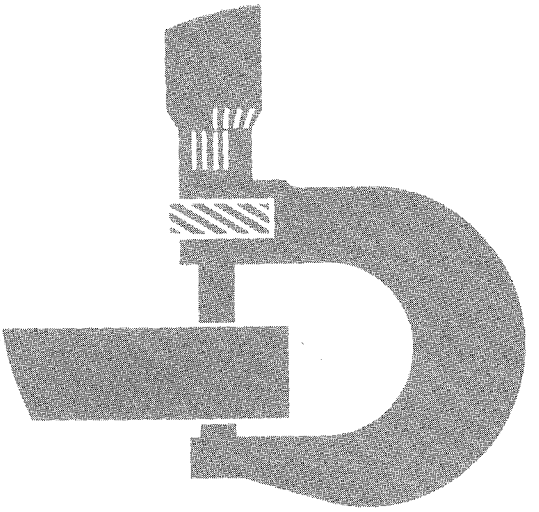
655
Crawler Loader



TECHNICAL MANUAL

TM-(1250) (Apr-87)

LITHO IN U.S.A.

655 CRAWLER LOADER
Technical Manual
TM-1250 (Apr-81)

SECTION AND GROUP CONTENTS OF THIS MANUAL

Litho in U.S.A.

SECTION AND GROUP CONTENTS OF THIS MANUAL—Continued

The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and ICED standards.

Litho in U.S.A.

ALPHABETICAL INDEX

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COMPLETE PAGE LISTING WITH LATEST DATE LINES

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COMPLETE PAGE LISTING WITH LATEST DATELINES

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COMPLETE PAGE LISTING WITH LATEST DATELINES

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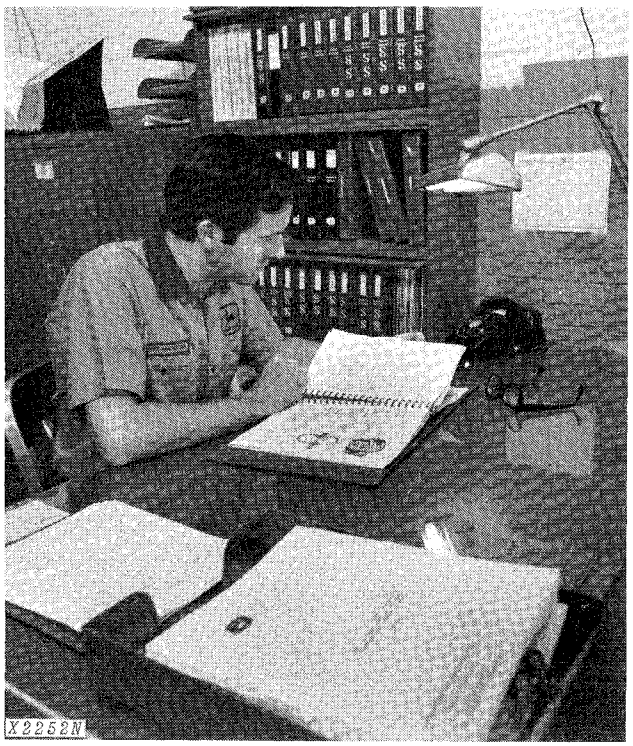
Group II
INTRODUCTION AND SAFETY INFORMATION

INTRODUCTION



Use FOS Manuals for Reference

Use Technical Manuals for Actual Service

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

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

•FOS Manuals—for reference

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

When a service technician should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

•Technical Manuals—for actual service

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

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 whenever in doubt about correct service procedures or specifications.

Some features of this manual:

- Inside front cover - "Table of Contents".
- Section I - Contents, Introduction and Safety Information, General Specifications, and Lubrication.
- Sections 1 through 42 - Removal repair, testing (components removed), installation, and adjustment.
- Section 90 - Detailed explanation of system operation, diagnosis, visual inspection, testing, and adjustments.
- Specifications grouped and illustrated at the end of each section.

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MAINTENANCE WITHOUT ACCIDENT

SAFETY AND YOU

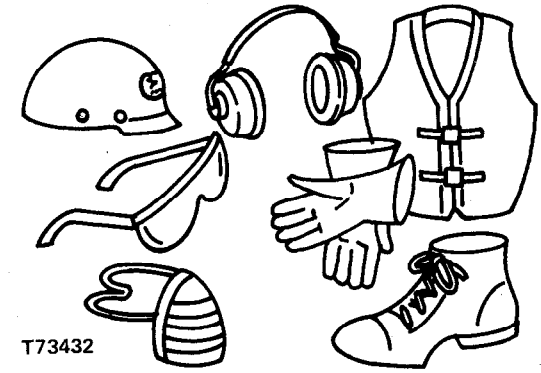
T27999N

CAUTION: This safety symbol followed by the word "caution" identifies important safety messages in this manual and on the crawler loader. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

T73433

T73433

Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located - know how to use them.

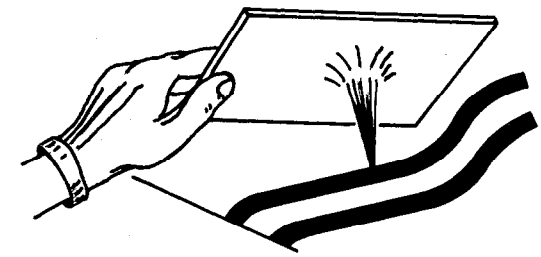


T73432

Wear safety equipment.

T45672

Wear fairly tight clothing.



T45794

CAUTION: Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious injury. Before disconnecting lines, be sure to relieve pressure. Before applying pressure, 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.

MAINTENANCE WITHOUT ACCIDENT

KEEP SHOP AND STORAGE AREA CLEAN

T27506N

Maintenance area should be adequately vented.

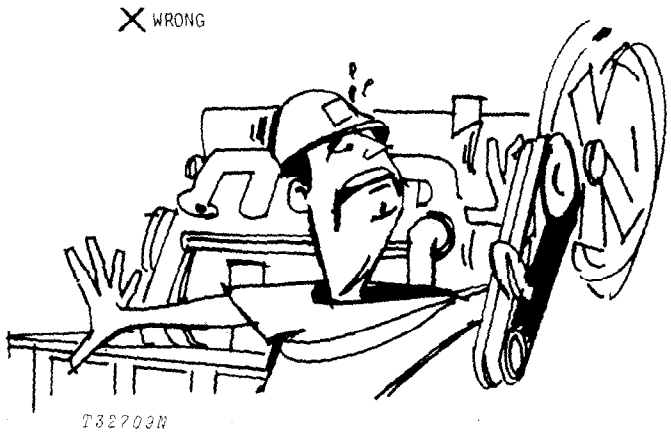
Keep maintenance area clean and dry.

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

FOLLOW SAFE WORKING CONDITIONS

Perform work on equipment only if authorized to do so.

Follow recommended procedures.



T32703N

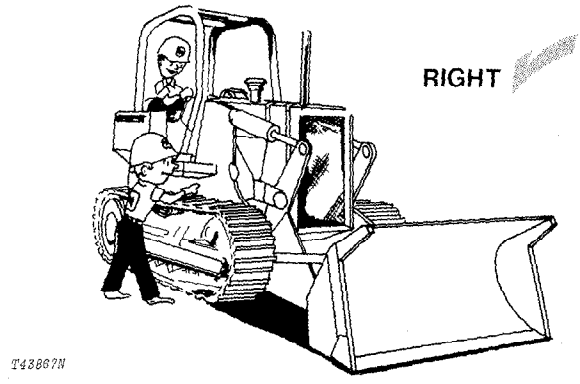
Do not service equipment while it is being operated or engine is running.

Keep hands away from moving parts.

Do not use open flame around machine.

If machine is on an incline, block it securely.

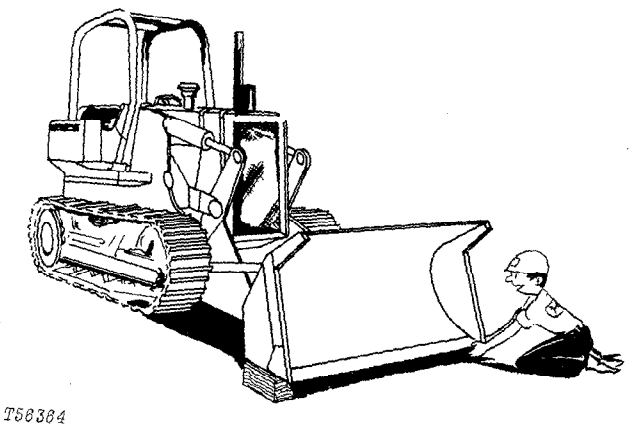
Use hoisting equipment for lifting heavy parts.



T43867N

T43867N

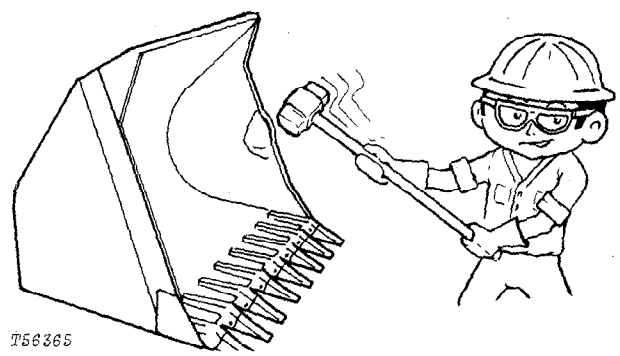
If it is necessary to make checks with the engine running, always use two service technicians - one, the operator at the controls, the other checking within sight of the operator.


T56364

Support all raised equipment.

Do not work under raised bucket.

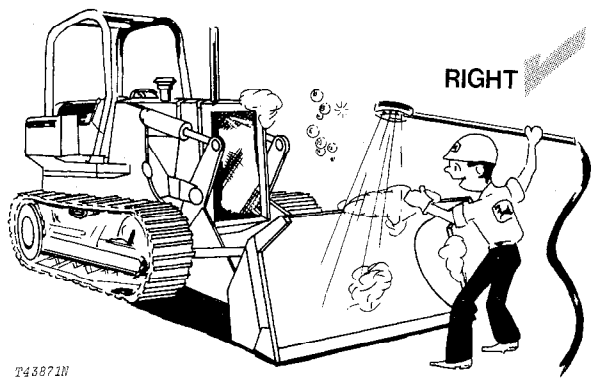
Always lower bucket before working on it.


T56365

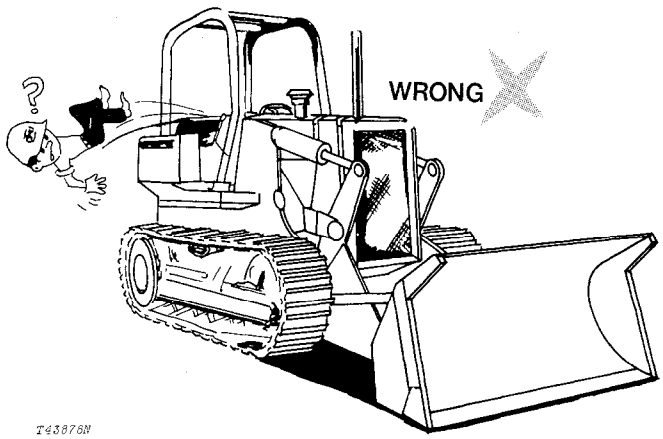
Wear safety glasses when drilling, grinding or hammering metal.

MAINTENANCE WITHOUT ACCIDENT

OBSERVE SERVICE PRECAUTIONS



Keep all equipment free of dirt and oil.



Remove oil, grease, mud, ice, or snow from floor of operator's compartment or steps.

Do not remove radiator filler cap unless engine is cool. Then loosen cap slowly to the stop. Release pressure before you remove cap.

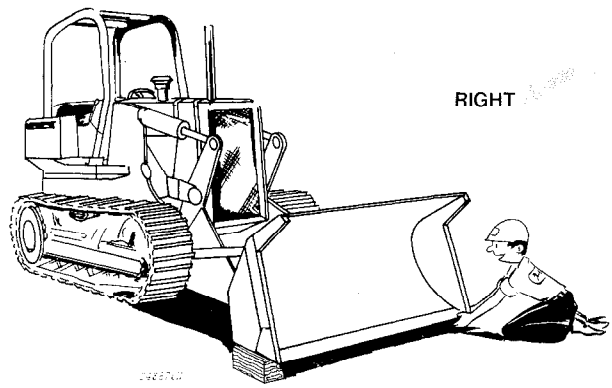
Check exhaust system periodically for excessive leakage.

Relieve hydraulic pressure before working on hydraulic system.

Use the correct test group when checking hydraulic pressure.

Discharge accumulators completely before recharging or servicing.

OBSERVE REPAIR PRECAUTIONS



Securely block bucket before changing cutting edges. Wear gloves when working with sharp edges.

Relieve hydraulic pressure before working on hydraulic system.

Turn off battery disconnect switch before repairing the electrical system or performing a major overhaul.

Install lift arm locking pin before working in engine area.

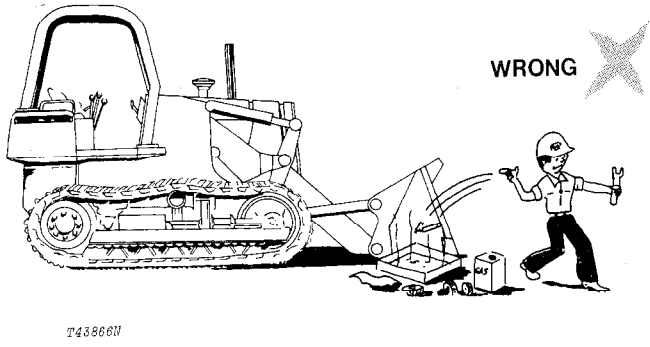
CHECK SAFETY EQUIPMENT ON MACHINE

Check that all protective devices (guards, canopies, shields, ROPS, seat belts, etc.) are installed and secured on machine.

Inspect machine carefully for leakage from lines, hoses, and fittings.

MAINTENANCE WITHOUT ACCIDENT

AVOID EXPLOSIONS OR FIRE



T43866N

Do not smoke while refueling.

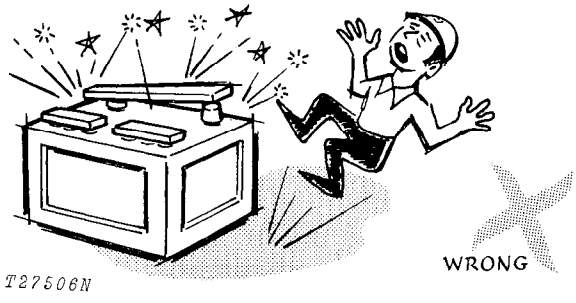
Do not smoke while handling highly flammable materials.

Shut off engine when refueling.

Use care in refueling if engine is hot.

Use good commercial, nonflammable solvents for cleaning parts.

OBSERVE BATTERY PRECAUTIONS



T27506N

Do not place metal objects across posts to check charge.

Do not smoke near battery.

Do not allow sparks or open flame near battery.

Provide adequate ventilation when charging batteries.

Although it is impractical to try to cover every possible maintenance situation, the safety precautions recommended here should serve to develop and promote safe maintenance procedures.

The information contained in this manual is not intended to replace safety codes, insurance requirements, federal, state, and local laws, rules and regulations. In particular, your service area or jobsite activities may be subject to state safety rules and/or federal regulation under the Occupational Safety and Health Act (OSHA). Familiarize yourself with all regulations applicable to your situation in order to avoid possible safety violations.

Litho in U.S.A.

Group III
General Specifications

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 2 cu. yd. (1.53 m^3) bucket with teeth, roll-over protective canopy, four counterweights, and standard equipment.)

Power (@ 2100 rpm):	**SAE**	**DIN**
Gross	122 hp (91 kW)	
Net	110 hp (97 kW)	111.5 PS

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

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

Bore and stroke	4.19 × 5 in. (106.4 × 127 mm)
Piston displacement	414 cu. in. (6.785 L)
Compression ratio	16.2 to 1
Maximum torque @ 1300 rpm	345 lb-ft (468 N·m) (47.7 kg-m)
NACC or AMA (U.S. Tax) horsepower	42
Lubrication	Pressure system with full flow filters
Main bearings	7
Cooling	Pressurized with thermostat and controlled bypass
Fan	Blower
Dual-stage aspirated air cleaner with restriction indicator	Dry
Electrical system	24 volt with alternator
Batteries (two 12-volt)	Reserve capacity: 180 minutes each

Transmission:

Cold weather starting ..... Disconnect clutch completely disengages hydrostatic drive and all hydraulics.

Splitter drive ..... Pressure-lubricated helical gears drive both hydrostatic transmissions, main hydraulic pump, winch drive shaft and auxiliary pump drive.

Drive .... Dual-Path, fully automatic, infinitely variable hydrostatic transmissions.

Speeds ..... Infinite from 0 to 6.5 mph (0 to 10.5 km/h) forward or reverse.

Control ..... Single-lever, variable speed, forward and reverse.

Steering:

Fully modulated, infinitely variable pedal steering for live power turns and counterrotation. No need for steering clutches or steering brakes.

Brakes:

Service ..... Hydrostatic

Parking ... Wet-disk brakes are automatically applied when engine is stopped, or manually applied with center foot pedal during normal operation.

Hydraulic System: Open-center

Control ..... Single-lever bucket control with automatic bucket positioner and float position. Three-function valve.

Pump ..... Vane, 55 gpm (3.47 L/s) @ rated engine speed

Pressure ..... 2500 psi (15 514 kPa) (158.2 kg/cm^2)

Oil lines ..... Seamless steel tubing; double-wire-braid hose

Filter ..... 10 micron filter in return line w/bypass

Hydraulic Cylinders:	**Bore**	**Stroke**
Boom (2)	5.50 in. (140 mm)	32 in. (813 mm)
Bucket (2)	4.50 in. (114 mm)	21.52 in. (547 mm)

Cylinder rods .. Ground, heat-treated, chrome-plated, polished

Boom cylinder rods	3.75 in. (95 mm) dia.
Bucket cylinder rods	2.25 in. (57 mm) dia.

Tracks (6-roller track frame with front and rear track guides and sprocket guard):

Two bar grouser	15 in. (381 mm)
Track shoes, each side	40
Ground contact area	2724 sq. in. (17 575 cm^2)
Ground pressure	11.8 psi (81.4 kPa) (0.830 kg/cm^2)
Length of track on ground	90.8 in. (2.31 m)
Track gauge	64 in. (1.63 m)
Carrier roller	1 each side
Adjustment	Hydraulic
Minimum ground clearance	15.3 in. (389 mm)

Litho in U.S.A.

SAE Operating Weight w/ROPS . . . . . 32,005 lb. (14 517 kg)

Capacities:	**U.S.**	**Imp.**	**Liters**
Cooling system	7 gal.	5.8 gal.	26.5
Fuel tank	73 gal.	60.8 gal.	276.3
Crankcase	18 qt.	15.0 qt.	17.0
Crankcase, including filter	20 qt.	16.7 qt.	18.9
Splitter drive	1.5 gal.	1.3 gal.	5.7
Final drive each: 1st reduction	5.375 gal.	4.5 gal.	20.3
2nd reduction	3.5 gal.	2.9 gal.	13.2
Loader hydraulic system	37 gal.	30.8 gal.	140.1
Hydrostatic drives	33 gal.	27.5 gal.	124.9

Additional Standard Equipment:
Enclosed alternator with solid-state regulator
Bottom guards
Suspension seat with armrests
Key switch
Pushbutton starting
Electric hour meter
Cigar lighter
Vandal protection
Boom safety lock pin
Muffler
Cold weather starting aid
Front idler shields
Master electrical disconnect switch
Toolbox
Transmission neutral lock with starter safety switch
Horn
Air cleaner restriction indicator
ROPS canopy with seat belt
Radiator sand shield

Special Equipment:
Oil sampling test kit
Bucket teeth, bolt-on or flush-mount weld-on
Hydraulics for rear-mounted equipment
Hydraulics for front-mounted equipment
Selector valve for ripper and multipurpose bucket
Protection package:
- Limb risers for ROPS canopy
- Brush screens for operator's compartment
- Rear bumper
- Tank guards

Fire extinguisher
Front pull hook
Cab with windshield wipers, pressurizer and heater
Air conditioner
Windshield washer
Engine coolant heater
Backup alarm
Lexan® windshield with wiper
Lexan® windows for cab
Rock guard, center section

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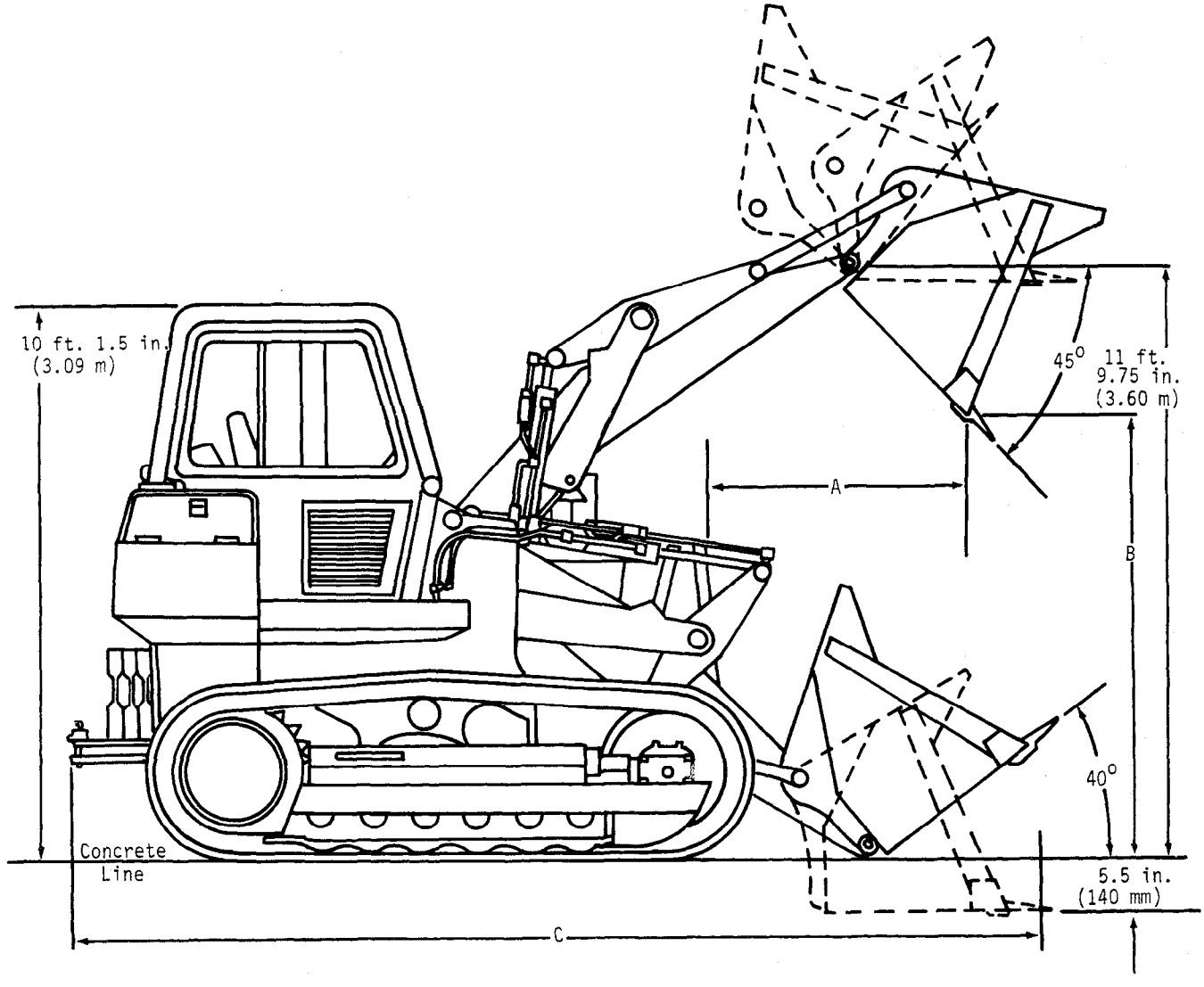
LOADER DIMENSIONS



T79498

BUCKET CAPACITIES	DIMENSIONS		
	A	B	C
2 cu. yd. bucket (1.68 m³)	47.5 in. (1207 mm)	9 ft. 3 in. (2.82 m)	18 ft. 3 in. (5.56 m)
1-3/4 cu. yd. (1.34 m³) multipurpose	53 in. (1.35 m)	9 ft. 4.5 in. (2.86 m)	18 ft. 6.75 in. (5.66 m)

LOADER OPERATING DIMENSIONS

OPERATING INFORMATION	BUCKET	
	General Purpose	Multipurpose
Capacity, heaped, SAE	2 cu. yd. (1.53 m³)	1-3/4 cu. yd. (1.34 m³)
Capacity, struck, SAE	1.67 cu. yd. (1.28 m³)	1.38 cu. yd. (1.06 m³)
Bucket width	82.5 in. (2.1 m)	83.84 in. (2.13 m)
Bucket weight	1550 lb. (703 kg)	2485 lb. (1127 kg)
SAE breakout force	25,310 lb. (113 kN) (11 480 kg)	23,060 lb. (103 kN) (10 460 kg)
SAE tipping load (w/drawbar and four counterweights)	19,500 lb. (8845 kg)	18.565 lb. (8421 kg)
Raising time	5.86 sec.	5.86 sec.
Dumping time	1.27 sec.	1.27 sec.
Lowering time	3.23 sec.	3.23 sec.
SAE operating weight w/ROPS canopy	32,005 lb. (14 517 kg)	32,940 lb. (14 941 kg)

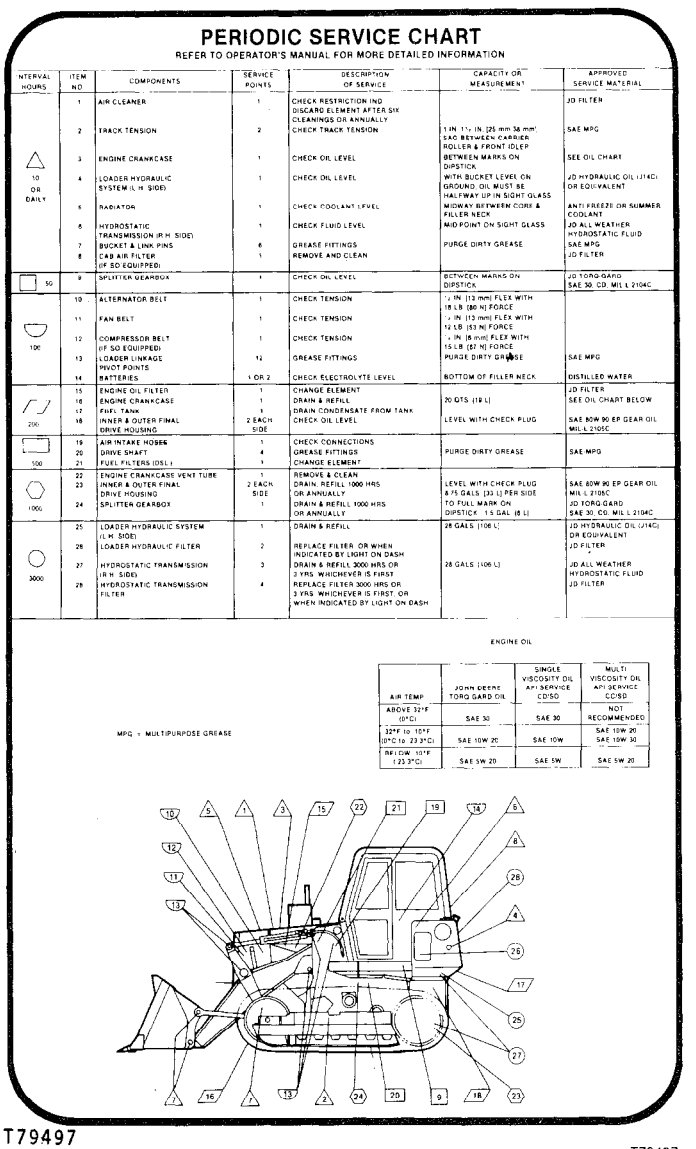
Adjustments to operating weights and tipping loads:		
Add (+) or deduct (−) lb. (kg) as indicated for loader equipped with:	**Loader Operating Weight**	**Tipping Load**
Cab	+740 lb. (336 kg)	+814 lb. (369 kg)
Bucket teeth	−151 lb. (68 kg)	−198 lb. (90 kg)
Air conditioning	+65 lb. (29 kg)	0
Ripper	+2400 lb. (1089 kg)	+4516 lb. (2048 kg)
Multipurpose bucket	+935 lb. (424 kg)	−935 lb. (424 kg)
Counterweight (each)	+ or −500 lb. (227 kg)	+ or −865 lb. (392 kg)

Group IV
LUBRICATION

GENERAL INFORMATION

Below is a copy of the periodic service chart which is on the outside of the left console (without cab) or outside the left side of the cab. More detailed information for working on the crawler loader is in the current 655 operator's manual.

Use the operator's manual and the periodic service chart as references when working on the crawler loader. Tell your customer to thoroughly read the operator's manual before operating or working on the crawler loader.



PERIODIC SERVICE CHART

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
	1	AIR CLEANER	1	CHECK RESTRICTION IND DISCARD ELEMENT AFTER SIX CLEANINGS OR ANNUALLY		JD FILTER
	2	TRACK TENSION	2	CHECK TRACK TENSION	1 IN. 1½ IN. (25 mm 38 mm) SAG BETWEEN CARRIER ROLLER & FRONT IDLEP	SAE MPG
△	3	ENGINE CRANKCASE	1	CHECK OIL LEVEL	BETWEEN MARKS ON DIPSTICK	SEE OIL CHART
10 OR DAILY	4	LOADER HYDRAULIC SYSTEM (L.H. SIDE)	1	CHECK OIL LEVEL	WITH BUCKET LEVEL ON GROUND, OIL MUST BE HALFWAY UP IN SIGHT GLASS	JD HYDRAULIC OIL (J14C) OR EQUIVALENT
	5	RADIATOR	1	CHECK COOLANT LEVEL	MIDWAY BETWEEN CORE & FILLER NECK	ANTI FREEZE OR SUMMER COOLANT
	6	HYDROSTATIC TRANSMISSION (R.H. SIDE)	1	CHECK FLUID LEVEL	MID POINT ON SIGHT GLASS	JD ALL WEATHER HYDROSTATIC FLUID
	7	BUCKET & LINK PINS	6	GREASE FITTINGS	PURGE DIRTY GREASE	SAE MPG
	8	CAB AIR FILTER (IF SO EQUIPPED)	1	REMOVE AND CLEAN		JD FILTER
50	9	SPLITTER GEARBOX	1	CHECK OIL LEVEL	BETWEEN MARKS ON DIPSTICK	JD TORQ-GARD SAE 30, CD, MIL L 2104C
	10	ALTERNATOR BELT	1	CHECK TENSION	½ IN. (13 mm) FLEX WITH 18 LB. (80 N) FORCE	
	11	FAN BELT	1	CHECK TENSION	½ IN. (13 mm) FLEX WITH 12 LB. (53 N) FORCE	
100	12	COMPRESSOR BELT (IF SO EQUIPPED)	1	CHECK TENSION	¼ IN. (6 mm) FLEX WITH 15 LB. (67 N) FORCE	
	13	LOADER LINKAGE PIVOT POINTS	12	GREASE FITTINGS	PURGE DIRTY GREASE	SAE MPG
	14	BATTERIES	1 OR 2	CHECK ELECTROLYTE LEVEL	BOTTOM OF FILLER NECK	DISTILLED WATER
	15	ENGINE OIL FILTER	1	CHANGE ELEMENT		JD FILTER
	16	ENGINE CRANKCASE	1	DRAIN & REFILL	20 QTS. (19 L)	SEE OIL CHART BELOW
	17	FUEL TANK	1	DRAIN CONDENSATE FROM TANK		
200	18	INNER & OUTER FINAL DRIVE HOUSING	2 EACH SIDE	CHECK OIL LEVEL	LEVEL WITH CHECK PLUG	SAE 80W 90 EP GEAR OIL MIL L 2105C
	19	AIR INTAKE HOSES	1	CHECK CONNECTIONS		
500	20	DRIVE SHAFT	4	GREASE FITTINGS	PURGE DIRTY GREASE	SAE MPG
	21	FUEL FILTERS (DSL)	1	CHANGE ELEMENT		
	22	ENGINE CRANKCASE VENT TUBE	1	REMOVE & CLEAN		
	23	INNER & OUTER FINAL DRIVE HOUSING	2 EACH SIDE	DRAIN, REFILL 1000 HRS OR ANNUALLY	LEVEL WITH CHECK PLUG 8.75 GALS (33 L) PER SIDE	SAE 80W 90 EP GEAR OIL MIL L 2105C
1000	24	SPLITTER GEARBOX	1	DRAIN & REFILL 1000 HRS OR ANNUALLY	TO FULL MARK ON DIPSTICK 1.5 GAL (6 L)	JD TORQ GARD SAE 30, CD, MIL L 2104C
	25	LOADER HYDRAULIC SYSTEM (L.H. SIDE)	1	DRAIN & REFILL	26 GALS. (106 L)	JD HYDRAULIC OIL (J14C) OR EQUIVALENT
	26	LOADER HYDRAULIC FILTER	2	REPLACE FILTER OR WHEN INDICATED BY LIGHT ON DASH		JD FILTER
	27	HYDROSTATIC TRANSMISSION (R.H. SIDE)	3	DRAIN & REFILL 3000 HRS OR 3 YRS. WHICHEVER IS FIRST	28 GALS. (106 L)	JD ALL WEATHER HYDROSTATIC FLUID
3000	28	HYDROSTATIC TRANSMISSION FILTER	4	REPLACE FILTER 3000 HRS OR 3 YRS. WHICHEVER IS FIRST, OR WHEN INDICATED BY LIGHT ON DASH		JD FILTER

ENGINE OIL

AIR TEMP	JOHN DEERE TORQ GARD OIL	SINGLE VISCOSITY OIL API SERVICE CD/SD	MULTI VISCOSITY OIL API SERVICE CD/SD
ABOVE 32°F (0°C)	SAE 30	SAE 30	NOT RECOMMENDED
32°F to 10°F (0°C to -23.3°C)	SAE 10W 20	SAE 10W	SAE 10W 20 SAE 10W 30
BELOW 10°F (-23.3°C)	SAE 5W 20	SAE 5W	SAE 5W 20

MPG = MULTIPURPOSE GREASE

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Fig. 1-Periodic Service Chart

LUBRICANTS

Engine Oils

Use John Deere TORQ-GARD SUPREME® engine oil.

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

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

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

Hydrostatic Transmission

Use John Deere All-Weather Hydrostatic Fluid.

Hydraulic System

Use John Deere Hydraulic Oil (J14C) or an equivalent.

Inner and Outer Final Drives

Use a Multi-Purpose SAE 80W-90 GL-5 Gear Oil meeting MIL-L-2105C specifications or an equivalent.

Splitter Drives

Use John Deere TORQ-GARD SUPREME SAE 30W, CD, Engine Oil meeting MIL-L-2104C specifications or equivalent.

Greases

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

Storing and Handling Lubricants

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

When handling lubricants, use clean containers.

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Section 1
TRACKS

CONTENTS OF THIS SECTION

Litho in U.S.A.

Group 0130
TRACK SYSTEMS

ROCK GUARDS AND TRACK GUIDES

GENERAL INFORMATION

Rock guards and track guides help prevent rocks and debris from entering the track system. They also help to keep the tracks centered on the rollers.

REMOVAL

Remove cap screws (1, 3, 7 and 9, Fig. 1) and bottom two cap screws from sprocket shield to remove rock guards (5 and 6) and track guides (2 and 10).

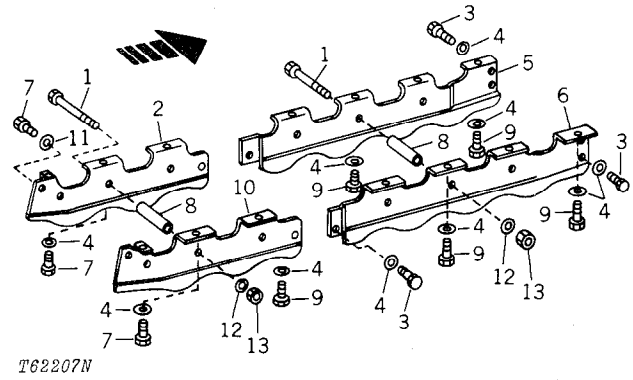
REPAIR

Inspect rock guards (5 and 6) and track guides (2 and 10) for wear and damage. Repair, weld or replace parts as necessary.

IMPORTANT: Good welds are important. Have only a qualified welder repair the components. Use E7018 electrodes. Before welding, clean all dirt and paint from the weld areas and turn the battery disconnect switch to "OFF". Connect the welder ground clamp close to each weld area so electrical current does not pass through any bearings.

INSTALLATION

Apply T43513 John Deere LOCTITE® Thread Lock and Sealer (High Strength) or an equivalent to the track guide-to-track frame cap screws (3, 7 and 9, Fig. 1), spacer cap screws (1) and sprocket shield-to-track guide cap screws.



T62207N

1—Bolt (6 used)
2—L.H. Track Guide
3—Cap Screw (6 used)
4—Washer (20 used)
5—L.H. Rock Guard
6—R.H. Rock Guard
7—Cap Screw (4 used)
8—Spacer (6 used)
9—Cap Screw (12 used)
10—R.H. Rock Guard
11—Washer (2 used)
12—Washer (6 used)
13—Nut (6 used)

Fig. 1-Rock Guards and Track Guides

Install inner rock guard (2, Fig. 1) and inner guide (5) and fasten with cap screws (3, 7 and 9) and washers (4 and 11).

Install cap screws (1) through inner rock guard and track guide, and fasten with washers (12) and nuts (13).

Install outer rock guard (6) and outer track guide (10), and fasten with cap screws (3, 7 and 9) and washers (4).

Install bottom two sprocket shields-to-track guide cap screws, and tighten to (325 N·m) 240 lb-ft.

LOCTITE is a trademark of the Loctite Corp.

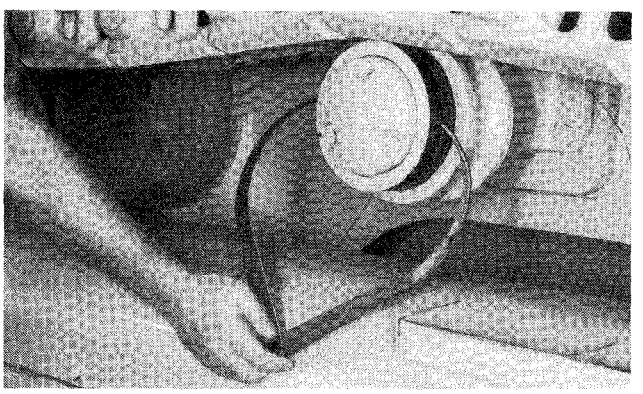
CARRIER ROLLERS

GENERAL INFORMATION

Carrier rollers are used to support and guide the track chain between the drive sprocket and the front idler.

MEASURING CARRIER ROLLER WEAR

Use a D-05229ST (304.8 mm) 12 in. Spring Caliper (part of D-05227ST Undercarriage Inspection Service Tool Kit) to measure carrier roller diameter.



T77883

Fig. 2-Carrier Roller Diameter Measurement

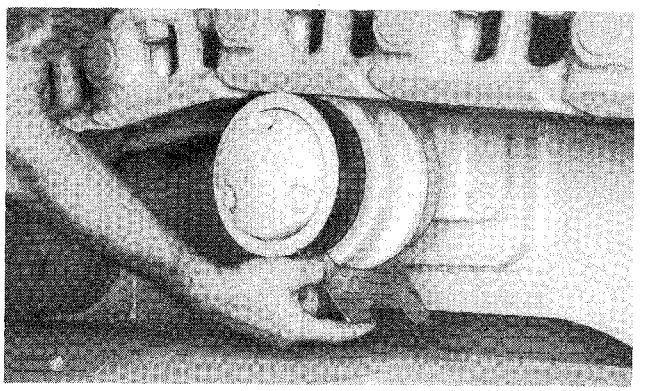
Position a caliper around the carrier roller as shown in Fig. 2. Measure the diameter of the carrier roller running surface. Record the measurement.

The outside diameter of a new carrier roller is (165 mm) 6-1/2 in. Minimum recommended outside diameter of a carrier roller for rebuilding is (148.4 mm) 5.84 in.

NOTE: For additional information on measuring carrier roller diameter, refer to UNDERCARRIAGE APPRAISAL MANUAL SP-236.

NOTE: It is recommended to use previous described procedure for more accurate measurements when replacing the track components. A track wear gauge (JD329-2) is available, enabling the service technician to quickly check the condition of a track assembly.

Use JD329-2 Track Wear Gauge to measure carrier roller wear as follows:



T77884

Fig. 3-Track Carrier Roller Wear

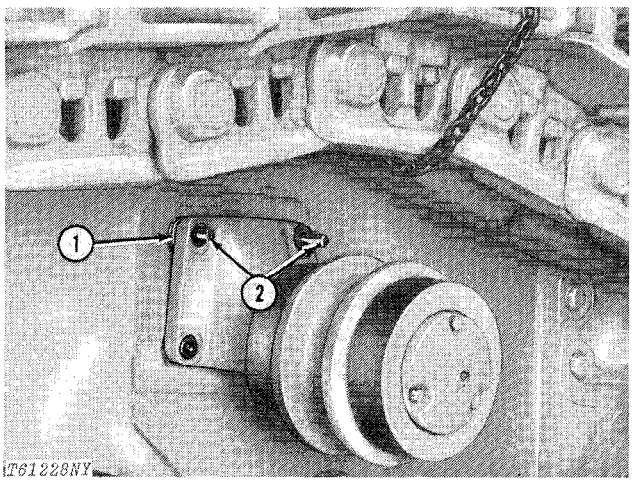
Place the gauge on the carrier roller tight against one flange with the top of the flange even with the line on the gauge. The allowable wear is written on the gauge with an arrow pointing to the location where the gap is to be measured.

Litho in U.S.A.

REMOVAL

See page 0130-33 to release tension from track chain.

Raise and support track chain so it is clear of carrier rollers.



T61228NY

1—Shims **2—Guide Screws**

Fig. 4-Removing Carrier Roller

Remove top two cap screws and install two cap screws with the heads cut off to use as guide screws (2, Fig. 4).

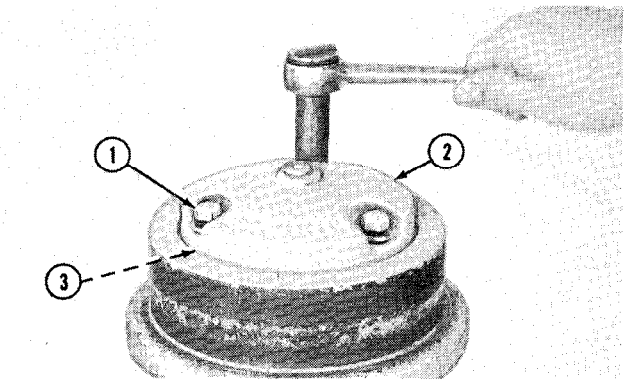
Note the number of shims (1) used behind the carrier roller support to aid in installation.

Remove bottom cap screws and shims.

Remove carrier roller.

REPAIR

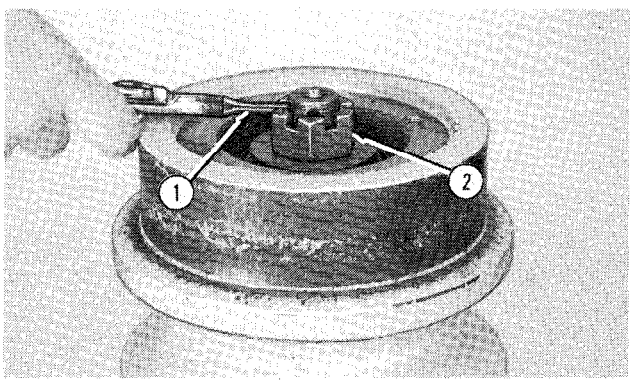
Disassembly



1—Cap Screw (3 used) **2—Cover**
3—Gasket

Fig. 5-Remove Cover

Remove cap screws (1, Fig. 5) to remove cover (2) and gasket (3).

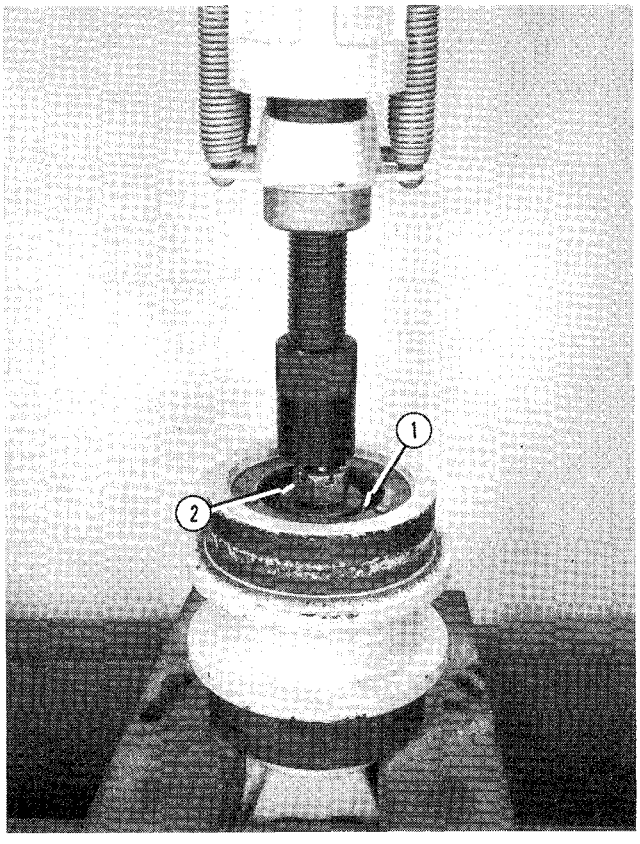


1—Cotter Pin **2—Nut**

Fig. 6-Remove Nut

Remove cotter pin (1, Fig. 6).

Loosen nut (2). Do not remove nut at this time.



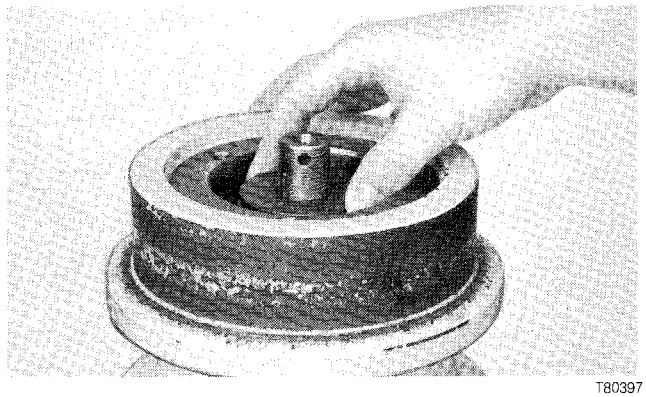
T80396

1—Bearing Cone **2—Nut**

Fig. 7-Remove Bearing Cone

Remove bearing cone (1, Fig. 7) from support bracket using a press.

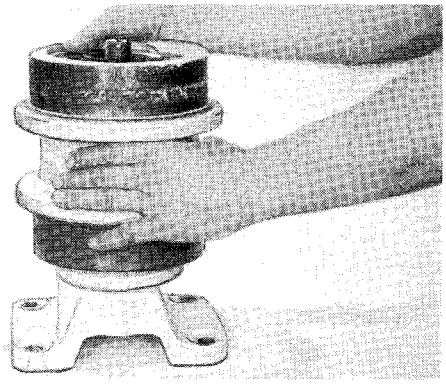
Remove nut (2).



T80397

Fig. 8-Washer

Remove washer (Fig. 8).

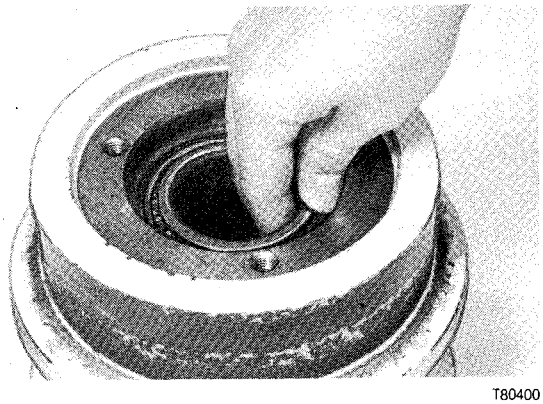


T80398

Fig. 9-Roller Shell

Remove roller shell (Fig. 9).

Inspect the roller shell for grooved, burred or galled condition. Replace parts if necessary.



T80400

Fig. 10-Bearing Cone

Remove bearing cone (Fig. 10).

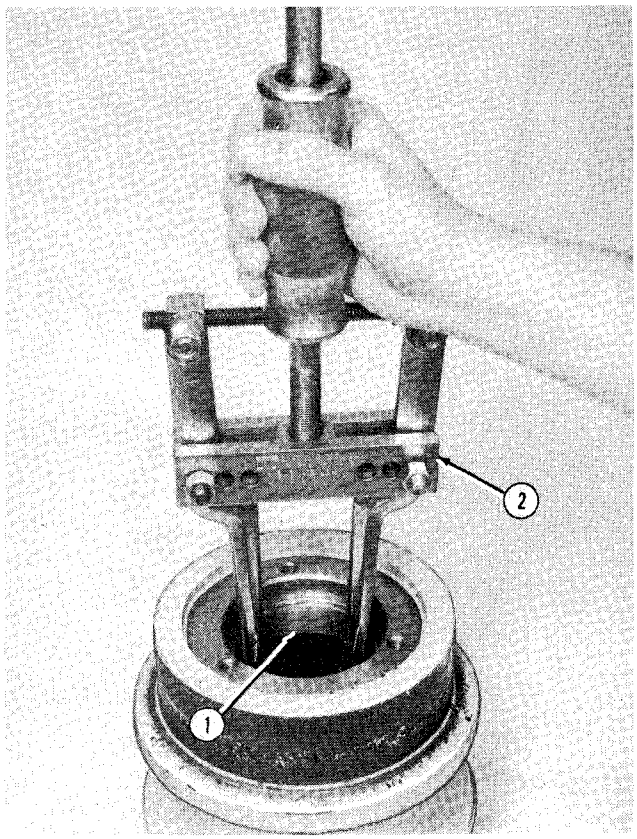
Wash bearing cones thoroughly in volatile mineral spirits.

Before inspection, oil the bearings with the same type of oil that will be used in the carrier roller.

NOTE: Never dry bearings with compressed air. Do not rotate bearings while they are not lubricated.

Inspect bearings for roughness of rotation. Replace a bearing if its rotation is still rough after cleaning and oiling.

Inspect bearings for scored, pitted, scratched, cracked or chipped races, and for indication of excessive wear of rollers. If one of these defects is found, replace the bearing.

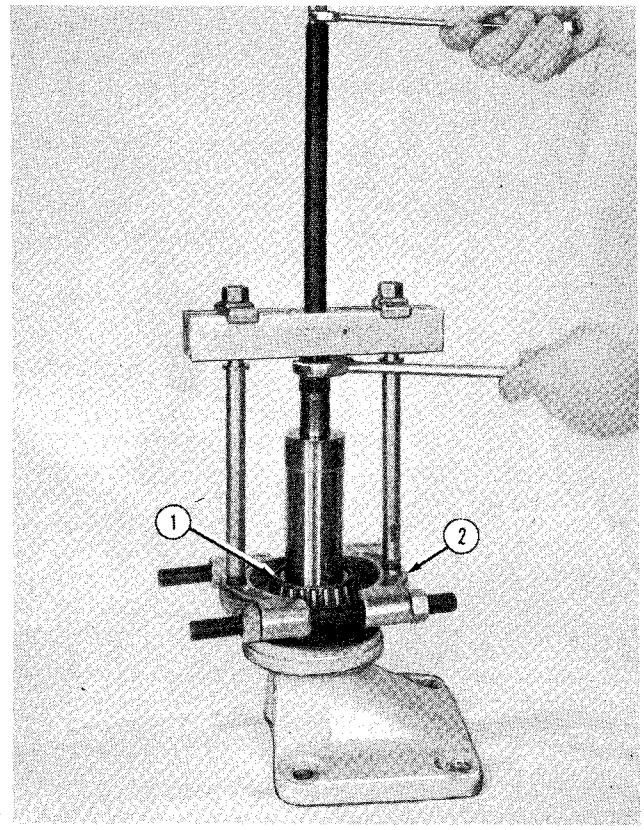


T80401

1—Bearing Cups (2 used) **2—Two Jaw Puller**

Fig. 11-Bearing Cup

Remove bearing cups (1, Fig. 11) with a two jaw puller (2) from the D-01047AA Puller Set.

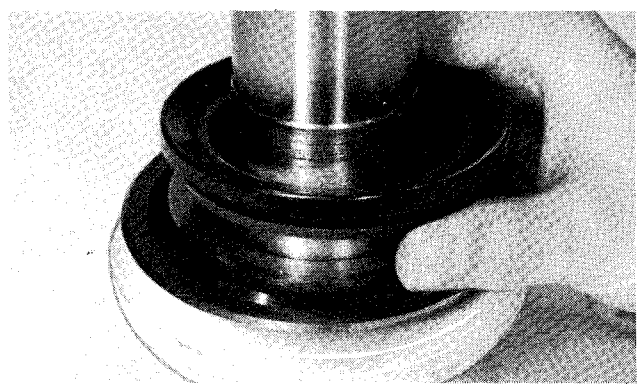


T80402

1—Bearing Cone **2—Puller**

Fig. 12-Bearing Cone

Remove bearing cone (1, Fig. 12) with a puller (2) from the D-01047AA Puller Set.

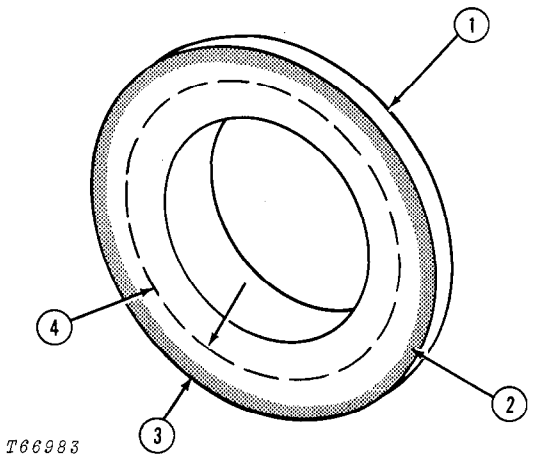


T80403

Fig. 13-Metal Face Seal

Remove metal face seals (Fig. 13). Tape the metal face seals together to keep them in matched sets.

After removal of sealing rings, inspect sealing ring pattern to find out if seals can be reused. Refer to the steps and figures below to determine the condition of the metal rings.



1—Metal Seal Ring
2—Sealing Area (shaded portion)
3—Outer Half of Sealing Face
4—Center of Sealing Face

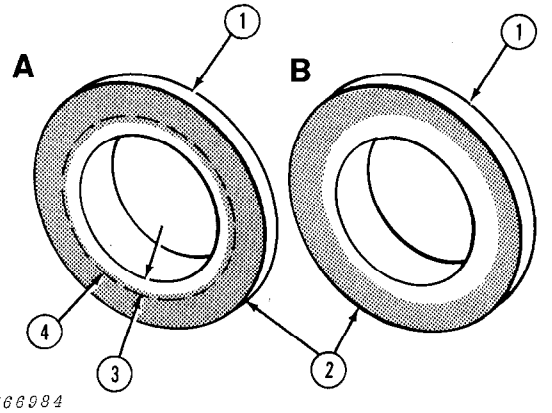
Fig. 14-A Good Sealing Ring

The following three steps are specifications which determine a good sealing ring.

1. The narrow, highly polished sealing area (2, Fig. 14) must be within outer half of the sealing face (3).

2. The sealing area (2) must be uniform and concentric with the I.D. and O.D. of metal seal ring (1).

3. The sealing area must not be chipped or scratched in any way.



1—Metal Seal Ring
2—Sealing Area (shaded portion)
3—Inner Half of Sealing Face
4—Center of Sealing Face

Fig. 15-A Poor Sealing Ring

The two drawings in Fig. 15 show examples of poor metal seal rings.

Drawing A (Fig. 15) shows the sealing area (2) within inner half of sealing face (3).

Drawing B (Fig. 15) shows the sealing area (2) not concentric with I.D. and O.D. of metal seal ring (1).

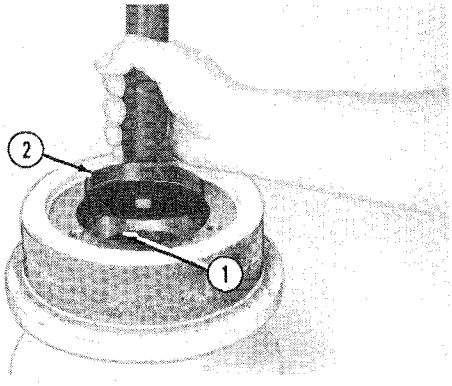
Clean the metal sealing rings as follows:

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

Wash the metal sealing rings with a volatile, non-petroleum base type solvent to remove all oil and wipe dry. Use the lint free wiper furnished in the new seal package to remove all traces of oil or grease from all surfaces.

NOTE: If metal rings appear to be useable, keep the two metal face seals together as matched sets. If the metal rings are not within proper specifications, DO NOT rebuild the seal, use a completely new seal.

Assembly

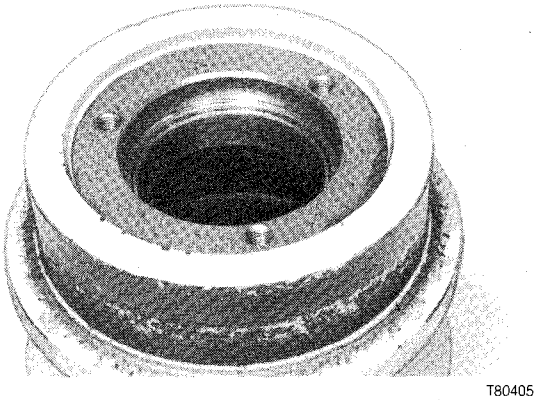


T80404

1—Bearing Cup (2 used) **2—27534 Disk**

Fig. 16-Install Bearing Cup

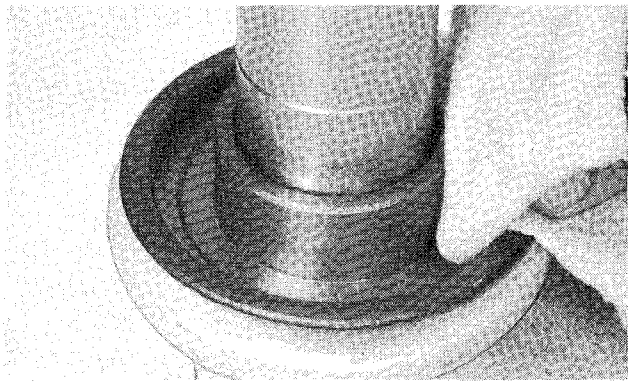
Install bearing cups (1, Fig. 16) to bottom of roller shell bore with a 27534 Disk (2) and a handle from the D-01045AA Driver Set.



T80405

Fig. 17-Roller Shell Bore

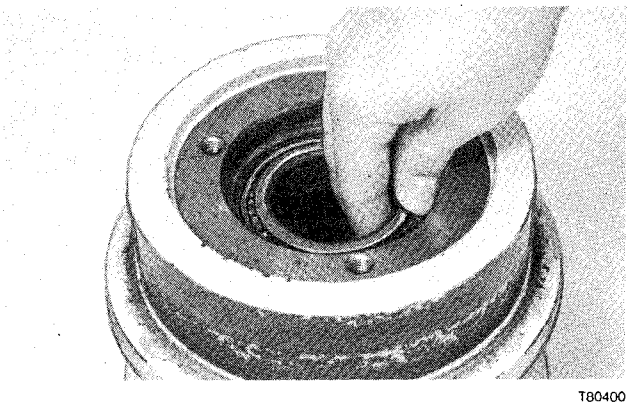
Thoroughly clean the seal cavities in the roller shell (Fig. 17) with a volatile, non-petroleum base-type solvent. Be sure they are dry and oil free.



T80406

Fig. 18-Support Bracket

Thoroughly clean the seal cavity in the support bracket (Fig. 18) with a volatile, non-petroleum base-type solvent. Be sure they are dry and oil free.



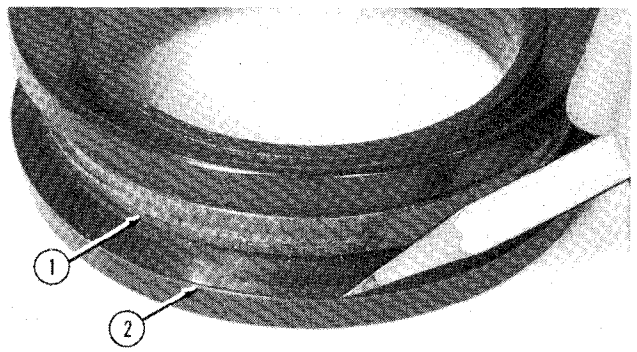
T80400

Fig. 19-Install Bearing Cone

Install bearing cone (Fig. 19). Be sure seal cavity is clean.

NOTE: Use procedure 1 to install metal face seals when the entire seal is replaced. Use procedure 2 to install metal face seals when the rubber seals are replaced (metal seal rings reused).

Procedure 1: New Seal



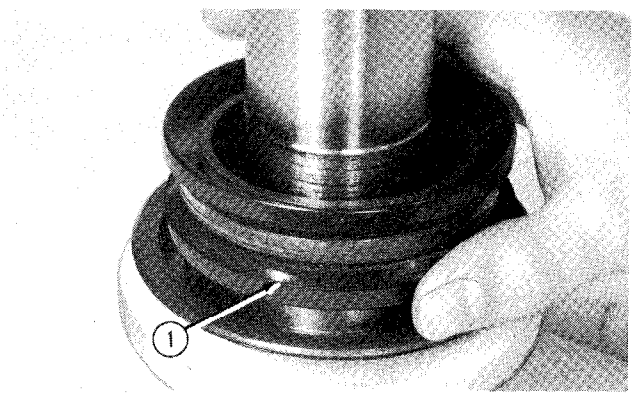
T80407

1—Plastic Retainer Band **2—Retainer Lip**

Fig. 20-Locating Retainer Lip

DO NOT remove plastic retainer band (1, Fig. 20) from new seal before installation.

Find the side of seal that has a retainer lip (2) on the rubber seals.



T80408

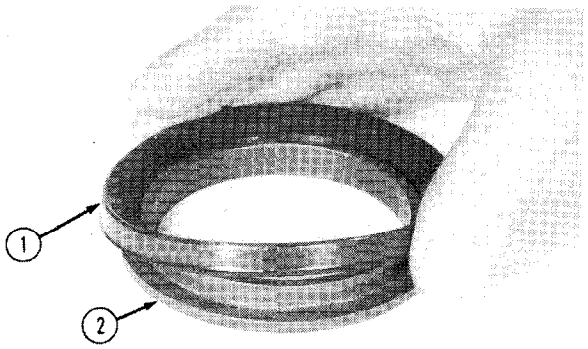
1—Retainer Lip

Fig. 21-Install Seal

Install metal face seal, with retainer lip (1, Fig. 21) first, into the seal bore in the support bracket.

Be sure the seal is seated on bottom of bore and sits straight.

Procedure 2: New Rubber Seals and Used Metal Seal Rings



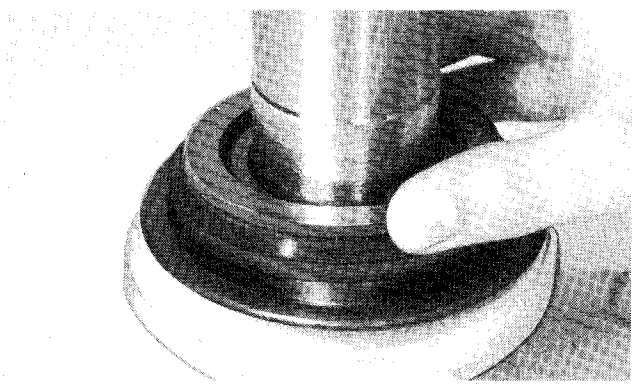
T80409

1—Rubber Seal **2—Metal Seal Ring**

Fig. 22-Install Rubber Seal

Clean metal seal rings (2, Fig. 22) in a volatile non-petroleum base type solvent and wipe dry with lint free cloth.

Install new rubber seals (1) onto the metal seal rings. Be sure the rubber seal is tight and straight against the metal seal ring shoulder flange. Be sure the rubber seals are free of oil.



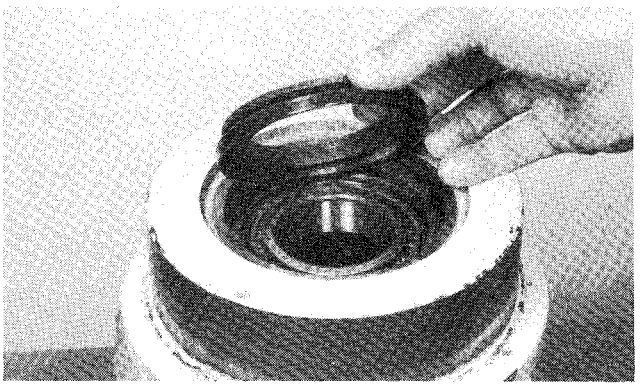
T80410

Fig. 23-Install Seal

Install metal face seal half, with retainer lip first, into the seal bore in the support bracket (Fig. 23).

Be sure the seal is tight against the seal bore and sits straight.

IMPORTANT: The new rubber seal must have a retainer lip to hold the seal half in the bore before the seal is compressed.



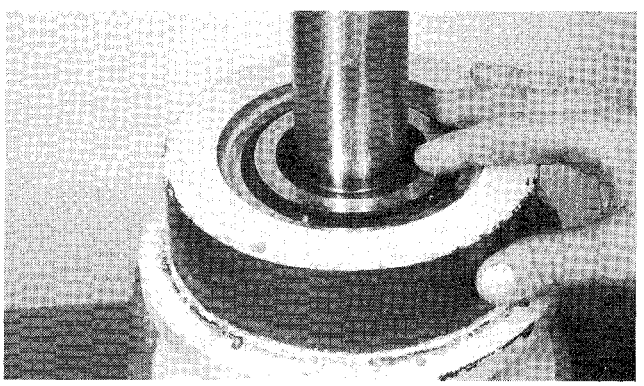
T80411

Fig. 24-Install Seal

Install metal face seal half, with retainer lip first, into the seal bore in the roller shell (Fig. 24).

Be sure the seal is tight against the seal bore and sits straight.

IMPORTANT: The new rubber seal must have a retainer lip to hold the seal half in the bore before the seal is compressed.



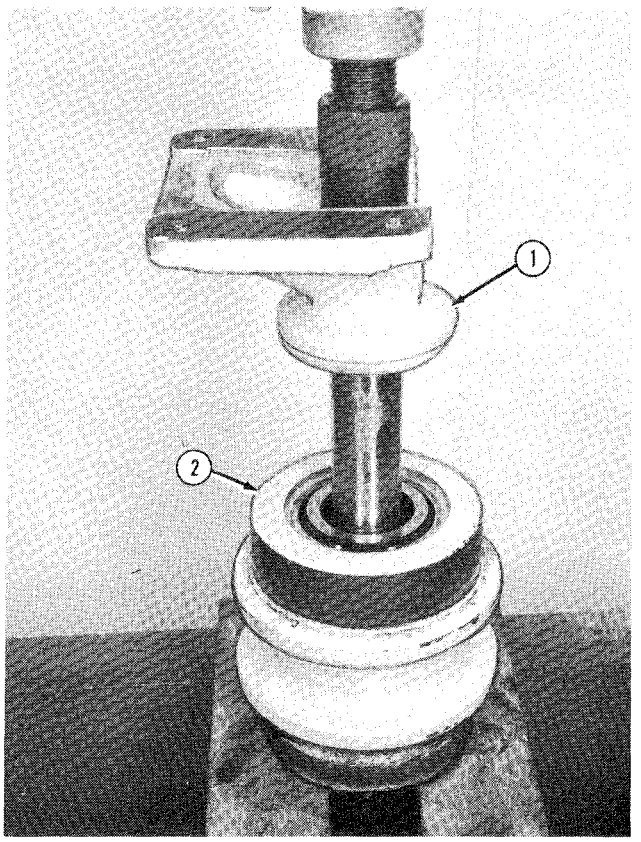
T80412

Fig. 25-Apply Oil

Wipe both metal seal ring faces dry with a lint free cloth.

Apply a thin film of oil, as used in the roller, to the shiny sealing area on both metal seal rings.

Be sure the rubber seals are free of oil.



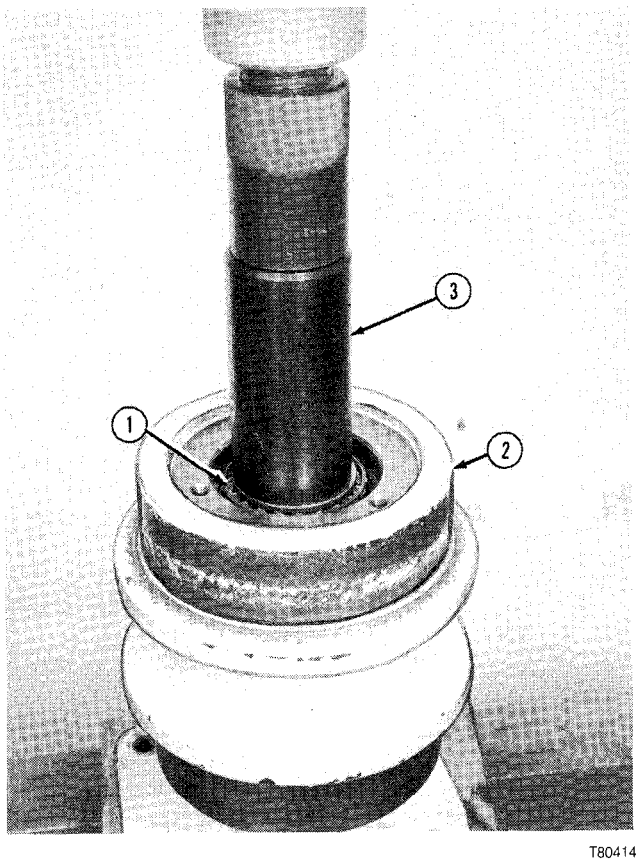
T80413

1—Support Bracket **2—Roller Shell**

Fig. 26-Install Support Bracket

IMPORTANT: Hold the support bracket (1, Fig. 26) to prevent it from falling when the shaft of the support bracket is pressed below the bearing cone.

Install the support bracket into the roller shell (2) with a press.

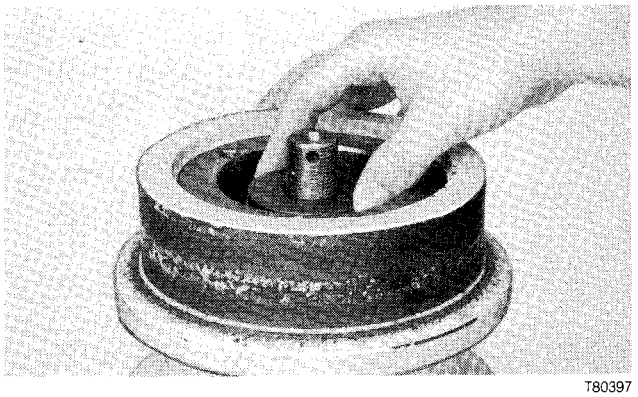


T80414

1—Bearing Cone **2—Roller Shell**
3—JD-357

Fig. 27-Install Bearing Cone

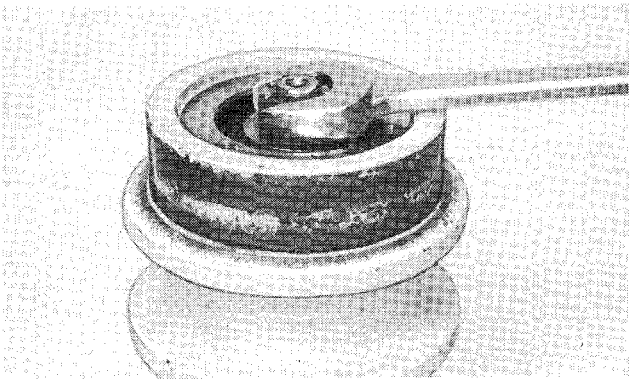
Install bearing cone (1, Fig. 27) into the roller shell (2) with a JD-357 Driver (3) and a press.



T80397

Fig. 28-Washer

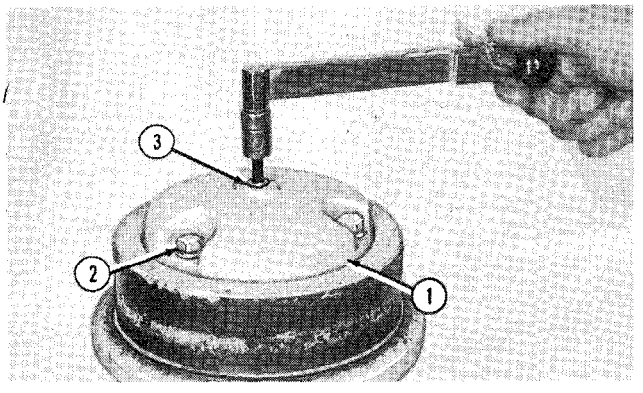
Install washer (Fig. 28).



T80415

Fig. 29-Install Nut

Install nut (Fig. 29) and tighten slightly.



T80416

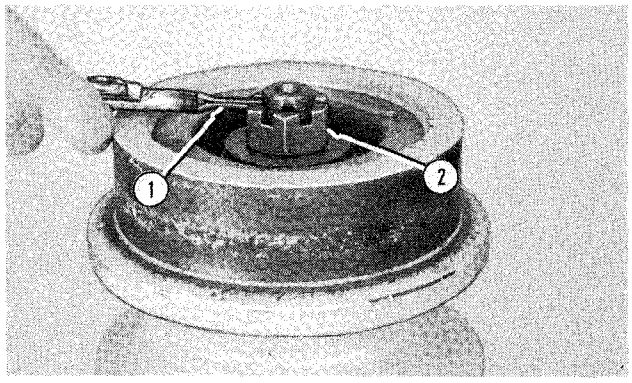
1—Cover **2—Cap Screw (3 used)**
3—Oil Fill Plug

Fig. 30-Checking Rolling Drag Torque

Install cover (1, Fig. 30) and cap screws (2).

Use the oil fill plug (3) to check the rolling drag torque. The rolling drag torque of the carrier roller must be (7.6 to 8.2 N·m) 67 to 73 lb-in. If the rolling drag torque is not correct, remove cover and tighten or loosen nut (Fig. 29). Repeat rolling drag torque procedure.

Remove cover after rolling drag torque is correct.



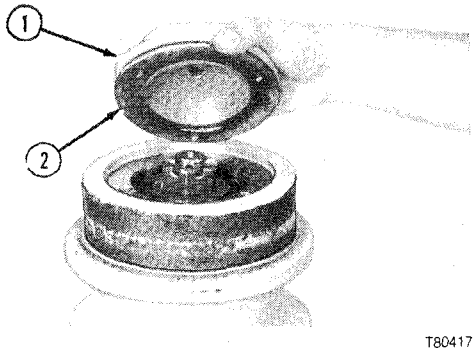
T80395

1—Cotter Pin **2—Nut**

Fig. 31-Install Nut

Turn nut (2, Fig. 31) counterclockwise 1/4 turn and install cotter pin (1). This should result in (0.00 to 0.15 mm) 0.000 to 0.006 in. end play.

Add approximately (491 mL) 16.6 oz. of recommended oil to carrier roller cavity. (See Section 1, Group IV.)

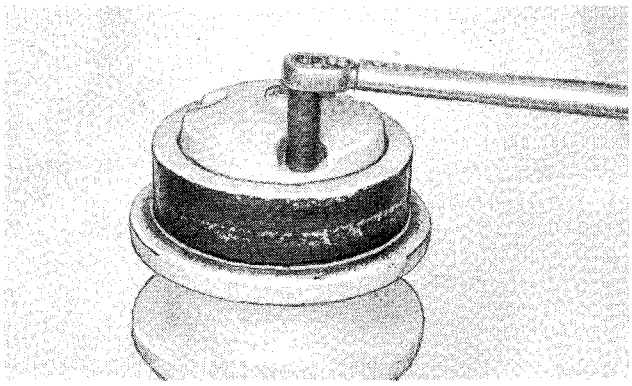


T80417

1—Cover **2—Gasket**

Fig. 32-Install Cover

Install cover (1, Fig. 32) and a new gasket (2).



T80418

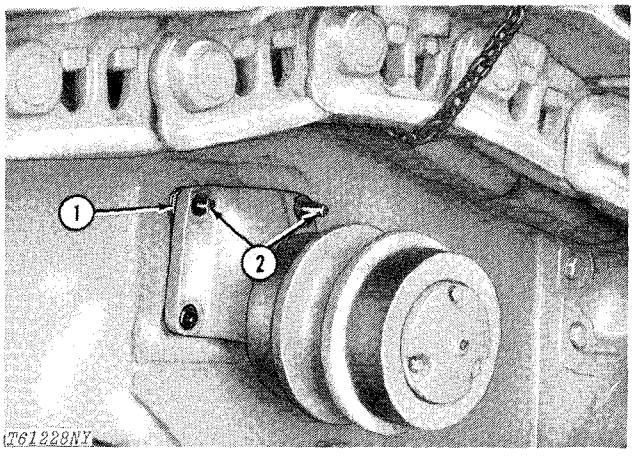
Fig. 33-Install Cap Screws

Apply Permatex Form-A-Gasket number 3 or an equivalent to roller cover cap screws and plug. Install lock washers and cap screws.

NOTE: Carrier rollers require lubrication only at the time of assembly.

See page 0130-68 to test carrier roller for leakage.

INSTALLATION



T61228NY

1—Shims **2—Guide Screws**

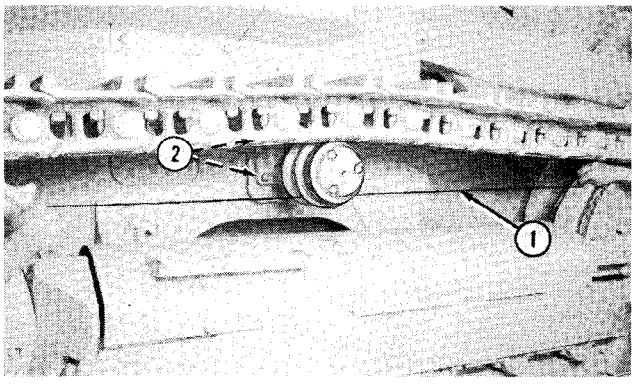
Fig. 34-Install Carrier Roller

Install guide screws (2, Fig. 34).

Install the same number of shims (1) as was removed behind the carrier roller support. Install carrier roller and cap screws.

If carrier roller must be aligned, place the carrier roller on the guide screws without any shims.

Install shims on the bottom until carrier roller is level.



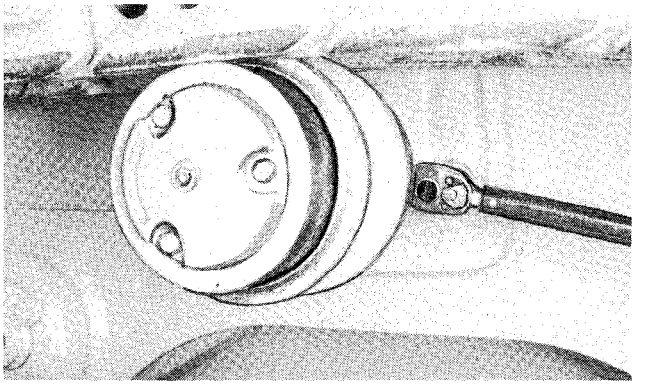
T80419

1—String **2—Shims (as required)**

Fig. 35-Aligning Carrier Roller

Center the front idler in the track frame. Stretch a string (1, Fig. 35) tight between the center of the front idler flange and the center of the sprocket teeth.

Add an equal number of shims (2) on the top and bottom to bring the center line of the carrier roller out to the string.



T80420

Fig. 36-Install Cap Screws

Install cap screws and washers. Tighten cap screws (230 N·m) 170 lb-ft.

Lower track onto carrier rollers.

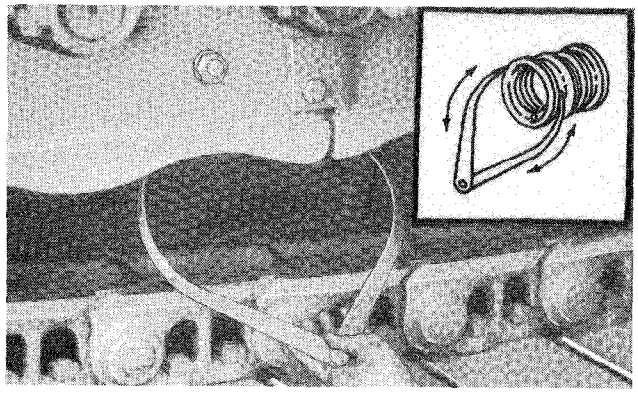
See Group 9030 to adjust track tension.

TRACK ROLLERS

GENERAL INFORMATION

Six track rollers are used on each side to support the load of the crawler. The first, fourth and sixth rollers are single flanged. The second, third and fifth rollers are double flanged.

CHECKING ROLLER WEAR



T77885

Fig. 37-Track Roller Diameter Measurement

Use D-05229ST (3048 mm) 12-in. Spring Caliper (part of D-05227ST Undercarriage Inspection Service Tool Kit) to measure track roller diameter.

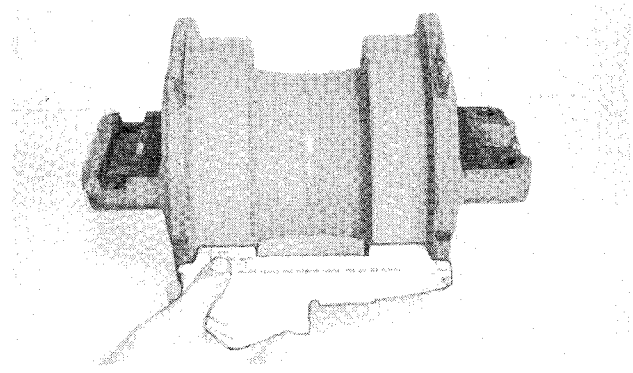
Position a caliper around a track roller as shown in Fig. 37. Record the measurement. Repeat the procedure for each roller.

Track roller diameter of a new roller is (203 mm) 7.99 in. Minimum recommended roller diameter is (184.2 mm) 7.25 in.

NOTE: For additional information on measuring track roller diameter, refer to UNDERCARRIAGE APPRAISAL MANUAL SP-236.

NOTE: It is recommended to use the previous procedures for more accurate measurements when replacing the track components. A track wear gauge (JD329-1) is available, enabling the service technician to quickly check the condition of a track assembly.

Use JD329-1 Track Wear Gauge to check wear on track roller.



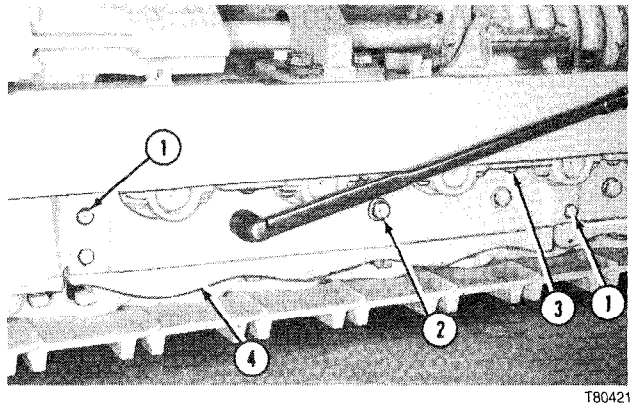
T79866

Fig. 38-Track Roller Wear

The track rollers will wear on the roller running surface and the inner surface of the flanges. Place gauge between the roller flanges tight against one flange. Measure gap between gauge and roller running surface and gap between gauge and flange. Allowable wear is indicated on gauge with an arrow pointing to surface where gap is to be measured.

REMOVAL

See page 0130-33 to release track tension.

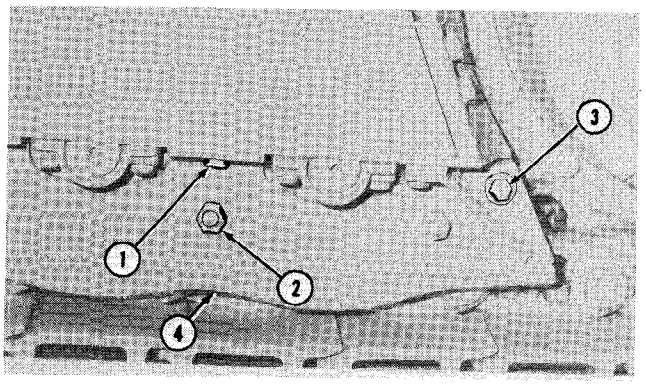


T80421

1—Cap Screw (6 used)
2—Cap Screw (6 used)
3—Cap Screw(6 used)
4—Left Rock Guard

Fig. 39-Rock Guards

Remove cap screws (1, 2 and 3, Fig. 39) and nuts to remove left rock guard (4) and right rock guard.

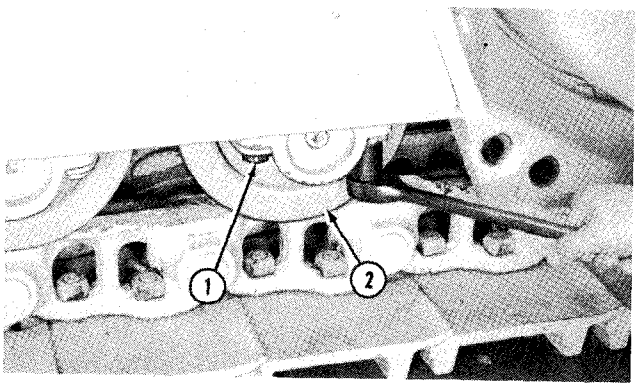


T81513

1—Cap Screw (6 used)
2—Nut (6 used)
3—Cap Screw (2 used)
4—Left Track Guide

Fig. 40-Track Guide

Remove cap screws (1 and 3, Fig. 40) and nuts (2) to remove left track guide (4) and right track guide.

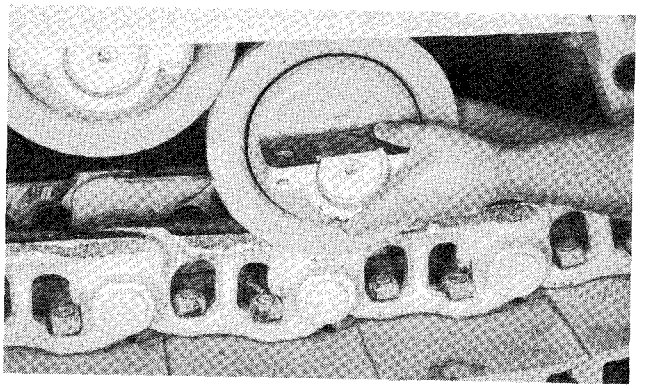


T80423

1—Cap Screw (4 used)
2—Track Roller

Fig. 41-Remove Roller Cap Screws

Remove cap screws (1, Fig. 41) to remove track roller (2).



T80424

Fig. 42-Remove Roller

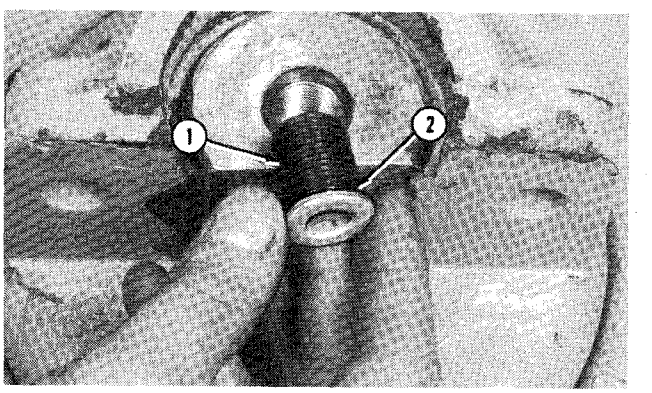
Lift the crawler using a service jack or hoist until the rollers can be removed. Put blocking under the crawler.

Remove the track roller (Fig. 42).

REPAIR

Disassembly

NOTE: Single flange rollers and double flange rollers are of the same design. Disassembly and assembly procedures are the same for both types of rollers.



T80425

1—Plug
2—O-Ring

Fig. 43-Remove Plug

Remove plug (1, Fig. 43) with O-ring (2) to drain oil from the roller.

Remove lock from inner collar before installing collar in the press.