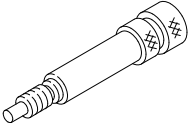
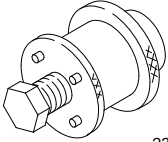


Fuel Injection Pump (97¼ MY Onwards–Engine Build Code Up To 43B-02076) – Remove And Install (23 414 0)

Special Tools

 <p>23018</p>	<p>23-018 Dial gauge holding fixture, injection pump timing</p>
 <p>23044</p>	<p>23-044 Remover, injection pump sprocket</p>

Proprietary Tools

Dial gauge

⚠ WARNING: This procedure involves fuel handling. Be prepared for fuel spillage at all times and always observe fuel handling precautions. Failure to follow these instructions can result in personal injury.

⚠ CAUTION: Diesel fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is therefore essential that absolute cleanliness is observed when working with these components. Always fit blanking plugs to any open orifices or pipes.

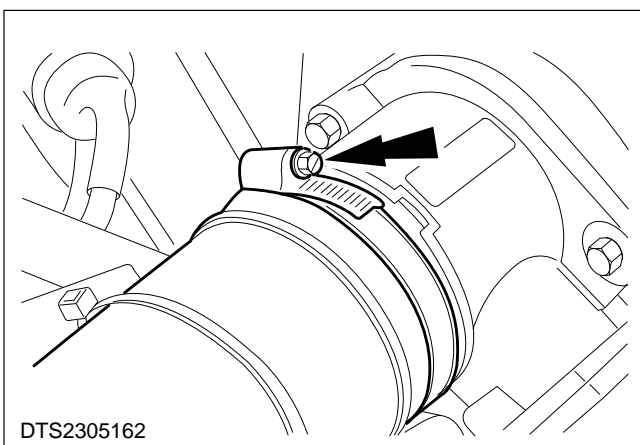
NOTE: The engine build code is stamped on the cylinder block, just below the dipstick tube and also on the front of the engine near the lifting eye (refer to Section 21–03).

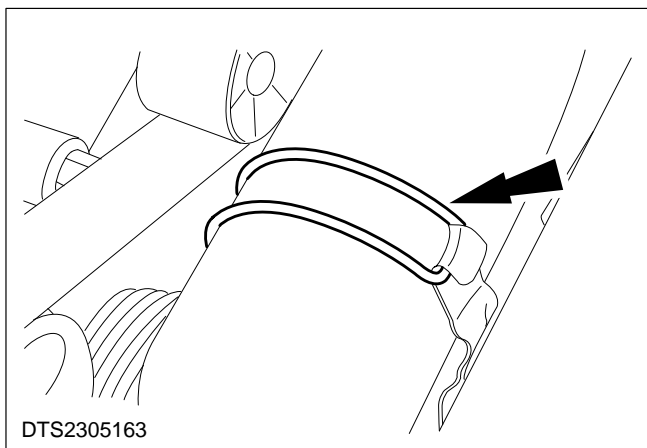
NOTE: It will be necessary to raise the vehicle during this procedure.

Remove

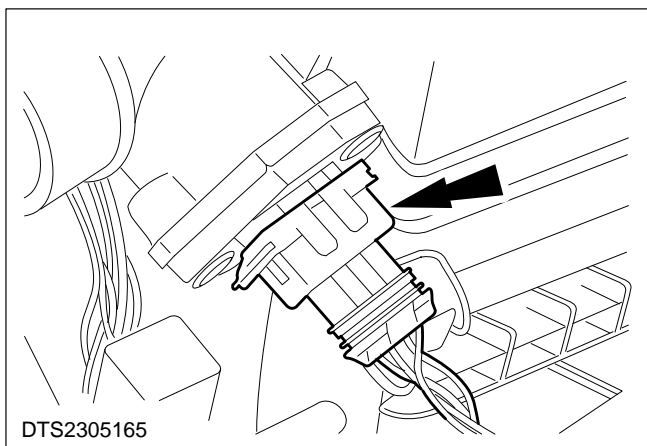
⚠ CAUTION: Disconnect the battery negative lead.

- 1. Disconnect the air cleaner outlet tube from the mass air flow sensor.**

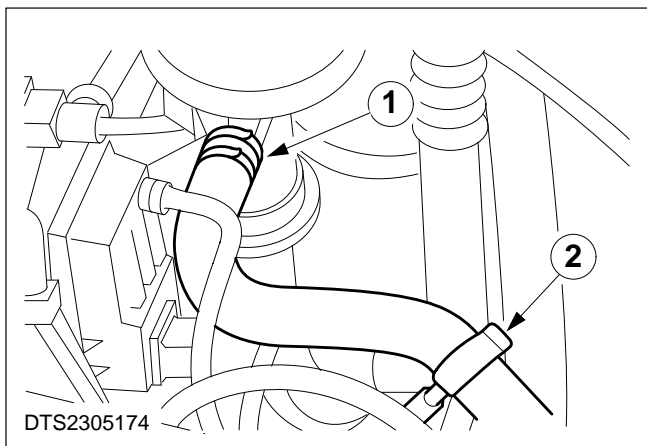




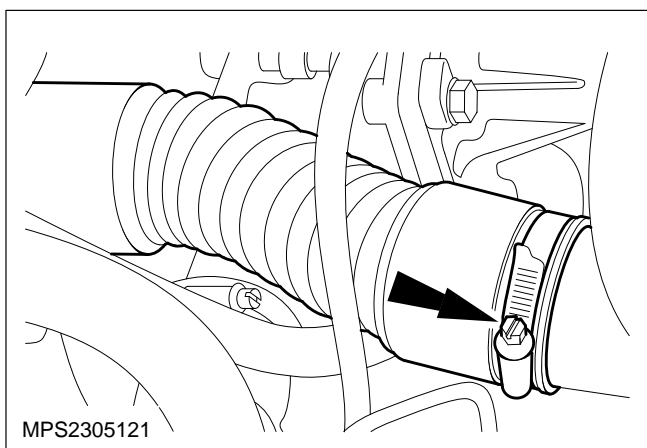
2. Remove the air cleaner outlet tube retaining band.



3. Disconnect the mass air flow sensor multiplug.



4. Disconnect the engine vent pipe.
 - 1 Disconnect the pipe.
 - 2 Detach the pipe from the retaining clip.

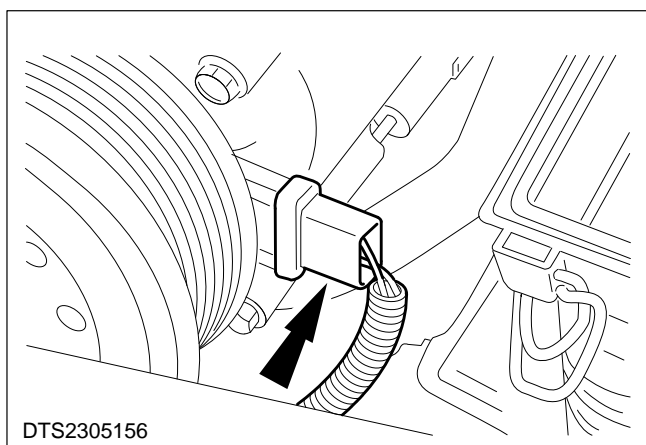


5. Disconnect the air cleaner outlet tube from the turbocharger compressor intake pipe (one clip).
6. Remove the air cleaner outlet tube.

Vehicles fitted with air conditioning

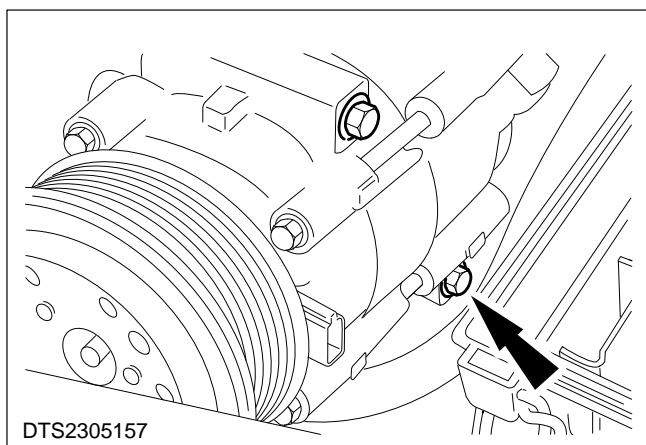
7. Remove the alternator drive belt (refer to Operation Number 31 413 0).

8. Disconnect the air conditioning clutch multiplug.



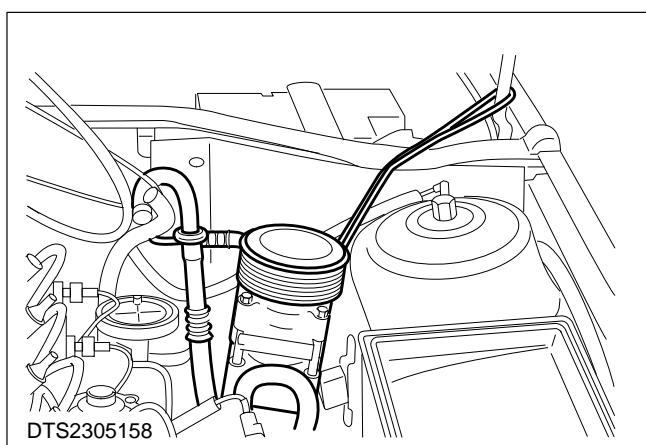
⚠ CAUTION: When removing the retaining bolts, support the air conditioning compressor to prevent damage.

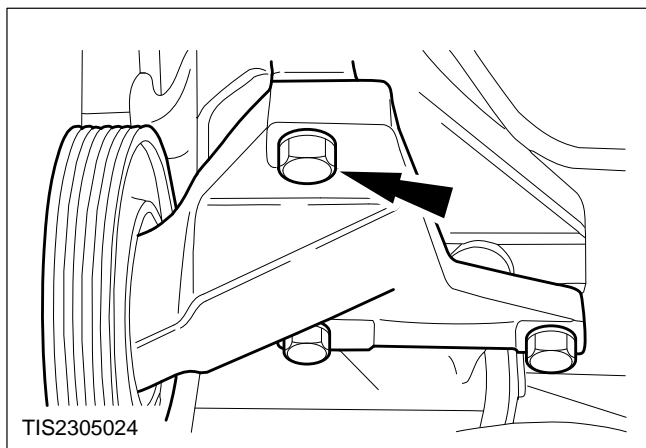
9. Remove the three air conditioning compressor retaining bolts.



⚠ CAUTION: When positioning the air conditioning compressor to one side, do not put any strain on the air conditioning pipes.

10. Using a piece of heavy wire, secure the air conditioning compressor to one side.



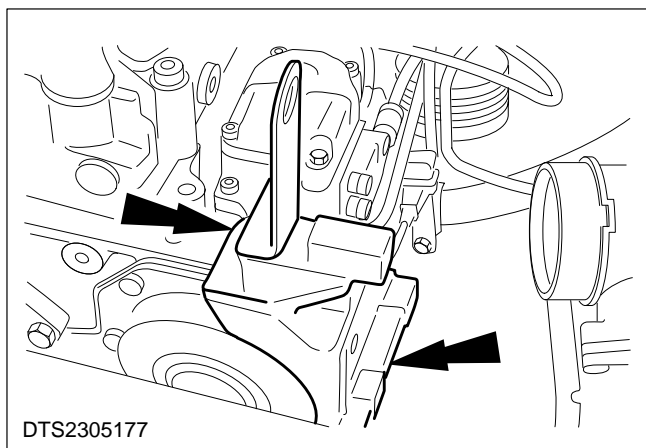


Vehicles without air conditioning

- 11. Remove the alternator drive belt idler pulley.**

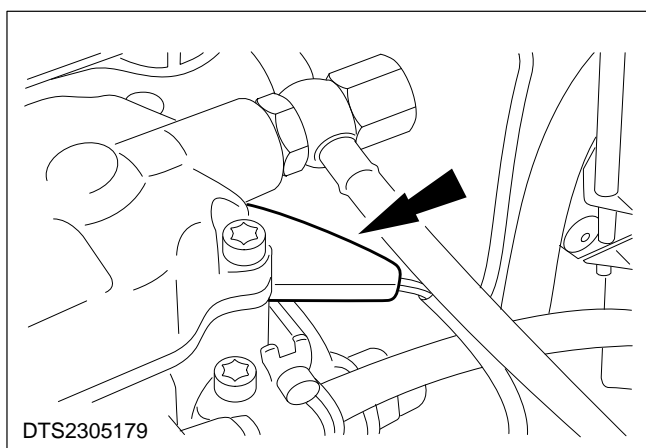
All vehicles

- 12. Remove the alternator assembly (refer to Operation Number 31 414 0).**

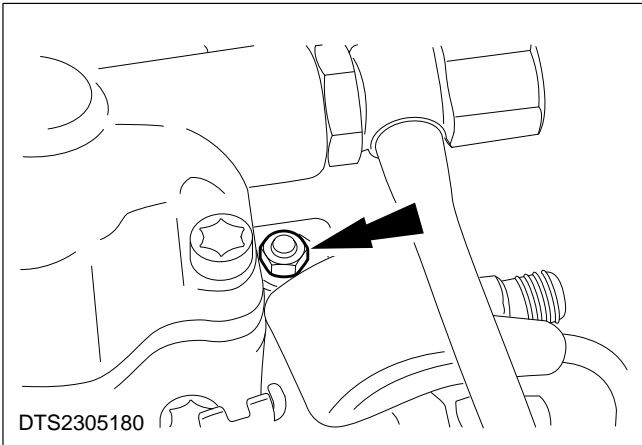


- 13. Remove the alternator drive belt idler pulley/air conditioning compressor/alternator assembly mounting bracket.**

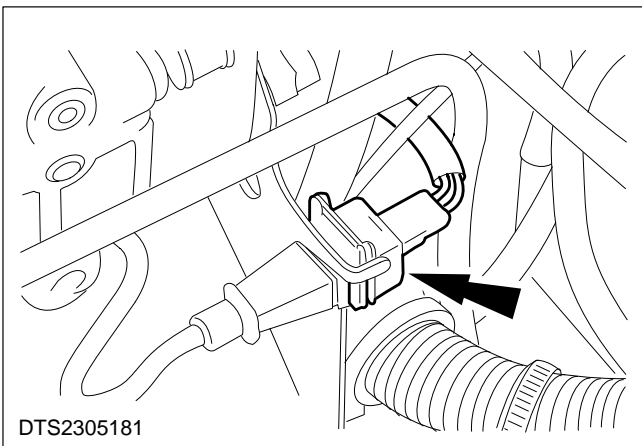
- 14. Remove the fuel injector delivery pipes (refer to Operation Number 23 483 0).**



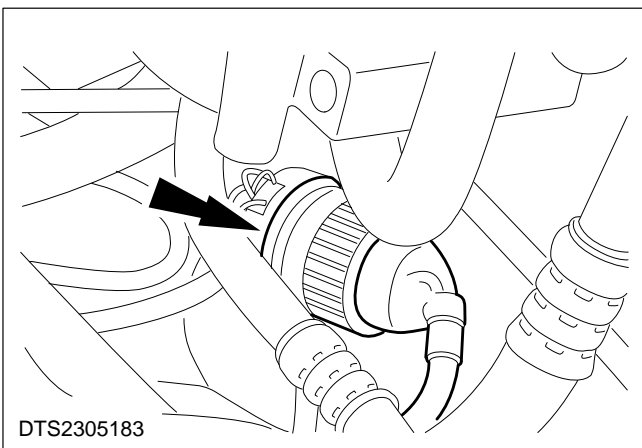
- 15. Detach the stop control solenoid electrical connector cover.**



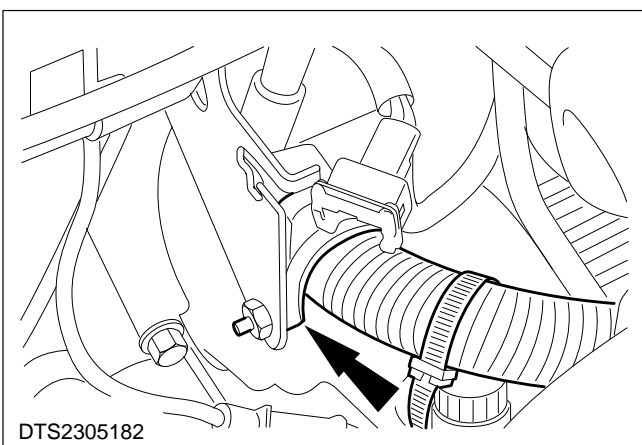
16. Disconnect the stop control solenoid electrical connector.



17. Disconnect the fuel injection pump multiplug.

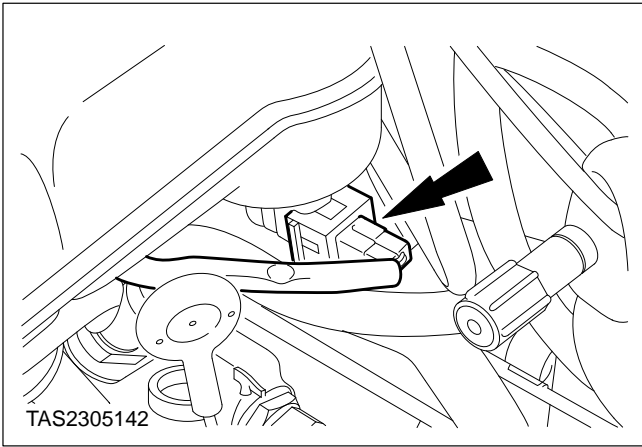


18. Disconnect the fuel injection pump wiring harness multiplug.

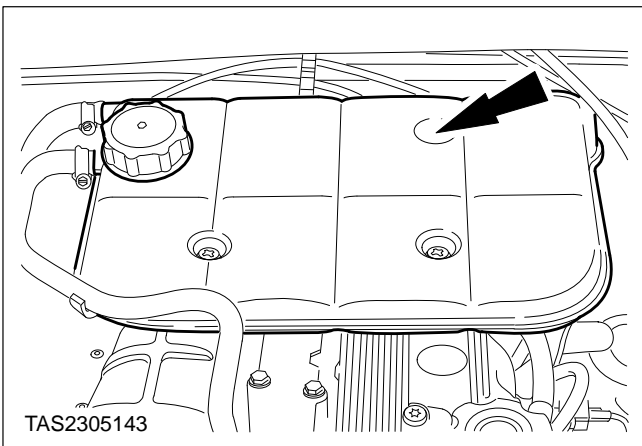


19. Detach the engine wiring harness from the bracket.

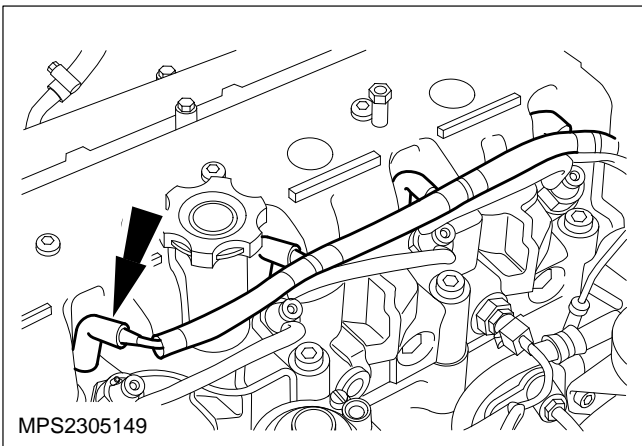
- Remove the retaining screw.



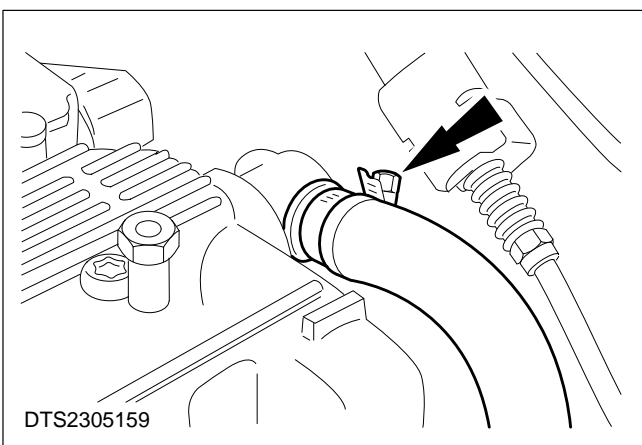
20. Disconnect the engine coolant low level warning switch multiplug.



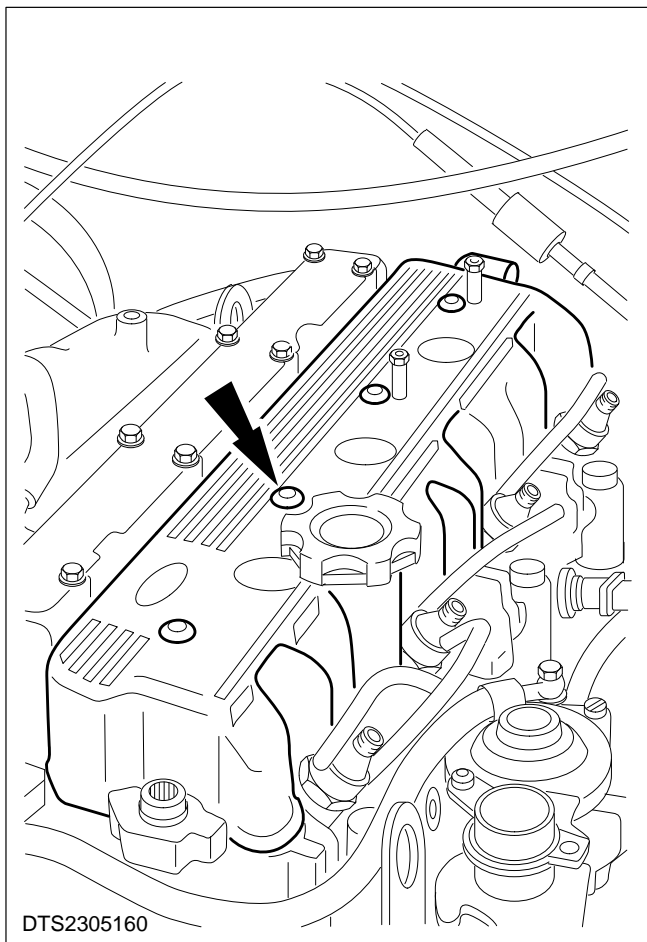
21. Remove the three retaining screws and position the expansion tank to one side.



22. Disconnect the glow plug multiplugs.

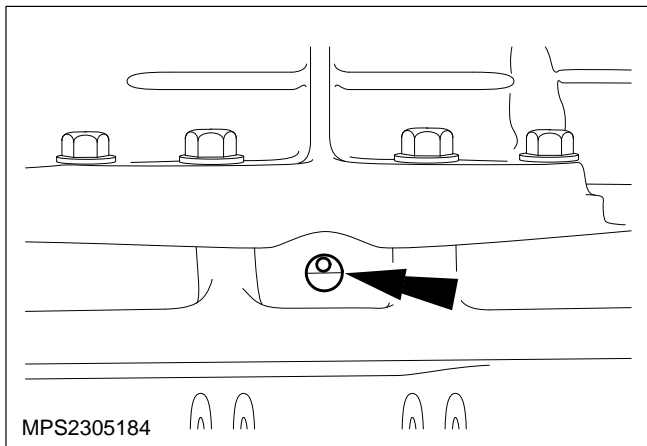


23. Disconnect the vent pipe from the cam cover.



24. Remove the cam cover.

25. Raise and support the vehicle.

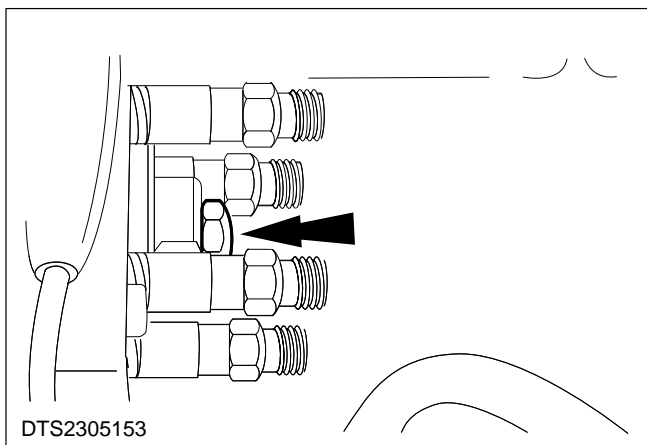


NOTE: After aligning the TDC mark, check the positioning of the valves as there are two holes in the flywheel.

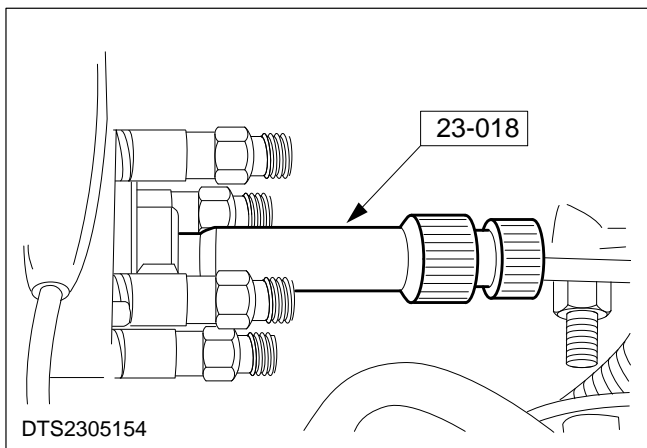
26. Turn the engine clockwise until number one cylinder is at TDC.

- Align the hole in the flywheel with the hole in the transmission adaptor plate.

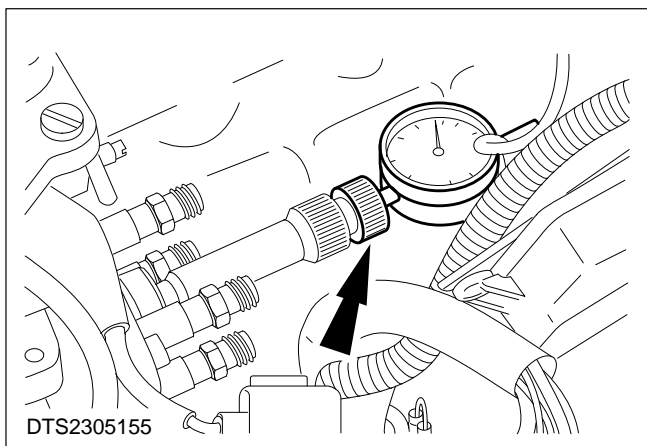
27. Lower the vehicle.



28. Remove the blanking plug from the rear of the fuel injection pump.



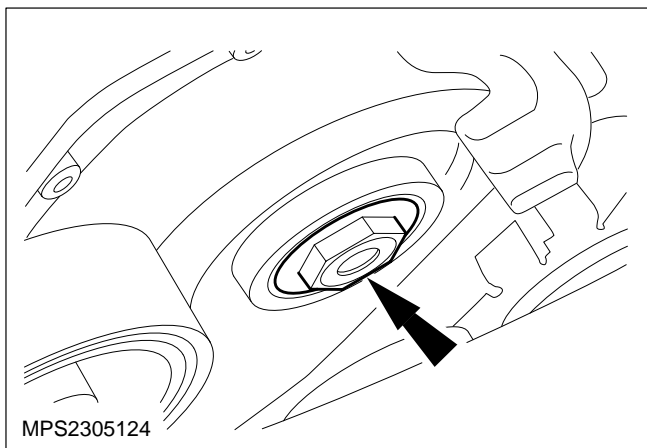
29. Install the dial gauge holding fixture to the rear of the fuel injection pump.



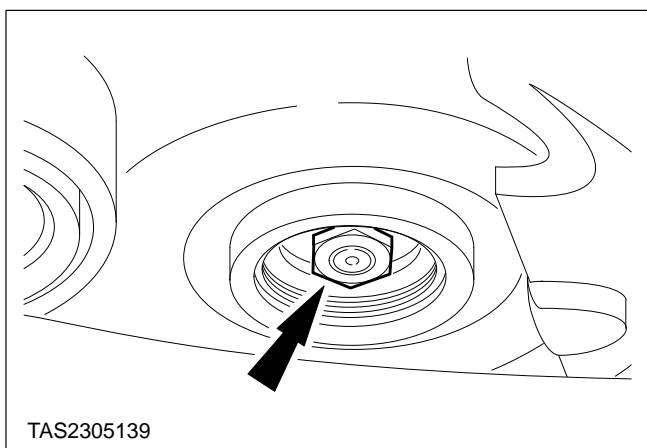
30. Install the dial gauge to the holding fixture and secure it with the locking collar.

31. Rotate the engine counterclockwise until the dial gauge needle stops moving (approximately 25° – 30° BTDC).

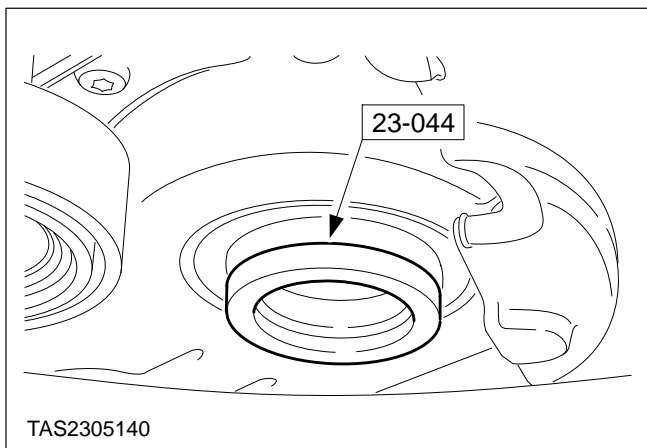
32. Zero the dial gauge.



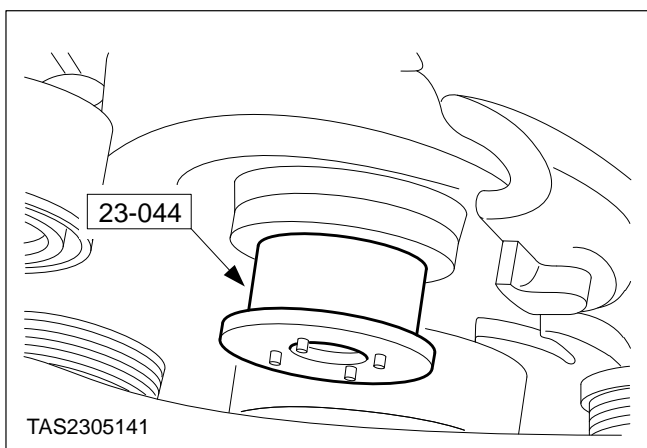
33. Remove the blanking plug from the timing cover.



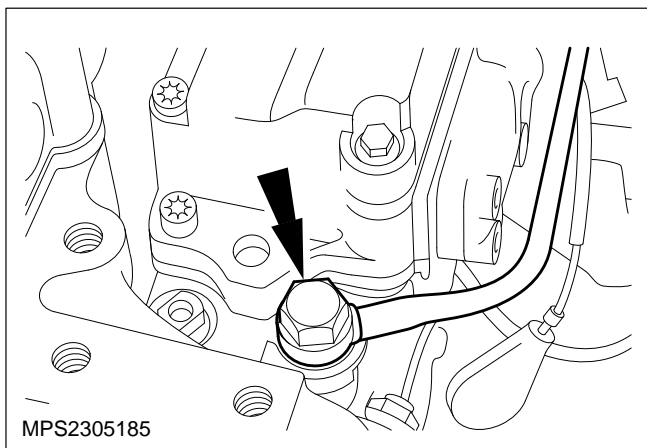
34. Remove the fuel injection pump drive gear retaining nut.



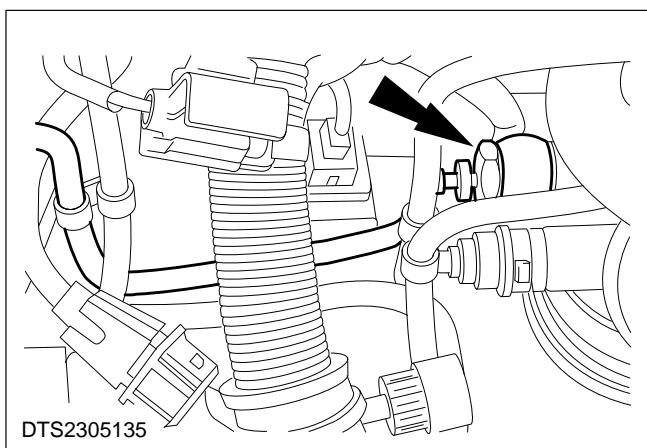
35. Install the special tool adaptor into the timing cover.



36. Install the body of the special tool into the fuel injection pump drive gear.

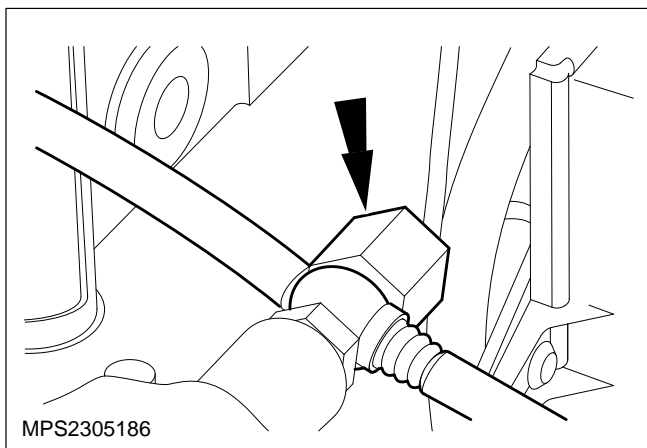


37. Disconnect the fuel supply pipe from the fuel injection pump.

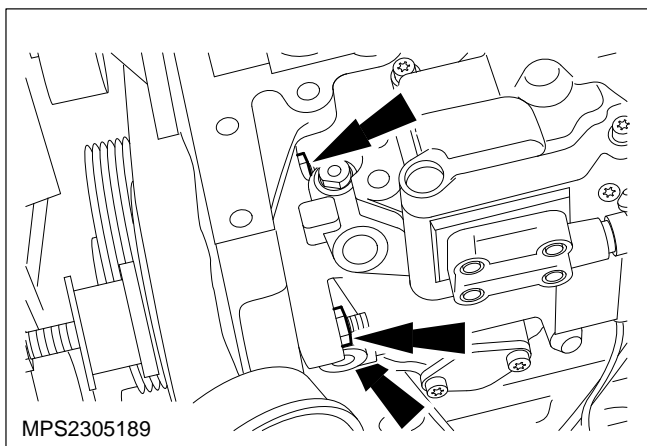


38. Remove the fuel supply pipe.

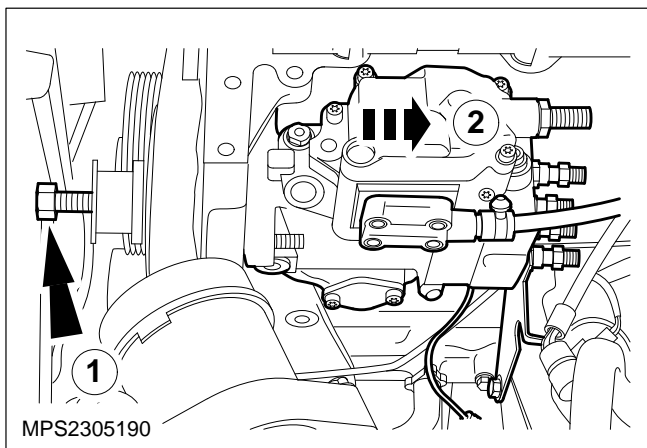
- Disconnect the fuel supply pipe from the fuel filter.



39. Disconnect the fuel return pipe from the fuel injection pump.



40. Remove the fuel injection pump retaining nuts.

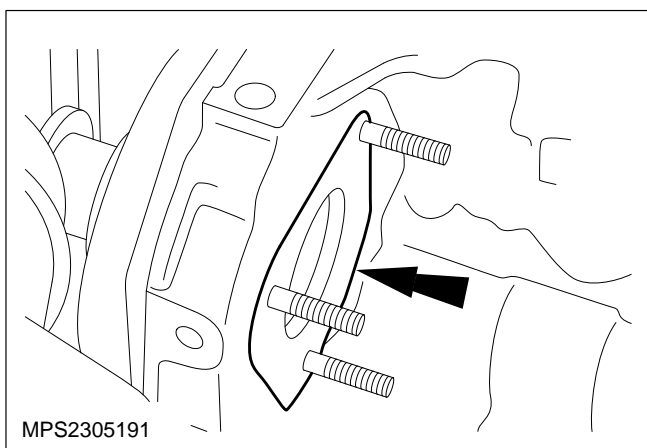


41. Remove the fuel injection pump.

1 Fit the bolt to the special tool to extract the fuel injection pump from the drive gear.

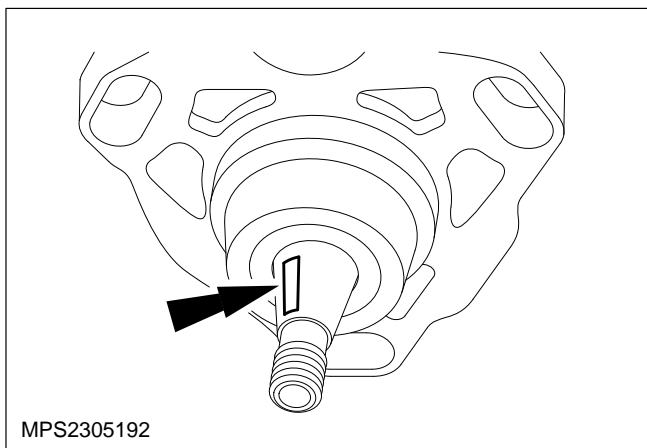
NOTE: The fuel injection pump drive gear has two keyways. During removal, the location of the key in the fuel injection pump shaft should be noted for installation.

2 Remove the fuel injection pump.



Install

42. Install a new fuel injection pump gasket.

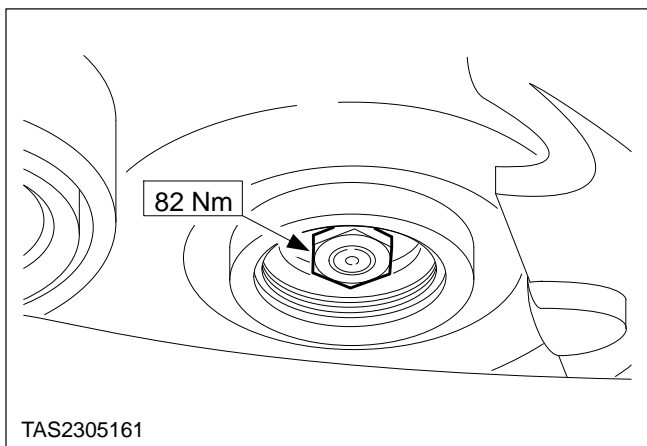


NOTE: When installing the fuel injection pump, make sure that the key in the shaft locates in the correct keyway in the fuel injection pump drive gear.

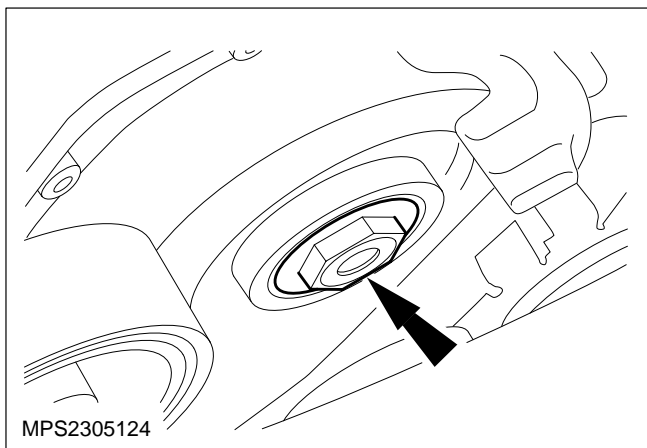
43. Install the fuel injection pump.

- Do not fully tighten the fuel injection pump retaining nuts at this stage.

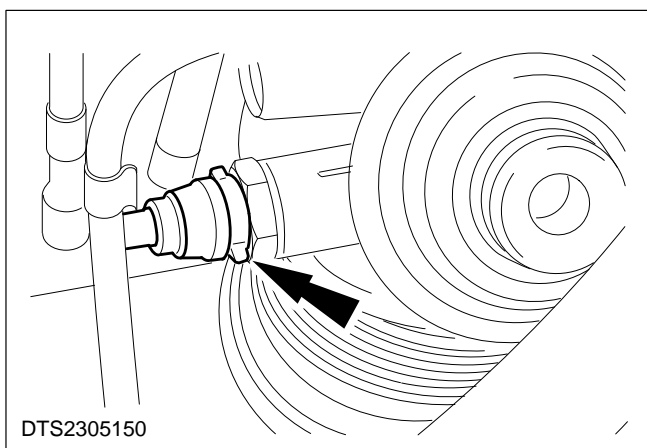
44. Remove the special tool from the timing cover.



45. Install the fuel injection pump drive gear retaining nut.

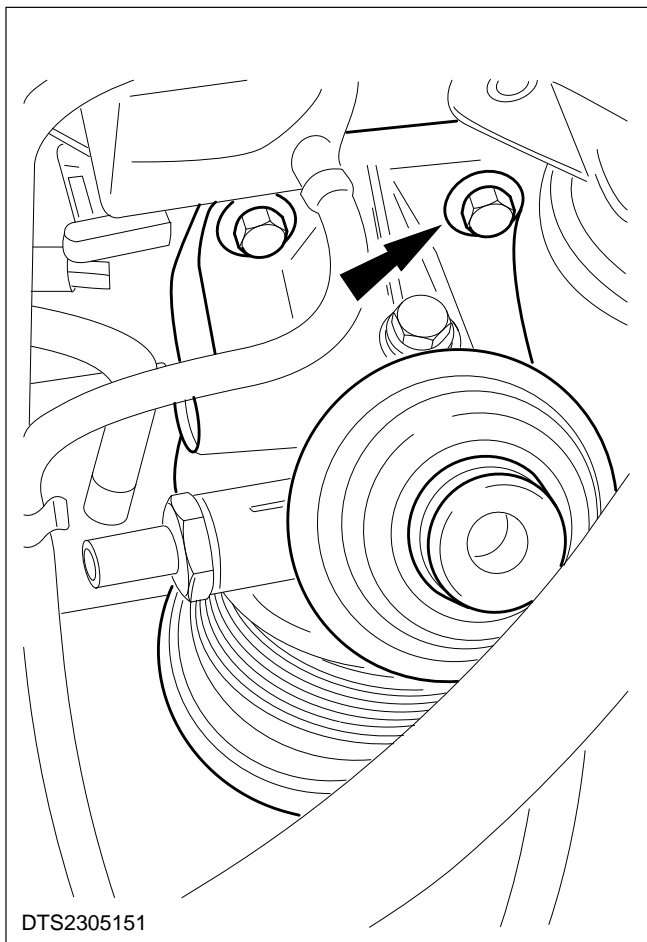


46. Install the blanking plug from the timing cover.

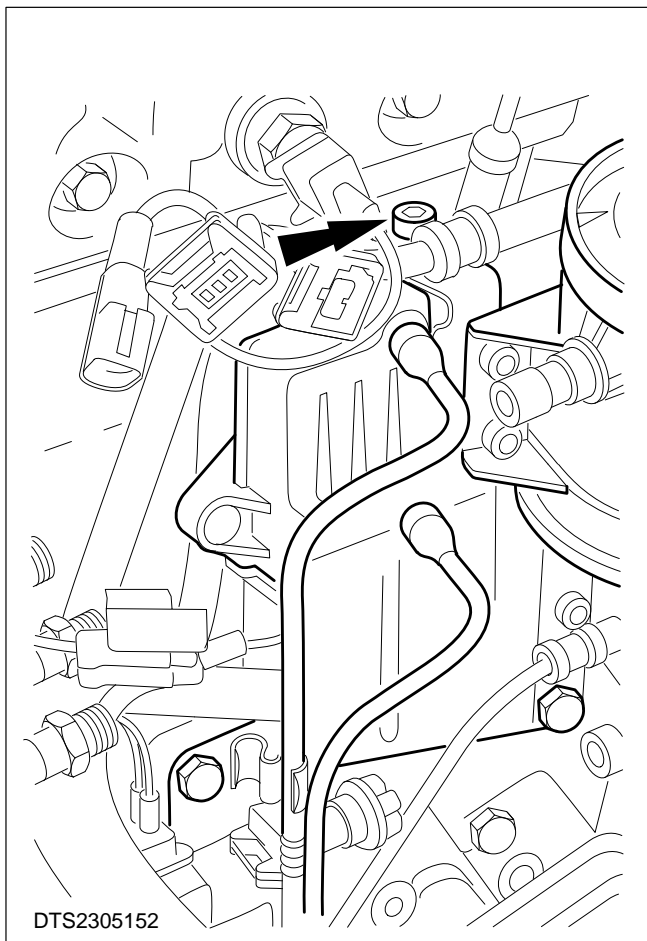


Fuel Injection Pump – Timing – Check (23 410 0)

47. Disconnect the inlet pipe from the fuel filter.

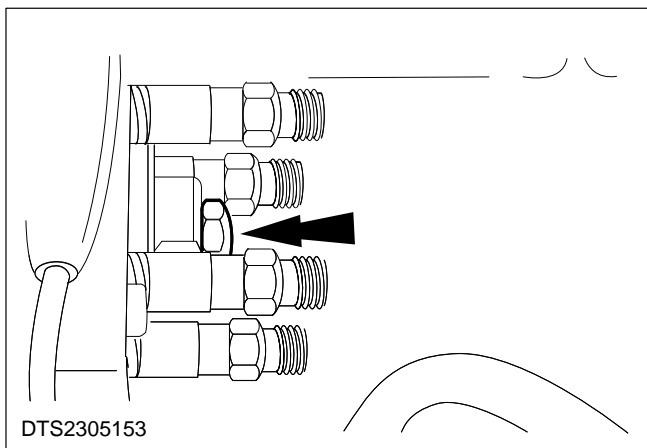


48. Remove the fuel filter.

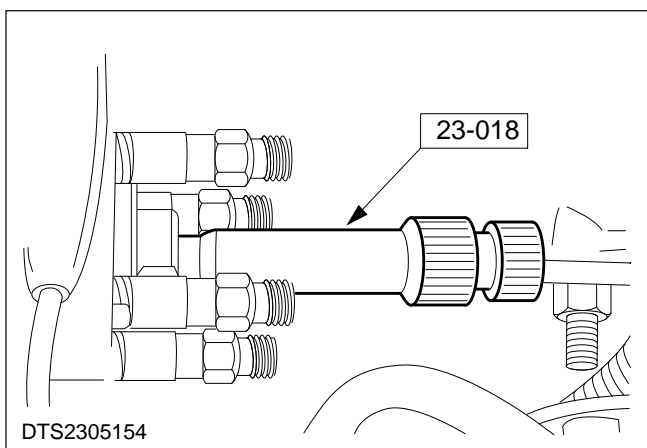


49. Remove the four retaining bolts and position the diesel fuel heater mounting bracket to one side.

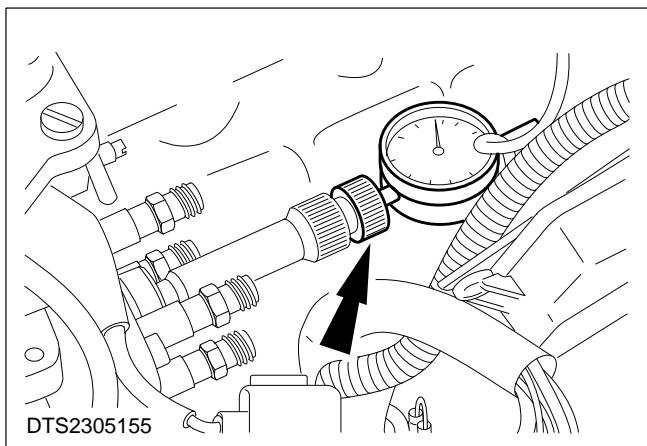
50. Raise and support the vehicle.



51. Remove the blanking plug from the rear of the fuel injection pump.



52. Install the dial gauge holding fixture into the rear of the fuel injection pump.

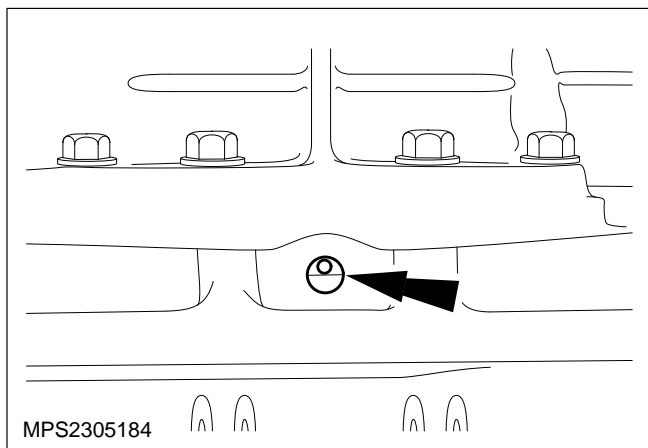


53. Install the dial gauge into the holding fixture and secure it with the locking collar.

54. Rotate the engine counterclockwise until the dial gauge needle stops moving.

55. Zero the dial gauge.

56. Raise and support the vehicle.



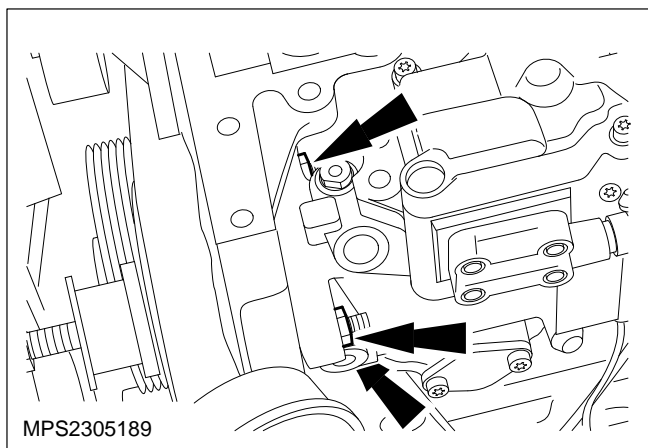
NOTE: After aligning the TDC mark, check the positioning of the valves as there are two holes in the flywheel.

57. Turn the engine clockwise until number one cylinder is at TDC.

- Align the hole in the flywheel with the hole in the transmission adaptor plate.

58. Lower the vehicle.

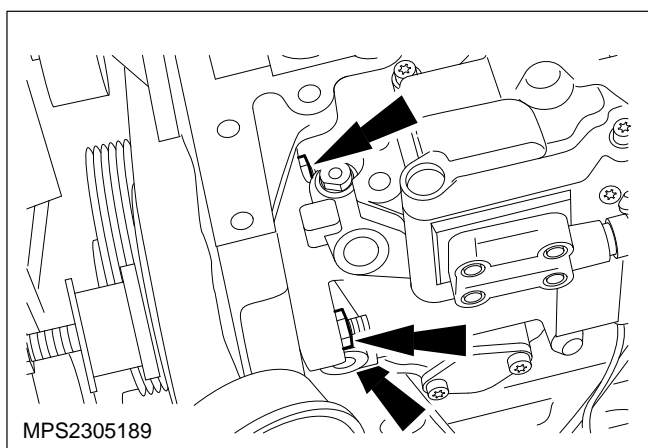
59. Check to make sure that the dial gauge needle reads 0.55 mm. If not, adjust the fuel injection pump timing (refer to Operation Number 23 411 0).



Fuel Injection Pump – Timing – Adjust (23 411 0)

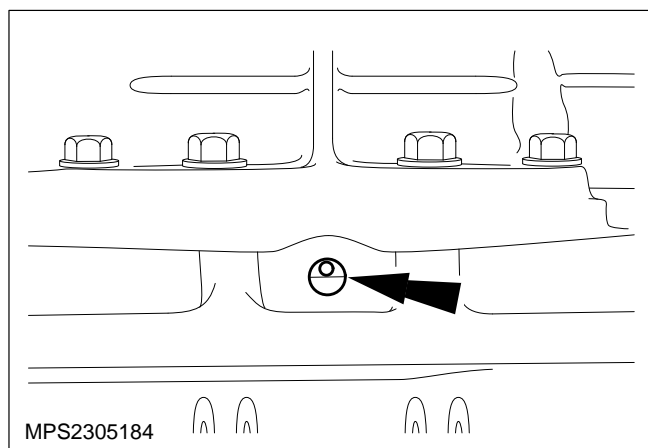
60. Loosen the fuel injection pump retaining nuts.

61. Rotate the fuel injection pump until the the dial gauge needle reads 0.55 mm.



62. Tighten the fuel injection pump retaining nuts.

63. Raise and support the vehicle.



NOTE: After aligning the TDC mark, check the positioning of the valves as there are two holes in the flywheel.

64. Turn the engine clockwise until number one cylinder is at TDC.

- Align the hole in the flywheel with the hole in the transmission adaptor plate.

65. Lower the vehicle.

66. Check to make sure that the dial gauge needle reads 0.55 mm. If not, repeat the timing procedure.

67. Remove the dial gauge and holding fixture from the fuel injection pump.

68. Install the blanking plug to the rear of the fuel injection pump.

69. Refit the remaining components in the reverse order.

- Install new copper sealing washers.
- Install a new cam cover gasket.

70. Bleed the fuel system.