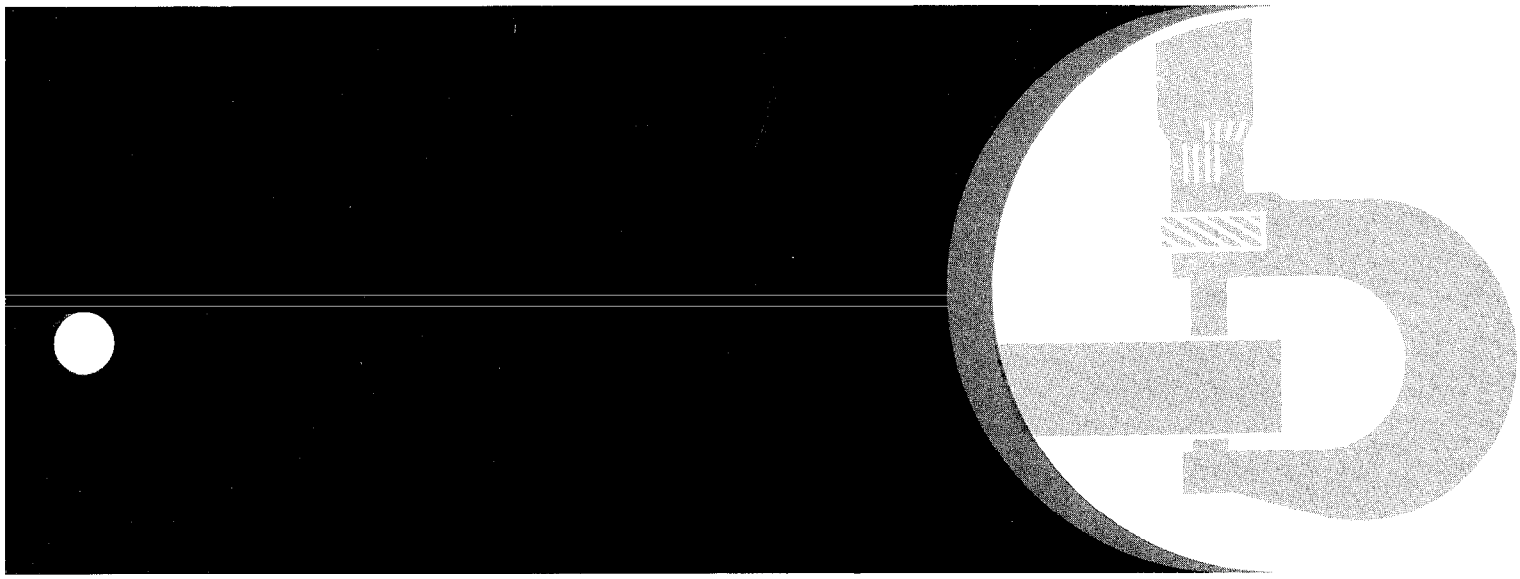
# 890A
# Excavator



# TECHNICAL MANUAL

TM1263 (Jun-86)
LITHO IN U.S.A. (REVISED)

# 890A EXCAVATOR TECHNICAL MANUAL TM-1263 (JUN-86)

## SECTION AND GROUP CONTENTS



*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. Whenever applicable, specifications and design information are in accordance with SAE and ICED standards.*



T28;1263 09 130686

## SECTION AND GROUP CONTENTS—CONTINUED



T28;1263 02 160686

## INTRODUCTION

This technical manual is part of a twin concept of service.

### FOS Manuals - for reference

### Technical Manuals - for actual service

The two kinds of manuals work as a team to give you both the general background and technical details of shop 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.

*Technical Manuals* are concise service guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed by an experienced service technician.

30A;T85958, T26;I II01 130582

## FEATURES OF THIS TECHNICAL MANUAL

- John Deere ILLUSTRUCTION format emphasizing detailed pictures and fewer words in easy-to-use modules.
- Removal and installation groups preceding some repair groups.
- A section of system diagnostic testing.
- Table of contents of all sections at the front of the manual and a listing of all groups and headings at the front of each section.
- Special tools and specifications listed at the front of each group they are used in.
- Special tools illustrated in numerical order at end of manual.
- Alphabetical listing of all major components, specifications, and special tools.
- Safety rules, general specifications, and lubrication specifications.

This technical manual was planned and written for you - an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Refer to it when you need to know correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.

30A;T85959 T26;I II15 130582

## SAFETY AND YOU

**CAUTION: This safety symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury.**

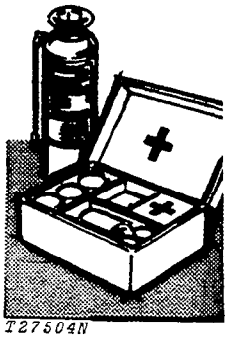
30A;T81389 T28:I 1102 260881

Be prepared for an accident or fire.

Know where the first aid kit and fire extinguisher are.

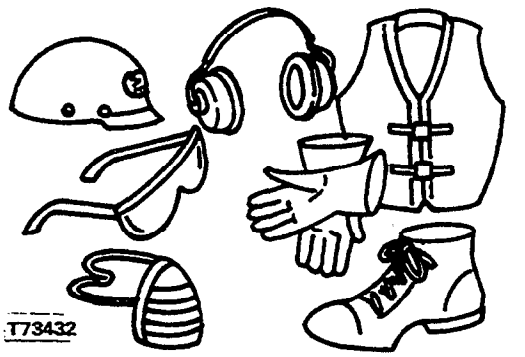
Know how to use them.

Know where to get help.




30A;T27504 N T28:I 1103 280581

Wear safety equipment.



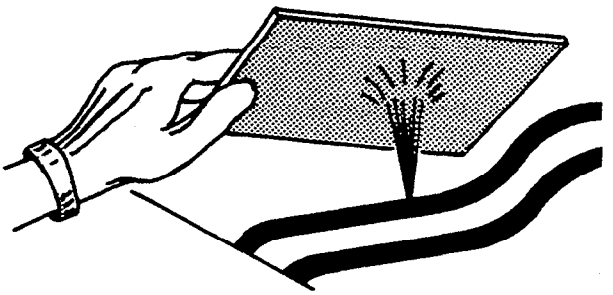

30A;T73432 T28:I 1104 260881

Wear fairly tight clothing.

30A;T45672 T28:I 1105 280581

**CAUTION: Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious injury. Before disconnecting lines, be sure connections are tight and lines, pipes and hoses are not damaged. Use a piece of cardboard or wood, rather than hands, to search for leaks.**

**If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.**



30A;T80991 T28;I 1106 260881

## KEEP SHOP AND STORAGE AREA CLEAN

Maintenance area should be well-ventilated.

Keep maintenance area clean and dry.

Store flammable materials in a cool and well-ventilated area out of reach of unauthorized personnel.


30A;T27508 N T28;I 1107 260881

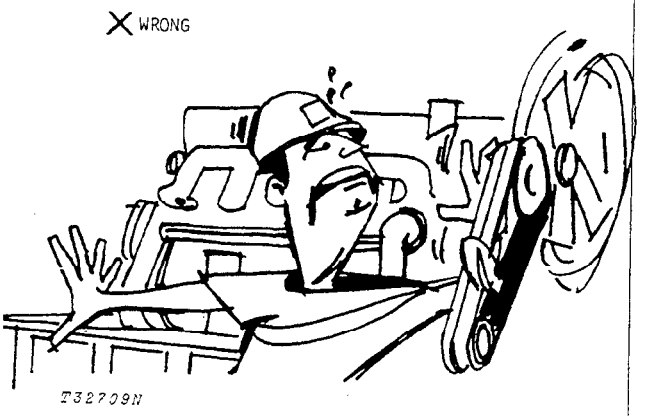
## FOLLOW SAFE WORKING CONDITIONS

Do not work on the equipment unless you are approved to do so. Then be sure you know the correct procedure.

Do not work on equipment while it is being operated.

Keep hands away from moving parts.

When the engine is running, do not work on equipment unless the procedure is approved.




If you must work on the machine with the engine running, ALWAYS USE TWO service technicians. One must be at the controls. The other must be within sight of the operator.

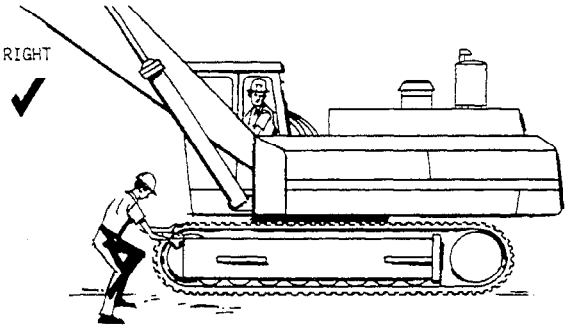
Put a support under all raised equipment.

Park the machine across a slope, or use blocks to hold it in place.

Do not lift heavy parts by yourself. Use a hoist or jack.

TAKE CARE! WATCH OUT FOR OTHER PEOPLE IN THE AREA.

When you drill, grind or hammer metal, wear safety glasses.




30A;T32709 N, 82412 T26; 1108 260881

## OBSERVE SERVICE PRECAUTIONS

Keep ALL equipment free of dirt and oil.

Clean oil, grease, mud, ice or snow from the operator's station, steps and hand rails.

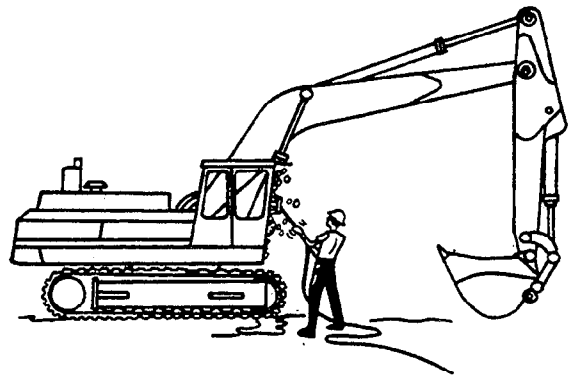
Do not remove the radiator cap unless the engine is cool. First, loosen the cap slowly to the stop. Then release all pressure in the cooling system before you remove the cap.

Check the exhaust system regularly for leaks.

Release hydraulic pressure before you work on the hydraulic system. See page I-II-06.

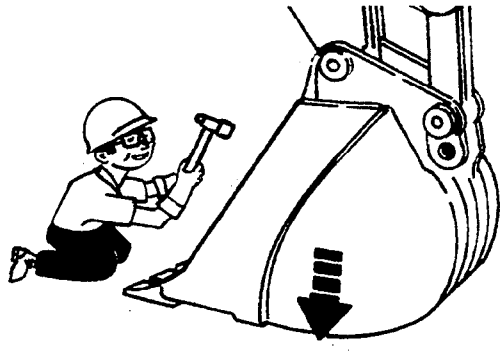
When you check hydraulic pressure, be sure to use the correct test gauge.

Before you work on the fuel system, close the fuel shutoff valve.



30A;T82345 T30;I 1109 091281

Do not work under a raised bucket. Lower the bucket to the ground, or put blocks under the bucket.

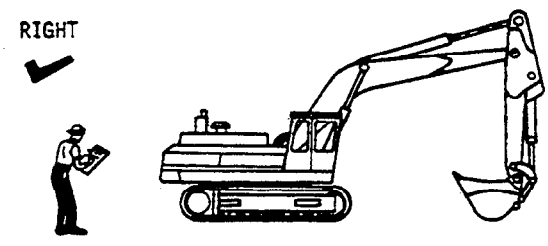


30A;T82343 T28;I 1110 260881

## CHECK SAFETY EQUIPMENT ON MACHINE

All protective parts (shields, guards, ROPS, etc.) should be in good condition and fastened in place.

Check for leaks in all systems:
Air intake system
Engine oil system
Hydraulic system
Fuel system
Cooling system




30A;T82323 T28;I 1111 260881

## AVOID EXPLOSIONS OR FIRE

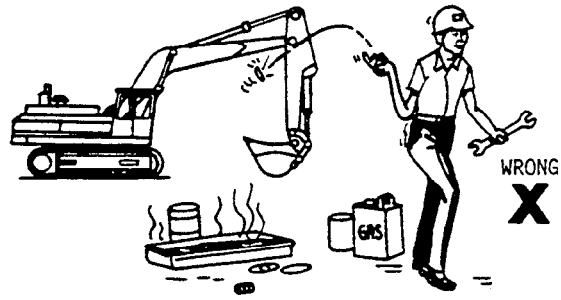
Do not smoke while you fill the fuel tank.

Do not smoke while you work with material that will start on fire easily.

Stop the engine before you fill the fuel tank.

Do not fill fuel tank if engine is hot.

Do not use gasoline or diesel fuel for cleaning parts. Use solvents that will not start on fire.




30A;T82411 T28;I II12 260881

## OBSERVE BATTERY PRECAUTIONS

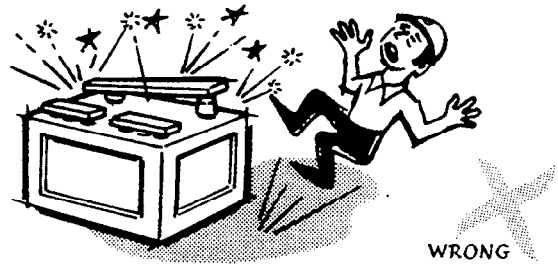
Do not put metal objects across terminals to check the battery charge.

When you charge a battery, be sure there is enough ventilation.

Keep sparks and flames away from batteries.

Do not smoke near battery.

Before you work on the electrical system, or make major repairs, turn off the battery disconnect switch.




30A;T27506 T28;I II13 260881

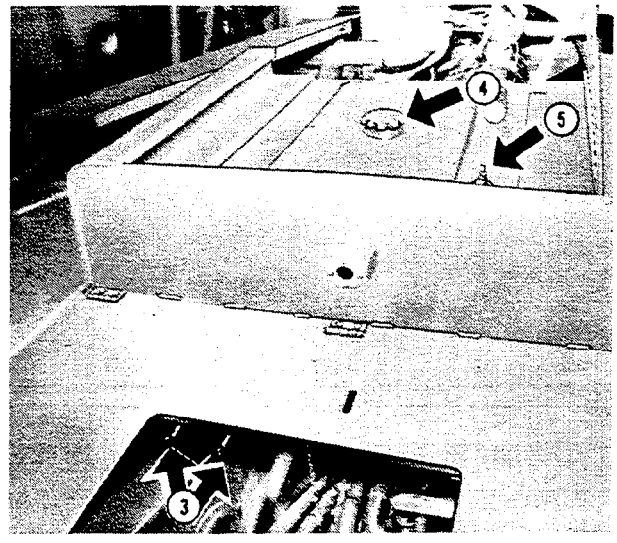
## BEFORE YOU WORK ON THE HYDRAULIC SYSTEM

Follow these steps before you work on any part of the hydraulic system:

1. Park the excavator on level ground.
2. Lower hydraulic pressure:
   - •Lower bucket to ground.
   - •Stop engine.
   - •Move control levers until boom and bucket do not move.
3. Push valve levers in all the way to stop oil flow.
4. Loosen the reservoir filler cap slowly to release pressure.
5. Open the diffuser vent. Turn it counterclockwise.

**IMPORTANT: After you finish:**
- **•Close diffuser vent.**
- **•Pull levers out.**

**CAUTION: Do not walk or stand on sloping fenders or other sheet metal to service the excavator.**

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## 890A EXCAVATOR

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCSA and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 107-in. (2.72 m) dipperstick, 39-in. (991 mm) bucket, 30-in. (750 mm) track shoes, and standard equipment.)

| **Power** (@2100 engine rpm): | **SAE** | **DIN** |
|---|---|---|
| Gross | 225 hp(168 kW) | |
| Net | 210 hp(157 kW) | 213 PS |

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, alternator, and muffler. Gross engine power is without fan. Power ratings are under SAE standard conditions of 500-ft. (150 m) altitude and 85°F (29.5°C) temperature, and DIN 6270 conditions (non-corrected). No derating is required up to 10,000 ft. (3000 m) altitude.

**Engine:** John Deere turbocharged 6-cylinder, valve-in-head, 4-stroke cycle.

Bore and stroke ....5.12 x 5.00 in. (130 x 127 mm)
Piston displacement ..... 619 cu. in. (10.145 L)
Compression ratio ..... 15.2:1
Max. torque @ 1300 rpm .....810 lb-ft (1098 N·m) (112 kg-m)
Lubrication ..... Pressure system w/full-flow filter
Cooling Pressurized w/thermostat and fixed bypass
Air cleaner w/restriction indicator .....Dry
Electrical system ..... 24 volts w/alternator
Batteries (2) 12-volt .Reserve capacity:180 minutes each

**Hydraulic System:**

Three open-center pumps mounted in line are coupled directly to the flywheel. The total flow is 163 gpm (10.3 L/s) at rated engine rpm. System operating pressure is 2900 psi (20 000 kPa)(204 kg/cm²) for the propel circuit and 2900 psi (20 000 kPa) (204 kg/cm²) for the digging circuit.

Relief valves:
- Boom (2) ...3260 psi (22 483 kPa) (229.3 kg/cm²)
- Crowd (2) ..3260 psi (22 483 kPa) (229.3 kg/cm²)
- Bucket (2) ..3260 psi (22 483 kPa) (229.3 kg/cm²)

Oil filtration:
- Two 149-micron suction screens
- Two 10-micron filters in return lines
- Three 25-micron high pressure filters

| **Cylinders:** | **Bore** | **Stroke** |
|---|---|---|
| Boom (2) .... | 7.0 in. (178 mm) | 62.87 in. (1597 mm) |
| Crowd ..... | 7.0 in. (178 mm) | 78.17 in. (1986 mm) |
| Bucket ..... | 7.0 in. (178 mm) | 40.51 in. (1029 mm) |
| Boom cylinder rods ..... | 3.75 in. (95 mm dia.) | |
| Crowd and bucket cylinder rods ..... | 4.50 in. (114 mm dia.) | |

All cylinders have phenolic wear rings. Boom, crowd and bucket cylinders have a built-in hydraulic cushion at each end of the stroke. Full-width hydraulic oil cooler matched with engine coolant radiator.

**Operating Information:**

Swing speed .....6.1 rpm
Gradability .....70 percent
Travel .....0 to 2.2 mph (3.5 km/h)
Locked in low .....0 to 0.95 mph (1.5 km/h)
Optional track shoes .....36 in. (0.9 m)

**Digging Information:**

Bucket rating (SAE heaped) .....1½ yd.³ (1.2 m³)
Lift capacity .....24,200 lb. (108 kN²) at 20 ft. (6 m)
Bucket penetrating force ..... 38,160 lb. (170 kN)
Arm crowd force ..... 30,310 lb. (135 kN)

Maximum reach at ground level .. 36.75 ft. (11.2 m)
Maximum dump height .....19.75 ft. (6 m)
Digging depth .....25 ft. (7.6 m)

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**Swing mechanism:**
Swing ..... 360-degree, internal drive, continuous
Turntable bearing ..... Single row, ball
Case-hardened ring and pinion gears run in lubricant.

**Undercarriage:**
Propel motors (one for each track) .... High-torque, variable-speed, axial-piston hydraulic motors with planetary drive. Multiple-disk brakes automatically release while propelling, and apply when stationary. Independent drive to each track permits counterrotation.

Undercarriage, car body, and track frame .... Each track frame is a formed, reinforced U-channel. Track frames are joined by reinforced boxed car body with swing bearing mount.

**Track Chain** ..... Sealed track chain

**Track Adjustment** ..... Hydraulic

**Cab:**
Steel, with urethane sound-proofing on ceiling and side walls, and cushioned neoprene floor mat. Safety glass on all sides and top. Front and rear windows open. Front window can be stored overhead.

**Seat:**
Fully adjustable heavy-duty cloth, foam-rubber cushioned seat.

**Controls:**
Pilot-operated two-lever for boom, crowd, bucket, and swing. Pilot-operated right and left pedals control forward and rearward movement of right and left tracks respectively.

**Buckets:** High-strength steel, ribbed and plated bottom section.

| | | Capacity | | |
|---|---|---|---|---|
| Nominal Width | Bite Width | SAE | Struck | Weight |
| 39 in. (991 mm) | 42 in. (1067 mm) | 1½ cu. yd.(1.15 m³) | 1¼ cu. yd. (0.96 m³) | 2550 lb. (1157 kg) |
| 45 in. (1143 mm) | 47 in. (1194 mm) | 1⅞ cu. yd. (1.43 m³) | 1½ cu. yd. (1.15 m³) | 2670 lb. (1211 kg) |
| 51 in. (1295 mm) | 54 in. (1372 mm) | 2⅛ cu. yd. (1.62 m³) | 1¾ cu. yd. (1.34 m³) | 2820 lb. (1279 kg) |
| Heavy-duty | | | | |
| 33 in. (838 mm) | 37 in. (940 mm) | 1½ cu. yd. (1.15 m³) | 1¼ cu. yd. (0.96 m³) | 3050 lb. (1383 kg) |
| 39 in. (991 mm) | 44 in. (1118 mm) | 1⅞ cu. yd. (1.43 m³) | 1½ cu. yd. (1.15 m³) | 3575 lb. (1622 kg) |
| 45 in. (1143 mm) | 50 in. (1270 mm) | 2 cu. yd. (1.53 m³) | 1½ cu. yd. (1.15 m³) | 3660 lb. (1660 kg) |

| Track Shoes: Width | Shoes | Ground Contact | Ground Pressure |
|---|---|---|---|
| 30 in. (750 mm) | Triple-bar semigrousers | 9723 sq. in. (62 731 cm²) | 8.92 psi (61.5 kPa) (0.63 kg/cm²) |
| 36 in. (900 mm) (optional) | Triple-bar semigrousers | 11,668 sq. in. (75 278 cm²) | 7.74 psi (53.4 kPa) (0.54 kg/cm²) |

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**Boom and Arm**
Internally reinforced tapered box construction with heat-treated steel bushings. Machined and bored after welding for accurate alignment. All pivot points are sealed to allow extended lubrication intervals.

**Servicing and Vandal Protection:**
Swingaway service doors expose built-in platforms for easy access to engine and hydraulic systems. Cab and access covers to fuel tank, radiator, and hydraulic reservoir lock with switch key.

| Capacities: | U.S. | Imp. | Liters |
|---|---|---|---|
| Fuel tank | 140 gal. | 117 gal. | 530 |
| Cooling system | 16 gal. | 13.3 gal. | 61 |
| Engine lubrication, including filter | 32 qt. | 26.7 qt. | 30.3 |
| Hydraulic system | 165 gal. | 137 gal. | 625 |
| Planetary propel drive (each) | 21 qt. | 17.5 qt. | 20.0 |
| Swing drive (each) | 8 qt. | 6.7 qt. | 7.5 |

**Operating Weights (without bucket)**

| | lb. | (kg) |
|---|---|---|
| Total weight—with narrow track | 85,059 | (38 598) |
| —with wide track | 88,650 | (40 210) |
| Boom | 7,450 | (3 380) |
| Arm—108 in. (2.7 m) | 5,080 | (2 300) |
| —140 in. (3.6 m) | 5,490 | (2 490) |
| Main Counterweight | 12,810 | (5 810) |
| Auxiliary Counterweight | 3,050 | (1 380) |

**Additional Standard Equipment:**
Electric hour meter
Alternator charge indicator light
Hydraulic oil filter pressure warning light
Engine overheating warning light
Gauges (internal illuminated):
- Engine coolant temperature
- Hydraulic oil temperature
- Engine oil pressure
- Fuel

Key switch
Cold weather starting aid
Horn
Positive-position hand throttle
12,810 lb. (5 810 kg) counterweight
Counterweight removal system
Track guides
Cab with heater
Floor mat
Lifting hook
Tinted roof window

**Special Equipment:**
36-in. (900 mm) triple-bar semigrouser shoes
Bucket side cutters
Fire extinguisher
Engine water heater
Window protection group
Air conditioner
Auxiliary counterweight—3,050 lb. (1 380 kg)
Two electric cab fans
Vandal protection

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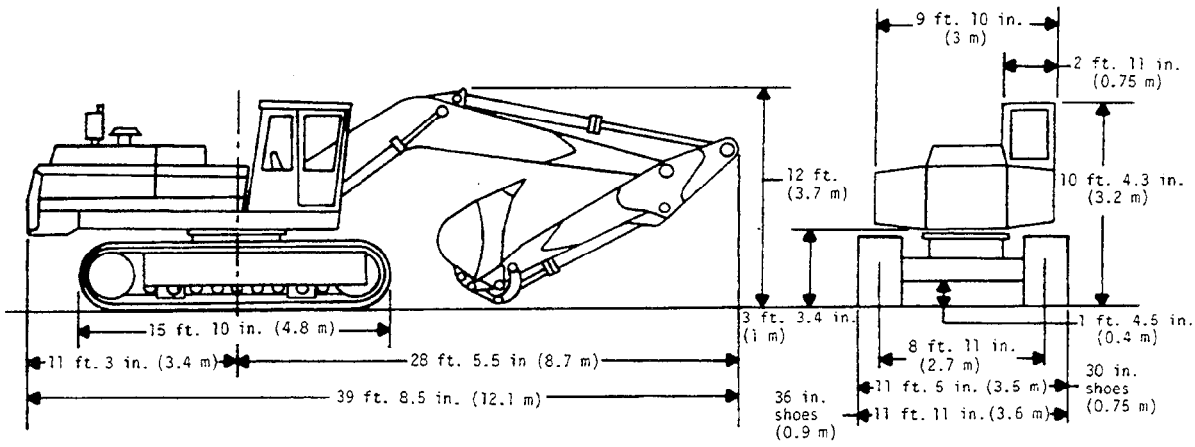
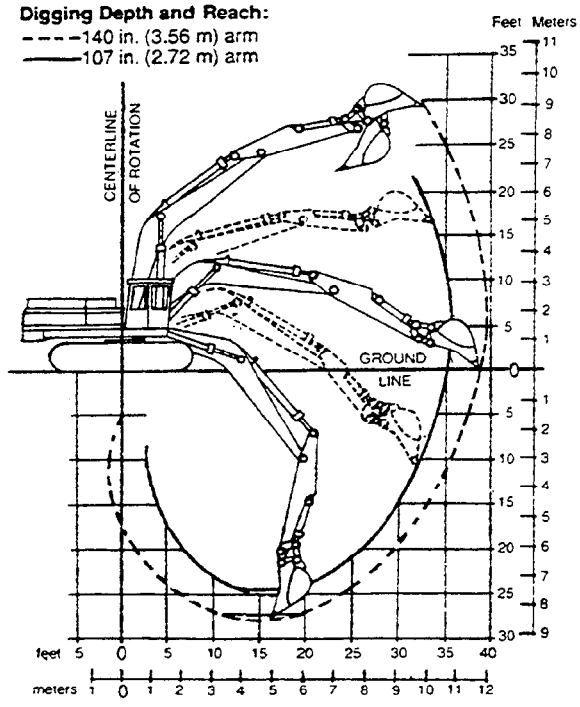



**Digging Depth and Reach:**
- - - -140 in. (3.56 m) arm
——107 in. (2.72 m) arm

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# CAP SCREW TORQUE VALUES

## CUSTOMARY TORQUE SPECIFICATIONS

*NOTE: Wrench torque tolerance is ± 10%.*

| Cap Screw | Plain Head* | | Three Dashes* | | Six Dashes* | |
|---|---|---|---|---|---|---|
| in. | (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 |

All torques are dry torque unless noted.

*Dashes identify the grade of hardware.

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## METRIC TORQUE SPECIFICATIONS

*NOTE: Wrench torque tolerance is ±10%.*

| Cap Screw | Property Class 8.8* | | Property Class 10.9* | |
|---|---|---|---|---|
| Diameter | (lb-ft) | N·m | (lb-ft) | N·m |
| M5 | (4.4) | 6.0 | (6.3) | 8.5 |
| M6 | (7.4) | 10.0 | (10.7) | 14.5 |
| M8 | (18.1) | 24.5 | (25.8) | 35.0 |
| M10 | (36.1) | 49.0 | (51.6) | 70.0 |
| M12 | (62.7) | 85.0 | (89.2) | 121.0 |
| M16 | (154.9) | 210.0 | (221.2) | 300.0 |
| M20 | (265.5) | 360.0 | (368.7) | 500.0 |
| M24 | (457.2) | 620.0 | (634.2) | 860.0 |
| M30 | (885.0) | 1200.0 | (1224.2) | 1660.0 |
| M36 | (1541.3) | 2090.0 | | |

All torques are dry torque unless noted.

*Numbers identify the grade of hardware.

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## GENERAL INFORMATION

When you service the excavator, check the periodic service chart inside the left, front fender. A copy of this chart is below. The 890A Operator's Manual has details for excavator service.

### PERIODIC SERVICES

REFER TO OPERATOR'S MANUAL FOR MORE DETAILED INFORMATION

| INTERVAL HOURS | ITEM NO | COMPONENTS | SERVICE POINTS | DESCRIPTION OF SERVICE | CAPACITY OR MEASUREMENT | APPROVED SERVICE MATERIAL |
|---|---|---|---|---|---|---|
| △ 10 OR DAILY | 1 | RADIATOR | 1 | CHECK COOLANT LEVEL | BOTTOM OF TUBE IN NECK | ANTI-FREEZE OR BURNER COOLANT |
| | 2 | HYDRAULIC RESERVOIR | 1 | CHECK OIL LEVEL | MIDDLE OF WINDOW WITH CYLINDERS HALF-WAY EXTENDED | JD HO (HIGH) OR EQUIVALENT |
| | 3 | ENGINE CRANKCASE | 1 | CHECK OIL LEVEL | TOP MARK ON DIPSTICK | SEE CHART BELOW |
| | 4 | AIR CLEANER | 1 | CHECK RESTRICTION INDICATOR | TOP MARK ON DIPSTICK | SEE CHART BELOW JD FILTERS |
| | 5 | BUCKET CYLINDER (ROD) | 1 | GREASE FITTING | 2 SHOTS | SAE MPG |
| | 6 | BUCKET LINKAGE | 8 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| □ 50 | 7 | BOOM TO MAIN FRAME PIN | 4 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| | 8 | BOOM CYLINDER (HEAD) | 2 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| | 9 | BOOM CYLINDER (ROD) | 2 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| | 10 | CROWD CYLINDER (HEAD) | 1 | GREASE FITTING | 2 SHOTS | SAE MPG |
| | 11 | CROWD CYLINDER (ROD) | 1 | GREASE FITTING | 2 SHOTS | SAE MPG |
| | 12 | BUCKET CYLINDER (MTG) | 1 | GREASE FITTING | 2 SHOTS | SAE MPG |
| | 13 | BOOM TO DIPPERSTICK PIN | 4 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| ⌓ 100 | 14 | TRACES*** | 2 | CHECK SAG | 3 in. - 5 IN. (76 mm - 127 mm) | |
| | 15 | ENGINE BELTS***** | 2 | CHECK TENSION | 80 LB. (400 N) BELT TENSION | |
| | 16 | HYDRAULIC RESERVOIR | 1 | CLEAN BREATHER VALVE | | KEROSENE OR SOLVENT |
| | 17 | HOUSE BRANCH | 1 | CHECK OIL LEVEL | BOTTOM OF CHECK HOLE | JD HO (HIGH) OR EQUIVALENT |
| | 18 | SWING GEARBOXES | 2 | CHECK OIL LEVEL | BOTTOM OF CHECK HOLE | JD GEAR GARD OR EQUIVALENT* |
| ▱ 300 | 19 | ENGINE CRANKCASE***** | 1 | DRAIN AND REFILL | 40 QT (38L) | SEE CHART BELOW |
| | 20 | CRANKCASE OIL FILTERS**** | 3 | REPLACE ELEMENTS | | JD FILTERS |
| | 21 | SWING GEARBOX AND BEARING GUILLS | 3 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| | 22 | TRACK GEARBOXES | 2 | CHECK OIL LEVEL | BOTTOM OF CHECK HOLE | JD GEAR GARD OR EQUIVALENT* |
| | 23 | HYDRAULIC OIL RETURN FILTERS**** | 4 | REPLACE ELEMENT | | JD FILTERS |
| | 24 | HYDRAULIC OIL HIGH PRESSURE FILTERS**** | 3 | REPLACE ELEMENT | | JD FILTERS |
| | 25 | HYDRAULIC OIL PILOT CONTROL FILTER | 1 | REPLACE ELEMENT | | JD FILTER |
| | 26 | ENGINE COOLANT FILTER******* | 1 | REPLACE CONDITIONER/FILTER | | JD CONDITIONER/FILTER |
| | 27 | FUEL TANK SUMP | 1 | DRAIN WATER AND SEDIMENT | | |
| ▭ 500 | 28 | AIR CLEANER HOSE | 1 | CHECK HOSE AND CONNECTIONS | | |
| | 29 | COOLING SYSTEM (SPRING & FALL)******* | 1 | DRAIN, FLUSH AND REFILL WITH ANTI-FREEZE OR WATER REPLACE CONDITIONER/COOLANT FILTER | | JD CONDITIONER/FILTER |
| | 30 | FUEL FILTERS | 2 | REPLACE ELEMENTS | | JD FILTERS |
| | 31 | SWING BEARING | 4 | GREASE FITTINGS ROTATE 45°, GREASE AGAIN, REPEAT FOR 360° | 4 SHOTS EACH | SHELL "ALVANIA EP 2" OR EQUIVALENT |
| | 32 | SWINGING GEAR** | 1 | ADD 1 LB. (0.5 kg) | 20 LB. (9 kg) | TEXACO TERCLAD 2 OR EQUIVALENT |
| | 33 | SWING GEARBOXES | 2 | DRAIN AND REFILL | 6 QT. (7.6 L) | JD GEAR GARD OR EQUIVALENT* |
| | 34 | TRACK ACCUMULATORS | 2 | CHECK PRESSURE | SEE CHART BELOW | DRY NITROGEN |
| ⬡ 1000 | 35 | AIR CLEANER | 1 | REPLACE ELEMENTS | | JD FILTERS |
| | 36 | TRACK GEARBOXES | 4 | DRAIN AND REFILL | 31 QT. (30 L) | JD GEAR GARD OR EQUIVALENT* |
| | 37 | HYDRAULIC RESERVOIR | 1 | DRAIN, FLUSH, CLEAN SUCTION SCREENS AND REFILL | 93 GAL. (366 L) RESERVOIR (270 GAL. (638 L) TOTAL) | JD HO (HIGH) OR EQUIVALENT |
| | 38 | ENGINE CRANKCASE VENT TUBE | 1 | REMOVE AND CLEAN | | |
| | 39 | ENGINE VALVE LASH* | 16 | CHECK AND ADJUST SEE JD DEALER | | |
| | 40 | ENGINE SPEED | 1 | CHECK AND ADJUST SEE JD DEALER | | |
| | 41 | CABLE PULLEY | 2 | GREASE FITTINGS | 2 SHOTS | SAE MPG |
| | 42 | BATTERIES | 4 | ADD WATER AND CHECK TERMINALS | | DISTILLED WATER |
| | 43 | CAB AIR FILTERS | 2 | CLEAN OR REPLACE ELEMENTS | | JD FILTERS |

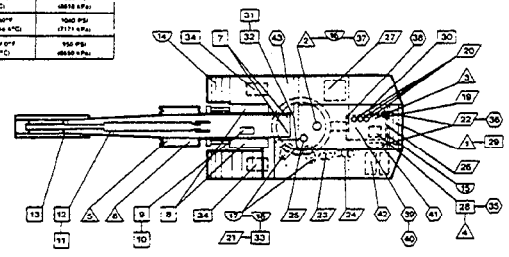
*SAE 80W EP GL5 or L 2105C
**DRAIN WATER FROM GREASE SUMP WHEN IN WATER ABOVE TRACKS
***MEASURE BETWEEN CENTER ROLLER AND CHAIN
****CHANGE FILTERS AFTER FIRST 50 HOURS AND 50 HOURS AFTER EACH MAJOR HYDRAULIC SYSTEM REPAIR
*****CHANGE OIL AND FILTERS AFTER FIRST 100 ENGINE HOURS
******SEE OPERATORS MANUAL FOR ADJUSTING BELT TENSION
*******CHANGE FILTER AFTER FIRST 100 HOURS OF COOLANT CHANGE

ENGINE OIL

| AIR TEMP | JOHN DEERE TORQ GARD SUPREME OIL | SINGLE VISCOSITY OIL API SERVICE CD/SC | MULTI-VISCOSITY OIL API SERVICE CD/SE |
|---|---|---|---|
| ABOVE 32°F (0°C) | SAE 30 | SAE 30 | NOT RECOMMENDED |
| 32°F TO 10°F (0°C TO -23.3°C) | SAE 10W 30 | SAE 10W | SAE 10W 30 SAE 10W 30 |
| BELOW 10°F (-23.3°C) | SAE 5W 30 | SAE 5W | SAE 5W 30 |

TRACK ACCUMULATOR

| AIR TEMP | DRY NITROGEN PRESSURE |
|---|---|
| ABOVE 10°F (-12°C) | 1250 PSI (8618 kPa) |
| 0° to 10°F (-18°C to -12°C) | 1060 PSI (7311 kPa) |
| BELOW 0°F (-18°C) | 950 PSI (6550 kPa) |



30A;T82413 T28;1 IV03 260382

### Engine Oils

Use John Deere TORQ-GARD SUPREME® engine oil in the engine crankcase.

Use John Deere TORQ-GARD SUPREME SAE 10W-20 oil or equivalent during the first 100 hours of operation for break-in.

Oils other than John Deere TORQ-GARD SUPREME must have one of the following specifications:

| **Single Viscosity Oils** | **Multi-Viscosity Oils** |
|---|---|
| API Service CD/SC | API Service CC/SE |
| MIL-L-2104C | MIL-L-46152 |
| Series 3 | |

### Oils and Air Temperature

| SAE ENGINE OILS | | | |
|---|---|---|---|
| Air Temperature | John Deere TORQ-GARD SUPREME Oil | Other Oils | |
| | | Single Viscosity Oil | Multi-Viscosity Oil |
| Above 32°F (0°C) | 30 | 30 | Not recommended. |
| 32° to -10°F (0° to -23°C) | 10W-20 | 10W | 10W-30 |
| Below -10°F (-23°C) | 5W-20 | 5W | 5W-20 |

If you use SAE 5W-20 or SAE 5W oil, your engine may use more oil. Check the oil level often.

### Storing and Handling Lubricants

Store lubricants in clean containers in an area protected from dust, moisture, and other contamination.

When you handle lubricants, use clean containers.

### Hydraulic Oils

If you operate excavator at air temperatures above −13°F (25°C), use John Deere Hydauic Oil (J14C) or equivalent.

For air temperatures between −31°F (−35°C) and 77°F (25°C), use SAE 5W-20 engine oil, CC/SE, MIL-L-46152.

*NOTE: See your John Deere dealer for special arctic lubricants.*

### Track Rollers and Idlers, Swing and Track Gearboxes

Use a multi-purpose GL-5 gear oil, SAE 80W-90, MIL-L-2105C.

### Greases

Use John Deere Multi-Purpose Grease or an equivalent for all grease fittings except where noted.

### Swing Bearing

Use Shell Alvania EP-2 or one of the following or an equivalent:

Sunoco 742 EP grease
Esso Unirex EP2 grease
American Amolith 2EP grease
Conoco Super Stay Conolith EP2 grease
Gulf Crown EP2 grease
Mobil Mobilux EP2 grease
Phillips Philube EP2 grease
Texaco Multifax EP2 grease
Standard Dura-Lith EP2 grease

### Swinging Gear

Use Texaco Texclad 2 or equivalent.

# Section 01
# TRACKS

## CONTENTS



T28:0100 01 090382

## SPECIAL TOOLS

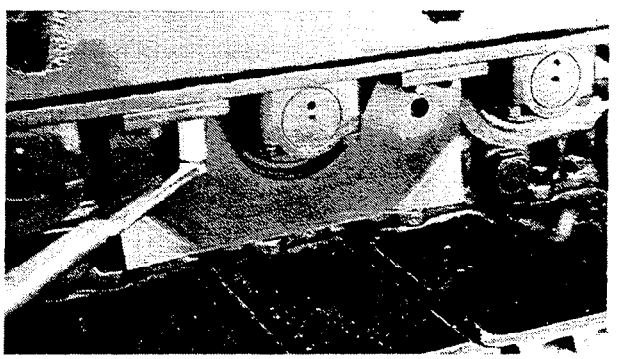
*NOTE: Order tools from your SERVICE-GARD™ Catalog, unless otherwise indicated.*

| Number | Name | Use |
|---|---|---|
| D-01031AA | 200-Ton Track Press | Disassemble and assemble track chain. |
| D-01043AA | Load Positioning Sling | Used With Master Pin Pusher to remove master pin. |
| D-01047AA | 17½ and 30-Ton Puller Set | Remove and install bushings, seals and roller end brackets. |
| D-01063AA | 100-Ton Master Pin Pusher | Remove and install master pin. |
| D-01065AA | Tooling Set for 200-Ton Track Press | Disassemble and assemble track chain. |
| D-01087AA | Master Accessory Kit for Hydraulic Analyzer | Fittings for adjusting track adjuster relief valve. |
| D-01168AA | Spring Compression Tester | Test track adjuster relief valve spring. |
| D-01182AA | 20-Ton Floor Stands | Supports the unit. |
| D-05227ST | Undercarriage Inspection Service Tool | Measure wear on undercarriage components. |
| D-15028NU | Universal Pressure Test Kit | Test oil leakage of roller and idler. |
| D-15041NU | Nitrogen Accumulator Charging Kit | To charge accumulator. |
| JD-342 | Idler Bushing Plate | Remove and install bushings in rollers and idlers. |
| JD-345 | Zerk Adapter | To adjust track adjuster relief valve. |
| JDG-69 | Nitrogen Accumulator Holding Tool | Remove and install accumulator. |
| JDG-127 | O-Ring Seal Tool Set | To remove O-rings. |
| JDG-206 | Seal Installation Tool | To install metal face seals. |

T28:0130 86 090382

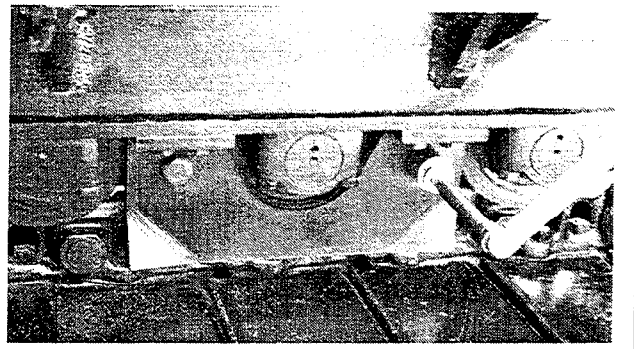
## GUIDE SPECIFICATIONS

Cap screws torque .....(407 N·m) 300 lb-ft



31A;T82824 T28;0130 206 121081

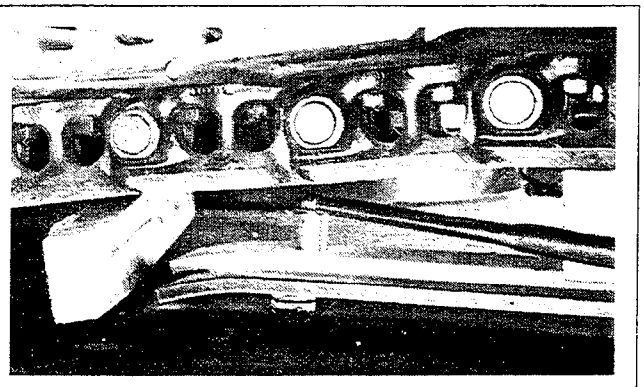
2. Cap screws torque .....(908 N·m) 670 lb-ft



31A;T82825 T28;0130 207 121081

## GUIDE AND SLIDE SPECIFICATION

Cap screws torque .....(325 N·m) 240 lb-ft

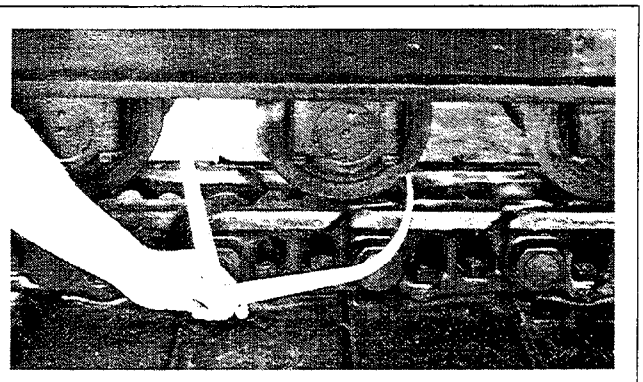


31A;T82829 T28;0130 208 121081

## ROLLER SPECIFICATIONS

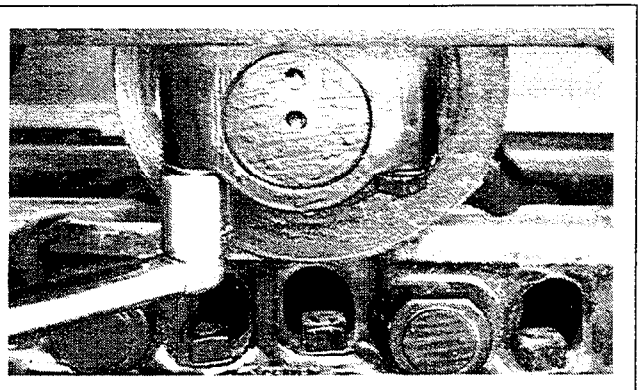
1. Outside contact surface of new roller .....185 mm (7.28 in.)

Minimum roller outside surface .....175 mm (6.88 in.)



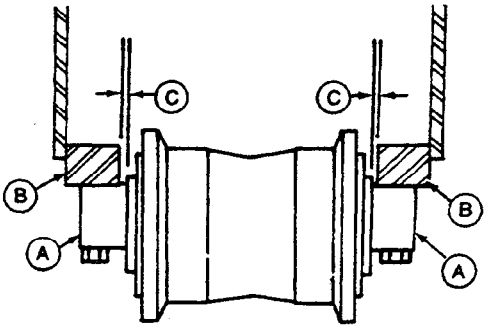
31A;T82830 T28;0130 209 121081

2. Cap screws torque .....(576 N·m) 425 lb-ft



31A;T82858 T28;0130 210 121081

3. Gap between roller bracket and inside of track frame ..... (0.25 mm) 0.010 in.

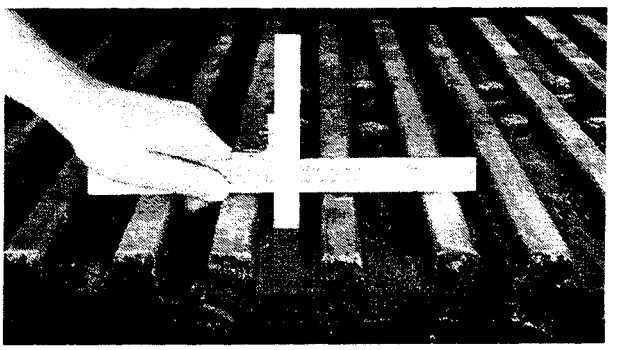



31A;T82513 T28;0130 211 121081

## TRACK SHOE SPECIFICATIONS

1. Grouser bar height of new shoe ..... (26.5 mm) 1.04 in.

Minimum grouser bar height ..... (12.5 mm) 0.49 in.



31A;T82859 T28;0130 212 121081

2. Track shoe cap screws torque (lubricated) ..... (300 ± 30 N·m) 220 ± 22 lb-ft plus an additional 1/3 turn.

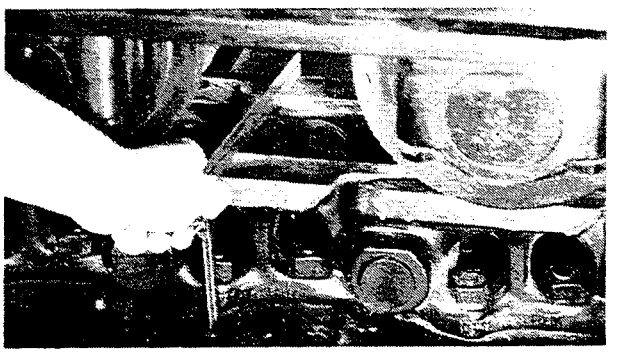
After 75 hours of operation .....(569 N·m) 420 lb-ft minimum

31A;T83549 T28;0130 213 121081

## TRACK CHAIN SPECIFICATIONS

1. Track link height of new chain ..... (125.5 mm) 4.94 in.

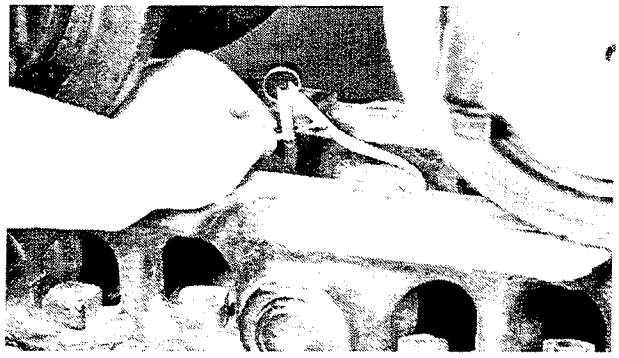
Minimum link height ..... (114.3 mm) 4.50 in.



31A;T82864 T28;0130 214 121081

2. Track bushing outer surface
(new bushing) ..... (71.4 mm) 2.81 in.

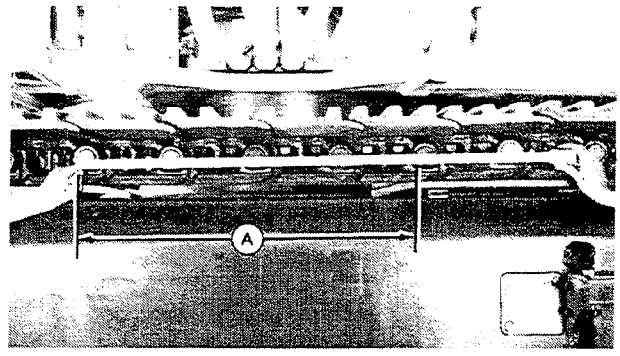
Minimum bushing outer surface before
turning bushings ..... (68.3 mm) 2.69 in.



31A:T82865 T28:0130 215 121081

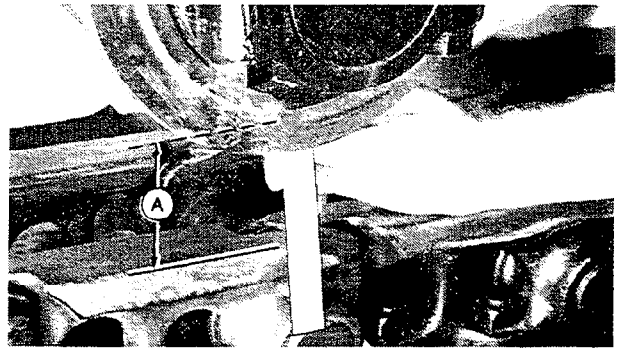
3. Track pitch of new chain (A) ..... (864.8 mm)
34.05 in.

Maximum track pitch before turning
pins and bushings ..... (877.5 mm)
34.55 in.




31A:T82866 T28:0130 216 121081

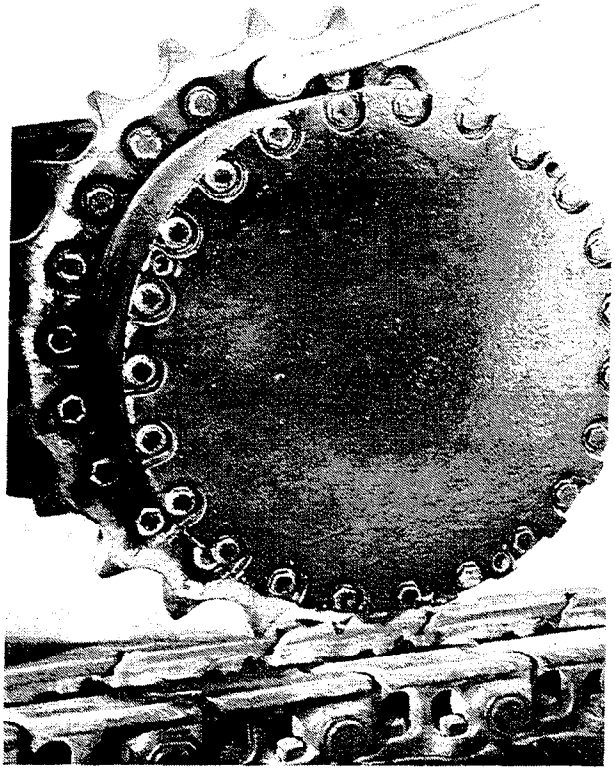
4. Track tension sag (A) .....(76 to 127 mm)
3.00 to 5.00 in.




31A:T82919 T28:0130 217 121081

## SPROCKET SPECIFICATION

Cap screws torque ..... (929 ± 93 N·m)
685 ± 68 lb-ft

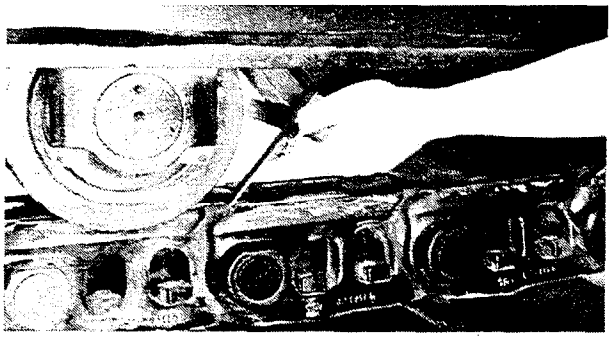


31A;T82561 T28;0130 218 121081

## IDLER SPECIFICATION

Flange height of new idler ..... (23.0 mm)
0.91 in.

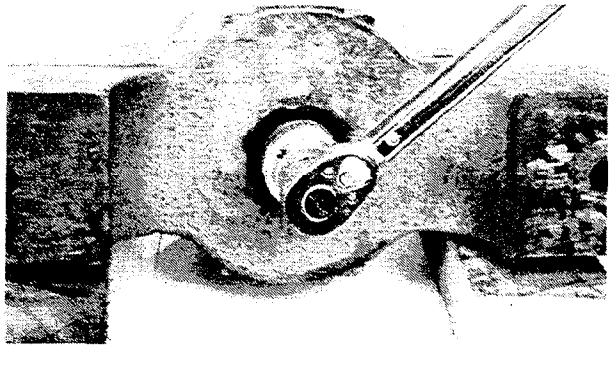
Maximum flange height ..... (32.8 mm)
1.29 in.



31A;T82910 T28;0130 219 121081

## TRACK ADJUSTER SPECIFICATIONS

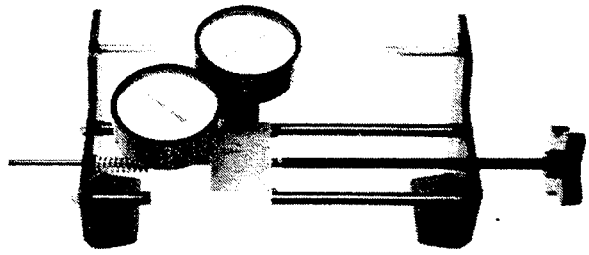
1. Plug torque ..... (81 ± 8 N·m)
60 ± 6 lb-ft



31A;T82955 T28;0130 220 090382

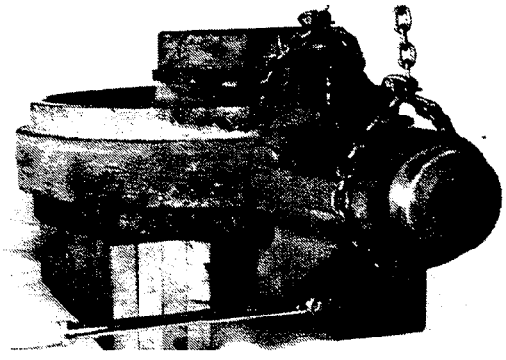
2. Track adjuster relief valve spring
free length ..... (46.33 ± 0.25 mm)
1.824 ± 0.010 in.

Test length at (387 ± 20 N ..... 38.56 mm)
87 ± 4.4 lb. force ..... 1.518 in.



31A;T83550 T28;0130 221 131081

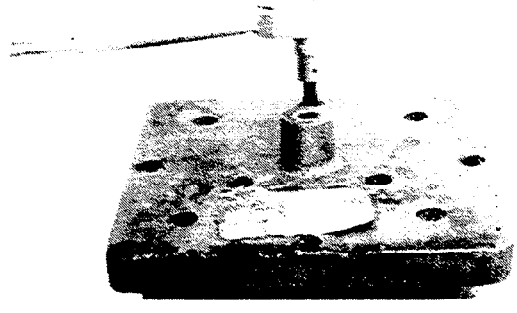
3. Cap screws torque .....(407 N·m)
300 lb-ft



31A;T83551 T28;0130 222 131081

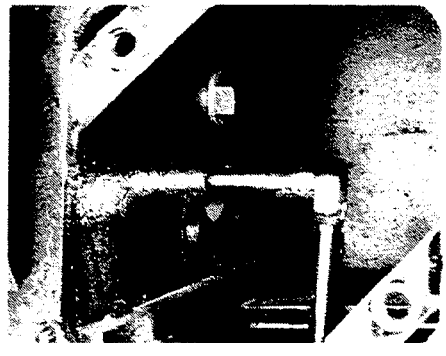
## ACCUMULATOR SPECIFICATIONS

1. Socket head cap screws torque ..... (88 ± 7 N·m)
65 ± 5 lb-ft



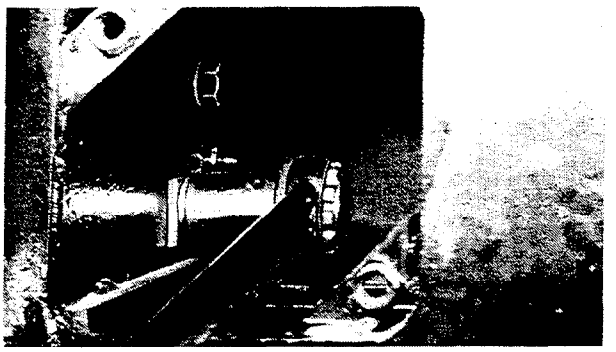
31A;T82994 T28;0130 223 131081

2. Valve torque .....(68 N·m) 50 lb-ft



31A;T83005 T28;0130 224 131081

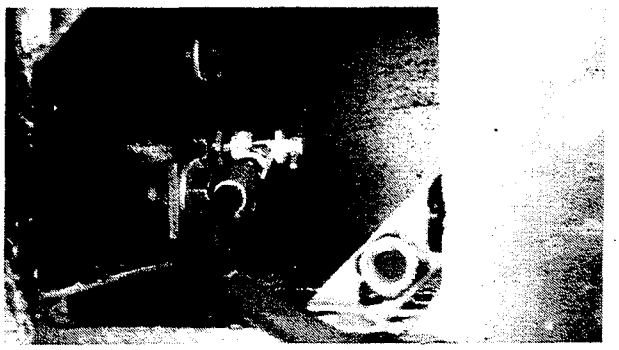
3. Cap screws torque .....(407 N·m) 300 lb-ft



31A;T83007 T28;0130 225 131081

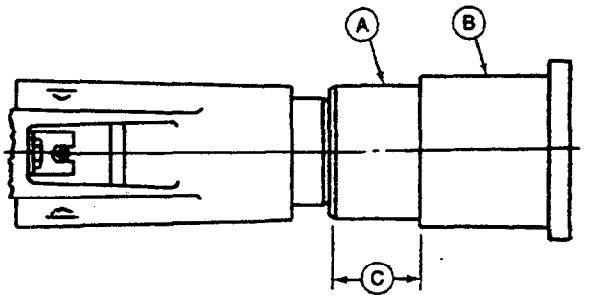
**CAUTION: When charging accumulator, use extreme handling care and proper equipment. Follow the steps for charging accumulator used in this group.**

4. The accumulator is charged with dry nitrogen gas to (8618 ± 172 kPa) (86 ± 1.7 bar) 1250 ± 25 psi at (20°C) 68°F.



31A;T83008 T28;0130 226 090382

5. Minimum piston extension (C) after track chain tension is properly adjusted ..... (47.5 mm) 1.87 in.

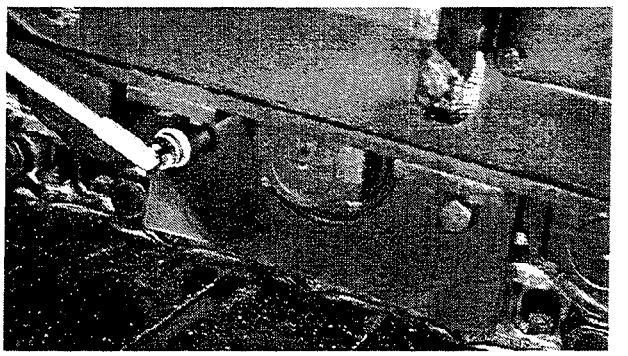



**A—Accumulator Piston**
**B—Accumulator Cylinder**
**C—(47.5 mm) 1.87 in. Minimum**

31A;T83149 T28;0130 257 131081

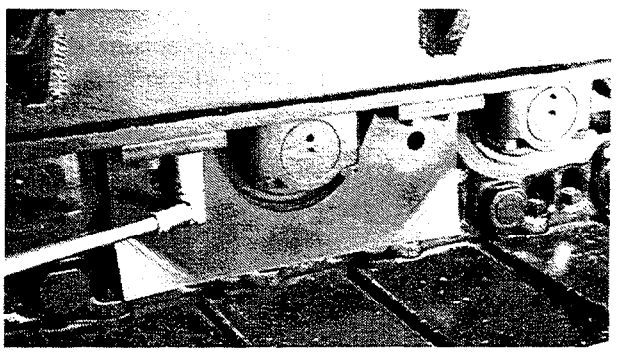
## REMOVE AND INSTALL TRACK GUIDES

1. Lower bucket to the ground.
2. Stop the engine.
3. Remove four cap screws, two on each side of track frame.



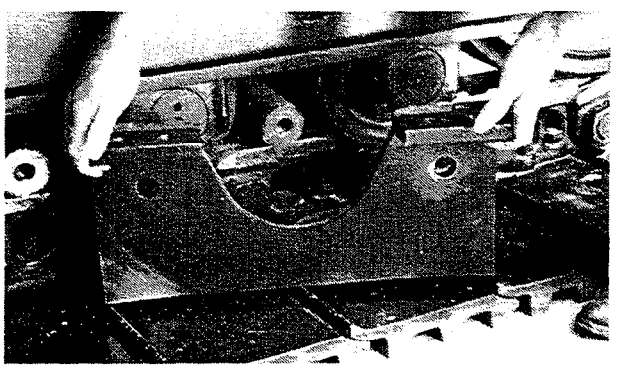
31A;T62818 T28;0130 69 180981

4. Remove eight cap screws, four on each side of track frame.



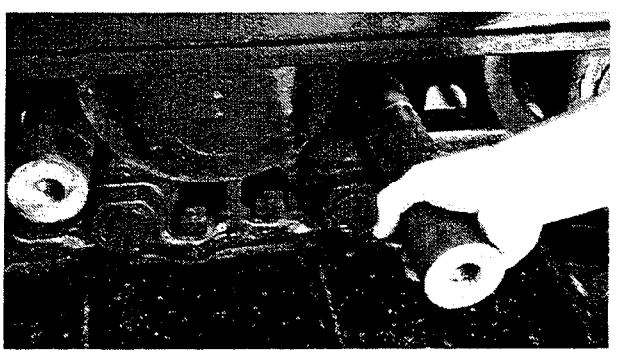
31A;T62821 T28;0130 70 180981

5. Remove inner and outer guides.



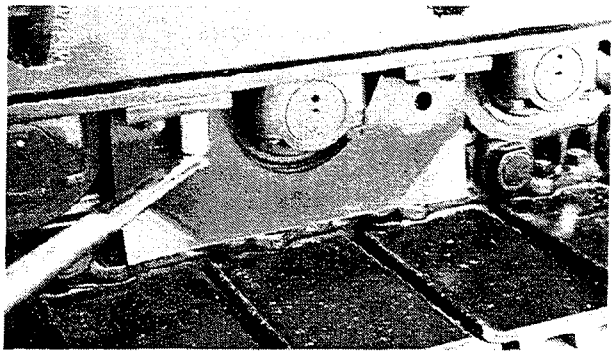
31A;T62822 T28;0130 71 180981

6. Remove two spacers.
7. Inspect parts for wear or damage; replace if necessary.



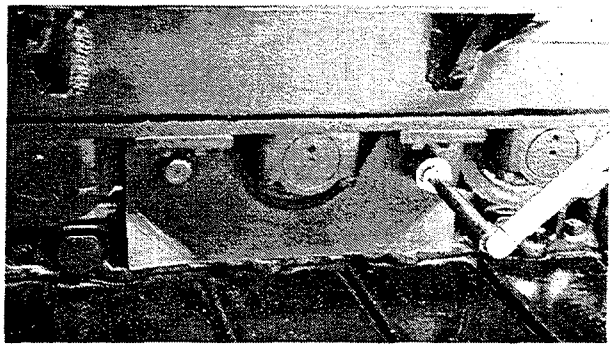
31A;T62823 T28;0130 72 180981

8. Install spacers, guides, cap screws, and lock washers. Tighten eight cap screws to (407 N·m) 300 lb-ft.



31A;T82824 T31;0130 73 180981

9. Install and tighten four cap screws and lock washers to (908 N·m) 670 lb-ft.



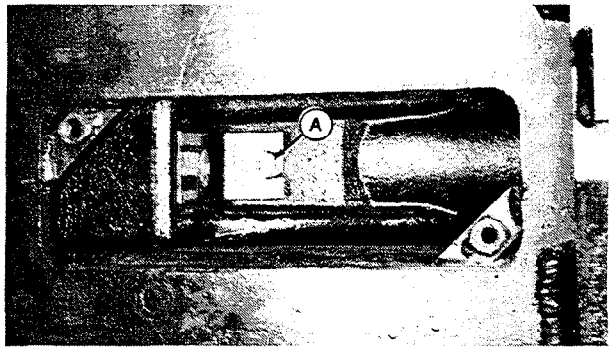
31A;T82825 T28;0130 74 180981

## REMOVE AND INSTALL TRACK GUIDES AND SLIDES

1. Turn upper structure to obtain maximum clearance over the guide and slide to be removed.
2. Lower bucket to the ground.
3. Stop the engine.

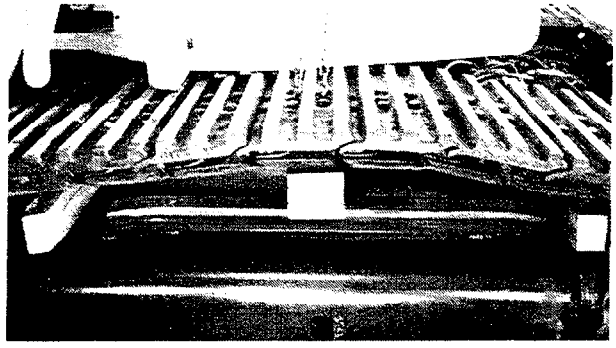
**CAUTION: Grease in track adjuster is under extreme pressure.**

4. Turn ball check valve assembly (A) one to three turns counterclockwise to release track tension. DO NOT turn grease fitting to release track tension.



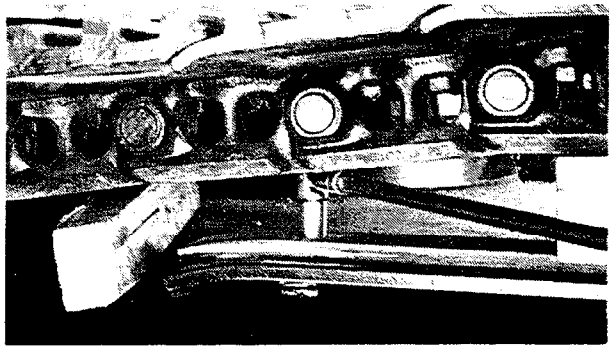

31A;T82685 T28;0130 75 180981

5. Lift track with chain and hoist.
6. Put blocks under track chain.



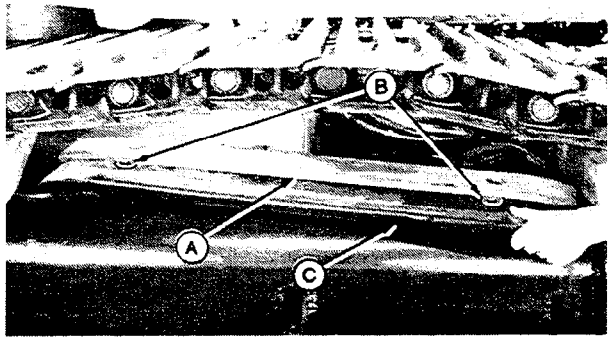
31A;T82826 T28;0130 76 180981

7. Remove two cap screws.



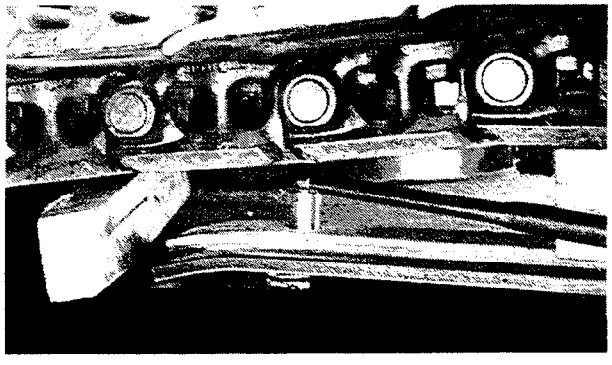
31A;T82827 T31;0130 77 180981

8. Remove middle block
9. Remove guide (A), two washers (B), and slide (C).
10. Inspect guide and slide for wear or damage; replace if necessary. Slide must be replaced when track chain bushings start to touch guide.




31A;T82828 T28;0130 78 180981

11. Install slide, washers, and guides.
12. Install cap screws and lock washers. Tighten cap screws to (325 N·m) 240 lb-ft.
13. Remove blocks.
14. Adjust track tension.



31A;T82829 T28;0130 79 180981

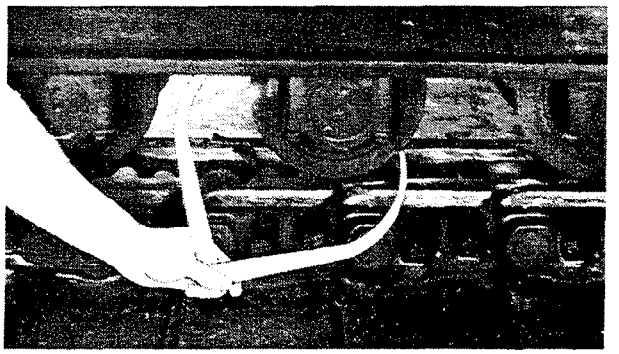
## MEASURE ROLLER WEAR

1. Use D-05229ST (3048 mm) 12 in. Spring Caliper from D-052275T Undercarriage Inspection Service Tool Kit to measure track roller tread diameter.

2. Put the caliper around each roller on the tread surface and record each measurement. Roller tread diameter of a new roller is 185 mm (7.28 in.). Minimum recommended roller diameter is 175 mm (6.88 in.).

3. Under some conditions, roller wear is uneven. If this condition exists, the rollers may be exchanged with other rollers providing the sequence of single and double flanges are not changed.

*NOTE: For additional information on measuring track roller tread diameter, see the UNDERCARRIAGE APPRAISAL MANUAL SP-236.*



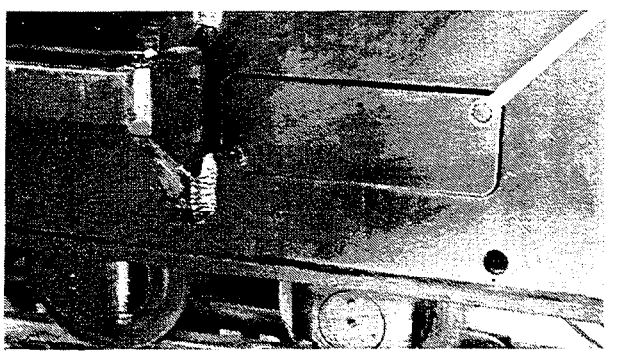
31A;T82830 T28:0130 80 180981

## REMOVE TRACK ROLLERS

1. Lower bucket to the ground.

2. Stop the engine.

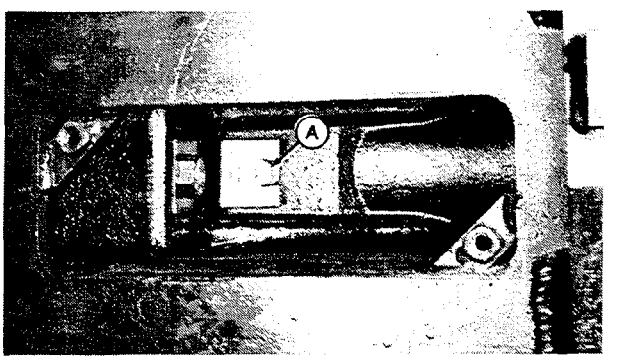
3. Remove two cap screws to remove track adjuster cover on side of unit from which rollers are to be removed.



31A;T82831 T28:0130 81 180981

**CAUTION: Grease in track adjuster is under extreme pressure.**

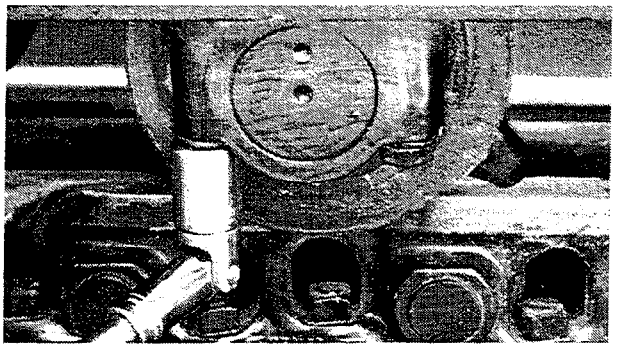
4. Turn ball check valve assembly (A) one to three turns counterclockwise to release track tension. DO NOT turn grease fitting to release track tension.




31A;T82685 T28:0130 82 180981

5. Remove four cap screws for each roller to be removed.

*NOTE: To remove rollers inside guides, the guides must be removed first.*

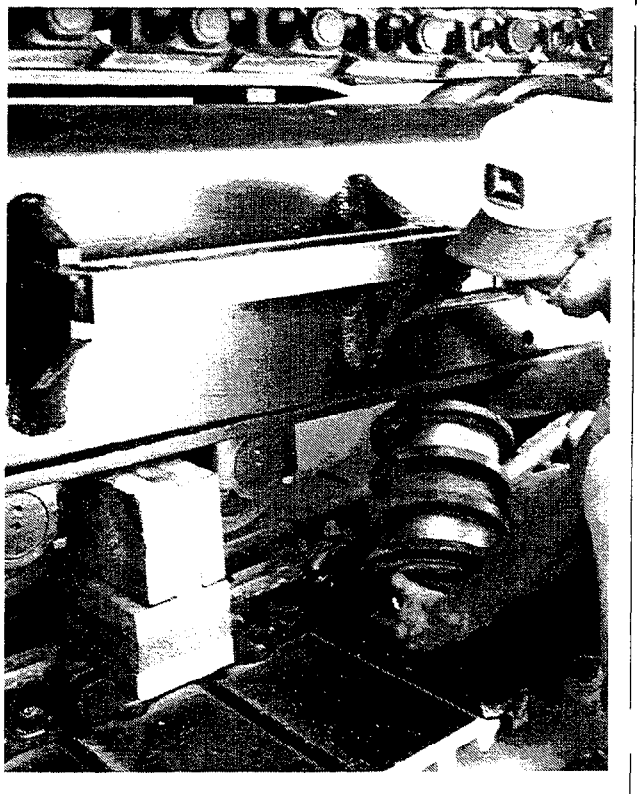


31A;T82832 T28;0130 83 180981

6. Lift side of unit high enough to permit roller removal.
7. Install blocks.

**CAUTION: Each roller weighs approximately (54.4 kg) 120 lb.**

8. Remove roller.

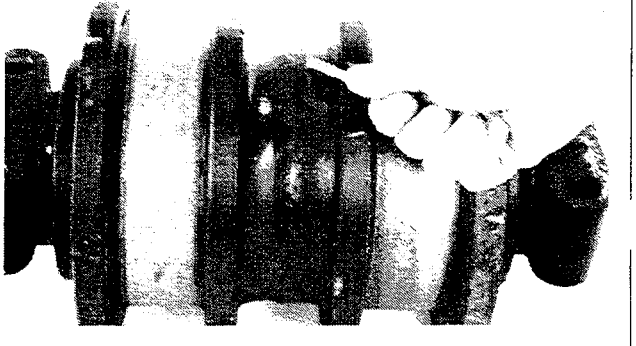


31A;T82833 T28;0130 84 180981

## DISASSEMBLE TRACK ROLLER

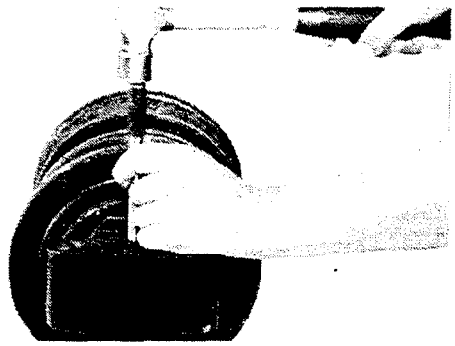
The only difference between single and double flange rollers is the roller shell. Disassembly and assembly for each is the same. All roller parts are metric in design.

1. Remove plug using a 6 mm hex wrench to drain oil from roller.



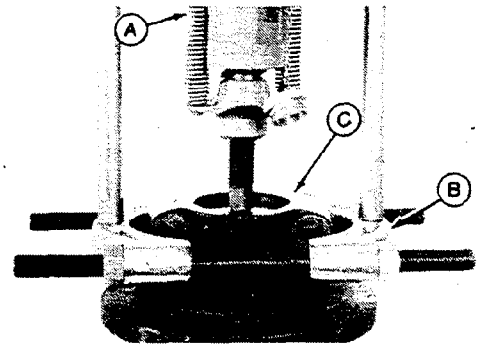
31A;T82834 T28;0130 85 180981

2. Remove spring pin from each end cap bracket.



31A;T82835 T28;0130 87 180981

3. Use bearing puller and hydraulic ram from D-01047AA 17½ and 30-Ton Puller Set to remove both end cap brackets.

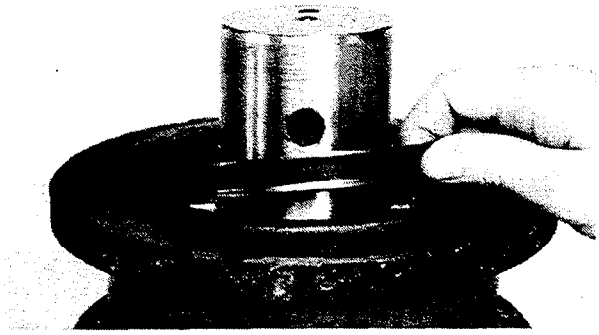



**A—D-01218AA 17½-Ton Hydraulic Ram**
**B—D-01243AA Bearing Puller**
**C—End Cap Bracket**

31A;T82836 T28;0130 88 180981

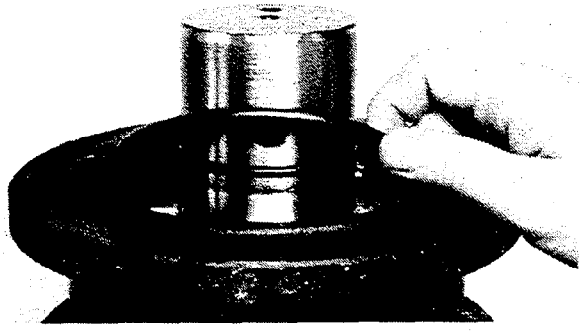
**IMPORTANT: The metal seal rings can be reused if they are not worn. Metal seal rings are to be kept in matched sets to protect the sealing face. Use tape to hold the two used seal rings together.**

4. Remove metal seal ring from roller shell.



31A;T82837 T28;0130 89 180981

5. Remove O-ring from roller shell.

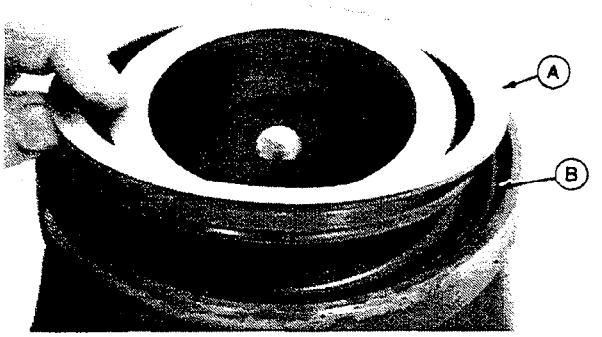


31A;T82838 T28;0130 90 180981

6. Remove metal face seal ring (A) and O-ring (B) from end cap bracket.

7. Use tape to hold metal face seal rings together to keep seal rings in original matched sets.

8. Remove metal face seal rings and O-rings from opposite side of roller and other end cap bracket. Use tape to hold metal face seal rings together.



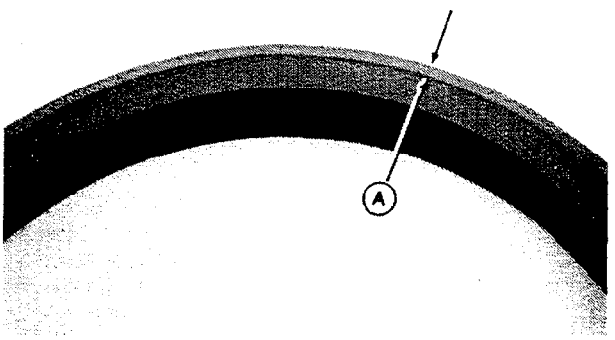

31A;T82839 T28;0130 91 180981

## INSPECT METAL FACE SEALS

1. Clean metal sealing rings as follows:

a. Remove any corrosion or hardened material that may exist on the metal ring OTHER than the sealing area (A). Use a scraper and/or any stiff bristled fiber brush to remove foreign material.

b. Wash the metal sealing rings with a volatile, non-petroleum base solvent to remove all oil and wipe dry. Use a lint free cloth to remove all traces of oil or grease from all surfaces.



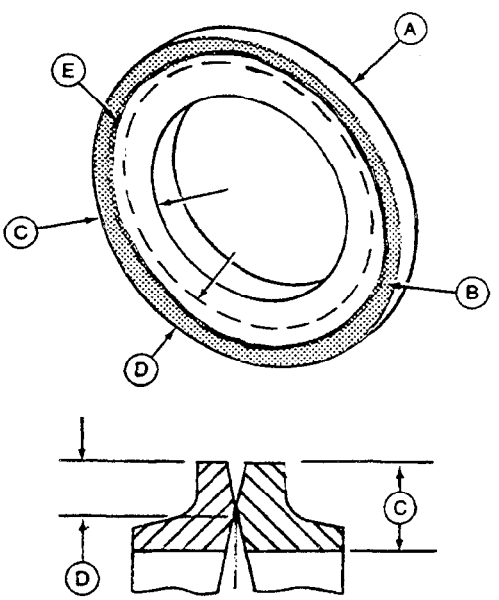

31A;T82840 T28;0130 92 180981

2. To decide if a sealing ring can be reused, the following three conditions must be met:

a. The narrow, highly polished sealing area (E) must be within outer half of the sealing face (D).

b. The sealing area (E) must be uniform and concentric with the inside surface and outside surface of metal seal ring (A).

c. The sealing area (E) must not be chipped, nicked or scratched in any way.




**A—Metal Seal Ring**
**B—Worn Area (shaded portion)**
**C—Seal Face**
**D—Outer Half of Sealing Face**
**E—Sealing Area (dark line)**

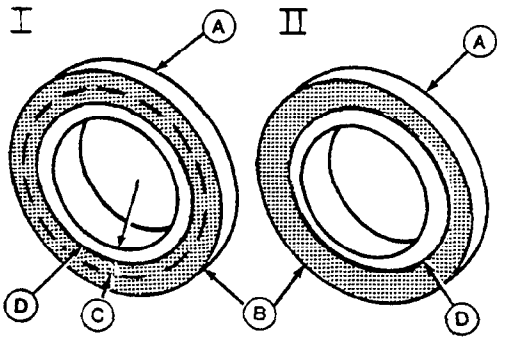
31A;T85079 T28;0130 93 090382

3. The two drawings show examples of poor metal seal rings.

Drawing I shows the sealing area (D) within inner half of sealing face.

Drawing II shows the sealing area (D) not concentric with inside and outside surfaces of metal seal ring (A).

**A—Metal Seal Ring**
**B—Worn Area (shaded portion)**
**C—Inner Half of Sealing Face**
**D—Sealing Area (dark line)**

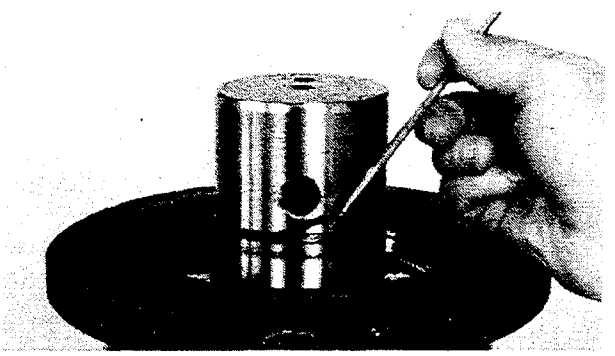



31A;T85080 T28;0130 94 090382

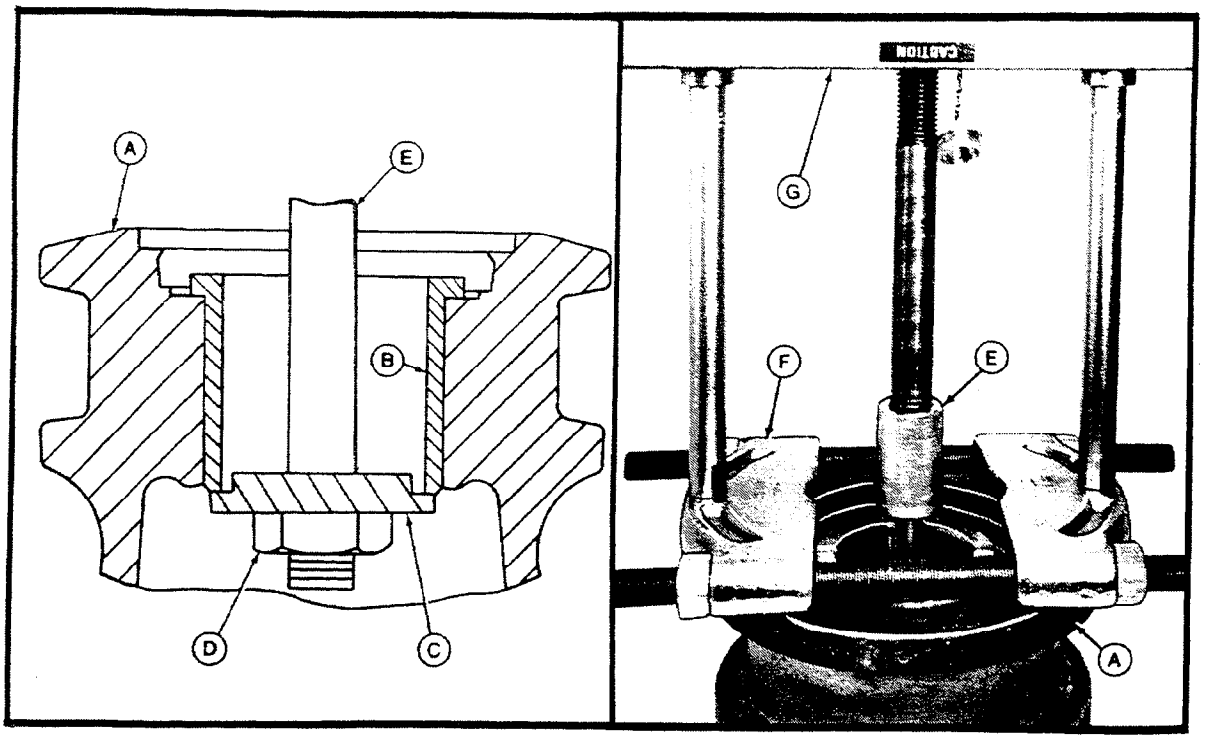
## CONTINUE TO DISASSEMBLE TRACK ROLLER

1. Use a pick from JDG-127 O-ring Seal Tool Set to remove O-ring from each end of shaft.

2. Remove shaft.



31A;T82841 T28;0130 95 180981




**A—Roller**
**B—Bushings (2 used)**
**C—JD-342 Idler Bushing Plate**
**D—5/8 in.-18 Nut**
**E—D-01303AA Pulling Shaft**
**F—D-01267AA Bearing Puller Attachment**
**G—D-1219AA Hydraulic Ram**

3. Install JD-342 Idler Bushing Plate (C) under bushing (B) as shown.

4. Put threaded pulling shaft (E) from D-01241AA Internal Puller through bushing plate (C) and fasten with nut (D).

5. Install hydraulic ram (G) and bearing puller attachment (F) from D-01047AA 17½ and 30-Ton Puller Set on top of roller in pulling position. Connect ram to pulling shaft.

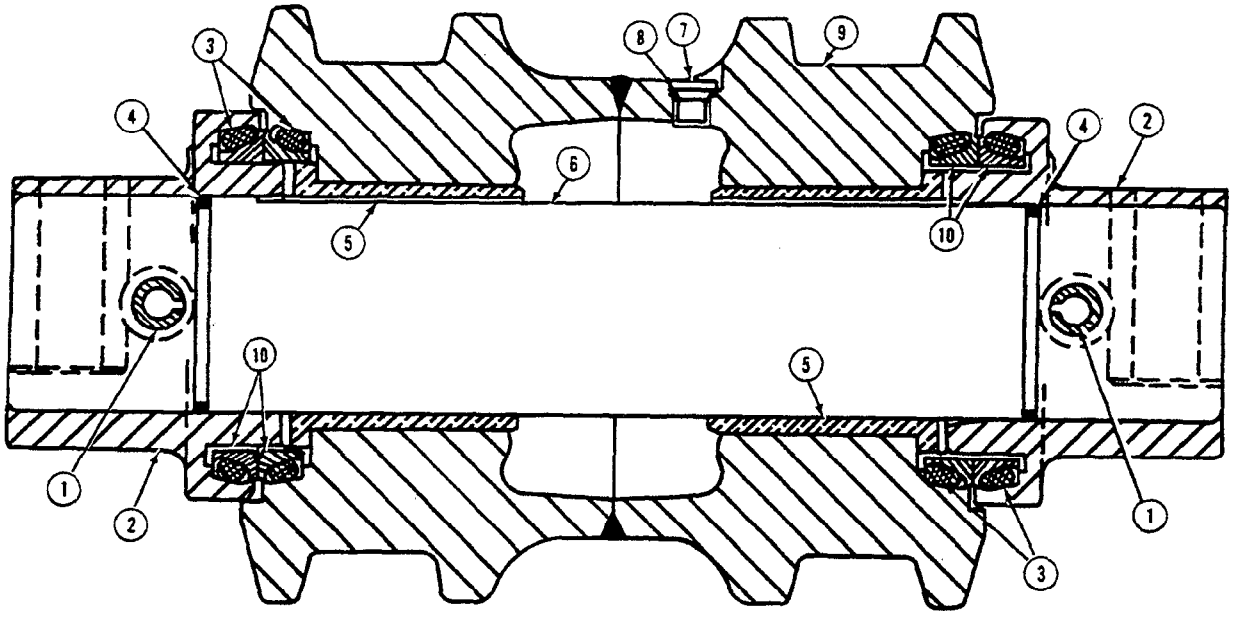
6. Apply pressure until bushing is removed.

7. Turn roller over and repeat above steps to remove other bushing.

8. Inspect roller, bushings, shaft, and brackets for wear or damage; replace if necessary.

31A-TM2681 T28:0130 96 180981

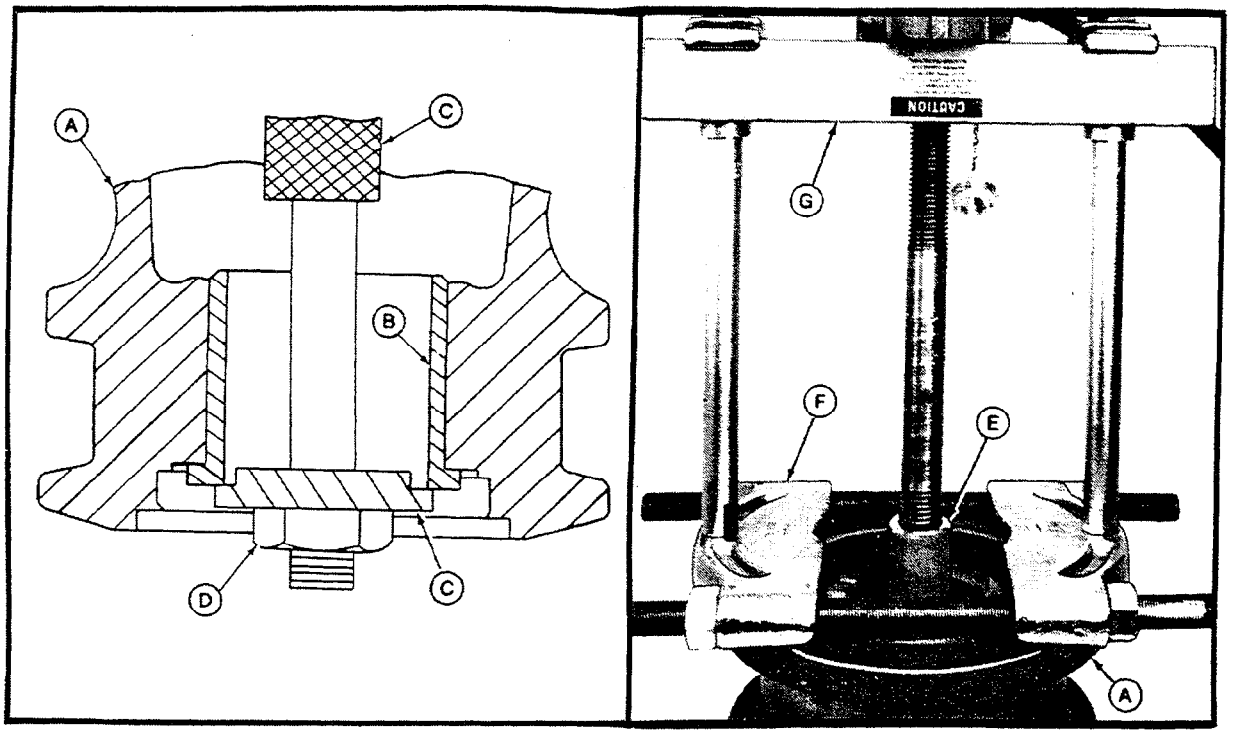
## CROSS SECTION OF TRACK ROLLER




1—Spring Pin (2 used)
2—End Cap Bracket (2 used)
3—O-ring (4 used)
4—O-ring (2 used)
5—Bushing (2 used)
6—Shaft
7—Plug
8—O-ring
9—Roller
10—Metal Face Seal (4 used)

31A;T82519 T28;0130 97 180981

## ASSEMBLE TRACK ROLLER




A—Roller
B—Bushings (2 used)
C—JD-342 Idler Bushing Plate
D—5/8 in.-18 Nut
E—D-01303AA Pulling Shaft
F—D-01267AA Bearing Puller Attachment
G—D-1219AA Hydraulic Ram

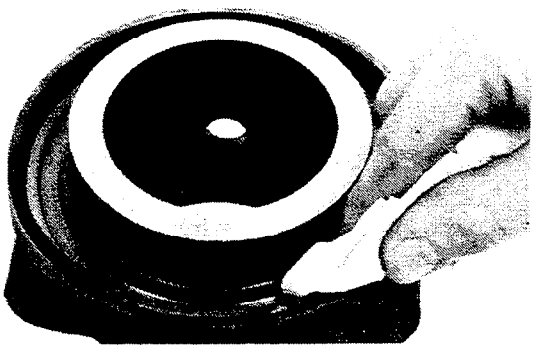
1. Install JD-342 Idler Bushing Plate (C) under bushing (B).
2. Put pulling shaft (E) through bushing plate (C). Install nut (D).
3. Install hydraulic ram (G) and bearing puller attachment (F) from D-01047AA 17½ and 30-Ton Puller Set on top of roller in pulling position. Connect ram to pulling shaft.
4. Apply pressure to ram until bushing is tight against its shoulder.
5. Turn roller over and repeat above steps to install other bushing.

31A;TB2680 T28;0130 98 160981

## INSTALL METAL FACE SEALS TO ASSEMBLE TRACK ROLLERS

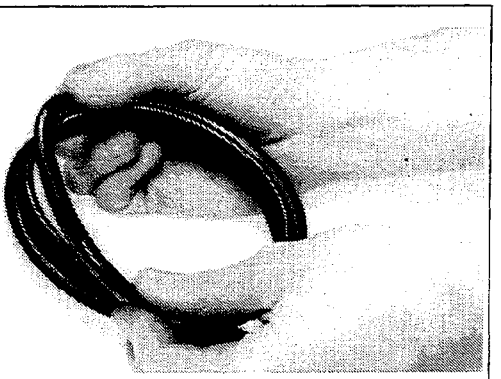
**IMPORTANT: Metal face seal bores in roller and end cap brackets must be clean, dry and oil free.**

1. Remove all dirt, oil and grease from seal bores in roller shell and end cap brackets. Use a wire brush to remove any rust and dirt.



31A;T82842 T28:0130 99 180981

2. Put a new O-ring on each metal seal ring.



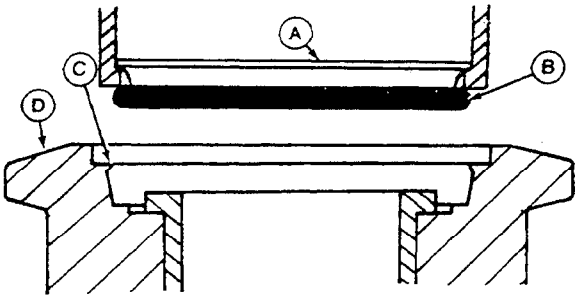
31A;T85439 T28:0130 100 090382

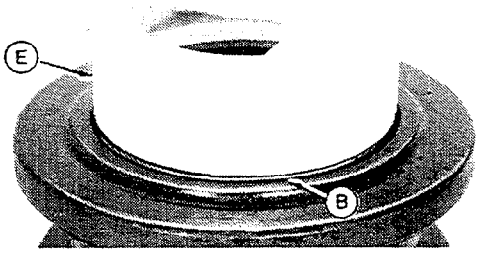
3. Install JDG-206 Seal Installation Tool between metal seal ring (A) and O-ring (B).


31A;T85440 T28:0130 250 090382

*NOTE: To aid seal installation, a volatile non-petroleum base solvent may be placed on rubber seal O-ring (B) and the seal bore retainer lip (C). The solvent MUST NOT damage the rubber seal O-ring or leave an oil residue on seal or seal bore.*

4. Push metal seal ring and O-ring into roller. After O-ring is pushed past retainer lip (C), turn the installation tool clockwise and counterclockwise to seat O-ring uniformly. Remove installation tool.

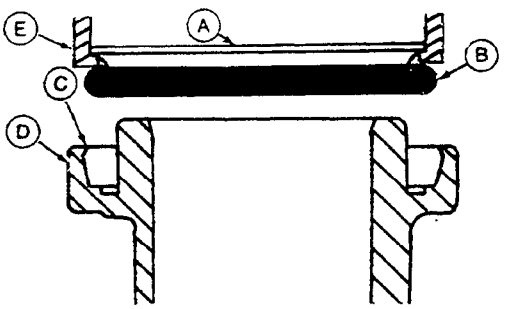


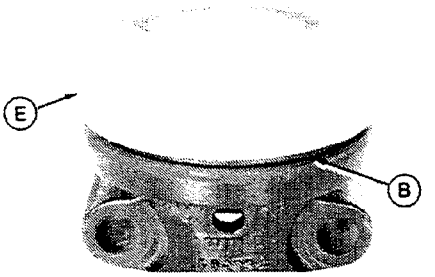




**A—Metal Face Seal Ring**
**B—Rubber Seal O-Ring**
**C—Retainer Lip**
**D—Roller**
**E—JDG-206 Seal Installation Tool**

31A;T85441, T85442 T28;0130 101 180981

5. Install the other half of the metal seal ring and O-ring in end cap bracket using the same procedure as for the roller.



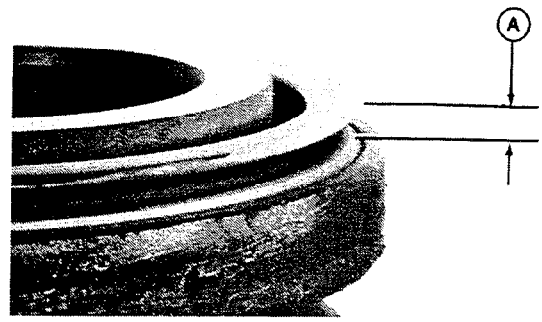




**A—Metal Face Seal Ring**
**B—Rubber Seal O-Ring**
**C—Retainer Lip**
**D—End Cap Bracket**
**E—JDG-206 Seal Installation Tool**

31A;T85443, T85444 T28;0130 102 090382

6. Make sure the metal seal rings fit square in seal bores. Be sure that distance A, between the top of the metal seal ring and the O-Ring, is uniform around the entire circumference for both seal halves.

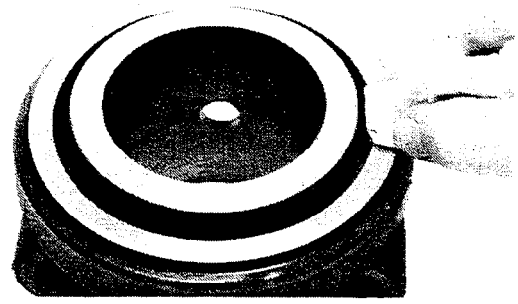
7. Install second set of metal face seals in other side of roller and other end cap bracket using above procedures.




31A;T82846 T28;0130 103 090382

8. Remove finger prints and foreign material from seal faces with a lint-free tissue.

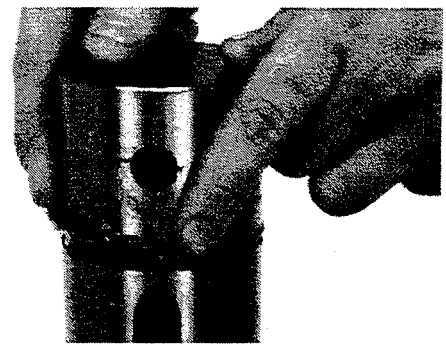
9. Apply a thin film of oil on each metal sealing face. DO NOT allow any oil on rubber seal O-rings.



31A;T82847 T28;0130 104 090382

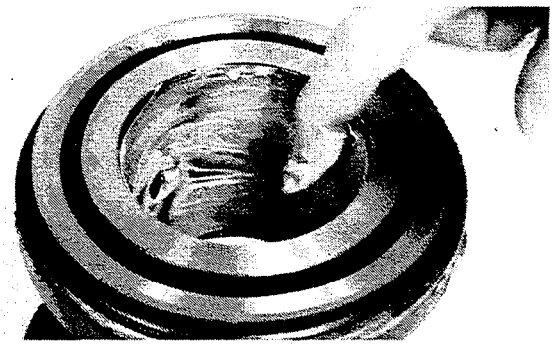
## CONTINUE TO ASSEMBLE TRACK ROLLER

1. Put petroleum jelly on O-rings. Install O-rings on each end of roller shaft.



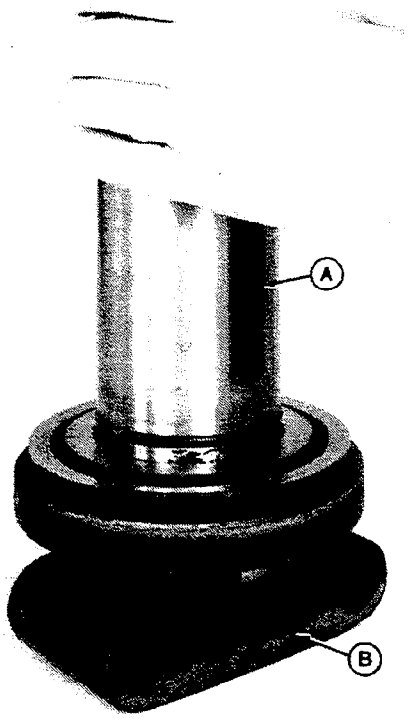
31A;T82848 T28;0130 105 180981

2. Apply a thin coat of multi-purpose grease in roller shaft bore of both end cap brackets.



31A;T82849 T28;0130 106 180981

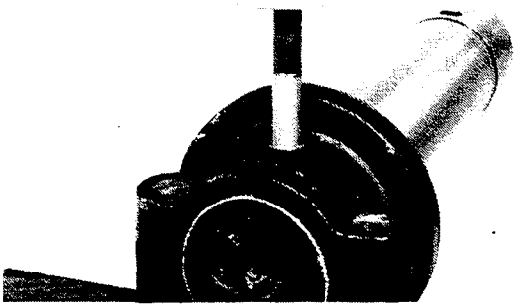
3. Install roller shaft in end cap bracket. Make sure the flat portion (A) on shaft is toward flat surface (B) on bracket. DO NOT damage O-ring.




31A;T82850 T28;0130 107 180981

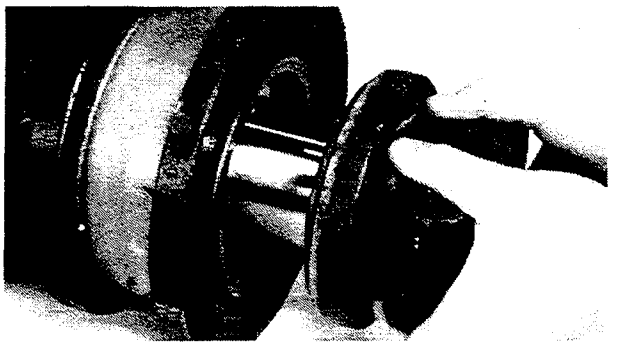
4. Put John Deere NEVER-SEEZ® or an equivalent on spring pin. Install spring pin through end cap bracket and shaft.

*NEVER-SEEZ is a trademark of the Never-Seez Compound Corp.*



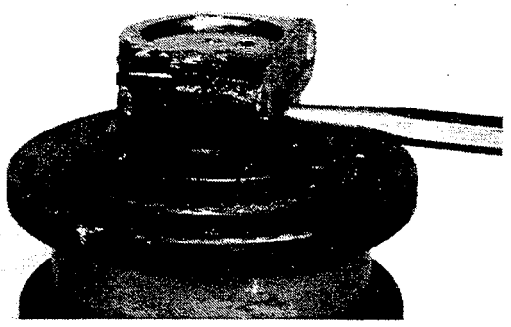
31A;T82851 T28;0130 108 180981

5. Apply a thin film of oil to roller bushings.
6. Install shaft and bracket assembly into roller.



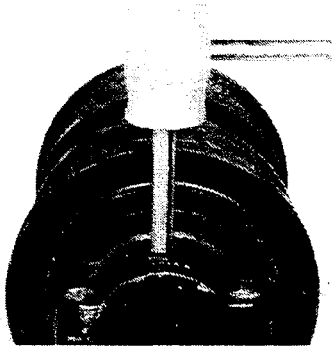
31A;T82852 T28;0130 109 180981

7. Install end cap bracket on shaft. Use a pry bar to align holes.



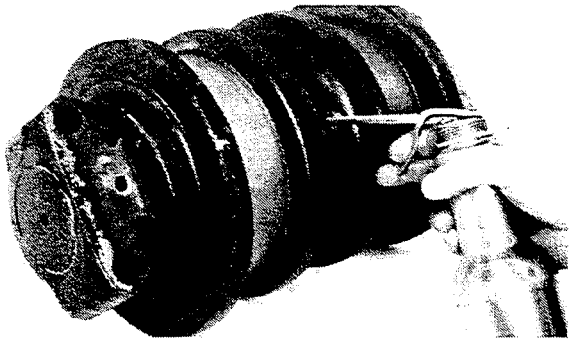
31A;T82853 T28;0130 110 180981

8. Put John Deere NEVER-SEEZ or an equivalent on spring pin. Install spring pin through end cap bracket and shaft.



31A;T82854 T28;0130 111 180981

9. With oil fill hole 10 to 40° from horizontal, fill roller with recommended oil until oil flows out of fill hole. (See Section I, Group V for type of oil to use.)



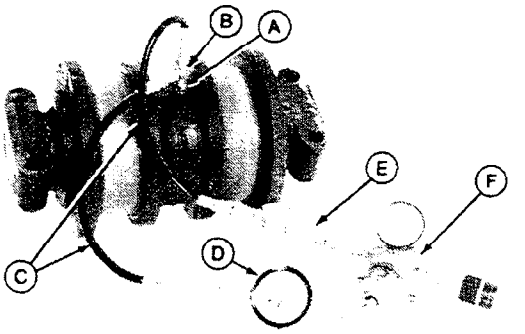
31A;T82855 T28;0130 112 090382

10. Install O-ring and plug. Tighten plug.

31A;T82834 T28;0130 113 180981

## TEST TRACK ROLLER FOR OIL LEAKAGE

1. Turn roller several times to seat metal face seals.
2. Remove oil fill plug.
3. Use fittings from D-15028NU Universal Pressure Test Kit to assemble test equipment as shown. Connect a regulator with gauge (F) to valve (E).
4. Apply (110 ± 28 kPa) (1.1 ± 0.3 bar) 16 ± 4 psi to roller with air.
5. Close valve (E) and wait for minimum of 30 seconds. Make sure oil is not leaking past metal face seals or O-rings. Check gauge (D) to see if roller maintains the correct air pressure.
6. If the roller leaks oil, replace seal or O-ring at location of leak. Fill roller with recommended oil to proper level. Test roller again for oil leakage.
7. Remove test equipment.
8. If oil level falls noticeably and there are no visible leaks, the roller must be replaced due to internal leakage.
9. Install and tighten oil fill plug.




**A—0721 O-ring Fitting**
**B—0027 Tee Fitting**
**C—2106 Pressure Hose (2 used)**
**D—6949 Pressure Gauge**
**E—2495 Snubber Valve**
**F—Regulator with Gauge**

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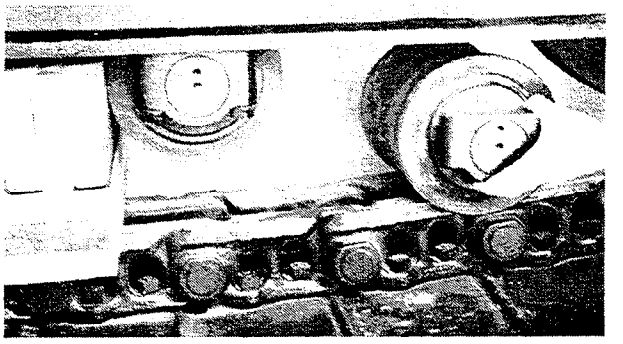
## INSTALL TRACK ROLLERS

**IMPORTANT: Alternate single and double flange rollers, starting with a single flange roller next to the idler.**

1. Put rollers on track chain with flat portion of roller and shaft pointing up. Align with tapped holes in track frame.



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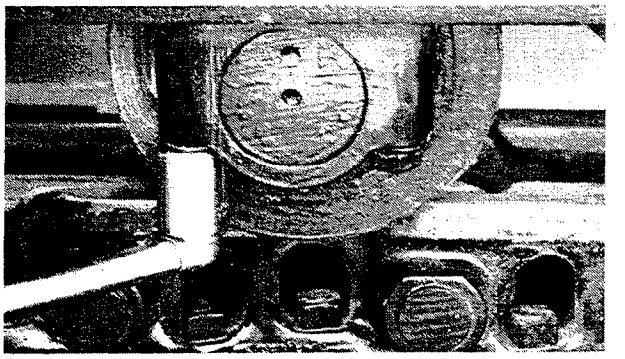
2. Lower unit enough to allow cap screws and lock washers to be installed into track frame. Tighten the cap screws to (576 N·m) 425 lb-ft. Rollers must be free to turn by hand after tightening cap screws.



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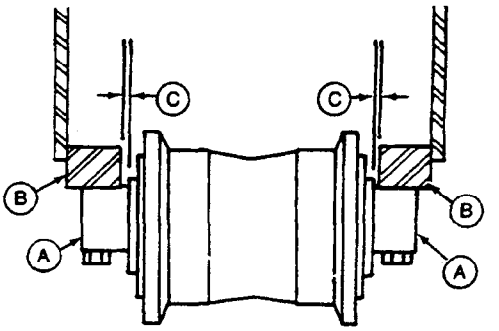
3. Minimum clearance (C) between track roller bracket and the inside of track frame should be (0.25 mm) 0.010 in.




**A—Roller End Bracket**
**B—Track Frame**
**C—Frame-to-Bracket Clearance**

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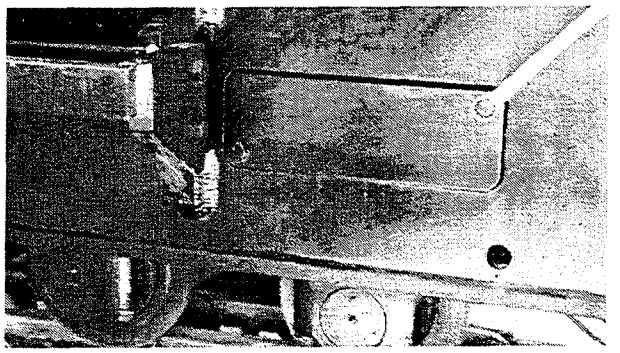
4. Install guides, if removed.

5. Adjust track tension.



31A;T82851 T28;0130 118 180981

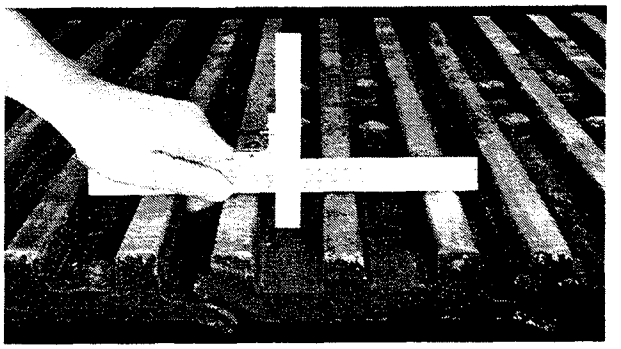
## MEASURE GROUSER WEAR

1. Put depth gauge over grouser bar. Depth gauge consists of D-05231ST 300 mm Metric Ruler, D-05265ST 150 mm Metric Ruler and D-05266ST Right Angle Attachment from D-05227ST Undercarriage Inspection Service Tool Kit.

2. Repeat measurement for several grousers to find average height.

3. Standard grouser height on a new shoe is (26.5 mm) 1.04 in. Minimum recommended grouser height is (12.5 mm) 0.49 in.

*NOTE: For additional information on measuring grouser bar height, see the UNDERCARRIAGE APPRAISAL MANUAL SP-326.*



31A;T82859 T28;0130 119 180981

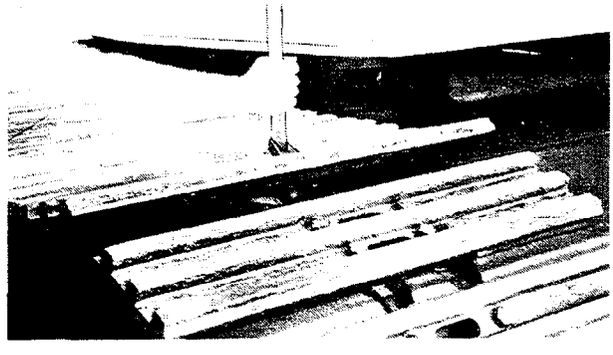
## REMOVE AND INSTALL TRACK SHOES

1. Remove four cap screws and nuts.

31A;T82860 T28:0130 120 180981

**CAUTION: The weight of a 900 mm (36 in.) shoe is 47.6 kg (105 lb.) A 750 mm (30 in.) shoe weight is 31.8 kg (70 lb.).**

2. Install a lifting strap to remove shoe.
3. Inspect shoe for cracks or damage; replace if necessary.
4. Mounting surface on track shoes and links must be clean and free of paint.
5. Put oil on cap screw threads and under cap screw head.
6. Install track shoes using cap screws to align shoe on track link.



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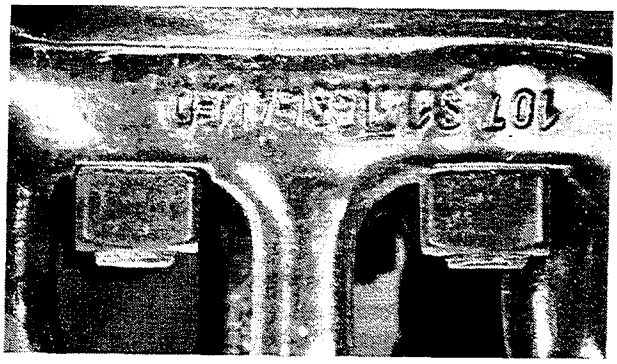
7. Install nuts with rounded corners against link.



31A;T82862 T28;0130 122 180981

8. Tighten cap screws to (300 ± 30 N·m) 220 ± 22 lb-ft. Turn cap screw an additional 120° (1/3 turn or two flats of cap screw head).

9. Check cap screws after 75 hours of operation. They must have a minimum torque of (569 N·m) 420 lb-ft.

10. If cap screws check below (569 N·m) 420 lb-ft, remove shoes and clean paint or foreign material from chain and shoe mating surfaces. Assemble shoes following above steps 5 through 9.

31A;T82863 T28;0130 123 180981

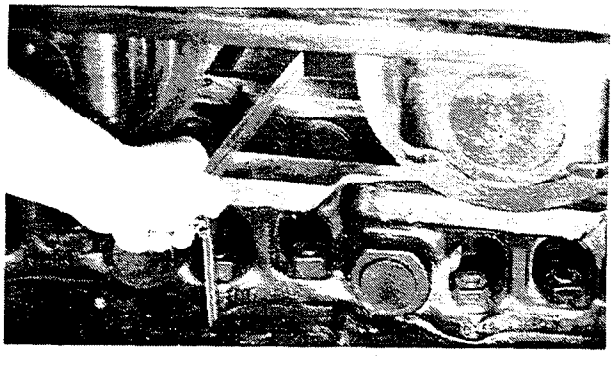
## MEASURE TRACK LINK FOR WEAR

1. Measure track link height with a depth gauge from the D-05227ST Undercarriage Inspection Service Tool Kit.

2. Measure additional links of track chain to find average measurement.

3. Link height of a new chain is (125.5 mm) 4.94 in. Minimum recommended link height is (114.3 mm) 4.50 in.

*NOTE: For additional information on measuring link height, see the UNDERCARRIAGE APPRAISAL MANUAL SP-326.*



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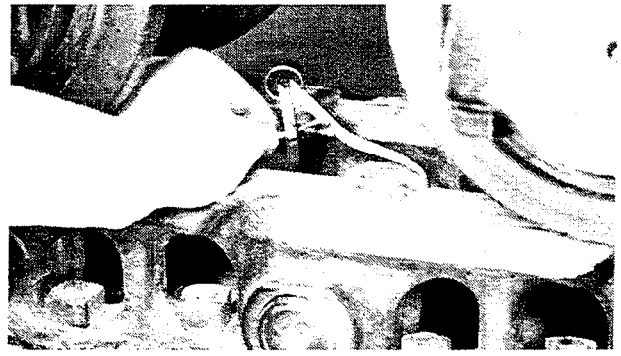
## MEASURE BUSHING FOR WEAR



1. Measure bushing diameter using a D-17524CI (101.6 mm) 4-in. Spring Caliper from D-05227ST Undercarriage Inspection Service Tool Kit.

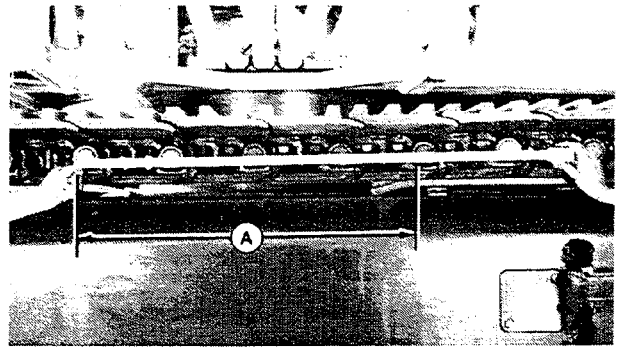
2. A bushing wears in two places due to forward and reverse directions. Put caliper around bushing to measure each area of wear.

3. Outside diameter of a new bushing is (71.4 mm) 2.81 in. The minimum recommended bushing outside diameter is (68.3 mm) 2.69 in. before turning bushings.

*NOTE: For additional information on measuring bushing outer diameter, see the UNDERCARRIAGE APPRAISAL MANUAL SP-326.*

31A;T82865 T28:0130 125 180981

## MEASURE TRACK PITCH




1. Measure track pitch using a D-05230ST 3 Meter Steel Tape from D-05227ST Undercarriage Inspection Service Tool Kit.

2. Pull track chain tight. Put tape measure across a four link section as shown. Record the measurement. Measure several other random sections, avoiding four sections either side of the master pin, to determine average chain wear.

3. Distance across a four link section on a new chain is (864.8 mm) 34.05 in. Maximum recommended distance across four links is (877.5 mm) 34.55 in. before turning or replacing pins and bushing.

*NOTE: For additional information on measuring track pitch, see the UNDERCARRIAGE APPRAISAL MANUAL SP-326.*

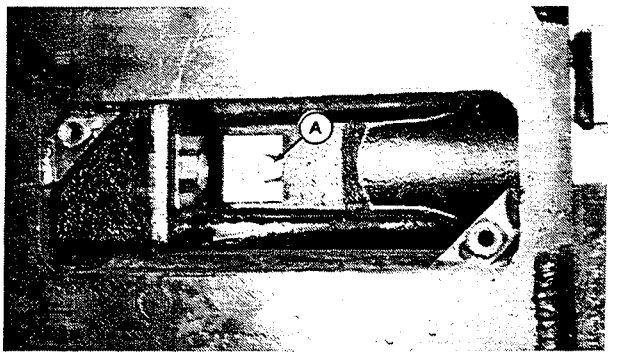
31A;T82866 T28:0130 126 180981

## REMOVE TRACK CHAIN

1. Remove track adjuster cover from track frame.

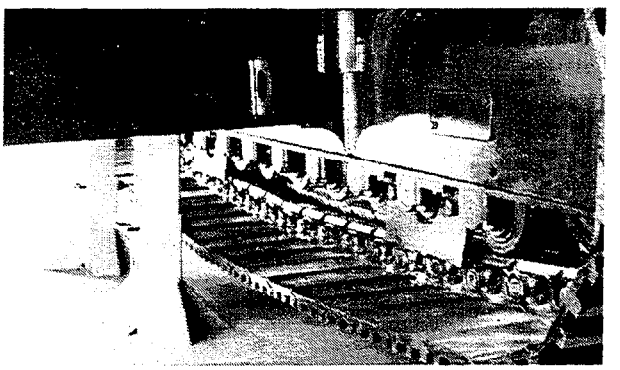
**⚠ CAUTION: Grease in track adjuster is under extreme pressure.**

2. Turn the ball check valve assembly (A) one to three turns counterclockwise to release track tension. DO NOT turn grease fitting to release track tension.




31A;T82685 T28;0130 127 180981

3. Lift the side of unit off the ground.
4. Put two D-01182AA 20-Ton Floor Stands under unit.

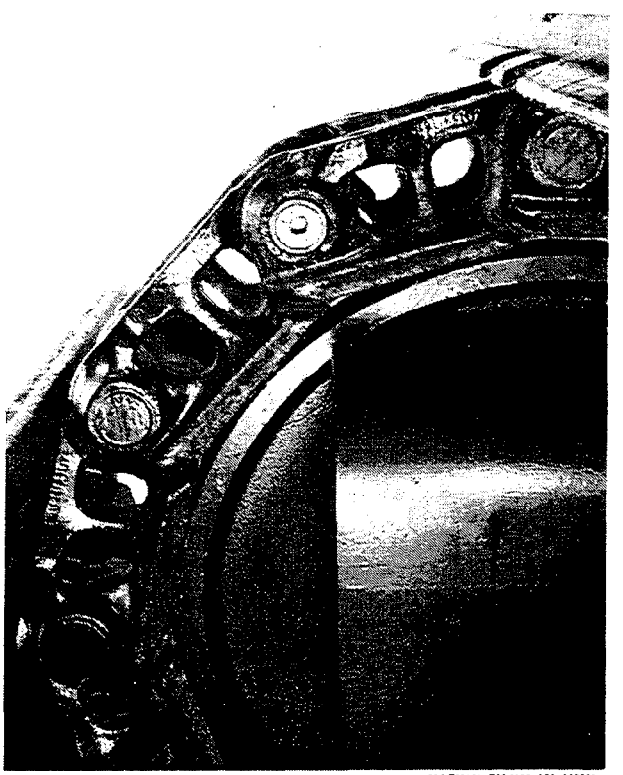


31A;T82867 T28;0130 128 180981

**⚠ CAUTION: Make sure track clears the floor before rotating it.**

*NOTE: Master pin is identified by drill point in end of pin.*

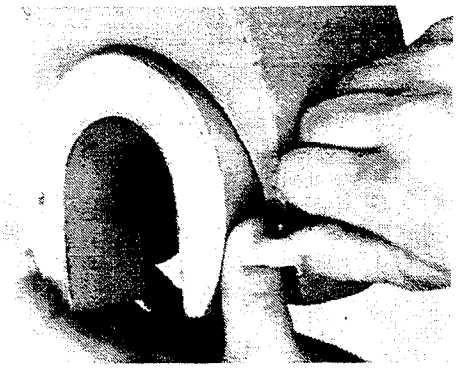
5. Move track until master pin is over front idler in the position as shown.
6. Remove two track shoes; one on each side of master pin.



31A;T82686 T28;0130 129 180981

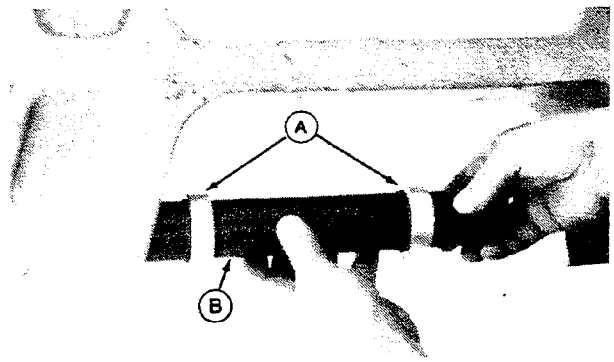
**IMPORTANT: DO NOT remove the track master pin with a hammer. This will enlarge the link pin bore requiring installation of a new track link.**

7. Remove master pin from track link using a D-01063AA (890 000 N) 100-Ton Master Pin Pusher. Install aligning adapter into Master Pin Pusher C-Frame and fasten with holding screw.



31A;T82687 T28;0130 130 180981

8. Put aligning bushings (A) on forcing pin (B). Install pin and bushings in C-frame.

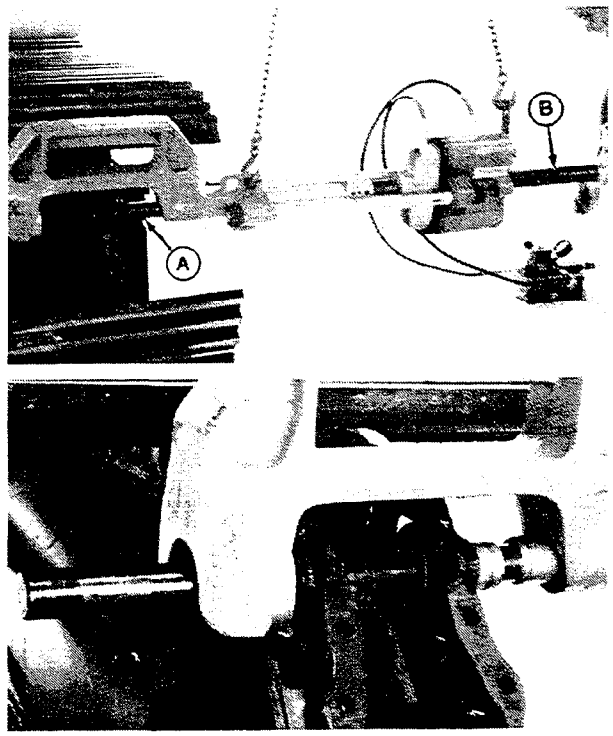



31A;T82688 T28;0130 131 180981

9. Put master pin pusher and forcing pin in alignment with master pin using D-01043AA Load Positioning Sling and hoist.

10. Turn ram adjusting screw (B) clockwise with crank until forcing pin (A) contacts master pin.

11. Connect hydraulic pump to pin pusher. Activate pump to remove master pin. Turn ram adjusting screw manually with crank to recycle as necessary. Forcing pin replaces master pin in track.

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