# 244J and 304J Loaders Repair

## TECHNICAL MANUAL
## 244J and 304J Loaders Repair

**TM2207 20NOV06 (ENGLISH)**

**For complete service information also see:**




**Worldwide Construction And Forestry Division**

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## Recognize Safety Information

**This is the safety alert symbol. When you see this symbol on your machine or in this manual, be alert for the potential of personal injury.**

Follow the precautions and safe operating practices highlighted by this symbol.

A signal word — DANGER, WARNING, or CAUTION — is used with the safety alert symbol. DANGER identifies the most serious hazards.

On your machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.

T133555 –UN–28AUG00



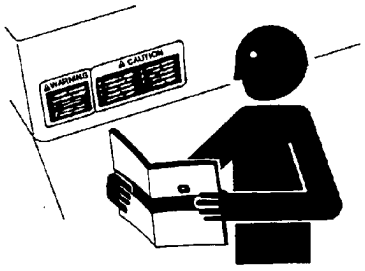

T133588 –19–28AUG00

TX03679,00016CC –19–01SEP06–1/1

## Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently. Keep safety signs in good condition. Replace missing or damaged safety signs. Replacement safety signs are available from your John Deere dealer.

Be sure all operators of this machine understand every safety message. Replace operator's manual and safety labels immediately if missing or damaged.

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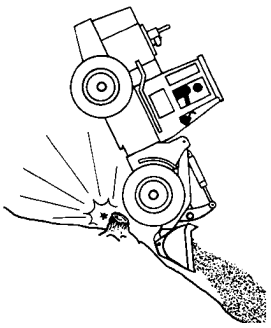
## Operating on Slopes

Avoid side slope travel whenever possible. Drive up steep slope in forward and down in reverse.

Select low gear speed before starting down slope. The grade of the slope will be limited by ground condition and load being handled.

Use service brakes to control speed. Sudden brake application with a loaded bucket on downhill side could cause machine to tip forward.



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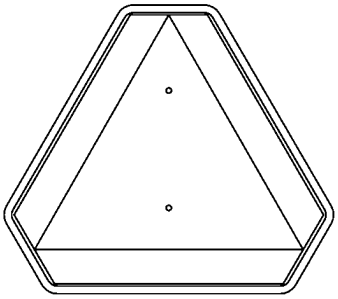
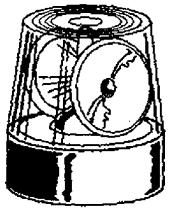
## Operating Or Traveling On Public Roads

Machines that work near vehicle traffic or travel slower than normal highway speeds must have proper lighting and markings to assure they are visible to other drivers.

Install additional lights, beacons, slow moving vehicle (SMV) emblems, or other devices and use as required to make the machine visible and identify it as a work machine. Check state and local regulations to assure compliance. Keep these devices clean and in working condition.





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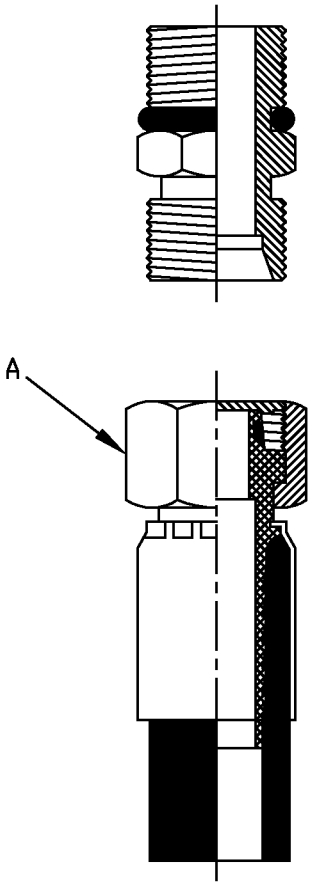
## Metric 24° O-Ring Seal DIN 20078 Service Recommendations

| METRIC 24° O-RING SEAL DIN 20078 TORQUE VALUES | | | |
|---|---|---|---|
| **Fitting Tube OD Size** | **Heavy Fitting Size** | **Light Fitting Size** | **Torque** |
| **mm** | **mm** | **mm** | **Turns** |
| 6 | — | M12 x 1.5 | Hand tighten so O-ring contacts seat plus an additional 1/4—1/3 turn using a wrench |
| 8 | M16 x 1.5 | M14 x 1.5 | |
| 10 | M18 x 1.5 | M16 x 1.5 | |
| 12 | M20 x 1.5 | M18 x 1.5 | |
| 14 | M22 x 1.5 | — | |
| 15 | — | M22 x 1.5 | |
| 16 | M24 x 1.5 | — | |
| 18 | — | M26 x 1.5 | |
| 20 | M30 x 2 | — | |
| 22 | — | M30 x 2 | |
| 25 | M36 x 2 | — | |
| 28 | — | M36 x 2 | |
| 30 | M42 x 2 | — | |
| 35 | — | M45 x 2 | |
| 38 | M52 x 2 | — | |




T113889

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*NOTE: These fittings are also referred to as EO and EO-2 Bite Type or Ermeto style fittings.*

**IMPORTANT: In this style of fittings, there are “heavy” and “light” designs. Usually “heavy” is used for pressure lines and “light” for return lines.**

**Some “heavy” and “light” sizes can be threaded together but do not seal properly. Be sure not to mix “heavy” and “light” fittings.**

1. Inspect the fitting sealing surfaces. They must be free of dirt scratches, nicks, and burrs.

**Continued on next page**

# Section 01
# Wheels

## Contents

## Front Axle Brake and Differential Lock Assemblies Disassemble—244J

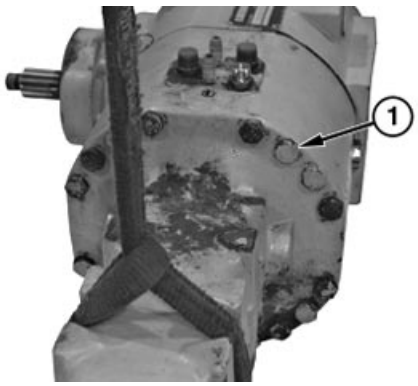
1. Remove right planetary cover and axle shaft. See Front Axle Planetary Drive Disassemble and Assemble. (Group 0250.)

**CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.**

**Specification**

Right Front Axle Housing 244J—Weight..... 102 kg (225 lb)

2. Support axle housing and remove cap screws (1). Slide axle housing away from differential housing.
3. Install M12 x 45 cap screws (2) and washer through plate and thread into piston housing. Tighten screws until bottomed out.
4. Remove park brake release screws (3) and U-shaped washer.
5. Evenly remove cap screws (2).
6. Using the threaded holes in piston housing and remove the housing using a suitable puller.

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**1—Cap Screw (16 used)**
**2—Cap Screw M12 x 45 (2 used)**
**3—Park Brake Release Screw (2 used)**

Continued on next page

OUO1017,0000B4C –19–22NOV04–1/4

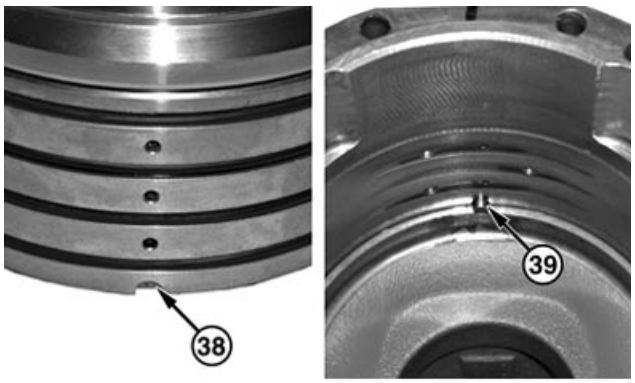
**IMPORTANT: Groove in piston housing must be aligned with locking screw in axle housing or axle parts will be damaged.**

30. Groove in piston housing (38) must line up with locking screw (39) when installing piston into axle housing.

31. Install two M12 cap screws into threaded holes of piston housing, and lower piston housing into axle housing, while lining up groove and locking pin.

32. Using a soft hammer tap on M12 cap screws until piston housing is seated on locking pin. Remove M12 cap screws.

**38—Groove in Piston Housing**
**39—Locking Screw**

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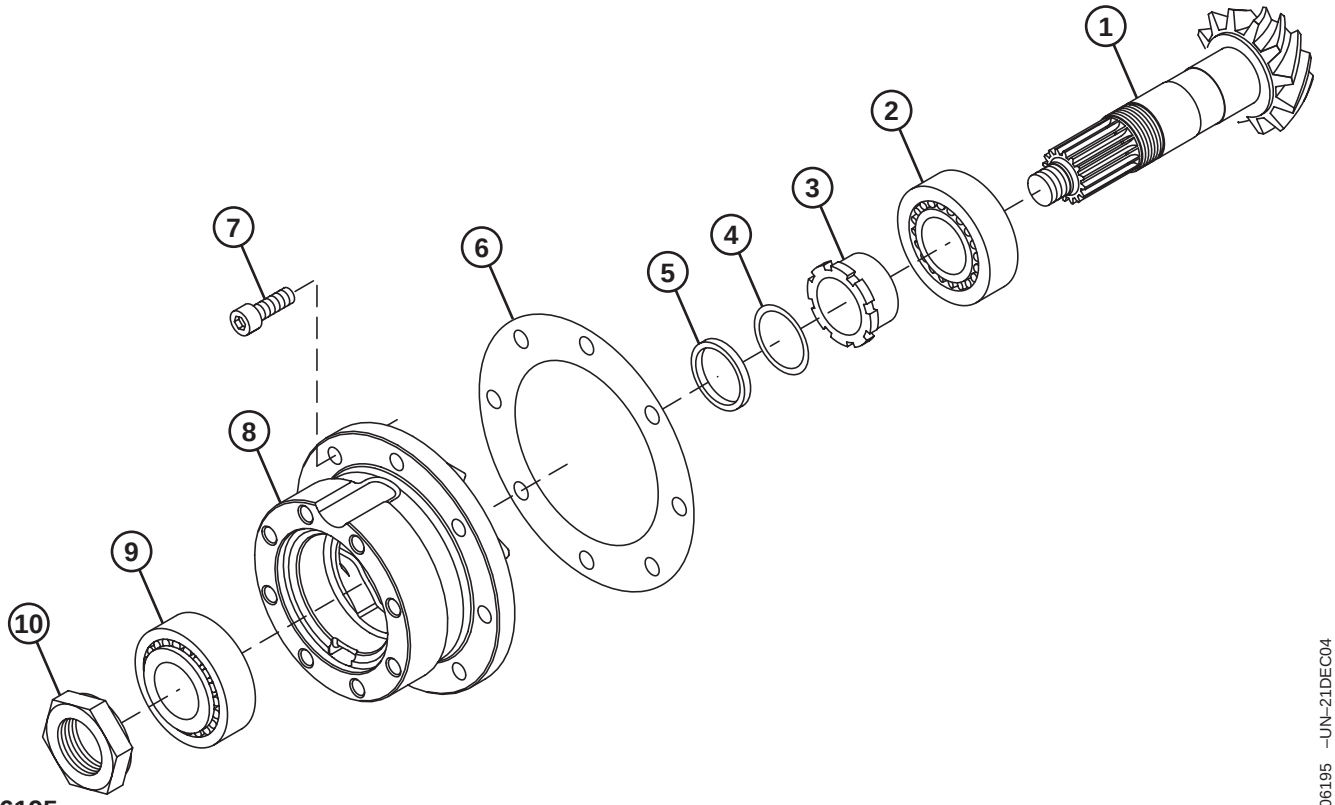


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**T206195**

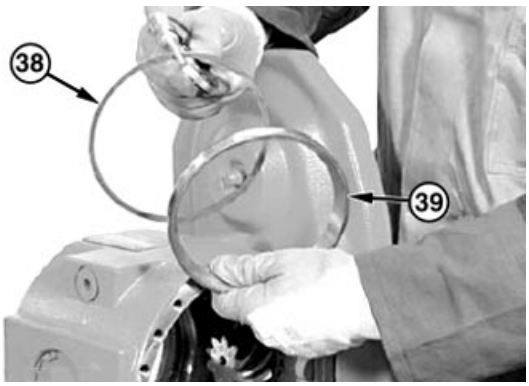
**1—Pinion Gear and Shaft**
**2—Inner Bearing**
**3—Speed Sensor Ring**
**4—Shim (as required)**
**5—Spacer**
**6—Shim (as required)**
**7—Socket Head Screw (8 used)**
**8—Housing**
**9—Outer Bearing**
**10—Nut**

2. Remove drum brake assembly. See Drum Brake Remove and Install. (Group 1011.)
3. Remove nut (10) using JDG1980 Pinion Nut Removal Tool.
4. Scribe a line on differential housing and on pinion bearing housing for determining location during installation.
5. Remove socket head screws (7) and remove housing (8) with pinion gear and shaft (1).
6. Support housing in press and press gear and shaft out of outer bearing (9).
7. Remove inner bearing (2) from shaft using a suitable puller.

**Continued on next page**

24. Create a pack of shims (38) with a value of approximately 0.37 mm (0.015 in). Install shims under bearing race (39) and install race into housing.

**38—Shims**
**39—Bearing Race**

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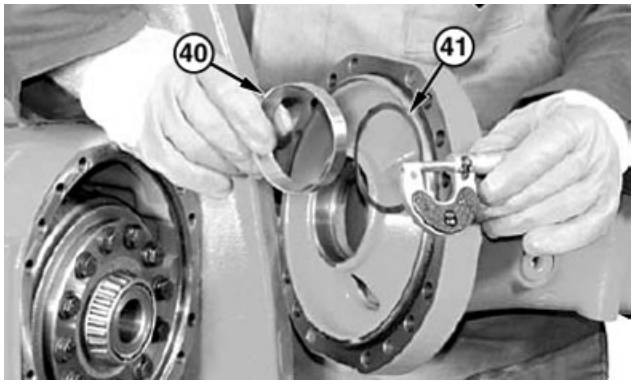
25. Install carrier assembly into housing.

26. Create a pack of shims (41) with a value of approximately 0.84 mm (0.033 in). Install shims under bearing race (40) and install race in axle housing.

**40—Bearing Race**
**41—Shims**

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27. Install at least eight cap screws (42) at different locations and tighten to specification.

**Specification**

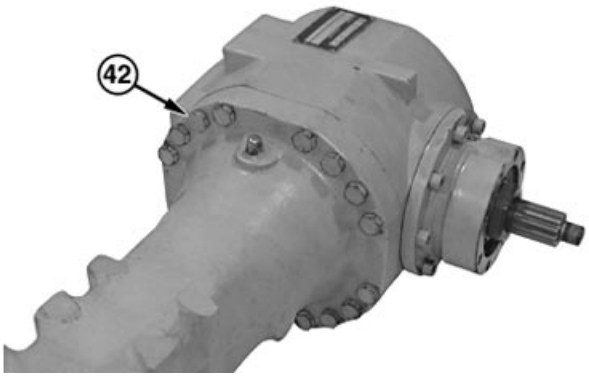
244J Left Front Axle Housing
Mounting Cap Screws—Torque ..... 128 N•m
94 lb-ft

28. Using internal spline socket from tool JDG1980, check pinion and carrier assembly rolling torque. Compare to specification.

**Specification**

Pinion and Carrier Assembly—
Rolling Torque ..... 120—180 Ncm
11—16 lb-in.

Add or subtract shims to achieve correct rolling torque.

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**42—Cap Screw (16 used)**

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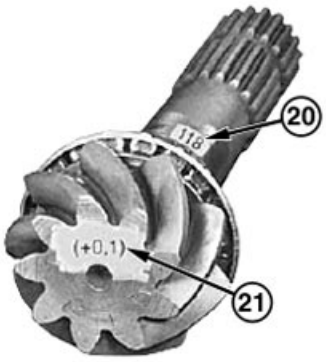
8. Check pinion gear marking (21) and pinion shaft marking (20). Add or subtract the markings on pinion gear and shaft to calculate cone point dimension.

| **Example Calculation:** | |
|---|---|
| 118.0 mm | PINION SHAFT MARKING (20) |
| + 0.1 mm | PINION GEAR MARKING (21) |
| = 118.1 mm | CALCULATED CONE POINT DIMENSION |

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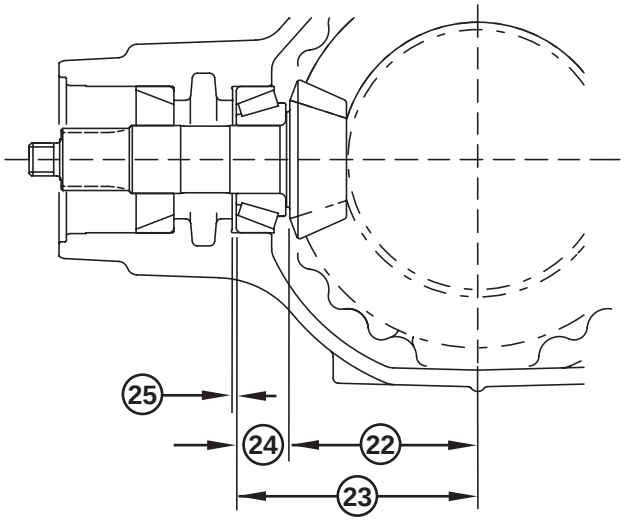
9. Determine your shim dimension for correct cone point adjustment. Add dimension (22) to dimension (24). The difference between dimension (19) and dimension (23) is your shim thickness (25). Add shims under inner bearing race to obtain calculated cone point dimension.

**20—Pinion Shaft Marking**
**21—Pinion Gear Variation**
**22—Calculated Cone Point Dimension**
**23—Bearing Height Measurement and Cone Point Dimension**
**24—Bearing Height Measurement**
**25—Shim Thickness**

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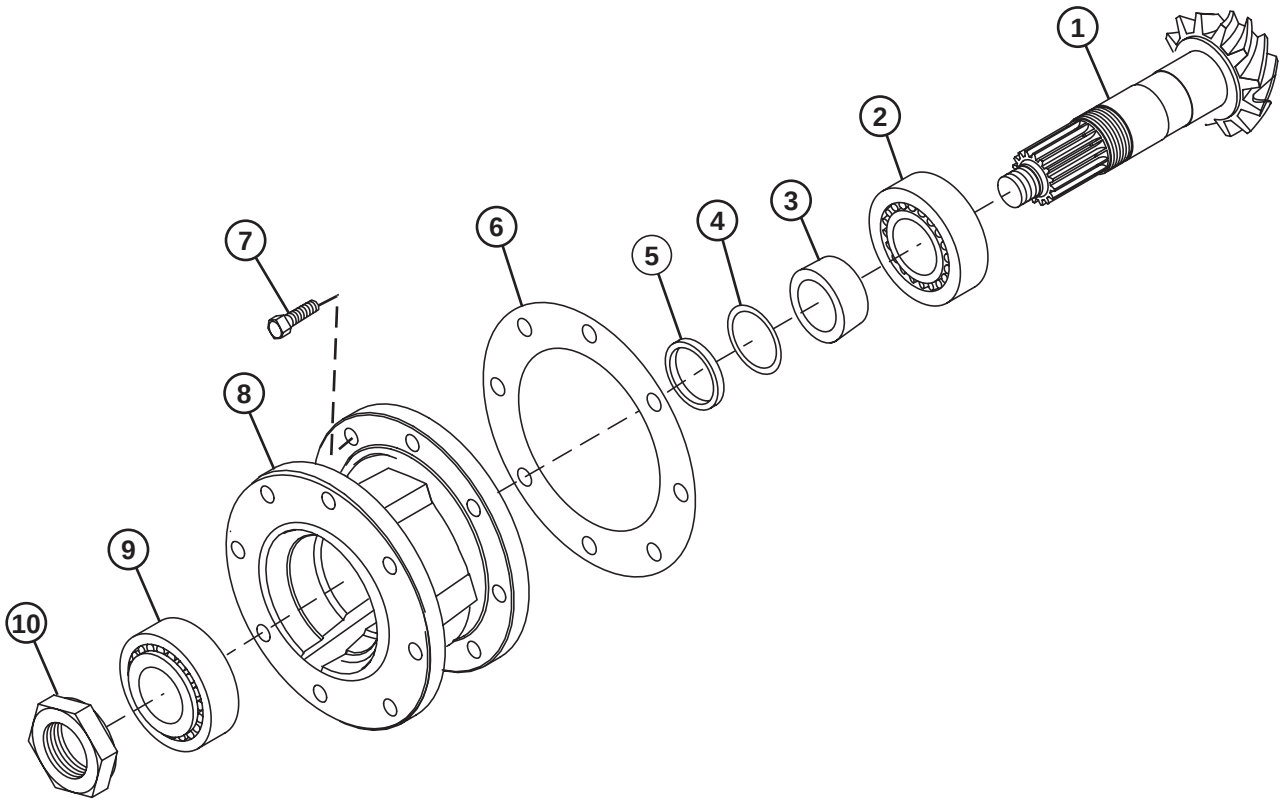
## Rear Axle Differential and Pinion Disassemble—244J




T207588



T207588 –UN–01FEB05

**1—Pinion Gear and Shaft**
**2—Inner Bearing**
**3—Speed Sensor Ring**
**4—Shim (as required)**
**5—Spacer**
**6—Shim (as required)**
**7—Cap Screw (8 used)**
**8—Housing**
**9—Outer Bearing**
**10—Nut**

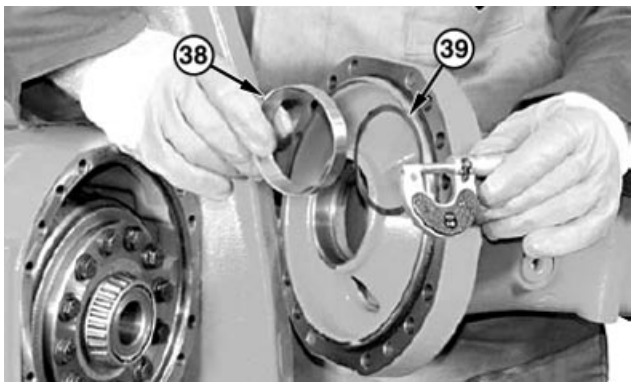
1. Remove nut (10) using JDG1980 Pinion Nut Removal Tool.
2. Scribe a line on differential housing and on pinion bearing housing for determining location during installation.
3. Remove cap screws (7) and remove housing (8) with pinion gear and shaft (1).
4. Support housing in press and press gear and shaft out of outer bearing (9).
5. Remove inner bearing (2) from shaft using a suitable puller.

**Continued on next page**

23. Create a pack of shims (39) with a value of approximately 0.37 mm (0.015 in). Install shims under bearing race (39) and install race into left side axle housing.

24. Install carrier assembly into housing.

25. Create a pack of shims (39) with a value of approximately 0.84 mm (0.033 in). Install shims under bearing race (38) and install race into right side axle housing.

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**38—Bearing Race**
**39—Shim Pack**

OUO1017,0000B52 –19–27JAN05–9/14

**CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.**

**Specification**

Axle Housing 244J—Weight .....102 kg
225 lb

26. Install left and right axle housing using at least eight cap screws (42) at different locations and tighten to specification.

**Specification**

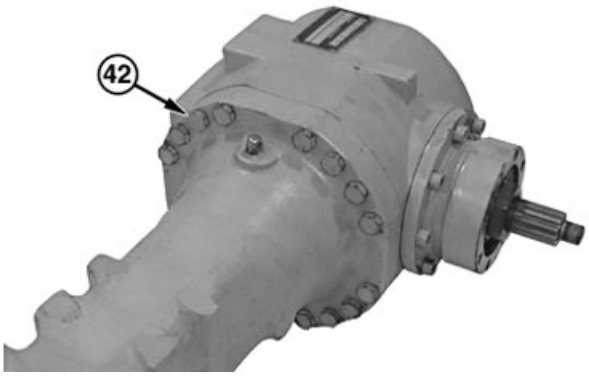
244J Axle Housing Mounting Cap Screws—Torque .....128 N•m
94 lb-ft

27. Using internal spline socket from tool JDG1980, check pinion and carrier assembly rolling torque. Compare to specification.

**Specification**

Pinion and Carrier Assembly—Rolling Torque ..... 120—180 Ncm
11—16 lb-in

Add or subtract shims to achieve correct rolling torque.

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**42—Cap Screw (16 used)**

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OUO1017,0000B52 –19–27JAN05–10/14

11. Install outer bearing onto JDG2014 pinion tool, insert tool and bearing into pinion housing and install inner bearing into housing and onto tool. Install other end of tool and hand tighten.

**IMPORTANT: When measuring make sure tip of measuring instrument is on the tool surface and not resting on the inner race of the bearing or inaccurate measurements will result.**

12. Measure to the top of the shaft. Be sure to measure to the top of the tool and not on the bearing inner race. Record this measurement.

13. Install speed sensor ring (7) and outer bearing (9) onto tool shaft. Install top piece of tool and thread until hand tight.

14. Measure to the top of tool. Record this measurement. Subtract the measurement recorded earlier. Add 0.12—0.13 mm to this number. This number is the thickness of the shims required to obtain correct pinion bearings rolling torque.

15. Lightly oil bearings with clean hydraulic oil and pinion shaft, bearings, speed sensor ring, and the required shims.

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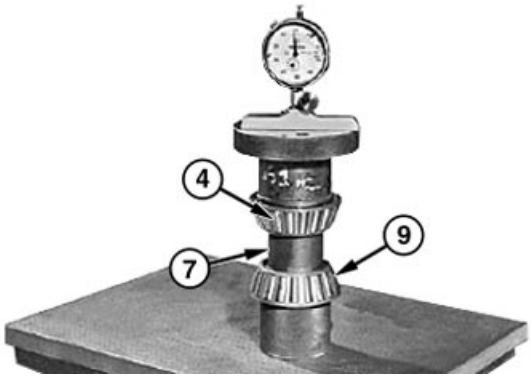


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**4—Inner Bearing**
**7—Speed Sensor Ring**
**9—Outer Bearing**

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OUO1017,0000B53 –19–27JAN05–5/10

# Section 03
# Transmission

## Contents

**IMPORTANT: If charge pump assembly was replaced, a new wear plate must be installed.**

**Make sure wear plate is orientated so port holes on wear plate align with port holes (16) on charge pump housing.**

14. Install coupler (9) and wear plate (8) using alignment marks to ensure proper orientation of port holes.

15. Install O-ring (15) and charge pump (7) using alignment marks on charge pump and charge pump housing.

16. Apply cure primer, then thread lock and sealer (medium strength) to threads of socket head screws (6). Install and tighten screws.

17. Install O-ring (5).

18. Install seal retainer (3) and O-ring (4).

19. Install main hydraulic pump, washers, and cap screws (1). Tighten screws to specification.

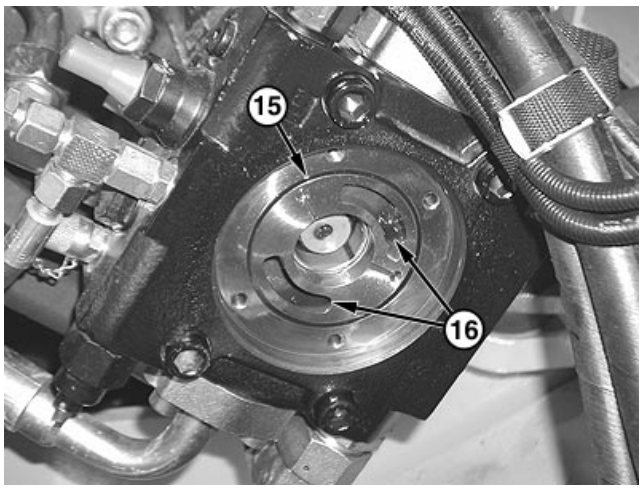
**Specification**

| | |
|---|---|
| Main Hydraulic Pump Mounting Cap Screws—Torque | 140 N•m<br>105 lb-ft |

20. Connect line (2).

21. Fill hydraulic reservoir to proper level. See Hydraulic Reservoir Oil. (Operator's Manual.)

22. Perform Hydrostatic Start-Up Procedure. (Group 0300.)




**15—O-Ring**
**16—Port Holes**

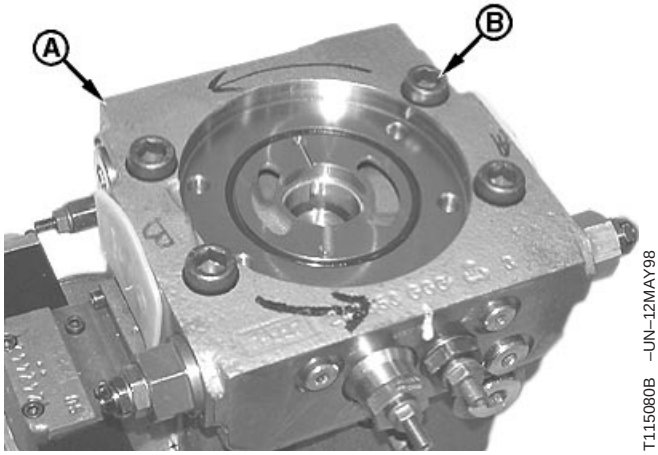


OUO1020,0001452 –19–21SEP04–5/5

3. Make a mark across port plate (A) and pump housing for assembly purposes.

4. Remove socket head screws (B) and port plate (A).

**A—Port Plate**
**B—Socket Head Screw (4 used)**

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CED,OUO1020,4106 –19–22SEP04–3/22

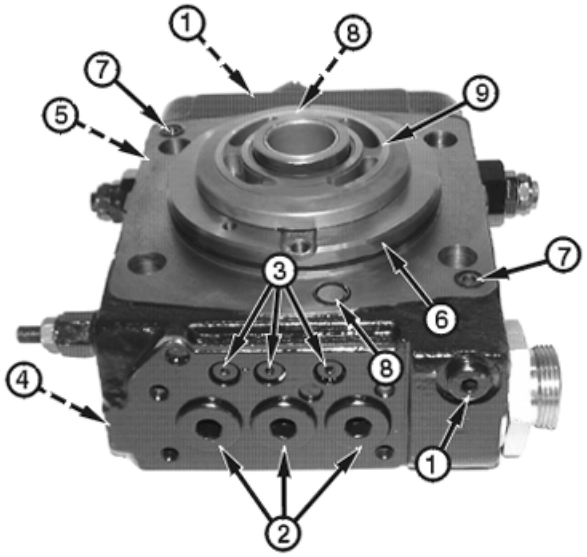
5. Remove valve plate (9).

6. Replace O-rings (6—8).

7. Replace O-rings on plugs (1—5).

8. Install plugs using the following torque specifications:

| Specification | |
|---|---|
| M26 x 1.5 Plug (4)—Torque | 60 N•m<br>44 lb-ft |
| M22 x 1.5 Plug (2)—Torque | 60 N•m<br>44 lb-ft |
| M12 x 1.5 Plug (1)—Torque | 20 N•m<br>177 lb-in. |
| M10 x 1.5 Plug (5)—Torque | 12 N•m<br>106 lb-in. |
| M8 x 1 Plug (3)—Torque | 5 N•m<br>45 lb-in. |

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**1—Plug (2 used)**
**2—Plug (3 used)**
**3—Plug (3 used)**
**4—Plug**
**5—Plug**
**6—O-Ring**
**7—O-Ring (2 used)**
**8—O-Ring (2 used)**
**9—Valve Plate**

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CED,OUO1020,4106 –19–22SEP04–4/22

8. Remove retaining ring (A), split rings (B), and snap ring (C).

9. Remove parts (D—H) from piston (J).

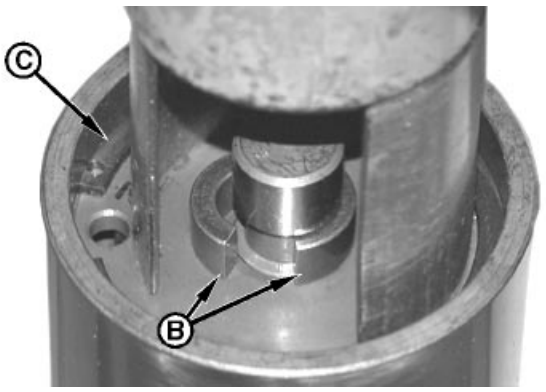
10. Repeat steps 7—9 to remove spring assembly from opposite end of piston.

11. Remove shaft (I).

*NOTE: Parts (A—J) are not serviceable. If parts are worn or damaged, replace whole servo piston assembly.*

12. Inspect parts (A—J) for wear or damage. Replace servo piston assembly if necessary.

**A—Retaining Ring (2 used)**
**B—Split Rings (2 sets used)**
**C—Snap Ring (2 used)**
**D—Outer Spring Guide (2 used)**
**E—Outer Spring (2 used)**
**F—Middle Spring (2 used)**
**G—Inner Spring (2 used)**
**H—Inner Spring Guide (2 used)**
**I—Shaft**
**J—Piston**

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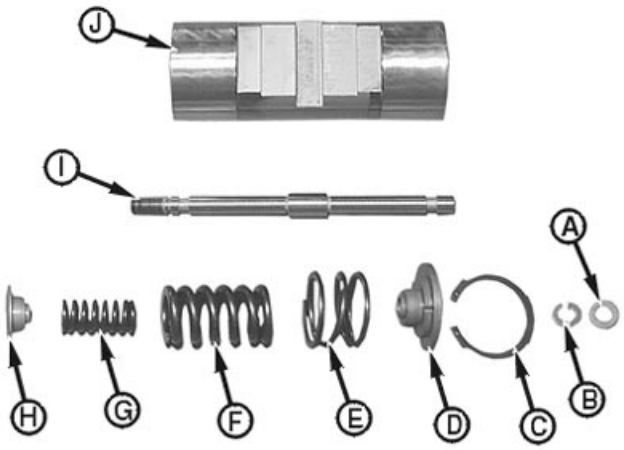



T133720B –UN–13SEP00

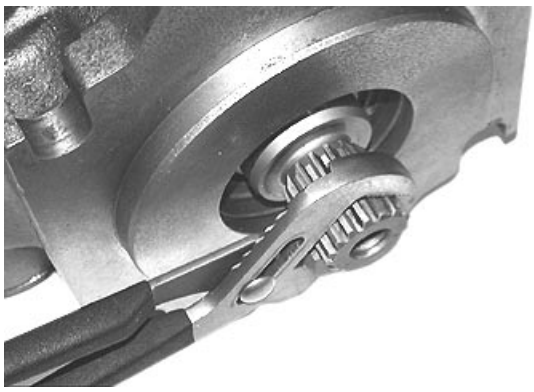


CED,OUO1020,4106 –19–22SEP04–22/22

*NOTE: A new pump will require approximately 67 N (15 lb-force), measured 178 mm (7 in.) from center of shaft, to cause the shaft to rotate.*

4. After port plate cap screws have been tightened, check that shaft rotates relatively easily using a pliers. If shaft turns hard or cannot be turned at all, remove port plate and check for the following:

   - Port plate not installed properly.
   - Swash plate not seated correctly.
   - Obstruction between valve plate and cylinder block.



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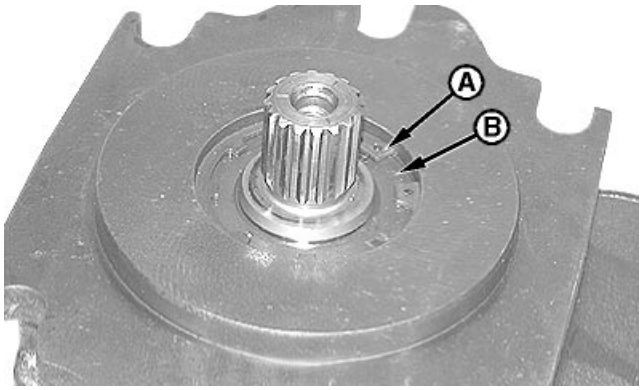
CED,OUO1020,4107 –19–22SEP04–17/19

5. Apply petroleum jelly to lips of shaft seal (B) and install seal. Push seal evenly into bore until tight against inner snap ring.

6. Install snap ring (A).

**A—Snap Ring**
**B—Shaft Seal**

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CED,OUO1020,4107 –19–22SEP04–18/19

7. Carefully insert the cylinder block on the taped cap screw. Allow cylinder block to rest on the valve plate so mating surfaces (B) make contact.

**IMPORTANT: Do not apply down force when lapping surface of cylinder block. The weight of cylinder block is sufficient.**

**Inspect progress often so as to remove the scratches without cutting through the bronze material. If too much bronze material is removed, the whole hydrostatic motor must be replaced.**

8. With only the weight of the cylinder block against the valve plate (do not apply additional down force), move cylinder block (A) in small circles while rotating the cylinder block for two or three revolutions.

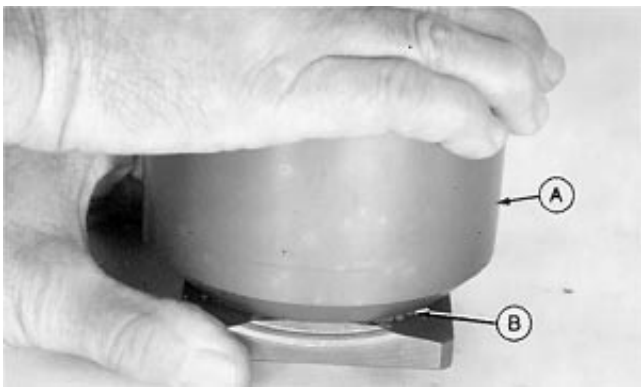
9. Inspect progress. Rotate cylinder block two or three more revolutions, then reinspect.

10. Repeat steps 8 and 9 until scratches almost disappear. Do not cut through bronze material.

11. Wipe the lapping compound from cylinder block and valve plate.

12. Put a small amount of extra fine lapping compound on cylinder block or valve plate.

13. Continue lapping as in steps 8 and 9 until scratches disappear. Do not cut through bronze material.



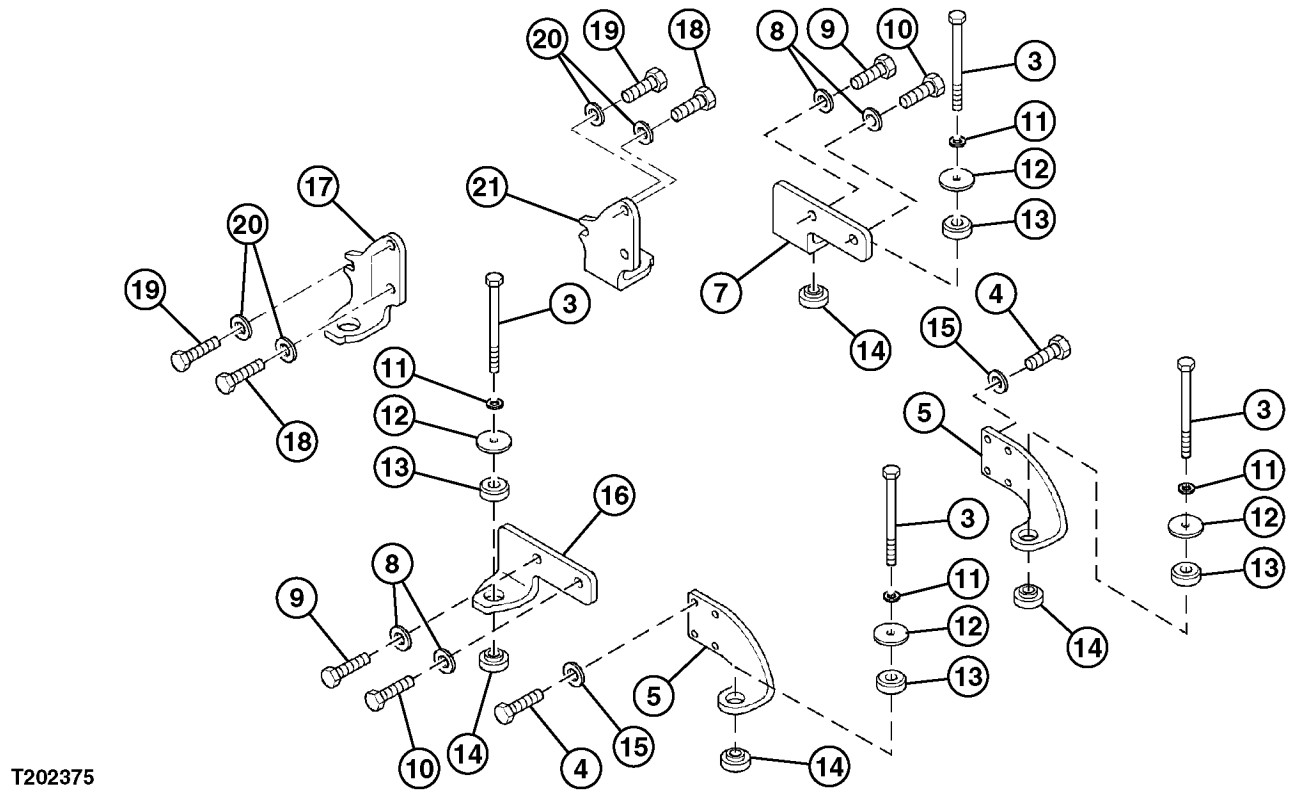

T7160BP –UN–22JAN90

**A—Cylinder Block**
**B—Mating Surfaces**

03
0360
33

**Continued on next page**

CED,OUO1010,128 –19–23SEP04–5/6




T202375 –UN–02SEP04

04 0400 5

3—Engine Mount Isolator Cap Screw (4 used)
4—Cap Screw (8 used)
5—Engine Mount Bracket (2 used)
7—Rear Right Engine Mount Bracket—244J
8—Lock Washer (4 used)—244J
9—Cap Screw (2 used)—244J
10—Cap Screw (2 used)—244J
11—Lock Washer (4 used)
12—Flat Washer (4 used)
13—Upper Isolator (4 used)
14—Lower Isolator (4 used)
15—Lock Washer (8 used)
16—Front Right Engine Mount Bracket—244J
17—Front Right Engine Mount Bracket—304J
18—Cap Screw (4 used)—304J
19—Cap Screw (2 used)—304J
20—Lock Washer (6 used)—304J
21—Rear Right Engine Mount Bracket—304J

19. Inspect engine mounting parts. Replace as required.

20. If engine mount brackets have been removed from engine, apply medium strength thread lock and sealer to threads of the left front and both right mount bracket-to-engine cap screws.

21. Install right engine mount brackets [(7 and 16) 244J] or [(17 and 21) 304J] and left front bracket (5) to engine block. Do not install left rear engine mount bracket at this time.

22. Lower engine into machine.

23. Fasten the left front engine mount bracket and both right engine mount brackets to machine frame using cap screws (3). Do not fully tighten cap screws at this time.

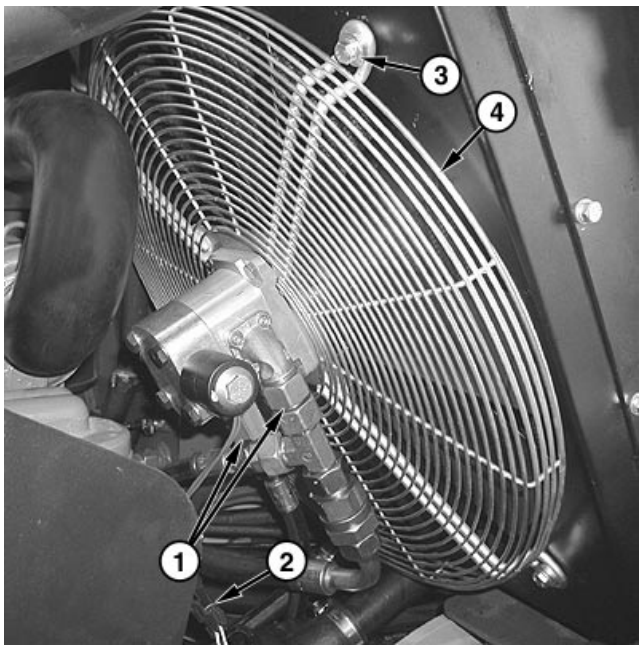
Continued on next page

OUO1017,0000B38 –19–08JUL04–6/8

## Cooling Fan and Cooling Fan Motor Remove and Install

1. Remove hood and right-side hood shock bracket.
2. Disconnect hydraulic lines (1).
3. Disconnect fan motor solenoid wire connector (2).
4. Remove cap screws and washers (3). Remove fan motor, fan, and fan guard (4) as an assembly.

**1—Hydraulic Lines**
**2—Fan Speed Solenoid Connector**
**3—Cap Screw and Washer (4 used)**
**4—Fan Guard**



T202703A –UN–17SEP04

OUO1017,0000B3E –19–03SEP04–1/4

05 0510 5

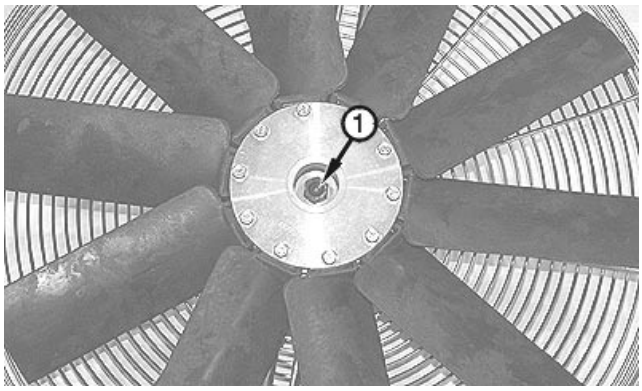
5. Remove nut (1) and lock washer.

**IMPORTANT: Pry only at hub center (3). Prying or pulling at hub outer edges (2) may damage hub.**

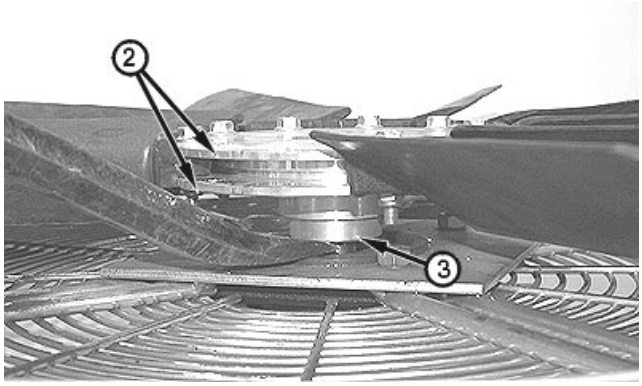
*NOTE: Removal of one or two fan blades may be necessary to access hub center.*

6. Using two pry bars, apply force at hub center (3) to remove fan. Do not pry or pull at hub outer edges (2).

**1—Nut**
**2—Hub Outer Edge**
**3—Hub Center**



T116536C –UN–27JUN00



T116537C –UN–27JUN00

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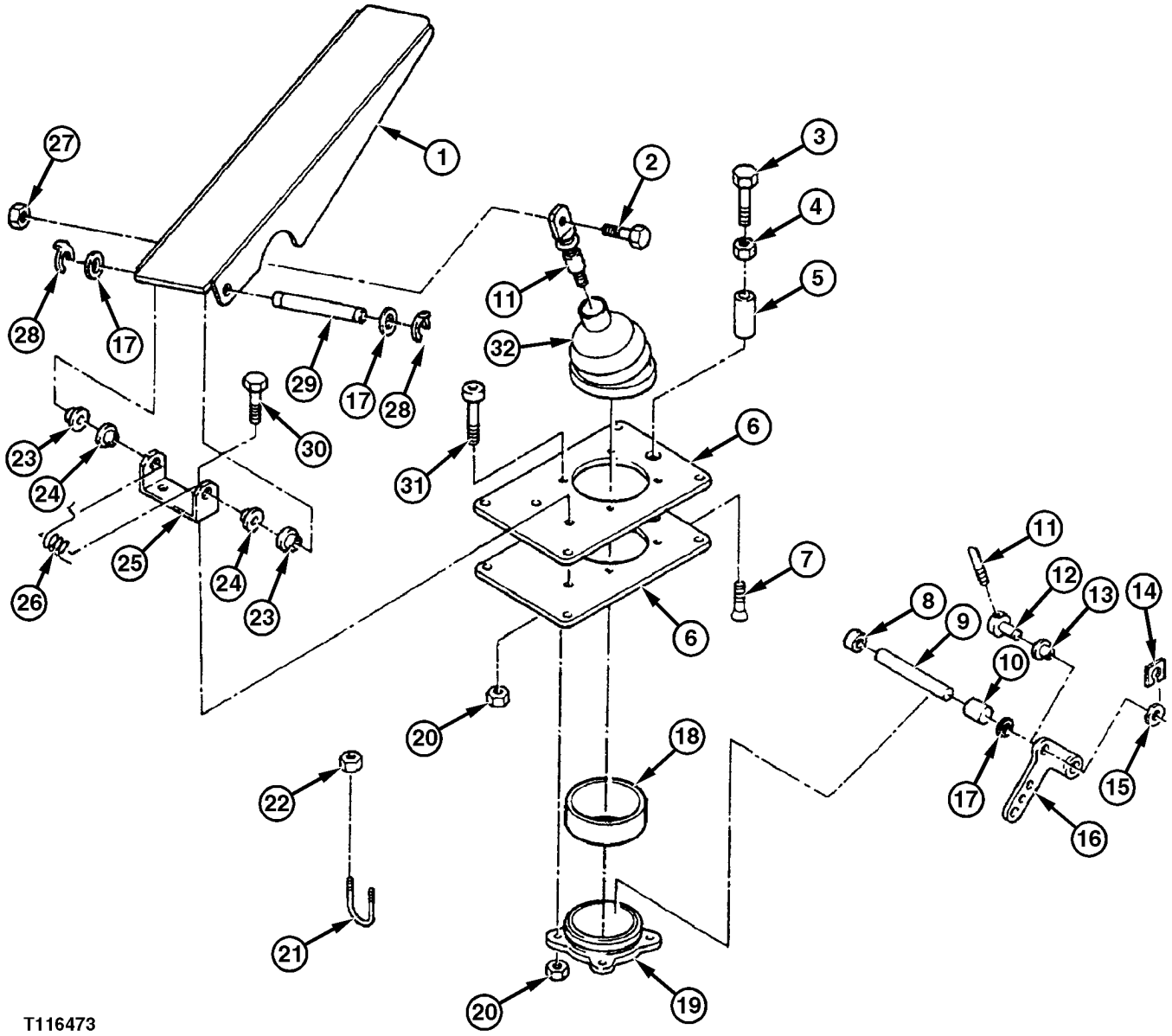
OUO1017,0000B3E –19–03SEP04–2/4




T116473 –UN–17JUL98

| | | | |
|---|---|---|---|
| 1—Pedal | 9—Dowel Pin | 17—Washer (2 used) | 25—Bracket |
| 2—Cap Screw | 10—Bushing | 18—Ring | 26—Spring |
| 3—Cap Screw (M6 x 25) | 11—Eyebolt | 19—Flange | 27—Lock Nut |
| 4—Nut | 12—Pivot | 20—Lock Nut (6 used) | 28—Clip (2 used) |
| 5—Spacer | 13—Bushing | 21—U-Bolt | 29—Shaft |
| 6—Plate (2 used) | 14—Clip | 22—Nut (2 used) | 30—Cap Screw (2 used) |
| 7—Cap Screw | 15—Washer | 23—Bushing (2 used) | 31—Cap Screw (4 used) |
| 8—Spacer | 16—Lever | 24—Bushing (2 used) | 32—Boot |

3. Disassemble parts (1—32). Inspect and replace parts as necessary.
4. Assemble parts (1—32) as shown.

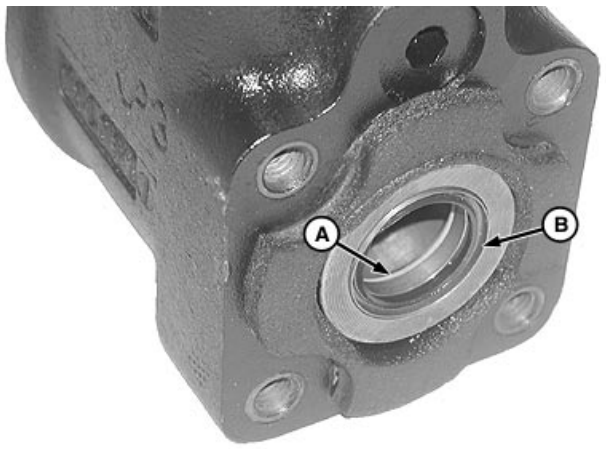
Continued on next page

# Section 09
# Steering System

## Contents

2. Install seal (A) and dust seal (B).

**A—Seal**
**B—Dust Seal**




LV10510 –UN–14SEP04

OUO1020,0001457 –19–04OCT04–2/7

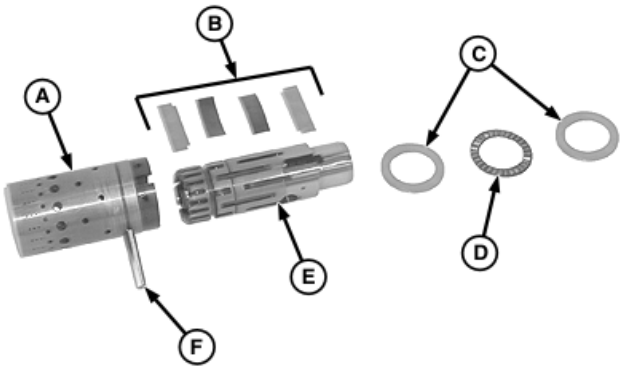
3. Install two flat leaves of spring set (B) into slot of control spool (E). Install two curved leaves between the flat leaves so centers of the curved leaves touch each other as shown in lower illustration.

4. Slide control spool and springs into sleeve (A). Squeeze spring ends together so springs fit into slot of sleeve. Leaf ends must be aligned and centered.

5. Install needle roller (F).

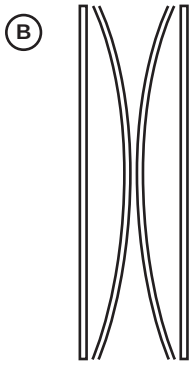
6. Install parts (C and D).

**A—Sleeve**
**B—Spring Set**
**C—Bearing Races**
**D—Needle Bearing**
**E—Control Spool**
**F—Needle Roller**




LV10516 –UN–14SEP04

*Exploded View of Spool Valve Assembly*




LV10549 –UN–05OCT04

*Orientation of Centering Spring Set*

09 0960 9

**Continued on next page**

OUO1020,0001457 –19–04OCT04–3/7

11. Inspect piston and rod guide for nicks or burrs that may damage seals or O-rings. Remove nicks or burrs with fine crocus cloth.

**IMPORTANT: Install seals with lips inward.**

12. Install parts (2) and (10—17) on rod guide (1).

13. Apply petroleum jelly to rod guide seals, O-rings and wear rings. Install rod guide onto rod (6).

OUO1020,0001459 –19–06OCT04–2/5

14. Install wear ring (7) and O-ring (9) on piston.

15. Install piston seal (8) using JDG1388-3 Pusher and JDG1388-1 Steering Piston Seal Installer. Use pusher from installer to compress seal to its original size.

16. Apply multipurpose grease to tapered area (mating surfaces) of piston and rod. Install piston on rod.

17. Using cylinder service stand and JT05794 Rod Guide Spanner Wrench, tighten piston to specification.

| Specification | |
|---|---|
| Steering Cylinder Piston—Torque | 350 N•m<br>258 lb-ft |

18. Install snap ring (4).

T116273B –UN–10JUL98

T116275B –UN–10JUL98

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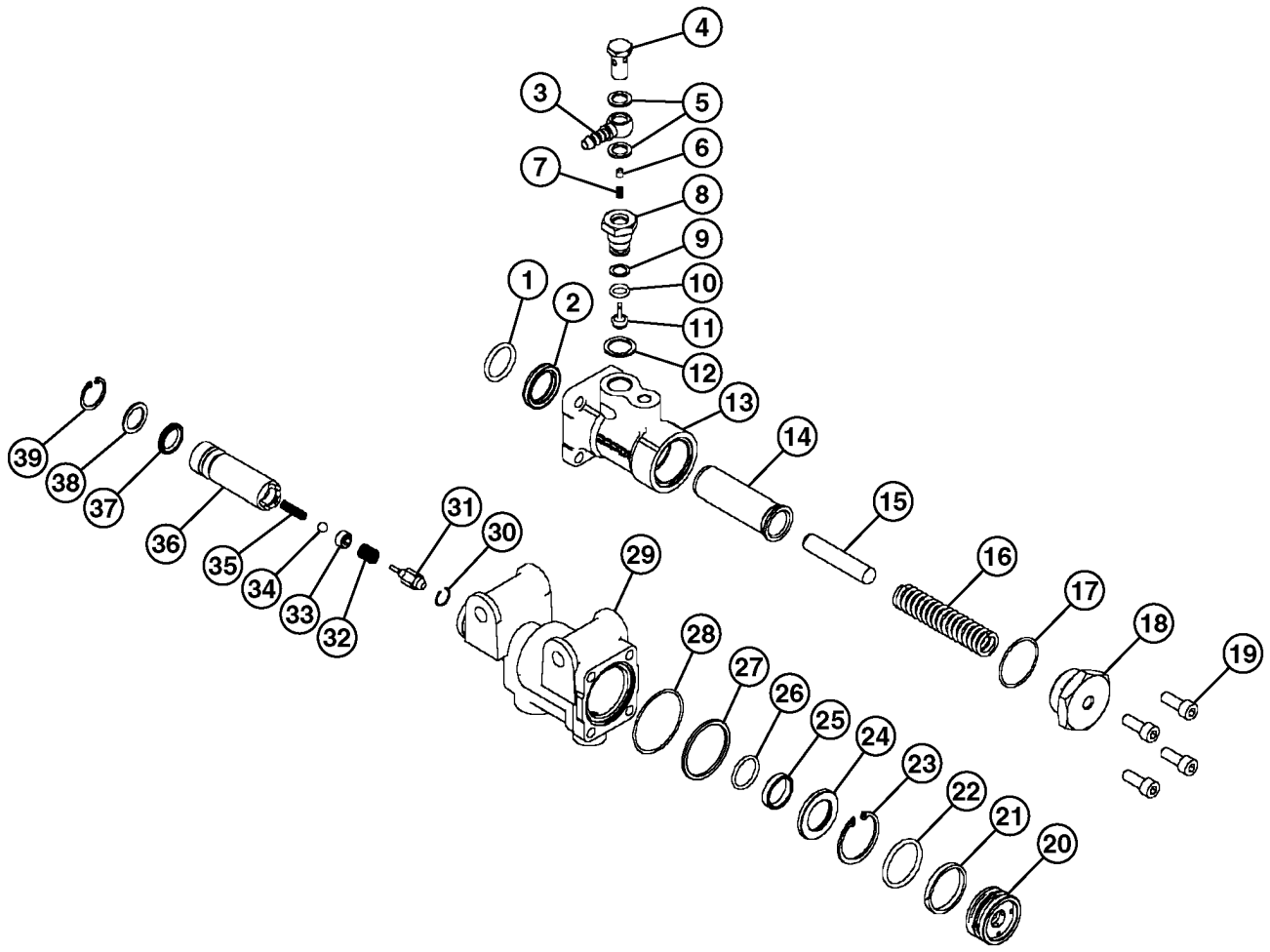
OUO1020,0001459 –19–06OCT04–3/5

## Brake Valve Disassemble and Assemble




T204489

1—O-Ring
2—Square Cut Seal
3—Banjo Fitting
4—Banjo Bolt
5—Sealing Washer (2 used)
6—Cap
7—Spring
8—Fitting
9—Back-Up Ring
10—O-Ring
11—Check Valve
12—Sealing Washer
13—Housing
14—Piston
15—Dowel
16—Spring
17—O-Ring
18—End plug
19—Socket Head Screw (4 used)
20—Piston
21—Back-Up Ring
22—O-Ring
23—Retaining Ring
24—Washer
25—Bronze Bushing
26—O-Ring
27—Washer
28—O-Ring
29—Housing
30—Retaining Ring
31—Check Valve
32—Spring
33—Cap
34—Ball
35—Spring
36—Piston
37—Seal
38—Special Washer
39—Retaining Ring

1. Remove inching valve and brake valve bracket.
2. Repair or replace parts as necessary.

**CAUTION: Remove end plug (18) carefully. Brake valve housing (13) contains a compressed spring (16).**

OUO1010,00006AE –19–22OCT04–1/1

# Section 17
# Frame or Supporting Structure



## Contents

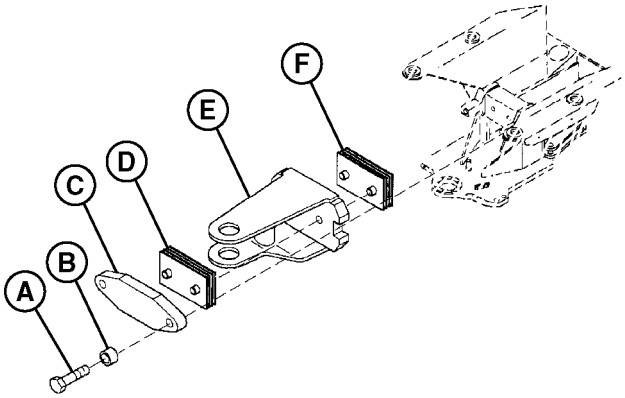
40. Install loader control valve access panel.



OUO1017,0000B45 –19–05OCT04–8/8

## Rotational Torque Spring Remove and Install

1. Separate machine. See Loader and Rear Frames Separation. (Group 1740.)
2. Remove rear rotational torque spring (F). Replace springs.
3. Apply grease to pins and mating surfaces of rotational torque spring.
4. Install one of the rotational torque springs on the rear frame.
5. Connect loader and rear frames. See Loader and Rear Frames Separation. (Group 1740.)




T203849

T203849 –UN–21OCT04

**A—Cap Screw (2 used)**
**B—Spacer (2 used)**
**C—Plate**
**D—Front Rotational Torque Spring**
**E—Support**
**F—Rear Rotational Torque Spring**

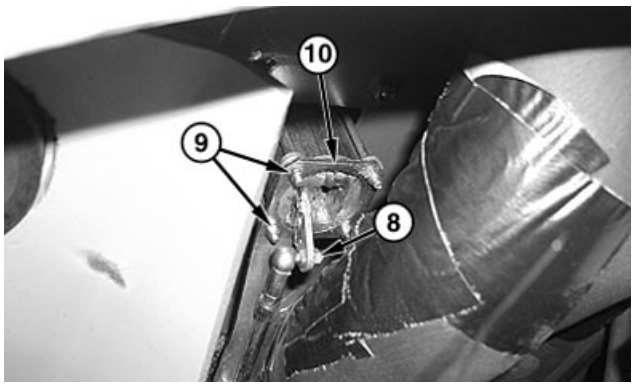
OUO1017,0000B46 –19–21OCT04–1/1

13. Remove nut (8) to disconnect engine speed control cable.

14. Remove lock nuts (9) to disconnect engine speed control cable bracket (10).

15. Disconnect wire connectors X6, X7, X8, and X9 from relay/fuse panel. Disconnect ground wire connectors from ground lug W3. See Loader/Rear Frame Harness (W6) Component Location. (Group 9015-10.)

16. Disconnect wire connector X2. See Cab Main Harness (W7) Component Location. (Group 9015-10.)




T204544A –UN–28OCT04

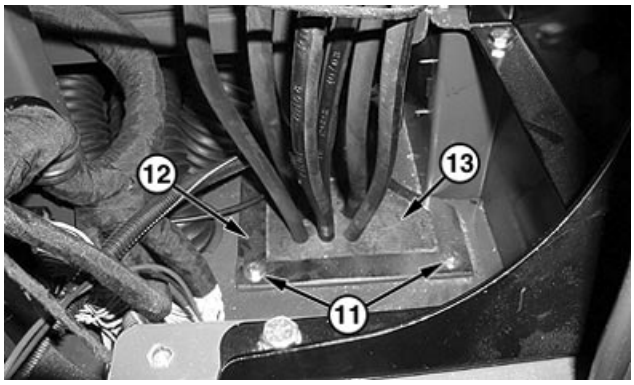
**8—Nut**
**9—Lock Nut (4 used)**
**10—Engine Speed Control Cable Bracket**

OUO1010,00006C9 –19–29OCT04–3/10

17. Remove four cap screws (11) and push rubber seal (13) through cab floor.

*NOTE: Close all hose and fitting openings using caps and plugs to prevent contamination of hydraulic system.*

18. Disconnect hydraulic lines from pilot control valve. See Loader System Component Location. (Group 9025-15.)




T204550A –UN–28OCT04

**11—Cap Screw (4 used)**
**12—Plate**
**13—Rubber Seal**

**Continued on next page**

OUO1010,00006C9 –19–29OCT04–4/10

## Flush and Purge Air Conditioner System

**CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.**

**See Refrigerant Cautions and Proper Handling. (Group 1830.)**

*NOTE: Flushing can be performed on machine.*

1. Perform Recover R134a Refrigerant. (Group 1830.)

   Add flushing solvent to system with JT02075 Flusher and JT02098 Flusher Fitting Kit.

2. Remove and discard receiver-dryer.

3. Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.

4. Fill flusher tank with solvent and fasten all connections. Dispose of solvent properly.

**Specification**

AC Flusher Tank—Capacity ..... 4 L
1 gal

*NOTE: Air pressure must be at least at specification for flushing and purging.*

**Specification**

AC Flusher Tank Air Pressure—Minimum Pressure ..... 620 kPa for flushing and purging
6.2 bar for flushing and purging
90 psi for flushing and purging

5. Connect supply line of moisture-free compressed air or dry nitrogen to flusher air valve.

6. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.

7. **Clean compressor as follows:**

   a. Remove compressor and measure oil drained from both manifold ports.

   b. Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.

   c. Pour flushing solvent into suction port and discharge port. Plug both ports in compressor manifold, using JT02099 and JT03194 Caps.

**Specification**

AC Flushing Solvent in Suction Port—Volume ..... 240 mL
8 fl oz

AC Flushing Solvent in Discharge Port—Volume ..... 120 mL
4 fl oz

   d. Turn compressor end for end and roll it side to side.

   e. Remove both plugs from manifold ports and drain solvent from compressor.

   f. Connect battery power to compressor clutch coil. Rotate pulley at least five revolutions to move solvent out of cylinders.

   g. Invert compressor. Roll end for end and side to side. Drain thoroughly.

   h. Repeat previous two steps at least three times.

8. **Divide system into two circuits:**

   - Condenser circuit, including inlet and outlet hoses.
   - Evaporator circuit, including inlet and outlet hoses.

9. **Condenser:**

Continued on next page

## Condenser Remove and Install

1. Park machine on a flat level surface.
2. Recover refrigerant. Perform Recover R134a Refrigerant. (Group 1830.)

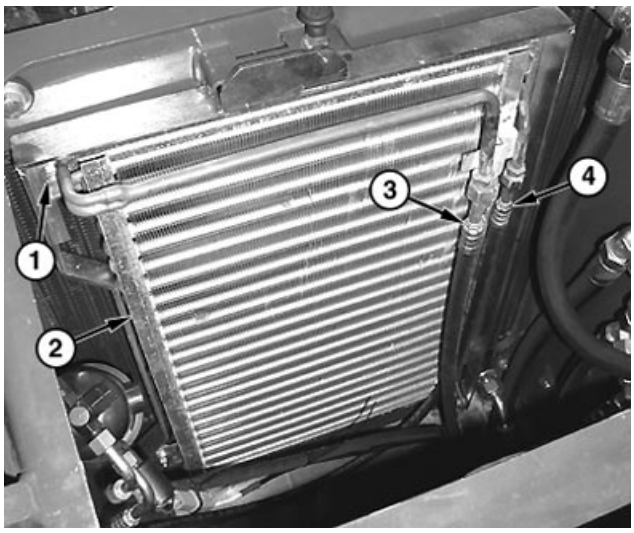
**IMPORTANT: Close AC lines with caps or plugs immediately after disconnecting to prevent contamination of system. If system is left open, receiver-dryer must be replaced before charging system.**

3. Disconnect refrigerant lines (3 and 4).
4. Remove cap screws (1), washers, and lock nuts to remove condenser (2).
5. Repair or replace parts as necessary.
6. Install condenser.
7. Connect refrigerant lines.

**Specification**

| | |
|---|---|
| Condenser High Pressure Gas Input Line Nut—Torque | 20—27 N•m<br>177—239 lb-in. |
| Condenser High Pressure Liquid Output Line Nut—Torque | 14—20 N•m<br>139—177 lb-in. |

8. Evacuate and charge air conditioning system. See Evacuate R134a System and see Charge R134a System. (Group 1830.)




T204177A –UN–19OCT04

*Air Conditioner Condenser*

**1—Cap Screws (4 used)**
**2—Condenser**
**3—High Pressure Gas Input Line**
**4—High Pressure Liquid Output Line**

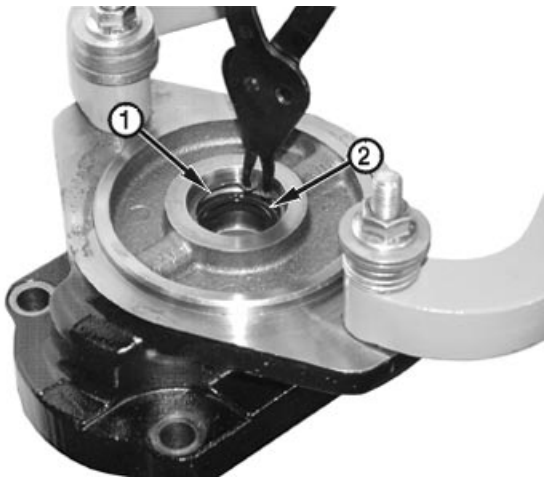
OUO1010,00006A2 –19–05OCT04–1/1

# Section 19
# Sheet Metal and Styling

## Contents

8. Remove snap ring (1) and shaft seal (2). Install shaft seal with lip facing inward. Install snap ring.

**1—Snap Ring**
**2—Shaft Seal**




T132897B –UN–28JUL00

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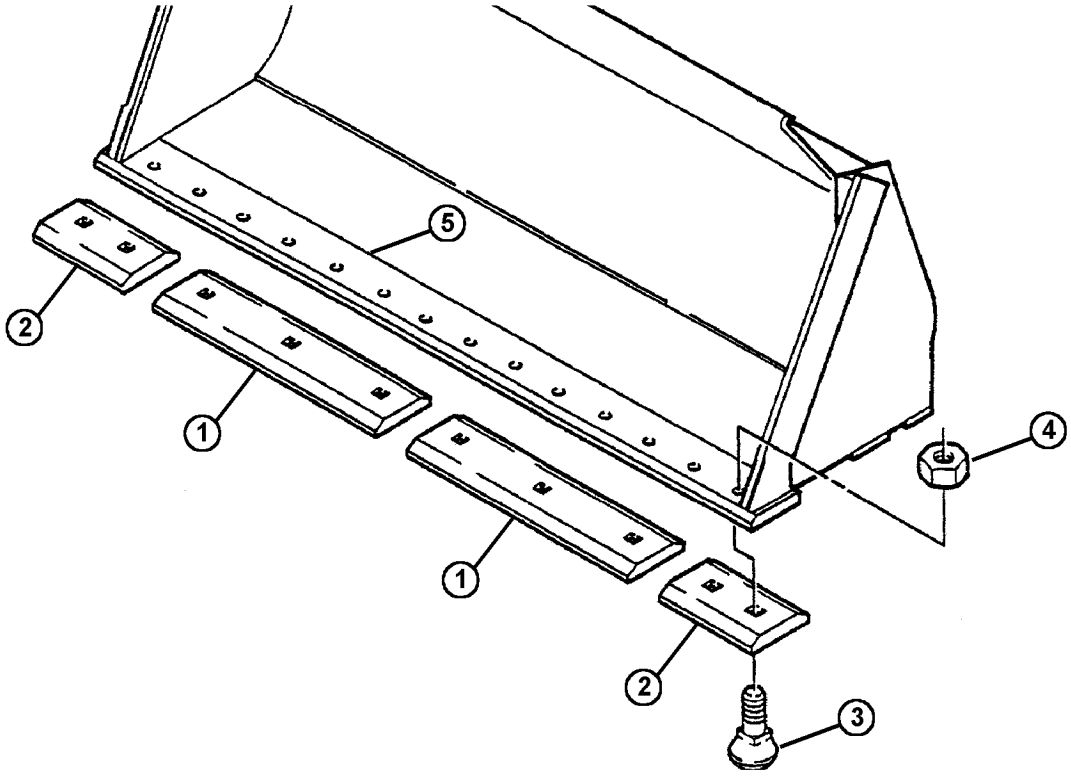
CED,OUO1020,4004 –19–19AUG04–6/7

Tack welds may be incorporated into the final weld, providing they have been made with electrodes that meet the requirements of the final welds and no cracking has occurred in the weld metal. Tack welds not meeting these requirements must be completely removed by grinding or air-arc gouging just prior to making the final weld in that area.

8. Do not remove bucket from welding environment until weld metal temperature has dropped to the ambient temperature. Do not force cooling rate of weld metal.

CED,OUO1020,4057 –19–15AUG00–2/2

## Bolt-On Cutting Edge Remove and Install




T133039

T133039 –UN–23AUG00

**1—Cutting Edge (2 used)**
**2—Cutting Edge (2 used)**
**3—Bolt (10 used)**
**4—Nut (10 used)**
**5—Cutting Edge (weld-on)**

1. Lower bucket to the ground. Remove nuts (4). Raise bucket and lower onto wooden blocks placed behind cutting edge. Remove cutting edges (1 and 2).

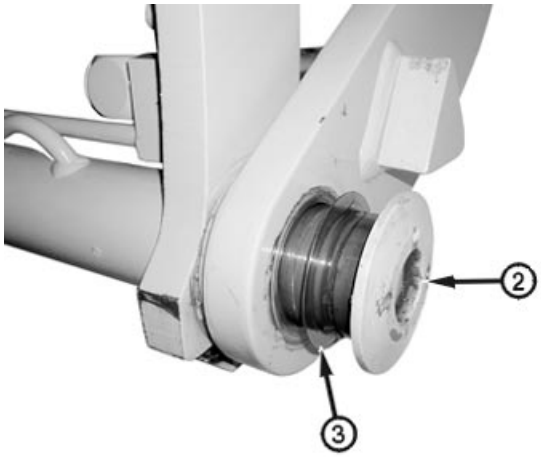
**IMPORTANT: Use new bolts and nuts when replacing cutting edges.**

2. Make sure underside of bucket cutting edge (5) is free of foreign material. Position cutting edges under bucket and install new bolts and nuts. Tighten nuts.

CED,OUO1020,4058 –19–15AUG00–1/1

4. Apply OPTIMOLY PASTE WHITE T® to threads of rod guide.
5. Install rod guide (2) and washer (3) into cylinder. Tighten rod guide until boom has zero side play.
6. Fill clamp slot on bottom of cylinder with ULTRA BLUE® RTV Silicone.

**2—Rod Guide**
**3—Washer**




T133909B –UN–21SEP00

*OPTIMOLY PASTE WHITE T is a registered trademark of Optimal Lubricants, Inc.*
*ULTRA BLUE is a trademark of Loctite Corp.*

OUO1032,0000F3D –19–11OCT04–14/16

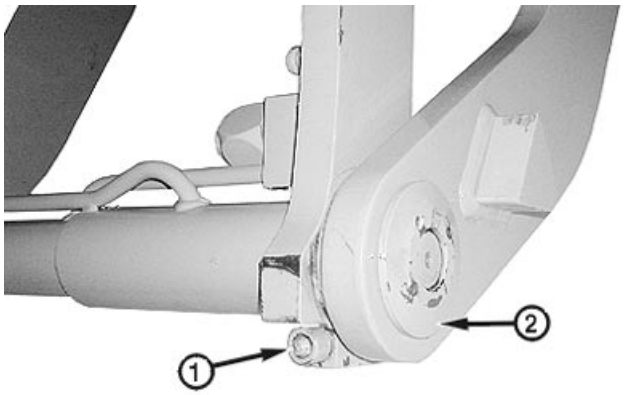
7. Install socket head screw (1) into cylinder. Tighten to specification.

**Specification**

Rod Guide Clamp Socket Head Screw—Torque.....310 N•m (228 lb-ft)

8. Repeat assembly procedure for opposite side of cylinder.

**1—Socket Head Screw**
**2—Rod Guide**




T133908B –UN–21SEP00

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OUO1032,0000F3D –19–11OCT04–15/16

## Loader Control Valve Remove and Install

1. Park machine on level surface. Raise boom and install boom locking bar.

**CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.**

2. Stop engine, turn key off.

3. Turn key on.

**CAUTION: Escaping fluid or gas from pressurized hydraulic accumulator systems can cause serious injury. Extreme heat can cause the accumulator to burst, and pressurized lines can be accidentally cut. Do not weld or use a torch near a pressurized accumulator or pressurized lines.**

**Relieve pressure from the hydraulic system before removing accumulator. Never attempt to relieve hydraulic system or accumulator pressure by loosening a fitting.**

**Accumulators cannot be repaired. Replace damaged accumulators with new.**

4. If loader is equipped with ride control, the ride control system and accumulator pressure must be relieved before continuing with this procedure. To relieve and/or remove accumulator, see Ride Control Valve Remove and Install—If Equipped. (Group 3160.)

5. Push and hold pilot enable/boom down switch, move loader control lever to boom down then to bucket rollback positions. Repeat this cycle until no movement is felt or seen from boom lower or bucket rollback functions.

31
3160
1

Continued on next page

## Boom Cylinder Remove and Install

*NOTE: Boom cylinder may be disassembled on the machine for seal and packing replacement.*

1. Install frame locking bar.

*NOTE: If both boom cylinders will be removed, support boom with a hoist.*

2. Raise boom and install boom lock (3) on cylinder that is not being removed.

**CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.**

3. Stop engine. Push and hold pilot enable/boom down switch while moving loader control lever to all positions, several times, until all pressure is released from hydraulic system.

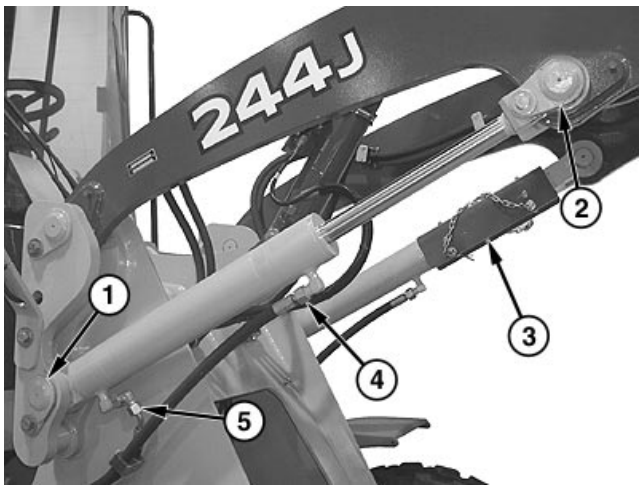
**CAUTION: Escaping fluid or gas from pressurized hydraulic accumulator systems can cause serious injury. Extreme heat can cause the accumulator to burst, and pressurized lines can be accidentally cut. Do not weld or use a torch near a pressurized accumulator or pressurized lines.**

**Relieve pressure from the hydraulic system before removing accumulator. Never attempt to relieve hydraulic system or accumulator pressure by loosening a fitting.**

**Accumulators cannot be repaired. Replace damaged accumulators with new.**

4. If loader is equipped with ride control, the ride control system and accumulator pressure must be relieved before continuing with this procedure. To relieve and/or remove accumulator, see Ride Control Valve Remove and Install—If Equipped. (Group 3160.)

5. Mark and disconnect hydraulic lines (4 and 5).




T202413A –UN–01SEP04

**1—Pin**
**2—Pin**
**3—Boom Lock**
**4—Hydraulic Line**
**5—Hydraulic Line**

31
3160
11

Continued on next page

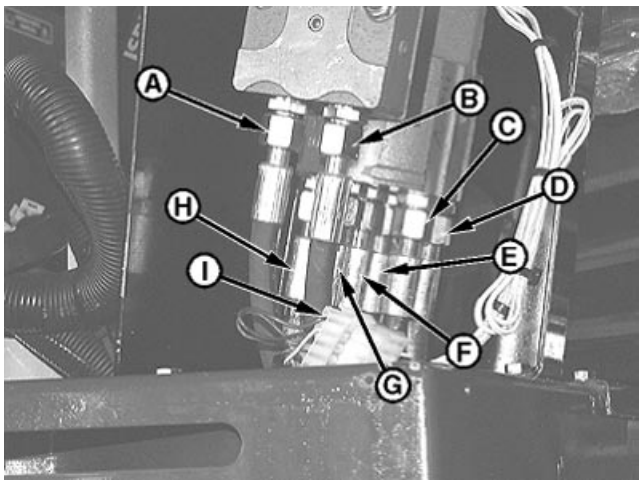
6. Remove loader control valve boot and console.

*NOTE: Mark lines before disconnecting to aid in installation.*

7. Mark and disconnect lines (A—H) and electrical connector (I).

8. Remove pilot control valve mounting plate-to-side support screws and lift pilot control valve, quick disconnect/auxiliary pilot control valve and mounting plate from machine.

**A—Auxiliary Port 2-to-Loader Valve Auxiliary Section Line**
**B—Auxiliary Port 1-to-Loader Valve Auxiliary Section Line**
**C—Boom Down Pilot Port-to-Loader Valve Boom Section Line**
**D—T Port-to-Reservoir Line**
**E—Bucket Dump Pilot Port-to-Loader Valve Bucket Section Line**
**F—P Port-to-Pilot Lockout Solenoid Valve Line**
**G—Bucket Rollback Pilot Port-to-Loader Valve Bucket Section Line**
**H—Boom Raise Pilot Port-to-Loader Valve Boom Section Line**
**I—Electrical Connector**

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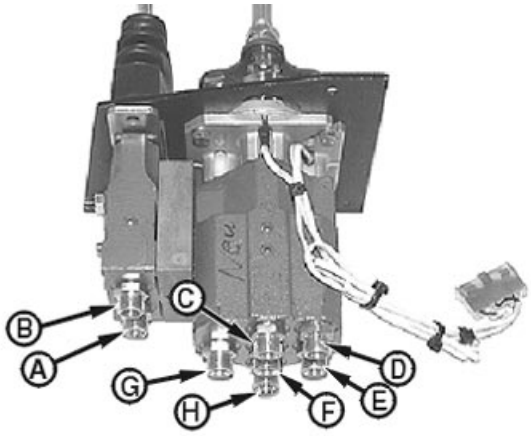


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## Pilot Lockout Solenoid Valve Remove and Install

The solenoid valve can be removed without removing valve block from machine.

1. Park machine on a level surface and lower boom and bucket to the ground.

2. Stop engine, then turn key to on position.

**CAUTION: Escaping fluid or gas from pressurized hydraulic accumulator systems can cause serious injury. Extreme heat can cause the accumulator to burst, and pressurized lines can be accidentally cut. Do not weld or use a torch near a pressurized accumulator or pressurized lines.**

**Relieve pressure from the hydraulic system before removing accumulator. Never attempt to relieve hydraulic system or accumulator pressure by loosening a fitting.**

3. Push and hold pilot enable/boom down switch while moving loader control lever to boom down then to bucket rollback positions. Repeat this cycle until no movement is felt or seen in boom lower or bucket rollback functions.

*NOTE: This procedure will take approximately 20 applications to bleed pilot accumulator circuit.*

4. Hold loader control lever bucket rollback partially engaged in boom raise function, push and release pilot enable/boom down switch, a kickback should be felt in control lever. Hold lever to partial engagement in each function and repeat push and release pilot enable/boom down switch procedure until no kickback is felt.

5. Apply a vacuum to reservoir to minimize oil leakage while removing pilot lockout valve.



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