CHRYSLER CORP. ELECTRONIC FUEL CONTROL

Chrysler Corp.
3.7L (Calif. Only)
5.2L (Exc. EFI)

DESCRIPTION

The Electronic Fuel Control system (EFC) is an electronically controlled system that closely controls air/fuel ratio and ignition timing. The Spark Control Computer (SCC) is the heart of the system. This computer provides the capability of igniting a lean air/fuel mixture according to different modes of engine operation; plus, during closed loop operation, the computer maintains the air/fuel mixture close to the ideal ratio of 14.7:1.

OPERATION

The EFC system consists of 8 sub-systems: Fuel control, electronic throttle control, spark control, data sensors, Spark Control Computer (SCC), electronic exhaust gas recirculation (EGR), electronic air switching and catalytic converter.

FUEL CONTROL

All models are equipped with feedback carburetors which contain an electronically operated duty cycle solenoid. This solenoid meters the main fuel system of carburetor and operates in parallel with the conventional fixed main metering jets. The computer controls the operation of the solenoid with electrical signals, in response to signals received from data sensors. See *Fig. 1*.

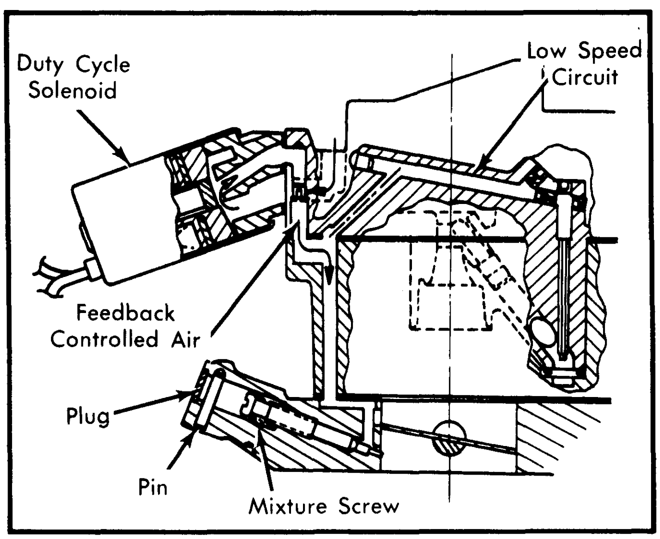

Fig. 1 Sectional View of Thermo-Quad Feedback Carburetor With Duty Cycle Solenoid

When the solenoid is de-energized by the computer, the solenoid valve spring pushes upward through main system fuel valve. When de-energized, the solenoid main metering orifice is fully uncovered, providing the richest mixture for any given air flow.

When the solenoid is energized by the computer, the solenoid main metering orifice is fully sealed. This solenoid position offers the leanest mixture wthin the carburetor for any given air flow.

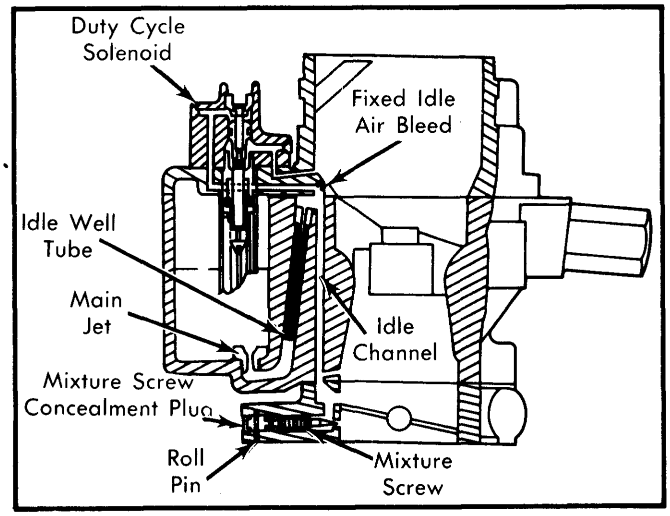

Fig. 2 Sectional View of Holley 6145 Feedback Carburetor Showing Location of Duty Cycle Solenoid

The main fuel system may be regulated between richest and leanest mixture conditions by controlling the amount of time that the solenoid is energized and de-energized. The computer controls the duration of time that the solenoid is energized in comparison to total time of solenoid operation. This duration of time is determined by engine operating conditions and/or oxygen sensor signals. In this manner, the ideal air/fuel ratio can be constantly maintained.

ELECTRONIC THROTTLE CONTROL

The Electronic Throttle Control system, along with 2 electric timers, is incorporated within the SCC. A solenoid, mounted on the carburetor, is energized whenever the air conditioning, rear window defogger or electric timers are activated. The 2 timers operate when the throttle is closed plus a time delay (2 seconds) or after engine is started.

SPARK CONTROL

Spark control allows the computer to determine the exact instant that ignition is required; then signals ignition coil to produce electrical impulses which fire the spark plugs. The computer eliminates the need for either vacuum advance units or centrifugal advance weights. Spark control operates in 1 of the following modes:

- **Start Mode** – During cranking, an electrical signal from the distributor is fed into the computer, which causes the computer to fire the spark plugs at a fixed amount of advance.

- **Run Mode** – Once the engine starts and is operating normally, the timing will be controlled by the computer, based upon information received by the data sensors.

Spark timing and dwell cannot be adjusted in the run mode. If the computer fails, the system will go into the start mode. This enables the vehicle to be driven in for repair; but performance and fuel economy will be poor. If the start mode fails, the engine will not start or run.

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The amount of spark advance is determined by engine speed and engine vacuum. However, where it happens depends upon the following conditions:

- **Advance From Vacuum** – Advance based upon engine vacuum is allowed by the computer when the carburetor switch is open. The amount of advance is programmed into the computer and is proportionate to the amount of vacuum and engine RPM.
- **Advance From Speed** – Advance based upon engine speed (RPM) is allowed by the computer when the carburetor switch is open and advance from vacuum will not happen quickly. This advance from speed is programmed into the computer and is controlled by engine RPM. Advance from speed will build at a slow rate. If carburetor switch closes, advance from speed will be cancelled.

DATA SENSORS

Each sensor furnishes electronic impulses to the SCC. The SCC computes ignition timing and air/fuel mixture ratio necessary to maintain proper engine operation. The function of each sensor is closely related to each of the other sensors. Operation of each sensor is as follows:

Magnetic Pick-Up Assembly – The magnetic pick-up assembly consists of 2 pick-up coils: start pick-up coil and run pick-up coil. Both are located in the distributor and operate as follows:

- **Start Pick-Up Coil** – Supplies a voltage signal to SCC which will cause the spark plugs to fire at a fixed amount of advance during cranking only. This coil is permanently positioned in distributor and the amount of advance will be determined by distributor position. See *Fig. 3*.

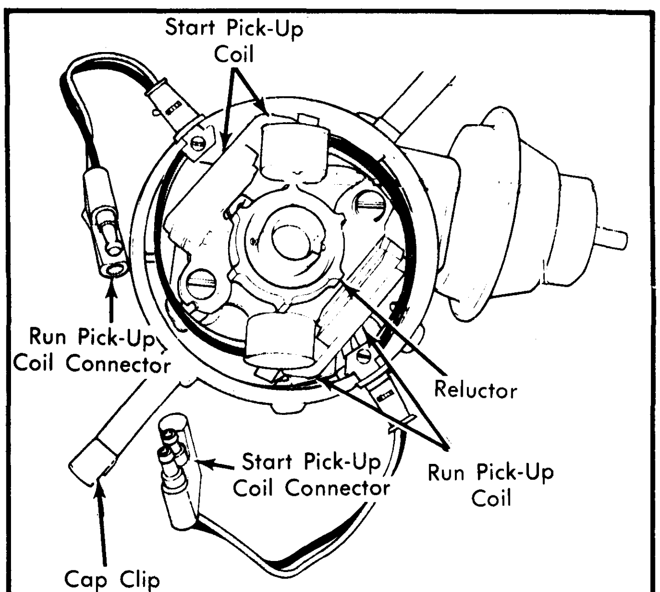

Fig. 3 View of Distributor, with Cap & Rotor Removed, Showing Location of Magnetic Pick-Up Coil Assembly

- **Run Pick-Up Coil** – Once engine begins to run, the start pick-up coil signal is by-passed and the run pick-up coil supplies advance information to the SCC. The SCC then modifies advance information to reflect engine operating conditions supplied by other sensors. See *Fig. 3*.

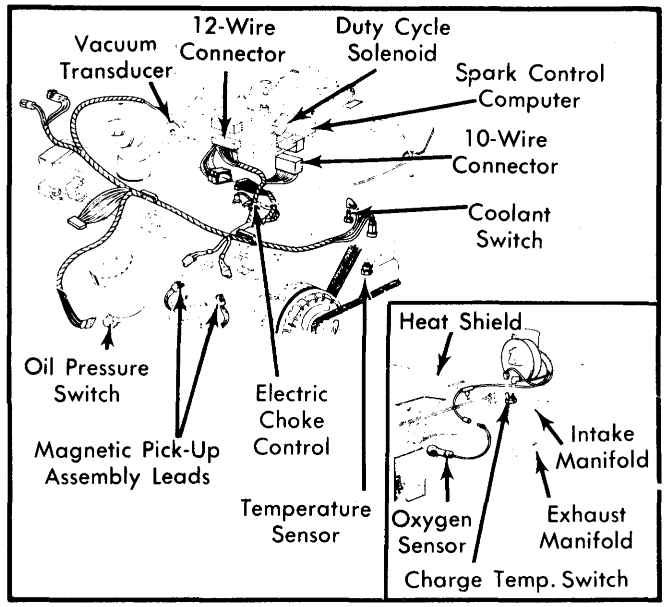

Fig. 4 View of 3.7L Engine Showing Location of Data Sensors

NOTE – *See Fig. 4, Fig. 5 and Fig. 6 for location of data sensors.*

Coolant Temperature Sensor – The coolant sensor is located in the cylinder head on 3.7L engines. On the Federal 5.2L 2-barrel engine, the sensor is located in the charge temperature location on the intake manifold. On all other 5.2L engines the sensor is located in the intake manifold. The coolant sensor informs the SCC when the engine has reached normal operating temperature, so that proper adjustment can be made to the air/fuel ratio. It also prevents changes until normal operating temperature is reached. The coolant sensor also controls the amount of ignition timing advance or retard when the engine is cold.

Vacuum Transducer – This sensor is mounted on the computer and provides the computer with a signal according to the amount of engine vacuum. Engine vacuum is used by the computer to determine how much to advance or retard ignition timing and to change air/fuel mixture.

Carburetor Switch – Located on the end of idle stop, the carburetor switch informs the computer when the engine is at idle. When carburetor switch contacts throttle lever ground, the computer will cancel spark advance and prevent air/fuel ratio from being adjusted.

Detonation Sensor – Used only on the 5.2L engine, this sensor is located in the intake manifold and sends a low voltage signal to the SCC whenever engine knock is detected. The SCC than retards ignition timing a maximum of 11°, the actual amount being proportional to strength and frequency of detonation. When the condition no longer exists, ignition timing is advanced to its original value.

Oxygen Sensor – Located in the exhaust manifold, this sensor informs the computer of the amount of oxygen present in exhaust gases. The amount is proportional to the rich and lean mixtures. The computer adjusts air/fuel ratio so that it will maintain operating efficiency of the 3-way catalyst system and the engine.

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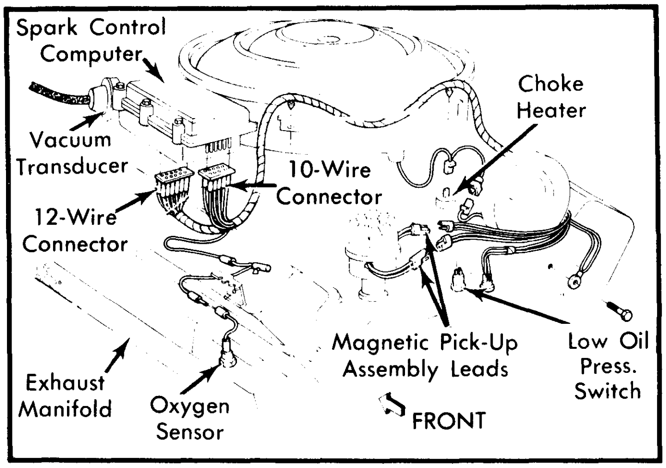

Fig. 5 Rear View of 5.2L Engine Showing Location of Data Sensors

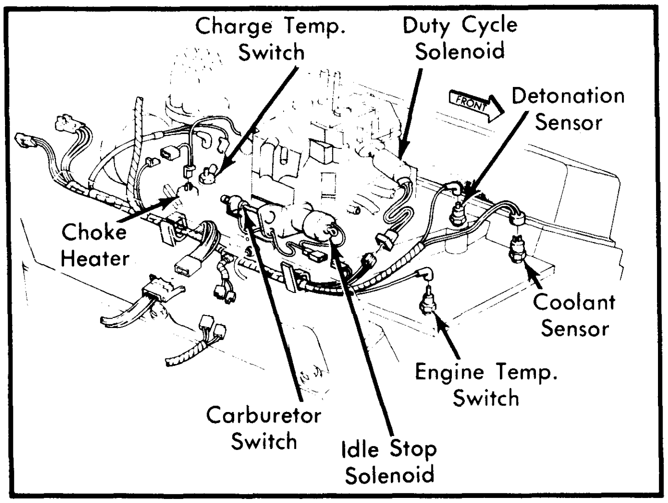

Fig. 6 Front View of 5.2L Engine Showing Location of Data Sensors

Charge Temperature Switch – This sensor is located in the intake manifold. The switch will be closed when intake charge (air/fuel mixture) is below 60°F. This permits no EGR timer function, no EGR valve operation and switches air injection upstream into exhaust system. When temperature is above 60°F, the switch opens, allowing EGR timer to time out, the EGR valve to operate and air injection is switched downstream into the exhaust system.

SPARK CONTROL COMPUTER

The computer is mounted on the air cleaner housing. The computer consists of 1 electronic printed circuit board which receives signals from all data sensors at the same time and analyzes all these signals to determine spark advance and air-/fuel mixture. Incorporated within the computer are the electronics for the throttle control, EGR and air switching systems. After determining spark advance, the computer will operate the engine in one of the following modes:

- **Open Loop Mode** – During cold engine operation, the air/fuel ratio is controlled by information programmed into the computer by the manufacturer. Until normal operating temperature is reached, the air/fuel mixture will be fixed at a rich level to allow proper engine warm-up. During this mode of operation, air from the AIR pump is injected "upstream" in the exhaust manifold to assist in heating up the oxygen sensor.
- **Closed Loop Mode** – Once normal engine operating temperature is achieved, the air/fuel ratio is controlled by the computer based upon information received from the oxygen sensor.

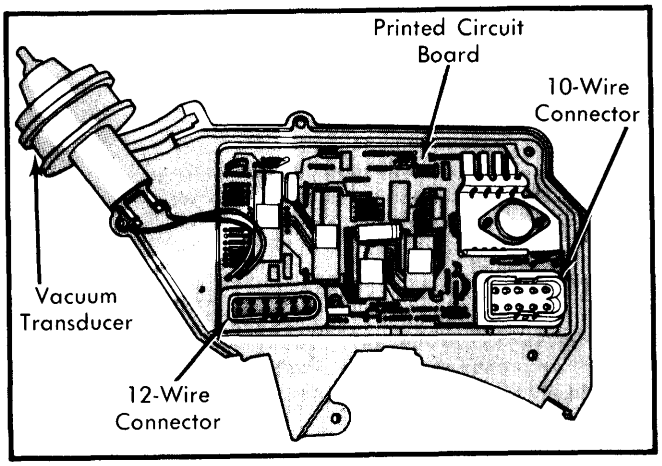

Fig. 7 Internal View of Spark Control Computer

ELECTRONIC EXHAUST GAS RECIRCULATION

The electronic EGR system is incorporated within the SCC. This system prevents EGR flow until engine has reached normal operating temperature (after a pre-determined length of time).

ELECTRONIC AIR SWITCHING

The electronic air switching system is incorporated within the SCC. This system directs the flow of air from the air pump either "upstream" or "downstream" after engine has reached operating temperature and after a pre-determined length of time.

CATALYTIC CONVERTER

Proper emission control is accomplished with the special catalytic converter system used with the EFC system. All models are equipped with a front converter located below exhaust manifold (2 converters on 5.2L engines; 1 on each side of engine). A second (main) converter is placed behind the front coverter(s) in exhaust system of all models.

NOTE – *Similarities exist between external characteristics of each converter system. However, extreme care must be exercised during replacement of converters due to internal design differences.*

TESTING

A malfunction in the EFC system may result in engine surge, hesitation, rough idle and/or poor fuel economy. Before making any tests, check all vacuum and electrical wiring for proper routing and connections, and check for exhaust and intake manifold leaks. If these are in order, testing may begin.

NOTE – *The Spark Control Computer controls ignition timing as well as air/fuel mixture. Before testing EFC system, perform spark control tests first.*

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ELECTRONIC SPARK CONTROL SYSTEM TESTS

Ignition System Starting Test – 1) Turn ignition on and remove coil wire from distributor cap. Hold end of wire ¼" from a good engine ground. Intermittently jump coil negative terminal to ground, while watching for spark at coil wire. If there is a spark, it must be constant and bright blue.

2) If there is a good spark, continue cranking engine while slowly moving secondary wire away from ground. Look for arcing at coil tower. If arcing occurs, replace coil. If spark is weak or not constant, or if there is no spark, proceed to "Failure to Start Test".

3) If spark is good and there is no arcing at the coil tower, secondary voltage is satisfactory. Make sure it is reaching spark plugs by checking distributor rotor, cap, spark plug wires and spark plugs.

4) If all of these components check okay, ignition system is not at fault. Check fuel system or mechanical engine damage.

CAUTION – *Perform "Ignition System Starting Test" first. Failure to do so may result in lost diagnostic time or incorrect test results.*

Failure to Start Test – 1) Measure and record battery voltage. Check battery specific gravity, which must be 1.220 (temperature corrected) to deliver proper voltage to ignition system.

2) Turn ignition switch off and disconnect 10-wire connector from the SCC. Repeat Ignition System Starting Test, step **1)**. If spark results, replace computer.

3) If no spark is obtained, check voltage at coil positive terminal. With ignition switch on, connect positive voltmeter lead to coil positive terminal and negative lead to a good ground. Reading should be within 1 volt of battery voltage. If not, check wiring between battery and coil positive terminal.

4) If voltage at positive coil terminal was correct, connect positive voltmeter lead to coil negative terminal and negative lead to a good ground. Again, voltage should be within 1 volt of battery voltage. If not, replace ignition coil.

NOTE – *You may wish to check coil primary and secondary resistance before replacing ignition coil. However, if you have battery voltage on positive side, but not on negative side of coil, ignition coil normally requires replacement.*

5) If voltage was correct at negative coil terminal, but no spark resulted in Ignition System Starting Test, step **1)**, replace ignition coil.

6) If spark results, but engine will not start, turn ignition switch to the "RUN" position. Connect positive voltmeter lead to terminal 1 of 10-wire connector and negative lead to a good ground. See *Fig. 8*. Reading should be within 1 volt of battey voltage. If not, check wire for open circuit. Repeat this step after repairing wire. Reconnect 10-wire connector to computer.

7) If battery voltage was recorded in step **6)**, place a thin insulator (piece of paper) between curb idle adjusting screw and carburetor switch or make sure screw does not touch switch. See *Fig. 9*. Connect negative lead of voltmeter to a good ground. Turn ignition switch to "RUN" position and touch positive voltmeter lead to carburetor switch terminal. Reading should be approximately 5 volts. If so, proceed to step **10)**.

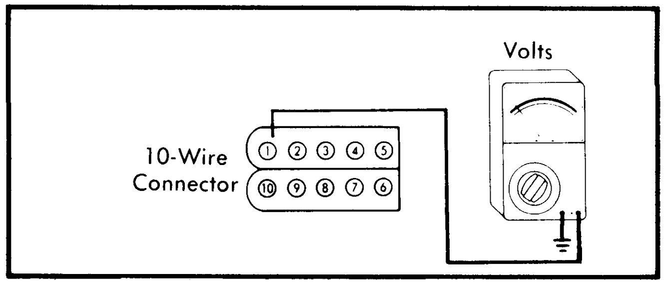

Fig. 8 Voltmeter Hook-Up for Checking Terminal 1 Voltage

8) If voltage was not at least 5 volts, turn ignition switch off. Disconnect 10-wire connector from computer. Turn ignition switch back to "RUN" position. Connect positive voltmeter lead to terminal 2 of 10-wire connector and negative lead to ground. See *Fig. 10*. Voltage reading should again be within 1 volt of battery voltage. If not, check wiring between terminal 2 and ignition switch for opens, shorts or poor connections.

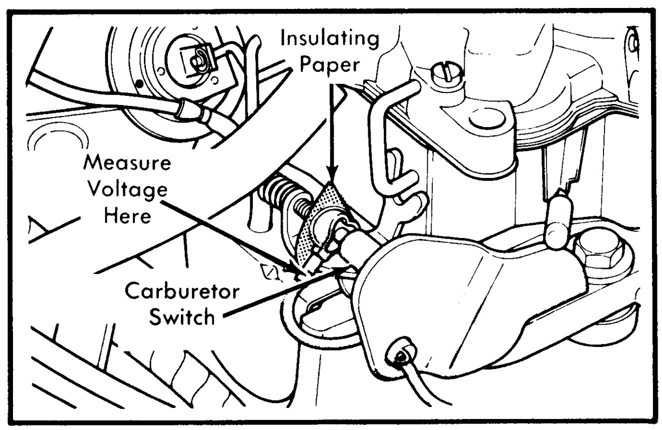

Fig. 9 Checking Voltage at Carburetor Switch

9) If voltage at terminal 2 was correct, turn ignition switch off. Check continuity between terminal 7 of 10-wire connector and carburetor switch terminal. See *Fig. 11*. Continuity should exist. If not, check wire for opens, shorts or poor connections. If continiuty is present, use an ohmmeter to check continuity between terminal 10 and engine ground. See *Fig. 12*. If there is continiuty, replace computer. If there is no continuity, check wire from terminal 10 to ground. If engine fails to start, proceed to next step.

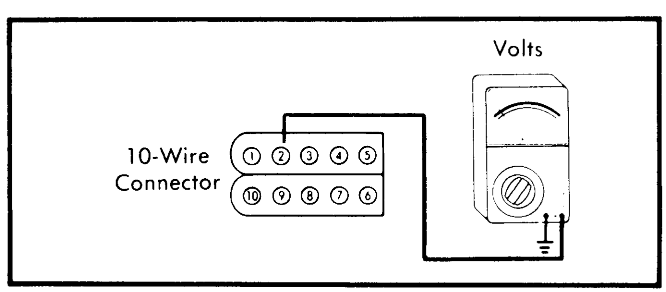

Fig. 10 Voltmeter Hook-Up for Checking Terminal 2 Voltage

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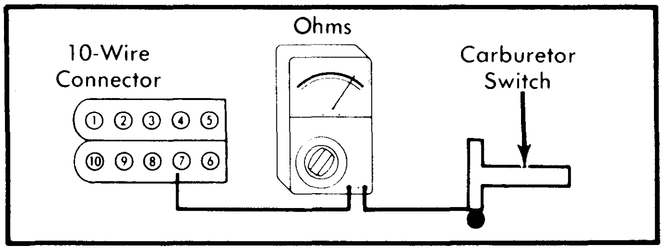

Fig. 11 Ohmmeter Hook-Up for Checking Carburetor Switch Wiring Harness

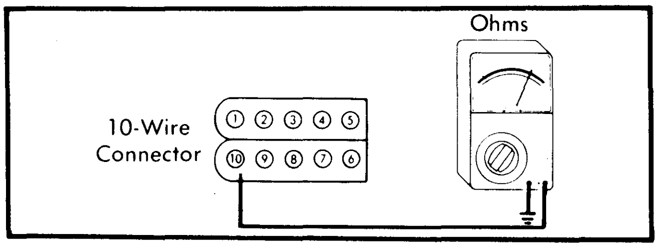

Fig. 12 Ohmmeter Hook-Up for Checking Computer Ground Circuit

10) Turn ignition switch off. Attach ohmmeter leads to terminals 5 and 9 of 10-wire harness connector to check run pick-up coil resistance and to terminals 3 and 9 to check start pick-up coil resistance. See *Fig. 13*. Resistance should be 150-900 ohms. If so, proceed to step **12)**.

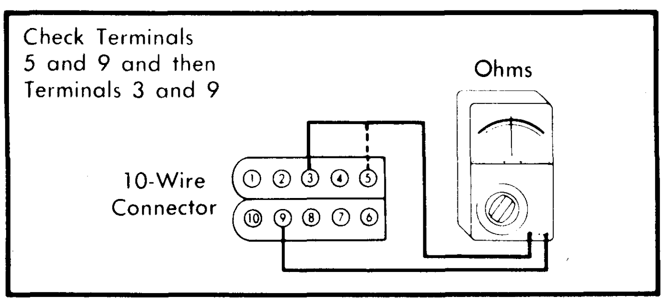

Fig. 13 Ohmmeter Hook-Up for Checking Pick-Up Coil Resistance

11) If not, disconnect distributor connectors, and attach ohmmeter leads to run pick-up coil leads and then to start pick-up coil leads coming from distributor. If resistance is now okay, wiring harness is defective. If resistance is still not 150-900 ohms, replace pick-up coils, as necessary.

12) Next, connect one lead of an ohmmeter to engine ground and touch other lead to each terminal of leads coming from 2 distributor pick-up coils. There should be no continuity. If continuity is indicated, replace pick-up coil.

13) Remove distributor cap and rotor and check reluctor-to-pick-up coil(s) air gap. Air gap for single pick-up coil distributor should be .006". On dual pick-up coil distributors, air gap should be .006" for start pick-up coil and .012" for run pick-up coil. If not to specifications, adjust air gap using a non-magnetic feeler gauge. See *Fig. 14*.

NOTE – *To adjust gap, loosen pick-up coil hold-down screws, move pick-up coil against feeler gauge, resting against reluctor tooth. Tighten hold-down screw, remove feeler gauge and recheck gap.*

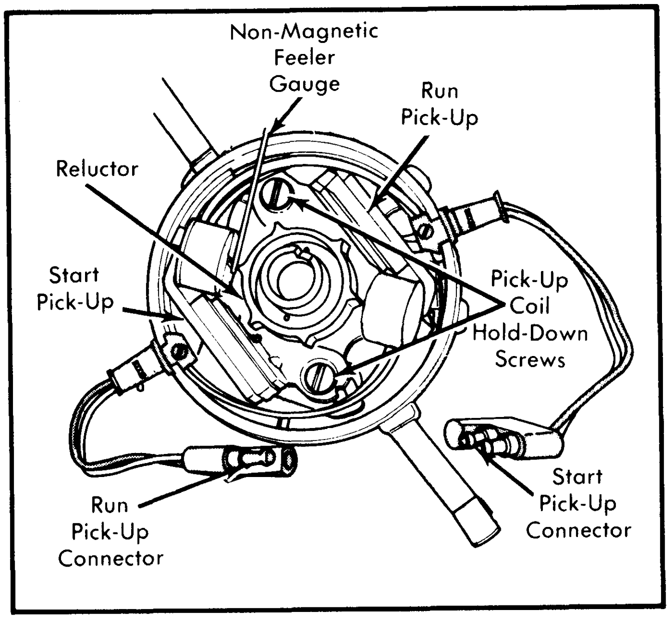

Fig. 14 Checking Distributor Pick-Up Coil Air Gap

14) Install distributor cap and reinstall all wiring. If engine fails to start, replace spark control computer. If it still fails to start, install original computer and retest.

Spark Control Computer Spark Advance Test – 1) Warm engine to normal operating temperature. Disconnect carburetor switch or unground it by placing a piece of paper between curb idle adjusting screw and switch. Be sure that coolant temperature sensor is connected and working properly.

2) Remove and plug vacuum hose at vacuum transducer. Connect an auxiliary vacuum supply to vacuum transducer and apply 16 in. Hg. Increase engine speed to 2000 RPM and wait 1 minute before checking specifications. Advance specifications are in addition to basic advance. See *Spark Advance Test Specifications table*.

Spark Advance Test Specifications

Computer Part No.	Spark Advance①
4145907	30-38°
4145980	30-38°
4145996	30-38°
4145998	30-38°
4289034	16-24°

① – With engine speed at 2000 RPM and 16 in. Hg vacuum applied.

3) If computer fails to obtain settings, replace computer.

ELECTRONIC FUEL CONTROL SYSTEM TESTS

NOTE – *The "Spark Control Computer Spark Test" should be tested prior to beginning any test on EFC system. The following tests MUST be performed in the sequence given.*

Air Switching System Diagnosis (Vacuum Supply) – 1) Remove vacuum hose for air switching/diverter valve and con-

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nect a vacuum gauge to hose. Set parking brake. Start engine and observe gauge reading.

2) On a cold engine, engine vacuum should be present until engine coolant temperature reaches 60°F. When temperature is reached and time delay has elapsed as shown in Air Switching Delay Specifications table, vacuum should drop to zero. If no vacuum is present on gauge, check vacuum supply, air switching solenoid, coolant switch, charge temperature switch and computer wiring and connections. If all check okay, computer may be defective, preventing air switching function. Proceed to step **4)**.

3) On a warm engine, vacuum should be present for the specified time shown in Air Switching Delay Specifications table after engine starts, then drop to zero. If there is no vacuum, check vacuum supply, air switching solenoid, coolant switch, charge temperature switch and computer wiring and connections. If all check okay, computer may be defective, preventing air switching function. Proceed to step **4)**.

4) If no vacuum was recorded in steps **2)** and **3)** and all components are operating properly, connect a voltmeter to Light Green wire on air switching solenoid. With engine at normal operating temperature and engine off, start engine. Voltage should be less than 1 volt. After specified time shown in Air Switching Delay Specifications table, voltmeter should read the same as charging system voltage. If voltmeter does not register charging system voltage or charging system voltage is shown prior to specified time, replace computer.

Air Switching Delay Specifications

Computer Part No.	Delay (Seconds)
4145907	90
4145980	90
4145996	20
4145998	20
4289034	65

Air Switching System Diagnosis (Air Switching Valve) – 1) Remove air supply hose from air switching valve. Remove vacuum hose from valve and install an auxiliary vacuum supply.

2) Set parking brake. Start engine. Air should blow out of side port. Apply vacuum to valve. Air should blow out bottom port.

Coolant Sensor Test – Turn ignition switch off and disconnect wire connector from sensor. Connect ohmmeter leads to sensor terminals. With engine cold and ambient temperature below 90°F, resistance should read 500-1000 ohms. With a hot engine, resistance should be greater than 1300 ohms. If specifications are not obtained, replace sensor.

NOTE – *The coolant sensor resistance will continually change with changes in engine temperature. It is not a switch.*

Charge Temperature & Coolant Switch – 1) Turn ignition off and disconnect wire from charge temperature switch. Connect 1 lead of ohmmeter to good engine ground (or to switch's ground terminal). Connect other lead to center terminal of coolant switch. Check for continuity.

2) On a cold engine, continuity should be present (resistance less than 100 ohms). If not, replace switch. The charge temperature switch must be cooler than 60°F to obtain this reading. On an engine at normal operating temperature, the terminal should show no continuity. If it does, replace coolant switch.

Carburetor Duty Cycle Solenoid Test – 1) Remove and plug vacuum hose at vacuum transducer. Connect a tachometer. Connect an auxiliary vacuum supply to vacuum transducer and apply 16 in. Hg. Set parking brake and start engine. Allow engine to reach normal operating temperature. DO NOT ground carburetor switch. Run engine at 1500 RPM.

NOTE – *After any hot start, maintain 1500 RPM for at least 2 minutes before proceeding with test.*

2) Disconnect duty cycle solenoid connector at solenoid. Average engine speed should increase a minimum of 50 RPM. Reconnect solenoid connector. Engine speed should slowly return to 1500 RPM.

3) Disconnect 12-pin connector at computer. Connect a ground to harness connector pin 11. Engine speed should decrease a minimum of 50 RPM. If engine speed does not change as outlined, service carburetor (check for air leaks).

Electronic Fuel Control Computer Test – 1) Connect a tachometer and set parking brake. Start engine, warm to normal operating temperature and maintain engine speed of 1500 RPM. DO NOT ground carburetor switch. Connect a voltmeter to duty cycle solenoid output wire going to carburetor (Green wire).

NOTE – *Do not separate the connector from the wiring harness.*

2) Disconnect electrical connector at oxygen sensor and connect a jumper wire to the harness end. Connect the other end of the jumper to a good ground. Engine speed should increase at least 50 RPM and voltmeter should indicate more than 9 volts.

3) Hold the jumper wire with 1 hand and with the other hand, touch the battery positive terminal with the jumper wire. Engine speed should decrease at least 50 RPM and voltmeter should indicate less than 3 volts. If computer fails both tests, replace it. Reconnect oxygen sensor harness.

CAUTION – *Before performing the next test, the fuel control computer must be operating properly.*

Oxygen Sensor Test – 1) Set parking brake and connect tachometer. Run engine at 1500 RPM and connect voltmeter to carburetor-to-computer output wire (green). DO NOT ground carburetor switch. Hold choke blade closed. During the next 10 seconds, the voltage should decrease to 3 volts or less and maintain that level. If engine does not respond, proceed to step **2)**.

2) Disconnect PCV system. During the next 10 seconds, the voltage should increase to 9 volts or greater and maintain that level until vacuum hose is reconnected. If sensor fails both tests, replace it. Reconnect all hoses and wires.

NOTE – *This test should not be performed for more than 90 seconds.*

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POOR PERFORMANCE TESTS

NOTE – *Be sure basic timing and hot curb idle speed are set to specifications before performing these tests.*

Carburetor Switch Test – 1) Turn ignition off and disconnect 10-wire connector from computer. With throttle completely closed, check continuity with ohmmeter leads connected to cavity 7 and ground.

NOTE – *Grounding carburetor switch eliminates all spark advance on most systems.*

2) If no continuity is read, check wire from cavity 7 to carburetor switch terminal. Also check carburetor switch for proper operation.

3) Open throttle and again check for continuity from cavity 7 to ground. There should be none.

NOTE – *After performing carburetor switch test, perform tests on the spark control system and fuel control system.*

ELECTRONIC THROTTLE CONTROL SYSTEM TEST

1) Connect a tachometer to engine. Start and run engine until normal operating temperature is obtained. On vehicles without air conditioning, depress and release accelerator. An RPM higher than curb idle speed should be seen for specified time shown in EGR and Throttle Control Specifications table.

2) On vehicles equipped with air conditioning or rear window defogger, turning on the air conditioning or rear window defogger and depressing accelerator for a moment, should give a RPM higher than curb idle speed. Turning air conditioning or rear window defogger off will result in normal idle speed.

NOTE – *The air conditioning clutch will cycle on and off as it is running. DO NOT mistake this for electronic throttle control operation.*

3) On all vehicles, if speed increases do not occur as outlined above, turn engine off and disconnect 3-wire connector at carburetor (idle stop solenoid and duty cycle solenoid). Using an ohmmeter, check the resistance of the solenoid by measuring from the 3-wire connector containing the Black wire to ground. Resistance should be 15-35 ohms. If not, replace idle stop solenoid.

EGR & Throttle Control Specifications

Computer Part No.	Delay (Seconds)
4145907	20
4145980	20
4145996	60
4145998	60
4289034	60

4) On vehicles without air conditioning or rear window defogger, start vehicle and, before specified time has elapsed, measure voltage at Black wire of 3-wire connector. Voltmeter reading should equal charging system voltage. If voltmeter reading does not equal charging system voltage, replace the Gray start timer on 3.7L Federal models, and on all other models, replace the computer.

5) On air conditioned vehicles, start engine and turn air conditioner on. Measure voltage at Black wire of 3-wire connector. Voltmeter reading should equal charging system voltage AFTER specified time has elapsed. If not, check wiring back to instrument panel for an open circuit.

ELECTRONIC EGR SYSTEM TEST

NOTE – *The engine temperature sensors must be working properly before performing this test.*

1) With the engine temperature cold and ignition switch off, connect a voltmeter between Gray wire on EGR solenoid and ground. Start engine. Voltage should read less than 1 volt. This reading should be maintained until normal operating temperature is reached and specified time has elapsed as shown in EGR and Throttle Control Specifications table.

2) After normal operating temperature is reached and time has elapsed, voltmeter should register charging system voltage. If voltage readings are not obtained as outlined, replace EGR solenoid and repeat test. If the voltmeter indicates charging system voltage prior to elapse of specified time, replace computer.

NOTE – *If an engine is restarted while still at normal operating temperature, the voltmeter reading should register 1 volt for the specified time, then register charging system voltage.*

ELECTRONIC AIR SWITCHING TESTS

NOTE – *Follow the test procedure for Air Switching System Diagnosis (Vacuum Supply and Air Switching Valve) described in ELECTRONIC FUEL CONTROL SYSTEM TESTS.*

DETONATION SENSOR TEST

NOTE – *This test applies only to the 5.2L engine.*

1) Connect a variable timing light to engine. Start engine and run it on second highest step of fast idle cam (about 1200 RPM). Connect an auxiliary vacuum supply of 16 in. Hg vacuum.

2) Tap lightly on the manifold near the sensor, using a small end wrench. Using the timing light, look for a decrease in spark advance. The amount of decrease in timing should be in proportion to the strength and frequency of the tapping. Maximum decrease in timing would be 11°. Shut off engine and disconnect timing light.

MAINTENANCE

The EFC system does not require periodic maintenance. However, when vehicle is raised for other services, check condition of catalytic converter, oxygen sensor and exhaust system.

REMOVAL & INSTALLATION

SPARK CONTROL COMPUTER

NOTE – *Do not remove grease from 10-wire or 12-wire harness connectors or connector cavities in computer. The*

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grease is used in order to prevent moisture from corroding the terminals. If there is not at least 1/4" of grease on bottom of computer connector cavities, apply a liberal amount of Mopar multi-purpose grease No. 2932524 (or equivalent) over entire end of connector plug before reinstalling.

Removal & Installation – Remove negative battery terminal. Disconnect 10-wire and 12-wire connectors from computer. Remove vacuum hose from vacuum transducer. Remove mounting screws from inside air cleaner and remove computer. To install, reverse removal procedure.

NOTE – *Computer is not serviceable. Do not attempt to take it apart for any reason. Also, if the vacuum transducer becomes defective, entire computer must be replaced.*

CHARGE TEMPERATURE & COOLANT SWITCH COOLANT TEMPERATURE SENSOR

Removal & Installation – Disconnect electrical connector and remove switch/sensor. To install, coat with anti-seize compound and reverse removal procedure.

MAGNETIC PICK-UP ASSEMBLY

NOTE – *Replacement of Magnetic Pick-Up Assembly requires overhaul of distributor.*

CARBURETOR SWITCH

Removal & Installation – Remove bracket and switch assembly from carburetor. Disconnect electrical connector. To install, reverse removal procedure and adjust if necessary.

DUTY CYCLE SOLENOID

Removal & Installation – Disconnect electrical connector. Remove retaining screws, duty cycle solenoid and gasket. To install, reverse removal procedure.

OXYGEN SENSOR

Removal & Installation – Disconnect battery cable and electrical lead at sensor. Remove sensor. To install, coat threads of new sensor with nickel-based anti-seize compound. Do not use graphite or other compounds. Start sensor by hand, then tighten to 35 ft. lbs. Connect electrical connector and battery cable.

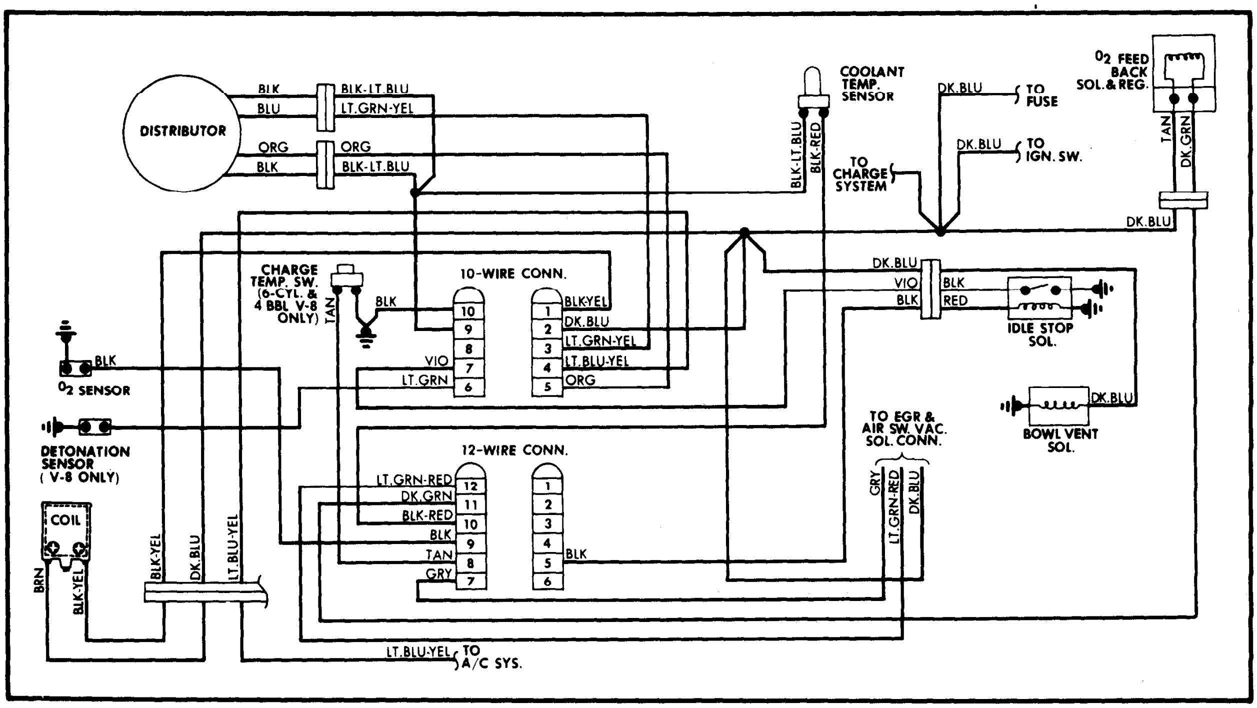

Fig. 15 Wiring Diagram for 3.7L and 5.2L Electronic Fuel Control System