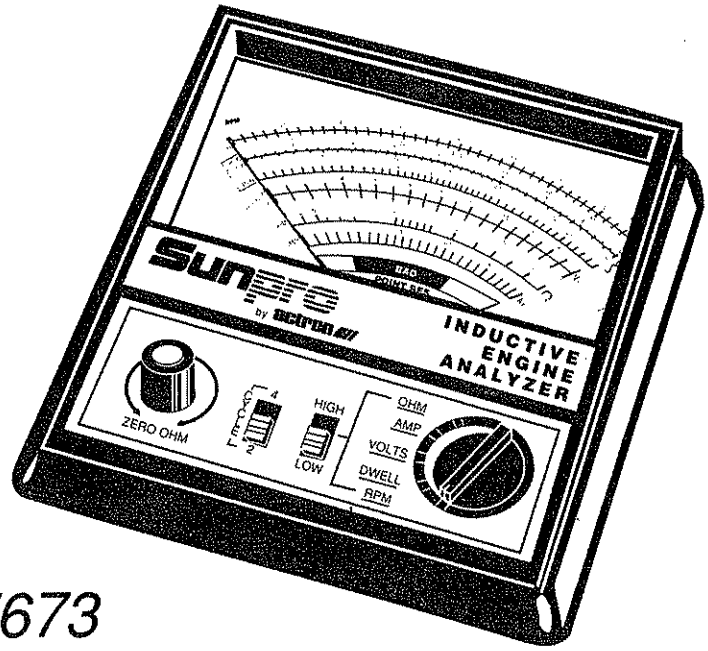
OPERATING INSTRUCTIONS

INDUCTIVE ENGINE ANALYZER



CP7673

TEST CONTENTS

GENERAL INFORMATION

The Model CP7673 INDUCTIVE ENGINE ANALYZER is a portable multifunction unit capable of performing many tune-up and troubleshooting tests. These tests are divided into three basic sections. They are: Tune-up Tests, Troubleshooting Tests, and Electronic Ignition Component Tests.

The functions and scales of the CP7673 are as follows:

RPM	LOW (0 to 1600 RPM) and HIGH (0 TO 8000 RPM).
DWELL	4-, 6-, and 8-cylinder, 0 to 90 degrees.
VOLTS	LOW (0 TO 2 VOLTS) and HIGH (0 to 20 VOLTS).
AMPS	0 to 100 Amps.
OHMS	LOW (0 to 100 OHMS) and HIGH (0 to 100,000 OHMS).

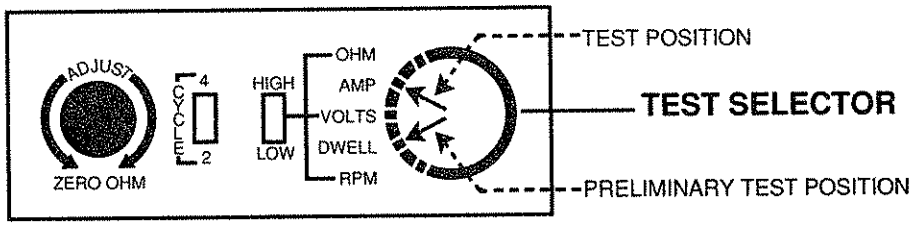
Besides the functions listed above, the model CP7673 INDUCTIVE ENGINE ANALYZER also features a 2/4 CYCLE selector switch. This makes the unit even more versatile.

This engine analyzer uses three leads: RED and BLACK leads with test clips and the INDUCTIVE PICKUP lead.

Two batteries are needed for the OHMS function of the analyzer. These are a 9-volt battery and a I.5-volt "C" cell. The OHMS scale must also be zeroed before each use. This is explained in OHMS CALIBRATION, page 4. The battery compartment is on the back of the unit.

There is also a fuse in the battery compartment of the unit for the OHMS function. The proper type of fuse is AGC 1.

Accompanying each test are diagrams showing test hookups and switch positions for the unit. The switch positions are shown below.



Colored-in portion of switch denotes switch position.

Means use position appropriate for your vehicle.

Means switch position doesn't matter.

Preliminary test position.

CAUTION: Never connect the test clips to a source of vehicle voltage while the function selector is in the OHMS or AMPS position! Doing so could damage the unit.

SAFETY GUIDELINES

TO PREVENT ACCIDENTS THAT COULD RESULT IN SERIOUS INJURY AND/OR DAMAGE TO YOUR VEHICLE OR TEST EQUIPMENT, CAREFULLY FOLLOW THESE SAFETY RULES AND TEST PROCEDURES

SAFETY EQUIPMENT

Fire Extinguisher

Never work on your car without having a suitable fire extinguisher handy. A 5-lb or larger CO_2 or dry chemical unit specified for gasoline/chemical/electrical fires is recommended.

Fireproof Container

Rags and flammable liquids should be stored only in fireproof, closed metal containers. A gasoline-soaked rag should be allowed to dry thoroughly outdoors before being discarded.

Safety Goggles

We recommend wearing safety goggles when working on your car, to protect your eyes from battery acid, gasoline, and dust and dirt flying off moving engine parts.

NOTE: Never look directly into the carburetor throat while the engine is cranking or running, as sudden backfire can cause burns.

LOOSE CLOTHING AND LONG HAIR (MOVING PARTS)

Be very careful not to get your hands, hair or clothes near any moving parts such as fan blades, belts and pulleys or throttle and transmission linkages. Never wear neckties or loose clothing when working on your car.

JEWELRY

Never wear wrist watches, rings or other jewelry when working on your car. You'll avoid the possibility of catching on moving parts or causing an electrical short circuit which could shock or burn you.

VENTILATION

The carbon monoxide in exhaust gas is highly toxic. To avoid asphyxiation, always operate vehicle in a well-ventilated area. If vehicle is in an enclosed area, exhaust should be routed directly to the outside via leakproof exhaust hose.

SETTING THE BRAKE

Make sure that your car is in **Park** or **Neutral**, and that the **parking brake is firmly set.**

NOTE: Some vehicles have an automatic release on the parking brake when the gear shift lever is removed from PARK position. This feature must be disabled when it is necessary (for testing) to have the parking brake engaged when in DRIVE position. Refer to your vehicle service manual for more information.

HOT SURFACES

Avoid contact with hot surfaces such as exhaust manifolds and pipes, mufflers (catalytic converters), radiator and hoses. Never remove the radiator cap while the engine is hot, as escaping coolant under pressure may seriously burn you.

SMOKING AND OPEN FLAMES

Never smoke while working on your car. Gasoline vapor is highly flammable, and the gas formed in a charging battery is explosive.

BATTERY

Do not lay tools or equipment on the battery. Accidentally grounding the "HOT" battery terminal can shock or burn you and damage wiring, the battery or your tools and testers. Be careful of contact with battery acid. It can burn holes in your clothing and burn your skin or eyes.

When operating any test instrument from an auxiliary battery, connect a jumper wire between the negative terminal of the auxiliary battery and ground on the vehicle under test. When working in a garage or other enclosed area, auxiliary battery should be located at least 18 inches above the floor to minimize the possibility of igniting gasoline vapors.

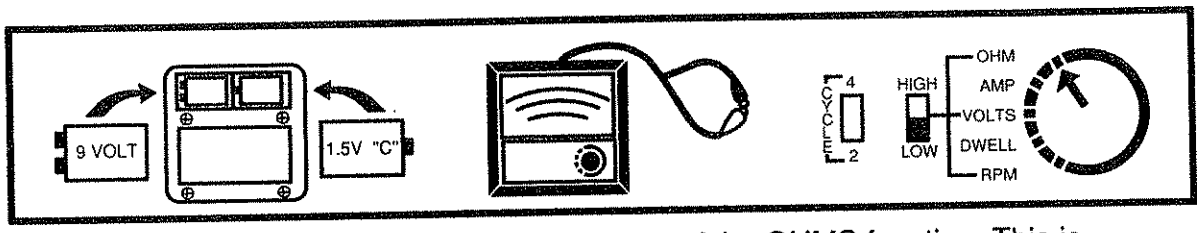
HIGH VOLTAGE

High voltage — 30,000 to 50,000 volts — is present in the ignition coil, distributor cap, ignition wires and spark plugs. When handling ignition wires while the engine is running, use insulated pliers to avoid a shock. While not lethal, a shock may cause you to jerk involuntarily and hurt yourself.

JACK

The jack supplied with the vehicle should be used only for changing wheels. Never crawl under car or run engine while vehicle is on a jack.

OHMS CALIBRATION



You must zero the OHMS scale before each use of the OHMS function. This is accomplished in the following manner:

1. Select the desired OHMS position (HIGH or LOW).
2. Connect the RED and BLACK test clips together.
3. Turn the OHMS ADJUST knob to bring the pointer to zero ohms.

The selected OHMS range is now ready for use.

If the meter cannot be adjusted to zero in either range the battery for that range must be replaced. The LOW OHMS scale uses a I.5-volt "C" cell and the HIGH OHMS scale uses a 9-volt battery.

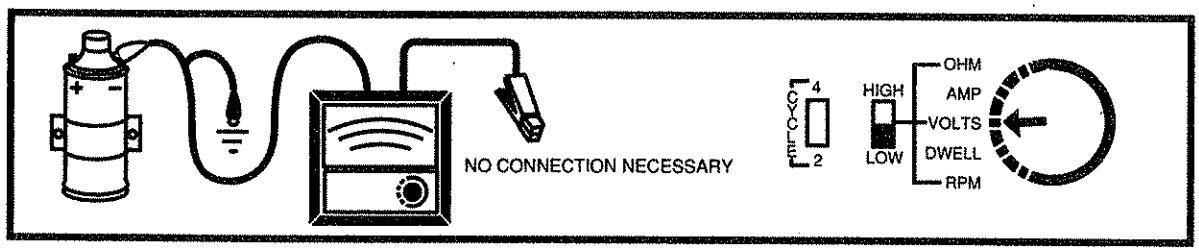
The battery compartment access cover is on the rear of the unit.

PRO TIPS

1. Burned breaker points can cause hard starting and a rough engine.
2. Low dwell causes poor ignition coil performance. High dwell causes prematurely burned breaker points.
3. Excessive distributor mechanical wear causes an abnormal spark advance, resulting in poor engine performance.
4. High idle speed causes brake wear, while low idle speed causes engine stalling and roughness.
5. Excessively lean or rich fuel mixture causes a rough operating engine and stalling at idle speed.
6. A defective PCV valve permits crankcase vapors to escape to the atmosphere and increases air pollution.
7. A dirty air filter causes an overrich fuel mixture resulting in poor fuel economy and loss of power.
8. Poor spark intensity causes misfiring of spark plugs, resulting in loss of power and fuel economy.
9. Defective components in the cranking system cause slow or difficult starting of engine, particularly in extremely cold weather.
10. Defective components in the charging system cause premature failure of the battery and other electrical accessories.

TUNE UP TESTS

1. POINTS CONDITION TEST.



A. Turn the test selector to the VOLTS position and put the range switch in the LOW position.

B. Connect the RED test clip to the distributor (-) side of the ignition coil and the BLACK test clip to ground.

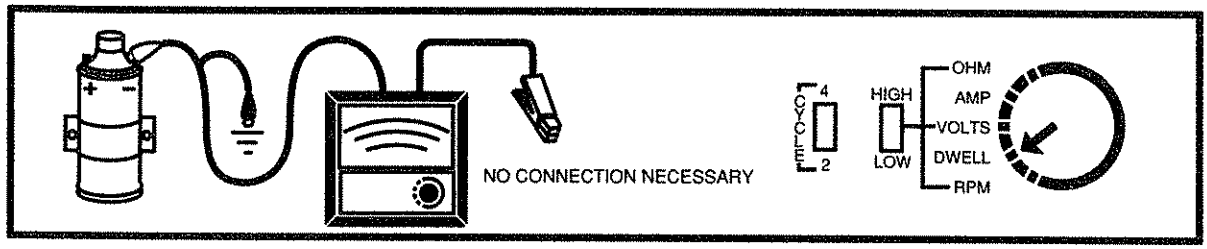
C. Turn the ignition switch to the ON position and observe the LOW VOLTS scale.

RESULTS: GOOD — indicates points are OK.

BAD — indicates points are burned. REPLACE.

OPEN — indicates points are open. Crank engine and recheck.

2. DWELL TEST



A. Turn the test selector to the DWELL position.

B. Connect the RED test clip to distributor (–) side of the ignition coil and the BLACK test clip to ground.

C. Start the engine and observe the proper DWELL scale (4-, 6-, or 8-cyl.) for your vehicle.

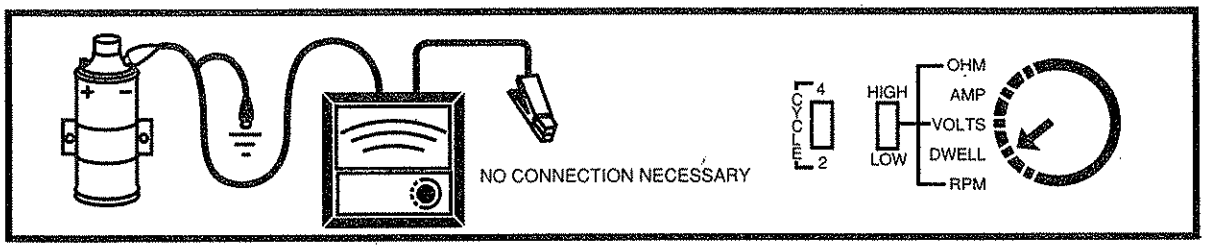
NOTE: See owner's manual for correct dwell.

RESULTS: LOW — indicates point gap too wide. RESET.

NORMAL — indicates point gap adjusted correctly.

HIGH — indicates point gap too narrow. RESET.

3. DISTRIBUTOR MECHANICAL WEAR TEST



A. Turn the test selector to the DWELL position.

B. Connect the RED test clip to the distributor (–) side of the ignition coil and the BLACK test clip to ground.

C. Start the engine and let it idle. Observe the proper DWELL scale (4-, 6-, or 8-cyl.) for your vehicle.

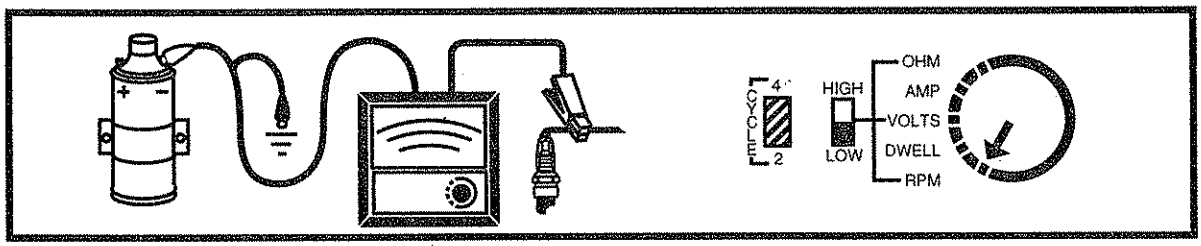
D. Race engine and observe difference in reading from idle.

RESULTS: CHANGE WITHIN 10% — Normal.

CHANGE OVER 10% — Worn out distributor. REPLACE.

NOTE: Some distributors have off-center pivoting breaker plates, which will cause excessive dwell change. This is normal for this type of distributor. See your owner's manual.

4. IDLE SPEED TEST



A. Turn the test selector to the RPM position and put the range switch in the LOW position.

B. Place the 2/4 CYCLE switch in the proper position for your vehicle (consult your service manual if needed).

C. Connect the RED test clip to distributor (–) side of the ignition coil and the BLACK test clip to ground.

D. Clip the inductive pickup lead to spark plug wire (with the arrow on the pickup pointing towards the spark plug.).

E. Start engine and let idle. On automatic transmission vehicles, place shift selector in correct position as specified by manufacturer for the idle speed test.

F. Observe the LOW RPM scale.

NOTE: Consult your owner's manual for correct idle speed.

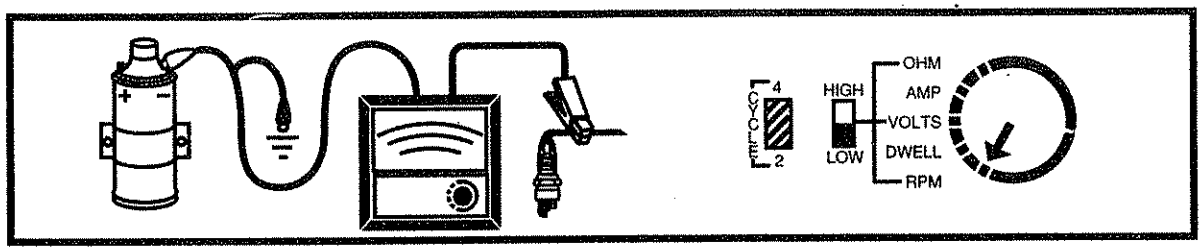
RESULTS: HIGH — Speed adjusted too fast. ADJUST.

NORMAL — Speed adjusted correctly.

TOO LOW — Speed adjusted too slow. ADJUST.

CAUTION: Place shift selector in Neutral or Park when finished with test.

5. IDLE MIXTURE TEST



A. Turn the test selector to the RPM position and put the range switch in the LOW position.

B. Set the 2/4 CYCLE switch to the proper position for your vehicle (consult your owner's manual).

C. Connect the RED test clip to the distributor (-) side of the ignition coil and the BLACK test clip to ground.

D. Clip the inductive pickup to any spark plug wire (with the arrow on the pickup pointing toward the spark plug).

E. With shift selector in Neutral, start engine and let it idle at normal idle speed.

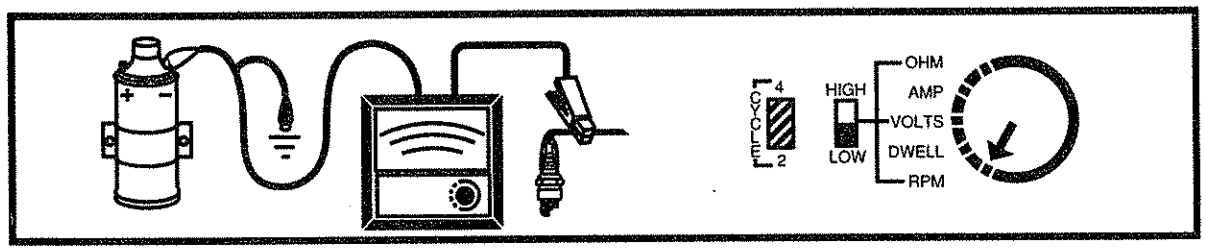
F. While observing the LOW RPM scale, slowly turn idle mixture screw(s) in (clockwise) and out (counterclockwise) to achieve highest RPM and smoothest idle operation.

RESULTS: TOO FAR IN — Causes lean mixture, runs rough. ADJUST.

NORMAL — Runs smoothly.

TOO FAR OUT — Causes rich mixture, runs rough. ADJUST.

6. PCV TEST



A. Turn the test selector to the RPM position and put the range switch in the LOW position.

B. Put the 2/4 CYCLE switch in the proper position for your vehicle (consult your owner's manual).

C. Connect the RED test clip to the distributor (–) side of the ignition coil and the BLACK test clip to ground.

D. CLIP the inductive pickup over any spark plug wire (with the arrow on the pickup pointing toward the spark plug).

E. Start the engine and let it idle with the shift selector in Neutral.

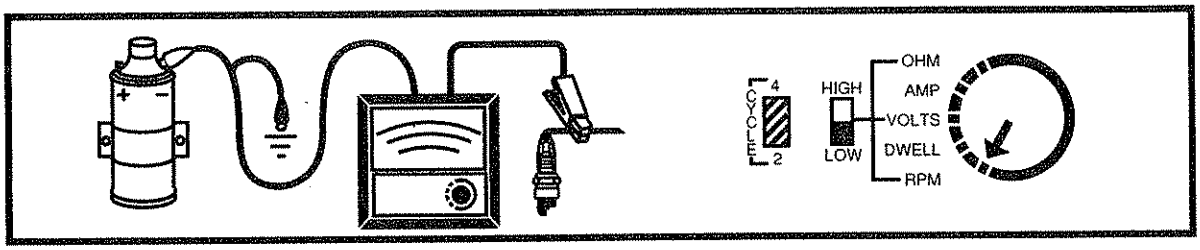
F. Pull PCV hose and assembly from valve cover and observe the LOW RPM scale.

G. Place thumb over end of PCV valve and observe scale.

RESULTS: SPEED DROPS 50 RPM OR MORE — PCV valve OK.

SPEED DROPS LESS THAN 50 RPM — PCV valve defective. REPLACE.

7. AIR FILTER TEST



A. Turn the test selector to the RPM position and put the range switch in the LOW position.

B. Put the 2/4 CYCLE switch in the proper position for your vehicle (consult your owner's manual).

C. Connect the RED test clip to the distributor (–) side of the ignition coil and the BLACK test clip to ground.

D. Clip the inductive pickup over any spark plug wire (with the arrow on the pickup pointing towards the spark plug).

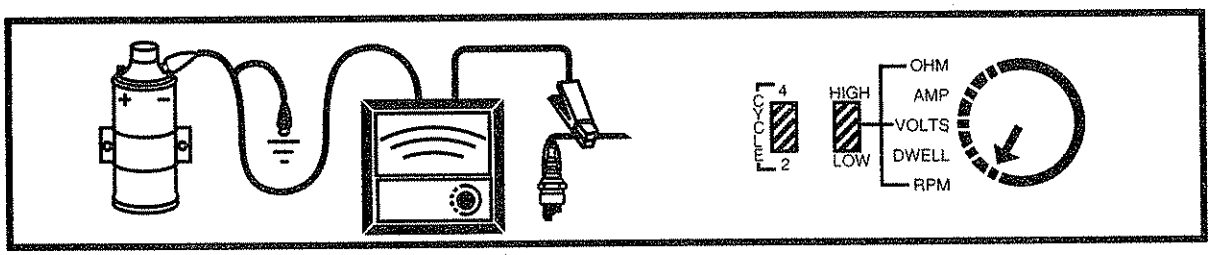
E. Start the engine and let it idle with the shift selector in Neutral.

F. Observe the LOW RPM scale with and without the air cleaner in place.

RESULTS: NO RPM CHANGE — Air filter OK.

RPM CHANGES — Air filter dirty and restricted. CLEAN or REPLACE.

8. SPARK INTENSITY TEST



A. Turn the test selector to the RPM position and put the range switch in the LOW position.

B. Put the 2/4 CYCLE switch in the proper position for your vehicle (consult your owner's manual).

C. Start the engine and let it idle in Neutral.

D. Clip the inductive pickup over the No.1 spark plug wire (with the arrow on the pickup pointing toward the spark plug) and observe the ignition indicator lamp on the meter dial.

E. Repeat Step D on each remaining spark plug wire.

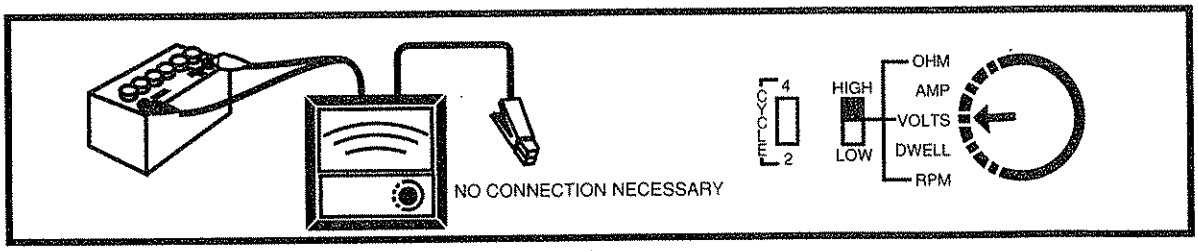
RESULTS: STEADY BLINKING ON ALL SPARK PLUG WIRES — Ignition coil, coil wire, rotor, distributor cap and all spark plug wires OK.

UNSTEADY OR NO BLINKING ON ALL SPARK PLUG WIRES — Check for bad coil, coil wire, rotor, or center tower of distributor cap.

UNSTEADY OR NO BLINKING ON ONE OR MORE SPARK PLUG WIRES — Check for bad spark plug wires or side towers of distributor cap.

(See TROUBLESHOOTING TESTS 10, 11, 12, and 13 following for electronic ignition. Also see ELECTRONIC IGNITION COMPONENT TESTS.)

9. BATTERY/STARTER CRANKING SYSTEM TEST



A. Turn the test selector to the VOLTS position and put the range switch in the HIGH position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the negative (–) battery terminal.

C. With the engine stopped, disconnect the ignition coil wire from the center tower of the distributor cap and ground it using a jumper wire.

NOTE: On GM HEI (8 cyl.) electronic ignition systems, disconnect "BAT" terminal connector from distributor.

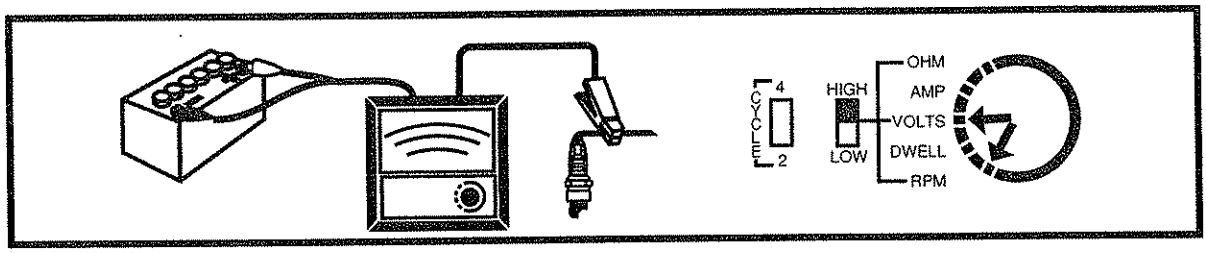
D. Crank the engine continuously for 15 seconds while observing the HIGH volts scale.

RESULTS: VOLTAGE READS MORE THAN 9.5 VOLTS — Cranking system normal.

VOLTAGE READS LESS THAN 9.5 VOLTS — Defective battery, cables, solenoid, or starter.

(See TROUBLESHOOTING TESTS 1,2,3,4,5).

10. CHARGING SYSTEM TEST



A. Turn the test selector to the RPM position and put the range switch in the HIGH position.

B. Connect the RED test clip to the positive (+) side of the battery and the BLACK test clip to the negative (–) side of the battery. Clip the inductive pickup over any spark plug wire.

C. Disconnect the ignition coil wire from the center tower of the distributor cap and ground it using a jumper wire.

D. Crank the engine continuously for 15 seconds.

E. Reconnect the ignition coil wire to the distributor cap, start the engine, and adjust speed to 1500–2000 RPM on the HIGH RPM scale.

F. Turn the test SELECTOR switch to the VOLTS position and observe the HIGH VOLTS scale.

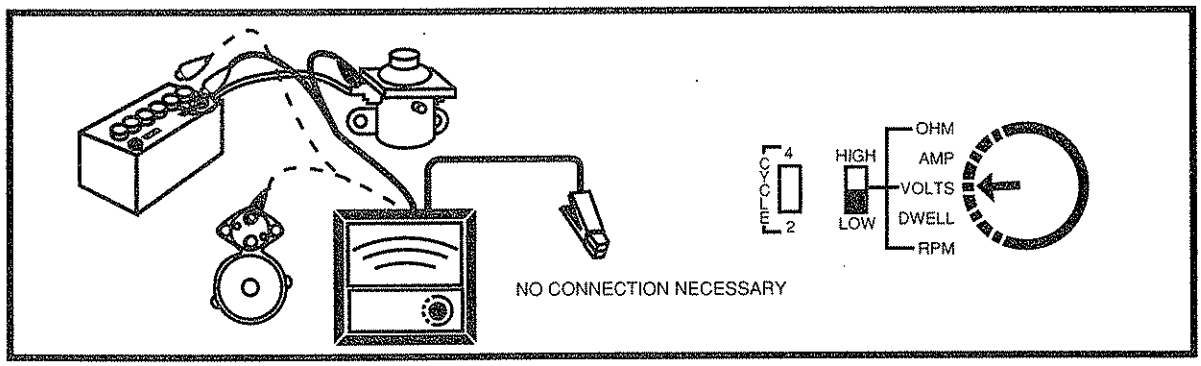
RESULTS: VOLTAGE READS MORE THAN 15.5 VOLTS — Defective or poorly grounded regulator or shorted or defective field.

VOLTAGE READS BETWEEN 13.5 and 15.5 VOLTS — Charging system normal.

VOLTAGE READS BELOW 13.5 VOLTS — Loose fan belt, defective regulator or alternator (generator), poor connections or open field circuit.

TROUBLESHOOTING TESTS

1. BATTERY CABLE TEST



A. Turn the test selector to the VOLTS position and the range switch to the LOW position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the battery terminal of the starter solenoid.

C. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

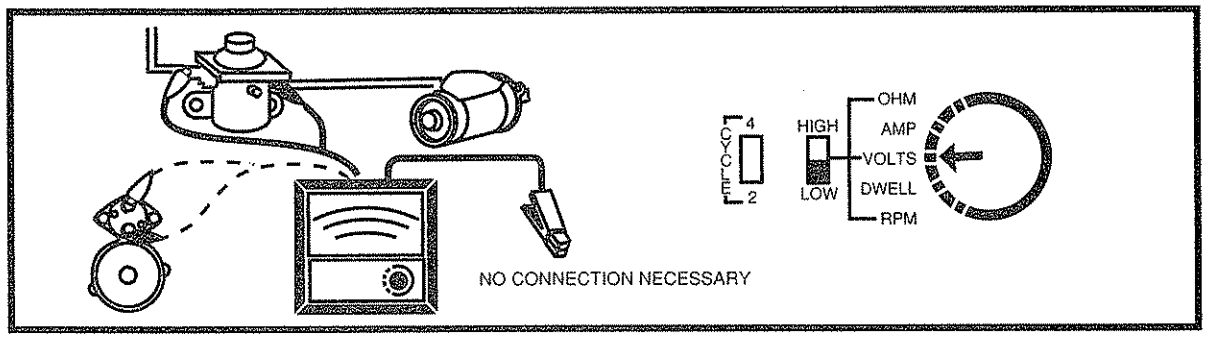
NOTE: On GM HEI systems, disconnect the "BAT" terminal from the distributor.

D. Crank engine while observing the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Defective battery cable, loose or corroded connections.

VOLTAGE READS LESS THAN 0.2 VOLTS — Cable and connections OK.

2. STARTER SOLENOID TEST



A. Turn the the test selector to the VOLTS position and the range switch to the LOW position.

B. Connect RED test clip to battery terminal of the solenoid and the BLACK test clip to the starter terminal of the solenoid.

C. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

NOTE: On GM HEI systems (8 cyl) disconnect "BAT" terminal from connector.

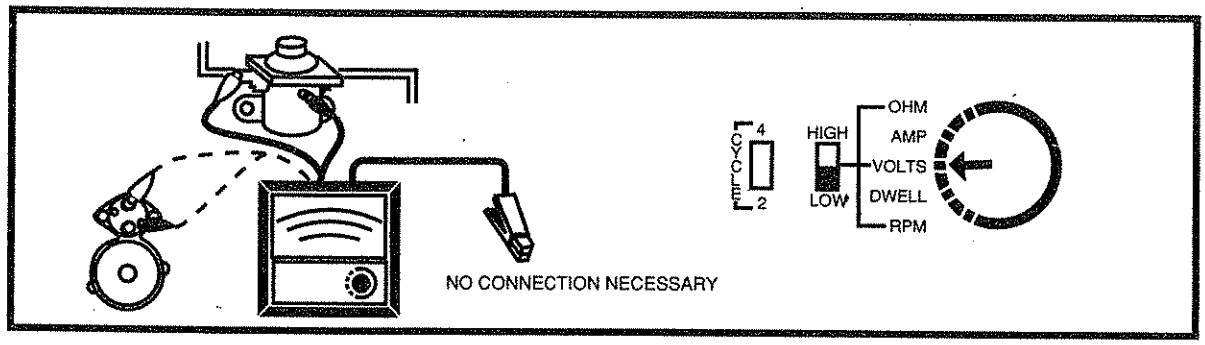
D. Crank engine while observing the LOW VOLTS scale.

NOTE: The pointer will read off scale until the solenoid is closed. This is normal and causes no harm to the analyzer.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Defective solenoid. REPLACE.

VOLTAGE READS LESS THAN 0.2 VOLTS — Solenoid is OK.

3. STARTER SWITCH CIRCUIT TEST



A. Turn the test selector to the VOLTS position and the range switch to the LOW position.

B. Connect the RED test clip to the battery terminal of the solenoid and the BLACK test clip to the small terminal of the solenoid.

NOTE: Some vehicles have two small terminals. If no reading is obtained when the BLACK test clip is connected to one of the terminals, simply reconnect the BLACK test clip to the other small terminal.

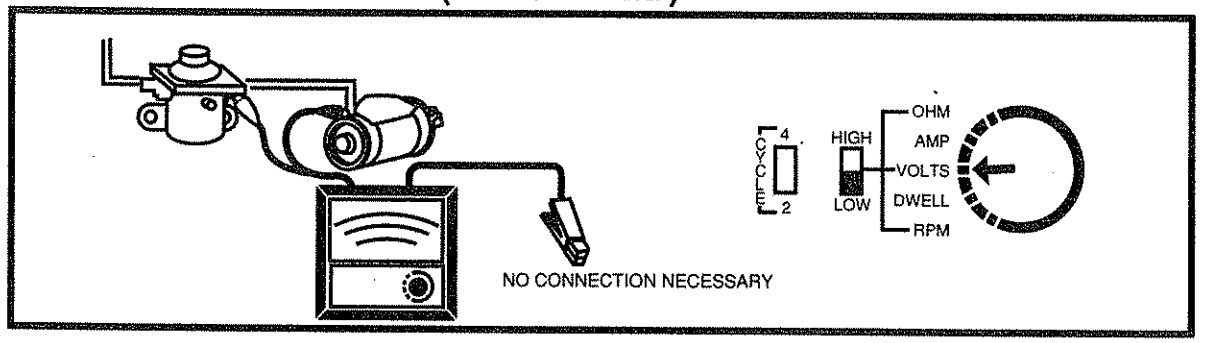
C. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

D. Crank engine while observing the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 1.0 VOLTS — Defective ignition switch, neutral safety switch (on automatic transmission vehicles), loose or corroded wires or connections.

VOLTAGE READS LESS THAN 1.0 VOLTS — Switches, wires and connections OK.

4. STARTER CABLE TEST (IF EQUIPPED)



A. Turn the test selector to the VOLTS position and the range switch to the LOW position.

B. Connect the RED test clip to the starter terminal of the solenoid and the BLACK test clip to the starter cable terminal of the starter motor.

C. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

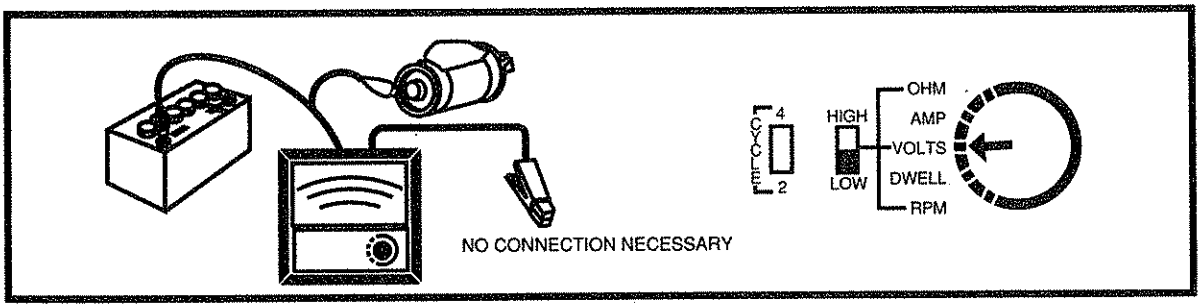
NOTE: On GM HEI equipped vehicles disconnect "BAT" terminal from the connector.

D. Crank the engine while observing the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Defective starter cable, loose or corroded connections.

VOLTAGE READS LESS THAN 0.2 VOLTS — Starter cable and connections OK.

5. GROUND CABLE TEST



A. Turn test selector to the VOLTS position and put the range switch in the LOW position.

B. Connect the RED test clip to the frame of the starter motor and the BLACK test clip to the negative (-) terminal of the battery.

C. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

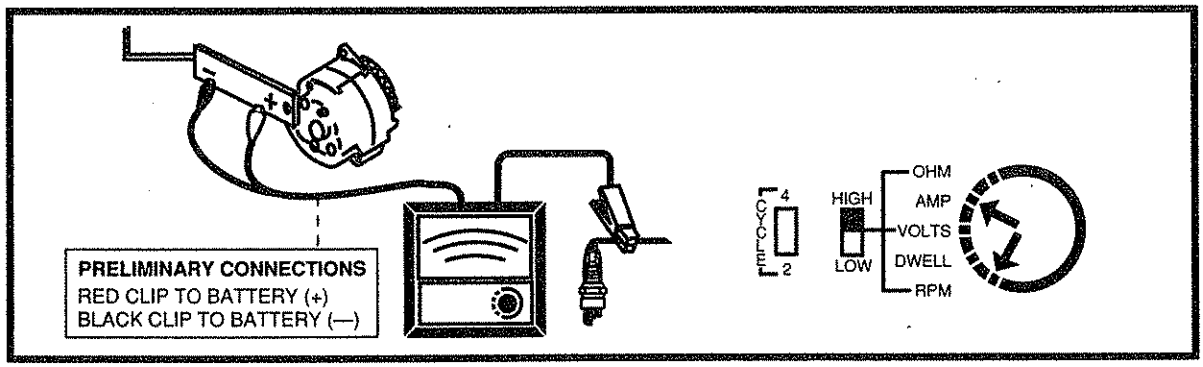
NOTE: On GM HEI equipped vehicles disconnect "BAT" terminal from the connector.

D. Crank the engine while observing the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Defective ground cable, loose or corroded connections, loose starter motor.

VOLTAGE READS LESS THAN 0.2 VOLTS — Ground cable and connections are OK.

6. ALTERNATOR/GENERATOR OUTPUT TEST



A. Turn the test selector to the RPM position and put the range switch in the HIGH position.

B. With engine stopped, disconnect large diameter wire at the "BAT" (+) terminal of the alternator or "ARM" (D+) terminal of the generator.

C. Fasten the SHUNT BAR to the terminal at the alternator/generator and reconnect the large wire to the other end of the SHUNT BAR.

D. Connect the RED test clip to the positive (+) terminal of the battery and the BLACK test clip to the negative terminal of the battery. Clip the inductive pickup over a spark plug wire.

E. Remove the high tension wire from the center tower of the distributor cap and ground it using a jumper wire.

NOTE: On GM HEI equipped systems (8 cyl.), disconnect the "BAT" terminal from the distributor connector.

F. Turn on all electrical accessories and crank the engine for 15 to 20 seconds.

G. Enable the ignition system by reconnecting the "BAT" terminal, start the engine, and adjust the speed to1500 to 2000 RPM on the HIGH RPM scale.

H. Remove the test clips from the battery and connect the RED test clip to the SHUNT BAR tab that is closest to the alternator/generator and connect the BLACK test clip to the remaining tab on the SHUNT BAR.

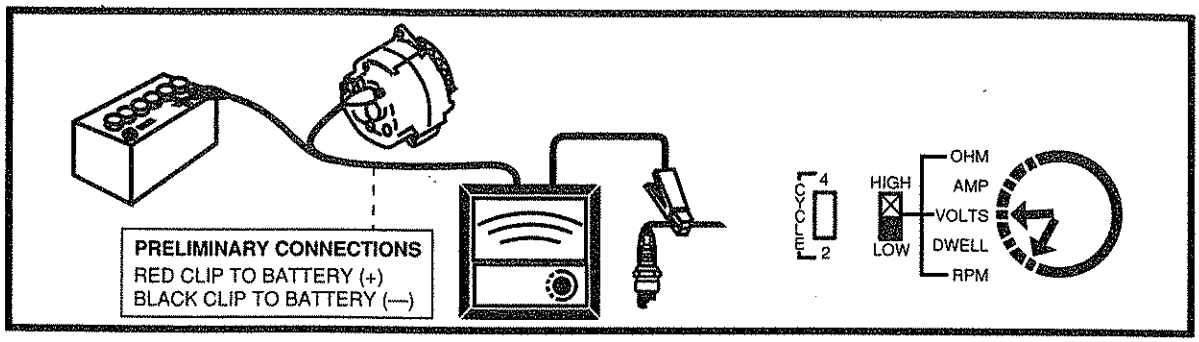
I. Turn the test selector to the AMPS position and observe the AMPS scale on the tester.

RESULTS: AMPERAGE MORE THAN 10% ABOVE RATED OUTPUT — Probable shorted field circuit. Replace alternator/generator or repair wiring.

AMPERAGE WITHIN 10% OF RATED OUTPUT — Normal alternator/ generator.

AMPERAGE MORE THAN 10% BELOW RATED OUTPUT — Loose fan belt, defective regulator or alternator/generator, poor connections, open field curcuit.

7. ALTERNATOR/GENERATOR CIRCUIT TEST



A. Turn the test selector to the RPM position and put the range switch in the HIGH position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the negative (–) battery terminal . Clip the inductive pickup over a spark plug wire.

C. With all accessories on, start the engine and adjust the speed to 1500 to 2000 RPM.

D. Remove the test clips from the battery and connect the RED test clip to the "BAT" (+) terminal of the alternator or "ARM" (D+) terminal of the generator and connect the BLACK test clip to the positive (+) battery terminal.

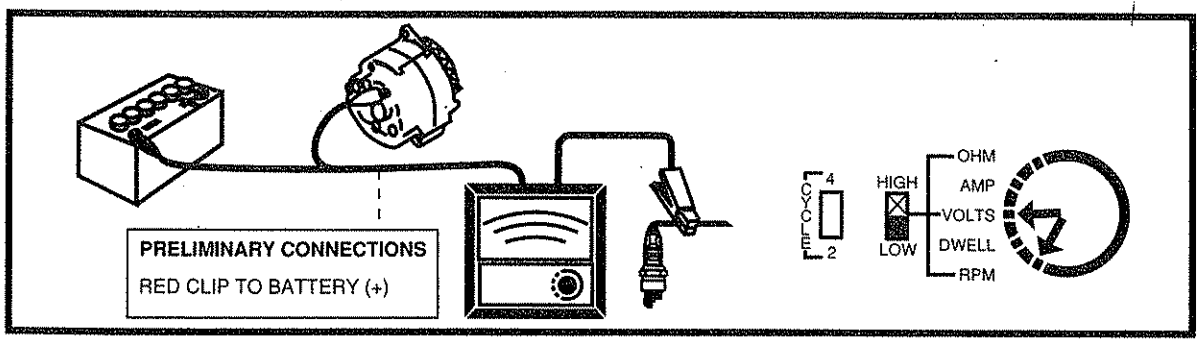
E. Turn the test selector to the VOLTS position and put the range switch in the LOW position.

F. Observe the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS (ALTERNATORS), 0.6 VOLTS (GENERATORS) — Defective wire, loose or corroded connections.

VOLTAGE READS LESS THAN 0.2 VOLTS (ALTERNATORS), 0.6 VOLTS (GENERATORS) — Wires and connections are OK.

8. ALTERNATOR/GENERATOR GROUND TEST



A. Turn the test selector to the RPM position and put the range switch in the HIGH position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the negative (–) battery terminal. Clip the inductive pickup over a spark plug wire.

C. With all accessories on, start the engine, and adjust the speed to 1500 to 2000 RPM on the HIGH RPM scale.

D. Disconnect the RED test clip from the battery and connect it to the frame of the alternator/generator.

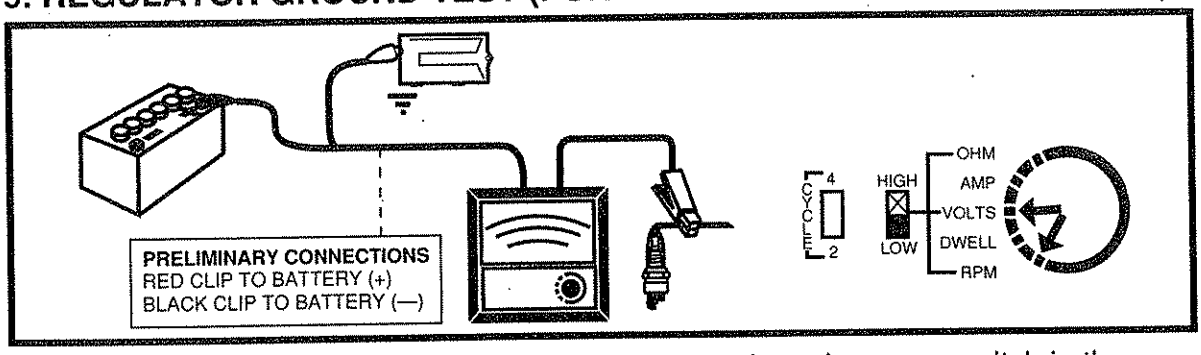
E. Turn the test selector to the VOLTS position and put the range switch in the LOW position.

F. Observe the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Loose or poorly grounded alternator/generator.

VOLTAGE READS LESS THAN 0.2 VOLTS — Alternator/generator properly grounded.

9. REGULATOR GROUND TEST (FOR EXTERNAL REGULATORS ONLY)



A. Turn the test selector to the RPM position and put the range switch in the HIGH position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the negative (–) battery terminal. Clip the inductive pickup over a spark plug wire.

C. With all accessories on, start the engine, and adjust the speed to 1500–2000 RPM on the HIGH RPM scale.

D. Disconnect the RED test clip from the battery and connect it to the frame of the regulator.

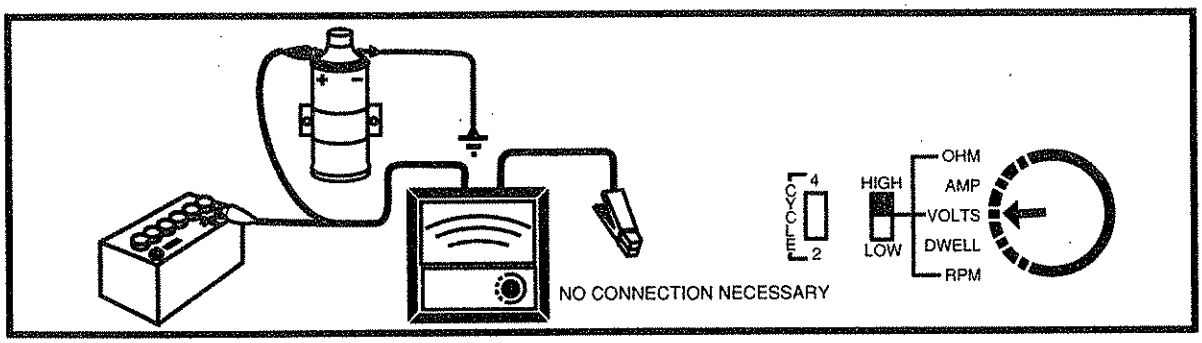
E. Turn the test selector to the VOLTS position and put the range switch in the LOW position.

F. Observe the LOW VOLTS scale.

RESULTS: VOLTAGE READS MORE THAN 0.2 VOLTS — Loose or poorly grounded regulator.

VOLTAGE READS LESS THAN 0.2 VOLTS — Regulator properly grounded.

10. IGNITION RESISTOR CIRCUIT TEST



A. Turn test selector to the VOLTS position and put the range switch in the LOW position.

B. Connect the RED test clip to the positive (+) battery terminal and the BLACK test clip to the "BAT" (+) terminal of the ignition coil.

C. With engine stopped, connect a jumper wire from the DIST (–) terminal of the ignition coil to ground.

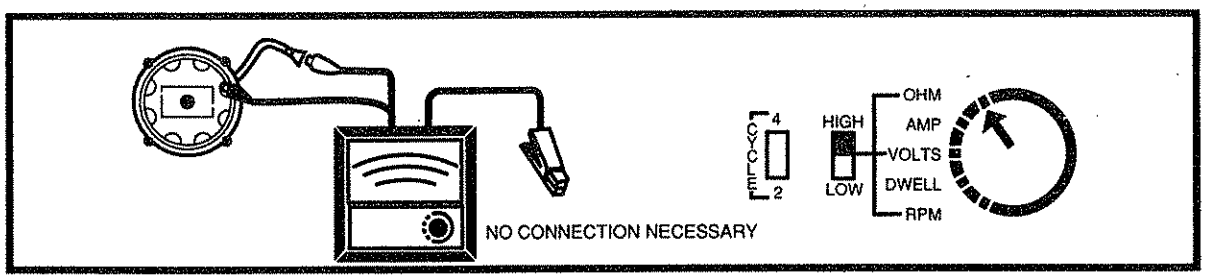
D. Turn ignition switch to the ON position and observe the HIGH VOLTS scale.

RESULTS: VOLTAGE READING ABOVE 7.5 VOLTS — Defective ballast resistor or primary resistance wire, defective ignition switch, loose or corroded connections.

VOLTAGE READING BETWEEN 4.5 AND 7.5 VOLTS — Resistor, ignition switch, wiring and connections are OK.

NOTE: A few ignition systems use an internal resistor within the ignition coil. This condition is indicated by a near-zero volt reading. Refer to your vehicle's service manual for this information.

11. IGNITION PLUG CABLE TEST



A. Turn the test selector to the OHMS position and put the range switch in the HIGH position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the HIGH OHMS scale.

B. Turn the ignition switch to the OFF position and remove the distributor cap.

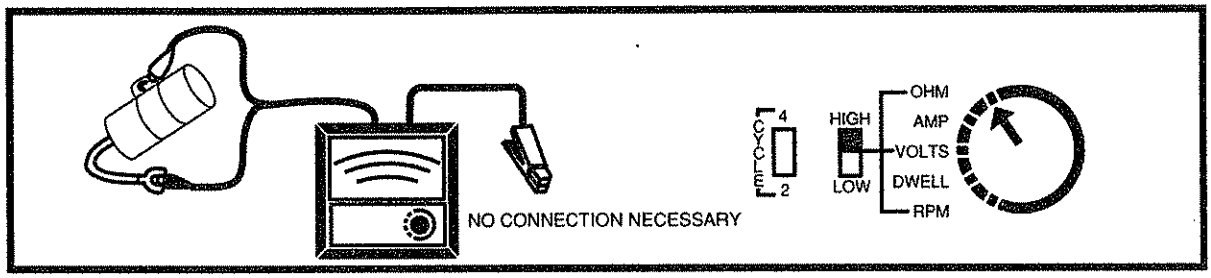
C. One at a time, remove each spark plug wire from the spark plug and connect either test clip to the end of the spark plug wire and the other test clip to the corresponding metal segment inside the distributor cap.

D. Observe the HIGH OHMS scale.

RESULTS: OHMS READING IS MORE THAN 30,000 — Defective spark plug cable or corroded socket in the distributor cap.

OHMS READING IS LESS THAN 30,000 — Spark plug cable is OK.

12. CONDENSER TEST



A. Turn the test selector to the OHMS position and put the range switch in the HIGH position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the HIGH OHMS scale.

B. Disconnect condenser wire from the circuit to be tested.

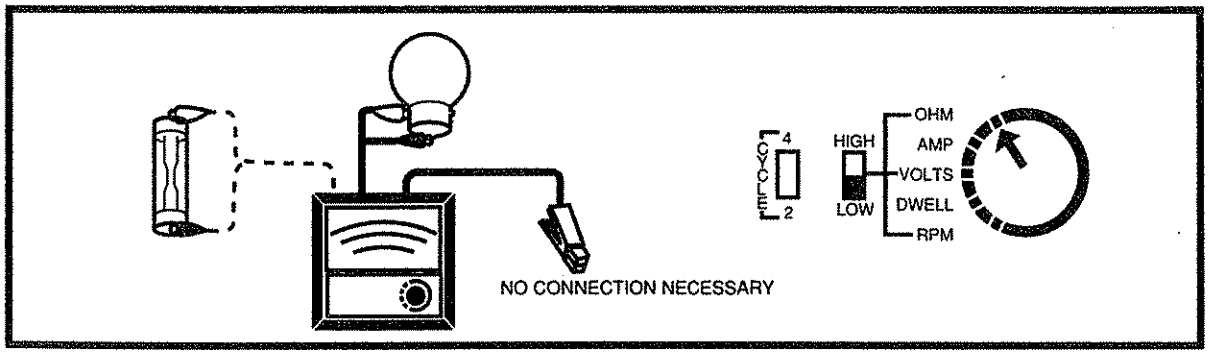
C. Connect either test clip to the condenser wire and the other test clip to the condenser body.

D. Observe the HIGH OHMS scale.

RESULTS: OHMS READING IS BETWEEN 0 OHMS AND INFINITY (∞) — Condenser is defective.

OHMS READING IS INFINITY(∞) — Condenser is OK.

13. FUSE/LIGHT BULB TEST



A. Turn the test selector to the OHMS position and put the range switch in the HIGH position. Refer to the OHMS CALIBRATION page in the front of this manual and calibrate the HIGH OHMS scale.

B. Remove fuse or bulb from circuit to be tested.

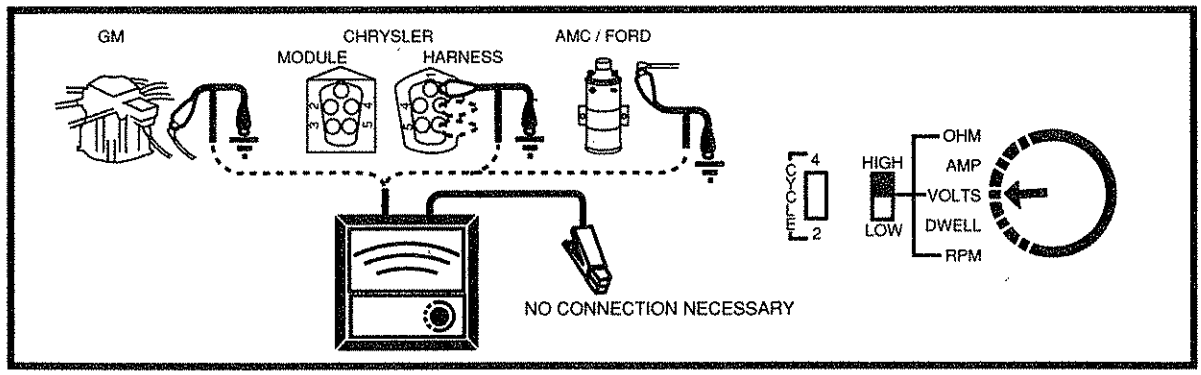
C. Connect test clips to the fuse ends or to terminals on bulb to be tested.

D. Observe the LOW OHMS scale.

RESULTS: OHMS READING IS INFINITY (∞) — Fuse or bulb is burned out.
OHMS READING IS NEAR 0 OHMS — Fuse or bulb is OK.

ELECTRONIC IGNITION COMPONENT TESTS

1. IGNITION CIRCUIT TEST



A. Turn the test selector to the VOLTS position and put the range switch in the HIGH position.

B. Disconnect the "BAT" positive (+) terminal of the (GM - distributor connector), (CHRYSLER - ignition module), (FORD or AMC - ignition coil).

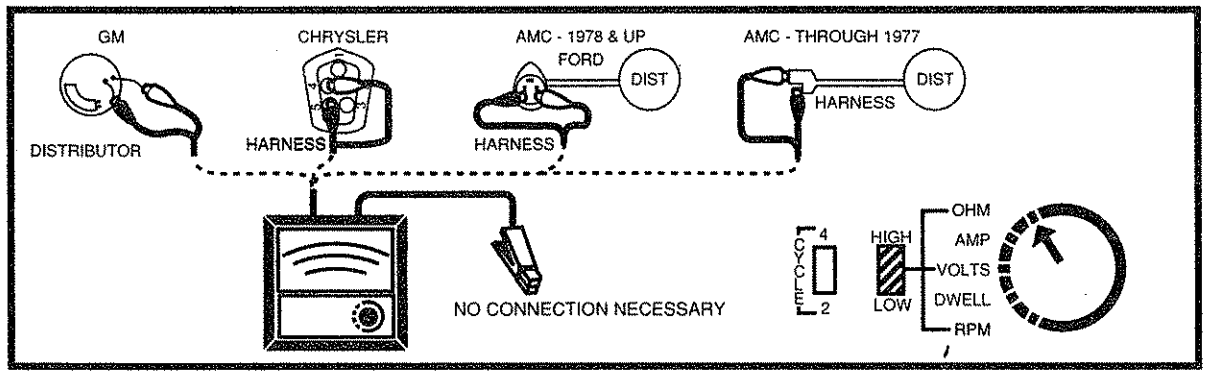
C. Connect the RED test clip to GM, Ford, or AMC disconnected "BAT" positive (+) wire, on Chrysler to pins 1,2,3 of harness. Connect the BLACK test clip to ground.

D. Turn ignition switch to the ON position and observe the HIGH VOLTS scale.

RESULTS: VOLTAGE READING BELOW 12.0 VOLTS — Defective ignition switch, ballast resistor (if equipped), loose or corroded connections.

VOLTAGE READING ABOVE 12 VOLTS — Ignition switch, ballast resistor, wiring and connections are OK.

2. DISTRIBUTOR PICKUP COIL TEST



A. Turn the test selector to the OHMS position. For GM, CHRYSLER, FORD, and 1978 or later AMC, put the range switch in the HIGH position. For AMC through 1977, put the range switch to the LOW position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the scale that is applicable to your vehicle.

NOTE: Make sure the ignition switch is in the OFF position before proceeding.

B. Remove the distributor cap and rotor.

C. Disconnect (GM - green "G" wire and white "W" wire from pickup coil in distributor), (CHRYSLER - connector plug at module), (FORD and AMC - connector plug at distributor).

D. Connect the test clips from (GM - disconnected green "G" wire and white "W" wire at distributor), (CHRYSLER - across pins 4 and 5 of harness to distributor), (FORD and 1978 and up AMC - across pins 2 and 3 of harness to distributor), (AMC through 1977 - across terminals of harness to distributor.)

E. Observe the appropriate OHMS scale for your vehicle.

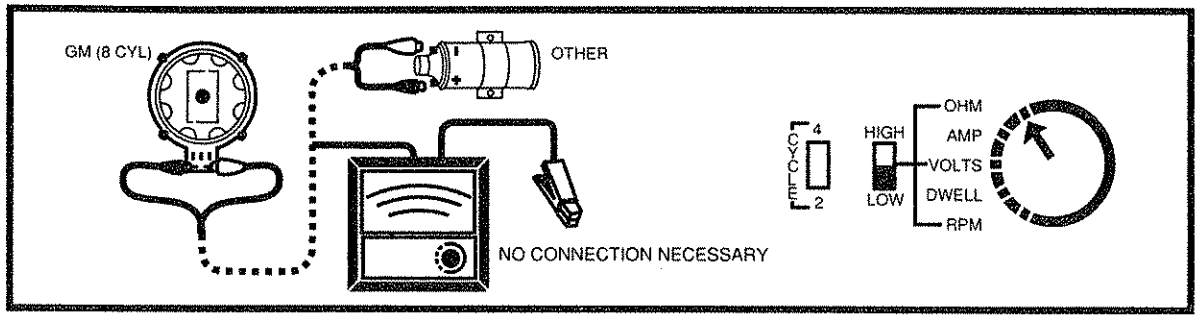
RESULTS: OHMS NOT WITHIN SPECIFICATIONS — Defective pickup coil. REPLACE.

OHMS WITHIN SPECIFICATIONS — Pickup coil is OK.

SPECIFICATIONS: GM - 500 to 1,500 OHMS; CHRYSLER - 150 to 900 OHMS; FORD and 1978 and up AMC - 400 to 800 OHMS; AMC through 1977 - 1.6 to 2.4 OHMS.

NOTE: For any vehicle not mentioned here, refer to the vehicle's service manual for pickup coil test procedure and specifications.

3. IGNITION COIL PRIMARY RESISTANCE TEST



A. Turn the test selector to the OHMS position and put the range switch in the LOW position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the LOW OHMS scale.

NOTE: Make sure the ignition switch is in the OFF position before proceeding.

B. On GM HEI (8 cyl. only) remove the distributor cap from the distributor and disconnect the harness connector plug at the distributor cap. No disconnect is necessary for any other vehicle.

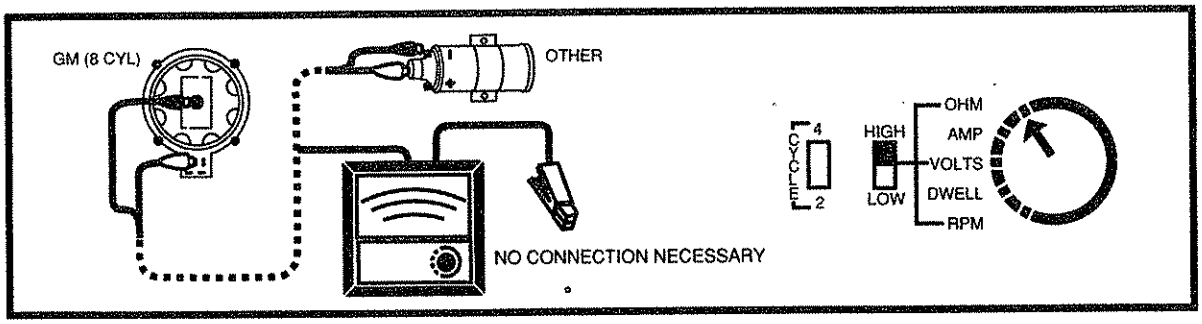
C. Connect the test clips to the ignition coil primary terminals (on GM 8-cylinder vehicles, connect across distributor cap "BAT" and "TACH" terminals).

D. Observe the LOW OHMS scale.

RESULTS: READING IS MORE THAN 2.0 OHMS — Open primary windings of coil. REPLACE.

READING IS LESS THAN 2.0 OHMS — Primary windings of ignition coil are OK.

4. IGNITION COIL SECONDARY RESISTANCE TEST



A. Turn the test selector to the OHMS position and put the range switch in the HIGH position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the HIGH OHMS scale.

NOTE: Make sure the ignition switch is in the OFF position before proceeding.

B. On GM HEI (8 cyl. only) remove the distributor cap from the distributor and disconnect the harness connector plug at the distributor cap. No disconnect is necessary for any other vehicle.

C. Connect the test clips to the ignition coil negative (-) terminal and the high tension output of the coil. (On GM 8-cylinder vehicles connect the test clips to the distributor cap rotor terminal and the distributor cap "TACH" terminal).

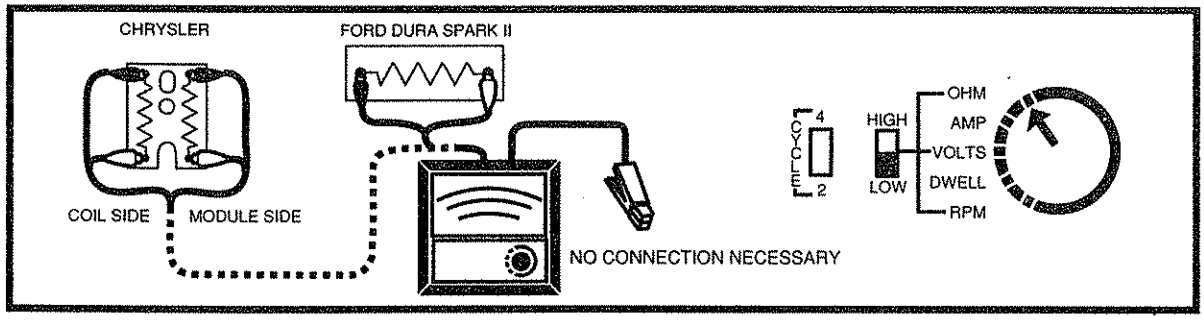
D. Observe the HIGH OHMS scale.

RESULTS: OHMS READING IS NOT WITHIN SPECIFICATIONS — Defective secondary windings of the ignition coil. REPLACE.

OHMS READING IS WITHIN SPECIFICATIONS — Secondary windings of ignition coil are OK.

SPECIFICATIONS: GM - 6,000 to 30,000 OHMS; CHRYSLER and AMC through 1977 plus all AMC 4-cylinders - 9,000 to 15,000 OHMS; FORD and 1978 and up AMC - 7,300 to 9,300 OHMS.

5. BALLAST RESISTOR TEST (Chrysler and Ford Dura Spark II only)



A. Turn the test selector to the OHMS CALIBRATION page in the beginning of this manual and calibrate the LOW OHMS scale.

NOTE: Make sure the ignition switch is in the OFF position before proceeding.

B. Connect the test clips across the ballast resistor (on CHRYSLER vehicles two tests must be made: the coil side of the ballast resistor and the module side of the ballast resistor).

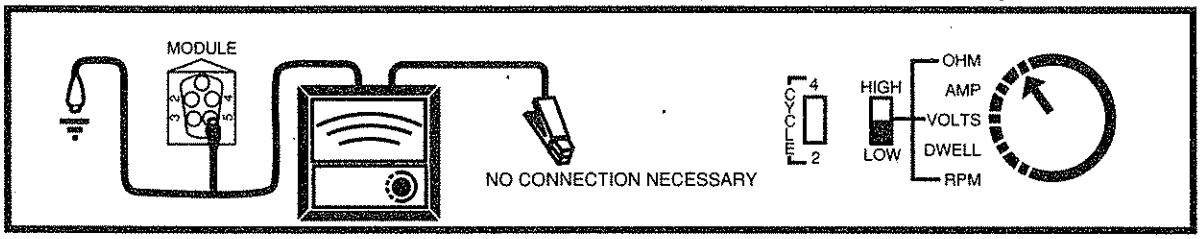
C. Observe the LOW OHMS scale.

RESULTS: OHMS MORE THAN SPECIFICATIONS — Defective ballast resistor. REPLACE

OHMS WITHIN SPECIFICATIONS — Ballast resistor is OK.

SPECIFICATIONS: CHRYSLER - Coil side is 0.5 OHMS and module side is 5.0 OHMS; FORD Dura Spark II - 1.0 OHMS.

6. ELECTRONIC MODULE GROUND TEST (CHRYSLER ONLY)



A. Turn the test selector to the OHMS position and put the range switch in the LOW position. Refer to the OHMS CALIBRATION page at the beginning of this manual and calibrate the LOW OHMS scale.

NOTE: Make sure the ignition switch is in the OFF position.

B. Disconnect the connector plug at the module.

C. Connect the test clips to pin 5 of module and ground.

D. Observe the LOW OHMS scale.

RESULTS: READING IS MORE THAN 100 OHMS — Defective module. REPLACE.

READING IS LESS THAN 100 OHMS — Module is OK.

FULL ONE (1) YEAR WARRANTY

Actron Manufacturing Company, 9999 Walford Avenue, Cleveland, Ohio 44102, warrants to the user that this unit will be free from defects in materials and workmanship for a period of one (1) year from the date of original purchase.

Any unit that fails within this period will be repaired or replaced at Actron's option and without charge when returned to the Factory. Actron requests that a copy of the original, dated sales receipt be returned with the unit to determine if the warranty period is still in effect.

This warranty does not apply to damages caused by accident, alterations, or improper or unreasonable use. Expendable items, such as batteries, fuses, lamp bulbs, flash tubes are also excluded from this warranty.

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