FORMAT DGT HE

Installation and servicing instructions
All descriptions and illustrations provided in this manual have been carefully prepared but we reserve the right to make changes and improvements in our products that may affect the accuracy of the information contained in this manual.
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
These appliances comply with the S.E.D.B.U.K. scheme, band “A”

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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 at the back 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

SIME 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 Benchmark Checklist in the use and maintenance section of this manual, been completed?
1 DESCRIPTION OF THE BOILER

1.1 INTRODUCTION

FORMAT DGT HE - FORMAT DGT HE SYSTEM are premixed gas condensation thermal modules that employ a microprocessor-based technology to control and manage all the functions. All modules are compliant with European Directives 2009/142/CE, 2004/108/CE, 2006/95/CE and 92/42/CE. For optimum installation and operation, always follow the instructions provided in this manual.

The products manufactured and sold by Sime do not contain any banned materials or substances (i.e., they comply with ISO9000:2000).

1.2 DIMENSIONS

### TABLE 1 - Connections

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
<th>Diameter</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>C.H. return</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>M</td>
<td>C.H. flow</td>
<td>22 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>G</td>
<td>Gas connection</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>E</td>
<td>D.H.W. inlet</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>U</td>
<td>D.H.W. outlet</td>
<td>15 mm</td>
<td>Compression</td>
</tr>
<tr>
<td>S3</td>
<td>Condensation outlet ø 20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 2 - Minimum clearances

<table>
<thead>
<tr>
<th>Description</th>
<th>For servicing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE THE APPLIANCE CASING</td>
<td>300 mm</td>
</tr>
<tr>
<td>AT THE R.H.S.</td>
<td>15 mm</td>
</tr>
<tr>
<td>AT THE L.H.S.</td>
<td>15 mm</td>
</tr>
<tr>
<td>BELOW THE APPLIANCE CASING</td>
<td>200 mm</td>
</tr>
<tr>
<td>IN FRONT OF THE APPLIANCE</td>
<td>500 mm</td>
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</table>
### 1.3 TECHNICAL FEATURES

<table>
<thead>
<tr>
<th>Models</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>20 System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat output</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal (80-60°C) kW</td>
<td>19.5</td>
<td>24.6</td>
<td>29.4</td>
<td>19.5</td>
</tr>
<tr>
<td>Nominal (50-30°C) kW</td>
<td>20.7</td>
<td>26.3</td>
<td>31.2</td>
<td>20.7</td>
</tr>
<tr>
<td>Reduced G20 (80-60°C) kW</td>
<td>5.7</td>
<td>7.2</td>
<td>8.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Reduced G20 (50-30°C) kW</td>
<td>6.3</td>
<td>8.0</td>
<td>8.9</td>
<td>6.3</td>
</tr>
<tr>
<td>Reduced G31 (80-60°C) kW</td>
<td>6.6</td>
<td>7.2</td>
<td>8.0</td>
<td>6.6</td>
</tr>
<tr>
<td>Reduced G31 (50-30°C) kW</td>
<td>7.3</td>
<td>8.0</td>
<td>8.9</td>
<td>7.3</td>
</tr>
<tr>
<td>Heat input nominal C.H./D.H.W. kW</td>
<td>20/24</td>
<td>25/30</td>
<td>30/35</td>
<td>20</td>
</tr>
<tr>
<td>Heat input reduced G20/G31 kW</td>
<td>6.0/70</td>
<td>75</td>
<td>8.2/9.0</td>
<td>6.0/70</td>
</tr>
<tr>
<td>Max/min useful yield (80-60°C) %</td>
<td>95.2/97.5</td>
<td>96.1/98.2</td>
<td>97.8/98.2</td>
<td>95.2/97.5</td>
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<tr>
<td>Max/min useful yield (50-30°C) %</td>
<td>105.2/103.7</td>
<td>106.2/105.2</td>
<td>108.2/104.3</td>
<td>105.2/103.7</td>
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<td>Useful yield at 30% of the load (40-30°C) %</td>
<td>1075</td>
<td>1079</td>
<td>108.5</td>
<td>1075</td>
</tr>
<tr>
<td>Thermal efficiency (CEE 92/42 directive)</td>
<td>⭐⭐⭐⭐⭐</td>
<td>⭐⭐⭐⭐⭐</td>
<td>⭐⭐⭐⭐⭐</td>
<td>⭐⭐⭐⭐⭐</td>
</tr>
<tr>
<td>Losses after shutdown to 50°C (EN 483) W</td>
<td>100</td>
<td>106</td>
<td>106</td>
<td>100</td>
</tr>
<tr>
<td>Supply voltage V/Hz</td>
<td>230-50</td>
<td>230-50</td>
<td>230-50</td>
<td>230-50</td>
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<tr>
<td>Adsorbed power consumption W</td>
<td>125</td>
<td>125</td>
<td>130</td>
<td>125</td>
</tr>
<tr>
<td>Electrical protection grade IP</td>
<td>X5D</td>
<td>X5D</td>
<td>X5D</td>
<td>X5D</td>
</tr>
<tr>
<td>C.H. setting range °C</td>
<td>20/80</td>
<td>20/80</td>
<td>20/80</td>
<td>20/80</td>
</tr>
<tr>
<td>Water content boiler l</td>
<td>4.3</td>
<td>4.8</td>
<td>4.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Maximum water head bar</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Maximum temperature °C</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Capacity of the heating expansion vessel l</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Pressure of the heating expansion vessel bar</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>D.H.W. setting range °C</td>
<td>10/60</td>
<td>10/60</td>
<td>10/60</td>
<td>–</td>
</tr>
<tr>
<td>D.H.W. flow rate (EN 625) l/min</td>
<td>10.5</td>
<td>13.4</td>
<td>15.2</td>
<td>–</td>
</tr>
<tr>
<td>Continuous D.H.W. flow rate Δt 30°C l/min</td>
<td>11.3</td>
<td>14.1</td>
<td>16.0</td>
<td>–</td>
</tr>
<tr>
<td>Minimum D.H.W. flow rate l/min</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>–</td>
</tr>
<tr>
<td>D.H.W. pressure min/max bar</td>
<td>0.5/70</td>
<td>0.5/70</td>
<td>0.5/70</td>
<td>–</td>
</tr>
<tr>
<td>Exhaust fumes temper. at max flow rate (80-60°C) °C</td>
<td>75</td>
<td>68</td>
<td>69</td>
<td>68</td>
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<tr>
<td>Exhaust fumes temper. at min. flow rate (80-60°C) °C</td>
<td>56</td>
<td>57</td>
<td>50</td>
<td>57</td>
</tr>
<tr>
<td>Exhaust fumes temper. at max flow rate (50-30°C) °C</td>
<td>57</td>
<td>52</td>
<td>52</td>
<td>57</td>
</tr>
<tr>
<td>Exhaust fumes temper. at min. flow rate (50-30°C) °C</td>
<td>39</td>
<td>36</td>
<td>33</td>
<td>43</td>
</tr>
<tr>
<td>Smokes flow min/max kg/h</td>
<td>10/35</td>
<td>13/44</td>
<td>14/52</td>
<td>5/20</td>
</tr>
<tr>
<td>CO2 at max/min flow rate G20 %</td>
<td>9.0/9.0</td>
<td>9.0/9.0</td>
<td>9.0/9.0</td>
<td>9.2/9.2</td>
</tr>
<tr>
<td>CO2 at max/min flow rate G31 %</td>
<td>10.0/10.0</td>
<td>10.0/10.0</td>
<td>10.0/10.0</td>
<td>10.0/10.0</td>
</tr>
<tr>
<td>CE certification n°</td>
<td>1312BT5266</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>II2H3P</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>B23P-53P/C13-33-43-53-83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOx emission class</td>
<td>5 (&lt; 30 mg/kWh)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight when empty kg</td>
<td>38</td>
<td>41</td>
<td>42</td>
<td>33</td>
</tr>
<tr>
<td>Main burner nozzle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity nozzles n°</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>G20/G31 nozzle diameter ø</td>
<td>70/5.0</td>
<td>75/6.0</td>
<td>8.5/5.2</td>
<td>70/5.0</td>
</tr>
<tr>
<td>Consumption at maximum/minimum flow rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G20 m³/h</td>
<td>2.54/0.63</td>
<td>3.17/0.79</td>
<td>3.68/0.87</td>
<td>1.21/0.31</td>
</tr>
<tr>
<td>G31 kg/h</td>
<td>1.86/0.54</td>
<td>2.33/0.58</td>
<td>2.70/0.70</td>
<td>0.89/0.31</td>
</tr>
<tr>
<td>Gas supply pressure G20/G31 mbar</td>
<td>20/37</td>
<td>20/37</td>
<td>20/37</td>
<td>20/37</td>
</tr>
</tbody>
</table>
1.4 FUNCTIONAL DIAGRAM

FORMAT DGT HE 25-30-35

KEY
1 Fan
2 Primary exchanger
3 C.H. sensor [SM]
4 Gas valve
5 D.H.W. exchanger
6 Heating water filter
7 Diverter valve
8 Safety thermostat
9 Pump with air release vent
10 D.H.W. flow meter
11 Water inlet filter
12 Water pressure valve
13 3 BAR safety valve
14 Water isolation valve
15 Condensate drain trap
16 Automatic bypass
17 Pressure release valve
18 Expansion vessel
19 Gas isolation valve
20 C.H. flow isolation valve
21 C.H. return isolation valve
22 Condensation outlet
23 Condensation outlet
24 D.H.W. isolation valve
25 D.H.W. outlet
26 D.H.W. inlet
27 D.H.W. outlet

CONNECTIONS
R C.H. return
M D.H.W. flow
G Gas connection
E D.H.W. inlet
U D.H.W. outlet
S3 Condensation outlet

Fig. 2
1.5 MAIN COMPONENTS

**KEY**
1. Control panel
2. Fan
3. Mixer
4. Ignition electrode
5. C.H. sensor (SM)
6. Primary exchanger
7. Smoke chamber
8. Fumes sensor
9. Safety thermostat
10. Condensate collection tray
11. Diverter valve
12. Automatic air vent
13. Pump

**NOTE:** Analogue pressure gauge see fig. 22/a.
2 INSTALLATION

The boiler must be installed in a fixed location and only by specialized and qualified personnel in compliance with all instructions contained in this manual. The installation of this boiler must be in accordance with the relevant requirements of the current Gas Safety (installation and use); the local building regulations; and and I.E.E. wiring regulations. Detailed recommendations for air supply are given in BS 5440.2. 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.

2.1 ANTI-FREEZE FUNCTION

The boilers are equipped with anti-freeze function which activates the pump and the burner when the temperature of the water contained inside the appliance drops to below value PAR 10. The anti-freeze function can only operate if:
- the boiler is correctly connected to the gas and electricity supply circuits;
- the boiler is switched on;
- the boiler ignition is not locked out;
- the essential components of the boiler are all in working order.

In these conditions the boiler is protected against frost down to an environmental temperature of 0°C.

ATTENTION:
In the case of installation in a place where the temperature drops below 0°C, the connection pipes must be protected.

2.2 FIXING THE WALL MOUNTING BRACKET

- Mark the position of the two wall mounting bracket fixing holes and the flue/air duct hole on the appropriate wall(s).
- Drill a top two fixing holes using a 10 mm masonry drill and fit the plastic plugs provided.
- Accurately measure the wall thickness, and note this dimension for later use.
- Secure the wall mounting bracket in position using the screws provided. Ensure that it is the correct way up, as indicated in fig. 4.

2.3 CONNECTING UP SYSTEM

Before connecting the boiler it is recommended that the system be flushed in accordance to BS 7593, to eliminate any foreign bodies that may be detrimental to the operating efficiency of the appliance. When connecting up the boiler the clearances in fig 1 should be respected. The boiler is supplied with a valve pack part number 5184817. The boiler can be filled and pressure tested prior to any electrical supply being connected with the use of the analogue pressure gauge. See fig 22/a. A safety valve set at 3 bar is fitted to the appliance, the discharge pipe provided should be extended to terminate safely away from the appliance and where a discharge would not cause damage to persons or property but would be detected. The pipe should be a minimum of 15 mm Ø and should be able to withstand boiling water; any should avoid sharp corners or upward pipe runs where water may be retained.

Gas Connection
The gas connection must be made using seamless steel or copper pipe. Where the piping has to pass through walls, a suitable insulating sleeve must be provided. When sizing gas piping, from the meter to the boiler, take into account both the volume flow rates (consumption) in m³/h and the relative density of the gas in question. The sections of the piping making up the system must be such as to guarantee a supply of gas sufficient to cover the maximum demand, limiting pressure loss between the gas meter and any apparatus being used to not greater than 1.0 mbar for family II gases and not exceeding 3 mbar for family III (natural gas).

An adhesive data badge is situated inside the front panel; it contains all the technical data identifying the boiler and the type of gas for which the boiler is arranged.

2.3.1 Connection of condensation water trap

To ensure safe disposal of the condensate produced by the flue gases, reference should be made to BS 67998:2000. The boiler incorporates a condensate trap which has a seal of 75mm, therefore no additional trap is required. The condensate should ideally be discharged internally into an internal waste pipe (washing machine/sink waste) or a soil pipe to avoid the risk of freezing. External pipe runs should be avoided, but if it is necessary, the pipework should be at least 32mm and protected from the risk of freezing with a waterproof insulation and the length kept to a minimum and not exceeding 3 m. termination should be into an external gully or purpose made soakaway.

NOTE:
All pipework must have a continuous fall from the boiler and must be resistant to corrosion by condensate, copper or steel is NOT suitable.

It should be noted that the connection of a condensate pipe to a drain may be subject to local building control requirements.

2.3.2 Dealing with condensate (fig.5)

Five suitable drainage points
Five suitable drainage points:
1. Internal drain stack pipe
2. Waste water pipe*
3. External drain or gully*
4. Rainwater hoppers that carry both rain water and foul water*
5. Purpose-made soakaways

* Care should be taken not to contaminate any "Grey Water Systems"

Pipework
Condensate pipework should be plastic, same as used for standard wastewater plumbing. Similarly the drainage system where the condensate discharges to should also be resistant to the acid condensate. Pipework should be kept as short as possible. External runs should be avoided, but when necessary be a minimum of 3 meter in 32 mm diameter pipework and lagged to avoid freezing, this also applies to pipe runs in unheated areas such as garages. To reduce the possibility of condensate being trapped in the pipe, the number of bends should be kept to a minimum. Pipework must be angled down from the boiler with a fall of at least 2.5°. The pipework must be supported at a distance of 0.5 m for inclined runs and 1.0 m for vertical runs.

Condensate traps
Where the condensate drain is not sealed to the discharge connection a trap will be required. The water seal should be 38 mm or more for external discharge and 75 mm or more for internal discharge. When con-
necting to a external stack the trap should be located within the building.

**Stack pipes**
Condensate connections should be at least 450 mm above any bend at the bottom of a stack pipe in a single or multi-story dwelling up to 3 storeys. There are specific requirements when connecting to a stack pipe serving multi-storey buildings greater than 3 storeys. All connections to stack pipes should avoid across flow between other Branch pipes.

**Soakaways**
Any soakaways have to be purpose-made and located as close to the boiler as possible, but clear of the buildings foundations and any buried services. The best option is to purchase a soakaway from a drainage manufacturer and install it to the manufacturer’s recommendation.

**Condensate disposal positioning and termination of the condensate drain pipe**
The condensate pipe should run and terminate internally to the house soil and vent stack or waste pipe. Alternatively, the condensate can be discharged into the rainwater system, or into a purpose-made soak away (condensate absorption point). An alternative condensate waste pipe should be considered where the system could be effected by extreme weather conditions. All connecting drainage pipework should have a fall of at least 2.5° to the horizontal, or approximately 50 mm per metre of pipe run.

### 2.3.3 Requirements for sealed water systems FORMAT DGT HE

The heating system design should be based on the following information:

- **a)** The available pump head is given in fig. 14.
- **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 by-pass 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 or the radiator in the room containing the room thermostat).
- **d)** A sealed system must only be filled by a competent person using one of the approved methods shown in fig. 5/a. The system design should incorporate the connections appropriate to one of these methods.

### 2.3.4 Requirements for sealed water systems FORMAT DGT HE SYSTEM

The heating system design should be based on the following information:

- **a)** The available pump head is given in fig. 14.
- **b)** The appliance is equipped with an internal bypass that operates with system heads (H) greater than 3 m. The maximum flow through the by-pass 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 or the radiator in the room containing the room thermostat).
### 2.4 Characteristicsof 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. Full instructions are supplied with the products.
- For long term protection against corrosion and scale, after flushing it is recommended that an inhibitor such as Sentinel X100 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 (4.5.2) should be checked and cleaned.

### 2.5 Installation of Coaxial Duct (ø 60/100 - ø 80/125)

The coaxial suction and discharge pipes are supplied in a special kit (that can be purchased separately) along with assembly instructions. The diagrams of fig. 6 illustrate some options of different types of flue options allowed and the maximum lengths that can be reached.

### 2.6 Installation of Separate Ducts (ø 80)

The kit with dedicated pipes enables to separate the exhaust fumes pipes from the air suction pipes (Fig. 7):
- For ø 80 pipes, divider code 8093050

#### IMPORTANT:

- The insertion of each additional 90° bend with a diameter of 60/100 (code 8095850) reduces the available section by 1.5 meters.
- The insertion of each additional 90° bend with a diameter of 80/125 (code 8095870) reduces the available section by 2 meters.
- Each additional 45° curve installed a diameter of 60/100 (code 8095550) reduces the available length by 1.0 metres.
- Each additional 45° curve installed a diameter of 80/125 (code 8095970) reduces the available length by 1.0 metres.

**Horizontal Flues Must Be Level**

**NOTE:** Before connecting accessories, it is always advisable to lubricate the internal part of the gaskets with silicon products. Avoid using oils and greases.

### Table 3 - Accessories ø 80

<table>
<thead>
<tr>
<th>Accessories ø 80</th>
<th>Total head loss (mm H2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Inlet</td>
</tr>
<tr>
<td>Air/smoke divider</td>
<td>-</td>
</tr>
<tr>
<td>90° elbow MF</td>
<td>0.15</td>
</tr>
<tr>
<td>45° elbow MF</td>
<td>0.10</td>
</tr>
<tr>
<td>Extension L 1000 (horizontal)</td>
<td>0.10</td>
</tr>
<tr>
<td>Extension L 1000 (vertical)</td>
<td>0.10</td>
</tr>
<tr>
<td>Wall terminal</td>
<td>0.05</td>
</tr>
<tr>
<td>Wall coaxial exhaust *</td>
<td>0.50</td>
</tr>
</tbody>
</table>

* This loss includes the loss of the adaptor 8091401

---

**Fig. 6**

![Diagram of coaxial duct installation](attachment:image.png)

---

**Fig. 7**

![Diagram of separate duct installation](attachment:image.png)
The maximum overall length, resulting from the sum of all the suction and discharge pipes, is determined by the load losses of the single connected accessories and should not exceed 13 mm H2O (version 20 System) - 15 mm H2O (version 25-30-35) (ATTENTION: the total length of each pipe should not exceed 50 m, even if the total loss is below the maximum applicable loss.) See Table 3 for information on the load losses of single accessories and the example of Fig. 7/a for information on how to calculate load losses.

2.6.1 Separate ducts kit

The diagrams of Figure 8 show a couple of examples of the permitted exhausts configurations.

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 4 gives the minimum distances to be observed, with reference to the type of building shown in fig. 9.

Example of allowable installation “25” calculation in that the sum of the head losses of the single fittings is less than 15.0 mm H2O:

<table>
<thead>
<tr>
<th>Inlet</th>
<th>Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 m horiz. pipe ø 80 x 0.15</td>
<td>1.35</td>
</tr>
<tr>
<td>9 m horiz. pipe ø 80 x 0.15</td>
<td>-</td>
</tr>
<tr>
<td>n° 2 90° elbows ø 80 x 0.20</td>
<td>0.40</td>
</tr>
<tr>
<td>n° 1 90° elbows ø 80 x 0.25</td>
<td>-</td>
</tr>
<tr>
<td>n° 1 terminal ø 80</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Total head loss: 1.85 + 2.10 = 3.95 mm H2O

NOTE
Before connecting accessories, it is always advisable to lubricate the internal part of the gaskets with silicon products. Avoid using oils and greases.

LIST OF ø 80 ACCESSORIES

1 Air/smoke divider code 8093050
3 a Extension L. 1000 code 8077351 (6 pz.)
3 b Extension L. 900 code 8077350 (6 pz.)
7 a Additional 45° MF curve code 8077451 (6 pz.)
7 b Additional 90° MF curve code 8077450 (6 pz.)
9 Manifold, code 8091401
10 Tile for joint code 8091300
11 Terminal for roof exit L. 1381 code 8091205
12 —
13 Union suction/exhaust code 8091401
14 Coaxial exhaust ø 80/125 L. 885 code 8096253
2.8 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, or incorrect connection of external controls. Any fault or component failure due to incorrect connection of external controls is not covered in the warranty.

2.8.1 External controls (fig. 10)

Including connection of the RF clock kit Sime part number 7102604 (BCG part 38493). The heating demand on Format DGT boilers can be controlled externally by either a voltage free or 240 volt demand. In either case the boiler MUST have a permanent power supply.

Voltage free option

A voltage free control, room thermostat or programmable room thermostat, can be connected after removal of the wire link, to the TA connections on the voltage free

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

(*) For condensing boilers this distance can be reduced to 25 mm without effecting boiler performance, but it will be necessary to protect the surfaces from the effects of condensate.
input connector.
If required a combination of voltage free room thermostat and a separate voltage free time clock can be connected. The room thermostat to the TA connection, and the time clock to the OP connection, after removing the links.

240 volt option
The heating demand can be controlled by a 240 volt switched demand—such as a room thermostat, time clock or the demand a Y or S plan.
Connect the switched demand to terminal 1 on the 240 volt expansion board, and remove the link in the TA connection on the voltage free inputs (if the TA link is not removed the boiler will work in the heating mode without a demand).

2.8.2 Connection of RF Clock
kit Sime part number 7102604 (BCG part 138493)
Ensure that the boiler is isolated from the power supply.
To enable ease of fitting a 1 meter cable is supplied within the boiler.
Mount the receiver close to the boiler at least 1.5 metres above the floor. Avoid any location that would cause receptions problems. Connect the boiler to the receiver as shown. Remove the wire link in the TA connection at the boiler and do not forget to link the “L” and “1” terminals at the RF Receiver (fig. 10/a).

2.8.3 Climatic control option
The boiler is designed for connection to an external temperature sensor, supplied on request (code 8094101) in conjunction with remote control (code 8092226), which can automatically regulate the temperature value of the boiler output according to the external temperature. For installation, follow the instruction in the package.

2.8.4 Use with different electronic systems
Some examples are given below of boiler systems combined with different electronic systems.
Where necessary, the parameters to be set in the boiler are given.
The electrical connections to the boiler refer to the wording on the diagrams (fig. 11-11/a).
Zone valve control is activated with every heating request from remote control.

Description of the letters indicating the components shown on the system diagrams:
M C.H. flow
R C.H. return
CR Remote control CR 63
SE External temperature sensor
TA 1-2 Zone room thermostat
VZ 1-2 Zone valve
RL 1-2 Zone relay
Sl Hydraulic separator
P 1-2 Zone pump
SB D.H.W. sensor
PB D.H.W. pump
IP Floor system
EXP Expansion card (code 8092240)
VM Three-way mixer valve
TSB Safety thermostat low temperature

1 BASIC SYSTEM
SYSTEM WITH A DIRECT ZONE AND ROOM THERMOSTAT, OR WITH A REMOTE CONTROL (Code 8092219), KIT EXPANSION REMOTE CONTROL (Code 8092240) AND EXTERNAL SENSOR (Code 8094101)
2 BASIC SYSTEM
MULTI-ZONE SYSTEM WITH VALVE, ROOM THERMOSTAT AND EXTERNAL SENSOR (Code 8094101)

3 BASIC SYSTEM
MULTI-ZONE SYSTEM WITH PUMP, ROOM THERMOSTATS AND EXTERNAL SENSOR (Code 8094101)

4 BASIC SYSTEM
MULTI-ZONE SYSTEM WITH VALVE, ROOM THERMOSTATS, REMOTE CONTROL (Code 8092219), KIT EXPANSION REMOTE CONTROL (Code 8092240) AND EXTERNAL SENSOR (Code 8094101)

PARAMETERS SETTINGS
Set the opening time of the VZ zone valve:
PAR 17 = SYSTEM PUMP ACTIVATION DELAY
5 BASIC SYSTEM
MULTI-ZONE SYSTEM WITH PUMPS, ROOM THERMOSTATS, REMOTE CONTROL (Code 8092219), KIT EXPANSION REMOTE CONTROL (Code 8092240) AND EXTERNAL SENSOR (Code 8094101)

NOTE:
The heating is set from the remote control for the first zone and from the boiler panel for the other zones. If there is a request for heat at the same time, the boiler is activated at the highest temperature setting.

6 MIXER VALVE SYSTEM
SYSTEM WITH ONE DIRECTED ZONE, AND ONE MIXER ZONE
NOTE (See section 2.8.1):
- If "TA" is used in low voltage (24 VDC) connect to clamps 5-6 of the terminal board in the panel, after having removed the jumper.
- If "TA" (230 V) is used connect to clamp 1 of the board.
- If a "OP" is used connect the contact to clamps 7-8 of the terminal board in the panel, after having removed the jumper.
- Any power supply of a "OP" at 230 V can be withdrawn from clamps 4-5 of the board.

CONNECTOR SPARE PART CODES:
- CN3 code 6318268
- CN4 code 6318275
- CN5 code 6318253
- CN6 code 6318266
- CN7 code 6319115

Fig. 11
NOTE (See section 2.8.1):
- If “TA” is used in low voltage (24 VDC) connect to clamps 5-6 of the terminal board in the panel, after having removed the jumper.
- If “TA” (230 V) is used connect to clamp 1 of the board.
- If a “OP” is used connect the contact to clamps 7-8 of the terminal board in the panel, after having removed the jumper.
- Any power supply of a “OP” at 230 V can be withdrawn from clamps 4-5 of the board.

CONNECTOR SPARE PART CODES:
- CN3 code 6316266
- CN4 code 6316267
- CN5 code 6316253
- CN6 code 6316266
- CN7 code 6319114

Fig. 11/a
3 CHARACTERISTICS

3.1 CONTROL PANEL

1 - DESCRIPTION OF DISPLAY ICONS

- SUMMER MODE ICON
- WINTER MODE ICON
- D.H.W. MODE ICON
- HEATING MODE ICON
- BURNER LIT ICON
- LOCKOUT DUE TO NO IGNITION/FLAME DETECTION
- RESET REQUIRED
- MAIN DIGITS

2 - DESCRIPTION OF CONTROLS

- OPERATING MODE/RESET
  By pressing the key in succession, pass to the summer and winter function (stand-by function if permanent on the key more than two second).
  RESET is only available if a resettable anomaly is signalled.

- D.H.W. SET
  Press the key to display the D.H.W. temperature value set

- HEATING SET
  Press the key to display the heating temperature value set (value not relative to the remote control)

- DECREASE
  Pressing this key decreases the value set

- INCREASE
  Pressing this key increases the value set

3 - LED GREEN

ON = Indicates the presence of electrical voltage. It switches momentarily every time the keys are pressed. It can be disabled by setting PAR 3 = 0.

4 - LED RED

OFF = Normal operation
ON = Boiler anomaly signalled
Flashing when the control panel buttons are pressed inside the PARAMETERS SECTION.
3.2 ACCESS TO INSTALLER’S PARAMETERS

For access to the installer’s parameters, press simultaneously the ( and ) keys for 5 seconds.

The red LED flashes and the display shows:

The parameters can be scrolled with or .

To enter the parameter press or . The value set flashes, the display shows:

Proceed as follows to change the set value:
– set the new value using or .
– confirm the set value using or .

Press 0 to exit the parameters section. The display is shown automatically after 5 minutes. The parameters section contains the alarms log, info and meters (display only).

3.2.1 Replacing the board or resetting parameters

If the electronic board is replaced or reset, or the type of gas used is changed, it is necessary to configure PAR 01 and PAR 02 by associating the following values to each type of boiler to be able to restart the boiler:

NOTE: the boiler panel has a label with the values that have to be set for PAR 01 and PAR 02 (fig. 19).

### LIGHTING PARAMETERS

#### FAST CONFIGURATION

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Combustion configuration</td>
<td>– = ND</td>
<td>=</td>
<td>=</td>
<td>12</td>
</tr>
<tr>
<td>C2</td>
<td>Hydraulics configuration</td>
<td>– = ND</td>
<td>=</td>
<td>=</td>
<td>12</td>
</tr>
<tr>
<td>C3</td>
<td>Disabling of the green LED</td>
<td>0 = Disabled</td>
<td>=</td>
<td>=</td>
<td>0</td>
</tr>
<tr>
<td>C4</td>
<td>Correction of external probe values</td>
<td>-5 ... 05</td>
<td>°C</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>C5</td>
<td>Default time for keypad locking</td>
<td>0 ... 100</td>
<td>Min.</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>C6</td>
<td>Gas</td>
<td>00 ... 81</td>
<td>rpm x 100</td>
<td>01 from 0.1 to 10.0</td>
<td>00</td>
</tr>
</tbody>
</table>

#### D.H.W. - HEATING PARAMETERS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Combustion configuration</td>
<td>– = ND</td>
<td>=</td>
<td>=</td>
<td>12</td>
</tr>
<tr>
<td>D2</td>
<td>Hydraulics configuration</td>
<td>– = ND</td>
<td>=</td>
<td>=</td>
<td>12</td>
</tr>
<tr>
<td>D3</td>
<td>Disabling of the green LED</td>
<td>0 = Disabled</td>
<td>=</td>
<td>=</td>
<td>0</td>
</tr>
<tr>
<td>D4</td>
<td>Correction of external probe values</td>
<td>-5 ... 05</td>
<td>°C</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D5</td>
<td>Default time for keypad locking</td>
<td>0 ... 100</td>
<td>Min.</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

#### PARAMETERS RE-SET

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Reset default parameters</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
</tbody>
</table>

* To reset the circuit board to the default settings, set PAR48 to 1. PAR1 and PAR2 will need to be set as shown in 3.2.1.

### ALARMS (visualization)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td>Code of last error</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A1</td>
<td>Code of last error - 1</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A2</td>
<td>Code of last error - 2</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A3</td>
<td>Code of last error - 3</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A4</td>
<td>Code of last error - 4</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A5</td>
<td>Code of last error - 5</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A6</td>
<td>Code of last error - 6</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A7</td>
<td>Code of last error - 7</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A8</td>
<td>Code of last error - 8</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A9</td>
<td>Code of last error - 9</td>
<td>=</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
</tbody>
</table>

### INFO (Display)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>I0</td>
<td>External sensor temperature</td>
<td>-9 ... 99</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I1</td>
<td>C.H. 1 sensor temperature</td>
<td>-9 ... 99</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I2</td>
<td>C.H. 2 sensor temperature</td>
<td>-9 ... 99</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I3</td>
<td>Fumes sensor temperature</td>
<td>-9 ... 99</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I4</td>
<td>Auxiliary sensor AUX temperature</td>
<td>-9 ... 99</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I5</td>
<td>Set of effective heating temperature</td>
<td>PAR 13 ... PAR 14</td>
<td>°C</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I6</td>
<td>Level ionization flame</td>
<td>00 ... 99</td>
<td>%</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I7</td>
<td>Fan speed</td>
<td>00 ... 99</td>
<td>100 rpm</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I8</td>
<td>Flow rate D.H.W. flow meter</td>
<td>00 ... 99</td>
<td>l/min</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

### COUNTERS (Display)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>UNIT OF MEASUREMENT</th>
<th>INC/DEC UNIT</th>
<th>DEFAULT SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>c0</td>
<td>Number of hours of operation of the burner</td>
<td>00 ... 99</td>
<td>h x 100</td>
<td>01 from 0.0 to 9.9</td>
<td>00</td>
</tr>
<tr>
<td>c1</td>
<td>Number of ignitions of the burner</td>
<td>00 ... 99</td>
<td>x 1,000</td>
<td>01 from 0.0 to 9.9</td>
<td>00</td>
</tr>
<tr>
<td>c2</td>
<td>Number of errors</td>
<td>00 ... 99</td>
<td>y</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>c3</td>
<td>Number of accesses of installer parameters</td>
<td>00 ... 99</td>
<td>x</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>c4</td>
<td>Number of accesses of OEM parameters</td>
<td>00 ... 99</td>
<td>x</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
3.3 EXTERNAL SENSOR

If there is an external sensor, the heating settings SET can be taken from the climatic curves according to the external temperature and, in any case, limited to the range values described in point 3.2 (parameters PAR 13 and PAR 14).

The climatic curve to be set can be selected from a value of 3 and 40 (at step 1). Increasing the steepness of the curves of fig. 14 will increase the output temperature as the external temperature decreases.

3.5 CARD FUNCTIONING

The electronic card has the following functions:
- Antifreeze protection of the heating circuits.
- Ignition and flame detection system.
- Control panel setting for the power and the gas for boiler functioning.
- Anti-jammed for the pump which is fed for a few seconds (10") after 48 hours of inactivity.
- Chimney sweep function which can be activated from the control panel.
- Temperature which can be shifted with the external sensor connected.
- Automatic regulation of the ignition power and maximum heating. Adjustments are managed automatically by the electronic card to guarantee maximum flexibility in use of the system.
- Interface with the following electronic systems: remote control CR 73 combined with expansion card kit code 8092240.

3.6 TEMPERATURE DETECTION SENSOR

Table 4 shows the resistance values of the heating, D.H.W. and fumes sensor.

If the heating sensor (SM) and fumes sensor (SF) is faulty or open circuit, the boiler will not function on either heating or D.H.W.

If the D.H.W. sensor (SB) is faulty or open circuit, the boiler set in winter mode will only work with heating function; if set in summer mode, D.H.W. function will be enabled only.

### TABLE 4 (SM - SF - SB sensors)

<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>5.828</td>
</tr>
<tr>
<td>50</td>
<td>4.161</td>
</tr>
<tr>
<td>60</td>
<td>3.021</td>
</tr>
<tr>
<td>70</td>
<td>2.229</td>
</tr>
<tr>
<td>80</td>
<td>1.669</td>
</tr>
</tbody>
</table>

3.6 ELECTRONIC IGNITION

Ignition and flame detection is controlled by a single electrode on the burner which guarantees reaction in the case of accidental extinction or lack of gas within one second.

#### 3.6.1 Functioning cycle

Burner ignition should occur within 10 seconds of the opening of the gas valve. If after three attempts the ignition is not detected the boiler will lockout (ALL 06).

- **Lack of gas**
  The ignition electrode will discharge for a maximum of 10 seconds. If after three attempts the ignition is not detected the boiler will lockout (ALL 06). This can happen the first time a boiler is switched on, or after long periods of inactivity. It can also be caused by a closed gas cock or a gas valve not operating.

- **No ionisation**
  The boiler will spark for 10 seconds, if after 3 attempts the ionisation is not detected, the boiler will lockout (ALL 06). This could be due to a poor connection or break in the ionisation cable. Check also that the cable is not shorted, badly worn or distorted.

In the case of a sudden loss of voltage, the burner will immediately switch off. When the voltage is restored, the boiler will automatically start up again.

3.7 WATER PRESSURE SWITCH

The water pressure switch (C fig. 15) intervenes, blocking burner functioning, if it detects that there is insufficient pressure in the boiler (< 0.6 bar).

To restore the boiler operation, increase the system pressure to 1 - 1.2 bar.

3.8 HEAD AVAILABLE TO SYSTEM

Residual head for the heating system is shown as a function of rate of flow in the graph in fig. 14. To obtain the maximum head available to the system, turn off the bypass by turning the union to the vertical position (fig. 15).
Fig. 14

RESIDUAL HEAD (mbar)
FLOW RATE (l/h)

Bypass on
Bypass off

Fig. 15

LEGENDA
A Bypass on
B Bypass off
C Water pressure valve

REFERENCE POSITION BY-PASS
PLEASE NOTE: During routine servicing and after any maintenance or change of part of the combustion circuit, the following must be checked:
- The integrity of the flue system and the flue seals
- The integrity of the boiler combustion circuit and relevant seals.
- The operational working gas pressure as described in section 4.7.1
- The combustion performance as described in section 4.8.1

4.1 GAS VALVE

The boiler is supplied as standard with a gas valve, model SIT 848 SIGMA (Fig. 16).

4.2 GAS CONVERSION (Fig. 17)

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
- Close the gas cock.
- Replace the nozzle (1) and the gasket (2) using those supplied in the conversion kit.
- Test all the gas connection using leak detection fluid. Do not use open flames.
- Apply the nameplate with the new gas flow layout.
- See section 4.2.2 to measure the CO₂ and adjustment of the gas valve if required.

4.2.1 New fuel configuration

Access the parameters section by pressing the control panel keys [ and ] at the same time for 5 seconds. The red LED flashes and the display shows:

```
01
```

Scroll the parameters using [ or ].
To enter the fuel configuration parameter PAR 01, use [ or ].
The set value **flashes** and if the boiler in question is a 20 System with methane, the display shows:

```
02
```

For the 20 System boiler to function with LPG, press [ until 06 appears. Confirm this value using [ or ].
Exit the parameters section by pressing [.

The table below gives the values to set when the supply gas is changed:

<table>
<thead>
<tr>
<th>GAS MODEL</th>
<th>PAR 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHANE (G20)</td>
<td>02</td>
</tr>
<tr>
<td>20 System - 25</td>
<td>03</td>
</tr>
<tr>
<td>30</td>
<td>03</td>
</tr>
<tr>
<td>35</td>
<td>04</td>
</tr>
<tr>
<td>PROPANE (G31)</td>
<td>06</td>
</tr>
<tr>
<td>20 System - 25</td>
<td>07</td>
</tr>
<tr>
<td>30</td>
<td>08</td>
</tr>
<tr>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

4.2.2 Calibrating the gas valve pressures

This can only be done using a flue gas analyser:
- If the combustion reading is greater than the acceptable value AND the integrity of the complete flue system and combustion seals have been verified, and the inlet gas pressure has been verified then adjustments to the gas valve can be made as described below. Make only small adjustments (1/8 turn max), and allow time for the combustion analysis to be made before making further adjustments.

Sequence of operations:

1) Press buttons [ and ] at the same time for 5 seconds. Chimney sweep mode, see 4.5.1 (Lo) will appear on the display and the boiler will work at minimum power.

2) Press button [ to raise the boiler to maximum power (Hi).

3) Determine the CO₂ values at max power stated below, if required adjust using the capacity step (5 fig. 16):

<table>
<thead>
<tr>
<th>Boiler model</th>
<th>MAX power CO₂ (Methane)</th>
<th>CO₂ (Propane)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25-30-35</td>
<td>9.0 ±0.3</td>
<td>10.0 ±0.3</td>
</tr>
</tbody>
</table>

4) Press button [ to bring the boiler to minimum power (Lo).

5) Determine the CO₂ values at min power stated below, if required adjust using the OFF-SET adjustment screw (6 fig. 16):

<table>
<thead>
<tr>
<th>Boiler model</th>
<th>MIN power CO₂ (Methane)</th>
<th>CO₂ (Propane)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25-30-35</td>
<td>9.0 ±0.3</td>
<td>10.0 ±0.3</td>
</tr>
</tbody>
</table>

6) Press buttons [ and ] several times to verify the pressures; if necessary, make the appropriate corrections.

7) Press button [ to exit the function.

4.3 CO / CO₂ RATIO

<table>
<thead>
<tr>
<th>CO ppm</th>
<th>CO₂ ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.001</td>
</tr>
<tr>
<td>400</td>
<td>0.004</td>
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</tbody>
</table>
4.4 DISASSEMBLING THE SHELL

To simplify maintenance operations on the boiler, it is also possible to completely remove the shell, as shown in figure 19. Turn the control panel to move it forward and be able to access the internal components of the boiler.

4.5 MAINTENANCE

To guarantee the operation and efficiency of the appliance it must be serviced regularly, dependant on usage, but at least annually by a qualified Gas Safe Registered engineer. During maintenance operations, it is important to verify that the condensate trap contains water (this check is particularly important if the generator has not been used for extended periods of time). If necessary, the condensate trap can be filled using the filling point provided (fig. 20). Instead, to clean the exchanger and the burner, do in the following way (fig. 20):

- Empty the condensation-collecting tray.
- Remove the sleeve.
- Spray the water jet inside of the burner and the exchanger in order to remove dust and combustion residue. DO NOT USE CHEMICAL AGENTS OR STEEL BUSHES.
- Remove the condensation-collecting tray. Clean it and put it back tightening the fixing nuts with a torque wrench.
- Having re-assembled the tray, check its sealing with a leak detector.

4.5.1 Chimney sweep function

To check boiler combustion, press at the

---

**Fig. 19**

*Codice/Code 8108110 Modello/Model FORMAT DGT HE 25 Matricola/Serial n. 9999999999 PAR 1 = 02 (METANO)/ 06 (GPL) PAR 2 = 01*

**Fig. 20**

*FLUE GAS CHAMBER SLEEVE TRAY TIGHTENING TORQUE : 2 Nm*
same time the installer’s key (− ↔ +) for a few seconds. The chimney sweep function will switch on and will continue for 15 minutes. During the 15 minutes functioning of chimney sweep function, pressing the keys (− and +) take the boiler respective at maximum (Hi) and at minimum (Lo) power. From that moment, the boiler will start working in heating mode at maximum power, with cut off at 80°C and re-ignition at 70°C.

Before activating the chimney sweep function make sure that the radiator valves or zone valves are open.

The test can also be carried out with the boiler working in D.H.W. mode. For this, after activating the chimney sweep function, open one or more hot water taps. Under these conditions, the boiler will function at maximum power with the D.H.W. kept at between 60°C and 50°C. During the test, the hot water taps must remain open. For exit to the chimney sweep function press the key of the control panel. The chimney sweep function will automatically switch off after 15 minutes from the activation.

4.5.2 Clean heating water filter (fig. 21)

To clean the filter, turn off the system flow/return valves, turn control board power off, remove the casing and empty the boiler through the relevant drain. Place a collecting vessel under the filter. Use pliers to remove the filter clean it removing impurities and lime scale deposits.

4.6 FUNCTIONING ERRORS

When there is a functioning error; an alarm appears on the display and switch on the red led. Descriptions of the errors with relative alarms and solutions are given below (if a error persists contact a authorised service engineer):

- FUMES DISCHARGE ERROR ALARM 01
  The fumes thermostat has intervened. If the condition causing the problem persists for two minutes, the boiler stops for an enforced period of thirty minutes. At the end of this period, the boiler re-attempts ignition.

- LOW WATER PRESSURE ERROR ALARM 02 (fig. 22/a)
  If the pressure detected by the water pressure valve is lower than 0.5 bar, the boiler stops and the display shows the alarm “AL 02”. Increase the system pressure to between 1.0 and 1.2 bar (use pressure gauge, fig 22/a) using the external filling loop. The boiler will automatically resume operating.

- HEATING SENSOR ERROR ALARM 05
  When C.H. sensor (SM) is open or short circuited, the boiler will not function and the display will show the alarm “AL 05”.

- LOCKOUT ALARM 06 (fig. 22/b)
  If the flame control has not detected the presence of the flame after a complete ignition sequence, or for any other reason the card cannot “see” the flame, the boiler will stop and the display will show the alarm “AL 06”. Press the key of the controls to start up the boiler again.

- SAFETY THERMOSTAT ERROR ALARM 07 (fig. 22/c)
  Opening of the safety thermostat will turn of the burner; the display will show AL07. If the problem persists for more than one minute, the boiler will stop and the red LED will turn on. Press the key of the controls to start up the boiler again.

- FLAME DETECTION ERROR ALARM 08
  If a flame is detected when one should not be present, the boiler will stop and the display will show “AL 08”.

- AUXILIARY SENSOR ERROR ALARM 10
  ONLY FOR BOILER WITH SOLAR PLANT COUPLING (PAR 2 = 2):
  D.H.W. inlet probe anomaly. When the probe is open or short circuited the boiler looses the solar function and the display shows anomaly AL 10.

- ACTIVATION OF THE EXHAUST FUMES SENSOR ERROR “AL 13” (fig. 22/d)
  The activation of the exhaust fumes sensor causes the boiler to stop and the display will show AL 13. Press the key of the controls to start
Ensure that the pump has been manually and pressurised to 1.5 bar. With the boiler on standby fill the system and check the operational (working) gas inlet pressure.

Set up the boiler to operate at maximum rate as described in 4.5.1 (Chimney sweep).

With the boiler operating in the maximum rate condition check that the operational (working) gas pressure at the inlet test point (see fig 16 item 1) is 21 mb +/- 2 mb.

Ensure that this inlet pressure can be obtained with all other gas appliances in the property working.

The boiler will attempt to light. Press "*" mode key” (fig. 12). The burner will extinguish.

Turn on a DHW tap fully (preferably the bath tap).

Set the controls to the required values as shown in the user guide.

Complete the Benchmark sheet enclosed in this manual.

Explain controls and operation to the user. Leave all documentation with the user.

4.8 ROUTINE SERVICE

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.

4.8.1 Combustion Check

Competence to carry out the check of combustion performance.

PLEASE NOTE: BS 6798: 2009 Specification for installation and maintenance of gas-fired boilers of rated input not exceeding 70 kw net advises that:

* The person carrying out a combustion measurement should have been assessed as competent in the use of a flue gas analyser and the interpretation of the results;

* The flue gas analyser should be one meeting the requirements of BS7927 or BS-EN50379-3 and be calibrated in accordance with the analyser manufacturers requirements, and

* Competence can be demonstrated by satisfactory completion of the CPA1 ACS assessment which covers the use of electronic portable combustion gas analysers in accordance with BS7967, parts 1 to 4.

Connect the flue gas analyser to the flue gas sampling point as shown in the diagram and check combustion as described in 4.2.2 and 4.3 (fig. 22/e).

4.8.2 Burner inspection

- Isolate from mains
- Remove case cover
- Isolate gas
- Drop down control case
- Remove ignition lead
- Disconnect gas pipe from gas valve to burner mixing arm
- Disconnect air sensing tube
- Remove air inlet to fan
- Remove 3 times screws holding arm to main heat exchanger body
- Remove arm with fan attached
- Check seals and replace if necessary
- Draw out main burner
- Replace in reverse order

Test for gas tightness

4.8.3 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.

4.8.4 Condensate Trap

The condensate trap would not normally require removal during service, but can be checked whilst the burner assembly is removed.

Carefully pour water into the heat exchanger and check that it flows freely to the drain.

Should it require removal, firstly remove the two wire clips securing the condensate drain rubber pipe to the heat exchanger and the condensate trap.

Remove the pipe.

Remove the 1/2" nut securing the condensate trap to the combustion compartment.

Disregard the drain pipe from the trap.

Clean the trap and refit in reverse order.
### GAS BOILER SYSTEM 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.

#### CONTROLS

**Time and Temperature Control to Heating**
- Room Thermostat
- Programmable Room Thermostat
- Load/Weather Compensation
- Optimum Start Control

**Time and Temperature Control to Hot Water**
- Cylinder Thermostat and Programmer/Timer

**Heating Zone Valves**
- Fitted
- Not Required

**Hot Water Zone Valves**
- Fitted
- Not Required

**Thermostatic Radiator Valves**
- Fitted
- Not Required

**Automatic Bypass to System**
- Fitted
- Not Required

**Boiler Interlock**
- Provided

#### ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer’s instructions
- Yes
- No

What system cleaner was used?

What inhibitor was used? Quantity

#### CENTRAL HEATING MODE

Measure and Record:

**Gas Rate**
- m³/hr
- ft³/hr

**Burner Operating Pressure (if applicable)**
- mbar
- Gas Inlet Pressure (at maximum rate)

**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

What type of scale reducer has been fitted?

#### DOMESTIC HOT WATER MODE

Measure and Record:

**Gas Rate**
- m³/hr
- ft³/hr

**Burner Operating Pressure (at maximum rate)**
- mbar
- Gas Inlet Pressure (at maximum rate)

**Cold Water Inlet Temperature**
- °C

**Hot water has been checked at all outlets**
- Yes
- Temperature

**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

**CO₂**
- %
- ppm

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

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.*
**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>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Signature</td>
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<td></td>
</tr>
</tbody>
</table>
If an electrical fault occurs on the appliance the preliminary electrical system checks 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 disconnected, meter set on $\Omega$ (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 $\Omega$ (ohm). If the resistance is greater than 1 $\Omega$ (ohm) check all earth wires for continuity and all contacts are clean and tight. If the resistance to earth is still greater than 1 $\Omega$ (ohm) then this should be investigated further.

5.2 SHORT CIRCUIT CHECK

Switches turned FULL ON - meter set on $\Omega$ (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 $\Omega$ (ohm) x 100 scale. Repeat it with leads from L to E. If meter reads less than infinity ($\infty$) 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 $\Omega$ (ohm) x 100 scale. All switches including thermostat on test leads from L to E - if meter reads other than infinity ($\infty$) 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.
6 REPLACEMENT OF PARTS

6.1 REMOVAL OF BURNER ASSEMBLY
- Isolate from mains
- Remove case cover
- Isolate gas
- Drop down control case
- Remove ignition lead
- Disconnect gas pipe from gas valve to burner mixing arm,
- Disconnect air sensing tube
- Remove air inlet to fan
- Remove 3 times screws holding arm to main heat exchanger body
- Remove arm with fan attached
- Check seals and replace if necessary
- Draw out main burner
- Replace in reverse order
- Test for gas tightness

6.2 REMOVAL OF FAN UNIT
- Isolate from mains
- Remove case cover
- Isolate gas supply
- Drop down control cover
- Remove ignition lead
- Disconnect gas pipe from gas valve and burner mixing arm
- Disconnect air sensing tube
- Remove air inlet to fan
- Unplug 2 x cables from fan
- Remove 3 times screws to main heat exchanger body
- Remove arm with fan attached
- Check seals and replace if necessary
- Loosen 2 x 8mm bolts from fan and remove
- Remove fan
- Remove restrictor plate and fit to new fan
- Refit in reverse order
- Re commission boiler
- Test for gas tightness

6.3 HEATING THERMISTOR (SM SENSOR)
- Remove case cover
- Unclip thermistor from flow pipe
- Disconnect cable
- Refit in reverse order
- Ensure cables are vertical

6.4 DOMESTIC HOT WATER THERMISTOR
- Isolate boiler
- Remove cover
- Close cold water supply isolation valve
- Turn on D.H.W tap
- Remove clip

6.5 SAFETY STAT
- Isolate from mains
- Remove case cover
- Pull clip forwards slide stat upwards
- Remove 2 black wires connected
- Apply heat sink compound to new stat
- Replace in reverse order

6.6 FLUE STAT
- Isolate from mains
- Remove case cover
- Loosen clip holding air intake tube to flue hood and remove
- Unplug cable from stat
- Loosen stat using 15mm spanner and remove
- Refit in reverse order

6.7 IGNITION ELECTRODE
- Isolate from mains
- Remove case cover
- Remove grommet from rear of PCB board cover and unplug ignition lead
- Remove 2 x screws
- Pull electrode forward
- Replace in reverse order
- Ensure correct gap set

6.8 EXPANSION VESSEL
- Isolate from mains
- Remove case cover
- Isolate flow and return valves
- Drain boiler using fitted drain vent
- Disconnect expansion pipe
- Remove expansion securing nut
- Remove vessel
- Check new vessel for correct pressure
- Refit in reverse order

6.9 GAS VALVE
- Isolate from mains
- Remove cover
- Isolate gas supply
- Disconnect leads from gas valve
- Disconnect sensing tube
- Remove gas valve
- Refit in reverse order ensuring seals are replaced as required in reverse order
- Setting the gas valve procedure for FORMAT DGT HE:

Connect flue gas analyser
Ensure the capacity step shutter (5 fig. 16) to be fully open then switch on the boiler:
Press and hold simultaneously the [ ] and [ ] button for a few seconds to light the boiler:
- Press the [ ] button to ensure that the boiler is on its minimum output:
  (A) Adjust the capacity step shutter (5 fig. 6) to achieve the CO2 value shown in the table.
- Adjust the OFF-SET screw (6 fig. 16) to achieve the CO2 value shown in the table.
- Press the [ ] button to ensure that the boiler is on its maximum output.
  Check the CO2 to be within the values shown in the table, if necessary adjust with the capacity step shutter.
- Re-check and confirm the settings at minimum and maximum output by pressing [ ] and [ ] buttons.
- Check for gas soundness.

6.10 MAIN HEAT EXCHANGER
- Isolate from mains
- Remove cover
- Isolate flow and return
- Isolate gas
- Drop down control case
- Remove ignition lead
- Disconnect gas pipe from gas valve to burner mixing arm,
- Disconnect air sensing tube
- Remove air inlet to fan
- Remove 3 screws holding arm to main heat exchanger body
- Remove arm with fan attached
- Check seals and replace if necessary

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- Draw out main burner
- Drain boiler using fitted drain vent
- Remove condense sensor lead
- Remove flue stat lead
- Remove overheat lead and SM sensor lead
- Remove flow pipe clip and remove pipe from main heat exchanger and technil assembly
- Remove return pipe from heat exchanger and pump housing
- Remove condense pipe from condense collector
- Remove 4 screws from right hand and left hand side of main heat exchanger
- Drop down heat exchanger and draw forwards
- Refit in reverse order
- Check all seals
- Check gas joints for tightness

6.14 DIVERTER VALVE MOTOR HEAD
- Isolate mains
- Remove cover
- Remove pin from valve head body
- Disconnect lead
- Lift motor upwards
- Refit in reverse order

6.15 D.H.W. SENSOR (SS)
- Isolate boiler
- Remove cover
- Isolate cold inlet
- Open hot tap
- Remove clip
- Pull upwards and remove, catching excess water
- Refit in reverse order

6.19 DHW FLOW SENSOR
- Isolate boiler
- Remove cover
- Remove cable from flow sensor and pull forward
- Lift flow sensor blue clip pull forward
- Refit in reverse order

6.20 CONDENSE SENSOR
- Isolate boiler
- Remove cover
- Remove air inlet duct
- Remove 2 red wires to flue sensor remove flue above boiler
- Remove 2 screws holding flue hood
- Remove 2 screws holding top plate
- Remove condense tube left hand side
- Lift top plate upwards
- Remove exhaust pipe upwards
- Remove flue restrictor
- Cover pump housing to catch excess condense
- Unscrew sensor removing plug lift through exhaust outlet
- Refit in reverse order ensuring all seals and flue restrictor is fitted

6.11 PUMP HEAD
- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Drain boiler using drain vent
- Remove electrical lead from pump
- Remove 4 x fixing screws from pump housing catching any excess water
- Pull pump forward
- Refit in reverse order

6.12 DOMESTIC HEAT EXCHANGER
- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Turn on D.H.W tap
- Close cold water supply isolation valve
- Drain boiler using drain vent
- Remove 2 screws securing plate heat exchanger
- Remove plate heat exchanger catching any excess water
- Ensure that the four O rings are removed from the technil assembly
- Fit new O rings supplied with new heat exchanger to the heat exchanger
- Refit in reverse order

6.16 AUTO AIR VENT
- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Drain boiler using drain vents
- Pull clip forwards and lift auto air vent upwards
- Refit in reverse order

6.21 CONDENSE TRAP
- Isolate boiler
- Remove cover
- Remove air inlet duct
- Remove 2 condense pipes from condense trap
- Remove locking nut holding trap to bracket
- Pull trap downwards and forwards
- Refit in reverse order

6.17 DIVERTER CARTRIDGE
- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Drain boiler using drain vent
- Remove air inlet duct
- Disconnect return pipe from pump housing
- Disconnect water gauge pipe from pump housing
- Unplug pump removing top cover
- Remove 2 x screws holding pump and pull forwards catching any excess water
- Remove motor head as 6.14
- Remove pin lift cartridge housing upwards catching any excess water
- Refit in reverse order ensure cartridge is locked in position

6.18 WATER PRESSURE TRANSDUCER
- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Drain boiler using drain vent
- Remove clip below flow switch

6.22 FLUE HOOD
- Isolate boiler
- Remove cover
- Remove air inlet duct
- Remove flue
- Remove condense pipe left hand side of duct
- Remove 2 screws rear of flue duct
- Remove 2 screws top of boiler case
- Lift out flue duct
- Refit in reverse order
- Checking seals
6.23 MANUAL BY-PASS

- Isolate boiler
- Remove cover
- Isolate flow and return valves
- Drain boiler using drain vent
- Remove clip
- Pull bypass valve forward
- Refit in reverse order
- Checking seals
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* Recommended stock parts - Componenti da tenere a scorta

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Products reference:
8108110: Format DGT HE 25
8108112: Format DGT HE 30
8108114: Format DGT HE 35

Check the correspondence with the boiler data plate.

* Recommended stock parts - Componenti da tenere a scorta

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* Recommended stock parts - Componenti da tenere a scorta*

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Products reference:

8108116 : Format DGT HE 12 System
8108118 : Format DGT HE 20 System

Check the correspondence with the boiler data plate.

* Recommended stock parts - Componenti da tenere a scorta
Dealing with Condensate

Five suitable drainage points
1. Internal drain stack pipe
2. Waste water pipe *
3. External drain or gully *
4. Rainwater hoppers that carry both rain water and foul water *
5. Purpose-made soakaways
   * Care should be taken not to contaminate any “Grey Water Systems”

Pipework
Condensate pipework should be plastic, same as used for standard wastewater plumbing.
Similarly the drainage system where the condensate discharges to should also be resistant to the acidic condensate.
Connection to the internal trap in the boiler can be achieved by using a 20mm solvent weld socket.
Pipework should be kept as short as possible.
External runs should be avoided, but when necessary be a minimum of 3 meters in 32mm diameter pipework and lagged to avoid freezing, this also applies to pipe runs in unheated areas such as garages.
To reduce the possibility of condensate being trapped in the pipe, the number of bends should be kept to a minimum.
Pipework must be angled down from the boiler with a fall of at least 2.5.
The pipework must be supported at a distance of 0.5m for inclined runs and 1.0m for vertical runs.

Condensate traps
Where the condensate drain is not sealed to the discharge connection a trap will be required. The water seal should be 38mm or more for external discharge and 75mm or more for internal discharge. When connecting to a external stack the trap should be located within the building.

Stack Pipes
Condensate connections should be at least 450mm above any bend at the bottom of a stack pipe in a single or multi-story dwelling up to 3 storeys.
There are specific requirements when connecting to a stack pipe serving multi-storey buildings greater than 3 storeys.
All connections to stack pipes should avoid across flow between other Branch pipes.

Soakaways
Any soakaways have to be purpose-made and located as close to the boiler as possible, but clear of the buildings foundations and any buried services. The best option is to purchase a soakaway from a drainage manufacturer and install it to the manufacturers recommendation.