



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: 134-9021-3

This unit replaces the following P/N's: 99021A 3, 99021A 5, 99021A 9, 99021A13, 9921A15, and 99021A16.

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.

INSTALLATION

1. Disconnect the Negative battery cable.
2. Check and clean all battery terminals and engine grounds.
3. Remove the flywheel and Stator according to the service manual for your engine.
4. Remove the Trigger wires from the Switchbox.
5. Connect the Trigger leads to the Switchbox, matching wire colors.
6. If using this Trigger on an application that uses a Switchbox with stud connections, it will be necessary to remove the female bullet connectors that come preinstalled from the factory and install the fork terminals that come supplied in the kit provided with the Trigger.
7. Re-install the Stator and flywheel according to the service manual for your engine.
8. Reconnect the Negative battery cable.
9. Set and verify the ignition timing according to the service manual for your engine.

TROUBLESHOOTING

NO SPARK ON ONE OR MORE CYLINDERS:

1. Disconnect the Black/Yellow (or Orange) stop wires 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 (if present).
2. Disconnect the Yellow wires from the Stator to the Regulator/Rectifier and retest. If the engine has spark, replace the Regulator/Rectifier.
3. Check the cranking RPM. A low cranking speed may 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.
4. Inspect and clean all engine and Ignition ground connections.
5. Check the Stator resistance and DVA as given below:

Black Stator using Flywheel with Bolted-in Magnets

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Blue (Low speed coil)	Engine Gnd	5.8-7.0K Ω	2.2-2.4K Ω	180-400 V	180-400 V
Red (High speed coil)	Engine Gnd	125-155 Ω	45-55 Ω	25-100 V	25-100 V

Black Stator using Flywheel with Glued-in Magnets

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Blue (Low speed coil)	Engine Gnd	3.25-3.65K Ω	515-635 Ω	180-400 V	180-400 V
Red (High speed coil)	Engine Gnd	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 (Adapter Module)	Engine Gnd	Open	-	180-400 V	180-400 V

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

Web Support: www.cdielelectronics.com • Tech Support: 1-866-423-4832 • Order Parts: 1-800-467-3371

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6. Check the Trigger resistance and DVA as given below:

Read from	Read to	Ohms	DVA (Connected)	DVA (Disconnected)
Brown (Trigger)	White/Black (or Black) (Trigger)	0.8-1.4K Ω	4 V Minimum	4 V Minimum
White (Trigger)	White/Black (or Black) (Trigger)	0.8-1.4K Ω	4 V Minimum	4 V Minimum
Purple (Trigger)	White/Black (or Black) (Trigger)	0.8-1.4K Ω	4 V Minimum	4 V Minimum
Brown (Trigger)	Engine Gnd	Open	1 V Minimum	-
White (Trigger)	Engine Gnd	Open	1 V Minimum	-
Purple (Trigger)	Engine Gnd	Open	1 V Minimum	-

NOTE: The 3 cylinder engines have several configurations to the firing order. Please refer to the Factory Service Manual to make that determination. The pairing should always be as follows:

- **Green Coil Wire goes with the Brown Trigger Wire**
- **Green/Red Coil Wire goes with the Purple Trigger Wire**
- **Green/White Coil Wire goes with the White Trigger Wire**

7. Check the triggering and charge coil flywheel magnets for cracked, broken, or loose magnets.

ENGINE WILL NOT STOP (KILL):

1. Disconnect the Black/Yellow (or Orange) wire(s) at the Switchbox. Connect a jumper wire to the stop wire(s) 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:

1. Disconnect the Regulator/Rectifier and retest. If miss is gone, the Regulator/Rectifier is usually at fault.
2. Check DVA on the Red wire of the Stator to engine ground 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.

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

ALL CYLINDERS HAVE SPARK, BUT ENGINE WILL NOT RUN:

1. Disconnect the White/Black wire and check the Bias circuit (White/Black terminal) resistance in reference to engine ground. Readings should be approximately 13-15K Ω . A shorted Bias circuit can advance the ignition timing as high as 40° above the set point.
2. If the Bias readings are correct on the Switchbox, index the flywheel and check timing on all individual cylinders. If the timing varies, replace the Switchbox as this is an indication that the Bias circuit in the Switchbox has failed.
3. Index the flywheel and check the firing order. Remember there are at least 4 different firing orders for these engines. Connect the Green Primary wires to the Ignition coils to match the firing order.

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 ON ONE OR MORE CYLINDERS**).
3. Replace the Ignition coil on the cylinder dropping spark.

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 wire and engine ground. Run the engine up to the RPM where the problem is occurring. The DVA should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad Stator.
3. Connect a DVA meter between the Stator's Red wire and engine ground. 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 because the water will evaporate off the spark plug before you can identify it.
6. Check the Trigger and Stator coil flywheel magnets for cracked, broken, or loose magnets.



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MISS AT ANY RPM:

1. Disconnect the Yellow wires from the Stator to the Regulator/Rectifier and retest. If the miss clears up, replace the Regulator/Rectifier.
2. In the water or on a Dynamometer, check the DVA on the Green Primary wires from the Switchbox while connected to the Ignition coils. You should have a reading of at least 150 DVA or more, increasing with engine RPM until it reaches 300-400 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 ON ONE OR MORE CYLINDERS**).
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 because the water will evaporate off the spark plug before you can identify it.
5. Check the Trigger and Stator coil flywheel magnets for cracked, broken, or loose magnets.

WILL NOT IDLE BELOW 1500 RPM:

1. Check the Bias resistance from the Black/White **terminal** (wire disconnected) on the Switchbox to engine ground. Reading should be 13-15K Ω .
2. Check the Stator and Trigger Resistance and DVA (see **NO SPARK ON ONE OR MORE CYLINDERS**).
3. Check for air leaks.