

# 1974-79 EXHAUST EMISSION SYSTEMS

## Honda Throttle Control System

3-229

Accord, Civic CVCC, Prelude

### DESCRIPTION

The throttle control system is one of three sub-systems of Honda's CVCC system. Exhaust hydrocarbon (HC) emissions during periods of gear shifting and deceleration are controlled by the carburetor throttle control diaphragm according to two interrelated systems.

### DASHPOT SYSTEM

This system, used on all models, slows down the closing of the throttle. During periods of deceleration, ported vacuum in the carburetor acts on the throttle controller through the dashpot check valve to hold the throttle slightly open. See Fig. 1.

The fixed orifice in the dashpot check valve gradually decreases the vacuum until the throttle closes completely. The speed at which the throttle closes is determined by the size of the fixed orifice in the dashpot check valve, the tension of the throttle return spring, and the amount of vacuum generated at the carburetor port above the preset level in the dashpot check valve.

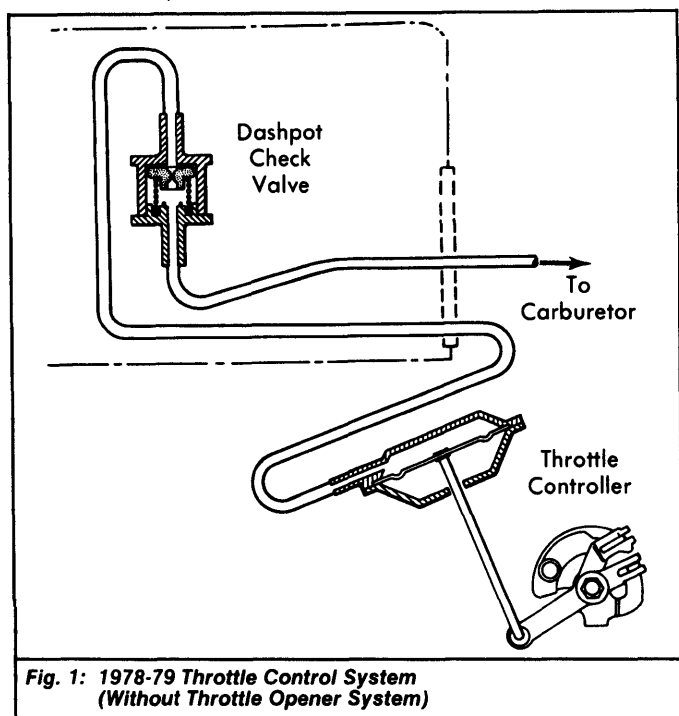


Fig. 1: 1978-79 Throttle Control System (Without Throttle Opener System)

### THROTTLE OPENER SYSTEM

The throttle opener system is used on all high altitude and California manual transmission equipped models. See Fig. 2. Functioning as a throttle positioner, above 15-20 MPH, the speed sensor in the speedometer causes the throttle opener solenoid valve to open, allowing vacuum to enter the throttle control valve.

When this vacuum exceeds a preset value (during deceleration), the throttle control valve opens and the throttle control diaphragm opens the throttle a fixed amount to improve combustion.

When vehicle speed drops below approximately 5-10 MPH, or the vacuum drops below the throttle control valve's preset value, the throttle control valve closes and the residual vacuum in the system is relieved through the orifice in the throttle control valve.

### THROTTLE CONTROL VALVE

**California Models** - Actuation of the throttle controller is by the throttle control valve. See Fig. 3. When the manifold vacuum exceeds a preset value, the valve opens and the vacuum is introduced into the throttle opener.

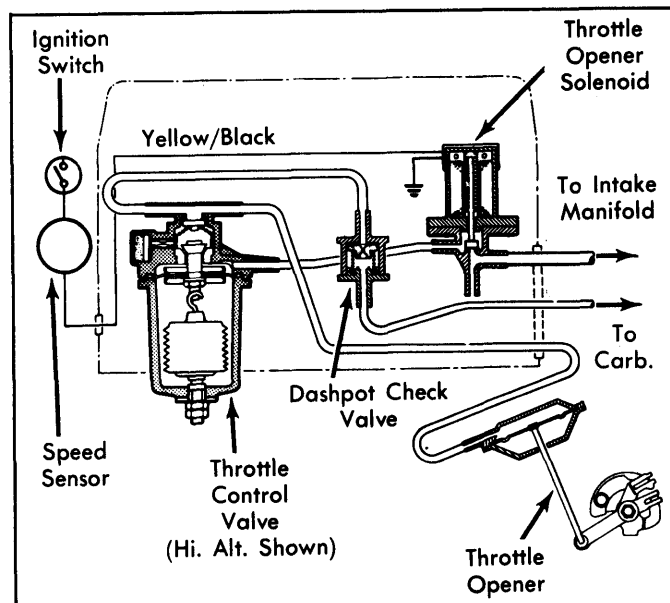


Fig. 2: 1978-79 Throttle Control System (With Throttle Opener System)

When intake manifold vacuum becomes less than the preset value, the valve is closed and the remaining vacuum in the throttle controller and the throttle control valve is returned to atmospheric pressure by the orifice.

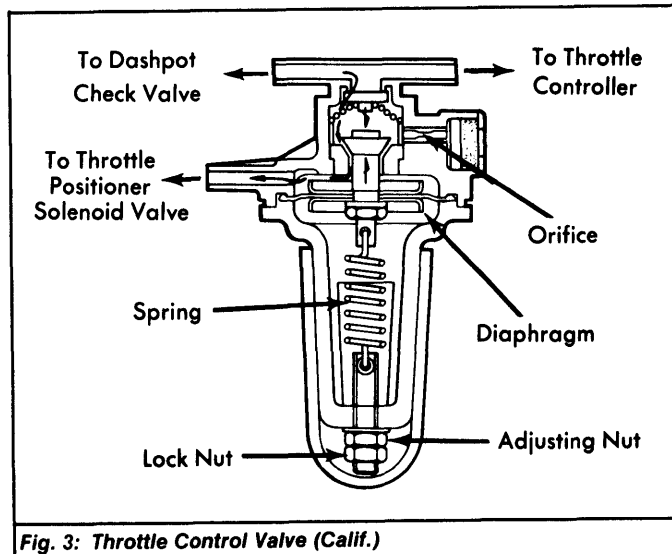


Fig. 3: Throttle Control Valve (Calif.)

**High Altitude Models** - This control valve is similar to the valve used on California applications, except that tension on the diaphragm is controlled by an aneroid bellows, which is sensitive to altitude (atmospheric pressure). See Fig. 4.

**1979 Accord & Prelude** - The throttle control valve used on these models incorporates a dashpot check valve. This check valve is separated from the control valve by a second check valve. Closing time of the throttle is regulated by both the dashpot check valve and the atmospheric pressure sensing bellows, which controls tension on the diaphragm. As altitude increases, less vacuum is required to keep the valve open, thus keeping the throttle open longer.

### SPEED SENSOR

**California & High Altitude** - The speed sensor, which is essentially an oscillating coil, is assembled in the speedometer. This sensor is operated at a predetermined vehicle speed by the sealed plate rotating with the speedometer shaft.

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## TESTING

### DASHPOT SYSTEM

**1975 Models** - 1) Disconnect vacuum hose from dashpot. Connect tachometer to engine. Start engine, lift dashpot arm fully, and plug vacuum port on dashpot. Engine speed should increase.

2) Keeping vacuum port plugged, release dashpot arm. Engine speed should stabilize and maintain 2000-4000 RPM. If speed is too low, widen slot in dashpot speed adjustment lever. If speed is too high, narrow slot in dashpot speed adjustment lever.

3) Reconnect vacuum hose and turn ignition on. Lift dashpot arm fully and release, counting time required for throttle valve to return to idle. If throttle valve does not close or takes longer than 4 seconds, replace dashpot solenoid.

4) If throttle valve closes in less than one second, measure voltage between emission control box connector Black/Yellow wire and Black (ground) wire. If 12 volts exist, replace faulty solenoid. If no voltage exists, check wiring or fuse.

**1976 Models** - 1) Connect tachometer to engine. Start engine and allow to reach normal operating temperature (cooling fan comes on). Disconnect hose from throttle opener diaphragm and connect a hand-held vacuum pump.

2) With engine running, apply at least 16 in. Hg of vacuum for more than one minute. Check that engine speed rises to RPM shown in THROTTLE OPENER SPECIFICATIONS table.

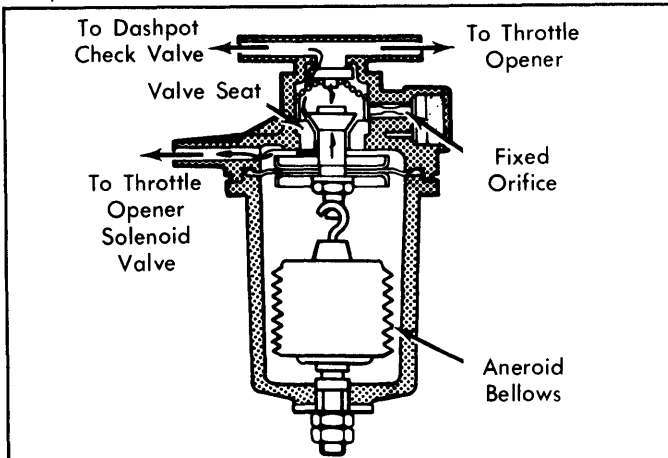


Fig. 4: Throttle Control Valve (High Altitude)

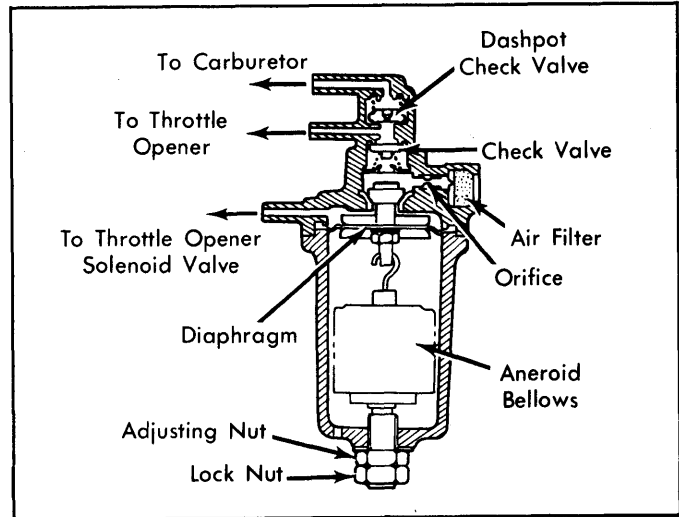


Fig. 6: Throttle Control Valve (1979 Accord & Prelude)

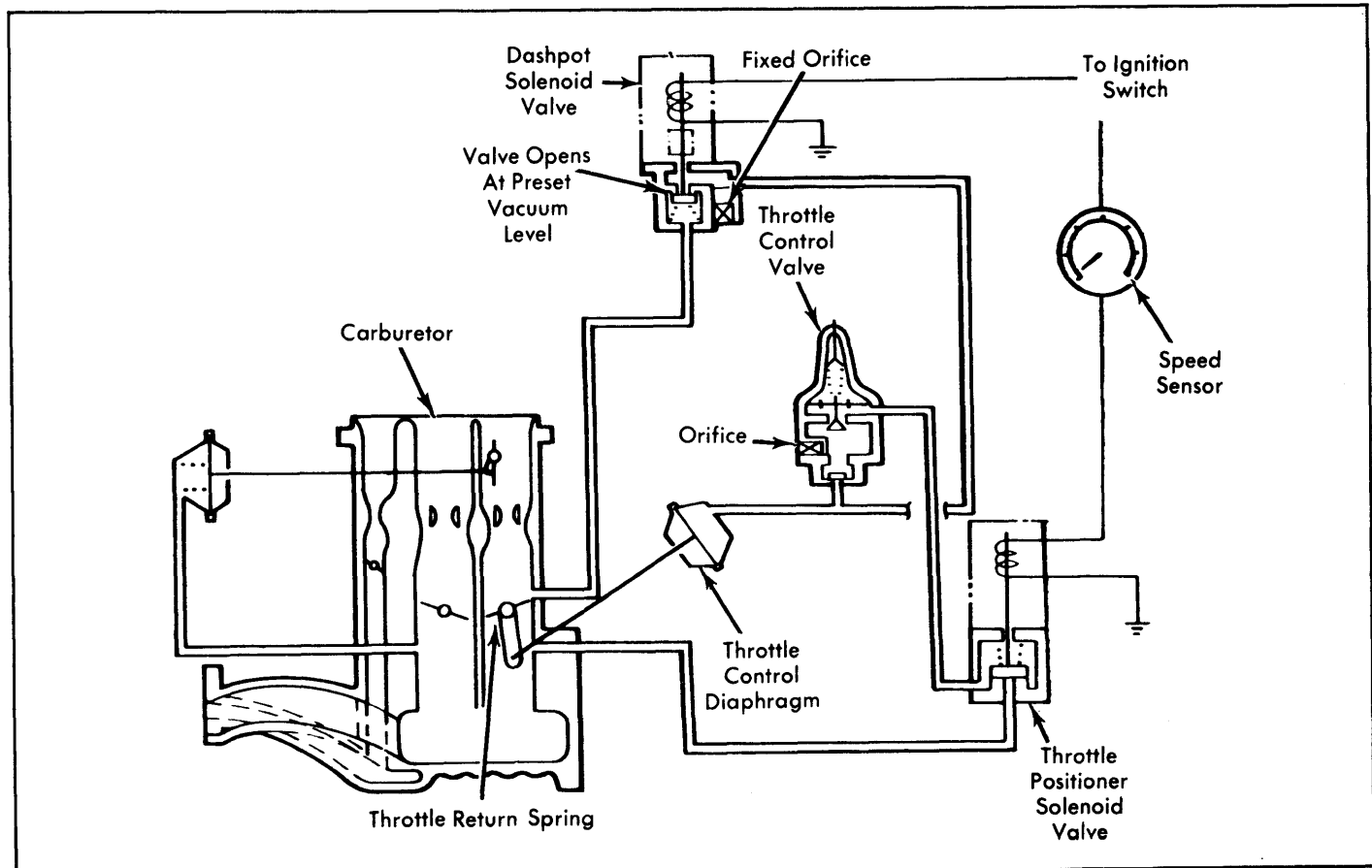


Fig. 5: 1976 Throttle Control System

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## Honda Throttle Control System (Cont.)

- 3) If speed is too low, widen adjustment slot in throttle control linkage. See Fig. 7. If speed is too high, narrow slot opening. If speed cannot be adjusted, or diaphragm will not hold vacuum, replace diaphragm and repeat test.
- 4) Reconnect vacuum hose. Raise engine speed to 3500 RPM and maintain for 2-3 seconds. Quickly release throttle. Engine should return to idle in 1-4 seconds. If throttle closes in less than one second, go to next step. If throttle takes longer than 4 seconds, go to step 8).
- 5) If throttle closes in less than one second, disconnect vacuum hose from throttle control diaphragm. See Fig. 6. Connect a vacuum gauge to hose. Raise engine speed to 4000 RPM. Vacuum should be at least 1.2 in. Hg.
- 6) If vacuum exists, by-pass throttle control valve and repeat step 4). If throttle control diaphragm is good, replace control valve. If throttle still returns in less than 1 second, check voltage at dashpot solenoid.
- 7) If voltage (12 volts) exists, replace dashpot solenoid. Remove throttle control by-pass and repeat step 4). If vacuum is below minimum, check hoses for leaks, or blocked carburetor port.
- 8) If throttle takes longer than 4 seconds to return, replace by-pass throttle control valve and retest. If return time does not change, replace dashpot.
- 9) If return time is now within limits, check throttle positioner solenoid for voltage. If voltage exist, replace speed sensor. If no voltage exists, replace throttle positioner solenoid and repeat step 4).

- 1977-79 Models** - 1) Connect tachometer to engine. Start engine and allow to reach normal operating temperature (cooling fan comes on). Check throttle opener by disconnecting hose from throttle opener diaphragm and connecting a hand-held vacuum pump.
- 2) With engine running, apply at least 16 in. Hg of vacuum for more than one minute. Check that engine speed rises to RPM shown in THROTTLE OPENER SPECIFICATIONS table.
  - 3) If speed is too low, widen adjustment slot in throttle control linkage. See Fig. 7. If speed is too high, narrow slot opening. If speed cannot be adjusted, or diaphragm will not hold vacuum, replace diaphragm and repeat test.
  - 4) Reconnect vacuum hose. Raise engine speed to 3500 RPM and maintain for 2-3 seconds. Quickly release throttle. Engine should return to idle in 1-4 seconds. If not, see TROUBLE SHOOTING in this article.

### THROTTLE OPENER SPECIFICATIONS

Application	RPM
1976 .....	2500-3500
1977-78	
Man. Trans. ....	2700
Auto. Trans. ....	2200
1979	
Civic CVCC	
Man. Trans. ....	1700-2700
Auto. Trans. ....	1500-2500
Accord & Prelude .....	2000-3000

1 - Set to 2200-3200 RPM on models with throttle control valve.

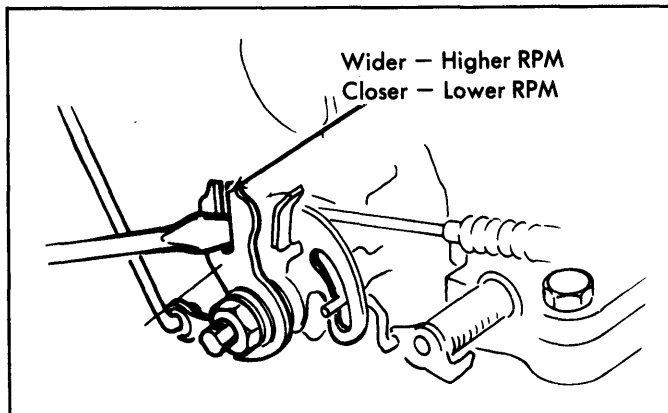


Fig. 7: Adjusting Throttle Opener Speed

### THROTTLE OPENER SYSTEM

- 1975 Models** - 1) Start engine and warm to normal operating temperature (cooling fan comes on). Disconnect vacuum hose from throttle opener diaphragm. See Fig. 8. Connect a hand-held vacuum pump to diaphragm.
- 2) Apply at least 15-20 in. Hg of vacuum to diaphragm. Engine speed should stabilize and remain at 1500-2500 RPM. If speed is too low, widen slot in dashpot speed adjustment lever. If speed is too high, narrow slot in dashpot speed adjustment lever.
  - 3) Disconnect vacuum hose from dashpot diaphragm. Connect a jumper wire from positive battery terminal to Yellow/Black wire of emission control box connector. Slowly increase engine speed to 4000 RPM and release throttle.
  - 4) If throttle takes less than 3 seconds or longer than 5 seconds to return to idle, remove emission control box cover and throttle opener control valve cover. Loosen lock nut and turn adjusting nut clockwise to decrease time or counterclockwise to increase return time.
  - 5) If throttle opener time cannot be changed, check voltage at throttle opener solenoid valve. Connect voltmeter positive probe to emission control box connector Yellow/Black wire and negative probe to Black wire.
  - 6) If 12 volts exist, throttle opener solenoid or throttle control valve are at fault. To test throttle control valve, remove vacuum hose to throttle opener solenoid. If vacuum is present, replace faulty throttle control valve.

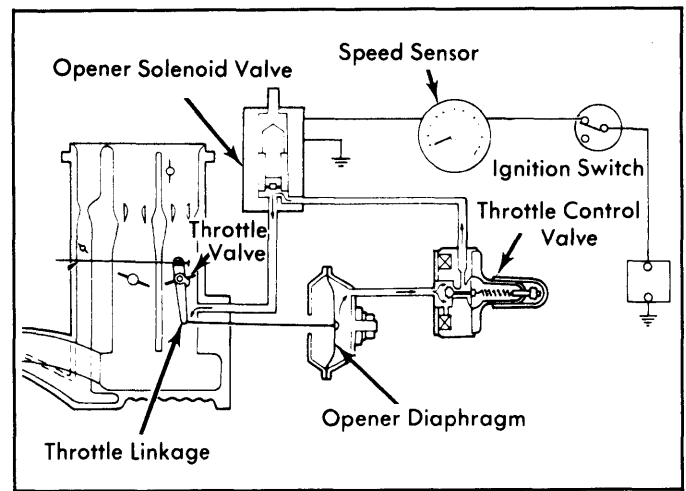


Fig. 8: 1975 Throttle Opener System

- 1976 Models** - 1) Perform DASHPOT SYSTEM test. By-pass the speed sensor by applying battery voltage to Yellow/Black wire at emission control box connector.
- 2) Squeeze vacuum hose shut between dashpot solenoid valve and carburetor. Raise engine speed to 3500 RPM and release throttle. Engine should return to idle in 2-8 seconds. If return time is out of limits, remove throttle control valve cover.
  - 3) Loosen lock nut on valve and turn adjusting nut clockwise to decrease return time or counterclockwise to increase return time. Tighten lock nut and retest. If return time cannot be increased, measure voltage at throttle positioner solenoid.
  - 4) If voltage (12 volts) exists, replace either throttle positioner solenoid or throttle control valve. To test throttle control valve, remove vacuum hose and check for vacuum. If vacuum exists, throttle control valve is defective.
- 1977 California & High Altitude Models** - 1) Perform DASHPOT SYSTEM test. By-pass the speed sensor by applying battery voltage to Yellow/Black wire at emission control box connector.
- 2) Squeeze vacuum hose shut between dashpot solenoid valve and carburetor (vacuum hose No. 3). Raise engine speed to 3500 RPM and release throttle. Engine should return to idle in 2-8 seconds. If return time is out of limits, remove throttle control valve cover.

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## Honda Throttle Control System (Cont.)

3) Loosen lock nut on valve and turn adjusting nut clockwise to decrease return time or counterclockwise to increase return time. Tighten lock nut and retest. If return time cannot be adjusted, see TROUBLE SHOOTING in this article.

**1978-79 California Man. Trans. & High Altitude Models** - 1) Perform DASHPOT SYSTEM test. By-pass the speed sensor by applying battery voltage to Yellow/Black wire at emission control box connector.

2) Raise engine speed to 3500 RPM and release throttle. Engine should return to idle in 2-8 seconds. If return time is out of limits, remove throttle control valve cover.

3) Loosen lock nut on valve and turn adjusting nut clockwise to decrease return time or counterclockwise to increase return time. Tighten lock nut and retest. If return time cannot be decreased, replace throttle control valve. If return time cannot be increased, see TROUBLE SHOOTING in this article.

### SPEED SENSOR CHECK

1) Jack up front of vehicle and support with safety stands. Block rear wheels and set parking brake.

2) Connect voltmeter positive probe to Yellow/Black wire terminal at emission control box connector. Connect negative probe to known good ground (Black ground wire). See Fig. 9. Start engine.

3) Select 2nd gear and accelerate engine slowly while observing voltmeter. Voltmeter should show battery voltage above 5-15 MPH (above 20 MPH on Accord and Prelude). With vehicle speed below 5 MPH (10 MPH on Accord and Prelude), voltmeter should show no voltage.

4) If no voltage exists above specified MPH, check for bad electrical connections, blown fuse, or faulty speed sensor. Repair or replace as necessary. If voltage readings do not agree with specified MPH range, install new speedometer and speed sensor assembly and repeat test.

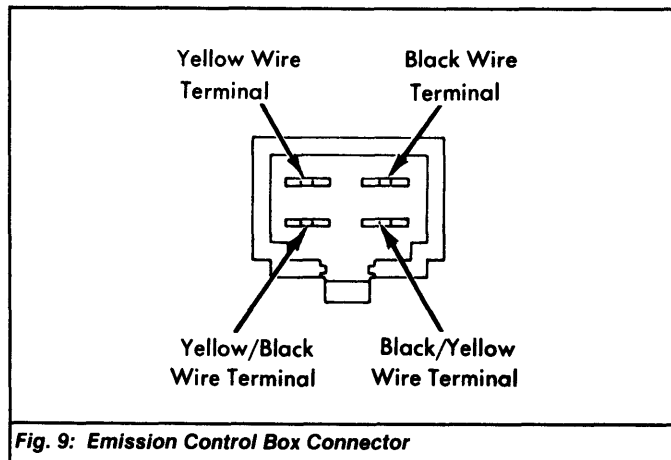


Fig. 9: Emission Control Box Connector

### TROUBLE SHOOTING

#### THROTTLE VALVE CLOSSES IN LESS THAN ONE SECOND

**1977 Models** - 1) Disconnect vacuum hose from throttle control diaphragm. Connect vacuum gauge to hose. Vacuum should be at least 1.2 in. Hg at 4000 RPM.

2) On Federal models, if there is vacuum, replace dashpot check valve and repeat THROTTLE OPENER SYSTEM test. On California and high altitude models, if there is vacuum, by-pass throttle control valve and repeat THROTTLE OPENER SYSTEM test.

3) If throttle return time is within specification, replace throttle control valve. If throttle return time is still less than one second, check for vacuum at dashpot.

4) If vacuum is available, replace dashpot check valve. If no vacuum, check hoses for leaks. Remove throttle control by-pass and repeat THROTTLE OPENER SYSTEM test.

5) On all models, if no vacuum is available, check for vacuum at carburetor vacuum port. If vacuum is available at carburetor vacuum port, check hoses for leaks or blockage. Repeat THROTTLE OPENER

SYSTEM test. If there is no vacuum at carburetor, clean port and repeat THROTTLE OPENER SYSTEM test.

**1978-79 Models** - 1) Disconnect vacuum hose from throttle control diaphragm. Connect vacuum gauge to hose. Vacuum should be at least 1.2 in. Hg at 4000 RPM.

2) On all automatic transmission and Federal manual transmission equipped models, if there is vacuum, replace dashpot check valve and repeat THROTTLE OPENER SYSTEM test.

3) On 1978 models and 1979 Civic high altitude and California manual transmission equipped models, if there is vacuum, by-pass throttle control valve and repeat THROTTLE OPENER SYSTEM test.

4) If throttle return time is within specification, replace throttle control valve. If throttle return time is still less than one second, check for vacuum at dashpot.

5) If vacuum is available, replace dashpot check valve. If no vacuum, check hoses for leaks. Remove throttle control by-pass and repeat THROTTLE OPENER SYSTEM test.

6) On 1979 Accord and Prelude high altitude and Calif. manual transmission equipped models, if there is vacuum, replace control valve and repeat THROTTLE OPENER SYSTEM test.

7) On all models, if no vacuum is available, check for vacuum at carburetor vacuum port. If vacuum is available at carburetor vacuum port, check hoses for leaks or blockage. Repeat THROTTLE OPENER SYSTEM test. If there is no vacuum at carburetor, clean port and repeat THROTTLE OPENER SYSTEM test.

#### THROTTLE TAKES LONGER THAN 4 SECONDS TO RETURN

**1977 Models** - 1) On Federal models, replace dashpot check valve and repeat THROTTLE OPENER SYSTEM test. On California and high altitude models, by-pass throttle control valve and repeat THROTTLE OPENER SYSTEM test.

2) If there is no change, replace dashpot check valve. If throttle return is within limits after by-passing throttle control valve, check throttle positioner solenoid valve for voltage. If voltage exists, replace speed sensor. If no voltage exists, replace solenoid valve and repeat THROTTLE OPENER SYSTEM test.

**1978-79 Models** - 1) On all automatic transmission and Federal manual transmission equipped models, replace dashpot check valve and repeat THROTTLE OPENER SYSTEM test.

2) On 1978 models and 1979 Civic high altitude and California manual transmission equipped models, by-pass throttle control valve by disconnecting the two top hoses from valve and connecting them together. Repeat THROTTLE OPENER SYSTEM test.

3) If there is no change, replace dashpot check valve. If throttle return is within limits after by-passing throttle control valve, check throttle positioner solenoid valve for voltage.

4) If voltage exists, replace speed sensor. If no voltage exists, replace solenoid valve and repeat THROTTLE OPENER SYSTEM test.

5) On 1979 Accord and Prelude high altitude and California manual transmission equipped models, pinch hose between throttle positioner solenoid valve and control valve. Repeat THROTTLE OPENER SYSTEM test.

6) If there is no change, replace control valve. If throttle return is within limits with hose pinched, check for voltage at throttle opener solenoid valve.

7) If voltage exists, replace speed sensor/speedometer assembly. If no voltage exists, replace throttle opener solenoid valve. Repeat THROTTLE OPENER SYSTEM test.

#### THROTTLE CONTROLLER TIME CANNOT BE INCREASED

1) Test throttle positioner solenoid valve for voltage. If voltage exists, it indicates either a failed throttle opener solenoid valve or a failed throttle control valve.

2) Disconnect vacuum hose to throttle opener diaphragm and check for vacuum. If vacuum is present, replace throttle control valve and retest. If no vacuum is present, replace throttle opener solenoid valve and retest.