



Trianco

TRO Range

CI/SfB

56.41



By appointment to H.M. Queen Elizabeth
The Queen Mother
Manufacturers of Domestic Boilers

Installation Instructions

TO BE RETAINED BY
HOUSEHOLDER

TRO 12/14

*TRO 15/19

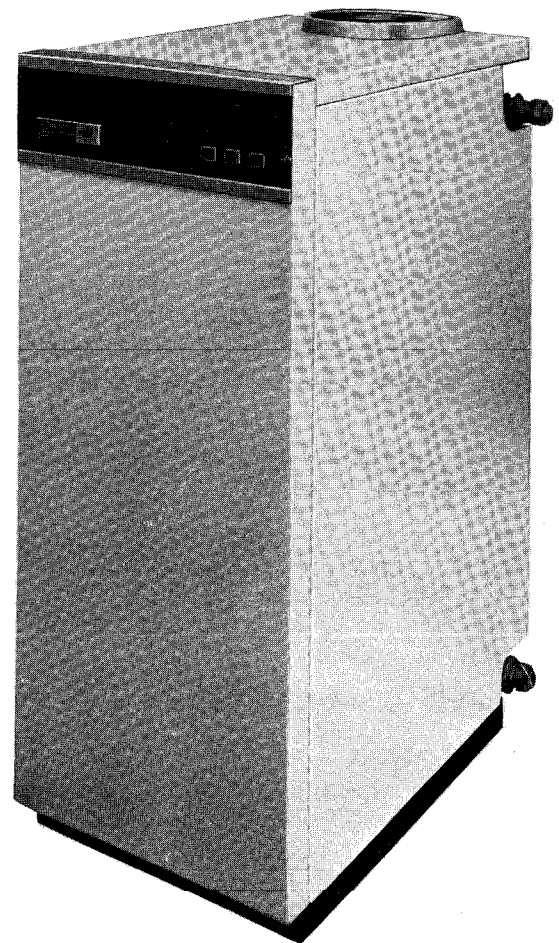
*TRO 20/25

*TRO 28/32

TRO 37/45

TRO 50/73

*Mk. II Models.



DESCRIPTION OF BOILER

The Unit is a horizontal firing pressure jet oil burning boiler. It is fully automatic and operates at high fire or off, the oil being ignited electrically.

The boiler body is constructed from welded steel plate suitably braced for a system working pressure of up to 207 kN/M² (30 p.s.i. — 70ft. head).

Flow and return tappings are provided on each side for connection to the heating and hot water systems and a pump tapping is available at the front. A top outlet socket is provided for flue-pipe connection.

The boiler is fired with the latest design of pressure jet burner embodying features that when correctly adjusted ensure complete and efficient combustion.

Control of the boiler is by a thermostat, with warning lights and a limit-thermostat being provided for additional safety.

The top flue-cover incorporates a flame viewing sight glass. This flue-cover provides easy access to the flue baffles and heat exchange surfaces for cleaning.

Space is provided inside the boiler casing for the fitting of a circulating pump if required.

The burner, which is mounted at the front of the boiler, is easily removed for servicing. Oil is supplied to the burner by connecting the flexible pipe to the supply line.

REMOVAL OF PANELS

Remove flue bezel filler-piece, then lift off the top panel.

Remove the screws fastening the side casings and chassis panel to boiler body. The side casings, door assembly and chassis panel can then be removed complete, taking care to remove thermostat phials and disconnect electrical plug.

LOCATION OF BOILER

The TRO boilers are suitable for all types of conventional systems, including micro and mini bore installations.

Before the boiler is installed, the following requirements should be met:

Hearth

The hearth should conform to the Building Regulations for appliances with hearth temp. of less than 100°C. The area chosen for the base must allow access for boiler installation and maintenance.

Minimum Clearance

Front	—	367mm (14.5") TRO 12/14 & 15/19 462mm (18.0") TRO 20/25 & 28/32 520mm (20.5") TRO 37/45 & 50/73
Top	—	300mm (12.0") All models
Sides	—	Sufficient for making flow and return connections.

Combustion Air

To ensure an adequate supply of fresh air necessary for efficient combustion, a low level inlet must be provided. This inlet should be approximately 300mm (12") from the floor and not liable to obstruction or blocking. To keep draughts to a minimum, it should be as near to the boiler as possible.

Combustion Air Minimum FREE Inlet Area.

Model	sq. cm.	sq. in.
TRO 12/14	130	20
TRO 15/19	180	28
TRO 20/25	225	35
TRO 28/32	290	45
TRO 37/45	408	63
TRO 50/73	662	102

Ventilation

A ventilation grille should be provided at a high level, having a free area of at least half that of the combustion air inlet.

Flue System

To evacuate the products of combustion safely and thoroughly from the boiler, an efficient flue system is necessary. The following notes have been compiled for guidance, but reference should be made to B.S. 5410 PARTS 1 or 2.

Conventional Flues

1. The flue should rise as near vertically as possible to terminate at a point which is not affected by down-draught or wind eddies, nor be in a pressure zone.
2. If possible, the flue should rise within the house and be lined. If an external flue is used, it should be of the twin-wall or insulated type to B.S. 4543 Part 3.
3. Horizontal runs and right-angled bends must be avoided. If it is necessary for a horizontal section to be included in the flue, an increase in flue height may be required.
4. The average flue should provide flue draught of approximately 20 N/m² (0.08" w.g.) when hot, but the boiler will function equally well on draughts as low as 10 N/m² (0.04" w.g.) or as high as 45 N/m² (0.18" w.g.).
5. A draught stabilizer is not normally required nor is desirable, but where flue draughts are in excess of 50 N/m² (0.20" w.g.) a stabilizer may be necessary.
6. No part of the flue run should have a cross sectional area less than that of the boiler flue outlet. Where the height is in excess of 9 m. (30 ft.) the flue diameter should be increased by 25 mm (1") to avoid excessive back pressure on start up.
7. Provision must be made for draining whenever condensation is likely.
8. The flue pipe connection between the boiler and chimney must be sealed with fire cement.

LOW LEVEL FLUE-GAS DISCHARGE

The TRO boilers from TRO 12/14 to 28/32 inclusive can also be used with any of the Trianco Redfyre Flue Terminal Kits, provided that the boilers are fired with Kerosene Class C2 oil.

Refer to separate literature for further information on the Flue Terminal Kits.

Water Connections

The water connections should be made to British Standards Code of Practice.

Position the boiler on its prepared base and make water connections to flow and return sockets. When using only one flow and return tapping connect to diagonally opposite sockets. If it is required to fit the circulating pump within the casing, use the socket at top front of boiler and run flow pipe along top of body (see Fig. 1). **MAKE SURE ALL UNUSED TAPPINGS ARE PLUGGED BEFORE FILLING THE BOILER WITH WATER.**

Fill the system with water and make a thorough check for leaks.

Where the boiler is also used for providing domestic hot water a double feed indirect cylinder to B.S. 1566 Part 1 must be used. No responsibility will be accepted by Trianco Redfyre Ltd. if connected otherwise.

Electrical Connections

Ensure that the mains supply is switched off before commencing work. The electrical supply must be 240 volts. A.C. single phase 50 Hz and this may be supplied from a convenient switch and socket 13 amp fused plug. The boiler is fitted with a 5 amp fuse for protection. Ancillary equipment should be suitably protected.

The wiring must conform to I.E.E. regulations.

The electrical supply to the boiler should be made with heat-resistant cable connected to the 3 way terminal-block on the control panel, and the cable secured with the cable grip provided. Terminal connections are also provided for ancillary equipment.

A wiring diagram for the appliance is included with these instructions and is also on the inside of the casing door.

In areas where there is a significant risk of high or low voltage, the start-up of the oil burner shall be prevented by the use of a voltage-sensitive device if the applied voltage drops or increases sufficiently to endanger the installation.

Limit Thermostat

The appliance is fitted with a limit-thermostat which is pre-set and requires no adjustment. Should the boiler thermostat become inoperative the limit-thermostat will take over control of the boiler and provide protection, but at a higher temperature setting. The AMBER light on the control panel will then come ON and OFF as the limit-thermostat contacts make and break, indicating that the unit is operating on the limit-thermostat only. Before attempting to replace the control thermostat check that the limit-thermostat has not tripped out as a result of a rise in boiler temperature due to the pump switching off or a valve closing down. The boiler thermostat should be replaced by a Service Engineer as soon as possible.

Programmer (Optional)

A ten-position programmer is available as an optional extra for plugging directly into the boiler control panel. (See separate instructions for fitting).

Fuel Storage Tank

It is important that a filter and stop valve is fitted into the oil supply line. Should these be omitted no responsibility can be accepted by Trianco Redfyre for failure to any part of the burner assembly.

Fuel Supply

An oil supply line, minimum 10mm (3/8") diameter, will be required. (See diagrams Figs. 2 & 3).

The oil connection on the flexible oil hose supplied with the burner is 1/4" BSP male.

An isolating valve should be fitted as near to the unit as practicable to enable oil line to be disconnected without undue loss of fuel.

The burner unit is supplied for use on a single pipe supply. To convert the unit for two pipe supply the following must be carried out.

Fit the by-pass plug (provided with burner) and connect a second flexible oil hose to the return port.

It is recommended that a fire stop valve be fitted in the oil line at the point of entry into the building. Where there is any doubt about a suitable tank site, consult the local fire officer.

Valves, fuel line, filters and external fire valve must conform to BS. 799 Part 3. With a single pipe oil supply system the fuel tank may be positioned so that the head above the burner centre line is between 0 and 3.6 metres (0 and 12 ft.). With a two pipe supply system the fuel tank may be positioned so that the suction head below the pump is between 0 and 3 metres (0 and 10 ft.).

The oil line can enter the appliance either side of the boiler, inside the casing above the base tray for connection to the flexible hose on the burner.

Fuel

The recommended fuel is 28 seconds Kerosene (BS.2869:1970 Class C2).

OPERATION

Normal Operating Sequence

Turn the thermostat knob clockwise to switch on the boiler and then set to the required temperature. The low setting corresponds approximately to 57°C (135°F), and the high setting to 88°C (190°F). Once the boiler has been switched on, the burner will ignite immediately after the 10 seconds pre-ventilation period and continue to run until the boiler thermostat reaches the desired temperature. The electrical supply to the ignitor is automatically switched off when a stable flame is established. Should flame failure occur during normal running, the control box will shut down the burner after 15 seconds and go to a lockout condition. This condition will remain until the reset button is pressed in to restart the burner. Wait for at least 60 seconds before pressing reset button.

Note for Heating Engineer

If the boiler is flushed out for the application of water treatment it is necessary to use the drain off socket at front of boiler for complete drainage. The return tappings should not be used because of internal water baffles.

HANDING OVER

After completing the installation of the boiler the Installer should make a thorough check to ensure that it is completely satisfactory by following through the procedure under "Commissioning" (see separate instructions), and demonstrate to the User the operation of the appliance and its controls.

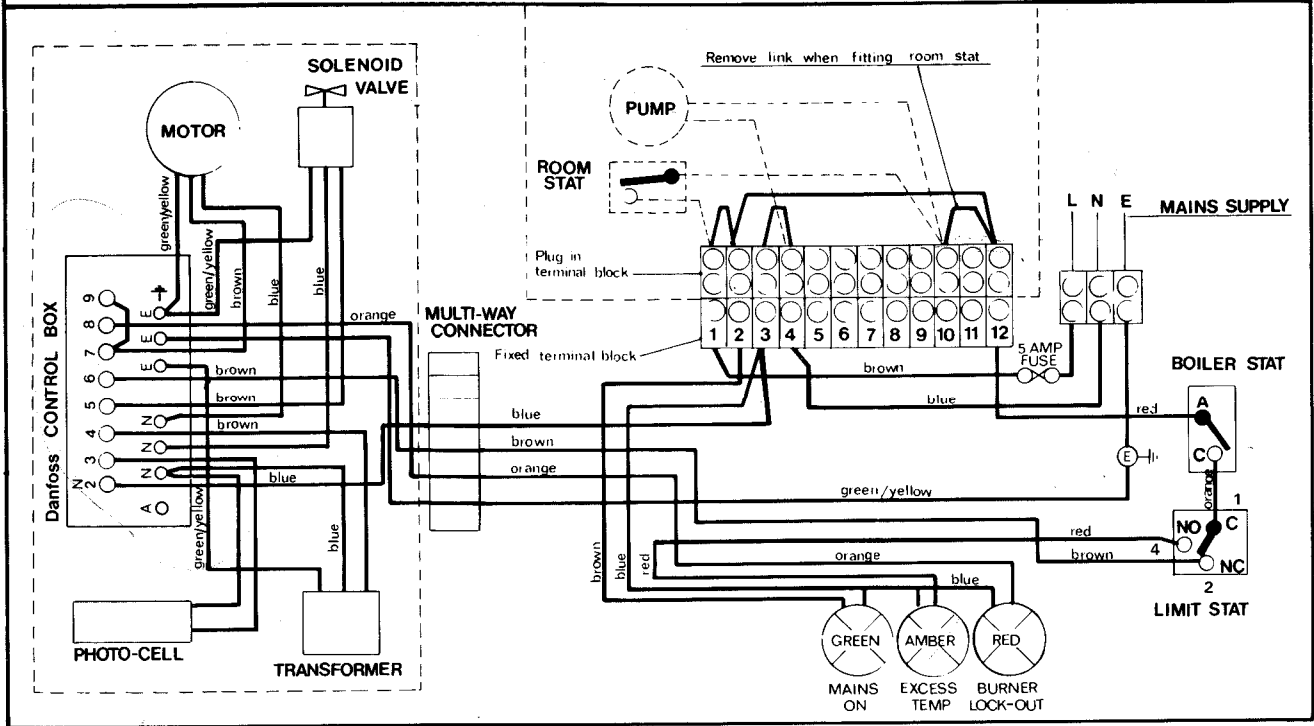
Notes: B.S.I. approval extends only to the use of Kerosene Class C fuel.

B.S.I. approval does not extend to TRO Boilerhouse Models.

WIRING DIAGRAM

NON PROGRAMMER MODEL

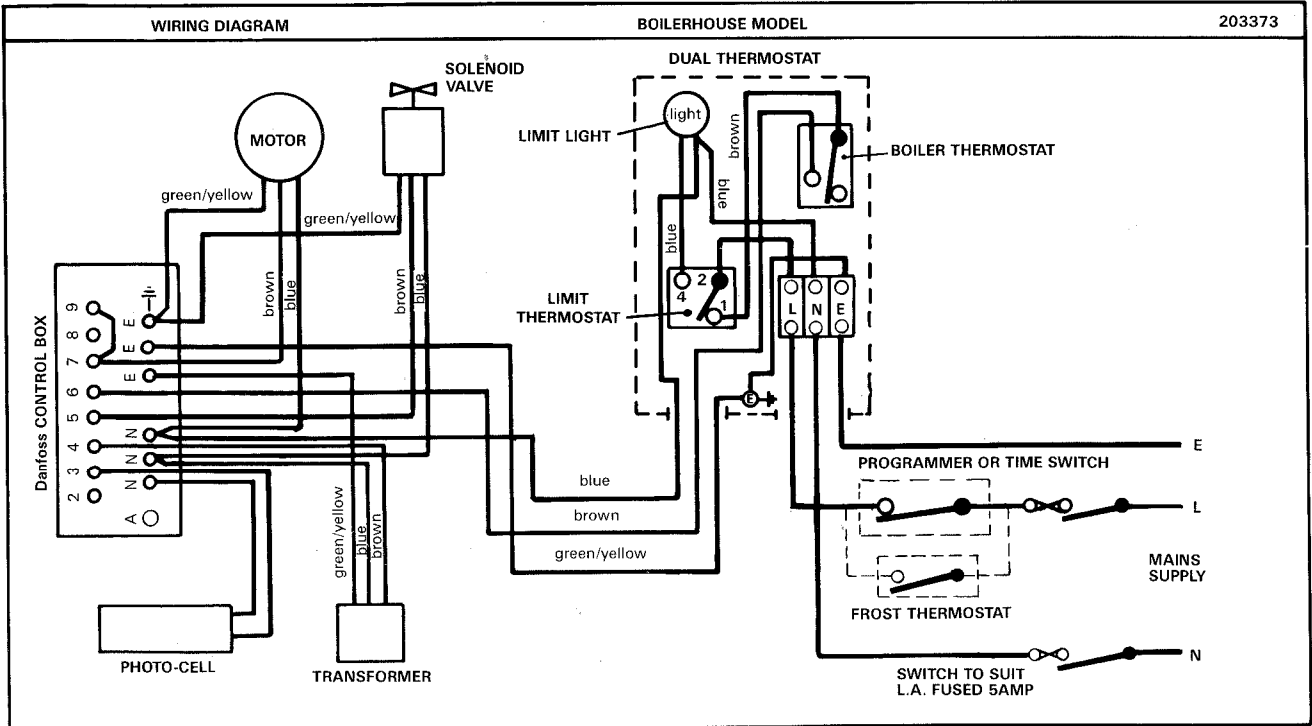
27078

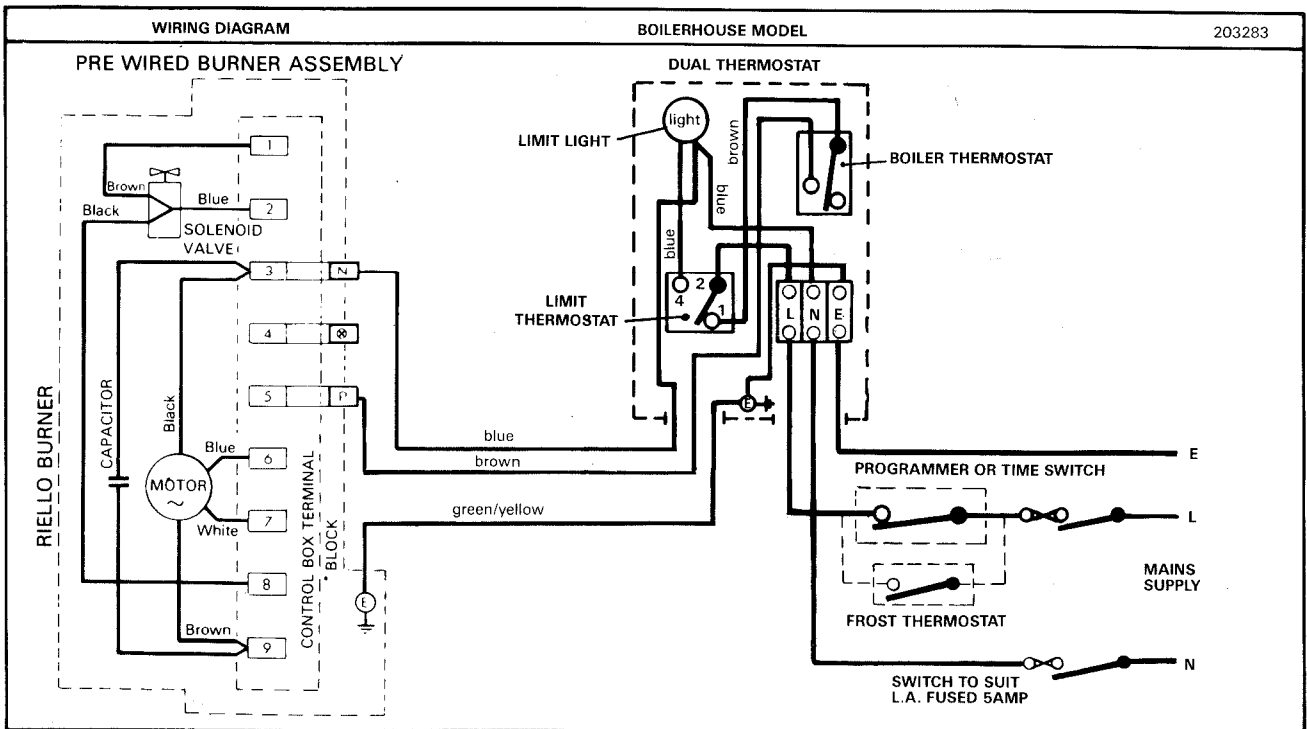
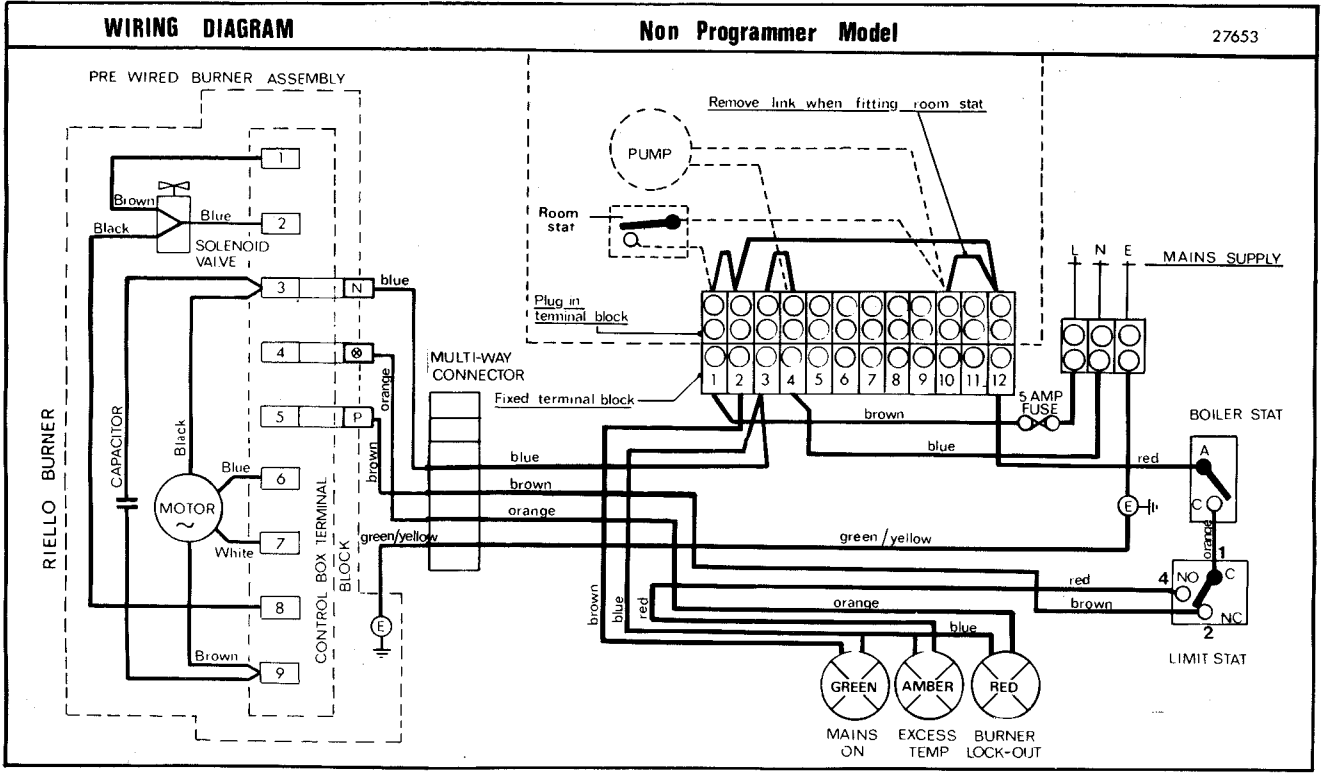


WIRING DIAGRAM

BOILERHOUSE MODEL

203373





H: HEAD		MAX. ALLOWABLE PIPE RUN			
METRES	FEET	10mm O/D	1/4" O/D	15mm O/D	1/2" O/D
NIL	NIL	29.5	97	45.8	150
0.3	1	39.6	130	45.8	150
0.6	2	45.8	150	45.8	150
0.9	3	45.8	150	45.8	150
1.2	4	45.8	150	45.8	150
1.5	5	45.8	150	45.8	150

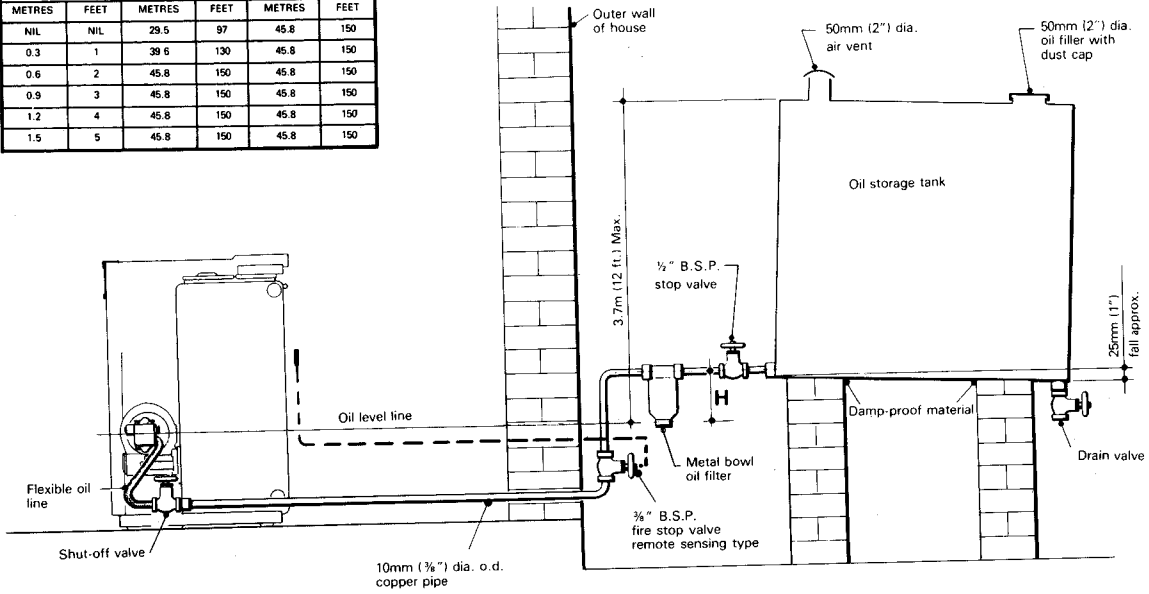
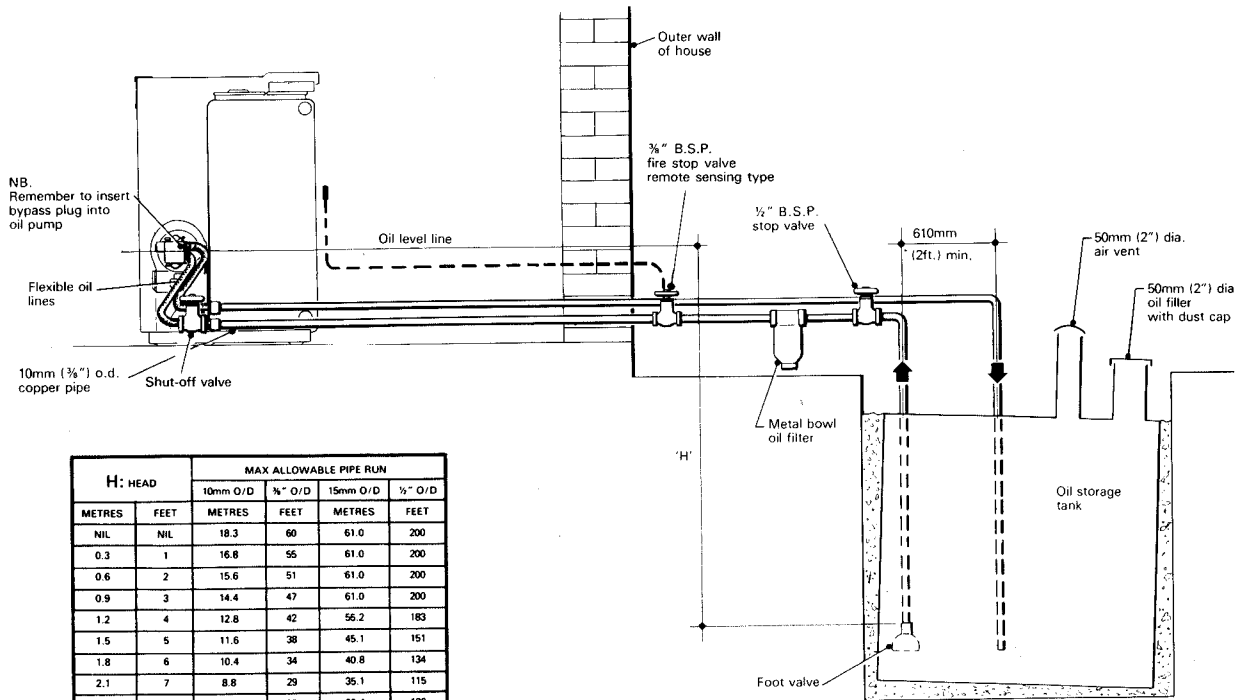


Fig 2

OIL SUPPLY — ONE PIPE INSTALLATION

NB. Remember to insert bypass plug into oil pump

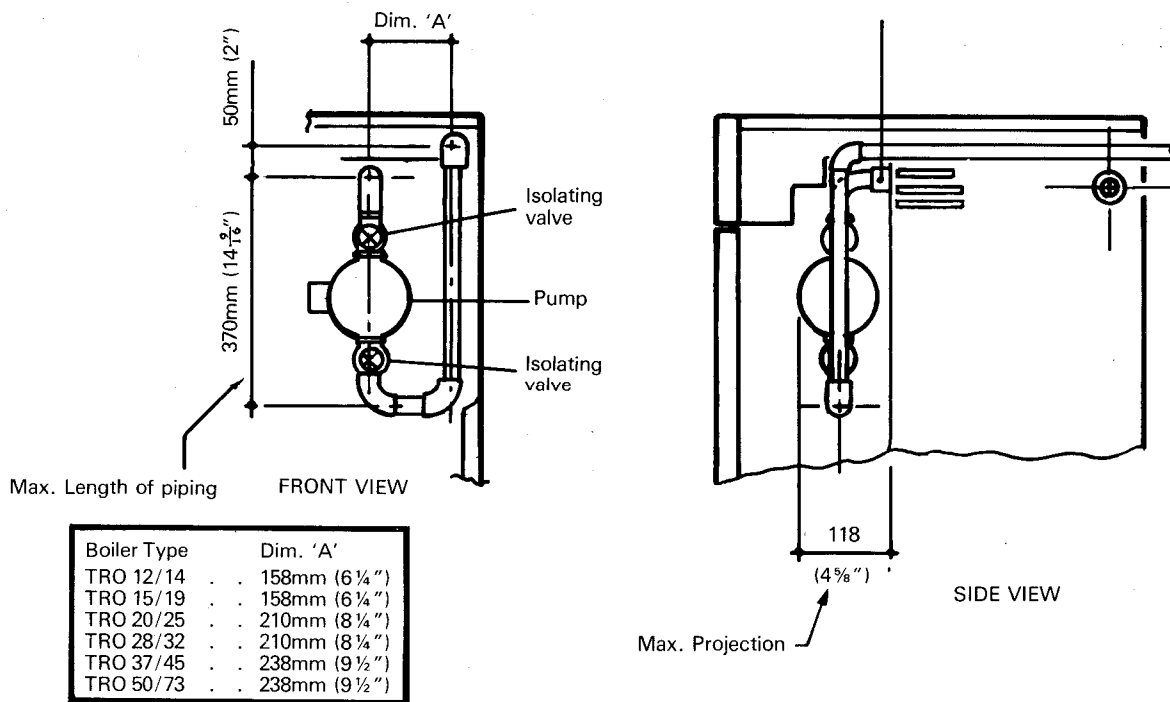


H: HEAD		MAX ALLOWABLE PIPE RUN			
METRES	FEET	10mm O/D	1/4" O/D	15mm O/D	1/2" O/D
NIL	NIL	18.3	60	61.0	200
0.3	1	16.8	55	61.0	200
0.6	2	15.6	51	61.0	200
0.9	3	14.4	47	61.0	200
1.2	4	12.8	42	56.2	183
1.5	5	11.6	38	45.1	151
1.8	6	10.4	34	40.8	134
2.1	7	8.8	29	35.1	115
2.4	8	7.6	25	30.4	100
2.7	9	6.1	20	24.8	81
3.0	10	4.9	16	19.5	64

Fig 3

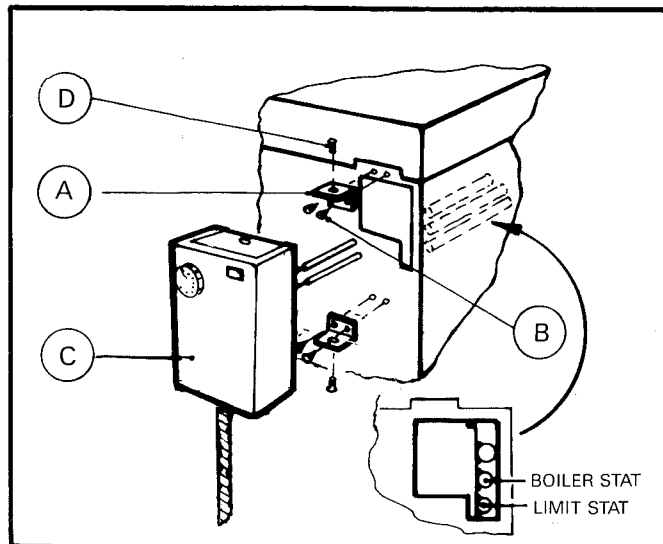
OIL SUPPLY — TWO PIPE INSTALLATION

PUMP CONNECTION ARRANGEMENT WHEN FITTED WITHIN BOILER CASING



Fitting Control Box (Boiler House Model)

1. Fit control box mounting brackets (A) to front casing using self tapping screws provided (B).
2. Bring control box (C) up to cut-out in front casing.
3. Slide thermostat phials into bottom 2 phial pockets on side of boiler (limit stat phial to be fitted in bottom pocket).
4. Secure control box in position with 2-M5 screws provided (D).



Technical Specification

Model Mk. II		TRO 12/14	TRO 15/19	TRO 20/25	TRO 28/32	TRO 37/45	TRO 50/73
Heat Output	kW Btu/h	12 to 14 41 to 48,000	15 to 19 51 to 65,000	20 to 25 68 to 85,000	28 to 32 95 to 110,000	37 to 45 126 to 154,000	50 to 73 170 to 250,000
Pressure Standard Jet Oil Burner Boilerhouse		Electro-Oil Int 99 PL1 Electro-Oil Int 99 PL1 (or alt. make)	Electro-Oil Int 99 PL10/4 Electro-Oil Int 99 PL10/4 (or alt. make)	Electro-Oil Int 109 PL10/4 Riello RS40 (or alt. make)	Electro-Oil Int 109 PLC Riello RS40 (or alt. make)	Riello RS40 Riello RS40 (or alt. make)	Riello RS40 Riello RS40 (or alt. make)
Max. Firing Rate Kerosene or Gas Oil (Nom.)	Imp. g/h ml/min.	0.37 29.5	0.50 40.5	0.66 53	0.85 68	1.17 90	1.91 150
Radiator Surface Based on 160 Btu/h/ ft ² (100°F diff.)	m ² ft ²	23.8 to 27.9 256 to 300	29.6 to 37.7 318 to 406	39.5 to 49.4 425 to 531	55.2 to 63.9 593 to 687	73.2 to 89.5 787 to 962	98.8 to 145.3 1062 to 1562
Water Content	litres gals.	21.8 4.8	25.5 5.6	35.5 7.8	40.5 8.9	54.6 12.0	60 13.2
Weight	kg. lbs.	104 230	111 245	145 320	157 345	191 420	204 450
Water connections two flow and two return Pump Connection	ins. ins.	1BSP ¾ BSP	1BSP ¾ BSP	1¼ BSP 1 BSP	1¼ BSP 1 BSP	1½ BSP 1¼ BSP	1½ BSP 1¼ BSP
Flue Socket for flue-pipe	ins.	5 Dia.	5 Dia.	5 Dia.	5 Dia.	6 Dia.	6 Dia.
Maximum Working Head	20.5 m (70 ft.) 30 psi						
Control Thermostat	Adjustable between 57°C and 88°C (135°F) to 190°F						
Limit Thermostat	Factory set to 'break' at 100°C (212°F) — Auto reset on fall of 20°C						
Casing Finish	Stove enamelled white with black facia and bright trim						
Insulation (thermal and acoustic)	Boiler totally encased with glass fibre panels						
Indicator Lights	Mains ON (GREEN)		Burner LOCK-OUT (RED)		Excess temperature (AMBER)		
Optional Extra	10 position plug-in programmer						

IMPORTANT WHEN THE T.R.O. 12/14, 15/19, 20/25 & 28/32 BOILERS ARE FITTED WITH THE T.R. FLUE TERMINAL SILENCER ONLY KEROSENE CLASS C2 FUEL SHOULD BE USED.

© Trianco Redfyre Limited 1989. Copyright in this brochure and the drawings or illustrations contained in it is vested in Trianco Redfyre Limited and neither the brochure nor any part thereof may be reproduced without prior written consent.

Trianco Redfyre policy is one of continuous research and development. This may necessitate alterations to this specification.



TRIANCO REDFYRE LIMITED
 Thornccliffe, Chapeltown, Sheffield S30 4PZ
 Tel: Sheffield (0742) 461221 Telex: 54476
 Fax: (0742) 453021



By appointment to H.M. Queen Elizabeth
 The Queen Mother
 Manufacturers of Domestic Boilers