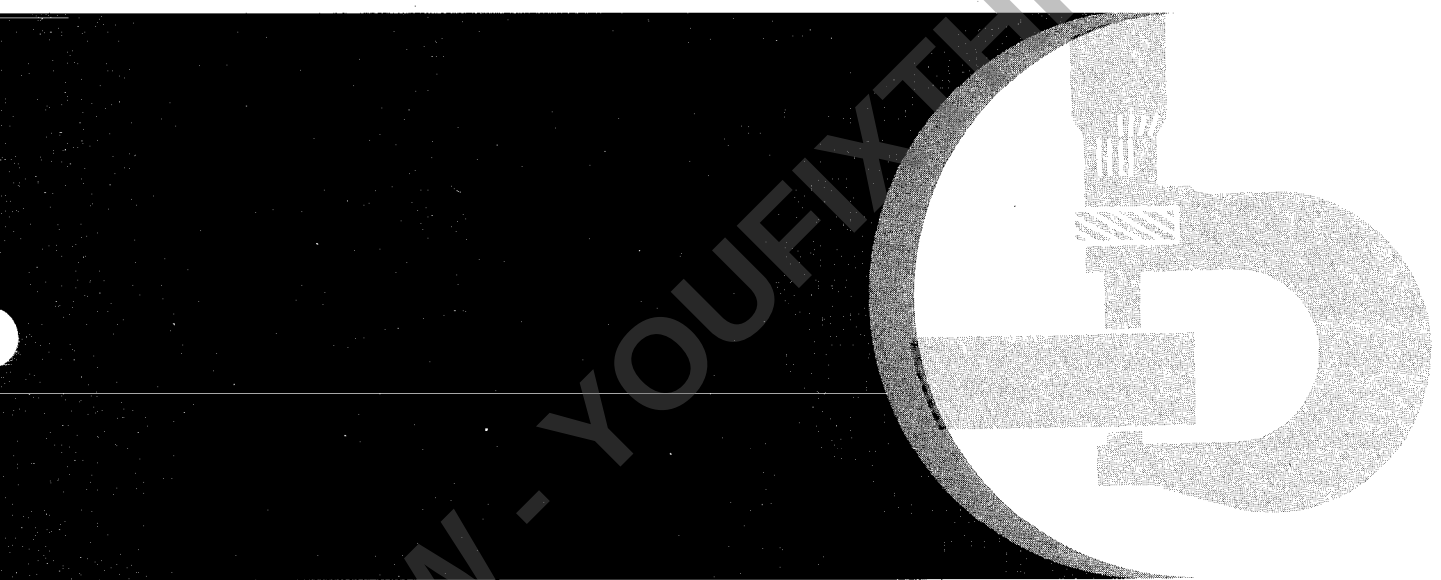
John Deere 444D, 544D and 644D Loader Repair



TECHNICAL MANUAL

TM-1341 (Oct-87)

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444D, 544D, AND 644D LOADERS TECHNICAL MANUAL TM-1341 (Oct-87)

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SECTION 04—ENGINE
- 5.4 L (329 Cu In.)—444D, 544D
- 5.9 L (359 Cu In.)—444D, 544D
- 6.8 L (414 Cu In.)—444D, 544D
- 7.6 L (466 Cu In.)—644D

NOTE: For repair on 5.9 L (359 cu. in.) engines, see CTM-4; 7.6 L (466 Cu. In.) engines, see CTM-1.

- Group 0400—Removal and Installation Oil Pan, Fuel Injection Pump, Fuel Injection Lines and Nozzles, Turbocharger, Water Pump, Thermostats, Fuel Transfer Pump, Starting Motor

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.

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T64;1341 J6 041187

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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 to the potential for personal injury.



AB6;T81389 053;ALERT 071085

UNDERSTAND SIGNAL WORDS

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

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

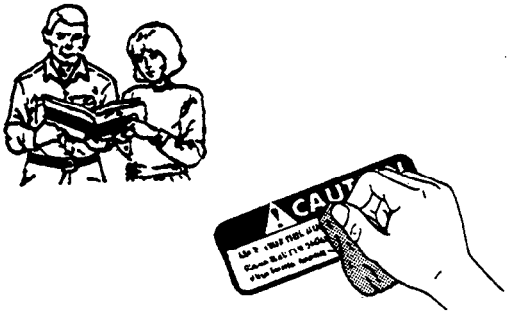


AB6;TS187 053;SIGNAL 071085

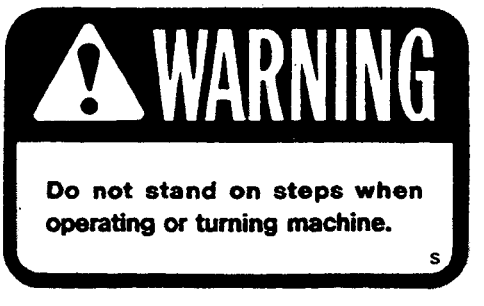
FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.



AB6;TS188 053;SIGNS 071085

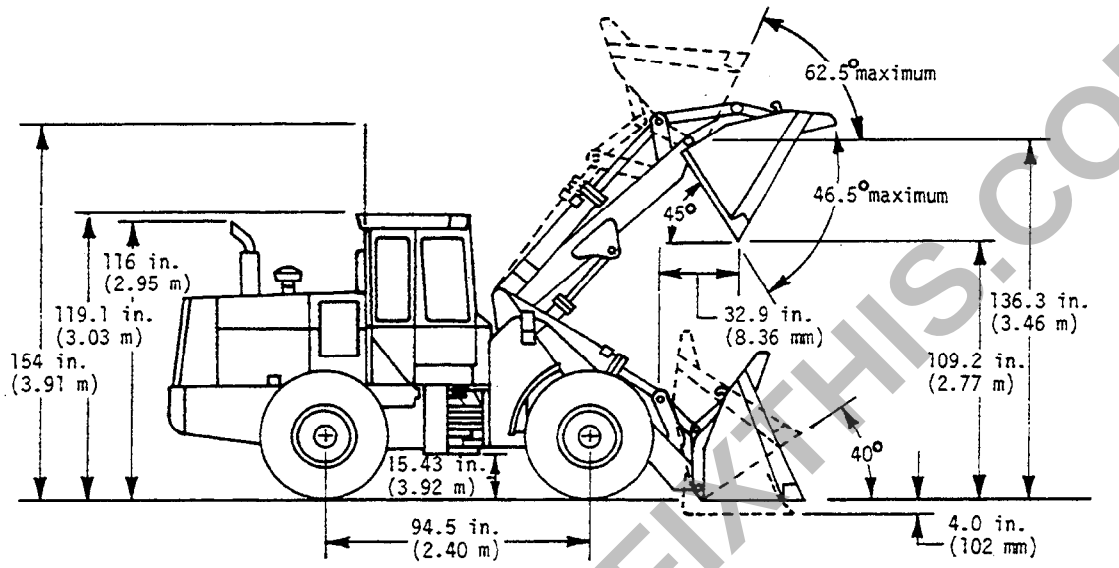


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444D LOADER



Engine:
- John Deere 6-cylinder turbocharger diesel ..... 90 SAE hp (67 kw)
- Bore and stroke
  - Pin (—511476) ..... 4.02 x 4.33 in. (102 x 110 mm)
  - Pin (511477—) ..... 4.19 x 4.33 in. (106 x 110 mm)
- Piston displacement
  - Pin (—511476) ..... 3.29 cu. in. (5.392 L)
  - Pin (511477—) ..... 3.59 cu. in. (5.833 L)
- Lubrication ..... Pressure system with full-flow filter
- Cooling ..... Pressurized with thermostat and controlled bypass
- Fan ..... Blower
- Dual-stage air cleaner with restriction indicator ..... Dry
- Electrical system ..... 12-volt with alternator
- Batteries (one 12-volt)
  - Cold cranking capacity at 0°F (−18°C) ..... 625 amps
  - Reserve capacity ..... 170 min. ea.
- Alternator: standard ..... 42 amps
  - optional with cab ..... 90 amps

Differentials:
- Front and rear ..... Standard
- Front hydraulic differential lock with capture circuit ..... Optional
- Front No Spin ..... Optional

Drive Axles:
- Inboard-mounted planetary gears to each wheel.
- Front axle fixed.
- Rear axle oscillates 22° total (15.6 in (396 mm) vertical travel at center of tire).

018;T6140AC 05T;115 C72 140886

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HARDWARE TORQUE SPECIFICATIONS

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

T82;SKMA AT 270286

NOTE: Torques shown are for dry (no lubrication on threads) hardware.

NOTE: Torque wrench tolerance is ± 10 per cent of specified torque.

Customary Hardware

Cap Screw Size-Inches	Grade B		Grade D		Grade F	
	lb-ft.	(N-m)	lb-ft.	(N-m)	lb-ft.	(N-m)
1/4	----	----	10	(14)	14	(19)
5/16	----	----	20	(27)	30	(41)
3/8	----	----	35	(47)	50	(68)
7/16	35	(47)	55	(75)	80	(108)
1/2	55	(75)	85	(115)	120	(163)
9/16	75	(102)	130	(176)	175	(237)
5/8	105	(142)	170	(230)	240	(325)
3/4	185	(251)	300	(407)	425	(576)
7/8	160	(217)	445	(603)	685	(929)
1	250	(339)	670	(908)	1030	(1396)
1-1/8	330	(447)	910	(1234)	1460	(1979)
1-1/4	480	(651)	1250	(1695)	2060	(2793)

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WHEEL RETAINER CAP SCREWS

Tighten cap screws to 410 ± 40 N·m (300 ± 30 lb-ft).

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Tires:	Cold Tire Inflation Pressure
13.0—24, 8 PR, G2	50 psi (345 kPa) (3.5 bar)
15.5—25, 8 PR, L2	45 psi (310 kPa) (3.1 bar)
15.5—25, 12 PR, L2	55 psi (380 kPa) (3.8 bar)
15.5—25, 1 STAR, XRAT	front 50 psi (340 kPa) (3.4 bar)
	rear 30 psi (210 kPa) (2.1 bar)
17.5—25, 12 PR, L2	50 psi (340 kPa) (3.4 bar)
*18.4—26, 10 PR, LS2	30 psi (210 kPa) (2.1 bar)
*23.1—26, 10 PR, LS2	25 psi (170 kPa) (1.7 bar)

**Use with log loader*

Wheel Treads:

Front and rear ..... 70.0 in. (1.78 m)

Refill Capacities:	U.S.	Metric
Cooling System	24 qt.	23 L
Fuel tank	50 gal.	189 L
Engine crankcase and filter	12 qt.	11.4 L
Transmission case and filter	8.5 gal	32.2 L
Front and rear differential	17 qt.	16 L
Hydraulic reservoir	64 qt.	61 L
Weight:	19, 223 lb	8727 kg

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard equipment, 15.5—25, 8 PR loader-tread tires with 940 lb (426 kg) $CaC1_2$ solution in rear tires, ROPS cab, full fuel tank, and 175 lb (79 kg) operator.

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T82;FLSP H 140685

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USING THE CHECKLISTS

Do an inspection procedure only if there is a "box" behind the procedure in the service column which you are following. Mark the box with an "x" when the procedure is done.

For specific instructions on how to do each procedure, refer to the operator's manual or the technical manual.

If a box is not marked, write an explanation in the comments column. For example:

If engine oil level is low, note amount of oil needed to fill crankcase.

If the machine is not lubricated according to the Periodic Maintenance Chart, note this.

When the inspection is done, put the checklist in the customer's file. Use the same checklist for additional inspections.

06T;PIM C5 120586

DELIVERY SERVICE

Use the operator's manual as a guide. Discuss the following points thoroughly with the customer:

The importance of safety.

Controls and instruments.

All functions of the hydraulic system.

How to start and stop the engine.

The importance of the break-in period.

The importance of lubrication and periodic maintenance.

Have the owner sign the Delivery Receipt.

Give the owner the operator's manual.

T82;TLPD P 290284

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SERVICE EQUIPMENT AND TOOLS

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

Name	Use
Heavy Duty Wheel Lift	Remove and install wheels.
Shop Stand	Support the unit while removing wheels.

T47;0110 K529 170985

SPECIFICATIONS

Item	Measurement	Specification
Cap Screw	Torque	410 ± 40 N·m (300 ± 30 lb-ft)

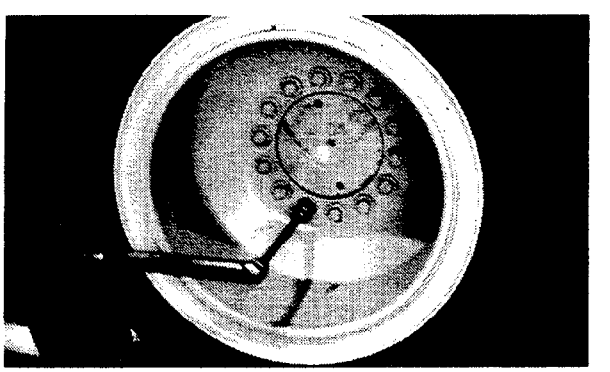
T47;0110 K530 170985

REMOVE WHEEL

NOTE: Procedures are the same for all units.

CAUTION: Loader wheels are heavy. Use suitable equipment when handling wheels to avoid injury.

1. Loosen cap screws before lifting unit off ground.

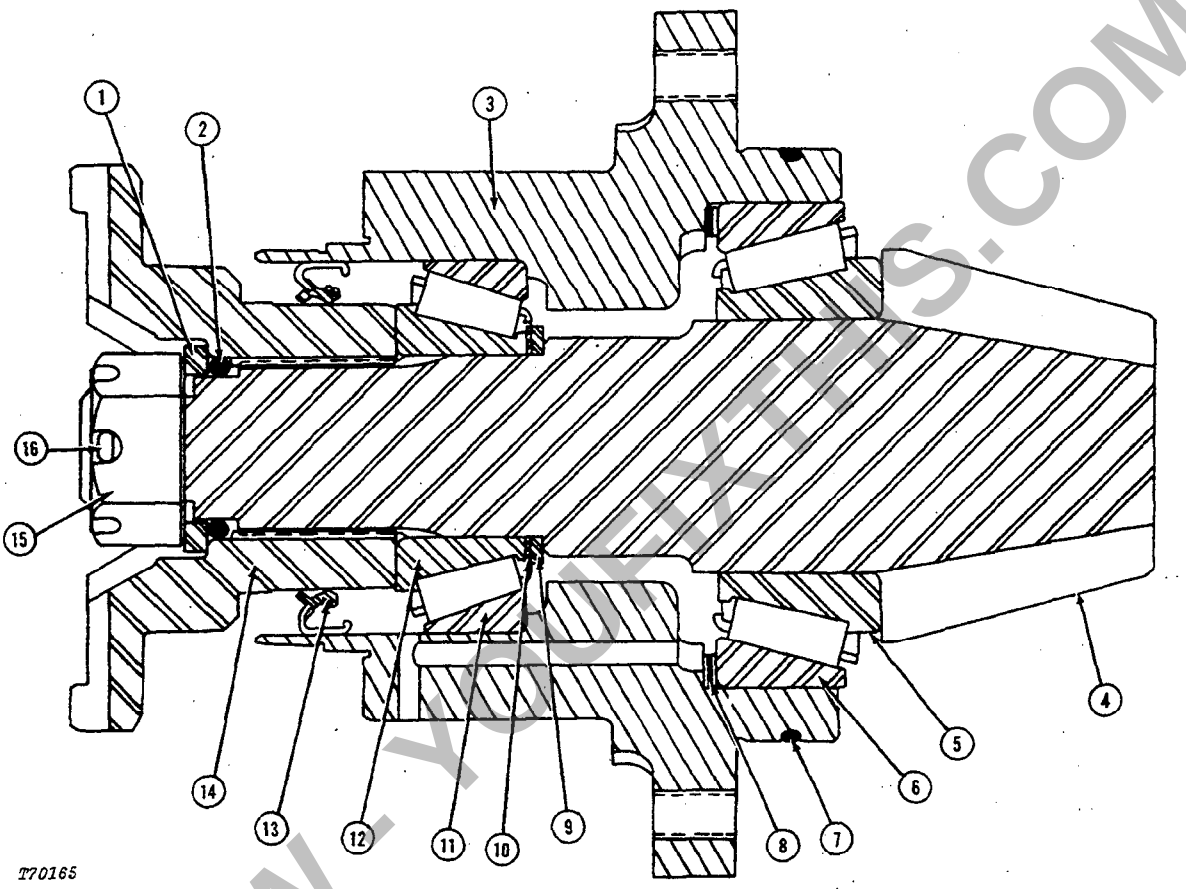


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ASSEMBLE DIFFERENTIAL INPUT QUILL



T70165

1—Special Washer (use as required)
2—O-Ring
3—Input Quill
4—Bevel Pinion Shaft
5—Bearing Cone
6—Bearing Cup
7—O-Ring
8—Shim (use as required)
9—Spacer
10—Shim (use as required)
11—Bearing Cup
12—Bearing Cone
13—Oil Seal
14—Yoke
15—Slotted Nut
16—Cotter Pin

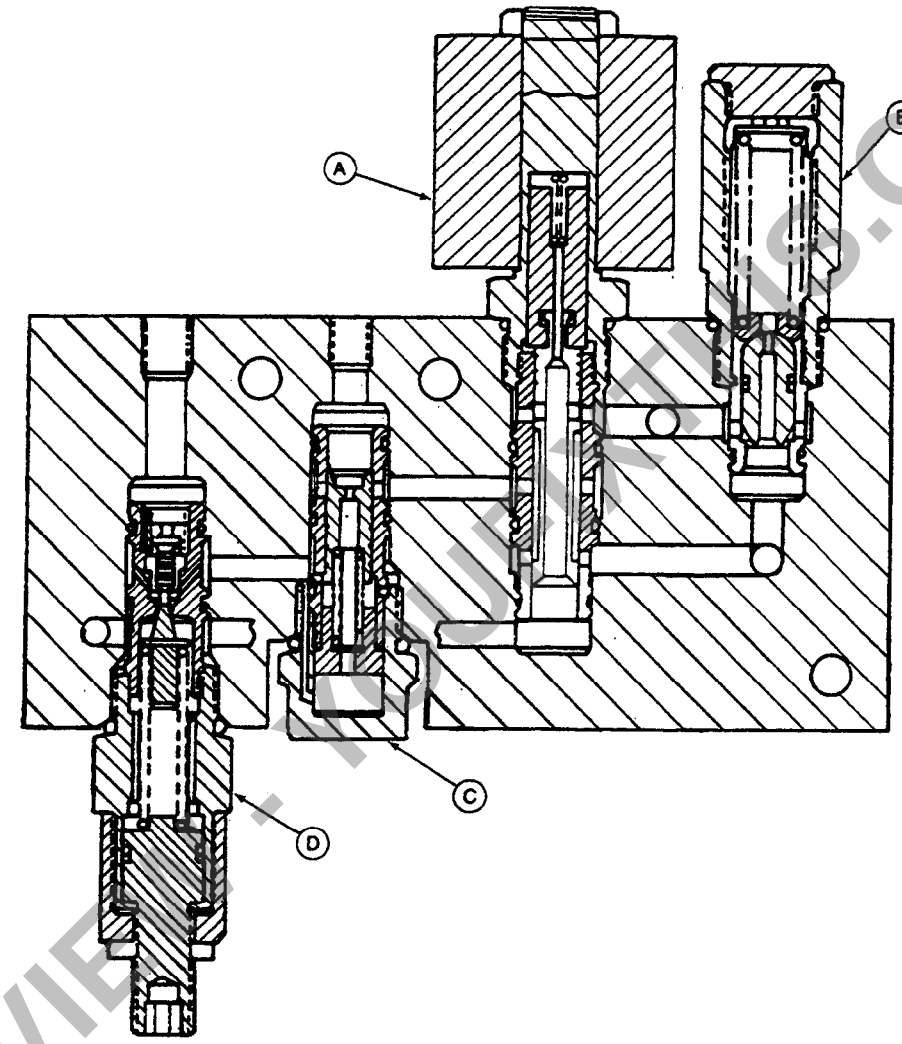
Differential Spiral Bevel Pinion Shaft Assembly

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3AA;T70165 R50;50300 1270 030685

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CROSS SECTION OF UNLOADING VALVE AND DIFFERENTIAL LOCK VALVE



A—Pilot Valve **B—Pressure Regulating Valve** **C—Differential Lock Valve** **D—Unloading Valve**

DISASSEMBLE, INSPECT AND ASSEMBLE UNLOADING VALVE AND DIFFERENTIAL LOCK VALVE COMPONENTS

NOTE: Procedures are the same for all units.

NOTE: Keys refer to cross section of unloading valve.

1. Remove pilot valve (D), unloading valve (C), differential lock solenoid valve (A), and pressure regulating valve (B).

2. Check that all oil ports are clean and clear.

3. Check that unloading valve (C) spool and differential lock solenoid valve (A) spool move freely in sleeves. Replace valve if necessary.

9AV;T6204AG T47;0260 K3 201185

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SERVICE EQUIPMENT AND TOOLS

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

Name	Use
Alternator Pulley Tool Set	Remove and install alternator pulley
Digital Volt-Ohm-Amp Meter	Check resistance and continuity
Belt Tension Gauge	Adjust alternator belt tension

T52;1672 C30 181185

OTHER MATERIAL

Number	Name	Use
No. 1948791	Delco-Remy Lubricant	Lubricate alternator bearings
SR1-Z	Chevron Grease	Lubricate Nipondenso alternator bearings
400-Grit or No. 00	Silicon Carbide Paper or Sandpaper	To polish slip rings.
Radio Shack #2761372	Heat Sink Compound	Between rectifier bridge and rear housing.

T52;1672 J11 050287

ALTERNATOR SPECIFICATIONS

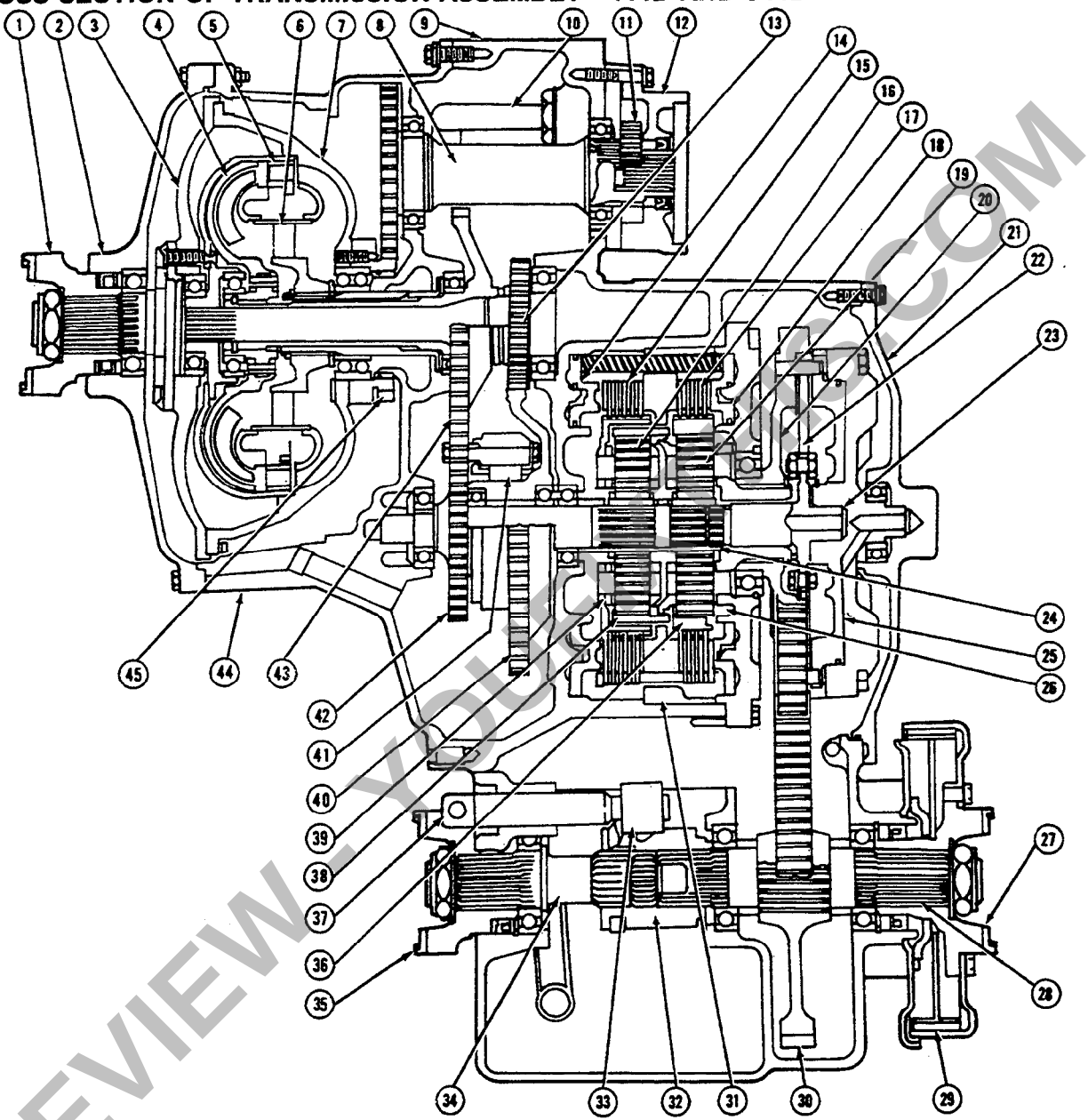
Item	Measurement	Specification
Delco-Remy Alternator pulley nut	Torque	68 N·m (50 lb-ft)
Nipondenso Alternator pulley nut	Torque	80 N·m (60 lb-ft)
Alternator belt adjustment	Tension	19 mm (0.75 in.) deflection with a 90 N (20 lb force) applied halfway between pulleys.
Motorola Alternator—Series 8EM		
Front Bearing Retainer Screw (3 Used)	Torque	3.5—4.8 N·m (25—35 lb-in.)
Front Bearing	Fit	Press inner race to contact shoulder on shaft
Shaft Nut (R)	Torque	47—68 N·m (35—50 lb-ft)
Thru-Bolts (N)	Torque	7—8.3 N·m (50—60 lb-in.)
Slip Rings	Resistance	4.0—4.7 ohm @ 20.8—26.3°C (70—80°F)

T52;1672 J12 020387

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CROSS SECTION OF TRANSMISSION ASSEMBLY—444D AND 544D



1—Input Flange
2—Converter Housing Cover
3—Torque Converter Drive Cover
4—Second Turbine
5—First Turbine
6—Stator
7—Converter Pump
8—Accessory Driven Gear
9—Transmission Housing
10—Oil Suction Tube
11—Oil Pump Gears
12—Oil Pump Assembly
13—First-Turbine Drive Gear
14—Reverse Clutch Piston
15—Reverse Clutch
16—Reverse Planetary Pinion
17—Low-Range Clutch
18—Low-Range Clutch Piston
19—Low-Range Planetary Pinion
20—Transfer Drive Gear
21—Front Cover
22—High-Range Clutch
23—High-Range Clutch Hub
24—Reverse and Low Range Sun Gear
25—High-Range Clutch Piston
26—Low-Range Planetary Carrier
27—Front Output Flange
28—Front Output Shaft
29—Parking Brake
30—Transfer Driven Gear
31—Reverse and Low-Range Clutch Anchor
32—Disconnect
33—Shifter Fork
34—Rear Output Shaft
35—Rear Output Flange
36—Low Range Ring Gear
37—Shifter Shaft
38—Reverse Ring Gear
39—Reverse Planetary Carrier
40—First-Turbine Driven Gear
41—Freewheel Clutch
42—Second-Turbine Driven Gear
43—Second Turbine Drive Gear
44—Torque Converter Housing
45—Accessory Drive Gear

01A;T78399 T05;0350 C158 261185

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2. Use a service jack or a hoist of at least 9000 kg (10-ton) capacity to lift unit until the wheel is off the ground.

3. Put a shop stand of at least 9000 kg (10-ton) capacity under the axle housing.

4. Put a wheel lift (A) under the raised wheel. Fasten the safety chain, from wheel lift, around the upper portion of tire.

5. Remove cap screws. Pull wheel assembly away from flanged axle.



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REMOVE TIRE

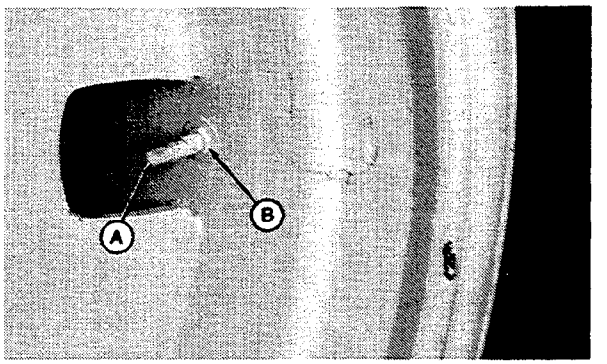
1. The tire can be removed without removing the wheel from the loader. See the John Deere Off-The-Road Tire Maintenance Manual to remove the tire from the wheel.

CAUTION: Failure to follow proper procedures when demounting a tire from a wheel or rim can produce an explosion which may result in serious bodily injury. DO NOT attempt to demount a tire unless you have the proper equipment and experience to perform the job safely. Have it done by a qualified tire repair service.

T47;0110 K533 170985

2. Before attempting any demounting operation, always completely deflate tire by removing valve core (A) from valve. Check the valve stem by running a probe through it, making sure the valve stem is not plugged. Remove valve nut (B).

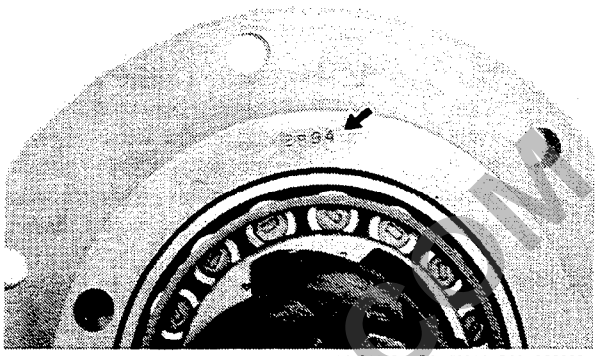
3. Inspect all parts for damage; replace parts as necessary.



1AG;T6145AD T47;0110 K534 170985

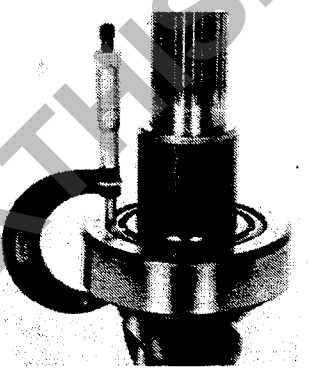
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2. Obtain and record the dimension stamped on the face on the quill. This is the distance between the face on the flange on the quill and the bearing cup seat.



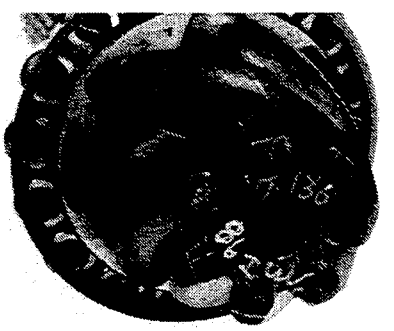
0AA;R38374 R50;50300 702 130983

3. Install the bearing cup on the cone. While holding cup tightly against cone, measure the width of the bearing from the mounting shoulder on the cup. Record this measurement.



0AA;R38375 R50;50300 703 290983

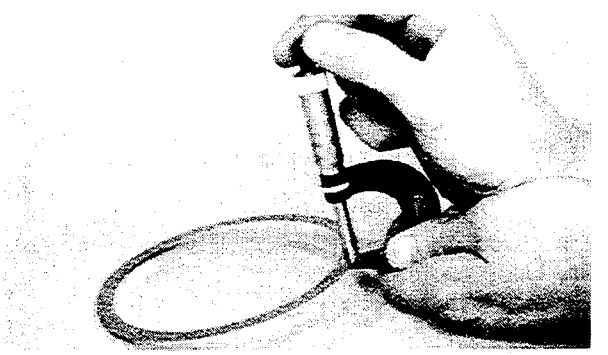
4. Add the dimension determined in step 3, to the dimension etched on the face of the bevel pinion shaft. Add 0.038 mm (0.0015 in.) to allow for the increased length of the bearing when the cup is installed into the quill.



0AA;R38376 R50;50300 704 190984

5. To determine the shim pack to be installed behind the bearing cup, subtract the dimension determined in step 4, from the sum of dimensions measured in step 1 and step 2.

6. Measure each shim separately to equal the shim pack needed.

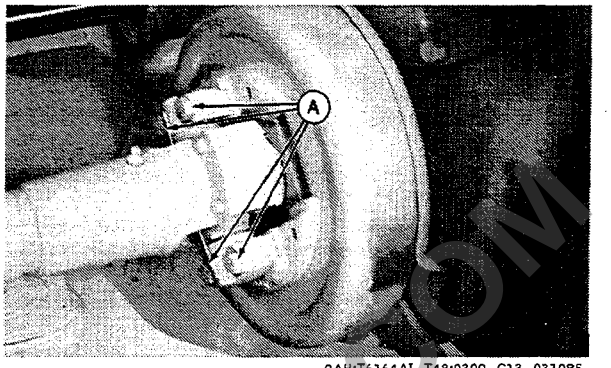


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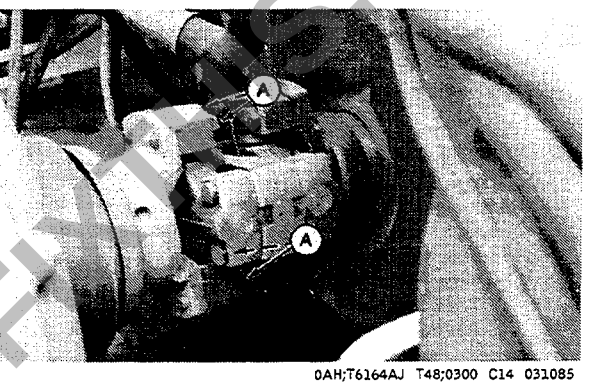
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24. Remove cap screws (A) to disconnect front differential universal joint.



0AH;T6164AI T48;0300 C13 031085

25. Remove cap screws (A) to disconnect transmission to engine drive shaft.



0AH;T6164AJ T48;0300 C14 031085

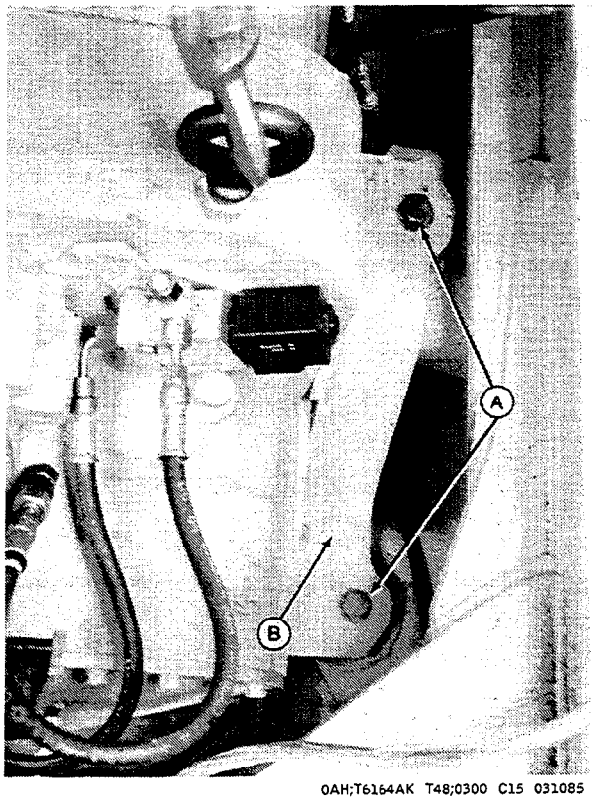
CAUTION: Transmission weighs approximately 431 kg (950 lb).

26. Install eyebolts into tapped holes on transmission housing.

27. Install hoist using chains.

28. Remove two cap screws (A) from mounting brackets on both sides.

29. Lift transmission up about 25.4 mm (1.00 in.) and remove four cap screws to remove left mounting bracket (B).



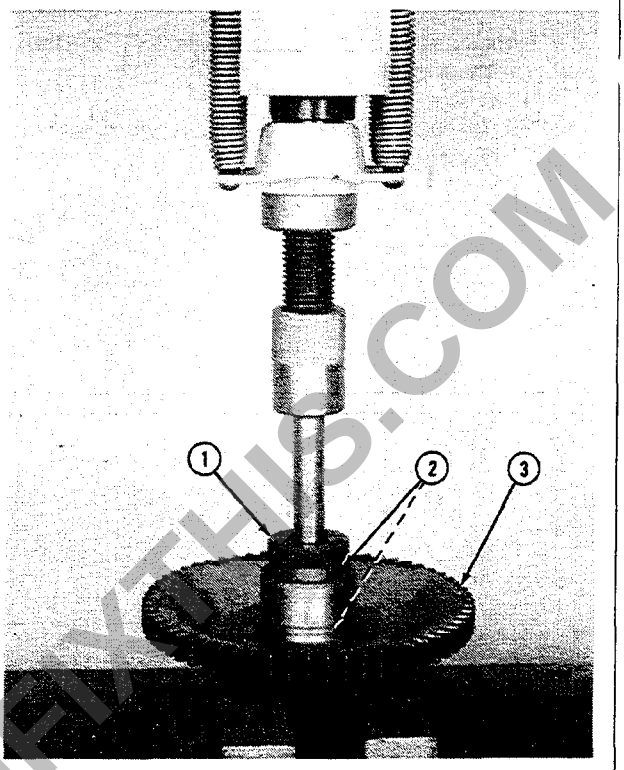
0AH;T6164AK T48;0300 C15 031085

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13. Install new bearings (2) in first turbine driven gear (3) using 65 mm disk (1) and a press.

14. Press bearings even with, or 0.76 mm (0.030 in.) below the end of chamfers at each end of the gear bore.

NOTE: Press only on the numbered ends of the bearings.



644D Only

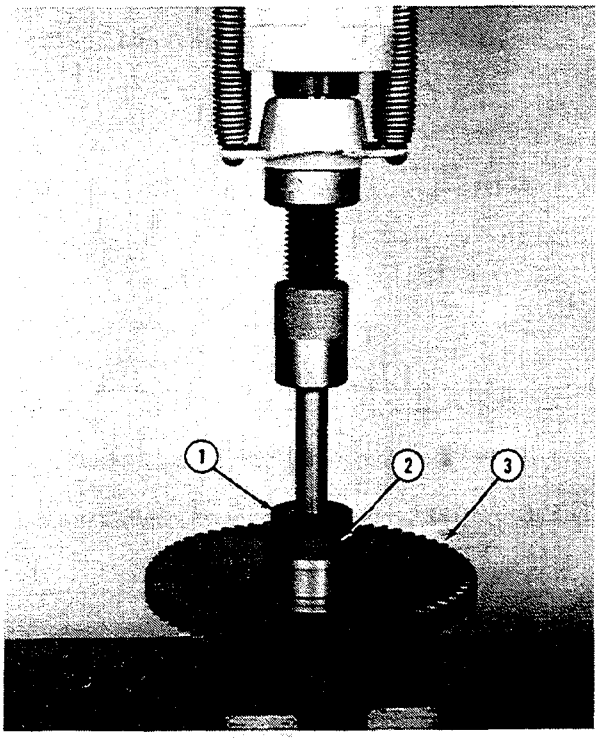
00A;T75115 T48;0350 K209 180486

15. Push new bearing (2) into the first turbine driven gear (3) using 71 mm disk (1).

NOTE: Push only on the numbered ends of the bearings.

16. Push lower bearing even with or 0.76 mm (0.030 in.) below the end of chamfer on the bottom of gear bore.

NOTE: DO NOT install upper bore bearing at this time.



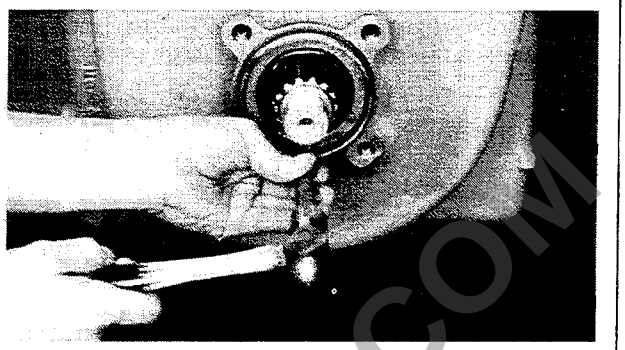
544D Only

00A;T78995 T48;0350 K210 180486

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4. Put a non-hardening sealant onto the outside surface of a new oil seal.

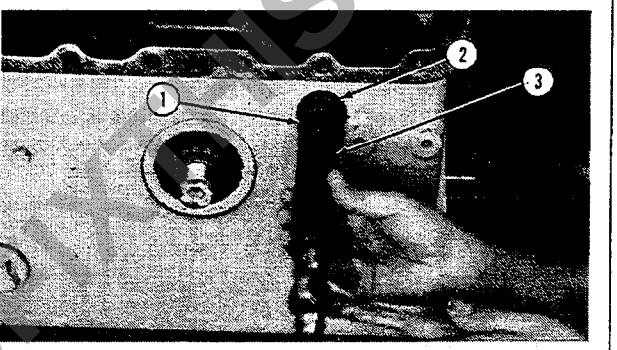
5. Install the oil seal, with spring loaded lip first, until it is tight against the counterbore shoulder.



01A;T78546 T48;0350 C184 261185

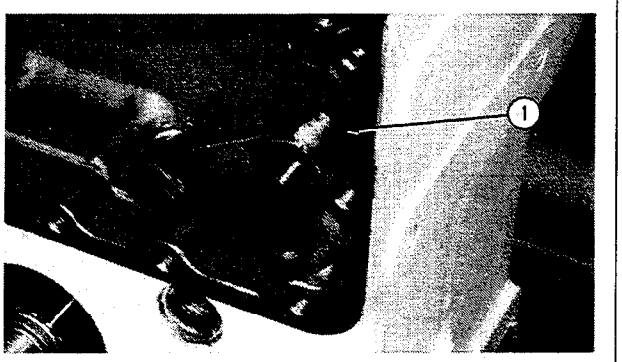
6. Put a non-hardening sealant on the outside surface of the new oil seal (2).

7. Use 23 mm and 34 mm disks (1) and handle (3) from driver set to install the oil seal. Install the oil seal, with spring loaded lip first, until it is seated against the counterbore shoulder.



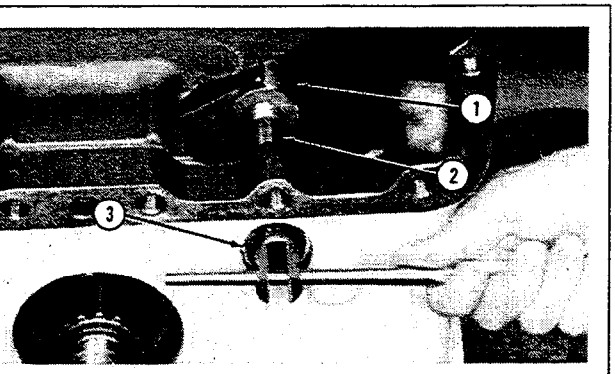
01A;T75389 T48;0350 C185 261185

8. Install the shifter fork (1) in the groove of the disconnect coupling.



01A;T75116 T48;0350 C186 261185

9. While holding the shifter fork (1) in position, install the shifter fork shaft (2) with threaded end first, through the oil seal (3) and into the shifter fork.



01A;T75114 T48;0350 C187 261185

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OTHER MATERIAL

Number	Name	Use
TY6299	John Deere Gasket Maker	Seal cap screw threads, oil pan gasket joints.
	Permatex Form-A-Gasket No.2 ...	Water pump, themostat cover and water manifold gaskets.

08T;04 J4 300387

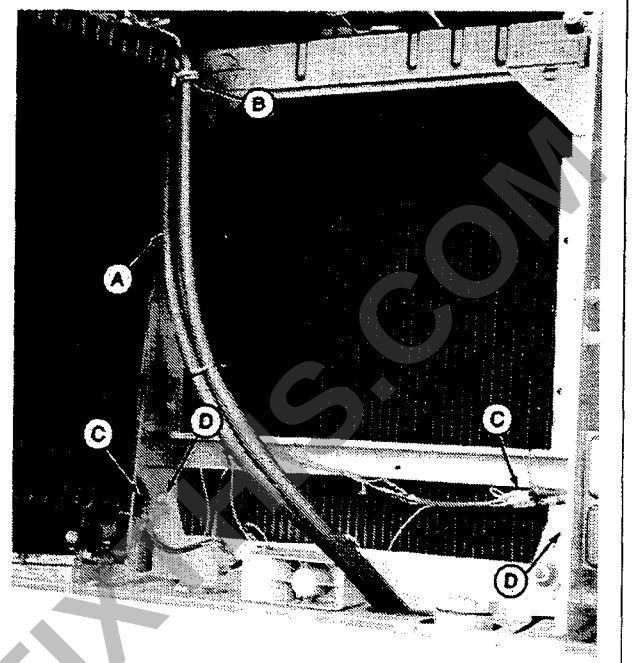
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3. Open grille and disconnect light leads (C).

4. Disconnect transmission coolant lines (A and B). Close all openings using caps and plugs.

5. Remove cap screws (D) and all necessary tie bands.



A—Line—Cooler Inlet
B—Line—Cooler Outlet
C—Light Wiring Leads
D—Cap Screw (2 used)

4AJ;T6105BC T49;0510 C7 170985

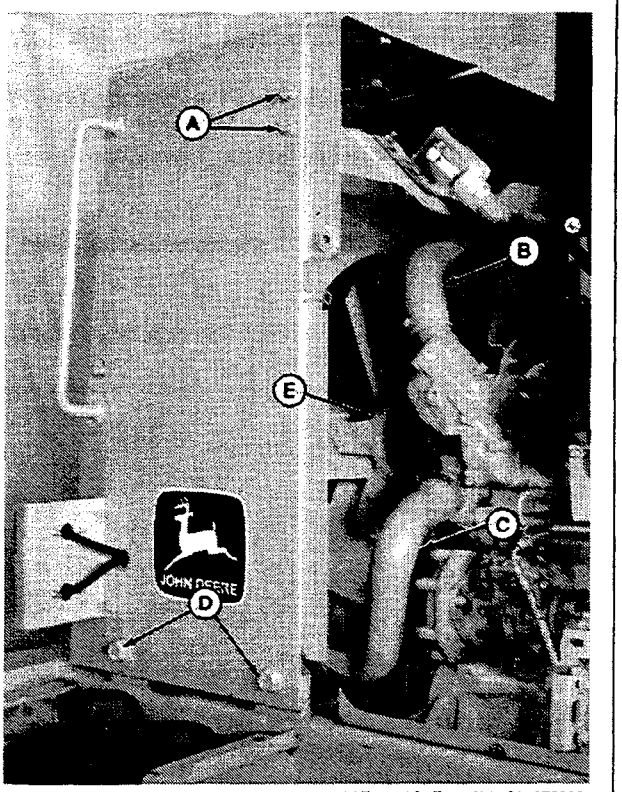
6. Disconnect upper and lower radiator lines (B and C).

7. Remove cap screws (A) from both sides to move back hydraulic oil cooler.

8. Remove four cap screws and move fan (E) down to rest on shroud.

9. Attach grille housing to hoist using chains or lifting straps.

10. Remove cap screws (D) on both sides.



A—Cap Screws (4 used)
B—Upper Radiator Hose
C—Lower Radiator Hose
D—Cap Screws (4 used)
E—Fan

4AJ;T6147AQ T49;0510 C8 170985

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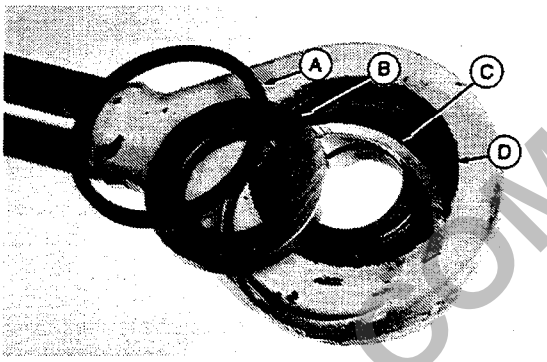
REMOVE STEERING CYLINDER BUSHINGS AND SEALS

NOTE: Procedures are the same for all units except where specified.

1. Remove seal (A) (444D and 544D) and spacer (B).

2. Remove top snap ring (C) and bottom snap ring.

3. For 444D and 544D, remove bushing (D) using 38 and 71 mm disks from driver set. For 644D, remove bushings (D) using 44 and 67 mm disks from driver set.

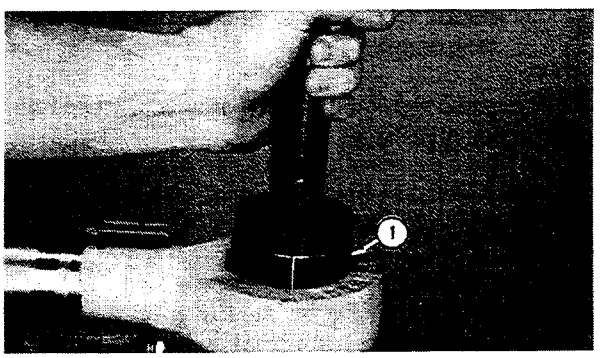


7MA;T6237AA T58;0960 C38 041285

INSTALL STEERING CYLINDER BUSHINGS AND SEALS

1. Install bushing so the fracture in outer race is 90° from the center line of steering cylinder. Install bushing far enough to install snap rings.

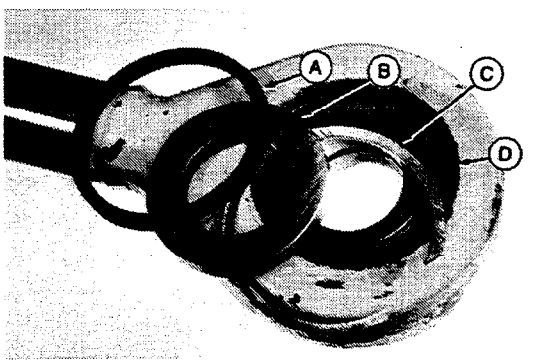
For 444D and 544D, install bushing (D) using 38 and 71 mm disks. For 644D, install bushing (D) using 44 and 67 mm disks.



7MA;T76047 T58;0960 C59 271185

2. Install bottom and top snap rings.

3. Install seal (444D and 544D) and spacer.



7MA;T6237AA T58;0960 C60 041285

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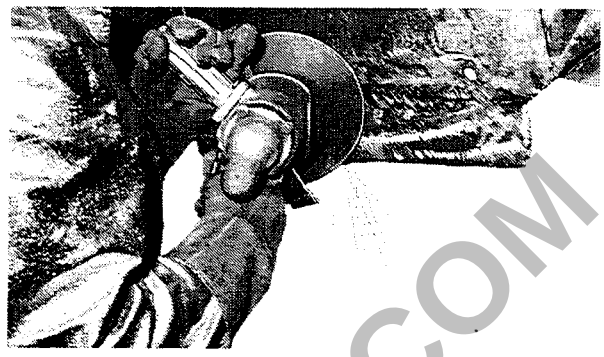
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INSTALL CUTTING EDGE

1. Grind any rough edges on bucket.

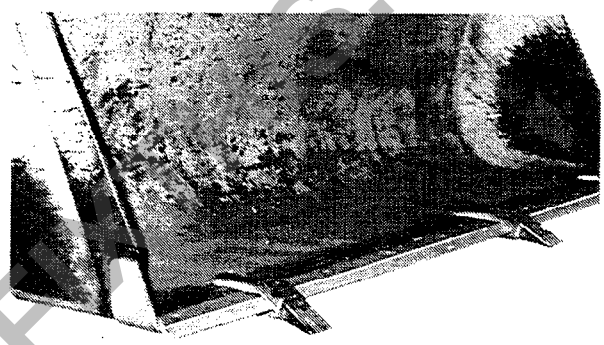


4AN;T86435 T54;3102 J14 031285

2. Put bucket on stands.

3. Align cutting edge and install bucket teeth as necessary to hold cutting edge in position.

4. On units without bucket teeth, align cutting edge and use C-clamps to hold it in place.



4AN;T86436 T54;3102 J15 031285

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