HONDA THROTTLE CONTROL SYSTEM

Accord
Civic
Prelude

DESCRIPTION & OPERATION

The throttle system is used to reduce hydrocarbon (HC) emissions during gear shifting and deceleration. The throttle opener diaphragm holds the throttle open slightly as necessary to improve combustion. System consists of a throttle control valve, a speed sensor, a throttle opener solenoid valve, a throttle opener diaphragm, a dashpot check valve (mounted inside throttle control valve), and hoses and wires connecting the various components. The Federal Civic Hatchback with a 1500 engine and manual transmission is also equipped with a engine RPM sensor, a thermosensor, and a second throttle opener solenoid valve.

DASHPOT SYSTEM

This system functions as a dashpot to slow 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 open slightly.

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.

THROTTLE OPENER SYSTEM

All Models Except Federal Civic Hatchback with 1500 Eng. & Man. Trans. – The throttle opener is controlled by a solenoid valve, control valve, and speed sensor. When vehicle speed is above 15 MPH, the speed sensor causes the solenoid valve to open and allow manifold vacuum to the control valve. When the manifold vacuum exceeds a preset value (which occurs during deceleration), the valve opens and the throttle opener opens the throttle a small amount to improve combustion.

When vehicle speed drops below 10 MPH, the speed sensor closes the solenoid valve, control vacuum drops, and the throttle positioner vacuum is relieved through an orifice. Carburetor return spring tension closes the throttle.

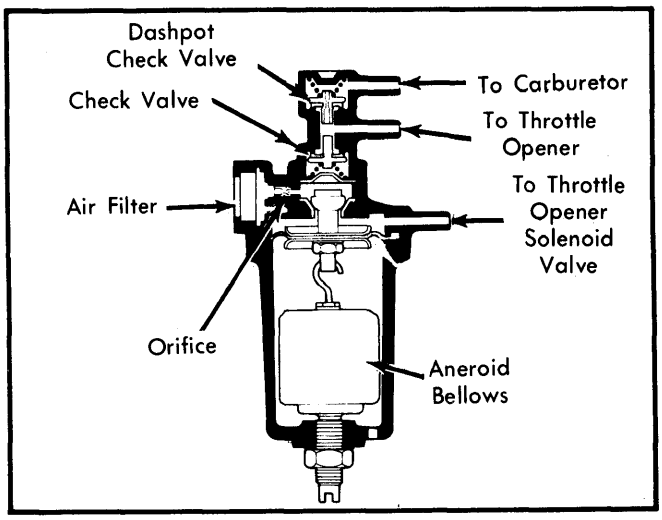

Fig. 2 Throttle Control Valve

Federal Civic Hatchback with 1500 Eng. & Man. Trans. – When manifold vacuum exceeds the preset level of the throttle control valve (which happens during deceleration), vacuum is applied through the control valve to the throttle opener diaphragm. This opens the throttle a fixed amount for improved combustion.

When vehicle speed is below the preset speed of the speed sensor, throttle opener solenoid valve A is closed and no vacuum reaches the control valve.

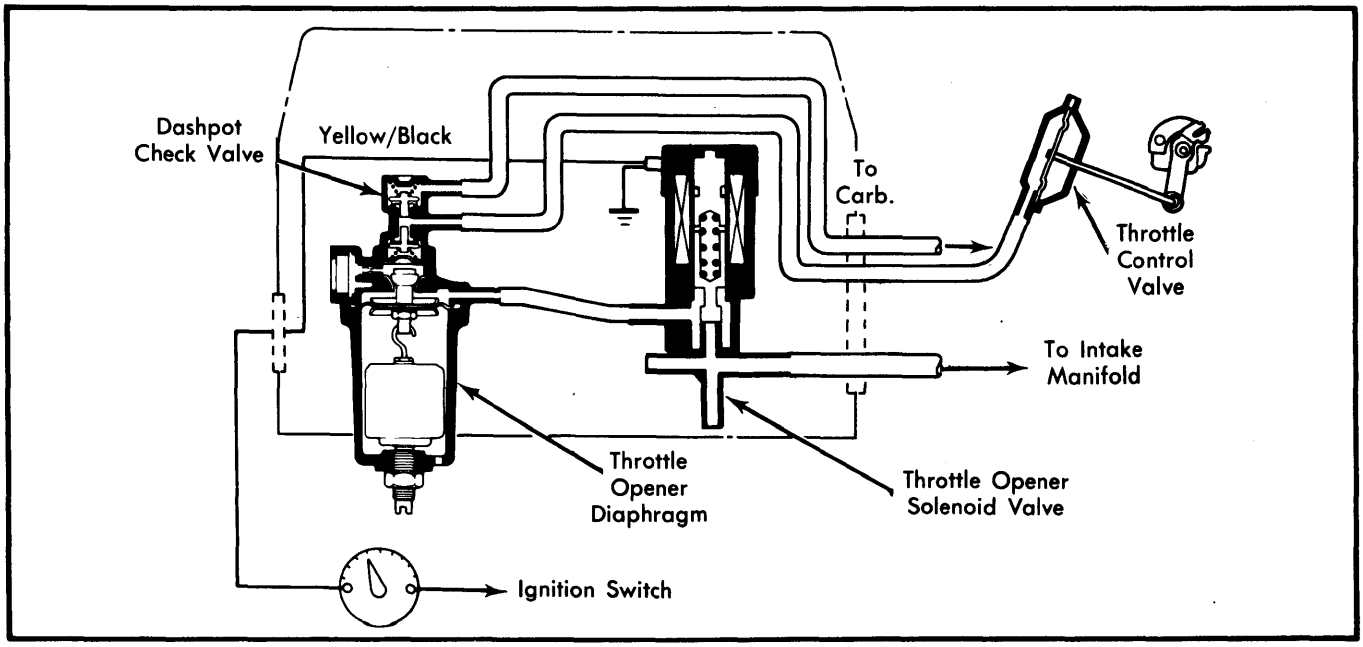

Fig. 1 Throttle Control System Diagram
(All Models Except Federal Civic Hatchback with 1500cc Eng. & Man. Trans.)

HONDA THROTTLE CONTROL SYSTEM (Cont.)

When vehicle speed is above the preset speed of speed sensor, throttle opener solenoid valve A is opened. When engine coolant temperature is below the preset temperature of the thermosensor or engine speed exceeds the preset speed of the engine RPM sensor, throttle opener solenoid valve B is closed so that manifold vacuum is applied to the control valve without leakage. When throttle opener solenoid valve B is opened, manifold vacuum is bled through an orifice in the valve, decreasing the opening time of the throttle control valve.

Throttle Control Valve – The throttle control valve incorporates the dashpot check valve in its top section. This check valve is separated from the control valve by a second check valve. Closing time of the throttle is regulated by the dashpot check valve and the atmospheric pressure sensing bellows, which controls tension on the diaphragm. As altitude increases, less vacuum is needed to keep the valve open, thus keeping the throttle open longer.

Speed Sensor – The speed sensor is a photo cell mounted in the speedometer head. The speed sensor provides a "ON" signal above 15 MPH and a "OFF" signal below 15 MPH.

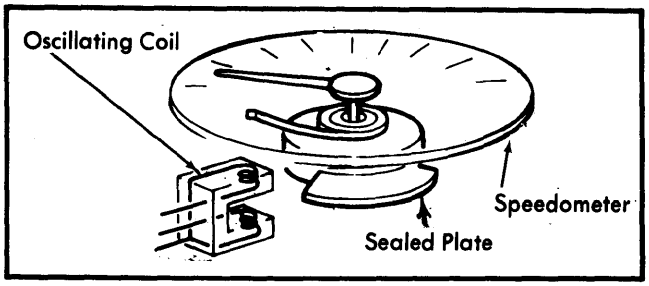

Fig. 3 Throttle Control System Speed Sensor

TESTING

DASHPOT SYSTEM CHECK

Civic Hatchback with 1500 Eng. & Man. Trans. (Engine Cold) – 1) With ignition key on, disconnect vacuum hose at throttle control valve and connect vacuum pump to hose. Draw vacuum. Vacuum should hold.

2) If vacuum does not hold, check for voltage on blue wire of connector at throttle opener solenoid valve B. If there is voltage, replace throttle opener solenoid valve B. If there is no voltage, check thermosensor for continuity.

3) If there is no voltage at thermosensor, replace thermosensor and retest. If there is voltage, check fuse and wiring.

All Models (Engine Hot) – 1) Connect a tachometer to the engine. Start engine and allow to reach normal operating temperature (cooling fan on).

2) Check throttle opener speed by disconnecting hose from the throttle opener diaphragm and connecting a hand vacuum pump.

3) With engine running, apply at least 16 in. Hg for more than one minute and check that engine speed rises to RPM shown in the following table.

Throttle Opener Speed

Application	RPM
Civic	
Man. Trans.	3000-4000
Auto. Trans.	2700-3700
Accord & Prelude	2300-3300

NOTE – *Engine should rise to specified RPM within 1 minute.*

4) If necessary, adjust engine speed; if speed was too low, widen adjustment slot in dashpot speed adjustment lever using a screwdriver; if too high, narrow the slot with suitable pair of pliers; if speed cannot be adjusted, or diaphragm will not hold vacuum, replace the diaphragm and repeat test.

5) Reconnect vacuum hose and raise engine speed to 3500 RPM and maintain for 2-3 seconds. Quickly release throttle.

6) Engine should return to idle in 1-4 seconds. If return time is correct, proceed to "Throttle Opener Check".

7) If return time is less than 1 second, "T" a vacuum gauge into the lower vacuum line at dashpot check valve. Vacuum should be at least 1.2 in. (30 mm) Hg at 4000 RPM. If so, replace control valve. If less, clean carburetor port and hoses and repeat test in step **5)**.

8) If idle return time is more than 4 seconds, clamp hose between throttle opener solenoid valve and control valve, then repeat test. If no change, replace control valve. If test is now within limits, check for voltage at solenoid valve. If voltage is present, replace speed sensor. If no voltage, replace throttle opener solenoid valve.

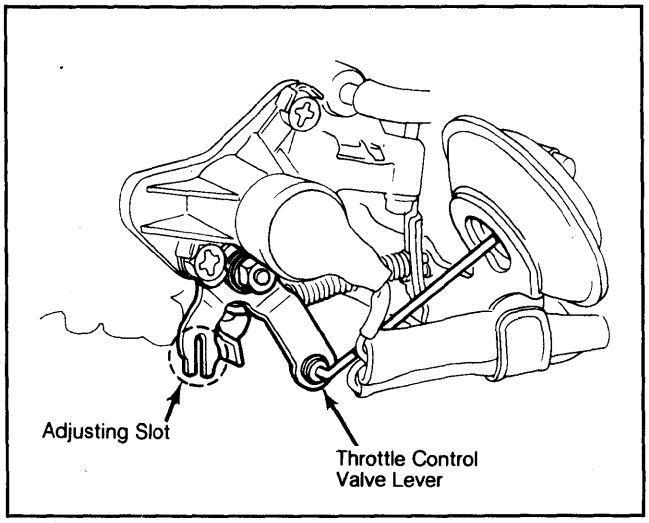

Fig. 4 Widening Dashpot Speed Adjusting Lever

THROTTLE OPENER CHECK

All Models (Engine Hot) – 1) Complete "Dashpot System Check" as outlined previously.

HONDA THROTTLE CONTROL SYSTEM (Cont.)

2) Bypass the speed sensor by applying battery voltage to yellow/black wire at throttle opener solenoid connector.

3) Raise engine speed to 3500 RPM and release throttle. Engine should return to idle in less than 6 seconds, but not faster than dashpot check time.

4) If return time is less than check valve time, remove vacuum line from throttle opener solenoid valve to throttle control valve. Feel for vacuum at throttle opener solenoid.

5) If vacuum is present, replace throttle control valve. If no vacuum, replace throttle opener solenoid valve. If return time to idle was more than seconds, replace throttle control valve. After component replacement, retest system and remove jumper wires.

SPEED SENSOR CHECK

All Models (Engine Hot) – 1) Jack up front of car and support with safety stands. Block rear wheels and set parking brake.

2) Connect voltmeter positive probe to yellow/black wire terminal at control box connector. Connect negative probe to a suitable ground.

3) Start engine. Select second gear and accelerate slowly while observing voltmeter.

4) Voltmeter should show voltage above 15 MPH. Below this speed, no voltage should be shown.

5) If voltage is present at the wrong speed, replace speed sensor. If no voltage is present, check fuse and related wiring and repair as necessary.

ENGINE RPM SENSOR

Federal Civic Hatchback with 1500 Eng. & Man. Trans. Only (Engine Hot) – 1) Disconnect lower hose at throttle control valve and install vacuum pump to hose.

2) With ignition key on, draw vacuum. No vacuum should hold. If there is vacuum, check operation of thermosensor and throttle opener solenoid valve B. Repair or replace as necessary and retest.

3) If there is no vacuum, draw vacuum with engine at 2500 RPM. If there is vacuum, test is complete. If there is no vacuum, check for voltage at blue wire of connector for throttle opener solenoid valve B. If there is voltage, replace valve B and retest. If there is no voltage, replace engine RPM sensor.

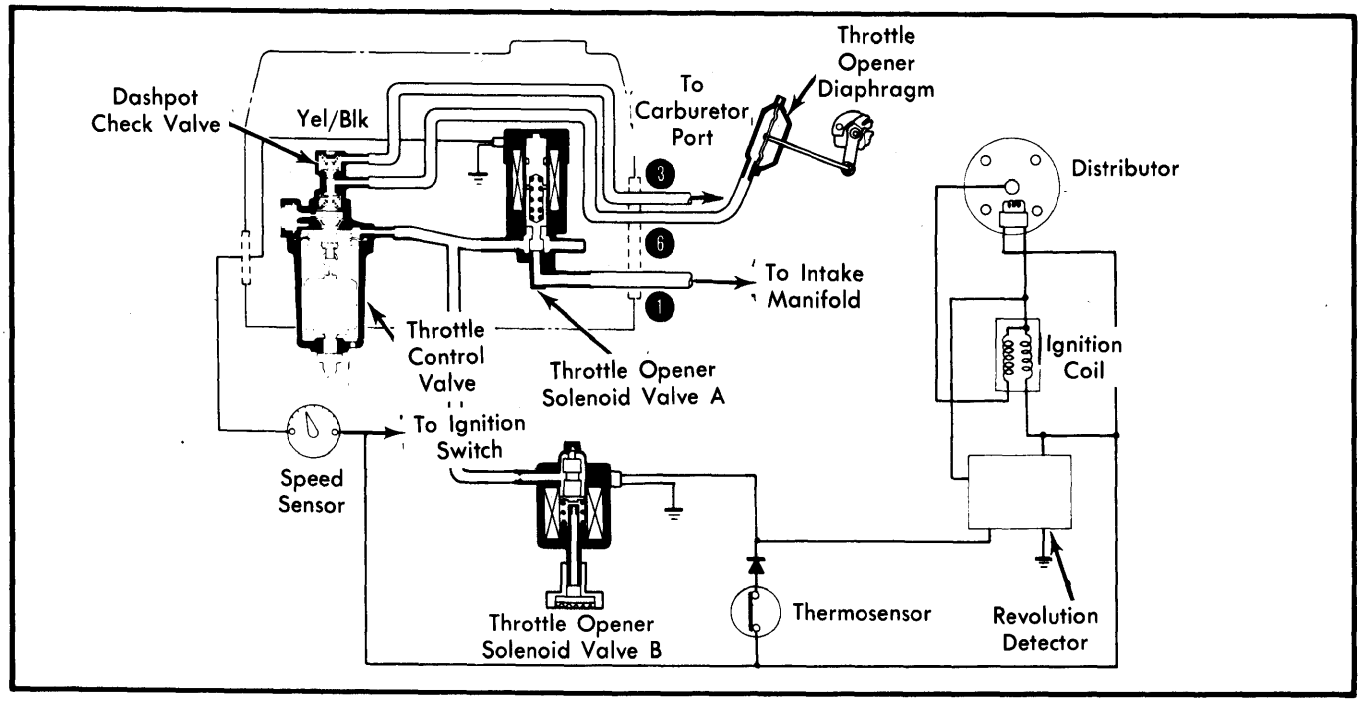

Fig. 5 Throttle Control System Diagram (Federal Civic Hatchback with 1500 Eng. & Man. Trans.)