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: 116-5301

This unit will replace the following P/N's: 475301, F475301-1, 300-888787, and 300-F475301-1.

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.

This Switchbox requires the modification of the Stator and Ignition coil wire connections. The round black plug connector will need to be removed from the Stator and bullet connectors will need to be installed on the Stator wires. The individual Black connectors of the Ignition coils will have to be removed and Individual male bullet connectors will have to be installed on the Ignition coils to mate up with the Primary wires from the new Switchbox.

INSTALLATION

1. Disconnect the Negative battery cable.
2. Loosen the mounting plate for the Ignition coils and the Switchboxes.
3. Disconnect the old Switchbox wires and remove the Switchbox from the mounting plate. Save the original mounting bolts.
4. Clean and inspect the Ignition coil, Switchbox, and mounting plate ground points and wires.
5. Install the new Switchbox on the mounting plate using the bolts removed previously. Make sure the ground wire connected to a clean ground point.
6. Tighten the mounting plate for the Switchbox and the Ignition coils back up.
7. This Switchbox will require the modification of the Stator and Ignition coil wire connections. The round black plug connector will need to be removed from the Stator and barrel connectors will need to be installed on the Stator wires. Crimp or solder the new barrel connectors from the provided kit onto the Stator wires of your Stator. The individual Black connectors of the Ignition coils will have to be removed and Individual male bullet connectors will have to be installed on the Ignition coils to mate up with the Primary wires from the new Switchbox. Crimp or solder the male bullet connectors from the provided kit to each Ignition coil wire.
8. Connect the rest of the wires of the new Switchbox the same as the old one was connected. Use the connection guides below as a template.
9. Reconnect the Negative battery cable.

NOTE: Due to the changes in the wire colors by the original manufacturer, the following chart is used as a guide.

CONNECTION GUIDE

Connections from #1 Switchbox (Firing #1 and #2 Cylinders) to Trigger, Stator, and Ignition coil:

Switchbox	Trigger	Stator	Ignition coil
White/Orange	White/Orange	-	-
White/Yellow	White/Yellow	-	-
White/Red	White/Red	-	-
White/Green	White/Green	-	-
Brown/Yellow	-	Brown/Yellow	-
Brown/Blue	-	Brown/Blue	-
Orange/Blue	-	-	White
Blue/Red	-	-	White

Connections from #2 Switchbox (Firing #3 Cylinder) to Trigger, Stator, and Ignition coil (3 Cylinder only):

Switchbox	Trigger	Stator	Ignition coil
White/ Orange	White/Orange	-	-
White/Yellow	White/Yellow*	-	-
White/Red	No Connection	-	-
White/Green	No Connection	-	-
Brown/Yellow	-	Brown/Yellow	-
Brown/Blue	No Connection (must be connected to the blue terminal on Switchbox #1)		
Orange/Blue	-	-	White
Blue/Red	-	-	No Connection

All rights reserved. Reproduction or use of content, in any manner, without express written permission by CDI Electronics, LLC., is prohibited.

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.

Connections from #2 Switchbox (Firing #3 Cylinder and #4 cylinders) to Trigger, Stator, and Ignition coil (4 Cylinder only):

Switchbox	Trigger	Stator	Ignition coil
White/ Orange	White/Orange	-	-
White/Yellow	White/Yellow*	-	-
White/Red	White/Red*	-	-
White/Green	White/Green	-	-
Brown/Yellow	-	Brown/Yellow	-
Brown/Blue	-	Brown/Blue	-
Orange/Blue	-	-	White
Blue/Red	-	-	White

NOTE: * CDI replacement Triggers do not have a connection for this wire from the Switchbox as the new Trigger uses a common ground wire. This allows the wires going to the Switchbox from the Trigger to be larger and more durable. The Switchbox uses that color as a ground wire for the Trigger.

Wire Color Code Reference:

Function	Old	New
Stator	Blue	Brown/Blue
Stator	Yellow	Brown/Yellow
Trigger	Orange	White/Orange
Trigger	Green	White/Yellow
Trigger	Red	White/Red
Trigger	White/Green	White/Green
Switchbox Primary	Orange	Orange/Blue
Switchbox Primary	Red	Blue/Red
Ignition Coil	White	Orange/Blue
Stop Circuit	White	Black/Yellow

TROUBLESHOOTING

NO SPARK ON ANY CYLINDER:

1. Disconnect and separate the White kill wire(s) AT THE SWITCHBOX. If spark comes back, touch the White kill wires together and check for spark. If no spark, replace the Switchbox(es). If you still have spark with the White wires touching together, there is a problem in the harness or key switch.
2. Disconnect the Rectifier. If the engine sparks, replace the Rectifier.
3. Check for broken or bare wires on the Switchbox, Stator, and Trigger.
4. Check the Stator and Trigger resistance and DVA for 2 cylinder engines as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown/Blue (Stator)	Brown/Yellow (Stator)	680-900 Ω	250-350 Ω	180-400 V	-
Brown/Blue (Stator)	Engine Gnd	Open	Open	-	Less than 2 V
Brown/Yellow (Stator)	Engine Gnd	Open	Open	-	Less than 2 V
White/Orange (#1 Trigger)	White/Yellow (#1 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-
White/Red (#2 Trigger)	White/Green (#2 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-

NOTE: Some OEM Stators had Blue and Yellow wires instead of the Brown/Blue and Brown/yellow wires.

NOTE: Some OEM Triggers had Orange and Green, or Red and White/Green Wires.

All rights reserved. Reproduction or use of content, in any manner, without express written permission by CDI Electronics, LLC., is prohibited.

5. Check the Stator and Trigger resistance and DVA for 3 and 4 cylinder engines as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown/Blue (Stator)	Brown/Yellow (Stator)	680-900 Ω	250-450 Ω	180-400 V	-
Brown/Blue (Stator)	Engine Gnd	Open	Open	-	Less than 2 V
Brown/Yellow (Stator)	Engine Gnd	Open	Open	-	Less than 2 V
Green (#1 Trigger)	Orange (#1 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-
Red (#2 Trigger)	White/Green (#2 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-
Green (#3 Trigger)	Orange (#3 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-
Red (#4 Trigger)	White/Green (#4 Trigger)	45-55 Ω	45-55 Ω	0.5 V Minimum	-

NOTE: If the voltage is correct between the wires, but exceeds 10% different to engine ground, swap the Yellow wire leads with the Blue wires to see if the problem moves. If it does, replace the Stator.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the Stator and Trigger resistance and DVA (see **NO SPARK ON ANY CYLINDER**).
2. If readings are good, swap the Switchbox Primary wire from the Ignition coil that works to the one that does not. If the Ignition coil that had spark stops firing, replace the Switchbox.

NO SPARK ON INTERMITTENT SPARK TWO CYLINDERS:

1. If two cylinders from the same Switchbox will not fire, the problem is usually in the Stator. Check the Stator DVA (see **NO SPARK ON ANY CYLINDER**).
2. If the #1 and #3 cylinders are not firing, disconnect the Brown/Yellow wire from the Switchbox #1 and retest. If you now get fire on #3, replace the #1 Switchbox. Reconnect the Brown/Yellow wire to Switchbox #1.
3. If still no fire on #3, disconnect the Brown/Yellow wire from the Switchbox #2 and retest. If you now get fire on #1, replace the #2 Switchbox.
4. If the #2 and #4 cylinders are not firing, disconnect the Brown/Blue wire from the Switchbox #1 and retest. If you now get fire on #4, replace the #1 Switchbox. Reconnect the Brown/Blue wire.
5. If still no fire on #4, disconnect the Brown/Blue wire from the Switchbox #2 and retest. If you now get fire on #2, replace the #2 Switchbox.

ONLY HAS SPARK WITH SPARK PLUGS OUT:

1. Check the cranking RPM. A cranking speed less than 250 RPM will not allow the system to fire properly. This can be caused by a weak battery, dragging starter, bad battery cables, or a mechanical problem inside the engine.
2. Check the Stator and Trigger resistance and DVA (see **NO SPARK ON ANY CLYINDER**).

MISS AT ANY RPM:

1. Disconnect the Rectifier from the Stator and retest. If the miss clears up, replace the Rectifier.
2. In the water or on a Dynamometer, check the DVA from the Switchbox primary wires 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 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 ON ANY 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.

SWITCHBOX OR TRIGGER REPEATEDLY BLOWS ON SAME CYLINDER:

1. Disconnect and separate the kill wires. If spark returns to the dead cylinder, replace the Switchbox that was firing correctly as it likely has a problem in the blocking diode.
2. Check the Trigger wires for shorts to engine ground because a shorted Trigger wire can destroy a SCR inside the Switchbox.
3. In contrast, a shorted SCR inside the Switchbox can destroy a Trigger coil. Check the Trigger resistance and DVA (see **NO SPARK ON ANY CYLINDER**).
4. Replace the Ignition coil on the cylinder dropping spark.

ENGINE WILL NOT STOP (KILL):

1. Disconnect all stop wires at the Switchbox. Connect a jumper wire to the (White or Black/Yellow) stop wire from the Switchbox and short it to engine ground. If this stops the Switchbox from firing, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present). If this does not stop the Switchbox from firing, replace the Switchbox. Repeat test as necessary for additional Switchboxes.

All rights reserved. Reproduction or use of content, in any manner, without express written permission by CDI Electronics, LLC., is prohibited.