



Giving blood should be voluntary....

**Midge-Tech Limited**

**Troubleshooting Guide**





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## Abbreviations

LCD	Liquid Crystal Display
LED	Light Emitting Diode
CO <sub>2</sub>	Carbon Dioxide
TEM	Thermo Electric Module
PCB	Printed Circuit Board



## Defender

**Q** *My defender is stopping (displaying fast flashing red light) after running for only 1 month or less – is it faulty?*

**A** Turn off gas, unplug machine, remove side vent from machine (using a Phillips screwdriver) tip machine over to vent side and shake - excess insects will fall out of machine. Machine should restart after emptying.

**Q** *My defender is dripping water at base of plume tube is this okay?*

**A** Yes this is normal the water is the by product from creating CO2

## Other Defender Issues

- Due to the net size of the Defender we have found that unless there is someone present daily to maintain the machine the volume of insects shuts it down over time. The defender is highly effective and is recommended for people with a minor insect problem.
- Before moving the defender it is crucial that the machine goes through its cooling down cycle to bring the burner temperature back to an acceptable level. If this is not carried out then damage can occur to components.
- The Defender cannot be run off a car battery without the use of an inverter. Tampering with the power cord voids warranty

## Liberty Plus

**Q** *I have charged my machine for the recommended 24hrs and it will not start?*

**There is not an icon on the Liberty Plus to inform that the battery is fully charged**

**A**

1. Ask customer if there was a light present during the charging period as they will probably have charged the machine in the "ON" position (RHS on rocker switch) – Request that the machine is turned to the "OFF" position and charged for a further 24hrs.
2. Check all power to the machine i.e. wall sockets- plug another device in to check for power – you can double-check the power cord by plugging into machine and turning on - the LED will be lit.
3. Check polarity of battery connections (red to red & black to black) uncommon but has occurred.
4. Check connections on battery and machine – are all metal pins in connectors?
5. Double check that battery has been charged for 24hrs – some customers get quite excited about the prospect of catching insects and only charge the machine for 12 hrs or less.

**Q** *My Liberty is making a loud noise (foghorn, howling etc)?*

**A** Machine requires to be brought in for repair.

Note:

- Some Liberty + machine's will "howl" until the green running LED is on – please double check that machine continues howling in the running condition before sending back.
- Also, make sure all parts are fitted to the machine – in particular the plume tube, net and trap cover is closed securely.

## Other Liberty Plus Issues

1. Side vent require to be removed periodically - every week (depending on catch) and cleaned by brushing off excess insects
2. Depending on type of insect and machine age it may be required to use the net adapter if this is not used the machine will only run for 2/3 days max then shutdown
3. Check machine condition by removing battery while machine is running – if the machine shuts down then there is a problem on board that will require repair. This method can be used for machine's that are running for only a few days at a time before showing battery out LED. If the machine shuts down when battery is removed then it requires repair.

## Pro & Pro Plus

**Q** *I have charged my machine for the recommended 24hrs and it will not start?*

**There is not a charge icon on the Pro/Pro Plus to inform that the battery is fully charged**

**A**

1. Ask customer if the machine was charged in the OFF position (indicated on the LCD –top left hand corner) during the charging period as they will probably have charged the machine in the “ON” position (indicated by “warming icon flashing). – Request that the machine is turned to the “OFF” position and charged for a further 24hrs.
2. Check all power to the machine i.e. wall sockets- plug another device in to check for power – you can double-check the power cord by plugging into machine and turning on - the LCD will be flash.
3. Check polarity of battery connections (red to red & black to black) uncommon but has occurred.
4. Check connections on battery and machine – are all metal pins in connectors?
5. Double check that battery has been charged for 24hrs – some customers get quite excited about the prospect of catching insects and only charge the machine for 12 hrs or less.

**Q** *I have a large metal plate in the box what is it?*

**A** It is the gas tank adapter plate for larger tanks to be fitted to the rear of the machine

### Other Pro and Pro Plus Issues

1. Side vent require to be removed periodically - every week (depending on catch) and cleaned by brushing off excess insects
2. Check machine condition by removing battery while machine is running – if the machine shuts down then there is a problem on board that will require repaired. This method can be used for machine’s that are running for only a few days at a time before showing battery out LED. If the machine shuts down when battery is removed then it will need sent in for repair.

## Fault Codes / Troubleshooting

### Defender - Start Sequence:

1. Switch on machine ( rocker switch to LHS)
2. Machine will run for 3.30 mins and you will hear fan speed drop (ignition)
3. Machine will speed back up to normal fan speed
4. Approximately 7 mins later the machine should display solid red light (running)

Fault Code	Possible Causes	Remedy
Fast flashing red light	Gas out (No gas)	<ul style="list-style-type: none"> <li>• Check gas tank is full,</li> <li>• Check regulator connection and leak test if necessary</li> <li>• Purge system using Co2 and re test machine.</li> <li>• Remove side vent and empty machine</li> <li>• Perform Gas Leak Test (Page 9)</li> </ul> <p>If all of the above fail the machine requires uplift</p>

## Liberty Plus - Start Sequence

1. Switch machine on
2. Fan will start at a slow speed
3. After 1 min you will hear igniter clicking
4. After 30 seconds the solenoid can be heard clicking on
5. Igniter circuit will click off
6. Fan will speed up – you will hear an initial howl from the machine while speeding up
7. After 20 mins the machine will go to Green LED - Running

<b>Fault Code</b>	<b>Possible Causes</b>	<b>Remedy</b>
Fast flash red	Thermistor fault	<ul style="list-style-type: none"> <li>• Machine requires uplifting</li> </ul>
Slow flash red	Gas out fault	<ul style="list-style-type: none"> <li>• Check regulator</li> <li>• Check gas tank</li> <li>• Purge system using Co2 and re test machine.</li> <li>• Perform Gas Leak Test (Page 9)</li> </ul>
Red and Yellow flash	Battery fault  TEM/ PCB fault If possible get machine to running condition (green LED) and remove battery from machine – does it shut down?	<ul style="list-style-type: none"> <li>• Has battery been charged for 24hrs in OFF position?</li> <li>• Check connections on battery &amp; machine</li> <li>• Has machine been left off for a period of time? – recharge</li> <li>• Uplift machine for repair</li> </ul>

## Pro and Pro Plus – Starting Sequence

1. Switch machine on – indicates “warming” *flashing*
2. Fan will start at high speed then slow down
3. After 1 min you will hear igniter clicking
4. After 30 seconds the solenoid can be heard clicking on
5. Igniter circuit will click off
6. Fan will speed up – you will hear an initial howl from the machine while speeding up
7. Approximately 25 mins later the “warming” will disappear indicating that the machine is running

Fault Code	Possible Causes	Remedy
Beep followed by high temperature icon on LCD	<p>Thermistor fault</p> <p>Poor airflow to machine</p> <p>Fan not working</p>	<ul style="list-style-type: none"> <li>• Machine requires uplifting</li> <li>• Check net – full? Check side vents?</li> <li>• Check fan is not obstructed and is moving</li> </ul>
Beep followed by gas out icon on LCD	Gas out fault	<ul style="list-style-type: none"> <li>• Check regulator</li> <li>• Check gas tank</li> <li>• Purge system using Co2 and re test machine</li> <li>• Perform Gas Leak Test (Page 9)</li> </ul>



## Gas Leak Test

Gas leak tests can be carried out on regulators by carrying out the following instructions:

### **Warning:**

To perform gas leak test the machine must be switched OFF and disconnected from mains and battery.

1. Make a solution of washing up liquid and water (foam mixture) and soak up with a sponge.
2. Apply all around the regulator – if bubbles grow around areas of the regulator then a gas leak is present and regulator will require tightened.
3. If a gas leak is detected turn off gas immediately.
4. Repeat process until leak is repaired.



## Cooling and Restarting

- All machines must be left for a cool down period (min  $\frac{3}{4}$  hr) before attempting to restart.
- As outlined in the Defender section it is crucial that the machine goes through its cooling down cycle to bring the burner temperature back to an acceptable level. If this is not carried out then damage can occur to components.
- Never attempt to move a machine while it is running, as this will invalidate the customers warranty - Always cool down machine before attempting to move.



## Batteries

- Liberty plus, Pro and Pro Plus all use the same battery and therefore can be interchanged if required.
- If you are fortunate enough to be dealing with a customer who owns a multi-meter (always ask!) you can check the output of the battery. All of the above machines require a minimum of 5.2v to start the machine anything below this and they will not start.

### Note:

Dealers will receive calls from customers that have returned to find their machine not running indicating gas out fault. It is nearly always the case that the customer has been away for a period of time and the gas is empty. The customer will have purchased another tank of gas and will have tried to restart the machine with the result being that the machine will indicate low battery fault. The machine will need recharged for a further 24 hrs. We would recommend that dealers advise customers to log tank changes (see below for table) and change over tanks prior to running out to save recharging.

Size of Gas Tank	New Tank Date	Date of Gas Tank running out	No of Days	Req'd Tank change date	Octenol Changed Y/N	Changed by
19kg	01-May	30-May	30		Y	Joe
19kg	01-Jun			30-Jun		

- Finally by investing in a multi-meter battery and charger conditions can be checked by Dealers.

## Regulators

- In appearance all of the Mosquito Magnet regulators look exactly the same between models for each region – this is not the case!
- All regulators are calibrated to each machine's specification and therefore cannot be swapped over without invalidating the warranty. The Grey Tank Adaptors (Portugal, Ireland, Spain, Norway etc) that are fitted to the regulator can be replaced without affecting warranty.
- All regulators use an O ring to form a gas tight seal between the regulator and gas tank. Please double check that this is present and in good condition with customers.
- All machines sold in the UK and Europe **do not** require the Gas re-set tool (USA only) mentioned in the manual.
- **Machines supplied from the USA have a permanently attached regulator, this regulator will not fit any UK supplied propane gas bottle and there are no adaptors. Cutting off the regulator and attaching a UK regulator will cause damage to the unit and the machine will not attract insects. USA supplied machines require modification to operate in Europe.**

## Regulator O ring

- All regulators use an O ring to form a gas tight seal between the regulator and gas tank. Please double check that this is present and in good condition with customers. Renew if perished.

## Gas Hoses

- All machine's gas hoses should be periodically inspected for damage. If a faulty hose is detected the machine must be returned for repair.

## Co2

**Q** Is this really necessary?

**A** Yes, all bottled propane contains contamination to a certain degree (depending on suppliers) and over a period of time the contamination (i.e. heavy oils & rust) builds up to a point that the machine nozzle becomes blocked making the starting /running of the machine more problematic. American BioPhysics recommends that machine's are quick cleared every 2/3 bottles of gas used. It is also a good practice to clean the machine before winter storage and prior to start up.

**Q** Can I use my own Co2 to clear out machine?

**A** No

Only the product that is endorsed by American Bio Physics can be used on the machine. All other products vary in pressure and contamination and are therefore not suitable for use on the Mosquito Magnet range of machines

**Q** Co2 discharge only took 20secs – is this normal as it states in the manual that it should take up to 3 mins?

**A** Yes, the Co2 will discharge very quickly (up to 30 secs) and this is normal.

## Purge Procedures

<b>Defender</b>	<b>Liberty Plus</b>	<b>Pro</b>	<b>Pro Plus</b>
Disconnect Gas	Disconnect Gas	Disconnect Gas	Disconnect Gas
Switch machine on	Switch machine on	Switch machine on	Switch machine on
Screw on Co2 adapter	Screw on Co2 adapter	Screw on Co2 adapter	Screw on Co2 adapter
Wait 3.5 mins	Wait 2 mins	Wait 2 mins	Wait 2 mins
Screw on Co2 cylinder	Screw on Co2 cylinder	Screw on Co2 cylinder	Screw on Co2 cylinder
Back off Co2 cylinder (anticlockwise) ¼ turn	Back off Co2 cylinder (anticlockwise) ¼ turn	Back off Co2 cylinder (anticlockwise) ¼ turn	Back off Co2 cylinder (anticlockwise) ¼ turn
Wait 30 secs	Wait 30 secs	Wait 30 secs	Wait 30 secs
Unscrew Co2 & adapter from machine	Unscrew Co2 & adapter from machine	Unscrew Co2 & adapter from machine	Unscrew Co2 & adapter from machine
Connect gas to machine	Connect gas to machine	Connect gas to machine	Connect gas to machine
Turn gas on –slowly	Turn gas on -slowly	Turn gas on –slowly	Turn gas on -slowly
Start machine	Start machine	Start machine	Start machine
Repeat if necessary	Repeat if necessary	Repeat if necessary	Repeat if necessary

Note:

- Some machine's may require 2/3 purges before the nozzle is cleared – always advise customers to quick clear their machine's on a frequent basis.



## Gas

There are two fuels used to power the Mosquito Magnets these are:

- Propane (UK)
- Butane

Make sure gas cylinder matches the gas connection fitting for your country.



## **Manuals**

All Mosquito Magnets come complete with manuals and interactive placement CD-ROM.

### **Not all of our customers read them**

Please Encourage ALL of our customers to take 5 mins to familiarise themselves with their new purchase – It will save everyone a lot of time.