

PARTS & SERVICE NEWS

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(C)

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SUBJECT: REPLACEMENT PROCEDURE FOR ENGINE FUEL INJECTION PUMP

PURPOSE: To inform Field Personnel

APPLICATION: WA40-3 Wheel Loaders, S/N 19001 and up
WA50-3 Wheel Loaders, S/N 23001 and up

FAILURE CODE: A760FC

DESCRIPTION:

1. Introduction:

Because of the insufficient clearance between the governor lever shaft on the fuel injection pump for the engine and the case, galling may occur with the shaft making the governor lever unreturnable on these wheel loaders. Therefore it is necessary to replace the fuel injection pump in assembly. An application for a recall has been filed to the Ministry of Land Infrastructure and Transport of Japan, and simultaneous modification will be carried out.

2. List of Parts:

Part No.	Part Name	Purpose of Part	Qty.	Remarks
729044-51330	Injection Pump Assembly	Replacement	1	
119285-66610	Cap	Replacment	1	
121850-51960	O-ring	Replacement	1	
22190-080002	Seal Washer	Replacement	6	
129001-12110	Gasket	Replacement	1	
26776-140002	Nut	Replacement	1	
22217-140000	Washer	Replacement	1	

Modification procedure

1. Removal of the engine ass'y

Referring to the Section "Removal of Engine Ass'y" in the Shop Manual for the WA40-3 and WA50-3 wheel loaders, remove the radiator and the engine from the machine.

2. Referring to the fuel injection pump replacement procedure manual, replace the fuel injection pump.

Refer to pages 3 thru 6.

3. Reinstallation of the engine ass'y

Referring to the Section "Installation of Engine Ass'y" in the Shop Manual for the WA40-3 and WA50-3 wheel loaders, reinstall the engine and the radiator back to the machine.

4. Adjustment procedure for the Hi-Idling revolution

Refer to page 2.

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Adjustment procedure for the Hi-Idling revolution

Depressing the accelerator pedal, adjust the bolt C so that the Hi-Idling revolution may come within the range shown in Table 1 below. (Refer to Fig. 1.)

Also, at that time, check that a clearance of more than 1 mm is maintained between the engine governor lever and the engine Hi-Idling stopper. (Refer to Fig. 2.)

In case the above clearance is not secured, adjust the bolt C to secure a clearance of more than 1 mm.

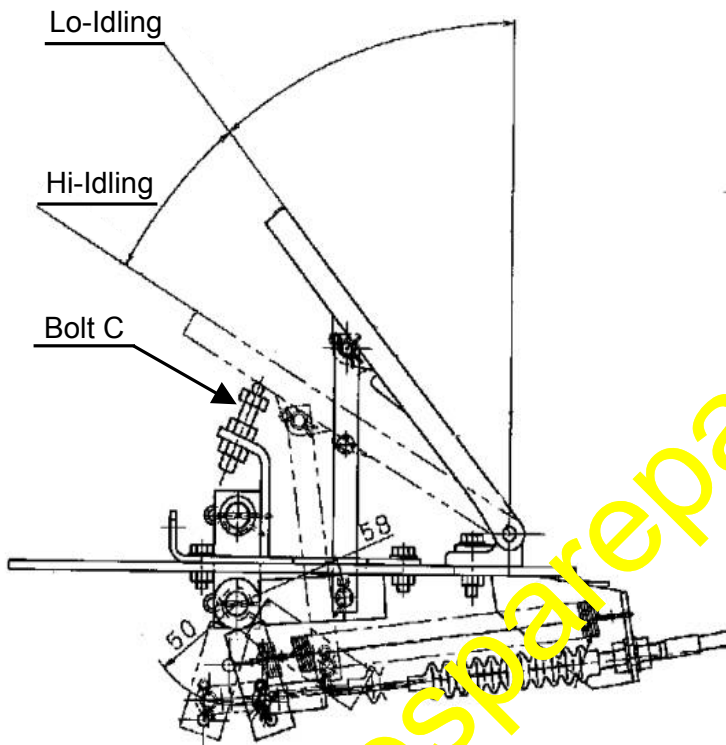


Fig. 1

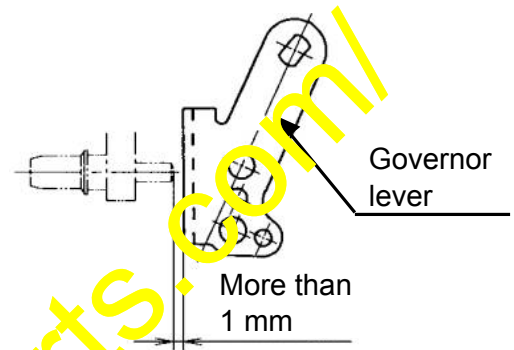


Fig. 2

Table 1

	WA40	WA50
Hi-Idling revolution rpm	2575±50	←

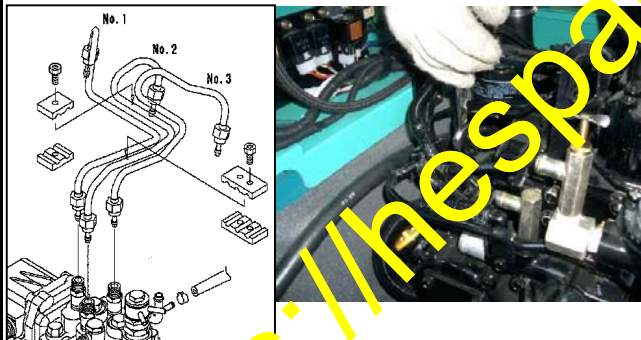
Before starting the replacement work, make sure that the parts shown in the Table on the right are ready at hand. (Necessary parts for replacement of the fuel injection pump (for a machine))

No.	Part code	Part name	Q'ty
1	729044-51330	Fuel injection pump	1
2	119285-66610	Cap, Hi-Idling	1
3	121850-51960	O-ring (for use on the FO pump)	1
4	22190-080002	Seal washer (small round type, nitrile) 8	6
5	129001-12110	Intake manifold packing	1

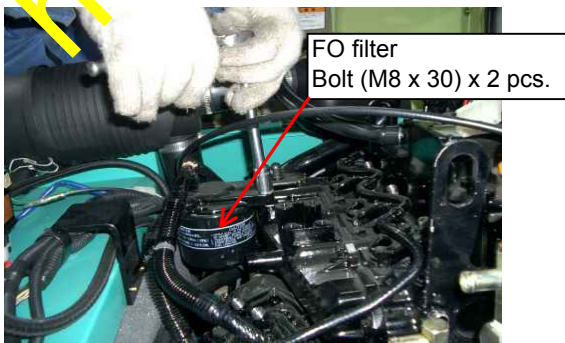
- 1 Remove the oil level gauge and the oil level gauge guide, since they will hinder the replacement work for the fuel injection pump.



- 2 Remove the high pressure piping from the fuel injection pump and from the FO fuel injection valve mechanism.



- 3 Remove the fuel filter since it will hinder the replacement work for the fuel injection pump.



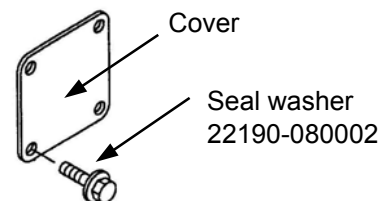
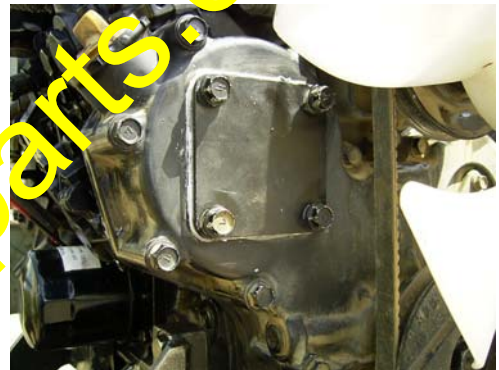
- 4 Remove the cover (HO-P) from the gear case.

(Note)

For prevention of oil leakage, liquid packing and seal washer are used for the cover.

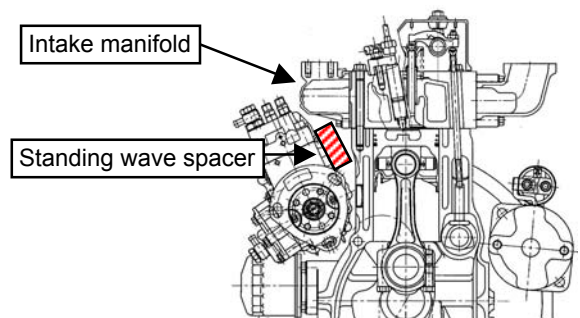
(1) When reinstalling the cover, remove the remaining liquid packing totally and use a new seal washer.

(2) Liquid packing: Three-Bond 1216 or an equivalent

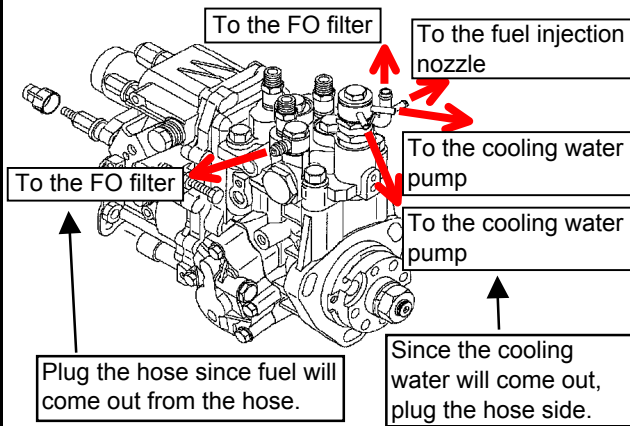


- 5 Remove the intake manifold. (M8 x 5 pcs.)

- 6 Take out the standing wave spacer (muffling material).



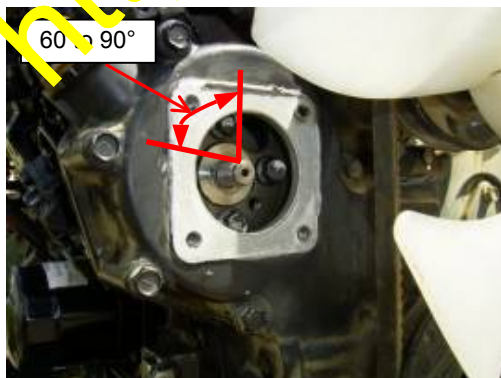
- 7 Disconnect the 5 hoses being connected to the fuel injection pump.



- 8 Remove the nut from the cam shaft taking care not to drop the nut and washer into the inside of the gear case.



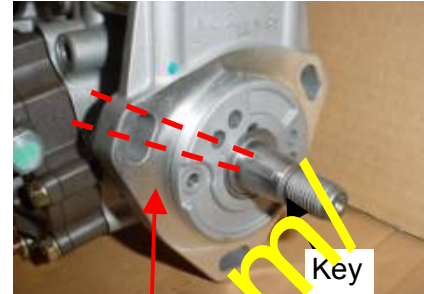
- 9 Turning the crank shaft, adjust the key position to the range between 60 to 90° as shown in the photograph shown below.
(The above is the range where the cam will become free.)



POINT

Check the key position of the replacing new pump. It will make more convenient to set the key position to almost the same position when making the disassembly work. (Reason)

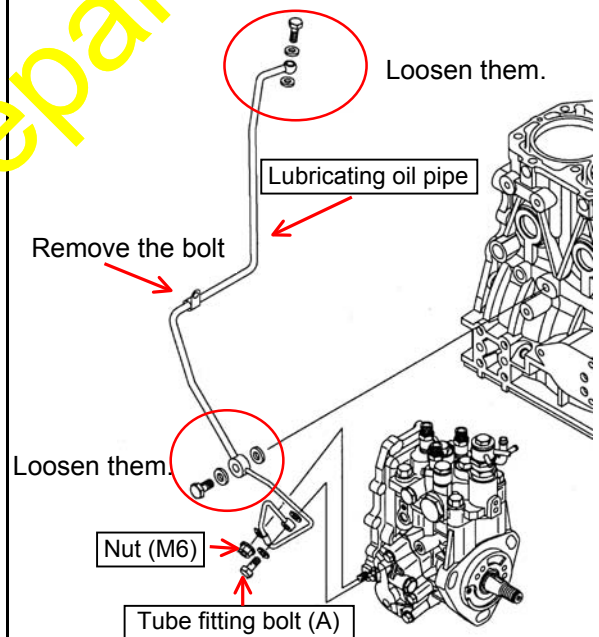
Since the lifting force of the fuel cam is too strong to make the positioning by turning the fuel cam.



Make it a reference that for which position it is coming against the pump mounting hoses.

The new pump will also be supplied with the same positioning.

- 10 Loosen or remove the bolt, nut and tube fitting bolt at each section of the lubricating oil pipe to make it free.



Caution: Do not bend the pipe when removing and installing the pump.

- 11 Remove the support located underneath the pump governor case.

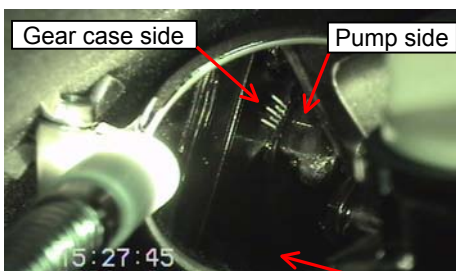
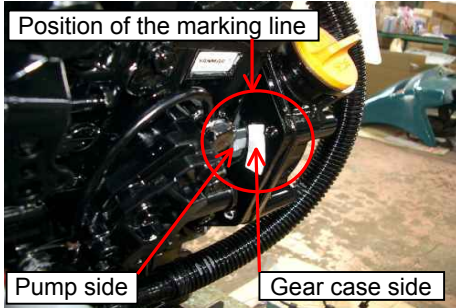


12 Removal of the fuel injection pump

(1) Since marking lines are drawn on the rear side of the gear case (refer to the photograph), check the positional relation between the gear case and the pump using a mirror.

(Reference)

1) If you apply powdered chalk over the marking line, the line will become easier to see.



A scene where a mirror is being used to check the positional relation between the gear case and the pump

2) Numbers of the marking lines

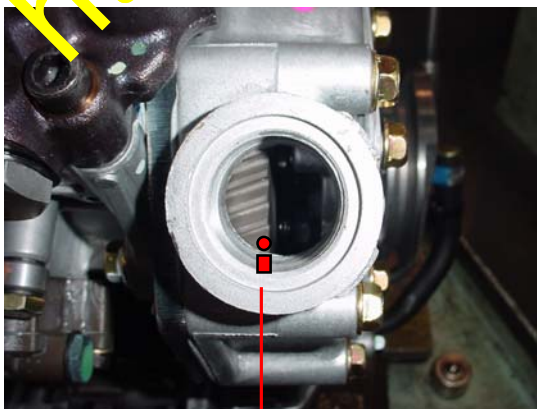
Pump side: 1 (line)

Gear case side: 5 or 1 (line)

3) In case the number of the marking lines on the gear case side is 5 (lines), the marking line on the pump side aligns to the central marking line.

(2) Apply temporary match marks to the pump drive gear. Since the inspection window of this engine is small in its size, it is not possible to apply temporary match marks to the pump drive gear and to the intermediate gear.

In substitution, remove the oil filler port cap and apply marking on the inner surface and on the addendum of the gear so that it may become possible to check if they come to almost the same positions when carrying out the reinstallation work.

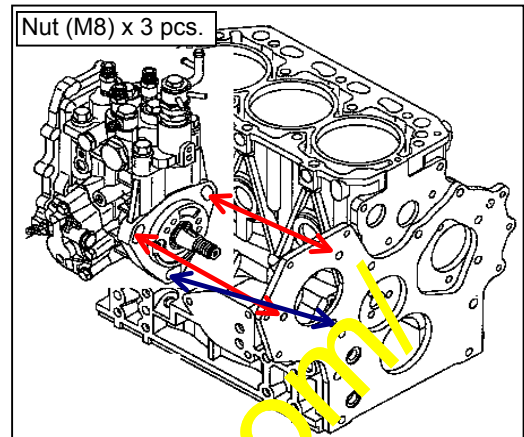


When carrying out the reinstallation work, make sure that the pump drive gear is being inserted to the proper position.

(3) Remove the nut to remove the fuel injection pump from the gear case.

At this time, since the shaft is tapered, use the following jigs.

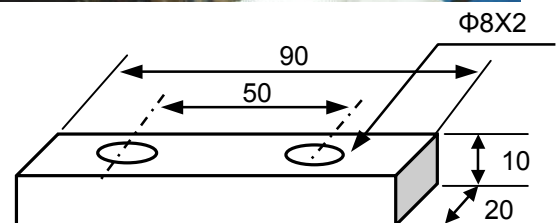
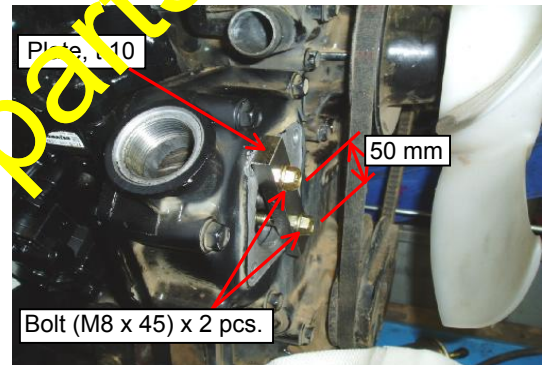
(Pump side: Nut Gear case side: Stud bolt)



<Installation of the fuel injection pump removing jig>

◆ Installed state

Be careful not to damage the threaded section of the cam shaft.

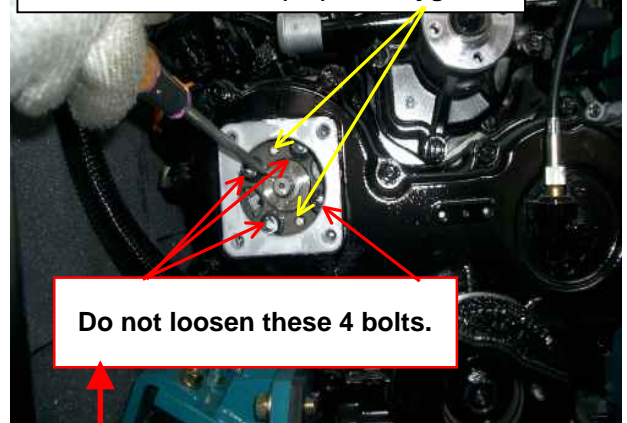


Removing jig (Reference)

Using bolt: M8 (Length under head: 45) x 2 pcs.

Female screw

Use this female screw (M8) for the jig bolt.

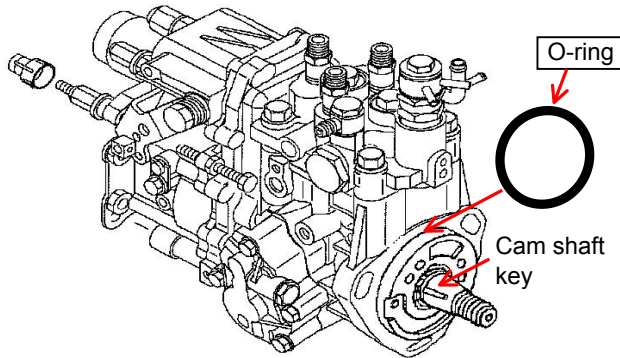


* If these bolts are loosened, the fuel injection timing will deviate.

13 Reinstallation

(1) Reinstallation of the fuel injection pump

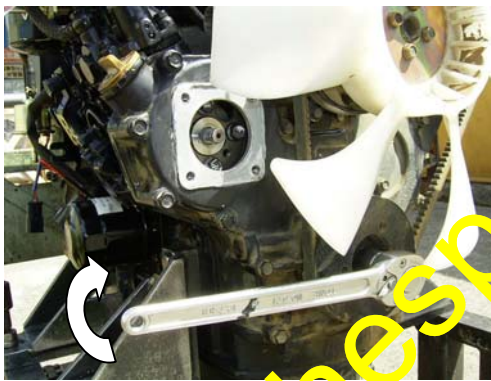
1) After applying lubricating oil on the O-ring which has been sent to you, install it to its position.



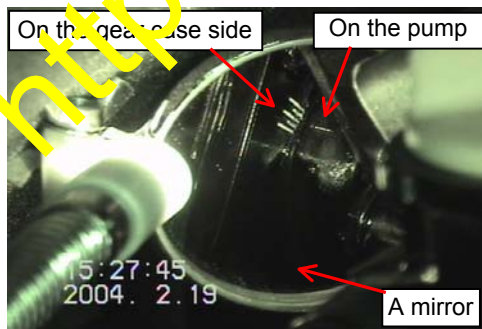
2) Install the fuel injection pump.

The key is formed on the cam shaft of the fuel injection pump. And, the key position on the new fuel injection pump is in the range of 30 to 60°.

When the key position on the cam shaft is not aligning, turn the crank shaft to align it.



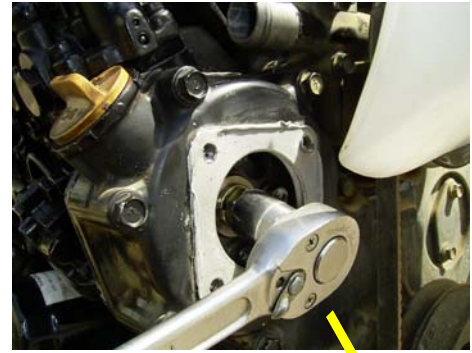
3) Set the new fuel injection pump to the same position of the current pump before its removal and install the new fuel injection pump temporarily using the mounting nuts.



4) Tighten the fuel injection pump mounting nut (M8 x 3) to mount the pump.

5) Tighten the cam shaft nut.

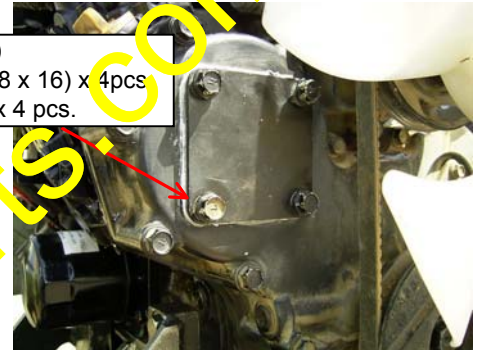
Tightening torque: 78 - 88 N·m (8 - 9 kgf·m)



6) Install the cover (HO-P).

Use Three Bond 1216 or an equivalent.

Cover (HO-P)
Collar bolt (M8 x 16) x 4pcs
Seal washer x 4 pcs.



7) Install the standing wave spacer and intake manifold.

8) Install the fuel filter.

9) Install the fuel injection tube.

Nut tightening torque: 29 - 34 N·m (3 - 3.5 kgf·m)

Conducting test operation of the machine, adjust the engine revolution using the adjusting bolt for the fuel injection pump.

After the adjustment, install the cap over the Hi-Idling adjust bolt.

Lo-Idling revolution: 900 +50/-25 rpm

Hi-Idling revolution: 2,650 ±25 rpm

(Caution)

Adjust the engine revolution after making sufficient warming up.

Do not forget this sealing !

