

BRUSHLESS GENERATOR TROUBLESHOOTING GUIDE**GENERATOR STARTS – NO VOLTAGE / LOW VOLTAGE**

1. Take off pan cover and visually inspect for metal shavings and melted insulation on wires or melted zip ties.
2. Check engine speed – should be at 1800 RPM. See diagram 1 on page 3 for settings.
3. If engine speed is O.K., check at stator mate-n-lock wires 3 and 4. Output should be 120 volts.
4. If no voltage is present, proceed to check control box components and wiring.
5. If still no voltage, flash unit by taking 12 volt battery (DO NOT USE CHARGER!) – jump to capacitor while unit is running and exciter wires are hooked up. Hold battery on for 2 or 3 seconds. Recheck voltage.
6. If you have 120 volts at mate-n-lock, check for bad GFI's or circuit breakers. Replace if necessary.
7. If still no voltage greater than 3 VAC, test capacitor
8. If capacitor is good, next step would be to test diode and rotor (see pages 3-5).
9. If rotor and diode test good, then test stator

CAPACITOR

WARNING: Safety glasses should be worn when performing this test.

WARNING: A capacitor has the ability to hold an electrical charge. Short the terminals of the capacitor together to discharge any potentially dangerous electrical charge before performing this test.

The capacitor must be able to store a charge for the generator to operate properly. To test the capacitor's ability to store a charge, perform the following test:

1. Isolate the capacitor from the exciter winding and briefly apply a 12-volt DC charge to the capacitor for 2-3 seconds using a 12-volt automotive battery (Diagram 1, this page). The capacitor is not polarity sensitive.

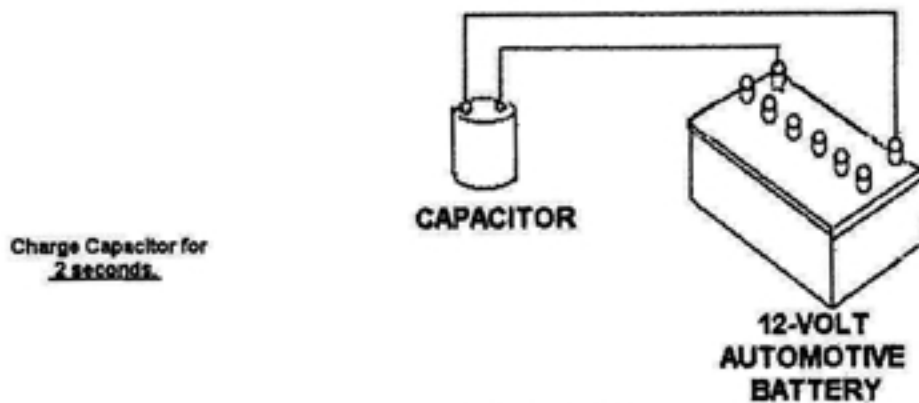
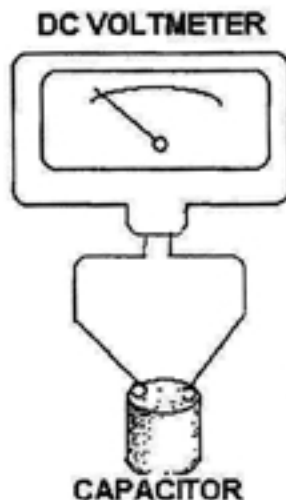


DIAGRAM 1

2. Take a DC voltage measurement across the capacitor. You should get a voltage reading within 2 volts of the battery charge (Diagram 2, this page).

NOTE: The capacitor will discharge through the meter when you are taking the voltage measurement.



Voltmeter reading should be within
2 volts of battery charge

DIAGRAM 2

ROTORS AND ROTOR DIODES

(Implemented June 1993)

To check the rotor and the rotor diodes, the end cover must be removed.

Rotate rotor so the 3 posts are at the 12 O'clock position. There should be a jumper wire from the left post to center post. The two outer posts are brass colored and the center is the diode (see figure below).

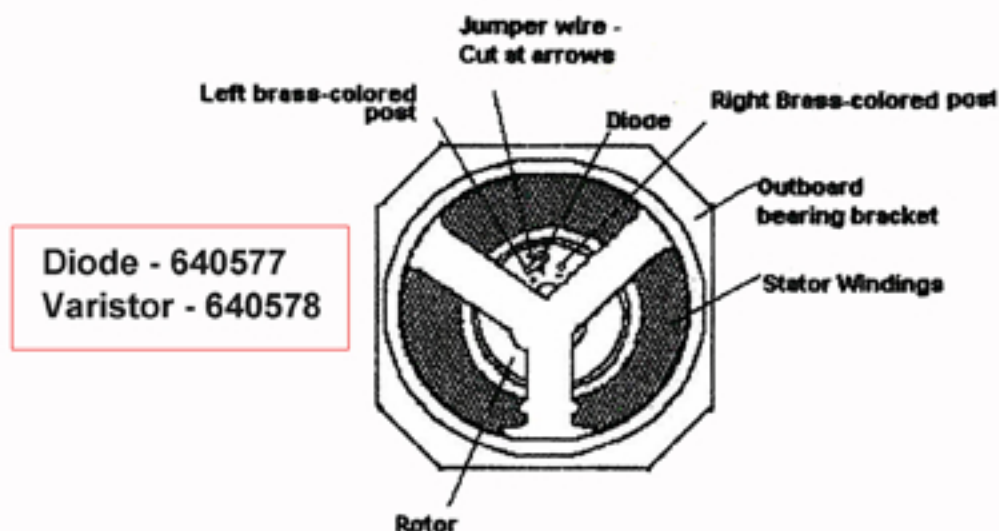
Using a pair of wire cutters, cut the jumper wire between left brass colored post and center post (diode).

Using a multi-meter set on lowest resistance range, put one lead on center post and the other lead to right post. Check for high resistance in one direction and low resistance in the other direction. A defective diode will give you the same resistance reading both directions.

The rotor winding may be checked when jumper wire is cut. Use a multi-meter set on its lowest resistance range to check between left and right post. You should get about 1 to 4 ohms. Continuity should not exist from copper post to rotor laminations or ground.

If the diode is bad, replace it. The cut jumper wire must be resoldered.

For information on replacing diodes, contact BALDOR Technical Service at: (479) 646-4711.



EXTERNALLY REGULATED GENERATOR TROUBLESHOOTING GUIDE

FOR BALDOR GENERATOR SETS WITH SOLID STATE VOLTAGE REGULATION.

APPLIES TO MODELS AE10 & UP, TS AND OTHERS WITH EXTERNAL VOLTAGE REGULATION.

WARNING! These procedures can cause damage, injury, or even death if not performed properly. Qualified, experienced individuals must only perform these procedures/tests.

WARNING! All safety precautions / procedures must be used while performing these procedures / tests to help ensure your safety.

<u>PROBLEM</u> (In order of Probability)	<u>POSSIBLE CAUSE</u>
Low Voltage (The generator set has only 15-20 VAC output)	Bad Voltmeter* Incorrect Engine Speed Bad/Open Circuit Breaker/Fuse Bad Voltage Adj. Rheostat* Bad Capacitor Bad Connection Bad Rotor Diodes Bad Voltage Selector Switch* Bad Stator Windings Bad Rotor Windings
Low Voltage (The generator set has 0-15 VAC Output)	Bad Capacitor Bad/Open Circuit Breaker/Fuse Bad Connection Loss of Residual Magnetism Bad Voltage Selector Switch* Bad Stator Windings
Incorrect Voltage Output	Bad Voltmeter* Incorrect Engine Speed Bad Voltage Adj. Rheostat* Bad Capacitor Bad Connection Bad Voltage Selector Switch*
Generator Set Will Not Pull Load	Incorrect Engine Speed Load too large for unit Load not connected properly

*Optional components - may not be included on your generator.

PROBLEM**CHECKING PROCEDURE**

Bad Voltmeter	Take a voltage reading across the back of the Voltage Meter with an accurate voltmeter known to be in good working order.
Incorrect Engine Speed	The generator needs to operate at the speed listed on the nameplate. On 60Hz units, the no load speed of the generator needs to be set at 61-62 Hertz. If your generator does not fall in this range, the engine speed needs to be adjusted.
Bad Connection	Check all wiring connections including grounds to make sure they are good, solid and corrosion free. Check all crimp terminal blocks to make sure the connections are still good. Check all male / female connection points to make sure they are still good. Any bad connection can cause problems with the generator set.
Bad/ Open Circuit Breaker or Fuse	All circuit breakers and fuses need to be checked with an Ohm Meter to make sure they have continuity across them. Please note one end on the circuit breaker/fuse should be isolated from all wiring before you check it.
Loss of Residual Magnetism	<p>** To restore residual magnetism on generator set with a Basler Voltage Regulator, apply 12 VDC to the F- and F+ lead wires that go to the exerciser winding of the stator. Disconnect these wires that go to the exerciser winding of the stator. Disconnect these wires from the voltage regulator prior to applying the 12 VDC. The 12 VDC needs to be applied for approximately 5 seconds when the generator set is running. Once you have flashed the unit, shut the engine down, reconnect the regulator and restart the unit to see if the unit now works (Also see 'Field Flashing - Illustrations' located later in this guide).</p> <p>NOTE: If the generator set loads up while applying the 12 VDC, stop the process immediately and stop the engine. Contact the Technical Service Department at Baldor (479) 646-4711.</p> <p>** This procedure is commonly known as Flashing the Generator.</p>
Bad Generator Capacitor	See Capacitor testing procedure on page 2.

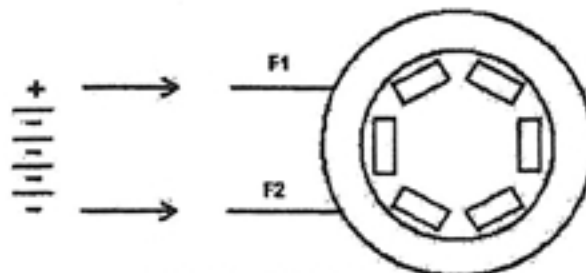
PROBLEM

CHECKING PROCEDURE

<p>Bad Rotor Diodes</p>	<p>Isolate the diodes from the rotor and check (with an Ohm Meter) to make sure the current will only flow through them in one direction.</p>
<p>Bad Rotor Winding</p> <div data-bbox="217 426 695 814" data-label="Diagram"> <p style="text-align: center;">WIRING DIAGRAM</p> </div>	<p>If the generator set is 25 KW or less, first isolate the rotor windings by unsoldering them. Before doing this, it is important to label both wires and terminals to ensure proper reconnection (the wires back to the exact terminals they came off of).</p> <p>The bridge rectifiers should now be checked, one shorted / open diode can cause the generator set to not produce electricity.</p> <p>The following winding resistances should be found:</p> <ul style="list-style-type: none"> - lead to + lead = 3 to 5 ohms - lead to - lead = .1 ohm + lead to + lead = .1 ohm <p>Of the three AC leads, no matter which two leads measured across the resistances should be equal.</p> <p>Also note: None of the leads mentioned above should have continuity to ground.</p> <p>On units larger than 25 KW, consult the owner's / operator's manual or contact Baldor.</p>
<p>Bad Stator Windings</p>	<p>To check the stator windings, first disconnect the stator leads from the control box wiring (usually at a terminal block or voltage selector switch).</p> <p>On 12 lead units; check to make sure continuity is present across stator coil leads 1-4, 2-5, 3-6, 7-10, 8-11 and 9-12. These readings should be identical and except as mentioned, the leads should not have continuity to ground or any other leads.</p> <p>On 4 lead units; check to make sure the resistance reading from lead 1 to 2 is the same as the reading from lead 3 to 4. No continuity should exist from lead 2 to 3. Nor should continuity exist from any lead to ground.</p> <p>The leads going to the exciter winding (F - and F+) should have a resistance reading of 32 to 36 ohms across them.</p>

PROBLEM**CHECKING PROCEDURE**

Load Too Large for the Generator Set	<p>Compare the amperage requirements of the load to the amperage rating of the generator set. Please note: If you are powering inductive type loads, use the starting amperage rating of the load as opposed to the running amperage rating (starting amperage may be as much as 5 times the running amperage).</p> <p>If the generator amperage rating is above the amperage requirements of the load and there is proper voltage at no load and the engine bogs down substantially, the problem may be the engine does not have the necessary horsepower or it is not operating properly.</p>
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FIELD FLASHING 250 / 280 / 300**12V D.C. METHOD****APPLY 12V FOR 10 - 15 SECONDS****NOTE:
REGULATOR MUST BE DISCONNECTED
PRIOR TO FLASHING**