PURPOSE

During the OBD-II drive cycle, the OBD-II system checks each emission control system by monitoring it for proper operation. It is necessary to run the OBD-II drive cycle:

D After repairing an affected vehicle to eliminate a fuel-related or emission-related diagnostic trouble code (DTC). The OBD-II drive cycle will monitor the affected emission system and confirm that the repair was successful.

D If the vehicle’s I/M test (“smog check”) results indicate that the OBD-II Readiness Monitors are “incomplete.”

Readiness Codes for 1996–98 models are not set to “complete” until all required monitors have gone through one complete monitor cycle. OBD-II monitors could identify a failure. After that, Readiness Codes are set to “complete” after each individual monitor has been completed.

Effective January 2, 2001, the U.S. Environmental Protection Agency (EPA) will require that vehicles must have all OBD-II Readiness Codes “complete” at the time of an I/M test.

This bulletin contains:
- OBD-II drive cycle procedure for 1996–97 affected vehicles only (Refer to the appropriate service manual for 1998 and later model OBD-II drive cycle procedures.)
- Warranty claim information for OBD-II drive cycle on all affected vehicles.

NOTE: On 1996–97 V6 models, after all Readiness codes are complete, turning the ignition off will cause all the Readiness status readings to show incomplete (“INCMP”). This may require that an I/M test be performed before the ignition key is turned off.

AFFECTED VEHICLES

1996–2001 Montero, Montero Sport, Diamante, 3000GT, Mirage, Galant, Expo/Expo LRV, and Eclipse models (except 2.0L non-turbo 420A engine models) (NOTE: Refer to TSB-96-13-022 for reprogramming instructions to retain OBD-II Readiness Codes on 420A models.)

PROCEDURE (1996–1997 AFFECTED VEHICLES ONLY)
For 1998–2001 models, refer to Group 13 in the appropriate service manual, under “OBD-II Drive Cycle.”

This procedure requires two people in the vehicle during the drive cycle. One person must drive within the drive cycle parameters while the other person reads the scan tool.
IMPORTANT: In order to carry out the OBD-II drive cycle, the ambient temperature must be higher than -10 degrees C (14 degrees F), and all electrical components must be turned off.

The following instructions describe how to drive the vehicle to complete the oxygen sensor monitor, EGR monitor, catalyst monitor, purge flow monitor, and Evaporative Emission Control System Leak (EVAP) monitor (Montero Sport only). All of these monitors except the EVAP must be completed twice before the scan tool Readiness Test screen will display any of them as complete (“CMP”).

S If all of these monitors (Readiness Tests) are incomplete (“INCMP”) on the scan tool status screen before you begin the drive cycle, the scan tool will not indicate any change in their status during the first drive cycle.

S If any monitor is already completed before you begin the drive cycle, check the scan tool Readiness Test status screen frequently while driving. Watch for the status to change to complete (“CMP”).

1. With the ignition switch off, connect the MUT-II scan tool. Check for any DTCs. If any are present, note the DTC(s), then clear all DTCs from the PCM memory.

2. Turn the ignition on, and observe the Readiness Test status on the scan tool by following the MUT-II selection sequence below:

   1. SYSTEM SELECT
   2. MFI
   3. MITSUBISHI MFI
   4. READINESS TEST
   5. READINESS TESTS

   <Readiness Test>
   Cat.: INCMP
   Htd. Cat.: N/A
   EVAP: INCMP
   2nd Air: N/A
   A/C: N/A
   HO2S: INCMP
   HO2S HTR: INCMP
   EGR: INCMP

   The Readiness Test status is displayed on the MUT-II screen.

   Perform those Readiness Tests (Monitors) which are incomplete (“INCMP”).

NOTE: If possible, perform all monitor drive cycles except EVAP within the same key cycle. (Do not turn the engine off and back on between drive cycles.)
3. **Evaporative Emission Control (Strict) System Leak Monitor**  
(1996-97 Montero Sport and 1997 Galant only):  

**IMPORTANT:** This monitor must be completed within 16 minutes after initial engine start-up. This monitor is controlled by a timer in the PCM, which enables the monitor to run for only 16 minutes.

a. The following conditions must be met for this monitor:
   - Engine coolant temperature 30 degrees C (86 degrees F) or less **(COLD START)**
   - Ambient temperature 5-30 degrees C (41-86 degrees F)
   - A/T select lever in D range, with Overdrive switch ON
   - Fuel tank 30-50% full is recommended

b. After initial start-up, immediately begin driving on level ground (no hills) at approximately 55 mph. Do not rapidly accelerate or decelerate. Do not turn corners or change lanes. If fuel sloshing occurs, this monitor must be restarted.

4. **Oxygen Sensor Monitor:**

a. Start the engine and allow to idle until the coolant temperature reaches at least 82 degrees C (180 degrees F).

b. Drive at 40 mph for two minutes. Engine load must be 25–60% (except 22%-60% on Mirage 1.8L M/T models). On Mirage 1.5L models, MAP sensor reading must be 7.8–19.8 inHg. Engine speed must be as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>A/T</th>
<th>M/T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galant, Eclipse, Expo, Truck</td>
<td>1100 - 3000 rpm</td>
<td>1500 – 3000 rpm</td>
</tr>
<tr>
<td>Mirage 1.5L</td>
<td>1400-3200 rpm</td>
<td>1600-3000 rpm</td>
</tr>
<tr>
<td>Mirage 1.8L</td>
<td>1400-3000 rpm</td>
<td>1600-3000 rpm</td>
</tr>
<tr>
<td>Diamante, Montero, Montero Sport</td>
<td>1100-3000 rpm</td>
<td>1250-3000 rpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Non-Turbo</th>
<th>Turbocharged</th>
</tr>
</thead>
<tbody>
<tr>
<td>3000 GT</td>
<td>1250-3000 rpm</td>
<td>1500-3000 rpm</td>
</tr>
</tbody>
</table>

5. **EGR Monitor:**

a. Be sure the engine coolant temperature is at least 82 degrees C (180 degrees F).

b. Drive at 40 mph, at engine speeds between 2400-2600 rpm, for 20 seconds. On A/T models, it may be necessary to set the overdrive to OFF.

c. Release the accelerator pedal and reduce speed to 20 mph. The following conditions must be met for 5 seconds:
   - Idle switch: ON
   - Engine speed 2000 rpm or less, except 1700 rpm or less for Mirage 1.8L
   - Engine load: 15% or less (M/T); 20% or less (A/T) - Galant, Expo, Eclipse, Mirage, Truck
   - Engine load: 18% or less (M/T); 28% or less (A/T) - 3000GT, Diamante, Montero, and Montero Sport
   - For Mirage 1.5L only: MAP sensor reading 10.2 inHg or less (M/T); 13.7 inHg or less (A/T)

d. Repeat Steps 5b. and 5c. It may be necessary to repeat this procedure up to 8 times during the **first** drive cycle only.
6. **Catalyst Monitor:**

a. Drive at 60 mph as follows:

<table>
<thead>
<tr>
<th>Mirage 1.5L Only</th>
<th>3000GT Only</th>
<th>All other models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerate to 60 mph for 30 seconds. The engine speed must be at least 2000 rpm and MAP sensor reading must be 323 mmHg or more (M/T); 341 mm Hg or more (A/T). Then drive at 60 mph for 60 seconds. During the 60 seconds, the engine speed must be at least 2000 rpm and the MAP sensor reading must be 10.5 inHg or more (M/T); 10.8 inHg or more (A/T). Then go to Step 6b.</td>
<td>Drive at 60 mph for 70 seconds. The volume air flow sensor reading must be more than 100 Hz during the 70 seconds. Then go to Step 6b.</td>
<td>Drive at 60 mph for 10 seconds. The volume air flow sensor reading must be more than 200 Hz (more than 280 Hz for Truck). Then continue to drive at 60 mph for 50 seconds. The volume air flow sensor reading must be more than 100 Hz (more than 160 Hz for Truck). Then go to Step 6b.</td>
</tr>
</tbody>
</table>

b. (All Models) Release the accelerator pedal and reduce speed to 40 mph for two minutes.

During the two minutes, the following conditions must be met:

- Idle switch: OFF
- Engine speed must be as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Engine Speed (rpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galant, Eclipse, Expo, Mirage, Truck</td>
<td>2600 or less</td>
</tr>
<tr>
<td>Mirage 1.5L</td>
<td>3000 or less (M/T); 2250 or less (A/T)</td>
</tr>
<tr>
<td>3000GT, Diamante, Montero, Montero Sport, Mirage 1.8L</td>
<td>3000 or less</td>
</tr>
</tbody>
</table>

- Volume air flow sensor reading must be as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>Volume Air Flow Sensor (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galant, Eclipse, Expo, Mirage</td>
<td>70–140</td>
</tr>
<tr>
<td>Truck</td>
<td>90–210</td>
</tr>
<tr>
<td>3000GT, Diamante, Montero, Montero Sport</td>
<td>70–170</td>
</tr>
</tbody>
</table>

- MAP sensor reading for Mirage 1.5L M/T models: 5.8–18.7 inHg
- MAP sensor reading for Mirage 1.5L A/T models: 7–21.6 inHg

**IMPORTANT**

If the vehicle speed drops to less than 36 mph or the volume air flow sensor reading goes out of the specified range during this monitor, you must repeat this monitor from Step 6a.

c. Release the accelerator pedal to reduce speed for 10 seconds.

d. Repeat Steps 6b. and 6c. It may be necessary to repeat this procedure up to 6 times during the first drive cycle only.
7. **Purge Flow Monitor (Except 1996-97 Montero Sport and 1997 Galant):**

Stop the vehicle and allow to idle for 5 minutes, with no electrical load and with the steering wheel at center. On A/T models, the shift lever must be in Park or Neutral. Scan tool readings must be:
- IAC valve position should be **stable** between 10 and 30 steps.
- Closed loop
- TPS approximately 0.5

8. Check the Readiness Test status on the MUT-II scan tool.
   
   a. When **all** Readiness codes are complete (“CMP”), the OBD-II system check is completed.
   
   b. If **all** the Readiness codes are incomplete (“INCMP”), turn the ignition key to “OFF” and wait for 10 seconds. Then go to Step 2 to carry out the entire OBD-II drive cycle (all monitors) again.
   
   c. If **one or more (not all)** Readiness codes are complete (“CMP”), repeat the EGR Monitor and Catalyst Monitor drive cycles.

**WARRANTY INFORMATION**

<table>
<thead>
<tr>
<th>Description</th>
<th>Labor Operation No.</th>
<th>Time Allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBD-II Readiness Check</td>
<td>85100160</td>
<td>0.2 hrs.</td>
</tr>
<tr>
<td>Oxygen Sensor Monitor</td>
<td>851001A1</td>
<td>0.2 hrs.</td>
</tr>
<tr>
<td>EGR Monitor</td>
<td>851001A2</td>
<td>0.6 hrs.</td>
</tr>
<tr>
<td>Catalyst Monitor</td>
<td>851001A3</td>
<td>0.6 hrs.</td>
</tr>
<tr>
<td>Purge Flow Monitor</td>
<td>851001A4</td>
<td>0.1 hrs.</td>
</tr>
<tr>
<td>EVAP Leak Monitor</td>
<td>851001A5</td>
<td>0.3 hrs.</td>
</tr>
</tbody>
</table>

Nature Code: 99D                Cause Code: 990

Warranty Coverage: 8 years/80,000 miles.

Special Warranty Information: Normal warranty procedures apply.