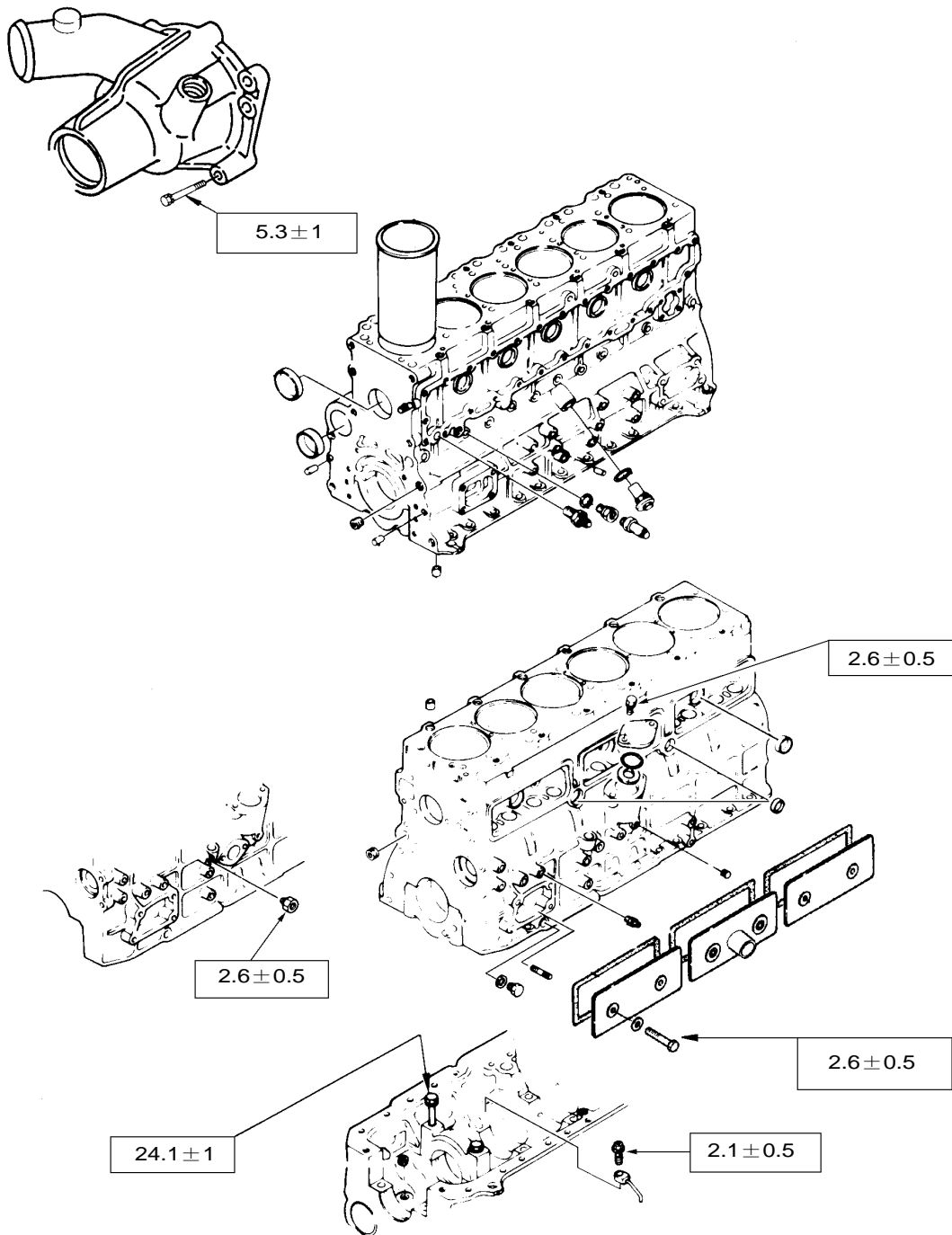


1.2. Engine Specifications

Items	Engine Model		
	DB 58	DB 58T	DB58TI
Engine type	Water cooled, 4 cycle, vertical in-line, overhead valve		
Combustion chamber type	Direct injection		
Cylinder liner type	Dry type		
Timing gear system	Gear drive type		
Number of piston ring	Compression ring 2, oil ring 1		
No. of cylinder-bore × stroke (mm)	6-102 × 118		
Total piston displacement (cc)	5,785		
Compression ratio	17.4 : 1		
Engine dimensions (length × width × height)(mm)	1122 × 648 × 775	1172 × 671 × 886	1172 × 683 × 928
Engine weight (dry) (kg)	455	497	505
Fuel injection order	1-5-3-6-2-4		
Fuel injection timing (B.T.D.C static)	18°	13°	13°
Type of fuel used	High speed diesel fuel (SAE No. 2)		
Fuel filter type	Cartridge type		
Injection pump type	Bosch in-line A type (for industrial)	Bosch in-line AD type (for Automotive)	
Governor type	Mechanical governing (RLD, RSV type)		
Injection nozzle type	Multi hole type		
Fuel injection pressure (kg/cm ²)	185		
Compression pressure (kg/cm ²)	31 (at 200RPM)		
Idle speed (RPM)	850	1100	
Intake and exhaust valve clearance (mm)	0.4(at cold)		
Max. power	130/2800	132ps/2200rpm	162ps/2200rpm
Max. torque	38/1600	45kg•m/1600rpm	60kg•m/1600rpm
Lubrication method	Pressurized circulation		
Oil pump type	Gear type		
Oil filter type	Full flow, cartridge or center bolt type		
Piston cooling method	Oil jet cooling type		
Lubrication oil capacity (l)	19	20.5	
Oil cooler type	Water cooled		
Cooling method	Pressurized forced circulation		
Cooling water capacity (l)	12		
Water pump	Belt driven impeller type		
Thermostat type	Wax pellet type		
Battery(V)	24		
Alternator (V-A)	24-60		
Starter (V-KW)	24-4.5		

• Cylinder Block

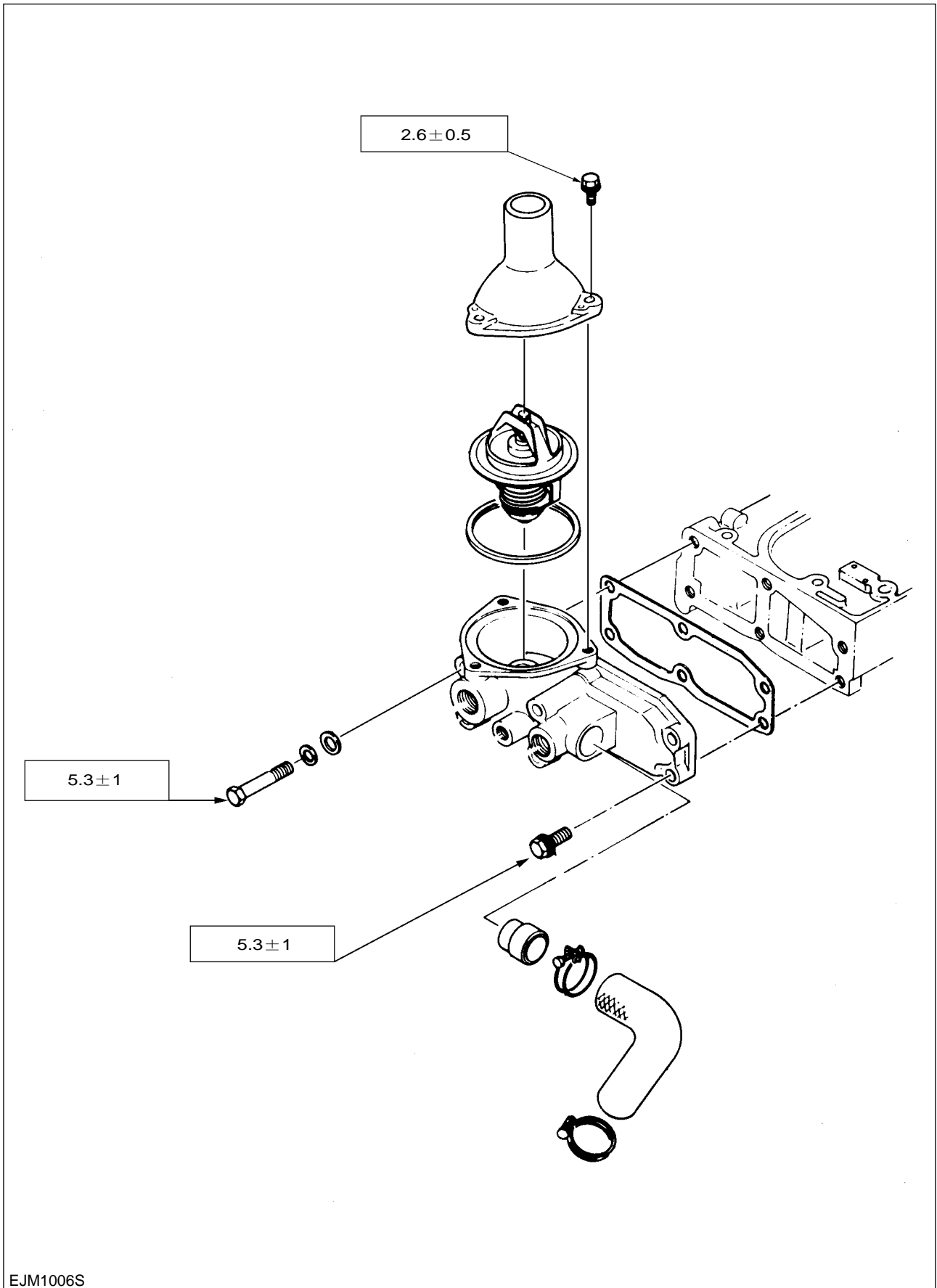
(Unit : kg · m)



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• Thermostat and Thermostat Housing

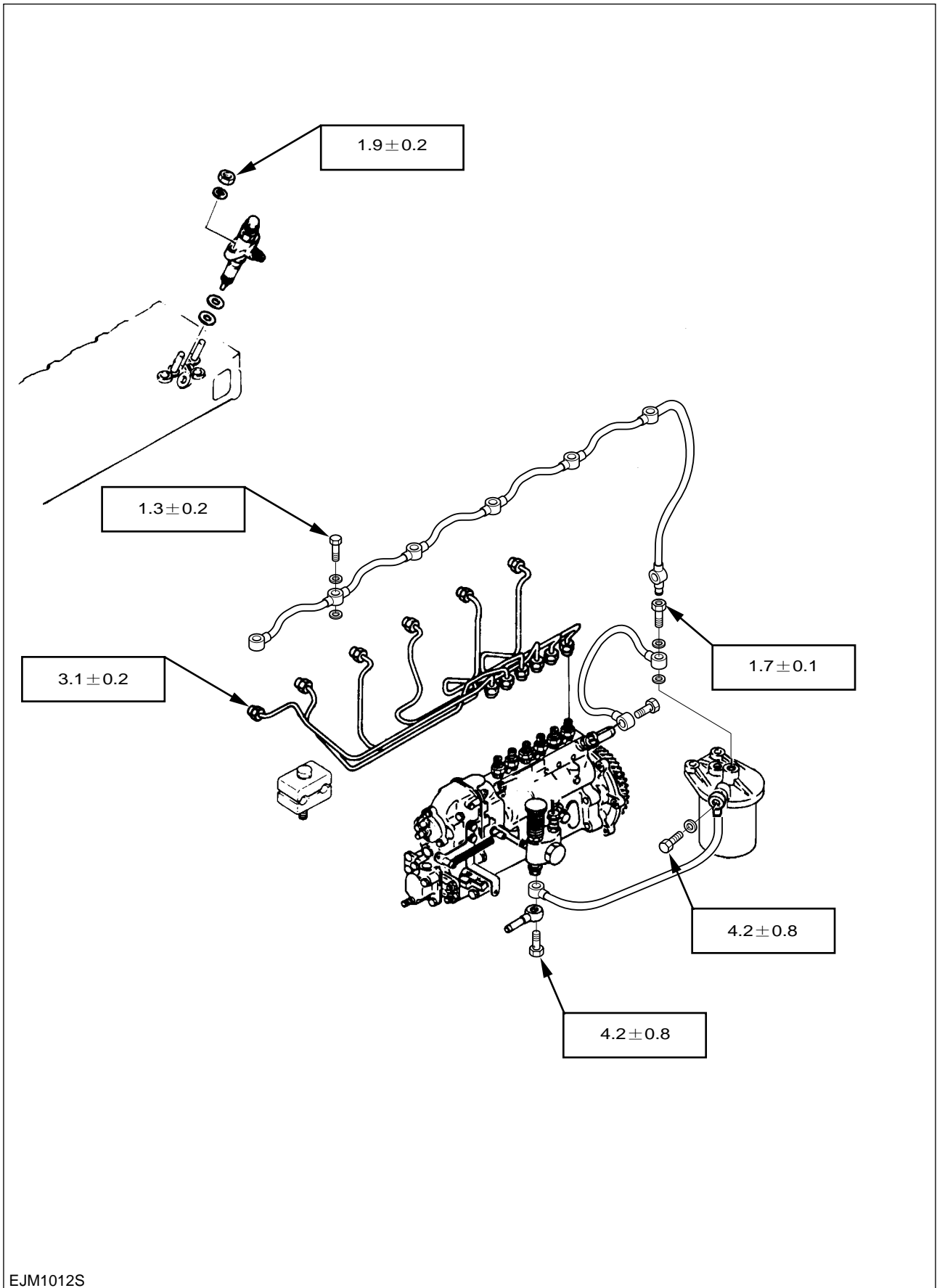
(Unit : kg · m)



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• Fuel System (DB58, DB58T)

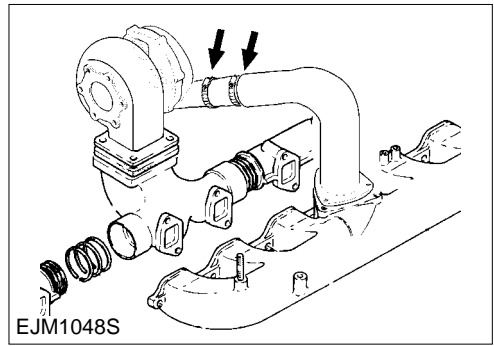
(Unit : kg · m)



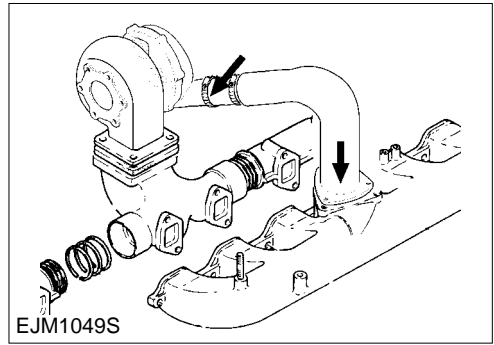
1.5.12. Inspection of Turbo charger



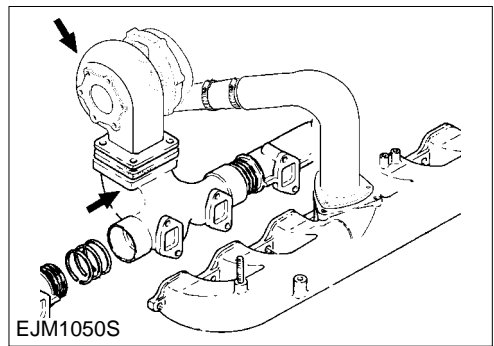
1) Check leakage at the connected part of suction.



2) Check leakage at the connected part of Intake manifold.



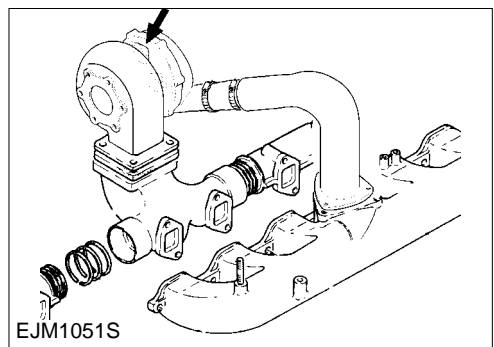
3) Check the leakage at the connected part of exhaust duct.



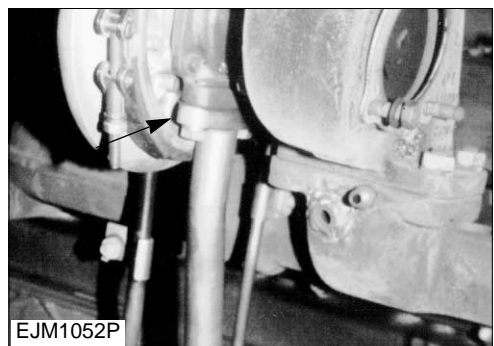
4) Check relaxity of turbocharger mounting nuts.



5) Check the leakage at oil delivery pipe.

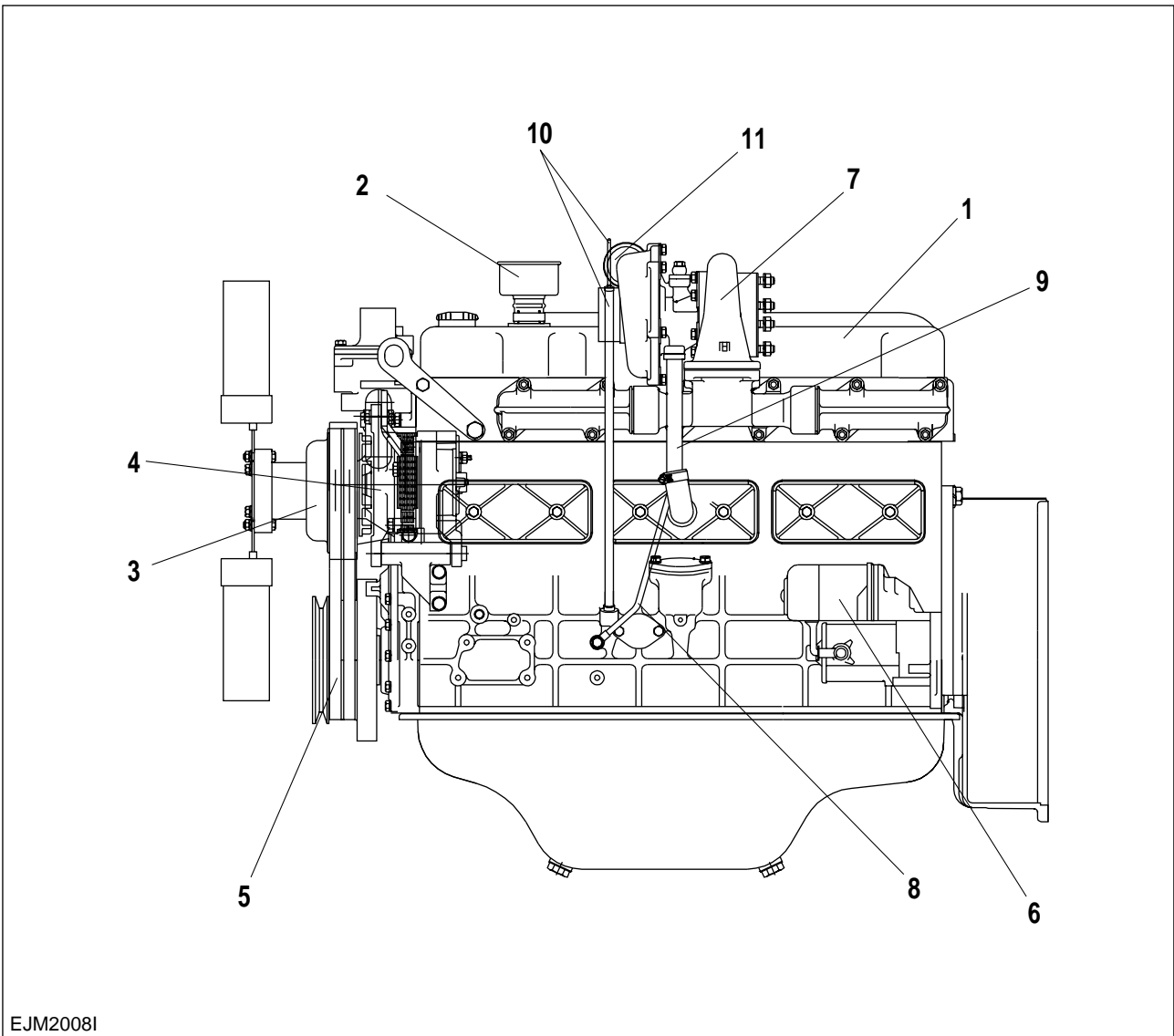


6) Check the leakage at oil return pipe joints.





• DB58T



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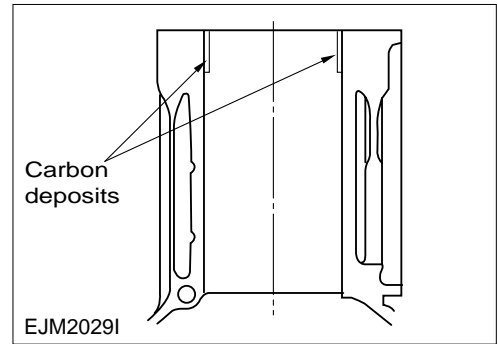
<Disassembly Steps>

- | | |
|-----------------------------------|-------------------------|
| 1. Dipstick and guide tube | 7. Fan belt |
| 2. Turbocharger oil return pipe | 8. Generator |
| 3. Turbocharger oil delivery pipe | 9. Fan pulley |
| 4. Intake pipe | 10. Breather |
| 5. Turbocharger | 11. Cylinder head cover |
| 6. Starter motor | |



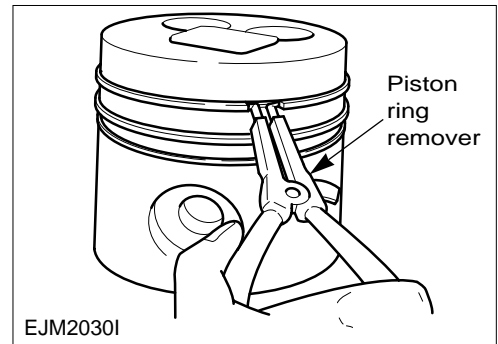
Importance

⚠ [CAUTION] Remove the piled up carbon at the upper of cylinder bore to be prevented damage of piston when remove.



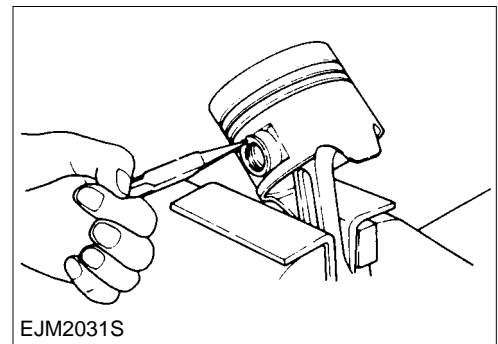
• Piston Rings

Remove the piston ring with using of piston ring disassembly tool.

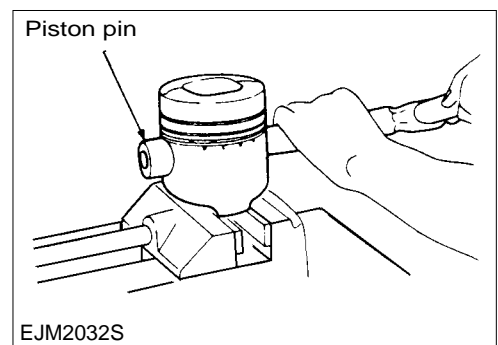


• Snap Ring and Piston Pin

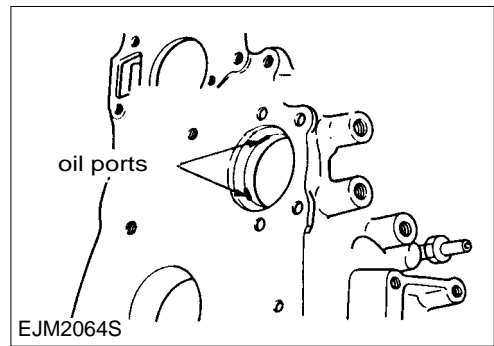
1) Use the snap ring pliers when remove the snap ring.



2) Pull out piston pin as tapping of hammer and brass bar.

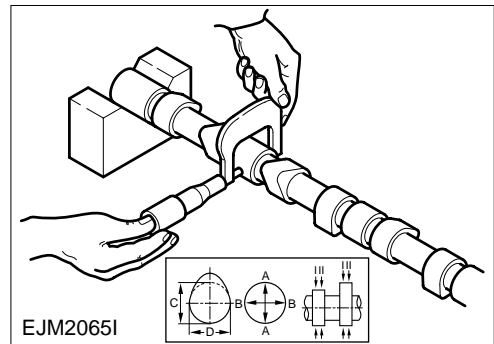


- 3) Agree with oil port of the cam shaft and the cylinder oil port.



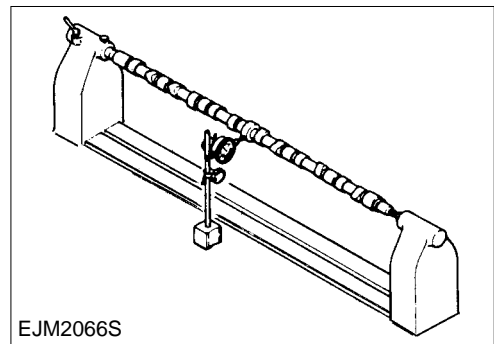
- 4) Measure the cam lobe with the micrometer.
Replace the cam lobe if the measured value escaped from the specified limit.

	Standard	Limit
Cam Lobe Height (C-D)	7.71 mm	7.21 mm
Cam Journal Diameter	56.0 mm	55.6 mm



- 5) Set up the cam shaft at the measured jig.
Measure the run out of cam shaft with the dial indicator.
Record the measured value (TIR)
Replace the cam shaft if the measured value escaped from the specified limit.

	Limit
Camshaft Run-Out (TIR)	0.12 mm



• **Grinding Limit of Crankshaft**

Classification	Limit
Crank Journal Outside Diameter	79.419 mm
Crank pin Outside Diameter	63.424mm

Utilize the undersize bearing (0.25, 0.5 mm) when the main bearing clearance was in excess of limit.

Regrinde the crank shaft in comply with below standard when it is used undersize bearing.

	Standard	Limit
Main Bearing Clearance	0.039-0.098 mm	0.11 mm

Use the undersize bearing (0.25, 0.5mm) when the connecting rod bearing clearance was in excess of limit.

Regrinde the crank shaft when it is used undersize bearing.

	Standard	Limit
Connecting Rod Bearing	0.03-0.07 mm	0.10 mm



• **Crank Shaft Gear**

<Overhaul>



Disassemble the crank shaft gear as the using tool of crank shaft remover.

Visually inspect the crankshaft gear.

Replace the crankshaft gear if excessive wear or damage is discovered.

<Inspection>

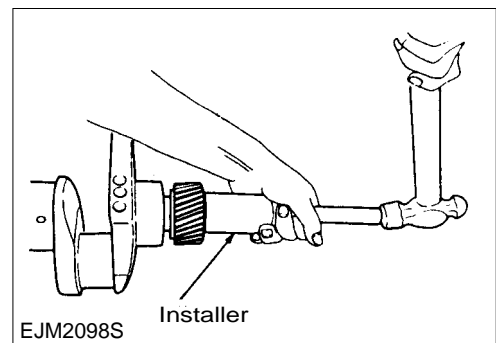
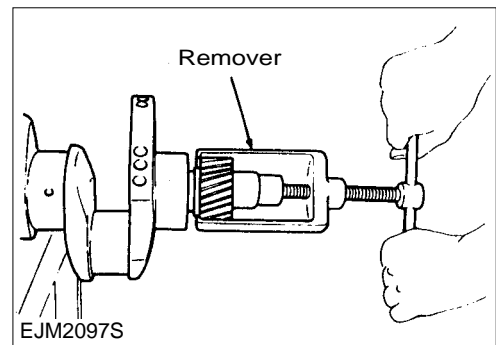
Replace the brand new parts when it is visually found over wore or defect.



<Installation>



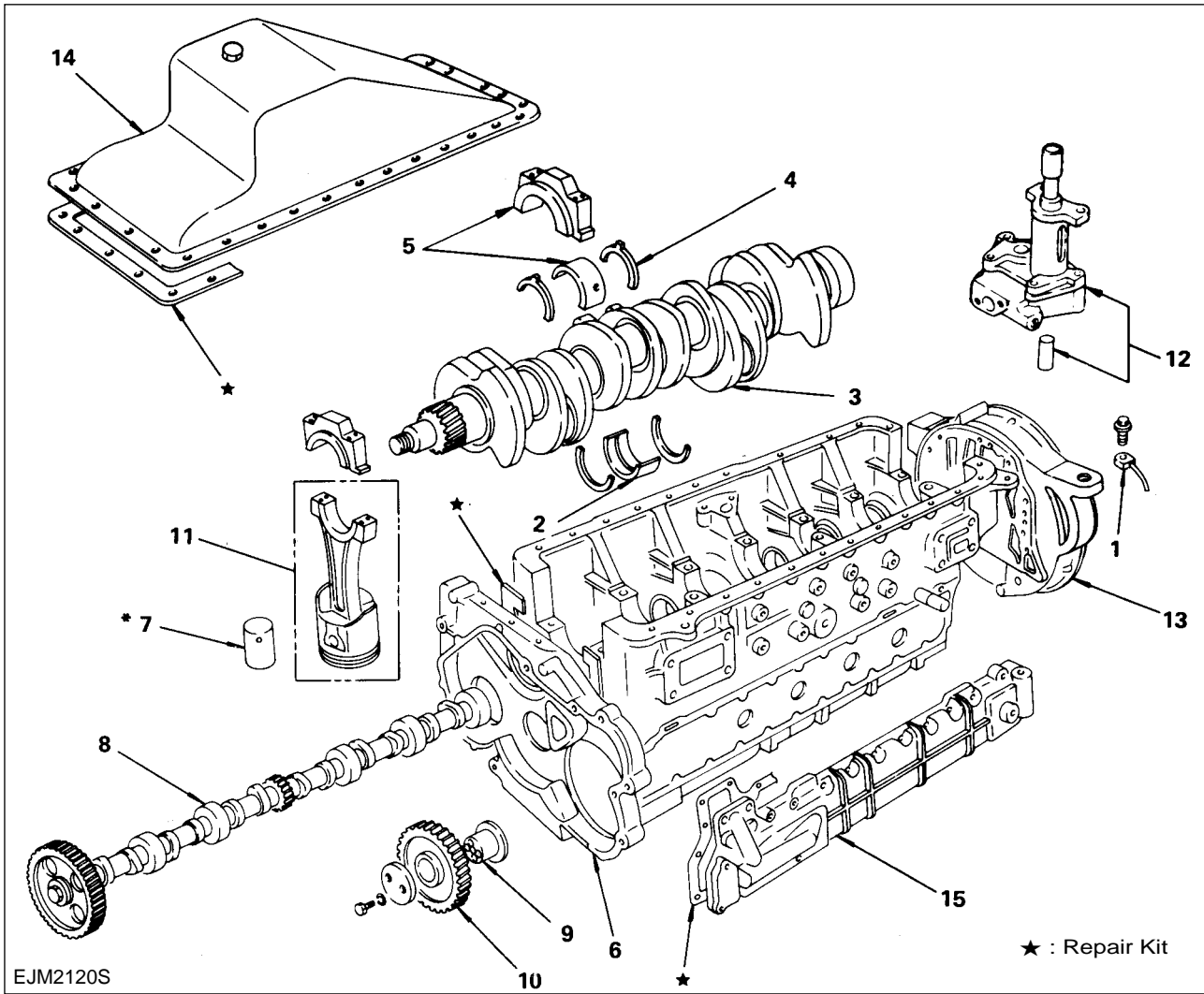
Utilize the tools for installation when it is installing crank shaft gear.





2.4.2. Inside parts

• Main Components (I)



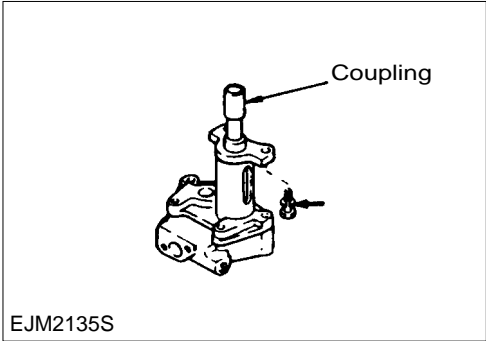
<Order of Assembly>

- | | |
|---|-------------------------------|
| 1. Oiling jet(DB58T/TI) | 9. Idler gear shaft |
| 2. Crank shaft bearing | 10. Idler gear |
| 3. Crank shaft | 11. Piston and connecting rod |
| 4. Thrust bearing | 12. Oil pump and coupling |
| 5. Crankshaft bearing and crank shaft bearing cap | 13. Flywheel housing |
| 6. Timing gear case | 14. Oil pan |
| 7. Tappet | 15. Oil cooler |
| 8. Camshaft | |

* Prior to assemble cam shaft, firstly assemble the tappet without fail.



Oil Pump Bolt Torque	$5.3 \pm 1.0 \text{ kg} \cdot \text{m}$
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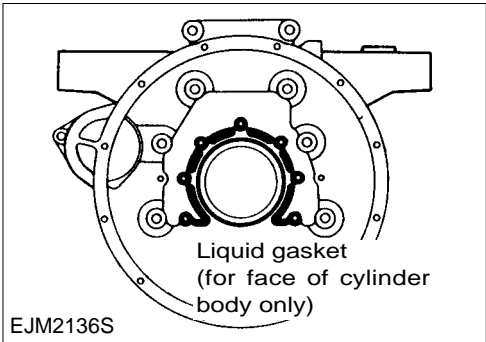
• Flywheel Housing



Tighten bolt as it is specified torque after it is pasted sealant at the black face in the figure.



Torque	Outer Bolt	$2.6 \pm 0.5 \text{ kg} \cdot \text{m}$
	Inner Bolt	$16.1 \pm 1 \text{ kg} \cdot \text{m}$

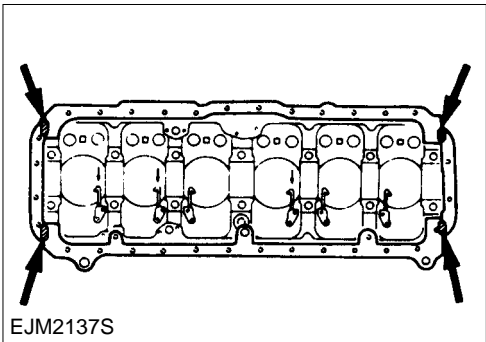


• Oil Pan

1) Install an oil fan after put on oil fan gasket at the spreaded sealant at the inveral between cyliner block and oil fan.



Torque	$2.6 \pm 0.5 \text{ kg} \cdot \text{m}$
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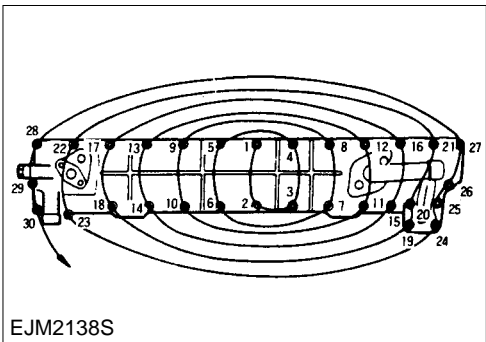


• Oil Cooler

Orderly assemble the oil cooler bolt after set up the spreaded sealant at the oil cooler gasekt.



Torque	$2.6 \pm 0.5 \text{ kg} \cdot \text{m}$
--------	---



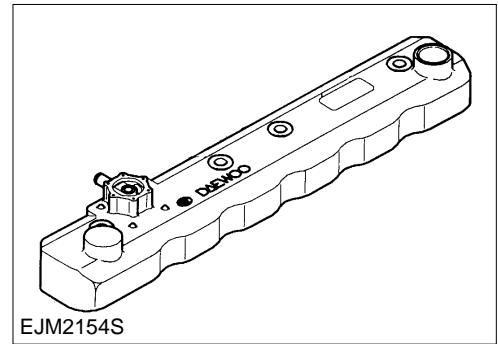


• **Cylinder Head Cover**

Orderly tighten the bolt as it is shown in figure.



Bolt Torque	$2.1 \pm 0.5 \text{ kg} \cdot \text{m}$
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• **Fan Belt**

Adjust the fan belt tension
See the item "maintenance".

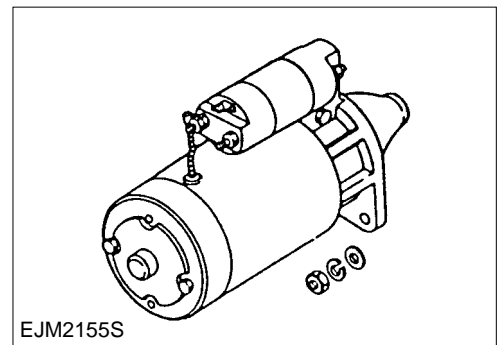


• **Starter Motor**

Tighten with the specified torque after assemble a starter motor to fly wheel housing.

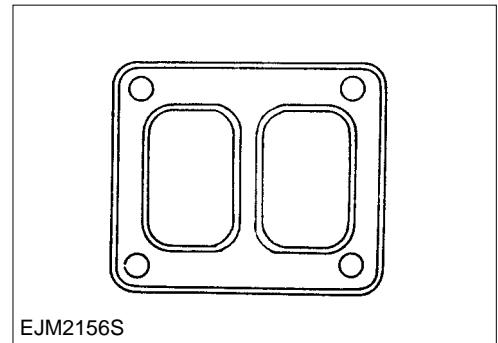


Torque	$8.4 \text{ kg} \cdot \text{m}$
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• **Turbocharger Mounting Flange Gasket**

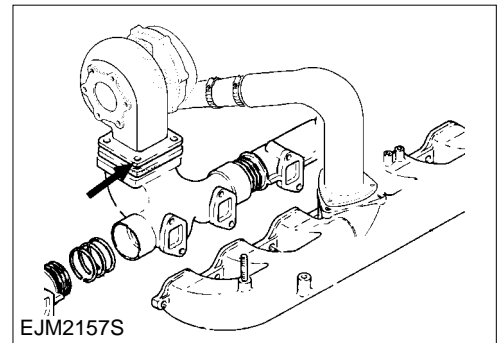
Carefully posit the gasket with the edged side facing up.



• **Turbocharger**

Tighten in the interim torborcharger nut.
Completely tighen the nut after it is assemble oil pipe.

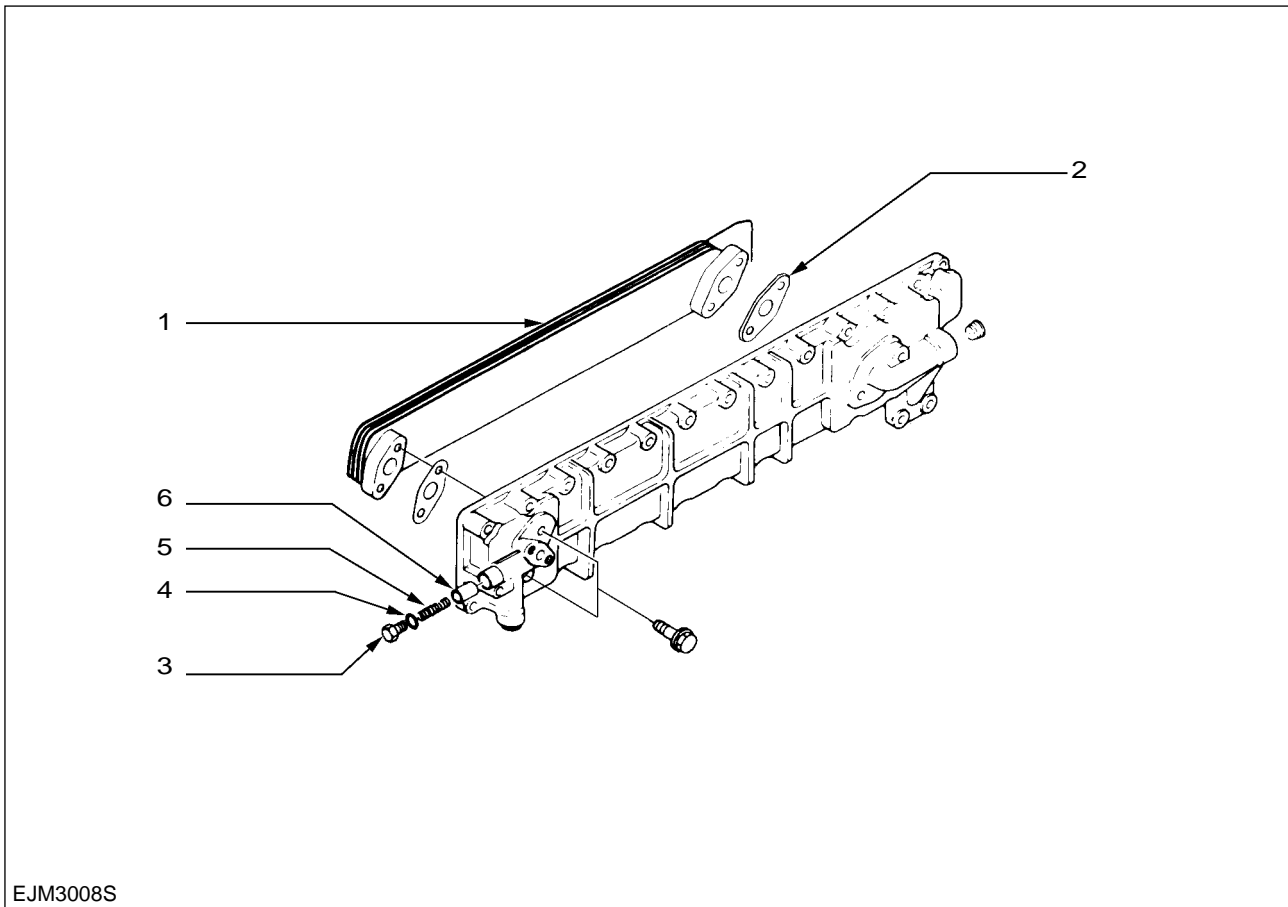
Torque	$5.3 \pm 1 \text{ kg} \cdot \text{m}$
--------	---------------------------------------



3.3. Oil Cooler



• Disassembly



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<System of Disassembly>

- | | |
|---|-------------------------|
| 1. Element (NA 3 plates. T/TI 4 plates) | 4. O-ring ; plug |
| 2. Element gasket | 5. By-pass valve spring |
| 3. By-pass vlave plug | 6. By-pass valve |



Inspection and Repair

Correct and replace if it is found the worn, defect or others when check it.

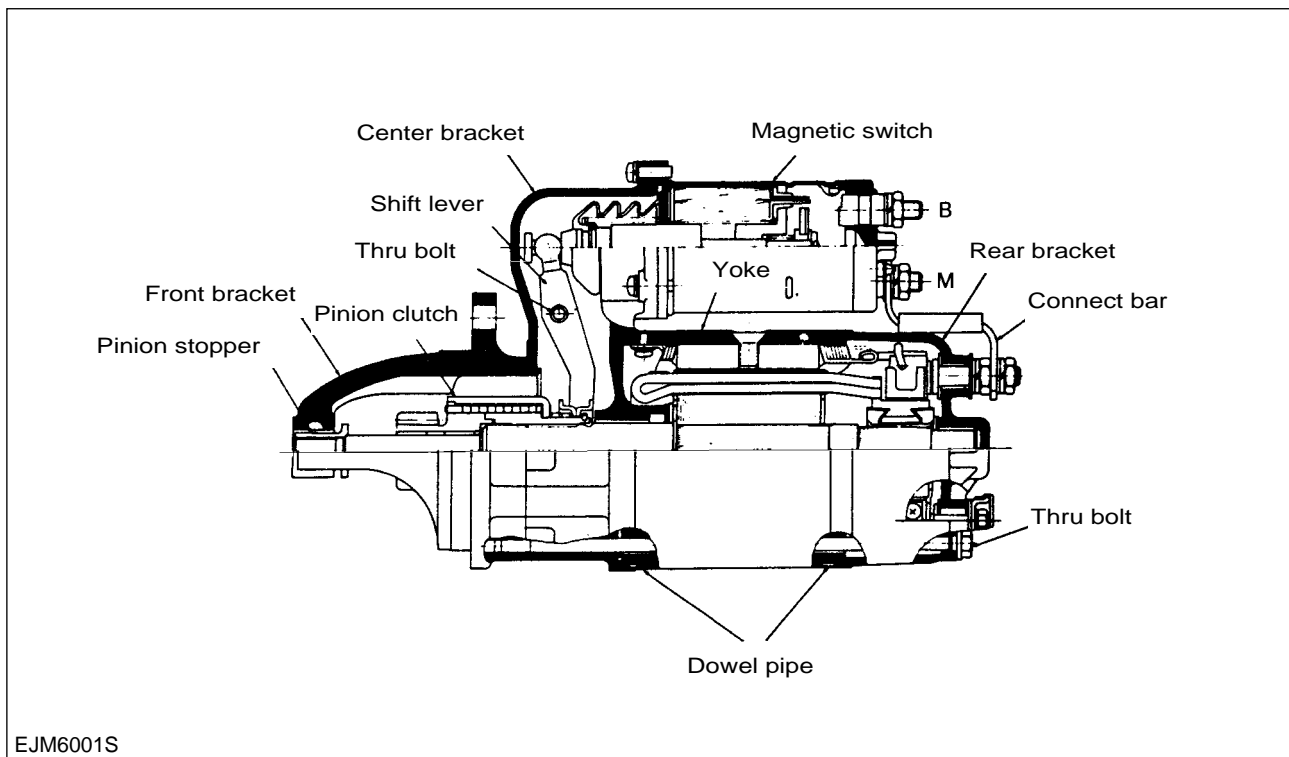
6. ENGINE ELECTRICALS

6.1. Starter motor

- Main data and specifications

Rated voltage	24V
Rated output	4.5KW/2.5KW
Rating	30 sec
Direction of rotation (viewed from the pinion side)	clockwise
Operating speed	More than 6500 rpm(No load) More than 1600 rpm(Load)

- Construction



8. CAUSE OF TROUBLE, DIAGNOSIS AND TROUBLESHOOTING

1) Starting Trouble

Statement	Cause	Remedy
Start Motor	(1) Magnetic switch does not operate when turn starter switch 1. Distribution inferiority, disconnection, connection inferiority, 2. starter switch connection inferiority 3. Coil disconnection of magnetic switch, strain 4. bend of flange shaft 5. fixed humidity part of flange.	Trouble of circuit Correction Replacement Replacement Correction or replacement Correction or replacement
	(2) Magnetic switch operate, but pinion does not clamp with ring gear. 1. Defect of amateur shaft bearing 2. Pinion & ring gear was excessive wore, changed. 3. Shortage of battery 4. Inferiority of Pinion moving 5. Flange & connector shaft fixed	Correction or replacement Correction or replacement Charge or replacement Wash Correction or replacement
	(3) Pinion clamped with ring gear, but engine does not turn 1. Pinion clutch skip 2. Amateur field coil strain 3. Brush & commutator inferiority 4. Shortage of battery 5. Earth inferiority	Replacement Replacement Correction or replacement Charge or replacement correction
Fuel System Trouble	(1) Fuel does not feed from feed pump 1. No fuel 2. Clogged fuel tank strainer 3. Clogged fuel tank or air in fuel line 4. Defect of fuel feed pump valve 5. Feed pump piston & push rod fixed 6. Clogged fuel pump strainer	Replenish Wash correction Replacement Correction or replacement Wash
	(2) Fuel does not inject from injection pump 1. Clogged fuel filter element 2. Continually opened over flow valve of fuel filter 3. Air in fuel filter or injection pump 4. flange, delivery valve fixed	Replacement Replacement Removal air Correction or replacement
	(3) Unfitness of fuel injector 1. Injection timing Inferiority 2. Unfitness of fuel timing 3. cam or cam shaft excessive wore	correction correction Replacement
	(4) Injection nozzle does not operate 1. Needle valve fixed 2. Leakage between nozzle and needle valve 3. Unfitness of injection pressure	Correction or replacement Correction or replacement