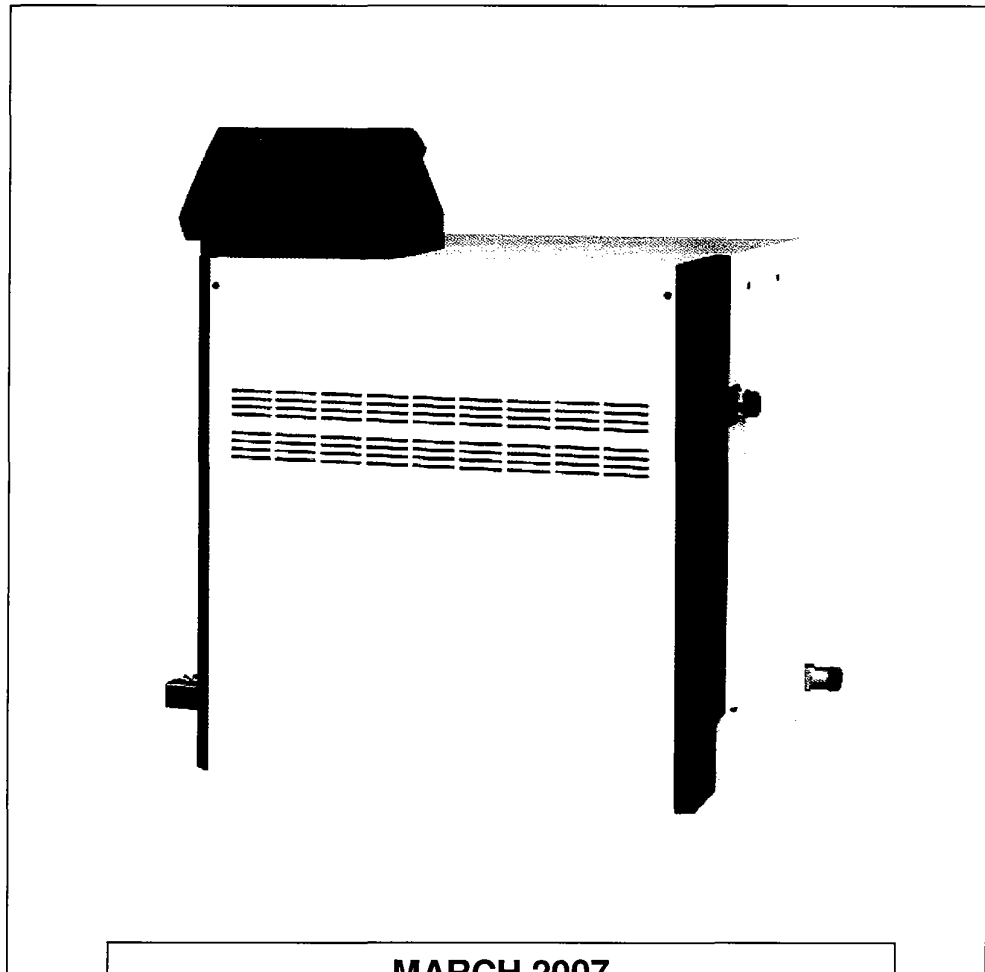


Derwent Prestige *plus*

INSTALLATION, OPERATION & MAINTENANCE MANUAL



MARCH 2007

POTTERTON

COMMERCIAL

heating specialists

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Fig. 1 – General Data & Dimensions (mm) (NOT TO SCALE)

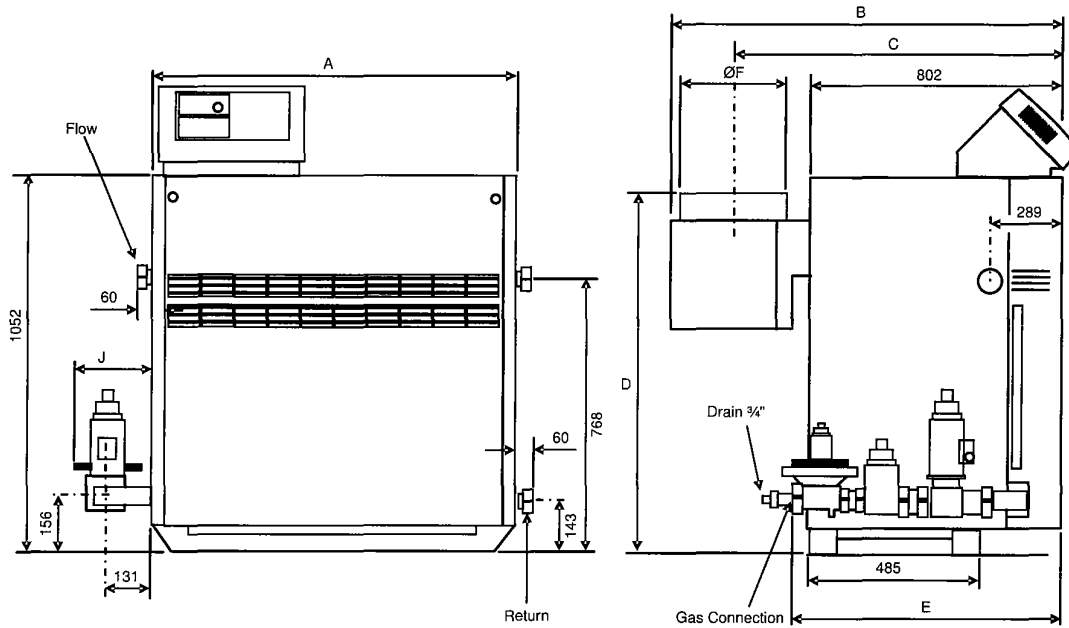


Table 1 – Boiler Dimensions

Number of Sections	9	10	11	12	13	14	15	16	17	18	20	22
A mm	793	874	955	1036	1117	1198	1279	1360	1441	1522	1684	1846
B mm		1144				1194			1244		1294	
C mm		995				1022			1047		1072	
D mm		1005					1015				1175	
E mm		507					775				875	
J mm		212					229				256	

** From the 12 section the gas and return connection cannot be made on the same side.

Table 2 – Connections

ØFmm	252	302	352	402
Water	1 1/2"		2"	DN65*
Drain			3/4"	
Gas	1"		1 1/2"	2"

- 20 & 22 Section flow and return are screwed flanged connections – mating flanges supplied
- Note: Only one flow and one return connection can be used
- Refer to page 18 for details on handling options for boiler flow and gas connections.

Table 3 - Technical Data (9 to 12 Section)

Number of Sections		9	10	11	12
CE Certification Number		0063AS3312			
	Output kW	133	149	166	182
1	Fuel Consumption (G20) m ³ /hr	14.9	16.8	18.6	20.5
	Input (Nett) kW	144	162	180	198
	Input (Gross) kW	160	180	200	220
Nominal Gas Inlet Pressure mbar		20			
Burner Manifold Pressure mbar		High Fire 16.5/ Low Fire 10.6			
Burner Injector Size mm		3.2			
Maximum Design Pressure Bar		5			
2	Minimum Operating Pressure Bar	0.5 (0.1 bar available on request)			
3	Nominal Flue Connection Size Ømm	250			300
	Internal Diameter of Diverter Socket to BS 835 Ømm	290			344
4	Flue Gas Volume m ³ /hr	259	292	323	356
Flue Draught Requirements		1 – 4 mm All Sizes			
5	High Level Natural Ventilation to BS 6644 cm ²	288	324	360	396
5	Low Level Natural Ventilation to BS 6644 cm ²	576	648	720	792
6	Mechanical Inlet to BS 6644 m ³ /sec	0.112	0.126	0.140	0.154
7	Water Connection Size BSP	1 ½"		2"	
8	Water Flow at 11 °C Δt lit/sec	2.8	3.2	3.5	3.9
	Min Water Flow at 25 °C Δt lit/sec	1.25	1.41	1.56	1.72
8	Hydraulic Resistance at 11 °C Δt kPa	12.81	15.78	18.55	22.43
9	Cold Feed Size to BS 6644 Minimum Bore mm	25		32	
9	Open Vent Size to BS 6644 Minimum Bore mm	32		38	
Safety Valve Size to BS 6644 Nominal Size mm		19			
2	Maximum Flow Temperature °C	90			
10	Minimum Return Temperature °C	55			
11	Dry Weight kg	470	515	560	610
Water Content kg		48.5	53.1	57.7	62.4
Power Requirements		230V 50Hz 1Ph – Isolator and 6.3A fuse required			

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

Table 4 - Technical Data (13 to 22 Section)

	Number of Sections		13	14	15	16	17	18	20	22	
	CE Certification Number		0063AS3312								
	Output	kW	199	215	232	248	265	281	315	348	
1	Fuel Consumption (G20)	m ³ /hr	22.4	23.8	26.1	28	29.8	31.7	35.4	39.2	
	Input (Nett)	kW	216	234	252	270	288	306	342	378	
	Input (Gross)		240	255	280	300	320	340	380	420	
	Nominal Gas Inlet Pressure	mbar	20								
	Burner Manifold Pressure	mbar	High Fire 16.5 / Low Fire 10.6								
	Burner Injector Size	mm	3.2								
	Maximum Design Pressure	Bar	5								
2	Minimum Operating Pressure	Bar	0.5 (0.1 bar Available on request)								
3	Nominal Flue Connection Size	Ømm	300				350		400		
	Internal Diameter of Diverter Socket to BS 835	Ømm	344				390		440		
4	Flue Gas Volume	m ³ /hr	389	414	454	487	518	551	615	681	
	Flue Draught Requirements		1 - 4 mm ALL SIZES								
5	High Level Natural Ventilation to BS 6644	cm ²	432	468	504	540	576	612	684	756	
5	Low Level Natural Ventilation to BS 6644	cm ²	864	936	1008	1080	1152	1224	1368	1512	
6	Mechanical Inlet to BS 6644	m ³ /sec	0.168	0.182	0.196	0.210	0.224	0.238	0.266	0.294	
7	Water Connection Size	BSP	2"						Flanged 2 1/2" (PN6 DN65)		
8	Water Flow at 11 °C Δt	lit/sec	4.2	4.6	4.9	5.3	5.6	5.9	6.4	7.1	
	Min Water Flow at 25 °C Δt	lit/sec	1.85	2	2.15	2.3	2.46	2.61	2.8	3.1	
8	Hydraulic Resistance at 11 °C Δt	kPa	25.83	29.22	33.11	36.93	41.32	45.6	39.09	48.15	
9	Cold Feed Size to BS 6644 Minimum Bore	mm	32							38	
9	Open Vent Size to BS 6644 Minimum Bore	mm	38							50	
	Safety Valve Size to BS 6644 Nominal Size	mm	19					25			
2	Maximum Flow Temperature	°C	90								
10	Minimum Return Temperature	°C	55								
11	Dry Weight	kg	656	703	750	798	845	895	990	1090	
	Water Content	kg	67	71.6	76.3	80.9	85.5	90.2	100.5	110.5	
	Power Requirements		230V 50Hz 1Ph - Isolator and 6.3A fuse required								

See Page 4 for explanatory notes

Conversion table on inside of back cover

1. FUEL CONSUMPTION

Gas fuel consumption is based on natural gas with a gross calorific value of 38.6 MJ/m³. The gas rate should be corrected for the meter supply pressure particularly on high pressure supplies to prevent overfiring.

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

A spun aluminium flue adaptor is included for convenience that is designed to accommodate BS835 twin wall flue pipe. It is not obligatory to use this adaptor but always ensure that the internal diameter of the flue used is no smaller than the connection on the flue collector hood (see table 3 & 4 for nominal flue connection size. For transport the adaptor is tie wrapped to the flue hood.

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 for flue sizing are 140°C at 6.5% CO₂ with 1mm draught at the boiler flue connection.

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 screwed BSP connections up to 18 section and the 20 and 22 section sizes are flanged 2¹/₂" with screwed counter flanges provided.

NOTE: Only one flow connection and one return connection can be used on each boiler.

8. WATER FLOW RATES

Water flow rates are given for boiler flow and return temperature differentials of 11 °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 the Potterton Commercial Technical Department.

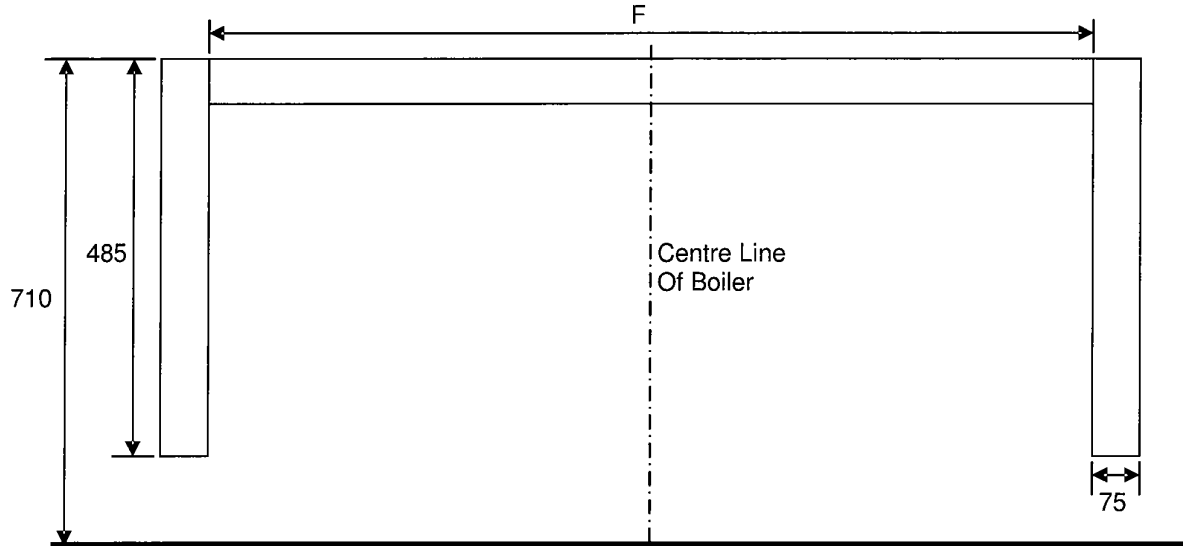
11. WEIGHT

The dry weight is inclusive of the gas train. Each section measures approximately 800mm (high) x 500mm (wide) x 80mm (deep) and weighs approximately 40 kg.

ANY PERSON OR PERSONS MOVING OR LIFTING 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.

Fig. 2 - Steel Base Strip Details

The Derwent Prestige is designed to be installed directly on the boiler room floor, provided that it is adequate. (See page 7 – Boiler Siting & Base).

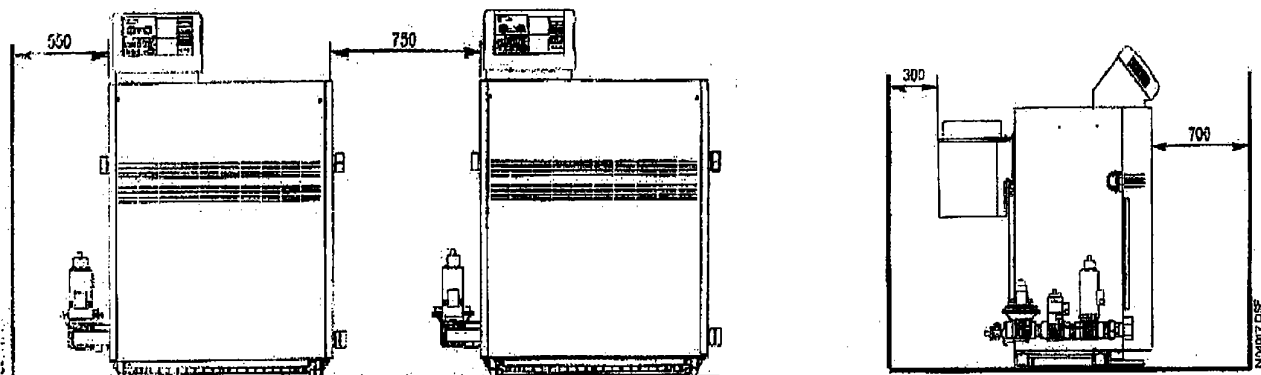


Sections		9	10	11	12	13	14	15	16	17	18	20	22
F	mm	567	648	729	810	891	972	1053	1134	1215	1296	1458	1620

The boiler feet **must never** be fixed in position (this is to allow for expansion).

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

- REAR - 300mm from rear of flue hood.
- SIDES - 750mm on gas train side, 200mm on the other
- FRONT - 700mm to allow for burner removal.
- TOP - 1000mm to allow for cleaning.



Flammable products should **never** be stored in the space around the boiler. Any walls that are sensitive to heat should be protected by an appropriate insulation.

BURNER INFORMATION

The Derwent Prestige boiler is fitted with low NOx Furigas atmospheric burners.
 NOx emission 70-120 mg/kWh, Class 3 certified to EN297: 1994 / A3: 1996

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 Derwent Prestige cast iron sectional boiler is available in twelve sizes from 133kW (9-section model) to 348kW (22-section model). Tables 3 (page 2) and 4 (page 3) give kW outputs and technical data for each model.

	Nat Gas	LPG
%	100 %	30%
Gross	82.9%	82.9%

They are approved for use on open vented systems (minimum head 5mm), however, they are suitable for use on sealed systems with a minimum operating pressure of 0.5 bar (0.1 bar Available on request) and a maximum operating pressure of 5 bar (73.5 p.s.i.). Refer to relevant British Standards and Codes of Practice regarding the installation of Derwent Prestige boilers on sealed systems.

For sites with restricted access the boiler block, with the burner and drain cock removed, will pass through a 660mm doorway.

If necessary the boiler block can be easily stripped down into individual sections. Each section weighs approximately 40kg and the principle dimensions are 800 × 500 × 80mm.

All assembled boilers are delivered with the gas train made to the left-hand side.. The Electrical connection to the gas train assembly must be connected on site by an in line plug and socket which is connected to the control panel. (as delivered).

On the 20 and 22 section boilers the flow and return connections **cannot** be made on the same side of the boiler – they **must be** diagonally opposite.

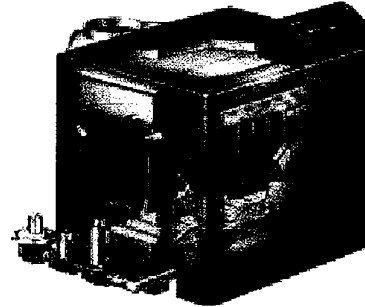
On the 12 to 22 section boilers the return connection and gas train **CANNOT** be on the same side of the boiler.

The boiler sections are cast iron with pips to aid heat transfer and they are joined by EPDM flat sealing washers to flow and return manifolds.

The boiler sections are insulated by 50mm glass fibre insulation. The case is finished in a powder coat paint as follows:

Red – RAL 3001

Grey – (Non Standard but closest match RAL 7024)

Assembled Boiler**STANDARD SUPPLY**

- Cast iron sections
- Flue hood
- Insulated, painted steel case
- Eco-control panel
- Cleaning brush
- Drain Cock

CONTROLS

The fully automatic control system, which incorporates full safety features, includes control and high limit thermostats, thermometer and burner on/off switch. All models have automatic ignition with a sequential control box and an ionisation flame failure device fitted to an interrupted low energy pilot burner. Including two volt-free remote status contacts

OPTIONAL EXTRAS

- Sequence controls & zone controls
- LPG Kits 9 to 11 Section – 17405489
- 12 to 18 Section – 17405494
- 10 to 22 Section - 17405495

SHIPPING – PACKAGING

The 9 to 16 section boilers are delivered fully assembled with boiler, burner and flue hood on a pallet plus separate cartons for gas train, control panel and casing pack.

The 17 to 22 section boilers are delivered unassembled with sections, flue hood, burner, gas train, and casing pack, on one pallet.

It is recommended that the Potterton Commercial Division's trained engineers should carry out erection and commissioning, as this will make valid the LIFETIME GUARANTEE. See back page of the manual for the addresses of the Service Office.

INSTALLATION

The boiler should be installed in a CLEAN boiler house free of dust and corrosive vapours. During insulation of system pipework and heavy building construction work around the boiler, the boiler must be switched off to avoid damage.

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

Any person installing or working on the boiler must be qualified & competent, and in the case of gas fired boilers attention is drawn to the mandatory requirement of C.O.R.G.I Registration (ACS Qualifications). Also they must be electrically competent and adhere to the IEE Regulations.

Boiler log book supplied.

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 the relevant British Standard 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 I.E.E. Regulations for the Electrical Equipment of Buildings.

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

Health & Safety at Work Act 1974.

BS 5440-1: 2000: Specification for Installation of Flues.

Building Regulations 2006.

Electricity at Work Regulations 1989.

Management of Health & Safety at Work Regulations 1992.

Manual Handling Regulations 1992.

Model Water By-laws 1986.

BS 5440-2: 2000: Specification for Installation of Ventilation for Gas Appliances.

BS 6644: 2005 – Installation of Gas Fired Hot Water Boilers for Inputs between 60kW and 2MW.

BS 7074: 1989: Part 2 – Application Selection & Installation of Expansion Vessels & 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 & 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 & Purging Procedure for Non-Domestic Installations.

IGE/UP/2 Gas Installation Pipework, boosters Compressors in Industrial & Commercial Premises.

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

Manufacturers notes must not be taken in any way as overriding statutory obligations.

BOILER SITING & BASE

The boiler should be sited in accordance with BS 6644: 2005 with respect to protecting the boiler from damage, air for combustion and ventilation, discharge of products of combustion, clearances for service and access, temperatures, noise levels, the disposal of boiler house water and the effects of flooding of the boiler house or seepage from a roof top boiler house. See section 1 for required boiler clearances for service and cleaning.

A level non-combustible floor capable of supporting the weight of the boiler filled with water, see Table 3 (page 2) and 4 (page 3) together with any additional weight bearing down on the base from connections, etc, must be provided. This should be of an adequate height above the floor so as to be raised in the case of flooding, but low enough to allow ease of erection. Typically a 50mm concrete plinth with an area equal to that of the plan of the boiler is adequate in most cases.

Heating systems must be installed so that water cannot be returned from the heating system to the drinking water system to which it is connected to prevent the drinking water being contaminated by the heating water or chemicals used in the heating water.

Steel strips should be provided (not supplied by Potterton Commercial) to support the left and right hand section feet and the back feet of the intermediate sections, see Fig. 2, page 5 for details. These strips should typically be 75mm wide and 5mm thick.

L.P.G boilers **MUST NOT** be installed in basements/below ground or in a well.

For further advice on installations, refer to the relevant Potterton Application Guide.

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.

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.

Further Guidance on Ventilation for Gas Appliances is provided by B.S 6644: 2005.

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 flue runs should not be less than 45° to a horizontal should be avoided in order to comply with the recommendations made in BS 6644: 2005, 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.

The chimney design should avoid the formation of condensate, which may be achieved by insulating the flue.

The flue system must be designed to work specifically to remove the products of combustion.

IMPORTANT: 90° square bends must not be used on the flue system, 2 × 45° bends or easy sweep pattern should be used. A minimum of 600mm straight vertical flue should be taken off the boiler flue outlet prior to any fittings.

FLUE SIZE CONSIDERATIONS

Nominal flue connection sizes are given in Table 3 and 4, these sizes refer to the boiler flue connection socket, detailed dimensions of the flue adapter to BS

835 are given in table 3 and table 4.

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 only add to the flue resistance without creating any buoyancy and must be avoided. Sloping flue runs should not be less than 45° to the horizontal. Flue resistance should be kept to a minimum but flues should not be oversized as this may lead to cold start spillage.

Where horizontal flue runs are unavoidable owing to building constraints advice should be sought from a flue 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).

For initial flue design a flue size equivalent to the total free area of the boiler flue outlet should be used as a minimum.

For further information regarding ventilation & flueing see Potterton Application Guide current issue or see relevant British Standard Publication BS6644: 2005.

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.

The boilers **MUST NOT** be fired under any circumstances with less than the minimum water flow.

On systems with variable flow rates due to flow reducing devices, ie. 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 Application Guide.

It is recommended that the system is designed to give a constant flow rate. For further information on water circulation systems see Potterton Application Guide.

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.

The boiler and system should be protected by suitable frost thermostats.

Never fill a hot boiler with cold water. Sudden cooling may cause the cast iron to fracture under the stress.

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.

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: 2005 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".

Noise Level

Derwent Prestige atmospheric boilers are regarded as being 'commercially quiet', ie < NR63 under typical operating conditions.

BOILER ERECTION

A Lifetime Guarantee is available on this boiler when the Potterton Commercial Service Department carries out Erection & Commissioning and the system meets with our recommendations. Please refer to our Standard Terms and Conditions for further details.

Risk Assessment

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

Regardless of the type of activity being assessed, the principles of risk assessments are the same. The basic steps are: -

- Classify Activity
- Identify Hazards
- Identify Existing Control Measures
- Determine Risk
- Assess Acceptability of Risk
- Prepare a Control Plan
- Implement Plan
- Review Plan
- Record Results

Manual Handling

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

Personal Protective Equipment

When undertaken any work you must comply with the Personal Protective Equipment Regulations 1992.

Confined Spaces

A "confined space" as defined in the Health and Safety Confined Spaces Regulations 1997 means any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, flue, well or other similar space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk.

Precautions should be taken in all areas where, by virtue of its even partially enclosed nature, pose a reasonably foreseeable specified risk.

Electrical Safety

Working on appliances can be broken down to two main systems of work.

1. Safe systems of work are adapted for all boiler maintenance & repair work undertaken on site.
2. The work undertaken does not affect the electrical safety of the appliance. In particular the earth connected to the buildings fixed electrical installation.

In the case of (1) above electrical work should only be undertaken once the boiler has been isolated from the electricity supply and confirmed electrically dead. If this is impractical then suitable precautions must be undertaken to prevent injury.

In the case of (2) above checks are specified to identify any abnormality in the electricity supply to the boiler as well as to confirm that the boiler electrical connections are reinstated correctly where it is necessary to disconnect or reconnect any internal wiring within the boiler.

If it is necessary to disconnect and reconnect the appliance from the site electrical installation other than means of a plug and socket then additional checks shall be undertaken by an approved engineer to check the earth loop impedance in accordance with IEE regulations.

Always carry out preliminary electrical safety checks.

All appliances and central heating systems must be provided with their own means of isolation for safety purposes especially during installation and maintenance.

Preparation

Before the installation of the boiler a check must be made to ensure that suitable facilities are available for off-loading the boiler (the 9 to 16 section boilers come with assembled heat exchanger) and conveying it to the boiler room. Each waterway section weighs approximately 40 Kg and measures 800mm x 500mm x 80mm. Ensuring all Manual Handling Techniques are followed.

Particular attention must be paid to ensuring cleanliness of the boiler room and waterway sections, dust or moisture may result in imperfect adhesion of the sealants which are applied during the erection of the waterways. All tapped holes should be degreased before making connections.

C.O.S.H.H

During the erection procedure there are a number of items which are subject to the Control Of Substances Hazardous to Health (C.O.S.H.H) Regulations, and may require specialist Personal Protective Equipment (P.P.E) beyond what is normally required. Listed below are the items subject to the C.O.S.H.H Regulations and the recommended precautions that should be taken. For a full breakdown of any substances listed below, please contact the Commercial Technical Department.

1. **Refractory Ceramic Fibre Insulation –**
 Wear gloves, overalls and safety glasses, in the case of an irritation rinse the affected area with water and wash gently, in the case of eye contact, flush abundantly with water, if irritation persists seek medical advice.
2. **High Temperature Glass Fibre Insulation –**
 Wear gloves, overalls and safety glasses, in the case of an irritation rinse the affected area with water and wash gently, in the case of eye contact, flush abundantly with water, if irritation persists seek medical advice.
3. **Adhesive –** Wear gloves, overalls, in the case of an irritation rinse the affected area with water and wash gently, in the case of eye contact, flush abundantly with water, and if irritation persists seek medical advice. Inhalation – continued exposure should be prevented.
4. **Sealing Rope -** Wear gloves, overalls, in the case of an irritation rinse the affected area with water and wash gently, in the case of eye contact, flush abundantly with water, and if irritation persists seek medical advice.

**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 the proposed work.
- II. Site Managers/Personnel aware that work will be taking place.
- III. Risk Assessments carried out on possible risks which may effect the persons carrying out the proposed work.
- IV. Sections and fittings boxes were applicable 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 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 prior 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 & Safety information, etc, should be provided.

Items VII to X are essential if boilers require pressure testing.

Heat Exchanger Assembly

Models 9 section to 16 section come delivered with the heat exchanger already assembled. The control panel, gas train and casing are packed separately and clearly labelled.

Models 17 section to 22 section are delivered unassembled. The flue hood, gas train, burners, casing and control panel are delivered on one pallet.

Provided below is a detailed assembly instruction procedure for erecting the boilers. It is advisable to read the instructions fully before starting assembly.

Assembly of Boiler Block

Remove the shrink wrap and metal straps securing the components to the pallet. Identify the bag of fasteners, thermostat pocket and spacers, ceramic rope, glue and Vaseline packed in the casing box.

Clean the sealing ring ports on the sections with a dry rag, DO NOT use oil or any other compound. Check that the sections are clear of swarf, sand or any other debris.

The heat exchanger consists of three types of sections these being the left hand section (L), the middle section (M) and the right hand section (R). (Fig. 3).

Fit the M10 studs (shorter thread) into the tapped holes in the sections (Fig. 4).

Fix the outlet manifold (D) (it has four 1/2" holes (C)) to the right hand section using one of the assembly plates (A) (Fig. 5 & 6).

Note: Ensure that the outlet is on the side, which has been specified.

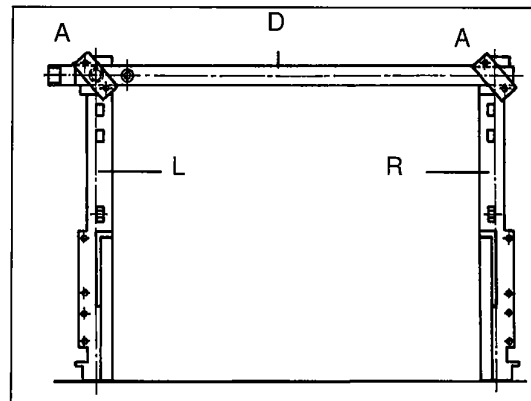
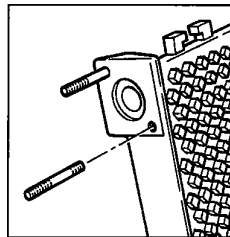
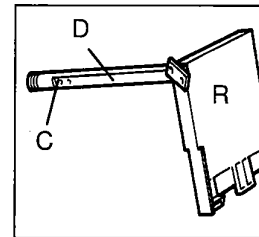
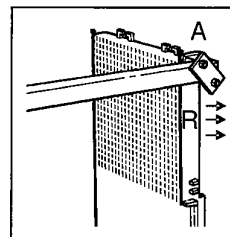
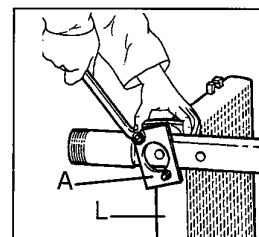
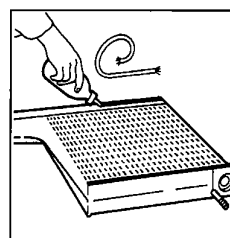
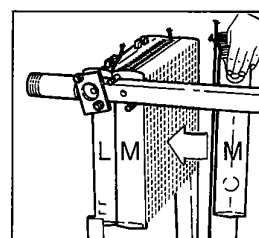
Fix it to the left hand section in the same way (Fig. 7).

Add the sealing rope to the left hand side of the sections. The rope is pre-cut to two different lengths, one for the front and one for the back and should be glued with the adhesive provided and trimmed to length if necessary (Fig. 8 & 9).

WARNING: The adhesive gives off a flammable vapour and skin and eye contact should be avoided.

If the adhesive comes into contact with: -

- a) SKIN – then resin removing cream should be used and not a solvent to remove it.

Fig. 3**Fig. 4****Fig. 5****Fig. 6****Fig. 7****Fig. 8****Fig. 9**

- b) **EYES** – the eye should be irrigated with water and medical treatment sought.
- c) **INHALATION** – continued exposure should be prevented and the user should be removed to open air and if necessary medical advice sought.

The adhesive should be used sparingly as it is only used to keep the rope in position until the sections are clamped together.

The end sections should be at right angles to the floor and sitting on steel strips required under the section feet (see Fig. 2 page 5).

The sections should be spaced so that the distance between the centres of the end sections are as Dimension B + 20mm in Fig. 10, it is essential that this dimension is maintained at the top and bottom, otherwise the bottom feet of the end sections may toe in and this will make fitting the base tray difficult. The boiler should now be sitting in its final position to avoid further movement when fully assembled.

Take an intermediate section and hang it on to the front manifold against the left-hand end section taking care not to snag and pull off the sealing rope. Add all of the intermediate sections until the last one is in place.

While maintaining continuous pressure on the right hand section in the direction shown by the arrow (Fig. 11) slacken the assembly plate "A" slightly to enable the final section to be moved up then retighten the clamping plate.

Fit the 3 tie bars, one at the front and two at the back. Loosen the two clamping plates, fit the base tray in position and tighten the tie rods on the boiler up to dimension B Fig. 10.

Check this dimension carefully and check that the sections are at right angles as shown in (Fig. 12).

Fit the return manifold (E) (Fig. 13). Centering the 3/4" hole (drain) positions the manifold accurately with respect to its clamping plate (F).

Fit the clamping plate using just 2 nuts at each end.

Fitting the Seals

Pull the return manifold about 15 to 20mm away from the cast iron heat exchanger using a lever (chisel or screwdriver). Insert the seals at an angle, locating the bottom in the recess and letting the top rest against the manifold (Fig. 13 & 15).

Fig. 10

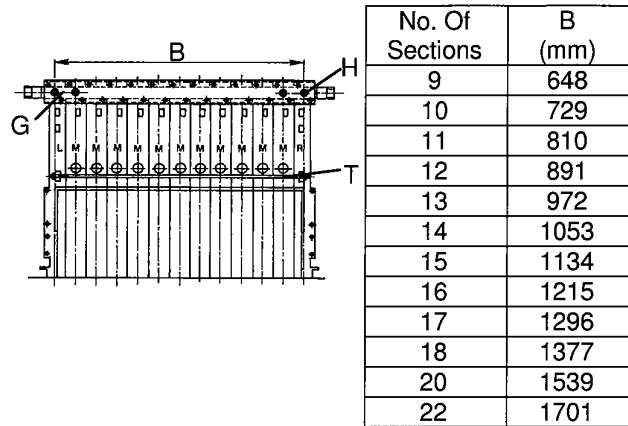


Fig. 11

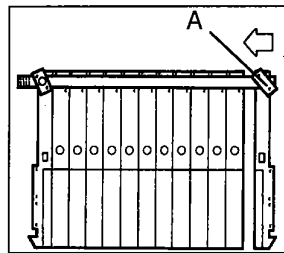


Fig. 12

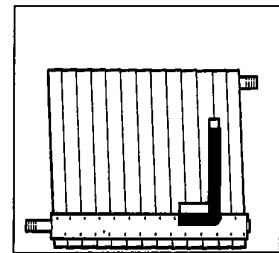


Fig. 13

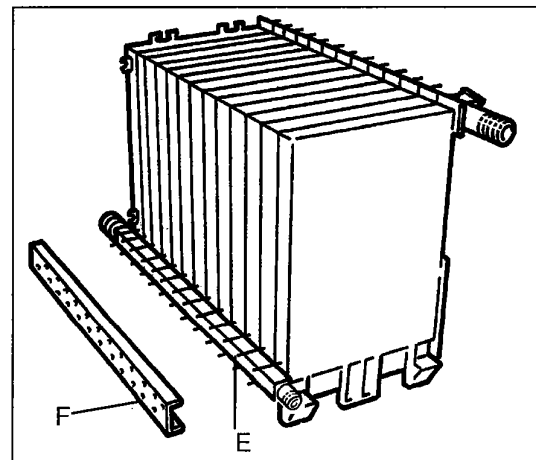


Fig. 14

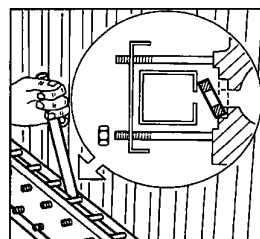
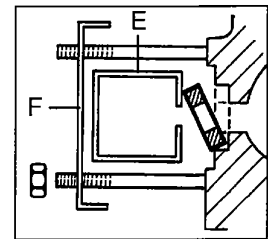


Fig. 15



NOTE: Do not use glue or mineral grease that might attack the EPDM seals. Only the Vaseline supplied should be used in contact with the seal.

Fit the washers and nuts and tighten until the seals are in contact, but without clamping the manifold. Ensure that the tie rods (T) are taking the strain and then remove the assembly plates "A" from the outlet manifold and fit the clamping plate (G Fig. 10).

Fit the seals in the same way for the outlet manifold (Fig. 14 & 15).

Once the heat exchanger has been assembled, but not clamped, the sections can be shaken down by tapping repeatedly on the sides.

Check Once Again:

- That length B at the tie rods is correct.
- That the manifolds are correctly positioned (holes centred in the clamping plates)
- That the return manifold is at right angles to the sections.

Tighten all the nuts on the manifolds evenly.

Fit the temperature monitoring sleeve in the ½" hole (H) in the section (8) nearest the outlet.

Fit the drain tap to ¾" hole in the return manifold.

Combustion Chamber Base Plate

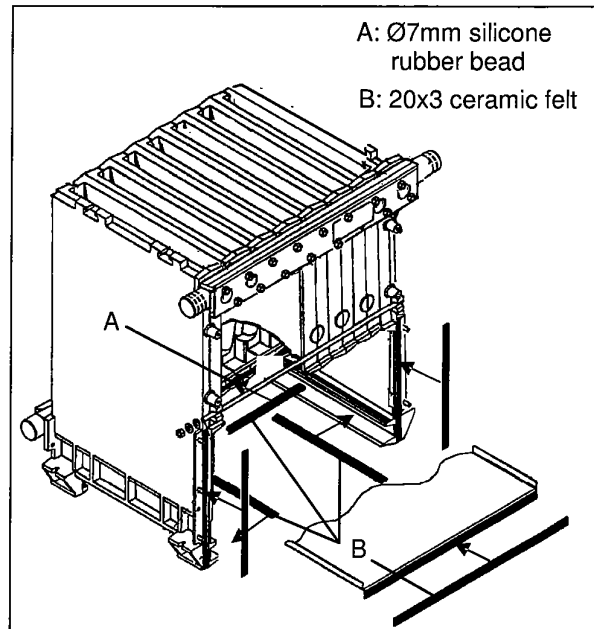
Put an insulating sealing strip on the bottom right and left edges of the combustion chamber (Fig. 16) and put an insulation strip on top at the back edge. Insert the base plate with the front fold downwards, being careful not to damage the seals and ensure a good seal.

Hydraulic Test of Boiler

This is to be carried out on boilers assembled on site or where water manifolds have been disturbed.

Fit a hydraulic test pump to the return manifold and fit a valve to vent air from the flow connection. Fill the boiler with cold water and, in accordance with BS 779, 1976 pressurise up to 1.5 times the system design pressure, ie. 7.5 bar maximum, and observe for 30 minutes.

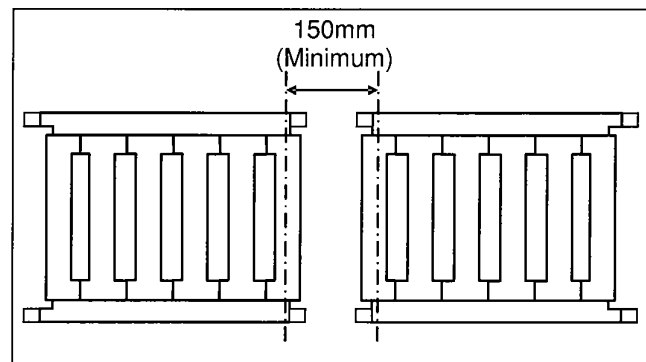
Fig. 16



INSTALLING MULTIPLE UNASSEMBLED BOILERS

When two boilers are being built side by side with the minimum practical clearance between them and with one flow connection to the left and the other to the right, the end sections should be positioned on the base as shown in Fig. 17.

Fig. 17



Fitting of Flue Hood and Burners

Fit the rear panel of the casing before the flue hood.

The flue hood is fitted onto the top of the boiler block and a seal must be made using the ceramic felt provided between the sections and the flue hood.

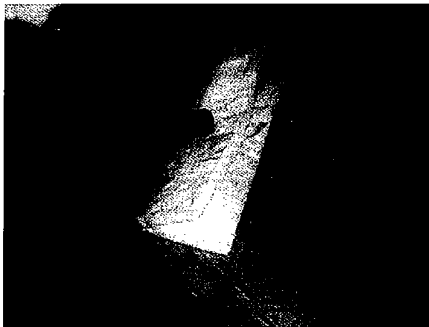
Take the roll of ceramic felt packed with the boiler and cut a strip and flue it across the front end of the sections. Next cut two pieces of sealing strip to form the side seal (1) on top of each end section see Fig.18

Finally add the rear sealing strip. This sealing strip does not sit on the top of the end sections but underneath the lip at the back of each section.

Fix the hood using the clamping plates (K) (Fig. 18). Ensure that there is a good seal made between the back of the heat exchanger block and flue hood. See Page 21 for handling the gas manifold.

FITTING OF BURNER ASSEMBLY 17 to 22 SECTION.

Stage 1: Fold the pieces of insulation as Figure No 1 and then fit the pieces of insulation firmly in between the sections legs at the rear of the boiler. See Figure No 2

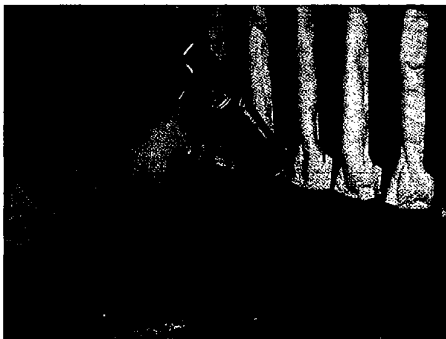


1



2

Stage 2: Clean the base tray-mounting seat and fix the sealing strip with the adhesive provided. See Figures 3 / 4 / 5.



3

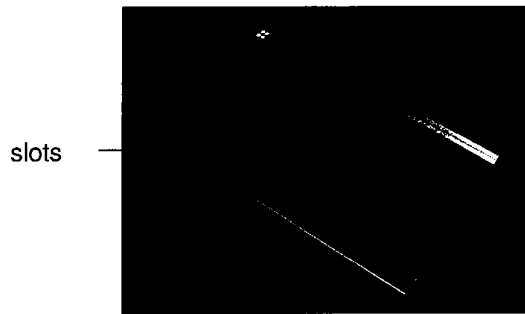


4

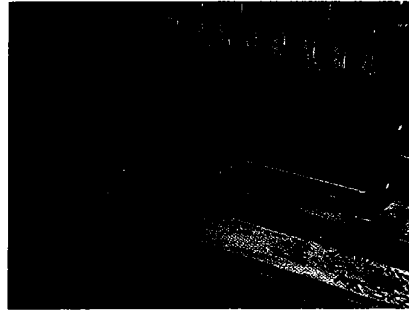


5

Stage 3: Insert the base tray inside the combustion chamber See Figures 6 / 7.



6



7

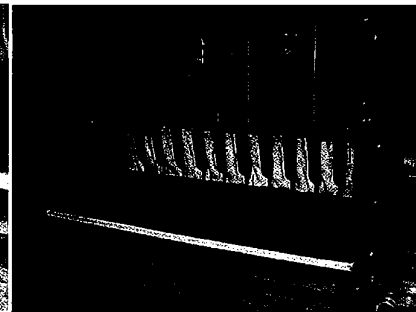
Stage 4: When the base tray is in position fit the sealing tape on the front edge of the base tray using the adhesive and sealing tape provided See Figures 8/ 9 /10.



8

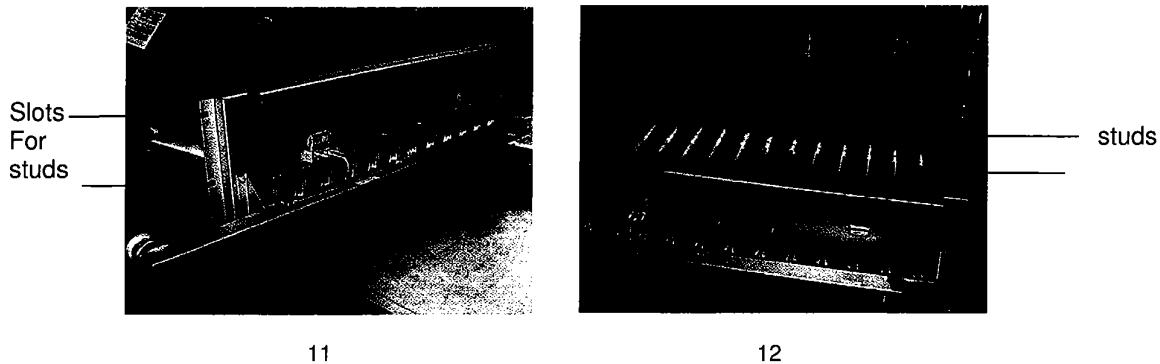


9

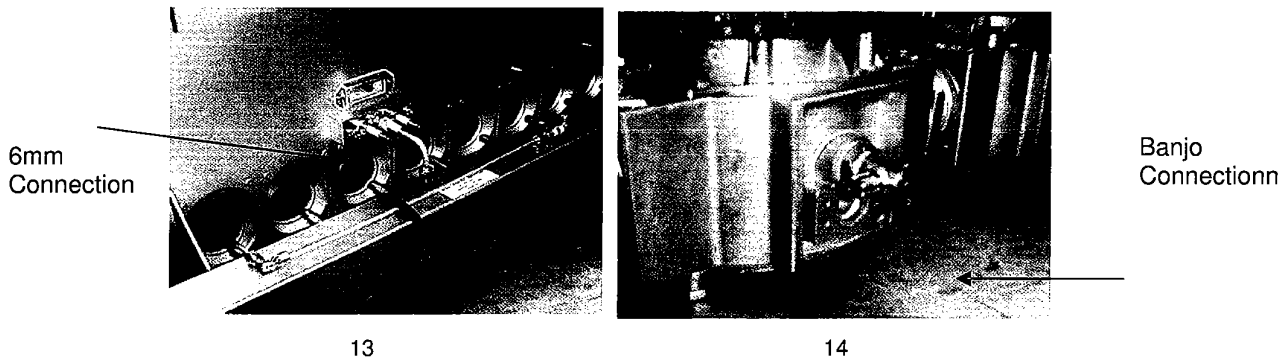


10

Stage 5: The complete burner assembly can now be fitted to the boiler by locating the burner assembly on to the studs on the end sections See Figures 11 / 12



Stage 6: Connect the pilot tube of 4mm diameter to the 6mm pilot tube elbow and on to the gas valve by the BANJO Stage Connection See Figures 13 /14



Boiler Maintenance

It is essential that when the maintenance of the boiler takes place that the pieces of insulation are inspected and if they are showing any signs of deterioration they should be replaced. Please refer to Boiler Maintenance on section 4 Page 34.

Burner Manifold

The burner manifold (T) can be fitted with the gas inlet on the right or left. It is fixed to the front panel (U) by four nuts and washer spacers supplied (Fig. 18).

Note: on the 12 to 22 section boiler the gas train and the return cannot be on the same side of the boiler.

Combustion Chamber Front Plate

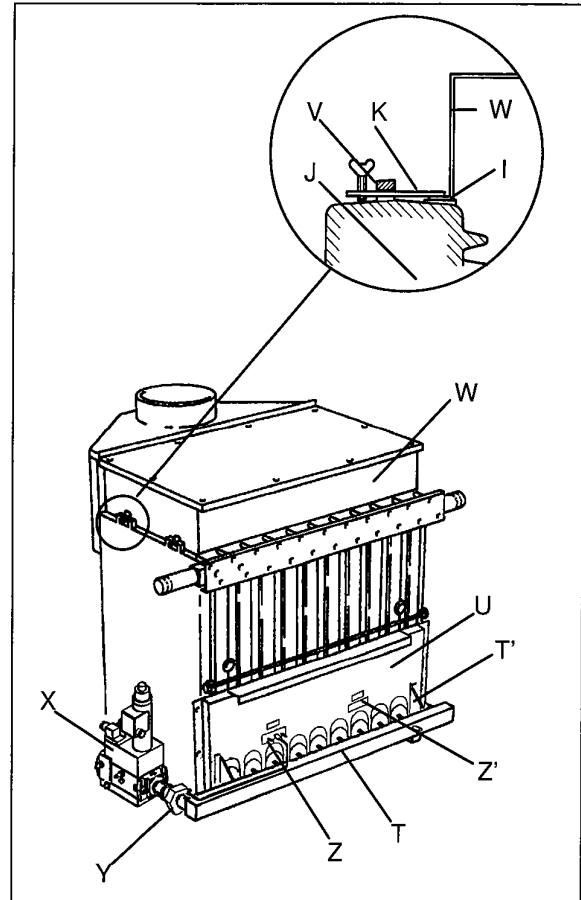
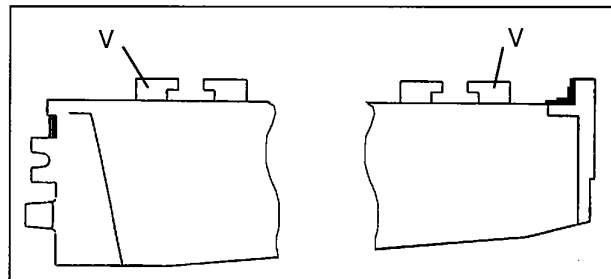
Bond the silicone rubber foam strips to the right and left hand sections of the heat exchanger delivered unassembled and bolt to the front plate (U) to these sections (Fig. 16). Use the nuts and washers supplied. Put an insulating sealing strip on the front fold of the base plate. The base plate is not screwed to the front plate (U) of the burner.

Gas Train

The gas train (X) is delivered assembled and prewired to be fitted to the right or left. It is connected to the connector on the gas burner manifold by a union (Y) (Fig. 18). Remove the cap from the appropriate connector Y and tighten the free part of the union, using a flat washer to seal the joint. Fit the pilot light assembly to the appropriate side (Z or Z') this **MUST** be fitted on the same side of the burner plate as the gas train. Fit the pilot light supply tube. For connection see "Gas Supply".

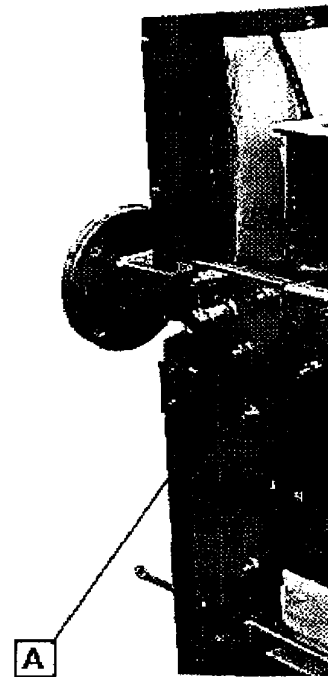
Handing**Flow & Return**

On the 20 and 22 section boilers the flow and return connections **must not** be made on the same side of the boiler – they **MUST** be diagonally opposite. On the 12 to 22 section boilers the return and the Gas Train cannot be on the same side

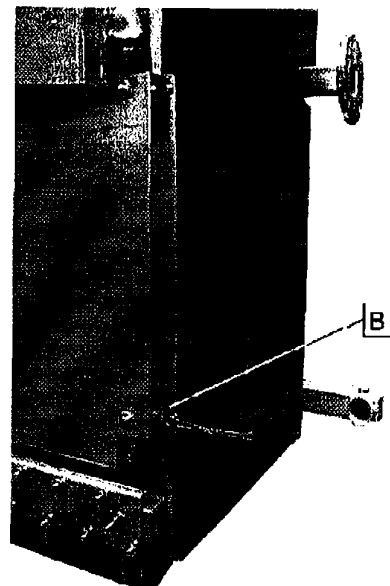
Fig. 18**Fig. 19**

ASSEMBLY OF CASING [9 to 22 section]

A
Fit the right and left sides at the front of the inside panel using the M5 screws.

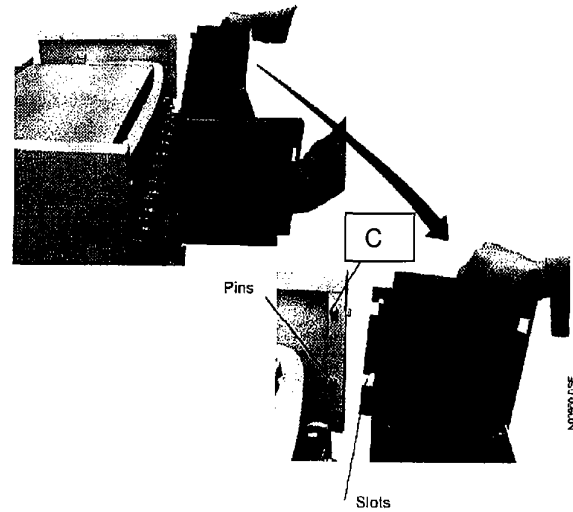


B
Fitting the sides on the rear panel using the M5 screws.

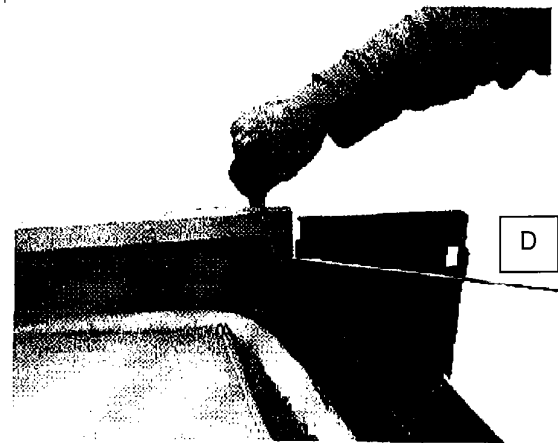


C
Prefit the M5 screws onto the left and right panels (without tightening completely).

Position the slots on the panel casing on the 2 x M5 screws and the 2 pins.



D
Tighten the 2 x M5 screws



E
Insert the pins into the slots

F
Using the M5, lock from underneath

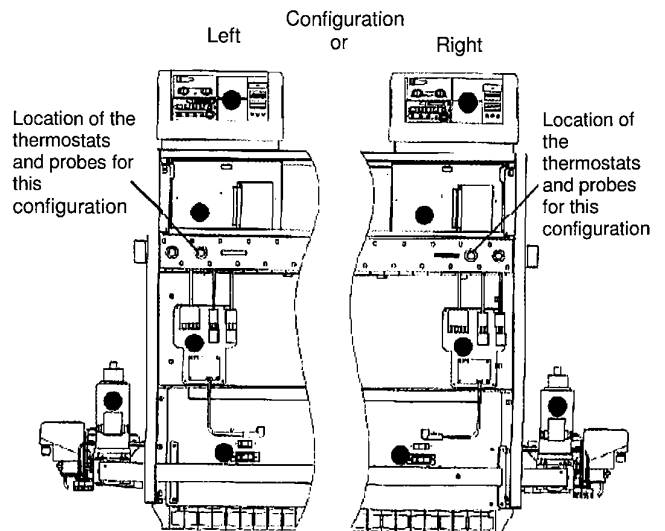
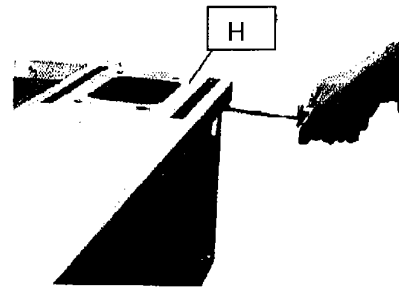
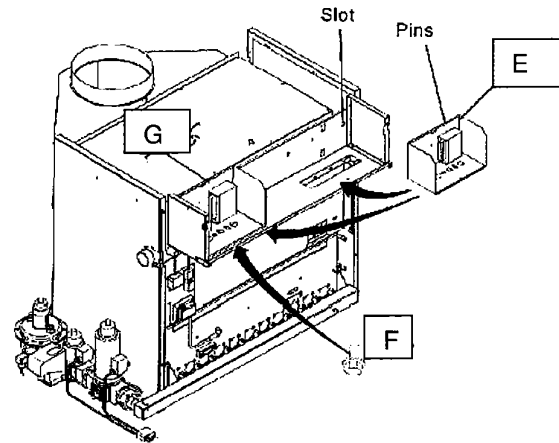
G
Check for the presence of the 3-way connector with jumper.

H
Assemble the front top by positioning the opening for the control panel on the right or on the left using the 2 M5 screws.

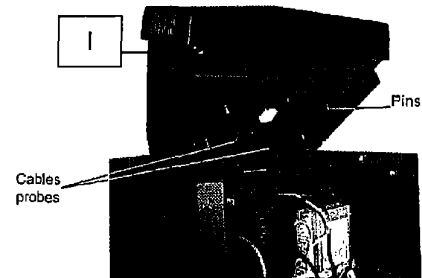


The control panel must always be fitted on the heating outlet side and the gas supply side.

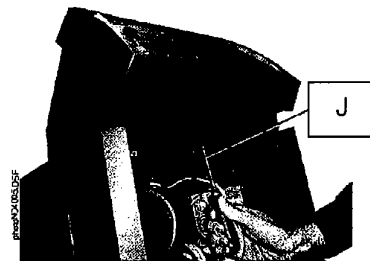
- Position the equipment according to right or left fitting.



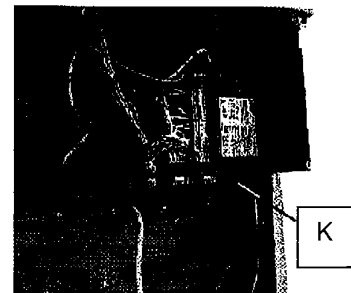
I
Position the control panel on the front top while routing the probe cables through the opening included to this effect.



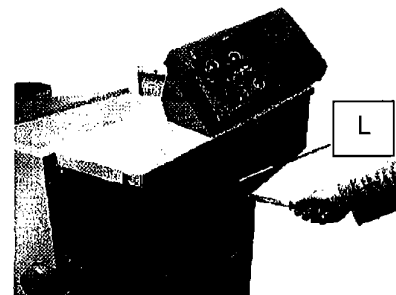
J
Insert the pins under the panel into the slots and pull the control panel towards you for right-hand side configuration or push it for a left-hand configuration. Lock it using a M5 screw on the top front.



K
Run the probe cables in the casing and introduce the thermostats into the thermostat pocket or left according to the position of the control panel.

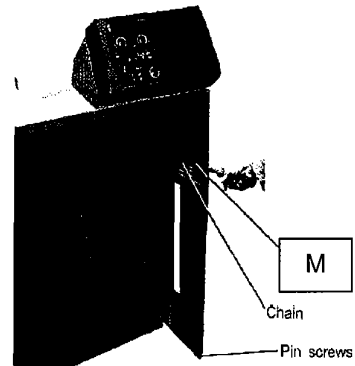


L
Secure the casing panel using a M5 screw.



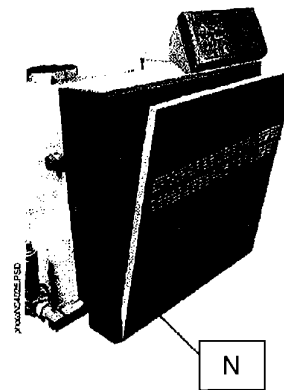
M

Insert the right and left removal panels onto the pins and secure with the M5 screws. Fit the pint screws. Screw the chain under the casing panel.



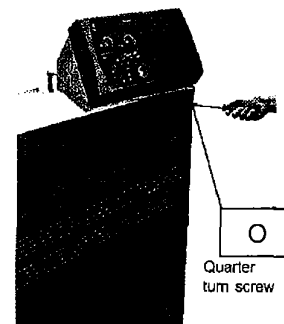
N

Insert the panel onto the pin screws and hook the chain into the hole located under the quarter turn screw.



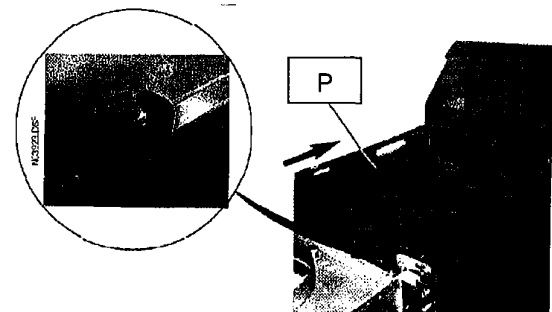
O

Lock the panel using the quarter turn screws.



P

Slide the top rear panel forwards and lock it using the stoppers.



Connecting the Water System

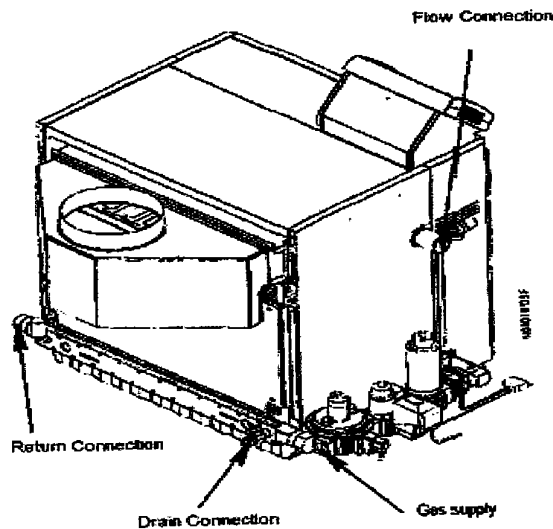
The flow and return connections should be made to the appropriate manifolds.

For 20 and 22 section boilers the connections should be made to the flanges provided which are fitted to the manifolds.

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.

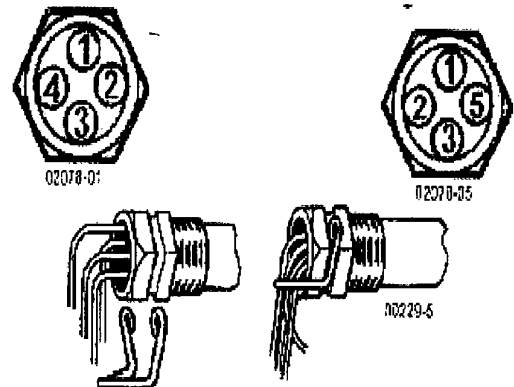
Care should be taken in the pipework design to prevent strain on the connections. Excessive strain can lead to premature failure of the boiler, which is obviously outside the terms of our warranty.

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

Fig. 20**Connecting the Components to the Control Panel**

- Valves (9-channel connector)
- Gas pressure switch (6-changeel connector)
- Connect the ignition cable (left electrode) and ionisation cable (right electrode) to the intermittent pilot burner assembly.
- Connect the burner safety thermostat cable.
- Assemble the thermostat phials, thermostat (and control probe optionally) in the thermostat pocket as indicated in the following diagram. (Fig. 21)

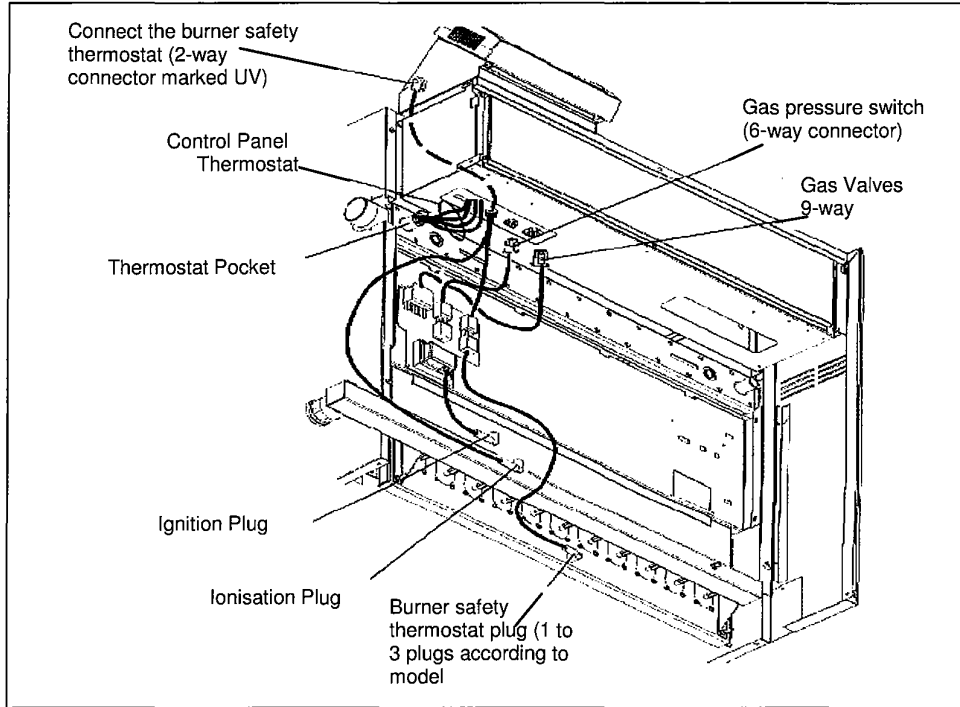
Control Panel

Control Panel with
Sequence ControlsBoiler thermostat
pocket without
sequence probeBoiler sequence
thermostat pocket with
sequencing

When fitting capillaries, ensure they are positioned at the bottom of the thermostat pocket.

- 1 – Overheat safety thermostat
- 2 – Heating outlet thermometer
- 3 – Control thermostat
- 4 – \varnothing 6 tube
- 5 – Sequence control probe

Connections – Fig. 22



Connecting the Electrical Supply

The electrical supply should be 230V 1Ph 50HZ. A 6.3A fuse and a suitable two pole isolator having a contact separation of at least 3 mm in all poles has to be provided by the installer for isolation of the boiler. All on site wiring shall conform to I.E.E. Regulations.

The supply should be made to the right hand side of the boiler control panel by flexible conduit. (This can be achieved by removing the two screws from the front top corners of the control panel and hinging control panel front down and all the electrical connections can now be seen)

Fig. 23

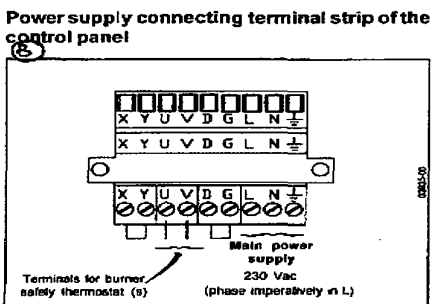
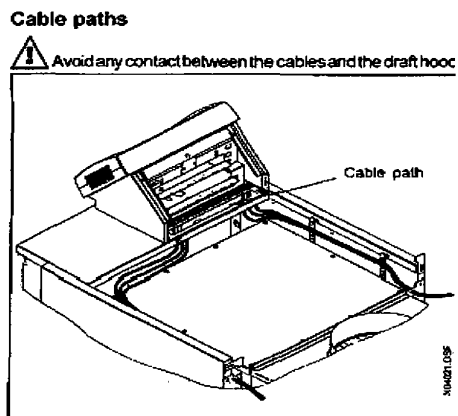


Fig. 24



Assembling the Gas Train

The live, neutral and earth connections should be made to the control panel terminal block. The earth connection should be made 50mm longer. The length of the conductors between the cord anchorage and the terminals must be such that the current carrying conductors become taut before the earth conductor if the cable or cord slips out of the cord anchorage. The wiring diagram is included in this manual on page 39 & 40 and also on the front inner panel of the boiler.

For multiple boiler installations each boiler shall have an isolator and fuse as detailed above to protect the boiler and allow for maintenance.

Connecting the flue

The fluehood has a vertical female outlet into which the flue should be fitted and sealed. It is recommended that twin walled flue is used. Find below guidance for flue installations. It recommended the services of a flue specialist are used (A).

BOILER DISASSEMBLY

If the boiler has to be disassembled it should be noted that the sections are not self-supporting. Remove the return manifold only, and then remove the sections individually from the flow manifold.

The boiler is supplied with a Dungs gas train for high/low operation.

Remove the gas train from its box and remove the boiler door. (The pilot supply pipe is also in the box with the gas train).

The pilot is supplied fixed to the burner for the left hand gas train arrangement.

If the gas train is to be fitted on the right hand side, swap the pilot over to the right hand side. The pilot is secured by two studs, washers and nuts. A blanking plate is similarly fastened to the redundant pilot mounting hole and should also be swapped over.

Remove the plastic plugs in the gas train union and fit to the union on the burner manifold. Make sure the rubber seal is fitted in the union it can be found attached to the gas valve.

If the gas train has to be fitted on the right hand side, the burner manifold should be changed over first.

NOTE: The gas train is not self-supporting and must be supported with the main gas pipework.

Connecting the Pilot Gas Line

The pilot line is of sufficient length and is fitted with an isolating valve.

A piece of tube is supplied in the gas train box. This is connected to the pilot burner and the pilot line by compression fittings.

Put the cap nuts on the tube then the olives and position both pipe ends right into the fittings before tightening.

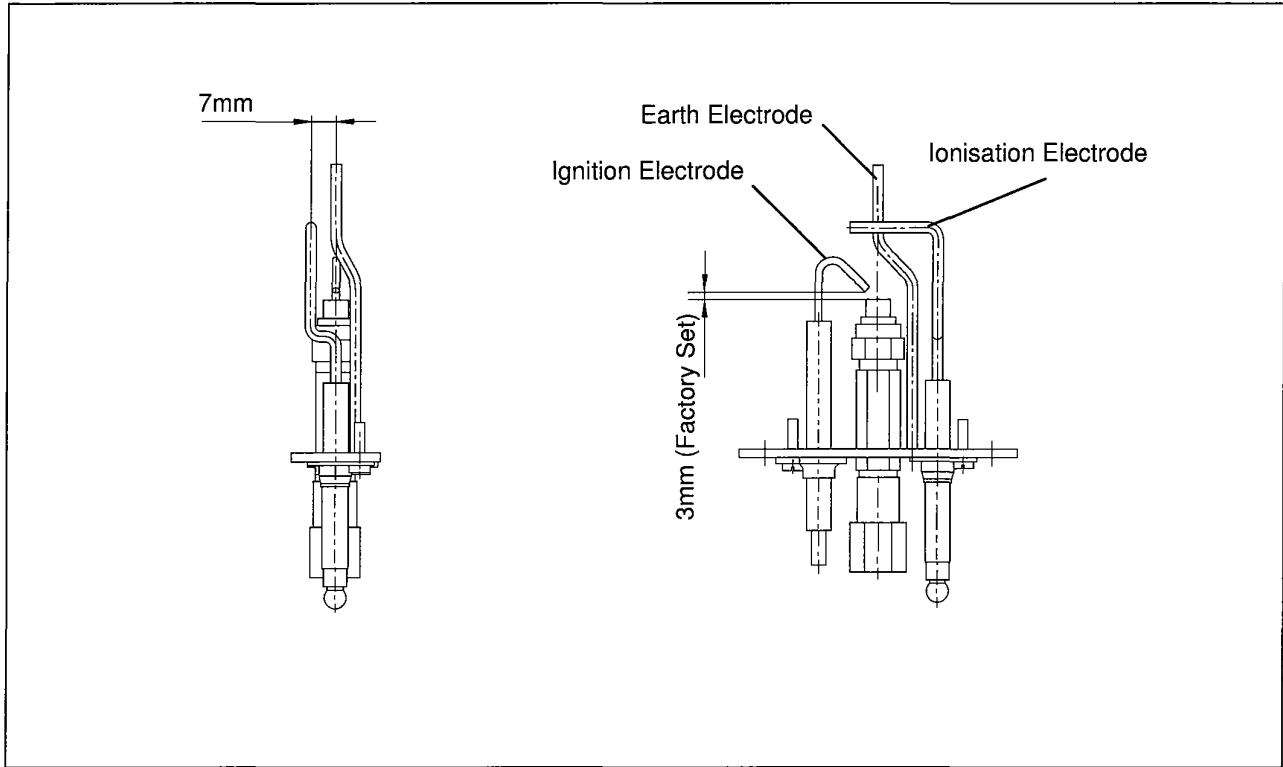
Tighten the fittings together and do not use pipe jointing compound on these connections.

Finally connect the gas train plug to the boiler plug on the front panel.

Plug the ignition lead into the ignition probe, then cut the ionisation lead to the required length. (see table below for details).

No. of Sections	Wire Length with Left Hand Gas Train	Wire Length with Right Hand Gas Train
12 to 14	2100mm	1600mm
15 to 17	2300mm	1600mm
18 to 22	2600mm	1600mm

Fig 25 General Arrangement of Pilot Burner



Connecting the Gas Supply

The connection should be made to the female connection (size given in Table 2 page 1). A union and isolating valve should be fitted close to the boiler to allow disconnection of the boiler controls for maintenance and repair.

The gas supply should be made through a suitable meter and the local gas undertaking should be consulted to determine the suitability of the meter and the gas supply to meet existing and additional demands for gas.

The installation shall be made in accordance with the requirements of the Gas Safety (Installation & Use) regulations and all other Regulations and Codes of Practice given on page 6.

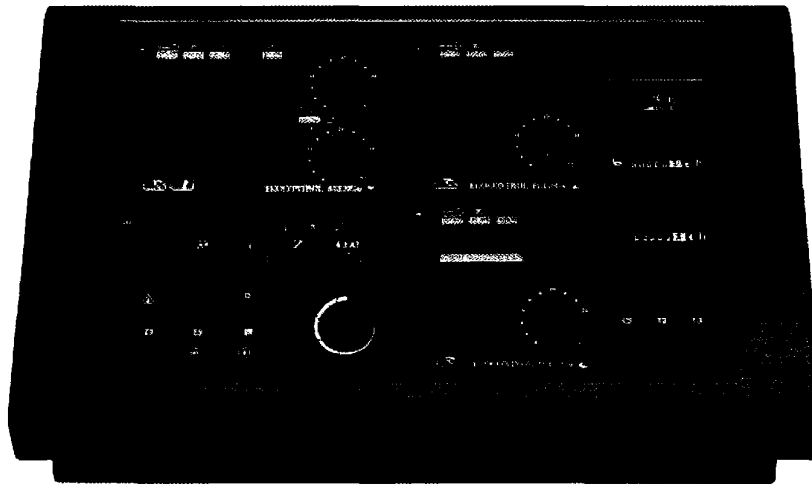
In particular, before connecting the boiler, ensure that the gas supply has been purged of air and a manual valve for isolation of the boiler is fitted in an accessible position, readily identifiable, adjacent to the boiler.

The gas supply should be supported adequately.

For large single and multiple boiler installations consideration should be given to the installation of additional gas meters to assist in the monitoring of boiler performance.

Attention is drawn to the need for adequately sized pipework according to the maximum gas demand for multiple boiler installations and each boiler shall be provided with an isolating valve so that it is possible to isolate the boiler from a common gas supply for maintenance purposes.

Boosters will not be necessary if a minimum inlet pressure of 17 mbar can be provided at the inlet to each gas train and maintained during full load conditions. If a booster is required the Local Gas Undertaking must be consulted and the booster shall be fitted with a low pressure cut off switch upstream of the booster in the event of reduced pressure and to prevent automatic restart on pressure restoration. The cut off pressure shall be decided by the Local Gas Undertaking.

**Boiler Controls**

The operation of the boiler is under the control of its own control box, boiler high/low and overheat thermostats.

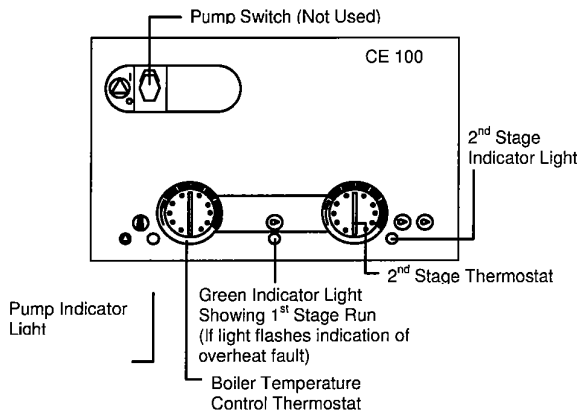
In addition, the boiler should be controlled by a time switch, frost thermostat, pump overrun facility and, for multiple boiler installations, a boiler sequence controller. The boiler can be controlled by removing

links D and G and providing a switch across these terminals to switch the boiler (Note this does not switch the pump circuit). Safety Interlocks are provided across R & K, for pressure switch etc.

The high limit thermostat and burner lockout signals can be picked up from terminals marked remote indication. These are volt free contacts.

See boiler wiring diagram.

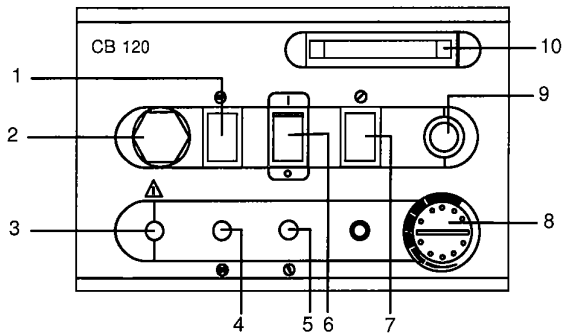
Fig. 26 – Control Panel Configurations



The CE 100 module provides the following functions

- Operation at 1st Stage
- Detection of boiler overheat, ionisation probe fault
- Ability to restrict max boiler temperature using jumper at back of module
- Indication of the operation mode of the boiler
- Operation of 2nd Stage operation

Fig. 27



The CB 120 module provides the following functions:

1. Reset button
2. Overheat thermostat
3. Overheat indicator
4. Lockout indicator
5. Mains supply indicator
6. On/Off switch
7. Over-ride button for safety checks
8. Over-ride thermostat (set to the right (maximum position) allowing control by the 1st stage and 2nd stage thermostats.
9. 6.3 Amp Fuse
10. Boiler thermostat.

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.

1. Site access available for persons carrying out the proposed work.
2. Site Managers/Personnel aware that work will be taking place.
3. Boilers correctly erected and cased.
4. Risk Assessments carried out on possible risks which may effect the persons carrying out the proposed work.
5. Site wiring complete to boilers.
6. Boilers filled & vented.
7. Controls connected, operable and calling for heat.
8. Sufficient system heating load available to run the boilers in order to complete combustion checks.
9. All system pumps operational and available.
10. Gas supply completed, purged and ready for use.
11. Flue system complete, adequate and fully functional.
12. Permanent ventilation complete and adequate.
13. All safety systems fitted and fully operational (e.g. safety valves, fuel shut off devices, flue fans interlocked, etc.)
14. 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 COMMISSION THE BOILER.

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 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.

Before commencing to commission ensure that any cling film is removed from the casing panels and then check the following.

1. Electrical supply is of correct voltage and polarity and earthing is available with certification that all electrical checks have been carried out.
2. Gas supply is tested for soundness and purged of air. Ensure that the burner is suitable for connected gas supply and pressure.
3. Test for gas soundness of gas trains as described on page 31.
4. Appliance gas cocks are all turned off.
5. Gas supply is turned on at the meter.
6. Boiler and system are filled with water and operating pressure is within appliance range.
7. Flow and return valves are open.
8. Any external controls and the on/off switch are in the "ON" position.
9. The circulating pumps are operational. Check that the pump is scheduled to run and not on pump overrun if the boiler has previously been fired. Check that any flow proving interlocks are functional.
10. Check that the high limit thermostat has not tripped by pressing the green reset button underneath the hexagon cap nut on the fascia.
11. Ventilation is adequate and, in the case of mechanical ventilation systems, operation of the boiler is inhibited unless the ventilation fan is proved.
12. On mechanically assisted flue systems the operation of the boiler plant should be inhibited unless the mechanical flue system is operational and flow proved.

13. The safety valve should be checked to ensure that it is the correct size and pressure.

14. The cold feed and open vent sizes should be checked.

Following completion of the above checks the burner should be commissioned. Typical combustion figures are detailed below. The 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.

Commissioning figures should be taken at a boiler flow temperature of 80°C. The combustion measurements should be taken in the secondary flue at a minimum of 600mm above the draught diverter.

GAS

CO ₂	-	6 - 7%
CO	-	0 - 50 ppm
Flue Gas Temp	-	130 - 160°C

IMPORTANT: The boiler/burner units are manufactured in accordance with the company Quality Assurance plan registered to meet the requirements of ISO 9000. A condition of this supply of the appliance for compliance with this Quality Assurance plan is the return of the appliance commissioning report.

Important – Safety

In the U.K it is a legal requirement that when working on gas appliances the engineer must be CORGI registered. The manufacturer cannot be held responsible for any consequential damage, loss or personal injury as a result of customers failing to follow these instructions, or as a result of misuse.

Emergency Instructions

The burners are designed and constructed to meet all of the essential requirements of the GAS APPLIANCE DIRECTIVE 90/396/EEC and under normal circumstances should not give occasion to any hazardous conditions. If such a condition should occur during commissioning or subsequent use of this product, be it a fault of the boiler or of any instrument, machine or service in the proximity of the burner then the GAS and ELECTRICITY supply to the burner should be **IMMEDIATELY ISOLATED** until such time that the fault has been investigated and rectified.

IMPORTANT After each adjustment, gas flow rate and flue gas analysis should be re-checked.

ALWAYS Use approved test equipment (Continually monitoring electronic equipment is recommended).

NEVER rely on a visual inspection of the flame as a guide to combustion quality.

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

1. Operation of the control, high/low 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 3 & 4 (pages 2 & 3)).
3. The fuel supply to the appliance should be isolated and the burner operated to ensure safety shut down and lockout of the burner on flame failure.
4. 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 thermostat 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.

Pre-Lighting

Before attempting to light the boiler start the circulating pump and check that it is scheduled to run and not on pump overrun if the boiler has been fired previously.

Check that the main and pilot gas cocks and electrical supply are turned off.

Set the boiler control thermostat to the required position and the time clock to the "ON" position. Check that the high limit thermostat has not been tripped by removing the hexagon cap nut and pressing the button beneath it.

Start the boiler by switching on the main isolator and the on/off switch on the boiler control panel fascia and the boiler will attempt to light. After a delay of approximately 15 seconds the ignition spark should be heard and after 5 seconds the control box should lock out.

If the ignition spark is not detected or the control box does not lock out see Fault Finding on page 36.

Commissioning Live Run

1. Turn on the appliance isolation valve.
2. Check the inlet pressure, which should be at least 17 mbar, on the inlet test pressure point and note the value.
3. Close the pilot supply gas cock and check that the pilot pressure is zero and not moving.
4. Turn on the electricity supply at the main isolator and at the on/off switch on the control panel fascia (ensuring that time clocks and any other external controls are made or are in the "ON" position), also turn on the pilot isolation valve.
5. Approximately 15 seconds after switching on, the ignition spark should appear followed by ignition of the pilot burner. If pilot flame is not established the control box will lockout, the red lockout light on the control panel will illuminate. This may initially occur due to air in the pilot line.
6. The control box may be re-set after a delay of one minute by pressing the red button on the control panel and the red light will go out. When the flame is established and the main burner is lit, check the gas pressure on the gas manifold pressure nipple and adjust the regulator (located on the gas valve see page 30) to give a pressure of 16.5 mbar. An ignition spark should start followed by lockout.
7. The pilot burner will re-light followed 10-15 seconds later by the main burners.

8. For high/low operation the low fire rate must be set first. To set the low fire rate the boiler temperature must be raised above 40°C (ie above the minimum operating temperature of the second stage thermostat). With a pressure gauge fitted to the burner manifold (PTP5), turn the control thermostat down until it clicks. Observe that the burner flames have diminished. Adjust the low fire rate (see page 33) until the burner manifold pressure is 10.6 mbar. Operate the burner at high and low fire checking that the burner manifold pressure is correct and that the flame is stable and blue.
9. Test the gas connection between the ignition valve and the pilot burner for soundness with a soap solution or other approved method and seal any leakages. Switch off the electrical supply and check that the burner has extinguished. Remove the pressure gauge from the burner manifold and tighten the pressure test screw on the gas valve.
10. Check the reliability of ignition of the boiler by switching the boiler off using the burner on/off switch on the boiler control panel. After two minutes turn the switch back on. The boiler will now relight. Check that the pilot has a stable flame and that the main burners light smoothly.
11. With the boiler switched on test for soundness on the union which is between the gas train valve and the burner manifold with a soap solution or other approved method and seal any leaks.
12. Turn the appliance isolation valve off. The main and pilot burners should go off. The boiler will attempt to relight. Check that the ignitor starts and that the boiler locks out.

SETTING THE GAS VALVE (9 to 11 Section)

High Fire Setting

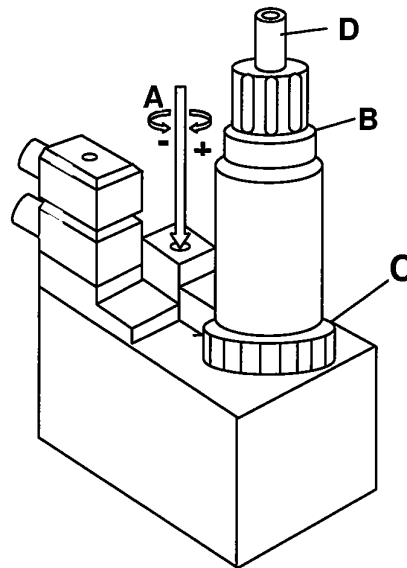
1. Start the burner with the two thermostats at maximum. The boiler should warm up for a minimum of 20 minutes before starting setting procedure.
2. The high fire setting has to be done first by turning the setting screw (A) of the gas valve governor. Turn to the right for more pressure or left for less pressure on the burner manifold.
3. Set the high fire pressure to 16.5 mbar.

Reduced Rate Setting

1. Reduce the setting of the high/low thermostat to minimum so that the boiler goes to low fire.

2. Unlock the screw (B) on the solenoid valve head and turn to the low rate setting ring (C), turn clockwise for less pressure and anti-clockwise for more pressure on the burner manifold.
3. Set the low fire pressure to 10.6 mbar.

Fig. 28 – Dungs MB-ZRDLE



- A- Setting Screw of Governor
 B- Locking Screw
 C- Low Fire Adjustment Ring
 D- Adjustment Cap

SETTING THE GAS VALVE (12 TO 22 SECTION)

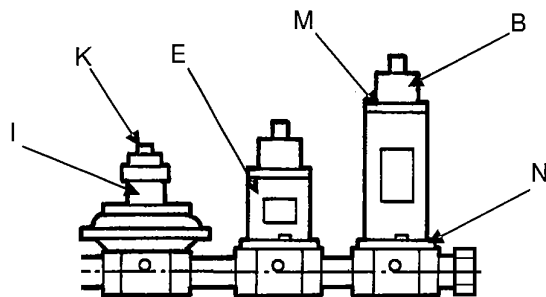
High Fire Setting

1. Start the burner with the two thermostats at maximum, the boiler should warm up for a minimum of 20 minutes before starting setting procedure.
2. The high fire setting has to be done first by turning the setting screw behind the protecting head of the governor (I), turn clockwise for more pressure or anti-clockwise for less pressure on the burner manifold.
3. Set the high fire pressure to 16.5 mbar.

Reduced Rate Setting

1. Reduce the setting of the high/low thermostat to minimum so that the boiler goes to low fire.
2. Unlock the screw (M) on the solenoid valve head (B) and turn to the low rate setting ring (N), turn clockwise for less pressure and anti-clockwise for more pressure on the burner manifold.
3. Set the low fire pressure to 10.6 mbar.

Fig. 29 – Gas Train (12 – 22 Section Boilers)



- I - Governor
- K - Setting Screw (Protecting Head)
- E - Security Valve
- M - Locking Screw
- N - Low Rate Ring
- B - Solenoid Valve High/Low

Ionisation Current Check

Switch the boiler off at its on/off switch and at the main isolator. Connect a micrometer into the ionisation cable in between the electrode and the cable. Switch on the main isolator and the burner on/off switch and after 15 seconds the ignition spark should be heard followed by lighting of the pilot burner. The micrometer should read approximately 7µA, at start up without main burner running.

Switch off the main isolator and the on/off switch, and remove the micrometer connections.

Flue Spillage Test

With the boiler hot and cold check for spillage of combustion products with a smoke bomb or smoke wand. Check that the air is in the draught diverter and that combustion products are not spilling out of the draught diverter. The flue draught should be checked with a draught gauge and a draught of 1mm.w.g. is required and should be measured at a suitable test point in the flue above the flue adaptor socket.

Ventilation Checks

For boiler houses with natural ventilation, the area of the grilles should be checked against the figures given for ventilation on page 2 & 3 or BS6644.

For boiler houses with mechanical ventilation, the suitability of the ventilation and extract system should be checked against the sizes given for mechanical ventilation on page 2 & 3 or BS6644

In addition, the installer should check that it is not possible for the boiler to operate if either the ventilation or extract fans are not running.

THE BOILER SHOULD NOT BE OPERATED WITHOUT ADEQUATE VENTILATION.

OPERATION OF ANCILLARY CONTROLS

After lighting the boiler, the operation of the above mentioned controls, e.g. clock and thermostats, should be checked.

TO LIGHT BOILER – NORMAL OPERATION

1. Check that the pilot gas cock and the service gas cock at the meter are on.
2. Check that all ancillary controls, e.g. time clocks are turned on.
3. Check that the electricity supply is turned on.
4. Switch on the on/off switch.
5. Check that the control panel lockout lamp is not lit, and if so, reset by pressing reset button.
6. Turn the boiler thermostat to the required setting.
7. The boiler will now light.

WARNING: If the pilot burner fails to establish or the boiler closed down after it has established, or, if the boiler closes down after the main flame has been established, no attempt should be made to relight the boiler for a period of one minute.

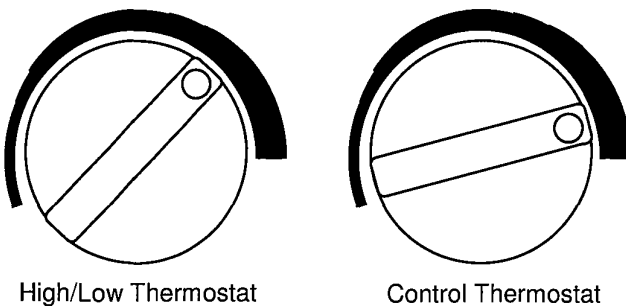
TO SHUT DOWN BOILER

1. Temporarily – Switch the on/off switch to “OFF”. Switch off the electrical supply.
2. Long Periods - As above but in addition turn off the service cock at the gas meter.

SETTING THE FLOW TEMPERATURE

The required flow setting should be set by the control thermostat. The temperatures that correspond to the positions on this scale are given in Fig. 29. The boiler thermometer should be used to check and adjust the setting as necessary.

NOTE: The high/low operation works with two thermostats. Low fire should be adjusted at a temperature between 0°C & 5°C below the high fire temperature.

Fig. 30 – Control & High/Low Thermostats**WATER FLOW SWITCH**

For boilers fitted with a water flow switch, the installer should check that it is not possible for the boiler to fire when there is no water flow. This may be done by checking the boiler closes down when the pumps are switched off or the water flow is gated off. Always restore the water flow before completing commissioning.

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 in the case of gas fired appliances attention is drawn to the mandatory requirement of CORGI (Council of Registered Gas Installers) registration of personnel undertaking work on these appliances. This facility is available from Potterton Commercial, details are available from the service offices listed on the back page of this manual.

Boilers should be serviced and re-commissioned as a minimum on an annual basis but frequency may depend on usage and application of the boiler.

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 gas supplies before attempting any maintenance work.

Following completion of maintenance on the boiler, the boiler should be re-commissioned as detailed below.

BOILER CLEANING

At every service visit, the boiler should be cleaned as detailed below and the soundness of the gas control assembly must be checked. The boiler should be fully re-commissioned as described below with attention also paid to;

1. The effectiveness of natural and mechanical ventilation and in particular the safe operation of an air flow switch on a mechanical ventilation system.
2. That the chimney system is sound and adequately evacuating the products of combustion and that there is no spillage of flue products.
3. That the burner gas pressure is correct and that the boiler is still on rate.
4. That the low pressure switch on the boiler, if fitted, is operating correctly.
5. That the water flow switch, if fitted, is operating correctly.

To clean the boiler it will be necessary to remove the boiler flue hood cover and burner assembly as detailed below. **Ensure boiler is isolated from all supplies.**

1. Remove the boiler door by lifting forwards and upwards (disconnect earth wiring and chain).
2. Remove side front panel bottom fixing screws then lift upwards and forwards.
3. Remove the pilot gas pipe on the 90° elbow close to the union nut, support the gas train and undo the gas union on the burner manifold.
4. Unscrew the nuts on the burner mounting plate on right and left hand sides of the mounting plate.
5. Disconnect the spark ionisation and earth wires to the pilot burner.
6. Pull the burner assembly forward and clean the burner, pilot burner, and combustion chamber of dust and debris.

7. Clean the burner bars and ensure that the holes/slots are clear. If necessary blow the slots and internals clear with compressed air or soft brush and vacuum. On no account should the burners be wire brushed.
8. Remove the boiler top panel by loosening the rear locking plate and pushing the panel towards the back.
9. Remove the top insulation and unscrew the flue box top cover for access to the heat exchanger.
10. With the flue brushes provided clean the flueways of the cast iron heat exchanger if necessary. The burner must be removed before cleaning.

Following completion remove the debris from the bottom of the boiler and clean around the boiler.

11. Following completion of the above, the boiler should be reassembled. The integrity of the gaskets and insulation should be checked and replaced if necessary during reassembly.
12. After reassembly test for gas soundness as detailed under commissioning and check the burner manifold union and pilot burner union for gas leaks.

FAULT FINDING

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 has not tripped.
- b) Pump overrun is operational to dissipate residual heat from the boiler on system shut down.
- c) System valves are open.
- d) The boiler is operating at the correct rate and is not overfired.

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 refer to Potterton Publication technical Bulletin No.1 latest issue.

Burner Lockout

The boilers 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 light on the boiler control panel will illuminate to indicate this.

Pushing the reset button can manually reset the lockout condition and the control box should restart its control sequence in an attempt to light the burner. If the control box 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 service offices details of which can be found on the back page of this manual.

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

Should the boiler go to lockout, check the following before attempting to re-light the burner.

1. The gas meter pressure is above 17 mbar.
2. The electrical supply to the appliance is of the correct voltage and polarity.

The Derwent Prestige boiler is fitted with a Dungs DGAI 65F control box. The control box controls the safe start up of the burner in sequence. See Fault Finding table on Page 36 for details of control box lockout conditions.

Fault Finding

<u>Stage 1</u> Boiler does not attempt to light. Control Box does not lockout.	a) Check electricity supply is available to boiler and on/off switch is illuminated. The boiler has an integral fuse. b) Check the boiler is being called to operate. Thermostat calling lamp should be lit unless internal thermostat is satisfied or external control circuit is broken. c) Check overheat cut off device has not operated. d) Check power supply is available to control box (see wiring diagram). Replace box if faulty.
<u>Stage 2</u> No Ignition Spark. Pilot does not Light. Control Box goes to lockout	a) Check ignition electrode continuity for earth fault. b) Check power supply is available to ignitor during ignition period. c) Check operation of ignitor. Replace if necessary
<u>Stage 3</u> Ignition sparks Pilot does not Light. Control Box goes to lockout	a) Check gas supply is available at the pilot burner at the correct pressure. b) Check gas supply is purged of air. c) Check pilot injector d) Check ignition electrode position.
<u>Stage 4</u> Pilot Burner lights Control Box goes to lockout safety time	a) Check electrical supply polarity b) Check earth continuity to pilot burner c) Check pilot burner pressure is correct d) Check there is no earth leakage on ionisation probe circuit. e) Check ionisation probe circuit for correct flame current. This is achieved by connecting a DC micrometer in series. A reading of at least 7µA DC should be obtained. If this is obtained and the control box continues to lock out then replace the control box.
<u>Stage 5</u> Pilot Burner Lights. Main burner does not light Control Box does not lockout	a) Check main burner gas cock is open. b) Check electrical continuity to main gas valve c) Check operation of gas valve and replace if necessary d) Check control box. Replace if necessary
<u>Stage 6</u> Pilot Burner Lights Main burner lights Control box locks out.	a) Check ignition of main flame is smooth and reliable. b) Check voltage supply for interference. c) Faulty Control Box

COMPONENT REPLACEMENT

Before commencing any component replacement, isolate the electrical and gas supplies to the boiler. After every service visit the soundness of the gas control assembly must be checked as described on page 31.

Main Burner Bar

1. Remove the main burner assembly as described under "Cleaning the Boiler" on page 34.
2. Refitting the burner assembly is the reverse of the above procedure.

Pilot Burner & Electrodes

1. Release the pilot burner by unscrewing the union on the rear of the pilot burner then undoing the two screws securing the pilot burner to the burner mounting plate.(when removing the pilot burner take care not to loose the pilot injector)
2. Release the electrodes and fit new electrodes if necessary.
3. Fit the pilot burner and check the electrode position as shown in Fig. 25, page 27.

High Limit, Control & High/Low Thermostat

1. Remove the two screws securing the control panel front fascia and hinge it down.
2. Release the quick release connection on the door by firmly pressing in and turn it one quarter turn to the left to open the door.
3. Remove the chain and earth wires and lift the door off.
4. Remove the thermostat phial from the thermostat pocket and thread it through the grommet into the control panel.
5. Remove the electrical connections to the thermostat, which are made by push on female connectors.
6. Remove the nut securing the thermostat to the control panel fascia. For the control & high/low thermostats the nut is located beneath the thermostat knob and for the limit thermostat it is located beneath the cover.
7. Fitting the new thermostat is the reversal of the above procedure. The thermostat phial should be positioned as shown in Fig. 21 page 24.

Thermometer

1. Remove the two screws securing the control panel front fascia and hinge it down.
2. Release the quick release connection on the door by firmly pressing in and turn it one quarter turn to the left to open the door.
3. Remove the chain and earth wires and lift the door off.
4. Remove the thermometer phial from the thermometer pocket and thread it through the grommet into the control panel.
5. Push the thermometer from the inside to the outside by pressing the two clamps.
6. Fit the new thermometer as the reversal of the above procedure. The thermometer phial should be positioned as shown in Fig. 21, page 24.

Control Box

1. Remove the two screws securing the control panel fascia and hinge it down.
2. Remove the two screws securing the control box base and then remove the control box.
3. Disconnect the wiring connections.
4. If the control box only is to be replaced fit the new box as a reverse of the above procedure.
5. Replace the wiring in the same order.

Spark Generator

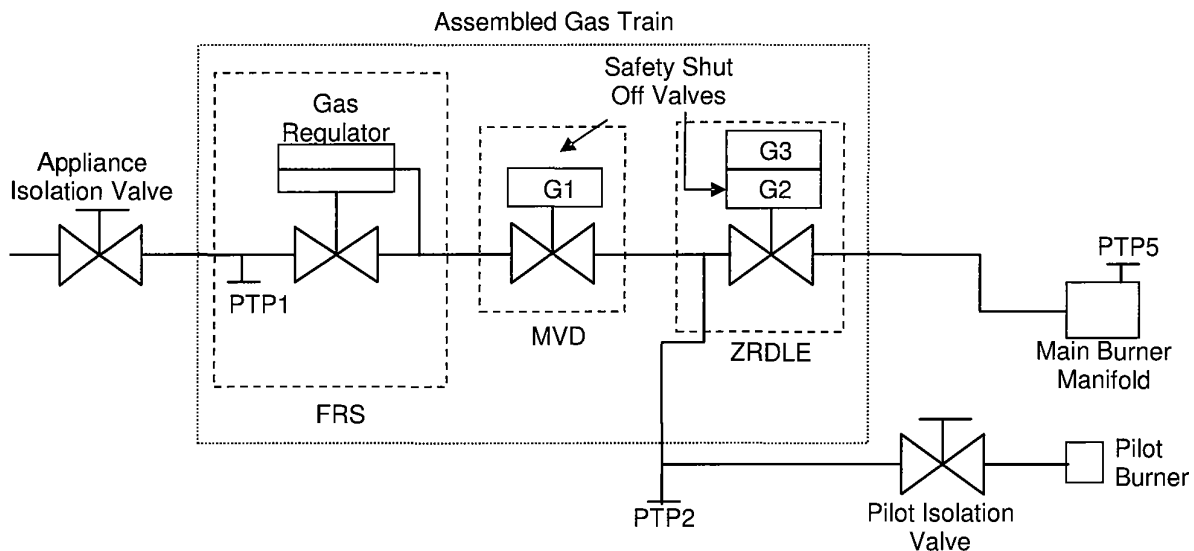
1. Release the quick release connection on the door by firmly pressing in and turn it one quarter turn to the left to open the door.
2. Remove the chain and earth wires and lift the door off.
3. Disconnect the spark generator connections from the control box base.
4. Remove the four screws securing the ignitor to the front panel.
5. Replace the spark generator as a reversal of the above procedure.
6. Recommission the boiler as described on page 31 to check the operation of the control box.

Main Gas Line Components

1. Release the quick release connection on the door by firmly pressing in and turn it one quarter turn to the left to open the door.
2. Remove the chain and earth wires and lift the door off.
3. Unplug the electrical connection to the gas train.
4. Release the burner manifold union and the pilot line connection to the pilot burner.
5. Disconnect the gas train rear union upstream and lift away the gas train complete.
6. Remove the cover plates and disconnect the electrical connections to the valve if necessary.
7. Change the valves or governor as necessary.
8. Remake the electrical connections and replace the pilot line and main gas line.
9. After replacing the complete gas train check for gas soundness as described on page below.

TO TEST FOR GAS SOUNDNESS OF CONTROL ASSEMBLY & SAFETY SHUT OFF VALVES.

To be read in conjunction with the schematic gas diagram (Fig. 30). IN ADDITION TO THE SPECIFIC VALVE PROVING TESTS BELOW ALL GAS JOINTS SHOULD BE CHECKED FOR LEAKS WITH A SOAP SOLUTION, (including the gas line to the pilot burner and main gas burner manifold).

Fig. 31 – Gas Train Configuration**1st Safety Shut Off Valve Gas Soundness**

Fit a pressure gauge to PTP1. Open the appliance isolation valve. Once a gauge pressure is observed close the appliance isolation valve. Observe the pressure gauge for 2 minutes. THERE SHOULD BE NO DROP IN GAUGE PRESSURE.

If a drop in gauge pressure is observed check for leaks with a soap solution or other approved method. If no external leaks are detected the 1st Safety Shut Off Valve (G1) is passing gas and should be replaced.

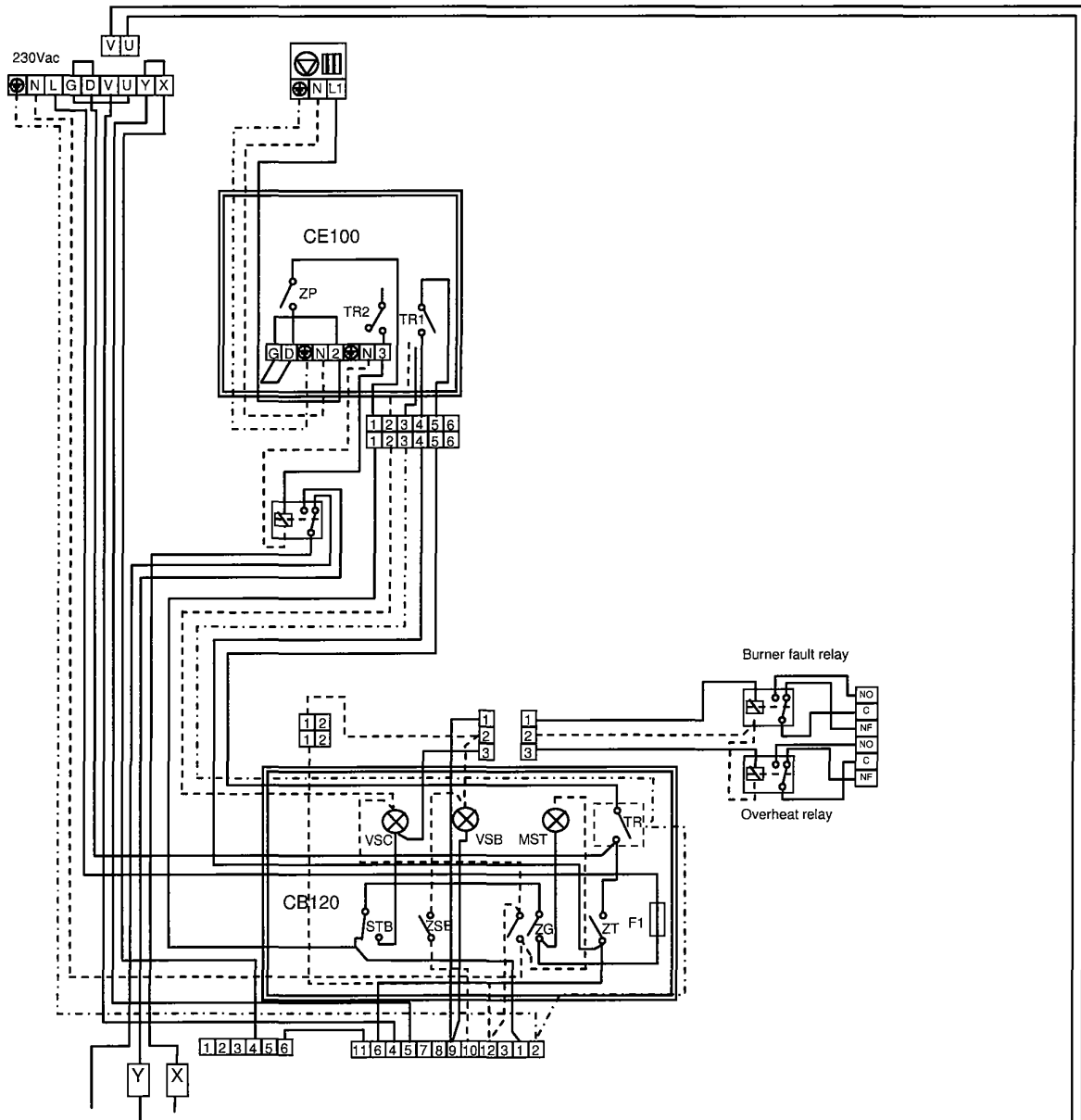
2nd Safety Shut Off Valve Gas Soundness

Fit a pressure gauge to PTP2, ensure that the gauge pressure is zero. Close the pilot isolation valve. Open the appliance isolation valve and start the boiler, the pressure should rise to line pressure and stay stable. Observe the pressure gauge for 2 minutes. Close the appliance isolating valve.

If a fall in gauge pressure is observed then the 2nd Safety Shut Off Valve (G2) is passing gas and should be replaced.

Once the soundness test has been successfully completed tighten the pressure test points and check for leaks with soap solution or other approved method.

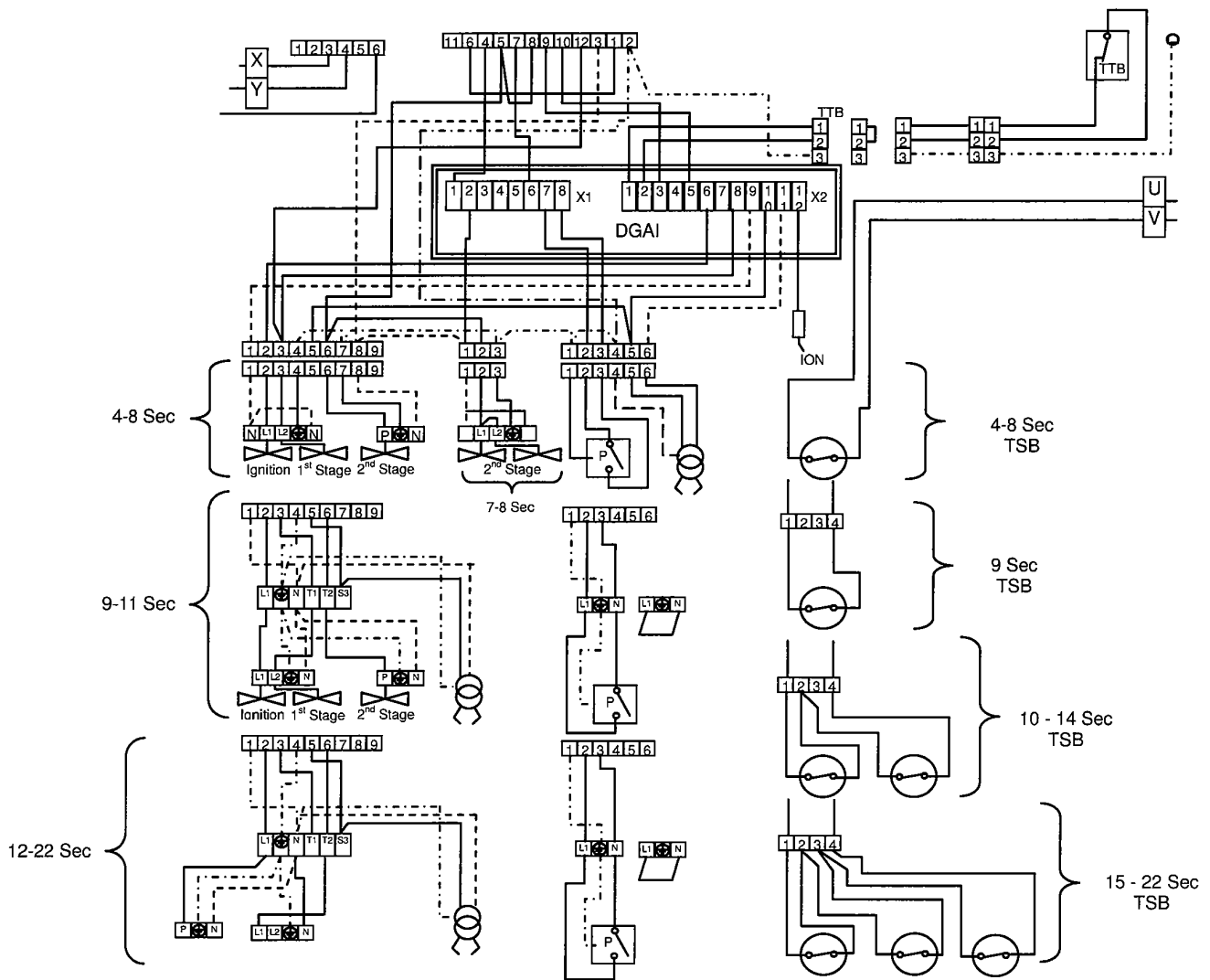
Fig. 32



ZP	Pump Switch	STB	Overheat Thermostat
TR1	1 st Stage Control Thermostat	ZSB	Burner Reset
TR2	2 nd Stage Control Thermostat	ZG	Override
CE100	Control Unit	ZT	Burner Test Switch
D&G	Control Interlock	F1	Fuse
X&Y	Safety Interlock		
VSC	Overheat Indicator Light		
VSB	Flame Failure Indicator Light		
MST	Mains Indicator Light		
TR	Safety Mode Thermostat		

U V

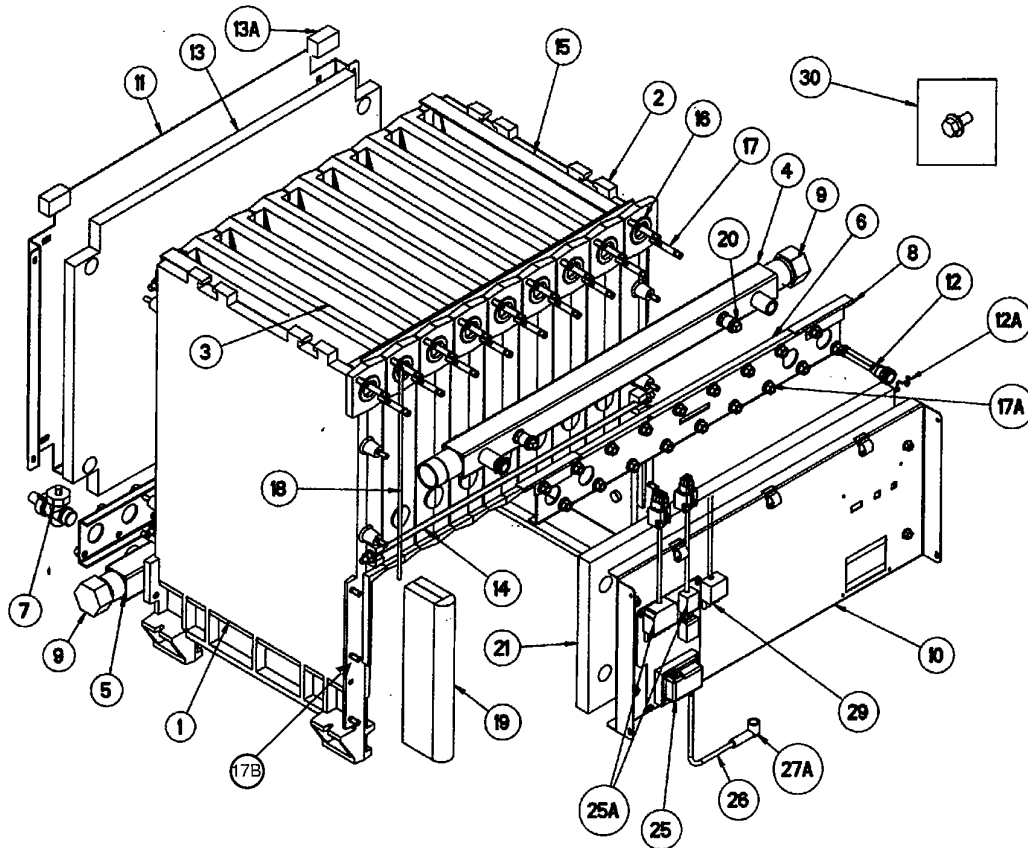
Fig. 33



DGAI	Burner Control Box
TTB	Flue Safety Device
ION	Ionisation Probe
TSB	Klixon
P	Gas Low Pressure Switch

Please be aware that the new control box used on the Derwent Range of products energises the fault indication on start up. If the volt-free connection for remote fault indication is used then a time delay must be incorporated on the BEMS side.

Fig. 34 - Boiler Body

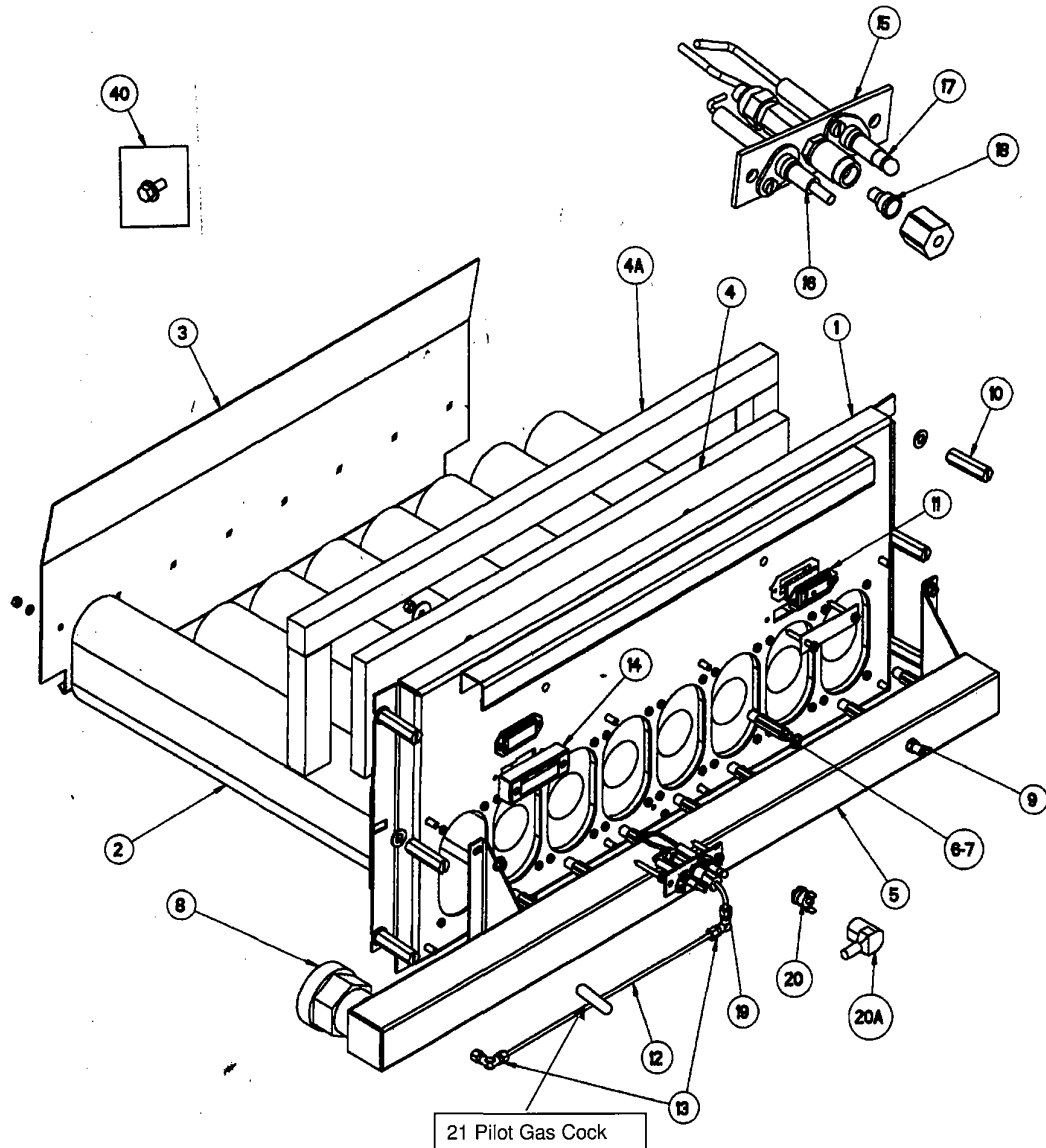


Item No.	Description	Quantity	Part No.
1	Left Hand End Section	1	COM17800856
2	Right Hand End Section	1	COM17800846
3	Intermediate Section	Dependant	COM17804056
4	Flow Header – 9 Section	1	COMN9270040
	Flow Header – 10 Section	1	COMN9270050
	Flow Header – 11 Section	1	COMN9270060
	Flow Header – 12 Section	1	COMN9270070
	Flow Header – 13 Section	1	COMN9270080
	Flow Header – 14 Section	1	COMN9270090
	Flow Header – 15 Section	1	COMN9270100
	Flow Header – 16 Section	1	COMN9270110
	Flow Header – 17 Section	1	COMN9270120
	Flow Header – 18 Section	1	COMN9270130
	Flow Header – 20 Section	1	COMN9116340
	Flow Header – 22 Section	1	COMN9116350
5	Return Header – 9 Section	1	COMN9270200
	Return Header – 10 Section	1	COMN9270210
	Return Header – 11 Section	1	COMN9270220
	Return Header – 12 Section	1	COMN9270230
	Return Header – 13 Section	1	COMN9270240
	Return Header – 14 Section	1	COMN9270250
	Return Header – 15 Section	1	COMN9270260

Item No.	Description	Quantity	Part No.
5	Return Header – 16 Section	1	COMN9270270
	Return Header – 17 Section	1	COMN9112060
	Return Header – 18 Section	1	COMN9112070
	Return Header – 20 Section	1	COMN9116360
	Return Header – 22 Section	1	COMN9113530
6	Manifold Clamp Plate – 9 Section	1	COMN9083604
	Manifold Clamp Plate – 10 Section	1	COMN9083614
	Manifold Clamp Plate – 11 Section	1	COMN9083624
	Manifold Clamp Plate – 12 Section	1	COMN9083634
	Manifold Clamp Plate – 13 Section	1	COMN9083644
	Manifold Clamp Plate – 14 Section	1	COMN9083654
	Manifold Clamp Plate – 15 Section	1	COMN9083664
	Manifold Clamp Plate – 16 Section	1	COMN9083674
	Manifold Clamp Plate – 17 Section	1	COMN9081474
	Manifold Clamp Plate – 18 Section	1	COMN9081484
	Manifold Clamp Plate – 20 Section	1	COMN9081954
	Manifold Clamp Plate – 22 Section	1	COMN9081964
	7	¾" Drain Cock	1
8	Case Support Bracket	2	COMN9100994
9	Blanking Cap (5 – 16 Section)	2	COMN9125170
10	Combustion Chamber Front Plate – 9 Section	1	S135965
	Combustion Chamber Front Plate – 10 Section	1	S135966
	Combustion Chamber Front Plate – 11 Section	1	S135967
	Combustion Chamber Front Plate – 12 Section	1	S135968
	Combustion Chamber Front Plate – 13 Section	1	S135969
	Combustion Chamber Front Plate – 14 Section	1	S135970
	Combustion Chamber Front Plate – 15 Section	1	S135971
	Combustion Chamber Front Plate – 16 Section	1	S135972
	Combustion Chamber Front Plate – 17 Section	1	S135973
	Combustion Chamber Front Plate – 18 Section	1	S135974
	Combustion Chamber Front Plate – 20 Section	1	S135975
Combustion Chamber Front Plate – 22 Section	1	S135976	
11	Heat Exchanger Rear Plate – 9 Section	1	S135647
	Heat Exchanger Rear Plate – 10 Section	1	S135648
	Heat Exchanger Rear Plate – 11 Section	1	S135649
	Heat Exchanger Rear Plate – 12 Section	1	S135650
	Heat Exchanger Rear Plate – 13 Section	1	S135651
	Heat Exchanger Rear Plate – 14 Section	1	S135652
	Heat Exchanger Rear Plate – 15 Section	1	S135653
	Heat Exchanger Rear Plate – 16 Section	1	S135654
	Heat Exchanger Rear Plate – 17 Section	1	S135655
	Heat Exchanger Rear Plate – 18 Section	1	S135656
	Heat Exchanger Rear Plate – 20 Section	1	S135657
Heat Exchanger Rear Plate – 22 Section	1	S135658	
12	Thermostat Pocket	1	COMN9115030
12A	Retaining Clip	1	COMC17006459
13	Rear Insulation – 9 Section	1	S136749
	Rear Insulation – 10 Section	1	S136750
	Rear Insulation – 11 Section	1	S136751
	Rear Insulation – 12 Section	1	S136752
	Rear Insulation – 13 Section	1	S136753
	Rear Insulation – 14 Section	1	S136754
	Rear Insulation – 15 Section	1	S136755
	Rear Insulation – 16 Section	1	S136756
	Rear Insulation – 17 Section	1	S136757

Item No.	Description	Quantity	Part No.
13	Rear Insulation – 18 Section	1	S136758
	Rear Insulation – 20 Section	1	S136759
	Rear Insulation – 22 Section	1	S136760
13A	Insulation Blocks	1	S136794
14	Tie Rod M10 x 695 – 9 Section	2	COMN9171020
	Tie Rod M10 x 775 – 10 Section	2	COMN9171030
	Tie Rod M10 x 855 – 11 Section	2	COMN9171040
	Tie Rod M10 x 935 – 12 Section	2	COMN9171050
	Tie Rod M10 x 1015 – 13 Section	2	COMN9171180
	Tie Rod M10 x 1100 – 14 Section	2	COMN9171250
	Tie Rod M10 x 1180 – 15 Section	2	COMN9171260
	Tie Rod M10 x 1260 – 16 Section	2	COMN9171270
	Tie Rod M10 x 1340 – 17 Section	2	COMN9171280
	Tie Rod M10 x 1420 – 18 Section	2	COMN9171290
	Tie Rod M10 x 1585 – 20 Section	2	COMN9171470
	Tie Rod M10 x 1745 – 22 Section	2	COMN9171480
15	Ceramic Sealing Strip 20 x 3 - 1 metres	1	COMN9205320
16	Sealing Ring (Rubber)	2 Per Sect	COMN9195220
17	Fixing Stud – M10 x 80	4 Per Sect	COMN9171140
17A	M10 Nuts	4 Per Sect	S15230100
18	Ceramic Sealing Rope Ø6mm 1.5m length	1	COMN9195370
19	Insulation Pad	1	S133107
20	½" BSP Plug	1	COMN9125010
21	Combustion Front Plate Insulation – 9 Section	1	S136766
	Combustion Front Plate Insulation – 10 Section	1	S136767
	Combustion Front Plate Insulation – 11 Section	1	S136768
	Combustion Front Plate Insulation – 12 Section	1	S136769
	Combustion Front Plate Insulation – 13 Section	1	S136770
	Combustion Front Plate Insulation – 14 Section	1	S136771
	Combustion Front Plate Insulation – 15 Section	1	S136772
	Combustion Front Plate Insulation – 16 Section	1	S136773
	Combustion Front Plate Insulation – 17 Section	1	S136774
	Combustion Front Plate Insulation – 18 Section	1	S136775
	Combustion Front Plate Insulation – 20 Section	1	S136776
	Combustion Front Plate Insulation – 22 Section	1	S136777
25	Ignition Transformer	1	S137143
25A	Ignition Transformer Connectors	1	S136466
26	Ignition Lead	1	COMC15825230
27A	Ignition Cap	1	COMC500483
29	Control Panel Cable (9 Section)	1	S136819
	Control Panel Cable (10 to 12 Section)	1	S136820
	Control Panel Cable (13 to 14 Section)	1	S136821
	Control Panel Cable (15 to 16 Section)	1	S136822
	Control Panel Cable (17 to 18 Section)	1	S136823
	Control Panel Cable (20 to 22 Section)	1	S136824
30	Bag of Screws 10 to 14	1	COM17881067
	Bag of Screws 15 to 18	1	COM17881068
	Bag of Screws 20 to 22	1	COM17881069
31	Earth Wire (Not Shown)	1	COM17071647
32	Data Plate (Not Shown)	1	COM17070892

Fig. 35 - Boiler Body

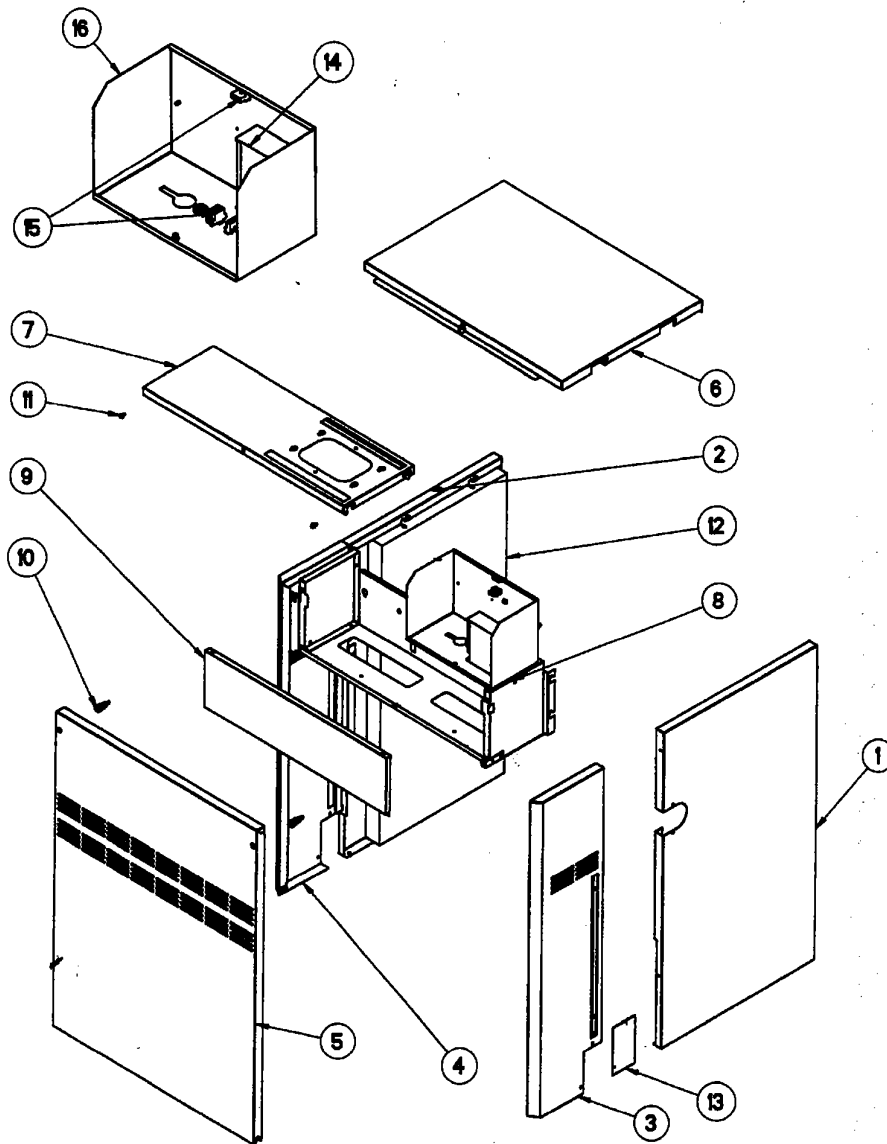


Item No.	Description	Quantity	Part No.
1	Mounting Plate – 9 Section	1	COMN9253860
	Mounting Plate – 10 Section	1	COMN9253870
	Mounting Plate – 11 Section	1	COMN9253880
	Mounting Plate – 12 Section	1	COMN9253890
	Mounting Plate – 13 Section	1	COMN9253900
	Mounting Plate – 14 Section	1	COMN9253910
	Mounting Plate – 15 Section	1	COMN9253920
	Mounting Plate – 16 Section	1	COMN9253930
	Mounting Plate – 17 Section	1	COMN9253940
	Mounting Plate – 18 Section	1	COMN9253950

Item No.	Description	Quantity	Part No.	
1	Mounting Plate – 20 Section	1	COMN9253960	
	Mounting Plate – 22 Section	1	COMN9253970	
2	Burner Bar	-	COMN9020400	
3	Burner Back Plate – 9 Section	1	S133988	
	Burner Back Plate – 10 Section	1	S133989	
	Burner Back Plate – 11 Section	1	S133990	
	Burner Back Plate – 12 Section	1	S133795	
	Burner Back Plate – 13 Section	1	S133991	
	Burner Back Plate – 14 Section	1	S133992	
	Burner Back Plate – 15 Section	1	S133993	
	Burner Back Plate – 16 Section	1	S133929	
	Burner Back Plate – 17 Section	1	S133994	
	Burner Back Plate – 18 Section	1	S133995	
	Burner Back Plate – 20 Section	1	S133996	
	Burner Back Plate – 22 Section	1	S133997	
	4	Burner Mounting Plate Insulation – 9 Section	1	S137015
		Burner Mounting Plate Insulation – 10 Section	1	S137016
Burner Mounting Plate Insulation – 11 Section		1	S137017	
Burner Mounting Plate Insulation – 12 Section		1	S137018	
Burner Mounting Plate Insulation – 13 Section		1	S137019	
Burner Mounting Plate Insulation – 14 Section		1	S137020	
Burner Mounting Plate Insulation – 15 Section		1	S137022	
Burner Mounting Plate Insulation – 16 Section		1	S137023	
Burner Mounting Plate Insulation – 17 Section		1	S137036	
Burner Mounting Plate Insulation – 18 Section		1	S137037	
4A	Burner Mounting Plate Insulation – 20 Section	1	S137038	
	Burner Mounting Plate Insulation – 22 Section	1	S137039	
	Insulation Strips – 9 Section	1	S135630	
	Insulation Strips – 10 Section	1	S135631	
	Insulation Strips – 11 Section	1	S135632	
	Insulation Strips – 12 Section	1	S135633	
	Insulation Strips – 13 Section	1	S135634	
	Insulation Strips – 14 Section	1	S135635	
	Insulation Strips – 15 Section	1	S135636	
	Insulation Strips – 16 Section	1	S135637	
	Insulation Strips – 17 Section	1	S135638	
	Insulation Strips – 18 Section	1	S135639	
5	Insulation Strips – 20 Section	1	S135640	
	Insulation Strips – 22 Section	1	S135641	
	Vertical Insulation Strip – All Models	1	S137100	
	Gas Manifold – 9 Section	1	COMN9116420	
	Gas Manifold – 10 Section	1	COMN9116430	
	Gas Manifold – 11 Section	1	COMN9116440	
	Gas Manifold – 12 Section	1	COMN9116450	
	Gas Manifold – 13 Section	1	COMN9116460	
	Gas Manifold – 14 Section	1	COMN9116470	
	Gas Manifold – 15 Section	1	COMN9116480	
	Gas Manifold – 16 Section	1	COMN9116490	
	Gas Manifold – 17 Section	1	COMN9116500	
	Gas Manifold – 18 Section	1	COMN9116510	
Gas Manifold – 20 Section	1	COMN9116520		
Gas Manifold – 22 Section	1	COMN9116530		
6	Natural Gas Injector 3.2	1	COMC17003180	
	LPG Injector 2.15	1	S17003191	
7	Washer	1	COMC17006504	

Item No.	Description	Quantity	Part No.
8	Union 1" 9 to 11 Section	1	S15922350
	Union 1 1/2" 12 to 22 Section	1	SN9126630
8A	Union Gasket 1" 9 to 11 Section (Not Shown)	1	COM15600310
	Union Gasket 1 1/2" 12 to 22 Section (Not Shown)	1	COMN9195590
9	Pressure Test Point 1/8"	1	COM17006201
10	Securing Nut 8x50	1	S15236109
11	Sight Glass Assembly	1	COMN9022010
12	Pilot Tube 9 to 12 Section	1	S137155
	Pilot Tube 13 to 15 Section	1	S137192
	Pilot Tube 16 to 18 Section	1	S137193
	Pilot Tube 20 & 22 Section	1	S137194
13	Pilot Tube Elbows	2	S133830
14	Pilot Mounting Plate	1	COM17002110
15	Pilot Assembly	1	S137131
16	Ignition Electrode	1	S134257
17	Ionisation Electrode	1	S133965
	Ionisation Lead (Not Shown)	1	S15825230
	Ionisation Lead (Not Shown)	1	S500832
18	Pilot Injector 0.5 Natural Gas	1	COMN5590360
	Pilot Injector 0.25 LPG	1	S500249
19	Pilot Supply Elbow	1	S137130
20	Klixon 100 +/-4°C	Dependant	S502259
20A	Klixon Cabling – 9 Section	1	S136819
	Klixon Cabling – 10 to 12 Section	1	S136820
	Klixon Cabling – 13 & 14 Section	1	S136821
	Klixon Cabling – 15 & 16 Section	1	S136822
	Klixon Cabling – 17 & 18 Section	1	S136823
	Klixon Cabling – 29 & 22 Section	1	S136824
21	Pilot Isolating Valve Assembly	1	COM17006475
40	Bag of Screws	1	S503294

Fig. 36 - Casing Assembly

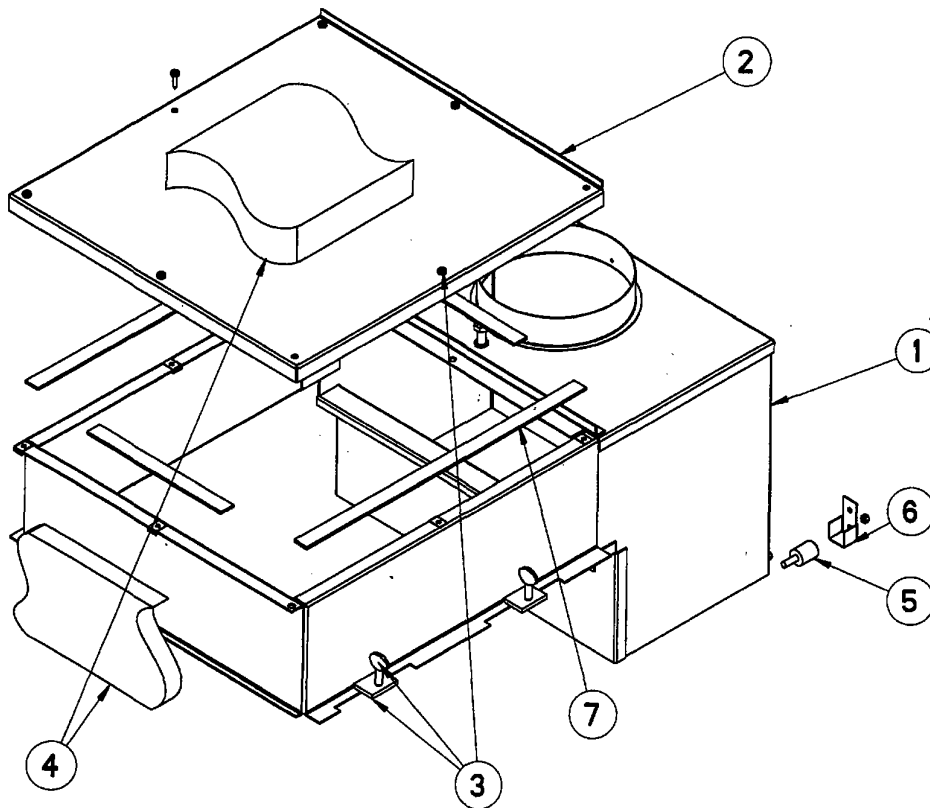


Item No.	Description	Quantity	Red Casing Part No.	White Casing Part No.
1	Right Hand Side Panel	1	S136810A	S136810EE
2	Left Hand Side Panel	1	S136809A	S136809EE
3	Right Hand Front Side Panel	1	S136418BB	S136418BB
4	Left Hand Front Side Panel	1	S136417BB	S136417BB
5	Front Door – 9 Section	1	S136487A	S136487EE
	Front Door – 10 Section	1	S136488A	S136488EE
	Front Door – 11 Section	1	S136489A	S136489EE
	Front Door – 12 Section	1	S136490A	S136490EE
	Front Door – 13 Section	1	S136491A	S136491EE
	Front Door – 14 Section	1	S136492A	S136492EE
	Front Door – 15 Section	1	S136493A	S136493EE
	Front Door – 16 Section	1	S136494A	S136494EE

Item No.	Description	Quantity	Red Casing Part No.	White Casing Part No.
5	Front Door – 17 Section	1	S136495A	S136495EE
	Front Door – 18 Section	1	S136496A	S136496EE
	Front Door – 20 Section	1	S136497A	S136497EE
	Front Door – 22 Section	1	S136498A	S136498EE
6	Top Panel – 9 Section	1	S136930A	S136930EE
	Top Panel – 10 Section	1	S136931A	S136931EE
	Top Panel – 11 Section	1	S136932A	S136932EE
	Top Panel – 12 Section	1	S136933A	S136933EE
	Top Panel – 13 Section	1	S136934A	S136934EE
	Top Panel – 14 Section	1	S136935A	S136935EE
	Top Panel – 15 Section	1	S136936A	S136936EE
	Top Panel – 16 Section	1	S136937A	S136937EE
	Top Panel – 17 Section	1	S136938A	S136938EE
	Top Panel – 18 Section	1	S136939A	S136939EE
	Top Panel – 20 Section	1	S136940A	S136940EE
	Top Panel – 22 Section	1	S136941A	S136941EE
7	Top Front Panel – 9 Section	1	S136507A	S136507EE
	Top Front Panel – 10 Section	1	S136508A	S136508EE
	Top Front Panel – 11 Section	1	S136509A	S136509EE
	Top Front Panel – 12 Section	1	S136510A	S136510EE
	Top Front Panel – 13 Section	1	S136511A	S136511EE
	Top Front Panel – 14 Section	1	S136512A	S136512EE
	Top Front Panel – 15 Section	1	S136513A	S136513EE
	Top Front Panel – 16 Section	1	S136514A	S136514EE
	Top Front Panel – 17 Section	1	S136515A	S136515EE
	Top Front Panel – 18 Section	1	S136516A	S136516EE
	Top Front Panel – 20 Section	1	S136517A	S136517EE
	Top Front Panel – 22 Section	1	S136518A	S136518EE
8	Control Panel Housing – 9 Section	1	S136943H	S136943H
	Control Panel Housing – 10 Section	1	S136944H	S136944H
	Control Panel Housing – 11 Section	1	S136945H	S136945H
	Control Panel Housing – 12 Section	1	S136946H	S136946H
	Control Panel Housing – 13 Section	1	S136947H	S136947H
	Control Panel Housing – 14 Section	1	S136948H	S136948H
	Control Panel Housing – 15 Section	1	S136949H	S136949H
	Control Panel Housing – 16 Section	1	S136950H	S136950H
	Control Panel Housing – 17 Section	1	S136951H	S136951H
	Control Panel Housing – 18 Section	1	S136952H	S136952H
	Control Panel Housing – 20 Section	1	S136953H	S136953H
	Control Panel Housing – 22 Section	1	S136954H	S136954H
9	Control Panel Housing Front – 9 Section	1	S136552H	S136552H
	Control Panel Housing Front – 10 Section	1	S136553H	S136553H
	Control Panel Housing Front – 11 Section	1	S136554H	S136554H
	Control Panel Housing Front – 12 Section	1	S136555H	S136555H
	Control Panel Housing Front – 13 Section	1	S136556H	S136556H
	Control Panel Housing Front – 14 Section	1	S136557H	S136557H
	Control Panel Housing Front – 15 Section	1	S136558H	S136558H
	Control Panel Housing Front – 16 Section	1	S136559H	S136559H
	Control Panel Housing Front – 17 Section	1	S136560H	S136560H
	Control Panel Housing Front – 18 Section	1	S136561H	S136561H
	Control Panel Housing Front – 20 Section	1	S136562H	S136562H
	Control Panel Housing Front – 22 Section	1	S136563H	S136563H
10	Quicklock Screw 60mm	1	S17002478	S17002479
11	Screw Pack	1	S503042	S503043
12	Side Panel Insulation	1	S17070878	S17070879

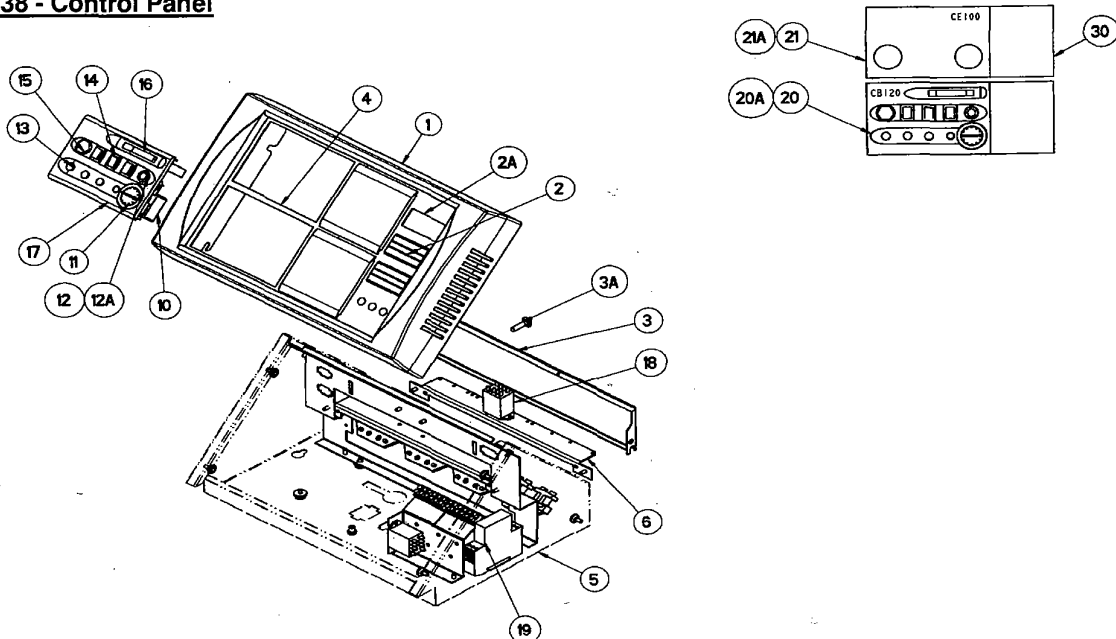
DERWENT PRESTIGE PLUS

Item No.	Description	Quantity	Red Casing Part No.	White Casing Part No.
13	Panel Blanking Plate	1	S136805BB	S136805BB
14	DGAI Controller	1	S138574	S138575
15	Controller Plugs	1	S136405	S136406
16	Controller Housing	1	S136806H	S136806H
-	Logo Prestige Plus Badge (Not Shown)	1	S139057	S139058

Fig. 37 - Flue Box

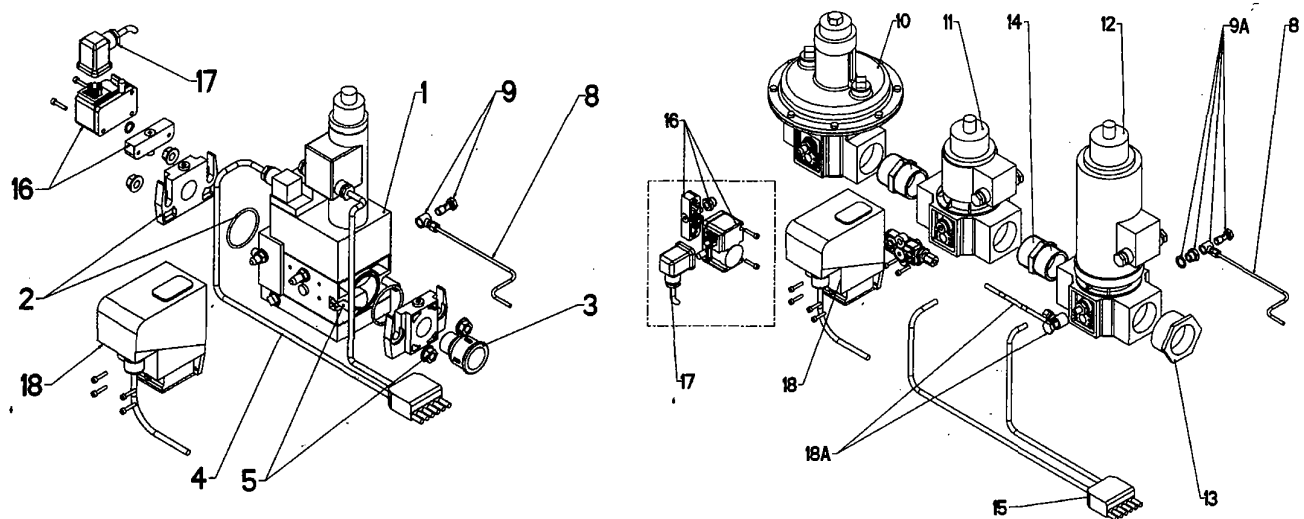
Item No.	Description	Quantity	Part No.
1	Flue Box – 9 Section	1	COMN7462180
	Flue Box – 10 Section	1	COMN7462190
	Flue Box – 11 Section	1	COMN7462200
	Flue Box – 12 Section	1	COMN7462210
	Flue Box – 13 Section	1	COMN7462220
	Flue Box – 14 Section	1	COMN7462230
	Flue Box – 15 Section	1	COMN7462240
	Flue Box – 16 Section	1	COMN7462250
	Flue Box – 17 Section	1	COMN7462260
	Flue Box – 18 Section	1	COMN7462270
	Flue Box – 20 Section	1	COMN7462280
	Flue Box – 22 Section	1	COMN7462290
2	Flue Box Top Cover – 9 Section	1	COMN9078984
	Flue Box Top Cover – 10 Section	1	COMN9078994
	Flue Box Top Cover – 11 Section	1	COMN9079004
	Flue Box Top Cover – 12 Section	1	COMN9079014
	Flue Box Top Cover – 13 Section	1	COMN9079024
	Flue Box Top Cover – 14 Section	1	COMN9079034
	Flue Box Top Cover – 15 Section	1	COMN9079044
	Flue Box Top Cover – 16 Section	1	COMN9079054
	Flue Box Top Cover – 17 Section	1	COMN9079064
	Flue Box Top Cover – 18 Section	1	COMN9079074
	Flue Box Top Cover – 20 Section	1	COMN9079084
	Flue Box Top Cover – 22 Section	1	COMN9079094

Item No.	Description	Quantity	Part No.
3	Pack of Securing Screws	1	S503295
4	Flue Cover Insulation – 9 Section	1	17070907
	Flue Cover Insulation – 10 Section	1	17070908
	Flue Cover Insulation – 11 Section	1	17070909
	Flue Cover Insulation – 12 Section	1	17070910
	Flue Cover Insulation – 13 Section	1	17070911
	Flue Cover Insulation – 14 Section	1	17070912
	Flue Cover Insulation – 15 Section	1	17070913
	Flue Cover Insulation – 16 Section	1	17070914
	Flue Cover Insulation – 17 Section	1	17070915
	Flue Cover Insulation – 18 Section	1	17070916
	Flue Cover Insulation – 20 Section	1	17070917
	Flue Cover Insulation – 22 Section	1	17070918
5	Flue Thermostat	1	S500540
6	Flue Thermostat Support	1	S136917
7	Ceramic Felt Strips 20 x 3 (1 metre length)	1	COMN9205320

Fig. 38 - Control Panel

Item No.	Description	Quantity	Part No.
	Complete Control Panel	1	S504712
1	Front Panel	1	S137535
2	Blank Plate	1	COM17002268
2A	Thermometer Blank Plate	1	COM17002281
3	Rear Panel	1	S137874A
3A	Bolt DZUS	1	S504314
4	Front Panel Support	1	S137873H
5	Control Panel Casing	1	S504313
6	Cable Terminal Support	1	S136979
10	Thermostat	1	COM17007004
11	Thermostat Knob	1	S17004738
12	Fuse Housing	1	COM15803999
12A	Fuse TFS 5 x 20 6.3A	1	COM15803525
13	Bag of Lights	1	S501970
14	Bag of Switches	1	S503081
15	Limit Thermostat - TG400 Cap 0.2m	1	COM17006955
16	Thermostat 68.5 x 14.5 0-120°C	1	S134421
17	CB120 Module Front Panel	1	S137158
18	Relay LY2F 220AC	1	COM15815049
19	Time Delay Relay	1	S503756
20	Basic CB120 Module Assembly	1	S137157
20A	Basic CB120 Module Wiring	1	S136811
21	CE100 Module Assembly	1	S137160
21A	CE100 Module Wiring	1	S136412
	NTC Sensor (Not Shown)	1	S502095
30	Blanking Panel	1	COM17000983


Fig. 39 - Gas Valve



Item No.	Description	Quantity	Part No.
1	Multiblock Gas Valve 9 – 11 Section	1	COMN9016680
2	Input Flange and O-ring 9 – 11 Section	1	SN9016360
3	1" to 3/4" Reducer 9 – 11 Section	1	COMN9125480
4	Multiblock Gas Valve Supply Cable	1	S500762
5	M10 Nuts	4	COM17881102
8	Pilot Tube 9 – 11 Section	1	COMN7731150
8	Pilot Tube 12 – 18 Section	1	S133920
8	Pilot Tube 20 – 22 Section	1	S133928
9	Pilot Elbow 9 – 11 Section	1	COMN9120220
	Screwed Adaptor	1	S15929282
9A	Pilot Elbow Banjo 1/8"	1	S133832
	Screwed Adaptor	1	S15929282
	1/4 x 1/8 Adaptor Reducer	1	S500533
	Sealing Washer	1	S133854
10	Pressure Regulator 12 – 18 Section	1	COM17007721
	Pressure Regulator 20 – 22 Section	1	COM17007722
11	Gas Valve – MVD 12 – 18 Section	1	COMN9015780
	Gas Valve – MVD 20 – 22 Section	1	COMN9015280
12	Gas Valve – ZRDLE 12 – 18 Section	1	COMN9015470
	Gas Valve – ZRDLE 20 – 22 Section	1	COMN9015480
13	2" – 1 1/2" Reducer 20 – 22 Section	1	COMN9125230
14	1 1/2" Connector 12 – 18 Section	1	COMN9125320
	2" Connector – 20 – 22 Section	1	COMN9125330
15	Gas Valve Supply Cable	1	COM17071675
16	Preostat 9 – 11 Section	1	S17071676
	Preostat 12 – 22 Section	1	S17071677
17	Preostat Cabling	1	S17077796
18	Gas Pressure Switch 9 – 11 Section	1	S12000170
	Gas Pressure Switch 12 – 22 Section	1	S12000180

COMMISSIONING REPORT

ALL BOILER TYPES

 Wood Lane, Erdington, Birmingham, B24 9QP. Tel: (08706) 050607 Fax: (08706) 001516	REPORT SENT TO INSTALLER:	YES	NO
	SITE VISIT (<i>Italics</i>)	COMMISSIONING	
REPORT No:	(Office use Only)		
SITE ADDRESS:	DATE:		
	SIGNATURE:		
	INSTALLER NAME & ADDRESS:		
	COMMISSIONING/SITE VISIT DATE:		

1.0	BOILER			
1.1	Type:			
1.2	No. of Sections:	Boiler N°/Position		
1.3	Serial No.			
1.4	Fuel:	N/Gas	LPG	Class C Class D
2.0	BURNER/CONTROLS			
2.1	Type:	Atmospheric	Pre-Mix	Pressure Jet
2.2	Ionisation Probe:	UV Cell	Thermocouple	
2.3	Make/Model:			
2.4	Serial N°:			
2.5	Spec N°:			
2.6	Control Box Type:			
2.7	Electrical Supply:			
2.8	Main Gas Valve Type & Size:			
2.9	Pilot Gas Valve Type & Size:			
2.10	Gas Booster Type & Size:			
2.11	Gas Booster Serial No:			
3.0	BURNER SETTINGS			
3.1	Main Burner Injector Size	mm		
3.2	Pilot Burner Injector Size	mm		
3.3	Electrode/Ionisation Setting (to manufacturers instructions)			
3.4	Are Burners & Injectors Clean			
3.5	Oil Nozzles:	High Fire	Size:	
		Low Fire	Type:	
4.0	PRE-COMMISSIONING CHECKS (See Notes)	Yes	No	N/A
4.1	Is boiler house ventilation as per the relevant B.S.			
4.2	Electricity supply fused, isolated & earth wire connected.			
4.3	Check external controls allow operation			
4.4	Check boiler/system filled and pumps operational & any isolation valves open			
4.5	Check gas available at burner			
4.6	Check oil available at burner			
4.7	Check gas meter fitted & sized adequately			
5.0	FLUE SYSTEM CHECKS	Yes	No	N/A
5.1	Flue Type	Conventional		
		Room Sealed		
		Fan Dilution System		
		Balanced Compartment		
		Plant Room Door Interlocked Fan Assisted		
5.2	Draught Stabiliser Fitted			
5.3	Is Flue System Clear			
5.4	Flue Header Diameter	mm		
5.5	Stack Diameter	mm		
5.6	Flue Type & 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 diameter Approximate Overall Height.....m			

6.0	COMBUSTION	Pilot	Low	High	Unit
6.1	Inlet Gas Supply Pressure (All Boilers running)				mbar
6.2	Burner Pressure				mbar
6.3	Gas Rate				m³/hr
6.4	Oil Pump Pressure				Bar
6.5	Ionisation Probe Current				µA
6.6	Air Shutter Position				----
6.7	O ₂				%
6.8	CO ₂				%
6.9	CO				ppm
6.10	Smoke Number				-
6.11	Nett Flue Gas Temperature				°C
6.12	Flue Draught				mmwg
6.13	CO ² At Flue Dilution Outlet				%
6.14	Burner Fan Static Pressure				mmwg
6.15	Combustion Chamber Resistance				mmwg
7.0	OPERATIONAL SAFETY CHECKS				
7.1	Check Control Thermostat Operation				
7.2	Check Limit Thermostat Operation				
7.3	Check High/Low Thermostat Operation				
7.4	Check For Gas Leaks				
7.5	Check For Gas Leakage Past Valve Assembly				
7.6	Check For Oil Leaks				
7.7	Check boiler Locks Out On Loss Of Flame Signal				
7.8	Check boiler Locks Out On Air Pressure Switch Operation				
7.9	Check Boiler Inhibits On Gas Inlet Pressure Switch				
7.10	Boiler Locks Out On All Other Safety Functions				
7.11	Check For Flue Spillage				
7.12	Check Thermocouple Operation				
7.13	Check Thermocouple Interrupter Operation				
7.14	Check Gas Booster Interlock Operational				
7.15	Record Booster INLET and OUTLET Pressure Switch Settings:-				
	INLET OUTLET.....				
7.16	Record Burner/ Boiler INLET and OUTLET Pressure Switch Settings:-				
	INLET OUTLET.....				
8.0	BOILER/SYSTEM CHECK LIST				
8.1	Control Thermostat Setting				°C
8.2	High/Low Thermostat Setting				°C
8.3	Boiler Water Pressure				
8.4	Are Pipework Connections As Per Manual				
8.5	Is Safety Valve Fitted				
	If So, SIZE & MAKE:-..... PRESSURE RATING.....				
8.6	Are Water Isolating Valves Fitted				YES NO
8.7	Are Water Flow Switches Fitted				
8.8	Are Return Water Shut Off Or Diverter Valves Fitted				
8.9	Is Shunt Pump Fitted				
8.10	Is Pump Overrun Fitted				
SYSTEM WATER QUALITY					
8.11	PH Value				pH
8.12	TDS				PPM

COMMISSIONING REPORT (Continued)

		Yes	No	N/A
8.13	Is The Fan Interlocked With The Boiler?			
8.14	Are Flue Dampers Fitted?			
	If So Are They Interlocked?			
8.15	Fan Assisted Ventilation?			
	If So Interlocked			
8.16	Any Evidence Of Condensate Formation?			
8.17	Any Evidence Of Condensate Leakage?			
8.18	Any Evidence Of Water Leakage?			
8.19	Any Evidence Of Flue Gas Leakage?			
8.20	Has Boiler Been Built And Cased Correctly?			
8.21	Is Gas Service Cock Installed?			
	If So Is It Accessible?			
8.22	Is Oil Filter Fitted?			
8.23	Is Fire Valve Fitted?			
8.24	Oil Supply:			
	Single Pipe			
	Two Pipe			
	Ring Main			
9.0 NOTES & COMMENTS BY COMMISSIONING ENGINEER				

10.0	Comments On Accessibility For Maintenance

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	

NOTE: 6.7, 6.8 & 6.9 to be measured in secondary flue 600mm up from the flue socket or at the sampling point provided. Normally 6.12 and 6.14 are recorded when tappings provided. Position of measurement to be in accordance with boiler and/or burner manufacturers instructions.

- * Fully Electric Boilers
- s Thermo-Electric Boilers
- c Condensing Boilers
- p Pressure Jet
- o Oil

Items in *italics* are MANDATORY

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 as a permanent record. A commissioning service is available from Potterton Commercial at the address listed on the back page of this manual. When a Potterton Commercial engineer commissions the boiler this commissioning report will be filled in and left with the boiler. Commissioning by Potterton Commercial engineers is restricted to equipment of our supply. No responsibility will be accepted for the on site assembly or installation of the equipment unless specifically carried out by Potterton Commercial. The installer must ensure that the boiler is installed in accordance with the manufacturer's instructions and all relevant B.S. Codes of Practice and Regulation (see manufacturers instructions for full details).

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PCF No. 212-02

CONVERSION TABLE

	IMPERIAL TO METRIC	METRIC TO IMPERIAL
<u>HEAT</u> 1 Therm = 100,000 Btu/hr	1 Btu/hr = 0.291 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 dm ³ = 1 LITRE 1,000 dm ³ = 1 m ³	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 1 U.S. Gallon = 0.83 UK 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 = 0.358 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 = 25.4 mm 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 = 0.7577 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

Commercial Sales Technical and Service Enquiries

Potterton Commercial

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Birmingham B24 9QP

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Fax: 08706 001516
Sales Hotline: 08706 001991

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Service Hotline: 08702 412759
Service Fax: 08701 653000

e-mail: commercial@potterton.co.uk
web site: www.pottertoncommercial.co.uk

Spares

Potterton Commercial spares are available nationwide through the **interpart** network of approved stockists. Alternatively please contact:-

interpart

Brooks House
Coventry Road
Warwick
CV34 4LL

Tel: 08706 000454
Fax: 08706 000545

Applications and Installations

Our experienced technical and applications team are available to offer advice on any aspect of heating system design and boiler installation.

Please contact:

Tel: 08706 002322

Commercial Service

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

Our service department offers a wide range of specialised services including:-

- Boiler site assembly
- Burner commissioning for all fuels
- Boiler maintenance and maintenance contracts
- Breakdown and repair services
- Boiler dismantling and re-jointing
- Burner and boiler replacement
- Oil/gas conversions
- Systems conditioning
- Water treatment and descaling
- Packaged Units

"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"



heating specialists

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