Ecomfort

Installation and servicing instructions
Code Of Practice
For the installation, commissioning and servicing of domestic heating and hot water products

Benchmark places responsibilities on both manufacturers and installers.* The purpose is to ensure that customers** are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer’s instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. Installers are required to carry out work in accordance with the following:

Standards of Work
- Be competent and qualified to undertake the work required.
- Install, commission, service and use products in accordance with the manufacturer’s instructions provided.
- Ensure that where there is responsibility for design work, the installation is correctly sized and fit for purpose.
- Meet the requirements of the appropriate Building Regulations. Where this involves notifiable work be a member of a Competent Persons Scheme or confirm that the customer has notified Local Authority Building Control (LABC), prior to work commencing.
- Complete all relevant sections of the Benchmark Checklist/Service Record when carrying out commissioning or servicing of a product or system.
- Ensure that the product or system is left in a safe condition and, whenever possible, in good working order.
- Highlight to the customer any remedial or improvement work identified during the course of commissioning or servicing work.
- Refer to the manufacturer’s helpline where assistance is needed.
- Report product faults and concerns to the manufacturer in a timely manner.

Customer Service
- Show the customer any identity card that is relevant to the work being carried out prior to commencement or on request.
- Give a full and clear explanation/demonstration of the product or system and its operation to the customer.
- Hand over the manufacturer’s instructions, including the Benchmark Checklist, to the customer on completion of an installation.
- Obtain the customer’s signature on the Benchmark Checklist, to confirm satisfactory demonstration and receipt of manufacturer’s instructions.
- Advise the customer that regular product servicing is needed, in line with manufacturers’ recommendations, to ensure that safety and efficiency is maintained.
- Respond promptly to calls from a customer following completion of work, providing advice and assistance by phone and, if necessary, visiting the customer.
- Rectify any installation problems at no cost to the customer during the installer’s guarantee period.

*The use of the word "installer" is not limited to installation itself and covers those carrying out installation, commissioning and/or servicing of heating and hot water products, or the use of supporting products (such as water treatment or test equipment).
**Customer includes householders, landlords and tenants.

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The Benchmark Scheme

Sime Ltd is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council. For more information visit www.centralheating.co.uk
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Important Information
IT IS A STATUTORY REQUIREMENT THAT ALL GAS APPLIANCES ARE INSTALLED BY COMPETENT PERSONS, IN ACCORDANCE WITH THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS (CURRENT EDITION). The manufacturer’s instructions must not be taken as overriding any statutory requirements, and failure to comply with these regulations may lead to prosecution.

No modifications to the appliance should be made unless they are fully approved by the manufacturer.

GAS LEAKS: DO NOT OPERATE ANY ELECTRICAL SWITCH, OR USE A NAKED FLAME. TURN OFF THE GAS SUPPLY AND VENTILATE THE AREA BY OPENING DOORS AND WINDOWS CONTACT THE GAS EMERGENCY SERVICE ON 0800111999.

Please refer to commissioning instructions for filling in the checklist of this installation guide.

Note: All Gas Safe registered installers carry a ID Card.
You can check your installer is Gas Safe Registered by calling 0800 408 5577

SIMCE COMBINATION BOILERS
Installer checklist

Please remember to carry out the following checks after installation. This will achieve complete customer satisfaction, and avoid unnecessary service calls. A charge will be made for a service visit where the fault is not due to a manufacturing defect.

- Has a correct by-pass been fitted and adjusted?
- Has the system and boiler been flushed?
- Is the system and boiler full of water, and the correct pressure showing on the pressure gauge?
- Is the Auto Air Vent open?
- Has the pump been rotated manually?
- Is the gas supply working pressure correct?
- Is the boiler wired correctly? [See installation manual].
- Has the D.H.W. flow rate been set to the customer requirements?
- Has the customer been fully advised on the correct use of the boiler, system and controls?
- Has the log book provided been completed?
- Has the Aquaguard Filter been cleaned [see 4.9]?
- Has the condensate trap been filled [see section 2]?
1 DESCRIPTION OF THE BOILER

1.1 INTRODUCTION

"ECOMFORT" is a boiler that has a condensing heat exchanger downstream from the fan to allow the heat contained in exhaust fumes to be recovered. The boiler is equipped as standard with frost protection and circulating pump anti-jamming system. The instructions given in this manual are provided to ensure proper installation and correct operation of the appliance.

1.2 DIMENSIONS

![Diagram of ECOMFORT System 25 HE and ECOMFORT 25-30 HE]

**TABLE 1 - Connections "ECOMFORT SYSTEM 25 HE"**

<table>
<thead>
<tr>
<th>Component</th>
<th>Diameter</th>
<th>Connection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>M</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>G</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>S3</td>
<td>20 mm</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 1/a - Connections "ECOMFORT 25 HE - 30 HE - 35 HE"**

<table>
<thead>
<tr>
<th>Component</th>
<th>Diameter</th>
<th>Connection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>M</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>G</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>E</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>U</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>S3</td>
<td>20 mm</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 2 - Minimum clearances**

<table>
<thead>
<tr>
<th>Area</th>
<th>For Ventilation</th>
<th>For Servicing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above the Appliance Casing</td>
<td>400 mm</td>
<td>300 mm</td>
</tr>
<tr>
<td>At the R.H.S.</td>
<td>15 mm</td>
<td>15 mm</td>
</tr>
<tr>
<td>At the L.H.S.</td>
<td>15 mm</td>
<td>15 mm</td>
</tr>
<tr>
<td>Below the Appliance Casing</td>
<td>200 mm</td>
<td>200 mm</td>
</tr>
<tr>
<td>In Front of the Appliance</td>
<td>100 mm</td>
<td>500 mm</td>
</tr>
</tbody>
</table>
### TECHNICAL FEATURES

<table>
<thead>
<tr>
<th>ECOMFORT SYSTEM</th>
<th>25 HE</th>
<th>25 HE</th>
<th>30 HE</th>
<th>35 HE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heat output nominal (80-60°C)</strong></td>
<td>kW</td>
<td>24.7</td>
<td>24.7</td>
<td>291</td>
</tr>
<tr>
<td><strong>Heat output nominal (50-30°C)</strong></td>
<td>kW</td>
<td>26.5</td>
<td>26.5</td>
<td>31.2</td>
</tr>
<tr>
<td><strong>Heat output minimum (80-60°C)</strong></td>
<td>kW</td>
<td>9.5</td>
<td>9.5</td>
<td>12.7</td>
</tr>
<tr>
<td><strong>Heat output minimum (50-30°C)</strong></td>
<td>kW</td>
<td>10.0</td>
<td>10.0</td>
<td>13.6</td>
</tr>
<tr>
<td><strong>Heat input nominal</strong></td>
<td>kW</td>
<td>25.5</td>
<td>25.5</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>Efficiency min./nom. output (80-60°C)</strong></td>
<td>%</td>
<td>93.6 / 97.0</td>
<td>93.6 / 97.0</td>
<td>94.4 / 96.9</td>
</tr>
<tr>
<td><strong>Efficiency min./nom. output (50-30°C)</strong></td>
<td>%</td>
<td>98.2 / 103.9</td>
<td>98.2 / 103.9</td>
<td>100.5 / 103.9</td>
</tr>
<tr>
<td><strong>Seasonal efficiency rating (SEDBUK)</strong></td>
<td>(B) (B) (B) (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Terrestrial efficiency (CEE 92/42 directive)</strong></td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
<td>★★★★★</td>
</tr>
<tr>
<td><strong>Class NOx</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Smokes temperature maximum (50-30°C)</strong></td>
<td>°C</td>
<td>78</td>
<td>78</td>
<td>80</td>
</tr>
<tr>
<td><strong>Smokes temperature minimum (50-30°C)</strong></td>
<td>°C</td>
<td>74</td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td><strong>Smokes temperature maximum (50-30°C)</strong></td>
<td>°C</td>
<td>50</td>
<td>50</td>
<td>51</td>
</tr>
<tr>
<td><strong>Smokes temperature minimum (50-30°C)</strong></td>
<td>°C</td>
<td>42</td>
<td>42</td>
<td>44</td>
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<tr>
<td><strong>CO2 maximum/minimum G20</strong></td>
<td>%</td>
<td>6.1 / 2.2</td>
<td>6.1 / 2.2</td>
<td>73 / 31</td>
</tr>
<tr>
<td><strong>CO2 maximum/minimum G30/G31</strong></td>
<td>%</td>
<td>7.5 / 2.8</td>
<td>7.5 / 2.8</td>
<td>8.5 / 3.5</td>
</tr>
<tr>
<td><strong>Adsorbed power consumption</strong></td>
<td>W</td>
<td>150</td>
<td>150</td>
<td>160</td>
</tr>
<tr>
<td><strong>Electrical protection grade</strong></td>
<td>IP</td>
<td>X4D</td>
<td>X4D</td>
<td>X4D</td>
</tr>
<tr>
<td><strong>CE certification n°</strong></td>
<td>1312B04473</td>
<td>1312B04473</td>
<td>1312B04473</td>
<td>1312B04473</td>
</tr>
</tbody>
</table>

### WEIGHT

|                | kg | 41 | 43 | 43 | 43 |

### CENTRAL HEATING

<table>
<thead>
<tr>
<th></th>
<th>bar</th>
<th>3</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum water head</strong></td>
<td>°C</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td><strong>Water content boiler</strong></td>
<td>l</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>C.H. setting range</strong></td>
<td>°C</td>
<td>30/80</td>
<td>30/80</td>
<td>30/80</td>
<td>30/80</td>
</tr>
<tr>
<td><strong>Expansion vessel capacity</strong></td>
<td>l</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Expansion vessel pressure</strong></td>
<td>bar</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

### DOMESTIC HOT WATER

<table>
<thead>
<tr>
<th></th>
<th>bar</th>
<th>-</th>
<th>0.5 / 70</th>
<th>0.5 / 70</th>
<th>0.5 / 70</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D.H.W. flow rate (EN 625)</strong></td>
<td>l/min</td>
<td>-</td>
<td>11.5</td>
<td>13.0</td>
<td>14.7</td>
</tr>
<tr>
<td><strong>Continuous D.H.W. flow rate ∆t, 30°C</strong></td>
<td>l/min</td>
<td>-</td>
<td>11.8</td>
<td>13.8</td>
<td>15.8</td>
</tr>
<tr>
<td><strong>Continuous D.H.W. flow rate ∆t, 35°C</strong></td>
<td>l/min</td>
<td>-</td>
<td>10.1</td>
<td>11.9</td>
<td>13.0</td>
</tr>
<tr>
<td><strong>D.H.W. setting range</strong></td>
<td>°C</td>
<td>-</td>
<td>30 / 60</td>
<td>30 / 60</td>
<td>30 / 60</td>
</tr>
</tbody>
</table>

### GAS PRESSURE AND NOZZLES

<table>
<thead>
<tr>
<th></th>
<th>mbar</th>
<th>20</th>
<th>20</th>
<th>20</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gas supply pressure G20</strong></td>
<td>mbar</td>
<td>28.30</td>
<td>28.30</td>
<td>28.30</td>
<td>28.30</td>
</tr>
<tr>
<td><strong>Gas supply pressure G30</strong></td>
<td>mbar</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td><strong>Gas supply pressure G31</strong></td>
<td>mbar</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td><strong>Burner gas pressure min./max. G20</strong></td>
<td>mbar</td>
<td>2.0 / 11.5</td>
<td>2.0 / 11.5</td>
<td>2.6 / 11.5</td>
<td>2.2 / 13.5</td>
</tr>
<tr>
<td><strong>Burner gas pressure min./max. G30</strong></td>
<td>mbar</td>
<td>4.8 / 28.5</td>
<td>4.8 / 28.5</td>
<td>6.3 / 28.5</td>
<td>4.5 / 28.2</td>
</tr>
<tr>
<td><strong>Burner gas pressure min./max. G31</strong></td>
<td>mbar</td>
<td>4.8 / 36.5</td>
<td>4.8 / 36.5</td>
<td>6.3 / 36.2</td>
<td>4.5 / 36.2</td>
</tr>
<tr>
<td><strong>C.H. gas consumption G20</strong></td>
<td>m³/h</td>
<td>2.70</td>
<td>2.70</td>
<td>3.17</td>
<td>3.68</td>
</tr>
<tr>
<td><strong>C.H. gas consumption G30</strong></td>
<td>kg/h</td>
<td>2.01</td>
<td>2.01</td>
<td>2.37</td>
<td>2.74</td>
</tr>
<tr>
<td><strong>C.H. gas consumption G31</strong></td>
<td>kg/h</td>
<td>1.98</td>
<td>1.98</td>
<td>2.33</td>
<td>2.70</td>
</tr>
</tbody>
</table>
1.4 FUNCTIONAL DIAGRAM

ECOMFORT SYSTEM 25 HE

KEY
1. Post-condenser
2. Smoke stat 95°
3. Fan
4. Main exchanger
5. SM sensor [thermister]
6. Aqua Guard Filter System
7. Safety stat ‘100°
8. Thermometer sensor
9. Gas valve
10. D.H.W. exchanger
11. Water flow switch
12. Divertor valve
13. Automatic by-pass
14. Circulating pump
15. Auto air vent
16. Expansion vessel
17. Condensation water trap
18. Safety valve
19. Temperature/pressure gauge
20. Boiler drain
22. D.H.W. inlet cock
23. Gas cock
24. C.H. flow cock
25. C.H. return cock
26. Condensation outlet ø 20

ECOMFORT 25 - 30 - 35 HE

R C.H. return
M C.H. flow
G Gas connection
E D.H.W. inlet
U D.H.W. outlet

Fig. 2
### 1.5 MAIN COMPONENTS

**KEY**

1. Water flow switch
2. Water trap
3. Safety stat 100°
4. Aqua Guard Filter System
5. Main exchanger
6. SM sensor (thermister)
7. Fan
8. Smoke stat 95°
9. Smoke pressure switch
10. Positive test point
11. Post-condenser
12. Combustion chamber
13. Ignition/ionization electrode
14. Burner
15. Gas valve
16. Automatic air vent
17. Control panel
18. Negative test point

---

**ECOMFORT SYSTEM 25 HE**

**ECOMFORT 25 - 30 - 35 HE**

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Fig. 3
The boiler must be installed in a fixed location and only by specialized and qualified persons in compliance with all instructions contained in this manual. The boiler should be installed in accordance with the Gas Safety Regulations.

It is important that the condensate trap be filled prior to operating the boiler. The trap can be filled by pouring water carefully into the inner flue connection prior to installation of the flue. Care should be taken not to allow any water to enter the outer flue.

2.1 VENTILATION REQUIREMENTS

Detailed recommendations for air supply are given in BS5440.2. The following notes are for general guidance:
- It is not necessary to have a purpose provided air vent in the room or compartment in which the appliance is installed.

2.3 CONNECTING UP SYSTEM

Before proceeding to connect up the boiler, you are recommended to flush out the system in order to eliminate any foreign bodies that might be detrimental to the operating efficiency of the appliance. When making the hydraulic connections, make sure that the clearances indicated in Fig. 1 are respected. To facilitate the hydraulic connections the boiler is equipped with a valve pack code 5184817 complete with instructions sheet. A safety valve set at 3 bar is fitted to the appliance complete with mounting instructions. The air inlet-smoke outlet assembly, code 8096250, is included in the standard supply of the appliance complete with mounting instructions. (Test kits are available from inhibitor stockists).

2.3.1 Connection of condensation water trap

The drip board and its water trap must be connected to a civil drain through a pipe with a slope of at least 5 mm per metre to ensure drainage of condensation water. The plastic pipes normally used for civil drains are the only type of pipe which is appropriate for conveying condensation to the building's sewer pipes.

2.3.2 Requirements for sealed water systems

The heating system design should be based on the following information:
- a) The available pump head is given in Fig. 16.
- b) The burner starts when the C.H. flow reaches 400÷450 l/h. This safety condition is ensured by the flow switch.
- c) The appliance is equipped with an internal bypass that operates with system heads (H) greater than 3 m. The maximum flow through the bypass is about 300 l/h. If thermostatic radiator valves are to be installed, at least one radiator should be without a thermostatic valve (usually the bathroom radiator).
- d) A sealed system must only be filled by a competent person using one of the approved methods shown in Fig. 4. The system design should incorporate the connections appropriate to one of these methods.

2.4 CHARACTERISTICS OF FEEDWATER

- All recirculatory systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.
- For optimum performance after installation this boiler and its associated central heating system must be flushed in accordance with the guidelines given in BS 7593 "Treatment of water in domestic hot water central heating systems".
- This must involve the use of a proprietary cleanser, such as Sentinel X300 or X400, or Fernox Superfloc. Full instructions are supplied with the product, but for immediate information please contact OE Betz (0151 420 9563) or Fernox (01799 550 811) directly.
- For long term protection against corrosion and scale, after flushing it is recommended that an inhibitor such as Sentinel X100, or Fernox MB-1 or Copal is dosed in accordance with the guidelines given in BS 7593.

Failure to flush and add inhibitor to the system may invalidate the appliance warranty.
- It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the manufacturer’s instructions. (Test kits are available from inhibitor stockists).
- At every service the Aquaguard Filter (43) should be checked and cleaned.

2.5 COAXIAL DUCT a 60/100 (only for "25-30 HE models")

The air inlet-smoke outlet assembly, code 8096250, is included in the standard supply of the appliance complete with mounting instructions.

NOTE: to use only special accessories for condensing boilers.
2.5.1 Coaxial flue diaphragm

The boiler is normally supplied with ø 87.5 diaphragm (fig. 4/a).

ATTENTION: the diaphragm should be used only when the length of the coaxial duct is below 1 m (only for “25 HE” model).

2.5.2 Coaxial duct accessories

The accessories to be used for this type of installation and some of the connecting systems that may be adopted are illustrated in fig. 5.

With the pipe bend included in the kit, the maximum length of the piping should not exceed 3.0 meter. When the vertical extension code 8086950 is used, the terminal part of the pipe must always come out horizontally.

2.6 COAXIAL DUCT ø 80/125

(only for “35 HE” model)

The air inlet-smoke outlet assembly ø 80/125 is supplied in a kit code 8096253 complete with mounting instructions. With the pipe bend included in the kit, the maximum length of the piping should not exceed 3.0 meter. The diagrams in fig. 7/a illustrate a number of examples of different coaxial outlets ø 80/125.

---

Only for “25-30 HE” models

KEY
1 1a-b Coaxial duct kit code 8096250
2 Extension L. 1000 code 8096150
3 Vertical extension L. 140 with take-off point code 8086950
4 a 90° additional bend code 8095850
4 b 45° additional bend code 8095950

max 3.0 m

NOTE: Place the duct horizontally.

IMPORTANT:
- Each additional 90° curve installed reduces the available length by 1.0 metres.
- Each additional 45° curve installed reduces the available length by 0.50 metres.

NOTE: Before installing accessories, lubricate the internal part of gaskets with silicon-based products. Avoid using oils and greases.
Only for “35 HE” model

KEY
1 Coaxial duct kit code 8096253
2 a Extension L. 1000 code 8096171
2 b Extension L. 500 code 8096170
3 Adapter ø 80/125 code 8093150
4 a 90° additional bend code 8095870
4 b 45° additional bend code 8095970
6 Hinged tile code 8091300
7 Coaxial roof exit terminal L. 1285 code 8091205

IMPORTANT:
- Each additional 90° curve installed reduces the available length by 1.0 metres.
- Each additional 45° curve installed reduces the available length by 0.50 metres.

Fig. 5/a
2.7 POSITIONING THE OUTLET TERMINALS

The outlet terminals for forced-draught appliances may be located in the external perimeter walls of the building. To provide some indications of possible solutions, Table 3 gives the minimum distances to be observed, with reference to the type of building shown in Fig. 6.

2.8 SEPARATE PIPES ø 80

(Optional alternative twin pipe system)

A special kit may be used to separate the

---

### TABLE 3

<table>
<thead>
<tr>
<th>Terminal position</th>
<th>Minimum spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Directly below an operable window, air vent</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>or any other ventilation opening</td>
<td></td>
</tr>
<tr>
<td>B. Below guttering, drain pipes or soil pipes</td>
<td>75 mm 3 in</td>
</tr>
<tr>
<td>C/D. Below eaves, balconies or carport roof</td>
<td>200 mm 8 in</td>
</tr>
<tr>
<td>E. From vertical drain pipes or soil pipes</td>
<td>75 mm 3 in</td>
</tr>
<tr>
<td>F. From internal or external corners</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>G. Above adjacent ground, roof or balcony level</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>H. From a surface facing the terminal</td>
<td>600 mm 24 in</td>
</tr>
<tr>
<td>I. From a terminal facing the terminal</td>
<td>1,200 mm 48 in</td>
</tr>
<tr>
<td>J. From an opening in the carport (eg. door, window into dwelling)</td>
<td>1,200 mm 48 in</td>
</tr>
<tr>
<td>K. Vertically from a terminal on the same wall</td>
<td>1,500 mm 60 in</td>
</tr>
<tr>
<td>L. Horizontally from a terminal on the same wall</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>M. Horizontally from a vertical terminal to a wall</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>N. Horizontally from an operable window or other opening</td>
<td>300 mm 12 in</td>
</tr>
<tr>
<td>P. Above an operable window or other opening</td>
<td>300 mm 12 in</td>
</tr>
</tbody>
</table>

- If the terminal discharges into a pathway or passageway check that combustion products will not cause nuisance and that the terminal will not obstruct the passageway.
- Where the lowest part of the terminal is fitted less than 2 m (78 in) above ground, above a balcony or above a flat roof to which people have access, the terminal MUST be protected by a purpose designed guard. Terminal guards are available from Quinnell, Barrett, and Quinnell, Old Kent Road, London. State model C2. (G.C. Part No 382946).
- Where the terminal is fitted within 850 mm (34 in) of a plastic or painted gutter, or 450 mm (18 in) of painted eaves, an aluminium shield at least 1,500 mm (59 in) long must be fitted to the underside of the painted surface.
- The air inlet/outlet flue duct MUST NOT be closer than 25 mm (1 in) to combustible material.
- In certain weather conditions the terminal may emit a plume of steam. This is normal but positions where this would cause a nuisance should be avoided.
14

The maximum overall length of the intake and exhaust ducts depends on the head losses of the single fittings installed (excluding the doublers) and must not be greater than 9.0 mm H2O ("25 HE" model) - 7.0 mm H2O ("30 HE" model) and 4.0 mm H2O ("35 HE" model).

For head losses in the fittings, refer to Table 4.

NOTE: To use only special accessories for condensing boilers.

2.8.1 Separate pipe accessories

Kit code 8089912 is supplied for this purpose (fig. 8).

2.9 ELECTRICAL CONNECTION

The boiler is supplied with an electric cable. Should this require replacement, it must be purchased exclusively from SIME. The electric power supply to the boiler must be 230V - 50Hz single-phase through a fused main switch, with at least 3 mm spacing between contacts. Respect the L and N polarities and the earth connection.

NOTE: SIME declines all responsibility for injury or damage to persons, animals or property, resulting from the failure to provide for proper earthing of the appliance.

2.9.1 Electrical board (fig. 12)

Before performing any kind of operation, disconnect the unit from the power supply using the bipolar switch of the plant. Placing the boiler selector in position "OFF" does not disconnect the electric board from the power supply.

Remove the three screws (9) fixing the control board, and pull forward the panel until it tilts downwards. In order to gain access to the electrical board components, unscrew the four screws fixing the control panel cover.

2.9.2 Room thermostat (fig. 12)

After having removed the jumper, connect electrically the room thermostat to terminals 1-2 of the junction box (8).

In order to have better room comfort and temperature control, we suggest you to use a room thermostat belonging to Class II, as specified by standard EN60730.1 (clean contact).
ATTENTION: After having removed the three screws (9) tilt the panel downwards to gain access.

IMPORTANT
Before performing any kind of operation, disconnect the unit from the power supply using the bipolar switch of the plant. Placing the boiler selector in position "OFF" does not disconnect the electric board from the power supply.

KEY
1 Thermohydrometer
2 Time programmer [optional]
4 Main PCB
5 Earth faston
6 Control panel protection
7 Cover (TA)
8 Connector (TA)
9 Fixing screw

Fig. 12
2.9.3 ECOMFORT SYSTEM 25 HE wiring diagram

NOTE:
- The room thermostat (TA) may be connected to the terminals 1.
- To remote control the boiler connect an external clock to the terminals 1-2 (24 V) of the “TA” connector and set the built-in clock to “constant” mode (see user instructions for details).

JUMPERS POSITION AND FEATURES

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>POSITION AND FEATURE SUPPLY POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP4 - METANO/GPL</td>
<td>Ready to function with LPG</td>
</tr>
</tbody>
</table>
2.9.4 ECOMFORT 25 - 30 - 35 HE wiring diagram

NOTE:
- The room thermostat may be connected to the terminals 15-16 (CN1) of the “TA” connector after having removed the link.
- To remote control the boiler connect an external clock to the terminals 1-2 (24 V) of the “TA” connector and set the built-in clock to “constant” mode (see user instructions for details).

JUMPERS POSITION AND FEATURES

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>POSITION AND FEATURE SUPPLY POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP4 - METANO/GPL</td>
<td>Ready to function with LPG Ready to function with natural gas Open</td>
</tr>
</tbody>
</table>

Fig. 13/a
3 CHARACTERISTICS

3.1 ELECTRONIC BOARD

The electronic board is manufactured in compliance with the EEC 73/23 low-voltage directives. It is supplied with 230V. The electronic components are guaranteed against a temperature range of 0 up to +60°C. An automatic and continuous modulation system enables the boiler to adjust power to the various system requirements or the user's needs.

3.1.1 Fault and malfunction signaling

The indicator LEDs signaling irregular and/or incorrect operation of the equipment are indicated in fig. 14.

3.1.2 Devices

The electronic board is equipped with the following devices (fig. 15):

- Connector “JP4” (4)
  With the connector disconnected, the boiler is ready to function with METHANE; with the connector connected with GPL.

ATTENTION: It is essential that the operations described above be carried out by authorized technical staff.

3.2 TEMPERATURE SENSOR

Antifreeze system managed by active heating NTC sensor when water temperature is 6°C. The heating sensor works also as a limit thermostat which switches off the burner when temperature is over 90°C. When sensor (SM) is interrupted, neither of the boiler’s heating services will function.

Table 5 shows the resistance values (Ω) obtained on the heating sensor as the temperature varies.

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>12.090</td>
</tr>
<tr>
<td>30</td>
<td>8.313</td>
</tr>
<tr>
<td>40</td>
<td>5.626</td>
</tr>
<tr>
<td>50</td>
<td>4.161</td>
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<td>60</td>
<td>3.021</td>
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<tr>
<td>70</td>
<td>2.229</td>
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<tr>
<td>80</td>
<td>1.669</td>
</tr>
</tbody>
</table>

TABLE 5

Fig. 14

Bi-colour green led off if power is cut-off.
Bi-colour orange led: C.H. sensor (SM) fault.
Green led flashing: fan/smoke pressure switch.
Flashing orange led no water circulation.
Flashing red led indicates a problem in the line post-condenser.

Red led on, ignition blocked/safety stat /smoke stat tripped: turn the rotary switch in the position (↑ ) to restore functioning.

Fig. 15

KEY

1 Jumper JP2
2 Fuse 1.6 AT
3 D.H.W. potentiometer
4 Connector “JP4”
5 Rotary switch
7 Block red led
8 Bi-colour led green/orange
9 Bi-colour led green/orange
10 Connector “TA”
3.3 ELECTRONIC IGNITION

Ignition and flame detection is controlled by a sole electrode located on the burner. It guarantees maximum safety with intervention times, for accidental switching off or gas failure, within one second.

3.3.1 Operating cycle

Rotate the selector knob to summer or winter; and verify that green LED ( ) lights up to confirm the presence of voltage. The burner must be ignited within 10 seconds max. However, it is possible for ignition failures to occur, with consequent activation of “locked out” signal:

- Gas failure
  The electrode continues spark discharge for a maximum of 10 sec. If the burner does not light, the board - after a 5 second ventilation stop - reactivates discharge for further 10 seconds. This cycle will be repeated 5 times, after that, the lock-out red LED will light up.

  This may occur upon first ignition or after long periods of boiler lay-off when there is air in the pipes. It may be caused by the gas cock being closed or by one of the valve coils having a break in the winding, so that the valve cannot open.

- Ignition electrode fails to spark
  The electrode continues spark discharge for a maximum of 10 sec. If the burner does not light, the board - after a 5 second ventilation stop - reactivates discharge for further 10 seconds. This cycle will be repeated 5 times, after that, the lock-out red LED will light up.

This may be due to a break in the wire of the electrode or to the wire not properly fastened to the ignition transformer terminal. The electrode itself may touch earth or may be heavily worn out and needs replacing. The electronic board is defective.

When there is a sudden voltage failure, the burner shuts down immediately; when the power supply returns, the boiler will start up again automatically.

3.4 FLOW SWITCH SAFETY VALVE

A flow switch safety valve (8 fig. 2) intervenes, blocking the operation of the burner if the boiler is without water due to the formation of air bubbles in the heat exchanger or if the circulator is not working correctly or because the “Aqua Guard” heating circuit filter is clogged.

3.5 SYSTEM AVAILABLE HEAD

The head available for the heating plant is shown as a function of the flow in graph in fig. 16. To obtain the maximum head available to the system, turn off the by-pass by turning the union to the vertical position (fig. 16/a).
3.6 SMOKE PRESSURE SWITCH

The air pressure switch is factory set to the values 42-52 Pa ("25 HE" model), 52-62 Pa ("30 HE" model) and 65-75 Pa ("35 HE" model) to guarantee boiler functioning even with intake and flue pipes at the maximum permitted length. The value of the signal to the pressure switch is measured using a special instrument connected to the pressure intake (10-18 fig. 3).

3.7 ELECTRICITY CONNECTION FOR ZONE SYSTEMS

When installing a system of this type, use a separate electrical line to which room thermostats with their local valves will be connected. Connect micro switches or relay contacts on terminals 15-16 of the "TA" connector of the electronic card after removing the existing jumper (fig. 17).

![Diagram](image_url)

**KEY**
- TA-TA1: Zone room stat
- VZ-VZ1: Zone valve
- R-R1: Zone relay
- CR-CR1: Relay contact or micro zone valve

**NOTE:** Relays are used only if the area valves have no microswitches.
4 USE AND MAINTENANCE

SIME SUPPORT
THE BENCHMARK INITIATIVE

All relevant sections of the logbook must be filled in at the time of installation and thereafter service information on the back page of the logbook. Commissioning of the boiler is not complete until the logbook is filled in.

4.1 FILLING THE WATER SYSTEM

- Open the flow and return valves.
- Loosen the automatic air vent cap.
- Open all radiator valves and system air vents. Fill the system with water using one of the approved methods described in section 2.3.2 to about 0.5 bar greater than the system design pressure. Close all air vents. Do not close the A.A.V.
- Check the system for water soundness.
- Completely drain the appliance and heating system, thoroughly flush the system, and refill the system design pressure.
- Before refilling check and clean the Aqua-guard filter (4.9).

4.1.1 Flow Rate Adjustment

The DHW flow rate should be set using the flow rate adjuster (see fig. 16/a) to the value shown in section 1.3.

4.2 GAS VALVE

The boilers are equipped standard with the SIT 845 SIGMA/HONEYWELL VK 4105M/SIEMENS VGU 50 gas valve (fig. 21).

The gas valve is set at two pressure values: maximum and minimum. According to the type of gas burnt, these correspond to the values given in Table 6. The gas pressures at the maximum and minimum values, are factory set. Consequently they must not be altered. Only when you switch the appliance from one type of gas supply (methane) to another (butane or propane), it is permitted to alter the operating pressure.

4.3 GAS CONVERSION

This operation must be performed by authorised personnel using original Sime components.

To convert from natural gas to LPG or vice versa, perform the following operations (fig. 22):

- Close the gas cock.
- Disassemble the burner manifold (3).
- Replace the main nozzles (6) supplied in a kit, inserting the copper washer (4). Use a ø 7 spanner to perform this operation.
- Remove the “METANO/GPL” connector link on the card and set it in the position corresponding to the gas to be used (4 fig. 15).

4.5.1 Adjusting valve pressure

Set maximum and minimum pressure on gas valves as follows (fig. 22/f):

1. Connect the column or a manometer to the intake downstream of the gas valve.
2. Disconnect the valve VENT pressure test point tube (5 fig. 21).
3. Remove the cap (1) from the modulator.
4. Place the hot tap water potentiometer knob at the maximum position.
5. Turn on the boiler using the four-way switch and turn on a hot water tap all the way.
6. Remember that rotating clockwise will increase pressure while rotating anti-

![Fig. 21](image1)

![Fig. 22](image2)

**NOTE:** When reassembling components you have removed, replace gas seals; test all gas connections after assembly using soapy water or a product made specifically for the purpose, being sure not to use open flame.

**TABLE 6**

<table>
<thead>
<tr>
<th>Type of gas</th>
<th>Burner max. pressure mbar</th>
<th>Modulator current</th>
<th>Burner min. pressure mbar</th>
<th>Modulator current</th>
</tr>
</thead>
<tbody>
<tr>
<td>G30 *</td>
<td>28.5</td>
<td>28.3</td>
<td>28.2</td>
<td>165</td>
</tr>
<tr>
<td>G31</td>
<td>26.5</td>
<td>26.2</td>
<td>26.2</td>
<td>165</td>
</tr>
<tr>
<td>G20</td>
<td>11.5</td>
<td>11.5</td>
<td>13.5</td>
<td>130</td>
</tr>
<tr>
<td>G21</td>
<td>26</td>
<td>26.3</td>
<td>26.2</td>
<td>165</td>
</tr>
<tr>
<td>G22</td>
<td>48</td>
<td>6.3</td>
<td>4.5</td>
<td>0</td>
</tr>
</tbody>
</table>

(*) Max. burner pressure is guaranteed only when the supply pressure exceeds the max. burner pressure by at least 3 mbar.

**WARNING:** To ensure a perfect seal, always use the washer (4) supplied in the kit when replacing nozzles, even in burner units for which it is not specified.
clockwise will diminish it.
- Adjust maximum pressure using the nut (3) with a wrench to the maximum pressure value indicated in Table 6.
- Do not adjust minimum pressure until you have adjusted maximum pressure.
- Turn off the supply power to the modulator; and keep the hot water tap turned on.
- Lock the nut (3) in place, turn the screw/nut (2) to the minimum pressure indicated in Table 6.
- Turn off the boiler and turn it back on again several times, keeping the hot water tap turned on at all times and checking that the maximum and minimum pressure values correspond to the established values; correct the settings if necessary.
- Adjust, checking that you have restored the power to the modulator.
- Put the pipe back on the valve VENT pressure test point.
- Remove the manometer, remembering to tighten the screw for closing the pressure test point.
- Put the plastic cap (1) back on the modulator and seal with a drop of coloured sealant if necessary.

4.8 REMOVAL OF OUTER CASING

It is possible to completely disassemble the shell for an easy maintenance of the boiler as showed in fig. 21.

4.9 CLEANING AND MAINTENANCE

Preventive maintenance and checking of efficient operation of equipment and safety devices must be carried out exclusively by authorized technical personnel.

4.10 CLEANING THE C.H. WATER FILTER “AQUA GUARD” (fig. 22)

To clean the filter, close the flow/return valves, turn off the power to the control panel, remove the casing and empty the boiler using the drain provided until the hydrometer shows “zero”. Place a container for collection underneath the filter; unscrew the cap and proceed to clean the filter; removing impurities and limestone deposits. Check the seal o-ring before reassembling the cap with the filter.
4.11 CHIMNEY SWEEP FUNCTION  
(fig. 23)

To carry out the verification of combustion in the boiler turn the selector and stop on the position [ ] until the green/orange led starts to flash intermittently. From that moment the boiler will start functioning in heating mode at the maximum power, with switching off at 80°C and restarting at 70°C.

Before activating the chimney sweep function make sure that the radiator valves or eventual zone valves are open. The test may be carried out also during hot-water service functioning. To do so it is enough, after having activated the chimney sweep function, to take some hot water from one or more cocks. Even in this condition the boiler functions at the maximum temperature always with the primary controlled between 80°C and 70°C. During the entire duration of the testing the hot water taps must remain open. After verifying the combustion the boiler should be switched off by placing the selector on the OFF position; then return the selector to the desired function.

ATTENTION: After about 15 minutes, or once the hot water request has been fulfilled, the chimney sweep function automatically deactivates.

4.12 BOILER SERVICING

4.12.1 Routine Servicing

To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced at regular intervals. The frequency of service will depend on the particular installation and conditions of usage, but in general once a year should be adequate. It is the law that a competent person such as a Gas Safe Register registered engineer, must carry out any service work.

4.12.2 Combustion Check

Incorporated into the flue elbow or vertical adaptor is a sampling point. The grey plastic cap should be unscrewed and the flue gas sampled using a flue gas analyser. During the test the boiler can be operated in "chimney sweep mode" see 4.11. The correct CO2 reading can be found in section 1.3.

4.12.3 Burner inspection

Remove the burner as described in section 6.3. Inspect the burner and if necessary clean using a soft brush.

4.12.4 Combustion Chamber

Remove any loose debris from the combustion chamber using a soft brush and a vacuum cleaner. Take care not to damage the rear insulation panel.

4.12.5 Condensate Trap

The condensate trap would not normally require removal during service, but it can be checked. Water should be poured into the inner flue. Great care must be taken to ensure no water enters the outer flue. Check that the water flows freely to the drain. Should it require removal, firstly remove wire clip securing the condensate drain rubber pipe to the condensate trap. Remove the pipe. Remove the two screws securing the condensate trap bracket. Clean the trap and refit in reverse order.

4.12.6 Flow Switch

The operation of the flow switch should be checked at each service. Remove small cover retaining screw and remove the cover. When the pump is running and water is flowing around the boiler; the actuator lifts off the microswitch. Check the operation of the actuator. Ensure that it is free and that it lifts and returns. If necessary lubricate the pivot point of the actuator. Isolate the boiler. Drain it using the drain provided. Remove the microswitch by carefully pulling it forward off its mounting pins. Remove the screw securing the mounting plate, then pull off the plate. Pull out the actuator pin.

4.12.7 Aquaguard Filter

It is recommended that the aquaguard filter is checked at each service. See section 4.10.
5  FAULT FINDING

If an electrical fault occurs on the appliance the preliminary electrical system checks contained in the British Gas Multimeter Instruction Booklet must be carried out first. When any service or replacement of electrical components which has required the breaking and re-making of electrical connections has taken place, the following tests must be repeated:
- earth continuity;
- short circuit;
- polarity;
- resistance to earth.

5.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnect-
ed, meter set on Ω (ohm) x 1 scale and adjust zero if necessary. Tests leads from any appliance earth point (e.g. inside control box) see wiring diagrams (section 7) to earth pin on plug. Resistance should be less than 1 Ω (ohm). If the resistance is greater than 1 Ω (ohm) check all earth wires for continuity and all contacts are clean and tight. If the resistance to earth is still greater than 1 Ω (ohm) then this should be investigated further.

5.2 SHORT CIRCUIT CHECK

Switches turned FULL ON - meter set on Ω (ohms) x 1 scale. Test leads from L to N on appliance terminal block, if meter reads 0 then there is a short circuit.

Meter set on Ω (ohm) x 100 scale. Repeat it with leads from L to E. If meter reads less than infinity (∞) there is a fault.

NOTE: Should it be found that the fuse has failed but no fault is indicated, a detailed continuity check (i.e. by disconnecting and checking each component) is required to trace the faulty component.

It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

5.3 POLARITY CHECK

Appliance reconnected to mains supply and meter set on 300 V ac scale. Test at appliance terminal block.
- Test leads from L to N meter reads approx. 240 V ac.
- Test leads from L to E " " meter reads approx. 240 V ac.
- Test leads from N to E " " meter reads from 0 to 15 V ac.

5.4 RESISTANCE TO EARTH CHECK

Appliance must be disconnected from main supply and meter on Ω (ohm) x 100 scale. All switches including thermostat on test leads from L to E - if meter reads other than infinity (∞) there is a fault which should be isolated.

A detailed continuity check is required to trace the faulty component.

IMPORTANT:
These series of checks are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections then the checks 5.1 Earth continuity, 5.3 Polarity and 5.4 Resistance to earth must be repeated.
GAS BOILERSYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer’s instructions may invalidate the warranty but does not affect statutory rights.

Customer Name __________________________ Telephone Number __________________________
Address ____________________________________________
Boiler Make and Model ____________________________
Boiler Serial Number ____________________________
Commissioned by (print name) ____________________________ GAS SAFE REGISTER ID Number ____________________________
Company Name ____________________________ Telephone Number ____________________________
Company Address ____________________________________________
Commissioning Date ____________________________

To be completed by the customer on receipt of a Building Regulations Compliance Certificate:
Building Regulations Notification Number (if applicable)

CONTROLS Tick the appropriate boxes

<table>
<thead>
<tr>
<th>Time and Temperature Control to Heating</th>
<th>Room Thermostat and Programmer/Timer</th>
<th>Programmable Room Thermostat</th>
<th>Load/Weather Compensation</th>
<th>Optimum Start Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>heating Zone Valves</td>
<td>Fitted</td>
<td>Not Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hot Water Zone Valves</td>
<td>Fitted</td>
<td>Not Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermostatic Radiator Valves</td>
<td>Fitted</td>
<td>Not Required</td>
<td></td>
<td></td>
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<tr>
<td>Automatic Bypas to System</td>
<td>Fitted</td>
<td>Not Required</td>
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<tr>
<td>Boiler Interlock</td>
<td>Provided</td>
<td></td>
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</tr>
</tbody>
</table>

ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer’s instructions Yes

What system cleaner was used? ____________________________ Quantity ____________________________ litres

CENTRAL HEATING MODE Measure and Record:

- Gas Rate m³/hr or ft³/hr
- Burner Operating Pressure (at maximum rate) mbar or Gas Inlet Pressure mbar
- Central Heating Flow Temperature °C
- Central Heating Return Temperature °C

COMBINATION BOILERS ONLY

- Is the installation in a hard water area (above 200ppm)? Yes No
- If yes, has a water scale reducer been fitted? Yes No

DOMESTIC HOT WATER MODE Measure and Record:

- Gas Rate m³/hr or ft³/hr
- Burner Operating Pressure (at maximum rate) mbar or Gas Inlet Pressure mbar
- Cold Water Inlet Temperature °C
- Hot water has been checked at all outlets Yes Temperature °C
- Water Flow Rate l/min

CONDENSING BOILERS ONLY

The condensate drain has been installed in accordance with the manufacturer’s instructions and/or BS5546/BS6798 Yes

ALL INSTALLATIONS

- If required by the manufacturer, record the following CO % OR CO ppm OR CO/CO₂ Ratio
- The heating and hot water system complies with the appropriate Building Regulations Yes
- The boiler and associated products have been installed and commissioned in accordance with the manufacturer’s instructions Yes
- The operation of the boiler and system controls have been demonstrated to and understood by the customer Yes
- The manufacturer’s literature, including Benchmark Checklist and Service Record, has been explained and left with the customer Yes

Commissioning Engineer’s Signature ____________________________
Customer’s Signature ____________________________

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### SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service Record is completed.

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

<table>
<thead>
<tr>
<th>SERVICE 1</th>
<th>Date</th>
<th>Energy Efficiency Checklist completed?</th>
<th>Yes</th>
<th>No</th>
<th>Engineer Name</th>
<th>Company Name</th>
<th>Telephone Number</th>
<th>GAS SAFE REGISTER ID Number</th>
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<th>Signature</th>
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<td>Energy Efficiency Checklist completed?</td>
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<td>No</td>
<td>Engineer Name</td>
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<td>SERVICE 3</td>
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<td>Energy Efficiency Checklist completed?</td>
<td>Yes</td>
<td>No</td>
<td>Engineer Name</td>
<td>Company Name</td>
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<tr>
<td>SERVICE 4</td>
<td>Date</td>
<td>Energy Efficiency Checklist completed?</td>
<td>Yes</td>
<td>No</td>
<td>Engineer Name</td>
<td>Company Name</td>
<td>Telephone Number</td>
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5.5 C.H. MODE - FAULT FINDING

Start from cold

- Rotary switch set to WINTER position.
- Room thermostat (if fitted) calling for heat and all D.H.W. taps off.
- C.H. thermostat set to maximum position.
- Clock in the on position (if fitted).

NOTE:

After completing fault finding reset the room thermostat (if fitted) to the required setting. If the appliance will not function check the wiring to the clock and if necessary, replace the clock.
5.6 D.H.W. MODE - FAULT FINDING

Start from cold - rotary switch set to SUMMER position, D.H.W. thermostat set to maximum, and all D.H.W. taps OFF.

[Flowchart diagram showing the fault finding process.]

1. Is there power at the external socket?
   - Yes: Make power available.
   - No: Replace fuses in mains plug.

2. Is there voltage available to the fan?
   - Yes: Replace the fan.
   - No: Check the power supply cables.

3. Does the pump start?
   - Yes: Replace the pump.
   - No: Is the pump shaft free to rotate?
     - Yes: Is the gas available?
       - Yes: Replace the gas valve.
       - No: Restore the connection.
     - No: Check the connection of the gas valve on the control board PCB.

4. Does the boiler lock-out without starting the burner?
   - Yes: The boiler lock-out starting the burner.
   - No: Verify that the safety and fume thermostats are working correctly.
     - Yes: The isolation probes connected to the main PCB and the ground.
     - No: Restore the connection.

5. Check the connection of the thermostats.
   - Yes: Replace the thermostats.
   - No: Verify that the safety and fume thermostats are working correctly.
     - Yes: The isolation probes connected to the main PCB and the ground.
     - No: Restore the connection.

6. Fit correctly the ignition electrode.
   - Yes: The gas between ignition electrode and hood is correct.
   - No: Check for continuity between ignition electrode and ignition transformer.

7. Replace the ignition electrode.
   - Yes: Is the connection of the fume and safety thermostats correct?
     - Yes: Verify that the safety and fume thermostats are working correctly.
     - No: Check the gas supply.
   - No: Replace the gas valve.

8. Is there a spark at the ignition electrode?
   - Yes: Verify that the safety and fume thermostats are working correctly.
   - No: Check the connection of the thermostats.

9. Is there voltage at the gas valve?
   - Yes: Replace the gas valve.
   - No: Replace the thermostats.

10. Does the microswitch of the divertor valve operate correctly?
    - Yes: Clean or replace the divertor valve.
    - No: Replace the microinterruptor.

11. Does the fan start?
    - Yes: Make it free to rotate.
    - No: Replace the divertor valve.

12. Is there voltage available to the fan?
    - Yes: Replace the fan.
    - No: Check the power supply cables.

13. Is there an adequate flow rate of D.H.W. available?
    - Yes: Open any tap.
    - No: Make power available.

14. Does the microswitch of the divertor valve operate correctly?
    - Yes: Clean or replace the divertor valve.
    - No: Replace the microinterruptor.

15. Replace fuses in mains plug.
    - Yes: Make power available.
    - No: Replace fuses in mains plug.

16. Is there power at the external socket?
    - Yes: Make power available.
    - No: Replace fuses in mains plug.

17. Is there voltage available to the pump?
    - Yes: Is the pump shaft free to rotate?
      - Yes: Replace the pump.
      - No: Check the connection of the gas valve on the control board PCB.
    - No: Is there voltage available to the pump?
      - Yes: Is the pump shaft free to rotate?
        - Yes: Replace the pump.
        - No: Check the connection of the gas valve on the control board PCB.
      - No: Check the connection of the gas valve on the control board PCB.

18. Is the ionization probe connected to the main PCB and the ground?
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

19. Is there voltage at the gas valve?
    - Yes: Replace the gas valve.
    - No: Replace the ignition electrode.

20. Is there a spark at the ignition electrode?
    - Yes: Replace the ignition electrode.
    - No: Replace the ignition electrode.

21. Is there voltage available to the fan?
    - Yes: Replace the fan.
    - No: Check the power supply cables.

22. Does the pump start?
    - Yes: Replace the pump.
    - No: Check the pump connection.

23. Check pump connection.
    - Yes: Replace the pump.
    - No: Replace the pump.

24. Is the connection of the fume and safety thermostats correct?
    - Yes: Reset the connection.
    - No: Reset the connection.

25. Verify that the safety and fume thermostats are working correctly.
    - Yes: The isolation probes connected to the main PCB and the ground.
    - No: Restore the connection.

26. Verify that the safety and fume thermostats are working correctly?
    - Yes: The isolation probes connected to the main PCB and the ground.
    - No: Restore the connection.

27. The boiler lock-out starting the burner.
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

28. Is the gas available?
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

29. Is there voltage at the gas valve?
    - Yes: Replace the gas valve.
    - No: Replace the ignition electrode.

30. Replace the gas valve.
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

31. Fit correctly the ignition electrode.
    - Yes: The gas between ignition electrode and hood is correct.
    - No: Check for continuity between ignition electrode and ignition transformer.

32. Replace the ignition electrode.
    - Yes: Is the connection of the fume and safety thermostats correct?
      - Yes: Verify that the safety and fume thermostats are working correctly.
      - No: Check the gas supply.
    - No: Replace the gas valve.

33. Is there a spark at the ignition electrode?
    - Yes: Verify that the safety and fume thermostats are working correctly.
    - No: Check the connection of the thermostats.

34. Is there voltage at the gas valve?
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

35. Replace the gas valve.
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

36. Replace the ignition electrode.
    - Yes: The gas between ignition electrode and hood is correct.
    - No: Check for continuity between ignition electrode and ignition transformer.

37. Replace the ignition electrode.
    - Yes: Is the connection of the fume and safety thermostats correct?
      - Yes: Verify that the safety and fume thermostats are working correctly.
      - No: Check the gas supply.
    - No: Replace the gas valve.

38. Is there a spark at the ignition electrode?
    - Yes: Verify that the safety and fume thermostats are working correctly.
    - No: Check the connection of the thermostats.

39. Is there voltage at the gas valve?
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

40. Replace the gas valve.
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

41. Replace the ignition electrode.
    - Yes: The gas between ignition electrode and hood is correct.
    - No: Check for continuity between ignition electrode and ignition transformer.

42. Replace the ignition electrode.
    - Yes: Is the connection of the fume and safety thermostats correct?
      - Yes: Verify that the safety and fume thermostats are working correctly.
      - No: Check the gas supply.
    - No: Replace the gas valve.

43. Is there a spark at the ignition electrode?
    - Yes: Verify that the safety and fume thermostats are working correctly.
    - No: Check the connection of the thermostats.

44. Is there voltage at the gas valve?
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.

45. Replace the gas valve.
    - Yes: Replace the gas valve.
    - No: Replace the gas valve.
Note: Use silicone grease to ease the fitting of any push fit connections.

6.1 Expansion Vessel
- Isolate power supply
- Remove boiler cover
- Isolate flow and return valves
- Drain boiler using fitted drain vent
- Disconnect expansion pipe
- Remove expansion vessel securing nut
- Remove vessel
- Check new vessel for correct pressure 1-1.25 bar
- Refit in reverse order

6.2 Ignition/Ionisation electrode
- Isolate power supply
- Remove boiler cover
- Remove sealed chamber cover
- Remove PCB cover
- Disconnect ignition lead
- Carefully remove lead through PCB cover and burner compartment
- Remove electrode fixing screw and remove electrode from burner
- Replace in reverse order

6.3 Main Burner
- Isolate power supply
- Isolate gas supply
- Remove boiler cover
- Remove sealed chamber cover
- Remove burner cover
- Disconnect gas connection to burner
- Remove locknut securing burner assembly
- Remove ignition/ionisation electrode
- Carefully lift out burner assembly
- Refit in reverse order
- Test for gas soundness

6.4 Fan assembly
- Isolate power supply
- Remove boiler cover
- Remove sealed chamber cover
- Disconnect wiring to fan
- Remove two fan fixing screws
- Carefully pull fan forward and to the right to disconnect fan from post condenser
- Remove air pressure switch sensing tube
- Apply light coating of silicone grease to nozzle of new fan
- Refit in reverse order

6.5 Main Heat Exchanger
- Isolate power supply
- Isolate gas supply
- Isolate flow and return valves
- Drain boiler using drain vent
- Remove fan assembly as described in 6.4
- Remove 4 screws and remove fan mounting plate
- Disconnect thermistor (SM sensor)
- Disconnect flow and return connections
- Lift out heat exchanger
- Refit in reverse order

6.6 95°C Limit stat
- Isolate power supply
- Remove boiler cover
- Remove sealed chamber cover
- Remove fan as described in 6.4
- Remove wires from 95°C stat
- Remove stat fixing screws
- Apply heat sink compound to new stat
- Refit in reverse order

6.7 Air Pressure Switch
- Isolate power supply
- Remove boiler cover
- Remove sealed chamber cover
- Remove screws securing air pressure switch
- Note position of wires before removal
- Note position of sensing tube before removal
- Refit in reverse order

6.8 100°C Safety Stat
- Isolate power supply
- Remove boiler cover
- Disconnect 100°C safety stat
- Remove fixing screws
- Refit in reverse order

6.9 Thermistor (SM sensor)
- Isolate power supply
- Remove boiler cover
- Remove sealed chamber cover
- Isolate flow and return valves
- Drain boiler using drain vent
- Disconnect thermistor
- Unscrew thermistor (catch any water lost)
- Refit in reverse

6.10 Gas Valve
- Isolate power supply
- Isolate gas supply
- Remove boiler cover
- Disconnect wiring from gas valve
- Disconnect sensing tube
- Remove gas valve
- Refit in reverse order ensuring seals are replaced as required
- Recommission boiler and adjust gas pressures as described in section 4.5.1
- Check for gas soundness

6.11 Circuit Board (PCB)
- Isolate power supply
- Remove screws securing control panel
- Lower panel to horizontal position
- Remove PCB cover
- Disconnect all wiring
- Remove control knobs
- Remove PCB fixing screws
- Transfer trimmer spindles to new board
- Ensure PCB links are matched to old board
- Refit in reverse order
- Recommission boiler

6.12 Pump Motor
- Isolate power supply
- Remove boiler cover
- Isolate flow and return valves
- Turn on DHW tap
- Close cold water supply isolation valve
- Drain boiler using drain vent
- Remove plug connection
- Remove 4 x fixing screws, catch any lost water
- Refit in reverse using new washers

6.13 Diverter Valve Microswitch
- Isolate power supply
- Remove boiler cover
- Pull microswitch assembly forward off the diverter valve head
- Refit in reverse order

6.14 Domestic Hot Water Heat exchanger
- Isolate power supply
- Isolate flow and return
- Turn on DHW tap
- Close cold water supply isolation valve
- Drain boiler using drain vent
- Remove diverter valve microswitch as described in 6.13
- Remove microswitch actuator from top of diverter valve
- Remove 3 x heat exchanger fixing screws
- Remove plate heat exchanger, catch any water lost
- Ensure that the four "O" rings are removed from the technil assembly
- Fit the new "O" ring supplied with the new heat exchanger to the heat exchanger
- Refit in reverse order

6.15 Diverter Valve
- Remove Diverter valve microswitch as described in 6.13
- Remove plate heat exchanger as described in 6.14
- Remove the securing clip at retaining the plug at the LHS of diverter assembly
- Remove internal bush from spindle
- Remove diverter valve head securing clip
- Pull diverter valve head from assembly
- Remove spindle from assembly complete with bush and spacer
- Replace in reverse order replacing “O” rings as required

6.16 Auto Air Vent (AAV)
- Isolate power supply
- Isolate flow and return valves
- Remove boiler cover
- Drain boiler using drain vent

6.17 Safety Valve
- Isolate power supply
- Isolate flow and return valves
- Remove boiler cover
- Drain boiler using drain vent
- Disconnect pipe from safety valve
- Remove safety valve securing clip
- Remove safety valve, catch any water lost
- Refit in reverse

6.18 Pressure / Temperature Gauge
- Isolate power supply
- Isolate flow and return valves
- Remove boiler cover
- Drain boiler using drain vent
- Remove the clip securing the pressure sensor
- Remove the clip securing thermometer bulb
- Carefully remove the gauge
- Refit in reverse order
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* Recommended stock parts - Componenti da tenere a scorta

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**Recommended stock parts** - Componenti da tenere a scorta

Products reference:
- 8104002: Ecomfort 30 HE
- 8104003: Ecomfort 25 HE
- 8104005: Ecomfort 35 HE

Check the correspondence with the boiler data plate.