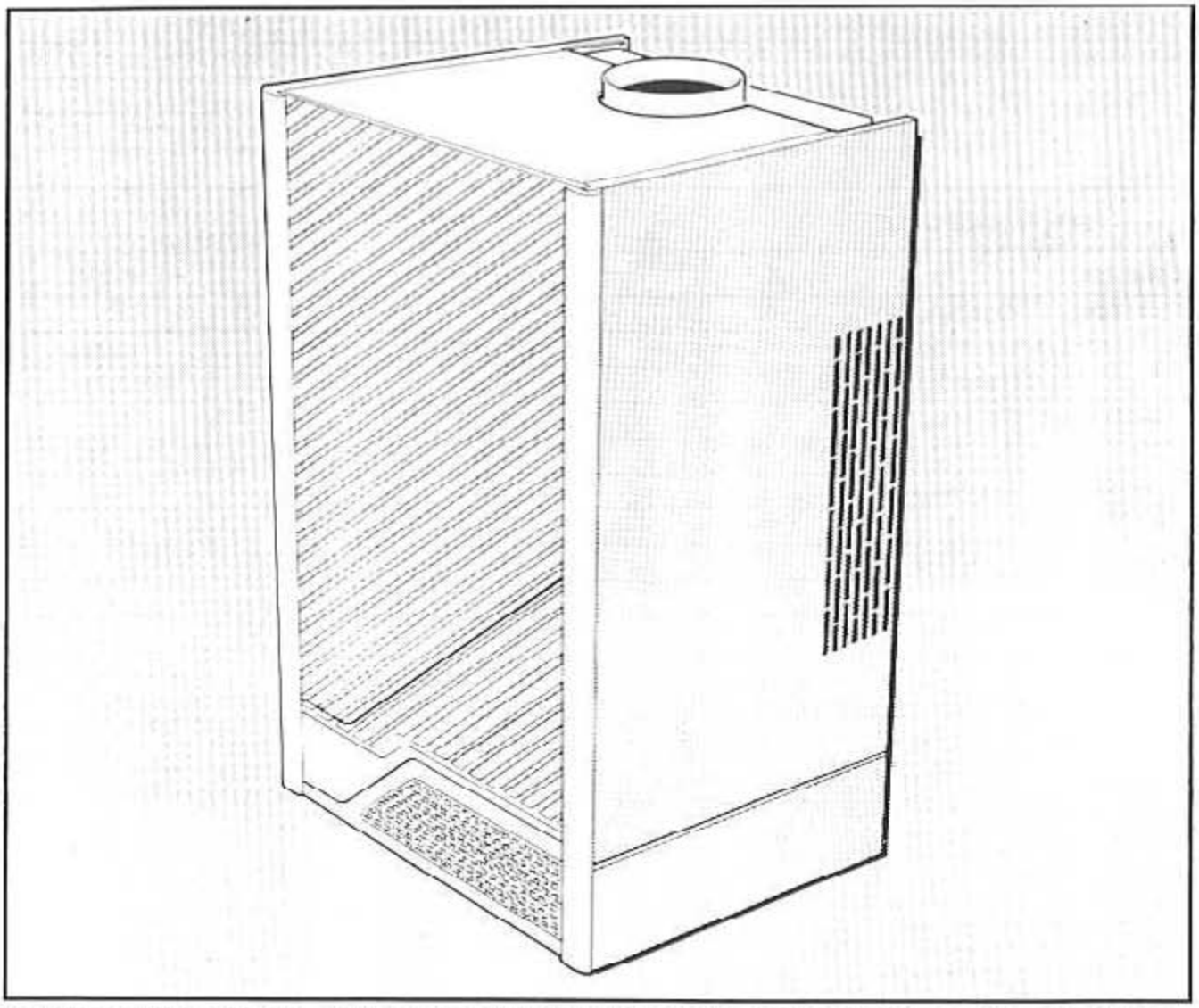
April, 1987

IDEAL
ELAN 2; CF. 40P, 50P & 60P
Wall Mounted, Open Flue, Gas Boilers
Installation & Servicing

CAUTION:
To avoid the possibility of injury during the installation servicing or cleaning of this appliance, care should be taken when handling the edges of sheet steel components.

IMPORTANT: These appliances are for use with PROPANE ONLY

Note: The appliances covered by this book are fitted with 'Honeywell' gas control valves



NOTE TO INSTALLER: LEAVE THESE INSTRUCTIONS ADJACENT TO THE APPLIANCE

STELRAD GROUP

GENERAL

Table 1 - GENERAL DATA

Boiler Size			CF 40 P	CF 50 P	CF 60 P
Main Burner			FURIGAS- Type R No. 118 500 043	AEROMATIC AC 19/ 123 238	
Gas Control Valve			½ BSP HONEYWELL V.4700E 1007-240V (regulator sealed)		
Burner Injector			Bray Cat. 10 size 440	Bray Cat. 10 size 520	Bray Cat. 10 size 650
Pilot Injector			HONEYWELL - 45 000 062/ 012		
Gas Supply Connection		in.BSP/I	Rc ½ ½		
Flue Connection, mm (ins.)			100 (4)		
Flow connection & Return connection			22 mm OD Copper		
MAXIMUM Static Water Head		m ft	30.5 100		
MINIMUM Static Water Head		m ft	0.45 1.5		
Electrical Supply			240 V, 50 Hz ~		
External Fuse Rating			3 A		
Water Content		Litre (gal)	1.0 (0.22)	1.2 (0.27)	
Dry Weight		kg (lb)	20.1 (44.3)	20.8 (45.9)	
MAX. Installation Weight		kg (lb)	14.5 (32.0)	15.2 (33.5)	
Boiler Size	Height	mm (in)	600 (24)		
	Width	mm (in)	380 (15)		
	Depth	mm (in)	300 (12)		

Table 2 - PERFORMANCE DATA

Boiler Size			CF 40 P	CF 50 P	CF 60 P
Boiler Input	NOMINAL	kW	13.2	18.4	22.3
		Btu/h	45 000	62 800	76 000
	Gas Consumption	l/s (ft³/h)	0.142 (18.05)	0.196 (24.91)	0.233 (29.60)
Boiler Output to water	NOMINAL	kW	10.3	14.4	17.6
		Btu/h	35 000	49 000	60 000
Burner Setting Pressure (Hot)	NOMINAL	mbar	36.0	36.2	36.2
		in.w.g.	14.4	14.5	14.5
Inlet Pressure	NOMINAL	mbar	37.0	37.0	37.0
		in.w.g.	14.9	14.9	14.9

Notes:

1. Gas consumption is calculated using a calorific value of 95 MJ/ m³ (2500 Btu/ ft³)
2. The appliance is preset at the factory to give the nominal output at an inlet pressure of 37 mbar (14.8 in.w.g)

GENERAL GUIDANCE

INTRODUCTION

The IDEAL ELAN 2 CF 40P, CF 50 P & CF 60 P are wall mounted lightweight, natural draught, open flue, gas boilers. They are range rated to provide central heating outputs of 10.3 kW (35 000 Btu/h) to 17.6 kW (60 000 Btu/h).

The boiler casing is of white enamelled mild steel, with a satinised white glass fascia. The controls pod, also of white enamelled mild steel, has fixed sides and a removable bottom panel.

A programmer kit is available as an optional extra and separate fitting instructions are included with the kit.

The glass fascia slides upwards to reveal the boiler thermostat controls and gas valve, and also the programmer (if fitted). With the fascia in the 'down' position the controls can be seen through an observation window.

The boilers are suitable for connection to fully pumped, open vented or sealed water systems.

Adequate arrangements for completely draining the system by provision of drain cocks MUST be provided in the installation pipework.

Gas Safety (Installation and Use) Regulations, 1984

It is the law that all gas appliances are installed by competent persons (e.g. CORGI, indentified by ⚙), in accordance with the above Regulations. Failure to install appliances correctly could lead to prosecution.

It is in your own interest, and that of safety, to ensure that the law is complied with.

The installation of the boiler MUST also be in accordance with the current I.E.E. Wiring Regulations, the Local Building Regulations, the bye laws of the Local Water Undertaking and any relevant requirements of the Local Authority. Detailed recommendations are contained in the following British Standards Codes of Practice.

Codes of Practice:

BS.5482:1	Domestic Butane & Propane burning appliances
BS.5376:2	Boilers of rated input not exceeding 60 kW.
BS.5449:1	Forced circulation hot water systems (small bore & microbore domestic central heating systems).
BS.5546	Installation of gas hot water supplies for domestic purposes (2nd Family Gasses)
BS.5440:1	Flues (for gas appliances of rated input not exceeding 60 kW)
BS.5440:2	Air supply (for gas appliances of rated input not exceeding 60 kW)

IMPORTANT It is important that no external control devices, (e.g. flue dampers, economisers, etc.), are directly connected to this appliance unless covered by these 'Installation & Servicing Instructions' or otherwise recommended by Stelrad Group Ltd., in writing.

If in doubt please enquire.

Any direct connection of a control device not recommended by Stelrad Group Ltd., could invalidate the normal appliance warranty. It could also infringe the Gas Safety Regulations and the above Regulations or other statutory requirements. Manufacturers notes must NOT be taken, in any way, as overriding statutory obligations.

LOCATION OF BOILER

The boiler may be installed on an internal or external wall.

The wall MUST be flat and vertical and capable of adequately supporting the weight of the boiler and any ancillary equipment.

The boiler may be fitted on a combustible wall and insulation between the wall and the boiler is not necessary - unless required by the Local Authority.

THE BOILER IS NOT SUITABLE FOR EXTERNAL INSTALLATION.

IMPORTANT NOTICE

If the boiler is to be fitted in a timber framed building it should be fitted in accordance with the British Gas publication 'Guide for Gas Installations in Timber Frame Housing' Reference DM2. If in doubt advice must be sought from Stelrad Group Ltd.

The boiler should NOT be installed in a bedroom and MUST NOT be installed in a room containing a bath or a shower.

A compartment used to enclose the boiler MUST be designed and constructed specially for this purpose.

An existing cupboard, or compartment, may be used provided it is modified for the purpose.

Details of essential features of cupboard/ compartment design, including airing cupboard installations, are given in BS.5376:2.

In siting the boiler, the following limitations MUST be observed.

1. The position selected for installation MUST allow adequate space for servicing in front of the boiler and for air circulation around the boiler.
2. This position MUST also permit the provision of a satisfactory flue and an adequate air supply.
   Installation in airing cupboards is NOT recommended.

GAS SUPPLY

The Local Propane Gas Supplier should be consulted, at the installation planning stage, in order to establish the availability of an adequate supply of gas.

Installation pipes, cylinders and pressure regulators should be fitted in accordance with BS.5482:1.

Bulk tank installations must comply with the requirements of the Home Office code of practice for the storage of liquified petroleum gas at fixed installations.

The complete installation MUST be tested for soundness as described in the above standard.

FLUING

The flue MUST be installed in accordance with the recommendations of BS.5440:1.

The following notes are intended for general guidance:

1. The cross-sectional area of the flue, serving the boiler, MUST be NOT less than the area of the flue outlet of the boiler.
   If flue pipe is to be used, it MUST be NOT less than 100 mm (4 in.) I.D.
2. Flue pipes and fittings, should be constructed from one of the following materials:
   (a) Aluminium or Stainless Steel.
   (b) Cast Iron - coated on inside with acid-resistant vitreous enamel.
   (c) Other approved material.
3. If double walled flue pipe is used, it should be of a type acceptable to British Gas.
4. If a chimney is to be used, it should preferably be one that is composed of, or lined with, a non-porous acid resistant material.
   Note: Chimneys lined with salt glazed, earthenware pipes, are acceptable if the pipes comply with BS.65 and BS.5440:1. A flue pipe, constructed from one of the materials in 2(a), 2(b) or 2(c) above, should form the initial connection to the lined chimneys. Where a chimney is to be used that is not composed of, or lined with, a non-porous, acid resistant material, it should be lined with a stainless steel flexible flue liner that is acceptable to British Gas. The internal diameter of the liner MUST NOT be less than 100mm (4 in), and the number of joints MUST be kept to a minimum.
5. Before connecting the boiler to, or inserting a liner into a flue that has been previously used - then the flue MUST be thoroughly swept clean of any soot or loose material. If a register plate, restrictor plate or damper, etc., is fitted in the flue then it MUST be removed before connecting the boiler to or inserting a liner into the flue.
6. The flue should terminate in accordance with the relevant recommendations given in BS.5440:1.

GENERAL GUIDANCE

7. The flue MUST be fitted with a terminal.
The terminal shall be of a type which has been tested, and found satisfactory, by British Gas this terminal must NOT be installed within 600 mm (24in) of an openable window air vent, or any other ventilation opening

IMPORTANT: It is absolutely ESSENTIAL to ensure, in practice, that the flue discharge is in a downdraught free zone and products of combustion discharging from the terminal cannot re-enter the building, or any other adjacent building, through ventilators windows doors other sources of natural air infiltration or forced ventilation/air conditioning systems Continuous spillage of the products of combustion must NEVER be allowed to issue from the draught diverter relief outlets. If this eventually should occur, the appliance MUST be turned OFF immediately and the Local Propane Gas Supplier called to investigate.

AIR SUPPLY

Detailed recommendations for air supply are given in BS 5440:2

The following notes are intended for general guidance

1. The room, or internal space, in which the boiler is installed MUST have, or be provided with, a permanent air vent. This vent MUST be either direct to outside air, or to an adjacent room, or internal space, which MUST itself have, or be provided with, a permanent air vent of at least the same size, direct to outside air
The minimum effective area of the permanent air vent(s) are specified below, and are related to maximum rated heat input of the boiler

Table 3

Boiler Size	CF 40P	CF 50P	CF 60P
Effective Area cm² (in²)	30 (5)	50 (6)	67 (11)

The air vents(s) must NOT have provision for closing or adjustment and should be sited to avoid risk of accidental damage or blockage.
If other methods of ventilation are envisaged, Stelrad Group Ltd should be requested to advise before proceeding

2. If the boiler is to be installed in a cupboard, or compartment, permanent air vents are required (for combustion, flue dilution and cooling purposes) in the cupboard, or compartment, at both high and low levels, to ensure safe and efficient combustion and ventilation.
The air vents may either communicate with a room/internal space appropriately ventilated, or be direct to outside air

The minimum effective areas of the permanent air vents required in the cupboard/ compartment, are specified below, and are related to the maximum rated heat input of the boiler

Table 4; CF 40 P

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm² (in²)	120 (20)	60 (10)
LOW LEVEL cm² (in²)	240 (40)	120 (20)

VENTILATION- WATER CIRCULATION

Table 5: CF 50 P

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm² (in²)	161 (25)	81 (13)
LOW LEVEL cm² (in²)	322 (50)	161 (25)

Table 6;- CF 60 P

Position of air vent	Air from room/ internal space	Air direct from outside
HIGH LEVEL cm² (in²)	196 (30)	98 (15)
LOW LEVEL cm² (in²)	392 (60)	196 (30)

Notes:

(a) Both air vents MUST communicate with the same room or internal space, or MUST be on the same wall to outside air

(b) Where cupboard/compartment air vents are open to a room or internal space, the room or internal space MUST itself be provided with a permanent air vent as previously specified

(c) The cupboard/compartment air vents MUST NOT communicate with a bedroom, bed sitting room, or a room containing a bath or shower

EFFECT OF AN EXTRACTOR FAN

If there is any type of extract fan fitted in the premises, there is a possibility that, if adequate air inlet area from outside is not provided, spillage of the products from the boiler flue could occur when the fan is in operation.
Where such installations occur, a spillage test, as detailed in BS 5440 1 MUST be carried out and any necessary action taken

VENTILATORS IN SERIES

In installations requiring two ventillators to be fitted in series e.g. across a cavity wall, EACH should be sized in accordance with the above data.
Where there are more than two ventilators in series, EACH should have an area of 50% in excess of the value quoted above

WATER CIRCULATION SYSTEM

Table 8;- WATER FLOW RATE PRESSURE LOSS

Boiler size			CF 40P	CF 50P	CF 60P
Boiler Output	kW		10.3	14.4	17.7
	Btu/h		35 000	49 000	60 000
Water Flow Rate	l/min		15.2	19.0	22.8
	gal/h		200	250	300
Pressure Loss	mbar		45	70	102
	in.w.g		18	28	41

The boiler must NOT be used for direct hot water supply.
The boiler is suitable for connection to fully pumped open vented or sealed water central systems or central heating combined with indirect domestic hot water systems.
The central heating system should be in accordance with the relevant recommendations given in BS 5376:2 and, in addition, for Smallbore and Microbore systems - BS 5449:1
The domestic hot water system, if applicable, should be in accordance with the relevant recommendations of BS 5546
Copper tubing, to BS 2871:1, is recommended for water carrying pipework. The hot water storage cylinder MUST be of the indirect type and should be, preferably, manufactured of copper.
Single feed indirect cylinders are not recommended, and MUST NOT be used on sealed systems.
The hot water cylinder and ancillary pipework not forming

GENERAL GUIDANCE

part of the useful heating surface, should be lagged to prevent heat loss and any possible freezing, particularly where pipes run through roof spaces. Draining taps MUST be located in accesible positions, which permit the draining of the whole system, including the boiler and hot water storage vessel. Draining taps should be at least ½in. nominal size and be in accordance with BS 2879.

The hydraulic resistance of the boilers, at MAXIMUM OUTPUT with an 11°C (20°F) temperature differential are shown in Table 8.

ELECTRICAL SUPPLY

Wiring external to the appliance MUST be in accordance with the current I.E.E. Wiring Regulations and any Local Regulations which apply.

The boiler is supplied for 240 V, 50 Hz ~ Single Phase.

Fuse rating is 3 A.

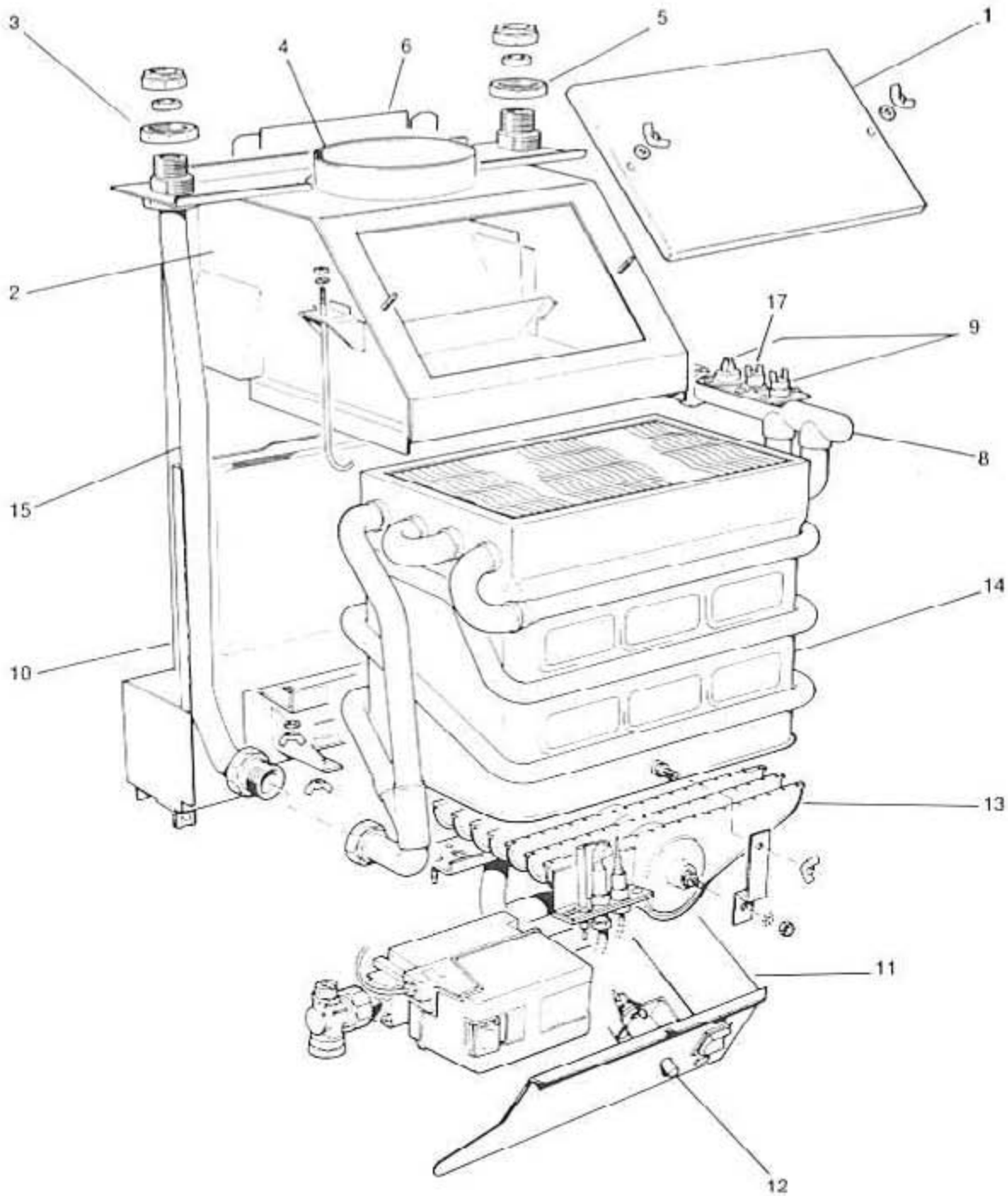
The method of connection to the mains electricity supply MUST facilitate complete electrical isolation of the boiler, preferably by the use of a fused three-pin plug and shuttered socket-outlet, both complying with the requirements of BS 1363.

Alternatively, a fused double-pole switch having a 3 mm (1/8 in) contact separation in both poles and serving only the boiler may be used.

The point of connection to the mains should be readily accessible and adjacent to the boiler.

ELECTRICAL SUPPLY- BOILER ASSEMBLY

BOILER ASSEMBLY- Exploded View



LEGEND.

1. Cleanout cover
2. Collector hood
3. Return connection
4. Flue socket
5. Flow connection
6. Wall mounting plate
8. Flow pipe
9. Thermostat leads
10. Back panel
11. Control box
12. Piezo unit
13. Burner/controls assembly
14. Heat exchanger
15. Return pipe
17. Overheat thermostat

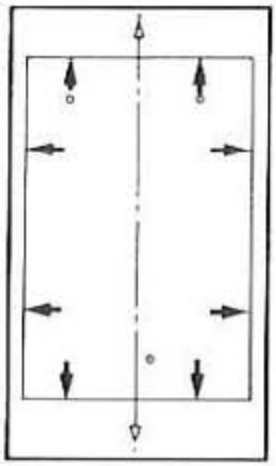
1 UNPACKING

Unpack the boiler and check the contents

The boiler is supplied fully assembled in one Pack A

Pack 'A' Contents

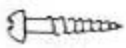
Complete Boiler



Wall Mounting Template

Pack 'A'- Hardware Pack Contents

Wall Mounting Plate



3 - off No 10 x 2 in long screws

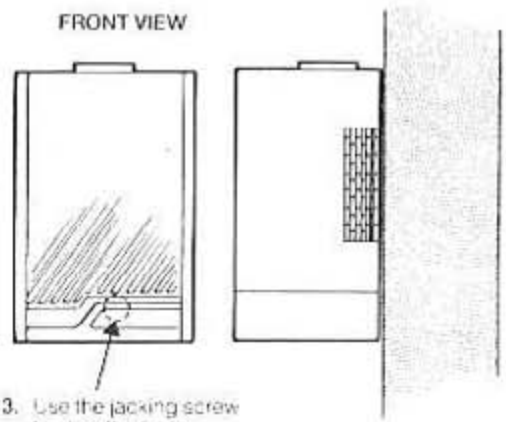
3 - off Wall plugs

2 WALL MOUNTING

1. It is most important that the boiler is installed in a vertical position
2. The wall must be of suitable load-bearing capacity

SIDE VIEW

FRONT VIEW



3. Use the jacking screw to align the boiler

3 BOILER CLEARANCES

The following minimum clearances must be maintained for operation and servicing

Additional space will be required for installation, depending upon site conditions

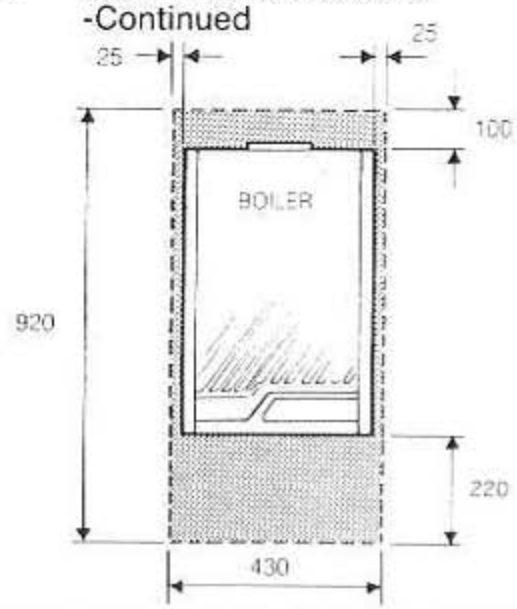
Note: Bottom clearance may be reduced to 100 mm (4 in), but under this condition access to the boiler control box will be limited without removal of the boiler casing

In addition a minimum of 300 mm (12 in) MUST be available at the front of the boiler for servicing

Boiler Size		Width	Depth	Height
CF 40P, 50P & 60P	mm	430	300	800
	in	17	12	32

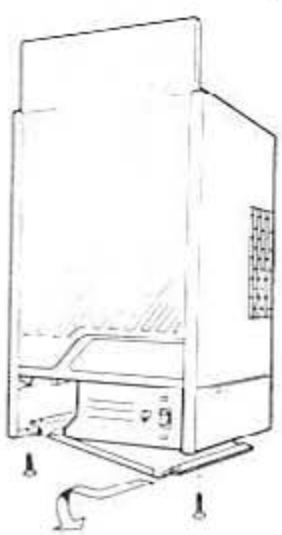
Refer to 'Frame 4' for illustration of boiler clearances

4 BOILER CLEARANCES -Continued



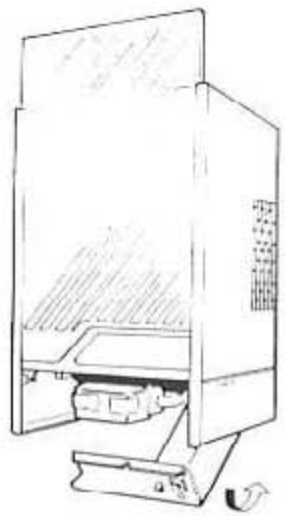
5 BOILER CASING REMOVAL

To install the boiler, the casing MUST be removed.



1. Slide the glass fascia upwards until it locates in the retaining catch
2. Remove the two securing screws, slide the bottom panel forward slightly, and then sideways to remove from the casing

6 BOILER CASING REMOVAL -Continued

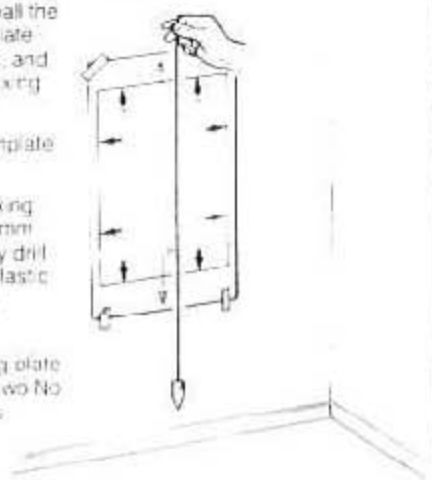


3. Remove the control box securing screw.
4. Lift the back of the control box slightly and swing it down, pivoting from the back.
5. Release the 2 bottom captive screws and lift the casing off the boiler.

Place the casing safely to one side, taking care not to damage the glass fascia panel.

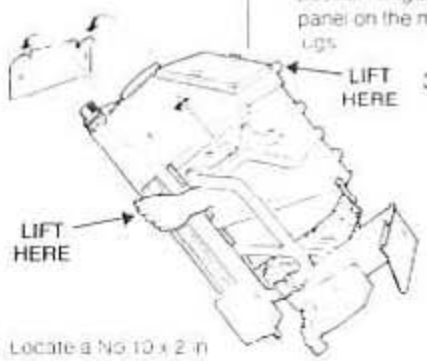
7 PREPARING THE WALL

1. Tape the template into the selected position.
2. Ensure squareness by hanging plumbline as shown.
3. Mark onto the wall the two mounting plate screw positions, and the lower fixing screw position.
4. Remove the template from the wall.
5. Drill the three fixing holes with an 8 mm (5/16 in) masonary drill and insert the plastic plugs provided.
6. Fix the mounting plate to the wall with two No 10 x 2 in screws provided.



8 MOUNTING THE BOILER

1. Remove the compression nuts and olives. If side access is less than 25 mm (1 in) fit stub connections to the flow and return.
2. Lift the boiler into position engaging the back panel on the mounting plate lugs.
3. Check the boiler alignment using a spirit level & adjust as necessary with the jacking screw - Refer to Frame 2.
4. Locate a No 10 x 2 in screw in the boiler lower fixing hole and secure to the wall.



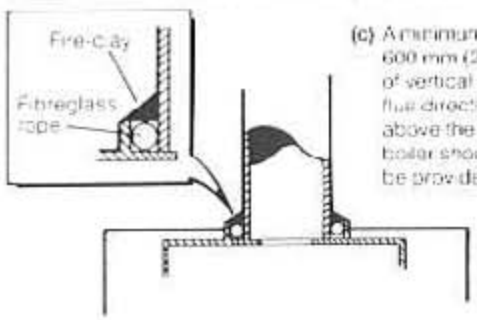
9 FLUE CONNECTION

Connect the flue pipe to the flue outlet.
Flue pipe spigot and socket connections should be sealed with fibreglass rope, or similar, and a suitable fireclay cement.

Notes:

(a) The boiler flue connection outlet size is suitable for asbestos flue pipe conforming to BS 567. If sheet steel flue pipe is fitted, a suitable acaptor should be used.

(b) To facilitate installation and subsequent disconnections, it is recommended that a slip or split socket be included in the flue installation adjacent to the boiler flue outlet connection.



(c) A minimum of 600 mm (2 ft) of vertical flue directly above the boiler should be provided.

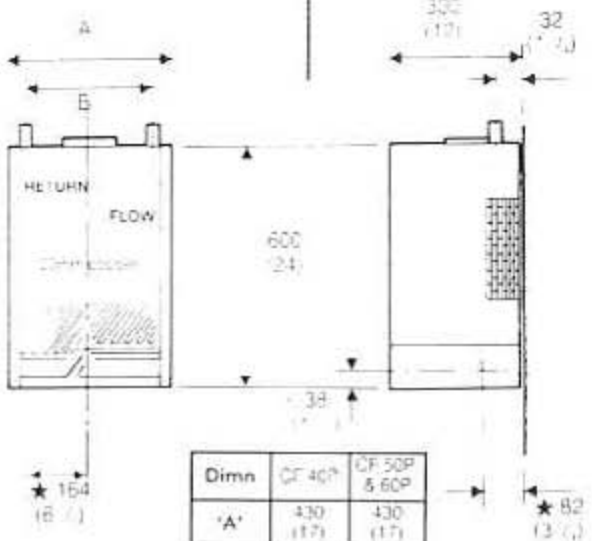
10 GAS CONNECTION

A MINIMUM gas pressure of 37 mbar (14.8 in.w.g.) MUST be available at the boiler inlet.

Extend a gas supply pipe NOT LESS THAN 15 mm OD to the boiler and connect to the gas service cock situated at the bottom LHS of the boiler. Connection MUST be made from BELOW and from the REAR of the boiler.

Ensure that the gas supply pipe does not foul the boiler casing when fitted.

Test the gas installation for soundness and purge in accordance with CP 331.3 - Refer to Frame 27 (b).



Dimn	CF 40P	CF 50P & 60P
'A'	430 (17)	430 (17)
'B'	294 (11 3/4)	319 (12 3/4)

★ Gas inlet ½" BSP

11 WATER CONNECTIONS

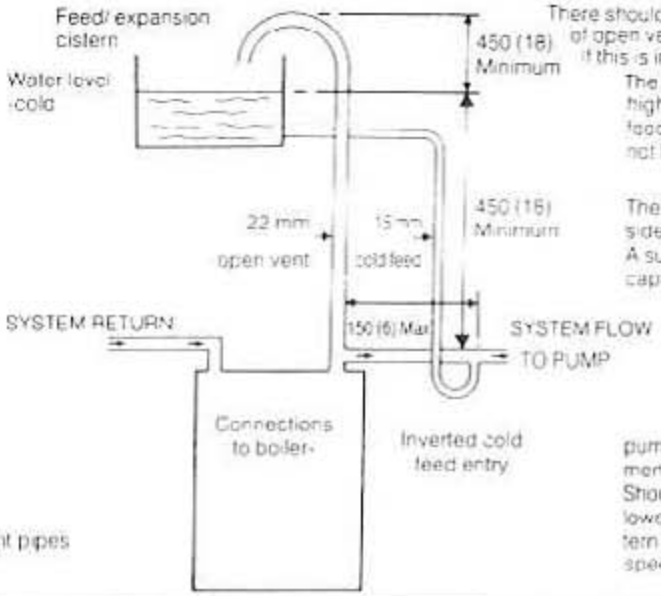
1. Connect the system flow and return pipework to the two water connections at the TOP of the boiler.
   Note: When the required output exceeds 14.4 kW (49000 Btu/h) 28 mm (1 in) flow and return pipes should be used.
2. Thoroughly flush the system with cold water WITHOUT the pump in position.
3. Refit the pump, ensure that all valves are open, fill and vent the system and check for water soundness.
   Note: This appliance is NOT suitable for use with a direct hot water cylinder.

All dimensions in mm. (in.)

12 OPEN VENT SYSTEM REQUIREMENTS

All dimensions in mm. , (imperial dimensions approx.)

The system should be vented directly off the boiler FLOW pipe, as close to the boiler as possible. The cold feed entry should be inverted and MUST be positioned between the pump and the vent, and not more than 150 mm (6 in) away from the vent connection.



The pump MUST be fitted on the flow side of the boiler.
A suitable pump is a domestic circulator capable of providing an 11°C (20°F) temperature differential (e.g. Grundfos UPS 15/50 or equivalent).
The vertical distance between the pump and feed/expansion cistern MUST comply with the pump Manufacturers minimum requirements to avoid cavitation.
Should these conditions not apply, either lower the pump position or raise the cistern above the minimum requirement specified by Stelrad Group Ltd.

Note; Combined feed and vent pipes may also be fitted.

13 LOW HEAD INSTALLATIONS-OPEN VENT

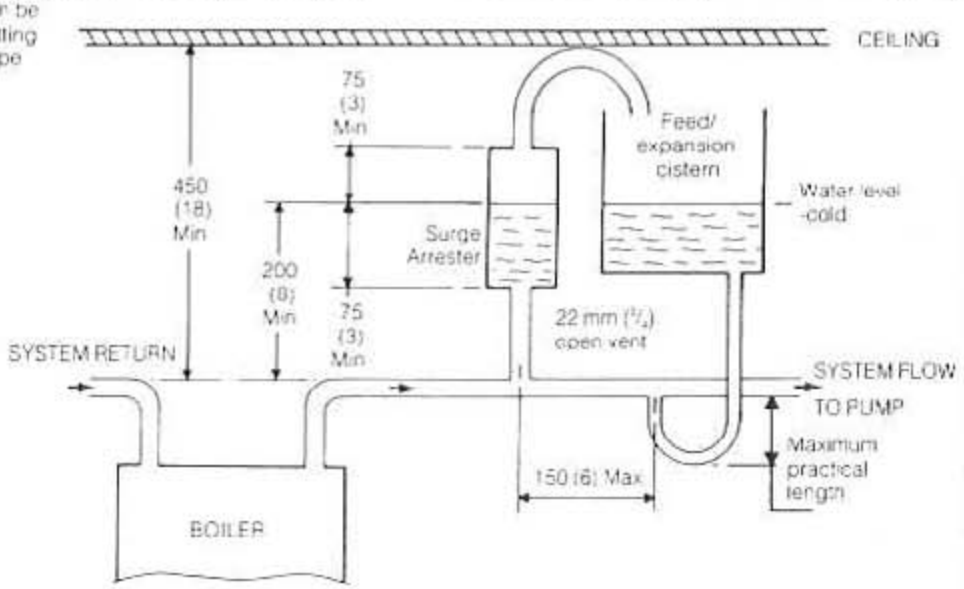
All dimensions in mm. , (imperial dimensions approx.)

The Ideal Elan 2 range of boilers can be installed in low head situations by fitting a surge arrester in the expansion pipe.

The following conditions MUST be observed.

1. The surge arrester must be at least 42 mm diameter x 150 mm long.
2. The cistern water level must be at least 200 mm above the highest point of the system.
3. The height of water in the surge arrester must be at least 75 mm.
4. The vent connection must NOT be made directly off the top of the boiler.

Note: The pump manufacturers minimum requirements must be complied with.



14 SCHEMATIC PIPEWORK AND BYPASS ADJUSTMENT- OPEN VENT

WATER FLOW RATE & PRESSURE LOSS

Boiler size			CF 40P	CF 50P	CF 60P
Boiler Output	kW		10.3	14.4	17.7
	Btu/h		35 000	49 000	60 000
Water Flow Rate	l/min		15.2	19.0	22.8
	gal/h		200	250	300
Pressure Loss	mbar		45	70	102
	in w.g.		18	28	41

The flow through the boiler MUST NOT fall below the values shown in the above table. A bypass MUST be fitted consisting of 15 mm (½ in) pipe, positioned as far from the boiler as possible and incorporating a balancing valve which CANNOT be adjusted by the householder.

CONTINUED IN FRAME 15

BY-PASS ADJUSTMENT

1. With the boiler firing, and with ALL circuits OPEN and the bypass CLOSED, adjust the pump to give 11°C (20°F) temperature differential across the boiler and system.
2. With one small radiator only OPEN, open the bypass to give 11°C (20°F) temperature differential across the BOILER.
3. With ALL circuits OPEN re-adjust the pump to give 11°C (20°F) temperature differential across the SYSTEM.

If in doubt contact Stelrad Group Ltd.

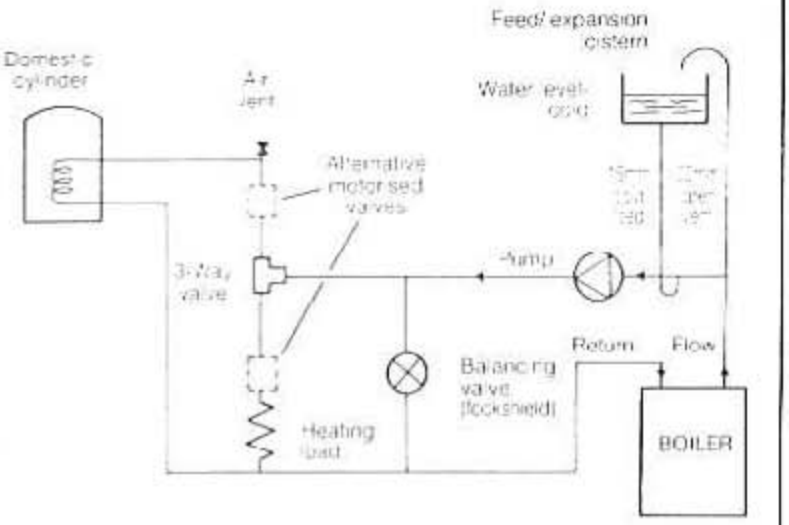
Note: Thermostatic Radiator Valves
Stelrad Group Ltd. support the recommendations made by leading manufacturers of domestic heating controls that heating systems utilising full thermostatic radiator valve control of temperature in individual rooms should also be fitted with a room thermostat controlling the temperature in a space served by radiators not fitted with such a valve.

15 SCHEMATIC PIPEWORK AND BYPASS ADJUSTMENT- OPEN VENT (Cont.)

Such an arrangement will provide for a potentially more efficient control of the environment and will also avoid the continuous running of the circulation pump during programmed heating 'On' periods, thus saving electrical energy.

It is recommended strongly therefore that when thermostatic radiator valves are used that space heating temperature control over living/dining area or hallways having a heating requirement of at least 2 kW (7000 Btu/h) be achieved using a room thermostat whilst other rooms are individually controlled by thermostatic radiator valves.

If a room thermostat is not fitted as described above, it is recommended that the system includes one uncontrolled radiator having a minimum heat loss of 1.5 kW (5000 Btu/h) under design conditions.

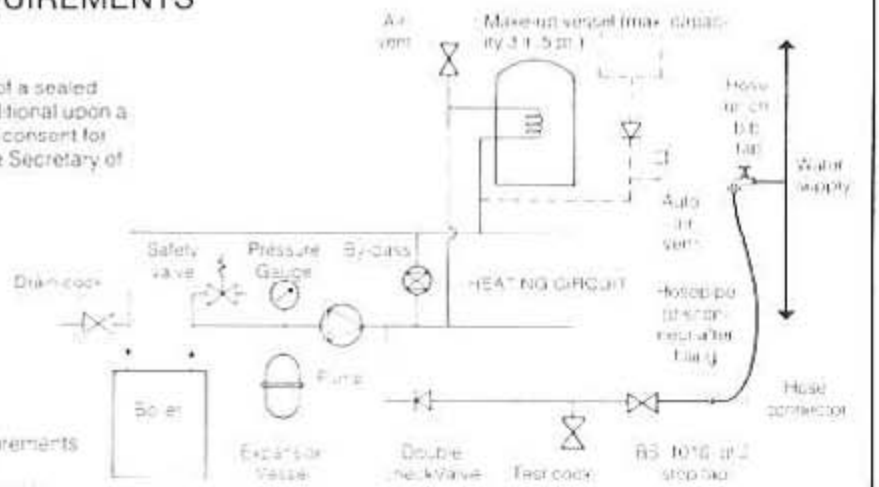


16 SEALED SYSTEM REQUIREMENTS

Notes:

(a) Any connection for filling or replenishing of a sealed primary circuit from a supply pipe is conditional upon a water undertaking seeking and obtaining consent for relaxation of its Byelaws 3 & 8 (1) from the Secretary of State.

(b) The method of filling, re-filling, topping up or flushing sealed primary hot water circuits from the mains via a temporary hose connection is only allowed if acceptable to the Local Water Authority.



1. General

(a) The installation must comply with the requirements of BS 5376 2 and BS 5449 1.

(b) The installation should be designed to work with low temperatures of up to 82°C.

(c) All components of the system, including the heat exchanger of the indirect cylinder, must be suitable for a working pressure of 3 bar (45lbf/in²) and a temperature of 110°C. Great care should be taken in making all connections so that the risk of leakage is minimised.

2. Safety Valve

A spring loaded safety valve complying with the relevant requirements of BS 759 must be fitted in the flow pipe as close to the boiler as possible and with no intervening valve or restriction. The valve should have the following features:

(a) A non-adjustable pre-set lift pressure not exceeding 3 bar (45 lbf/in²).

(b) A manual testing device.

(c) Provision for connection of a discharge pipe.

The valve or discharge pipe should be positioned such that discharge of water or steam cannot create a hazard to the occupants of the premises, cause damage to electrical components and wiring.

3. Pressure Gauge

A pressure gauge covering at least the range 0- 4 bar (0- 60 lbf/in²) must be fitted to the system. The gauge should be easily seen from the filling point and should preferably be connected at the same point as the expansion vessel.

4. Expansion Vessel

(a) A diaphragm type expansion vessel must be connected at a point close to the inlet side of the pump, the connecting pipe being not less than 15mm (½" nominal) size and not incorporating valves of any sort (see above for recommended system layout).

(b) The vessel capacity must be adequate to accept expansion of system water when heated to 110°C (230°F).

(c) The charge pressure must not be less than the static water head above the vessel. The pressure attained in the system when heated to 110°C (230°F) should be at least 0.35 bar (5 lbf/in²) less than the pressure of the safety valve. For guidance on vessel sizing, Refer to Frame 17. For further details refer to BS 5449:1 and British Gas Corporation publications: Materials and Installation Specifications for Domestic Central Heating and Hot Water.

5. Cylinder

The cylinder must be either of the indirect coil type or a direct cylinder fitted with an immersion heater which is suitable for operating at a gauge pressure of 0.35 bar (5 lbf/in²) in excess of the safety valve setting.

Single feed indirect cylinders are not suitable for sealed systems.

6. Make-up Water

Provision must be made for replacing water lost from the system either:

(a) From a manually filled make-up vessel with a readily visible water level. The vessel should be mounted at least 150 mm (6 in) above the highest point of the system and be connected through a non - return valve to the system at least 300 mm (12in) below the make-up vessel on the return side of the domestic hot water cylinder or radiators.

(b) Where access to a make-up vessel would be difficult by pre-pressurisation of the system (Refer to Frame 17 Filling).

7. Mains Connection

There must be no direct connection to the mains water supply or to the water storage tank supplying domestic water, even through a non-return valve, without the approval of the Local Water Authority.

17 SEALED SYSTEM REQUIREMENTS

Sizing procedure for expansion vessels:- The volume of the expansion vessel (litres) fitted to a sealed system shall not be less than given by the table below. Factor of 0.8 (for flow temp. less than 88°C)

Safety valve setting (bar)		3.0							
Vessel charge pressure (bar)		0.5				1.0			1.5
Initial system pressure (bar)		0.5	1.0	1.5	3.0	1.0	1.5	2.0	1.5	2.0
Total water content of system		Expansion Vessel Volume (litres)								
Litres	25	2.1	3.5	6.5	13.7	2.7	4.7	10.3	3.9	8.3
	50	4.2	7.0	12.9	27.5	5.4	9.5	20.6	7.8	16.5
	75	6.3	10.5	19.4	41.3	8.2	14.2	30.9	11.7	24.8
	100	8.3	14.0	25.9	55.1	10.9	19.0	41.2	15.6	33.1
	125	10.4	17.5	32.4	68.9	13.6	23.7	51.5	19.5	41.3
	150	12.5	21.0	38.8	82.6	16.3	28.5	61.8	23.4	49.6
	175	14.6	24.5	45.3	96.4	19.1	33.2	72.1	27.3	57.9
	200	16.7	28.0	51.8	110.2	21.8	38.0	82.4	31.2	66.2
	250	20.8	35.0	64.7	137.7	27.2	47.5	103.0	39.0	82.7
	300	25.0	42.0	77.7	165.3	32.7	57.0	123.6	46.8	99.3
	350	29.1	49.0	90.6	192.8	38.1	66.5	144.2	54.6	115.8
	400	33.3	56.0	103.6	220.4	43.6	76.0	164.8	62.4	132.4
	450	37.5	63.0	116.5	247.9	49.0	85.8	185.4	70.2	148.9
	500	41.6	70.0	129.9	275.5	54.5	95.0	206.0	78.0	165.5
Systems volumes other than those given- multiply system volume by the factor across		0.0833	0.140	0.259	0.55*	0.109	0.190	0.412	0.156	0.331

8 Filling

The system may be filled by one of the following methods

(a) Through a cistern used for no other purposes via a ballvalve permanently connected directly to a service pipe and/or a cold water distributing pipe. The static head available from the system should be adequate to provide the desired initial system design pressure. The cold feed pipe from the cistern should include a nonreturn valve and a stop valve with an automatic air vent connected between them, the stop valve being located between the system and the automatic air vent. The stop valve may remain open during normal operation of the system if automatic water make up is required.

(b) Through a self-contained unit comprising a cistern, pressure booster pump (if required) and if necessary an automatic pressure reducing valve or flow restrictor. The cistern should be supplied through a temporary connection from a service pipe or cold water distributing pipe. The unit may remain permanently connected to the heating system to provide limited automatic water make up. Where the temporary connection is supplied from a service pipe or a distributing pipe which also supplies other 'draw off' points at a lower level a combined check valve & anti-vacuum valve shall be installed upstream of the 'draw off' point.

(c) Through a temporary hose connection from a draw off tap supplied from a service pipe under mains pressure. Where the mains pressure is excessive a pressure reducing valve shall be used to facilitate filling.

The following fittings shall form a permanent part of the system and shall be fitted in the order stated

A stop valve complying with the requirements of BS 1010 Part 2 (the hose from the 'draw off' tap shall be connected to this fitting)

A test cock

A double check valve of an accepted type

(i) Thoroughly flush out the whole of the system with cold water without the pump in position.

(ii) With the pump fitted, fill & vent the system until the pressure gauge registers 1.5 bar (21.5 lbf/in²) and examine for leaks.

(iii) Check the operation of the safety valve by manually raising the water pressure until the valve lifts. This should occur within ± 0.3 bar (± 4.3 lbf/in2) of the pre-set lift pressure.

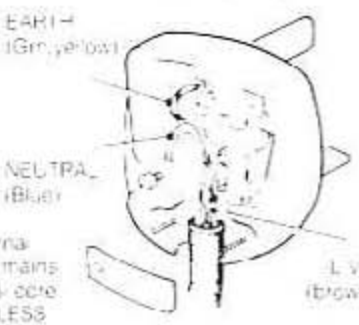
(iv) Release water from the system until the initial system design pressure is reached.

(v) Light the boiler and heat the system to the maximum working temperature. Examine for leaks.

(vi) Turn off the boiler and drain the system while still hot.

(vii) Refill and vent the system, and adjust the initial pressure to the required value.

18 ELECTRICAL CONNECTIONS



WARNING: This appliance MUST be efficiently earthed.

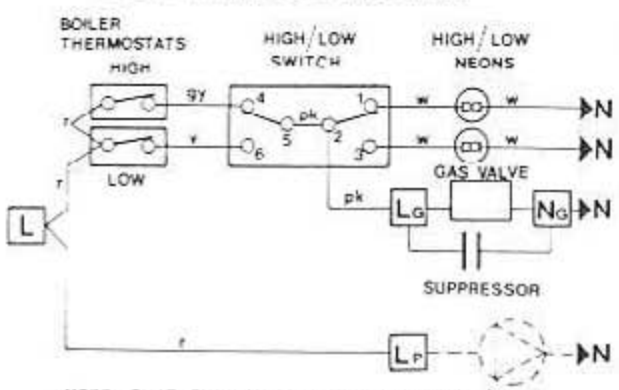
A mains supply of 240 V, 50Hz, ~ Single Phase is required.

All external controls & external wiring MUST be suitable for mains voltage. Wiring should be 3-core PVC insulated cable, NOT LESS than 24/0.2 mm (0.75 mm²) to BS 6500 table 16.

Wiring external to the boiler MUST be in accordance with the current I.E.E. Wiring Regulations, and any Local Regulations which apply.

The supply connection may be made via a removable plug to a shuttered socket-outlet and should such a plug be used for connection to the mains, it MUST be of 3-pin type, wired as shown, fused at 3 A, & comply with the requirements of BS 1363. Alternatively a fused, double pole switch, having a 3 mm (⅛ in) contact separation in both poles and serving only the boiler may be used.

FLOW WIRING DIAGRAM



NOTE:- THAT PUMP MAY BE ALTERNATIVELY CONNECTED REMOTE FROM BOILER.

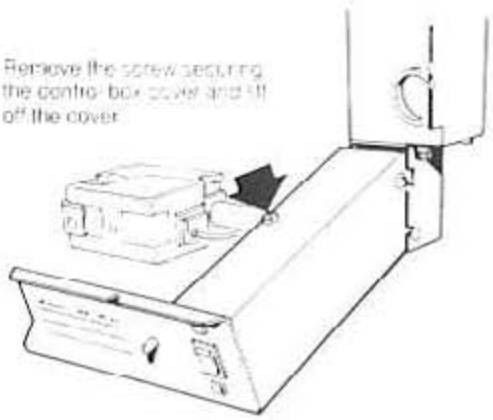
Legend

gy - grey
r - red
pk - pink
w - white

19 INTERNAL WIRING

Flow and Pictorial wiring diagrams are shown in frames 18 & 22
A schematic wiring diagram is included on the Lighting Instruction Label

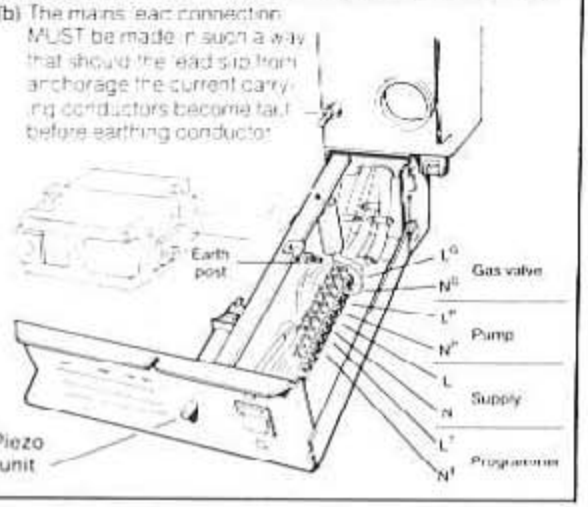
1. Remove the screw securing the control box cover and lift off the cover



20 INTERNAL WIRING

1. Route the electrical leads into the box via the grommetted hole at the rear and connect as shown

Notes:
(a) Secure each lead with one of the cable clamps provided
(b) The mains lead connection MUST be made in such a way that should the lead slip from anchorage the current carrying conductors become taut before earthing conductor



21 EXTERNAL WIRING

EXTERNAL CONTROLS

External wiring MUST be in accordance with the current I.E.E. Wiring Regulations.
The wiring diagrams illustrated in Frames 23 - 25 cover the systems most likely to be used with this appliance.
For wiring external controls to the IDEAL ELAN 2 boiler, reference should be made to the system wiring diagram supplied by the relevant Manufacturer, in conjunction with the wiring diagrams shown in Frames 18 and 22.
Difficulty in wiring should not arise, provided the following directions are observed:

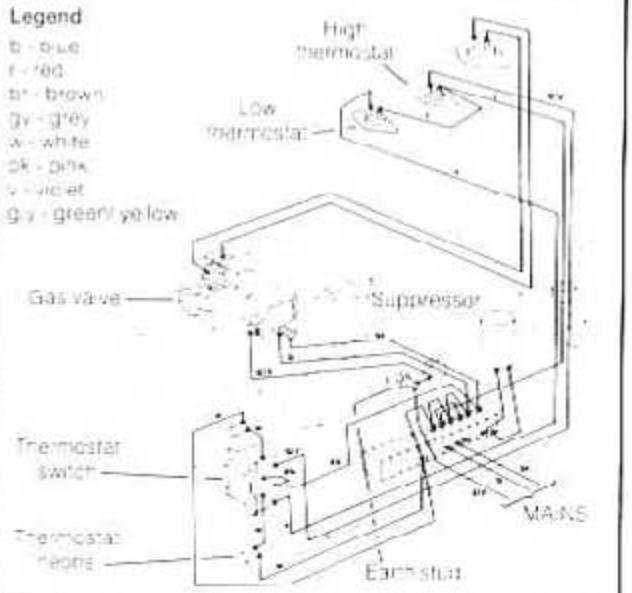
1. Controls that switch the system ON and OFF, e.g. a time switch MUST be wired in series with the live mains lead to the boiler.
2. Controls that override or ON/OFF control, e.g. a frost thermostat MUST be wired into the mains lead in parallel with the controls to be overridden - refer to Frame 26.
3. If a proprietary system is used, follow the instructions supplied by the Manufacturer(s).
4. SYSTEM DESIGNS FEATURING CONTROLS OR WIRING ARRANGEMENTS WHICH ALLOW THE BOILER TO FIRE WHEN THERE IS NO PUMPED CIRCULATION TAKING PLACE MUST NOT BE FITTED.

Notes:
(a) If there are no external controls the circulating pump MUST also be wired into the control box.
(b) When the OPT ON/SL programmer is installed, the incoming mains lead MUST be wired to the control box terminals marked L, N and E. Refer to the Programmer Installation Instructions.

22 PICTORIAL WIRING

Overheat thermostat

Legend
b - blue
r - red
br - brown
gy - grey
w - white
bk - pink
v - violet
g/y - green/yellow



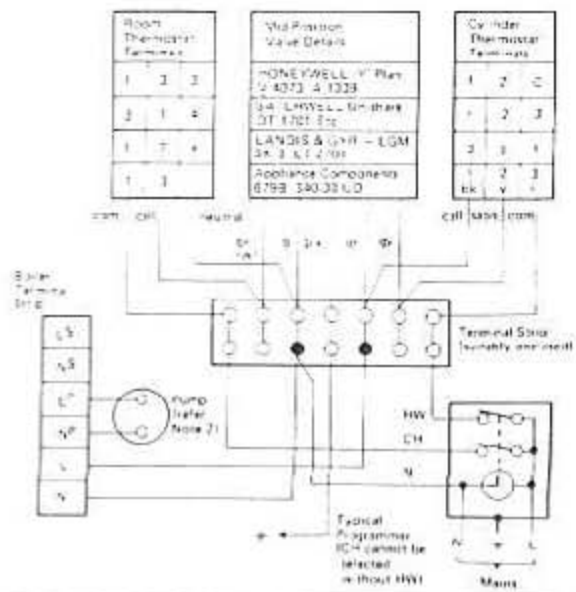
23 MID POSITION VALVE, (NO RELAY)- PUMPED ONLY

Notes:

1. SOME EARTH WIRES ARE OMITTED FOR CLARITY. ENSURE PROPER EARTH CONTINUITY WHEN WIRING.
2. Black dots denote alternative pump connections.
3. This is a fully controlled system - set the boiler thermostat to HIGH.
4. Numbering of thermostat terminals applies ONLY to the Manufacturer mentioned.

LEGEND:

b - blue	g/y - green/yellow
bk - black	or - orange
br - brown	r - red
g - green	y - yellow
gy - grey	w - white



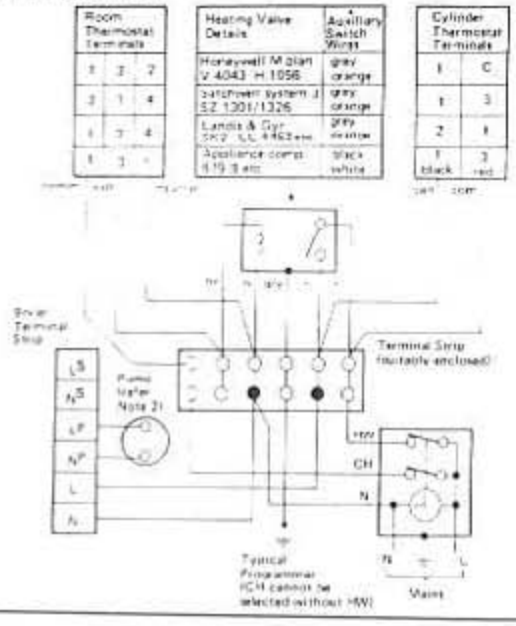
24 ONE VALVE IN HEATING CIRCUIT- PUMPED ONLY

Notes:

1. SOME EARTHED WIRES ARE OMITTED FOR CLARITY. ENSURE PROPER EARTH CONTINUITY WHEN WIRING.
2. Black dots denote alternative pump connections.
3. Numbering of thermostat terminals applies ONLY to the Manufacturer mentioned.

LEGEND:

b - blue
bk - black
br - brown
r - red
gry - green/ yellow



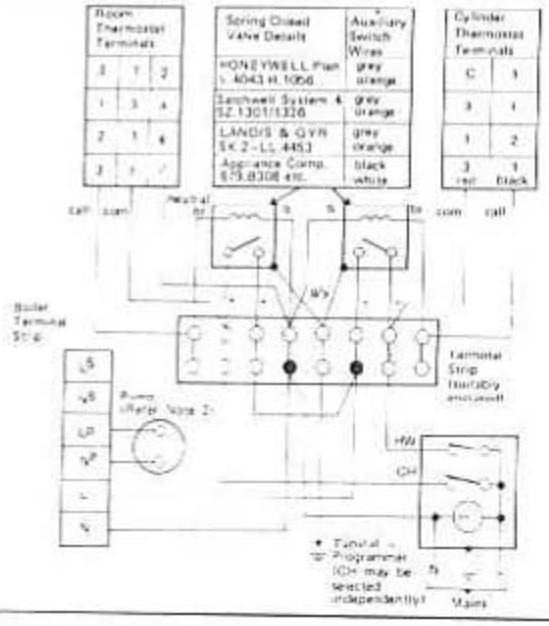
25 TWO SPRING CLOSED VALVES- PUMPED ONLY

Notes:

1. SOME EARTH WIRES ARE OMITTED FOR CLARITY. ENSURE PROPER EARTH CONTINUITY WHEN WIRING.
2. Black dots denote alternative pump connections.
3. This is a fully controlled system - set the boiler thermostat to HIGH.
4. Numbering of thermostat terminals applies ONLY to Manufacturer mentioned.

LEGEND:

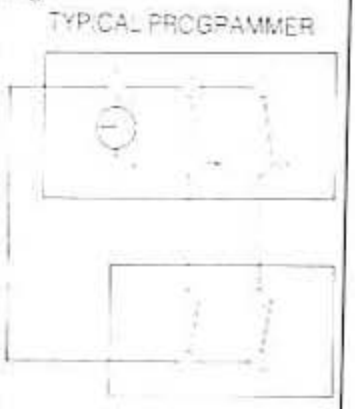
b - blue
br - brown
g - green
g/y - green/yellow
r - red
y - yellow



26 FROST PROTECTION

Notes:

1. The frost thermostat should be wired to the programmer as shown without disturbing the appliance internal wiring.
2. The frost thermostat should be sited in a cool place in the house, but where it can sense heat from the system.
3. The occupier should be advised that, during frosty weather, the system should be turned OFF at the programmer slide switches ONLY - all other controls should be left in the normal running position.



DOUBLE POLE FROST THERMOSTAT

27 COMMISSIONING & TESTING

(a) Electrical Installation

1. Checks to ensure electrical safety should be carried out by a competent person
2. ALWAYS carry out the preliminary electrical system checks as detailed on the Instructions for the British Gas Multimeter or similar test meter
3. Refit the control box cover

(b) Gas Installation

1. The whole of the gas installation should be inspected, tested for soundness and purged in accordance with the recommendations of CP. 331: 3
2. Purging air from the gas installation may be expedited by loosening the union on the gas service cock and purging until gas is smelled
3. Retighten the union and check for gas soundness

WARNING:

Whilst effecting the required gas soundness test and purging air from the gas installation, open all windows and doors, extinguish naked lights and DO NOT SMOKE

28 INITIAL LIGHTING- Continued in 'Frame 30'

1. Check that the gas service cock (K) is ON, and the boiler thermostat selector switch (D) is OFF
2. Remove the screw in the burner pressure test nipple (G) and connect a gas pressure gauge via a flexible tube
3. Slide the gas control button (A) to the RIGHT until resistance is felt and then release it
4. Push in & retain fully depressed the gas control button (A) press & release the piezo ignition button (F) repeatedly until the pilot lights
5. Hold the gas control button (A) depressed for 15 seconds after the pilot burner has ignited
6. If the pilot burner fails to remain alight at this stage repeat the procedure detailed above, but wait longer than 15 seconds before releasing the gas control button (A)
7. Check the appearance of the pilot flame to ensure that it envelopes the tip of the thermocouple and is approximately 25 mm (1 in.) long- Refer to Frames 16 & 17 (Servicing)

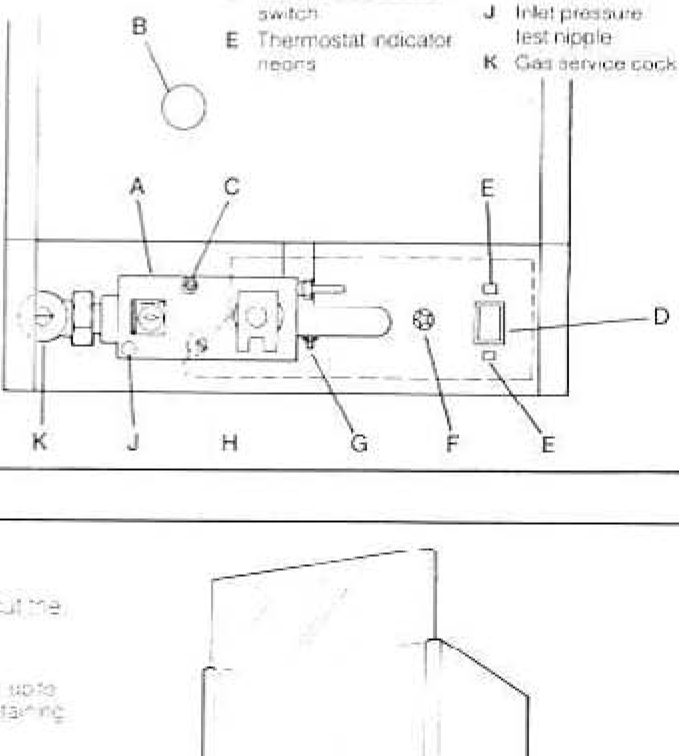
   The adjuster is factory set and sealed

8. Test the pilot supply connection at the pilot burner for gas soundness using leak detection fluid
9. Fit the boiler casing - Refer to Frame 29

Note: Controls are shown with gas valve cover removed

Legend

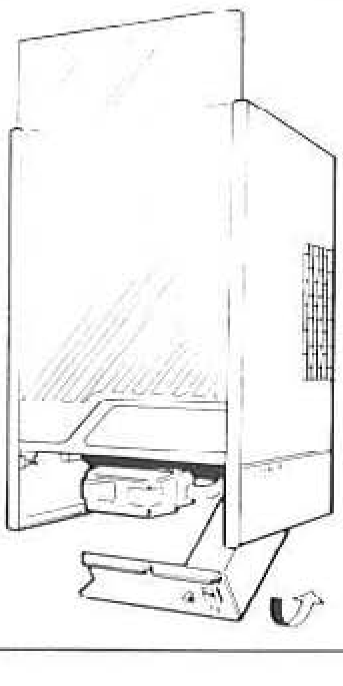
- A Gas control valve button
- B Sight glass
- C Pilot pressure adjuster (SEALED)
- D Thermostat selector switch
- E Thermostat indicator neons
- F Piezo ignition button
- G Burner pressure test nipple
- H Main burner pressure adjuster (SEALED)
- J Inlet pressure test nipple
- K Gas service cock



29 FITTING THE CASING

IMPORTANT: This appliance MUST NOT be operated without the casing being correctly fitted.

1. Lift the boiler casing with the glass fascia in the down position up to the boiler assembly and hook the top return edge over the retaining lugs
2. Slide the fascia up until it locates in the retaining catch
3. Secure the bottom 2 captive screws
4. Swing the control box into its working position and secure it to the bottom of the casing



30 INITIAL LIGHTING- Continued

Refer also to Frame 28

1. Switch the electricity supply ON and check that all external controls are calling for heat.
2. Set the boiler thermostat selector switch (D) to HIGH and check that the burner cross-lights smoothly. The HIGH indicator neon will glow when the boiler is alight.
3. Test for gas soundness around the boiler gas components using leak detection fluid.
4. Operate the boiler for ten minutes to stabilise the burner temperature. The boiler is pre-set at the factory to its nominal rating.
5. Check the burner pressure against the values quoted in Table 2.
6. Set the boiler thermostat selector switch to 'OFF'.
7. Remove the pressure gauge and tube and replace the pressure test nipple screw. Check that the screw is gas tight.
8. Swing the control box back into its working position. Re-fit the controls pod bottom panel.

31 GENERAL CHECKS

Make the following checks for correct operation:

1. Turn the boiler thermostat selector switch from OFF to HIGH and from OFF to LOW and check that the main burner and indicator neons light and extinguish in response.
2. Check that the programmer, if fitted, and all other system controls function correctly.
   Operate each control separately and check that the main burner or circulating pump, as the case may be, responds.
3. Flame Failure Device.
   Check the operation of the flame failure device in the gas control valve as follows:
   (a) Extinguish the pilot flame by closing the gas service cock (K) and note the time taken for the flame failure device to shut down - identified by a click within the gas control valve. This MUST NOT be longer than 60 seconds.
   (b) Open the gas service cock and re-light the pilot.
   (c) Set the boiler thermostat selector switch (D) to HIGH and the burner should light.
   (d) Slide the gas control knob (A) to the RIGHT until resistance is felt and then release it. The main burner and pilot flame should shut down immediately.
   Note: A latch in the gas control valve provides a safety delay period of approximately 30 seconds before the boiler can be re-lit.
4. Check that the casing is sealed correctly.
5. Water Circulation System.
   (a) With the system HOT, examine all water connections for soundness.
   (b) With the system still hot turn off the gas, water and electricity supplies to the boiler and drain down in order to complete the flushing process.
   (c) Re-fill and vent the system, clear all air locks and again check for water soundness.
   (d) Balance the system and set the bypass.

Finally

Set the controls to the Users requirements and slide the glass fascia down into the closed position.

Notes:

1. If an optional Programmer Kit is fitted refer to the Programmer Kit Installation and User's Instructions.
2. The temperatures quoted below are approximate and vary between installations.

Thermostat Setting	Flow temperature °C	°F
HIGH	83	180
LOW	60	140

Note: The HIGH or LOW indicator neons will glow whenever the boiler thermostat is calling for heat.

WARNING: The boiler MUST NOT be operated with the casing removed

32 HANDING OVER

After completing the installation and commissioning of the boiler system, the installer should hand over to the householder by the following actions:

1. Hand the User's Instructions to the Householder and explain his/her responsibilities under the Gas Safety (Installation and Use) Regulations 1984.
2. Draw attention to the lighting instruction label affixed to the casing front and visible through the observation window in the glass fascia when in the raised position.
3. Explain and demonstrate the lighting and shutting down procedures.
4. The operation of the boiler and the use and adjustment of its system controls should be fully explained to the Householder to ensure the greatest possible fuel economy, consistent with household requirements of both heating and hot water consumption.
   Advise the User of the precautions necessary to prevent damage to the system, and to the building, in the event of the system remaining inoperative during frost conditions.
5. Explain the function and the use of the boiler thermostat and external controls.
6. Explain the function of the boiler over-heat thermostat and emphasise that if cut-out persists the boiler should be turned off and the Local Heating Installer consulted.
7. Explain and demonstrate the function of time and temperature controls, radiator valves, etc, for the economic use of the system.
8. If an optional Programmer Kit is fitted, then draw attention to the Programmer Kit User's Instructions and hand them to the Householder.
9. Explain and demonstrate the cylinder charging procedure - see User's Instructions.
10. Stress the importance of regular servicing by the Local Gas Region or by qualified a Heating Engineer.
11. Draw attention to the User's Instructions Emergency Action Notice.

1 SCHEDULE

THE FOLLOWING SHOULD BE CARRIED OUT AT PERIODS NOT EXCEEDING ONE YEAR

(a) Light the boiler and carry out a pre-service check, noting any operational faults
(b) Clean the main burner
(c) Clean the heat exchanger
(d) Clean the main and pilot injectors
(e) Check the condition of the thermocouple
(f) Check that the flue terminal is unobstructed and that the flue system including the inlet cover is sealed correctly
(g) If the appliance has been installed in a compartment check that the ventilation areas are clear

THE SERVICING PROCEDURES ARE COVERED MORE FULLY IN FRAMES 2 TO 11 AND MUST BE CARRIED OUT IN SEQUENCE

WARNING: Always turn OFF the gas supply at the gas service cock and switch OFF and DISCONNECT the electricity supply to the appliance BEFORE SERVICING

IMPORTANT: After completing servicing or exchange of components always test for gas soundness and carry out functional checks as appropriate

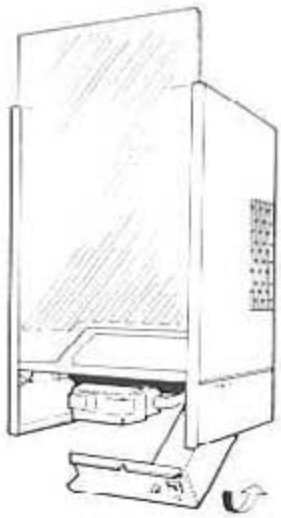
Note: In order to carry out either servicing or replacement of components the boiler casing must be removed - Refer to Frames 2 & 3

IMPORTANT When work is complete the casing MUST be correctly re-fitted. The boiler ***MUST NOT*** *be operated if the casing is not fitted*

2 BOILER CASING REMOVAL

1. Slide the glass fascia upwards until it locates in the retaining catch
2. Remove the two securing screws, slide the panel forward slightly, and then sideways to remove from the casing

3 BOILER CASING REMOVAL

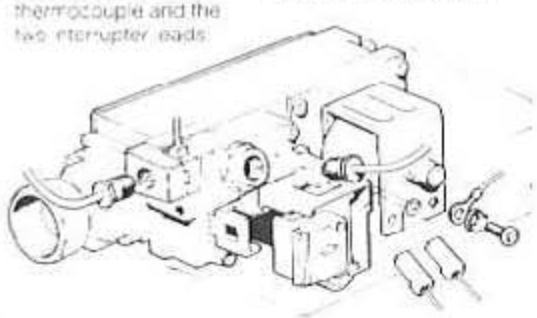


3. Remove the control box securing screw
4. Lift the back of the control box slightly and swing it down, pivoting from the back
5. Release the 2 bottom captive screws and lift the casing off the boiler

Place the casing safely to one side, taking care not to damage the glass fascia panel.

4 BURNER ASSEMBLY- REMOVAL

1. Release the securing screw & remove the valve cover
2. Disconnect the thermocouple and the two interrupter leads



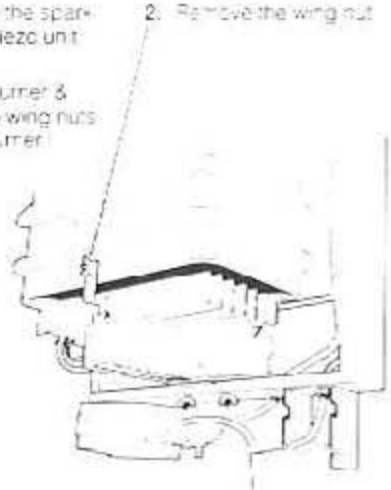
3. Undo the gas service cock union nut
4. Disconnect the electrical leads from the solenoid

Gas valve shown with cover removed.

5 BURNER ASSEMBLY- REMOVAL

Elan 2 CF 40 P shown

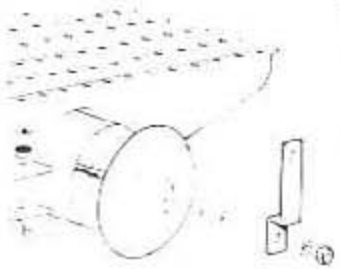
1. Disconnect the the spark lead from the piezo unit
2. Remove the wing nut
3. Support the burner & remove the two wing nuts securing the burner manifold



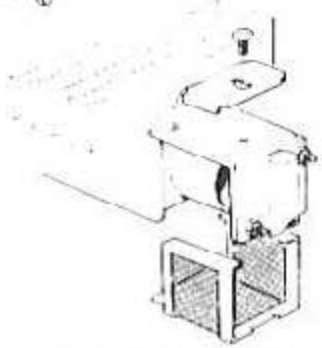
3. Withdraw the assembly & place on a convenient working surface

6 LINT GAUZE- REMOVAL

Elan 2 CF 50 P & 60 P



1. Remove the burner end cap & support bracket
2. Withdraw the lint gauze



Elan 2 CF 40 P

1. Undo the securing screw
2. Remove the lint gauze

7 CLEANING-BURNER ASSEMBLY

1. Clean the lint gauze to remove any deposits of lint, fluff, etc
2. Brush off any deposits that may have fallen onto the burner head- ensuring that the flame ports are unobstructed. Remove any debris that may have collected on the assembly components.
   Note: Brushes with metallic bristles MUST NOT be used
3. Remove the main burner injector, ensure that there is no blockage or damage. Clean or renew as necessary
4. Refit the injector using an approved jointing compound sparingly
5. Inspect the pilot, thermocouple and spark electrode, ensure that they are clean and in good condition.
   In particular check that:
   (a) The pilot burner injector is not blocked or damaged
   (b) The pilot burner is clean and unobstructed
   (c) The spark electrode is clean and undamaged
   (d) The spark lead is in good condition and securely connected.
   (e) The spark gap is correct - Refer to Frames 16 & 17
   (f) The thermocouple tip is not burned or cracked
   (g) The position of the thermocouple relative to the pilot burner is correct
   (h) The thermocouple terminal at the gas valve is clean

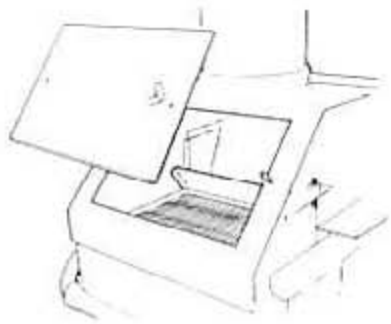
Clean or renew components as necessary.

8 CLEANING- FLUEWAYS

1. Remove the two wing nuts and lift off the cleanout cover

Place a plastic sheet or similar beneath the boiler, and remove all loose deposits from the heat exchanger finned block-brushing from above and below, and also from the copper skirt using a suitable brush and/or clearing rod.

Check that the flue outlet pipe is unobstructed



9 RE-ASSEMBLY

Re-assemble the boiler in the following order :-

1. Refit the flue cleanout cover renewing any damaged or deteriorating sealing gasket
2. Refit the burner and controls assembly
3. Reconnect the gas service cock and electrical wiring
4. Check the sightglass in the boiler casing. Clean or renew as necessary
5. Refit the boiler casing

IMPORTANT When work is complete the casing MUST be correctly re-fitted

The boiler MUST NOT be operated if the casing is not fitted.

10 GAS PRESSURE ADJUSTMENT

(a) Pilot

Light the boiler and check that the pilot flame is 25 mm (1 in) long. The pilot adjuster screw is factory set to maximum and no further adjustment should be necessary.

However if the pilot flame length is incorrect proceed as follows -Refer to 'Initial Lighting' Frame 28 (Installation)

(a) Slide the gas control button (A) to the RIGHT until resistance is felt and then release it
(b) Remove the gas valve cover
(c) Turn the pilot pressure adjuster screw (C) CLOCKWISE until fully CLOSED
(d) Turn the pilot pressure adjuster screw ANTI-CLOCKWISE four full turns to give maximum setting.
(e) Refit the gas valve cover
(f) Relight the pilot in accordance with the Lighting Instructions - Refer to Frame 28 (Installation)

Note - The pilot adjusting screw is sealed against User interference and must be re-sealed if disturbed during servicing

(b) Main Burner

After any servicing, reference should be made to Table 2 which quotes details of the rated output with the related burner setting pressure and the heat input.

COMPONENT REPLACEMENT

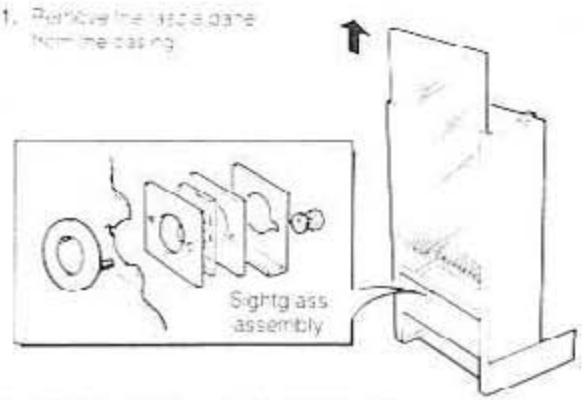
Note: To replace the components in Frames 11 to 22 it is necessary to remove the boiler casing - Refer to Frame 2

IMPORTANT When work is complete the casing MUST be correctly refitted

The boiler MUST NOT be operated if the casing is not fitted.

11 SIGHTGLASS- REPLACEMENT

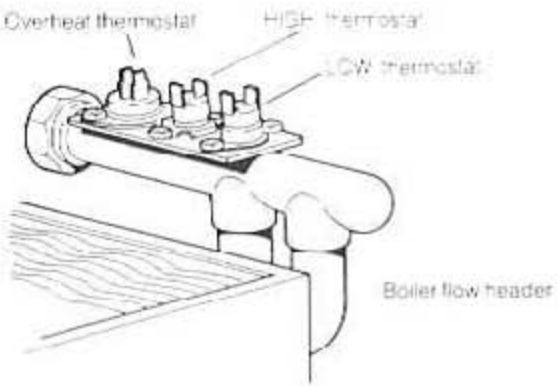
1. Remove the fascia pane from the casing



2. Unfasten the two nuts and washers and remove the assembly
3. Fit the new sightglass and reassemble as shown
4. Retighten the two nuts to ensure an airtight seal but DO NOT overtighten
5. Refit the fascia pane

12 CONTROL THERMOSTAT REPLACEMENT

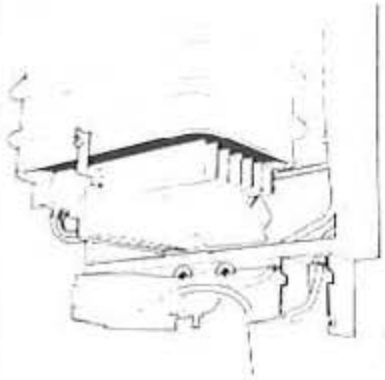
1. Remove the two screws securing the faulty thermostat
2. Disconnect the two electrical leads from the thermostat
3. Fit the new thermostat and re-assemble in reverse order



13 OVERHEAT THERMOSTAT REPLACEMENT

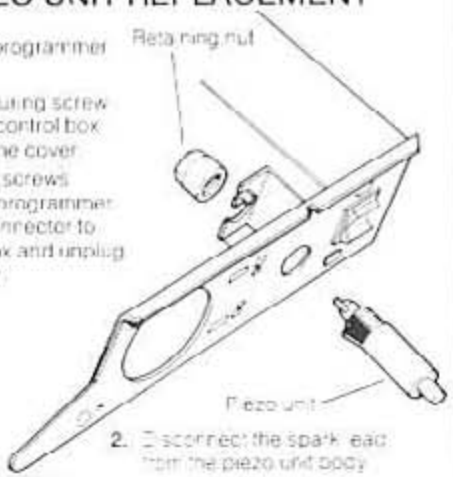
Refer also to Frame 12

1. Remove the burner and controls assembly (Refer Frames 4 & 5)
2. Release the strain relief bush and withdraw the interrupter leads
3. Unclip the leads from the back panel
4. Remove the two securing screws and withdraw the thermostat
5. Fit the new thermostat assembly in reverse order



14 PIEZO UNIT REPLACEMENT

1. Remove the programmer (Ufec)
   (a) Undo the securing screw on top of the control box and remove the cover
   (b) Undo the two screws securing the programmer flying-lead connector to the control box and unplug the connector
   (c) Undo the two screws securing the programmer to the controls mounting panel and remove the programmer



2. Disconnect the spark lead from the piezo unit body
3. Remove the piezo unit retaining nut and withdraw the unit as shown
4. Fit the new unit and re-assemble in reverse order

15 SPARK ELECTRODE REPLACEMENT

(a) CF 40 P only

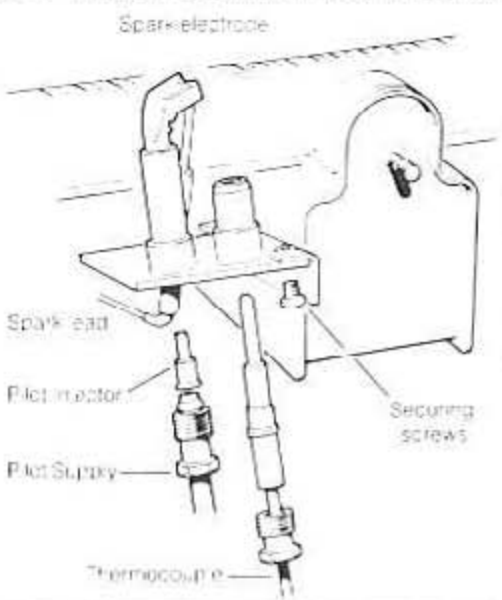
1. Proceed as detailed in Frame 16, steps 1-3
2. Undo the spark electrode retaining nut and withdraw the electrode
3. Fit the new electrode and re-assemble in reverse order

(b) CF 50 P & CF 60 P

Refer also to frame 17

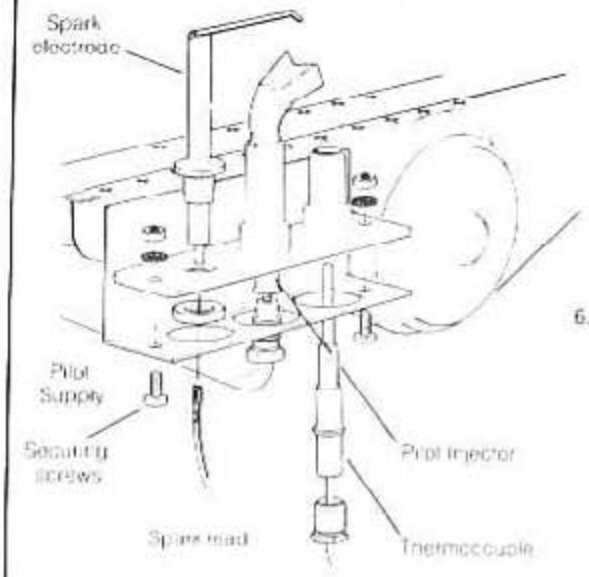
1. Disconnect the spark lead
2. Undo the spark electrode retaining nut and withdraw the electrode
3. Fit the new electrode and re-assemble in reverse order

16 PILOT BURNER REPLACEMENT:- CF 40 P only

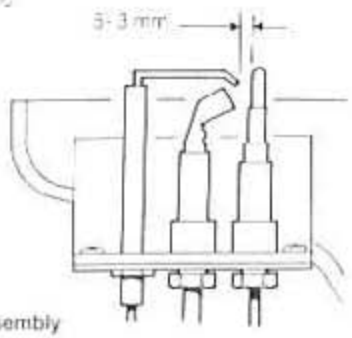


1. Undo the pilot supply connection and ease clear of the pilot burner. DO NOT use the pilot injector as a spanner on the pilot burner fitting
2. Undo the thermocouple connection and pull the thermocouple clear
3. Disconnect the spark lead
4. Remove the two securing screws and withdraw the pilot assembly
5. Transfer the spark electrode to the new pilot burner
6. Fit the new pilot burner assembly and re-assemble in reverse order ensuring that
   (a) The electrode is in position when refitting the pilot supply
   (b) A gas tight joint is made - refer to frame 28 (Installation)
   (c) The spark gap is correct

17 PILOT BURNER REPLACEMENT;- CF 50 P & CF 60 P



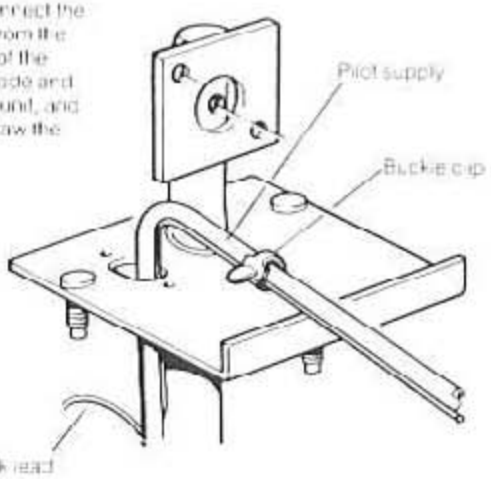
1. Undo the pilot supply connection and ease clear of the pilot burner. Do NOT lose the pilot injector which is a push fit in the pilot burner housing.
2. Undo the thermocouple connection & pull the thermocouple clear.
3. Disconnect the spark lead.
4. Remove the two securing screws and withdraw the pilot assembly.
5. Transfer the spark electrode to the new pilot burner.
6. Fit the new pilot burner assembly and re-assemble in reverse order ensuring that:
   (a) The injector is in position when refitting the pilot supply.
   (b) A gas tight joint is made- refer to frame 28 (Installation).
   (c) The spark gap is correct.



Pilot Assembly

18 SPARK LEAD REPLACEMENT

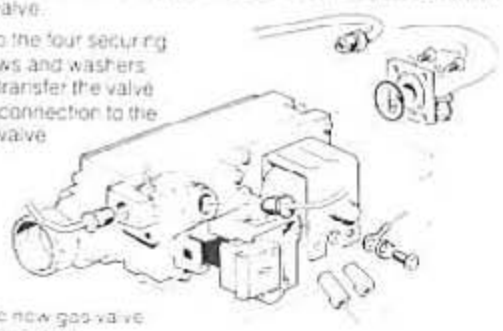
1. Remove the buckle clip.
2. Disconnect the lead from the base of the electrode and piezo unit, and withdraw the lead.



3. Fit the new lead and re-assemble in reverse order.

19 GAS VALVE REPLACEMENT

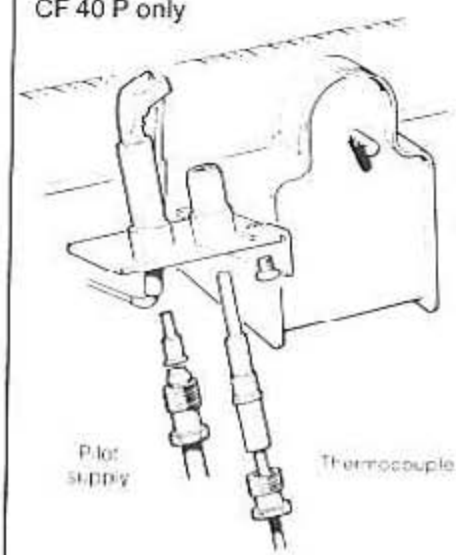
1. Remove burner & controls assembly- Refer to frames 4 & 5.
2. Undo the pilot supply connection.
3. Undo the four securing screws and washers and withdraw the valve.
4. Undo the four securing screws and washers and transfer the valve inlet connection to the new valve.



5. Fit the new gas valve ensuring that:
   (a) The valve is fitted the right way round, an arrow engraved on the valve indicates the direction of flow.
   (b) The sealing 'O' rings supplied with the valve, are correctly fitted at the inlet and outlet flanges.
6. Reassemble in reverse order.

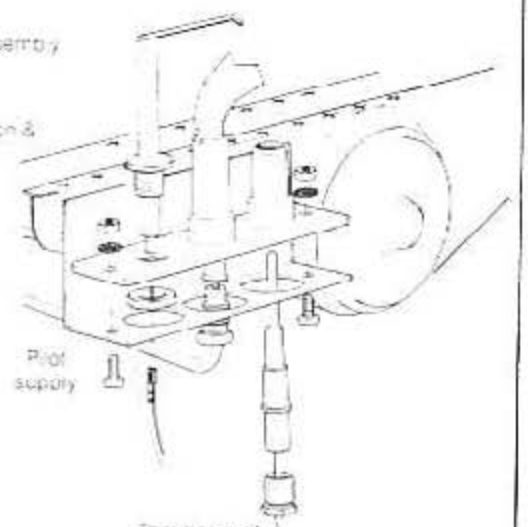
20 THERMOCOUPLE REPLACEMENT

CF 40 P only



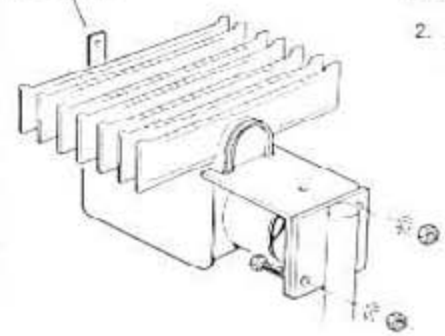
CF 50 P & CF 60 P

1. Remove the burner & controls assembly -Refer to Frames 4 & 5.
2. Remove the buckle clip.
3. Undo the thermocouple connection & withdraw the thermocouple.
4. Fit the new thermocouple and reassemble in reverse order.
   Note: Avoid sharp bends in the thermocouple lead and ensure that it follows the same route as previously.



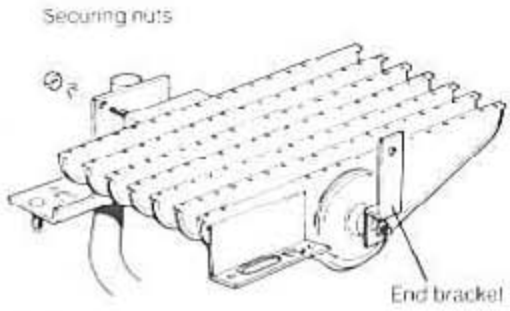
21 MAIN BURNER REPLACEMENT

CF 40 P only



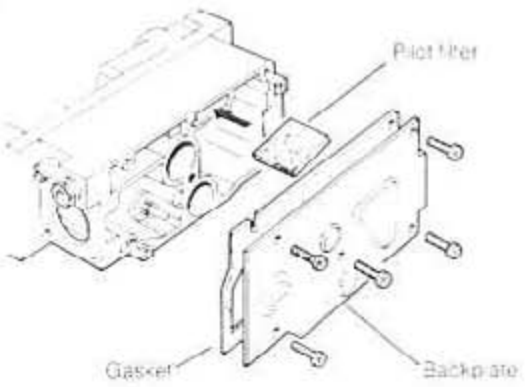
1. Remove the burner and controls assembly -Refer to Frames 4 &5
2. Remove the pilot burner assembly -Refer to Frames 16 & 17
3. Remove the two nuts & washers securing the burner to the manifold & withdraw the burner
4. Transfer the burner end bracket to the new burner
5. Fit the new burner and re-assemble in reverse order, taking care not to damage the burner injector which is screwed into the gas manifold

CF 50 P & CF 60 P



22 PILOT FILTER REPLACEMENT

1. Remove the burner & controls assembly -Refer to Frames 4 & 5
2. Remove the backplate from the valve

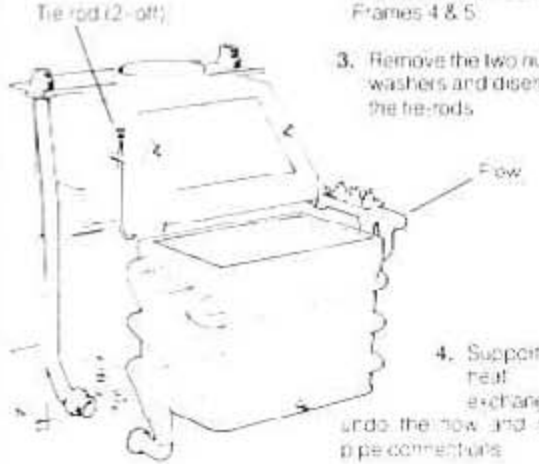


3. Withdraw the pilot filter
4. Fit the new filter and re-assemble in reverse order

23 HEAT EXCHANGER REPLACEMENT

IMPORTANT: Before starting the removal procedure protect the gas and electrical controls with a waterproof sheet or similar.

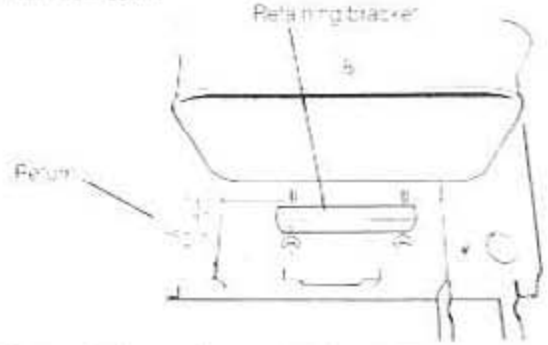
1. Drain down the system
2. Remove the burner & controls assembly - Refer Frames 4 & 5
3. Remove the two nuts and washers and disengage the tie-rods



4. Support the heat exchanger & undo the flow and return pipe connections

24 HEAT EXCHANGER REPLACEMENT - Continued

5. Undo the two wing nuts and remove the retaining bracket
6. Ease the heat exchanger forward to drain the water from the return connection

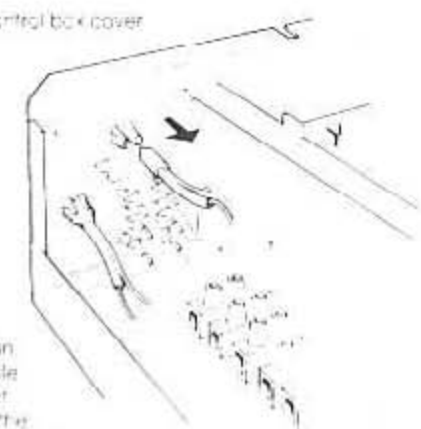


7. Withdraw the heat exchanger from the interspace
8. Fit the new heat exchanger and reassemble in reverse order. Renew any damaged or deteriorating [illegible]

NOTE: To replace the components in Frames 25 to 27, if the clearance between the cover is 220 mm (9 in.) or greater it is only necessary to remove the casing bottom panel and hinge the control box down-Refer to Frame 2.

25 NEON REPLACEMENT

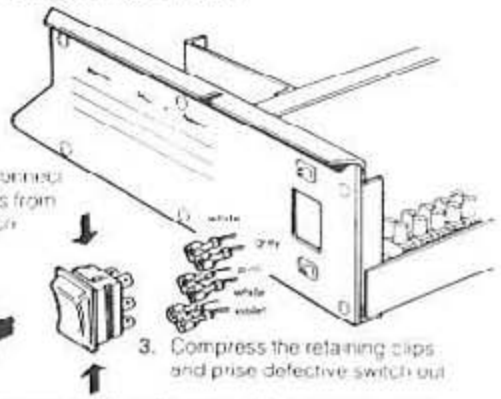
1. Remove the control box cover
2. Disengage the [illegible] from the [illegible]
3. Disconnect the [illegible] from the terminals and the back of the selector switch



4. Fit the new neon and re-assemble in reverse order. Ensure that all the electrical connections are correctly remade

26 THERMOSTAT SWITCH REPLACEMENT

1. Remove the control box cover.



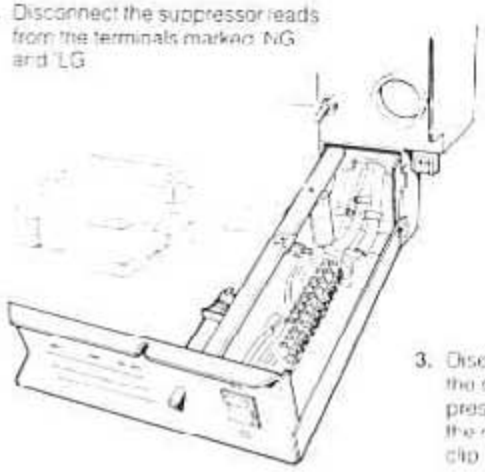
2. Disconnect leads from switch.

3. Compress the retaining clips and prise defective switch out.

4. Fit the new switch and re-assemble in reverse order. Ensure that -
   (a) The switch is the correct way up.
   (b) All electrical connections are correctly re-made.
   (c) The indicator neons have not been displaced during the switch replacement.

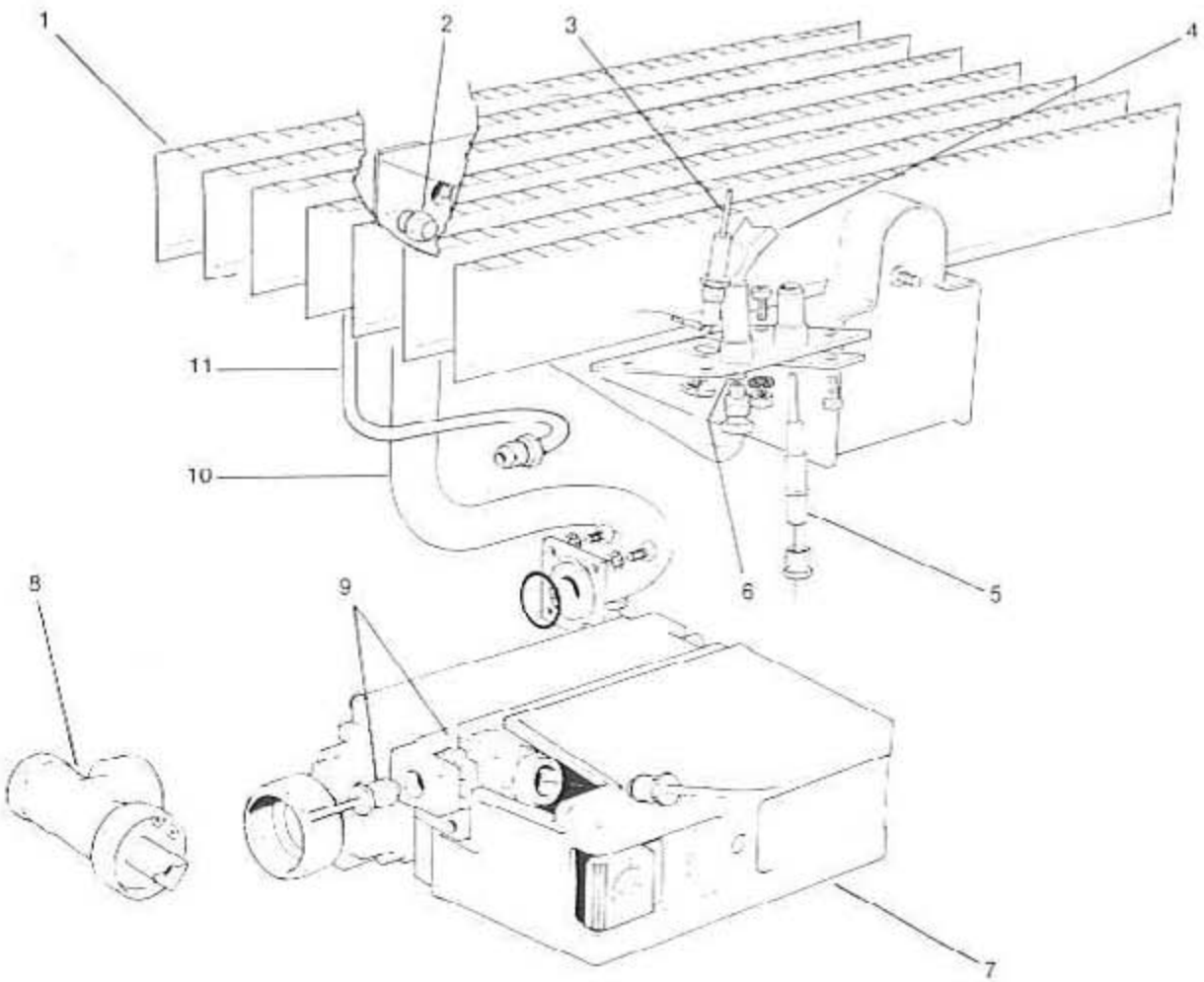
27 SUPPRESSOR REPLACEMENT

1. Remove the control box cover.
2. Disconnect the suppressor leads from the terminals marked 'NG' and 'LG'.



3. Disengage the suppressor from the retaining clip.
4. Fit the new suppressor in reverse order, ensuring that all electrical connections are correctly re-made.

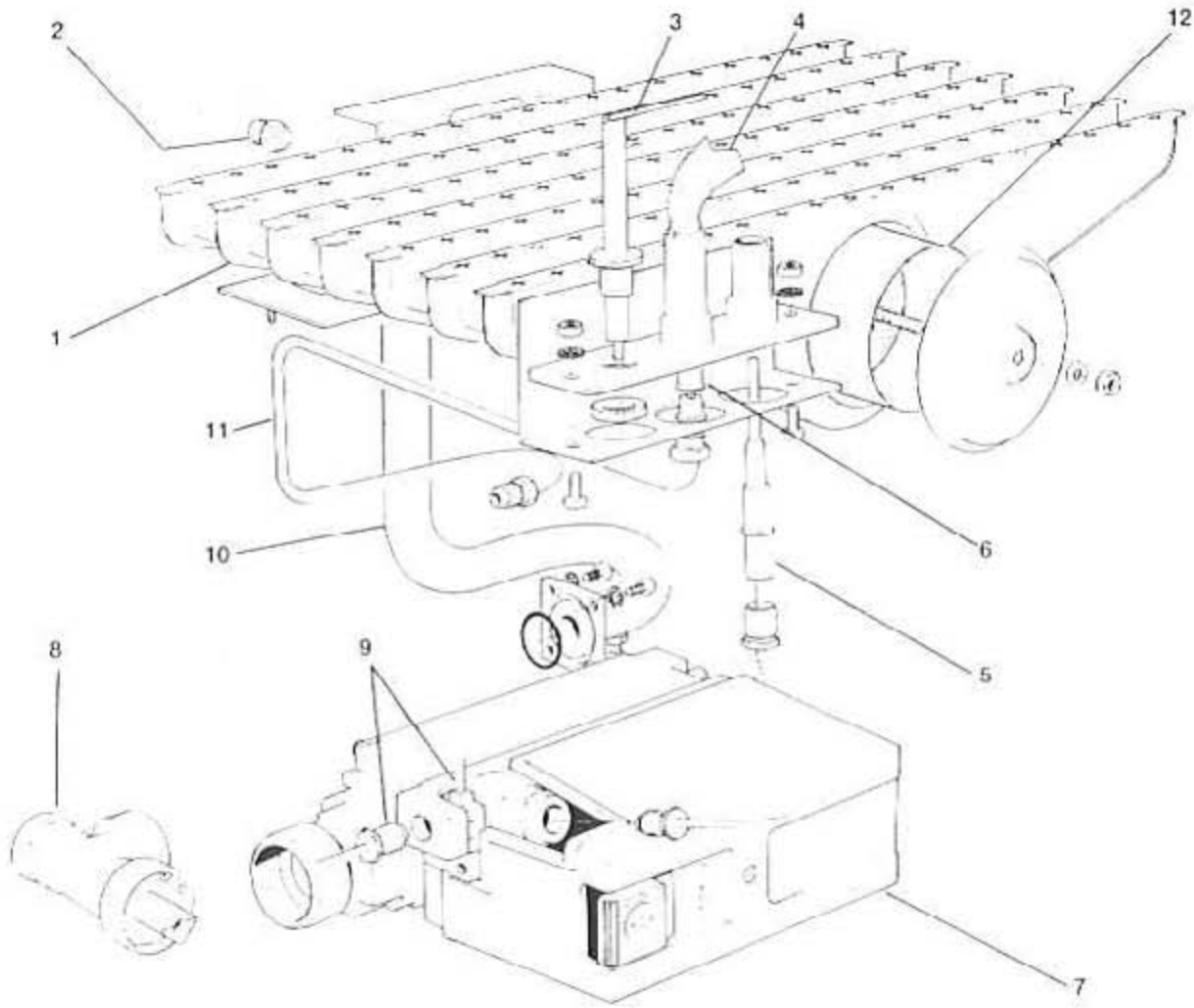
28 BURNER AND CONTROLS ASSEMBLY- Elan 2 CF 40 P only



Legend

1	Main burner	5	Thermocouple	9	Thermocouple interruptor connections
2	Main burner injector	6	Pilot injector	10	Gas manifold
3	Spark electrode	7	Main gas valve	11	Pilot pipe
4	Pilot burner	8	Gas service cock		

29 BURNER AND CONTROLS ASSEMBLY- Elan 2 CF 50 P & CF 60 P



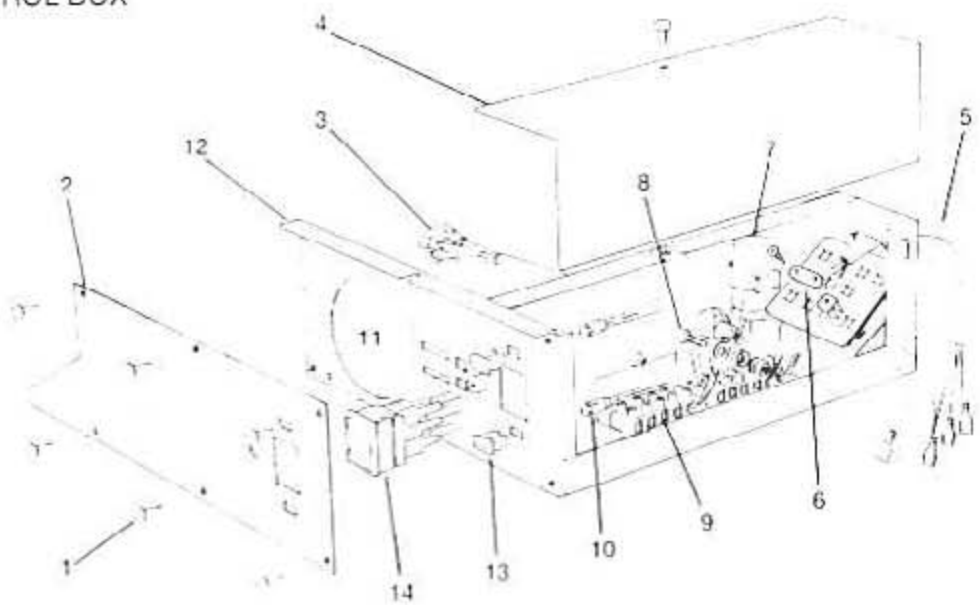
Legend

1	Main burner	5	Thermocouple	9	Thermocouple interrupter connections
2	Main burner injector	6	Pilot injector	10	Gas manifold
3	Spark electrode	7	Main gas valve	11	Pilot pipe
4	Pilot burner	8	Gas service cock	12	Lint arresting gauze

30 BOILER CONTROL BOX

Legend

1. Fascia prs
2. Fascia
3. Gas valve lead
4. Control box cover
5. Thermostat harness
6. Cable clamp
7. Suppressor
8. Earth stud
9. Terminal strips
10. Neon indicators
11. Piezo unit
12. Control box
13. Neon indicator lenses
14. Thermostat switch



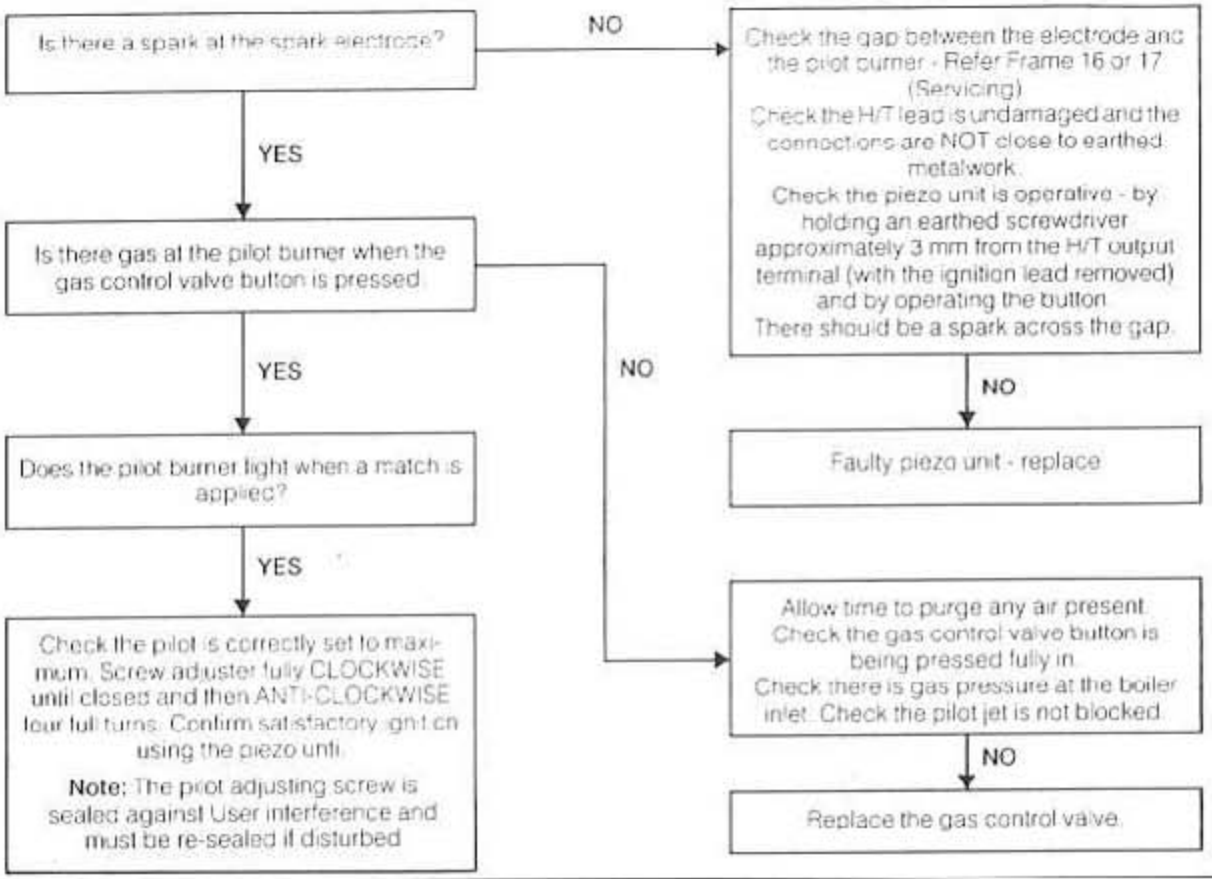
FAULT FINDING

Before attempting any electrical fault finding, ALWAYS carry out the preliminary electrical system checks as detailed on pages 6-9 of the Instructions for the British Gas Multimeter, or similar test meter.

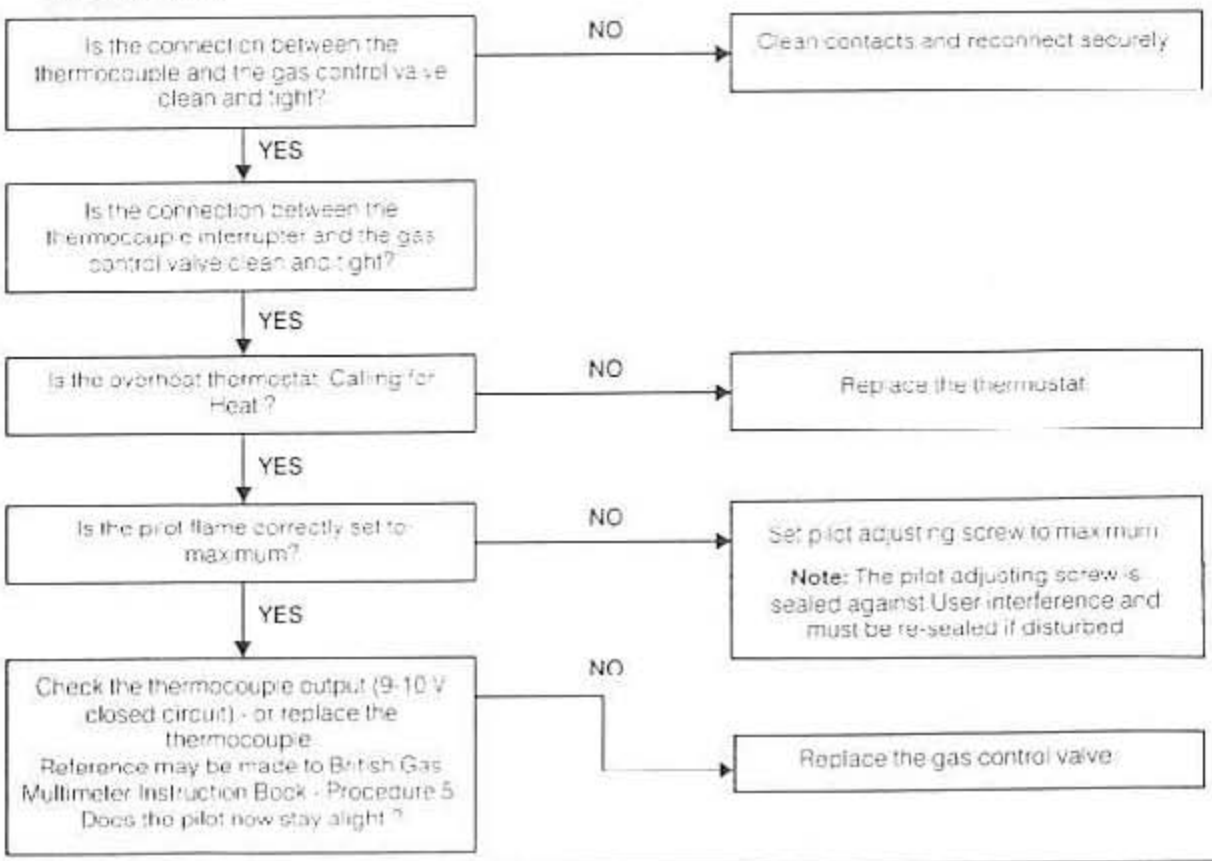
PILOT FAULTS

Detailed instructions on the replacement of faulty components are contained in the 'Servicing' section of this publication.

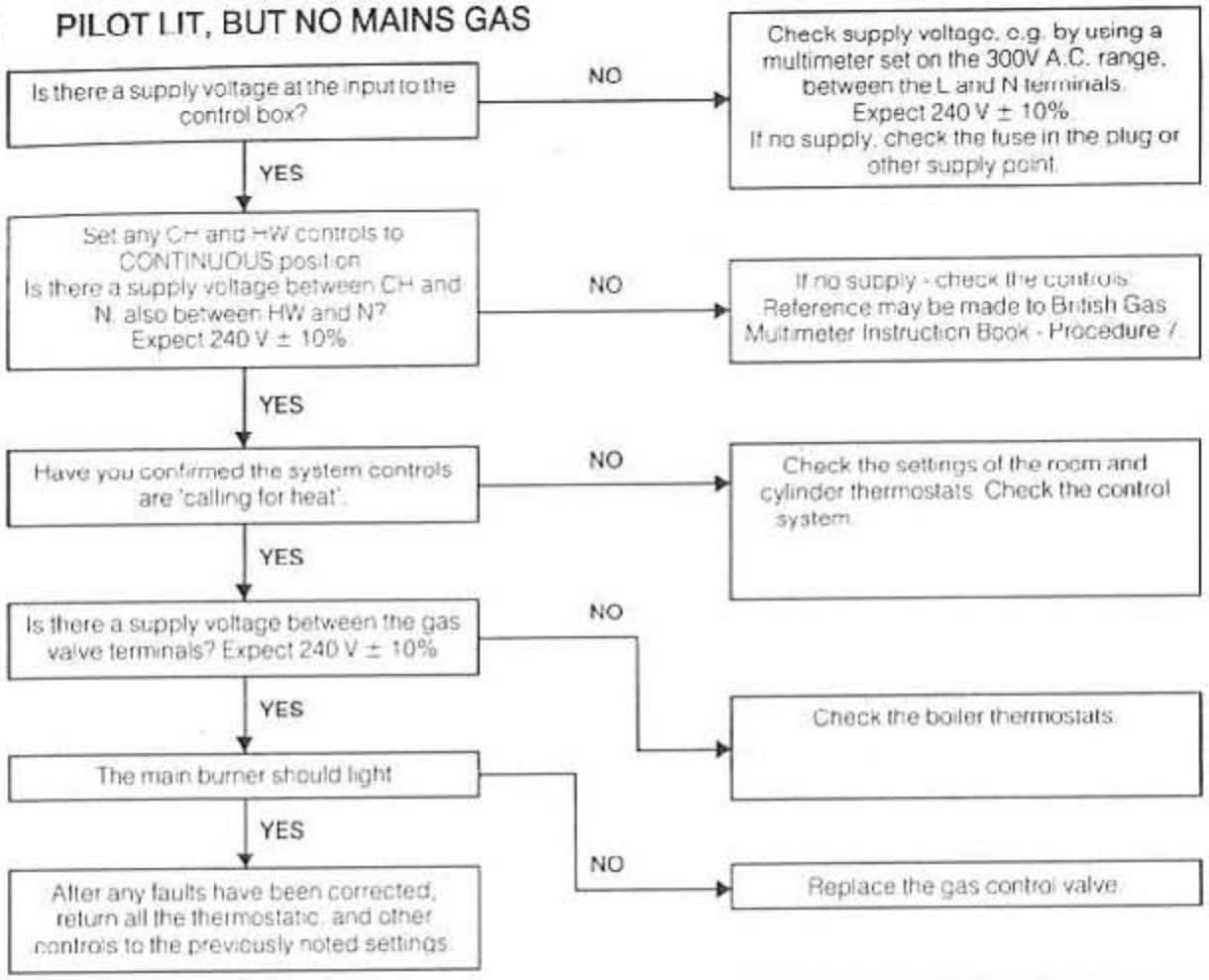
1 PILOT WILL NOT LIGHT



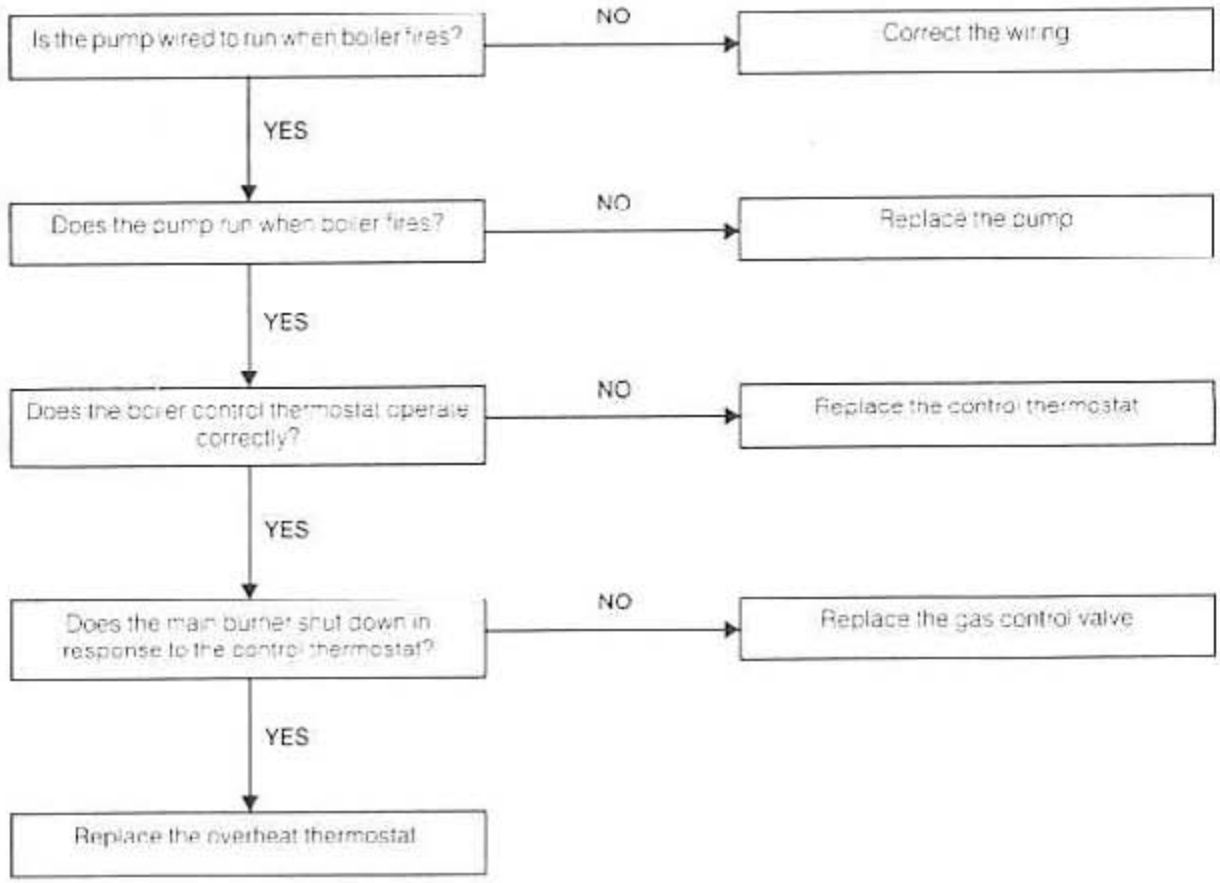
2 PILOT WILL NOT STAY LIT WHEN THE GAS CONTROL VALVE BUTTON IS RELEASED



3 PILOT LIT, BUT NO MAINS GAS



4 MAIN BURNER IS SHUT DOWN BY THE OVER-HEAT THERMOSTAT



SPARES

SHORT LIST OF PARTS

The following list comprises parts commonly required as replacements due to damage, expendability, or such that their failure, or absence, is likely to affect safety or performance.
This List is extracted from the B.G.C. List of Parts, which contains all available spare parts.

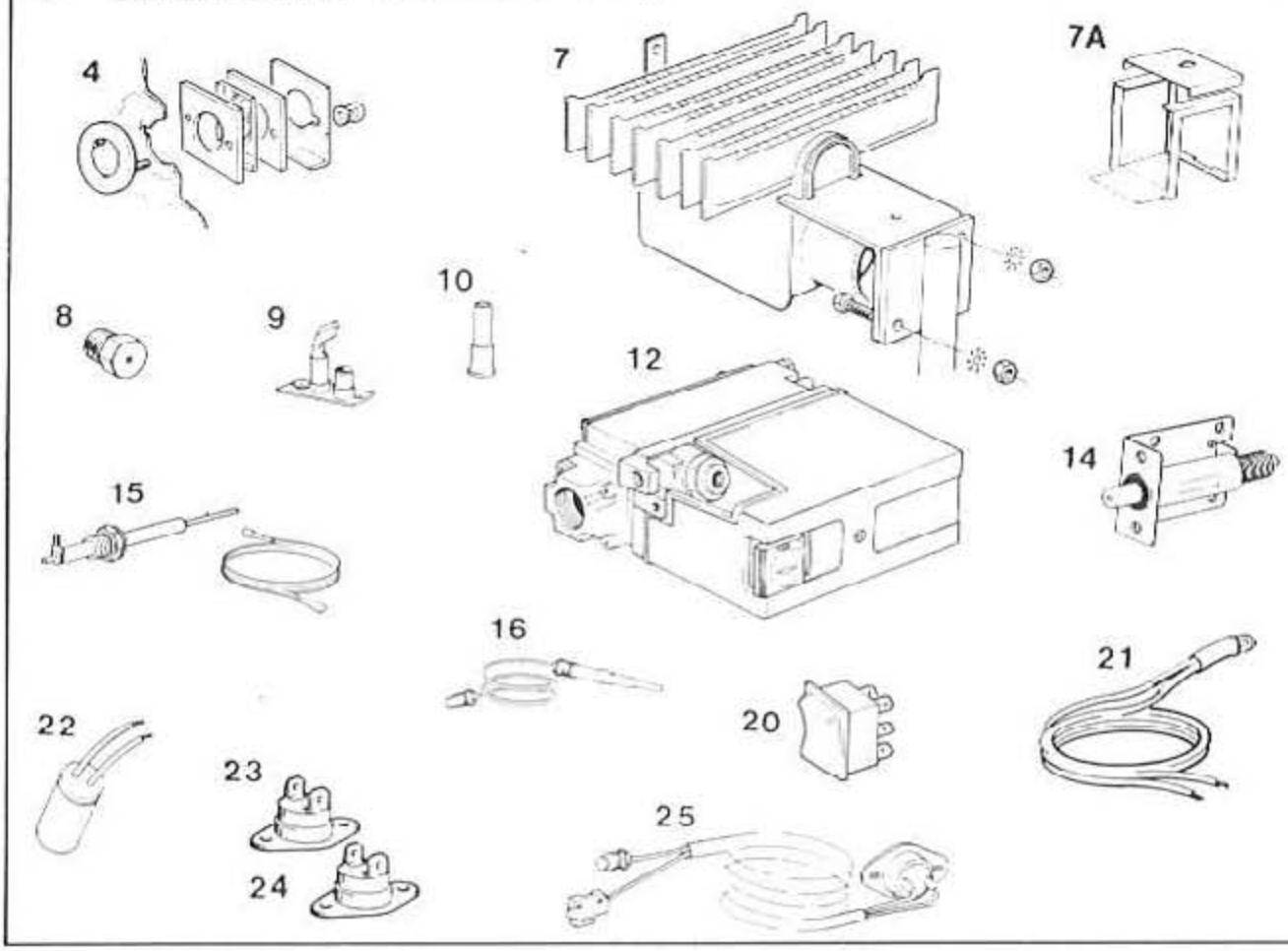
IDEAL ELAN 2, CF 40P, 50P & 60P GAS BOILERS

When ordering spares, please quote:

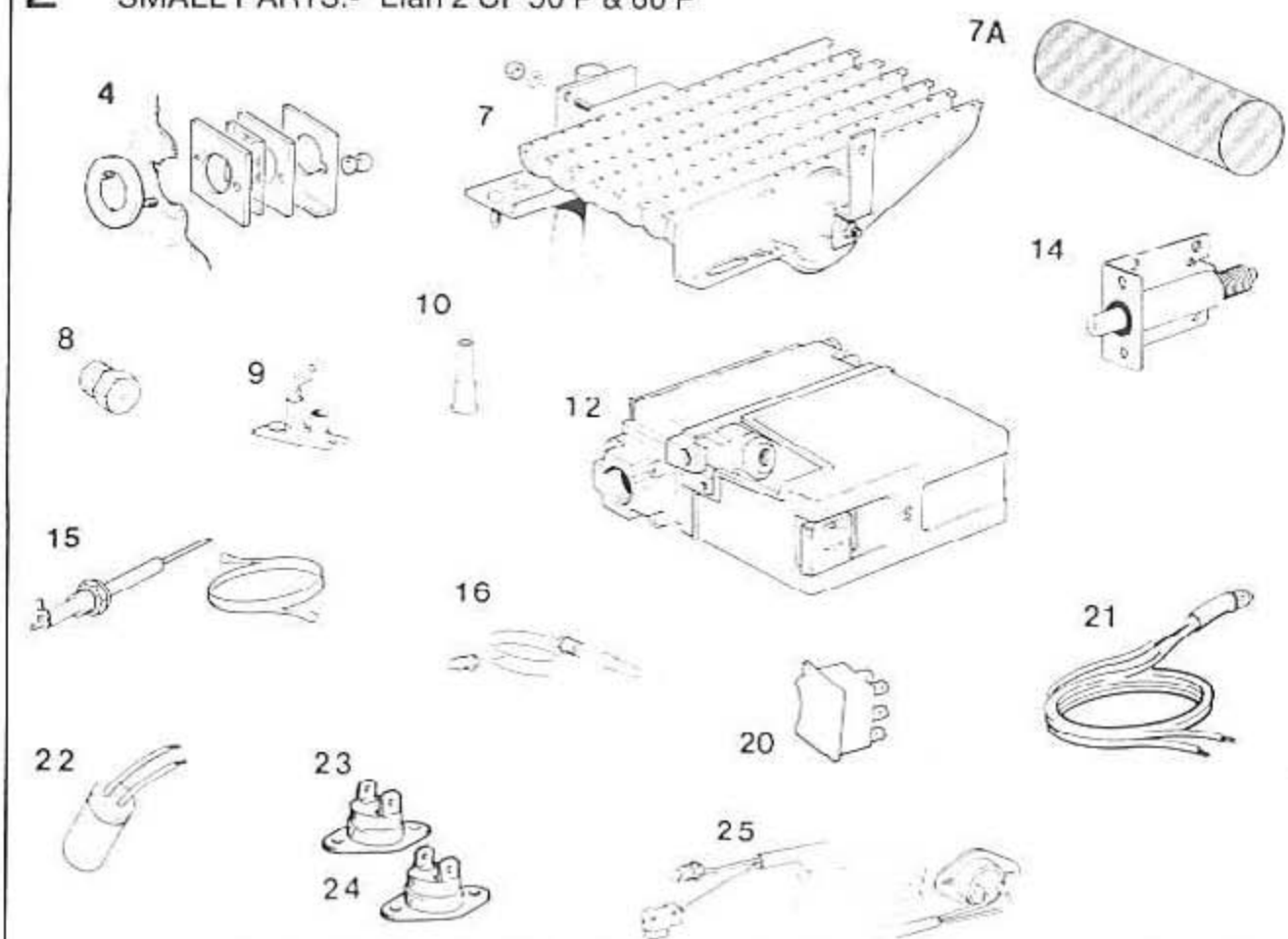
1. Boiler Model
2. Description
3. Maker's Part Number
4. Quantity

Key No.	G.C. Part No.	Description	No. off	Maker's Part No.
4	341 446	Sight glass assembly, comprising, sight glass and frame, two sight glass gaskets, two M4 Hex nuts and two M4 shakeproof washers	1	189736045
7	395 690	Main burner FURIGAS Type 'R' - No. 118 500 043 - Elan 2, CF 40 P	1	
		AEROMATIC - No.19/ 123 238 - Elan 2, CF 50 P & CF 60 P	1	
7A	395 692	Lint arresting gauze- FURIGAS- No 118 500 003 - Elan 2, CF 40 P	1	189830083
		AEROMATIC- No.014021 - Elan 2, CF 50 P & CF 60 P	1	189850083
8	398 316	Main burner injector- BRAY Cat. 10 - Size 440 - Elan 2, CF 40 P ONLY	1	
		BRAY Cat. 10 - Size 520 - Elan 2, CF 50 P ONLY	1	
		BRAY Cat. 10 - Size 650 - Elan 2, CF 60 P ONLY	1	
9		Pilot burner-		
	391664	HONEYWELL No. Q359A 1041 - Elan 2, CF 40 P	1	
	395 694	HONEYWELL No. Q359A 1082 - Elan 2, CF 50 P & CF 60 P	1	
10	382 536	Pilot burner injector- HONEYWELL No. 45000062/ 012	1	
12	395 685	¼in. BSP Gas control- HONEYWELL V.4700E 1007- 240 V	1	586731900
14	395 705	Piezo Unit- VERNITRON No. 60080	1	589830086
15		Spark electrode and H/T lead assembly VERNITRON No. 60043 - Elan 2, CF 40 P (H/ T lead 600 mm lg.)	1	589030088
	395 689	VERNITRON No. 60911 - Elan 2, CF 50 P & CF 60 P (H/ T lead 600 mm lg.)	1	589830089
16	390 039	Thermocouple- HONEYWELL No. Q309A 2739- 24 in. lg.	1	576830051
20	393 451	Thermostat selector switch- ARCOLECTRIC No. C.470	1	589030104
21	341 461	Neon indicator - READILEAUS Ltd	2	589730067
22	384 689	Supressor- ITT No. TS 121A- 'Cat' Type (65 mm lds)	1	569040030
23		Thermostat- HIGH Setting- ELMWOOD 2455R 8124	1	
24		LOW Setting- ELMWOOD 2455R 8213	1	
25		OVERHEAT- THERMODISC with ECO leads & Honeywell interrupter	1	
26	341 490	Boiler casing assembly - white stove enamel (less removable glass fascia) with removable bottom panel lighting instructions label, dimple foil insulation and two fixing screws with retaining washers	1	
27		Glass Fascia	1	
29		Controls casing bottom panel with Lighting Instruction label and two fixing screws	1	

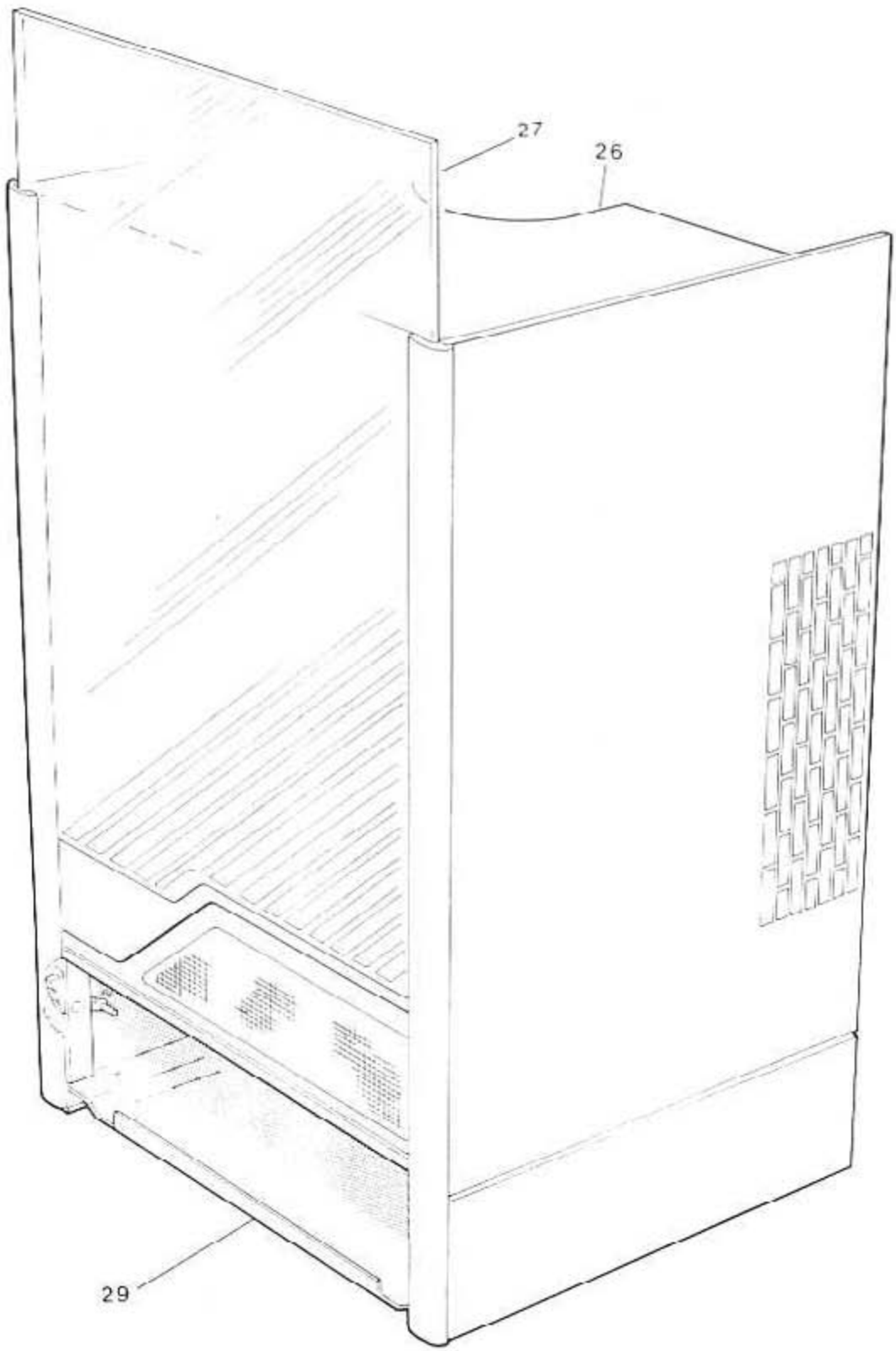
1 SMALL PARTS:- Elan 2 CF 40 P only



2 SMALL PARTS:- Elan 2 CF 50 P & 60 P



3 BOILER CASING- Exploded View



STELRAD GROUP pursues a policy of continuing improvement in design and performance of its products. The right is therefore reserved to vary specification without notice.

STELRAD GROUP Limited
Sales and Marketing
P.O. Box 103, National Avenue
Kingston upon Hull
North Humberside, HU5 4JN
Telephone: (0482) 492251 Telex: 597 032

Head and Registered Office:
Newtown Road Henley-on-Thames Oxfordshire
RG9 1HL
Registration No. London 322137

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