installation and servicing

excel
Your Ideal installation and servicing guide

See reverse for excel users guide

For details of document amendments, refer to page 3

HE C24, C28, C32
DOCUMENT AMENDMENTS

Relevant Installation changes implemented in this book from Mod Level .......... A05 (Oct 06) to A06 (Nov 07)

- Page 4, Table 1 - General Data
  New Maximum working pressure figures.

- Page 7, Optional Extra Kits
  Addition of High Level Flue Outlet Kit.

- Page 40, Frame 63 - PCB Replacement
  Note added re: antistatic precautions.

- Page 42, Frame 66 - Air Pressure Switch Replacement
  New photograph added showing correct orientation of air pressure switch.

- Users Guide - Page 2, Important Notes
  Addition of two new bullets into important notes.

Ideal Stelrad Group reserve the right to vary specification without notice
GENERAL

CAUTION. To avoid the possibility of injury during the installation, servicing or cleaning of this appliance care should be taken when handling edges of sheet steel components.

Note.

Gas consumption is calculated using a calorific value of 38.7 MJ/m³ (1038 Btu/ft³) gross or 34.9 MJ/m³ (935 Btu/ft³) nett.

To obtain the gas consumption at a different calorific value:

1. For l/s - divide the gross heat input (kW) by the gross C.V. of the gas (MJ/m³)
2. For ft³/h - divide the gross heat input (Btu/h) by the gross C.V. of the gas (Btu/ft³)

Table 1 - General Data

<table>
<thead>
<tr>
<th></th>
<th>excel HE C24</th>
<th>excel HE C28</th>
<th>excel HE C32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burner pressure (hot) G20 mbar</td>
<td>13.4</td>
<td>5.0</td>
<td>10.5</td>
</tr>
<tr>
<td>Input based on nett CV kW (btu/h)</td>
<td>24.4</td>
<td>15.2</td>
<td>20.8</td>
</tr>
<tr>
<td>Input based on gross CV kW (btu/h)</td>
<td>27.1</td>
<td>15.2</td>
<td>20.8</td>
</tr>
<tr>
<td>Output: Non condensing kW (btu/h)</td>
<td>25.1</td>
<td>14.2</td>
<td>17.9</td>
</tr>
<tr>
<td>Gas consumption (Hot) G20 l/s (ft³/h)</td>
<td>0.700</td>
<td>0.40</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Table 2 - Performance Data - Central Heating

<table>
<thead>
<tr>
<th></th>
<th>excel HE C24</th>
<th>excel HE C28</th>
<th>excel HE C32</th>
</tr>
</thead>
<tbody>
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<td>Burner pressure (hot) G20 mbar</td>
<td>13.4</td>
<td>5.0</td>
<td>10.5</td>
</tr>
<tr>
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<td>24.4</td>
<td>15.2</td>
<td>20.8</td>
</tr>
<tr>
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<td>27.1</td>
<td>15.2</td>
<td>20.8</td>
</tr>
<tr>
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<td>14.2</td>
<td>17.9</td>
</tr>
<tr>
<td>Gas consumption (Hot) G20 l/s (ft³/h)</td>
<td>0.700</td>
<td>0.40</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Table 3 - Performance Data - Domestic Hot Water

<table>
<thead>
<tr>
<th></th>
<th>excel HE C24</th>
<th>excel HE C28</th>
<th>excel HE C32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burner pressure (hot) G20 mbar (in,w.g.)</td>
<td>13.4 (5.3)</td>
<td>5.0</td>
<td>10.5 (5.3)</td>
</tr>
<tr>
<td>Input based on nett CV kW (btu/h)</td>
<td>24.4 (83,300)</td>
<td>15.2</td>
<td>20.8 (83,300)</td>
</tr>
<tr>
<td>Input based on gross CV kW (btu/h)</td>
<td>27.1 (92,400)</td>
<td>15.2</td>
<td>20.8 (92,400)</td>
</tr>
<tr>
<td>Output kW (btu/h)</td>
<td>25.1 (80,000)</td>
<td>14.2</td>
<td>17.9 (80,000)</td>
</tr>
<tr>
<td>Gas consumption (Hot) G20 l/s (ft³/h)</td>
<td>0.700</td>
<td>0.40</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Key to symbols

GB = United Kingdom
IE = Ireland (Countries of destination)
PMS = Maximum operating pressure of water
C1, C2, C3 = A room sealed appliance designed for connection via ducts to a horizontal or vertical terminal, which admits fresh air to the burner and discharges the products of combustion to the outside through orifices which, in this case, are concentric. The fan is up stream of the combustion chamber.
iw = An appliance designed for use on 2nd Family gas, Group H only.

CAUTION. To avoid the possibility of injury during the installation, servicing or cleaning of this appliance care should be taken when handling edges of sheet steel components.
For GB, to comply with Building Regulations Part L1 (Part J in Scotland) the boiler should be fitted in accordance with the manufacturer's instructions. Self-certification that the boiler has been installed to comply with Building Regulations can be demonstrated by completing and signing the Benchmark Commissioning Checklist.

**BENCHMARK COMMISSIONING CHECKLIST**

<table>
<thead>
<tr>
<th>Boiler</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make and model</td>
<td>5</td>
</tr>
<tr>
<td>Appliance serial no. on data badge</td>
<td>13</td>
</tr>
<tr>
<td>SEDBUK No. %</td>
<td>4</td>
</tr>
</tbody>
</table>

**Controls**

- Time and temperature control to heating | 27 |
- Time and temperature control to hot water | 27 |
- Heating zone valves | 37 |
- TRV's | 10 |
- Auto bypass | 11 |
- Boiler interlock | 10 |

**For all boilers**

- Flushing to BS.7593 | 12 |
- Inhibitor | 12 |
- Central heating mode | |
- Heat input | to be calculated |
- Burner operating pressure | measure and record |
- Central heating flow temp. | measure and record |
- Central heating return temp. | measure and record |
- Scale reducer | 11 |
- Hot water mode | |
- Heat input | n/a |
- Max. operating burner pressure | n/a |
- Max. operating water pressure | n/a |
- Cold water inlet temp | n/a |
- Hot water outlet temp | n/a |
- Water flow rate at max. setting | n/a |
- Condensate drain | 23 |

**For all boilers:** complete, sign & hand over to customer

For assistance see Technical Helpline on the back page

For GB, to comply with Building Regulations Part L1 (Part J in Scotland) the boiler should be fitted in accordance with the manufacturer's instructions. Self-certification that the boiler has been installed to comply with Building Regulations can be demonstrated by completing and signing the Benchmark Commissioning Checklist.

**BENCHMARK COMMISSIONING CHECKLIST**

<table>
<thead>
<tr>
<th>Boiler size</th>
<th>G.C. Appliance No.</th>
<th>PI No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C24</td>
<td>47 348 35</td>
<td>87 BP 46</td>
</tr>
<tr>
<td>C28</td>
<td>47 348 36</td>
<td>87 BP 46</td>
</tr>
<tr>
<td>C32</td>
<td>47 348 37</td>
<td>87 BP 46</td>
</tr>
</tbody>
</table>
INTRODUCTION

The excel HE range of boilers are wall mounted, full sequence, automatic spark ignition, low water content, fanned flue, high efficiency, condensing, combination gas boilers.

Note: Due to the high efficiency of the boiler a plume of water vapour will form at the terminal during operation.

Central heating (CH) and instantaneous domestic hot water (DHW) outputs are fully modulating with a maximum of:

- C24 23.4kW (80,000 Btu/h)
- C28 28.0kW (95,500 Btu/h)
- C32 32.0kW (109,000 Btu/h)

The boilers are supplied fully assembled with DHW plate heat exchanger, diverter valve, circulating pump, pressure gauge, safety valve and CH expansion vessel.

Variable CH and DHW temperature controls are fitted on the user control.

The boiler casing is of white painted mild steel with a plastic drop down controls access door.

The boiler controls are located behind the controls access door.

The main heat exchanger is made of copper, the high efficiency recuperator is made of stainless steel and the DHW plate heat exchanger is made of stainless steel.

The boiler is suitable for connection to fully pumped, sealed water systems ONLY. Adequate arrangements for completely draining the system by provision of drain cocks MUST be provided in the installation pipework.

A system bypass is not required when TRV’s are fitted to radiators (see Frame 5). The boiler incorporates an automatic bypass. Pipework from the boiler is routed downwards as standard, but may be routed upwards behind the boiler using the stand-off frame (supplied in a separate kit).

SAFE HANDLING

This boiler may require 2 operatives to move it to its installation site, remove it from its packaging and during movement into its installation location. Maneuvering the boiler may include the use of a sack truck and involve lifting, pushing and pulling.

Caution should be exercised during these operations. Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:

- Grip the boiler as described in Frame 28.
- Be physically capable.
- Use PPE as appropriate, e.g. gloves, safety footwear.

During all manoeuvres and handling actions, every attempt should be made to ensure the following unless unavoidable and/or the weight is light.

- Keep back straight.
- Avoid twisting at the waist.
- Avoid upper body/top heavy bending.
- Always grip with the palm of the hand.
- Use designated hand holds.
- Keep load as close to the body as possible.
- Always use assistance if required.

OPERATION

With no demand for CH, the boiler fires only when DHW is drawn off. When there is a demand for CH, the heating system is supplied at the selected temperature of between 38°C and 82°C, until DHW is drawn off. The full output from the boiler is then directed via the diverter valve to the plate heat exchanger to supply a nominal DHW draw-off of:

- C24 9.6 l/min (2.1 GPM) at 35°C rise.
- C28 11.5 l/min (2.6 GPM) at 35°C rise.
- C32 13.1 l/min (2.9 GPM) at 35°C rise.

Note. Quoted flow rates and temperature rises are those theoretically achievable. Flow rates measured during commissioning may differ (due, for example, to resistance of domestic hot water pipe lengths and fittings or available dynamic gas pressures).

Due to system variations and seasonal temperature fluctuations DHW flow rates/temperature rise will vary, requiring adjustment at the draw off tap.

At low DHW draw-off rate the maximum temperature is limited to 65°C by the modulating gas control.

Refer also to Frame 1 - ‘Boiler Water Circuit Diagram’.
OPTIONAL EXTRA KITS

FLUING:
- Flue Extension Ducts. (‘D’ Pack - 1000mm long).
  C24-up to 3m
  C28-up to 2.675m
  C32-up to 1.725m
- 90° Elbow Kit (60/100 dia maximum no. per installation).
  C24-up to 2 elbows
  C28-up to 2 elbows
  C32-up to 1 elbow
- 45° Elbow Kit (60/100 dia maximum no. per installation).
  C24-up to 2 elbows
  C28-up to 2 elbows
  C32-up to 1 elbow
- Roof Flue Kit (80/125)
  C24-up to a maximum length of 16 m
  C28-up to a maximum length of 12 m
  C32-up to a maximum length of 8 m
- Roof Flue Extension Duct Kit (80/125)
- Pitched Roof Tile (for roof flue kit)
- Flat Roof Tile (For roof flue kit)
- Ridge Tile Flue Terminal (For twin flue kit)
- Adaptor (60/100 to 80/125)
- Twin Flue Kit (80/80)
- Twin Flue Kit (60/60)
- Vertical Connector (60/100)
- Vertical Outlet Flue Kit with Elbow (60/100)
  C24-up to a maximum length of 5.5 m
  C28-up to a maximum length of 4 m
  C32-up to a maximum length of 2.5 m
- 80mm Extension Duct
- 60mm Extension Duct
- 90° Elbow (60mm male/female)
- 90° Elbow (60mm male/female)
- 45° Elbow (80mm male/female)
- 45° Elbow (80mm male/female)
- Flue Finishing Kit
- 90° Elbow (80/125)
- 45° Elbow (80/125)
- Slip Coupling (80mm)
- Slip Coupling (60mm)
- High Level Flue Outlet Kit

OTHER OPTION KITS:
- Mechanical Programmer (24 hour)
- Electronic Programmer (7 day)
- Condensate Pump Kit
- Siphon Kit
- Stand Off Kit
- Pre-Piping Frame Kit

SAFETY

Current Gas Safety (installation and use) regulations or rules in force:
The appliance is suitable only for installation in GB and IE and should be installed in accordance with the rules in force. In GB, the installation must be carried out by a CORGI Registered Installer, or in IE a competent person. It must be carried out in accordance with the relevant requirements of the:
- Gas Safety (Installation and Use) Regulations.

- The appropriate Building Regulations either The Building Regulations, The Building Regulations (Scotland), Building Regulations (northern Ireland).
- The Water Fittings Regulations or Water bye-laws in Scotland.
- The Current I.E.E. Wiring Regulations.
Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice. In IE, the installation must be carried out by a Competent Person and installed in accordance with the current edition of I.S.813 "Domestic Gas Installations", the current Building Regulations and reference should be made to the current ETCI rules for electrical installation.

Detailed recommendations are contained in the following British Standards of Practice:
BS. 5440:1 Flues (for gas appliances of rated input not exceeding 70 kW).
BS. 5440:2 Ventilation (for gas appliances of rated input not exceeding 70 kW).
BS. 5449 Forced circulation hot water systems.
BS. 5546 Installation of gas hot water supplies for domestic purposes (2nd Family Gases)
BS. 6798 Installation of gas fired hot water boilers of rated input not exceeding 70 kW.
BS. 6891 Low pressure installation pipes.

Health & Safety Document No. 635.
The Electricity at Work Regulations, 1989.
The manufacturer's notes must NOT be taken, in any way, as overriding statutory obligations.

IMPORTANT. These appliances are CE certificated for safety and performance. It is, therefore, important that no external control devices, e.g. flue dampers, economisers etc., are directly connected to these appliances unless covered by these Installation and Servicing Instructions or as otherwise recommended by Ideal Steyrad Group in writing. If in doubt please enquire.

Any direct connection of a control device not approved by Ideal Steyrad Group could invalidate the certification and the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above regulations.

SAFE HANDLING OF SUBSTANCES

Care should be taken when handling the boiler insulation panels, which can cause irritation to the skin. No asbestos, mercury or CFCs are included in any part of the boiler or its manufacture.

LOCATION OF BOILER

The boiler must be installed on a flat and vertical wall, capable of adequately supporting the weight of the boiler and any ancillary equipment.

The boiler may be fitted on a combustible wall and insulation between the wall and the boiler is not necessary, unless required by the local authority.

For electrical safety reasons there must be no access available from the back of the boiler.

The boiler must not be fitted outside.

Timber Framed Buildings

If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the Institute of Gas Engineering document IGE/UP/7:1998.

Bathroom Installations

This appliance is rated IP20.
GENERAL

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current IEE (BS.7671) Wiring Regulations and, in Scotland, the electrical provisions of the building regulations applicable in Scotland, with respect to the installation of the boiler in a room or internal space containing a bath or shower. For IE reference should be made to the current ETCI rules for electrical installations and I.S. 813:2002.

If the appliance is to be installed in a room containing a bath or shower then, providing water jets are not going to be used for cleaning purposes (as in communal baths/showers), the appliance can be installed in Zone 3, as detailed in BS.7671.

Compartments

A compartment used to enclose the boiler should be designed and constructed specially for this purpose. An existing cupboard or compartment may be used, provided that it is modified for the purpose.

In both cases, details of essential features of cupboard / compartment design, including airing cupboard installation, are to conform to the following:

- BS 6798 (No cupboard ventilation is required - see ‘Air Supply’ for details).
- The position selected for installation MUST allow adequate space for servicing in front of the boiler.
- For the minimum clearances required for safety and subsequent service, see the wall mounting template and Frame 2. In addition, sufficient space may be required to allow lifting access to the wall mounting plate.

GAS SUPPLY

The local gas supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas. An existing service pipe must NOT be used without prior consultation with the local gas supplier.

The boiler MUST be installed on a gas supply with a governed rate of gas supply required.

The flue assembly shall be so placed or shielded as to prevent ignition or damage to any part of any building.

The boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440-1:2000.

IMPORTANT. It is absolutely essential to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance MUST be turned OFF, labelled as 'unsafe' until corrective action can be taken.

TERMINAL

The terminal assembly can be adapted to accommodate various wall thicknesses. Refer to Frame 11.

<table>
<thead>
<tr>
<th>Terminal Position</th>
<th>Minimum Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Directly below, above or alongside of another openable window, air vent, or other ventilation opening.</td>
<td>300 mm (12&quot;)</td>
</tr>
<tr>
<td>2. Below guttering, drain pipes or soil pipes</td>
<td>25 mm (1&quot;)</td>
</tr>
<tr>
<td>3. Below eaves</td>
<td>25 mm (1&quot;)</td>
</tr>
<tr>
<td>4. Below balconies or a car port roof</td>
<td>25 mm (1&quot;)</td>
</tr>
<tr>
<td>5. From vertical drain pipes or soil pipes</td>
<td>150 mm (6&quot;)</td>
</tr>
<tr>
<td>6. From an internal or external corner or a boundary along side the terminal</td>
<td>100 mm (4&quot;)</td>
</tr>
<tr>
<td>7. Above adjacent ground, roof or balcony level</td>
<td>300 mm (12&quot;)</td>
</tr>
<tr>
<td>8. From a surface or a boundary facing the terminal</td>
<td>600 mm (24&quot;)</td>
</tr>
<tr>
<td>9. From a terminal facing a terminal</td>
<td>1200 mm (48&quot;)</td>
</tr>
<tr>
<td>10. From an opening in a car port (e.g. door or window) into dwelling</td>
<td>1200 mm (48&quot;)</td>
</tr>
<tr>
<td>11. Vertically from a terminal on the same wall</td>
<td>1500 mm (60&quot;)</td>
</tr>
<tr>
<td>12. Horizontally from a terminal on the wall</td>
<td>300 mm (12&quot;)</td>
</tr>
<tr>
<td>Vertical Terminals</td>
<td></td>
</tr>
<tr>
<td>13. Above the roof pitch with roof slope of all angles to air inlet.</td>
<td>300 mm (12&quot;)</td>
</tr>
<tr>
<td>14. Above flat roof to air inlet.</td>
<td>300 mm (12&quot;)</td>
</tr>
<tr>
<td>15. From single wall face</td>
<td>600 mm (24&quot;)</td>
</tr>
<tr>
<td>From corner walls</td>
<td>1000 mm (40&quot;)</td>
</tr>
</tbody>
</table>

| Twin Flue Applications                         |                 |
| 16. Centre distance between air inlet and flue outlet ducts | 120mm (5")    |

FLUE INSTALLATION

Plumbing will occur at the terminal so terminal positions where this could cause a nuisance should be avoided.

The flue must be installed in accordance with the recommendations of BS. 5440-1: 2000. In IE refer to I.S. 813:2002.

The following notes are intended for general guidance:

1. The boiler MUST be installed so that the terminal is exposed to external air.
2. It is important that the position of the terminal allows the free passage of air across it at all times.
3. Minimum acceptable spacing from the terminal to obstructions and ventilation openings are specified in Table 4.

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Tower House, Vale Rise Fax. + 44 (0) 01732 354 445
Tonbridge, Kent TN9 1TB
www.tfc-group.co.uk

Ensure that the guard is fitted centrally.

5. The flue assembly shall be so placed or shielded as to avoid ignition or damage to any part of any building.

6. The air inlet products outlet duct and the terminal of the boiler MUST NOT be closer than 25mm (1") to combustible material. Detailed recommendations on the protection of combustible material are given in BS. 5440-1:2000.

IMPORTANT. It is absolutely essential to ensure, in practice, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air conditioning.

If this should occur the appliance MUST be turned OFF, labelled as ‘unsafe’ until corrective action can be taken.
2 BOILER DIMENSIONS, SERVICES & CLEARANCES

The following minimum clearances must be maintained for operation and servicing.

All dimensions in mm (in)

Additional space will be required for installation, depending upon site conditions.

Side and Rear Flue
a. Provided that the flue hole is cut accurately, e.g. with a core drill, the flue can be installed from inside the building where wall thicknesses do not exceed 600mm (24").

Installation from inside ONLY
b. If a core boring tool is to be used inside the building the space in which the boiler is to be installed must be at least wide enough to accommodate the tool.

Front clearance
The minimum front clearance when built in to a cupboard is 5mm (1/4") from the cupboard door but 450mm (17 3/4") overall clearance is still required, with the cupboard door open, to allow for servicing.

* Bottom clearance
Bottom clearance after installation can be reduced to 5mm. However, 100mm must be available for servicing.

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* Bottom clearance
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GENERAL
AIR SUPPLY
It is NOT necessary to have a purpose-provided air vent in the room or internal space in which the boiler is installed. Neither is it necessary to ventilate a cupboard or compartment in which the boiler is installed, due to the low surface temperatures of the boiler casing during operation; therefore the requirements of BS 6798, Clause 12, and BS 5440.2 may be disregarded.

WATER CIRCULATION SYSTEM
IMPORTANT.
A minimum length of 1 metre of copper pipe MUST be fitted to both flow and return connections from the boiler before connection to any plastic piping.
The central heating system should be in accordance with BS 6798 and, in addition, for smallbore and microbore systems, BS 5449.

WATER TREATMENT - see Frame 6

BOILER CONTROL INTERLOCKS
Ideal Stelrad Group recommend that heating systems utilising full thermostatic radiator valve control of temperature in individual rooms should also be fitted with a room thermostat controlling the temperature in a space served by radiators not fitted with such a valve as stated in BS 5449.
Central heating systems controls should be installed to ensure the boiler is switched off when there is no demand for heating or hot water.

3 SYSTEM REQUIREMENTS - Central Heating

Notes
a. The method of filling, refilling, topping up or flushing sealed primary hot water circuits from the mains via a temporary hose connection is only allowed if acceptable to the local water authority.
b. Antifreeze fluid, corrosion and scale inhibitor fluids suitable for use with boilers having copper heat exchangers may be used in the central heating system.
Advice should be sought from a local water treatment company.

General
1. The installation must comply with all relevant national and local regulations.
2. The installation should be designed to work with flow temperatures of up to 82°C.
3. All components of the system must be suitable for a working pressure of 3 bar and temperature of 110°C. Extra care should be taken in making all connections so that the risk of leakage is minimised.
The following components are incorporated within the appliance:
a. Circulating pump.
b. Safety valve, with a non-adjustable preset lift pressure of 3 bar.
c. Pressure gauge, covering a range of 0 to 4 bar.
d. A 7-litre expansion vessel, with an initial charge pressure of 0.75 bar.

When thermostatic radiator valves are used, the space heating temperature control over a living / dining area or hallway having a heating requirement of at least 10% of the boiler heat output should be achieved using a room thermostat, whilst other rooms are individually controlled by thermostatic radiator valves.

ELECTRICAL SUPPLY

WARNING.
This appliance must be earthed.
Wiring external to the appliance MUST be in accordance with the current I.E.E. (BS.7671) Wiring Regulations and any local regulations which apply. For IE reference should be made to the current ETCI rules for electrical installations.
The point of connection to the mains should be readily accessible and adjacent to the boiler.

CONDENSATE DRAIN Refer to Frame 27
A condensate drain is provided on the boiler. This drain must be connected to a drainage point on site. All pipework and fittings in the condensate drainage system MUST be made of plastic - no other materials may be used.

IMPORTANT.
Any external runs must be insulated.
The drain outlet on the boiler is standard 21.5mm (3/4") overflow pipe.

<table>
<thead>
<tr>
<th>Safety valve setting (bar)</th>
<th>3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel charge pressure (bar)</td>
<td>0.5 to 0.75</td>
</tr>
<tr>
<td>System pre-charge pressure (bar)</td>
<td>None to 1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System volume (litres)</th>
<th>Expansion vessel volume (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.6</td>
</tr>
<tr>
<td>50</td>
<td>4.1</td>
</tr>
<tr>
<td>75</td>
<td>4.7</td>
</tr>
<tr>
<td>100</td>
<td>6.3</td>
</tr>
<tr>
<td>125</td>
<td>7.8</td>
</tr>
<tr>
<td>150</td>
<td>9.4</td>
</tr>
<tr>
<td>175</td>
<td>10.9</td>
</tr>
<tr>
<td>190</td>
<td>11.9</td>
</tr>
<tr>
<td>200</td>
<td>12.5</td>
</tr>
<tr>
<td>250</td>
<td>15.6</td>
</tr>
<tr>
<td>300</td>
<td>18.8</td>
</tr>
</tbody>
</table>

For other system volumes multiply by the factor across the table.

4. 'Make-up' Water. Provision must be made for replacing water loss from the system, either:
a. From a manually filled 'make-up' vessel with a readily visible water level. The vessel should be mounted at least 150mm above the highest point of the system and be connected through a non-return valve to the system, fitted at least 150mm below the 'make-up' vessel on the return side of the radiators.

<table>
<thead>
<tr>
<th>System volume (litres)</th>
<th>Expansion vessel volume (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1.6</td>
</tr>
<tr>
<td>50</td>
<td>4.1</td>
</tr>
<tr>
<td>75</td>
<td>4.7</td>
</tr>
<tr>
<td>100</td>
<td>6.3</td>
</tr>
<tr>
<td>125</td>
<td>7.8</td>
</tr>
<tr>
<td>150</td>
<td>9.4</td>
</tr>
<tr>
<td>175</td>
<td>10.9</td>
</tr>
<tr>
<td>190</td>
<td>11.9</td>
</tr>
<tr>
<td>200</td>
<td>12.5</td>
</tr>
<tr>
<td>250</td>
<td>15.6</td>
</tr>
<tr>
<td>300</td>
<td>18.8</td>
</tr>
</tbody>
</table>

For other system volumes multiply by the factor across the table.

continued . . . . . .
4 SYSTEM REQUIREMENTS - CH (continued) and Hot Water

b. Where access to a 'make-up' vessel would be difficult, by pre-pressurisation of the system. The maximum cold water capacity of the system should not exceed 143 litres, if not pressurized. However, if the system is to be pressurized, the efficiency of the expansion vessel will be reduced and a larger vessel (or smaller system volume) may be necessary. If the capacity of the vessel is not considered sufficient for this, or for any other reason, an additional vessel MUST be installed on the return to the boiler.

Guidance on vessel sizing is given in Frame 3.

5. Filling. The system may be filled by the following method:
   a. Through a temporary hose connection from a ‘draw-off’ tap, supplied from a service pipe under mains pressure. Where the mains pressure is excessive a pressure reducing valve must be used to facilitate filling. When installing the filling device it must be connected as shown below, to fully comply with the water regulations. This may involve the fitting of an additional WRAS approved isolator valve to the mains supply.
      i. Thoroughly flush out the whole system with cold water.
      ii. Fill and vent the system until the pressure gauge registers 1.5 bar and examine for leaks.
      iii. Check the operation of the safety valve by raising the water pressure until the valve lifts. This should occur within 0.3 bar of the preset lift pressure.
      iv. Release water from the system until the minimum system design pressure is reached: 1.0 bar if the system is to be pre-pressurised.

DOMESTIC HOT WATER

1. The domestic hot water service must be in accordance with BS 5546 and BS 6700.
2. Refer to Table 1 for minimum and maximum working pressures.
3. The boilers are suitable for connection to most types of washing machine and dishwasher appliances.
4. When connecting to suitable showers, ensure that:
   a. The cold inlet to the boiler is fitted with an approved anti-vacuum or syphon non-return valve.

5 SYSTEM BALANCING

The boiler does not need a bypass.

BALANCING

1. Set the programmer to ON.
   Close the manual or thermostatic valves on all radiators, leaving the twin lockshield valves (on the radiators referred to above) in the OPEN position.
   Turn up the room thermostat and adjust these lockshield valves to give boiler flow and return temperatures not more than 20°C apart.
   These valves should now be left as set.
2. Open all manual or thermostatic radiator valves and adjust the lockshield valves on the remaining radiators, to give around 20°C temperature drop at each radiator.
3. Adjust the room thermostat and programmer to NORMAL settings.

Water Flow Rate and Pressure Loss

<table>
<thead>
<tr>
<th>Max CH Output (kW)</th>
<th>23.4</th>
<th>28</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Btu/h)</td>
<td>(80,000)</td>
<td>(95,500)</td>
<td>(109,000)</td>
</tr>
<tr>
<td>Water flow rate (l/sec)</td>
<td>0.28</td>
<td>0.33</td>
<td>0.38</td>
</tr>
<tr>
<td>(gal/min)</td>
<td>(3.7)</td>
<td>(4.4)</td>
<td>(5.0)</td>
</tr>
<tr>
<td>Temp. Differential °C</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>(°F)</td>
<td>(36)</td>
<td>(36)</td>
<td>(36)</td>
</tr>
<tr>
<td>Head available for m.w.g. system pump. (ft.w.g.)</td>
<td>3.3</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>(10.8)</td>
<td>(4.9)</td>
<td>(3.6)</td>
<td></td>
</tr>
</tbody>
</table>

Water Flow Rate and Pressure Loss

<table>
<thead>
<tr>
<th>Max CH Output (kW)</th>
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<th>28</th>
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<td>(5.0)</td>
</tr>
<tr>
<td>Temp. Differential °C</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>(°F)</td>
<td>(36)</td>
<td>(36)</td>
<td>(36)</td>
</tr>
<tr>
<td>Head available for m.w.g. system pump. (ft.w.g.)</td>
<td>3.3</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>(10.8)</td>
<td>(4.9)</td>
<td>(3.6)</td>
<td></td>
</tr>
</tbody>
</table>
6 WATER TREATMENT
CENTRAL HEATING
The excel HE range of boilers have a copper main heat exchanger and a stainless steel high efficiency heat exchanger.

IMPORTANT. The application of any other treatment to this product may render the guarantee of Ideal Stelrad Group invalid.

Ideal Stelrad Group recommend Water Treatment in accordance with the Benchmark Guidance Notes on Water Treatment in Central Heating Systems.

If water treatment is used Ideal Stelrad Group recommend only the use of FERNOX-COPAL or MB1, GE BETZ SENTINEL X100 or Salamander Corrosion Guard inhibitors and associated water treatment products, which must be used in accordance with the manufacturers' instructions.

Notes.
1. It is most important that the correct concentration of the water treatment products is maintained in accordance with the manufacturers' instructions.
2. If the boiler is installed in an existing system any unsuitable additives MUST be removed by thorough cleansing. BS 7593:1992 details the steps necessary to clean a domestic heating system.
3. In hard water areas, treatment to prevent lime scale may be necessary - however the use of artificially softened water is NOT permitted.
4. Under no circumstances should the boiler be fired before the system has been thoroughly flushed.

DOMESTIC HOT WATER
In hard water areas where main water can exceed 200ppm Total Hardness (as defined by BS 7593:1993 Table 2) a scale reducing device should be fitted into the boiler cold supply within the requirements of the local water company. The use of artificially softened water, however, is not permitted.

Ideal Stelrad Group recommend the use of Fernox Qantomat, GE Betz Sentinel Combiguard and Calmag CalPhos I scale reducing devices, which must be used in accordance with the manufacturers' instructions. For further information contact:

Fernox Manufacturing Co. Ltd
Cookson Electronics
Forsyth Road
Sheerwater
Woking
Surrey GU21 5RZ
Tel: +44 (0) 1799 521133

Sentinel Performance Solutions
The Heath Business & Technical Park
Runcorn
Cheshire
WA7 4QX
Tel: 0800 389 4670
www.sentinel-solutions.net

Salamander Engineering Ltd
Unit 24 Reddicap Trading Estate
Sutton Coldfield
West Midlands B75 7BU
Tel: +44 (0) 121 3780952

Calmag Ltd.
Unit 4-6, Crown Works
Bradford Road
Sandbeds, Keighley
West Yorkshire BD20 5LN
Tel: +44 (0) 1535 210 320

7 BOILER ASSEMBLY - Exploded View Legend

1. Main heat Exchanger
2. Fan
3. Recuperator
4. Burner
5. Injectors
6. Detection electrode
7. Ignition electrode LH & RH
8. Pump head
9. Divertor valve Actuator
10. Auto air vent valve
11. Casing controls door
12. Controls fascia
13. Knob potentiometer
14. Panel control cover
15. Panel control support
16. Panel user wiring cover
17. Main PCB
18. Pressure gauge
19. Lens clear
20. Expansion PCB
21. Mains switch
22. Ignition unit NAC
23. Air pressure switch
24. Panel front sealing
25. Casing LH side panel
26. Casing RH side panel
27. Casing front panel
28. Casing bottom panel
29. Gas valve
30. Condensate blockage thermistor
31. Overheat thermostat
32. Expansion vessel
33. Combustion chamber insulation
34. Thermistor waterset CH & DHW
35. Plate Heat Exchanger
9 UNPACKING

The boiler is supplied fully assembled in one Pack A, together with a standard flue assembly for lengths up to 775mm, rear or side flue outlet, in Pack B.

Unpack and check the contents. Refer to Frame 10 for Unpacking.

Pack A Contents
A The boiler
B Hardware pack and fittings
C Wall mounting plate
D These Installation & Servicing/ User’s instructions
E Wall mounting template
F 1 year guarantee form
G Flue Restrictor - 1 off
   24 kW - 39mm
   28 kW - 43mm
   32 kW - 45mm

Hardware Pack & Fittings
A Isolation ball valve - CH - 2 off
B Isolation ball valve - DHW - 1 off
C 3/4" sealing washer - 2 off
D Bulkhead elbow - 1 off
E 12mm sealing washer - 2 off
F Gas cock - 1 off
G Gas cock washer - 1 off
H Wallplug - 2 off
J No 14x2in wood screw rd hd black - 2 off
K M5x10 pozid pan screw ZP - 1 off
L Turret clamp - 1 off
M Pressure relief valve discharge pipe - 1 off
N Pressure relief valve discharge pipe back nut - 1 off
P Pressure relief valve discharge pipe 15mm olive - 1 off

Pack B Contents
A Flue turret
B Flue terminal
10 PACKAGING REMOVAL

1. Cut and remove straps.
2. Remove literature and wall mounting template.
3. Lift off outer sleeve.
4. Lift off top tray.
5. Leave boiler in bottom tray to protect exposed boiler connections during wall hanging.

Note. Hardware pack contained within bottom tray at back of boiler. Ensure components are withdrawn before discarding bottom tray.

11 DETERMINING THE FLUE LENGTH AND FLUE PACKS REQUIRED

For the 100mm concentric flue system

| Dimension X | Wall thickness. |
| Dimension L | Wall thickness plus boiler spacing. |
| Dimension R | Wall thickness plus boiler spacing. |

Note. The flue duct MUST be inclined at 1.5 degrees to the horizontal to allow condensate to drain back into the boiler and out through the condensate drain. (Only necessary if using one or more 'D' extension duct packs)

<table>
<thead>
<tr>
<th>Total Flue length dimension</th>
<th>Flue</th>
<th>Extra packs required</th>
<th>Boiler Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear flue dim. X+177</td>
<td>L,H. Side flue dim. L+331</td>
<td>RH Side flue dim. R+119</td>
<td></td>
</tr>
<tr>
<td>Up to 775 mm</td>
<td>Up to 775 mm</td>
<td>Up to 775 mm</td>
<td>none</td>
</tr>
<tr>
<td>Up to 1725 mm</td>
<td>Up to 1725 mm</td>
<td>Up to 1725 mm</td>
<td>Pack D - 1 off</td>
</tr>
<tr>
<td>Up to 2675 mm</td>
<td>Up to 2675 mm</td>
<td>Up to 2675 mm</td>
<td>Pack D - 2 off</td>
</tr>
<tr>
<td>Up to 3000 mm</td>
<td>Up to 3000 mm</td>
<td>Up to 3000 mm</td>
<td>Pack D - 3 off</td>
</tr>
</tbody>
</table>

90° Elbow Kit - resistance is equivalent to 1.5m length of flue pipe
45° Elbow Kit - resistance is equivalent to 1.0m length of flue pipe
**INSTALLATION**

**12 FLUE ASSEMBLY - Exploded View**

**IMPORTANT. DO NOT fit flue restrictor if flue length is greater than 775 mm (‘B’ Pack).**

An optional flue duct extension kit is required for wall thicknesses greater than:

- **LH Side**: 420mm (16 1/2")
- **RH Side**: 630mm (24 3/4")
- **Rear**: 600mm (23 5/8")

**LEGEND**

1. Flue Elbow.
2. Flue Assembly.
3. Flue Restrictor.
4. M5 x 10 pozi pan screw.
5. Turret Clamp.

**Note.** If using stand-off kit distance increases to 211mm.

**13 WALL MOUNTING TEMPLATE**

**Note.**

The template shows the positions of the fixing holes and the rear flue outlet hole centre for standard installation. Care MUST be taken to ensure the correct holes are drilled.

1. **Tape template into the selected position. Ensure squareness by hanging a plumbline as shown.**
2. **If fitting a side flue extend the flue centre line onto the side wall and measure in 175mm for standard installation.**
   **Note.** If using stand-off kit distance increases to 211mm.

3. **Mark onto the wall the following:**
   a. The wall mounting plate screw positions (choose one from each group).
   b. The position of the flue duct hole (see diagram).
   **Note.** Mark the centre of the hole as well as the circumference.
4. **Remove the template from the wall.**

---

**See wall mounting template**

**‘H’ = Distance in metres from side of the boiler to the side wall**

**Note.** If wall thickness is greater than 305mm then dimension ‘H’ must be reduced by the same amount and the offset may be adjusted accordingly.
14 PREPARING THE WALL

IMPORTANT.
Ensure that, during the cutting operation, masonry falling outside of the building does not cause damage or personal injury.

1. Cut the flue hole (preferably with a 5" core boring tool), ensuring that the hole is square to the wall. Both wall faces immediately around the cut hole should be flat.

15 CUTTING THE FLUE - REAR  Wall thicknesses of 114 to 600mm

Notes.

a. If using the extension ducts go to Frame 17, 18 and 19.
b. If the stand-off frame is used it is essential add 33mm to 'X' the measured wall thickness when marking the flue (this will allow for the fitted frame).

1. Measure and note wall thickness X. Refer to Frame 11.
2. Add 105mm (4 1/8") to dimension X and, measuring from the ring, cut both outer and inner tube. Ensure support spring clip is in position to facilitate cutting.
3. To ensure the tube is cut square, mark the flue all the way around.

16 CUTTING THE FLUE - LH OR TO RH SIDE   Wall thicknesses of 114 to 420mm LH side or to 630mm RH side

Note. If using the extension ducts go to Frame 17, 18 and 19.

1. Measure and note side flue length L or R. Refer to Frame 11.
2. Add 284mm (11 3/16") to dimension L or 72mm (2 13/16") to dimension R and, measuring from the ring, cut both outer and inner tube. Ensure support spring clip is in position to facilitate cutting.
3. To ensure the tube is cut square, mark the flue all the way around.
17 FLUE EXTENSION DUCTS - For flue lengths greater than 775mm

Pack D Flue extension duct kit contents

- Extension duct & clamp 1.0m (39") long
- Wall plugs - 2 off
- Clamp screws - 2 off
- Washers - 2 off
- Support fixing screws - 2 off

18 FLUE EXTENSION DUCTS - continued

Use a maximum of 3m extended flue ONLY (C24)
Use a maximum of 2.675m extended flue ONLY (C28)
Use a maximum of 1.725m extended flue ONLY (C32)

General arrangement

1. A maximum of 2 extension ducts for the C24/ C28 and a maximum of 1 extension duct for the C32 (one suitably cut) plus the standard flue duct may be used together.

2. Flue extensions of greater length than 1m (39") should be supported with the bracket provided, suitably adjusted. Refer to Frame 17.

19 FITTING THE KIT

1. Fit the inner flue extension duct onto the inner flue duct.

2. Fit the outer flue extension duct onto the outer air duct.

3. Repeat steps 1 and 2 if a second flue extension is required.

4. Measure and mark the flue length required onto the flue, measuring from the ring near the terminal. (Refer to Frames 11 and 16 for the detail of flue length calculation.)

5. To ensure a square cut, mark the flue all the way around.

6. De-burr the cut edges.
**20 FITTING THE OPTIONAL ROOF FLUE KIT (Flat or Pitched)**

**Note.**
A flat or pitched roof flashing plate (not supplied) is required before proceeding with the installation of this kit.

This kit is suitable for both flat and pitched roof terminations, using a concentric flue to run vertically from the top of the boiler and terminating above roof level.

Connection to the top of the boiler is made using both a separately supplied vertical connector and a 80/125 adaptor.

**WEATHER PROOFING**
Where the flue passes through the roof line an adequate seal must be made. This is achieved by using either:
- Flat roof weather collar
- Universal weather collar.

**ACCESSORIES**
Flue Duct Extension Kits are available for flue lengths extending beyond 1m. These packs contain 1m extension ducts and may be cut to the desired length.

If the offset vertical option is used an elbow Kit is required. For a full accessories list refer to page 7, Optional Extras and Frame 23, Flue Arrangement.

---

**21 ROOF FLUE KIT CONTENTS / OPTIONS**

A. Flue assembly with terminal
B. Flue seal collar
C. 3.5x13 screw
D. Pitched roof tile/flat roof tile weather collar
E. Vertical connector (60/100)
F. Retention flange/screw
G. Adaptor (60/100 to 80/125)
H. Roof flue extension duct kit (80/125)
I. 90° elbow kit (80/125)
J. 45° elbow kit (80/125)

**Note.** Items D, E, G, H, I and J are not supplied with the roof flue kit.
22 FLUE TERMINAL POSITION

The terminal should be positioned so that products of combustion can safely disperse at all times. Plumbing may occur at the termination so, where possible, terminal positions where this could cause a nuisance should be avoided.

Minimum dimensions are shown below:

![Diagram](image)

- **Pitched Roof - with structure**
- **Flat roof - with structure**

23 FLUE ARRANGEMENT

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>80/125 Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>C24</td>
</tr>
<tr>
<td>610</td>
<td>Maximum Flue Length (m)</td>
<td>16</td>
</tr>
<tr>
<td>201 548</td>
<td>Flue ext. 80/125</td>
<td>15</td>
</tr>
<tr>
<td>201 547</td>
<td>Terminal Vertical Roof 80/125</td>
<td>1</td>
</tr>
<tr>
<td>158 431</td>
<td>Weather Collar Pitched Roof</td>
<td>1</td>
</tr>
<tr>
<td>158 432</td>
<td>Weather Collar Flat Roof</td>
<td>1</td>
</tr>
<tr>
<td>201 550</td>
<td>90° Elbow kit (80/125)</td>
<td>4</td>
</tr>
<tr>
<td>201 551</td>
<td>45° Elbow kit (80/125)</td>
<td>4</td>
</tr>
<tr>
<td>201 184</td>
<td>Vertical Connector</td>
<td>1</td>
</tr>
<tr>
<td>201 549</td>
<td>Adaptor (60/100 - 80/125)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note.**

The equivalent flue length resistance of the 90° elbow kit (80/125) is 1.5m and the 45° elbow kit (80/125) is 1.0m.
24 ASSEMBLING THE ROOF FLUE KIT

Determine the correct height that the flue should terminate above the roof. If after calculating or measuring the overall flue height from the top of the boiler, it is necessary to cut both pipes of assembly A, then ensure they are cut equally leaving the inner flue tube longer than the outer air tube as supplied. (Refer to No. 6 below)

Ensure the cut pipe ends are free from any burrs.

1. Ensure the flue seal collar B is located onto the flue assembly A.

2. Position the roof flashing plate D (supplied separately) over the hole cut in the roof and insert flue assembly A from the roof end.

3. Push fit the vertical connector E (supplied separately) into the boiler flue connection and retain with the retention flange F (supplied with the boiler) and securing screw. ENSURING THE GASKETS IN THE BOILER FLUE OUTLET ARE CORRECTLY FITTED.

4. "Push" fit the 60/100 to 80/125 adaptor G (supplied separately) into the vertical connector.

5. "Push" fit extension duct H (if required (supplied separately)) and the roof flue kit assembly A into the adaptor G.

6. If the last extension duct requires cutting, measure the distance (outer ducts) between the duct and the terminal and add 100 mm to this dimension. This gives the length of the last extension duct. **Note.** Check the position of the inner flue duct relative to the outer duct on the assembled extension duct(s) and ensure the terminal flue duct is cut longer than the air duct to ensure engagement in the final flue duct seal.

7. Slide down and position the flue seal collar B over the roof plate D and secure it with the 3 screws C to the flue assembly A.

8. Finally ensure the roof flashing plate D is correctly sealed to the roof.
25 FITTING THE OPTIONAL FLUE FINISHING KIT

Contents:
Outer wall sealing plate - 1 off
Inner rubber wall seal (White) - 1 off
Outer rubber wall seal (black) - 1 off
Wall plugs - 4 off
Screws No. 10x2" - 4 off

1. Fit black outer wall seal over terminal and ensure the retaining rim is located in the terminal depression.
2. Fit flue pipe assembly through the hole previously cut in wall.
3. Fit white inner wall seal and push up to inner wall.
4. Fit turret to boiler (see Frame 30) and to the flue pipe assembly.
5. Fit outer wall sealing plate over outer wall seal and retain with the 4 screws and wall plugs provided.
26 FITTING THE WALL MOUNTING PLATE

Fit the wall mounting plate either:

a. Directly to the wall
   - Insert wall plugs.
   - Put the screws into the wall plugs and leave 10mm proud
   - Hang the frame onto the screws (take care to use the same hole position from each group as previously chosen with the wall template) and tighten up.
   
   or

b. If using optional Stand-Off Frame or Pre-Piping Frame, refer to instructions provided with kit.

27 CONDENSATE DRAIN


The boiler comes with an integral 100mm condensate trap. The boiler condensate drain must be connected to a drainage point, preferably within the building. This condensate drainage should be run in standard 21.5mm overflow pipe.

Before fitting drain pipe remove plastic plug from connection. Connection to the boiler is by push fit into the rubber collar protruding from the boiler.

Ensure that the condensate trap is full of water before commissioning the boiler. Refer to Frame 30:

The routing of the drain must be made to allow a minimum fall of 1 in 20 away from the boiler, throughout its length.

The drainage pipework must be arranged so that obstruction (e.g. through freezing) of external drainage pipe does not give rise to spillage within the dwelling.

IMPORTANT.
If excessive external pipework cannot be avoided an additional siphon kit or a condensate removal pump (both available as an option) and insulation are recommended to prevent possible freezing.

All pipework and fittings in the condensate drain system must be made of plastic. No other materials may be used.

The drain outlet on the boiler is standard 21.5mm overflow pipe. This size must not be reduced in any part of its length.
28 MOUNTING THE BOILER

Note. The boiler may require two men to lift it onto the wall mounting plate.

1. Lift the boiler by the packaging base onto the plate, locating it over the tabs at the top of the bracket. Ensure the boiler is correctly retained on the wall mounting plate tabs. Remove packaging base.

Note. If side clearance is limited, the packaging base can be removed prior to lifting.

2. Ensure the plastic plugs are removed from both the CH and DHW Connections. N.B. Some spillage of water may occur from the connections when mounting the boiler onto the wall plate.

3. Fit the two 22mm CH isolating ball valves to the two CH connections on the boiler using the two 22mm washers provided.

4. Fit the 15mm isolating ball valve to the DHW inlet connection on the boiler using the 15mm washer provided.

5. Fit the 15mm bulkhead elbow to the DHW outlet connection on the boiler using the 15mm washer provided.

6. Fit the 15mm gas cock to the gas connection on the boiler using the gas cock seal provided.

29 CONNECTIONS - CH, DHW AND GAS

Notes.

1. Central Heating
   For heating loads in excess of 60,000 Btu/h use 28mm x 22mm connectors to connect the boiler flow and return pipes to 28mm system pipework.

2. Central Heating, Domestic Hot Water and Gas
   Do not subject any of the isolating valves to heat as the seals may be damaged.

3. Gas
   Refer to Frame 2 for details of the gas connection position.

30 CONNECTING THE FLUE TO THE Boiler

Note. Before fitting the flue turret fill the condensate trap or siphon trap within the boiler by pouring a cupful of water into the flue outlet A. Take care to ensure that the water is only poured into the flue outlet, and does not spill into the boiler casing.

IMPORTANT. DO NOT fit flue restrictor if flue length is greater than 775 mm (‘B’ Pack).

1. “Push” fit the flue restrictor (if necessary) into centre of plastic flue outlet. Refer to Frame 12.

2. Insert the flue assembly through the prepared hole in the wall.

3. Locate the flue turret on the top of the boiler. CHECK THAT THE FLUE SEAL LOCATED IN THE TOP OF THE FLUE MANIFOLD IS SECURE AND GIVING AN EFFECTIVE SEAL.

4. Locate the flue into the turret and push to ensure full engagement.

5. Secure the flue turret on top of the boiler by inserting the open ends of the turret clamp under the 2 studs and fixing it in the middle with the single M5 x 10mm pozi-hex screw provided.

6. Flues over 1 metre long.
   Fix the flue support bracket to the wall, using the 2 wall plugs and wood screws.
31 PRESSURE RELIEF VALVE DRAIN PIPE

The pressure relief valve is located at the bottom LHS of the boiler.

Remove front panel. See Frame 44.

The pressure relief pipe (to be found in the hardware pack) must be fitted to the pressure relief valve and sealed with the olive and back nut provided. Ensure the pipe is extended so that the discharge of water or steam cannot create a hazard to the occupants of the premises or damage the electrical components and wiring.

32 FILLING

Central Heating
1. Remove the front, RH side and bottom cover panels. See Frames 44, 45 and 46.
2. Ensure the CH isolating valves are open.
3. Open the stopcock at the filling point connection to the CH system until water is heard to flow.
4. Open each radiator vent starting at the lowest point of the system and fully fill and vent the system.
5. Bleed air from the pump and ensure it is free to rotate.
   A. Remove the pump vent plug
   B. Using a screwdriver, rotate the shaft several times
   C. Replace the pump vent plug.
   Note. Some slight water leakage will occur.
   Ensure control box wiring is protected.
6. Ensure the pressure indicated on the pressure gauge is between 1 and 1.5 bar.

Domestic Hot Water
1. Close all hot water draw off taps.
2. Open the cold water inlet valve.
3. Slowly open each draw off tap and close only when clear and air bubble free water flows out.
33 ELECTRICAL CONNECTIONS

WARNING. This appliance MUST be earthed.

A mains supply of 230 V ~ 50 Hz is required.

Mains wiring should be 3 core PVC insulated flexible cord
NOT LESS than 0.75mm² (24x0.2mm) and to BS 6500, Table 16. (0.5mm² flex is not acceptable - for mechanical, not electrical reasons.)

Mains wiring external to the boiler MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations.

For Ireland reference should be made to the current ETCI rules for electrical installations.

The supply connection is intended to be made via a double pole switch having a 3mm (1/8”) contact separation in both poles, serving only the boiler and system controls.

The fuse rating should be 3A.

WARNING. This appliance MUST be earthed.

A mains supply of 230 V ~ 50 Hz is required.

Mains wiring should be 3 core PVC insulated flexible cord
NOT LESS than 0.75mm² (24x0.2mm) and to BS 6500, Table 16. (0.5mm² flex is not acceptable - for mechanical, not electrical reasons.)

Mains wiring external to the boiler MUST be in accordance with the current I.E.E. (BS7671) Wiring Regulations and any local regulations.

For Ireland reference should be made to the current ETCI rules for electrical installations.

The supply connection is intended to be made via a double pole switch having a 3mm (1/8”) contact separation in both poles, serving only the boiler and system controls.

The fuse rating should be 3A.

34 INTERNAL WIRING

INCOMING MAINS WIRING DETAIL

To gain access to the power supply and external controls terminal block:

1. Remove the screws and the cover panel.
2. Remove the control box fixing screws.
3. Pull the control panel forward.
4. Remove the screws and the service panel.

LEGEND

L Live
N Neutral
E Earth
F1 Frost Stat Switched Live
F2 Frost Live Feed
R1 Room Stat Switched Live
R2 Room Live Feed
R3 Programmer Common SWL

Note. Ensure that the lengths of the current conductors are shorter than the earth conductor so that if the cable slips in its anchorage the current carrying conductors become taut before the earth conductor.
35 EXTERNAL ELECTRICAL CONTROLS

WARNING. When the boiler is powered 'ON', mains voltage is present on terminals “F2” and “R2”. PLEASE TAKE CARE.

Wiring external to the boiler MUST be in accordance with the current I.E.E. (BS. 7671) Wiring Regulations.

For Ireland reference should be made to the current ETCI rules for electrical installation.

The controls internal fuse is a 2A fast blow 250V rated.

Lock the flexible cords in place with the clamps provided.

ELECTRICAL CONNECTIONS FOR A COMBI BOILER

Optional Programmer Kit

An optional 7 day digital programmer or 24hr mechanical programmer kit is available with its relevant instructions.

Room Thermostat

This should be wired as shown in diagram A.

Frost Protection

excel HE appliances are provided with a built in anti-freeze system that operates the boiler when the temperature is below 5°C. Internal frost protection operates regardless of the position of the main switch and CH heating thermostat knob (B). Therefore, when the boiler is not lit and used in cold weather, with consequent risk of freezing, the supply to the boiler should be left switched on.

Central heating systems fitted wholly inside the house do not normally require frost protection as the house acts as a 'storage heater' and can normally be left at least 24 hours without frost damage.

However, if parts of the pipework run outside the house or if the boiler will be left off for more than a day or so then a frost thermostat should be wired into the system.

To maintain frost protection with the programmer selector switches set to OFF, the mains supply and the boiler panel controls MUST be left in the running position.

The frost thermostat should be sited in a cold place but where it can sense heat from the system.

Wiring should be as shown, with minimal disturbance to other wiring.

External Programmers

This should be of the single channel type (as this boiler does not incorporate a pre-heat facility for the instantaneous hot water service).

Programmers with room thermostat - see diagram B.

Earths are not shown for clarity but must never be omitted.

Note. These diagrams are schematic only and do not show external terminal strips etc.
WARNING. Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and DO NOT SMOKE.

**A. Electrical Installation**
1. Checks to ensure electrical safety should be carried out by a competent person.
2. ALWAYS carry out the preliminary electrical system checks, i.e. earth continuity, polarity, resistance to earth and short circuit, using a suitable test meter.

**B. Gas Installation**
1. The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations of BS. 6891.
3. Purge air from the gas installation by the approved methods only.

**C. Flue Sealing**
1. Check the integrity of the flue outlet and air inlet system to the boiler ensuring no leaks are evident from piping joints or flue/air sampling points.
1. Check that the system has been filled and that the boiler is not airlocked. Ensure the automatic air vent cap (H) is open.

Note. It is important the burner is not operated before the system is fully vented of air. If it is necessary to operate the appliance pump to assist venting of the air this must be done with the gas service cock turned off.

2. Refit the boiler RHS panel. Refer to Frame 45.

3. Replace control panel and secure with fixing screws.

4. Check that all the drain cocks are closed and that the CH and DHW isolating valves (T, P and N) are OPEN.

5. Check that the electrical supply is OFF.

6. Check that the boiler on/off switch (A) is off.

7. Check that the gas service cock (R) is OPEN.

8. Slacken the screw in the inlet pressure test point (M) and connect a gas pressure gauge via a flexible tube.

9. Slacken the screw in the burner pressure test point (J) and connect a gas pressure gauge via a flexible tube.

10. Switch the electricity supply ON and check all external controls are calling for heat.

11. CENTRAL HEATING

   Set the main switch and CH thermostat knob (B) to position shown in diagram and switch the boiler on/off switch (A) to ON. The boiler control should now go through its ignition sequence until the burner is established. Green operational light 1 (E) will be illuminated when burner is lit.

   If the boiler fails to light up to five times during the ignition sequence, the boiler will go to lockout and red operational light 2 (E) will be illuminated. To reset the ignition sequence turn the main switch (B) to '0' wait until the boiler reaches standby state, indicated by no fan or pump running (this can take up to 10 minutes in an overheat condition). Turn the main switch (B) to the winter setting, wait for 2 seconds then set the main switch (B) back to the desired position.
31
INSTALLATION

13. DOMESTIC HOT WATER
With the boiler firing, set the DHW thermostat knob (C) to maximum and fully open a DHW tap. The boiler should continue to run and provide hot water at the open tap. Green operational lights 1 and 3 (E) will be illuminated when burner is lit.

14. Turn off the tap.

15. Test for gas soundness around ALL boiler gas components using leak detection fluid.

16. Operate for 10 minutes to stabilise the burner temperature.

17. The boiler is preset at the factory to its maximum output. Check the burner pressures against the values quoted in Table 2 (page 4) by using the following procedure:
   i. Remove plastic protective cap from the mechanical pressure adjustment components (L&K).
   ii. Start the boiler at its maximum power. Operate the boiler in DHW mode or ensure that the boiler is not range rated if the test is carried out in CH mode.

Maximum valve setting - CH & DHW
Note:
The minimum CH pressure is automatically set electronically.

18. Refit the front panel and bottom panel.

40 INITIAL LIGHTING ..... CONTINUED

13. DOMESTIC HOT WATER
With the boiler firing, set the DHW thermostat knob (C) to maximum and fully open a DHW tap. The boiler should continue to run and provide hot water at the open tap. Green operational lights 1 and 3 (E) will be illuminated when burner is lit.

14. Turn off the tap.

15. Test for gas soundness around ALL boiler gas components using leak detection fluid.

16. Operate for 10 minutes to stabilise the burner temperature.

17. The boiler is preset at the factory to its maximum output. Check the burner pressures against the values quoted in Table 2 (page 4) by using the following procedure:
   i. Remove plastic protective cap from the mechanical pressure adjustment components (L&K).
   ii. Start the boiler at its maximum power. Operate the boiler in DHW mode or ensure that the boiler is not range rated if the test is carried out in CH mode.

Maximum valve setting - CH & DHW
Note:
The minimum CH pressure is automatically set electronically.

18. Refit the front panel and bottom panel.

41 GENERAL CHECKS
Make the following checks for correct operation:

1. Hot water
   a. Fully open all DHW taps in turn and ensure that water flows freely from them.
   b. Close all taps except the furthest one from the boiler and check that the boiler is firing at maximum rate.
   c. Ensure that DHW temperature rise of approximately 40°C is obtained at the tap. This corresponds to a flow rate of approximately:
      8.4 (1.8) l/min (gpm)  excel HE C24
      10 (2.2) l/min (gpm)  excel HE C28
      11.5 (2.6) l/min (gpm) excel HE C32
      Note. Quoted flow rates and temperature rises are those theoretically achievable. Flow rates measured during commissioning may differ (due, for example, to resistance of domestic hot water pipe lengths and fittings or available dynamic gas pressures)
      If necessary reduce the flow rate using isolation valve ‘S’. Refer to Frame 39.
   d. Turn off the DHW tap.

2. Central heating
   Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.

3. Gas rate
   Check the boiler gas rate when the boiler is at full output. The gas rate will normally be
   45.8 (1.62) litres/min (ft³/min) for the model excel HE C24
   53.5 (1.89) litres/min (ft³/min) for the model excel HE C28
   62.1 (2.19) litres/min (ft³/min) for the model excel HE C32
   checked at the gas meter, with no other appliance in use.
   If this check is not possible, ensure that the burner pressure is:
   13.4 (5.3) mbar (in. w.g.) for the model excel HE C24
   10.5 (4.2) mbar (in. w.g.) for the model excel HE C28
   12.9 (5.2) mbar (in. w.g.) for the model excel HE C32
   In addition ensure the dynamic inlet pressure is 20mb.

Note. A suitable flushing solution should be used during the flushing procedure.
   a. With the system HOT examine all water connections for soundness.
   b. With the system still HOT, turn off the gas, water and electricity supplies to the boiler and drain down, to complete the flushing process.
   c. Refill the system, adding inhibitor (see ‘Water Treatment’), if required. Refer to Frame 10
   d. Balance the system. It is suggested that, initially, all radiator handwheel valves (or TRVs if fitted) be set fully open, that all lockshield valves be set a half-turn open.
   Make minor adjustments to each radiator to achieve the same differential on all.
   Finally, set the system controls to the users requirements. If an optional programmer kit is fitted refer to the instructions supplied.
42 HANDING OVER

After completing the installation and commissioning of the system the installer should hand over to the householder by the following actions:

1. Hand the User Instructions to the householder and explain his/her responsibilities under the relevant national regulations.
2. Explain and demonstrate the lighting and shutting down procedures.
3. The operation of the boiler and the use and adjustment of all system controls should be fully explained to the householder, to ensure the greatest possible fuel economy consistent with the household requirements of both heating and hot water consumption. Advise the User of the precautions necessary to prevent damage to the system and to the building, in the event of the system remaining inoperative during frosty conditions.
4. Explain the function and the use of the boiler heating and domestic hot water controls. Explain that due to system variations and seasonal temperature fluctuations DHW flow rates/temperature rise will vary, requiring adjustment at the draw off tap. It is therefore necessary to draw the users attention to the section in the Users Instructions titled “Control of Water Temperature” and the following statement: “Additionally, the temperature can be controlled by the user via the draw-off tap: the lower the rate the higher the temperature, and vice versa”.
5. Explain the function of the boiler fault mode. Emphasise that if a fault is indicated, the boiler should be turned off and a CORGI registered local heating installer consulted. In the case of a registered local heating installer should be consulted.
6. Explain and demonstrate the function of time and temperature controls, radiator valves etc., for the economic use of the system.
7. If a programmer is fitted draw attention to the Programmer Users Instructions and hand them to the householder.
8. Loss of system water pressure

Explain that the dial on the boiler control panel indicates the central heating system pressure and that if the normal COLD pressure of the system is seen to decrease over a period of time then a water leak is indicated. In this event a registered local heating installer should be consulted.

WARNING. Do not fire the boiler if the pressure has reduced to zero from the original setting.
9. After installation and commissioning please complete the Benchmark commissioning Checklist before handover to the customer. For I.E it is necessary to complete a “Declaration of Conformity” to indicate compliance to I.S. 813:2002.
10. IMPORTANT

A comprehensive service should be carried out ANNNUALLY. Stress the importance of regular servicing by a CORGI registered installer. In I.E servicing work must be carried out by a competent person.
11. As the installer you may wish to undertake the service contract yourself or alternatively offer to the customer the benefits of the Ideal Care Scheme, details of which are outlined in the householder pack supplied with this boiler.

43 SERVICING SCHEDULE

To ensure the continued safe and efficient operation of the appliance it is recommended that it is checked at regular intervals and serviced as necessary. The frequency of servicing will depend upon the installation condition and usage but should be carried out at least annually.

It is the law that any service work must be carried out by a CORGI registered installer. In I.E service work must be carried out by a competent person.

1. Light the boiler and carry out a pre-service check, noting any operational faults.
2. Check the gas consumption.
3. Connect a suitable gas analyser to the sampling point on the top of the boiler or into the flue terminal if access is possible (optional test). For correct boiler operation, the CO/CO2 content of the flue gas should not be greater than 0.004 ratio. If this is the case, and the gas input is at least 90% of the nominal, then no further action need be taken. If not, proceed to Step 5.
4. Clean the main burner.
5. Clean the heat exchanger.
6. Check the condition of the combustion chamber insulation. Any cracked or damaged pieces should be replaced.
7. Check the main injectors for blockage or damage.
8. Check that the flue terminal is unobstructed and that the flue system is sealed correctly.

The servicing procedures are covered more fully in Frames 40 and 41 and MUST be carried out in sequence.

Note. In order to carry out either servicing or replacement of components the boiler front panel and sealing panel must be removed. Refer to Frames 44 and 45.

WARNING. Always turn OFF the gas supply at the gas service cock, and switch OFF and disconnect the electricity supply to the appliance before servicing.

IMPORTANT.
9. After completing the servicing or exchange of components always test for gas soundness and carry out functional checks in 3 and 4 above.
10. When work is complete the sealing panel MUST be correctly refitted, ensuring that a good seal is made.

Do NOT OPERATE the boiler if the sealing panel is not fitted.
11. Complete the service section of the Benchmark Commissioning Checklist.
12. Complete the service section of the Benchmark Commissioning Checklist.
44 BOILER FRONT PANEL REMOVAL

1. Remove the 2 fixing screws from the top of the front panel.
2. Lift the front panel upwards and forward at the bottom to remove.

45 BOILER SIDE PANEL AND SEALING PANEL REMOVAL

1. Slacken the 2 top and 2 bottom fixing screws from the LH and RH side panels and remove the panels.
2. To remove the sealing panel remove the 4 fixing screws from the front.
3. Remove the sealing panel by pulling forward to disengage rear clips.
4. Remove the fixing screws retaining the inner sealing panel and remove the panel taking care not to damage the front insulation panel.
**SERVICING**

### 46 THE CONTROL BOX IN THE SERVICING POSITION

1. Remove the screws and the cover panel.
2. Remove the control box fixing screws.
3. Pull the control panel forward.
4. Remove the control box lid fixing screws and remove lid.

### 47 FAN AND VENTURI REMOVAL AND CLEANING

1. Remove the screw on the fan mounting bracket.
2. Carefully pull fan from the recuperator sealing gasket. Check the gasket for damage and replace if necessary.
3. Disconnect the electrical leads from the fan.
4. Disconnect APS sensing tube.
5. Inspect venturi and fan and clean as necessary.
6. Reassemble in reverse order.
48 BURNER REMOVAL AND CLEANING

1. Carefully separate the detection lead in-line connector.
2. Carefully pull off the two ignition leads from the side of the PCB ignition unit.
3. Carefully pull the 3 leads through the rubber sealing grommets.
4. Remove the earth lead and 4 burner fixing screws and carefully withdraw the burner unit.
5. Inspect the burner and clean as necessary.
   Note. Brushes with metallic bristles should not be used.
6. Inspect all injectors for blockage or damage if necessary.
7. Inspect the three electrodes/leads for damage and check the spark gap is 3-5mm between the pair of ignition electrodes (centre and RH side).

49 CLEANING THE HEAT EXchanger

1. Using a suitable tool as supplied in the standard British Gas Flue brush kit, clean between the heat exchanger fins.
2. Access to the base of the combustion chamber is now possible. Brush clean any deposits from the base of the combustion chamber and remove any loose deposits.
3. Check the condition of the combustion chamber insulation. Any cracked or damaged pieces should be replaced.

50 RE-ASSEMBLY

1. Refit the burner assembly and earth tab.
2. Reconnect ignition and detection leads.
3. Reconnect the fan electrical leads.
4. Refit the fan / venturi assembly.
5. Refit the boiler sealing panel.
   IMPORTANT Ensure that the boiler sealing panel is correctly fitted and that a good seal is made.
6. Refit the control box cover.
7. Push the control box back into its working position and secure.
8. Refit the boiler front and bottom panels.
9. Turn on the gas supply at the gas service cock.
10. Reconnect the electrical supply.
51 REPLACEMENT OF COMPONENTS

GENERAL

When replacing ANY component
1. Isolate the electricity supply.
2. Turn off the gas supply.
3. Remove the boiler front panel. Refer to Frame 38.

After replacing ANY component check operation of the boiler, including gas soundness, gas rate and combustion test.

IMPORTANT.
When work is complete, the sealing panel, if removed, must be correctly refitted - ensuring that a good seal is made.

Notes.
1. In order to assist fault finding, the control panel has an LED diagnostic display. The key to boiler fault conditions is shown in Frame 79.
2. In order to replace components in Frames 68-78 it is necessary to drain the boiler. Refer to Frame 67.

THE BOILER MUST NOT BE OPERATED WITHOUT THE SEALING PANEL FITTED

52 CONDENSATE BLOCKAGE THERMISTOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45.
3. Carefully pull off the green electrical connection.
4. Unscrew the condensate blockage thermistor.
5. Fit new condensate blockage thermistor complete with new washer.
6. Re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 50 and 51.

53 FAN AND FAN SUPPRESSOR REPLACEMENT

FAN
1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45.
3. Remove the fan mounting fixing screw.
4. Pull fan from the recuperator sealing gasket.
5. Disconnect electrical leads from the fan.
6. Pull plastic sensing pipe from venturi connection.
7. Reconnect the fan electrical connections and fit the new fan in reverse order ensuring the plastic venturi pipe is replaced.
8. Re-assemble the boiler in reverse order.
9. Check the operation of the boiler. Refer to Frame 50 and 51.

Fan Suppressor
1. As 1-5 above.
2. Pull off fan suppressor.
SERVICING

54 BURNER INJECTOR REPLACEMENT
1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frames 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Carefully separate the in-line connector from the detection lead.
4. Carefully pull off the two ignition leads from the side of the ignition unit.
5. Carefully pull the three leads through the rubber sealing grommets.
6. Remove the earth lead and the four burner fixing screws and carefully withdraw the burner unit.
7. Unscrew each injector from the manifold.
8. Fit new injectors using new copper washers provided.
9. Re-assemble in reverse order.
10. Check the operation of the boiler. Refer to Frame 50 and 51.

55 BURNER REPLACEMENT
1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frames 44 and 45.
3. Overheat Thermostat:
   a. Carefully pull off the 2 electrical connections.
   b. Unclip thermostat from pipe.
   c. Fit 2 electrical connections onto new thermostat.
   d. Clip new thermostat onto pipe ensuring correct positioning on heat exchanger manifold and re-assemble in reverse order.
4. UNDER NO CIRCUMSTANCES REFIT THE OVERHEAT THERMOSTAT ONTO THE COLD RECUPERATOR RETURN PIPE.
5. Check the operation of the boiler. Refer to Frame 50 and 51.

56 OVERHEAT THERMOSTAT REPLACEMENT
1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frames 44 and 45.
3. Overheat Thermostat:
   a. Carefully pull off the 2 electrical connections.
   b. Unclip thermostat from pipe.
   c. Fit 2 electrical connections onto new thermostat.
   d. Clip new thermostat onto pipe ensuring correct positioning on heat exchanger manifold and re-assemble in reverse order.
4. UNDER NO CIRCUMSTANCES REFIT THE OVERHEAT THERMOSTAT ONTO THE COLD RECUPERATOR RETURN PIPE.
5. Check the operation of the boiler. Refer to Frame 50 and 51.
57 IGNITION ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frames 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Carefully separate the in-line connector from the detection lead.
4. Carefully pull off the two ignition leads from the side of the ignition unit.
5. Carefully pull the three leads through the rubber sealing grommets.
6. Remove the earth lead and the four burner fixing screws and carefully withdraw the burner unit.
7. Remove the fixing screws from the centre and RH electrodes and carefully withdraw the two ignition electrodes.
8. Fit new ignition electrodes.
9. Re-assemble in reverse order.
10. Check the operation of the boiler. Refer to Frame 50 and 51.

58 FLAME DETECTION ELECTRODE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frames 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Carefully separate the in-line connector from the detection lead.
4. Carefully pull off the two ignition leads from the side of the ignition unit.
5. Carefully pull the three leads through the rubber sealing grommets.
6. Remove the earth lead and the four burner fixing screws and carefully withdraw the burner unit.
7. Remove the fixing screw from the LH electrode and carefully withdraw the detection electrode.
8. Fit new detection electrode.
9. Re-assemble in reverse order.
10. Check the operation of the boiler. Refer to Frame 50 and 51.
SERVICING

59 SPARK GENERATOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front and side panels. Refer to Frame 44 and 45 and put the control box into the servicing position. Refer to Frame 46.
3. Carefully pull off the two ignition leads from the side of the ignition unit.
4. Remove the electrical plug from the printed circuit board.
5. Carefully pull the spark generator forward to disengage the 4 pin connection at the top of the gas control.
6. Fit the new spark generator and re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 50 and 51.

60 GAS CONTROL VALVE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front and side panels. Refer to Frame 44 and 45 and put the control box into the servicing position. Refer to Frame 46.
3. Loosen retention clip with screw driver and pull the clip from the diverter valve.
4. Remove the three electrical connections noting their position.
5. Carefully remove the actuator.
6. Fit new actuator and re-assemble in reverse order ensuring the 3 wires are correctly replaced as shown.
7. Check the operation of the boiler. Refer to Frame 50 and 51.

61 DIVERTER VALVE ACTUATOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front and side panels. Refer to Frame 44 and 45 and put the control box into the servicing position. Refer to Frame 46.
3. Loosen retention clip with screw driver and pull the clip from the diverter valve.
4. Remove the three electrical connections noting their position.
5. Carefully remove the actuator.
6. Fit new actuator and re-assemble in reverse order ensuring the 3 wires are correctly replaced as shown.
7. Check the operation of the boiler. Refer to Frame 50 and 51.
SERVICING

62 COMBUSTION CHAMBER INSULATION REPLACEMENT

1. Refer to Frame 51.
2. Remove burner assembly. Refer to Frame 55.
3. Remove the two screws retaining both left and right hand combustion chamber side panels.
4. Slide the combustion chamber side panel insulation from its retention and fit new insulation panels.
5. Lift rear insulation panel from its retention and replace with new panel.
6. Remove the front panel insulation (straighten 2 top retaining clips and lift from bottom retention return) and replace with new panel.
7. Reassemble in reverse order.
8. Check the operation of the boiler. Refer to Frame 50 and 51.

Note. Antistatic precautions must be observed when handling the main or expansion PCB.

63 PCB REPLACEMENT (MAIN PCB AND EXPANSION PCB)

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Carefully remove all push on connectors and earth connections (main PCB only) from the printed circuit board.
4. Remove the PCB from the five plastic supports (main PCB) or two plastic supports (expansion PCB).
5. Fit new PCB and refit all push on connectors and earth connections.
6. Reassemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 56 and 51.
**SERVICING**

### 64 MAINS SWITCH REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Remove the two electrical connections from the mains switch.
4. Depress the plastic side retention clips and remove the mains switch from the front of the control box.
5. Fit new mains switch and replace electrical connections.
6. Check the operation of the boiler. Refer to Frame 50 and 51.

### 65 CH AND DHW MICROSWITCH REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Pull microswitch forward to disconnect from diaphragm.
4. Lift plastic retention clip and remove electrical connection.
5. Fit electrical connection to new microswitch and refit to diaphragm.
6. Re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 50 and 51.
SERVICING

66 AIR PRESSURE SWITCH REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front and left hand side panel. Refer to Frame 44 and 45.
3. Remove sensing pipe from air pressure switch.
4. Remove the two screws retaining the air pressure switch.
5. Remove electrical connections.
6. Fit new air pressure switch and refit electrical connections and sensing pipe.
7. Re-assemble in reverse order, ensuring the sensing pipe is replaced onto the top connection marked "L".
8. Check the operation of the boiler. Refer to Frame 50 and 51.

67 DRAINING THE BOILER

1. Refer to Frame 51.
2. Close all the water isolating valves (CH and DHW).
3. To drain the central heating circuit, attach a length of hose to the drain point and open the drain valve.

Note. Some residual water may be experienced during the replacement of components.

4. As there is no direct drain for the domestic hot water circuit, depending on the location of the boiler, opening the lowest hot water tap may drain this circuit.

Note. Some residual water may be experienced during the replacement of components.

5. After replacing any component on the boiler, close the drain valve, remove the hose and open all system isolating valves (re-pressure as appropriate) before proceeding to check operation of the boiler.

6. Check the operation of the boiler. Refer to Frame 50 and 51.
68 CH AND DHW DIAPHRAGM REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Drain the boiler water circuit. Refer to Frame 67.
4. Pull microswitch forward to disconnect from diaphragm.
5. Using a suitable tool, remove the four torx screws retaining the diaphragm.
6. Fit the new diaphragm and refit the microswitch.
7. Re-assemble in reverse order.
8. Check the operation of the boiler. Refer to Frame 50 and 51.

69 PRESSURE GAUGE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Unscrew the pressure gauge sensing pipe retaining nut from the pressure relief valve.
4. Remove the pressure gauge head from the control panel front by depressing the plastic retention clips.
5. Fit the new pressure gauge and reconnect the sensing head to the pressure relief valve.
6. Re-assemble in reverse order.
7. Check the operation of the boiler. Refer to Frame 50 and 51.
70 SAFETY RELIEF VALVE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front panel. Refer to Frame 44.
3. Drain the boiler water circuit. Refer to Frame 67.
4. Put the control box into the servicing position. Refer to Frame 46.
5. Remove the pressure gauge sensing head from the safety relief valve.
6. Undo the safety relief valve inlet and outlet union nut connections and remove safety relief valve.
7. Fit new safety relief valve and re-connect pressure gauge sensing head.
8. Re-assemble in reverse order.
9. Check the operation of the boiler. Refer to Frame 50 and 51.

71 AUTOMATIC AIR VENT REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front and right hand side panel. Refer to Frame 44 and 45.
3. Pull "U" shaped retaining clip forward.
4. Drain the boiler water circuit. Refer to Frame 67.
5. Remove automatic air vent valve.
6. Fit new automatic air vent valve.
7. Re-assemble in reverse order.
8. Check the operation of the boiler. Refer to Frame 50 and 51.
72 CH THERMISTOR AND DHW THERMISTOR

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Drain the boiler water circuits. Refer to Frame 67.
4. To remove the CH thermistor (red wires) pull out the "U" shaped retaining clip.
5. To remove the DHW thermistor (blue wires) pull out the "U" shaped retaining clip.
6. Fit new thermistor and retain with "U" shaped clip.
7. Re-assemble in reverse order.
8. Refill the boiler. Refer to Frame 32.
9. Check the operation of the boiler. Refer to Frame 50 and 51.

73 DIVERTER VALVE MECHANISM REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Drain the boiler water circuits. Refer to Frame 67.
4. To remove the diverter valve mechanism, pull out the "U" shaped retaining clip.
5. Fit new diverter valve mechanism and retain with "U" shaped clip.
6. Re-assemble in reverse order.
7. Refill the boiler. Refer to Frame 32.
8. Check the operation of the boiler. Refer to Frame 50 and 51.
74 DHW PLATE HEAT EXCHANGER REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Drain the boiler water circuits. Refer to Frame 67.
4. Pull out the two "U" shaped clips retaining the copper bypass pipe and remove the pipe.
5. Unscrew the two allen screws retaining the DHW plate heat exchanger and remove the heat exchanger via the space vacated by the bypass pipe.
6. Fit the new plate heat exchanger being careful not to damage the "O" rings and retain with the two allen screws.
7. Refit the bypass pipe and retain with two "U" shaped clips.
8. Re-assemble in reverse order.
9. Refill the boiler. Refer to Frame 32.
10. Check the operation of the boiler. Refer to Frame 50 and 51.

75 PUMP HEAD REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45. Put the control box into the servicing position. Refer to Frame 46.
3. Drain the boiler water circuits. Refer to Frame 67.
4. Remove the pump electrical connection.
5. Remove the four allen screws retaining the pump head.
6. Remove the pump head.
7. Fit the new pump head.
8. Re-assemble in reverse order.
9. Refill the boiler. Refer to Frame 32.
10. Check the operation of the boiler. Refer to Frame 50 and 51.
76 HEAT ENGINE REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45.
3. Drain the boiler water circuits. Refer to Frame 67.
4. Remove the inner sealing panel.
5. Remove overheat thermostat clip from heat exchanger right hand side.
6. Pull off heat exchanger LH side retention clip and pull pipe downwards to disengage copper pipe 'O' ring seal.
7. Pull off recuperator LH side pipe connection retention clip and pull pipe downwards to disengage 'O' ring seal.
8. Disconnect recuperator plastic drain connection from recuperator RH side.
9. Unscrew the union connection on the recuperator RH side brass outlet connection and swivel the brass piece to clear the copper pipe.
10. The heat exchanger can now be pulled forward to remove (flex the collector hood sides to clear the heat exchanger and flex the pipe connections to facilitate removal).
11. Fit the new heat exchanger and re-connect all water pipe and drain connections.

Note: Ensure the recuperator RH side brass connection and its copper pipe are correctly aligned before tightening the union nut.

12. Re-connect the overheat thermostat clip to the heat exchanger pipe. UNDER NO CIRCUMSTANCES REFIT THE OVERHEAT THERMOSTAT ONTO THE COLD RECUPERATOR RETURN PIPE.

13. Re-assemble in reverse order.
14. Refill the boiler. Refer to Frame 32.
15. Check the operation of the boiler. Refer to Frame 50 and 51.

77 EXPANSION VESSEL REPLACEMENT

If the expansion vessel is faulty, there are two options:

A. If it has a punctured diaphragm but is otherwise leak free then it can be left in place and a new vessel added to the return side of the CH system, external to the boiler providing it is of adequate capacity and pre-charge pressure.

B. The boiler can be removed from the wall and the expansion vessel replaced:

1. Refer to Frame 51.
2. Drain the boiler water circuits. Refer to Frame 67.
3. Unscrew all of the gas water and condensate connection unions.
4. Remove the flue turret.
5. Remove the front and side panels. Refer to Frame 44 and 45.
6. Lift the complete boiler from the wall mounting plate and place on a flat surface, face down to expose the expansion vessel.
7. Unscrew the expansion vessel flexible hose from the copper pipe.
8. Remove the top support bracket.
9. Lift the expansion vessel from its side retaining brackets.

10. Fit the new expansion vessel.
11. Re hang boiler on wall bracket and reconnect all water, gas and flue connections.
12. Re-assemble in reverse order.
13. Refill the boiler. Refer to Frame 32.
14. Check the operation of the boiler. Refer to Frame 50 and 51.
78 RECUPERATOR REPLACEMENT

1. Refer to Frame 51.
2. Remove the boiler front, side and sealing panels. Refer to Frame 44 and 45.
3. Drain the boiler water circuits. Refer to Frame 67.
4. Pull off the electrical connection from the condensate blockage thermistor.
5. Unscrew the condensate blockage thermistor.
6. Pull off the recuperator LH side pipe retention clip and pull the pipe downwards to disengage ‘O’ ring seal.
7. Disconnect recuperator plastic drain connection from recuperator RH side.
8. Unscrew the union connection on the recuperator RH side brass outlet connection and swivel the brass piece to clear the copper pipe.
9. Remove the condensate drain point from the top of the recuperator.
10. Remove the fan. Refer to Frame 53.
11. Remove the single fixing screw from the bottom rear of the recuperator connecting the recuperator to the back panel.
12. Carefully pull the recuperator downwards to disengage the flue turret connection.
13. Fit the new recuperator and reconnect all flue, water pipe, condensate drain and thermostat connections with the new gaskets provided. Ensure the recuperator and fan are aligned correctly before tightening the recuperator fixing screw.
14. Re-assemble in reverse order.
15. Refill the boiler. Refer to Frame 32.
16. Check the operation of the boiler. Refer to Frame 50 and 51.
79 FAULT FINDING

The operation of the LED’s and fault codes shall be as follows:

LED 1 - Burner status LED
LED 2 - Lockout / Error LED
LED 3 - Mode LED

(Refer to Frame 39 for LED positions)

During normal operation LED 1 and LED 3 will function as defined below:

<table>
<thead>
<tr>
<th>Status</th>
<th>LED 1 Green</th>
<th>LED 3 Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>No demand, standby</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>CH demand, burning</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>DHW demand, burning</td>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>CH demand, not burning</td>
<td>Flashing</td>
<td>Off</td>
</tr>
<tr>
<td>DHW demand, not burning</td>
<td>Flashing</td>
<td>On</td>
</tr>
<tr>
<td>Frost demand, burning</td>
<td>On</td>
<td>Flashing</td>
</tr>
<tr>
<td>Frost demand, not burning</td>
<td>Flashing</td>
<td>Flashing</td>
</tr>
</tbody>
</table>

Note. At all times LED 2 will be off.

Lockout and error conditions will be indicated by the illumination of LED 2 for a period of 10 seconds on and 2 seconds off. During the 10 second on period LED 3 will flash a variable number of times, 0.5 seconds on, 0.5 seconds off. The number of times that it flashes will define the error code as detailed below:

- ERROR CODE 1 - LOCKOUT  GO TO FRAME 80
- ERROR CODE 2 - OVERHEAT ALARM  GO TO FRAME 81
- ERROR CODE 3 - WPS / PPS ALARM  GO TO FRAME 82
- ERROR CODE 4 - APS / FAN ALARM  GO TO FRAME 83
- ERROR CODE 5 - CH THERMISTOR FAULT  GO TO FRAME 84
- ERROR CODE 6 - DHW THERMISTOR FAULT  GO TO FRAME 85
- ERROR CODE 7 - FLUE OVERHEAT  GO TO FRAME 86
- ERROR CODE 8 - CONDENSATE BLOCKAGE  GO TO FRAME 87
80 ERROR CODE 1 - LOCKOUT

Causes: Failed to light after 5 ignition attempts or after flame failure.

Check:
- Gas Flow
- Spark
- Detection

Note. Air pressure switch failure results in 5 - Code 4 cycles followed by Error Code 1.

Does the boiler light then go out?

NO

YES

Check detection electrode and wiring for continuity, condition and position. Replace if necessary.

Check gas supply and rectify

Is 20 mbar pressure available at the inlet?

NO

YES

Is 240V AC available between L(3) and N(1) at the NAC connection with the Gas Valve?

NO

YES

Check NAC wiring for continuity. Is it OK?

Is 240V AC available at the PCB?

NO

YES

Check NAC wiring for continuity. Is it OK?

Is there a spark?

NO

YES

Replace Gas Valve

Replace ignition electrodes

NO

YES

Replace NAC

Replace PCB

Is voltage across OH stat 0V dc?

NO

YES

Replace OH Stat

Is wiring continuity OK?

NO

YES

Replace wiring harness

Replace PCB

When the boiler is fired does the pump give a differential across the heat exchanger inlet and outlet of 10°C to 30°C?

NO

YES

Set OH control knob to max temperature. If the OH trips again measure flow temp.

Over 90°C - check flow thermistor (Frame 72 & 84)
Under 90°C - replace OH stat.

Fill and vent system and open all isolation valves

Replace pump

Are the boiler and system filled and all isolation valves open?

NO

YES

When the boiler is fired does the pump give a differential across the heat exchanger inlet and outlet of 10°C to 30°C?

NO

YES

Can the error be reset by the reset procedure when the boiler is cold? (See Frame 39)

NO

YES

Replace ignition electrodes for continuity, condition and position. Are they both OK?

Is 240V AC available at the PCB for the NAC?

NO

YES

Replace PCB

YES

81 ERROR CODE 2 - OVERHEAT ALARM

Can the error be reset by the reset procedure when the boiler is cold? (See Frame 39)

NO

YES

Is voltage across OH stat 0V dc?

NO

YES

Replace OH Stat

Is wiring continuity OK?

NO

YES

Replace wiring harness

Replace PCB

Fill and vent system and open all isolation valves

Replace pump

Are the boiler and system filled and all isolation valves open?

NO

YES

When the boiler is fired does the pump give a differential across the heat exchanger inlet and outlet of 10°C to 30°C?

NO

YES

Set OH control knob to max temperature. If the OH trips again measure flow temp.

Over 90°C - check flow thermistor (Frame 72 & 84)
Under 90°C - replace OH stat.

Replace pump
82 ERROR CODE 3 - WPS / PPS ALARM

Can the error be reset by the reset procedure? NO YES

Check water pressure and pump function

Does the pressure gauge read > 1 bar? NO YES

Top up using filling loop

Is the PPS microswitch fitted correctly? NO YES

(See Frame 65)

Fit and re-test

When pump is running, is there 0 V across PPS contacts? NO YES

Remove microswitch assembly. Is the pressure switch microswitch actuating pin extending a min length of 10 mm

Can you measure 5 V dc on PPS connector when pump is stopped and 0 V dc when pump is running? NO YES

Check diaphragm.

Replace water set / pump?

Fit and re-test

Is PCB connector fitted correctly? NO YES

Replace PCB

83 ERROR CODE 4 - APS / FAN ALARM

Does the fault clear following the reset procedure? NO YES

Run and observe operation

Is there movement from the fan? NO YES

Is there 240 V AC on fan motor? NO YES

Measure V DC across APS NO/C contact is it 0 V?

Is APS sensing pipe fitted between fan and pressure switch port marked L? NO YES

Is harness PCB connector fitted correctly? NO YES

Stop the fan. Is the voltage across the APS contacts approx 30 V DC?

Is harness continuity OK? NO YES

Replace PCB

Replace harness

Refit Hose

Is harness continuity OK?
84 ERROR CODE 5 - CH THERMISTOR FAULT

Unplug thermistor connector. Is resistance approx. 10K OHMS at 25°C?

- YES → Re-connect and measure voltage across thermistor. Is it 3.75V DC nominal?
  - YES → Replace PCB
  - NO → Drain watertset and replace thermistor
- NO → Is PCB connector fitted correctly?
  - NO → Fit and re-test
  - YES → Replace PCB

Is harness continuity OK?

- NO → Replace harness
- YES → Replace PCB

85 ERROR CODE 6 - DHW THERMISTOR FAULT

Unplug thermistor connector. Is resistance approx. 10K OHMS at 25°C?

- YES → Re-connect and measure voltage across thermistor. Is it 3.75V DC nominal?
  - YES → Replace PCB
  - NO → Drain watertset and replace thermistor
- NO → Is PCB connector fitted correctly?
  - NO → Fit and re-test
  - YES → Replace PCB

Is harness continuity OK?

- NO → Replace harness
- YES → Replace PCB
**FAULT FINDING**

**86  ERROR CODE 7 - FLUE GAS OVERHEAT**

1. Can the fault condition be reset by carrying out the reset procedure?
   - YES
   - NO

2. Is the system filled and vented and all isolation valves open?
   - YES
   - NO

3. Check the value of the thermistor. Is it OK?
   - YES
   - NO

4. Inspect the heat exchanger and check for water flow. Repair as necessary.
   - YES

5. Disconnect and measure the value of the recuperator thermistor.
   - Approx 10 K @ 25°C
   - Approx 3.2K @ 60°C
   - Approx 1.1K @ 95°C
   - Are the values correct?
   - YES
   - NO

6. Re-connect and measure the voltage across the thermistor nominally 3.75V DC.
   - Is the voltage correct?
   - YES
   - NO

7. Is PCB connector fitted correctly?
   - YES
   - NO

8. Measure the wiring harness continuity to the thermistor. Is it OK?
   - YES
   - NO

9. Fill and vent the system.
   - Open all isolating valves
   - Replace thermistor

10. Replace thermistor

**87  ERROR CODE 8 - CONDENSATE BLOCKAGE ALARM**

1. Is there condensate in the recuperator? Check this by partially unscrewing the recuperator thermistor (see Frame 78)
   - YES
   - NO

2. Does the error clear on reset?
   - YES
   - NO

3. Observe operation and re-test if necessary.
   - YES

4. Is the wiring harness continuity OK?
   - YES
   - NO

5. Replace PCB
   - Replace harness

6. Remove blockage and re-test

7. Measure the resistance of the recuperator thermistor
   - Approx 10 K @ 25°C
   - Approx 3.2K @ 60°C
   - Approx 1.1K @ 95°C
   - Is it correct
   - YES
   - NO

8. Re-connect and measure voltage across thermistor.
   - Is it 3.75V DC nominal?
   - YES
   - NO

9. Is the connector fitted correctly to the PCB?
   - YES
   - NO

10. Replace PCB

11. Refit and re-test
## SHORT LIST OF PARTS

The following are parts commonly required due to damage or expendability. Their failure or absence is likely to affect safety or performance of this appliance.

The list is extracted from the British Gas List of Parts, which contains all available spare parts. The full list is held by British Gas Services, Ideal Stelrad Group distributors and merchants.

When ordering spares please quote:
1. Boiler model
3. Description.
4. Quantity.
5. Product number.

When replacing any part on this appliance use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Ideal Boilers.

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<th>Key No.</th>
<th>G.C. Part No.</th>
<th>Description</th>
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INSTALLER NOTIFICATION GUIDELINES

IT IS A REQUIREMENT OF CORGI MEMBERSHIP TO REGISTER EVERY GAS APPLIANCE

In addition a change to Building Regulations (England and Wales) requires the installer to notify when installing a heating appliance, as from 1st April 2005.

Install and commission this appliance to manufacturers' instructions

Complete the Benchmark Checklist

Competent Person's SELF CERTIFICATION SCHEME

If you notify via CORGI Scheme, CORGI will then notify the relevant Local Authority Building Control (LABC) scheme on members behalf

Scheme members only: Call CORGI on 0870 88 88 777 or log onto: www.corgi-notify.com within 10 days

You must ensure that the notification number issued by CORGI is written onto the Benchmark Checklist

CORGI will record the data and will send a certificate of compliance to the property

Choose Buildings Regulations notification route

BUILDING CONTROL

Contact your relevant Local Authority Building Control (LABC) who will arrange an inspection or contact a government approved inspector

LABC will record the data and will issue a certificate of compliance

IT IS A CONDITION OF THE MANUFACTURERS WARRANTY THAT THE BENCHMARK COMMISSIONING CHECKLIST IS FULLY COMPLETED AND LEFT WITH THE APPLIANCE
GAS BOILER COMMISSIONING CHECKLIST

**CONTROLS** To comply with the Building Regulations, each section must have a tick in one or other of the boxes

<table>
<thead>
<tr>
<th>Controls</th>
<th>Room T/Stat &amp; Programmer/Timer</th>
<th>Programmable Roomstat</th>
<th>Combi Boiler</th>
<th>NOT REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time &amp; Temperature Control to Heating</td>
<td>Room T/Stat &amp; Programmer/Timer</td>
<td>Programmable Roomstat</td>
<td>Combi Boiler</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>Heating Zone Valves</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>Hot Water Zone Valves</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>Thermostatic Radiator Valves</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
</tr>
<tr>
<td>Automatic Bypass to System</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
<td>Fitted</td>
<td>NOT REQUIRED</td>
</tr>
</tbody>
</table>

**FOR ALL BOILERS CONFIRM THE FOLLOWING**

- THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS?
- THE SYSTEM CLEANER USED
- THE INHIBITOR USED

**FOR THE CENTRAL HEATING MODE, MEASURE & RECORD**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Rate</td>
<td>m3/hr</td>
</tr>
<tr>
<td>Burner Operating Pressure (if applicable)</td>
<td>mbar</td>
</tr>
<tr>
<td>Central Heating Flow Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>Central Heating Return Temperature</td>
<td>°C</td>
</tr>
</tbody>
</table>

**FOR COMBINATION BOILERS ONLY**

- HAS A WATER SCALE REDUCER BEEN FITTED? YES | NO
- WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED?

**FOR THE DOMESTIC HOT WATER MODE, MEASURE & RECORD**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Rate</td>
<td>m3/hr</td>
</tr>
<tr>
<td>Maximum Burner Operating Pressure (if applicable)</td>
<td>mbar</td>
</tr>
<tr>
<td>Cold Water Inlet Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>Hot Water Outlet Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>Water Flow Rate</td>
<td>lts/min</td>
</tr>
</tbody>
</table>

**FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING**

- THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS? YES

**FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING**

- THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS
- THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS
- IF REQUIRED BY THE MANUFACTURER, HAVE YOU RECORDED A CO/CO₂ RATIO READING? N/A | YES | CO/CO₂ RATIO
- THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER
- THE MANUFACTURER'S LITERATURE HAS BEEN LEFT WITH THE CUSTOMER

**COMMISSIONING ENG’S NAME**

PRINT ____________________ CORGİ ID No. ____________________
SIGN ____________________ DATE ____________________
It is recommended that your heating system is serviced regularly and that you complete the appropriate Service Interval Record below.

Service Provider. Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part when replacing all controls.

<table>
<thead>
<tr>
<th>SERVICE 1</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
<th>CORGI ID CARD SERIAL No.</th>
<th>COMMENTS</th>
<th>SIGNATURE</th>
</tr>
</thead>
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<table>
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<tr>
<th>SERVICE 2</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
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<tr>
<th>SERVICE 3</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
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<tr>
<th>SERVICE 4</th>
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<th>TEL No.</th>
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<tr>
<th>SERVICE 5</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
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<tr>
<th>SERVICE 6</th>
<th>DATE</th>
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<th>TEL No.</th>
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<tr>
<th>SERVICE 7</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
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<tr>
<th>SERVICE 8</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
<th>CORGI ID CARD SERIAL No.</th>
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<tr>
<th>SERVICE 9</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
<th>CORGI ID CARD SERIAL No.</th>
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<tr>
<th>SERVICE 10</th>
<th>DATE</th>
<th>ENGINEER NAME</th>
<th>COMPANY NAME</th>
<th>TEL No.</th>
<th>CORGI ID CARD SERIAL No.</th>
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Technical Training

The Ideal Boilers Technical Training Centre offers a series of first class training courses for domestic, commercial and industrial heating installers, engineers and system specifiers.

For details of courses please ring: .............   01482 498 432

Ideal Boilers, P.O. Box 103, National Ave, Kingston upon Hull, HU5 4JN, Telephone: 01482 492 251 Fax: 01482 448 858. Registration No. London 322 137.

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