## Removal and Installation

EBS00RCB

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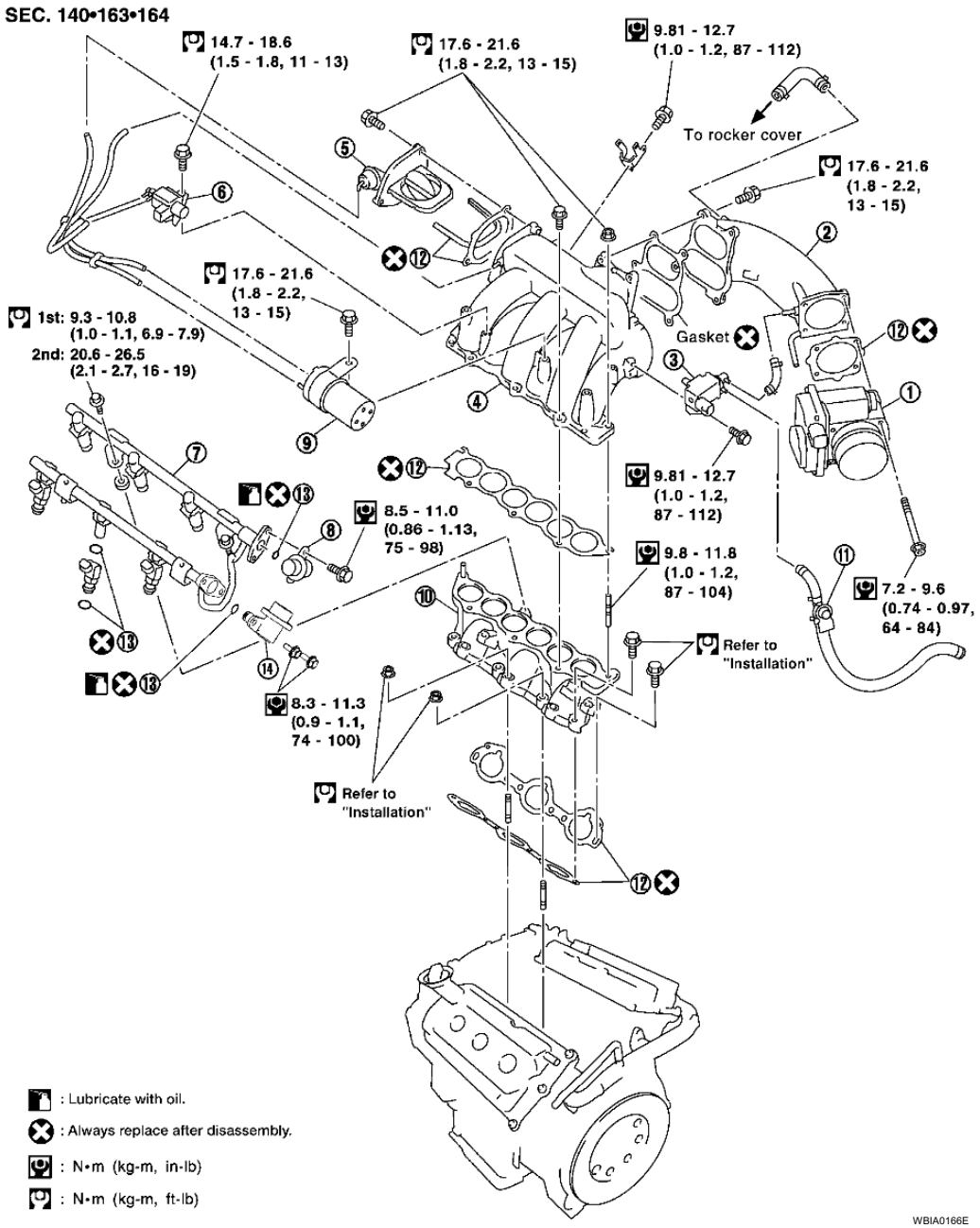



1. Electric throttle control actuator
2. Intake manifold collector (upper)
3. EVAP canister purge volume control solenoid valve
4. Intake manifold collector (lower)
5. Power valve
6. VIAS control solenoid valve
7. Fuel tube
8. Fuel damper
9. Vacuum tank

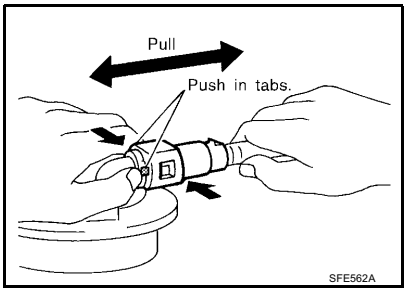
10. Intake manifold
11. Service port
12. Gasket
13. O-ring
14. Fuel damper

## REMOVAL

**WARNING:**

**To avoid the danger of being scalded, never drain the coolant when the engine is hot.**

1. Remove the engine cover using power tool.
2. Release the fuel pressure. Refer to EC-81, "FUEL PRESSURE RELEASE" .
3. Remove air cleaner case (upper) and mass air flow sensor, and air intake tube as an assembly. Refer to EM-14, "Removal and Installation" .
4. Partially drain the coolant when the engine is cool. Refer to CO-10, "DRAINING ENGINE COOLANT" .
5. Disconnect fuel tube quick connector at vehicle piping side.
6. To remove the quick connector cap, hold the sides of the connector, push in the tabs and pull out the tube.

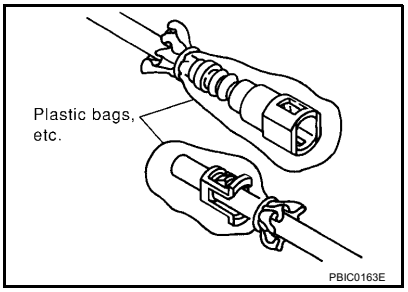



**NOTE:**

If the connector and the tube are stuck together, push and pull several times until they start to move. Then disconnect them by pulling.

**CAUTION:**

- **The tube can be removed when the tabs are completely depressed. Do not twist it more than necessary.**
- **Do not use any tools to remove the quick connector.**
- **Keep the resin tube away from heat. Be especially careful when welding near the tube.**
- **Prevent acid liquids such as battery electrolyte, etc. from getting on the resin tube.**
- **Do not bend or twist the tube during removal or installation.**
- **Do not remove the remaining retainer on the tube**
- **When the tube is replaced, also replace the retainer with a new one.**
- **To keep the connecting portion clean and to avoid damage and foreign materials entering, cover the ends of the fuel tubes with plastic bags or something similar.**




7. Disconnect the power brake booster vacuum hose, the coolant hoses from the electric throttle control actuator, the swirl control vacuum lines, the fuel injectors electrical connectors, and the PCV hose.

**CAUTION:**

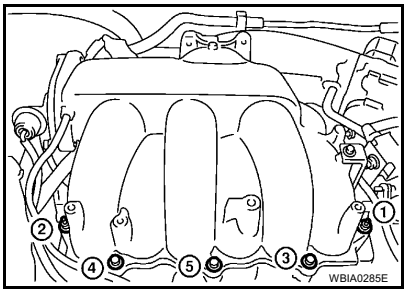
- **Cover any engine openings to avoid the entry of any foreign material.**

8. Disconnect the electric throttle control actuator electrical connectors.
9. Remove the windshield wiper assembly. Refer to WW-26, "REMOVAL AND INSTALLATION" .
10. Disconnect the power steering hose bracket.
11. Remove the vacuum tank from the back of the intake manifold collector (lower).
12. Remove the intake manifold collector (upper) and electric throttle control actuator by loosening the four bolts in a diagonal pattern.

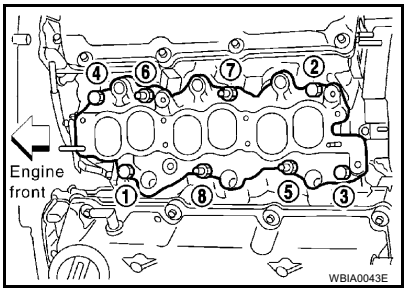
**CAUTION:**

**Handle carefully to avoid any shock to the electric throttle control actuator.**

13. Loosen the bolts in the order as shown, and remove the intake manifold collector (lower) using power tool.
14. Remove the fuel rail with the fuel injectors attached, from the intake manifold. Remove the fuel injector O-rings and use new O-rings for installation.




15. Loosen the bolts in the order as shown, and remove the intake manifold using power tool.

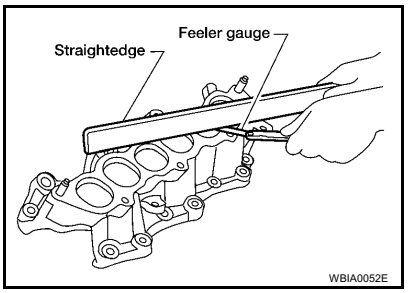



## INSPECTION AFTER REMOVAL

### Surface Distortion

- Using straightedge and feeler gauge, inspect the surface distortion of both the intake manifold and the intake manifold collector (lower).

**Standard : 0.1 mm (0.004 in)**

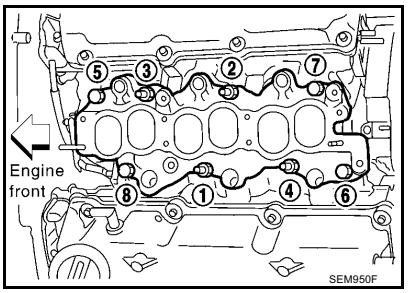



## INSTALLATION

Installation is in the reverse order of removal. Follow the procedures below for specific tightening sequences and procedures.

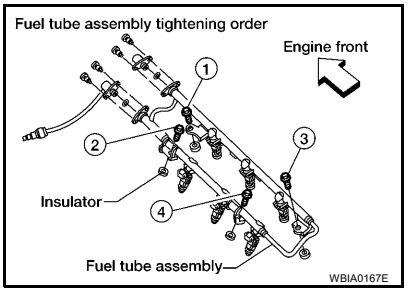
- Install intake manifold bolts in two stages in the numerical order as shown.

**Stage 1 : 5- 10 N·m (0.5 - 1.0 kg-m, 44 - 86 in-lb)**
**Stage 2 : 26 - 31 N·m (2.7 - 3.2 kg-m, 20 - 23 ft-lb)**



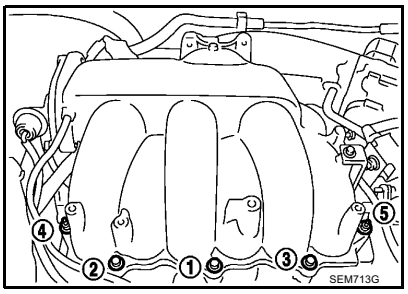
- Seat the fuel injectors into the intake manifold with new O-rings. Tighten the fuel rail bolts as shown, in two stages:

  **CAUTION:**
  **Do not reuse O-rings.**




- Install the intake manifold collector (lower) bolts in the numerical order as shown.

  **CAUTION:**
  **Do not reuse gaskets.**

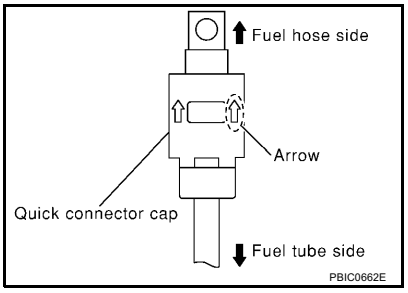



- Tighten the bolts of the intake manifold collector (upper) and electric throttle control actuator assembly equally and diagonally to specification.

**NOTE:**
After installation, it is necessary to re-calibrate the electric throttle control actuator as follows:

1. Perform the "Throttle Valve Closed Position Learning" when harness connector of the electric throttle control actuator is disconnected. Refer to EC-79, "Throttle Valve Closed Position Learning" .
2. Perform the "Idle Air Volume Learning" when the electric throttle control actuator is replaced. Refer to EC-79, "Idle Air Volume Learning" .

- Install the quick connector as follows:
  - Make sure no foreign substances are deposited in and around the fuel tube and quick connector and that there is no damage.
  - Align the center to insert the quick connector straight onto the fuel tube.
  - Insert the fuel tube until a click is heard.
  - Install the quick connector cap on the quick connector joint. Align the arrow mark on the quick connector cap to the upper side.
  - Install the fuel hose into the hose clamp.




## INSPECTION AFTER INSTALLATION

Make sure there is no fuel leakage at connections as follows:

1. Apply fuel pressure to fuel lines by turning ignition switch ON (with engine stopped). Then check for fuel leaks at connections.
2. Start the engine and rev it up and check for fuel leaks at connections.

   **NOTE:**
   Use mirrors for checking on connections out of the direct line of sight.

**WARNING:**
**Do not touch engine immediately after stopping as engine is extremely hot.**

- Perform procedures for “Throttle Valve Closed Position Learning” after finishing repairs. Refer to EC-79, "Throttle Valve Closed Position Learning" .
- If electric throttle control actuator is replaced, perform procedures for “Idle Air Volume Learning” after finishing repairs. Refer to EC-79, "Idle Air Volume Learning"