

FOREWARD

This maintenance manual is designed to serve as a reference for distributors of DHI.

To maintain the excavator in optimum condition and retain maximum performance for a long time, CORRECT OPERATION and PROPER MAINTENANCE are essential.

This manual is in detail explained about Specifications, Operation Principle, Disassembly, and Reassembly, Troubleshooting and Maintenance Standard. Therefore, when the machine goes wrong, repair the machine by correct procedure after reading this manual.

If you have any questionnaire or recommendation in connection with this manual, please do not hesitate to contact our overseas service department or branch office in your territory.

DAEWOO HEAVY INDUSTRIES LTD.

Product: Doosan Mega 200 Wheel Loader Engine Service Repair Workshop Manual
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(WHEEL LOADER : MEGA200)		
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- HYDRAULIC CIRCUIT DIAGRAM
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ENGINE(DB58T)

SECTION 1
GENERAL
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1. GENERAL REPAIR INSTRUCTION

- 1) The use of proper tools and special tools where specified, is important to efficient and reliable service operation.
- 2) Use genuine Daewoo parts.
- 3) Used cotter pins, gaskets, O-rings, oil seals, lock washers and self lock nuts should be discarded and new ones should be prepared for installation as normal function of the parts can not be maintained if these parts are reused.
- 4) To facilitate proper and smooth reassembly operation, keep disassembled parts neatly in groups. Keeping fixing bolts and nuts separate is very important as they vary in hardness and design depending on position of installation.
- 5) Clean parts before inspection or reassembly. Also clean oil ports, etc. using compressed air to make certain they are free from restrictions.
- 6) Lubricate rotating and sliding faces of the parts with oil or grease before installation.
- 7) When necessary, use a sealer on gaskets to prevent leakage.
- 8) Carefully observe all specifications for bolt and nut torques.
- 9) When service operation is completed, make a final check to be sure service has been done properly.

2. ENGINE SPECIFICATION

I t e m		S p e c i f i c a t i o n
Engine type		Water cooled, four cycle, vertical in-line, overhead valve
Combustion chamber type		Direct injection
Cylinder liner type		Dry
No. of cylinder – bore × stroke	(mm)	6 – 102.0 × 118.0
Total piston displacement	(cm ³)	5,785
Compression ratio		17.5 : 1
Engine dimensions (L × W × H)	(mm)	1122 × 648 × 775
Engine weight (Dry)	(kg)	450
Fuel injection order		1 – 5 – 3 – 6 – 2 – 4
Specified fuel		Diesel fuel
Injection pump		In-line plunger, Bosch A type
Governor		Mechanical, RSV type
Injection nozzle		Multi hole
Injection starting pressure	(kg/cm ²)	150 or 185
Fuel filter type		Center bolt type
Water sedimentor (if so equipped)		Sediment/water level indicating type
Compression pressure (at warm)	(kg/cm ²)	31 at 200 rpm at sea level
Valve clearance (at cold)	Intake (mm)	0.40
	Exhaust (mm)	0.40
Lubrication method		Pressurized circulation
Oil pump		Gear type
Main oil filter type		Center bolt, full flow
Lubricating oil capacity	(ℓ)	21.5
Oil cooler		Water cooled integral type
Cooling method		Pressurized forced circulation
Coolant capacity (engine only)	(ℓ)	12.0
Water pump		Belt driven impeller type
Thermostat type		Wax pallet type
Alternator	V – A	24 – 25
Starter	V – kW	24 – 4.5

3. SPECIFIED TIGHTENING TORQUE

- Standard bolts

The torque values given in the following table should be applied where a particular torque is not specified.

kg·m

Bolt identification Material Bolt diameter ×pitch(mm)			
	4 T Low carbon steel	7 T High carbon steel	9 T Alloy steel
M 6×1.0	0.6 ± 0.2	0.75 ± 0.2	
M 8×1.25	1.3 ± 0.5	1.75 ± 0.5	2.0 ± 0.7
M10×1.25	2.8 ± 0.7	3.75 ± 0.9	5.0 ± 1.3
M12×1.25	6.25 ± 1.2	7.75 ± 1.5	9.65 ± 1.9
M14×1.5	8.75 ± 1.9	11.85 ± 2.3	14.50 ± 2.9
M16×1.5	13.3 ± 2.7	17.30 ± 3.5	20.40 ± 4.1
M18×1.5	19.2 ± 3.8	24.90 ± 5.0	29.30 ± 5.9
M20×1.5	26.3 ± 5.3	34.40 ± 6.9	40.40 ± 8.1
M22×1.5	33.0 ± 8.3	46.25 ± 9.2	54.10 ± 10.8
M24×2.0	45.8 ± 9.2	58.20 ± 14.0	70.60 ± 14.1
*M10×1.5	2.7 ± 0.7	3.7 ± 0.9	4.9 ± 1.2
*M12×1.5	5.8 ± 1.2	7.2 ± 1.4	9.1 ± 1.8
*M14×2.0	9.1 ± 1.8	11.2 ± 2.2	13.6 ± 2.2
*M16×2.0	12.7 ± 2.5	16.5 ± 3.3	19.5 ± 3.9

Note :

Bolts marked with an asterisk (*) are used for female threaded parts made of soft materials such as casting.

4. TIGHTENING TORQUE FOR NUTS & BOLTS OF MAJOR PART

- A) Cylinder head cover kg·m(lb.ft)
- Torque for bolts of cylinder head cover2.1±0.5(15.2±3.6)
 - Torque for new bolts of cylinder head 7.0→9.5±0.5
(50.6)→(68.6±3.6)
 - Torque for reused bolts of cylinder head7.0→11.5±0.5
(50.6)→(83.1±3.6)
 - Torque for glow plug 2.7±0.25(19.5±1.8)
- B) Cylinder body kg·m(lb.ft)
- Torque for bolts holding water pump to cylinder body5.3±1(38.3±7.2)
 - Torque for bolts holding crankshaft bearing cap2.4±1(73.5±7.2)
 - Torque for bolts holding push rod chamber cover2.6±0.5(18.8±3.6)
- C) Oil pan and Dipstick kg·m(lb.ft)
- Torque for nut holding dipstick2.9±0.3(21.0±2.2)
 - Torque for bolts of oil pan2.6±0.5(18.8±3.6)
 - Torque for drain plug of oil pan8.0±1.0(57.8±7.2)
- D) Camshaft and Rocker Arm kg·m(lb.ft)
- Torque for bolts of rocker arm shaft bracket3.1±0.5(22.4±3.6)
 - Torque for nuts of screw for valve clearance adjustment2.6±0.5(18.8±3.6)
 - Torque for bolts of flange holding camshaft2.6±0.5(18.8±3.6)
 - Torque for bolts holding camshaft gear16±1.5(115.7±10.5)
(Apply engine oil)
 - Torque for bolts holding idle gear5.5±1(39.8±7.2)
- E) Crankshaft, Piston and Flywheel kg·m(lb.ft)
- Torque for bolts of connecting rod bearing cap12±0.25(86.7±1.80)
(Apply MoS₂ grease)
 - Torque for nuts holding V-belt pulley60±5(433.8±36.2)
 - Torque for bolts holding flywheel to crankshaft22.3±2.2(161.2±15.9)
- F) Thermostat and Thermostat Housing kg·m(lb.ft)
- Torque for bolts thermostat housing cover2.6±0.5(18.8±3.6)
 - Torque for bolts of thermostat housing5.3±1(38.3±7.2)
- G) Intake and Exhaust Manifold kg·m(lb.ft)
- Torque for bolts holding intake manifold2.6±0.5(18.8±3.6)
 - Torque for bolts holding exhaust manifolds2.9±0.3(21±2.2)
- H) Timing gear case and Flywheel Housing kg·m(lb.ft)
- Torque for bolts of timing gear case2.6±0.5(18.8±3.6)
 - Torque for bolts of timing gear case cover2.6±0.5(18.8±3.6)
 - Torque for bolts inside of flywheel housing16.0±1.0(115.7±7.2)

- I) Oil cooler, Oil Filter, and Oil Pump kg·m(lb.ft)
- Torque for bolts holding oil filter5.3±1.0(38.3±7.2)
 - Torque for bolts holding oil cooler2.6±0.5(18.5±3.6)
 - Torque for bolts holding oil delivery pipe to oil pump2.6±0.5(18.5±3.6)
 - Torque for bolts holding oil delivery pipe to cylinder body5.3±1.0(38.3±7.2)
- J) Fuel system kg·m(lb.ft)
- Torque for nuts holding nozzle holder1.9±0.2(13.7±1.5)
 - Torque for bolt holding fuel return pipe to fuel filter4.2±0.8(30.4±5.8)
 - Torque for bolt holding fuel supply pipe
from fuel filter to fuel injection pump1.7±0.1(12.3±0.7)
 - Torque for bolt holding fuel supply pipe
from fuel feed pump to fuel filter4.2±0.8(30.4±5.8)
 - Torque for nuts holding injection pipe to nozzle holder3.1±0.2(22.4±1.5)

5. MAINTENANCE

5.1 Oil filter replacement

• Removal

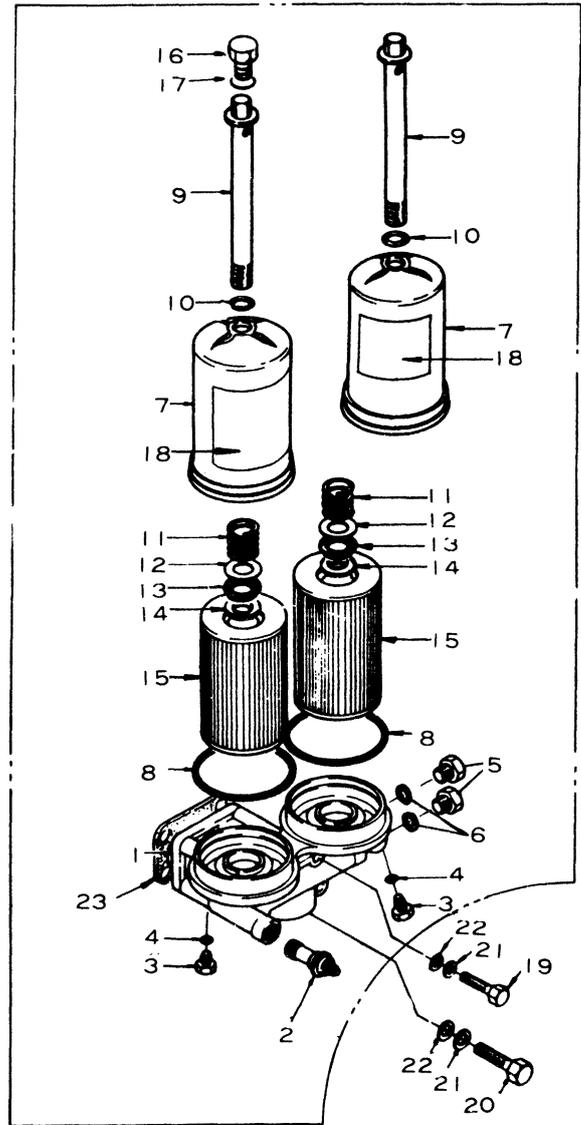
1. Loosen the drain plug to drain the engine oil from the oil filter.
2. Remove the center bolt and the filter housing from the filter head along with the filter element.
3. Discard the used filter element.
4. Wipe the oil filter fitting face clean with a rag.
This will allow the new oil filter to seat properly.

• Installation

Reassemble in reverse order.

Note :

- Make sure that O-rings are correctly seated to prevent oil leakage.
- Torque for center bolt : $5.3 \pm 1.0 \text{ kg} \cdot \text{m}$
drain plug : $1.8 \pm 0.2 \text{ kg} \cdot \text{m}$



<Oil filter>

- | | | |
|--------------------------|---------------------------|------------------------------|
| 1. Head ; oil filter | 9. Bolt ; center | 17. O-ring P10 |
| 2. Valve ; relief | 10. O-ring P16 | 18. Plate ; caution |
| 3. Screw ; plug M10×1.25 | 11. Spring | 19. Bolt ; hex. M10×1.25×130 |
| 4. O-ring P10 | 12. Washer | 20. Bolt ; hex. M10×1.25×55 |
| 5. Screw ; plug M16×1.5 | 13. O-ring | 21. Washer |
| 6. O-ring P16 | 14. Washer | 22. Washer |
| 7. Housing ; oil filter | 15. Element ; oil filter | 23. Gasket |
| 8. O-ring G105 | 16. Screw ; plug M10×1.25 | |

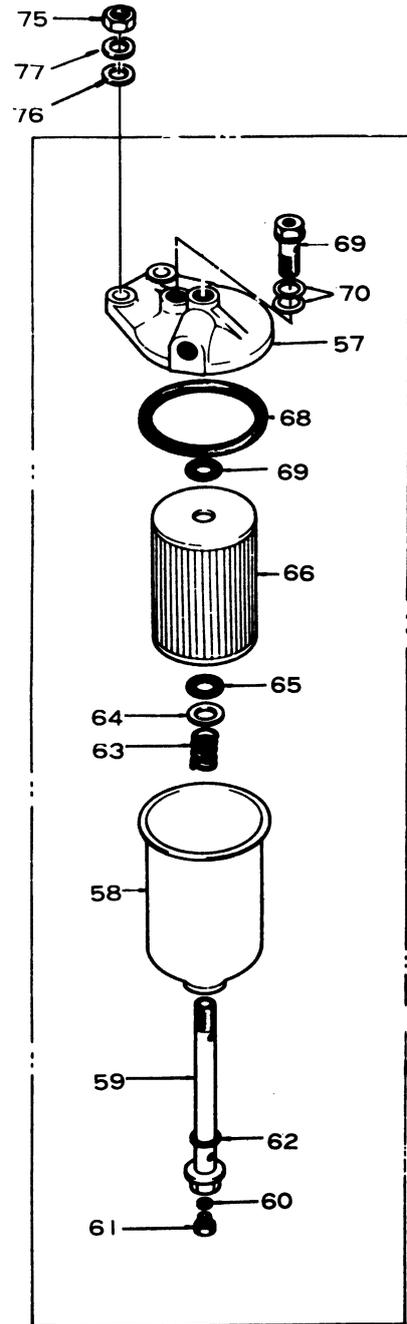
5.2 Fuel filter replacement

• Removal

1. Loosen the drain plug to drain the fuel from the fuel filter.
2. Loosen the center bolt to remove the filter housing, the spring, the washer, the packing, and the filter element.
3. Discard the used filter element.

• Installation

1. Wash the filter housing and the other parts immersing them into clean diesel oil.
2. Reassemble the parts in reverse order. Use the new element.
3. Make sure that the packings are correctly seated to prevent fuel leakage.



- 57. Cover
- 58. Housing
- 59. Bolt : center
- 60. O-ring
- 61. Screw ; plug
- 62. O-ring

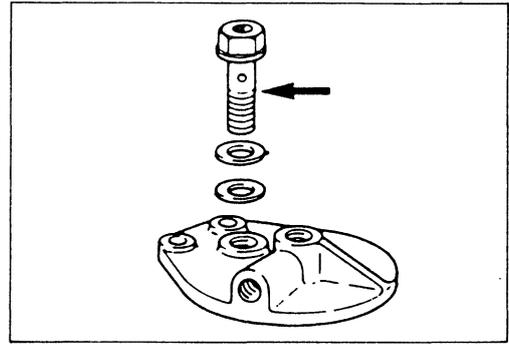
- 63. Spring
- 64. Seat ; spring
- 65. Packing
- 66. Element
- 67. Packing
- 68. Packing

- 69. Valve ; over flow
- 70. Ring ; seal
- 75. Nut ; hex. M10
- 76. Washer
- 77. Washer

5.3 Injection nozzle

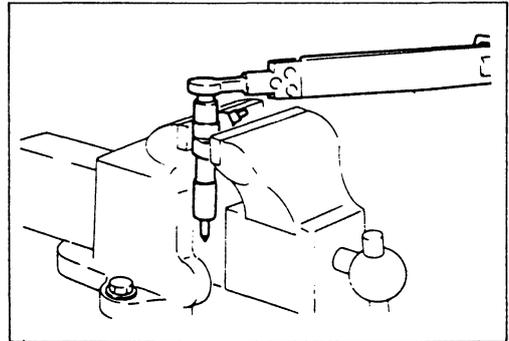
Check the overflow valve for clogging.
 Check the ball side for suction leakage.

	kg/cm ² (psi)
Overflow valve opening Pressure(reference)	1.5(21.33)



Inspection procedure

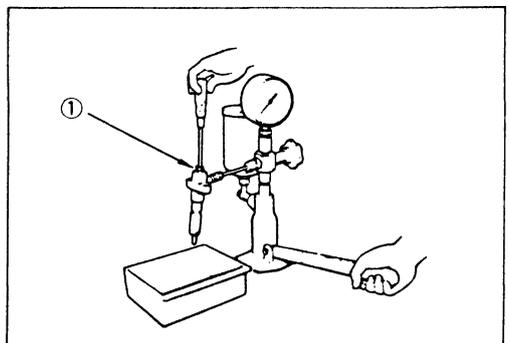
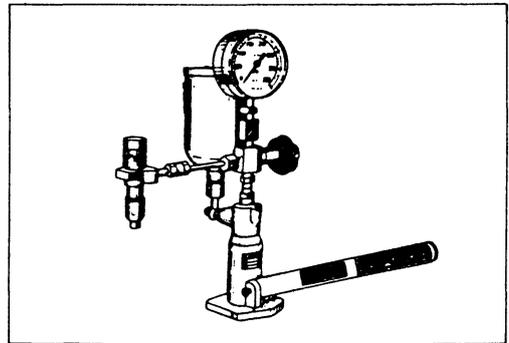
1. Clamp the injection nozzle holder in a vise.
2. Use a wrench to remove the injection nozzle holder cap.
3. Remove the injection nozzle holder from the vise.



• Adjusting procedure

Injection starting pressure check

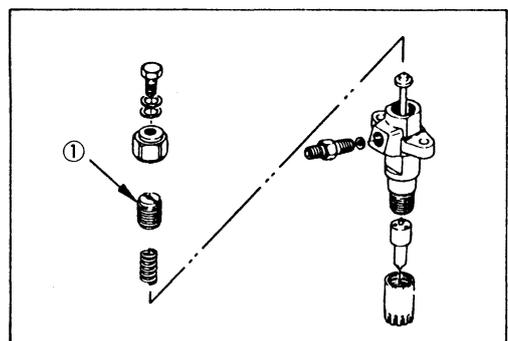
1. Install the injection nozzle holder to the injection nozzle tester.
2. Loosen the adjusting screw ①.
3. Check the injection nozzle starting pressure and the spray condition by operating the injection nozzle tester.
4. Adjust the injection nozzle starting pressure. Turn the adjusting screw clockwise while operating the injection nozzle tester handle.



Injection starting pressure	150 or 185 kg/cm ²
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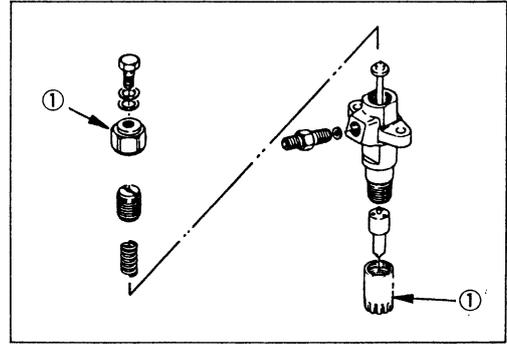
WARINING :

TEST FLUID FROM THE NOZZLE TESTER WILL SPRAY OUT UNDER GREAT PRESSURE. IT CAN EASILY PUNCTURE A PERSON'S SKIN. KEEP YOUR HANDS AWAY FROM THE NOZZLE TESTER AT ALL TIMES.

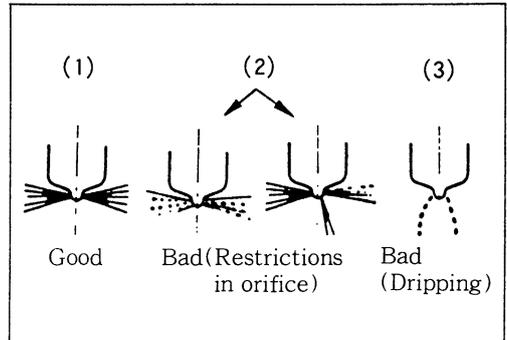


• Spray condition check(During injection nozzle tester operation)

1. Tighten the cap nut ①.
2. Check the injection nozzle starting pressure.
3. Check the injection nozzle spray condition.

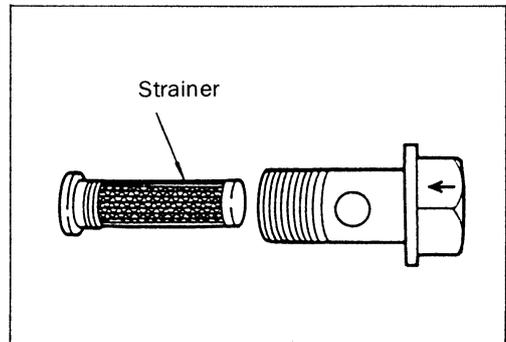


Operate the injection nozzle tester hand lever 4 to 6 times a second while looking for abnormal injection nozzle spray conditions.



5.4 Feed pump strainer

1. Remove the joint bolt.
2. Use a screwdriver to remove the stainer.
3. Wash the strainer in clean diesel fuel.

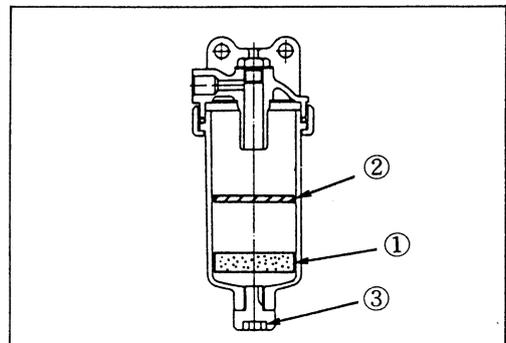


5.5 Water separator(water sedimentor)
(optional equipment)

Check the water separator float ① level.
If the float ① has reached level ②, loosen the drain plug ③ (at the bottom side of the water separator) to drain the water.

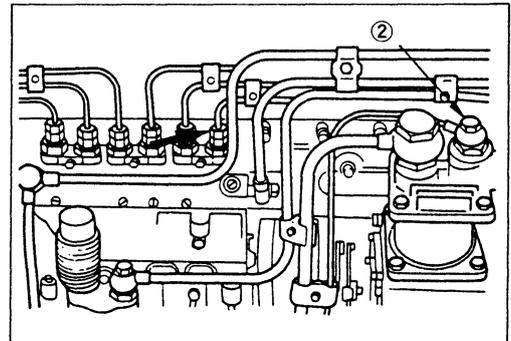
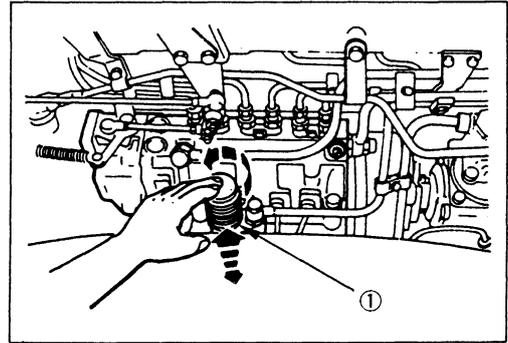
kg/cm²(psi)

Drain plug torque	1.2±0.3(8.68±2.7)
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Air Bleeding

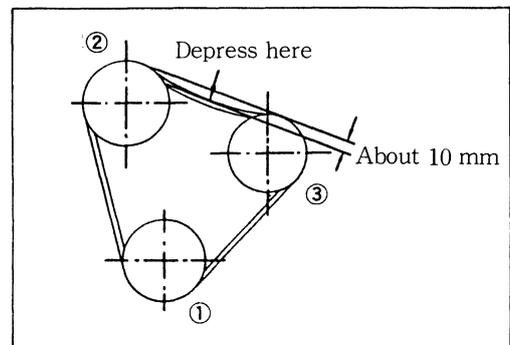
1. Loosen the priming pump cap ① on the injection pump.
2. Loosen the fuel filter fuel return eye bolt ②.
3. Operate the priming pump until there are no more bubbles visible in the fuel being discharged from the fuel filter fuel return eye bolt.
4. Retighten the fuel filter fuel return eye bolt.
5. Operate the priming pump several times and check for fuel leakage around the injection pump and the fuel filter.



5.6 Cooling fan drive belt

Adjustment

1. Check the cooling fan drive belt for cracking and other damage.
2. Check the drive belt tension by exerting a force of 10 kg (22 lb) midway between the water pump pulley ② and the alternator pulley ③.
3. Adjust the belt tension by loosening the alternator mounting bolt and the alternator adjusting bolt and pivoting the alternator.
Be sure to retighten the bolts after adjusting the belt tension.



mm(in)

Cooling fan drive	8.0–12.0
Belt deflection	(0.3–0.5)

5.8 Thermostat

• Inspection

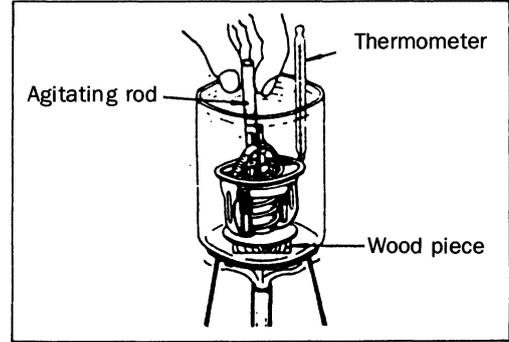
Visually inspect the thermostat.
 Replace the thermostat if excessive wear or damage is discovered during inspection.
 Measure the valve lift.

mm(in)

Amount of valve lift at 95°C (203°F)	10.0(0.39)
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°C (°F)

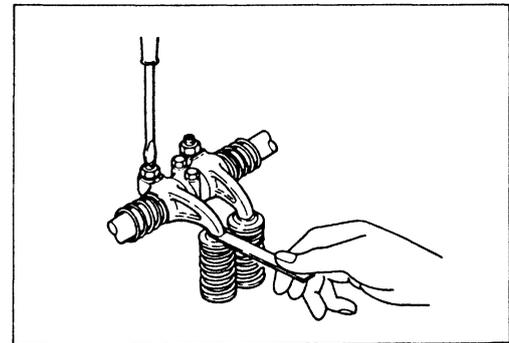
Valve opening temperature	80–84(176–183)
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5.9 Valve clearance and adjustment

Note :

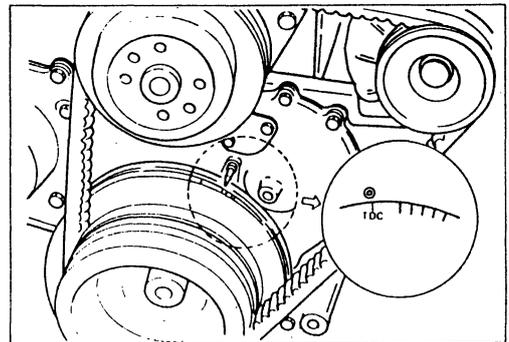
The cylinder head bolts were previously tightened with the “Angular Tightening Method”. Therefore, it is not necessary to retighten the cylinder head bolts before adjusting the valve clearance.



1. Bring the piston in either the No.1 cylinder or the No.6 cylinder to top dead center on the compression stroke by turning the crankshaft until the TDC notched line on the crankshaft pulley is aligned with the timing pointer.
2. Check to see if there is play in the No.1 intake and exhaust valve rocker arms.

If the No.1 cylinder intake and exhaust valve rocker arms have play, the No.1 piston is at TDC on the compression stroke.

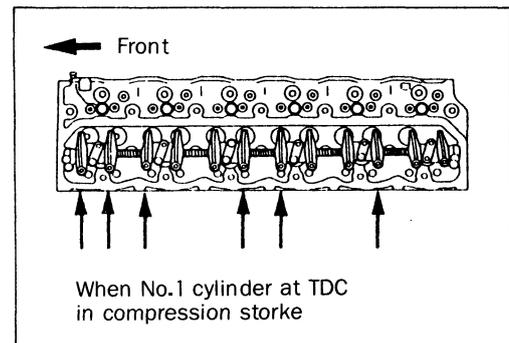
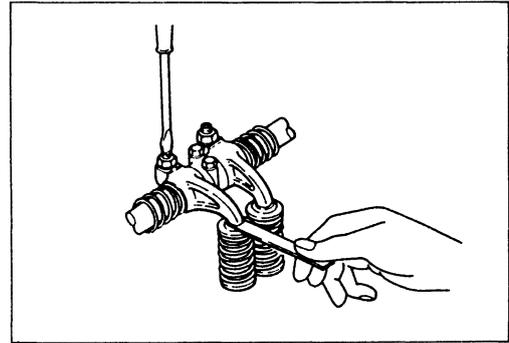
If the No.1 cylinder intake and exhaust valve rocker arms are depressed, the No.6 piston is at TDC on the compression stroke.



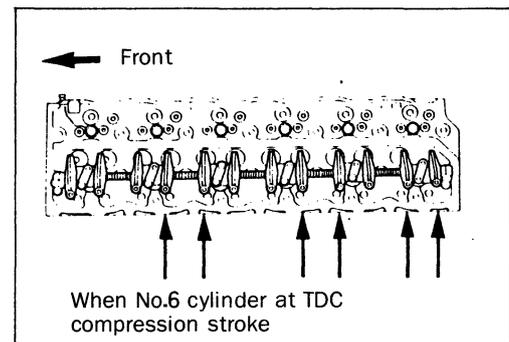
Adjust the No.1 or the No.6 cylinder valve clearances while their respective cylinders are at TDC on the compression stroke.

	mm(in)
Intake and exhaust Valve clearance(ole)	0.40(0.016)

3. Loosen each valve clearance adjusting screw as shown in the illustration.
4. Insert a 0.40mm(0.016 in) feeler gauge between the rocker arm and the valve stem end.
5. Turn the valve clearance adjusting screw until a slight drag can be felt on the feeler gauge.
6. Tighten the lock nut securely.
7. Rotate the crankshaft 360°.
Realign the crankshaft pulley TDC notched line with the timing pointer.
8. Adjust the clearances for the remaining valves as shown in the illustration.



	kg·m(lb.ft)
Rocker arm screw lock nut torque	$2.6 \pm 0.5(18.8 \pm 3.6)$



5.10 Injection timing

Note :

Take care to avoid entry of dust or foreign particles into the pump interior when the timing adjustment is made.

Flange mounted injection pump injection timing checking and adjustment

The flange mounted injection pump is installed behind the timing gear case.

Checking procedure

1. Align the crankshaft pulley TDC mark with the pointer.

Remove the inspection hole cover at the front of the injection pump on the timing gear case cover.

Check the alignment between the pointer ④ on the injection pump gear nut lock plate and the projection area mark ③ on the injection pump gear case.

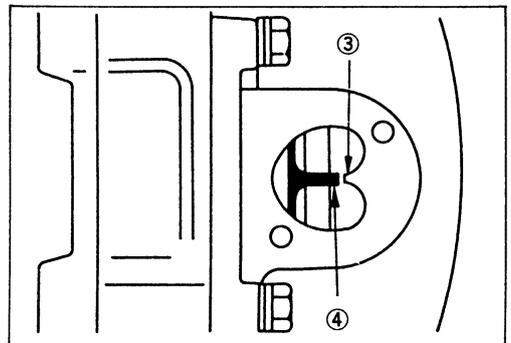
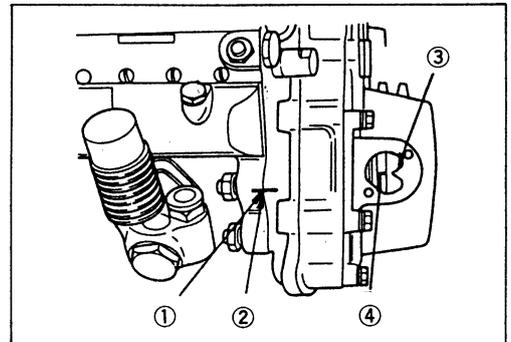
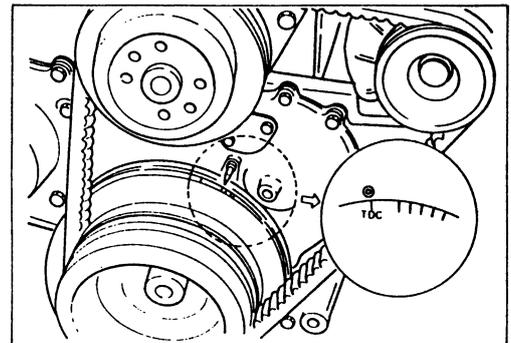
If it is in misalignment, recheck with turning the crankshaft pulley one more turn to repeat the previous procedure to make sure that it is in alignment.

Check the alignment of the notched lines ① and ②.

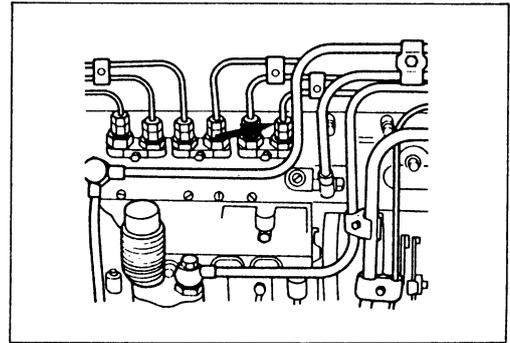
(These notched lines were aligned at the factory to set the injection pump body and the mounting flange.)

Next, inspect the crankangle position of the injection starting.

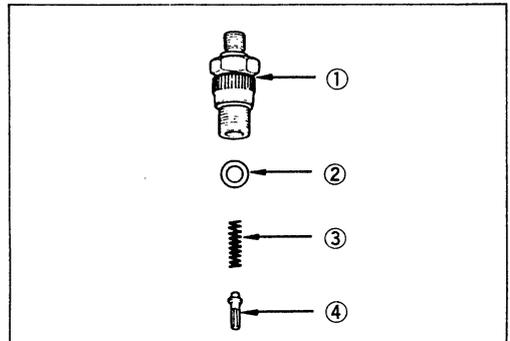
2. Reversely turn the crankshaft pulley counterclockwise about 30° crankangle.



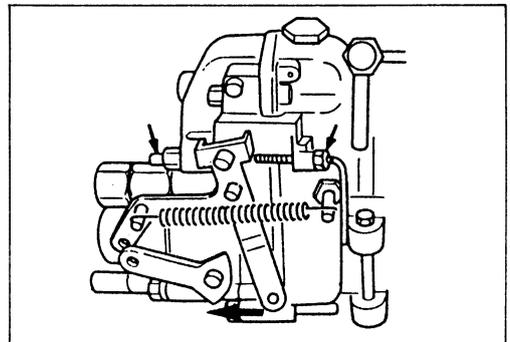
3. Disconnect the injection pipe from the No.1 plunger.
This will allow you to visually check the full injection starting flow at No.1 plunger.



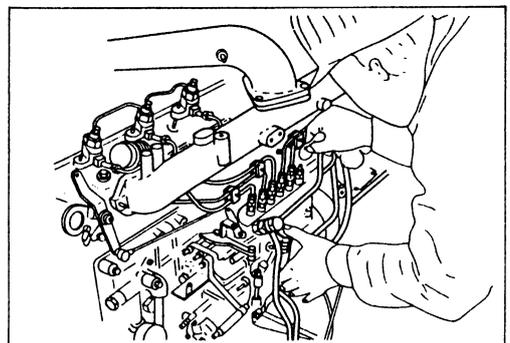
4. Remove the delivery valve holder ①, the valve seat ②, the valve spring ③, and the delivery valve ④ from the No.1 plunger.
5. Reinstall the delivery holder ① and tighten it to the specified torque.
Do not reinstall the delivery valve spring, the valve seat and the delivery valve.
These parts will be reinstated later.



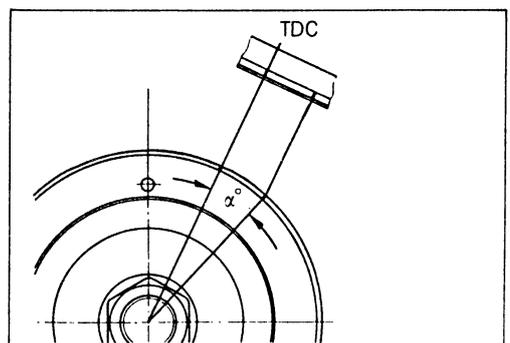
6. Hold the fuel control lever at the fully open position.



7. Slowly turn the crankshaft pulley clockwise, at the same time, continue to feed the fuel with pumping the priming pump.
When the fuel stop to flow out from the No.1 delivery valve holder, stop the pump instantaneously.
This crankangle position is the injection starting of the engine.



8. Observe and make sure that mark(injection starting angle line α°) on the crankshaft pulley is aligning with the pointer.
The timing line shows the injection starting angle of the engine.
Blow out the remaining fuel from the delivery valve holder.
Make sure that there is no fuel being delivered from the priming pump.



9. Remove the delivery valve holder from the No.1 plunger.
10. Reinstall the delivery valve internal parts(seat, spring, and valve)to the delivery valve holder.
11. Reinstall the delivery valve holder assembly to the No.1 plunger and tighten it to the specified torque.

kg·m(lb.ft)

Delivery valve holder torque	$4.25 \pm 0.25(30 \pm 1.8)$
------------------------------	-----------------------------

12. Install the No.1 cylinder injection pipe and tighten it to the specified torque.

kg·m(lb.ft)

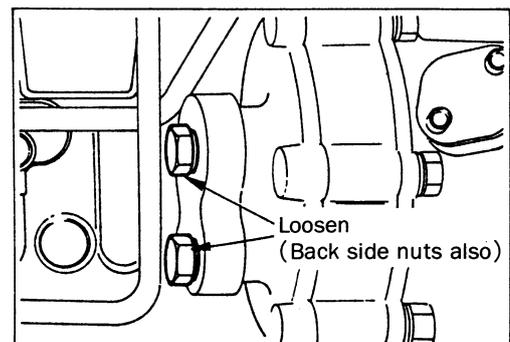
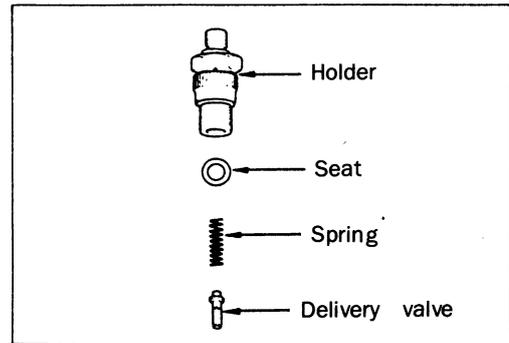
Injection pipe nut torque	$3.1 \pm 0.2(22.4 \pm 1.5)$
---------------------------	-----------------------------

Note :

- Do not overtighten the injection body which is made of aluminum.
- Overtightening will distort the injection pump body shape and adversely affect control rack operation.

Adjusting procedure

1. Align the pointer and the specified timing mark on the crank pulley.
2. Perform the operations described on page 2-10, 11, paragraphs 3, 4, 5, 6.
3. Loosen the four injection pump fixing nuts.
4. To advance the timing
Pivot the injection pump at the pump driveshaft toward out.
- To retard the timing.
Pivot the injection pump at the pump driveshaft toward in, (toward the cylinder block)
- Reference ; the 1 mm misalignment between the two setting mark lines corresponds to about 2° in crankangle.
5. Do a fine injection pump position adjustment, while continue the pumping operation to feed the fuel, and stop to pivot the injection pump when the fuel stop to flow out from the No.1 delivery valve holder.
6. Tighten the four injection pump fixing nuts.
7. Once remove the No.1 delivery valve holder, and reinstall the delivery valve, the spring, and the valve holder with the specified torque.
8. Install the No.1 injection pipe and tighten it to the specified torque.



5.11 Compression pressure measurement

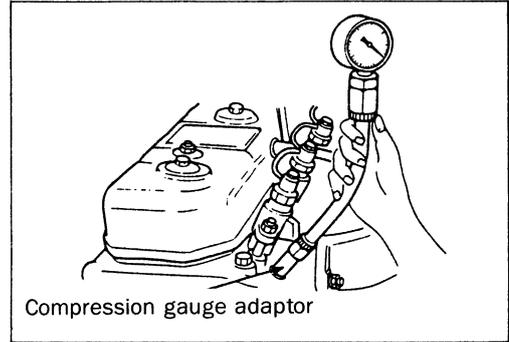
1. Operate the engine to warm-up until the coolant temperature reaches to 75°C (167°F).
2. Remove all of the glow plugs and the injection pipes.
3. Attach a compression gauge to the No.1 cylinder glow plug installation threads.

Note :

Compression pressure may be measured starting at any cylinder and in no particular cylinder order. However, it is very important that the compression pressure be measured in each cylinder.

Therefore, start at the No.1 cylinder and work back.

In this way, you will be sure to measure the compression pressure in each cylinder.



4. Crank the engine with the starter motor and take the compression gauge reading.

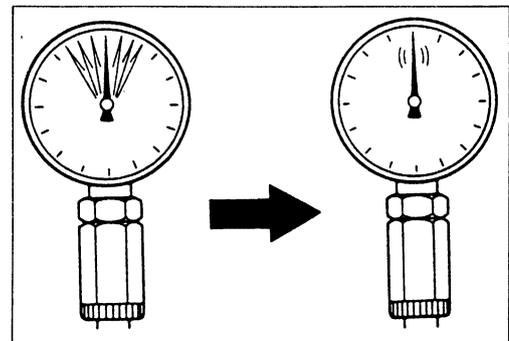
kg/cm²(psi) at 200 rpm at sea level

Standard	Limit
31.0(441)	26.0(370)

5. Repeat the procedure (Steps 2 and 3) for the remaining cylinders.

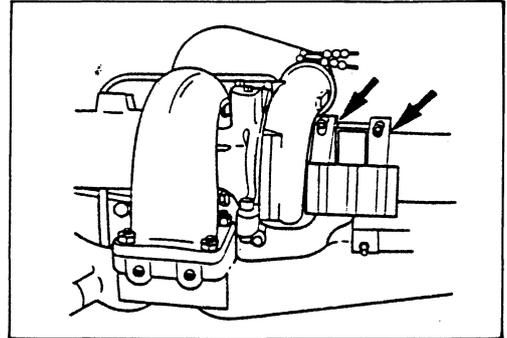
Compression pressure should be approximately the same for each cylinder. A variation exceeding 2.0 kg/cm²(28.44 psi) is unacceptable.

If the measured value exceeds the specified limit, the related parts must be checked.

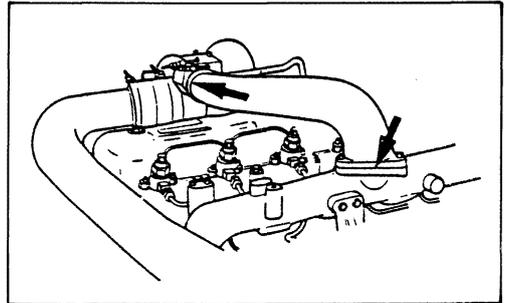


5.12 Turbocharger Inspection

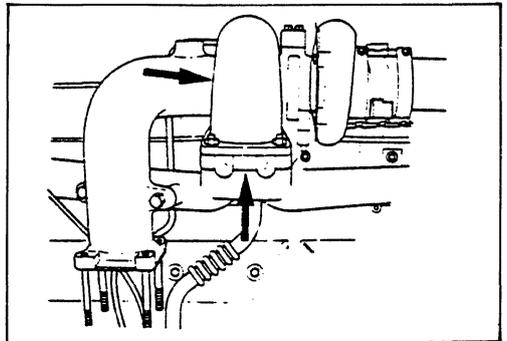
1. Check the air intake duct connections for air leakage.



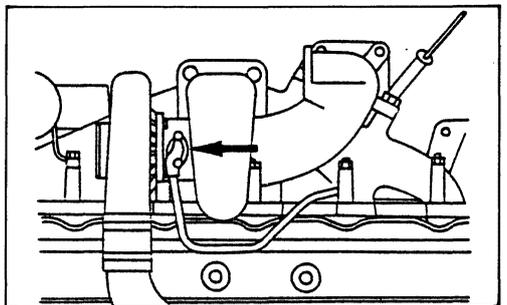
2. Check the intake manifold connections for air leakage.



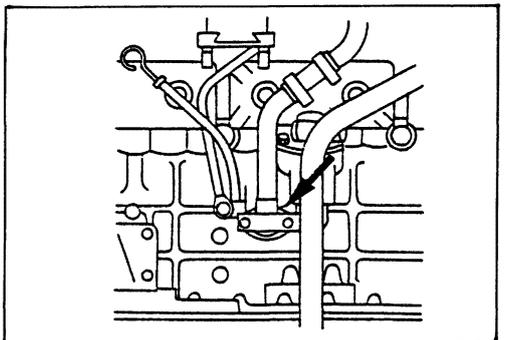
3. Check the exhaust duct connections for smoke leakage.
4. Check the turbocharger mounting nuts for looseness.



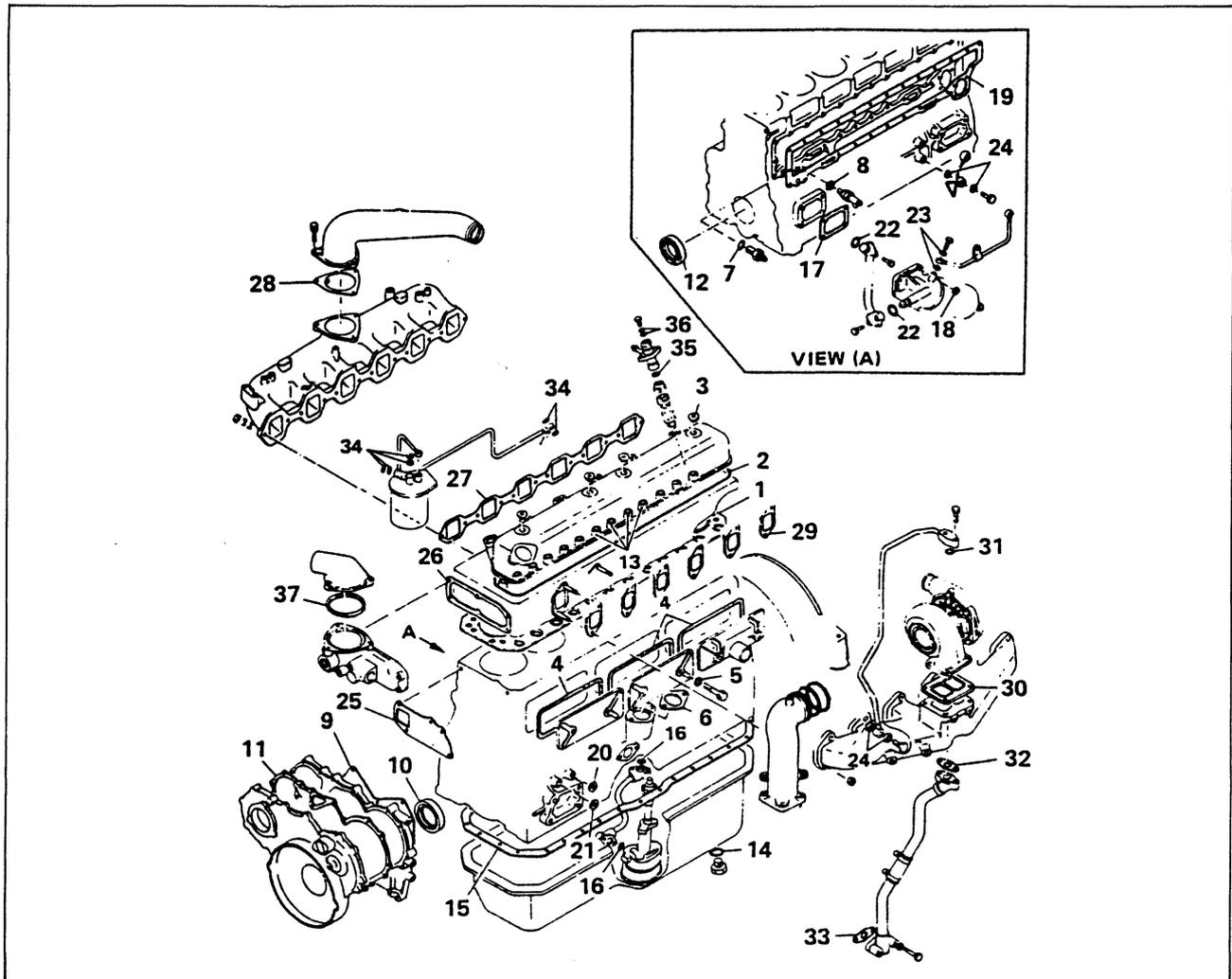
5. Check the oil feed pipe for oil leakage.



6. Check the oil return pipe joints for oil leakage.



6. ENGINE REPAIR KIT (FOR TURBOCHARGED ENGINES)

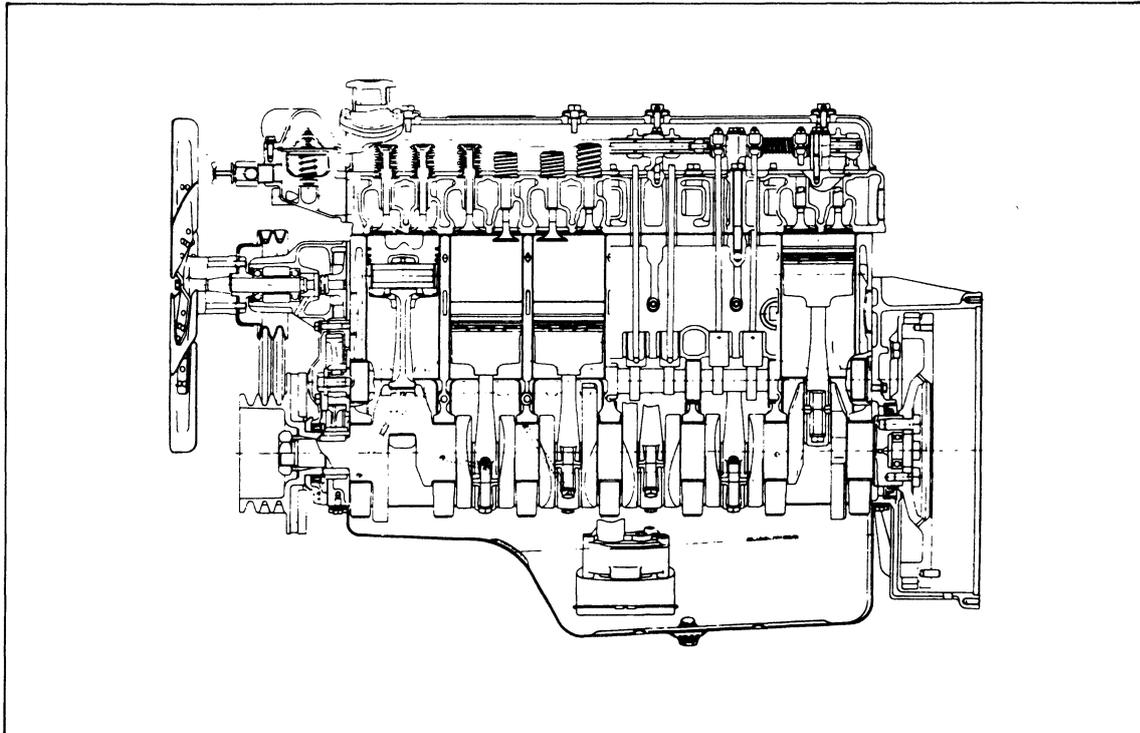
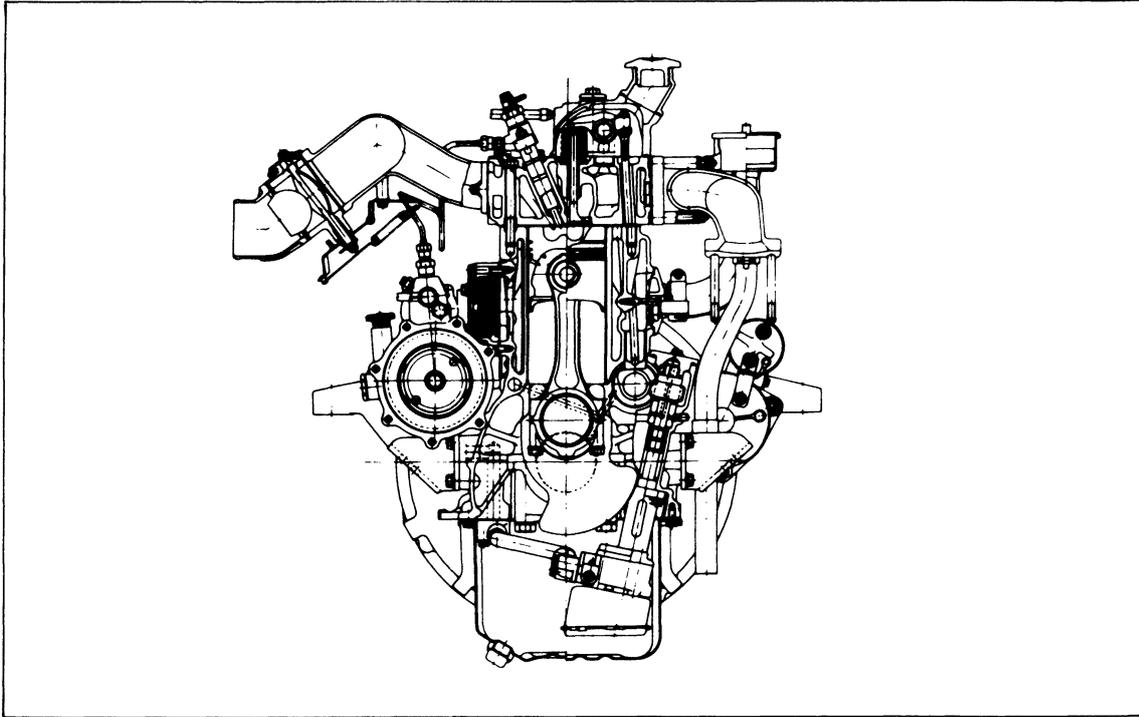


- | | |
|--|---|
| 1. Cylinder head gasket | 20. Oil pipe joint gasket |
| 2. Cylinder head cover gasket | 21. Joint bolt gasket |
| 3. Cylinder head cover nut gasket | 22. Oil pipe gasket |
| 4. Tappet chamber cover gasket | 23. Injection pump oil pipe gasket |
| 5. Chamber cover fixing bolt gasket | 24. Injection pump oil pipe gasket |
| 6. Oil Pump hole cover gasket | 25. Water pump gasket |
| 7. Oil relief valve gasket | 26. Thermostat housing gasket |
| 8. Water drain valve gasket | 27. Intake manifold gasket |
| 9. Gear case to cylinder block gasket | 28. Inlet pipe manifold gasket |
| 10. Crank pulley to gear case oil seal | 29. Exhaust manifold gasket |
| 11. Gear case cover gasket | 30. Exhaust manifold to turbocharger gasket |
| 12. Crankshaft rear end oil seal | 31. Oil feed pipe gasket |
| 13. Valve guide oil seal | 32. Oil drain pipe gasket |
| 14. Drain plug gasket | 33. Oil drain pipe gasket |
| 15. Oil pan gasket | 34. Overflow fuel pipe gasket |
| 16. Oil pipe gasket | 35. Injection nozzle gasket |
| 17. Oil filter gasket | 36. Injection nozzle leak off pipe gasket |
| 18. Oil filter fixing bolt gasket | 37. Thermostat gasket |
| 19. Oil cooler gasket | |

SECTION 2
ENGINE DISASSEMBLY/REASSEMBLY
INDEX

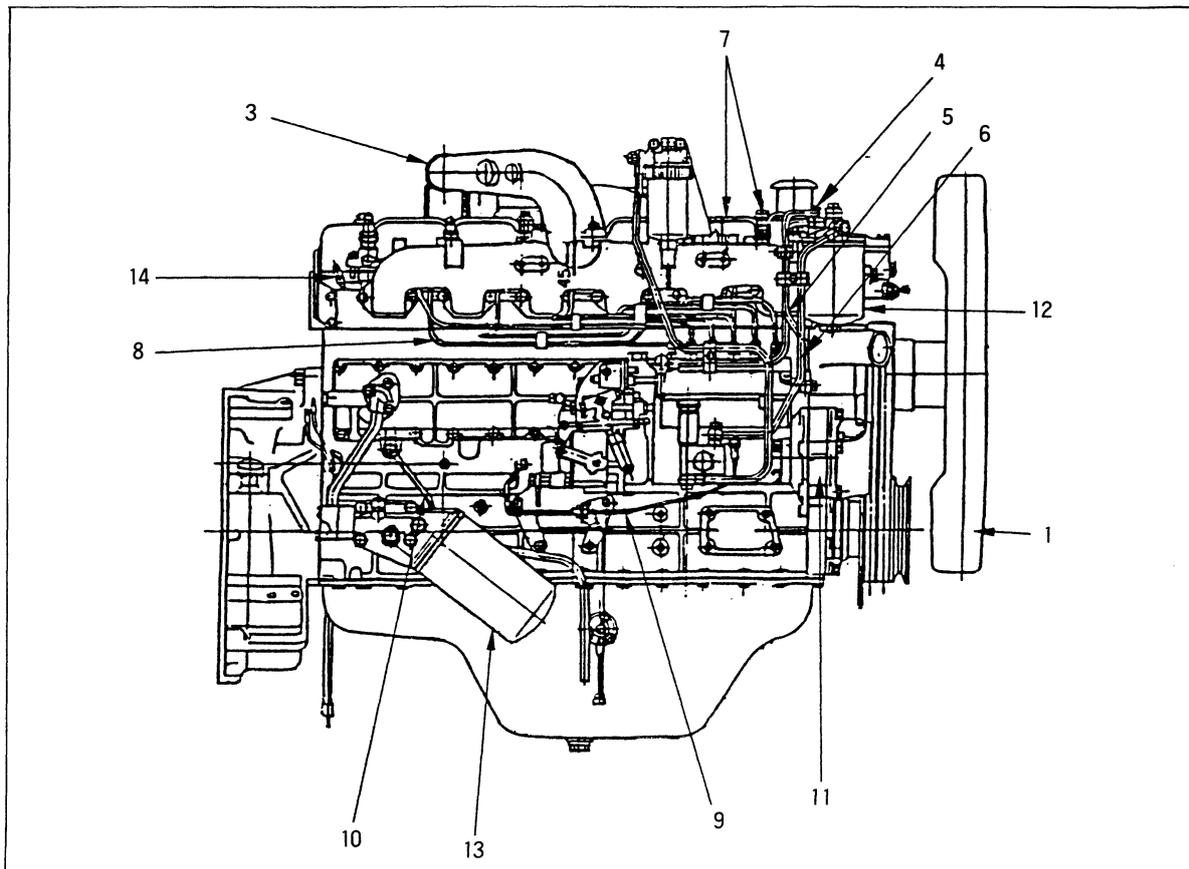
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3. INSPECTION & REPAIR	35
4. REASSEMBLY.....	58

1. GENERAL ASSEMBLY DRAWING



2. DISASSEMBLY

2.1 External parts(R.H)



Disassembly steps

- | | |
|--|---|
| 1. Cooling fan | 9. Oil pipe ; injection pump to cylinder body |
| 2. Not installed | 10. Oil pipe : filter to oil cooler |
| 3. Intake pipe | 11. Injection pump with injection pump gear |
| 4. Fuel return pipe | 12. Fuel filter |
| 5. Fuel pipe : fuel filter to injection pump | 13. Oil filter |
| 6. Fuel pipe : feed pump to filter | 14. Glow plug |
| 7. injection nozzle and leak off pipe | |
| 8. injection pipe | |

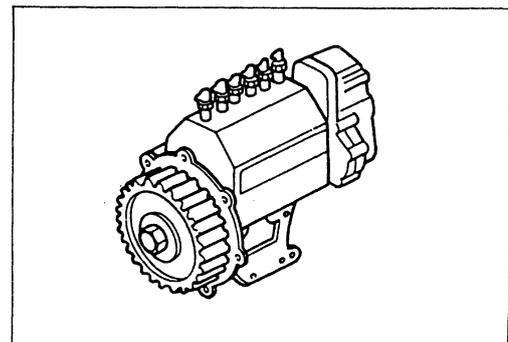
Important operations

Injection pump with injection pump gear

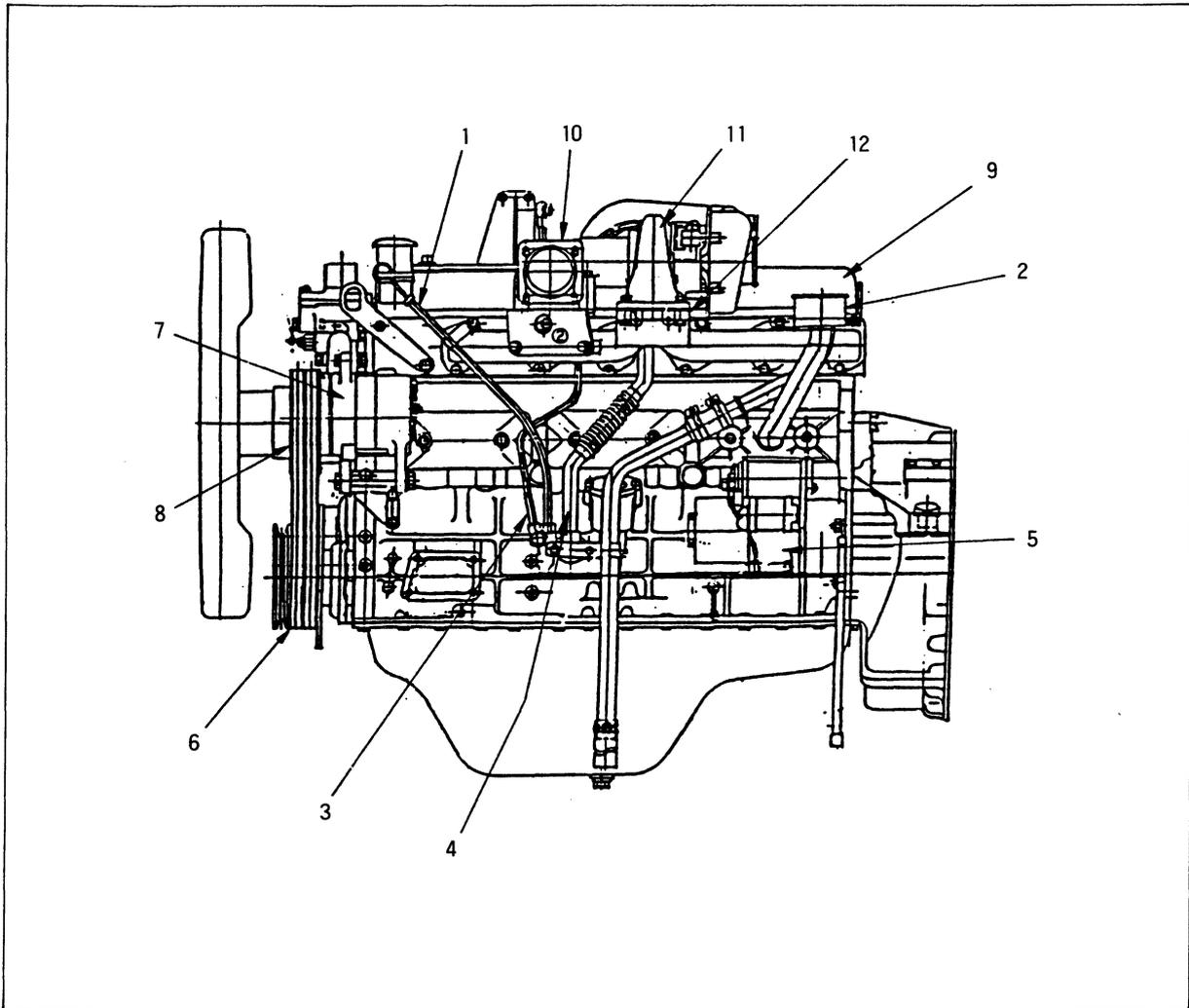
Use the shipping plugs(or something similar)to seal the injection pump delivery valve ports. This will prevent the entry of foreign material.

Flange mounted injection pump removal

1. Remove the injection pump flange bolts.
2. Pull the injection pump with the injection pump drive gear free.



2.2 External parts(L.H)



Disassembly steps

- | | |
|-------------------|------------------------|
| 1. Dipstick | 7. Alternator |
| 2. Air breather | 8. Fan pulley |
| 3. Oil feed pipe | 9. Cylinder head cover |
| 4. Oil drain pipe | 10. Turbo adaptor |
| 5. Starter motor | 11. Turbocharger |
| 6. Fan belt | 12. Gasket |