

CDI P/N: 197-0002 Yamaha Voltage Regulator Replaces P/N: 6H0-81960-00-00.

WARNINGS:

- This product is designed for installation by a professional marine mechanic. CDI cannot be held liable for injury or damage resulting from improper installation, abuse, neglect or misuse of this product.
- **DO NOT USE A MAINTAINENCE FREE, AGM OR DRY CELL BATTERY WITH THIS TYPE REGULATOR/RECTIFIER!!!**
- **NEVER DISCONNECT THE BATTERY WHILE THE ENGINE IS RUNNING AS THIS MAY BURN OUT THE REGULATOR/RECTIFIER. If the boat is equipped with a battery switch, make sure that it is a make before break type.**

INSTALLATION

1. Disconnect the negative battery cable.
2. Disconnect and remove the old regulator/rectifier (saving the mounting bolts).
3. Install the new regulator/rectifier, using the original mounting bolts.
4. Connect the Black wire to a clean engine ground (reconnect to the same location as the original regulator/rectifier was grounded).
5. Connect the stator's Green wire connector to the new regulator/rectifier.
6. Connect the stator's Green/White wire connector to the new regulator/rectifier.
7. Connect the stator's Green/White pigtail wire from the new regulator/rectifier to the Green/White wire in the engine harness (Tach Lead).
8. Connect the Red wire with the bullet connector to the mating connector going to the engine harness.
9. Reconnect the negative battery cable.

TROUBLESHOOTING

BATTERY IS NOT BEING CHARGED:

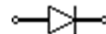
1. Clean all Battery cables, engine and battery connections, both on the engine and on the battery.
2. Install a clamp on ammeter capable of reading at least 30 amperes on the Red battery cable connected to the starter solenoid. Start the engine and see if the ammeter is showing a charge going into the battery. If so, swap out the battery for a known good one. If the engine now shows a charge going into the battery, the old battery is defective.

3. Check the resistance between the Lighting Coil's Green wires as follows:

Read From	Read To	Disconnected
Green	Green/White	0.40 to 0.60 Ω

4. Disconnect all connections to the Regulator/Rectifier. Then, using a Multimeter set to diode scale, check the **Diodes** between the Regulator/Rectifier's Green wires and the Red Wire as follows:

Red Meter Lead Connection	Black Meter Lead Connection	Reading
Green	Red Lead from Regulator/Rectifier	0.4 to 0.6
Green/White	Red Lead from Regulator/Rectifier	0.4 to 0.6
Red Lead from Regulator/Rectifier	Green	Open or No Reading
Red Lead from Regulator/Rectifier	Green/White	Open or No Reading



5. Check the DVA voltage on stator's Green wires as follows:

Read From	Read To	Disconnected	Connected	At 1500 RPM	At 3500 RPM
Green	Green/White	7V (at cranking)	7V (at cranking)*	13 V*	11 V*

*Connected to the Regulator/Rectifier. If the voltage is too high, the Regulator/Rectifier may be defective. If the voltage is too low, the stator is likely defective.

NO TACHOMETER SIGNAL:

1. Disconnect the Green/White wire coming from the engine harness. Using a jumper wire, connect it to the Green lead.
2. If the Tach now works, try cross connecting the Green and Green/White leads to the Regulator/Rectifier. Leave the Green/White Tach lead from the harness connected to the Green wire of the Regulator/Rectifier.
3. If the Tach quits working, check for a short to engine ground of the Lighting Coil.

- If no change, the Regulator/Rectifier may be defective.

Maximum Output Test

(Verify the maximum output of your engine using the factory Service Manual)

- Install a clamp on ammeter capable of reading at least 20 amperes in-line on the Red wire connected to the starter solenoid.
- Connect a load bank to the battery.
- In the water or on a Dynamometer, start the engine and bring the RPM up to approximately 3500 in gear.
- Turn on the load bank switches to increase the battery load to equal at least 20 Amps.
- Check the ammeter, you should see approximately 10 Amps. If the amperage is too low, replace the battery and retest. If is still too low, check the stator resistance and DVA.
- Increase RPM to 5500 RPM in gear.
- Turn on the load bank switches to increase the battery load to equal at least 30 Amps.
- Check the ammeter, you should see approximately 10 Amps. If is still too low, check the stator resistance and DVA.

Bench Test (Disconnected)

Rectifier/Regulator Diode plate check:

- Test the diodes between the Two Green wires to the Red wire and to the Black Ground wire., with the meter set to Diode test.

Red Meter Lead	Black Meter Lead	Reading
Green	Red	about 0.5
Green/White	Red	about 0.5
Red	Green	Very high or open
Red	Green/White	Very high or open
Black	Green	about 0.5
Black	Green/White	about 0.5
Green	Black	Very high or open
Green/White	Black	Very high or open

