

## SERVICE INSTRUCTIONS 5 Star Gas VE Water Heater

**TM009**



**EVERHOT**

Issued: Aug 01

Revision: AL

Issued: Sept 18



850 Series



350/354/850/854 Series



250/252 Series



647 Series

	Rheem	Everhot
	350265	354265
	350295	354295
	850265	854265
	850295	854295
	850330	
	850360	
		250265
		250295
		252265
		252295
		647270

First Issued: 08/2001

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## INTRODUCTION

The information provided in these service instructions is based on the water heater being installed in accordance with AS/NZS 5601 and the Installation Instructions provided with each water heater.

Should you require further technical advice on a Rheem or Everhot 5 Star Gas Storage Water Heater, contact Rheem Technical Support on 1300 712 863.

## SAFETY WARNING

The purpose of these instructions is to provide sufficient information to allow a person with the skills required by the Regulatory Authorities to carry out effective repairs to a Rheem or Everhot Gas Water Heater in the minimum of time.

Safety precautions or areas where extra care should be observed when conducting tests outlined in this service manual are indicated by print in ***bold italics*** and/or a warning symbol. Take care to observe the recommended procedure.



HOT

***Hot surface or liquid. Personal Protective Clothing (PPE) shall be worn to reduce the risk of scalding.***



***General warning symbol. Observe the instructions accompanying the symbol.***



***When conducting repairs to a gas appliance the gas train including injector sizes must not be altered or modified in any way.***

## WATER HEATER MODEL IDENTIFICATION

The identification numbers are designed to convey detailed information about the heater to which it is attached.

	8	5	0	330	N	0
<b>Cylinder Warranty</b>						
2 – Everhot (5 or 7 yr wty)						
3 – Rheem (5 or 7 yr wty)						
6 - Everhot						
8 – Rheem (10 yr wty)						
<b>Efficiency</b>						
4 - High Efficiency Rheem Plus						
5 - High Efficiency						
<b>Type</b>						
0 / 7- Pilot						
2 – Everhot (10 yr wty)						
4 – Pilot Rheem Plus						
<b>Capacity</b>						
First Hour Delivery						
<b>Gas Type</b>						
N - Natural Gas						
P - Propane Gas						
0- No Reference System Requirement						

The model number, serial number and date of manufacture should be quoted in all correspondence.

## SPECIFICATIONS

		Model						
		250265 350265 354265	252265 850265 854265	250295 252295 350295	354295 854295 850295	850330	850360	647270
Max Water Supply Pressure (kPa)	With ECV	960		960		960	960	960
	Without ECV	1120		1120		1120	1120	1120
Min Gas Supply Pressure - (kPa)	Natural Gas	1.13	1.13	1.13	1.13	1.13	1.13	1.13
	Propane/Butane	2.75	N/A	2.75	N/A	2.75	2.75 <sup>(1)</sup>	2.75
Maximum Gas Supply Pressure (kPa)		3.5		3.5		3.5	3.5	3.5
Maximum Thermostat Setting (°C)		66		66		66	66	70
ECO Cut Out Temperature (°C)		82±3		82±3		82±3	82±3	90±3
Storage Capacity (litres)		130		160		130	160	135
Hourly Recovery (45°C rise)		135		135		200	200	135
Anodes	Quantity	1	2	1	2	2	2	1
	Length (mm)	1100		1400		1100	1400	1170
Flue Baffle	Blades	20		22		20	22	N/A
	Length (mm)	1214		1315		1214	1315	N/A
Water Connections		RP <sup>3</sup> / <sub>4</sub> /20		RP <sup>3</sup> / <sub>4</sub> /20		RP <sup>3</sup> / <sub>4</sub> /20	RP <sup>3</sup> / <sub>4</sub> /20	RP <sup>3</sup> / <sub>4</sub> /20
T&PR Valve	Diameter	RP <sup>1</sup> / <sub>2</sub> /15		RP <sup>1</sup> / <sub>2</sub> /15		RP <sup>1</sup> / <sub>2</sub> /15	RP <sup>1</sup> / <sub>2</sub> /15	RP <sup>1</sup> / <sub>2</sub> /15
	Rating (kPa)	1400		1400		1400	1400	1400
Gas Connection		RP <sup>1</sup> / <sub>2</sub> /15		RP <sup>1</sup> / <sub>2</sub> /15		RP <sup>1</sup> / <sub>2</sub> /15	RP <sup>1</sup> / <sub>2</sub> /15	RP <sup>1</sup> / <sub>2</sub> /15
Pilot injector (mm)	Natural gas	0.27	0.27	0.27	0.27	0.27	0.27	0.27
	Propane / Butane	0.16	N/A	0.16	N/A	0.16	0.16 <sup>(1)</sup>	0.20
Gas Control	Regulated Pilot	All Gas Types		All Gas Types		All Gas Types	All Gas Types	All Gas Types
Burner Injector (mm)	Natural Gas	2.45	2.45	2.45	2.45	2.90	2.90	2.40
	Propane Gas	1.50	N/A	1.50	N/A	1.80 <sup>(1)</sup>	1.80 <sup>(1)</sup>	1.42
	Butane Gas	1.40	N/A	1.40	N/A	1.60 <sup>(1)</sup>	1.60 <sup>(1)</sup>	N/A
Thermal Input (MJ)		30		30		42	42	30

250295, 252265, 252295, 850265 & 850295 models available in Natural Gas only

<sup>(1)</sup> 850330 & 850360 Propane and Butane models discontinued from Dec 2017

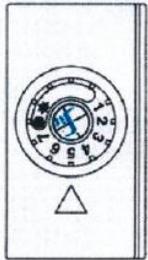
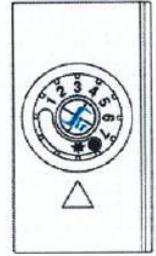
## OPERATION

### Eurosit 630 (250, 252, 350, 354, 850 & 854 Series)

When the gas control knob is depressed in the pilot position, the thermoelectric safety valve is opened allowing gas to flow to the pilot head where it can be ignited by a spark from the manually operated piezo igniter.

The pilot flame heats the thermocouple creating an electrical current which holds the thermoelectric safety valve in the open position allowing the pilot to remain alight when the gas control knob is released.

On models manufactured after August 2016 the thermocouple current causes a millivolt meter (located on the side of the gas valve) to move from the red to the green zone, indicating the pilot flame has been established.



The gas control knob can then be rotated anticlockwise, by depressing slightly, to supply gas to the main burner. The main burner is lit via a cross light action between the pilot and the gas emanating from the main burner.

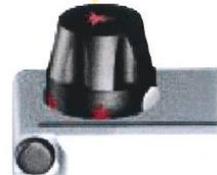
Position 7 on the gas control knob will heat the water to a temperature of approximately 66°C. Each number on the gas control represents a water temperature change of approximately 6°C.

The water temperature is maintained by means of a liquid contained in the sensing bulb expanding in the capillary tube and operating a bellows located in the gas control body.

As the water temperature increases the bellows expands and acts on the valve seat by means of a lever. When the required set temperature is reached the main gas way is closed and the main burner is extinguished.

### Sit AC3 (647270)

When the gas control knob is depressed in the \* (pilot) position, the thermoelectric safety valve is pushed down to allow gas flow to the pilot where it can be ignited by a spark from the manually operated piezo igniter



The pilot flame heats the thermocouple creating an electrical current which holds the thermoelectric safety valve in the open position allowing the pilot to remain alight when the gas control knob is released.



The gas control knob can then be rotated anticlockwise to the † (on) position, by depressing slightly, allowing gas supply to the main burner. The main burner is lit via a cross light action between the pilot and the gas emanating from the main burner.

Setting '5' on the Temperature Selection Knob will heat the water to approximately 70°C. Each number on the Temperature Selection Knob represents a water temperature change of approximately 10°C.



As the water temperature increases an element expands and acts on the valve seat by means of a lever. When the required set temperature is reached the main gas way is closed and the main burner is extinguished.

## PREVENTATIVE MAINTENANCE

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### **TO BE DONE BY QUALIFIED PERSONS**

**Note:** The service and routine replacement of any components, if required, are not included in the Rheem warranty. Only genuine replacement parts should be used on this water heater.

#### **Service Every Twelve Months**

For safe and efficient operation, it is recommended a service be conducted on the water heater every twelve (12) months.

The annual service includes the following actions:

- Check the operation of the temperature control valve (RheemPlus model)
- Inspect and flush the temperature pressure relief valve.
- Inspect and flush the expansion control valve (if fitted).
- Check and if necessary adjust the inlet gas pressure.
- Check the piezo igniter, gas control and thermocouple.
- Check the operation of and clean the pilot light and main burner.
- Visually check the unit for any potential problems.
- Inspect all connections.

#### **Major Service Every Five Years**

It is recommended a major service be conducted on the water heater every five (5) years.

The major service includes the following actions:

- Replace the temperature control valve (RheemPlus model)
- Replace the temperature pressure relief valve.
- Inspect and flush the expansion control valve (if fitted). If required, replace the valve.
- Inspect and if required, replace the anodes.

If an anode is not replaced, it should be replaced within five (5) years of this service (refer to "Anode Inspection and Replacement" below).

- Check and if necessary adjust the inlet gas pressure.
- Check the piezo igniter, gas control and thermocouple.
- Check the operation of and clean the pilot light and main burner.
- Visually check the unit for any potential problems.
- Inspect all connections.

### **252, 850 & 854 Series**

#### **Anode Inspection and Replacement**

For water supplies which are either softened or desalinated, or where the water supply may alternate between a water tank and a reticulated public supply or another supply, or where there is a variable supply (e.g. from a bore or public reticulated supply from various water sources), the anodes must be inspected (and replaced if there is any sign of depletion) within five (5) years of its installation, and within every three (3) years thereafter.

For all water supplies, if the anodes are not replaced during the major service then the maximum time after its installation when the anodes should be replaced is ten (10) years.

## PREVENTATIVE MAINTENANCE (Continued)

1. Check for discharge from the T&PR valve. Whilst the burner is off there should be no discharge of water. When the burner is operating, a small discharge of water may be evident. Operate the valve-easing lever to ensure the valve opens and resets properly. Always open and close the valve gently. The T&PR valve should be replaced at 5 yearly intervals.
2. Check that the pilot is burning with a small blue flame. Remove and clean the pilot burner if there is a tendency for yellowing of the flame. Ensure the pilot ignites the main burner with no delayed ignition. Appliances operating on propane gas may exhibit a slightly yellow pilot flame; this is a normal condition.
3. Check the gas supply pressure at the inlet to the water heater with the water heater and all other gas burning appliances in the premises operating (burners alight). The minimum gas supply pressure is:  
Natural Gas 1.13kPa      Propane 2.75kPa  
If this minimum cannot be achieved, it may indicate the meter or the gas line to the water heater is undersized. It is important to ensure that an adequate gas supply pressure is available to the water heater when other gas burning appliances, on the same gas supply are operating.
4. Check the main burner pressure is as stated on the rating plate. Pressure within -5% and +10% is acceptable. Remember to replace test point screw.
5. 250, 252, 350, 354, 850 & 854 Series: Check the main burner for flue scale deposits and clean if necessary.
6. Check the main burner flame to ensure all parts ignite readily and that the flame is blue with little or no yellowing of the tips. If necessary adjust the primary air shutter to eliminate yellowing without inducing a harsh noisy blue flame (propane models only).
7. Check the operation of the piezo igniter. The pilot should light after 2 or 3 operations of the piezo (assuming the gas line is purged of air), if not, check for correct spark gap, burnt electrode or cracked ceramic insulator.
8. Check the operation of the thermoelectric valve safety valve & millivolt meter (where fitted).
  - The thermoelectric safety valve should be held open within one minute of lighting the pilot by the electric current generated by the thermocouple. The millivolt meter indicator should move from the red to the green band. If not check the output of the thermocouple.
  - The thermoelectric safety valve should release (close) within 30 seconds of the pilot being extinguished and the millivolt meter indicator should drop back into the red zone.
9. Check for signs of excessive corrosion on the jacket or inside combustion chamber.
10. 250, 252, 350, 354, 850 & 854 Series: Check the condensate drain for blockages.
11. Warn customer of the danger of using flammable materials or aerosol spray packs near the water heater. Aerosols and harsh chemicals can cause premature failure of water heater components.
12. 354/854 Series and External Tempering Valves. Check water temperature to ensure the appropriate temperature is being maintained. Tempering and temperature control valves must be replaced every 5 years.

## LIGHTING INSTRUCTIONS

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Refer to the lighting instructions provided on the rear of the access cover of each water heater.

## BALANCED FLUE PRINCIPAL

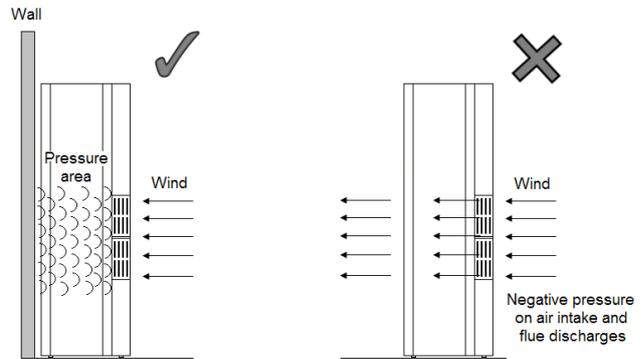
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In practice it is almost impossible to achieve exact balance between the pressures on the air inlet and flue outlet of a balanced flue terminal.

In order to avoid the possibility of reverse flueing the flue terminal design is always biased to provide slightly higher pressure on the air inlet.

The flue terminal is designed and tested to operate with winds directed at the side or front of the water heater. If the wind comes from the behind the water heater the operation of the flue terminal is unpredictable and may result in problems such as heat or flame roll out from the combustion chamber, sooting of the primary flue ways and/or pilot outage.

For the reasons noted above the water heater must be installed against an external wall and its location must comply with AS/NZS 5601.



## PRODUCT CHANGES

**Rheem 850265, 850295, 854265, 854295 & Everhot 252265 & 252295 Models:** Introduced in Feb 2018

**Rheem & Everhot 250/350/354-265N0 & 250/350/354-295N0:** Discontinued from May18. Replaced by 252265, 252295, 854265 & 854295.

**Rheem & Everhot 250/350/354-265P0, 250/350/354-295P0, 850330P0, 850330B0, 850360P0 & 850360B0:** Discontinued from Dec 2017

**Dome Restraint:** In August 2017 a dome restraint has been added to the flue liner top in all 250, 350 and 354 series heaters. The purpose of this is to restrain the dome to the heater should a delayed ignition occur.

Restraint wire



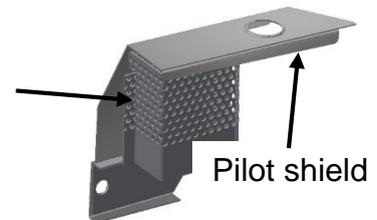
 If there is a delayed ignition event in a 265 or 295 capacity heater, fitted with a dome restraint, where the flue liner top and jacket top are dislodged, then the entire water heater **MUST** be replaced.

**Revised Pilot & Millivolt Meter:** In August 2016 a revised pilot with additional shielding was introduced to the 250, 350 & 850 Series.



Millivolt meter

Pilot flame guard



Due to the shield obstructing the view of the pilot flame a millivolt meter was also introduced to indicate when the pilot flame is established.

**Rheem 350265P0 & 350295P0:** Discontinued from Sept 2015.

**Everhot 250 Series:** Introduced in Nov 2013

**Everhot 647320:** Introduced in Aug 2012

**Rheem 350265 & 350295 Models:** Introduced in May 2009

**Pilot Shield:** In March 2003 a pilot shield (part number 143902) was introduced to overcome problems with pilot outage due to condensation interfering with the thermocouple and pilot flame. The shield can be retrofitted to all models.

**Pilot Injector 850330 & 850360 Models:** In February 2003 the pilot injector size was increased in both Natural and Propane gas models to that used in square and round gas models.

	Natural Gas	LP Gas
Old Injector	0.24 (890180)	0.14 (890182)
New Injector	0.27 (890181)	0.16 (890197)

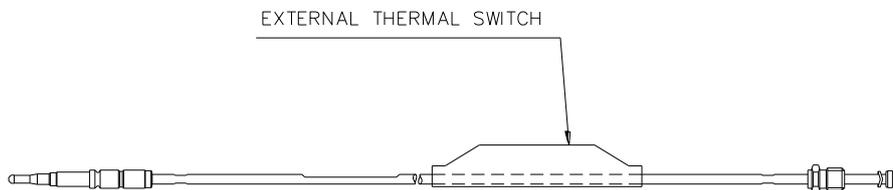
## PRODUCT CHANGES (continued)

**Jacket:** In August 2002 the condensate tray and condensate drain were redesigned, this required a change to the jacket. This change was introduced on the 30/8/2002, models produced after this date have a different jacket and condensate drain.

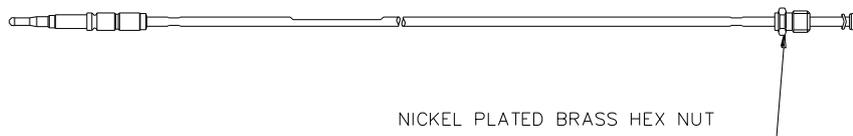
**Gas Supply Pipe Entry:** In June 2001 the entry for the gas supply pipe in the flue terminal was moved up to allow a straight connection to the gas valve. The modified flue terminal will be the only type carried as a spare part. When replacing the flue terminal with the old style gas connection it will be necessary to alter the pipe work to the gas valve before the replacement flue terminal can be fitted. The replacement part number remains unchanged.

**Thermocouple:** The original T.S thermocouple had the thermal fuse mounted externally on the outer sheath of the thermocouple encased in heat shrink (see diagram below). The current style of T.S. thermocouple has the thermal fuse integrated inside the outer sheath of the thermocouple. A nickel coloured nut at the gas control end of the thermocouple identifies this type of T.S. thermocouple. Non-T.S. thermocouples have a brass coloured nut.

### Original T.S. thermocouple



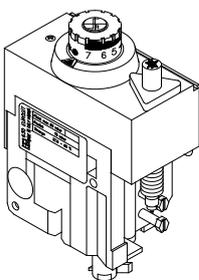
### Current T.S. thermocouple



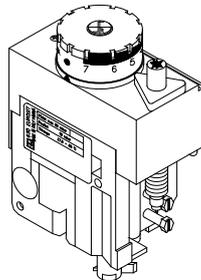
**Gas Control:** In January 2001 a new generation Eurosit gas control was introduced.

The replacement gas control features a more positive interlock between the pilot and main burner position and, on Natural Gas types, an internal regulated pilot gas supply. The new gas control can be easily identified by the larger control knob (see diagram below).

The Eurosit gas control with interlock will now be the only model supplied as a replacement from spare parts for Natural and LP gas types.



Old Style



New Style

**NOTE:** When replacing an older style Eurosit gas control with the new generation Eurosit it will be necessary to also replace the existing lighting instructions with lighting instruction, part number 121024.

The replacement lighting instructions have an adhesive back and have been designed to be placed over the existing lighting instructions.

**Rheem 850330 & 850360 Models:** Introduced July 1999

## COMPONENTS AND THEIR FUNCTION

**Eurosit 630 Gas Control:** The gas control is a multi-functional single knob gas control. It is gas type specific and designed for either Natural gas or Propane/Butane gas. **The control is factory set and not field serviceable or gas type convertible.**

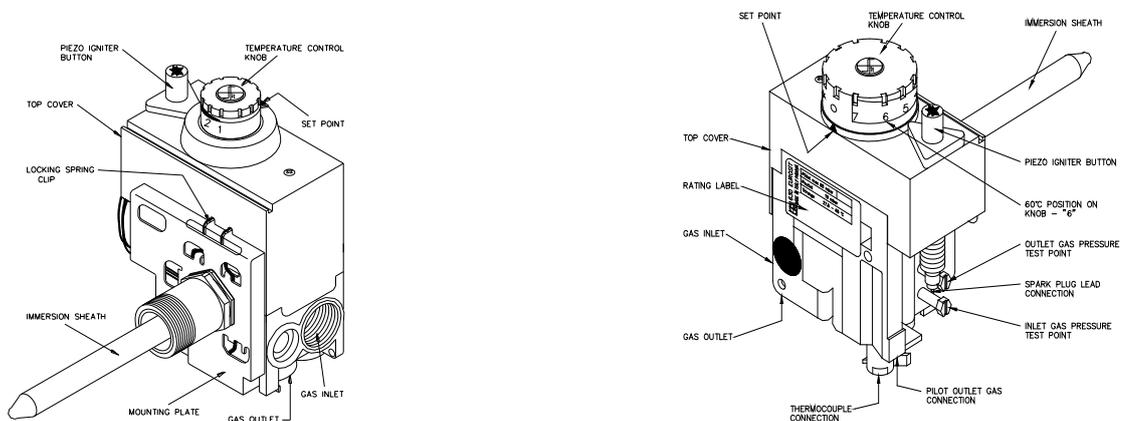
The gas control is manufactured without the temperature sensor and over temperature switch (ECO) enclosed in a sheath.

The sheath is a separate item and is screwed into the cylinder during manufacture. A slot in the head of the sheath is aligned in the horizontal position to allow the snap-on bracket at the rear of the gas control to be located positively.

This design allows the gas control to be replaced without the need to drain the water heater.

Note: The only time the sheath needs to be removed is in the event of a leak developing at the cylinder connection or in the sheath itself. **In this case the water supply needs to be isolated and pressure relieved from the cylinder.**

In the event of a sheath replacement, use a 27mm AF socket to prevent damage to the slot. Apply thread sealing tape and tighten so that the slot is horizontal with a minimum of 2 threads or a maximum of 4 threads protruding from the cylinder fitting.



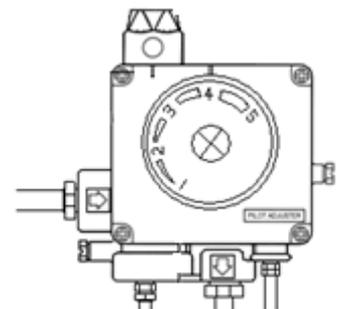
## SIT AC3 Gas Control

An electromechanical device that controls gas flow to the pilot and main burner to regulate heating so the cylinder water temperature is maintained at the gas controls thermostat setting.

The gas control has an integral magnetic gas isolating valve which is held in the open position by a small electric current generated by the thermocouple. This valve will completely isolate the supply of gas to the main burner and pilot in the event of a pilot flame failure.

The gas control temperature sensor and over temperature switch (ECO) are enclosed in a probe which is an integral part of the gas control.

In the event of replacement a SIT gas control spanner is required.



**Over Temperature Energy Cutout (E.C.O.):** A temperature-sensing device in combination with the gas control that automatically cuts off the gas supply to prevent excessive water temperature occurring. This device will reset automatically once temperatures have fallen to a safe level allowing the pilot to be relit. **DETERMINE CAUSE OF OPERATION.**

**Magnetic Valve:** A solenoid type gas isolating valve held in the open position by a small electric voltage generated by the thermocouple. This valve will completely isolate the supply of gas to the burner in the event of a pilot flame failure.

**Thermocouple:** A device that generates a small electric voltage when heated.

Thermocouples are available in T.S (thermal switch) and non-T.S. types, the thermocouple type by the colour of the nut at the gas control end. T.S thermocouples have a nickel coloured nut, non-T.S thermocouples have a brass coloured nut.

The voltage generated by the thermocouple is used to hold a thermo-magnetic valve, fitted in the gas control, open.

The pilot assembly is designed to ensure that the T.S. (thermal switch) thermocouple manufactured by S.I.T. specifically for this product is the only type used as a replacement.

The use of a T.S. thermocouple is to provide a safety shutdown in the event of a blockage in the combustion chamber or flue way.

**Thermal Switch:** A one-shot safety device mounted in the thermocouple near the gas control that senses excessive heat outside the combustion chamber. This device cannot be reset.

**IMPORTANT:** *If replacing an open circuit T.S. thermocouple, it is essential to investigate the cause of failure.*

**Possible causes include; incorrect installation of the water heater, i.e. Incorrect distance from corners of walls or the back of the water heater not against a wall; Exhaust fans or air conditioners close by; Blockage of the condensate drain between the condensate tray around the cylinder and the outlet in the jacket.**

**Inlet Diffuser:** A device installed in the cold water inlet of the water heater to help control temperature stratification within the cylinder.

**Anode (Sacrificial):** A metal alloy electrode that, by galvanic action, protects the inner cylinder from corrosion.

**Temperature and Pressure Relief Valve (T&PR or PTR):** A valve designed to provide automatic relief by discharging water in case of excessive temperature, pressure or both.



**Never fit a T&PR Valve with a pressure rating greater than that indicated on the product rating label.**

**Delivery Tube (Dip Tube):** A polypropylene tube fitted inside the water heater cylinder to conduct water from the highest point to the outlet connection. It also acts as a fitting liner.

**Flue Baffle:** A baffle inserted into the water heater flue tube that slows the passage of flue gases to ensure maximum heat transfer to the stored water.

## COMMON COMPLAINTS

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When a complaint is lodged about the performance of a hot water system there are a number of causes that should be checked and eliminated. In an attempt to pinpoint the most likely cause it is important to discuss with the customer their reasons for the complaint, the duration of the problem, any change in circumstances or usage and recent weather conditions.

This information in conjunction with the following listed common complaints will assist you in locating the most likely cause. All procedures assume there is water flowing through the water heater.

### Normal operating conditions of the water heater

- Water will drip from the Temperature Pressure Relief valve (TPR)
- Condensate water will form around the base of the water heater.
- Condensate will drip from the terminal.
- Water vapour will be emitted from the Flue Terminal. This is a sign of the water heater's high efficiency.
- Water from the tap may have a milky appearance. This is caused by suspended air bubbles and will clear if left to stand.

### Abnormal operating conditions of the water heater

- Gas smells
- Unusual odours. There will be a strong smell during the first few days of operation, this is normal.
- The burner to burn with yellow luminous flames.
- Black soot deposits on the terminal.
- Water to flow excessively from the TPR valve.

### Excessive hot water usage

The complaints of insufficient hot water and no hot water can on many occasions be attributed to hot water usage exceeding the capacity of the water heater to provide hot water.

When first attending a call of this nature it is essential to establish the probable hot water usage by querying the usage habits of the household and compare this with the potential delivery of the model water heater installed. It can then be established if the usage is within or outside the capacity of the model. The areas to look at for excessive usage are:

1. Automatic washing machines.
2. Showers exceeding eleven (11) litres/minute for mixed water and five (5) minutes in duration.
3. Two (2) or more showers operating at the same time.
4. Change of occupancy or number of persons increased.
5. High water pressure area. (Excessive T&PR discharge)
6. Plumbing leaks

### Discoloured water

1. This may be the result of discoloured water entering from the cold water mains. Check if the cold water is also discoloured.
2. Brown coloured water will generally indicate that the anode has been depleted or the water heater is near the end of its useful life.
3. Milky coloured water is generally air in suspension and will disperse of its own accord. In very hard water areas where anode gassing occurs, milky water may be evident. The use of a blue anode should overcome this problem.

## **Water hammer**

A water heater will not cause water hammer, however valves associated with the water heater may be the source of the problem i.e. cold-water stopcock, non-return valve, T&PR valve or relief valve.

Most water hammer problems are associated with plumbing, hot and cold, or appliances i.e. solenoid valves, ball cocks, loose pipes, sharp angles in pipe work, faulty or worn valve parts or neighbouring equipment.

High water pressure areas will have more complaints of this nature and the use of a pressure-limiting valve (PLV) to reduce the household cold-water pressure will usually solve most problems.

## **Hot water plumbing leaks**

If hot water has not been used for a period of time, feeling the temperature of the hot water line may give an indication of water flow if the pipe is warm. The method of checking for plumbing leaks is:

1. Turn off the stopcock on the cold water supply to the water heater.
2. Open a hot tap to ensure the flow of water stops. This will confirm the stopcock is operating correctly.
3. Turn off the hot tap.
4. Turn on the stopcock to make up the water pressure in the cylinder, and then turn the stopcock off again.
5. Wait approximately five (5) minutes then do either of the following:
  - a. With your ear close to the stopcock turn it on slightly and listen for any water passing. If there are no leaks, water should not pass.
  - b. Open a hot tap while listening for any pressure release. If there is a pressure release there will be no leaks in the plumbing system.

## **Mixing or crossed connections**

If an automatic dishwasher, washing machine, flick mixer tap, tempering valve, temperature control valve or thermostatic mixing valve is installed there is always the possibility that the cold water could mix with the hot water through a faulty or incorrectly installed valve. This is referred to as a cross connection.

The complaints of insufficient hot water, water too cold or excessive discharge from the T&PR valve may be attributed to a cross connection. The method of checking for a cross connection is:

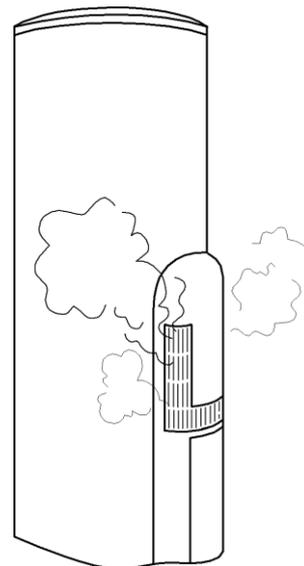
1. Turn off the stopcock on the cold water supply to the water heater.
2. Open a hot tap. If water flow is persistent and cold a cross connection exists.

## HIGH EFFICIENCY WATER HEATERS

When the water heater is first lit, or after a large usage of hot water, condensation may form on the burner and flue terminal.

This is quite normal, especially in winter months, and will dry off as the water is heated.

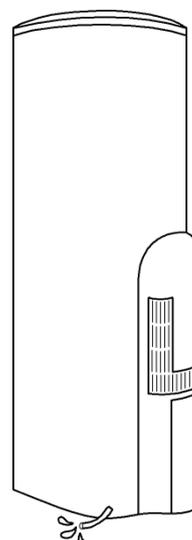
**NOTE:** During heating cycles it is not unusual to see water vapour clouds streaming from the flue terminal. This is normal operation of the water heater.



The plastic drain near the bottom left-hand side of the water heater will drip water during the heating cycle.

It is possible for SEVERAL LITRES a day of condensation to discharge from the drain especially in cool conditions.

This water **is not** from the mains supply but is condensation caused by the efficient operation of the water heater.

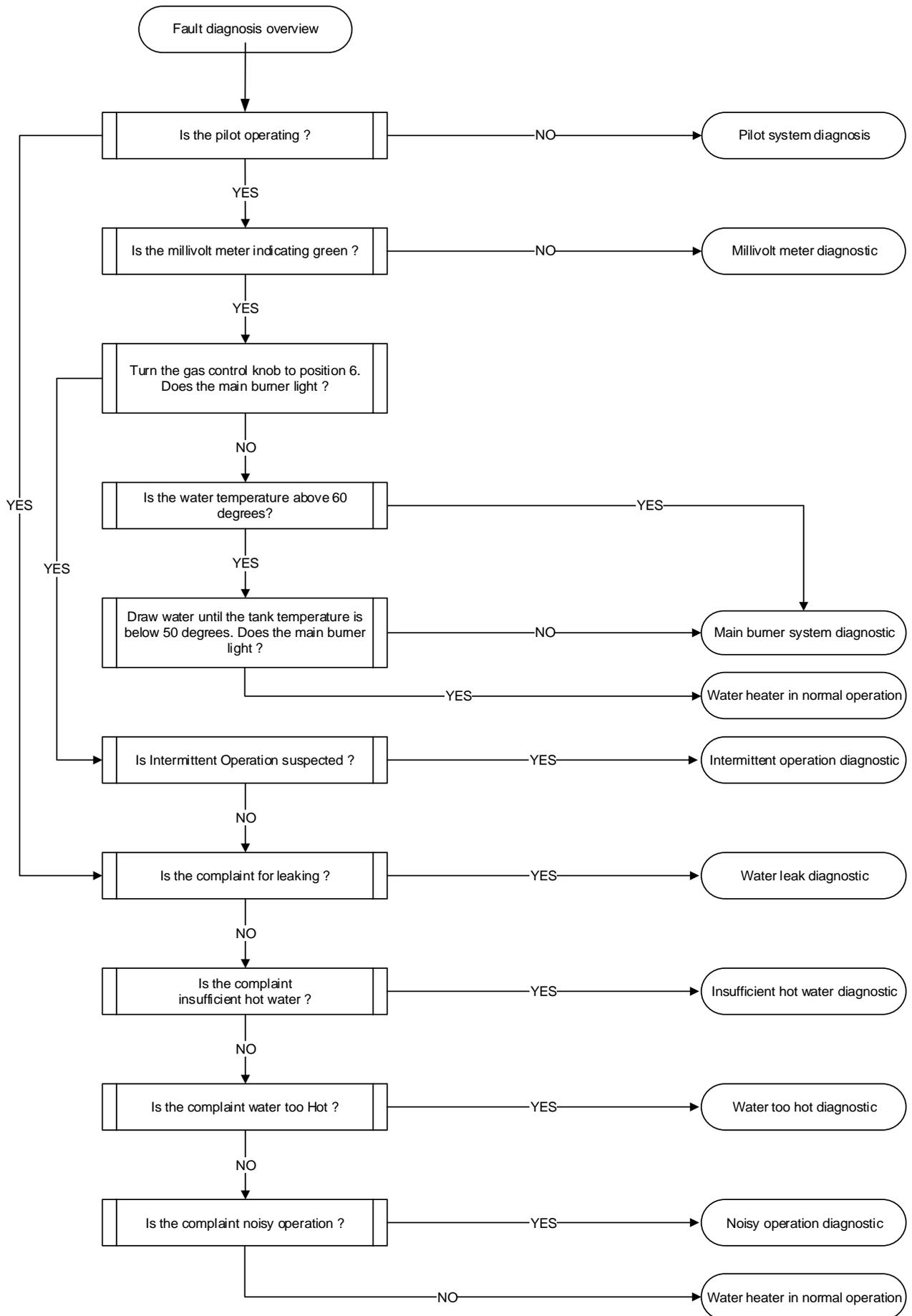


## FAULT FINDING

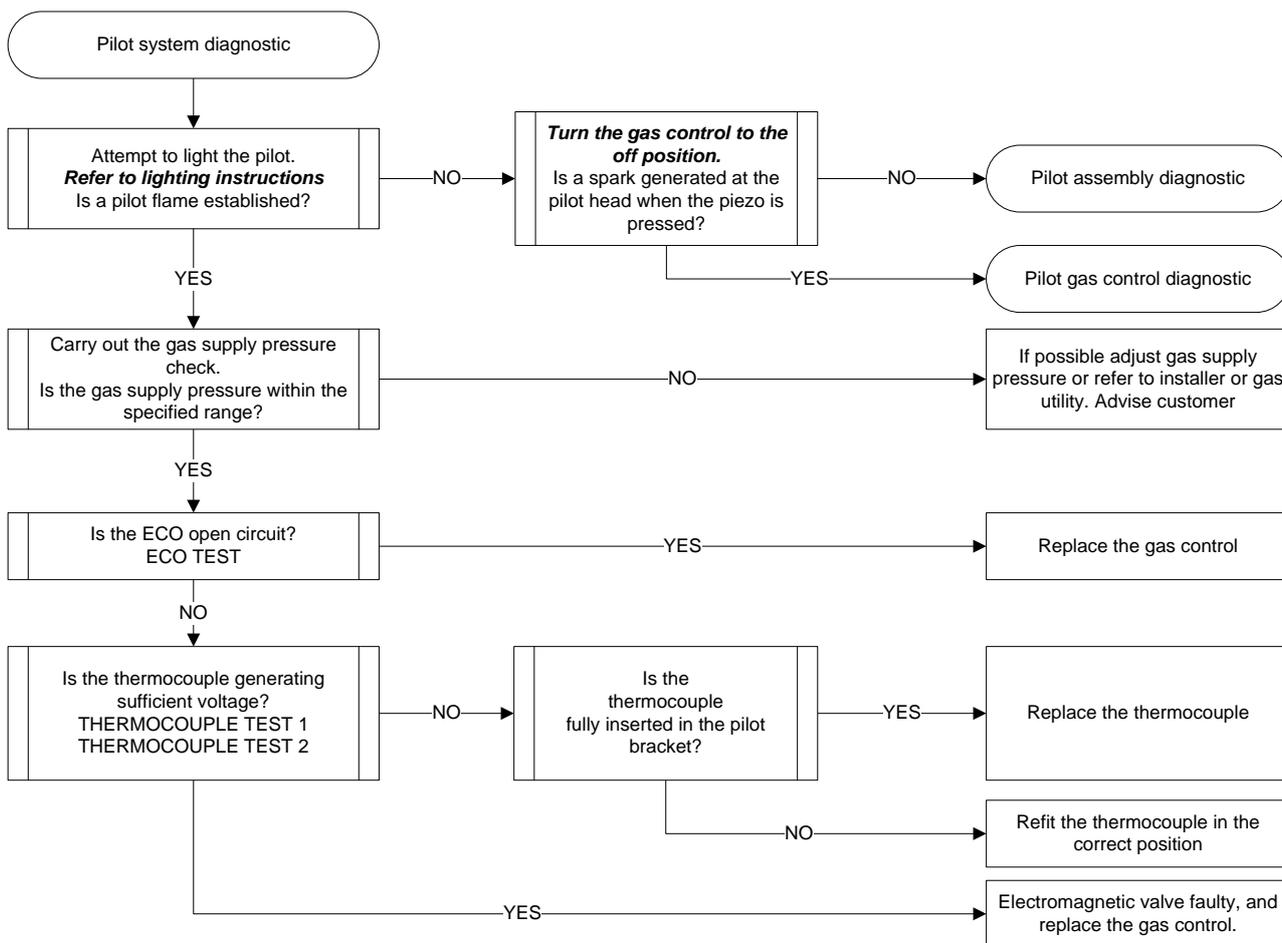
### Fault Finding Charts

Fault	Diagnostic Flow Chart	Page
No hot water	Pilot System Diagnostic	17
	Pilot Assembly Diagnostic	17
	Pilot Gas Control Diagnostic	18
Main burner fault	Main Burner Diagnostic	20
Leaking	Leaking water heater	24
Insufficient hot water	Insufficient hot water	26
Water too hot	Water too hot	27
	Stacking	28
Noisy water heater	Noisy water heater	29
Intermittent operation	Intermittent operation	30

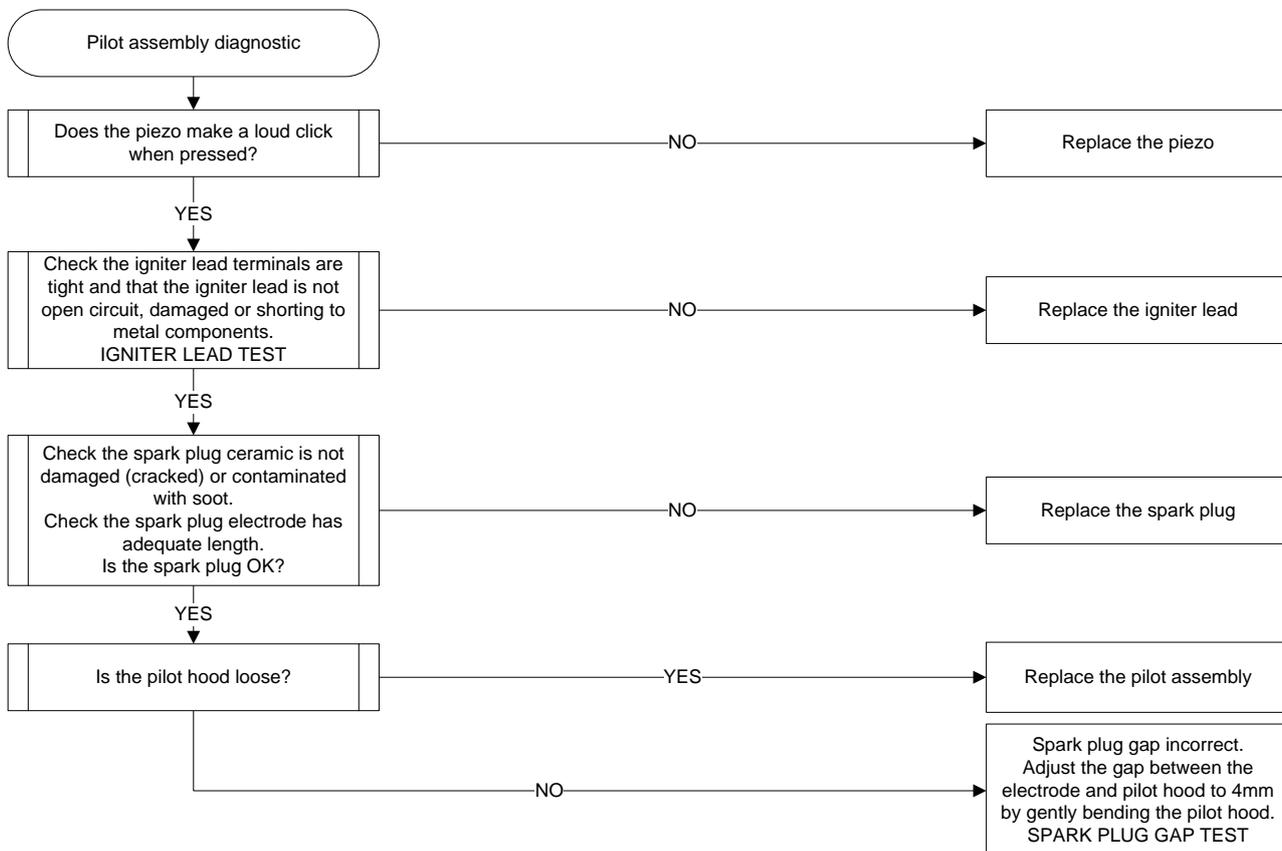
# General Fault Finding Flow Chart



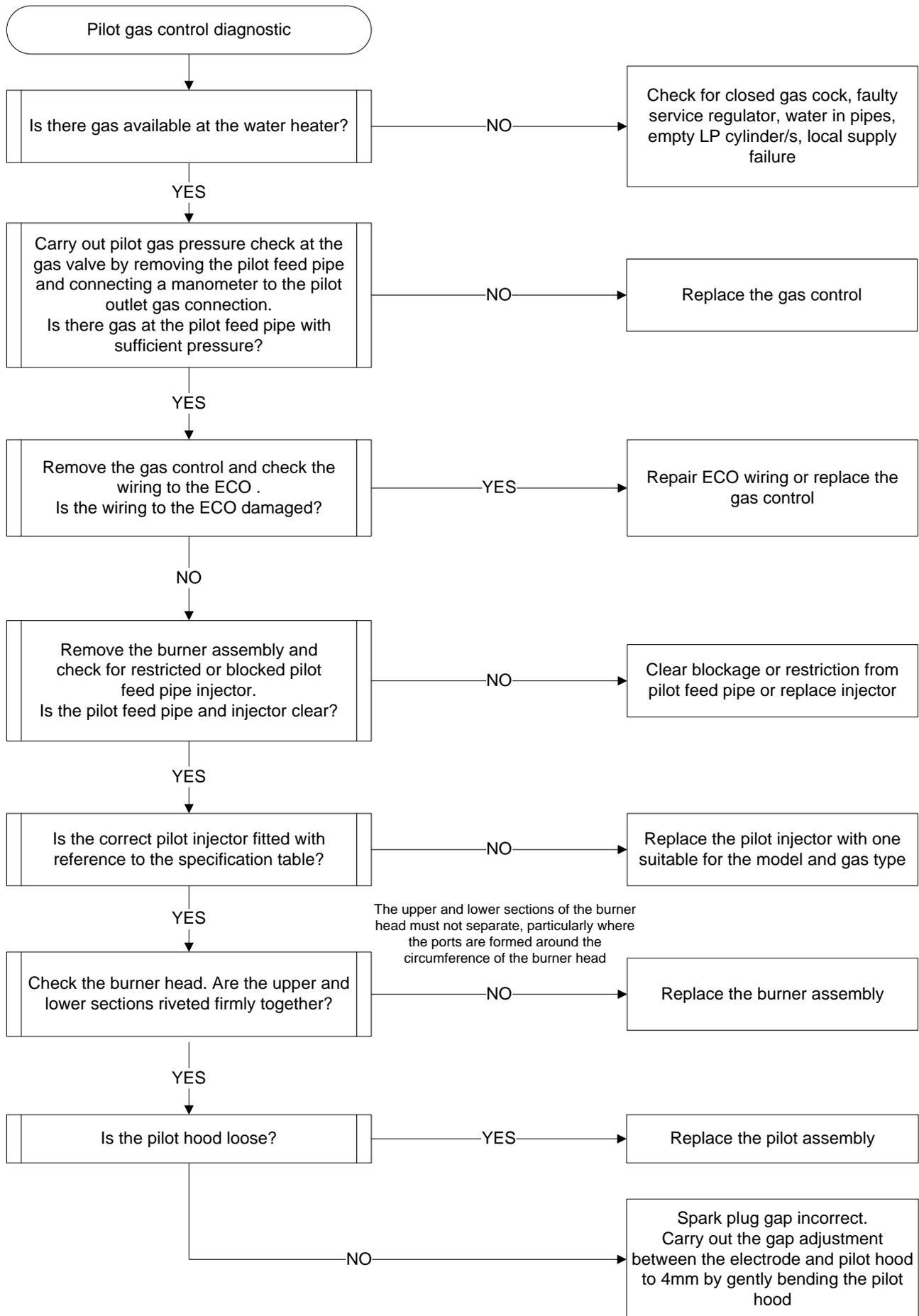
## Pilot System Flow Chart



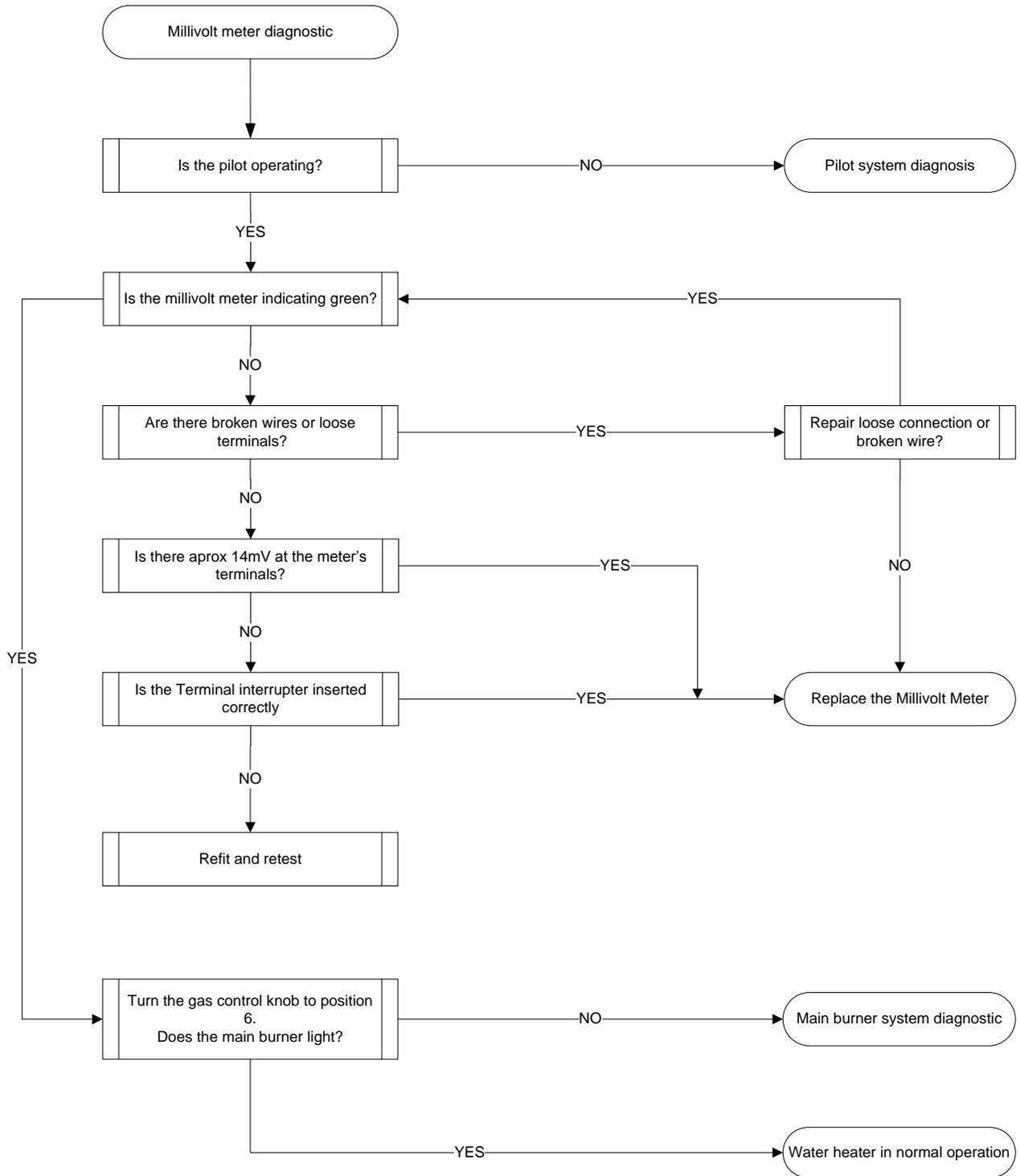
## Pilot Assembly Diagnostic



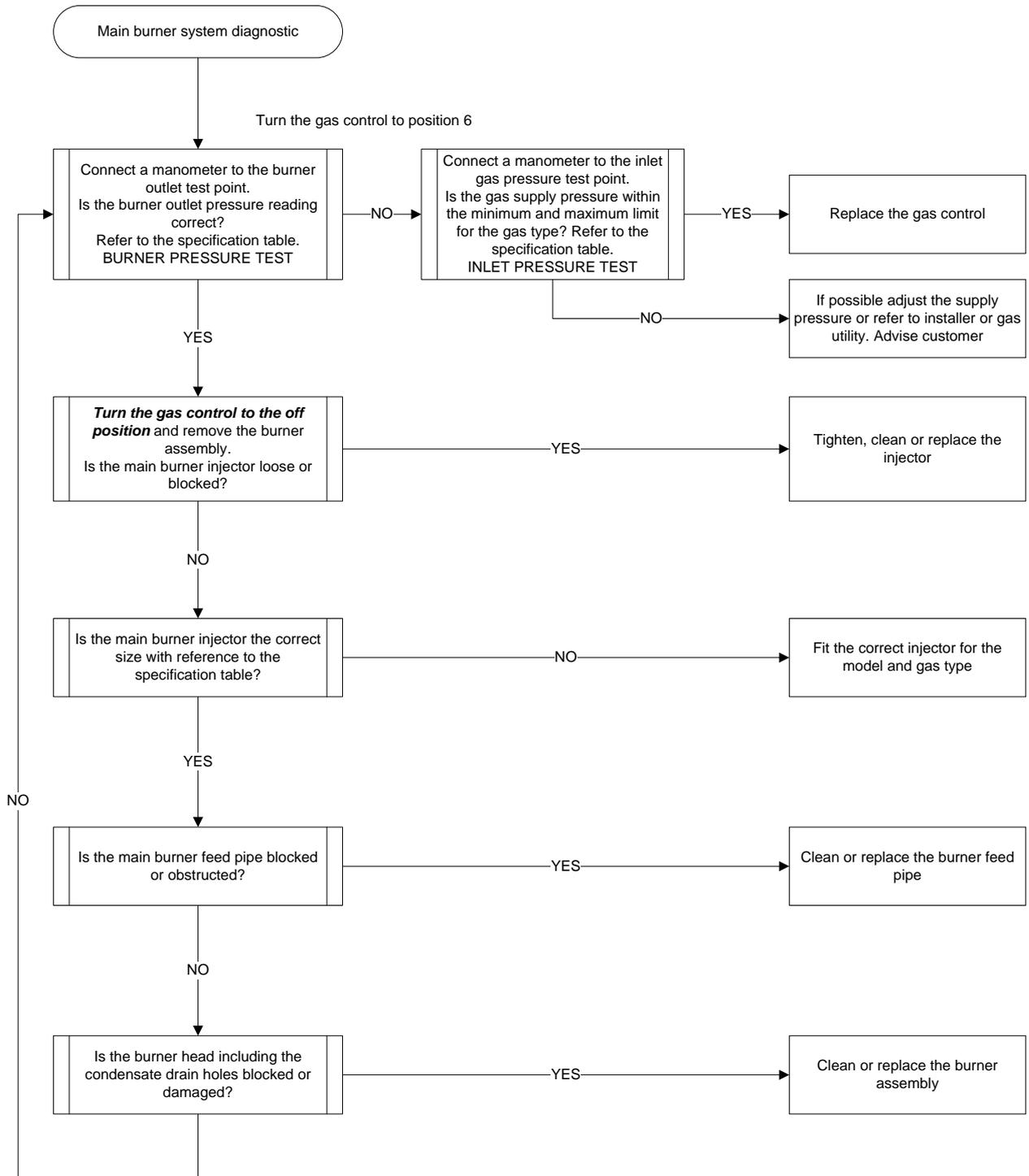
# Pilot Gas Control Flow Chart



# Millivolt Meter

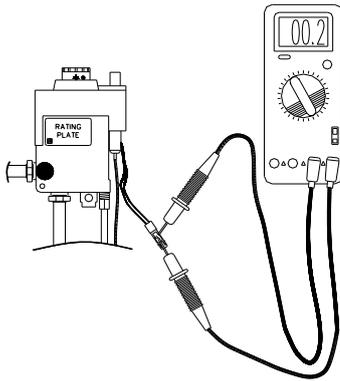


# Main Burner Flow Chart



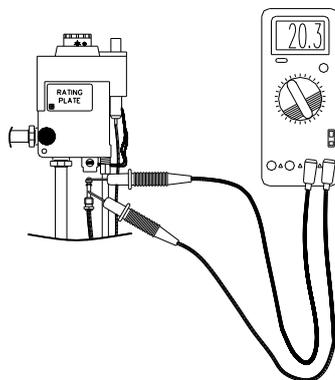
## Component Tests

### ECO Test – Eurosit 630

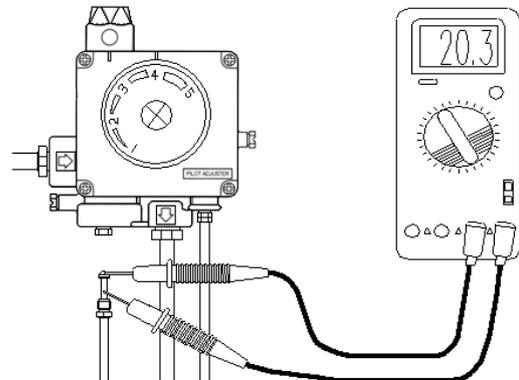


Using a multimeter set on the x1 resistance scale, measure across the terminals of the interrupter block on the gas control. The reading should be 0 ohms (dead short).

### Thermocouple Test 1



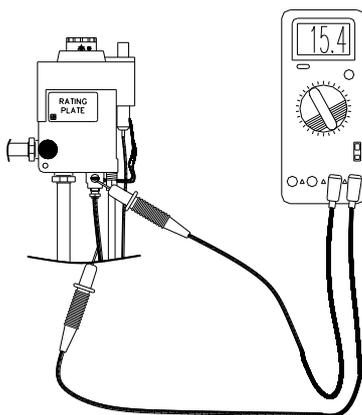
Eurosit 630



AC3

Disconnect the thermocouple from the gas control and using a multimeter set on the DC millivolt scale measure the voltage being generated by the thermocouple. Normal voltage should be approximately 20 mV. **Note:** It will be necessary to light the pilot and manually hold the gas control knob down during this test.

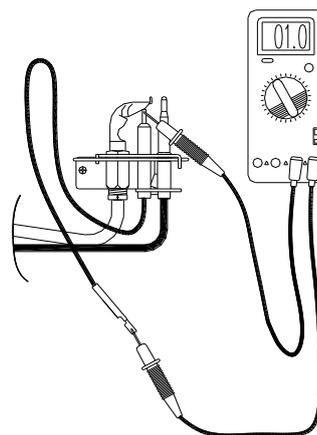
### Thermocouple Test 2



630 Eurosit

With the thermocouple connected to the gas control and using a multimeter set on the DC mV scale, measure the voltage between the lower terminal of the interrupter block and the thermocouple sheath. The reading should be approximately 14mV.

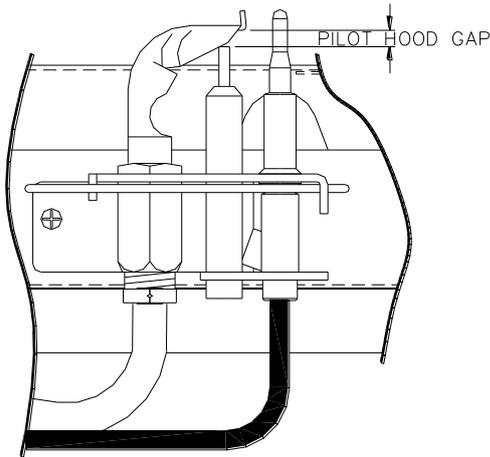
### Igniter Lead



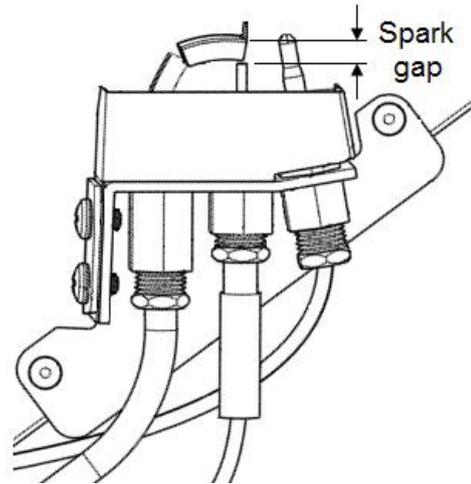
Using a multimeter set on the x1 resistance scale, measure the resistance between the wiring terminal and the electrode tip (ensure the tip is clean). Resistance should be 0 ohms (dead short).

## Component Tests

### Spark Plug Gap



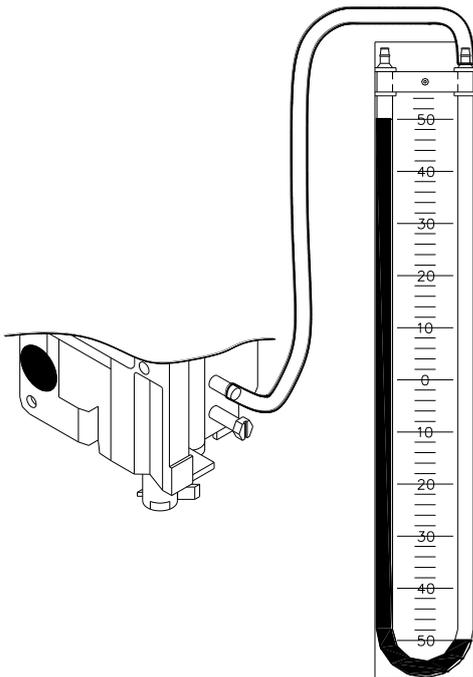
**250 / 252 / 350 / 354 / 850 / 854 Series**



**647 Series**

The gap between the pilot hood and electrode tip should be between 4 and 5 mm. Gently bend the pilot hood to adjust the spark gap.

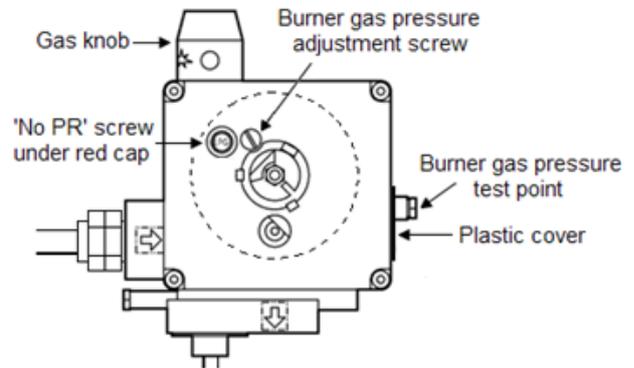
### Burner Pressure Test



**630 Eurosit**

Burner gas pressure reading should be 1kPa for natural gas and 2.75kPa for propane gas-5% +10%. If adjustment is required refer to page 32.

#### Gas Control Component Diagram



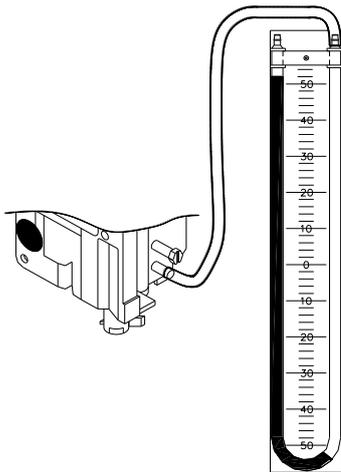
Note: Gas control shown with temperature adjustment dial (---) removed

**SIT AC3**

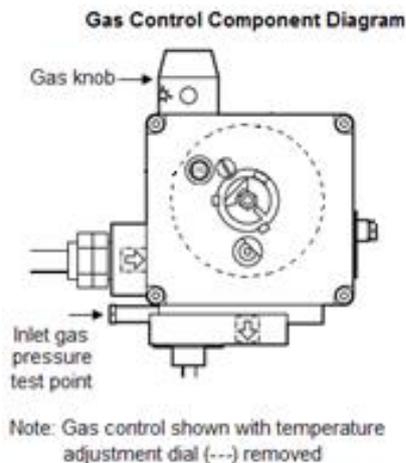
Refer to burner pressure adjustment procedure on page 33.

## Component Tests

### Inlet Pressure Test



**Eurosit 630**



**AC3**

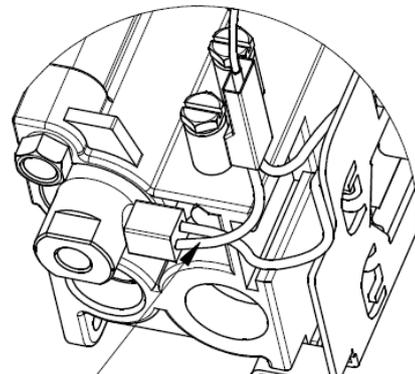
Fit manometer to inlet pressure test point. With all gas burning appliances lit, including the water heater, the inlet test point pressure should be a minimum of 1.13kPa for natural gas and 2.75kPa for propane and butane gas and a maximum of 3.5kPa for all gas types.

Changing the gas valve or attempting to over-gas the burner will not rectify a fault caused by insufficient line pressure.

### Millivolt meter Test 1

With the thermocouple connected to the gas control and using a multimeter set on the DC mV scale, confirm the voltage between the lower terminal of the interrupter block and the millivolt meter's (Red) earthed terminal is approximately 14mV.

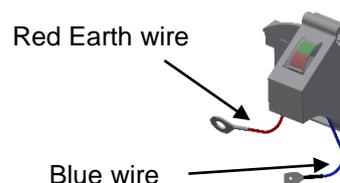
Test also for 14mV between the millivolt meter's (Blue) connector terminal and (Red) earth terminal wires.



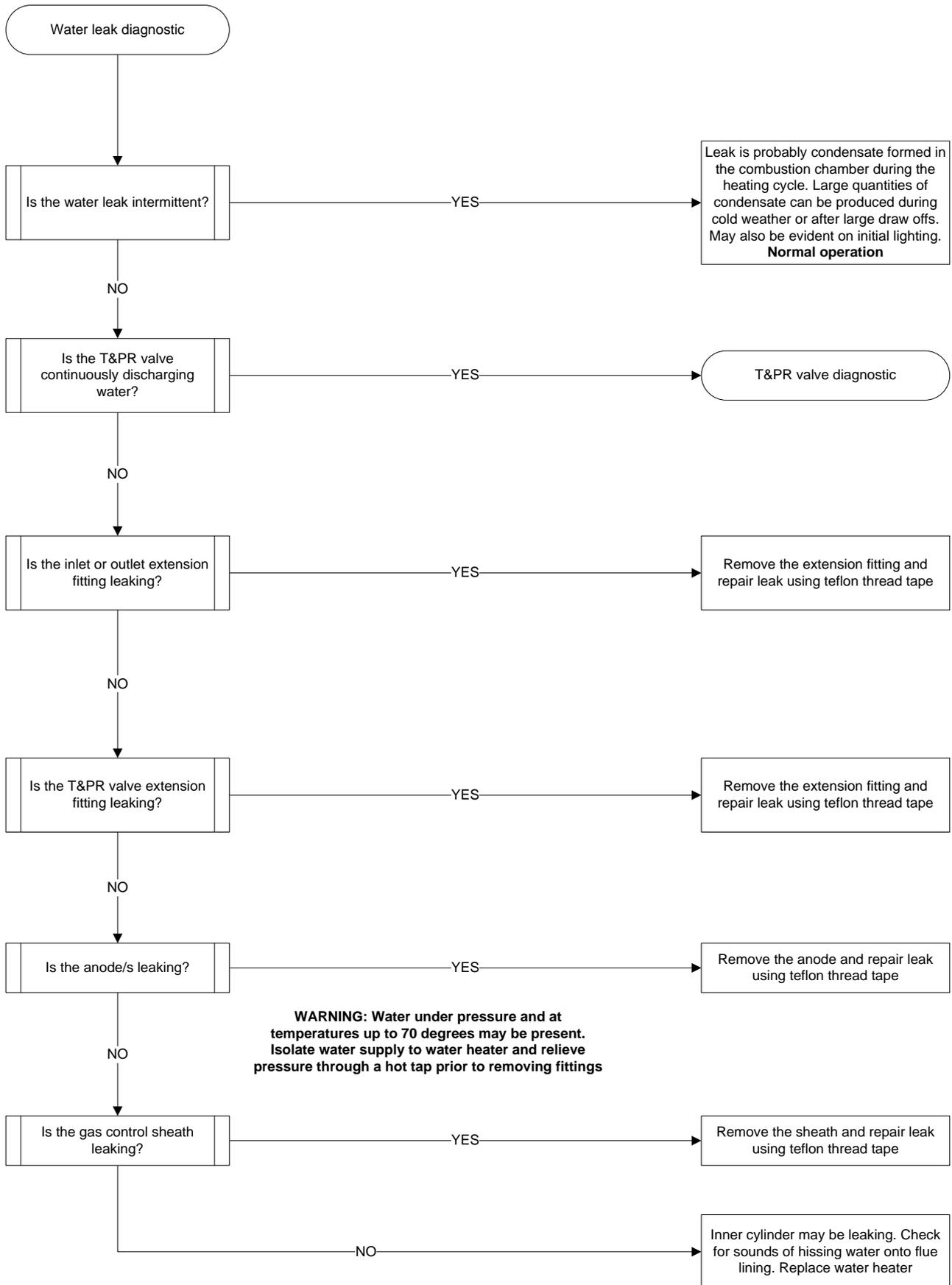
**Important:** The (White) wire to the Millivolt meter connector must be on the lower terminal of the interrupter block

### Millivolt meter Test 2

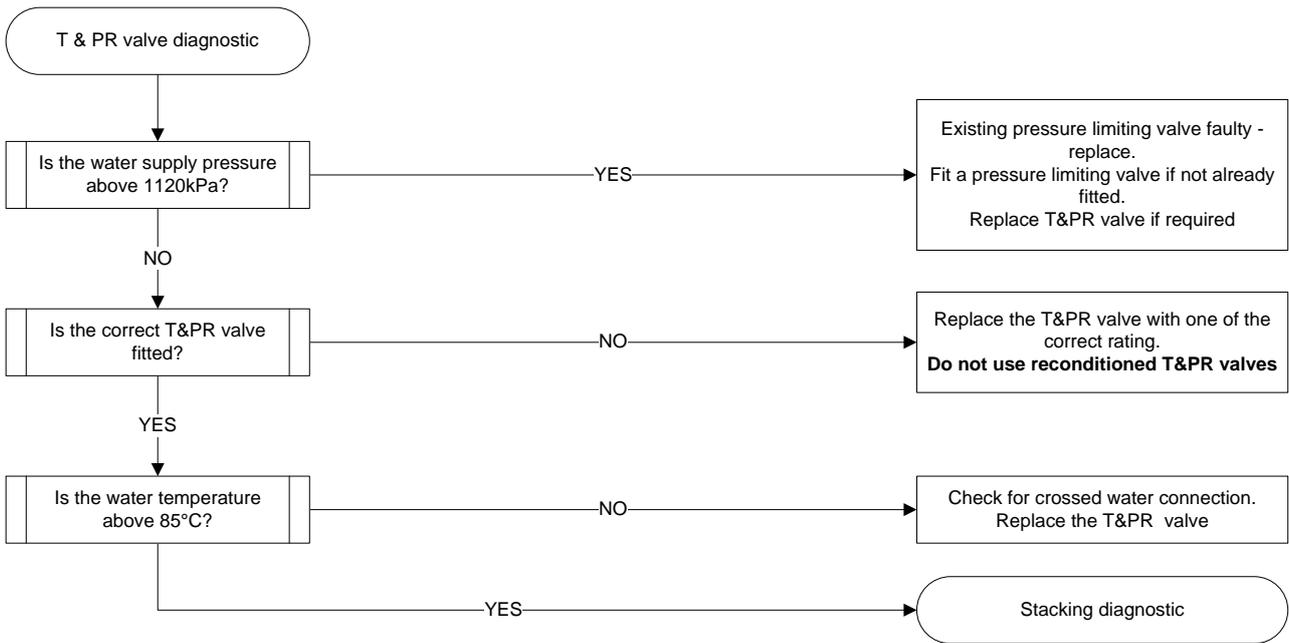
With the Red and Blue Millivolt meter wires disconnected from the gas valve, the normal resistance between the two wires should measure approximately 8-9 Ohms



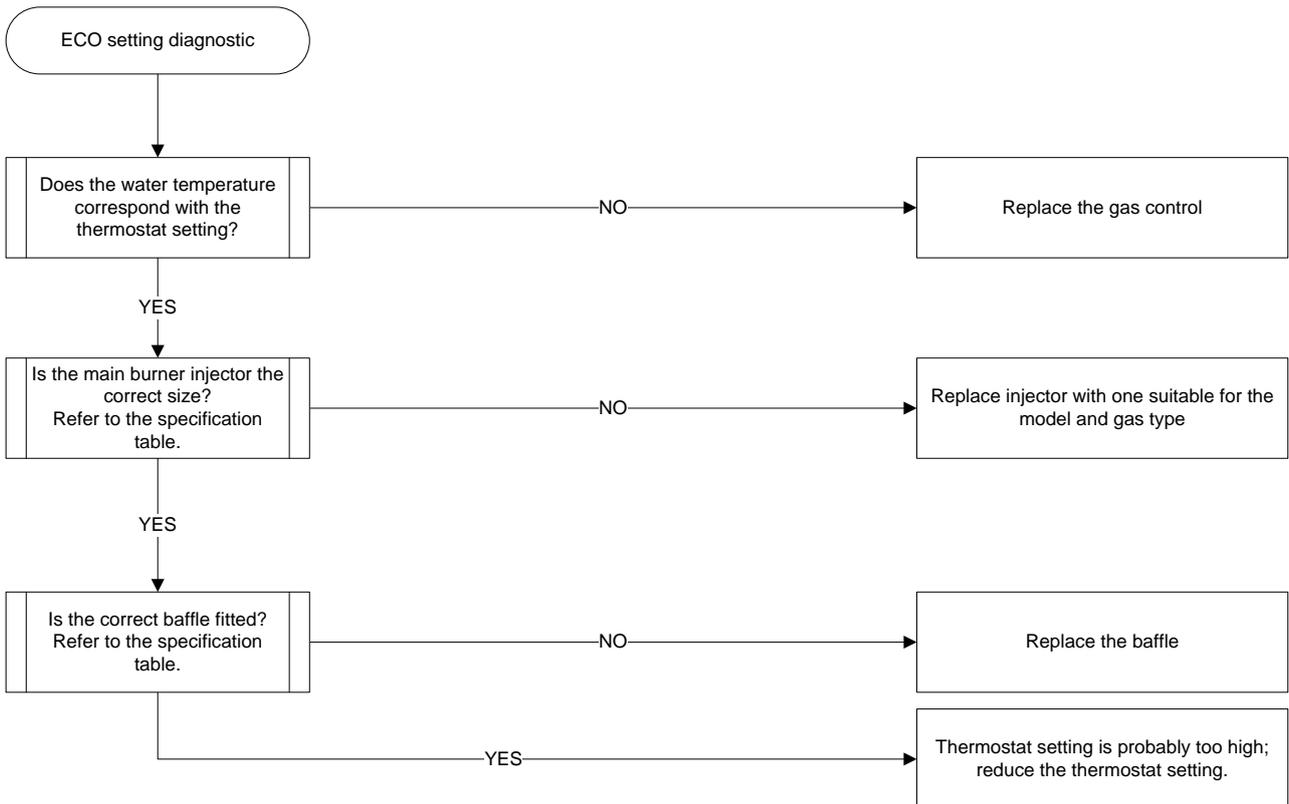
# Leaking Water Heater



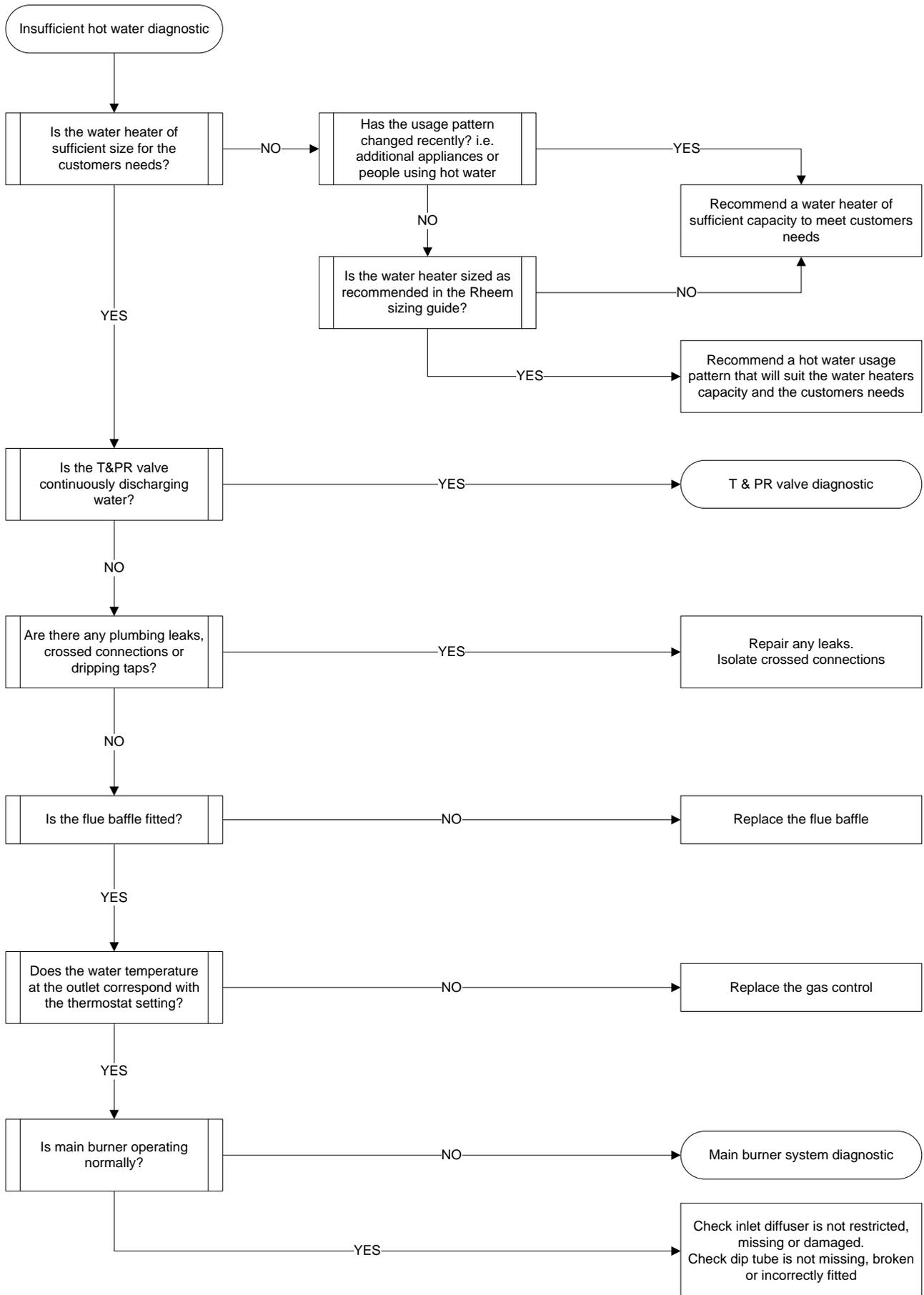
## T&PR Valve Flow Chart



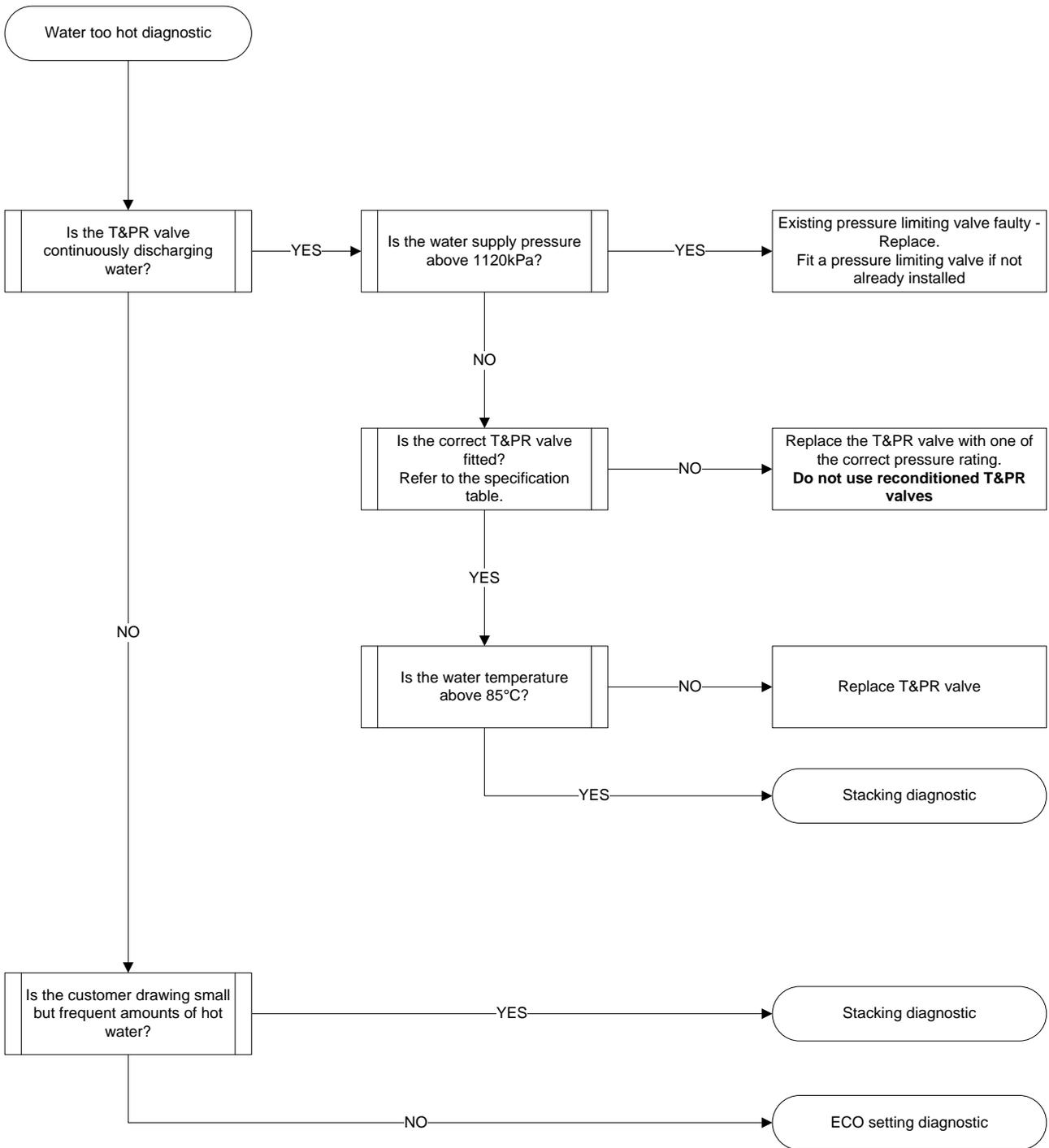
## ECO Diagnostic



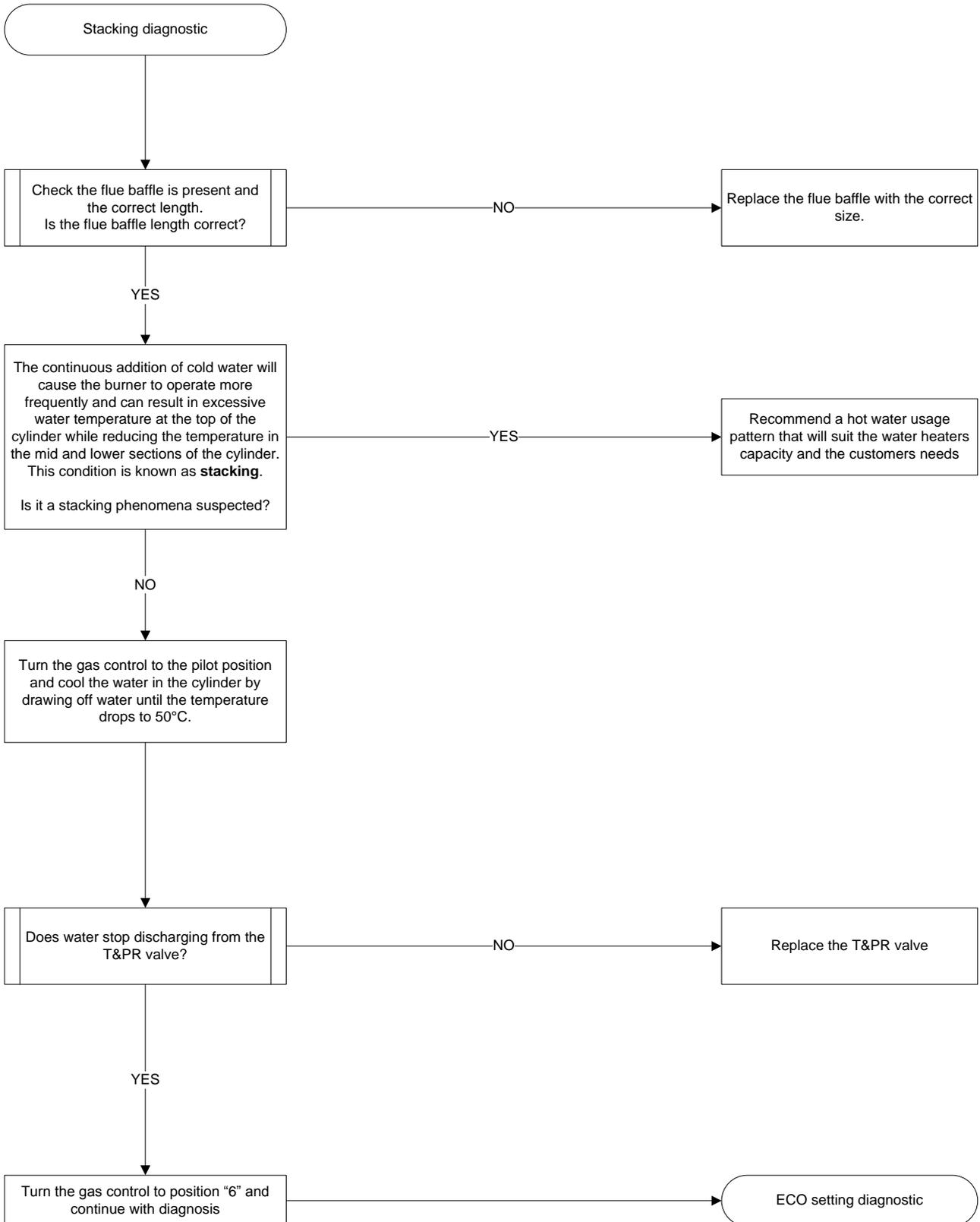
# Insufficient Hot Water



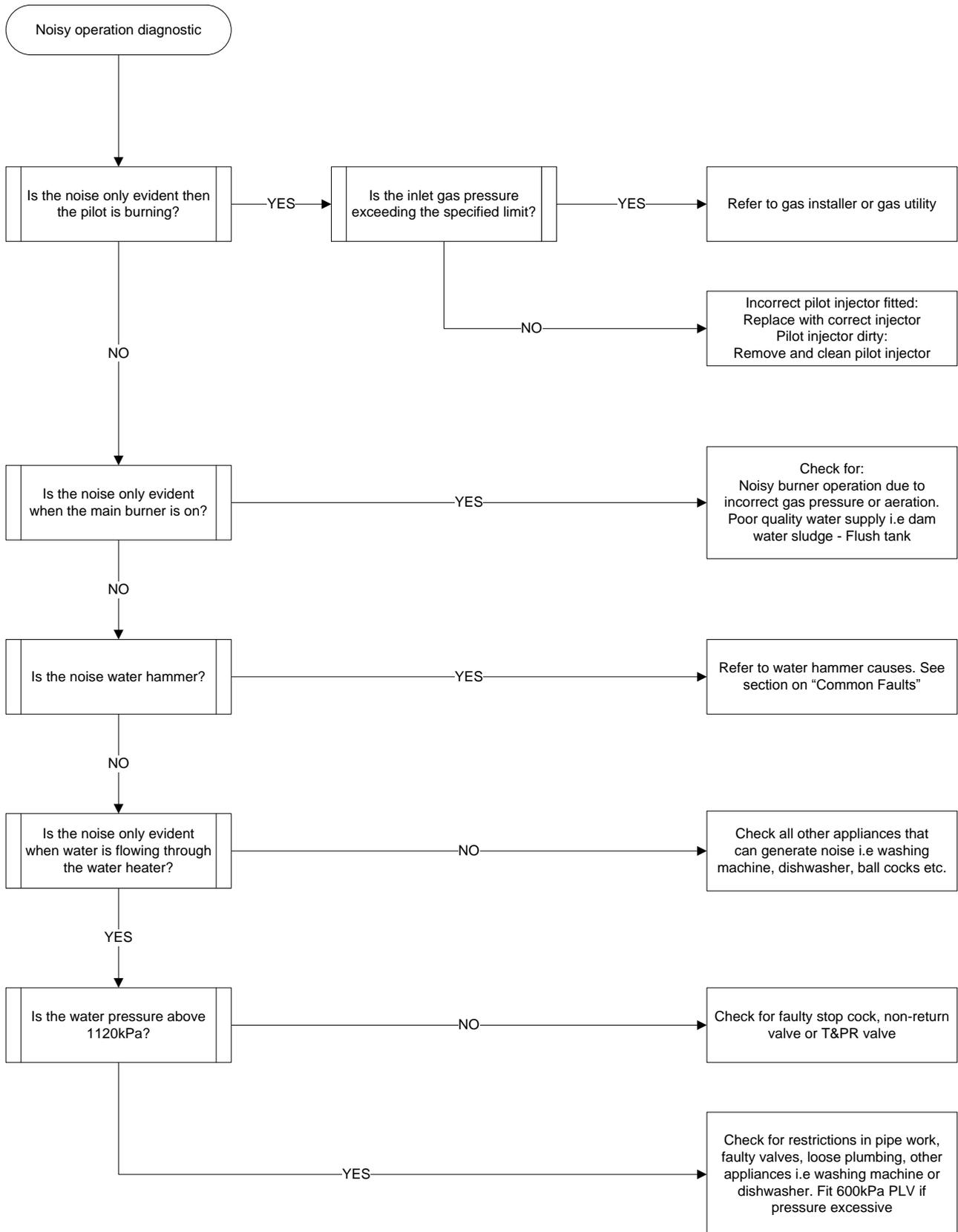
# Water Too Hot



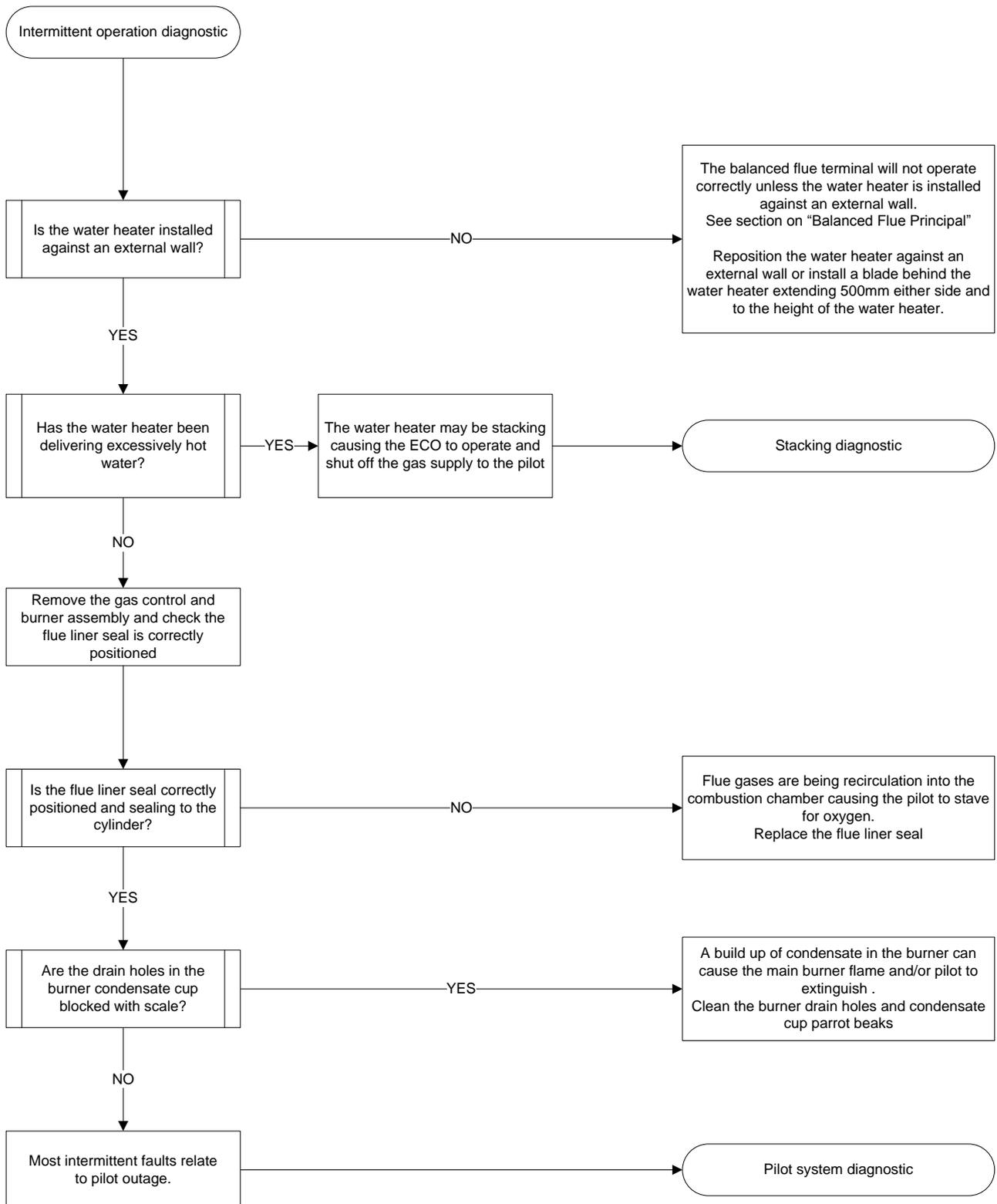
# Stacking Flow Chart



# Noisy Water Heater



# Intermittent Operation



## OUTLET TEMPERATURE COMPENSATION ADJUSTMENT – 354 / 854 SERIES

The maximum outlet temperature of a Rheem Plus water heater may be adjusted to compensate for temperature losses in the pipe work between the water heater outlet and sanitary fixtures.

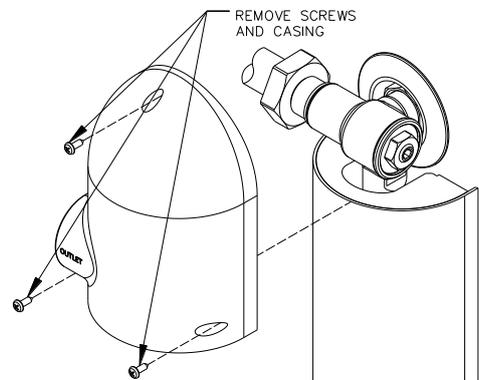
**⚠ Warning:** After adjustment of the temperature control valve, the water temperature **MUST NOT** exceed 50°C from the first tap in the hot water pipe work after the water heater used for personal hygiene purposes, such as in a bathroom or ensuite.

To adjust the maximum outlet temperature:

- Ensure the temperature of the water in the water heater is up to the thermostat setting on the water heater.

The temperature of the water can be measured at the temperature pressure relief valve drain discharge point. Do not measure this temperature from a hot tap

- Operate the easing lever on the temperature pressure relief valve and place the thermometer in the flow of water from the relief valve drain line.
- Remove the upper plastic casing and insulation covering the pipe work on the side of the water heater, by removing the three (3) retaining screws, to expose the temperature control valve.
- Locate the first hot tap in the hot water pipe work after the water heater used for personal hygiene purposes.
- Turn on the hot tap fully to achieve maximum flow.
- Using a thermometer, measure the temperature of the water from the tap, until the temperature stops increasing.

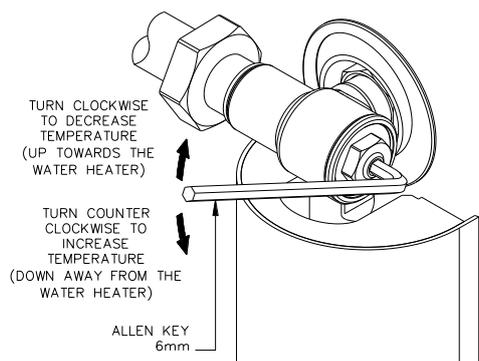


If the water temperature is below 50°C the maximum outlet temperature of the water heater can be adjusted upwards.

- Turn the adjusting knob on the temperature control valve counter-clockwise (down away from the water heater), using a 6 mm Allen key.

Turning the adjusting knob counter clockwise (down away from the water heater) increases the outlet water temperature, turning it clockwise (up towards the water heater) decreases the outlet water temperature.

- Repeat the water temperature measurement from the same hot tap.
- Further adjust the temperature control valve as required, turning the adjusting knob either counter clockwise (down away from the water heater) or clockwise (up towards the water heater) to increase or decrease the outlet water temperature, until an acceptable water temperature not exceeding 50°C is measured at the same hot tap.
- Turn off the hot tap.
- Replace the insulation and plastic casing to cover the temperature control valve and pipe work on the side of the water heater and secure using the three (3) retaining screws.



## COMPONENT ADJUSTMENT PROCEDURES

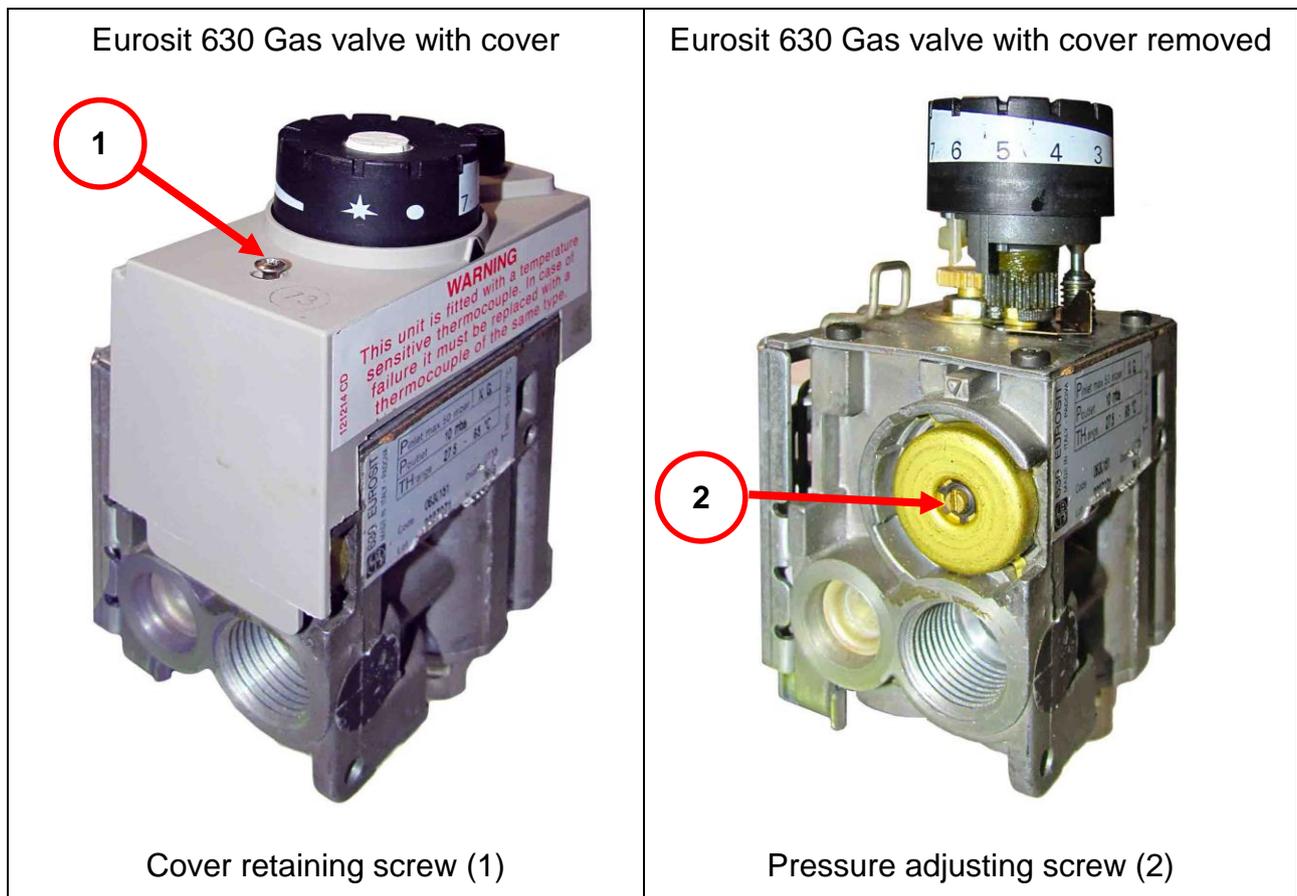
### Eurosit 630 Gas Burner Pressure Adjustment Procedure

1. Remove the access door (outdoor models) or the pipe cover (indoor models).
2. Note the current setting on the gas control.
3. Remove the screw retaining the plastic cover (1) and remove the cover to expose the burner gas pressure adjusting screw (2)
4. Turn the knob to position 7
5. Check the burner gas pressure (refer to test on page 22).
6. To increase the pressure, turn the pressure adjusting screw (2) clockwise
7. After the correct pressure is achieved, carefully seal the pressure test points with the screws provided (Recommended Torque 2.5 Nm).



**Test for gas leaks at all unions using soapy water solution.**

8. Turn gas control to the setting noted in step 2 and refit the access cover.



## Testing & Adjusting Burner Gas Pressure – SIT AC3 Gas Control

Refer to “Gas Control Component Diagram” opposite for the location of the gas control components described in the following procedure.

To test and adjust burner gas pressure:

1. Ensure the water heater is turned off.
2. Using a small flat bladed screwdriver, lever and remove the black plastic cover surrounding burner gas pressure test point on gas control.
3. Remove screw from burner gas pressure test point and attach manometer hose to test point.
4. Light the water heater and ensure burner is operating (refer to the lighting instructions on the water heater access door).
5. Take manometer reading with burner operating.

If reading is 1.0kPa for natural gas models or 2.7kPa (-5%, +10% tolerance) for propane gas models, the burner gas pressure is correct. Proceed directly to step 7.

If reading is not 1.0kPa for natural gas models or 2.7kPa (-5% +10% tolerance) for propane gas models, the burner gas pressure will require adjusting in which case proceed to step 6a for natural gas models or step 6b for propane gas models.

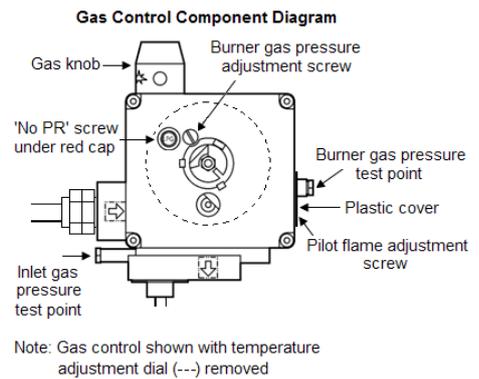
### 6. a. Natural Gas Models

- i. Remove temperature adjustment dial using a small flat bladed screwdriver; lever and pull dial away from gas control.
- ii. Using a small flat bladed screwdriver, rotate burner pressure adjustment screw (marked P.R.ADJ.) clockwise to increase or anticlockwise to decrease burner gas pressure until manometer reads 1.0kPa. Proceed to step 7.

### b. Propane Gas Models

- i. Burner gas pressure should be 2.7kPa (-5% +10% tolerance) whilst burner is operating. If this value is not obtained and the inlet dynamic gas pressure is correct, adjust the appliance regulator until a burner pressure of 2.7kPa (-5% +10% tolerance) is achieved.
- ii. Turn off water heater by completely shutting down gas control.
- iii. Remove manometer hose from burner gas pressure test point and replace test point screw. End of procedure.

7. Turn off water heater by completely shutting down gas control.
8. Remove manometer hose from burner gas pressure test point and replace test point screw.
9. Light the water heater and ensure burner is operating (refer to the lighting instructions on the water heater access door).
10. Test burner gas pressure test point for leaks using a soapy water solution.
11. Replace black plastic cover surrounding burner gas test point by pushing back into position. For natural gas models, replace temperature adjustment dial.



## Pilot Flame Adjustment – AC3 Gas Control

The pilot should burn with a small blue flame. A luminous yellow or ‘floating’ flame is not acceptable. Note: LP models may exhibit a slightly yellow flame.

Refer to “Gas Control Component Diagram” on page 33 for the location of the gas control components described in the following procedure.

To adjust the pilot flame:

1. Ensure the gas control is turned off.
2. Using a small flat bladed screwdriver, lever and remove the black plastic cover surrounding burner gas pressure test point on gas control.
3. Light the pilot (refer to the lighting instructions on the water heater access door).
4. Using a small flat bladed screwdriver, rotate pilot flame adjustment screw clockwise to increase or anticlockwise to decrease the pilot flame.
5. Replace black plastic cover and reinstate the burner as follows: Depress gas knob slightly and rotate anticlockwise to the red line “I” (ignition) position. Hold in this position for 5 seconds then release the gas knob. The gas knob will return to the red flame “I” (on) position automatically and the burner will ignite. Note: If the main burner does not light, the water may already be at the selected temperature.

## COMPONENT REPLACEMENT PROCEDURES

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### 250, 252, 350, 354, 850 & 854 SERIES

#### Draining the Water Heater

---



***A quantity of hot water will discharge from the tank during this process. Personal Protective Equipment should be worn to prevent scalds or burns.***

1. ***Remove the access cover and turn the gas control knob to the off position.*** Note the current setting on the gas control
2. ***Isolate the gas and water supplies to the water heater.***
3. ***Relieve pressure from the water heater through T&PR valve or a hot tap.***
4. Disconnect the cold water supply pipe.
5. Fit a drain hose to the cold water connection and run the other end to a drain or safe location.
6. Open the temperature and pressure relief valve to allow air into the system.

#### Adapter (Sheath) Replacement

---

1. Drain the water heater. Refer to 'Draining the Water Heater' procedure above.
2. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
3. Using a 27mm socket, to prevent damage to the slot, unscrew the adapter and remove.
4. ***Apply thread-sealing tape to the adapter thread and tighten so that the slot is horizontal with a minimum of 2 threads or a maximum of 4 threads protruding from the cylinder fitting.***
5. Refit the Gas Control and Burner Assembly.
6. Refill the water heater, ensure air is purged from cylinder and pipe work.
7. Relight the pilot. ***Lighting instructions are provided on the access door or the front of the water heater, follow the instructions carefully.***
8. ***Test for gas leaks at all unions using soapy water solution.***
9. Refit access cover.

#### Gas Control Only

---

1. ***Remove the access cover and turn the gas control knob to the off position.*** Note the current setting on the gas control.
2. ***Isolate the gas supply.***
3. Disconnect the gas line at the gas control.
4. Disconnect the pilot feed pipe, burner feed pipe, igniter lead and thermocouple.
5. Remove the screw retaining the plastic cover, remove the plastic cover, release the spring clip and withdraw the gas control from the sheath.
6. Reassemble in reverse order of above.
7. Restore gas supply.
8. Relight the pilot. ***Lighting instructions are provided on the access door, follow the instructions carefully.***
9. ***Test for gas leaks at all unions using soapy water solution***
10. Turn gas control to setting noted in step 1 and refit access cover.

## Gas Control and Burner Assembly

---

1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.
2. **Isolate the gas supply.**
3. Disconnect the gas line at the gas control.
4. **265 & 295 Capacities:** Remove the flue terminal (refer to Flue Terminal Procedure on page 42).
5. Remove holding screw from the burner-mounting bracket.
6. Remove the screw retaining the plastic cover and remove the plastic cover and igniter lead.
7. With a screwdriver, release the spring clip and withdraw the gas control and burner assembly.
8. Reassemble in reverse order of above.
9. Restore gas supply.
10. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
11. **Test for gas leaks at all unions using soapy water solution.**
12. Turn gas control to setting noted in step 1 and refit access cover.

## Piezo Igniter Replacement

---

1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.
2. Disconnect the igniter lead from the piezo igniter.
3. Undo the screw retaining the plastic top cover on the gas control and remove the plastic top cover.
4. Remove the piezo igniter.
5. Reassemble in reverse order of above.
6. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
7. Turn gas control to setting noted in step 1 and refit access cover.

## Millivolt Meter

---

1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Remove the screw securing the red wire to the front of the gas valve and disconnect the black wire from the terminal connector.
3. Unclip the millivolt meter housing from the back of the gas valve.
4. Reassemble in the reverse order of above. **NOTE:** Check the white wire from the terminal connector is joined to the bottom connection of the interrupter block.
5. Restore gas supply.
6. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
7. **Test for gas leaks using soapy water solution.**
8. Turn gas control to setting noted in step 1 and refit access cover.



## Thermocouple

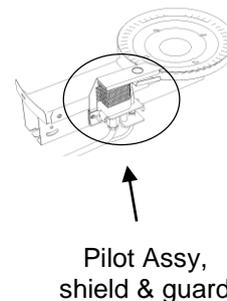
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1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Disconnect the thermocouple from the gas control.
3. Using a flat blade screwdriver spread the spring clip retaining the thermocouple head into the pilot assembly bracket and withdraw the thermocouple from the bracket.
4. Reassemble in the reverse order of above. **Note: Due to the design of the bracket a TS thermocouple is the only type that can and must be fitted as a replacement.**
5. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
6. Turn gas control to setting noted in step 1 and refit access cover.

## Pilot Assembly, shield and guard

---

1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Disconnect the pilot feed pipe and thermocouple from the gas control and disconnect the high-tension lead from the piezo igniter.
3. Remove the screw retaining the pilot assembly, shield & guard (when fitted) to the burner air channel.
4. Reassemble in the reverse order of above.
5. Restore gas supply.
6. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
7. **Test for gas leaks using soapy water solution.**
8. Turn gas control to setting noted in step 1 and refit access cover.



## Pilot Injector

---

1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Disconnect the pilot feed pipe at the pilot assembly and withdraw from the pilot assembly. **Note: The injector is clipped to the end of the pilot feed pipe and will be removed as the pipe is withdrawn from the pilot assembly.**
3. Slide the replacement injector over the end of the pilot feed pipe, ensuring the injector skirt slips over and engages the formed end of the pilot feed pipe, prior to inserting the pilot feed pipe into the pilot assembly. **Do not slide the injector into the pilot assembly and insert the feed pipe after.**
4. Carefully insert the injector and pilot feed pipe as an assembly into the pilot assembly, ensuring the injector does not disengage from the pilot feed pipe, and tighten the retaining nut.
5. Restore gas supply.
6. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
7. **Test for gas leaks using soapy water solution.**
8. Turn gas control to setting noted in step 1 and refit access cover.

## Burner Feed Pipe Replacement

---

1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Disconnect the burner feed pipe from the gas control.
3. Remove the retaining clip holding the burner feed pipe to the burner air duct.
4. Hinge the burner feed pipe down to disengage the tongue from the end of the burner air duct.
5. Remove the injector.
6. Fit the injector to the replacement burner feed pipe using gas paste or similar to ensure a gas tight seal. **Ensure the paste does not block the injector orifice.**
7. Reassemble In reverse order of above.
8. Restore gas supply.
9. Relight the pilot. **Lighting instructions are provided on the access door or the front of the water heater, follow the instructions carefully.**
10. **Test for gas leaks using soapy water solution.**
11. Turn gas control to setting noted in step 1 and refit access cover.

## Main Burner Injector

---

1. Remove the Gas Control and Burner Assembly. Refer to 'Gas Control and Burner Assembly' procedure on page 36.
2. Disconnect the burner feed pipe at the gas control.
3. Remove the retaining clip holding the burner feed pipe to the burner air duct.
4. Hinge the burner feed pipe down to disengage the tongue from the end of the burner air duct.
5. Unscrew the injector from the burner feed pipe.
6. Reassemble in the reverse order of above.
7. Restore gas supply.
8. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
9. **Test for gas leaks using soapy water solution.**
10. Turn gas control to setting noted in step 1 and refit access cover.

## T&PR Valve

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**Never fit a T&PR valve with a rating higher than that indicated on the water heater rating label. Do not use reconditioned T&PR valves.**

1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.
2. **Isolate the water supply to the water heater.**
3. **Relieve pressure from the water heater through the T&PR valve or a hot tap.**
4. Remove the drain line from the T&PR valve.
5. Unscrew the T&PR valve and remove.



**A quantity of hot water will discharge from the tank during this process. Personal Protective Equipment should be worn to prevent scalds or burns.**

6. Confirm the replacement T&PR valve is the correct rating and refit using thread tape.
7. Refit the drain line.
8. Close the hot tap and restore water supply.
9. Check T&PR valve thread for leaks.
10. Operate the T&PR valve lever to reset relief drain.
11. Purge air from the system through hot taps.
12. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully**
13. Turn gas control to setting noted in step 1 and refit access cover.

## Dip Tube Replacement

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1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control
2. **Isolate the water supply to the water heater.**
3. **Relieve pressure from the water heater through the T&PR valve or a hot tap.**
4. Disconnect the hot water line from the outlet of the water heater.



**A quantity of hot water will discharge from the tank during this process. Personal Protective Equipment should be worn to prevent scalds or burns.**

5. Using a flat blade screwdriver gently split the outer rim at the top and bottom of the dip tube face and prise the dip tube out of the cylinder fitting.
6. Fit the replacement dip tube into the cylinder fitting ensuring the flat lines up with the fitting (dip tube facing up) and gently drive the dip tube into the fitting a short distance.
7. Apply thread tape to the plumbing fitting and refit; the dip tube will be pushed into the correct location.
8. Reconnect the hot water line and restore the water supply.
9. Purge air from the system through hot taps.
10. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully**
11. Turn gas control to setting noted in step 1 and refit access cover.



## Anode

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1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.
2. **Isolate the water supply.**
3. **Relieve pressure through a hot tap or the T&PR valve.**

### 330/360 Capacity Models

4. Remove the holding screw from the recess in the rear of the jacket top.
5. Remove the jacket top - gently lever top from jacket.
6. Remove the insulation pieces noting the order of each.
7. Remove flue liner top using the handle provided. **Warning: The flue liner top may be hot, use protective gloves to prevent burns.**
8. Using a 27mm tube or socket spanner, remove the anodes.
9. Apply thread seal tape to replacement anodes, refit and tighten.
10. Restore water supply and check for leaks.
11. Reapply protective coating (Stove Black or similar) around the anode head to prevent corrosion from flue gases.
12. Apply new seal, part number 225502, to flue liner top and replace top.
13. Refit jacket top and screw.
14. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully**
15. Turn gas control to setting noted in step 1 and refit access cover.

## 265/295 Capacity Models

4. Remove the plastic jacket top by gently prising off the water heater.
5. Remove the screws retaining the metal jacket top and remove the top.
6. Remove the insulation pieces noting the order of each.
7. **NOTE:** The flue liner top is secured with a wire strap and the strap cannot be removed. Remove flue liner top using the handle provided. **Warning: The flue liner top may be hot, use protective gloves to prevent burns (refer also to page )**
8. Using a 27mm tube or socket spanner, remove the anode/s.
9. Apply thread seal tape to replacement anode/s, refit and tighten.
10. Restore water supply and check for leaks.
11. Reapply protective coating (Stove Black or similar) around the anode head to prevent corrosion from flue gases.
12. Refit the flue liner top (with dome restraint); jacket top and screws.
13. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
14. Turn gas control to setting noted in step 1 and refit access cover.



HOT

## Cleaning or Replacing Flue Baffle

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**During replacement the correct baffle must be fitted. Fitment of a baffle not suited to the model may cause incomplete combustion, stacking, pilot outage and lead to an unsafe condition.**

1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.

## 330/360 Capacity Models

2. Remove the holding screw from the recess in the rear of the jacket top.
3. Remove the jacket top - gently lever the top from the jacket.
4. **NOTE:** The flue liner top is secured with a wire strap and the strap cannot be removed. Remove flue liner top using the handle provided. **Warning: The flue liner top may be hot, use protective gloves to prevent burns.**
5. Slide the flue baffle out of the primary flue.
6. Apply new seal, part number 225502, to flue liner top before replacing.
7. Reassemble in reverse order of above. **NOTE:** During removal and replacement of the baffle, scale may be dislodged onto the burner. The burner should be inspected and if necessary removed and cleaned prior to lighting the pilot
8. Refit the flue liner top (with dome restraint); jacket top and screws.
9. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
10. Turn gas control to setting noted in step 1 and refit access cover.

## 265/295 Capacity Models

1. Remove the plastic jacket top by gently prising off the water heater.
2. Remove the screws retaining the metal jacket top and remove the top.
3. Remove the insulation pieces noting the order of each.
4. Remove flue liner top using the handle provided. **Warning: The flue liner top may be hot, use protective gloves to prevent burns.** **NOTE:** The flue liner top is secured to the water heater with a wire strap and cannot be completely removed, lay the flue liner top gently against the side of the heater (Refer also to page 9).
5. Remove the flue baffle.
6. Apply new seal, part number 225502, to flue liner top before replacing.
7. Reassemble in reverse order of above.
8. Refit the flue liner top (with dome restraint); jacket top and screws.
9. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
10. Turn gas control to setting noted in step 1 and refit access cover



HOT

## Flue Terminal Assembly

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1. **Remove the access cover and turn the gas control knob to the off position.** Note the current setting on the gas control.
2. **Isolate gas supply at gas cock.**
3. Disconnect the gas line between the gas cock and the gas control.

## 330/360 Capacity Models

NOTE: On models manufactured prior to June 2001 it may be necessary to alter the gas supply pipe when replacing the flue terminal on (refer to page 10).

4. Remove the 3 holding screws from the flue terminal assembly.
5. Gently remove assembly from the jacket.
6. Reassemble in reverse order of above.
7. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
8. **Test for gas leaks using soapy water solution.**
9. Turn gas control to setting noted in step 1 and refit access cover.

## 265/295 Capacity Models

4. Remove the 2 holding screws from the flue terminal assembly.
5. Gently pivot the Flue Terminal Assembly out at the top and lift to remove from the jacket.
6. Reassemble in reverse order of above.
7. Relight the pilot. **Lighting instructions are provided on the access door, follow the instructions carefully.**
8. **Test for gas leaks using soapy water solution.**
9. Turn gas control to setting noted in step 1 and refit access cover.



## Cold Water Connector – 354 Series

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1. **Isolate power and water supplies to the water heater.**
2. **Relieve pressure from water heater through the T & PR valve or a hot tap.**
3. Drain the water heater. Refer to 'Draining the Water Heater on page 35.
4. Remove cold water and cold pipe access covers.
5. Disconnect plastic cold water pipe from cold water connector and unscrew cold water connector from heater.  
**Note:** Removal of the cold pipe requires the use of a special tool, part number 890330. To remove the cold pipe from the cold water connector slide the tool over the pipe and push down against the quick connect fitting whilst pulling up on the cold pipe.
6. Screw new cold water connector into cylinder using thread tape on threaded section.
7. Insert plastic cold pipe into cold water connector snap lock fitting and push down clicking plastic cold pipe into fitting (no tool required).
8. Reconnect cold water supply pipe.
9. Restore water supply and check for leaks.
10. Purge air from the system through hot taps.
11. Refit cold water and cold pipe access covers.
12. Reconnect the cold water plumbing and refill water heater.
13. When tank is full restore electrical supply.

## Temperature Control Valve – 354 / 854 Series

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**A quantity of hot water will discharge from the tank during this process. Personal Protective Equipment should be worn to prevent scalds or burns.**

1. **Isolate the electricity and water supplies to the water heater.**
2. **Relieve pressure from the water heater through the T&PR valve or a hot tap.**
3. Drain the water heater. Refer to procedure on page 28.
4. Remove the temperature control valve and cold pipe access covers.
5. Disconnect cold and warm water pipes from temperature control valve and unscrew temperature control valve from heater.  
**Note:** Removal of the cold pipe requires the use of a special tool, part number 890330. To remove the cold pipe from the temperature control valve slide the tool over the pipe and push up against the quick connect fitting whilst pulling down on the cold pipe.
6. Screw new temperature control valve into heater using thread tape on threaded section.
7. Insert cold pipe into temperature control valve quick connect fitting and push up to click pipe into place (no tool required).
8. Reconnect warm water pipe using thread tape on threaded section.
9. Close hot tap or T&PR valve and restore water supply.
10. Check for leaks.
11. Purge air from the system through hot taps.
12. When tank is full restore electrical supply.

**NOTE:** After replacing the temperature control valve the warm water temperature will need to be checked to ensure correct operation. A reading of less than 50°C should be obtained at the NEAREST warm water tap (refer to 'Outlet Temperature Compensation Adjustment – 354 / 854 Series' on page 31).

### Pressure & Temperature Relief Valve

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**Never fit a PTR valve with a rating higher than that indicated on the water heater rating plate. Do not use reconditioned PTR valves.**

1. Partially drain the water heater (refer to procedure 1).
2. Remove the drain line from the PTR valve.
3. Unscrew the PTR valve and remove.
4. Confirm the replacement PTR valve is the correct rating and refit using thread tape.
5. Refit the drain line.
6. Restore water supply and check PTR valve thread for leaks.
7. Operate the PTR valve lever to reset relief drain.
8. Purge air from the system through hot taps.
9. Restore gas supply and relight the water heater. **Lighting instructions are provided on the access door, follow the instructions carefully.**

### Anode

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**Elevated temperatures may be present. Personal Protective Equipment should be worn to prevent the risk of scalding.**

1. **Isolate gas and water supplies to the water heater.**
2. **Relieve pressure from the water heater through the PTR valve or a hot tap.**
3. Remove the anode cap.
4. Using a 32 mm tube or socket spanner, remove the anode.
5. Apply thread seal tape to replacement anode, refit and tighten.
6. Restore water supply and check anode fitting for leaks.
7. Refit the anode cap.
8. Purge air from the system through hot taps
9. Restore gas supply and relight the water heater. **Lighting instructions are provided on the access door, follow the instructions carefully**

### Gas Control Only – AC3

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1. Drain the water heater. Refer to 'Draining the Water Heater' procedure on page 35.
2. Disconnect pilot feed pipe, burner feed pipe and thermocouple from gas control.
3. Disconnect HT lead from piezo igniter.
4. Using a SIT gas valve removal spanner, unscrew and withdraw gas control from storage tank fitting.
5. Apply thread tape to the replacement gas control and reassemble in reverse order of above.
6. Restore gas supply.
7. Relight the water heater (**Lighting instructions are provided on the access door, follow the instructions carefully**), set the thermostat to the position noted in step 2 and check for gas leaks using a soapy water solution.
8. Replace lower access cover.

## Burner Assembly

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1. **Isolate the gas supply to the water heater.**
2. Remove access cover.
3. Remove single screw retaining burner mounting bracket.
4. Disconnect pilot feed pipe, burner feed pipe and thermocouple from gas control.
5. Disconnect HT lead from piezo igniter.
6. Withdraw burner assembly from water heater.
7. Remove two screws retaining pilot assembly to burner bracket and remove pilot assembly.
8. Loosen two screws on clamp retaining burner feed pipe to burner assembly and remove burner feed pipe from burner assembly.
9. Reassemble in reverse order of above ensuring burner assembly is centred on locating brackets.
10. Restore gas supply.
11. Relight the water heater (**Lighting instructions are provided on the access door, follow the instructions carefully**) and check for gas leaks using a soapy water solution.
12. Replace lower access cover.

## Pilot assembly

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1. Remove the burner and pilot assembly by following steps 1 ~ 7 of procedure 5.
2. Reassemble in reverse order of above ensuring burner assembly is centred on locating brackets.
3. Restore gas supply and check for gas leaks using a soapy water solution.
4. Relight the water heater. **Lighting instructions are provided on the access door, follow the instructions carefully.**
5. Replace lower access cover.

## Thermocouple

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1. Remove the burner assembly by following steps 1 ~ 6 of procedure 5.
2. Unscrew nut retaining thermocouple to pilot assembly and withdraw thermocouple from pilot assembly.
3. Reassemble in reverse order of above ensuring burner assembly is centred on locating brackets.
4. Restore gas supply.
5. Relight the water heater (**Lighting instructions are provided on the access door, follow the instructions carefully**) and check for gas leaks using a soapy water solution.
6. Replace lower access cover.

## Pilot Injector & Pilot Feed Pipe

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1. Remove the burner assembly by following steps 1 ~ 6 of procedure 5.
2. Unscrew nut retaining pilot feed pipe to pilot assembly, remove pilot feed pipe and withdraw pilot injector.
3. Reassemble in reverse order of above ensuring burner assembly is centred on locating brackets.
4. Restore gas supply.
5. Relight the water heater (***Lighting instructions are provided on the access door, follow the instructions carefully***) and check for gas leaks using a soapy water solution.
6. Replace lower access cover.

## Burner Injector & Burner Feed Pipe

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1. Remove the burner assembly by following steps 1 ~ 6 of procedure 5.
2. Loosen two screws on clamp retaining burner feed pipe to burner assembly and remove burner feed pipe from burner assembly.
3. Unscrew and remove burner injector from burner feed pipe and remove any excess thread sealant from burner feed pipe thread.
4. Reassemble in reverse order of above. Use an approved gas thread sealant on injector thread and ensure burner assembly is centred on locating brackets.
5. Restore gas supply.
6. Relight the water heater (***Lighting instructions are provided on the access door, follow the instructions carefully***) and check for gas leaks using a soapy water solution.
7. Replace lower access cover.

## DOCUMENT REVISION HISTORY

Title: 5 Star Gas VE Storage Water Heaters	Document N <sup>o</sup> : TM009
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Rev	Details of change	D.O.I.
A	Service Instructions issued for 850 series Rheem Stellar	14/08/2001
B	All references to Southcorp replaced with Rheem	30/07/2002
C	Manual updated to include changes to jacket and injector sizes	9/05/2003
D	Gas Conversion Procedure Updated	14/09/2007
E	Part numbers for pilot assemblies and LPG pilot size corrected	16/01/2008
F	Name changed to 5 star gas storage. 350 series added.	20/05/2010
G	250265 model added	05/10/2010
H	250265 removed - model not manufactured. Rheem 354 series & Everhot 647 series added. Exploded views and replacement parts lists removed, now form part of SPM-DGS Spare Parts Manual Domestic Gas Storage	09/08/2012
AI	Everhot 250 Series re-added	20/11/2013
AJ	Details on Millivolt meter added for 250, 350, 354 & 850 Series	02/08/2016
AK	Addition of Gas Burner Pressure Adjustment Procedure Addition of Dome restraint to 250, 350 and 354 series heaters	11/10/2017
AL	252 & 854 Series added. Specifications table updated	13/08/18

NOTE: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences which may arise as a result of its application.