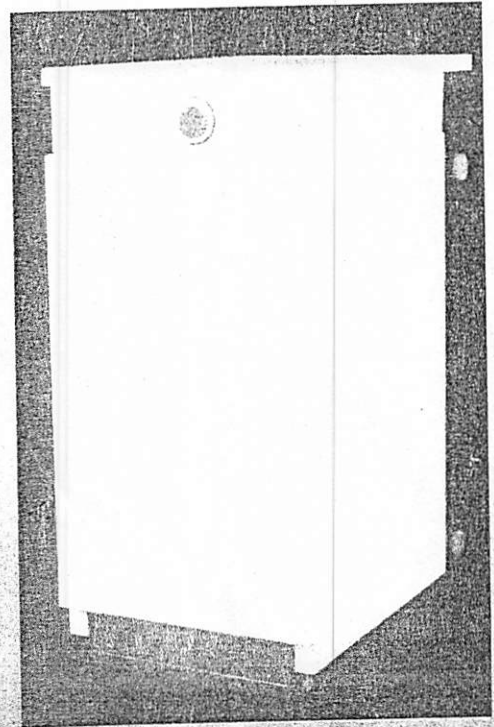




FIREBIRD

SUPER Q OIL BOILER



INSTALLATION
COMMISSIONING
SERVICING &
USER INSTRUCTIONS

THIS MANUAL MUST REMAIN
WITH THE HOUSEHOLDER ON
COMPLETION OF INSTALLATION

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2. **TECHNICAL SPECIFICATION**
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 - 2B Boiler Specification
 - 2C Boiler Operation
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FIREBIRD

This instruction manual is produced for the reference and guidance of qualified installation engineers.

E.U. legislation is currently being prepared governing the manufacture, operation and efficiency of all domestic oil boilers. One effect of this will be that boilers and burners will require to be supplied as matched units tested and approved to OFTEC Standard OFS A100.

FIREBIRD Boilers are full manufacturing members of OFTEC (Oil Firing Technical Association for the Petroleum Industry) and are participating in its testing and approvals programme to comply with OFS A100.

We earnestly recommend that boilers are installed, commissioned and serviced by fully qualified and experienced personnel.

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

FIREBIRD

The Firebird 'SUPER Q' boiler is designed and manufactured to meet all the latest European standards and the thermal efficiency requirements of the Boiler (efficiency) Regulations 1993.

It has a flexible output, ranging from 50,000 to 90,000 Btu/h and is available as a conventional flue model or separately as a room sealed unit with a rear outlet balanced flue kit.

The control panel assembly may be pulled forward, 'drawer like', for ease of servicing.

(See diagram page 9)

Clean combustion and quiet operation is assured by a highly efficient matching pressure jet burner which produces very low No_x emissions.

The 'SUPER Q' boiler is suitable for all open vented central heating systems and indirect hot water systems. It can be used in sealed systems with the appropriate safety equipment, up to a working pressure of 3 bar.

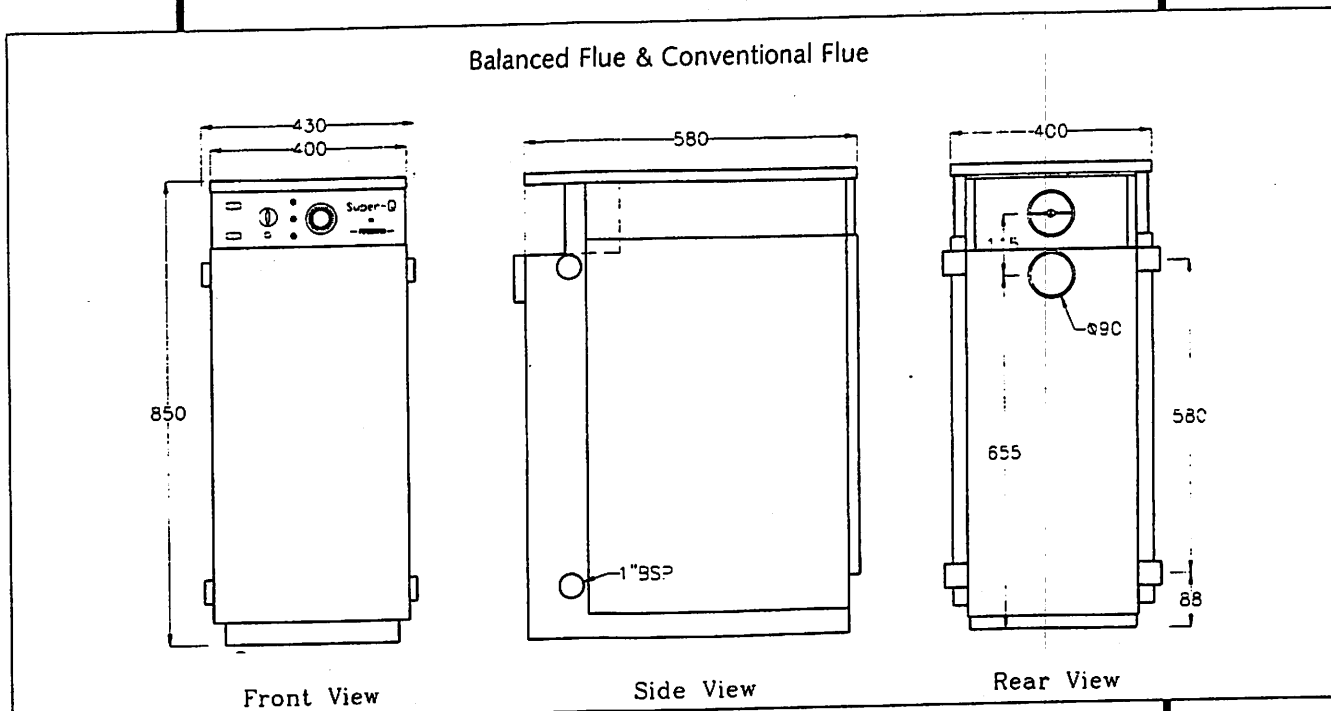
A facility for fitting a drain off cock is included inside the boiler casing under the burner and there are flow and return sockets provided on both sides of the boiler for connection to the heating and hot water systems.

As all servicing can be carried out from the front, the boiler may be fitted under a kitchen worktop if required. The room sealed models are also ideal for installation in a garage or outhouse.

The burner is factory set for use with kerosene 28 second class C fuel. However, 35 second gas oil may be used on a conventional flue installation - if a pre-heater kit is installed.

FIREBIRD

2-A Super Q 90-(0) Boiler Dimensions



Boiler
overall
dimensions

Dimensions

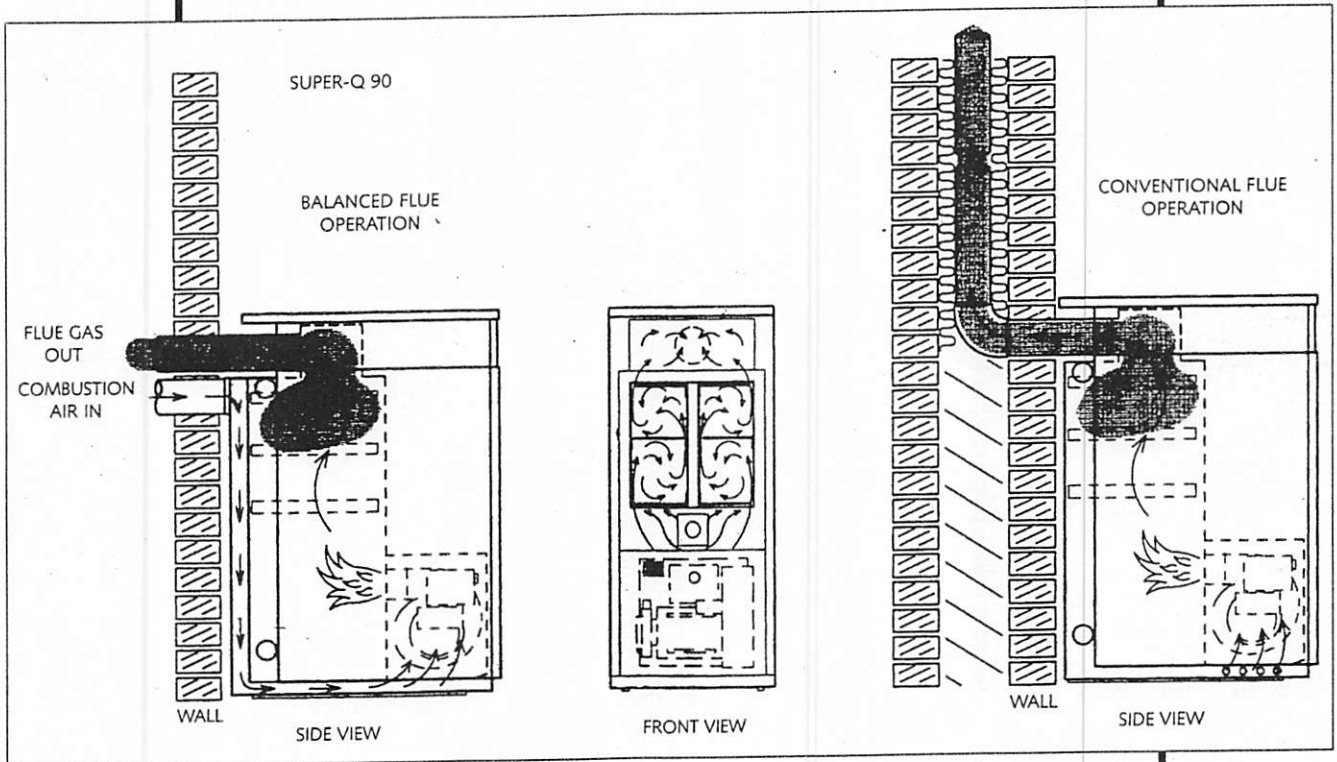
Height: 845mm (33¹/₄") Depth: 590mm (23¹/₄") Width: 385mm (15")

2-B Boiler Specifications

Heat Output	50-90,000 Btu/h.
Pressure Jet Oil Burner	Ecoflam - Minor I.
Flow & Return Connections	Flow 2 x 1" BSP. Return 2 x 1" BSP.
Drain Off Connection	One 1/2" BSP socket & plug fitted.
Flue Options	(A) Conventional 5". (B) Balanced Flue room-sealed. Rear outlet 3" Ø.
Control Thermostat	Adjustable between 65°C - 85°C.
Limit Thermostat	Factory set at 110°C.
Electrical Supply	240v. AC 50Hz. 5 amp fuse.
Fuel	28 sec. kerosene. (with 35 sec. gas oil a pre-heater kit must be used - not available on balanced flue installations)

FIREBIRD

2-C Boiler Operation



2-D Burner Specification - Ecoflam Minor 1 BR ST

The Ecoflam Minor I burner is factory set to suit approximately 65,000 Btu/h output. Adjustments will be required to suit output levels of 50,000 Btu/h to a maximum of 90,000 Btu/h dependent upon the system heating load requirement. (See output table below).

TYPICAL PERFORMANCE INDICATORS USING STANDARD DANFOSS H TYPE NOZZLES

- A) Individual nozzle outputs may vary from that shown on table below.
 - B) If replacing standard nozzles with new Kerosene Type E, please carefully consult accompanying literature and reset pump pressure and combustion air according to output required.
- Carry out combustion test to confirm correctness of adjustments

Monoflame Minor One

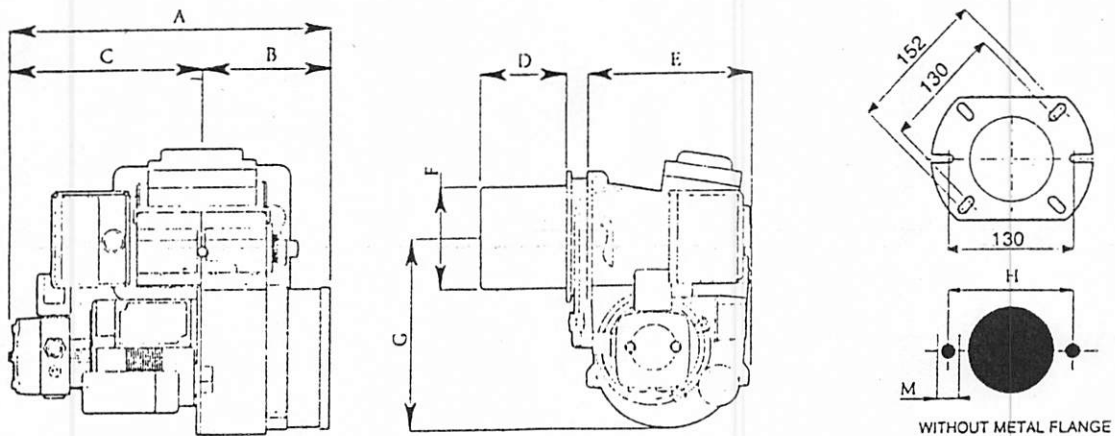
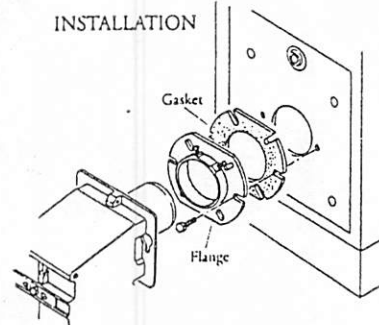
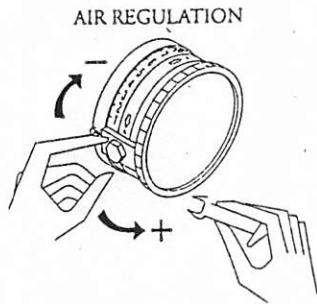
Boiler Type	Nozzle	Pump Pressure	No. of Baffles	Fuel (l/h)	Approx CO ₂	Nett Flue Gas Temp.*
Oftec SQ 50/90	0.50° 80°H	8 bar	5	1.81	13%	under 200°C
	0.50° D	10 bar	5	2.03	13%	under 215°C
	0.60° A	8 bar	6	2.30	13%	under 185°C
	0.60° N	10 bar	6	2.58	13%	under 195°C
	0.65° F	8 bar	6	2.76	13%	under 215°C
	0.65° O	10 bar	6	3.04	13%	under 225°C
	0.75° S	8 bar	6	2.61	13%	under 205°C
	0.75° S	10 bar	6	2.93	13%	under 220°C

*Variations in draught can effect flue gas temperature therefore it may vary from figures given.

Also see
Flue
Systems
pages
18 & 19

2-D Burner Specification - Ecoflam Minor 1 BR ST

Make sure there are no leaks on flexible oil line connections. Bleed air from the pump. Switch on boiler. Turn the thermostat to the required setting. The burner will purge for approximately 13 seconds. At this point the oil valve opens and oil is ignited. In case of no ignition the burner goes to lock out in 10 seconds



MODEL	A	B	C	D	E	F	G	H	M
MINOR 1 BR ST	270	110	160	65	165	89	160	125	M8

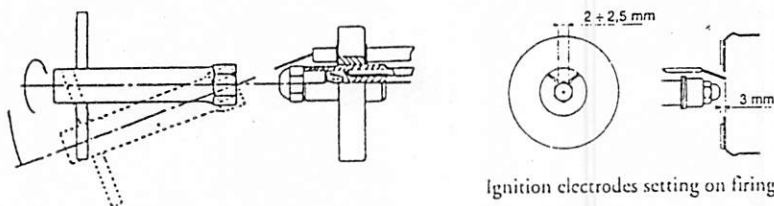
Nozzle Replacement

Remove nozzle carefully taking great care not to damage the electrodes.

Fit new nozzle with the same care.

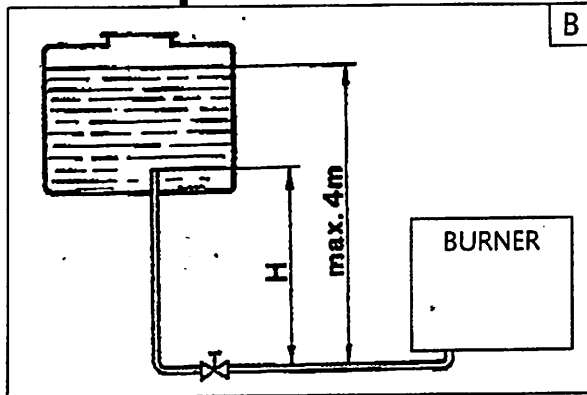
Note: Always check the position of the electrodes after replacing the nozzle

(Follow diagram below)



Ignition electrodes setting on firing head

2-D Burner Specification - Ecoflam Minor 1 BR ST



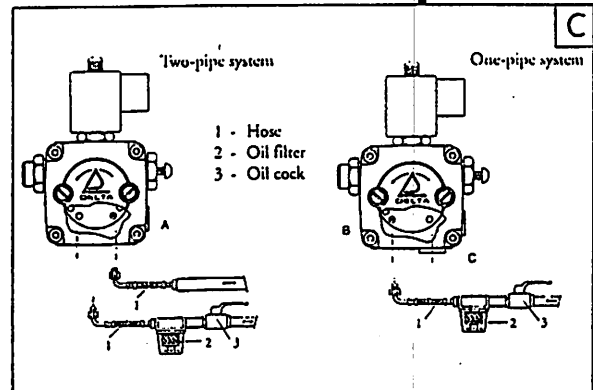
Oil Lines

Priming the pump

Loosen the plug of the suction gauge and wait until the fuel flows out.

H (m)	L Meters	
	I.D. 8mm	I.D. 10mm
0.5	10	20
1	20	40
1.5	40	80
2	60	100

H (m)	L Meters	
	I.D. 8mm	I.D. 10mm
0	35	100
0.5	30	100
1	25	100
1.5	20	90
2	15	70
3	8	30
3.5	6	20



WARNING

The burner is supplied for use with a one pipe system.

For use on a two pipe system

It is necessary to remove the pump cover and fit the pump by-pass plug A supplied as a burner accessory. (See diagram C).

Also please refer to separate burner instruction booklet as alternative oil pump may be fitted.

The pump suction should not exceed a maximum of 0.4 bar (30 cm Hg). Beyond this limit gas is released from the oil.

Oil lines must be completely airtight.

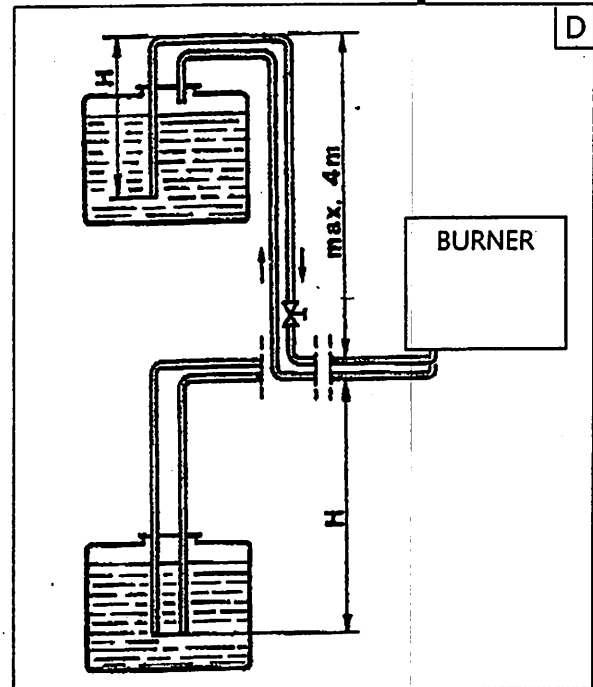
The return line should terminate within the oil tank at the same level as the suction line; in this case a non-return valve is not required. Should however the return line arrive over the fuel level, the non-return valve is indispensable. This solution however is less safe than previous one, due to the possibility of leakage of the valve.

PRIMING THE PUMP

Start the burner and wait for the priming. Should lock-out occur prior to the arrival of the fuel, await at least 20 seconds before repeating the operation.

WARNING

Before starting the burner make sure that the return pipe-line is not clogged; any obstruction would cause the pump seals to break.



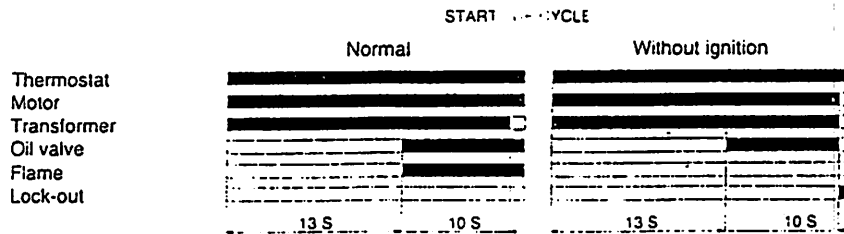
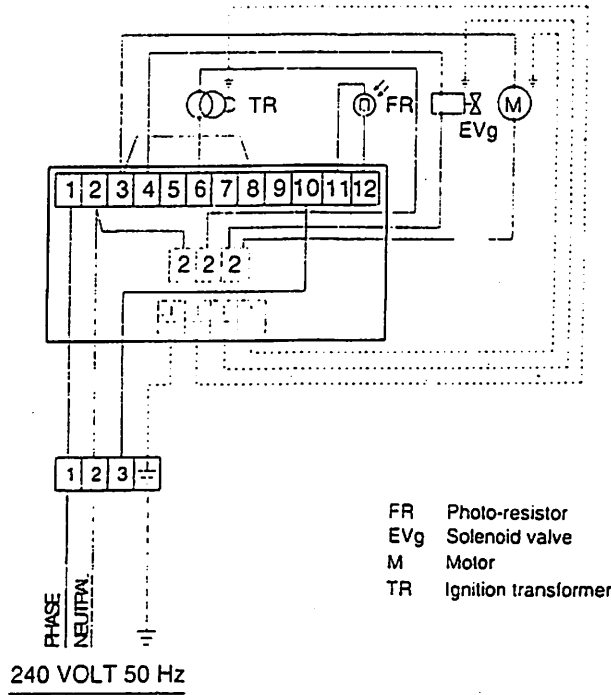
H = Difference of level
L = Length of suction line
I.D. = Int. Dia of oil pipe lines

FIREBIRD

2-D Burner Specification - Ecoflam Minor 1 BR ST

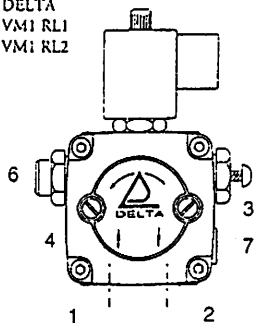
ELECTRICAL WIRING
Control Box LANDIS LOA 21/24

ELECTRICAL WIRING
Control Box LANDIS LOA 21/24



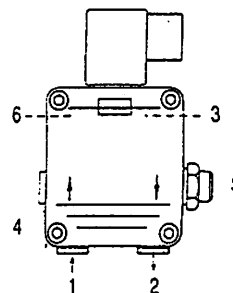
2-D Burner Specification - Ecoflam Minor 1 BR ST

DELTA
VM1 RL1
VM1 RL2



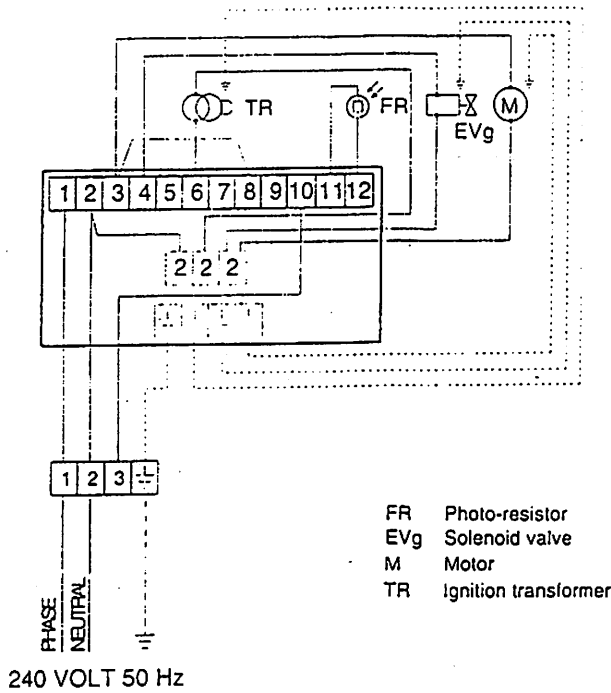
- 1 - INLET
- 2 - RETURN
- 3 - BLEED AND PRESSURE GAUGE PORT
- 4 - VACUUM GAUGE PORT
- 5 - PRESSURE ADJUSTMENT
- 6 - NOZZLE OUTLET
- 7 - BLEED AND PRESSURE GAUGE PORT

DANFOSS BFP 11 R3



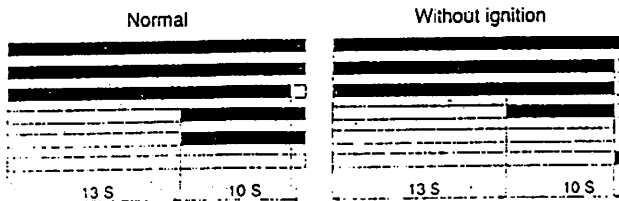
The pump setting is carried out in the factory during testing. To prime the pump first of all start the burner and bleed air from the pump through the gauge port. If the burner goes to lock-out after the prepurging time due to lack of pressure in the oil pump, restart the burner.

ELECTRICAL WIRING Control Box LANDIS LOA 21/24



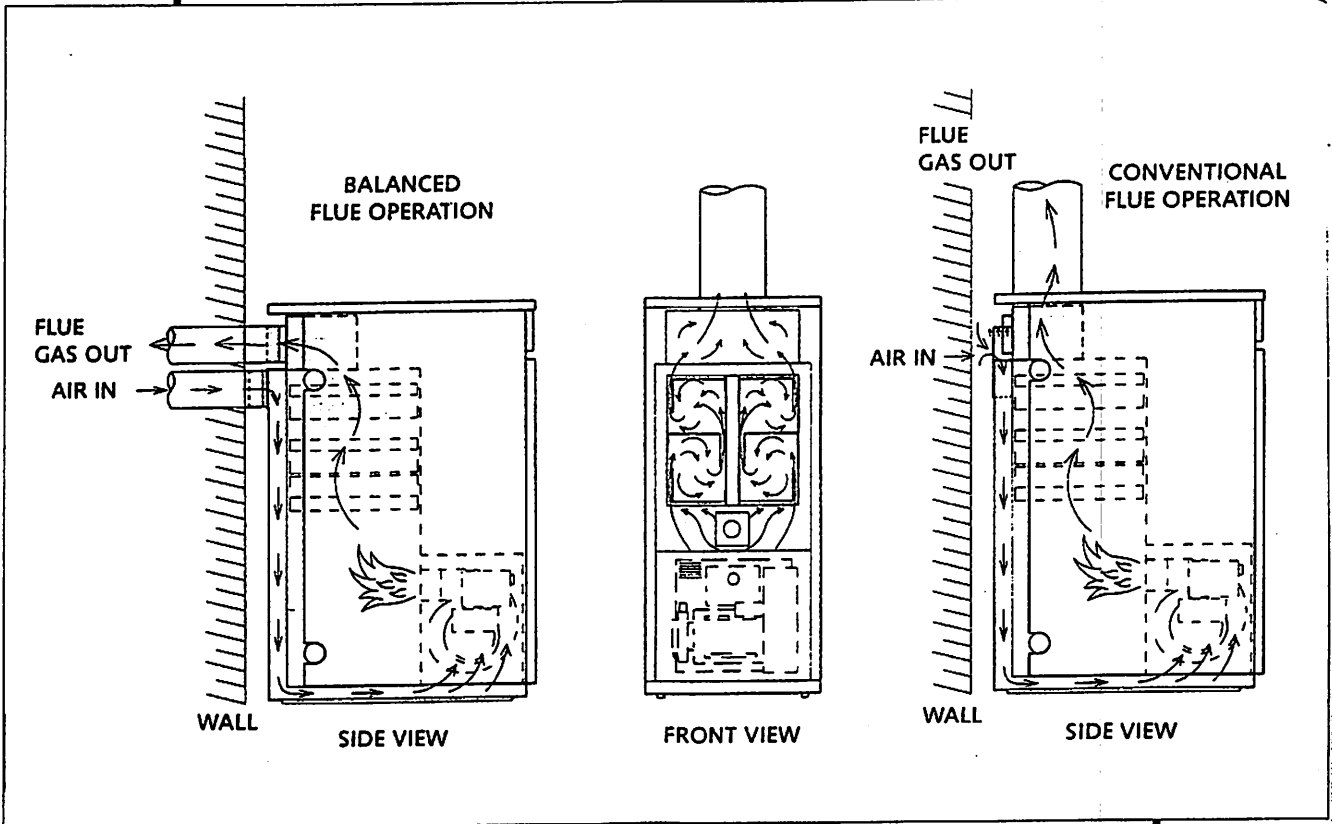
START - UP CYCLE

Thermostat
Motor
Transformer
Oil valve
Flame
Lock-out



FIREBIRD

Boiler Operation - Riello 3GX



2-E Burner Specification - Riello 3GX

The standard Riello 3GX burner is factory set to suit approximately 65,000 Btu/h output. Adjustments will be required to suit output levels of 50,000 Btu/h to a maximum of 82,000 Btu/h dependent upon the system heating load requirement.

TYPICAL PERFORMANCE INDICATORS USING NEW DANFOSS KEROSENE EH NOZZLE

Size	.50*	.50	.50	.60	.60	.65	.65	.75	.75
Angle	80°	80°	80°	80°	80°	80°	80°	80°	80°
Fuel	← Kerosene 28 sec →								
Pump Pressure	7bar	8bar	10bar	8bar	10bar	8bar	10bar	8bar	10bar
Litres per hour	2.02	2.09	2.23	2.24	2.32	2.27	2.54	2.59	2.94
Output Btu/h	51452	60000	64025	64310	66607	65170	78000	74400	84500

***NOTE: IMPORTANT**

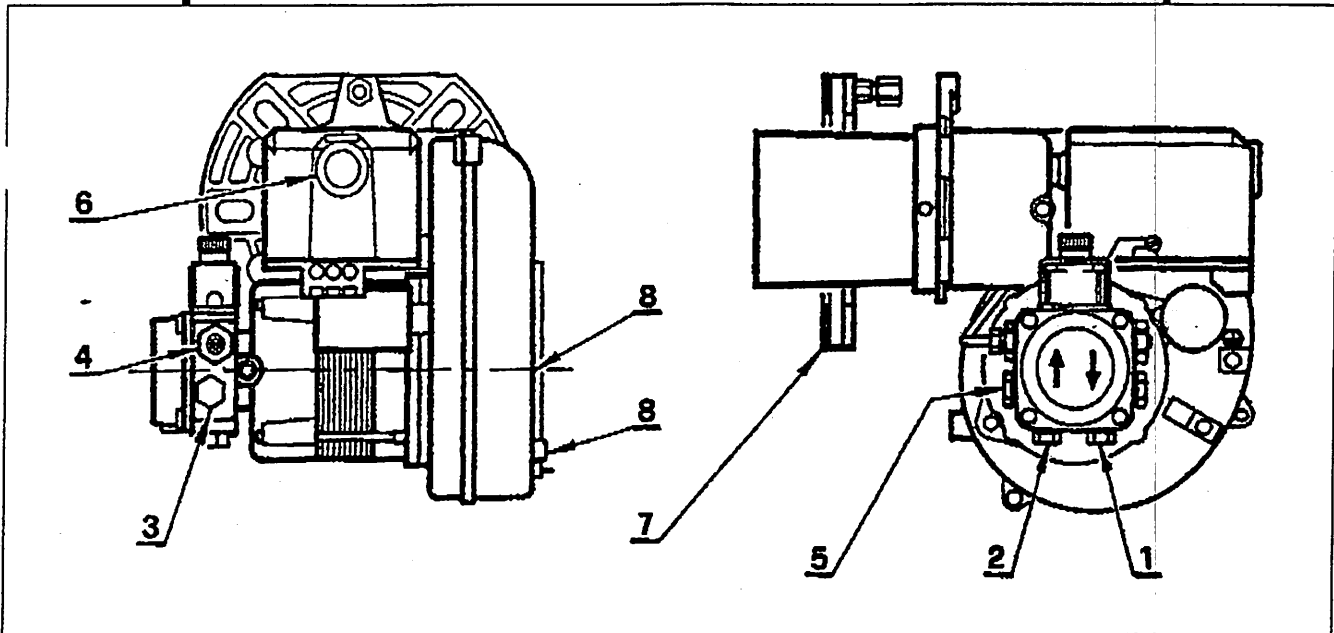
When using a .50 nozzle at seven bar pump pressure remove centre baffle. See illustration above.

FIREBIRD

2-E Burner Specification - Riello 3GX

Thermal Power Output	19-35 - 1.6-3 kg/h
Fuel	Kerosene
Electrical Supply	Single phase 240V +10% - 15% ~ 50Hz
Motor	Run current 0.85 A - 2850 rpm - 298 rad/s
Capacitor	4 μ F
Ignition Transformer	Secondary, 8 kV - 16 mA
Pump	Maximum pressure with kerosene- 10 bar (143 psi)
Absorbed Electrical Power	0.15 kW

- Cod. 3743651 with nozzle type 0.65 GPH 80°
- Cod. 3743652 with nozzle type 0.75 GPH 80°

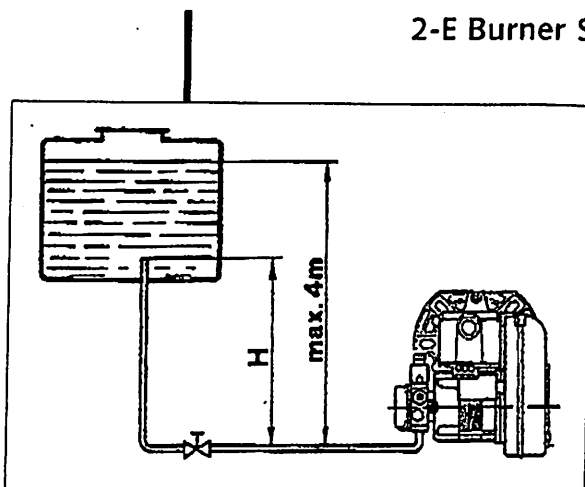


1. Return Line
2. Suction Pump
3. Gauge Connection
4. Pump Pressure Regulator
5. Suction Gauge Connection
6. Lock-out Lamp and Reset Button
7. Flange with Insulating Gasket
8. Screws Fixing Air-damper

Qty	Description
1	Flexible pipe with union
1	Flange with insulating gasket
2	Screws and nuts for flange
1	Screw
1	Screw with two nuts for flange

FIREBIRD

2-E Burner Specification - Riello 3GX



Oil Lines

Priming the pump

Loosen the plug of the suction gauge and wait until the fuel flows out.

H (m)	L Meters	
	I.D. 8mm	I.D. 10mm
0.5	10	20
1	20	40
1.5	40	80
2	60	100

H (m)	L Meters	
	I.D. 8mm	I.D. 10mm
0	35	100
0.5	30	100
1	25	100
1.5	20	90
2	15	70
3	8	30
3.5	6	20

WARNING

The burner is supplied for use with a one pipe system. For use on a two pipe system, it is necessary to remove the pump cover and fit the pump by-pass plug A supplied as a burner accessory.

The pump suction should not exceed a maximum of 0.4 bar (30 cm Hg). Beyond this limit gas is released from the oil.

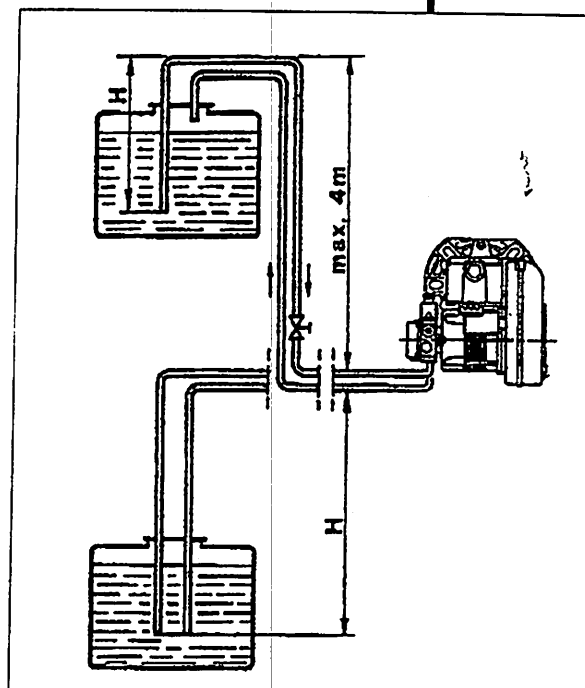
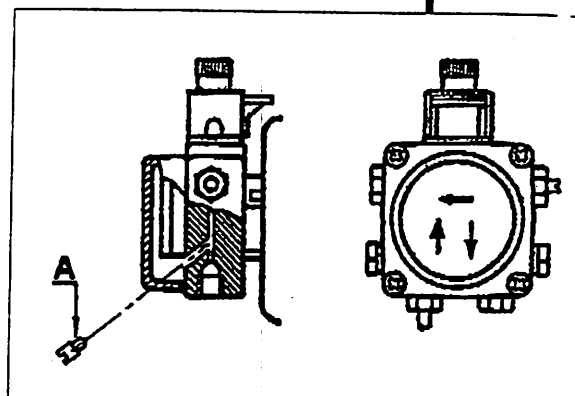
Oil lines must be completely airtight. The return line should terminate within the oil tank at the same level as the suction line; in this case a non-return valve is not required. Should however the return line arrive over the fuel level, the non-return valve is indispensable. This solution however is less safe than previous one, due to the possibility of leakage of the valve.

PRIMING THE PUMP

Start the burner and wait for the priming. Should lock-out occur prior to the arrival of the fuel, await at least 20 seconds before repeating the operation.

WARNING

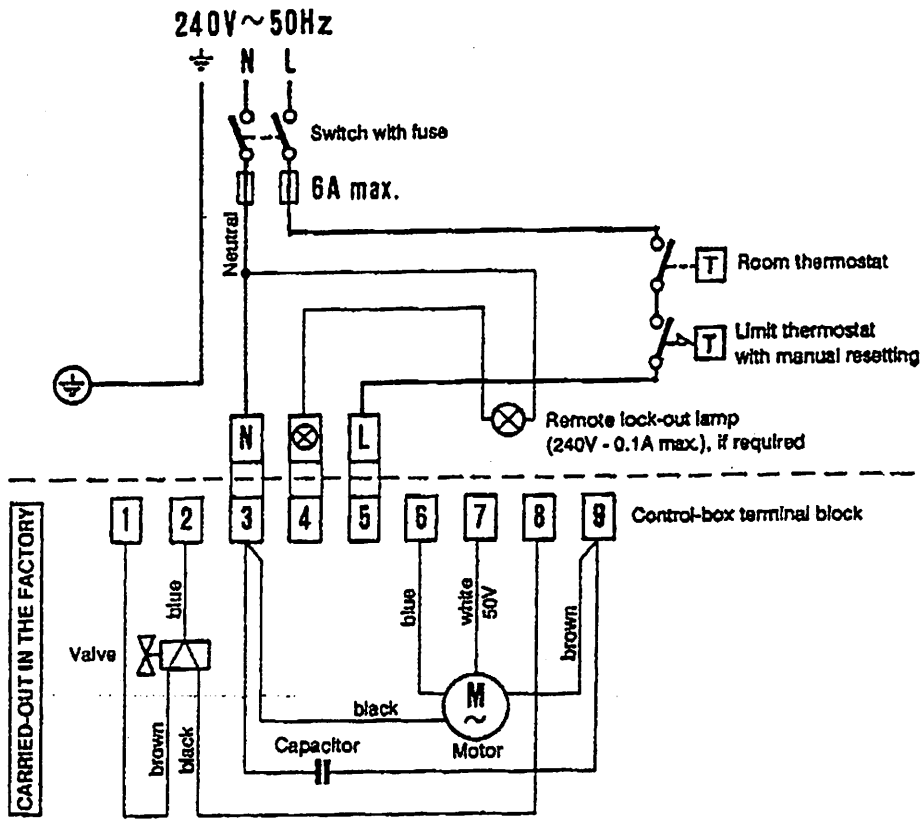
Before starting the burner make sure that the return pipe-line is not clogged; any obstruction would cause the pump seals to break.



H = Difference of level
 L = Length of suction line
 I.D. = Int. Dia of oil pipe lines

2-E Burner Specification - Riello 3GX

ELECTRICAL WIRING



NOTES

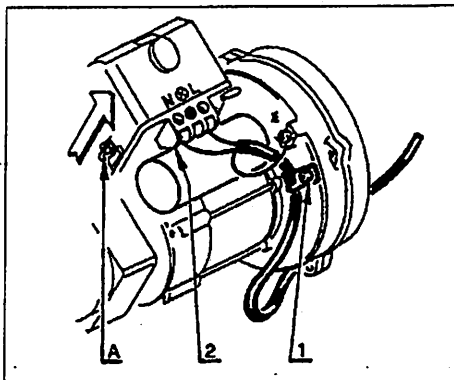
Wires of 1mm² section.
Do not exchange line with neutral.

To remove the control-box from the burner, loosen screw (A) (see figure) and pull towards the arrow.

The photoresistance is fitted directly onto the control-box (underneath the ignition-transformer) on a plug-in support.

TESTING

Check the shut-down of the burner by opening the thermostats.



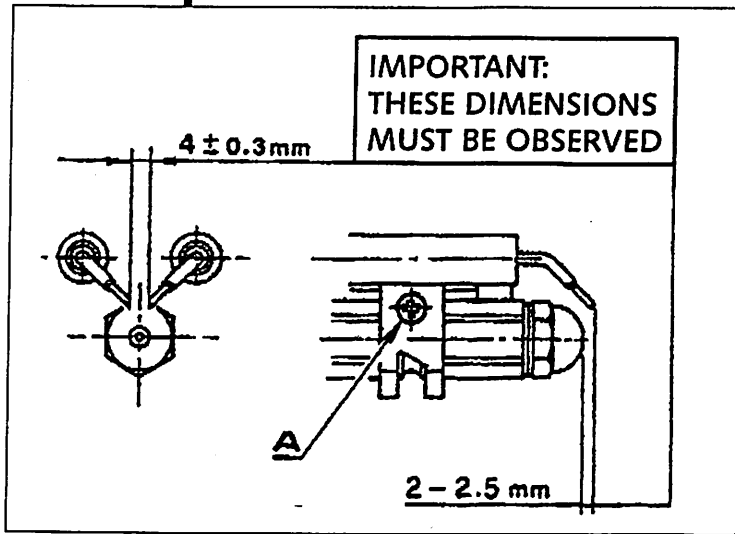
Run of the electrical cable

- 1) Cable-clamp
- 2) Terminal block

FIREBIRD

2-E Burner Specification - Riello 3GX

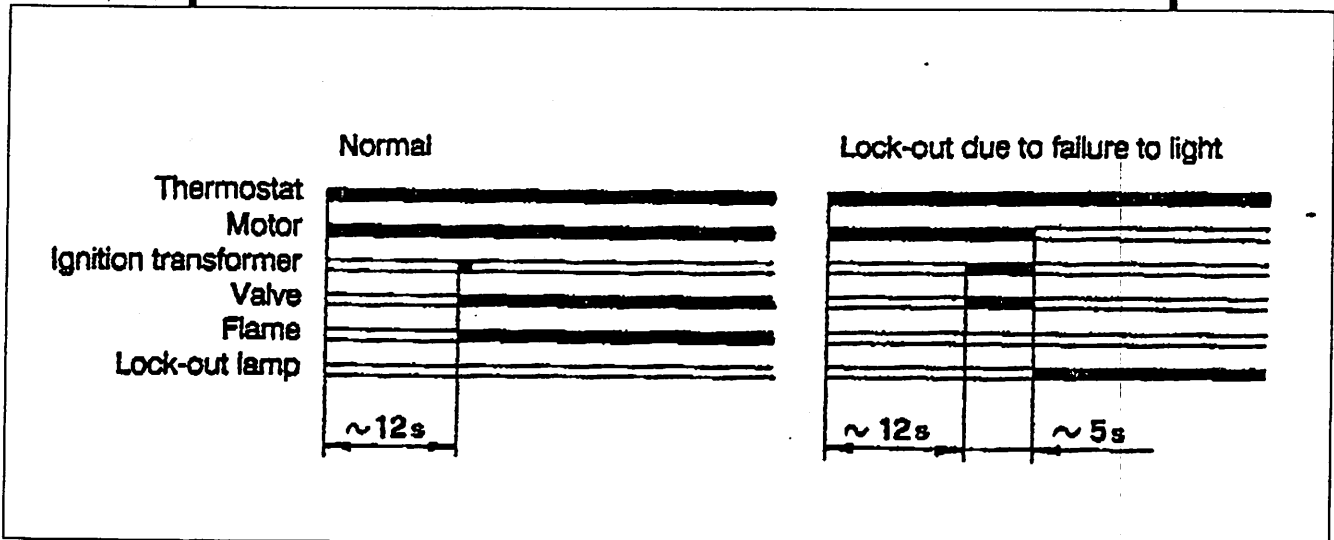
ELECTRODE SETTING



Attention

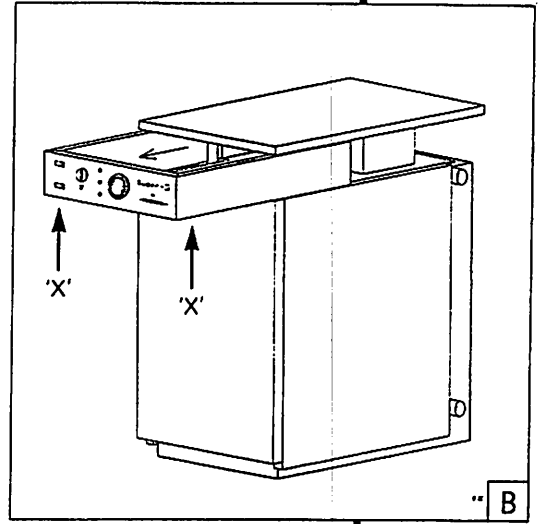
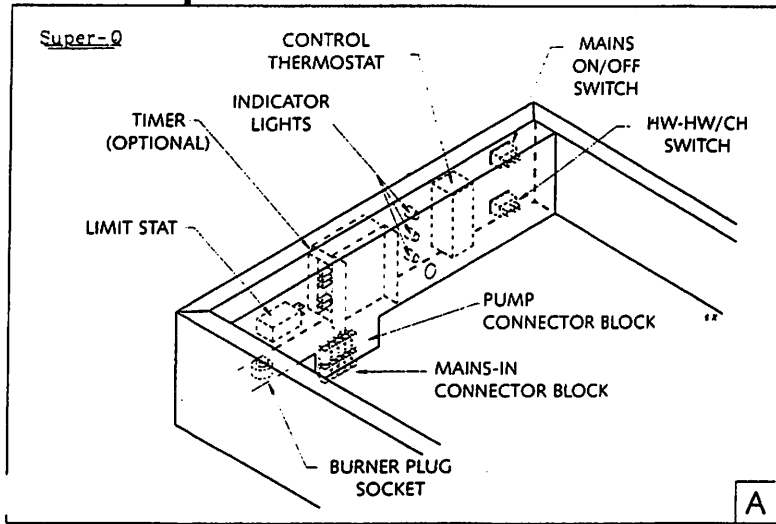
Before assembling or removing the nozzle the screw (A) and move the electrodes ahead.

BURNER START-UP CYCLE



NOTE: Information provided relevant to Riello G 3X Burner.
The Firebird Olympic has been tested and will operate equally efficiently using an appropriate Monoflame burner.

2-F Control Panel Layout



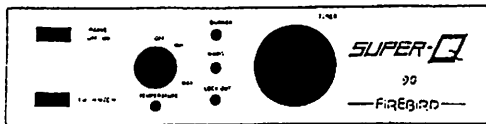
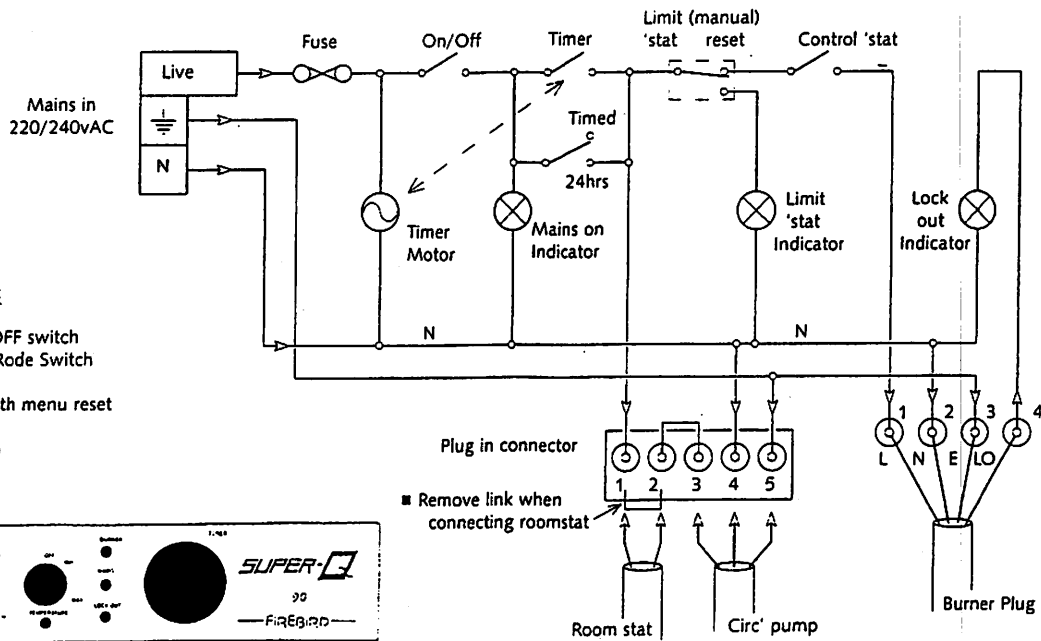
The control panel face is designed for simplicity of use and consists of rocker control switches, a thermostat adjustment knob and optional time control. The control panel may be withdrawn as in diagram 'B' & 'F' (page 10) by undoing screws 'x-x' under its bottom edge. Front door panel must be removed first.

FIREBIRD SUPER-Q

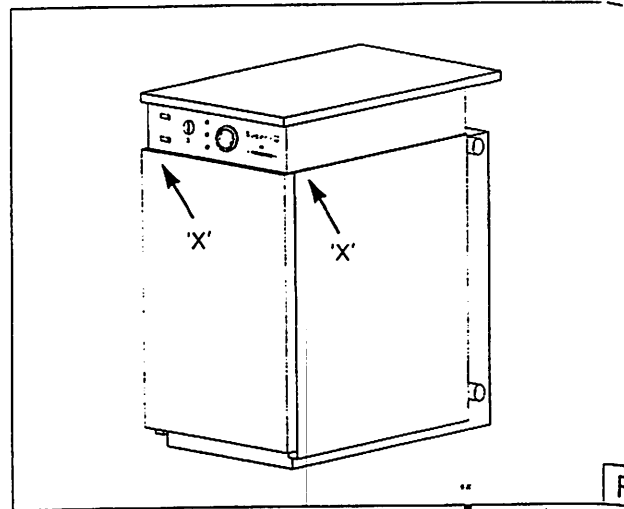
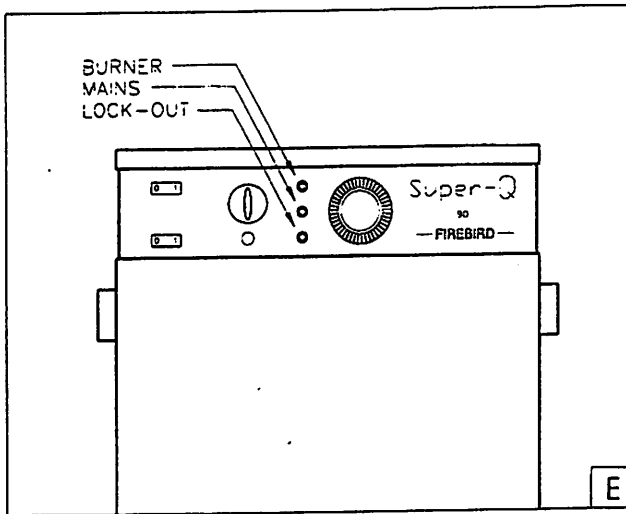
Schematic Wiring Diagram

Model F4. - U.K. Pattern with Timer (Optional)
For open and sealed heating systems.

Indicator Lights



FIREBIRD



3-A Boiler Controls

The F4 control panel illustrated above is equipped with the following:

Three indicator lights. These are:

1. Mains On.
2. Limit 'Stat'. Activated when lighting.
3. Burner Lock-out. Activated when lighting.

The panel also contains:

4. Mains 'on' rocker switch.
 5. Timer override switch
 6. HW-CH/HW switch.
 7. Boiler thermostat control.
 8. Time control (optional).
 9. Limit-stat reset button.
- Under bottom edge of panel
(see diagram above)

3-B Operating Procedure

To start the boiler follow this sequence:

- Turn on fuel supply.
- Switch power supply to boiler 'ON'.
- Activate the boilers 'mains on' switch.
- Set the boiler thermostat to the required temperature.

The boiler thermostat controls the boiler operation by automatically maintaining the required boiler water temperature output. Safe operation is also maintained by the burner control system which provides the required ignition and shut off sequence.

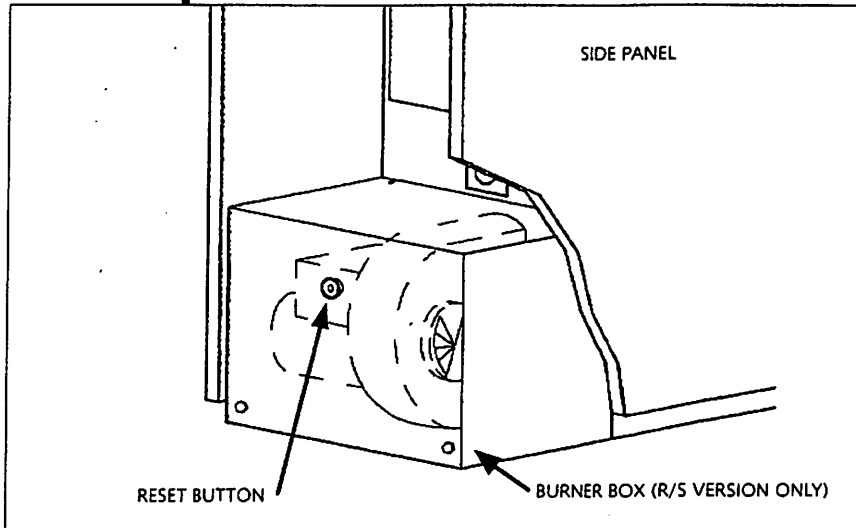
If the optional timer control is fitted this will automatically switch the boiler off and on when heat is required.

The boiler can be turned off by any of the following means:

- Turn the timer control (if fitted) to OFF.
- Turn the boiler thermostat to OFF.
- Turn the mains 'ON' switch to OFF.
- Turn OFF the mains electrical supply to the boiler.

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3-C Burner Lockout



On R.S. Balanced Flue Boilers the burner lock-out can be reset without removing burner cover by pressing the soft plastic button on the outside of this cover. On conventional Flue Boilers the reset button can be pressed directly

The boiler is factory fitted with a burner control box lockout safety feature which operates automatically if a fault occurs in the burners operation. Should this happen, the red light on the control panel of the boiler will illuminate and the cause must be investigated. This could be:

- A. An interruption in the fuel supply.
- B. An electrical supply fault.
- C. A fault with the burner or its safety control system.
- D. The failure of a component.

It is important that before restarting the boiler the front panel is removed and a visual check made for any obvious problems such as oil leaks.

To restart the boiler:

1. Ensure that the boiler thermostat, time switch (if fitted) and any external controls connected to the boiler are set to call for heat.
2. Check that the oil supply valves are open and that there is sufficient oil in the tank.
3. Check that the burner lockout light is unlit and with the 'MAINS ON' the boiler will be ready to commence its start sequence.

3-D Servicing

The boiler requires servicing on an annual basis to ensure it maintains its efficiency, continues to perform reliably and as a regular check on its built in safety features.

It is important that servicing should be conducted by a competent engineer, preferably one who is OFTEC trained and registered.

Please note: As a pre-heater kit is necessary to use 35-second gas oil (only on conventional flue applications) this means that annual servicing is sufficient - as it is for 28-second kerosene systems.

See section 8 for servicing instructions.

FIREBIRD