

## 8. FAULTS

When the controller detects a fault, the red fault LED flashes (above the *Reset* button) and a fault code is shown on the *Temperature* display.


After the fault has been remedied, the controller can be restarted by pressing the *Reset* button for 5 secs.

The following faults are detected and displayed:-

Temperature display	Description	Possible cause/remedy
10, 11, 12, 13, 14	Sensor fault S1	<ul style="list-style-type: none"> <li>• Check the wires for breaks</li> <li>• Replace S1</li> </ul>
20, 21, 22, 23, 24	Sensor fault S2	<ul style="list-style-type: none"> <li>• Check the wires for breaks</li> <li>• Replace S2</li> </ul>
0	Sensor fault after self-check	<ul style="list-style-type: none"> <li>• Replace boiler sensor S1 and/or S2</li> </ul>
1	Temperature too high	<ul style="list-style-type: none"> <li>• Air in system</li> <li>• Pump does not run</li> <li>• Too little circulation in system, radiators closed, pump setting too low</li> </ul>
2	Exchange S1 and S2	<ul style="list-style-type: none"> <li>• Check the cable loom</li> <li>• Replace S1 or S2</li> </ul>
4	No flame signal after 4 ignition attempts	<ul style="list-style-type: none"> <li>• Gas tap closed</li> <li>• Incorrect ignition distance</li> <li>• Gas inlet pressure too low or disappears</li> <li>• Gas valve or ignition unit does not receive voltage</li> <li>• Further info can be found on Technical Data Sheet TDS012 available on <a href="http://www.atmos.co.uk">www.atmos.co.uk</a></li> </ul>
5	No flame signal after 4 restart attempts	<ul style="list-style-type: none"> <li>• Condensate discharge blocked</li> <li>• Check setting of gas valve</li> <li>• Further info can be found on Technical Data Sheet TDS013 available on <a href="http://www.atmos.co.uk">www.atmos.co.uk</a></li> </ul>
6	Flame detection fault	<ul style="list-style-type: none"> <li>• Replace ignition cable + spark probe</li> <li>• Replace ignition unit</li> <li>• Replace controller</li> </ul>
8	Fan speed incorrect	<ul style="list-style-type: none"> <li>• Fan rubs against casing</li> <li>• Wiring between fan and casing</li> <li>• Check the wires for poor contact (tacho signal)</li> <li>• Replace fan</li> </ul>
29, 30	Gas valve relay fault	<ul style="list-style-type: none"> <li>• Replace controller</li> </ul>

### 8.1 Display last fault code.

It is possible to display the last fault code as follows:

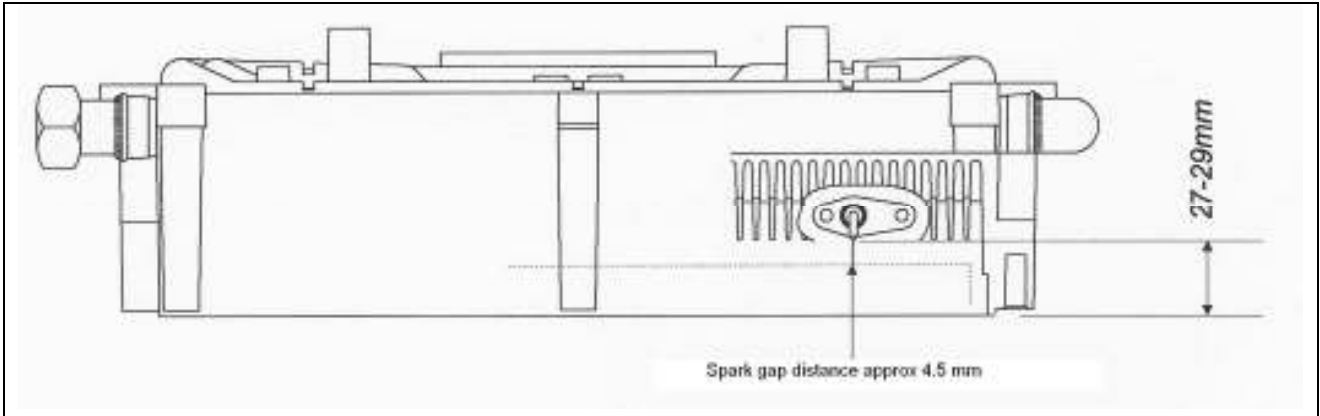
- Set the appliance in the off mode using the *On/Off* key (  on the service display).
- Press the *Service* key, until the last fault code appears flashing on the temperature display. When no fault has occurred no code will be displayed.
- By pressing simultaneously the *Service* key and the “-“ key the fault code will be erased.

## 8.2 Burner does not ignite

Possible causes		Remedies
Gas tap is closed	⇒ Yes	1. Open the gas tap.
↓ No		
Air in the gas pipe.	⇒ Yes	1. De-aerate the gas pipe.
↓ No		
Inlet pressure too low.	⇒ Yes	1. Contact the gas company.
↓ No		
No ignition	⇒ Yes	1. Replace the ignition probe.
↓ No		
No spark. Ignition unit on gas unit faulty	⇒ Yes	1. Check the cabling. 2. Check the spark probe 3. Replace the ignition unit.
↓ No		
Gas-air control not adjusted properly.	⇒ Yes	1. Check the adjustment, see Gas-air control.
↓ No		
Fan faulty	⇒ Yes	1. Check the wiring. 2. Check the fuse. 3. Replace the fan if necessary.
↓ No		
Fan blockage	⇒ Yes	1. Clean the fan.
↓ No		
Gas valve faulty	⇒ Yes	1. Replace the gas valve. 2. Re-adjust the gas valve, see Gas-air control.

## 8.3 Burner ignites with much noise

Possible causes		Remedies
Inlet pressure too high.	⇒ Yes	1. The house gas meter may be faulty. Contact the gas company.
↓ No		
Incorrect ignition distance.	⇒ Yes	1. Replace the ignition probe. 2. Check the ignition probe distance.
↓ No		
Gas-air mixture not adjusted properly.	⇒ Yes	1. Check the adjustment. See Gas-air control.
↓ No		
Weak spark.	⇒ Yes	1. Replace the ignition probe. 2. Replace the ignition unit on the gas valve. 3. Check the ignition spark gap.



#### 8.4 Burner resonates

Possible causes		Remedies
Inlet pressure too low.	⇒ Yes	1. The house gas meter may be faulty. Contact the gas company.
↓ No		
Re-circulation of the flue gases.	⇒ Yes	1. Check the flue gases and air supply.
↓ No		
Gas-air mixture not adjusted properly.	⇒ Yes	1. Check the adjustment, see Gas-air control.

#### 8.5 No heating (CH)

Possible causes		Remedies
Room thermostat/weather-dependent control not closed or faulty.	⇒ Yes	1. Check the wiring. 2. Replace the thermostat. 3. Replace the weather-dependent control.
↓ No		
No voltage (24 V).	⇒ Yes	1. Check the wiring according to the diagram. 2. Check the connector x4. 3. Replace defective controller
↓ No		
Pump does not run.	⇒ Yes	1. Check the voltage. 2. Check the connector x4. 3. Replace defective pump. 4. Replace defective controller.
↓ No		
Burner does not operate on CH: - Sensor S1 or S2 faulty.	⇒ Yes	1. Replace sensor S1 or S2. See Fault code display: 1 or 2.
↓ No		
Burner does not ignite.	⇒ Yes	1. See Burner does not ignite.

## 8.6 Reduced output

Possible causes		Remedies
At high speed, the power has decreased by not more than 5%.	⇒ Yes	1. Check appliance and flue system for pollution. 2. Clean appliance and flue system.

## 8.7 CH does not reach the correct temperature

Possible causes		Remedies
Room thermostat settings not correct.	⇒ Yes	1. Check the setting and adjust if necessary: set to 0.1 A.
↓ No		
Temperature set too low.	⇒ Yes	1. Raise the CH temperature, see CH operation. 2. Check the outside sensor for short circuit: remedy this..
↓ No		
Pump does not run well. Pump setting too low.	⇒ Yes	1. Raise the pump setting or replace the pump.
↓ No		
No circulation in the system.	⇒ Yes	1. Check for circulation: at least 2 or 3 radiators must be open.
↓ No		
The boiler power is not set well for the system.	⇒ Yes	1. Adjust the power, see Setting maximum CH power.
↓ No		
No heat transfer due to scaling or pollution in the heat exchanger.	⇒ Yes	1. Descale or flush the heat exchanger on the CH side.

Table 6. NTC resistances

NTC 12 kOhm					
T [°C]	R[ohm]	T [°C]	R[ohm]	T [°C]	R[ohm]
-15	76020	25	12000	65	2752
-10	58880	30	9805	70	2337
-5	45950	35	8055	75	1994
0	36130	40	6653	80	1707
5	28600	45	5522	85	1467
10	22800	50	4609	90	1266
15	18300	55	3863	95	1096
20	14770	60	3253	100	952

## 9. SERVICING THE BOILER AND COMPONENT REPLACEMENT

### 9.1 SERVICING THE BOILER

The appliance and the system should be serviced annually by a qualified service engineer.

For appliances connected to propane gas, a six monthly service in the first two years to simply clean the condensate trap and pipe may be necessary. Due to the nature of propane gas, a jelly like substance can build up in the trap, causing it to become blocked.

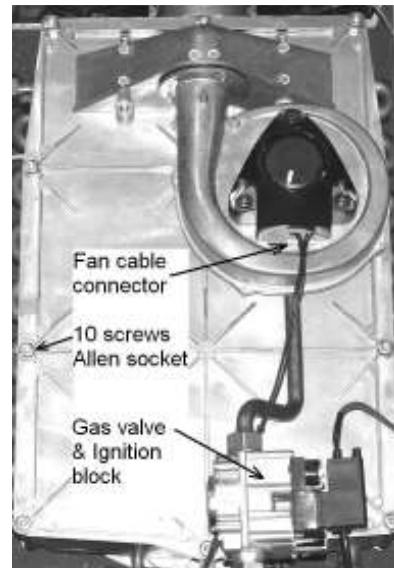
#### 9.1.1 Preparation

Switch off the appliance using the *On/Off* button on the operating panel. Switch off the electrical supply to the appliance.

Close the gas tap.

Unscrew the two recessed screws left and right at the front underneath the appliance and lift/remove the front panel. See photo in §4.4.3.

Wait until the appliance and the burner have cooled down.



#### 9.1.2 Checking the heat exchanger and spark ignition probe

Remove the connector from the fan and the ignition block from the gas valve.

Disconnect the lower gas valve union.

Unscrew the 10 socket screws (Allen socket M8x40) from the front cover and remove this forwards complete with gas valve and fan.

While removing the front cover do not hold this at the gas valve or the fan.

**Be careful not to damage the burner and the fan while removing the front plate.**

**The burner does not need any maintenance.**

**Never clean the burner with a brush or compressed air. This causes damage to the metal fibre.**

Check the spark ignition probe and gently clean any deposits. As the spark gap cannot be checked directly, use a flat surface across the corner of the heat exchanger to measure the distance to the probe. See the diagram in §8.3. The distance should be in the range 27 to 29mm.

Replace the probe if necessary.

Remove the baffles that have been placed crosswise in the fins of the heat exchanger.

If necessary, clean the baffles and the fins of the heat exchanger from top to bottom with a brush or with compressed air.

Clean the bottom of the heat exchanger and disconnect and clean the black plastic condensate sump at the bottom of the flue discharge behind the heat exchanger.

Reassemble the baffles in the heat exchanger.

Check the silicone gasket of the front cover for damage (hair cracks and/or discolouring) and replace if necessary.

Mount the front cover to the heat exchanger and attach this with the socket screws with spring washers. Crosswise tighten the socket screws evenly by hand. Using an Allen key, tighten the screws so that the front cover is closed onto the heat exchanger all round the edge, and then tighten them hand tight (approximately 10 Nm torque).

Make sure that the silicon gasket is well placed around the front cover.

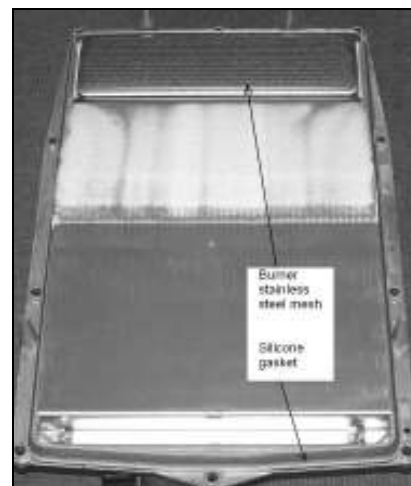
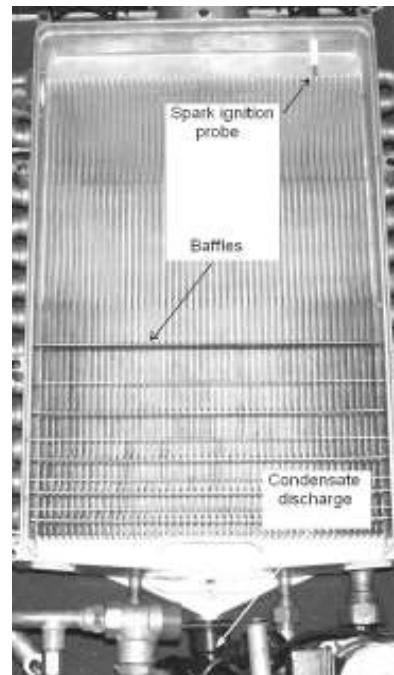
Reconnect the gas union below the gas valve.

Check the sealing ring for damage and replace if necessary.

Fit the connector on the fan and the ignition block on the gas valve.

Open the gas tap and check the gas couplings below the gas valve and on the mounting bracket for leaks.

Switch on the electrical supply to the appliance



Switch on the appliance, using the *On/Off* button on the operating panel. Check the front cover and the connection of the fan to the front cover for leaks.

### 9.1.3 Checking the condensate discharge

See the diagram in §4.6.

Clean the condensate trap and the condensate discharge pipe.

After cleaning, fill the trap with water.

### 9.1.4 Inspect air supply / flue gas discharge system

Inspect the air supply / flue discharge system throughout its entirety, ensuring that it is in sound condition with no damage to the pipes or joints. Inspect the terminals ensuring that they are clear and unobstructed.

### 9.1.5 Checking the gas-air control

Check the gas-air control as given in §7.7, and adjust as necessary.

### 9.1.6 Check the CO/CO<sub>2</sub> ratio

The CO/CO<sub>2</sub> ratio should be checked on each service. See §7.7 and §7.8

### 9.1.7 Completion of inspection and service

Fit the front panel and replace the screws at the bottom of the appliance.

Check the heating system for leaks and check the boiler, controls and system for correct operation.

Check the corrosion inhibitor concentration level within the CH system, topping up when necessary.

#### Note

After servicing, the Benchmark Checklist and Service Record (located at the back of this manual) must be completed and signed and the manual left with the customer.

## 9.2 COMPONENT REPLACEMENT

### 9.2.1 Preparation

Switch off the appliance using the *On/Off* button on the operating panel.

Switch off the electrical supply to the appliance.

Close the gas tap.

Unscrew the two recessed screws left and right at the front underneath the appliance and lift / remove the front panel. See photo in §4.4.3.

Wait until the appliance and the burner have cooled down.

Note – When removing cables / wires to the controller, the cable clamp must be released first by unscrewing 2 posidrive screws and the controller hinged down by unscrewing 2 posidrive screws as shown in diagram §5.3.

### 9.2.2 Gas valve / ignition block

**Note: The gas valve is factory-preset and therefore only Atmos or their agents can supply these.**

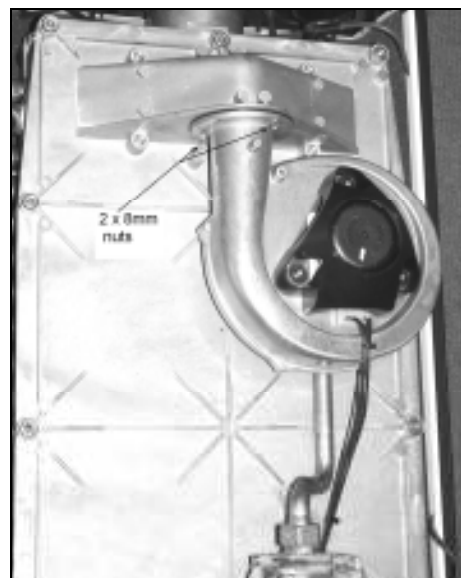
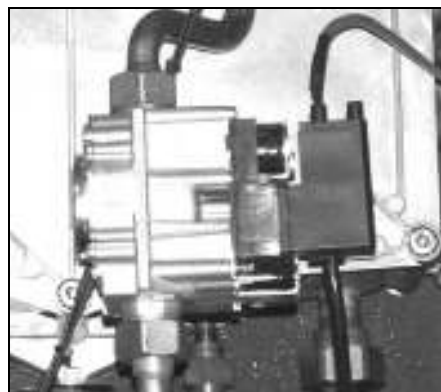
Remove the spark ignition block by removing the Torx T10 screw and pulling apart horizontally. Undo the upper and lower unions, making sure that the 'O' rings and gas setting ring are not lost or damaged (see diagram in §7.6). Replace the gas valve, and refit the 'O' rings, the gas setting ring, the unions and the ignition block.

Note: After replacing the gas valve, carry out the gas analysis adjustments and the CO/CO<sub>2</sub> ratio check as given in §7.7 and §7.8.

If replacing the ignition block, then pull apart as above. Remove the push-fit cable to the probe and undo the X1 connections at the controller and earth. Replace the ignition block and make the connections.

### 9.2.3 Fan

Remove the electrical connector. Undo the upper union from the gas valve. Undo the two 8mm nuts as shown in the photo. Remove the assembly including the sealing ring. Undo the three Allen screws (M4x10) to remove the gas inlet sub assembly. Fit the replacement fan in reverse order. Check the sealing ring is not damaged and replace if necessary

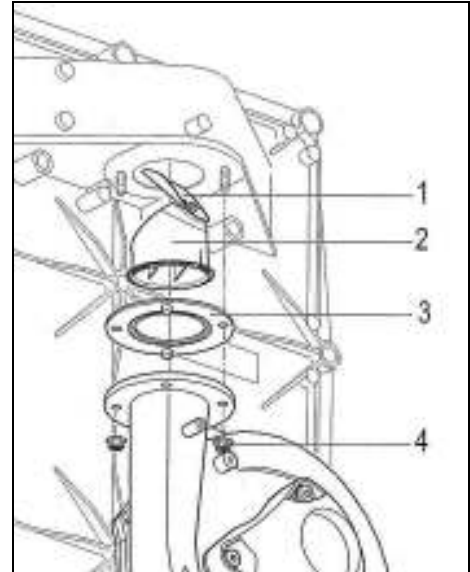




and check that it seals correctly. See also §9.2.4 below for appliances fitted with Non Return Valve (flue gas).

#### 9.2.4 Note for CFS systems with Non Return Valve (flue gas)

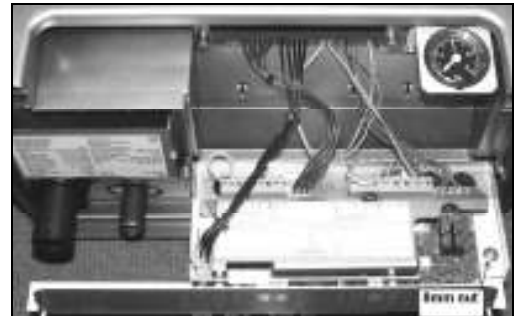
When refitting the fan, the NRV MUST be refitted (see diagram). Fold the silicon valve (1) of the NRV carefully into a U-form. Place the valve + holder (1+2) into the hole of the front plate, making sure the valve is placed in the correct position (direction toward the front plate as shown). Replace the fan + seal back on the front plate, and screw both nuts (4) tight, making sure the valve stays in the right position.



#### 9.2.5 Controller

If possible, record the parameter settings as described in §Error! Reference source not found.. Remove the display cover and undo the two posidrive screws to drop down the controller panel as shown in the diagram in §5.3.

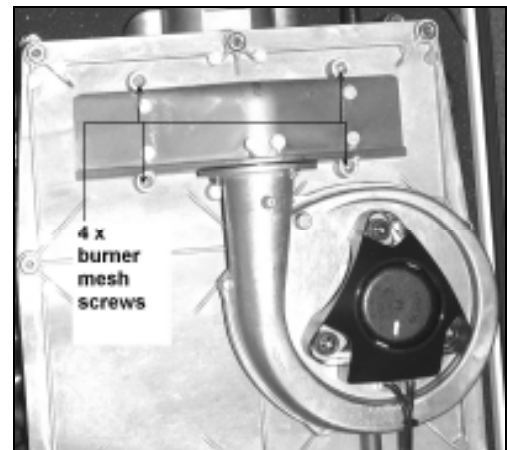
Pull apart the connectors and undo the 8mm nut to allow the controller assembly to be removed and replaced. After replacement, set the parameters to the required settings as described in §Error! Reference source not found.and §Error! Reference source not found..



#### 9.2.6 Burner / spark ignition probe

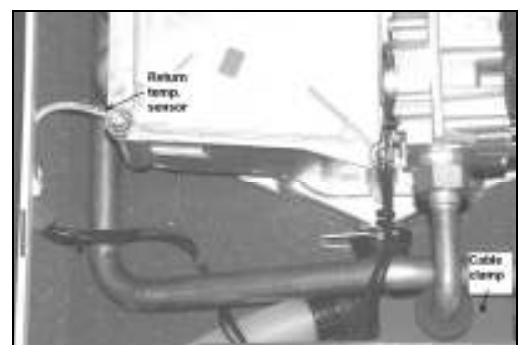
Remove the front cover of the heat exchanger as described in §9.1.2. Unscrew the 4 screws shown on the photo to allow the stainless steel burner mesh to be removed. These screws are Torx 20 (RVS A2 4,2x25") or Allen bolt M4x20 (units before 2006). The burner gasket should be checked and replaced if damaged. Replace the burner mesh assembly and refit the screws.

The spark ignition probe is shown in the photo in §9.1.2 and also the diagram in §8.3. To replace the probe, pull off the ignition cable and unscrew the 2 screws (Allen bolt M4x8). The seal should be checked and replaced if damaged. Replace the probe and refit the seal and the screws. Check the spark gap and replace the front cover, as described in §9.1.2.



#### 9.2.7 Flow / return temperature sensors

The supply temperature sensor is located above the return temperature sensor. The latter is shown in the photo. Disconnect the two pin connector and release the spring clip. Pull out the sensor and replace.



## 10. TECHNICAL SPECIFICATIONS

<b>Appliance category</b>	B13; B33; C13; C 33; C 43; C53; C63; C83
Gas inlet pressure	20 mbar
Suitable for gas	II <sub>2</sub> H <sub>3</sub> P

<b>Technical data</b>			
	InterOpen HE 22		

<b>CH</b>			
Heat power input (gross)*	kW	7.0 – 26.3	
Heat power input (net)*	kW	6.3 – 23.7	
Heat output at 80/60°C*	kW	6.1 – 22.7	
Heat output at 50/30°C*	kW	6.7 – 23.1	
Max. CH water temperature	°C	90	

<b>Other data</b>			
Gas consumption	m <sup>3</sup> /h	0.66 – 2.29	

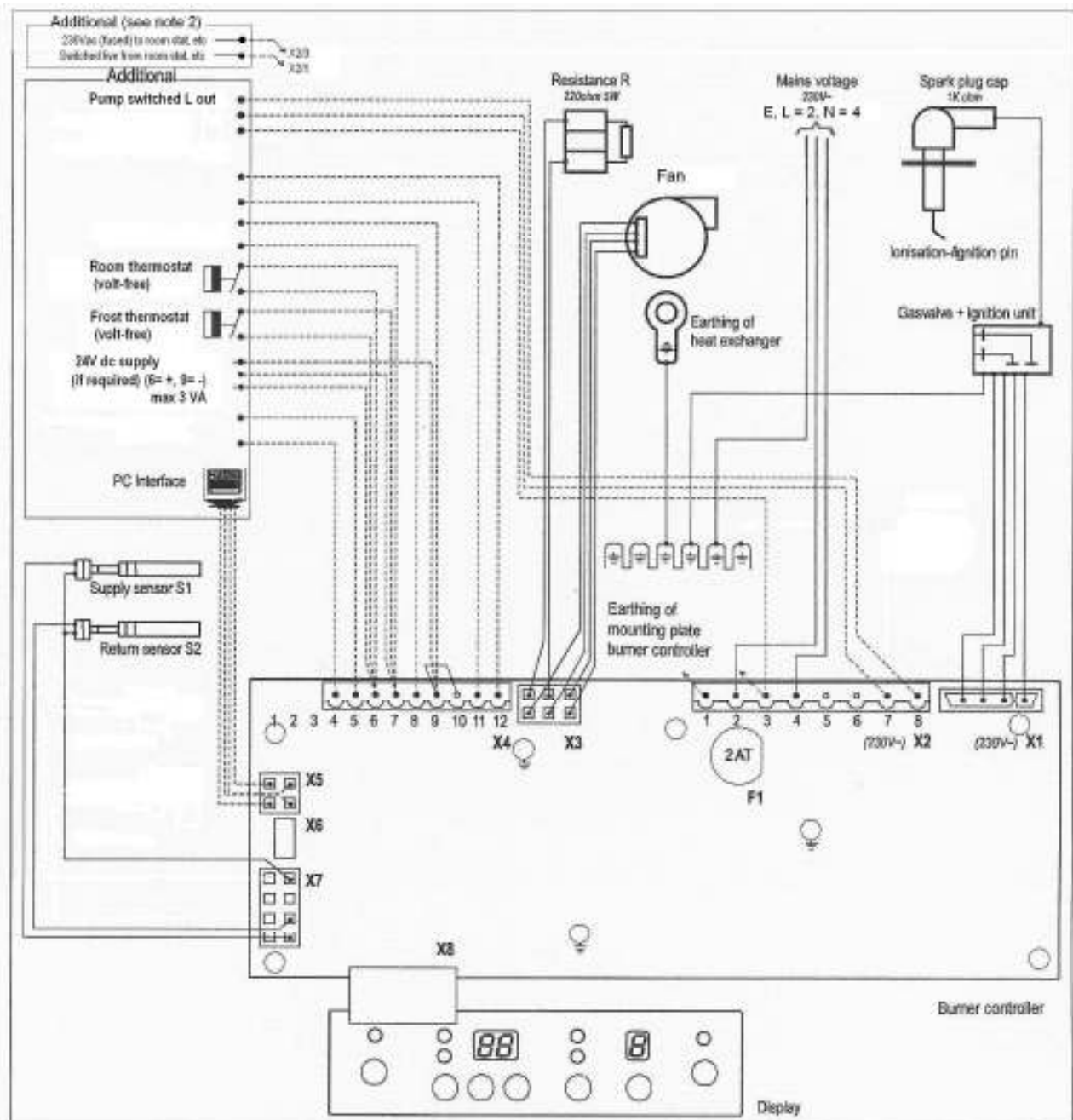
<b>Electrical data</b>			
Mains voltage	V	230	
Protection class		IP44 (B(.)=IP20)	
Consumed power: full load	W	40	
Consumed power: partial load	W	15	
Consumed power: standby	W	2.4	

<b>Overall dimensions and weight</b>			
Height	mm	750	
Width	mm	450	
Depth	mm	270	
Weight	kg	34	

\*The maximum CH power is set to 65% of the highest value at the factory (see Setting CH power).



## 10.1 Electrical diagram



### Notes

1. **F1:** 5x20mm anti-surge fuse, 2A.
2. **230Vac stat circuit:** Available for room stat, etc. The switched live can also be used for S plan or Y plan circuits (note that the 230Vac live to the Wiring Centre must come from the same fused spur as the 230Vac supply to the boiler).
3. **External pump:** A switched live output X2/8 (X2/7 = N) is available for a pump if the heating system requires pump overrun. Note that the appliance itself does not require this feature.

## 11. CE DECLARATION

Declaration of conformity according to ISO IEC GUIDE 22.

Manufacturer: Atmos Heating Systems  
Address: West March, DAVENTRY, Northants, NN11 4SA

Hereby declares that the application:

Atmos, Type InterOpen HE22

Meets the stipulations of the following directives:

- Machine directive (89/392/EC) as amended in directive (93/68/EC)
- Low voltage directive (73/23/EC) as amended in directive (93/68/EC)
- Directive concerning gas appliances (90/396/EEG)
- Boilers Efficiency Directive for new oil and gas fired central heating boilers (92/42/EC)
- EMC Directive (89/336/EC) as most recently amended in directive (93/68/EC).

Daventry, 5 January 2010



J.A. Thomason BSc (Eng)  
Director





# Service Record

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

## Service Provider

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

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

### Service 1 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 2 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 3 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 4 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 5 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 6 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Operative ID No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 7 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 8 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 9 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

### Service 10 Date: \_\_\_\_\_

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

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

Telephone No. \_\_\_\_\_

Gas Safe Register No. \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

