



# Installation and Troubleshooting Guide

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## CDI P/N: 114-2986

This unit replaces 332-2986A3, A4, A5, A6, A7, A8, A9, A10, A17, A21, A22, A23, A24, A25 and A27.

**WARNING!** This product is designed to be installed by a professional marine mechanic. CDI Electronics cannot be held liable for injury or damage resulting from improper installation, abuse, neglect or misuse of this product. **The acceptable voltage range for battery type ignitions is typically 9.5 Volts (at cranking) to a maximum of 16 volts at full throttle (13.2-14.6 preferred). Voltages above or below this range can cause damage to the CD.**

### **DO NOT USE A MAINTENANCE FREE, DRY CELL OR AGM BATTERY WITH ANY BATTERY DRIVEN CD UNIT!**

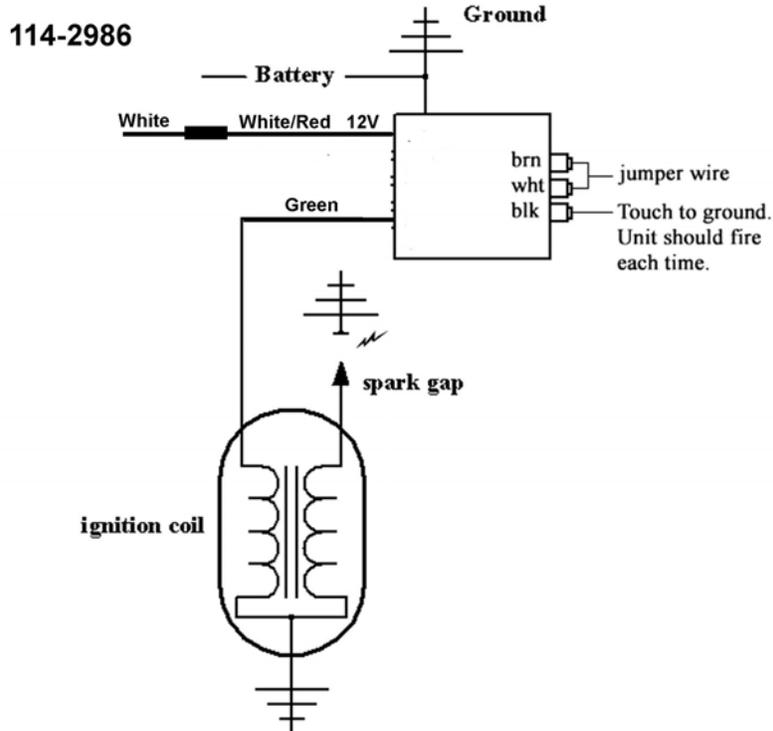
1. Disconnect the Negative battery cable.
2. Check and clean all battery terminals and engine grounds.
3. Disconnect all wires from the old CD.
4. Unbolt and remove the old 332-2986, saving the original bolts and nuts.
5. Remove the high tension lead from the original coil and distributor cap.
6. Reconnect the Red wire (that went to the old CD) to the rectifier battery terminal or tape off as it is no longer needed.
7. Reconnect the Brown wire to one of the rectifier AC terminals (Yellow wire).
8. Clip off the ring terminals from the White wire on the ignition side (the side with 4 terminals), and the Brown, White and Black trigger wires.
9. Strip the insulation from approximately the last 3/16" of the wire ends, and twist the bare wire so that it does not fray out.
10. Slide the insulator sleeves onto the wires from the trigger and the White wire from the harness. Crimp and solder the bullet connectors on the white harness wire and the trigger wires.
11. Connect the new high tension lead from the distributor to the new coil mounted on the plate. **WARNING: DO NOT CONNECT THIS CDI MODULE TO THE OEM COIL AS SEVERE DAMAGE TO THE CDI UNIT WILL RESULT.**
12. Install the new CDI module using the original bolts and nuts.
13. Connect the White wire from the harness to the White/Red wire from the new switch box. **CAUTION-** If you connect the White wire from the harness to the White trigger wire and turn the key-switch on, you may burn out the trigger.
14. Connect the White, Black and Brown trigger wires to the new switch box, matching the wire colors.
15. Reconnect the battery cable.
16. While monitoring the battery voltage, start and run the engine. With a fully charged battery, run the engine on a dynamometer or on the water and bring the engine to WOT (wide open throttle). If the battery voltage exceeds 16 volts after a short time, try a different brand of battery. Battery voltage should be checked at the battery and at the ignition pack. Voltage above 16 volts or below 9-1/2 volts will damage the ignition pack.

**NOTE:** *When you turn the ignition on, you may hear a high pitched whining noise coming from the CDI module. This is normal and varies depending upon the battery voltage.*

## TROUBLESHOOTING THE CDI MODULE

### **No Fire on Any Cylinder:**

1. Clean all battery connections and engine grounds.
2. Disconnect the mercury tilt switch and retest. If the ignition works properly, replace the mercury switch.
3. Connect a spark gap tester to the spark plug wires and check for fire on *all cylinders*. If some cylinders fire and not others, the problem is likely in the distributor cap, rotor button or spark plug wires. **Notice:** If the unit only fires when you let off of the key switch, the trigger is usually the problem.
4. If the trigger is one manufactured by CDI Electronics, verify the disk used in the trigger is the steel disk – not the copper one.
5. Check voltage present on the White wire (White/Red wire in Switch) at cranking. It **MUST** be at least 9½ volts. If not, the problem is in the harness, key switch, starter or battery.
6. Check voltage present on the Brown Trigger wire at cranking. It **MUST** be at least 9 volts. If not, the problem's likely in the pack.
7. Check DVA voltage on the Green wire going to the coil. It should be approximately 200 volts at cranking.
8. With the spark gap tester to the high tension lead coming from the ignition coil, disconnect the Brown, White and Black trigger wires. Connect a jumper wire from the slot for the Brown wire to the slot for the White wire. Connect another jumper to the slot for the Black wire and (with the key switch turned on) strike the jumper against engine ground. The unit should fire each time. If it does, the CD module is usually good. See diagram below.



9. Perform a voltage drop test after the engine is repaired to see if there is a problem with the voltage going to the CD module. At cranking and while the engine is running, use a DC voltmeter and put the black meter lead on the battery POS (+) post and the red meter lead on the positive battery cable at the starter solenoid. Keep the black lead on the battery post and shift the red meter lead to the positive post of the rectifier, then to the red and white terminals on the switch box. If you find a reading above 0.6V, there is a problem at the point where the voltage jumped up. For example, if the meter reads 0.4V until you get to the white terminal and then jumps to 2.3V on the white terminal – this indicates a problem in the key switch, or harness. Repeat the test for the negative battery post by putting the black meter lead on the battery NEG (-) post and the red meter lead on the negative battery cable terminal, then shifting to the engine block, rectifier base and case ground of the CD module.

### ONLY HAS SPARK AS LONG AS THE STARTER IS ENGAGED:

This symptom usually indicates a bad trigger or low voltage.

### NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

Note: A CD Tester like the one by CDI Electronics or Merc-o-Tronic can be used to test the CD module, distributor cap, rotor button and spark plug wires on the engine while the Trigger Tester by CDI can be used to test the distributor trigger.

1. Connect a spark gap tester to the high-tension leads coming from the distributor cap and set the gap to approximately 7/16". (Use of a CD Tester is recommended).
2. Align the rotor with #1 spark plug wire. Disconnect the trigger wires and connect a jumper wire from the brown trigger terminal to the white trigger terminal.
3. Connect another jumper wire to the black trigger terminal turn the ignition switch on. Strike the jumper wire from the black terminal against engine ground – (DO NOT HOLD THE JUMPER AGAINST ENGINE GROUND). Only the #1 spark plug wire should fire. If any other spark plug wire has fire, there is a problem in the distributor cap.
4. Repeat the test for the other cylinders.

### HIGH SPEED MISS:

1. Check the battery voltage on the red and white terminals of the switch box at high speed, the voltage should be between 12.5V and 16V DC. A reading outside this range will damage the CD module. If the readings are abnormal, perform the voltage drop test described above.
2. Perform a high-speed shutdown and read the spark plugs. Check for water. A crack in the block can cause a high miss at high speed when the water pressure gets high, but a normal shutdown will mask the problem.