



**CDI P/N: 194-2115K1**

# Installation and Troubleshooting Guide

All rights reserved. Reproduction or use of content, in any manner, without express written permission by CDI Electronics, Inc., is prohibited.

This kit replaces Mercury P/N's: 194-3072, 854515T 2, 883072T 1, 883072T 2, 892115-001, 892115-002, 893640-002 and 893640-A02.

**Warning!** 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 MAINTENANCE FREE, AGM OR DRY CELL BATTERY WITH THIS TYPE REGULATOR/RECTIFIER AS THIS WILL VOID THE WARRANTY !!!**

## Precautions:

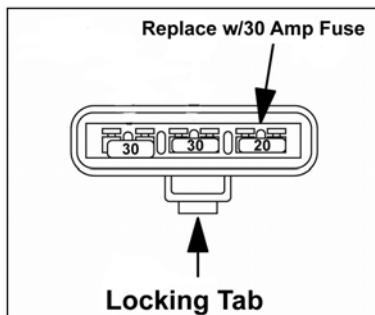
1. NEVER disconnect the voltage regulator output (Red) wires, regulator harness or battery cables while the engine is running.
2. Always remove the Battery Negative cable before working on the battery charging system.
3. When installing the battery, make SURE the Negative battery cable is connected to the negative battery terminal.
4. When charging the battery, make SURE the Negative charger cable is connected to the negative battery terminal (a high output charger can charge a battery backwards).

## Installation

1. DISCONNECT THE BATTERY NEGATIVE POST FIRST!
2. Disconnect and remove the old regulator/rectifier.
3. Visually check the stator for burned battery charge windings. Dark brown or Black charge windings indicate the stator has been over-heated and needs replacement.
4. Use a quality heat-sink compound (CDI P/N: 989-8109) on the back of the regulator when you install the new regulator/rectifier.
5. Connect the twin connectors for the Yellow wires together and the single plastic connector for the Red wire together. Connect the Gray wire to the Gray wire from the engine harness (only connects to one regulator/rectifier on a V6 engine). If the old regulator/rectifier had the Grey wire capped off, cap off the Grey wire on the new regulator/rectifier. Connect the small Red wire to the Red wire from the harness. If the old regulator/rectifier only had one Red wire, tape off the extra Red wire on the new regulator/rectifier.
6. Position the Red and Yellow connectors over the foam strip and secure them using the metal mounting strap.



7. On V6 engines, replace the 20 Amp fuse with the 30 Amp fuse supplied per the factory Service Bulletin 2001-09. All 3 of these fuses should be the 30 Amp rating. On all other engines, ignore the 30 Amp fuse supplied as it is not required.



8. Reconnect the Negative battery cable.

**SERVICE NOTE:** It is recommended that dielectric grease (i.e. CDI P/N 991-9705) be used in the connectors to help prevent corrosion.

**INSTALLATION NOTE:** These regulator/rectifiers will cause a small spark when you reconnect the battery and will draw a very small amount of current from the battery (Less than 0.001 amp).



# Installation and Troubleshooting Guide

All rights reserved. Reproduction or use of content, in any manner, without express written permission by CDI Electronics, Inc., is prohibited.

## Troubleshooting

### Not Charging the Battery:

1. Clean and service the battery cable connections (both on the engine and on the battery). Stainless steel hex nuts and lock washers are recommended to connect the cables to the battery.
2. Check the 30 Amp fuses in the harnesses fuse holder.
3. Charge and load test the battery.
4. Connect an ammeter inline between the boat harness and the battery. Verify the boat battery load does not match or exceed the charging system capability.
5. Connect an ammeter inline between the regulator/rectifier and the battery. Connect a load bank (set to the maximum output of the charging system) to the battery.
6. With the engine on a Dyno or in the water, bring the engine up to at least 4000 RPM. Turn the load bank on and observe the ammeter reading. It should show very close to the rated output of the charging system. Remember the charging system output is directly proportional to the engine RPM.
7. Check the battery charge winding of the stator. Typically, you will measure approximately 1 ohm of resistance between the yellow wires and no reading to engine ground.

### No Tachometer Signal

1. Swap the Gray Tachometer wire to the other regulator/rectifier (V6 engines) and retest. If the Tachometer still does not work, jumper another Tachometer to the engine and see if it works.
2. 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.
3. 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 Dynometer, 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.
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