

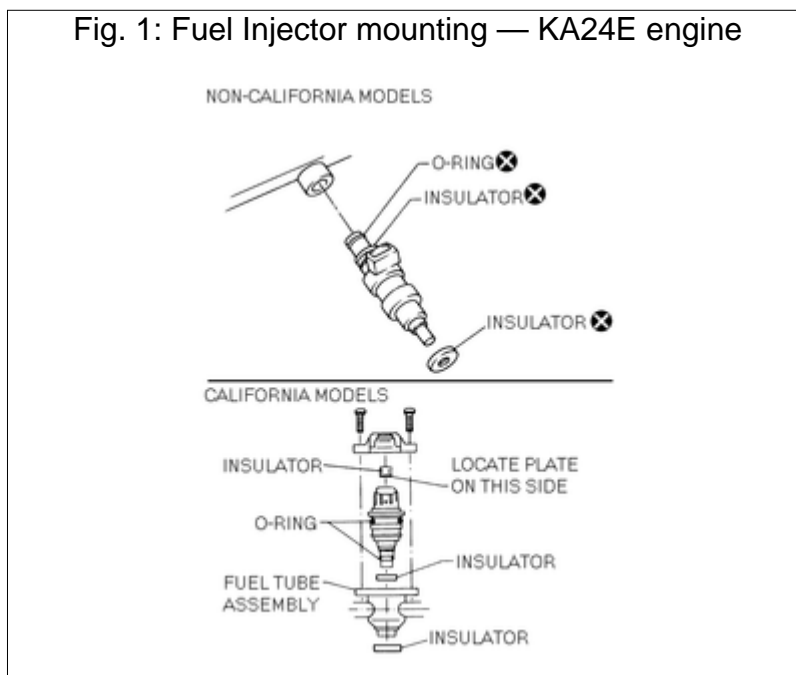


## Injectors and Fuel Pipe

### REMOVAL & INSTALLATION

#### KA24E Engine

1. Relieve the fuel pressure from the system. Disconnect the negative battery cable.
2. Remove the BPT valve and the bolts securing the fuel tube.



3. Remove the bolts securing the injectors, then take out the fuel tube and injector as an assembly.
4. Remove the injectors from the fuel tube.

#### To install:

5. Install the injectors to the fuel tube. Always use new O-rings. Lubricate O-rings with a small amount of silicone oil.
6. Install the injector/fuel tube assembly. Tighten the fuel tube bolts evenly to 12–15 ft. lbs. (16–21 Nm) and install the BPT valve.
7. Start the engine, then check for fuel leaks around the injectors and fuel tube.

#### VG30E Engine

1. Relieve the fuel pressure from the system. Disconnect the negative battery cable.
2. Remove the 2 drain plugs (from both sides of the cylinder block) and drain the engine coolant into a suitable container.

Fig. 2: Fuel injector mounting on the VG30E engine —  
Be sure to always replace the O-rings and insulators

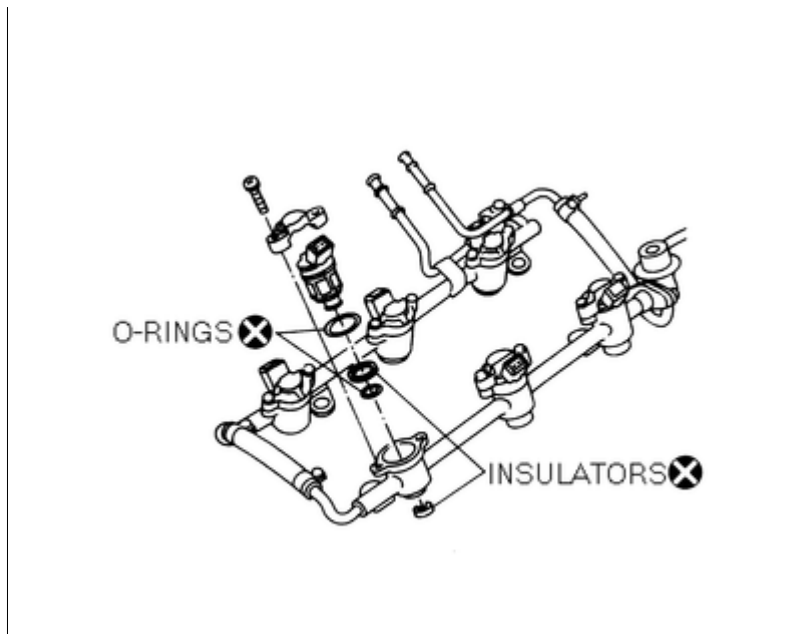


Fig. 3: Intake manifold collector assembly — VG30E engine

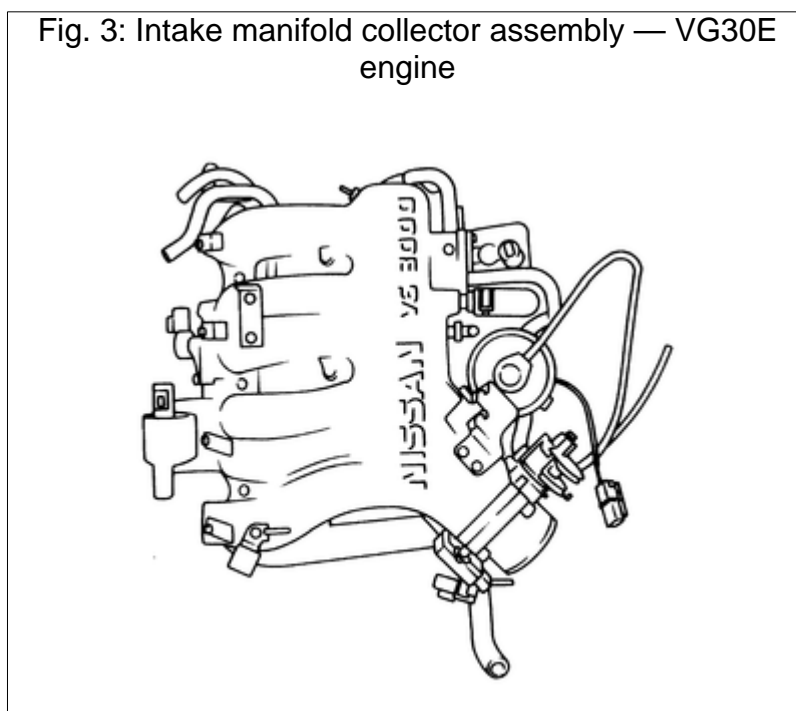


Fig. 4: Remove the throttle cable from the drum assembly using needlenose pliers

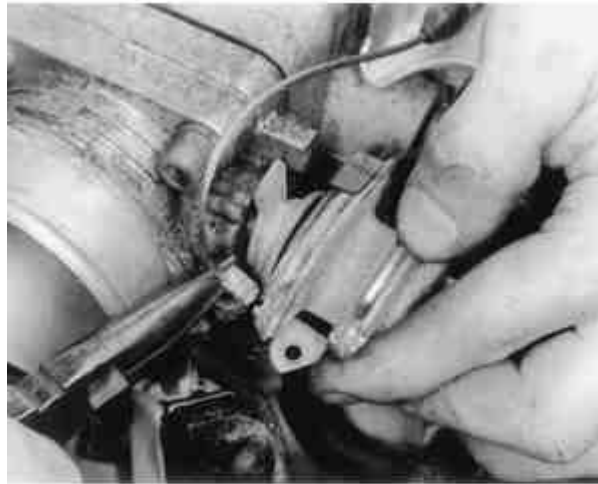


Fig. 5: Remove the throttle cable mounting bracket bolts before removing the intake manifold collector



Fig. 6: Use a socket to remove the intake manifold collector mounting bolts

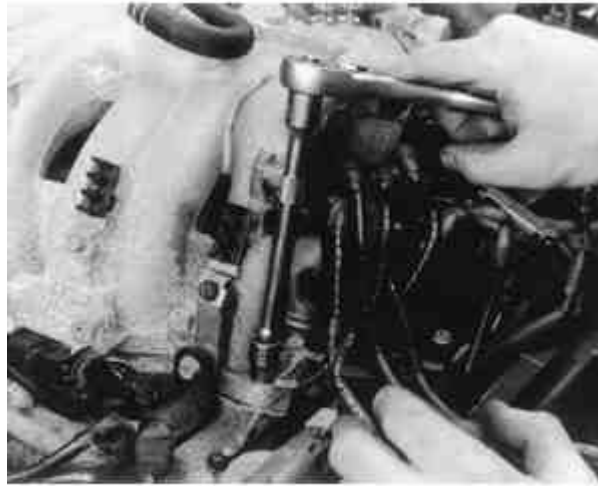


Fig. 7: Remove all necessary brackets from the intake manifold collector

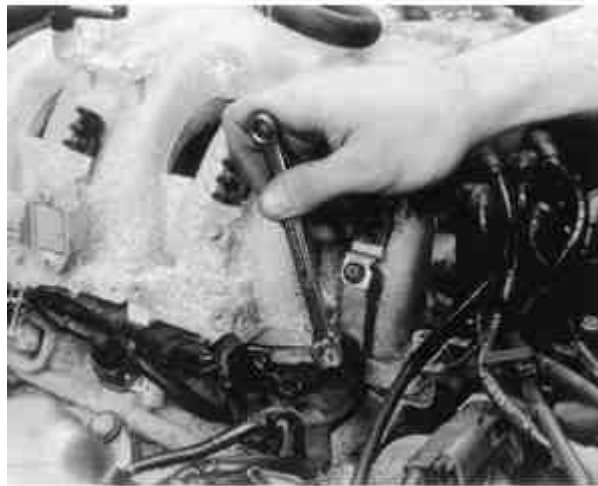


Fig. 8: Using a hex-type socket, remove the intake manifold collector mounting bolts



Fig. 9: Once the collector is removed, the fuel injector harness connectors are accessible

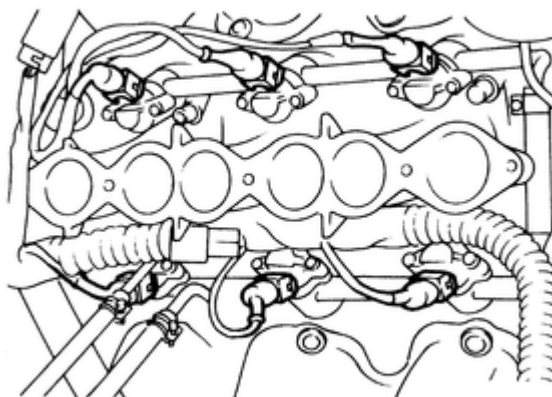


Fig. 10: Release the locktabs in order to unfasten the fuel injector electrical connection — be careful not damage the connectors

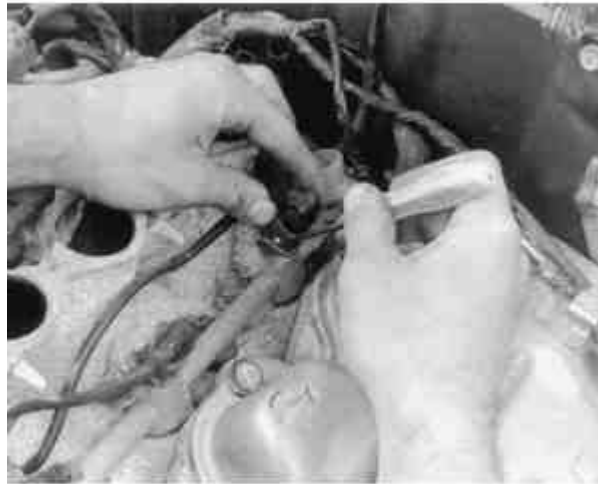


Fig. 11: Once the locktabs are released, carefully separate the connectors

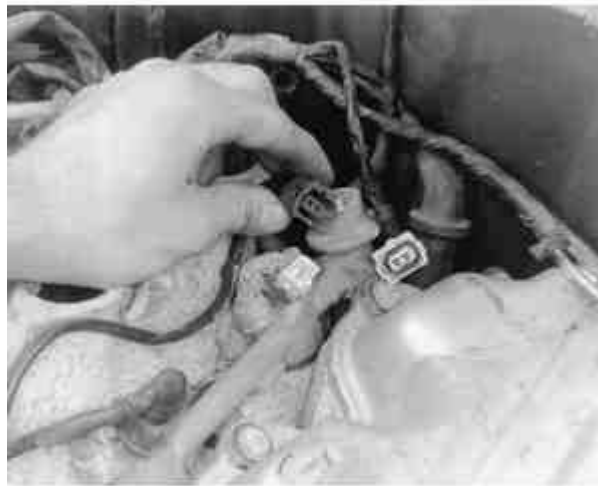


Fig. 12: Remove the fuel lines from the fuel rail — always use new fuel injection hose retaining clamps upon assembly



Fig. 13: View of the fuel rail installed — note the location of the pressure regulator assembly



Fig. 14: Remove the fuel rail retaining bolts — use a hex-type socket or Allen key for this job



Fig. 15: Remove the fuel rail assembly from the engine with the injectors installed

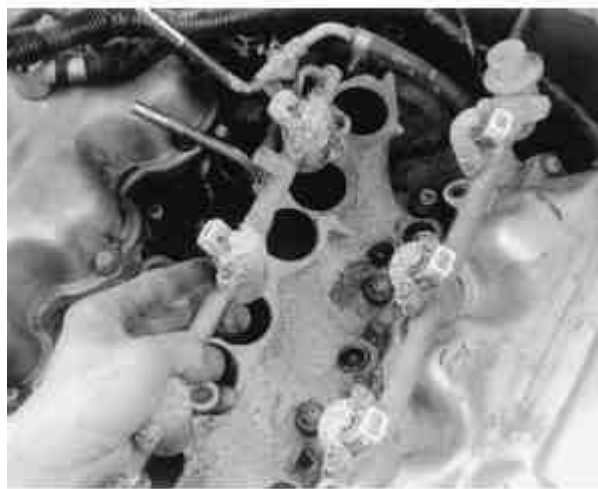


Fig. 16: In order to remove the injectors, loosen and remove the cover retainers



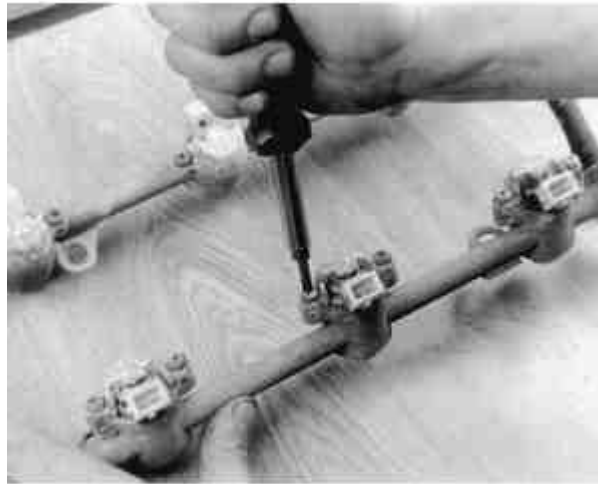


Fig. 17: Once the retainers are unthreaded, lift the injector cover from the fuel rail



Fig. 18: Separate the injector from the fuel rail assembly

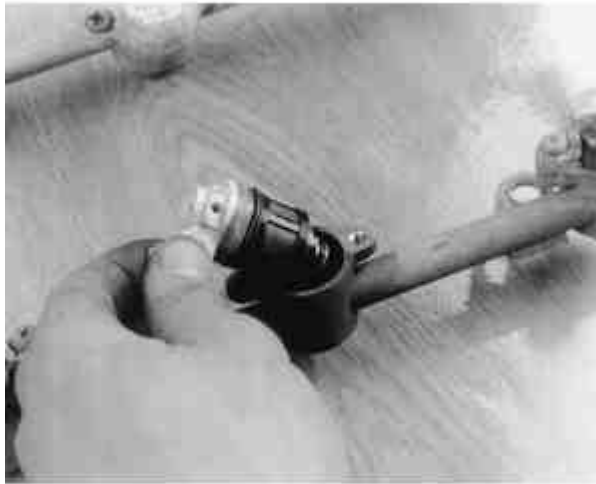


Fig. 19: Always replace and lubricate the O-rings upon installation of the fuel injector



3. Disconnect the Automatic Speed Control Device (ASCD) and accelerator control wire from the intake manifold collector.
4. Disconnect the following from the intake manifold collector:
  - A. Auxiliary Air Control (AAC) valve
  - B. Throttle sensor and throttle valve switch
  - C. Ignition coil
  - D. EGR control solenoid
  - E. Air regulator
  - F. Exhaust gas temperature sensor (California models)
  - G. PCV hose from the right-hand rocker cover
  - H. Air duct hose
  - I. Ground wire
  - J. EGR Tube
  - K. Purge hose from the evaporative canister
5. Disconnect the brake master cylinder, pressure regulator and the remaining carbon canister vacuum hoses.
6. Remove the intake collector.
7. Remove the fuel hoses from the injector fuel tube assembly.
8. Disengage the injector electrical connectors, then remove the injectors with the fuel tube

assembly.

**To install:**

9. Replace or clean the injectors, as necessary.
10. Install the injectors to the fuel tube using new O-rings and insulators.
11. Install all parts which were disconnected from the intake manifold collector, in the reverse order of removal.
12. Connect the negative battery cable.
13. Verify that the drain plugs are installed in the cylinder block, then refill and bleed the cooling system.
14. Run the engine, then check for fuel leaks around injectors and fuel tube.

