Guide to correct operation of the 0537402 ABC Ignition and Flame Failure module.

System Checks: -

To check the operation of the 537 ABC you will require a digital multi-meter with the functions to measure AC/DC Voltage, Continuity or Resistance and Micro-Amps.

It is critical that the appliance is earthed and that the active and neutrals are not reversed.

For an initial inspection, turn off the power supply and check wiring for continuity. This also applies to the Electrode and Flame rod wiring.

Check the Electrode and Flame Rod ceramic insulators for signs of cracks. Cracking can cause leakage to earth of high voltage (HT) of spark igniter and loss of flame rod signal.

Check that the connections are according to the wiring diagram.

An internal fuse of 3.5amp (Fast blow) is located inside the box. It can be replaced if required.

Spark Ignition electrode gap should be 2 – 4mm.

Flame sensitivity lockout value is 0.5µA. (Micro-amps).

We recommend that a stable value of greater than 1.5 µA is an acceptable measurement for a normal flame signal. This can be measured using a micro-amp meter in series with the flame rod output.

Connections.

Terminals 5, 6 and 7 are bridged.

Terminals 10 is the Active supply.

Terminals 11 is the Neutral connection.

Terminal 12 is the Earth connection.

Terminal 13 is a Neutral connection.

Terminal 14 is an Active connection only when the Flame is on.

Fault Finding.

No Ignition when appliance is turned on.

If there is power to terminal No: 10 but the heater is not operating, the 537 ABC Module may be in the lockout mode. To reset the 537 ABC, turn off the power supply for 10 secs and then turn the power on again.

If terminal 10 is active, check the internal 3.5amp fuse.

If the fuse is OK and there is power to terminal 10, check other connections are in place.

If these checks are correct, the ignition electrode should spark at the same time as the gas control solenoid valves open. At this point the Spark Electrode will activate for up to 10 seconds maximum until the flame has been established. Terminal 14 will be active as soon as the flame has been sensed. If the 537 is still not operating continue with the following checks.

Electrode and flame rod check.

If there is no spark, check the continuity of the HT cable. Check both the Flame rod and spark electrode so that there is no short circuit to earth and spark gap is correct. A positive check on the spark is to use a jumper wire and connect one end to earth and hold the other end with insulated pliers 4mm from the Spark Generator on the 537 ABC. If there is no spark to earth then change the module.

Sigma Gas Control

The gas valve should open at the same time that the Igniter sparks. If there is no gas to the burner when this occurs, check the solenoid coils for continuity. EV1 coil resistance is 0.8 – 0.9k Ohms. EV2 coil resistance is 6 – 7k Ohms. Check that the gas pressure regulator has been adjusted to allow gas to flow. Check that there is gas to the inlet of the appliance.

If a Sigma 845 is used there is a 0-17 vdc blue modulating coil attached. There are various methods of controlling this coil but measurement can be checked using a multimeter in series. The value of the coil changes from 0 – 165 milliAmp depending on the high/low range being controlled. If the connection is removed the modulating valve drops to the minimum setting of the regulator.

The maximum setting of the control should be made with the modulating coil in full mode. The 10mm brass hex nut is used to set Gas Pressure. The plastic cross slotted screw is adjusted to set minimum gas pressure when power to coil is removed.

Appliance ignites but goes to lockout.

If there were no faults with the gas control this would indicate that the Flame Rod circuit requires to be checked. Make sure there is correct earthing of the appliance including the burner or chassis. Check flame rod cable for continuity making sure there is no short-circuit to earth and there is the correct gap between the probe and the burner. To test the flame for the correct ionisation signal, you must connect a multi-meter in series with the flame rod and set the function to measure micro-Amps. The module will go to lockout if the flame current sensitivity is less than 0.5 micro-Amps. The approximate signal strength on high flame can be about 10 micro-Amps and on low it could be approximately 4 micro-Amps. The signal strength will fluctuate but should be greater than 1.5 micro-amps at all times.

Please take precautions because the ionisation probe can have a high negative voltage and can cause shock.

Fuse blowing continually.

Should the fuse continue to blow. Please check the solenoid coils for any sign of them being shorted. If you remove the 537 ABC from the gas control you can still start the ignition sequence on the appliance as this will eliminate the coils. If the fuse still blows then checks need to be carried out on the Fan and wiring for short circuits.