Section C4

Ignition System

Contents

General Description

Ignition System

The ignition system used for this vehicle has an ESA (Electronic Spark Advance) system *(Figure C4-1)* and consists of the following parts:

- Engine Control Module (ECM)
  - It detects the engine condition through the signals from the sensors, determines the most suitable ignition timing and time for electricity to flow through the primary coil and sends a signal to the igniter.
- Ignition Control Module (Igniter)
  - It turns "ON" and "OFF" the primary current of the ignition coil according to the signal from the ECM.
- Ignition coil
  - It is located in the distributor. When the ignition coil primary current is turned "OFF," a high voltage is induced in the secondary winding.
- Distributor
  - It distributes a high voltage current induced by the ignition coil to each plug.
    - High-tension cords and spark plugs.
- Camshaft Position (CMP) sensor
  - Located in the distributor, it converts the crank angle into a voltage variation and sends it to the ECM.
- MAF sensor, TP sensor, ECT sensor, IAT sensor, VSS
  - For sensor descriptions, refer to *Section 6E3-C1.*

In ESA system, the ECM is programmed for the best ignition timing under every engine condition. Receiving signals which indicate the engine condition from the sensors, e.g., engine revolution, intake air volume, engine coolant temperature, etc., it selects the most suitable ignition timing from its memory and operates the igniter; thus ignition timing is controlled to yield the best engine performance.

On-Vehicle Service

Refer to *Section 6D4* for ignition system component replacement procedures.

Ignition Timing

Figures C4-1 through C4-4

Inspect

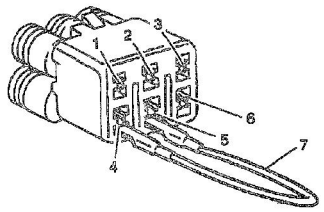
Adjust

1. Start and warm engine to normal operating temperature.
2. Make sure that
   - All electrical loads (wipers, radio, headlights, defogger and blower) are "OFF."
   - A/C is "OFF," if equipped.
   - Gearshift control lever is set in neutral (manual transmission) or manual selector lever is in "P" (automatic transmission).
   - Parking brake lever is fully engaged.
3. Check to be sure that the idle speed is within specification. Refer to *Section 6E3-C2.*
4. Connect a timing light to No. 1 high tension cord *(Figure C4-4)*.
5. Remove cap from Duty Check Data Link Connector located next to the battery.
6. Connect a jumper from Duty Check Data Link Connector cavity "4" to cavity "5" *(Figure C4-1)*.

Notice: In this state, ignition timing is fixed.

7. Check timing. It should be 5° ± or -1° BTDC at 800 RPM *(Figure C4-2)*.
8. If not within specification, loosen distributor hold down bolt and rotate distributor and repeat until timing is within specifications *(Figure C4-3)*.
9. Remove jumper from Duty Check Data Link Connector. Make sure that timing is within specifications and that it advances with engine speed.

Figure C4-1 - Duty Check Data Link Connector Pinout



1 NOT USED
2 DIAGNOSTIC REQUEST SIGNAL
3 MIL CONTROL/DIAGNOSTIC OUTPUT
4 GROUND
5 TEST SWITCH SIGNAL
6 DUTY CHECK OUTPUT
7 JUMPER WIRE

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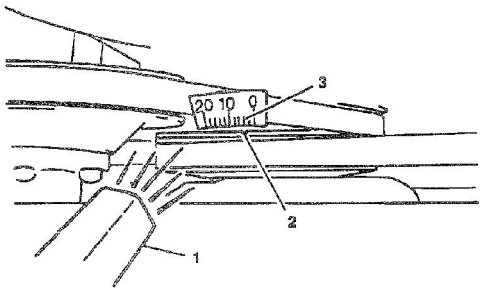
Figure C4-2 - Checking Ignition Timing



1 TIMING LIGHT
2 "V" MARK ON CRANKSHAFT PULLEY
3 5° BTDC MARK

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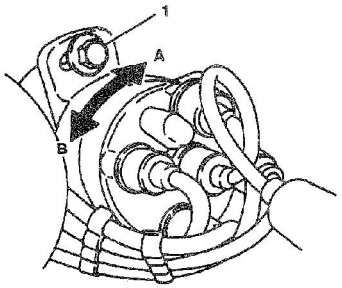
Figure C4-3 - Adjusting Ignition Timing (Typical)



A TO ADVANCE TIMING
B TO RETARD TIMING
1 DISTRIBUTOR FLANGE BOLT

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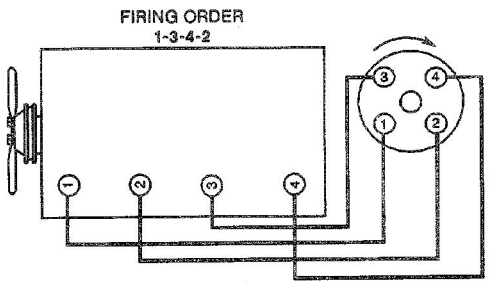
Figure C4-4 - Firing Order 1.6L (VIN 6)



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