

# PARTS & SERVICE NEWS

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**SUBJECT:** INTRODUCTION OF IMPROVED, WEAR-RESISTANT 2ND, 3RD CLUTCH FOR TRANSMISSION

**PURPOSE:** To introduce improved 2nd and 3rd clutch parts with enhanced wear resistance for use with the transmission assembly

**APPLICATION:** WA500-3/3LC Wheel Loaders, S/N 50001 thru 50751 & A70001 thru A70642

**FAILURE CODE:** 15E740

## DESCRIPTION:

### 1. Introduction

This Service News will introduce improved 2nd and 3rd clutch parts with enhanced wear resistance for use with the transmission assembly on the WA500-3 wheel loaders that are being used by customers who frequently make shifts to the 2nd speed stage and to the 3rd speed stage.

<An example of making frequent speed shifting>

When shifting the speed from F2 to F1 while digging, if manual shifting operation in the sequence of "F2 → F1 → R1 → R2" is made using the speed shift lever and the F-R changeover lever without use of the kick-down switch, speed shifts of "R1 → R2" where the 2nd speed clutch becomes the loaded clutch will occur frequently to influence the durability of the 2nd speed clutch.

While, if the kick-down switch is concurrently used, operation of the switch and operation of the F-R changeover lever only are enough to make the necessary speed shift and the speed shift pattern can then be in the sequence of "F2 → F1 → R2" whereby the operations become easier and the speed shifting sequence does not need to include the "R1 → R2" shift where the 2nd speed clutch becomes the loaded clutch, thus helping prolong the service life of the 2nd speed clutch.

## 2. List of parts

No.	Part No.	Part Name	Q'ty	Remarks
1	425-15-21151 (425-15-21150)	Housing (Housing)	1 (1)	
2	425-15-21141 (425-15-21140)	Housing (Housing)	1 (1)	
3	425-15-21132 (425-15-21131)	Housing (Housing)	1 (1)	
4	425-15-00180 (421-15-00130)	Cage ass'y (Cage ass'y)	1 (1)	
5	425-15-22681 (425-15-22680)	Ring gear (Ring gear)	1 (1)	
6	425-15-22630 (421-15-12631)	Hub (Hub)	1 (1)	
7	425-15-22780 (425-15-22750)	Piston (Piston)	1 (1)	For the 3rd clutch (same part as the one for the current 2nd clutch)
8	425-15-22790 (425-15-22780)	Piston (Piston)	1 (1)	For the 2nd clutch
9	425-15-22830 (425-15-22730)	Plate (Plate)	2 (2)	
10	425-15-22840	Plate	1	
11	425-15-22820 (425-15-22720)	Plate (Plate)	2 (2)	
12	424-15-12711 (712-85-12710)	Disc (Disc)	3 (3)	
13	175-15-42880	Spring	5	5 units have been added (total 100 units/machine).
14	425-15-05112 (425-15-05111)	Service kit (Service kit)	1 (1)	For modification of the transmission assembly
15	(562-15-19320) (579-15-12860)	(Seal ring) (Seal ring)	(1) (1)	A changed component part of the service kit
The part number of the transmission assembly incorporating the improved wear resistant clutches is as follows.				
18	425-15-21003 (425-15-21002)	T/M ass'y (T/M ass'y)	1 (1)	
The part number of the torque flow assembly (torque converter + transmission) incorporating the improved wear resistant clutches is as follows.				
20	425-13-21003 (425-13-21002)	Torqueflow A. (Torqueflow A.)	1 (1)	

### 3. Contents of the modification (Refer to page 4 for the detailed shape.)

#### 3-1. Contents of the modification with the 2nd clutch

- (1) The material and quantity of the disc ⑫ have been changed.  
 Material : Molded resin friction material → Sintered alloy  
 Disc color : Black → Brass color  
 Quantity : 2 sheets → 3 sheets
- (2) The thickness and quantity of the plate ⑪ have been changed.  
 Thickness : 5 mm → 3.2 mm  
 Quantity : 1 sheet → 2 sheets
- (3) The width of the external gear of the ring gear ⑤ has been widened.  
 Gear width : 23.5 mm → 28.5 mm
- (4) The thickness of the piston plate ⑨ has been changed.  
 Thickness : 7 mm → 5 mm
- (5) The thickness of the contact section to the disc of the housing ③ has been changed.  
 Thickness of the contact section to the disc : 19 mm → 16.2 mm
- (6) The bore diameter and wall thickness of the piston ⑧ have been changed.  
 Bore diameter :  $\phi$  285 mm →  $\phi$  290 mm  
 Wall thickness : 17.5 mm → 16.5 mm  
 (The 2nd clutch piston before this modification is the same part as the 3rd clutch piston after this modification. Therefore, if the piston is not damaged, it can be reused for this modification.)
- (7) The small diameter of the piston chamber in the housing ② has been changed.  
 Small diameter :  $\phi$  285 mm →  $\phi$  290 mm
- (8) The quantity of the equal separation spring ⑬ being used for the 2nd clutch section has been changed.  
 Quantity being used for the 2nd clutch section: 10 units → 15 units
- (9) The piston seal ⑭ has been changed along with the change of the bore diameter of the piston.

#### 2-2. Contents of the modification with the 3rd clutch

- (1) The shape of the piston ⑦ has been changed to the split-type.  
 Splitting the flange section from the piston, the same part as the R-piston (425-15-22780) is to be used as the piston, and the plate ⑨ (common part as the improved part for the 2nd clutch) is to be used as the flange section.
- (2) The shape of the 3rd piston section of the housing ① has been changed.  
 Depth of the piston chamber : 17 mm → 18 mm.  
 The identification grooving is being provided on the small diameter side of the 4th piston chamber.
- (3) The plate ⑩ has been added.

#### 2-3. The lubrication means for the 2nd clutch has been improved (since the number of the clutch discs and plates has been increased)

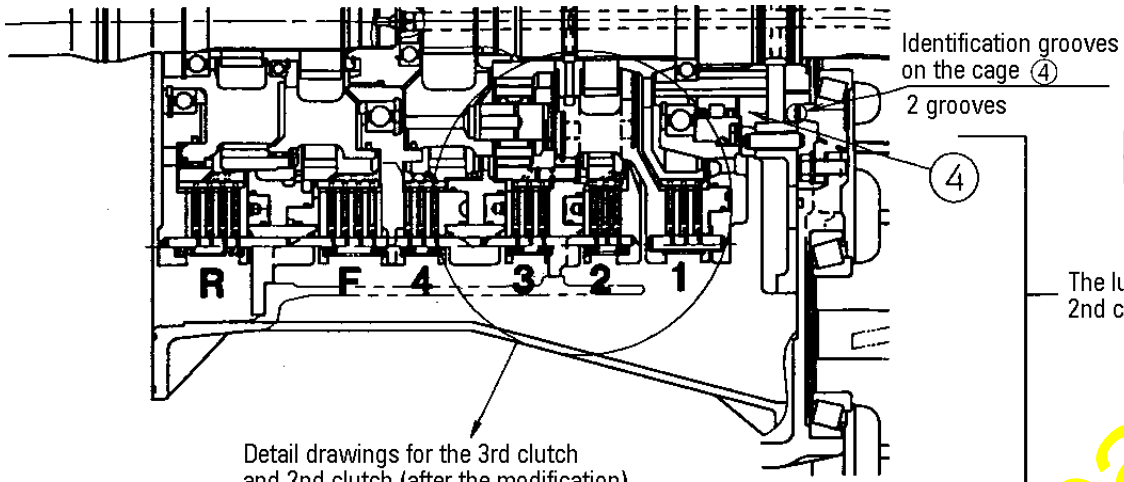
- (1) The hole position in the front section of the hub ⑥ has been changed.  
 Provided with the identification grooving.  
 (Refer to the drawing indicated on page 4.)
- (2) The position of the drilled hole for lubrication in the cage ④ has been changed.  
 Provided with the identification grooving.  
 (Refer to the drawing indicated on page 4.)

### 3. Modification procedures

Make the aforementioned modification referring to the Section "Disassembly and Assembly of Transmission" in the Shop Manual.

Meanwhile, when making this modification, pay attention to the following points.

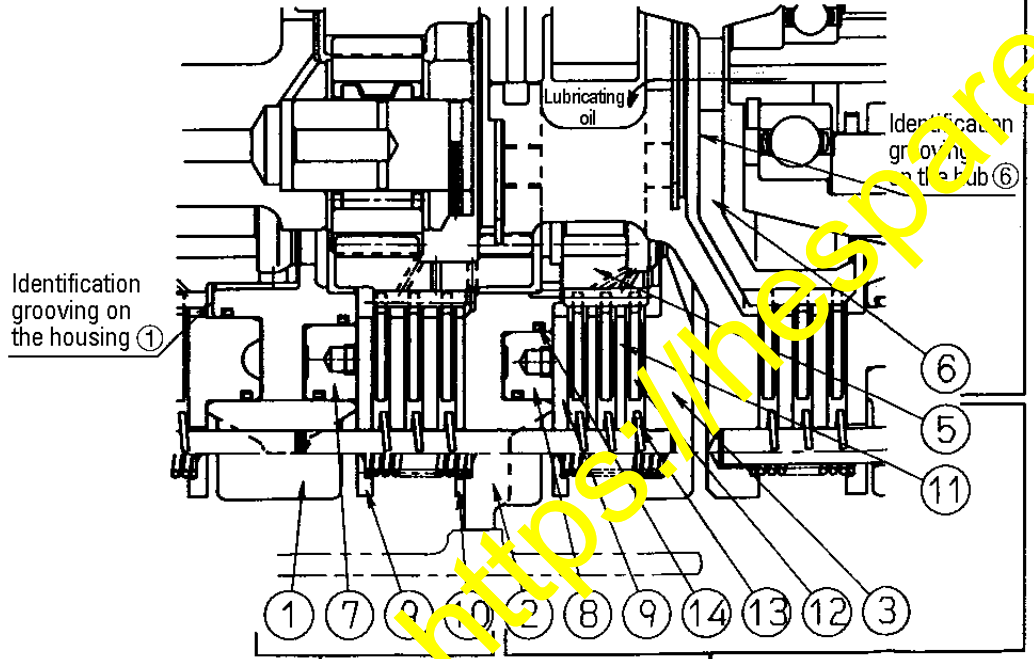
- (1) Be sure to insert the plate ⑩ for the 3rd clutch section.
- (2) The piston for the 3rd clutch section has been separated into the piston part ⑦ and the plate part ⑨.  
 Assemble them to the same shape of the piston for the 2nd clutch section.



[As for the part numbers of the parts itemized ① thru ⑭ indicated in these drawings, refer to page 2.]

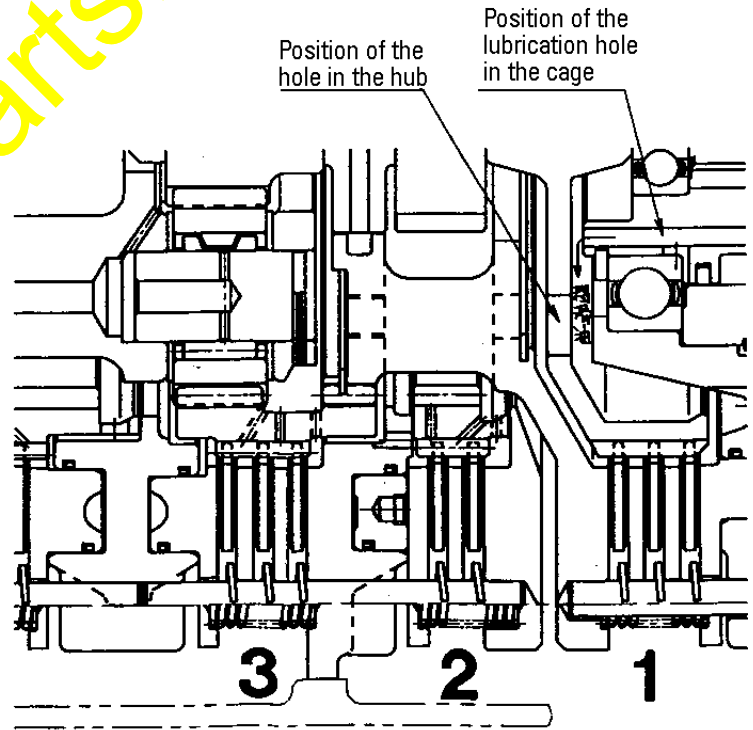
The lubrication means for the 2nd clutch has been improved.

Detail drawings for the 3rd clutch and 2nd clutch (after the modification)



Modification with the 3rd clutch

Modification with the 2nd clutch



← Current shape