WSM

WORKSHOP MANUAL

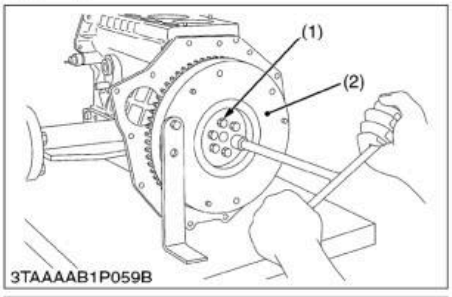
ZD321,ZD323,ZD326,ZD331

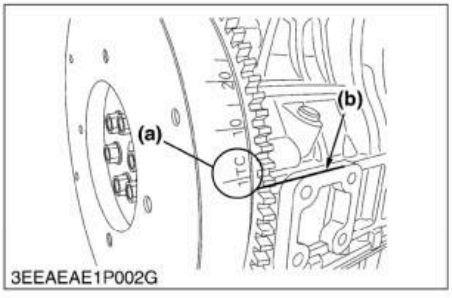
Kubota

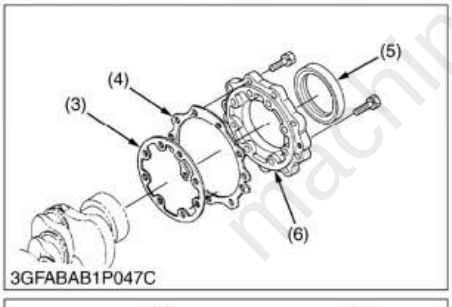
KiSC issued 08, 2016 A

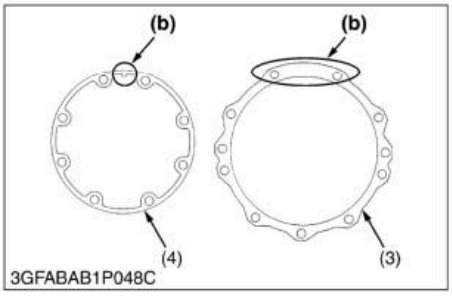
Item		Factory Specification	Allowable Limit
Camshaft Journal to Cylinder Block Bore	Oil Clearance	0.050 to 0.091 mm 0.0020 to 0.0035 in.	0.15 mm 0.0059 in.
• Camshaft Journal	O.D.	35.934 to 35.950 mm 1.4148 to 1.4153 in.	–
• Cylinder Block Bore	I.D.	36.000 to 36.025 mm 1.4174 to 1.4183 in.	–
Idle Gear Shaft to Gear Bushing	Clearance	0.020 to 0.054 mm 0.00079 to 0.0021 in.	0.10 mm 0.0039 in.
• Idle Gear Shaft 1	O.D.	25.967 to 25.980 mm 1.0224 to 1.0228 in.	–
• Idle Gear Bushing	I.D.	26.000 to 26.021 mm 1.0237 to 1.0244 in.	–
Piston Pin Bore	I.D.	22.000 to 22.013 mm 0.86615 to 0.86665 in.	22.03 mm 0.8673 in.
Piston Pin to Small End Bushing	Clearance	0.014 to 0.038 mm 0.00056 to 0.0014 in.	0.15 mm 0.0059 in.
• Piston Pin	O.D.	22.002 to 22.011 mm 0.86622 to 0.86657 in.	–
• Small End Bushing	I.D.	22.025 to 22.040 mm 0.86713 to 0.86771 in.	–
Piston Pin to Small End Bushing (Spare Parts)	Oil Clearance	0.015 to 0.038 mm 0.00059 to 0.0014 in.	0.15 mm 0.0059 in.
• Small End Bushing	I.D.	22.025 to 22.040 mm 0.86713 to 0.86771 in.	–
Connecting Rod	Alignment	–	0.05 mm 0.002 in.
Piston Ring Gap [D1005-E2] [D1005-E3]	Top Ring	0.30 to 0.45 mm 0.012 to 0.017 in.	1.25 mm 0.0492 in.
	Second Ring	0.30 to 0.45 mm 0.012 to 0.017 in.	1.25 mm 0.0492 in.
	Oil Ring	0.25 to 0.40 mm 0.0099 to 0.015 in.	1.25 mm 0.0492 in.
Piston Ring Gap [D1305-E3]	Top Ring	0.20 to 0.35 mm 0.0079 to 0.013 in.	1.20 mm 0.0472 in.
	Second Ring	0.30 to 0.45 mm 0.012 to 0.017 in.	1.20 mm 0.0472 in.
	Oil Ring	0.30 to 0.55 mm 0.012 to 0.021 in.	1.25 mm 0.0492 in.

[D] Flywheel and Crankshaft









Flywheel

1. Secure the flywheel to keep it from turning, using a flywheel stopper.
2. Remove all flywheel screws (1) and then remove the flywheel (2).

(When reassembling)

- Align the **"1TC"** mark **(a)** on the outer surface of the flywheel horizontally with the alignment mark **(b)** on the rear end plate. Now fit the flywheel in position.
- Apply engine oil to the threads and the undercut surface of the flywheel screw and fit the screw.

Tightening torque	Flywheel screw	54 to 58 N·m 5.5 to 6.0 kgf·m 40 to 43 lbf·ft

(1) Flywheel Screw
(2) Flywheel
(a) 1TC Mark
(b) Alignment Mark

9Y1210265ENS0070US0

Bearing Case Cover

1. Remove the bearing case cover mounting screws.
2. Remove the bearing case cover (6).

■ **IMPORTANT**

- **The length of inside screws (1) and outside screws (2) are different. Do not take a mistake using inside screws and outside screws.**

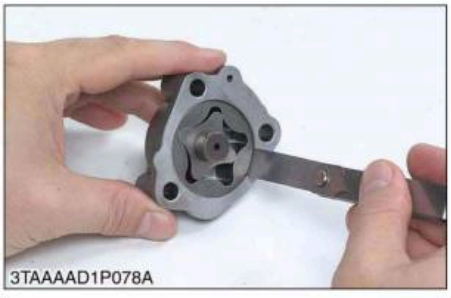
(When reassembling)

- Fit the bearing case gasket (3) and the bearing case cover gasket (4) with correct directions.
- Install the bearing case cover (6) to position the casting mark **"UP"** on it upward.
- Apply engine oil to the oil seal (5) lip and be careful that it is not rolled when installing.
- Tighten the bearing case cover mounting screws with even force on the diagonal line.

Tightening torque	Bearing case cover mounting screw	10.8 to 12.2 N·m 1.10 to 1.25 kgf·m 7.96 to 9.04 lbf·ft

(1) Bearing Case Cover Mounting Screw (Inside) (Long)
(2) Bearing Case Cover Mounting Screw (Outside) (Short)
(3) Bearing Case Gasket
(4) Bearing Case Cover Gasket
(5) Oil Seal
(6) Bearing Case Cover
(a) Top Mark "UP"
(b) Upside

9Y1210265ENS0071US0

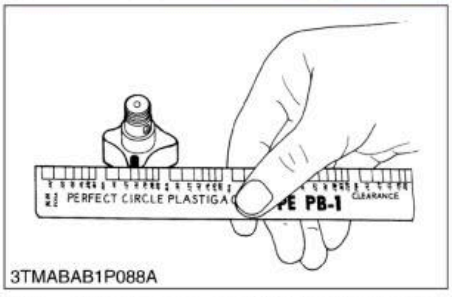

3TAAAAD1P078A

Clearance between Outer Rotor and Pump Body

1. Measure the clearance between the outer rotor and the pump body with a thickness gauge.
2. If the clearance exceeds the factory specifications, replace the oil pump rotor assembly.

Clearance between outer rotor and pump body	Factory specification	0.070 to 0.15 mm 0.0028 to 0.0059 in.

9Y1210265ENS0115US0



3TMABAB1P088A

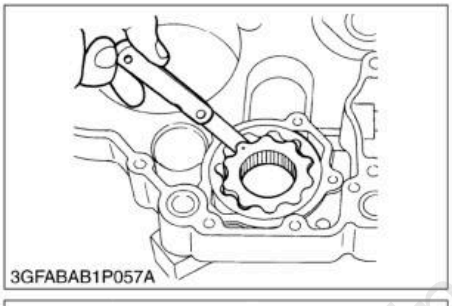
Clearance between Rotor and Cover

1. Put a strip of plastigauge onto the rotor face with grease.
2. Install the cover and tighten the screws.
3. Remove the cover carefully, and measure the amount of the flattening with the scale and get the clearance.
4. If the clearance exceeds the factory specifications, replace oil pump rotor assembly.

Clearance between rotor and cover	Factory specification	0.0750 to 0.135 mm 0.00296 to 0.00531 in.

9Y1210265ENS0116US0

(7) Oil Pump (D1005-E2/E3/E4, D1105-E4, D1305-E3)

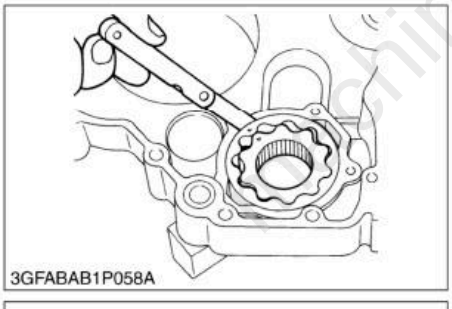

3GFABAB1P057A

Rotor Lobe Clearance

1. Measure the clearance between lobes of the inner rotor and the outer rotor with a feeler gauge.
2. If the clearance exceeds the factory specifications, replace the oil pump rotor assembly.

Rotor lobe clearance	Factory specification	0.060 to 0.18 mm 0.0024 to 0.0070 in.

9Y1210265ENS0117US0

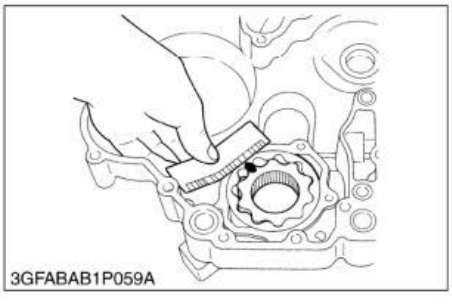

3GFABAB1P058A

Clearance between Outer Rotor and Pump Body

1. Measure the clearance between the outer rotor and the pump body with a feeler gauge.
2. If the clearance exceeds the factory specifications, replace the oil pump rotor assembly.

Clearance between outer rotor and pump body	Factory specification	0.100 to 0.180 mm 0.00394 to 0.00708 in.

9Y1210265ENS0118US0


3GFABAB1P059A

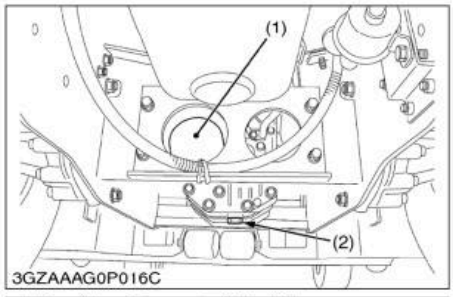
Clearance between Rotor and Cover

1. Put a strip of plastigauge onto the rotor face with grease.
2. Install the cover and tighten the screws.
3. Remove the cover carefully, and measure the amount of the flattening with the scale and get the clearance.
4. If the clearance exceeds the factory specifications, replace the oil pump rotor assembly.

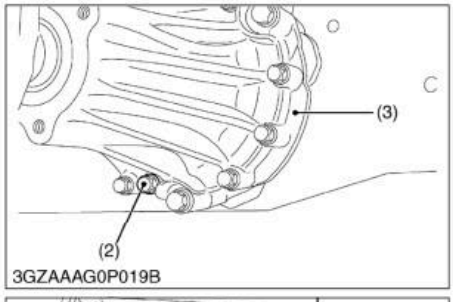
Clearance between rotor and cover	Factory specification	0.025 to 0.075 mm 0.00099 to 0.0029 in.

9Y1210265ENS0119US0

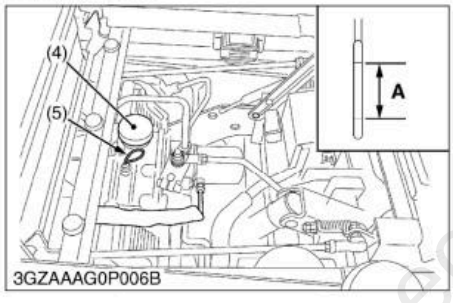
(2) Disassembling and Assembling the Hydraulic Control Valve



3GZAAAG0P016C



3GZAAAG0P019B



3GZAAAG0P006B

Draining Transmission Fluid

CAUTION

To avoid personal injury:

- **Be sure to stop the engine and remove the key before changing or checking the oil.**
- **Allow transmission case to cool down sufficiently; oil can be hot and may cause burns.**

The fluid in the transmission case is also used for the hydrostatic drive system.

1. To drain the transmission oil, place oil pan underneath the transmission case and the rear axle gear case (RH and LH) and remove the drain plug at the bottom of the transmission case and the rear axle gear case (RH and LH).
2. After draining, reinstall the drain plugs.
3. After removing the oil plug (4), up the upper notch on the dipstick fill with new fluid from filling port.

■ **IMPORTANT**

- **It takes time to pour the oil from the transmission case to the rear axle case RH and LH. Pour the regulated amount of oil slowly.**

4. After running the engine for a few minutes, stop it and check the oil level again; add oil to the prescribed level.

■ **IMPORTANT**

- **Operate only at low RPM's immediately after changing the transmission fluid and filter cartridge.**
  Keep the engine at medium speed for a few minutes to ensure proper lubrication of all parts so there is no damage to transmission.
- **Use only multi-grade transmission oil. Use of other oils may damage the transmission of hydraulic system.**
  Refer to "LUBRICANTS, FUEL AND COOLANT". (See page G-9.)
- **Do not mix different brands oil together.**

Transmission fluid capacity	12.1 L 12.8 U.S.qts 10.6 Imp.qts

(1) Transmission Oil Filter
(2) Drain Plug
(3) Rear Axle Gear Case LH
(4) Oil Plug and Breather Cup
(5) Dipstick

A : Oil level acceptable within this range.

9Y1210265TXS0050US0

Full Version Available

Kubota ZD331 Zero Turn Mower Workshop Manual

This is a short preview. The complete manual contains all chapters, wiring diagrams, torque specifications and full service procedures.