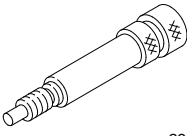
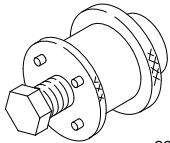


Fuel Injection Pump (Up to 97¼ MY) – Remove And Install (23 414 0)

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

<p>Dial gauge</p>

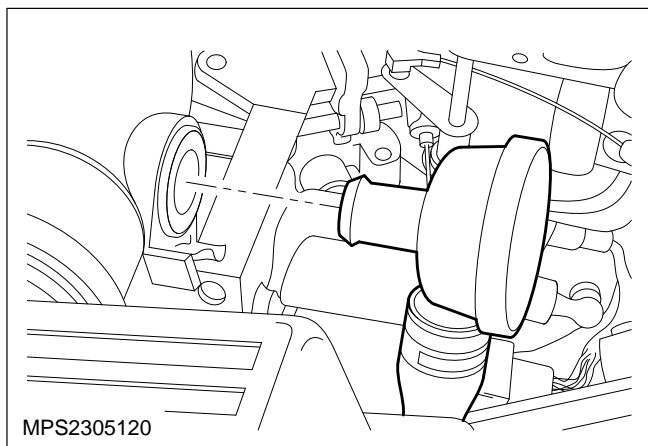
⚠ WARNING: This procedure involves fuel handling. Be prepared for fuel spillage at all times and always observe fuel handling precautions. Failure to follow these instructions can result in personal injury.

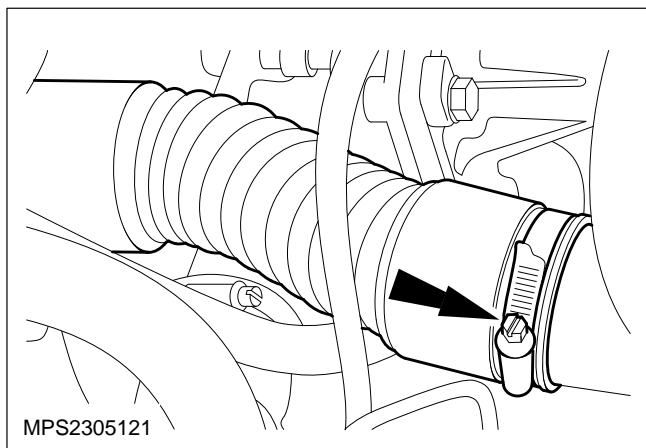
⚠ CAUTION: Diesel fuel injection equipment is manufactured to very precise tolerances and fine clearances. It is therefore essential that absolute cleanliness is observed when working with these components. Always fit blanking plugs to any open orifices or pipes.

Remove

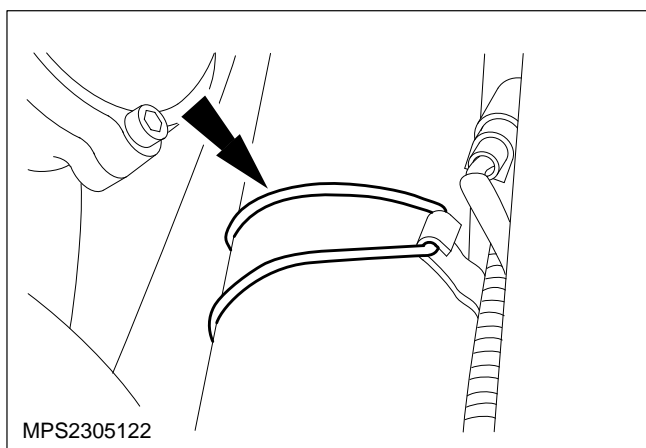
⚠ CAUTION: Disconnect the battery negative lead.

- 1. Disconnect the vent pipe from the air cleaner outlet tube.**

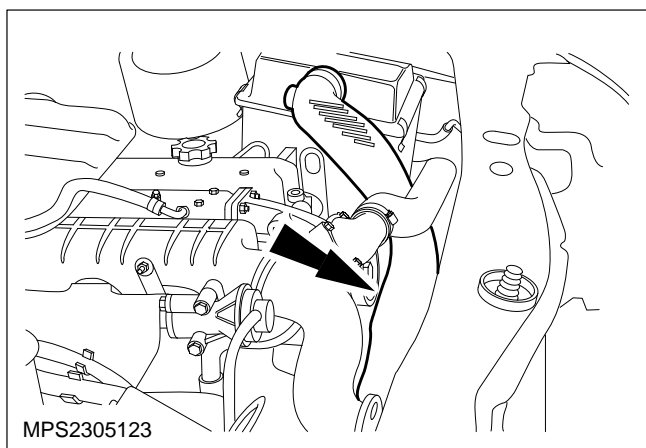




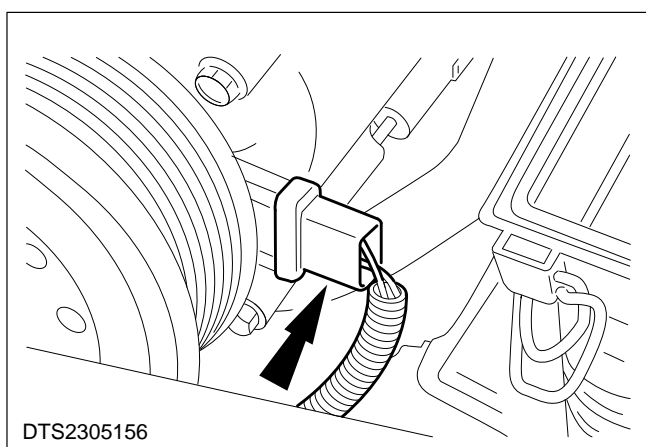
2. Disconnect the air cleaner outlet tube from the turbocharger compressor intake pipe (one clip).



3. Remove the air cleaner outlet tube retaining band.

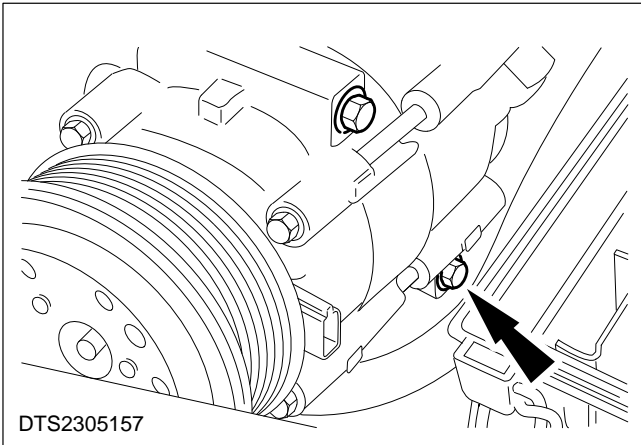


4. Remove the air cleaner outlet tube.



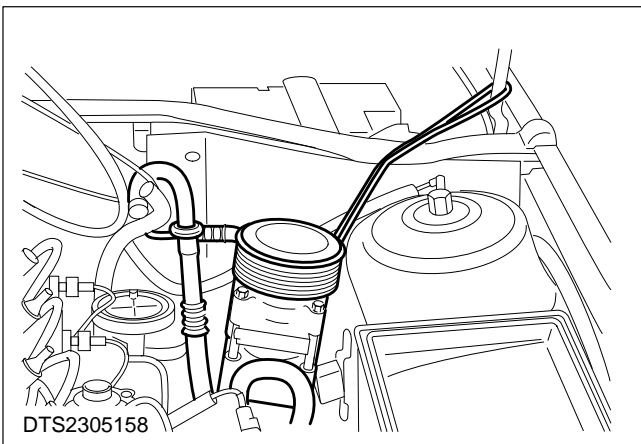
Vehicles fitted with air conditioning

5. Disconnect the air conditioning clutch multiplug.



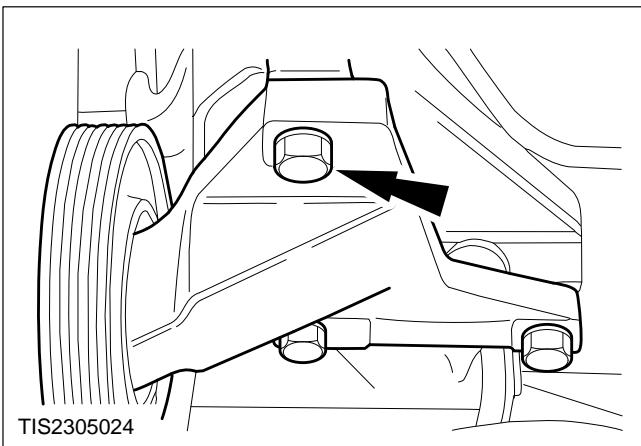
⚠ CAUTION: When removing the retaining bolts, support the air conditioning compressor to prevent damage.

6. Remove the three air conditioning compressor retaining bolts.



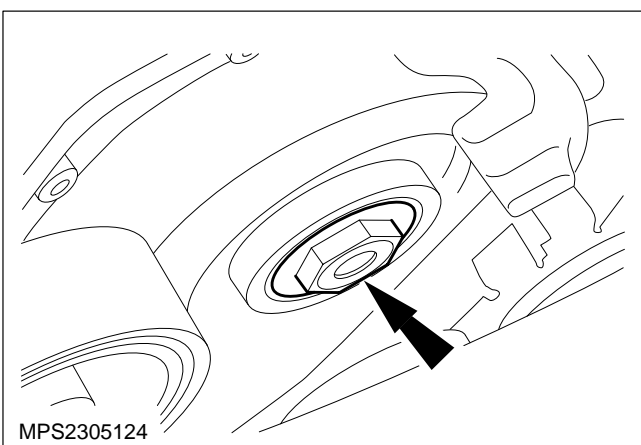
⚠ CAUTION: When positioning the air conditioning compressor to one side do not put any strain on the air conditioning pipes.

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



Vehicles without air conditioning

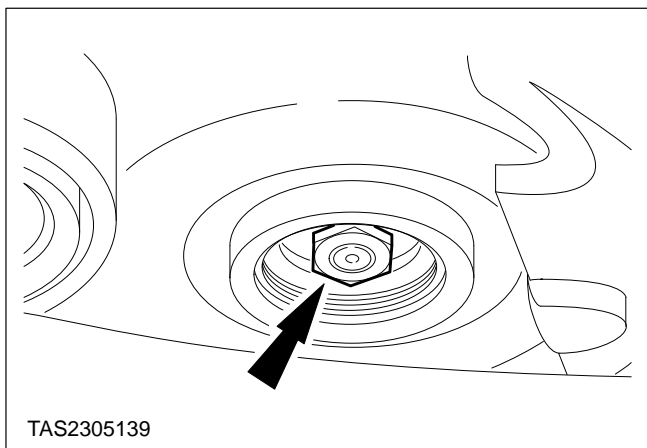
8. Remove the alternator drive belt idler pulley.



All vehicles

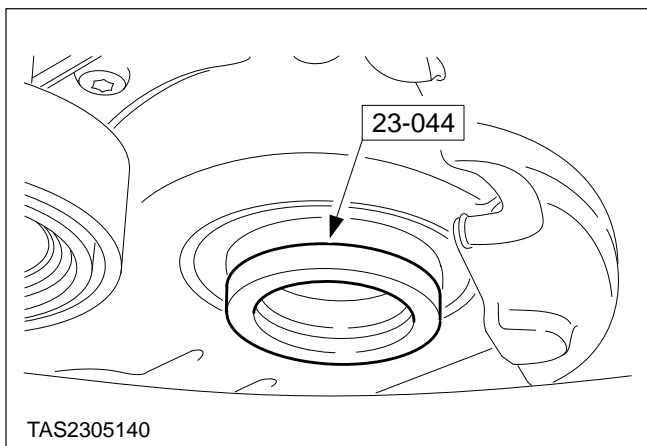
NOTE: When removing the blanking plug ensure that the sealing washer is recovered.

9. Remove the blanking plug from the timing cover.

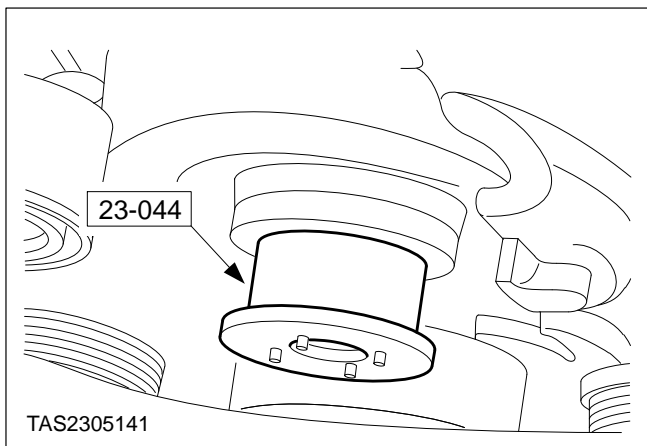


⚠ CAUTION: When removing the fuel injection pump drive gear retaining nut, take care not to drop the locking washer into the timing cover.

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

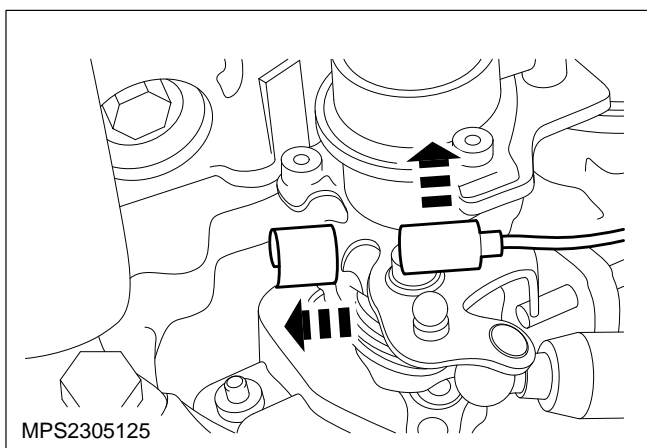


11. Install the special tool adaptor to the timing cover.

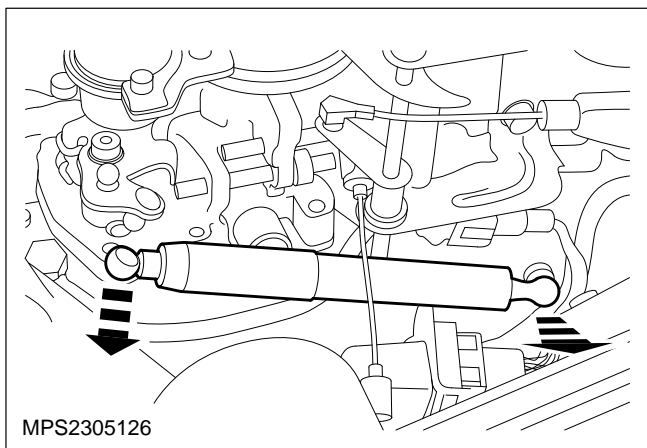


12. Install the body of the special tool to the fuel injection pump drive gear.

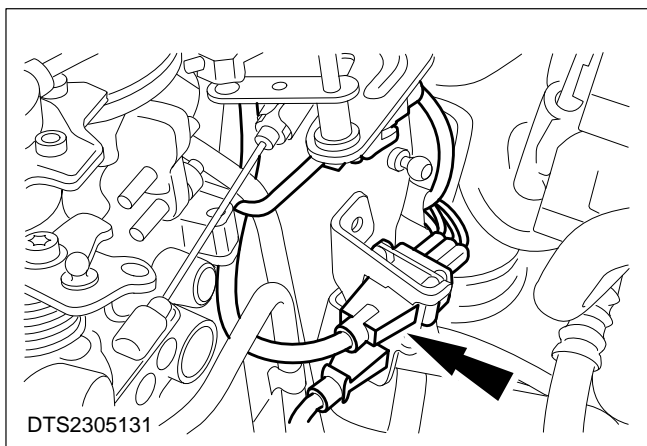
13. Remove the fuel injector delivery pipes (refer to Operation Number 23 483 0).



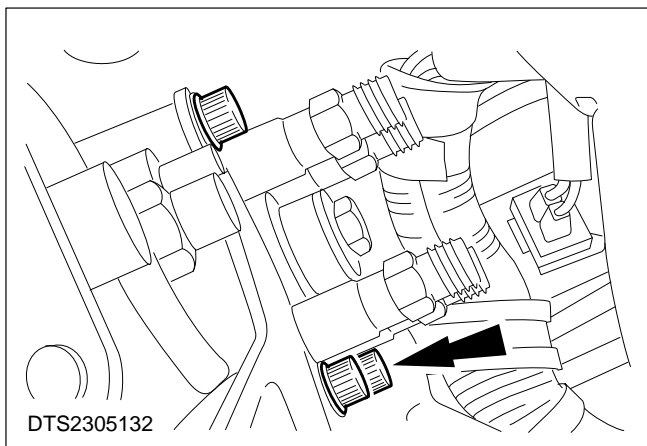
14. Disconnect the accelerator cable from the fuel lever.



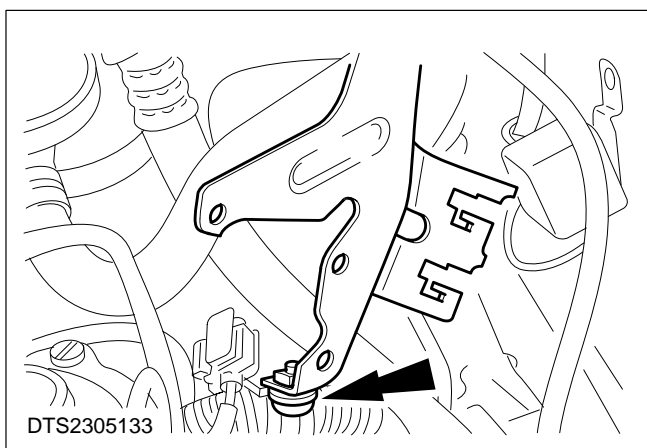
15. Remove the fuel lever damper.



16. Detach the three fuel injection pump multiplugs from the bracket and disconnect them.

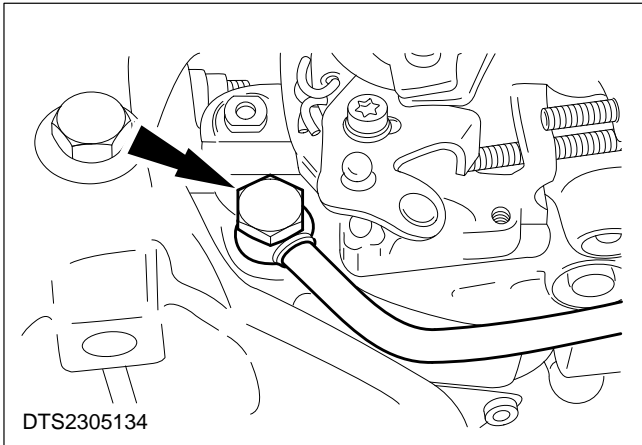


17. Remove the three fuel injection pump bracket retaining bolts.

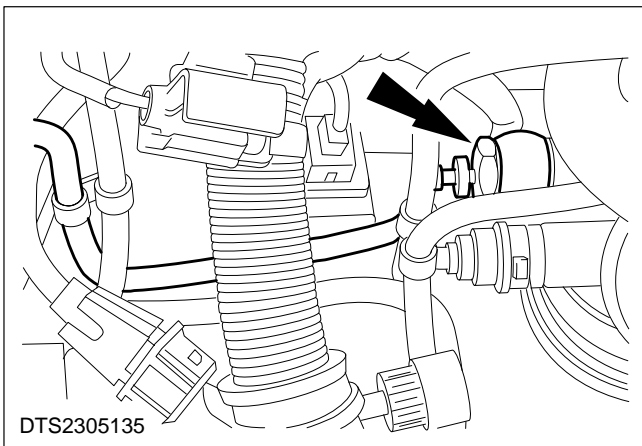


18. Detach the engine wiring harness and position the fuel injection pump bracket to one side.

- Remove the retaining screw.

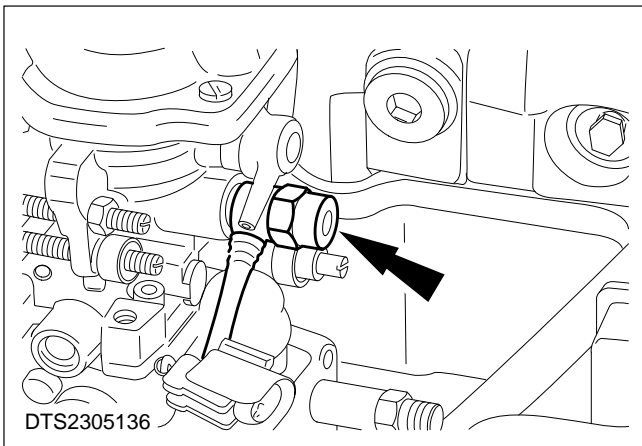


19. Disconnect the fuel supply pipe from the fuel injection pump.

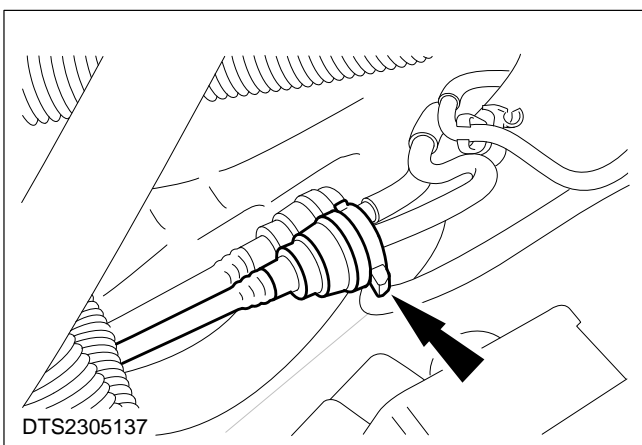


20. Remove the fuel supply pipe.

- Disconnect the fuel supply pipe from the fuel filter.

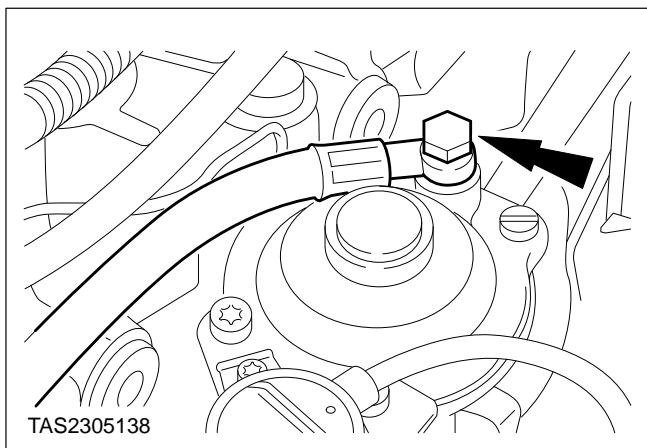


21. Disconnect the fuel return pipe from the fuel injection pump.

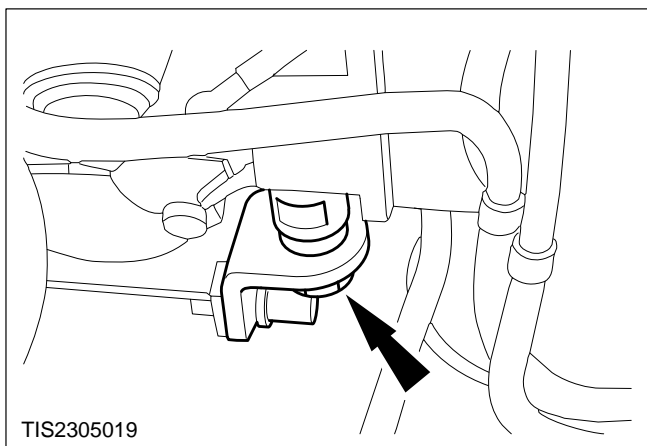


22. Remove the fuel return pipe.

- Disconnect the fuel return pipe from the main fuel return line.

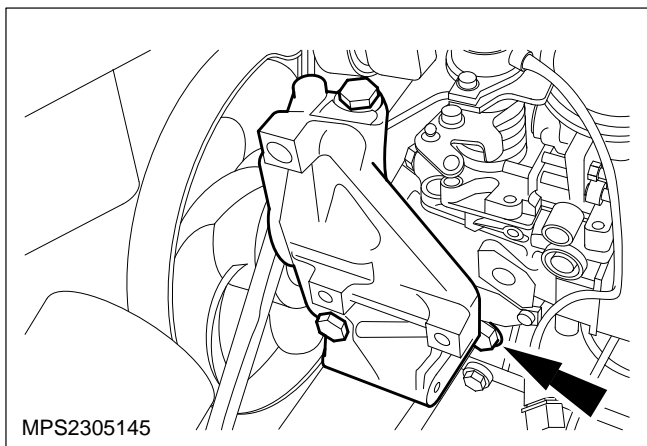


23. Disconnect the vacuum pipe from the exhaust gas recirculation vacuum regulator.

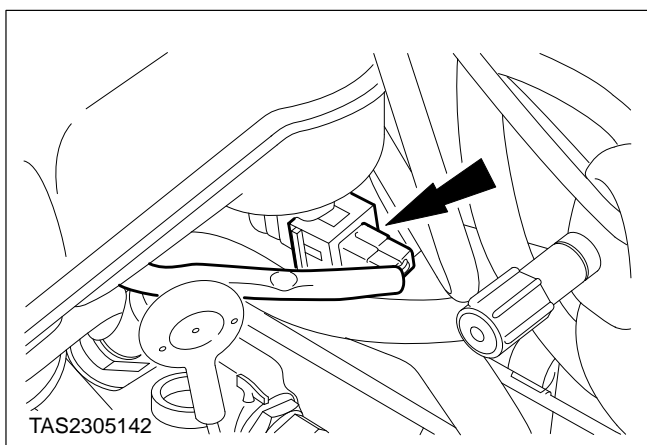


24. Remove the fuel injection pump lower support bracket.

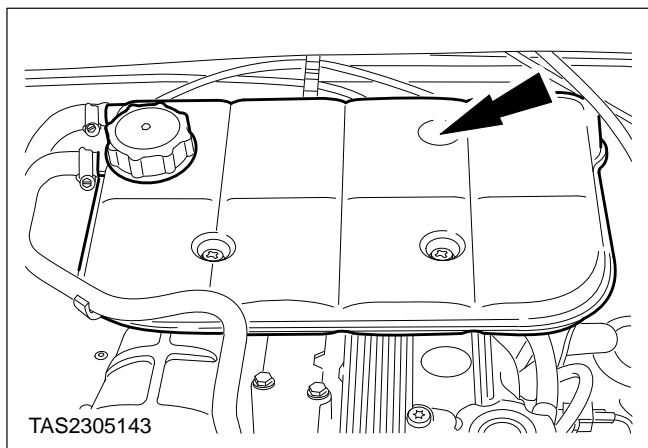
25. Remove the alternator assembly (refer to Operation Number 31 414 0).



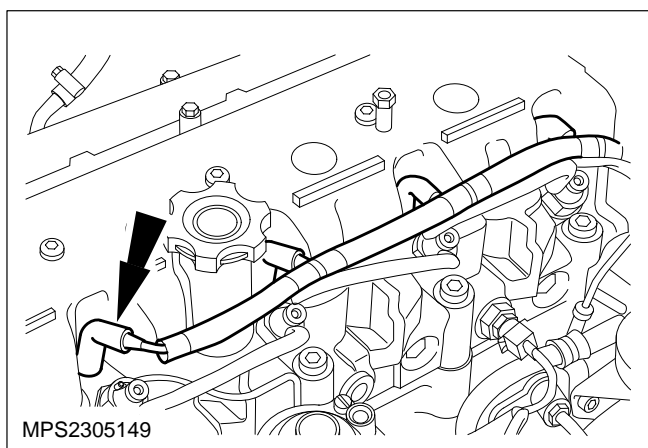
26. Remove the alternator drive belt idler pulley/air conditioning compressor/alternator assembly mounting bracket.



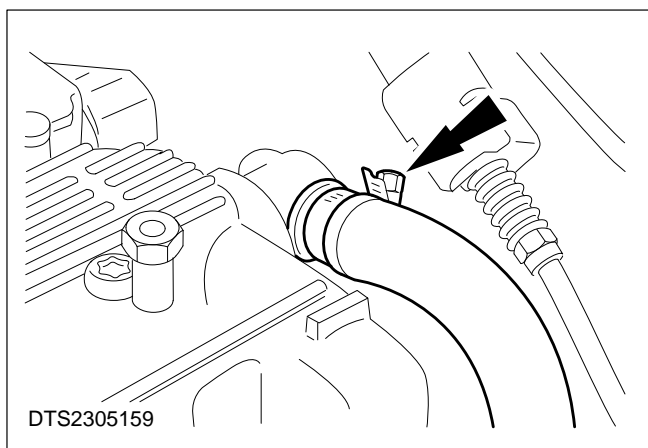
27. Disconnect the engine coolant low level warning switch multiplug.



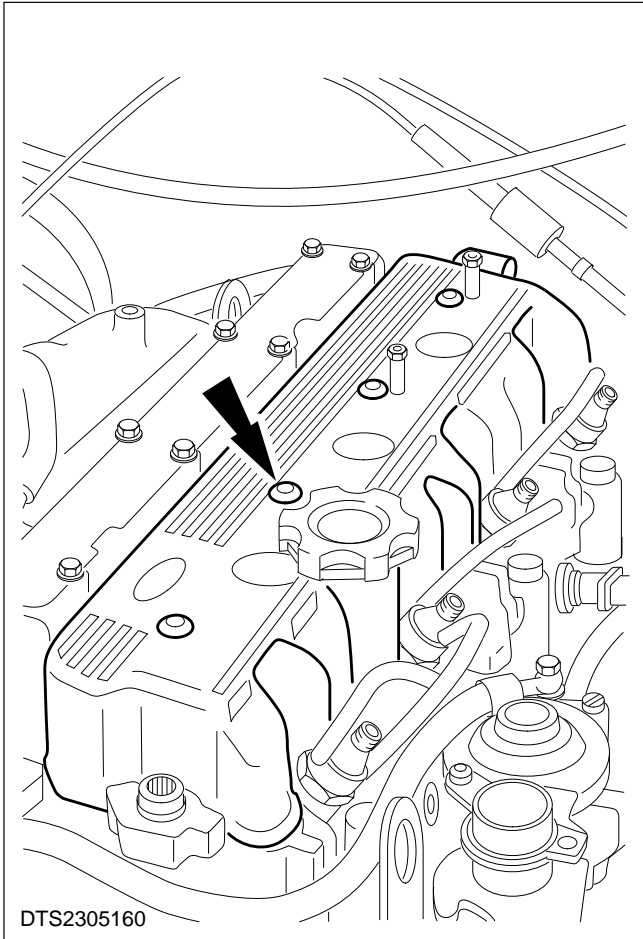
28. Remove the three retaining screws and position the expansion tank to one side.



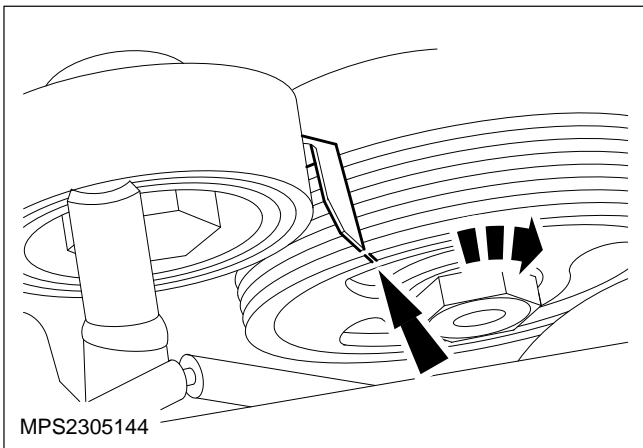
29. Disconnect the glow plug multiplugs.



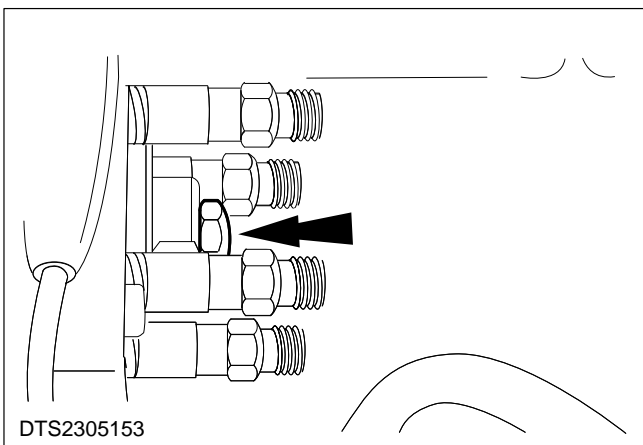
30. Disconnect the vent pipe from the cam cover.



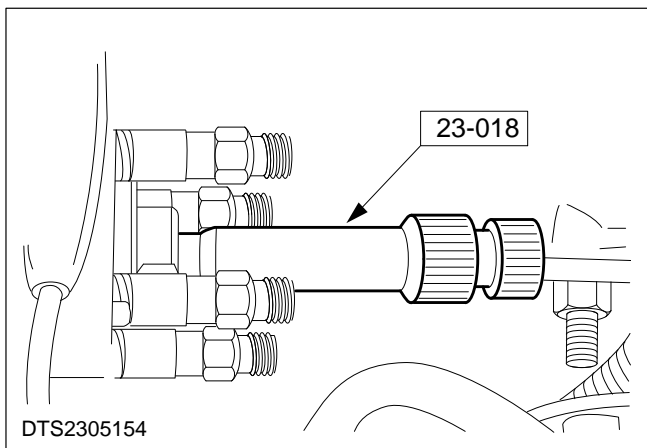
31. Remove the cam cover.



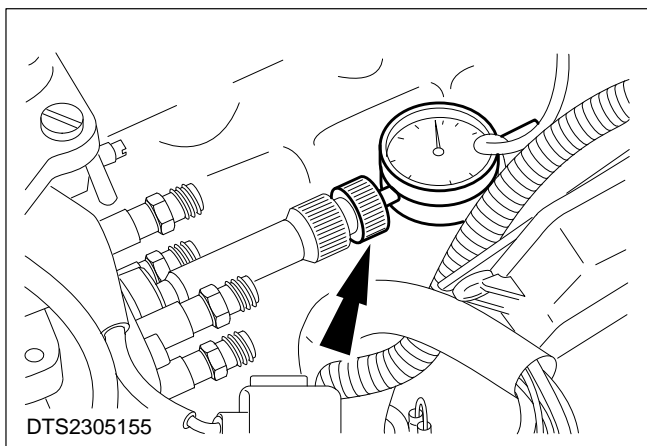
32. Turn the engine clockwise until number one cylinder is at TDC.



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



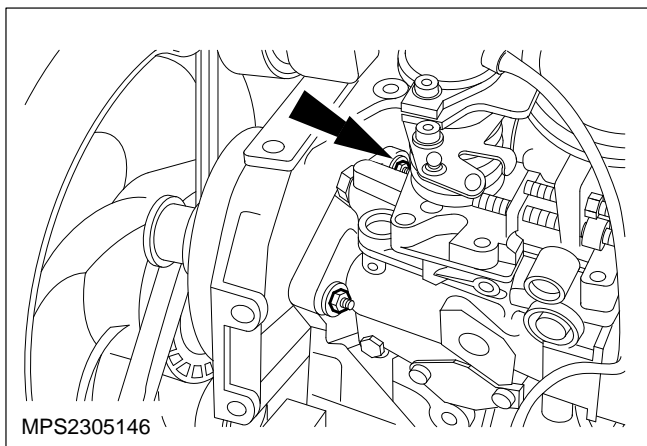
34. Install the dial gauge holding fixture to the rear of the fuel injection pump.



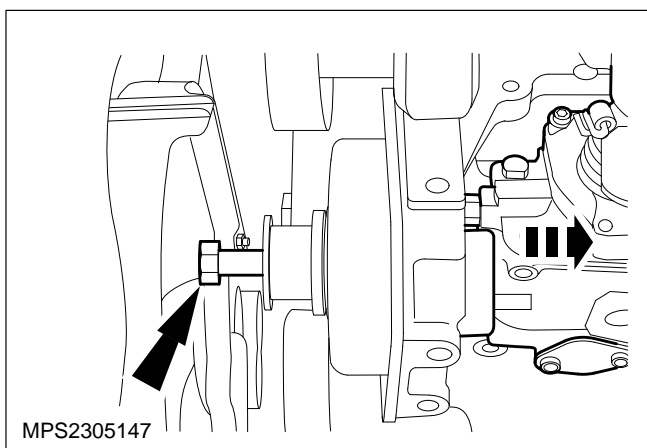
35. Install the dial gauge to the holding fixture and secure it with the locking collar.

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

37. Zero the dial gauge.



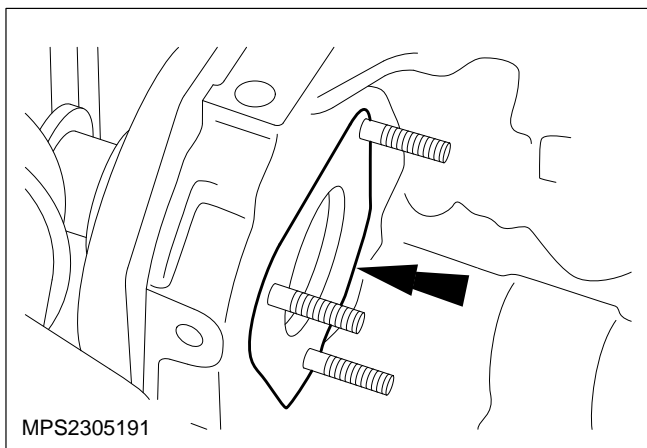
38. Remove the fuel injection pump retaining nuts.



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

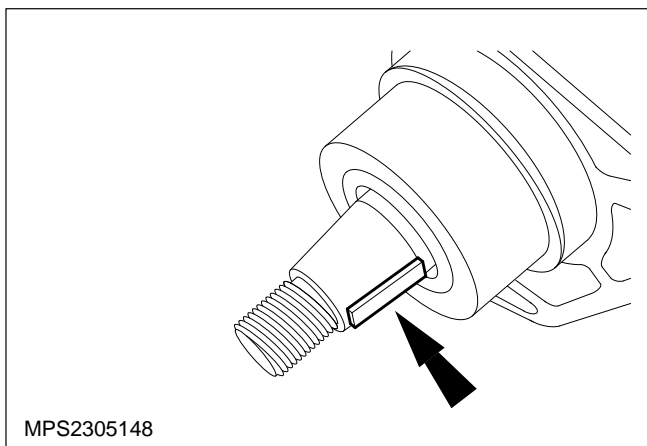
NOTE: The fuel injection pump drive gear has two keyways. During removal the location of the key in the fuel injection pump shaft should be noted.

40. Remove the fuel injection pump.



Install

41. Install a new fuel injection pump gasket.

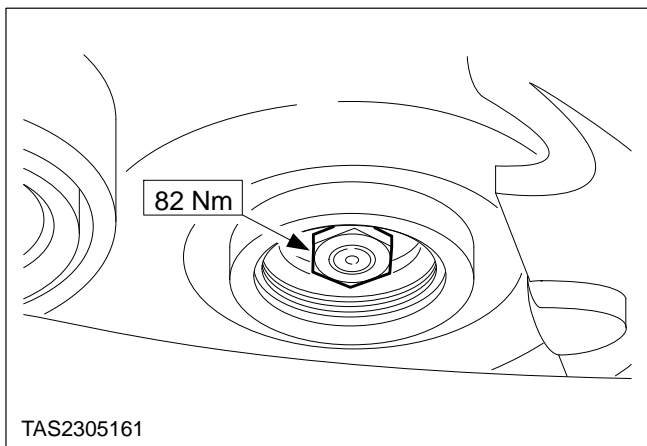


NOTE: When installing the fuel injection pump make sure that the key in the shaft locates in the correct keyway in the fuel injection pump drive gear.

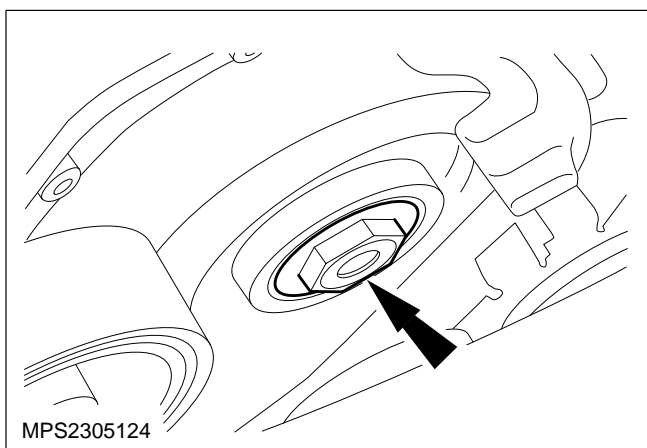
42. Install the fuel injection pump.

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

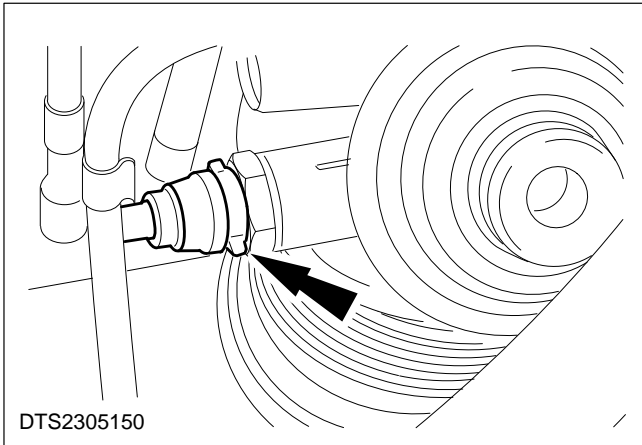
43. Remove the special tool from the timing cover.



44. Install the fuel injection pump drive gear retaining nut and locking washer.

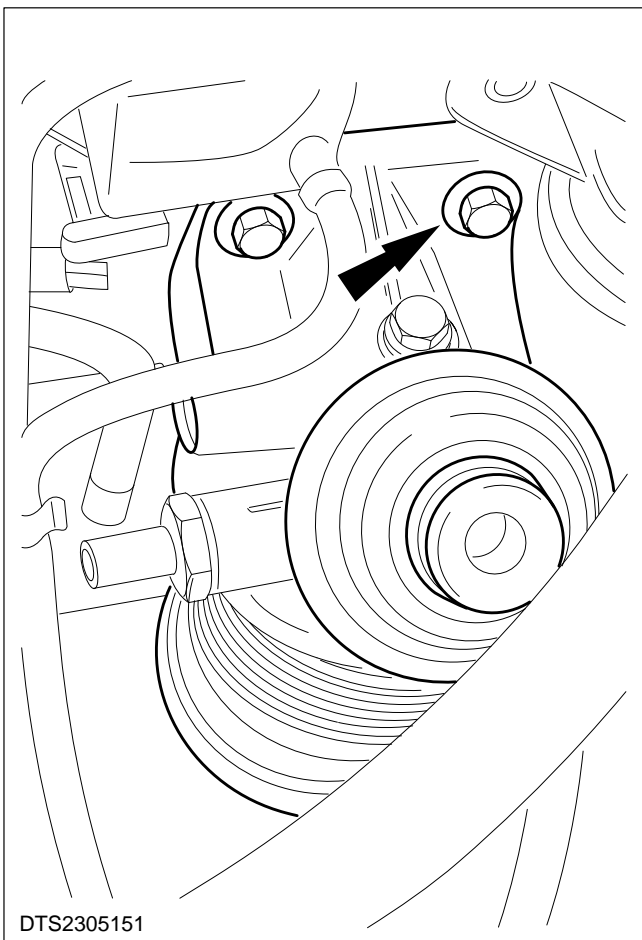


45. Install the blanking plug to the timing cover.

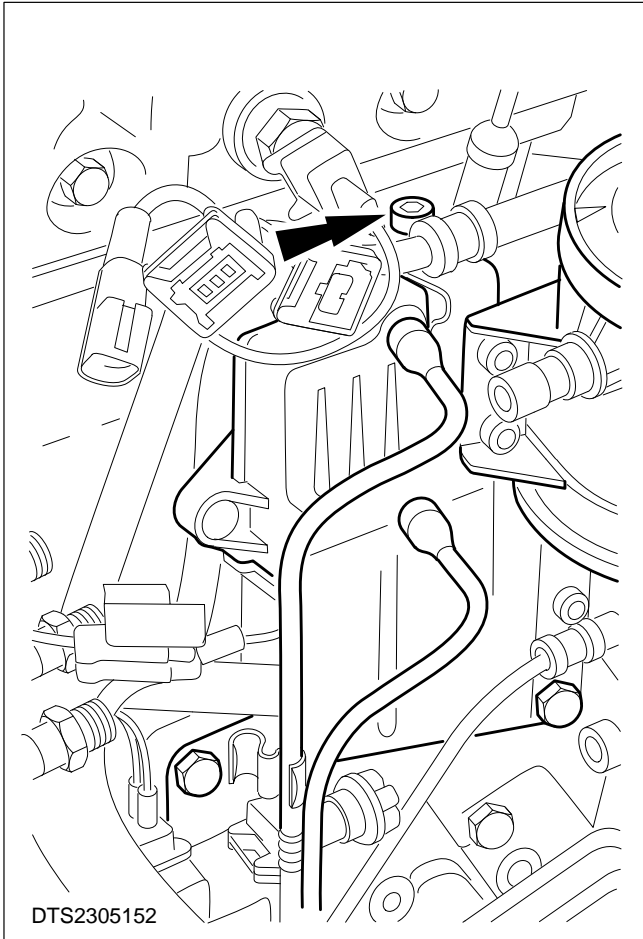


**Fuel Injection Pump – Timing – Check
23 410 0**

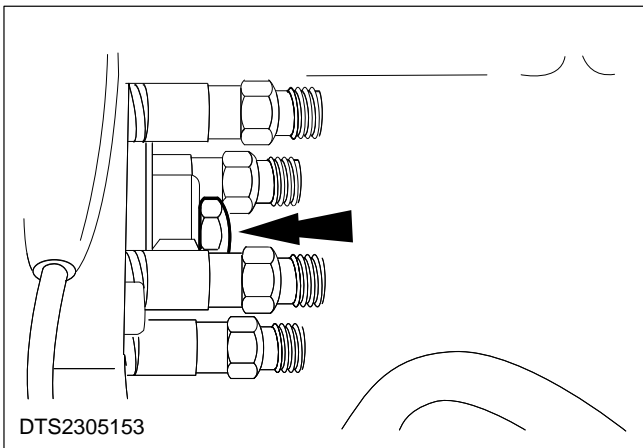
46. Disconnect the inlet pipe from the fuel filter.



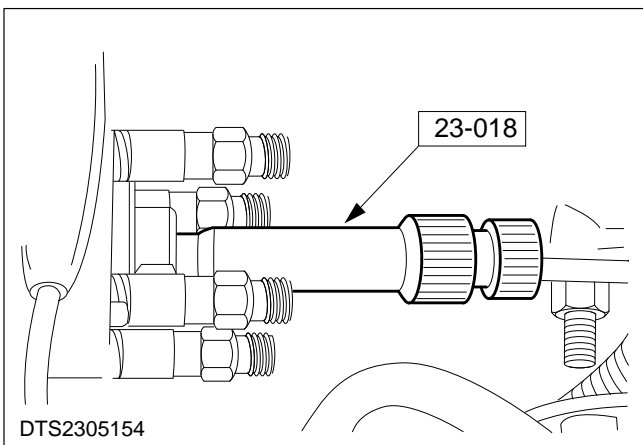
47. Remove the fuel filter.



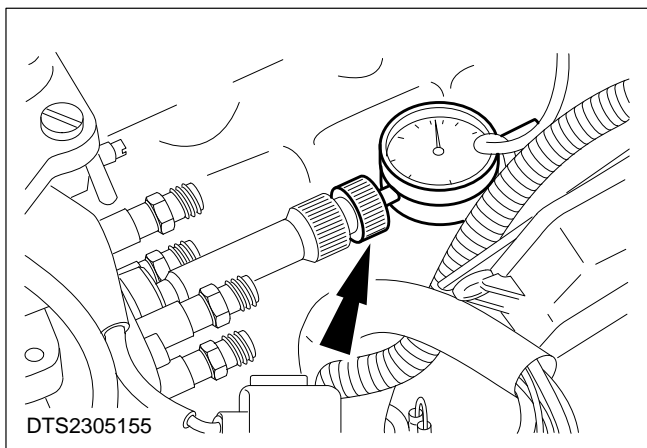
48. Remove the four retaining bolts and position the diesel fuel heater mounting bracket to one side.



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



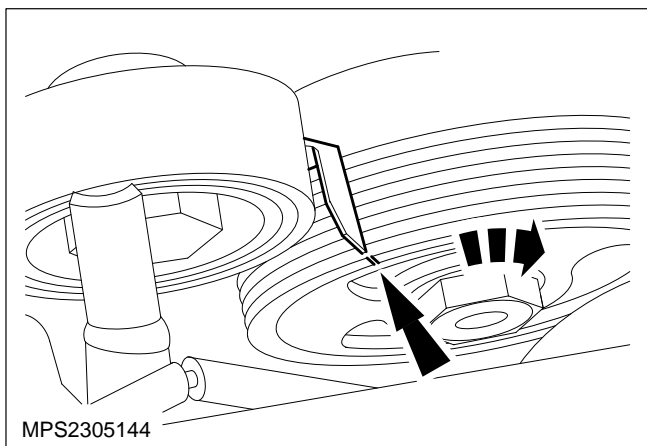
50. Install the dial gauge holding fixture to the rear of the fuel injection pump.



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

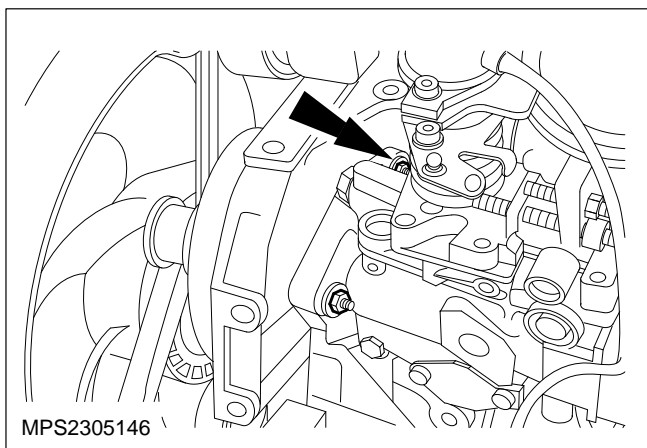
52. Rotate the engine counterclockwise until the dial gauge needle stops moving.

53. Zero the dial gauge.



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

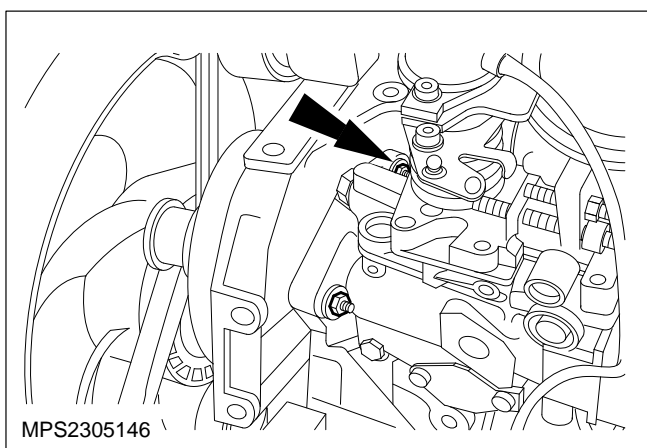
55. Check to make sure that the dial gauge needle reads 0.65 mm. If not, adjust the fuel injection pump timing (refer to Operation Number 23 411 0).



Fuel Injection Pump – Timing – Adjust 23 411 0

56. Loosen the fuel injection pump retaining nuts.

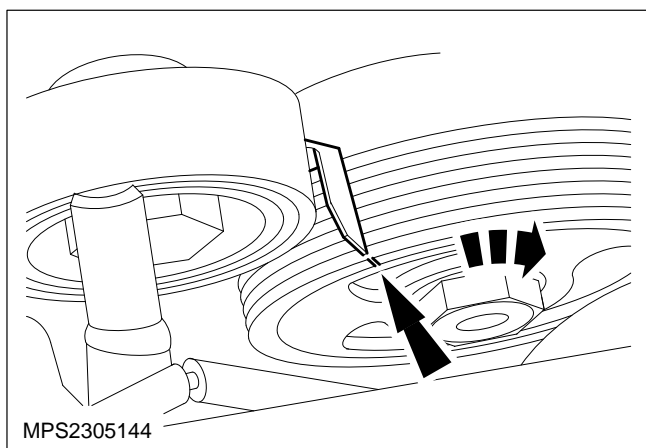
57. Rotate the fuel injection pump until the dial gauge needle reads 0.65 mm.



58. Tighten the fuel injection pump retaining nuts.

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

60. Zero the dial gauge.



- 61. Turn the engine clockwise until number one cylinder is at TDC.**
- 62. Check to ensure the dial gauge needle reads 0.65 mm. If not, repeat the timing procedure.**
- 63. Remove the dial gauge and holding fixture from the fuel injection pump.**
- 64. Install the blanking plug to the rear of the fuel injection pump.**

- 65. Refit the remaining components in the reverse order.**

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

- 66. Bleed the fuel system.**