

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: 113-1731

Replaces P/N's: 581311, 581709, 581731, 581895, 582056, 18-5753, 18-5756, 75340, and 75350. (No RPM Limit).

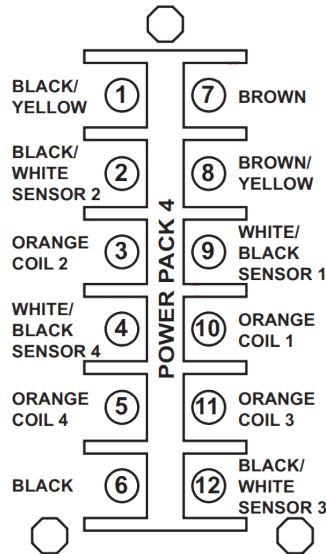
WARNING! This product is designed to be installed by a professional marine mechanic. CDI Electronics cannot be held liable for injury or damage resulting from improper installation, abuse, neglect, or misuse of this product.

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. Remove the old Power Pack cover.
3. Disconnect all wires from the old Power Pack.
4. Remove the old Power Pack and save the mounting bolts.
5. Install the new Power Pack using the original bolts.
6. Reconnect the wires according to the connection guide below (also located on the cover).
7. Install the new cover and gasket using the new screws included with the new Power Pack.
8. Connect the negative battery cable.



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. Inspect and clean all engine and ignition ground connections. Verify by using a jumper wire from engine ground to the ground terminal on the Power Pack.



Installation and Troubleshooting Guide



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5. Check the Stator and Timer Base resistance and DVA as given below:

Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
Brown (Stator)	Brown/Yellow (Stator)	835-985 Ω (1973)	650-850 Ω	150-400 V	150-400 V
Brown (Stator)	Brown/Yellow (Stator)	555-705 Ω (1974-77)	650-850 Ω	150-400 V	150-400 V
Black/White (#1 input)	White/Black (#3 input)	10-20 Ω	35-55 Ω	0.6 V minimum	0.6 V minimum
Black/White (#2 input)	White/Black (#4 input)	10-20 Ω	35-55 Ω	0.6 V minimum	0.6 V minimum
Black/White (all)	Engine Gnd	Open	Open	150-400 V	-
White/Black (all)	Engine Gnd	Open	Open	150-400 V	-

6. Check the DVA on the Black/Yellow kill wire on the screw terminal 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 on the screw terminal of the Power Pack is low, the Power Pack is likely faulty.
7. If equipped with an OEM Timer Base and the Timer Base DVA is low, you may try to reset the air gap between the Timer Base sensor and the Timer Base magnet using a Sensor Gap Gauge or use the following procedure:
- Loosen the two mounting screws and the nuts on the Timer Base Sensor located in the epoxy on the outside of the heat shield of the Timer Base.
 - Slide the Timer Base sensor in toward the crankshaft until the sensor touches the stop boss located at the base of the sensor mounting area. Tighten the mounting screws.
 - Coat the face of the sensors with machinists bluing or equivalent.
 - Install the flywheel without the woodruff key and rotate the flywheel at least one full turn.
 - Remove the flywheel and check to see if the Timer Base magnet struck the face of the sensors. If it did, back the sensor out approximately 0.005" and repeat steps c, d, and e.
 - If the ignition now has spark, finger tight the nuts on the outside of the heat shield and coat them with RTV.
 - If still no spark, replace the Timer Base.
8. Check the DVA on each Black/White wire to engine ground. You should have a reading of at least 150 V minimum (while connected to the Power Pack). If the reading is low, disconnect the Timer Base wires from the Power Pack and recheck the Black/White terminals ON THE POWER PACK. If the voltage jumps up to an acceptable reading, the Timer Base may have a problem in the internal wiring
9. Check the Timer Base and Stator coil flywheel magnets for cracked, broken, or loose magnets.

NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

- Disconnect the Yellow wires from the Rectifier and retest. If the engine now has good spark, replace the Rectifier.
- Check the Timer Base resistance and DVA (see **NO SPARK ON ANY CYLINDER**).
- Swap the Timer Base wire sets (swap the #1 & #3 pair with the #2 & #4 pair) and see if the no spark problem follows a Timer Base wire.
- 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 minimum. 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 good, the Ignition coil is likely bad. A continued low reading indicates a bad Power Pack.
- Visually inspect the Ignition coils for burned or discolored areas or cracks in the casing (indicating arcing inside the coil).
- Swap the Ignition coil with one that has good spark.
- Rare causes include a weak Timer Base magnet. If possible, try another flywheel.

POWER PACK OR TIMER BASE REPEATEDLY BLOWS ON SAME CYLINDER:

- Check the Timer Base wires for shorts to engine ground as a shorted Timer Base wire can destroy a SCR inside the Power Pack.
- 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**).
- Replace the Ignition coil on the cylinder dropping spark.

ENGINE WILL NOT STOP (KILL):

- 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.



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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. 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**).
3. 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.
4. Check the Timer Base and Stator coil flywheel magnets for cracked, broken, or loose magnets.
5. Disconnect the Rectifier and retest. If the system fires, replace the Rectifier.
6. Using a digital multi meter set to Diode scale, check the Power Pack as follows:

Red meter lead	Black meter Lead	Reading
1.) Black/Yellow (Stop wire)	6.) Black (ground)	Reading*
2.) Black/White (#2 Sensor)	6.) Black (ground)	Reading*
3.) Orange (#2 Primary)	6.) Black (ground)	Reading*
4.) White/Black (#4 Sensor)	6.) Black (ground)	Reading*
5.) Orange (#4 Primary)	6.) Black (ground)	Reading*
7.) Brown (Stator)	6.) Black (ground)	Reading*
8.) Brown/Yellow (Stator)	6.) Black (ground)	Reading*
9.) White/Black (#1 Sensor)	6.) Black (ground)	Reading*
10.) Orange (#2 Primary)	6.) Black (ground)	Reading*
11.) Orange (#3 Primary)	6.) Black (ground)	Reading*
12.) Black/White (#3 Sensor)	6.) Black (ground)	Reading*
1.) Black/Yellow (Stop wire)	7.) Brown (Stator)	Reading*
2.) Black/White (#2 Sensor)	7.) Brown (Stator)	Reading*
4.) White/Black (#4 Sensor)	7.) Brown (Stator)	Reading*
9.) White/Black (#1 Sensor)	7.) Brown (Stator)	Reading*
12.) Black/White (#3 Sensor)	7.) Brown (Stator)	Reading*
6.) Black (ground)	1.) Black/Yellow (Stop wire)	Open*
6.) Black (ground)	2.) Black/White (#2 Sensor)	Open*
6.) Black (ground)	3.) Orange (#2 Primary)	Open*
6.) Black (ground)	4.) White/Black (#4 Sensor)	Open*
6.) Black (ground)	5.) Orange (#4 Primary)	Open*
6.) Black (ground)	7.) Brown (Stator)	Open*
6.) Black (ground)	8.) Brown/Yellow (Stator)	Open*
6.) Black (ground)	9.) White/Black (#1 Sensor)	Open*
6.) Black (ground)	10.) Orange (#2 Primary)	Open*
6.) Black (ground)	11.) Orange (#3 Primary)	Open*
6.) Black (ground)	12.) Black/White (#3 Sensor)	Open*
7.) Brown (Stator)	1.) Black/Yellow (Stop wire)	Open*
7.) Brown (Stator)	2.) Black/White (#2 Sensor)	Open*
7.) Brown (Stator)	9.) White/Black (#1 Sensor)	Open*
7.) Brown (Stator)	12.) Black/White (#3 Sensor)	Open*