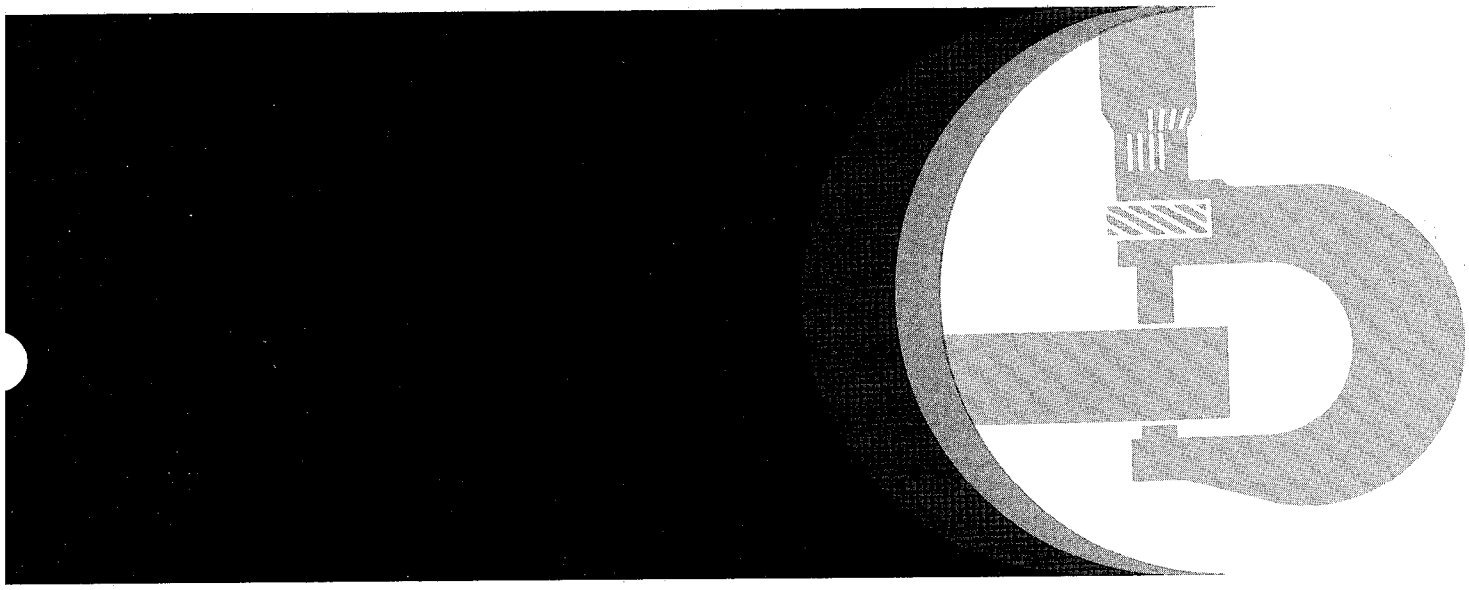
John Deere 210C, 310C, 315C Backhoe Loaders Repair



TECHNICAL MANUAL

TM-1420 (Jun-88)

LITHO IN U.S.A.

Introduction

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 types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technicals 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 technicals manuals are written as stand-alone manuals covering multiple machine applications.

053;TMIFC 190188

JOHN DEERE DEALERS

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

This is a complete revision for TM-1328, 210C, 310C and 315C Backhoe Loaders.

TM-1419 (Operation and Test) and TM-1420 (Repair) replace TM-1328.

The new pages are dated (Jun-88). Listed below is a brief explanation of "WHAT" was changed and "WHY" it was changed.

This manual was revised:

1. To update brake specifications and adjustment procedures.

T64;TM1420 DCS 150688

210C, 310C, 315C BACKHOE LOADERS TECHNICAL MANUAL TM-1420 (JUN-88) REPAIR

SECTION AND GROUP CONTENTS

NOTE: This manual covers machine repair. For operation and test information, see TM-1419 Operation and Test.

Continued on next page

All information, illustrations and specifications contained in this technical 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.

T64;1420 K1 160688

T64;1420 K2 140688

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.

AB6;TS227 053;FLAME 050188

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).

ABT;TS204 053;SPARKS 050188

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.

AB6;TS186 053;FIRE2 080785

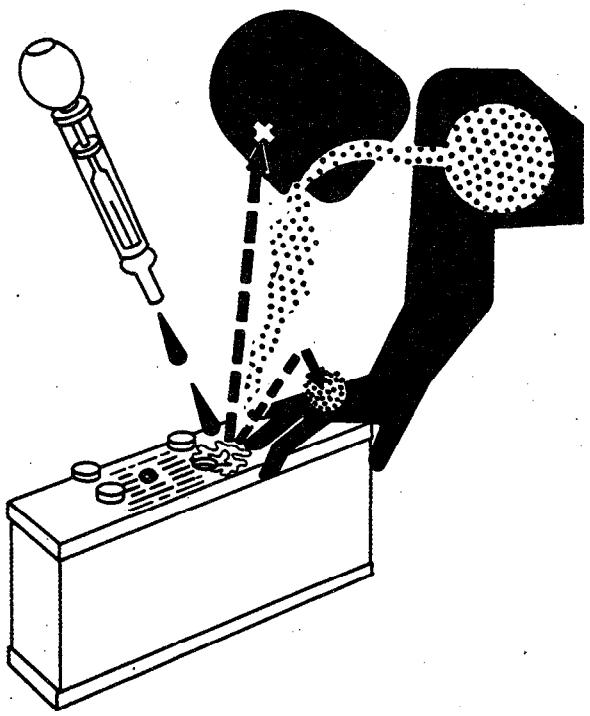
PREVENT ACID BURNS

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.

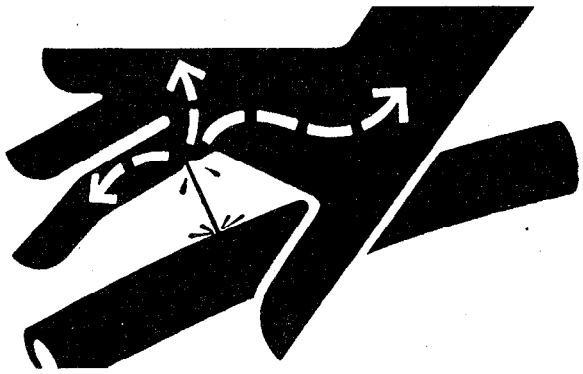


AB6;TS203 053;POISON 211287

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before unhooking hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard to search for leaks.

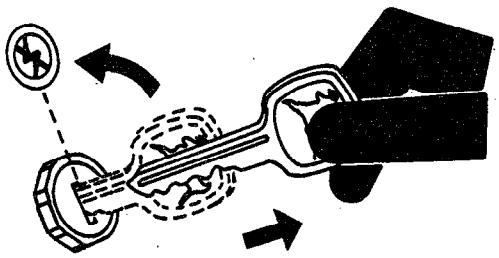
If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



AB6;X9811 053;FLUID 180987

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.

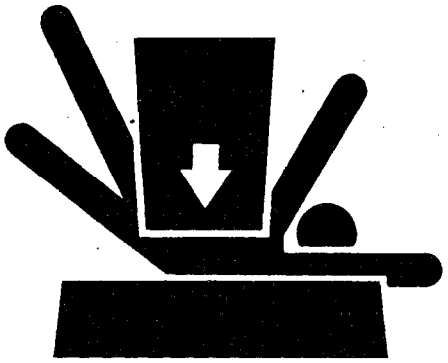


AB6;TS230 053;PARK 050188

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



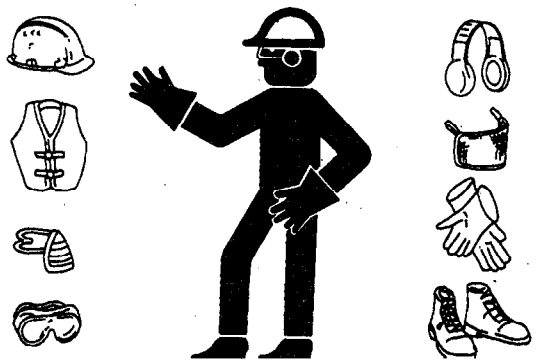
AB6;TS229 053;LOWER 211287

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

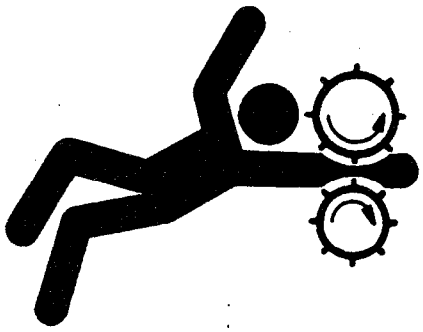


AB6;TS206 053;WEAR 230487

SERVICE MACHINE SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

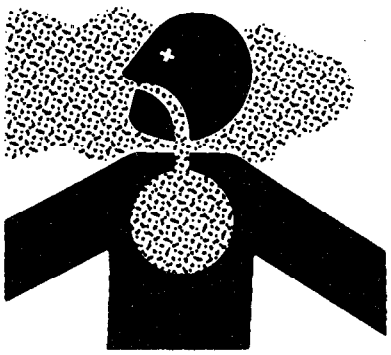


AB6;TS228 053;LOOSE 211287

WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.



AB6;TS220 053;AIR 050188

UNDERSTAND CORRECT SERVICE

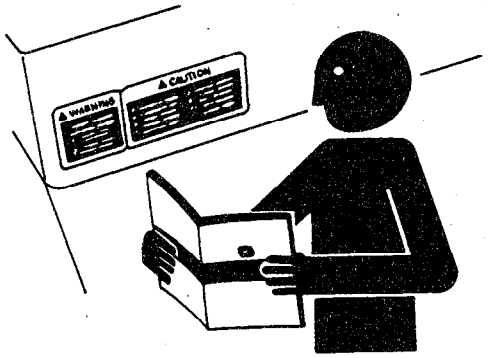
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

Catch draining fuel, oil, or other fluids in suitable containers. Do not use food or beverage containers that may mislead someone into drinking from them. Wipe up spills at once.

AB6;TS223 053;LIGHT 230288

REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

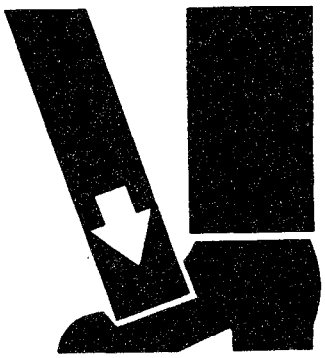


AB6;TS201 053;SIGNS1 221287

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.

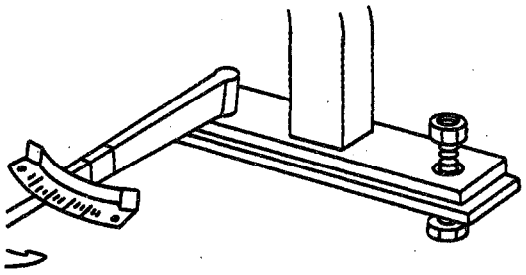


AB6;TS226 053;LIFT 050188

KEEP ROPS INSTALLED PROPERLY

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

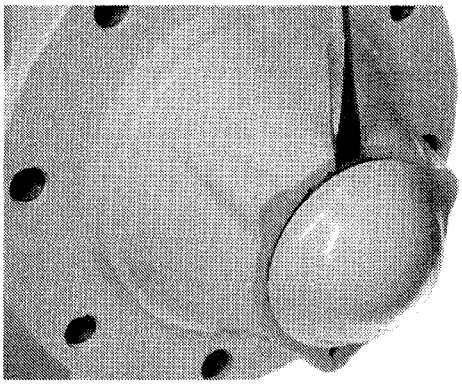


AB6;TS212 053;ROPS3 230487

REMOVE HUB ASSEMBLY

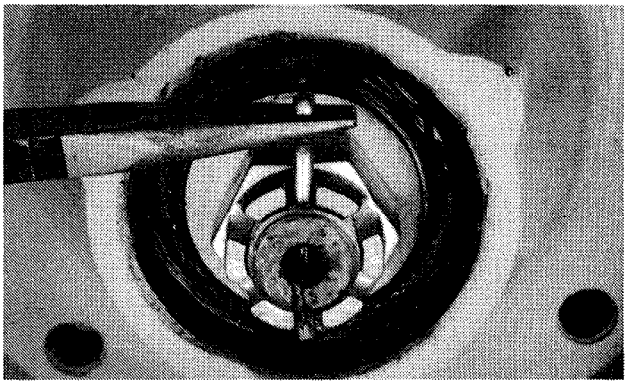
1. Remove front wheel. (See Remove Front Wheel Assembly , Group 0120.)

2. Remove cap.



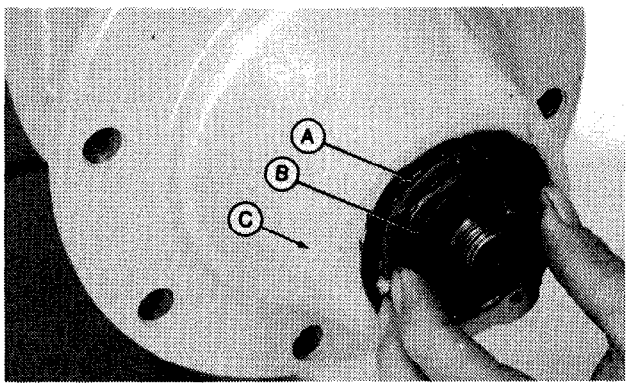
8AG;T91811 T47;0230 86 151283

3. Remove cotter key to remove nut.



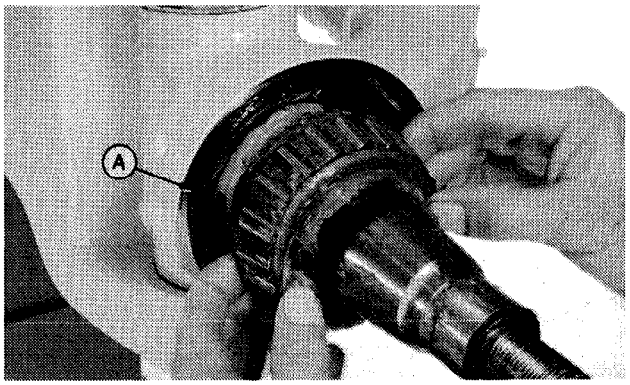
8AG;T91812 T47;0230 87 160583

4. Remove washer (B), bearing (A) and hub (C).



8AG;T91813 T47;0230 88 160583

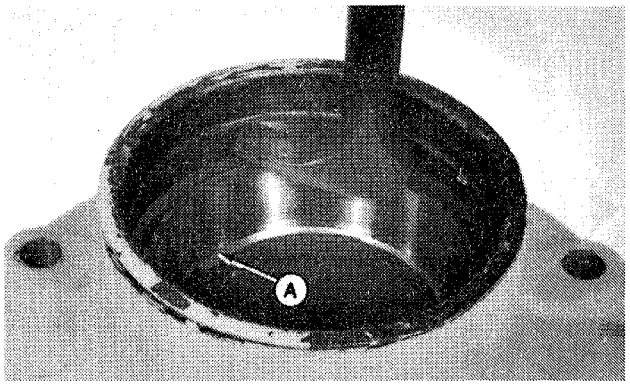
5. Remove bearing cone and seal (A).



8AG;T91814 T47;0230 89 160583

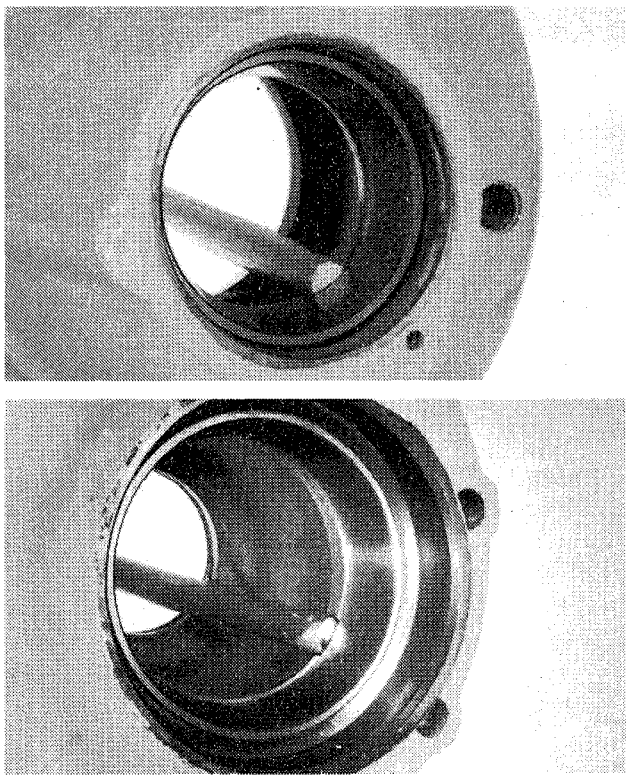
6. Remove seal cup.

7. Inspect bearing cup (A). Remove cups only if replacement is necessary.



8AG;T91815 T47;0230 90 160583

8. Remove bearing cups using a soft steel rod.

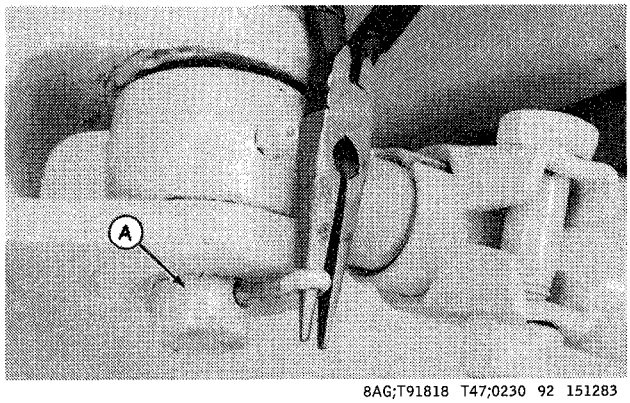


8AG;T91817, T91816 T47;0230 91 160583

REMOVE SPINDLE AND KNUCKLE ASSEMBLY

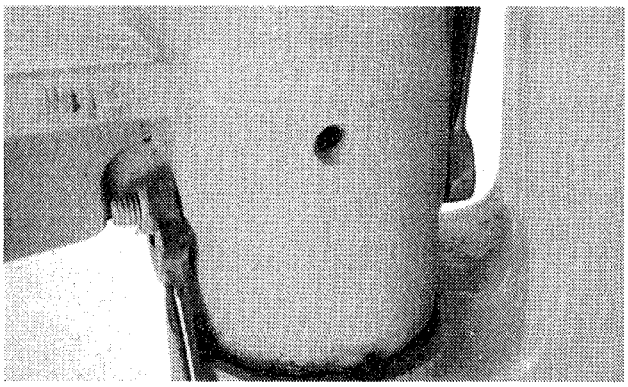
1. Remove hub. (See Remove Hub Assembly in this group.)

2. Remove cotter pin and pin (A) to disconnect tie rod.



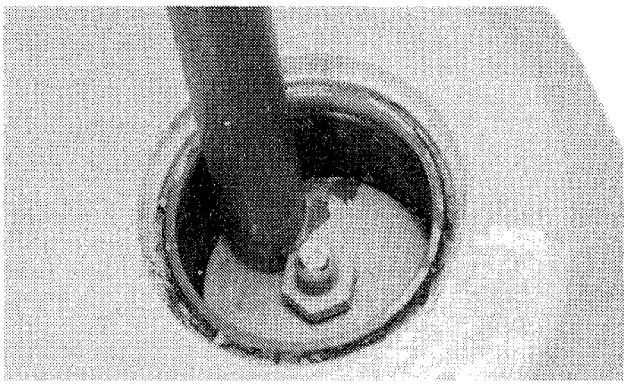
8AG;T91818 T47;0230 92 151283

3. Remove cap screw.



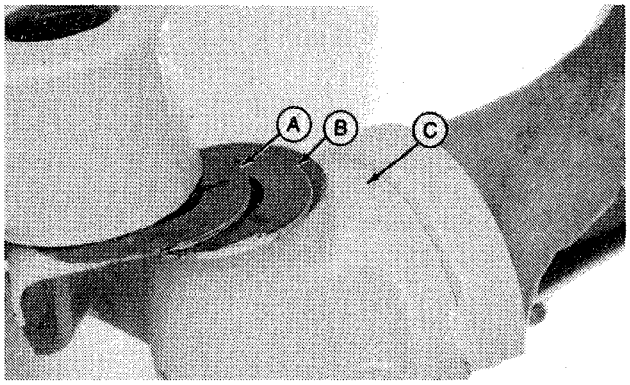
8AG;T91819 T47;0230 93 160583

4. Remove kingpin using a soft steel rod.



8AG;T91820 T47;0230 94 160583

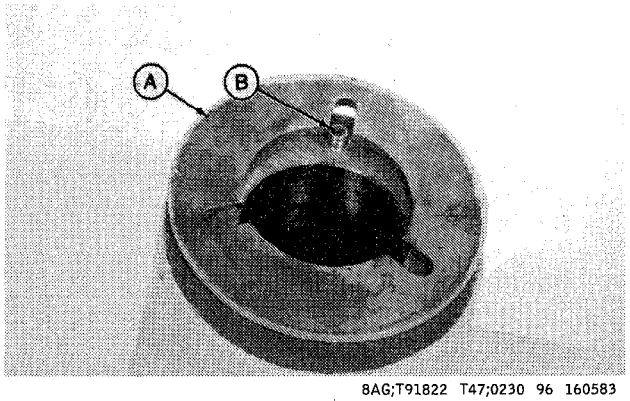
5. Remove knuckle (C) with thrust washer (B) and stop thrust washer (A).



8AG;T91821 T47;0230 95 160583

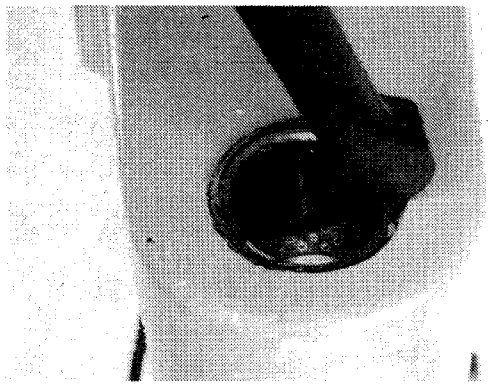
6. Inspect thrust washer (A) and spring pin (B) for wear or damage. Remove spring pin only if replacement is necessary.

7. Inspect all parts for wear or damage including axle bushings.



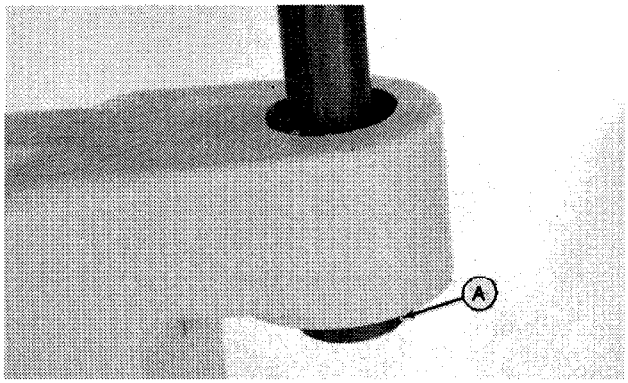
8AG;T91822 T47;0230 96 160583

8. Remove upper and lower seals.



8AG;T91823 T47;0230 97 160583

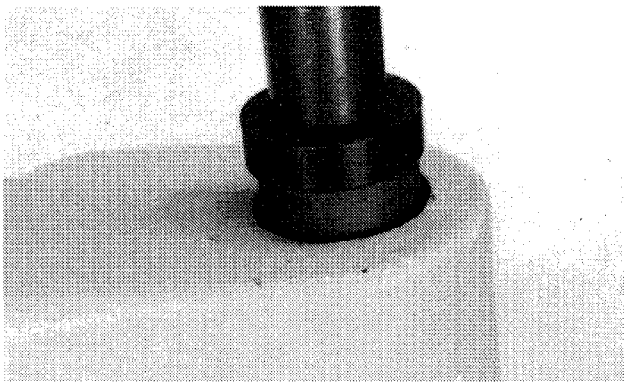
9. Remove upper and lower bushings (A) using 39 mm and 44 mm disks.

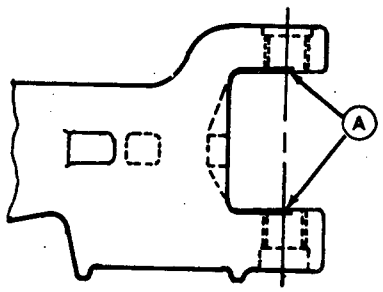


8AG;T91824 T47;0230 98 060484

INSTALL SPINDLE AND KNUCKLE ASSEMBLY

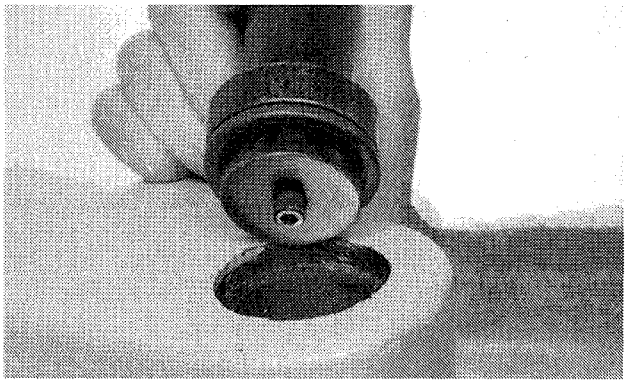
1. Apply retaining compound to outside surface of new bushings. Install new bushings using 39 and 49 mm disks. Install bushings flush to 0.3 mm (0.01 in.) recessed from spindle side (A) of bores.





8AG;T91825, T91826 T47;0230 99 130586

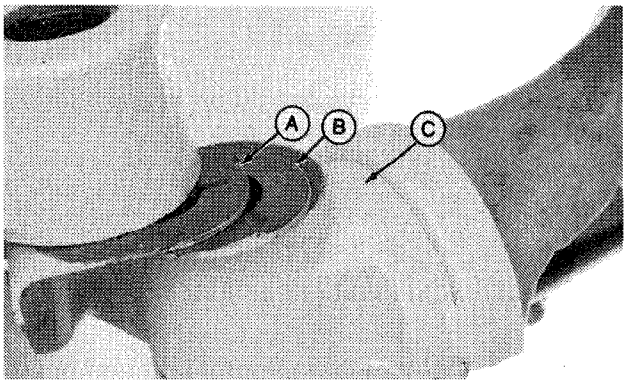
2. Install new seals using 39 disk and 49 disk. Install seals tight against bushings.



8AG;T91827 T47;0230 100 231085

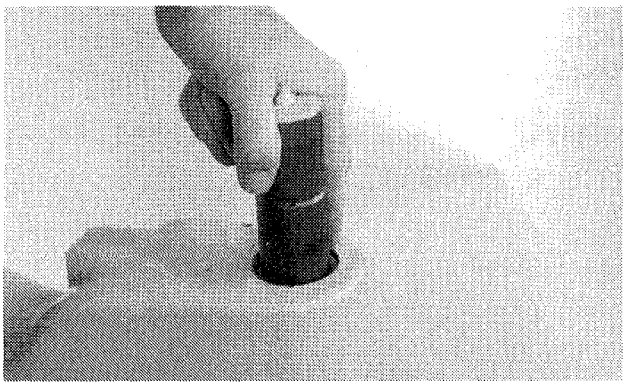
3. Install new knuckle spring pin, if removed.

4. Install stop thrust washer (A), thrust washer (B), and knuckle (C).



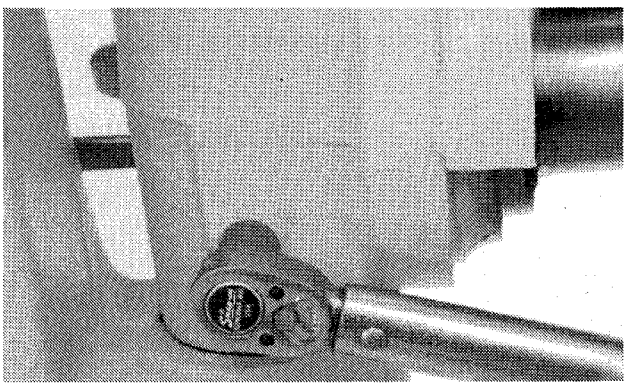
8AG;T91821 T47;0230 101 160583

5. Install kingpin.



8AG;T91828 T47;0230 102 160583

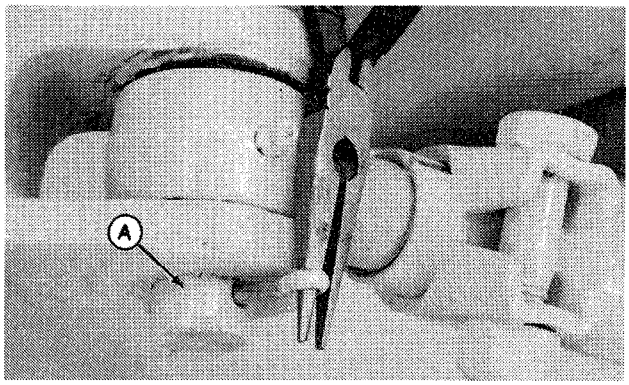
6. Install and tighten cap screw to 47 N·m (35 lb-ft).



8AG;T91829 T47;0230 103 160583

7. Align tie rod to install pin (A) and cotter pin.

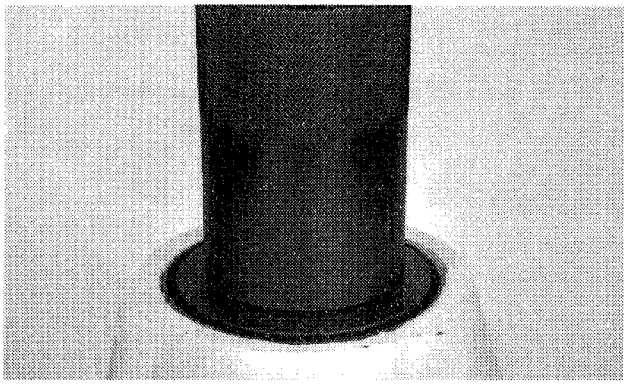
8. Install hub. (See Install Hub Assembly in this group.)



8AG;T91818 T47;0230 104 151283

INSTALL HUB ASSEMBLY

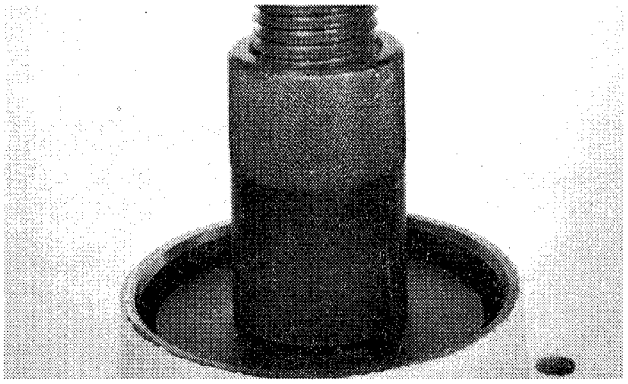
1. Install new bearing cup using a press and 73 mm disk. Install cup tight against its shoulder.



8AG;T91830 T47;0230 J11 240286

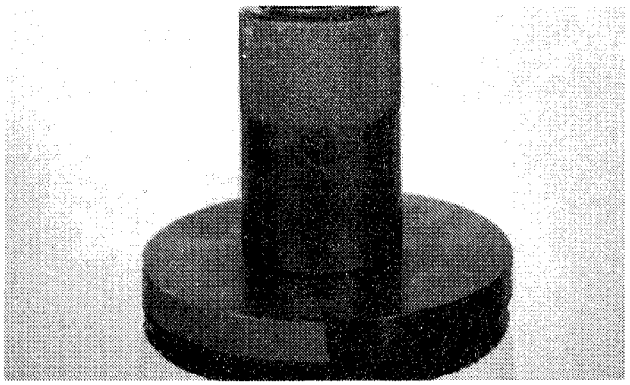
2. Install bearing cup using a press and 68 mm and 106 mm disk. Install cup tight against its shoulder.

3. Put multi-purpose grease on the inner and outer bearing cups.



8AG;T91831 T47;0230 J12 240685 JW

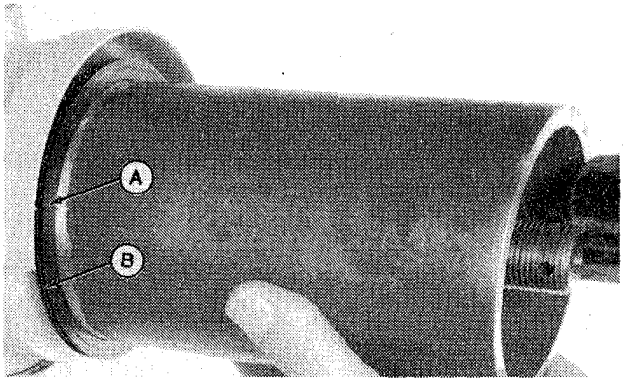
4. Install seal cup using a press and 108 mm driver.



8AG;T91832 T47;0230 J13 060685 JW

5. Install seal (A) using a 2.510 in. I.D. x 2.750 O.D. x 0.120 wall round mechanical tubing 6 in. long. Install seal tight against its shoulder with flat side of seal against driver.

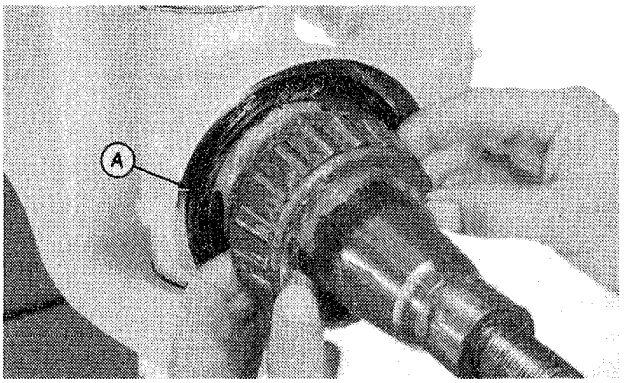
6. Put multi-purpose grease on lips (B) of seal.



8AG;T91833 T47;0230 J14 280186

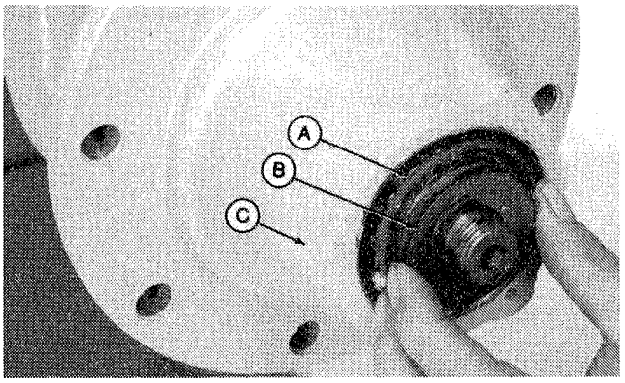
7. Install inner bearing cone.

8. Put multi-purpose grease in space between bearing cone and seal (A) until space is full.



8AG;T91814 T47;0230 109 160583

9. Install hub (C), bearing cone (A), and washer (B).



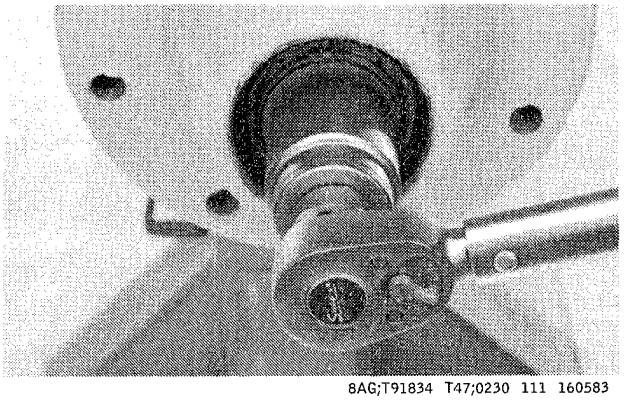
8AG;T91813 T47;0230 110 160583

ADJUST WHEEL HUB BEARINGS

1. Install and tighten slotted nut to 47 N·m (35 lb-ft).

2. Turn hub several times and tighten nut again to 47 N·m (35 lb-ft).

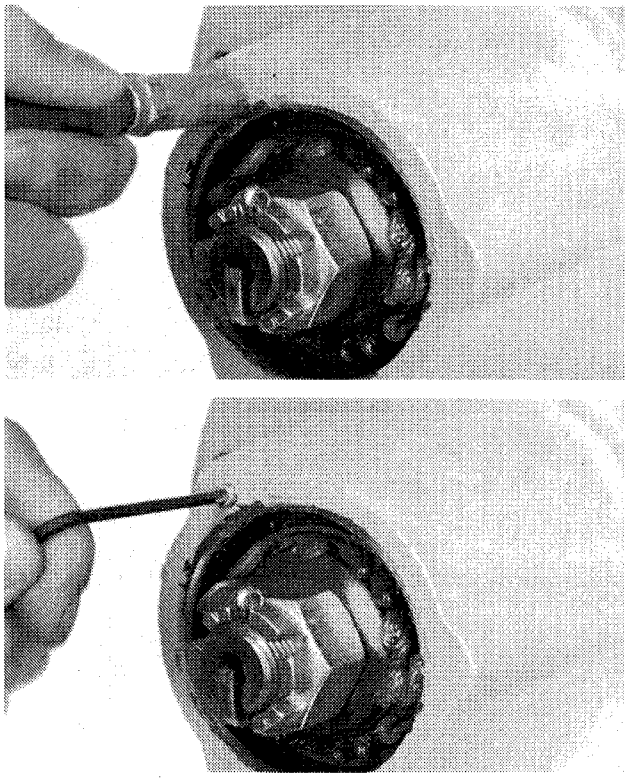
3. Loosen nut just enough to install cotter pin. If hole in knuckle is aligned with slot in nut when nut is tightened to 47 N·m (35 lb-ft), loosen nut one slot and install cotter pin.



8AG;T91834 T47;0230 111 160583

CONTINUE TO INSTALL HUB ASSEMBLY

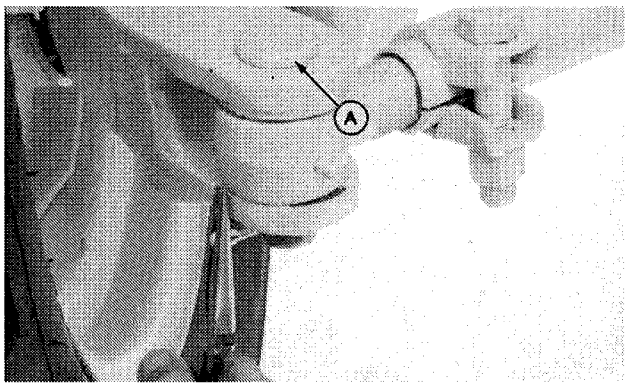
1. Remove set screw and install a grease fitting.
2. Put multi-purpose grease into hub until the grease begins to come through outer bearing cone.
3. Remove grease fitting and install set screw.
4. Install cap.



8AG;T91835, T91836 T47;0230 112 160583

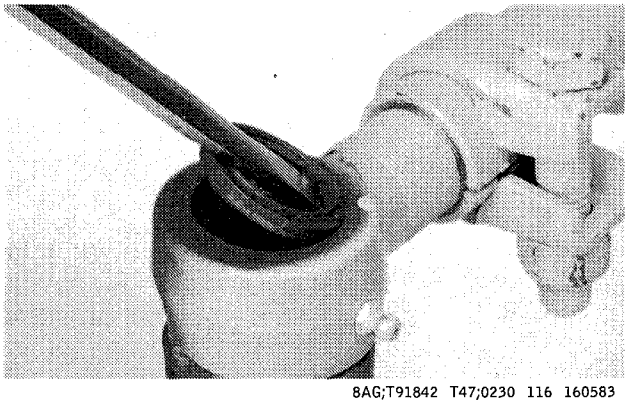
REMOVE TIE ROD

1. Remove cotter pin.
2. Remove pin (A).



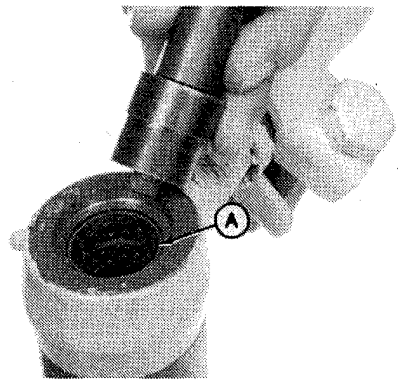
8AG;T91839 T47;0230 C4 250985

3. Remove seal.



8AG;T91842 T47;0230 116 160583

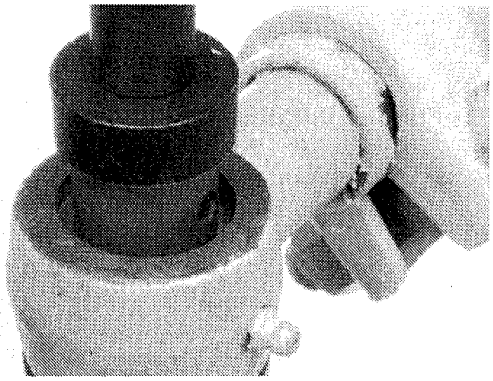
4. Remove bushing (A) using 28 and 25 mm disk.



8AG;T91843 T47;0230 117 280186

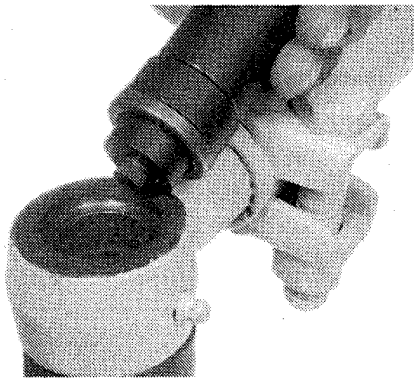
INSTALL TIE ROD

1. Install new bushing using 34 and 25 mm disks.



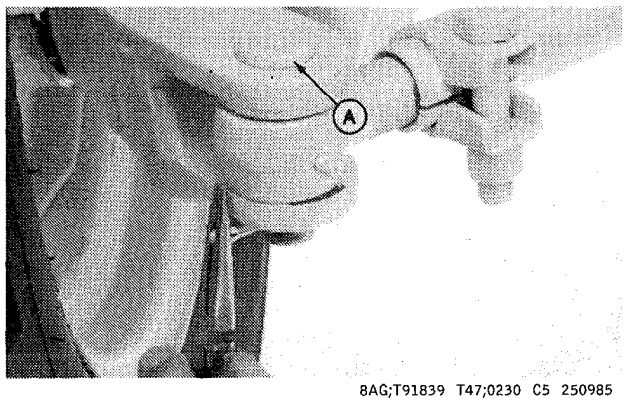
8AG;T91844 T47;0230 118 281086

2. Install new seal using 34 and 25 mm disks.



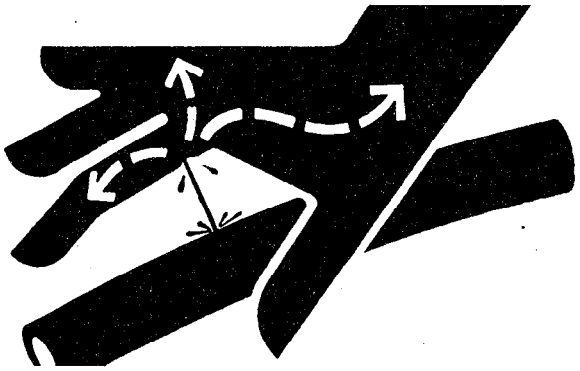
8AG;T91845 T47;0230 119 280186

3. Install pin (A) and cotter pin.



8AG;T91839 T47;0230 C5 250985

REMOVE NON-POWERED FRONT AXLE



1. Raise loader and install boom lock bar.

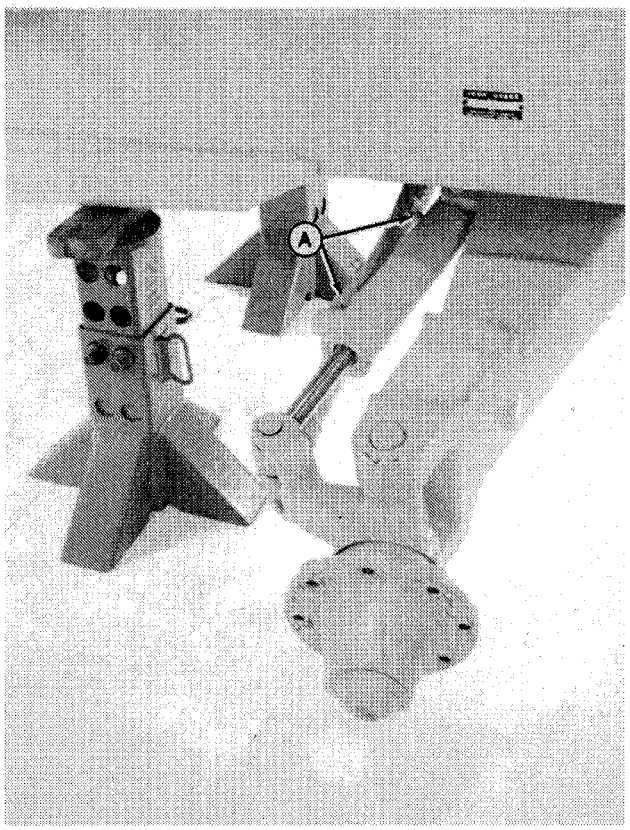
2. Remove counterweights if equipped.

3. Remove both front wheels. (See Remove Front Wheel Assembly in Group 0120.)

4. Install two floor stands with wooden blocks under main frame.

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



5. Operate all hydraulic control valves to release pressure in hydraulic system.

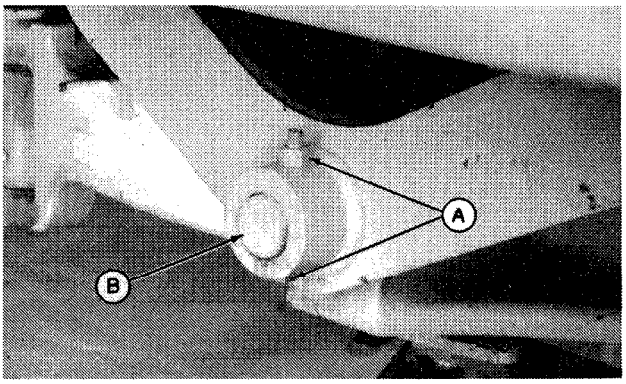
6. Disconnect lines (A). Cap and plug all openings to prevent dirt from entering the hydraulic system.

AB6;X9811 8AG;T91850 T47;0230 C6 240286

7. Place a scissors or service jack under axle.

8. Remove nut and cap screw (A).

9. Remove grease fittings from rear of pin (B). Remove pin to remove axle.

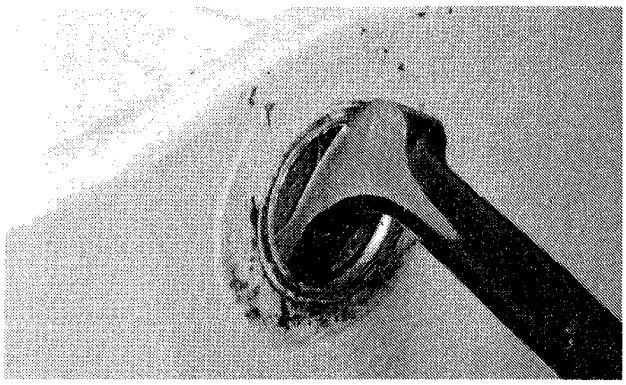


8AG;T6195AD T47;0230 C7 250985

T92;020230 12 180987Y

REMOVE AND INSTALL AXLE BUSHINGS

1. Remove both seals.

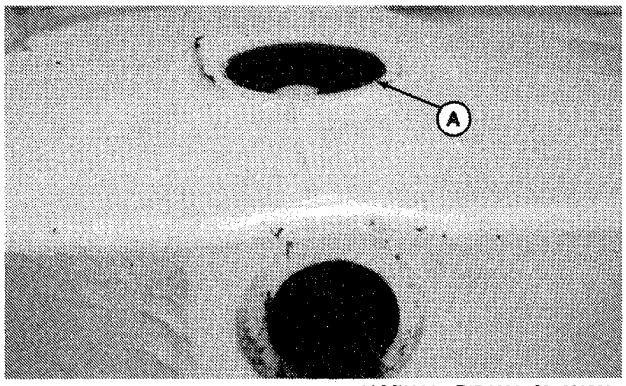


8AG;T91853 T47;0230 C8 250985

2. Remove top plug from hole (A).

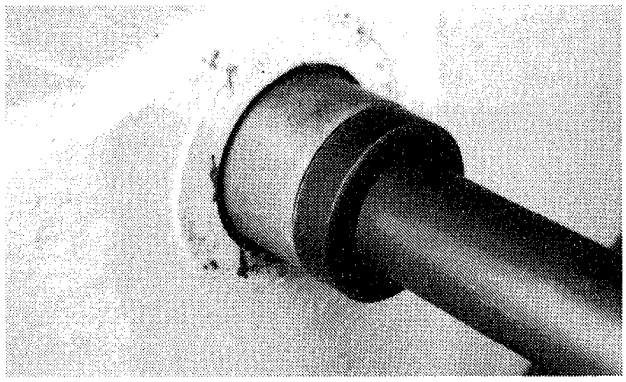
3. Remove pivot bushings by driving outward through hole (A) or with chisel.

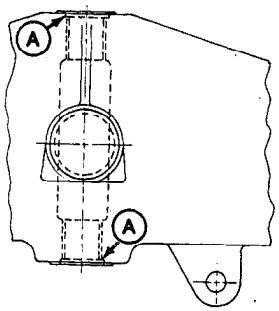
4. Clean bushing bores and new bushings. Surfaces must be free of grease, oil, dirt or paint.



8AG;T91854 T47;0230 C9 290886

5. Apply Retaining Compound to outside surface of new bushings. Install new bushings using 44 mm and 54 mm disks. Install new bushings flush to 0.8 mm (0.03 in.) recessed from edge of seal shoulder (A).

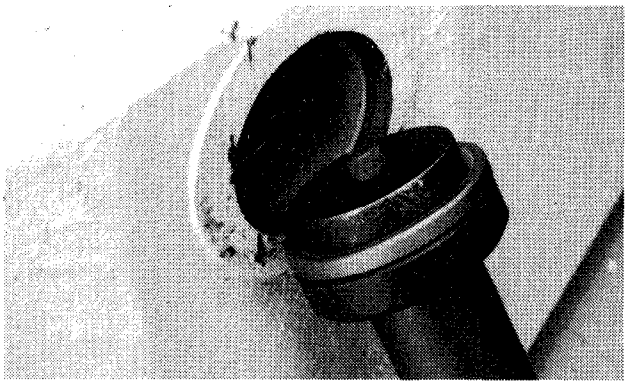




8AG;T91855, T91856 T47;0230 127 280186

6. Install new seals using 44 mm and 54 mm disks. Install new seals tight against bushings with sealing lips facing driver.

7. Install plug in top of axle.



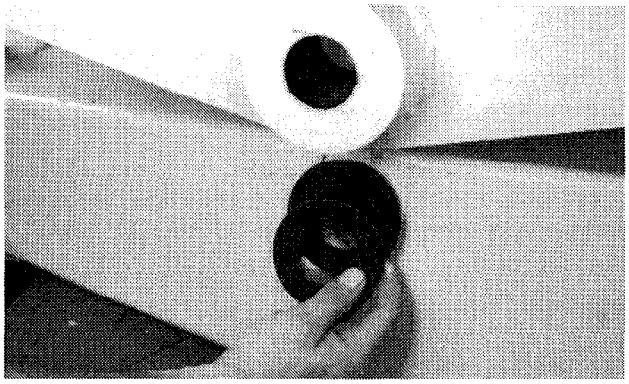
8AG;T91857 T47;0230 C10 250985

INSTALL NON-POWERED FRONT AXLE

1. Position front axle. Install as many shims as will fit between axle and support.

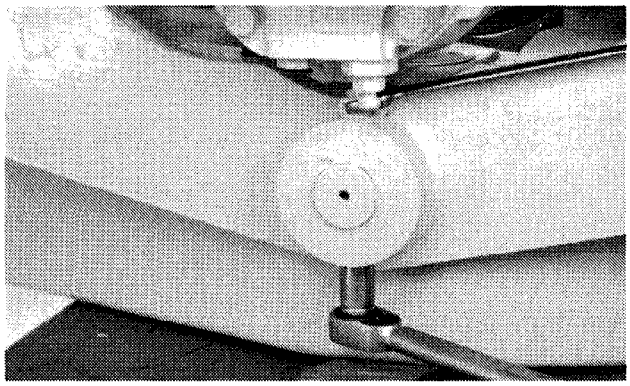
2. Install pin and cap screw. Tighten cap screw.

3. Measure the amount of play between axle and support. Add or subtract shims to get 0.00 to 1.50 mm (0.00 to 0.06 in.) end play.



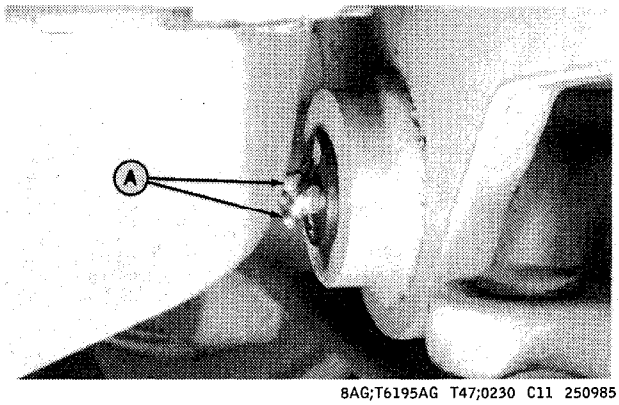
8AG;T91859 T47;0230 130 231085

4. Tighten cap screw to 121 N·m (89 lb-ft).



8AG;T91860 T47;0230 131 160583

5. Install and tighten grease fittings (A). Apply recommended grease to fittings.



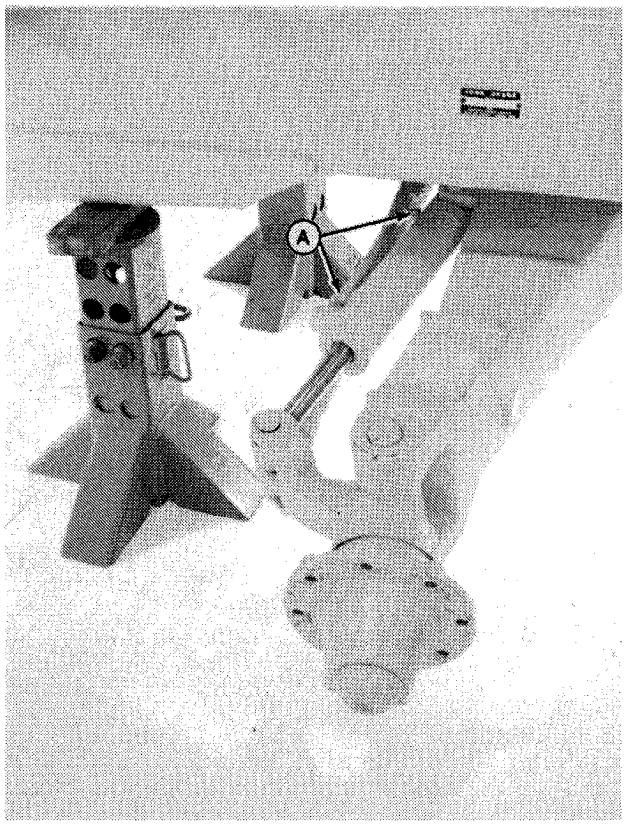
8AG;T6195AG T47;0230 C11 250985

6. Connect two hydraulic hoses (A).

7. Install front wheels. (See Install Front Wheel Assembly in Group 0120.)

8. Install counterweight if equipped.

9. Raise unit and remove floor stands.



8AG;T91850 T47;0230 C12 250985