



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: 113-5316

This kit will replace the following P/N's: 175316, 585261, and 585262.

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.

Please use the Factory recommended Champion QL77JC4 spark plugs gapped at 0.030".

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

- 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

- Disconnect the negative battery cable.
- Disconnect the wires going to the old Power Pack.
- Remove Power Pack mounting bolts.
- Connect the wires from the new Power Pack to the Stator, Timer Sensor, and Ignition coils. Connect the Orange/Blue coil lead to the top Ignition coil and the Orange/Green coil lead to the bottom Ignition coil.
- Mount the new Power Pack using the original bolts.
- Reconnect the battery cable.

TROUBLESHOOTING

NO SPARK ON ANY CYLINDER:

- 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).
- Disconnect the Yellow wires from the Regulator/Rectifier and retest. If the engine now has spark, replace the Regulator/Rectifier.
- 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.
- Check the Stator and Timer Base as follows:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown (Stator)	Brown/Yellow (Stator)	750-950 Ω	650-850 Ω	150-400 V	150-400 V
Orange (Power Coil)	Orange/Black (Power Coil)	360-440 Ω	45-55 Ω	11-22 V	45-120 V
White (Common)	Blue (#1 Timer Base)	22-32 Ω	25-30 Ω	100-400 V	0.6 V Minimum
White (Common)	Green (#2 Timer Base)	22-32 Ω	25-30 Ω	100-400 V	0.6 V Minimum
White (Common)	Engine Gnd	Open	Open	-	-
Blue (#1 Timer Base)	Engine Gnd	Open	Open	100-400 V	-
Green (#2 Timer Base)	Engine Gnd	Open	Open	100-400 V	-

- 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.

CDI Electronics • 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 Power Pack resistance:

Read from	Read to	Ohms
Orange/Blue (#1 Primary)	Blue (#1 Timer Base Input)	110 Ω (a)
Orange/Green (#2 Primary)	Green (#2 Timer Base Input)	110 Ω (a)
White (Common)	Black (Engine Ground)	Shorted
Brown (Stator Input)	Black (Engine Ground)	Open or M range
Brown/Yellow (Stator Input)	Black (Engine Ground)	Open or M range

(a) Use a comparison reading as different brands of multi meters will give different readings. The typical range is 90-150 Ω for the Orange wires. You should have approximately the same Ohm reading on the Orange wires. If one of the SCR's inside the Power Pack is shorted or open, the readings will be quite different.

NO SPARK ON ONE CYLINDER:

1. Check the Timer Base resistance and DVA (see **NO SPARK ON ANY CYLINDER**).
2. Swap the Blue Timer Base wire with the Green Timer Base wire and retest. If the spark moves from one cylinder to the other, replace the Timer Base. If it does not move, the Ignition coil is likely defective.
3. Swap the Orange primary wire of the cylinder not firing with the primary wire of the cylinder that does fire and see if the spark moves from one Ignition coil to the other. If it does, the Power Pack is likely bad. If the spark stays on the same cylinder, the Ignition coil or Timer Base is likely bad.
4. Visually inspect the Ignition coils for burned or discolored areas and cracks in the casing indicating arcing inside the Ignition coil.
5. Swap the Brown stator wire with the Brown/Yellow stator wire and retest. If the fire moves from one cylinder to the other, replace the Stator.
6. Rare causes include a weak center hub trigger magnet inside the flywheel. If possible, try another flywheel.

Note: If the Orange primary wire DVA reading is low on one cylinder, disconnect the 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 specification, the Ignition coil is likely defective. If it still measures low, this indicates a bad Power Pack if the Timer Base tests within specification.

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 coil. Check the Timer Base resistance and DVA (see **NO SPARK ON ANY CYLINDER**).
3. Replace the Ignition coil on the cylinder dropping spark.

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 Sensor.
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 Sensor will cause this same problem. Check the Timer Sensor 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.

S.L.O.W. FUNCTION IS ACTIVATED:

1. Use a temperature probe and verify that the engine is not overheating.
2. Disconnect the Tan temperature wire from the Power Pack and retest. Make sure to cut the key switch off killing the engine, and then crank the engine back again. This resets the circuit board inside the Power Pack. If the engine now performs properly, check the temperature switch, harness, and System Check Gauge.
3. Make sure the Tan temperature switch wire is not located next to a spark plug wire (RF interference can activate the S.L.O.W function without sounding the warning horn).

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4. If the engine will not rev above 2500 RPM and the Tan wire is disconnected from the Power Pack (and not near a spark plug wire), the Power Pack is likely defective. Make sure to cut the key switch off killing the engine, and then crank the engine back again. This resets the circuit board inside the Power Pack.

S.L.O.W. FUNCTION WILL NOT ACTIVATE:

1. Disconnect the Tan temperature wire and short it to engine ground. *If the SLOW circuit now operates*, replace the temperature sensor.
2. Check the Power Coil DVA. You should have at least 10 V from the Orange to the Orange/Black wire while they are connected to the Power Pack. If you have the correct DVA on the Power Coil, the Power Pack is likely defective.
3. Check the terminal on the Tan wire for broken wire or corrosion.