

PARTS & SERVICE NEWS

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SUBJECT: REPAIR OF WORK EQUIPMENT BOOM SHOULDER BUSHING COMING OUT ON WA1200-3

PURPOSE: To introduce modification procedures to prevent the bushing being used in the boom shoulder section on WA1200-3 wheel loaders from coming out

APPLICATION: WA1200-3 Wheel Loaders, Serial Nos. 50001 thru 50007

FAILURE CODE: 771B03

DESCRIPTION:

1. Introduction

When the WA1200-3 wheel loaders are frequently used for operations involving applications of forces causing significant twists or bends of the boom (such as digging using the bucket corner, digging of large sized rocks and removing independent rocks projecting from wall faces), the bushing being used in the boom shoulder section may come out by applications of thrust loads and radial loads.

Also, if the bushing comes out, the oil seal will be damaged to cause leakage of the sealed oil resulting, possibly, to galling and seizures of the pin and bushing.

To prevent occurrence of the aforesaid failure, make the modification being introduced in this Service News to improve the structure holding these bushings.

2. List of parts

Part No.	Part Name	Purpose of part	Q'ty	Remarks
42C-70-11106 (42C-70-11105)	Boom A (Boom A)	} Reworked	1 (1)	Standard boom
42C-850-1014 (42C-850-1013)	Boom A (Boom A)		1 (1)	Hi-Lift boom
42C-70-11345 (42C-70-11344)	Bushing (Bushing)	Replacement	2 (2)	
42C-70-11720	Ring, snap	Addition	4	
42C-70-11411	Seal	} Replacement	8	} Consumable part
42C-70-11421	Seal		8	
42C-70-11431	Seal		4	
07000-12100	O-ring		4	
07000-15130	O-ring		4	
07000-15170	O-ring		2	
07000-15180	O-ring		8	
07000-15240	O-ring		8	
07000-15280	O-ring	4		

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3. Contents of the modification

(1) If unbalanced radial load and thrust load are applied to the pin and the bushing, the press-fitting force (the force resisting to coming out in the thrust direction of the bushing) decreases resulting, possibly, to coming out of the bushing.

To prevent occurrence of the aforesaid failure, snap rings are to be supplemented on both ends of the bushing to let the shearing strength of the snap ring to bear the thrust force, thus preventing occurrence of coming out failure of the bushing.

☆: Parts being changed or supplemented

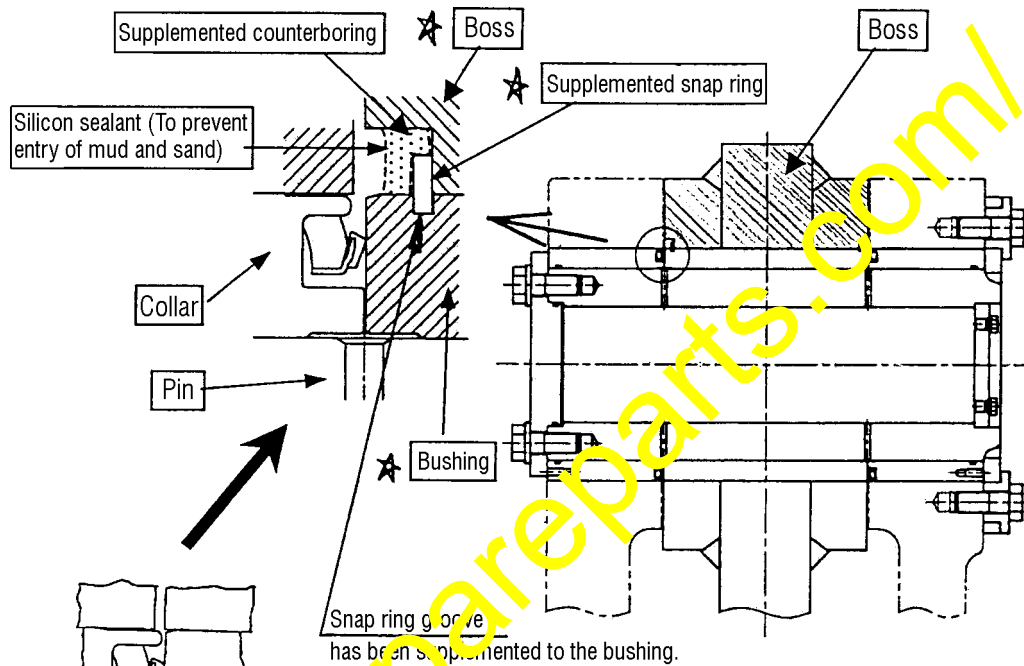


Fig. 1

(2) Sections where this modification is being made

This modification is to be implemented in the boom shoulder pivot section.

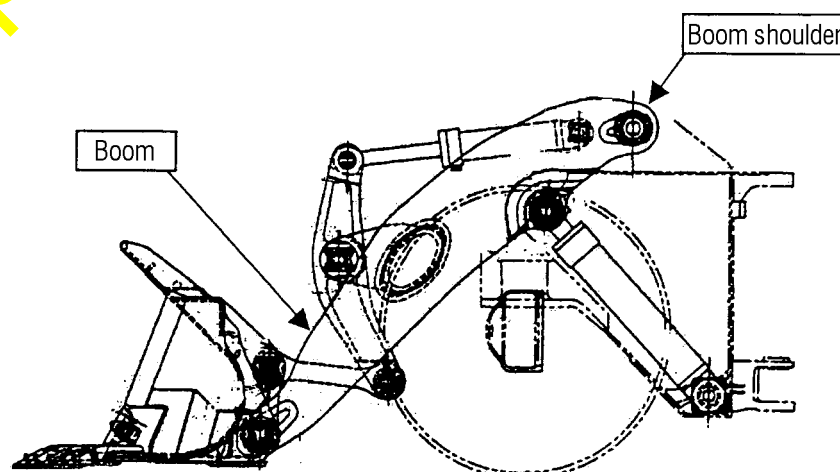


Fig. 2

4. Modification procedures

a) Contents of the modification

- 1) Removing the boom
- 2) Removing the bushing
- 3) Reworking with the boom
- 4) Press-fitting the new busing and installing the snap ring
- 5) Installing the boom back to the chassis

b) Modification procedures

- 1) Remove the boom from the chassis. (Photograph the current status of the bushing when coming out of its place.)

When doing the above, refer to the local assembly procedures manual or the Shop Manual.

- 2) Pull out to remove the bushings (2 units from the boom shoulder section) using a port power.

* If the bushing cannot be removed owing to shortage of the capacity with the using port power, make build-up welding at a few places on the bare surface of the bushing to let the bushing contracted to facilitate its removal.

* Port power capacity: Prepare a 150 – 200 ton port power.
(The press-fitting force for the busing should be about 100 to 150 tons.)

Caution: Do not gas cut the bushing under any circumstances.

(Since it may cause galling or seizure of the pin)

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3) Reworking with the boom in its shoulder section

Rework with the boom in its shoulder section to provide the snap ring receiving section.

Also, wash the bore surface of the hole using a solvent. Also, when deemed necessary, use sand paper (corresponding to #60 to #100 paper) to clean the surface.

Reworking dimensions

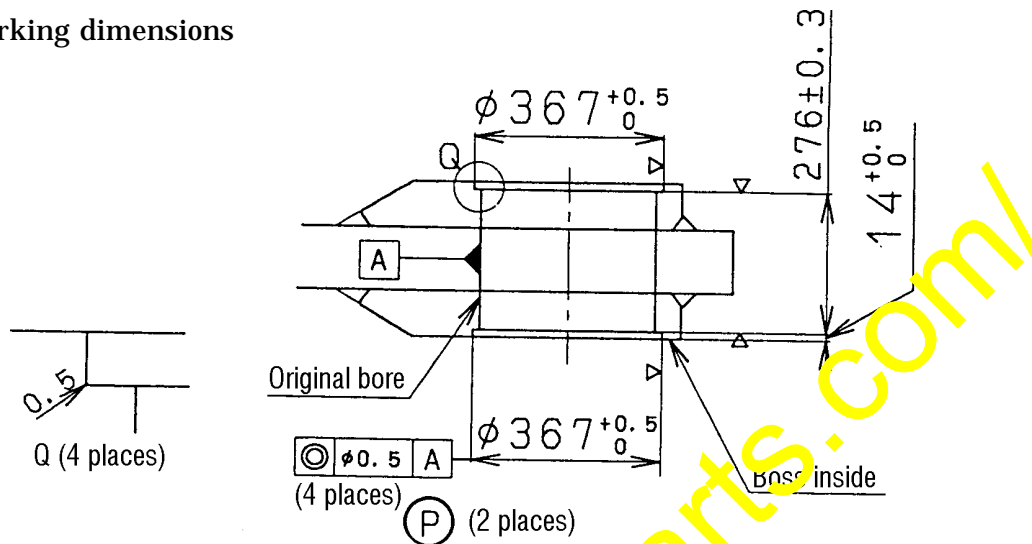


Fig. 3

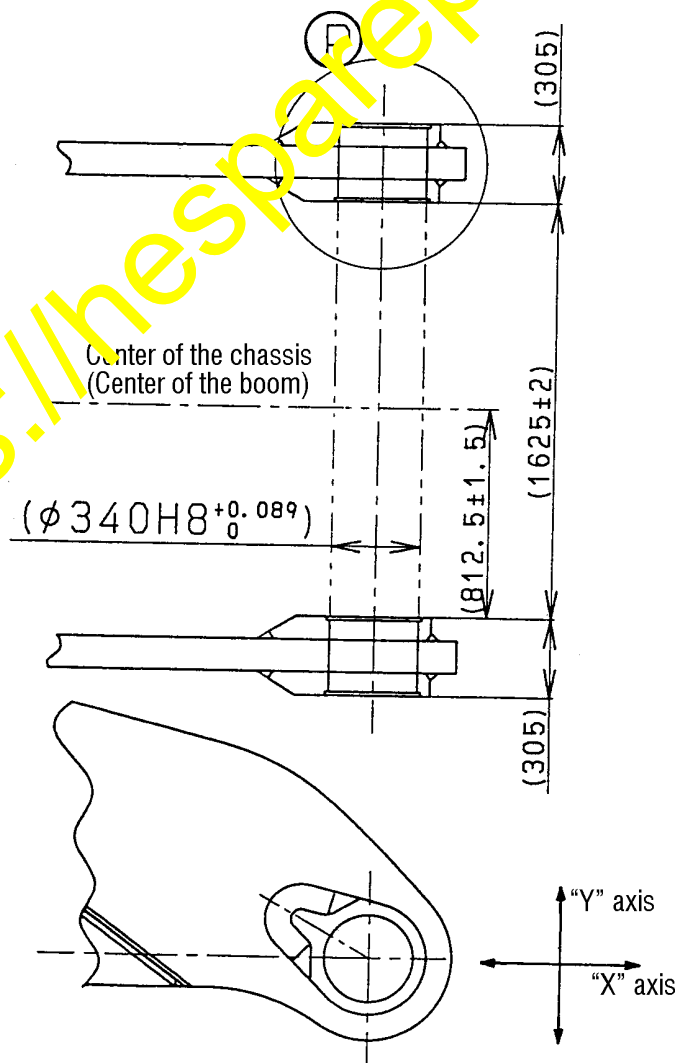


Fig. 4

4) Press-fitting the bushing

Install the new bushing (Part No. 42C-70-11345) equipped with the snap ring mounting groove by expansion fitting or by press-fitting after application of engine oil.

Installation procedures for the bushing:

- ① Measure the bore diameter of the hole in the boom (the $\phi 340$ H 8 section in Fig. 4 on page 5) in advance.
Measure the diameter in both of the X-axis and Y-axis, at both ends of the bore and at the center of the bore (at 3 sections per a side).
- ② Install the snap ring (Part No. 42C-70-11720) to either one of the ring grooves being machined on the bushing.

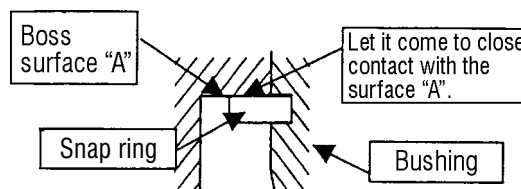
Note 1: When installing the snap ring, be careful not to open its abutment any more than 50 mm.



(The aforementioned preparations are common for both of the expansion fitting and for press-fitting after application of engine oil.)

③-1 When installing the bushing by expansion fitting

- a) Dip the bushing after finishing the above procedure ① in a liquid nitrogen bath.
- b) When the temperature of the bushing has dropped sufficiently, take the bushing out to measure its outer diameter.
- c) At a temperature where the outer diameter of the bushing has contracted to a dimension 0.1 mm less than the minimum measurement value of the bore diameter according to the above procedure ①, insert the bushing into the boom boss from the end opposite to the side where the snap ring was installed.
- d) Insert the bushing until the snap ring installed according to the above procedure ② comes in close contact with the surface "A" of the boss and lock the bushing to that position not to let it move until the bushing is warmed to become an interference fit state.



Note 2: If a gap exists between the snap ring and the surface "A", it may become impossible to install the opposite side snap ring.

③-2 When installing the bushing by press-fitting after application of engine oil

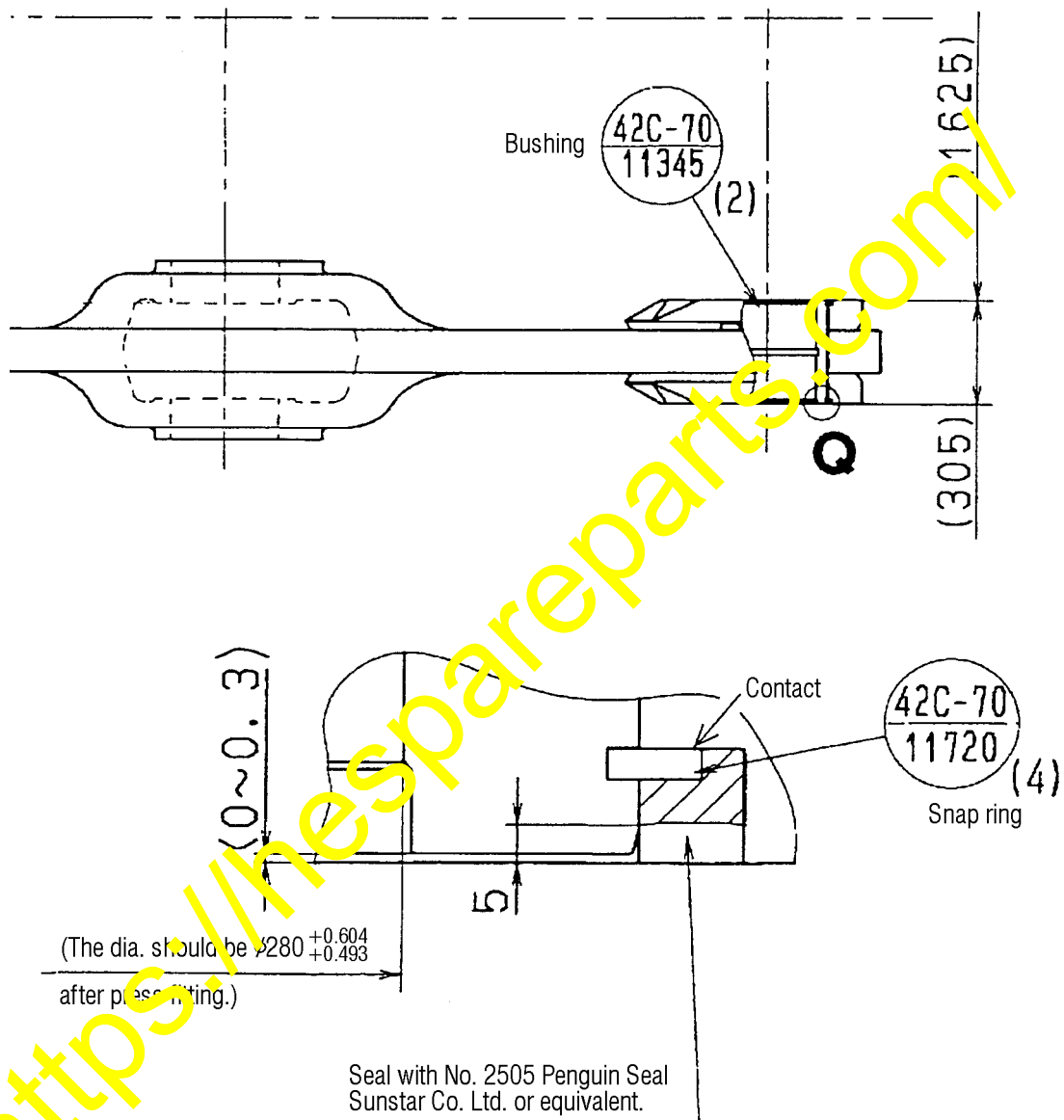
- a) After applying engine oil over the bushing surface, press-fit the bushing into the boom boss from the end opposite to the side where the snap ring was installed. (The press-fitting force should be about 100 to 150 tons.)
- b) As for the insertion depth, insert the bushing until the snap ring comes in close contact with the surface "A" of the boom boss, similar to the procedure d) of the above Section ③-1 of the installation by expansion fitting.

(Procedures being described below are common for both of the installation by expansion fitting and installation by press-fitting after application of engine oil.)

- ④ Install the opposite side snap ring from the snap ring which was installed according to the above procedure ②. (When installing the snap ring, be careful not to open its abutment any more than 50 mm.)

- ⑤ Apply sealant over the section where the snap rings were installed to prevent entry of mud and sand.
 Name brand of the recommended sealant: Penguin Seal No. 2505 made by Sunstar Co., Ltd. or an equivalent.

Bushing and snap ring installation diagrams



Q (NONE)

Fig. 5

5) Reinstalling the boom

Reinstall the boom back to the chassis following the procedures described in the local assembly procedures manual or the Shop Manual.

Seals and O-rings which have been removed when the boom was detached should be replaced with new parts. (refer to the table indicated below regarding their part numbers.)

	⑤ Seal	Q'ty	⑥ O-ring	Q'ty	⑧ O-ring	Q'ty
A	42C7011421	4	0700015240	4	0700015130	2
B	42C7011411	4	0700015180	4	0700012100	2
D	42C7011411	4	0700015180	4	0700012100	2
G	42C7011421	4	0700015240	4	0700015130	2
I	42C7011431	4	0700015280	4	0700015170	2

- A: For the bucket hinge at the tip end of the boom
- B: For the bucket link, on the bucket side
- D: For the bucket cylinder, on the cylinder rod side
- G: For the boom cylinder, on the cylinder rod side
- I: For the boom shoulder

