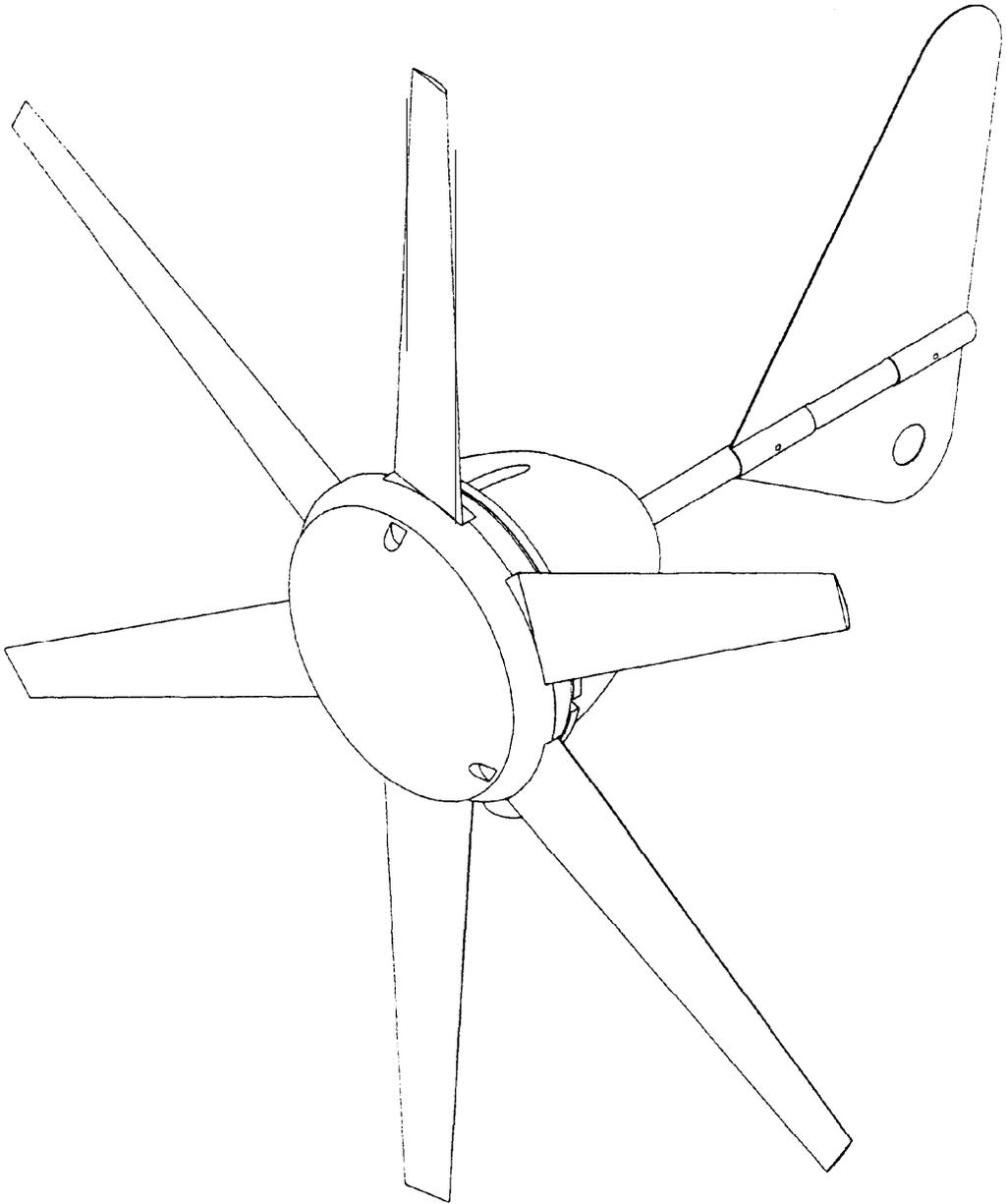


# Rutland 913 Windcharger Fault Finding Guide



## Notes:

### 1. Insufficient Wind / Turbulence

Please see page 4 of the WG9 13 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.

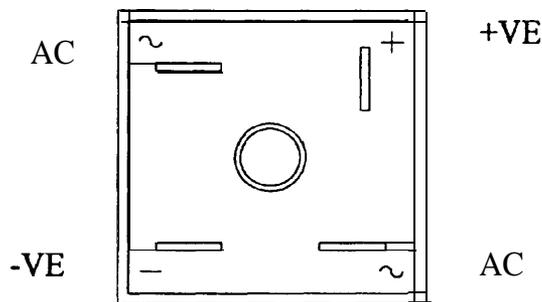
- Connect the Black lead of **the SR200** to the negative of the power supply.
- Connect both the Brown and the Red leads of the SR200 to the positive of the power supply.
- Slowly increase the **voltage** of the power supply **until 13.8v** is reached, at this point **the** regulator will begin to **draw 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 its **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.

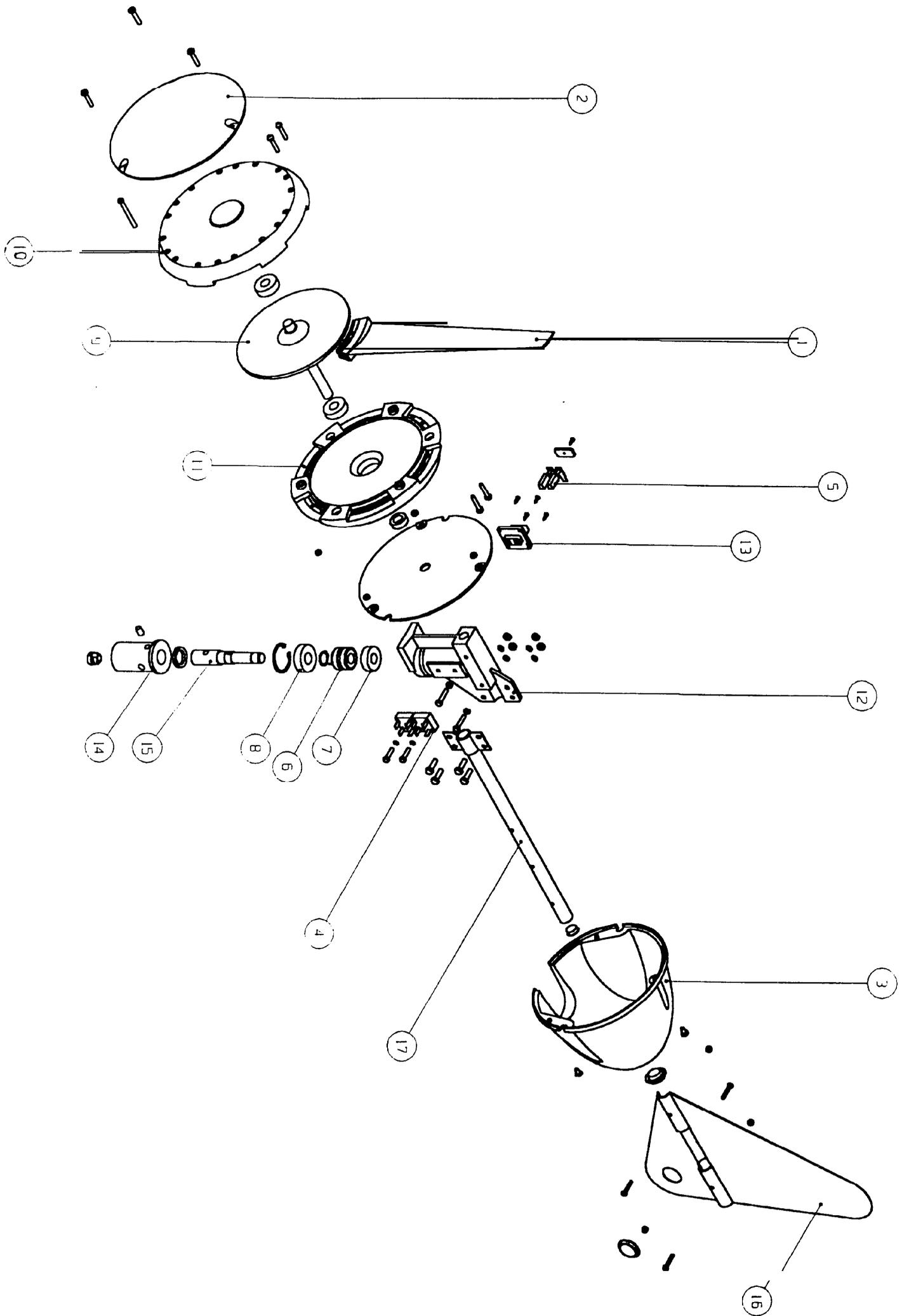
- It is **first necessary** to remove the generator and its **nacelle cover** as in Note 3.
- **Disconnect the 3 generator leads from the rectifiers**, making note of which terminals **each wire** is connected to.
- Using a multimeter on Ohms range or an Ohmmeter, **measure** the resistance between 2 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.

## Spare Parts List

Item No	Description	Marlec Part No
1	Aerofoil Blade	01-100
2	Nose Dome	01-103
3	<b>Nacelle</b> Cover	<b>01-112</b>
4	Bridge <b>Rectifier</b>	<b>913-001</b>
5	<b>Carbon</b> Brush	917-003
6	Slipring	919-003
7	<b>6202ZZ</b> Ball Bearing	921-001
8	620322 Ball Bearing	921-010

### Sub Assemblies (Supplied pre-assembled)

9	Stator <b>Winding 12v</b> <i>Including: Bearings (Item 7)</i>	SA-06/07
	Stator <b>Winding 24v</b> <i>Including: Bearings (Item 7)</i>	SA-06108
10	Hub Moulding (Front)	SA-01105
11	Hub Moulding (Back)	SA-01/06
	Hub Assembly <b>12v</b> <i>Including: Hub Mouldings (Items 10 &amp; 11)</i> <i>Stator Winding 12v (Item 9)</i>	SA-02107
	Hub Assembly <b>24v</b> <i>Including: Hub Mouldings (Items 10 &amp; 11)</i> <i>Stator Winding 24v (Item 9)</i>	SA-02/08
	Wind <b>Shaft</b> Casting Assembly <i>Including: Windshaft casting (Item 12)</i> <i>Brush Holder (Item 13)</i> <i>Carbon Brushes (Item 5)</i> <i>All related fasteners</i>	SA-04104
	Post Adapter Assembly <i>Including: Post Adapter (Item 14)</i> <i>Post Shaft (Item 15)</i> <i>Slipring (Item 6)</i> <i>6202ZZ Ball Bearing (Item 7)</i> <i>6203ZZ Ball Bearing (Item 8)</i> <i>0.5m 2.5mm Cable</i> <i>All related fasteners</i>	SA-05/04
	Tail Assembly <i>Including: Tail Fin (Item 16)</i> <i>Tail Boom (Item 17)</i> <i>All related fasteners</i>	SA-08102
	Brush Assembly <i>Including: Brush Holder (Item 13)</i> <i>Carbon Brushes (Item 5)</i> <i>All related fasteners</i>	SA-10/02



# INTRODUCTION

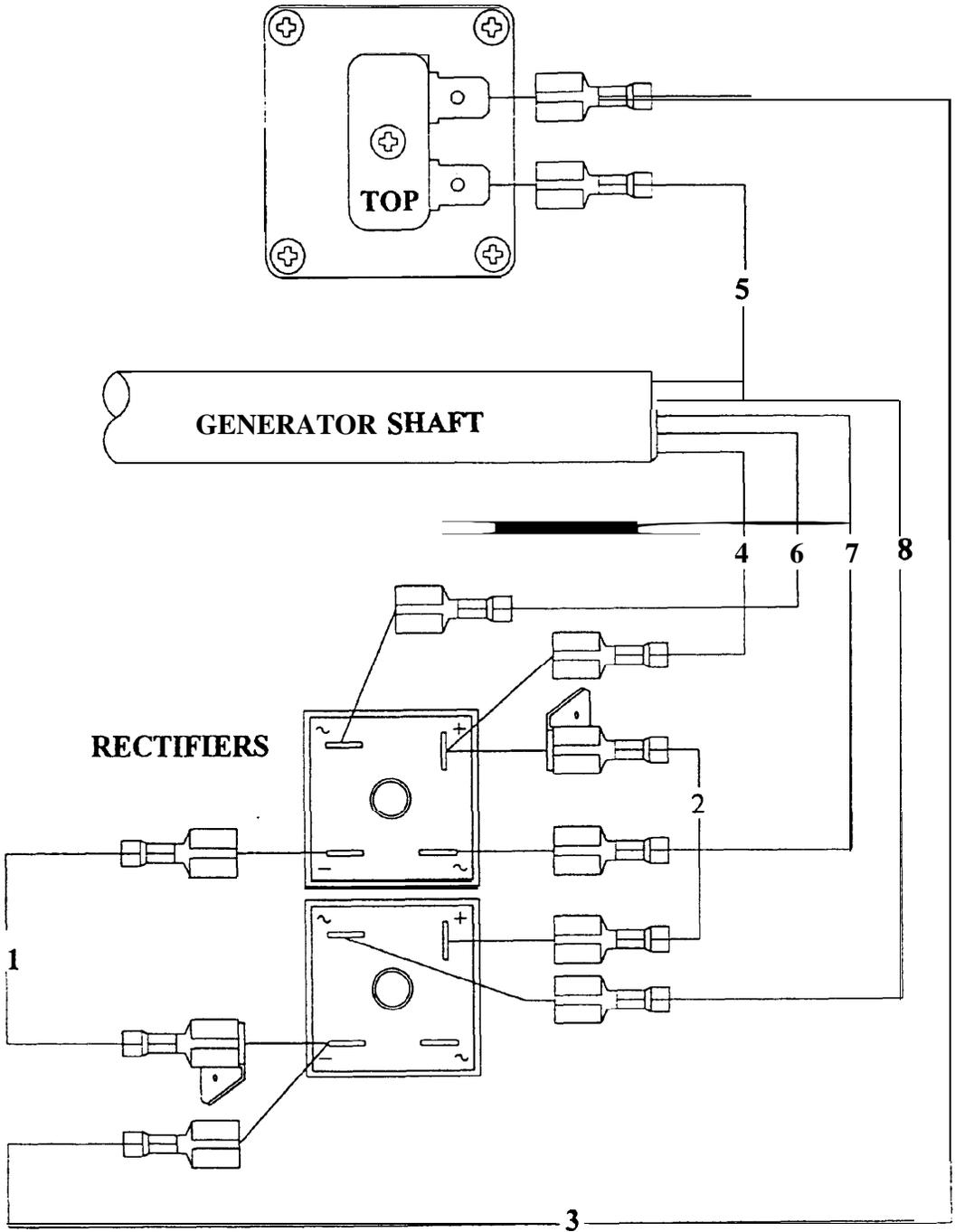
This manual contains **important** information concerning fault finding on your Rutland 913 Windcharger.

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

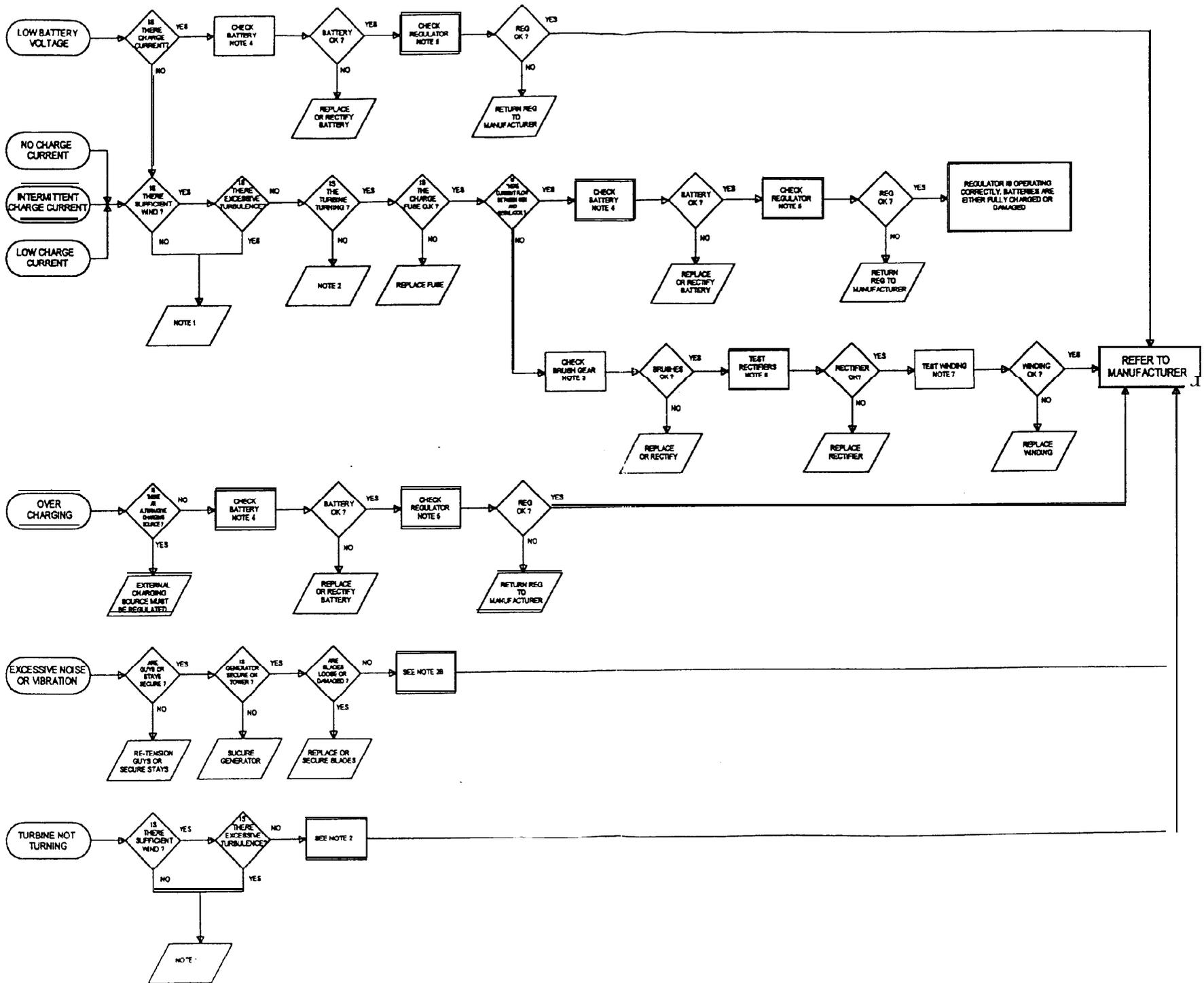
To use this fault finding guide, open out this flow chart, select the Symptom in the left hand column & follow the arrows & instructions.

## **WARNING!**

- *When tuning, 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.*



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



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