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: 114-4953-32

This Switchbox replaces these P/N's: 18495A22 and 18495A32.

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.

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

1. Disconnect the Negative battery cable.
2. Check and clean all battery terminals and engine grounds.
3. Remove the wires from the old Switchbox.

   Put a wire tie around the Red and Blue wires from the Stator to each Switchbox so they do not get crossed. Solid colors stay together, and the Striped wires stay together.

4. Unbolt and remove the old Switchbox, saving the original bolts and nuts.
5. Install the new Switchbox using the original bolts and nuts.
6. Connect the Black ground wire to engine ground.
7. Connect the wires to the new Switchbox as they were on the old Switchbox.
8. Reconnect the Negative battery cable.

TROUBLESHOOTING

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow kill wire FROM BOTH SWITCHBOXES. If the engine's Ignition now has spark, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present).
2. Disconnect the TKS unit. If the engine now has spark, the TKS ECM is faulty.
3. Check for broken or bare wires on the Switchbox, Stator, and Trigger.
4. Disconnect the Yellow wires from the Stator to the Voltage Regulator and retest. If the engine now has good spark, replace the Voltage Regulator.
5. Check the DVA on the Black/Yellow kill wire of each Switchbox. You should have a reading of at least 150 DVA or more. The Stator and Trigger should be connected to the Switchbox for this test. If you do not, check the DVA on the Stator and the Trigger. If the DVA on the Stator and Trigger is good but the DVA on the Black/Yellow Kill wire stud on the Switchbox is low, the Switchbox is likely faulty.
6. Check the resistance and DVA of the Stator and Trigger as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)
Blue (Low speed Coil)	Engine Gnd	1.0-1.6K Ω	517-633 Ω	180 V Minimum
Blue/White (Low speed Coil)	Engine Gnd	1.0-1.6K Ω	517-633 Ω	180 V Minimum
Red (High speed Coil)	Engine Gnd	75-90 Ω	27-55 Ω	20 V Minimum
Red/White (High speed Coil)	Engine Gnd	75-09 Ω	27-55 Ω	20 V Minimum
Brown wire (#1 Trigger)	White wire (#4 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
White wire (#3 Trigger)	Purple wire (#6 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
Purple wire (#5 Trigger)	Brown wire (#2 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
Brown wire (#1 Trigger)	Engine Gnd	Open	Open	1 V Minimum
White wire (#3 Trigger)	Engine Gnd	Open	Open	1 V Minimum
Purple wire (#5 Trigger)	Engine Gnd	Open	Open	1 V Minimum
Brown wire (#2 Trigger) (a)	Engine Gnd	Open	Open	1 V Minimum
White wire (#4 Trigger) (a)	Engine Gnd	Open	Open	1 V Minimum
Purple wire (#6 Trigger) (a)	Engine Gnd	Open	Open	1 V Minimum

(a) Yellow band – Outside Switchbox

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NO SPARK ON ONE BANK (ODD OR EVEN CYLINDERS ON INLINE 6 CYLINDER):

1. Check the resistance and DVA of the Stator as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)
Blue (Low speed Coil)	Engine Gnd	1.0-1.6K Ω	517-633 Ω	180 V Minimum
Blue/White (Low speed Coil)	Engine Gnd	1.0-1.6K Ω	517-633 Ω	180 V Minimum
Red (High speed Coil)	Engine Gnd	75-90 Ω	27-55 Ω	20 V Minimum
Red/White (High speed Coil)	Engine Gnd	75-90 Ω	27-55 Ω	20 V Minimum

2. Swap both sets of the Stator wires between the Switchboxes. If the problem moves, replace the Stator.
3. If the problem stays on the same bank, swap physical location and all connections of the two Switchboxes. If the problem stays with one Switchbox, replace the Switchbox. If the Switchbox is bad, it is recommended that BOTH Switchboxes be replaced AS A SET.

INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

1. Disconnect the White/Black wire between the Switchboxes on a 6 cylinder and retest. If all cylinders now spark, replace both Switchboxes as there is a problem in the Bias circuitry.
2. On all others, check for low DVA from the Stator and Trigger. Disconnect the Voltage Regulator and retest. If the problem disappears, replace the Voltage Regulator.
3. Check the Trigger resistance and DVA as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)
Brown wire (#1 Trigger)	White wire (#4 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
White wire (#3 Trigger)	Purple wire (#6 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
Purple wire (#5 Trigger)	Brown wire (#2 Trigger) (a)	0.8-1.4K Ω	0.8-1.4K Ω	4 V Minimum
Brown wire (#1 Trigger)	Engine Gnd	Open		1 V Minimum
White wire (#3 Trigger)	Engine Gnd	Open		1 V Minimum
Purple wire (#5 Trigger)	Engine Gnd	Open		1 V Minimum
Brown wire (#2 Trigger) (a)	Engine Gnd	Open		1 V Minimum
White wire (#4 Trigger) (a)	Engine Gnd	Open		1 V Minimum
Purple wire (#6 Trigger) (a)	Engine Gnd	Open		1 V Minimum

(a) Yellow band – Outside Switchbox

ENGINE WILL NOT STOP (KILL):

1. Disconnect the Black/Yellow wires 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 present). If this does not stop the Switchbox from sparking, replace the Switchbox. Repeat the test as necessary for any additional Switchboxes.

HIGH SPEED MISS OR WEAK HOLE SHOT:

1. Disconnect the Regulator/Rectifier and retest. If the miss is gone, the Voltage Regulator is usually at fault. Remember, a problem Voltage Regulator can damage a Stator.
2. Perform a DVA test on the Blue and Blue/White wires in reference to engine ground and do a running test. The DVA should show a smooth climb and stabilize, gradually falling off at higher RPM's (above 3,000). If you see a sudden drop in DVA right before the miss becomes apparent, the Stator is likely at fault.
3. Check DVA on the Red wires reference to engine ground of the Stator at high speed. The readings should show a smooth climb in voltage. If there is a sudden or fast drop in voltage right before the miss becomes apparent, the Stator is usually at fault. If there is no indication of the problem, it could be mechanical problem.

   NOTE: Use caution when doing this and do not exceed the rated voltage range of your meter.

4. Rotate the Stator one bolt hole in either direction and re-test. If the miss is gone, leave the Stator as is. If the miss is worse, rotate the Stator back where it was.
5. Using extreme caution, on the water or connected to a dyno, take the engine to the RPM where the problem is occurring and hold it for a few seconds, then perform a high speed shutdown at that RPM. Check the sparkplugs for differences in color or the presence of water droplets on the sparkplug (an indicator of a possible crack in the engine block or a blown head gasket).

NO SPARK WITH THE SPARKPLUGS INSTALLED:

1. Check for dragging starter or low battery causing slow cranking speed. DVA test Stator and Trigger.
2. Disconnect Voltage Regulator and retest. If the problem goes away, replace the Voltage Regulator.

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SPARK ON ALL CYLINDERS BUT ENGINE WILL NOT RUN:

1. Disconnect the White/Black wire and check the Bias circuit (White/Black terminals) resistance to engine ground. Readings should be between 13-15K Ω for standard Switchboxes. If the readings are correct on the Switchboxes, index the Flywheel and check timing on all individual cylinders. If the timing varies, replace BOTH Switchboxes.

DESTROYED ONE OR TWO CYLINDERS/PISTONS:

1. Check the Bias resistance from the Black/White **terminal** (wire disconnected) on the Switchbox to engine ground, you should read 13-15K Ω. Readings above 15K Ω or less than 13K Ω indicate a defective Switchbox. Due to the design of the Switchboxes, a Switchbox with a defective bias circuit can damage a mating Switchbox (domino effect). **REPLACE BOTH SWITCHBOXES AS A SET!!!!**
2. Use an ANALOG DVA meter to check the voltage on the White/Black (Bias) terminal. With everything connected, run the engine at various Rpm's and monitor the DVA. It should remain steady for a set RPM. Fluctuation in voltage indicates a problem in the Bias circuit. If there is a problem, disconnect everything on the White/Black terminal except the jumper from the inside Switchbox to the outside Switchbox. Retest, if the problem persists, replace **BOTH** Switchboxes. If the problem went away, reconnect the items taken off of the White/Black terminal one at a time. Re-test after every reconnection until you locate the source of the problem.

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