ENVIROMAX
CONDENSING RANGE
TECHNICAL MANUAL

For use with Diesel 35 Sec. Gas Oil

TECHNICAL MANUAL INCLUDES
❯❯ HOUSEHOLDER INSTRUCTIONS
❯❯ INSTALLER GUIDE
❯❯ COMMISSIONING
❯❯ SERVICING
❯❯ SPARE PARTS

Working towards a greener planet

This manual must remain with the householder on completion of installation

REVISION 6. © 01-03-2010
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FOREWORD

We would like to thank you for purchasing a high efficiency Firebird C Range Condensing domestic central heating oil fired boiler. This instruction manual is produced for the reference and guidance of qualified installation engineers such as those who are OFTEC registered. EU legislation governs the manufacture, operation and efficiency of all domestic central heating oil boilers. Our boilers and burners will are supplied as matched units tested and approved to OFTEC Standard OFS A100.

FIREBIRD Boilers are full manufacturing members of OFTEC (Oil Firing Technical Association) and are participating in its Boiler testing and approvals programme to comply with OFS A100 and EC Efficiency Directive.

You should ensure that all installation, servicing and commissioning works are carried out by a competent person, such as one registered by OFTEC. It should be noted that it is the responsibility of the Installer/Householder to ensure that the boiler is properly commissioned. Failure to do so may invalidate the boiler guarantee and any extended warranty.

SERVICING

The boiler requires servicing on an annual basis to ensure it maintains its efficiency, continues to perform reliably and as a regular check on its built-in safety features. It is important that servicing should be conducted by a competent engineer, such as one who is OFTEC trained and registered.

All appropriate OFTEC manuals and BS Standards should be studied and their requirements adhered to and used in conjunction with these instructions. This manual includes a list of some BS Standards and Building Regulations.

OFTEC is conducting training and registration of engineers and this is to be commended, as reading of this manual alone for installation and servicing procedures cannot replace the critical advantage provided by training and years of experience.

INTRODUCTION

Firebird domestic oil fired condensing boilers are highly efficient and are all independently certified to Sedbuk Band A. They use less fuel and have lower running costs than non-condensing boilers. Because of their increased efficiency they emit less carbon dioxide than non-condensing boilers, which will contribute to efforts to reduce global warming. The incredible efficiency of the Firebird C Range Condensing Boiler is due to the development of a single boiler unit with two unique heat exchanger units. This gives a exchange surface greater than non-condensing boilers.

This additional surface area increases the amount of heat extracted from the combustion process and thus reduces the heat wasted to atmosphere. So much heat is extracted from the combustion gases that their water vapor element condenses into liquid form, releasing the latent heat that was used to create the vapor in the first place. It is this heat gain that gives the condensing boiler its significant advantage over a non-condensing model. In order to enable this high level of heat extraction to take place, the water in the boiler’s heat exchanger must be cooled down to about 55°C or less, this means that the boiler is working at its maximum efficiency.

The condensate produced is often mistakenly considered to be highly acidic. In fact the acidity of condensate from a Firebird C Range Condensing Boiler will be found to be as low, if not lower, than that of vinegar.

The Firebird C Range Condensing Boiler is suitable for under floor heating provided the return temperature is above 40˚C. at all times.

The Firebird C Range Condensing Boiler even when not working in condensing mode will still operate at extremely high efficiencies making it suitable for fitting to an existing heating system without alteration to the radiator sizes.

The burner is factory set for use with kerosene 35 second Gas Oil.
• Firebird boilers are designed and manufactured to give many years of trouble-free service. We provide a comprehensive conditional warranty of 5 years on the boiler shell and 2 years on burner and associated controls.

• This will only apply if the boiler is commissioned by an approved engineer and is serviced annually thereafter.

• Please ensure that the Commissioning Card (the tear-off section on the Guarantee Card) is returned, fully completed within 28 day's of complete installation & commissioning. Correct commissioning will ensure that your boiler is set to operate at its maximum fuel efficiency.

• Consumable components, the nozzles and the oil hose are excluded.

• The terms laid down on the Guarantee must be adhered to.

**TERMS OF THIS GUARANTEE**

1. Firebird hereby guarantees the following (The Guarantees)
   a. The Boiler Shell will be free from defective parts or workmanship for a period of 5 years from the date of installation.
   b. Burner, controls and flue kits (supplied by Firebird) will be free from defective parts or workmanship for a period of 2 years from the date of installation. (With the exception of burner nozzles, which should be replaced at the recommended service intervals.)

2. Guarantees are subject to the following conditions:
   a. All claims under the guarantees must be within the above stated time limits.
   b. The boiler must be commissioned by qualified persons and as set out in the Installation Manual, using correct test equipment.
   c. Maintenance should be carried out at the intervals stated in the Installation Manual.
   d. Installation of the boiler must be in accordance with (a) Installation Manual, (b) all relevant standards and codes of practice.
   e. Firebird can accept no liability in respect of any defect arising from incorrect installation, negligence, fair wear and tear, misuse, alteration or repair by unqualified persons.
   f. Firebird will not accept any liability in respect of any defect occurring in the heat exchanger due to limescale build-up and or low return water temperature.
   g. The guarantees extend to reasonable labour costs EXCEPT under clause 1a where any valid claim made after 3 years will not include labour costs.
   h. Firebird’s prior authorisation must be obtained before examination or repair of the boiler takes place.
   i. Firebird will examine all claims made under the guarantee sand for any claims that are deemed invalid, the costs incurred will be borne by the owner.
   j. That the appliance was used only for normal domestic central heating purposes.

3. Any defective part removed under any or all of the guarantees MUST be returned to Firebird.

**STATUTORY RIGHTS OF THE OWNER ARE NOT AFFECTED BY THIS GUARANTEE**
**POPULAR BOILERHOUSE**

**Enviromax Popular Boilerhouse Operating Procedure**
(All outputs)

**TO START THE BOILER FOLLOW THIS SEQUENCE:**
- Turn on fuel supply.
- Switch on power supply to boiler.
- Turn timer control (if fitted) to ‘ON’.
- Set the boiler thermostat to the required temperature (figure 1 pg. 5). The boiler thermostat controls the boiler operation by automatically maintaining the required boiler water temperature output. Safe operation is also maintained by the burner control system which provides the required ignition and shut off sequence. If a time control is fitted this will automatically switch the boiler off and on when heat is required.

**THE BOILER CAN BE TURNED OFF BY ANY OF THE FOLLOWING MEANS:**
- Turn the timer control (if fitted) to OFF.
- Turn OFF the mains electrical supply to the boiler.

---

**SYSTEM**

**Enviromax System Operating Procedure**
(All outputs)

**TO START THE BOILER FOLLOW THIS SEQUENCE:**
- Turn on fuel supply.
- Switch on power supply to boiler.
- Turn timer control (if fitted) to ‘ON’.
- Set the boiler thermostat to the required temperature (figure 1 pg. 5). The boiler thermostat controls the boiler operation by automatically maintaining the required boiler water temperature output. Safe operation is also maintained by the burner control system which provides the required ignition and shut off sequence. If a time control is fitted this will automatically switch the boiler off and on when heat is required.

**THE BOILER CAN BE TURNED OFF BY ANY OF THE FOLLOWING MEANS:**
- Turn the timer control (if fitted) to OFF.
- Turn OFF the mains electrical supply to the boiler.

* Lights not included in Utility models.
**SYSTEMPAC**

**Enviromax Systempac Operating Procedure**
(All outputs)

- **Temperature Control**
  - High Limit re-set button

- **Burner Lock-out**
  - re-set button

**TO START THE BOILER FOLLOW THIS SEQUENCE:**
- Turn on fuel supply.
- Switch on power supply to boiler.
- Turn timer control (If Fitted) to ‘ON’.
- Set the boiler thermostat to the required temperature (figure 1 pg. 5). The boiler thermostat controls the boiler operation by automatically maintaining the required boiler water temperature output. Safe operation is also maintained by the burner control system which provides the required ignition and shut off sequence. If a time control is fitted this will automatically switch the boiler off and on when heat is required.

**THE BOILER CAN BE TURNED OFF BY ANY OF THE FOLLOWING MEANS:**
- Turn the timer control (if fitted) to OFF.
- Turn OFF the mains electrical supply to the boiler.

---

**Thermostat Control**

*figure 1*

- Set at Max 80˚C
- Set at Mid 70˚C
- Set at Min 60˚C

**Burner Lockout**

(ALL MODELS)

The boiler is factory fitted with a burner control box lockout safety feature which operates automatically if a fault occurs in the burners operation. Should this occur, the light on the front of the burner - See Burner Section Pg. 40 or Boiler Photo - will illuminate and its cause must be investigated. This could be caused by:

A. An interruption in the fuel supply. (Eg. empty oil supply tank)
B. An electrical supply fault.
C. A fault with the burner or its safety control system.
D. The failure of a component. (Eg. photo cell)
E. Worn or dirty oil nozzle.

Before attempting to restart the boiler the front panel and the burner cover should be removed and a visual check made for any obvious problems such as oil leaks, loose connections etc.

**ENSURE OIL TANK CONTAINS CORRECT GRADE FUEL. 35 SECOND GAS OIL**

**TO RESTART THE BOILER**

1. Press reset button See Burner Section Pg. 40 or Boiler Photo
2. Ensure that the boiler thermostat, time switch (if fitted) and any external controls connected to the boiler are set to call for heat.
3. Check that the oil supply valves and remote sensor fire valve are open and that there is sufficient oil in the tank.
4. Check that the burner lockout light is unlit and with the ‘mains ON’ the boiler will be ready to commence its start sequence.
Firebird Enviromax Popular Boilerhouse C Range Dimensions (mm)

- Ø 209
- 832
- 1057
- 697
- 130
- 759
- 705
- 759
- 112
- 705
- 759

Boiler Model
- C80 / 100
- Max Heat Output Kw: 80 / 100
- Btu/h ('000): 341

CONNECTIONS
- Heating Flow: 2" Bsp.
- Heating Return: 2" Bsp.
- Drain Off Cock: 2" Bsp.
- Condense Drain Off Connection: 22 mm PLASTIC

WATER CONTENT
- Water Content Boiler: 75

FLUE (Indoor Boilers)
- Concentric Flue
- Balanced Flue Assembly (mm): 207 (8")
- Conventional flue Socket. (mm): 207 id.
- Flue Draught Req'd. (Min WG.): 0.040"
- Conventional Flue (Max WG.): 0.15"

MAINS WATER SUPPLY
- Pressure Max: 10 bar
- Pressure Min: 1 bar

TEMPERATURE CONTROL
- Boiler Central Heating Control: 60°C - 80°C + 3°C
- Boiler Safety Limit: 110°C ± 3°C

HEATING SYSTEM (SEALED)
- Fit in accordance with BS 7074 Part 1, BS 5449, OFTEC Standards, etc.
- Boiler Test Pressure: 4.5 Bar
- Safety Valve Operating Pressure Gauge: 0 to 4 Bar

WATER SIDE RESISTANCE
- Flow Rate To Give A Nominal Output At 10k Differential
  - Flow Rate Measured (Kg h⁻¹): 2874.24
  - Waterside Resistance (mbar): 0.18
- Flow Rate To Give A Nominal Output At 20k Differential
  - Flow Rate Measured (Kg h⁻¹): 1522.92
  - Waterside Resistance (mbar): 0.19

Pressure Jet Oil Burners
- RIELLO RDB 4.2

Fuel
- 35 second Gas Oil

Electrical Supply
- 230v. AC 50Hz To be fused at 5amp.
ELECTRICAL SUPPLY

The boiler and controls require 230V 1 phase 50Hz mains electric supply protected with a 5amp fuse.

The guarantee on this product will be rendered void if damaged by power from a stand by electricity supply. i.e. (Generator.)

THIS APPLIANCE MUST BE EARTHED.

A qualified electrician must carry out all electric wiring in accordance with current I.E.E Regulations and any local regulations which may apply.

The mains electrical supply must be taken from a double pole isolating switch with a 5amp fuse, positioned somewhere close to the boiler. Heat resisting cable must be used which can be routed into the boiler through the access provided on either side of the base. Ancillary controls may be provided for with terminal connections in the control panel.

**POPULAR / BOILERHOUSE WIRING**

**I. Stat Dual Thermostat**

- Control Thermostat.
- Safety Limit Thermostat.
- Power supply to Burner.
- Use Double Insulated Heat Resistant Cable.

**Burner Plug.**

- N = Neutral.
- X = Burner Lock out.
- L = Live.
- Earth.

**SCHEMATIC DIAGRAM.**

- Control Stat.
- Live Out To Burner / Boiler.
- Neutral.
- Earth.

**OVER RUN DIAGRAM FOR CIRCULATING PUMP.**

1. Double insulated heat resistant cable is used.
2. No single insulated cable is exposed at connection points on the (Thermostat, Burner, plug and socket)
3. All relevant lids and covers are properly replaced and secured correctly.
4. A permanent power supply (not timed) be available at location of boiler. This can be used for a frost thermostat and or an over heat thermostat, should either or both be needed.
## Enviromax Popular - Boilerhouse Model C100

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>Burner panel</td>
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<td>2</td>
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<td>212415</td>
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<td>3</td>
<td>Left Side Panel</td>
<td>212418</td>
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<tr>
<td>4</td>
<td>Back Panel</td>
<td>212417</td>
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<td>5</td>
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<td>6</td>
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<td>7</td>
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<td>10</td>
<td>Graphite Door Seal</td>
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<td>11</td>
<td>Door Gasket</td>
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<td>12</td>
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<td>13</td>
<td>Condense Trap</td>
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<td>15</td>
<td>Boiler Dual Thermostat</td>
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3.1 - POPULAR BOILERHOUSE BAFFLES

ENVIROMAX C26 & C35

ENVIROMAX (E) RANGE Baffles.

- E26 Smoke Baffle R4 - Part No. 212028
- E35 Smoke Baffle oblong - Part No. 212122

- Tube Baffle (1 Off) E26 & E35 Part No. 110908
- Tube Baffle (4 Off) E26 & E35 Part No. 110909
- E26 & E35 Door Gasket - Part No. 110918
- E26 & E35 Door - Part No. 210910

ENVIROMAX C44, C58, C73 & C100

- E26 Smoke Baffle R4 - Part No. 211645
- E35 Smoke Baffle oblong - Part No. 111505

- C44/C58 Graphite Seal Part No. 111646
- C73 Graphite Seal Part No. 111506

- C44/C58 Duroboard Door Part No. 111645
- C73 Duroboard Door Part No. 111506

- 8 No. Gas Baffles.
  8 No. C44 Gas Baffle Part No. 211644
  8 No. C73 Gas Baffle Part No. 211501
  8 No. C100 Gas Baffle Part No. 212429

- 8 No. C44 Gas Baffle Part No. 211651
  8 No. C58 Gas Baffle Part No. 211640
  8 No. C73 Gas Baffle Part No. 211501
  8 No. C100 Gas Baffle Part No. 212429

- 8 No. Gas Baffles.

- C44 & C58
  8 No. Tube baffle No. 1 Part No. 211502
  6 No. Tube baffle No. 2 Part No. 211504

- C73
  4 No. Tube baffle No. 2

- C100
  9 x Tube baffle No. 2

PATENTED BOILER DESIGN
### Firebird Enviromax System C Model Dimensions (mm)

<table>
<thead>
<tr>
<th>Model</th>
<th>Output</th>
<th>Weight</th>
<th>Dimensions (mm)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>94</td>
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<tr>
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<td>845</td>
<td>442</td>
<td>610</td>
<td>753</td>
<td>223</td>
<td>157</td>
<td>94</td>
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<tr>
<td>System C35</td>
<td>149</td>
<td>845</td>
<td>442</td>
<td>610</td>
<td>753</td>
<td>223</td>
<td>157</td>
<td>94</td>
<td>124</td>
<td>-</td>
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<tr>
<td>System C44</td>
<td>235</td>
<td>1046</td>
<td>660</td>
<td>852</td>
<td>914</td>
<td>232</td>
<td>157</td>
<td>100</td>
<td>125</td>
<td>236</td>
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</tbody>
</table>

**Copper Pipe Not Plastic to be used for a minimum of 1 metre off the boiler**

**TEMPERATURE CONTROL**

- Boiler Central Heating Control: 60°C - 80°C +/− 3°C
- Boiler Safety Limit: 110°C + 3°C
- Tank (DHW) Fixed: 78°C + 3°C
- Early Alert Fixed: 87°C + 3°C
- Over-run Fixed: 93°C + 3°C

**HEATING SYSTEM (SEALED)**

- Fit in accordance with BS 7074 Part 1, BS 5449, OFTEC Standards, etc.
- Max. Operating Pressure: 2.5 Bar
- Max. System Pressure Cold: 1.5 Bar
- Min. System Pressure Cold: 0.5 Bar + 0.3 Bar
- Boiler Test Pressure: 4.5 Bar
- Safety Valve Operating Pressure: 3 Bar

**WATER SIDE RESISTANCE**

- Flow Rate to Give a Nominal Output at 10k Differential:
  - Flow Rate Measured (Kg h⁻¹): 2874.24
  - Waterside Resistance (mbar): 0.18

- Flow Rate to Give a Nominal Output at 20k Differential:
  - Flow Rate Measured (Kg h⁻¹): 1522.92
  - Waterside Resistance (mbar): 0.19

**Guidelines for Sealed System Installation** - See section 3.2, 4, 5 & 6

---

**FLUE (Indoor Boilers)**

- Balanced Flue Assembly (mm): 125 (5")
- Conventional flue Socket (mm): 130 id.
- Flue Draught Req'd (Min WL): 0.040"
- Conventional Flue (Max WL): 0.15"

**Pressure Jet Oil Burners**

- RIELLO RDB 2.2 up to C35 & RIELLO RDB 4.2 up to C58 - C73
- Fuel: 35 second Gas Oil
- Electrical Supply: 230v. AC 50Hz To be fused at SAMP.

---

**Guidelines for Sealed System Installation** - See section 3.2, 4, 5 & 6
**ELECTRICAL SUPPLY**

The boiler and controls require 230V 1 phase 50Hz mains electric supply protected with a 5amp fuse.

The guarantee on this product will be rendered void if damaged by power from a stand by electricity supply, i.e. (Generator.)

**THIS APPLIANCE MUST BE EARTHED.**

A qualified electrician must carry out all electric wiring in accordance with current I.E.E Regulations and any local regulations which may apply.

The mains electrical supply must be taken from a double pole isolating switch with a 5amp fuse, positioned somewhere close to the boiler. Heat resisting cable must be used which can be routed into the boiler through the access provided on either side of the base. Ancillary controls may be provided for with terminal connections in the control panel.

---

**Firebird Enviromax System Wiring Diagram**

*Enviromax 7 Pin Plug Wiring White Panel with Lights & Pressure Switch*

**Temperature Control.**

Max 80°C.

Min 60°C.

**Mains Connection.**

- (B4) NEUTRAL
- (S3) EARTH.
- PERMANENT LIVE (T1)
- TIMED SWITCH LIVE (T2)
- NEUTRAL (N)
- PUMP LIVE (L1)
- EARTH.

**Pump Connection.**

**Power To Burner**

**Use Heat Resistant Cable. Protect Supply with 5 Amp. Fuse.**

---

**Burner Lock Out Light.**

**Mains Supply Light.**

**Pressure Gauge.**

**Burner Plug.**

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## 3.2 - SYSTEM - PARTS

**ENVIROMAX SYSTEM - White Cased Models C20, C26, C35 & C44**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>C20 / C26 / C35</th>
<th>C44</th>
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<td>1</td>
<td>Front Panel</td>
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<td>2</td>
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<td>Top Panel</td>
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<td>Top Panel Insulation</td>
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<td>Flue Trim (Half Moon)</td>
<td>111397</td>
<td>111587</td>
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<td>Flue Blank</td>
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<td>Flue Gas Analysis Blank</td>
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<td>12</td>
<td>Insulation Jacket</td>
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<td>13</td>
<td>Boiler Shell</td>
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<td>17</td>
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<td>C20 410205</td>
<td>C44 410208</td>
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<td>C26 410206</td>
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<td>18</td>
<td>Air Hose</td>
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<td>19</td>
<td>Pressure Vessel Bracket</td>
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</table>

**ROS PRINTERS**
**TEL: 064-6631233**

**PROOF**
### Enviromax System Plumbing Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>C20 / C26 / C35</th>
<th>C44 / C58</th>
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<td>12ltr. Pressure Vessel</td>
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<td>Auto Air Vent</td>
<td>ACCCOMAAV</td>
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<td>7</td>
<td>Pressure Switch</td>
<td>ACC000PSW</td>
<td>ACC000PSW</td>
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<td>8</td>
<td>22mm Pump Valve</td>
<td>ACC022PIV</td>
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<td>Circulating Pump</td>
<td>ACCCOMPMP</td>
<td>ACC150PMP</td>
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<td>3 Bar Safety Valve</td>
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<td>Manual Air Vent</td>
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<td>13</td>
<td>1 1/4” Gate Valve</td>
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<td>14</td>
<td>System Pipe 1</td>
<td>110969</td>
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<td>15</td>
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<td>System Pipe 3</td>
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<td>17</td>
<td>22mm Butterfly Valve</td>
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3.2 - DOMESTIC HEATING & HOT WATER

SEALIED HEATING CIRCUIT
(also applies to System Boilers)

The system must comply with BS 7074 Part 1 and BS 5449 Part 1 with a maximum water temperature of 80˚C.

* A manual reset overheat limit thermostat is located at the rear of the electrical control panel. If a boiler overheat condition arises the burner will stop and remain inoperative until this thermostat reset button is depressed.

* A pressure relief valve to BS 6759 operating at 3 bar (45 lb/in²) is fitted. A discharge pipe of 15 mm diameter is also fitted to the discharge connection on the pressure relief valve. During installation an extension pipe should be fitted to this leading to outside the building. The pipe should be as short as possible and may need a tundish fitted in a protected position within the building.

* A 12 litre expansion vessel is fitted to boiler, precharged with air or nitrogen to 1 bar which allows a system static head of 5 metres. If the static head is greater than this then the air charge in the vessel must be increased to balance the higher static head. The air charge should not exceed a pressure of 1.5 bar.

The Firebird Combi C Boiler’s with built in Expansion Vessels having an initial air charge pressure of 1 bar. If total water content of system is greater than the capabilities of the vessel supplied then an additional vessel will be required to be fitted to the return pipe as close as is practical to the boiler. There should be no valves or restrictions between vessel and boiler. See page 17 for vessel sizes.

* A drain cock must be fitted at the lowest points in the system to enable draining as necessary. A drain cock is already fitted at the bottom of the boiler heat store to enable draining of boiler and tank unit only. All pipes connected to boiler should have shut off valves fitted to facilitate this.

* A Pressure gauge, having range 0 to 4 bar is fitted to boiler control panel. This indicates water pressure in boiler and system at time of reading. Pressure when cold should be ½ bar minimum to 1.5 bar maximum. This is known as Initial System Design Pressure (Pᵢ).

N.B. Initial System Design Pressure (measured in bar) equals static head of system (measured in bar) plus 0.3.

When the system is cold and filled to initial fill pressure Pᵢ the pointer on the pressure gauge should point at 1 bar.

The pressure gauge shown has two red zones marked on it. The first is between 0 and 1/2 a bar. If the pointer falls into this zone when system and boiler are cold this is indicating that initial System Fill Pressure has dropped and this will activate the pressure switch cutting off power supply to the Combi C. Refill system manually until indicated pressure rises to 1 bar.

N.B. Insufficient pressure in the boiler will cause power supply to switch off.

* A 12 litre expansion vessel is fitted to boiler, precharged with air or nitrogen to 1 bar which allows a system static head of 5 metres. If the static head is greater than this then the air charge in the vessel must be increased to balance the higher static head. The air charge should not exceed a pressure of 1.5 bar.

The system must comply with BS 7074 Part 1 and BS 5449 Part 1 with a maximum water temperature of 80˚C.

* A manual reset overheat limit thermostat is located at the rear of the electrical control panel. If a boiler overheat condition arises the burner will stop and remain inoperative until this thermostat reset button is depressed.

* A pressure relief valve to BS 6759 operating at 3 bar (45 lb/in²) is fitted. A discharge pipe of 15 mm diameter is also fitted to the discharge connection on the pressure relief valve. During installation an extension pipe should be fitted to this leading to outside the building. The pipe should be as short as possible and may need a tundish fitted in a protected position within the building.

Note:- Water must not discharge above an entrance, window or where public have access. The installer must be aware that the discharge may be boiling water.

* A drain cock must be fitted at the lowest points in the system to enable draining as necessary. A drain cock is already fitted at the bottom of the boiler heat store to enable draining of boiler and tank unit only. All pipes connected to boiler should have shut off valves fitted to facilitate this.

* A Pressure gauge, having range 0 to 4 bar is fitted to boiler control panel. This indicates water pressure in boiler and system at time of reading. Pressure when cold should be ½ bar minimum to 1.5 bar maximum. This is known as Initial System Design Pressure (Pᵢ).

N.B. Initial System Design Pressure (measured in bar) equals static head of system (measured in bar) plus 0.3.
3.2 - DOMESTIC HEATING & HOT WATER

N.B. The second red zone is between 2 1/2 and 4 bar pressure. When the heating system is up to full working temperature, if the pointer on the pressure gauge should enter this red zone showing a final system design pressure of more than 2 1/2 bar, it is likely that:

(a) Total system water content is greater than that calculated and if additional expansion vessel has been fitted it should be replaced with a larger unit OR if integral boiler expansion vessel only is used then an additional expansion vessel is required.

(b) Static head may be higher than calculated. In this case it is necessary to re-measure static head and revise expansion vessel air charge pressure.

(C) Expansion vessel incorrect size or air charge pressure incorrect.

Refer to BS 7074 Part 1 and BS 5449 for further information.

EXAMPLE: using above table

If total water content of system is - 150 litres and initial system pressure required is - 1.0 bar then vessel volume required is - 16.3 litres

(from above table)

The vessel supplied with boiler is - 12.0 litres therefore an additional vessel of - 4.3 litres is required

(For this system of 150 litres - total water volume)

..Nearest available stock size for additional vessel required, at 1 bar initial system pressure (taken from above table) is 5 Litres.

It is emphasised that the installer should be fully acquainted with sealed system installation and operation, calculation of total system water volume, determining of initial system pressure required and calculation of any additional expansion vessel volume required. Warranty is void when the boiler is installed in a system with insufficient expansions.

NB .. Ensure that all expansion vessels in the same system are set at EQUAL air charge pressures.

EXPANSION VESSEL AND SYSTEM REQUIREMENTS

<table>
<thead>
<tr>
<th>Safety Valve Setting</th>
<th>3 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial System Pressure</td>
<td>0.5 bar</td>
</tr>
<tr>
<td>Total Water Content of System</td>
<td>TOTAL VESSEL VOLUME **</td>
</tr>
<tr>
<td>Litres</td>
<td>Litres</td>
</tr>
<tr>
<td>25</td>
<td>2.1</td>
</tr>
<tr>
<td>50</td>
<td>4.2</td>
</tr>
<tr>
<td>75</td>
<td>6.3</td>
</tr>
<tr>
<td>100</td>
<td>8.3</td>
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<td>125</td>
<td>10.4</td>
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<td>150</td>
<td>12.5</td>
</tr>
<tr>
<td>175</td>
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<td>200</td>
<td>16.7</td>
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<tr>
<td>225</td>
<td>18.7</td>
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<tr>
<td>250</td>
<td>20.8</td>
</tr>
</tbody>
</table>

* * When calculating size of any additional expansion vessel required, remember to deduct the boiler expansion vessel volume of 12 litres from the calculated total system vessel volume required, as given in above table.

DOMESTIC HOT WATER CIRCUITS

The final 600 mm mains water supply should be of copper tube to BS 2871 Part 1. Ensure that any capillary fittings used are of lead free solder variety.

For user comfort the mains pressure at taps should be between 1 and 5 bar. If it exceeds this it is advisable to fit a pressure reducing valve adjusted to reduce pressure to an acceptable level within above range.

To ensure user comfort and satisfaction it may be advisable to discuss foregoing with householder. Where long hot water supply-pipe runs are used these should be insulated to prevent rapid cooling of residual hot water after draw off is completed.

If the boiler is fitted in a hard water area check that hardness does not exceed 150 p.p.m. by testing with a standard test strip. Immerse test strip in flowing tap water for one second. Shake off excess water. Check strip after approximately fifteen seconds. If three or more zones have changed colour the water hardness is over 150 p.p.m. (Read instructions on test strip package). Fitting of an in line scale inhibitor is then necessary.

Failure to check water hardness and fit appropriate water softening equipment will result in scale build up and consequent reduction in water heating performance. Check with local Water Authority if in doubt.
Hot and Cold taps, mixing valves and fittings must be suitable for operating at mains pressure up to 10 bar. Bidets with the supply of hot and cold mains water are permitted if they are of the over-rim flushing type and have shrouded outlets which enable them to have temporary hand held spray attached. Showers of loose headed or flexible type must be fixed so that the head cannot fall closer than 25mm above the top edge of the bath to prevent it immersing into the bath water. Alternatively the shower should have a double check valve incorporated at the point of the flexible connections.

### WATER FLOW REGULATION

The flow rate of water from individual taps may be affected by any of the following:

1. **Number of taps in use at one time**
2. **Cold mains pressure**
3. **Diameter and length of pipework in the domestic water circuits within the dwelling.**
4. **Excessive flow from 3/4” bath taps in a house system converted to mains water supply.**

It is recommended:

A. To ensure that the mains water connection to the appliance is the first connection from the mains on entering the dwelling.
B. Where flow starvation is encountered that flow restrictors or balancing valves are fitted at supply outlets.

* The boiler has circulating pumps fitted therefore no other is normally required. They are factory set at maximum output. This setting should not be altered on the domestic hot water pump as production of domestic hot water may be adversely affected.

### SYSTEM FILLING, TESTING AND MAKE-UP

**Introduction**

Mains cold water is supplied through the boiler pipework to two separate circuits operating at different pressures.

**Circuit One**

This is the Radiator Heating System including boiler and primary tank which is filled from mains supply via flex filling loop (see - Method A) within boiler to a pressure determined from system static head, expansion vessel size and system water volume. This flexible filling loop should be disconnected when boiler and system are filled and checked, See diagrams - Method A & Method B).

**Circuit Two**

This is the domestic cold water supply through the boiler plate heat exchanger via domestic hot water pipework direct to hot taps. This works at full mains pressure or if this is excessive at a reduced pressure controlled by a mains pressure reducing valve to a pressure acceptable to householder and satisfactory for the correct operation of Combi C Boiler System. This mains pressure reducing valve is not supplied with boiler, but will be available from a local supply merchant.

**System filling should take place slowly and can be done by either of the following methods:-**

### Manual Filling

The Firebird Combi C comes with this system built into the appliance. It consists of a flexible hose connection with a butterfly shut off valve at each end and a double check valve assembly at boiler end. To conform to requirements of BS 7074 Part I and local water Authority Bye Laws, the flexible hose should be disconnected at one end when filling has been completed and checked. Two end caps are supplied and should be fitted to disconnected ends as a safety precaution against inadvertent opening of ball valves.

Pressure gauge on Control Panel should be checked occasionally when system is cold. Refill to initial fill pressure if necessary. Should this be a frequent occurrence, complete system should be checked for leaks.

### Automatic Filling

Automatic System filling may be made with a feed and make-up cistern connected through a double check valve and stop valve assembly to the return side of the heating system as close to the boiler as is practical. This cistern should be located above the heating systems highest point to give a minimum static head of 300 mm between it (highest point) and cistern. The manual filling system fitted to boiler should then be disconnected and connection points blanked off.

This system has the advantage of automatic water make-up in the event of system pressure loss due to air elimination and minor leaks. In any case control panel pressure gauge should be occasionally checked.
3.2 - DOMESTIC HEATING & HOT WATER

METHOD B

N.B. Remember also to check air fill pressure of Expansion Vessel when system is cold using standard tyre gauge connected to Schrader air valve on vessel.

NOTE: There shall be no direct connection to the mains, even with the use of a non-return valve without the permission of Local Water Authority.

* It is recommended that an inhibitor be added at the time of final fill to protect the System from corrosion. Ensure that this is carried out in accordance with inhibitor manufacturers instructions. Installer should ensure that inhibitor used is suitable and that it will have no adverse effect on Expansion Vessel diaphragms or any other part or component of the system.

COMMISSIONING

* Before proceeding to filling, ensure that electricity supply is switched off at mains to avoid any possibility of time switch operating and passing power to appliance prior to filling.

Filling and Testing

Check that all connections, especially compression joints, are fully tightened. Re-check and ensure that pressure vessel air charge is correct, then fill system with water via filling system used. Turn off water supply before system pressure reaches safety valve operation point of 3 bar. (Say 2 to 2.5 bar). Vent system via all manual air vents including circulating pumps, boiler, radiators, system high points, etc. Check that dust caps are loosened on auto air vents, keep constant check on system pressure gauge (fitted to control panel). If pressure has dropped re-admit water to above pressure. Ensure all appropriate boiler and system valves are open.

- With water supply turned off, thoroughly flush out boiler and system to remove all foreign matter before allowing boiler and pumps to operate. If in doubt drain system and repeat above procedure. At this stage flushing-out water should be clean and clear of all foreign matter.

Refill the system and again vent at all points as described above. Examine the complete system for water leaks having pressurised it to 1 - 2.5 bar. Correct any leaks, then check operation of safety valve by admitting further water until this valve operates. This should occur when system pressure rises to between 2.7 and 3.3 bar. When satisfied with valve operation, and with mains water still turned off, draw off sufficient water until initial system design fill pressure ($P_i$). (cold fill) is established (0.5 - 1 bar - as calculated for system).

Remember that initial cold fill pressure can only be checked when system water has properly cooled down. Check that final operating pressure ($P_f$) is under 2.5 bar with all radiators turned on and up to highest working temperature. Should system operating pressure exceed this, check:

1. That initial cold fill pressure is correct and, if additional expansion vessel is fitted, that pressure is equal in each vessel.
2. That expansion vessels are sized correctly.

Special attention should be given to existing heating systems where Firebird Combi C boiler has replaced an existing unit. Extra effort should be made to ensure that all original pipe work and radiators are repeatedly flushed. If possible use a proprietary cleansing agent suitable for system as loosened scale and foreign matter can seriously reduce domestic hot water performance and pump efficiency.

Use corrosion inhibitor of suitable type.
Firebird Enviromax Heatpac C Range Dimensions (mm)

```
<table>
<thead>
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<th>Output</th>
<th>Weight</th>
<th>Dimensions (mm)</th>
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<td>Kw/hr</td>
<td>kg</td>
<td>H   W   D</td>
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<tr>
<td>Heatpac</td>
<td>C26</td>
<td>158</td>
<td>946 713 622</td>
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<tr>
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<td>C35</td>
<td>158</td>
<td>946 713 622</td>
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<tr>
<td>Heatpac</td>
<td>C44</td>
<td>244</td>
<td>1074 840 856</td>
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**Copper Pipe Not Plastic to be used for a minimum of 1 metre off the boiler**
## ENVIROMAX

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<tr>
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<th>Systempac</th>
<th>Heatpac / Slimline Heatpac</th>
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<tr>
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<tr>
<td>Btu/h ('000)</td>
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<td>119</td>
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### CONNECTIONS
- **Heating Flow**
  - 1” Bsp.
  - 1” Bsp.
  - 1” Bsp.
- **Heating Return**
  - 1” Bsp.
  - 1” Bsp.
  - 1” Bsp.
- **Mains Cold Feed (Copper)**
  - 1/3” Bsp.
  - 1/3” Bsp.
  - 1/3” Bsp.
- **Drain Off Cock**
  - 1/3” Bsp.
  - 1/3” Bsp.
  - 1/3” Bsp.
- **Safety Pressure Relief Valve outlet (Copper)**
  - 1/3” Bsp.
  - 1/3” Bsp.
  - 1/3” Bsp.
- **Condense Drain Off Connection**
  - White Cased
  - 3/4” Bsp. Female
  - 3/4” Bsp. Female
- **Heat Pac & Popular B.H.**
  - 22 mm PLASTIC
  - 22 mm PLASTIC

### WATER CONTENT
- **Water Content Boiler**
  - 24
  - 24
  - 45

### TEMPERATURE CONTROL
- **Boiler Central Heating Control**
  - 60°C - 80°C +/− 3°C
  - 60°C - 80°C +/− 3°C
- **Boiler Safety Limit**
  - 110°C + 3°C
  - 110°C + 3°C
- **Over-run - Fixed**
  - 87°C + 3°C
  - 87°C + 3°C (Heatpac & Kitchen only)

### HEATING SYSTEM (SEALED)
- **Fit in accordance with BS 7074**
- **Part 1, BS 5449, OFTEC Standards, etc**
- **Max. System Pressure cold**
  - 2.5 Bar
  - 2.5 Bar
- **Min. System Pressure cold**
  - 0.3 Bar + 0.3 Bar
  - 4.5 Bar
- **Boiler Test Pressure**
  - 4.5 Bar
  - 3 Bar
- **Safety Valve Operating Pressure**
  - Limescale excess: When over 150/200 ppm. Fit appropriate scale reducer.
  - 5 bar Maximum Operating Pressure (Tested to 10 bar) (Fit pressure reducing valve as necessary)
  - 1 bar min. For user Comfort reduce pressure at tap to between 1 and 5 Bar.

### WATER SIDE RESISTANCE
- **Flow Rate Measured (Kg h⁻¹) To Give A Nominal Output At 10k Differential**
  - 2874.24
  - 0.18
- **Flow Rate Measured (Kg h⁻¹) To Give A Nominal Output At 20k Differential**
  - 1522.92
  - 0.19
- **Pressure Jet Oil Burners**
  - RIELLO RDB 2.2 up to C35 & RIELLO RDB 4.2 up to C58 - C100
  - C2 Kerosene
  - 230v. AC 50Hz To be fused at 5amp.

### MAINS WATER SUPPLY
- **Limescale excess:** When over 150/200 ppm. Fit appropriate scale reducer.
- **5 bar Maximum Operating Pressure** (Tested to 10 bar) (Fit pressure reducing valve as necessary)
- **1 bar min.** For user comfort reduce pressure at tap to between 1 and 5 Bar.

### PRESSURE JET OIL BURNERS
- **Fuel**
  - C2 Kerosene

### ELECTRICAL SUPPLY
- **230v. AC 50Hz To be fused at 5amp.**
**ELECTRICAL SUPPLY**

The boiler and controls require 230V 1 phase 50Hz mains electric supply protected with a 5amp fuse.

The guarantee on this product will be rendered void if damaged by power from a stand by electricity supply. i.e. (Generator.)

A qualified electrician must carry out all electric wiring in accordance with current I.E.E Regulations and any local regulations which may apply.

The mains electrical supply must be taken from a double pole isolating switch with a 5amp fuse, positioned somewhere close to the boiler. Heat resisting cable must be used which can be routed into the boiler through the access provided on either side of the base. Ancillary controls may be provided for with terminal connections in the control panel.

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**Firebird Systempac C Wiring Diagram**

**Firebird I. Dual Thermostat**

Temperature Control Dial.
Max 80°C.
Min 60°C.

Reset Pin Inside Screw Off Cover.

**Enviromax 7 Pin Plug Systempac Wiring**

- **Burner Plug**
- **Power Supply & Pump**
- **7 Pin Plug**
- **Use Heat Resistant Cable. Protect Supply with 5 Amp. Fuse.**

---

**Temperature Control**

High Limit Thermostat.

Max 80°C.
Min 60°C.

---

**Pump Over Run Thermostat 87°C.**

**Bi. Metal Frost Thermostat. 5°C / 14°C.**

---

**Mains Connection.**

- **(B4) NEUTRAL**
- **(S3) EARTH.**
- **PERMANENT LIVE (T1).**
- **TIMED SWITCH LIVE (T2).**

**Pump Connection.**

- **NEUTRAL (N).**
- **PUMP LIVE (L1).**
- **EARTH.**
## ENVIRONMENT HEATpac - Outdoor Models C26, C35 & C44

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>C26/35</th>
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<tr>
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<td>Front Panel</td>
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<td>2</td>
<td>Control Panel</td>
<td>310453</td>
<td>311804</td>
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<tr>
<td>3</td>
<td>Fixed Right Side</td>
<td>211518</td>
<td>211758</td>
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<td>4</td>
<td>Removeable Right Side</td>
<td>211521</td>
<td>211751</td>
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<td>5</td>
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<td>211517</td>
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## Enviromax Slimline Heatpac Parts

Outdoor models C26 & C35

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<td>2</td>
<td>Control Panel</td>
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</tr>
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<td>3</td>
<td>Fixed Right Side</td>
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<td>4</td>
<td>Fixed Left Side</td>
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<td>5</td>
<td>Back Panel</td>
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<td>6</td>
<td>Top Panel</td>
<td>211609</td>
<td>211609</td>
</tr>
<tr>
<td>7</td>
<td>Base</td>
<td>211594</td>
<td>211594</td>
</tr>
<tr>
<td>8</td>
<td>Key</td>
<td>110267</td>
<td>110267</td>
</tr>
<tr>
<td>9</td>
<td>Flue Panel</td>
<td>211606</td>
<td>211606</td>
</tr>
</tbody>
</table>
STANDARDS & REGULATIONS

To ensure the highest standards of installation & safety, it is important that the boiler be installed in compliance with the following regulations where applicable. It is the responsibility of installer and everyone concerned with any aspect of installation to ensure that all applicable standards and regulations are fully adhered to.

In addition, the work must comply with OFTEC Installation Requirements for oil fired boilers and oil storage tanks.

OFTEC also publish excellent guides including: Safe working practices for Oil Fired Technicians - OFTEC Technical Book Three (Installation requirements for Oil Fired Boilers and Oil Storage Tanks) - OFTEC Technical Book Four (Domestic Heating Systems) and it is recommended that these should adhere to Domestic Heating Design Guide.

COPIES OF BRITISH STANDARDS MAY BE PURCHASED DIRECT FROM:

BSI (Customer Services),
389 Chiswick High Rd., London W4 4AL.
Tel.: 0181-9967002 Fax: 0181-9967001

International and EC Standards are also available from above.

OFTEC PUBLICATIONS ARE AVAILABLE FROM:--

OFTEC, Oil Firing Technical Association,
Foxwood House, Dobbs Lane,
Kesgrave, Ipswich. IP5 2QQ
www.oftec.org

PRE-INSTALLATION CHECKS

The installer should also be aware of his/her responsibilities under The Health and Safety at Work Act. The interests of safety are best served if the boiler is installed and commissioned by a competent engineer, OFTEC trained and Registered. If not a Building Notice is required in England & Wales. Other parts of the British Isles including the Channel Islands also require notification to building control.

BOILER INSTALLATION:

Other than special considerations for condensate removal and plume dispersal, the installation of oil firing condensing boilers is the same as for non-condensing boilers.

BS 5410: Part 1 1997 gives the requirements for domestic boiler and oil storage installations.

For condensing boilers the same requirements apply for installation with regard to cleaning and flushing and providing inhibitors as are followed for any other boiler. Manufacturer instructions must always be followed together with the requirements of BSEN 12828, 2003 & BS EN 12831, 2003, which supersede BS 5449 1990, and the statutory requirements of the Building Regulations.

All CURRENT editions of the appropriate Building Regulations:

Part L & J  England & Wales
Part F  Section III Scotland - Conservation of Fuel Power
Part L  Northern Ireland - Conservation of Fuel Power
Part J  Republic of Ireland - Conservation of Fuel Power

BS 7074  Part 1 1989. Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.
BS 5446 1990. Installation of hot water supplies for domestic purposes.
BS 4543 part 3 1990. Factory made insulated chimneys for oil fired appliances.

BS 6700. Design, installation, testing and maintenance of services supplying water.
HEALTH & SAFETY INFORMATION

Under the Consumer Protection Act 1987 and Section 6 of the Health and Safety Act 1974, we are required to provide information on substances hazardous to health.

INSULATION AND SEALS

Ceramic Fibre, Alumino - Silicone Fibre material are used for boards, ropes and gaskets. Known hazards are that people may suffer reddening and itching of the skin. Fibre entering the eye will cause foreign body irritation. It may also cause irritation to the respiratory tract.

Precautions should be taken by people with a history of skin complaints or who may be particularly susceptible to irritation. High dust levels are only likely to arise following harsh abrasion. Suitable personal protective equipment should be worn where appropriate.

Generally, normal handling and use will not give discomfort. Follow good hygiene practices, wash hands before consuming food, drink or using the toilet.

First Aid - Medical attention should be sought following eye contact or prolonged reddening of the skin.

The small quantities of adhesives and sealants used in the product are cured. They present no known hazards when used in the manner for which they are intended.

THIS PRODUCT HAS BEEN DESIGNED TO THE FOLLOWING STANDARDS:

EMC Directive
(Electromagnetic compatibility) 89/336/EC
Standards:
EN 61000-6-1: Electromagnetic Compatibility Generic Standard - Immunity for residential, commercial and light industrial environments. (Feb.2001)
EN 61000-6-3: Electromagnetic Compatibility Generic Standard - Emission standard for residential, commercial and light industrial environments. (Feb.2001)

LV Directive
(Low voltage) 73/23/EEC
Standard:
IEC 60335-1: Household and similar electrical appliances - Safety (May 2001)

Boiler Efficiency Directive 92/42/EEC
Standard:
BSEN 304: Oil boilers with forced draft burners.

FUEL SPILLAGE

1. Switch off all electrical and other ignition sources.
2. Remove all contaminated clothing to safeguard against fire risk and skin damage. Wash affected skin thoroughly with soap and water and remove clothing to a safe well ventilated area and allow to air before cleaning.
3. Contain and smother the spill using sand or other suitable oil absorbent media or non-combustible material.
4. Do not allow fuel to escape into drains or water courses. If this happens, contact the relevant authorities in your area. (Ireland Only) Contact The Environment Agency on 0800 807060 (UK Only)
5. Consult local Authority about disposal of contaminated soil.

SAFETY

Safe use of Kerosene.

These fuels give off a flammable vapour when heated moderately. Vapour ignites easily, burns intensely and may cause explosion. The vapour can follow along at ground level for considerable distances from open containers and spillages collecting as an explosive mixture in drains, cellars, etc.

Fuels remove natural oils and fats from the skin and this may cause irritation and cracking of skin. Barrier cream containing lanolin is highly recommended together with good personal hygiene and where necessary appropriate personal protection equipment. (P.P.E.)

Gas oil may also cause irreversible damage to health on prolonged or repeated skin contact.

Always store fuels in a properly constructed and labelled tank. Always handle fuel in open air or well ventilated space away from sources of ignition and refrain from smoking.

Always drain fuel using a proper fuel retriever, funnel or mechanical siphon. Never apply heat to a fuel tank, container or pipework. Never siphon fuel through tube by mouth. If accidentally swallowed contact doctor immediately and do NOT induce vomiting. Avoid inhaling fuel vapour as this can cause light headedness and seriously impair judgement.

FIRST AID

If fuel is accidentally swallowed:-
* Seek medical attention immediately. Do NOT induce vomiting.

If fuel is splashed into eyes:-
* Wash out with running water for at least ten minutes and seek medical attention.
Please not following important points before commencing installation. Failure to do so will invalidate warranty

INSTALLATION & COMMISSIONING:
Boilers must be installed, commissioned and serviced by qualified and experienced persons and as set out in the installation manual, using correct test equipment.

EXPANSION VESSEL:
Total water content of system and boiler must be calculated to determine if an additional pressure vessel is required.

HARD WATER - LIMESCALE:
Failure to check water hardness and fit appropriate water softening equipment will result in scale build up and consequent reduction in water heating performance. Check with local Water Authority if in doubt.

PLASTIC PIPING - WARNING
The boiler thermostat control and safety system is not designed, and must not be relied on, to protect plastic pipe from overheating. Plastic pipe must never be connected directly to the boiler. If you choose to use plastic pipe anywhere on your heating circuits, then please consult the plastic pipe manufacturer for their instructions on how to ensure their product never overheats. Our boiler control and safety high limit thermostats are not designed to fulfil this function. (They may suggest the fitting of independent pipe thermostats, or thermostatic mixing valves linking flow and return).
• Firebird accepts no responsibility for failure of plastic piping and fittings for what ever reason.

WARNING:
The manufacturer cannot accept responsibility for any damage to persons, animals or property due to error in installation or in the burner adjustment or due to improper or unreasonable use or non observance of the technical instruction enclosed with the burner, or due to the intervention of unqualified personnel.

BOILER THERMOSTAT / THERMISTOR FUNCTION
The CONTROL THERMOSTAT [1] on the boiler allows the householder to vary the water flow temperature from a low of 60°C to a high of 80°C to 82°C, depending on the model.

In accordance with EU boiler standards, your boiler is also fitted with a SAFETY HIGH LIMIT THERMOSTAT [2], fixed at 114°C. This system protects the boiler in the event of the control thermostat failing and keeps the boiler safe.

The safety high limit thermostat [2] will shut off the boiler and will require the limit button to be pushed to restart the boiler. If the problem re-occurs, you should call your service engineer.

In cases where the flow from the boiler is down to the heating system, fitting a PUMP OVER RUN THERMOSTAT [3] (A Pipe Stat) is recommended. This is to prevent the residual heat build up in the boiler from unnecessarily activating the high limit thermostat and thus causing nuisance. See Heat Pac Wiring Diagram on page 38.

We have factory fitted pump overrun thermostats on Kitchen, System, Combi and Heatpac range of boilers.

TIME AND TEMPERATURE CONTROLS
The Building Regulations state that central heating systems must have time and temperature control on the pipe circuits (eg thermostatic radiator valves / TRVs, room thermostats, cylinder thermostats etc.).

BURNER
The burner is factory set for use with kerosene 28 second class C fuel.

ROOM SEALED BALANCED FLUES.
(a) BS5410 – 1997 Code of practice for oil firing. Installations up to 45 kW output capacity for space heating and hot water supply purposes

Paragraph 11.2 Mounting

“The flue terminal should be mounted so that it is separated from any combustible material forming a part of the building.

Such combustible material may take the form of cladding on the surface of a non-combustible wall through which the flue outlet passes. In such a case, the cladding adjacent to the flue outlet should be replaced by non-combustible material extending not less than 50mm beyond the outside dimensions of the flue outlet.

The wall through which the flue outlet passes may itself be of combustible material, and if so the flue outlet, where it passes through the wall, should be surrounded by non-combustible insulating material not less than 50mm thick (see Fig. 1, Page 44). The insulating material itself should be contained in a steel liner to provide the necessary structural rigidity and to prevent moisture reaching the insulating material.”
Installation in New Zealand and Australia

This appliance has been manufactured in compliance with AS1690 Domestic Oil Fired appliances Safe Design Code.

This appliance has a current Occupational Safety and Health (OSH) and Environmental Risk Management Association (ERMA) Clean Air Approval number of 1079/03

This appliance and flue system has been tested by CRL Laboratories in New Zealand (Certificate number 07-41180) and can be installed to meet the requirements of AS1691-1985 Domestic Oil Fired Appliances Installation.

This includes suitability for zero clearance installation to combustible surfaces.

Please ensure that this appliance and flue system is installed to comply with manufacturers instructions and AS1691-1985 Domestic Oil fired Appliances Installation.

Please ensure that the appliance is bolted to the floor for seismic restraint.

Firebird recommend the use of Firebird coaxial flue systems to achieve room sealed operation. However, conventional flue systems are also suitable.

The installation of this appliance and fuel source will require a building consent from your local council.

**THIS APPLIANCE IS TUNED TO RUN ON DIESEL FUEL.**

This appliance must be installed by experienced personnel.
Failure to install correctly will invalidate the warranty.
The warranty does not cover consequential damages.

If you have any queries with this product, please consult the distributor in New Zealand

Central Heating New Zealand Ltd
11 Parkhouse Road
Christchurch
0064 3357 1233
www.centralheating.co.nz
6.3 - POSITIONING THE BOILER

Ensure that adequate clearance is available for making the water and flue connections.

As the boiler is serviced from the front, no headroom clearance is necessary but a clearance of 750mm must be available at the front of the boiler.

No special hearth is required as the boiler is fully insulated, but the floor must be level and capable of supporting the weight of the boiler and its water content.

Sound levels must also be a consideration. Whilst Firebird Enviromax boilers are one of the quietest boilers on the market, some householders are particularly sensitive and the following points should be considered:

1. Tiled surfaces in a small room will amplify noise - particularly if the wall construction is hollow.

2. If a conventional flue passes through a bedroom it is capable of transmitting noise.

3. Low level balanced flue terminals can produce exhaust noise on the outside terminal and this should be considered when siting near adjacent property.

4. The Firebird Balanced Flue Kit has been specifically designed for Firebird’s indoor boilers. The use of third party low level flue kits is not recommended and will affect its warranty.

5. The siting of the boiler should take into account the disposal of condensate products.

- It is recommended that a suitable corrosion inhibitor is added to the heating system.

- New and existing systems should be treated with chemical cleaner and properly flushed before the boiler is fitted and corrosion inhibitor added.

- In areas of hard water a suitable descaler would also be required.
6.4 - CONDENSATE DISPOSAL - OPTION 1

CONDENSATE DISPOSAL

SYSTEM NO. 1
CONDENSATE TRAP

IMPORTANT
Always prime condense trap.

Before switching on your Firebird condensing oil boiler check that:
(1) The float & condense drain baffle are in place.
(2) That the condense trap is primed.
(3) The condense discharge pipe is a corrosion resistant pipe.
CONDSNATE DISPOSAL
SYSTEM NO. 2 - CONDENSATE PUMP

IMPORTANT

Firebird condensing boilers when in condensing mode extract more heat from the flue products and the resulting condensate which is mildly acidic needs to be drained from the boiler via a condensate pipe to the drainage system.

Provision must be made for the removal of condensate from the boiler to an internal soil stack, waste pipe, external soil stack, gully or soak-away as per BS56798.

The 75mm trap is provided with the boiler and situated on the front of the boiler (under the cleaning door) as per figure 1, page 45. This should be checked at regular intervals and cleaned at annual service.

The condensate line should be plastic and minimum diameter of 22mm.

Copper or steel cannot be used.

A fall from the boiler of 1:40 minimum.

As few bends as possible to reduce the risk of trapping condensate.

CONDENSATE PIPEWORK THAT IS EXTERNAL OR IN AN UNHEATED GARAGE SHOULD NOT EXCEED 3 METERS AND LAGGED WITH WATER PROOF INSULATION TO PREVENT FREEZING.

CONDENSE PUMP (KIT IS AVAILABLE AS AN OPTIONAL EXTRA)

![Diagram of condensate pump installation]

**PART NUMBERS**

- Condense Pump: 111508
- Hose tail connection: 111510
- Hose pipe: 111509

**Condense Pump Performance**

- Flow rate: 7.2 l/min
- Lift: 5 m
- Head: 8 m

ROSS PRINTERS
TEL: 064-6631233
PROOF
6.5 - FLUES REGULATIONS

**BALANCED FLUE SITING**

A. Horizontal from opening, airbrick, opening window etc.

B. From an internal or external corner.

C. Below an opening, airbrick, opening window etc.

**Notes:**
1. The terminal should be positioned to avoid combustion products entering the building or accumulating in stagnant pockets around buildings.
2. The terminal must be protected by a guard if it is less than 2 metres above ground level or in a position where any person has access to it (i.e. a balcony).
3. A heat protection shield should be fitted if the terminal is less than 850mm from a plastic or painted gutter or less than 450mm from painted eaves.

* **FIREBIRD RECOMMENDS AS PER OFTEC RECOMMENDATIONS THAT THE FLUE SHOULD BE A MINIMUM DISTANCE OF 1 METRE FROM OPENINGS SO THAT IT DOES NOT CAUSE A NUISANCE AND PERMITS THE DISPERAL OF COMBUSTION PRODUCTS. (SEE PAGE 51)**

**Building Regulations**

<table>
<thead>
<tr>
<th>BUILDING REGULATIONS</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Ireland 1990</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Republic of Ireland 1997</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
</tbody>
</table>

*Where the terminal is within 1 metre of any plastic material, such material should be protected from the effects of combustion products of fuel. There are additional general requirements in most Regulations and Standards that the flue must be positioned so that it does not cause a nuisance and permits the dispersal of combustion products.*

**NOTE:** The Buildings Regulations clearances shown above are minimum allowed. To take account of prevailing site conditions it is advisable wherever necessary to follow the manufacturers preferred recommendation. If in doubt contact manufacturer for advice.

**ALWAYS CHECK FOR ANY BUILDING REGULATIONS AMENDMENTS WHICH MAY HAVE BEEN ISSUED AFTER THE PUBLICATION OF THIS MANUAL**
Clearances advised by the BRITISH STANDARDS for Open Flues, Low Level Balanced Flues and Balanced Flues fitted to Oil Fired Boilers. 
THESE ARE ALSO THE BUILDING REGULATIONS FOR ENGLAND, WALES & SCOTLAND

**Minimum distances to terminals in millimetres as measured from top of the chimney or the rim of a low level discharge opening.**

<table>
<thead>
<tr>
<th>APPLIANCE BURNER TYPE</th>
<th>PRESSURE JET</th>
<th>VAPOURING</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Directly below an opening, air brick, opening window etc *</td>
<td>600</td>
<td>Not allowed</td>
</tr>
<tr>
<td>B Horizontally to an opening, air brick, opening window etc</td>
<td>600</td>
<td>Not allowed</td>
</tr>
<tr>
<td>C Below a gutter, eaves or balcony with protection</td>
<td>75</td>
<td>Not allowed</td>
</tr>
<tr>
<td>D Below a gutter or a balcony without protection</td>
<td>600</td>
<td>Not allowed</td>
</tr>
<tr>
<td>E From vertical sanitary pipework</td>
<td>300</td>
<td>Not allowed</td>
</tr>
<tr>
<td>F From an internal or external corner or surface or boundary alongside the terminal</td>
<td>300</td>
<td>Not allowed</td>
</tr>
<tr>
<td>G Above ground or balcony level</td>
<td>300</td>
<td>Not allowed</td>
</tr>
<tr>
<td>H From a surface or boundary facing the terminal</td>
<td>600</td>
<td>Not allowed</td>
</tr>
<tr>
<td>J From a terminal facing the terminal</td>
<td>1200</td>
<td>Not allowed</td>
</tr>
<tr>
<td>K Vertically from a terminal on the same wall</td>
<td>1500</td>
<td>Not allowed</td>
</tr>
<tr>
<td>L Horizontally from a terminal on the same wall</td>
<td>750</td>
<td>Not allowed</td>
</tr>
<tr>
<td>M Above the highest point of an intersection with the roof</td>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>N From a vertical structure on the side of the terminal</td>
<td>750</td>
<td>2300</td>
</tr>
<tr>
<td>O Above a vertical structure less than 750mm from the side of the terminal</td>
<td>600</td>
<td>1000</td>
</tr>
<tr>
<td>P From a ridge terminal to a vertical structure on the roof</td>
<td>1500</td>
<td>Not allowed</td>
</tr>
</tbody>
</table>

These notes form an integral part of the information shown above.

1. Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.
2. Appliances burning Class D oil have additional restrictions. (See 1.7.3 in Oftec Book 3 - Aug. 2002)
3. Vertical structure in N, O and P include tank or lift rooms, parapets, dormers etc.
4. Terminating positions A to L are only permitted for appliances that have been approved for low level flue discharge when tested to OFS A100 or A101.
5. Terminating positions must be at least 1.8 metres distant from an oil storage tank unless a wall with at least 30 mins fire resistance and extending 300mm higher and wider than the tank is provided between the tank and the terminating position.
6. Where a flue is terminated less than 600mm away from a projection above it and the projection consists of plastic or has a combustible or painted surface, then a heat shield of at least 750mm wide should be fitted to protect these surfaces.
7. For terminals used with vapourising burners, a horizontal distance of at least 2300mm is required between the terminal and the roof line.
8. If the lowest part of the terminal is less than 2 metres above the ground, balcony, flat roof or other place to which any person has access, the terminal must be protected by a guard.
9. Notwithstanding the dimensions given in the drawing and table, a terminal should not be sited closer than 300mm to combustible material.
BALANCED FLUE BOILERS

The Firebird boiler may be set for Room-sealed balanced flue operation using a Firebird condensing balanced flue kit. This kit does not draw combustion air from inside the room. It is drawn from outside direct to burner by airpipe supplied with boiler. Flue gases are expelled through the same kit. However, if the boiler is installed in a compartment or small room, some ventilation air is necessary to maintain acceptable temperature in boiler area.

Balanced flue boiler in room (eg. kitchen) does not require individual ventilation.

BALANCED - FLUE BOILERS IN COMPARTMENTS

Information supplied by

COMPARTMENT VENTILATED FROM OUTSIDE

550m² /kW of boiler output

1100m² /kW

COMPARTMENT VENTILATED FROM ROOM

550m² /kW

1100m² /kW

Use of any equipment other than the matching Firebird low level roomsealed concentric flue kit is not guaranteed for low level discharge and will probably invalidate the warranty.
Ventilation and Combustion Air

Conventional Flue Boilers
An adequate supply of combustion and ventilation air is essential for efficient and safe boiler operation and the openings for this should be positioned to cause least possible draught, with no possibility of being accidentally blocked.

Please note: The British Standard Code of Practice for Oil Firing BS5410: Part 1, requires a permanent air inlet opening of 550mm² per kW (above 5 kW) of boiler rated output. (Note: 1kW = 3412 Btu/h).

Also, when the boiler is installed in a compartment or confined space, ventilation openings are required to ventilate and to avoid overheating in the boiler area.

Definitions

**Combustion Air**: Air required directly by boiler oil burner for combustion process.

**Ventilation Air**: Air required in room for ventilation, cooling, etc. and to promote a healthy living environment.
CONDENSATE PLUME DISPERSAL

When choosing the location for a condensing boiler, special consideration must be given to the positioning of the flue terminal. Care should be taken to locate it so as to prevent either the end user or their neighbours perceiving the plume to be a nuisance.

It should be noted that the normal statutory clearances required around low level flue terminals (ref. T45 T1/135) may not be sufficient to cope with plume dispersal from a condensing boiler. The following points should be considered:

1. Plumes can extend out horizontally and can also drift out to the sides and above the terminal. Care needs to be taken, therefore, to avoid the plume reaching adjacent surfaces, particularly windows and neighbours dwellings.
2. Flue terminals need to be located where air can pass freely across them to disperse vapours.
3. The effect of the moisture generated must be considered in relation to the possible corrosion of metal parts it might reach and to the possible formation of ice on pathways in freezing conditions.
4. Keep flue terminals a minimum of 1 m (horizontally) from openings in the building.
5. Do not install flue terminals directly below a window.
6. Do not install flue terminals next to a door.
7. Do not install flue terminals within 1 m of ventilated soffits or eaves.
8. Keep flue terminals at least 1 m away from a surface or boundary facing the terminal.
9. Follow the appliance manufactures instructions.

CONVENTIONAL FLUE SYSTEMS

IMPORTANT

The Firebird condensing boiler must not be installed with existing flue systems. A flue system suitable for wet flues must be used. If a flue system which is unsuitable is used it will invalidate the warranty.

Because of the high operating efficiencies of the Firebird condensing boilers and low flue gas temperatures, it is necessary to pay extra special attention to the flues and chimneys.

Existing chimneys must be lined with a liner certified as suitable for condensing oil boilers by flue manufacturer.

Twin wall insulation must be used for external applications, with seals and stainless steel inner skin.

Only vitreous enamel or high grade stainless steel can be used between boiler and chimney in an internal installation, aluminium or asbestos type material must not be used (Vitreous enamel must not be cut).

Condensate must be able to run back into the flue chamber of the boiler and not escape, as up to 1.5 ltr. of condensate can be produced in a conventional flue. No trap is required in the flue system.

The terminal must be positioned to avoid combustion products entering the building and as per Building Regulations. Refer to BS5410:1 OFTEC installation requirements books one and two.

Every individual concerned with any aspect of installation should be deemed as competent, and be aware of all current National and Local Government Standards and Building & Installation Regulations.
45° Terminal should be tilted up to prevent condensate dropping from end of flue.

For Right Hand Flue option. Remove the two screws securing the flue, rotate flue and swap the removable side panels.

### CONDENSING BOILER CHIMNEY INSTALLATION

- **System 35 Clamp plate**
- **System 35 Flexible liner** Suitable for condensing applications
- **System 35 Adaptor** 45° Bend
- **500mm Adjustable Length**

### FLUE SIZE

<table>
<thead>
<tr>
<th>Boiler</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>C26</td>
<td>100mm</td>
</tr>
<tr>
<td>C35</td>
<td>100mm</td>
</tr>
<tr>
<td>C44</td>
<td>125mm</td>
</tr>
<tr>
<td>CS8</td>
<td>125mm</td>
</tr>
<tr>
<td>C73</td>
<td>150mm</td>
</tr>
</tbody>
</table>

### PLUME KIT

- **80 mm 45° Bend**
- **Wall bracket**
- **80 mm 90° Bend**

### Extensions

X=250 / 500 / 1000 / 1250 [mm]

### NOTE:

All brick chimney constructions must comply with current building regulations and BS 5410: Part 1. Insulated factory made chimneys should comply with BS 4543.
MULTI DIRECTIONAL BALANCED FLUE SYSTEMS

FIREBIRD ENVIROMAX BALANCED FLUE SYSTEMS

Vertical Balanced Flue Kit - Maximum flue length
6 metres C20 • 6 metres C26 • 6 metres C35

Overall length must take into account 45° bend = 500mm length

High Level Balanced Flue Kit - Maximum flue length 6 metres

90° bend equivalent to 1 metre length

INSTALLATION INSTRUCTIONS SUPPLIED WITH ALL FLUE KITS
6.7 - OIL SUPPLY

OIL STORAGE TANK SITING

Consult OFTEC Manuals

It is very unlikely that a fire should start from a domestic oil tank, however it does need to be protected from a fire which may originate in a building nearby. For this reason, the tank should be located at least 1.8 metres from any building and no closer than 760mm from any boundary. If it must be closer than 1.8 metres, the building wall should not have any openings other than ventilation openings. In addition, the wall should have at least 30 minutes fire resistance and extending 300mm higher and extends 300mm beyond both ends of the tank is provided between the tank and the terminating position and the wall should have a half hour resistance to an internal fire and extend 1.8 metres from any part of the tank.

A non-combustible radiation barrier is an alternative but this must meet the requirements of BS 5410 Part 1:1997, “clause 28” Section 6.4.

Steel tanks must be mounted on brick or block piers with a waterproof membrane between the piers and tank.

See Oftec Technical Information T19

Oil storage tanks should not be sited within 1.8m of boiler flue outlets.

Do not allow household waste or hot ashes container in vicinity of oil storage tank or boiler flue outlet.

FLEXIBLE OIL PIPE(S)

A flexible burner oil hose is supplied with the boiler which must be wholly contained with in the appliance case.

Please note: A filter must not be fitted inside the boiler and all joints in the oil line MUST BE OIL-TIGHT. Soldered joints are not permissible. Before connecting to the boiler always flush the complete oil supply line and ensure that oil supply is completely clean and free of any dirt or foreign matter.

SINGLE PIPE SYSTEM

Where installations have the bottom of the tank above the oil burner, a single pipe system may be used. The oil burner should then be set for single pipe operation - See also manufacturers oil burner manual

Max oil level 4 metres above burner where this height is unavoidably exceeded a pressure reducing valve should be fitted to the supply line.
**TWO PIPE SYSTEMS**

Where installations have the bottom of the tank below the oil burner pump a two pipe system is required. Ensure that valves and filters are not fitted in the return line as this must be unobstructed at all times.

The oil burner pump should be set for two pipe operation as detailed in accompanying oil burner manual.

---

**TIGERLOOP SINGLE PIPE SYSTEMS**

**IMPORTANT:**
The Tigerloop should not be fitted inside the dwelling - See TI/139 drawing below and OFTEC manual book 3 page 2(8:1)

Where installations normally require a two pipe system but have long or impractical return line runs, a 'Tigerloop' De-aerator can be used which removes air from a single - pipe - lift oil feed. Higher lift heights can be achieved than are possible with conventional two pipe systems.

The oil burner pump should be set for two pipe operation.

**INDIVIDUAL TIGERLOOP INSTRUCTIONS MUST BE IMPLICITLY FOLLOWED.**

---

**FIRE VALVES**

A fire valve is an essential part of the oil supply system. It should be capable of cutting off the flow of oil outside the building in the event of a fire starting up within the boiler. The valve should be located just outside the building at the point where the oil supply line enters. It must be activated by a remote sensor located over the burner, but in a position clear of any direct radiation or excessive heat.

**IMPORTANT:** Fire Valves should comply with OFTEC Standards OFS E101. Fitting of Fire Valves should comply with BS 5410 Part 1.

---

**REGULATIONS & STANDARDS**

In **England and Wales**, installation in single family dwellings have to comply with the building Regulations Part J. This requires compliance with BS 5410 : Part 1 : 1997. All tanks either deemed to be at risk or with a capacity of more than 2,500 litres will require to be bunded.

For installation in **Scotland**, Building Standard Part F applies. This requires compliance with BS 5410 : Parts 1 and 2. All tanks either deemed to be at risk or with a capacity of more than 2,500 litres will require to be bunded.

Those externally installed tanks with a capacity of less than 2,500 litres will require a bund if located not more than 50 metres from a spring or bore hole, 10 metres from controlled waters and additionally where it may constitute a hazard.

The above risks and hazards are described in OFTEC Technical Information Note TI/133.

In **Northern Ireland**, the Building Regulations do not currently cover the installation of oil storage tanks.

In the **Republic of Ireland** the requirements of BS 5410: Parts 1 and 2 are required to be complied with be Building Regulations Part J.
The burner nozzle, pump pressure and air setting may have to be changed from the factory setting to suit site conditions.

Riello RDB 2.2 Range Burner Settings (D).
Variations in nozzle throughput, flue type & draught, oil viscosity etc. may give results differing from these laboratory performance figures. These settings were carried out using a conventional flue.

**DIESEL SETTINGS FOR FIREBIRD C BOILER RANGE USING RDB 2.2 & 4.2 BURNERS**

| Model | Output kW. | BTU | Blast Tube | Nozzle Size | Nozzle Angle | Nozzle Type | Pump Pressure | Air Shutter | Comb Head | Air Box | Avg. Fg. ºC | CO₂ | Smoke No |
|-------|------------|-----|------------|-------------|--------------|--------------|---------------|-------------|-----------|---------|---------|-------------|-----|----------|
| Model |            |     |            |             |              |              |               |             |           |         |            |     |          |
| C.26  | 20         | 70,000 | T1         | .5          | 80°          | S            | 12 bar        | 2.2         | -         | 1        | 70     | 11.5-12%   | 0-1 |
|       | 23         | 80,000 | T3         | .55         | 80°          | S            | 10.5 bar      | 3.5         | -         | 1        | 70     | 11.5%      | 0-1 |
|       | 26         | 90,000 | T3         | .55         | 80°          | S            | 12 bar        | 4.5         | -         | 1        | 75     | 11.5-12%   | 0-1 |
| C.35  | 36         | 90,000 | T3         | .6          | 80°          | S            | 11 bar        | 4           | -         | 1        | 85     | 11.5%      | 0-1 |
|       | 30.5       | 105,000| T3         | .65         | 80°          | S            | 11 bar        | 5           | -         | 1        | 90     | 11.5-12%   | 0-1 |
|       | 35         | 120,000| T5         | .65         | 80°          | S            | 14 bar        | 6           | -         | 1        | 95     | 11.5-12%   | 0-1 |
|       | 35         | 120,000| T5         | .65         | 80°          | S            | 14 bar        | 4           | -         | 2        | 80     | 11.5%      | 0-1 |
|       | 39.5       | 135,000| T5         | .75         | 80°          | S            | 13 bar        | 5           | -         | 2        | 85     | 11.5%      | 0-1 |
|       | 44         | 150,000| T5         | .85         | 80°          | S            | 13 bar        | 6           | -         | 2        | 90     | 11.5%      | 0-1 |
| T1    | 80         | 272,000| Adj.       | 1.75        | 80°          | S            | 12 bar        | 6           | 5         | -       | 80     | 12%        | 0-1 |
|       | 100        | 340,000| Adj.       | 2.00        | 80°          | S            | 12 bar        | 8.4         | 6         | -       | 80     | 12%        | 0-1 |

**THE SHAPED IN LINE REPRESENT FACTORY SETTING:**

The above settings were carried out on a Firebird Condensing Boiler with 2 metres of vertical balanced flue. The ambient air was averaging around 20°C. Allowances should also be allowed for the viscosity of the oil and the tolerance of the nozzles.

These settings are a guide and should only be used as such. If a flue gas analyser must be used when fine tuning a burner to a boiler.

When using the chart on a burner fitted to a standard efficient boiler air setting may vary.

**Steps in Commissioning a Burner in a Firebird Boiler.**
1. Check Nozzle to required output.
2. Is the correct Burner Head fitted to the burner for the required output?
3. Set air damper from the guide above for the desired output.
4. Check the pump pressure.
5. Set Boiler thermostat to minimum and allow boiler to heat up before carrying out a Flue gas analysis.
6. Check Flue gasses with a smoke gun before taking using Flue gas analyser.
7. Proceed with Flue gas analysis, adjust air damper to get desired CO2%.
8. Print a record of analysis result.

**Air Box 1**
- Dia. 18mm
- Clearance for electrodes
- Hole to aid photocell
- 4mm holes

**Air Box 2**
- Dia. 20mm
- Clearance for electrodes

**RDB T1**
- Top
- Hole to aid photocell

**RDB T3**
- Top
- Hole to aid photocell light detection

**RDB T5**
- Top
- Hole to aid photocell light detection

Dia. 23mm
- Clearance for electrodes
RIELLO BURNER SPECIFICATION

**Burner Description**

One stage kerosene burner.

The intake air temperature must not be over 70 °C.

Burner with CE marking in conformity with EEC directives: EMC 89/336/CEE and Efficiency 92/42/EEC.

CE Certification No.: 0036 0316/01 as 92/42/CEE.

---

**HYDRAULIC SYSTEM**

**WARNING**

- **SINGLE PIPE**
  The pump is designed to allow working with one pipe.

- **TWO PIPE**
  In order to obtain two pipe working it is necessary to unscrew the return plug (2), screw in the by-pass screw (3) and then screw in return oil line (2). (See fig. 4).

In the two pipe systems, before starting the burner make sure that the return pipe-line is not clogged. An excessive back pressure would cause the damage of the pump seal.

---

**ATTENTION**

Before assembling or removing the nozzle loosen screw (A) and move electrodes forward.

---

**ELECTRODE SETTING**

Riello RDB 2.2

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**PRIMING PUMP:**

On the system in fig. 5 it is sufficient to loosen the suction gauge connection (6, fig. 4) and wait until oil flows out.

On the systems in fig. 6 and 7 start the burner and wait for the priming. Should lock-out occur prior to the arrival of the fuel, await at least 20 seconds before repeating the operation. The pump suction should not exceed a maximum of 0.4 bar (30 cm Hg). Beyond this limit gas is released from the oil. Oil pipes must be completely tight. In the vacuum systems (fig. 7) the return line should terminate within the oil tank at the same level as the suction line. In this case a non-return valve is not required. Should however the return line arrive over the fuel level, a non-return valve is required. This solution however is less safe than previous one, due to the possibility of leakage of the valve.

---

For Full details on suction line systems please refer to OFTEC Technical Information Sheet T1/139 (T32)
Troubleshooting Guide for Riello RDB Burner

Fault Finding Logic For Control Box Type 5352 SE/LD RDB Series Oil Burners

- Burner Motor Runs
  - Yes
  - Lock out within 1 second
  - No
  - Check L&N To Control Box Base
    - Yes
    - Motor or Pump seized
      - Yes
      - Repair/Replace Motor/Pump
      - No
      - Check Boiler Controls
    - No
    - Replace Motor Capacitor

- Ignition Spark Proved
  - Yes
  - Lock Out After 12 sec. Purge
    - Yes
    - Check and set the Electrodes
      - Yes
      - Replace the Control Box
      - No
      - Motor Gives 50 Volt to white wire
        - Yes
        - Coil of Solenoid functional
          - Yes
          - Photo Cell functional
            - Yes
            - Replace Control Box
            - No
            - Replace Burner Motor
          - No
          - Replace Solenoid Coil
        - No
      - No
      - Replace Motor/Pump

- Pump Produces Pressure
  - Yes
  - Washing Pressure 1-2 Bar
    - Yes
    - Solenoid Operating raise pressure
      - Yes
      - Replace Nozzle
      - No
      - Do the Coil &/or Stem Valve
        - Yes
        - Contaminated Fuel Filter
          - Yes
          - Boiler or Flue Blocked
          - No
          - Flame Off and Re-Lights
        - No
        - Re-Couple Broken
          - Yes
          - Replace or Oil Pump
          - No
          - Motor White wire returns 50-53 Volt AC to control box.

- Nozzle Atomising Fuel
  - Yes

- Combustion Air Set Correct
  - Yes

- Combustion Head Set Correct
  - Yes

NOTES:

Solenoid coil test for resistance of 100 Ohms (+5) or continuity

Accurate Photocell testing is very difficult without a lux meter so it is best to replace the photocell if suspect.

Motor white wire returns 50-53 Volt AC to control box.

Burners on Balanced flue systems can recirculate flue products resulting in burner recycling if this happens check flue position & sealing.

If B/F application reseal B/F Flue or re-position.
## Burner Parts

**Diesel - Light Oil Burners**

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*Firebird Enviromax Condensing Range*

ROS PRINTERS
TEL: 064-6631233
PROOF
**Burner - Spare Parts**

**Kerosene - Light Oil Burners**

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**Runbird Enviromax Condensing Range**

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D) THE BURNER

Check performance of oil-nozzle and replace.

Ensure correct specification replacement nozzle is used.

Check all oil filters and replace as necessary.

Remove burner and clean blast tube and ensure that airways are clear.

Ensure electrodes are clean, dry, not broken and are set as per burner specifications.

Clean fan and photocell.

Once again check flexible oil lines and connections for damage or leaks, replace as necessary. Replace flexible oil lines every 2 years.

Combustion Check

Carry out combustion analysis and ensure that boiler is performing to specification outlined in manual. Flue conditions may cause deviation from these figures. Firebird recommend that the flue gas analyser is set to light oils and that a smoke test is always carried out before using the analyser.

Always keep careful record of flue gas analysis results including any verbal and written advice to customer (householder). Always check carefully for restricted or blocked flue. If possible record CO levels and advise customer of need to keep boiler room well ventilated. Always make sure that ventilation is kept clear.

SERVICING RECORD - PAGE 46

NOTE: SERVICING MUST BE CARRIED OUT BY A COMPETENTLY QUALIFIED ENGINEER ANNUALLY.

A) Before carrying out a service it is recommended that the following is checked:

1). Smoke
2). CO2
3). The flue gas temperature
4). Oil pressure
5). Ensure flue is unrestricted & operating properly

At the same time check for oil and combustion leaks. Advance to service ONLY after ensuring that both electric and oil supply to boiler is safely isolated.

B) THE OIL TANK

Draw off any accumulated water and sludge from the tank by opening the drain cock. Turn off the oil supply and remove the filter bowl, then wash the element clean with kerosene.

C) THE BOILER

Remove combustion access door for access to baffles and to clean heat exchanger.

Check insulation sealing and its silver foil lining in combustion access door - replacing when necessary. Check graphite seal and replace if necessary. When refitting this door be careful not to damage the foil and insulation by over tightening.

Check condensate trap is clean and free of combustion debris and make sure that the condense drain is free and not blocked.

Expansion Vessel pre-charge pressure should be checked annually.
Service Checklist

**NB** All Information recorded hereunder should also be included in Engineers own filed service reports. It is recommended that the boiler be serviced, *at least once a year*, and the details recorded below. Combi Boilers may need more frequent service. Engineer should advise householder.

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<td>CO₂ %</td>
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<td>F.G.T. °C</td>
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<tr>
<td>Fire Valve Location</td>
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<tr>
<td><strong>Condense Trap (where Fitted)</strong></td>
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<tr>
<td>Is condense trap piped to drain</td>
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<tr>
<td>Is condense trap primed</td>
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<tr>
<td>Float and condense trap in place</td>
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<tr>
<td><strong>CHECK</strong></td>
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<tr>
<td>Flue seals OK</td>
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<tr>
<td>Flexible Oil Line</td>
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<tr>
<td>Baffle Quality</td>
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<tr>
<td>Deflector plate and baffles in position</td>
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<tr>
<td>Graphite door seal and door gasket fitted and in good order</td>
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<tr>
<td><strong>CHECK</strong></td>
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<tr>
<td>All Connections</td>
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<tr>
<td>D.M. Hot Water Operation</td>
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<td>Combi Hot Water Operation</td>
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<tr>
<td>Central Heating Operation</td>
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<tr>
<td>Boiler Thermostat Operation</td>
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</table>

**Date:**

**Service Engineer:**

**Tel. No.:**

**Signature:**

**Comments:**
Boiler Passport Golden Rules

Failure to comply with the below requirements may invalidate all warranties

TO THE HOUSEHOLDER:

1) This appliance must be serviced annually in accordance with the appliance manufacturer's instructions and the service records within this document completed.

2) To ensure your continued Boiler Warranty, the annual service must be carried out by an OFTEC Registered Technician or an otherwise competent person.

3) Use of non-competent persons may invalidate this warranty. A list of OFTEC Registered Technicians is available at www.oftec.org or alternatively telephone OFTEC on 0845 658 5080 (UK) or 01 864 5771 (RoI)

If there is any doubt as to the suitability of your technician, please check with the manufacturer prior to the work being carried out.

TO THE INSTALLER:

1) The installer is responsible for completing this passport and returning the paperwork to the manufacturer.

2) The appliance must be correctly commissioned in accordance with the appliance manufacturer's instructions and registered with the manufacturer.

3) The Central Heating System must be cleansed with a proprietary cleanser and treated with a proprietary corrosion inhibitor, the concentration of which must be checked at each annual service.

4) The incoming cold water mains supply to a combi boiler must be fitted with a suitable and effective hard water treatment.

5) A fuel filter with a filter rating of 70 microns or better must be fitted to the fuel supply to the appliance, in accordance with the burner manufacturer’s recommendations.

Remember, the future warranty of the appliance is conditional upon correct installation, completion of the passport document and returning the commissioning certificate to the appliance manufacturer – if you don’t do this the warranty could be invalid.

Boiler Passport must be returned within 28 days of installation to validate warranty (see T&C page 3)
It is recommended that commissioning is carried out by a competent and qualified service engineer.

It should be noted that it is the responsibility of the installer to ensure that the boiler is properly commissioned. Failure to do so may invalidate the boiler guarantee and any extended warranty.

PROCEDURES

1. OIL TANK

The installation of the oil tank and supply line should comply with all the instructions shown earlier in this manual. Consult OFTEC Manual - Book No. 3, Section 2.

If a single supply line is used ensure that the bottom of the tank is above the burner. A suction line system via a de-aerator should be used where the level of the oil in the tank may fall below the level of the oil burner pump.

CHECK AND ENSURE CORRECT GRADE FUEL OIL HAS BEEN SUPPLIED.

2. THE BURNER

A two single pipe system may also be used in low-level tank installations. See page 39. Please flush out oil pipe by drawing off some oil before connecting fuel pipe to burner - otherwise there is a danger of grit and dirt being forced into the burner pump, resulting in pump blockage, damage and ‘lock-out’

3. THE BOILER

A. Switch off the power supply, ensure that the boiler and system is full of water, all valves are open and that installation conforms with all Standards, Regulations and Instructions.

B. Depending on condensate disposal system check that the condensate trap is primed or pump is operational.

C. Check that boiler baffles are correctly positioned.

D. Check the oil supply by disconnecting the oil supply hose at the burner and running off a quantity to ensure it is free from air. Then bleed air from burner pump. See page 46.
E. If fitted, check that the time switch is 'ON' and that both room and boiler thermostats are calling for heat.

F. Reconnect electrical supply and the boiler should start. If the burner lock-out activates, this suggests air in the pump. Wait a minute or so and try again. If lock-out occurs again, air must be bled from the pump pressure gauge connection point once more.

G. View the burner flame through the sight glass - it should be bright cream/yellow without any sign of smoke. Use a smoke gun to check that the burner is burning clean.

H. Run the boiler for about fifteen minutes then take a CO2 reading and adjust as necessary.

**HANDING OVER**

A thorough check of the system should be made, then the householder should receive a clear and concise demonstration of the boiler operation and any system controls and OFTEC forms: OFTEC CD10 and OFTEC CD11

This manual and burner manufacturers manual plus any other instructions should be handed over to the user, the guarantee card should be completed and posted, and the user advised about the importance of annual servicing.

**COMMISSIONING RECORD**

Should be completed and a copy kept in engineers file.
For further information on Firebird Products please contact

New Zealand Distributor

Central Heating New Zealand Ltd

11 Parkhouse Road,
Sockburn,
Christchurch,
+ 64 3357 1233

www.centralheating.co.nz

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