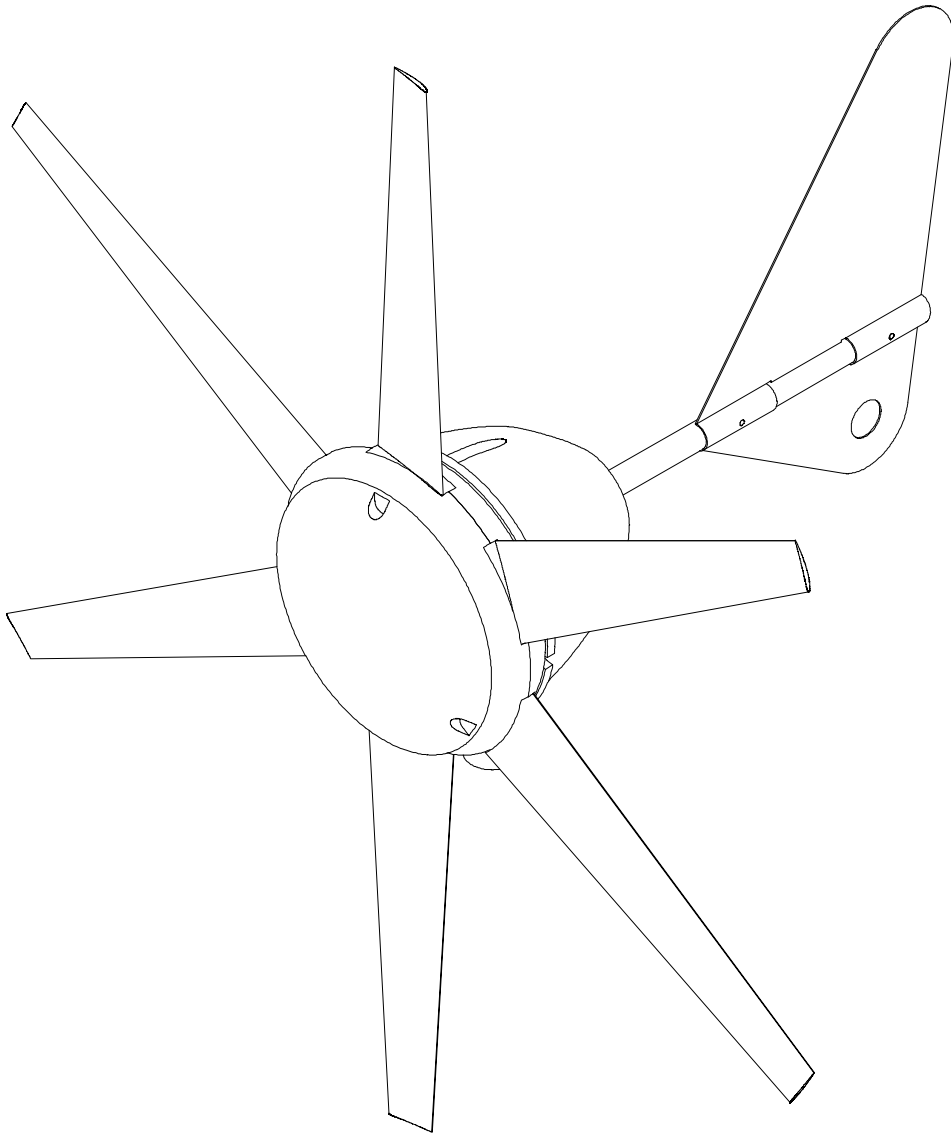
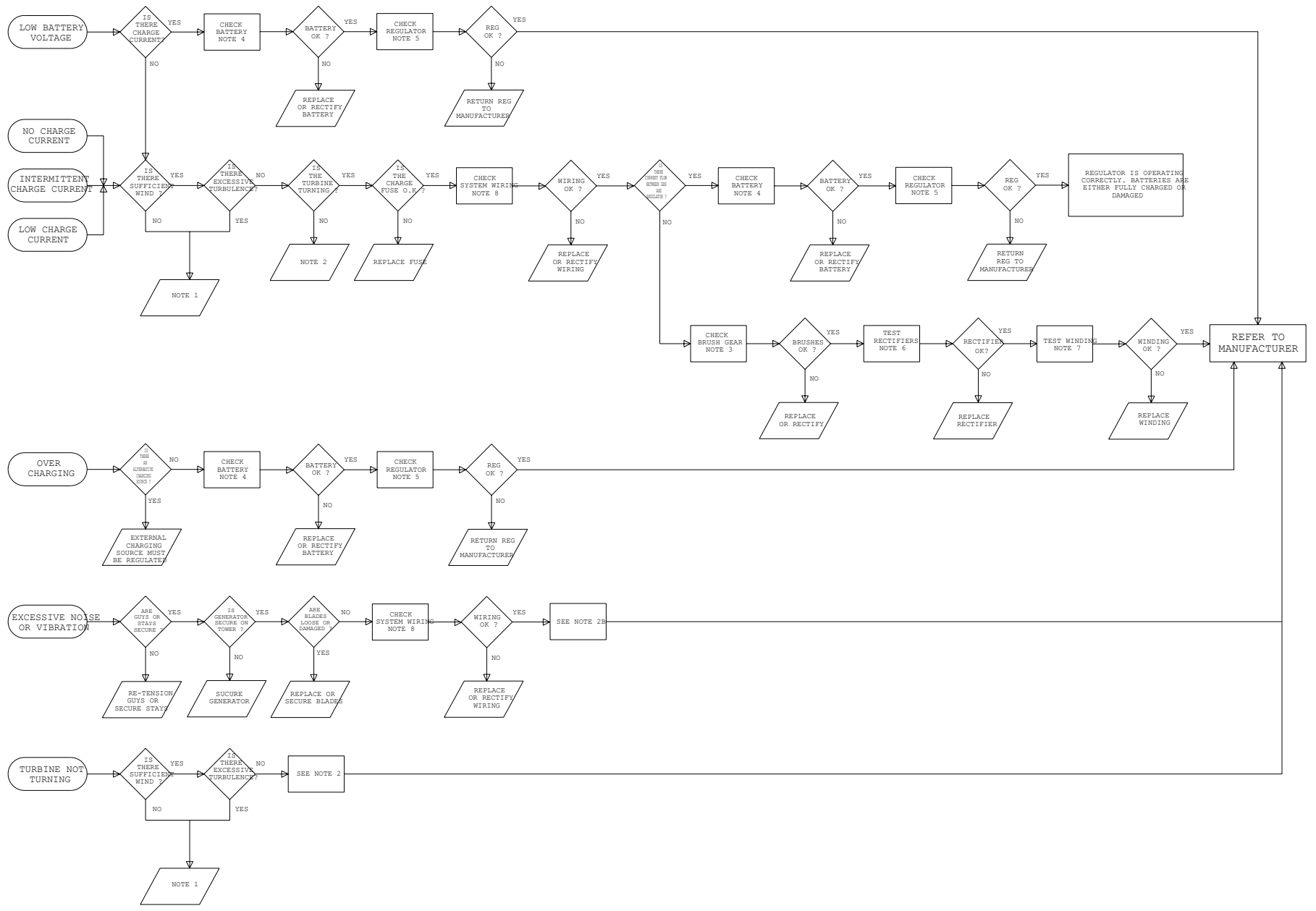


# Rutland 913 Windcharger Fault Finding Guide





## INTRODUCTION

This manual contains important information concerning fault finding on your Rutland 913 Windcharger.

It is strongly recommended that you read this manual and familiarise yourself with its contents before attempting to repair the Windcharger system.

To use this fault finding guide, open out this flow chart, select the symptom in the left hand column & follow the arrows & instructions.

### **WARNING!**

- *When turning, the Windcharger is capable of generating voltages in excess of the nominal voltage. Caution must be exercised at all times to avoid electric shock.*
- *No attempt to repair the system should be made until the wind generator is restrained from turning.*
- *The Windcharger is fitted with ceramic magnets which can be damaged by heavy handling. The main generator assembly should be treated with care during transit and assembly.*
- *It is essential to observe the correct polarity when connecting the Windcharger and all other components into an electrical circuit. Reverse connection will damage the Windcharger and incorrect installation will invalidate the warranty.*
- *If in doubt, refer to your dealer, a competent electrical engineer or the manufacturer.*

## **Notes:**

### **1. Insufficient Wind / Turbulence**

Please see page 4 of the WG913 Owners Manual "Siting the Windcharger"- Document No SM1913 supplied with the WG913.

### **2. Turbine Not Turning**

- A. Check for a short circuit in system. Ensure there are no wires trapped or shorted to the supporting pole or other earth on the system. Ensure all wiring is connected correctly and securely.
  
- B. Check that the generator hub is running freely by rotating the hub by hand. If the hub does not rotate freely it could be due to a mechanical defect inside the generator hub. If the generator hub produces a rumbling sound, this could be due to faulty bearings which should be replaced.

### **3. Check Brushes and Slipping**

- Remove the generator from it's mounting & remove the front dome to enable the generator to be placed face down on a suitable flat surface.
- Remove the 3 screws which secure the nacelle in place, & slide the nacelle along the tail boom towards the tail fin to expose the brush holder assembly.
- Remove the 4 self tapping screws which secure the brush holder assembly to the casting.
- Withdraw the brush assembly and inspect the brushes and slipping surface. The slipping can be cleaned using fine emery cloth, applying light pressure to the slipping through the hole in the side of the casting while rotating the yaw assembly. Check the brushes for signs of damage or overheating, overheating indicates that at some time the battery has been connected with reverse polarity.
- Replace brushes if necessary.

### **4. Check Battery Condition.**

- Check battery voltage is correct for system.
- Check battery terminal voltage.
- Check electrolyte level if wet battery is fitted.

### **5. Check Regulator.**

In order to check the regulator it is necessary to use a variable d.c power supply together with a voltmeter and ammeter, if this equipment is not available the regulator must be returned to the manufacturer.

- Connect the Black lead of the SR200 to the negative of the power supply.
- Connect both the Brown and the Red leads of the SR200 to the positive of the power supply.
- Slowly increase the voltage of the power supply until 13.8v is reached, at this point the regulator will begin to draw current and the Red LED will light, a further increase of the power supply voltage will cause the Regulator to draw more current.
- The built in blocking diode can be checked using a multimeter set to Ohms range applied between the Red & Brown leads of the Regulator. Positive lead to Brown,

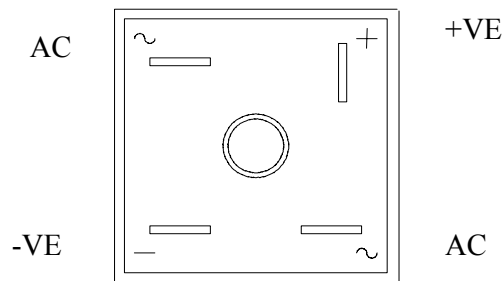
negative lead to Red should show continuity. Positive lead to Red, negative lead to Brown should show no continuity.

- If the Regulator does not operate as above it should be returned to the manufacturer or replaced.

#### 6. Check Rectifiers.

- It is first necessary to remove the generator and it's nacelle cover as in Note 3.
- Remove the connections from both rectifiers, making note of which terminals each wire is connected to.
- Using a multimeter on Ohms range, the rectifier can be tested as follows.

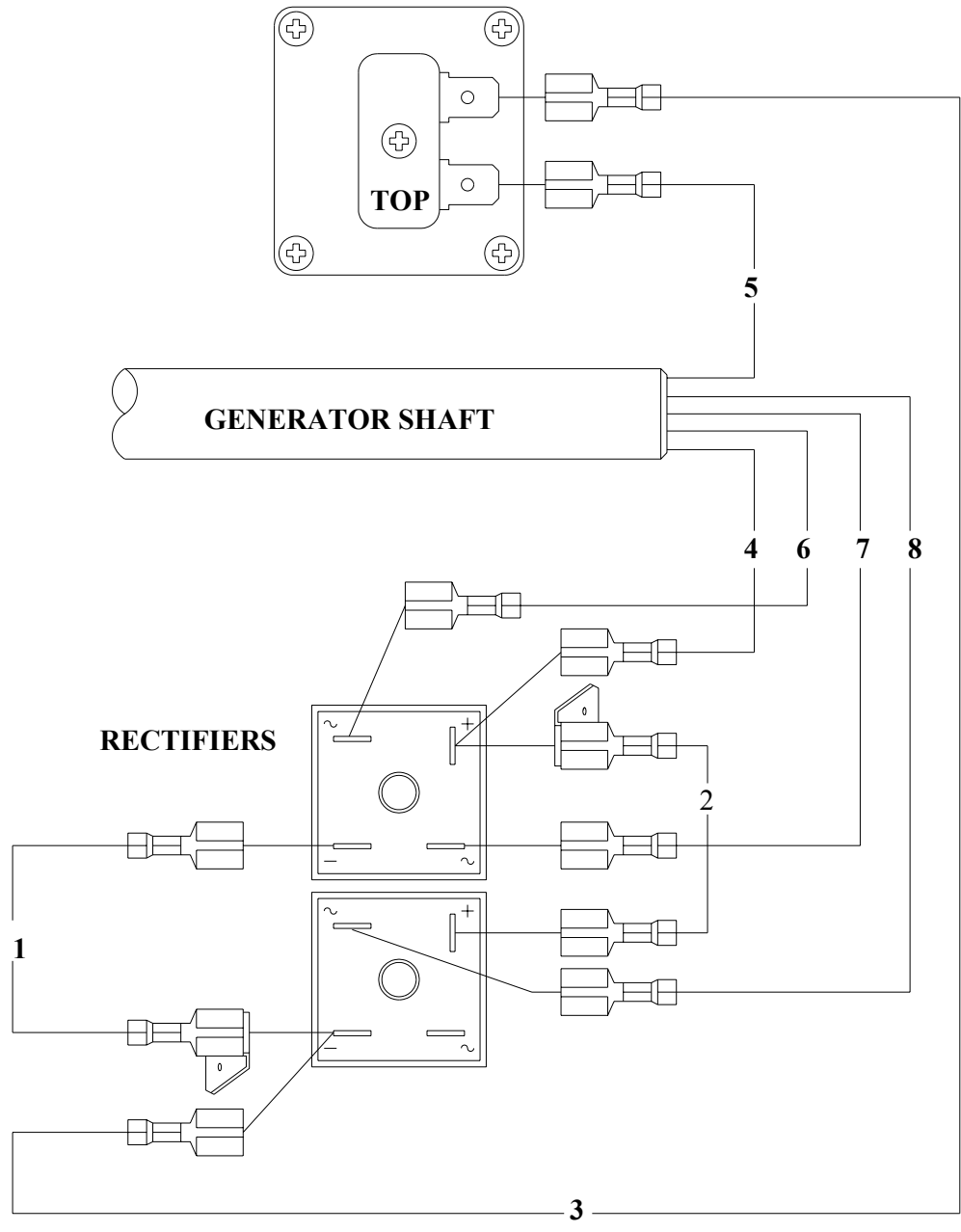
Red lead to +ve rectifier terminal, Black lead to each a.c terminal - No Continuity  
Black lead to +ve rectifier terminal, Red lead to each a.c terminal - Continuity  
Red lead to -ve rectifier terminal, Black lead to each a.c terminal - Continuity  
Black lead to -ve rectifier terminal, Red lead to each a.c terminal - No Continuity



- If the rectifiers do not operate as above they should be replaced.

#### 7. Check Winding.

- It is first necessary to remove the generator and it's nacelle cover as in Note 3.
- Disconnect the 3 generator leads from the rectifiers, making note of which terminals each wire is connected to.
- Using a multimeter on Ohms range or an Ohmmeter, measure the resistance between 2 of the 3 leads, the reading should be approx 1.8 Ohms for 12v machine, 7.2 Ohms for a 24v machine, at 20°C.
- Repeat the process for each combination of 2 leads, in each case the readings should be approx the same.
- If the resistance measured is greatly different from above, the winding should be replaced.
- Disconnect the 2 thermostat leads from the rectifier and brush assembly, making note of which terminals each wire is connected to.
- Using a multimeter on Ohms range, check the continuity of the thermostat between these 2 leads, at room temperature the thermostat should be closed indicated by a continuity reading, if no continuity can be measured the winding should be replaced.



No	Description
1	Black Cable
2	Red Cable
3	Black Cable
4	Thermostat lead
5	Thermostat lead
6	Winding Output lead
7	Winding Output lead
8	Winding Output lead

## Spare Parts List

Item No	Description	Marlec Part No
1	Aerofoil Blade	01-100
2	Nose Dome	01-103
3	Nacelle Cover	01-112
4	Bridge Rectifier	913-001
5	Carbon Brush	917-003
6	Slipring	919-003
7	6202ZZ Ball Bearing	921-001
8	6203ZZ Ball Bearing	921-010

### Sub Assemblies (Supplied pre-assembled)

9	Stator Winding 12v <i>Including: Bearings (Item 7)</i>	SA-06/07
	Stator Winding 24v <i>Including: Bearings (Item 7)</i>	SA-06/08
10	Hub Moulding (Front)	SA-01/05
11	Hub Moulding (Back)	SA-01/04
	Hub Assembly 12v <i>Including: Hub Mouldings (Items 10 &amp; 11) Stator Winding 12v (Item 9)</i>	SA-02/07
	Hub Assembly 24v <i>Including: Hub Mouldings (Items 10 &amp; 11) Stator Winding 24v (Item 9)</i>	SA-02/08
	Wind Shaft Casting Assembly <i>Including: Windshaft casting (Item 12) Brush Holder (Item 13) Carbon Brushes (Item 5) All related fasteners</i>	SA-04/04
	Post Adapter Assembly <i>Including: Post Adapter (Item 14) Post Shaft (Item 15) Slipring (Item 6) 6202ZZ Ball Bearing (Item 7) 6203ZZ Ball Bearing (Item 8) 0.5m 2.5mm Cable All related fasteners</i>	SA-05/04
	Tail Assembly <i>Including: Tail Fin (Item 16) Tail Boom (Item 17) All related fasteners</i>	SA-08/02
	Brush Assembly <i>Including: Brush Holder (Item 13) Carbon Brushes (Item 5) All related fasteners</i>	SA-10/02

