ENGINE CONTROL MODULE (ECM) REPLACEMENT

REMOVAL PROCEDURE

NOTE: Always turn the ignition off when installing or removing the ECM connectors in order to prevent damage to the components.

1. Turn the ignition OFF.
2. Using a scan tool, retrieve the percentage of remaining engine oil and the remaining automatic transmission fluid life. Record the remaining engine oil and the remaining automatic transmission fluid life.

IMPORTANT:
- It is necessary to record the remaining engine oil life. If the replacement module is not programmed with the remaining engine oil life, the engine oil life will default to 100%. If the replacement module is not programmed with the remaining engine oil life, the engine oil will need to be changed at 5000 km (3,000 mi) from the last engine oil change.
- It is necessary to record the remaining automatic transmission fluid life. If the replacement module is not programmed with the remaining automatic transmission fluid life, the automatic transmission fluid life will default to 100%. If the replacement module is not programmed with the remaining automatic transmission fluid life, the automatic transmission fluid will need to be changed at 83000 km (50,000 mi) from the last automatic transmission fluid change.

3. Use a DVOM in order to measure the main relay circuit voltage at the ECM fuse in the underhood fuse block.

IMPORTANT: Ensure that there is no main relay circuit voltage (ECM Fuse).

4. Disconnect the battery negative cable.
5. Remove the ECM fuse in the underhood fuse block.
6. Remove the TCM/IPC fuse in the underhood fuse block.
7. Remove the ECM/TCM fuse in the underhood fuse block.
8. Unlock the chassis side (upper) ECM electrical connector.
   1. Depress the ECM electrical connector lever lock (1).
   2. Simultaneously rotate the ECM connector clamp lever and depress the lock slide (2).
9. Remove the body side (upper) ECM connector.

**NOTE:** In order to prevent any possible electrostatic discharge damage to the ECM, do not touch the connector pins.

10. Unlock and remove the engine side (lower) ECM connector.
11. Remove the ECM redundant ground wire bolt (2) and wire from the ECM.

12. Remove the ECM bolts.
13. Remove the ECM.
14. If you are replacing the ECM bracket, perform the following steps:
15. Remove the electrical connector bracket bolt and bracket from the ECM bracket.

16. Remove the ground wire bolt (1) and wire from the ECM bracket.
17. Remove the wire harness retainer bolt and retainer from the side of the ECM bracket.

18. Remove the ECM bracket bolts (2 and 3).
19. Remove the ECM bracket (1).

INSTALLATION PROCEDURE
1. Install the ECM bracket (1).
2. Install the ECM bracket bolts (2 and 3).
   1. Tighten the ECM bracket to cylinder head bolts (2) to 10 N.m (89 lb in).
   2. Tighten the ECM bracket to engine front cover bolt (3) to 23 N.m (17 lb ft).

**NOTE:** Refer to Fastener Notice in Service Precautions.
3. Install the wire harness retainer and bolt (2) to the side of the ECM bracket.

Tighten the bolt to **23 N.m (17 lb ft)**.

4. Install the electrical connector bracket and bolt to the ECM bracket.

Tighten the bolt to **10 N.m (89 lb in)**.
5. Install the wiring harness ground wire and bolt (1) to the ECM bracket.

Tighten the bolt **10 N.m (89 lb in)**.
NOTE: In order to prevent any possible electrostatic discharge damage to the ECM, do not touch the connector pins.

7. Install the ECM bolts.

Tighten the bolts to 10 N.m (89 lb in).

8. Install the ECM redundant ground and bolt (2) to the ECM.

Tighten the bolt to 5 N.m (44 lb in).
9. Install the engine side (lower) ECM connector.

10. Install the body side (upper) ECM connector.

11. Install the ECM/TCM fuse in the underhood fuse block.

12. Install the TCM/IPC fuse in the underhood fuse block.

13. Install the ECM fuse in the underhood fuse block.

14. Connect the battery negative cable to the battery.
15. Program the ECM. See: Vehicle > Programming and Relearning
16. Turn OFF the ignition for at least **5 seconds** after the programming event is complete.