



Installation and Troubleshooting Guide



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: 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 VDC (at cranking) to a maximum of 16 VDC at full throttle (13.2-14.6 VDC preferred). Voltages above or below this range can cause damage to the Switchbox.

This unit does not have an RPM Limit.

DO NOT USE A MAINTENANCE FREE, DRY CELL, OR AGM BATTERY WITH ANY BATTERY DRIVEN IGNITION SYSTEM!

INSTALLATION

1. Disconnect the Negative battery cable.
2. Check and clean all battery terminals and engine grounds.
3. Disconnect all wires from the old Switchbox.
4. Unbolt and remove the old Switchbox, saving the original bolts and nuts.
5. Remove the high tension lead from the original Ignition coil and distributor cap.
6. Reconnect the Red wire that went to the old Switchbox to the Rectifier battery terminal or tape off as it is no longer needed.
7. Reconnect the Brown Tachometer wire to one of the Rectifier Yellow wire terminals.
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 end 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 Ignition coil mounted on the plate.

WARNING! DO NOT CONNECT THIS SWITCHBOX TO THE OEM COIL AS SEVERE DAMAGE TO THE SWITCHBOX WILL RESULT!

12. Install the new Switchbox using the original bolts and nuts.
13. Connect the White wire from the harness to the White/Red wire from the new Switchbox.

Caution! Do not connect the White wire from the harness to the White Trigger wire! This will damage the Trigger!

14. Connect the White, Black, and Brown Trigger wires to the new Switchbox matching the wire colors.
15. Reconnect the Negative 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). Battery voltage should be checked at the battery and at the Switchbox. If the battery voltage exceeds 16 VDC, make sure the battery is a maintenance type flood wet lead acid battery. If not, the battery should be changed to a maintenance type flood wet lead acid battery or engine damage will occur. Voltage above 16 VDC or below 9-1/2 VDC will damage the Switchbox.

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

TROUBLESHOOTING

NO SPARK 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 spark on all cylinders. If some cylinders spark and not others, the problem is likely in the distributor cap, rotor button, or spark plug wires. If the unit only sparks when you let off of the key switch, the Trigger is usually the problem.
4. Check voltage present on the White wire (White/Red wire in Switch) at cranking. It MUST be at least 10 VDC. If not, the problem is in the harness, key switch, starter, or battery.

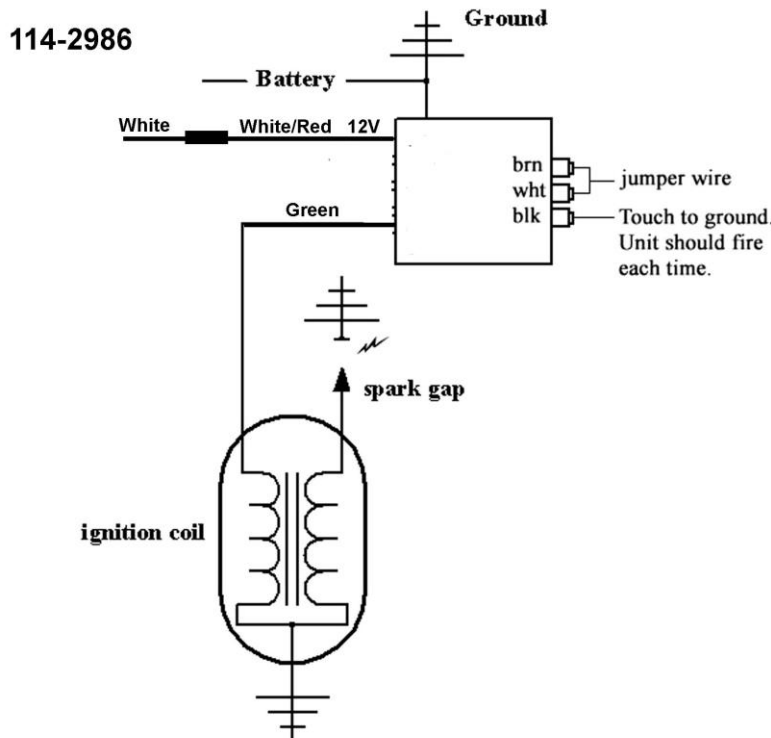
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5. Check DVA on the Green wire going to the Ignition coil. It should be approximately 200 DVA at cranking. If the DVA is good but the Ignition coil will not spark, the Ignition coil is likely faulty. If the DVA is low, disconnect the Green Primary wire from the Ignition coil and connect it to a Pack Load resistor. Repeat the test by checking the DVA on the Green wire at cranking speed. If the DVA is now good, the Ignition coil is faulty. If the DVA is still low, the Switchbox is likely faulty.
6. Check voltage present on the Brown Trigger wire at cranking. It MUST be at least 9 VDC. If not, the problem's likely in the Switchbox.
7. If the Trigger is one manufactured by CDI Electronics, verify the disk used in the Trigger is the steel disk – not the factory copper disk. The factory copper disk will not work with the CDI Electronics Trigger.
8. Connect a spark gap tester to the high tension lead coming from the Ignition coil, then disconnect the Brown, White, and Black Trigger wires. Connect a jumper wire from the Brown wire to the White wire coming out of the Switchbox. Connect another jumper to the Black wire coming out of the Switchbox and (with the key switch turned on) strike the jumper against engine ground. The Ignition coil should spark each time. If it does, the Switchbox is usually good. If you verify the White/Red wire going into the Switchbox has at least 10 VDC on it during this test and there is still no spark, the Switchbox or Ignition coil is likely defective. See the 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 Switchbox. At cranking and while the engine is running, use a multi-meter to perform a voltage drop test. Connect 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 meter lead on the battery post and shift the Red meter lead from the positive post of the Rectifier, then to the Red and White terminals on the Switchbox. If you find a reading above 0.6 VDC, there is a problem at the point where the voltage jumped up.

For example, if the meter reads 0.4 VDC until you get to the White terminal and then jumps to 2.3 VDC on the White terminal, this indicates a problem in the key switch or harness on the White wire. Repeat the test for the Negative battery post by connecting 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 Switchbox.



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ONLY HAS SPARK AS LONG AS THE STARTER IS ENGAGED:

1. This symptom usually indicates low voltage or a bad Trigger.
2. Clean all battery connections and engine grounds.
3. Check voltage present on the White wire (White/Red wire in Switch) at cranking. It MUST be at least 10 VDC. If not, the problem is in the harness, key switch, starter, or battery.
4. Check voltage present on the Brown Trigger wire at cranking. It MUST be at least 9 VDC. If not, the problem's likely in the Switchbox.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Connect a spark gap tester to the high-tension leads coming from the Distributor cap and set the gap to approximately 7/16".
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 spark. If any other spark plug wire has spark, 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 Switchbox at high speed, the voltage should read 12.5-16 VDC. A reading outside this range will damage the Switchbox. 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.