Instructions for use
Installation and servicing

ISOTWIN CONDENS
ISOTWIN CONDENS F 35 E
GUARANTEE REGISTRATION

Thank you for installing a new Saunier Duval appliance in your home. Saunier Duval appliances are manufactured to the very highest standard so we are pleased to offer our customers a Comprehensive Guarantee. This product is guaranteed for 24 months from the date of installation or 30 months from the date of manufacture, whichever is the shorter, for parts. In addition, this product is guaranteed for 12 months from the date of installation or 18 months from the date of manufacture, whichever is the shorter, for the labour. The second year of the parts guarantee, from the beginning of the 13th month onwards after installation or manufacture, is conditional upon the boiler having been serviced by a CORGI registered gas installer, in accordance with the manufacturer’s recommendations. We strongly recommend regular servicing of your gas appliance, but where the condition is not met, any chargeable spare parts or components issued within the applicable guarantee period still benefit from a 12 month warranty from the date of issue by the manufacturer.

We recommend you complete and return as soon as possible your guarantee registration card.

If your guarantee registration card is missing, you can obtain a copy or record your registration by telephoning the Saunier Duval Customer Service number below.

For customer service call: 01773 525 914
Technical helpline: 01773 828400

For General and Sales enquiries:
Tel. 0870 6064351

To register your Saunier Duval appliance call: 0800 073 2144

Please complete the Benchmark Log Book at the end of this manual, if the appliance fails to operate then the condition should be reported immediately to our service organisation Saunier Duval Service 01773 525 914.

DO NOT REMOVE the appliance from the system until the engineer has confirmed and signed the report allowing the return of the appliance to the merchant. The merchant will NOT accept any returns unless supported by Saunier Duval Service the engineer’s signed report.
Instructions for use

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1 General points

ISOTWIN CONDENS F 35 E boiler is an appliance that uses condensing technology, which recovers heat present in waste gas. Thanks to this operating principle, the boiler consumes less energy and decreases NOx and CO2 emissions.

ISOTWIN CONDENS F 35 E boiler has a double use (heating + instantaneous hot water).

This appliance of the room-sealed type is equipped with a flue exhaust and air intake for combustion products called the flue system. This flue system connection principle offers the possibility to install the appliance in any room and with no specific ventilation requirements.

The installation and the commissioning of the appliance has to be carried out by a skilled professional who is responsible for the compliance of the installation and the commissioning according to current regulations.

You also have to call on a skilled professional for the maintenance and the repairing of the appliance as well as for any gas adjustment.

Saunier Duval has specially designed different accessories for your appliance depending on your installation.

If you want to have a detailed list, please contact your supplier or visit our website www.saunier-duval.co.uk.

2 Documents

• Please keep this manual as well as any documents enclosed with it safe for future reference.

We accept no liability in case of damage due to the non-compliance of the instructions of the present manual.

3 Safety

3.1 Gas Leak or Fault

• Do not switch on nor switch off the light.
• Do not activate the electrical switch.
• Do not use the phone in this risky area.
• Do not light up a flame (for example, a lighter or a match).
• Do not smoke.
• Turn off the gas emergency control valve immediately.
• Open all windows and doors to ventilate the area.
• Warn any person in the house.
• Inform the Gas Utility company or a skilled professional.

3.2 Safety regulations and recommendations

Please observe the following safety regulations and recommendations:

• Do not use any aerosols, solvents, abrasive cleaner, detergents with chlorine, paint, glue, etc. near the appliance. Under unfavourable conditions, these substances can be very corrosive even for the flue.
• Do not use or store any explosive material or easily flammable (for example, petrol, paint, etc.) in the room where the appliance is situated.

• Never switch off the safety devices and do not try to handle these devices as this could lead to a malfunction.

• Do not change:
  - The appliance,
  - The appliance environment,
  - Water, air, gas and electric supply,
  - Flue system.

• Never carry out by yourself maintenance or repairing operations on the appliance.

• In case of a water leakage, immediately close the cold water inlet of the appliance and call a skilled professional to repair the leakage.

• Do not break sealed mechanisms.

• Do not modify the technical conditions close to the appliance, as these are very important as far as the appliance safety is concerned. For example: the minimum clearances of the external sides.

**Warning!**
A heating safety valve with a discharge pipe and a domestic hot water pressure relief valve with a discharge pipe are fitted to this appliance. The valves must not be touched except by a skilled professional.

• If the valves discharges at any time, switch the appliance off and isolate it from the electrical supply.

**Warning!**
We advise you to be very careful when adjusting hot water temperature: water can be very hot when releasing from the draw off tap.

### 4 Guarantee / Responsibility

Your appliance is guaranteed for a period of 24 months from the date of installation or 30 months from the date of manufacture whichever is the shorter and covers manufacturing defects only.

We, Saunier Duval, undertake to repair or replace parts free of charge which are recognised by us to be of faulty manufacture - if necessary after return to our factory for examination - on condition that:

- The appliance was installed by a qualified gas installer in accordance with installation instructions, and all the relevant codes of practice, standards and legislation in force.

- The appliance has been used for normal domestic purposes and in accordance with the manufacturer’s operating and maintenance instructions.

- The appliance has not been serviced, maintained, repaired dismantled or tampered with during the guarantee period, by anyone other than a competent person.

- The repair or replacement of parts during the guarantee period does not have the effect of extending the period.

This guarantee does not cover:

- Any defects or damage resulting from incorrect or poor installation, inadequate servicing, or maladjustment of the gas or water used.

- Any defects in the system to which the appliance is connected.
Any deterioration or maladjustment following changes in the nature or pressure of the gas or the water used, or a change in the characteristics of the electrical supply voltage.

Notification of any fault should be made to the appliance installer. No repairs should be undertaken upon the appliance, intending it to be covered by the product guarantee without prior authorisation from Saunier Duval.

IMPORTANT: The appliance serial number must be quoted on all correspondence/contact made with Saunier Duval.

This guarantee is in addition to your statutory and other legal rights, which will not be excluded or diminished by the return of the guarantee registration card.

5 Appliance use

Saunier Duval’s appliances are manufactured according to the latest technical evolutions and current safety regulations.

This appliance is used to produce hot water using gas. Any other use is considered as inappropriate and is forbidden.

The manufacturer shall not be responsible for any damage caused by another use. In that case the user shall be the responsible.

6 Servicing

- Clean the case of the appliance with wet soapy cloth.
- Do not use any abrasive cleaning product as they could damage the housing or plastic parts.

7 Recycling

The appliance comprises many recyclable parts. The packaging, the appliance and the content of the package shall not be thrown together with domestic waste but eliminated according to the current regulations.
8 Appliance use

8.1 Control panel

Legend
1 Operating indicator
2 Display of the available pressure in the heating circuit
3 Operating mode selection
4 DHW temperature adjustment
5 Display of the measured temperature in the heating circuit
6 On/off switch
7 Heating temperature adjustment

8.2 Commissioning and lighting

- Make sure that:
  - the boiler is connected to the electrical supply.
  - the gas service cock is open.
- Push the switch (6) until the “I” symbol appears.
  The operating indicator on the control panel turns on: the boiler is ready to run.

- Push “MODE” to modify the operating mode of the boiler. The ◄ symbol is then situated in front of the selected mode:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌃🔥</td>
<td>Central heating and domestic hot water</td>
</tr>
<tr>
<td>🌃</td>
<td>Central heating only</td>
</tr>
<tr>
<td>🔥</td>
<td>Domestic hot water only</td>
</tr>
<tr>
<td>🛁</td>
<td>Appliance frost protection</td>
</tr>
</tbody>
</table>
8.3 Temperature adjustment

8.3.1 Domestic hot water temperature adjustment

The domestic hot water must be set at max 63°C.

- Push + or – on the ⬇️ side to adjust the max temperature.
  The ECO symbol remains until 49°C.

8.3.2 Heating temperature adjustment

- Push + or – on the ☀️ side to change water temperature between 22°C and the maximum value allowed by your installer.

Observation:
A quick push on +/- or ☀️ / ⬇️ side displays the temperature value previously selected

9 Turn the boiler off

- Push the switch (6) until the “O” symbol appears.
  The appliance is no longer supplied with electric power.

We advise you to turn off the appliance gas supply if you leave home for a long period.

10 Fault finding

If there is a fault, then a fault symbol displays and the operating indicator on the control panel flashes red.

Warning!
Never try to service or repair the appliance by yourself and only start the appliance once a skilled professional repaired the fault.

<table>
<thead>
<tr>
<th>Symbol and fault code</th>
<th>Cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The operating indicator is OFF.</td>
<td>Power failure</td>
<td>Check the mains power supply is on and that the appliance is switched on at the spur or socket. The appliance starts automatically once the power supply is on. If the fault persists, please contact a skilled professional.</td>
</tr>
<tr>
<td>⬇️ code F1, F4</td>
<td>Ignition fault</td>
<td>Deactivate the boiler Wait 5 seconds and then start the boiler again. If the fault continues, please contact a skilled professional.</td>
</tr>
<tr>
<td>⬆️ code F2, F3</td>
<td>Air flow failure</td>
<td>Please contact a skilled professional</td>
</tr>
<tr>
<td>code F5</td>
<td>Overheating fault</td>
<td>Open the blue tap situated under the boiler until you obtain a pressure between 1 and 2 bars on the indicator. If you have to fill it this might be caused by a leakage in your appliance. In this case, contact a skilled professional to check the boiler and system.</td>
</tr>
<tr>
<td>⚖️</td>
<td>Insufficient water pressure in the system</td>
<td>Please contact a skilled professional</td>
</tr>
<tr>
<td>⚖️</td>
<td>Other defects</td>
<td>Please contact a skilled professional</td>
</tr>
</tbody>
</table>
11 Frost protection

11.1 Boiler frost protection
In case of frost risk, do as follows:

- Make sure the boiler is supplied with electrical power and gas.
- Select the ️ operating mode on the control panel.

The frost protection system operates the boiler as soon as the temperature in the heating circuit is under 4°C. The boiler stops as soon as the water temperature in the heating circuit reaches 16°C.

11.2 Installation frost protection

- If you leave home for a few days, select the minimum heating temperature on the control panel of the boiler and just decrease the setpoint temperature on your room thermostat.
- If you leave home for a long period, see chapter “Draining of the appliance” in the installation manual.

12 Maintenance/After Sales Service

Please note that an incorrect servicing can affect the safety of the appliance and can lead to injury.

To ensure the continued efficient and safe operation of the appliance it is recommended that it is checked and serviced as necessary at regular intervals. The frequency of servicing will depend upon the particular installation conditions and usage, refer to guarantee registration.

If this appliance is installed in a rented property there is a duty of care imposed on the owner of the property by the current issue of the Gas Safety (Installation and Use) Regulations, Section 35. Servicing/maintenance should be carried out by a competent person in accordance with the rules in force in the countries of destination. To obtain service, please call your installer or Saunier Duval service.
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1 Comments on the instructions

- Please give all of the instructions to the user. The user shall keep them for future reference. We accept no liability in case of damage due to the non-compliance of the instruction manual.

2 Appliance description

2.1 Data label

The data label certifies the origin where the product was manufactured and the country for which it is intended. Warning! The appliance shall only be used with the gas types indicated on the data label.

2.2 Mandatory WARNING for EEC countries

This appliance is designed, approved and inspected to meet the requirements of the intended market. The data label indicates where the product was manufactured and the country for which it is intended.

This appliance meets the requirements of Statutory Instrument, No. 3083 The Appliance (Efficiency) Regulations, and therefore is deemed to meet the requirements of Directive 92/42/EEC on the efficiency requirements for new hot water appliances fired with liquid or gaseous fuels.

Type test for purposes of Regulation 5 certified by: Notified body 0063. Product/production certified by: Notified body 0086.

The CE mark on this appliance shows compliance with:

IMPORTANT. With regards to the Manual Handling Operations, 1992 Regulations, the following lift operations are recommended as the appliance weight exceeds a one-man lift.

- Clear the route before attempting the lift.
- Ensure safe lifting techniques are used - keep back straight - bend using legs.
- Keep load as close to body as possible.
- Do not twist - reposition feet instead.
- If two persons performing lift, ensure co-ordinated movements during lift.
- Always use assistance if required.

Manufacturer’s instructions must not be taken as overriding statutory requirements. Reference in these instructions to British standards and statutory regulations/requirements apply only to the United Kingdom. For Ireland the current edition of I.S.813 «Domestic Gas Installations» must be used.

This appliance certificated to the current issue of EN 483: 2000 for performance and safety. It is important that no alteration is made to the appliance, without permission, in writing, from Saunier Duval. Any alteration that is not approved by Saunier Duval could invalidate the warranty and could also infringe the current issue of the Statutory Requirements.
2.3 Block diagram
Legend
1 Flue outlet
2 Main heat exchanger
3 Burner
4 Ignition and control electrode
5 Fan
6 Gas control valve
7 DHW storage vessel
8 Condensate drain
9 Overheat safety thermostat
10 Temperature sensor for DHW storage vessel
11 Expansion vessel
12 Heating return thermistor
13 Heating flow thermistor
14 Ignition module
15 Heating Pump
16 Water pressure sensor
17 Domestic plate to plate heat exchanger
18 Three way valve
19 Domestic expansion vessel
20 Drain cock
21 Flow switch
22 Heating discharge safety valve
23 DHW temperature sensor
24 DHW discharge safety valve
25 Heating isolating valve
26 Filter on cold water inlet
27 Filling system
28 Filter on heating circuit
29 Heating isolating valve
30 Domestic cold water isolating valve
31 Heating isolating valve
32 Gas isolating valve
33 DHW pump
34 Storage anode protection
35 Non return valve
36 Temperature / pressure relief valve
37 Tapping (plug connection) for the recirculation loop
38 Pressure reducing valve and check valve

3 Appliance location

- This appliance is not suitable for outdoor installation.

- This appliance may be installed in any room, although particular attention is drawn to the installation of an appliance in a room containing a bath or shower where reference must be made to the relevant requirements. In GB this is the current I.E.E. WIRING REGULATIONS and BUILDING REGULATIONS.

- In IE reference should be made to the current edition of I.S.813 «Domestic Gas Installations» and the current ETCI rules.

- Make sure you keep an appropriate distance between the sides of the appliance to ensure total accessibility for servicing.

- The appliance must be mounted on a flat wall, which is sufficiently robust to take its weight.

- The appliance is room sealed, so when it is installed in a room or space, a permanent air vent is not required.

- Do not install the appliance above another appliance that could damage it (for example, above a cooker that might emit steam or grease) or in a room, which has a lot of dust in the atmosphere which is corrosive.
4 Safety instructions and regulations

This appliance is tested and certificated for safety and performance. It is, therefore, important that no alteration is made to the appliance, without permission, in writing, from Saunier Duval. Any alteration not approved by Saunier Duval, could invalidate the certification, appliance warranty and may also infringe the current issue of the statutory requirements.

4.1 Safety instructions
If the gas pressure at the inlet of the appliance is outside the range specified, you shall not start the appliance. If the cause of the problem cannot be found nor solved, please contact the Gas Utility company.

Warning! Incorrect installation can cause electric shock or appliance damage.
- When making the connections, locate the sealing washers properly so as to avoid any gas or water leakage.
- Never use a wire brush or stiff-bristle scrubbing brush to clean the heat exchanger as this could damage the appliance.
- Under no circumstances must the User interfere with or adjust sealed parts. Under Section 6 of The Health and Safety at Work Act 1974, we are required to provide information on substances hazardous to health. The adhesives and sealants used in this appliance are cured and give no known hazard in this state.

In the event of the appliance overheating the safety devices will cause a safety shutdown. If this happens, call your installation/servicing company.

Warning! This appliance must be earthed. This appliance must be wired in accordance with these instructions. Any fault arising from incorrect wiring cannot be put right under the terms of the Saunier Duval guarantee.

The following safety instructions must be imperatively followed during the maintenance and the replacement of spare parts.

- Stop the appliance (see chapter “Turn the boiler off” of the Instructions for use).
- Disconnect the appliance from the mains power supply with the socket or the double-pole switch (with a minimum gap of 3mm for both poles).
- Turn off the gas control valve.
- Close the shut off valves located on the connection sockets.
- Drain the appliance if you want to change hydraulic parts of the appliance.
- Let the appliance cool down before undertaking any maintenance work.
- Protect all the electrical components from water when you carry out any work.
- Use only new O-rings and gaskets.
- After having completed work on gas components, check their tightness.
- When the replacement work is completed, perform an operation test of the replaced parts and the appliance.
4.2 Regulations

When installing and commissioning the appliance, the regulations below shall be observed in their current version:

In your own interests and that of safety, it is the Law that ALL gas appliances must be installed by a competent person only, in accordance with the current issue of the above regulations.

In GB the installation of the appliance must be carried out by a competent person as described in the following regulations:
- The manufacturer’s instructions supplied.
- The Gas Safety (Installation and Use) Regulations.
- The appropriate Buildings Regulations either The Building Regulations, The Building Regulations (Scotland), The Building Regulations (Northern Ireland).
- The Water Fittings Regulations or Water byelaws in Scotland.
- The Health and Safety at Work Act, Control of Substances Hazardous to Health (COSHH).
- The Current I.E.E. Wiring Regulations.

Where no specific instructions are given, reference should be made to the relevant British Standard Code of Practice.

In IE, the installation must be carried out by a competent person and installed in accordance with the current edition of I.S.813 «Domestic Gas Installations», the current Building Regulations and reference should be made to the current ETCI rules for Electrical Installation.

In GB the following Codes of Practice apply: BS4814, BS6798, BS5440 Part 1 and 2, BS5546 Part 1, BS5449, BS6891, BS6700, BS7074 Part 1 and 2, BS7593, BS7671.

In IE: I.S.813, BS5546, BS 5449, BS 7074, BS 7593.

Where no British Standard exists, materials and equipment should be fit for their purpose and of suitable quality and workmanship. The installation of this appliance must be carried out by a competent person in accordance the rules in force in the countries of destination. Manufacturer’s instructions must not be taken as overriding statutory requirements.

If the appliance is to be installed in a timber frame building it should be fitted in accordance with the Institute of Gas Engineers document IGE/UP/7/1998. If in doubt seek advice from the local gas undertaking or Saunier Duval.

The installation is subject to building regulation approval, notify the Local Authority of intention to install.
5 Appliance installation

All the dimensions in this chapter are expressed in mm.

5.1 Recommendations before mounting

5.1.1 Domestic hot water circuit design

The circuit should be designed to avoid any unnecessary flow losses (decrease the number of elbows).

The boiler will operate with a minimum supply pressure but with a low flow. Optimum performance will be achieved with a pressure of 1 bar.

5.1.2 Heating circuit design

ISOTWIN CONDENS boilers can be used for any kind of installation: serial or derivated double tube, single tube, hot floor, etc...

Heating surfaces can be made up with heaters, convectors or unit heaters.

Warning: If the materials used are of a different type, some corrosion can occur. In that case, we advise you to add an inhibitor to the heating circuit water (according to the manufacturer’s recommendations) that could avoid gas production and oxide formation.

The pipework sections should be fixed by using the following flow/pressure curve (see chapter “Heating circuit adjustment”). The system will be calculated according to the flow corresponding to the power that is really required without taking into account the maximum power that the boiler can supply. Nevertheless, we advise you to have a flow big enough so that the temperature difference between outgoing and return is under or equal to 20°C. The minimum flow rate is indicated in the chapter “Technical Data” at the end of this instruction manual.

The piping route should be designed in such a way that it avoids any air locks and make purging of gas from the system easier. Bleeders should be placed at each high point of the system as well as on any radiators.

Total water volume accepted by the heating circuit depends, amongst other things, on the cold static load. The expansion tank fitted in the boiler is delivered factory set (see chapter “Technical Data” at the end of this instruction manual). At commissioning, it is possible to change this pressure in case of a larger static load. We advise you to provide a drain valve at the lowest point of the system.

If thermostatic radiator valves are used, we advised you not to fit in a room where a room thermostat is fitted.

- In case of an old installation, flush the heating system before installing the new boiler.
- If the boiler is not immediately installed, protect all the pipe fittings so as to avoid that any plaster or paint that could impede the connection.
5.1.3 Tundish discharge

The internal safety valves, 24 and 36 have been tee’d together and the discharge pipe run so that it exits at the right hand bottom of the boiler (see chapter «Block diagram»). The tundish (supplied) must be used with this outlet within the normal guidelines and code of practice and must be installed so that it is visible to the occupants and positioned away from any electrical devices.

It is necessary, during installation, to connect a 22 mm diameter metal discharge pipe to a suitable position outside the building. It is permissible to use copper pipe.

Warning! The discharge pipe from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal and:

- Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least larger than the nominal outlet size of the safety device, between 18m and 27m at least 3 sizes larger, and so on. Bends must be taken in to account in calculating the flow resistance.

- Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipework.

- Be installed with a continuous fall.

- Be positioned away from any electrical appliances.

- Have discharges visible at both the tundish and the final point of discharge but where this is not possible or practically difficult there should be clear visibility at one or these of these locations. Examples of acceptance discharge arrangements are:

  - Ideally below a fixed grating and above the waterseal in a trapped gully.

  - Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standing, grassed areas etc. are acceptable providing that where children may play or otherwise come in to contact with discharges, a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.

  - Discharges at high level; e.g into metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or into a roof capable of withstanding high temperature discharges of water and 3m from any plastics guttering systems that would collect such discharges (tundish visible).

  - Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation can be traced reasonably easily. The single common discharge pipe should be least one pipe size larger then the largest individual discharge pipe to be connected. If unvented hot water storage systems are installed where discharges from safety devices may not be apparent i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.

Note: the discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.
5.1.4 Water treatment
In the case of an existing installation, it is essential that prior to installing the new boiler the system is thoroughly flushed. For optimum performance after installation of a new system, the boiler and its associated central heating system should also be flushed. Flushing should be carried out in accordance with BS7593: 1992 using a cleanser such as Sentinel X300 or X400, Fernox Superfloc or Salamander corrosion guard cleaner.

For long-term corrosion protection, after flushing, an inhibitor suitable for stainless steel heat exchangers should be used, refer to the current issue of BS 5449 and BS 7593 on the use of inhibitors in central heating systems. Examples are Sentinel X100 Fernox or Salamander corrosion guard inhibitor.

5.2 Dimensions

5.3 List of delivered equipment
The boiler is delivered in two packages:
- The boiler and the hanging bracket.
- One documentation pack:
  - 1 user and installation manual
  - 1 guarantee envelope
  - 1 Wiring diagram
  - 1 gasket pack

One parts pack:
- 1 connection pack 1
- 1 connection pack 2 + wall template
- 1 safety valves drain pack

The flue is supplied separately and will depend upon the configuration of the installation.

5.4 Fixing to the wall
- Make sure the material you use fits those of the appliance.
- Chose the location of the appliance. See chapter “Appliance location”.
• Remove front panel, unscrew and remove the two retaining screws from the bottom of the front panel. Remove front panel by lifting up and forward.

• To remove the self adhesive wiring diagram label from the document envelope, fit the self adhesive wiring diagram label to the inside of the front panel, put front panel in a safe place to avoid damaging it.

• The hanging bracket will be adapted to the features of the bearing wall and will have to take into account the weight of the boiler filled with water.

• Drill the holes for the fixing screws in accordance to the diagram below and to the size of the wall template delivered with the appliance.

• Place the boiler above the hanging bracket.

• Slowly lower the boiler.

• Set the seals on the different pipe fittings.

• Make connections to boiler, gas, water and heating cocks with the tube assemblies supplied in piping pack.

• Do not forget to connect the filling loop extension on the filling tap.

• Screws mechanical features will match, at least, the values indicated on the following sketch.
5.5 Gas and water connection

- Before undertaking any operation, carefully clean the pipes with an appropriate product in order to remove impurities such as filings, welds, different oils and greases that may be present. These foreign bodies may enter the boiler and disrupt the operation.

- Do not use any solvents that could damage the heating circuit.

- Take care when soldering pipes as the heat could damage the seals and cause leakage. Fit washers after joints have cooled.
Legend

Connection pack 1 :
A Pressure test point
1 Hanging bracket
2 Heating return pipe: angular bush to weld Ø 22 + nut 3/4"
5 Gasket 3/4" (x3)
8 Cold water inlet + domestic hot water outlet with isolating valve
12 Heating flow with isolating valve
13 Gas service cock
14 Gasket 1/2" (x3)
15 Gas pipe: angular bush to weld Ø 15 + nut 1/2"
16 Cold water inlet pipe + domestic hot water pipe:

Connection pack 2 :
4 Heating return with isolating valve
9 Nut / Pressure gauge connection
10 Gasket
11 Heating return filter

Gasket pack :
3 Cold water flow rate limiter
6 Gasket (x2)
7 Gasket (x3)

angular bush to weld Ø 15 + nut 1/2"

17 Heating flow pipe: angular bush to weld Ø 22 + nut 3/4"

The heating return adapter is fitted with a filter (11) that could be reached by unscrewing the end nut. This operation must be achieved once the heating return shut-off taps are closed.

The test pressure will be read on a pressure gauge (9) (not supplied) screwed in the position of the first nut of the heating return adapter.
• Only use the genuine seals delivered with the appliance.
• Check that there is no leakage. Repair if need be.

The pipes from the heating and domestic hot water safety discharge valves must not discharge above an entrance, window or any type of public access area.

Take the short safety discharge tube, union nut and seal, supplied loose in the boiler fittings pack. This must be extended, using not less than 15mm o.d. pipe, to discharge, in a visible position, outside the building, facing downwards, preferably over a drain.

The pipe must have a continuous fall and be routed to a position so that any discharge of water, possibly boiling, or steam cannot create any danger to persons, damage to property or external electrical components and wiring.

To ease future servicing it is advisable to use a compression type fitting to extend the safety discharge valve tube.

Warning! Cylinder relief valve connections should not be used for any other purpose.
Legend
1 Domestic hot water safety valve
2 Drain cock
3 Filling loop extension knob
4 Gasket
5 Nut
6 Discharge valve for PRV (BLUE) on domestic hot water circuit
7 Nut (x2)
8 Gasket (x2)
9 Gasket (x2)
10 Union coupling
11 Nut
12 Biconical ring
13 Tundish
14 Biconical ring
15 Nut
16 Nozzle
17 Nut
18 Inner tee
19 Biconical ring coupling
20 Biconical ring
21 Discharge pipe for PRV (RED) on heating circuit
22 Gasket
23 Nozzle
24 Tube for drain valve
<table>
<thead>
<tr>
<th>Valve outlet size</th>
<th>Minimum size of discharge to tundish D1</th>
<th>Minimum size of discharge pipe D2 from tundish</th>
<th>Maximum resistance allowed expressed as a length of straight pipe i.e. no elbows or bends</th>
<th>Resistance created by each elbow or bend</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 1/2&quot;</td>
<td>15 mm</td>
<td>22 mm 28 mm 35 mm</td>
<td>up to 9 m</td>
<td>0.8 m 1.0 m 1.4 m</td>
</tr>
<tr>
<td>G 3/4&quot;</td>
<td>22 mm</td>
<td>28 mm 35 mm 42 mm</td>
<td>up to 18 m</td>
<td>1.0 m 1.4 m 1.7 m</td>
</tr>
<tr>
<td>G 1&quot;</td>
<td>28 mm</td>
<td>35 mm 42 mm 54 mm</td>
<td>up to 27 m</td>
<td>1.4 m 1.7 m 2.3 m</td>
</tr>
</tbody>
</table>

Legend
1 Safety device eg. temperature relief valve
2 Tundish (supplied)
3 Trapped gully
4 Fixed grating

Discharge pipe D1: from temperature relief valve to tundish.
Discharge pipe D2: from tundish with continuous fall.

- See table above for size examples.
5.6 Connection to the condensate trap

Legend
1. Access plugs for cleaning purposes
2. Condensate drain connection
3. Condensate trap

- Connect the flexible pipe to a discharge system leading to the sewer in compliance with the instructions below:
- Use the condensate drain flexible connection pipe supplied (2).
- Ensure there is a cozinual fall of 2.5° (44 mm/m).
- Do not let the condensate drain flexible connection fall into the trap.
- Do not use copper pipes.

Important notice:
The float of the condensate trap also ensures fume tightness. Therefore, it is not necessary to add water in the condensate trap.

5.7 Flue connection

Different flue outlet configurations can be carried out.

- Consult your supplier for more information about the other possibilities and associated accessories.

Warning! You can only use flue accessories approved for the ISOTWIN CONDENS.

Saunier Duval’s horizontal flue automatically provides a 3° angle that enables the return of the condensates to the appliance.

- Whatever the kind of flue system chosen, observe the minimum distances indicated in the chart below to position the flue terminals.
Installation and servicing instructions strictly reserved for qualified gas installers

**Position** | **Position of the flue terminal** | **mm**
---|---|---
**Horizontal flues**
A | directly below an opening, air brick, opening windows | 300
B | above an opening, air brick, opening windows | 300
C | horizontally to an opening, air brick, opening windows | 300
D | below gutter, drain/soil pipe | 25
E | below eaves | 25
F | below a balcony or car port | 25
G | from vertical drain pipes and soil pipes | 25
H | from internal/external corners | 25

**Vertical flues**
P | from another terminal | 600
Q | above roof level | 300
R | from adjacent opening window | 1000
S | from adjacent wall to flue | 300

**H** | to a boundary alongside the terminal | 300
I | above adjacent ground or balcony level | 300
J | from surface or a boundary facing the terminal | 600
K | facing terminals | 1200
L | from opening (door/window) in car port into dwelling | 1200
M | vertical from a terminal | 1500
N | horizontally from a terminal | 300

**UNDER CAR PORT etc.**
H*: This dimension comply with the building regulations, but it may need to be increased to avoid wall staining and nuisance from pluming depending on site conditions.

5.7.1 Horizontal concentric flue
Ø 60/100
(C13 type installation)

Legend
1  Gasket

Maximum flue index: 150 Pa

This value is reached with the length of the maximum duct (L) + 1 90° elbow.

<table>
<thead>
<tr>
<th>Flue model</th>
<th>Max. length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 60/100</td>
<td>5 m</td>
</tr>
</tbody>
</table>

A Plume mangement kit can be installed at the extremity of the duct.

- Refer to the instructions sheet of the accessory and take it into account the following length:
  - L1 ≤ 6 m whatever L
  - L2 = L = 5 m

Every time a 90° elbow is used (or 2 off 45°), the length (L) should be reduced by 1 m.

5.7.2 Vertical concentric flue
Ø 60/100
(C33 type installation)

Maximum flue index: 150 Pa

This value is reached with the length of the maximum duct (L) + 1 90° elbow.

<table>
<thead>
<tr>
<th>Flue model</th>
<th>Max. length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 60/100</td>
<td>5.5 m</td>
</tr>
</tbody>
</table>

Every time an extra 90° elbow is used (or 2 off 45°), the length (L) should be reduced by 1 m.

5.7.3 Twin flue 2 x Ø 80
(C53 type installation)

Warning!
- Any duct that goes through a wall and whose temperature is over 60°C from the room temperature will be thermally insulated at this passage. The insulation will be composed of an appropriate insulating material whose thickness is ≥ 10 mm and thermal conductivity λ ≤ 0.04 W/m.K.
Maximum flue index: 150 Pa

This value is reached with 2 elbows, the separator and the maximum duct length (L1+L2) of 40 m.

Every time an extra 90° elbow is used (or 2 off 45°), the length (L) should be reduced by 1 m.

5.8 Electrical connection

Warning! Incorrect installation can cause electric shock or appliance damage.

- Connect the power cable of the boiler to the 230 V single-phase + earth network.
- Observe the live and neutral connection on the boiler.

Important: A skilled professional should achieve the electric connection of the appliance. All the interventions achieved inside the appliance will be made by the After Sales Service or a skilled professional.

Isolation should be by a double pole switched fused spur box, with a minimum gap of 3mm for both poles.

The fuse of the PCB must be connected to the neutral.

The mains cable integrated in the boiler is specific: if you want to change it, order it exclusively from Saunier Duval service.
5.9 Wiring diagram

Legend
1 Overheat thermostat
2 Fan
3 Gas valve
4 Heating return thermistor
5 Heating flow thermistor
6 Water pressure sensor
7 Water flow sensor
8 DHW pump
9 Heating pump
10 Main board
11 User interface
12 Main reset switch
13 Chassis earth
14 Fuse
15 Three way valve
16 Ignition module
17 DHW temperature sensor
18 Ignition and controle electrode
6 Commissioning

- Slide the switch until the "I" symbol appears. The operating indicator on the control panel turns on: the boiler is ready to operate.
- Open the isolating valves located on the pipes: they will be placed in the direction of the flow.
- Open the auto air vent on the pump as well as the automatic bleeders of the system.
- Open the blue filling loop valve situated under the boiler until you obtain a 2 bars pressure on the indicator.
- Bleed each radiator to remove the air, re-tighten bleed screws.
- Leave the cap on the pump auto air vent open.
- Flush the domestic hot water system by opening the hot water taps for several minutes.
- Make sure the display indicates a system pressure of between 1 and 2 bars. Re-fill system as necessary.

7 Specific adjustments

7.1 Heating circuit adjustment

This flow rate will be adjusted according to the system calculations. When it is delivered, the (1) integrated bypass screw is open by half a turn.

Legend
1 Bypass screw

- Depending on the requirements, adjust this screw (for example, screw for closing) in order to fit the available pressure head to the system energy loss according to the output/pressure curve.

Legend
1 Speed III
2 Speed II
3 Speed I
4 Speed selector of pump

- Turn the selector (4) to choose pump speed I, II or III in relation to the output/pressure curve.
Legend

Speed III
1 By-pass fully shut
2 Open 1/4 turn
3 Open 1/2 turn
4 Open 2 turns

Speed II
5 By-pass fully shut
6 Open 1/4 turn
7 Open 1/2 turn

Speed I
8 By-pass fully shut
9 Open 1/2 turn
7.2 Access to the boilers technical data (for professional and After Sales Service use only)

The access to the boilers technical data allows you to make some adjustments and to analyse potential malfunctions.

For example, you can adjust the maximum power of the boiler in heating mode on all the values included between the powers indicated in the chart at the end of this manual. This makes it possible to adapt the power supplied to the real needs of the system so as to avoid any over-power, while maintaining a high efficiency.

Note: the heating power decrease has no effect on the domestic hot water power.

Do as follows:

- Press for more than 10 seconds on the “MODE” key to access the setting menu.

  • When “0” and “0” appear, use the keys + or - until “96” appears on the indicator.
  
  • Once again press the “MODE” key to display the first parameters menu, i.e. the heating maximum power (menu COD.1).
  
  • When the COD menu.1 displays on the indicator, press the “MODE” key if you want to alter this parameter.
  
  • Press the + keys to set the required value.
  
  • Validate by pressing the “MOD” key.
  
  • Press the + key to go to the following menu.

Note: the indicator goes back to its normal position after 10 minutes without any operation or after having pressed the “MODE” key for more than 10 s.

<table>
<thead>
<tr>
<th>N° menu</th>
<th>Title</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD. 1</td>
<td>maximum heating power</td>
<td>Press the + - keys to set the required value (factory setting: 20)</td>
</tr>
<tr>
<td>COD. 2</td>
<td>flue configuration</td>
<td>No adjustment required for this kind of boiler. Flue codes have no effect on the boiler operation.</td>
</tr>
<tr>
<td>COD. 3</td>
<td>minimum heating temperature</td>
<td>Select a value: 22°C, 28°C, 38°C or 50°C (factory setting: 22°C)</td>
</tr>
<tr>
<td>COD. 4</td>
<td>maximum heating temperature</td>
<td>Select a value: 50°C, 65°C, 73°C or 80°C (factory setting: 73°C)</td>
</tr>
<tr>
<td>COD. 5</td>
<td>pump mode</td>
<td>Select an operating mode: 1 - intermittent with room thermostat (factory setting) 2 - intermittent with burner 3 - permanent</td>
</tr>
<tr>
<td>COD. 6</td>
<td>outdoor sensor: regulation slope</td>
<td>Among the 16 slopes numbered from 0 to 15, select one regulation slope (see following sketch). Example: if you select the slope n°10 (factory setting), the heating temperature will be set at its maximum for an outdoor temperature of -5.5°C.</td>
</tr>
</tbody>
</table>
### COD. 7
outdoor thermostat:
- regulation slope
- reference point

Move the reference point of the regulation slopes by moving the parameter from -9 to 10.

### COD. 8
burner forcing

Select an operating mode:
- 0 - normal operation.
- 1 - forcing at P. mini.
- 2 - forcing at P. maxi.
- 3 - forcing at P. ignition

COD 8 menus and following would only be used by After Sales Service Engineers.

---

### Temperature setting curves.

<table>
<thead>
<tr>
<th>Heating flow temperature (°C)</th>
<th>Heating flow temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>73</td>
</tr>
<tr>
<td>49</td>
<td>70,1</td>
</tr>
<tr>
<td>47,7</td>
<td>66,5</td>
</tr>
<tr>
<td>46,4</td>
<td>63</td>
</tr>
<tr>
<td>45,1</td>
<td>59,3</td>
</tr>
<tr>
<td>43,8</td>
<td>55,8</td>
</tr>
<tr>
<td>42,5</td>
<td>52,2</td>
</tr>
<tr>
<td>41,3</td>
<td>48,6</td>
</tr>
<tr>
<td>40,6</td>
<td>45</td>
</tr>
<tr>
<td>39,3</td>
<td>41</td>
</tr>
<tr>
<td>38</td>
<td>38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outdoor temperature (°C)</th>
<th>Temperature setting curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td></td>
</tr>
<tr>
<td>-15</td>
<td></td>
</tr>
<tr>
<td>-10</td>
<td></td>
</tr>
<tr>
<td>-5</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>25</td>
<td></td>
</tr>
</tbody>
</table>

Legend
1. Menu 6 setting
2. Menu 7 setting
8 Draining of the appliance

8.1 Heating circuit

- Turn on the drain cock (1) provided at the system low point.
- Provide an air intake by opening a radiator bleed screw.
- In order to drain only the water in the boiler, first shut off the heating flow and return isolating valves.

8.2 Domestic Hot Water circuit

- Turn off the water cock of the system.
- Install a drain hose and unscrew the bleed valve located under the storage vessel.
- Create an air intake by turning on a hot water tap.

9 Gas conversion

The ISOTWIN CONDENS can be converted to run on LPG-Propane (G31). This conversion should only be carried out by a competent person.

- During the conversion to Propane, use of a suitable flue gas analyser is necessary.

As an option, a chargeable boiler only commissioning service can be provided by Saunier Duval Service by calling telephone number located at the beginning of the manual (customer service).

Tools required to make the conversion are a 2 mm Allen key and an electricians screwdriver.

- Ensure that the appliance supply pressure = 37 mbar.

Legend
1 Adjustment screw min. power
2 Adjustment screw max. power

9.1 Maximum rate

- Remove the front panel and the inner panel
- Turn screw 2 fully clockwise.
- Turn screw 2 back anti-clockwise by 5.5 turns.
- Ensure that the gas analyser is set to the correct fuel setting - Propane.
- Attach combustion analyser to the combustion test point.
- Turn on the mains electrical supply and turn on the gas service cock. Switch the boiler on.
- Fully open a hot water tap.
- Wait for 2 minutes or so, until the CO2 reading has stabilized.
- Adjust the screw (2) to obtain the CO2 value stated in the following table using the following principal:
  - To increase the CO2 value, turn the screw anti-clockwise.
  - To decrease the CO2 value, turn the screw clockwise.

Note: After re-fitting the inner front case, the CO2 values must correspond to that given in the following table.

9.2 Minimum rate

- Remove the front panel and the inner panel
- Ensure that the gas analyser is set to the correct fuel setting - Propane.
- Attach combustion analyser to the combustion test point.
- Turn on the mains electrical supply and turn on the gas service cock. Switch the boiler on.
- Adjust the heating output to minimum using menu 1 described in the chapter “Access to the boilers technical data”.
- Wait for 2 minutes or so, until the CO2 reading has stabilized.
- Adjust the screw (1) to obtain the CO2 value stated in the following table using the following principal:
  - To increase the CO2 value, turn the screw clockwise.
  - To decrease the CO2 value, turn the screw anti-clockwise.

Note: After re-fitting the inner front case, the CO2 values must correspond to that given in the following table.

<table>
<thead>
<tr>
<th>Gas changing adjustment</th>
<th>Unit</th>
<th>G20</th>
<th>G31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating output max. hot water</td>
<td>kW</td>
<td>34.2</td>
<td></td>
</tr>
<tr>
<td>Heating output min. heating</td>
<td>kW</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>CO2 case on</td>
<td>%</td>
<td>9 +/- 0.2</td>
<td>10.1 +/- 0.2</td>
</tr>
<tr>
<td>CO2 case off</td>
<td>%</td>
<td>9.2 +/- 0.3</td>
<td>10.3 +/- 0.3</td>
</tr>
</tbody>
</table>

9.3 Reactivation

- After setting and reassembly, restore the maximum heating power to its initial value (20 kW).
- Stick the gas data label close to the nameplate.
## 10 Fault finding

You will find the list of some fault codes in the operating instructions. The faults described in this chapter should be carried out by a skilled professional and if need be by SAUNIER DUVAL’s After Sales Service.

Important: a central heating system cannot operate efficiently if it is not filled with water and if the air it contains at first has not been completely removed. If those requirements are not fulfilled, some noise originated by the water boiling inside the boiler and noise of water chute inside the radiators could appear.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Possible cause</th>
</tr>
</thead>
</table>
| F1, F4 | Ignition fault, boiler failed to light | No gas / Insufficient gas  
Incorrect gas valve adjustment  
Electrode ignition lead defect  
Electronic igniter defective  
Check air inlet duct  
Check connections to igniter unit |
| F5 | Overheat fault | Overheat stat operated  
Maximum temperature exceeded  
Check thermistor connections  
Air in system with thermistor at maximum setting  
Faulty overheat stat connection |
| F6 | Central heating flow thermistor fault | Thermistor cable defective/broken  
Thermistor faulty |
| F7 | DHW thermistor fault | Check that thermistor attached correctly to pipe |
| F8 | Tank thermistor fault | |
| F9 | Water pressure sensor fault | Faulty sensor connection  
Check wiring |
| F10 | Central heating return thermistor fault | Thermistor cable defective/broken, thermistor faulty  
Check that thermistor attached correctly to pipe |
| F11 | User interface connection fault | Check wiring between mainboard and user interface |
| F12 | Main board connection fault | |
| F13 | Main board connection fault | Check connection and wires |
| F14 | Central heating flow T° > 95°C | System fault / Possible pump failure  
Check thermistor on flow |
| F16 | Flame detection fault (flame presence for more than 5 seconds after burner stopped) | Gas valve defective |
| F17 | Power supply is less than 170V | Check electrical supply / polarity |
| F18 | User interface fault | Faulty user interface |
| F19 | Central heating thermistor unplugged | Thermistor cable defective/broken, thermistor faulty  
Check that thermistor attached correctly to pipe |
| F20 | Software incompatibility | Incorrect user interface or main board  
Incorrect product code |
| F23 | Water circulation fault | Possible pump failure |
| F26 | Maximum delta temperature | Water circulation fault  
Check central heating flow and return connection |
START

Is the system pressure displayed? NO → Check there is no demand

YES → Is it flashing indicating zero? YES → Adjust system pressure

NO → Replace pressure sensor if there is no change

Set a demand for C.H. on

Is there temperature indicated on LCD? YES → Does appliance fire?

NO → Does boiler modulate before desired set point is reached?

YES → Differential is too high
• Current flow rate too low

NO → Does boiler go off before desired set point is reached?

YES → Temperature rise too high
• Current flow rate too low

NO → Are radiators getting warm?

YES → Normal operation

NO → Check operation of 3 way valve

REFER TO F CODE POSSIBLE CAUSES

Check wires between main pcb and interface.

COMPONENT

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH thermistor</td>
<td>10K Ω @ 25°C</td>
</tr>
<tr>
<td>Fan</td>
<td>22V DC</td>
</tr>
<tr>
<td>Gas Valve</td>
<td>22V DC / 55 Ω</td>
</tr>
<tr>
<td>Flow sensor</td>
<td>Remove and check rotation of paddle wheel</td>
</tr>
<tr>
<td>3 Way valve</td>
<td>Remove motor, switch tap on and off and check spindle moves in and out</td>
</tr>
</tbody>
</table>
11 Control / Commissioning
Once the appliance is installed, check whether it runs:

• Start the appliance according to the indications of the operating instructions and check whether it runs.

• Check the appliance for leaks (gas and water) and eliminate any leakage found.

• Check that the ignition is correct and that the flames of the burner are uniform.

• Check that the flue exhausts properly.

• Check the whole control and safety devices, their setting and their operating state.

12 User information
The user should know how to use the appliance.

• Explain to the user the appliance operating principles and demonstrate if required.

• Have a look at the operating instructions together and answer any questions if need be.

• Give the user all of the manuals and documents concerning the appliance and tell the user to keep them near the appliance.

• Explain more precisely the safety principles they should observe.

• Remind the user to regularly service the appliance.

13 Spare parts
In order to guarantee a long-lasting operating of the parts of the appliance and keep it in good condition, only original spare parts from SAUNIER DUVAL should be used when repairing and servicing the appliance.

• Only use original spare parts.

• Make sure that these parts have been correctly assembled with regards to their position and basic sense.
14 Maintenance

Warning!

• Before starting the maintenance of the appliance, read carefully the chapter “Safety instructions”.

14.1 Casing

Legend
1 Inner front panel insulation
2 Inner front panel
3 Inner front panel retaining screws
4 Front panel retaining screws
5 Front panel
6 Right side panel
7 Right side panel retaining screws

14.1.1 Front panel

• Remove the 2 front panel retaining screws (4).
• Remove the front panel (5).

14.1.2 Right side panel

• Remove the front panel (5).
• Remove the right side panel retaining screws (7).
• Remove the right side panel (6).

14.1.3 Inner front panel

• Remove the inner front panel retaining screws (3).
• Remove the inner front panel (2).
14.2 Hydraulic block

Legend
1 DHW pump retaining screws
2 DHW pump motor
3 Heating pump retaining screws
4 Heating pump motor
5 Cold water filter retaining clip
6 Cold water filter
7 Filling tap retaining clip
8 “Foaming” filter retaining clip
9 “Foaming” filter
10 Low water pressure sensor retaining clips
11 Low water pressure sensor
12 Sanitary exchanger retaining screws
13 Sanitary exchanger
14 Flow sensor
15 Flow sensor retaining clips
16 Connector
14.2.1 Cold water filter
- Turn off the cold water main inlet.
- Relieve the filter retaining clip (5).
- Remove the cold water filter (6) and clean it.

14.2.2 “Foaming” filter
The “foaming” filter improves the heating circuit gas purging operation.
- Turn off the heating flow and return insulating valves, and then drain the boiler.
- Relieve the filter retaining clip (8) located under the pump.
- Relieve the “Foaming” filter (9).
- Clean and put back in place, and then correctly position the lock pin.

14.3 Heating Return Filter

Legend
1 Heating Return Filter
2 Isolating valves
- Close both shut off isolating valves (2) located on the heating return.
- Loosen the pipe fitting end, then relieve the heating return filter (1) and clean it.

14.4 Condensate trap

Legend
1 Flexible
2 Float
3 Condensate trap retaining screw
4 Condensate trap
5 Draining flexible
6 Siphon adapter
- Disconnect the connector flexible (5) located under the condensate trap.
- Remove the inner front panel.
- Loosen both retaining screw (3) of the condensate trap (4).
- Remove the condensates recovery equipment by loosening flexibles (1); take care do not spray liquid.
- Clean flexibles and remove potential wastes.
- Clean the float (2) located inside the condensate trap.
- Rinse the condensate trap to clean it.
- Reassemble the unit taking care to correctly place the seals.
Warning: do not connect the condensate trap to copper pipe.
14.5 Combustion block
14.5.1 Ignition and controle electrode

- Remove the ignition and controle electrode connector (8).
- Remove the 2 ignition and controle electrode retaining screws (9).
- Remove the ignition and controle electrode (7).
- Clean both ends of the electrode with a dry cloth if necessary.
- Inspect the tips for damage.
- Clean away any debris and check the spark gap is 3.5 to 4.5 mm.
- Check the electrode gasket for signs of damage and replace if necessary.

14.5.2 Burner

- Disconnect the gas supply at the gas service cock.
- Remove the two gas pipe retaining clips (29), one located below gas valve (35) and the other one located on the underside of the boiler chassis.
- Pull sealing grommet down gas pipe.
- Push the gas pipe upwards further into gas valve connection and then rotate anti-clockwise until the gas pipe end is over the large hole in boiler chassis. Withdraw the gas pipe from gas valve connection and remove.
- Note: When replacing ensure that the sealing grommet, situated below the gas valve is correctly re-seated.
- Disconnect the gas valve connector (28).
- Disconnect the fan connector (12).
- Remove the five heat exchanger retaining nuts (17).
- Gently remove the fan (33), gas valve (35) and burner assembly from the heat exchanger (31).
- Clean the burner with a soft brush taking great care not to damage the front insulation.
- Do not use wire or sharp instruments to clean the holes of the burner.
• Inspect the burner for any signs of damage.
• Inspect the sealing rings and replace if necessary.
• Removal of the burner is not necessary during a normal service.

14.5.3 Heat exchanger

• Remove the 2 mixing arm retaining screws (23) bolted on the fan (33).
• Remove the 5 heat exchanger retaining nuts (17).
• Remove the “burner + mixing arm” unit from the heat exchanger.
• Remove loose debris from combustion chamber using a soft brush and vacuum cleaner. Carefully flush by spraying water removing any remaining debris through the condensate trap (Ensure the water is kept away from electrical components).

14.5.4 Combustion Check.

• If a gas carrying component has been replaced, the combustion of the appliance should be checked.
• Once the appliance has been re-assembled (apart from the front and inner casing panels) connect a CO2 combustion analyser to the test point on the flue adapter (see chapter «Gas conversion»).

15 Remplacement of parts

Warning!
• Before starting the remplacement of parts, read carefully the chapter “Safety instructions”.

Warning!
Before starting the remplacement of parts, read carefully the chapter “Safety instructions”.

Warning!
15.1 Hydraulic block

Legend
1 DHW pump retaining screws
2 DHW pump motor
3 Heating pump retaining screws
4 Heating pump motor
5 Cold water filter retaining clip
6 Cold water filter
7 Filling tap
8 Filling tap retaining clip
9 Filling device nozzle
10 Filling tap retaining clip
11 “Foaming” filter
12 “Foaming” filter retaining clip
13 DHW exchanger retaining screws
14 Filling device nozzle retaining clip
15 Heating safety valve
16 Heating safety valve retaining clip
17 Low water pressure sensor retaining clip
18 Filling device
19 DHW safety valve retaining clip
20 DHW safety valve
21 Three way valve
22 Low water pressure sensor
23 Low water pressure sensor connector
24 Automatic air vent
25 DHW exchanger
26 Three way valve connector
27 Flow sensor
28 Flow sensor retaining clips
29 Flow sensor connector
15.1.1 DHW pump or heating
- Loosen the 4 pump retaining screws (1)/(3).
- Remove the pump motor (2)/(4).

15.1.2 DHW exchanger
- Remove both retaining screws (13) accessible from the boiler front face.

Be careful with the direction of reassembly: the word “TOP”, printed on the edge of the exchanger (25) will be set upward.

15.1.3 Flow sensor
- Turn off the cold water inlet.
- Relieve the clips (28).
- Remove the connector (29).
- Remove the flow sensor (27).

15.1.4 Cold water filter
- Relieve the filter retaining clip (5).
- Remove the cold water filter (6).

15.1.5 “Foaming” filter
The “foaming” filter improves the heating circuit gas purging operation.
- Turn off the heating flow and return insulating valves, and then drain the boiler.
- Relieve the filter retaining clip (12) located under the pump.
- Relieve the “Foaming” filter (11).

15.1.6 Low water pressure sensor
- Relieve the clip (17).
- Remove the connector (23).
- Remove the low water pressure sensor (22).

15.1.7 Three way valve
- Remove the connector (26).
- Remove the three way valve (21).

15.1.8 DHW safety valve or heating
- Relieve the clips (16)/(19).
- Remove the safety valve (15)/(20).

15.1.9 Filling device
- Disconnect the drain connection (5) located under the filling device (18).
- Relieve the clip (14).
- Remove the filling device (18).

15.1.10 Automatic air vent
- Remove the retaining clip and remove the automatic air vent (24).
- Fit the new automatic air vent and ‘O’ ring ensuring the vent cap is left loose.
- Refill, vent and pressurise the boiler.
- Check for leaks.

15.1.11 Filling tap
- Remove the clips (8)/(10).
- Fit new ‘O’ rings.
- After replacing the filling tap, open the cold water isolation valve and slowly open a hot water tap to remove air. Close the hot water tap and check for any leaks.
15.2 Combustion block
Legend

1 Heat exchanger retaining screws
2 Gasket
3 Viewing window gasket
4 Viewing window circlip
5 Gasket
6 Ignition and controle electrode gasket
7 Ignition and controle electrode
8 Ignition and controle electrode connector
9 Ignition and controle electrode retaining screws
10 Ignition module harness connector
11 Ignition module retaining screws
12 Fan connector
13 Mixing arm
14 Heat exchanger hanging brackets
15 Burner assembly retaining screws
16 Insulation
17 Heat exchanger retaining nuts
18 Spring leaf
19 Viewing window
20 Heat exchanger hydraulic coupling
21 Gasket
22 Ignition module
23 Mixing arm retaining screws
24 Gasket
25 Gas valve connector retaining screw
26 Gas valve connector retaining plate
27 Burner retaining screws
28 Gas valve connector
29 Gas valve retaining clip
30 Burner
31 Heat exchanger
32 Combustion chamber
33 Fan
34 Fan retaining screws
35 Gas valve

15.2.1 Mixing arm

- Remove the 2 mixing arm retaining screws (23) bolted on the fan (33) and the burner door.
- Remove the mixing arm (13).
- Fit the new mixing arm and the new gaskets in the reverse order.

15.2.2 Burner

- Remove the mixing arm (13).
- Remove the 5 heat exchanger retaining nuts (17).
- Remove the burner retaining screws (27) and remove the burner (30).
- Fit the new burner and the new gasket in the reverse order.

15.2.3 Heat exchanger

- Remove the 2 mixing arm retaining screws (23) bolted on the fan (33).
- Remove the 5 heat exchanger retaining nuts (17).
- Remove the “burner + mixing arm” unit of the heat exchanger.
- Remove the heat exchanger retaining screws (1) and relieve the heat exchanger retaining plates (14).
- Relieve the 2 heat exchanger hydraulic coupling (20).

Warning: There will be water in the heat exchanger (31).

- Remove condense pipe connector from bottom of heat exchanger.
- Carefully remove the heat exchanger (31) out.
- Fit the new heat exchanger in the reverse order.

15.2.4 Gas valve

- Relieve the gas valve retaining clip (29).
- Relieve the 4 gas nozzle retaining screws located under the gas valve (35).
• Remove the screw (25) and the retaining plate (26) from the gas valve connector.
• Remove the gas valve connector (28).
• Remove the fan retaining screws (34).
• Remove the gas valve (35).
• Fit the new gas valve and the new gasket in the reverse order.
• When re-fitting the gas valve take care as it can be fitted more than one way.
• After re-fitting check the combustion CO2 and adjust if necessary (see chapter «Gas conversion»).

15.2.5 Fan
• Remove the mixing arm (13).
• Remove the fan retaining screws (34).
• Relieve the fan connector (12).
• Relieve the fan (33).
• Fit the new fan and the new gasket in the reverse order.

15.2.6 Ignition module
• Remove the ignition and control electrode connector (8) from the ignition module (22).
• Remove the ignition module harness connector (10).
• Remove the 2 ignition module retaining screws (11).
• Fit the new ignition module in the reverse order.

15.2.7 Ignition and control electrode
• Remove the connector from the ignition and control electrode connector (8).
• Remove the 2 ignition and control electrode retaining screws (11).
• Fit the new ignition and control electrode and the new gasket in the reverse order.

15.2.8 Viewing window
• Remove the circlip (4).
• Remove the gaskets (3) (18), the viewing window (19) and the spring leaf (18).
• Fit the new viewing window and the new gaskets in the reverse order.

15.3 DHW storage vessel / Expansion vessel
15.3.1 Heating expansion vessel

- Relieve the heating expansion vessel coupling (6).
- Loosen the screws (2) and (3) of the hanging bracket and remove it.
- Remove the heating expansion vessel (5).
- Fit the new heating expansion vessel and the new gasket in reverse order.

- Refill, vent and pressurise the boiler.
- Check for leaks.

15.3.2 DHW expansion vessel

- Relieve the DHW expansion vessel coupling (8).
- Relieve the DHW expansion vessel retaining screw (9).
- Remove the DHW expansion vessel (10).
- Fit the new DHW expansion vessel and the new gasket in the reverse order.
- Refill, vent and pressurise the boiler.
- Check for leaks.

15.3.3 DHW storage vessel

- Remove the heating expansion vessel (5).
- Relieve the DHW storage vessel coupling (12) (14) the drain nozzle nut (11).
- Remove the screws (1) (4) and (7), and take off the tie-rod.
- Relieve the DHW storage vessel harness.
- Relieve the DHW storage vessel (6).
- Fit the new DHW storage vessel and the new gasket in the reverse order.
- Refill, vent and pressurise the boiler.
- Check for leaks.

Legend
1 Pressure test point
2 Heating expansion vessel

- Check the supply pressure of the expansion vessel (see chapter “Technical Data”) with the pressure tap (1) and adjust it if necessary.
15.4 Condensate trap

- Disconnect the connector flexible (5) located under the condensate trap.
- Remove the front face of the tight chamber.
- Loosen both retaining screw (3) of the condensate trap (4).
- Remove the condensates recovery equipment by loosening flexibles (1); take care do not spray liquid.

Warning: condensate is acidic: use protective gloves.

15.5 Control panel

15.5.1 Access to the printed circuit board

- Fit the new condensate trap in the reverse order.

Legend
1 Flexibles
2 Float
3 Condensate trap retaining screw
4 Condensate trap
5 Draining flexible
6 Siphon adapter

Legend
1 Switchbox protective cover retaining screw
2 Cover retaining plate on the switchbox

- Remove the 2 switchbox protective cover retaining screws (1).
- Remove the cover retaining plate on the switchbox (2).
- Remove the switchbox protective cover.
15.5.2 Main board

- Fit the new main board in the reverse order.

15.5.3 User interface board

- Push on the 2 retaining clips (1) of the user interface to make it tip over.
- Remove the main board harness connector (2).
- Remove the user interface board retaining screws (4).
- Remove the user interface board (3).
- Fit the new user interface board in the reverse order.

Legend

1 Switchbox protective cover retaining screw
2 Cover retaining plate on the switchbox
3 Low voltage harness connector
4 Low voltage harness connector
5 Low voltage harness connector
6 Main board
7 Switchbox
8 Ignition module harness connector
9 Heating pump harness connector
10 DHW pump harness connector
11 Low voltage harness connector
12 Main board harness connector
13 On/Off switch harness connector
A Main board retaining clips

- Remove the 2 switchbox protective cover retaining screws (1).
- Remove the cover retaining plate on the switchbox (2).
- Remove the switchbox protective cover.
- Disconnect the connectors (3) (4) (5) (8) (9) (10) (11) (12) (13) from the main board.
- Remove the main board (6) from the switchbox (7) clips (A).
# 16 Technical data

Boiler type C13, C33, C53

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>ISOTWIN CONDENS F 35 E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas category</td>
<td></td>
<td>ll2H3P</td>
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<tr>
<td><strong>Heating</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating output at 80°C/60°C (P)</td>
<td>kW</td>
<td>7.6 - 28</td>
</tr>
<tr>
<td>Efficiency calculated on net calorific value at 80/60°C</td>
<td>%</td>
<td>95.8 - 97.8</td>
</tr>
<tr>
<td>Heating output at 50°C/30°C (P)</td>
<td>kW</td>
<td>8.6 - 30.6</td>
</tr>
<tr>
<td>Efficiency calculated on net calorific value at 50/30°C</td>
<td>%</td>
<td>107</td>
</tr>
<tr>
<td>Minimum calorific flow rate (Q min)</td>
<td>kW</td>
<td>8</td>
</tr>
<tr>
<td>Maximum calorific flow rate (Q max)</td>
<td>kW</td>
<td>28.6</td>
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<tr>
<td>Heating minimum flow rate</td>
<td>l/h</td>
<td>500</td>
</tr>
<tr>
<td>Maximum heating temperature</td>
<td>°C</td>
<td>80</td>
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<tr>
<td>Minimum heating temperature</td>
<td>°C</td>
<td>22</td>
</tr>
<tr>
<td>Expansion vessel, useful capacity</td>
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<td>12</td>
</tr>
<tr>
<td>Expansion tank initial pressure</td>
<td>bar</td>
<td>0.75</td>
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<tr>
<td>Maximum system capacity at 75°C</td>
<td>l</td>
<td>240</td>
</tr>
<tr>
<td>Safety valve, maximum service pressure (PMS)</td>
<td>bar</td>
<td>3</td>
</tr>
<tr>
<td><strong>Domestic hot water</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating output (P)</td>
<td>kW</td>
<td>7.6 - 33.2</td>
</tr>
<tr>
<td>Minimum calorific flow rate (Q min)</td>
<td>kW</td>
<td>8</td>
</tr>
<tr>
<td>Maximum calorific flow rate (Q max)</td>
<td>kW</td>
<td>34.2</td>
</tr>
<tr>
<td>Minimum hot water temperature</td>
<td>°C</td>
<td>38</td>
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<tr>
<td>Maximum hot water temperature</td>
<td>°C</td>
<td>63</td>
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<tr>
<td>Specific flow rate (D) (ΔT 30°C)</td>
<td>l/min</td>
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<tr>
<td>Threshold flow rate</td>
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<tr>
<td>DHW storage vessel</td>
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<tr>
<td>DHW storage vessel heat up time</td>
<td>min</td>
<td>6</td>
</tr>
<tr>
<td>Time to reheat 70% of the storage to 60°C</td>
<td>min</td>
<td>4</td>
</tr>
<tr>
<td>Maximum supply pressure</td>
<td>bar</td>
<td>16</td>
</tr>
<tr>
<td>Temp./pressure relief valve operating pressure</td>
<td>bar</td>
<td>7</td>
</tr>
<tr>
<td>Temp./pressure relief valve operating temperature</td>
<td>°C</td>
<td>90</td>
</tr>
<tr>
<td>Cold water flow rate regulator</td>
<td>l/min</td>
<td>16</td>
</tr>
<tr>
<td>Safety valve, maximum service pressure</td>
<td>bar</td>
<td>10</td>
</tr>
<tr>
<td>Minimum operating pressure</td>
<td>bar</td>
<td>0.7</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>bar</td>
<td>10</td>
</tr>
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### Combustion

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh air flow rate</td>
<td>m³/h</td>
<td>43</td>
</tr>
<tr>
<td>Product outlet flow rate</td>
<td>g/s</td>
<td>15.3</td>
</tr>
<tr>
<td>Product outlet temperature</td>
<td>°C</td>
<td>68</td>
</tr>
</tbody>
</table>

Values of product outlet (measured on nominal heating output with G20 reference gas):

<table>
<thead>
<tr>
<th></th>
<th>ppm</th>
<th>g/kWh</th>
<th>%</th>
<th>mg/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>86</td>
<td>92</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>CO₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOx balance</td>
<td>21.1</td>
<td>37.3</td>
<td></td>
<td></td>
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</table>

Dimensions:

<table>
<thead>
<tr>
<th></th>
<th>mm</th>
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<tbody>
<tr>
<td>Height</td>
<td>890</td>
</tr>
<tr>
<td>Width</td>
<td>700</td>
</tr>
<tr>
<td>Depth</td>
<td>480</td>
</tr>
<tr>
<td>Net weight</td>
<td>75</td>
</tr>
<tr>
<td>Weight of appliance when full</td>
<td>120</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>V/Hz</td>
</tr>
<tr>
<td>Maximum absorbed power</td>
<td>W</td>
</tr>
<tr>
<td>Electrical rating</td>
<td>A</td>
</tr>
<tr>
<td>Fuse</td>
<td>mA</td>
</tr>
<tr>
<td>Electric protection</td>
<td>IPX4D</td>
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<tr>
<td>Class</td>
<td>1</td>
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<tr>
<td>CE number</td>
<td>1312 BP 4108</td>
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### Technical data depending on the gas type

#### Natural gas G 20 (1)

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary flow rate at maximum input</td>
<td>m³/h</td>
<td>3.62</td>
</tr>
<tr>
<td>Heating flow rate at maximum input</td>
<td>m³/h</td>
<td>3.02</td>
</tr>
<tr>
<td>Flow rate at minimum input</td>
<td>m³/h</td>
<td>0.68</td>
</tr>
<tr>
<td>Inlet pressure</td>
<td>mbar</td>
<td>20</td>
</tr>
<tr>
<td>Burner injector diameter</td>
<td>mm</td>
<td>5.65</td>
</tr>
</tbody>
</table>

(1) 15 °C, 1013.25 mbar
# Gas Boiler Commissioning Checklist

## Controls

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

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

## For All Boilers Confirm the Following

- The system has been flushed in accordance with the boiler manufacturer's instructions?  
- The system cleaner used
- The inhibitor used

## For the Central Heating Mode, Measure & Record

<table>
<thead>
<tr>
<th>Description</th>
<th>m³/hr</th>
<th>ft³/hr</th>
<th>mbar</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burner Operating Pressure (If Applicable)</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Heating Flow Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Heating Return Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## For Combination Boilers Only

- Has a water scale reducer been fitted?  
- What type of scale reducer has been fitted?

## For the Domestic Hot Water Mode, Measure & Record

<table>
<thead>
<tr>
<th>Description</th>
<th>m³/hr</th>
<th>ft³/hr</th>
<th>mbar</th>
<th>°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Burner Operating Pressure (If Applicable)</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Water Inlet Temperature</td>
<td></td>
<td></td>
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<tr>
<td>Hot Water Outlet Temperature</td>
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<td></td>
</tr>
<tr>
<td>Water Flow Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## For Condensing Boilers Only Confirm the Following

- The condensate drain has been installed in accordance with the manufacturer's instructions?  

## For All Installations Confirm the Following

- The heating and hot water system complies with current building regulations
- The appliance and associated equipment has been installed and commissioned in accordance with the manufacturer’s instructions
- If required by the manufacturer, have you recorded a CO/CO₂ ratio reading? N/A YES CO/CO₂ Ratio
- The operation of the appliance and system controls have been demonstrated to the customer
- The manufacturer's literature has been left with the customer

## Commissioning Eng's Name

<table>
<thead>
<tr>
<th>Name</th>
<th>Corgi ID No.</th>
<th>Sign</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**SERVICE INTERVAL RECORD**

It is recommended that your heating system is serviced regularly and that you complete the appropriate Service Interval Record Below.

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

<table>
<thead>
<tr>
<th>SERVICE 1</th>
<th>DATE</th>
</tr>
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<tbody>
<tr>
<td>ENGINEER NAME</td>
<td></td>
</tr>
<tr>
<td>COMPANY NAME</td>
<td></td>
</tr>
<tr>
<td>TEL No.</td>
<td></td>
</tr>
<tr>
<td>CORGI ID CARD SERIAL No.</td>
<td></td>
</tr>
<tr>
<td>COMMENTS</td>
<td></td>
</tr>
<tr>
<td>SIGNATURE</td>
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</table>

<table>
<thead>
<tr>
<th>SERVICE 2</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINEER NAME</td>
<td></td>
</tr>
<tr>
<td>COMPANY NAME</td>
<td></td>
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<tr>
<td>TEL No.</td>
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<tr>
<td>CORGI ID CARD SERIAL No.</td>
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<tr>
<td>COMMENTS</td>
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<table>
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<tbody>
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<td>COMMENTS</td>
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<table>
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