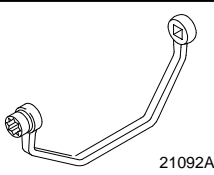
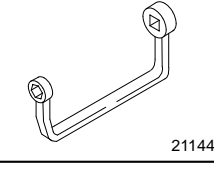
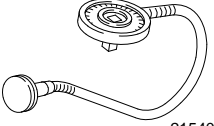
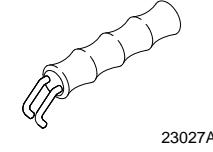
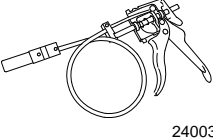


Cylinder Heads – Remove and Install (21 164 0)

Special Tools

	21-092 A Inlet manifold wrench
	21-144 Inlet manifold wrench
	21-540 Bolt tightening angle gauge

	23-027 A Fuel pipe remover
	24-003 Remover/installer, radiator hose clip

Materials

Coolant	
Sealer	SPM-4G-9112-H
Sealer	SPM-2G-3121-A

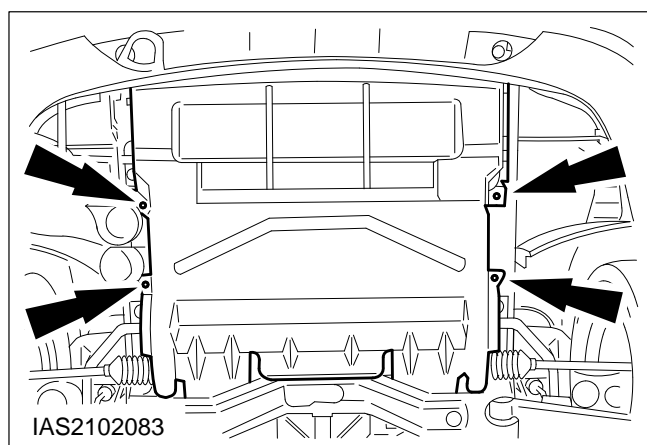
Detach the cylinder heads

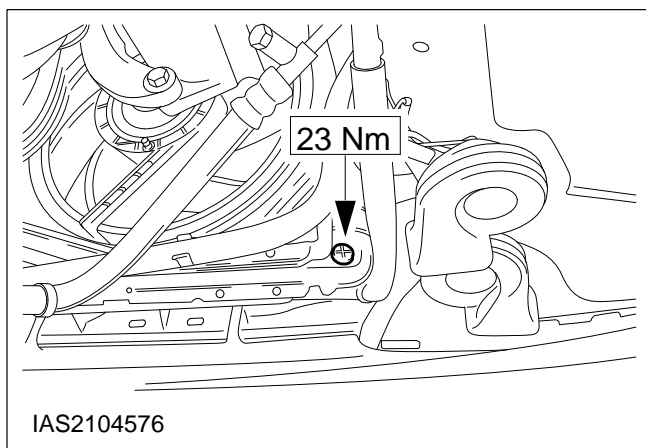
1. Preparatory measures.

- Make a note of the radio keycode.
- Make a note of the preset radio stations.
- Detach the battery cover (one nut).
- Disconnect the battery negative lead.
- Open the coolant expansion tank.

2. Raise the vehicle.

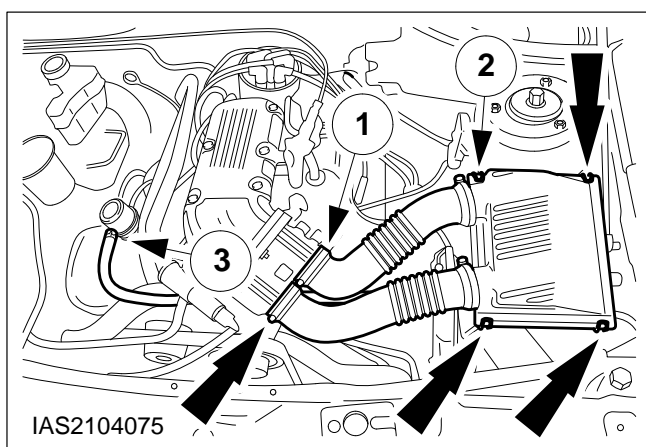
3. Detach the engine undershield.





4. Drain off the coolant.

Tighten the drain plug again.



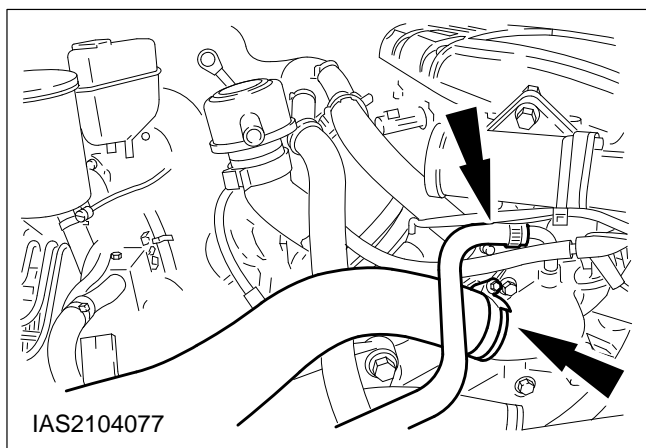
5. Lower the vehicle.

6. Detach the upper part of the air cleaner housing.

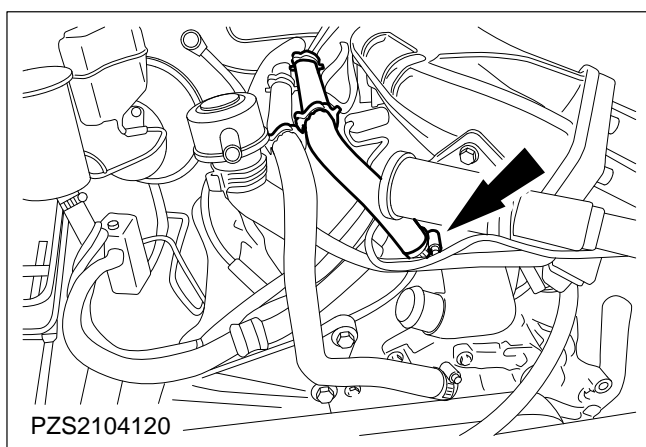
1 Remove the intake pipes from the throttle housing (two hose clamps).

2 Unclip the upper part of the air cleaner housing (four clips).

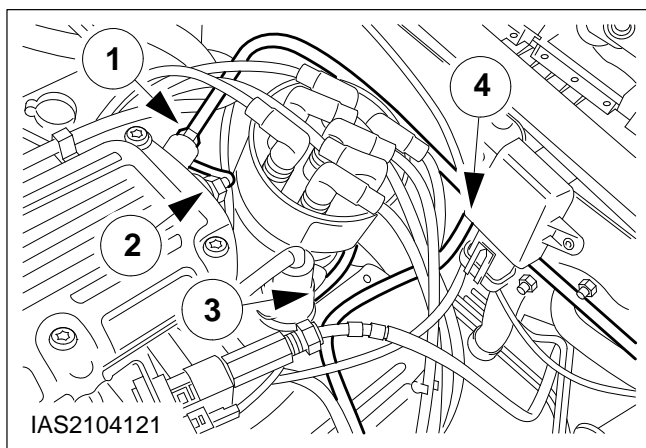
3 Pull off the positive crankcase ventilation (PCV) hose.



7. Disconnect the expansion tank connecting hose and the upper coolant hose from the thermostat housing.

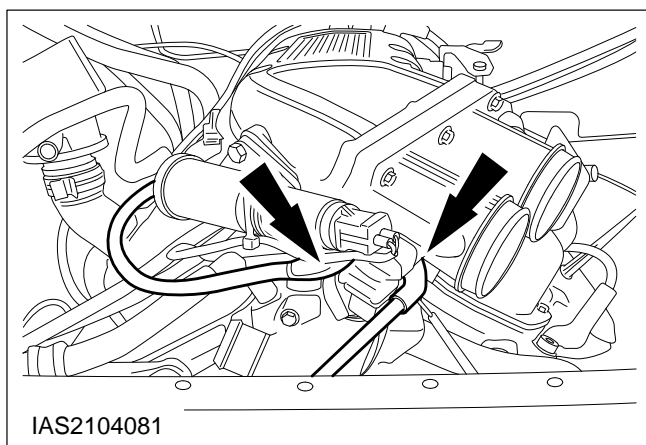


8. Disconnect the heater coolant hose from the thermostat housing.

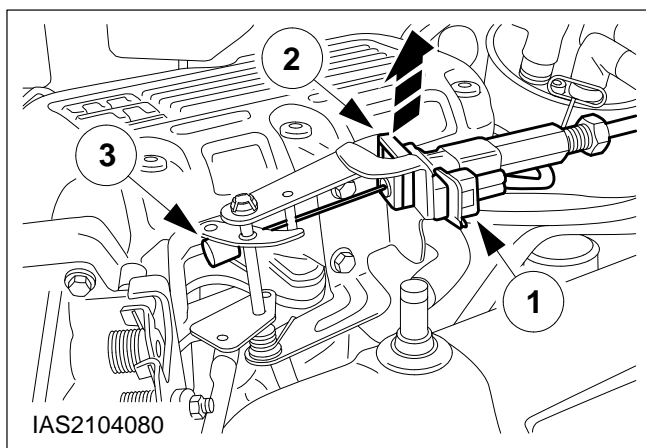


9. Disconnect the vacuum hoses.

- 1 Brake servo.
- 2 From the air plenum chamber.
- 3 From the fuel pressure regulator.
- 4 Manifold absolute pressure sensor (MAP sensor).

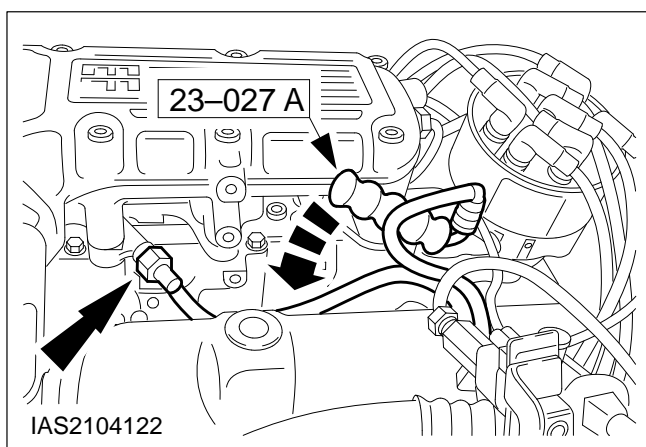


10. Disconnect both vacuum hoses from the throttle housing.



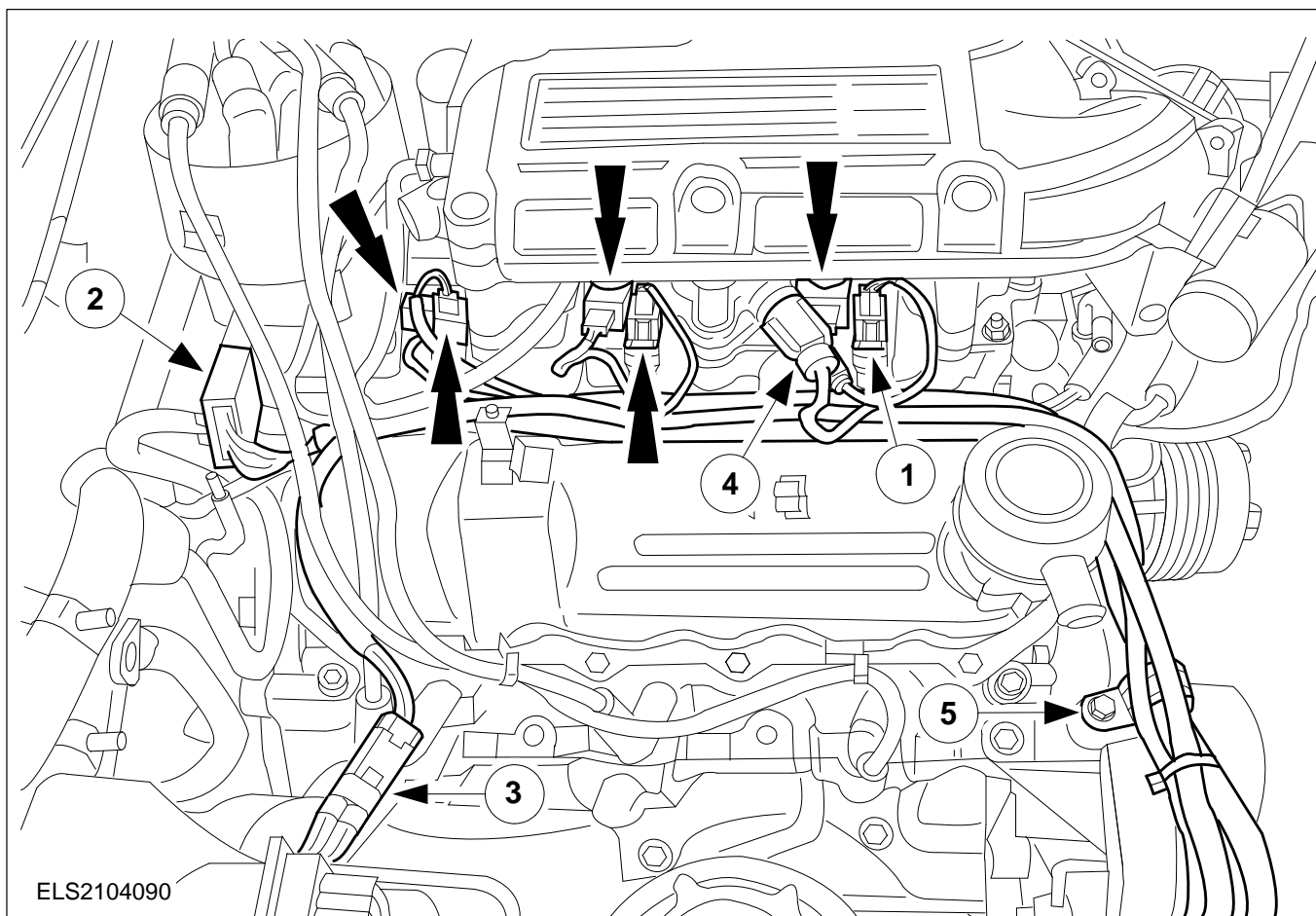
11. Detach the throttle cable.

- 1 Disconnect the kickdown switch plug.
- 2 Remove the clip.
- 3 Unhook the cable.



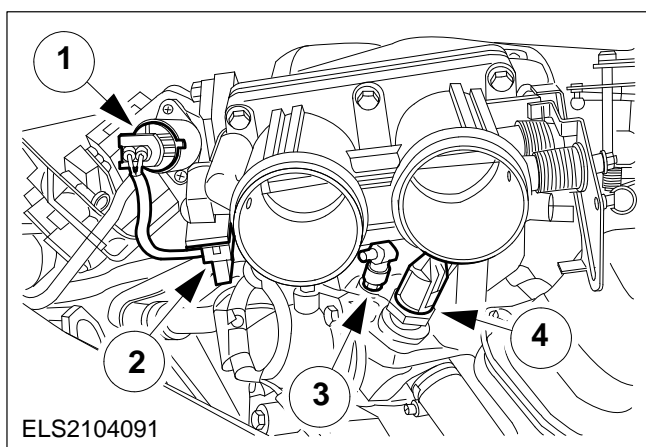
12. Disconnect the fuel pipes.

Fit the special tool in the slots.



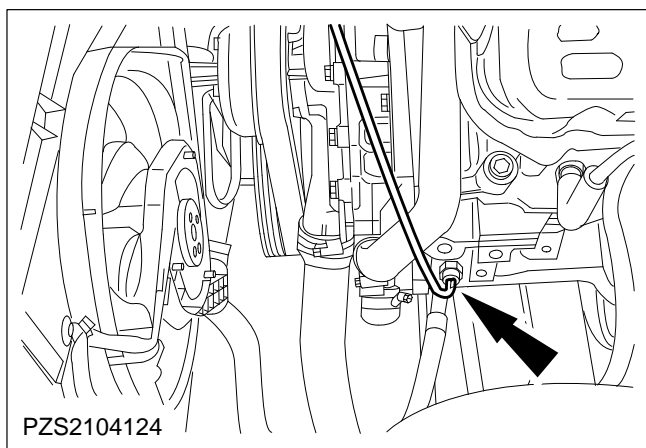
13. Disconnect the engine wiring loom.

- 1 Disconnect the injector plugs.
 - Separate the following plugs:
 - 2 From the distributor
 - 3 Right-hand heated oxygen sensor (HO2S) plug
 - 4 From the intake air temperature sensor (IAT sensor).
 - 5 Remove the wiring loom clip.

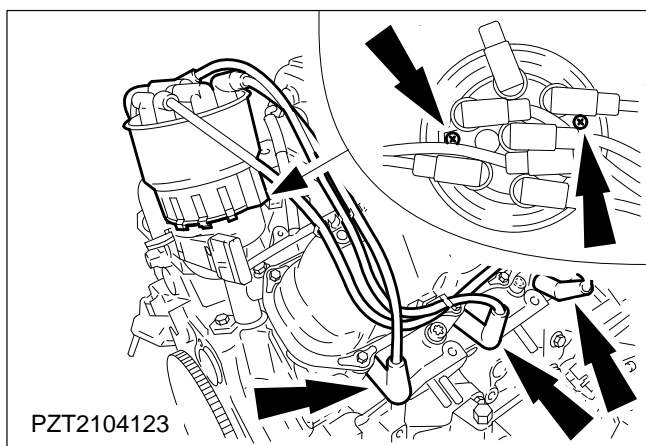


14. Disconnect the engine wiring loom (continued).

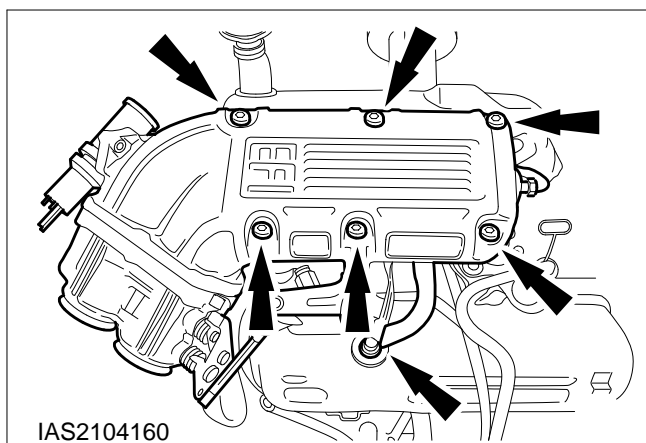
- Separate the following plugs:
 - 1 From the idle speed control (ISC) valve.
 - 2 From the throttle position sensor (TPS).
 - 3 From the coolant temperature sender unit.
 - 4 From the engine coolant temperature (ECT) sensor.



15. Disconnect the oil pressure switch plug.



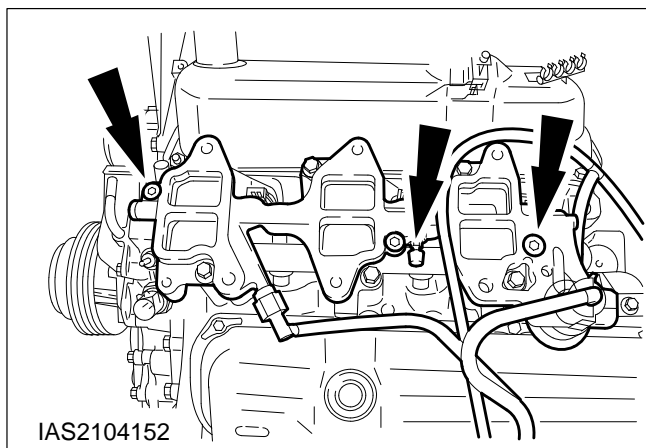
16. Disconnect the ignition wiring and detach the distributor cap.



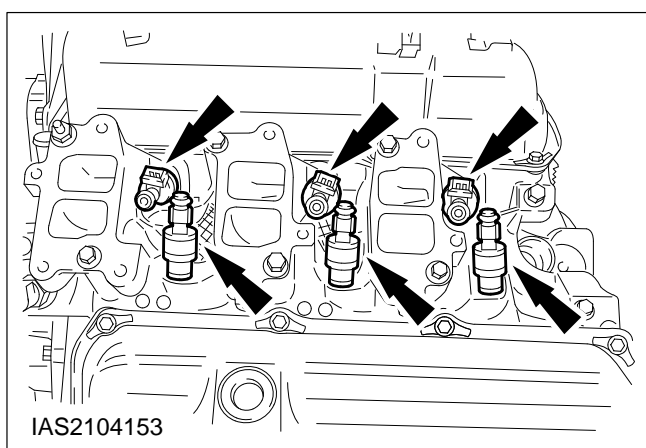
⚠ CAUTION: Do not use a steel scraper.

17. Remove the air plenum chamber with the throttle body.

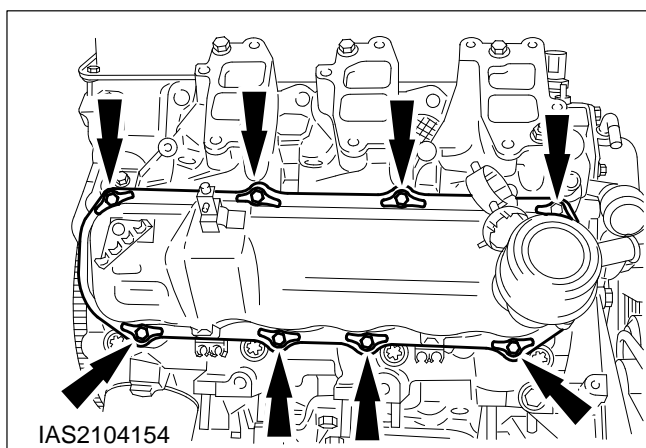
- Remove the gaskets.
- Disconnect the engine breather hose with the valve from the cylinder head cover.



18. Disconnect the fuel rail (four bolts).

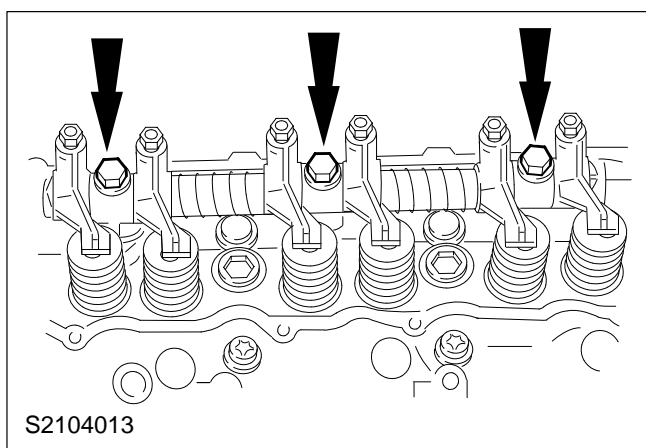


19. Remove the injectors.



20. Remove the cylinder head covers (eight bolts and washers each).

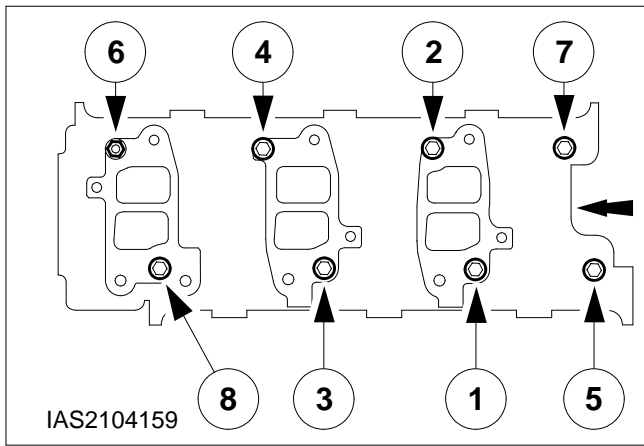
Remove the gaskets.



21. Remove the two rocker shafts.

NOTE: Do not mix up the rocker shafts and push rods.

Withdraw the push rods in the correct sequence and keep them in order.

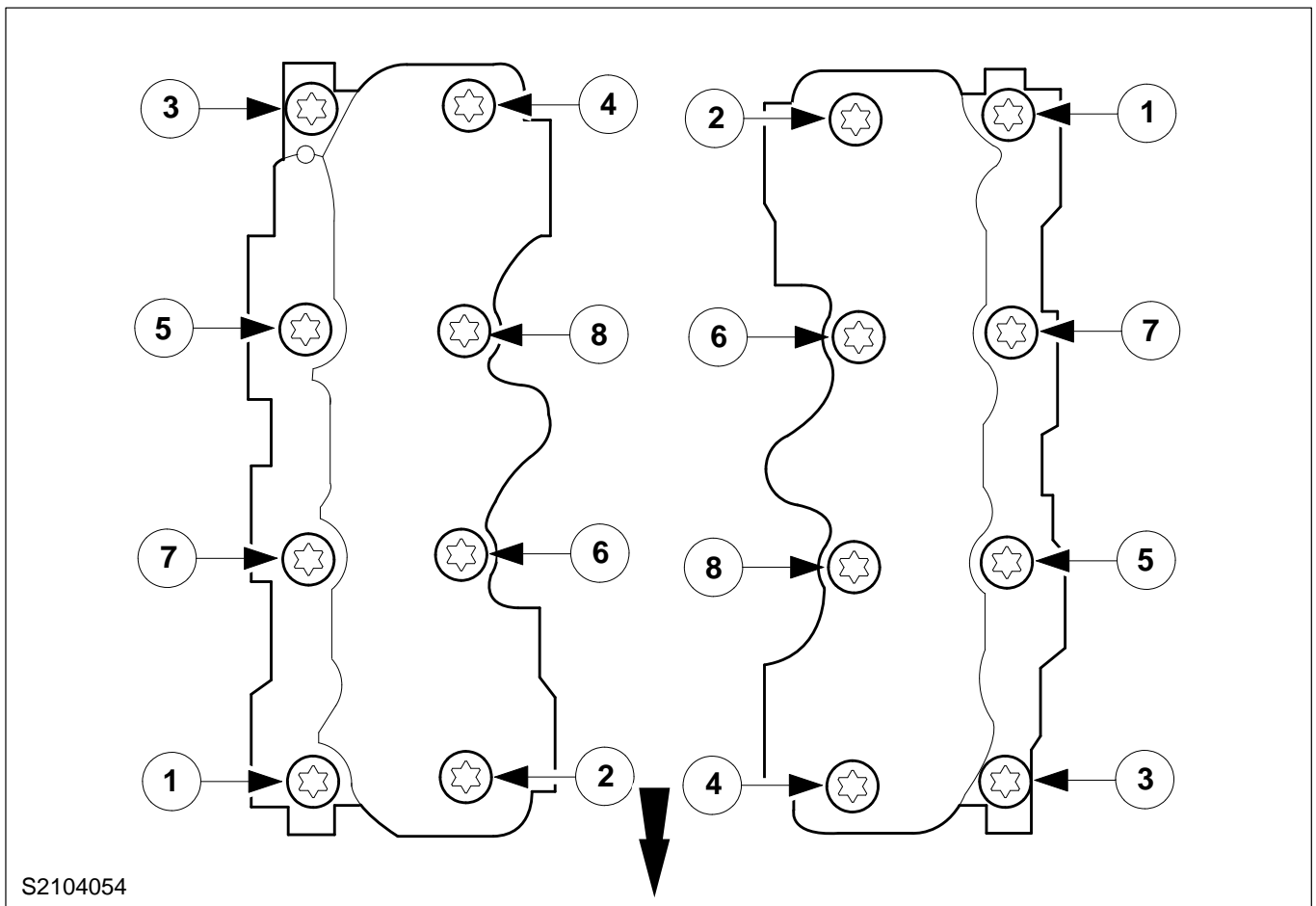


22. Detach the inlet manifold.

- Disconnect the connecting hose running to the thermostat housing.

NOTE: Bolt-slackening sequence.

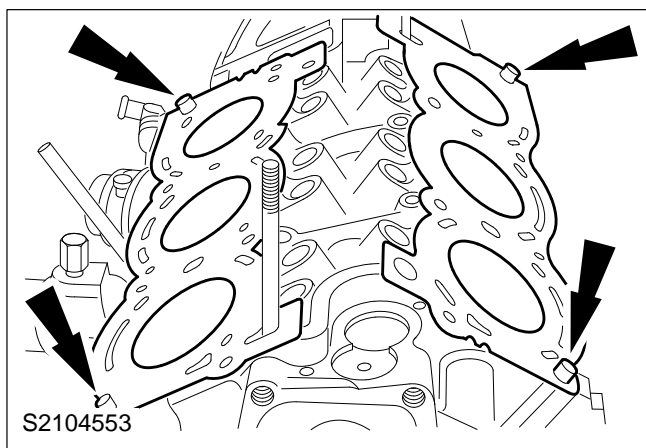
- Detach the inlet manifold (seven bolts, one nut).
- Remove the gasket.



NOTE: Bolt-slackening sequence.

23. Remove the cylinder heads.

The cylinder head bolts may only be used once.



Fit the cylinder heads

24. Fit the new cylinder head gaskets.

- The cylinder block and cylinder head mating faces must be dry and clean.
- The gaskets are marked "TOP FRONT" and are guided into place with the locating sleeves.
- The left and right-hand gaskets are different.

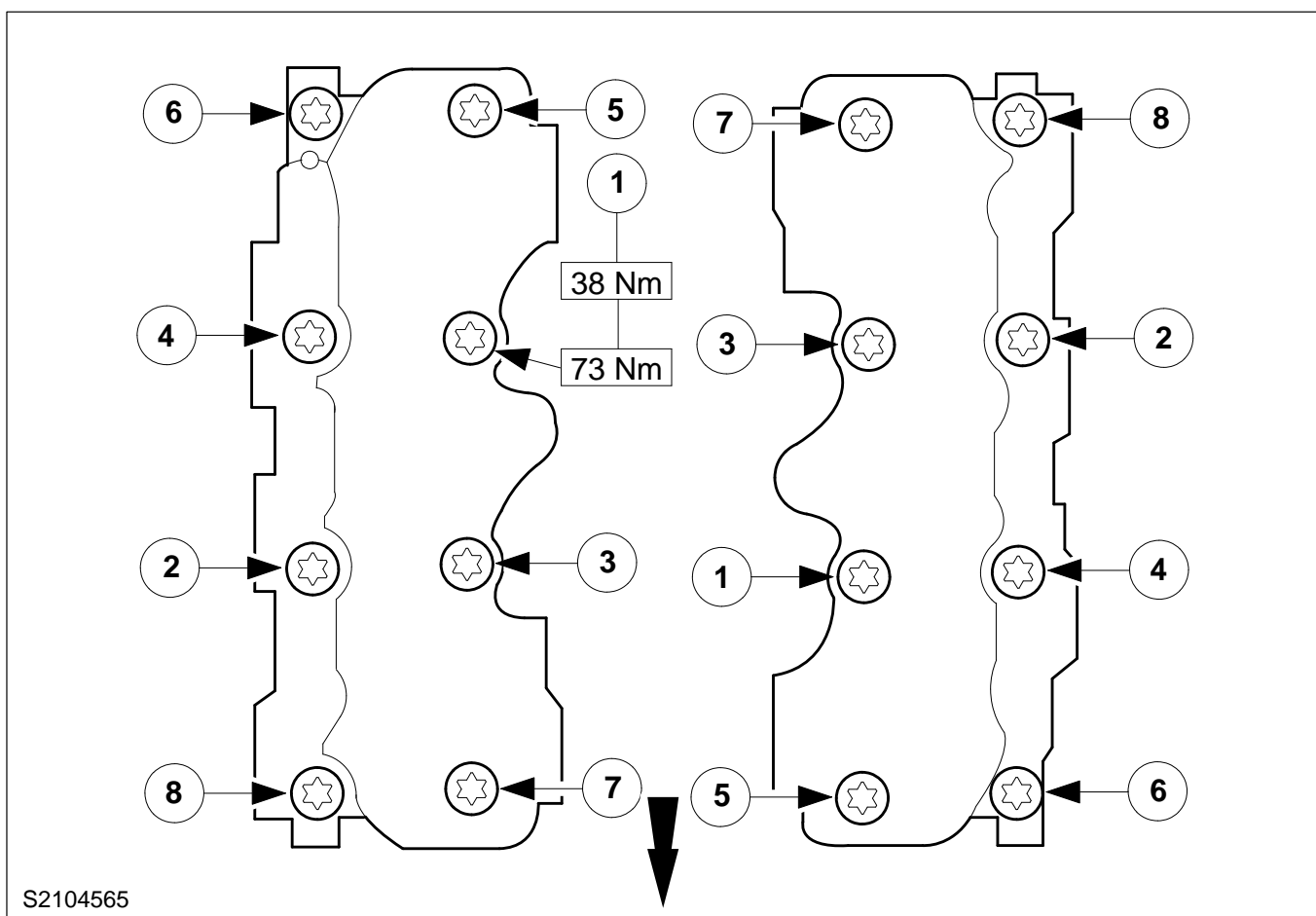
25. Fit the cylinder heads.

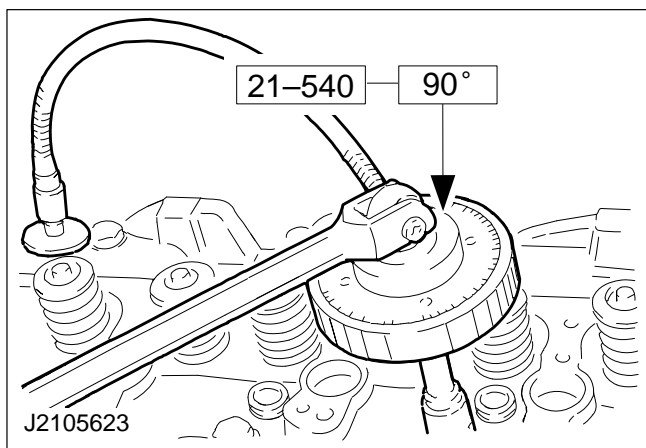
The cylinder heads are guided into locating sleeves.

26. Pre-tighten the cylinder head bolts.

⚠ CAUTION: Use new bolts.

- Lubricate the heads and threads of the cylinder head bolts with oil and fit them.
- Pre-tighten the cylinder head bolts in two stages and in the indicated sequence.

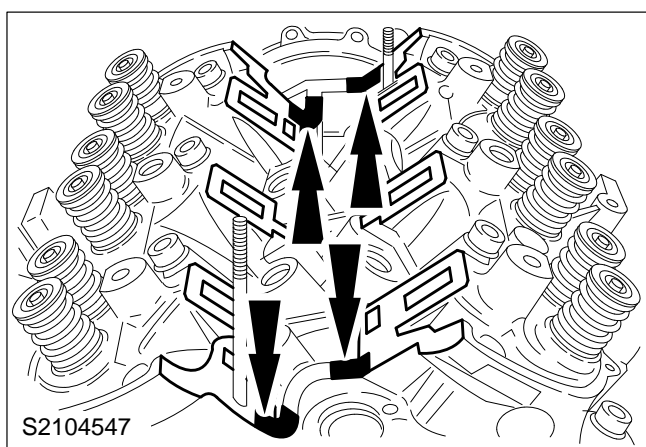




CAUTION: The cylinder head bolts must not be retorqued.

27. Tighten the cylinder head bolts.

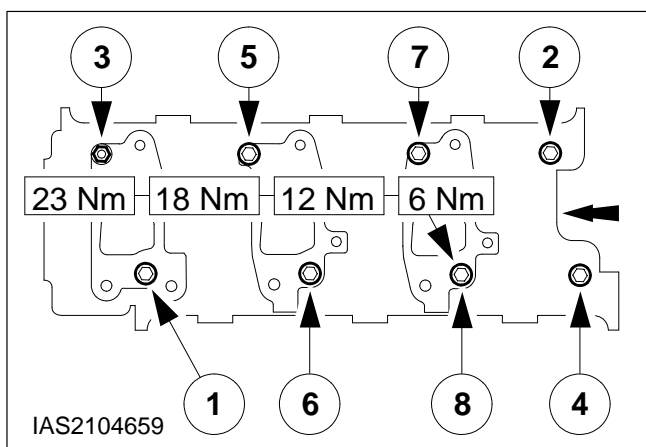
Wait five minutes after the second stage and tighten the bolts a further 90°.



Install the inlet manifold.

28. Install the gasket.

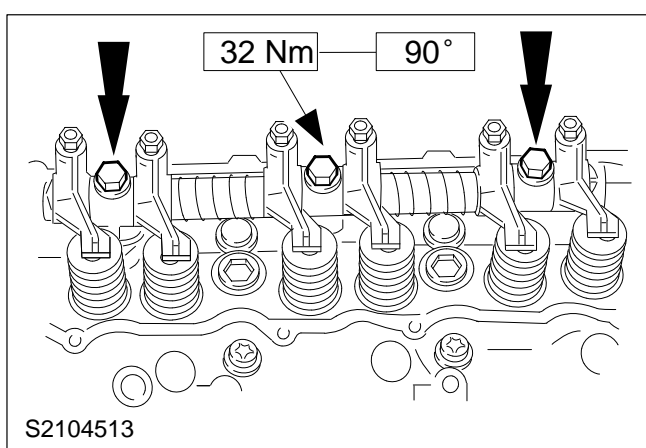
- Apply sealer (Wellseal, SPM-4G-9112-H) to the contact faces of the cylinder block and cylinder heads and the inlet manifold flange.
- Fit the gasket.
- Apply sealer (SPM-4G-9112-H) to the four protruding parts of the gasket between the inlet manifold and the cylinder heads.



NOTE: Bolt-tightening sequence.

29. Fit the inlet manifold (seven bolts, one nut).

Tighten the inlet manifold bolts in four stages.

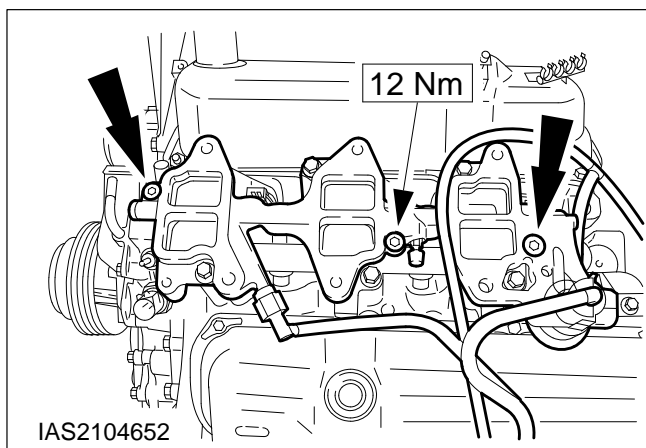


30. Attach the rocker shafts.

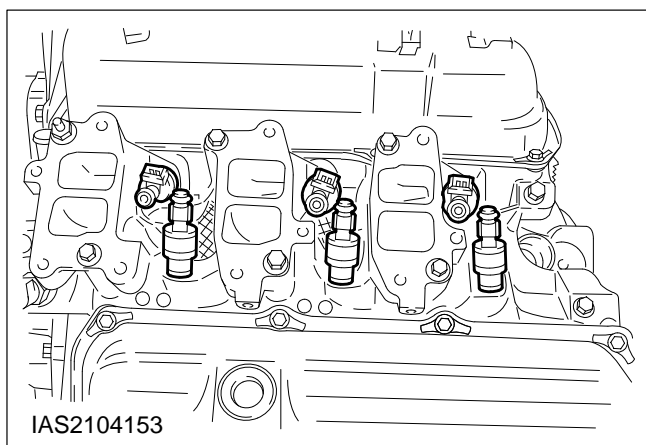
- Lubricate the push rods with oil and fit them.

CAUTION: Do not move the rocker arm adjusting bolts.

- Fit the rocker shafts and screw in the bolts.
- Tighten the bolts.

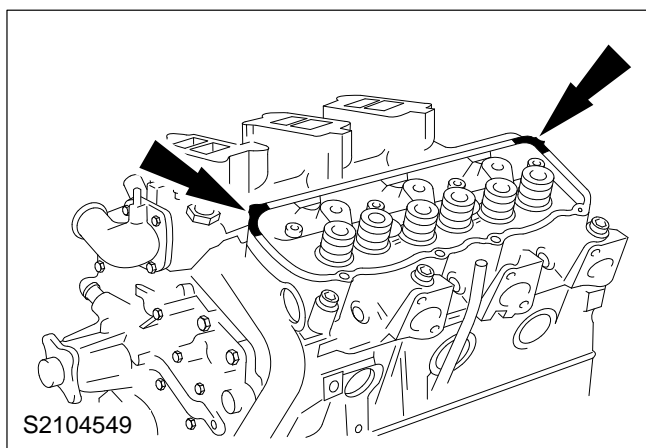


31. Fit the fuel rail (four bolts).



NOTE: Use new seal rings on the injectors.

32. Fit the injectors.

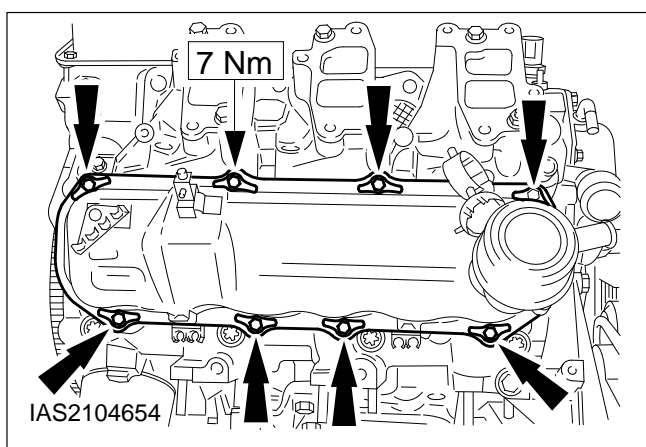


Fit the cylinder head covers.

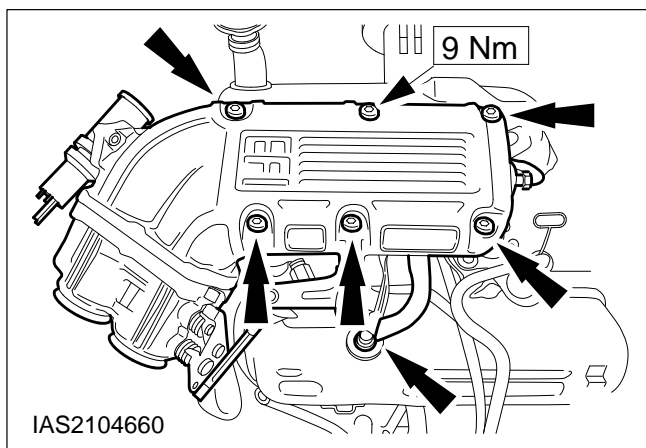
NOTE: Stick the gaskets in place with the adhesive-coated side facing the cylinder head cover.

33. Coat the contact faces of the cylinder head cover flange with sealer (SPM-2G-3121-A).

Lay the gaskets in place.

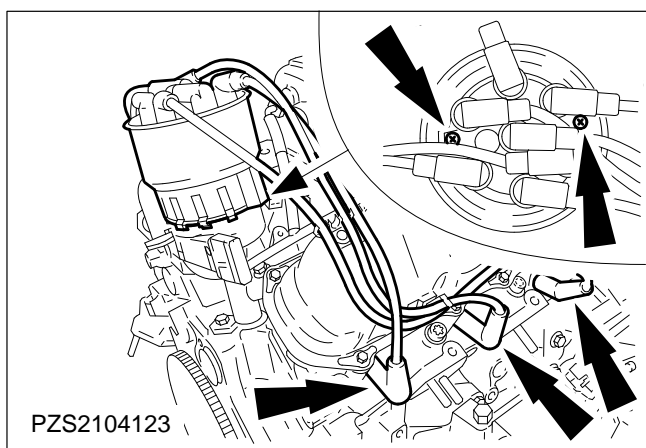


34. Fit the cylinder head covers (eight bolts and washers each).

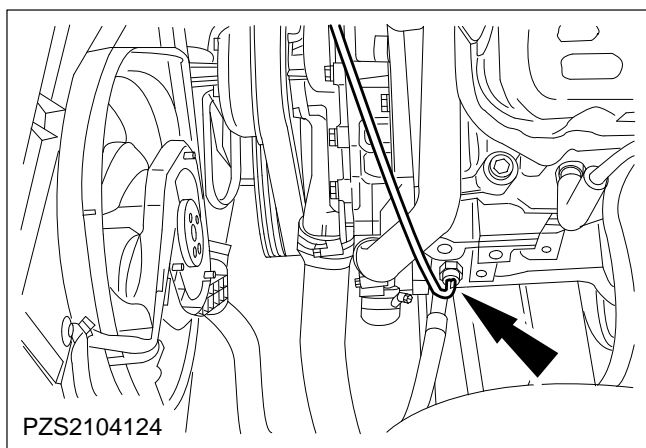


35. Fit the inlet air plenum chamber and throttle housing.

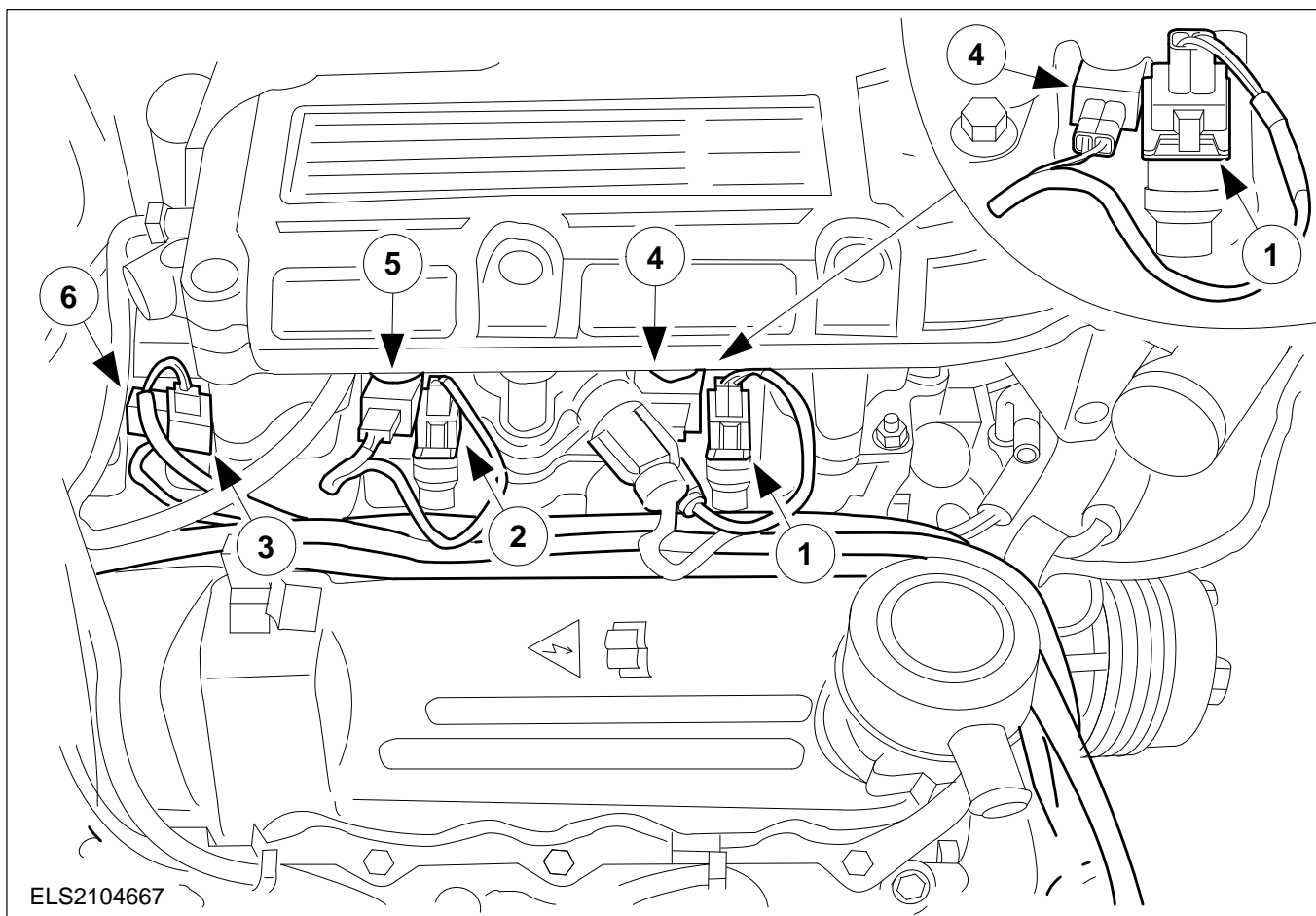
Put the positive crankcase ventilation (PCV) hose in place in the left cylinder head cover.



36. Fit the distributor cap and connect the HT leads.

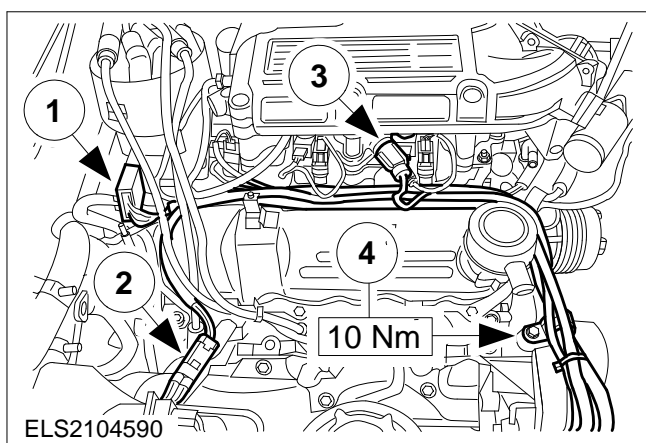


37. Connect the oil pressure switch plug.



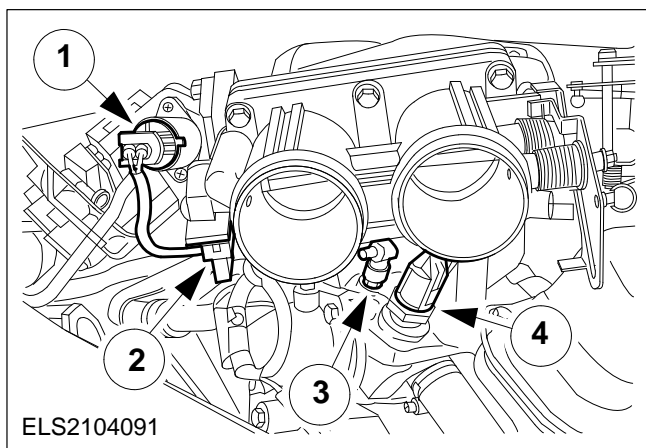
38. Connect the engine wiring loom.

- Lower the vehicle.
- Connect the plugs following the cylinder sequence.



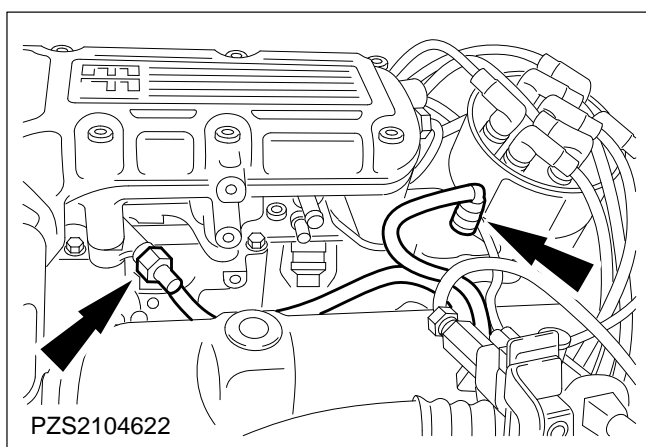
39. Connect the engine wiring loom (continued).

- Connect the following plugs on the right-hand side:
 - 1 Distributor plug
 - 2 Connect the right-hand heated oxygen sensor (HO2S) plug.
 - 3 IAT sensor plug.
 - 4 Fit the wiring loom clamp.

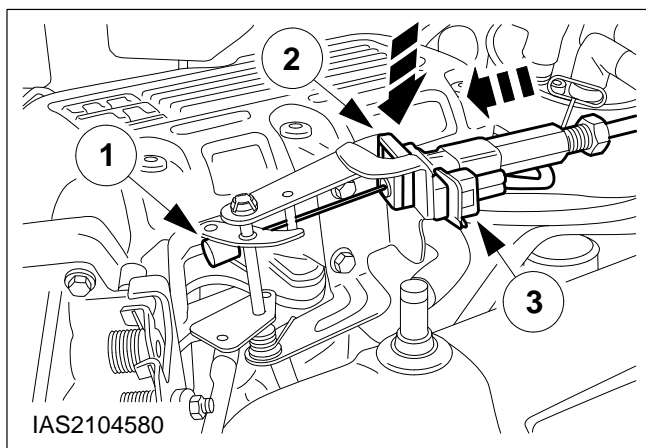


40. Connect the engine wiring loom (continued).

- Connect the following plugs on the left-hand side:
 - 1 ISC valve plug.
 - 2 TP sensor plug.
 - 3 Plug to the coolant temperature sender unit.
 - 4 Engine coolant temperature (ECT) sensor plug.

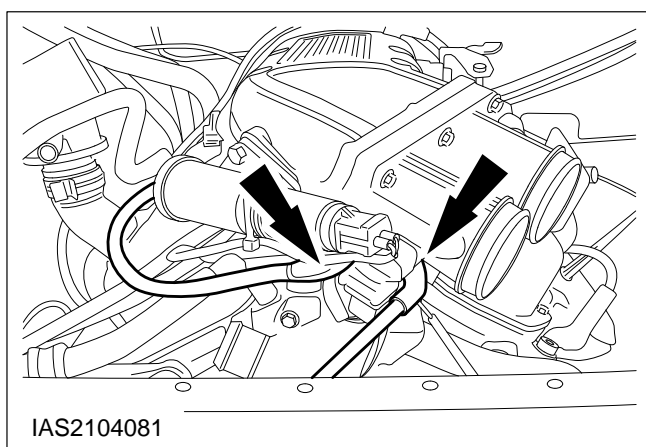


41. Connect the fuel pipes.

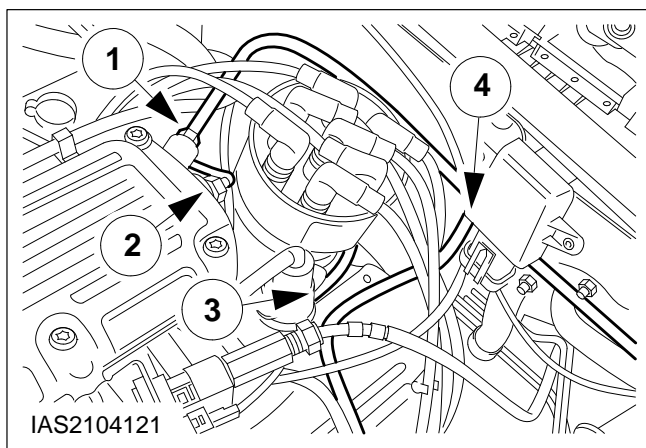


42. Attach the throttle cable.

- 1 Hook the cable in place.
- 2 Secure it with a clip.
- 3 Connect the kickdown switch plug.

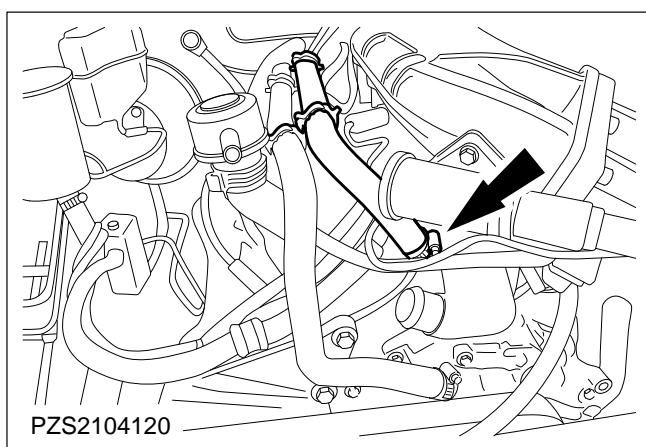


43. Connect both vacuum hoses to the throttle housing.

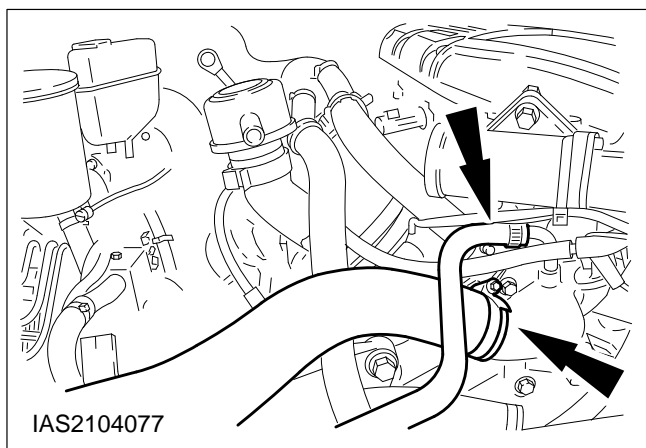


44. Connect the vacuum hoses.

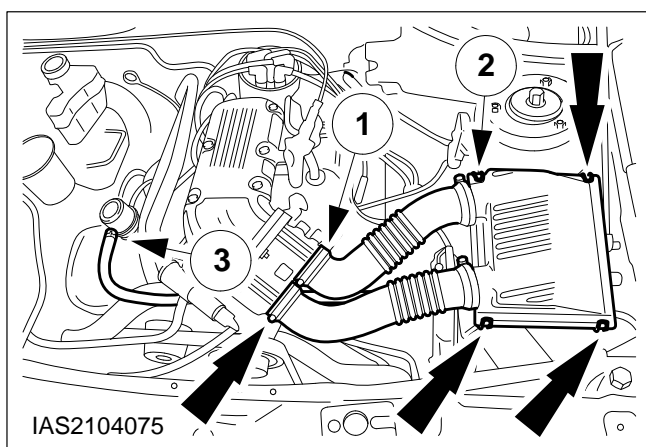
- 1 Brake servo.
- 2 Air plenum chamber.
- 3 Fuel pressure regulator.
- 4 Manifold absolute pressure sensor (MAP sensor).



45. Connect the heater coolant hose to the thermostat housing.

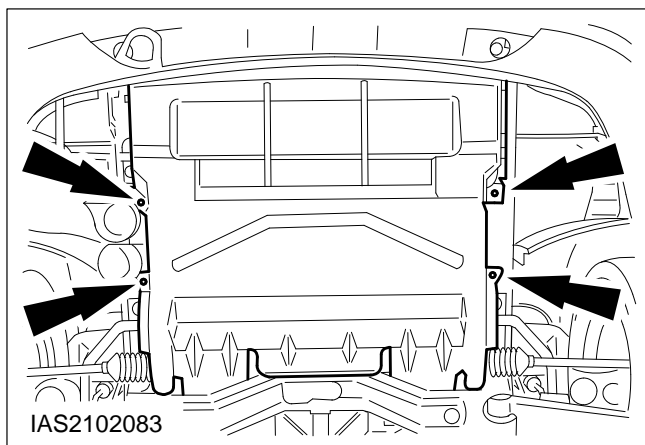
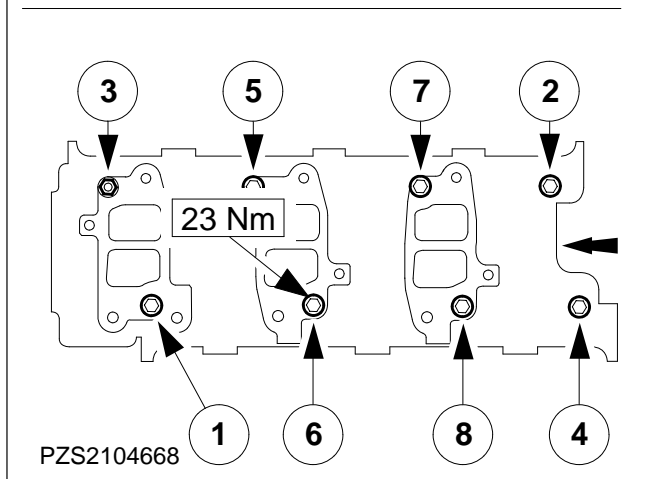
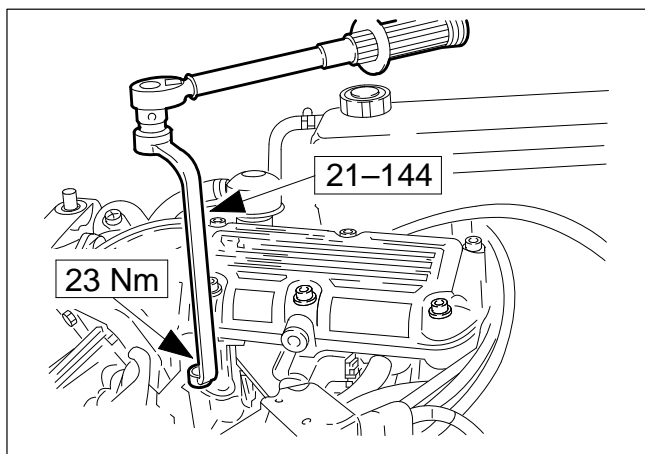


46. Connect the expansion tank connecting hose and the upper coolant hose to the thermostat housing.



47. Attach the upper part of the air cleaner housing.

- 1 Fit the intake pipes on the throttle housing (two hose clamps).
- 2 Clip the upper part of the air cleaner housing in place (four clips).
- 3 Fit the positive crankcase ventilation (PCV) hose.



48. Connect the battery negative lead.

49. Top up the coolant.

50. Retorque the inlet manifold bolts.

- After installation is completed, let the engine run until it reaches operating temperature.

NOTE: Bolt-tightening sequence.

- Retorque the bolts.
- Retorque the nuts using Special Tool 21-092 A.

51. Finishing operations:

- Check the fluid levels and rectify as necessary.
- Check the routing of the vacuum hoses and the wiring and secure them using cable ties as required.
- Change the engine oil.
- Enter the radio keycode.
- Reprogramme the preset radio stations.
- Reset the clock.
- Carry out a road test to enable the PCM module to collect data.
- Check the engine and cooling system for leaks (visual check).
- Attach the engine undershield.