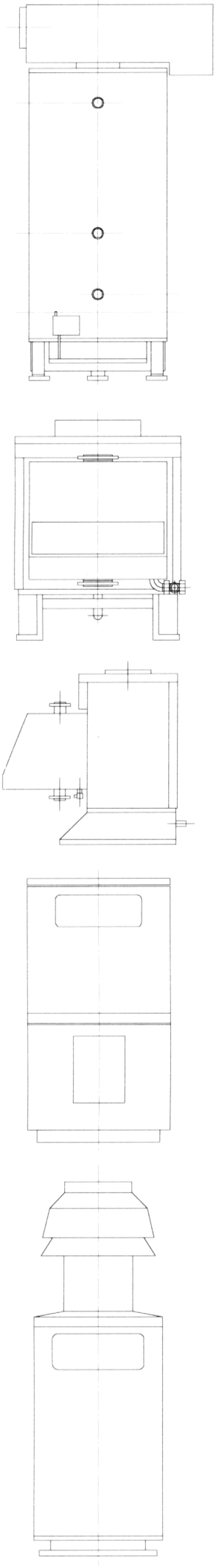

Homepage Register

Installation, Commissioning and Servicing Instructions supplement

Dorchester
DR35L-CE to DR90L-CE
Hot Water Storage Heaters

Appendix 4
Fully Automatic

IMPORTANT NOTE
THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT.

BSI REGISTERED FIRM
BS EN ISO 9001:1994
Certificate No. FM 10082

CE

HAMWORTHY
heating products

Customer Services

TECHNICAL ENQUIRIES ☎ 01202 662527 / 662528

To supplement the detailed technical brochures, technical advice on the application and use of products in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

SITE ASSEMBLY ☎ 01202 662555

Specialist teams are available for on site assembly of the full range of Hamworthy boilers (excluding Lulworth). Boiler sections for site assembly must be positioned within the boiler house prior to the arrival of the assembly team and provide sufficient space for safe working. Handling sections into boiler houses other than at ground level may be subject to additional charges.

The normal assembly price does not include for the fitting of boiler casings or the burner, however this can be carried out at the time of build at additional cost.

Providing the facilities are available on site, a hydraulic test will be carried out within the terms of BS779. Upon completion a certificate of assembly and test will be issued.

COMMISSIONING ☎ 01202 662555

Commissioning of equipment by Hamworthy Heating's own engineers, accredited agents or specialist sub-contractors will ensure that the equipment is operating safely and efficiently. Hamworthy commissioning reports provide a detailed record of the original status of the plant, which is essential for future routine maintenance and trouble free operation.

Standard warranty terms provide for the free of charge replacement of defective parts, but does not include labour. When the equipment is commissioned and routinely maintained by Hamworthy Heating under a Service Maintenance Agreement then the warranty terms will cover both parts and labour.

MAINTENANCE AGREEMENTS ☎ 01202 662555

Regular routine servicing by Hamworthy Heating's engineers ensures trouble free operation and optimum efficiency. The frequency of visits required is variable, dependent upon the equipment type and usage. Annual service agreements are available on all Hamworthy products to meet individual requirements.

Planned maintenance of equipment by routine servicing reduces operational costs considerably below that associated with repair or breakdown approach.

BREAKDOWN SERVICE, REPAIR, REPLACEMENT ☎ 01202 662555

Even when the commissioning and routine servicing has been carried out to the highest standard there are always occasions when the unexpected breakdowns occur. Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents located throughout the UK.

SPARE PARTS ☎ 01202 662525

A comprehensive spare parts service is operated from our factory in Poole, providing replacement parts for both current and discontinued products. In some instances spares may be available from accredited agents.

Delivery of parts and components is normally from stock within 7 days. However, a 24 hour delivery service is available for breakdowns and emergencies for the additional cost of the courier. Please contact our spares team, providing details of product type, serial number, model or any other identifying marks or codes to determine part requirements wherever possible.

DORCHESTER
DR35L-CE TO DR90L-CE

HOT WATER
STORAGE HEATERS

INSTALLATION, COMMISSIONING AND MAINTENANCE MANUAL FOR FULLY AUTOMATIC CONTROLS

NOTE! THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING OR COMMISSIONING THIS HOT WATER HEATER

PUBLICATION NO. 5000010029
ISSUE 'C'
June 1995

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APPENDIX 4 TO DRL INSTALLERS GUIDE

DRL SERIES OF HOT WATER STORAGE HEATERS FITTED WITH FULLY AUTOMATIC CONTROLS FIRING NATURAL GAS.

To be used in conjunction with the main installer's guide - publication number 500001001.

DESCRIPTION

The Hamworthy DRL series of hot water storage heaters can also be supplied with fully automatic controls. The fully automatic control provides a safe light-up and shutdown programme for the burner, flame detection being based on the well known rectification principle.

When the controlling thermostat calls for heat a high energy spark is produced at the spark electrode and the compact gas control valve (see Fig 1) is energised to establish a gas flame on the burner bars.

Failure to establish and detect flame during a start-up attempt results in lockout after the expiry of the nominal 5 seconds ignition safety time. Flame failure during a `run' results in an immediate attempt to safely re-light the burner. Failure to establish and detect flame during a re-light attempt results in lockout after the expiry of the 5 seconds safety ignition time. A false flame signal at the start point and during the 13 seconds waiting time prior to the introduction of the spark causes the control box to lockout.

These water heaters are very similar to the basic range of permanent pilot models and for general information concerning technical data, water flows, installation recommendations, etc, attention is drawn to the installation and commissioning instructions in the main manual 500001001.

The basic differences between the permanent pilot, natural gas models and the fully automatic versions are as follows:-

1) The Honeywell V4410 softlite gas control valve is replaced by a Dungs MB DLE 407 B01 compact gas control valve on the DR70L and DR90L (see Fig 1), and a VR4601 compact valve on the DR35L and DR50L - These valves incorporate slow opening to produce a low flame start.

2) The thermocouple is replaced by a flame rectification probe.

3) The Piezo unit and electrode are replaced by a spark generator and a spark electrode (see Fig 1).

4) A Satronic TF1 812 2B controller is incorporated into the ignition system (see Fig 1).

5) The gas inlet connection dimension from the centre line of the heater is altered, see Figure 1.

CONTROL SYSTEM

Control Thermostat

The control thermostat (B1N) on the DRL automatic heaters is similar to that used on the permanent pilot versions. However, the thermostat is connected in series with the main supply to the Satronic controller (see Fig 2). On activation the thermostat interrupts the supply to the controller, the flame is extinguished and the heater shuts down.

For further details refer to the main manual.

Limit Thermostat

A manual reset limit thermostat (B1f) is pre-wired in series with the supply to the Satronic controller (see Fig 2). In the event of the limit thermostat being activated, power to the controller is interrupted and the heater shuts down. The limit thermostat must then be reset by removing the plastic cap on the unit and pressing the green button exposed (see Fig 3). The heater will then automatically restart.

NOTE! In the event of the overheat limit thermostat being activated, the complete heater installation should be inspected to trace and isolate the cause of the problem

before any further firing takes place.

Controller

The Satronic controller supervises the ignition and safety shutdown of the heater in the event of flame failure. Supply to the controller is via the thermostats previously described (see Fig 2).

COMMISSIONING

Checks

Before attempting to commission any heater, ensure that any personnel involved are aware of what action is to be taken. Begin by making the checks listed in the main installers guide with the amendment to e) as follows:-

e) Gas supply is connected but turned off, gas cock closed, unions are tightened (with any seals in position), test points are tight, burners are correctly positioned, injectors are tight, spark electrode and flame probe are correctly positioned with 3-4 mm gaps, above burner bars and are undamaged particularly ceramic portion (do not over-tighten electrode retaining nuts). Electrode and probe leads are fully screwed into electrode connectors which are firmly connected to the appropriate electrode.

Procedure for Lighting

Turn control thermostat to the minimum setting (35°C) and ensure electrical supply is off.

Open heater gas cock.

Check that any electrical circuits are closed and switch on the power supply to the appliance. Adjust the control thermostat to the recommended required setting (to a value not exceeding 60°C). Within 13 seconds the spark will operate, the gas valve will open and the burners will light on low flame and automatically increase to full flame. If the burner does not light, spark will continue for 5 seconds, after which time the control box will `lockout' in a safe condition with the lockout button illuminated. If this occurs, switch off power supply, wait 3 minutes, check that gas is available at heater (revent to outside of building if necessary), reinstate power supply and press the lockout button to reset and repeat the sequence.

After the heater has operated for approximately 5 minutes, switch off the power, slacken the gas pressure test point screw on the gas manifold and fit manometer. Switch the heater on and measure the operating gas pressure. Check readings against pressure required in Table 1 in the main manual. Adjust the appliance regulator as necessary by:-

a) DR35L-DR50L (Honeywell valve VR4601 A). Remove the aluminium plug (see Fig 4) and, using a screw driver turn the adjusting screw to alter the pressure, clockwise to increase, anti-clockwise to decrease. Replace plug.

b) DR70L-DR90L (DUNGS MB-DLE 407 B01) Rotate pivoted cover from over adjustment screw on front of Dungs valve and, using a screwdriver turn the adjusting screw to alter the pressure, clockwise to increase, anti-clockwise to decrease. Replace cover.

Remove manometer, remembering to re tighten pressure test point. Relight the burner and check that no waste gas spillage occurs from any draught diverter. Check operation of control thermostat by adjusting the temperature setting, thus lighting and extinguishing the flame.

SERVICING

Removal of Gas Train

Unscrew and disconnect the two halves of the ¾ gas pipework union at the inlet to the compact gas control valve and remove and retain the union rubber sealing ring.

Remove the three core power supply lead to the compact gas control valve as follows.

Unscrew the retaining screw securing the din plug/s in place and carefully pull the plug/s away from the valve or separate the plug and socket in line connector near the control box.

Disconnect the flame probe and electrode leads by pulling off the ceramic cap from the flame probe and the rubber cap from the spark electrode.

The gas train assembly is secured to the heater by two nuts on the front feet and screw in the bottom of the heater casing at the centre of the gas manifold. Removal of these enables the assembly to be withdrawn.

The electrode and flame probe should be checked for cracked ceramics and wear. Replace as necessary and adjust to correct gaps. For servicing of the burners and the internals of the heater, refer to the main installers guide, with the exception of the pilot burner which is not fitted to the automatic version.

Reassemble components in reverse order, taking care to replace the rubber sealing ring in the union.

FAULT FINDING

1. Heater will not start, controller not locked out:-

Check continuity across control thermostat with control at operating temperature position.

Check for high temperature limit thermostat lockout.

2. Heater starts but controller goes to lockout without ignition:-

Check gas valve operation (by pressure at manifold test point during a start up attempt).

Check ignition electrode connector (wire is firmly screwed into ceramic connector) and ignition transformer if no spark is produced.

3. Heater starts, ignition occurs, controller immediately goes to lockout:-

DR35-90L

Check flame probe connector (wire is firmly screwed into ceramic connector).

Check flame probe position ie touching the burner bar or not in the flame will cause a lockout (see Fig 5 for correct probe position).

DR70-90L

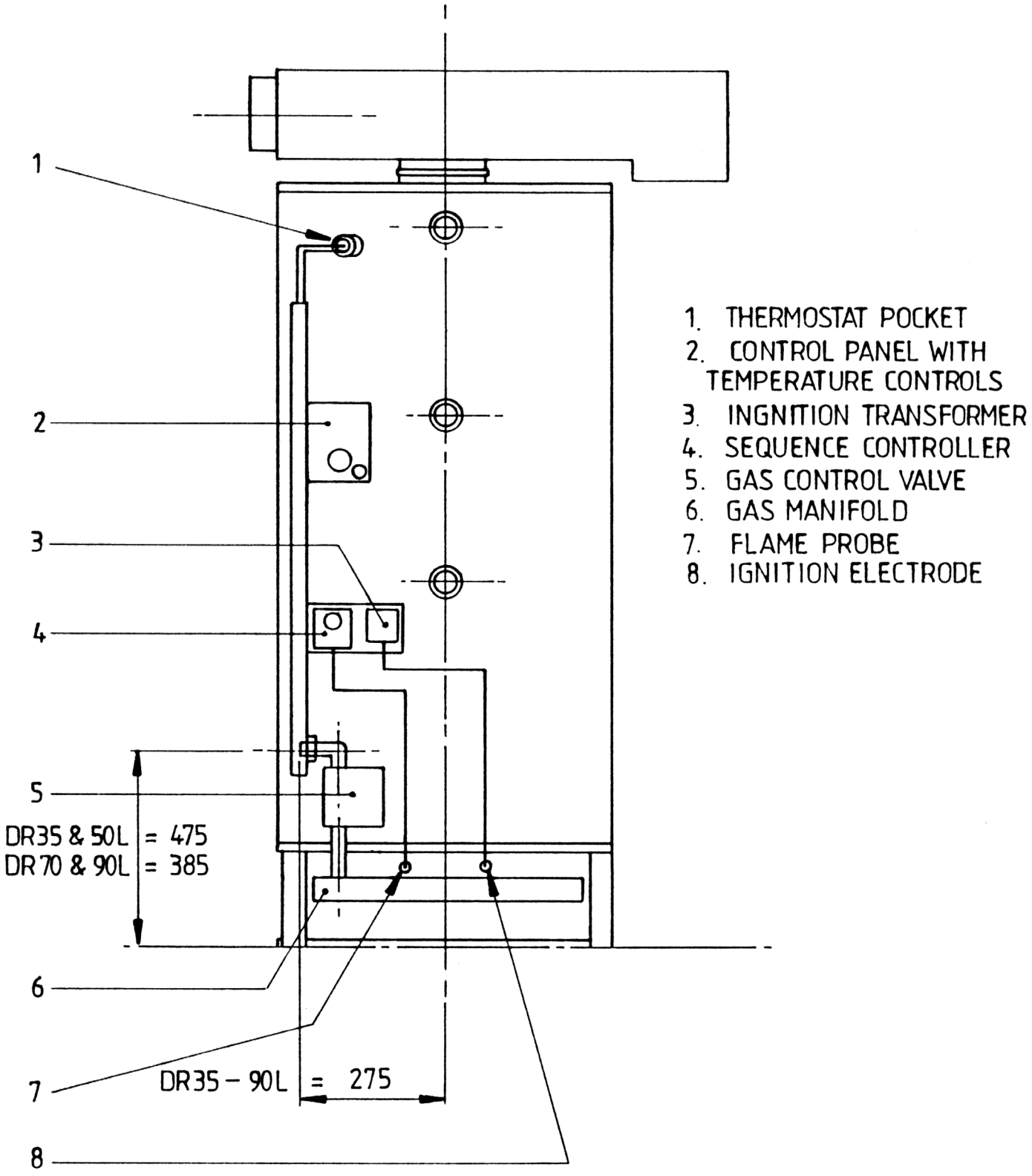
Reduce flame ignition time by adjusting the main valve initial opening. Remove the protective cap from the top of the valve (see Fig 4), reverse it and use to turn the spindle exposed. This adjusts the rapid initial opening of the valve and thus the initial gas pressure. The valve is initially set at the minimum opening position, turn counter-clockwise to increase the opening. Restart the heater and replace protective cap.

Replace control box. **NOTE!** To remove control box from its base, using a screwdriver remove the retaining screw in the front of the box and gently pull from the base. Locate and press home the new one and retighten screw.

ADDITIONAL RECOMMENDED SPARES

Description	Part Number
Control Valve ¾ Dungs	533903013
Compact Gas Control Valve 23 mm in/out Honeywell VR4601A (special)	531907008
Limit Thermostat	533901191
Controller	533901006
Ignition transformer	533901062
Electrode (ignition)	533805008
Probe (Flame Sensing)	533805007
Ceramic Cap (Probe)	533901060
Rubber Cap (Electrode)	533901255

FIG. 1 – DR 35L – 90L FULLY AUTOMATIC WATER HEATER



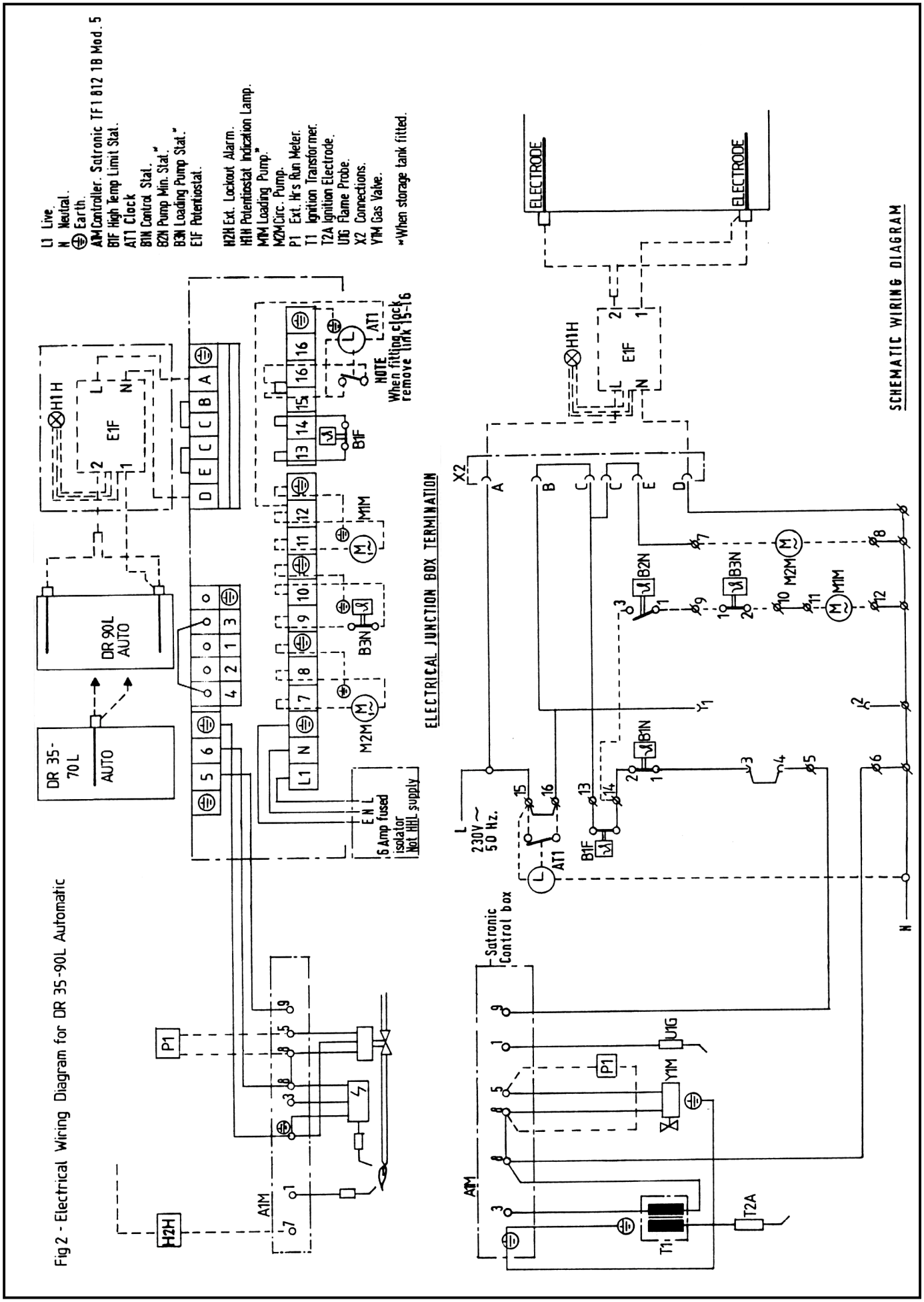
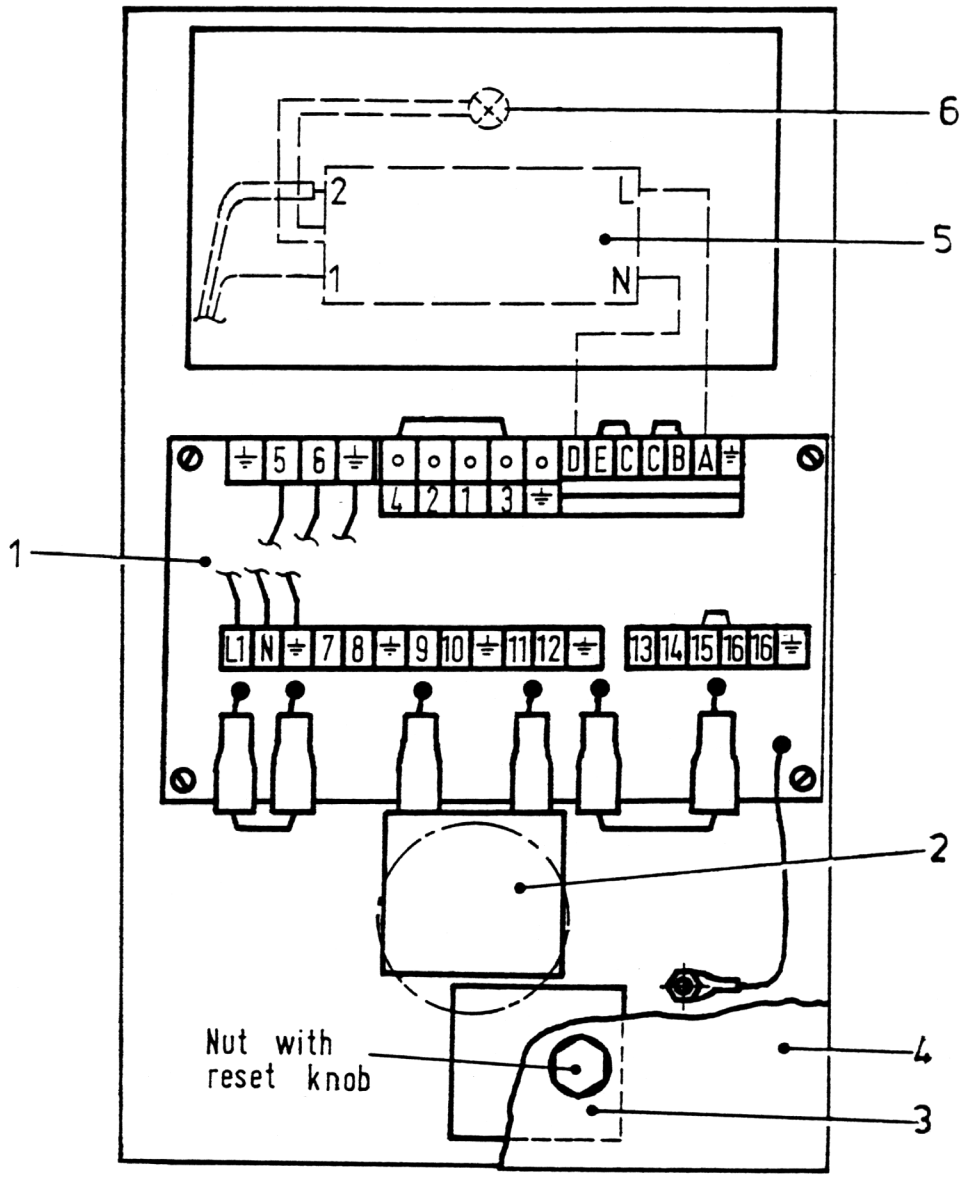


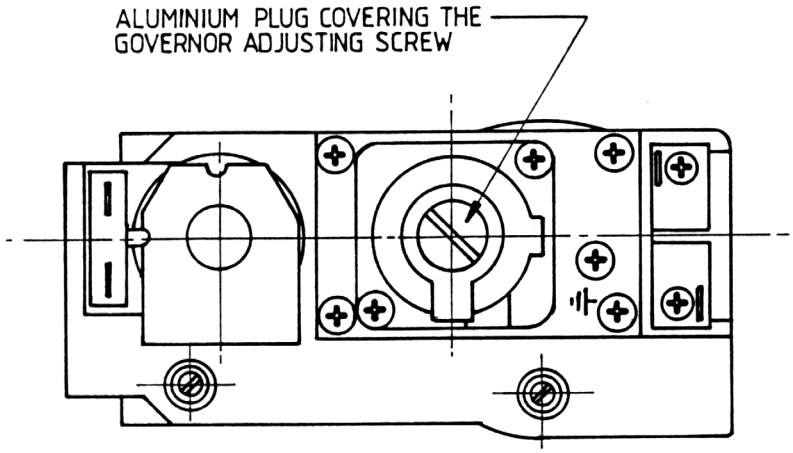
Fig 2 - Electrical Wiring Diagram for DR 35-90L Automatic

Fig 3 - DR 35-90L Auto Control Box

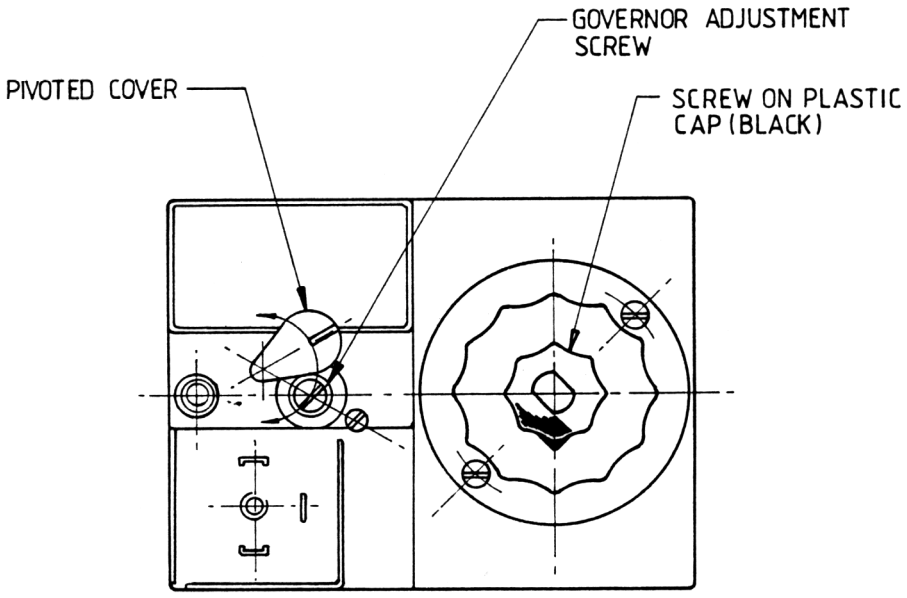


1. Leader plate with terminal connections.
2. Control thermostat.
3. High temperature limit thermostat.
4. Switchbox cover.
5. Potentiostat if fitted
6. Potentiostat indication lamp. if fitted

FIG. 4

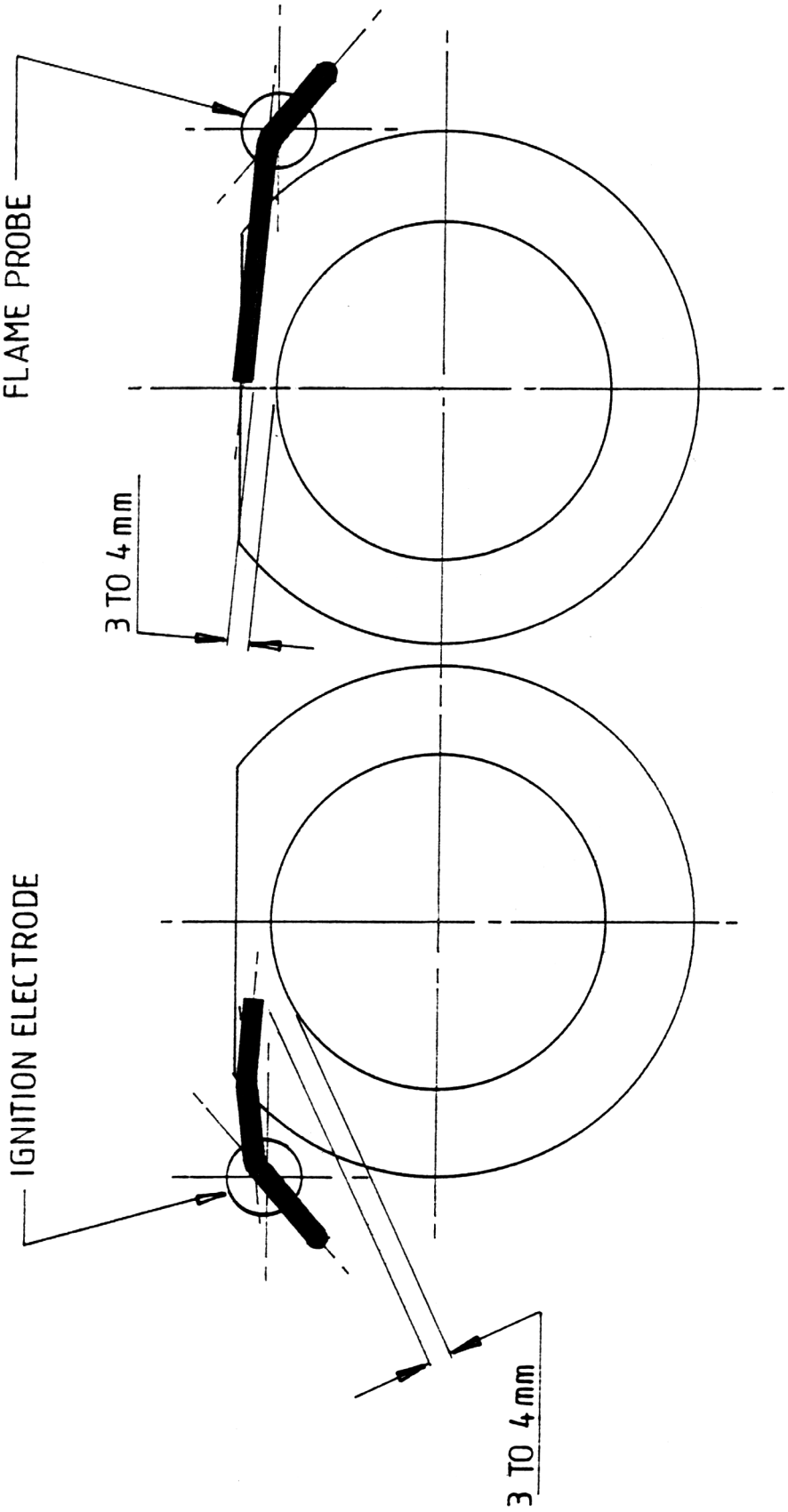


GAS VALVE (COMBINATION) – DR 35L & DR 50L
HONEYWELL VR 4601 A (Special)



GAS VALVE (COMBINATION) – DR 70L & DR 90L
DUNGS MB-DLE 407 B01

FIG. 5 – IGNITION ELECTRODE AND FLAME PROBE SETTINGS IN RELATION TO A BURNER
— DRL WATER HEATERS —



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Fax: 01202 536442

North West England

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Fax: 0151 647 8101

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Fax: 0191 455 7899

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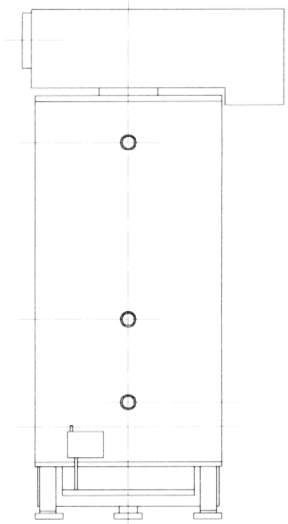
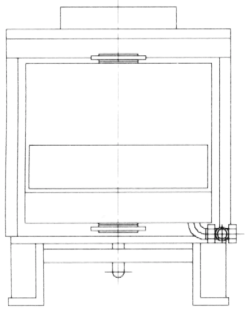
Fax: 01232 776865

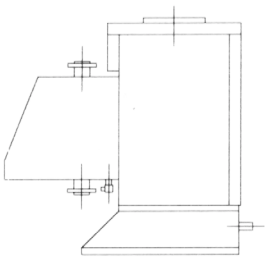
Southern Ireland

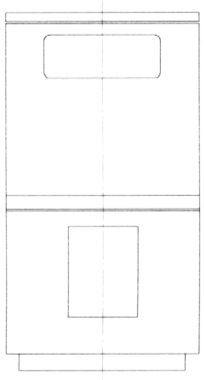
HEVAC Limited
70-72 Lower Dorset Street
Dublin 1, Ireland
Tel: 003531 830 1211
Fax: 003531 830 1990

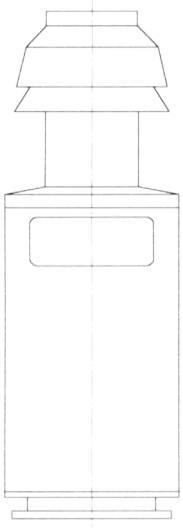
For all other areas, or for further advice, please contact Hamworthy Heating head office service department in Poole, telephone 01202 662500.











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For problems of a technical nature and further product support, our Technical Applications Engineers offer specifiers and contractors advice on all aspects of equipment application, configuration and capability.

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For an efficient response to order acknowledgement and administrative queries, contact our order processing team.

DELIVERY ENQUIRIES ..... ☎ 01202 662515/662504

Deliveries from Hamworthy Heating arrive direct from the factory on a vehicle equipped with a tail-lift for ease of off-loading to ground level. Our contracts team will progress despatch and liaise individual delivery arrangements.

SPARE PARTS ..... ☎ 01202 662525

A comprehensive spare parts service is operated from our factory in Poole, providing replacement parts for both current and discontinued products. Please contact our spares team, providing details of product type, serial number, model and part requirements wherever possible.

SERVICE DEPARTMENT ..... ☎ 01202 662555

At Hamworthy Heating we employ our own skilled service engineers who are trained to work on all of our products. Our National coverage of all UK mainland sites is supported by a network of Authorised Service Agents who can provide the same high level of service and product expertise.

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