tm1884 - 310SG and 315SG Backhoe Loader Repair
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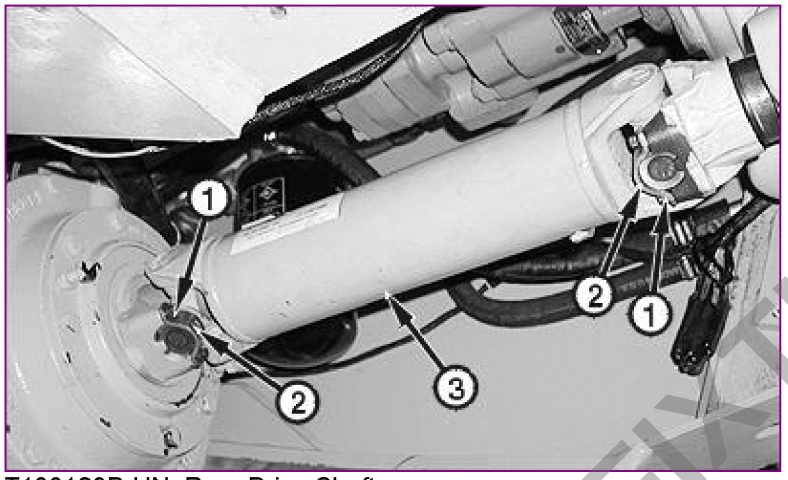
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tm1884 - 310SG and 315SG Backhoe Loader Repair
Drive Shaft-Remove and Install

Drive Shaft-Remove and Install

1. **IMPORTANT:**

   Always replace drive shaft cap screws when removed.



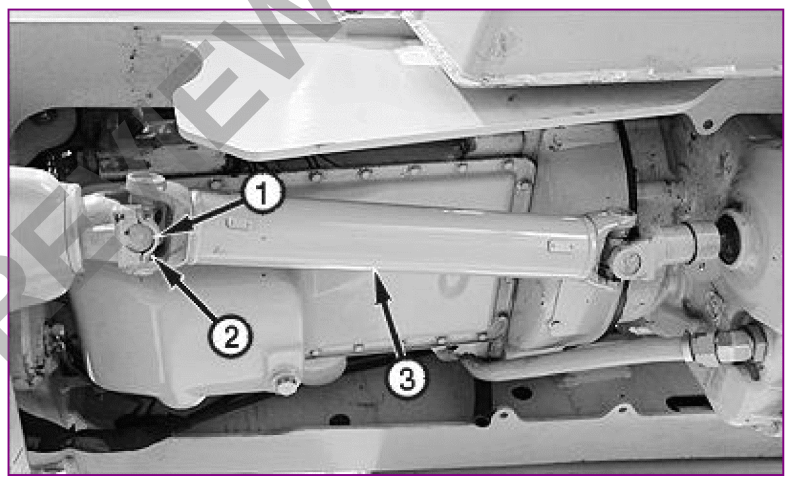
T133129B-UN: Rear Drive Shaft

LEGEND:

1 - Cap Screw (8 used)
2 - Half-Clamps (4 used)
3 - Rear Drive Shaft

To remove rear drive shaft (3), remove four cap screws (1) and two half-clamps (2) at each end of drive shaft. Discard cap screws.

2.



T133130B-UN: MFWD Drive Shaft

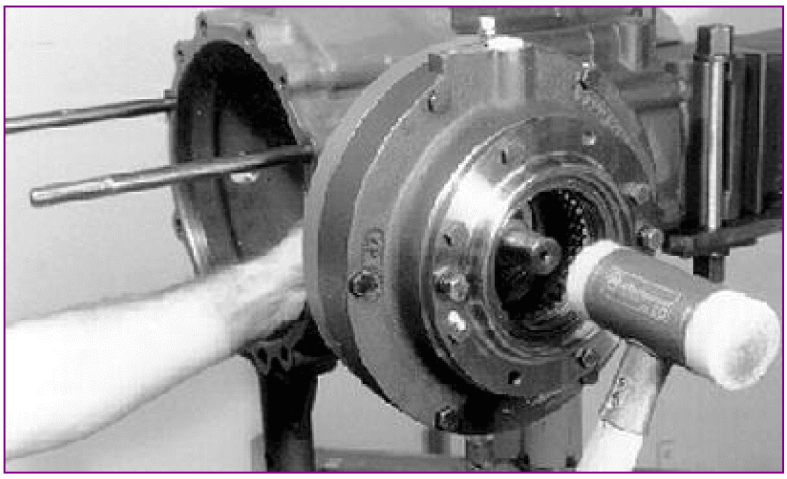
LEGEND:

1 - Half-Clamps (2 used)
2 - Cap Screw (4 used)
3 - MFWD Drive Shaft

To remove MFWD drive shaft (3) (if equipped), remove and discard four cap screws (2) and two half-clamps (1) at front axle. Slide drive shaft from transmission output shaft.

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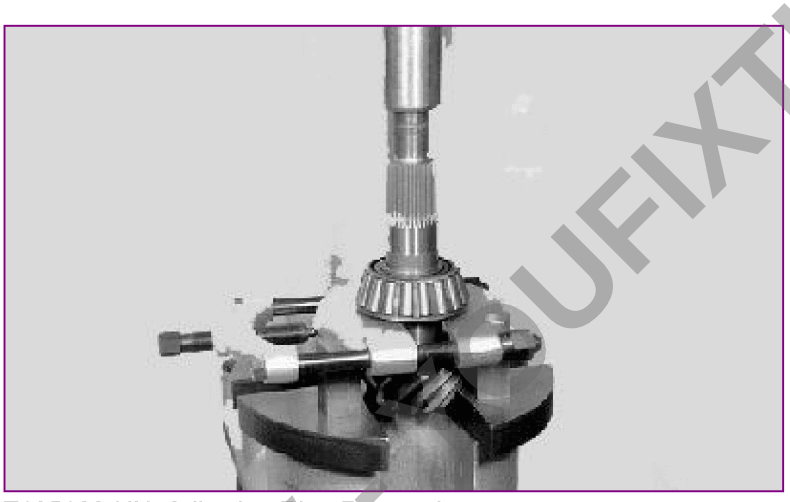
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4. 

T105106-UN: Pinion Shaft Removal

Drive pinion shaft from park brake housing using a soft mallet.

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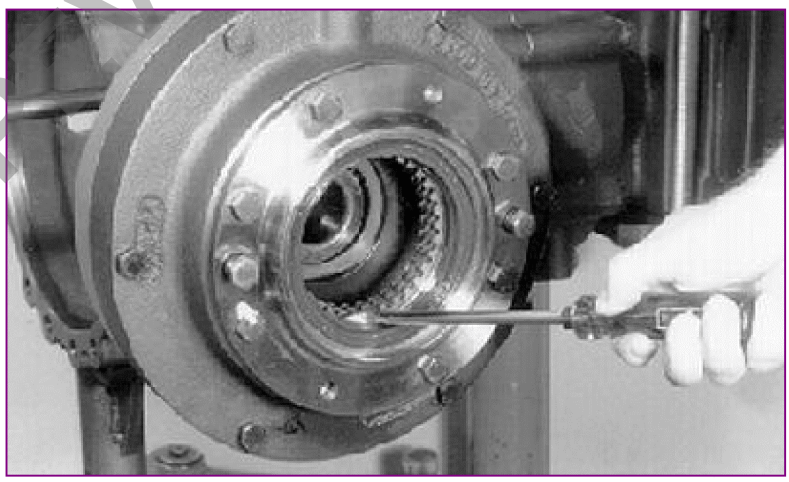
5. 

T105108-UN: Adjusting Ring Removal

Remove adjusting ring from shaft.

6. Remove bearing from pinion shaft using a knife edge puller.

---

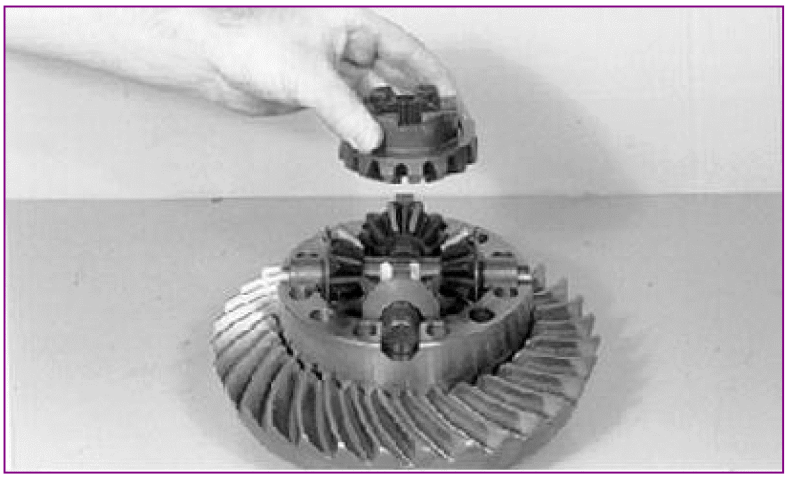
7. 

T105109-UN: Pinion Shaft Seal Removal

Remove pinion shaft seal from housing.

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5. 

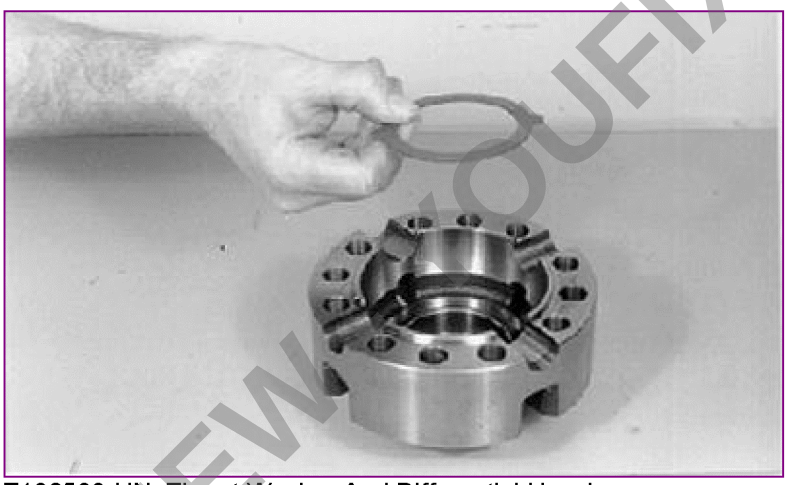
T106499-UN: Side Gear Installation

Install side gear.

---

6. *NOTE:*

A light coat of grease on the back side of thrust washer may be used to keep the washer in place during housing assembly.



T106500-UN: Thrust Washer And Differential Housing

Install thrust washer into differential lock side of housing.

7. **IMPORTANT:**

Failure to properly align and seat thrust washer tabs with slots in case half could lead to differential failure.

Assemble differential housing, keeping pinion gear thrust washer tabs aligned with slots in ring gear half of housing.

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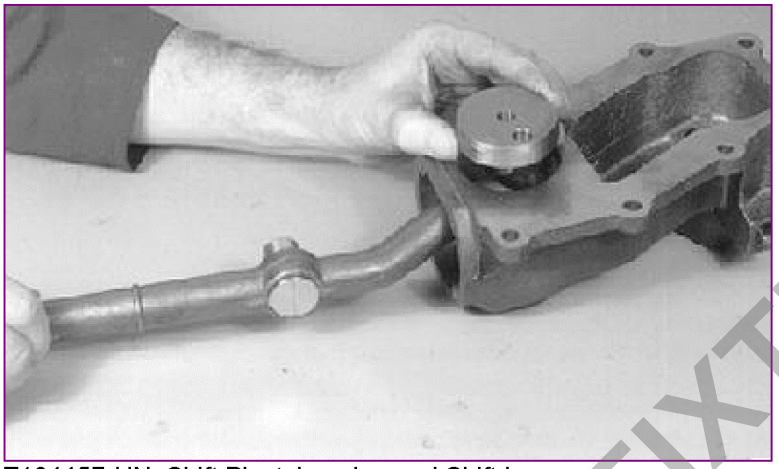
8 - Flat Gasket
9 - Shift Rail (3rd/4th Speed)
10 - Shift Rail (1st/2nd Speed)
11 - Shift Control Housing

Install pivot pin (2) into gearshift lever (1).

---

6. *NOTE:*

See illustration Shift Lever Housing (Group 0315) in step 5 for callout identification.



T104457-UN: Shift Pivot, housing and Shift Lever

Install shift pivot (3) into the shift control housing (11) at the same time as installing gearshift lever (1).

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7. *NOTE:*

See illustration Shift Lever Housing (Group 0315) in step 5 for callout identification.



T104458-UN: Pin

Install pin (4) in the shift pivot (3).

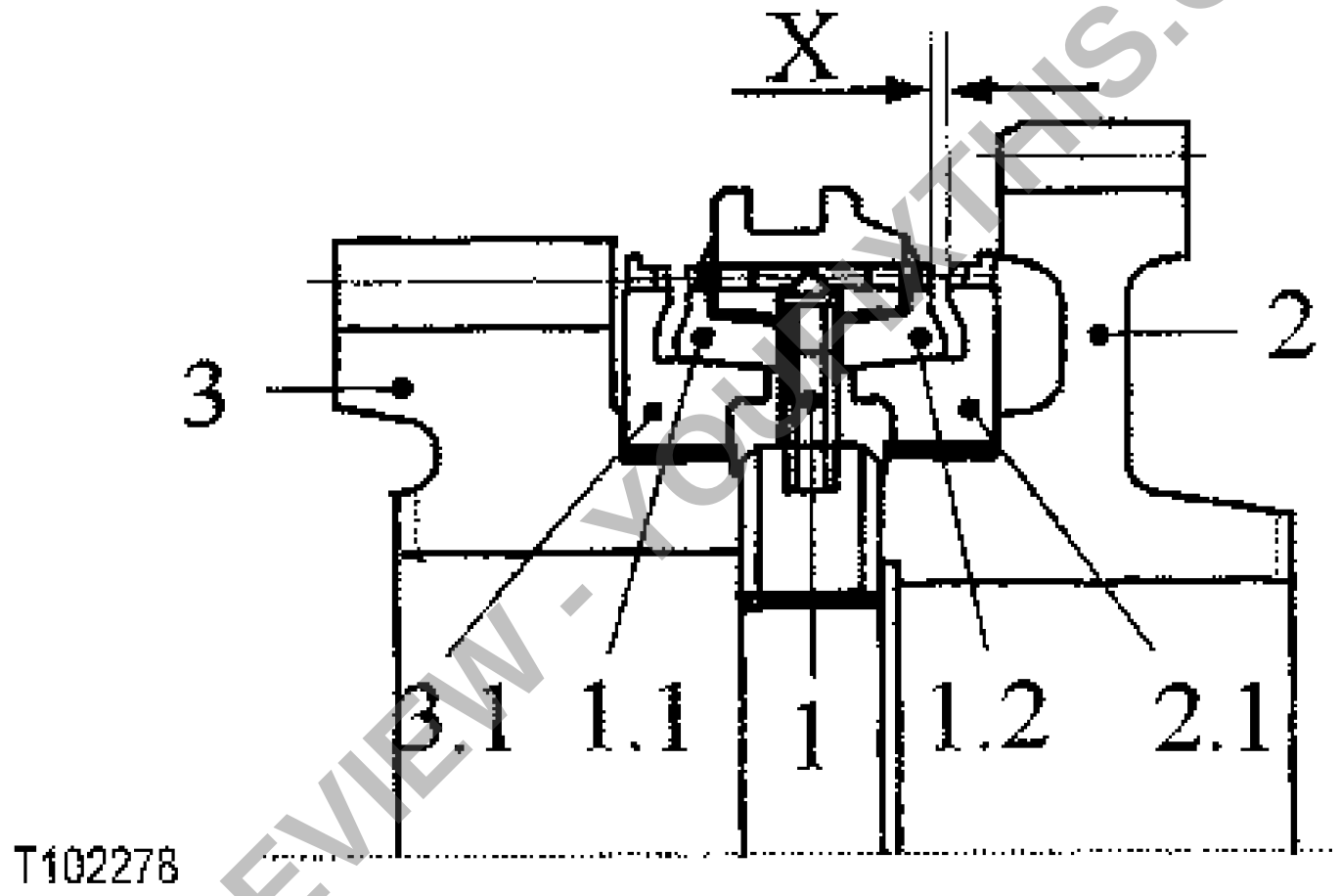
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8. *NOTE:*

See illustration Shift Lever Housing (Group 0315) in step 5 for callout identification.

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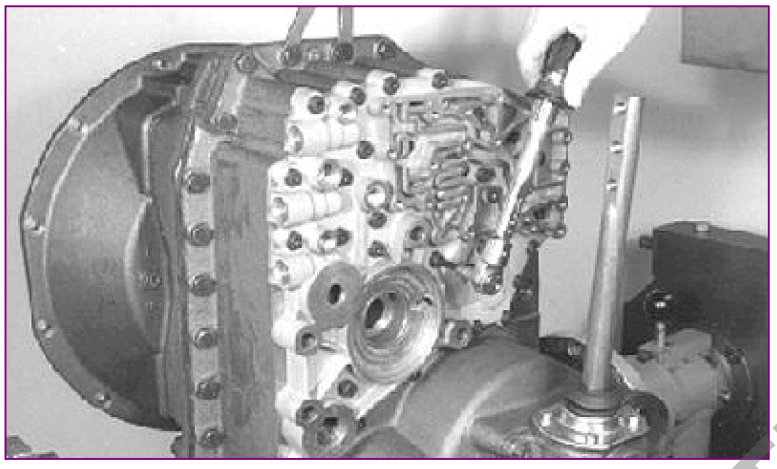
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T104425-UN: M8 Dowels

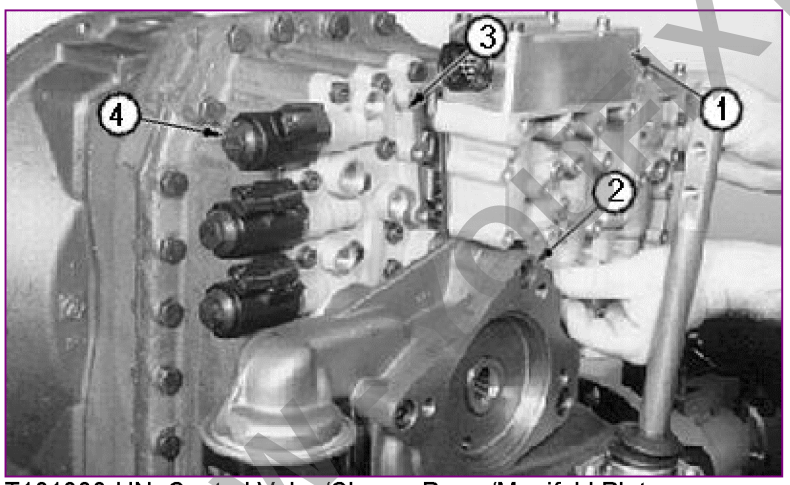
Install two M8 dowels (arrows).

16. Install flat gasket.

---

17. 

T104426-UN: Control Valve Cap Screws



T101330-UN: Control Valve/Charge Pump/Manifold Plate

LEGEND:

1 - Control Valve
2 - Charge Pump
3 - Manifold Plate
4 - Solenoid (3 used)

Install manifold plate.

18. Install cap screws. Starting with inside cap screws first and continuing to the outside. Tighten cap screws to specification.

Item	Measurement	Specification
Transmission Control Valve Manifold Plate	Torque	23 N·m (204 lb-in.)

19. Install solenoids (4). See Remove and Install Manifold Plate and Solenoids-Manual Shift . (Group 0360)

20. Install control valve (1). See Remove and Install Control Valve-Manual Shift . (Group 0360.)

21. Install charge pump (2). See Remove and Install Transmission Charge Pump-Manual Shift . (Group 0360.)

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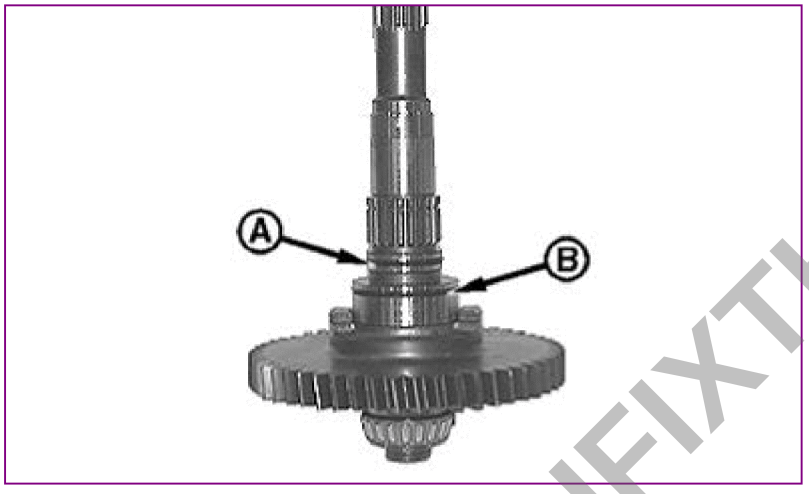
B - Spring
C - Snap Ring
D - Backing Plate
E - Sliding Sleeve

Compress spring (B) and remove snap ring (C), using DFT1163 snap ring removal and installation tool and a press. See DFT1163 MFWD Snap Ring Removal and Installation Tool (Group 9900) for instructions to make tool.

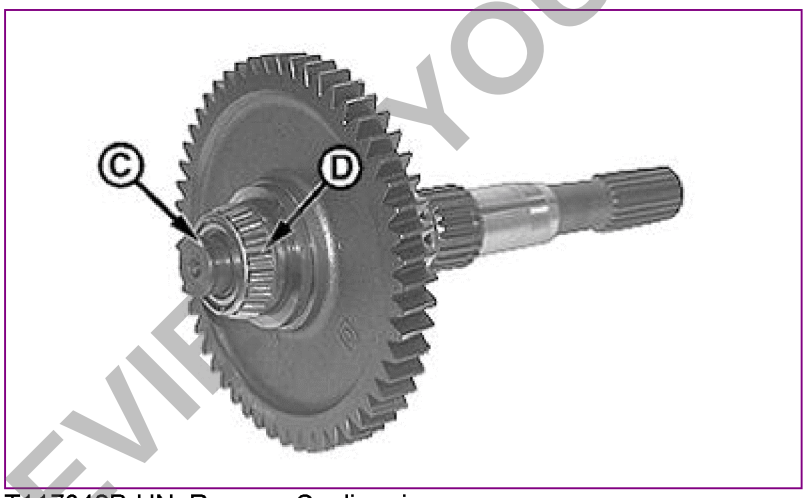
2. Remove backing plate (D) and compression spring (B).

3. Lightly pry up on sliding sleeve (E) and lift up off of shaft.

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4. 

T117341B-UN: Remove O-Rings



T117342B-UN: Remove Sealing ring

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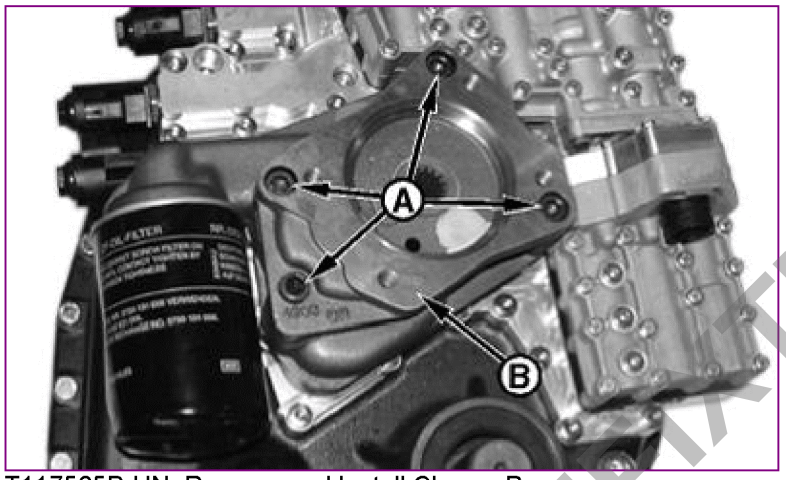
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tm1884 - 310SG and 315SG Backhoe Loader Repair
Remove and Install Transmission Charge Pump-Powershift

Remove and Install Transmission Charge Pump-Powershift

1. *NOTE:*

   Disassemble and assemble charge pump. See Disassemble and Assemble Transmission Charge Pump-Manual Shift and Powershift . (Group 0360)



T117565B-UN: Remove and Install Charge Pump

LEGEND:

A - Socket Head Screw (4 used)
B - Pump

Remove hydraulic pump. See Remove and Install Hydraulic Pump . (Group 2160)

2. Remove charge pump socket head screws (A) and remove charge pump (B) and shaft.

3. Install dowels into manifold plate to guide charge pump when installing.

4. *NOTE:*

   Make sure stop is pushed down until it contacts needle bearing assembly. Stop must remain in place while installing pump.

   Install pump and shaft (shaft installed in pump) into transmission drive shaft, aligning pump on dowels. Apply cure primer, then thread lock and sealer (medium strength) to threads of cap screws. Tighten socket head screws (A) to specification.

Item	Measurement	Specification
Charge Pump-to-Transmission Socket Head Screws	Torque	115 N·m (85 lb-ft)

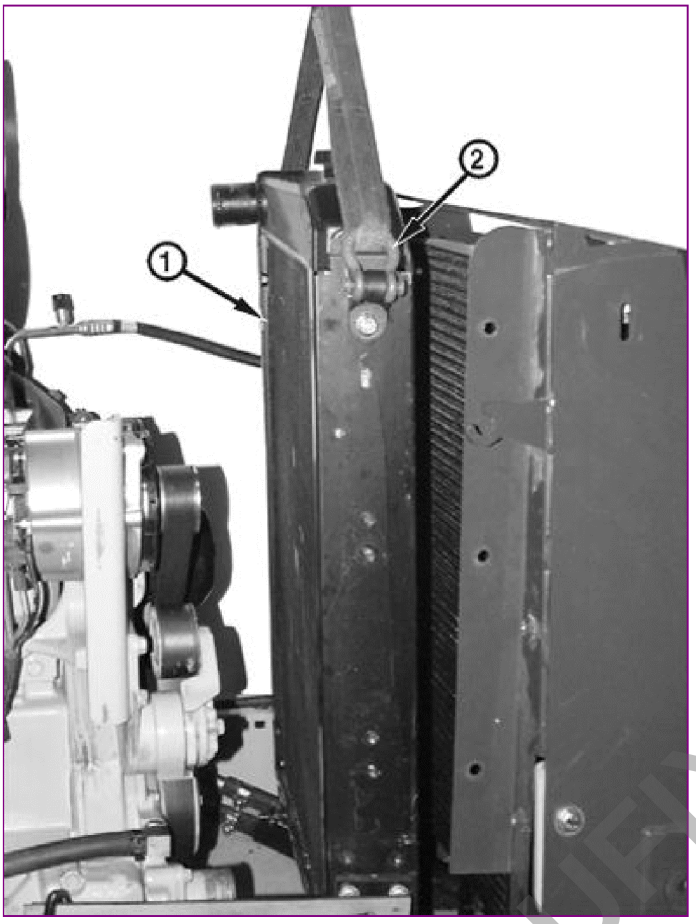
5. Install hydraulic pump. See Remove and Install Hydraulic Pump . (Group 2160)

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18. 

T133460B-UN: Radiator With Lifting Brackets Attached

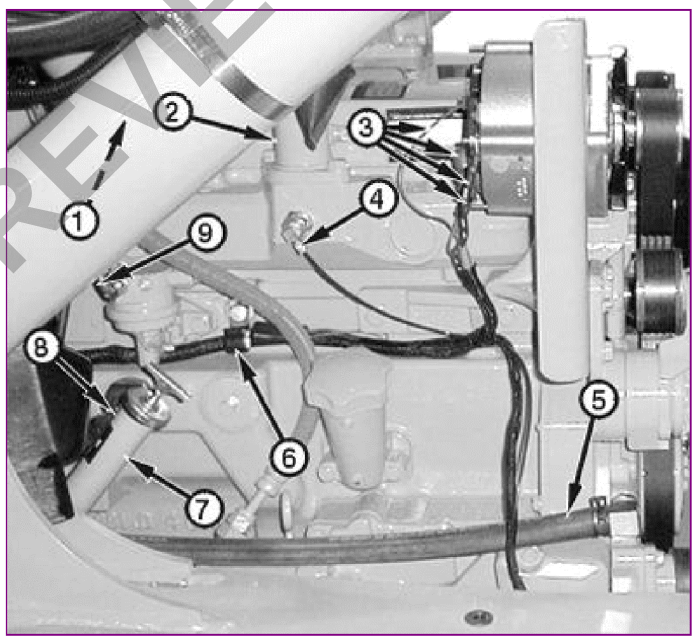
LEGEND:

1 - Radiator
2 - Lifting Bracket (2 used)

Install two lifting brackets (2) to radiator as shown. Connect hoist to lifting brackets and remove radiator (1).

19. Put a piece of corrugated cardboard against the back side of the oil cooler to protect the oil cooler fins when engine is being removed.

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20. 

T133458B-UN: Right Side Of Engine

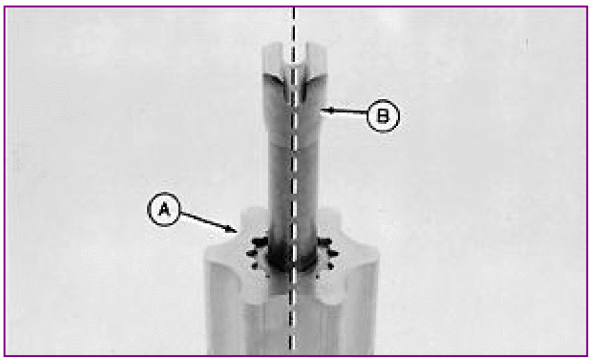
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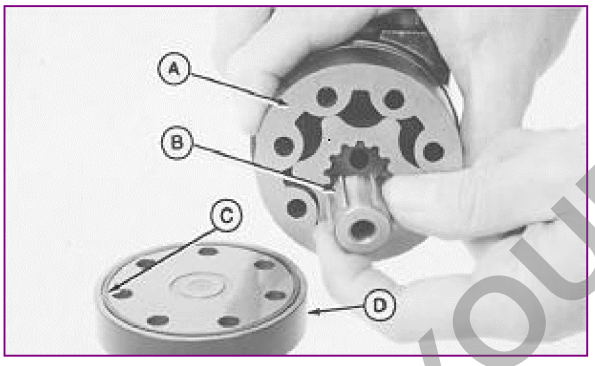
T5835AG-UN: Drive Shaft

LEGEND:

A - Gerotor Star
B - Drive Shaft

Install gerotor star (A) on drive shaft so root of tooth is in alignment with groove in the end of drive shaft (B).

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7. 

T92297-UN: Gerotor Ring

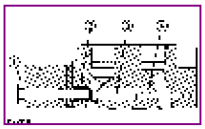
LEGEND:

A - Gerotor Ring
B - Spacer
C - O-Ring (2 used)
D - End Cap

Install O-ring (C) into gerotor ring (A) and end cap (D).

8. Install gerotor ring and spacer (B).
9. Install end cap.
10. Clean and dry cap screws before installing.

---

11. 

T127352-UN: Manual Steering Check Valve

LEGEND:

1 - Cap Screw
2 - Sleeve
3 - Pin
4 - Ball

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tm1884 - 310SG and 315SG Backhoe Loader Repair Specifications

Specifications

Item	Measurement	Specification
Brake Valve Plugs	Torque	54-62 N·m (40-45 lb-ft)
Brake Valve Assemblies Cap screws	Torque	30-38 N·m (22-25 lb-ft)
Brake Adapter Valve Assemblies	Torque	40.6-47.5 N·m (30-35 lb-ft)
Brake Valve Plugs	Torque	61-81.4 N·m (45-60 lb-ft)
STC Fitting Connectors	Torque	34 N·m (25 lb-ft)
Brake Light Switch	Torque	20 N·m (177 lb-in.)
Pedal Stop Cap Screw	Clearance	0.13- 0.38 mm (0.005-0.015 in.)
Brake Pedal Travel		
Dual Brake Pedal Travel (lock bar engaged)	Distance	95 mm (3.75 in.) maximum
Single Brake Pedal Travel (lock bar disengage)	Distance	114 mm (4.5 in.)

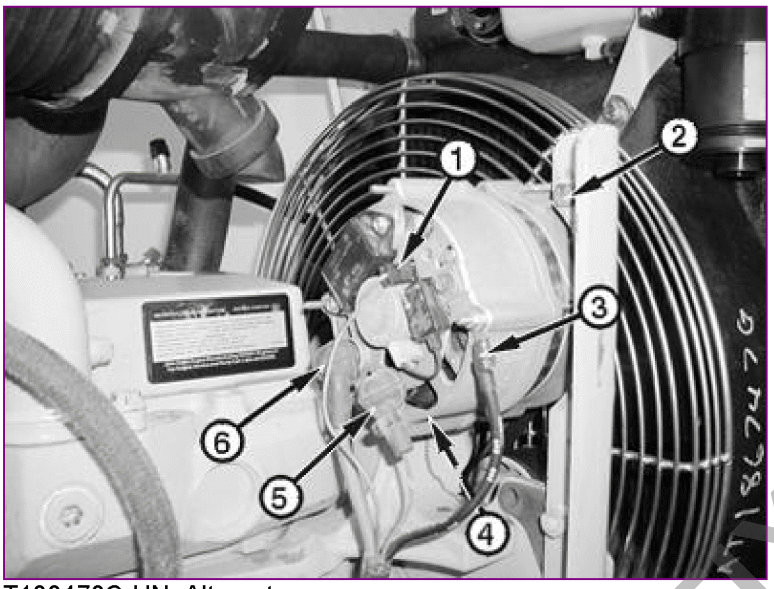
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tm1884 - 310SG and 315SG Backhoe Loader Repair
Remove and Install Alternator

Remove and Install Alternator



T133470C-UN: Alternator

LEGEND:

1 - M39 Purple Wire (“W” terminal)
2 - Cap Screw
3 - G02 Black Wire (“Ground” terminal)
4 - Nut, Bushing, and Cap Screw (not visible)
5 - P13 Red Wire (“D+” terminal)
6 - B11 Red Wire (“B+” terminal)

CAUTION:

Before working on machine with loader in raised position, install boom lock bar.

IMPORTANT:

Disconnect battery ground cable to prevent accidental grounding of alternator wiring leads.

1. Raise loader and engage boom lock bar.
2. Disconnect battery ground (-) cable.
3. Open engine hood fully.
4. Tag and disconnect wires (1, 3, 5, and 6) from alternator.
5. Remove fan guard to access belt tensioner.
6. Insert a 1/2 in. drive socket wrench into square hole in belt tensioner and pull belt tensioner away from belt. Remove belt from alternator sheave.
7. Remove cap screw (2) and cap screw, bushing, and nut (4) to remove alternator.

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tm1884 - 310SG and 315SG Backhoe Loader Repair Specifications

Specifications

Item	Measurement	Specification
RIVNUT® (KREMNUT) Fastener	Torque	68-74 N·m (50-55 lb-ft)

RIVNUT is a registered trademark of The BF Goodrich Co.

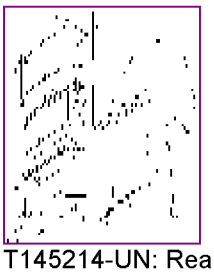
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tm1884 - 310SG and 315SG Backhoe Loader Repair
Rear Windows-Remove and Install (S.N. -920856)

Rear Windows-Remove and Install (S.N. -920856)



T145214-UN: Rear Windows

LEGEND:

1 - Complete Window Assembly
2 - Screw (8 used)
3 - Left Lower Guide
4 - Left Upper Guide
5 - Screw (2 used)
6 - Latch
7 - Shim
8 - Grommet
9 - Nut
10 - Right upper Guide
11 - Seal
12 - Weather Strip
13 - Seal
14 - Seal Kit
15 - Upper Window
16 - Screw
17 - Right Lower Guide
18 - Middle Window
19 - Label
20 - Label
21 - Lower Window
22 - Isolator
23 - Isolator
24 - Nut
25 - Screw
26 - Stand-Off Spacer (20 used)
27 - Right Rear Side Window
28 - Left Rear Side Window
29 - Cap Screw (6 used)
30 - Washer (6 used)

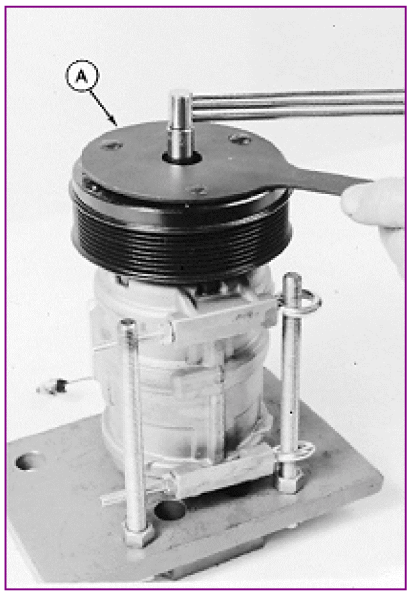
1. Move middle window (18) and upper window (15) to lowest position.
2. With screw driver remove upper window guides (4 and 10).
3. Remove one latch (6) from windows (15 and 18).
4. Lift and tip windows to remove.
5. Remove screw and nut (24 and 25) on both sides.
6. Lift and tip lower window (21) to remove.
7. Disassemble parts as shown.
8. Inspect for worn or damaged parts. Replace if necessary.
9. Install seals (11, 12 and 13) with small amount of adhesive.

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tm1884 - 310SG and 315SG Backhoe Loader Repair
Compressor Clutch Disassemble and Assemble

Compressor Clutch Disassemble and Assemble

1. 



LEGEND:

A - JDG747 Compressor Clutch Spanner
B - Clutch Shaft Bolt
C - Clutch Hub
D - Pulley Snap Ring
E - Pulley
F - Clutch Coil Snap Ring
G - Clutch Coil
H - Shims

Mount compressor on D01006AA Bench Mounted Holding Fixture or DFRW20 Compressor Holding Fixture See DFRW20 Compressor Holding Fixture (Group 9900) using two 6 in. x 1/4 in. eye bolts with nuts as illustrated.

2. Remove dust cover.

3. Hold the clutch hub using JDG747 Compressor Clutch Spanner (A) and remove the clutch shaft bolt (B).

4. Remove the clutch hub (C). Remove the shims (H) from the clutch hub and save for installation.

5. Remove and discard snap ring (D). Remove the pulley (E) using a plastic hammer or JDG220 Puller, JDG748 Jaws and JDG771 Forcing Screw.

6. Disconnect the clutch coil lead wire. Remove and discard the snap ring (F) and remove the clutch coil (G).

NOTE:

The bearing in the pulley is NOT serviceable.

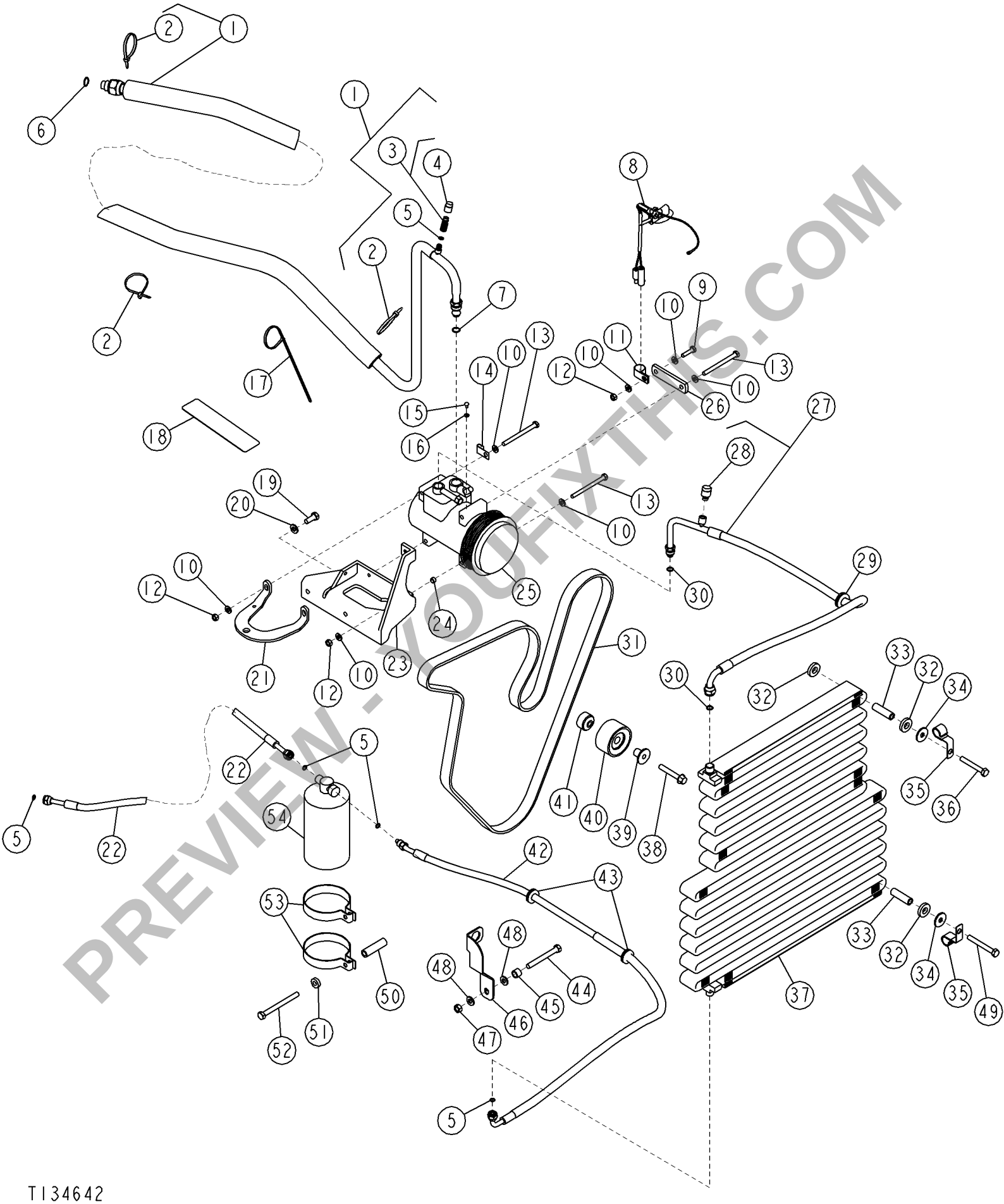
7. Check pulley bearing operation. Replace pulley and bearing as required.

8. Install the clutch coil and new snap ring with flat side of the snap ring down. Connect the clutch coil lead wire.

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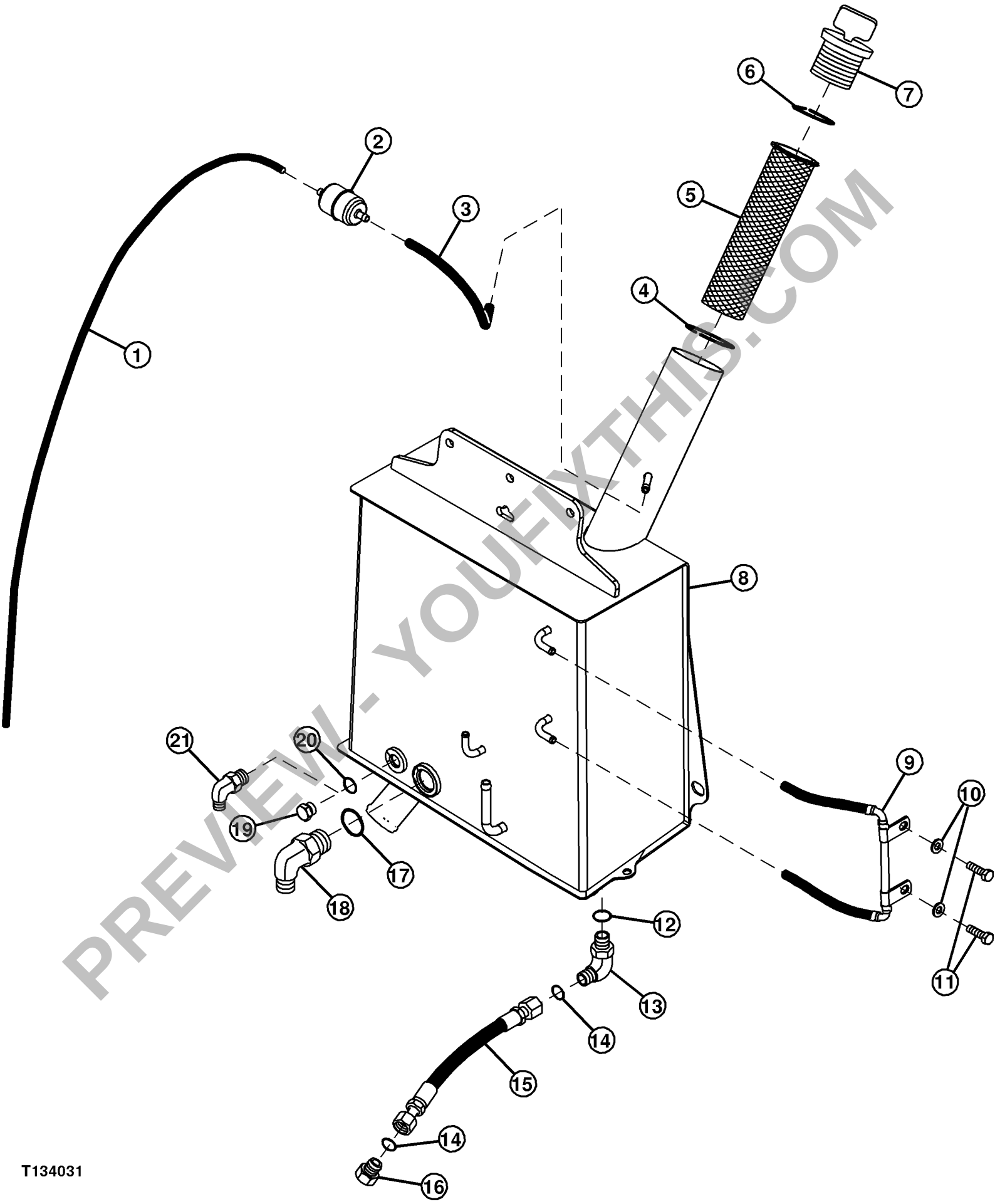
Condenser Assembly Diagram [T134642]



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Hydraulic Reservoir-Exploded View [T134031]



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tm1884 - 310SG and 315SG Backhoe Loader Repair
Service Equipment and Tools

Service Equipment and Tools

NOTE:

Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

Spanner Wrench.....JDG347
Used to remove cylinder spanner nut.

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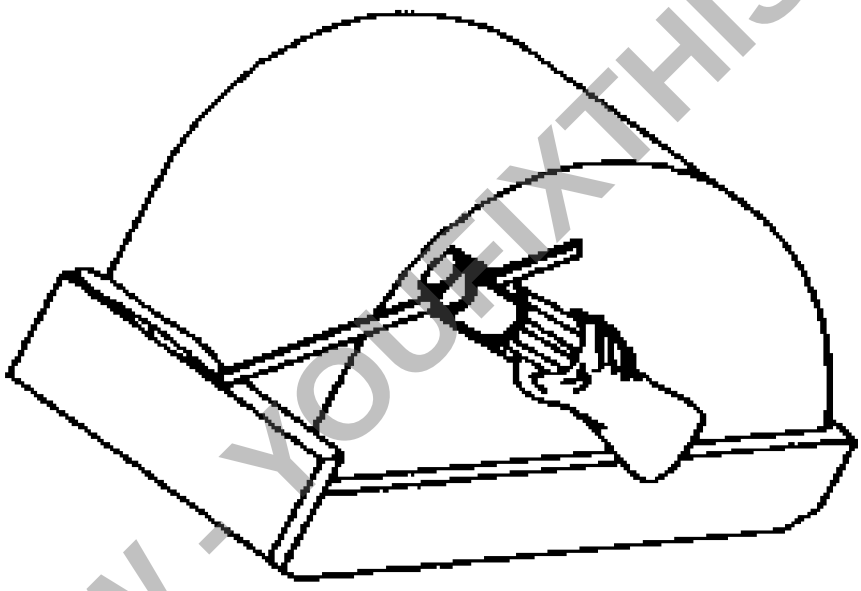
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15. Install clamp (2).

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T7535AK (CV)

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2. Stop engine and set park brake.
3. Remove bucket and bucket links. See Remove and Install Bucket and Bucket Links . (Group 3302)
4. Remove quick coupler (if equipped).
5. Remove bucket cylinder. See Remove and Install Backhoe Bucket Cylinder-125 Series . (Group 3360) Let hoses and lines hang to the side.
6. Remove outer upper (8) and outer lower (10) wear pads. Remove shims (7) (if equipped).
7.

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate lifting device. Make sure hoist is attached to dipperstick extension. When extendible cylinder rod end pin is re moved, dipperstick extension can drop suddenly. Dipperstick extension approximate weight 386 kg (850 lb).

Item	Measurement	Specification
Dipperstick Extension	Approximate Weight	385 kg 850 lb

Install a hoist and chain to dipperstick extension (A)

8. Remove snap ring and remove extendible dipperstick cylinder rod end pin (C).
9. Raise boom and put dipperstick extension in vertical position (B). While raising boom and moving dipperstick toward machine with extension supported on the ground, raise boom until extension can be removed.
10. Inspect internal dipperstick wear pads (4). Replace if necessary.

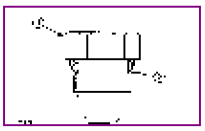
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tm1884 - 310SG and 315SG Backhoe Loader Repair
Shut-off Plug Auxiliary Disassemble and Assemble

Shut-off Plug Auxiliary Disassemble and Assemble



T127068-UN: Shut-Off Plug

LEGEND:

1 - Shut-Off Plug
2 - Special Seal

1. Remove seal, if necessary.
2. Put clean hydraulic oil on seal before assembly.
3. Install special seal using JDG1328 Seal Installer.
4. Plug (1) installation torque.

Item	Measurement	Specification
Backhoe Control Valve		
Shut-Off Plug (Installation)	Torque	65 ± 7 N·m (48 ± 5 lb-ft)

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5.

CAUTION:

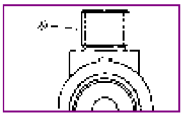
The approximate weight of swing cylinder is 48 kg (106 lb).

Item	Measurement	Specification
Swing Cylinder	Weight	48 kg (106 lb) Approximate

Attach cylinder to a hoist using a lifting strap.

6. Remove pin (C) through swing frame and cylinder rod end.

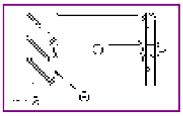
7. Remove cylinder.

8. 

T6131AK-UN: Swing Cylinder Bushings

Inspect swing cylinder bushings (A). Remove if replacement is necessary.

9. Install new bushings even with trunnion using driver set.

10. 

T7531CA-UN: Bushing Location

Inspect upper and lower trunnion block bushings. Remove if replacement is necessary.

11. Install new bushings using driver set. Align grease passages in trunnion block and frame with passage in bushing. Be sure lower trunnion bushing is pushed into seat flange.

Press upper bushing even with top of trunnion block.

12. **IMPORTANT:**

Be sure hydraulic fittings in swing cylinder are tightened to specification. Cylinder movement and hydraulic pressure can loosen fittings and cause a leak.

If hydraulic fittings were removed from cylinder, install and tighten fittings.

13. Install lower trunnion spacer washer.

14. Install cylinder into lower trunnion.

15. Install pin through swing frame and cylinder rod end.

16. Install trunnion over upper cylinder bushings.

17. Install trunnion cap screws and tighten.

18. Connect hydraulic lines to cylinder.

TX,31,RR7703-19-01SEP06

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