JEM Smoke Machine Training Program

INDEX

An Introduction To Smoke Technology:

Smoke Machine Markets 3
Smoke Machine Principles 3
CE Marking 4
Searching for information on the NET 5
Which fluid can I use with my machine? 6
What can my machine do? 6
Specifications 6

Service of machines:

Tools and optional extras 8
Machine Overview 9
Opening The Machine 10
Inside The Machine 10

How To...

How To Change A Heat Exchanger 11
How To Change A Pump 12
How To Change A PCB Control PCB 13 13
Calibration 14

Spare Parts Lists:

Spare Parts 240V 15
Spare Parts 110V 16

Appendix:

Fuse Ratings 16
PCB Schematics 17
AN INTRODUCTION TO SMOKE TECHNOLOGY

**Smoke Machine Markets**

Jem / Martin smoke machines are categorised into 2 ranges: The *Professional* and the *Club / DJ* range.

If a product is branded as a “Martin” product this is aimed at the *Club / DJ* market.

All products branded as a “JEM” product are classed as *Professional* and are aimed at the higher end touring / installation market.

All JEM / Martin Smoke products can be used across both of the different markets without any **compromise of performance or features**.

**Smoke machine principles:**

All JEM / Martin *conventional* smoke machines utilise the same technology:

**In Brief:**

When the *run button* on the *remote* is pressed, *smoke fluid* is pumped from a removable *container* situated within the machine via the flexible fluid pipe into an *oscillating piston pump*.

The *fluid* passes through the *pump* and enters the *heat exchanger* were the *fluid is vaporised* and exits as thick, white *smoke*.

The *heat exchanger* is comprised of a *heating element* and a *coil* of copper or steel tubing between 3 and 6 metres in length. This is cast into a mass of *aluminium*.

The *heat exchanger* is heated via the *heating element*.

This is controlled by a *J Type thermocouple* fitted to the *heat exchanger*.

The *temperature* is determined by the *calibration* of the *main control PCB*.

Once the working *temperature* is reached, the *main control PCB* will allow the *pump* to be operated and the machine will now be ready to *run*.

**Haze machine principles:**

The JEM ZR24/7 and Magnum Hazer work on the same smoke generation principles as the JEM / Martin smoke machines.

The only difference is the smoke output on a hazer exits into a *metal chamber* where there is a *fan* creating a *fast moving air stream*. This air stream *disperses* the smoke output and creates the *haze*.

Again the principles are identical to that of a *conventional* smoke machine.

There is a *pump*, *heat exchange*, *PCBs* and *onboard controls*. The major difference is the *air chamber*. A *radial fan* is used with this system. It is used to allow the exiting smoke to have the *maximum dispersal*.

As with several of the smoke machines, the haze machine has a *low fluid shut off* system. This is an *electronic temperature control device* that measures the *temperature* of the *heat exchange* over a short period. If the *temperature* has not changed but the unit has been *pumping*; the unit will assume that the system has *run out of fluid* and shut down. *This prevents the system from running dry and burning out the pump.*
**CE mark**

All products that are produced by JEM / Martin carry the **CE Certification**. These products meet the requirements of the following **EC Standards** and as such, comply with the **EMC (Electromagnetic Compatibility)** and **LVD (Low Voltage Directives)**, directives of the **European Community**:

- **EN 50 082-1 1992**  Generic Immunity Standard for domestic and light Industrial environments.
- **EN 60 335-1 1995**  Safety of household and similar electrical appliances

These standards reference the following European standards:

**Emissions:**
- **EN 55 022 /B**  RF voltage and field strength
- **EN 60 555**  Harmonic current content
- **EN 55 014**  RF voltage (discontinuous)

**Immunity:**
- **IEC 801-2**  Electrostatic discharge to case
- **IEC 801-4**  Common mode fast transients

These standards also meet the requirements of **CISPR 22**.

JEM did not carry the **CE** mark on products that were produced prior to 1995. These products can be identified by either the **DIN/XLR** socket on the rear or top of the unit or the **Mains PCB**:

- If the unit has a **5 pin DIN** or a **4 pin XLR** without the **CE** text on the rear, the unit is classed as **NON-CE**.
- If the PCB has a **12 pin Molex** connector fitted to it, this is classed as a **NON-CE** unit.
Searching for information on the INTERNET

If you require information with regards to JEM / Martin Smoke, Haze and Heavy Fog products an ideal place to start is the Internet.

Martin has a dedicated team of staff who are constantly monitoring and updating the information that is placed onto the INTERNET. This is to ensure that the best possible service is being given to not just dealers and end users but also to internal staff.

Locating information is simple:

First go to: www.jemsmoke.com

Here you will find information on all of our current range of products including news, bulletins, specifications and even videos of machines in action.

To access support information:

On the left hand side of the screen there are several different categories.

Click on SUPPORT.

This will bring you to the SMOKE USER SUPPORT page.

If you have a LOGIN NAME AND PASSWORD then press the LOGIN icon at the top of the page and enter your username and password into the relevant boxes.

(If you do not have a LOGIN NAME you can still use the site, just with limited access to information)

Select SMOKE from the menu on the left hand side.

Go to the PRODUCTS MENU and choose the PRODUCT you require information on.

Now go to the CATEGORY menu and select which piece of information you require (parts, manuals, etc)

Once you have done this press the SEARCH icon.

All of the information relevant to the product you have chosen will now be displayed.

A LOGIN is required for access to TECHNICIAN and DISTRIBUTOR SUPPORT areas.

Please direct all inquires regarding access to your national distributor.
Which fluid can I use with my machine?

<table>
<thead>
<tr>
<th>Fluid Type</th>
<th>MAGNUM 800</th>
<th>Pro-Smoke Studio DX Mix</th>
<th>Pro-Smoke Super ZR Mix</th>
<th>Pro-Smoke High-dcnsity SP Mix</th>
<th>I-Fog</th>
<th>Reg. DJ Fluid</th>
<th>Party Pack</th>
<th>Pro Haze</th>
<th>Heavy Fog Fluid B2 Mix</th>
<th>Heavy Fog Fluid C3 Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>X=NO O=YES</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td></td>
<td>O</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

What can my machine do?

Dance clubs and discos the world over greatly appreciate this industry workhorse. This reliable yet compact fog machine delivers a non-stop intense cover of fog for instant atmosphere generation – a must for any mobile DJ or small club.

Easy to operate with a convenient carrying handle and portable design, the Magnum 800 uses the same high technology standards found in the larger Magnum 2000.

The Magnum 800 is tough and rugged, the perfect fogger for small nightclubs, mobile DJs and bands. It is also a useful fogger for parties and celebrations.

Specifications:

**Physical**
- Length: 410 mm
- Width: 165 mm
- Height: 170 mm
- Dry weight: 6.5 kg

**Performance**
- Max. smoke output (approx.): 200 m³ per minute
- Max. operating time at full output (approx.): 38 mins
- Operating time: Continuous, automatic level adjustment
- Warm-up time: Approx. 7 minutes

**Control and Programming**
- Control options: Remote control (supplied) or DMX with optional DMX interface module
- Remote control features: Instant or timer-controlled output, 0-100% adjustable output level

**Fluid System**
- Fluid pump: Oscillating piston, high pressure
- Onboard fluid capacity: 1 l
- Max. fluid consumption at peak output: 50 ml per minute

**Construction**
- Housing: Steel & aluminium
- Heat exchanger: 750 W, direct thermal protection

**Installation**
- Orientation: Floor (No Flying Kit Available)

**Connections**
- Remote control: 5-pin DIN
- Power connection: 3-pin IEC male socket
- DMX (with optional DMX interface): 3-pin locking XLR
Electrical
AC power (EU models): 220-240 V nominal, 50 Hz
AC power (US models): 110-120 V nominal, 60 Hz
Main fuse (220-240 V power): 5 AT (slow blow)
Main fuse (110-120 V power): 10 AT (slow blow)

Typical Power and Current
US model
110 V, 60 Hz: 820 W, 7.45 A
115 V, 60 Hz: 896 W, 7.79 A
120 V, 60 Hz: 975 W, 8.13 A
EU model
220 V, 50 Hz: 630 W, 2.86 A
230 V, 50 Hz: 689 W, 3.00 A
240 V, 50 Hz: 750 W, 3.12 A
Measurements made at nominal voltage. Allow for a deviation of +/- 10%.

Thermal
Maximum ambient temperature (Ta max.): 40° C
Exterior surface temperature, steady state: 50° C
Max. nozzle temperature: 200° C

Approvals
EU safety: EN 50 081-1, EN 50 082-1
EU safety: EN 60 335-1 (1995)

Accessories
Pro Smoke Studio (DX Mix) fluid, various sizes available
Pro Smoke Super (ZR Mix) fluid, various sizes available
Pro Smoke Super (Fragranced) fluid, various sizes available
Pro Smoke High Density (SP Mix) fluid, various sizes available
I-fog fluid, various sizes available
Ducting Kit (Including adapter and 5m of 4-inch (104mm) ducting): P/N 92625004
DMX Interface ZR12: P/N 92765015

Ordering Information
Martin Magnum 800, 110 V: P/N 92220001
Martin Magnum 800, 240 V: P/N 92220000

Service Info (internal only - do not publish)
Cooling time before service or maintenance: 15 minutes
Minimum clearance around air vents: 0.20 m
SERVICE OF MACHINES

TOOLS AND THINGS:

For successful servicing of a machine you will need some basic tools which are in good working order and the right size for the job. Other tools / equipment are available for specific jobs but in most cases these are not needed for general service.

Equipment needed:

Screwdrivers
- Pozidrive, size 1 and 2
- Flat tip, size small and medium

Wrenches
- 7mm
- 12mm x2

Pliers
- Needle Nose, small
- Wire Cutters, small

Digital Multi Meter (With ability to measure mV)

Additional Items / recommended:
- Cable Ties (p/n 13104000)
- Silicone Sealant
- JEM Calibration Box (p/n 92620005)
- Paper towels (or other absorbent material)
- Ammeter (For measuring current draw of machine – could be handheld or bench mounted)
- Epsilon 5 Portable ISP Programmer (p/n 50502004)
- Common Sense !!

WARNING – MAINS VOLTAGE
DISCONNECT FROM MAINS SUPPLY BEFORE REMOVING COVERS AND SERVICING THIS MACHINE

PROCEED WITH EXTREME CAUTION
MAGNUM 800 MACHINE OVERVIEW

The Outside:

ANALOGUE CONTROL

Dimensions:
- Length: 410mm
- Width: 170mm
- Height: 165mm

First Angle Projection Measurement without tolerance to DS/ISO 2768
Opening The Machine:
1. **DISCONNECT FROM MAINS SUPPLY.**
2. Remove the 6 M4x10 pozidrive TAPTITE screws from the outside of the machine and store safely.
3. Lift off the lid.

The Inside:
HOW TO....

REFER TO SCHEMATICS / DIAGRAMS IN THE APPENDIX FOR MORE DETAILS

How To Change A Heat Exchange:

1. Always try to change a HEAT EXCHANGE when it is cold as the exposed metal parts can be VERY HOT.
2. DISCONNECT FROM MAINS SUPPLY.
3. Remove TOP COVER.
4. Disconnect the THERMOCOUPLE from the MAIN PCB.
5. Disconnect the HEAT EXCHANGE POWER WIRES from the terminals of the PCB.
6. Remove the negative (BLUE) wire from the heater.
7. Undo the brass nut that connects the BRASS ASSEMBLY to the HEAT EXCHANGE and disconnect the fluid line from the pump.
8. Undo the 4 screws that hold the HEAT EXCHANGER to the CHASSIS.
9. Withdraw the NOZZLE of the heater through the hole and remove the heat exchange from the chassis.

Refitting Your New Heater:

1. Replace heat exchange in chassis NOZZLE FIRST.
2. Screw the 4 screws back in through the bottom of the chassis
3. Replace the negative (BLUE) wire to the HEAT EXCHANGER ELEMENT.
4. Reconnect the HEATER POWER wires to the TERMINALS of the PCB.
5. Using a NEW OLIVE refit the COPPER FLUID LINE to the PUMP.
6. RECALIBRATE the temperature of the unit. (See Calibration Section)
How To Change A Pump:

1. **DRAIN ALL FLUID FROM THE SYSTEM FIRST.**
2. **DISCONNECT FROM MAINS SUPPLY.**
3. Remove **TOP COVER.**
4. Disconnect the **POWER** wires from the **PUMP.**
5. Disconnect the **BLACK RUBBER FLUID LINE** from the rear of the **PUMP.**
6. Move the fluid line out of the way. *(BE CAREFUL OF FLUID COMING BACK DOWN THE PIPE)*
7. Disconnect the **COPPER FLUID LINE** from the front of the pump.

8. Unhook the rear **RUBBER MOUNT** from the pump.
9. Withdraw the pump from the front **RUBBER MOUNT.**
10. Remove the **PUMP** from the machine.
11. Remove the **BRASS FITTING** from the front of the **PUMP.**
REFITTING:

12. Fit the **BRASS FITTING** to the front of the pump using a **THREAD SEALANT COMPOUND**.
13. Fit the new **PUMP** to the **CHASSIS** by inserting the front end first into the **RUBBER MOUNT**.
14. Hook the rear mount onto the back of the pump.
15. Reconnect the **BLACK RUBBER PIPE**.
16. Reconnect the **POWER** wires to the **PUMP – BROWN INSIDE / BLUE OUTSIDE**.
17. Turn machine on and **RE-PRIME** the system.
18. Refit **TOP COVER**.

How To Change A PCB:

**REFER TO SCHEMATICS / DIAGRAMS IN THE APPENDIX FOR MORE DETAILS**

![PCB Image]

**PCB**

1. **DISCONNECT FROM MAINS SUPPLY**.
2. Remove **TOP COVER**.
3. Remove the 2 screws at the bottom of the **PCB HEATSINK** from **INSIDE THE HEATER COMPARTMENT**.
4. Disconnect the **PCB WIRING LOOMS** from the **PCB** (Note orientation before removal).
5. Remove the 2 **PLASTIC RIVETS** from the 5-pin din socket.
6. The PCB is mounted on 2 mounting posts which will need to be squeezed to remove the pcb.
7. Remove the HEATSINK from the PCB by removing the 2 screws/nuts/washers.

REFITTING:

8. Fit the HEATSINK to the PCB using the 2 screws/nuts adding THERMAL TRANSFER PASTE underneath component Q6.
9. Fit new PCB to the mounting posts.
10. Insert the 2 PLASTIC RIVETS into the din socket.
11. Insert the 2 screws into the heatsink from the heater compartment.
12. Reconnect the PCB WIRING LOOMS (Observe polarity).
13. Refit the TOP COVER.

Calibration:

1. Set the JEM CALIBRATION BOX to the required mV setting (13.4mV).
2. Make sure the RAMP BUTTON on your CALIBRATION BOX (GREY) is OFF.
3. Remove the TOP COVER.
4. Disconnect the THERMOCOUPLE from the PCB.
5. Connect the RED TERMINAL of the CALIBRATION BOX to the POSITIVE (+) THERMOCOUPLE connector of the PCB.
6. Connect the BLACK TERMINAL of the CALIBRATION BOX to the NEGATIVE (-) THERMOCOUPLE connector of the PCB.
7. Turn the machine on and tweak the TEMPERATURE CALIBRATION POT until the RED (HEATING) LED FLASHES.

8. IF YOU PRESS THE RAMP BUTTON IN THE LED SHOULD GO OUT AND COME BACK ON AGAIN WHEN YOU RELEASE THE BUTTON.
9. Disconnect the CALIBRATION BOX from the THERMOCOUPLE connectors.
10. Replace the THERMOCOUPLE onto the DMX/PROGRAM PCB (PRE 11/06: YELLOW = + BLUE = - / POST 11/06: BLACK = + WHITE = -)
11. Turn the machine on and check for current draw.
12. Let the machine heat up and check using a digital volt meter that the RED (HEATING) LED turns OFF at the correct point.
13. The GREEN (OK) LED should turn on about 1mV lower than the peak temperature setting. 
   (RED LED TURNING OFF)
14. TEMPERATURE CALIBRATION IS NOW COMPLETE.
## Spare Parts Lists

### 240V

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Spare Part Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUMP</td>
<td>PUMP</td>
<td>05761003</td>
<td>240V RED BODY (LARGE)</td>
</tr>
<tr>
<td>PCB</td>
<td>MAIN</td>
<td>62020005</td>
<td>MAIN CONTROL PCB - TESTED TESTED w/o BUTTON TOPS OR KNOBS</td>
</tr>
<tr>
<td>PCB</td>
<td>REMOTE</td>
<td>62020008</td>
<td></td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE COMPLETE</td>
<td></td>
<td>COMPLETE BUILT UP HEAT EXCHANGE c/w BRASS FITTINGS</td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE BARE inc BRASSWORK</td>
<td>26400630</td>
<td>BARE EXCHANGE (No insulation or casework) c/w BRASS FITTINGS</td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE BRASSWORK ONLY</td>
<td>26460030</td>
<td>BRASS FITTINGS ONLY CASEWORK AVAILABLE SEPARATELY - CONTACT <a href="mailto:jem-service@martin.dk">jem-service@martin.dk</a></td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE CASEWORK</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE INSULATION</td>
<td>26520010</td>
<td>PRE CUT INSULATION KIT</td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE THERMAL TRIP ONLY</td>
<td>05041021</td>
<td>TRIP SWITCH ONLY TRIP SWITCH INCLUDING HARD WIRED LOOM</td>
</tr>
<tr>
<td>HEAT</td>
<td>EXCHANGE THERMAL TRIP Inc LOOM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CASEWORK</td>
<td>CARRY HANDLE (PLASTIC)</td>
<td>19200050</td>
<td>PLASTIC CARRY HANDLE</td>
</tr>
<tr>
<td>CASEWORK</td>
<td>TOP COVER</td>
<td>26560150</td>
<td>TOP LID / COVER</td>
</tr>
<tr>
<td>CASEWORK</td>
<td>MAIN CHASSIS</td>
<td>26560140</td>
<td>MAIN CHASSIS - BARE</td>
</tr>
<tr>
<td>OTHER</td>
<td>BOTTLE</td>
<td>34300001</td>
<td>9.5L FLUID BOTTLE</td>
</tr>
<tr>
<td>OTHER</td>
<td>REMOTE CONTROL</td>
<td>92765000</td>
<td>COMPLETE REMOTE CONTROL</td>
</tr>
<tr>
<td>OTHER</td>
<td>FLUID LINE</td>
<td>56220011</td>
<td>CLEAR FLUID LINE</td>
</tr>
<tr>
<td>OTHER</td>
<td>MAINS SWITCH</td>
<td>05523002</td>
<td>MAINS ON/OFF SWITCH</td>
</tr>
<tr>
<td>OTHER</td>
<td>WIRING LOOMS COMPLETE</td>
<td></td>
<td>ALL WIREFI LOMS FOR MACHINE</td>
</tr>
<tr>
<td>OTHER</td>
<td>STICKERS COMPLETE</td>
<td></td>
<td>ALL STICKERS / LABELS FOR MACHINE</td>
</tr>
</tbody>
</table>
### 110V

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Spare Part Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUMP</td>
<td>PUMP</td>
<td>05761001</td>
<td>110V BLACK BODY (LARGE)</td>
</tr>
<tr>
<td>PCB</td>
<td>MAIN</td>
<td>62020007</td>
<td>110V MAIN CONTROL PCB - TESTED</td>
</tr>
<tr>
<td>PCB</td>
<td>REMOTE</td>
<td>62020008</td>
<td>TESTED w/o BUTTON TOPS OR KNOBS</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>COMPLETE</td>
<td></td>
<td>COMPLETE BUILT UP HEAT</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Brasswork Only</td>
<td>26400820</td>
<td>EXCHANGE c/w BRASS FITTINGS</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Casework</td>
<td>26460030</td>
<td>BARE EXCHANGE (No insulation or casework) c/w BRASS FITTINGS</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Casework</td>
<td></td>
<td>CASework AVAILABLE SEPARATELY - CONTACT <a href="mailto:jem-service@martin.dk">jem-service@martin.dk</a></td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Insulation</td>
<td>26520010</td>
<td>PRE CUT INSULATION KIT</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Thermal Trip Only</td>
<td>05041021</td>
<td>TRIP SWITCH ONLY</td>
</tr>
<tr>
<td>HEAT EXCHANGE</td>
<td>Thermal Trip Inc Loom</td>
<td>05041021</td>
<td>TRIP SWITCH INCLUDING HARD WIRED LOOM</td>
</tr>
<tr>
<td>CASEWORK</td>
<td>Carry Handle (Plastic)</td>
<td>19200050</td>
<td>PLASTIC CARRY HANDLE</td>
</tr>
<tr>
<td>CASEWORK</td>
<td>Top Cover</td>
<td>26560150</td>
<td>TOP LID / COVER</td>
</tr>
<tr>
<td>CASEWORK</td>
<td>Main Chassis</td>
<td>26560140</td>
<td>MAIN CHASSIS - BARE</td>
</tr>
<tr>
<td>OTHER</td>
<td>Bottle</td>
<td>34300001</td>
<td>9.5L FLUID BOTTLE</td>
</tr>
<tr>
<td>OTHER</td>
<td>Remote Control</td>
<td>92765000</td>
<td>COMPLETE REMOVE CONTROL</td>
</tr>
<tr>
<td>OTHER</td>
<td>Fluid Line</td>
<td>56220011</td>
<td>CLEAR FLUID LINE</td>
</tr>
<tr>
<td>OTHER</td>
<td>Mains Switch</td>
<td>05523002</td>
<td>MAINS ON/OFF SWITCH</td>
</tr>
<tr>
<td>OTHER</td>
<td>Wiring Looms Complete</td>
<td></td>
<td>ALL WIRING LOOMS FOR MACHINE</td>
</tr>
<tr>
<td>OTHER</td>
<td>Stickers Complete</td>
<td></td>
<td>ALL STICKERS / LABELS FOR MACHINE</td>
</tr>
</tbody>
</table>

### APPENDIX

**Fuse Ratings**

<table>
<thead>
<tr>
<th>Fuse</th>
<th>240V</th>
<th>110V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>6.3A</td>
<td>10A</td>
</tr>
</tbody>
</table>
**MAGNUM 800 REMOTE CONTROL DIN PLUG PIN OUTS**

1 - YELLOW (READY).
4 - WHITE (HEAT).
2 - BLACK (GND).
5 - BLUE (0 - 10v)
3 - RED (+16v).

**VIEWED FROM THE SOLDER SIDE OF THE DIN PLUG**

**PIN OUT DESCRIPTION**

1, GND WHEN MACHINES UP TO TEMPERATURE
4, GND WHEN MACHINES HEATING
2, GND
5, 0 - 10v INPUT, NEEDS 1.5v TO HEAT AND
   2v -10v PUMP SPEED WHEN MACHINES READY
3 +16v OUTPUT
MAGNUM 800 REMOTE PCB PIN OUTS

PIN
1, Not Used
2, RED (+16v output)
3, BLUE (0-10v input)
4, BLACK (GND)
5, WHITE (Heat)
6, YELLOW (Ready)

Timer LED
Ready LED
Heat LED

Output Level Control
Timer control
Fog button
题烟 Smoke pic.
JEN SMOKER plc.

**Connector Functions**

<table>
<thead>
<tr>
<th>Connector Numbers</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pl1</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Ready LED (Active Low)</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>15V Unreg. Supply</td>
</tr>
<tr>
<td>4</td>
<td>Heating LED</td>
</tr>
<tr>
<td>5</td>
<td>0/10V Input Signal</td>
</tr>
</tbody>
</table>

**Board Connections**

- P2: Pump Speed Control
- P1: Temperature Control
- Pl11: Neutral Input
- Pl10: Live Input
- Pl9: Neutral to Pump
- Pl8: Live to Heater
- Pl7: Neutral to Heater
- Pl6: Live to Pump
- Pl5: Thermostouple +VE
- Pl4: Thermostouple -VE

**Legend**

- Y9: Transformer
- Pl5
- Pl4
- Pl3
- Pl2
- Pl1

** алкогольного процесса**
NO OUTPUT

Is the machine plugged in, turned on at the mains AND the power switch set to ON?

NO

Check power and turn on

YES

Is the machine fully heated and ready to run?

NO

See HEATER PROBLEMS

YES

Is the pump running?

NO

See PUMP PROBLEMS

YES

Undo the brass fitting to the heater / fluid line and run the machine.

Is fluid coming out of the brass fitting?

NO

Pump seized – Replace pump

YES

Heater is blocked – Replace heater
PUMP PROBLEMS

Is power getting to the pump? (set to full power and check 240V / 110V)

Does piston seem to be moving?

Is fluid travelling through pump?

Fault may be in fluid line / heater

See PCB PROBLEMS

PUMP SEIZED - REPLACE

PUMP BLOCKED - REPLACE
HEATER PROBLEMS

Is the heater heating?  

Overheating  

CHECK CALIBRATION

Is power getting to the heater?  
(check 240V / 110V)

Is power getting to the thermal trip?  
(check 240V / 110V)

Is power getting through the thermal trip?  
(check 240V / 110V)

Disconnected power and remove power loom from element connectors

Measure across the elements for continuity and check for earth leaks

Normal Ohms reading?  

Open circuit heater - replace

Earth leakage?  

Open circuit heater - replace

See PCB PROBLEMS
APART FROM THE OBVIOUS FUSES / WIRING ETC. PCB FAULT FINDING IS TOO IN-DEPTH TO COVER HERE – PLEASE REFER SERVICING / REPAIR TO A QUALIFIED ENGINEER