SERVICE MANUAL

LOADALL (ROUGH TERRAIN
VARIABLE REACH TRUCK)
506-36, 507-42, 509-42, 510-56, 512-56

EN - 9823/1700 - ISSUE 1 - 07/2018

This manual contains original instructions, verified by the manufacturer (or their authorized representative).

Foreword

The Operator's Manual

⚠

You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

Contents

Check (Condition)

Consumables

Description	Part No.	Size
JCB Threadlocker and Sealer (Medium Strength)	4101/0250	0.01 L
	4101/0251	0.05 L

1. If the gearbox cases are to be renewed, be sure to install blanking plugs and adaptors as required. Inspect the original cases and identify the blanking plug and adaptor positions. Transfer the plugs and adaptors to the new cases. Apply JCB Threadlocker and Sealer to the threads before installation.

   Consumable: JCB Threadlocker and Sealer (Medium Strength)

Remove and Install

For: PS750 MK3 ..... Page 27-216
For: PS750 MK4 ..... Page 27-222

(For: PS750 MK3)

Special Tools

Description	Part No.	Qty.
End Float Setting Tool Kit	993/70100	1
Torque Wrench (10-100Nm)	993/70111	1
Adaptor	993/78200	1

Consumables

Description	Part No.	Size
JCB Multi-Gasket	4102/1212	0.05 L
JCB Threadlocker and Sealer (Medium Strength)	4101/0250	0.01 L
	4101/0251	0.05 L

Remove

With the gearbox removed from the machine, place suitable wooden blocks to securely support the assembly.

1. Remove the suction strainer.
2. Remove the drain plug and discard its sealing washer.
3. Remove and discard the oil filter.

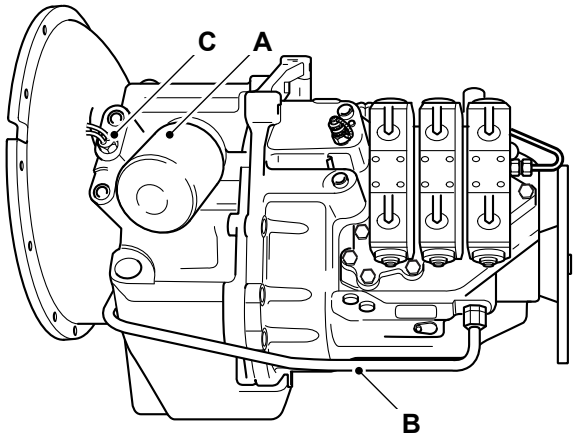
   3.1. Note: Some gearbox installations may have a remotely situated oil filter.

4. Remove the main shaft lubrication oil pipe. Refer to Figure 728.

   4.1. The pipe is connected at the rear case and at the torque converter housing.

5. Remove the mainline pressure switch and pressure test point assembly. Refer to Figure 728.

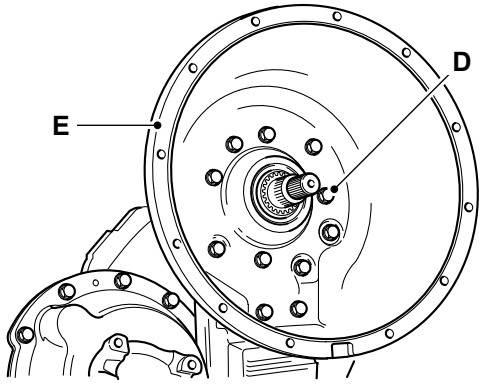
Figure 728.



A Oil filter
B Oil pipe
C Pressure switch and pressure test point

6. If required remove the speed sensor.
7. Remove the torque converter housing as follows: Refer to Figure 729.
   7.1. Remove the bolts 1 that attach the torque converter housing.
   7.2. Lift the torque converter housing from the gearbox.

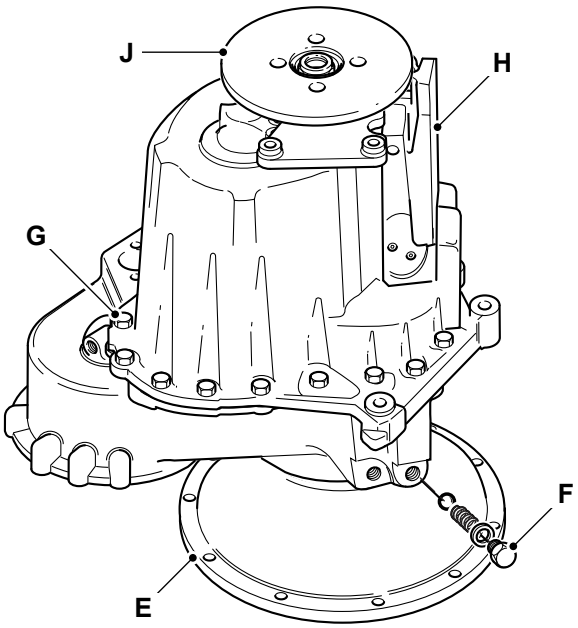
Figure 729.



D Bolt 1
E Torque converter housing

8. Remove the gearbox oil pump.
9. Remove the solenoid control valves.
10. Remove the applicable 4WD (Four Wheel Drive) clutch shaft assembly.
11. Separate the front and rear cases as follows: Refer to Figure 730.

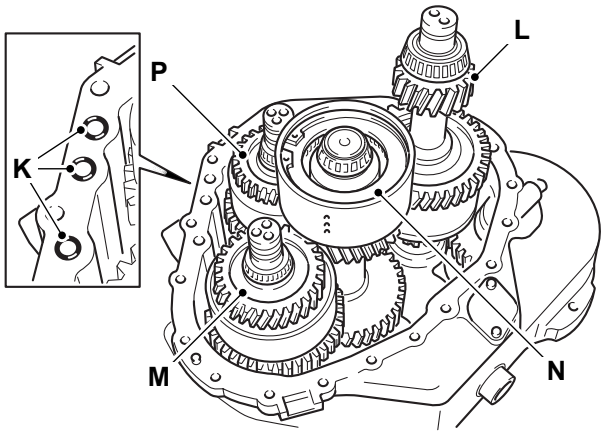
Figure 730.



E Torque converter housing
F Torque converter relief valve
G Bolt 2
H Rear case
J Brake disc

   11.1. Temporarily install the torque converter housing with 2 bolts.
   11.2. Put the gearbox in the vertical position such that the torque converter housing faces down.
   11.3. Remove the torque converter relief valve ball, spring and sealing washer.
   11.4. Remove the bolts 2 (x20) and lift the rear case.
   11.5. Make sure you remove the bearing outer cups from inside the case.
   11.6. Keep the cups together with their associated bearing.
   11.7. Note: Make sure that the internal components remain installed in the front case. If necessary, rotate the brake disc on the output shaft back and forth slightly to dislodge the internal components.
   11.8. Remove and discard the sealing O-rings from the front case. Refer to Figure 731.
12. Remove the clutch and shaft assemblies in the sequence that follows: Refer to Figure 731.

Figure 731.



K O-ring (x3)
L Layshaft clutch assembly
M Reverse clutch assembly
N Main shaft clutch assembly
P Input clutch assembly

12.1. Layshaft clutch assembly.

12.2. Reverse clutch assembly.

12.3. Main shaft clutch assembly.

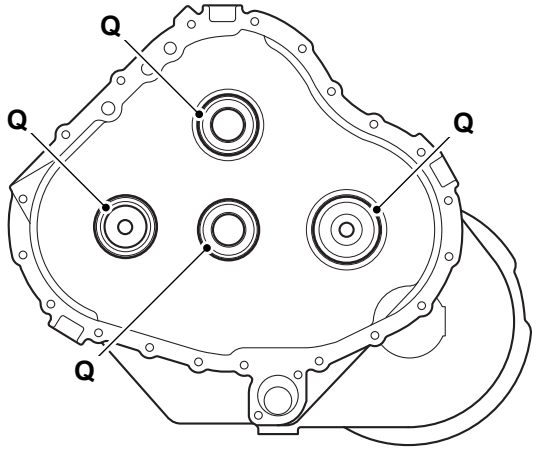
12.4. Input clutch assembly.

13. Note the positions of the end shaft spacers. Remove and put labels on the spacers to enable assembly in their original locations. Be sure to remove the bearing outer cups from inside the case. Keep the cups together with their associated bearing.

Install

1. Install the clutch shaft spacers (x4) in their original positions inside the front case. Refer to Figure 732.

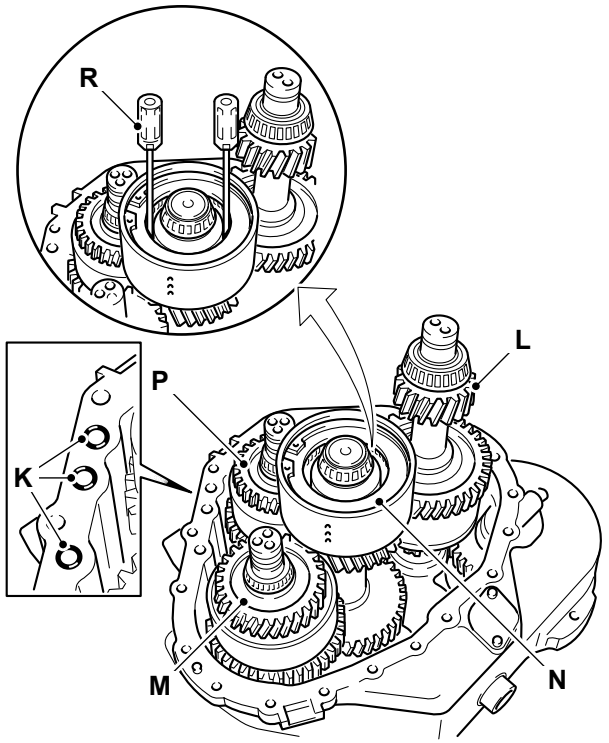
Figure 732.



Q Clutch shaft spacers (x4)

2. Install the clutch shaft assemblies as follows: Refer to Figure 733.

Figure 733.



K O-ring (x3)
L Layshaft clutch assembly
M Reverse clutch assembly
N Main shaft clutch assembly
P Input clutch assembly
R Screwdrivers

2.1. Lubricate all the bearings.

2.2. Make sure that the piston ring seals have been replaced, lubricated and installed in their correct positions.

2.3. Install the input clutch and the main shaft together into the front case.

2.4. With the help of a second person slightly raise the input clutch and the main shaft. With the two units raised, install the reverse clutch.

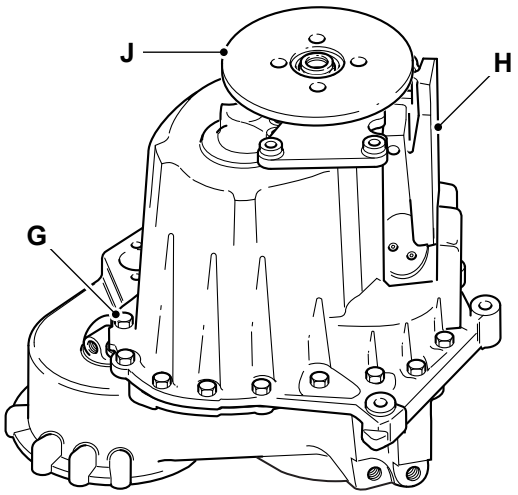
2.5. Install the layshaft assembly.

2.6. Make sure that all bearings are correctly installed and that the relevant gears are engaged correctly.

2.7. With two small rods (or screwdrivers) align all the friction and counter plates of the main shaft clutch.

3. Assemble the front and rear cases as follows: Refer to Figure 734.

Figure 734.



G Bolt 2
H Rear casing
J Brake disc

3.1. Install the new o-rings (x3) in the front case. Lubricate the O-rings. Make sure they stay in position.

3.2. Apply liquid gasket to the front case mating face.

Consumable: JCB Multi-Gasket

3.3. Before you install the rear case make sure that the bearings are lubricated and the piston ring seals are lubricated and installed at their correct position.

3.4. Make sure that the clutch bearing outer cups are installed to the rear case and the output shaft assembly.

3.5. Make sure that all the friction and counter plates in the main shaft clutch are aligned.

3.6. Carefully lower the rear case into position, take care to align the output gear splines with the main shaft clutch friction and counter plates.

3.7. Gently rotate the brake disc back and forth to enter the plates, if the case does not drop down onto the dowels, do not use the bolts or force as the plates will be damaged.

3.8. Apply sealant to the threads of the bolts that attach the front and rear cases.

Consumable: JCB Threadlocker and Sealer (Medium Strength)

3.9. Tighten the bolts to the correct torque value.

Note: The end float of the clutch shafts is controlled without the use of shims. This is achieved by using a `set-right' tolerancing system during manufacture. After assembly the clutch shaft end floats must be checked to make sure correct assembly and tolerances. This is particularly important if components such as clutch shafts or gearbox cases have been replaced.

1. The main shaft airline adaptor 993/78200 can be used to hold the clutch pack with air pressure, the pack needs to be aligned with the transfer gear assembly first.

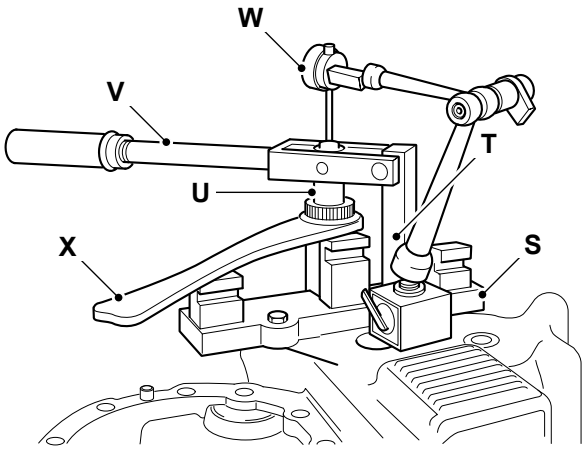
   Special Tool: Adaptor (Qty.: 1)

2. Use the service tool to measure the end float of all clutch shafts.

   Special Tool: End Float Setting Tool Kit (Qty.: 1)

3. Measure the input shaft end float. Refer to Figure 735.

Figure 735.



S Base plate
T Support pillar
U Adaptor
V Torque wrench
W DTI
X Splined wrench

3.1. Assemble the adaptor to the end of the shaft.

3.2. Install the base plate to the gearbox with a bolt.

3.3. Install a splined wrench (which can be manufactured from an old torque converter hub) over the shaft.

3.4. Assemble the DTI (Dial Test Indicator) and the torque wrench.

Special Tool: Torque Wrench (10-100Nm) (Qty.: 1)

3.5. Set the DTI to zero and the torque wrench to the specified torque value.

Torque: 35 N·m

3.6. Rotate the input shaft back and forth with the splined wrench, to seat the bearings, and lift and depress the torque wrench.

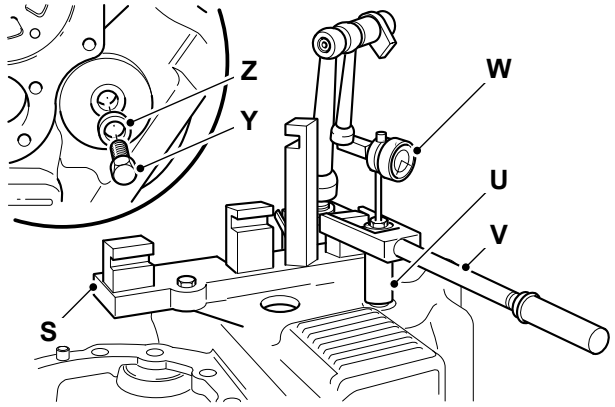
3.7. Make a record of the reading on the DTI.

3.8. The end float must be within the range specified.

Length/Dimension/Distance: 0.02 –0.16 mm

4. Measure the reverse shaft end float. Refer to Figure 736.

Figure 736.



S Base plate
U Adaptor
V Breakback torque wrench
W DTI
Y Sealing plug
Z Washer

4.1. Remove the sealing plug and the washer.

4.2. Assemble the adaptor to the end of the shaft.

4.3. Install the base plate to the gearbox with a bolt.

4.4. Assemble the DTI and the torque wrench.

4.5. Set the DTI to zero and the torque wrench to the specified torque value.

Torque: 35 N·m

4.6. Rotate the reverse shaft back and forth with the splined wrench on the input shaft, to seat the bearings, and lift and depress the torque wrench.

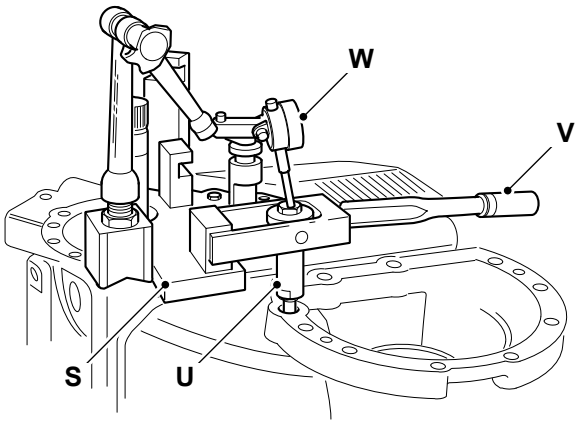
4.7. Record the reading on the DTI.

4.8. The end float must be within the range specified.

Length/Dimension/Distance: 0.02 –0.16 mm

5. Measure the layshaft shaft end float. Refer to Figure 737.

Figure 737.



S Base plate
U Adaptor
V Torque wrench
W DTI

5.1. Assemble the adaptor to the end of the shaft.

5.2. Install the base plate to the gearbox with a bolt.

5.3. Assemble the DTI and the torque wrench.

5.4. Set the DTI to zero and the torque wrench to the specified torque value.

Torque: 35 N·m

5.5. Rotate the reverser shaft back and forth with the brake disc on the output shaft, to seat the bearings, and lift and depress the torque wrench.

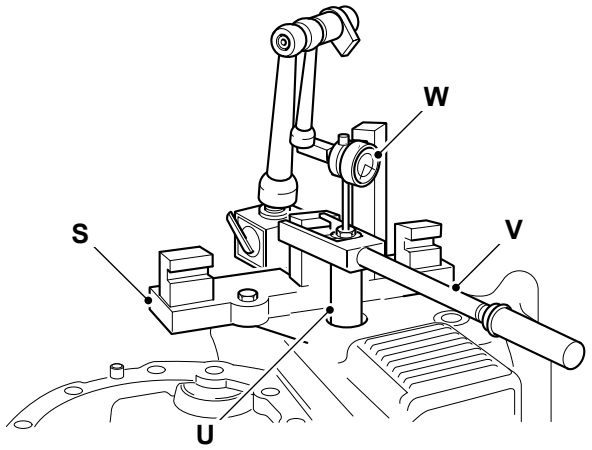
5.6. Record the reading on the DTI.

5.7. The end float must be within the range specified.

Length/Dimension/Distance: 0.02 –0.16 mm

6. Measure the main shaft shaft end float. Refer to Figure 738.

Figure 738.



S Base plate
U Adaptor
V Torque wrench
W DTI

6.1. Assemble the adaptor to the end of the shaft.

6.2. Install the base plate to the gearbox with a bolt.

6.3. Assemble the DTI and the torque wrench.

6.4. Set the DTI to zero and the torque wrench to the specified torque value.

Torque: 35 N·m

6.5. Gain access through the 4WD cover to rotate the main shaft. For 2WD (Two Wheel Drive) transmissions use an airline and the adaptor tool.

6.6. Rotate the main shaft back and forth to seat the bearings, and lift and depress the torque wrench.

6.7. Record the reading on the DTI.

6.8. The end float must be within the range specified.

Length/Dimension/Distance: 0.02 –0.18 mm

7. Install the 4WD clutch assembly or output shaft assembly (permanent 4WD variant) (if applicable).

8. Install the gearbox oil pump.

9. Install the torque converter housing as follows:

9.1. Apply liquid gasket to the mating face of the torque converter housing.

Consumable: JCB Multi-Gasket

9.2. Put the torque converter in position against the front case. Make sure that the dowels are engaged with the torque converter housing.

9.3. Apply sealant to the threads of the bolts that attach the torque converter.

Consumable: JCB Threadlocker and Sealer (Medium Strength)

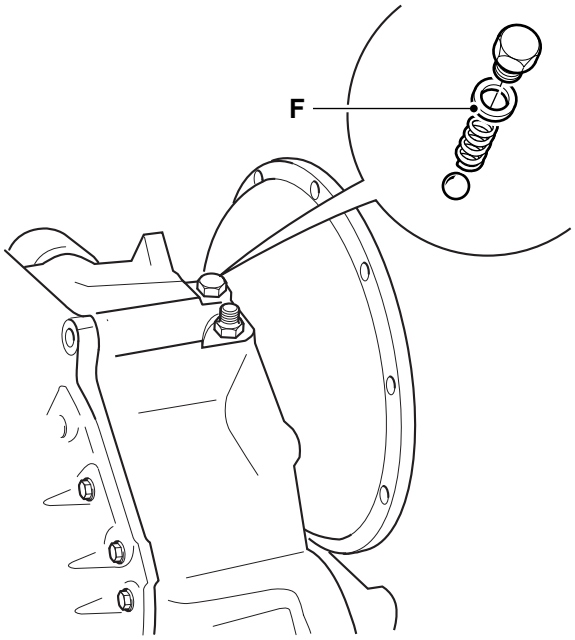
9.4. Tighten the bolts to the correct torque value.

9.5. Install the torque converter relief valve ball and tapered spring. Refer to Figure 739.

9.6. Make sure that the larger diameter of the tapered spring is located securely over the spigot on the plug.

9.7. Use a new sealing washer, then install and tighten plug.

Figure 739.



F Torque converter relief valve

10. Install the solenoid valve manifold block and the solenoid valves.

11. Install the suction strainer.

12. Install the drain plug with a new sealing washer.

13. Tighten the drain plug to the correct torque value.

Torque: 203 N·m

14. Install the main line pressure switch and pressure test point assembly with a new sealing washer.

15. Tighten the locknut to the correct torque value.

16. Install a new oil filter.

17. Install the main shaft lubrication oil pipe at the gearbox case and torque converter housing.

18. If removed, install the speed sensor.

Table 290. Torque Values

Item	Description	Nm
C	Mainline pressure switch and pressure test point locknut	28
D	Bolt 1	56
G	Bolt 2	56

(For: PS750 MK4)

Consumables

Description	Part No.	Size
JCB Multi-Gasket	4102/1212	0.05 L

Before removal

Before splitting the front and rear case do the following procedures.

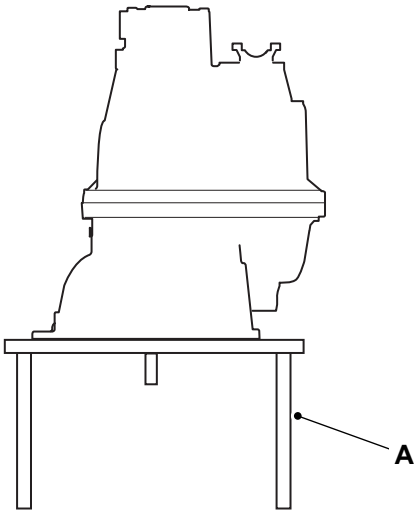
- Remove the oil filter. Refer to (PIL 27-06-39).
- Remove the suction strainer. Refer to (PIL 27-06-40)
- Remove the solenoid control valves. Refer to (PIL 27-06).
- Remove the 4WD yoke and seal. Refer to (PIL 27-06-95).
- Remove the speed sensors. Refer to (PIL 27-06-27).
- Remove the torque converter relief valve. Refer to (PIL 27-14-09).

Cleanliness is of the utmost importance when you service the gearbox. All precautions to prevent any ingress of dirt, grit etc. must be taken.

- Remove deposits of dirt, grit and oil from the outer cases and components.
- Prevent dirt, grit and debris falling into the gearbox.
- Put caps on all open ports, hoses, pipes and orifices.

Use lifting equipment to locate the gearbox in a work cradle as shown. Do not try to disassemble the gearbox further unless it is safely located in a work cradle.

Figure 740.



A Cradle

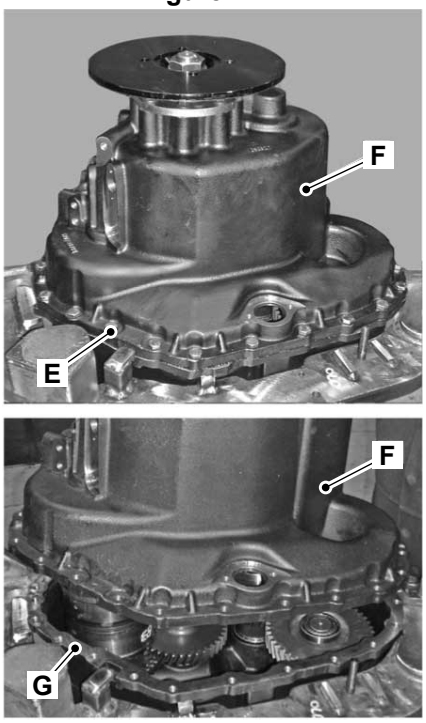
Remove the external oil feed pipe. Refer to (PIL 27-06-85).

Remove

Front and rear case

1. Remove all the case fixing screws.

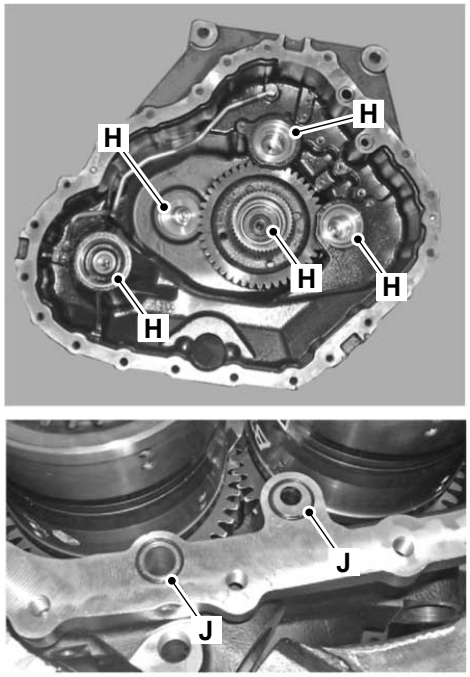
Figure 741.



E Case fixing screws (x22)
F Rear case
G Front case

2. Use lifting equipment to carefully lift off the rear case.
3. Remove the shaft bearing outer cups. The cups will be left on the bearings, or inside the front case.

Figure 742.



H Bearing outer cups
J O-ring seals

4. Keep the cups with their associated bearings.
5. Remove and discard the O-ring seals from the front case.

After removal

Remove the oil transfer pipe. Refer to (PIL 27-06-86).

Remove the clutch assemblies - refer to the following procedures:

- Mainshaft - (including layshaft clutch assembly, 2WD / 4WD clutch assembly, reverse clutch assembly, mainshaft clutch assembly and forward/input clutch assembly) - refer to (PIL 27-06-54).

For detailed clutch disassemble and assemble procedures refer to the following procedures:

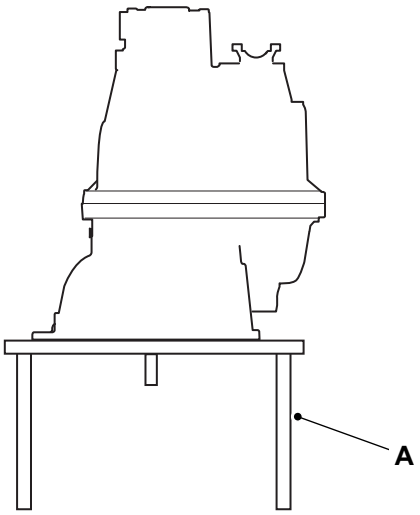
- Reverse clutch - refer to (PIL 27-06-06)
- 2WD / 4WD clutch - refer to (PIL 27-06-07)
- Layshaft clutch - refer to (PIL 27-06-08)
- Mainshaft clutch - refer to (PIL 27-06-09)
- Forward / input clutch - refer to (PIL 27-06-11)

Before installation

- If you remove the output shaft and bearing then install them. Refer to (PIL 27-06-58).
- Make sure the clutch assemblies are correctly assembled and are free from defects. Refer to (PIL 27-06).
- Replace the clutch shaft piston ring seals with new ones. Make sure that the piston ring seals are correctly installed in the shaft grooves. Refer to (PIL 27-06).

Use lifting equipment to locate the gearbox in a work cradle as shown. Do not try to assemble the gearbox further unless it is safely located in a work cradle.

Figure 743.



A Cradle

Clean and check the condition of all components before you install them.

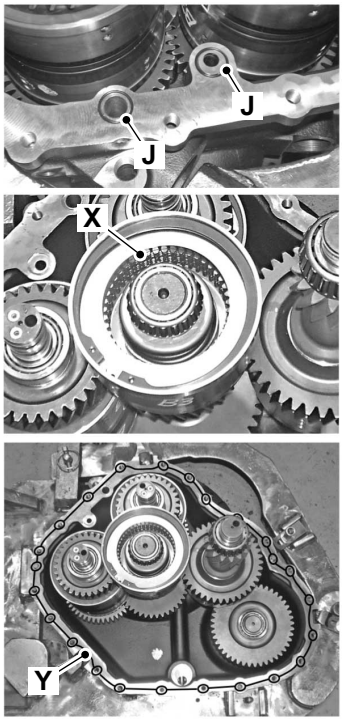
Install the oil transfer pipe. Refer to (PIL 27-06-86).

Install the clutch shaft assemblies. Refer to (PIL 27-06).

Install the front and rear case

1. Install new O-ring seals in the front case.

Figure 744.



J O-ring seals
X Friction counter plates
Y JCB Multigasket

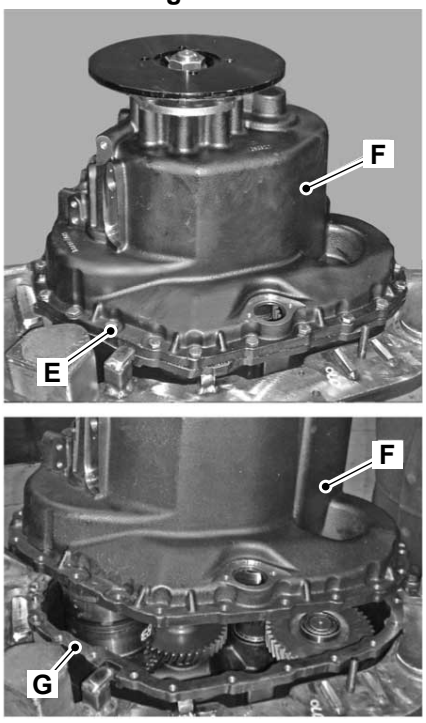
2. Apply a continuous bead of JCB Multigasket to the front case mating face.

   Consumable: JCB Multi-Gasket

3. Use two small rods or screwdrivers to align all the friction counter plates in the main shaft clutch.

4. Use suitable lifting equipment to carefully lower the rear case and to align the output gear splines with the main shaft clutch friction plates.

Figure 745.



E Case fixing screws (x22)
F Rear case
G Front case

5. If necessary rotate the output shaft a small amount to align the splines.

6. Apply sealant to the threads of the case fixing bolts and install them.

7. Tighten the bolts to the correct torque value.

After installation

Install the external oil feed pipe.

Table 291. Torque Values

Item	Description	Nm
E	Case fixing screws	56

Remove and Install

Special Tools

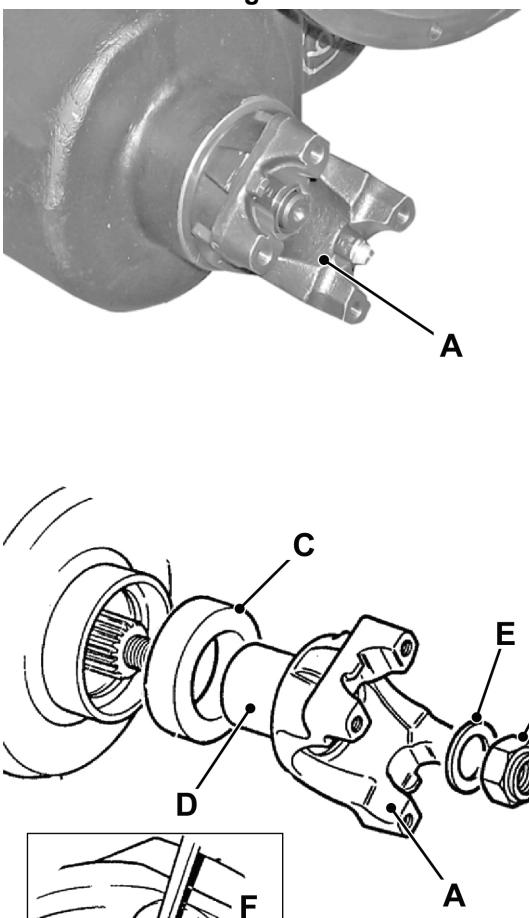
Description	Part No.	Qty.
Drive Coupling Spanner	892/00812	1

Remove

1. Bend back the stake nut locking ring.
2. Clean the area around the yoke. Do not allow particles of grit to fall into the gearbox.
3. Use service tool 892/00812 to hold the yoke and at the same time undo the nut. The nut is very tight, the help of an assistant will be required. Discard the nut.

   Special Tool: Drive Coupling Spanner (Qty.: 1)
4. Remove the yoke and the washer.
5. If necessary remove the oil seal. Do not damage the seal housing.

Figure 746.



A Yoke
B Stake nut
C Oil seal
D Oil seal interface
E Washer
F Locking ring

Install

1. Make sure that the oil seal interface on the yoke is clean and free from wear or damage.
2. If necessary install a new oil seal. Locate the seal in the position shown, the seal does not locate to the back of the housing.
3. Lubricate the lips of the oil seal.
4. Install the yoke.
5. Install the stepped washer the correct way around with the plan face facing the stake nut as shown.

6. Install a NEW stake nut. Tighten to the correct torque value.
7. Stake the nut to the shaft using a square ended staking tool, as shown.

Table 292. Torque Values

Item	Nm
B	400

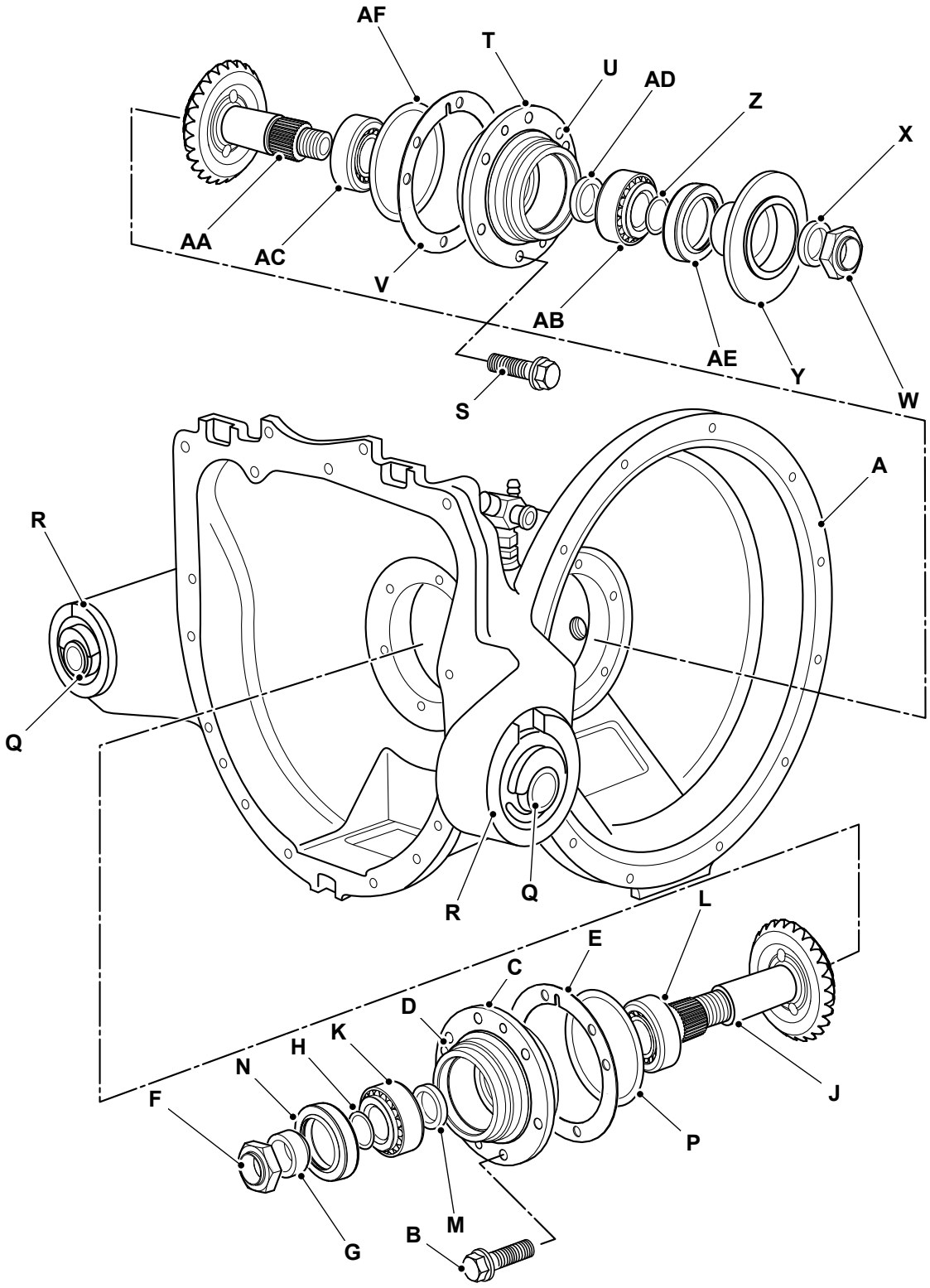
Component Identification

Unit Identification

The gearbox serial number is stamped on the unit identification plate as shown. When you make an order for parts replacement, always give the details mentioned on the unit identification plate. In the case of gear replacements, always check the part number stamped on the gear, and the number of teeth.

Main Component Identification

Figure 747. Component Identification (For: Bevel Gearbox)



Our support email:

ebooklibonline@outlook.com