WSM

WORKSHOP MANUAL

DIESEL ENGINE

07-E3B SERIES

Kubota

KiSC issued 09, 2008 A

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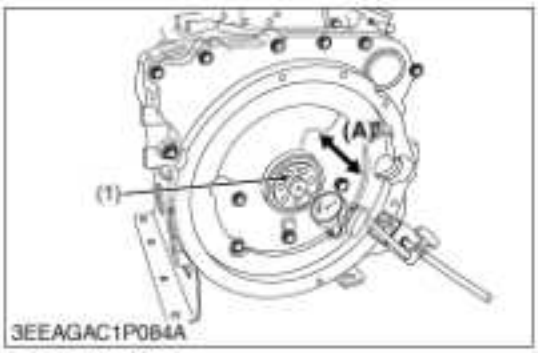
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Symptom	Probable Cause	Solution	Reference Page
Deficient Output	Incorrect injection timing	Adjust	S-25
	Engine's moving parts seem to be seizing	Repair or replace	–
	Injection pump malfunctioning	Repair or replace	S-26, 58
	Deficient nozzle injection	Repair or replace nozzle	S-27, 43
	Compression leak	Check the compression pressure and repair	S-20, 42 to 47
	Gas leak from exhaust system	Repair or replace	S-32, 38
	Air leak from compressor discharge side	Repair or replace	S-32, 38
	Air cleaner dirty or clogged	Clean or replace	G-12, 24
	Compressor wheel turning heavily	Replace the turbocharger assembly	S-32, 38
Excessive Lubricant Oil Consumption	Piston ring's gap facing the same direction	Shift ring gap direction	S-70, 71, 72
	Oil ring worn or stuck	Replace	S-70, 71, 72, 95
	Piston ring groove worn	Replace piston	S-70, 71, 72, 95
	Valve stem and valve guide worn	Replace	S-48, 80
	Crankshaft bearing and crank pin bearing worn	Replace	S-69, 71, 72, 96 to 99
	Oil leaking due to defective seals or packing	Replace	–
Fuel Mixed into Lubricant Oil	Injection pump's plunger worn	Repair or replace	S-26, 58
	Deficient nozzle injection	Repair or replace nozzle	S-27, 43
	Injection pump broken	Replace	S-26, 58
Water Mixed into Lubricant Oil	Head gasket defective	Replace	S-45, 46, 47
	Cylinder block or cylinder head flawed	Replace	S-79
Low Oil Pressure	Engine oil insufficient	Replenish	G-7, 9
	Oil strainer clogged	Clean	S-68
	Relief valve stuck with dirt	Clean	S-61, 103
	Relief valve spring weaken or broken	Replace	S-61, 103
	Excessive oil clearance of crankshaft bearing	Replace	S-73, 99
	Excessive oil clearance of crankpin bearing	Replace	S-69, 97, 98
	Excessive oil clearance of rocker arm	Replace	S-44, 82
	Oil passage clogged	Clean	–
	Different type of oil	Use specified type of oil	G-6, 9
	Oil pump defective	Replace	S-22, 103

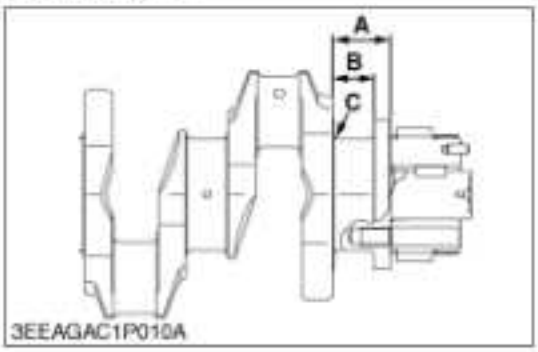
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(4) Crankshaft



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Crankshaft Side Clearance

1. Set a dial indicator with its tip on the end of the crankshaft (1).
2. Measure the side clearance by moving the crankshaft (1) to the front and rear.
3. If the measurement exceeds the allowable limit, replace the thrust bearings.
4. If the same size bearing is out of specifications because of the crankshaft journal wear, replace it with an oversize one referring to the table and figure.

Side clearance of crankshaft	Factory spec.	0.15 to 0.35 mm 0.0059 to 0.013 in.
	Allowable limit	0.50 mm 0.020 in.

(Reference)

- Oversize dimensions of crankshaft journal.

[V2607-DI-T-E3B]

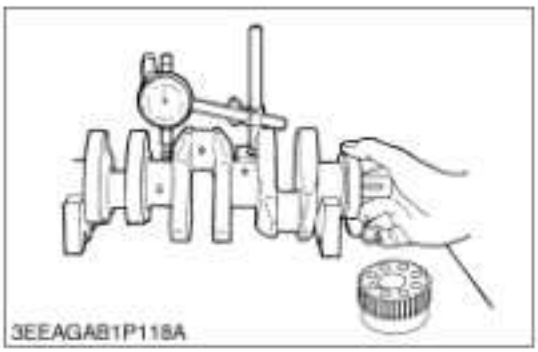
Oversize	0.20 mm 0.0079 in.	0.40 mm 0.016 in.
Dimension **A**	37.50 to 37.70 mm 1.477 to 1.484 in.	37.60 to 37.80 mm 1.481 to 1.488 in.
Dimension **B**	26.20 to 26.25 mm 1.032 to 1.035 in.	26.40 to 26.45 mm 1.040 to 1.041 in.
Dimension **C**	2.8 to 3.2 mm radius 0.11 to 0.12 in. radius	2.8 to 3.2 mm radius 0.11 to 0.12 in. radius
The crankshaft journal must be fine-finished to higher than ▽▽▽▽.		(0.8S)

[V3007-DI-T-E3B / V3307-DI-T-E3B]

Oversize	0.20 mm 0.0079 in.	0.40 mm 0.016 in.
Dimension **A**	41.10 to 42.10 mm 1.619 to 1.657 in.	41.20 to 42.20 mm 1.622 to 1.661 in.
Dimension **B**	28.20 to 28.25 mm 1.111 to 1.112 in.	28.40 to 28.45 mm 1.119 to 1.120 in.
Dimension **C**	2.8 to 3.2 mm radius 0.11 to 0.12 in. radius	2.8 to 3.2 mm radius 0.11 to 0.12 in. radius
The crankshaft journal must be fine-finished to higher than ▽▽▽▽.		(0.8S)

(1) Crankshaft **(A) Side Clearance of Crankshaft**

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Crankshaft Alignment

1. Support the crankshaft with V block on the surface plate and set a dial indicator with its tip on the intermediate journal at right angle.
2. Rotate the crankshaft on the V block and get the misalignment (half of the measurement value).
3. If the misalignment exceeds the allowable limit, replace the crankshaft.

Crankshaft alignment	Allowable limit	0.02 mm 0.0008 in.

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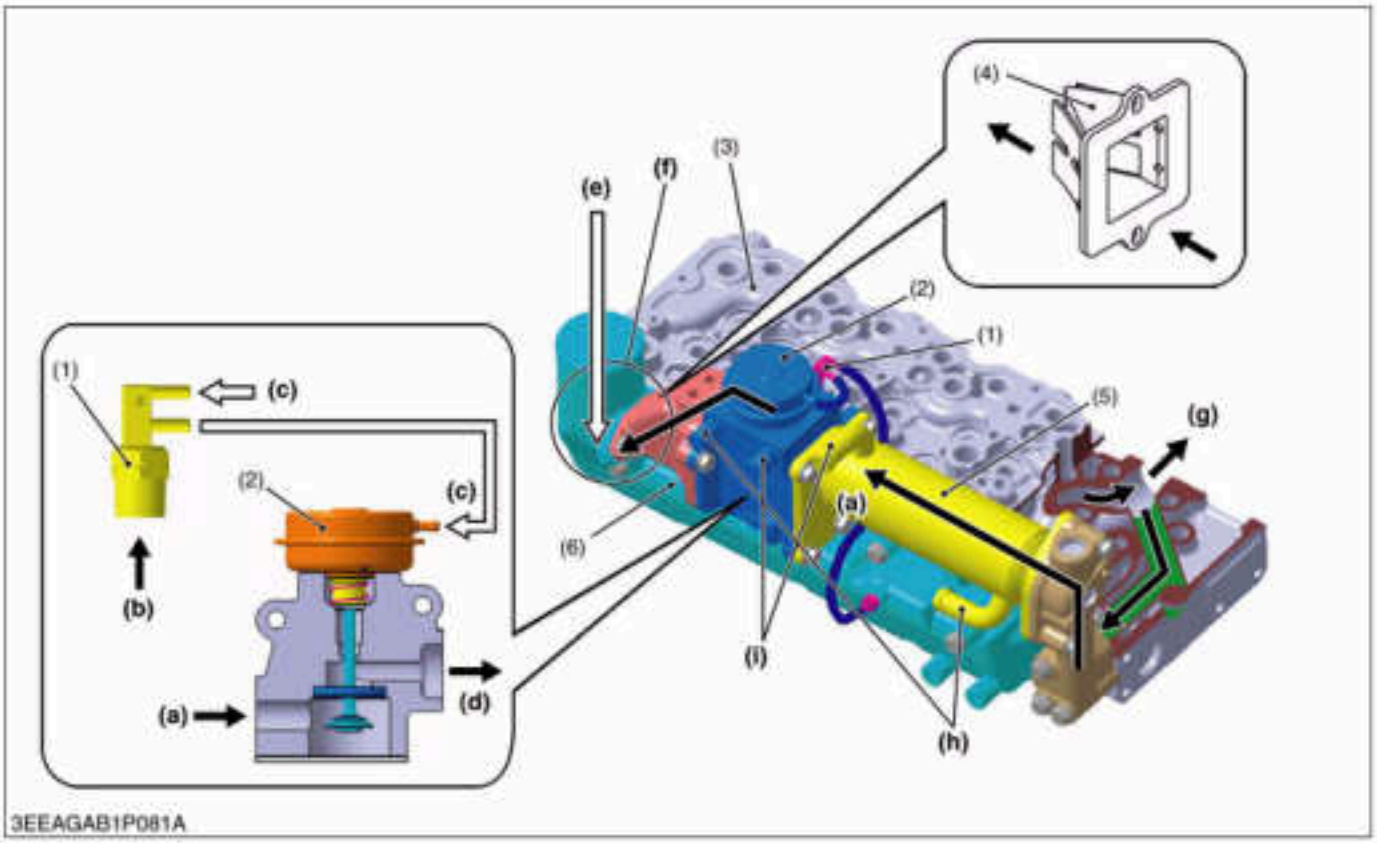
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7. EXHAUST GAS RECIRCULATION (EGR) SYSTEM

[1] GENERAL

In order to meet with the strict emission regulations, Kubota has adopted the EGR on the V2607-DI-T-E3B, V3007-DI-T-E3B and V3307-DI-T-E3B. The nitrogen oxide (NOx) which is a hazardous component in exhaust gas is generated by oxidation of nitrogen in the air, due to rise of the combustion temperature in cylinders. The EGR is a system in which the exhaust gas with lean oxygen is cooled and returned to cylinders again in order to lower the combustion temperature. As a result, NOx can be decreased.

[2] EXTERNAL MECHANICAL EGR



(1) Thermo Valve
(2) Mechanical EGR Valve
(3) Cylinder Head
(4) Reed Valve
(5) EGR Cooler
(6) Intake Manifold

(a) Cooled EGR Gas
(b) Coolant Temperature
(c) Boost Pressure
(d) To The Intake Manifold
(e) Fresh Air
(f) Cooled EGR Gas Merges with Fresh Air
(g) Exhaust Gas
(h) Coolant Inlet
(i) Coolant Outlet

External mechanical EGR consists of water cooled EGR cooler (5), mechanical EGR valve (2), reed valve (4) and thermo valve (1).

When the coolant temperature **(b)** is getting higher, thermo valve (1) is open and the boost pressure of intake manifold (6) gets to reach the diaphragm of mechanical EGR valve (2).

If the coolant temperature **(b)** is high, but the boost pressure is low, the EGR valve (2) does not open. If coolant temperature **(b)** is high, boost pressure is also high, EGR valve (2) is open and cooled EGR gas **(a)** through the water cooled EGR cooler (5) flows into the intake manifold (6). And the reed valve (4) between EGR valve (2) and intake manifold (6) prevents the fresh air flowing into EGR system.

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Alternator on Unit Test

(Before testing)

- Before alternator on unit test, check the battery terminal connections, circuit connection, fan belt tension, charging indicator lamp, fuses on the circuit, and abnormal noise from the alternator.
- Prepare full charged battery for the test.

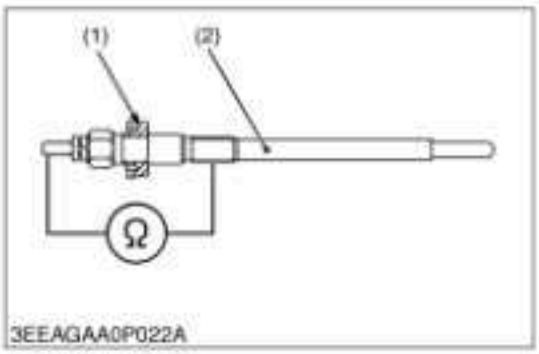
■ **NOTE**

- **Be careful not to touch the rotating engine parts while engine is running.**
  Keep safety distance from the engine rotating parts.

1. Start the engine.
2. When the engine is operating measure the voltage between two battery terminals. If the voltage is between 13.8 V and 14.8 V, the alternator is operating normally.
3. If the results of alternator on unit test are not within the specifications, disassemble the alternator and check the each component part for finding out the failure. See the "DISASSEMBLING AND ASSEMBLING" and "SERVICING" for alternator.

Regulating voltage at no load	Factory spec.	13.8 to 14.8 V at 25 °C (77 °F)

0000010745E



Glow Plug Continuity

1. Remove the glow plug (2).
2. Measure the resistance with a circuit tester between the glow plug terminal and the glow plug housing.
3. If the factory specification is not indicated, glow plug (2) is faulty.

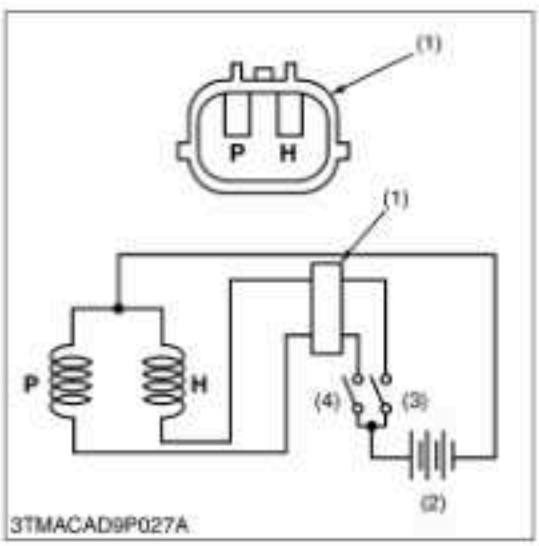
■ **NOTE**

- **Adjust the direction of the ditch to the terminal side when the seal (1) is installed in the glow plug (2).**

Resistance	Factory spec.	Approx. 0.95 Ω

(1) Seal (2) Glow Plug

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Engine Stop Solenoid

1. Remove the engine stop solenoid from the engine.
2. Connect the jumper leads from the pulling coil **P** terminal to the switch (3), and from switch (3) to the battery positive terminal.
3. Connect the jumper leads from the holding coil **H** terminal to the switch (4), and from switch (4) to the battery positive terminal.
4. Connect the jumper leads from the engine stop solenoid body to the battery negative terminal.
5. When switch (4) is turn on, the plunger pull into the solenoid body and then turn off the switch (4), the plunger comes out.
6. Turn on the switch (3) then turn on the switch (4), the plunger pull into the solenoid body and it keep in holding position after turn off the switch (4).
7. If the plunger is not attracted, the engine stop solenoid is faulty.

■ **IMPORTANT**

- **Never apply the current for pulling coil more than two seconds when inspecting.**

(1) Connector
(2) Battery
(3) Switch for Holding Coil
(4) Switch for Pulling Coil

P : Terminal for Pulling Coil
H : Terminal for Holding Coil

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