

PARTS & SERVICE NEWS

REF NO.	AA00017A
DATE	January 8, 2001

This **PARTS AND SERVICE NEWS** supercedes AA00017, dated January 24, 2000, which should be discarded.

- SUBJECT:** REAR CRANKSHAFT OIL SEAL
- PURPOSE:** Inform field service personnel of changes made to the rear crankshaft oil seal and it's respective service kits.
- APPLICATION:** PC400LC-5LC Hydraulic Excavator Serial Number A40001 and UP
 PC400LC-6LC Hydraulic Excavator Serial Number A80000 and UP
 WA450-2 Wheel Loader Serial Number A25001 and UP
 WA450-3 Wheel Loader Serial Number A30001 and UP
 TD20G Crawler Tractor Serial Number PO35195 and UP
- FAILURE CODE:** A30640
- DESCRIPTION:** Changes have been made to the components and hardware used with the rear crankshaft oil seal to improve its oil sealing capability. The component and hardware changes have taken place in both production and service.

Customer Issue

In a dry application, engine oil is seen leaking on the ground. It usually drips off the flywheel housing.

In a wet application, engine oil fills up the flywheel housing and burns out the engine speed sensor (flywheel ring gear sensor) in the flywheel housing.

Customers may notice increased oil consumption.

Technical Description

An oil leak can be caused by the following:

- Oil seal leaks
- Extruded seal material (This causes improper surface loading on the seal lip)
- Foreign material due to improper installation of the POSE (Dust Excluder)
- New seal installed with an excessive wear groove on the crankshaft
- Improper torquing procedure causing offset wear of the seal on the crankshaft
- Seal installed backwards
- Incorrect installation of speed-sleeve
 - Installed too far
 - Installed without filling the wear groove
- Incorrect wear groove repair
- Improper installation of seal (damage lip)
- Oil gasket leaks
- Gasket relaxation
- Poor load distribution between seal carrier mounting capscrews

Implementation Summary

Oil seal and gasket

Changes occurred: August 23, 1999. First ESN: 34973997

Service Parts Kits

Item	Part Number	Description	Qty	Remarks
1	1246 308 H95	Oil Seal Kit (Dry Bell Housing)	1	Kit Contents Below
	1246 216 H1	Captive Washer CA Screw	12	
	1241 690 H2	Gasket Carrier	1	
	NSS	Dust Seal	1	
	NSS	Oil Seal	1	
2	1241 689 H92	Oil Seal Kit (Wet Bell Housing)	1	Kit Contents Below
	1246 216 H1	Captive Washer CA Screw	12	
	1241 690 H2	Gasket Carrier	1	
	NSS	Oil Seal without Wear Sleeve	1	
3	1315 286 H91	Oil Seal/Wear Sleeve Kit (Dry Bell Housing)	1	Kit Contents Below
	1246 216 H1	Captive Washer CA Screw	12	
	1241 690 H2	Gasket Carrier	1	
	NSS	Oil Seal with Wear Sleeve	1	
4	1315 287 H91	Oil Seal/Wear Sleeve (Wet Bell Housing)	1	Kit Contents Below
	1246 216 H1	Captive Washer CA Screw	12	
	1241 690 H2	Gasket Carrier	1	
	NSS	Oil Seal with Wear Sleeve	1	

NOTE: Do not re-use the clamping ring, Part No. 1294 473 H1, or the 12 non-captive washer capscrews, Part No. 1246 157 H1.

Increase final torque from 15 to 25 ft-lbs. Tighten the capscrews in a star pattern in two steps.

Step 1: 7 N-m [60 in-lbs]

Step 2: 35 N-m [25 ft-lbs]

Improved Parts

Old Part Number	New Part Number	Description
1241 689 H91	1241 689 H92	Oil Seal Kit (Wet Bell Housing)
1246 308 H94	1246 308 H95	Oil Seal Kit (Dry Bell Housing)
1246 157 H1	1246 216 H1	Mounting Capscrew
NSS	1315 287 H91	Combination Seal with Wear Sleeve (Wet Bell Housing)
NSS	1315 286 H91	Combination Seal with Wear Sleeve (Dry Bell Housing)
1241 690 H2	1241 690 H2	Carrier Gasket

NOTE: New kits contain: Reduced ID carrier mounting gasket, captive washer capscrews and bulletin outlining the proper installation procedure.

New wear sleeve includes seal and requires special installation tool Part No. 31 635 65

CORRECTIVE ACTION SUMMARY

Oil Seal and Gasket

NOTE: Changes have been made to the components and hardware used with the rear crankshaft oil seal to improve its oil sealing capability. The component and hardware changes have taken place in both production and service.

- Mounting capscrews have been replaced by captive washer capscrews (See Improved Parts Table).
- The torque on the captive washer capscrews has been increased to 34 N-m [25 ft-lbs].
- The clamping plate has been obsoleted. It must not be used with the captive washer capscrews due to possible interference issues that exist between the capscrew and flywheel.
- The carrier gasket has been obsoleted and superceded by a reduced inner diameter carrier gasket (See Improved Parts Table)
- Production Changes:
 - Reduced ID carrier mounting gasket
 - Captive washer capscrews
 - Increased torque on capscrews from 15 to 25 ft-lbs
 - Discontinue use of clamping ring
- Wear Sleeve
 - A thick wall wear sleeve and matching oil seal are released. The thick wall wear sleeve and matching oil seals will replace the Speedi-sleeve as an alternative repair. The seal and sleeve are one and require special tool Part No. 31 635 65 to install.
- Combination seal with wear sleeve for wet bell housing: Part No. 1315 287 H91
- Combination seal with wear sleeve for dry bell housing: Part No. 1315 286 H91

PREPARATIONS FOR WORK

IMPORTANT: Please observe all safety and precautionary standards as dictated by the environment and work conditions under which the equipment will be inspected, reworked and repaired. Consult appropriate "Shop Manual" and your Komatsu district service manager with any and all questions regarding safety.

1. Park the machine on a flat level surface, lower the working equipment to the ground. Shut off the engine and cycle the controls to remove any residual hydraulic pressure from the boom and bucket circuits. Fully apply the parking brake.
2. Place chocks (when applicable) at the front and rear of all wheels to prevent the machine from moving.
3. Place the safety bar (if equipped) on the machine.
4. Remove the key from the start switch and retain it until the repairs are complete. Place a tag on the steering wheel advising: "**This machine is being repaired. It should not be started or moved for any reason until the tag is removed by the person doing the repairs**".

INSTALLATION

1. Obtain the correct Service Parts Kit, then using the installation bulletin, disassembly the bell housing and remove the rear crankshaft oil seal.
2. Replace non-captive washer capscrews (1246 157 H1) with the captive washer capscrews (1246 216 H1) found in the service kit. Discard the clamping ring.
3. Using the new mounting gasket (1241 690 H2) and capscrews, follow the installation bulletin instructions to reassembly the rear crankshaft oil seal. Using a criss-cross pattern torque captive washer capscrews as follows:

First Pass. 57Nm (60 INCH lbs.)
Second Pass. 35Nm (25 ft. lbs.)
4. Using the installation bulletin, reassembly the remaining components.

THICK WEAR SLEEVE AND OIL SEAL INSTALLATION

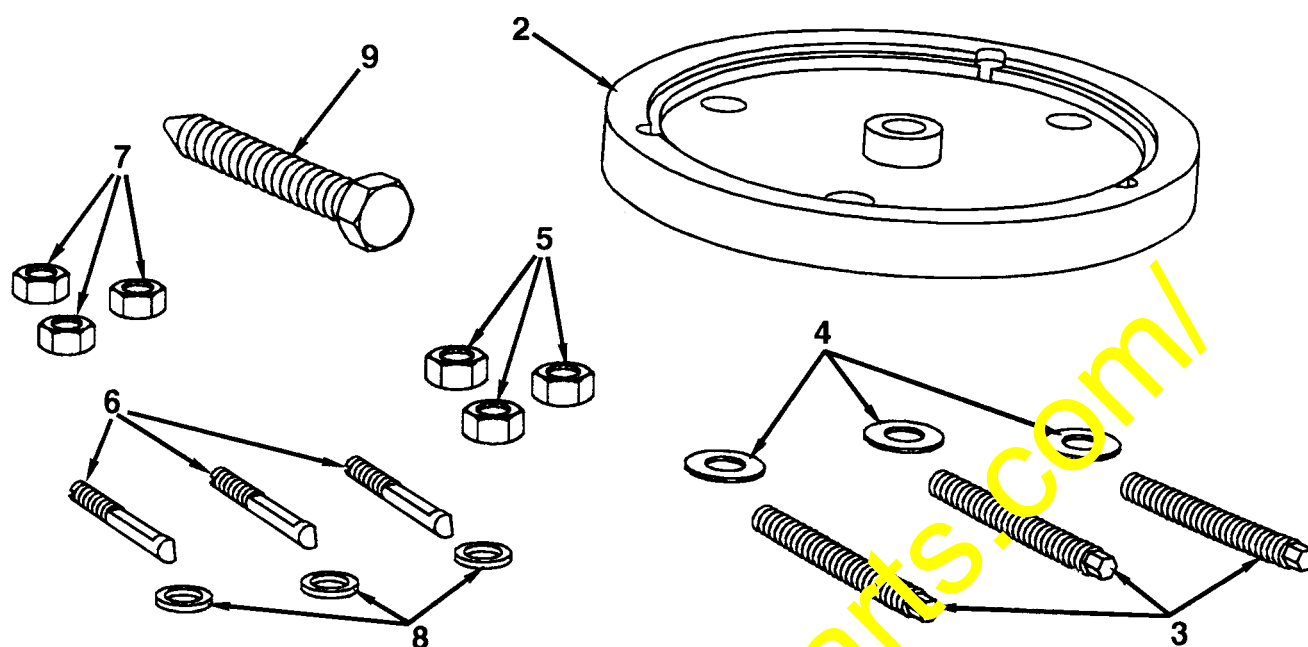


Figure 1

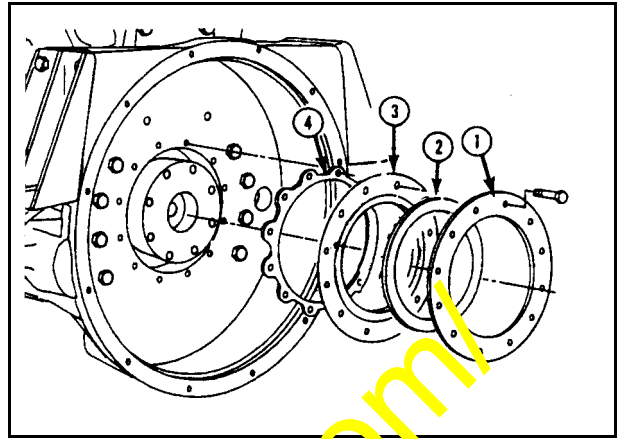
Item	Part Number	Description	Qty	Remarks
Fig. 1	3163 565	Kit, Thick Wear Sleeve and Oil Seal Installation and Removal Tool	-	
2	3163 705	Mandrel, Thick Wear Sleeve and Oil Seal Tool	1	
3	3163 707	Stud	3	M14 x 1.5
4	1238 118 H1	Washer, Flat	3	19/32 x 11/8
5	3163 708	Nut, Hexagon	3	M14 x 1.5
6	3163 706	Jaws, Puller	3	
7	1238 077 H1	Nut, Hexagon	3	7/16-14
8	1238 970 H1	Washer, Flat	3	7/16 x 7/8
9	3163 495	Screw, Forcing	1	
	3377 846	Instruction Sheet	1	Not Shown

NOTE: This service tool is used to remove and install the M11 rear crankshaft thick wear sleeve and oil seal assembly. This tool will NOT install an oil seal on engines equipped with the rear engine power take-off (REPTO).

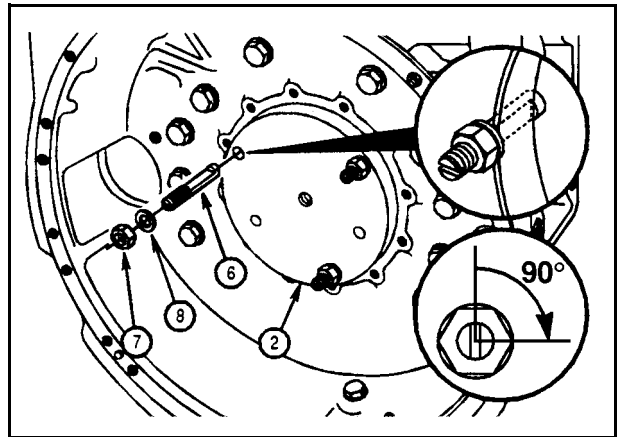
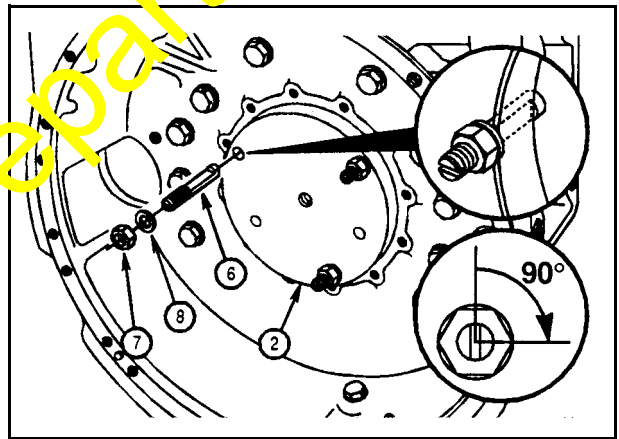
Removal

NOTE: When prying off the rear crankshaft oil seal, do **NOT** burr or nick the surface of the flywheel housing.

1. Using the appropriate Shop Manual, remove the flywheel from the engine. Then
 - a. Remove the 12 capscrews.
 - b. If installed, remove clamping ring (1).
 - c. Remove oil seal (3).
 - d. If installed, remove dust seal assembly (2).
 - e. Remove mounting gasket (4).

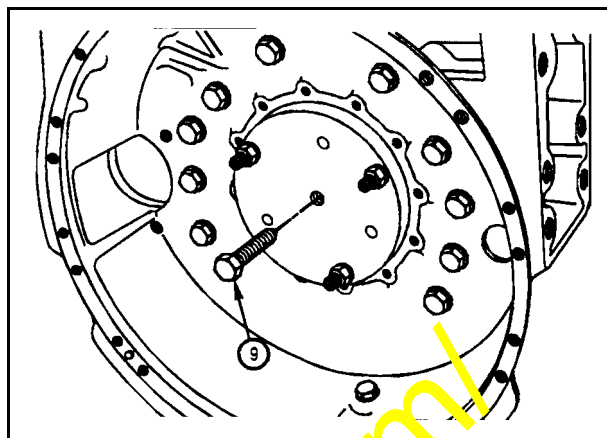


2. Position the thick wear sleeve and oil seal tool (2) onto the crankshaft against the thick wear sleeve. Then
 - a. Rotate jaw puller (6) until the large flat edge is aligned with the thick wear sleeve.
 - b. Insert the jaw puller until it bottoms in the bore.
 - c. After all three jaw pullers are inserted, rotate each one **clockwise** 90°. This will lock the jaw puller with the engine wear sleeve.
 - d. Install flat washers (8), then nuts (7) onto jaw pullers and tight. Finish tightening nuts to 11 Nm (97 INCH lbs.).

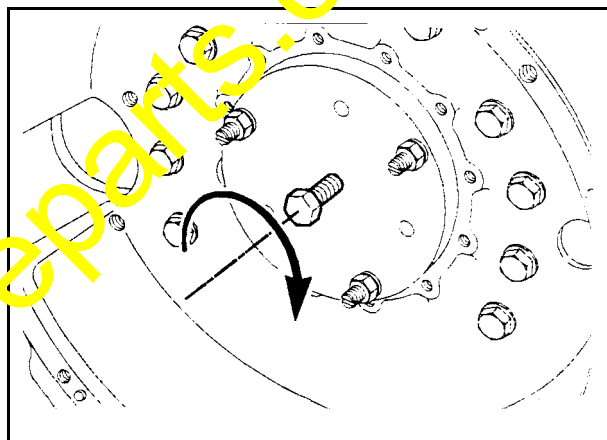


Removal (continued)

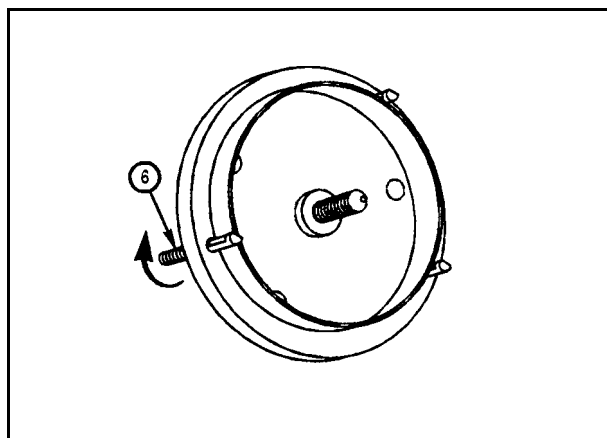
3. Lubricate the tip of the forcing screw (9), then insert the screw into the center of the thick wear sleeve and oil seal tool. Rotate the forcing screw **clockwise** until it is hand tight.



4. Continue turning forcing screw until thick wear sleeve is removed.

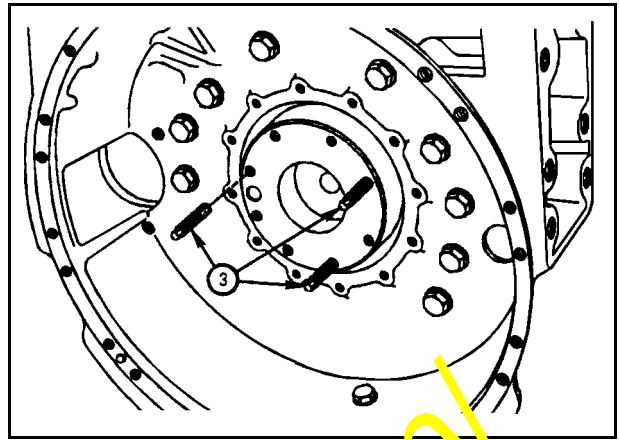


5. Remove the thick wear sleeve assembly and removal tool from the rear of the crankshaft, then
 - a. Loosen the nuts on the jaw puller.
 - b. Rotate the three jaw pullers **counterclockwise** 90° to unlock the wear sleeve.
 - c. Clean all parts in the thick wear sleeve and oil seal installation and removal kit, then store in a clean and safe place.



INSTALLATION

1. Clean and inspect the crankshaft and thick wear sleeve mandrel tool as follows:
 - a. Use crocus cloth to remove dirt or deposits on both the crankshaft and tool.
 - b. Use lint free cloth to remove any traces of oil from crankshaft flange and tool.
 - c. Check the crankshaft for any nicks, burrs or grooves, make any necessary repairs.

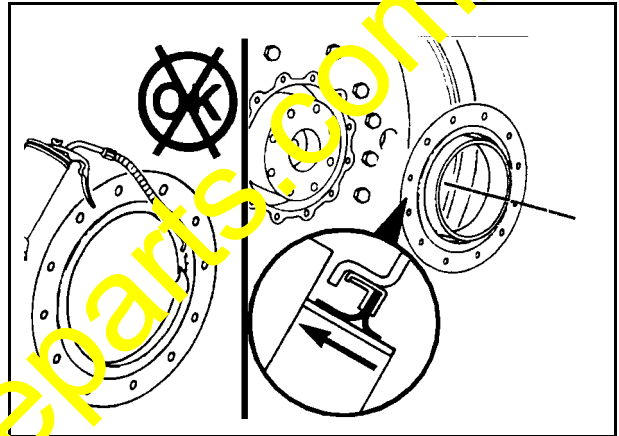


NOTE: Do **NOT** separate the oil seal from the thick wear sleeve at any time during assembly. A new thick wear sleeve and seal assembly **MUST** be used.

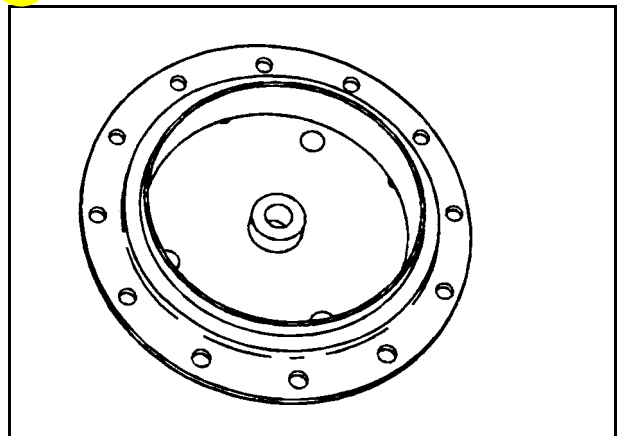
Do **NOT** use any lubricant to install the oil seal. The lip of the seal and the crankshaft **MUST** be oil free and dry for proper installation of oil seal.

The yellow lip of the oil seal **MUST** face outward.

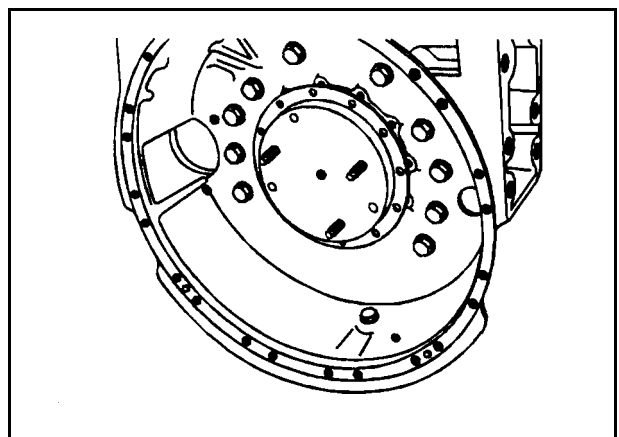
The thick wear sleeve, oil seal and gasket **MUST** be installed as one assembly.

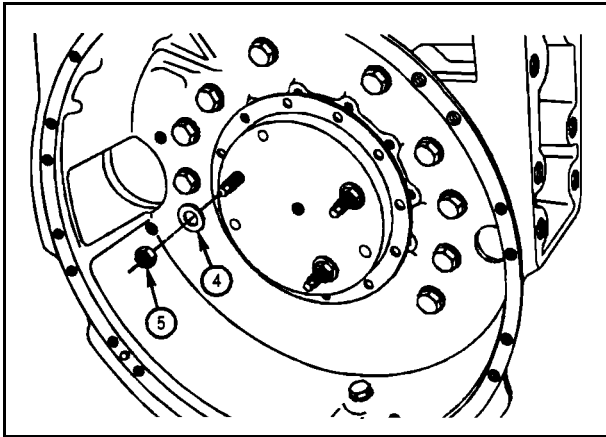


2. Position the thick wear sleeve, oil seal, and gasket into the proper counter bore location in the thick wear sleeve and oil seal mandrel tool.



3. Install the mandrel assembly as follows:
 - a. Place the thick wear sleeve, oil seal, gasket and thick wear sleeve mandrel tool on the three studs.
 - b. Position the mandrel assembly against the crankshaft flange.
 - c. Using a M8-1.25 x 20 capscrew, align the oil seal and gasket to the flywheel housing.



INSTALLATION (continued)

NOTE: Lubricate one side of the flat washer (4) and install so that the lubricated side faces toward the thick wear sleeve and oil seal mandrel tool.

4. Install the three flat washers (4) onto the studs.

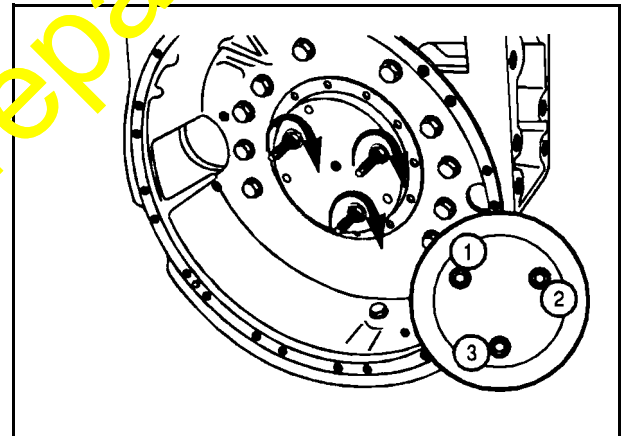
5. Install three hexagon nuts (5) onto the studs finger tight.




WARNING! Ensure the thick wear sleeve and oil seal remains parallel and straight when entering the bore. Failure to do so may result in damage to the thick wear sleeve and oil seal.

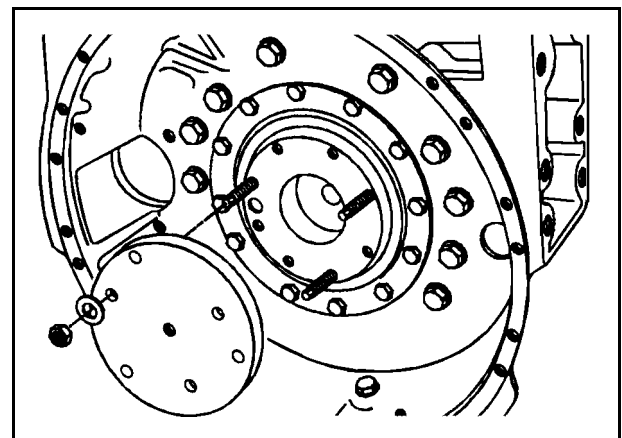
6. Alternately turning the hexagon nuts 1/2 of a turn at a time in a **clockwise** direction, tighten nuts until the thick wear sleeve and oil seal mandrel tool seats against the crankshaft flange (see illustration).

 **Hexagon Nut Torque:** 68 Nm (50 ft. lbs.)



7. Disassembly mandrel as follows:
- Remove the three hexagon nuts.
 - Remove the three flat washers.
 - Remove the mandrel.
 - Remove the three studs.
8. Install the oil seal into the flywheel housing, then using a criss-cross pattern tighten the 12 capscrews to the torque listed below.

 **Oil Seal Torque:** 1st pass 7 Nm (60 in. lbs.)
Oil Seal Torque: 2nd pass 35 Nm (25 ft. lbs.)



9. Clean all parts of the installation and removal kit and store in a safe place.