

# **R80 Rotary Disc Pull-Type Windrower**

**OPERATOR'S MANUAL**

Model Year 2010

Part #169053 \$15

This Manual contains instructions for “SAFETY”, “OPERATION”, and “MAINTENANCE/SERVICE” for your new MacDon Model R80 Rotary Disc Pull-Type Mower Conditioner.



**R80 PULL-TYPE ROTARY DISC MOWER CONDITIONER**

# 1 INTRODUCTION

This manual describes the operating and maintenance procedures for the MacDon Model R80 Pull-Type Rotary Disc Mower Conditioner. Your new MacDon rotary disc mower conditioner is designed to cut, condition, and lay in windrows a wide variety of grasses and hay crops.

**CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.**

Use this manual as your first source of information about the machine. If you follow the instructions given in this manual, your mower conditioner will work well for many years. A Parts Catalog is also supplied with your new header. If you require more detailed service information, a Service Manual is available from your dealer.

Use the Table of Contents and the Index to guide you to specific areas. Study the Table of Contents to familiarize yourself with how the material is organized.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your dealer if you need assistance, information, or additional copies of this manual. Store the Operator's Manual and the Parts Catalog in the plastic manual case inside the header right hand side drive compartment.

**RECORD THE SERIAL NUMBERS OF THE HEADER AND ARTICULATING POWER TONGUE (APT) IN THE SPACES BELOW.**

## HEADER SERIAL NUMBER:

\_\_\_\_\_

Serial Number plate is located on the top surface at the right hand end of the header.



## APT SERIAL NUMBER:

\_\_\_\_\_

Serial Number plate is located at the left front side of the APT.



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## SAFETY

## 2 SAFETY

### 2.1 SAFETY ALERT SYMBOL



This safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

This symbol means:

**ATTENTION!  
BECOME ALERT!  
YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

WHY IS SAFETY IMPORTANT TO YOU?

**ACCIDENTS DISABLE AND KILL  
ACCIDENTS COST  
ACCIDENTS CAN BE AVOIDED**

### 2.2 SIGNAL WORDS

Note the use of the signal words DANGER, WARNING, and CAUTION with safety messages. The appropriate signal word for each message has been selected using the following guidelines:



#### **DANGER**

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



#### **WARNING**

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. It is also used to alert against unsafe practices.



#### **CAUTION**

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used as a reminder of good safety practices.

### 2.3 SAFETY SIGNS

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from your Dealer Parts Department.

#### 2.3.1 Safety Sign Installation

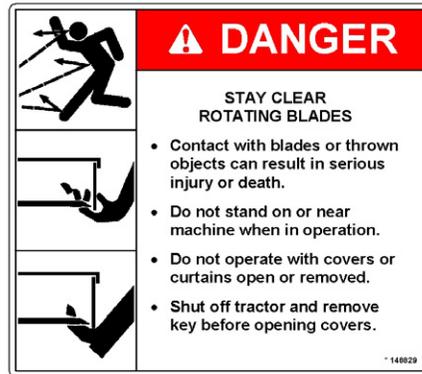
- a. Be sure the installation area is clean and dry.
- b. Decide on the exact location before you remove the decal backing paper.
- c. Remove the smaller portion of the split backing paper.
- d. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
- e. Small air pockets can be smoothed out or pricked with a pin.

# SAFETY

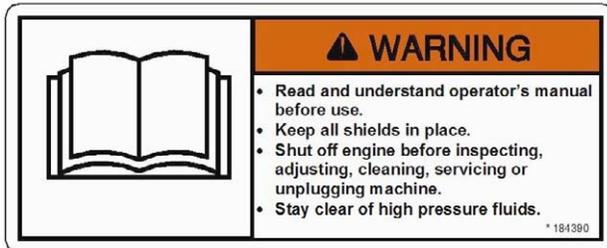
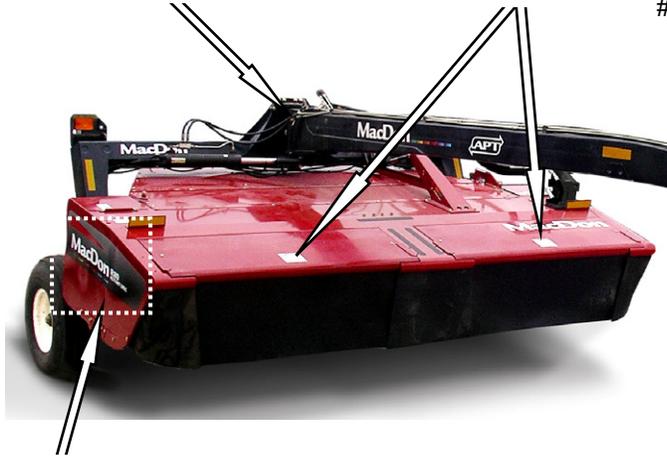
## 2.3.2 Safety Sign Locations



(BOTH SIDES) #115100



#148829



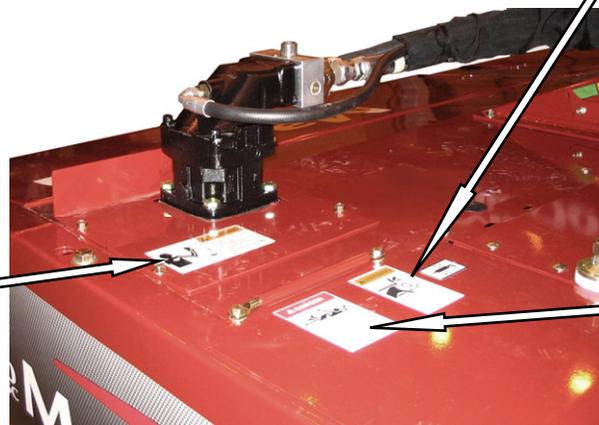
ON MANUAL CASE #184390



(BOTH SIDES) #32738



#134070



#170281

# SAFETY

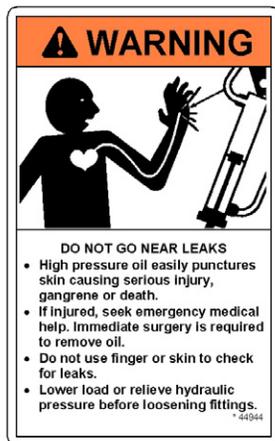
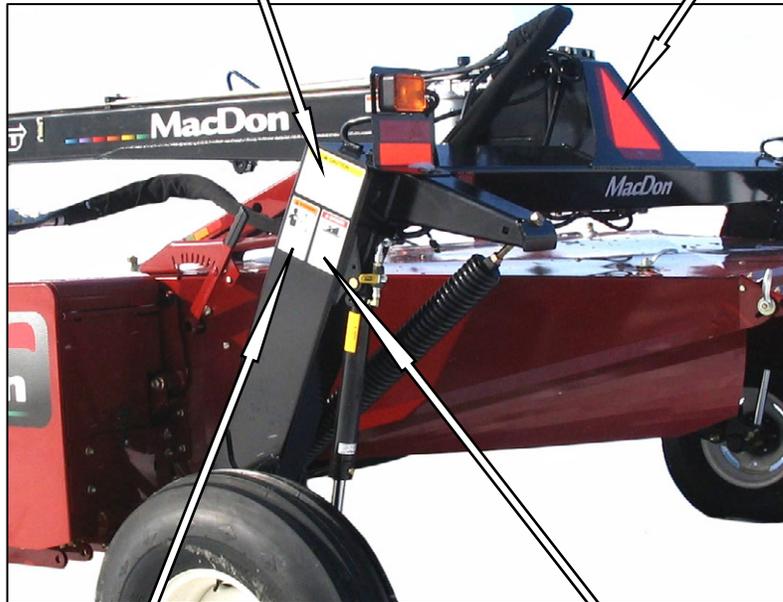
## Safety Sign Locations (cont'd)



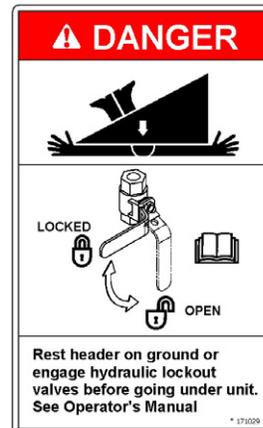
#109843



#115148



#44944



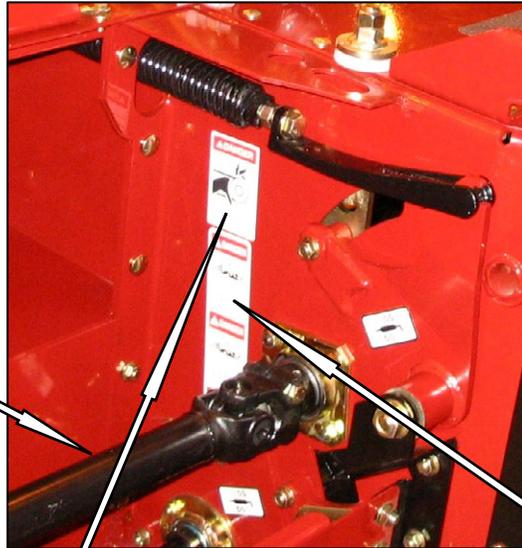
BOTH SIDES #171029

**SAFETY**

**Safety Sign Locations (cont'd)**



#30316



#36651

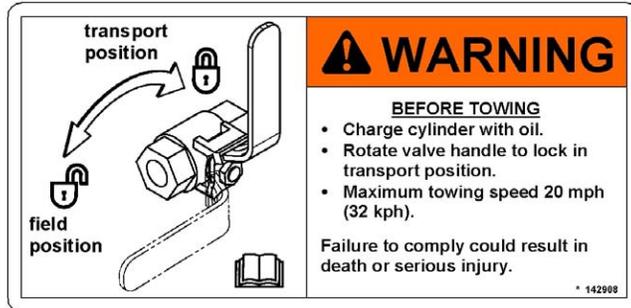


#142909

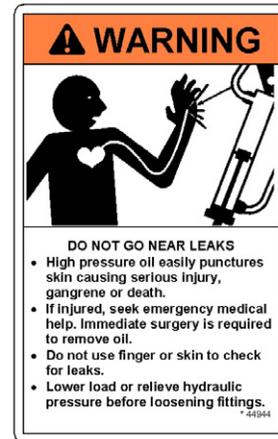


# SAFETY

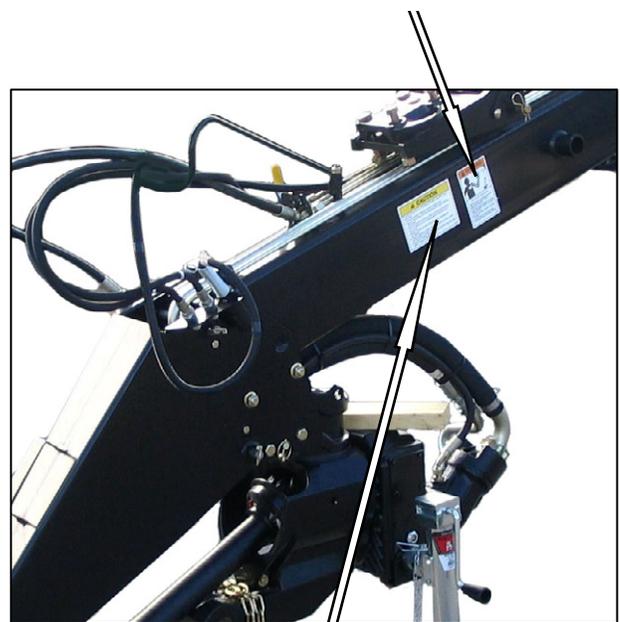
## Safety Sign Locations (cont'd)



#142908



#44944



#142912

## SAFETY

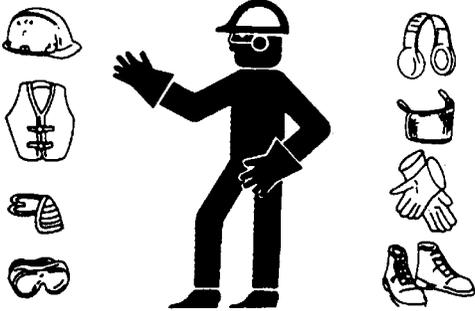
### 2.4 GENERAL SAFETY



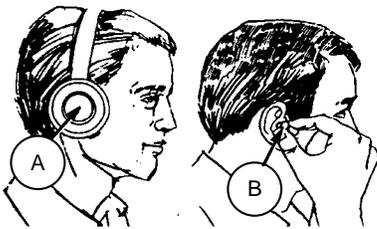
#### CAUTION

The following are general farm safety precautions that should be part of your operating procedure for all types of machinery.

- Protect yourself.



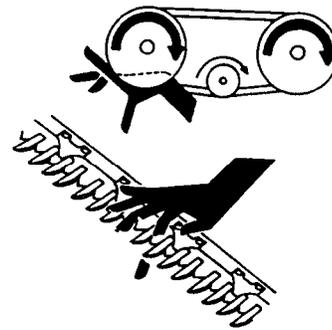
- When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that **COULD** be necessary for the job at hand. Don't take chances.
- You may need:
  - a hard hat.
  - protective shoes with slip resistant soles.
  - protective glasses or goggles.
  - heavy gloves.
  - wet weather gear.
  - respirator or filter mask.
  - hearing protection. Be aware that prolonged exposure to loud noise can cause impairment or loss of hearing. Wearing a suitable hearing protective device such as ear muffs (A) or ear plugs (B) protects against objectionable or loud noises.



- Provide a first-aid kit for use in case of emergencies.



- Keep a fire extinguisher on the machine. Be sure the extinguisher is properly maintained and be familiar with its proper use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when the operator is tired or in a hurry to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.
- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep hands, feet, clothing and hair away from moving parts. Never attempt to clear obstructions or objects from a machine while the engine is running.



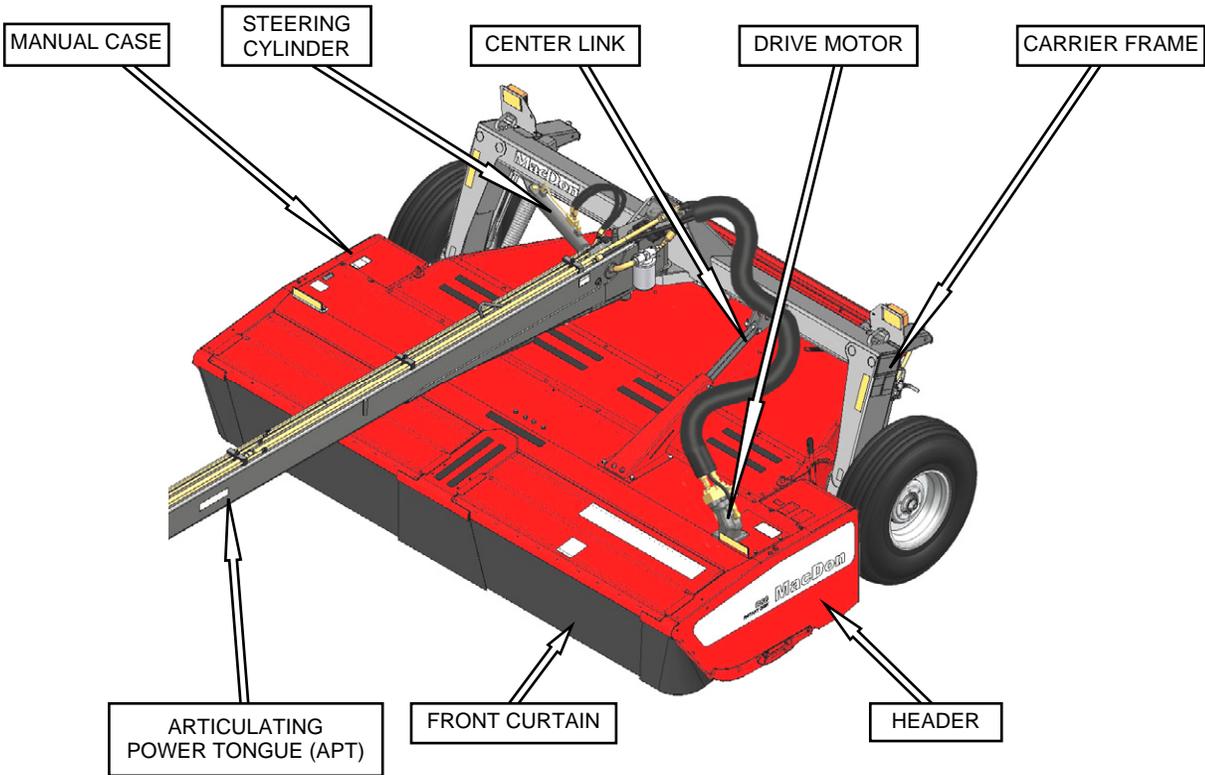
- Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
- Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.
- Keep machinery clean. Do not allow oil or grease to accumulate on service platforms, ladders or controls. Clean machines before storage.
- When storing machinery, cover sharp or extending components to prevent injury from accidental contact.

### 3 ACCRONYMS AND ABBREVIATIONS

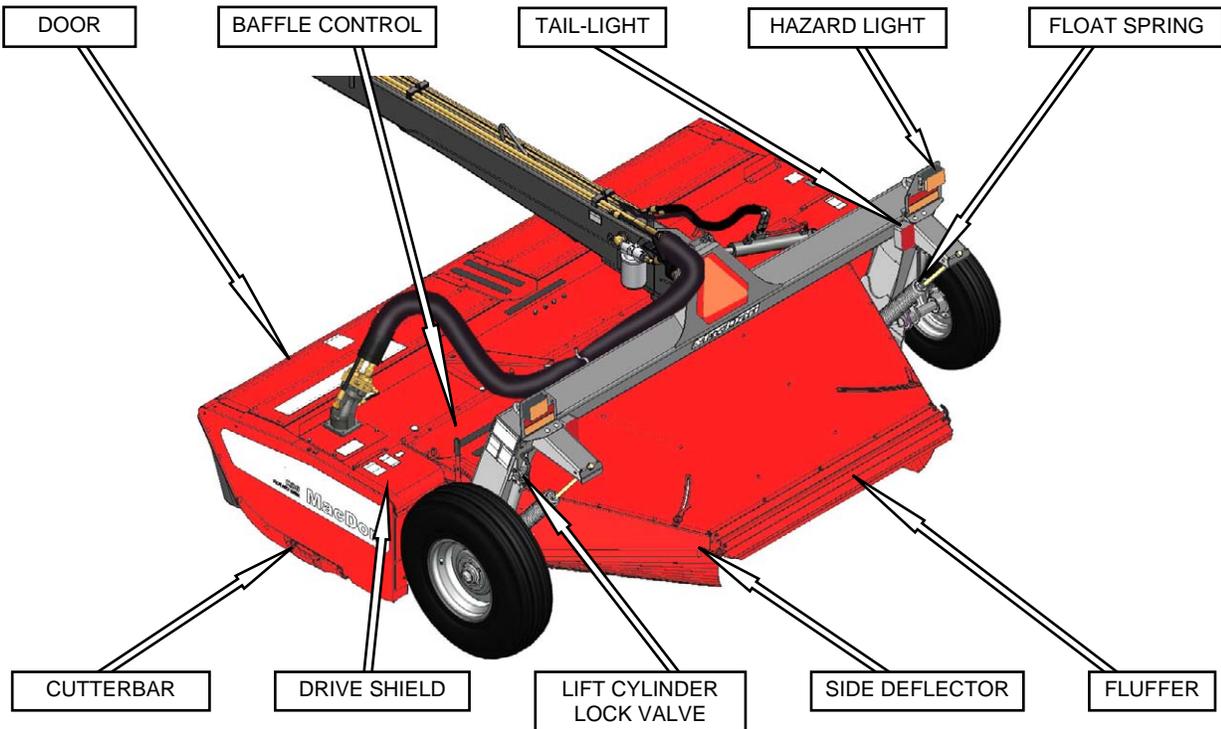
TERM	DEFINITION
API	American Petroleum Institute
APT	Articulating Power Tongue
ASTM	American Society Of Testing And Materials
C	Celsius
F	Fahrenheit
ft/min	feet per minute
ft/s	feet per second
gpm	U.S. gallons per minute
hp	horsepower
in. <sup>3</sup>	cubic inches
kPa	kilopascals
lbf	pounds force
lbf-ft or ft-lbf	pound feet or foot pounds
lbf-in or in-lbf	pound inches or inch pounds
mPa	megapascals
mph	miles per hour
N	newtons
N·m	newton meters
oz.	ounces
psi	pounds per square inch
PTO	Power Take-Off
rpm	Revolutions Per Minute
SAE	Society Of Automotive Engineers

# GENERAL

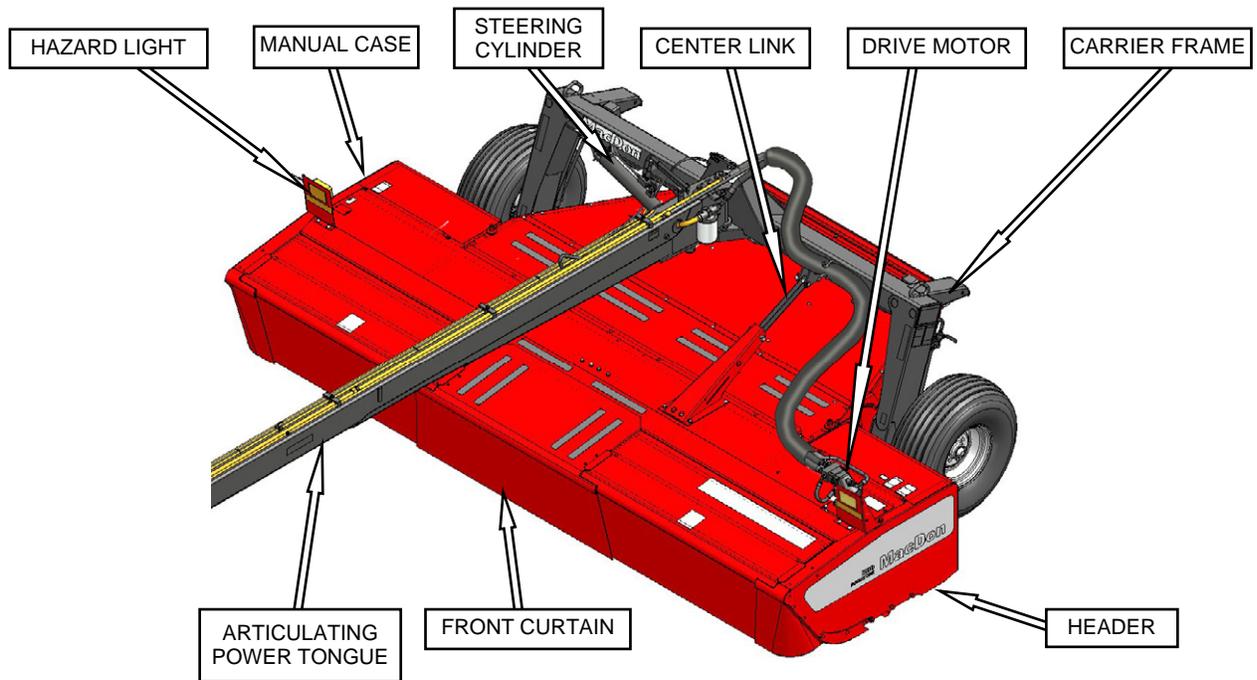
## 4 COMPONENT IDENTIFICATION



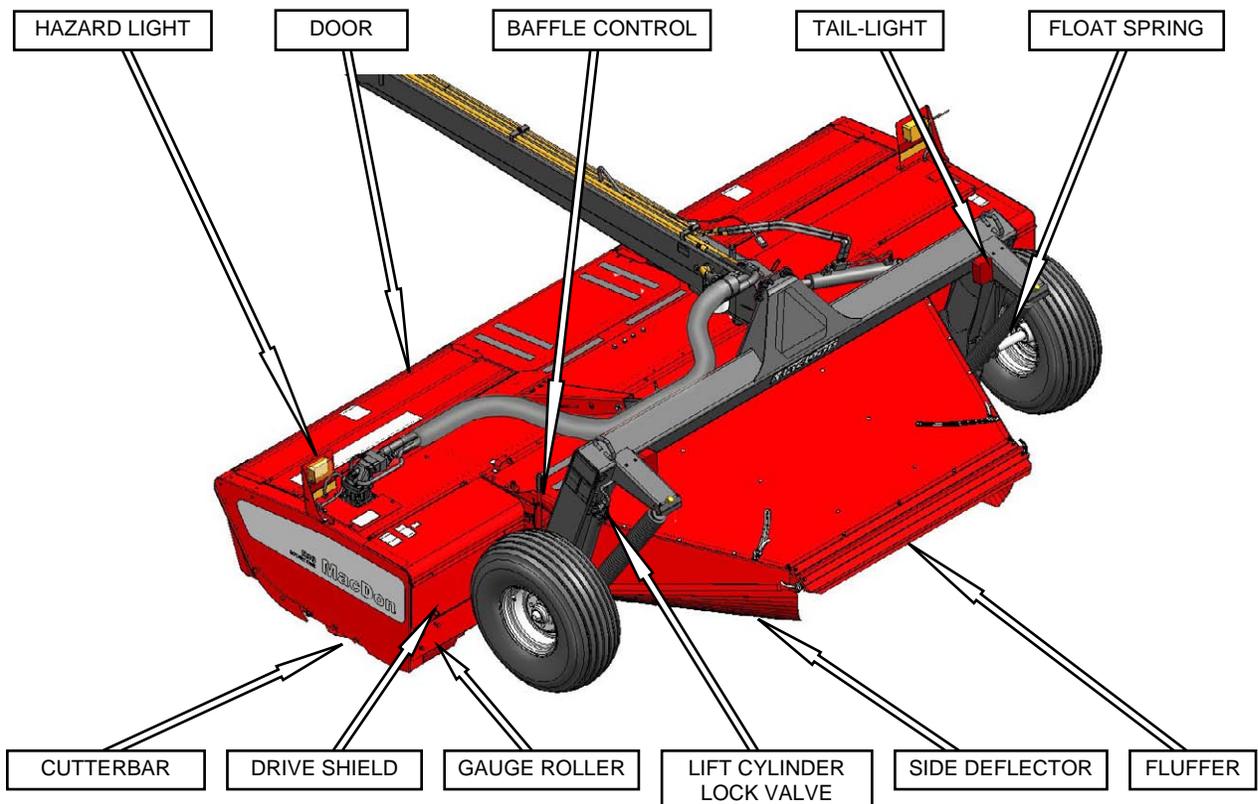
### 13 FT MODEL



# GENERAL

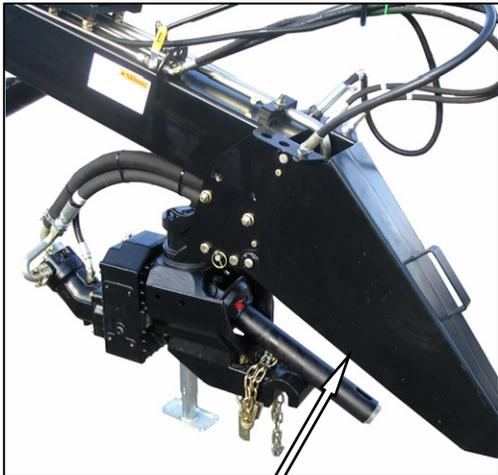
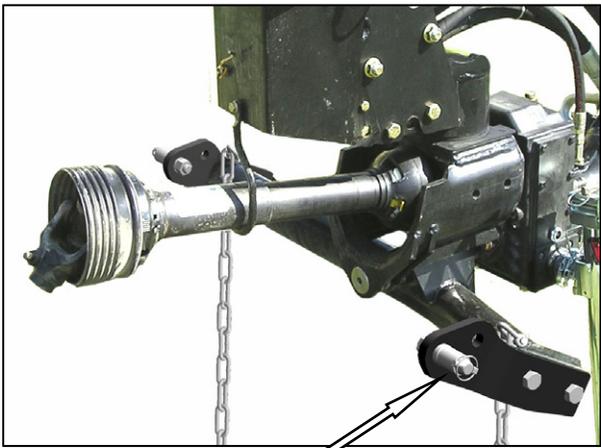
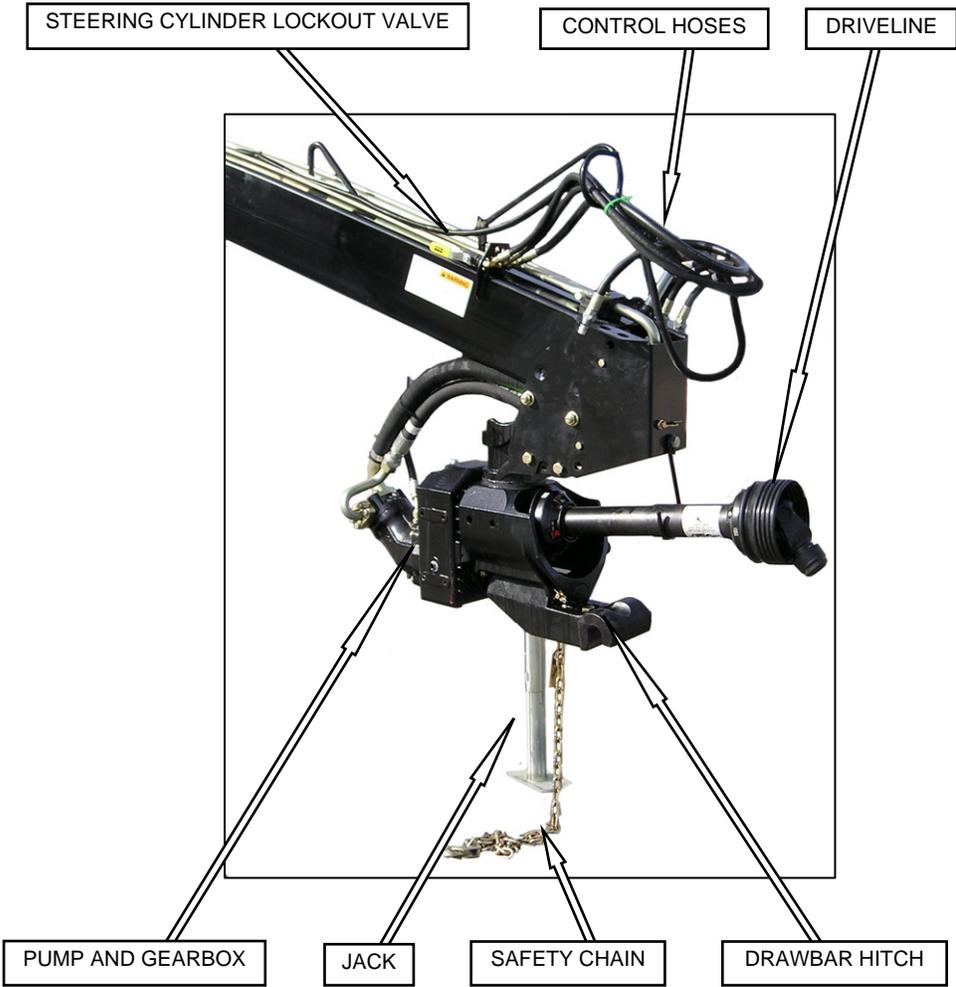


# 16 FT MODEL



# GENERAL

## ARTICULATING POWER TONGUE (APT)



## 13 & 16 FT MODELS

## SPECIFICATIONS

### 5 SPECIFICATIONS

HEADER MODEL		R80 – 13 FT	R80 – 16 FT
<b>FRAME &amp; STRUCTURE</b>			
Width		13 ft-0 in. (3952 mm)	16 ft-3 in. (4957 mm)
Weight (estimated)		6200 lb (2818 kg)	7130 lb (3240 kg)
Carrier		Pull-Type	
Lighting		Two Amber Transport and Two Red Tail-Lights	
Wheels/Tires		16 in. / 10.00x16 – 4 Rib	16 in. / 14Lx16.1 8 Ply
Tread Width		143 in. (3265 mm)	150 in. (3800 mm)
Manual Storage		Plastic Case In Header RH Drive Compartment	
<b>CUTTERBAR</b>			
Qty Of Cutting Discs		8	10
Knives Per Disc		Two 18 Deg. Bevel Down Reversible (11 Deg. Optional)	
Disc Speed		2530 rpm	
Knife Tip Speed Range		184 mph (82.9 m/s)	
Effective Cutting Width		12 ft-9.37 in. (3895 mm)	16 ft-0.87 in. (4899 mm)
Cutting Height		1 to 3 in. (25-75 mm) Without Lift Kit	1 to 3 in. (25-75 mm) Without Lift Kit
Oil Capacity (Maximum)		7 Pints (3.25 Litres)	9 Pints (4.25 litres)
Cutting Angle Range		0-8 Deg Below Horizontal	
Geartrain Protection		Shearable Disc Spindles	
Deflectors		2 Hourglass Converging	6 Hourglass Converging
<b>DRIVES</b>			
Tractor PTO		1.375 in. (35 mm) Dia. 21 Spline or 1.75 in. (44 mm) Dia. 20 Spline	
Connections		Quick Attachment Coupling	
Hydraulic Pump		Step-Up Gearbox to 4.9 cu in. (80 cc) Pump	
Hydraulic Motor		3.7 cu in. (60 cc) To Gearbox	
Power Developed (max)		143 hp (107 kW)	
Normal Operating Pressure		2000 psi (13.71 MPa)	
<b>CONDITIONER</b>			
Drive		Bevel Gearbox To Belt Driven Enclosed Timing Gearbox And Driveline.	
Bevel Gearbox Lub. Capacity		0.9 Pints (0.4 Litres)	
Roll Type		Intermeshing Steel Bars	
Roll Diameter	Main	9.17 in. (233 mm)/6.62 in. (168 mm) OD Tube	
	Lifting	9.21 in. (234 mm)/6.62 in. (168 mm) OD Tube	
Roll Length	Main	118 in. (3000 mm)	
	Lifting	118 in. (3000 mm)	
Roll Speed	Main	1035 rpm	
	Lifting	690 rpm	
Swath Width		36-102 in. (915-2540 mm)	
Forming Shields		Header Mounted Adjustable Baffle, Fixed Side Deflectors, and Header Mounted Adjustable Forming Shield System.	

*(continued next page)*

## SPECIFICATIONS

HEADER MODEL		R80 – 13 FT	R80 – 16 FT
<b>GROUND SPEED</b>			
Recommended Cutting		8-11 mph (13-18 km/h)	
Recommended Transport		20 mph (30 km/h)	
<b>TRACTOR REQUIREMENTS</b>			
PTO Power - Minimum		120 hp (90 kW)	150 hp (112 kW)
Hydraulics	Pressure	2000 psi (13.71 MPa)	
	Controls	Two Double-Acting / One Single-Acting	

- NOTES:
1. Specifications and design are subject to change without notice or obligation to revise previously sold units.
  2. Tractor must be equipped with a cab.

## OPERATION

### 6 OPERATION

#### 6.1 OWNER/OPERATOR RESPONSIBILITIES



#### CAUTION

- It is your responsibility to read and understand this manual completely before operating the mower conditioner. Contact your dealer if an instruction is not clear to you.
- Follow all safety messages in the manual and on safety signs on the machine.
- Remember that YOU are the key to safety. Good safety practices protect you and the people around you.
- Before allowing anyone to operate the mower conditioner, for however short a time or distance, make sure they have been instructed in its safe and proper use.
- Review the manual and all safety related items with all operators annually.
- Be alert for other operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.
- Do not modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.
- The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.
- Ensure that the tractor is properly equipped to safely operate the mower conditioner. This may include adding ballast according to Tractor Operator's Manual requirements for attachments of this size and mass.

#### 6.2 OPERATIONAL SAFETY

Follow these safety precautions:



#### CAUTION

- Follow all safety and operational instructions given in your tractor Operator's Manual. If you do not have a tractor manual, get one from your dealer and read it thoroughly.
- Never attempt to start the tractor engine or operate the mower conditioner except from the tractor seat.
- Check the operation of all controls in a safe clear area before starting work.
- Do not allow riders on tractor or mower conditioner.
- Never start or move the machine until you are sure all bystanders have cleared the area.
- Avoid travelling over loose fill, rocks, ditches or holes.
- Drive slowly through gates and doorways.
- If cutting ditch banks, use extreme caution. If the mower conditioner hits an obstruction, the front of the tractor will usually swerve towards the ditch.
- When working on inclines, travel uphill or downhill when possible. Be sure to keep tractor transmission in gear when travelling downhill.
- Never attempt to get on or off a moving tractor.
- Do not get off the tractor while the mower conditioner is in operation.
- Stop tractor engine and remove key before adjusting or removing plugged material from the machine. A child or even a pet could engage the drive.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure:
  - engage tractor brake
  - disengage PTO
  - turn off engine and remove key
  - wait for all movement to stop
  - dismount and close lift cylinder valves before inspecting raised machine.

*(continued next page)*

## OPERATION

- Operate only in daylight or good artificial light.
- Keep everyone several hundred feet away from your operation. Ensure bystanders are never in line with the front or rear of the machine. Stones or other foreign objects can be ejected from either end with force.
- Extreme care must be exercised to avoid injury from thrown objects. Do not, under any circumstances, operate the mower-conditioner when other people are in the vicinity. Stones and other objects can be thrown great distances by the rotating cutting blades.



- The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the mower-conditioner. Replace the curtains if they should become worn or damaged.

# OPERATION

## 6.3 TRACTOR SETUP

### 6.3.1 Tractor Requirements

R80 MODEL	MIN POWER HP (kW)	MINIMUM DRAWBAR CAPACITY	MINIMUM HYDRAULICS psi (MPa)
13 FT	120 (90)	As per ASAE	2000 (13.7)
16 FT	150 (112)	As per ASAE	2000 (13.7)

#### NOTE

Tractor must be equipped with a seven terminal outlet to supply power to the mower conditioner's hazard lights.

### 6.3.2 Drawbar Adjustment

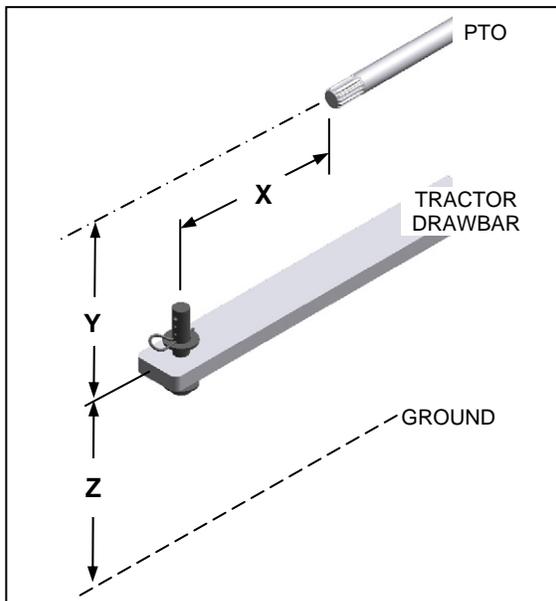


#### CAUTION

Shut off tractor, engage parking brake and remove key before working around hitch.

Adjust tractor drawbar to meet ASAE Standard specifications as listed below.

DIMENSION	1000 RPM PTO	
	1.37 INCH DIA.	1.75 INCH DIA.
X	16 in. (406 mm)	20 in. (508 mm)
Y	6-12 in. (152-305 mm) 8 in. (203 mm) Recommended	
Z	13-17 in. (330-432 mm) 16 in. (406 mm) Recommended	



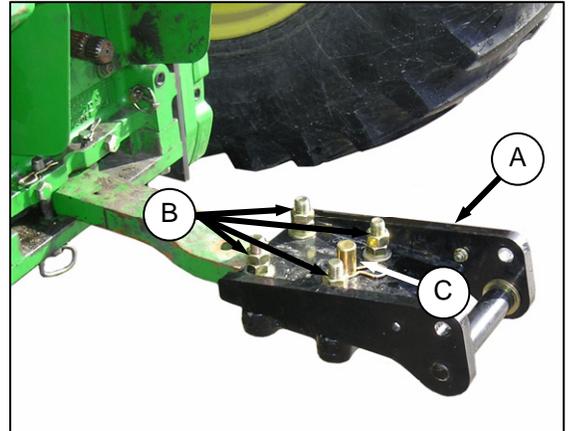
### 6.3.3 Drawbar Hitch Set-Up



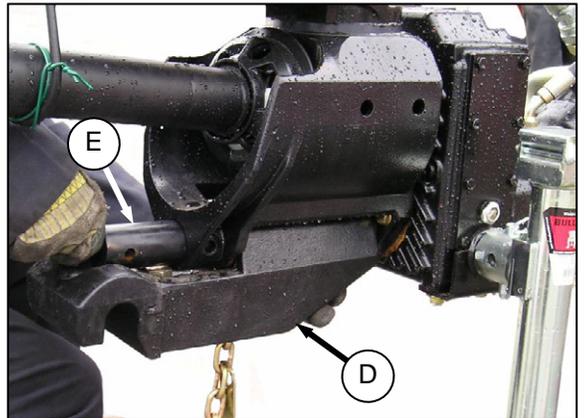
#### CAUTION

Shut off tractor, engage parking brake and remove key before working around hitch.

- Secure the tractor drawbar so the hitch-pin hole is directly below the driveline.



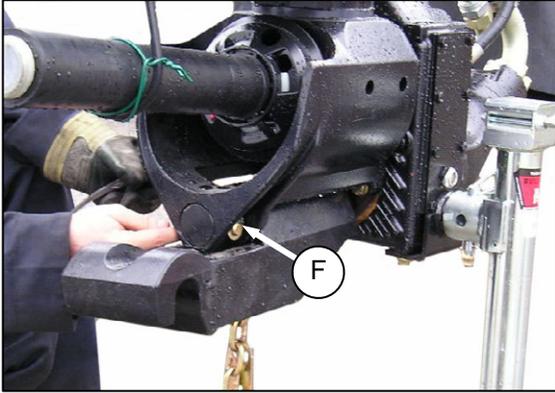
- Loosen bolts (B) on extension assembly (A) and slide onto drawbar.
- Install pin (C) through drawbar and extension from underside and secure with hairpin.
- Gradually tighten the four bolts to 265 ft-lbf (359 N-m).



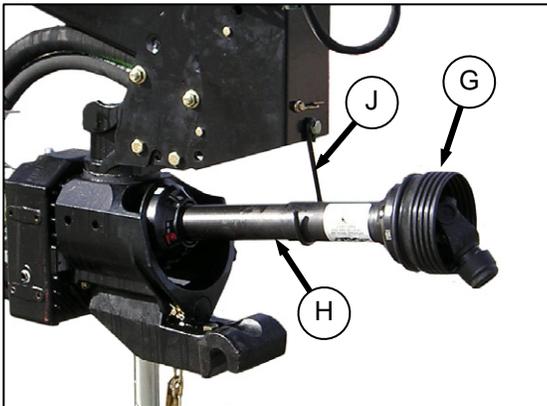
- Attach the swivel APT member (D) with pin (E) onto the APT.

(continued next page)

## OPERATION

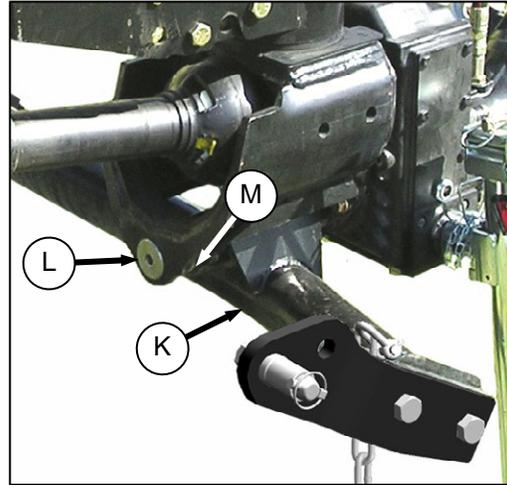


- f. Secure pin with clevis pin (F), washers, and cotter pin.

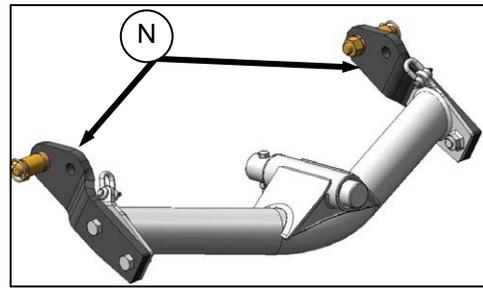


- g. Assemble PTO driveline male half (G) onto PTO shaft (H) on APT. Push male half so that PTO shaft is at its fully compressed length.  
h. Locate PTO shaft in hook (J).

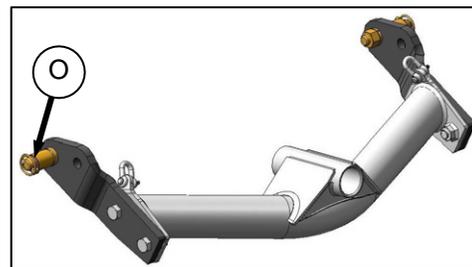
### 6.3.4 3 Point Hitch (Cat. II, III, or IIIN) Set-Up



- a. Attach the 3 point hitch yoke (K) to the APT with pin (L). The installation is similar to that described in the previous section.  
b. Secure pin (L) with clevis pin (M), washers, and cotter pin.  
c. The arms (N) on APT yoke can be set up to suit the tractor hitch arms:



CATEGORY II or IIIN

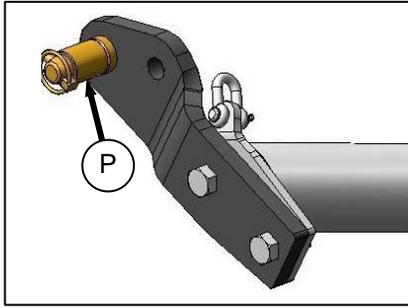


CATEGORY III

1. Remove pins (O) from arms.
2. Remove arms (N) from APT yoke.
3. Re-install arms on opposite ends of yoke as shown.
4. Re-install pins (O) in arms.

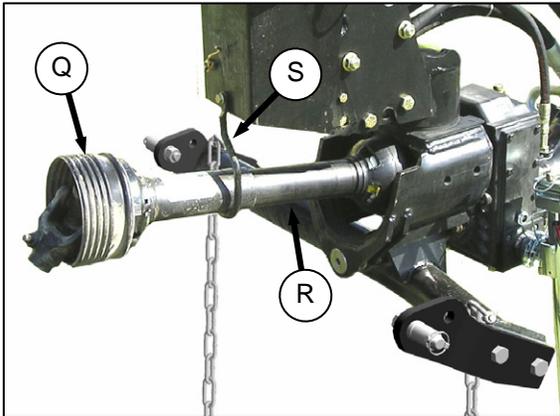
*(continued next page)*

## OPERATION



### NOTE

*Bushings (P) on pins can be removed to suit hole size in tractor hitch arms.*



- d. Assemble PTO driveline male half (Q) onto PTO shaft (R) on APT. Push male half so that PTO shaft is at its fully compressed length.
- e. Locate PTO shaft in hook (S).

## OPERATION

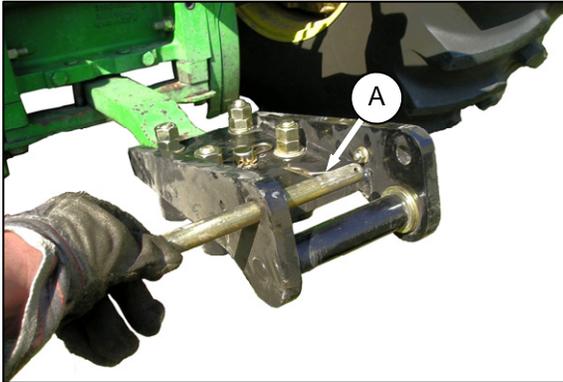
### 6.4 MOWER CONDITIONER/ TRACTOR HOOK-UP

#### 6.4.1 Drawbar Hook-Up

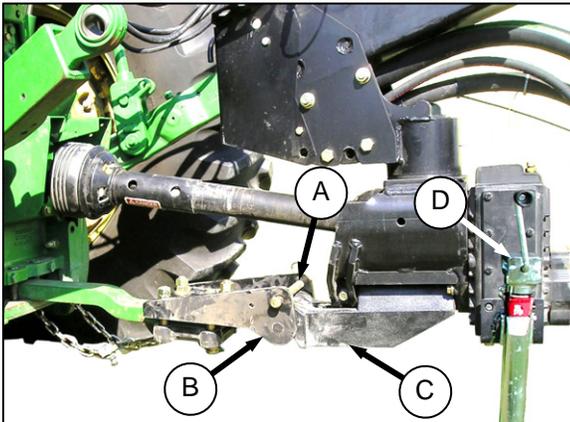


#### CAUTION

Shut off tractor, engage parking brake and remove key before working around hitch.



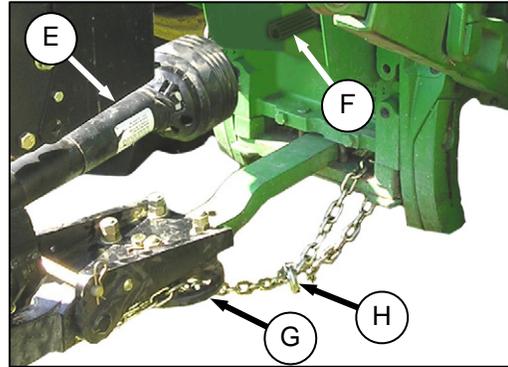
- a. Remove pin (A).



- b. Position tractor to align drawbar extension (B) with arm (C) on mower conditioner.  
c. Lower jack (D) to engage arm (C) on drawbar extension (B).  
d. Install hitch-pin (A) and secure with hairpin.

#### IMPORTANT

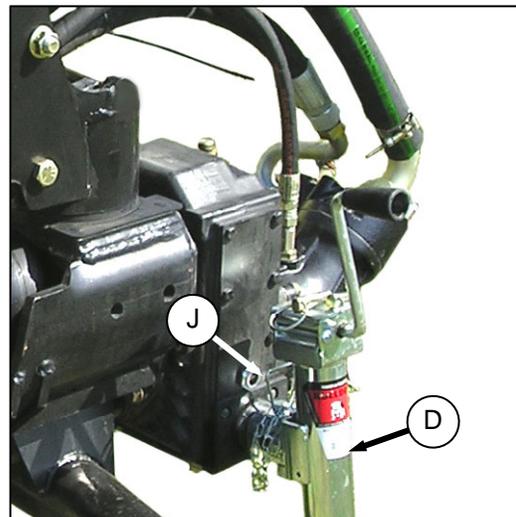
If the tractor has a three-point hitch, lower the lower links as low as possible to prevent damage to articulating power tongue (APT).



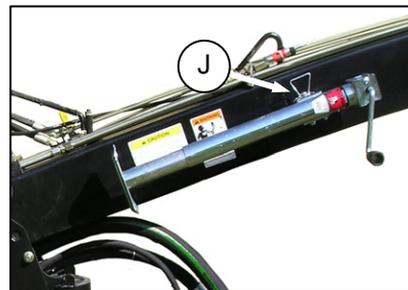
- e. Attach driveline (E) to tractor PTO shaft as follows:  
1. Position driveline onto tractor PTO shaft (F).  
1. Pull back collar on driveshaft and push driveshaft until it locks. Release collar.  
f. Route safety chain from mower conditioner through chain support (G), around drawbar support and lock the hook (H) on chain.

#### IMPORTANT

Adjust chain length to remove all slack except what is needed for turns.



- g. Raise jack (D), pull pin (J) and move jack to storage position on side of APT.  
h. Secure jack with pin (J).



- i. Proceed to Step 6.4.3 Hydraulic Connections

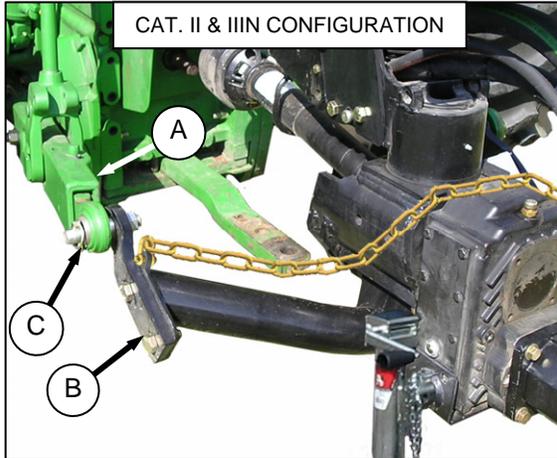
## OPERATION

### 6.4.2 3 Point Hitch (Cat. II, III, or IIIN) Hook-Up

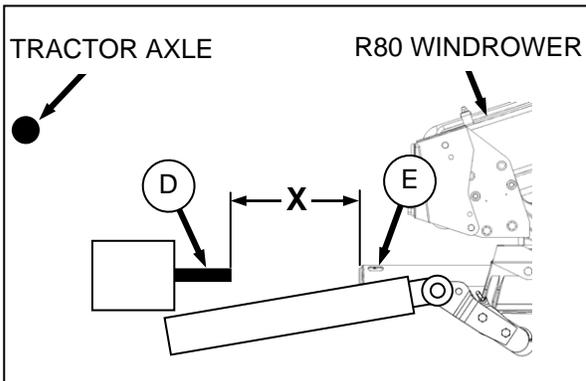


#### CAUTION

**Shut off tractor, engage parking brake and remove key before working around hitch.**

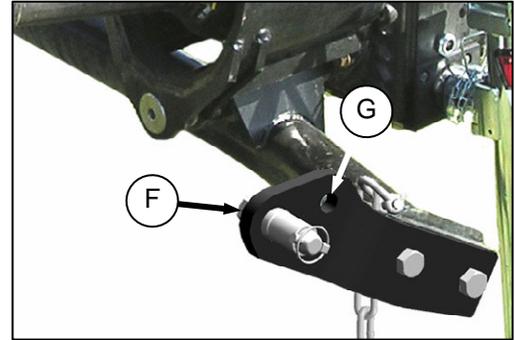


- a. Position tractor and align tractor hitch arms (A) with windrower arms (B). Use the jack to adjust height of windrower APT.
- b. Secure arms with lynch pins (C).
- c. Install anti-sway bars on tractor hitch to stabilize lateral movement of hitch arms (A). Refer to your tractor operator's manual.

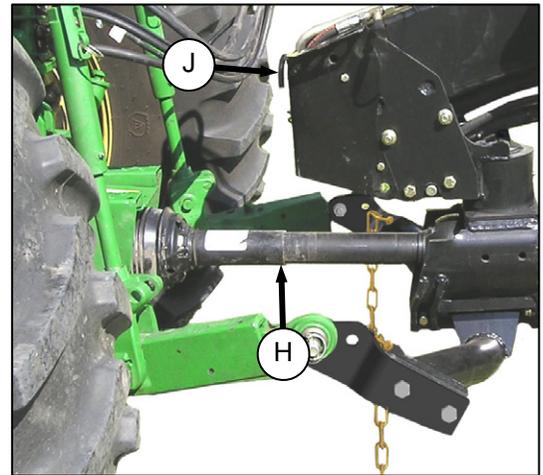


- d. Check distance 'X' between tractor PTO shaft (D) and implement input shaft (E) (without the front half of the driveline attached).
- e. The measurement must not exceed the following:

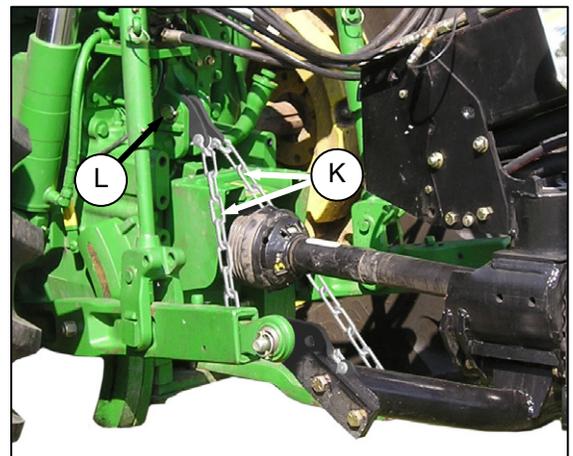
DRIVELINE SHAFT SIZE	DISTANCE 'X'
1.375 in. (34 mm)	14 in. (356 mm)
1.75 in. (43 mm)	17 in. (432 mm)



- f. Change locations of pins (F) in APT arms to hole (G) to locate implement closer to tractor if necessary.



- g. Position driveshaft (H) onto tractor PTO shaft. Driveline should be approximately level.
- h. Pull back collar on driveshaft and push driveshaft until it locks. Release collar.
- i. Rotate driveline storage hook (J) to upward position.



- j. Attach down-stop chains (K) to pin (L) on tractor.

*(continued next page)*

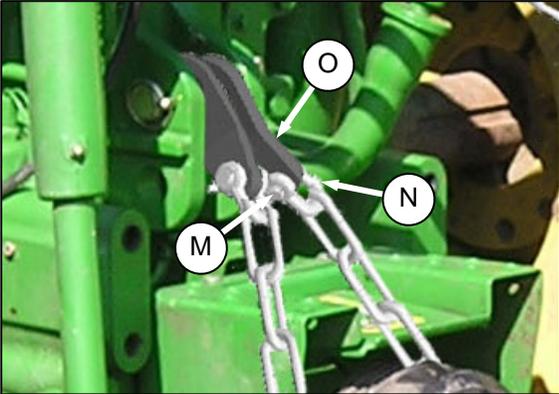
## OPERATION



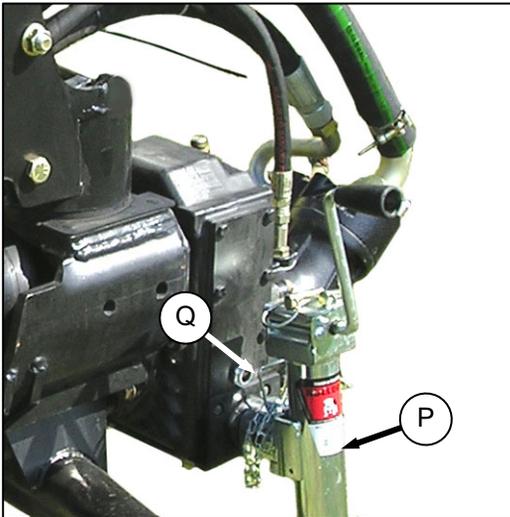
### CAUTION

The downstop chains limit the downward travel of the 3-point hitch lifting arms to prevent damaging the PTO driveline on the mower-conditioner. Ensure chains are attached when operating the mower-conditioner.

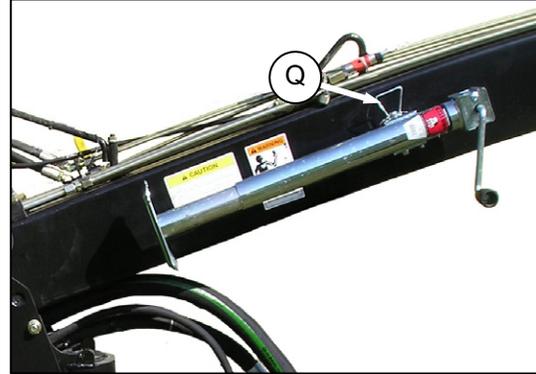
- k. Adjust chain length as required by relocating end link at tractor end of chain as follows:



1. Remove cotter pin and clevis pin (M) to disconnect open link (N) and end link (O).
2. Relocate open link (N) to new location on chain and re-attach to end link (O) with clevis pin (M). Chains do not need to be tight.
3. Secure clevis pin with cotter pin.



- l. Raise jack (P), pull pin (Q), and move jack to storage position on side of APT.



- m. Secure jack with pin (Q).

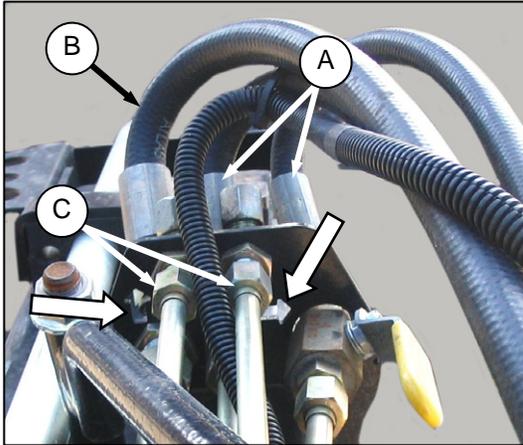
# OPERATION

## 6.4.3 Hydraulic Connections



### WARNING

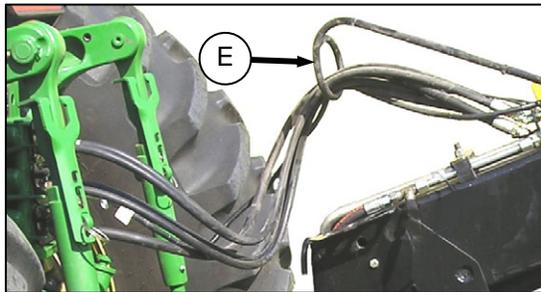
Do not use remote hydraulic system pressures over 3000 psi (20684 kPa). Check your tractor manual for remote system pressure.



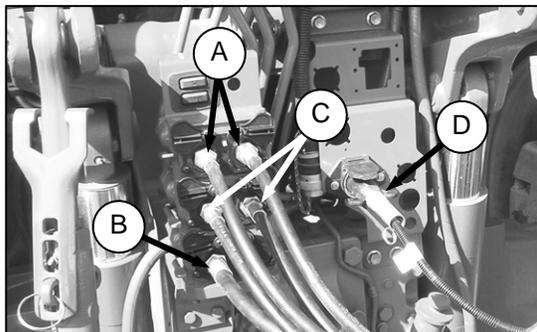
SYSTEM	HOSE	TRACTOR HYDRAULICS
Steering	A (2 Hoses)	Control 1
Lift	B (1 Hose)	Control 2
Header Tilt	C (2 Hoses)	Control 3

#### NOTE

Arrows cut into plate indicate system for hoses. LIFT ↑ STEERING ↔



- a. Ensure hoses are routed through guide (E) to provide proper hose arc as shown.



- b. Connect two **steering** cylinder hoses (A) as follows:

CONTROL LEVER POSITION	CYLINDER MOVEMENT	MOWER-CONDITIONER DIRECTION
Forward	Extend	Right
Backward	Retract	Left

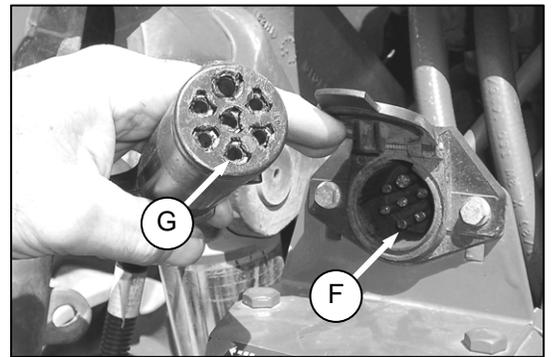
- c. Connect one **lift** cylinder hose (B) as follows:

CONTROL LEVER POSITION	CYLINDER MOVEMENT	HEADER MOVEMENT
Forward	Retract	Lower
Backward	Extend	Raise

- d. Connect two **header tilt** cylinder hoses (C) as follows: (Not required with mechanical center link).

CONTROL LEVER POSITION	CYLINDER MOVEMENT	HEADER MOVEMENT
Forward	Retract	Lower
Backward	Extend	Raise

- e. Connect the mower-conditioner wiring harness connector (D) to tractor. The connector is designed to fit tractors equipped with a round 7-pin receptacle (SAE J560).



#### IMPORTANT

Older model tractors will have Pin #4 (F) energized as an accessory circuit. The R80 mower conditioner uses this pin position (G) for brake lights. Check that Pin #4 in the tractor receptacle is not constantly energized – see tractor's operator's manual and remove the appropriate fuse if required.

## OPERATION

### 6.5 MOWER CONDITIONER/ TRACTOR UNHOOK

#### 6.5.1 Drawbar Unhook

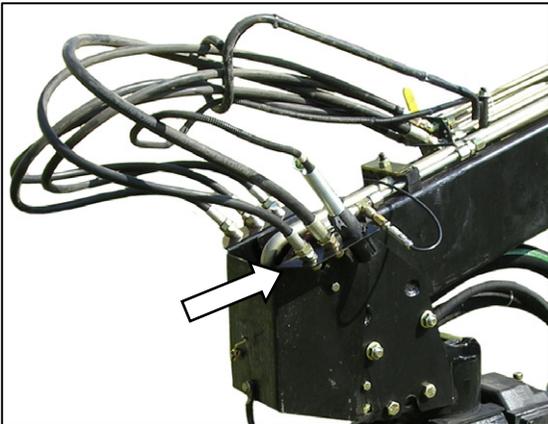


#### CAUTION

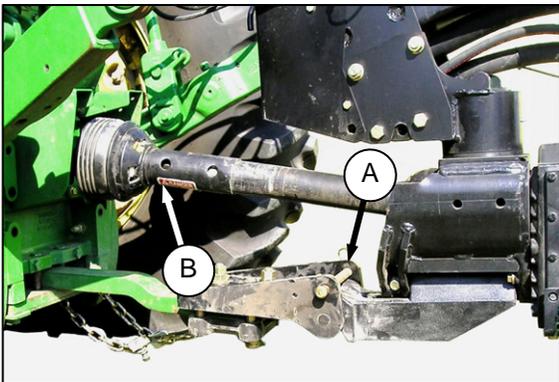
To prevent accidental movement of tractor, shut off engine, engage parking brake, and remove key.

To maintain stability, always lower the machine completely. Block mower conditioner wheels before detaching from tractor.

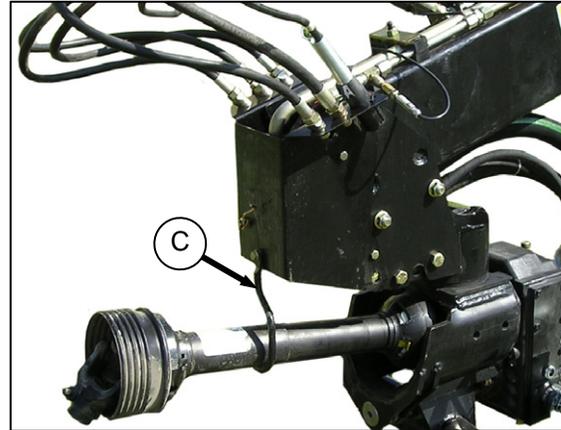
- Park machine on flat level surface.
- Lower header onto blocks or leave header raised. Engage lift cylinder lock-out valves if leaving in raised position.
- Move remote cylinder control valve lever back and forth to relieve stored hydraulic pressure.



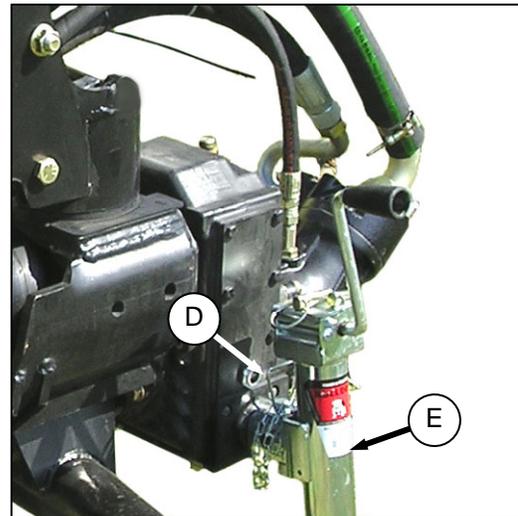
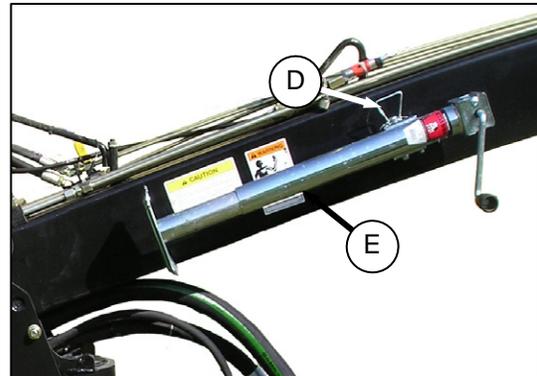
- Disconnect hydraulic hoses and electrical harness. Store hose ends in holes at front of APT as shown.



- Remove pin (A).
- Pull back collar on driveline (B) and slide coupler off tractor PTO shaft and rest driveline on drawbar.



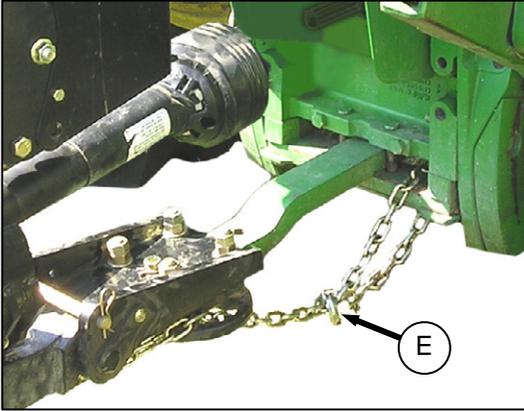
- Rotate hook (C) to lower position and position driveline in hook.



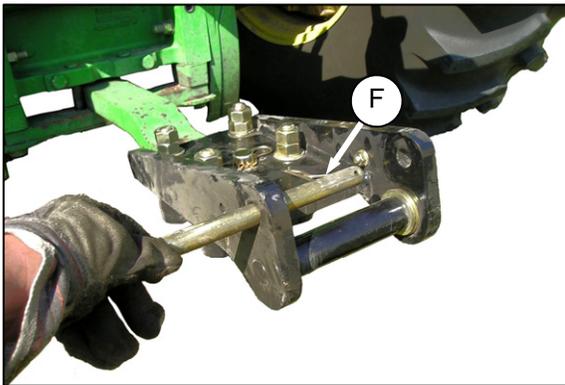
- Pull pin (D) securing jack (E) and move to working position at front of APT. Secure jack with pin (D).
- Lower jack to take weight off tractor drawbar.

*(continued next page)*

## OPERATION



- j. Remove chain lock (E) and unhook safety chain from tractor. Wrap chain around APT for storage.
- k. Lower jack to raise APT clear of drawbar.
- l. Slowly drive tractor away from mower conditioner.



- m. Replace hitch pin (F) and secure with hairpin.

### 6.5.2 3-Point Hitch Unhook

- a. Park machine on flat level surface.
- b. Lower header onto blocks or leave header raised. Engage lift cylinder lock-out valves if leaving in raised position.
- c. If necessary, raise 3-point hitch arms to release tension on downstop chains.

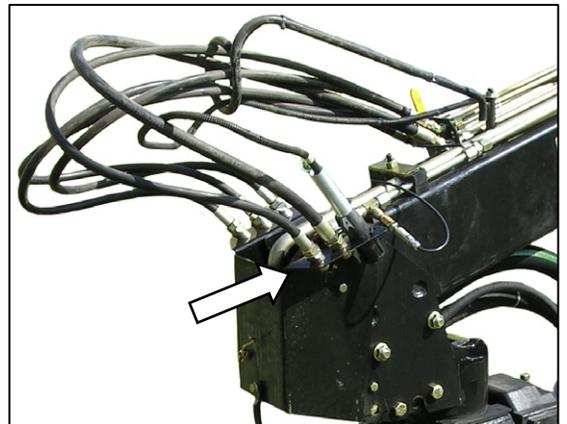


### CAUTION

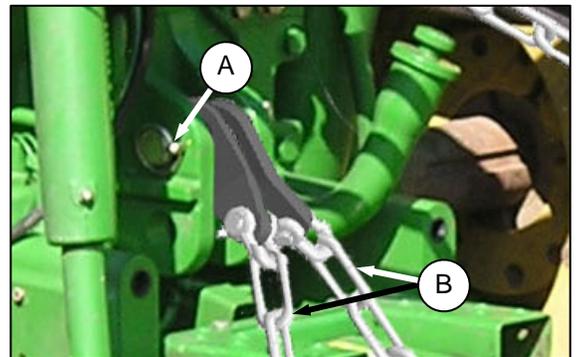
To prevent accidental movement of tractor, shut off engine, engage parking brake, and remove key.

To maintain stability, always lower the machine completely. Block mower conditioner wheels before detaching from tractor.

- d. Shut off engine and remove key.
- e. Move remote cylinder control valve lever back and forth to relieve stored hydraulic pressure.



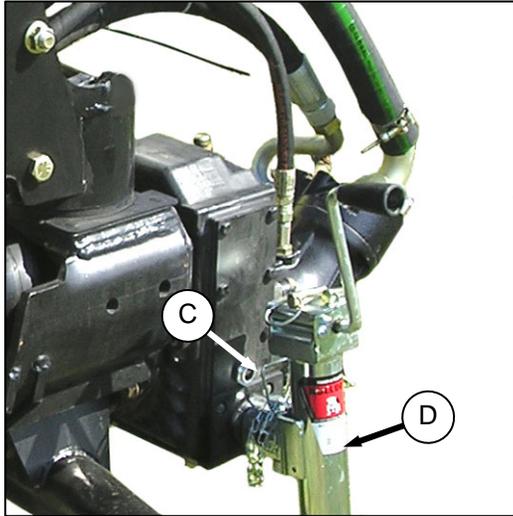
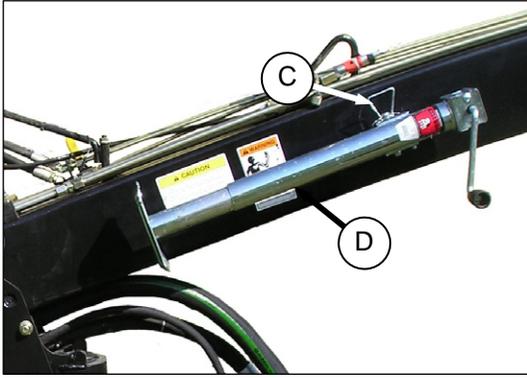
- f. Disconnect hydraulic hoses and electrical harness. Store hose ends in holes at front of APT as shown.



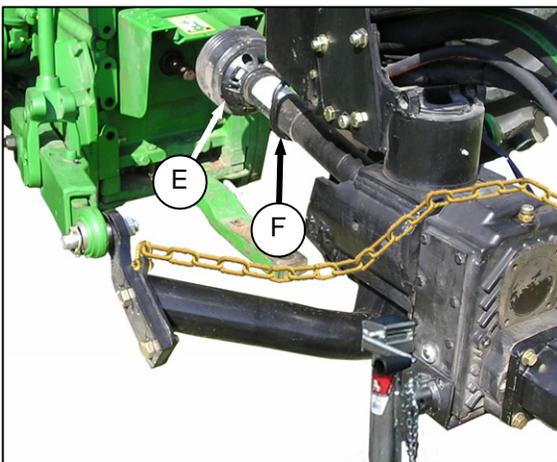
- g. Remove pin (A), and remove down-stop chains (B) from tractor and store on APT yoke.

*(continued next page)*

## OPERATION

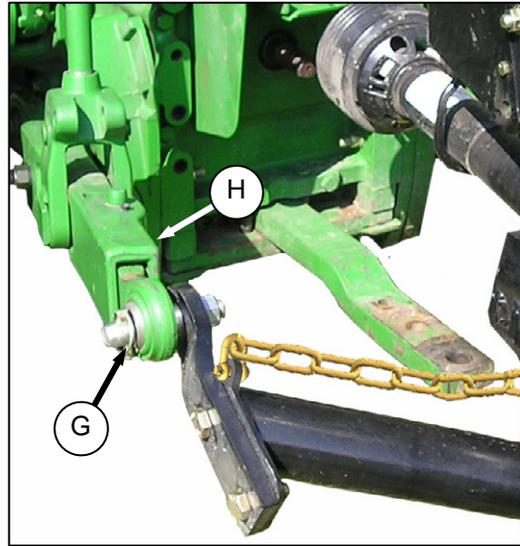


- h. Pull pin (C) securing jack (D) and move to working position at front of APT. Secure jack with pin (C).
- i. Pull back collar on driveline (E) and slide coupler off tractor PTO shaft.



- j. Rotate hook (F) to lower position and place driveline in hook.

- k. Lower jack to raise APT and take weight off hitch arms.



- l. Remove lynch pins (G) and swing hitch arms (H) clear of APT.
- m. Slowly drive tractor away from mower conditioner.

## OPERATION

### 6.6 BREAK-IN PERIOD

- a. After attaching mower conditioner to tractor for the first time, operate the machine slowly for 5 minutes, watching and listening FROM THE TRACTOR SEAT for binding or interfering parts.

#### NOTE

*Until you become familiar with the sound and feel of your new mower conditioner, be extra alert and attentive.*



### CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off tractor, engage parking brake and remove key.

- b. Perform the items specified in to paragraph 7.13.1 Break-In Inspection Requirements.

### 6.7 PRE-SEASON CHECK

Perform the following the beginning of each operating season:



### CAUTION

- Review the Operator's Manual to refresh your memory on safety and operating recommendations.
  - Review all safety signs and other decals on the mower conditioner and note hazard areas.
  - Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.
  - Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.
  - Check the first aid kit and fire extinguisher. Know where they are and how to use them.
- a. Check tension on conditioner drive belt and adjust if required. Refer to Section 7.9.5 Conditioner Drive Belt.
  - b. Check tension on hourglass deflector drive belts and adjust if required. Refer to Section 7.9.10 Hourglass Deflector Drive Belts – 16 Ft.
  - c. Lubricate machine completely. Refer to Section 7.7 Lubricating the Windrower.
  - d. Check tire pressure and adjust as required. See Section 7.12.3 Tire Inflation.
  - e. Perform all annual maintenance. See Section 7.13 Maintenance Schedule.

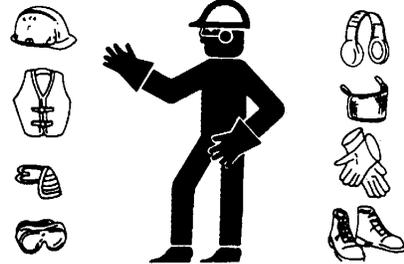
### 6.8 DAILY START-UP CHECK

Do the following each day before start-up:



### CAUTION

- Be sure tractor and mower conditioner are properly attached, all controls are in neutral and tractor brake is engaged.
- Clear the area of other persons, pets etc. Keep children away from machinery. Walk around the mower conditioner to be sure no one is under, on or close to it.
- Wear close fitting clothing and protective shoes with slip resistant soles.
- Remove foreign objects from the machine and surrounding area.
- As well, carry with you any protective clothing and personal safety devices that **COULD** be necessary through the day. Don't take chances.



- You may need:
    - a hard hat
    - protective glasses or goggles
    - heavy gloves
    - respirator or filter mask
    - wet weather gear
  - Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortable loud noises.
- a. Check the machine for leaks or any parts that are missing, broken, or not working correctly.

#### NOTE:

*Use proper procedure when searching for pressurized fluid leaks. Refer to Section 7.10 Hydraulic Drive System.*

- b. Clean all lights and reflective surfaces on the machine. Check lights for proper operation.
- c. Perform all Daily maintenance. Refer to Section 7.13, Maintenance Schedule.

*(continued next page)*

## 6.9 SHUTDOWN PROCEDURE



### CAUTION

Before leaving the tractor seat for any reason:

- Park on level ground if possible.
- Lower the mower conditioner fully.
- Place all controls in NEUTRAL or PARK.
- Disengage PTO.
- Engage the park brake.
- Stop engine and remove key from ignition.
- Wait for all movement to stop.
- Lock tractor anti-vandalism covers and closures when leaving the machine unattended.

## 6.10 ENGAGING THE PTO



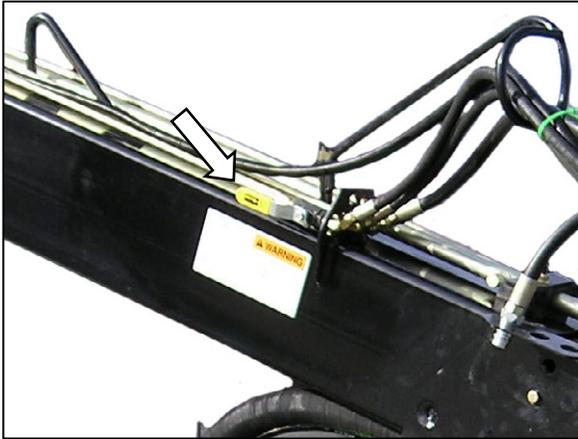
### DANGER

**Be sure all bystanders are clear of the machine before engaging the PTO. Never leave tractor seat with the PTO engaged.**

- a. Engage the PTO slowly, just before the mower conditioner is moved up to the standing crop.
- b. Be sure tractor PTO is running at 1000 rpm before starting to cut.
- c. Disengage the PTO when not operating the mower conditioner.
- d. To prevent pump cavitation, run machine at low tractor idle for approximately 10 minutes when ambient temperature is 50°F (10°C) or less.

# OPERATION

## 6.11 STEERING



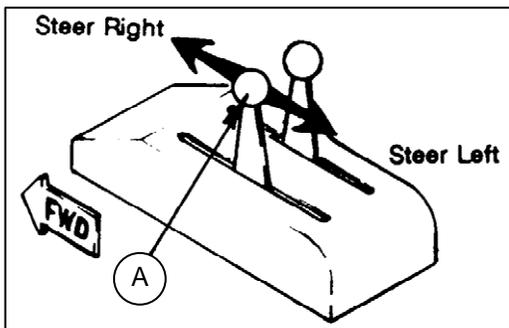
### IMPORTANT

The valve on the APT must be in the working or open position (handle in line with APT) for the steering system to be operational.

Steering is controlled by the tractor remote hydraulic system. The APT provides the operator the ability to move the mower conditioner into field position easily, allows right angle turns in either direction, steering around objects on both sides and straight line field cutting on either side of the tractor.

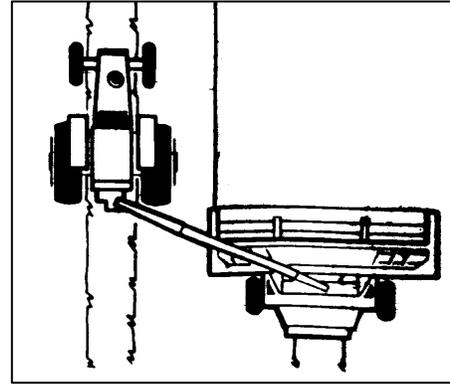
### IMPORTANT

Hoses should be connected so that moving tractor control lever (A) forward steers the machine to the right and moving the lever (A) backward steers the mower conditioner left.



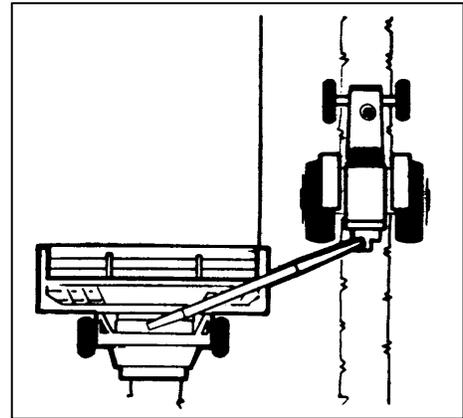
The control (A) is operated momentarily for steering and must be returned to OFF or NEUTRAL position as soon as the mower conditioner reaches the desired path of travel.

### 6.11.1 Right Side Operation



Move steering lever forward to achieve desired position of mower conditioner on right side of tractor.

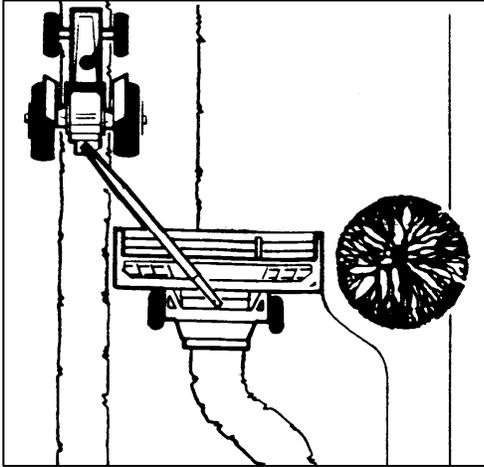
### 6.11.2 Left Side Operation



Move steering lever backward to achieve desired position of mower conditioner on left side of tractor.

## OPERATION

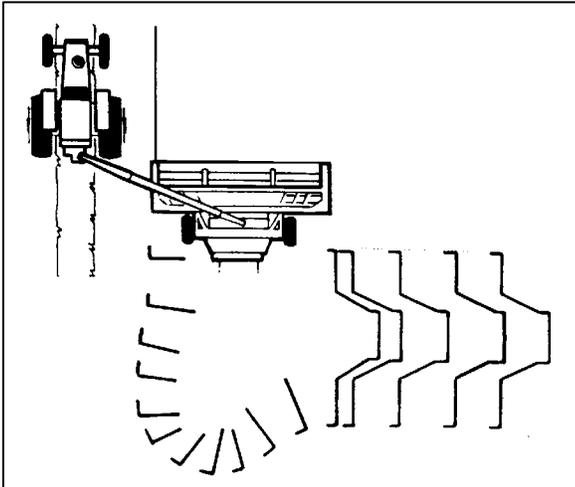
### 6.11.3 Avoiding Obstacles



Move steering lever as required to avoid obstacles.

### 6.11.4 Square Corners

The following procedure is intended only as a guide to developing a turning procedure for the tractor being used. Specific distances are not given due to the variances in tractor manoeuvrability.



- As the tractor approaches the corner, guide the tractor sharply away from the crop. Steer the mower conditioner to maintain a straight cut ahead as the tractor moves away from the crop.
- As soon as the header cuts past where the new corner will be, raise the header sufficiently for skid shoes to clear the ground, then steer the mower conditioner to the extreme direction away from the uncut crop.

- As the tractor passes the corner, steer it sharply back towards the uncut crop, taking care that the inside tractor tire does not contact the APT.
- Guide the tractor to straddle the last cut windrow. As the mower conditioner finishes turning, steer it back towards the uncut crop, align the header with the crop edge and lower header to cutting height.

## OPERATION

### 6.11.5 180 Degree Turn

#### NOTE

*When cutting back and forth on one side of the field, approximately 50 ft. (15 m) is required at each end of the field to make a 180° turn-around.*

- Beginning at position (A), the tractor is guided away from the uncut crop while the mower conditioner is guided straight ahead until cutting through the end.
- As soon as the header cuts through, raise the header to lift the skid shoes clear of the ground, and steer the mower conditioner to the extreme direction away from the uncut crop.

#### NOTE

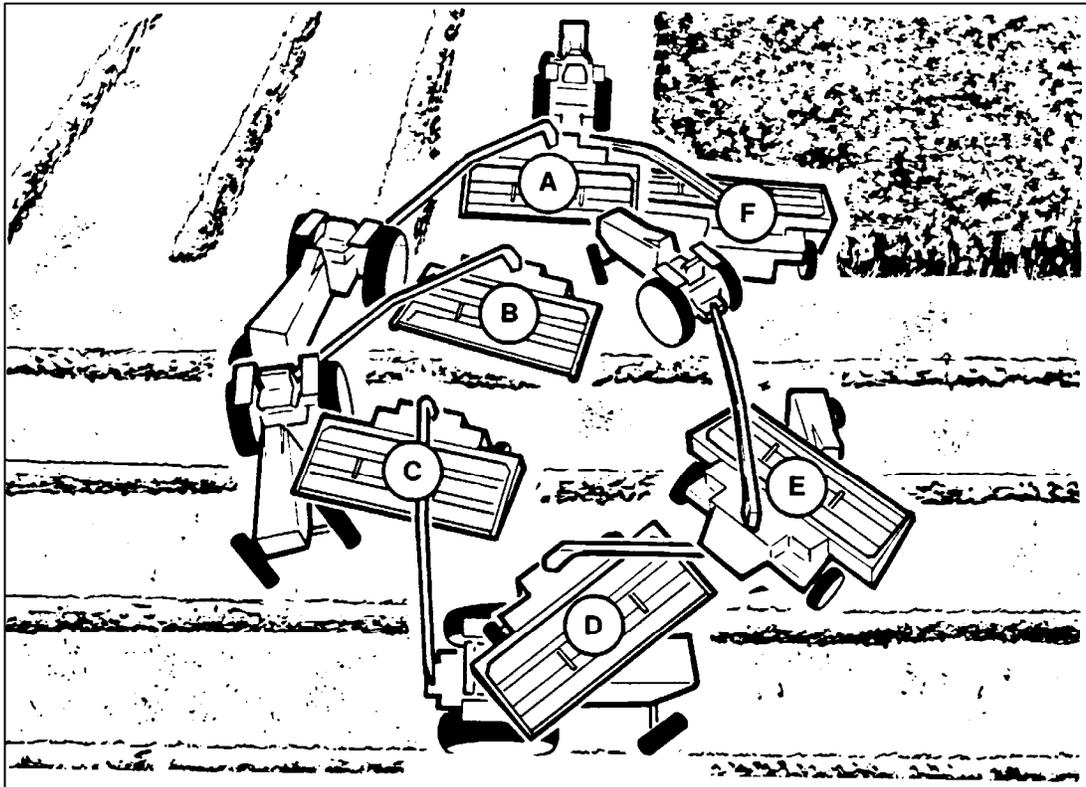
*For ease of operation, both levers can be activated with one hand and held until steering cylinder completes its stroke.*

- At position (B), start turning the tractor back towards the uncut crop.

#### IMPORTANT

When turning, take care that the inside tractor tire does not contact APT of mower conditioner.

- In positions (C) and (D), continue turning towards the uncut crop, (with the mower conditioner steered towards the outside of the turning circle), being aware of APT-to-tire clearance.
- At position (E), the tractor completes the circle and the front wheels are turned to straddle the last cut windrow. At this point, steer the mower conditioner to line up with the edge of the uncut crop.
- At position (F), lower header to cutting height and begin a new cut through the field.



## OPERATION

### 6.12 TRANSPORTING MOWER CONDITIONER

The R80 Windrower can be transported on public roads by towing with a tractor or a truck. Proceed to 6.12.1 Transporting With A Tractor, or, 6.12.2 Transporting With A Truck.



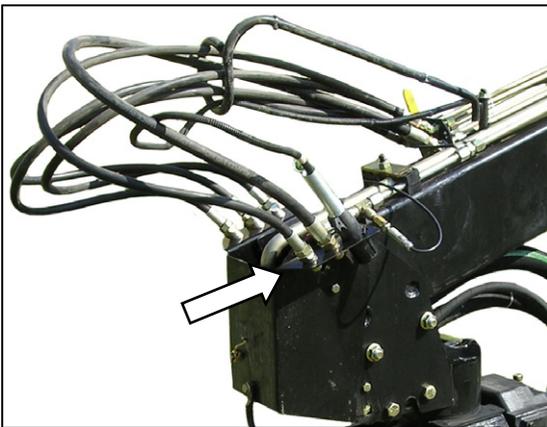
#### CAUTION

- Be aware of roadside obstructions, oncoming traffic and bridges.
- Travel speed should be such that complete control and machine stability are maintained at all times. Do not exceed 20 mph (32 km/h). Reduce speed for corners and slippery conditions.
- When transporting on roads, use tractor lights and mower conditioner flashing amber and red tail-lights to provide adequate warning to operators of other vehicles.
- Do not transport the mower conditioner on a road or highway at night, or in conditions, which reduce visibility, such as fog or rain.

#### 6.12.1 Transporting With A Tractor

If the windrower is in transport mode, proceed as follows. Otherwise, see 6.12.3 Preparing Windrower for Transport.

- a. Hook-up mower conditioner to tractor. See 6.4 Mower Conditioner/Tractor Hook-up, for details on attaching the mower conditioner to the tractor.



#### NOTE

The hydraulic hoses do not need to be attached to the tractor for towing. Ensure they are securely stored on the APT.

#### NOTE

The PTO does not need to be attached for towing purposes. If not attached, lower hook (A), store driveline (B) on hook, and remove forward half of driveline. Store forward half in cab for transport.

- b. Ensure that APT safety chain is properly attached to towing vehicle. Provide only enough slack in chain to permit turning.
- c. Check local laws for width regulations and lighting or marking requirements before transporting on roads.
- d. Do not exceed 20 mph (32 km/h).

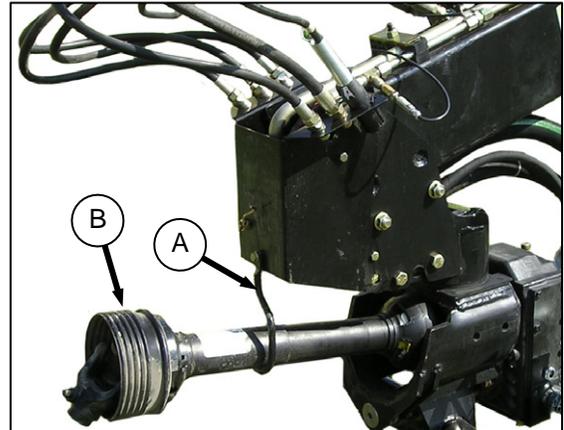
#### 6.12.2 Transporting With a Truck



#### CAUTION

Do not tow with a vehicle weighing less than 7500 lb (3400 kg). Ensure that the capacity of the towing vehicle is sufficient to maintain control.

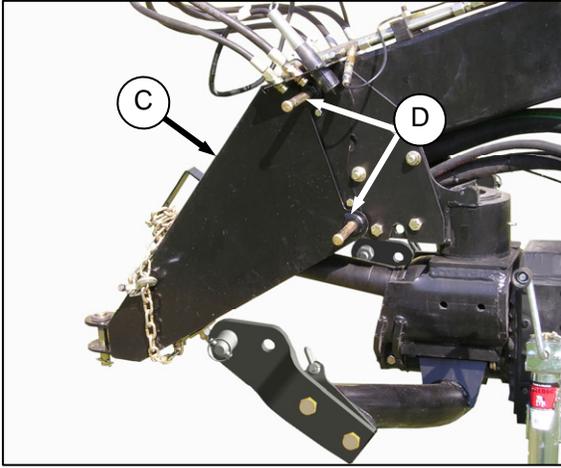
If the windrower is in transport mode, proceed as follows. Otherwise, see 6.12.3 Preparing Windrower for Transport.



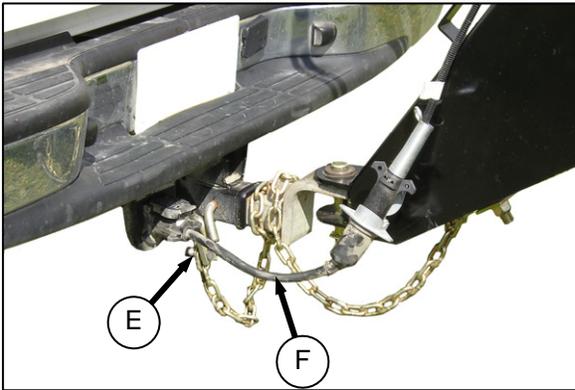
- a. Store hydraulic hoses on the APT as shown opposite.
- b. Lower hook (A) and place driveline in hook.
- c. Remove the forward half (B) of driveline and store in truck for transport.

(continued next page)

## OPERATION



- d. Position towing adapter (C) on APT and secure with pins (D).
- e. Attach mower conditioner to truck.
- f. Remove jack from working position and store on APT. Secure with pin.



- g. Wrap safety chain around APT and attach to truck frame (E).
- h. Connect electrical harness (F).
- i. Check local laws for width regulations and lighting or marking requirements before transporting on roads.
- j. Do not exceed 20 mph (32 km/h).

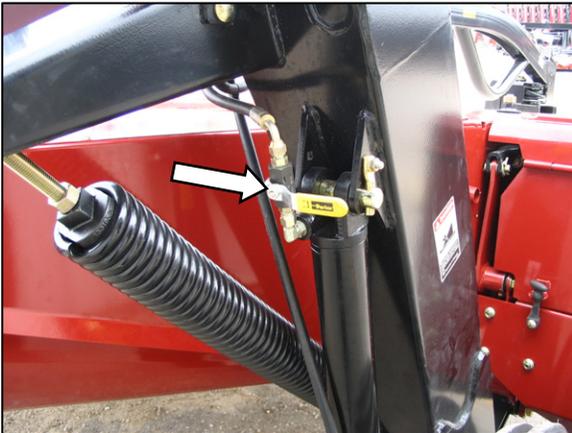
## OPERATION

### 6.12.3 Preparing Windrower for Transport

- a. Charge the steering circuit as follows:
  1. Connect the two APT steering cylinder hoses to a tractor hydraulic circuit.
  2. Steer the header completely to the left, then right. Repeat three or four times.
- b. Steer the mower conditioner so that it is centered behind the towing vehicle.



- c. Close the lock-out valve on the APT.



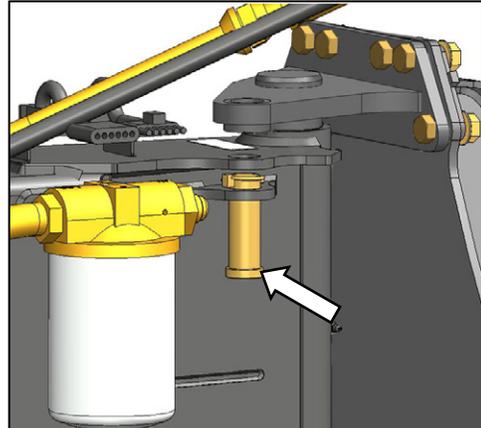
- d. Raise the header fully and engage both header lift cylinder lock-out valves.



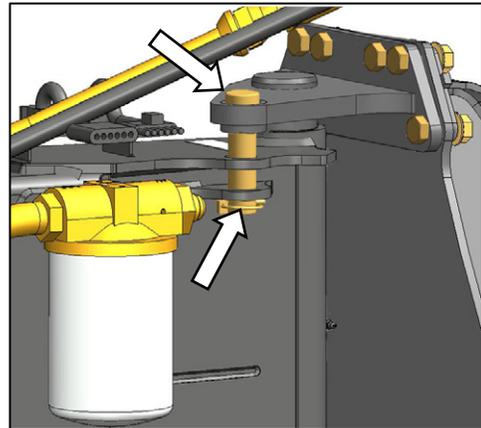
### WARNING

Do not tow unless the steering cylinder is fully charged. If steering cylinder is not fully charged loss of control can result in injury or death. Use the temporary transport lock pin if machine must be towed without a fully charged steering cylinder.

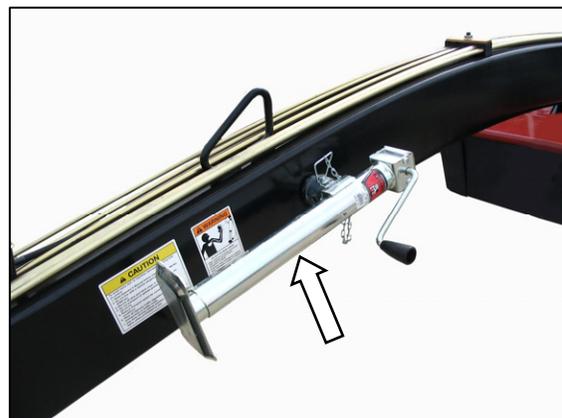
- e. If steering cylinder is not fully charged, install temporary transport lock pin as follows: Otherwise, proceed to step f.



1. Remove pin from storage at aft end of APT.



2. Line up holes in APT and frame and install transport lock pin as shown.
3. Secure with lynch pin.



- f. Check that jack is properly attached in storage position on APT.
- g. Keep SMV sign, reflectors and lights clean and visible at rear of mower conditioner.

## OPERATION

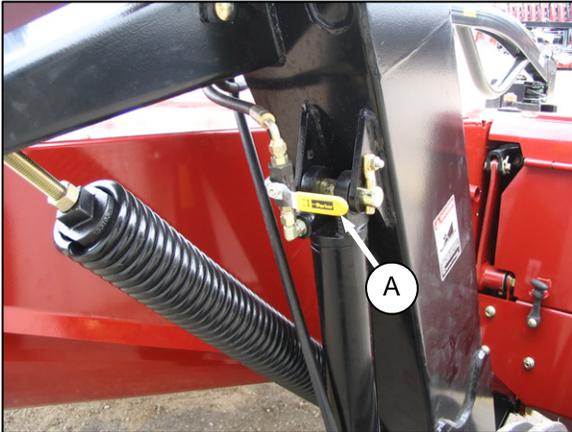
### 6.12.4 Flatbed



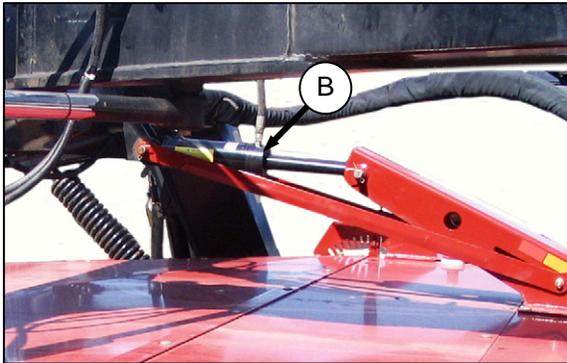
#### CAUTION

Use the following procedure when transporting the mower conditioner on a flatbed trailer.

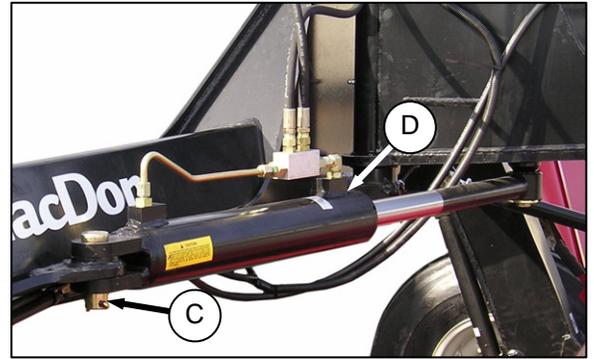
#### 6.12.4.1 Loading



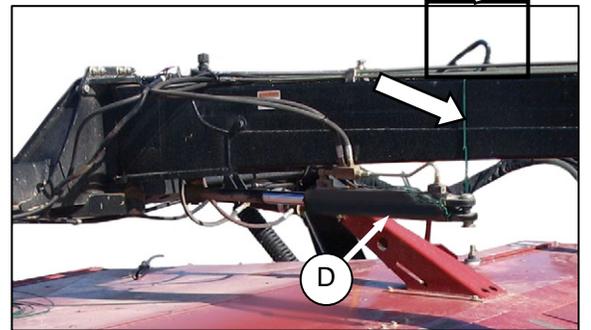
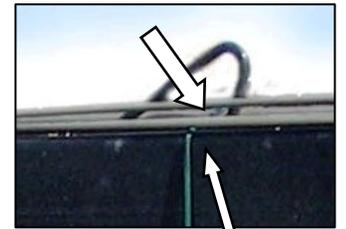
- a. Lower the header to the ground and engage lift cylinder lock-out valves (A).



- b. Retract header angle control link (B) to minimum length.  
c. Unhook tractor from mower conditioner. See Section 6.5 Mower Conditioner/Tractor Unhook.



- d. Remove pin (C) attaching steering cylinder (D) at frame and swing cylinder under APT. Store pin in barrel end of cylinder.



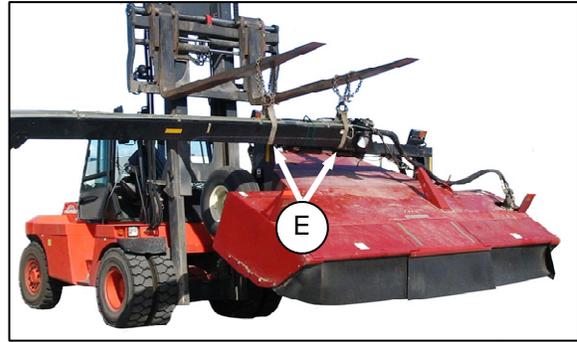
- e. Secure cylinder (D) to APT with shipping wire or equivalent.

#### IMPORTANT

Ensure shipping wire is not over hydraulic lines.

*(continued next page)*

## OPERATION

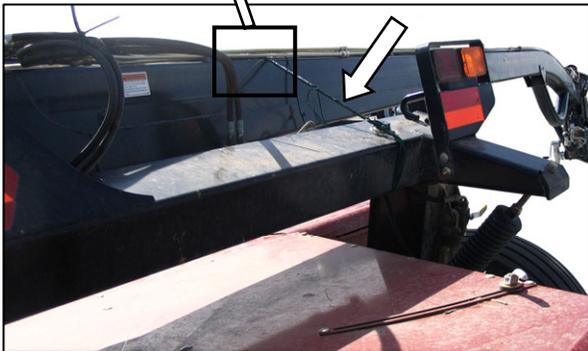
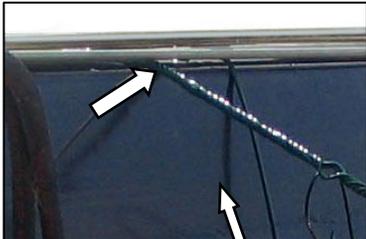


- f. Attach a chain to front of APT and other end to a fork lift or equivalent.
- g. Lift front of APT and slowly swing APT aft until it is approximately parallel with carrier frame. Lower APT and remove chain.

**IMPORTANT**

Ensure hoses on carrier frame are free to move when APT is moved to transport position.

- h. Tie APT to frame back tube with shipping wire or equivalent.



**IMPORTANT**

Ensure shipping wire is not over hydraulic lines.

- i. Locate two lifting slings (E) around APT and frame approximately as shown and attach to fork lift with chains.

**NOTE**

*Adjust position of slings so that mower conditioner is lifted evenly.*



**CAUTION**

**To avoid injury to bystanders from being struck by machinery, do not allow persons to stand in loading area.**



**CAUTION**

**Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in chain breakage, vehicle tipping or machine damage.**

<i>LIFTING VEHICLE</i>	
Min. Lifting Capacity	8000 lb. (3630 kg)
Min. Lifting Height	15 ft. (4.5 m)

<i>CHAIN</i>	
Overhead Lifting Quality (1/2 Inch)	5000 lb. (2270 kg) Min. Working Load

- j. Lift mower conditioner slightly to take weight off APT.



- k. Remove jack from forward end of APT and move to storage location (G) on APT. Secure with pin.

*(continued next page)*

## OPERATION

- l. Slowly drive to flatbed and raise mower conditioner.



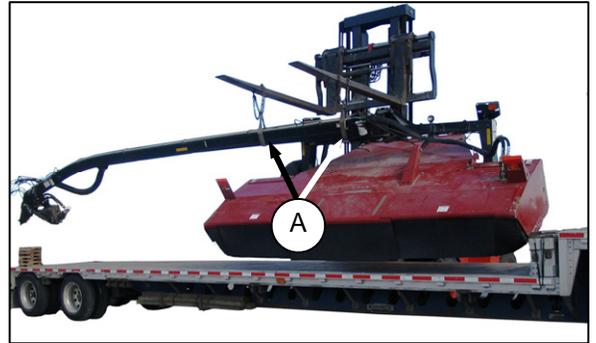
- m. Lower mower conditioner onto flatbed. Blocking is not required. Remove slings from mower conditioner.



- n. Secure mower conditioner to flatbed with straps.

### 6.12.4.2 Unloading

- a. Remove tie downs.
- b. Approach mower conditioner from backside with forklift.



- c. Locate two lifting slings (A) around APT and frame approximately as shown and attach to fork lift with chains.

**NOTE**

*Adjust position of slings so that mower conditioner is lifted evenly.*



### CAUTION

To avoid injury to bystanders from being struck by machinery, do not allow persons to stand in loading area.



### CAUTION

Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in chain breakage, vehicle tipping or machine damage.

<i>LIFTING VEHICLE</i>	
Min. Lifting Capacity	8000 lb. (3630 kg)
Min. Lifting Height	15 ft. (4.5 m)

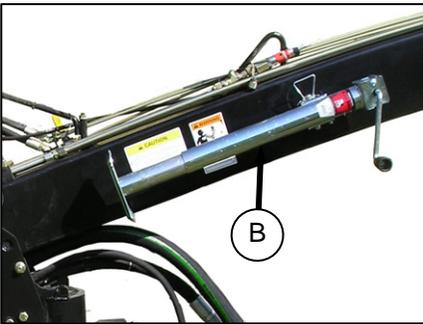
<i>CHAIN</i>	
Overhead Lifting Quality (1/2 Inch)	5000 lb. (2270 kg) Min. Working Load

*(continued next page)*

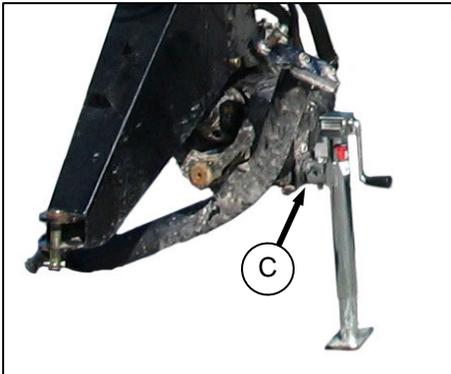
## OPERATION



- d. Lift mower conditioner off flatbed and back away slowly.
- e. Lower mower conditioner to slightly above ground.



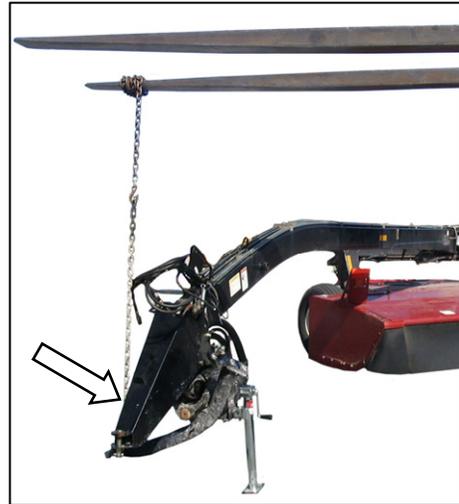
- f. Remove jack (B) from storage location on APT.



- g. Install jack at working position (C) at front of APT.
- h. Lower mower conditioner to ground and remove slings.



- i. Cut shipping wire securing APT to carrier frame.

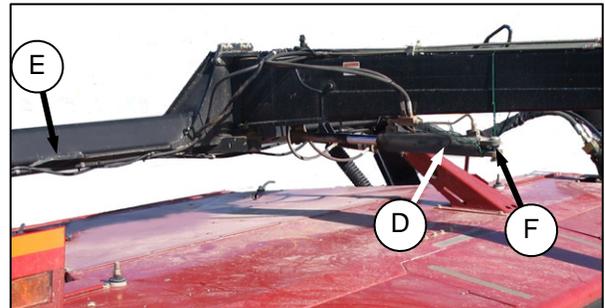


- j. Attach a chain to front of APT and other end to a fork lift or equivalent.

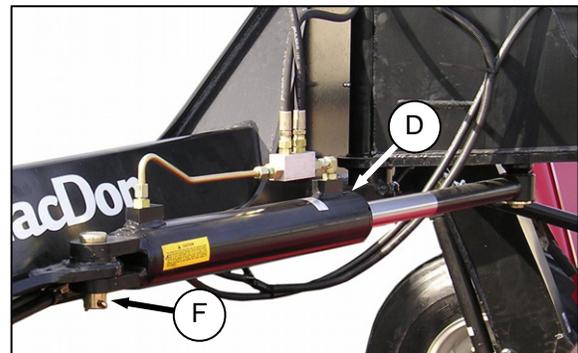
### IMPORTANT

Ensure hoses on carrier frame are not pinched when APT is moved to working position.

- k. Lift front of APT and slowly swing APT forward until it is approximately perpendicular with carrier frame. Lower APT and remove chain.



- l. Cut shipping wire securing steering cylinder (D) to APT. Swing cylinder to attachment bracket (E) on frame.



- m. Remove pin (F) from cylinder.
- n. Align yoke on cylinder with bracket (E) and install pin (F). Secure with cotter pin.
- o. Attach mower conditioner to tractor or towing vehicle.

# OPERATION

## 6.13 HEADER OPERATION

Satisfactory operation of the mower conditioner in all situations requires making proper adjustments to suit various crops and conditions.

Correct operation reduces crop loss and allows cutting of more acres. As well, proper adjustments and timely maintenance will increase the length of service you receive from the machine.

The variables listed below and detailed on the following pages will affect the performance of the mower conditioner. You will quickly become adept at adjusting the machine to give you the desired results.

VARIABLE	SECTION
Cutting Height	6.13.1
Header Angle	6.13.2
Header Flotation	6.13.3
Roll Gap/Timing/Alignment	6.13.4
Roll Tension	6.13.5
Forming Shields	6.13.6
Ground Speed	6.13.7

### 6.13.1 Cutting Height

Cutting height is determined by the angle of the cutterbar/header which can be adjusted with the center link, either hydraulically or mechanically. Optional adjustable gauge rollers or skid shoes are available for 16 ft headers to also provide different cutting heights. Refer to Section 9, Options and Attachments.

Cutting height should be adjusted for optimum cutting performance without allowing excessive build-up of mud and soil inside the header which can lead to poor crop flow and increased wear on cutting components.

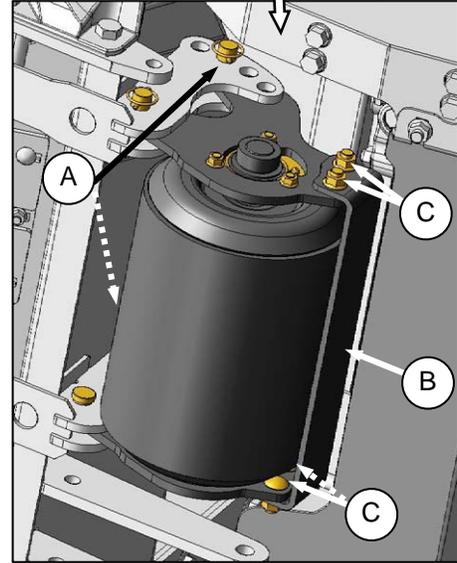
#### 6.13.1.1 Gauge Roller Height Adjustment – 16 Ft



### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage header lift cylinder stops before going under machine for any reason.

1. Raise header fully, stop engine, and remove key.



2. Remove lynch pin and remove adjuster pin (A) from one side of roller.
3. Hold roller and remove lynch pin and adjuster pin (A) from other side. Position roller at desired position and reinstall adjuster pins (A). Secure with lynch pins.
4. Repeat for roller at opposite end of header.
5. Adjust mud bar (B) by loosening nuts (C) and then re-tighten to maintain minimum clearance between mud bar and roller.

*(continued next page)*

## OPERATION

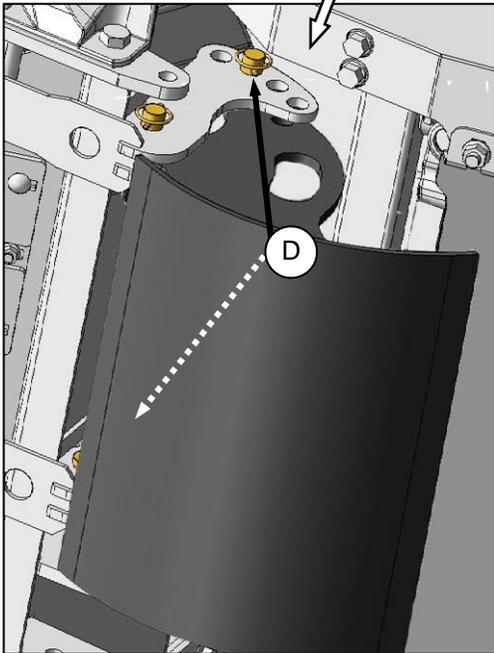
### 6.13.1.2 Skid Shoe Height Adjustment – 16 Ft



#### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage header lift cylinder stops before going under machine for any reason.

- a. Raise header fully, stop engine, and remove key.



- b. Remove lynch pin and remove adjuster pin (D) from one side of skid shoe.
- c. Hold skid shoe and remove lynch pin and adjuster pin (D) from other side. Position shoe at desired position and reinstall adjuster pins (D). Secure with lynch pins.

Repeat for skid shoe at opposite end of header. Cutting height is determined by the angle of the cutterbar/header to the ground which can be adjusted with the center link, either hydraulically or mechanically.

### 6.13.2 Header Angle

Header (or cutterbar) angle can be varied from 0 to 5° below horizontal with the mechanical center link and 0-8° below horizontal with the hydraulic center link. Choose an angle that maximizes performance for your crop and field conditions. A flatter angle provides better clearance in stony conditions while a steeper angle is required in down crops for better lifting action.

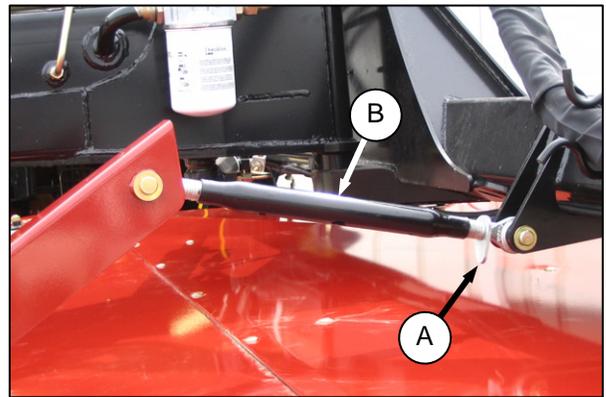


#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### 6.13.2.1 Mechanical Adjustment (if equipped)

- a. Lower header so that cutter bar is resting on the ground.

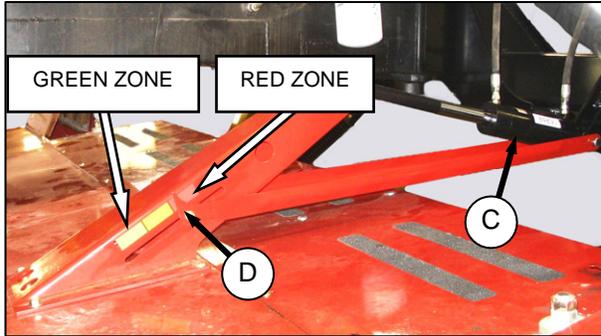


- b. Loosen nut (A).
- c. To decrease (flatten) header angle, rotate the turnbuckle sleeve (B) so that the turnbuckle decreases in length.
- d. To increase (steepen) header angle, rotate the turnbuckle sleeve (B) so that the turnbuckle increases in length.
- e. Snug up nut (A) but do not over tighten. A slight tap with a small hammer is sufficient.
- f. Check cutting height and adjust if required.
- g. Check header float and adjust if required. Refer to Section 6.13.3, Header Flotation.

## OPERATION

### 6.13.2.2 Hydraulic Adjustment (if equipped)

The header angle can be adjusted from the tractor without shutting down the mower conditioner.



- To decrease (flatten) header angle, operate tractor hydraulic control so that cylinder (C) retracts, moving the gauge (D) toward the green zone.
- To increase (steepen) header angle, operate tractor hydraulic control so that cylinder (C) extends, moving the gauge (D) toward the red zone.

### 6.13.3 Header Flotation

Header flotation springs are normally set so 95-105 lbf (426-471 N) is required to lift either end of the header just off the ground. In rough or stony conditions, it may be desirable to maintain a lower force to protect cutting components.

#### NOTE

*When float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing and leaving a ragged cut.*

#### 6.13.3.1 Flotation Adjustment

##### IMPORTANT

Float setting (or lifting force) must be equal on both ends of the header. Left and right ends require different spring lengths to achieve equal float at both ends.

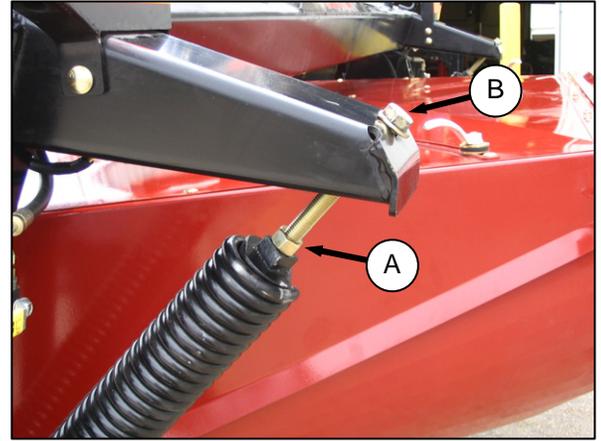
- Center header directly behind the tractor.
- Raise header fully, shut off engine and remove key.



## DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

- Engage lift cylinder lock-out valves.



- Back jam nut (A) away from spring.
- To increase flotation, turn adjuster bolt (B) clockwise (further into spring).
- To decrease flotation, turn adjuster bolt (B) counterclockwise (out of spring).
- Tighten jam nut (A) against spring insert to secure the setting.
- Lower header and check header flotation at each end.

#### NOTE

*Other operating variable adjustments may affect float setting. Check the float and readjust if necessary after adjusting cutting height or header angle. Also, if using a tractor with drawbar height different than 16 inches (406 mm) flotation will be affected. Adjust as required.*



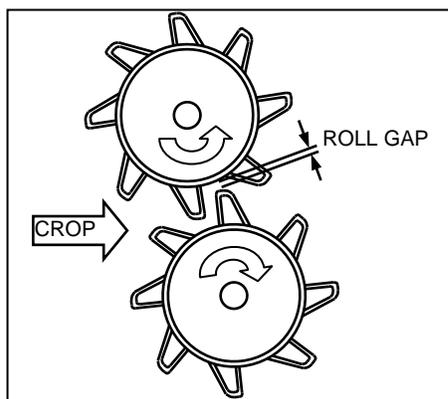
## WARNING

**To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lockout valves before going under machine.**

## OPERATION

### 6.13.4 Roll Gap and Timing

Steel rolls "condition" the crop by crimping and crushing the stem in several places. This allows moisture release for quicker drying. The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap. See illustration. The gap is factory set at 1/4 inch (6 mm).



Correct conditioning of alfalfa, clover and other legumes is usually indicated when 90% of the stems show cracking, but no more than 5% of the leaves are damaged. Use only enough roll gap to achieve this result.

A gap up to 1 inch (25 mm) may be desirable in thick stemmed cane-type crops; however, too large a gap may cause feeding problems.

Grass type crops may require a smaller gap for proper feeding and conditioning.

#### IMPORTANT

When the roll gap is decreased, the roll timing is critical because:

- conditioning is affected, and
- the bars may contact each other.

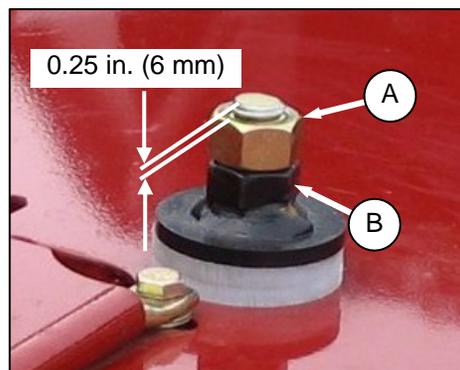
#### 6.13.4.1 Roll Gap Adjustment



### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

- Lower header fully.



- Loosen and back-off upper jam nut (A), both sides of conditioner.
- To increase roll gap, turn lower nut (B) clockwise which raises the upper roll.

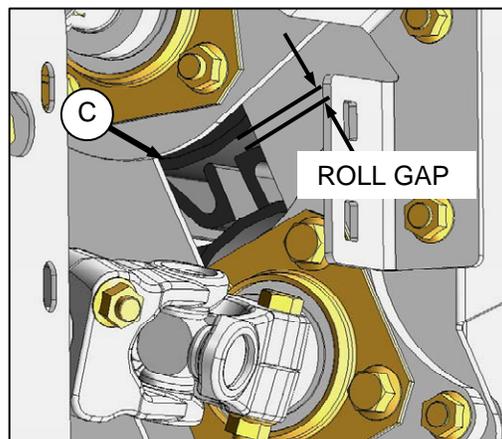
#### NOTE

*The amount of thread protruding through jam nut should equal roll gap. Factory setting is 1/4 in. (6 mm).*

#### NOTE

*When adjusting roll gap, be sure that the thread protrusion is the same on both sides of the conditioner roll to achieve consistent intermesh across the rolls.*

- To decrease roll gap, turn lower nut (B) counterclockwise which lowers the upper roll.
- Tighten jam nuts (A), both sides.



- Inspect roll gap at both ends of the rolls at access port (C).

## OPERATION

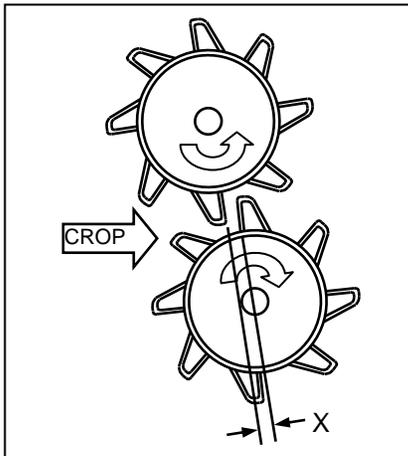
### 6.13.4.2 Roll Timing

For proper conditioning, the rolls must be properly timed with each steel bar on one roll centered between two bars of the other roll as shown. The factory setting should be suitable for most crop conditions.



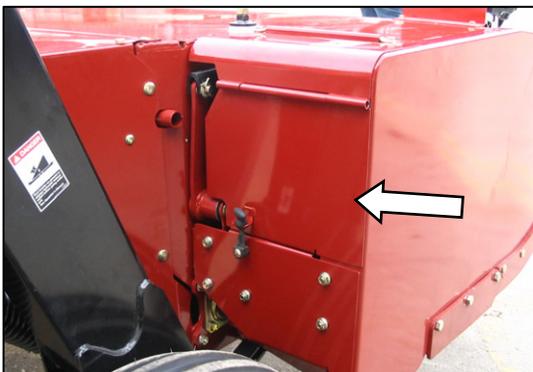
### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

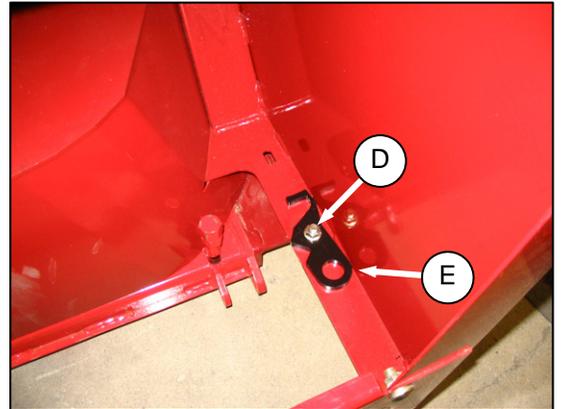


Check roll timing (distance 'X') as follows:

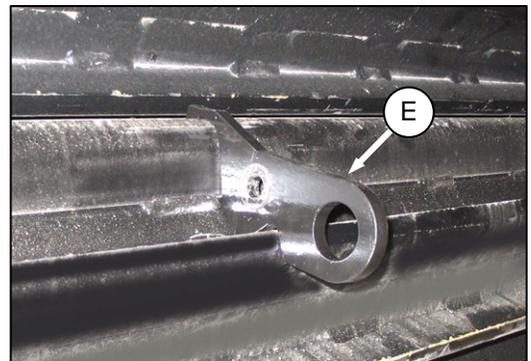
- Lower header to ground, shut down tractor and remove key.



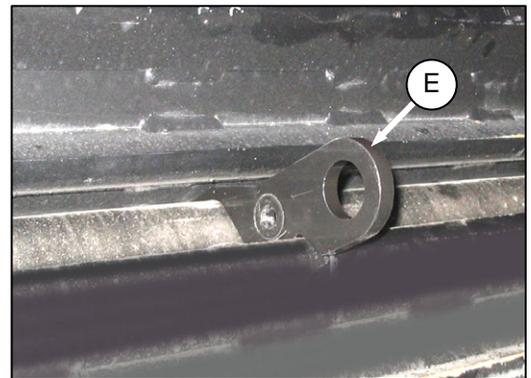
- Open RH drive shield.



- Remove bolt (D) and nut, and remove gauge (E) from inside panel at RH end of header.



START POSITION



GAUGE POSITION

- Locate gauge at center of rolls as shown and turn rolls to limits of gauge. Rolls will engage the gauge if timing is correct.

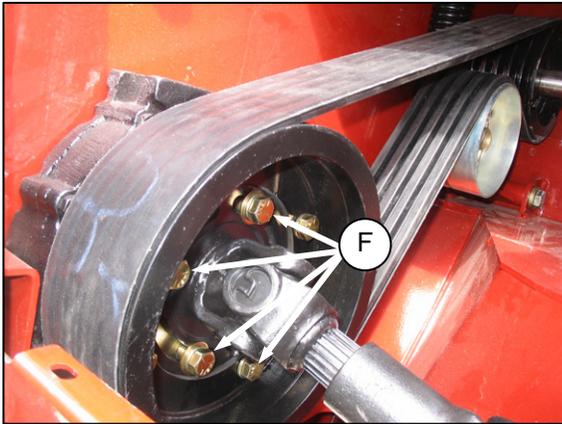
*(continued next page)*

## OPERATION

- e. If required, adjust roll timing as follows:



1. Open LH drive shield.



2. Loosen four bolts (F) in slots of yoke plate on lower roll universal shaft.
3. Position gauge at center of rolls and manually turn the rolls to engage the gauge. The rolls will automatically adjust to the correct timing.
4. Tighten bolts (F) to secure the position.
5. Turn the rolls to release gauge.



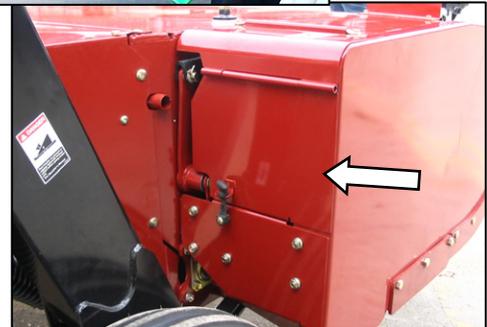
### WARNING

**Remove gauge from rolls and return it to storage location before starting machine.**

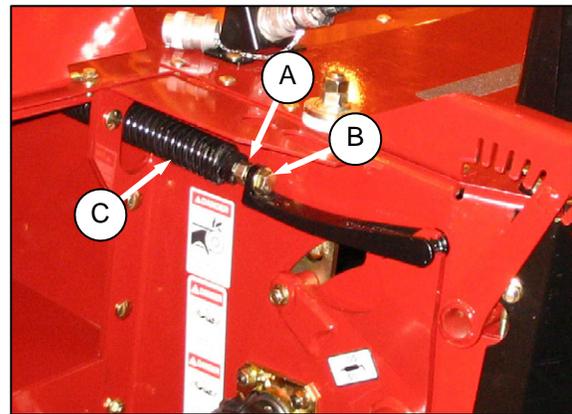
- f. Store gauge inside RH panel with bolt (D) and nut.
- g. Close drive shields.

### 6.13.5 Roll Tension

The roll tension (the force holding the rolls together) is factory set and is adjustable. If required, adjust as follows:



- a. Open LH and RH drive shields.



- b. Loosen jam nut (A).
- c. To increase the roll tension, turn the spring draw-bolt (B) clockwise to tighten the spring (C) at each end of the roll.
- d. To decrease the roll tension, turn the spring draw-bolts counterclockwise to loosen the springs.
- e. Tighten jam-nut (A) after adjusting tension.
- f. Close drive shields.

## OPERATION

### 6.13.6 Forming Shields



#### WARNING

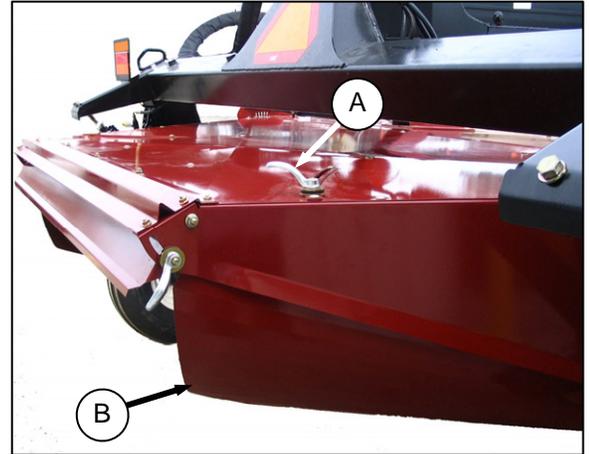
Keep hands and feet away from discharge opening. Keep everyone several hundred feet away from your operation. Never direct the discharge toward anyone. Stones or other foreign objects can be ejected with force.

The position of the forming shields controls the width and placement of the windrow. The decision on forming shield position should be based on the following factors:

- weather conditions (rain, sun, humidity, wind)
- type and yield of crop
- drying time available
- method of processing (bales, silage, "green-feed")

A wider windrow will generally dry faster and more evenly, resulting in less protein loss. Fast drying is especially important in areas where the weather allows only a few days to cut and bale. Refer to Section 6.15 Haying Tips, for more information.

Where weather conditions permit or when drying is not critical, for example, when cutting for silage or "green-feed", a narrower windrow may be preferred for ease of pick-up.



- a. Loosen locking handle (A).
- b. Move deflector (B to desired position and tighten handle.
- c. Repeat for other side.

#### 6.13.6.1 Side Deflectors

The position of the side forming shields controls the width and placement of the windrow.

To ensure windrow placement is centered with respect to carrier wheels, adjust both side deflectors to the same position.

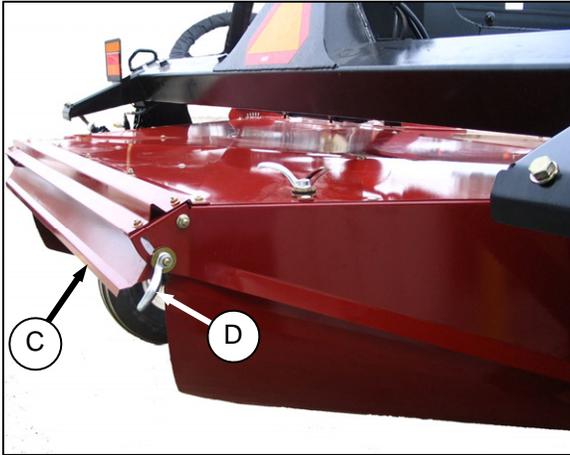


#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

## OPERATION

### 6.13.6.2 Rear Deflector (Fluffer Shield)



The rear deflector (C) slows the crop exiting the conditioner rolls, directs the flow downward, and "fluffs" the material.



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

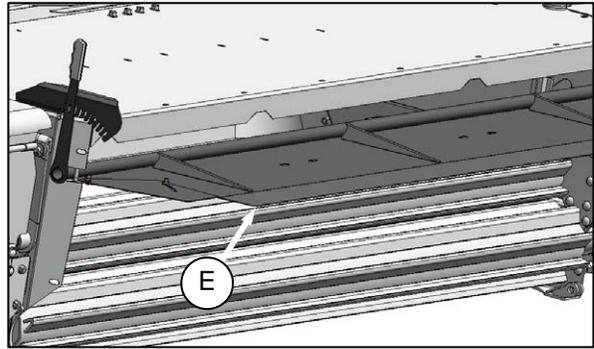
Adjust the deflector as follows:

- For more crop control in light material, lower the deflector (C) by pushing down on one side of the deflector and then on the other side. Locking handles (D) are located at either end of the deflector and may be loosened slightly.
- For heavier crops, raise the deflector by pulling up on one side and then on the other side.

#### NOTE

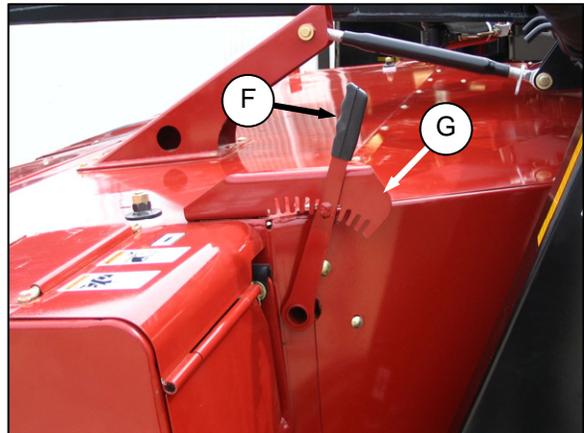
*For even windrow formation, be sure the deflector is not twisted.*

### 6.13.6.3 Baffle



The baffle (E) determines the width and height of the windrow. It is located immediately behind and above the conditioning rolls, and can be positioned to direct the crop flow from the conditioner downward to form a wide swath.

Adjust the baffle as follows:



- Pull lever (F) to disengage from bracket (G) and move lever forward to raise baffle and backward to lower baffle.
- Release lever into bracket.

# OPERATION

## 6.13.7 Ground Speed



### CAUTION

Reduce speed when turning, crossing slopes, or when travelling over rough ground.

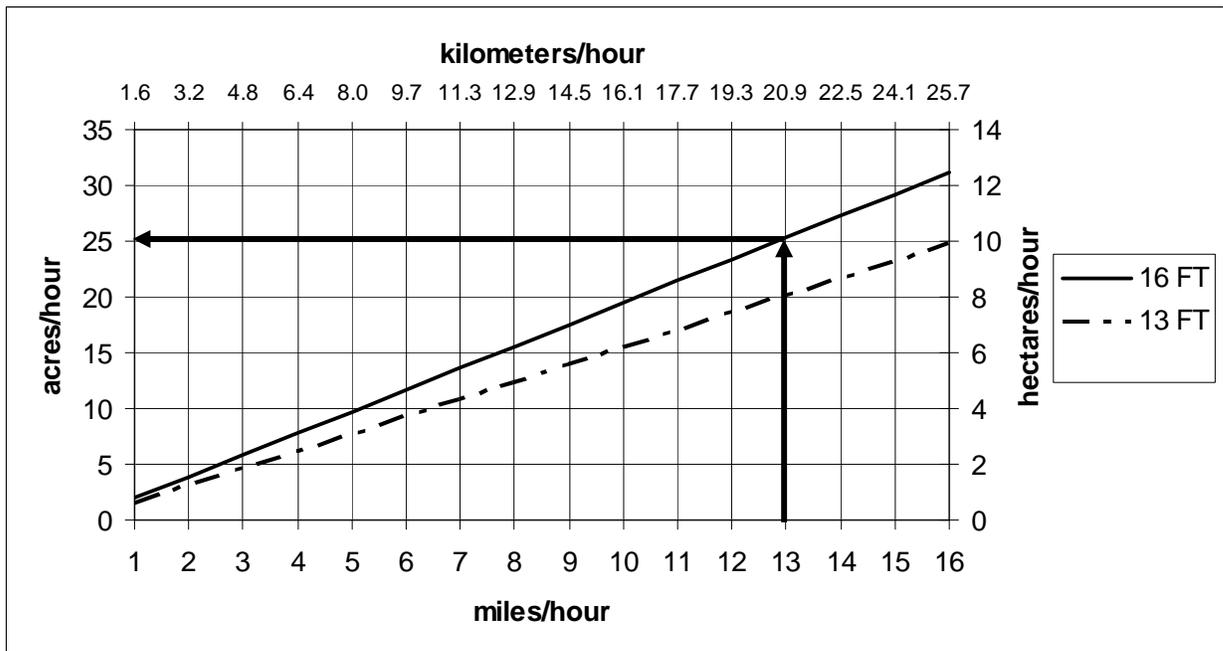
- Operate the PTO at rated speed.
- Choose a ground speed that allows the cutterbar and conditioner to cut the crop smoothly and evenly. Try different combinations of PTO and ground speed to suit your specific crop.
- In tough cutting conditions, such as native grasses, the PTO speed will need to be maintained and ground speed decreased.
- In light crops the PTO can be reduced (reduce engine rpm) and shifting into a higher gear to maintain ground speed.

### NOTE

*Operating the header at the minimum PTO speed will extend the wear life of components, and save fuel.*

- The chart below indicates the relationship between ground speed and area cut for a 13 ft header.

Example: At ground speed of 13 mph (21 km/h) with a 16 ft. windrower, the area cut would be approximately 25 acres (10 hectares) per hour.



## OPERATION

### 6.14 UNPLUGGING THE MOWER CONDITIONER



#### WARNING

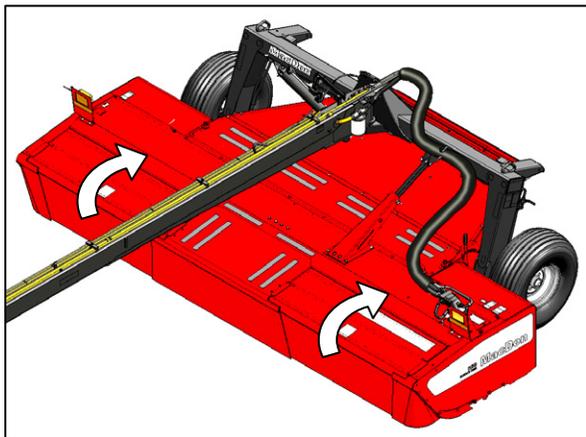
Stop tractor engine and remove key before removing plugged material from mower conditioner. A child or even a pet could engage the drive.

- Stop forward movement of the tractor and stop the PTO.
- Raise the header fully, shut down the tractor engine, and remove the key.
- Engage lift cylinder lock-out valves.



#### WARNING

Wear heavy gloves when working around cutterbar.



- Open cutterbar doors and clean off cutterbar or rolls by hand.

### 6.15 HAYING TIPS

#### 6.15.1 Curing

- A quick cure will maintain top quality because:
  - 5% of the protein is lost for each day hay lies on the ground,
  - The sooner the cut hay is off, the earlier the start for next growth.
- Leaving the windrow as wide and thin as possible makes for the quickest curing.
- The cured hay should be baled as soon as possible.

#### 6.15.2 Topsoil Moisture

- On wet soil, the general rule of "wide and thin" does not apply. A narrower windrow will dry faster than hay left flat on wet ground.
- When the ground is wetter than the hay, moisture from the soil is absorbed by the hay above it. Determine topsoil moisture level before cutting. Use a moisture tester or estimate level:

LEVEL	% MOISTURE	CONDITION
Wet	Over 45	Soil is Muddy
Damp	25 – 45	Shows Footprints
Dry	Under 25	Surface is Dusty

- If ground is wet due to irrigation, wait until soil moisture drops below 45%.
- If ground is wet due to frequent rains, cut when weather allows and let the forage lie on wet ground until it dries to the moisture level of the ground.
- The cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

#### 6.15.3 Weather and Topography

- Cut as much hay as possible by midday, when drying conditions are best.
- Fields sloping south get up to 100% more exposure to the sun's heat than do north sloping fields. If hay is baled and chopped, consider baling the south facing fields and chopping those facing north.
- When relative humidity is high, the evaporation rate is low and hay dries slower.
- If there is no wind, saturated air becomes trapped around the windrow. Raking or tedding will expose the hay to fresher, less saturated air.
- Cut hay perpendicular to the direction of the prevailing winds is also recommended.

## OPERATION

### 6.15.4 Windrow Characteristics

It is recommended that a windrow with the following characteristics be produced. Refer to Section 6.13 Header Operation for instructions on adjusting the mower conditioner.

CHARACTERISTIC	ADVANTAGE
High And Fluffy	The movement of air through the windrow is more important to the curing process than direct sunlight.
Consistent Formation, Not Bunchy	Permits an even flow of material into the baler, chopper etc.
Even Distribution of Material Across Windrow	Results in even and consistent bales to minimize handling and stacking problems.
Properly Conditioned	Prevents excessive leaf damage.

### 6.15.5 Driving On Windrow

Driving on previously cut windrows can lengthen drying time by a full day in hay that will not be raked.

If practical, set forming shields for a narrower windrow that can be straddled.

#### NOTE

*Driving on the windrow in high yielding crops may be unavoidable if a full width windrow is necessary.*

### 6.15.6 Raking And Tedding

Raking or tedding speeds up drying, however the benefits must be weighted against the additional leaf losses which will result. There is little or no advantage to raking or tedding if the ground beneath the windrow is dry.

Large windrows on damp or wet ground should be turned over when they reach 40-50% moisture. Hay should not be raked or tugged at less than 25% moisture, or excessive yield losses will result.

### 6.15.7 Chemical Drying Agents

Hay drying agents work by removing wax from legume surfaces, enabling water to escape and evaporate faster. However, treated hay lying on wet ground will also absorb ground moisture faster.

Before deciding to use a drying agent, costs and benefits relative to your area should be carefully compared.

### 6.16 STORAGE

Do the following at the end of each operating season:

- a. Clean the mower conditioner thoroughly.



#### CAUTION

**Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.**



#### CAUTION

**Cover cutterbar to prevent injury from accidental contact.**

- b. Store in a dry, protected place if possible. If stored outside, always cover mower conditioner with a waterproof canvas or other protective material.
- c. Raise header and engage lift cylinder lock-outs.
- d. If possible, block up the mower conditioner to take weight off tires.
- e. Repaint all worn or chipped painted surfaces to prevent rust.
- f. Loosen drive belts.
- g. Lubricate the mower conditioner thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads, cylinder rods and sliding surfaces of components. Oil cutterbar components to prevent rust.
- h. Check for worn components and repair as necessary.
- i. Check for broken components and order replacement from your dealer. Attention to these items right away will save time and effort at beginning of next season.
- j. Replace or tighten any missing or loose hardware. Refer to Section 7.3.1 Recommended Torques.
- k. Remove divider rods (if equipped) to reduce space required for inside storage.

## MAINTENANCE/SERVICE

### 7 MAINTENANCE/SERVICE

The following instructions are provided to assist the operator for servicing the mower conditioner. Detailed maintenance and service information are contained in the Service Instruction Manual that is available from your dealer. A Parts Catalog is located in a plastic case inside the RH drive compartment.

Log hours of operation and use the "Maintenance Checklist" provided to keep a record of scheduled maintenance. Refer to Section 7.13, Maintenance Schedule.

#### 7.1 PREPARATION FOR SERVICING



#### CAUTION

To avoid personal injury, before servicing mower conditioner or opening drive covers, perform the following:

- a. Fully lower the mower conditioner. If necessary to service in the raised position, always close lift cylinder valves.
- b. Disengage PTO.
- c. Stop engine and remove key.
- d. Engage park brake.
- e. Wait for all moving parts to stop.

#### 7.2 RECOMMENDED SAFETY PROCEDURES

- Review Section 2.4 GENERAL SAFETY.
- Park on level surface when possible. Block wheels securely if mower conditioner is parked on an incline. Follow all recommendations in your Tractor Operator's Manual.
- Wear protective shoes with slip-resistant soles, a hard hat, protective glasses or goggles and heavy gloves.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or other mechanically driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and sickle) to move. Stay clear of driven components at all times.
- Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.

- Use adequate light for the job at hand.
- Replace all shields removed or opened for service.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design or safety requirements.
- Keep the machine clean. Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- Keep the area used for servicing machinery

clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical

outlets and tools are properly grounded.



# MAINTENANCE/SERVICE

## 7.3 MAINTENANCE SPECIFICATIONS

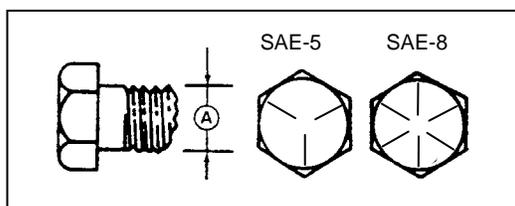
### 7.3.1 Recommended Torques

- Tighten all bolts to the torques specified in chart unless otherwise noted throughout this manual.
- Check tightness of bolts periodically, using bolt torque chart as a guide.
- Replace hardware with the same strength bolt.
- Torque figures are valid for non-greased or non-oiled threads and heads unless otherwise specified. Do not grease or oil bolts or capscrews unless specified in this manual. When using locking elements, increase torque values by 5%.

#### 7.3.1.1 SAE Bolts

BOLT DIA. "A" in.	NC BOLT TORQUE*			
	SAE 5		SAE 8	
	lbf-ft	N-m	lbf-ft	N-m
1/4	9	12	11	15
5/16	18	24	25	34
3/8	32	43	41	56
7/16	50	68	70	95
1/2	75	102	105	142
9/16	110	149	149	202
5/8	150	203	200	271
3/4	265	359	365	495
7/8	420	569	600	813
1	640	867	890	1205

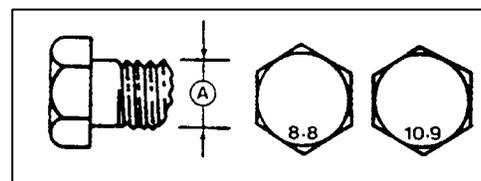
\* Torque categories for bolts and capscrews are identified by their head markings.



#### 7.3.1.2 Metric Bolts

BOLT DIA. "A"	NC BOLT TORQUE*			
	8.8		10.9	
	lbf-ft	N-m	lbf-ft	N-m
M3	0.4	0.5	1.3	1.8
M4	2.2	3	3.3	4.5
M5	4	6	7	9
M6	7	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M14	103	140	148	200
M16	166	225	229	310
M20	321	435	450	610
M24	553	750	774	1050
M30	1103	1495	1550	2100
M36	1917	2600	2710	3675

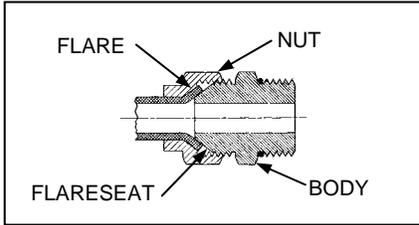
\* Torque categories for bolts and capscrews are identified by their head markings.



## MAINTENANCE/SERVICE

### 7.3.1.3 Flare-Type Hydraulic Fittings

a. Check flare and flare seat for defects that might



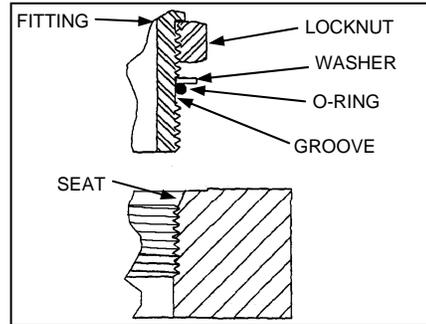
cause leakage.

- b. Align tube with fitting before tightening.
- c. Lubricate connection and hand tighten swivel nut until snug.
- d. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

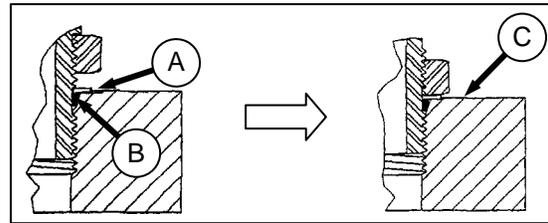
SAE NO.	TUBE SIZE O.D. (in.)	THD SIZE (in.)	NUT SIZE ACROSS FLATS (in.)	TORQUE VALUE*		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
				ft-lbf	N-m	Flats	Turns
3	3/16	3/8	7/16	6	8	1	1/6
4	1/4	7/16	9/16	9	12	1	1/6
5	5/16	1/2	5/8	12	16	1	1/6
6	3/8	9/16	11/16	18	24	1	1/6
8	1/2	3/4	7/8	34	46	1	1/6
10	5/8	7/8	1	46	62	1	1/6
12	3/4	1-1/16	1-1/4	75	102	3/4	1/8
14	7/8	1-3/8	1-3/8	90	122	3/4	1/8

\* The torque values shown are based on lubricated connections as in reassembly.

### 7.3.1.4 O-ring Type Hydraulic Fittings



a. Inspect O-ring and seat for dirt or obvious defects.



- b. On angle fittings, back off the lock nut until washer (A) bottoms out at top of groove (B) in fitting.
- c. Hand tighten fitting until back up washer (A) or washer face (if straight fitting) bottoms on part face (C) and O-ring is seated.
- d. Position angle fittings by unscrewing no more than one turn.
- e. Tighten straight fittings to torque shown.
- f. Tighten angle fittings to torque shown in the following table while holding body of fitting with a wrench.

SAE NO.	THD SIZE (in.)	NUT SIZE ACROSS FLATS (in.)	TORQUE VALUE*		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
			ft-lbf	N-m	Flats	Turns
3	3/8	1/2	6	8	2	1/3
4	7/16	9/16	9	12	2	1/3
5	1/2	5/8	12	16	2	1/3
6	9/16	11/16	18	24	2	1/3
8	3/4	7/8	34	46	2	1/3
10	7/8	1	46	62	1-1/2	1/4
12	1-1/16	1-1/4	75	102	1	1/6
14	1-3/16	1-3/8	90	122	1	1/6
16	1-5/16	1-1/2	105	142	3/4	1/8
20	1-5/8	1-7/8	140	190	3/4	1/8
24	1-7/8	2-1/8	160	217	1/2	1/12

\* The torque values shown are based on lubricated connections as in reassembly.

## MAINTENANCE/SERVICE

### 7.3.2 Recommended Lubricants

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

- Use clean containers to handle all lubricants.
- Store in an area protected from dust, moisture, and other contaminants.

### IMPORTANT

**Do not overfill the cutterbar when adding lubricant.** Overheating and failure of cutterbar components may occur if overfilled.

LUBRICANT	SPEC	DESCRIPTION	USE	CAPACITIES	
				13 Ft	16 Ft
Grease	SAE Multi-Purpose	High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2). Lithium Base	As Required Unless Otherwise Specified.	--	
		High Temp. Extreme Pressure (EP) Performance With 10% Max Molybdenum Disulphide (NLGI Grade 2). Lithium Base	Driveline Slip-Joints	--	
	NLGI 00	Synthetic EP	Conditioner Drive Gearbox	Lubricated For Life 16 oz. (454 grams)	
Gear Lubricant	Traxon SAE 80W90	High Thermal & Oxidation Stability. API Service Class GL-5	Cutterbar	7 pints (3.25 liters)	9 pints (4.25 liters)
			Pump Drive Gearbox	2.1 qts (2.0 liters)	
	SAE 75W90 API Service Class GL-5. (SAE J2360 Preferred)	Fully Synthetic Gear Lubricant	Bevel Gearbox	0.86 pints US (0.4 liters)	
Hydraulic Oil	Single Grade Trans-Hydraulic Oil *	** See Below For List of Recommended Brand Names.	Hydraulic Drive Systems	39 gal. US (147 liters)	48 gal. US (180 liters)

\* **For Australian Units** – Use SAE 15W40 complying with SAE specs for API Class SJ and CH-4 engine oil.

\*\* The following oil company and equipment manufacturer brand names are **recommended**:

Petro Canada DuraTran      Case IH Hy-Tran Plus®  
John Deere Quatrol® J20C      Agco Power Fluid 821XL

\*\* The following oil company and equipment manufacturer brand names are **acceptable**:

New Holland Hydraul      Esso/Exxon Hydraul 56  
Shell Donax TD

## MAINTENANCE/SERVICE

### 7.3.3 Conversion Chart

QUANTITY	INCH-POUND UNITS		FACTOR	SI UNITS (METRIC)	
	UNIT NAME	ABBR.		UNIT NAME	ABBR.
Area	acres	acres	$\times 0.4047 =$	hectares	ha
Flow	US gallons per minute	(gpm)	$\times 3.7854 =$	liters per min	L/min
Force	pounds force	lbf	$\times 4.4482 =$	Newtons	N
Length	inch	in.	$\times 25.4 =$	millimeters	mm
	foot	ft	$\times 0.305 =$	meters	m
Power	horsepower	hp	$\times 0.7457 =$	kilowatts	kW
Pressure	pounds per square inch	psi	$\times 6.8948 =$	kilopascals	kPa
			$\times .00689 =$	megapascals	MPa
Torque	pound feet or foot pounds	lbf-ft or ft-lbf	$\times 1.3558 =$	newton meters	N·m
	pound inches or inch pounds	lbf-in. or in-lbf	$\times 0.1129 =$	newton meters	N·m
Temperature	degrees Fahrenheit	°F	$(F - 32) \times 0.56 =$	Celsius	°C
Velocity	feet per minute	ft/min	$\times 0.3048 =$	meters per min	m/min
	feet per second	ft/s	$\times 0.3048 =$	meters per sec	m/s
	miles per hour	mph	$\times 1.6063 =$	kilometers per hour	km/h
Volume	US gallons	US gal.	$\times 3.7854 =$	liters	L
	ounces	oz.	$\times 29.5735 =$	milliliters	ml
	cubic inches	in. <sup>3</sup>	$\times 16.3871 =$	cubic centimeters	cm <sup>3</sup> or cc
Weight	pounds	lb	$\times 0.4536 =$	kilograms	kg

## MAINTENANCE/SERVICE

### 7.4 LIFT CYLINDER LOCK-OUT VALVES

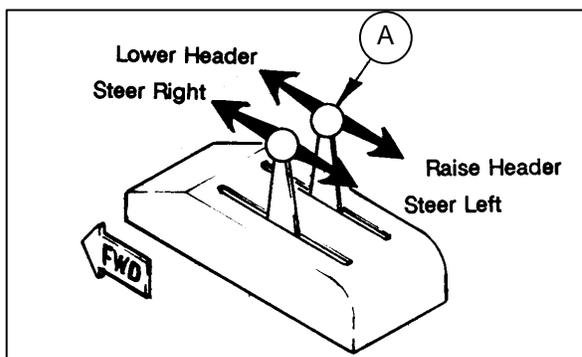


#### WARNING

To avoid bodily injury or death from fall of raised machine, always lock-out lift cylinders before going under mower conditioner for any reason.

Lockout the lift cylinders as follows:

- Raise machine to maximum height by activating remote cylinder control valve in tractor.



#### IMPORTANT

Hoses should be connected so that moving control lever (A) backward raises the header. See Section 6.4.3 Hydraulic Connections for more information.



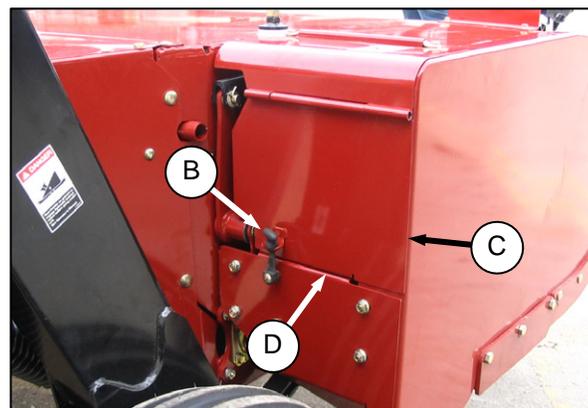
- Close the lock-out valve on each lift cylinder by turning the handle to the horizontal position.

Return to normal operation as follows:



- Turn the handle on the lock-out valves to the vertical position.
- Lower machine by activating the remote cylinder control in tractor.

### 7.5 DRIVE SHIELDS



- To open the left and right drive shields on the header, pull rubber latch (B) off hook and lift cover (C) to open position.
- To close, lower shield and engage bolt (D) in frame.
- Place rubber latch (B) in hook.

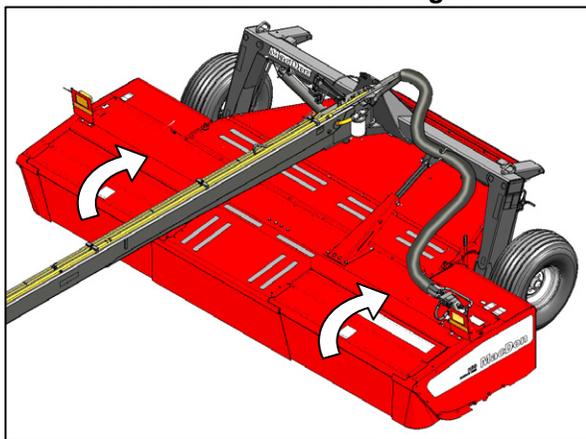
## MAINTENANCE/SERVICE

### 7.6 CUTTERBAR DOORS



#### CAUTION

- Do not operate the machine without all the cutterbar doors down, curtains installed and in good condition.
- The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the mower-conditioner. Replace the curtains if they should become worn or damaged.



- To open doors, lift each door at arrow.
- To close door pull at top and move to closed position. Ensure that curtains hang properly and completely enclose cutterbar area.

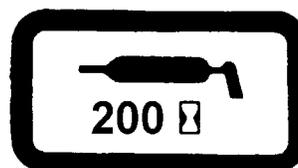
### 7.7 LUBRICATING THE WINDROWER



#### WARNING

To avoid personal injury, before servicing windrower or opening drive covers, follow procedures in Section 7.1, Preparation for Servicing.

The greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation. See illustration below.



Log hours of operation and use the "Maintenance Checklist" provided to keep a record of scheduled maintenance. Refer to Section 7.13, Maintenance Schedule.

#### 7.7.1 Procedure



#### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

- Use the recommended lubricants specified in this manual. See 7.3.2 Recommended Lubricants.
- Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
- Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
- Leave excess grease on fitting to keep out dirt.
- Replace any loose or broken fittings immediately.
- If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

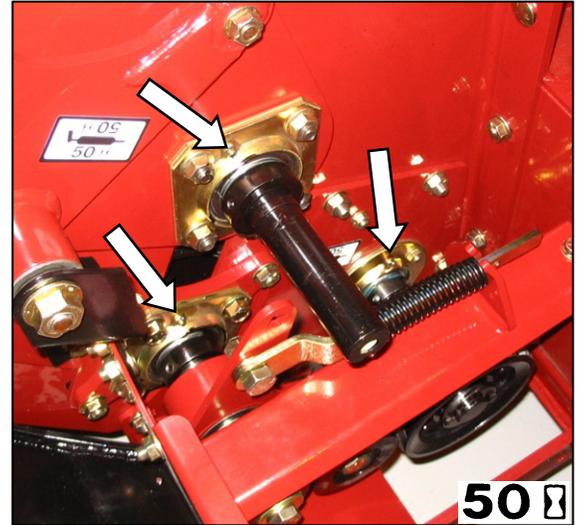
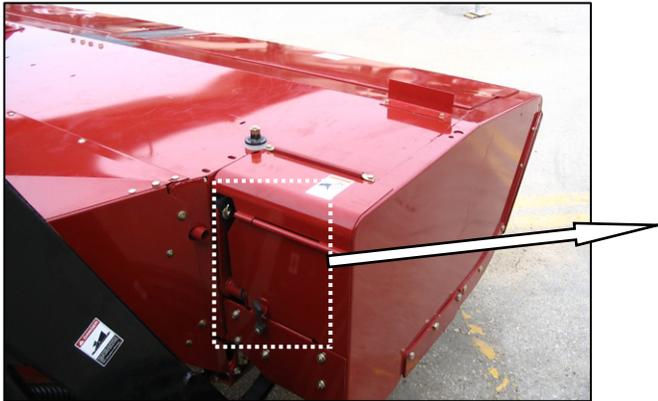
#### 7.7.2 Lubrication Points

Refer to the illustrations on the following pages for identifying the various locations that require lubrication.

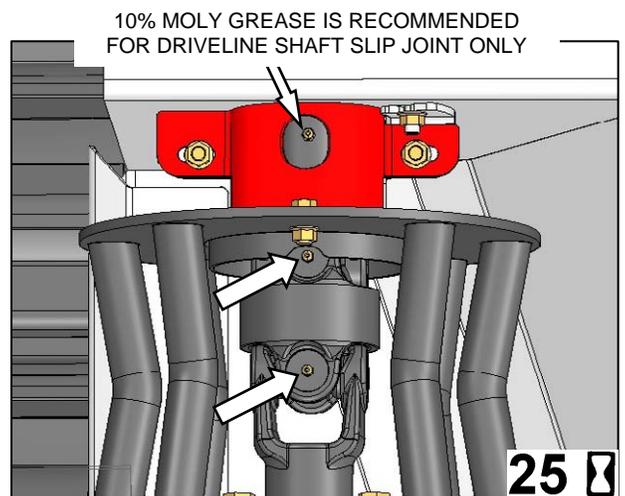
# MAINTENANCE/SERVICE

## I. 13 FT HEADER

High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base



ROLL SHAFT BEARINGS (3 PLCS)



DRIVELINE UNIVERSALS & SHAFT (3 PLCS)

10% MOLY GREASE IS RECOMMENDED FOR DRIVELINE SHAFT SLIP JOINT ONLY

# MAINTENANCE/SERVICE

## 13 FT HEADER (cont'd)

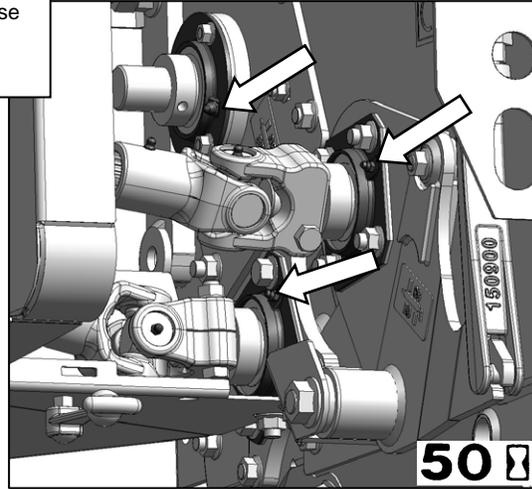
High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base



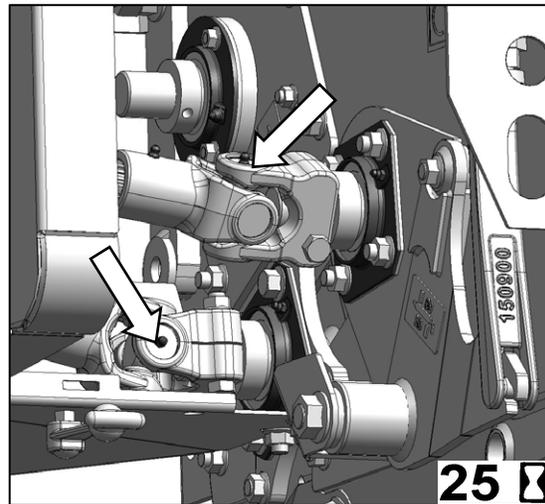
**CHECK PLUG**  
Oil should slightly run out when removed.



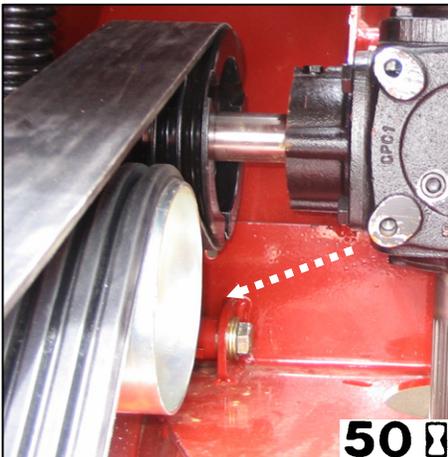
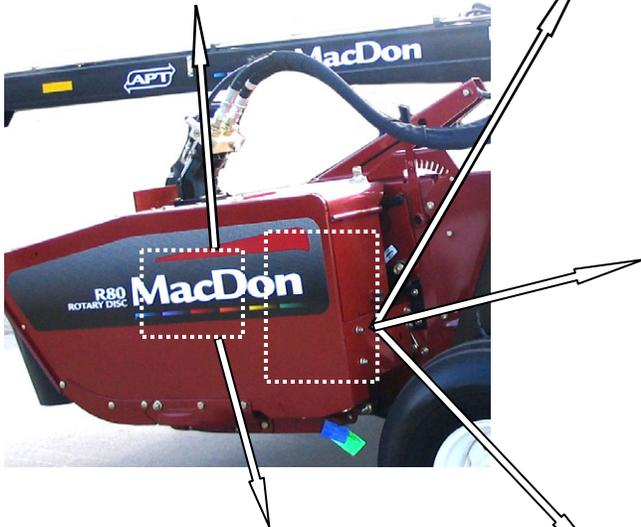
GEARBOX OIL LEVEL



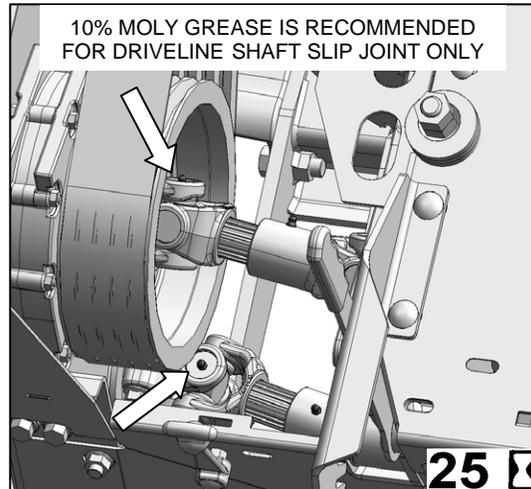
ROLL SHAFT BEARINGS (3 PLCS)



DRIVELINE UNIVERSALS (2 PLCS)



BELT TENSIONER PIVOT (1 PLC)

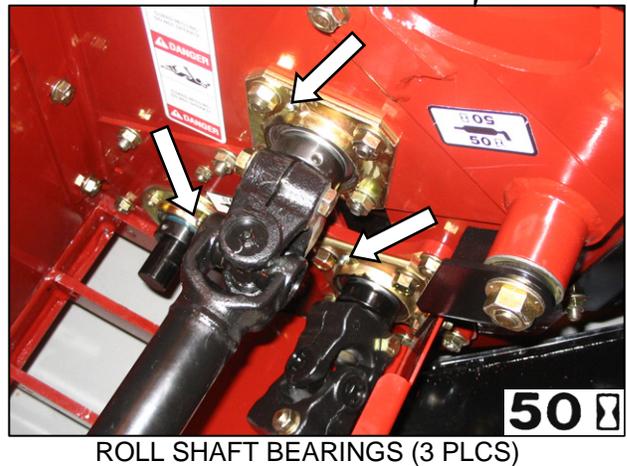
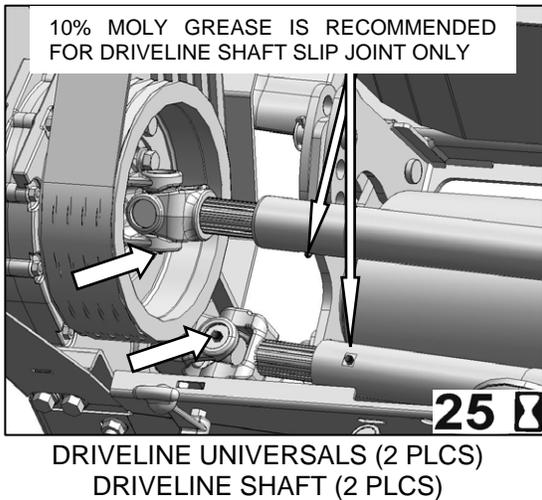
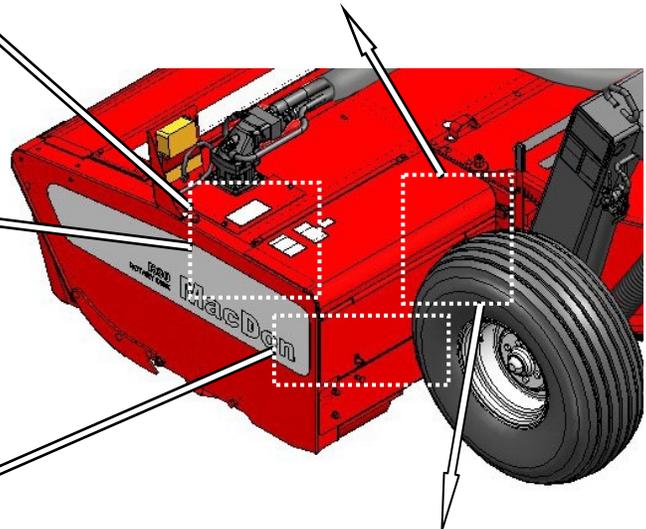
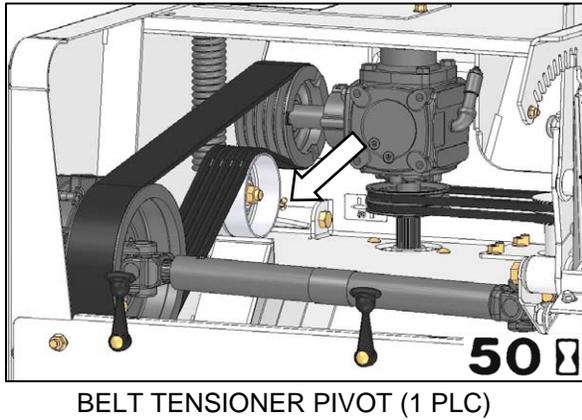
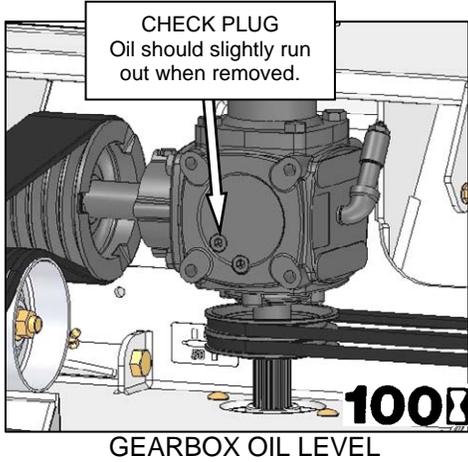


DRIVELINE UNIVERSALS (2 PLCS)  
DRIVELINE SHAFT (2 PLCS)

# MAINTENANCE/SERVICE

## II. 16 FT HEADER

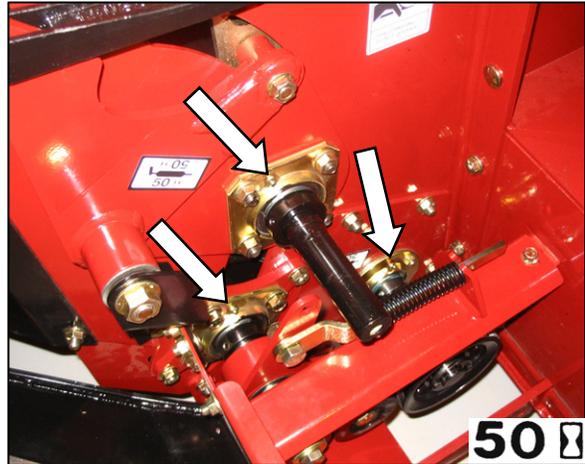
High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base

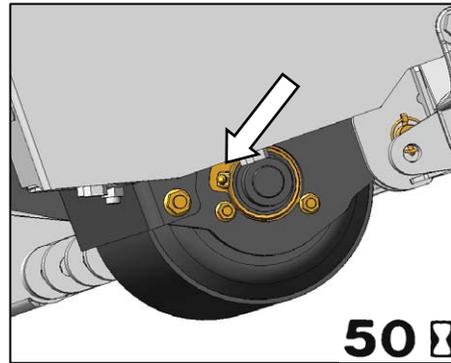
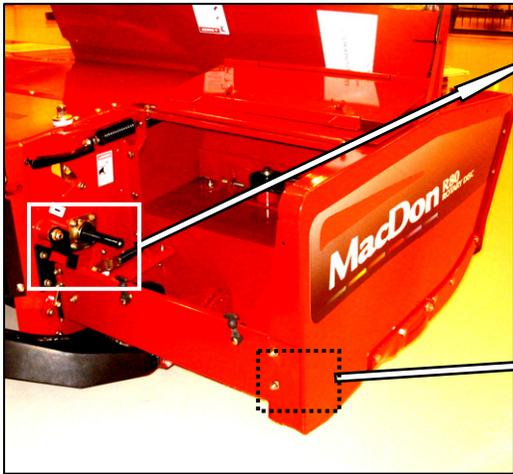
# MAINTENANCE/SERVICE

## 16 FT HEADER (cont'd)

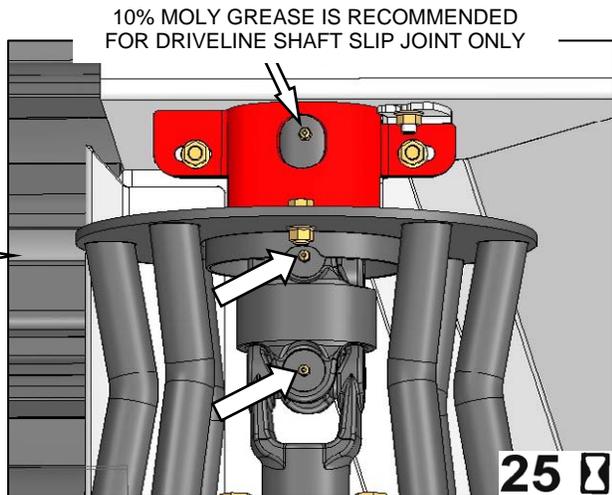
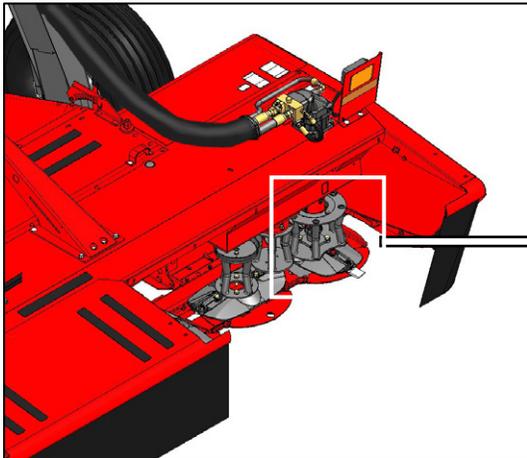
High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base

ROLL SHAFT BEARINGS (3 PLCS)



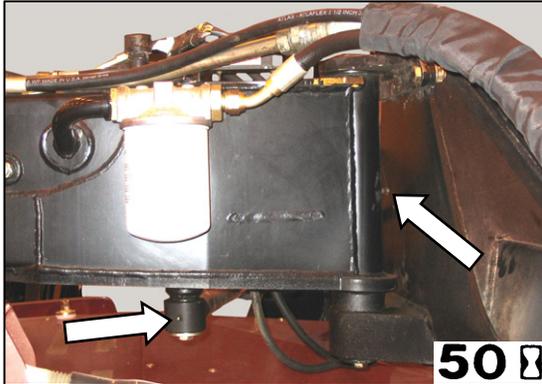
OPTIONAL GAUGE ROLL BEARINGS (2 PLCS)  
BOTH SIDES



DRIVELINE UNIVERSALS (2 PLCS)  
DRIVESHAFT (1 PLC)  
(BOTH SIDES)

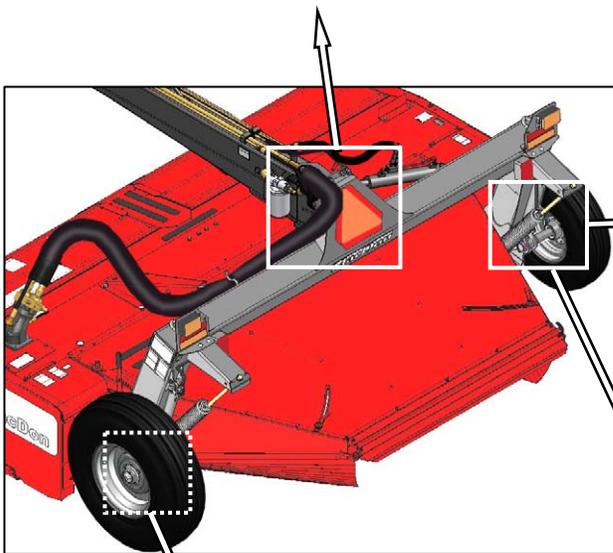
# MAINTENANCE/SERVICE

## III. CARRIER FRAME



TONGUE PIVOT & STEERING CYLINDER

High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base



WHEEL BEARING – BOTH WHEELS



CYLINDER PIVOT 1 PLC

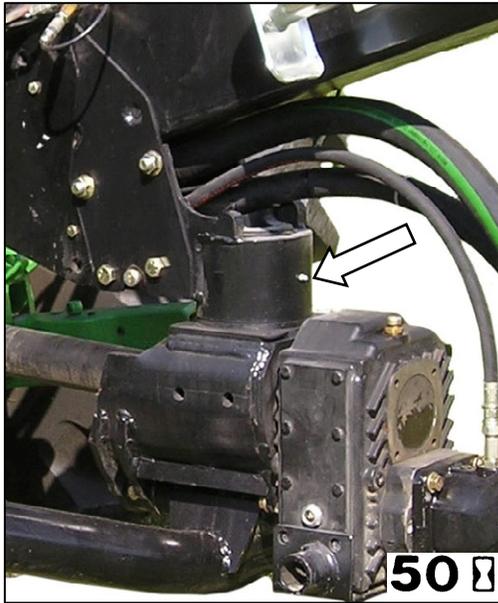


LIFT LINK 1PLC – BOTH SIDES

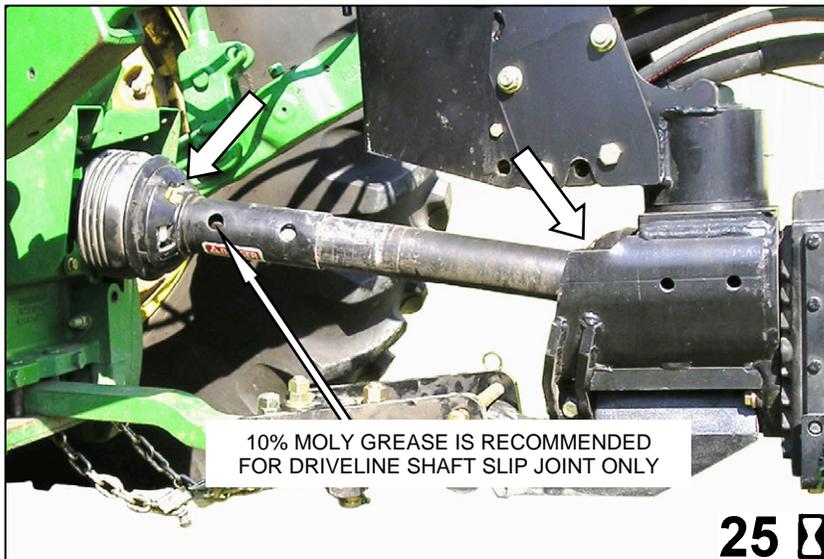
# MAINTENANCE/SERVICE

## IV. DRIVELINE

High Temp. Extreme Pressure  
(EP2) Performance With 1%  
Max Molybdenum Disulphide  
(NLGI Grade 2).Lithium Base



APT SWIVEL



APT DRIVELINE

7.8 CUTTERBAR

7.8.1 Skid Plates and Rock Guards



**DANGER**

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



**DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lock-out valves before going under machine for any reason.

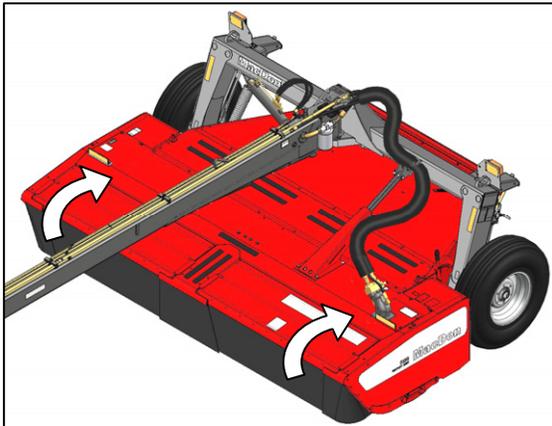


**CAUTION**

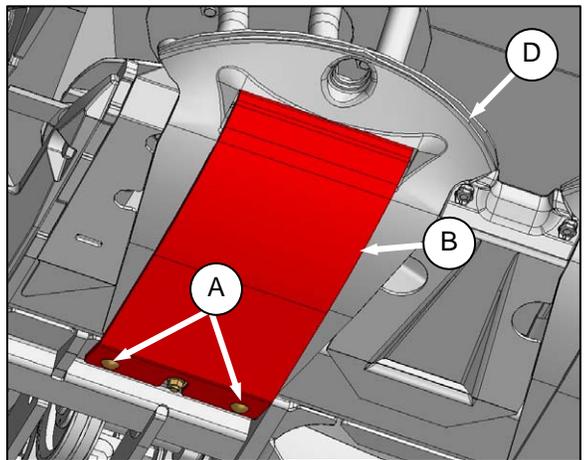
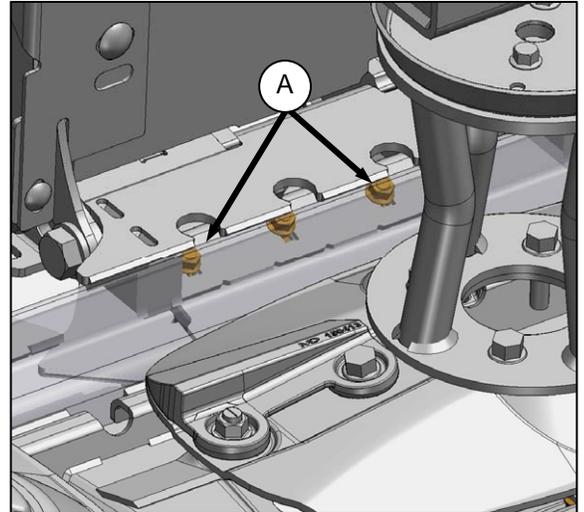
Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

7.8.1.1 Removal

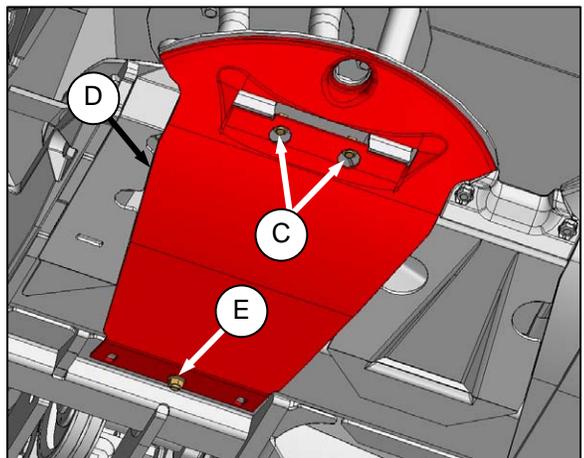
- a. Raise header fully, stop engine, and remove key.



- b. Engage lift cylinder lock-out valves.
- c. Open cutterbar doors.



- d. Remove two bolts (A) from the skid plate (B) and remove skid plate by lowering the aft end and dropping forward end from rock guard (D).



- e. Remove nuts and bolts (C) from rock guard (D).
- f. Remove nut and bolt (E), slightly lower aft end of rock guard (D) and slide rock guard forward off cutterbar.

## MAINTENANCE/SERVICE

### 7.8.1.2 Installation



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



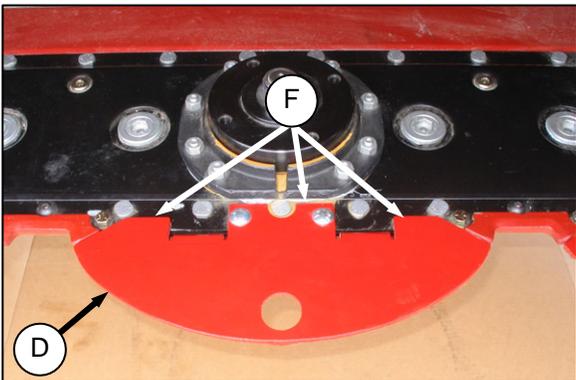
#### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lock-out valves before going under machine for any reason.

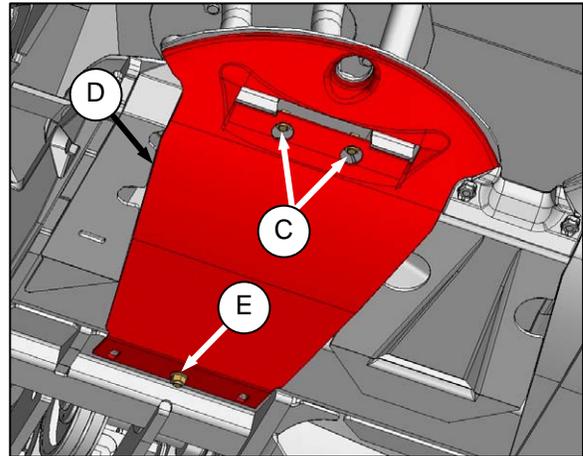


#### CAUTION

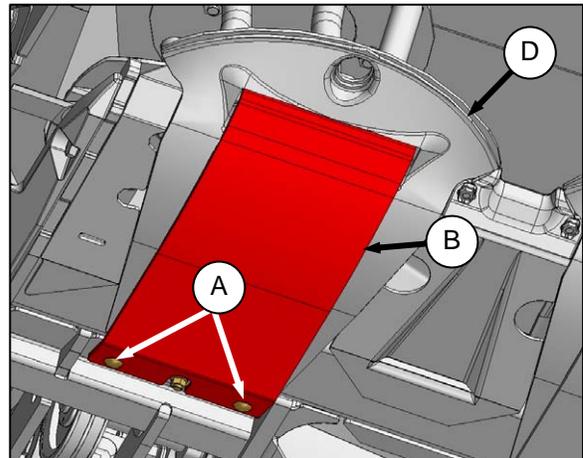
Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.



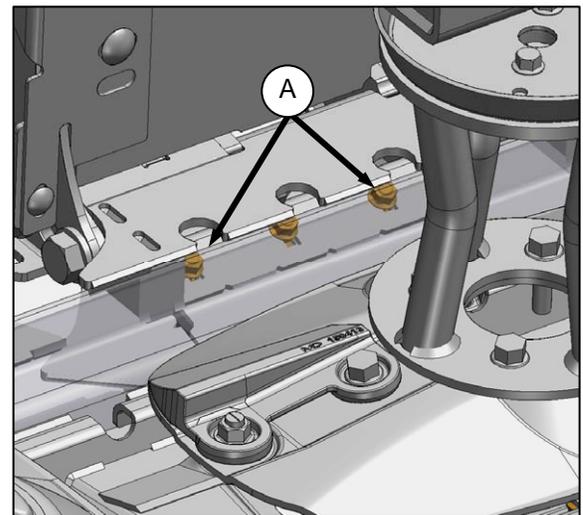
- a. Locate forward end of rock guard (D) onto cutterbar and engage tabs (F) onto cutterbar.



- b. Raise aft end of rock guard (D) and install the long bolt (E) and nut.  
c. Install the two shorter forward bolts (C) and nuts. Tighten bolts.



- d. Slip forward end of skid shoe (B) into forward end of rock guard (D).



- e. Lift aft end and install two bolts (A) and nuts. Tighten bolts from topside of cutterbar.

## MAINTENANCE/SERVICE

### 7.8.2 Cutter Bar Lubrication

The oil level in the cutterbar cannot be checked. If in doubt as to the quantity of oil in the cutterbar, do not add oil. Drain the cutterbar and refill with new clean oil as follows:

#### IMPORTANT

Drain the cutterbar when the oil is warm. If the oil is cold, idle the machine for about 10 minutes prior to draining.



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



#### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

#### 7.8.2.1 Draining

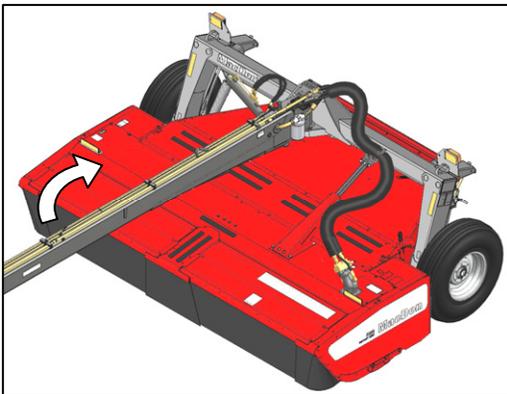
- Park the machine on level ground, raise header fully, stop engine, and remove key.



#### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lock-out valves before going under machine for any reason.

- Engage lift cylinder lock-out valves.



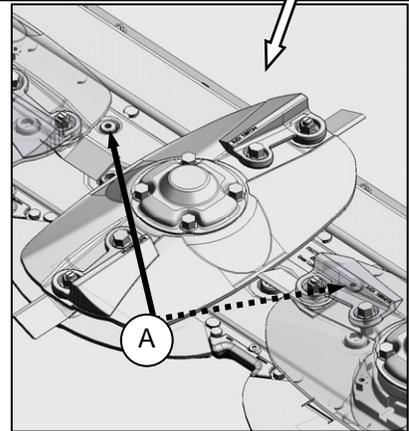
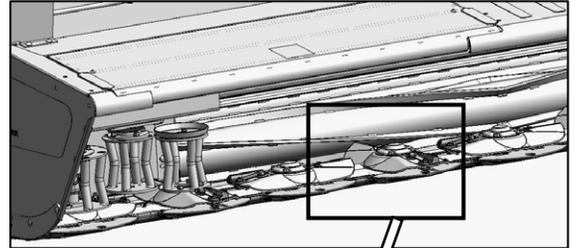
- Open RH cutterbar door.
- To gain access to the cutterbar drain plug, the RH skid shoe needs to be removed. Refer to Section 7.8.1, Skid Shoes and Rock Guards.

- Place a suitably sized container under the cutterbar drain hole and a block under each end of the header.

#### NOTE

*The block under the LH end of the header should be higher than the RH end to improve draining.*

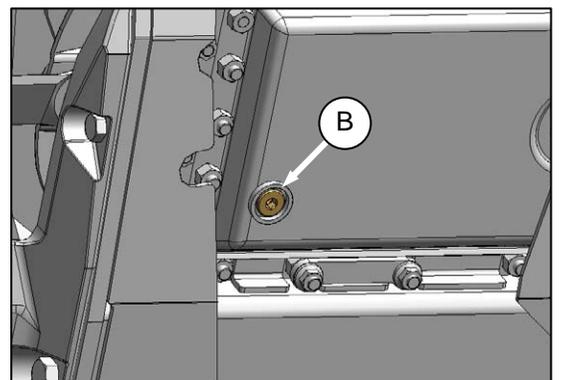
- Disengage the lift cylinder lock-out valves, start mower conditioner, and lower header onto blocks. Shut down mower conditioner and remove key.



- Clean around either filler (A) and remove plug.

#### NOTE

*Rotate disc to expose filler if necessary.*



- Remove drain plug (B) and allow sufficient time for oil to drain.

#### IMPORTANT

Do not flush the cutterbar.

- Replace drain plug (B) and tighten.

## MAINTENANCE/SERVICE

### 7.8.2.2 Filling



#### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lock-out valves before going under machine for any reason.

- Start engine and raise header. Stop engine and engage lift cylinder lock-out valves.
- Move higher block to RH end of header and remove used oil container.

#### NOTE

*Having the fill end higher allows for quicker filling of cutterbar.*

- Disengage lift cylinder lock-out valves.



#### CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

- Start engine and lower header onto blocks. Stop engine and remove key.



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

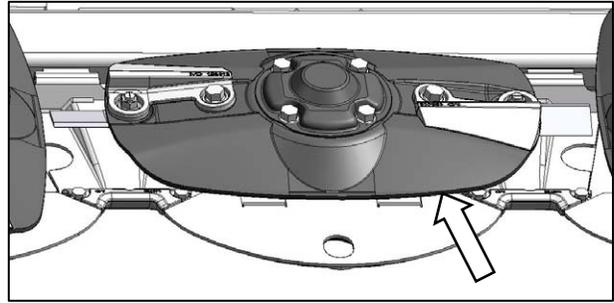
- Add Traxon SAE 80W-90 lubricant through filler hole (A). See illustration on previous page.
  - 13 ft. Header – Exactly 7 pints (3.25 litres).
  - 16 ft. Header – Exactly 9 pints (4.25 litres)

#### IMPORTANT

Do not overfill the cutterbar. Overfilling can cause overheating, and damage to or failure of cutterbar will occur.

- Replace filler plugs.
- Start engine and raise header.
- Stop engine and engage lift cylinder lock-out valves.
- Remove blocks.
- Reinstall skid shoe that was previously removed. Refer to Section 7.8.1 Skid Shoes and Rock Guards.

### 7.8.3 Disc Maintenance



Check daily that discs are not damaged by rocks or worn excessively from abrasive working conditions. They are interchangeable and a disc can be moved to a spindle that rotates in the opposite direction, as long as it is in a useable condition. The discs are not repairable and must be replaced if severely damaged or worn.

#### IMPORTANT

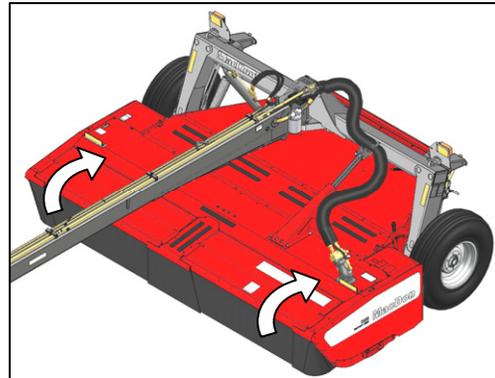
If holes appear in a disc, replace the disc immediately. Do not attempt to repair the discs. Always use factory replacement parts.

#### 7.8.3.1 Disc Removal



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



- Open cutterbar door(s).



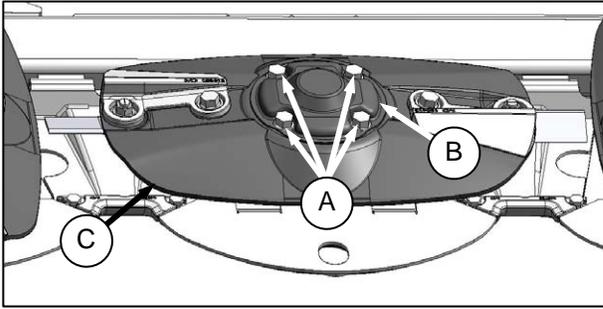
#### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

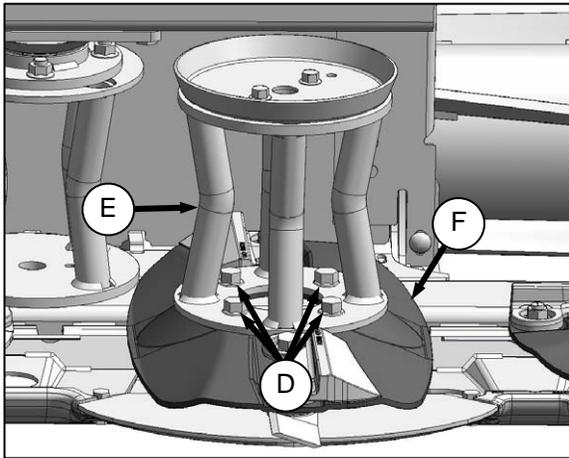
*(continued next page)*

## MAINTENANCE/SERVICE

- b. Place a block of wood between two discs to prevent disc rotation while loosening blade bolts.

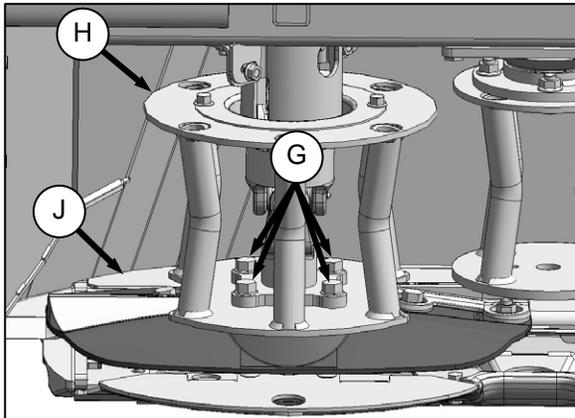


- c. Remove four bolts (A) on disc cover (B) and remove cover and disc (C).  
d. If end disc is being removed;

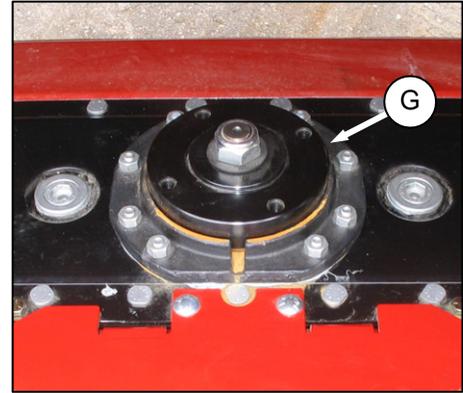


1. Remove bolts (D) and remove deflector (E).
2. Remove disc (F).

- e. If driveline disc is being removed;



1. Remove bolts (G).
2. Lift deflector (H) and driveline, and slide disc (J) off spindle.



- f. Clean spindle (G).

### 7.8.3.2 Disc Installation



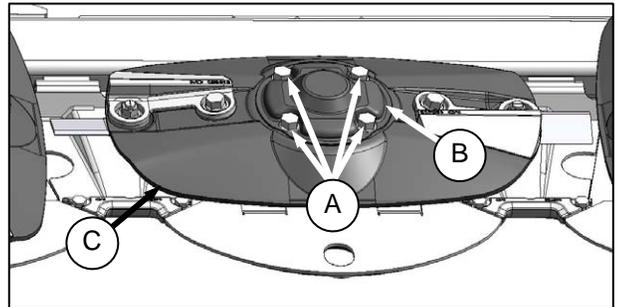
## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



## CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

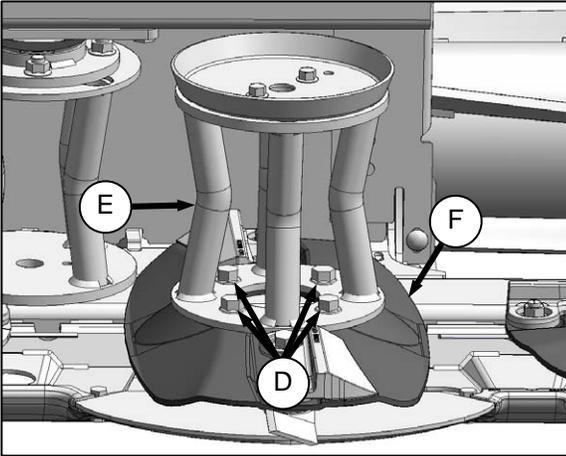


- a. Position new disc (C) on spindle ensuring it is 90 degrees to the adjacent discs.
- b. Install cover (B) and secure with four bolts (A).
- c. Tighten bolts to 92 ft-lbf (125 N-m).

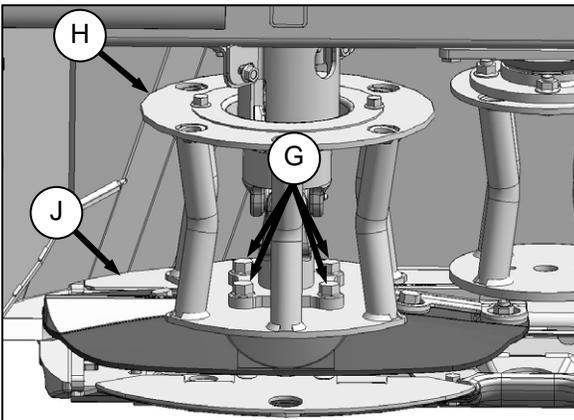
*(continued next page)*

## MAINTENANCE/SERVICE

d. If installing end disc;



1. Position new disc (F) on spindle ensuring it is 90 degrees to adjacent discs.
2. Install deflector (E) and secure with four bolts (D).
3. Tighten bolts to 92 ft·lbf (125 N·m).



e. If driveline disc is being installed;

1. Lift deflector (H) and driveline and slide disc (J) onto spindle.
2. Locate deflector (H) and driveline onto disc (J).
3. Install bolts (G) and torque to 92 ft·lbf (125 N·m).

f. Remove block of wood if used.



### WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

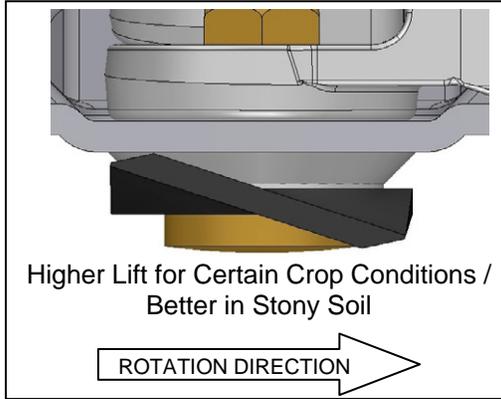
g. Close cutterbar doors.

# MAINTENANCE/SERVICE

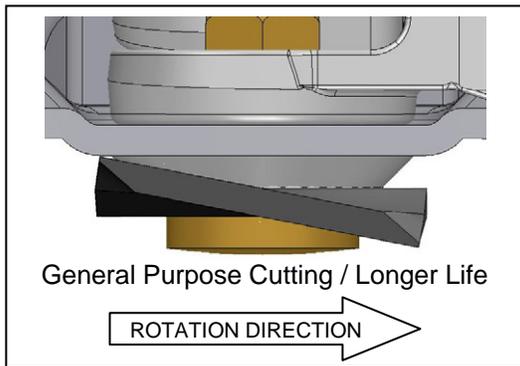
## 7.8.4 Cutter Blades

### 7.8.4.1 Cutter Blade Types

#### a. 18 DEGREE BEVEL DOWN



#### b. 11 DEGREE BEVEL UP (Optional)



### 7.8.4.2 Inspection



#### CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.



#### CAUTION

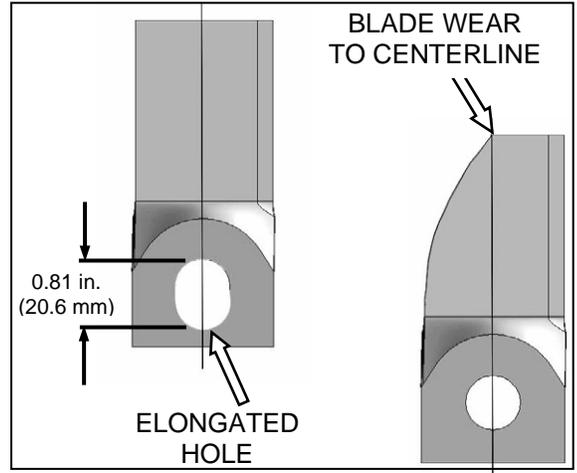
Damaged blades may damage the cutterbar, and result in poor cutting performance. Replace damaged blades at earliest possible opportunity.



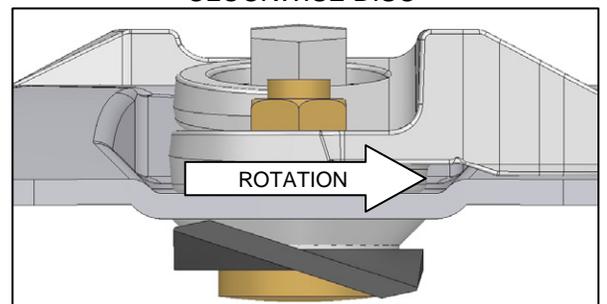
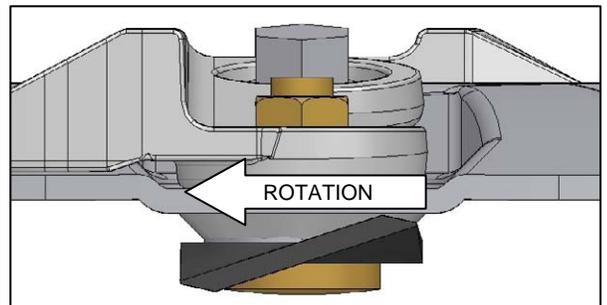
#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. Check daily that the cutter blades are securely attached to the disc.



- b. Check blades for cracks or wear beyond safe operating limits, and distortion.
- c. Replace blades immediately if any of these problems occur.



#### IMPORTANT

Blades should be replaced in pairs, otherwise the disc may be unbalanced and damage the cutterbar.

#### IMPORTANT

The cutter blades have cutting edges on both edges so that the blade can be turned over and reused. The twist in each blade determines if its cutting direction is clockwise or counterclockwise.

## MAINTENANCE/SERVICE

### 7.8.4.3 Replacement



### CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

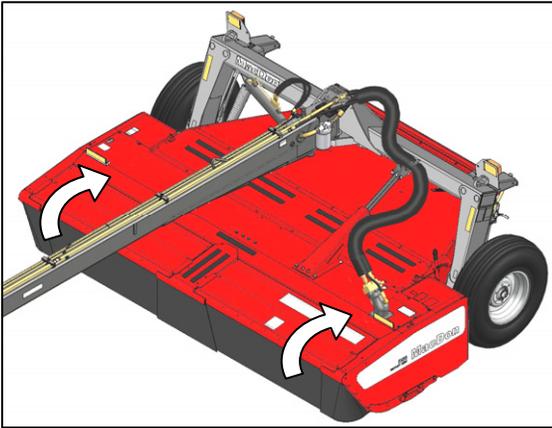


### DANGER

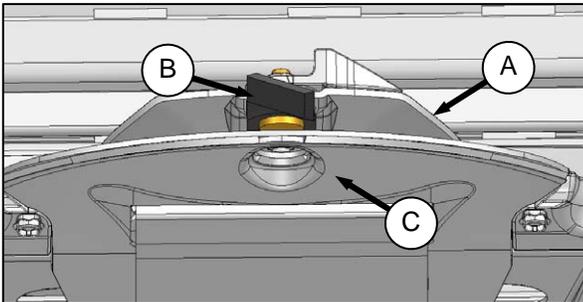
To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage lift cylinder lock-out valves before going under machine for any reason.

Replace cutter blade as follows:

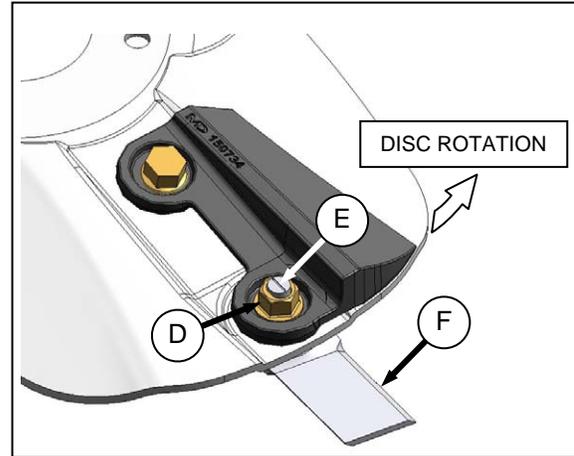
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open cutterbar door(s).



- Rotate disc (A) so that blade (B) faces forward, and lines up with hole (C) in rock guard.
- Place a block of wood between two discs to prevent disc rotation while loosening blade bolts.
- Clean debris from blade attachment area.



- Remove nut (D).
- Remove shoulder bolt (E), and blade (F).
- Install new or reversed blade (F) with shoulder bolt (E) onto disc.
- Install nut (D). Tighten nut to 100 ft·lbf (135 N·m).
- Remove block of wood if used.



### WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

- Close doors.

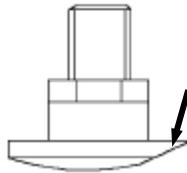
## MAINTENANCE/SERVICE

### 7.8.4.4 Cutter Blade Hardware

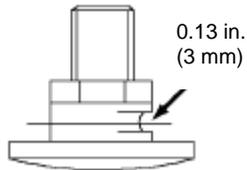
Check blade attachment hardware each time blades are changed. Refer to previous section for hardware replacement procedure.

- a. Check bolts for wear or damage and replace bolt if:

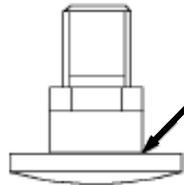
1. Bolt has been removed and installed five times.
2. Head is worn flush with bearing surface of blade.



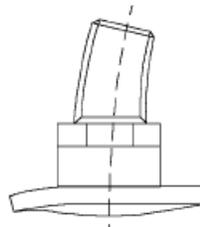
3. Diameter of bolt neck is worn out of specification.



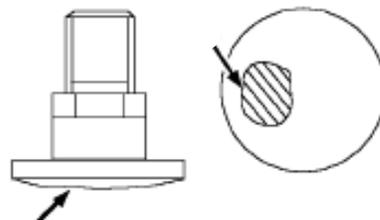
4. Bolt is cracked.



5. Bolt is visibly distorted.

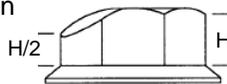


6. Evidence of interference with adjacent parts.



- b. Check nuts for wear or damage and replace nut if:

1. Worn height is less than half total height.
2. Cracked.
3. Nut has been removed and installed five times.



## MAINTENANCE/SERVICE

### 7.8.5 Accelerators

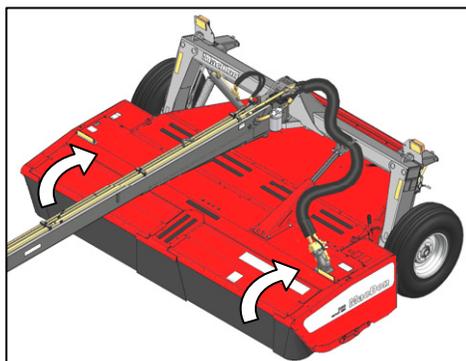
#### 7.8.5.1 Removal



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



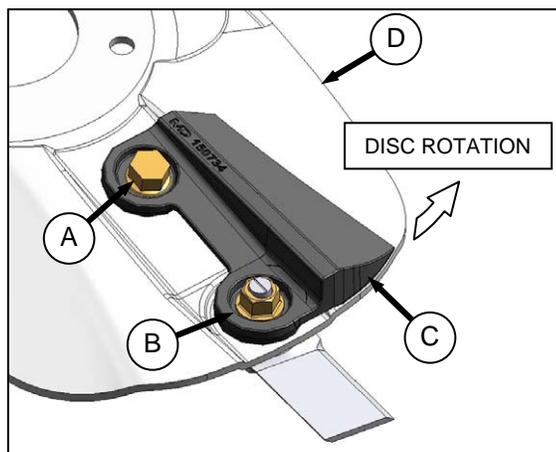
- Open cutterbar doors.



### CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

- Remove disc. Refer to Paragraph 7.8.3.1 Disc Removal.



- Remove nut and bolt (A), nut (B), and remove accelerator (C) from disc (D). Do not remove cutter blade bolt unless it or the blade are being replaced. Repeat for other accelerator.

#### 7.8.5.2 Installation

- Locate accelerator (C) on disc onto existing cutter blade bolt and install nut (B).

#### NOTE

Accelerators are handed for clockwise and counterclockwise operation. Verify the direction of disc before installing accelerators.

- Install hex bolt (A) and nut at inboard hole. Bolt head faces up.
- Tighten both nuts to 100 ft-lbf (135 N-m).
- Repeat for other accelerator.
- Reinstall disc on spindle. Refer to Paragraph 7.8.3.2 Disc Installation.
- Remove block of wood if used.



### WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

- Close cutterbar doors.

## MAINTENANCE/SERVICE

### 7.8.6 Hourglass Deflectors

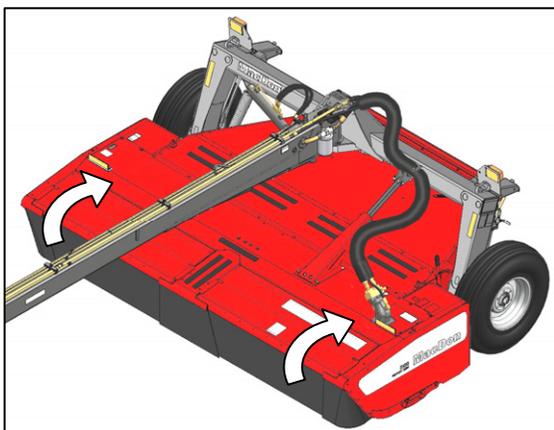
Check daily that hourglass deflectors are not damaged or bent by rocks. The deflectors are not repairable and must be replaced if severely damaged or worn.



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open cutterbar door(s) and inspect deflectors.

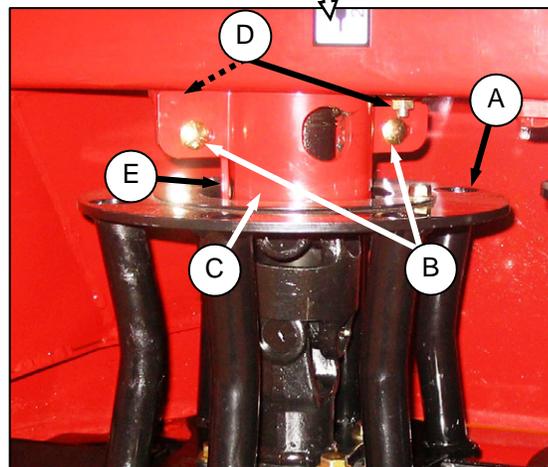


#### CAUTION

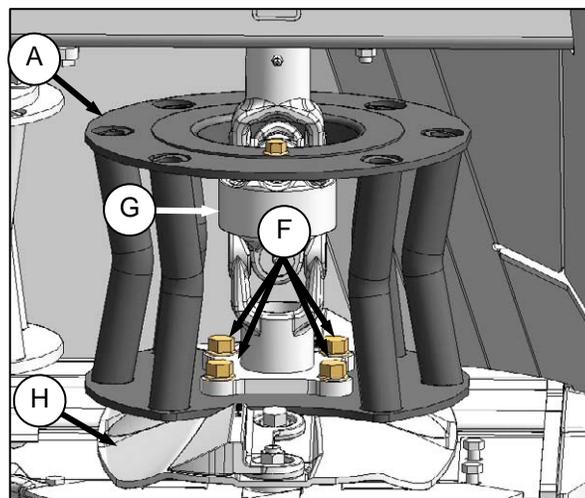
Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

### 7.8.6.1 Driveline Deflector – 13 & 16 Ft

- Remove driveline deflector (A) as follows:



- Remove two bolts (B) and remove guard (C).
- Loosen two bolts (D) and remove guard (E).
- Rotate deflector (A) so that wider space between bars faces forward.
- Place a block of wood between two discs to prevent deflector from turning.



- Remove four bolts (F).
- Lift driveline (G) off deflector (A) base and slide lower end of deflector off disc (H).

(continued next page)

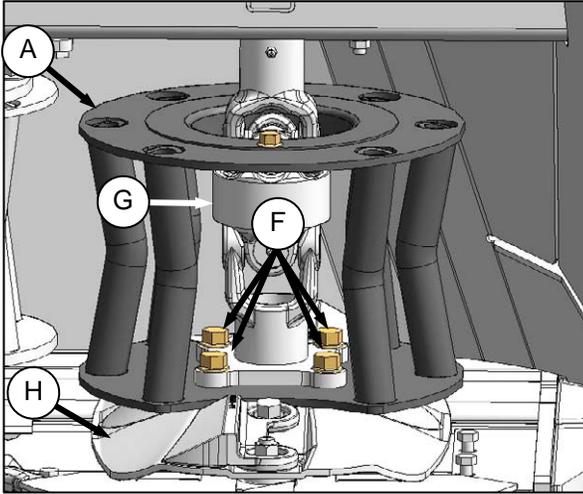
## MAINTENANCE/SERVICE

- b. Install driveline deflector as follows:

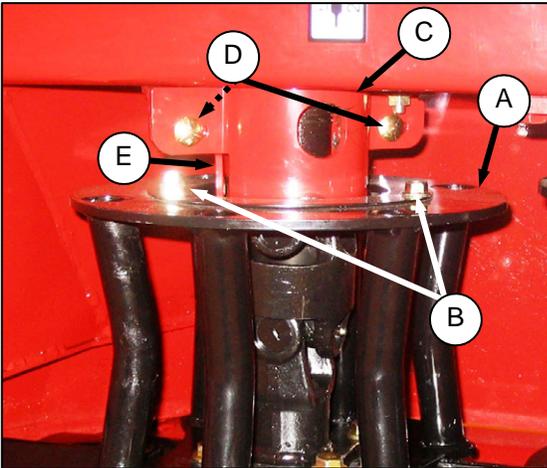


### CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.



1. Slide driveline (G) upward onto shaft, locate deflector (A) over driveline, and position deflector on disc (H).
2. Align cut-outs in base of deflector with cutter blades.
3. Install four bolts (F), and torque to 92 ft·lbf (125 N·m).



4. Position guard (E) and tighten bolts (D).
5. Position guard (C) and attach with two bolts (B).
6. Remove block of wood if used.



### WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

7. Close cutterbar doors.

#### 7.8.6.2 Driven Deflector – 13 Ft



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

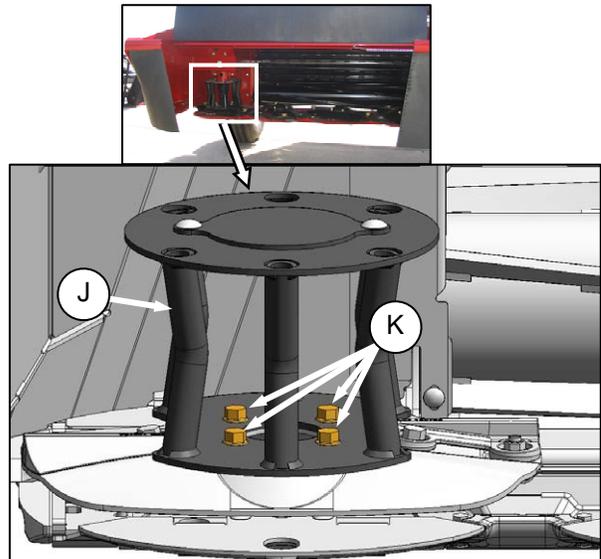


### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

- a. Remove driven deflector as follows:

1. Place a block of wood between two discs to prevent deflector from turning.



2. Remove four bolts (K) attaching deflector (J) to disc and remove deflector.
- b. Install deflector as follows:
1. Position deflector (J) on disc and install bolts (K) and torque to 92 ft·lbf (125 N·m).
  2. Remove block of wood if used.
  3. Close cutterbar doors.

## MAINTENANCE/SERVICE

### 7.8.6.3 Driven and Suspended Deflectors - 16 Ft



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

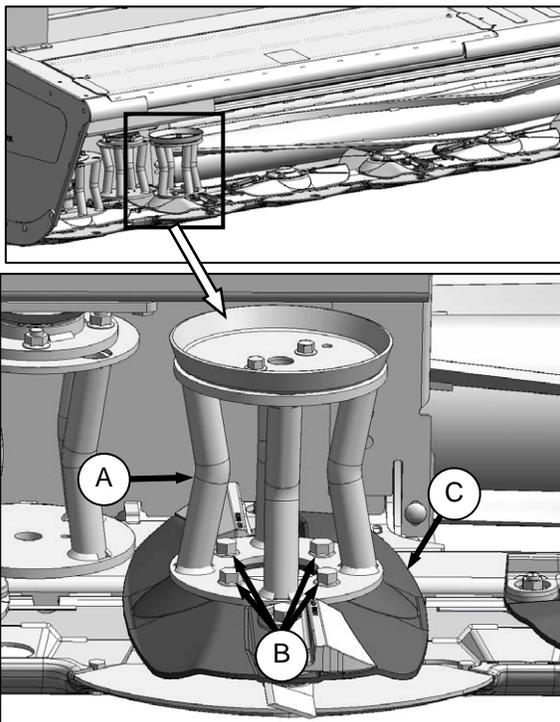


#### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

#### Driven Deflector (A)

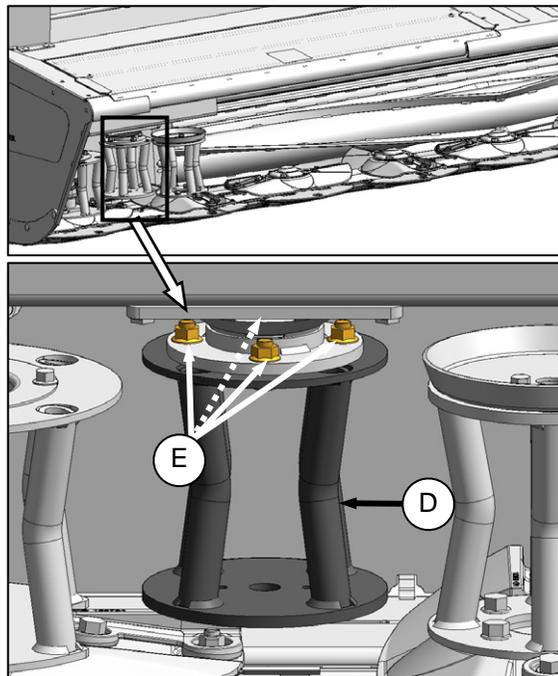
- Place a block of wood between two discs to prevent deflector from turning.



RH SHOWN – LH OPPOSITE

- To remove driven deflector (A), remove four bolts (B) and remove deflector.
- To install deflector (A), position deflector on disc (C) and install bolts (B) and torque to 92 ft·lbf (125 N·m).
- Remove block of wood if used.

#### Suspended Deflector (D)

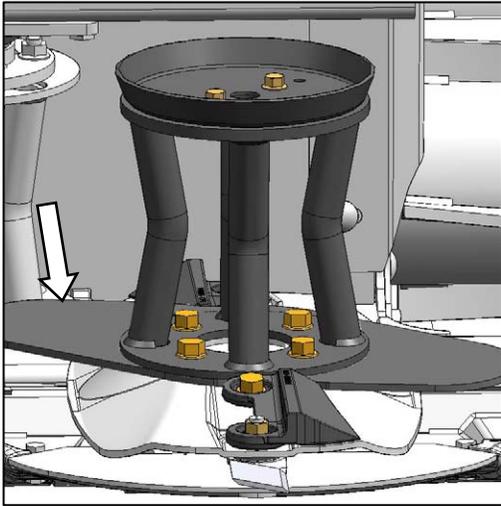


RH SHOWN – LH OPPOSITE

- Place a block of wood between two discs to prevent deflector from turning.
- To remove suspended deflector (D), remove four bolts (E) and nuts, and remove deflector.
- To install deflector (D), position deflector on flange (F) and install bolts (E) and nuts. Tighten to 92 ft·lbf (125 N·m).
- Remove block of wood if used.
- Close doors.

## MAINTENANCE/SERVICE

### 7.8.7 Tall Crop Feed Plates



The tall crop feed plates assist the feeding of tall crops into the conditioner by encouraging material flow from behind the hourglass deflectors. They will degrade the cutting performance of the cutterbar if they are used in medium to light alfalfa, and so should not be installed in those types of crops. The feed plates are designed for installation under the two inboard hourglass deflectors and only on 16 ft headers. They are stored inside the RH side drive compartment.

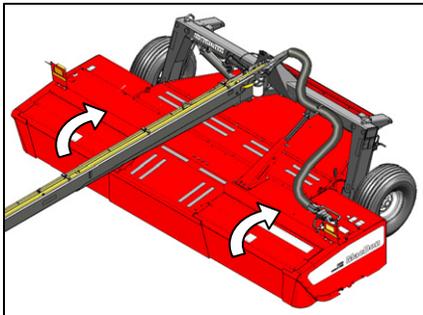


### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

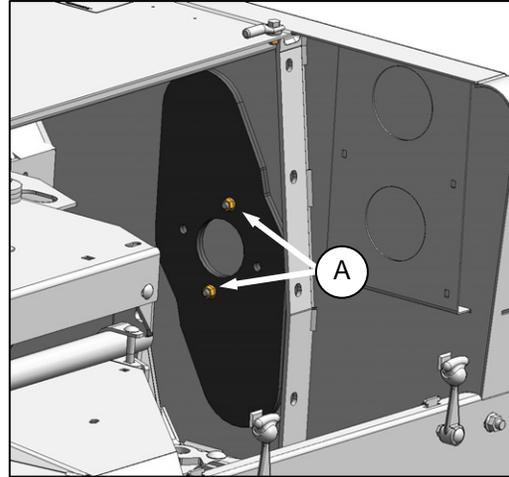
#### 7.8.7.1 Installation

- Lower header to the ground, shut off engine and remove key from ignition.



- Open cutterbar doors.

- Open RH side drive compartment shield.



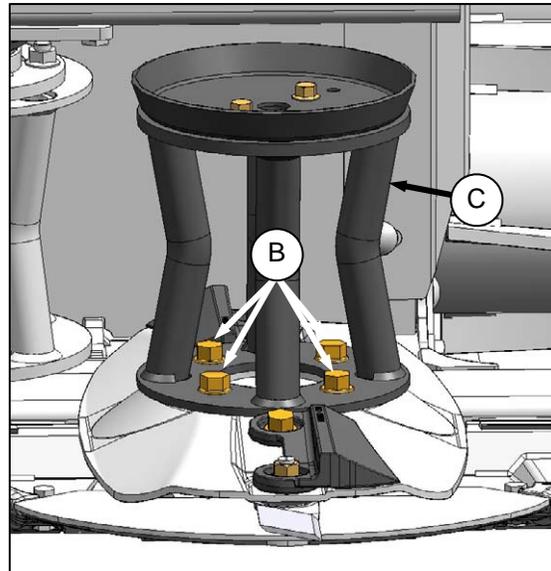
- Remove nuts (A) securing feed plates to side of compartment and remove plates.



### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

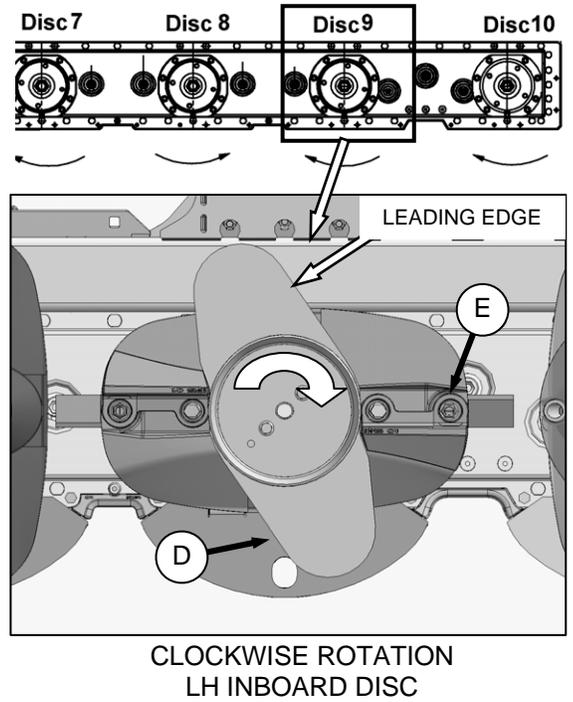
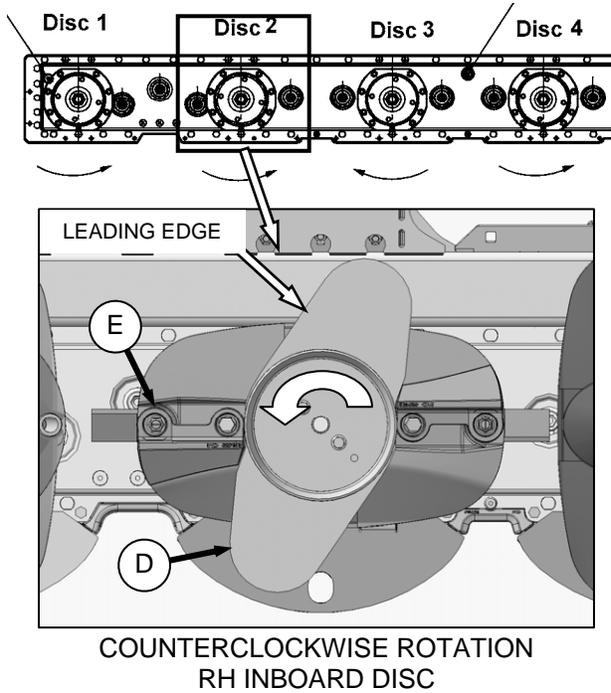
- Place a block of wood between discs to prevent deflector from turning.



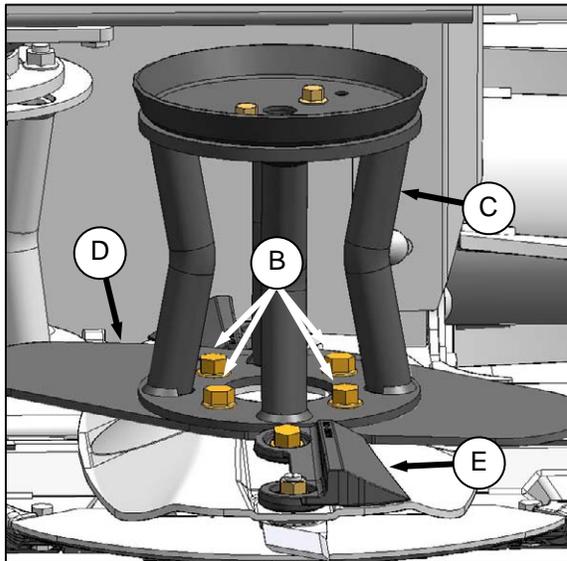
- Remove four bolts (B) and remove inboard hourglass driven deflector (C) from cutterbar.

(continued next page)

## MAINTENANCE/SERVICE



- g. Locate feed pate (D) on the disc ensuring that hole in feed plate registers on disc. Position plate as shown and align holes.



COUNTERCLOCKWISE ROTATION  
RH INBOARD DISC

**IMPORTANT**

Feed plate should be located so that when holes are aligned, the leading edge of the feed plate (D) is further from the accelerator (E) than the trailing edge.

**NOTE**

*Older type feed plates may require trimming to properly locate on disc. Locate feed plate (D) on disc and scribe a trim line on feed plate to clear the accelerators (E). Trim feed plate to suit.*

- h. Re-position deflector (C) and align holes.
- i. Re-install bolts (B) and tighten to 92 ft·lbf (125 N·m).
- j. Repeat above steps for opposite side.
- k. Manually rotate discs to check for interference of feed plate and adjacent parts.

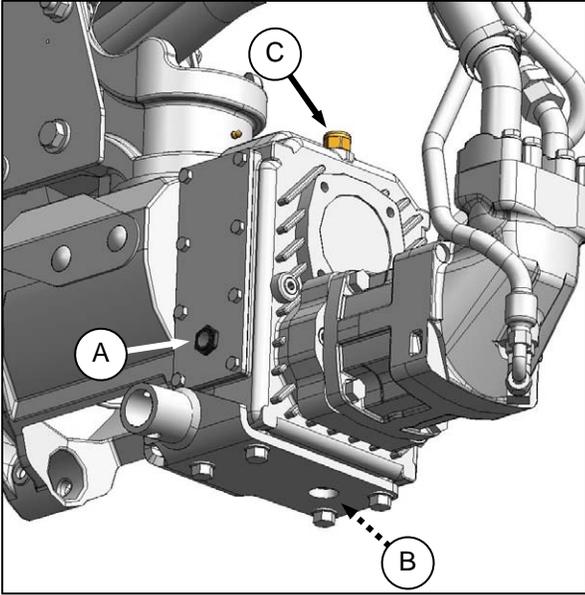
## MAINTENANCE/SERVICE

### 7.9 HEADER DRIVE

#### 7.9.1 Pump Gearbox

##### 7.9.1.1 Checking Oil Level

- a. Park mower conditioner on level ground.

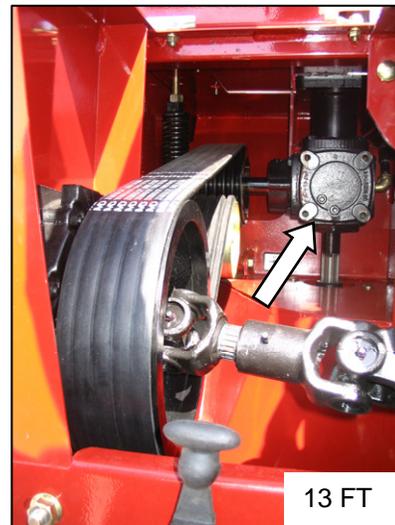
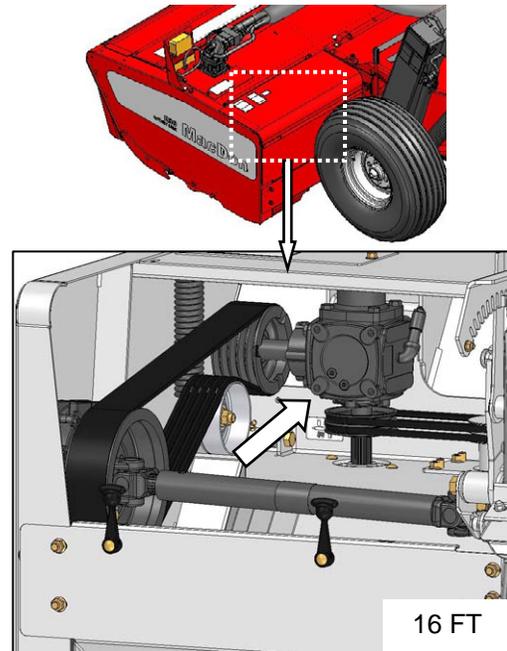


- b. Check oil level in sight gauge (A) on lower left side of gearbox. The oil must be even with the sight glass when at the proper level.

##### 7.9.1.2 Changing Oil

- a. Drain the gearbox when the oil is warm. If the oil is cold, idle the machine for about 10 minutes prior to draining.
- b. Place a suitable container under drain plug (B) and remove the plug.
- c. Allow sufficient time for oil to drain.
- d. Replace plug and tighten.
- e. Remove filler/breather plug (C).
- f. Add 2.1 qts (2.0 litres) SAE 80W-90 gear lubricant to gearbox through port (C).
- g. Check sight glass (A) for proper level.
- h. Properly dispose of used oil and clean up any spilled oil.

#### 7.9.2 Bevel Gearbox



The bevel gearbox is located inside the drive compartment at the left hand side of the header. If repairs are required, it should be removed and serviced at your dealer. Refer to Section 7.9.2.3 Removal – Bevel Gearbox.

## MAINTENANCE/SERVICE

### 7.9.2.1 Checking Oil

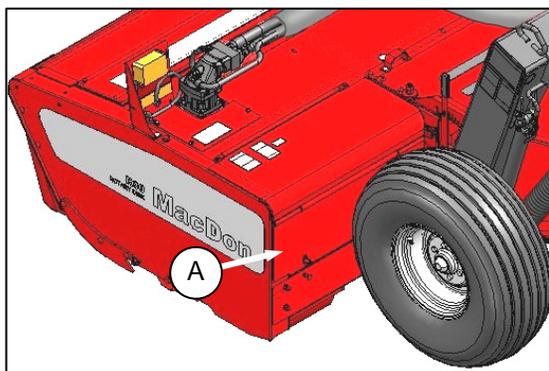
The bevel gearbox oil level should be checked every 100 hours or once per year:



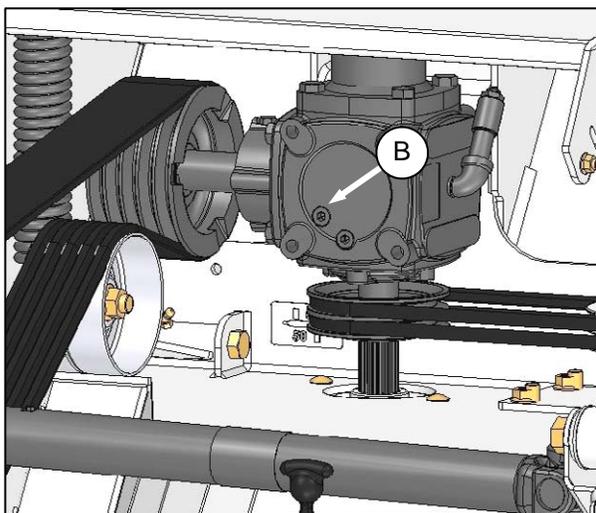
#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. Rest header onto blocks so that it is level.



- b. Open up LH drive shield (A).



16 FT SHOWN – 13 FT SIMILAR

- c. Remove plug (B) and verify that the oil slightly runs from the hole.
- d. Replace plug and tighten.
- e. Clean up any spilled oil.

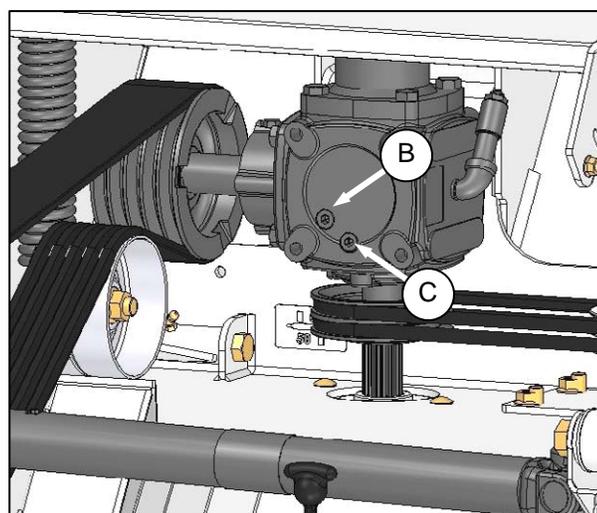
### 7.9.2.2 Changing Oil



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. Drain the gearbox when the oil is warm. If the oil is cold, idle the machine for about 10 minutes prior to draining.
- b. Raise header to full height and engage windrower lift cylinder locks. Stop engine and remove key.
- c. Open up LH drive shield (A).



16 FT SHOWN – 13 FT SIMILAR

- d. Place a suitable container under drain plug (C).
- e. Remove plugs (B) and (C).
- f. Allow sufficient time for oil to drain.
- g. Replace plug (C) and tighten.
- h. Disengage windrower lift cylinder locks, start engine and lower header so that it is level.
- i. Add 0.86 pints (0.4 litres) of 75W-90 Synthetic gear oil to gearbox through port (B). Oil should slightly run out of port (B) when full.
- j. Replace plug (B) and tighten.
- k. Properly dispose of used oil and clean up any spilled oil.
- l. Lower drive shield (A).

## MAINTENANCE/SERVICE

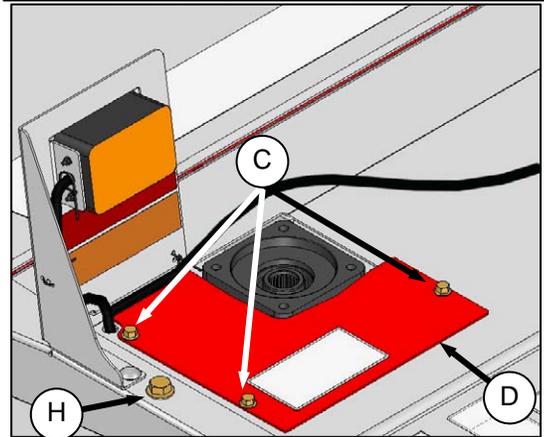
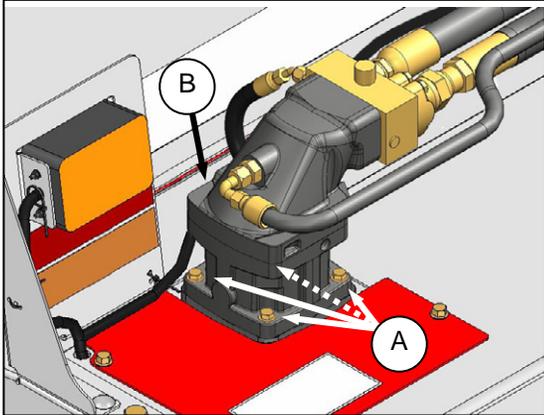
### 7.9.2.3 Removal – Bevel Gearbox



## DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. Lower header to ground, turn off engine, and remove key.



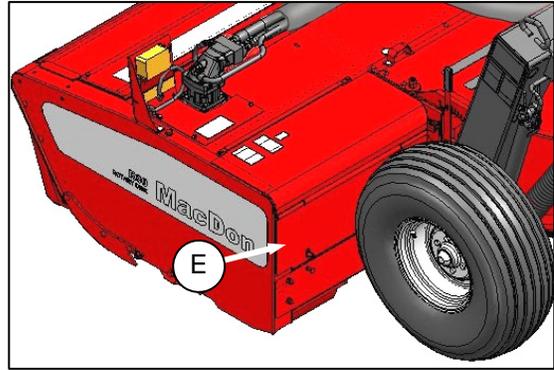
16 FT SHOWN – 13 FT SIMILAR

- b. Remove four bolts (A) and remove hydraulic motor (B). Locate motor and hoses clear of work area.

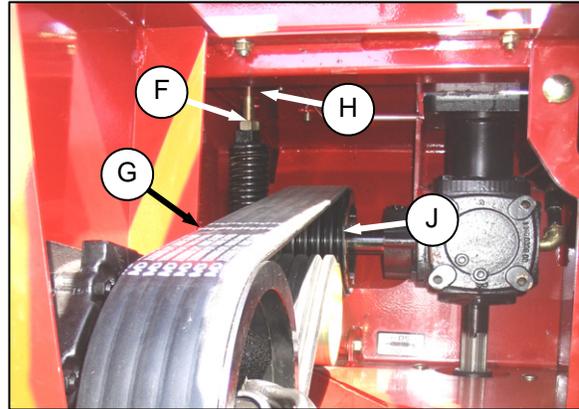
**NOTE**

*On 16 ft header, cut plastic ties securing wiring harness to hose bundle as required.*

- c. Remove three bolts (C) and lift off panel (D).



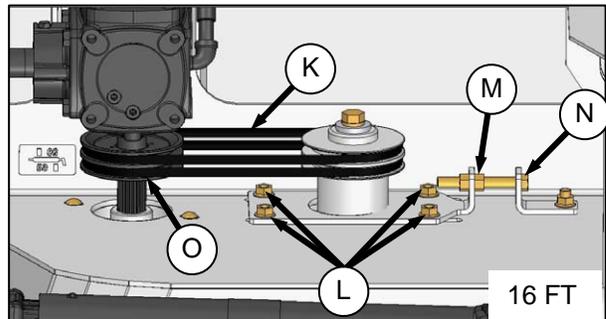
- d. Open LH drive shield door (E).



- e. Loosen jam-nut (F) and loosen belt (G) with adjuster bolt (H) so that belt can be slipped off pulley (J).

**NOTE**

*Following step f. is only applicable to 16 ft. header.*

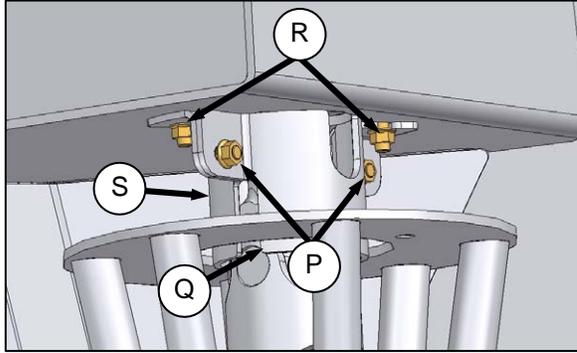


- f. Loosen hourglass deflector drive belts (K) as follows:

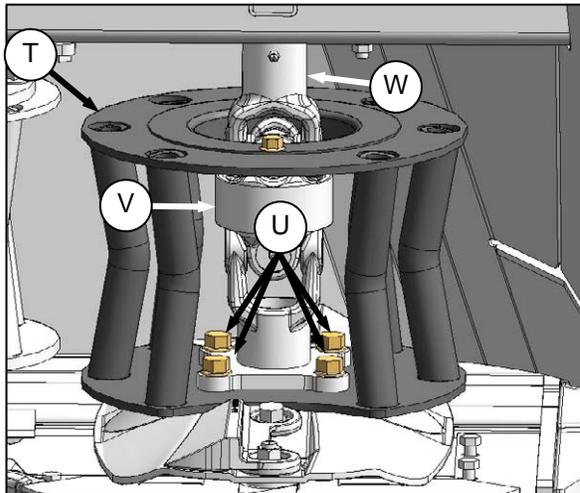
1. Loosen nuts (L).
2. Loosen jam-nut (M) on adjuster bolt (N).
3. Turn adjuster bolt (N) to loosen belts (K) so they can be slipped off drive pulley (O).

*(continued next page)*

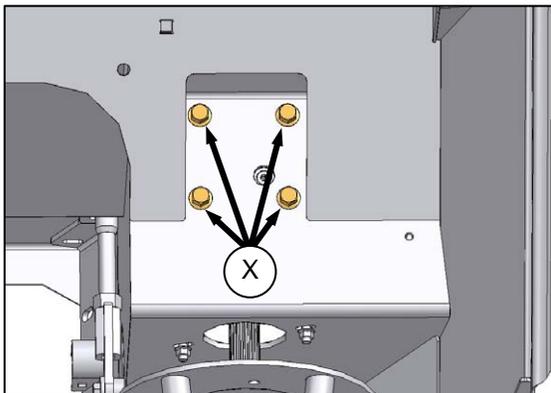
## MAINTENANCE/SERVICE



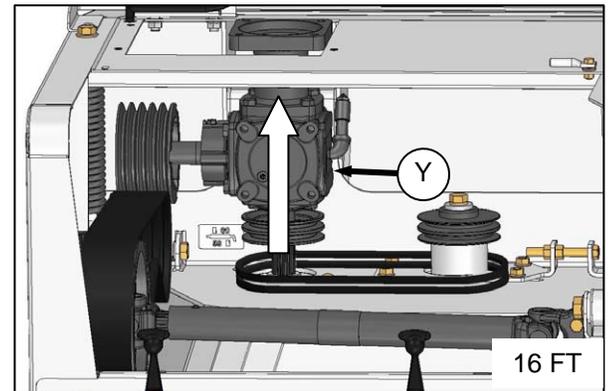
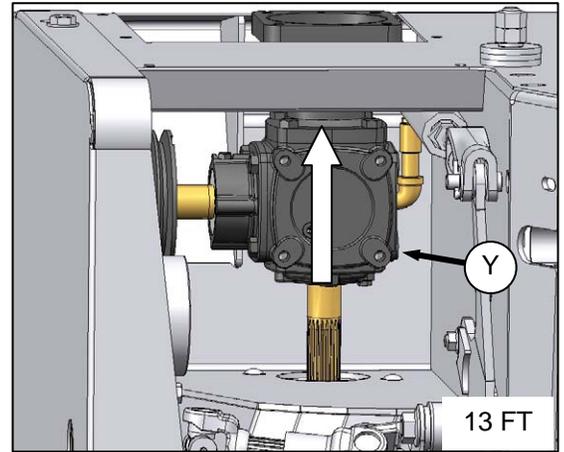
g. Remove two bolts (P) and remove guard (Q).



- h. Loosen two bolts (R) and remove guard (S).
- i. Rotate deflector (T) so that wider space between bars face forward.
- j. Remove four bolts (U).
- k. Pull driveline (V) through deflector and slide U-joint (W) off drive shaft.



l. Remove four bolts (X). Support gearbox (Y) when removing last bolt.



m. Lift gearbox (Y) and manoeuvre from drive area, top end first.

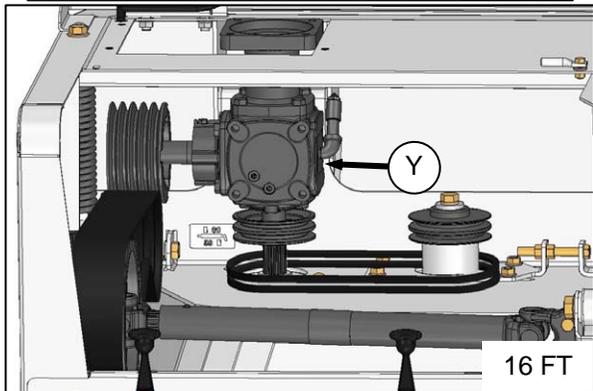
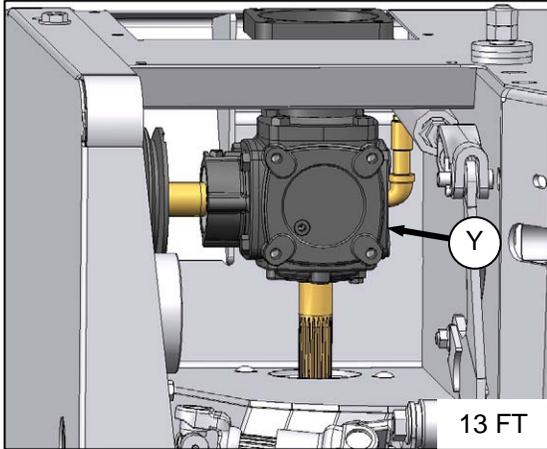
## MAINTENANCE/SERVICE

### 7.9.2.4 Installation – Bevel Gearbox



## DANGER

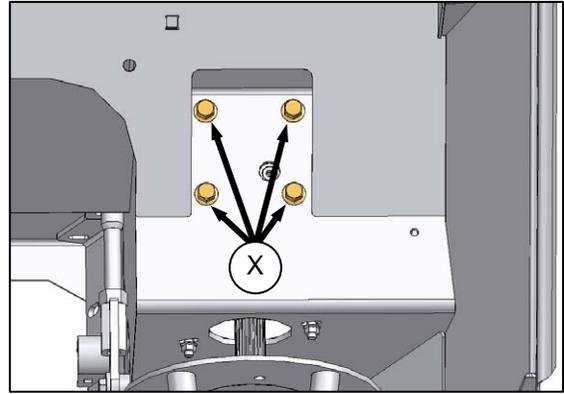
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



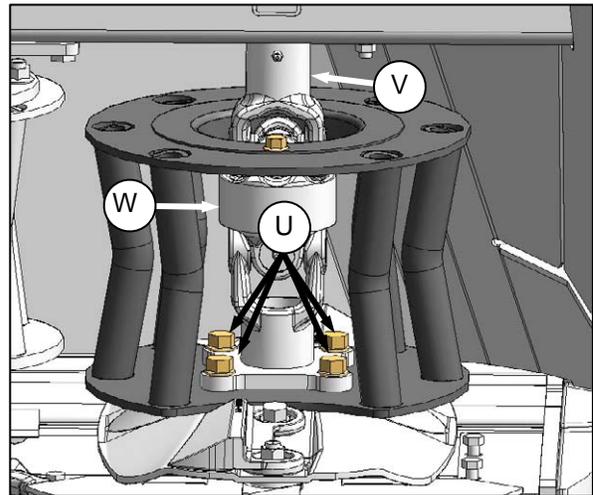
- a. Lower gearbox (Y) into position through top opening.

**NOTE**

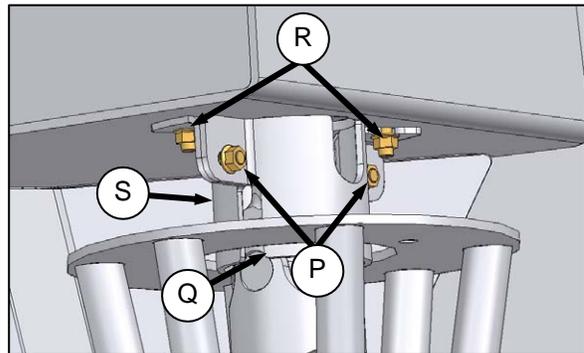
*On 16 ft header, ensure hourglass deflector drive belts are engaged onto gearbox shaft.*



- b. Install four bolts (X). Torque to 106 ft·lbf (144 N·m).



- c. Position driveline (V) in deflector, and slide U-joint (W) onto drive shaft.  
 d. Install four bolts (U) and torque to 92 ft·lbf (125 N·m).



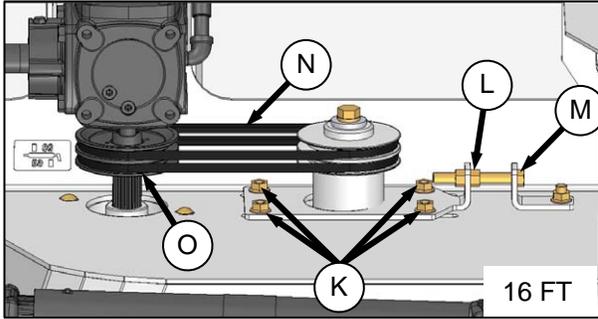
- e. Position guard (S) and tighten bolts (R).  
 f. Position guard (Q) and attach with two bolts (P).

*(continued next page)*

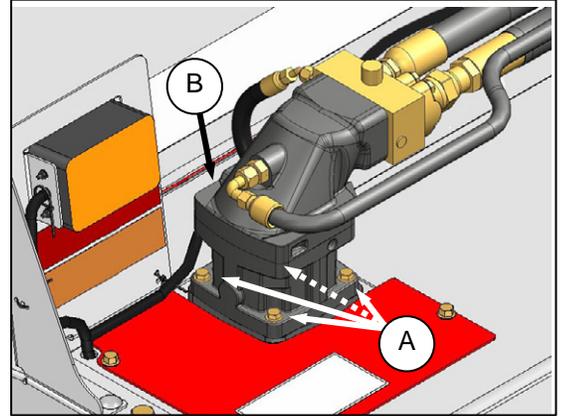
## MAINTENANCE/SERVICE

**NOTE**

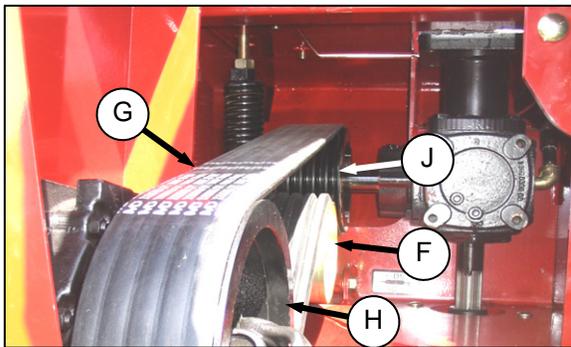
*Steps g to i. applicable to 16 ft header only.*



- g. Install hourglass deflector drive belts (N) onto drive pulley (O) and driven pulley.
- h. Turn adjuster bolt (M) to tighten belts (N).
- i. Tighten nuts (K) and jam-nut (L).



- n. Position hydraulic motor (B) on gearbox and install four bolts (A). Torque bolts to 103 ft·lbf (140 N·m).
- o. On 16 ft header, re-attach wiring harness to hose bundle with plastic ties as required.
- p. Close shield.

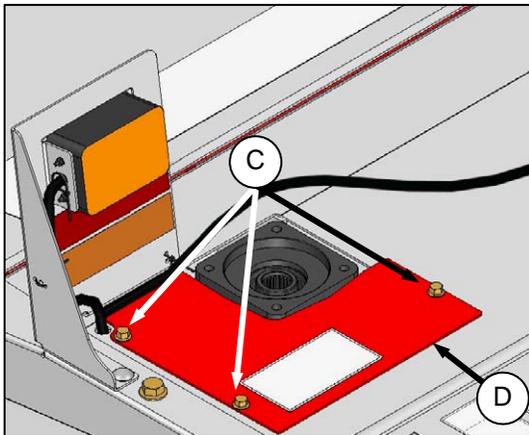


- j. Locate conditioner drive belt (G) onto forward pulley (J).
- k. Route belt over idler (F) ensuring it is properly located on pulley (H).

**NOTE**

*Check alignment of pulleys (H) and (J).*

- l. Tension drive belt (G). Refer to Section 7.9.5.2 Tension Adjustment.

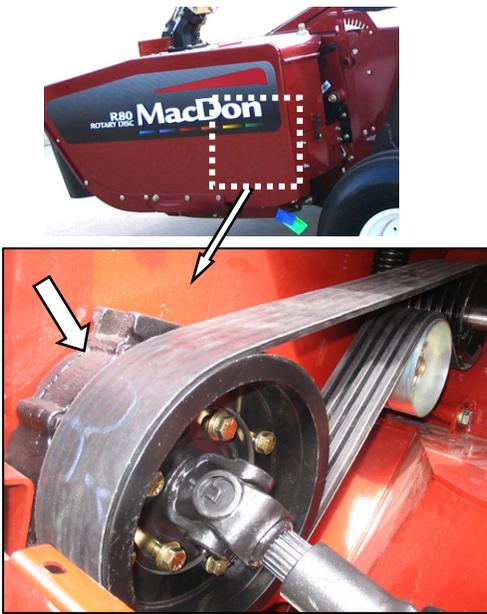


16 FT SHOWN – 13 FT SIMILAR

- m. Re-install cover (D) with three bolts (C).

## MAINTENANCE/SERVICE

### 7.9.3 Conditioner Gearbox – 13 Ft



The conditioner gearbox is located inside the drive compartment at the left hand side of the header. The conditioner gearbox does not require normal maintenance or servicing, and if repairs are required, it should be removed and serviced at your dealer.

#### 7.9.3.1 Conditioner Gearbox Removal – 13 Ft



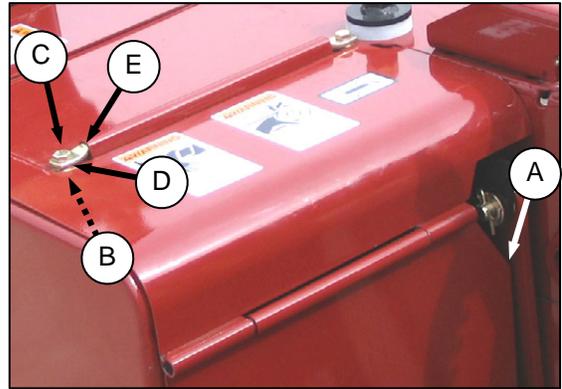
### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

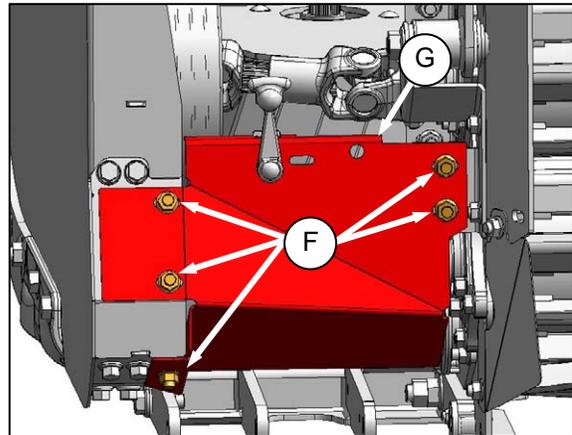
- a. Raise header fully, shut off tractor engine and remove key. Close lift cylinder shut-off valves.



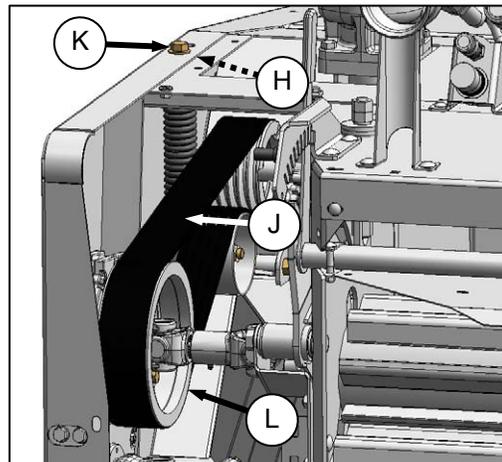
- b. Open LH drive shield lower door (A).



- c. Remove nut (B), bolt (C), and washers (D), and pin (E). Remove LH drive shield.



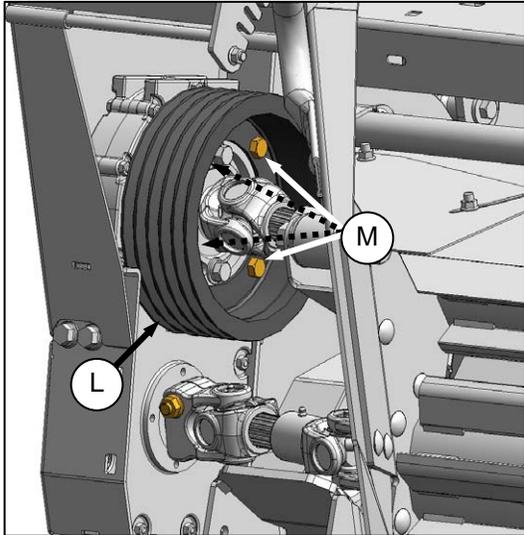
- d. Remove five nuts and bolts (F), and remove panel (G).



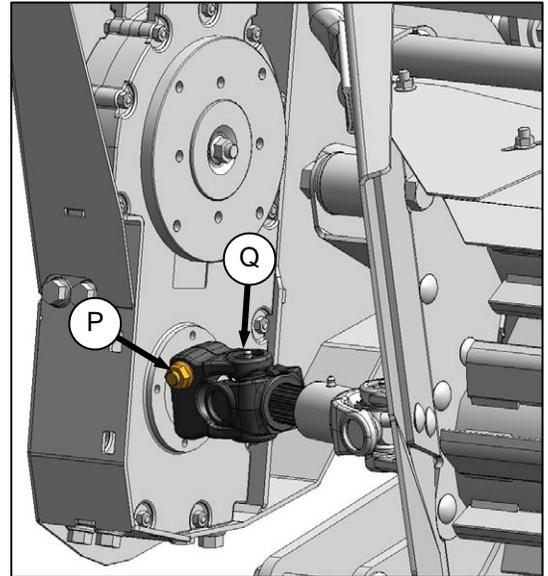
- e. Loosen jam-nut (H) and loosen belt (J) with adjuster bolt (K) so that belt can be slipped off pulley (L).

*(continued next page)*

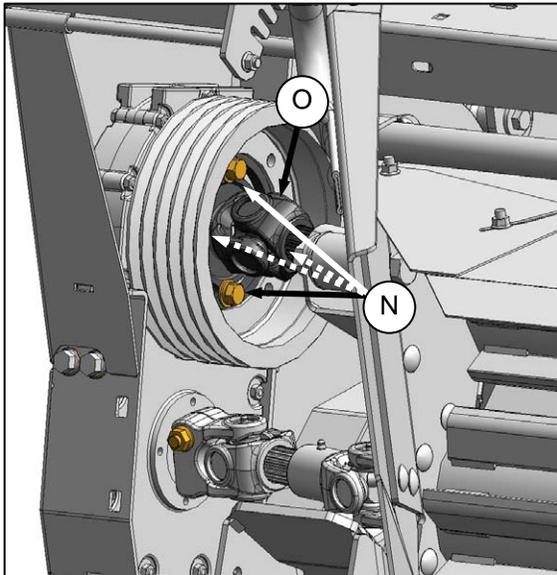
## MAINTENANCE/SERVICE



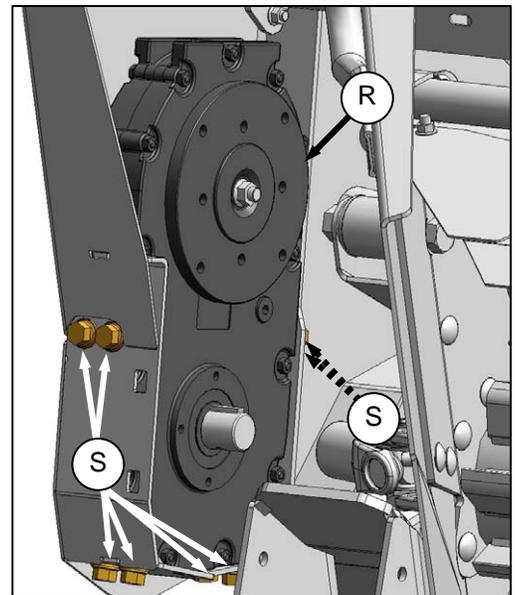
- f. Remove bolts (M). Slide pulley (L) off gearbox onto driveline.



- h. Loosen bolt (P) on lower U-joint and slide yoke (Q) off gearbox.



- g. Remove bolts (N) and swivel driveline so that pulley and driveshaft (O) can be slipped off driveline.



- i. Remove eight bolts (S) holding gearbox (R) to frame.  
j. Lift gearbox out of drive compartment.

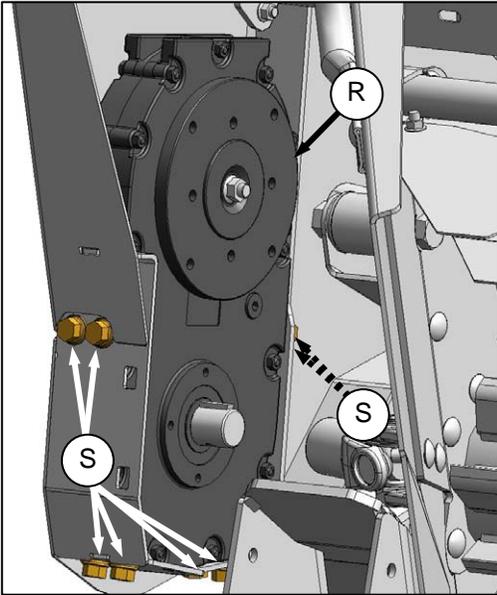
## MAINTENANCE/SERVICE

### 7.9.3.2 Conditioner Gearbox Installation – 13 Ft

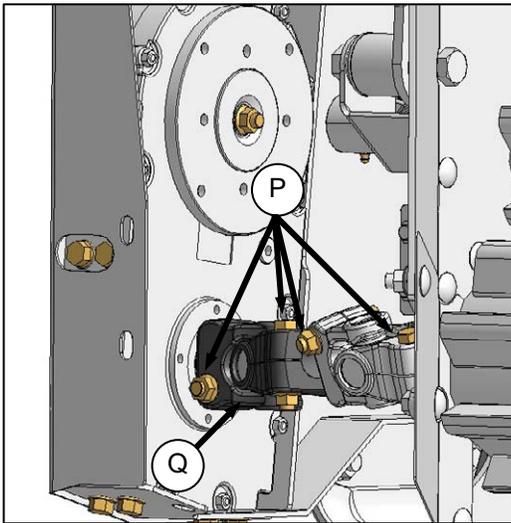


#### DANGER

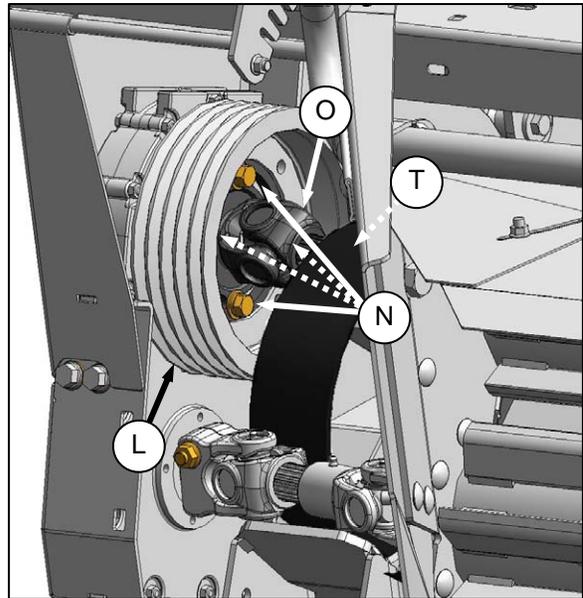
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



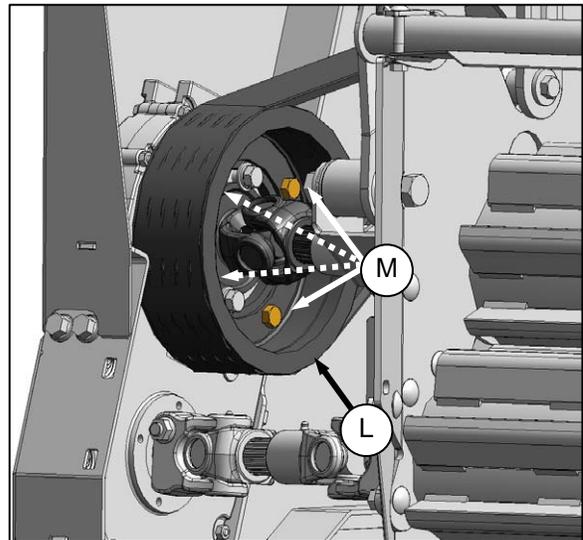
- a. Position conditioner gearbox (R) in drive compartment and secure with eight bolts (S). Torque to 92 ft·lbf (125 N·m).



- b. Ensure woodruff key is in shaft keyway and slide yoke (Q) onto gearbox shaft. Tighten bolt (P) on U-joint.



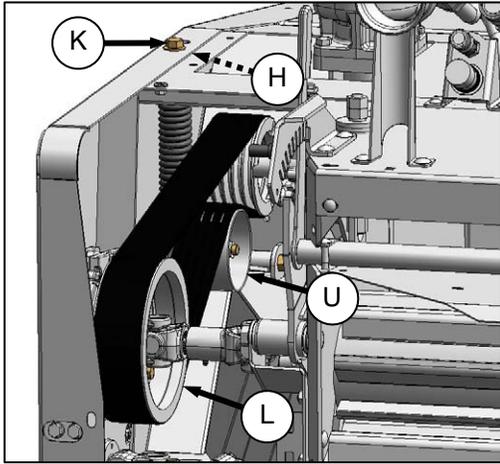
- c. Slide upper driveshaft (O) with pulley (L) and belt into yoke (T). Attach timing flange to gearbox with bolts (N), washers, and lockwashers. Do not tighten.



- d. Position pulley (L) on gearbox and install four bolts (M) with lockwashers.  
e. Tighten bolts (M) to 75 ft·lbf (102 N·m).

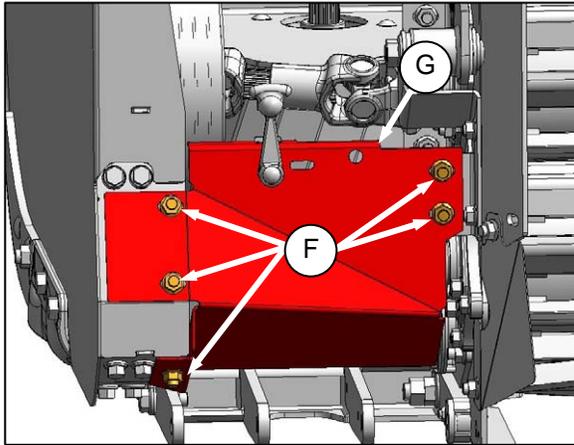
*(continued next page)*

## MAINTENANCE/SERVICE

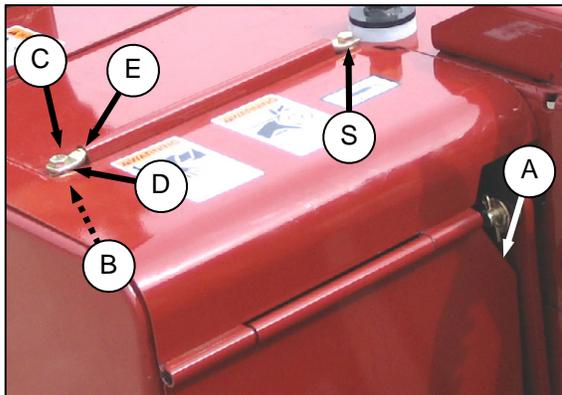


- i. Position pin (E) in shield and attach to frame with two washers (D), bolt (C), and nut (B). Washers are under the pin. Tighten nut (B).
- j. Adjust roll timing. Refer to Section 6.13.4.2 Roll Timing.
- k. Close drive shield (A).

- f. Re-install belt on pulley (L) and tighten idler (U) with adjuster bolt (K). See 7.9.5.1 Tension Adjustment – Conditioner Drive Belt. Tighten jam-nut (H).



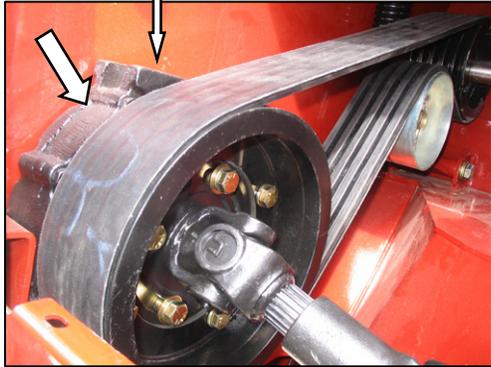
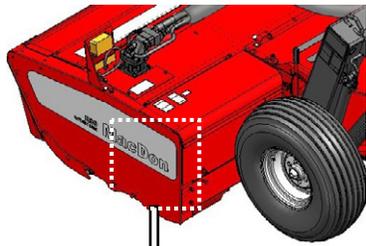
- g. Re-install panel (G) with five bolts and nuts (F). Install bolts from inside.



- h. Position LH drive shield on header and locate on existing pin (S).

## MAINTENANCE/SERVICE

### 7.9.4 Conditioner Gearbox – 16 Ft



The conditioner gearbox is located inside the drive compartment at the left hand side of the header. The conditioner gearbox does not require normal maintenance or servicing, and if repairs are required, it should be removed and serviced at your dealer.

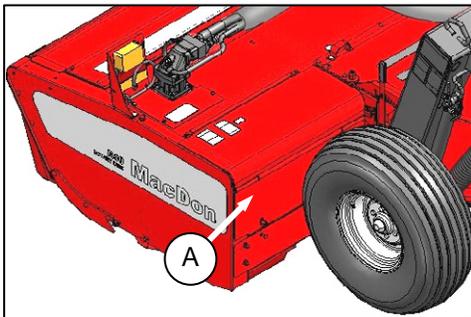
#### 7.9.4.1 Conditioner Gearbox Removal – 16 Ft



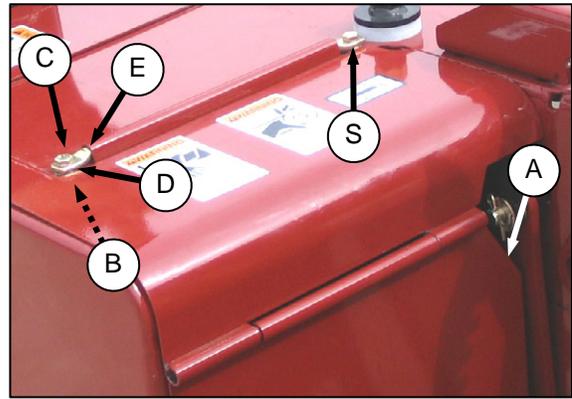
### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

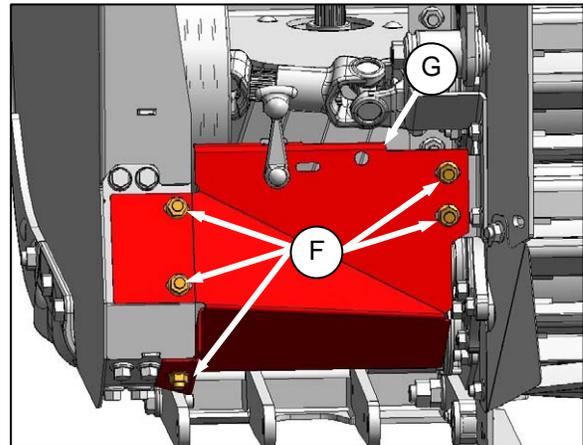
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



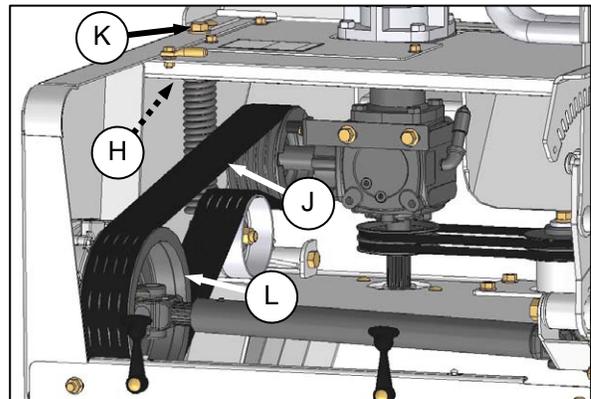
- Open LH drive shield lower door (A).



- Remove nut (B), bolt (C), and washers (D), and pin (E). Remove LH drive shield.

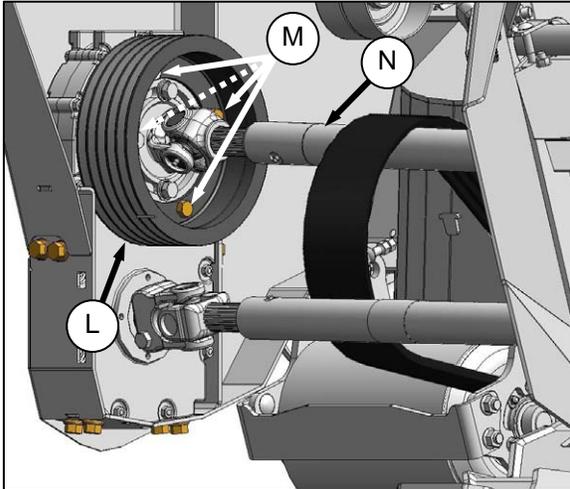


- Remove nuts and bolts (F), and remove panel (G).

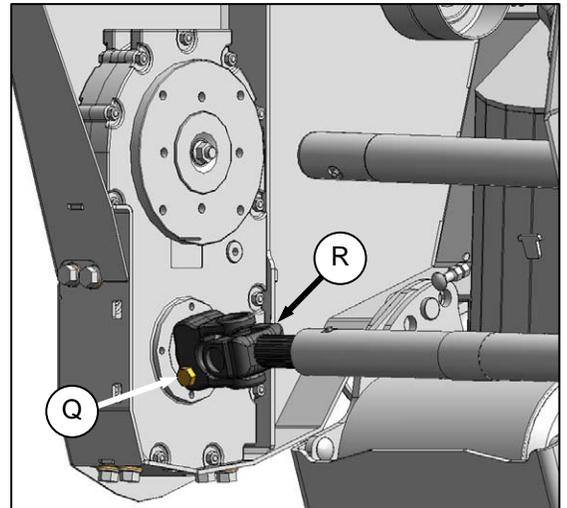


- Loosen jam-nut (H) and loosen belt (J) with adjuster bolt (K) so that belt can be slipped off pulley (L).

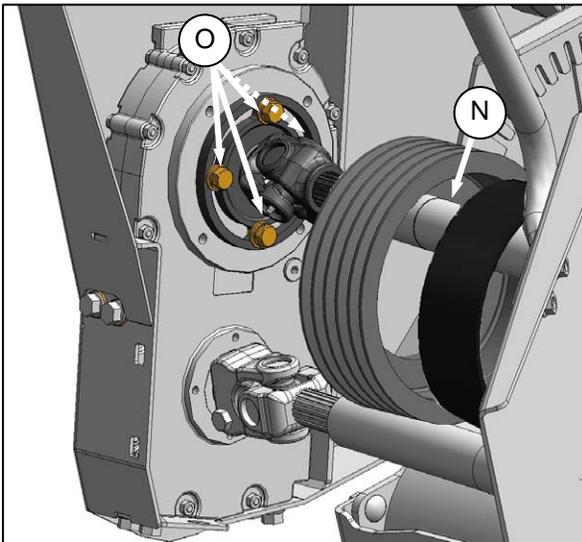
## MAINTENANCE/SERVICE



- g. Remove bolts (M). Slide pulley (L) off gearbox and slide pulley over timing flange yoke onto driveshaft (N).

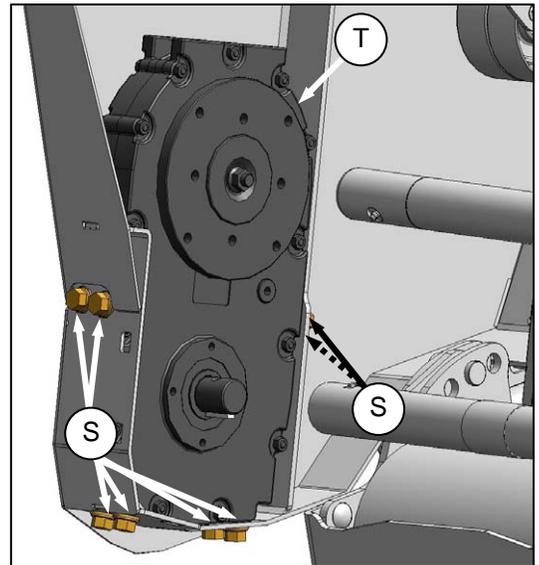


- j. Loosen bolt (Q) on lower U-joint and slide yoke (R) off gearbox.



- h. Remove bolts (O) and swivel driveshaft (N) so that pulley can be slipped off driveline.

- i. Position driveline clear of work area.



- k. Remove eight bolts (S) attaching gearbox (T) to frame and lift gearbox out of drive compartment.

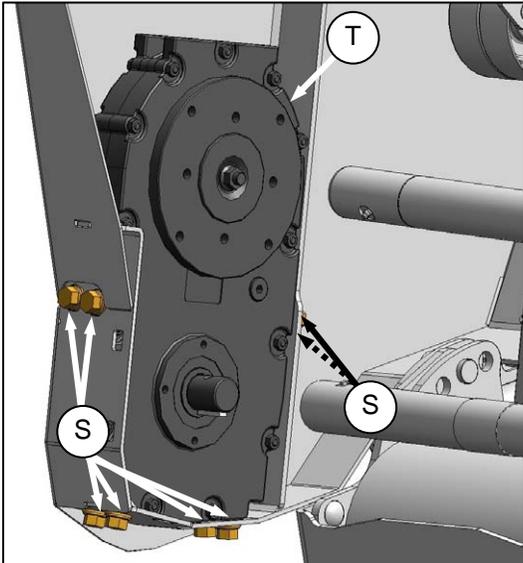
## MAINTENANCE/SERVICE

### 7.9.4.2 Conditioner Gearbox Installation – 16 Ft

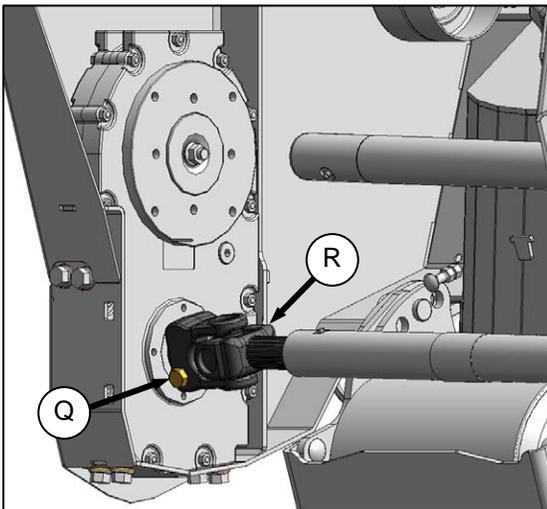


#### DANGER

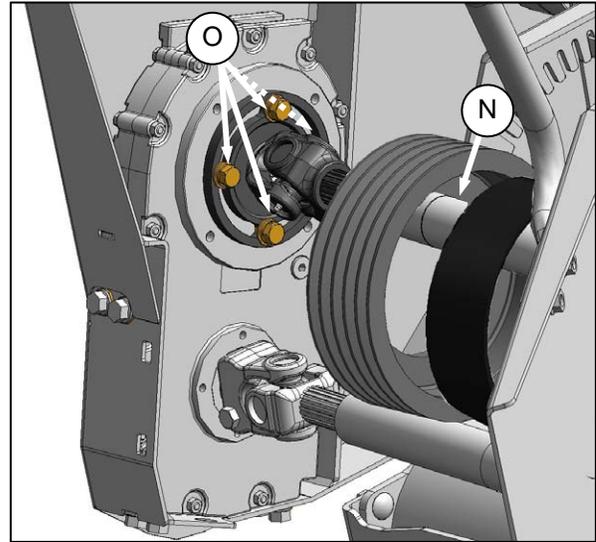
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



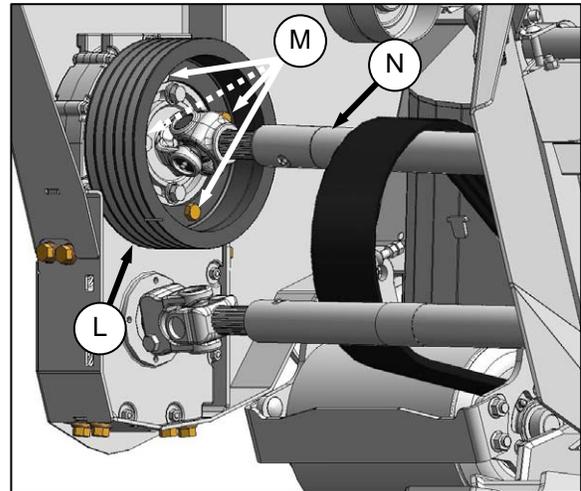
- a. Position conditioner gearbox (T) in drive compartment and secure with eight bolts (S). Torque to 92 ft-lbf (125 N-m).



- b. Ensure woodruff key is in shaft keyway and slide yoke (R) onto gearbox shaft. Tighten bolt (Q) on U-joint.



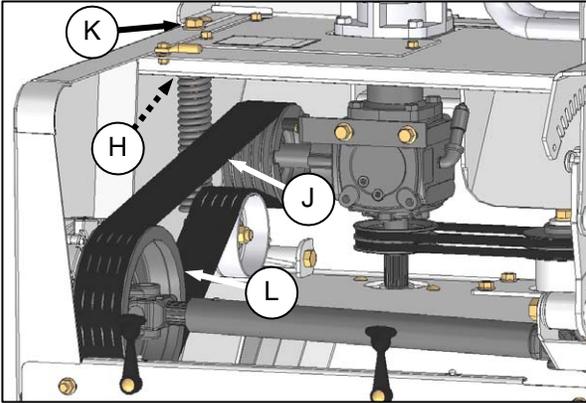
- c. Slide pulley and belt onto upper driveshaft (N) and position driveshaft on gearbox.  
d. Install four bolts (O) with lockwashers but do not tighten.



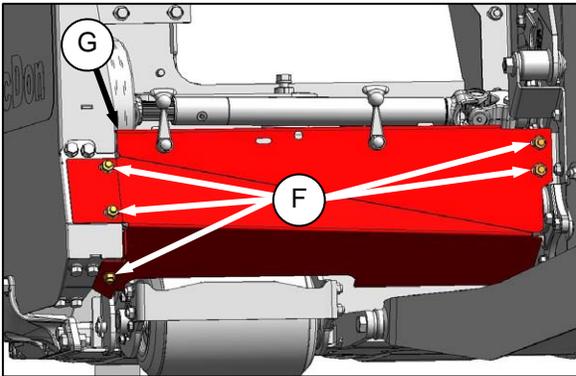
- e. Attach pulley (L) to gearbox with bolts (M). Torque to 75 ft-lbf (102 N-m).

*(continued next page)*

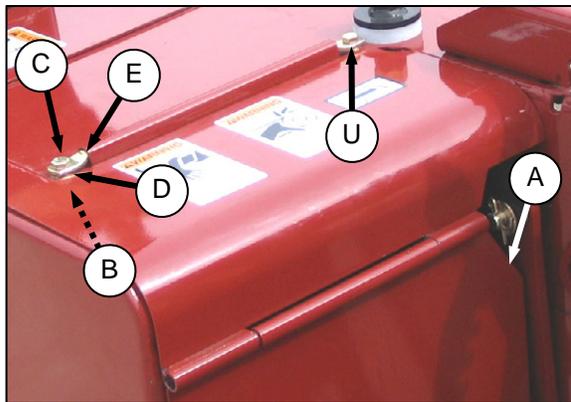
## MAINTENANCE/SERVICE



- f. Position belt (J) on pulley (L) and tighten idler with adjuster bolt (K). See 7.9.5.1 Tension Adjustment – Conditioner Drive Belt. Tighten jam-nut (H).



- g. Re-install panel (G) with five bolts (F) and nuts. Install bolts from inside.



- h. Position LH drive shield on header and locate on existing pin (U).
- i. Position pin (E) in shield and attach to frame with two washers (D), bolt (C), and nut (B). Washers are under the pin. Tighten bolt.
- j. Adjust roll timing. Refer to Section 6.13.4.2 Roll Timing.
- k. Close drive shield (A).

## MAINTENANCE/SERVICE

### 7.9.5 Conditioner Drive Belt

The conditioner drive belt is located inside the drive compartment at the left hand side of the header.



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### 7.9.5.1 Checking Belt Tension

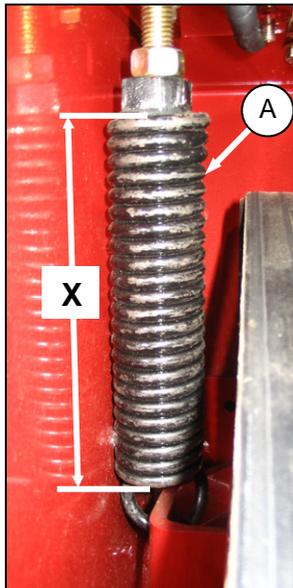
##### IMPORTANT

Belt tension acts as an overload protection mechanism to prevent damage to the gearboxes or roll drivelines in the event the rolls reach peak load. Check tension at beginning of each operating season.

- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.

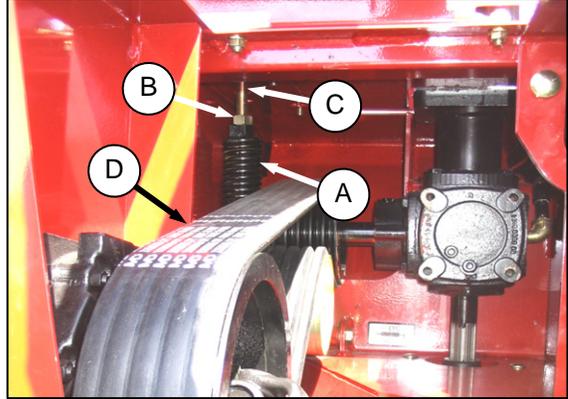


- Open LH drive shield.
- Measure the length of the spring (A) as shown. It should be within the dimensions in the following table. If required, adjust tension as per the following section.

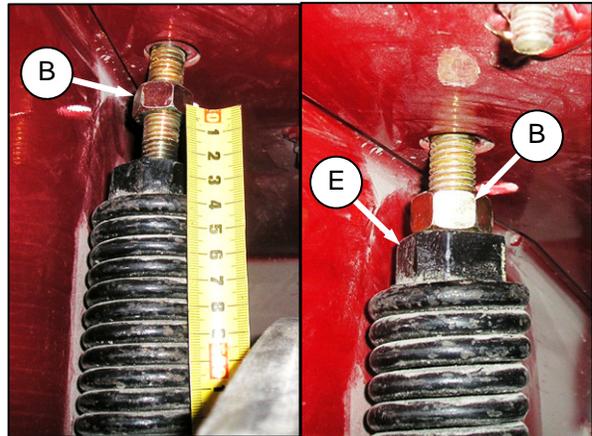


NUMBER OF VISIBLE COILS	MEASUREMENT 'X'
23	7.75-8.15 inches (197-207 mm)
24	8.11-8.5 inches (206-216 mm)

#### 7.9.5.2 Tension Adjustment



- Loosen jam-nut (B).
- Turn adjuster bolt (C) to fully release spring (A) tension.
- Turn adjuster bolt (C) by hand to take up all belt (D) slack and clearance at hook end of the spring. Spring must be snug but not stretched.



- Back off jam-nut (B) 13/16 inch (20 mm) from the end of the spring insert (E).
- Tighten adjuster bolt (C) with a wrench to stretch spring until jam-nut (B) contacts the spring insert (E).
- Tighten jam-nut (B) against spring insert.
- Close drive shield.

## MAINTENANCE/SERVICE

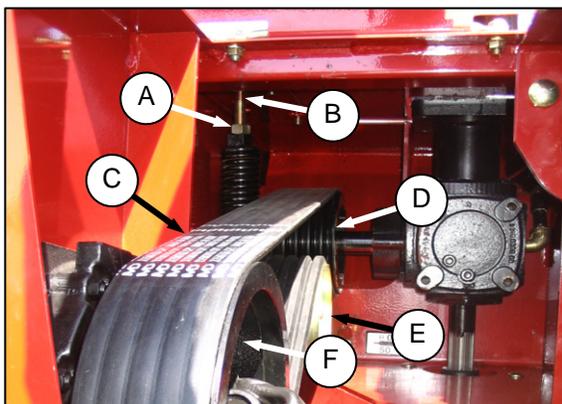
### 7.9.5.3 Conditioner Drive Belt Removal



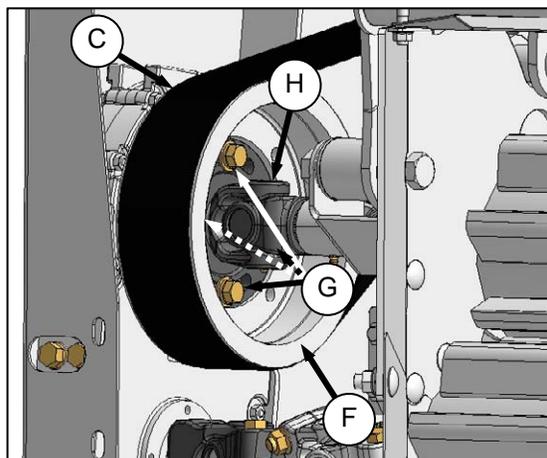
#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.
- Open LH drive shield.

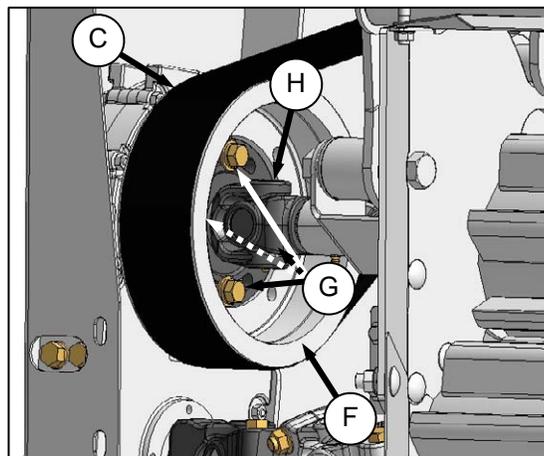


- Loosen jam-nut (A).
- Turn adjuster bolt (B) to fully release tension on belt (C).
- Slip belt (C) off forward pulley (D), idler (E), and driven pulley (F).

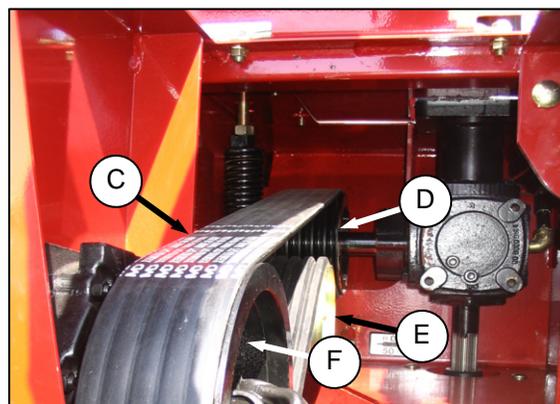


- Remove four bolts (G) and slide driveline (H) fully inboard.
- Slip belt between pulley (F) and driveline flange to remove it.

### 7.9.5.4 Conditioner Drive Belt Installation



- Slip belt (C) between pulley (F) and driveline (H).



- Locate belt onto forward pulley (D).
- Route belt over idler (E) and onto driven pulley (F).
- Attach driveline flange to gearbox with four bolts (G) but do not tighten.

#### NOTE

Check alignment of pulleys (D) and (F).

- Tension belt (C). Refer to Section 7.9.5.2 Tension Adjustment.
- Adjust roll timing. Refer to Section 6.13.4.2, Roll Timing.
- Lower drive shield.

## MAINTENANCE/SERVICE

### 7.9.6 Conditioner Drive Belt Idler



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

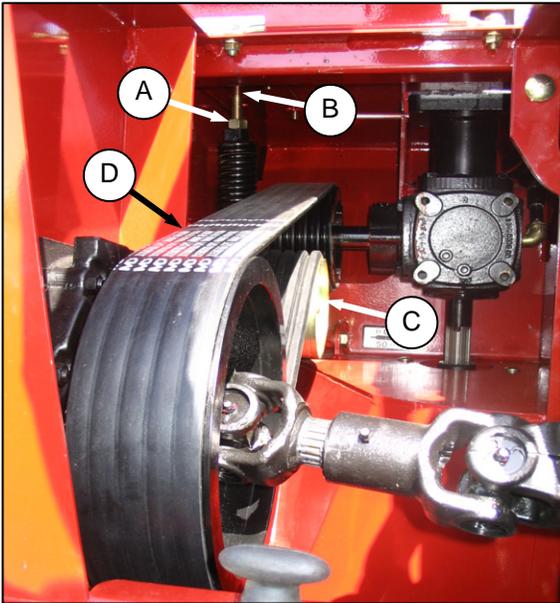
The conditioner drive belt idler does not require normal maintenance or servicing but may eventually require replacing.

Replace the idler as follows:

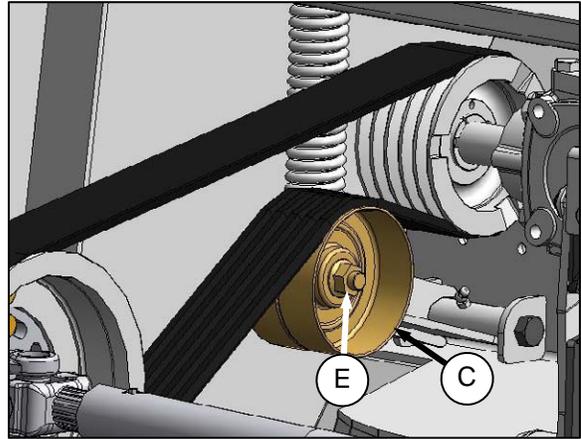
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open LH drive shield.



- Loosen jam-nut (A).
- Turn adjuster bolt (B) counter-clockwise to release tension on spring until idler (C) and belt (D) are loose.



- Remove nut (E), washers, and remove idler (C).

#### IMPORTANT

Note locations of washers on bolt. They center the idler on the drive belt and must be re-installed the same location.

- Install idler (C) onto bolt with washers in same locations.
- Install nut (E) and torque to 150 ft·lbf (203 N·m).
- Tension belt (D). Refer to Section 7.9.5.2 Tension Adjustment.
- Close drive shield.

## MAINTENANCE/SERVICE

### 7.9.7 Lifting Roll Drive Belt

The two lifting roll drive belts are located inside the drive compartment at the right hand side of the header. Belt tension is set at the factory and does not require adjustment. Replace the belts if they are slipping.

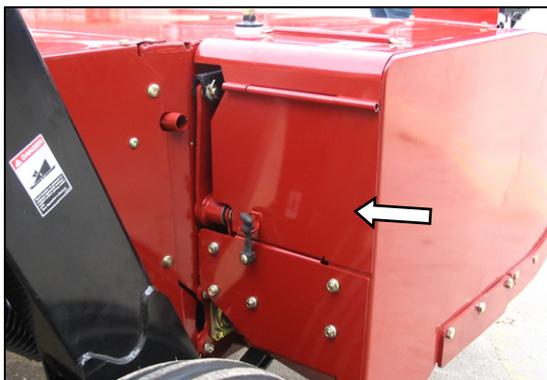
#### 7.9.7.1 Replacement



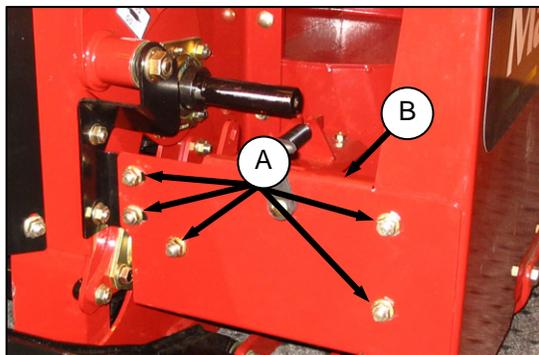
### DANGER

**Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.**

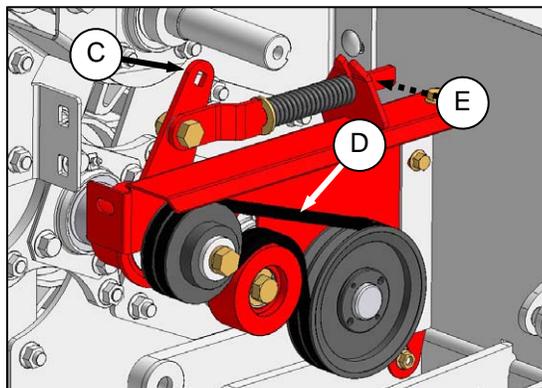
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open RH drive shield.



- Remove five bolts (A) and nuts and remove rear shield (B).



- Insert the end of a ½ inch drive socket wrench in the square hole on the idler arm (C).
- Rotate idler arm until belts (D) are loose.
- Insert a bolt in hole (E) to hold idler.
- Remove belts (D).

#### NOTE

*Belts must be replaced in pairs.*

#### NOTE

*Check alignment of pulleys.*

- Install belts (D) on pulleys ensuring they are in the pulley grooves.
- Rotate idler arm (C) so that bolt in (E) can be removed.
- Release tension on spring and remove wrench.
- Re-install rear shield (B) with bolts (A) and nuts.
- Close drive shield.

## MAINTENANCE/SERVICE

### 7.9.8 Lifting Roll Belt Idler

The lifting roll belt idler does not require normal maintenance or servicing but may eventually require replacing.

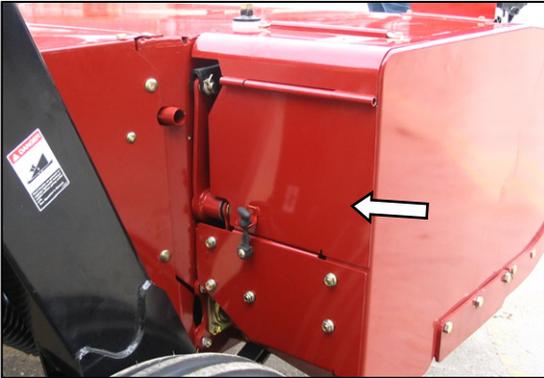


#### DANGER

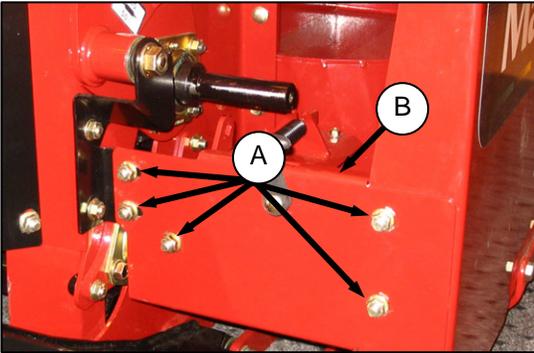
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

Replace the idler as follows:

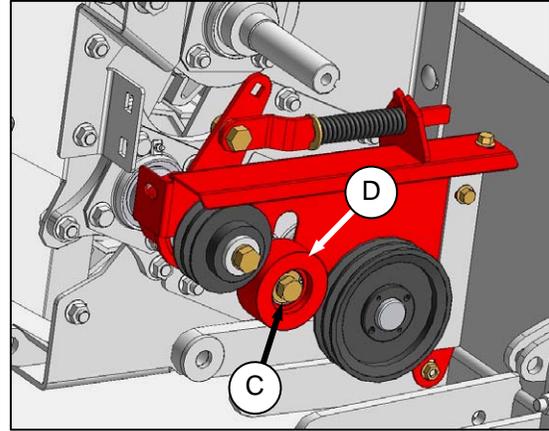
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open RH drive shield.



- Remove five bolts (A) and nuts and remove rear shield (B).
- Remove belts. See previous section.

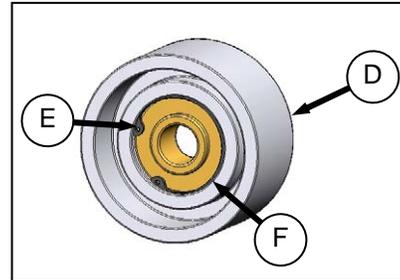


- Remove nut and bolt (C) and remove idler (D) from arm.
- Install new idler (D) with bolt (C) and nut.
- Tighten nut to 150 ft-lbf (203 N·m).
- Reinstall belts. See previous section.

### 7.9.9 Lifting Roll Idler Bearing

The lifting roll belt idler bearing does not require normal maintenance or servicing but may eventually require replacing.

Replace the idler bearing as follows:



- Remove lifting roll idler (D). Refer to previous section.
- Remove C-clip (E) and remove bearing (F) from idler.
- Install new bearing (F) and secure with C-clip (E).
- Re-install idler. Refer to previous section.

## MAINTENANCE/SERVICE

### 7.9.10 Hourglass Deflector Drive Belts – 16 Ft



#### DANGER

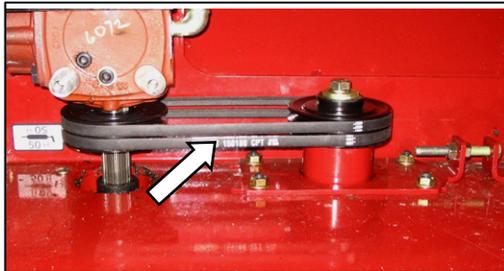
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### 7.9.10.1 Belt Tension

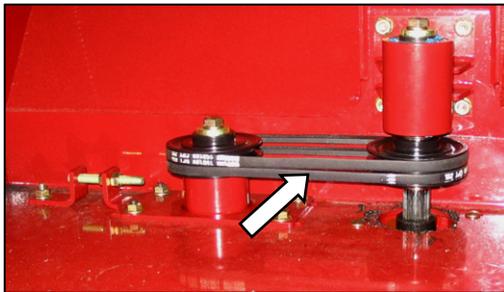
- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open LH and RH drive shields.



LH SIDE

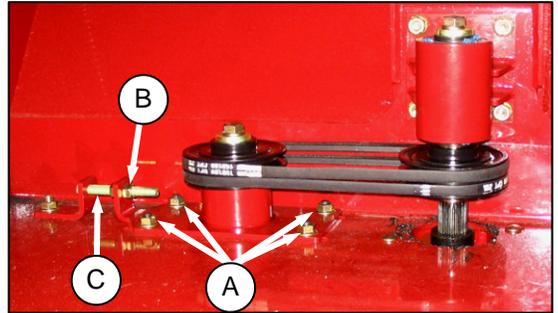
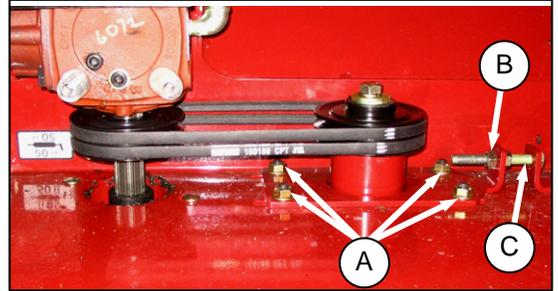


RH SIDE

- Apply force of 51 lbf (22 N) to each deflector drive belt at mid-span. Deflection of each belt should be 0.12 in. (3 mm).

#### IMPORTANT

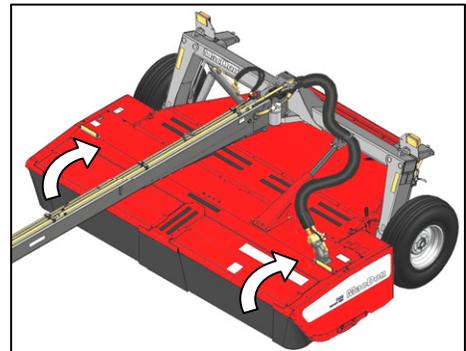
To prolong belt and drive life, do not overtighten belts.



- If necessary, adjust as follows:
  - Loosen nuts (A).
  - Loosen jam-nut (B) on adjuster bolt (C).
  - Turn adjuster bolt to adjust tension.
  - Tighten nuts (A) and jam-nut (B).
  - Re-adjust tension of a new belt after a short run-in period, (about 5 hours).

#### 7.9.10.2 Belt Replacement

- Raise header fully, shut off engine and remove key.
- Engage lift cylinder lock-out valves.



- Open cutterbar door(s).
- Open LH and RH drive shields.



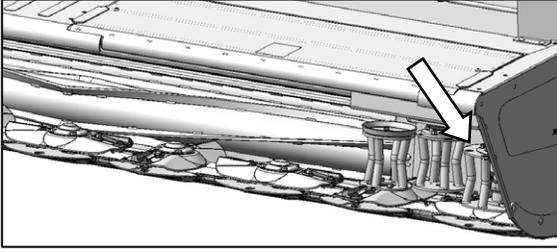
#### CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

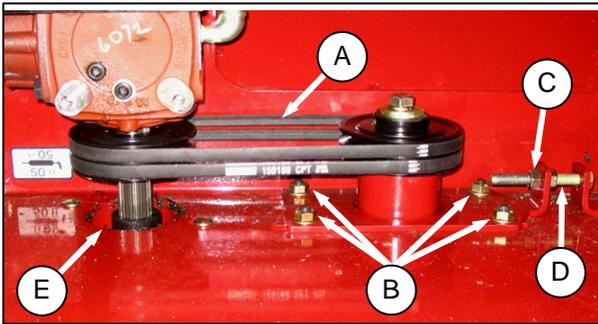
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## MAINTENANCE/SERVICE

### Driveline (LH) Side



- Remove outboard hourglass deflector and driveline. Refer to Section 7.8.6.1 Driveline Deflector.
- Loosen hourglass deflector drive belts (A) as follows:



- Loosen nuts (B).
  - Loosen jam-nut (C) on adjuster bolt (D).
  - Turn adjuster bolt (D) to loosen belts (A) so they can be slipped off both pulleys.
- Feed belts through opening (E) to disengage from gearbox drive shaft.

#### IMPORTANT

Belts are a matched set. Replace both drive belts even if only one needs replacing.

- Feed new belts through opening (E) and onto gearbox drive shaft.
- Position belts on pulleys and tension the belts with adjuster bolt (D). Apply force of 51 lbf (22 N) to each deflector drive belt at mid-span. Deflection of each belt should be 0.12 in. (3 mm).

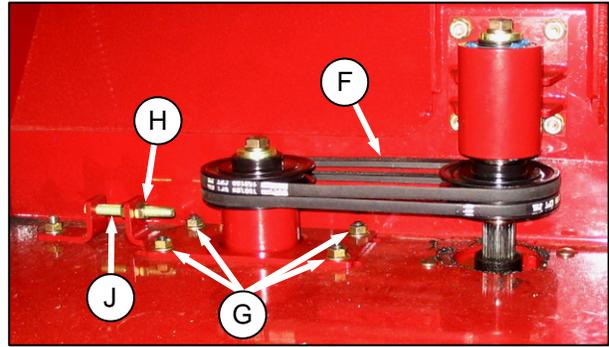
#### IMPORTANT

To prolong belt and drive life, do not over-tighten belts.

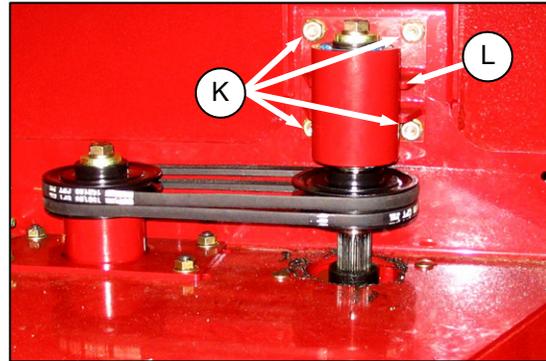
- Manually turn drive system and re-check tension. Adjust as required.
- Tighten nuts (B) and jam-nut (C).
- Re-install hourglass deflector. Refer to Section 7.8.6.1 Driveline Deflector.

### Driven Side (RH)

- Loosen hourglass deflector drive belts (F) as follows:



- Loosen nuts (G).
  - Loosen jam-nut (H) on adjuster bolt (J).
- Turn adjuster bolt (J) to loosen belts (F) so they can be slipped off both pulleys.



- Remove nuts (K) and bolts, and lift drive assembly (L) out of driveline and free of belts.

#### IMPORTANT

Belts are a matched set. Replace both drive belts even if only one needs replacing.

- Locate new belts over driveline opening.
- Re-install drive assembly (L) onto driveline and install bolts and nuts (K) and tighten.
- Position belts on pulleys and tension the belts with adjuster bolt (J). Apply force of 51 lbf (22 N) to each deflector drive belt at mid-span. Deflection of each belt should be 0.12 in. (3 mm).

#### IMPORTANT

To prolong belt and drive life, do not over-tighten belts.

- Manually turn drive system and re-check tension. Adjust as required.
- Tighten nuts (G) and jam-nut (H).
- Close drive shields and cutterbar doors.
- Re-check belt tension after 5 hours of operation.

## MAINTENANCE/SERVICE

### 7.10 HYDRAULIC DRIVE SYSTEM

The pull-type mower conditioner is hydraulically powered using the following systems:

- A self-contained hydraulic system to operate the header functions.
- The tractor remote system to operate the header lift cylinders, steering, and header tilt if equipped.

#### 7.10.1 Reservoir

The mower conditioner's self-contained hydraulic system uses the APT of the machine for the hydraulic oil reservoir.

##### 7.10.1.1 Oil Level



Check oil level daily (before start-up) at the sight gauge at rear of APT. Oil level should be at or near FULL mark on the gauge when top surface of APT is level and oil is cold.

#### 7.10.1.2 Adding Hydraulic Oil



### WARNING

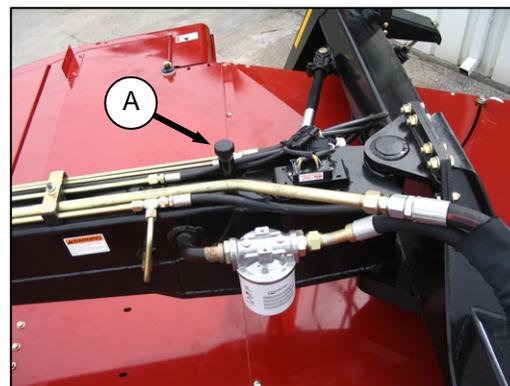
To avoid injury from contact with hot oil, do not remove cap when system is hot. When removing cap, unscrew it slowly to vent the build-up of air pressure in the reservoir.



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. Level APT by parking on level ground or with the jack.



- b. Slowly unscrew cap (A) from filler tube.
- c. Add single grade trans-hydraulic oil until level is between ADD and FULL marks on gauge. See Section 7.3.2 Recommended Lubricants.
- d. Replace cap.

#### 7.10.1.3 Draining Reservoir

##### NOTE

Change hydraulic oil every 500 hours or 3 years.

##### NOTE

A drain pan with a capacity of 180 litres (48 U.S. gallons) will be required.

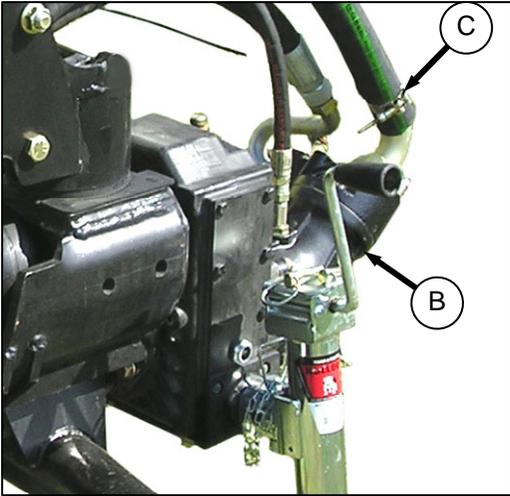
##### NOTE

Mower conditioner must be disconnected from tractor. Refer to Section 6.5 Mower Conditioner/Tractor Unhook.

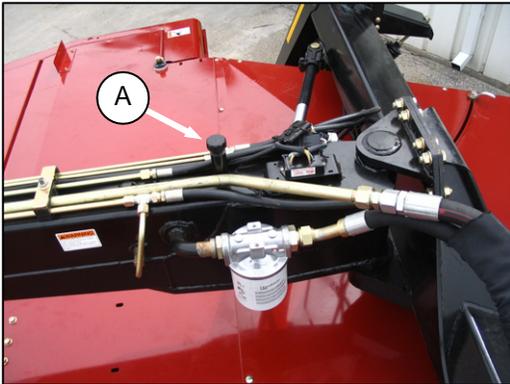
- a. Remove filler cap (A).

(continued next page)

## MAINTENANCE/SERVICE



- b. Place drain pan under pump (B).
- c. Lower APT as low as possible with jack.
- d. Loosen hose clamp (C) on the pump suction hose and pull the hose off the fitting.
- e. Allow oil to drain into container.
- f. Reconnect pump suction hose to pump. Tighten clamp (C).



- g. Fill with clean single grade trans-hydraulic oil through filler pipe (A). See Section 7.3.2 Recommended Lubricants.

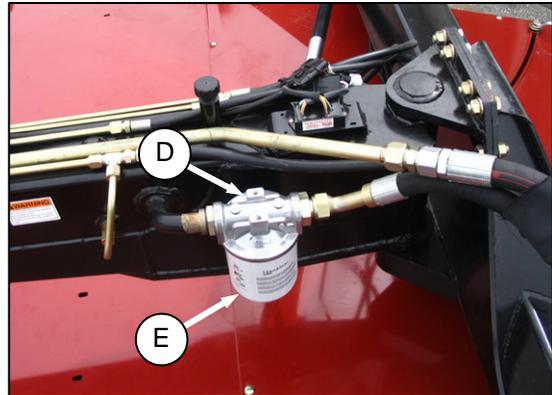


- h. Check sight glass for proper oil level.
- i. Replace cap on filler pipe.

### 7.10.2 Hydraulic Oil Filter

#### NOTE

Change hydraulic oil filter after the first 100 hours operation and every 250 hours thereafter.

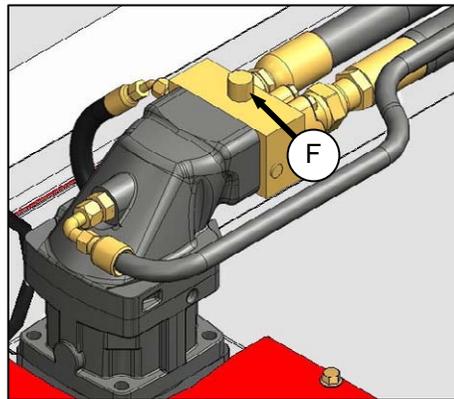


- a. Clean around the filter head (D).
- b. Remove the filter (E) and clean the gasket surface of the filter head.
- c. Apply a thin film of clean oil to the gasket on the new filter.
- d. Install new filter. Turn the filter onto the mount until the gasket contacts the filter head. Tighten the filter an additional 1/2 to 3/4 turn by hand.

#### IMPORTANT

Do not use a filter wrench to install the filter. Over-tightening can damage gasket and filter.

### 7.10.3 Pressure Relief Valve



A possible cause of poor cutting performance and/or excessive heating of hydraulic oil is low relief pressure. The relief valve (F) is factory set at 6000 psi (41.37 MPa). See your dealer for adjustment or service.

## MAINTENANCE/SERVICE

### 7.10.4 Pump

The main drive pump does not require normal maintenance or servicing. If repairs are required, it should be removed and serviced at your dealer.

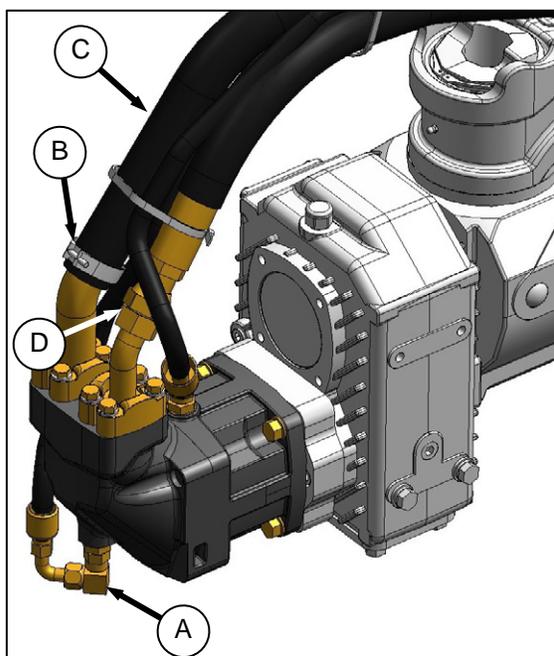
#### 7.10.4.1 Removal



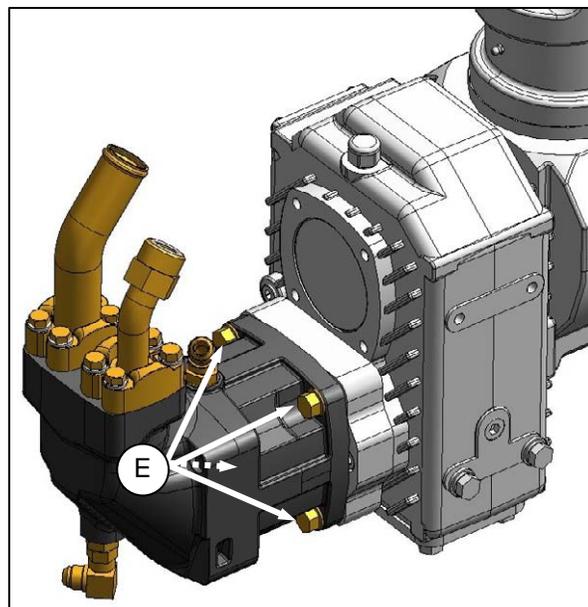
### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- a. If machine is connected to the tractor, lower header to ground, turn off engine, and remove key.



- b. Disconnect case drain hoses (A) from pump and install caps on hose ends and pump ports.
- c. Cut hose ties to ease removal and handling of hydraulic hoses.
- d. Loosen clamp (B) and disconnect supply hose (C) at the pump. Plug supply hose immediately to minimize loss of oil. Do not remove bolted fittings. Plug pump inlet line.
- e. Disconnect pressure line at fitting (D). Do not remove bolted fittings. Plug open lines.



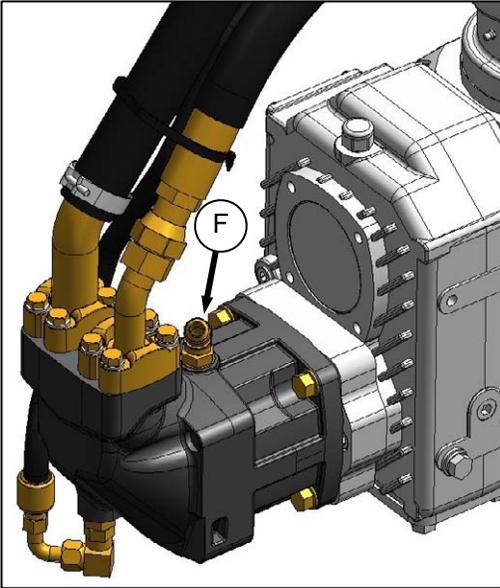
- f. Remove four bolts (E) and remove pump.
- g. Cover gearbox opening with a rag or plastic.

#### 7.10.4.2 Installation

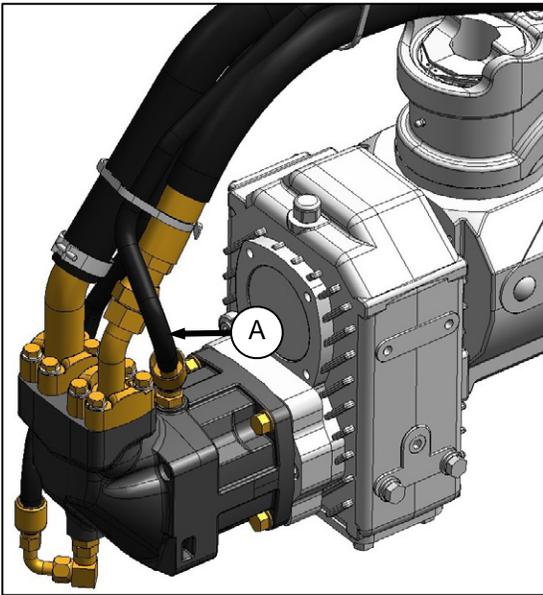
- a. Remove covering from gearbox.
- b. Apply SAE multi-purpose extreme pressure grease to pump spline and position on gearbox.
- c. Re-install four bolts (E) and torque to 92 ft·lbf (125 N·m).
- d. Remove caps from pressure fitting (D) and hose end, and attach pressure hose to pump. Tighten fitting. See illustration opposite.
- e. Remove plug from suction fitting on pump.
- f. Remove plug from supply hose (C) and attach to pump fitting. Secure with clamp (B).
- g. Remove plug from lower case hose (A) and attach to pump fitting.

*(continued next page)*

## MAINTENANCE/SERVICE



- h. Fill pump case with clean hydraulic oil at fitting (F).



- i. Attach case drain hose (A) and tighten.
- j. Install hose ties.
- k. Check reservoir oil level and add oil if required. See Section 7.10.1 Reservoir.

## MAINTENANCE/SERVICE

### 7.10.5 Hydraulic Motor

The main drive hydraulic motor does not require normal maintenance or servicing. If repairs are required, it should be removed and serviced at your dealer.

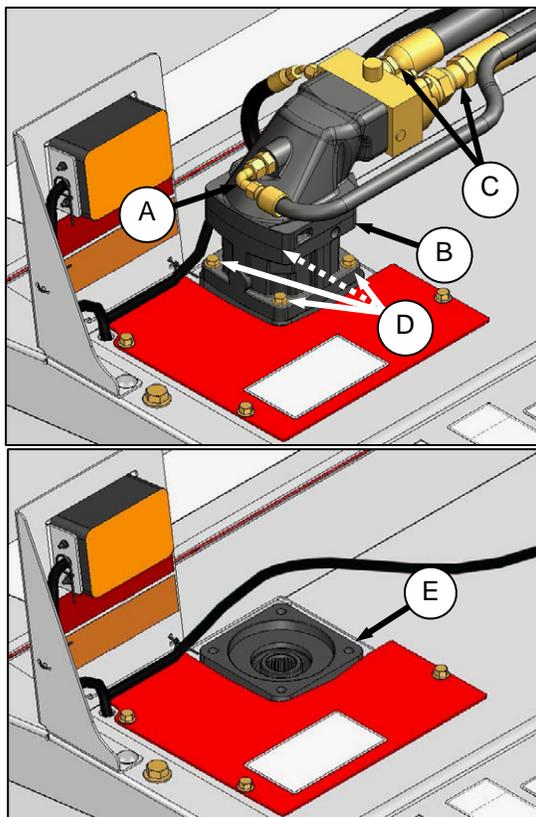
#### 7.10.5.1 Removal



### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

- If machine is connected to the tractor, lower header to ground, turn off engine, and remove key.



16 FT SHOWN – 13 FT SIMILAR

- Disconnect case drain hose (A) from motor (B) and install caps on hose end and motor port.
- Disconnect pressure and return hoses at threaded fittings (C). Do not remove bolted fittings. Install caps and plugs on open fittings.
- Remove four bolts (D) and remove motor.
- Cover gearbox opening (E) with a rag or plastic.

#### 7.10.5.2 Installation

- Remove covering from gearbox (E) opening.
- Place motor (B) on gearbox (E) flange. See illustration opposite.
- Install four bolts (D). Torque to 103 ft-lbf (140 N·m).
- Remove caps from motor ports and hoses and re-connect hoses to motor.

### 7.10.6 Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.



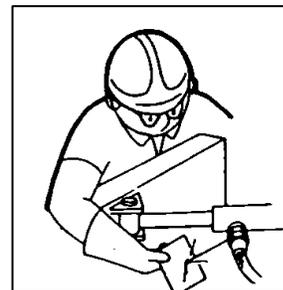
### WARNING

Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury.



Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pin-holes and nozzles which eject fluids under high pressure.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result. Use a piece of cardboard or paper to search for leaks.



#### IMPORTANT

Keep hydraulic coupler tips and connectors clean. Dust, dirt, water and foreign material are the major causes of hydraulic system damage. DO NOT attempt to service hydraulic system in the field. Precision fits require WHITE ROOM CARE during overhaul.

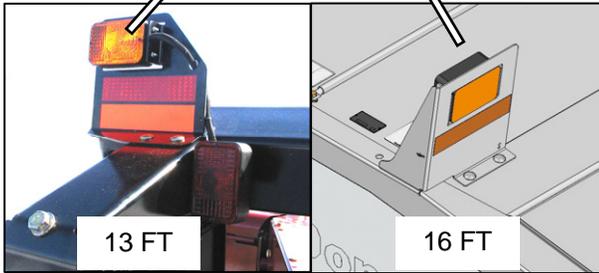
## MAINTENANCE/SERVICE

### 7.11 ELECTRICAL

- Use electrical tape and wire clips as required to prevent wires from dragging or rubbing.
- Keep lights clean and replace burnt bulbs.

#### 7.11.1 Light Bulb Replacement

- Using a phillips screwdriver, remove screws from fixture and remove plastic lens.
- Replace bulb and reinstall plastic lens and screws.

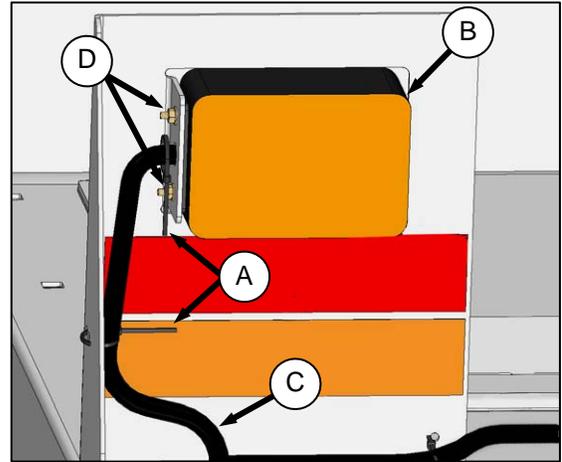


AMBER HAZARD LIGHT – BOTH SIDES  
Bulb – Trade #1156

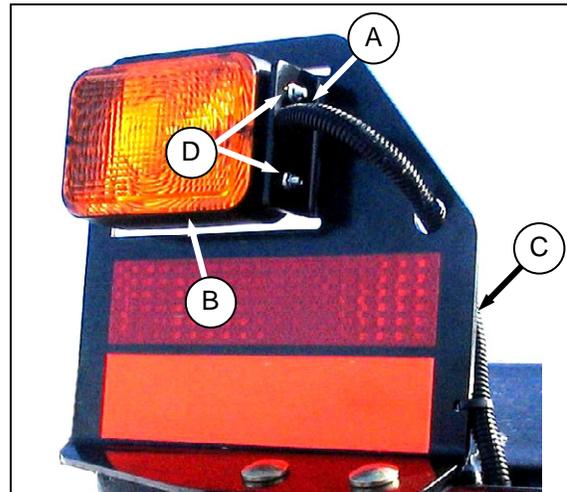


RED TAIL/BRAKE LIGHT – BOTH SIDES  
Bulb – Trade #1157

#### 7.11.2 Fixture Replacement



16 FT



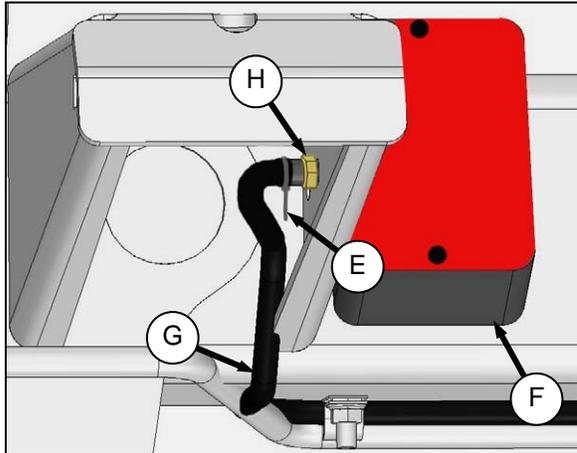
13 FT

##### 7.11.2.1 Hazard Lights

- Cut plastic cable ties (A) securing harness covering to light (B).
- Retrieve connections (C) from inside harness covering approximately 6 inches (150 mm) from light and disconnect wires. Remove tape if necessary.
- Remove the two nuts (D) securing light to bracket and remove light. Pull wires through hole in bracket.
- Feed connectors of new light (B) through hole in bracket and position light onto bracket.
- Install nuts (D) and tighten.
- Connect wires to connectors (C) in harness and re-secure harness covering with tape and plastic tie (A) as required.

## MAINTENANCE/SERVICE

### 7.11.2.2 Tail/Brake Lights



- a. Cut plastic cable tie (E) securing harness covering to light (F).
- b. Retrieve connections (G) from inside harness covering approximately 6 inches (150 mm) from light and disconnect wires. Remove tape if necessary.
- c. Remove nut (H) securing light to frame and remove light. Pull wires through hole in frame.
- d. Feed connectors of new light (F) through hole in bracket and position light onto frame.
- e. Install nut (H) and tighten.
- f. Connect wires to connectors (G) in harness and re-secure harness covering with tape and plastic tie (E) as required.

## MAINTENANCE/SERVICE

### 7.12 WHEELS AND TIRES



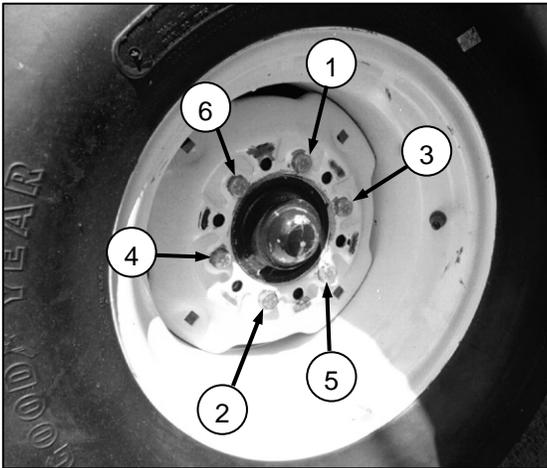
#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### 7.12.1 Wheel Bolts

##### IMPORTANT

Check and tighten wheel bolts after the first hour of operation and every 100 hours thereafter. Maintain 120 ft-lbf (160 N·m) torque using tightening sequence as shown.



##### IMPORTANT

Whenever a wheel is removed and re-installed, check torque after one hour of operation.

### 7.12.2 Wheel - Removal/Installation



#### DANGER

Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

#### 7.12.2.1 Removal

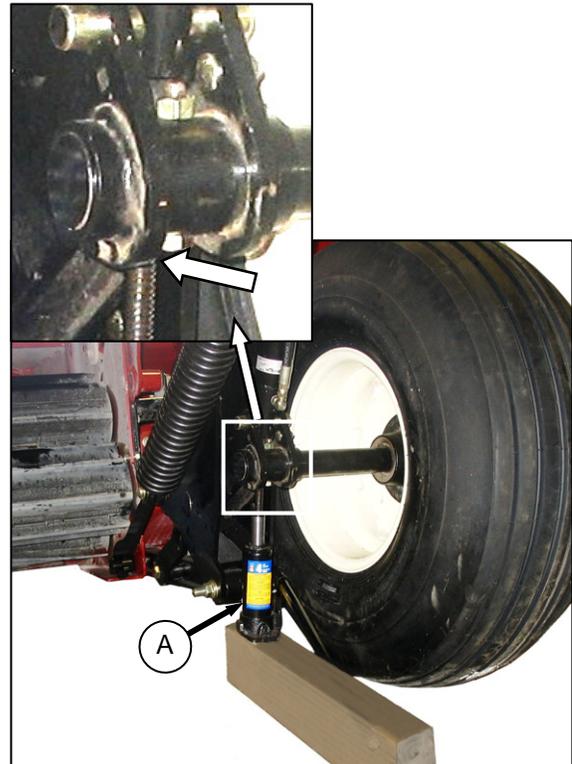
- Loosen wheel bolts slightly.
- Jack up the mower conditioner using one of the following recommended procedures:

##### NOTE

*Minimum jack capacity – 5000 lb (2270 kg).*

##### Bottle Jack (Field Application):

- Lower header to the ground.



- Position a bottle jack (A) and a block under frame leg as shown.

##### IMPORTANT

Ensure jack locates on flat area under frame.

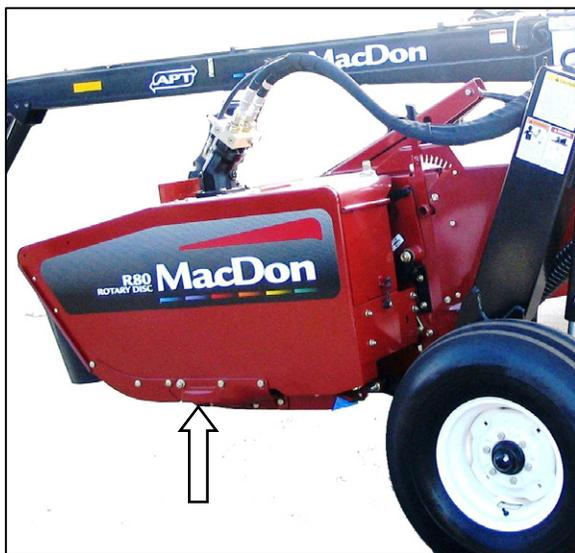
- Operate jack to raise wheel off ground.

*(continued next page)*

## MAINTENANCE/SERVICE

### Bottle Jack (Field or Road Application):

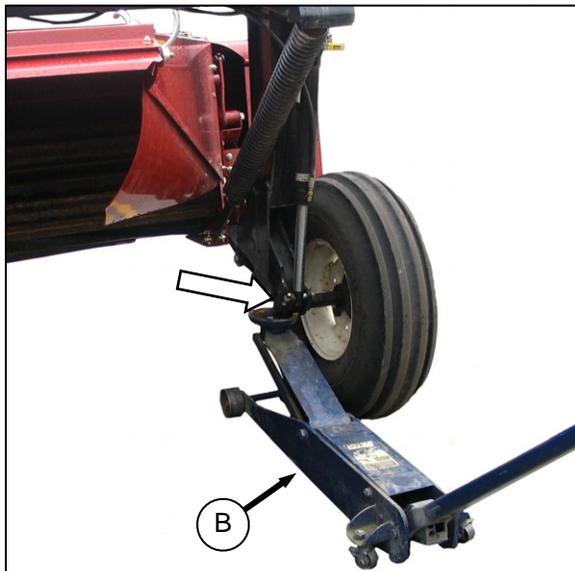
1. Raise header to full height if in working position.



2. Locate a bottle jack (or equivalent) under end of header as shown. Use a block under jack if ground is soft.
3. Operate jack to raise wheel off ground.

### Floor Jack (Shop Application):

1. Raise header to full height.



2. Position floor jack (B) under frame leg as shown.
  3. Operate jack to raise wheel off ground.
- c. Place blocks or a stand under frame leg.
  - d. Remove wheel bolts and remove wheel.

### 7.12.2.2 Installation

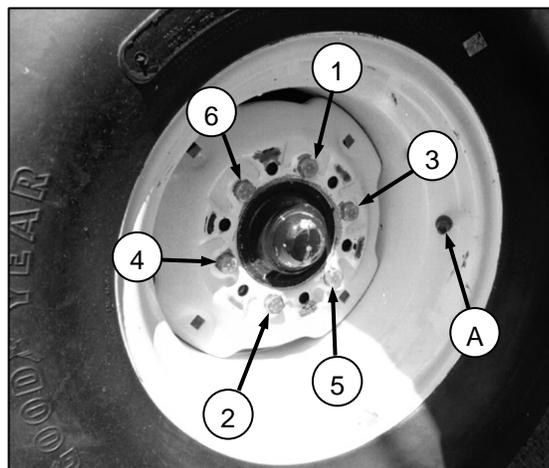


## CAUTION

When installing wheel be sure to use the holes that are countersunk to match bolt head profile. The uncountersunk holes do not seat the bolts correctly.

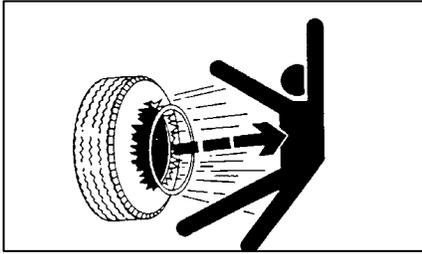
### IMPORTANT

*Be sure valve stem (A) points away from wheel support.*



- a. Position wheel on spindle and install bolts. Partially tighten.
- b. Remove blocks or stand, and lower jack until tire contacts the ground.
- c. Torque bolts to 120 ft-lbf (160 N-m) in accordance with tightening sequence shown.
- d. Lower jack completely and remove from work area.

### 7.12.3 Tire Inflation



Check tire pressure daily. Maintain pressure at 30 psi (207 kPa).



### WARNING

- Service tires safely.
- A tire can explode during inflation and cause serious injury or death.
- Do not stand over tire. Use a clip-on chuck and extension hose.
- Never increase air pressure beyond 35 psi (241 kPa) to seat the bead on the rim.
- Replace the tire if it has a defect.
- Replace a wheel rim, which has cracks, wear or severe rust.
- Never weld a wheel rim.
- Never use force on an inflated or partially inflated tire.
- Make sure the tire is correctly seated before inflating to operating pressure.
- If the tire is not in correct position on the rim, or is too full of air, the tire bead can loosen on one side, causing air to leak at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.
- Make sure all the air is removed from a tire before removing the tire from a rim.
- Do not remove, install or make repairs to a tire on a rim unless you have the proper equipment and experience to perform the job.
- Take the tire and rim to a qualified tire repair shop.

## MAINTENANCE/SERVICE

### 7.13 MAINTENANCE SCHEDULE

The following maintenance schedule is a listing of periodic maintenance procedures, organized by service intervals. Regular maintenance is the best insurance against early wear and untimely breakdowns. Following this schedule will increase machine life. For detailed instructions, refer to the specific headings in Section 7, Maintenance/Service. Use the fluids and lubricants specified in Section 7.3.1 Recommended Fluids and Lubricants.

**Service Intervals:** The recommended service intervals are in hours of operation. Where a service interval is given in more than one time frame, e.g. "100 HOURS OR ANNUALLY", service the machine at whichever interval is reached first.

#### IMPORTANT

Recommended intervals are for average conditions. Service the machine more often if operated under adverse conditions (severe dust, extra heavy loads, etc.).



#### CAUTION

**Carefully follow safety messages given under Section 7.1 PREPARATION FOR SERVICING, and Section 7.2 RECOMMENDED SAFETY PROCEDURES.**

#### 7.13.1 Break-In Inspection

<b><u>BREAK-IN INSPECTIONS</u></b>		
<b>HRS</b>	<b>ITEM</b>	<b>CHECK</b>
<b>1</b>	Wheel Bolts	Torque 120 ft-lbf (160 N·m)
<b>5</b>	Drive Belts	Tension
	Hardware	Torque. Refer to Section 7.3.2.
<b>25</b>	Drive Belts	Tension
<b>50</b>	Drive Belts	Tension
	Cutterbar Lubricant	Change. <b>Use only specified amount. Do not overfill.</b>
	Bevel Gearbox Lubricant Pump Gearbox Lubricant	Change
<b>100</b>	Hydraulic Oil Filter	Change
<b>150</b>	Bevel Gearbox Lubricant Cutterbar Lubricant	Change
<b>250</b>	Cutterbar Lubricant	Change

## MAINTENANCE/SERVICE

### 7.13.2 Interval Maintenance

<b>INTERVAL</b>	<b>SERVICE</b>	
<b>FIRST USE</b>	Refer To BREAK-IN INSPECTIONS (previous page).	
<b>100 HOURS OR ANNUALLY *</b>	<ol style="list-style-type: none"> <li>1. Check Bevel Gearbox Lubricant Level.</li> <li>2. Check Wheel Bolt Torques.</li> <li>3. Check Conditioner Drive Belt Tension.</li> </ol>	<ol style="list-style-type: none"> <li>4. Check Hourglass Deflector Belt Tension – 16 Ft.</li> <li>5. Grease Wheel Hub Bearings.</li> </ol>
<b>END OF SEASON</b>	Refer To Section 6.16 STORAGE.	
<b>10 HOURS OR DAILY</b>	<ol style="list-style-type: none"> <li>1. Check Hydraulic Oil Level.</li> <li>2. Check Hydraulic Hoses and Lines For Leaks.</li> </ol>	<ol style="list-style-type: none"> <li>3. Check Hourglass Deflectors For Security and Condition.</li> <li>4. Check Tire Pressure.</li> </ol>
<b>25 HOURS</b>	<ol style="list-style-type: none"> <li>1. Grease Cutterbar Driveline Bearings.</li> <li>2. Grease Roll Universal Shafts.</li> </ol>	<ol style="list-style-type: none"> <li>3. Grease PTO Shaft and Universals.</li> </ol>
<b>50 HOURS</b>	<ol style="list-style-type: none"> <li>1. Grease APT Pivot.</li> <li>2. Grease Steering Cylinder Pivot</li> <li>3. Grease Drive Belt Tensioner.</li> <li>4. Grease APT Swivel.</li> </ol>	<ol style="list-style-type: none"> <li>5. Grease Roll Shaft Bearings.</li> <li>6. Grease Lift Cylinder Pivot.</li> <li>7. Grease Lower Link Pivots.</li> </ol>
<b>250 HOURS</b>	<ol style="list-style-type: none"> <li>1. Change Hydraulic Oil Filter.</li> <li>2. Change Cutterbar Lubricant.</li> </ol>	<ol style="list-style-type: none"> <li>3. Change Bevel Gearbox Lubricant.</li> </ol>
<b>500 HOURS OR 3 YEARS</b>	<ol style="list-style-type: none"> <li>1. Change Hydraulic Oil.</li> </ol>	
<b>1000 HOURS OR 3 YEARS</b>	<ol style="list-style-type: none"> <li>1. Change Pump Gearbox Oil.</li> </ol>	

**\* IT IS RECOMMENDED THAT ANNUAL MAINTENANCE BE DONE PRIOR TO START OF OPERATING SEASON.**



## TROUBLESHOOTING

### 8 TROUBLESHOOTING

#### 8.1 MOWER PERFORMANCE

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Cutterbar Plugging.</b>	Dull, bent, or badly worn blades.	Replace blades.	7.8.4.3
	Build-up of dirt between rock guards.	Decrease header angle and increase flotation. In some conditions, it may be necessary to carry header slightly with header lift cylinders.	6.13.2 & 6.13.3
	Lift roll drive belt slipping.	Change belts.	7.9.7
	Conditioner drive belt slipping.	Adjust conditioner drive belt tension.	7.9.5
<b>Conditioner Rolls Plugging.</b>	Ground speed too fast.	Reduce Ground Speed.	6.13.7
	Roll gap too large for proper feeding.	Decrease roll gap.	6.13.4
	Roll gap too small in thick stemmed cane-type crops.	Increase roll gap.	6.13.4
	Baffle set too low.	Raise baffle.	6.13.6.3
	Rolls improperly timed.	Adjust roll timing.	6.13.4.2
	Roll speed too low.	Maintain rated header speed.	6.13.7
	Foreign object between rolls.	Disengage header and stop engine. When all moving parts have completely stopped, remove foreign object.	6.14
	Cutting height too low.	Decrease header angle to raise cutting height.	6.13.2
Backing into windrow.	Raise header before backing up.	-	
<b>Plugging Behind End Hourglass Deflectors.</b>	Ground speed too slow.	Increase ground speed.	6.13.7
<b>Ragged Or Uneven Cutting Of Crop.</b>	Header flotation too light, causing bouncing.	Adjust to heavier float setting.	6.13.3
	Excessive ground speed.	Reduce ground speed.	6.13.7
	Downed crop.	Adjust header angle to cut closer to ground.	6.13.2
<b>Strips Of Uncut Crop Left On Field.</b>	Bent cutter blades.	Replace blades.	7.8.4.3
	Build-up of dirt between rock guards.	Decrease header angle and increase flotation.	6.13.2 & 6.13.3

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Strips Of Uncut Crop Left On Field.</b>	Foreign object on cutterbar.	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	6.14
<b>Uneven Formation And Bunching Of Windrow.</b>	Rear deflector bypassing or dragging crop.	Adjust rear deflector for proper crop control.	6.13.6.2
	Forming shields not properly adjusted.	Adjust forming shields.	6.13.7
	Conditioner rolls running too slow.	Maintain rated header speed.	6.13.7
	Roll gap too large.	Adjust roll gap.	6.13.4
<b>Uneven Windrow Formation In Light Crop.</b>	Uneven feeding.	Reduce header speed.	6.13.7
<b>Cutting Height Varies From One Side To The Other.</b>	Flotation not properly balanced.	Adjust header flotation.	6.13.3
<b>Not Cutting Short Enough In Down Crop.</b>	Broken, bent or dull blades.	Replace blades or turn blades over.	7.8.4.3
	Ground speed too fast.	Reduce ground speed.	6.13.7
	Cutting height too high.	Adjust header angle to lower cutting height if field conditions allow.	6.13.2
<b>Material Being Pulled Out By Roots When Cutting Tall Crop Leaning Into Machine.</b>	Crop in conditioner rolls before crop is cut.	Increase roll gap.	6.13.4
<b>Damaged Leaves And Broken Stems.</b>	Insufficient roll gap.	Adjust roll spacing.	6.13.4
	Roll timing off.	Check roll timing and adjust if necessary.	6.13.4.2
<b>Slow Crop Drying.</b>	Rolls not crimping crop sufficiently.	Decrease roll gap.	6.13.4
	Crop is bunched in windrow.	Adjust forming shields/baffle.	6.13.7
<b>Excessive Drying Or Bleaching Of Crop.</b>	Excessive crimping.	Increase roll gap.	6.13.4
	Windrow too wide and thin.	Adjust forming shields.	6.13.7

## TROUBLESHOOTING

### 8.2 MECHANICAL

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Excessive Noises.</b>	Bent cutter blade.	Replace blade.	7.8.4.3
	Conditioner roll timing off.	Check roll timing and adjust if necessary.	6.13.4.2
	Conditioner roll gap too small.	Check gap and adjust if necessary.	6.13.4
<b>Excessive Vibration Or Noise In Header.</b>	Mud deposits on conditioner rolls.	Clean rolls.	6.14
	Conditioner rolls contacting each other.	Increase roll gap.	6.13.4
		Check roll timing.	6.13.4.2
<b>Excessive Heat In Cutterbar.</b>	Too much oil in cutterbar.	Drain oil and refill with specified amount.	7.8.2
<b>Frequent Blade Damage.</b>	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.14
	Spindle bearing failure.	Replace spindle bearing.	See MacDon Dealer.
	Material wrapped around spindle.	Remove disc and remove material.	7.8.3.4
	Cutting too low in rocky field conditions.	Decrease header angle. Increase flotation.	6.13.2 & 6.13.3
	Header float set too heavy.	Increase flotation.	6.13.3
	Ground speed too high in rocky field conditions. Note-high ground speed tends to dig rocks from ground instead of floating over them.	Reduce ground speed	6.13.7
	Blade incorrectly mounted.	Check all blade mounting hardware ensure blades are free to move.	7.8.4.3
<b>Excessive Wear Of Cutting Components.</b>	Header angle too steep.	Reduce header angle.	6.13.2
	Crop residue and dirt deposits on cutterbar.	Clean cutterbar.	6.14
	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.14
<b>Breakage Of Conditioner Drive Belt.</b>	Improper belt tension.	Adjust conditioner drive belt tension.	7.9.5
	Belt not in proper groove in pulley.	Move belt to proper groove.	7.9.5

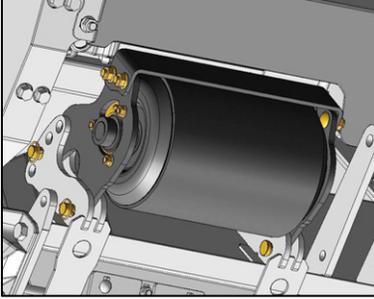
## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Breakage Of Conditioner Drive Belt.</b>	Belt pulleys and idlers misaligned.	Align pulleys and idler.	See MacDon Dealer.
<b>Machine Pulling To One Side.</b>	Header dragging on one end and pulling to that side.	Adjust header flotation on both ends.	6.13.3
	Low tire pressure on one side.	Check and correct tire pressure (30 psi (207 kPa)).	--
<b>Discs Stop When Engaging Cutterbar.</b>	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.14
<b>Lights Malfunctioning.</b>	Improper ground connection.	Check for proper grounding between light base and header.	---
	Burnt out bulb.	Replace bulb.	7.11
	Poor connection.	Check connector at tractor.	---
<b>Header Turns While Unloaded But Slows Or Stops When Starting To Cut.</b>	Low reservoir oil level.	Add oil to reservoir.	7.10.1.2
	Defective motor.	Repair/replace motor.	See MacDon Dealer.
	Defective pump.	Repair/replace pump.	See MacDon Dealer.
	Defective relief valve.	Repair/replace relief valve.	See MacDon Dealer.
	PTO slipping on tractor.	Repair tractor PTO system.	See MacDon Dealer.
	Cold oil in system.	Reduce ground speed until oil reaches operating temperature.	6.13.7
<b>Header Slows Or Stops When Travelling Uphill.</b>	Low reservoir oil level.	Add oil to reservoir.	7.10.1.2

## OPTIONS AND ATTACHMENTS

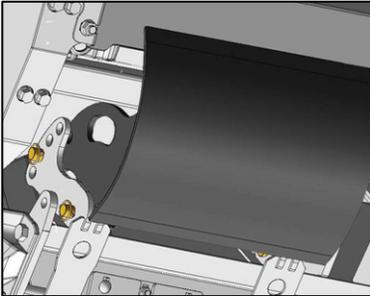
### 9 OPTIONS AND ATTACHMENTS

#### 9.1 GAUGE ROLLER KIT



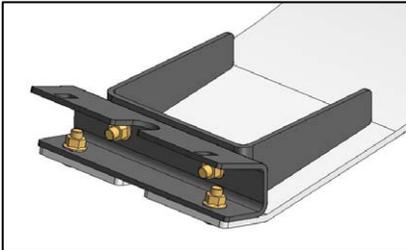
The gauge roller kit installs at either end of the cutterbar and the rollers can be adjusted for varying cutting height. The kit includes two roller assemblies and attachment hardware. It is available only for the 16 foot header.

#### 9.2 SKID SHOE KIT



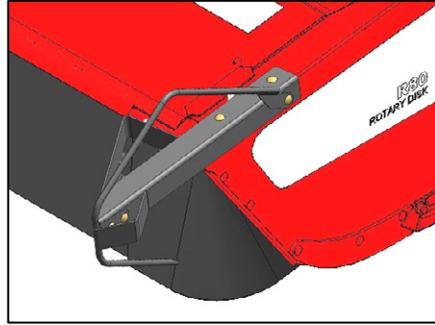
The skid shoe kit installs at either end of the cutterbar and the shoes can be adjusted for varying cutting height. The kit includes two skid shoe assemblies and attachment hardware. It is available only for the 16 foot header.

#### 9.3 SKID PLATE LIFT KIT



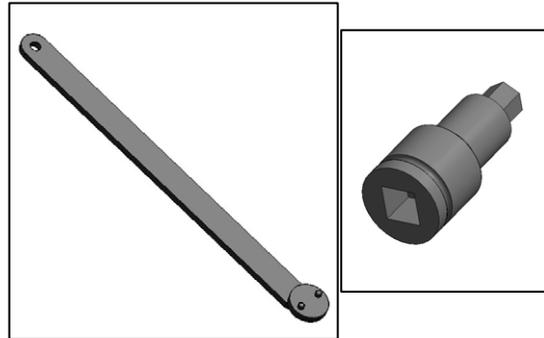
The shoe lift kit consists of spacer assemblies that attach to the existing skid shoes to increase the ground clearance by approximately 2 inches (51 mm). The kit includes four assemblies and attachment hardware.

#### 9.4 TALL CROP DIVIDER KIT



The tall crop dividers attach to the ends of the header for clean crop dividing and reel entry in tall crops. The kit includes left and right dividers and attachment hardware.

#### 9.5 CUTTERBAR REPAIR TOOL KIT



The cutterbar repair tool kit contains the necessary tools for replacement of the cutterbar idler gears. Refer to the Technical Service Manual for instructions.

#### 9.6 HYDRAULIC CENTER LINK KIT

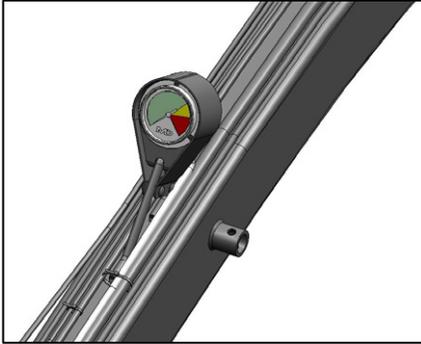


This kit allows the header angle to be adjusted hydraulically with a cylinder replacing the standard mechanical link, and uses a separate hydraulic circuit from the tractor. Installation instructions are included with the kit.

*(continued next page)*

## OPTIONS AND ATTACHMENTS

### 9.7 PRESSURE GAUGE KIT



This kit allows the operator to monitor the header operating load on the machine with the installation of a pressure gauge on the Articulated Power Tongue. Installation instructions are included with the kit.

## UNLOADING AND ASSEMBLY

### 10 UNLOADING AND ASSEMBLY

Refer to R80 Pull-Type Rotary Disc Mower Conditioner Unloading & Assembly Instructions, #169080 and Pre-Delivery Checklist that is included with your shipment for unloading and set-up procedures.

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