TRIANCO

Burner Setup Details

Riello RDB3

38/52 kW
56/70 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 Antisolv 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.

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TECHNICAL SPECIFICATIONS

Model	Riello RDB3	**Ignition**	8 kV / 16 mA
Electrical supply	230/280 V – 50 Hz fused at 5A	**Control box**	RBL 535 SE/LD analogue
Motor	RBL 150W	**Pump**	RBL
Rpm	2,750	**Fuel**	Kerosene C2
Capacitor	5 uF	**Power**	0.16 kW

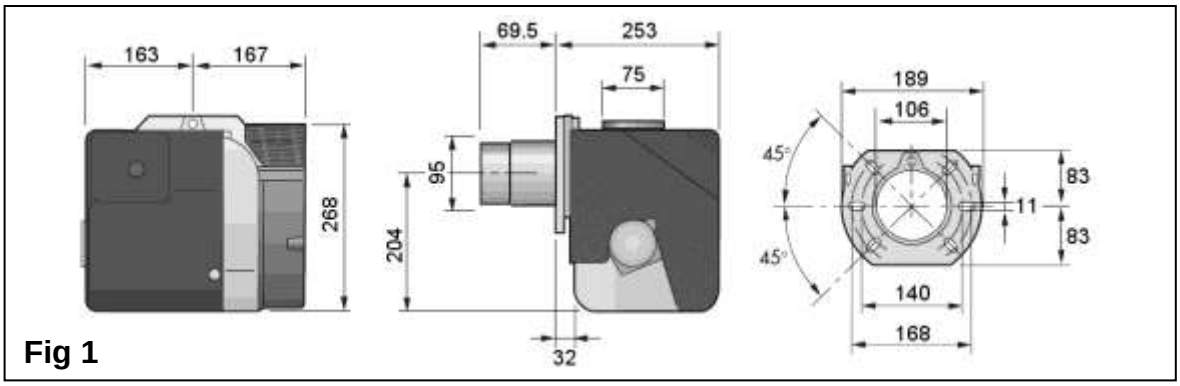


Fig 1

BURNER SETUP

Output	Input	Nozzle	Oil pressure	Air damper	CO_2
38.1 kW 130,000 Btu/h	39.8 kW 135,797 Btu/h	1.25 x 60º S	100 psi 6.9 bar	2.0	11.0%
45.4 kW 155,000 Btu/h	47.4 kW 161,729 Btu/h	1.35 x 60º S	110 psi 7.6 bar	4.0	11.5%
52.7 kW 180,000 Btu/h	54.4 kW 185,619 Btu/h	1.65 x 60º S	105 psi 7.2 bar	5.5	11.5%
55.5 kW 190,000 Btu/h	**.* kW ***,*** Btu/h	**.* x **º *	*** psi *.* bar	*.*	**.*%
63.0 kW 215,000 Btu/h	**.* kW ***,*** Btu/h	**.* x **º *	*** psi *.* bar	*.*	**.*%
70.3 kW 240,000 Btu/h	**.* kW ***,*** Btu/h	**.* x **º *	*** psi *.* bar	*.*	**.*%

Note 1 The air damper settings are for guidance only; individual site conditions may compel deviation from the recommended positions. See **fig 3** for air damper adjustment instructions.

Note 2 The CO_2 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

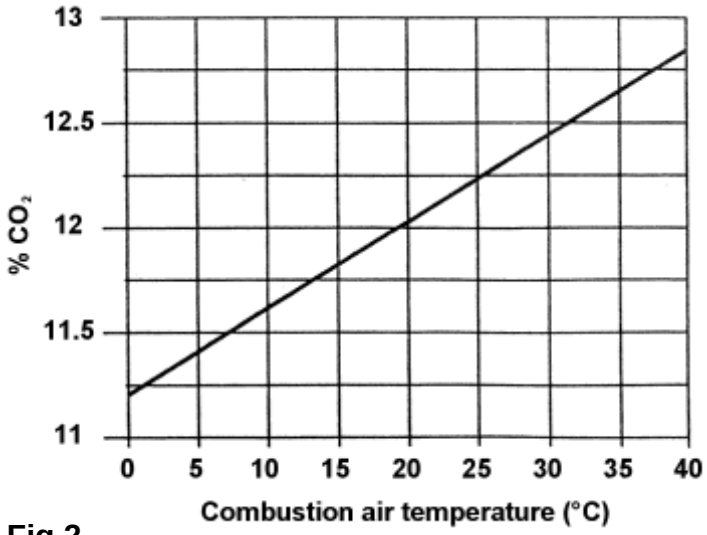


Fig 2

To conform to Efficiency Directive 92/42/EEC, the concentrations of CO and CO_2 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 CO_2 ratio of 12%

AIR DAMPER ADJUSTMENT

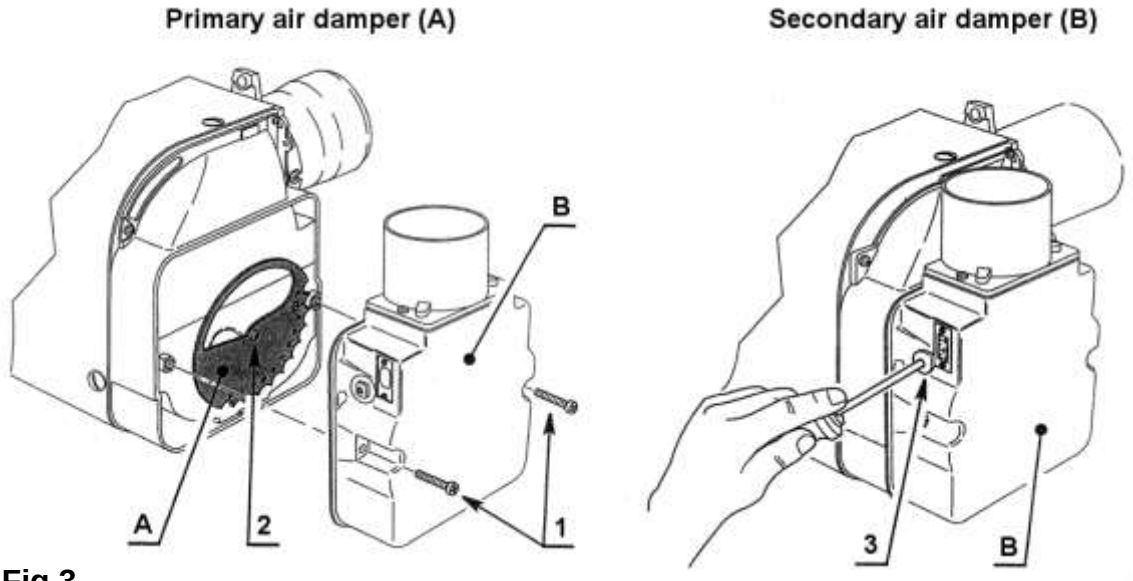
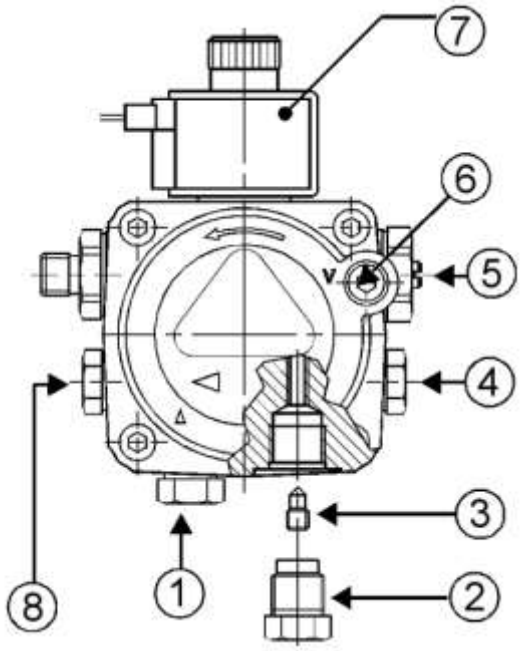


Fig 3

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



1 – Suction line
2 – Return line
3 – Bypass screw
4 – Pressure gauge connection / air bleed point
5 – Pressure adjustment
6 – Suction gauge connection
7 – Solenoid valve
8 – Auxiliary pressure test point

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

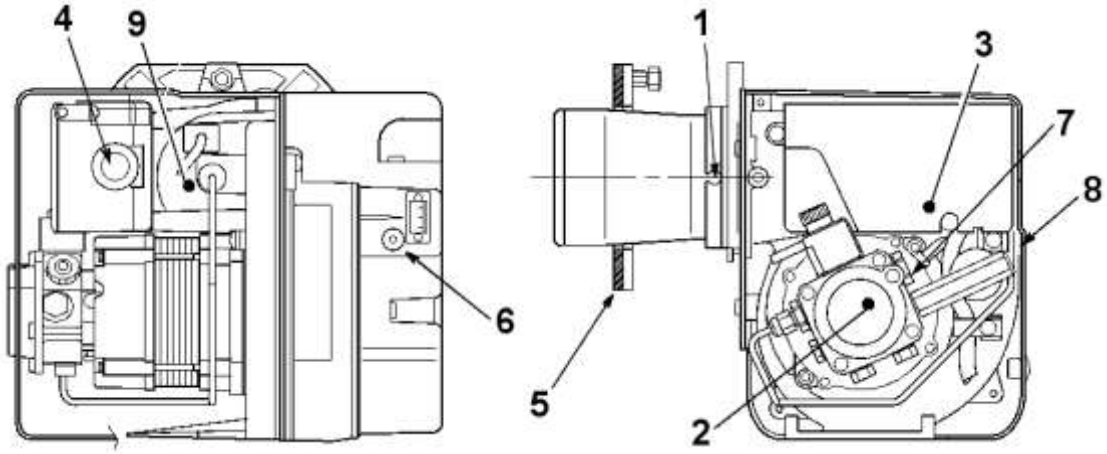
Where the lowermost part of the tank is below the level of the burner, a two-pipe suction lift is necessary. A second flexible hose will be required, and the oil pump must first be converted for use. Remove the return line plug (**2**), insert the bypass screw (**3**) and connect a second flexible oil 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 and the pump converted 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.



1 – Blast tube retaining screws (x2)
2 – Oil pump
3 – Control box
4 – Reset button / light
5 – Mounting flange / gasket
6 – Air damper fine tuning
7 – Pump pressure adjustment
8 – Pressure gauge connection
9 – Photocell

Fig 5

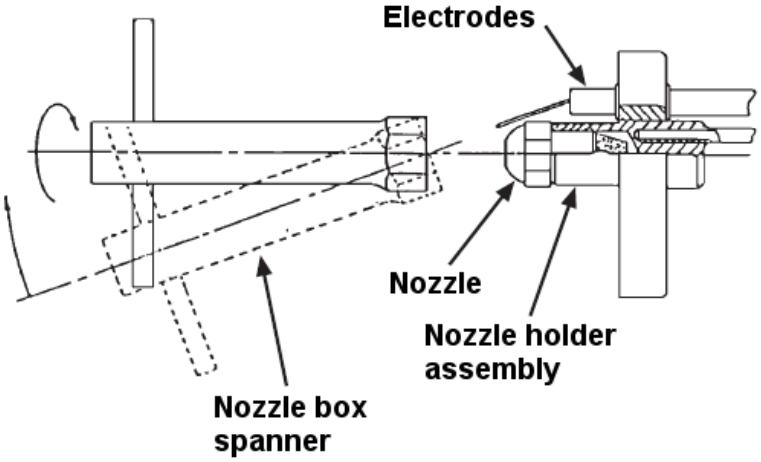
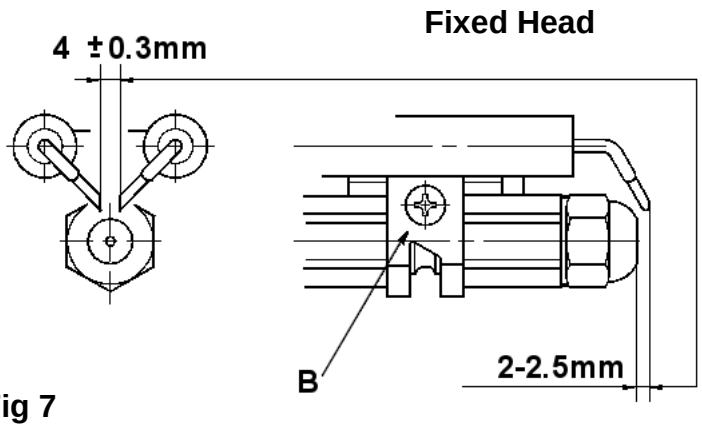


Fig 6

ELECTRODE POSITIONS

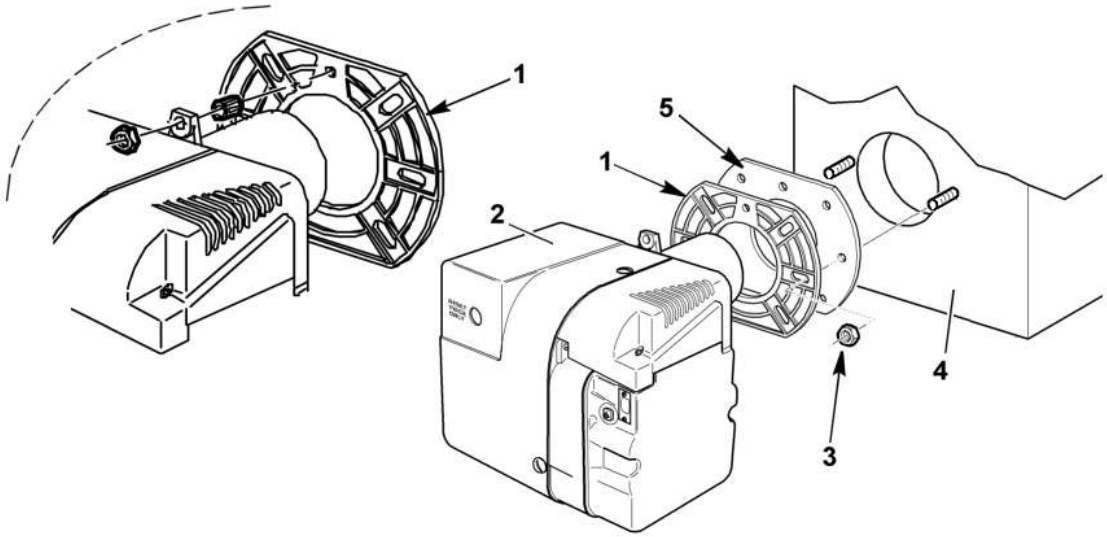


Important:

Before removing or assembling the nozzle, loosen the screw (**B**) and move the electrodes ahead.

Fig 7

BURNER REMOVAL



To remove the burner (**2**), unscrew the nut that holds it to the mounting flange (**1**) and pull away, leaving the mounting flange and gasket (**5**) attached to the boiler (**4**). To remove / replace the flange and gasket, undo the retaining nuts (**3**).

Fig 8

CONTROL BOX WIRING

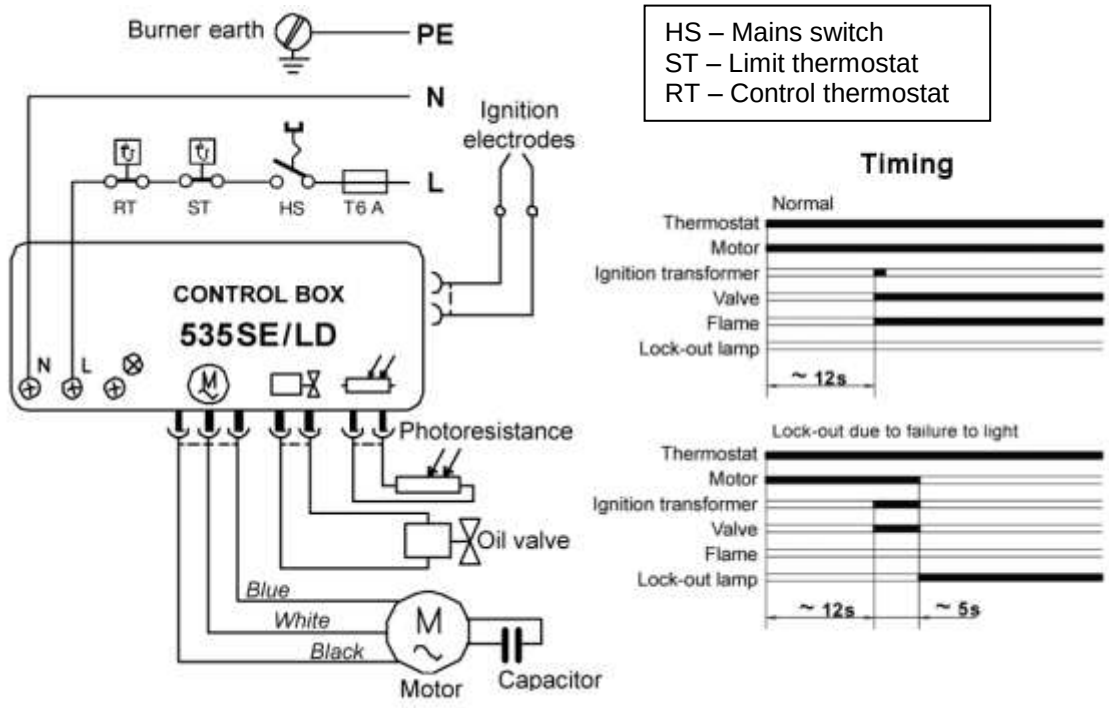
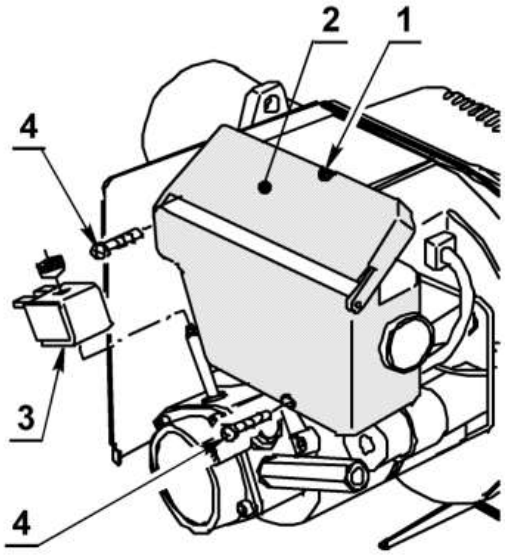


Fig 9 **RBL 535 SE/LD Analogue**

CONTROL BOX REMOVAL



To remove the control box:

1 – Loosen the screw (**1**) and open lid (**2**).

2 – Remove all components.

3 – Remove the solenoid valve (**3**).

4 – Loosen the two retaining screws (**4**).

5 – Disconnect the ignition leads and remove the control box.

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

Burner Fault-finding Logic Chart

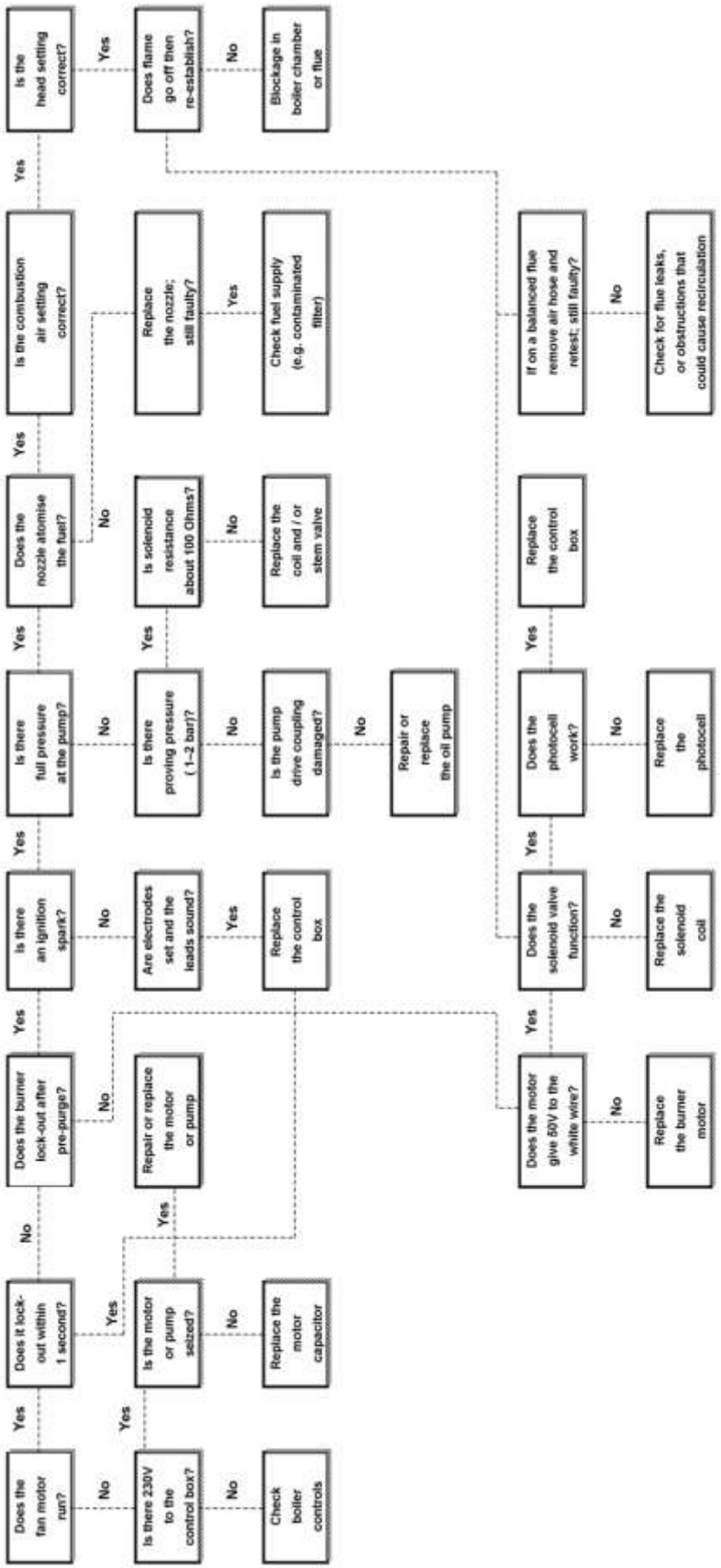


Fig 11

SPARES

Item	Description		TR Eng Code	Riello Code	TR Eng Code	Riello Code
	Full burner	RDB3	224823	*******	224824	*******
1	Mounting flange		225001	3008637	******	*******
2	Blast Tube Assembly		225003	3002572	******	*******
3	Diffuser Disc		225004	3002571	******	*******
4	Nozzle Holder		225005	3002570	******	*******
5	High Voltage Lead		224788	3008794	******	*******
6	Collar		225006	3008957	******	*******
7	Seal Kit		225007	3008963	******	*******
8	Air Damper Assembly		224789	3008839	******	*******
9	Noise Insulation		225008	3008958	******	*******
10	Fan		225009	3005799	******	*******
11	Photo Electric Cell		225010	3008646	******	*******
12	Burner Cover		225011	3008962	******	*******
13	Electrode		225012	3020121	******	*******
14	Capacitor 5µF		225013	3008960	******	*******
15	Oil Line Connector		224799	3003602	******	*******
16	Flexible Oil Line		224800	3005720	******	*******
17	Motor		225014	3008964	******	*******
18	Pressure Gauge Connector		224802	3008876	******	*******
19	Oil Supply Tube		225015	3008961	******	*******
20	Pump Drive Coupling		224808	3000443	******	*******
21	Solenoid Coil and Nut		224804	3008648	******	*******
22	Solenoid Lead		224809	3008851	******	*******
23	Pump		224796	3008654	******	*******
24	Pump Seal		224795	3000439	******	*******
25	Filter ‘O’ Ring		224798	3008653	******	*******
26	Regulator		224794	3008651	******	*******
27	Needle Valve		224793	3007582	******	*******
28	Control Box 535SE/LD		224808	3008652	******	*******
29	Control Box Cover		224807	3008649	******	*******
30	Diffuser Disc		225016	3020119	******	*******
31	Mounting Flange Gasket [1]		225002	*******	******	*******
	Nozzle [1]	1.25 x 60º S	26857	-	-	-
	Nozzle [1]	1.35 x 60° S	223608	-	-	-
	Nozzle [1]	1.65 x 60º S	223609	-	-	-
	Nozzle [1]	*.** x **ºEH	-	-	******	-
	Nozzle [1]	*.** x **ºEH	-	-	******	-
	Nozzle [1]	*.** x **ºEH	-	-	******	-

[1] Not shown

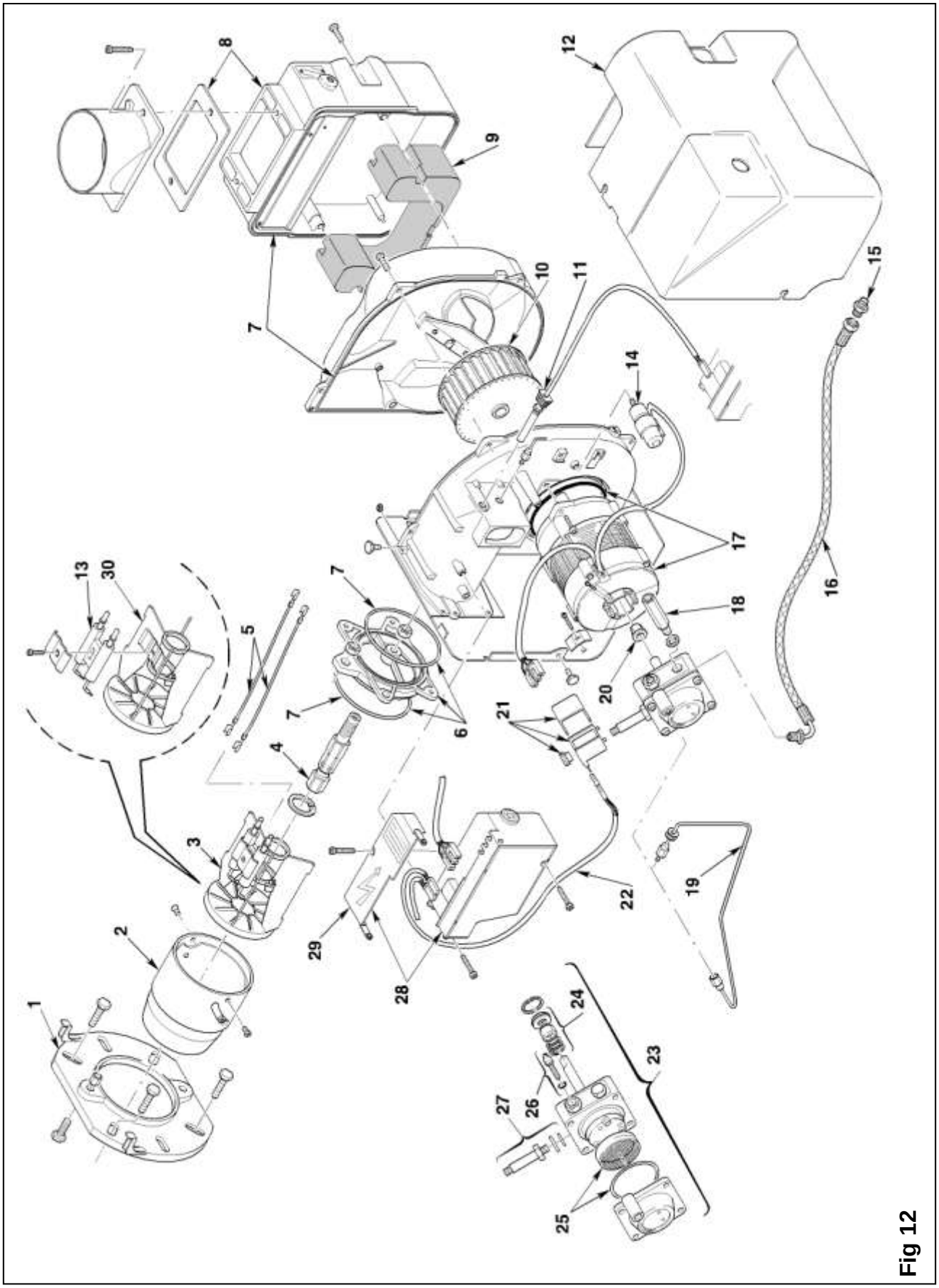

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Fig 12

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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.

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