



# 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: 114-4952

This unit replaces the following P/N's: 18495A 4, A 5, A6, A 8, A11, and A13.

**Warning! This product is designed for installation 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.**

**Warning! Do not connect the Red Switchbox wire to a 12 V power source as this will damage the Switchbox. The Red wire should only connect to the Red high speed Stator wire. If the Stator used is a Red Stator kit with the Green/white and White/Green wires, the Red Switchbox wire would be left disconnected and unused.**

### How to test the Engine Stop Circuit (Kill) for DC Voltage:

- DC voltage present on the kill circuit of the Switchbox due to a faulty key switch, boat harness, or engine harness will severely damage the Switchbox's internal kill circuit. Connect a Digital Multi Meter to the Ignition Stop wire(s) AT THE SWITCHBOX(S) while disconnected from the Switchbox in reference to a known good engine ground. Turn the Ignition switch on and off several times. If, at any time, you see over 2 VDC on the kill wire(s), there is a problem with one or both harnesses and/or the Ignition switch. The Ignition Stop wire should not be connected back to the new Switchbox at any point until the problem is corrected **OR DAMAGE TO THE SWITCHBOX WILL OCCUR!**

## INSTALLATION

- Disconnect the Negative battery cable.
- Check and clean all battery terminals and engine grounds.
- Label the position of the Green and Green/White Primary wires for each cylinder before removing the wires from the Ignition coils.
- Remove the wires from the Switchbox.
- Unbolt and remove the old Switchbox, saving the original bolts and nuts.
- Install the new Switchbox using the original bolts and nuts.
- Connect the black ground wire to engine ground and the remaining wires to the new Switchbox as they were on the old Switchbox (If the old Switchbox did not have any wires connected to the red wire, do not connect any wire to the Red wire on the new Switchbox).
- Reconnect the Negative battery cable.

## TROUBLESHOOTING

### NO SPARK ON ANY CYLINDER:

- Check the cranking RPM. A cranking speed of less than 250 RPM will not allow the system to spark properly. This can be caused by a weak battery, dragging starter, bad battery cables, or a mechanical problem inside the engine.
- Disconnect the Black/Yellow stop wire AT THE SWITCHBOX and retest. If the engine's ignition now has spark, the stop circuit has a fault. Check the key switch, harness, and shift switch.
- Inspect and clean all engine and ignition ground connections.
- Disconnect the Yellow wires from the Stator to the Regulator/Rectifier and retest. If the engine now has spark, replace the Regulator/Rectifier.
- Check the Stator resistance and DVA as follows:

#### Black Stator

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Blue (Low speed Coil)	Blue/White (Low speed Coil)	3250-3650 Ω	488-662 Ω	180-400 V	180-400 V
Red (High speed Coil)	Red/White (High speed Coil)	75-90 Ω	28-32 Ω	25-100 V	25-100 V

#### Red Stator Kit

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
White/Green (Stator)	Green/White (Stator)	500-700 Ω	400-550 Ω	180-400 V	180-400 V
Blue (Out of Adapter Module)	Engine Gnd	Open	-	180-400 V	180-400 V

- Check the Triggering and Charge coil flywheel magnets for cracked, broken, or loose magnets.

CDI Electronics, LLC • 353 James Record Road SW • Huntsville, AL 35824 USA

Web Support: [www.cdielectronics.com](http://www.cdielectronics.com) • Tech Support: 1-866-423-4832 • Order Parts: 1-800-467-3371

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## NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the Trigger resistance and DVA as shown below:

Read from	Read to	Ohms	DVA (Connected)	DVA (Disconnected)
Purple (#1 Trigger)	White (#2 Trigger)	800-1400 Ω	4 V Minimum	4 V Minimum
Purple (#1 Trigger)	Engine Gnd	Open	1 V Minimum	-
White (#2 Trigger)	Engine Gnd	Open	1 V Minimum	-

2. Check the DVA on the Green wires from the Switchbox while connected to the Ignition coils. Check the reading on the Switchbox terminal AND on the Ignition coil terminal. You should have a reading of at least 150 V or more (while connected) at both places.

**NOTE: If the reading is low on one cylinder, disconnect the Green wire from the Ignition coil for that cylinder and reconnect it to a Pack load resistor (CDI P/N 511-9775). Retest. If the reading is now within specifications, the Ignition coil is likely defective. A continued low reading indicates a defective Switchbox if the Trigger tests good.**

3. If the cylinders are only misfiring above an idle, connect an inductive tachometer to each cylinder in turn and try to isolate the problem cylinder.
4. Visually inspect the Ignition coils for burned or discolored areas and cracks in the casing that would indicate arcing inside the coil.
5. Swap the Ignition coil with one that is sparking correctly.
6. Rare causes include a weak Trigger magnet. If possible, try another flywheel.

## SWITCHBOX OR TRIGGER REPEATEDLY BLOWS ON SAME CYLINDER:

1. Check the Trigger wires for shorts to engine ground as a shorted Trigger wire can destroy a SCR inside the Switchbox.
2. In contrast, a shorted SCR inside the Switchbox can destroy a Trigger coil. Check the Trigger resistance and DVA (see **NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER**).
3. Replace the Ignition coil on the cylinder dropping spark.

## WILL NOT STOP (KILL):

1. Disconnect the stop wire at the Switchbox. Connect a jumper wire to the stop wire from the Switchbox and short it to engine ground. If this stops the Switchbox from sparking, the stop circuit has a fault. Check the key switch, harness, and shift switch. If this does not stop the Switchbox from sparking, replace the Switchbox.

## WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the Stator to the Regulator/Rectifier and retest. If the engine now has good spark, replace the Regulator/Rectifier.
2. Connect a DVA meter between the Stator's Blue and Blue/White wires. Run the engine up to the RPM where the problem is occurring. DVA should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad Stator. (Read from Blue to engine ground if the engine has a Red Stator kit installed).
3. Connect a DVA meter between the Stator's Red and Red/White wires. The DVA should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading indicates a bad Stator.
4. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad Switchbox or Ignition coil. All cylinders not sparking properly usually indicates a bad Stator.
5. Perform a high speed shutdown and read the spark plugs. Check for water. A crack in the block can cause a miss at high speed when the water pressure gets high, but a normal shutdown will mask the problem.
6. Check the Triggering and Charge coil flywheel magnets for cracked, broken, or loose magnets.

## MISS AT ANY RPM:

1. Disconnect the Yellow wires from the Stator to the Regulator/Rectifier and retest. If the miss clears, replace the Regulator/Rectifier.
2. In the water or on a Dynamometer, check the DVA on the Green wires from the Switchbox while connected to the Ignition coils. You should have a reading of at least 150 V or more, increasing with engine RPM until it reaches 300-400 V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad Stator. A sharp drop in DVA on less than all cylinders will normally be the Switchbox or Trigger.
3. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A high variance in RPM on one cylinder usually indicates a problem in the Switchbox or Ignition coil. Occasionally a Trigger will cause this same problem. Check the Trigger DVA (see **NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER**).
4. Perform a high speed shutdown and read the spark plugs. Check for water. A crack in the block can cause a miss at high speed when the water pressure gets high, but a normal shutdown will mask the problem.
5. Check the Triggering and Charge coil flywheel magnets for cracked, broken, or loose magnets.