HONDA IGNITION TIMING CONTROL SYSTEM

All Models

DESCRIPTION & OPERATION

All Honda engines have ignition control systems to achieve low emission levels, maximum fuel economy, and best engine performance. Each engine application has a specific system, designed to advance and retard ignition timing as necessary. The systems are composed as follows:

Civic 1300 – The engine coolant thermosensor energizes the ignition solenoid valve when coolant temperature is below 167° F. Manifold vacuum is allowed through the valve to control vacuum advance. When the engine warms up, the solenoid is de-energized and there is no vacuum advance.

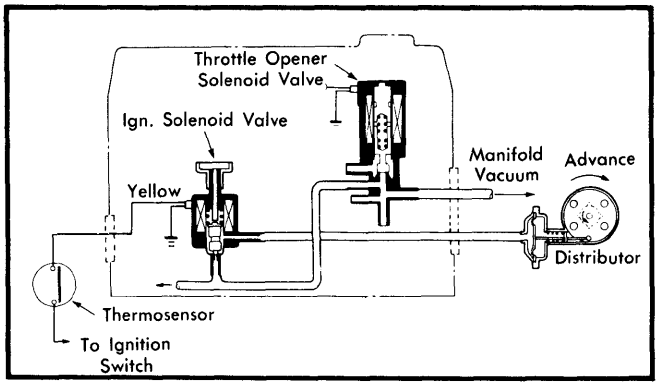

Fig. 1 Civic 1300 Ignition Timing Controls

Civic 1500 (Federal Man. Trans. Only) – Vacuum advance is controlled by manifold vacuum at all times, provided from a port on the carburetor insulator.

Civic 1500 (All Exc. Federal Man. Trans.) – Vacuum advance is controlled by throttle plate ported vacuum. When sufficient vacuum is available from this port, engine timing is advanced.

Accord and Prelude 1800 (Federal) – Vacuum advance is controlled by throttle plate ported vacuum. A check valve in the vacuum line stops gasoline vapors from reaching a delay valve, which smooths out operation of the vacuum advance diaphragm and bleeds off vacuum at a fixed rate.

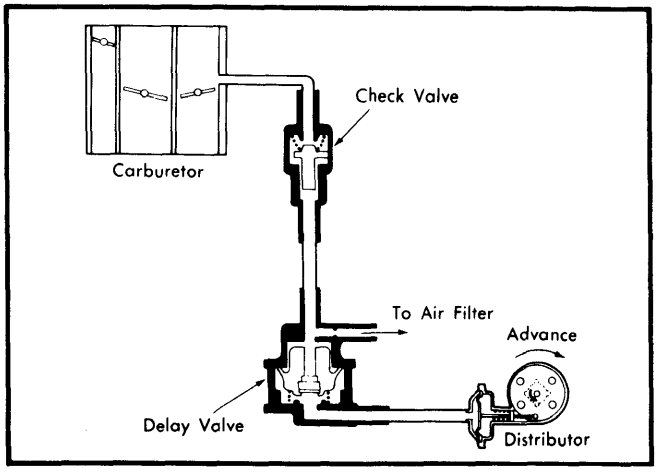

Fig. 2 Accord & Prelude Ignition Timing Controls (Federal Models)

Accord and Prelude 1800 (Calif. Man. Trans.) – When the engine is cool, vacuum advance is controlled by ported vacuum, through a check valve and delay valve. When the engine is hot and idling, manifold vacuum is routed through the ignition solenoid valve to the distributor retard diaphragm, retarding the timing. In a steady cruise condition, ported vacuum rises and trips a vacuum switch which closes the ignition solenoid valve and cuts off manifold vacuum at the retard diaphragm. The result is advance and no retard at hot engine, steady cruise condition.

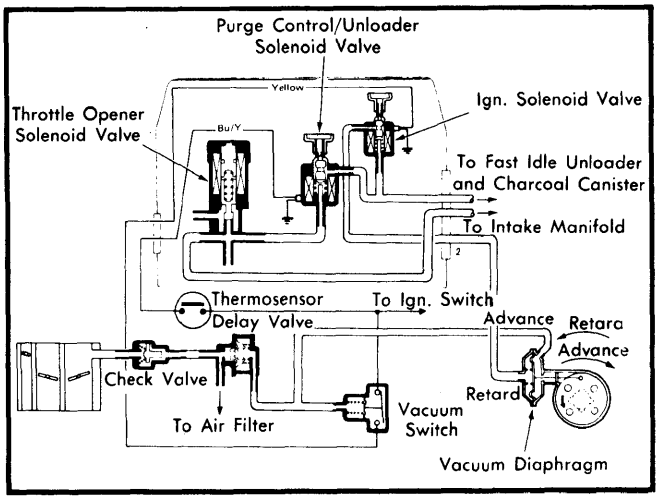

Fig. 3 Accord & Prelude Ignition Timing Controls (Calif. Manual Transmission Models)

Accord and Prelude 1800 (Calif. Auto. Trans.) – Ignition timing is controlled by centrifugal advance only. There are no vacuum or electronic timing controls.

TESTING

Civic 1300 – **1)** Begin test with cold engine. Disconnect vacuum hose from distributor advance unit, connect to vacuum gauge, and start engine.

2) Vacuum should be present. If not, check vacuum hoses for leaks or poor connections. If still no vacuum, proceed to next step.

3) Check for voltage at ignition solenoid valve with ignition "ON". If no voltage, check wiring connections and thermosensor for continuity. Repair wiring or replace thermosensor.

4) When voltage is present, draw a vacuum (with hand pump) on advance hose. If gauge will not hold vacuum, check for vacuum leak between distributor advance and intake manifold. If gauge holds vacuum, replace ignition solenoid valve and recheck.

5) Warm engine to normal operating temperature. No vacuum should be present on advance hose. If vacuum is present, check thermosensor for continuity. If continuity is shown, replace thermosensor. If not, replace ignition solenoid valve.

6) Attach vacuum pump to distributor advance diaphragm, start engine, and pull 6 in. (150 mm) Hg vacuum. Timing should advance. If not, or if vacuum leaks down, replace vacuum advance diaphragm.

HONDA IGNITION TIMING CONTROL SYSTEM (Cont.)

Civic 1500 – 1) Connect tachometer to engine and vacuum gauge to vacuum advance hose, then start engine. Vacuum should be present at idle on Federal engines with manual transmission, and vacuum should be present at 3500 RPM on all other engines.

2) If no vacuum is present, check all hoses to distributor for blockage or leaks. Connect a hand vacuum pump to distributor, start engine, and pull 8 in. (200 mm) Hg vacuum. Timing should advance and hold. If not, replace vacuum diaphragm.

Accord and Prelude 1800 (Federal) – 1) Connect vacuum gauge to advance hose at distributor. Start engine; vacuum should be present at 3500 RPM. If no vacuum, check for vacuum at carburetor side of delay valve. If vacuum, replace valve. If no vacuum is present, inspect check valve and carburetor port.

2) Reconnect advance hose, then remove delay valve. Connect a hand vacuum pump and 11 in. (280 mm) piece of 1/8 in. (3.5 mm) I.D. hose to check valve side of delay valve. Plug ports on delay valve that are connected to air cleaner bleed and distributor.

3) Apply vacuum and check for leaks. If leaks are found, replace valve. Apply vacuum to distributor port of valve and check for restriction. If vacuum can be held, replace valve.

4) Plug port on valve that goes to air cleaner bleed. Apply 15 in. (380 mm) Hg vacuum to check valve side and watch for vacuum bleed. Vacuum should decrease to 5 in. (130 mm) Hg in 4-9 seconds. If not, replace valve.

NOTE – *If specified hose length and diameter are not used, vacuum leak times may vary.*

5) Connect vacuum pump to distributor diaphragm. Reconnect all other hoses and start engine. Pull 13 in. (330 mm) Hg vacuum; timing should advance and hold. If not, replace advance unit diaphragm.

Accord and Prelude 1800 (Calif. Man. Trans.) – 1) Begin test with cold engine. Connect a vacuum gauge to vacuum hose at Retard side of distributor vacuum unit. Start engine. No vacuum should be present.

2) If vacuum is present, check for battery voltage at Blue/Yellow wire at purge control/unloader solenoid valve. If voltage is present, replace valve. If no voltage, check for continuity between Black/Yellow and Yellow wires at thermosensor connector. If no continuity, replace thermosensor. If continuity, check fuse and wiring.

3) Connect vacuum gauge to hose at Advance side of distributor mechanism and start engine. Vacuum should be present at 3500 RPM. If not, check for vacuum to delay valve. If vacuum is present, replace delay valve. If not, inspect check valve and carburetor port.

4) Allow engine to warm up and check for vacuum at Retard hose. If no vacuum, check for continuity between Black/Yellow and Yellow wires at thermosensor. If no continuity is present, sensor is okay. If continuity is present, replace sensor.

5) Reconnect sensor wiring and check for battery voltage at Green wire by probing back of connector. If voltage is present, replace vacuum switch. If no voltage and still no vacuum at Retard hose, check for blocked vacuum port or plugged ignition solenoid valve. Repair and recheck.

6) Leave gauge connected to Retard hose and connect another gauge to Advance hose. Start engine and raise speed until Advance gauge shows 5.5-6.3 in. (140-160 mm) Hg vacuum. Vacuum should not be present at Retard gauge. If vacuum does not disappear at correct level, replace vacuum switch and retest.

7) If vacuum does not reach proper level on Advance gauge, check for leaks and retest. If vacuum does not disappear, hold Advance vacuum at 6.3 in. (160 mm) Hg. Check for voltage between Green and Black/Yellow wires at left side of emission control box. If no voltage, check fuses and wiring. If voltage, check at the ignition solenoid valve (Yellow wire). If voltage is present there, replace valve. If not, check and repair wiring.

8) Remove delay valve. Connect a hand vacuum pump and 11 in. (280 mm) piece of 1/8 in. (3.5 mm) hose to check valve side of delay valve. Plug other two ends and check for vacuum leaks. Apply vacuum to distributor side. If a vacuum can be obtained, replace valve.

9) Plug air filter bleed orifice and apply vacuum to check valve side. Vacuum should decrease from 15 in. (380 mm) Hg to 5 in. (130 mm) Hg in 4-9 seconds. If not, replace valve.

NOTE – *If specified hose length and diameter are not used, vacuum leak times may vary.*

10) Reinstall delay valve. Connect a vacuum pump to distributor Advance hose and start engine. Pull 14 in. (360 mm) Hg vacuum. Timing should advance and hold; if not, replace diaphragm. Repeat test at Retard diaphragm.

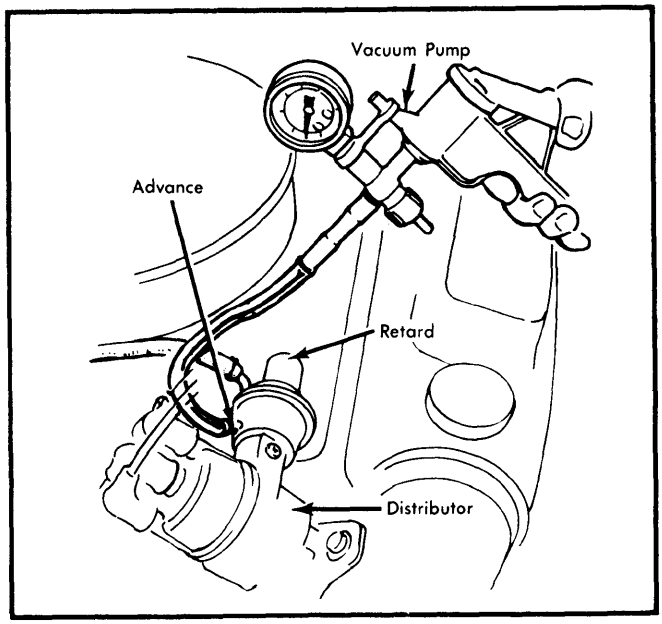

Fig. 4 Testing Distributor Advance and Retard