



# Installation and Troubleshooting Guide



NOTE: This installation is to be completed by an Authorized Dealer or Professional Service Technician. For questions regarding installation or warranty, call CDI Tech Support at 866-423-4832. **Do not return to the Dealer or Distributor where the part was purchased. Contact CDI Electronics Directly for Return Material Authorization.**

## CDI P/N: 197-6G5-A0 Voltage Regulator Yamaha

Replaces P/N: 197-1960 and 6G5-81960-A0-00

### 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.***

1. Disconnect the negative battery cable .
2. Disconnect and remove the old regulator/rectifier.
3. Mount the new adapter plate using the flat head bolts supplied.
4. Mount the new regulator/rectifier to the adapter plate (Use heat sink compound on the back of the new regulator/rectifier. Connect the black wire to one of the mounting studs for the new regulator/rectifier.
5. Cut off the ring terminals from the two green wires from the stator. Strip approximately 3/16" of insulation from each. Slide the female bullet connector sleeves on each green wire, then crimp and solder the female bullet terminals on the wires. Connect these wires to the two yellow wires from the regulator/rectifier.
6. Cut off the ring terminal from the single green wire from the engine harness. Strip approximately 3/16" of insulation from the cut end. Slide the male bullet connector sleeve on the wire, then crimp and solder the male bullet terminal on the wire. Connect this wire to the gray wire from the regulator/rectifier.
7. Cut off the ring terminals from the two red wires from the engine harness. Strip approximately 3/16" of insulation from each. Slide the male bullet connector sleeve on one of the wires, then crimp and solder the male bullet terminal on the wire. Connect this wire to the smaller red wire from the regulator/rectifier. Slide the female bullet connector sleeve over the other red wire, then crimp and solder the female bullet terminal on the wire. Connect this red wire to the large red wire from the regulator/rectifier. Note: If your harness only has a single Red wire, connect it to the large Red wire from the rectifier/regulator.
8. Reconnect the negative battery cable.

Note: This regulator/rectifier draws a very small amount of current as a standby voltage. This draw is typically around 0.00005 amps. If the boat is to be stored for an extended time, it is recommended that the battery be disconnected.

### TROUBLESHOOTING

1. At 800-1000 RPM, check output on the gray wire, reading should be at least 8 volts with a DVA meter. A low reading usually indicates a bad regulator if the system is charging the battery.
2. Check the resistance between the gray wire and engine ground. You should read above 100K (100,000) ohms. Gray to red, and gray to the yellow wires should be a high reading, usually in the M range.

### Maximum Output Test

1. Install an ammeter capable of reading at least 40 amperes in-line on the red wire connected to the starter solenoid.
2. Connect a load bank to the battery.
3. In the water or on a Dynamometer, start the engine and bring the RPM up to approximately 4500 in gear.
4. Turn on the load bank switches to increase the battery load to equal 40 Amps.
5. Check the ammeter, 16 Amp systems should show approximately 16 Amps and 40 Amp systems will show approximately 20 amps on each regulator/rectifier.
6. If the amperage is low,
  - A) Check the load bank for battery draw.
  - B) Reconnect the ammeter between the red wires from one of the regulator/rectifiers and the terminal strip. Retest. You should show about 20 Amps from each regulator/rectifier.
  - C) If the output is still low, check and clean all connections between the battery and the regulator/rectifier plate.
7. If the amperage is correct, but the battery voltage remains low, replace the battery.

### Bench Test

**Diode plate check:** Test the forward diodes between the two yellow wires and the red wire. You should get a reading of about 45K (45,000) on one and a high reading on the other. Check the resistance from each of the yellow wires to case ground, you should get a reading of about 56K (56,000) on one and a high reading on the other. The red wire should read about 14K (14,000) ohms to ground.

### Tachometer Circuit:

Check the resistance between the gray wire and engine ground. You should read above 100K (100,000) ohms. Gray to red, and gray to the yellow wires should be a high reading, usually in the M range