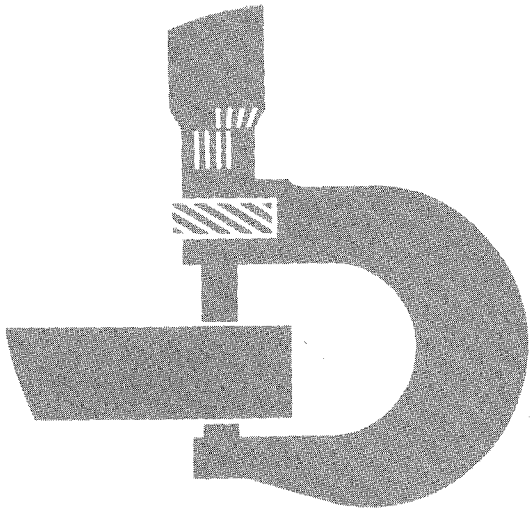
84
Loader
Repair



TECHNICAL MANUAL

TM1398 (08MAY90)

LITHO IN U.S.A.

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

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

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

FOS MANUALS—REFERENCE

TECHNICAL MANUALS—MACHINE SERVICE

COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

IMPORTANT: Please remove this page and route through your service department.

This is a complete revision for TM1398, 84 Loader.

To make miscellaneous additions and corrections.

To update material per earlier and later units throughout manual.

TX,1398,DCL -19-20APR90

Contents

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

TM1398-19-08MAY90

Section I
GENERAL INFORMATION

Contents

110590

HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

TS227 -UN-23AUG88

O53,FLAME -19-26JAN90

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

TS204 -UN-23AUG88

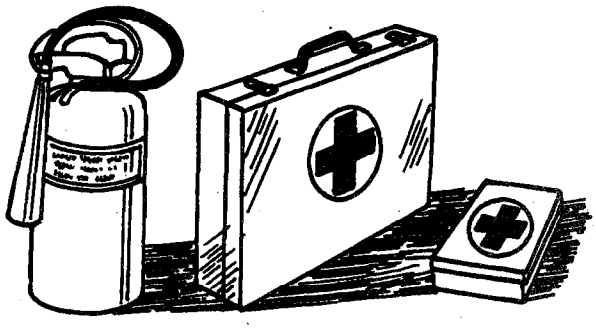
O53,SPARKS -19-26JAN90

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

O53,FIRE2 -19-26JAN90

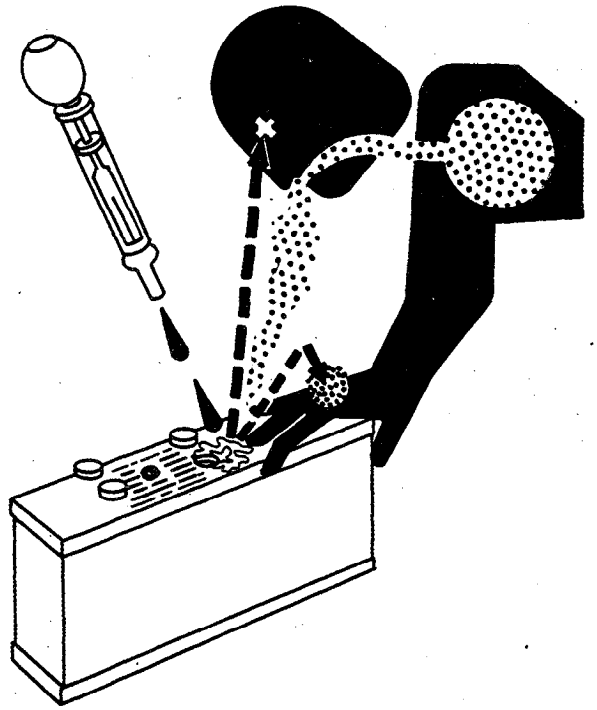
PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:
1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10—15 minutes. Get medical attention immediately.

If acid is swallowed:
1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



TS203 -UN-23AUG88

O53,POISON -19-26JAN90

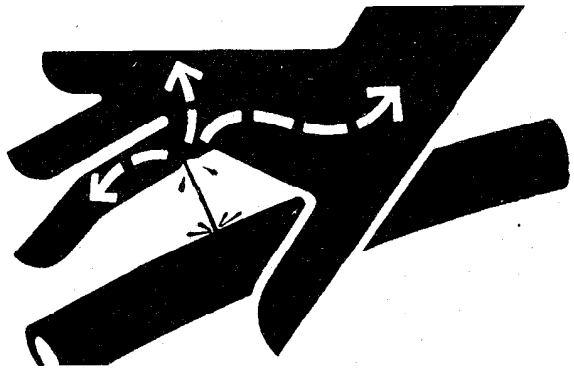
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

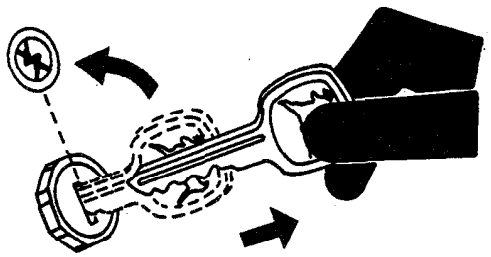


X9811 -UN-23AUG88

O53,FLUID -19-26JAN90

PARK MACHINE SAFELY

Before working on the machine:
- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



TS230 -UN-24MAY89

O53,PARK -19-26JAN90

SERVICE EQUIPMENT AND TOOLS

NOTE: Order tools from your SERVICE-GARD™ Catalog. Some tools may be available from a local supplier.

Name	Use
Internal Puller	To remove input pinion bearing cups.
Puller Set	To remove bearing cones.
74, 78, 81 (2-29/32, 3-5/64, 3-3/16 in.) Disks	To install bearing cups and input pinion oil seal.
Spring Scale (0—5 kg, 0—10 lb range)	To measure differential preload.
Dial Indicator (0—25 mm, 0—1.0 in. range)	To measure backlash.

0210,40 -19-20APR90

OTHER MATERIAL

Number	Name	Use
	Paint or dye	To check tooth contact patterns.
TY6304	Flexible Sealant	On front differential plate mounting surface.
TY43512	Thread Lock and Sealer (Medium Strength)	On O.D. of input pinion oil seal. On brake piston housing cap screws. On differential carrier cap screws. On differential adjusting nuts lock plates cap screws. On input pinion cap screws.
AT38226	Epoxy	On ring gear cap screws.

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SPECIFICATIONS

Item	Measurement	Specification
Input Pinion Shaft To-Flange Cap Screw	Torque	108 N·m (80 lb-ft)
Ring Gear Cap Screws	Torque	108 N·m (80 lb-ft)
Input Pinion Cap Screws	Torque	59 N·m (44 lb-ft)
Brake Piston Housing Cap Screws	Torque	30 N·m (22 lb-ft)
Differential Carrier Cap Screws	Torque	59 N·m (44 lb-ft)
Adjusting Nuts Lock Plates Cap Screws	Torque	30 N·m (22 lb-ft)
Front Differential Plate Cap Screws	Torque	59 N·m (44 lb-ft).
Rear Axle Pin Cap Screws	Torque	59 N·m (44 lb-ft)
Differential Housing	Preload	2.2—2.75 kg (4.8—6.1 lb)
Differential Ring Gear	Backlash	0.15—0.20 mm (0.006—0.008 in.)

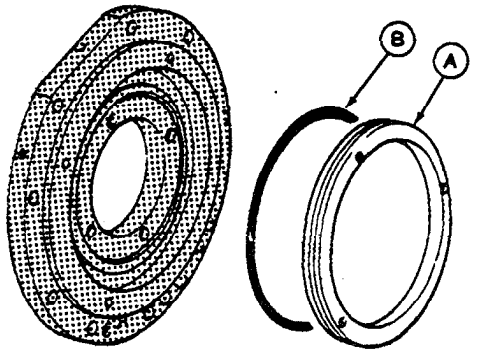
0210,42 -19-20APR90

REMOVE DIFFERENTIAL AND INPUT PINION

1. Remove axles. (See Disassemble Axle, Group 0250.)

NOTE: Identify right and left axle and differential parts to aid at installation.

2. Remove piston (A). Remove O-rings (B) from piston.



T6439LH -UN-19MAY89

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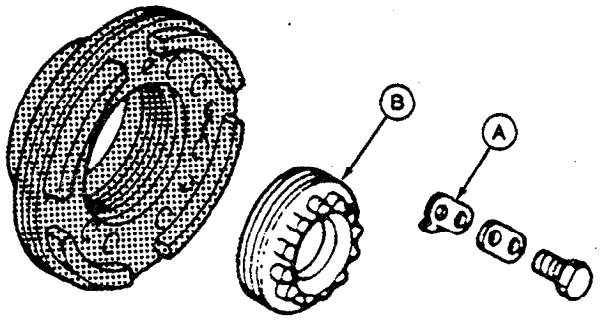
3. Remove lock plate (A) and adjusting nut (B).



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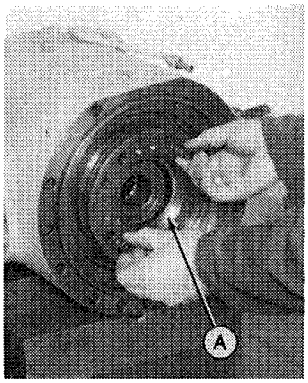
4. Remove carrier.

5. Remove bearing cup (A).



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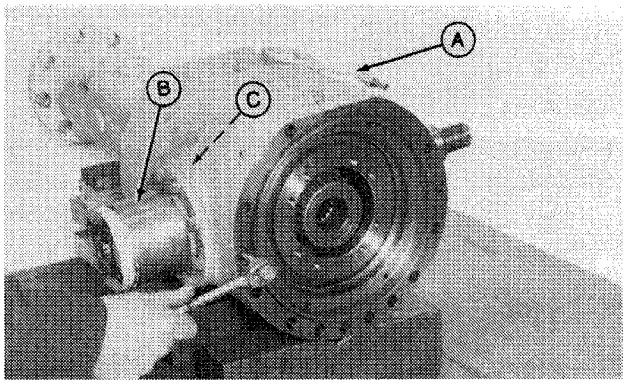
0210,03 -19-20APR90

6. Remove brake piston housing.

7. Remove brake line (A).

8. Remove input pinion (B) and shims (C).

9. Remove parts from the other side.



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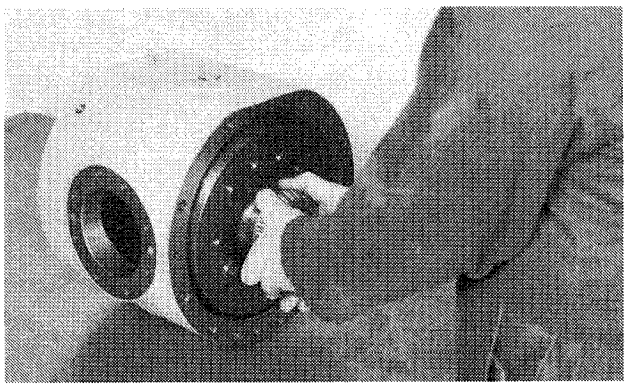
10. Remove differential.



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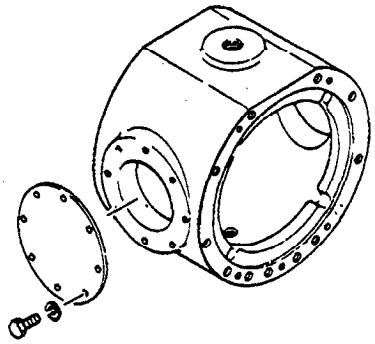
11. Remove plate from front differential.

12. Remove pin from rear differential using pusher screws.

13. Remove O-ring from pin.



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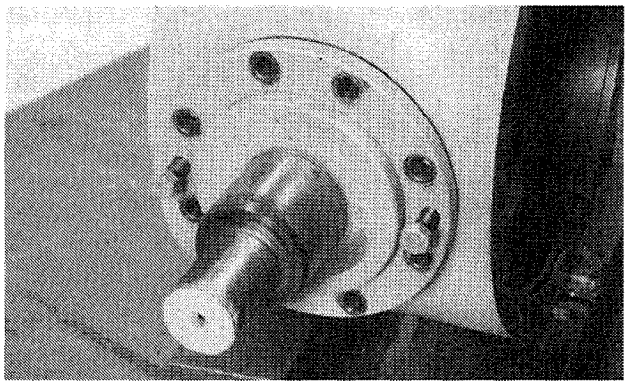

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DISASSEMBLE DIFFERENTIAL

1. Remove cap screws (1) and lock washers (2).

2. Remove bevel gear (3).

3. Inspect bearings (4 and 5). Remove with a puller if necessary.

NOTE: If bearings (4 and 5) are replaced, bearing cups must be replaced.

4. Inspect bearing cups (6 and 7). Replace if necessary.

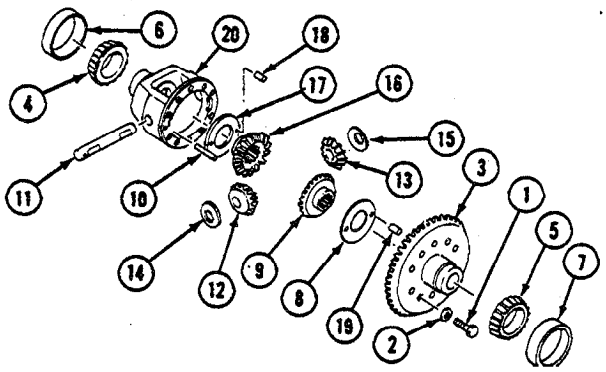
5. Remove thrust washer (8) and bevel gear (9).

6. Remove pin (10).

7. Remove pinion shaft (11), side gears (12 and 13), and thrust washers (14 and 15).

8. Remove bevel gear (16) and thrust washer (17).

9. Remove spring pins (18 and 19) only if they are damaged.



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1—Cap Screw	**11—Pinion Shaft**
2—Lock Washer	**12—Side Gear**
3—Ring Gear	**13—Side Gear**
4—Bearing Cone	**14—Thrust Washer**
5—Bearing Cone	**15—Thrust Washer**
6—Bearing Cup	**16—Bevel Gear**
7—Bearing Cup	**17—Thrust Washer**
8—Thrust Washer	**18—Spring Pin**
9—Bevel Gear	**19—Spring Pin**
10—Pin	**20—Differential Housing**

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110590

ASSEMBLE DIFFERENTIAL

1. Install spring pins (18 and 19) until 2 mm (0.08 in.) protrudes above surface.

CAUTION: Heat parts in a bearing heater. Use a thermometer and do not exceed 150°C (300°F). Plan a safe handling procedure to avoid burns.

2. Install bearings (4 and 5). Heat bearing cone not to exceed 150°C (300°F). Install heated bearing cone tight against shoulder.

3. Coat both sides of thrust washer (17) with hydraulic oil. Install thrust washer and bevel gear (16).

4. Coat both sides of thrust washers (14 and 15) with hydraulic oil. Coat pinion shaft (11) with oil soluble grease.

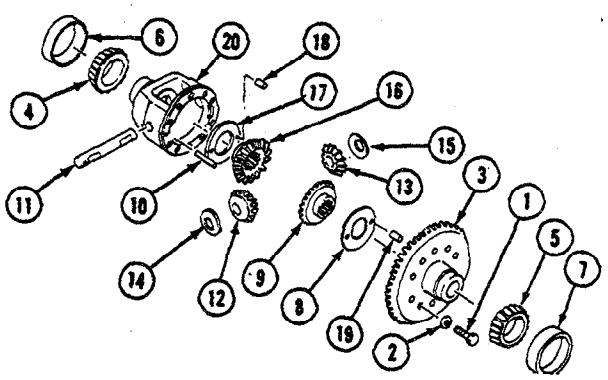
5. Lock pin hole in pinion shaft (11) must be positioned to align with hole in differential housing (20). Install pinion shaft, thrust washer (14), side gears (12 and 13), and thrust washer.

6. Press pinion shaft (11) into differential housing (20) until lock pin hole is aligned with hole in housing. Install pin (10). The pin must not protrude from housing surface.

7. Coat both sides of thrust washer (8) with hydraulic oil. Install bevel gear (9) and thrust washer.

8. Install ring gear (3).

9. Apply epoxy adhesive or equivalent to lower threads of cap screws (1). Install cap screws and lock washers (2). Tighten cap screws in a crisscross pattern to 108 N·m (80 lb-ft). Repeat tightening pattern several times.



T6439LX -UN-19MAY89

1—Cap Screw
2—Lock Washer
3—Ring Gear
4—Bearing Cone
5—Bearing Cone
6—Bearing Cup
7—Bearing Cup
8—Thrust Washer
9—Bevel Gear
10—Pin
11—Pinion Shaft
12—Side Gear
13—Side Gear
14—Thrust Washer
15—Thrust Washer
16—Bevel Gear
17—Thrust Washer
18—Spring Pin
19—Spring Pin
20—Differential Housing

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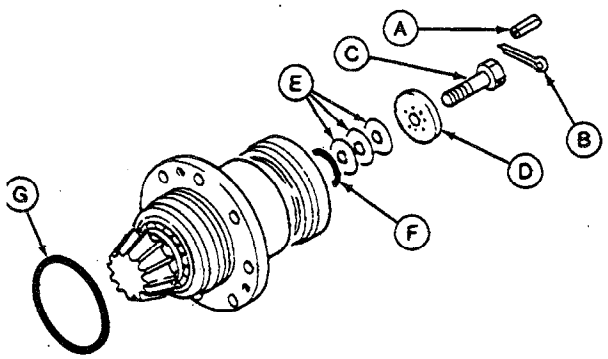
DISASSEMBLE INPUT PINION

1. Remove pin (A) and cotter pin (B).
2. Remove cap screw (C) and spacer (D).
3. Identify shims (E) to aid at assembly. Remove shims.
4. Remove O-rings (F and G).

A—Spring Pin
B—Cotter Pin
C—Cap Screw
D—Spacer
E—Shim Pack
F—O-Ring
G—O-Ring



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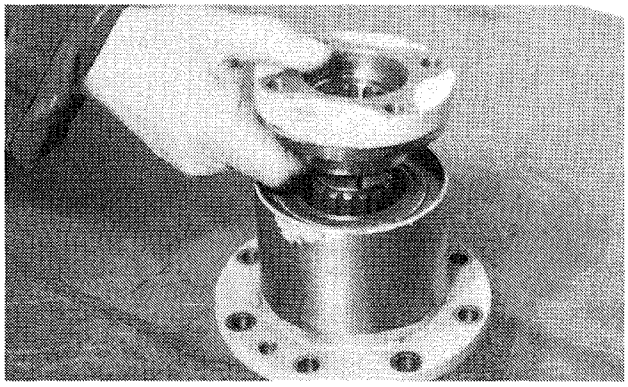
5. Remove input flange.



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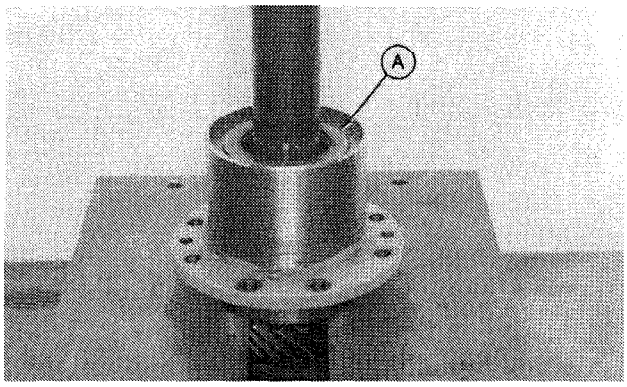
0210,14 -19-20APR90

6. Remove pinion shaft.
7. Remove oil seal (A).



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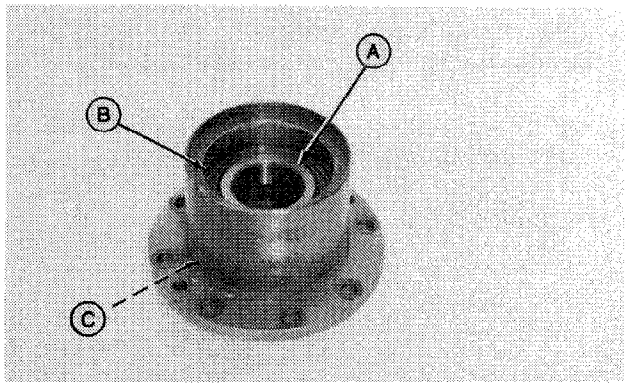
8. Remove bearing (A). Replace bearing cup (B) if bearing is replaced.

9. Inspect bearing cups (B and C). Remove with puller if replacement is necessary.



T6439MA -UN-18OCT88

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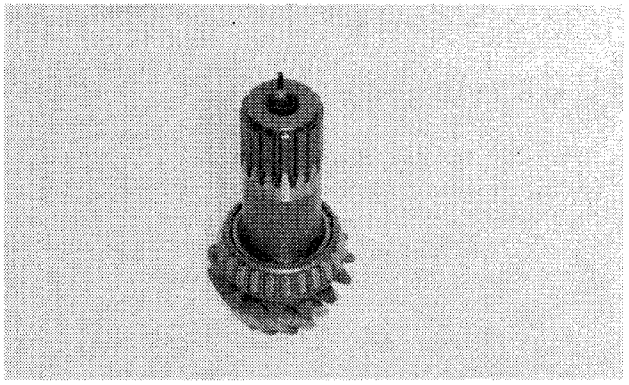
10. Inspect bearing. Remove with puller if replacement is necessary.

NOTE: Replace bearing cup (C) in step 9 if bearing is replaced.



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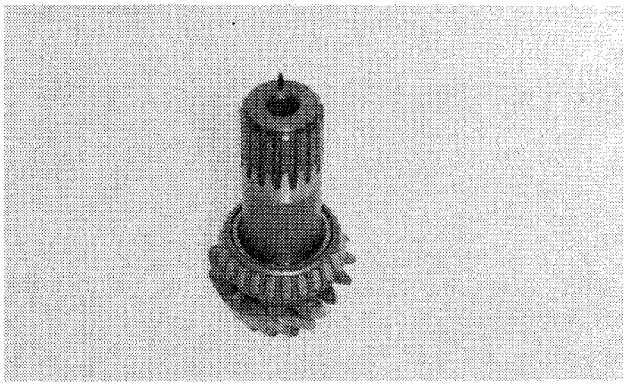
0210,17 -19-20APR90

ASSEMBLE INPUT PINION

CAUTION: DO NOT heat oil over 182C (360F). Oil fumes or oil can ignite above 193C (360F). Use a thermometer. Do not allow a flame or heating element to come in direct contact with the oil. Heat the oil in a well ventilated area. Plan a safe handling procedure to avoid burns.

1. Heat bearing cone to 150C (300F) and install on shaft.



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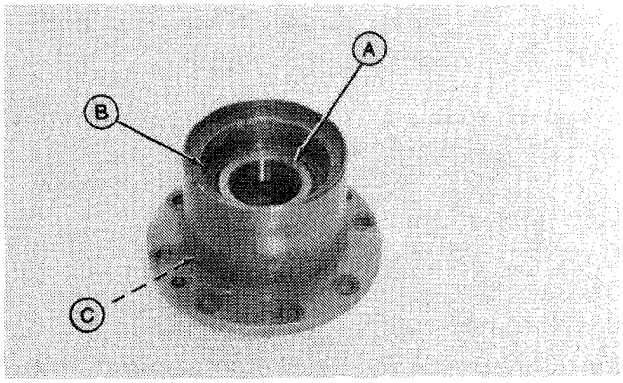
2. Install bearing cup (C) using a 78 mm (3-5/64 in.) disk. Install cup tight against shoulder in quill.

3. Install bearing cup (B) using a 74 mm (2-29/32 in.) disk. Install cup tight against shoulder in quill.

4. Install bearing (A).



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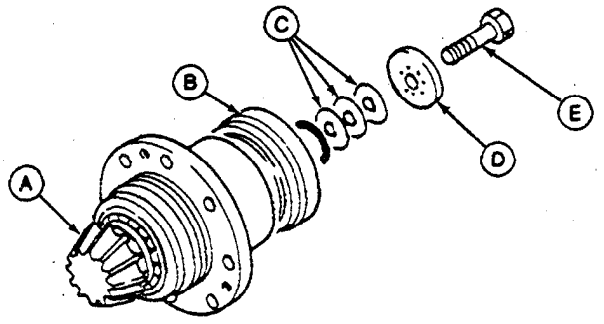
5. Install pinion shaft (A).

6. Install input flange (B).

7. Install original shim pack (C), spacer (D), and cap screw (E). Tighten cap screw to 180 N·m (80 lb-ft).

NOTE: Do not install oil seal at this time. Oil seal will be installed after pinion shaft adjustment.

A—Pinion Shaft
B—Input Flange
C—Shim Pack
D—Spacer
E—Cap Screw



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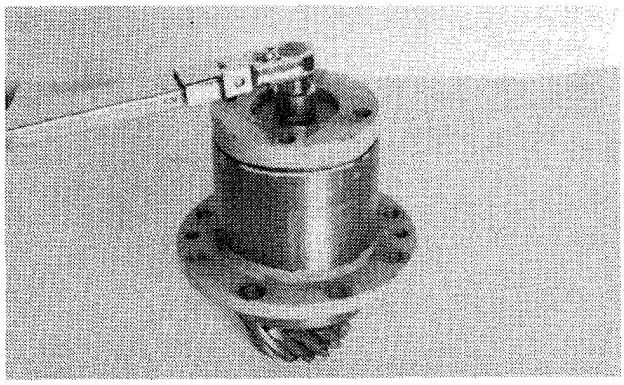
8. Check rolling drag torque to be within 15—18 N·m (11—13 lb-ft). Add shims to decrease or subtract shims to increase rolling drag torque.

9. Check to make sure there is no end play in the pinion shaft bearings.



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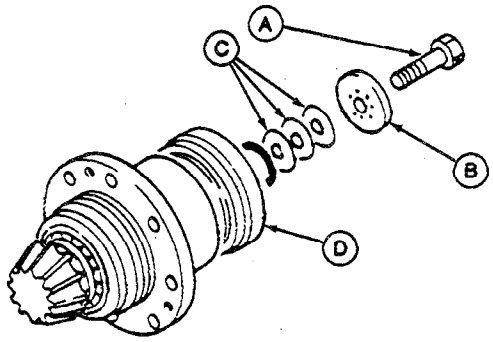
10. Remove cap screw (A), spacer (B), shims (C), and input flange (D).

A—Cap Screw
B—Spacer
C—Shim Pack
D—Input Flange



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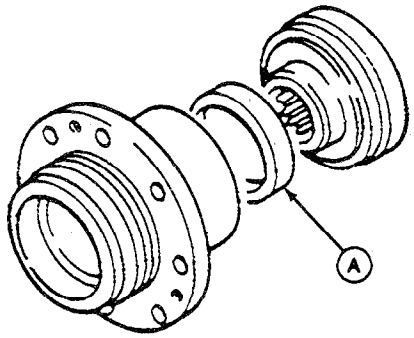
11. Apply thread lock and sealer (medium strength) or an equivalent, on the outside surface of the oil seal (A).

12. Install new oil seal (A) using an 81 mm (3-3/16 in.) disk. Put multipurpose grease on seal lips.



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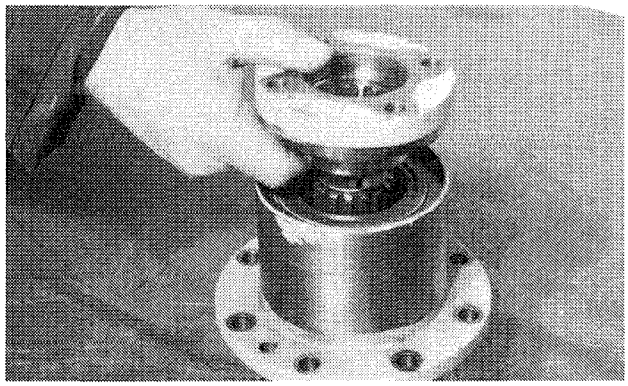
13. Install input flange.



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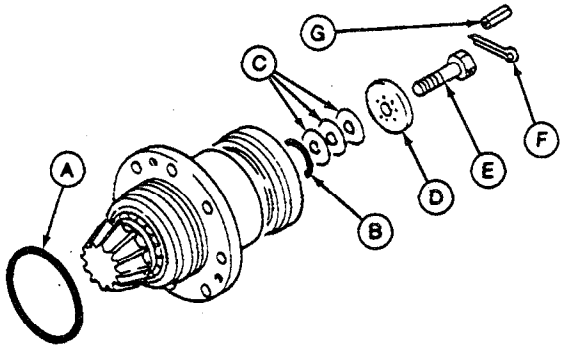
14. Install O-rings (A and B).

15. Install shims (C), spacer (D), and cap screw (E). Tighten cap screws to 108 N·m (80 lb-ft).

16. Install cotter pin (F) and spring pin (G). Bend ends of cotter pin around spring pin.

A—O-Ring
B—O-Ring
C—Shim Pack
D—Spacer
E—Cap Screw
F—Cotter Pin
G—Spring Pin



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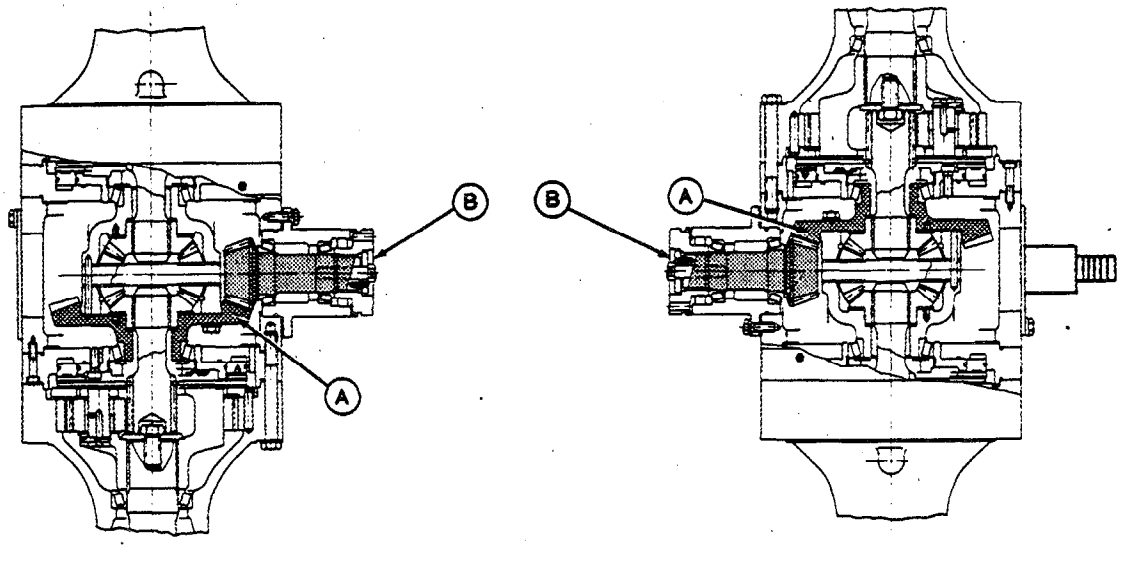
INSTALL DIFFERENTIAL AND INPUT PINION



1. Install differential. The ring gear (A) will be on the left side when facing the input pinion (B).

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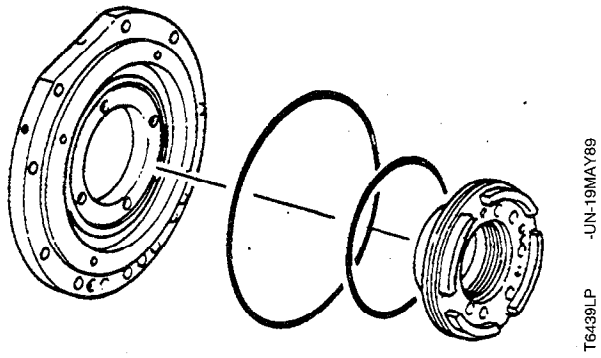
2. Coat O-rings with hydraulic oil. Install O-rings.



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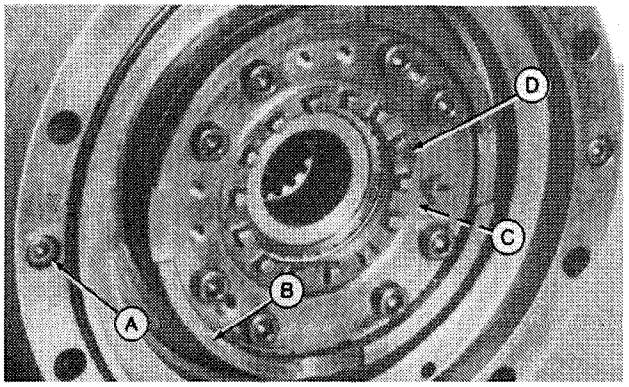
3. Install brake piston housing. Apply thread lock and sealer (medium strength) to the cap screw threads (A). Tighten to 30 N·m (22 lb-ft) torque.

4. Install carriers (B) and bearing cup (C). Apply thread lock and sealer (medium strength) to the cap screw threads. Tighten to 59 N·m (44 lb-ft) torque.

5. Install adjusting nuts (D).

6. Install brake line.

A—Cap Screw
B—Carrier
C—Bearing Cup
D—Adjusting Nut



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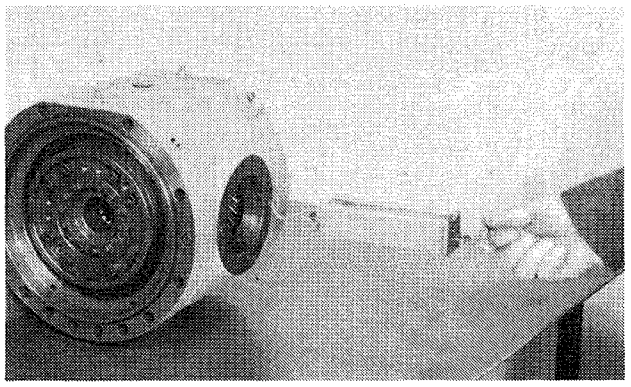
7. Measure amount of effort to turn differential housing using a spring scale and string. Reading on scale must be 2.2—2.75 kg (4.8—6.1 lb). To increase or decrease amount of pull, loosen or tighten adjusting nut.



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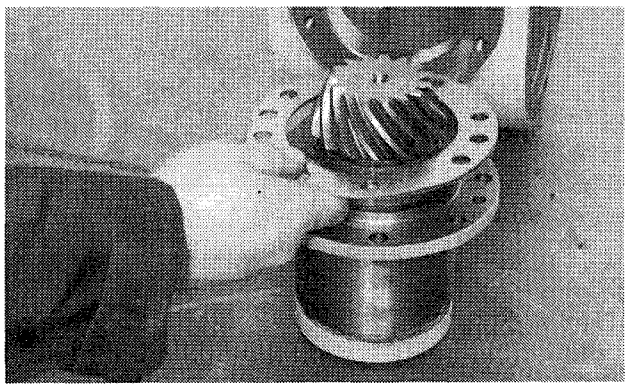
8. Install original shim Pack.

9. Install input pinion.

10. Tighten cap screws (A) to 59 N·m (44 lb-ft) torque.



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11. Position dial indicator with contact point resting against ring gear tooth.

12. Hold pinion shaft stationary. Move ring gear back and forth. Measure backlash.

BACKLASH SPECIFICATION

Backlash	0.15—0.20 mm (0.006—0.008 in.)

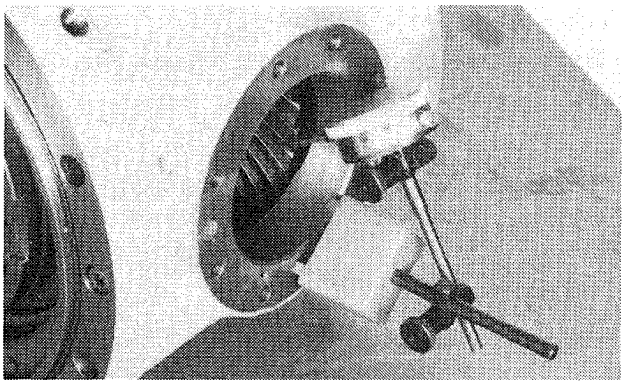
13. Adjust backlash by turning both differential adjusting nuts an equal amount in the same direction to move the differential closer to or farther away from the input pinion.

14. Apply dye on several teeth of ring gear drive side (convex).

15. Hold ring gear just tight enough to create resistance. Turn input pinion flange so that pinion shaft teeth contact drive side of ring gear teeth. Turn ring gear one complete revolution.

16. Check tooth pattern on ring gear.

17. Make adjustments indicated in chart.



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