SHOP MANUAL

KOMATSU®

67E-1 SERIES

DIESEL ENGINE

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2. CHECK POINTS OF EVERY 50 HOURS

Checking Fuel Hose and Clamp Bands

1. If the clamp (1) is loose, apply oil to the threads and securely retighten it.
2. The fuel hose (2) is made of rubber and ages regardless of the period service.
   Change the fuel hose together with the clamp every two years.
3. However, if the fuel hose and clamp are found to be damaged or deteriorate earlier than two years, then change or remedy.
4. After the fuel hose and the clamp have been changed, bleed the fuel system.

⚠ CAUTION

- **Stop the engine when attempting the check and change prescribed above.**

(When bleeding fuel system)

1. Fill the tank with fuel and open the cock (4).
2. Loosen the air vent plug (3) of the fuel filter a few turns.
3. Screw back the plug when bubbles do not come up any more.
4. Open the air vent cock (5) on top of the fuel injection pump.
5. If equipped electrical fuel feed pump, turn the key to AC position and pump the fuel up for 10 to 15 seconds.
   If equipped mechanical fuel feed pump, set the stop lever on stop position and crank the engine for 10 to 15 seconds.
6. Close securely the air vent cock after air bleeding.

■ NOTE

- **Always keep the air vent cock on the fuel injection pump closed except when air is vented, or it may cause the engine to stop.**

(1) Clamp
(2) Fuel Hose
(3) Air Vent Plug
(4) Fuel Cock
(5) Air Vent Cock

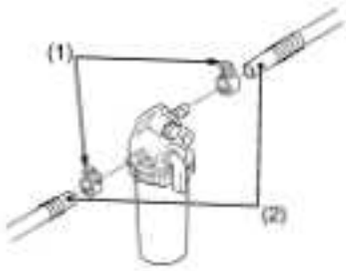
[A] Cartridge Type
[B] Element Type

[A]



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[B]



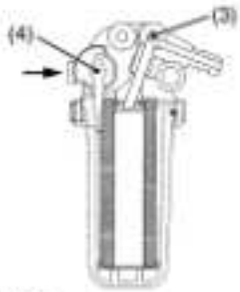
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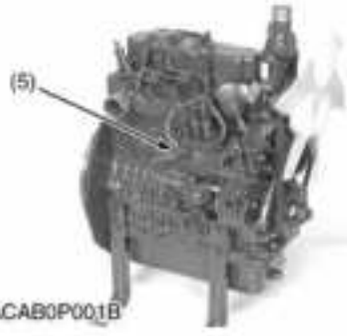


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SERVICING SPECIFICATION

Item		Factory Specification	Allowable Limit
Valve Clearance (Cold)		0.145 to 0.185 mm	—
Compression Pressure	3D67E-1A	2.84 to 3.24 MPa {29.0 to 33.0 kg/cm^2}	2.26 MPa {23.0kg/cm^2}
	Variance Among Cylinder	—	10 % or less
Top Clearance		0.50 to 0.70 mm	—
Cylinder Head Surface	Flatness	—	0.05 mm
Valve Recessing (Intake and Exhaust)		–0.10 to 0.10 mm	0.30 mm
Valve Stem to Valve Guide	Clearance	0.030 to 0.057 mm	0.10 mm
	Valve Stem (O.D.)	5.968 to 5.980 mm	—
	Valve Guide (I.D.)	6.010 to 6.025 mm	—
Valve Face	Angle	45°	—
Valve Seat	Angle	45°	—
	Width	2.12 mm	—
Valve Spring	Free Length	31.3 to 31.8 mm	28.4 mm
	Tilt	—	1.2 mm
	Setting Load / Setting Length	64.7 N / 27.0 mm (6.6 kg / 27.0 mm)	54.9 N / 27.0 mm (5.6 kg / 27.0 mm)
Rocker Arm Shaft to Rocker Arm	Oil Clearance	0.016 to 0.045 mm	0.15 mm
	Rocker Arm Shaft (O.D.)	10.473 to 10.484 mm	—
	Rocker Arm (I.D.)	10.500 to 10.518 mm	—
Push Rod	Alignment	—	0.25 mm
Tappet to Tappet Guide Bore	Oil Clearance	0.016 to 0.052 mm	0.10 mm
	Tappet (O.D.)	17.966 to 17.984 mm	—
	Tappet Guide Bore (I.D.)	18.000 to 18.018 mm	—
Timing Gear	Crank Gear to Idle Gear (Backlash)	0.043 to 0.124 mm	0.15 mm
	Idle Gear to Cam Gear (Backlash)	0.047 to 0.123 mm	0.15 mm
	Idle Gear to Injection Pump Gear (Backlash)	0.046 to 0.124 mm	0.15 mm
	Crank Gear to Oil Pump Drive Gear (Backlash)	0.041 to 0.123 mm	0.15 mm
Idle Gear	Side Clearance	0.20 to 0.51 mm	0.80 mm
Camshaft	Side Clearance	0.15 to 0.31 mm	0.5 mm
	Alignment	—	0.01 mm
	Cam Height (Intake and Exhaust)	26.88 mm	26.83 mm

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Engine Stop Solenoid Test (Energize to Run Type)

1. Disconnect the **3P** connector (3) from the engine stop solenoid (1) wiring harness.
2. Remove the engine stop solenoid (1) from the engine.
3. Connect the jumper leads from the pulling coil terminal (6) to the switch (7), and from switch (7) to the battery positive terminal (10).
4. Connect the jumper leads from the holding terminal (5) to the switch (8), and from switch (8) to the battery positive terminal (10).
5. Connect the jumper leads from the ground terminal (4) to the battery negative terminal (9).
6. When switch (7) is turned on, the plunger pull into the solenoid body and then the plunger comes out within approximately 1.2 seconds.
7. Turn on the switch (8) then turn on the switch (7), the plunger pull into the solenoid body and it keeps in holding position after turn off the switch (7).
8. If the plunger is not attracted, the engine stop solenoid is faulty.

Pull coil energized time	Factory spec.	0.52 to 1.20 seconds

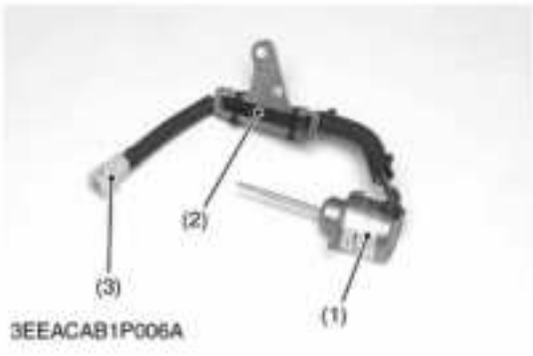
■ **NOTE**

- **This solenoid assembly includes reverse polarity protected pulling coil timer module (2) to prevent solenoid burnout due to engine over crank or misadjustment of linkage by limiting the pull coil ON time.**

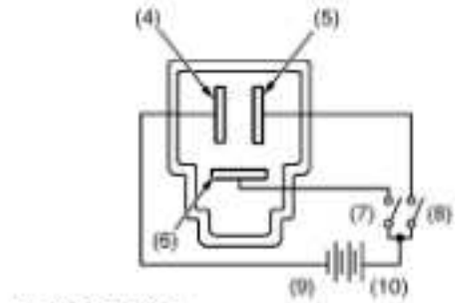
(1) Engine Stop Solenoid
(2) Pulling Coil Timer Module
(3) **3P** Connector
(4) Ground Terminal
(5) Holding Coil Terminal
(6) Pulling Coil Terminal
(7) Switch for Pulling Coil
(8) Switch for Holding Coil
(9) Battery Negative Terminal
(10) Battery Positive Terminal



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Injection Pump, Fuel Feed Pump and Speed Control Plate (for Energize to Run Type Engine Stop Solenoid) (Continue)

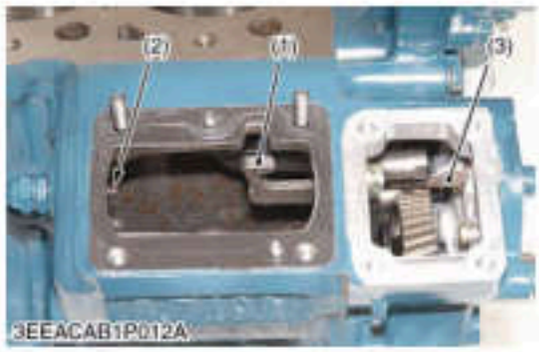
(When reassembling)

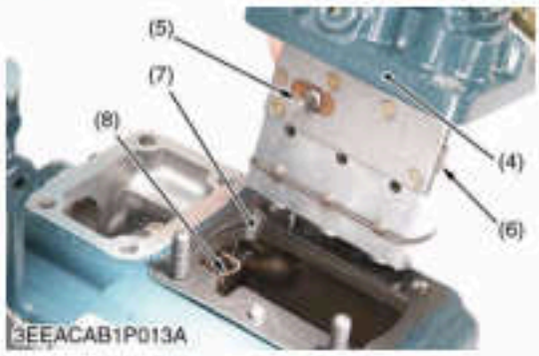
1. Move the fork lever (1) to the gear case side.
2. Hook the start spring (7) to the injection pump control rack pin (5).
3. Put the specific tool (8) through the fork lever hole of cylinder block (9) and hook the start spring (7).
4. Keep this spring slightly extended and install the injection pump (4). Make sure the control rod (6) should be pushed by the idling adjusting spring (2) and the pin (5) on the rod engages with the fork lever (1).
5. Hook the start spring (7) to the bracket (3) using the specific tool (8).
6. Hook the governor springs (small and large) (14) to the governor lever (13) using the specific tool (8) and install the speed control plate (11). Be sure to place the copper washers underneath two screws (12) in the upper of the speed control plate.
7. Install the stop solenoid rod (15) to the guide hole of cylinder block (10) and fix the stop solenoid (16) with socket head screws.

■ **NOTE**

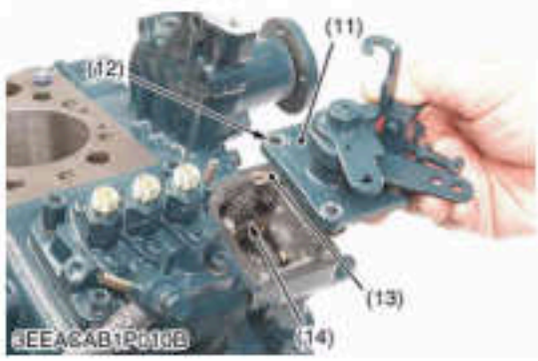
- **Be careful not to stretch the start spring (7) too long. Otherwise it may get defermed permanently.**
- **Make sure the start spring (7) is tight on the bracket (3).**
- **The sealant is applied to both sides of the soft metal gasket shim. The liquid gasket is not required for assembling.**
- **Addition or reducton of shim (0.05 mm) delays or advances the injection timing by approx. 0.5°.**
- **In disassembling and replacing, be sure to use the same number of new gasket shims with the same thickness.**

(1) Fork Lever
(2) Idling Adjusting Spring
(3) Bracket
(4) Injection Pump
(5) Injection Pump Control Rack Pin
(6) Injection Pump Control Rod
(7) Start Spring
(8) Specific Tool
(9) Fork Lever Hole of Cylinder Block
(10) Guide Hole of Cylinder Block
(11) Speed Control Plate
(12) Screw and Copper Washer
(13) Governor Lever
(14) Governor Spring
(15) Stop Solenoid Rod
(16) Stop Solenoid











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Cylinder Head

1. Loosen the pipe clamps (1), and remove the water return pipe (2).
2. Remove the cylinder head screw in the order of (**n** or **j**) to (**a**).
3. Lift up the cylinder head to detach.
4. Remove the cylinder head gasket and O-ring (3).

(When reassembling)

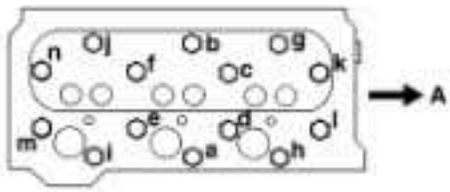
- Replace the cylinder head gasket with a new one.
- Securely fit the O-ring (3) to the pipe pin.
- Tighten the cylinder head screws after applying sufficient oil.
- Tighten the cylinder head screws in order of (**a**) to (**n** or **j**).
- Tighten them uniformly, or the head may deform in the long run.
- Retighten the cylinder head screws after running the engine for 30 minutes.

Tightening torque	Cylinder head screw	37.3 to 42.2 Nm {3.8 to 4.3 kgm}

(1) Pipe Clamp
(2) Water Return Pipe
(3) O-ring

A: Gear Case Side
(n or j) to (a): To Loosen
(a) to (n or j): To Tighten





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Tappets

1. Remove the tappets (1) from the crankcase.

(When reassembling)

- Visually check the contact between tappets and cams for proper rotation. If defect is found, replace tappets.
- Before installing the tappets, apply engine oil thinly around them.

■ **NOTE**

- **Do not change the combination of tappet and tappet guide.**

(1) Tappet



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