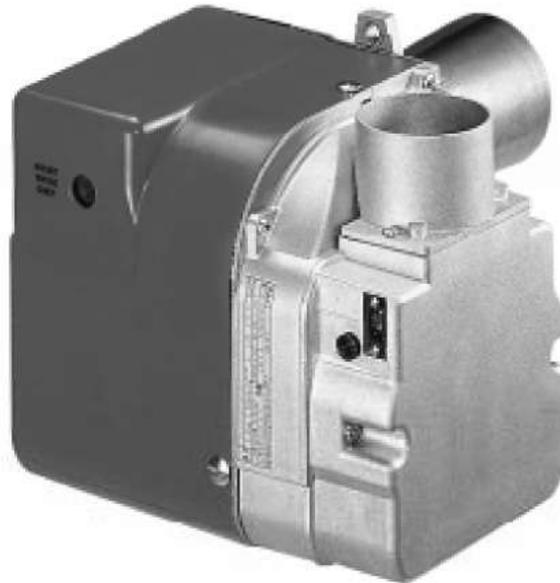




Burner Set-up Details



Riello RDB2

15–20 kW
20–26 kW
29–36 kW

Please read these instructions carefully
before commissioning and using this appliance.

To be retained by the householder

HEALTH AND SAFETY

INFORMATION FOR THE USER, INSTALLER AND SERVICE ENGINEER

Under the Consumer Protection Act 1987 and the Health and Safety at Work Act 1974, it is a requirement to provide information on substances hazardous to health (COSHH Regulations 1998).

TR Engineering takes every reasonable care to ensure that its products are designed and constructed to meet these safety requirements when the products are properly installed and used. To fulfil the requirements, products are comprehensively tested and examined before despatch.

When working on the appliance, it is the responsibility of the user or engineer to ensure that personal protective clothing or equipment—appropriate to parts that could be considered hazardous or harmful—is worn.

This appliance may contain some of the items below:

Insulation and Seals

Glass rope, mineral wool, insulation pads, ceramic fibre, glass insulation.

When handling, avoid inhalation and contact with eyes. These may be harmful and cause irritation to the skin, eyes, nose or throat. Use disposable gloves, facemasks and eye protection.

After handling, wash hands and other exposed areas. When disposing of materials, limit dust and the risk of inhalation by using a water spray. Ensure materials are securely wrapped.

Seek urgent medical attention if inhaled or ingested. Exposure to eyes and skin should be followed by immediate cleansing of the affected areas and medical attention if necessary.

Glues, Sealants and Paints

The glues, sealants and paints used present no known hazards when the appliance is used in the manner for which it is intended.

Mineral Oils

The appliance is designed to run on 28 sec. kerosene class C2. The effects of mineral oils on the skin will vary depending on the length of exposure.

Avoid any skin contact with oil or clothing contaminated with oil. Kerosene will remove the protective grease normally present on the surface of the skin, rendering it dry, liable to cracking and more prone to damage caused by cuts and abrasions. Seek immediate medical attention for any rash, wart or sore that develops on any part of the body.

Barrier cream that contains lanolin, such as Rosalex Antisol is recommended together with a strict regime of personal cleaning.

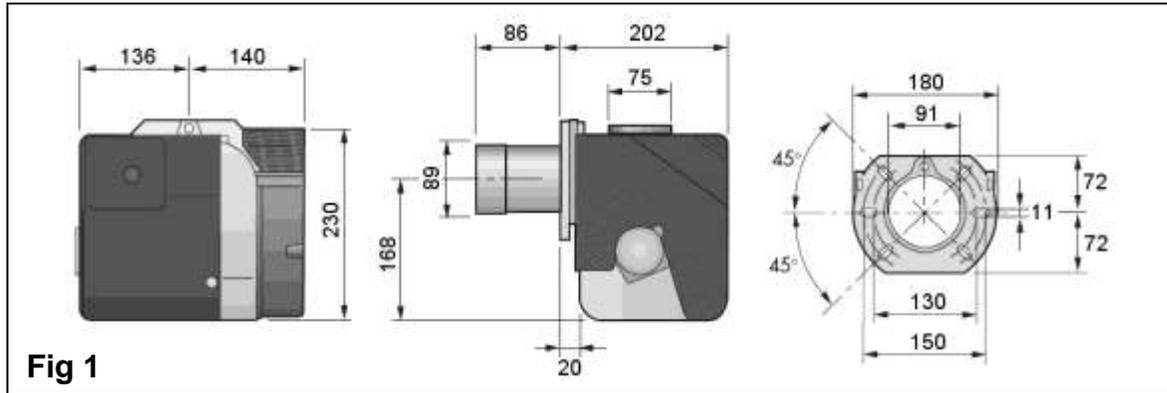
Do not breathe oil vapours. Do not fire the burner in the open (i.e. out of the boiler), as a misfire will produce unburned oil vapours. Under no circumstances should mineral oils be taken internally.

CONTENTS

	Page no.
Technical specifications	4
Burner set-up	4
Combustion air / adjustment	5
Oil pump	6
Nozzle replacement	7
Electrode positions	8
Burner removal	8
Control box wiring / removal	9
Fault-finding	10–11
Spares	12–13

TECHNICAL SPECIFICATIONS

Model	Riello RDB2	Ignition	8 kV / 16 mA
Electrical supply	230/280 V – 50 Hz fused at 5A	Control box	RBL 535 SE/LD analogue
Motor	RBL 90W	Pump	RBL
Rpm	2,700	Fuel	Kerosene C2
Capacitor	4.5 mF		



BURNER SETUP

Output	Input	Nozzle	Pump pressure	Primary air damper	Secondary air damper	CO ₂
15.0 kWh 50,000 Btu·h	15.5 kWh 52,860 Btu·h	0.45 x 60°ES	110 psi 7.6 bar	B	2.0	11.0%
17.5 kWh* 60,000 Btu·h	19.1 kWh 64,993 Btu·h	0.5 x 80°EH	130 psi 9 bar	B	4.0	11.3%
20.5 kWh 70,000 Btu·h	22.1 kWh 75,528 Btu·h	0.6 x 80°EH	130 psi 9 bar	C	4.0	11.5%
20.5 kWh 70,000 Btu·h	22.1 kWh 75,528 Btu·h	0.6 x 80°EH	130 psi 9 bar	C	3.0	11.5%
23.4 kWh* 80,000 Btu·h	25.0 kWh 85,350 Btu·h	0.65 x 80°EH	135 psi 9.3 bar	C	5.0	11.5%
26.3 kWh 90,000 Btu·h	28.3 kWh 96,374 Btu·h	0.75 x 80°EH	135 psi 9.3 bar	D	5.5	11.5%
29.0 kWh 100,000 Btu·h	31.5 kWh 107,441 Btu·h	0.85 x 80°EH	130 psi 9 bar	C	4.5	12.0%
32.8 kWh* 112,000 Btu·h	35.3 kWh 120,500 Btu·h	1.0 x 80°EH	110 psi 7.6 bar	E	4.0	12.0%
36.0 kWh 125,000 Btu·h	39.2 kWh 133,712 Btu·h	1.1 x 80°EH	125 psi 8.6 bar	E	4.5	12.0%

Note 1 The primary air damper should remain at the position indicated. The secondary air damper settings are for guidance only; individual site conditions—such as the type of flue and level of draught—will often compel deviation from the recommended positions. See **fig 3** for air damper adjustment instructions.

Note 2 The CO₂ ratio is correct for a combustion air temperature of 20°C; see **fig 2** for other temperatures.

Note 3 The * indicates factory settings. To attain different outputs, changes to the nozzle specification pump pressure and air setting may be required. The boiler should be set to match the heat requirements of the system. Incorrect matching may impede the boiler's correct operation and invalidate its warranty.

COMBUSTION AIR

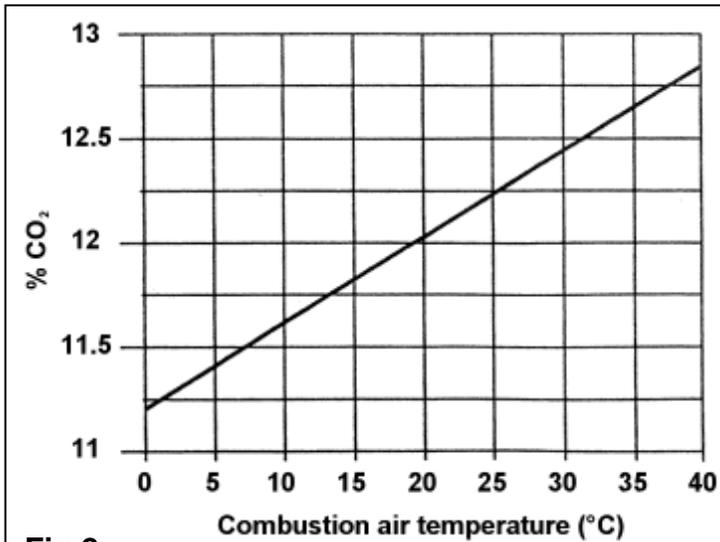


Fig 2

To conform to Efficiency Directive 92/42/EEC, the concentrations of CO and CO₂ in the flue gases must be verified. As combustion air can be taken from the room in which the boiler is situated or from outside, there may be variations in the ratio depending on the combustion air temperature. Use the graph adjacent to set the correct level.

Example: a 29–36 kW boiler taking in combustion air at 20°C will require a CO₂ ratio of 12%

AIR DAMPER ADJUSTMENT

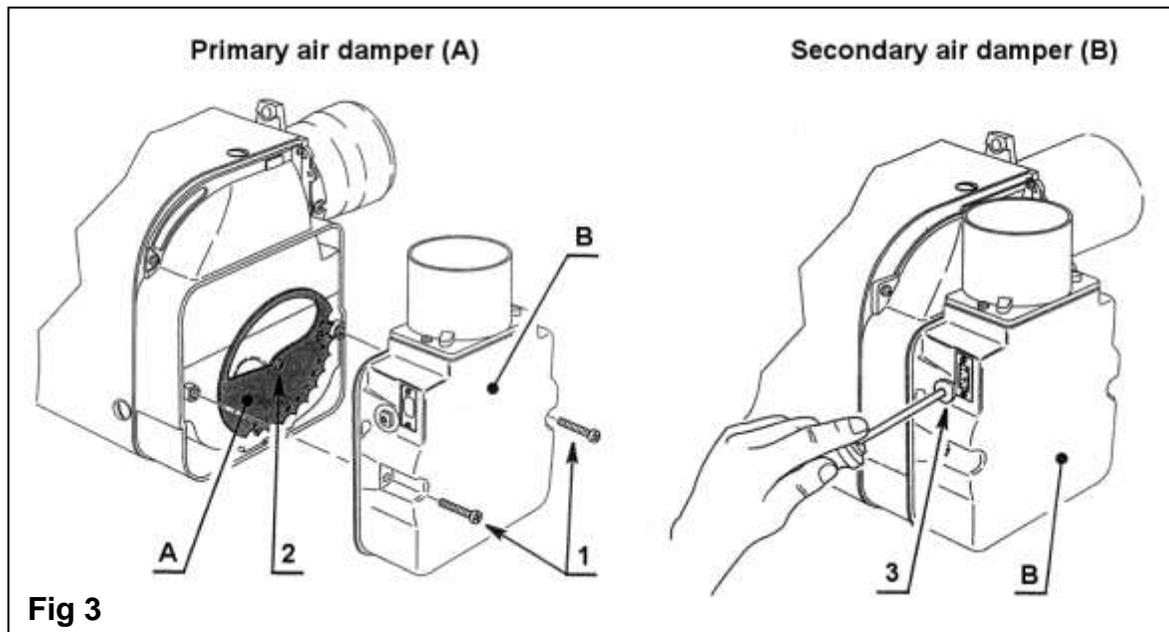


Fig 3

To set the primary air damper (A), remove the secondary air damper (B) by loosening the screws (1). Loosen the primary air wheel screw (2) and rotate the primary damper to the required position. Retighten the screw and replace the secondary damper.

To set the secondary air damper (B), turn the adjustment screw (3) either clockwise (+) or anti-clockwise (-) using the Allen key provided. The air setting will be indicated in the display window.

OIL PUMP

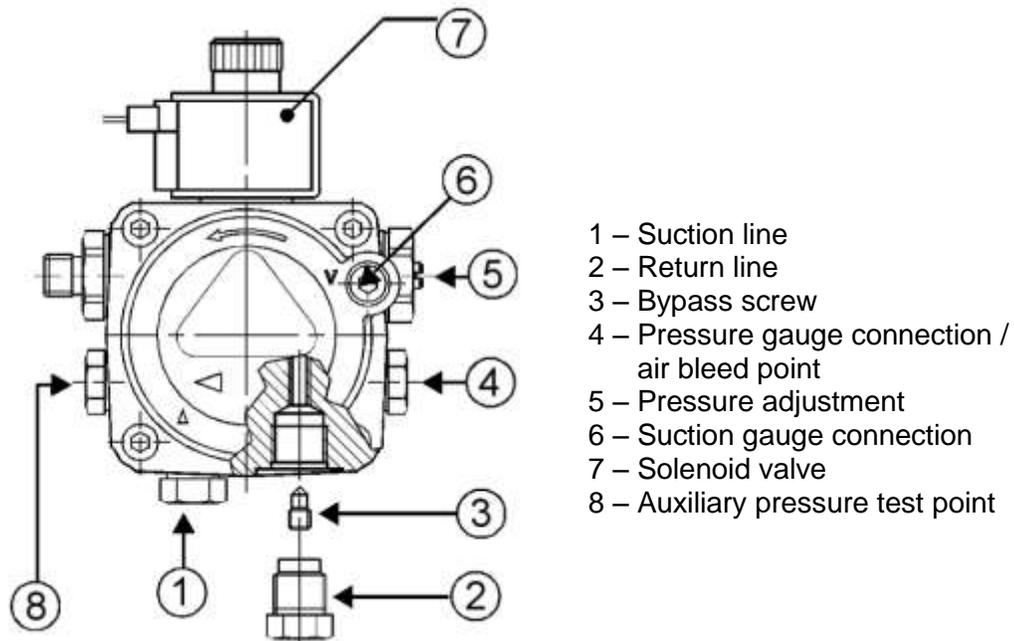


Fig 4

If the burner goes to a lockout state due to a lack of oil pressure, the pump may require priming. Remove the pressure gauge bleed port plug until oil is seen to be present and replace the plug.

Single-pipe systems

Where the lowermost part of the tank is above the level of the oil pump, a single-pipe gravity system can be used. The supply pipe should be connected to the suction port on the burner pump via the flexible hose (supplied). The pump is pre-set to run on single-pipe oil supplies—the bypass screw (3) must not be present in the return line (see fig 4).

Two-pipe systems

Where the lowermost part of the tank is below the level of the burner, a two-pipe suction lift is necessary. A second flexible hose will be required, and the oil pump must first be converted for use. Remove the return line plug (2), insert the bypass screw (3) and connect a second flexible oil line (not supplied).

Single pipe oil supplies with a de-aerator

Where a two-pipe suction lift is required, but it is not feasible to fit a return pipe, an oil de-aerator can be used. The burner should be piped—as for a two-pipe system, up to the de-aerator, at which point a single pipe can be taken to the storage tank. The de-aerator should be fitted as close to the boiler as possible—though externally to the premises—at a height no lower than the oil pump.

NOZZLE REPLACEMENT

1. Switch off the electrical supply to the burner and isolate the oil supply.
2. Remove the burner plug from the boiler control box.
3. Remove the burner from the boiler (**fig 8**).
4. Remove the blast tube (**fig 5**), exposing the nozzle holder assembly.
5. Taking care not to damage the electrodes, remove the nozzle with an appropriate socket or box spanner (**fig 6**).
6. Fit a new nozzle of the same specification.
7. Replace the flame ring in the same position, check the electrode positions (**fig 7**) and tighten.
8. Refit the blast tube.

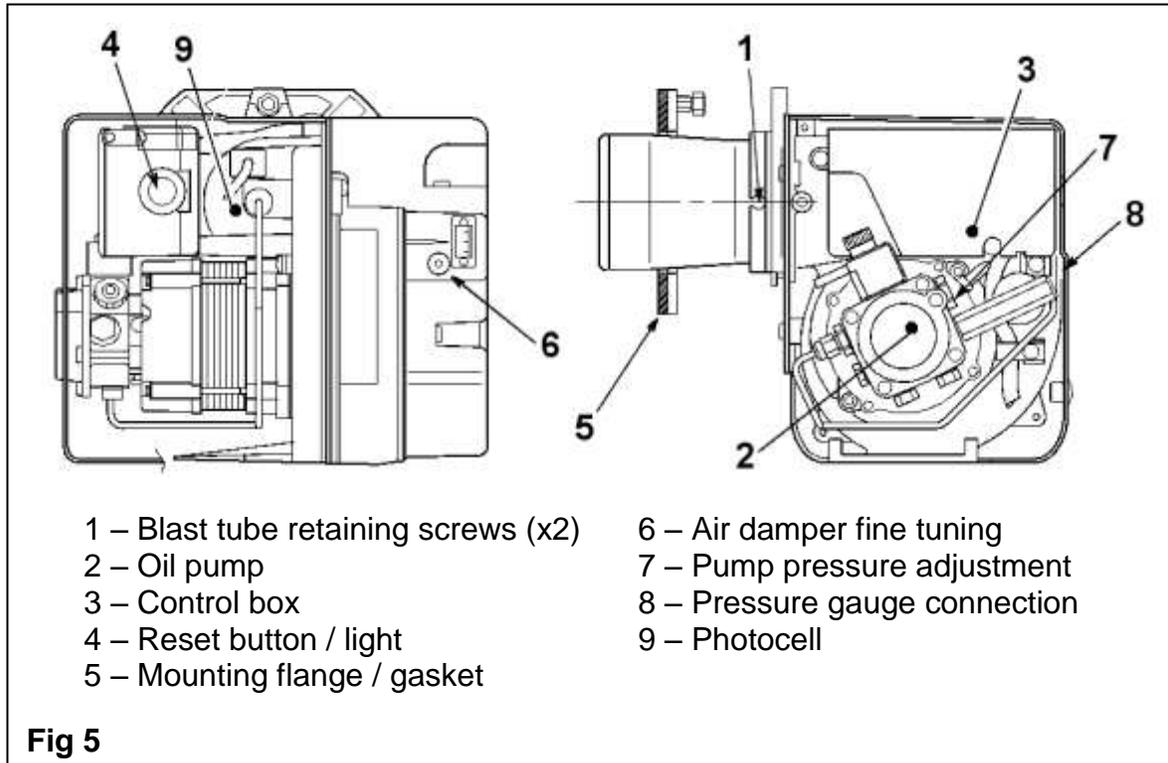


Fig 5

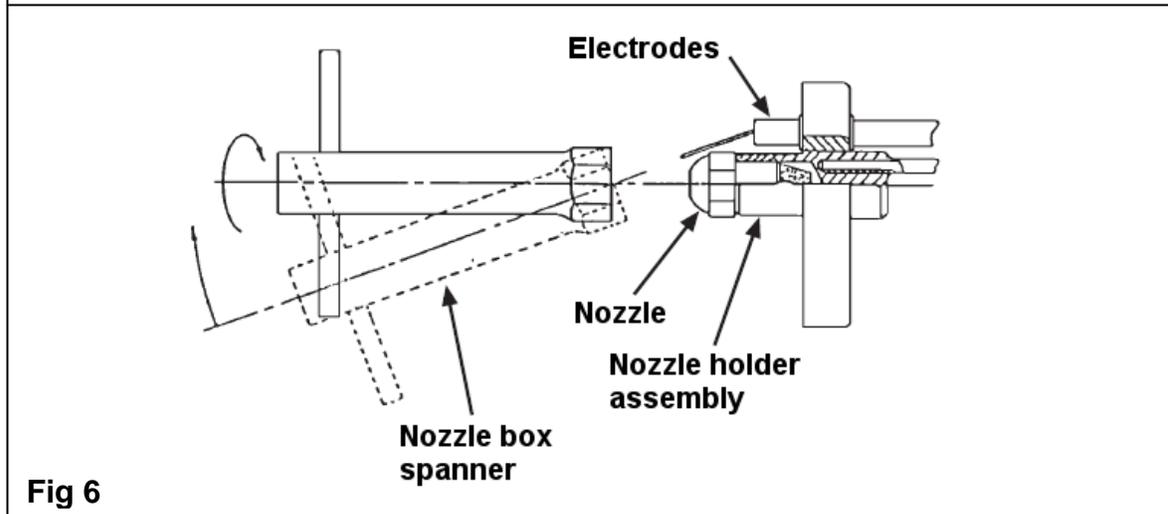
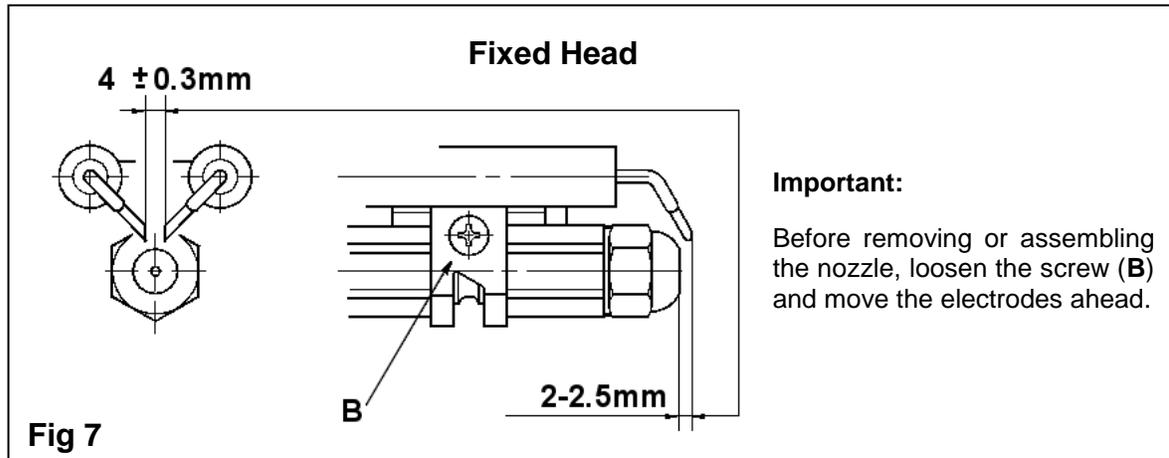
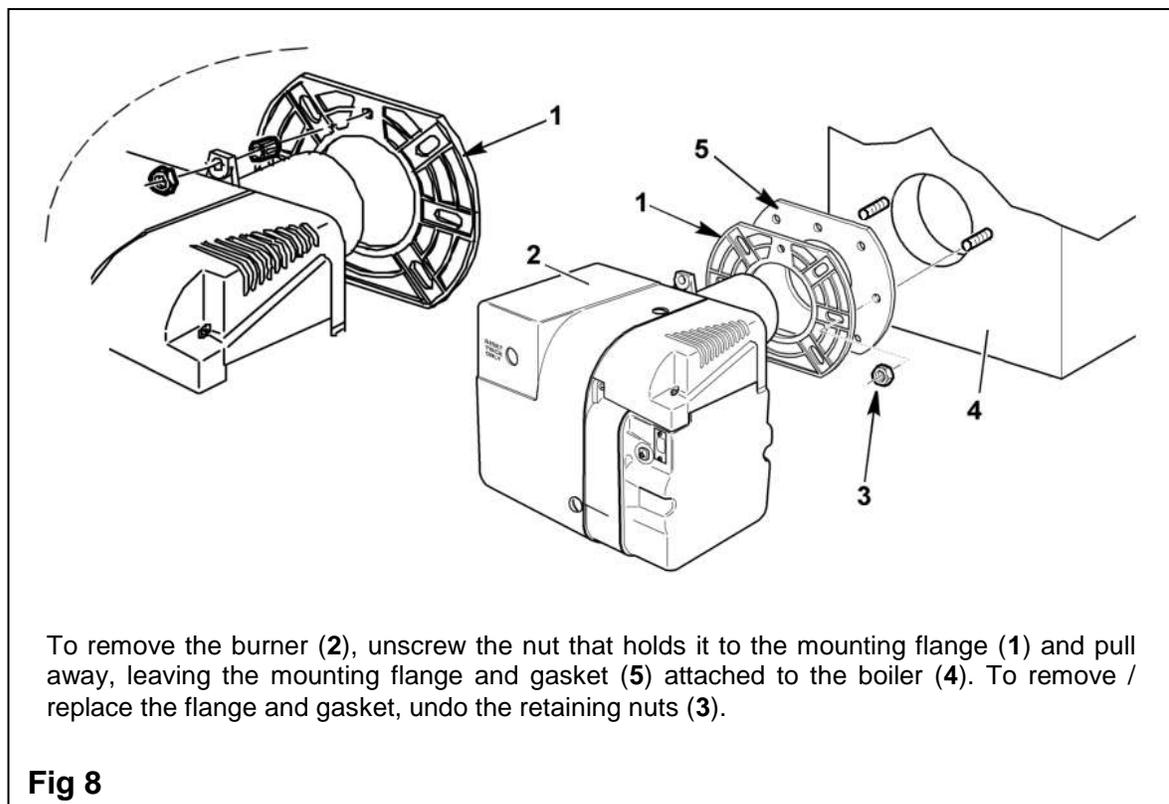


Fig 6

ELECTRODE POSITIONS



BURNER REMOVAL



CONTROL BOX WIRING

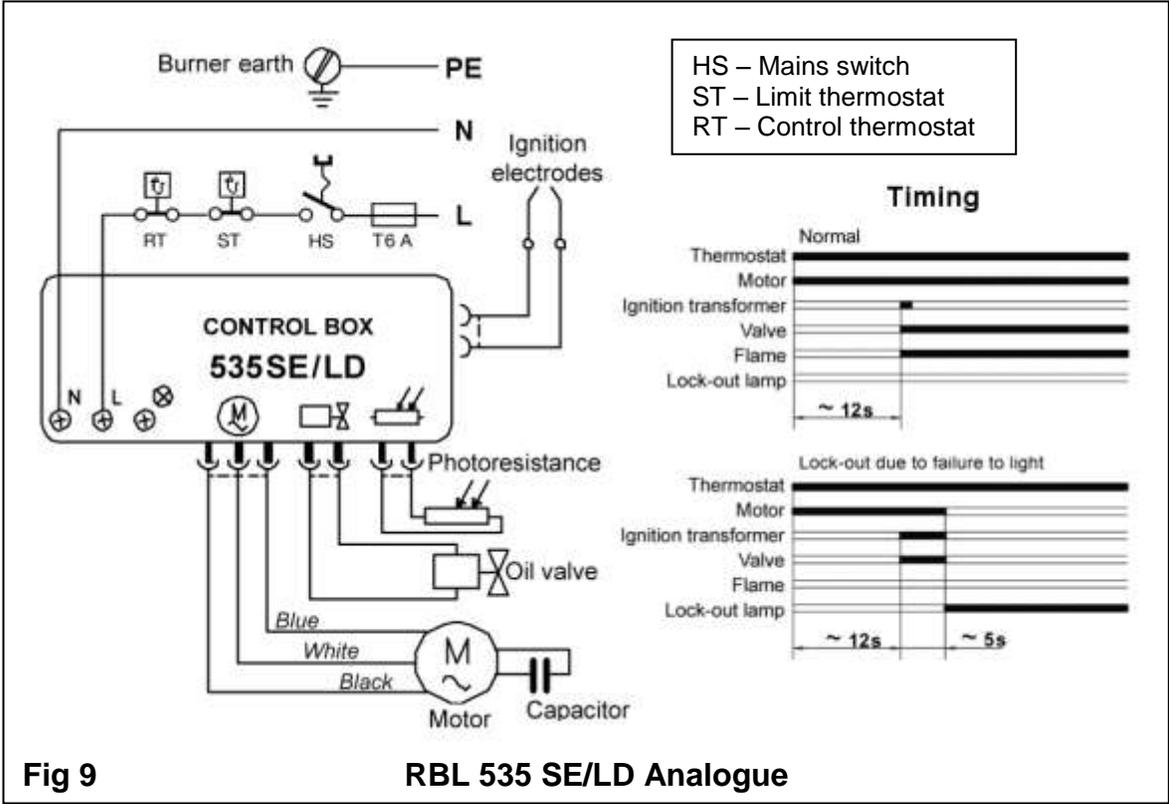


Fig 9

RBL 535 SE/LD Analogue

CONTROL BOX REMOVAL

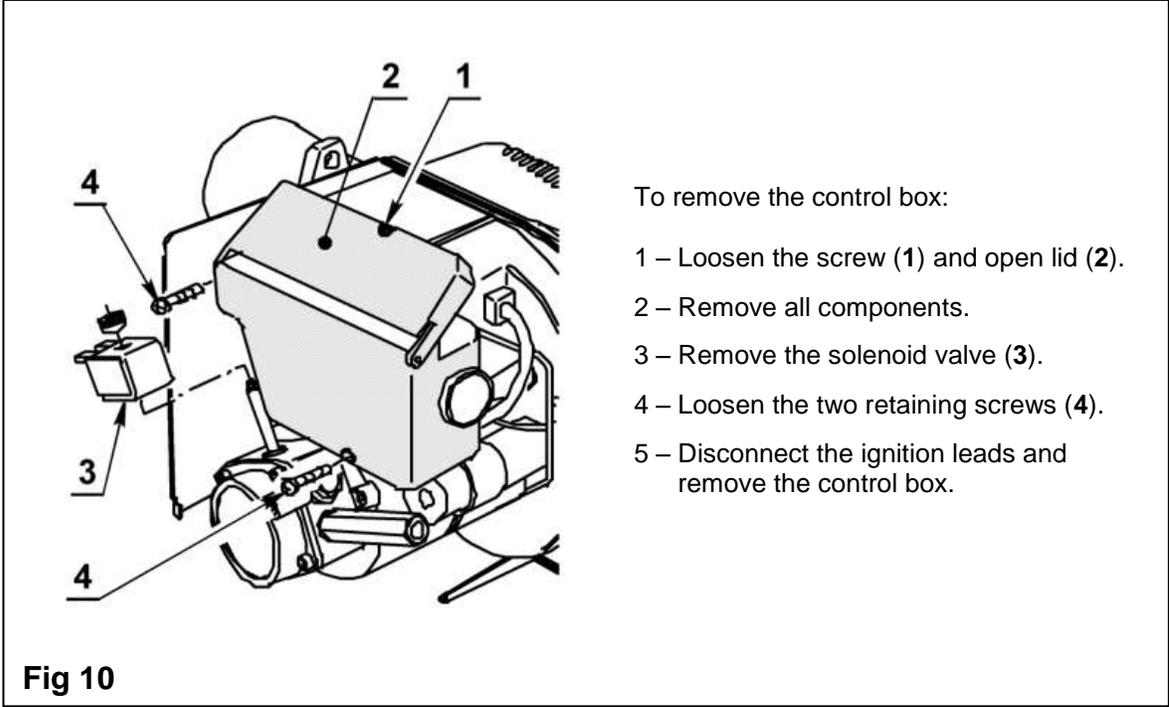


Fig 10

BURNER FAULT-FINDING

Note: before making any electrical checks or modifications, ensure the mains supply to the boiler is switched off.

Fault	Possible cause	Action
Burner will not start	Control box locked out High limit thermostat tripped System controls satisfied Blown fuse Motor or pump seized	Press red reset button on burner Press red reset button on rear of control panel; check function of boiler thermostat Ensure that all controls are calling for heat Fit new fuse (5A); if problem persists, look for short circuits in the wiring Check for rotation; replace as necessary
Burner starts but flame will not establish	No oil supply Air trapped in pump or oil line Solenoid coil not opening Blocked nozzle Electrodes incorrectly set Electrode insulation cracked Faulty ignition leads Low oil pressure	Check oil levels in storage tank; check for adequate flow through the oil supply pipes Bleed excess air from the pump via the pressure gauge connection Check coil for continuity; replace as necessary Replace the nozzle Reset gap and position to dimensions given Replace as necessary Replace as necessary Check pump pressure and adjust to level given
Flame establishes but cuts out after a few seconds	Oil contaminated with water Oil filter partially blocked Faulty photocell or photocell not seeing flame Low oil pressure	Run oil from drain cock at tank until free of water Wash filter clean with kerosene Clean photocell; check for damage; ensure it is fully inserted; replace as necessary Check pump pressure and adjust
Morning start lock-out	Faulty non-return valve or air leak Low voltage to the boiler Incorrect combustion settings Oil in storage tank below level of burner	Replace non-return valve; repair leak Check with electricity supplier to remedy Check combustion under normal running conditions; set air intake and oil pressure Raise tank or fit two-pipe oil supply
Delayed ignition (burner pulsates)	Nozzle partially blocked Low oil pressure Flue blocked or damaged Fan slipping on shaft Pump coupling loose or worn	Replace nozzle Check pump pressure and adjust Check flue; replace/repair as necessary Check fan; replace/repair as necessary Check coupling; replace/repair as necessary
Burner starts violently	Electrodes incorrectly set Electrodes damaged Faulty ignition leads	Reset electrode gap and position to dimensions given in burner details leaflet Replace as necessary Replace as necessary
Burner repeatedly attempts to fire (balanced-flue only)	Exhaust gas in combustion air	Repair/replace leaking flue sections as necessary; check for obstructions close to the terminal
Combustion fumes smell	Combustion chamber access cover not secure Burner incorrectly fitted or gasket damaged Flue incorrectly fitted or gasket damaged	Tighten nuts; replace seal as necessary Tighten burner to boiler; replace seal as necessary Tighten mounting nuts; replace seal as necessary

Burner Fault-finding Logic Chart

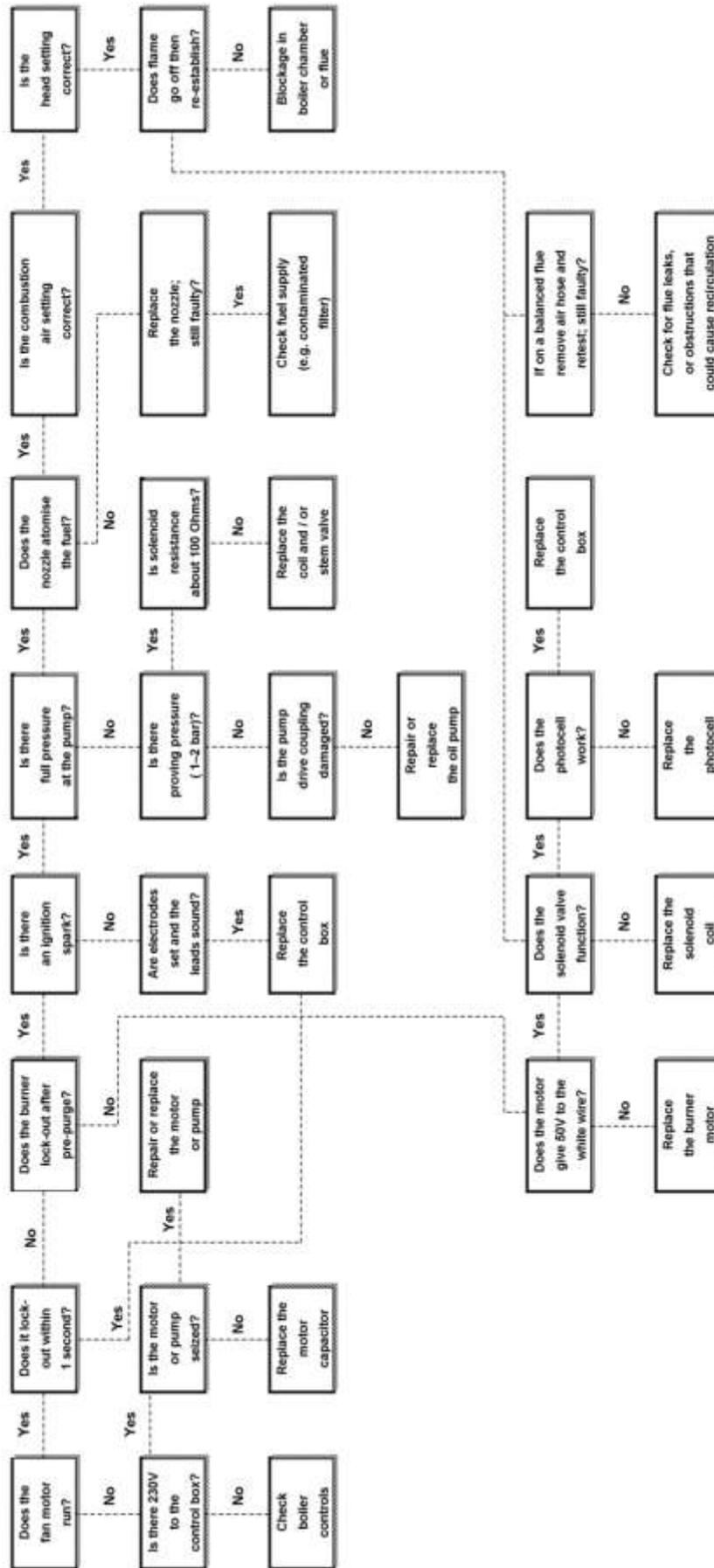


Fig 11

SPARES

Item	Description	Trianco Code	Riello Code	Trianco Code	Riello Code	Trianco Code	Riello Code
	Full Burner RDB 2	224820	20025628	224821	20025629	224822	20025631
1	Mounting flange gasket	TBC	TBC	TBC	TBC	224781	TBC
2	Mounting flange	TBC	TBC	TBC	TBC	224782	TBC
3	Blast tube	TBC	TBC	TBC	TBC	224783	TBC
4	Electrode assembly	TBC	TBC	TBC	TBC	224784	TBC
5	Housing screw	TBC	TBC	TBC	TBC	224785	TBC
6	Nozzle holder	TBC	TBC	TBC	TBC	224786	TBC
7	Collar	TBC	TBC	TBC	TBC	224787	TBC
8	Ignition leads	TBC	TBC	TBC	TBC	224788	TBC
9	Air damper assembly	TBC	TBC	TBC	TBC	224789	TBC
10	Fan	TBC	TBC	TBC	TBC	224790	TBC
11	Photocell	TBC	TBC	TBC	TBC	224791	TBC
12	Capacitor	TBC	TBC	TBC	TBC	224792	TBC
13	Needle valve	TBC	TBC	TBC	TBC	224793	TBC
14	Regulator	TBC	TBC	TBC	TBC	224794	TBC
15	Pump seal	TBC	TBC	TBC	TBC	224795	TBC
16	Pump	TBC	TBC	TBC	TBC	224796	TBC
17	Pump 'o'-ring	TBC	TBC	TBC	TBC	224797	TBC
18	Pump filter 'o'-ring	TBC	TBC	TBC	TBC	224798	TBC
19	Oil line connector	TBC	TBC	TBC	TBC	224799	TBC
20	Flexible oil line	TBC	TBC	TBC	TBC	224800	TBC
21	Oil supply pipe	TBC	TBC	TBC	TBC	224801	TBC
22	Pressure gauge connector	TBC	TBC	TBC	TBC	224802	TBC
23	Pump drive coupling	TBC	TBC	TBC	TBC	224803	TBC
24	Solenoid valve	TBC	TBC	TBC	TBC	224804	TBC
25	Motor	TBC	TBC	TBC	TBC	224805	TBC
26	Motor & capacitor	TBC	TBC	TBC	TBC	224806	TBC
26	Control box housing	TBC	TBC	TBC	TBC	224807	TBC
27	Control box	TBC	TBC	TBC	TBC	224808	TBC
28	Solenoid valve cable	TBC	TBC	TBC	TBC	224809	TBC
29	Burner cover	TBC	TBC	TBC	TBC	224810	TBC
30	Seals kit	TBC	TBC	TBC	TBC	224811	TBC
	Air deflector	TBC	TBC	TBC	TBC	TBC	TBC
	Nozzle ¹ 0.45 x 80°EH	223283	-	-	-	-	-
	Nozzle ¹ 0.50 x 80°EH	223162	-	-	-	-	-
	Nozzle ¹ 0.60 x 80°EH	26213	-	26213	-	-	-
	Nozzle ¹ 0.65 x 80°EH	-	-	223161	-	-	-
	Nozzle ¹ 0.75 x 80°EH	-	-	223538	-	-	-
	Nozzle ¹ 0.85 x 80°EH	-	-	-	-	221356	-
	Nozzle ¹ 1.00 x 80°EH	-	-	-	-	26367	-
	Nozzle ¹ 1.10 x 80°EH	-	-	-	-	208693	-

¹ Not shown

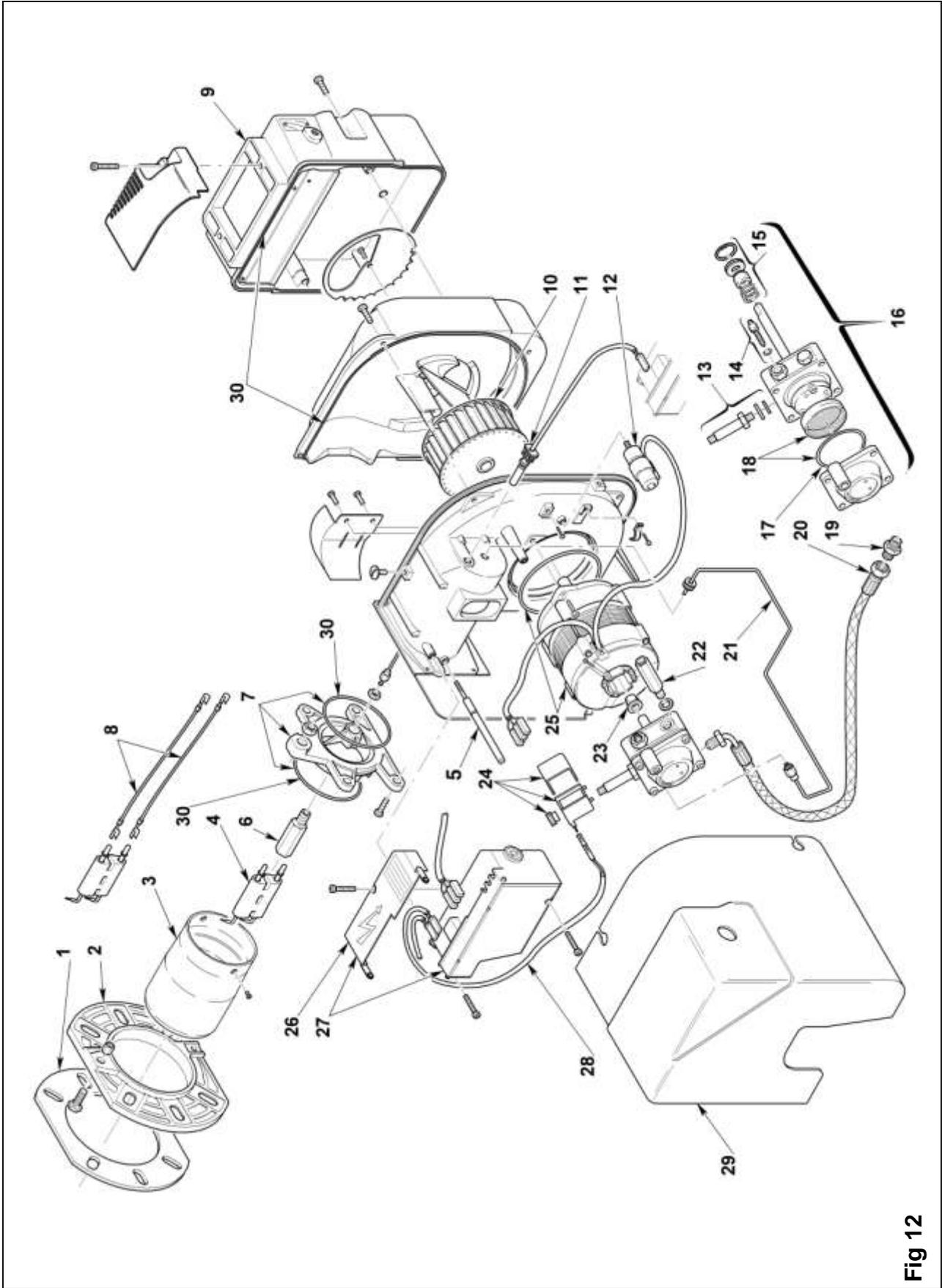


Fig 12



TR ENGINEERING LTD
Thornccliffe, Chapeltown
Sheffield S35 2PH
Tel: (0114) 257 2300
Fax: (0114) 257 1419
www.trianco.co.uk

Copyright in this brochure and the drawings and illustrations contained within are vested in TR Engineering Ltd and neither the brochure nor any part thereof may be reproduced without prior written consent.

TR Engineering's policy is one of continuous research and development. This may necessitate alterations to this specification. Instructions correct at time of going to print.