1207, 1209, 1217, and 1219 Mower-Conditioners

John Deere Ottumwa Works
TM1284 (15JAN02)
LITHO IN U.S.A.
ENGLISH

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX,TMIFC -19-22MAY92

Contents

All information, illustrations and specifications in this 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.

TM1284-19-15JAN02

Section 10
GENERAL

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RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

T81389 -UN-07DEC88

DX,ALERT -19-04JUN90

UNDERSTAND SIGNAL WORDS

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

TS187 -19-30SEP88

DX,SIGNAL -19-09JAN92

HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

TS227 -UN-23AUG88

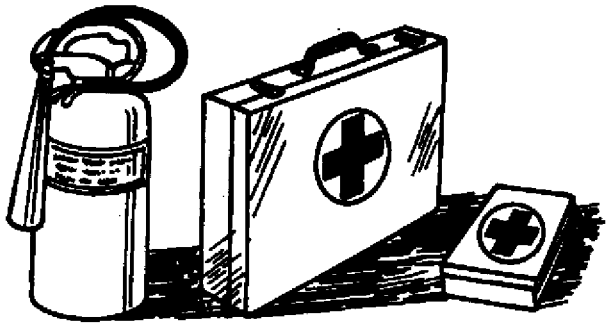
DX,FLAME -19-04JUN90

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-04JUN90

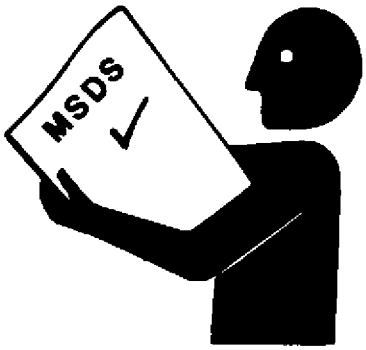
HANDLE CHEMICAL PRODUCTS SAFELY

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)

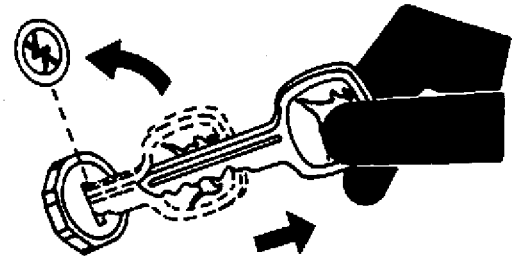


TS1132 -UN-26NOV90

DX,MSDS,NA -19-15MAR91

PARK MACHINE SAFELY

Before working on the machine:
- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



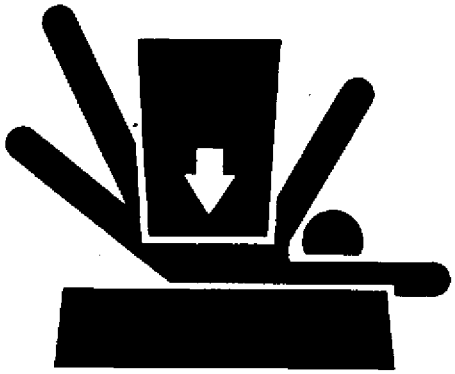
TS230 -UN-24MAY89

DX,PARK -19-04JUN90

SUPPORT MACHINE PROPERLY

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

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



TS229 -UN-23AUG88

DX,LOWER -19-04JUN90

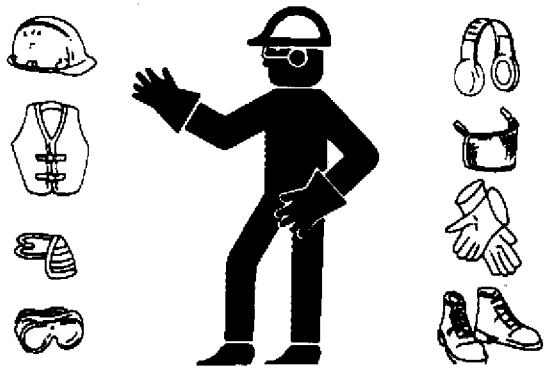
WEAR PROTECTIVE CLOTHING

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

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

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

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

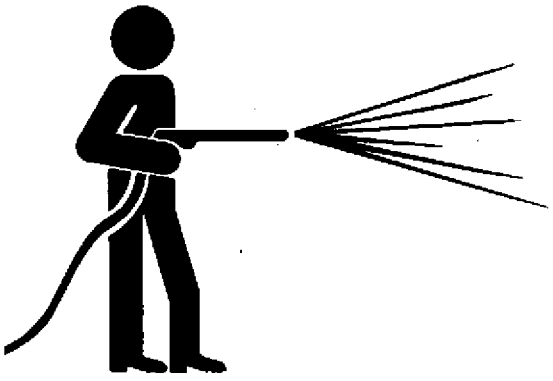


TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

WORK IN CLEAN AREA

Before starting a job:
- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



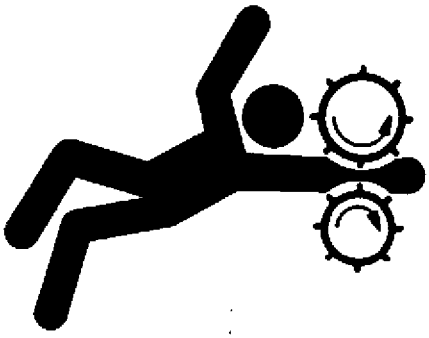
T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90

SERVICE MACHINES SAFELY

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

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



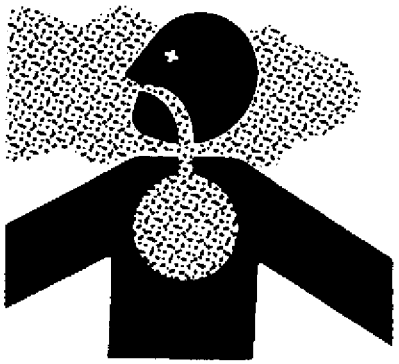
TS228 -UN-23AUG88

DX,LOOSE -19-04JUN90

WORK IN VENTILATED AREA

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

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



TS220 -UN-23AUG88

DX,AIR -19-04JUN90

ILLUMINATE WORK AREA SAFELY

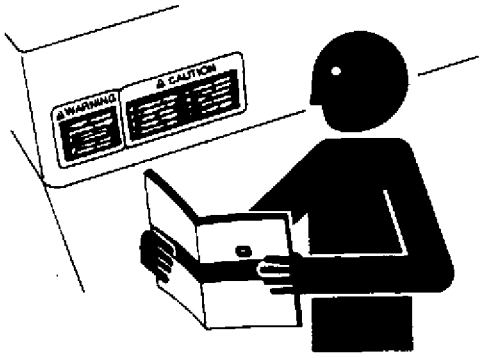
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

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



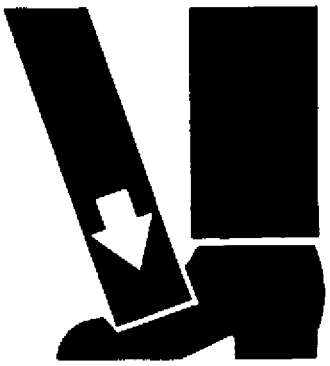
TS201 -UN-23AUG88

DX,SIGNS1 -19-04JUN90

USE PROPER LIFTING EQUIPMENT

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

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



TS226 -UN-23AUG88

DX,LIFT -19-04JUN90

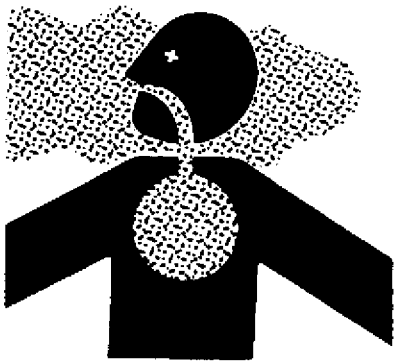
AVOID HARMFUL ASBESTOS DUST

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.

Keep bystanders away from the area.



TS220 -UN-23AUG88

DX,DUST -19-15MAR91

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

TS953 -UN-15MAY90

DX,TORCH -19-05OCT90

METRIC AND CUSTOMARY DESIGN

Specifications are given in metric with the US-customary equivalent following.

Hardware specifications are given as they were designed in metric or US-customary and can not be converted.

Replace hardware with the same strength and measurement. Never replace metric with customary or customary with metric.

EX,1526,1010,D -19-12JUN92

REPAIR COMPONENTS

Use only John Deere parts when replacing a component.

John Deere repair parts are selected because of fit, quality, and expected service life.

Cross referenced components between manufacturers, and will fit components may not be the quality, or have the service life of the specified John Deere part.

EX,1526,1010,E -19-12JUN92

UNAUTHORIZED MODIFICATIONS

CAUTION: Unauthorized modifications may cause machine failure and personal injury.

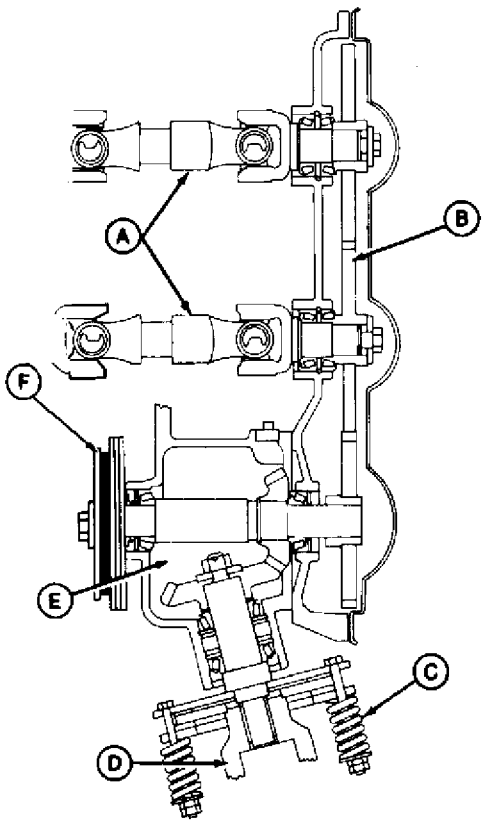
Unauthorized modifications may affect the warranty and the service life of the machine.

EX,1526,1010,F -19-12JUN92

When servicing the mower-conditioner, pay particular attention to the tractor-mower-conditioner hookup geometry, page 01 and 02.

Power is transmitted from the tractor through the powerline to a 105-degree main drive gear case, which drives the roll drive gear case and the cutterbar drive sheave. A belt from the cutterbar drive sheave drives the cutterbar gear case. The rolls are driven from the roll drive gear case through a series of U-joints. A chain and belt off the right-hand end of the upper roll drives the reel.

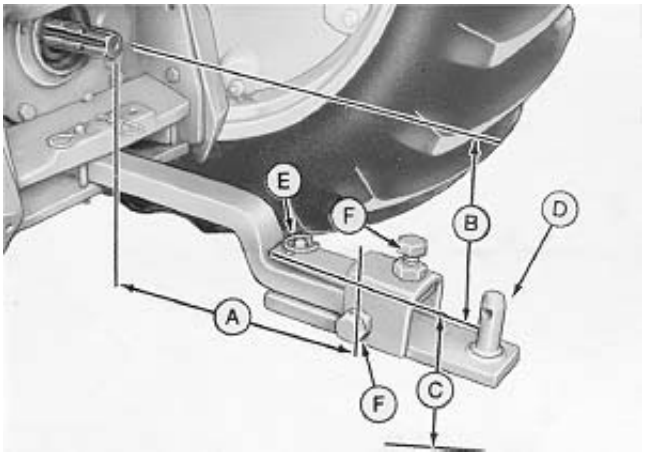
A—Roll Drive U-Joints
B—Roll Drive Gear Case
C—Slip Clutch
D—Powerline
E—Main Drive Gear Case
F—Cutterbar Drive Sheave



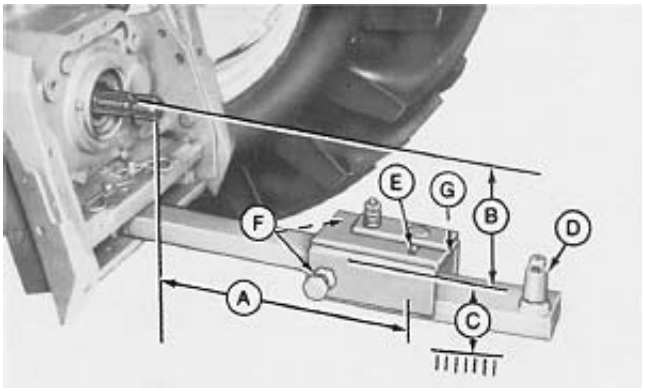
E21478 -UN-10JUL92

Mower-Conditioner Drive Train

EX,1284,1015,A -19-28AUG92



Hookup Dimensions (-285000)



Hookup Dimensions (285000-)

Unequal angles occur if the tractor drawbar is not set for the proper length relative to the PTO operating speed. The tractor hookup U-joints must operate at equal angles whether turning a corner or passing over uneven terrain. If the equal angles are not maintained, the following problems could occur.

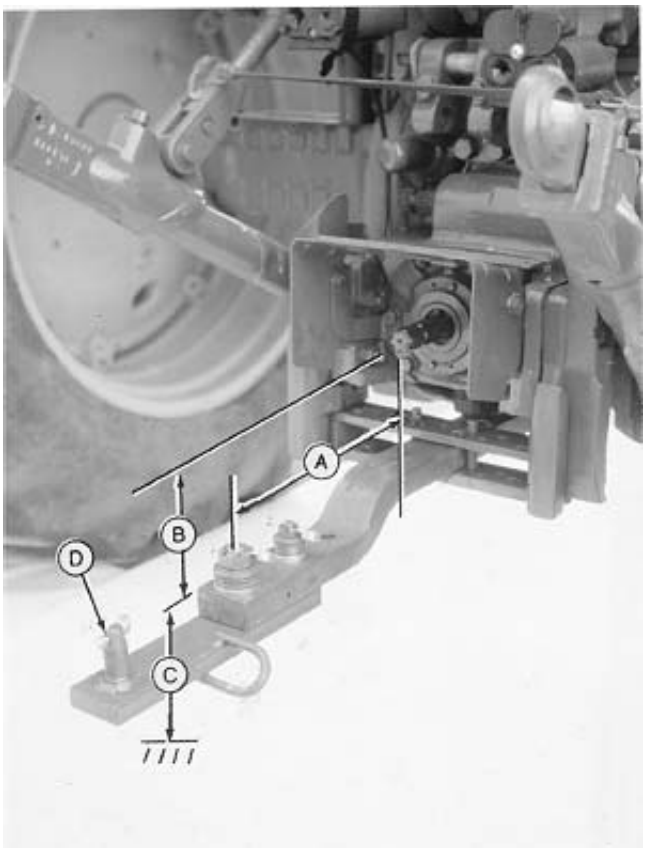
1. Premature failure of the powerline components.

2. Excessive noise and vibration.

For basic theory of power transmitted with a tractor PTO hookup, see FOS manual 40—POWER TRAINS.

The proper equal angle hitch hookup dimension (for 540 rpm) is illustrated.

A—356 mm (14 in.)
B—152-305 mm (6 to 12-in.)
C—330-432 mm (13 to 17 in.)
D—Equalizer Hitch
E—Quick-Lock Pin
F—Adjusting Bolt
A—356 mm (14 in.) 540 rpm
406 mm (16 in.) 1000 rpm
B—152-305 mm (6 to 12-in.)
C—330-432 mm (13 to 17 in.)
D—Equal Angle Hitch
E—Hitch Pin
F—Adjusting Bolts
G—Shims
A—356 mm (14 in.) 540 rpm
406 mm (16 in.) 1000 rpm
B—152-305 mm (6-12 in.)
C—330-508 mm (13-20 in.) to ground
D—Equal Angle Hitch (710001-)



Hookup Dimensions (710001-)

EX,1284,1015,B -19-28AUG92

GREASE

Use grease based on the expected air temperature range during the service interval.

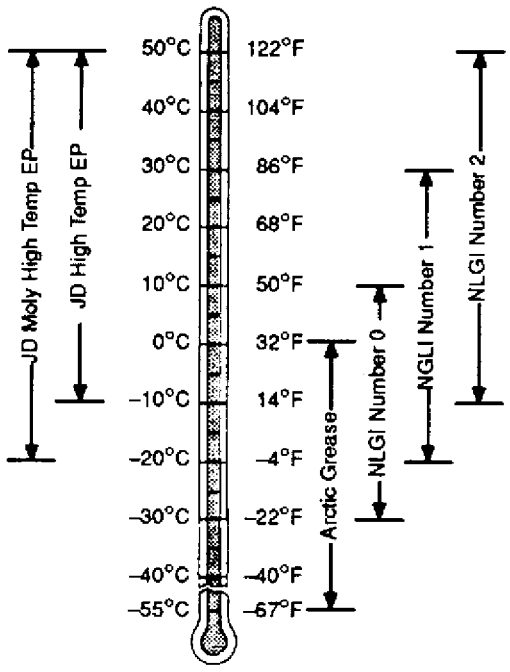
The following greases are preferred:

- John Deere MOLY HIGH TEMPERATURE EP GREASE
- John Deere HIGH TEMPERATURE EP GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet one of the following:

- SAE Multipurpose EP Grease with a maximum of 5% molybdenum disulfide
- SAE Multipurpose EP Grease

Greases meeting Military Specification MIL-G-10924F may be used as arctic grease.



DX,GREA1 -19-11JUN92

Use oil viscosity based on the expected air temperature range during the period between oil changes.

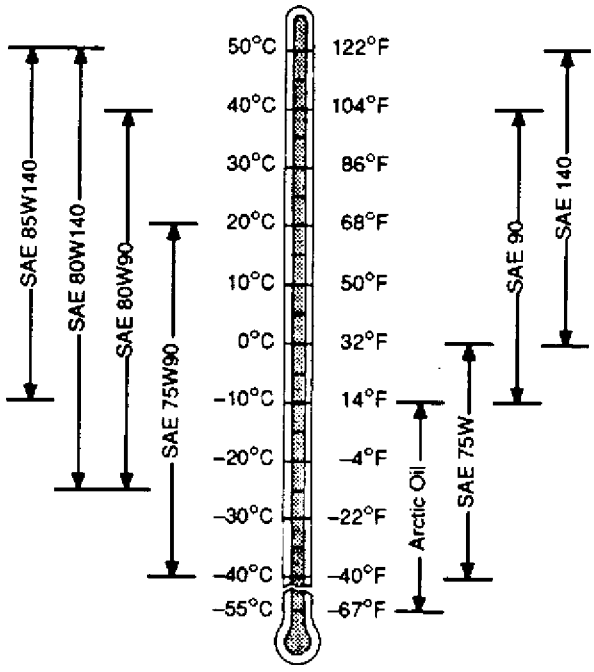
The following oils are preferred:

- John Deere EXTREME-GARD™
- John Deere GL-5 GEAR LUBRICANT

Other oils may be used if they meet the following:

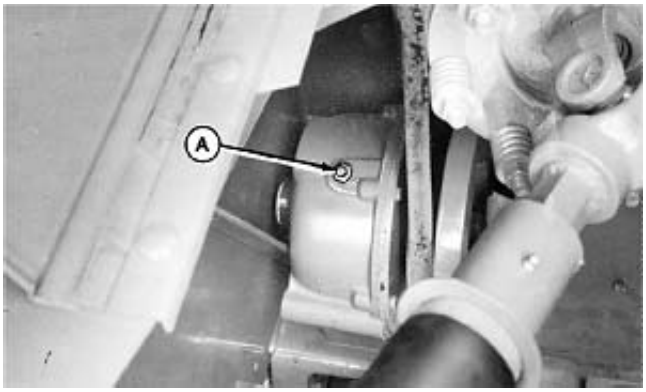
- API Service Classification GL-5

Oils meeting Military Specification MIL-L-10324A may be used as arctic oils.



DX,GEOIL -19-11JUN92

KNIFE DRIVE CASE



Fill the drive case to 64 to 89 mm (2-1/2 to 3-1/2 inches) below fill plug (A) with SAE 85-140 API-GL5 Gear Lubricant.

IMPORTANT: Overfilling can cause leakage, overheating and contribute to internal damage. Fill no higher than 64 to 89 mm (2-1/2 to 3-1/2 inches) below fill plug.

John Deere SAE 85W140 API-GL5 Gear Oils are recommended. If other oils are used, they must meet performance requirements of:

—API Service Classification GL-5
—Military Specification MIL-L-2105C

Knife drive case capacity is .946 L (one qt.).

EX,1284,1020,A -19-28AUG92

MAIN DRIVE AND ROLL DRIVE GEAR CASE

(-285000)

Check oil level (C) of roll drive gear case (A) each season. Fill (A) to approx. 1/3 full (1.3 L) (45 ounces) (C) with John Deere Corn Head Lubricant or an equivalent type “0” (zero) extreme pressure lubricant. (Capacity: approximately 1.4 L) (3 U.S. pints).

To drain, if necessary:

1. Remove 15 cap screws, [washers 1207 (-285000)] and cover (D).

2. Straighten any recessions in cover caused by cap screws.

3. Clean both surfaces of gasket compound and oil.

4. Place 3 mm (1/8 in.) bead of new gasket material on gear case surface.

5. Torque cover to 34 N·m (25 lb-ft).

6. Fill as described above.

(285001-)

The reservoir between the main gear case and the roll drive gear case is common.

Check oil level (C) of roll drive gear case (A) each season. Fill (A) to check plug level (C) with SAE 85-140 API-GL5 Gear Lubricant. (Capacity: approximately 3.8 L) (1 gal).

To drain, if necessary:

1. Remove 15 cap screws and cover (D).

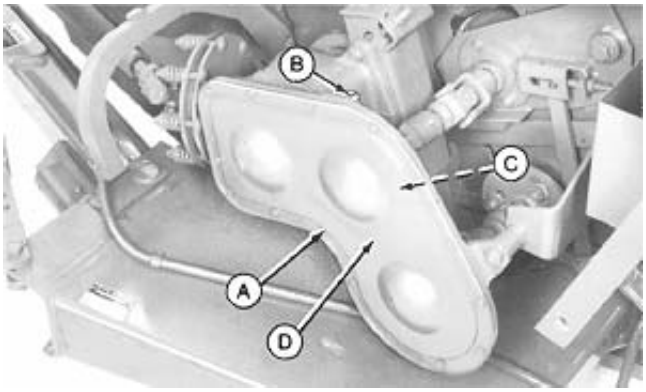
2. Straighten any recessions in cover caused by cap screws.

3. Clean both surfaces of gasket compound and oil.

4. Place 3 mm (1/8 in.) bead of new gasket material on gear case surface.

5. Torque cover to 34 N·m (25 lb-ft).

6. Fill as described above.



1219 Illustrated

A—Roll Drive Gear Case
B—Fill Plug
C—Check Plug Level
D—Cover

EX,1284,1020,B -19-28AUG92

LUBRICANT STORAGE

Your equipment can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

DX,LUBST -19-11JUN92

LUBRICATION SERVICES

COMPONENT	CAPACITY	LUBRICANT*	SERVICE ITEM	INTERVAL** (HOURS)
Knife Drive Case	.946 L (1 Qt.)	85-140 API-GL5	Check	250
Roll Drive Gear Case:				
(-285000)	1.4 L (3 pints)	John Deere Corn Head Lubricant or equivalent type “0” (zero)	Check	250
(285001-)	3.8 L (1 gal)	85-140 API-GL5	Check	250
Tongue		Grease	Brush	As required
Hitch		Grease	Brush	As required
Reel Drive Chain		Oil	Lubricate	As required
Rope Control Positioner (285001-)		Oil	Lubricate	As required
Grease Fittings				
Reel Ends***		Grease	Lubricate	10
Knife Head		Grease	Lubricate	10
Roll Pressure Bellcrank***		Grease	Lubricate	10
Vibration Dampener		Grease	Lubricate	10
Roll Drives		Grease	Lubricate	50
PTO Powr-Gard		Grease	Lubricate	50
Gear Case Input Shaft		Grease	Lubricate	50
Wheel Bearings		Multi-purpose type	Pack	250

** See previous pages for lubricant specifications*

*** This is not break-in service hours. See operator’s manual.*

**** Lubricate both sides.*

EX,1284,1020,C -19-28AUG92

Section 20
Power Train

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Continued on next page

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DIAGNOSING MALFUNCTIONS

Symptom	Problem	Solution
Poorly Formed or Bunchy Windrows	Reel speed too slow	Speed up reel
	Improper windrowing shield adjustment	Readjust windrowing shields so material flows along the sides of the shields
	Swath flap down	Adjust flap up
	Improper PTO speed	Correct PTO speed
	Cam set for late tooth release	Adjust cam
Excessive Noise	Improper hitching	Re-hitch
	Rolls too close	Space rolls
	Rolls out of time	Retime rolls
	Knife or guards bent	Straight knife and reset guards
	Knife section too long (protrudes)	Straighten knife and/or grind tip of section
Leaf Damage or Leaf Loss	Reel speed too fast	Reduce reel speed
	Roll spacing too close	Space rolls
	Over-conditioning	Increase roll spacing or decrease roll pressure
Stems Shredding	Roll pressure too high	Decrease roll spacing
	Improper roll spacing or pressure	Increase roll spacing or decrease roll pressure
Rolls Plugging	Foreign objects between rolls	Disengage tractor PTO and stop engine. When all moving parts are completely stopped, remove foreign objects
Roll Drive Gear Case Noisy	Lack of lubricant	Check and maintain correct level of oil
	Loose bearings	
	Gears not meshing properly	Replace
		Improper tooth contact of gears
	Excessive backlash	Incorrect torque on gears
	Gears binding	Check gear torque and backlash

Continued on next page

Symptom	Problem	Solution
	Roll timing or springs out of adjustment	Adjust
	Roll drive “U” joints out of phase	Check for correct phasing
Roll Drive Gear Case Excessively Hot	Lack of lubricant	Check and maintain correct level of oil
	Gears binding	Check gear torque and backlash
	Defective bearings	Replace
	Improperly installed bearing cups	Check for correct installation
Leaking Oil	Defective oil seals	Check and replace
	Defective gasket, shims, or breather	Check and replace
	Worn adjusting nut or input shaft	Replace nut, check input shaft
	Too much lubricant in gear case	Drain to correct level. Overfilling can severely damage gear case
	Hardware not properly torqued	Refer to torque chart when specific torques are not called out
	Defective shims on input shaft	Replace
	Using wrong viscosity oil in gear	Drain and discard oil. Refill with correct oil.
NOTE: A slight loss of oil (-160000) or grease (160001-) at the front breather is not abnormal during the first 50 hours of operation.		

EX,1284,2005,A -19-28AUG92

SPECIFICATIONS

Item	Measurement	Specifications
Reel Shaft	End Play	0.79 mm (1/32-in.)
Reel Assembly	Vertical Height (Tooth to Ground	8 mm (5/16-in.)
Reel Cam Follower	Follower Arm to Bracket	3 mm (1/8-in.)
Reel Drive Belt	Deflection	Parallel to reel idler arm
Reel Drive Chain	Deflection	3 mm (1/8-in.)

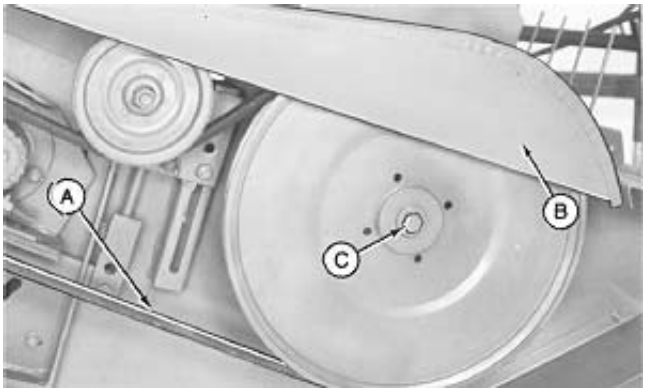
EX,2010,ZK -19-28AUG92

REEL REMOVAL

1. Remove tension in reel drive belt (A).

2. (1209—1219) Remove carriage bolt, loosen two cap screws and remove shield (B).

3. Remove cap screw (C), washer and sheave.



EX,2010,ZL -19-28AUG92

4. (1209—1219) Remove lubrication line (A).

5. (1209—1219) Remove reel adjusting nut (B) and washer.

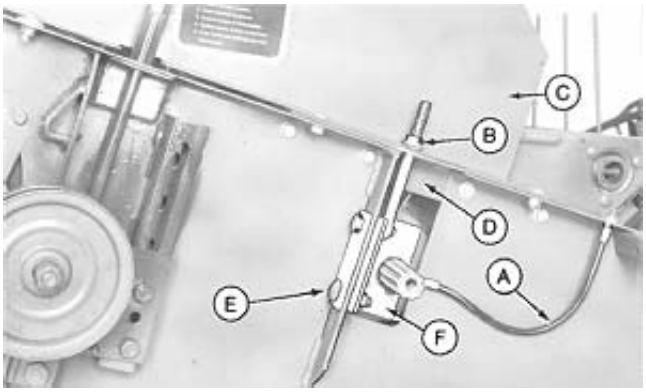
6. (1209—1219) Remove two carriage bolts and nuts, washer and shield (C).

7. Remove five carriage bolts and nuts (four carriage bolts and nuts 1207—1217) and side sheet reinforcement (D).

8. Attach hoist to reel.

9. Remove cap screw (adjusting eyebolt 1209—1219), cap screw and nut (E).

10. Remove reel mounting (F) and bearing.



E21483 -UN-10JUL92

A—Lubrication Line
B—Reel Adjusting Nut
C—Shield
D—Side Sheet Reinforcement
E—Cap Screw and Nut
F—Reel Mounting

EX,2010,ZM -19-28AUG92

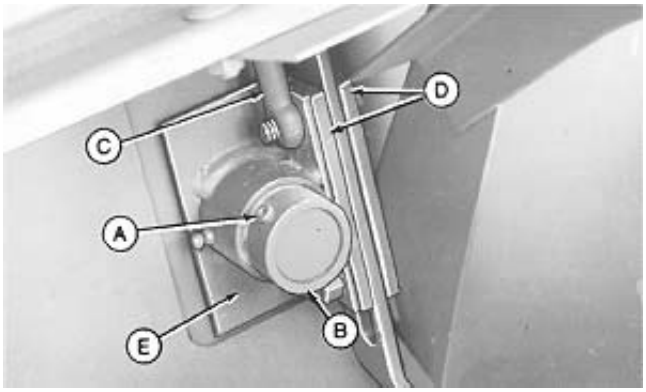
11. (1209—1219) Remove spring pin (A).

12. (1209—1219) Remove reel collar (B) and washers.

13. (1209—1219) Loosen eyebolt (C) and remove upper cap screw.

14. (1209—1219) Remove cap screw, nut and spacers (D).

15. (1209—1219) Remove reel mounting (E).



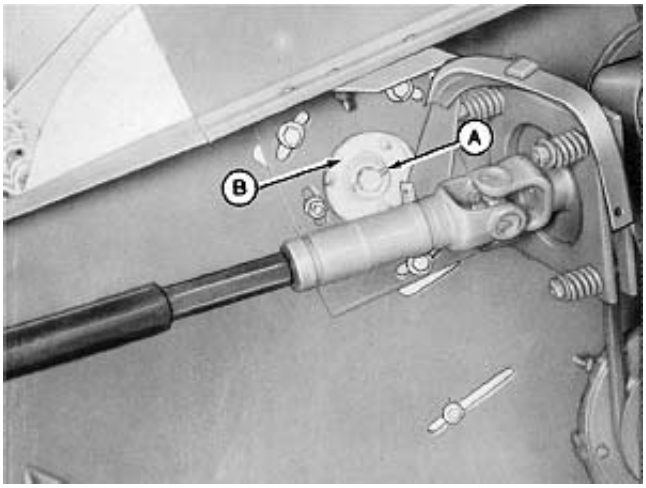
E21484 -UN-10JUL92

A—Spring Pin
B—Reel Collar
C—Eyebolt
D—Spacers
E—Reel Mounting

EX,2010,ZN -19-28AUG92

16. (1207—1217) Remove spring pin (A).

17. Remove carriage bolts, nuts and left-hand bearing (B).



E21485 -UN-10JUL92

EX,2010,ZO -19-28AUG92

18. Remove spacer washers.

NOTE: Record amount of washers removed. These are needed for alignment during assembly.

19. Carefully raise and remove reel, leaving reel cam in place.

E21486 -UN-10JUL92

EX,2010,ZP -19-28AUG92

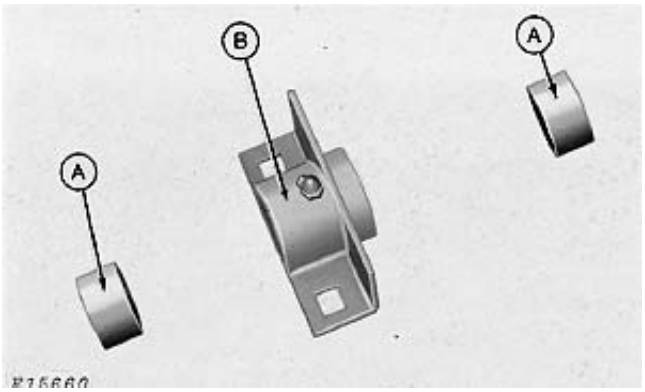
INSPECT REEL

1. Check reel mounting (B) and bushings (A) and if signs of wear are evident, press and replace.

2. Check cam follower bearings.

3. Inspect all remaining parts for damage or excessive wear.

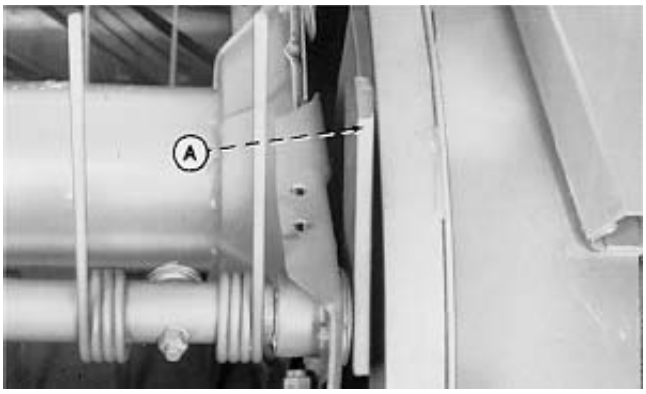
4. Check reel drive belt for fraying.



EX,2010,ZQ -19-28AUG92

INSTALL REEL

1. Install reel and engage cam followers (A) into cam in the “following” position.

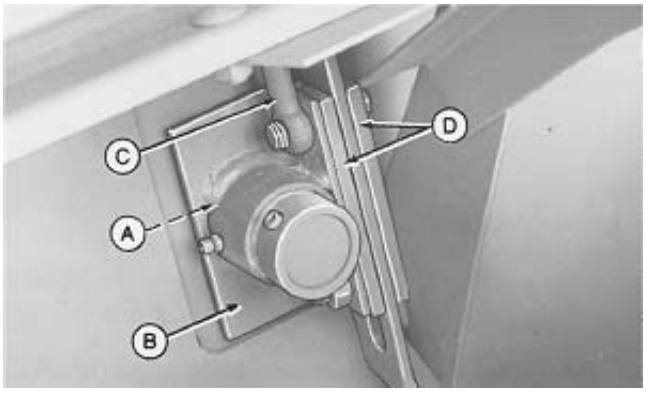


E05,2010,Y -19-28AUG92

2. Place spacer washers (A) on reel shaft.

NOTE: Install the same amount of washers removed during disassembly.

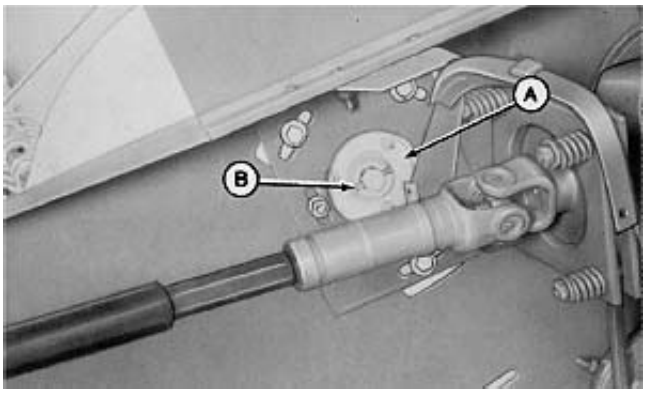
3. (1209—1219) Attach reel mounting (B), eyebolt (C), spacers (D) and secure using carriage bolt, nut and cap screw.



E05,2010,Z -19-28AUG92

4. (1207—1217) Install left-hand bearing (A) and secure using carriage bolts and nuts.

5. (1207—1217) Install spring pin (B).



E05,2010,AA -19-28AUG92