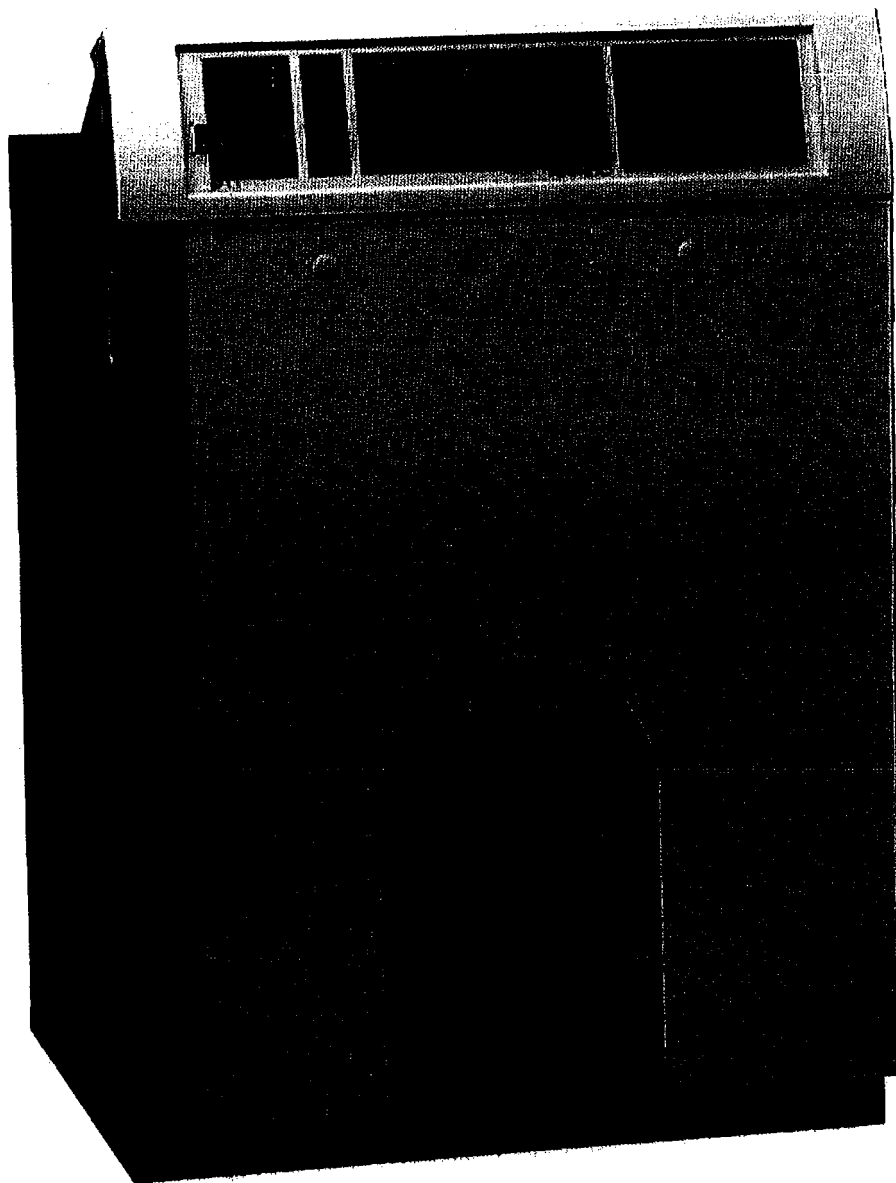


RAPIDO f110

INSTALLATION, OPERATION & MAINTENANCE MANUAL



JANUARY 2005

POTTERTON
COMMERCIAL

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Fig.1 - General Dimensions

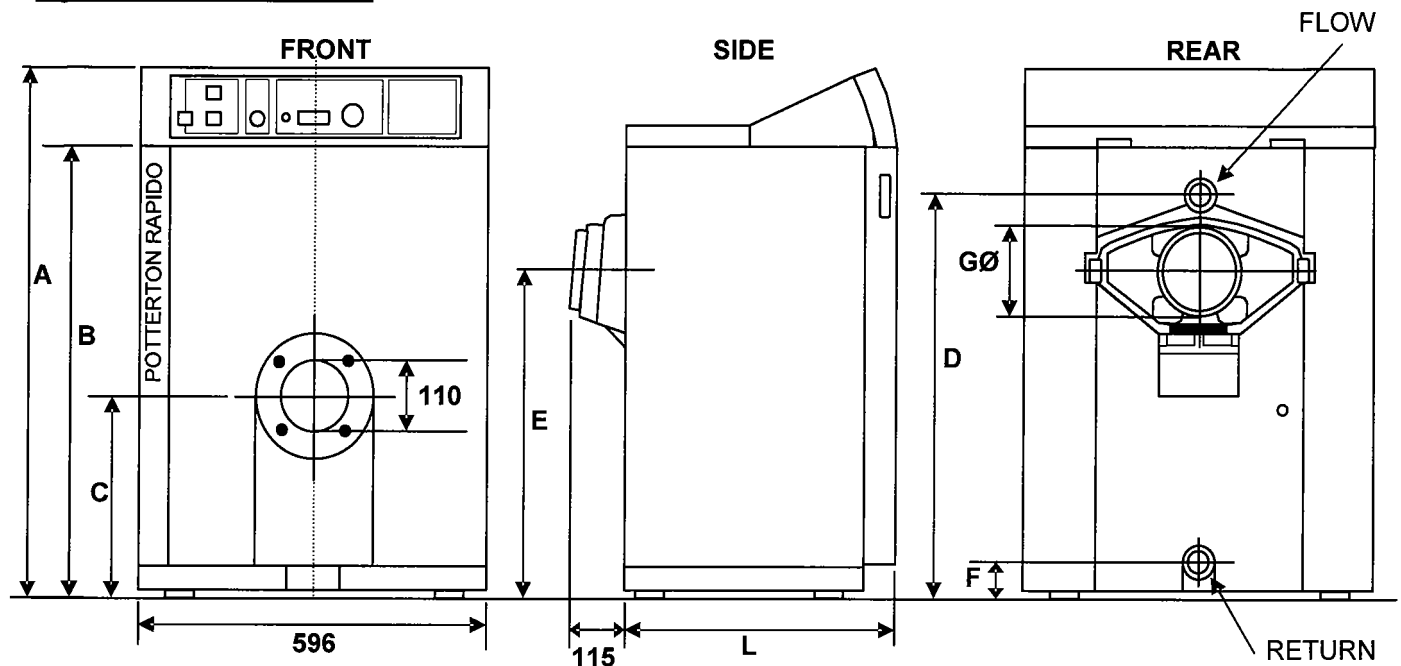


Table 1 - General Dimensions

Boiler Size	3	4	5	6
A mm	910		900	
B mm	760		750	
C mm	305		295	
D mm	665		655	
E mm	517		507	
F mm	75		65	
L mm	465	595	725	855

Table 2 - Nominal Flue Size (see Fig.2 for Spigot)

Boiler Size	3	4	5	6
GØ mm	130		150	

Fig.2 - Flue Spigot (Cross Section)

Figures in [] brackets are for 5 & 6 Section

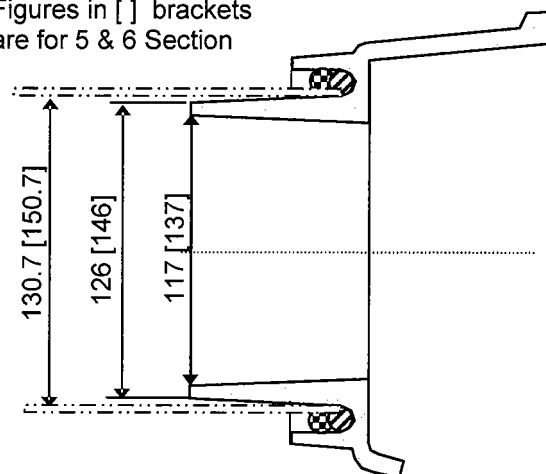


Table 3 - Combustion Chamber Data

Table 3 - Combustion Chamber Data						
Model			3	4	5	6
Mean Diameter		mm	330			
Cross Sectional Area		m ²	0.2			
Length (X)		mm	365	395	525	655
Volume		m ³	0.023	0.034	0.045	0.055
Surface Area		m ²	0.45	1.443	1.935	2.427
Resistance		mm	0.10	0.14	0.18	0.23
Flue Gas Temperature (Gross)		°C	220			
Efficiency		(Nett) %	92			
		(Gross) %	81.9			
Percentage CO ₂		Oil %	12			
		Gas %	9			
Heat Release		kW/m ²	32.11	33.88	35.26	36.14

The burner location is central to the combustion chamber.

Table 4 - Technical Data

Number of Sections		3	4	5	6
CE Number		085AQ1190			
Output	kW	24	40	56	72
	Btu/hr	81,000	136,000	191,000	245,000
Fuel GAS	M ³ /hr	2.73	4.56	6.38	8.2
Consumption OIL	Lit/hr	2.71	4.51	6.32	8.1
Input (Gross) GAS	kW	29.2	48.7	68.2	87.9
	OIL	kW	29.2	48.7	68.2
Input (Net) GAS	kW	26.4	44.1	61.3	79.2
	OIL	kW	27.4	45.7	64
Maximum Design Pressure		4 BAR ALL MODELS			
Minimum Operating Pressure		0.3 BAR ALL MODELS			
Nominal Flue Connection Size		130		150	
Flue Gas Volume		36	60	84	108
Flue Draught Requirements		0 – 4 mm. w.g. ALL MODELS			
High Level Natural Ventilation to BS 6644 (Free Area)		270		288	332
Low Level Natural Ventilation to BS 6644 (Free Area)		540		577	665
Mechanical Inlet to BS 6644		0.026	0.044	0.062	0.08
Water Connection Size		1 ¼"	1 ¼"	1 ¼"	1 ¼"
Minimum Water Flow at 25°C Δ t		0.22	0.38	0.53	0.68
Water Flow at 11°C Δ t		0.52	0.86	1.2	1.5
Hydraulic Resistance at 11°C Δ t		0.285	0.791	1.55	2.565
Cold Feed Size to BS 6644 Minimum Bore		19			25
Open Vent Size to BS 6644 Minimum Bore		25			32
Safety Valve Size to BS 6644 Nominal, Size		19			
Maximum Flow Temperature		90°C			
Minimum Return Temperature		55°			
Dry Weight		138	176	217	255
Water Content		19	26	33	40
Power Requirements		240 V SINGLE PHASE ALL MODELS – SEE BURNER CARD FOR CURRENT RATINGS			
Gas Supply mbar	Min	17			
	Max	25			
Oil Supply bar	Min	0			
	Max	0.69			
Efficiency %		90			

For metric to imperial conversions refer to conversion chart inside back cover

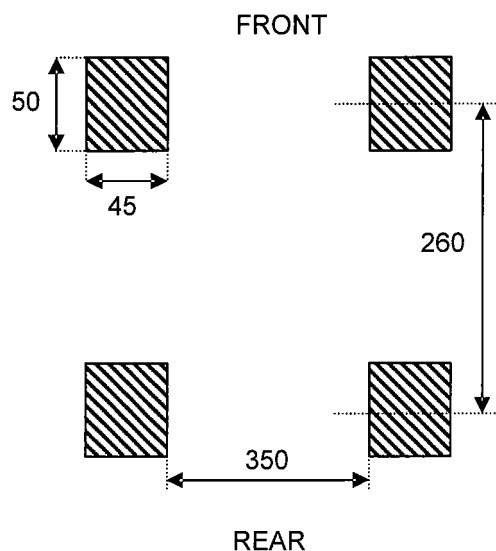
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1. **FUEL CONSUMPTION:** Gas fuel consumption is based on natural gas with a gross calorific value of 38.6 MJ/m³.

Oil fuel consumption is based on Class D (35 second) gas oil with a gross calorific value of 45.5 MJ/kg, Kerosene has a gross calorific value of 46.5 MJ/lit.

NOTE: The fuel and heat inputs are maximum values and may be reduced during commissioning to achieve the stated heat output depending on operating efficiency measured.
2. **MINIMUM OPERATING PRESSURE:** This is the minimum operating pressure of the boiler with pumps operating (NOT static pressure). The requirements of the Health & Safety Executive guidance note PM5 regarding maximum operating temperatures should be observed.
3. **BOILER FLUE CONNECTION:** This is the nominal flue size of the flue connection spigot, for dimensional details of the flue connection spigot see Fig.2, page 1. Actual flue size required to achieve correct draught and operation under all running conditions may need to be increased.
4. **FLUE GAS VOLUME:** Flue gas volumes are given at STP (standard temperature and pressure [15°C and 1013.25 mbar]). Typical flue gas temperatures are 220°C (gross) at CO₂ levels of 9% and 12% respectively on gas and oil.
5. **NATURAL VENTILATION:** The sizes indicated are free grille areas and are based on a single boiler installation.
6. **MECHANICAL VENTILATION:** The volume given is for a single boiler installation.
7. **WATER CONNECTION SIZES:** The boiler water connections are 1 1/4" BSP screwed (FEMALE). On 5 and 6 section boilers the return water connection is 1 1/4" BSP screwed (MALE).
8. **WATER FLOW RATES:** Water flow rates are given for boiler flow and return temperature differences of 11°C and 25°C.
9. **COLD FEED/OPEN VENT/SAFETY VALVE SIZES:** Sizes indicated are minimum sizes for single boiler installations.
10. **MINIMUM RETURN TEMPERATURE:** If system return temperatures below 55°C are required then contact Potterton Commercial Technical Department.
11. **WEIGHT:** The dry weight is exclusive of the burner and gas train. Each section measures approximately 0.5 m x 0.15m x 0.73 m and the weights are 29.5 kg (front), 35 kg (Inter), 37 kg (rear).

Fig 3 - Boiler Base Details



Feet details shown are for a 3 section boiler. For larger models additional intermediate section feet are added on 130mm spacing are added at 130mm spacing.

CLEARANCES

The minimum boiler room clearances for access, erection and maintenance are as follows:-

- REAR - Boiler length or sufficient to make flue and water connections and removal of sparge pipe, see table 1 for further details.
- SIDES - 300mm + burner projection on one side, 200mm on the other
- FRONT - The length of the boiler to allow for cleaning.

BURNER INFORMATION

The burner should be fitted in accordance with the instructions in Section 4.

The burner unit should be commissioned in accordance with the manufacturer's instructions supplied with the burner, to obtain combustion figures detailed on Page 14. Burner commissioning requires specialist knowledge and equipment. We therefore strongly recommend that the services of Potterton Service Department are used.

PLEASE NOTE : F110 3 / 4 AND 5 SECTION

The flue gas re-circulation tube found in the combustion chamber door on the F110 3 / 4 and 5 section boilers is not required for use in the UK. PLEASE REMOVE.

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SPARGE PIPE DETAIL

The 4, 5 and 6 section Rapido F110 boilers are fitted with sparge pipes for water distribution within the boiler. These are inserted into the boiler through the bottom front connection and sufficient clearance should be provided for removal of these pipes should the need arise.

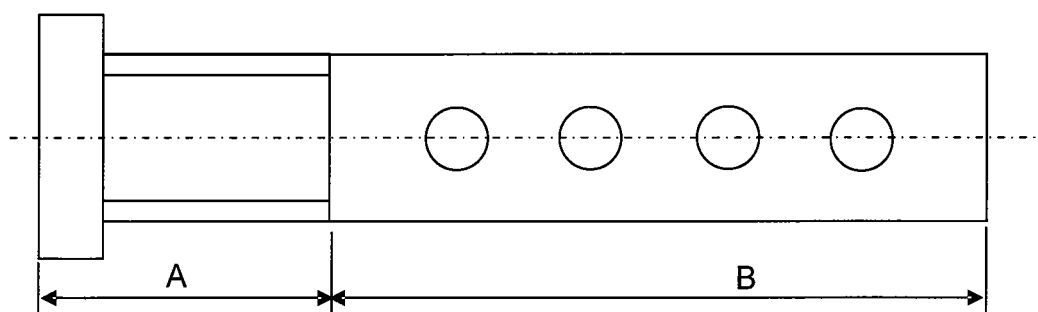
The dimensions of the sparge pipe are given in Table 5 below.

Table 5 - Sparge Pipe Dimensions

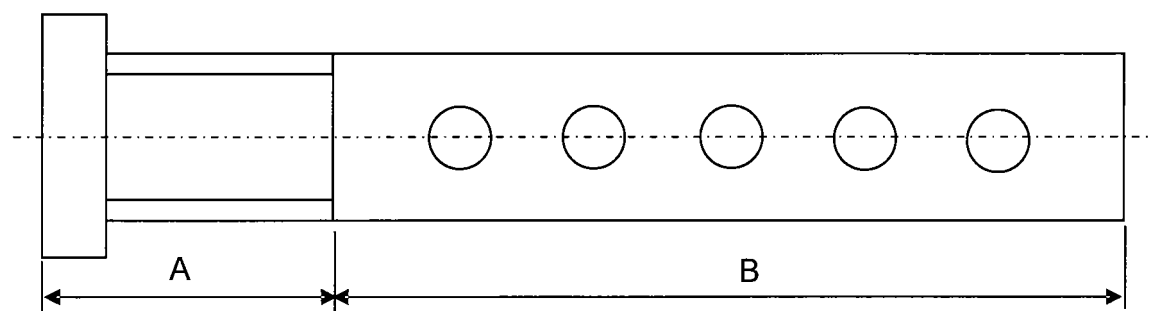
Sections		4	5	6
Total Length	mm	464	600	726
Length A	mm	28	28	28
Length B	mm	436	570	698
Diameter of Holes	mm	10	10	10
Number of Holes		4	5	6

Fig 5 - Sparge Pipe Configuration

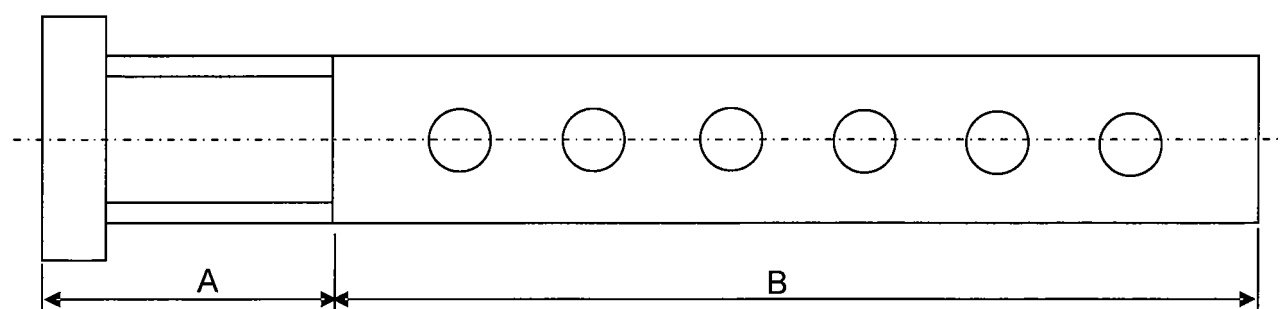
4 Section



5 Section



6 Section



GENERAL

This boiler is **NOT SUITABLE** for installation in a normally occupied area (i.e. kitchen).

A **LIFETIME GUARANTEE** is available on this boiler, please refer to our standard terms and conditions for details.

The Potterton F110 is a cast iron sectional boiler available in outputs from 24kW (3-section model) to 72kW (6 section model). The heat transfer surfaces for the F110 have been specially designed to maximise the boiler efficiency and the combustion chamber capacity ensures environmentally sound combustion reducing CO and Nox emissions. Specially designed and prewired control panels allow full boiler control.

The F110 is suitable for running at variable low temperatures under direct compensated control.

The boiler has match tested package burners, available for Natural Gas, LPG, 35 Second and 28 Second Oil. The package burner is supported by the front waterway section to which is supported by the front waterway section to which is attached by hinges on one side and locking nuts on the other. Hinge points are interchangeable allowing for left or right hand door opening by turning the door assembly through 180° at erection stage.

The F110 is suitable for use on fully pumped open vented systems or a sealed system with a maximum design pressure of 4-bar (60 p.s.i.).

The F110 boiler is an overpressure type with 3-pass reverse flame design. The first two passes are in the combustion chamber the third in the convection tubes where the turbulence to achieve high heat transfer is generated by the extended surface area achieving efficiencies of 91% (net) 84% (gross).

The F110 is constructed with BS1452 Grade 220 cast iron heat exchanger, constructed in accordance with EN303.1. The boiler package meets Gas and Oil requirements of M&E3 and the burners EN767.

The waterway sections are joined by steel taper nipples and secured with tie rods. The combustion chamber is sealed by ceramic fibre rope. the F110 waterways are assembled at works.

The powder coated mild steel casings have an 80 mm fibre wrap around the castings, thus reducing fuel consumption and emissions.

The F110 is supplied assembled.

STANDARD SUPPLY

- Assembled boiler.
- Cleaning tools.
- Control panel

CONTROLS

The F110 range are supplied as standard with an integral control panel which is fitted with control thermostat, thermometer and burner on/off switch.

A 230 V single phase supply is taken to the control panel.

OPTIONAL EXTRAS

- Volt free contacts

SHIPPING – PACKAGING

The boiler package is delivered assembled on one pallet with the burner separately either in a carton or pallet.

It is recommended that the manufacturer's trained engineers should carry out erection and commissioning, as this will make valid the LIFETIME GUARANTEE, details on the rear of this manual.

INSTALLATION

Before starting work a risk assessment should be carried out on the boiler and its access to determine and ensure a safe installation and working environment.

Any person installing or working on the boiler must be qualified and competent and in the case of gas fired boilers attention is drawn to the mandatory requirement of C.O.R.G.I. Registration and qualified to A.C.O.P's element 16. Also they must be electrically competent and adhere to the IEE regulations.

Manual Handling – any person or persons moving or lifting the boiler or any part of it, should be trained in manual handling techniques and if necessary use suitable lifting equipment to reduce the risk of injury to themselves or other people.

The installation should comply with relevant British Specifications, Codes of Practice and current Building Regulations, together with any special regional requirements of the Local Authorities, Gas Undertaking and Insurance Company. All electrical wiring must comply with the IEE Regulations for the Electrical Equipment of Buildings.

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The installation of the boiler must be in accordance with the relevant requirements of: -

Health and Safety at Work Act 1974.

Building Regulations 1991.

Electricity at Work Regulations 1989.

Management of H&S at Work Regulations 1992.

Manual Handling Regulations 1992.

Model Water By-laws 1986.

BS.7671:1992 – Requirements for Electrical Installations, IEE Wiring Regulations 16th Edition.

BS.5440:1990:Part 1 – Specification for Installation of Flues.

BS.5440:1989:Part2 – Specification for installation of Ventilation for Gas Appliances.

BS.6644:1991 – Installation of Gas Fired Hot Water Boilers for Inputs between 60kW and 2MW.

BS.7074:1989:Part 2 – Application Selection and Installation of Expansion Vessels and Ancillary Equipment for Sealed Water Systems.

BS.6880:1988 – Codes of Practice for Low Temperature Hot Water Systems.

BS.779:1989 – Cast Iron Boilers for Central Heating and Indirect Hot Water Supply (Rated Output 44kW and above).

CP342.2 - Centralised Hot Water Supply.

Gas Safety (Installation & Use) Regulations 1994.

IM/11 Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters.

IGE/UP/1 – Soundness Testing and Purging Procedure for Non-domestic Installations.

IGE/UP/2 – Gas Installation Pipework, Boosters and Compressors for Industrial and Commercial Premises.

Manufacturer's notes must be taken in any way as overriding statutory obligations.

BOILER SITING AND BASE

The boiler should be sited in accordance with BS.6644:1991 with respect to protecting the boiler from damage, air for combustion, clearances for service and access, temperatures, noise levels, the disposal of boiler water and the effects of flooding of the boiler house of seepage from a roof top boilerhouse. See Page 4 for required boiler clearances for service and access.

A level of non-combustible floor capable of supporting the weight of the boiler filled with water, see technical data table, together with any additional weight bearing down on the base from the connections, burner etc., must be provided. This should be of an adequate height off the floor so as to be raised in case of flooding, but also low enough to allow ease of erection. This should be typically a 50 mm concrete plinth with an area equal to that of the plan of the boiler.

For certain special installations a sound proof plinth may be necessary and a metal plinth resting on anti-vibration pads is recommended in these instances.

Consideration should also be given to fitting steel strips beneath the boiler feet for boiler base protection, see Fig.3 for base details

Before any work takes place Risk Assessments should be carried out, to determine what possible risk are associated with the work which is taking place.

L.P.G. boilers should not be installed in basements/below ground or in a well.

For further advice on installations, refer to Technical Bulletins 1 –4

VENTILATION

Safe, efficient and trouble free operation of conventionally flued boilers is vitally dependent on the provision of an adequate supply of fresh air to the room in which the appliance is installed. Account must also be taken of any other fuel burning appliance existing or to be fitted when designing the ventilation and combustion air systems.

For oil see relevant standard. Further guidance on ventilation for gas appliances is provided by BS 6644: 1991 and BS.5440:1990.

IMPORTANT - The use of an extractor fan in the same room as the boiler (or in an adjacent room in communication) can, in certain conditions, adversely affect the safe operation of the boiler and therefore must be avoided.

FLUE

To ensure safe and satisfactory operation the chimney system, which may be individual or common in the case of modular boiler installations, shall be capable of the complete evacuation of combustion products at all times. The effective height of the chimney terminal(s) above the boiler(s) flue outlet(s) shall ensure sufficient buoyancy to overcome the resistance of the bends, tees and runs of the flue pipe involved and shall terminate in a down draught free zone. The number of bends used should be kept to a minimum and runs of flue pipe less than 45° to the horizontal should be avoided in order to comply with the recommendations made in BS 6644: 1991 and British Gas publication IM/11 "Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters". The third edition of the 1956 Clean Air Act Memorandum and the Building Regulations should be strictly observed and approval obtained where applicable, combustion chamber details are given in table 3 (page 1). The flue system to be designed to work specifically to remove the products of combustion.

IMPORTANT: 90° square bends must not be used on the flue system, including the boiler flue spigot, a straight length followed by an "easy sweep" or lobster back bend should be used.

FLUE SIZE CONSIDERATIONS

Nominal flue connection sizes are given in Table 2 (page 1), these sizes refer to the boiler flue connection spigot, detailed dimensions of the connection spigot are given in Fig.2 (page 1).

The actual size of the flue system will depend on individual site applications. Detailed below are general considerations on sizing flue systems. These notes are for guidance only and Potterton Commercial Division cannot accept responsibility for any flue system designs.

Horizontal Flue Runs

Horizontal flue runs are not recommended particularly over 2m in length, where these are unavoidable advice should be sought from a flue system specialist.

Common Flue Systems

Where multiple boilers are installed on a common flue system then the flue system should be designed to ensure the correct operation of the flue on varying load conditions. In particular that the appliance flue draught is within the operating parameter under full load and partial load conditions. For safe and reliable operation of the boiler plant it is recommended that the variance in flue draught available at each appliance under full and part load operation is designed to a minimum. **(It is recommended that the services of a specialist flue system manufacturer are sought for the design of common flue systems).**

THE ABOVE RECOMMENDATIONS ARE FOR GENERAL GUIDANCE ONLY. POTTERTON COMMERCIAL DIVISION CANNOT ACCEPT RESPONSIBILITY FOR FLUE SYSTEM DESIGNS BASED ON THE ABOVE RECOMMENDATIONS

WATER CIRCULATION SYSTEMS

The water circulation systems should be indirect and installed in accordance with the relevant parts of British Standards Codes of Practice CP342 and BS 6644: 1991.

The maximum and minimum design temperature differential across the boiler should be 20°C and 10°C and the boiler should be prevented from operating with flow rates giving a temperature difference across the boiler greater than 25°C based on the full boiler output. Boilers operating under constant flow conditions can be more accurately controlled and are not subject to excessive temperature stresses.

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The boiler **must not** be fired less than the minimum flow.

On systems with variable flow rates due to flow reducing devices, i.e. TRVs, zone valves, etc, or where the minimum heat demand, ie. summer domestic hot water load, does not achieve the minimum boiler flow rate then consideration shall be given to incorporating a primary loop system. For further information see Potterton Publication Technical Bulletin No.1 Issue 3.

It is essential that all pipework connections to the boiler are self supporting, correctly aligned and allow for free expansion of both boiler and pipework.

Care should be taken in the pipework design to prevent strain on the connections. Excessive strain can lead to premature failure of the boiler, which is obviously outside the terms of our warranty.

The use of expansion bellow to take up both axial and lateral movement is recommended.

BOILER PROTECTION

The provision of pump overrun by a time delay relay or a thermostat situated in the flow pipe close to the boiler is essential to remove residual heat from the boiler, see Section 6, Fig.11 (page 19).

Unions and isolating valves should be fitted to the flow and return manifolds so that the boiler can be isolated from the system if the need arises. Your legal obligations must be adhered to.

The system must be clean, as debris regress will damage the boiler.

IMPORTANT: The water level in the cistern or expansion tank should be minimal on cold charge to allow expansion without discharge from the overflow between cold and hot operating conditions.

SYSTEM WATER QUALITY

High efficiency boiler systems require the water quality of the system water to be controlled by the use of inhibitors to maintain a neutral Ph and inhibit corrosion. Additionally the water system should be free of leaks to prevent raw water make up which will dilute any inhibitors, promote corrosion and form lime scale.

Existing Systems

On existing systems where boilers are being replaced due to failure then the cause should be investigated before installing new boilers. This can normally be

achieved by cutting open a failed boiler section and examination for system debris or contamination.

Lime scale is a positive indicator of continuous system water make up due to water loss. Evidence of magnetite (black sludge) in the system and the formation of gas in radiators causing air locking is a positive indicator of corrosion.

Where an old system shows evidence of contamination then system cleaning should be carried out before installation of new boilers. The heating system should be chemically flushed to remove any lime scale or corrosion and a corrosion and lime scale inhibitor added. Lime scale descalers if incorrectly used could cause any remaining system debris to continue to breakdown and contaminate the new boiler causing boiler failure.

Advice on system cleaning and suitable products should be sought from specialist suppliers of system cleaners such as Fernox or Sentinel.

It is important to note that corrosion inhibitor can only be used in an attempt to prevent corrosion from occurring, where a system has an existing corrosion problem, inhibitors will be ineffective and the system requires cleaning.

On existing systems where comprehensive descaling and desludging cannot be carried out then consideration should be given to separating the new boiler system from the existing system pipe work by the use of plate heat exchangers.

New Systems

New pipe work systems should be thoroughly flushed with a suitable cleaning agent to remove debris and flux residues before filling. The system water should be dosed with a suitable corrosion and lime scale inhibitor.

System Water Monitoring

The system water should be monitored as part of a maintenance programme to ensure the following.

Raw water make up is not occurring.

Corrosion and lime scale Inhibitors are still active
Water Ph is below Ph 8.5 other wise on systems with aluminium content, component failures may occur

SEALED SYSTEMS

General

Potterton Commercial boilers are suitable for use on sealed systems designed in accordance with BS 6644: 1991 and BS 6880 Part 2. In addition, reference should be made to the Health & Safety Executive guidance note PM5 "Automatically Controlled Steam & Hot Water Boilers".

BOILER ERECTION**Preparation**

Before commencing erection ensure that all parts shown on the packing sheets are on site.

The Rapido F110 range of boilers are factory assembled utilising steel push nipples. On sites with restricted access where the boiler needs to be stripped down and reassembled, it is recommended that the services of Potterton Commercial service offices are utilised (addresses on the back page of this manual) as specialist tools and knowledge will be required.

WARNING: The sections are not self supporting until several sections have been assembled. Therefore when attempting to dismantle or reassemble the boiler the sections should be adequately supported to prevent injury or damage.

**Potterton Commercial Customer
Erection/Assembly Check List**

The items listed below have been put together as a guide to what actions should be completed before the erection/assembly of a boiler takes place.

- i. Site access available for persons carrying out proposed work.
- ii. Site Managers/Personnel aware that work will be taking place.
- iii. Risk Assessments carried out on possible risks which may affect the persons carrying out the proposed work.
- iv. Sections and fittings boxes should be positioned adjacent to the plinth(s) within the boiler house prior to persons carrying out the proposed work, attending site. As this will eliminate one source of an on site injury taking place, if this is unable to be done notice prior to attending site should be given.
- v. When boilers are to be stripped and rebuilt, labour and transport should be provided for moving the sections from the delivery point to the final erection point. If this is unable to be provided notice to attending site should be given.
- vi. Sections/casing etc., should be kept in a clean and dry area prior to erection/assembly.
- vii. Water should be available.

- viii. A drain off area should be available.
- ix. Power should be available.
- x. A site representative should be available at all times.
- xi. Clear instructions supplied to the persons carrying out the proposed work regarding positioning the boiler.
- xii. Fire evacuation procedures, facilities availability, specific Health and Safety information etc., should be provided.

Items vii to x are essential if boilers require pressure testing.

ERECTION PROCEDURE**Waterways**

The boiler is despatched as a fully assembled waterway with all access doors and plates fitted.

1. Position the waterway on a level base with a minimum height of 50mm.
2. Ensure that the sparge pipe is fitted to the 5 and 6 section boilers (see page 5). This is screwed into the tapping on the front of the boiler below the boiler door. Clearance should be provided for the removal of the sparge pipe if necessary.
3. Connect the flow and return system pipework to the 1 ¼" BSP connections on the rear of the waterway block.
4. Ensure that all fittings are tight.

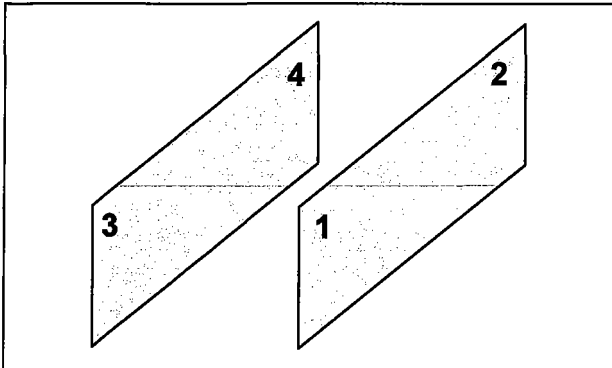
BAFFLE PLATES

Baffle plates are supplied with each boiler and are fitted as follows.

1. Insert the flue baffles according to Fig.6 with the numbers on the baffles corresponding to those on the section, i.e. 1 to 1, 3 to 3, etc.
2. The number on the baffle should be placed towards the front of the boiler.

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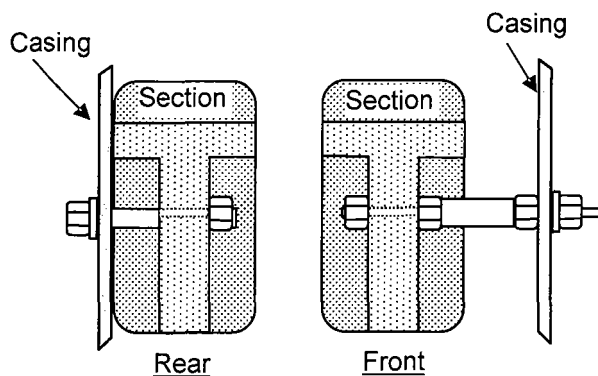
Fig.6 - Flue Baffles



Casing/Control Panel

1. Fit insulation jacket around the boiler section block, aluminium foil outermost.
2. Using four M8-60 hexagon screw bolts insert through casing support brackets on the front section with the thread protruding outwards. Fit spacer and then M8 nut until tight against the spacer. Repeat for all four bolts, see Fig.7 below.
3. Using four M8-80 hexagon screw bolts insert through the casing support bracket holes provided in the rear section with the thread protruding outwards. Take one M8 nut and tighten against section.
4. Take rear casing panel and fit over the protruding threads. Do not fasten.
5. Take side casing panel and position with fixing holes (top and bottom) provided over the protruding threads on the front and rear sections.

Fig 7 – Casing Fixing



Using M8 washers and nuts securely fasten the top of the casing panels leaving the bottom ones on the front section free until base sheet is fitted.

6. Take front base sheet and align with fixing holes over the protruding bolts in the front section (bottom). Using M8 washers and nuts fasten securely.
 7. Take the top casing rear panel, push into place and secure using the four plastic clips (two on each side).
 8. Take the control panel and route the burner cables over the top of the insulation and behind the front panel.
 9. Take the ½" BSP thermostat pocket and locate in the ½" BSP tapping provided in the top of the front section. Insert the two phials into the pocket into the pocket, taking care not to kink the capillaries, and secure using the spring clip.
- Secure the control panel to the topside casing panel using the plastic clips provided into the fixing holes.
10. Fit the burner to the boiler door using the pins provided and plug the flying lead into the socket on the control panel.
 11. Take the front casing panel and slide the burner cut-out over the burner and locate bottom of panel into the front base sheet then push top of panel towards the boiler until the magnetic catches locate.

PLEASE NOTE F10 3 / 4 AND 5

The flue gas re-circulation tube found in the combustion chamber door on the F110/3 and F110/4 boilers is not required for use in the UK.
PLEASE REMOVE

BOILER MAINTENANCE

It is essential for efficient and trouble free operation that the boiler plant is regularly maintained. This must be carried out by qualified and experienced engineers and the case of gas fired appliances attention is drawn to the mandatory requirement of CORGI (Confederation of Registered Gas Installers) registration of personnel undertaking work on these appliances. This facility is available from Potterton Commercial Division, details are available from the regional service offices listed on the back page of this manual.

Boilers should be serviced and re-commissioned as a minimum on an annual basis. It is strongly advised that a maintenance contract be entered into with Potterton Commercial Division to ensure that the boiler/burner unit is correctly and properly maintained.

WARNING: Isolate the electrical and fuel supplies before attempting any maintenance work.

Cleaning of Flue Surfaces

The boilers are supplied with a flueway brush for routine cleaning procedures. Boilers may require periodic cleaning with specialist mechanical equipment dependent on boiler conditions, fuel type, etc.

Cleaning of the boiler requires opening of the door, removal of the boiler baffles, these should be removed and re-installed as detailed on page 10.

Frequency of boiler cleaning varies and is dependent on site conditions, fuel type, heat load, design of controls and running conditions.

For the maximum efficiency and economy in running it is essential that the combustion chamber and flueway surfaces should be kept clean and free from deposits. A layer of deposits 1/16" thick will reduce the heat transfer through the tube wall by up to 10%.

Not only does this waste fuel but the higher flue gas temperatures that result will increase the thermal stresses within the boiler and may lead to joint leakage or in extreme conditions section failure.

Natural Gas & LPG Fired Boilers

We recommend brushing out of the combustion chamber and flueways and the removal of the rear clean out cover to check for deposits in the flue box twice a year.

Class 'D' Fuel Oil

The boilers should be brushed out thoroughly at least twice a year for 35 second and 28 second fuel oil during the heating season but more frequent attention may be necessary dependent on the operating conditions to prevent the formation of hard adherent scale on the flueway surfaces.

It is essential to ensure that cleaning is carried out throughout the full length of the boiler passes and that the rear clean out cover is taken off to allow for the removal of deposits brushed through into the flue box.

Should a heavy or tough adherent deposit become formed which is too hard for the standard brush to remove, it may be necessary to wash out the tubes with water followed by a thorough brushing – this may have to be repeated several times.

Sludge Gas

Maintenance for boilers running on these fuels will be required at more frequent intervals, possible on a weekly basis or even a daily basis dependent on the fuel type and quality.

Boiler Ancillaries

Check the sealing of the boiler door against the front section. There should be a uniform depression about 3/32" (2mm) deep from the sealing grooves of the front section in the braiding. If this is not uniform, the sealing may be adjusted by the locknuts on the hinge pins. Make sure the locknuts are fully tightened after adjustment is complete.

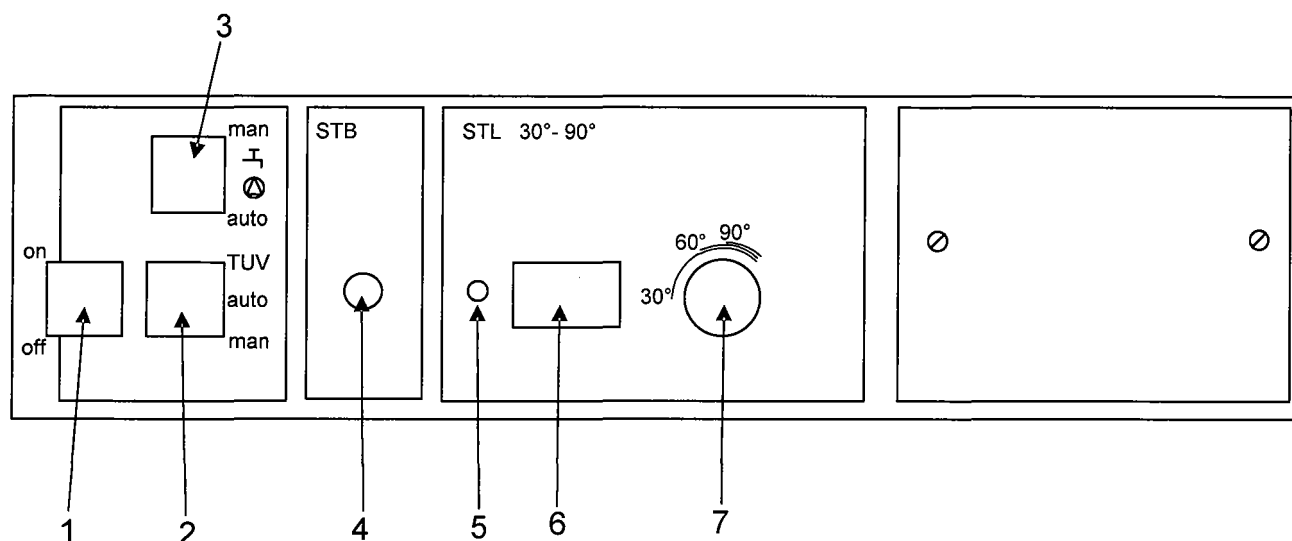
Keep a regular check on the condition of the door refractory. If there is any deterioration this must be made good immediately to prevent damage to the boiler and burner.

Boiler Controls

The operation of boiler controls including control thermostat and overheat thermostat should be checked on an annual basis and the burner recommissioned as detailed below.

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Fig.8 - Boiler Control Panel Layout – SP1.1 (Not to Scale)



1. Boiler On/Off Switch
2. Manual/Auto/Test Switch
3. Auto/Manual Charge Pump Switch
4. Overheat Button
5. Overheat LED
6. Temperature Gauge
7. Control Thermostat

Safety Interlocks

The operation of safety interlocks such as flow proving on mechanical flue/ventilation systems should be checked to ensure that operation of the boiler is prevented on a fault condition.

Potterton Commercial Customer Commissioning Check List

The items listed below have been put together as a guide to what actions should be completed before the commissioning of a boiler takes place.

- | | |
|---|--|
| <ol style="list-style-type: none"> i. Site access available for persons carrying out the proposed work. ii. Site Managers/Personnel aware that work will be taking place. iii. Boilers correctly erected and cased. iv. Risk Assessments carried out on possible risks which may effect the persons carrying out the proposed work. v. Site wiring complete to boilers. vi. Boilers fully flooded. vii. Controls connected, operable and calling for heat. | <ol style="list-style-type: none"> viii. Sufficient system heating load available to run the boilers in order to complete combustion checks. ix. All system pumps operational and available. x. Gas supply completed, purged and ready for use (if applicable) xi. Oil supply completed, bled and ready for use (if applicable). xii. Flue system completed, adequate and fully functional. xiii. Permanent ventilation complete and adequate. xiv. All safety systems fitted and fully operational (e.g. safety valves, fuel shut off devices, flue fans interlocked, etc.). xv. Safe working environment provided. |
|---|--|

CONTRAVENTION OF REGULATIONS

PLEASE NOTE THAT SHOULD ANY ITEMS BE INSTALLED ON A TEMPORARY BASIS, E.G. VENTILATION, FLUES ETC., THEN THE COMMISSIONING ENGINEER WILL NOT BE ABLE TO LEAVE THE BOILERS RUNNING UPON COMPLETION AND WILL NEED TO SHUT DOWN THE APPLIANCES, MAKING THEM INOPERABLE AND ISSUING SHUT DOWN AND WARNING NOTICES.

COMMISSIONING

IMPORTANT: The boiler must be commissioned following completion of installation. Operation of an uncommissioned appliance may cause injury to personnel and damage to the boiler/burner unit and could invalidate the manufacturer's warranties.

Commissioning of the burner unit should only be carried out by personnel approved and competent to do so. This facility is available from Potterton Commercial service offices at the addresses as listed on the back page of this manual.

Commissioning of the burner unit should be carried out in accordance with the burner manufacturer's handbook provided with combustion adjustments in accordance with the Potterton burner data sheet also provided.

Before commencing to commission the burner check the following.

1. Electrical supply is of the correct voltage and polarity and earthing is available.
2. Fuel supply is tested for leakage and purged of air. Ensure the burner is suitable for the connected fuel supply and pressure.
3. Boiler and system are fully flooded with water and the operating pressure is within the appliance range.
4. Pumps are operational and any flow proving interlocks are functional. The operation of the pump should be checked, particularly on sealed systems, to ensure that operation does not cause a reduction in pressure within the system below the minimum operating pressure. See page 13 for further details on water circulation systems.
5. Ventilation is adequate and, in the case of mechanical ventilation systems, operation of the boiler is inhibited unless the ventilation fan is proved.

6. On mechanically assisted flue systems the operation of the boiler plant should be inhibited unless the mechanical flue system is operational and flow proved.
7. The safety valve should be checked to ensure that it is of the correct size and pressure.
8. The cold feed and open vent sizes should be checked. See page 15 for further details.
9. Ensure that the burner fitted to the boiler is of the correct specification and size for the boiler and suitable for the fuel supply available.
10. The boiler baffles have been correctly fitted, see page 10.

Following completion of the above checks the burner should be commissioned in accordance with the burner manufacturer's handbook provided with the burner. Typical combustion figures, etc., should be completed on the commissioning form provided at the back of this manual and returned to Potterton Commercial at the address on the back page of this manual.

<u>OIL</u>	CO ₂	- 11 – 12%
	Smoke	- 0 – 1 Bacharach
	Flue Gas Temp	- 220°C (428°F)
	Draught	- 1 mm Negative

<u>GAS</u>	CO ₂	- 8 – 9%
	O ₂	- 4 – 5%
	CO	- Nil
	Flue Gas Temp	- 220°C (428°F)
	Draught	- 1 mm Negative

IMPORTANT The boiler/burner units are supplied in accordance with Potterton Commercial Quality Assurance plan registered to meet the requirements of BS 5750 Part 2. A condition of the supply of the appliance for compliance with this Quality Assurance plan is the return of the appliance commissioning report.

Following/during commissioning of the burner unit the following additional checks should be carried out.

1. Control and high limit thermostats should be checked for correct operation.
2. The flue draught available at the appliance flue outlet should be checked under all operating conditions (hot and cold) and should be within the boiler operating parameters, see Table 4 (page 2).
3. The fuel supply to the appliance should be

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isolated and the burner operated to ensure safety shut down and lockout of the burner on flame failure.

4. That shut down of the boiler plant by external controls does not cause a hazardous condition and pump overrun is provided to remove residual heat from the boiler.
5. Following commissioning the boiler overheat and control thermostats should be set to the required operating setting.
6. Following completion of commissioning the soundness of all automatic fuel valves should be checked for leakage.

Additional Checks

Where possible the system should be checked to ensure that following purging of air there is no raw water make-up. In particular, when the system is operated in the hot condition, there should be no discharge of water from the safety valve, open vent or cold feed tank overflow that would otherwise lead to unregulated raw water make-up when the system cools down.

FAULT FINDING

General fault finding for burner failure should be in accordance with the burner manufacturer's handbook. Set out below are general guidance notes on system fault finding.

Overheat Operation

Operation of the boiler overheat thermostat is associated with a reduction in boiler water flow. Where overheat operation is reported the following should be checked.

- a) The boiler/system pump is adequate for the duty.
- b) Operation of flow reducing devices, i.e. TRVs, compensated mixing valves, etc., do not reduce the water flow rate through the boiler below the minimum flow rate.
- c) Pump overrun is incorporated to dissipate residual heat from the boiler on system shut down.
- d) The operation of boiler back end valves incorporate a time delay to allow for removal of residual heat from the boiler.

- e) The boiler is operating at the correct rate and is not overfired.

- f) On 4, 5 and 6 section boilers check sparge pipe for blockage.

To reset the overheat thermostat allow the boiler to cool down, remove the overheat thermostat knob and press the reset button.

The use of a primary loop system is highly recommended to provide a constant boiler flow rate under all operating conditions. For further information see Potterton publication Technical Bulletin No.1, Issue 2.

Burner Lockout

The package burners supplied with the boiler unit have an integral safety system to allow the safe and reliable operation of the burner. Failure of the burner to operate correctly will cause the burner control box to "lockout" and the lockout button on the burner will illuminate to indicate this.

The lockout condition may be manually reset by pushing the reset button and the control box should restart its control sequence in an attempt to light the burner. If the control box lockout will not reset or goes to lockout after being reset then the services of a boiler repair/maintenance company should be sought. This service is available from Potterton Commercial Division service offices at the addresses on the back page of this manual.

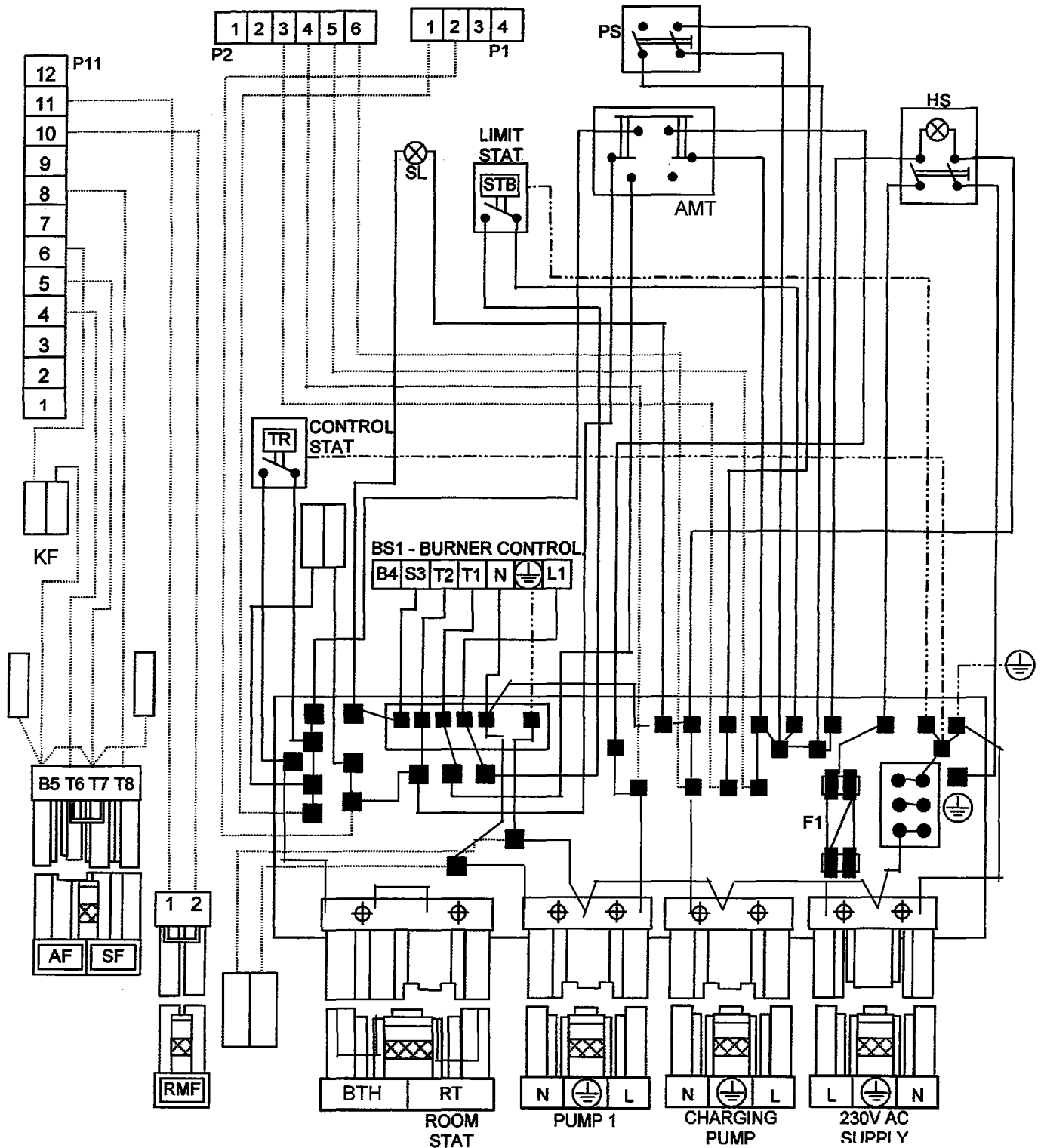
WARNING The lockout reset button should not be repeated operated otherwise a hazardous situation may occur.

Should the boiler go to lockout, check the following before attempting to relight the burner.

1. Fuel is available at the burner.
2. The electrical supply to the appliance is of the correct voltage and polarity.

The boiler control boxes in some instances have indicator dials as an aid to fault finding on boiler lockout. In these instances refer to the control box manufacturers data sheet for fault finding details.

Fig.9 - Boiler Control Panel Wiring Diagram (SP1.1)



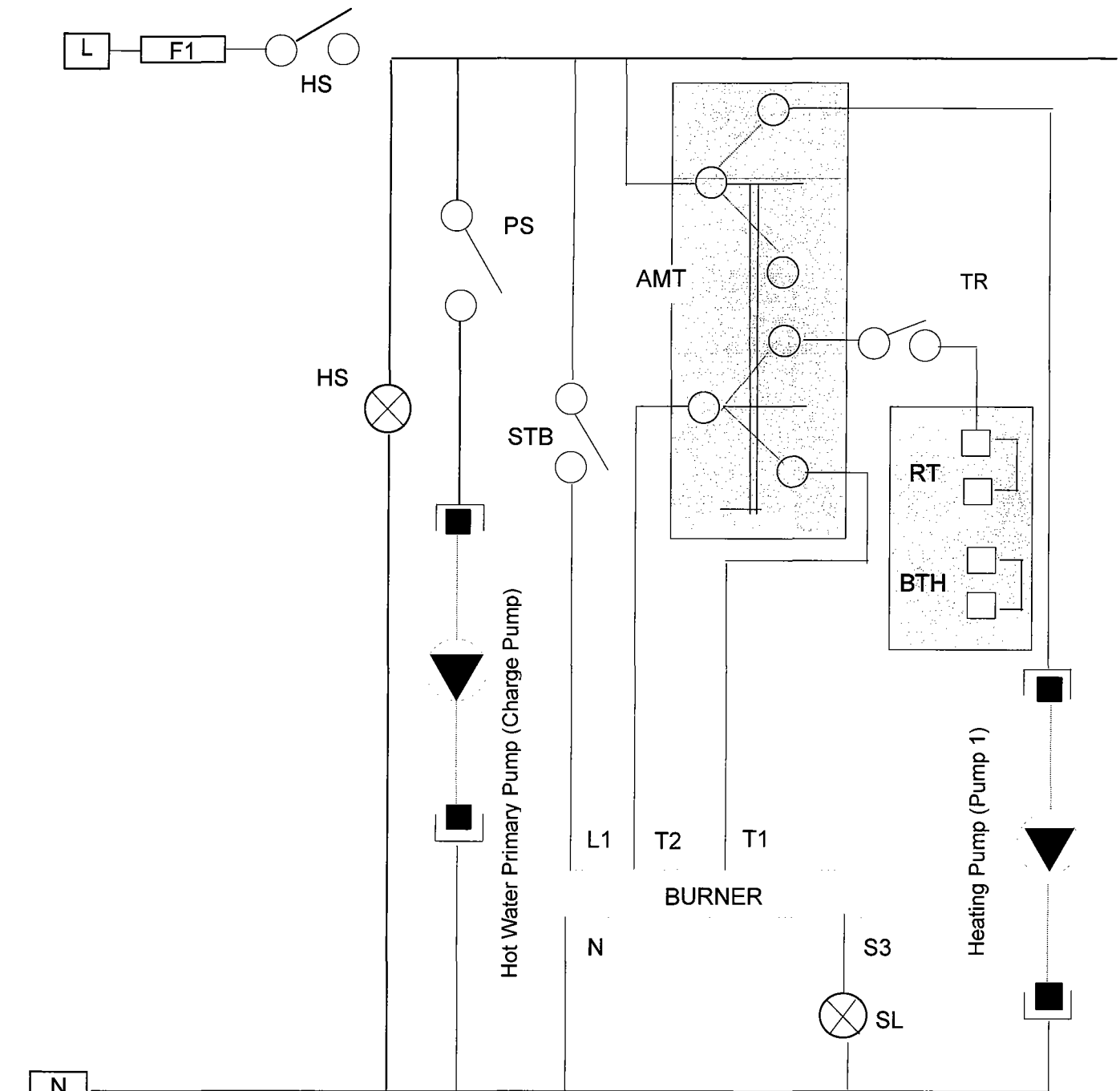
..... Denotes wiring supplied but not required for use in the UK market

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LEGEND FOR WIRING DIAGRAM (PAGE 16)

AF	- [NOT REQUIRED IN THE UK]
AMT	- Automatic/Manual/TUV Switch
BS1	- Burner Plug
BTH	- [NOT REQUIRED IN THE UK]
F1	- Delayed Action 6.3A Fuse
HS	- Main Switch
KF	- Boiler Sensor
PS	- Automatic/Manual Switch for Storage Charging Pump and Circuit No.2 Heat Circulation Pump (Red)
P1, P2, etc	- [NOT REQUIRED IN THE UK]
PUMP 1	- Heating Circuit No.1 Circulation Pump (Green)
PUMP 2	- Heating Circuit No.2 Circulation Pump (Red)
RT	- Time Clock, Room Thermostat
RMF	- [NOT REQUIRED IN THE UK]
SF	- [NOT REQUIRED IN THE UK]
SL	- Fault Warning Light
STB	- Safety Temperature Limiter
TR	- Temperature Control

Fig. 10 Schematic Wiring Diagram

**LEGEND**

F1 - Delayed Action 6.3A Fuse
 PS - Manual/Auto/TUV Switch for
 Storage Hot Water Pump
 TR - Control Thermostat
 RT - Connection for Room Thermostat/Time Switch

HS - Mains Switch & lamp
 STB - High Limit Thermostat
 AMT - Manual/Auto/TUV Switch
 SL - Fault Warning Light
 BTH - (Not Required in the UK)

Auto Manual/TUV Switch: In the MANUAL position the boiler will work normally in conjunction with any other external controls (i.e. thermostats, control systems). The AUTO position should not be used on this boiler as it is only to be used with special controls which are not available in the UK. The TUV (test) position by-passes the control and high/low thermostats and fires the boiler on full rate, this can be used to check the operation of the overheat thermostat.

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Fig.11 - Pump Overrun Using Changeover Pipe Thermostat (Not Available from Potterton).

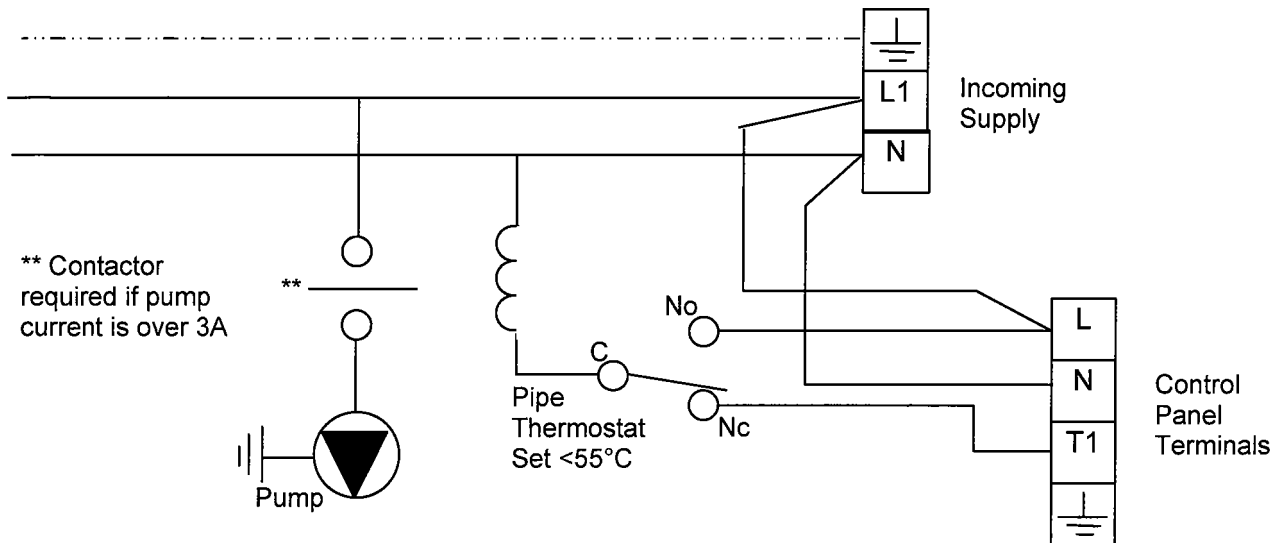
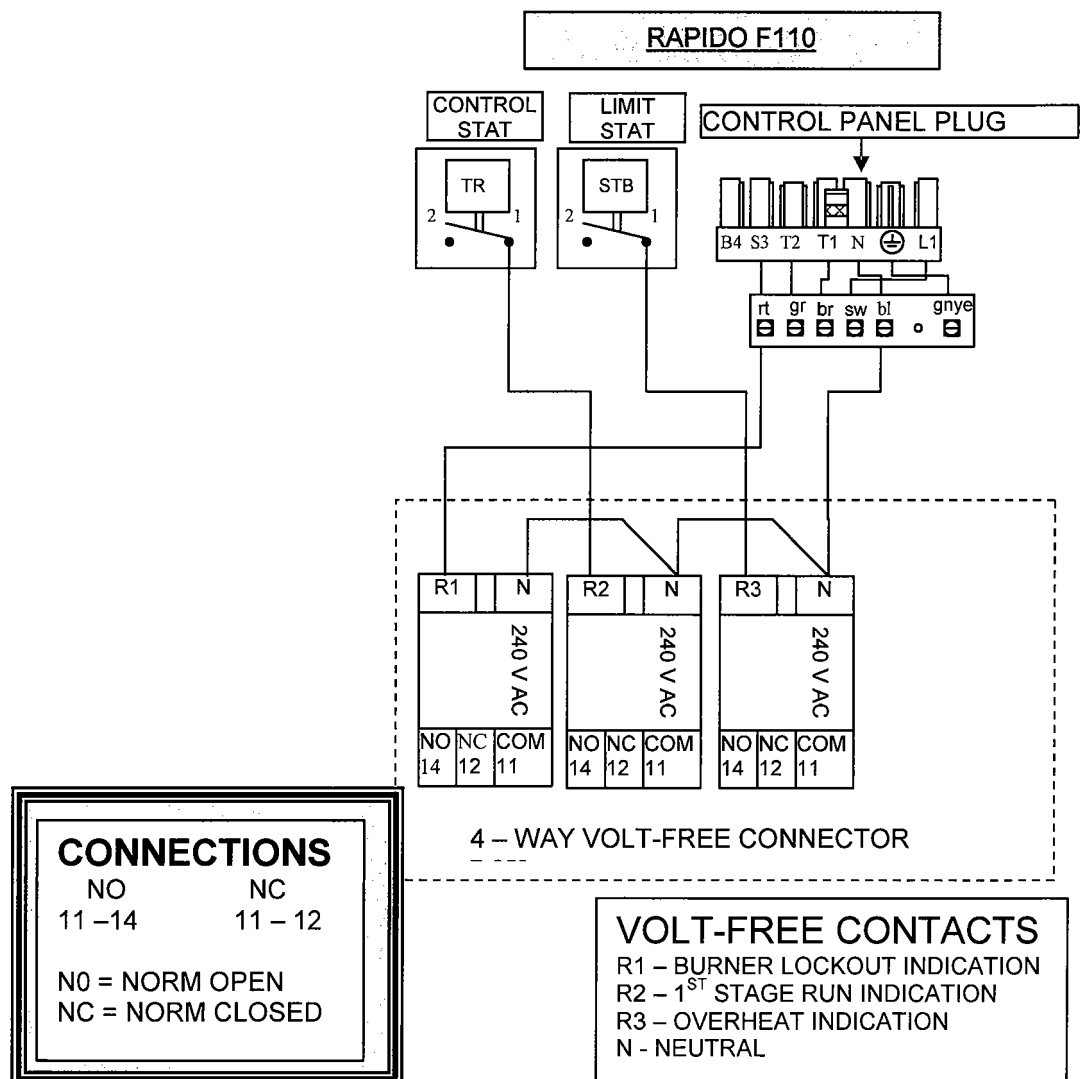
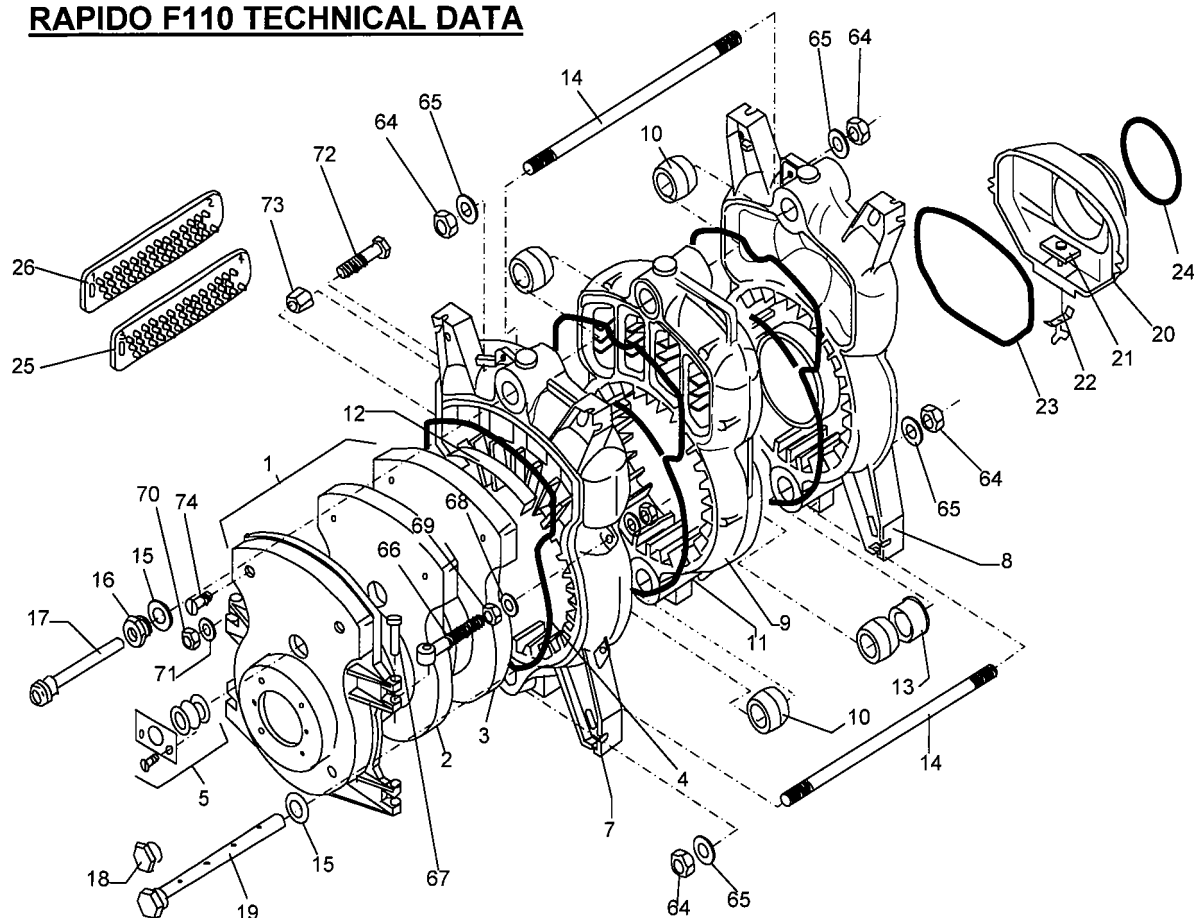


Fig.12 - 4 Way Volt-free Connector Box

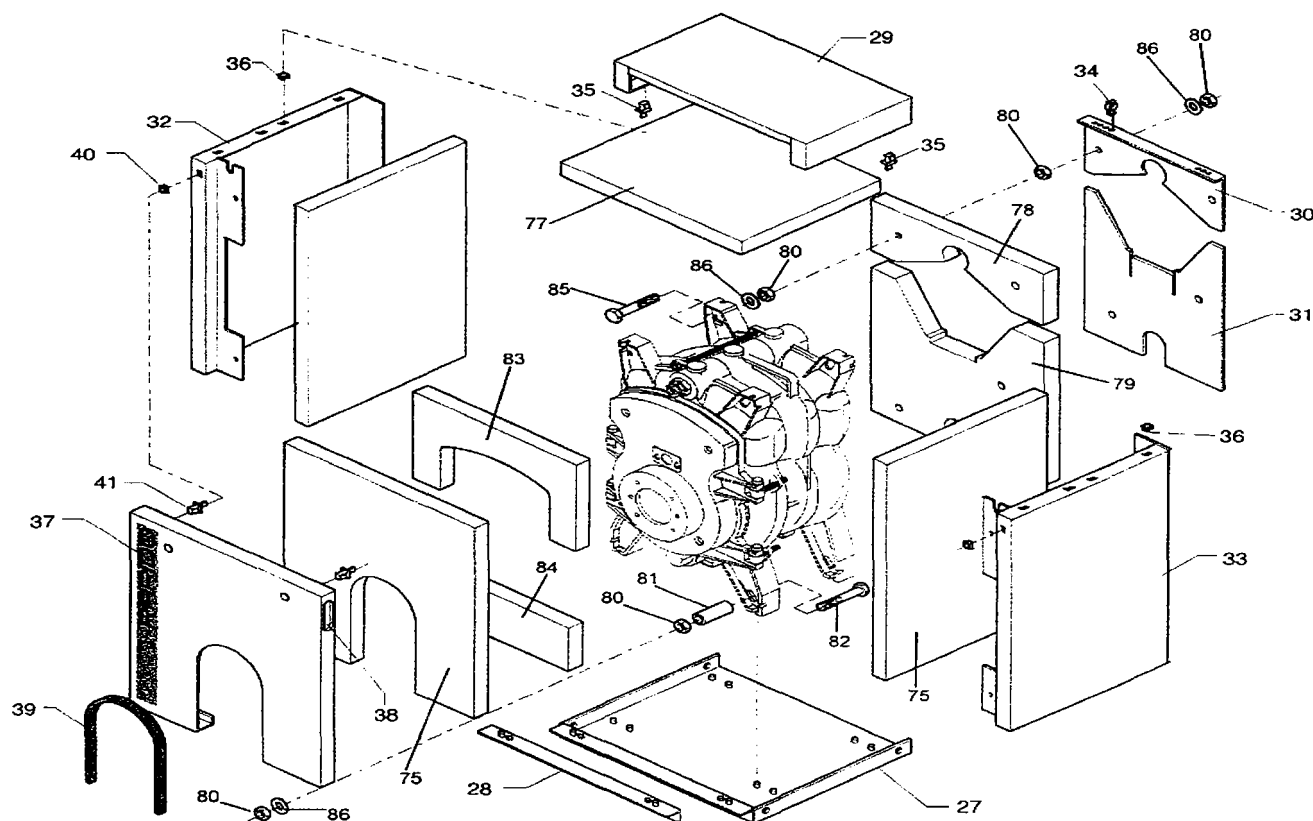


RAPIDO F110 TECHNICAL DATA**Spare Parts Numbers**

Description	Qty.	Potterton Part No.
1. Burner Door Including Insulation	1	358818
2. Burner Door Inner Insulation	1	358549
3. Burner Door Insulation	1	358550
4. Glass Fibre Sealing Rope	1	502242
5. Sight Glass Assembly	1	358819
7. Front Section	1	358525
8. Rear Section	1	358526
9. Intermediate Section (All)	Dependant	358527
10. Boiler Nipple (Ø 53.8 x 40) All	2 Per Section	358528
11. Isoceramic Cord	1 Per Section	358535
12. Baffle Plate (3 Section Only)	1	358539
13. Blanking Nipple	1	508448
14. Tie Rod (M12 x 310mm) F110/3	2	358529
Tie Rod (M12 x 440 mm F110/4	2	358530
Tie Rod (M12 x 570mm) F110/5	2	358531
Tie Rod (M12 x 700mm) F110/6	2	358532
15. Gasket (Front Section – Sparge Pipe)	2	358538
16. Front Section Upper Blanking Plug	1	358637
17. Thermostat Pocket	1	358809
18. Blanking Plug F110/3 & 4	1	502223

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19. Sparge Pipe (F110/4)	1	358806
Sparge Pipe (F110/5)	1	358807
Sparge Pipe (F110/6)	1	358808
20. Flue Hood F110/3 & 4	1	358817
Flue Hood F110/5 & 6	1	358816
21. Flue Clean Out Cover	1	358815
22. Clean Out Cover Fixing Clip	1	358814
23. Flue Hood Sealing Rope (Ø6mm)	1	358813
24. Flue Sealing Ring (Ø8mm)	1	358603
25. Baffle – F110/3 (240mm x 80mm)	2	358544
Baffle – F110/4 (370mm x 80mm)	2	358545
Baffle – F110/5 (500mm x 80mm)	2	358546
Baffle – F110/6 (635mm x 80mm)	2	358547
26. Baffle – F110/3 (240mm x 80mm)	2	358540
Baffle – F110/4 (370mm x 80mm)	2	358541
Baffle – F110/5 (500mm x 80mm)	2	358542
Baffle – F110/6 (635mm x 80 mm)	2	358543




27. Base Tray	1	358828
28. Base Tray Front	1	508432
Top Casing Panel – F110/3	1	358823
Top Casing Panel – F110/4	1	358824
Top Casing Panel – F110/5	1	358825
Top Casing Panel – F110/6	1	358826

30. Rear Top Casing Panel	1	358831
31. Rear Bottom Casing Panel	1	358822
32. Left Hand Side Casing Panel F110/3	1	358568
Left Hand Side Casing Panel F110/4	1	358569
Left Hand Side Casing Panel F110/5	1	358570
Left Hand Side Casing Panel F110/6	1	358571
33. Right Hand Side Casing Panel F110/3	1	358576
Right Hand Side Casing Panel F110/4	1	358577
Right Hand Side Casing Panel F110/5	1	358578
Right Hand Side Casing Panel F110/6	1	358579
34. Spring Clip	1	358829
35. Top Casing Securing Clip Assembly	4	358830
36. Recepticle Clip	1	508323
37. Front Casing Panel	1	358820
38. Handle	2	508333
39. Edge Protection (Black) – 735 mm long	1	358566
40. Front Casing Securing Clip	2	508773
41. Recepticle Clip	2	508772
64. Hexagon Nut (M12 [Din.9348])	4	358534
65. Washer (A14 [Din.126])	4	358533
66. Door Hinge Eye Bolt (M12 x 59)	2	358553
67. Door Hinge Pin (Ø 12mm x 60 mm)	2	358554
68. Hexagon Nut (M12 [Din.934.8])	2	358534
69. Washer (A14 [Din.126])	2	358533
70. Hexagon Nut (M12 [Din.439])	4	358556
71. Washer (15 [Din.7349])	2	358558
72. Hexagon Screw	2	358559
A. Section Sealing Compound (not illustrated) For use only when boiler has been dismantled or sections replaced.	1 Tin	924042
B. Flue Brush – All sizes (not illustrated)	1	358799
75. Front Insulation Jacket	1	358821
76. Side Insulation Jacket F110/3	2	358572
Side Insulation Jacket F110/4	2	358573
Side Insulation Jacket F110/5	2	358574
Side Insulation Jacket F110/6	2	358575
77. Top Insulation Jacket F110/3	1	358594
Top Insulation Jacket F110/4	1	358595
Top Insulation Jacket F110/5	1	358596
Top Insulation Jacket F110/6	1	358597
78. Rear Upper Insulation Jacket	1	358832
79. Rear Lower Insulation Jacket	1	358827
80. Hexagon Nut (M8[Din.934.8])	16	358602
81. Spacer (Ø 15 mm x 36)	1	358601
82. Hexagon Screw (M8 x 60 [Din.933])	4	358598
83. Front Upper Insulation	1	358593
84. Front Lower Insulation	1	358592
85. Hexagon Screw (M8 x 80 [Din.933])	4	358599
86. Washer	10	358600

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Control Panel

1. Control Panel Assembly Complete (ON/OFF SP1.1)	1	5103183
3. Blanking Plate	1	358833
4. Charge Pump Switch	1	358834
5. Control Thermostat Knob	1	358835
8. Temperature Gauge	1	358836
10. Main Control Board	4	358837
12. Clips	1	358838
15. Control Panel Cover	1	358839
16. Control Panel Front	1	358840
17. Base Panel	1	358841
18. Overheat Thermostat	1	358842
19. L.E.D.	1	??
20. Control Thermostat	1	358843
21. On/Off Switch	1	358844
22. Test Switch	1	358845

 Brooks House, Coventry Road Warwick CV34 4LL Telephone 08706 050607 Fax 08706 001516	REPORT SENT TO INSTALLER:		YES		NO	
	SITE VISIT (<i>Italics</i>)			COMMISSIONING		
	Date:					
	Signature:					
REPORT No:		INSTALLER NAME & ADDRESS:				
SITE ADDRESS:				
.....					
.....					
.....		COMMISSIONING DATE:				

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1.0</td><td>BOILER</td></tr> <tr><td>1.1</td><td>Type:</td></tr> <tr><td>1.2</td><td>No of Sections:</td></tr> <tr> <td>1.3</td> <td>Boiler No/Position: RH/LH/Centre/1/2/3/ etc</td> </tr> <tr><td>1.4</td><td>Serial No:</td></tr> <tr> <td>1.5</td> <td>Fuel: N/Gas, Class D, etc.</td> </tr> <tr><td>2.0</td><td>BURNER</td></tr> <tr><td>2.1</td><td>Type:</td></tr> <tr><td>2.2</td><td>Serial Number:</td></tr> <tr><td>2.3</td><td>Spec Number:</td></tr> <tr><td>2.4</td><td>Control Box Type:</td></tr> <tr><td>2.5</td><td>Electrical Supply:</td></tr> <tr><td>2.6*</td><td>Gas Train Type & Size:</td></tr> <tr><td>2.7*</td><td>Gas Train Serial No:</td></tr> <tr><td>2.8*</td><td>Gas Booster Type & Size:</td></tr> <tr><td>2.9*</td><td>Gas Booster Serial No:</td></tr> <tr><td>3.0</td><td>BURNER SETTINGS</td></tr> <tr><td>3.1</td><td>Draught Tube Diameter</td><td>mm</td></tr> <tr><td>3.2</td><td>Draught Tube Projection</td><td>mm</td></tr> <tr><td>3.3</td><td>Diffuser Diameter (if appropriate)</td><td>mm</td></tr> <tr><td>3.4</td><td>Diffuser Setting (if appropriate) (Distance from end of draught tube)</td><td>mm</td></tr> <tr> <td rowspan="4">3.5*</td> <td>Gas Nozzle: Side (if appropriate)</td> <td>No of Holes</td> <td></td> </tr> <tr> <td></td> <td>Diameter</td> <td>mm</td> </tr> <tr> <td>End (if appropriate)</td> <td>No of Holes</td> <td></td> </tr> <tr> <td></td> <td>Diameter</td> <td>mm</td> </tr> <tr> <td rowspan="4">3.5†</td> <td>Oil Nozzles: High Fire</td> <td>Size</td> <td></td> </tr> <tr> <td></td> <td>Type</td> <td></td> </tr> <tr> <td>Low Fire</td> <td>Size</td> <td></td> </tr> <tr> <td></td> <td>Type</td> <td></td> </tr> <tr> <td>3.6</td> <td>Electrode Settings? (to burner card/manufacturers instructions?)</td> <td></td> <td></td> </tr> <tr> <td>3.7</td> <td>Burner to Specification? (to burner card/manufacturers instructions?)</td> <td></td> <td></td> </tr> </table>	1.0	BOILER	1.1	Type:	1.2	No of Sections:	1.3	Boiler No/Position: RH/LH/Centre/1/2/3/ etc	1.4	Serial No:	1.5	Fuel: N/Gas, Class D, etc.	2.0	BURNER	2.1	Type:	2.2	Serial Number:	2.3	Spec Number:	2.4	Control Box Type:	2.5	Electrical Supply:	2.6*	Gas Train Type & Size:	2.7*	Gas Train Serial No:	2.8*	Gas Booster Type & Size:	2.9*	Gas Booster Serial No:	3.0	BURNER SETTINGS	3.1	Draught Tube Diameter	mm	3.2	Draught Tube Projection	mm	3.3	Diffuser Diameter (if appropriate)	mm	3.4	Diffuser Setting (if appropriate) (Distance from end of draught tube)	mm	3.5*	Gas Nozzle: Side (if appropriate)	No of Holes			Diameter	mm	End (if appropriate)	No of Holes			Diameter	mm	3.5†	Oil Nozzles: High Fire	Size			Type		Low Fire	Size			Type		3.6	Electrode Settings? 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NOTE: It is the installer's responsibility to ensure that the boiler is correctly commissioned by a competent engineer and that this report is completed and kept as a record. A commissioning service available from Potterton at the address listed on the back page of this manual. When a Potterton engineer commissions, this completed report will be sent to the installer. It is the installer's responsibility to action any points arising. Commissioning by Potterton engineers is restricted to equipment of our supply. No responsibility is accepted for the on site assembly or installation of the equipment unless specifically carried out by Potterton. The installer must ensure that the boiler is installed in accordance with the manufacturers instructions and all relevant BS Codes of Practice and Regulations (see manufacturers instructions for full details). Items 4.1 to 4.6 are related to the boiler installation and as such these pre-commissioning checks should be carried out in the presence of the installer.

Potterton is a Member of the Boiler & Radiator Manufacturers Association (BARMA), and the terms of this Commissioning Document follow the generally agreed conditions of the Association. Potterton, in line with its policy of continuous product development, reserves the right to alter and amend this Document as is deemed necessary at any time.

6.0	OPERATIONAL SAFETY CHECKS	
6.1	Check control stat operation	
6.2	Check limit stat operation	
6.3	Check high/low stat operation	
6.4*	Check for gas leaks	
6.5*	Check for gas leakage past valve assembly	
6.5¶	Check for oil leaks	
6.6	Check boiler locks out on loss of flame signal	
6.7	Check boiler locks out on air pressure switch operation	
6.8*	Check gas low inlet & overpressure outlet switches	
6.9*	Record switch settings:- LOW OVERPRESSURE.....	
6.10*	Check gas booster interlocks operational	
6.11*	Record switch settings:- INLET OUTLET	
7.0	BOILER/SYSTEM CHECK LIST	
7.1	Control stat left at	°C
7.2	Limit stat left at	°C
7.3	High/low stat left at	°C
7.4	Maximum flow temperature recorded	°C
7.5	Maximum return temperature recorded	°C
7.6	Boiler water pressure	
7.7	Are pipework connections as per manual?	
7.8	Is safety valve fitted? If so, SIZE PRESSURE RATING	
7.9	Are water isolating valves fitted?	
7.10	Are water flow switches fitted?	
7.11	Are return water shut off or diverter valves fitted?	
7.12	Is shunt pump fitted?	
7.13	Is pump overrun fitted?	
7.14	Flue type and diameter of connection to boiler:- TYPE DIAMETER (mm) Where appropriate and for multi boiler installations sketch details of flue system showing length of runs and diameters. Conventional <input type="checkbox"/> Fan Assisted <input type="checkbox"/> Flue Dilution <input type="checkbox"/> Approximate overall height m Is the fan interlocked with the boiler? YES / NO	
7.15	Are flue dampers fitted?	YES / NO
	If so, interlocked?	YES / NO
7.16	Fan assisted ventilation?	YES / NO
7.16	Fan assisted ventilation interlocked? YES / NO	
7.17	Any evidence of condensate formation? YES / NO	
7.18	Any evidence of water leakage? YES / NO	
7.19	Any evidence of flue gas leakage? YES / NO	
7.20	Has boiler been built and cased correctly? YES / NO	
7.21*	Is gas service cock installed? YES / NO	
	If so, accessible? YES / NO	
7.22¶	Is oil filter fitted?	YES / NO
7.23¶	Is fire valve fitted? YES / NO	
7.24¶	Oil supply:	Single Pipe
		Two Pipe
		Ring Main

Registered Address: Pentagon House, Sir Frank Whittle
Road, Derby DE21 4XA
Registered in England No 412935

8.0	COMMENTS ON ACCESSIBILITY FOR MAINTENANCE

9.0	NOTES & COMMENTS BY COMMISSIONING ENGINEER

FINDINGS		
	YES	NO
Is the installation safe for use?		
If the answer is NO, has a warning label been raised?		
Is any remedial work required?		
Have warning labels been fitted?		
Has RIDDOR form been raised?		
Customer Signature:		
Print Name:		
Date:		

ENGINEER DETAILS
NAME
COMPANY
SIGNATURE
DATE

Document ID Ref: PCF/178/0

CONVERSION TABLE

	<u>IMPERIAL TO METRIC</u>	<u>METRIC TO IMPERIAL</u>
<u>HEAT</u> 1 Therm = 100,000 Btu/hr	1 Btu/hr = 0.2931 W 1 Btu = 1055 J 1 Btu/hr = 0.252 kcal/hr	1 kW = 3412 Btu/hr 1 J = 0.0009478 Btu 1 kcal/hr = 3.968 Btu/hr
<u>FUEL CONSUMPTION</u> 1 dm³ = 1 LITRE 1,000 dm³ = 1m³	1 ft ³ = 28.317 dm ³ (litre) 1 UK Gall = 4.546 litre 1 UK Gall = 1.2 U.S. Gallon	1 m ³ = 35.3147 ft ³ 1 litre = 0.2199 Imp. Gallon
<u>PRESSURE</u> 1 PSI = 2.307 FT 1 kPa = 1000 Pa 1 bar = 1000 mbar = 100 kPa	1 lb/in ² = 6895 Pa 1 lb/in ² = 68.95 mbar 1 in.w.g. = 249.1 Pa 1 in.w.g. = 2.491 mbar 1 in.w.g. = 25.4 mm.w.g.	1 bar = 33.45 ft.w.g. 1 kPa = 0.3345 ft.w.g. 1 bar = 14.5 lb/in ² 1 Pa = 0.3858 in.w.g. 1 mm.w.g. = 0.0394 in.w.g. 1 mm.w.g. = 9.8 Pa
<u>LENGTH</u> 1m = 1000mm	1 inch = 25.4mm 1 ft = 0.3048 m 1 yard = 0.9144 m 1 mile = 1.609 km	1 mm = 0.03937 in 1 m = 3.281 ft 1 m = 1.094 yard 1 km = 0.6214 mile
<u>VOLUME</u>	1 ft ³ = 0.02832 m ³ 1 ft ³ = 28.32 litre	1 m ³ = 35.3147 ft ³ 1 litre = 0.03531 ft ³
<u>AREA</u>	1 in ² = 645.2 mm ² 1 in ² = 6.452 cm ² 1 ft ² = 929 cm ² 1 ft ² = 0.0929 m ²	1 mm ² = 0.00155 in ² 1 cm ² = 0.155 in ² 1 m ² = 1550 in ² 1 m ² = 10.76 ft ²
<u>FLOW RATE</u> 1 kg/sec = 1 lit/sec @ 0°C reference temperature	1 gall/min = 0.07577 lit/sec 1 ft ³ /min = 0.4719 lit/sec 1 ft ³ /min = 0.00047 m ³ /sec	1 lit/sec = 13.2 gall/min 1 lit/sec = 2.119 ft ³ /min 1 m ³ /sec = 2119 ft ³ /min
<u>TEMPERATURE</u>	°F to °C = ("X"°F - 32) x 0.5556	°C to °F = ("X" °C x 1.8) + 32
<u>TEMPERATURE DIFFERENCE</u> 1°C = 1°K	"X"°F x 0.5556 = °C	"X" °C x 1.8 = °F
<u>WEIGHT</u>	1 lb = 0.4536 kg 1 cwt = 50.8 kg 1 ton = 1016 kg	1 kg = 2.205 lb 1 tonne = 0.9842 ton 1 tonne = 2204.6 lb

For further details on Potterton Commercial boiler products contact the following:-

COMMERCIAL SALES & TECHNICAL ENQUIRIES

Potterton Commercial Products Division
Brooks House
Coventry Road
WARWICK
CV34 4LL

Tel: (08706) 050607
Fax: (08706) 001516
Sales Direct Line: (08706) 001991
Technical Direct Line: (08706) 002322
e-mail: commercial@potterton.co.uk
Web Site: www.pottertoncommercial.co.uk

COMMERCIAL SERVICE OFFICES

Our service organisation covers the whole of the U.K. to look after your needs for all Potterton Commercial Products. We are also able to offer our services for other manufacturers products.

SOUTHERN REGION

Potterton Commercial Service Dept
Unit 2 Borehamwood Enterprise Centre
Theobald Street,
BOREHAMWOOD
Herts WD6 4RU
Tel: (08702) 412759
Fax: (02082) 072466

NORTHERN REGION

Potterton Commercial Service Dept
Unit 102, Batley Enterprise Centre
513 Bradford Road
BATLEY
West Yorkshire WF17 8JY
Tel: (08702) 412759
Fax: (01924) 420276

Our service offices offer a wide range of specialised services including:-

- Boiler Site Assembly
- Burner Commissioning for all Fuels
- Boiler Maintenance & Maintenance Contracts
- Breakdown & Repair Services
- Boiler Dismantling & Re-Jointing
- Burner & Boiler Replacement
- Oil/Gas Conversions
- System Conditioning
- Water Treatment & Descaling
- Packaged Units

SPARES

Potterton Commercial spares are available nationwide through the Potterton Interpart network. Alternatively please contact:-

interpart

Brooks House, Coventry Road, Warwick - Telephone: 08706 000454 Fax: 08706 000545

"All descriptions and illustrations contained in this leaflet have been carefully prepared but we reserve the right to make changes and improvements in our product which may affect the accuracy of the information contained in this leaflet"

POTTERTON

C O M M E R C I A L

heating specialists

A Baxi Group Company

Baxi Heating Ltd Reg. Office: Sir Frank Whittle Road, Derby DE21 4XA, Registered in England No. 3879156

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