

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: 194-2115K 1 Voltage Regulator 2, 3, 4, & 6 Cylinder

This kit replaces Mercury P/N's: 194-3072, 854515T 2, 883072T 1, 883072T 2, 892115-001, 892115001, 892115-002, 892115002, 893640-002, 893640002, 893640A02 and 8M0027324.

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

### PRECAUTIONS:

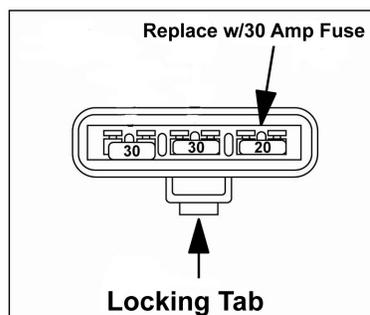
1. NEVER disconnect the voltage regulator output (Red) wires, regulator harness or battery cables while the engine is running.
2. Always remove the Battery Negative cable before working on the battery charging system.
3. When installing the battery, make SURE the Negative battery cable is connected to 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. Use a good quality dielectric grease on the rubber seal of the two terminal connector and a small amount in the bullet connectors to seal out moisture.
6. Connect the twin connectors for the Yellow wires together and the single plastic connector for the Red wire together. Connect the Grey wire to the Grey 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, connect the Red jumper wire to the new regulator/rectifier and connect the remaining end to the starter solenoid's battery terminal.
7. Position the Red and Yellow connectors over the foam strip and secure them using the metal mounting strap.



8. 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 unless a 20 amp fuse was used on the old Regulator/Rectifier.



9. Reconnect the Negative battery cable.

**SERVICE NOTE:** These regulator/rectifiers may cause a small spark when you reconnect the battery and will draw a very small amount of current from the battery (Less than 0.005 amp).

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## 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. Charge and load test the battery.
3. Verify BOTH Red wires have Battery voltage on them. Without Battery voltage on both Red wires, the Regulator/Rectifier may not work.
4. Check the fuses (30 Amp for V6 and 20 Amp for smaller engines) in the harness's fuse holder and inspect the terminals in the fuse holder for corrosion or burned spots.
5. 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.
6. 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.
7. In the water or on a Dynamometer, start the engine. Allow the engine to warm up and bring the RPM up to approximately 4500 in gear.
8. 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 proportional to the engine RPM.
9. Check the battery charge winding of the stator. Typically, you will measure less than 1 ohm of resistance between the Yellow wires and no reading to engine ground.

### NO TACHOMETER SIGNAL:

1. Swap the Grey Tachometer wire to the other regulator/rectifier (V6 engines) and retest. If the Tachometer still does not work, jumper another Tachometer at the engine and see if it works. If so, connect the wiring going to the original Tachometer to the test Tachometer. If the Test Tachometer works, replace the Tachometer. If the test Tachometer does not work at the helm but does work at the engine, replace the wiring harness or run new wiring from the engine to the Tachometer.
2. At 800-1000 RPM, check output on the Grey 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 Grey wire and engine ground. You should read about 10K  $\Omega$ . Grey to Red, and Grey 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 30 amperes in-line on the Red wire connected to the starter solenoid's Battery post.
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 30 Amps.
5. Check the ammeter.
6. If the amperage is low,
  - A) Check the load bank for battery amperage draw.
  - B) Reconnect the ammeter between the Red wire from the regulator/rectifier and the terminal strip. Retest. You should show about 15 - 20 Amps from the 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.

## OVERCHARGING

1. Clean all battery terminals, cables and mounting bosses.
2. Check the voltage on the battery with a digital voltmeter and compare it to the dash meter.
3. Compare the voltage at the regulator/rectifier with the voltage at the battery. If the voltage is ok at the battery and not good at the regulator/rectifier, you have a bad connection somewhere. Clean the regulator/rectifier case, mounting area, terminals, battery posts and terminals.
4. Replace the battery with a known good marine battery and retest. If the battery voltage remains ok, install a new battery.



# Installation and Troubleshooting Guide



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## BENCH TEST

### METER TESTING:

Test the Regulator/Rectifier as follows:

Red Meter Lead	Black Meter Lead	Ohms
Yellow Stator Leads (each)	Red Regulator	30K – 50K $\Omega$
Red Regulator (w/Barrel Terminal)	Red Regulator	Open, M $\Omega$ or OL(Out of Limit)
Case	Yellow Stator Lead (each)	Open, M $\Omega$ or OL(Out of Limit)
Case	Red Regulator	Open, M $\Omega$ or OL(Out of Limit)
Case	Grey Terminal	10K $\Omega$