

# HI-SPEC J25SCA

## WARM AIR HEATER

*with System E-T*

*Eljan 4/SEA Water Circulator*

### **INSTALLATION, COMMISSIONING & SERVICING INSTRUCTIONS**

G.C. NUMBERS: Air Heater      43-416-99  
Water Circulator      43-417-58



These instructions are to be left with the User or adjacent to the Gas Meter

[www.johnsonandstarley.co.uk](http://www.johnsonandstarley.co.uk)

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## THE BENCHMARK SCHEME

In order to comply with Building Regulations Part L (Part J in Scotland) the boiler MUST be fitted in accordance with the manufacturer's instructions.

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.

Visit [www.centralheating.co.uk](http://www.centralheating.co.uk) for more information.

**PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING THE INSTALLATION. ON COMPLETION LEAVE THESE INSTRUCTION WITH THE USER OR AT THE GAS METER.**

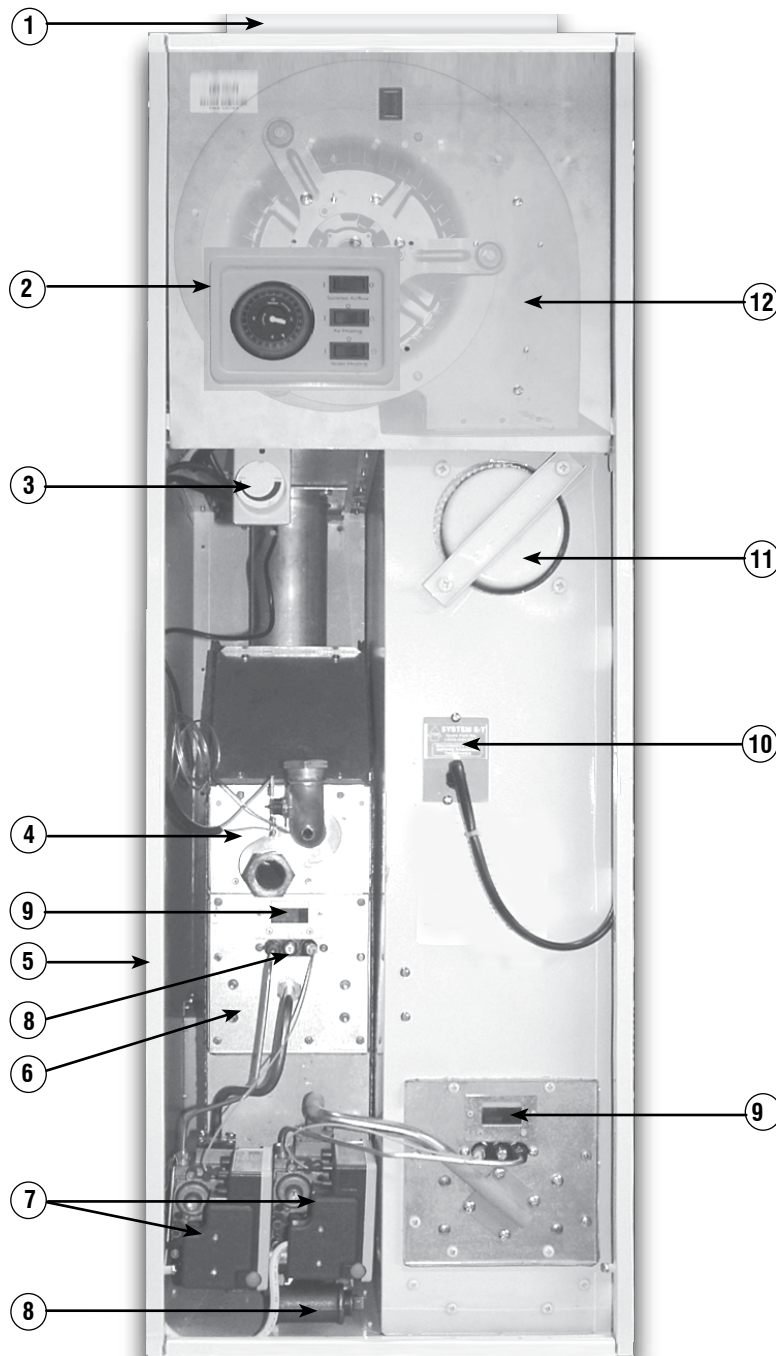
In the interest of continuous development Johnson and Starley reserve the right to change specification without prior notice. Johnson and Starley prides itself on it's ability to supply spare parts quickly and efficiently.

If your service engineer indicates a problem in obtaining a spare part, advise him to contact Johnson and Starley Spares Department.

## 1. FEATURES

These appliances have been tested and certified by B G Technology for use with natural gas G20.

**Note:** If a water heater is fitted, these instructions must be read in conjunction with the Installation, Commissioning and Servicing Instructions for that appliance.



### FEATURES

- 1 Air Filter
- 2 Electrical Panel Assembly/  
Time Control
- 3 Circulator Thermostat
- 4 ELJAN 4/SEA Water Heater  
(If fitted)
- 5 Data Plate (Inside of panel)
- 6 Circulator Burner Assembly
- 7 Ignition Controls
- 8 Gas Supply Pipe
- 9 Viewing Port
- 10 Airflow Sensor/Limit Switch
- 11 Heat Exchanger Access Cover
- 12 Air Circulating Fan

FIGURE 1  
HI-SPEC J25SCA FEATURES

## 2. BRIEF DESCRIPTION

- 2.1 HI-SPEC J25SCA is a fanned-circulation, downflow, ducted warm air heater for SE-duct applications, which may be supplied with SYSTEM E-T and in combination with an ELJAN 4/SEA water heater.
- 2.2 The Air heater output can be adjusted between 6.44kW (23.2MJ/h, 22,000 Btu/h) and 7.3kW (26.4MJ/h, 25,000Btu/h). "Summer air circulation" of unheated air is available by manual selection (see User's Instructions). ELJAN 4/SEA output is 3.32kW (12.0MJ/h, 11,340Btu/h).

**THIS APPLIANCE CONFORMS TO BS EN 55014**

### 3. IMPORTANT INFORMATION

#### Installation shall be in accordance with the current editions of:-

- Building Standards (Scotland) (Consolidation) Regulations
- Building Regulations
- Gas Safety (Installation and Use) Regulations (as amended)
- BS 7671 Institute of Electrical Engineers (I.E.E.) Wiring Regulations
- BS 6891 Installation of Low Pressure Gas Pipework of up to 28mm (R1) in domestic premises (2nd family gases).
- BS 5440 Pt.1 (Flues for Gas Appliances)
- BS 5440 Pt.2 (Air Supply for Gas Appliances)
- BS 5864 Installation of Gas Fired Ducted Air Heaters
- British System Design Manual "Gas Fired Warm Air Heating"
- Model and Local Authority Bye-laws
- BS 5546 Installation of Domestic Hot Water Supplies.

**IT IS A STATUTORY REQUIREMENT THAT ALL GAS APPLIANCES MUST BE INSTALLED BY COMPETENT PERSONS, (i.e. GAS SAFE REGISTERED INSTALLERS. GAS SAFE MEMBERSHIP ENQUIRIES - TEL: 0800 408 5500) IN ACCORDANCE WITH THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS (CURRENT EDITION). FAILURE TO COMPLY WITH THESE REGULATIONS MAY LEAD TO PROSECUTION.**

### 4. HEATER COMPARTMENT AND CLEARANCES (See BS 5864)

- 4.1 **IMPORTANT** - If the heater is to be fitted to an existing base duct (warm air plenum), always ensure that installation is carried out such that the rear left hand corner of the heater is aligned with the rear left hand corner of the base duct, so that any overhang or blanking off will be at the front and/or right hand side. In any event, blanking plates must be mechanically secured and all joints sealed.
- 4.2 When the heater is fitted into a compartment, a minimum clearance from the compartment walls of 20mm (0.75") at the sides and rear, and 25mm (1") at the front must be left. Consideration should also be given to the space required for the removal and replacement of the filter tray and the entry of the gas and electrical supplies.
- 4.3 Consideration must be provided for service access. Space must also be allowed, in a compartment installation, to permit the removal of the heater. If clearances are less than 75mm, the internal surface of the compartment must be lined with non-combustible material. The compartment must be of a fixed rigid structure.
- 4.4 In airing cupboard installations, the part used as the air heater compartment must comply with the relevant section of BS 5864 and must be completely separated by either a non-combustible partition or a perforated metal partition with the perforations not exceeding 13mm (½").
- 4.5 The base duct on which the air heater stands must be only placed on a non-combustible floor.
- 4.6 **IMPORTANT: Ensure the red 'SAFETY' label supplied with the heater, IS AFFIXED in a prominent position on the front door panel.**

### 5. VENTILATION AND COMBUSTION AIR

- 5.1 A SE-duct appliance does not require a combustion air vent in the room or internal space in which it is installed. If the appliance is installed in a compartment, the minimum total free area of the high and low level ventilation air vents must be as specified in Table 1 (as per BS 5440 Pt. 2 Table 1).

**Note:** These free areas allow for the operation of the appliance in combination with an ELJAN 4/SEA water heater.

- 5.2 Both vents must communicate with the same room or internal space, or must both be on the same wall to outside air. The vertical distance between the vents shall be as large as is practicable. The compartment containing the room sealed appliance **MUST** be labelled to warn against blockage of vents - referring to BS 5440 Part 2, clause 4.2.4.

<b>VENTILATED FROM INSIDE BUILDING</b>	Low level grille 127cm <sup>2</sup> (19.7in <sup>2</sup> )
	High level grille 127cm <sup>2</sup> (19.7in <sup>2</sup> )
<b>VENTILATED FROM OUT-SIDE BUILDING</b>	Low level grille 63cm <sup>2</sup> (9.8in <sup>2</sup> )
	High level grille 63cm <sup>2</sup> (9.8in <sup>2</sup> )

**TABLE 1  
MINIMUM EFFECTIVE AREAS**

## 6. DUCT SYSTEM

All ductwork MUST be mechanically secured and sealed with good quality ducting tape. (See British Design Manual - Gas fired Warm Air Heating)

### 6.1 RETURN AIR

- 6.1.1 Room-sealed appliances may be installed without return air ducting provided that the path between the return air grille and the appliance return air inlet is protected in such a manner that the required airflow will be maintained at all times. The return air grille should have a free area of not less than 0.06m<sup>2</sup> (93 in<sup>2</sup>).
- 6.1.2 An adequate and unobstructed return air path is essential from areas served by a directly ducted return and to which warm air is delivered. All such rooms should be fitted with relief grilles which have a free area of 0.0088m<sup>2</sup>/kW (1in<sup>2</sup>/250Btu/h) of heat supplied to the room. The only exceptions are kitchens, bathrooms and w.c's.

### 6.2. WARM DELIVERED AIR

- 6.2.1 All ductwork, including riser ducts, should be fully insulated with 50mm (2") of fibreglass or similar. If short extended duct runs are taken below floor level, these should be similarly insulated and in addition, wrapped with a sound vapour proof barrier and protected from crushing.
- 6.2.2 The duct system should be carefully designed to suit the needs of its specific heating requirements and building layout. The type of duct system, i.e., radial/extended plenum/stepped, should be installed using the least number of fittings to minimise the resistance to air flow.
- 6.2.3 The base duct, which equalises the air pressure to supply ducts, shall be constructed to support the weight of the heater, which shall be secured to the plenum with screws on at least two sides, and sealed using self-adhesive foam strip, ducting tape or sealing compound. All ducting and blanking plates shall be mechanically secured and sealed.

## 7. INSTALLATION REQUIREMENTS

### 7.1 SIDE RETURN AIR

If return air is to be introduced via the side of the appliance, it will be necessary to prepare it prior to installation. Return air ducting may be connected to either side of the heater as follows:

- 7.1.1 Remove the air filter, front cover and the air circulation fan.
- 7.1.2 Cut a hole in the chosen side of the fan compartment. The knock outs will determine the size and position.
- 7.1.3 Remove and the filter frame retaining screws and remove the filter frame.
- 7.1.4 Position the filter frame centrally over the prepared hole so that the front of the frame is flush with the front of the heater.
- 7.1.5 Using the frame as a template, mark and drill the 6 x 3.2mm diameter frame fixing holes.
- 7.1.6 Secure the filter frame to the side of the heater using the screws previously removed.
- 7.1.7 Refit the air circulation fan, front cover and air filter.
- 7.1.8 Using suitable material, manufacture a plate to cover the original return air opening in the top of the air heater, and secure with self tapping screws (not provided).

### 7.2 SE-DUCT PREPARATION

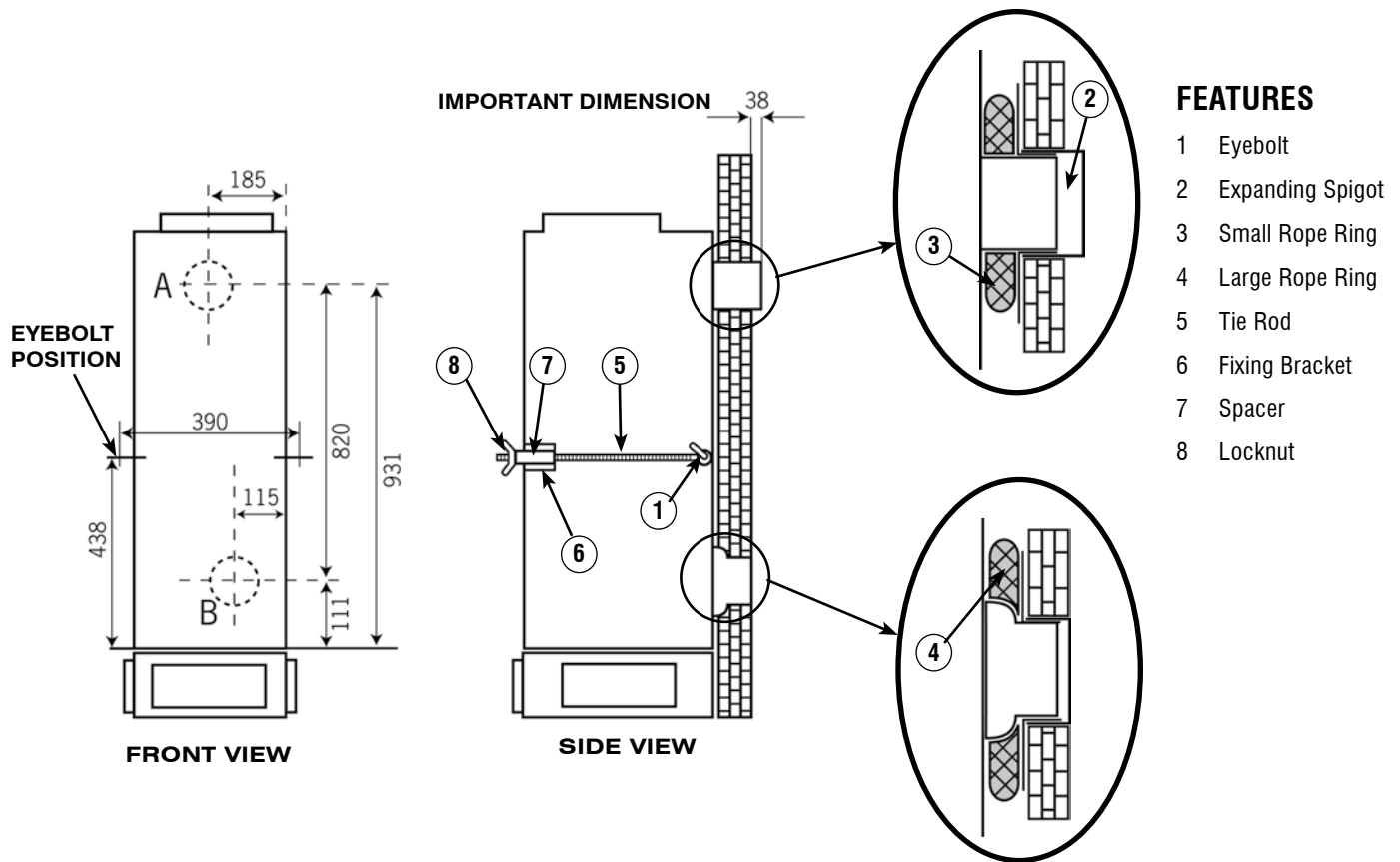
- 7.2.1 Ensure that the existing air heater has first been removed.

**IMPORTANT: Many SE-ducts are constructed from asbestos-based materials, and due to dimensional variations between Johnson & Starley and other manufacturers appliances, a certain amount of rework will be required on the SE-duct by REGISTERED CONTRACTORS.**

- 7.2.2 In some circumstances, the SE-duct may be completely exposed and special components needed to complete the installation. Consult Johnson & Starley Service Department if this situation is encountered.
- 7.2.3 **Referring to Figure 2, NOTE THE DATUM POINTS INDICATED before proceeding.** A Sealing Template Kit (ST25) is available for cutting the holes in the SE-duct.
- 7.2.4 Thoroughly clean and replace the sealing material from the top of the existing base duct.
- 7.2.5 The holes in the SE-duct **MUST** correspond with the positions 'A' and 'B' as shown in Figure 2, 138mm (5.5") minimum diameter, 152mm (6") maximum diameter, and clear the duct of all resulting debris. Should the original heater be a SUGG Type 22/WH 'Halcyon', the existing bottom hole is suitable for use.
- 7.2.6 Seal the redundant hole/s in the SE-duct using a suitable cement or blanking material, to ensure a good flat surface on both the inner and outer faces of the duct wall.

**IMPORTANT: Any debris which falls into the SE-duct MUST BE REMOVED.**

- 7.2.7 Referring to Figure 2, drill 2 x 9mm diameter holes and fix the eye-bolts using the masonry plugs provided in the installation kit.



**FIGURE 2**  
**HI-SPEC J25SCA FITTED TO SE-DUCT. FITTING DIMENSIONS**

### 7.3 METHOD OF FIXING

7.3.1 Due to base plan variations between the replacement and the original heaters, at some stage it may be necessary to blank off part or parts of the base duct aperture. This can be done at the discretion of the installer, but it is important that a suitable non-combustible material is used and that the perimeter of the remaining aperture is bounded by suitable sealing tape to ensure a good seal between the heater and the base duct. Blanking plates **MUST** be mechanically secure to the base duct, and the use of TAPE ALONE IS NOT ACCEPTABLE.

7.3.2 Measure the thickness of the SE-duct wall and, using one of the expanding spigots as the flue spigot, adjust it such that it projects 38mm (1.5"), and secure the spigot to length using 2 x self tapping screws provided.

**Note: This dimension is critical.**

7.3.3 Adjust the other spigot to a length equal to the thickness of the SE-duct wall and secure to length as above.

**Note: If the SE-duct wall is 125mm or less, the inner tube of the expanding spigot should be discarded, and the outer tube cut to length as necessary.**

7.3.4 Apply a suitable mastic (not provided) to the spigot flanges and insert them into their respective apertures, and seal them to the face of the SE-duct wall.

7.3.5 Position the larger rope ring seal over the raised flange on the heater inlet spigot, and secure with three equally spaced beads of a suitable mastic (not provided).

7.3.6 Place the smaller rope ring (denoted by blue indent) onto the air heater flue spigot, and place the air heater onto the base plenum to engage the spigots with the SE-duct apertures.

**NB ensure that the rope ring is fitted such that it is pushed OVER the bulge the protrudes from the heater. See figure 2.**

7.3.7 Hook the tie rods to the eye-bolt wall fixings, and secure using the brackets provided, hooked into the slots in the front edge of the side of the air heater.

7.3.8 Fit the nuts and washers provided, then carefully tighten the tie rods so that the air heater is effectively sealed against the SE-duct.

Note: If the air heater is installed in a compartment, the warning label must be applied in a prominent position.

7.3.9 The air heater must be mechanically secured to the base plenum on at least 2 sides.



## 7.4 ELECTRICAL

### 7.4.1 Mains

- a. The heater is supplied with mains cable (PVC sheathed, heat resisting to 85°C), 3-core Brown-Blue-Green/Yellow, 6A, 0.75mm<sup>2</sup>), connected to a terminal block and exiting through the heater at the top left hand front. The cable is suitable for a 230V 50Hz supply and shall be connected to the fixed wiring using a double pole switched, fused spur, incorporating a protective earth link. The fuse fitted shall be rated 5A to BS 1362. Connections shall be in accordance with the current edition of I.E.E Regulations BS 7671.
- b. An electronic controller (Thermista-stat) is supplied which acts as a room thermostat.
- c. To gain access to the control panel to make the Thermista-stat connections, remove the air filter and the front cover from the air heater, release the 2 x securing screws and hinge down the electrical panel.

### 7.4.2 Thermista-stat location

- a. The Thermista-stat should be located where there is free air circulation approx. 1.5m (5ft) from the floor.
- b. Avoid the following locations:-
  - i. In a room where temperature is greatly affected by the sun or any other heat source, e.g. radiant fire, wall light fittings or TV set.
  - ii. Near an outside door or windows, or on an outside wall.
  - iii. Where affected by warm air ducts, diffusers, waste pipes or the heater itself.
  - iv. Where subject to vibration.
- c. Connect Thermista-stat wires to control panel terminals '7' and '8' (see Figure 9 - 11)

## 7.5 GAS (See BS 5864 and BS 6891)

- 7.5.1 An independent gas supply pipe from the meter is to be preferred wherever possible. When this is not possible, the pipe must be capable of taking the complete input of the heater and all other gas appliances being served by this same pipe. This supply should be suitably sized to conform to British Standards requirements of no more than 1.0 mbar (0.4" wg) pressure drop (See table of discharge in BS 6891).
- 7.5.2 The ½" union gas cock (supplied) must be fitted to the gas inlet of the heater for easy isolation during servicing. The gas pipe should be so fitted and installed as to be durable, substantial and gas tight. To assist in determining where a gas connection may not be tight, a leak detection fluid should be applied around the connection. Under no circumstances should a flame be used to locate a gas leak. Gas entry to the air heater is through either side to a Rc½ (½" BSP. external [taper] thread).

## 8. COMMISSIONING

### 8.1 PREPARATION

- 8.1.1 Ensure that:
  - a. Gas and Electrical supplies are **OFF**.
  - b. Filter, fan and fan compartments are free from obstructions.
  - c. All registers or grilles are open and conform to design specifications.
  - d. Return, relief and ventilation air installations are adequate.

### 8.2 SETTING OF FAN SPEED

- 8.2.1 Remove air filter and air heater front door.
- 8.2.2 On the electronic control module, set the rate Switch to '**MAX**',
- 8.2.3 Cleanflow switch to '**0**'. (If not fitted)

### 8.3 IGNITION BURNERS AND MAIN BURNERS

- 8.3.1 Turn on the gas supply to the heater.
- 8.3.2 Set both the "AIR HEATER" and "WATER HEATER" switches on the time control unit to the "OFF" position.
- 8.3.3 Set the thermista-stat to "9".
- 8.3.4 Turn on the mains power supply to the heater.
- 8.3.5 Set the "WATER HEATER" switch on the time control to "CONT."
- 8.3.6 The ignitor will spark for a maximum period of 60 seconds during which time the ignition SHOULD ignite. After this time the ignitor will stop and the main burner will light.
- 8.3.7 If the main burner fails to ignite the unit will retry with another ignition attempt. If after 5 ignition attempts no flame is detected the red LED marked "LOCKOUT" will illuminate blue control box.

- 8.3.7 Allow the air heater to operate for a minimum of 15 minutes to ensure stability.
- 8.3.8 Reset the thermista-stat to the desired comfort level
- 8.3.9 Set the time control to the desired "on and "off" periods.
- 8.3.10 Set the "AIR HEATER" switch on the time control to "TIMED".

### 8.4 MAIN BURNER PRESSURE TEST

**NOTE: AIR HEATER BURNERS ARE FACTORY SET TO PROVIDE A NOMINAL HIGH PRESSURE OUTPUT AS DETAILED IN SUB PARAGRAPH 2.2**

- 8.4.1 Loosen the screw on the outlet pressure test point and fit a pressure test gauge (see Figure 4)
- 8.4.2 Check the gauge reading against the information on Table 2..
- 8.4.3 If necessary, use the burner pressure adjuster to obtain required gauge reading in accordance with Table 2.
- 8.4.4 Remove the pressure gauge and re-tighten screw on the outlet pressure test point.

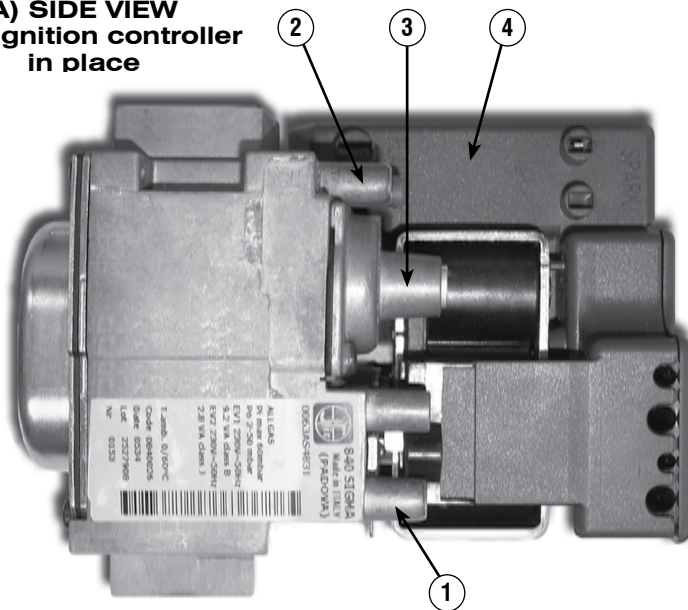
### 8.5 AUTOMATIC CONTROLS CHECK

- 8.5.1 Light the ignition and main burners as detailed in 8.3.
- 8.5.2 Allow the heater to operate for 15 minutes to ensure stability.
- 8.5.3 After a short period, ensure that the fan increases to full speed.
- 8.5.4 When the temperature reaches the control setting, check that the main burner cycles ON and OFF at intervals of approx. 75 to 120 seconds.

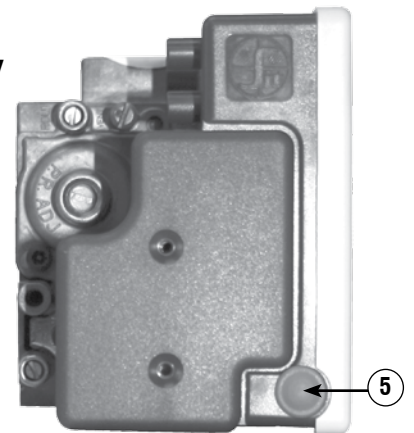
**REMINDER: At the time of commissioning, complete all the relevant sections of the Benchmark Checklist located on the inside back pages of this document prior to handing over the appliance to the occupier.**



**A) SIDE VIEW with ignition controller in place**



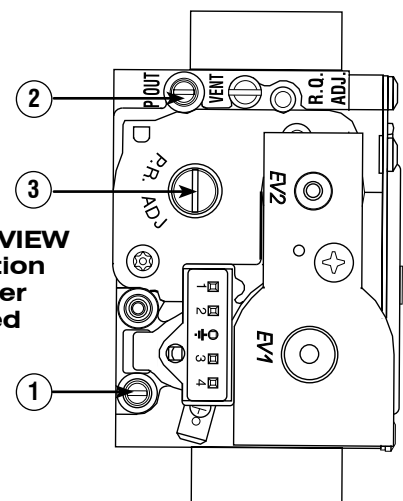
**B) FRONT VIEW with ignition controller in place**



### FEATURES

- 1 Inlet Pressure Test Point
- 2 Outlet Pressure Test Point
- 3 Burner Pressure Adjuster
- 4 Ignition Control
- 5 Manual Reset

**C) FRONT VIEW with ignition controller removed**

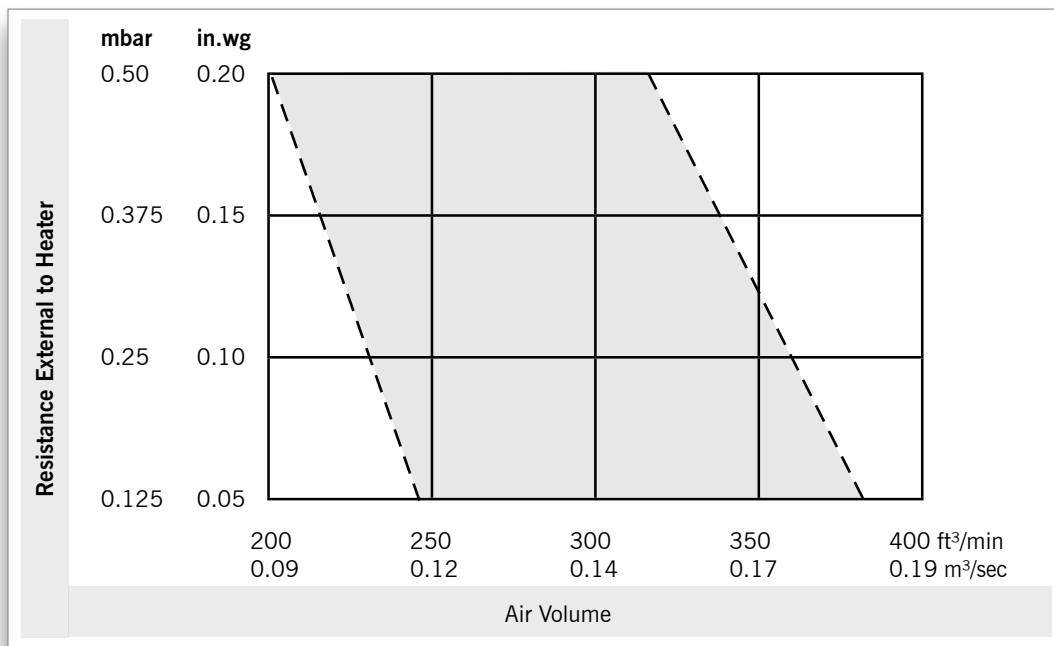


**FIGURE 4 IGNITION CONTROLLERS**



	LOW RATE			HIGH RATE			CIRCULATOR		
	kW	MJ/h	Btu/h	kW	MJ/h	Btu/h	kW	MJ/h	Btu/h
INPUT	8.56	30.9	29,350	9.69	34.9	33,100	4.4	15.8	15,000
OUTPUT	6.44	23.21	22,000	7.32	26.4	25,000	3.23	11.6	11,340
GAS RATE CV 1037 Btu/ft <sup>3</sup>	0.80m <sup>3</sup> /h (28.3ft <sup>3</sup> /h)			0.90m <sup>3</sup> /h (31.9ft <sup>3</sup> /h)			0.42m <sup>3</sup> /h (14.85ft <sup>3</sup> /h)		
BURNER SETTING PRESSURE (HOT)	12.0mbar (4.8" wg)			14.9mbar (6.0" wg)			16.5mbar (6.6" wg)		
MAIN INJECTOR	AMAL 187/001/800						AMAL 340		

**TABLE 2  
MAIN BURNER PRESSURE SETTING**



**TABLE 3  
FAN PERFORMANCE CURVE**

## 8.6 SAFETY CHECKS

In order to check the correct operation of the control module, run the heater for a short period and introduce a fault condition by carrying out the following sequence:

- 8.6.1 Check for gas tightness within the appliance.
- 8.6.2 Check for water soundness around circulator and ALL joints.
- 8.6.3 Turn on both the gas and electrical supplies to the heater.
- 8.6.4 Set the "AIR HEATER" switch on the time control unit to "CONT".
- 8.6.5 Light the ignition and main burners as described in section 8.3
- 8.6.6 Allow the circulator to run for a period of 5 minutes to stabilise.
- 8.6.7 Turn off gas supply to heater at the heater Gas Cock. **DO NOT TURN OFF AT GAS METER!**
- 8.6.8 Having detected the fault condition, the module will go through the ignition sequence. Having detected the fault condition, the control module should cause the heater to go into lockout, indicated by a constant red LED ion the blue box.
- 8.6.9 Reinststate gas supply and wait for a minimum period of 10 seconds.
- 8.6.10 Depress the "RESET" button on the blue box.
- 8.6.11 The heater will go through its ignition procedure and the ignition and main burners SHOULD ignite.
- 8.6.12 Set the "AIR HEATER" switch on the time control unit to "TIMED"

## 8. ELJAN 4/SEA CIRCULATOR

### 8.1 WATER CIRCULATION SYSTEM

Detailed recommendations for the water circulation system are given in BS 6798, BS 5449 (for small bore and microbore central heating systems), and BS 5446. The maximum water side operating pressure (PMS) is 3bar.

**NOTE:** The circulator thermostat is factory set to provide a temperature range of 50°C to 82°C. If the circulator is used in a direct application Temperature Stop 2 should be left in position (see Figure 5), ensuring a maximum temperature of 60°C. For indirect applications, remove temperature stop 2.

### 8.2 WATER CONNECTIONS

**NOTE:** Both flow and return connections are Rp $\frac{3}{4}$  ( $\frac{3}{4}$  in BSP female) connections.

**IMPORTANT - Use compression fittings at the appliance flow and return connections and at the air heater casing exit, to facilitate easy access to the circulator body.**

**THIS UNIT MUST BE PUMPED**

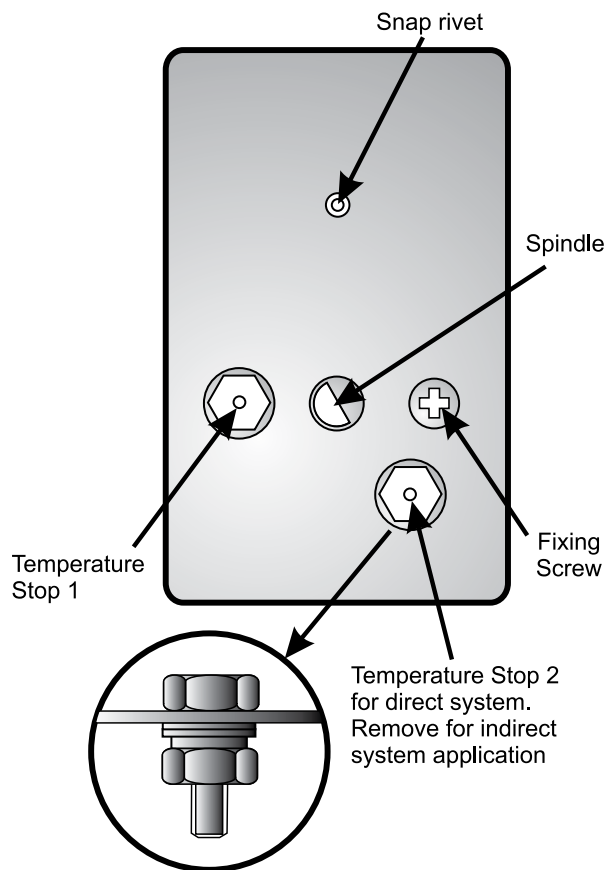


FIGURE 5  
ELJAN 4/SEA DIRECT SYSTEM APPLICATION

## 9. ELJAN 4/SEA CIRCULATOR COMMISSIONING

### 9.1 PREPARATION

- 9.1.1 Ensure that the gas and electrical supplies are OFF.
- 9.1.2 Fill the water circulation system, clear any air locks and check for water soundness, sealing any leaks detected.

### 9.2 LIGHTING IGNITION AND MAIN BURNERS

- 9.2.1 Turn on the gas supply to the heater.
- 9.2.2 Set both the "AIR HEATER" and "WATER HEATER" switches on the time control unit to the "OFF" position.
- 9.2.3 Set the thermostat so that it reaches the maximum stop.
- 9.2.4 Turn on the mains power supply to the heater
- 9.2.5 Set the "WATER HEATER" switch on the time control to "CONT."
- 9.2.6 The ignitor will spark for a maximum period of 60 seconds after which time the ignition burner and main burner SHOULD ignite and the igniter will stop.
- 9.2.7 If the main burner fails to ignite, the red LED marked "LOCKOUT" will illuminate on the blue box.
- 9.2.8 Test for gas leakage at the supply, multifunctional control, ignition burner and main burner using proprietary detection fluid, sealing any leaks found.
- 9.2.9 Allow the circulator to operate for a minimum of 15 minutes to ensure stability.
- 9.2.10 Set the thermostat to the desired water temperature.
- 9.2.11 Set the time control to the desired "on" and "off" periods.
- 9.2.12 Set the "WATER HEATER" switch on the time control to "TIMED".

### 9.3 WATER BURNER PRESSURE TEST

**NOTE:** THE WATER CIRCULATOR BURNERS ARE PRE-SET AND SHOULD NOT REQUIRE ADJUSTING.

- 9.3.1 Loosen the screw on the outlet pressure test point and fit a pressure test gauge (see Figure 4)
- 9.3.2 Check the gauge reading against the information at Table 2.
- 9.3.3 If necessary, use the burner pressure adjuster to obtain the required gauge reading as shown at Table 2.
- 9.3.4 Remove the pressure gauge and re-tighten the screw on the outlet pressure test point.

### 9.4 SAFETY CHECKS

- 9.4.1 Check for gas tightness within the appliance.
- 9.4.2 Check for water soundness around circulator and ALL joints.
- 9.4.3 Turn on both the gas and electrical supplies to the heater.
- 9.4.4 Set the "WATER HEATER" switch on the time control unit to "CONT".
- 9.4.5 Light the ignition and main burners as described in section 9.2
- 9.4.6 Allow the circulator to operate for a period of 5 minutes to stabilise.
- 9.4.7 Turn off gas supply to heater at the heater gas cock. **DO NOT TURN OFF AT GAS METER!**
- 9.4.8 Having detected a the fault condition, the module will go through the ignition sequence. Having detected the fault condition after the 5th attempt, the module should cause the heater to go into lockout, indicated by a constant red LED on the blue box.
- 9.4.9 Reinststate gas supply and wait for a minimum period of 10 seconds.
- 9.4.10 Depress the "RESET" button on the blue box.
- 9.4.11 The heater will go through its ignition procedure and the ignition and main burners SHOULD ignite.
- 8.4.12 Set the "WATER HEATER" switch on the time control unit to "TIMED"

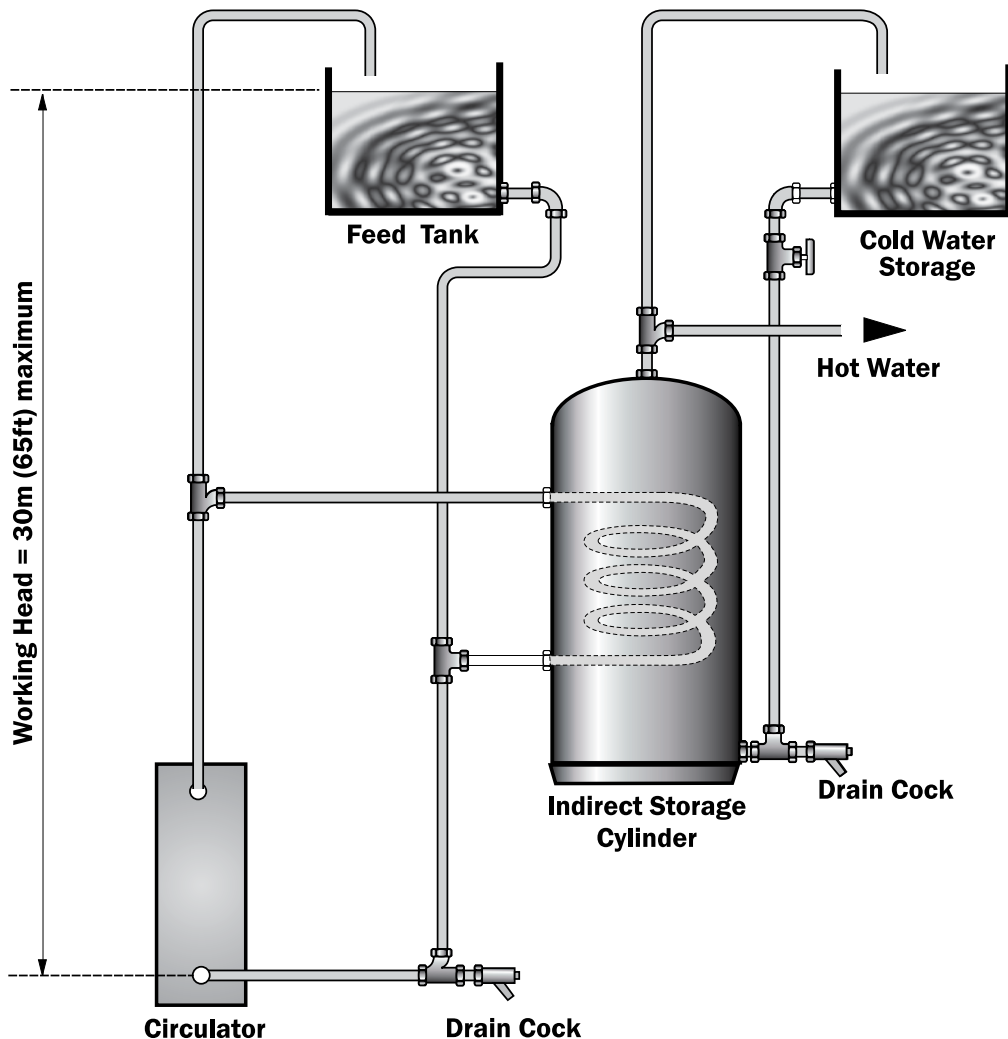


FIGURE 6  
ELJAN 4/SEA DIRECT SYSTEM APPLICATION

## 10. INSTRUCTIONS FOR USERS

- 10.1 If the building is unoccupied, ensure that the user instructions are left taped to the air heater for the the user's reference and that the installation instructions are left at or near the air heater for use on future service calls.
- 10.2 If the building is occupied, hand the user instructions over and ensure that the user understands:
  - 10.2.1 How to light both the air heater and water circulator.
  - 10.2.2 How to re-set the air heater or water circulator if "LOCKOUT" occurs.
  - 10.2.3 How to operate the time control, thermista-stat and the SUMMER AIRFLOW switch.
  - 10.2.4 That the time control must be reset following a power failure.
  - 10.2.5 How to use the circulator thermostat to set the water temperature.
  - 10.2.6 How to turn off the heater and switch off the electrical supply to the heater.
  - 10.2.7 How to remove, clean and refit the air filter and at what intervals, (i.e. fortnightly, or weekly for new houses).
  - 10.2.8 How to control the heating system by opening and closing warm air outlets.
  - 10.2.9 How to obtain summer air circulation.
  - 10.2.10 That the air grilles on the heater or heater compartment; grilles and ventilators in the walls, windows or doors of the building **MUST NOT BE OBSTRUCTED**.
  - 10.2.11 That the heater must be serviced at least once a year by a competent person to ensure efficient and safe operation.
  - 10.2.12 That the red instructions for safe use have been pointed out and understood.
  - 10.2.13 That expert help must be obtained if persistent "LOCKOUT" occurs.

## 11. MAINTENANCE

**IMPORTANT: Ensure gas and electricity supplies are isolated before commencing any maintenance or replacement of components. After completion of any maintenance, always test for gas soundness and carry out a complete functional test of the appliance in accordance with Commissioning Instructions at Sect 6.1 to 6.8 inclusive. Replace any sealing gasket or insulation that is damaged before re-commissioning, taking care to not disperse fibrous materials.**

### 11.1 ROUTINE MAINTENANCE

- 11.1.1 Operate the appliance and check for the correct function of the burner and controls.
- 11.1.2 Turn OFF the gas and electrical supplies to the appliance.
- 11.1.3 Remove the air heater front panel.
- 11.1.4 Remove and check the return air filter/cleaner for cleanliness, remove and clean the Air Circulation fan as detailed in para 11.8.
- 11.1.5 Remove the Burner and Controls Assembly as detailed in paragraph 11.2. Inspect and clean the main burner and injector as necessary. Examine the main burner for cracks, including hairline cracks, exchanging the burner as necessary.
- 11.1.6 Inspect and clear the pilot burner orifice.
- 11.1.7 Clean the heat exchanger flueways by thoroughly brushing from above and below, as shown in para 11.10.
- 11.1.8 By viewing through the Fan Aperture, and using a torch or similar, examine the heat exchanger externally for signs of cracks or holes, particularly around welded joints.
- 11.1.9 Using a torch or similar, introduce a light source into the heat exchanger burner aperture and upper access port, and again examine the heat exchanger for signs of cracks or holes, particularly around welded joints, whilst again viewing through the Fan Aperture.
- 11.1.10 Refit the Air Circulation fan, Burner and Controls Assembly, and air filter/air cleaner.
- 11.1.11 Light the appliance and note the main burner flame profile. If the flame profile is affected when the Air Circulation fan switches on, check for any air leaks between the air heater and the base plenum, paying particular attention to heaters with rear draught diverters. Rectify any air leaks before continuing with this procedure.
- 11.1.12 Allow the air heater to operate for approximately 15 minutes to ensure stability, and with the main burner lit, ensure that the operation of Air Circulation fan does not affect the main burner flame profile.
- 11.1.13 If no defects are found, fully commission the air heater in accordance with the Installation, Commissioning and Maintenance instructions applicable to the appliance.

## **11.2 BURNER AND CONTROL ASSEMBLY REMOVAL**

- 11.2.1 Ensure that the Gas and Electrical supplies are switched OFF
- 11.2.2 Remove air filter and the appliance door.
- 11.2.3 Disconnect igniter at the piezo unit.
- 11.2.4 Disconnect Multifunctional control electrical connections.
- 11.2.5 Disconnect the gas supply by breaking the union at the input of the Multifunctional control.
- 11.2.6 Remove the 8 Burner assembly securing screws and withdraw the Burner and Control Assembly.
- 11.2.7 Refitment or replacement is in reverse order.

## **11.3 MAIN BURNER REMOVAL**

- 11.3.1 Remove the Burner and Controls assembly as detailed in 11.2.
- 11.3.2 Release the 4 x securing screws and withdraw the Main Burner.
- 11.3.3 Refitment or replacement is in reverse order.

## **11.4 MAIN INJECTOR REMOVAL**

- 11.4.1 Remove the Main Burner as detailed in 11.3.
- 11.4.2 Unscrew the main injector from its holder.
- 11.4.3 Refitment or replacement is in reverse order.

## **11.5 IGNITION BURNER ASSEMBLY DISMANTLING AND REMOVAL**

- 11.5.1 Remove Burner and Controls assembly as detailed in 11.2.
- 11.5.2 Release the Igniter electrode lock nut from the Pilot Assembly and withdraw the electrode.
- 11.5.3 Disconnect the Ignition gas feed pipe from the Multifunctional control and Pilot Assembly.
- 11.5.4 Withdraw the Ignition injector from the Pilot Assembly.
- 11.5.5 Release the 2 x screws, nuts and lock washers securing the Ignition Assembly to the Burner and Controls assembly, and withdraw the Pilot Assembly.
- 11.5.6 Refitting or replacement is in reverse order, ensuring that the Ignition Assembly gaskets are not damaged and that the Ignition Assembly firmly seals with the Burner and Controls assembly. DO NOT over tighten the thermocouple connection at the Multifunctional control, (finger tight plus 1 flat).

## **11.6 MULTIFUNCTIONAL CONTROL REMOVAL**

- 11.6.1 Remove the Burner and Controls Assembly as detailed in 11.2
- 11.6.2 Disconnect the Ignition gas feed pipe from the Multifunctional control.
- 11.6.3 Disconnect the Multifunctional control input and output supply feeds.
- 11.6.4 Refitting or replacement is in reverse order.

**NOTE:** When refitting or replacing the Multifunctional control, the 'O' ring seals are to be replaced.

## **11.7 AIR CIRCULATING FAN, REMOVAL AND CLEANING**

- 11.7.1 Ensure that the electrical supply is isolated.
- 11.7.2 Remove the appliance front door, release the 2 x securing screws and hinge down the electrical panel.
- 11.7.3 Disconnect the fan flying lead socket.
- 11.7.4 Withdraw the fan flying lead from the cable clamp on fan chamber floor.
- 11.7.5 Release the 2 x Fan Assembly securing screws and withdraw the Fan Assembly from the Heater cabinet, avoiding damage to the fan blades.
- 11.7.6 Remove all dust from both the impeller and motor, taking care to not disturb the balance of the fan.
- 11.7.7 Refitting or replacement is in reverse order.

## 11.8 ELECTRICAL ASSEMBLY REMOVAL

- 11.8.1 Ensure that the electrical supply is isolated.
- 11.8.2 Remove the appliance front door, release the 2 x securing screws and hinge down the electrical panel.
- 11.8.3 Disconnect the following
  - a. Air circulation fan flying leads from the capacitor and withdraw from the cable clamp,
  - b. 230V mains 'L', 'N' and 'E' from connection block terminals '1' and '2', and **Earth Stud** respectively,
  - c. Thermista-stat connections from connection block terminals '7' and '8',
  - d. Limit switch from connection block terminals '13' and '14',
  - e. Fan Delay Control from connection block terminals '18' and '17',
  - f. Multifunctional Control from connection block terminals '16 (N) and '15' (L), and **Earth Stud**.
  - g. Water heater from connection block terminals '10' (L) and '9' (N),
  - h. Water Pump from connection block terminals '12' (L) and '11' (N),
  - i. Cleanflow from connection block terminals '19' (24V) and '20' (0V),
  - j. Earth lead from the fan chamber floor,
- 11.8.5 Release the hinge pins and withdraw the Electrical assembly, releasing wiring from cable clamps and grommets as required.
- 11.8.6 Refitting or replacement is in reverse order.

## 11.9 ELECTRONIC MODULE REMOVAL

- 11.9.1 Ensure that the electrical is isolated.
- 11.9.2 Remove the appliance front door, release the 2 x securing screws and hinge down the electrical panel.
- 11.9.3 Disconnect terminals '21' to '33' from the Electronic module.
- 11.9.4 Release the 2 x screws and nuts securing Electronic module to Electrical assembly and remove module.
- 11.9.5 Refitting or replacement is in reverse order.

## 11.10 TIME CONTROL AND SWITCH REMOVAL

- 11.10.1 Ensure that the electrical is isolated.
- 11.10.2 Remove the appliance front door, release the 2 x securing screws and hinge down the fan chamber door.

### TIME CONTROL REMOVAL

- 11.10.3 Disconnect conductors 'C1', 'C2', 'C3' and 'C5' from the Time control.
- 11.10.4 Release the 3 x fixing nuts, and withdraw the Time control.
- 11.10.5 Refitting or replacement is in reverse order.
- 11.10.6 Set Time Control to required ON and OFF times.
- 11.10.7 Set Time Control to correct time.

### SWITCH REMOVAL

- 11.10.8 Disconnect the conductors from the switch terminals.
- 11.10.9 Depress the retaining clips and press the switch out of the fascia panel.
- 11.10.10 Refitting or replacement is in reverse order.

**WARNING: The fascia panel is held in place by push fit retainers which must be removed with caution to avoid causing damage to the support pins. Removal of the fascia is not advised unless it is intended to be replaced.**

## 11.11 FAN DELAY CONTROL/LIMIT SWITCH REMOVAL

- 11.11.1 Ensure that the electrical supply is isolated.
- 11.11.2 Remove appliance front door, release the 2 x securing screws and hinge down the fan chamber door.
- 11.11.3 Release the 2 screws securing the Limit Switch cover plate and withdraw the control from the appliance by drawing the conductors through the grommet in the fan chamber floor.
- 11.11.4 Disconnect the required control/switch, noting the position of wiring for subsequent re-connection.
- 11.11.5 Release the 2 x securing screws, and withdraw the required control/switch
- 11.11.5 Refitting or replacement is in reverse order, ensuring that the Igniter earth lead (if fitted) is grounded by the Limit Switch cover plate securing screw.

## 11.12 HEAT EXCHANGER ACCESS

- 11.12.1 Ensure that the electrical supply is isolated.
- 11.12.2 Remove the appliance front door.
- 11.12.3 Release the 2 screws securing the heat exchanger access cover plate, and withdraw the cover plate and gasket.
- 11.12.4 Withdraw the 'U' baffle from the heat exchanger.
- 11.12.5 Reassembly is in reverse order.

**NOTE: When reassembling, ensure that the 'U' baffle correctly locates within the heat exchanger, gaskets are soundly sealed, and the heater is fully re-commissioned.**

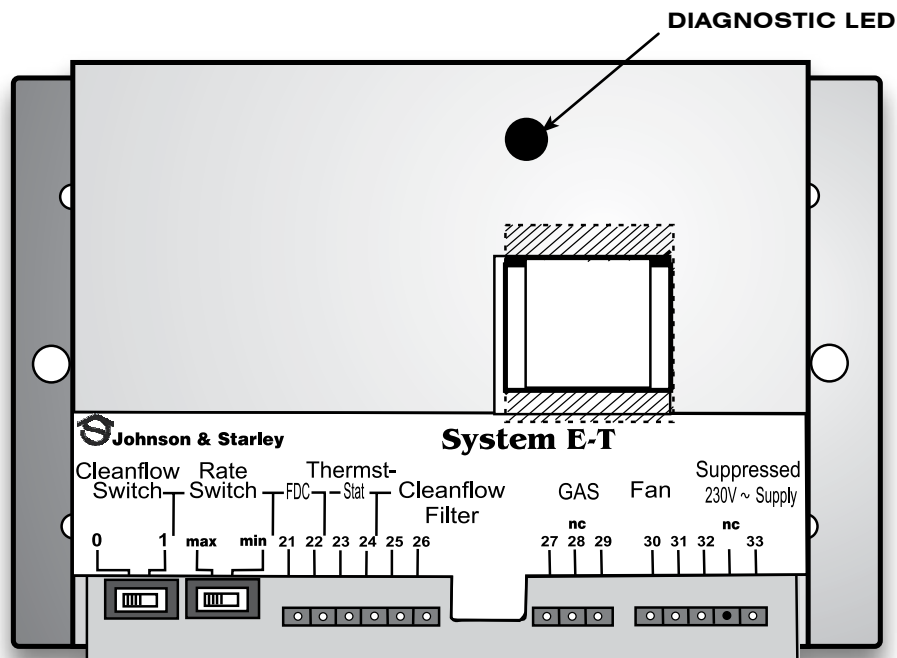


## 12. DEFECT DIAGNOSIS

**IMPORTANT:** If an electrical defect occurs after installation of the appliance; preliminary earth continuity, polarity, and resistance to earth checks should be carried out with a multimeter. On completion of any maintenance/fault-finding task that has required the breaking and remaking of electrical connections, then checks of continuity, polarity, and resistance to earth must be repeated.

### 12.1 WARNINGS

- 12.1.1 When purging or checking gas supplies, ensure that the ventilation to the room or cupboard is adequate, and that all naked lights are extinguished.
- 12.1.2 **SYSTEM E-T**
- When carrying out any electrical testing, a test meter **MUST** be used, since low resistance test devices can cause damage to the Electronics module.
  - Before commencing defect diagnosis, ensure that the Thermista-stat is set to maximum, the mains supply is 'ON' and the time control (if fitted) is at an 'ON' position.
  - Care is to be taken during the replacement and handling of electronic assemblies (i.e. electronic panel, airflow sensor or Thermista-stat), it is not practical to rectify defects on these assemblies, except at the manufacturer, and any attempt to do so may render the guarantee or factory replacement arrangement invalid.



**FIGURE 8**  
**SYSTEM E-T ELECTRONIC MODULE**

12.2 The SYSTEM E-T module is fitted with a diagnostic light emitting diode (LED) which is visible through a hole in the module cover, as shown in Fig. 5 below. If the LED is flashing, this means that :

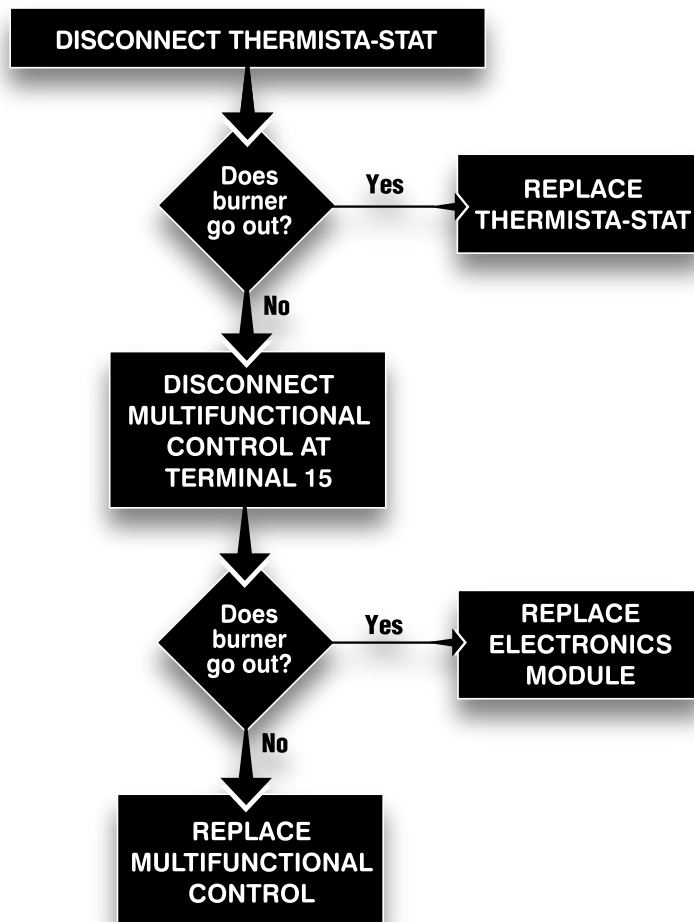
- The fan is not connected, or
- The capacitor is not connected, or
- There is a short circuit in the fan supply.

## DEFECT DIAGNOSIS

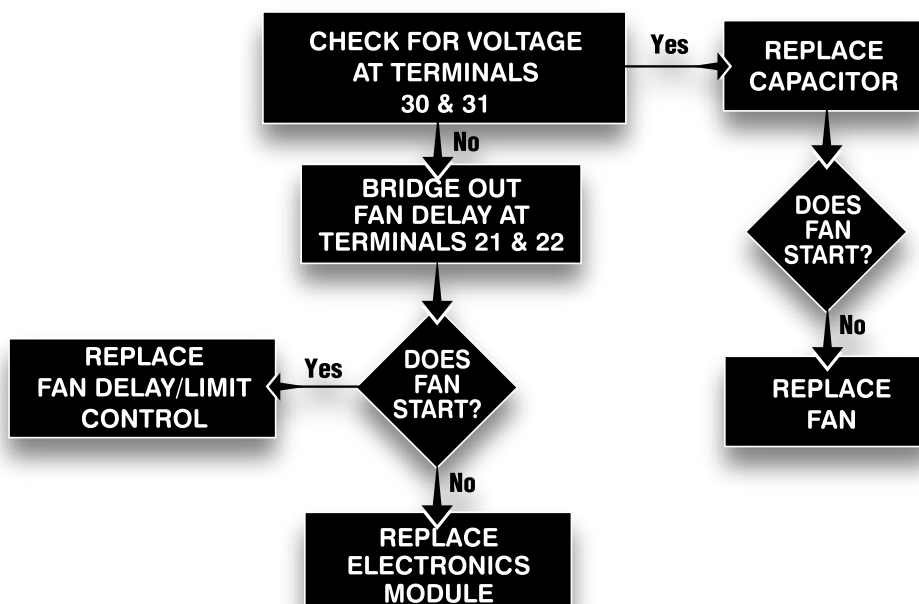
	SYMPTOM	POSSIBLE CAUSE	REMEDY
1	<b>Ignition burner will not light</b>	No gas supply to heater	Check for gas at inlet pressure test point on Multifunctional Control
		Gas supply pipe not purged	Purge gas supply pipe in accordance with BS 6891
		Ignition burner orifice restricted	Clear ignition orifice or replace pilot injector
		No spark	Check ignition control, lead and electrode
		Excessive gas supply pressure	Check that mains gas pressure is 20mbar and reduce if necessary
2	<b>Main burner operating intermittently with fan running</b>	Gas rate or burner pressure setting high	Check gas rate and burner pressure setting
		Temperature rise excessive	Adjust fan speed or gas rate accordingly
		Air filter or return air path restricted	Check filter is clean and air path is clear
		Excessive number of outlets closed	Open additional outlets
3	<b>Main burner operating with intermittent fan operation</b>	Gas rate or burner pressure setting too low	Check gas rate and burner pressure setting
		Airflow sensor faulty	Replace
4	<b>Fan runs for excessive periods or operates intermittently after main burner shuts down</b>	Airflow sensor faulty	Replace
5	<b>Noisy Operation</b>	Gas pressure too high	Check burner pressure setting
		Noisy fan motor	Replace fan assembly
		Fan speed setting too high	Adjust fan speed
6	<b>Incorrect operation of fan or main burner</b>	Fault related to SYSTEM E-T control System (refer to pages 15 to 20)	Consult diagnostic chart and follow recommended procedure

# 13. SYSTEM E-T DEFECT DIAGNOSIS FLOW CHART

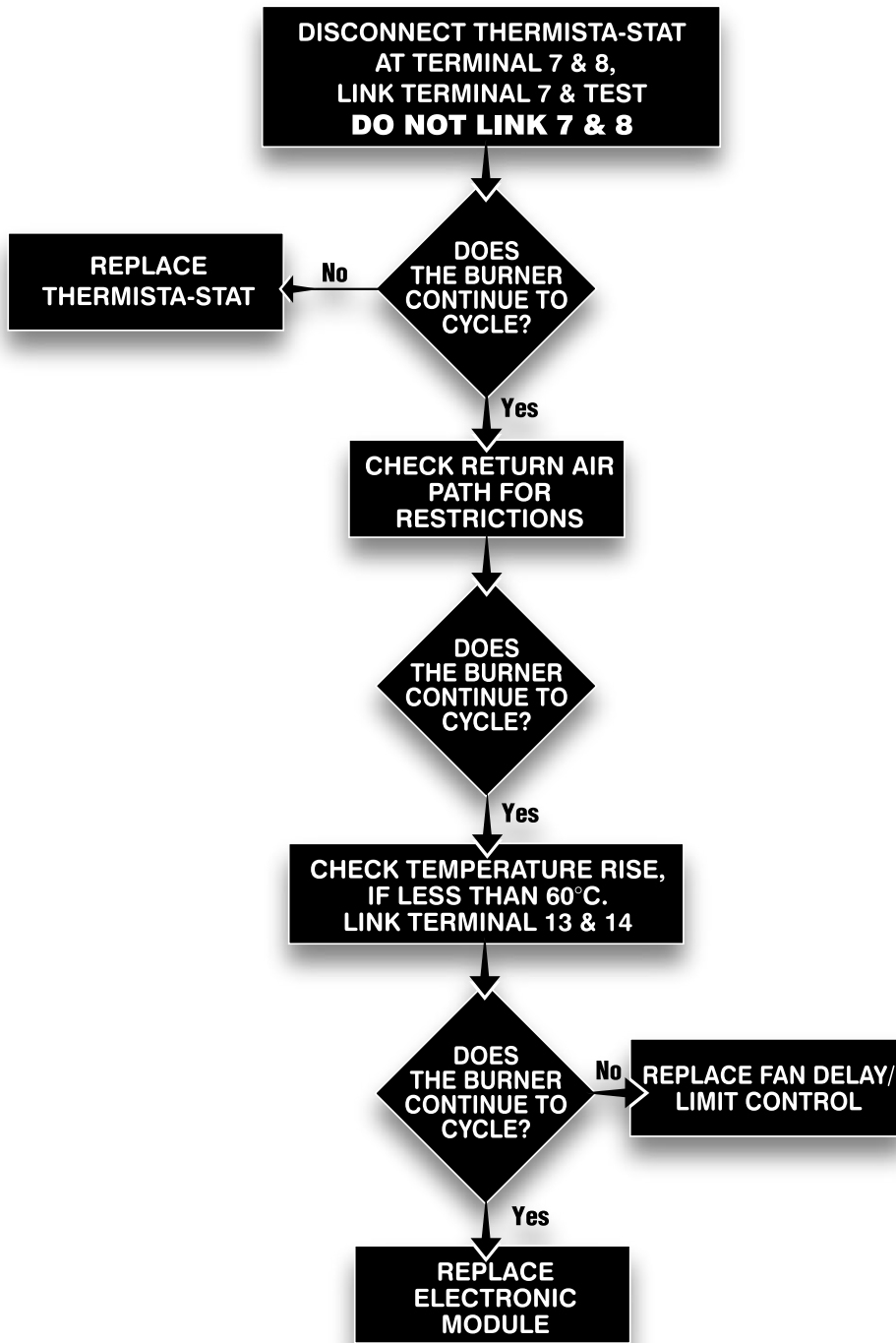
## MAIN BURNER NOT CYCLING (ROOM TEMPERATURE TOO HIGH)



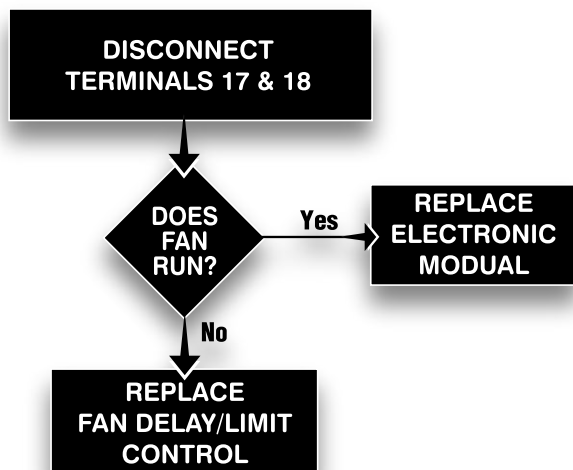
## MAIN BURNER ON, BUT FAN NOT RUNNING



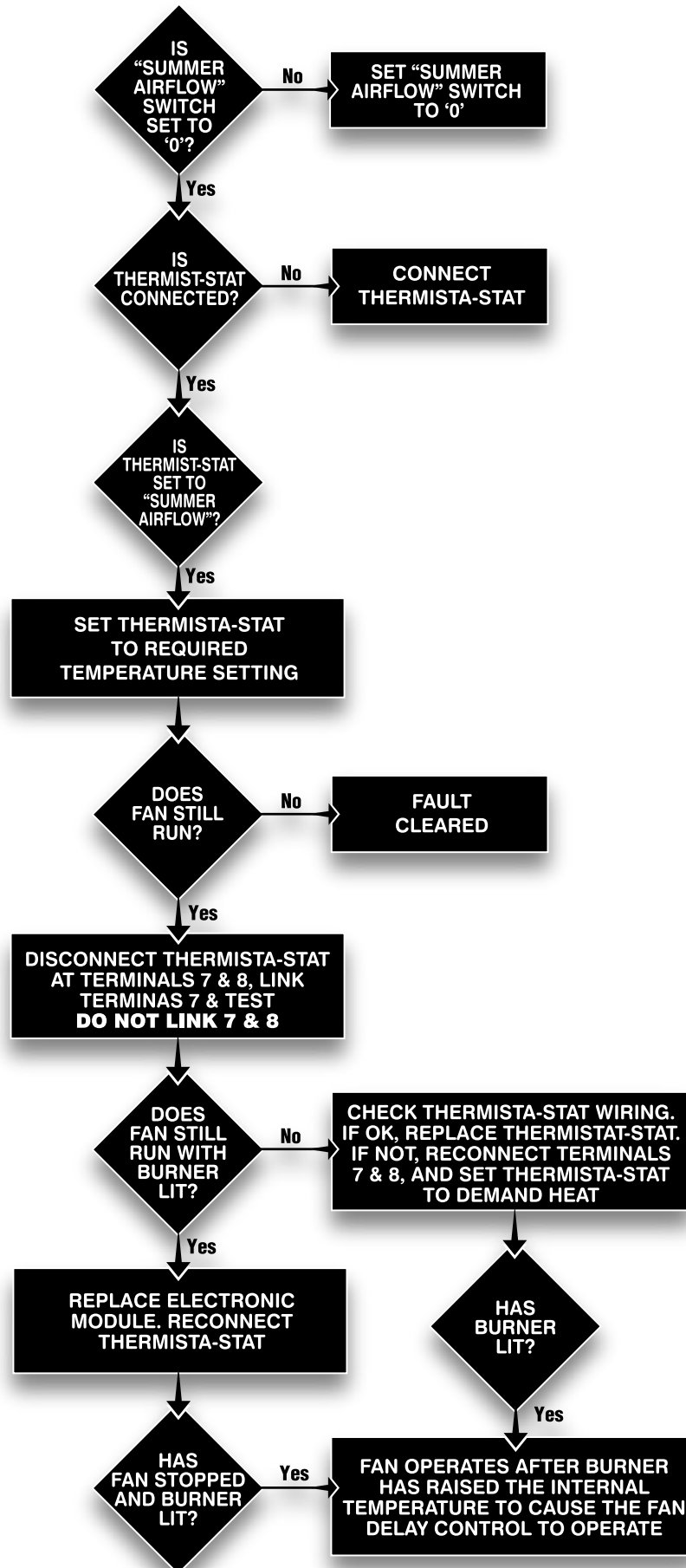
**FAN OPERATES. BUT BURNER CYCLES BEFORE REQUIRED TEMPERATURE IS REACHED**



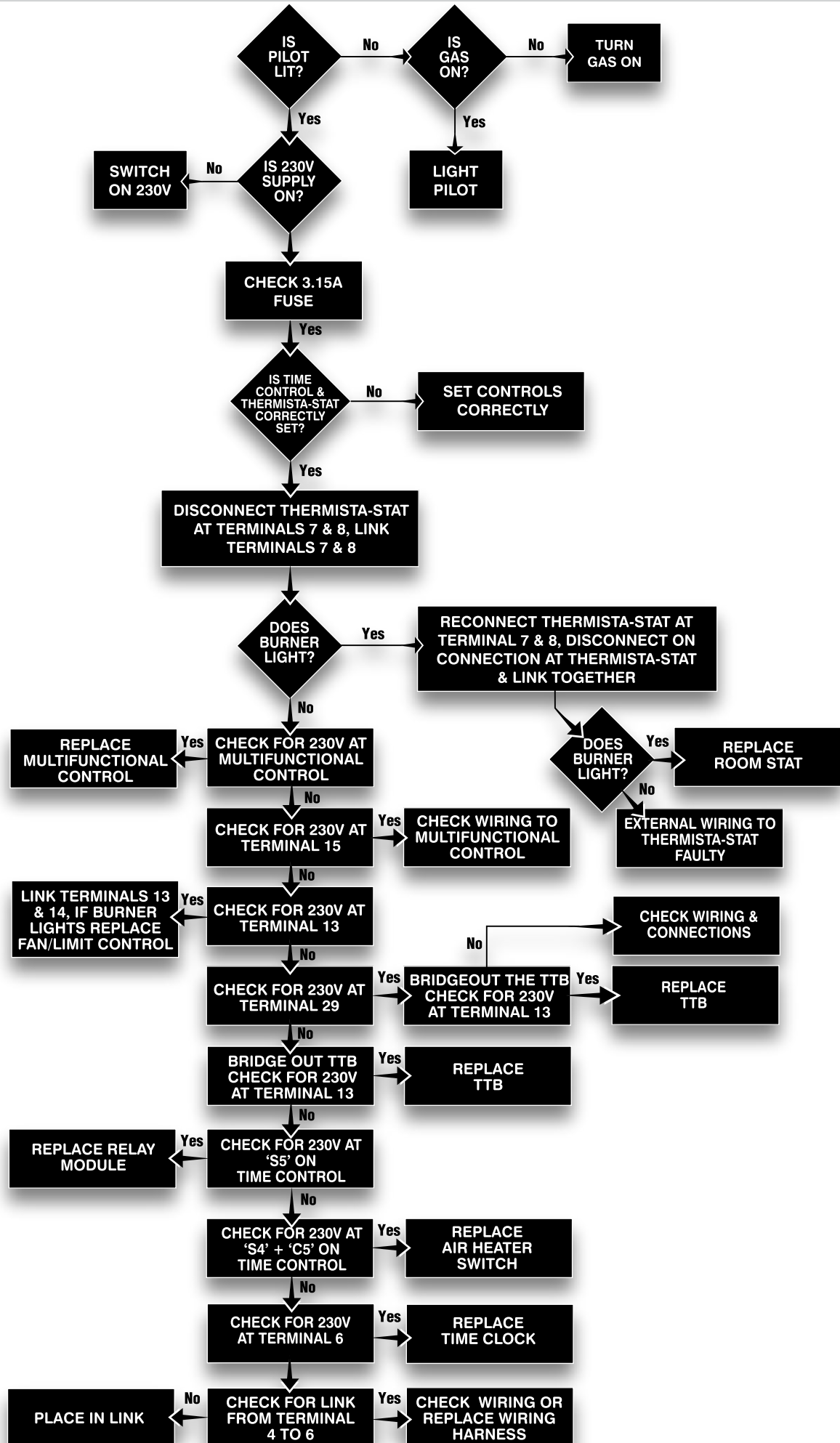
**FAN CONTINUES RUNNING, OR CYCLES AFTER HEATING IS TURNED OFF**



# FAN RUNS BUT MAIN BURNER NOT OPERATING

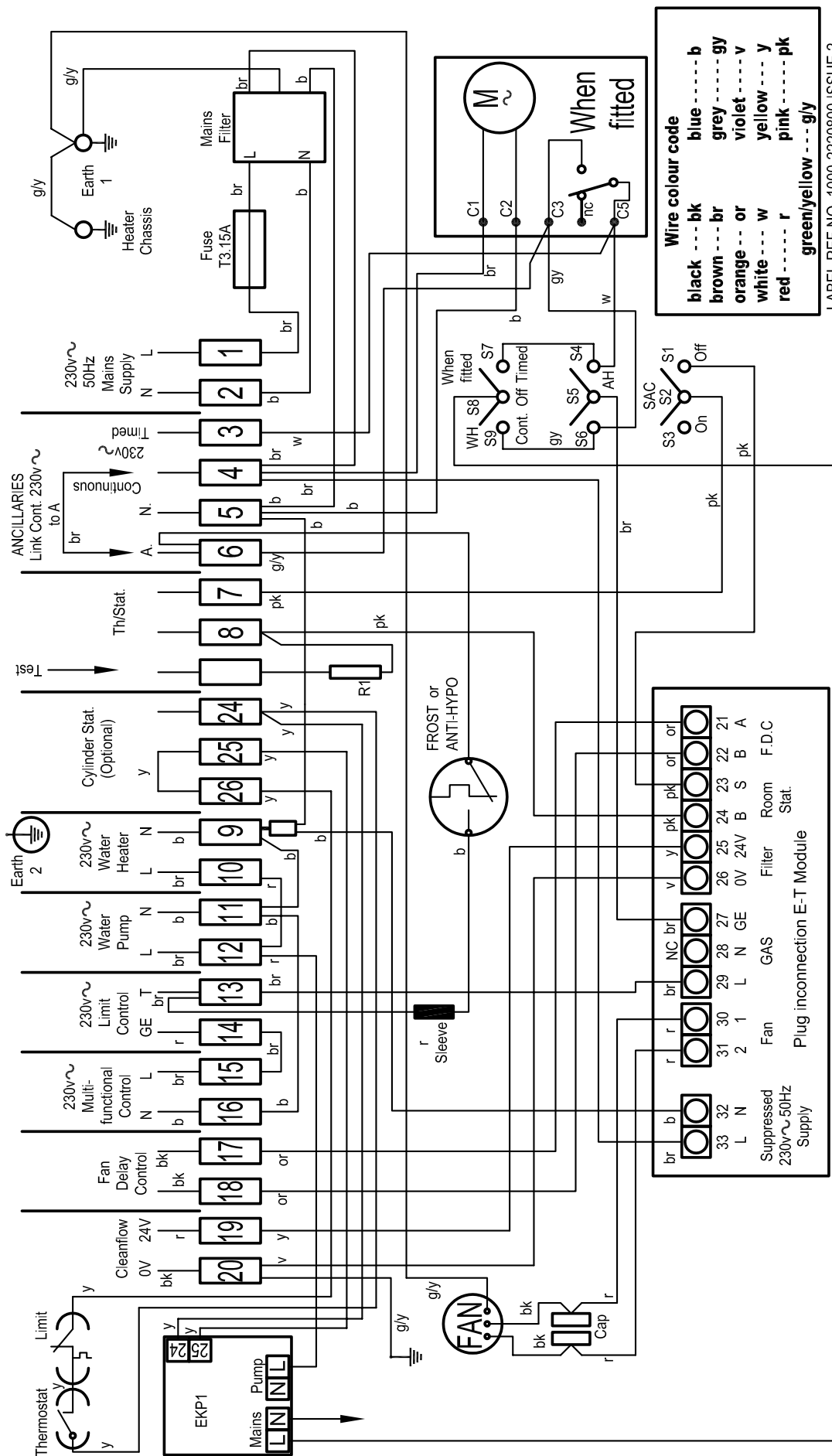


# MAIN BURNER NOT OPERATING





# 14. SYSTEM E-T CIRCUIT DIAGRAM

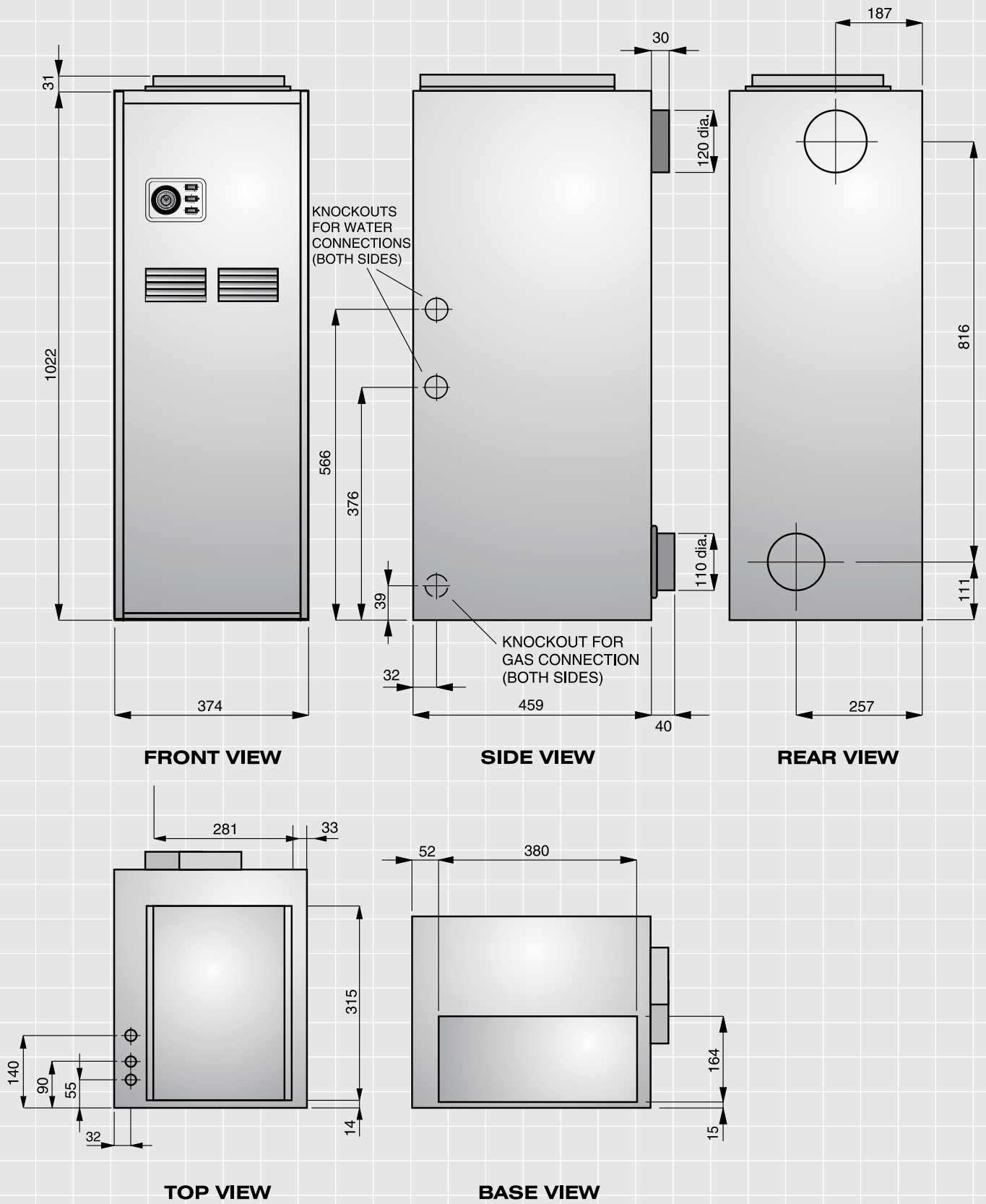


LABEL REF NO. 1000-2220800 ISSUE 2

**FIGURE 9**  
**SYSTEM E-T CIRCUIT DIAGRAM**



# 17. DIMENSIONS



\* THIS DIMENSION REQUIRES - R /AIR DUCT FITTING

**FIGURE 12**  
**DIMENSIONS**

## 14. LIST OF SPARES

Telephone Johnson & Starley Spares Department 01604 707012.

ITEM	G.C. No.	PART No.	DESCRIPTION	QTY
<b>HI-SPEC J25SCA AIR HEATER</b>				
1	232-878	BOS 02064SP	Fan Assembly (Air Circulating Fan c/w Integral Motor)	1
2	E69-640	1000-0708190	Multifunctional Gas Control (S.I.T.)	1
3	H74-237	1000-0710380	Pilot Assembly	1
4	H74-238	1000-2501490	Gasket - Pilot	1
5	378-466	BOS 02031	Time Control - Diehl 18801-005	1
6	H74-239	S253-0709000	Burner Arm Assembly	1
7	245-394	1000-0703430	Manifold - Burner (Main Injector - Bray 800)	1
8	245-509	1000-0513820	Fuse T3.15A - Anti-Surge	1
9	245-508	R253-0145000	Filter Tray Assembly	1
10	E84-219	400-0016-7-32	'O' Ring	2
11	242-228	S00174	Heat Exchanger Assembly	1
12	245-542	1000-0515970	Capacitor 15 uF - Non ET Control	1
13	245-514	1000-0515620	Thermistat - ET Control	1
14	H74-240	1000-0516375	Thermostat - Fan Delay Control/Limit Switch	1
15	H74-241	S253-0500000	Complete Electrical Panel	1
16	H74-242	S253-0128000	Cabinet Door Assembly	1
17	H74-243	S253-0506000	Flame Control	1
18	H74-244	S253-0700000	Burner & Gas Control Assembly	1
19	E05-328	1000-0515090	Filter - Mains	1
20	245-539	ET005	System E-T Control Module	1
21	H74-245	1000-0524950	Interface Board - Water Heater	1
22	H74-246	1000-0710420	Electrode	1
23	H74-248	1000-0708930	Thermo Switch Assembly	1
<b>ELJAN 4/SEA WATER HEATER</b>				
24	H74-249	S253-0713000	Burner Arm Assembly	1
25	H74-237	1000-0710380	Pilot Assembly	1
26	H74-238	1000-2501490	Gasket - Pilot	1
27	397-445	1000-0703460	Pilot Injector - Amal 187/001/340	1
28	E69-640	1000-0708190	Multifunctional Gas Control (S.I.T.)	1
29	E84-219	400-0016-7-32	'O' Ring	2
30	H74-250	S253-0710000	Burner c/w Gas Control	1
31	H74-251	S252-0705000	Waterways Assembly	1
32	H74-254	1000-0521910	Switch - Overheat Cut Off	1
33	H74-246	1000-0710420	Electrode	1
34	H74-243	S253-0506000	Control - Flame	1



# **HI-SPEC J25SCA LOG BOOK**

## **WARM AIR HEATER AND WATER CIRCULATOR COMMISSIONING CHECKLIST**



This Log Book should be filled out at each annual service



BENCHMARK Number

## WARM AIR HEATER AND CIRCULATOR COMMISSIONING CHECKLIST

### WARM AIR UNIT

APPLIANCE SERIAL NUMBER:  NOTIFICATION NUMBER:

### HOT WATER GENERATOR

APPLIANCE SERIAL NUMBER:  NOTIFICATION NUMBER:

**CONTROLS** to comply with the Building Regulations, each section must have a tick on one or other of the boxes

REQUIREMENT	MEASURES PROVIDED		
1. Time & temp control to heating	Room stat & integral timer	<input type="checkbox"/>	
2. Time & temp control to hot water	Cylinder stat & integral timer	<input type="checkbox"/>	
3. Heating zone valve	Fitted	<input type="checkbox"/>	Not Required <input type="checkbox"/>
4. Thermostatic Radiator Valves	Fitted	<input type="checkbox"/>	Not Required <input type="checkbox"/>
5. Boiler Interlock	Provided	<input type="checkbox"/>	Not Required <input type="checkbox"/>

### FOR WARM AIR HEATERS ONLY

Has the system been balanced in accordance with the heater manufacture's instructions? YES  NO

Was an anemometer used? YES  NO

Have balancing dampers been fitted? YES  NO

### FOR WARM AIR HEATING: MEASURE AND RECORD

Burner operating pressure  mbar

Heat input  kW

Temperature difference between return air inlet and nearest outlet  °C

### FOR HOT WATER GENERATORS: MEASURE AND RECORD

Burner operating pressure  mbar

Heat input  kW

Water flow temperature  °C

### FOR ALL PRODUCTS

Does the heating & hot water system comply with the appropriate building regulations? YES  NO

Has the appliance and associated controls been installed & commissioned in accordance with manufacture's instructions? YES  NO

Have you demonstrated the operation of the appliance & system to the customer? YES  NO

Have you left all the manufacturer's literature with the customer? YES  NO

Competent Person's Signature..... Customer's Signature.....  
*(To confirm demonstration of equipment & receipt of appliance instructions)*

### COMMISSIONING ENGINEER'S DETAILS

Name..... Commissioning Date.....

Address.....

..... Tel No.....

Corgi Registration No..... CORGI ID SERIAL No.....



# SERVICE RECORD

It is recommended that your heating system is serviced regularly and that the appropriate Service Record is completed.

## Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

### SERVICE 1      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 2      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 3      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 4      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 5      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 6      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 7      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 8      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 9      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

### SERVICE 10      Date

Energy Efficiency Checklist completed? Yes  No

Engineer Name \_\_\_\_\_

Company Name \_\_\_\_\_

Telephone Number \_\_\_\_\_

CORGI ID Number \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

Signature \_\_\_\_\_

**Johnson & Starley** are the leading UK & European manufacturers of a complete range of **Domestic Warm Air Heaters**.

All the heaters suit both **Replacement** and **Upgrade** needs and are compliant with the new (2006) amendments to Part L of the Building Regulations.

## HOME COMFORT SOLUTIONS

### Company Details

Website Address [www.johnsonandstarley.co.uk](http://www.johnsonandstarley.co.uk)  
 Email [sales@johnsonandstarley.co.uk](mailto:sales@johnsonandstarley.co.uk)  
[marketing@johnsonandstarley.co.uk](mailto:marketing@johnsonandstarley.co.uk)  
 Telephone Number **01604 762881** (Main switchboard)  
 Fax Number **01604 767408**

### Spares

Telephone **01604 707012**  
 Fax **01604 762884**

### Sales

Telephone **01604 707012**  
 Fax **01604 764879**

### Service

Telephone **01604 707011**  
 Fax **01604 707017**

### Warm Air Upgrade Enquiry Service

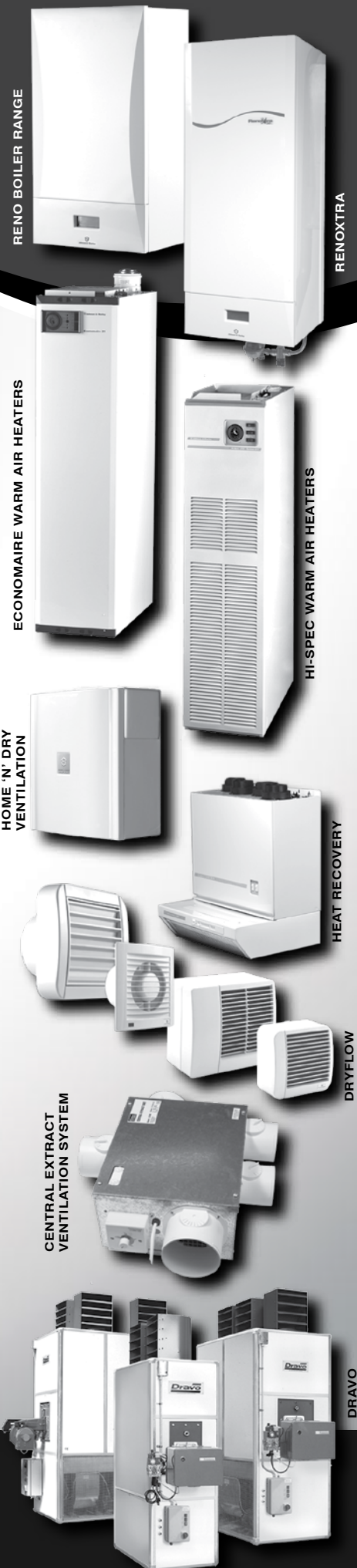
Telephone **01604 707026**  
 Fax **01604 707017**

## COMMERCIAL & INDUSTRIAL H&V SOLUTIONS



### Company Details

**Johnson & Starley** Dravo Division Industrial H&V  
 Website Address [www.dravo.co.uk](http://www.dravo.co.uk)  
 Email [dravo@johnsonandstarley.co.uk](mailto:dravo@johnsonandstarley.co.uk)  
 Telephone Number **01604 707022**  
 Fax Number **01604 706467**



RENO BOILER RANGE

RENOXTRA

ECONOMAIRE WARM AIR HEATERS

HI-SPEC WARM AIR HEATERS

HOME 'N' DRY VENTILATION

HEAT RECOVERY

DRYFLOW

CENTRAL EXTRACT VENTILATION SYSTEM

DRAVO

Rhosili Road, Brackmills, Northampton NN4 7LZ

In the interest of continuous development Johnson & Starley Ltd reserve the right to change specifications without prior notice.