

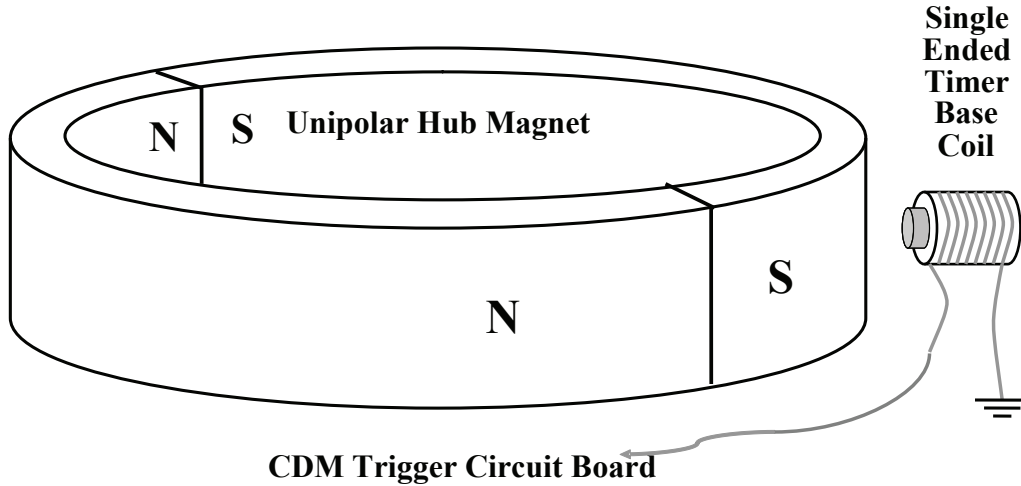


Mercury Trigger Magnets

THE FLYWHEELS WITH THESE MAGNET DESIGNS CANNOT BE INTERCHANGED!!!!

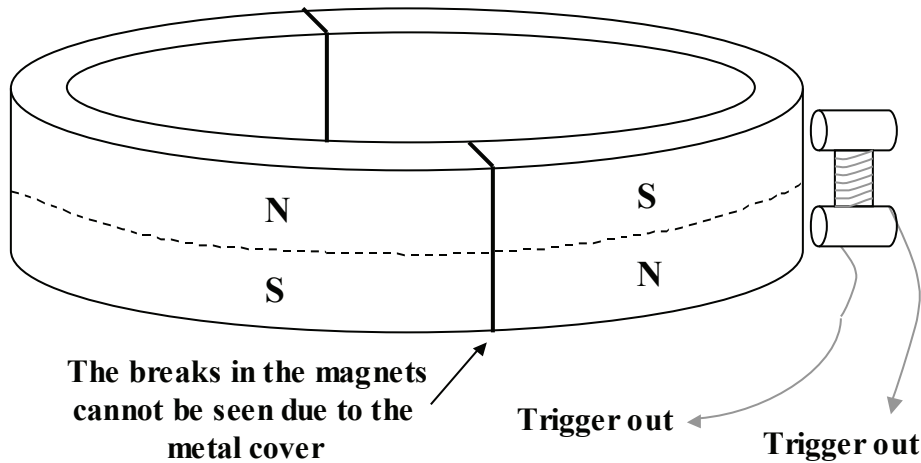
Mercury CDM Hub Magnet Design

1996 to 2006 2, 3 and 4 cylinder engines with CDM Modules



Mercury Hub Magnet Design

Push-Pull Trigger Coil Design (1978-1996 on 2, 3 and 4 Cyl engines All 1978-2005 L6, 2.0L, 2.4L and 2.5L engines)



Note that the design of the magnet for the push-pull is the same for the 3, 4 and 6 cylinder engines using standard ADI ignitions. The trigger magnet for the CDM modules is completely different.



Mercury Alternator Driven Ignitions

One and Two Cylinder Engines 1971-1975 (With 336-4516 Phase-Maker Ignition)

SERVICE NOTE: These engines require the Orange, Red or Green Ignition coils. The Black or Blue ignition coils use a common ground connection internally for the primary and the secondary side of the coils. This system requires that the primary and the secondary side of the coils be separate as the points drive the negative side of the coil to ground, causing the coil to generate spark on the secondary side.

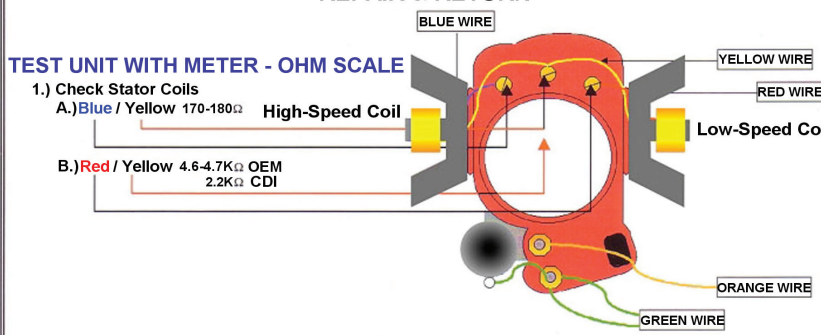
NO SPARK ON ONE OR BOTH CYLINDERS:

1. Disconnect the Orange stop and connect it to engine ground. Retest. If the engine now has spark, the stop circuit has a fault.
2. Check the stator resistance and DVA output as given below:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)
Red	Yellow	4600-4700	2200	N/A
Blue	Yellow	170-180	180	N/A
Green	Engine Ground	--	--	180 V +
3. Disconnect the Brown and White points wires one at a time and retest. If the spark comes back on the one still connected when you disconnect one of them, the points or points wire is defective for the disconnected cylinder.
4. Disconnect the Green wires one at a time and retest. If the spark comes back on one cylinder, the ignition coil not connected is defective. Remember that the coils must not be the Black or Blue coils (these coils are not isolated ground).
5. Test the 336-4516 module as follows:

336-4516

REPAIR & RETURN



TEST UNIT WITH METER - OHM SCALE

- 1.) Check Stator Coils
 - A.) Blue / Yellow 170-180Ω High-Speed Coil
 - B.) Red / Yellow 4.6-4.7KΩ OEM / 2.2KΩ CDI

**CHECK WITH METER
USE THE DIODE SCALE TO MEASURE THE UNIT AS FOLLOWS:**

START BLK 0.561 RED DIODE STEP#1	 BLK 0.561 RED DIODE STEP#2	 BLK 0.000 RED SHORTED STEP#3
 RED 0.561 BLK DIODE STEP#4	 RED 0.561 BLK DIODE STEP#5	 RED 1.016 BLK HIGH or OPEN STEP#6
 BLK 0.561 RED DIODE FINISH STEP#7		

Title	CDI Electronics, Inc.	
Size	Description	
D	336 - 4516	
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Mercury

One and Two Cylinder Engines 1966-1985 (With 174-3996/336-3996/336-3962 Stator/Switch Box)

WARNING!! DO NOT START AND RUN THIS ENGINE ON A FLUSHING ATTACHMENT OR EAR MUFFS AND ACTIVATE THE STOP CIRCUIT. This system operates with the Orange stop wire normally shorted to ground. When you activate the stop circuit, you open the Orange's connection to ground. The resulting backlash into the stator may damage the electronics. You must use the choke to stop the engine. In the water, the back pressure from the exhaust will slow the engine quickly enough to prevent damage to the stator.

(Note) The insulator blocks used with this stator are very important. You are strongly advised to closely inspect the Brown and White points wires and insulator blocks for cracking or arcing. This system operates at a much higher voltage than the normal systems and what would be acceptable on other systems will cause arcing problems.

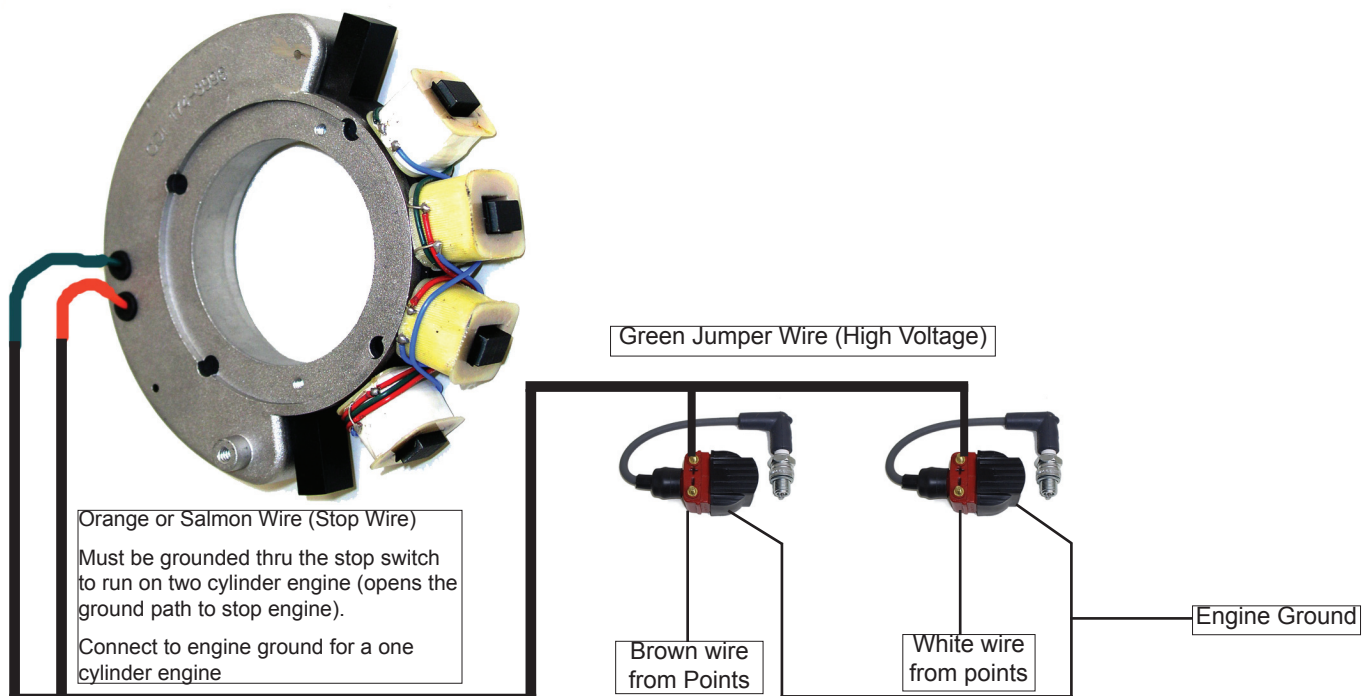
SERVICE NOTE: These engines require the Orange, Red or Green Ignition coils. The Black or Blue ignition coils use a common ground connection internally for the primary and the secondary side of the coils. This system requires that the primary and the secondary side of the coils be separate as the points drive the negative side of the coil to ground, causing the coil to generate spark on the secondary side.

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange stop wire and connect it to engine ground. Retest. If the ignition system now has spark, the stop circuit has a problem.
2. Disconnect the Brown and White points wires from the ignition coils and connect a jumper wire to the negative side of the coils. Crank the engine and carefully tap the jumper to engine ground, if the coil sparks – check the points and points wires. If it fails to spark, inspect the ignition coil. You should have either a Red, Orange or Green coil with a bare braided ground wire from the backside of the coil. This bare braided ground wire **MUST** be connected to a clean engine ground. You cannot use a Black or Blue ignition coil.

NO SPARK ON ONE CYLINDER:

1. Disconnect the Brown and White points wires from the ignition coils and swap them for a cranking test. Crank the engine over and see if the spark moves to a different coil. If it does, you have a problem in the points, points wire or insulator block for the cylinder not sparking.
2. If the spark remains on the same coil when you swap the points wires and it is the coil where the Green wire is coming from the stator, remove the Green jumper wire. Swap the Green wire coming from the stator from one coil to the other coil. If the spark moves to the other coil, replace the Green jumper wire connecting the two coils.
3. Check the ignition coil. You should have approximately 1,000 (1 K ohm) of resistance from the spark plug wire to engine ground using the Orange coil and 600 ohms for the Green coil.
4. Inspect the ignition coils. You should have either a Red, Orange or Green coil with a bare braided ground wire from the backside of the coil. This bare braided ground wire **MUST** be connected to a clean engine ground. You cannot use a Black or Blue ignition coil.





Mercury 1970-1975 Four Cylinder Engines (With 333-3213 Switch Box) (With Ignition Driver Distributors)

WARNING!! DO NOT CONNECT 12VDC TO THE IGNITION MODULE AS DC VOLTAGE WILL SEVERELY DAMAGE THE SWITCH BOX AND IGNITION DRIVER.

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange (or Blue) stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. 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.

3. Check the Ignition Driver resistance and DVA output:

WIRE	READ TO	FUNCTION	RESISTANCE	DVA (Connected)
Red	White wire	Cranking Winding	400 ohms	180-400 V
Blue	White wire	High Speed Winding	10 Ohms	25-100 V
Green	Engine GND	Pack output	N/A	150 V +
White	Common for Ignition Driver (DOES NOT CONNECT TO ENGINE GND)			

4. Check the Ignition pack resistance:

RED METER LEAD	BLACK METER LEAD	READING
Red Terminal	Pack Case Ground	Diode
Pack Case Ground	Red Terminal	Open
Blue Terminal	Pack Case Ground	Diode
Pack Case Ground	Blue Terminal	Open
White Terminal	Pack Case Ground	Diode
Pack Case Ground	White Terminal	Open
Green	Engine Ground	Open
Pack Case Ground	Green Terminal	Diode

NO SPARK ON ONE OR MORE CYLINDERS:

If only one or two cylinders are not firing on this system, the problem will be either in the distributor cap or spark plug wires.

Two Cylinder Engines 1974-1985 (With 114-6222/339-6222/339-5287 Switch Box)

SERVICE NOTE: These engines require the Orange, Red or Green Ignition coils. The Black or Blue ignition coils use a common ground connection internally for the primary and the secondary side of the coils. This system requires that the primary and the secondary side of the coils be separate as the pack drives the negative side of the coil to ground, causing the coil to generate spark on the secondary side.

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, 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 sparks, 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 and clean all engine and ignition ground connections.
5. Check the stator and trigger resistance and DVA output:

WIRE	READ TO	RESISTANCE	DVA (Connected)	DVA (Disconnected)
Orange	Engine GND	1600-1800 (800-900 per coil)	180-400 V	180-400 V (*)
Brown	White (or Brown)	140-160	0.5 V +	0.5 V + (#)

(*) 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 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 – 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

6. Inspect the ignition coils. You should have either a Red, Orange or Green coil with a bare braided ground wire from the backside of the coil. This bare braided ground wire MUST be connected to a clean engine ground. You cannot use a Black or Blue ignition coil.
7. Check the ignition coils as follows: Check resistance from + to – terminal reading should be 0.2-1.0 ohms and 800-1100 ohms from the high tension lead to engine ground. There should be no connection from the – terminal to engine ground.
8. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
9. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.



ENGINE HAS SPARK BUT WILL NOT RUN:

1. Index the flywheel and check the timing. If it is out by 180 degrees, swap the trigger wires to the switch box.
2. If the timing is off by any other degree, check the flywheel key.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the DVA output between the Green and Green/White wires from the switch box, also between the Blue and Blue/White wires while they are 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 wires from the ignition coil for that cylinder and reconnect them to a load resistor. Retest. If the reading is now ok, the ignition coil is likely bad. A continued low reading indicates a bad switch box.
2. Connect an inductive tachometer to each cylinder and compare the RPM readings at the RPM where the problem is occurring. If only one cylinder is dropping out, swap the ignition coil locations and retest. If the problem follows a coil, replace the coil. If it stays on the same spark plug, replace the switch box.
3. Disconnect the negative side of the ignition coils. Connect a jumper wire to the negative side of the coil and while the engine is turning over, tap the jumper wire to engine ground. If this causes the coil to spark, the coil is good and you will need to replace the pack.
4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK ON ANY CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK ON ANY CYLINDER above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.

Two Cylinder Engines 1970-1971 Model 400 (With the 332-4172 Switch Box)

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange (or Salmon) stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. Check the stator and trigger resistance and DVA output:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	3200-3800	2200-2600	180-400 V	180-400 V (*)
Red (or White)	Engine GND	45-55	45-55	25-100 V	25-100 V (*)
Brown	Engine GND	N/A	N/A	1.0 V +	N/A

(*) 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 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 – the pack is bad.

ENGINE HAS SPARK BUT WILL NOT RUN:

1. Index the flywheel and check the timing. If it is out, check the flywheel key.
2. If the timing is off and the flywheel key is ok, replace the trigger.

NO SPARK ON ONE CYLINDER:

If one cylinder is firing good and one is not, the problem is going to be either in the distributor cap or spark plug wire.



Two Cylinder Engines 1974-1985 (With 114-4911/332-4911/332-4733 Switch Box)

NO SPARK ON ANY CYLINDER:

1. Disconnect the Orange (or Black/Yellow) stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, 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 sparks, 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 and clean all engine and ignition ground connections.
5. Check the stator and trigger resistance and DVA output:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	White	6000-7400 (a)	2000-2500 (a)	180-400 V	180-400 V (*)
Blue	Engine GND	5200-7000 (b)	2000-2500 (b)	180-400 V	180-400 V (*)
Red	Blue	185-205 (a)	160-200 (a)	25-100 V	25-100 V (*)
Red	Engine GND	180-340 (b)	160-200 (b)	25-100 V	25-100 V (*)
Brown	White (or Brown)	800-1000 (a)	800-1000 (a)	0.5 V +	0.5 V + (#)
Brown	White (or Brown)	140-160 (b)	140-160 (b)	0.5 V +	0.5 V + (#)

(*) 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 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 – 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

(a) 1973-1974

(b) 1976-1978 (w/ full ring stator CDI part# 174-5255)

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

ENGINE HAS SPARK BUT WILL NOT RUN:

1. Index the flywheel and check the timing. If it is out by 180 degrees, swap the trigger wires to the switch box.
2. If the timing is off by any other degree, check the flywheel key.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the DVA output from the switch box on the Green wire while it is connected to the ignition coil. You should have a reading of at least 150V or more. If the reading is low, you can have a problem firing both cylinders (the one that is firing will usually show a weak spark).
2. Connect an inductive tachometer to each cylinder and compare the RPM readings at the RPM where the problem is occurring. If only one cylinder is dropping out, swap the ignition coil locations and retest. If the problem follows a coil, replace the coil. If it stays on the same spark plug, replace the switch box.
3. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK ON ANY CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK ON ANY CYLINDER above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.



Two Cylinder Engines 1979-1996 (With 114-7452A3 & K1/339-7452 Switch Box)

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. 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.
3. Inspect and clean all engine and ignition ground connections.
4. Check the stator resistance and DVA output:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Black/Yellow	Engine GND	3250-3650	2200-2400	180-400 V	180-400 V (*)
Black/White	Engine GND	150-250	200-250	25-100 V	25-100 V (*)

(*) 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 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 – the pack is bad.

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

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the trigger resistance and DVA output:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown/Yellow	Brown/White	750-1400	925-1050	4 V +	4 V + (#)
Brown/Yellow	Engine GND	Open	Open	1 V +	N/A
Brown/White	Engine GND	Open	Open	1 V +	N/A

(#) 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

2. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both places. If the reading is low on one cylinder, disconnect the Green 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 switch box.
3. Connect an inductive tachometer to each cylinder and compare the RPM readings at the RPM where the problem is occurring. If only one cylinder is dropping out, swap the ignition coil locations and retest. If the problem follows a coil, replace the coil. If it stays on the same spark plug, replace the switch box.
4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Connect a DVA meter between the stator's Black/Yellow wire/terminal and engine ground. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator.
3. Connect a DVA meter between the stator's Black/White wire/terminal and engine ground. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Black/Yellow wire/terminal reading indicates a bad stator.
4. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
5. 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.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.



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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.

Two Cylinder Engines 1994-1996 (With 114-4952A30/18495A9, A14, A16, A20, A21 or A30 Switch Box)

(NOTE) This engine has a locked trigger arm. Therefore, the timing is controlled by the switch box and is adjusted according to the engine RPM. RPM limiting is done by retarding the timing at high RPM.

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. 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.
3. Inspect and clean all engine and ignition ground connections.
4. Check the stator resistance and DVA output as given below:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Black	2900-3500	2200-2600	180-400 V	180-400 V (*)
Red	Black	100-180	200-250	25-100 V	25-100 V (*)
Black	Engine GND	Open	Open	2 V +	N/A

(*) 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 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 – the pack is bad.

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

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the trigger resistance and DVA output as shown below:

WIRE	READ TO	RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown	White	800-1400	4 V +	4 V + (#)
Brown	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A

(#) 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

2. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both places. If the reading is low on one cylinder, disconnect the Green 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.
3. If the cylinders are only misfiring above an idle, connect an inductive tachometer to each cylinder in turn and try to isolate the problem cylinder.
4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.



WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Connect a DVA meter between the stator's Blue and Black wires. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator.
3. Connect a DVA meter between the stator's Red and Black wires. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading indicates a bad stator.
4. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
5. 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.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.

Two Cylinder Engines 1994-2006 (With 114-5713/855721A3 & A4 Switch Box)

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, 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 sparks, 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 and clean all engine and ignition ground connections.
 5. Check the stator resistance and DVA output as given below:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
White/Green	Green/White	660-710	350-450	180-400 V	180-400 V (*)
- (*) 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 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 – the pack is bad.
6. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
 7. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER:

1. Check the trigger resistance and DVA output as shown below:

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown/Yellow	Brown/White	850-1100	850-1100	4 V +	4 V + (#)
Brown/Yellow	Engine GND	Open	Open	1 V +	N/A
Brown/White	Engine GND	Open	Open	1 V +	N/A
- (#) 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.
2. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both places. If the reading is low on one cylinder, disconnect the Green 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.
 3. If the cylinders are only misfiring above an idle, connect an inductive tachometer to each cylinder in turn and try to isolate the problem cylinder.
 4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

**SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Connect a DVA meter between the stator's Green/White and White/Green wires. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator.
3. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE CYLINDER above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.



Three Cylinder Engines 1976-1996

Three Cylinder Engines Using a Single Switch Box and Three Ignition Coils

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow (or Orange) stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, 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 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 and clean all engine and ignition ground connections.
5. Check the stator resistance and DVA output as given below:

Black Stator using Flywheel with Bolted-in Magnets

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	5800-7000	2200-2400	180-400 V	180-400 V (*)
Red	Engine GND	135-165	45-55	25-100 V	25-100 V (*)

Black Stator using Flywheel with Glued-in Magnets

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	3250-3650	500-600	180-400 V	180-400 V (*)
Red	Engine GND	75-90	28-32	25-100 V	25-100 V (*)

Red Stator Kit

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 (*)
Blue	Engine GND	OPEN	OPEN	180-400 V	180-400 V (*)

(*) 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 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 – the pack is bad.

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

NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

1. Check the trigger resistance and DVA output as given below:

WIRE	READ TO	RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown	White/Black (or Black)	800-1400	4 V +	4 V + (#)
White	White/Black (or Black)	800-1400	4 V +	4 V + (#)
Purple	White/Black (or Black)	800-1400	4 V +	4 V + (#)
Brown	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A
Purple	Engine GND	Open	1 V +	N/A

(#) 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 trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

2. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both terminals. If the reading is low on one cylinder, disconnect the Green 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 symptom indicates a bad power pack.
3. If the cylinders are only misfiring above an idle, connect an inductive tachometer to all cylinders and try to isolate the problem cylinders.
4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.



WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Connect a DVA meter between the stator's Blue wire and engine ground. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator. (Read from Blue to engine ground if the engine has a Red stator kit installed).
3. Connect a DVA meter between the stator's Red wire and engine ground. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading indicates a bad stator.
4. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
5. 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.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

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. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
3. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
4. 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.
5. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
6. Rotate the stator one bolt hole in either direction and retest.

WILL NOT IDLE BELOW 1500 RPM:

1. Check the Bias resistance from the Black/White terminal to engine ground. Reading should be 14-15,000 ohms.
2. Check for air leaks.

Four Cylinder Engines 1978-1996

Four Cylinder Engines Using a Single Switch Box and Four Ignition Coils

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow (or Orange) stop wire AT THE SWITCH BOX and retest. If the engine's ignition now has spark, 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 and clean all engine and ignition ground connections.
5. Verify the correct flywheel is installed.
6. Check the stator resistance and DVA output as shown below:

Black Stator using Flywheel with Bolted-in Magnets

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Blue/White	5000-7000	2200-2400	180-400 V	180-400 V (*)
Red	Red/White	125-155	45-55	25-100 V	25-100 V (*)

Black Stator using Flywheel with Glued-in Magnets

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Blue/White	3250-3650	500-600	180-400 V	180-400 V (*)
Red	Red/White	75-90	28-32	25-100 V	25-100 V (*)

Red Stator Kit

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 (*)
Blue	Blue/White	OPEN	OPEN	180-400 V	180-400 V (*)

(*) 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 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 – the pack is bad.

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



NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

1. Check the trigger resistance and DVA output as given below:

WIRE	READ TO	RESISTANCE	DVA (Connected)	DVA (Disconnected)
Purple	White	800-1400	4 V +	4 V + (#)
Brown	White/Black (or Black)	800-1400	4 V +	4 V + (#)
Purple	Engine GND	Open	1 V +	N/A
White	Engine GND	Open	1 V +	N/A
Brown	Engine GND	Open	1 V +	N/A
White/Black	Engine GND	Open	1 V +	N/A

(#) 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 or two cylinders and the trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

(Note) If #1 and #2, or #3 and #4 are misfiring, check the trigger as described above. The trigger has two coils firing four cylinders. #1 & 2 share a trigger coil and #3 & 4 share a trigger coil. Also, the switch box is divided into two parts. The #1 and #2 cylinders spark on one side and #3 and #4 spark from the other side of the switch box. If the trigger tests are okay according to the chart above, but you have two cylinders not firing (either #1 and #2, or #3 and #4), the switch box or stator is bad.

- If you have two cylinders not firing (either #1 and #2, or #3 and #4), switch the stator leads end to end on the switch box (swap Red with Red/White) and (swap Blue with Blue/White). If the problem moves to the other cylinders, the stator is bad. If the problem stays on the same cylinders, the switch box is likely bad.
- Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both terminals. If the reading is low on one cylinder, disconnect the Green 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 symptom indicates a bad power pack.
- If the cylinders are only misfiring above an idle, connect an inductive tachometer to all cylinders and try to isolate the problem cylinders.
- Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX OR TRIGGER REPEATEDLY BLOWS ON SAME CYLINDER:

- Check the trigger wires for shorts to engine ground as a shorted trigger wire can destroy a SCR inside the switch box.
- In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
- Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

- Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
- Connect a DVA meter between the stator's Blue and Blue/White wires. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator. (Read from Blue to engine ground if the engine has a Red stator kit installed).
- Connect a DVA meter between the stator's Red and Red/White wires. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading indicates a bad stator.
- Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
- 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.
- Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

MISS AT ANY RPM:

- Disconnect the Yellow wires from the stator to the rectifier and retest. If the miss clears, replace the rectifier.
- In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
- 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
- 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.
- Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
- Rotate the stator one bolt hole in either direction and retest.



WILL NOT IDLE BELOW 1500 RPM:

1. Index the flywheel and check the timing on all cylinders. If the timing cannot be adjusted correctly or if the timing is off on one cylinder, replace the trigger.
2. Check for air leaks.
3. Check synchronization of the carburetors.

Six Cylinder Engines 1978-1999

Inline 6 and V6 Carbureted Engines Using Dual Switch Boxes and Six Ignition Coils

(SERVICE NOTE) Whenever replacing one switch box, always replace the other. Replacing just one switch box can result in damage to the engine if the remaining switch box on the engine has a problem in the bias circuit.

NO SPARK ON ANY CYLINDER:

1. Disconnect the Black/Yellow (or Orange) stop wires AT THE SWITCH BOXES and retest. If the engine's ignition has spark, the stop circuit has a fault. Check the key switch, harness and shift switch.
2. Disconnect the Yellow wires from the rectifier and retest. If the engine 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 and clean all engine and ignition ground connections.
5. Check the center hub triggering magnet in the flywheel. A loose magnet can cause this problem.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

NO SPARK OR INTERMITTENT SPARK ON ONE BANK (3 OF 6 ON THE INLINE L-6):

1. Swap the stator leads from one switch box to the other (swap Red with Red/White) and (swap Blue with Blue/White). If the problem moves, the stator is bad. If the same bank still does not spark, the switch box is usually bad.
2. Check the stator resistance and DVA output as shown below:

9 to 16 Amp Flywheels

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	5000-7000	2200-2400	180-400 V	180-400 V (*)
Blue/White	Engine GND	5000-7000	2200-2400	180-400 V	180-400 V (*)
Red	Engine GND	90-200	30-90	25-100 V	25-100 V (*)
Red/White	Engine GND	90-200	30-90	25-100 V	25-100 V (*)

40 Amp Flywheels

WIRE	READ TO	OEM RESISTANCE	CDI RESISTANCE	DVA (Connected)	DVA (Disconnected)
Blue	Engine GND	3200-4200	2200-2400	180-400 V	180-400 V (*)
Blue/White	Engine GND	3200-4200	2200-2400	180-400 V	180-400 V (*)
Red	Engine GND	90-140	28-32	25-100 V	25-100 V (*)
Red/White	Engine GND	90-140	28-32	25-100 V	25-100 V (*)

(*) 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 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 – the pack is bad.

(NOTE) If both Blue wires read low, check the cranking RPM. It must be more than 250 RPM.

3. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both terminals on all cylinders. If the reading is low on one bank and the stator voltage is good, the switch box is usually bad.
4. Check the cranking RPM. A cranking speed less than 250-RPM will not allow the system to spark properly.

NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS:

1. Check the trigger resistance and DVA output as shown below:

WIRE	READ TO	RESISTANCE	DVA (Connected)	DVA (Disconnected)
Brown (Black Sleeve)	White (Yellow Sleeve)	800-1400	4 V +	4 V + (#)
White (Black Sleeve)	Purple (Yellow Sleeve)	800-1400	4 V +	4 V + (#)
Purple (Black Sleeve)	Brown (Yellow Sleeve)	800-1400	4 V +	4 V + (#)

(#) 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 or two cylinders and the trigger's DVA reading for that cylinder is low – disconnect the trigger wires and recheck the DVA output. If the reading stays low – the trigger is bad. If the reading is now within spec – the pack is bad.

(Service Note) You should get a high or open resistance reading to engine ground from each wire, but you will get a DVA reading of approximately 1-2 Volts. This reading can be used to determine if a pack has a problem in the triggering circuit. For example, if you have no spark on one cylinder and the DVA trigger reading for that cylinder is low – disconnect the trigger wire and recheck the DVA output to ground from the trigger wire. If the reading stays low – the trigger is bad.

2. Check the DVA output on the Green wires from the switch box while connected to the ignition coils. Check the reading on the switch box terminal AND on the ignition coil terminal. You should have a reading of at least 150V or more at both terminals. If the reading is low on one cylinder, disconnect the Green 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 symptom indicates a bad switch box.
3. Connect a spark gap tester and verify which cylinders are misfiring. If the cylinders are only misfiring above an idle, connect an inductive tachometer to all cylinders and try to isolate the problem cylinders.
 4. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

SWITCH BOX 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 switch box.
2. In contrast, a shorted SCR inside the switch box can destroy a trigger coil. Check the trigger resistance and DVA output (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
3. Replace the ignition coil on the cylinder dropping spark.

ENGINE WILL NOT SHUT OFF:

Disconnect the stop wire at the switch box. Connect a jumper wire to the stop wire from the switch box and short it to engine ground. If this stops the switch box from sparking, the stop circuit has a fault. Check the key switch, harness and shift switch. If this does not stop the switch box from sparking, replace the switch box. Repeat test as necessary for additional switch boxes.

WILL NOT ACCELERATE BEYOND 3000-4000 RPM:

1. Disconnect the Yellow wires from the stator to the rectifier and retest. If the engine now has good spark, replace the rectifier.
2. Disconnect the idle stabilizer (advance module) and reset the timing between 23-25 degrees Wide Open Throttle. If the problem clears, discard the idle stabilizer as it is not needed.
3. Connect a DVA meter between the stator's Blue wire and engine ground. Run the engine up to the RPM where the problem is occurring. DVA voltage should increase with RPM. A sharp drop in DVA right before the problem occurs usually indicates a bad stator. (Repeat the test from Blue/White to engine ground and compare the readings).
4. Connect a DVA meter between the stator's Red wire and engine ground. The DVA voltage should show a smooth climb in voltage and remain high through the RPM range. A reading lower than on the Blue wire reading indicates a bad stator. (Repeat the test from Red/White to engine ground and compare the readings).
5. If all cylinders become intermittent, replace both switch boxes.
6. Connect an inductive tachometer to each cylinder in turn and try to isolate the problem. If two or more cylinders on the same bank are dropping out, the problem is likely going to be either the stator or the switch box. A single cylinder dropping spark will likely be a bad switch box or ignition coil. All cylinders not sparking properly usually indicates a bad stator.
7. 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.
8. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.

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. Disconnect the idle stabilizer (advance module) and reset the timing between 23-25 degrees Wide Open Throttle. If the problem clears, discard the idle stabilizer as it is not needed.
3. In the water or on a Dynameters, check the DVA output on the Green wires from the switch box while connected to the ignition coils. You should have a reading of at least 150V DVA or more, increasing with engine RPM until it reaches 300-400V DVA maximum. A sharp drop in DVA right before the miss becomes apparent on all cylinders will normally be caused by a bad stator. A sharp drop in DVA on less than all cylinders will normally be the switch box or trigger.
4. 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 switch box or ignition coil. Occasionally a trigger will cause this same problem. Check the trigger DVA voltage (see NO SPARK OR INTERMITTENT SPARK ON ONE OR MORE CYLINDERS above).
5. 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.
6. Check the triggering and charge coil flywheel magnets for cracked, broken and loose magnets.
7. Rotate the stator one bolt hole in either direction and retest.