

PARTS & SERVICE NEWS

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(C)

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SUBJECT: REPAIR PROCEDURE OF TRANSMISSION 2ND AND 3RD CLUTCH SHAFT

PURPOSE: To introduce modification procedure to repair the 2nd and 3rd clutch shaft

APPLICATION: WA450-5 Wheel Loaders, All Serial Numbers
WA450-5L Wheel Loaders, S/N A36150 and down
WA470-5 Wheel Loaders, S/N 70001 and up
WA480-5 Wheel Loaders, S/N 80001 and up
WA480-5L Wheel Loaders, S/N A37045 and down

FAILURE CODE: 15LRFM

DESCRIPTION:

1. Introduction:

The strength of the 2nd and 3rd clutch shafts have been improved in the lube hole areas to increase life.

If breakage failure occurs, make the modification being introduced in this **PARTS & SERVICE NEWS**.

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2. List of parts

Part No.	Part Name	Purpose of part	Q'ty	Remarks
In case this modification is made by replacement of the 2nd & 3rd clutch ass'y				
714-07-20001 (714-07-20000)	Transmission Ass'y (Transmission Ass'y)	} Replacement	1 (1)	Torque converter : Standard spec.
714-07-20011 (714-07-20010)	Transmission Ass'y (Transmission Ass'y)		1 (1)	Torque converter : Lock up clutch spec.
714-07-22033 (714-07-22031)	Cluch Ass'y (Cluch Ass'y)		1 (1)	Clutch ass'y, 2nd & 3rd
419-15-12122	Seal ring		6	Replacing parts when making this modification For the 1st & 4th clutch shaft and for the 2nd & 3rd clutch shaft
714-19-19210	Seal ring		4 or 5	Replacing parts when making this modification, for the input shaft Q'ty 4 : In case of standard torque converter spec. Q'ty 5 : In case of lock up torque converter spec.
714-21-19810	Seal ring		0 or 2	Replacing parts when making this modification, for the input shaft Q'ty 0 : In case of standard torque converter spec. Q'ty 2 : In case of lock up torque converter spec
07000-15130	O-ring		1	Replacing parts when making this modification For the 2nd and 3rd clutch shaft cage
07000-02012	O-ring		1	} Replacing parts when making this modification For the contact surface of the engine flywheel
120-10-31120	O-ring		1	
714-07-28211	Shim		6	} Replacing parts when making this modification For shim adjustment of the 2nd and 3rd clutch shaft
714-07-28211	Shim		4	
714-07-28211	Shim		4	
07000-72015	O-ring		24	} Replacing parts when making this modification For the valve seat
07000-73026	O-ring		1	
07000-73028	O-ring		2	
07000-73045	O-ring		1	
07000-72012	O-ring		2	
419-15-18131	Liquid gasket		1	Replacing parts when making this modification For the contact surface of the case

Part No.	Part Name	Purpose of part	Q'ty	Remarks
In case this modification is made for the 2nd & 3rd clutch shaft separately (shaft and cylinder)				
714-07-20001 (714-07-20000)	Transmission Ass'y (Transmission Ass'y)	} Replacement	1 (1)	2nd & 3rd clutch shaft
714-07-20011 (714-07-20010)	Transmission Ass'y (Transmission Ass'y)		1 (1)	
714-07-22134 (714-07-22132)	Shaft cylinder Ass'y (Shaft cylinder Ass'y)		1 (1)	
714-07-29340	Bearing		1	} Replacing parts when making this modification For the clutch ass'y
714-08-19570	Thrust washer		4	
714-23-19430	Bearing		3	
714-07-19320	Seal ring		2	} Replacing parts when making this modification For the clutch piston
714-16-19220	Seal ring		2	
714-07-29350	Bearing		1	} Replacing parts when making this modification For the clutch ass'y
419-15-12122	Seal ring		6	
07000-15130	O-ring		1	} Replacing parts when making this modification For the 2nd & 3rd clutch shaft and for the 2nd & 3rd clutch shaft
07000-02012	O-ring		1	
120-10-31120	O-ring		1	} Replacing parts when making this modification For the contact surface of the engine flywheel
714-07-28211	Shim		6	
714-07-28211	Shim		4	} Replacing parts when making this modification For shim adjustment of the 2nd and 3rd clutch shaft
714-07-28211	Shim		4	
07000-72015	O-ring		24	} Replacing parts when making this modification For the valve seat
07000-73026	O-ring		1	
07000-73028	O-ring		2	
07000-73045	O-ring		1	
07000-72012	O-ring		2	

Part No.	Part Name	Purpose of part	Q'ty	Remarks
419-15-18131	Liquid gasket		1	Replacing parts when making this modification For the contact surface of the case
714-19-19210	Seal ring		4 or 5	Replacing parts when making this modification, for the input shaft Q'ty 4 : In case of standard torque converter spec. Q'ty 5 : In case of lock up torque converter spec.
714-21-19810	Seal ring		0 or 2	Replacing parts when making this modification, for the input shaft Q'ty 0 : In case of standard torque converter spec. Q'ty 2 : In case of lock up torque converter spec.

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3. Details of the modification

The material and the heat treatment method for the 2nd & 3rd clutch shaft of the transmission ass'y have been changed to improve the strength of the shaft.

4. Modification procedure

Refer to the Shop Manual when disassembling and reassembling the "2nd & 3rd clutch ass'y" and the "2nd & 3rd clutch shaft".

4.1 Replacement of the 2nd & 3rd clutch shaft

4.1.1 In case this modification is made by replacement of the 2nd & 3rd clutch ass'y

- (1) Check the shape of the plug at the end face of the clutch ass'y shaft before replacing with the new part.

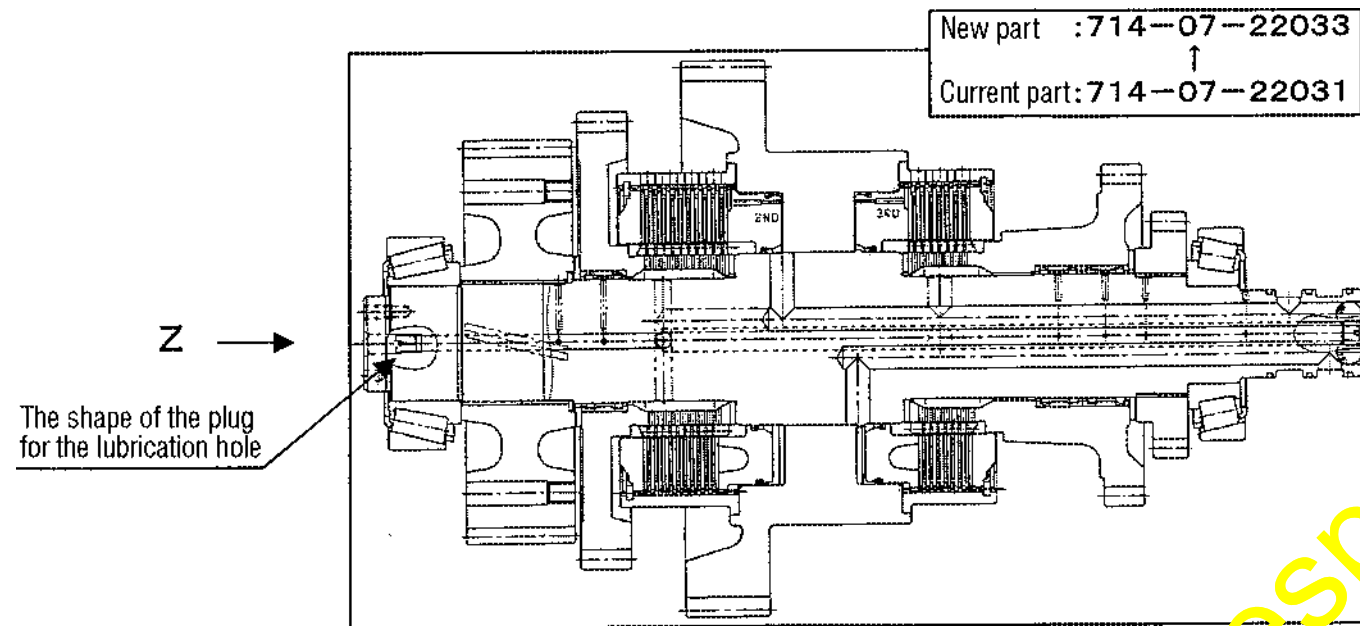


Fig. 1 Clutch ass'y, 2nd & 3rd

- (2) Identification for the new and current parts

Part No.	New part	Current part
		714-07-22033 714-07-22134
The shape of the end face of the shaft (When viewed from the "Z" side)		
The shape of the plug for the lubrication hole		
	Slitting shape	Hexagonal shape

4.1.2 In case this modification is made for the 2nd & 3rd clutch shaft separately (the shaft with press fit cylinder)

- (1) Check the shape of the plug at the end face of the 2nd & 3rd clutch shaft before replacing with the new part.

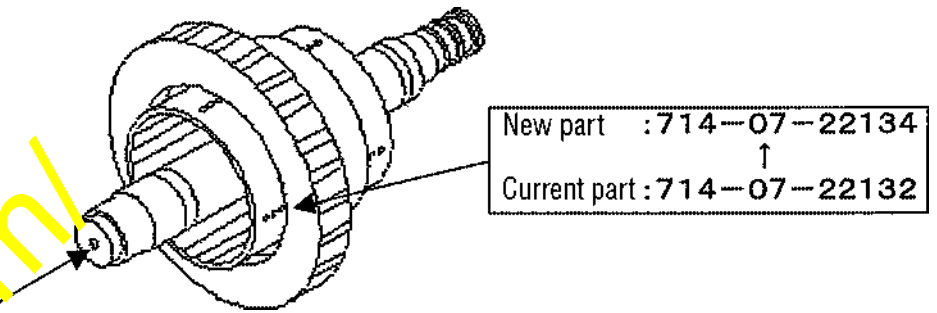


Fig. 2 2nd & 3rd clutch shaft

- (2) Identification for the new and current parts
Same as the above Item (2) of Section 4.1.1.

4.2 Shim adjustment for the taper roller bearing for the 2nd & 3rd clutch

Carry out the shim adjustment referring to the Shop Manual. If the shim adjustment is insufficient, there is a possibility of breakage of the bearing in an early stage.

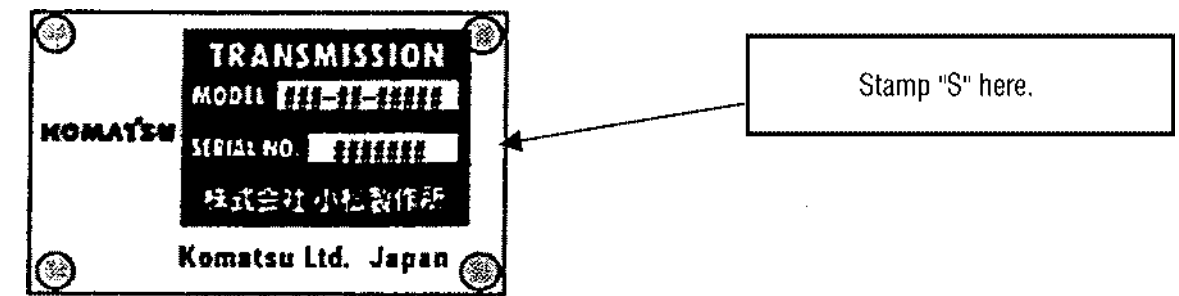
<Note>

Carry out the shim adjustment referring to the correction draft of the Shop Manual indicated on page 6 since "Disassembly and Assembly", "Disassembly and Assembly of Transmission Assembly", "Assembly" and "9. Adjustment of shim in 2nd · 3rd-speed clutch taper roller bearing" in the Shop Manual are presently in the process of making corrections.

Corrected sections: At 4 places marked ※

4.3 Stamping to make after this modification completed

For the transmission ass'y with which this modification has been completed, stamp "S" at the end of the serial number on the name plate.



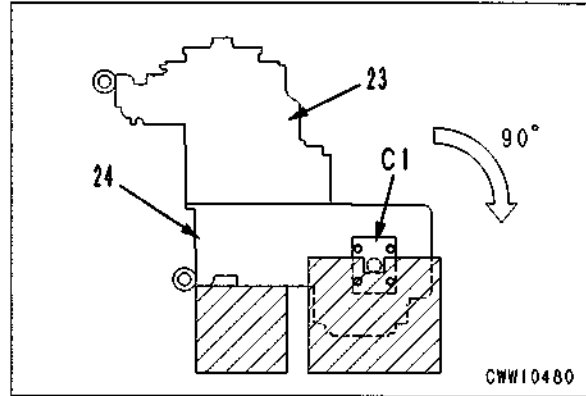
Nameplate

DISASSEMBLY AND ASSEMBLY

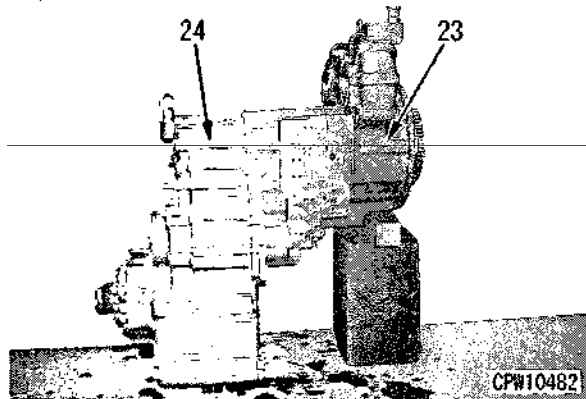
1 Place, ※

TRANSMISSION ASSEMBLY

- 6) Lift up the torque converter transmission assembly. Support two places of **C1** tool shaft with a block. Support the bottom of front housing (24) with blocks.
- 7) Turn the torque converter transmission assembly 90° around **C1** tool shaft and then support the bottom of rear housing (23) with blocks.



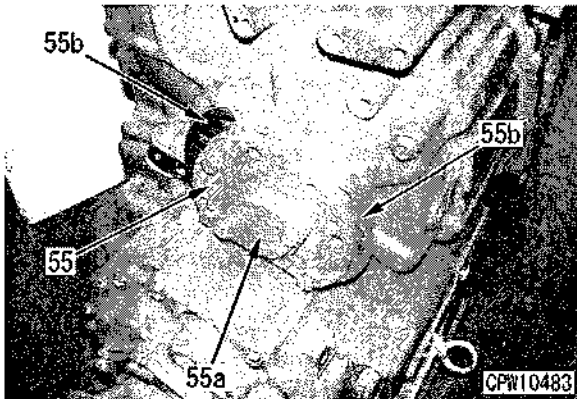
- 8) Lift up the torque converter transmission assembly to support the bottom of front housing (24) and rear housing (23) with blocks.
- 9) Remove **C1** tool.



- ※ 0) Directing the parking brake side upward, set the transmission ass'y on the block.
9. Adjustment of shim in 2nd · 3rd-speed clutch taper roller bearing

- 1) Referring to Step 8, 1) in "Assembly of parking brake assembly", release the parking brake.
- 2) Referring to Step 14 in "Disassembly", remove cover (55a), bearing case (55) and shim (55b).
- 3) Install bearing case (55) and then tighten the bolt to the torque below.

Mounting bolt:
 $9.8 \pm 0.98 \text{ Nm} \{1 \pm 0.1 \text{ kgm}\}$



- 4) Turn the output shaft to turn the 2nd · 3rd speed clutch shaft 20 turns.
 ★ Look through the mounting hole of cover (55a) for bearing case (55) to check the shaft for rotation.
- 5) Check the tightening torque of the bearing case mounting bolt.
 ★ If the tightening torque fluctuates, repeat steps 2) and 3).
- 6) Using a thickness gauge, measure any three or four points equally divided on the periphery for clearance between front housing (24) and bearing case (55).

DISASSEMBLY AND ASSEMBLY

2 Place, ※

TRANSMISSION ASSEMBLY

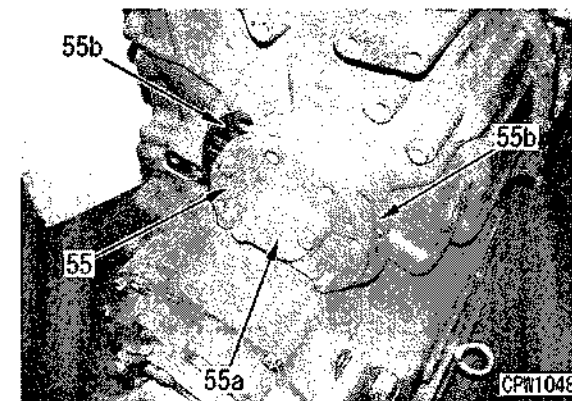


★ Possible causes for the fluctuation in the measurements that exceed $\pm 0.15 \text{ mm}$ are the improperly installed bearing or others. Determine and correct the cause to make the fluctuation within the standard value.

- 7) Calculate the average of measured clearance values.
- 8) Determine the thickness of the shim to be installed.
 ★ Thickness of shim = Averaged clearance $\mp 0.35 \sim 0.40 \text{ mm} \text{ ※} + 0.20 \sim 0.25 \text{ mm}$
 ★ Reference: Standard thickness of shim = 1.45 mm
- 9) Install selected shim (55b), bearing case (55) and cover (55a).

O-ring for bearing case and cover:
Grease (G2-LI)

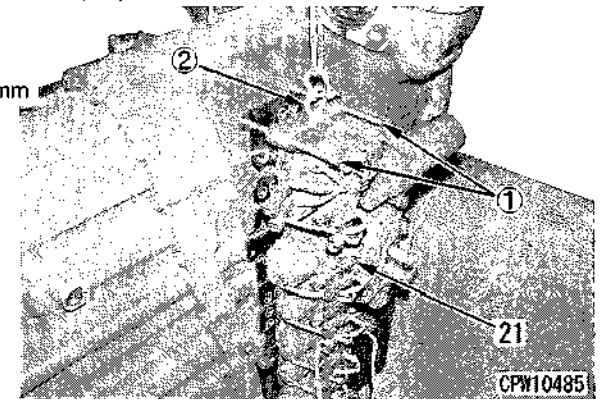
Bearing case bolt:
 $98.0 \sim 122.5 \text{ Nm} \{10 \sim 12.5 \text{ kgm}\}$



- 10) Referring to Step 8, - 10) 11) in "Assembly of parking brake assembly", reset the released parking brake.

10. Transmission control valve assembly

 - 1) Securely install the O-ring to the rear housing mounting face.
 - 2) Fit guide bolt ① to the rear housing mounting hole.
 - 3) Install transmission control valve assembly (21).



- 4) Referring to the following, tighten the bolts in several steps.

★ Bolt stem length	55 mm: (17), (17a)
	105 mm: (18)
	110 mm: (19)
	120 mm: (20)

Solenoid assembly:
 $58.8 \sim 73.5 \text{ Nm} \{6.0 \sim 7.5 \text{ kgm}\}$

