



40 Rotary Tiller



JOHN DEERE

TECHNICAL MANUAL

40
Rotary Tiller

TM1232 (01NOV79) English

John Deere Horicon Works
TM1232 (01NOV79)

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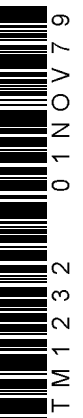


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INTRODUCTION

This technical manual contains service and maintenance information for the John Deere 40 Rotary Tiller.

Basic service information pertaining to removal, disassembly, inspection and repair is given in detail. Emphasis is placed on diagnosing malfunctions for quick reference in determining the cause of machine failure.

⚠ This safety alert symbol identifies important safety messages. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

Metric equivalents have been included where applicable, throughout this technical manual.

DESCRIPTION

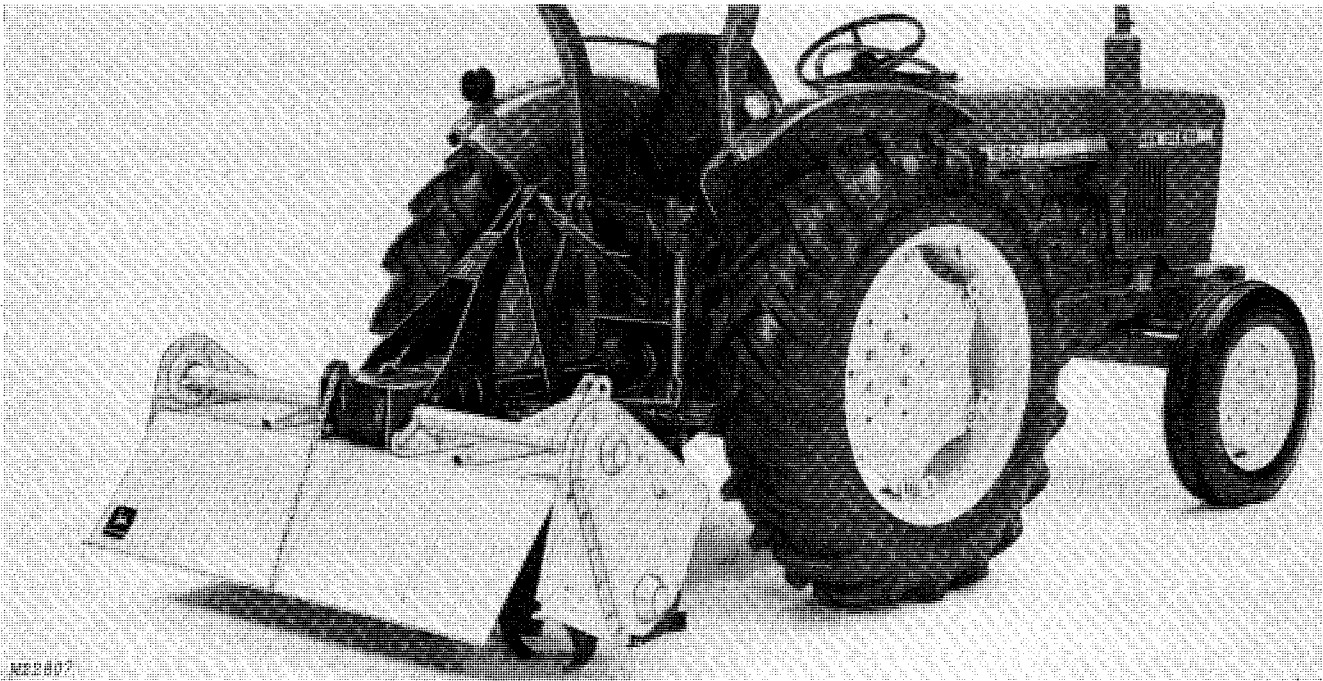


Fig. 1-John Deere 40 Rotary Tiller

The John Deere 40 Rotary Tiller, Fig. 1, is a heavy-duty rear-mounted integral rotary tiller designed for use with 850 and 950 Tractors.

The tiller is mounted on the tractor 3-point hitch.

The tractor 540 rpm rear PTO shaft drives the tiller powershaft which attaches to the gear case. A pinion and bevel gear is connected to a one-piece drive shaft inside the gear case. A sprocket and chain on each end of the drive shaft transmit power to the rotor tine shaft.

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SPECIFICATIONS

Tiller Specifications

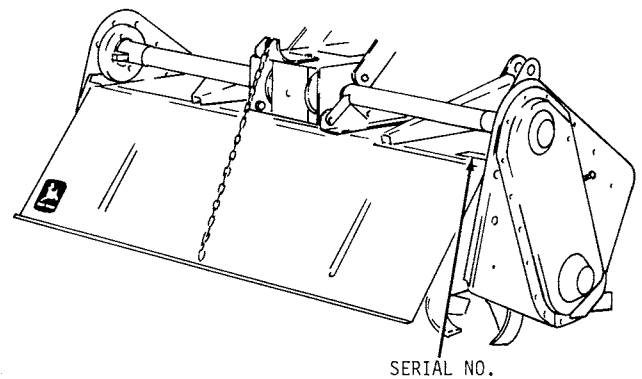
Width of Cut	60 in. (1.52 m)
Rotor Diameter	16 in. (406 mm)
Gear Case	Curtis Model 412
Tines	Hi-Carbon Heat-Treated
Drive	U-joint PTO shaft (with shear protection) to gear case and dual final chain reduction.
Rotor rpm	225 rpm
Rotor Tip Speed	942 ft/min (287.12 m/min)
Height of Lift	24 in. (610 mm)
Depth of Till	8 in. (20.32 mm)
Approximate Weight	480 lbs. (218.2 kg)

Tractor Requirements

Horsepower	27 maximum
Hitch	3-point hitch-Category 1
Rear PTO Speed	540 rpm
Ballast	None Required

SERIAL NUMBERS

Tiller Serial Number

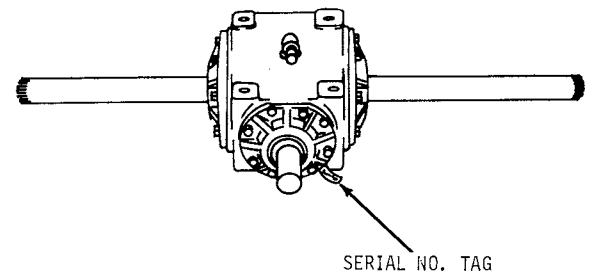


M26251

Fig. 2-Tiller Serial Number

The tiller serial number is located on top of the housing, Fig. 2.

Gear Case Serial Number



M26253

Fig. 3-Gear Case Serial Number

The gear case serial number is located on a tag attached to the gear case, Fig. 3.

TORQUE CHARTS**Bolt Torque Chart**

**AVERAGE TIGHTENING TORQUE FOR BOLTS
(BASED ON 85% OF YIELD)**

BOLT SIZE	A17B			A17D			A17F		
	lb-in	lb-ft	N·m	lb-in	lb-ft	N·m	lb-in	lb-ft	N·m
1/4	72	6	8	120	10	13.5	168	14	19
5/16	156	13	17.6	240	20	27	360	30	40.7
3/8	276	23	31.2	420	35	47.5	600	50	67.8
7/16	420	35	47.5	660	55	74.6	960	80	108.5
1/2	660	55	74.6	1020	85	115.2	1440	120	162.7
9/16	900	75	101.7	1560	130	176.3	2100	175	237.3
5/8	1260	105	142.4	2040	170	230.5	2880	240	325.4
3/4	2220	185	250.8	3600	300	406.7	5100	425	576.2
7/8	1920	160	216.9	5340	445	603.3	8220	685	928.7
1	3000	250	339	8040	670	908.4	12360	1030	1396.5
1-1/8	3960	330	447.4	10920	910	1233.8	17520	1460	1979.5
1-1/4	5760	480	650.8	15000	1250	1694.8	24720	2060	2793

B grade bolts larger than 3/4 are sometimes formed hot rather than cold, which accounts for the lower mean tightening torque.

Set Screw Seating Torque Chart		
Screw Size	Seating Torque	
	Inch-Pounds	Newton Meters (N·m)
#5	9	1.0
#6	9	1.0
#8	20	2.3
#10	33	3.7
1/4	87	9.8
5/16	165	18.6
3/8	290	32.8
7/16	430	48.6
1/2	620	70.1
9/16	620	70.1
5/8	1225	138.4
3/4	2125	240.1

LUBRICATION

Use only the lubricants specified. Apply lubricant at interval specified and according to instructions.

Gear Case

IMPORTANT: Be sure tiller is on a level surface when checking or adding lubricant. Check gear case lubricant level every 25 hours of operation.

Remove plug on backside of gear case to check lubricant level. Lubricant should flow out plug hole.

Use John Deere PT549 Lubricant or an equivalent SAE 90 (EP) SCL-type gear lubricant in gear case.

Grease Fittings

Use John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease to lubricate all grease fittings.

Lubricate grease fittings every 25 hours of operation.

IMPORTANT: Do not use a high-pressure grease gun to lubricate universal joint fittings on powershaft. Lubricate these fittings with a hand-type grease gun only. One or two strokes is sufficient. Otherwise, damage to the bearing seals will occur.

Chain Case

At the beginning of each use season, the chain case covers should be removed and repacked with John Deere Multi-Purpose Lubricant or an equivalent SAE multi-purpose type grease.

Old grease should be removed from chain case covers and approximately 1-1/2 pounds (0.68 kg) of new grease packed in lower part of cover.

IMPORTANT: Be sure to replace old gaskets with new gaskets before installing chain case covers.

Hinge or Pivot Points

Lubricate hinge or pivot points every 25 hours of operation with SAE 30 engine oil.

ADJUSTMENTS

Leveling Tiller Side-to-Side

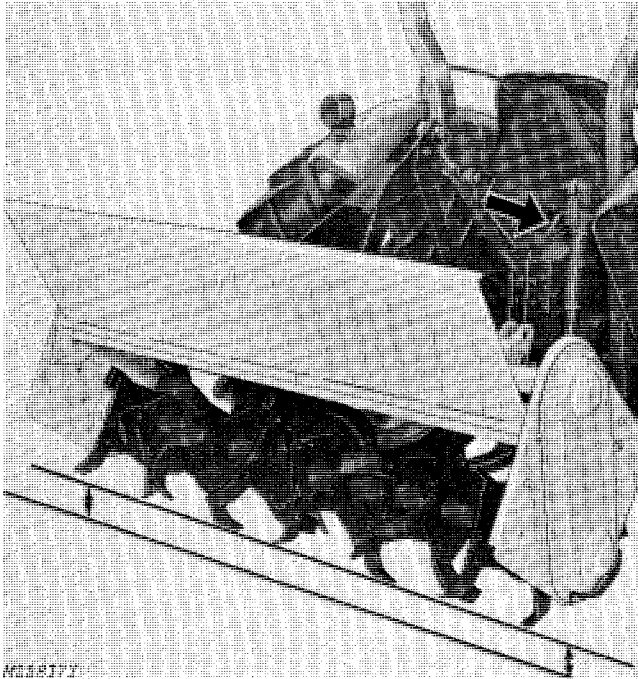


Fig. 4-Leveling Tiller Side-to-Side

Start tractor engine and raise tiller to maximum height. Shut off engine.

Lengthen or shorten draft link (arrow), Fig. 4, until there is equal clearance between outside tine and ground on both sides.

NOTE: Adjustment must be made on a level surface.

Leveling Tiller Front-to-Rear

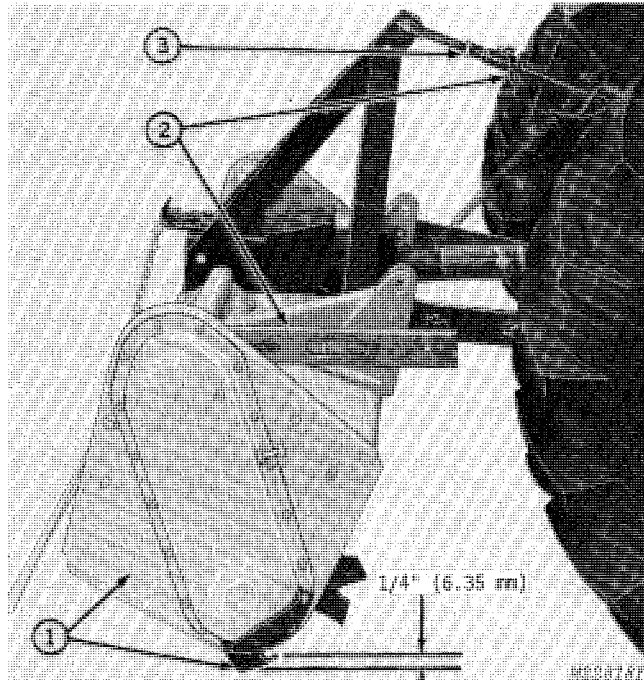


Fig. 5-Leveling Tiller Front-to-Rear

1. Lower tiller to 1/4-inch (6.35 mm) off surface.
2. Adjust center link, Fig. 5, until top of tiller is level.
3. Tighten locking nut.

Adjusting Sway Chains

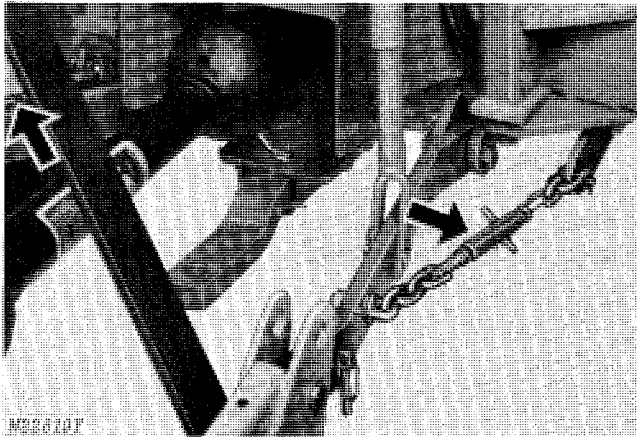


Fig. 6-Adjusting Sway Chains

Adjust turnbuckles (arrow), Fig. 6, to eliminate any slack in sway chains.

Adjusting Drive Chain Tensioners

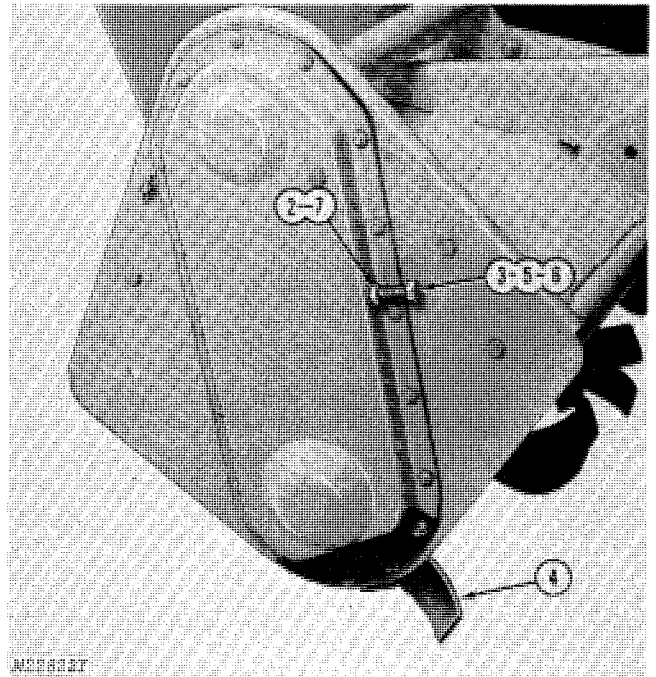


Fig. 7-Adjusting Drive Chain Tensioners

1. Start tractor engine and raise tiller. Shut off engine.

CAUTION: Remove ignition key from switch. Place jackstands or wooden blocks under tiller to securely block tiller in raised position.

2. Loosen jam nut, Fig. 7.

3. Turn screw in until a slight drag is felt.

4. Move tiller tines back and forth until chain slack (backlash) is felt.

5. Continue turning screw while moving tiller tines until no backlash can be felt and a slight drag exists on chain.

6. Back screw out approximately 1/2 turn or until tiller tines turn freely.

7. Tighten jam nut.

IMPORTANT: Adjust both drive chains equally. Do not overtighten chain tensioners or chains and tighteners will wear excessively.

DIAGNOSING MALFUNCTIONS

Tine Shaft Does Not Rotate

- Sheared PTO shaft bolt.
- Broken drive chains.
- Broken drive shaft.
- Broken gears in gear case.

Erratic Tiller Operation

- Material wrapped around tines and tine shaft.
- Tine striking tiller housing.
- Loose tines.
- Loose drive chain(s).
- Defective tine shaft or drive shaft bearings.
- Broken tines.

Tiller Does Not Till Effectively

- Material wrapped around tine shaft and tines.
- Tine installed improperly.
- Extremely hard packed or rocky soil conditions.
- Tiller depth of penetration incorrectly adjusted.
- Tiller not leveled properly.
- Tines bent or broken.
- Tines not tight or missing.

REPLACING TINES AND DRIVE COMPONENTS

Replacing Tines

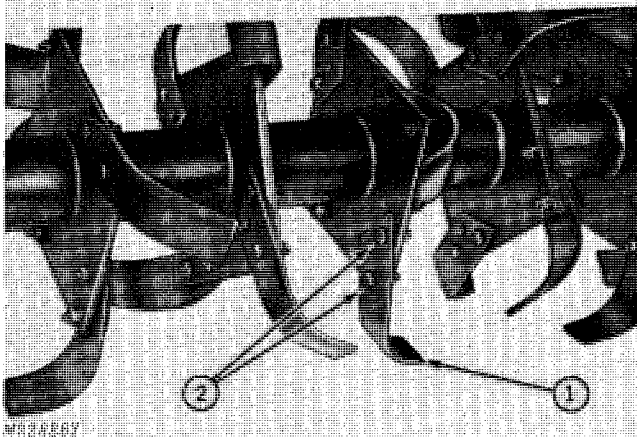


Fig. 8-Replacing Tines

NOTE: Right-hand tines are marked "BR" and left-hand tines are marked "BL."

1. Remove old tine and install new tine. Be sure cutting edge on tine is facing direction of rotor tine shaft rotation, Fig. 8.

2. Tighten lock nuts to 34 ft-lbs (46 N·m) torque.

Replacing Shear Bolts

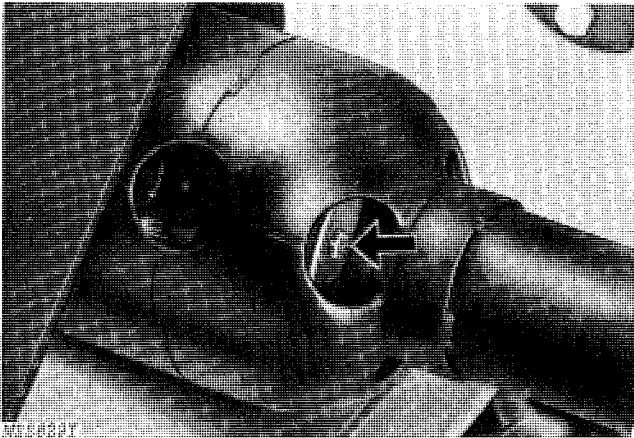


Fig. 9-Replacing Shear Bolts

1. Disengage PTO (power-take-off) and shut off tractor engine. Remove key from ignition switch.

2. Disconnect PTO shaft from tractor PTO.

3. Rotate PTO shaft shield until shear bolts can be reached through large hole in shield, Fig. 9.

4. Remove sheared bolt, Fig. 9.

5. Align PTO shaft holes and install new shear bolt.

6. Remove any obstructions and inspect tiller for damage.

Replacing Drive Chains

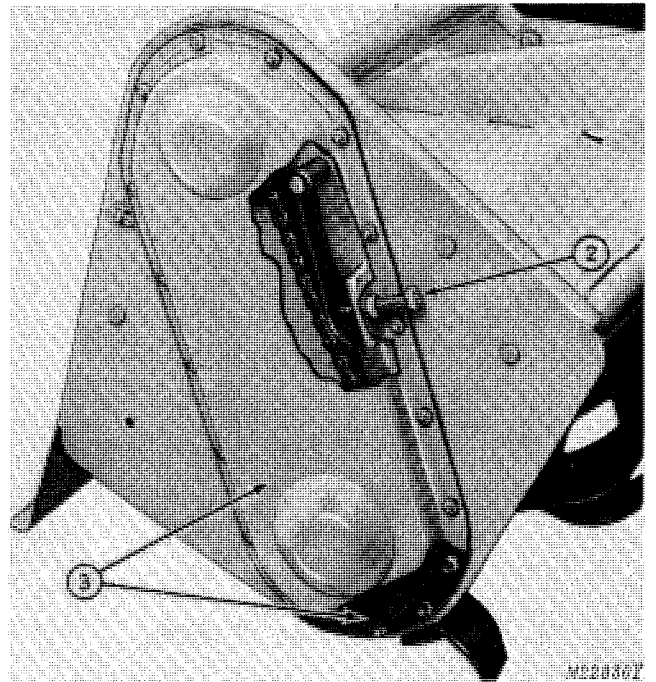


Fig. 10-Removing Chain Cover

1. Disengage PTO, lower tiller to surface and shut off tractor engine. Remove key from ignition switch.

2. Remove chain tensioner bolt, Fig. 10.

3. Remove drive chain cover, reinforcement and gasket.

NOTE: Chain tensioner bolt and pad will come off with cover.



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Replacing Drive Chains—Continued

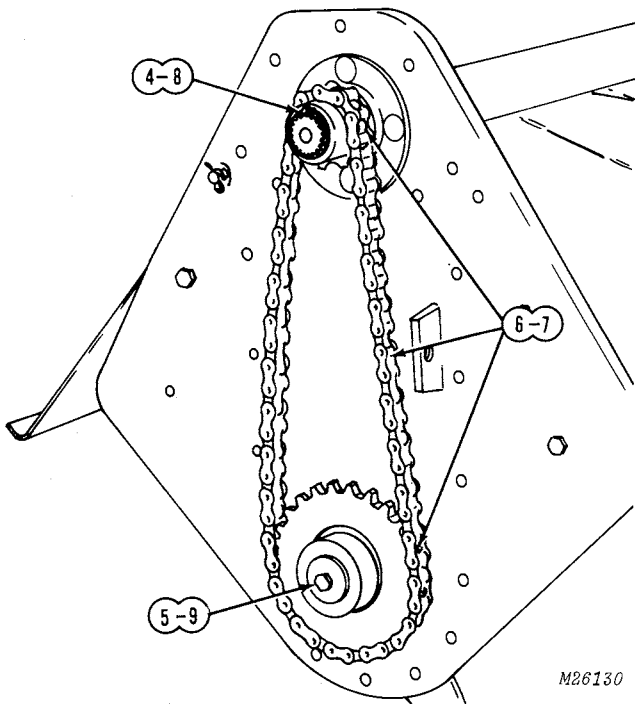


Fig. 11-Replacing Drive Chain and Sprockets

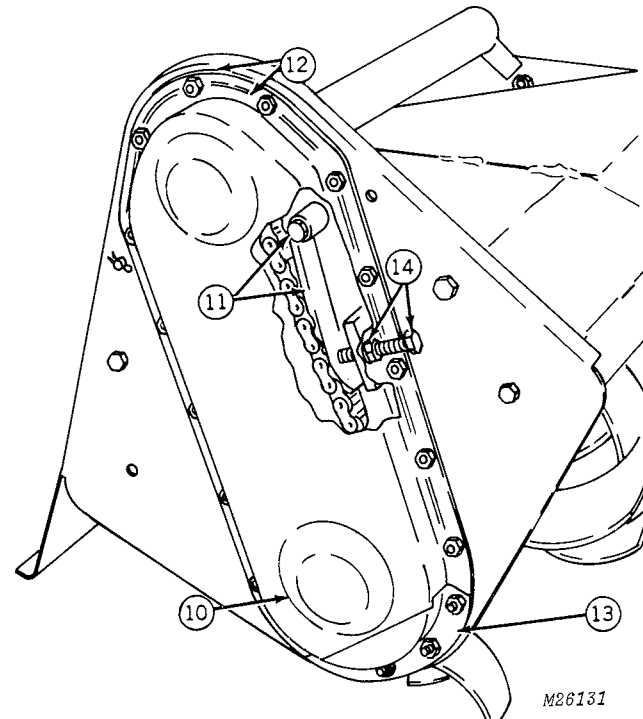


Fig. 12-Installing Drive Chain Cover

4. Remove retaining ring, Fig. 11.
5. Remove cap screw and washer.
6. Pull sprockets and chain off shafts.
7. Wrap chain around sprockets and install sprockets on shafts.

NOTE: Start the upper small drive shaft sprocket on the drive shaft first. Then, install the lower rotor tine shaft sprocket.

8. Install retaining ring.
9. Apply Loctite to bolt. Install bolt and washer. Tighten bolt to 50 ft-lbs (68 N·m) torque.

10. Pack approximately 1-1/2 pounds (0.68 kg) of John Deere Multi-Purpose Lubricant or equivalent SAE multi-purpose-type grease in lower part of cover, Fig. 10.

11. Install long bolt and chain tensioner in cover, Fig. 12.

12. Install new gasket and cover. Make sure chain tensioner pad is correctly positioned over chain.

13. Install reinforcement.

14. Install jam nut and long tensioner bolt. Adjust chain tension as explained page 7.

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