

## Introduction

Use the “Flow Charts” in conjunction with the detailed instructions in **Section 2.3, *Diagnostic Tests*** . Test numbers and/or verbiage used in the flow charts correspond to the numbered tests and/or verbiage in Section 2.3.

The first step in using the flow charts is to identify the correct problem on the following pages. For best results, perform all tests in the exact sequence shown in the flow charts.

## Preliminary Output Voltage Test

**NOTE:** This test is for Evolution 1.0 firmware (v1.12 and above) and Evolution 2.0 (all firmware) and does not apply to VSCF Synergy.

### General Theory

When an Alarm of the 1900 group (Undervoltage) is displayed on the controller, certain tests need to be performed to determine the actual fault. With firmware v1.12 and above, up to four minutes (in Manual Mode) is available to measure output voltage before shutting down on “Under Voltage”. Measuring output voltage as described in this test will help determine the next step in troubleshooting. Refer to **Table 2-1**.

When measuring output voltage, it is important to look at the output voltage displayed on the control panel as well as measuring actual output voltage of the generator.

**NOTE:** If the unit enters a shutdown during this procedure, acknowledge the alarm by pressing the OFF

button and then ENTER. Restart unit if necessary to complete the test.

### Procedure

1. Set the Main Line Circuit Breaker (MLCB) to the CLOSED (ON) position.
2. Disconnect and isolate Wire 23 (from ground) in the customer connection area of the generator or the transfer switch to ensure that the generator DOES NOT transfer power to the load (structure) during testing.
3. Navigate to the voltage display using the dealer menu map for the controller.
4. Set the controller to MANUAL. Allow generator to start and stabilize.
5. Visually monitor the output volts displayed on the controller. Record the value indicated.

**Voltage Indicated on the Controller:** \_\_\_\_\_

6. Set the digital multimeter (DMM) to measure AC voltage.
7. Connect one meter test lead to Wire 11 and the other meter test lead to Wire 44 at the load side of the MLCB.
8. Measure and record the voltage indicated on the DMM.

**Measured Voltage Output at MLCB:** \_\_\_\_\_

9. Shut the unit down by pressing the OFF button on the controller.
10. Connect Wire 23.

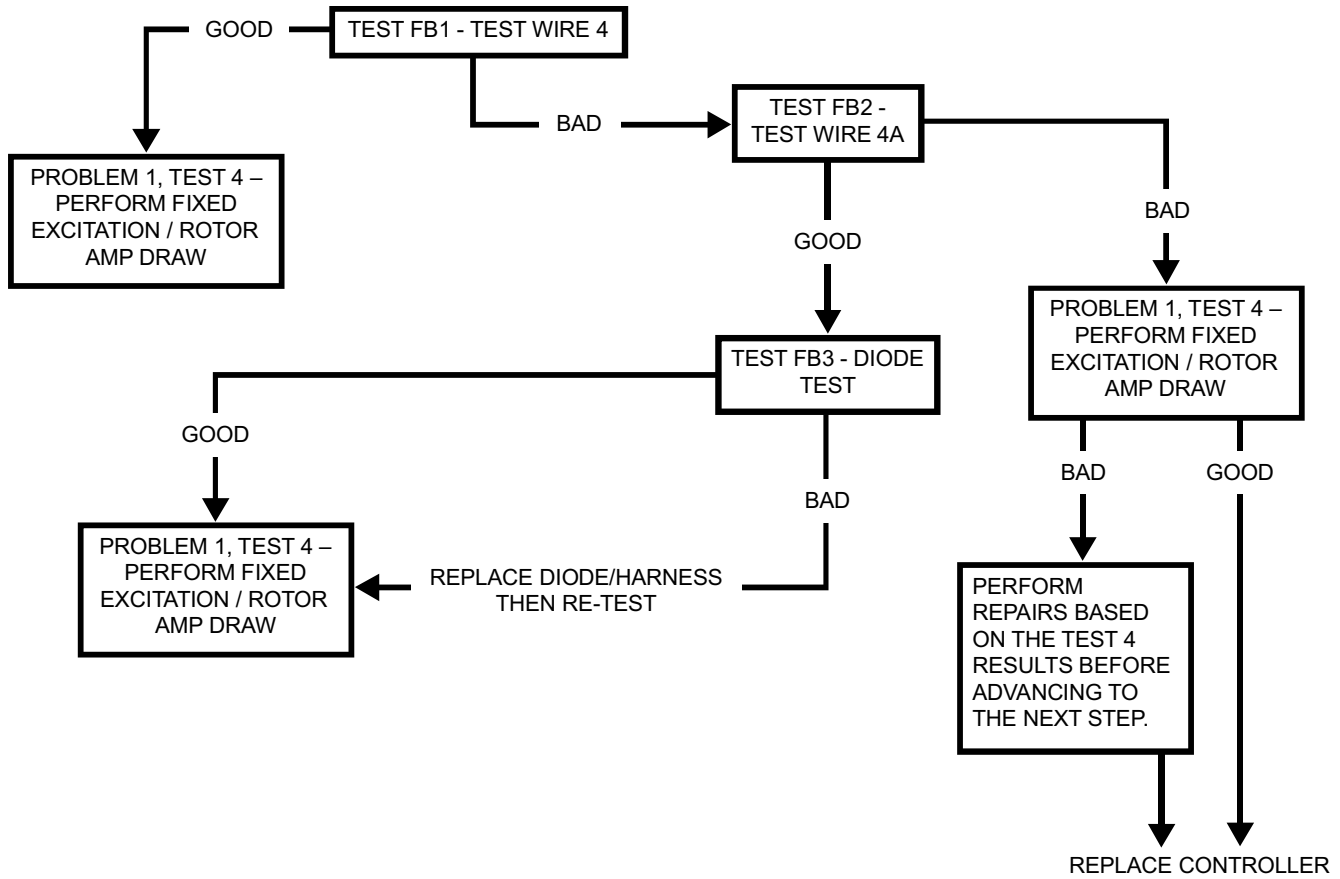
**Table 2-1. Preliminary Output Voltage Test Results**

Controller Voltage	Measured Voltage	Flow Chart Path Begin:	Perform Test(s):
0 (+10%)	140-180 (+ or - 10%)	C	<b>Test 6 – Test Excitation Winding Circuit 2 and 6</b>
140-180 (+ or - 10%)	140-180 (+ or - 10%)	FB1	<b>Test FB1 – Test Wire 4</b>
0 (+20%)	0 (+20%)	FB2	<b>Test FB2 – Test Wire 4A</b> if necessary, perform tests as defined in the <b>Field Boost Circuit Test (FBCT)</b> flowchart.
~50% of measured voltage	≥300	B	<b>Test 5 – Test Sensing Circuit Wires 11S and 44S</b>

**Table 2-2. Output Voltage Test Results**

Voltage		Voltage		Voltage	
Indicated Controller		Indicated Controller		Indicated Controller	
Measured Output		Measured Output		Measured Output	

**Field Boost Circuit Test (FBCT)**



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