

# Eclipse & Eclipse 2

## Troubleshooting Alarm Conditions



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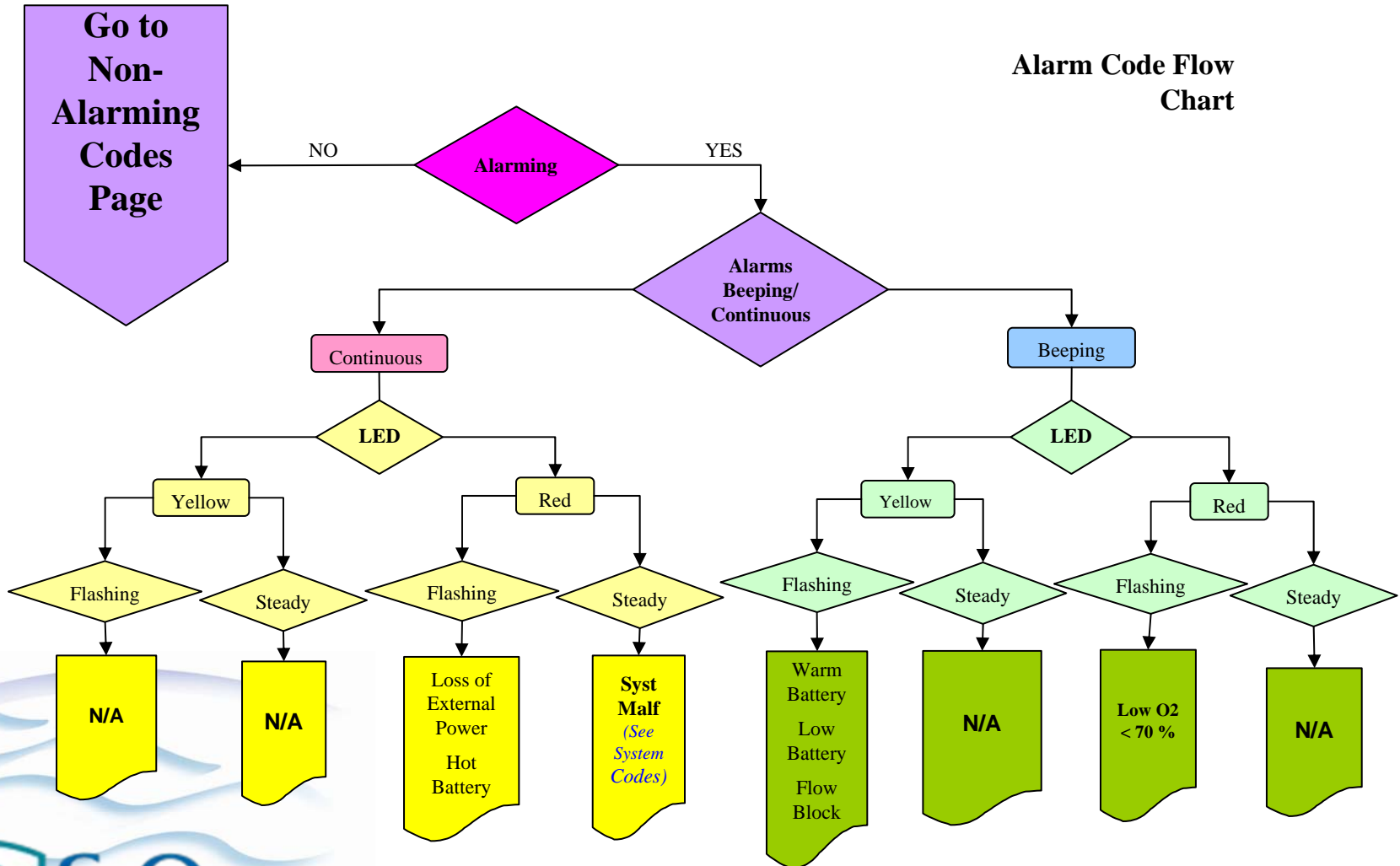
## Non Alarming Problems

8. Display Panel Malfunction (Buttons).
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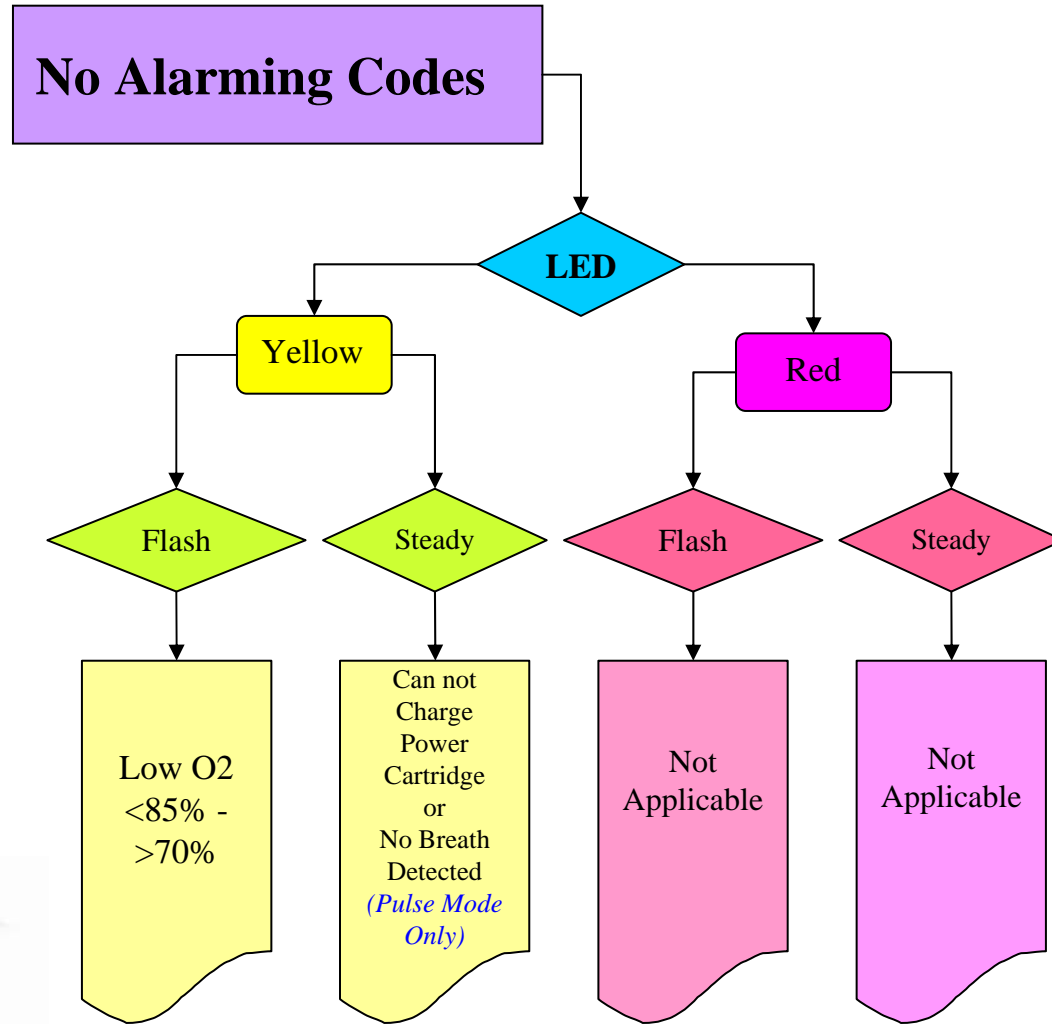


# Troubleshooting Guide

**Alarm Code Flow Chart**



# Troubleshooting Guide



# Troubleshooting Guide

## Quick Reference Alarm Guide

Alarm	Priority	Green	Yellow	Red	Alarm	Code
All OK, warm-up done	13/None	ON	OFF	OFF	OFF	00
Warm-up: %O <sub>2</sub> < 85	12/Low	ON	ON	OFF	OFF	08
Warm-up: %O <sub>2</sub> < 70	11/Low	ON	ON	ON	OFF	04
Cannot Charge Battery	10/Low	N/A	ON	OFF	OFF	01
No breath for 45 seconds	9/Medium	ON	ON	OFF	OFF	20
70% < %O <sub>2</sub> < 85%	8/Medium	OFF	(1s/1s)	OFF	OFF	08
Flow rate error	7/Medium	OFF	(1s/1s)	OFF	(0.5s/119.5s)	20
Warm battery	6/Medium	ON	(1s/1s)	OFF	(0.5s/119.5s)	02
Low battery	6/Medium	ON	(1s/1s)	OFF	2 Beeps 0.5s/0.5s every 30s	10
DC cable detected	4/Medium	N/A	(1s/1s)	OFF	(0.5s/1.5s)	N/A
%O <sub>2</sub> < 70	3/High	OFF	OFF	(0.25s/0.25s)	3 Beeps (0.5s/0.5 every 120s)	04
Loss of power	2/High	OFF	OFF	(0.25s/0.25s)	ON	40
Malfunction	1/High	OFF	OFF	ON	10s then silence	N/A

# Troubleshooting Guide

## Quick Reference Alarm Guide-System Codes.

Malfunction	Code	Resolution
Invalid RESET	80	<p>Remove <b><u>ALL</u></b> Power Sources (External Power &amp; Power Cartridge) for <u>20 sec's</u> then restart Eclipse.</p> <p>If problem persist replace and/or repair unit.</p>
I/O port failure	81	
RAM failure	82	
FLASH failure	83	
EEPROM failure	84	
IPC watchdog timeout	90	
Compressor motor stalled	94	
Battery communication failure	95	
IPC failure	A0	
Product pressure sensor failure	A1	
Breath pressure sensor failure	A2	
Ultrasonic failure	A3	
Loss of product tank pressure failure	A5	
Purity calibration data failure	A6	
Flow calibration data failure	A7	
Breath sensitivity data failure	A8	
Hour of operation data failure	A9	
Invalid assembly option	AA	
Ambient pressure sensor failure	AB	

# Troubleshooting Guide

## Quick Reference Alarm Guide-System Codes

Malfunction	Code	Resolution
Compressor motor too hot	91	Remove <b><u>ALL</u></b> Power for 20 min's then restart Eclipse. If problem persist replace and/or repair unit.
PCB too hot	92	
Product temperature sensor failure	A4	





## 1. Low Power Cartridge or warm Power Cartridge

Eclipse is: **Beeping**, has a **YELLOW LED** flashing and the unit **IS** running.

- A. Is Eclipse plugged into an **External Power Source** or running off of the **Power Cartridge**?
  - i. If POWER CARTRIDGE, then go to **Step B**
  - ii. If External POWER SOURCE (AC or DC), then go to **Step C**
- B. How many bars are on the Power Cartridge Icon?
  - i. **1 bars or Less**
    - i. The Power Cartridge power is low in the Eclipse. Replace the Power Cartridge with a fully charged one, or switch to an external power source (Use AC or DC Adapter).
  - ii. **2 Bars or More**
    - i. The Power Cartridge is possibly too warm. Replace the Power Cartridge with a spare one (that has cooled), or switch to an external power source (Use AC or DC Adapter), and remove the Power Cartridge for approximately 15 to 20 minutes to allow to cool properly, before replacing.

**\*\* NOTE:** If Eclipse is plugged into an external power source and running from the Power Cartridge and will not switch over to an external power source (AC or DC) then there may be a system fault. Exchange out the unit for evaluation.

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## 1. Low Power Cartridge or warm Power Cartridge

**Eclipse is: **Beeping**, has a **YELLOW LED** flashing and the unit **IS** running.**

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- C. Is Eclipse running from the AC or DC Adapter?
  - i. **AC Adapter** – There may have been an electrical fluctuation (an electrical dip or spike), or a power outage at the electrical outlet, Eclipse has switched to the Power Cartridge as a backup, and now the Power Cartridge is either low or warm (see Steps B i or B ii)
  - ii. **DC Adapter** – The voltage in the vehicle has possibly fallen out of range and Eclipse has switched to the Power Cartridge as a backup, and now the Power Cartridge is either low or warm (see Steps B i or B ii)
- D. Press the No Smoking Icon once, and observe what number appears after the “AC=” in the LCD window.  
(The Diagnosis Code will disappear after 5 sec’s if no button is pushed).

**\*\* NOTE:** If Eclipse is plugged into an external power source and running from the Power Cartridge and will not switch over to an external power source (AC or DC) then there may be a system fault. Exchange out the unit for evaluation.

# Troubleshooting Guide

## 2. Low Oxygen Purity (Between 85% & 70%)

My Eclipse has: a **YELLOW LED** flashing and the unit **IS** running. (NO Audible Alarms)

- A. What Flow Mode is Eclipse in **CONTINUOUS** or **PULSING**?
- B. If **Continuous Flow** – Is Eclipse is at least 3” away from anything that may block the vents (i.e.: drapes, bedding, fabric or upholstery, and is the cabinet filter clean?
  - i. If “**YES**”, then the purity is low. Replace and repair the Eclipse for low Purity. Contact your provider for further instructions.
  - ii. If “**NO**” then relocate the Eclipse to improve airflow, and / or have your external cabinet filter cleaned.
- C. If **Pulsing Flow** – Is the user respiratory rate greater than the range on the chart below:
  - i. If “**YES**”, then switch to continuous mode until the respiratory rate is below the recommended rate, then the Eclipse can be returned the Pulse Mode
  - ii. If “**NO**” then the purity is low. Exchange out the unit for evaluation and possible repair.

<u>Pulse Flow Setting</u>	<u>Bolus Size (+/- 15%)</u>	<u>Min Breath Rate</u>	<u>AC Power</u>	<u>15 Amp</u>	<u>10 Amp</u>
			<u>Supply and Power Cartridge</u>	<u>Switch Setting DC Power Supply</u>	<u>Switch Setting DC Power Supply</u>
			<u>Max Breath Rate</u>	<u>Max Breath Rate</u>	<u>Max Breath Rate</u>
1	16	6	40	40	40
2	32	6	40	40	40
3	48	6	40	40	40
4	64	6	39	39	31
5	80	6	31	31	25
6	96	6	26	26	20

# Troubleshooting Guide

## 3. Low Oxygen Purity Below 70%

Eclipse is: **Beeping** with a **RED LED Flashing** and the unit **IS** running.

- A. What is the Eclipse liter flow?
- B. What Flow Mode is set? (CONTINUOUS or PULSING)
- C. If Continuous Flow – Is Eclipse is at least 3” away from anything that may block the vents (i.e.: drapes, bedding, fabric or upholstery, and is the cabinet filter clean?
  - i. If “YES”, then your purity is low. Replace and repair the Eclipse. Contact your provider for further instructions.
  - ii. If “NO” then relocate Eclipse for improved airflow and / or have your external cabinet filter cleaned.
- D. **If Pulsing Flow – Is the respiratory rate greater than the range on the chart below:**
  - i. If “YES”, then switch to Continuous Mode until the respiratory rate is below the recommended rate, then return to the pulse Mode
  - ii. If “NO” then purity is low. Exchange out the unit for evaluation and possible repair.

<u>Pulse Flow Setting</u>	<u>Bolus Size (+/- 15%)</u>	<u>Min Breath Rate</u>	<u>AC Power</u>	<u>15 Amp</u>	<u>10 Amp</u>
			<u>Supply and Power Cartridge</u>	<u>Switch Setting DC Power Supply</u>	<u>Switch Setting DC Power Supply</u>
			<u>Max Breath Rate</u>	<u>Max Breath Rate</u>	<u>Max Breath Rate</u>
1	16	6	40	40	40
2	32	6	40	40	40
3	48	6	40	40	40
4	64	6	39	39	31
5	80	6	31	31	25
6	96	6	26	26	20

## 4. Flow Rate Error / Blocked Flow

Eclipse is: **BEEPING** has a **YELLOW BLINKING LED** and the unit **IS** running

- A. Ensure that the Oxygen Tubing and Nasal Cannula are not blocked or kinked
- B. If a humidifier bottle is attached make sure it is not clogged? Replace it if necessary
- C. Check to make sure Air Intake Vent (Filter) is not blocked. Replace it with a clean filter if needed
  - i. If flow is still blocked: Exchange out the unit for evaluation and possible repair



**In-Take Vent**

**Exhaust Vent**



## 5. No Inspiration Detected (In Pulse Mode Only)

Eclipse 2 has: **BEEPED ONCE**, has a **GREEN & YELLOW STEADY LED** and the unit **IS** running.

- A. Is the patient [breathing through their Nose](#)?
- B. If **NO**, Switch to Nasal Breathing
- C. If **YES**, Is Eclipse in [Pulse mode](#)? (Does the Flow Mode Button have a green LED illuminated next to it?)
- D. If **NO**, then switch to Pulse Mode.
- E. If **YES**, Is there a [humidifier bottle](#) attached to the unit
- F. If **YES**, Remove the humidifier bottle. Pulse Mode will not work correctly with a humidified bottle attached to the breathing circuit.
- G. If **NO**, Is the [Nasal Cannula](#) greater than 7ft?
- H. If **YES**, Then switch the Nasal Cannula to one that is 7ft or less.
- I. If **NO**, Has the clinician adjusted or instructed you on [adjusting pulsing sensitivity](#)?
- J. If **YES**, there may not be enough [inspiratory effort](#) to trigger the pulse system. A qualified person needs to test the pulse sensitivity.
  - i. If the steps above have been taken and the Eclipse is still not functioning correctly. [Exchange out the unit for evaluation and possible repair.](#)

## 6. Loss of External Power or Hot Power Cartridge.

Eclipse Unit has a **CONTINUOUS ALARM**, a **RED FLASHING LED**, and the Eclipse is **NOT** Running.

- A. Has the Eclipse lost power at the electrical outlet? (check the power outlet )
  - i. If “**Yes**” then find a working outlet to plug in Eclipse.
  - ii. If “**No**” then proceed to **Step B**
- B. Remove all electrical power from the Eclipse; by removing the Power Cartridge and any AC or DC power source.
  - i. If alarming continues, push & hold the Power Button for 5 - 7 seconds then release to silence the alarm.
  - ii. Wait 15 seconds before re-connecting the AC or DC Adapter.
- C. Ensure that the AC power cord is securely plugged into the AC Adapter Box and the Green LED is LIT on top of the Adapter Box.



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## 6. Loss of External Power or Hot Power Cartridge.

Eclipse Unit has a **CONTINUOUS ALARM**, a **RED FLASHING LED**, and the Eclipse is **NOT** Running.

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- D. Ensure that the AC/DC Adapter plug is securely plugged into the Eclipse Power Connector, and the GREEN External Power Icon on the Eclipse Display/Button panel is illuminated.
  - i. If “**Not**”, the AC or DC Adapter may be faulty... [Exchange out the item for evaluation and possible repair.](#)
  - ii. If “**Yes**”, continue to **Step E**
- E. Push and hold the On/Off button until the unit turns “ON”, the Eclipse should sound a 3 second test beep. All LED’s should be LIT. The Red then the Yellow LED’s should go out with in several minutes.
  - i. If unit starts to alarm - Remove the AC/DC Adapter Unit and hold down the ON/OFF Button for 5 seconds then release to turn the Unit “OFF”. “The AC or DC Adapter of Eclipse may be faulty. [Exchange out the item for evaluation and possible repair.](#)
  - ii. If “**Not**” – then proceed to **Step F**
- F. Re-Insert the Power Cartridge and turn the unit “ON”. (**Repeat Step E**)
  - i. If the unit starts to alarm - Remove the AC/DC Adapter unit and hold down the ON/OFF Button for 3 seconds to turn the Unit “OFF”.
  - ii. “The AC or DC Adapter or your Eclipse may be faulty. [Exchange item for evaluation and possible repair.](#)
  - iii. If “**Not**” – “Your Eclipse concentrator is running within its normal limits now, you may continue to use your Eclipse”



## 7. System Malfunction

Eclipse has a **RED LED FLASHING** and **ALARMING CONTINUOUSLY**, and the unit is **NOT** running

- A. To shut off the alarm, remove all power sources (external power source – AC or DC), and the Power Cartridge, for a minimum of 15 seconds.
- B. Plug in external power (AC or DC) into the outlet, and ensure that the power cord is plugged in the AC Adapter securely.
- C. Is the LED on top of the AC or DC Adapter lit, (YES or NO)?
  - i. If “**YES**” go to **Step D**
  - ii. If “**NO**”: ensure there is power to the AC outlet.. If not, find a working outlet for Eclipse. If the LED still is not lit, then the adapter may have a fault. [Exchange out the item for evaluation and possible repair..](#)
  - iii. What color is the LED (RED or GREEN)?
  - iv. **Red** – The voltage for the electrical outlet may not meet the requirements for Eclipse. Insure there is adequate power to that outlet (e.g.; outlets that are controlled by a wall or dimmer switch should not be used)
  - v. **Green** – The AC or DC Adapter is working within its normal limits. Proceed on to **Step D**

**\*NOTE:** Continue to use the Eclipse, if Eclipse alarms again contact your provider for further instructions.

## 7. System Malfunction

Eclipse has a **RED LED FLASHING** and **ALARMING CONTINUOUSLY**, and the unit is **NOT** running

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- D. Plug in the AC or DC power cord into the Eclipse power connector (on the side of the Eclipse).
  - i. A 3 second “Test Beep” should be heard and all 3 LED’s should light up, for 3 sec’s and the Green LED will remain on.
- E. If alarm continues then repeat **Step A** (to shut off alarm). If not then proceed to **Step F**
- F. Turn on the Eclipse, by holding down the Power button for 3 seconds, then release.
- G. If Eclipse continues to alarm then “Exchange out the unit for evaluation and possible repair.”
- H. Go to **Step A** to shut down the unit and also to shut off the alarm.
- I. If Eclipse does **NOT** alarm and continues to run then Insert the Power Cartridge into Eclipse
  - i. How many bars are there in the Power Cartridge Icon (1 or greater than 1)
  - ii. If “1” then there is a fully discharged Power Cartridge. Eclipse may have shut down due to loss of power from a fully discharged Power Cartridge. Switch to an external power source (if available). “Contact your provider for further instructions ”
  - iii. If Greater than 1 bar, then you had a temporary malfunction, that has rest itself



**\*NOTE:** Continue to use the Eclipse, if Eclipse alarms again contact your provider for further instructions.

## 8. Display Panel Malfunction (Buttons)

- The Buttons on Eclipse are not responding to inputs. (Or)
  - The Eclipse will not Power Down (Turn OFF) (Or)
  - The Eclipse will Power ON automatically
- A. Shut down Eclipse (if possible) and remove all power sources from it (AC or DC and the Power Cartridge) for a minimum of 15 sec's. Reinstall the AC or DC Charger and/or your Power cartridge to re-start the Eclipse.
- B. Does the buttons respond to inputs? (YES or NO)
- i. If **YES** then your “Eclipse had a temporary fault, and is now working normally”.
  - ii. If **NO** then; “the Display/Button Panel is inoperable and the Eclipse needs service. “Exchange out the unit for evaluation and possible repair.”
- C. If Eclipse will not power down or when power is removed from the external power source (AC or DC) and the Power Cartridge and the Eclipse continues to Alarm, and will not stop alarming the Display Panel may be faulty (See Below)

Note: “Find a quiet, out of place location (i.e., spare room) where the Eclipse can be placed and allowed to alarm and until the internal battery is depleted.. “Contact your provider for further instructions”

9. **Power Cartridge will not charge more than 5 bars (E1) & more than 2 bars in E2.**

**Eclipse shuts down at half the time expected while running on the Power Cartridge.**

- A. Has the Power Cartridge and display been calibrated recently? If “YES”, then go to **Step vi**
- i. If “NO”, Make sure the Power Cartridge is plugged into the Eclipse.
  - ii. Remove external power source (AC or DC Adapter) if present.
  - iii. Continue to run Eclipse on the Power Cartridge until the Eclipse **STOPS RUNNING**, with a **LONG CONTINUOUS ALARM** and the **Red LED “Flashing”**

NOTE: Approximately approx 10 min’s before the Eclipse Power Cartridge is completely discharged, the Low Battery alarm will sound (1 beep every 30 sec’s) and a **Yellow Flashing LED will come on.**

- iv. Plug in the AC Adapter into the Eclipse’s power connector, once the Battery is completely discharged.
- v. Allow the Eclipse to charge the Power Cartridge until the Power Cartridge Indicator is completely.

\* NOTE: By powering down or reducing the liter flow the Power Cartridge charge time will be reduced.

- vi. If “Yes”: then the Power Cartridge maybe faulty. “Exchange the item for evaluation and possible repair.”

## 10. Power Cartridge Re-Calibration

### Power Cartridge will not charge fully.

- A. Make sure that the Power Cartridge is plugged into the Eclipse.
  - i. Remove external power source (AC or DC Adapter) if present.
  - ii. Continue to run Eclipse on the Power Cartridge until the Eclipse STOPS RUNNING, with a LONG CONTINUOUS ALARM and the Red LED “Flashing”

NOTE: Approximately approx 10 min’s before the Eclipse Power Cartridge is completely discharged, the Low Battery alarm will sound and a Yellow Flashing LED will be displayed

- iii. Once the Power Cartridge is completely discharged, plug in the AC Adapter into the Eclipse’s power connector,.
- iv. Allow Eclipse to charge the Power Cartridge until the Power Cartridge Indicator is full.

\*\* NOTE: By powering down or reducing the liter flow the Eclipse will charge the Power Cartridge more rapidly.



## 11. Power Cartridge will not charge (cascade) when it is in the Eclipse, and Eclipse is running off an AC / DC Power Source.

- A. Is the Power Cartridge Full? (**YES** or **NO**)
- i. If "**YES**" then the cartridge is completely charged. No further action required
  - ii. If "**NO**" Is the external power adapter (AC or DC Adapter) connected? (**YES** or **NO**)
  - iii. If "**NO**" then Eclipse is operating from the Power Cartridge, and not the AC or DC adapter, "There are no charging capabilities at this time."
  - iv. If "**YES**"
    1. Ensure that all power cords are properly connected to there receptacles.
    2. Ensure that the LED is illuminated "Green on the AC or DC Adapter unit
- B. Has the Eclipse recently been operating from the Power Cartridge for a prolonged period of time or on the higher continuous liter flows (2.5 or 3.0 continuous)? (**YES** or **NO**)
- C. If "**YES**": The Power Cartridge may have over heated. Remove the Power Cartridge from Eclipse and allow it to cool in a well ventilated area for approximately 20 min's, then return the Power Cartridge to Eclipse for recharging.
- D. If "**NO**": There may be a problem with the Eclipses Charging System "Your (1) Eclipse, (2) Power Cartridge or (3) External Power Charger may be faulty. "Exchange out the unit for evaluation and possible repair".

### Reasons why a Power Cartridge will not charge

- Power Cartridge is fully charged (10 bars for Eclipse & 4 bars for Eclipse 2)
- Power Cartridge is being used (See Loss of external power,)
- Power Cartridge is too warm. (remove & allow to cool for approximately 20 min's)



## **12. Eclipse beeps once every 1-3 min's (No LED's) when running on a 12 volt DC System (... Car, RV, Boat)**

- A. Does the vehicle have a 12VDC power system? (**YES** or **NO**)
- i. If **"NO"** The Eclipse is designed to run on a 12 volts system, and cannot operate on a 6 or 24 volt system.
  - ii. If **"YES"**, Is there adequate power available to operate the Eclipse (15 amps and higher for a setting of 2.5 &/or 3.0 continuous, all other setting can use a minimum of 10 amp)
  - iii. If **"NO"**: The Eclipse requires a minimum of 12 volts and 10 – 15 amps to operate. If the vehicle electrical system is inadequate, your Eclipse will switch over to the Power Cartridge as a back up power source, if the Power Cartridge is installed and charged up.
  - iv. If **"YES"**: The Eclipse has detected, that at some time, the voltage from the outlet dropped below 11.5 VDC. The Eclipse will attempt to reconnect to the car's electrical system if the voltage rises above 11.5VDC. A qualified technician may need to inspect the vehicle outlet insure that the proper power is available.

\*Note: If Eclipse can be used in the Pulse Mode do so. This mode of operation reduces the power requirements from the vehicle electrical system, or use the Power Cartridge to continue to run Eclipse.

# Eclipse Technical Support

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Thank you for  
your time &  
Interest in  
SeQual  
Technologies

