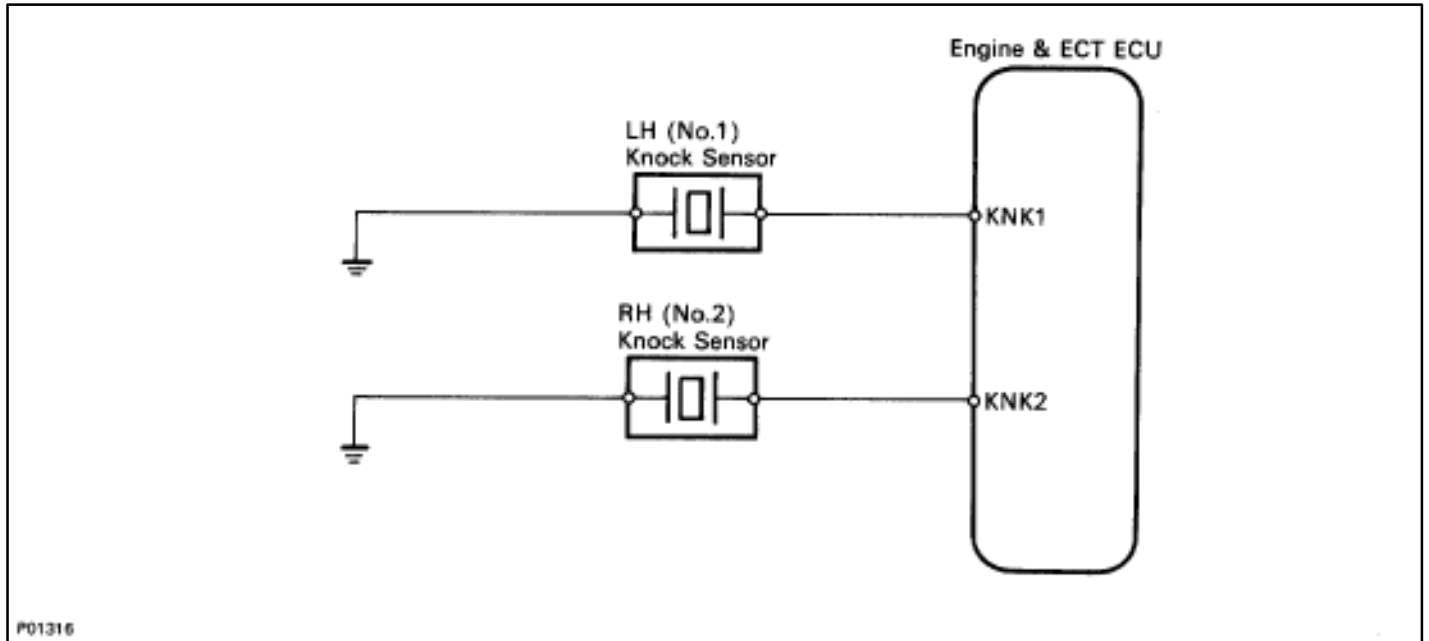
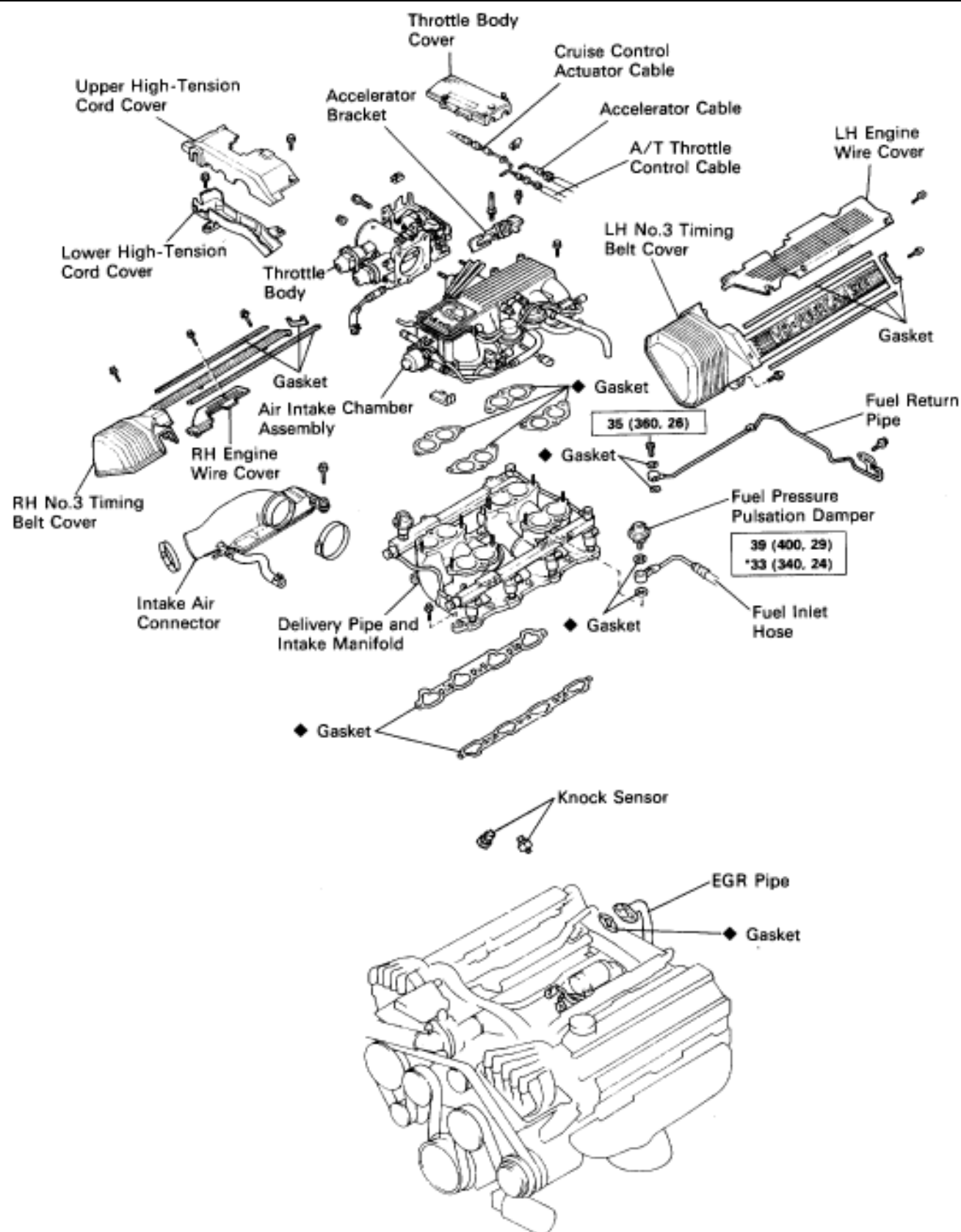
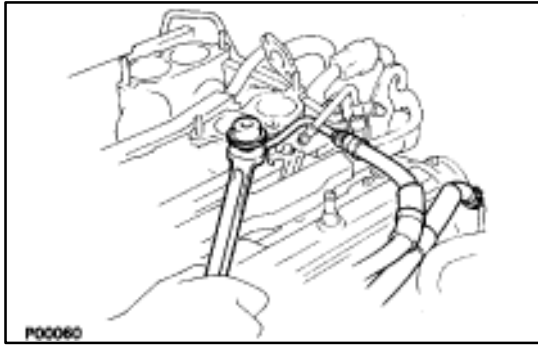


Knock Sensors



COMPONENTS FOR REMOVAL AND INSTALLATION





INSPECTION OF KNOCK SENSORS

1. REMOVE AIR INTAKE CHAMBER

(See steps 1 to 16 on pages [FI-27](#) to 32)

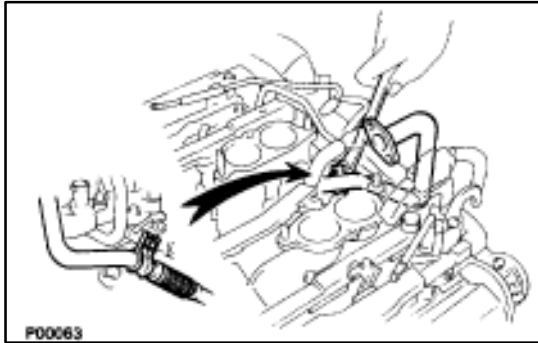
2. DISCONNECT FUEL INLET HOSE FROM LH DELIVERY PIPE

Remove the pulsation damper and two gaskets, and disconnect the inlet hose.

3. DISCONNECT FUEL RETURN HOSE FROM FUEL RETURN PIPE

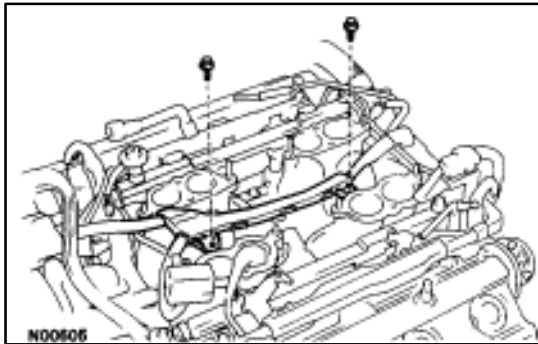
4. DISCONNECT EGR PIPE FROM RH CYLINDER HEAD

Remove the bolt holding the EGR pipe to the cylinder head, and disconnect the EGR pipe.



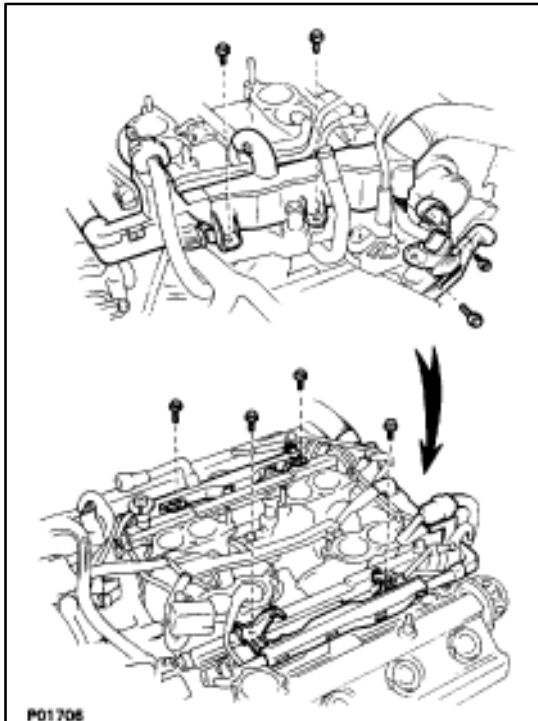
5. DISCONNECT ENGINE WIRE FROM INTAKE MANIFOLD

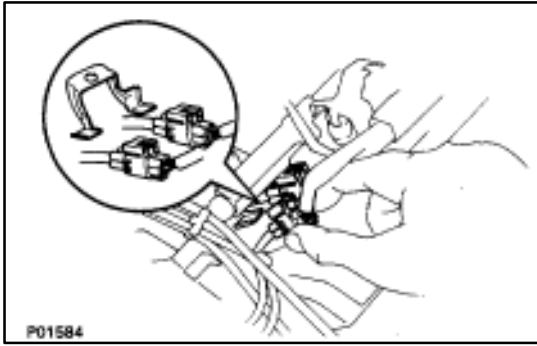
Remove the two bolts, and disconnect the engine wire.



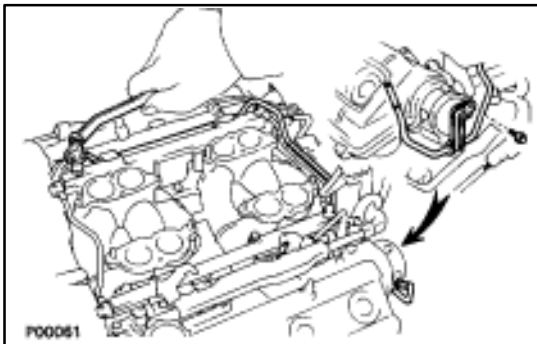
6. DISCONNECT ENGINE WIRE FROM DELIVERY PIPES, REAR WATER BY-PASS JOINT AND RH CYLINDER HEAD

- Remove the four bolts holding the engine wire to the delivery pipes, and disconnect the engine wire from the delivery pipe.
- Remove the two bolts holding the engine wire to the rear water by-pass joint, and disconnect the engine wire from the rear water by-pass joint.
- Remove the two bolts holding the engine wire to the rear side of the RH cylinder head, and disconnect the engine wire from the RH cylinder head.



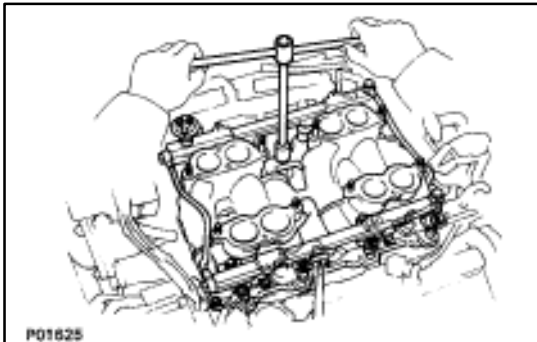


- (d) Disconnect the two engine wire connectors from the connector bracket on the front side of the LH delivery pipe.
- (e) Disconnect the eight injector connectors.



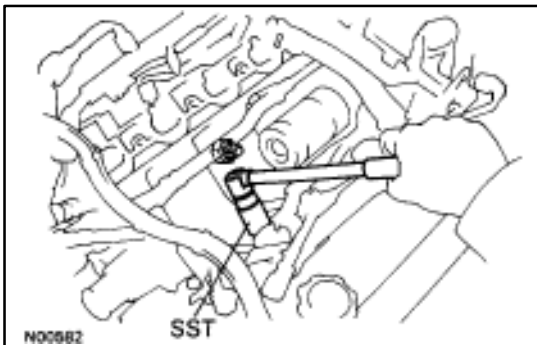
7. REMOVE FUEL RETURN PIPE

- (a) Remove the bolt holding the return pipe to the LH cylinder head.
- (b) Remove the union bolt, two gaskets and return pipe.



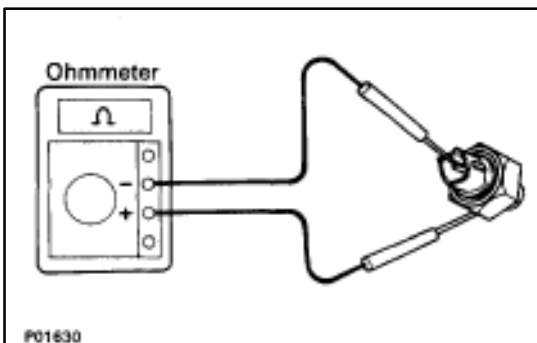
8. REMOVE DELIVERY PIPES AND INTAKE MANIFOLD ASSEMBLY

- (a) Remove the six bolts and four nuts holding the intake manifold to the cylinder heads.
- (b) Remove the two delivery pipes and intake manifold assembly.
- (c) Remove the two intake manifold gaskets.



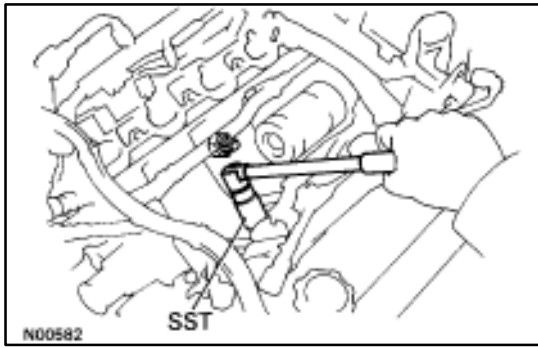
9. REMOVE KNOCK SENSOR

- (a) Disconnect the knock sensor connectors
 - (b) Using SST, remove the two knock sensors.
- SST 09816-30010



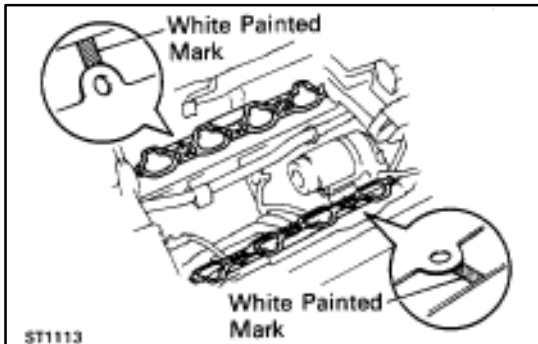
10. INSPECT KNOCK SENSOR

Using an ohmmeter, check that there is no continuity between the terminal and body.
If there is continuity, replace the sensor.



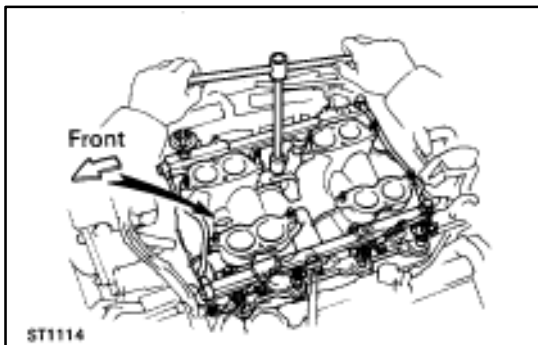
11. REINSTALL KNOCK SENSOR

- (a) Using SST, remove the two knock sensors.
SST 09816-30010
Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)
- (b) Connect the knock sensor connectors.



12. REINSTALL DELIVERY PIPES AND INTAKE MANIFOLD ASSEMBLY

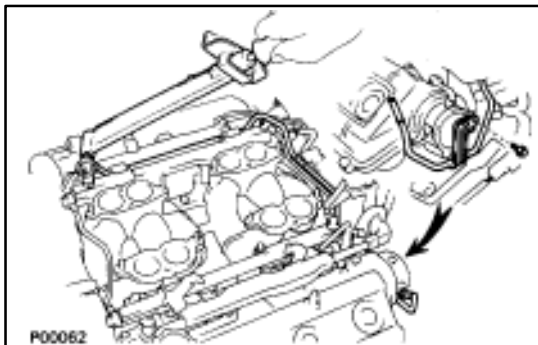
- (a) Place two new gaskets on the cylinder heads with the white painted mark facing upward.
NOTICE: Align the port holes of the gasket and cylinder head. Be careful of the installation direction.



- (b) Place the delivery pipes and intake manifold assembly in position on the cylinder heads with the arrow mark on the intake manifold facing forward.

NOTICE: Be careful of the installation direction.

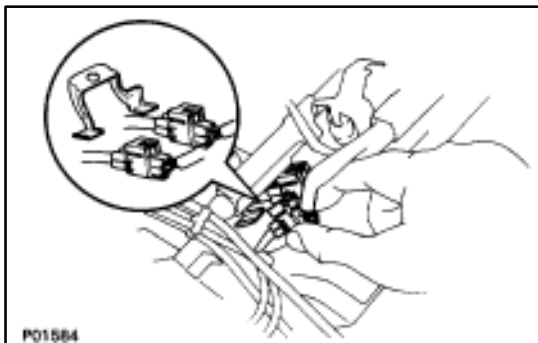
- (c) Install the six mounting bolts and four mounting nuts.
Torque: 18 N·m (185 kgf·cm, 13 ft·lbf)
HINT: Use bolts 30 mm (1.18 in.) in length.



13. REINSTALL FUEL RETURN PIPE

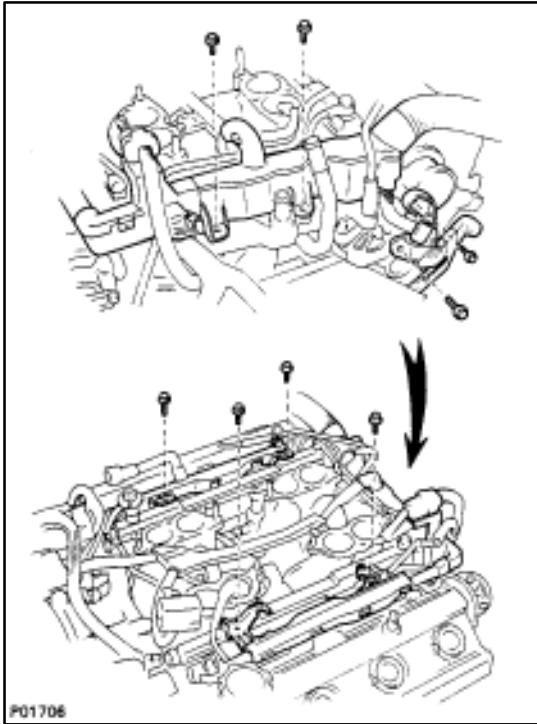
Install the return pipe with two new gaskets, union bolt and bolt.

Torque (Union bolt):
35 N·m (360 kgf·cm, 26 ft·lbf)

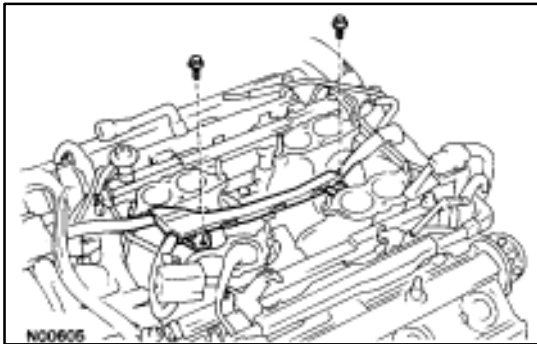


14. REINSTALL ENGINE WIRE TO DELIVERY PIPES, REAR WATER BY-PASS JOINT AND RH CYLINDER HEAD

- (a) Connect the eight injector connectors.
- (b) Connect the two engine wire connectors to the connector bracket on the LH delivery pipe.

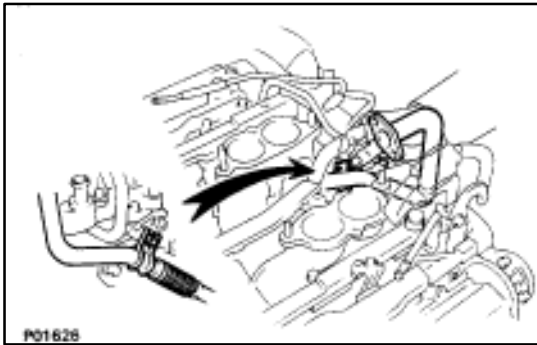


- (c) Install the engine wire to the RH cylinder head with the two bolts.
- (d) Install the engine wire to the rear water by-pass joint with the two bolts.
- (e) Install the engine wire to the delivery pipes with the four bolts.



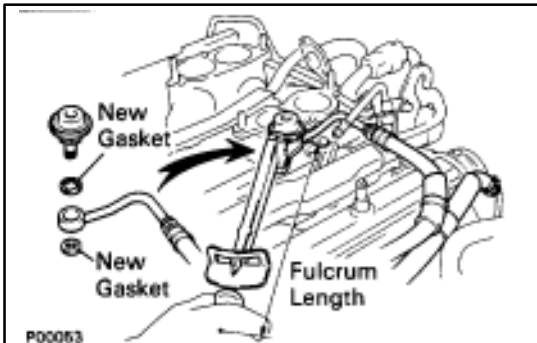
15. REINSTALL ENGINE WIRE TO INTAKE MANIFOLD

Install the engine wire with the two bolts.



16. TEMPORARILY REINSTALL EGR PIPE TO RH CYLINDER HEAD

Temporarily Install the EGR pipe with the bolt.



17. RECONNECT FUEL RETURN HOSE TO FUEL RETURN PIPE

18. RECONNECT FUEL INLET HOSE TO LH DELIVERY PIPE

Using SST, connect the inlet hose with two new gaskets and pulsation damper.

SST 09612-24014 (09617-24011)

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

33 N·m (340 kgf·cm, 24 ft·lbf) for SST

HINT: Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

19. INSTALL AIR INTAKE CHAMBER

(See steps 2 to 18 on pages [FI-35](#) to 41)

HINT: After the air intake chamber is installed, tighten the bolt holding the EGR pipe to the RH cylinder head.