

CDI P/N: 113-4808

This unit replaces the following P/N's: 18-5774, 18-5780, 584808, 585145, 585189, 5004532 and 5004533.

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.

Installation

1. Disconnect the battery cables.
2. Remove power pack mounting bolts and disconnect all of the wires going to the old power pack.
3. Check for DC voltage on the kill (stop) wire (usually Black/Yellow) with the key-switch in the on and off position. At no time should you see over 2 volts DC on this wire as severe damage to the power pack can occur.
4. Connect the wires to the new power pack. Some engines do not need the pigtail three wire adapter, if so, simply remove the pigtail.
5. Use a small amount of dielectric silicone grease in the bullet connectors (if used).
6. Position the stator wire connector in the slot provided in the bracket.
7. Position the Timer Base wire connector in the slot provided in the bracket.
8. Mount the new power pack using the original bolts.
9. Connect the orange wires to the ignition coils (remember that the blue striped wires go up and the green striped wires go down).
10. Reconnect the battery cables.

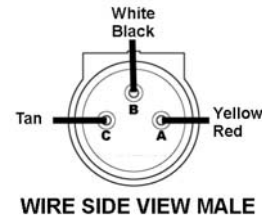
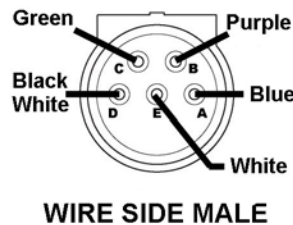
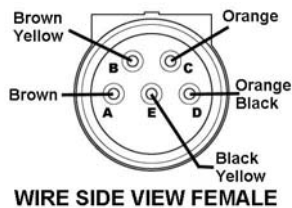
Troubleshooting

Service Note: Please use the Factory recommended spark plug (currently Champion QL77JC4) gapped at 0.030".

Note: These engines usually have a 35 Amp battery charging capacity. Due to the size and weight of the flywheel magnets, it is highly recommended that you check to make sure both the triggering and charge magnets are still secure in the flywheel before you service the engine. A loose or broken magnet can be deadly to you or your pocketbook. It is a recommended you index the flywheel and check the timing on all cylinders when servicing these engines. Also check for static firing and intermittent spark.

ENGINE WILL NOT START OR MISFIRES:

Verify the wiring in the connectors as follows:



NO SPARK ON ANY CYLINDER:

1. Disconnect the black/yellow kill wires AT THE PACK and retest. If the engine's ignition now has fire, the kill circuit has a fault- possibly the key switch, harness or shift switch.
2. Disconnect the yellow wires from the stator to the rectifier and retest. If the engine fires, replace the rectifier.
3. Check the stator and timer base resistance and DVA output as given below:

WIRE	READ TO	RESISTANCE (Disconnected)	DVA (Connected)	DVA (Disconnected)
Brown	Brown/Yellow	450-550	150 V +	150 V + (*)
Orange	Orange/Black	450-550 (CDI 45-55)	11-22 V	45-120 V (*)
White	Purple	(^)	100 V + (a)	0.6 V + (#)
White	Blue	(^)	100 V + (a)	0.6 V + (#)
White	Green	(^)	100 V + (a)	0.6 V + (#)
White	Black/White	400-500	6 to 12 V(b)	6 to 12 V (from pack)

(*) This reading can be used to determine if a stator or pack has a problem. For instance, if you have no spark on any cylinder and the stator's DVA reading is out of spec – disconnect the stator wires and recheck the DVA output. If the reading is still out of spec – the stator is bad. If the reading is now within spec – the pack is bad.

(#) This reading can be used to determine if a pack has a problem in the triggering circuit. For instance, if you have no spark on one cylinder and the timer base's DVA reading for that cylinder is low – disconnect the timer base wires and recheck the DVA output. If the reading stays low – the timer base is bad. If the reading is now within spec – the pack is likely bad.



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(^) This reading will vary according to the meter used. Do a comparison reading and if there is a difference of over 10%, replace the timer base. Typically, use the Red meter lead to the White wire and the Black meter lead to the other wires. The Fluke series meters will typically read 1 MΩ to 2.4 MΩ while the CDI 511-60 meter will read about 5 MΩ.

- (a) This reading will be only approximately 0.6-1.5 volts if the SCR inside the pack is not firing. You will read 100 to 200 volts depending upon your meter and the voltage generated by the stator if the SCR in the pack is firing out to the ignition coil (due to the bypass filter cap inside the pack).
- (b) Voltage will drop below 1 volt when engine drops out of QuickStart (engine is over 104 Deg or 1200 RPM).

4. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
7. Check the cranking RPM. A cranking speed of 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.

NO SPARK ON ONE CYLINDER:

1. Check the timer base's resistance and output (see NO SPARK ON ANY CYLINDER above).
2. Check the DVA output on the orange wires from the power pack while connected to the ignition coils. You should have a reading of at least 130V or more. If the reading is low on one cylinder, disconnect the orange wire from the ignition coil for that cylinder and reconnect it to a load resistor. Retest. If the reading is now good, the ignition coil is likely bad. A continued low reading indicates a bad power pack or Timer-Base.

3. Check the power pack resistance as given below:

Wire Color	(CYL)	Check to Wire Color	Resistance
Orange/Blue	(#1)	Blue	110 (a)
Orange	(#2)	Purple	110 (a)
Orange/Green	(#3)	Green	110 (a)
White		Black (Engine Ground)	Shorted
Brown		Black (Engine Ground)	Open or M range
Brown/Yellow		Black (Engine Ground)	Open or M range

(a) Use a comparison reading as different brands of meters will give different readings. The typical range is 90 to 150 ohms for the Orange wires. You should have approximately the same ohm reading on all six tests with the Orange wires. If one of the SCR's inside the power pack is shorted or open, the readings will be quite a bit different.

4. Check the spark plug wires for breaks and abrasions.

ENGINE WILL NOT ACCELERATE BEYOND 2500 RPM (Runs smooth below that RPM) :

1. Use a temperature probe and verify that the engine is not overheating.
2. Disconnect the tan temperature wire from the pack and retest. If the engine now performs properly, test and replace the defective temperature switch.
3. Make sure the tan temperature switch wire is not located next to a spark plug wire.
4. Connect the engine to a fuel tank containing a 50:1 fuel/oil mix and disconnect the VRO sensor from the engine harness. Re-test. If the engine performs correctly, replace the VRO or VRO sensor.

ENGINE DIES WHEN QUICKSTART DROPS OUT:

Check ignition timing at idle with the White/Black temperature wire disconnected. Remember to allow for the drop in ignition timing when Quick Start disengages. Verify ignition timing after engine has warmed up, according to the service manual.

ENGINE WILL NOT STAY IN QUICKSTART OVER 10 SECONDS:

1. Verify the engine temperature is below the trip point (89 degrees on some engines and 104 degrees on others) of the temperature switch.
2. Disconnect the White/Black Temperature Switch wire from the Port Temperature Switch. If the engine now stays in Quick Start, the Temperature Switch is likely defective.

ENGINE STAYS IN QUICKSTART ON ALL CYLINDERS:

1. With the engine idling, check the Yellow/Red wire for DC voltage. If there is DC voltage on this wire while the engine is running, the Quick-Start will not disengage. A voltage of less than 7 volts will not engage the starter solenoid, yet will engage Quick-Start.
2. Short the White/Black Temperature Switch wire FROM the power pack to engine ground. Start the engine, if the Quick Start drops out after approximately 5 seconds, replace the White/Black Temperature Switch.
3. Disconnect the Black/White wire from the power pack. If the Quick-Start feature is not now working, replace the power pack.



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ENGINE WILL NOT ENGAGE QUICKSTART:

1. Disconnect the White/Black wire from the temperature sensor.
2. With the engine idling, check the Black/White timer base wire for DC voltage. There should be about 6 to 12 volts DC voltage on this wire while the engine is running for the Quick-Start to engage.
3. Short the White/Black Temperature Switch wire FROM the power pack to engine ground. If the voltage on the Black/White wire drops out after approximately 5 seconds but the engine timing does not change, replace the timer base. If the voltage remains present, disconnect the Yellow/Red wire to the pack and repeat the test. If the voltage still remains, replace the pack.

ENGINE ENGAGES S.L.O.W. (Limits at 2500 PM) WHEN THE NO OIL, LOW OIL OR FUEL VACUUM ALARM SOUNDS:

1. Disconnect engine harness.
2. Disconnect the Tan wires from the temperature sensors in both cylinder heads.
3. Using an VOM Meter, check the diode in the engine harness as follows:

<u>Red Meter Lead</u>	<u>Black Meter Lead</u>	<u>Reading</u>
Tan pin in Engine Harness Connector	Tan Lead From the Cyl Head	0.500 (approximately)
Tan Lead From the Cyl Head	Tan pin in Engine Harness Connector	OL or over 1.0

NOTE: You can replace the diode in the harness with a 1N4007 diode available at most electronics stores.

Thank you for using CDI Electronics.