



# 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: 134-6456-18

This unit replaces the following P/N's: 96455A18 and 96455T18.

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

## INSTALLATION

1. Disconnect the Negative battery cable.
2. Remove the flywheel according to the service manual for your engine.
3. Disconnect the Trigger lead from the TPM Module.
4. Disconnect the Trigger linkage arm from the Trigger.
5. Remove the bushing from the old Trigger arm and install it in the new Trigger arm.
6. Remove the Stator bolts and lay the Stator out of the way.
7. Remove the old Trigger and install the new Trigger and the Stator according to the service manual.
8. Connect the Trigger linkage to the bushing and then connect the Trigger lead to the TPM.
9. Replace the flywheel according to the service manual for your engine.
10. Reconnect the Negative battery cable.
11. Verify and adjust ignition timing as needed according to the service manual for your engine.

## TROUBLESHOOTING

### NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow kill wires from the harness and retest. If the engine's Ignition now has spark, the stop circuit has a fault. Check the key switch, harness, and shift switch (if present).
2. Disconnect the Timing Protection Module's (TPM) 6 pin connectors from the Trigger and CDM Harness. Connect the Trigger directly to the CDM Harness, bypassing the TPM. Remember, the TPM for the Carbureted engines has a built in RPM Limiter. Check for Spark. If Spark is present, check the Purple wire to the TPM. With the key switch on, you should have battery voltage present (above 10 VDC while cranking). If the voltage is not present, trace the Purple wire back towards the key switch and locate the break in the wire.
3. Install a 511-5207A 1 test harness inline to one of the CDM Modules and unplug the Black/Yellow wires in the harness. This will isolate that CDM from all other connections. If spark returns on that CDM with the Black/Yellow wires unplugged, test the remaining CDMs. If you disconnect one CDM and all other CDMs start sparking, the one that the test harness is connected to is defective. Remember, the fault could be in the CDM harness.
4. Disconnect one CDM Module one at a time and see if the other CDM Modules start sparking. If they do, the CDM Module you just unplugged is defective.
5. Disconnect the Yellow wires from the Stator to the Voltage Regulator and retest. If the engine now has spark, replace the Voltage Regulator.
6. Check the Resistance of the Black wire in the 4 pin connector to the CDM in reference to a good clean engine ground. It should show a short, less than 0.5  $\Omega$ . A high reading or an open reading indicates a break in the Black wire. Check the wire at the ground terminal.
7. Check the cranking RPM. A cranking speed less than 250 RPM will not allow the system to spark properly.
8. Pull on each wire from each CDM harness plug. Make sure all wires are making proper contact inside plugs.
9. Check the Trigger and Stator coil flywheel magnets for cracked, broken, or loose magnets.

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

1. Disconnect the CDM Modules one at a time and see if the cylinders that were not sparking now spark. If so, replace the CDM Module you have disconnected. Remember, there can be more than one issue on the engine.
2. Locate the two ground terminals for the CDM Modules ground wires. Originally, there are 3 wires going into a single ring terminal. Clean the mounting plate and cut off the single ring terminal and install individual ring terminals on the wires. Do this for all 6 wires. We recommend adding a secondary ground wire (10-12 ga) from one of the ground points, routed around and connected with the Negative Battery cable on the engine.

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3. Check the Trigger Resistance and DVA as given below:

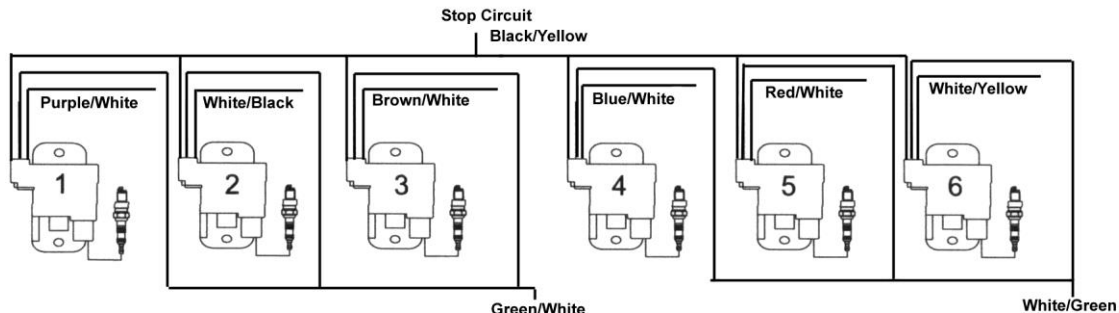
Read from	Read to	OEM Ohms	CDI Ohms	DVA (Connected)	DVA (Disconnected)
White/Green (Stator)	Green/White (Stator)	380-430 Ω	380-430 Ω	160-400 V	200-400 V
Purple (#1 Trigger)	Blue (#4 Trigger)	1.1-1.4K Ω	0.85-1.05K Ω	0.4 V Minimum	4 V Minimum
White (#2 Trigger)	Red (#5 Trigger)	1.1-1.4K Ω	0.85-1.05K Ω	0.4 V Minimum	4 V Minimum
Brown (#3 Trigger)	Yellow (#6 Trigger)	1.1-1.4K Ω	0.85-1.05K Ω	0.4 V Minimum	4 V Minimum
Purple (#1 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-
White (#2 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-
Brown (#3 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-
Blue (#4 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-
Red (#5 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-
Yellow (#6 Trigger)	Engine Gnd	Open	Open	0.2 V Minimum	-

4. Check the resistance and diodes of each of the CDM Modules as follows:

	Red Meter Lead	Black Meter Lead	OEM Reading	CDI Reading
CDM Pin #	(A) Ground	(C) Trigger	1.2-1.4K Ω	1.2-1.4K Ω
CDM Pin #	(D) Stator	(A) Ground	Open*	Open*
CDM Pin #	(A) Ground	(D) Stator	Reading*	Reading*
CDM Pin #	(D) Stator	(B) Kill Circuit	Reading*	Reading*
CDM Pin #	(B) Kill Circuit	(D) Stator	Open*	Open*
CDM Pin #	(A) Ground	(B) Kill Circuit	Reading*	Reading*
CDM Pin #	(B) Kill Circuit	(A) Ground	High M Ω or Open*	High M Ω or Open*
-	High Tension Lead	(A) Ground	0.7-1.3K Ω	2.2-2.4K Ω

\* This Measurement is with the meter set to the diode scale. Where you see the term "Reading" represents a reading on the meter. Where you see the term "Open" represents no value showing on the meter.

5. The connection guide below will assist you in locating areas where problems can occur. Remember a short in either #1, #2, or #3 can cause either # 4, #5, and #6 not to have spark.



## HIGH SPEED MISS:

1. Disconnect the Yellow wires from the Stator to the Voltage Regulator one at a time and retest. If the miss clears, replace the Voltage Regulator.
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 Trigger or CDM module. Check the Trigger DVA (see **NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS**).
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 Trigger and charge coil flywheel magnets for cracked, broken, or loose magnets.
5. Index the flywheel and check the timing on ALL cylinders. On carbureted models, the TPM Module rev limit function starts to retard timing in sequence (2, 3, 4, 5, 6, 1) at 5800-6000 RPM. The TPM Module will retard the timing each cylinder up to 30° (starting with #2) and then stop sparking that cylinder if the RPM is still above the limit. It will continue to retard, then shut down each cylinder until the engine drops below the limit.
6. Check the Stator resistance and DVA (see **NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS**).



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## ENGINE HAS ERRATIC TIMING OR ADVANCED TIMING:

1. Disconnect the 4 wire Detonation Controller (if equipped) and check the DVA on the Black/White wire, reference to engine ground. You should read 25-40 DVA. If the voltage is low, replace the Engine Control Module.
2. Replace the Engine Control Module.
3. Check the Trigger magnet in the flywheel to see if it is loose or cracked.

## ENGINE DOUBLE FIRING:

1. Check the Bias Circuit DVA on the Black/White wire in reference to engine ground. You should read 25-40 DVA. If the voltage is low, replace the TPM Control Module.
2. Swap the CDM that is double firing with another CDM sparking cleanly. If the problem moves, replace the defective CDM.
3. Locate the two ground terminal for the CDM Modules ground wires. Originally, there are 3 wires going into a single ring terminal. Clean the mounting plate and cut off the single ring terminal and install individual ring terminals on the wires. Do this for all 6 wires. We recommend adding a secondary ground wire (10-12 ga) from one of the ground points, routed around and connected with the Negative battery cable on the engine.

## CDM OR TRIGGER REPEATEDLY BLOWS ON SAME CYLINDER:

1. Check the Trigger wires for shorts to engine ground as a shorted Trigger wire can destroy a SCR inside the CDM Module.
2. In contrast, a shorted SCR inside the CDM Module can destroy a Trigger coil. Check the Trigger resistance and DVA (see **NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS**).
3. Disconnect the 4 pin connector from the CDM Module with no spark. Check for DC voltage on the Black/Yellow in the 4 pin connector, in reference to engine ground. Turn the ignition switch on and off several times. DC voltage should never exceed 2V. If it does, the stop circuit has a fault. Check the key switch, harness, and shift switch.
4. Verify the ground connection for that CDM Module.
5. Replace the CDM Module on the cylinder dropping spark.