Installation and Troubleshooting Guide

CDI P/N: 213-4035

This unit replaces the following P/N's: 113-4035, 583471, 584034 and 584035 for High Performance Applications.

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 the power pack mounting bolts and disconnect all of the wires going to the old power pack.
3. Connect the harness wires to the new power pack. Use a small amount of dielectric silicone grease in the bullet connectors.
4. Connect the White/Black Temperature wire to the temp switch.
5. Connect the Orange and Orange/Black stator wires to the terminal strip on the Regulator/Rectifier.
6. Position the stator wire connectors in the lower slot provided in the electrical bracket.
7. Position the timer base wire connectors in the slot above the stator wire connectors in the electrical bracket.
8. Mount the new power pack using the original bolts (take special care not to pinch any wires).
9. Connect the Orange coil wires to the ignition coils per the service manual.

	Port (Left) Side		Starboard (right) Side
Top (#2)	Orange/Violet	Top (#1)	Orange/Blue
2nd from Top (#4)	Orange/Pink	2nd from Top (#3)	Orange/Green
3nd from Top (#6)	Orange/Violet/White	3nd from Top (#5)	Orange/Blue/White
4th from Top (#8)	Orange/Pink/White	4th from Top (#7)	Orange/Green/White

10. Reconnect the battery cables.

TROUBLESHOOTING

NO FIRE ON ANY CYLINDER:

1. Disconnect the black/yellow engine stop wires AT THE PACK and retest. If the engine's ignition now has spark, the stop 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 now has spark, replace the rectifier.
3. Check the stator and timerbase resistance and DVA output as given below for each bank. Remember the resistance readings are with the wires DISCONNECTED.

Wire Color	Check to Wire Color	Resistance	DVA Reading
Brown wire	Brown/Yellow wire	850-1100	150V + Connected, 170V + Disconnected
Orange	Orange/Black	93-103	10-24V Connected
White wire	Black/White wire (Timer Base)	215-225	6-10 V + Connected (With White/Black temp wire disconnected)

SERVICE NOTE: A Timer Base DVA reading of 0.5V or more from the White wire to the Blue, Purple, Green and Pink wires (while connected) indicates the timer base is producing enough voltage to trigger the SCR's inside the power pack. A reading of approximately 100V or more indicates the SCR inside the power pack has fired to the ignition coil. If no spark to the sparkplug, replace the ignition coil.

4. Check the timer base's resistance from the white wire in the 1 connector to the blue, green, purple and pink wires in both connectors. Reading should be approximately the same on all. If you have no readings, reverse the meter leads and retest to see if you now have a reading.
5. Check the DVA output from the timer base. A reading of at least 0.5V or more from the white wire to the blue, green, purple and pink wires (while connected to the pack) is needed to fire the pack. Read from the white wire to both sides of the timer base's blue, green, purple and pink wires.
6. Check the cranking RPM. A cranking speed of less than 250 RPM will not allow the system to fire the spark plugs properly.

NO FIRE OR INTERMITTENT FIRE ON ONE OR MORE CYLINDERS:

1. Check the timer base's resistance from the white wire to the blue, green , purple and pink wires in both connectors. Reading should be approximately the same on all. If the readings are off, reverse the meter leads and retest to see if the readings are corrected.
2. Check the DVA output from the timer base. A reading of at least 0.5V or more from the white wire to the blue, green , purple and pink wires (while connected to the pack) is needed to fire the pack. Read from the white wire to both sides of the timer base's blue, green and purple wires.
3. 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 150V 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 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.

NO FIRE OR INTERMITTENT FIRE ON ONE BANK:

1. Check the stator resistance. You should read approximately 1000 ohms from the brown wire to the brown/yellow wire in each set and 100 ohms from the orange to orange/black wires.

2. Check the DVA output from the stator. You should have a reading of at least 150V or more from the brown wire to the brown/yellow wire (while connected to the pack) on each bank.
3. 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 150V or more. If the reading is low on one bank, disconnect the orange wires from the ignition coil for that bank and reconnect them to a load resistor. Retest. If the reading is now good, one or both of the ignition coils are likely bad. A continued low reading indicates a bad power pack.
4. Disconnect the shift interrupter and retest. If all cylinders now have spark, replace the shift interrupter.

HIGH SPEED MISS FIRE OR WEAK HOLE SHOT:

1. Using the Piercing Probes/DVA adapter, check the DVA voltage at the RPM where the problem is occurring while connected as follows:

Red Lead	Black Lead	DVA	Bank/Cylinder
Brown	Brown/Yellow	150V +	Starboard (1,3,5, 7)
Brown/White	Brown/Black	150V +	Port (2,4,6, 8)

NOTE: The readings should rapidly increase as the engine RPM increases and stabilize below 400 volts (voltage exceeding 400 V DVA indicates a bad pack). A sharp drop in voltage right before the miss becomes apparent usually indicates a bad stator charge coil.

2. Connect an inductive tachometer to the spark plug wires one at a time and compare the readings. If most of the cylinders show the same reading and one or two show different readings, check the primary wires with the inductive pickup to see if the readings are the same coming out of the power pack. A difference in readings between the primary and secondary coil wires indicate bad ignition wires. No difference indicates a bad power pack.

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. Disconnect the VRO sensor from the engine harness and retest. If the engine performs correctly, replace the VRO or 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 QuickStart, the Temperature Switch is likely defective.

ENGINE DROPS OUT AND BACK IN QUICKSTART AT IDLE:

1. With the engine idling, check the Yellow/Red wire for DC voltage. Intermittent DC voltage on this wire while the engine is running will re-engage Quick-Start. A voltage of less than 7 volts will not engage the starter solenoid, yet will engage Quick-Start.
2. With the engine idling, disconnect the Black/White wire from the power pack and short the White/Black Temperature Switch wire FROM the power pack to engine ground. If the Quick Start drops out and stays out after approximately 5 seconds, replace the White/Black Temperature Switch. If the problem is still present, replace the power pack.

ENGINE STAYS IN QUICKSTART ON ALL CYLINDERS:

1. With the engine idling, check the Yellow/Red wire for DC voltage. If there is over 2V DC but less than 7 volts, the starter solenoid will not engage the starter solenoid, yet will engage Quick-Start.
2. Disconnect the Black/White wire to the Timer Base. If the Quick-Start feature is not now working, replace the power pack.

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 10 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:

Red Meter Lead	Black Meter Lead	Reading
Tan pin in Engine Harness Connector	Tan Lead From Port Cyl Head	0.500 (approximately)
Tan pin in Engine Harness Connector	Tan Lead From Stbd Cyl Head	0.500 (approximately)
Tan Lead From Stbd Cyl Head	Tan pin in Engine Harness Connector	OL or over 1.0
Tan Lead From Port 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.