



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

# JANUS/SEL and SER WATER HEATERS

## Including WM variant for wall mounting

### INSTALLATION, COMMISSIONING & SERVICING INSTRUCTIONS

JANUS/SEL G.C. No 53-416-15  
JANUS/SER G.C. No 53-416-16

Publication No. ZZ 283/8  
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**WARNING: This appliance MUST be EARTHED**

**This appliance has been tested and certified by B G Technology for use with Natural Gas G20**

#### 1. GENERAL DESCRIPTION

- 1.1 JANUS/SEL and /SER are gas fired circulators which can generate up to 62.5 litres/h (13.7 gal/h) of hot water when used in conjunction with the Johnson & Starley JT/RS22-25 air heater in SE-duct applications. The JANUS/SEL is fitted to the left hand side of the air heater, whilst the JANUS/SER is fitted to the right hand side.
- 1.2 JANUS/SEL and /SER may be adapted for fixing directly to the SE-duct wall. They are then referred to as JANUS/SEL/WM and JANUS/SER/WM respectively. The /SEL/WM has the controls on the right, whilst the /SER/WM has its controls on the left hand side.
- 1.3 All models are suitable for use in a gravity fed circuit serving a hot water storage cylinder (tank) and may be used efficiently with indirect storage systems, or, in soft water areas, direct systems. Indirect systems are preferred; direct systems should only be used when recommended by the Local Water Authority.
- 1.4 For use with a sealed system, a CK1 Kit and an approved unvented kit is required. Contact Johnson & Starley for details.
- 1.5 The gas supply to the main burner is controlled by a Multifunctional Control. The main burner operates in conjunction with a permanent pilot burner and a thermoelectric sensing device. Pilot ignition is by means of a piezo-electric unit.

#### 2. TECHNICAL DATA

##### 2.1 NATURAL GAS:

Injector:	1.55mm diameter.
Setting pressure:	18.7mbar (7.5 in wg).
Gas rate:	0.42m <sup>3</sup> /h (14.8 ft <sup>3</sup> /h).
Input:	4.4 kW (15,000 Btu/h).
Output:	3.32 kW (11,340 Btu/h).
Gas connection:	Rp <sup>1</sup> / <sub>2</sub> (1/2 in BSP external taper).
Gas service cock:	Rp <sup>1</sup> / <sub>2</sub> (1/2 in BSP) gas cock and union (supplied loose).

##### 2.2 WATER:

Maximum output:	62.5 litres/h (13.7 gal/h) raised by 44.5°C (80°F).
Water temperature:	adjustable between 45°C (113°F) and 85°C (185°F).
Temperature control:	allows settings below selected maximum.
Maximum working head:	20m (65 ft).
Minimum working head:	1m (3.3 ft).
Minimum circulation head:	356mm (14 in) Direct systems, 610mm (24 in) Indirect systems.
Water connections:	R <sup>3</sup> / <sub>4</sub> (3/4 in BSP) internal parallel.

##### 2.3 INSTALLATION AND SERVICING CLEARANCES:

**IMPORTANT: Care must be taken to ensure that adequate space is provided at the front and 'open' sides of the circulator for installation purposes.**

'Open' side:	12mm (1/2 in).
Front:	300mm (12 in) for servicing.
Top:	250mm (10 in) above Multifunctional control.

Access to control MUST NOT be RESTRICTED.

**THIS APPLIANCE CONFORMS TO BS EN 45014**

**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 6798 Specification for installation of gas fired hot water boilers of rated input not exceeding 60kW.

BS 5449 Forced circulation hot water systems.

BS 5546 Installation of gas hot water supplies for domestic purposes, (2nd Family Gas).

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

BS 6700 Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

Model and Local Authority Bye-laws

**IMPORTANT: STATUTE LAW DEFINES THAT ALL GAS APPLIANCES MUST BE INSTALLED BY COMPETENT PERSONS, (i.e. CORGI REGISTERED INSTALLERS) IN ACCORDANCE WITH THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS (CURRENT EDITION). FAILURE TO COMPLY WITH THESE REGULATIONS MAY LEAD TO PROSECUTION.**

### 3. GENERAL REQUIREMENTS

#### 3.1 VENTILATION:

3.1.1 An 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.

**Note:** These free areas allow for the operation of the appliance in combination with a JT/RS 22-25 Mk. 2 air heater.

Position of air vents	/SEL and /SER		/SEL/WM and /SER/WM	
	Air from room or internal space	Air direct from outside	Air from room or internal space	Air direct from outside
High level	132cm <sup>2</sup> (20 in <sup>2</sup> )	66cm <sup>2</sup> (10 in <sup>2</sup> )	40cm <sup>2</sup> (6.5 in <sup>2</sup> )	20cm <sup>2</sup> (3.25 in <sup>2</sup> )
Low level	132cm <sup>2</sup> (20 in <sup>2</sup> )	66cm <sup>2</sup> (10 in <sup>2</sup> )	80cm <sup>2</sup> (13 in <sup>2</sup> )	40cm <sup>2</sup> (6.5 in <sup>2</sup> )

**Table 1**  
**Minimum Effective areas**

**Note:** High and low air vents must communicate with the same room or internal space, or both must be on the same wall to outside air.

#### 3.2 GAS SUPPLY:

3.2.1 Installation pipes should be fitted in accordance with BS 6891.

3.2.2 Pipework from the gas meter to the appliance must be of adequate size. Pipes of a smaller size than the appliance inlet gas connection must not be used.

3.2.3 The complete installation must be tested for gas soundness and purged as described in the above British Standard.

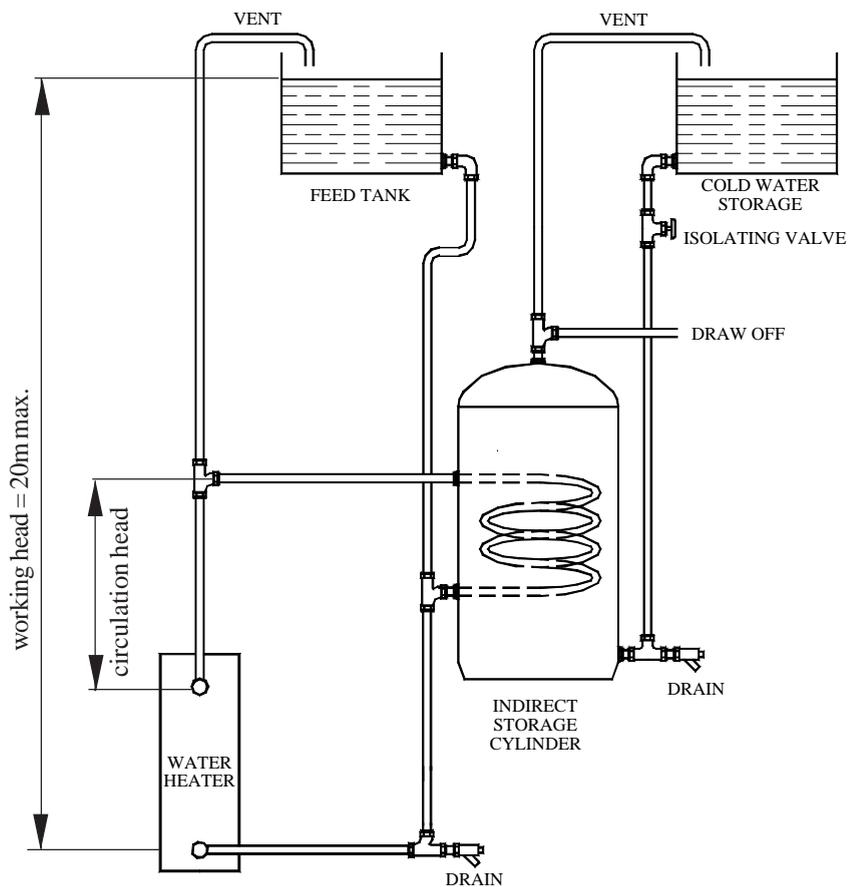
#### 3.3 WATER:

3.3.1 Detailed recommendations for the water circulation system are given in BS 6798, BS 5449 (for small bore and microbore central heating systems), and BS 5546. To ensure good circulation in gravity circuits, flow pipes should be designed to run vertically from the water heater before running laterally. Any lateral run of pipework should be not more than twice the previous vertical length. Pipework should be installed with a rise towards the vent point.

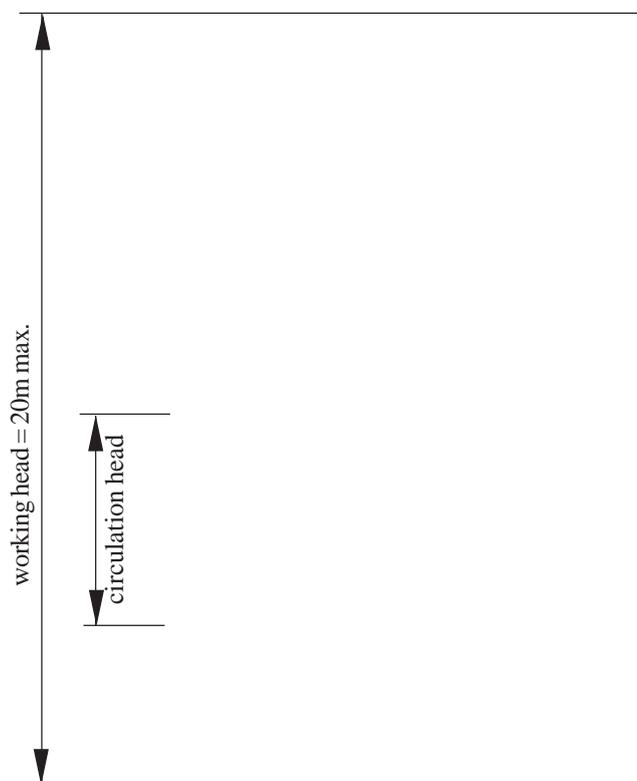
3.3.2 Draining points must be located in accessible positions to permit the draining of the whole system, including the appliance and hot water storage vessel. A draining point should be fitted at the lowest point of the water heating circuit, and, in the case of an indirect system, another must also be fitted at the lowest point of the cold feed. Draining points should be at least 1/2 in. nominal size and in accordance with BS 2879.

3.3.3 Economy valves can only be used in a direct installation.

**Note:** Indirect systems are preferred to avoid the possibility of scale formation. Direct systems should only be used when recommended by the local Water Authority.



**Fig. 1a.**  
**Typical Gravity fed Indirect cylinder application.**



**Fig. 1b.**  
**Typical Gravity fed Direct cylinder application.**

## 4. INSTALLATION

**Note:** For /SEL and /SER appliances, paragraphs 4.1 to 4.5 are applicable, whereas for SEL/WM and SER/WM variants, paragraphs 4.1 to 4.2 and 4.6 to 4.7 apply. Paragraphs 4.8 onwards are common for all applications.

### 4.1 SE-DUCT:

**WARNING:** Many SE-Ducts are constructed of asbestos based materials, and because of dimensional variations between Johnson & Starley and other manufacturers' equipment, a certain amount of SE-Duct rework will need to be carried out by REGISTERED CONTRACTORS:

- 4.1.1 In some situations 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. A special supplement describing a recommended fitting procedure is available (Publication No. ZZ559).

### 4.2 IDENTIFICATION AND COMPONENT CHECK:

- 4.2.1 The JANUS/SEL and /SER are to be installed on in combination with a Johnson & Starley JT/RS22-25 air heater, whilst JANUS/ SEL/WM and /SER/WM are to be mounted directly onto the SE-Duct. Components contained in both packs are to be identified and checked.

Description	Qty
JANUS/SEL (or SER) water heater assembly	1
Union gas cock	1
<b>SEL/SER models only</b>	
Transfer box (left or right hand. complete with 4 x water heater fixing screws)	1
Sealing plate	1
Tie Rod assembly, complete with heater bracket & nut	2
Rope Ring seal	6
Eye bolt	1
Masonry plug for eye bolt	1
Sealing Tape	1
<b>SEL/WM and SER/WM models only (JAN3 SEW kit)</b>	
Mounting plate	2
Blanking plate with spigots	1
M5 x 12 pan head screw	8
M5 Hex nut	4
Rope Ring seal	2
Template	1

### 4.3 /SEL & /SER: SE-DUCT PREPARATION:

- 4.3.1 Since these instructions are based upon the replacement of a Sugg type 22/WH 'Halcyon' air heater, it will only be necessary to re-cut the Flue Outlet (upper aperture) in the SE-Duct when replacing this type of heater. Replacement of any other heater may require the re-cutting of both SE-Duct apertures.
- 4.3.2 Referring to Fig. 2, note the position of the two datum points.
- 4.3.3 Remove all sealing material from the top of the existing plenum.
- 4.3.4 Referring to Fig. 2, mark and cut apertures A and B in the SE-Duct and clear all debris (if replacing a Sugg type 22/WH 'Halcyon', only aperture A will be required since aperture B corresponds with the existing Combustion Air Inlet).
- 4.3.5 Seal the redundant hole(s) in the SE-Duct using suitable cement or blanking material to provide a flat surface on both inner and outer faces of the duct.
- 4.3.6 Referring to Fig. 2, drill and fit the eyebolt masonry plug, having first noted the handing of the water heater (eyebolt to the left of the air heater for JANUS/SER, and eyebolt to the right of the air heater for JANUS/SEL).

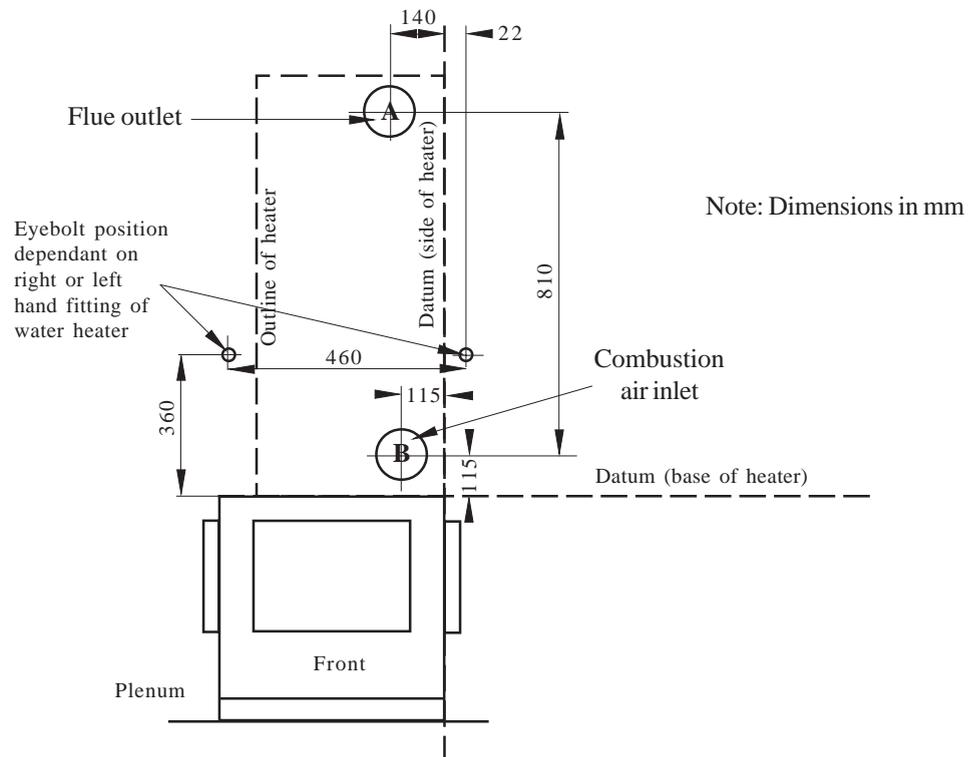
### 4.4 PLENUM BLANKING:

Due to base plan variations between original and replacement heaters, it will be necessary to blank off part or parts of the Plenum aperture. This is carried out 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 the sealing tape (provided) to ensure a good seal between the air heater and the plenum. Installers are to ensure that any plates fitted are mechanically secured and sealed.

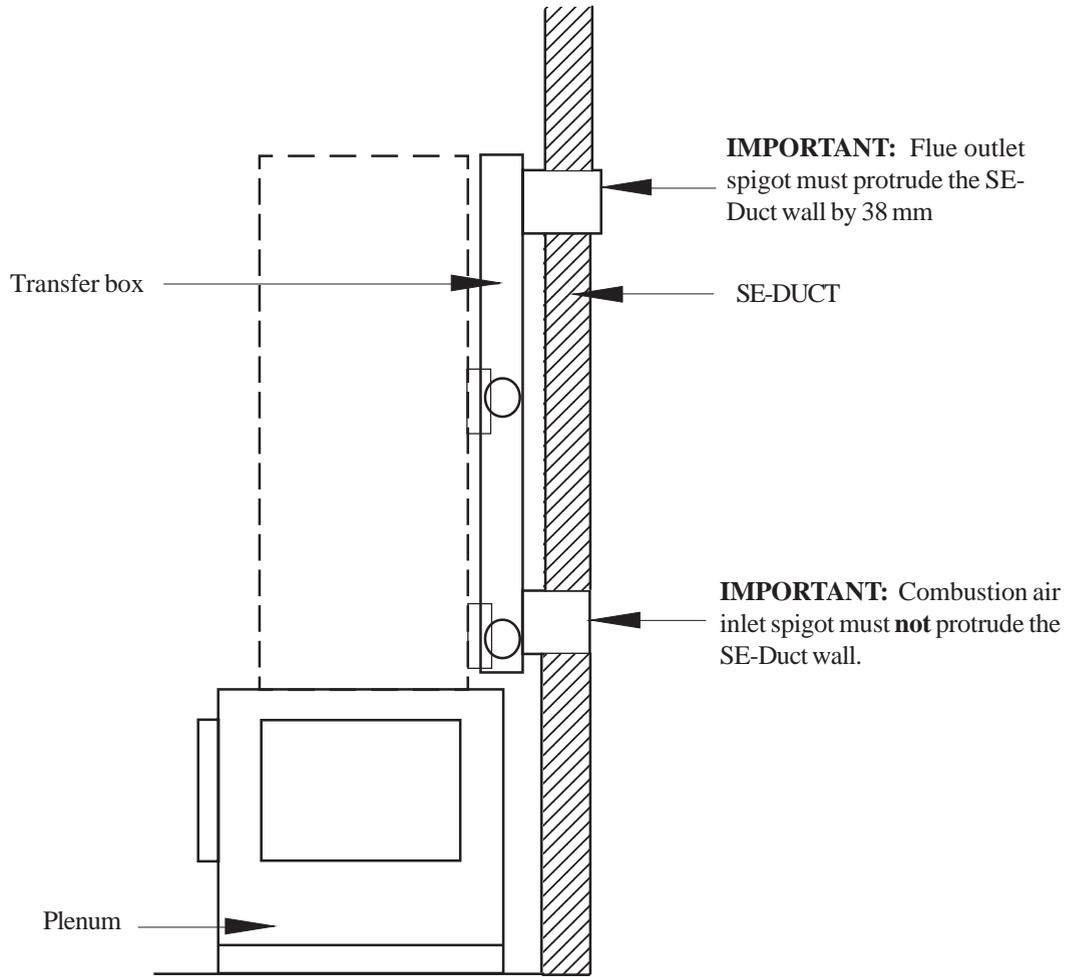
## 4.5 /SEL &amp; /SER FITTING:

- 4.5.1 Referring to Fig. 3, measure the thickness of the SE-Duct wall, mark and cut the transfer box spigots as follows:
- Combustion Air Spigot:** The combustion air spigot can finish flush with, but not protrude beyond, the SE-Duct wall (i.e. the maximum spigot length must **not be greater than the thickness of the SE-Duct wall + 12mm**).
  - Flue Spigot:** The flue spigot length is critical and **must be cut to the thickness of the SE-Duct wall + 38mm**.
- 4.5.2 Offer up the transfer box to the SE-Duct wall such that the spigots engage their respective holes, and using the box as a template, mark through the fixing hole positions. Remove the transfer box, drill and plug the fixing holes.
- 4.5.3 Ensuring that a rope ring seal is fitted to both water heater spigots, fix the water heater to the transfer box top and bottom side brackets, using the 4 screws (provided).
- 4.5.4 Place a rope ring seal on each of the transfer box spigots, and fit the sealing plate to the bottom spigot.
- 4.5.5 Align the transfer box assembly with the fixing holes in the SE-Duct, and secure the assembly to the wall using suitable fixings compatible with the SE-Duct wall material. ENSURE that the transfer box assembly is effectively sealed against the SE-Duct wall.
- 4.5.6 Position the remaining rope ring seals onto the air heater spigots and place the air heater onto the plenum to engage the spigots with the transfer box apertures.
- 4.5.7 Hook one tie rod onto the eyebolt wall fixing and secure using the 'T' shaped bracket hooked around the front of the air heater.
- 4.5.8 Hook the second tie rod onto the centre bracket on the side of the transfer box, and secure using the 'Z' shaped bracket to the side of the air heater. Trim the tie rod to length as required.
- 4.5.9 Carefully tighten the tie rods such that the are heater is effectively sealed against the transfer box assembly.

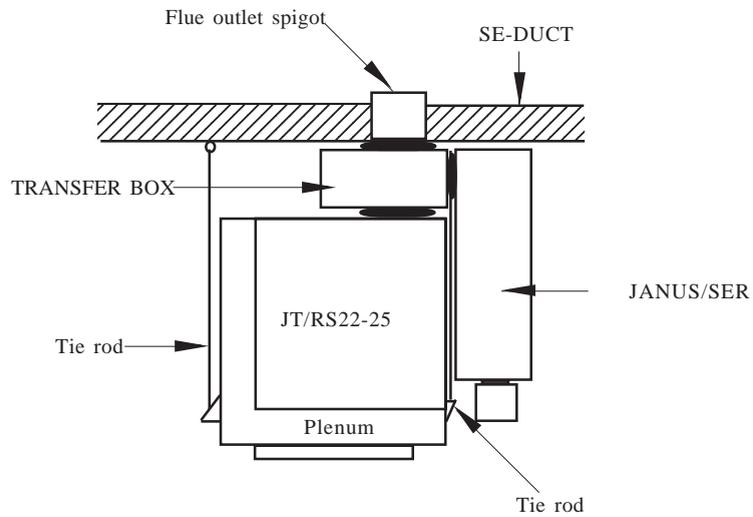
**NOTE:** If the heater is not installed in a compartment, a suitable guard or insulation of noncombustible material **MUST** be provided around exposed parts of the transfer box assembly.



**Fig. 2**  
**Location of apertures and fixing holes**  
**in SE-Duct wall**



**Fig. 3**  
**Side view (without water heater)**



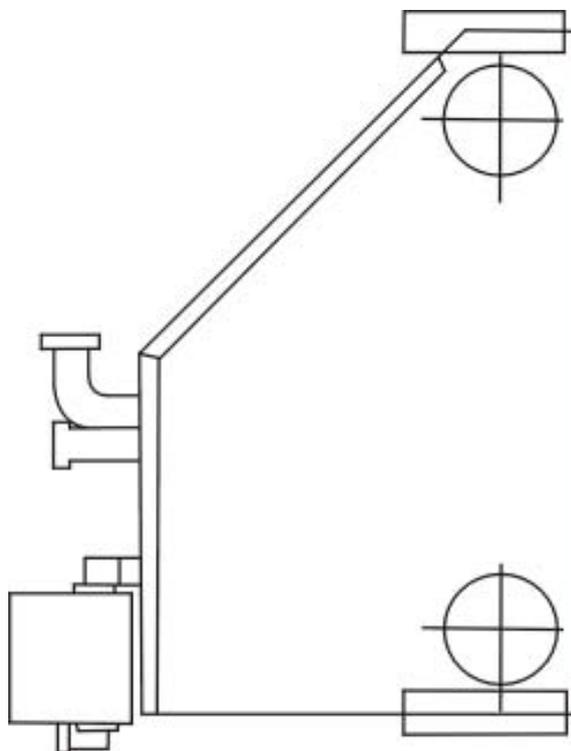
**Fig. 4**  
**Plan view with water heater (right hand fitting)**

#### 4.6 /SEL/WM & /SER/WM: DUCT PREPARATION:

- 4.6.1 Select the position on the SE-Duct for mounting the appliance, ensuring that there is enough room at the side of the appliance to enable the pilot burner to be seen through the viewing port, and for the removal of the Burner and Controls Assembly for servicing.
- 4.6.2 Using the template provided, mark and cut the 2 x 125 mm dia. Air Inlet and Flue Outlet holes in the SE-Duct wall, and clear any debris from the duct.
- 4.6.3 Measure the thickness of the SE-Duct wall, mark and cut the blanking plate spigots as follows:
- Lower Spigot:** The combustion air spigot can finish flush with, but not protrude beyond, the SE-Duct wall
  - Upper Spigot:** The flue spigot length is critical and **must be** cut to the **thickness of the SE-Duct wall + 38mm.**

#### 4.7 /SEL/WM & /SER/WM FITTING:

- 4.7.1 Mount the blanking plate to the SE-Duct with the spigots engaged with their correct apertures. Mark the position of the 6 x fixing holes on the duct wall, remove the blanking plate and drill and plug the fixing holes.
- 4.7.2 Secure the blanking plate to the SE-Duct wall using 6 screws (not provided) and sealing with mastic compound.
- 4.7.3 Make good the lower aperture in the SE-Duct wall to provide a neat sharp edge to the spigot on the INSIDE of the duct.
- 4.7.4 Referring to Fig. 5, fit the mounting plates to the water heater as shown, using 4 x M5 screws and nuts (provided) ensuring that the screw heads are on the spigot side and noting the orientation of the mounting plates ('long' end towards the appliance controls).
- 4.7.5 Fit a rope ring seal to each of the water heater spigots, offer and secure the appliance to the blanking plate using the 4 remaining M5 screws to the bushes in the top and bottom flanges.



**Fig. 5**  
**Mounting brackets fitted to /WM VARIANT**

#### 4.8 WATER CONNECTIONS:

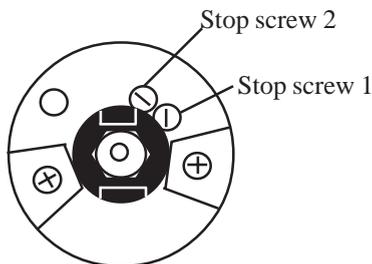
- 4.8.1 Connect the flow and return pipes as required and as detailed in paragraph 3.3. Union fittings should be used at the points of connection to the appliance to enable subsequent dismantling of the heat exchanger. Ensure that the return pipework does not restrict access to the thermostat phial, or prevent the removal of the Burner and Controls assembly for servicing.
- 4.8.2 Thoroughly flush the system through prior to the installation of the pump (if fitted), ensuring that all valves are open.

#### 4.9 GAS CONNECTIONS:

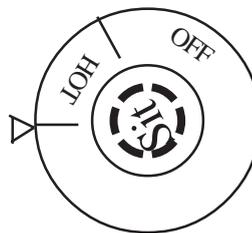
- 4.9.1 Connect the gas supply via the union gas service cock (provided), ensuring that the supply pipework does not obstruct the removal of the Burner and Controls assembly for servicing.
- 4.9.2 Test the installation for gas soundness using a proprietary leak detection fluid, and purge the system in accordance with BS 6891.

### 5. COMMISSIONING

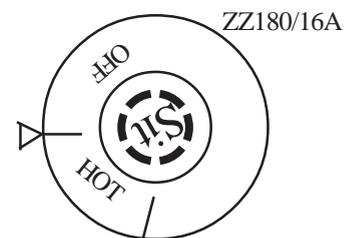
- 5.1 Fill the water circulation system, clear any air locks and check for water soundness.
- 5.2 Ensure that the Thermostat capillary is fully inserted into the pocket in the flow connection of the circulator.
- 5.3 JANUS 3/SE is factory set to provide a flow temperature of 60°C (140°F). If a higher flow temperature is required, proceed as follows:
- 5.3.1 Remove the Multifunctional Control Temperature Control knob, (this is a push fit only)
- 5.3.2 Referring to Figs. 6, identify the stop screws 1 and 2.
- 5.3.3 Dependant upon the required water temperature, remove:
- Stop screw 1 to provide a maximum temperature of 68°C (155°F), or,
  - Stop screws 1 and 2 to provide a maximum temperature of 77°C (170°F).
- 5.3.4 Refit the Multifunctional Control Temperature Control knob, ensuring that it fully engages on the valve spindle.



**Fig. 6a**  
Stop screw positions



**Fig. 6b**  
Minimum Setting 60°C



**Fig. 6c**  
Maximum Setting 77°C

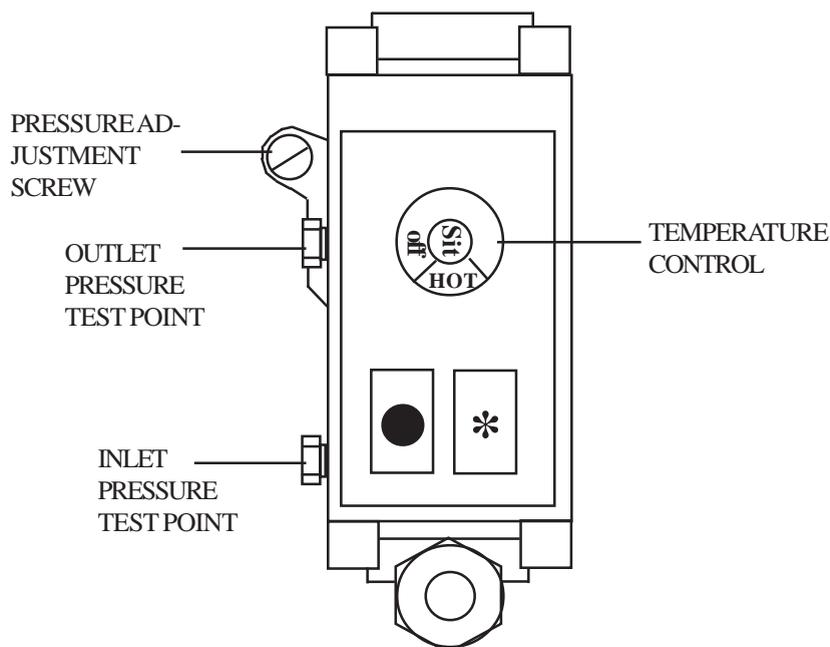
**Fig. 6**  
Water Temperature Control Settings

#### 5.4 GAS PRESSURE SETTING:

- 5.4.1 Referring to fig. 3, remove the Outlet Pressure Test Point cover and connect the Gas Pressure Test Gauge.
- 5.4.2 Turn the gas supply ON at the gas service cock.
- 5.4.3 Referring to the lighting instruction label, ignite the Pilot Burner and ensure that the pilot flame envelopes the thermocouple tip.
- 5.4.4 Set the Multifunctional Control Temperature Control knob fully clockwise and ensure that the main burner ignites. The appliance will now operate under thermostatic control.
- 5.4.5 Test the appliance for gas soundness, sealing any leaks found.
- 5.4.6 Referring to Fig. 3 and para 2.1, set Multifunctional Control Pressure Adjuster to provide the required pressure setting for the installation.

## 5.5 SYSTEM OPERATION:

- 5.5.1 With the appliance ignited, ensure that all controls operate correctly.
- 5.5.2 Carry out a spillage test as detailed in the Installation, Commissioning and Servicing instructions for the relevant air heater
- 5.5.3 Allow the system to reach working temperature and switch the appliance OFF, rapidly drain and refill the system, clearing any air locks and test for water soundness.
- 5.5.4 Turn OFF the Gas supply cock.
- 5.5.5 At the Multifunctional Control, remove the Gas Pressure Test Gauge and refit the Inlet Pressure cover.
- 5.5.6 Fit the Control Cover.
- 5.5.7 Turn the Gas supply cock ON.
- 5.5.8 Relight the appliance and set the appliance to the User's requirements.



**Fig. 3**  
**Multifunctional control Component Identification**

## 6.

### USER INSTRUCTIONS

- 6.1 If the building is unoccupied, ensure that the User Instructions (including those for the air heater) are left with the appliance. These Installation instructions are to be left with the appliance for service use.
- 6.2 If the building is occupied, hand over the User Instructions, and ensure that the User knows the following:
  - 6.2.1 How to use the circulator (water heater) independently of the air heater.
  - 6.2.2 How to light the appliance.
  - 6.2.3 How to adjust the water temperature.
  - 6.2.4 If fitted, how to operate the Time Control.
  - 6.2.5 That the appliance must be serviced at least once a year, and by a competent person, to ensure efficient and safe operation.
  - 6.2.6 That the RED instructions for safe use have been pointed out and understood.
  - 6.2.7 What to do in the event of an emergency shut down.
  - 6.2.8 What to do in the event of a gas leak. (i.e. turn off the gas, extinguish any naked flames, ventilate the area, NOT to operate any electrical switches, and to call the emergency service of the local gas authority [e.g. TRANSCO]).
  - 6.2.9 If the system incorporates a water pressure gauge, and the pressure indication falls below the 'normal' level when the system is cold or if hot water is being discharged, that there is a fault in the system and expert advice MUST be sought.

## 7. SERVICING

**IMPORTANT: BEFORE commencing any servicing or replacement of components, ENSURE THAT THE GAS SUPPLY IS TURNED OFF, the ELECTRICAL SUPPLY IS ISOLATED, and if necessary, the water supply is turned OFF and the system drained down. On completion of any servicing ensure that any air locks are cleared, test for gas and water soundness, and fully commission the appliance in accordance with the Installation, Commissioning and Servicing instructions.**

### 7.1 **ROUTINE MAINTENANCE:**

- 7.1.1 Operate the appliance and check for correct function of the Burner and Controls assembly.
- 7.1.2 Remove the Burner and Controls assembly as detailed in section 7.2, inspect and clean the main burner and injector as necessary. Examine the main burner for cracks, including hairline cracks, and exchange the burner as necessary.
- 7.1.3 Inspect and clean the pilot burner and injector as necessary.
- 7.1.4 Check the condition of the thermocouple and ignition lead, cleaning or replacing as necessary.
- 7.1.5 Inspect the Heat Exchanger flueways, clean by brushing from above and below and taking care to avoid damaging the surrounding insulation. Remove debris from the Heat Exchanger and Burner aperture using a vacuum cleaner or air duster. Clean any debris from the heat shield at the base of the appliance.
- 7.1.6 Test the appliance for gas soundness and check that the appliance and controls operate correctly.
- 7.1.7 Ensure that the flue products are clearing satisfactorily.

### 7.2 **BURNER AND CONTROLS ASSEMBLY REMOVAL:**

- 7.2.1 Ensure that the gas supply to the appliance is turned OFF.
- 7.2.2 Disconnect the gas supply from the Multifunctional Control.
- 7.2.3 Remove the thermostat phial retaining plug and carefully withdraw the thermostat phial from the flow pocket.
- 7.2.4 Remove the 5 securing screws and withdraw the Burner and Controls Assembly.
- 7.2.5 Refitment or replacement is in reverse order, taking care to ensure the integrity and correct location of the burner front plate seal.

### 7.3 **MAIN BURNER AND INJECTOR REMOVAL:**

- 7.3.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.3.2 Disconnect the ignition lead from the igniter electrode.
- 7.3.3 Disconnect the Thermocouple from the Multifunctional Control, taking care to avoid damaging the capillary.
- 7.3.4 Disconnect the pilot gas feed pipe from the Multifunctional Control.
- 7.3.5 Remove the 2 pilot burner fixing screws and withdraw the Pilot Burner assembly.
- 7.3.6 Partially release the main burner lock nut and unscrew the Main Burner from the Main Injector.
- 7.3.7 Unscrew the Main Injector from the gas connection.
- 7.3.8 Refitment or replacement is in reverse order.

**Note:** If the Main Injector is to be replaced, ensure that it is correctly marked, referring to the data badge for details.

### 7.4 **MAIN BURNER AND INJECTOR CLEANING:**

- 7.4.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.4.2 Remove the Main Burner and Injector as detailed in Section 7.3.
- 7.4.3 Thoroughly clean the Main Burner, both inside and out, with a soft brush. **Do not enlarge, distort or damage the burner holes.**
- 7.4.4 Clean the Main injector as necessary. **Do not enlarge, distort or damage the Main Injector aperture.**
- 7.4.5 Refit the Main Burner and Injector in reverse order.

### 7.5 **PILOT BURNER ASSEMBLY REMOVAL AND REPLACEMENT:**

- 7.5.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.5.2 Disconnect the ignition lead from the Igniter Electrode.
- 7.5.3 Disconnect the pilot gas feed pipe from the Pilot Burner.
- 7.5.4 Disconnect the Thermocouple from the Multifunctional Control, taking care to avoid damaging the capillary.
- 7.5.5 Remove the 2 clamping screws from the Pilot Burner assembly, and release the Thermocouple, Igniter Electrode and Pilot Burner.
- 7.5.6 Release the screw in the base of the Pilot Burner and unscrew the Pilot Injector.
- 7.5.7 Refitment or replacement is in reverse order.

**7.6 MULTIFUNCTIONAL CONTROL REMOVAL:**

- 7.6.1 Ensure that the gas supply to the appliance is turned OFF.
- 7.6.2 Disconnect the gas supply from the Multifunctional Control.
- 7.6.3 Remove the thermostat phial retaining plug and carefully withdraw the thermostat phial from the flow pocket.
- 7.6.4 Disconnect the Pilot Gas Feed pipe from the Multifunctional Control.
- 7.6.5 Release the 4 x screws and release the Multifunctional control, ensuring that the 'O' ring seal is retained.
- 7.6.6 Refitment or replacement is in reverse order.

**7.7 PIEZO UNIT REMOVAL:**

- 7.7.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.7.2 Disconnect the ignition and earth leads from the Igniter Electrode.
- 7.7.3 Release the Piezo Unit locking nut and withdraw the Piezo Unit.
- 7.7.4 Refitment or replacement is in reverse order.

**7.8 WATERWAY REMOVAL:**

- 7.8.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.8.2 Turn OFF the water supply to the appliance and drain down the system.
- 7.8.3 Remove the 3 remaining screws from the front plate and withdraw the waterway from the main body.
- 7.8.4 Carefully remove the insulation panels.
- 7.8.5 Refitment or replacement is in reverse order.  
**Note:** The side insulation panels are tapered. Ensure that they are fitted with the thicker end towards the front of the appliance, and also ensure that there is approximately a 1mm gap between the waterway and the water heater body insulation by running a steel rule between them.

**7.9 HEAT EXCHANGER ACCESS:**

- 7.9.1 Remove the Burner and Controls assembly as detailed in Section 7.2.
- 7.9.2 Remove the 6 screws securing the inspection cover and withdraw the cover.
- 7.9.3 Refitment is in reverse order.

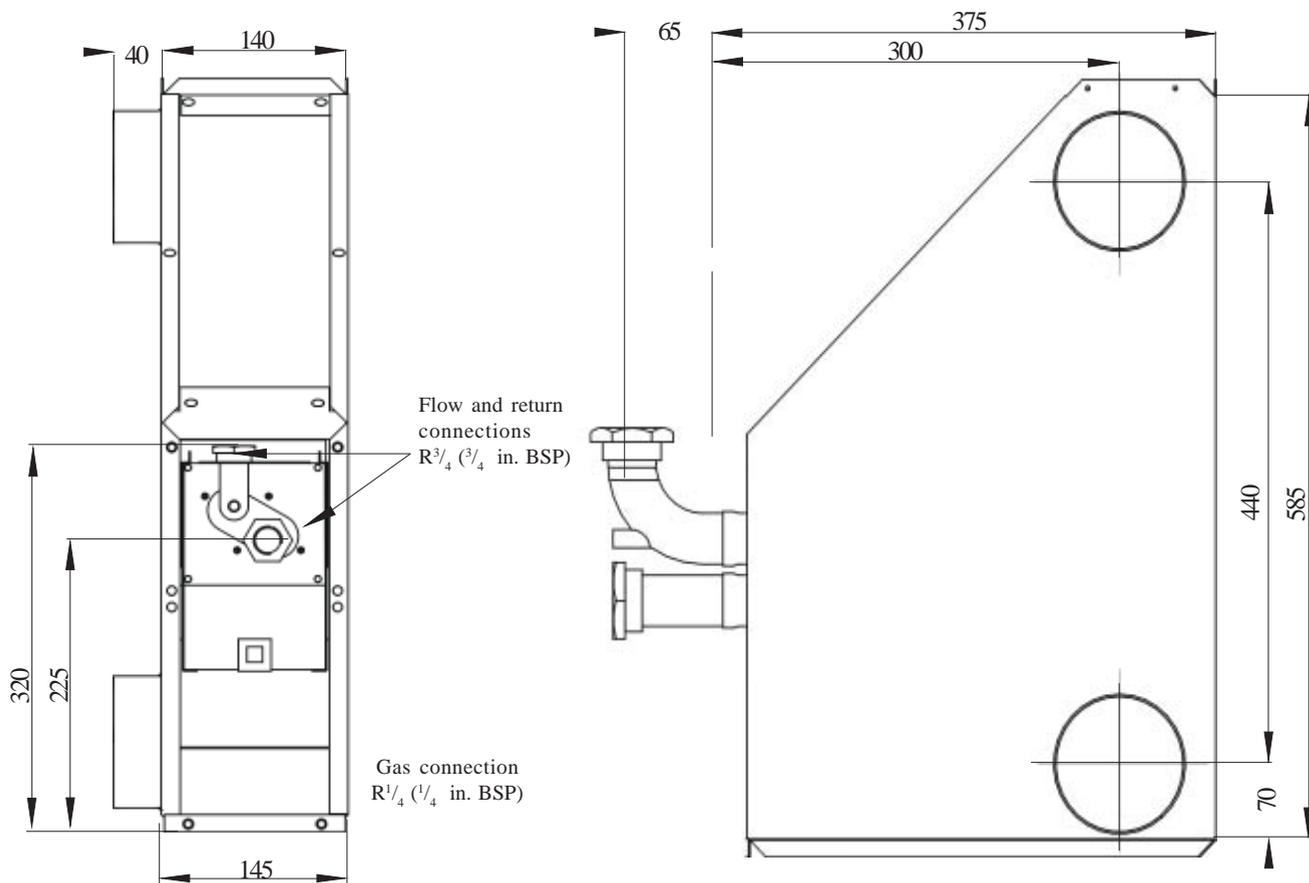
8.

**DEFECT DIAGNOSIS**

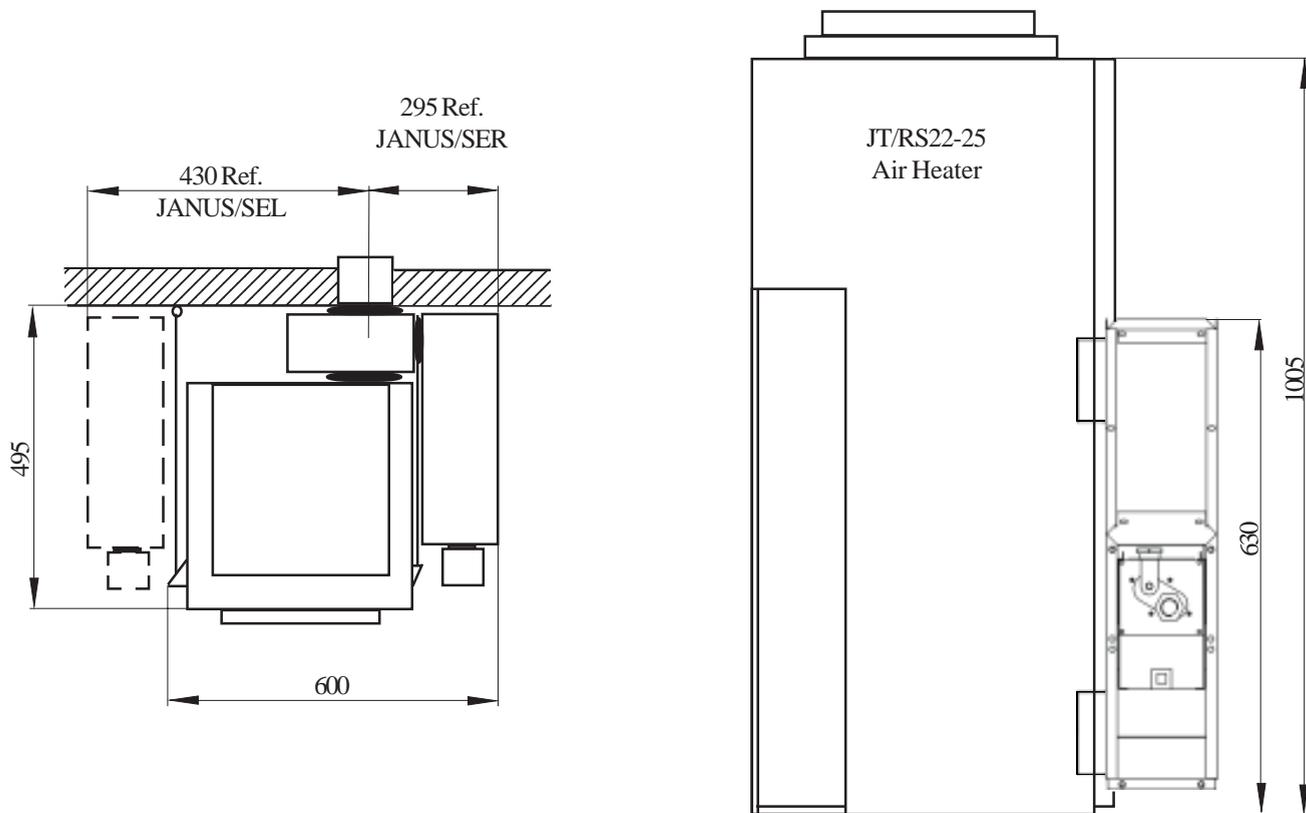
**IMPORTANT:** When purging or checking gas supplies ensure that, there is adequate ventilation to the room or cupboard, and all naked lights are extinguished.

<b>SYMPTOM</b>	<b>POSSIBLE CAUSE</b>	<b>RECTIFICATION</b>
a. Pilot fails to light.	<ul style="list-style-type: none"> <li>i No gas supply to water heater.</li> <li>ii Gas supply not purged.</li> <li>iii Pilot injector orifice restricted.</li> <li>iv Piezo faulty.</li> </ul>	Check for gas at inlet pressure test point on Multifunctional Control. Purge gas supply pipe in accordance with BS 6891. Clean pilot orifice or replace pilot assembly. Check/replace piezo unit, lead or pilot burner assembly.
b. Pilot fails to remain lit.	<ul style="list-style-type: none"> <li>i Connection between thermocouple and Multifunctional Control not secure.</li> <li>ii Faulty Multifunctional Control.</li> <li>iii Thermocouple defective.</li> </ul>	Check connection is secure.  Replace Multifunctional Control. Replace Pilot Burner Assembly.
c. Pilot burner goes repeatedly extinguishes after normal operation.	<ul style="list-style-type: none"> <li>i Pilot injector orifice restricted.</li> <li>ii Thermocouple defective.</li> <li>iii Draughts affecting pilot flame.</li> <li>iv. Combustion air contaminated.</li> </ul>	Clean pilot orifice or replace Pilot Assembly. Replace Pilot Burner Assembly. Eliminate draughts. Conduct spillage test and rectify.
d. Main burner fails to light	<ul style="list-style-type: none"> <li>i. 'OFF' button accidentally pressed during lighting procedure.</li> <li>ii. Thermostat too hot.</li> <li>iii. Thermostat defective.</li> <li>iv. Multifunctional Control defective.</li> </ul>	Press 'OFF' button. Wait 3 minutes the repeat procedure.  Draw off hot water from system to allow thermostat to cool, and ensure burner lights. Replace Thermostat. Replace Multifunctional Control.
e. Insufficient hot water.	<ul style="list-style-type: none"> <li>i. Burner operation cycle too short due to incorrect plumbing.</li> </ul>	Check plumbing, in particular lateral runs.
f. Water temperature outside usable range.	<ul style="list-style-type: none"> <li>i. Thermostat out of calibration.</li> <li>ii. Gas rate incorrect.</li> <li>iii Thermostat phial or capillary damaged.</li> </ul>	Set thermostat for required water temperature or replace Multifunctional Control. Check burner pressure, main injector for blockage, replace main injector if faulty. Replace Multifunctional control.

**IMPORTANT:** If a faulty heater control may have resulted in excessively high water temperatures, (above 85°C, 185°F), the hot water cylinder should be checked to establish whether it is a SELF-PRIMING type. If so, the circuit should be drained and refilled to ensure that the air seal between the primary and secondary circuits in the cylinder is properly established.



**Fig. 7**  
Principle dimensions (in mm)



**Fig. 8**  
JANUS SER fitted to JT/RS22-25 Air Heater  
dimensions (in mm)

10.

**SHORT LIST OF SPARES****JANUS/SEL, /SER and WM variants**

**IMPORTANT: When ordering replacement Burner and Controls assembly for JANUS/SEL/WM variant, use JANUS/SER, and vice versa for JANUS/SER/WM appliance.**

<b>KEY</b>	<b>G.C No</b>	<b>MFR'S No</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1a	232-873	S00397	Waterway Assembly kit (straight) complete with insulation	1
1b	245-243	S00398	Waterway assembly kit (twisted) complete with insulation	1
2a	245 245	ELJ0-0700000	Burner and Controls assembly (JANUS/SEL & SER/WM)	1
2b	245 246	ELJ0-0700010	Burner and Controls assembly (JANUS/SER & SEL/WM)	1
3	245 259	1000-0701065	Multifunctional control kit EUROSIT 630	1
4	397 823	1000-0505790	Solenoid Valve	1
5	397 824	1000-0505805	Solenoid valve coil	1
6	397 825	BOS 00562	Main Burner	1
7		BOS 02018/1	Pilot Burner assembly including pilot injector	1
8	381 750	1000-0701710	Thermocouple	1
9	244 825	BOS 02287NSE	Main Injector	1
10	397 826	1000-0500360	Plug DIN 115170 with PG9 cable clamp	1
11	382 587	BOS 02022	Igniter electrode	1
12	395 945	1000-0700570	Piezo unit	1
13	397 819	BOS 02394	Electrode lead	1
14	230 328	1000-2500075	Phial retaining plug	1
15		1000-0501260	Piezo unit earth lead	1

**Johnson and Starley prides itself on its ability to supply spare parts quickly and efficiently. If you have a problem in obtaining a spare part, please contact Johnson and Starley Spares Department at the address below.**

**Telephone: (01604) 762881**

**Fax: (01604) 767408**

**JOHNSON & STARLEY LTD.  
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