Mercury/Force
Two Cylinder Engines
1994-2006 Engines Using CDM Modules

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow stop wires from the harness and retest. If the engine's ignition sparks, the stop circuit has a fault. Check the key switch, harness and 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 cranking RPM. A cranking speed of less than 250-RPM will 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.
4. Inspect the spark plug wires, boots and spark plugs. Check for chafing on the wiring and harnesses.
5. Inspect and clean all engine and ignition ground connections.
6. Pull on each wire from each CDM harness plug. Make sure all wires are making proper contact inside plugs.
7. Disconnect one CDM module at a time and using a set of piercing probes and jumper wires - short the stator wire in the CDM connector to engine ground. Retest. If the other module starts sparking, the CDM you unplugged is bad.
8. Check the stator resistance and DVA output as follows:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
White/Green	Green/White	500-700	500-600	180-400 V	180-400 V (*)

(*) This reading can be used to determine if a stator or the CDM modules have a problem. For instance, if you have no spark on any cylinder and the stator's DVA reading is low – disconnect the stator wires and recheck the DVA output. If the reading stays low – the stator is bad. If the reading is now within spec – at least one of the CDM modules is bad.

9. Check the resistance of each of the CDM modules as follows:

	RED METER LEAD	BLACK METER LEAD	READING
CDM Pin #	A	C	OEM 2200-2400 Ohms – CDI 1200-1300 Ohms
CDM Pin #	D	A	DIODE*
CDM Pin #	A	D	DIODE*
CDM Pin #	D	B	DIODE*
CDM Pin #	B	D	DIODE*
CDM Pin #	A	B	DIODE*
	High Tension Lead	A	OEM 700-1300 Ohms – CDI 2200-2400 Ohms

* Diode readings are to be read one way, then reverse the leads and read again. You should get a low reading in one direction and a higher reading in the other.

10. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
11. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Inspect the spark plug wires, boots and spark plugs. Check for chafing on the wiring and harnesses.
2. Clean and inspect CDM ground wire connections to engine ground.
3. Check the trigger DVA output as shown below:

WIRE	READ TO	RESISTANCE	DVA (Connected)
Purple	Engine GND	Open	1 V +
White	Engine GND	Open	1 V +

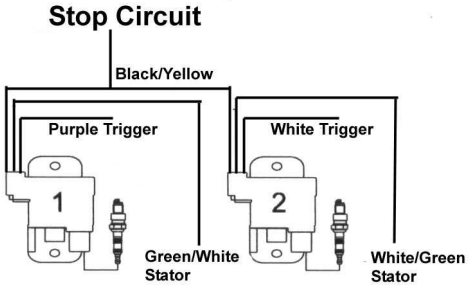
4. If one cylinder is not sparking, swap the White/Green and Green/White stator wires and retest. If the problem moves to the other cylinder, the stator is likely bad. If no change, replace both CDMs. A continued no spark condition on the same cylinder indicates a bad trigger.
5. If the cylinders are only misfiring up above an idle, connect an inductive tachometer to all cylinders and try to isolate the problem cylinders.
6. Check the resistance of each of the CDM modules (see NO SPARK ON ANY CYLINDER above).

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.
2. In contrast, a shorted SCR inside the CDM can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK ON ANY CYLINDER above).
3. Cut the Black/Yellow stop wire from the CDM not sparking. Measure DC voltage from Black/Yellow (from the harness) 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. Replace the CDM on the cylinder dropping spark.

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 trigger or CDM module. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
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 triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
5. Rotate the stator one bolt hole in either direction and retest.



 Rev A 2/2010