

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: 113-2138**

**This unit replaces the following P/N's: 18-5760, 581933, 582138, 582400, and 75390.**

**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.**

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

1. DC voltage present on the kill circuit of the Power Pack due to a faulty key switch, boat harness, or engine harness will severely damage the Power Pack's internal kill circuit. Connect a Digital Multi Meter to the Ignition Stop wire AT THE POWER PACK while disconnected from the Power Pack 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, 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 Power Pack at any point until the problem is corrected **OR DAMAGE TO THE POWER PACK WILL OCCUR!**

## INSTALLATION

1. Disconnect the Negative battery cable.
2. Disconnect all of the wires going to the old Power Pack.
3. Remove the Power Pack mounting bolts.
4. Connect the wires from the new Power Pack to the Stator, Timer Base, and Ignition coils.
5. Mount the new Power Pack using the original bolts.
6. Reconnect the Negative battery cable.

## 3 CYLINDER TROUBLESHOOTING

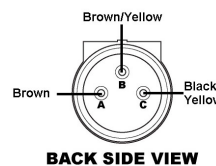
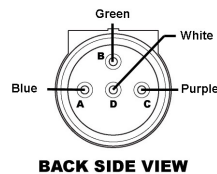
**NO SPARK ON ANY CYLINDER:**

1. Disconnect the Black/Yellow stop wire from the Power Pack and retest. If the engine's ignition has spark, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present).
2. Check the cranking RPM. A cranking speed of less than 250 RPM 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.
3. Disconnect the Yellow wires from the Rectifier and retest. If the engine now sparks, replace the Rectifier.
4. Check the resistance and DVA of the Stator and Timer Base:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown (Stator)	Brown/Yellow (Stator)	360-440 Ω	530-630 Ω	150-400 V	150-400 V
Brown (Stator)	Brown/Yellow (Stator)	750-950 Ω	530-630 Ω	150-400 V	150-400 V
Brown (Stator)	Engine Gnd	-	-	150-400 V	-
Brown/Yellow (Stator)	Engine Gnd	-	-	150-400 V	-
White (Common)	Blue (#1 Timer Base)	9-21 Ω	10-15 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Purple (#3 Timer Base)	9-21 Ω	10-15 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Green (#2 Timer Base)	9-21 Ω	10-15 Ω	0.6 V Minimum	0.6 V Minimum

**NOTE: Due to manufacturing constraints and to allow easier assembly, the OEM Timer Base was manufactured so it can trigger the SCR's in the Power Pack every 120 Degrees. This results in the Purple Timer Base lead actually firing the Orange/Green SCR and the Green Timer Base lead firing the Orange SCR.**

5. Check wire pin-out as follows:



*If 3 Pin Connector is used*



# 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.

## **NO SPARK OR INTERMITTENT ON ONE OR MORE CYLINDERS:**

1. Check the resistance and DVA of the Stator and Timer Base (see **NO SPARK ON ANY CYLINDER**).
2. Check the DVA on the Orange Primary wires from the Power Pack while connected to the Ignition coils. You should have a reading of at least 150 V or more. If the reading is low on one cylinder, disconnect the Orange Primary wire from the Ignition coil for that cylinder and reconnect it to a Pack Load resistor. Retest. If the reading is now good, the Ignition coil is likely bad. A continued low reading usually indicates a bad Power Pack.
3. Swap the Ignition coil with one that is sparking correctly.
4. Rare causes include a weak Trigger magnet. If possible, try another flywheel.

## **ENGINE WILL NOT STOP (KILL):**

1. Disconnect the Black/Yellow wire at the Power Pack. Connect a jumper wire to the stop wire from the Power Pack and short it to engine ground. If this stops the Power Pack from sparking, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present). If this does not stop the Power Pack from sparking, replace the Power Pack.

## **MISS AT ANY RPM:**

1. Disconnect the Yellow wires from the Stator to the Rectifier and retest. If the miss clears, replace the Rectifier.
2. In the water or on a Dynamometer, check the DVA on the Orange wires from the Power Pack 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 Power Pack or Timer Base.
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 Power Pack or Ignition coil. Occasionally a Timer Base will cause this same problem. Check the Timer Base 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.
5. Check the Trigger and Charge coil flywheel magnets for cracked, broken, or loose magnets.

## **POWER PACK OR TIMER BASE REPEATEDLY BLOWS ON SAME CYLINDER:**

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

## **6 CYLINDER TROUBLESHOOTING**

### **NO SPARK ON ANY CYLINDER:**

1. Disconnect the Black/Yellow stop wires from the Power Packs and retest. If the engine's ignition has spark, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present).
2. Check the cranking RPM. A cranking speed of less than 250 RPM 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.
3. Perform a visual inspection of all ground wire connections to make sure that they are clean and tight.
4. Disconnect the Yellow wires from the Regulator/Rectifier and retest. If the engine now sparks, replace the Regulator/Rectifier.
5. Perform a visual inspection of all ground wire connections to make sure that they are clean and tight.
6. Check the DVA on the Black/Yellow kill wire coming out of the Power Pack. You should have a reading of at least 150 DVA or more. The Stator and Timer Base should be connected to the Power Pack for this test. If you do not, check the DVA on the Stator and Timer Base. If the DVA on the Stator and Timer Base is good but the DVA on the Black/Yellow Kill wire coming out of the Power Pack is low, the Power Pack is likely faulty.

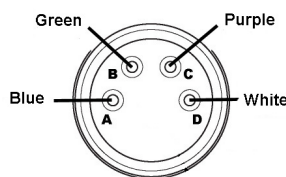
This installation is to be completed by an Authorized Dealer or Professional Service Technician. For questions regarding installation or warranty, call CDI Tech Support at 866-423-4832. Do not return to the Dealer or Distributor where the part was purchased. Contact CDI Electronics Directly for Return Material Authorization.

7. Check the resistance and DVA of the Stator and Timer Base:

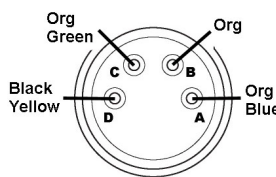
Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown (Stator)	Brown/Yellow (Stator)	485-635 Ω (9 Amp)	530-630 Ω	150-400 V	150-400 V
Brown (Stator)	Brown/Yellow (Stator)	950-1100 Ω (12 Amp)	900-1100 Ω	150-400 V	150-400 V
Brown (Stator)	Engine Gnd	-	-	150-400 V	-
Brown/Yellow (Stator)	Engine Gnd	-	-	150-400 V	-
White (Common)	Blue (#1 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Green (#3 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Purple (#5 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Blue (#2 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Green (#4 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
White (Common)	Purple (#6 Timer Base)	15-50 Ω	15-50 Ω	0.6 V Minimum	0.6 V Minimum
Orange/Blue (#1 Timer Base)	Engine Gnd	-	-	150 V Minimum	0.6 V Minimum
Orange (#3 Timer Base)	Engine Gnd	-	-	150 V Minimum	0.6 V Minimum
Orange/Green (#5 Timer Base)	Engine Gnd	-	-	150 V Minimum	0.6 V Minimum

**NOTE: Due to manufacturing constraints and to allow easier assembly, the OEM Timer Base was manufactured so it can trigger the SCR's in the Power Pack every 120 Degrees. This results in the Purple Timer Base lead actually firing the Orange/Blue SCR and the Green Timer Base lead firing the Orange SCR.**

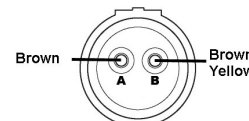
8. Check the wire pin-out as follows:



**BACK SIDE VIEW**



**BACK SIDE VIEW**



**BACK SIDE VIEW**

9. Check the Stator input diodes connected inside the Power Pack using a meter set to diode scale. If the readings show a short or open, replace the Power Pack.

Red meter lead	Black meter lead	Reading
Brown (Stator)	Black Gnd	Reading*
Brown/Yellow (Stator)	Black Gnd	Reading*
White (Trigger)	Black Gnd	Reading*

\* This Measurement is with the meter set to the diode scale. Where you see the term "Reading" represents a reading on the meter. Actual Meter readings will vary depending on type of meter.

**NO SPARK OR INTERMITTENT ON ONE OR MORE CYLINDERS:**

1. Check the resistance and DVA of the Stator and Timer Base (see **NO SPARK ON ANY CYLINDER**).
2. Check the DVA on the Orange Primary wires from the Power Pack while connected to the Ignition coils. You should have a reading of at least 150 V or more. If the reading is low on one cylinder, disconnect the Orange Primary wire from the Ignition coil for that cylinder and reconnect it to a Pack Load resistor. Retest. If the reading is now good, the Ignition coil is likely bad. A continued low reading usually indicates a bad Power Pack.
3. Swap the Ignition coil with one that is sparking correctly.
4. Rare causes include a weak Trigger magnet. If possible, try another flywheel.

**ENGINE WILL NOT STOP (KILL):**

1. Disconnect the Black/Yellow wire at the Power Pack. Connect a jumper wire to the stop wire from the Power Pack and short it to engine ground. If this stops the Power Pack from sparking, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present). If this does not stop the Power Pack from sparking, replace the Power Pack.



# 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.

## MISS AT ANY RPM:

1. Disconnect the Yellow wires from the Stator to the Rectifier and retest. If the miss clears, replace the Rectifier.
2. In the water or on a Dynamometer, check the DVA on the Orange wires from the Power Pack 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 Power Pack or Timer Base.
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 Power Pack or Ignition coil. Occasionally a Timer Base will cause this same problem. Check the Timer Base 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.
5. Check the Trigger and Charge coil flywheel magnets for cracked, broken, or loose magnets.

## POWER PACK OR TIMER BASE REPEATEDLY BLOWS ON SAME CYLINDER:

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