R80 Rotary Disc Self-Propelled Windrower Header

OPERATOR'S MANUAL

Model Year - 2009

Part #169089 $15

This Manual contains instructions for “SAFETY”, “OPERATION”, and “MAINTENANCE/SERVICE” for your new MacDon Model R80 Rotary Disc Self-Propelled Windrower Header.

R80 ROTARY DISC SELF-PROPELLED WINDROWER HEADER

1 INTRODUCTION

This manual describes the operating and maintenance procedures for the MacDon Model R80 Self-Propelled Rotary Disc Header. Your new MacDon rotary header 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 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 this Operator's Manual and the Parts Catalog with the windrower manuals in the cab storage compartment.

RECORD THE SERIAL NUMBER OF THE HEADER.

_____

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

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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

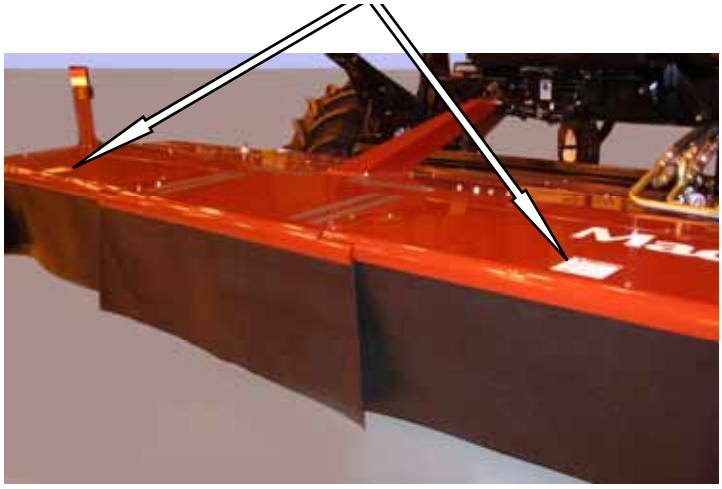
- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from your Dealer Parts Department.

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.

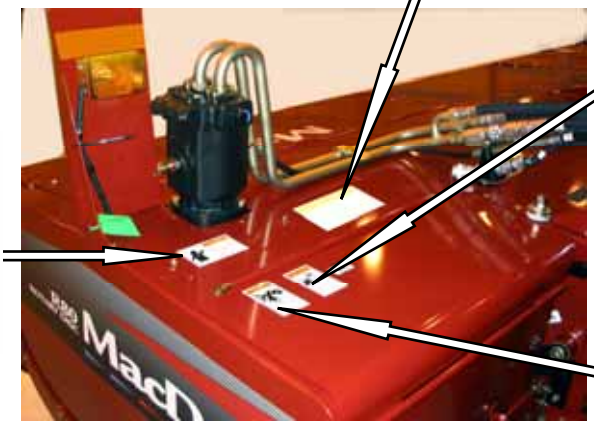
2.3.2 Safety Sign Locations

2 PLCS #148829



#109843

#32738
(BOTH SIDES)



#134070

#170281

Safety Sign Locations (continued)

1 PLC – BOTH SIDES
#036651

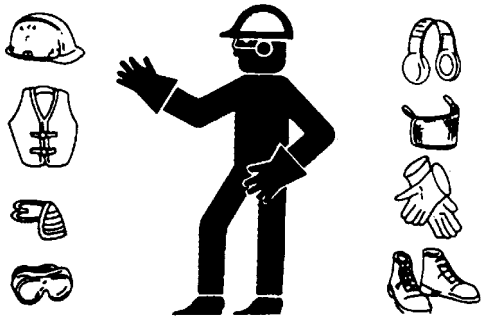
1 PLC #036651

2.4 GENERAL SAFETY

CAUTION

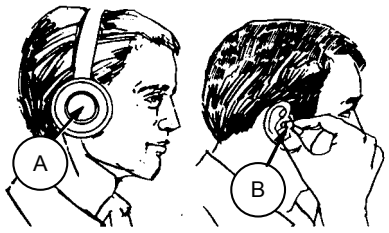
- **The following are general farm safety precautions that should be part of your operating procedure for all types of machinery.**

- **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.**
- **Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.**
- **Do not modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.**
- **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.**

(continued next page)

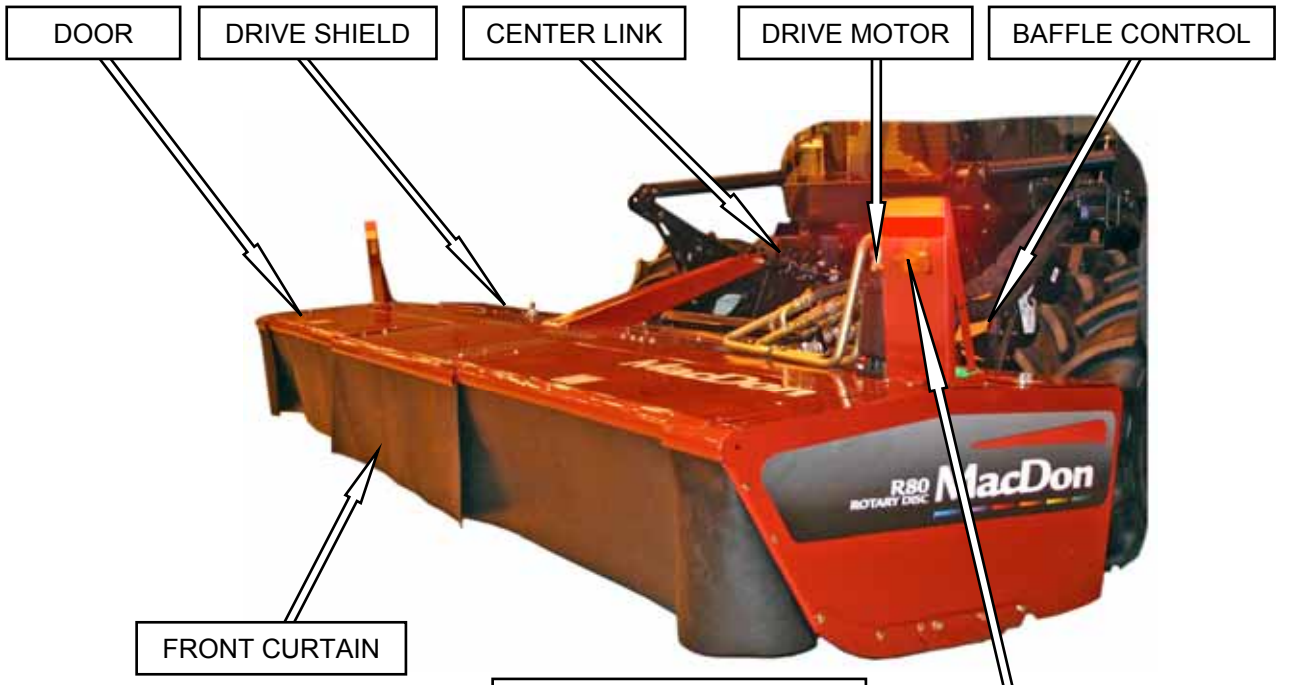
- **Keep the area used for servicing machinery clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.**

- **Use adequate light for the job at hand.**
- **Keep machinery clean. Do not allow oil or grease to accumulate on service platforms, ladders or controls. Clean machines before storage.**
- **Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.**
- **When storing machinery, cover sharp or extending components to prevent injury from accidental contact.**

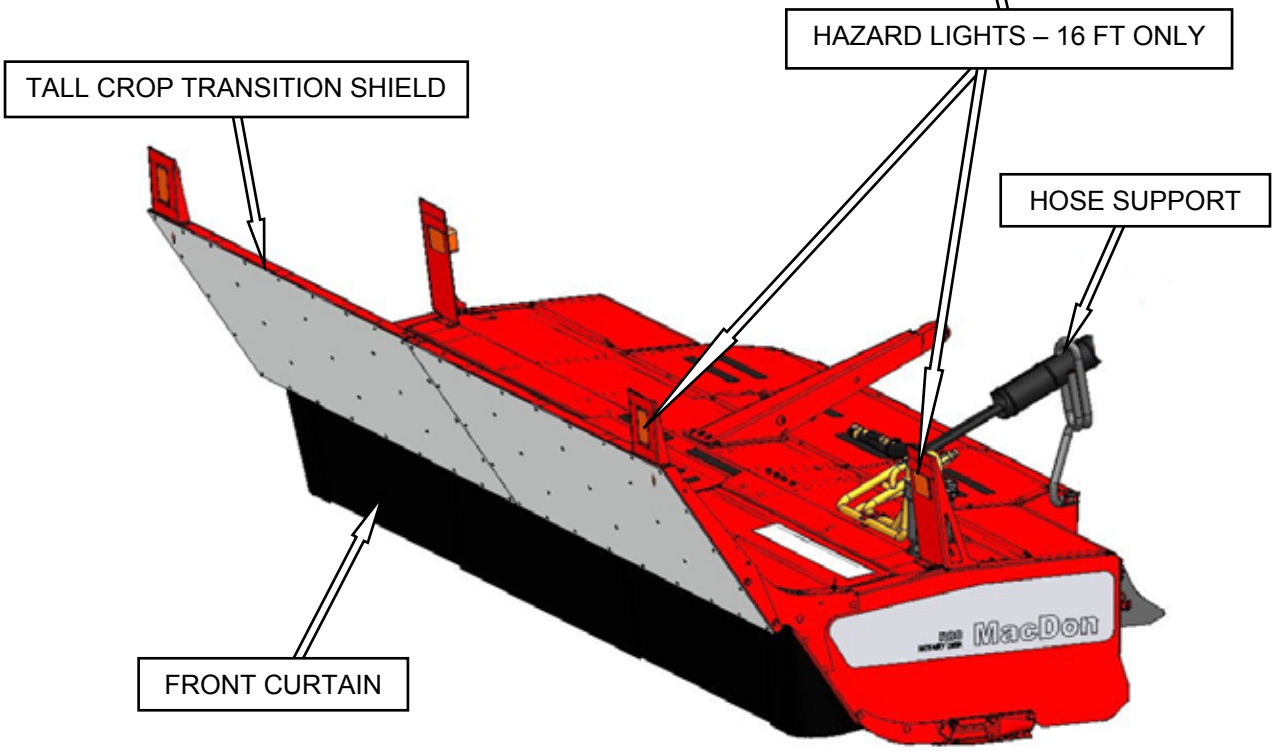
3 ACCRONYMS AND ABBREVIATIONS

TERM	DEFINITION
API	American Petroleum Institute
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
$in.^3$	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

4 COMPONENT IDENTIFICATION



STANDARD HEADER



GRASS SEED HEADER

5 SPECIFICATIONS

HEADER MODEL		R80 – 13 FT	R80 – 16 FT
FRAME & STRUCTURE			
Width		13 ft-0 in. (3952 mm)	16 ft-3 in. (4957 mm)
Weight (estimated)		3500 lb (1590 kg)	4300 lb (1955 kg)
Carrier		MacDon M150 & M200 SP Windrower Tractors	MacDon M200 SP Windrower Tractor
Lighting		--	Two Amber Transport
Manual Storage		Tractor Cab Manual Storage Compartment	
CUTTERBAR			
Qty Of Cutting Discs		8	10
Knives Per Disc		Two 18 Deg. Bevel Down Reversible.	
Disc Speed		1800-2600 rpm	
Knife Tip Speed Range		131-189 mph (59.2-85.5 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
Grass Seed Deflectors		--	4 Converging Drums – 1000 rpm Max.
DRIVES			
Main	M150	4.6 cu in. (75 cc) Heavy Duty Hydraulic Motor.	--
	M200	6.4 cu in. (106 cc) Heavy Duty Hydraulic Motor	
Max Power	M150	130 hp (97 kw)	--
	M200	195 hp (146 kw)	
Connections		Flat Faced Quick Attach Couplers – Connect Under Pressure.	
Normal Operating Pressure		4000 psi (27.58 MPa)	
CONDITIONER			
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)/6.63 in. (168.4 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	737-1064 rpm	
	Lifting	492-709 rpm	
Swath Width		36-102 in. (915-2540 mm)	
Forming Shields		Header Mounted Adjustable Baffle, Fixed Side Deflectors, and Tractor Mounted Adjustable Forming Shield System.	
GROUND SPEED	M150	11 mph (17.7 km/h)	--
	M200	16 mph (25.7 km/h)	

NOTES: 1. Specifications and design are subject to change without notice or obligation to revise previously sold units.

6 OPERATION

6.1 OWNER/OPERATOR RESPONSIBILITIES

CAUTION

- **It is your responsibility to read and understand this manual completely before operating the windrower. 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 windrower, 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 header. 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 windrower except from the operator's seat.**
- **Check the operation of all controls in a safe clear area before starting work.**
- **Do not allow riders on windrower.**
- **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 header hits an obstruction, the front of the tractor will usually swerve towards the ditch.**
- **When working on inclines, travel uphill or downhill when possible.**
- **Never attempt to get on or off a moving tractor.**
- **Do not get off the tractor while the header 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**
  - **turn off engine and remove key**
  - **wait for all movement to stop**
  - **dismount and engage lift cylinder stops before inspecting raised machine.**
- **Operate only in daylight or good artificial light.**

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- **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.**

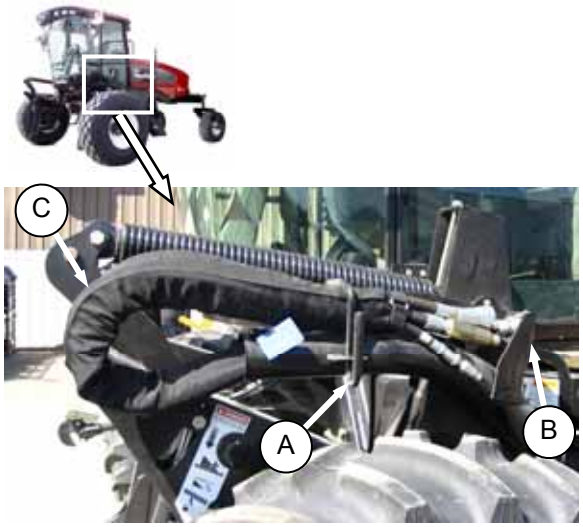
- **The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the mower-conditioner. Replace the curtains if they should become worn or damaged.**

6.3 HEADER ATTACHMENT

Refer to the M150 & M200 Self-Propelled Windrower Operator's Manual for procedures for mechanically attaching the disc header to the self-propelled windrower. Refer to the following procedures for electrical and hydraulic connections. The header drive hydraulic hoses and electrical harness are located on the left cab-forward side of the tractor.

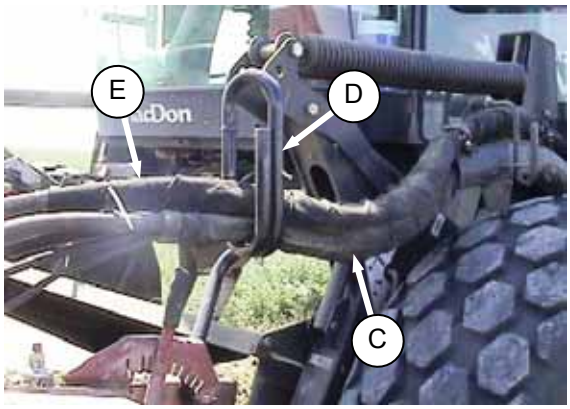
6.3.1 M200 – 13 FT & 16 FT

6.3.1.1 TRACTOR CONNECTIONS



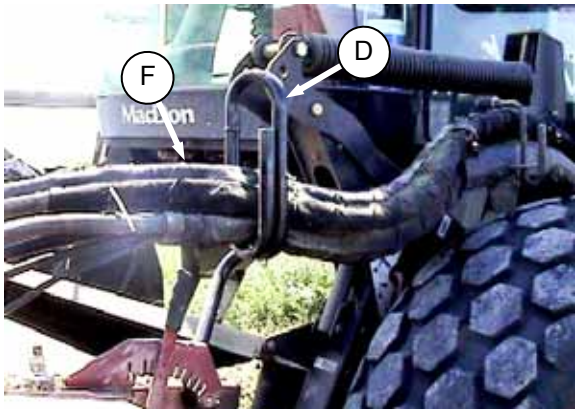
a. Disengage and rotate lever (A) counter-clockwise to fully up position.

b. Remove cap (B) securing electrical connector to frame.

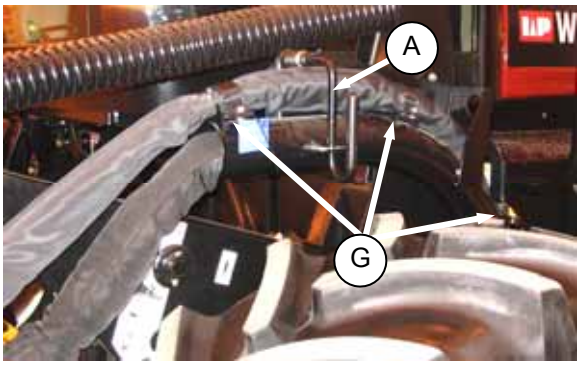


c. Move hose bundle (C) from tractor through hose support (D) on header.

d. Route header return and pressure hose bundle (E) through header support (D) to tractor, and locate bundle above existing hose bundle (C) as shown.



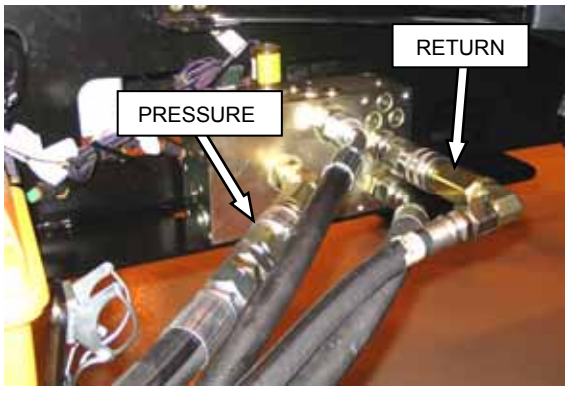
e. If grass seed header is being attached, route converging drum hose bundle (F) through header support (D) to tractor, and locate bundle above existing hose bundles as shown.



f. Lower and lock lever (A).

g. Secure hose bundles with three cinch straps (G).

h. Move tractor left side platform to open position.



i. Connect two hose bundle from header to middle valve block as shown.

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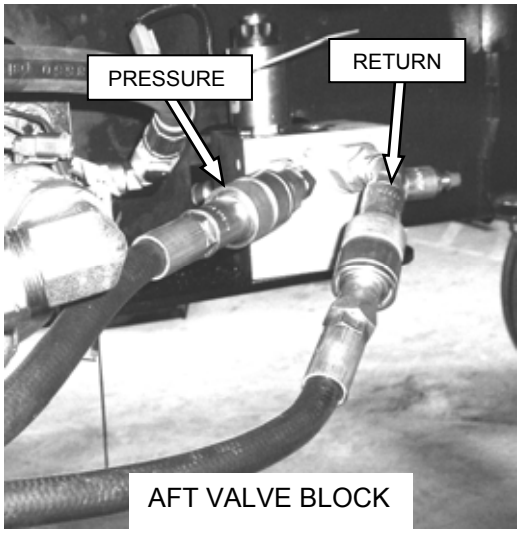
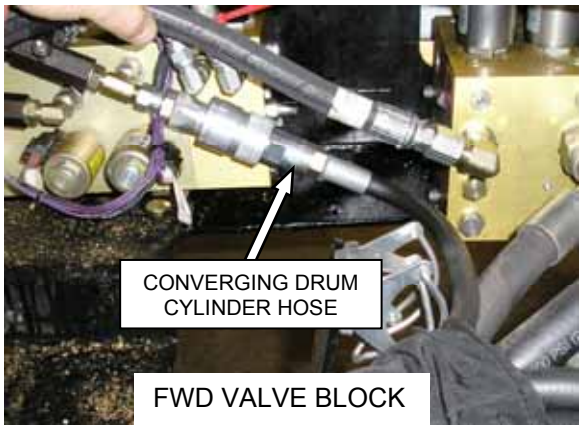
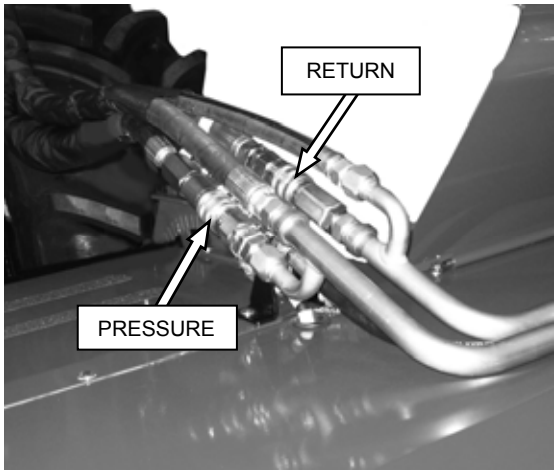


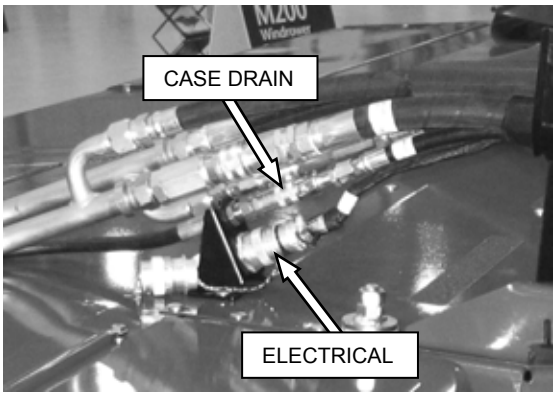


j. If grass seed header is being attached, connect converging drum three hose bundle to forward and aft valve blocks as shown.

k. Move tractor platform to closed position.

6.3.1.2 HEADER CONNECTIONS



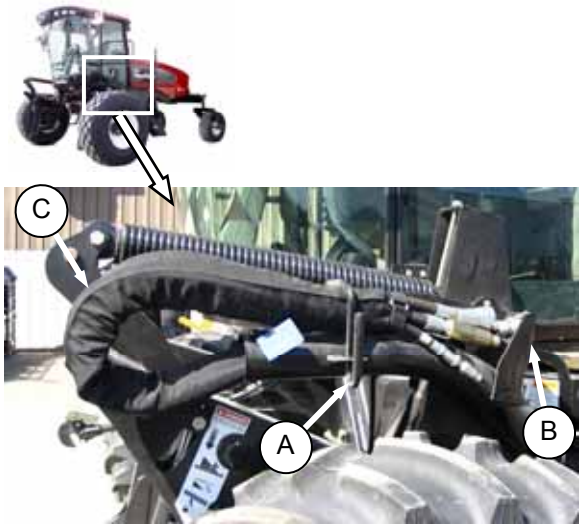


a. Remove caps and plugs from hoses and lines.

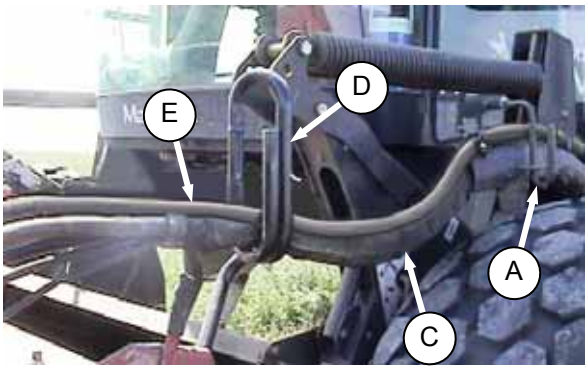
b. Connect the three hoses from tractor to the fittings on the header as shown.

c. Assemble electrical connector as shown.

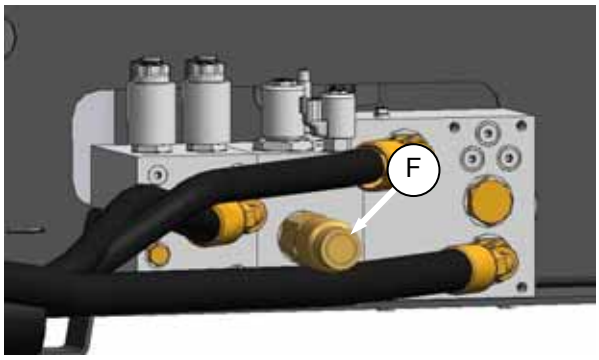
6.3.2 M150 - 13 FT



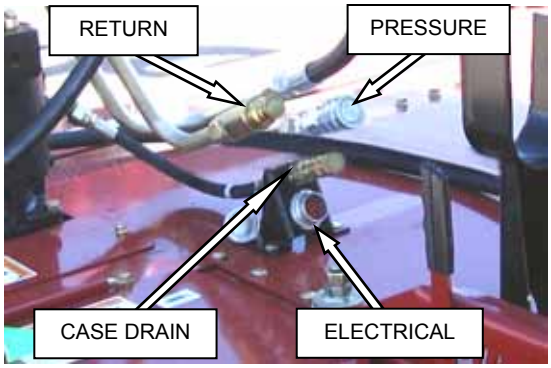
a. Disengage and rotate lever (A) counter-clockwise to fully up position.
b. Remove cap (B) securing electrical connector to frame.



c. Move hose bundle (C) from tractor through hose support (D) on header.
d. Route header pressure hose (E) from header through hose support (D) to tractor, and locate it above existing hose bundle (C) as shown.
e. Lower and lock lever (A).
f. Secure with existing cinch straps.
g. Move tractor left side platform to open position.



h. Connect single hose (E) from header to coupler (F) on middle valve block as shown
i. Remove caps and plugs from hoses and lines.



j. Connect the three hoses from tractor to the fittings on the header as shown.
k. Connect harness from tractor to electrical connector.
l. Move tractor platform to closed position.

6.4 HEADER DETACHMENT

Refer to the M150 & M200 Self-Propelled Windrower Operator's Manual for procedures for mechanically detaching the header from the self-propelled windrower. Refer to the following procedures for disconnecting electrical harness and hydraulic hoses.

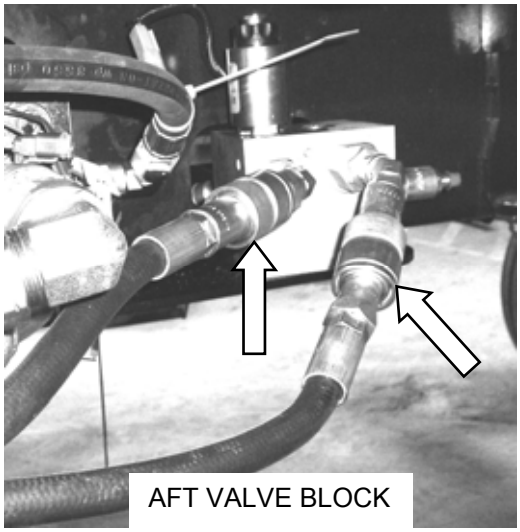
CAUTION

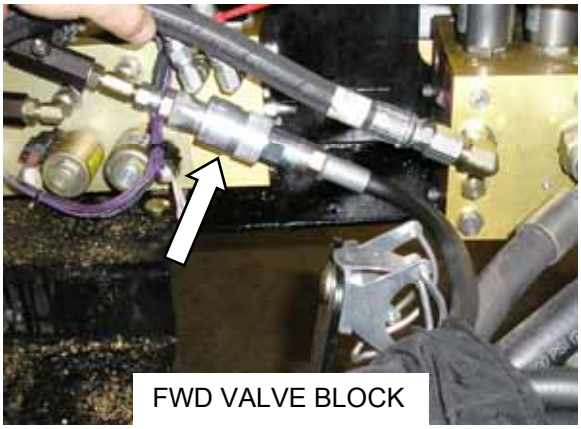
To prevent accidental movement of tractor, shut off engine, engage parking brake, and remove key.

6.4.1 M200 – 13 FT & 16 FT

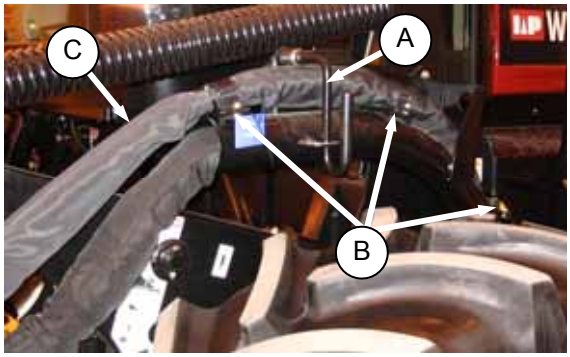
a. Move LH (cab forward) platform to rear of tractor.

b. Disconnect the two hydraulic couplers from tractor valve.





c. If grass seed header is being detached, disconnect two couplers at the aft valve and the single coupler at the forward valve.



d. Raise lever (A) and undo Velcro straps (B).

e. Move hose bundle (C) to store on header. If grass seed header is being detached, there are two hose bundles to store on the header.

f. Install caps on connectors and hose ends if equipped.

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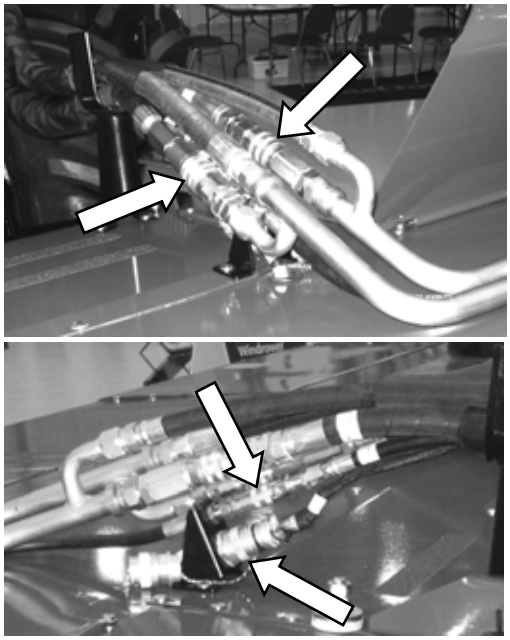
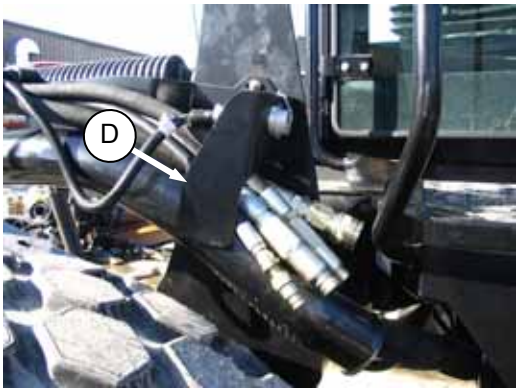
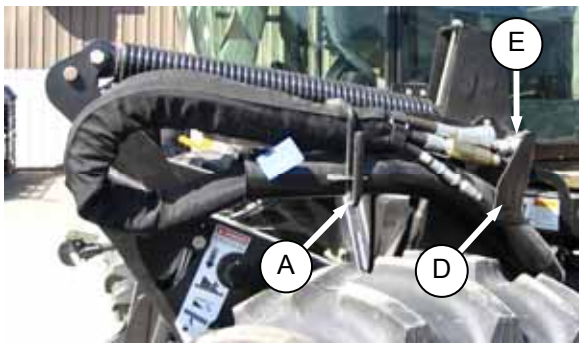


g. At the header, disconnect electrical connector by turning collar counterclockwise and pulling connector to disengage.

h. Disconnect the two drive couplers, and case drain coupler on header.



i. Move hose bundle from header and locate on tractor LH side with hoses in support (D).



j. Rotate lever (A) clockwise and push to engage bracket.

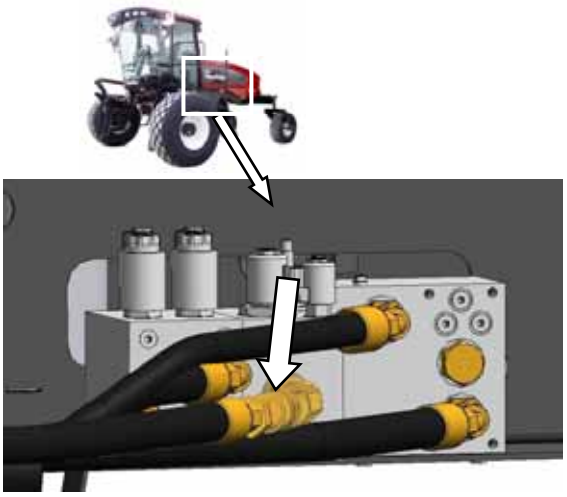
k. Locate electrical harness through support (D) and attach cap to electrical connector (E).

l. Move tractor platform back to closed position.

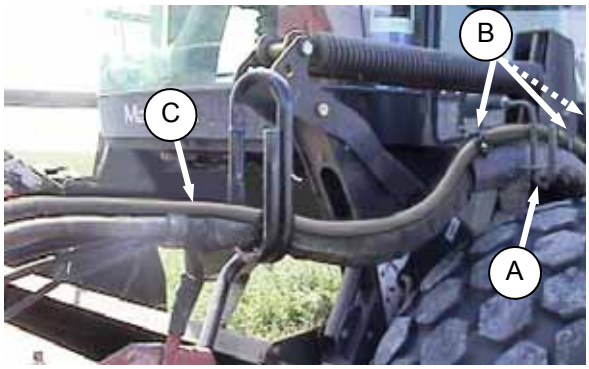
m. Detach header from tractor. Refer to the M150 & M200 Self-Propelled Windrower Operator's Manual for procedures for mechanically detaching the header from the self-propelled windrower.

6.4.2 M150 – 13 FT

a. Move LH (cab forward) platform to rear of tractor.



b. Disconnect the hydraulic coupler from tractor valve.



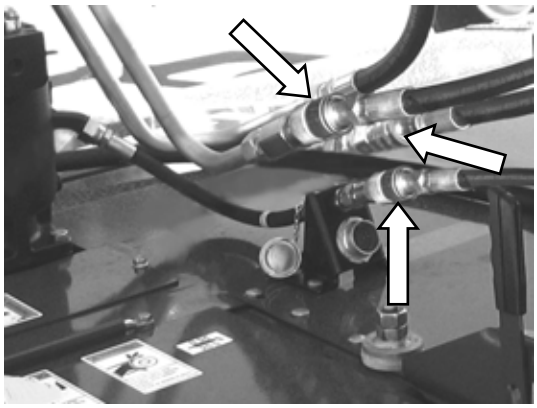
c. Raise lever (A) and undo Velcro straps (B).

d. Move hose (C) to store on header.

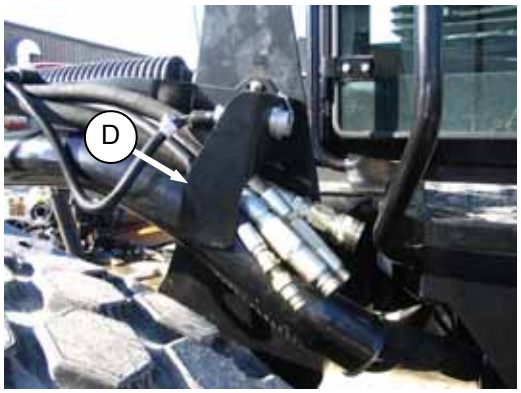
e. Install caps on connectors and hose end if equipped.

(continued next page)

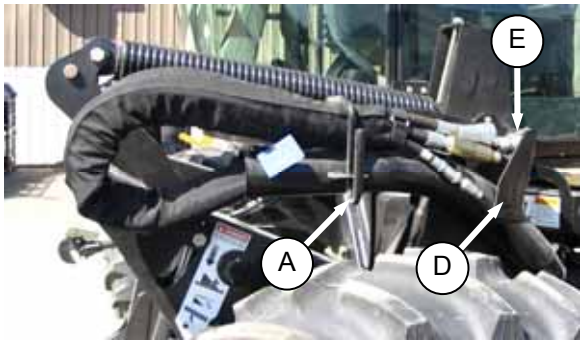
f. At the header, disconnect electrical connector by turning collar counterclockwise and pulling connector to disengage.



g. Disconnect the two drive couplers, and case drain coupler on header.



h. Move hose bundle from header and locate on tractor LH side with hoses in support (D).



i. Rotate lever (A) clockwise and push to engage bracket.

j. Locate electrical harness through support (D) and attach cap to electrical connector (E).

k. Move tractor platform back to closed position.

l. Detach header from tractor. Refer to the M150 & M200 Self-Propelled Windrower Operator's Manual for procedures for mechanically detaching the header from the self-propelled windrower.

6.5 TRANSPORTING WINDROWER

Refer to M150 & M200 Self-Propelled Windrower Operator's Manual for transporting headers when attached to the M150/M200 windrower tractor.

6.6 LIGHTS

The turn signal lights and hazard lights, which are mounted on both ends of the header, are activated by switches in the M Series windrower tractor cab. Only the 16 ft model is equipped with lights.

6.7 BREAK-IN PERIOD

a. After attaching header 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 header, be extra alert and attentive.

WARNING

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 7.12.1 Break-In Inspection Requirements.

6.8 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 header 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. Adjust tension on drive belt. Refer to Section 7.9.3.

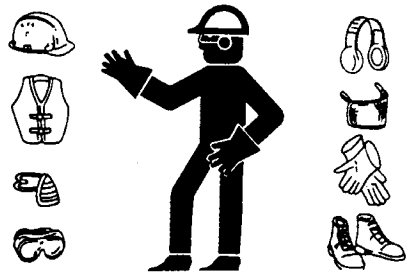
b. Lubricate machine completely. Refer to Section 7.7, Lubrication.

c. Perform all annual maintenance. See Section 7.12, Maintenance Schedule.

6.9 DAILY START-UP CHECK

CAUTION

- **Be sure tractor and header 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 windrower 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, Hydraulics.

b. Clean all lights and reflective surfaces on the machine. Check lights for proper operation.

c. Perform all Daily maintenance. Refer to Section 7.12, Maintenance Schedule.

6.10 SHUTDOWN PROCEDURE

CAUTION

Before leaving the tractor seat for any reason:

- **Park on level ground if possible.**
- **Lower the header fully.**
- **Place ground speed control in N-DETENT.**
- **Stop engine and remove key from ignition.**
- **Wait for all movement to stop.**

6.11 UNPLUGGING THE HEADER

DANGER

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

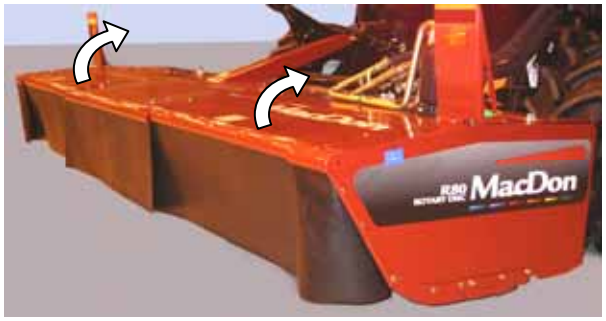
a. Stop forward movement of the tractor and disengage the header.

b. Raise header fully, shut off engine, remove key.

c. Engage header lift cylinder locks.

WARNING

Wear heavy gloves when working around cutterbar.



d. Open header doors and clean off cutterbar by hand.

6.12 HEADER OPERATION

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

Correct operation reduces crop loss and increases productivity. 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 header. You will quickly become adept at adjusting the machine to give you the desired results.

6.12.1 Disc Speed

The disc header can be used to cut a variety of crops and for the best cutting results, a range of disc speeds is recommended for each type of crop and condition. See table below.

CROP	CONDITION	DISC RPM
Alfalfa	Heavy	2300-2500
	Light	1600-2000
Sudan, Sorghum, Haygrazer, Timothy	Tall & Stemmy	2300-2500
Short Grass	Dense	2500
	Thin	1800-2000

Disc speeds are set and adjusted from the cab using without shutting down the windrower. Refer to M150/M200 Self-Propelled Windrower Operator's Manual.

6.12.2 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 following paragraphs.

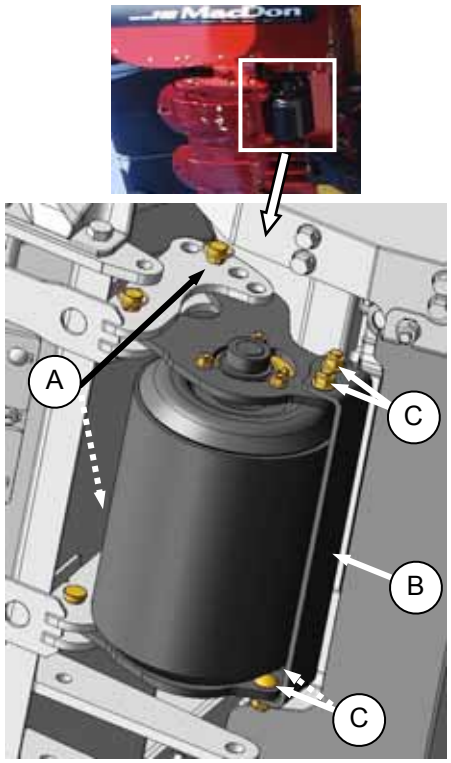
Cutting height should be adjusted for optimum cutting performance without allowing excessive build-up of mud and soil inside the header which can lead to poor crop flow and increased wear on cutting components.

6.12.2.1 Gauge Roller Height Adjustment

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. Engage header lift cylinder stops.



b. Remove lynch pin and remove adjuster pin (A) from one side of roller.

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c. 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.

d. Repeat for roller at opposite end of header.

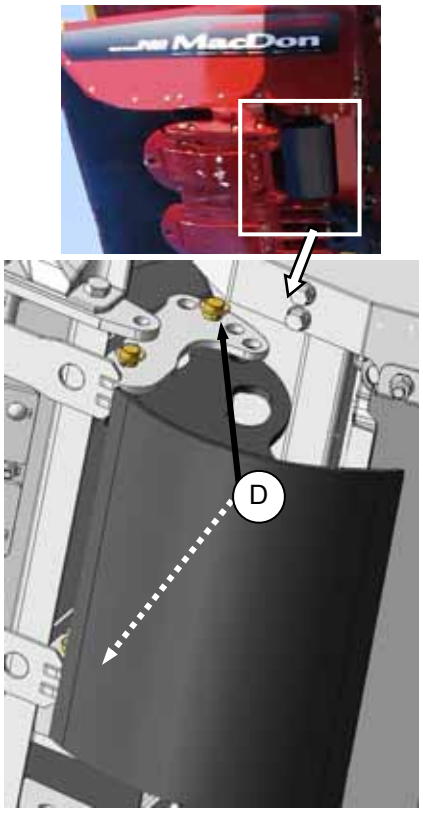
e. Adjust mud bar (B) by loosening nuts (C) and then re-tighten to maintain minimum clearance between mud bar and roller.

6.12.2.2 Skid Shoe Height Adjustment

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.

d. Repeat for skid shoe at opposite end of header.

6.12.3 Header Angle

Header (or cutterbar) angle can be varied from 0-8° below horizontal. 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.

The header angle can be hydraulically adjusted from the cab using hydraulic cylinder without shutting down the windrower. To adjust the angle, refer to M150 & M200 Self-Propelled Windrower Operator's Manual.

6.12.4 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 lighter setting to protect cutting components.

NOTE

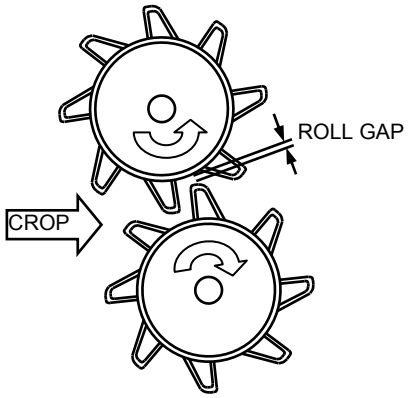
When float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing and leaving a ragged cut.

The header float can be hydraulically fine-tuned from the cab without shutting down the windrower. To adjust the float, refer to M150 & M200 Self-Propelled Windrower Operator's Manual.

6.12.5 Roll Gap

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. Set enough roll gap to achieve this result.



A larger 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 less gap for proper feeding and conditioning.

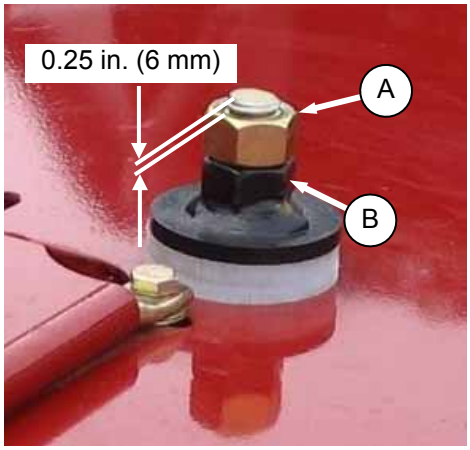
6.12.5.1 Roll Gap Adjustment

To adjust the roll gap, refer to following illustration and proceed as follows:

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 fully.



b. Loosen and back-off upper jam nut (A), both sides of conditioner.

c. To increase roll gap, turn both lower nuts (B) clockwise.

NOTE

The amount of thread protruding through jam nut indicates roll gap. Factory setting is 0.25 in. (6 mm).

NOTE

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

d. To decrease the roll gap, turn lower nuts (B) counter-clockwise.

e. Tighten jam nuts (A), both sides.

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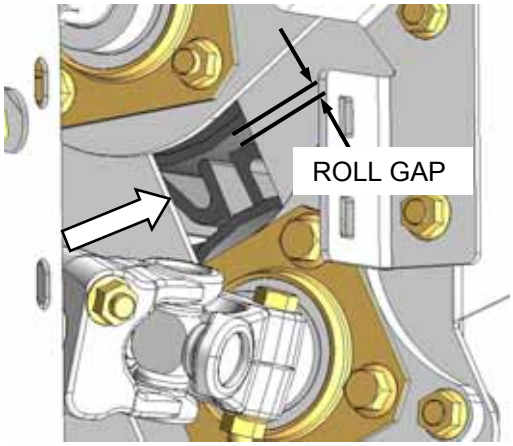


f. Inspect roll gap at both ends of the rolls at access port.

IMPORTANT

Roll timing is critical when the roll gap is decreased because:

- Conditioning is affected, and
- The bars may contact each other.

Refer to Section 6.12.5.2, Roll Timing.

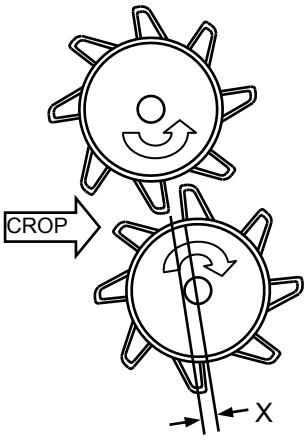
6.12.5.2 Roll Timing

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.

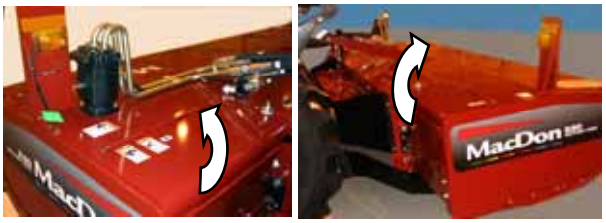
DANGER

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.

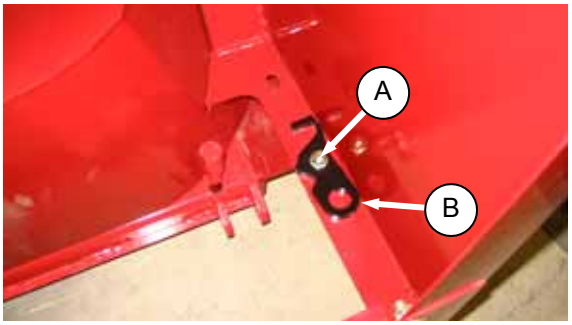
Check roll timing (distance 'X') at each end of the rolls with the header fully lowered using the gauge located inside the RH end panel of header.



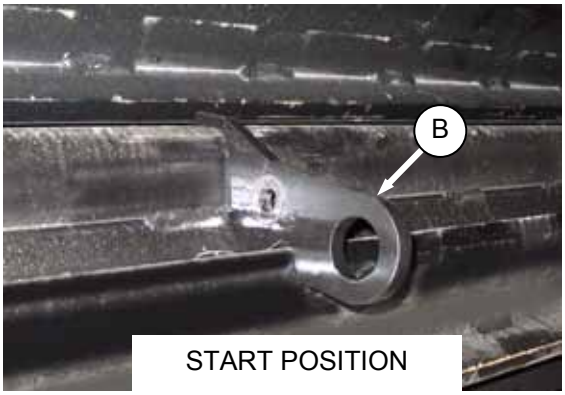
a. Lower header to ground, shut down tractor and remove key.

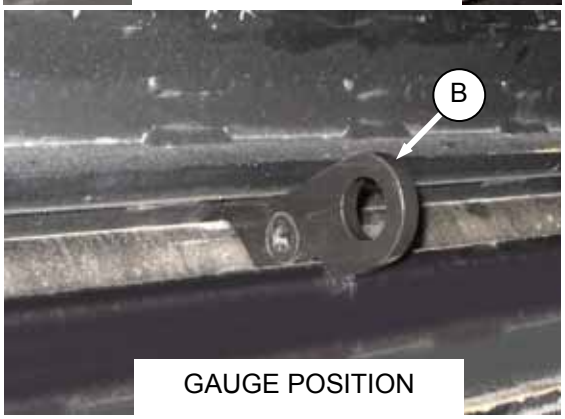


b. Open both rear drive shields.



c. Remove bolt (A) and nut, and remove gauge (B) from inside panel at RH end of header.





d. From the rear of the header, locate gauge (B) at centre of rolls as shown and manually turn rolls to limits of gauge. Rolls will engage the gauge if timing is correct.

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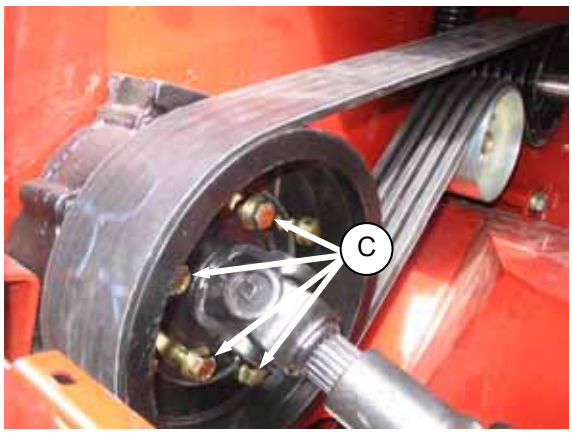
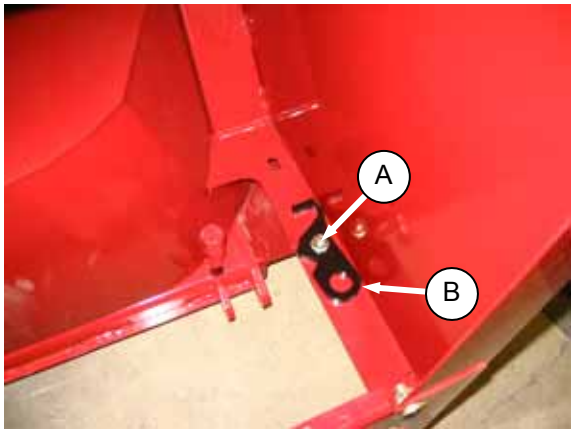
e. To adjust roll timing, refer to illustrations and proceed as follows:



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

CAUTION

To ensure gauge is not forcibly ejected from rolls when machine is started, ensure gauge is securely re-attached to frame.



f. Store gauge (B) inside RH panel with bolt (A) and nut.

6.12.6 Roll Tension

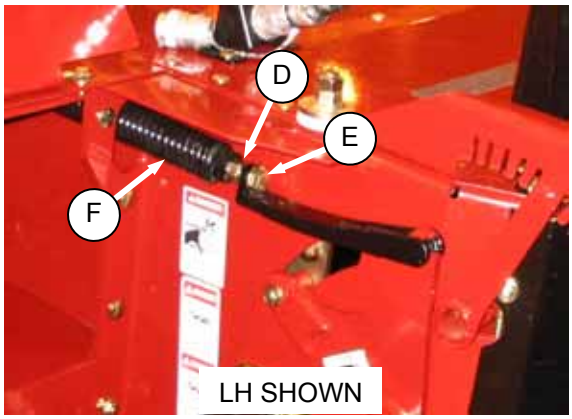
The roll tension (the force holding the rolls together) is factory set to maximum and is adjustable.

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, shut down tractor and remove key.

b. Open both rear drive shields.



c. To increase the roll tension, loosen jam nut (D) and turn the spring draw-bolt (E) clockwise to tighten the spring (F) 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 (D) after adjusting tension.

f. Close drive shields.

6.12.7 Forming Shields

WARNING

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.

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 6.13, 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.

NOTE

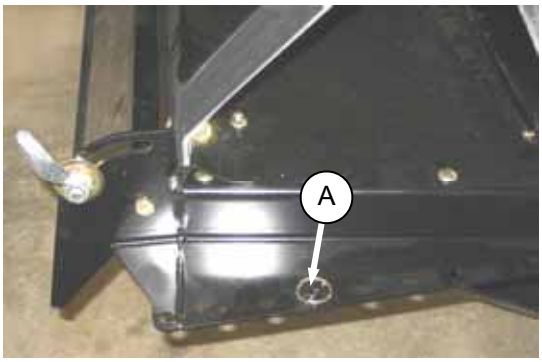
The forming shields are not required when using a grass seed header.

6.12.7.1 Side Deflectors

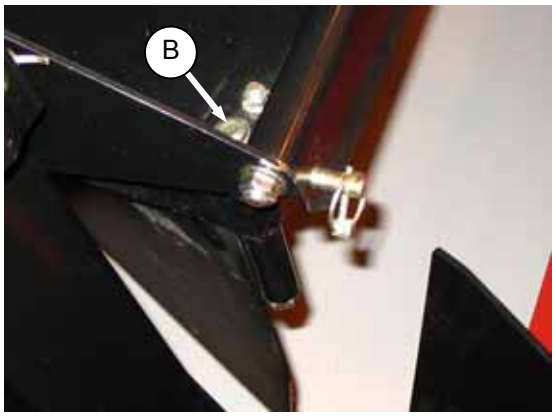
The position of the side forming shields controls the width and placement of the windrow.

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. Set forming shield side deflectors to desired width by repositioning adjuster bars (A) in holes in forming shield cover. To ensure windrow placement is centered, adjust both side deflectors to the same position.



b. If forming shield attachment is too tight or too loose, tighten or loosen nut (B) as required.

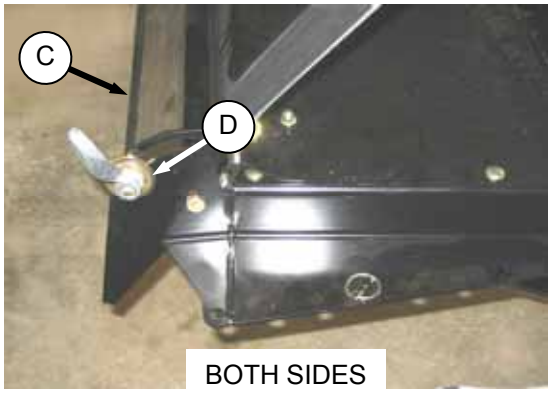
6.12.7.2 Rear Deflector (Fluffer Shield)

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

Adjust the deflector as follows:

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. 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.

NOTE

Locking handles (D) are located at either end of the deflector and may be loosened slightly.

b. 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.

c. Tighten handles (D) to secure deflector position.

6.12.7.3 Baffle

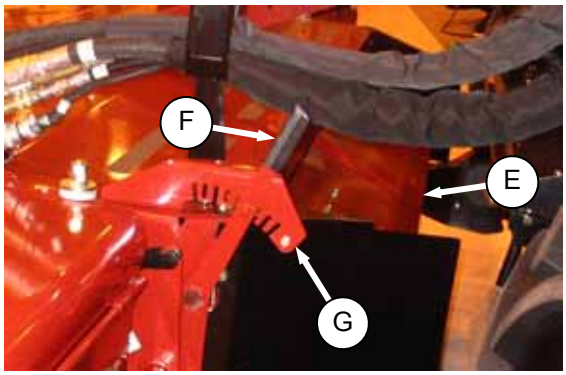
The baffle (E) determines the width and height of the windrow. It is located immediately behind and above the conditioning rolls, and can be positioned to;

- Direct the crop flow into the forming shield for narrow and moderate width windrows.
- Direct crop downward to form a wide swath.

Adjust the baffle as follows:

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

b. Release lever into bracket.

6.12.8 Ground Speed

CAUTION

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

a. Choose a ground speed that allows the cutterbar and conditioner to cut the crop smoothly and evenly. Try different combinations of header speed and ground speed to suit your specific crop. Refer to M150/M200 Self-Propelled Windrower Operator's Manual for changing ground speed.

b. In tough cutting conditions, such as native grasses, the disc speed will need to be increased.

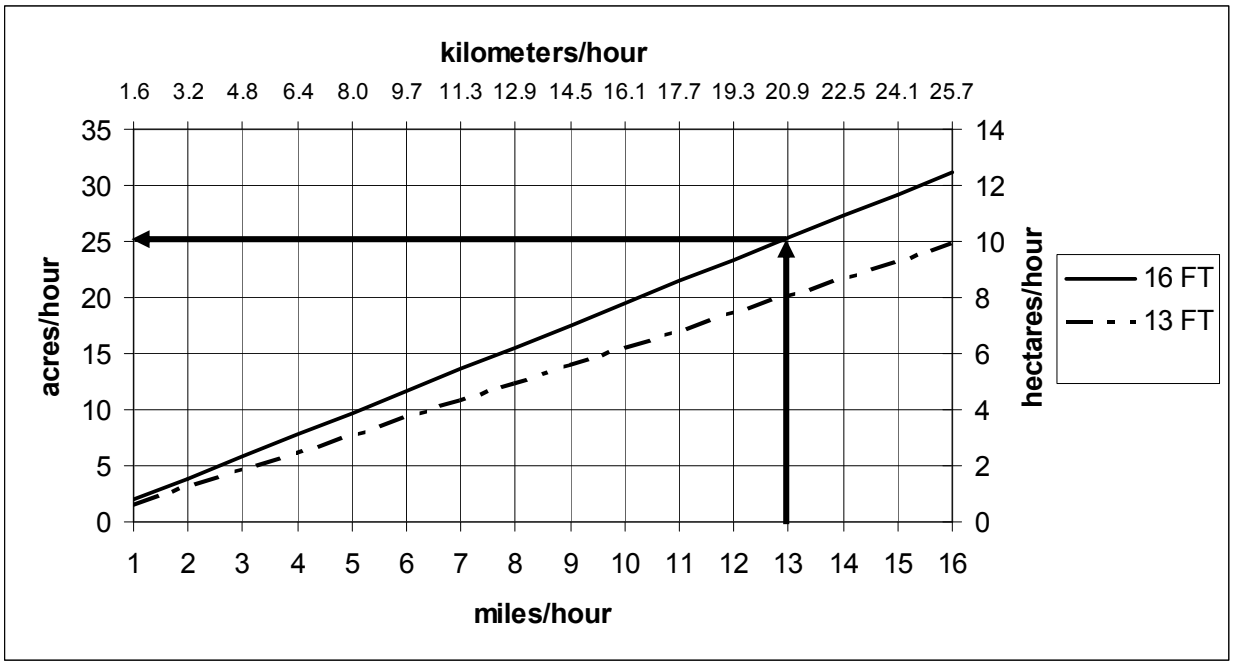
c. In light crops the header speed can be reduced while maintaining ground speed.

NOTE

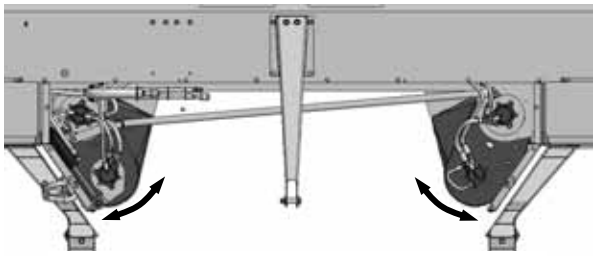
Operating the header at the minimum disc speed will extend the wear life of cutting components.

d. The chart below indicates the relationship between ground speed and area cut for two header sizes.

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

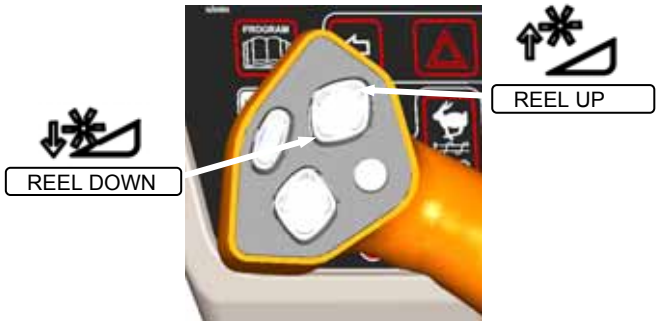


6.12.9 Converging Drum Assemblies – Grass Seed Header



TOP VIEW OF HEADER - SOME PARTS NOT SHOWN FOR CLARITY.

The twin converging drum assemblies are designed specifically for grass seed and similar crops where conditioning is not a requirement. The hydraulically adjustable drum assemblies are used to form the desired type and shape of windrow, depending on crop density, dryness, and maturity. Refer to Section 6.13, Haying Tips, for more information.



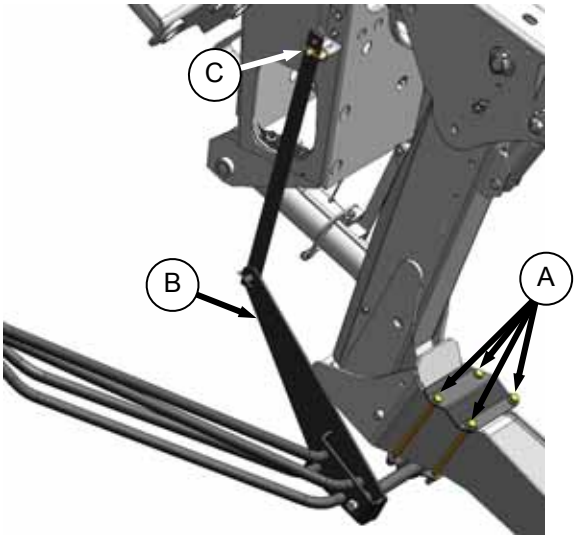
The position can be controlled from the windrower cab with the REEL UP and REEL DOWN switches on the GSL.

The drums are hydraulically driven and the rotational speed can be varied from 0 to 1000 rpm from the windrower cab with the rotary knob on the operator's console.

6.12.10 Windrow Forming Rods

Grass seed headers are equipped with windrow forming rods, which assist in forming the narrow windrows preferred for this application. A rod assembly is installed on the windrower tractor at either side of header opening.

Adjust the rods as follows to modify the windrow shape. Use the forming rods in conjunction with the converging drum deflectors to achieve the width and shape of windrows you desire.



a. Loosen clamp bolts (A) and move rod assembly (B) inboard or outboard to achieve desired swath width.
b. Tighten clamp bolts (A).
c. To adjust height of rods remove hairpin (C) from lug and re-position link on lug.
d. Re-install hairpin (C).

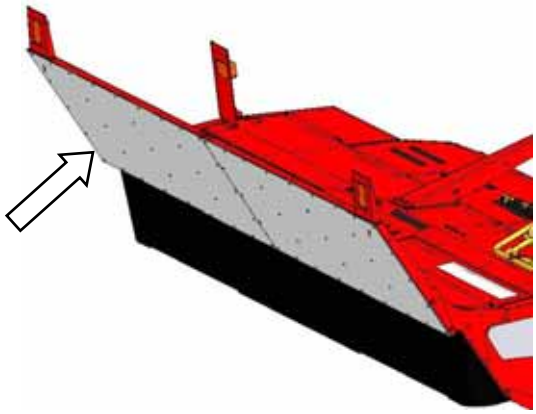
6.12.11 Double Windrowing

Refer to MacDon M Series Windrower Tractor Double Windrow Attachment Manual #169216 for operating and maintenance instructions. The manual is shipped with the DWA Kit.

6.12.12 Tall Crop Dividers

The tall crop dividers (one on each end of header) assist in clean crop dividing and cutterbar entry in tall crops (except grass seed). They are not adjustable but can easily be removed when operating the header with the tall crop transition shield in grass seed.

6.12.13 Tall Crop Transition Shield – Grass Seed



The tall crop transition shield deflects the grass seed heads down and into the cutterbar area while minimizing head shattering and seed loss. There are no adjustments necessary for its required operation. Ensure the hazard lights on it are in working properly when transporting the header on the road. See Section 6.6 Lights.

6.13 HAYING TIPS

6.13.1 Curing

a. A quick cure will maintain top quality because:
   - Protein is lost for each day hay lies on the ground,
   - The sooner the cut hay is harvested, the earlier the start for next growth.

b. Leaving the windrow as wide and thin as possible makes for the quickest curing.

c. The cured hay should be baled as soon as possible.

6.13.2 Topsoil Moisture

a. 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.

b. 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

c. If ground is wet due to irrigation, wait until soil moisture drops below 45%.

d. 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.

e. The cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

6.13.3 Weather and Topography

a. Cut as much hay as possible by midday, when drying conditions are best.

b. 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.

c. When relative humidity is high, the evaporation rate is low and hay dries slower.

d. If there is no wind, saturated air becomes trapped around the windrow. Raking or tedding will expose the hay to fresher, less saturated air.

e. Cutting hay perpendicular to the direction of the prevailing winds is also recommended.

6.13.4 Windrow Characteristics

It is recommended that a windrow with the following characteristics be produced. Refer to Operating Variables, Section 6.12 for instructions on adjusting the header.

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.

6.13.5 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.

6.13.6 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 tedded at less than 25% moisture, or excessive yield losses will result.

6.13.7 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.

6.14 STORAGE

Do the following at the end of each operating season:

a. Clean the windrower thoroughly.

CAUTION

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

b. Store in a dry, protected place if possible. If stored outside, always cover windrower with a waterproof canvas or other protective material.

c. Raise header and engage header lift cylinder lock-outs.

d. If possible, block up the windrower to take weight off tires.

e. Repaint all worn or chipped painted surfaces to prevent rust.

f. Loosen drive belts.

g. Lubricate the header 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 tall crop dividers (if equipped) to reduce space required for inside storage.

7 MAINTENANCE/SERVICE

The following instructions are provided to assist the operator in the use of the disc header. Detailed maintenance, service, and parts information are contained in the Service Instruction Manual and Parts Catalogue that are available from your dealer.

Log hours of operation and use the "Maintenance Checklist" provided to keep a record of scheduled maintenance. Refer to Section 7.12, Maintenance Schedule.

7.1 PREPARATION FOR SERVICING

CAUTION

- **To avoid personal injury, before servicing header or opening drive covers, perform the following:**

a. **Fully lower the header. If necessary to service in the raised position, always engage header lift cylinder stops.**

b. **Stop engine and remove key.**

c. **Engage park brake.**

d. **Wait for all moving parts to stop.**

7.2 RECOMMENDED SAFETY PROCEDURES

- **Park on level surface when possible. Block wheels securely if windrower is parked on an incline. Follow all recommendations in your Tractor Operator's Manual.**
- **Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.**
- **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 disc) to move. Stay clear of driven components at all times.**
- **Be prepared if an accident should occur. Know where the first aid kit and fire extinguishers are located and how to use them.**
- **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.**

7.3 MAINTENANCE SPECIFICATIONS

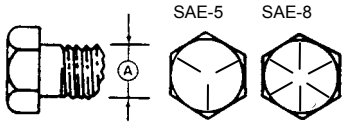
7.3.1 Recommended Torques

- 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

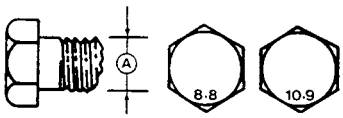
* Torque categories for bolts and capscrews are identified by their head markings.



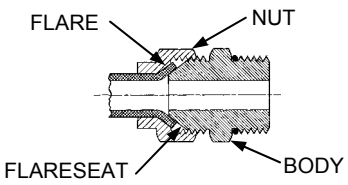
7.3.1.2 Metric Bolts

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.



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.

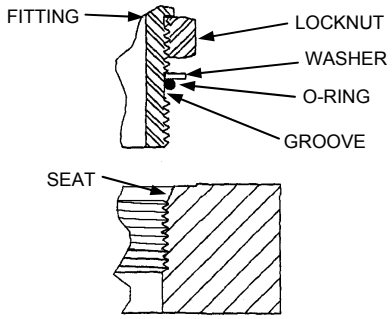
c. Lubricate connection and hand tighten swivel nut until snug.

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.

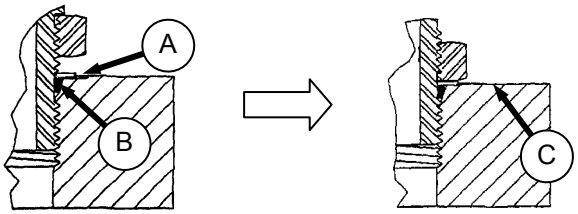
TUBE SIZE O.D. (in.)	NUT SIZE ACROSS FLATS (in.)	TORQUE VALUE*		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
		lbf·ft	N·m	Flats	Turns
3/16	7/16	6	8	1	1/6
1/4	9/16	9	12	1	1/6
5/16	5/8	12	16	1	1/6
3/8	11/16	18	24	1	1/6
1/2	7/8	34	46	1	1/6
5/8	1	46	62	1	1/6
3/4	1-1/4	75	102	3/4	1/8
7/8	1-3/8	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.

THD SIZE (in.)	NUT SIZE ACROSS FLATS (in.)	TORQUE VALUE*		RECOMMENDED TURNS TO TIGHTEN (AFTER FINGER TIGHTENING)	
		lbf·ft	N·m	Flats	Turns
3/8	1/2	6	8	2	1/3
7/16	9/16	9	12	2	1/3
1/2	5/8	12	16	2	1/3
9/16	11/16	18	24	2	1/3
3/4	7/8	34	46	2	1/3
7/8	1	46	62	1-1/2	1/4
1-1/16	1-1/4	75	102	1	1/6
1-3/16	1-3/8	90	122	1	1/6
1-5/16	1-1/2	105	142	3/4	1/8
1-5/8	1-7/8	140	190	3/4	1/8
1-7/8	2-1/8	160	217	1/2	1/12

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

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	--	
Gear Lubricant	Traxon SAE 80W90*	High Thermal & Oxidation Stability. API Service Class GL-5	Cutterbar	3.43 qts (U.S.) (3.25 liters)	4.5 qts (U.S.) (4.25 liters)
	SAE 75W90* API Service Class GL-5 (SAE J2360 Preferred)	Fully Synthetic Gear Lubricant	Bevel Gearbox	0.86 pints (U.S.) (0.4 liters)	
	NLGI 00	Synthetic EP	Conditioner Gearbox	Lubricated For Life	

* or equivalent

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7.3.3 Conversion Chart

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

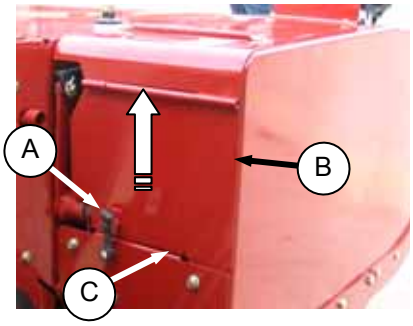
7.4 HEADER LIFT CYLINDER LOCKS

Refer to M150/M200 Self-Propelled Windrower Operator's Manual for details on the header lift cylinder locks.

7.5 DRIVE SHIELDS

WARNING

Do not operate the machine with the drive shields open. High speed rotating components may throw debris and could result in death or serious injury.



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

7.6 CUTTERBAR DOORS

WARNING

- **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.**

There are two doors to provide access to the cutterbar area.

a. To open door, lift at front of door.
b. To close door pull at top and move to closed position.

CAUTION

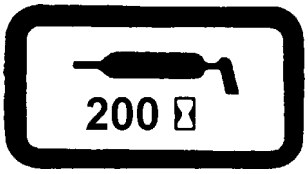
To avoid injury, keep hands and finger away from corners of doors when closing.

7.7 LUBRICATION

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.



Log hours of operation and use the "Maintenance Checklist" provided to keep a record of scheduled maintenance. Refer to Section 7.12, 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.

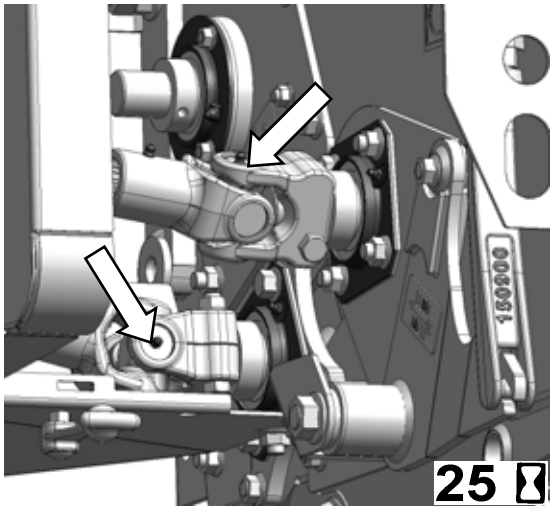
a. Use the recommended lubricants specified in this manual. See 7.3.2 Recommended Lubricants.
b. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
c. Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
d. Leave excess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

7.7.2 Lubrication Points

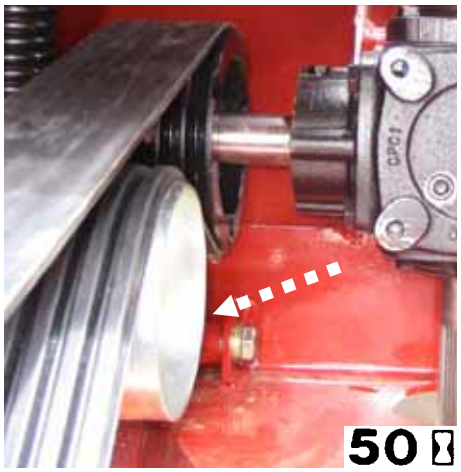
Refer to the illustrations on the following pages for identifying the various locations that require lubrication.

I. 13 FT HEADER

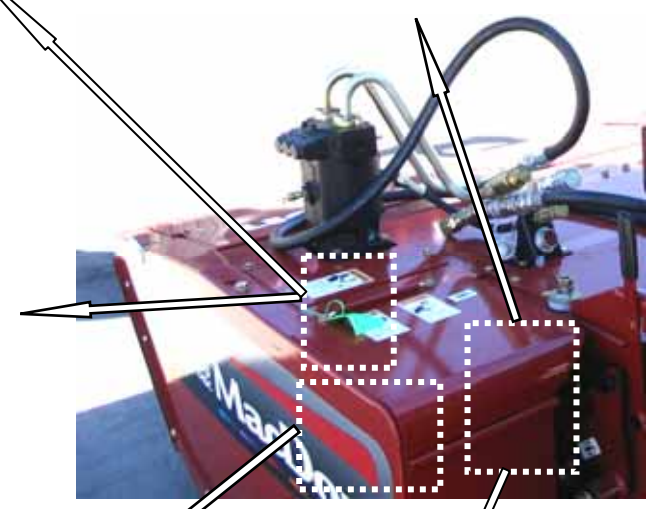
GEARBOX OIL LEVEL

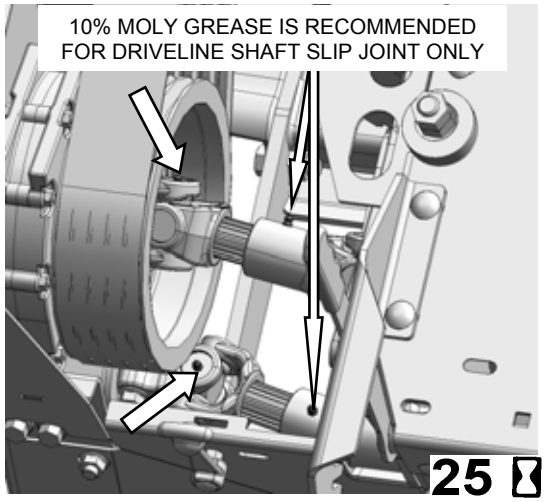


DRIVELINE UNIVERSALS (2 PLCS)

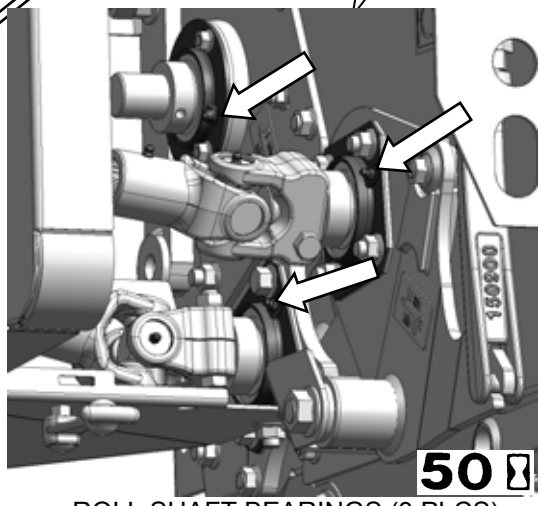


BELT TENSIONER PIVOT (1 PLC)





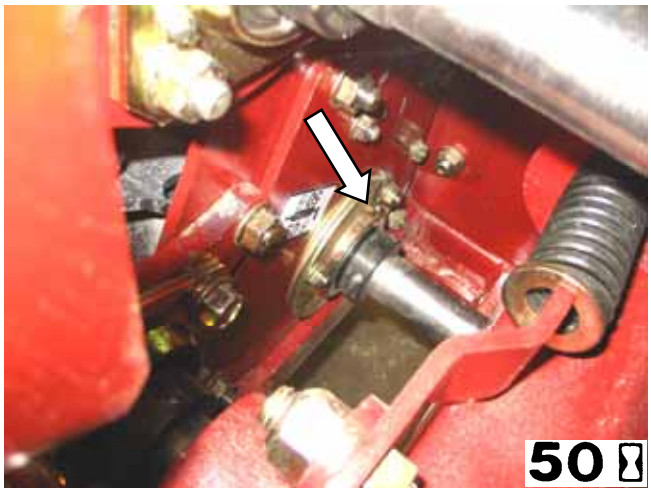
DRIVELINE UNIVERSALS (2 PLCS)
DRIVELINE SHAFT (2 PLCS)



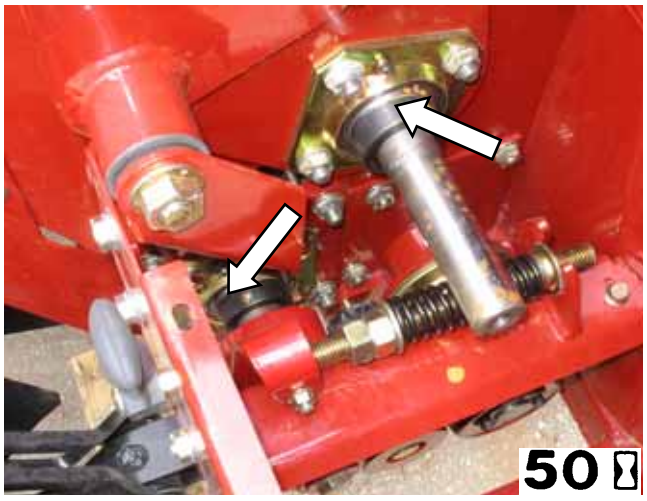
ROLL SHAFT BEARINGS (3 PLCS)

13 FT HEADER (cont'd)

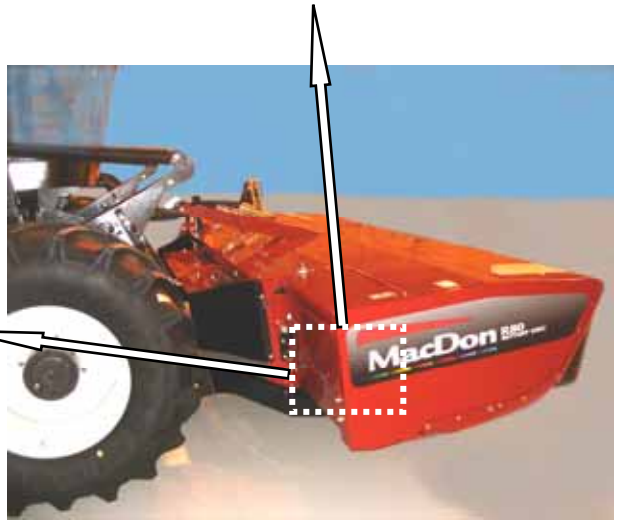
High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base



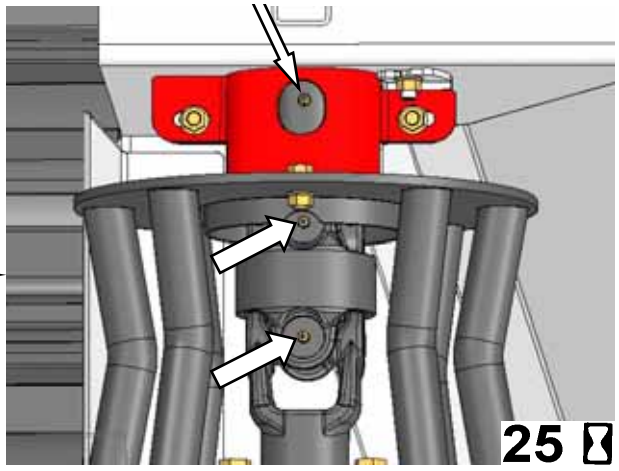
LIFTING ROLL SHAFT BEARING



ROLL SHAFT BEARINGS (2 PLCS)



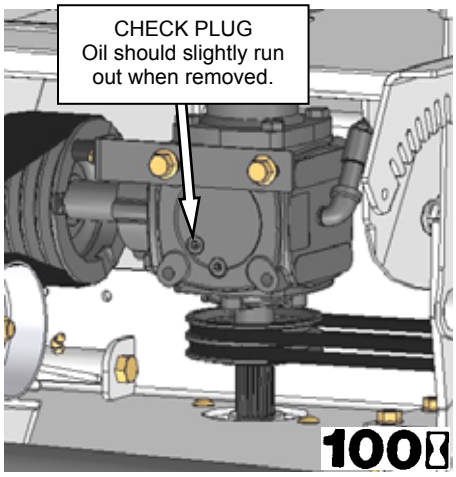
10% MOLY GREASE IS RECOMMENDED
FOR DRIVELINE SHAFT SLIP JOINT ONLY



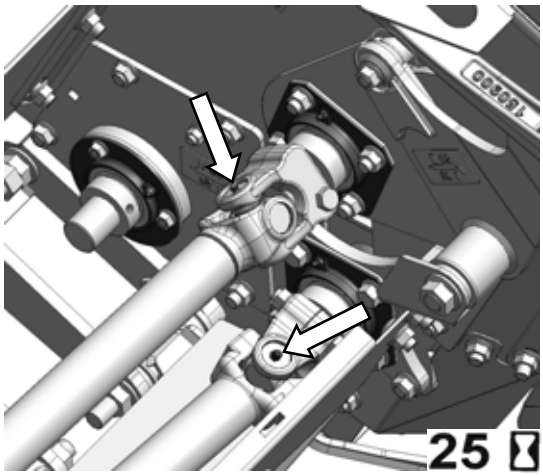
DRIVELINE UNIVERSALS & SHAFT (3 PLCS)
ONE SIDE

II. 16 FT HEADER

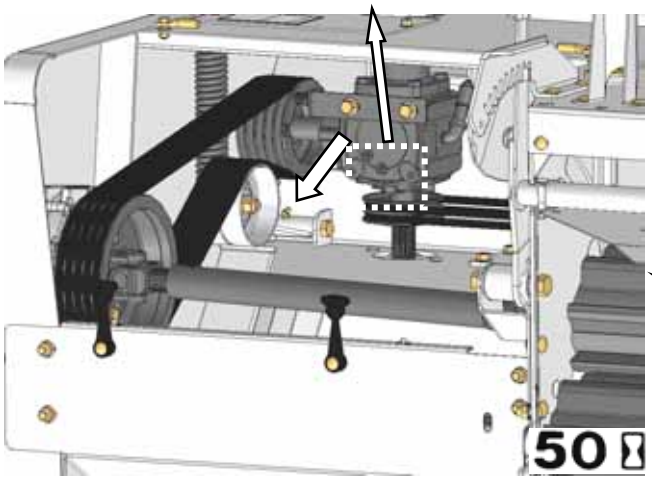
High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).Lithium Base



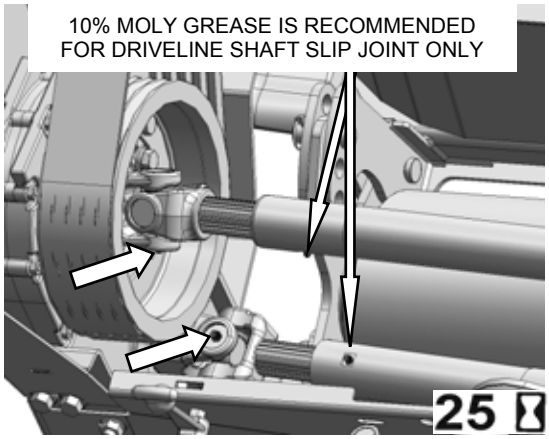
GEARBOX OIL LEVEL



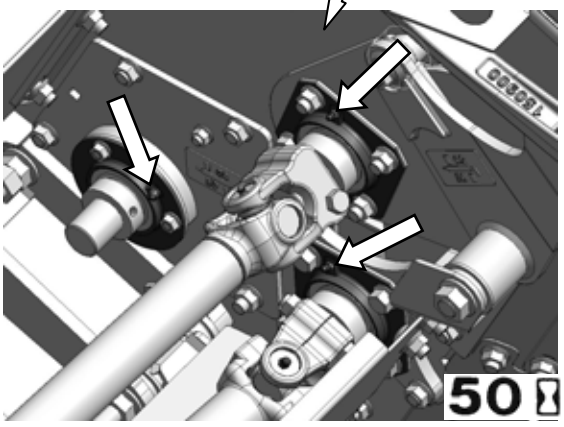
DRIVELINE UNIVERSALS (2 PLCS)



BELT TENSIONER PIVOT (1 PLC)



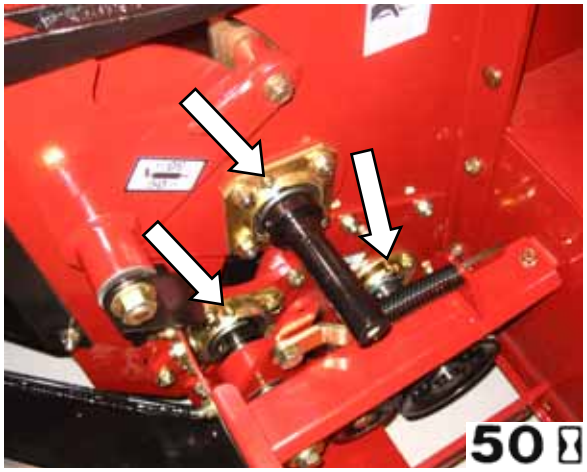
DRIVELINE UNIVERSALS (2 PLCS)
DRIVELINE SHAFT (2 PLCS)



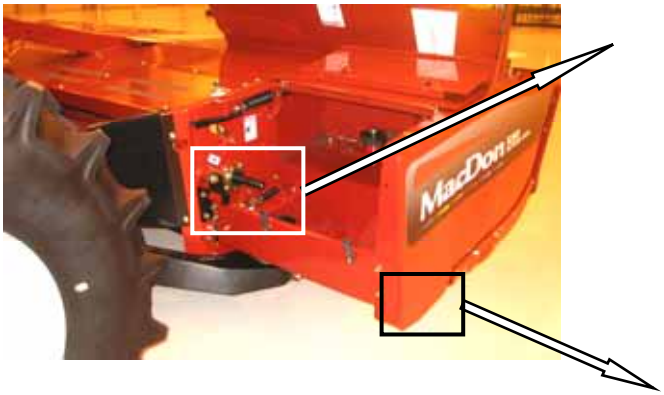
ROLL SHAFT BEARINGS (3 PLCS)

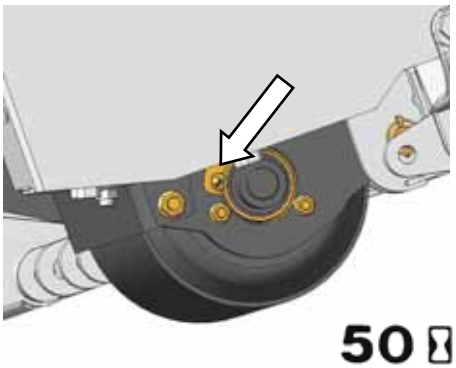
16 FT HEADER (cont'd)

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



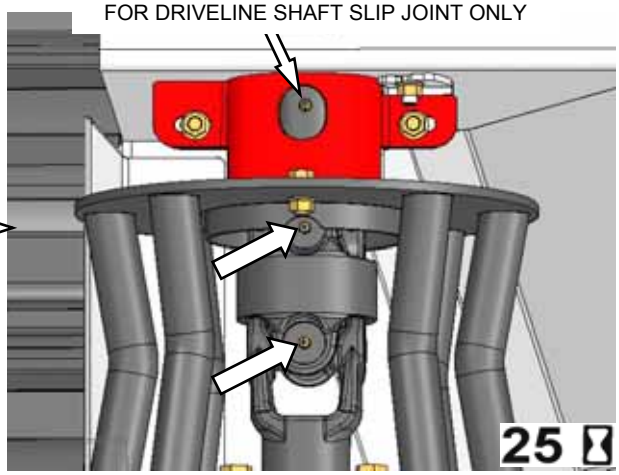
ROLL SHAFT BEARINGS (3 PLCS)





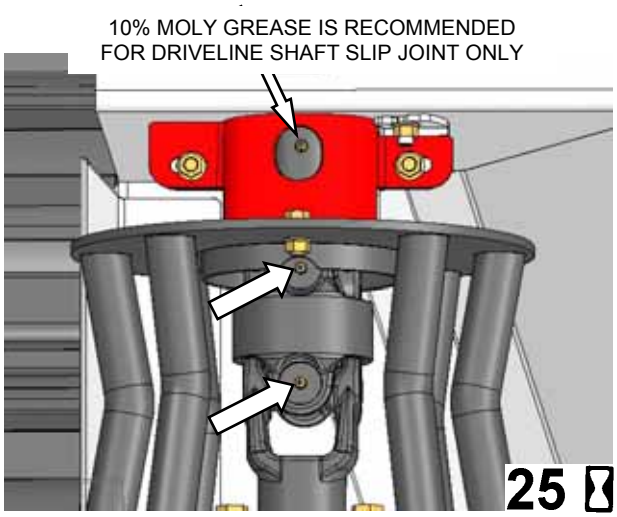
OPTIONAL GAUGE ROLL BEARINGS (2 PLCS)
BOTH SIDES

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

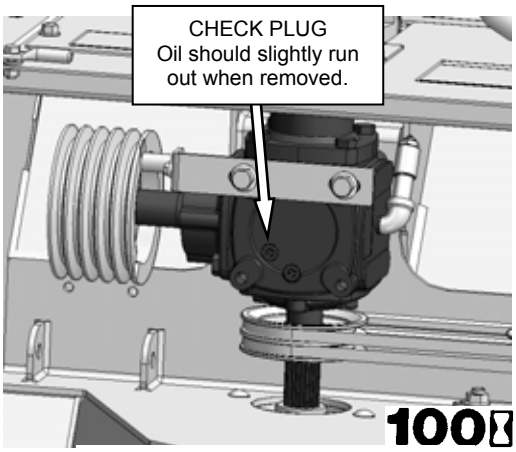


DRIVELINE UNIVERSALS (2 PLCS)
DRIVESHAFT (1 PLC)
(BOTH SIDES)

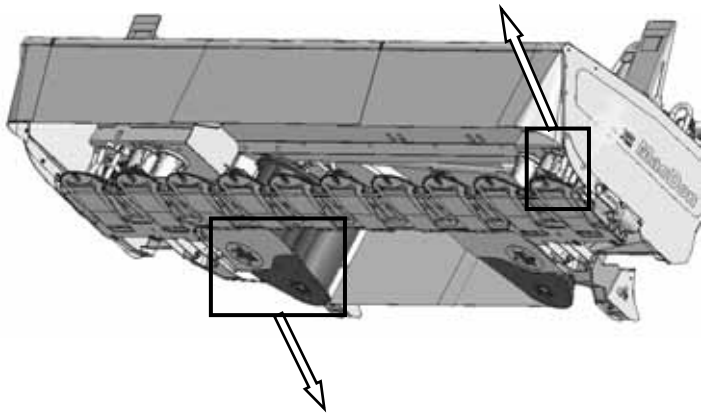
III. 16 FT HEADER – GRASS SEED HEADER

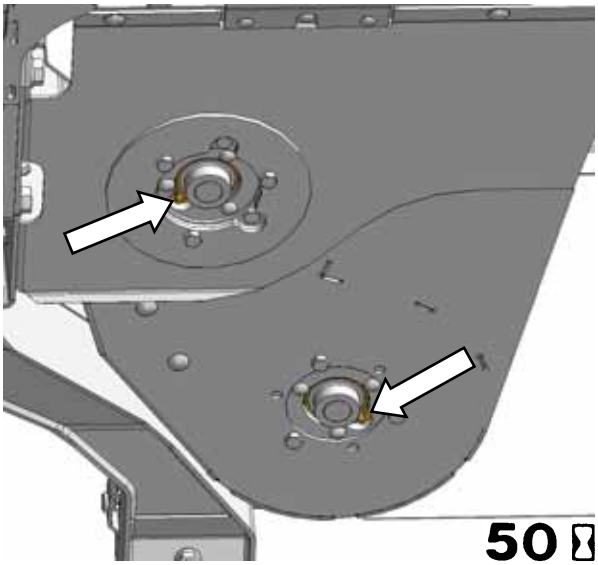


DRIVELINE UNIVERSALS (2 PLCS)
DRIVESHAFT (1 PLC)
(BOTH SIDES)

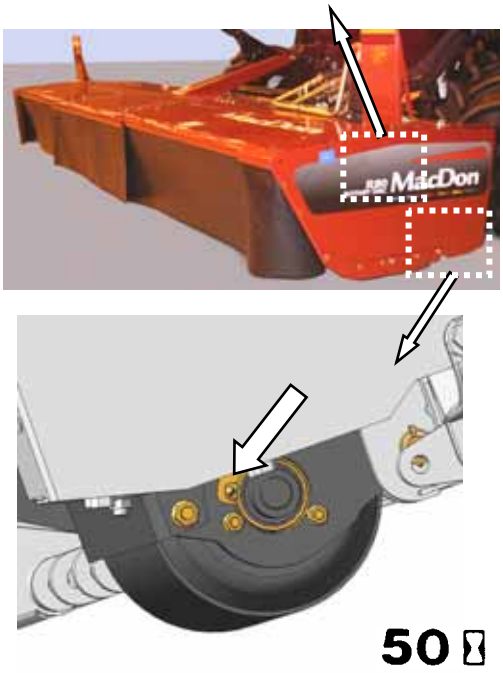


GEARBOX OIL LEVEL





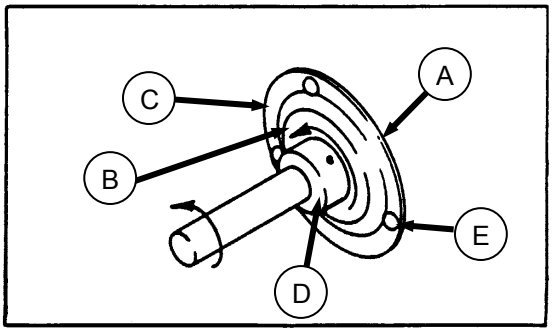
CONVERGING DRUMS (2 PLCS) - BOTH SIDES



OPTIONAL GAUGE ROLL BEARINGS (2 PLCS)
BOTH SIDES

7.7.3 Sealed Bearing Installation

a. Clean shaft and coat with rust preventative.



b. Install flangette (A), bearing (B), second flangette (C) and lock collar (D).

NOTE

The locking cam is only on one side of the bearing.

c. Install (but do not tighten) the flangette bolts (E).

d. When the shaft is correctly located, lock the lock collar with a punch.

NOTE

The collar should be locked in the same direction the shaft rotates. Tighten the set screw in the collar.

e. Tighten the flangette bolts.

f. Loosen the flangette bolts on the mating bearing one turn and re-tighten. This will allow the bearing to line up.

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 header lift cylinder stops before going under machine for any reason.

CAUTION

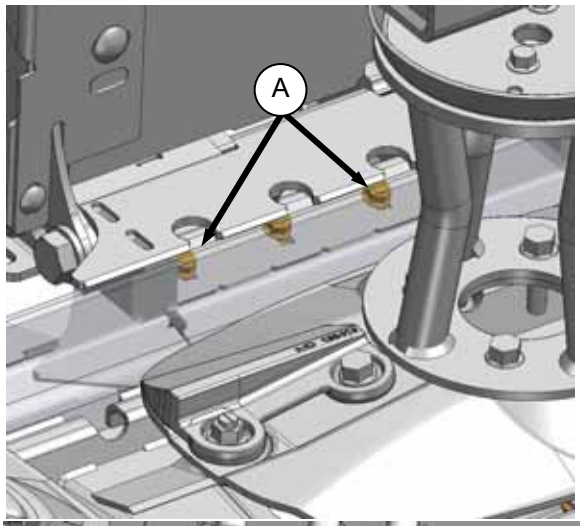
Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

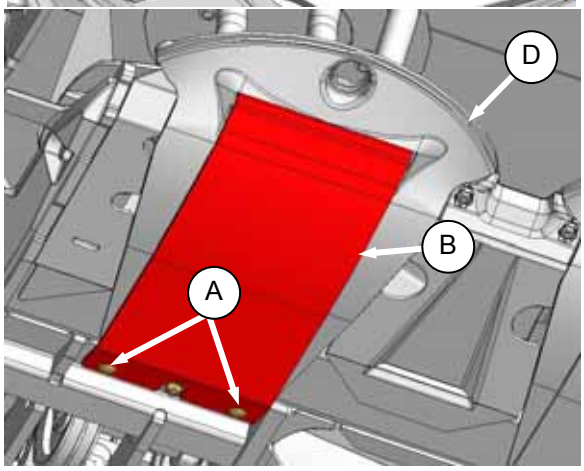
7.8.1.1 Removal

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

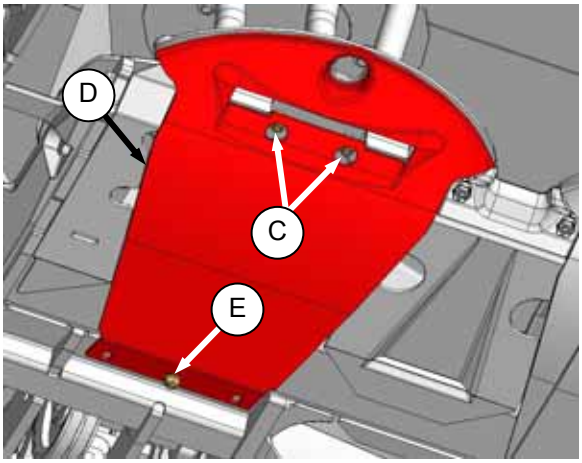
b. Engage header lift cylinder locks.

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.

7.8.1.2 Installation

DANGER

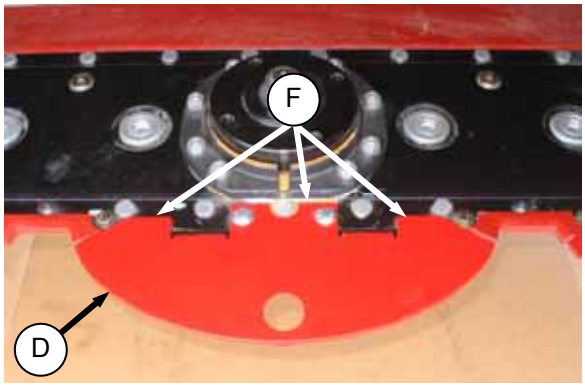
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

DANGER

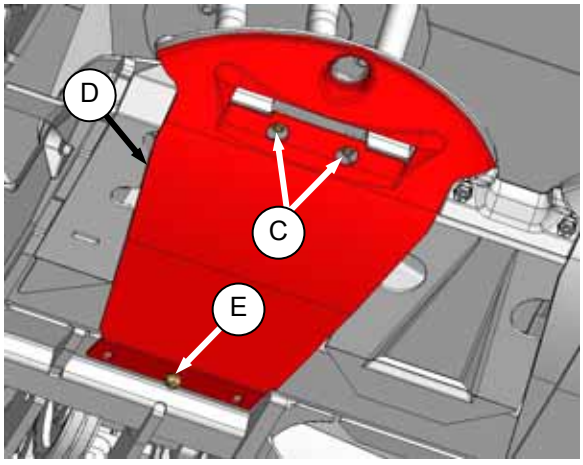
To avoid bodily injury or death from unexpected start-up or fall of raised machine; stop engine, remove key and engage header lift cylinder stops before going under machine for any reason.

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.

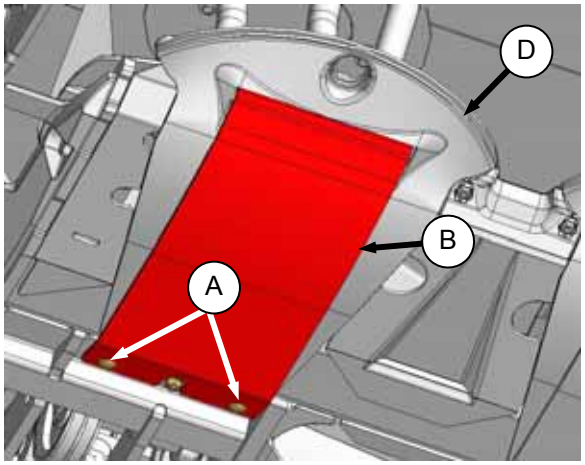


b. Raise aft end and install bolt (E) and nut.

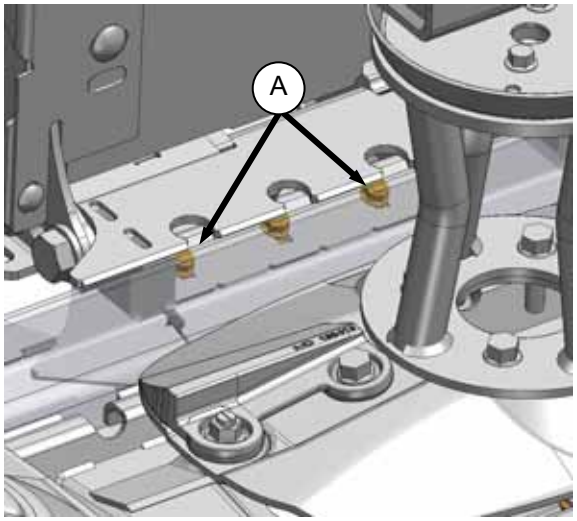
NOTE

Longer bolt (E) is required for rock guards at ends of cutterbar.

c. Install the two forward bolts (C) and nuts. Tighten bolts.



d. Slip forward end of skid plate (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.

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

a. 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 header lift cylinder stops before going under machine for any reason.

b. Engage header lift cylinder locks.

c. Open RH cutterbar door.

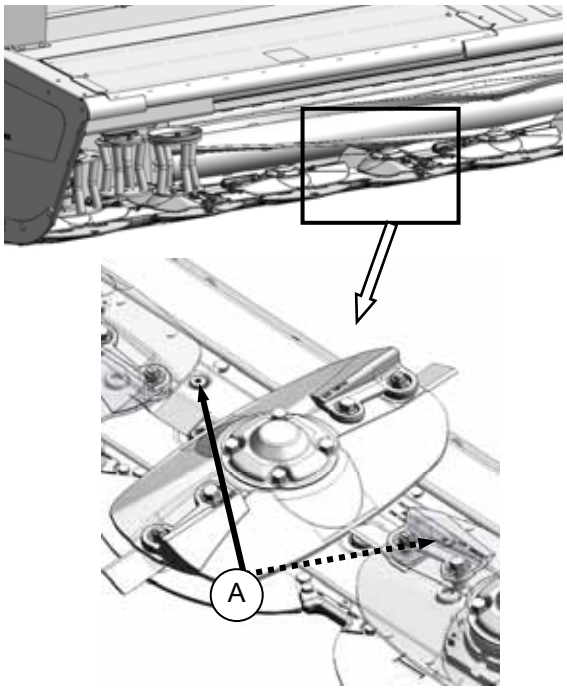
d. To gain access to the cutterbar drain plug, the RH skid plate needs to be removed. Refer to Section 7.8.1 Skid Plates And Rock Guards.

e. 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.

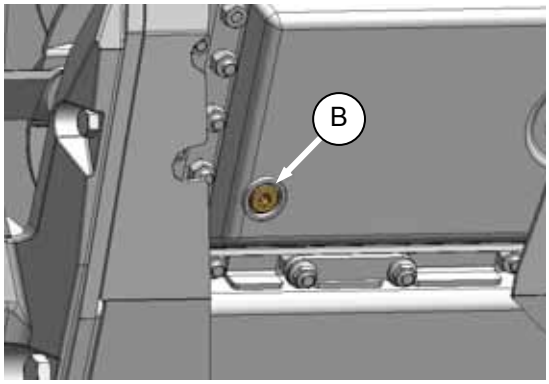
f. Disengage the header lift cylinder locks, start windrower, and lower header onto blocks. Shut down windrower and remove key.



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

NOTE

Rotate disc to expose filler if necessary.



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

IMPORTANT

Do not flush the cutterbar.

i. Replace drain plug (G) and tighten.

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 header lift cylinder stops before going under machine for any reason.

a. Start engine and raise header. Stop engine and engage header lift cylinder lock-outs.

b. 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.

c. Disengage header lift cylinder lock-outs.

CAUTION

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

d. 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.

e. 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.

f. Replace filler plugs.

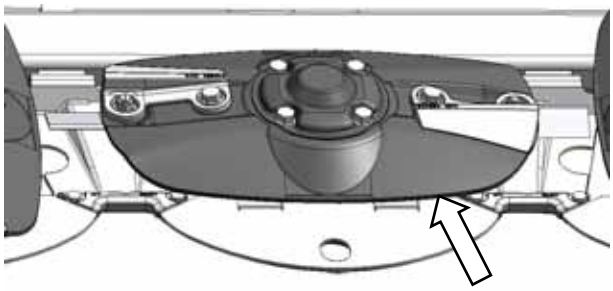
g. Start engine and raise header.

h. Stop engine and engage header lift cylinder lock-outs.

i. Remove blocks.

j. Re-install skid plate. Refer to Section 7.8.1 Skid Plates 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.

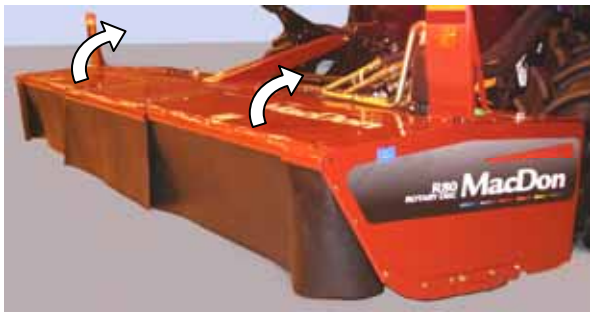
IMPORTANT

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.

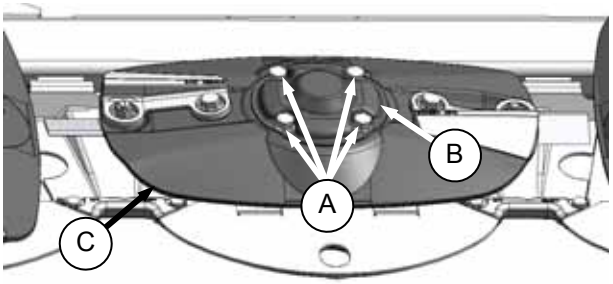


a. Open cutterbar door(s).

CAUTION

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

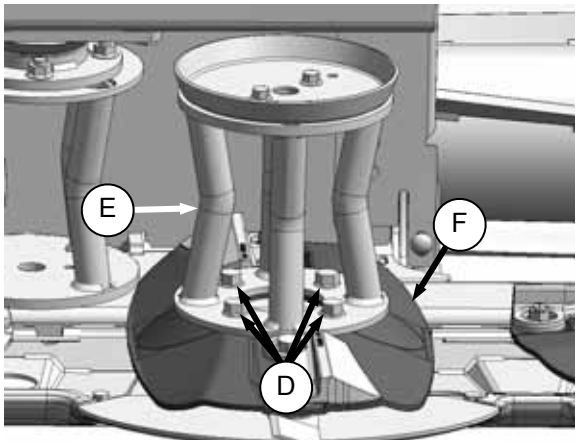
b. Place a block of wood between two discs to prevent disc rotation while loosening blade bolts.



c. Remove four bolts (A) on disc cover (B) and remove cover and disc (C).

d. If removing #2 disc;

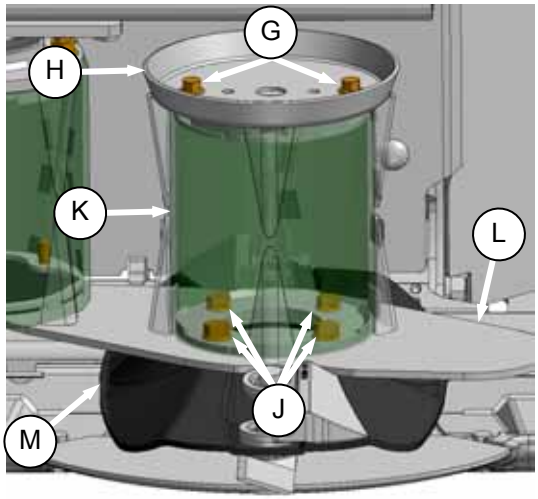
Standard Header



16FT SHOWN – 13 FT SIMILAR

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

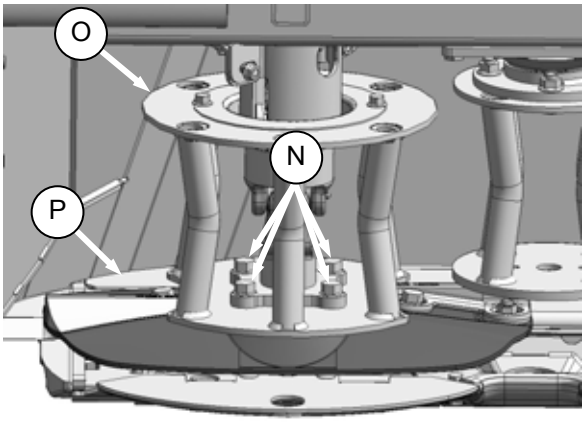
Grass Seed Header – 16 Ft Only



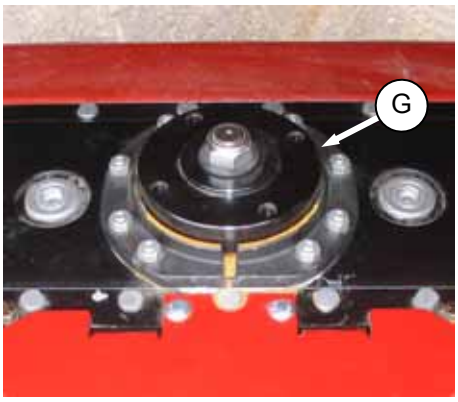
1. Remove bolts (G) and remove cover (H).
2. Remove four bolts (J) and remove drum (K) and plate (L).
3. Remove disc (M).

(continued next page)

e. If removing driveline disc;



1. Remove bolts (N).
2. Lift deflector (O) and driveline, and slide disc (P) off spindle.



3. Clean spindle (G).

7.8.3.2 Disc Installation

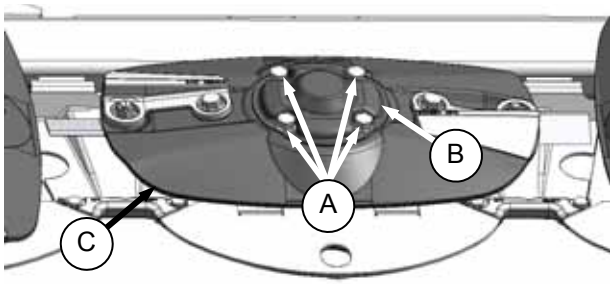
DANGER

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

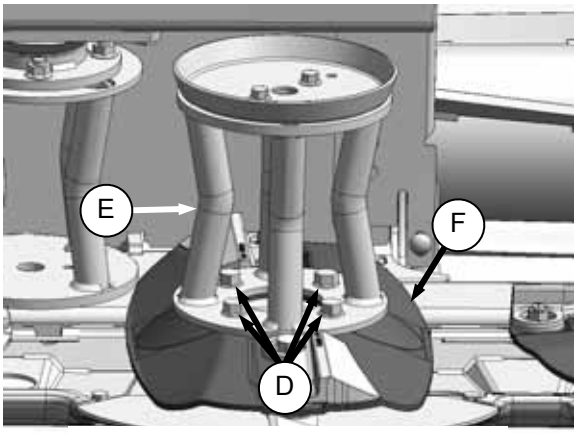
Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

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).
d. If installing disc with converging drum;

Standard Header

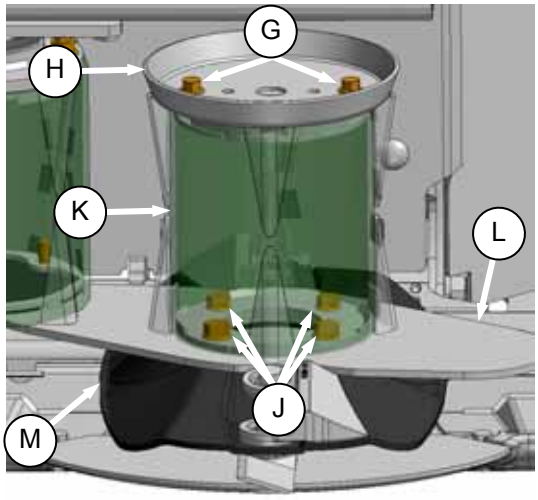


16 FT SHOWN – 13 FT SIMILAR

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).

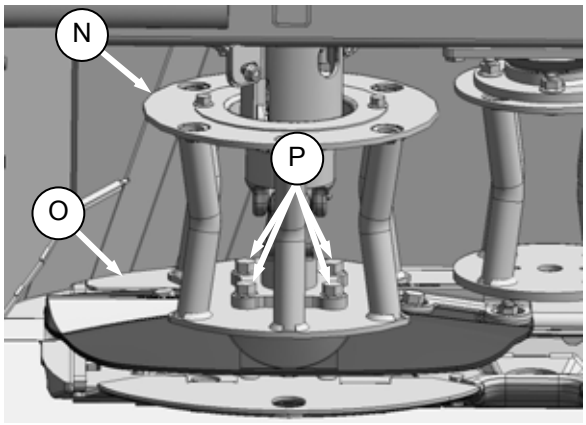
(continued next page)

Grass Seed Header – 16 Ft Only.



1. Position new disc (M) on spindle ensuring it is 90 degrees to adjacent discs.
2. Install plate (L), drum (K) and secure with four bolts (J).
3. Tighten bolts to 92 ft·lbf (125 N·m).
4. Install cover (H) with two bolts (G).

e. If driveline disc is being installed;



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

f. Remove block of wood if used.

WARNING

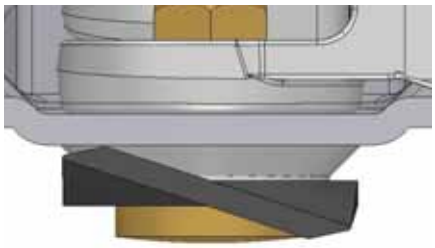
Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

g. Close doors.

7.8.4 Cutter Blades

7.8.4.1 Cutter Blade Types

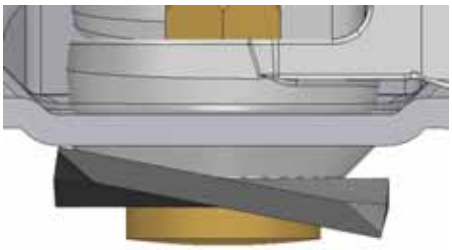
a. 18 DEGREE BEVEL DOWN



Higher Lift for Certain Crop Conditions / Better in Stony Soil

ROTATION DIRECTION

b. 11 DEGREE BEVEL UP (Optional)



General Purpose Cutting / Longer Life

ROTATION DIRECTION

7.8.4.2 Inspection

CAUTION

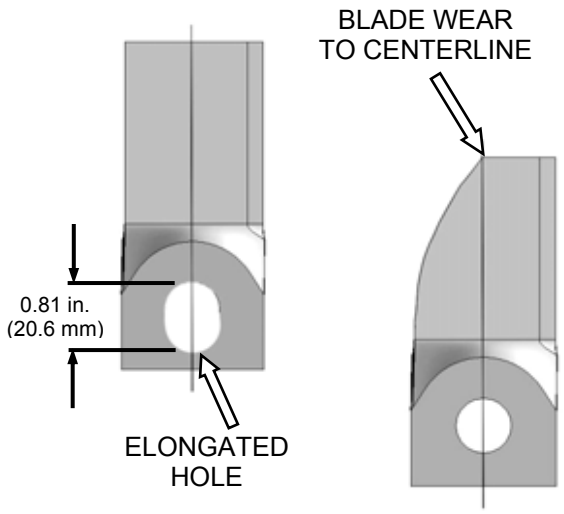
Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

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.



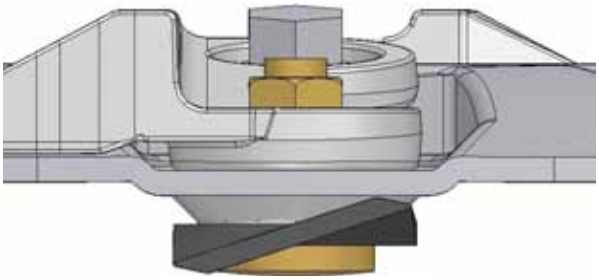
a. Check daily that the cutter blades are securely attached to the disc.

b. Check blades for cracks or wear beyond safe operating limits, and distortion.

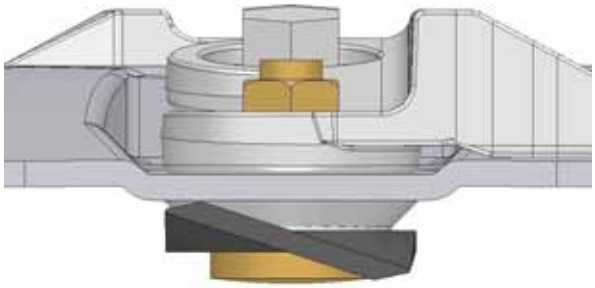
c. Replace blades immediately if any of these problems occur.

IMPORTANT

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



CLOCKWISE DISC



COUNTERCLOCKWISE DISC

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.

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.

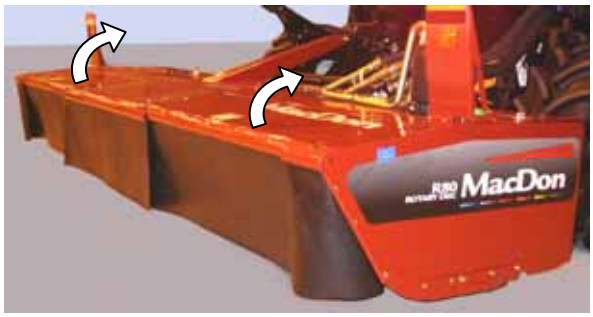
DANGER

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.

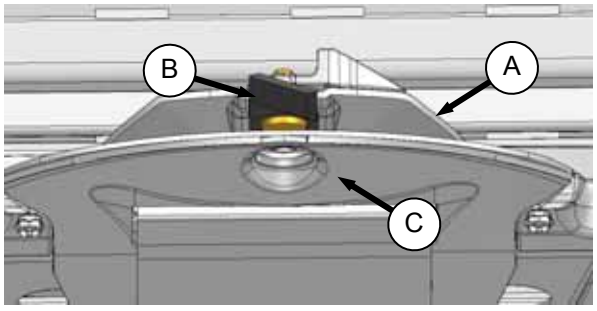
Replace cutter blade as follows:

a. Raise header fully, shut off engine and remove key.

b. Engage lift cylinder lock-out valves.



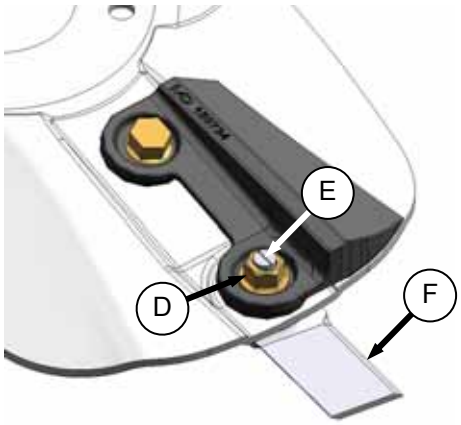
c. Open cutterbar door(s).



d. Rotate disc (A) so that blade (B) faces forward, and lines up with hole (C) in rock guard.

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

f. Clean debris from blade attachment area.



g. Remove nut (D).

h. Remove shoulder bolt (E), and blade (F).

i. Install new or reversed blade (F) with shoulder bolt (E) onto disc.

j. Install nut (D). Tighten nut to 100 ft·lbf (135 N·m).

k. Remove block of wood if used.

WARNING

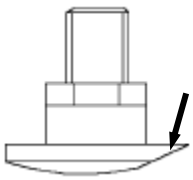
Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

l. Close doors.

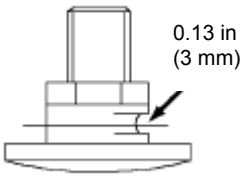
7.8.4.4 Cutter Blade Hardware

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

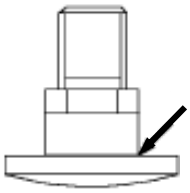
a. Check bolts for wear or damage and replace bolt if:
   1. Bolt has been removed and installed five times.
   2. Head is worn flush with bearing surface of blade.



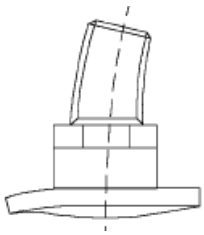
   3. Diameter of bolt neck is worn out of specification.



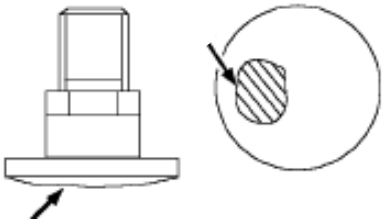
   4. Bolt is cracked.



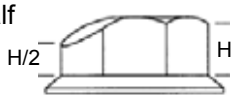
   5. Bolt is visibly distorted.



   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.



7.8.5 Accelerators

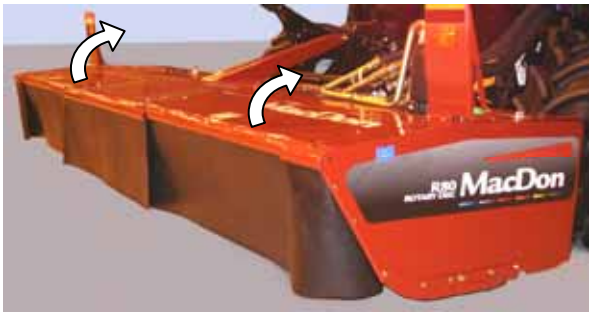
7.8.5.1 Removal

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.

a. Raise header fully, shut off engine and remove key.

b. Engage lift cylinder lock-out valves.

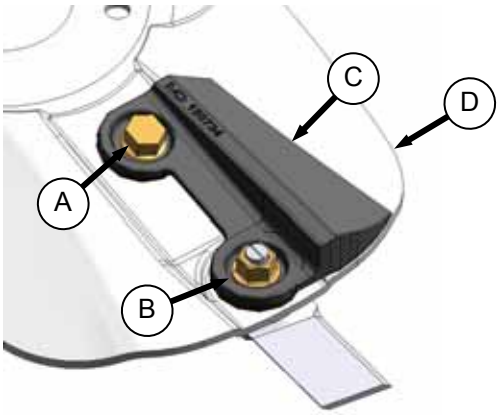


c. Open cutterbar doors.

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.

d. Remove disc. Refer to Paragraph 7.8.3.1 Disc Removal.



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

7.8.5.2 Installation

a. Locate accelerator on disc onto existing cutterblade bolt and install nut (B).

b. Install hex bolt (A) and nut at inboard hole. Bolt head faces up.

c. Tighten both nuts to 100 ft·lbf (135 N·m).

d. Repeat for other accelerator.

e. Reinstall disc (D) on spindle. Refer to Paragraph 7.8.3.2 Disc Installation.

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.

7.8.6 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.

a. Raise header fully, shut off engine and remove key.

b. Engage header lift cylinder lock-outs.

c. Open door(s).

7.8.6.1 Driveline Deflector

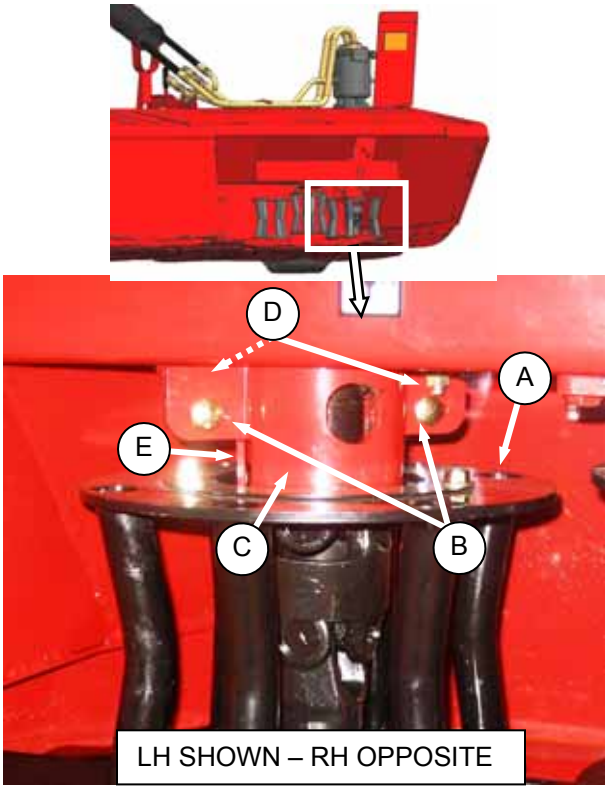
NOTE

Procedure is the same for both 13 and 16 ft headers. 16 ft is shown.

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.

Removal



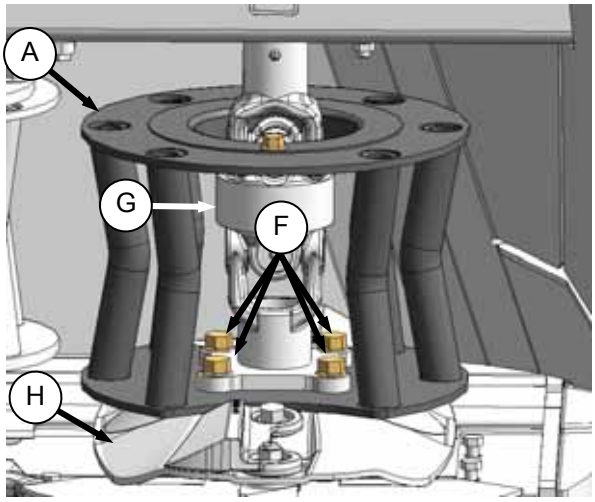
a. Remove two bolts (B) and remove guard (C).

b. Loosen two bolts (D) and remove guard (E).

c. Rotate deflector (A) so that wider space between bars face forward.

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

(continued next page)



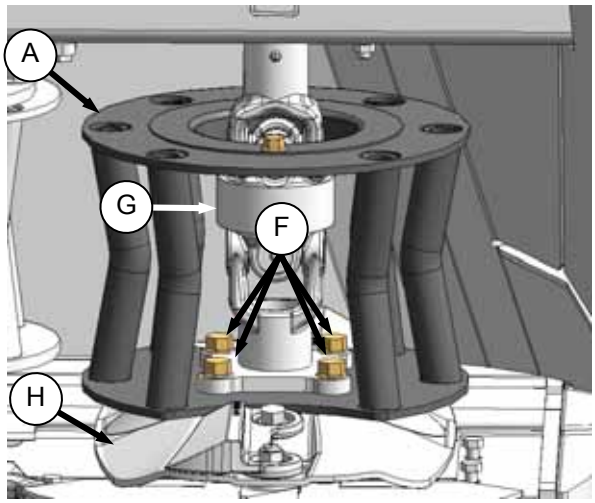
e. Remove four bolts (F).

f. Lift driveline (G) off deflector (A) base and slide lower end of deflector off disc (H).

Installation

CAUTION

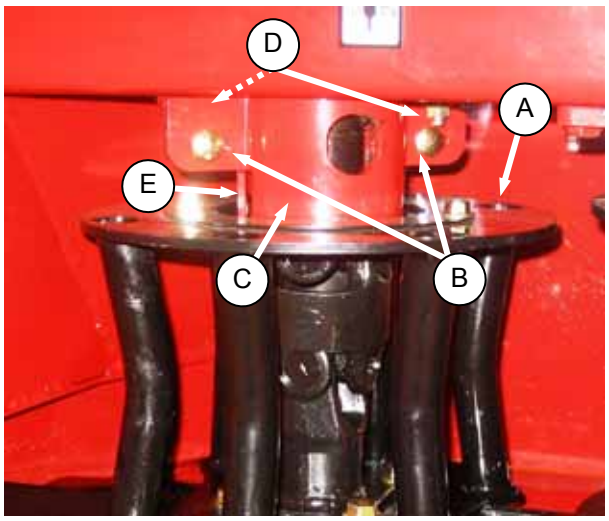
Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.



a. Slide driveline (G) upward onto shaft, locate deflector (A) over driveline, and position deflector on disc (H).

b. Align cut-outs in base of deflector with cutter blades.

c. Install four bolts (F), and torque to 92 ft·lbf (125 N·m).



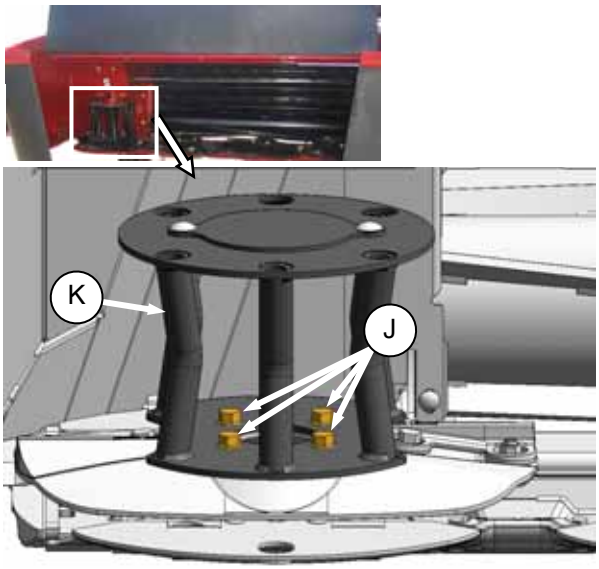
d. Position guard (E) and tighten bolts (D).

e. Position guard (C) and attach with two bolts (B).

f. Remove block of wood if used.

g. Close doors.

7.8.6.2 Driven Deflector – 13 FT



Removal

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

b. Remove four bolts (J) and remove deflector (K).

Installation

a. Position deflector (K) on disc with cut-outs in base of deflector lined up with cutter blades.

b. Install bolts (J) and torque to 92 ft·lbf (125 N·m).

c. Remove block of wood if used.

d. Close doors.

7.8.6.3 Driven and Suspended Deflectors - 16 Ft - Standard Header

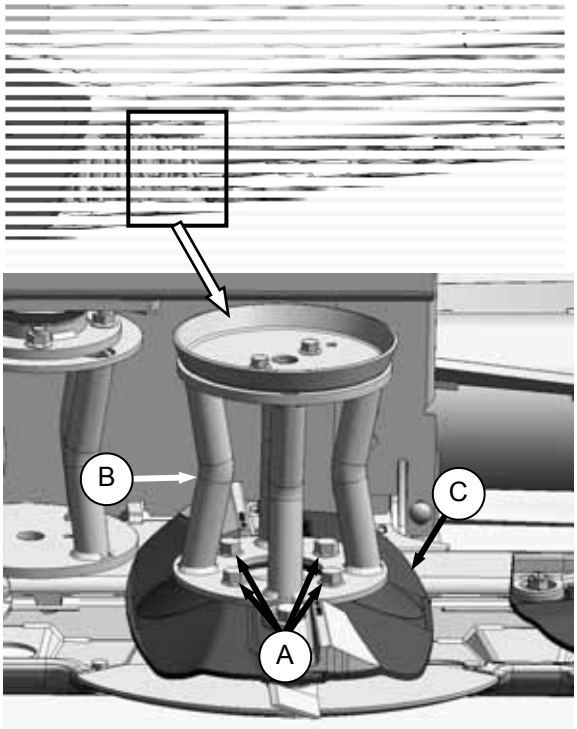
DANGER

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.

CAUTION

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

7.8.6.3.1 Driven Deflector



RH SHOWN – LH OPPOSITE

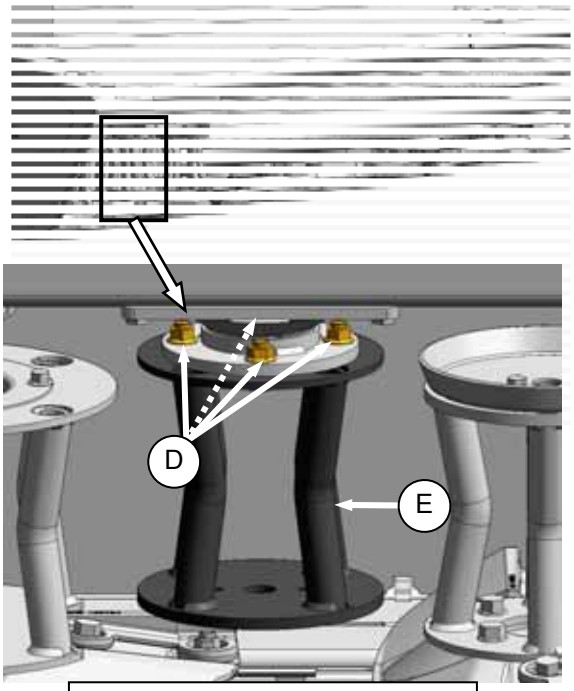
Removal

a. Place a block of wood between two discs to prevent deflector from turning.
b. Remove four bolts (A) and remove deflector (B).

Installation

a. Position deflector (B) on disc (C) and install bolts (A) and torque to 92 ft·lbf (125 N·m).
b. Remove block of wood if used.

7.8.6.3.2 Suspended Deflector



RH SHOWN – LH OPPOSITE

Removal

a. Place a block of wood between two discs to prevent deflector from turning.
b. Remove four bolts (D) and nuts, and remove deflector (E).

Installation

a. Position deflector (E) on flange and install bolts (D) and nuts. Tighten to 92 ft·lbf (125 N·m).
b. Remove block of wood if used.
c. Close doors.

7.8.6.4 Driven and Suspended Deflectors - 16 Ft – Grass Seed Header

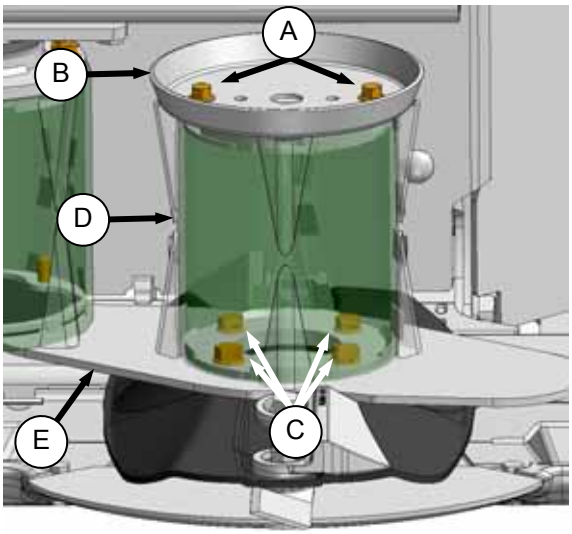
DANGER

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.

CAUTION

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

7.8.6.4.1 Driven Deflector



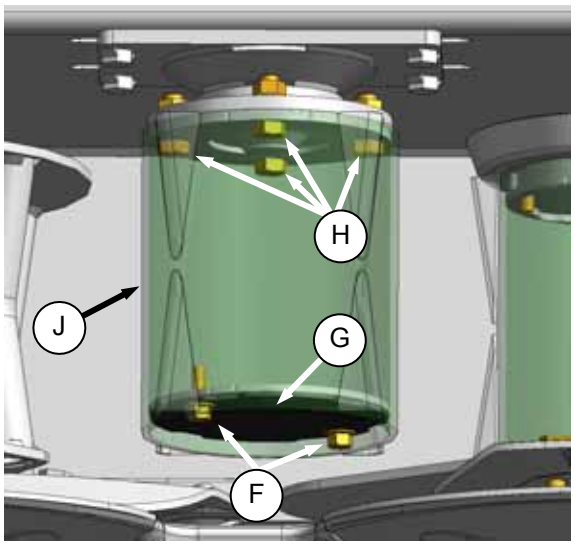
Removal

a. Place a block of wood between two discs to prevent deflector from turning.
b. Remove bolts (A) and remove cover (B).
c. Remove four bolts (C) and remove drum (D).

Installation

a. Install drum (D) and secure with four bolts (C). Ensure plate (E) is correctly positioned.
b. Tighten bolts to 92 ft·lbf (125 N·m).
c. Install cover (B) with two bolts (A).
d. Remove block of wood if used.

7.8.6.4.2 Suspended Deflector



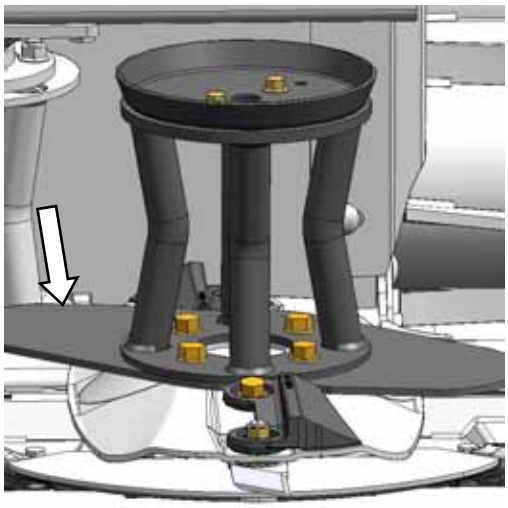
Removal

a. Place a block of wood between two discs to prevent deflector from turning.
b. Remove bolts (F) and remove cover (G).
c. Remove four bolts (H) and remove drum (J).

Installation

a. Position drum (J) and secure with four bolts (H).
b. Tighten bolts to 92 ft·lbf (125 N·m).
c. Install cover (G) with two bolts (F).
d. Remove block of wood if used.
e. Close doors.

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 cage 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 on the two inboard cage deflectors and only on 16 ft headers. They are stored inside the RH side drive compartment.

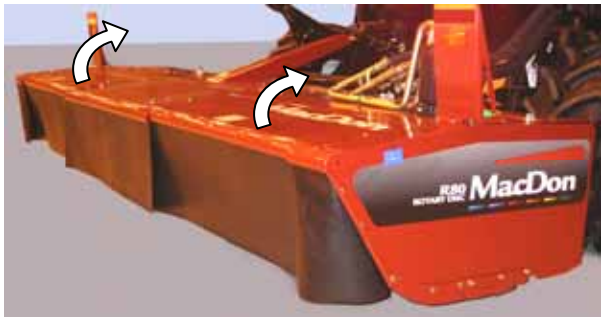
Feed plates are factory installed on grass seed headers.

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.

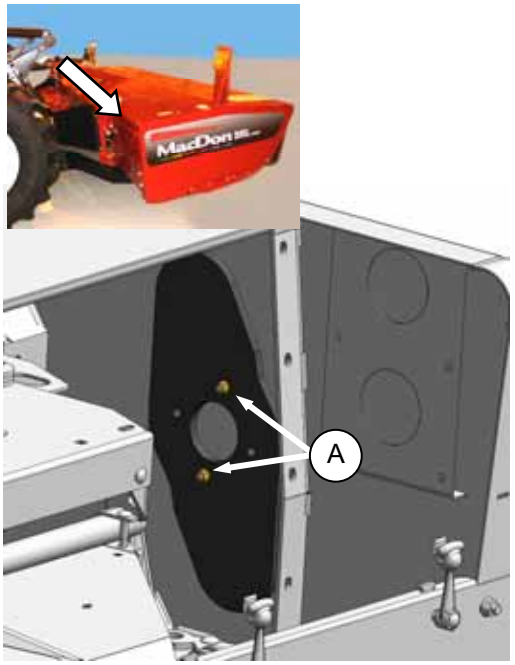
7.8.7.1 Installation

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



b. Open cutterbar doors.

c. Open RH side drive compartment shield.

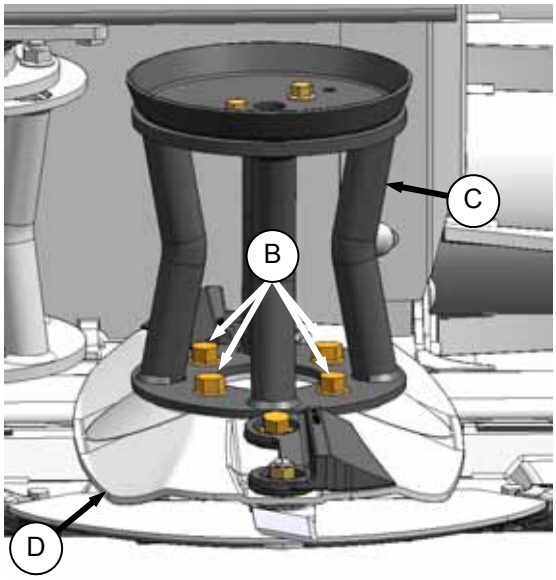


d. Remove nuts (A) securing nut guards and feed plates to side of compartment and remove shields and plates.

CAUTION

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

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



f. Remove four bolts (B) and remove inboard cage driven deflector (C) from cutterbar.

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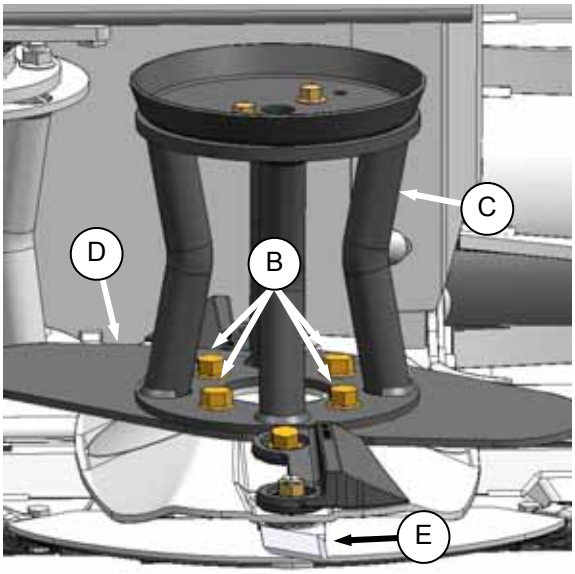


g. Locate feed plate (D) on the disc ensuring that hole in feed plate registers on disc. Position plate approximately as shown and align holes.

IMPORTANT

Feed plate should be located so that when holes are aligned, it is closer to the cutter blade leading edge (E) than the trailing edge.

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.

7.9 HEADER DRIVE

7.9.1 Hydraulic Motor

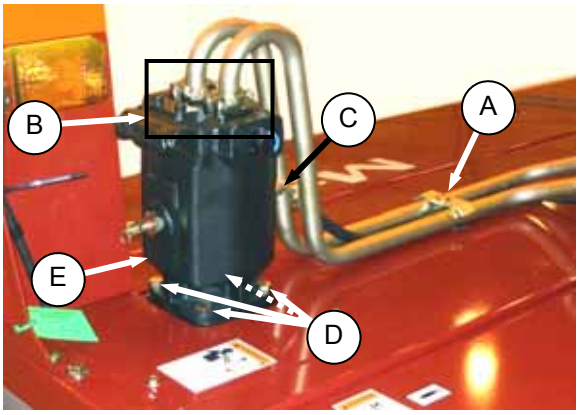
The main drive hydraulic motor does not require normal maintenance or servicing. If repairs are required, it should be removed and serviced at your dealer.

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

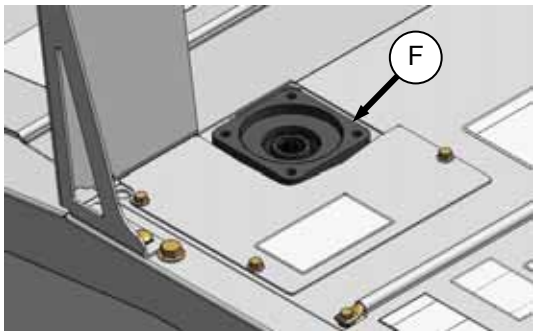


b. Remove nut, bolt and bracket (A). Open shield to access nut.

c. Remove bolts on split flange fittings and disconnect supply and return hoses at (B). Install plugs on motor and cap off hydraulic lines.

d. Disconnect case drain hose (C) from fitting and install caps on tube end and motor fitting.

e. Remove four bolts (D) and remove motor (E).



f. Cover gearbox opening (F) with a rag or plastic.

7.9.1.2 Installation

a. Remove covering from gearbox (F) opening.

b. Place motor (E) on gearbox (F) flange.

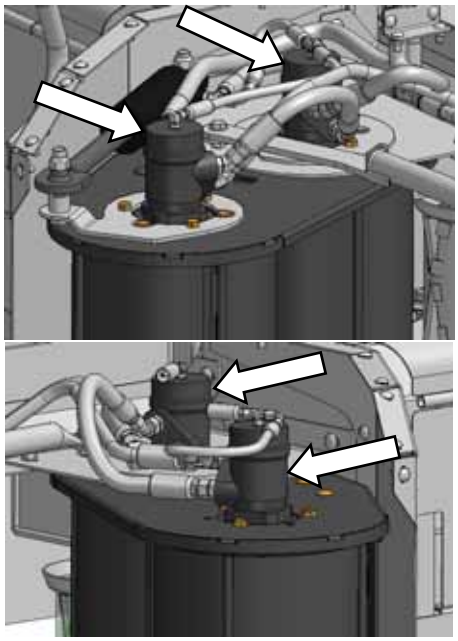
c. Install four bolts (D). Torque to 103 ft·lbf (140 N·m).

d. Remove caps from motor fitting and case drain line and re-connect to motor at (C).

e. Remove plugs from motor and caps from supply and return lines and re-connect lines to motor at (B). Torque bolts to 32 ft·lbf (43 N·m).

f. Secure hydraulic lines with bracket (A), bolt and nut.

7.9.2 Converging Drum Motors – Grass Seed Header



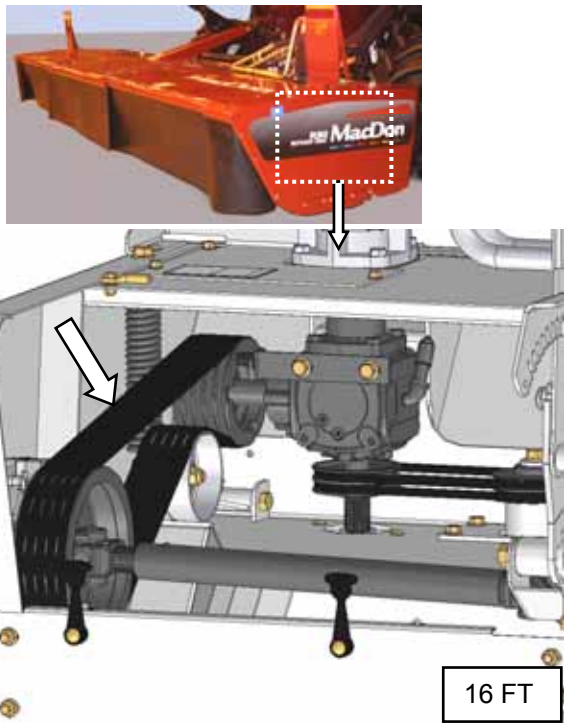
The converging drum hydraulic motors do not require normal maintenance or servicing. If repairs are required, they should be removed and serviced at your dealer. Refer to the Technical Service Manual available through your dealer.

7.9.3 Conditioner Drive Belt

The conditioner drive belt is located inside the drive compartment at the left hand side of the header and is tensioned with a spring tensioner.

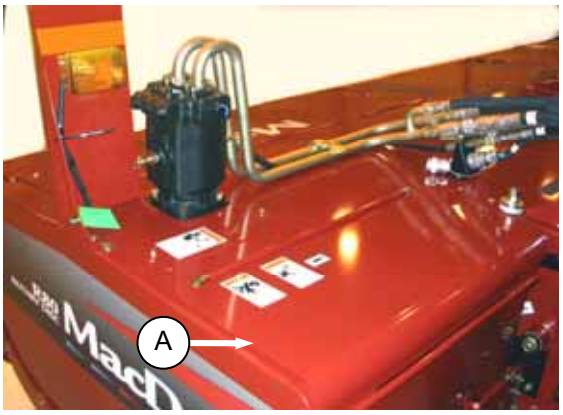
DANGER

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.

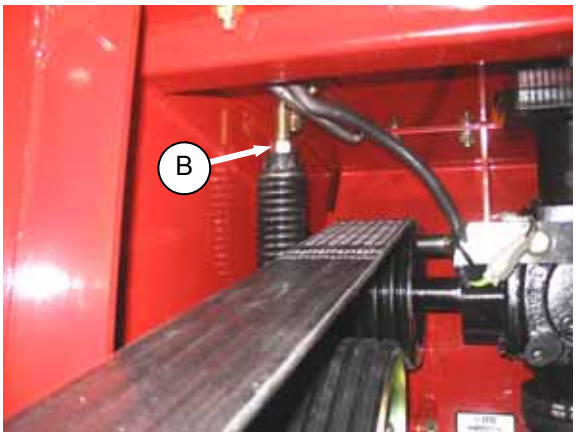


7.9.3.1 Tension Adjustment – Conditioner Drive Belt

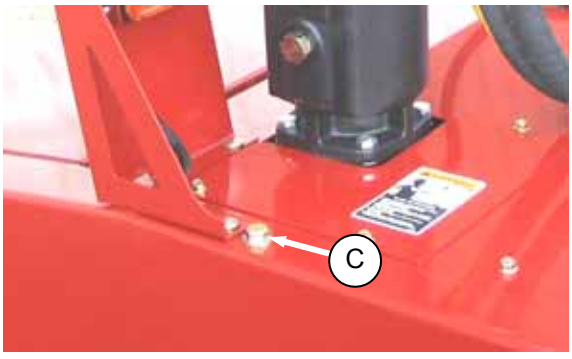
a. Lower header to ground, turn off engine, and remove key.



b. Open LH drive shield (A).



c. Loosen jam-nut (B).



d. Turn adjuster bolt (C) clockwise to tighten belt or counterclockwise to loosen.

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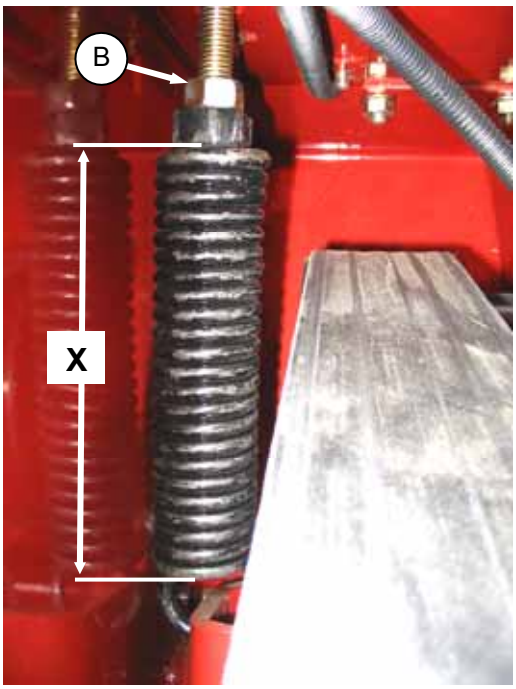
e. Adjust belt tension by adjusting the length of the spring to the values in the following table:

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



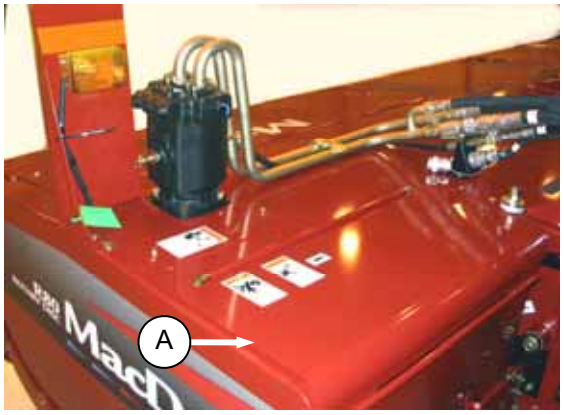
f. Tighten jam-nut (B).

7.9.3.2 Conditioner Drive Belt Removal – 16 FT

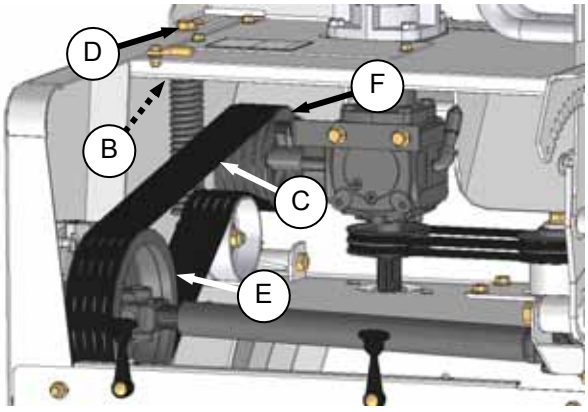
DANGER

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.

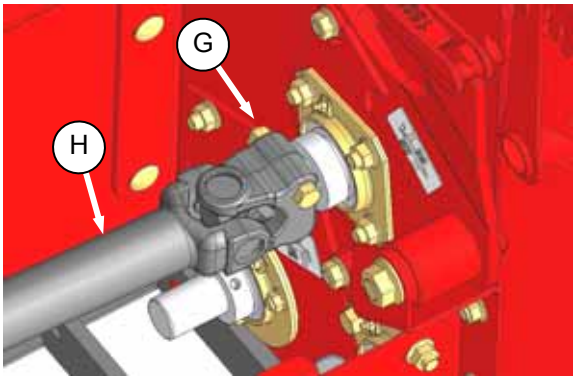
a. Lower header to ground, turn off engine, and remove key.



b. Open LH drive shield (A).



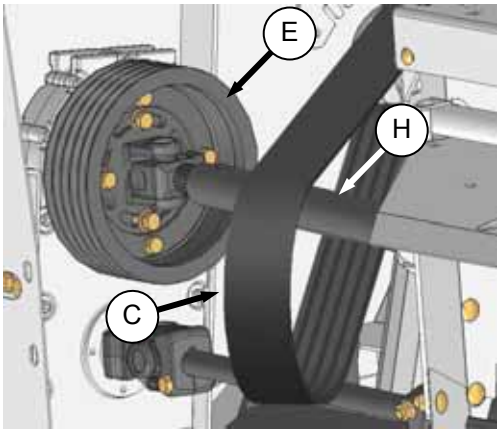
c. Loosen jam-nut (B) and loosen belt (C) with adjuster bolt (D) so that belt can be slipped off pulley (E) and drive pulley (F).



d. Remove nut and bolt (G) and pull U-joint off shaft.

e. Slip belt off driveline (H).

7.9.3.3 Conditioner Drive Belt Installation – 16 FT



a. Slip belt (C) over driveshaft (H) at inboard end.

b. Locate belt onto drive pulley (F). See illustration opposite.

c. Route belt over idler and onto driven pulley (E).

NOTE

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

d. Attach U-joint to shaft and secure with bolt (G) and nut. Tighten bolt. See illustration above.

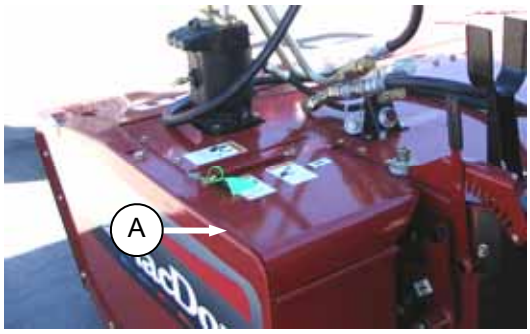
e. Adjust roll timing. See Section 6.12.5.2 Roll Timing.

f. Tension drive belt. See Section 7.9.3.1 Tension Adjustment.

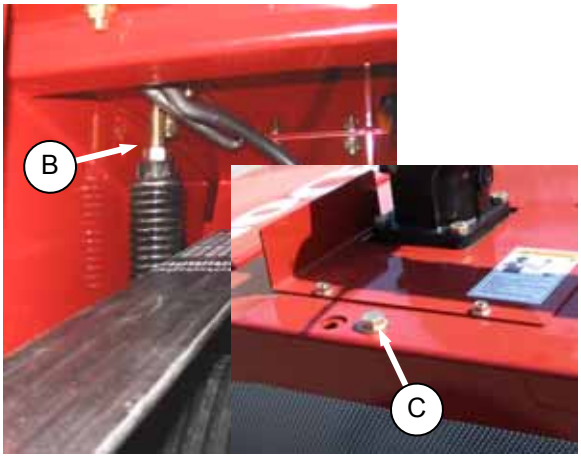
g. Lower drive shield (A).

7.9.3.4 Conditioner Drive Belt Removal – 13 FT

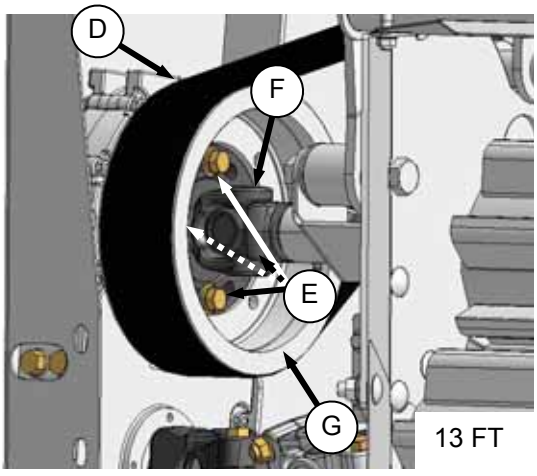
a. Lower header to ground, turn off engine, and remove key.



b. Open LH drive shield (A).



c. Loosen jam-nut (B) and turn bolt (C) counter-clockwise to release belt tension.

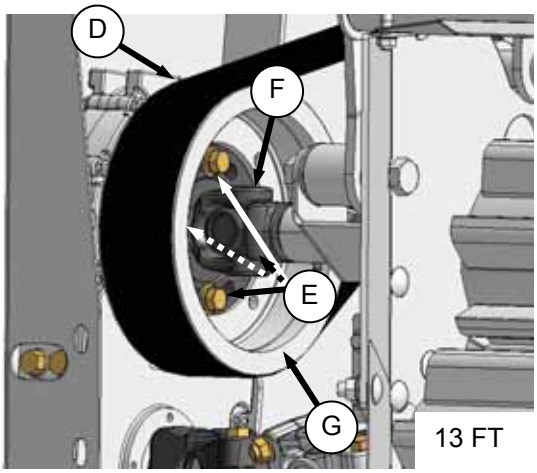


d. Remove four bolts (E) and slide driveline (F) fully inboard.

e. Slip belt (D) between pulley (G) and driveline.

f. Slip belt off drive pulley to remove it.

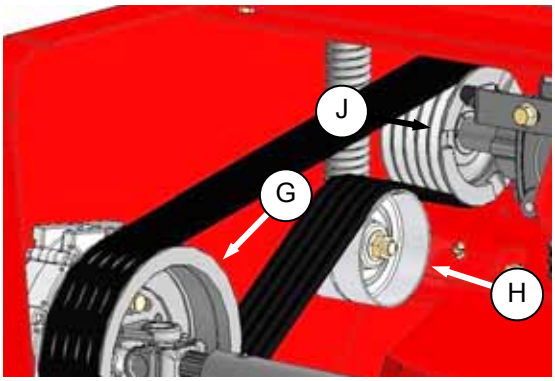
7.9.3.5 Conditioner Drive Belt Installation– 13 FT



a. Slip belt (D) between pulley (G) and driveline (F).

b. Locate belt onto drive pulley (J).

c. Install four bolts (E) but do not tighten.



d. Route belt over idler (H) and onto driven pulley (G).

NOTE

Check alignment of pulleys (G) and (J).

e. Adjust roll timing. Refer to Section 6.12.5.2, Roll Timing.

f. Tension the drive belt. See Section 7.9.3.1 Tension Adjustment.

g. Lower drive shield (A).

7.9.4 Conditioner Drive Belt Idler

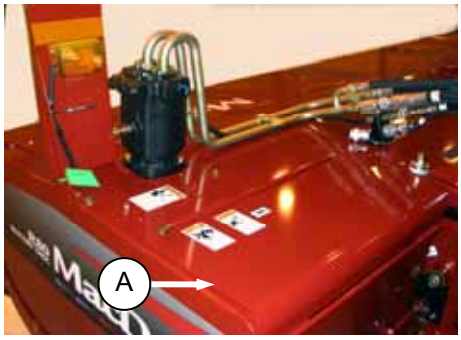
DANGER

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.

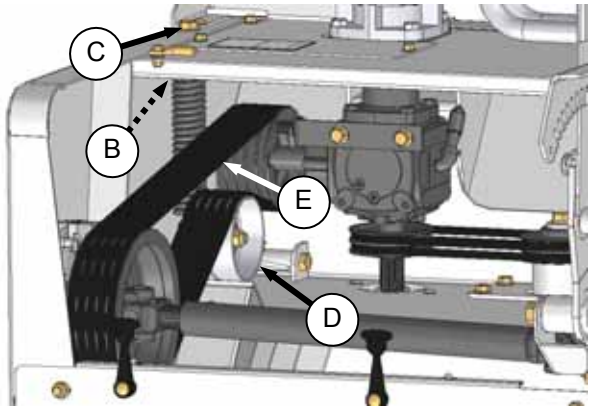
The conditioner drive belt idler does not require normal maintenance or servicing but may eventually require replacing.

Replace the idler as follows:

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

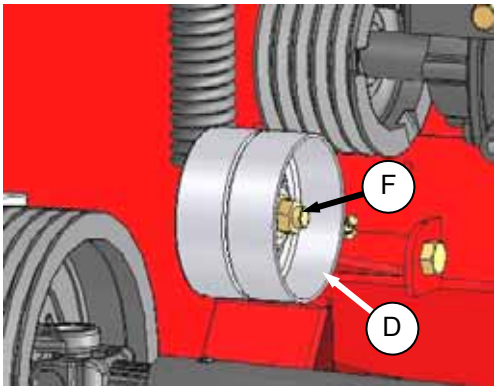


b. Open LH drive shield (A).



c. Loosen jam-nut (B).

d. Turn adjuster bolt (C) counter-clockwise to release tension on spring until idler (D) and belt (E) are loose.



e. Remove nut (F) from idler shaft and remove idler (D).

IMPORTANT

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

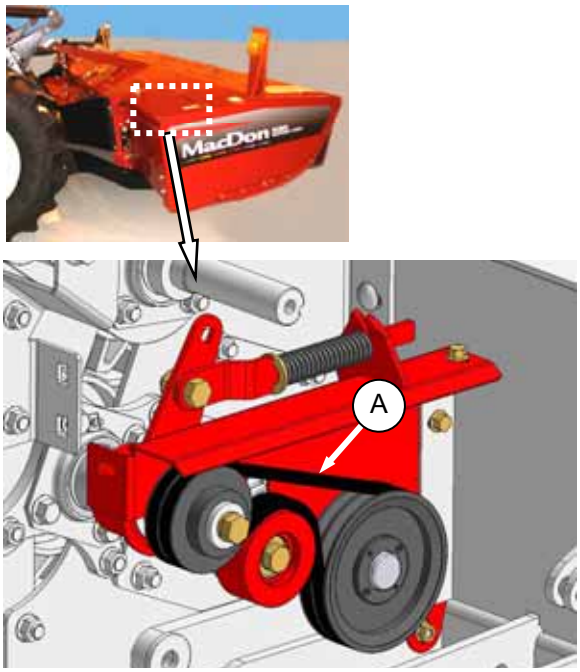
f. Install idler (D) onto shaft with washers in same locations.

g. Install nut (F) and torque to 150 ft·lbf (203 N·m).

h. Tension the drive belt (E). See Section 7.9.3.1 Tension Adjustment.

i. Close drive shield (A).

7.9.5 Lifting Roll Drive Belt



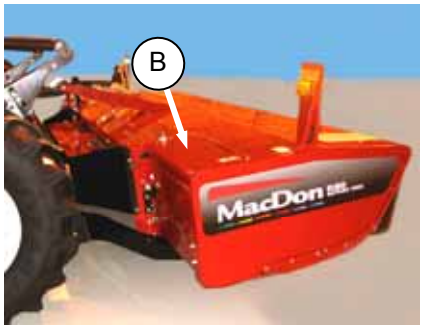
The two lifting roll drive belts (A) are located inside the drive compartment at the right hand side of the header. Belt tension is set at the factory and does not require adjustment.

NOTE
Rear shield not shown for clarity.

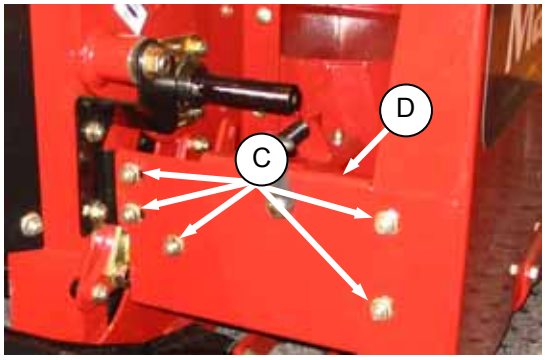
7.9.5.1 Replacement

DANGER

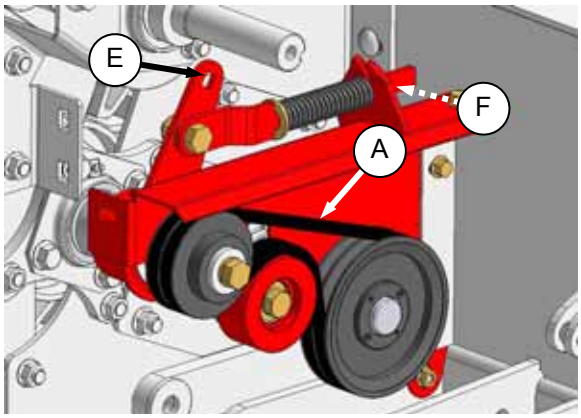
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



a. Lower header to ground, turn off engine, and remove key.
b. Open RH drive shield (B).



c. Remove five bolts (C) and nuts and remove rear shield (D).



d. Insert the end of a ½ inch drive socket wrench in the square hole on the idler arm (E).
e. Rotate idler arm until belts (A) are loose.
f. Insert a bolt in hole (F) to hold idler.
g. Remove belts (A).

NOTE
Belts must be replaced in pairs.

NOTE
Check alignment of pulleys.

h. Install belts on pulleys ensuring they are in the pulley grooves.
i. Rotate idler arm (E) so that bolt in (F) can be removed.
j. Release load on idler and remove wrench.
k. Re-install rear shield (D) with bolts (C) and nuts.
l. Close drive shield.

7.9.6 Lifting Roll Belt Idler

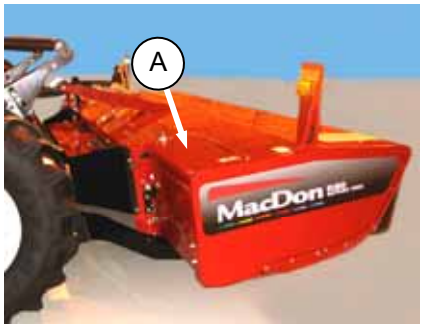
DANGER

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.

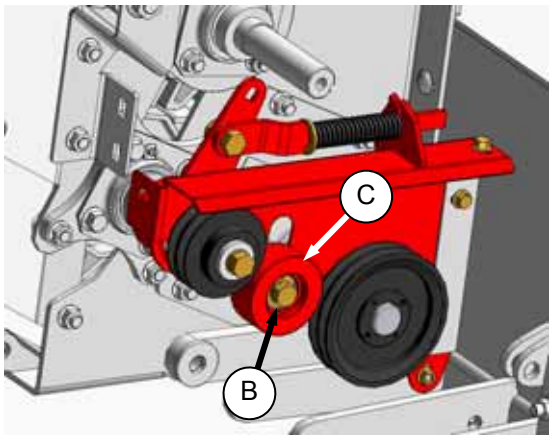
The lifting roll belt idler does not require normal maintenance or servicing but may eventually require replacing.

Replace the idler as follows:

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



b. Open RH drive shield (A).
c. Remove belts. See previous section.



d. Remove nut and bolt (B) and remove idler (C).
e. Install new idler (C) with bolt and nut (B).
f. Tighten nut to 150 ft·lbf (203 N·m).
g. Reinstall belts. See previous section.
h. Re-install rear shield. See previous section.
i. Close drive shield.

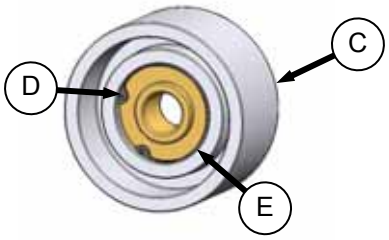
7.9.7 Lifting Roll Idler Bearing

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

Replace the idler bearing as follows:



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

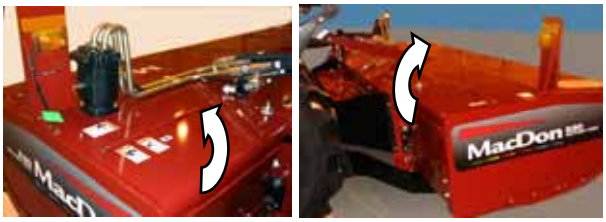
7.9.8 Hourglass Deflector Drive Belts – 16 Ft Only

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.**

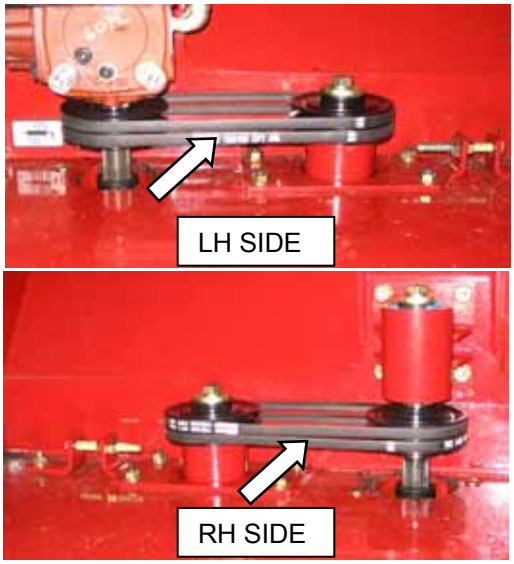
7.9.8.1 Belt Tension

a. Lower header fully, shut off engine and remove key.



b. Open LH and RH drive shields.

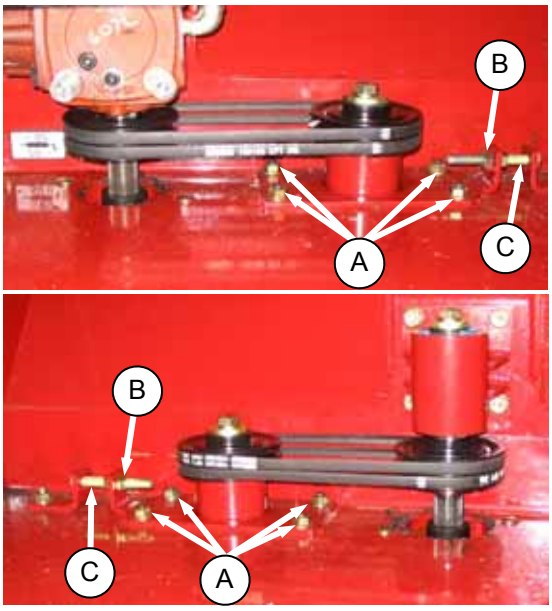
c. Apply force of 51 lbf (22 N) to each deflector drive belt at mid-span. Deflection of each belt should be 0.12 in. (3 mm).



IMPORTANT

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

d. If necessary, adjust as follows:



1. Loosen nuts (A).
2. Loosen jam-nut (B) on adjuster bolt (C).
3. Turn adjuster bolt to adjust tension.
4. Tighten nuts (A) and jam-nut (B).

e. Re-adjust tension of a new belt after a short run-in period, (about 5 hours).

7.9.8.2 Belt Replacement

a. Lower header fully, shut off engine and remove key.

b. Open cutterbar door(s).

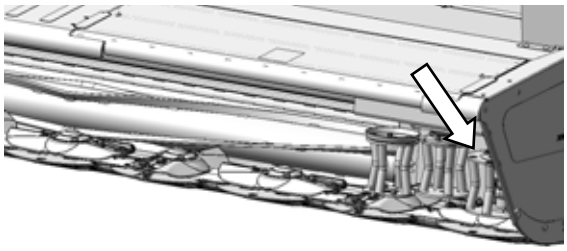
c. Open LH and RH drive shields.

CAUTION

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

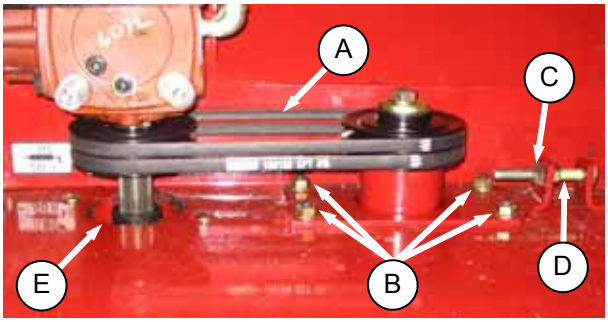
(continued next page)

Driveline (LH) Side



a. Remove outboard hourglass deflector and driveline. Refer to Section 7.8.6.1 Driveline Deflector.

b. Loosen hourglass deflector drive belts (A) as follows:



1. Loosen nuts (B).
2. Loosen jam-nut (C) on adjuster bolt (D).
3. Turn adjuster bolt (D) to loosen belts (A) so they can be slipped off both pulleys.

c. 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.

d. Feed new belts through opening (E) and onto gearbox drive shaft.

e. 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.

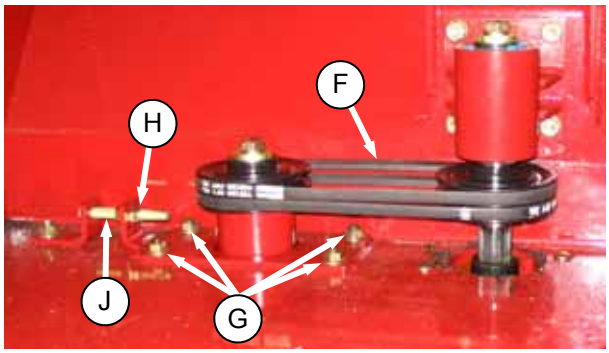
f. Manually turn drive system and re-check tension. Adjust as required.

g. Tighten nuts (B) and jam-nut (C).

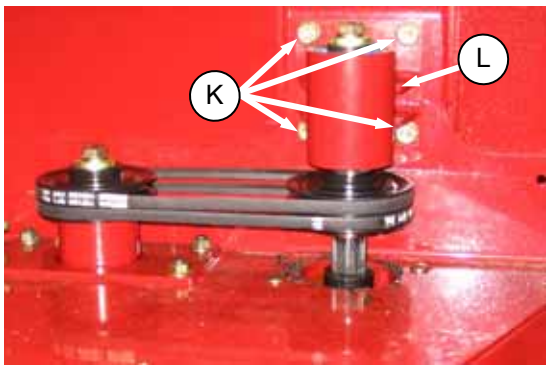
h. Re-install hourglass deflector. Refer to Section 7.8.6.1 Driveline Deflector.

Driven Side (RH)

a. Loosen hourglass deflector drive belts (F) as follows:



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



b. 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.

c. Locate new belts over driveline opening.

d. Re-install drive assembly (L) onto driveline and install bolts and nuts (K) and tighten.

e. 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.

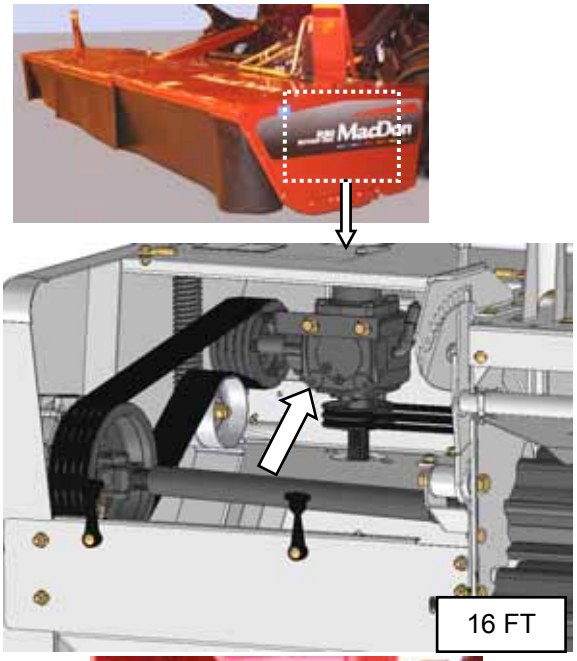
f. Manually turn drive system and re-check tension. Adjust as required.

g. Tighten nuts (G) and jam-nut (H).

h. Close drive shields and cutterbar doors.

i. Re-check belt tension after 5 hours of operation.

7.9.9 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. See 7.9.9.3 Removal – Bevel Gearbox.

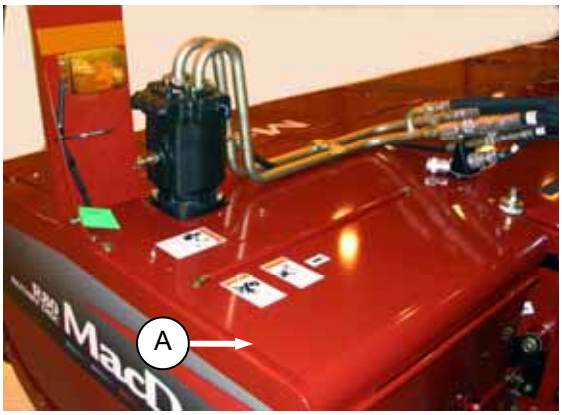
7.9.9.1 Checking Oil

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

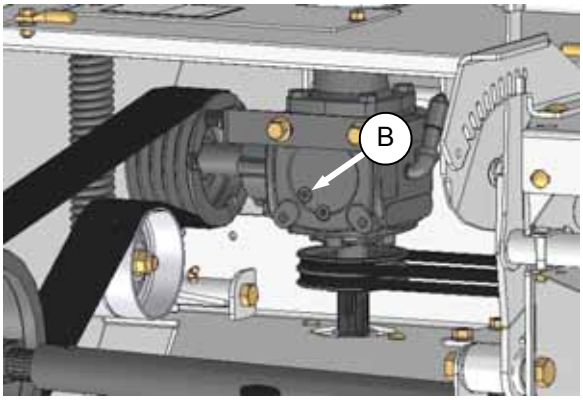
DANGER

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 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.

7.9.9.2 Changing Oil

DANGER

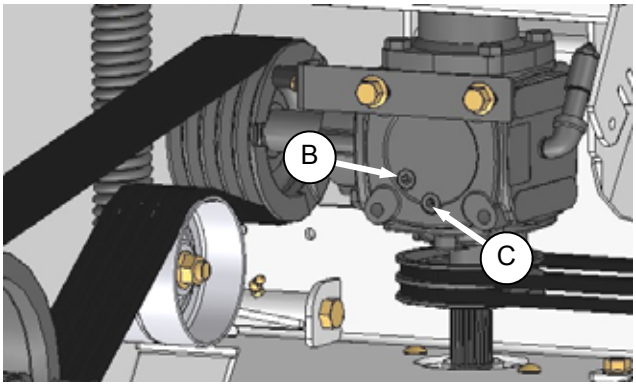
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

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 header lift cylinder locks. Stop engine and remove key.

c. Open LH drive shield (A).

d. Place a suitable container under drain plug (C).



16 FT SHOWN – 13 FT SIMILAR

e. Remove plugs (B) and (C).

f. Allow sufficient time for oil to drain.

g. Replace plug (C) and tighten.

h. Disengage header 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).

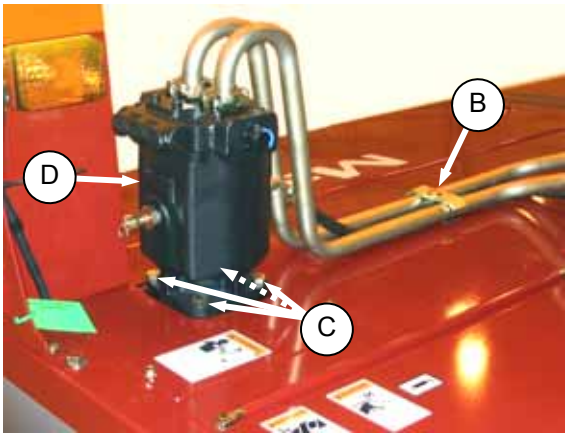
7.9.9.3 Removal – Bevel Gearbox

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.

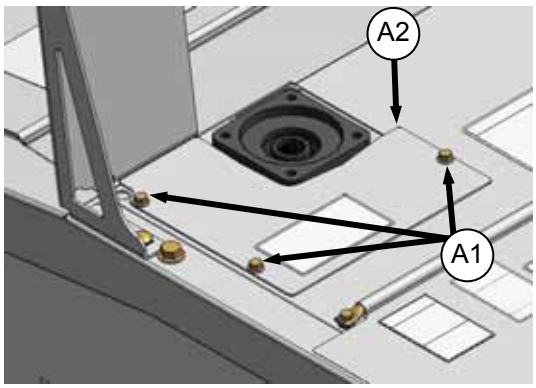
a. Lower header to ground, turn off engine, and remove key.

b. Open LH drive shield door (A).

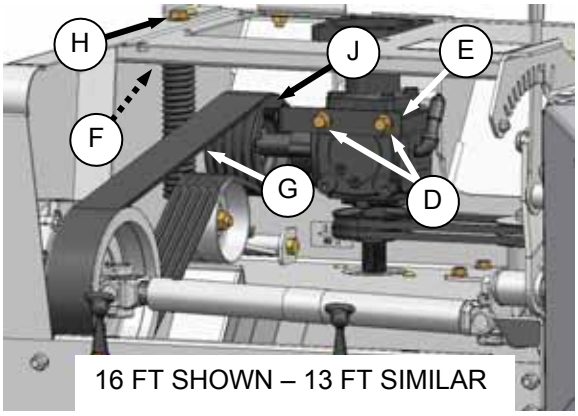


c. Remove clamp (B) securing hydraulic lines to header. No clamp on 13 ft.

d. Remove four bolts (C) and lift motor (D) off gearbox. Move motor and hoses clear of work area.



e. Remove three bolts (A1) and lift off panel (A2).

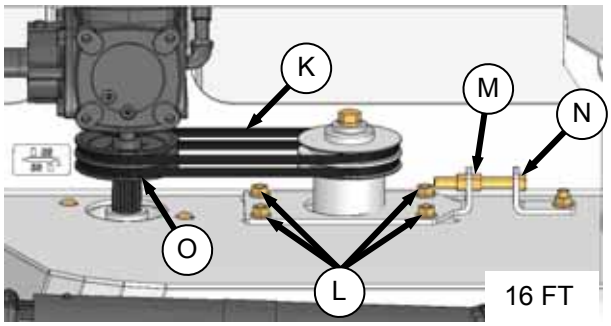


f. Remove bolts (D) securing sensor bracket (E) to gearbox and move sensor clear of work area.

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

NOTE

Following step h. is only applicable to 16 ft. header.



h. 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).

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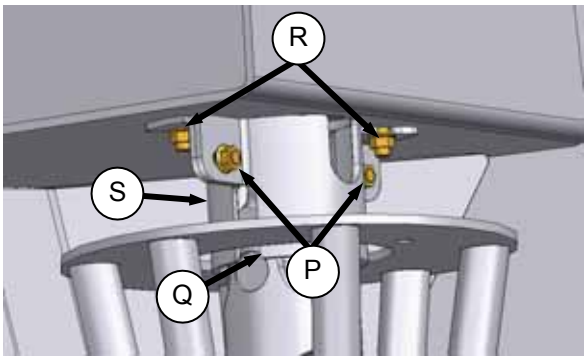
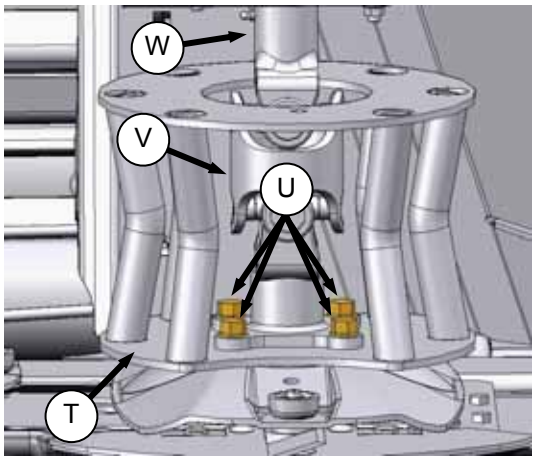


i. Remove two bolts (P) and remove guard (Q).

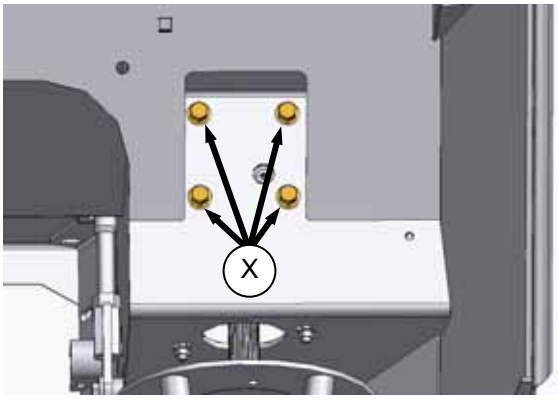
j. Loosen two bolts (R) and remove guard (S).



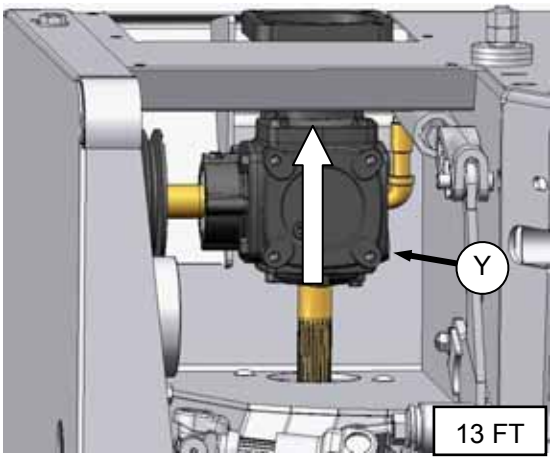
k. Rotate drum (T) so that wider space between bars face forward.

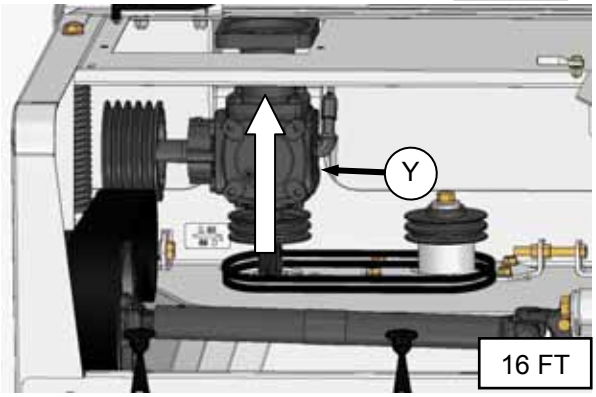
l. Remove four bolts (U).

m. Pull driveline (V) through cage and slide U-joint (W) off drive shaft.



n. Remove four bolts (U). Support gearbox (Y) when removing last bolt.



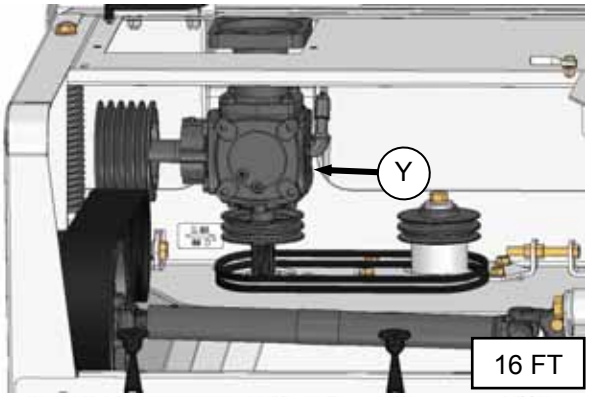


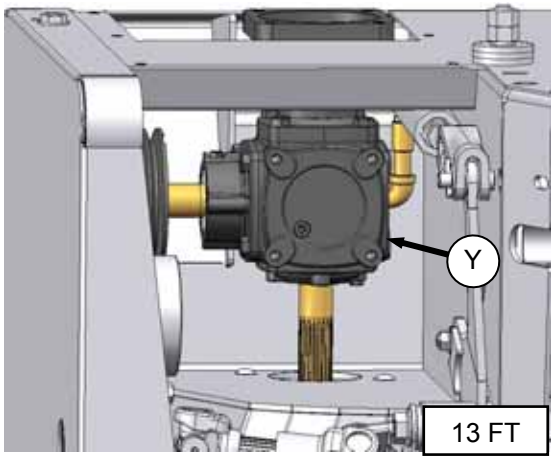
o. Lift gearbox (Y) and manoeuvre from drive area, top end first.

7.9.9.4 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.

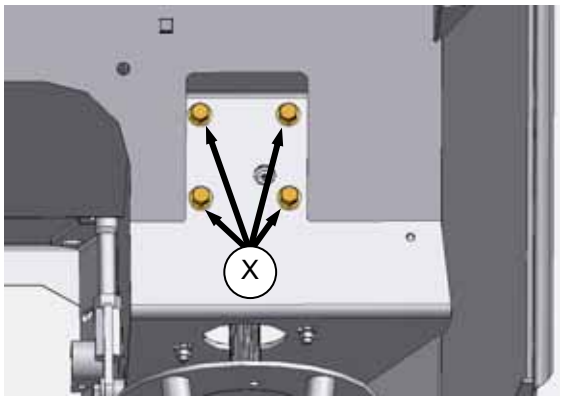




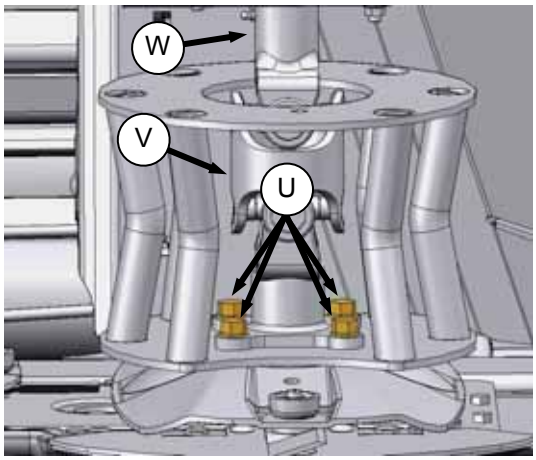
a. Lower gearbox (Y) into position through top opening.

NOTE

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

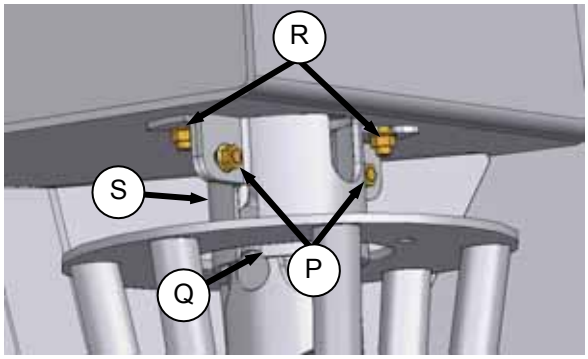


b. Install four bolts (X). Torque to 106 ft·lbf (144 N·m).



c. Position driveline (V) in drum, and slide U-joint (W) onto drive shaft.

d. Install four bolts (U) and torque to 92 ft·lbf (125 N·m).



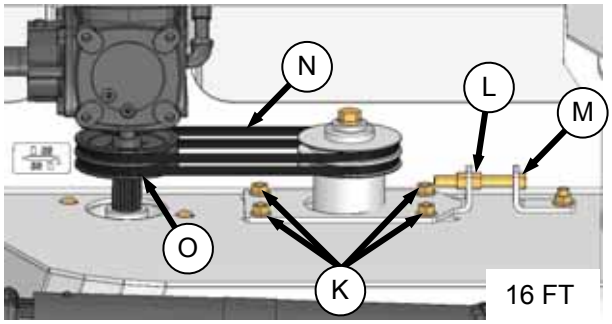
e. Position guard (S) and tighten bolts (R).

f. Position guard (Q) and attach with two bolts (P).

(continued next page)

NOTE

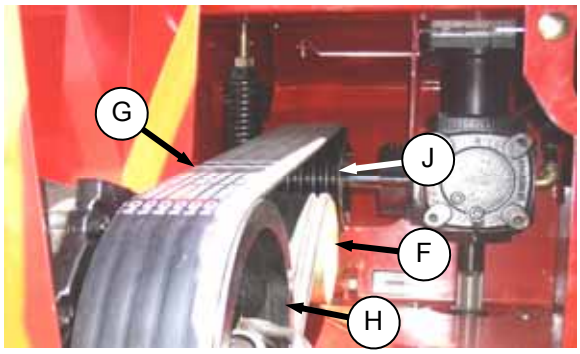
Steps g. to i. applicable to 16 ft header only.



g. Install hourglass deflector drive belts (N) onto drive pulley (O).

h. Turn adjuster bolt (M) to tighten belts (N). Apply a 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)

i. Tighten nuts (K) and jam-nut (L).



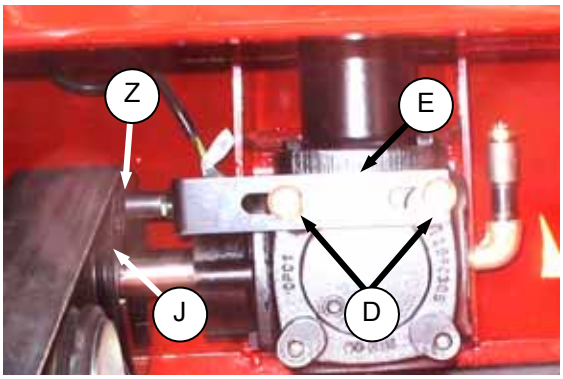
j. Locate conditioner drive belt (G) onto forward pulley (J).

k. Route belt over idler (F) ensuring it is properly located on pulley (H).

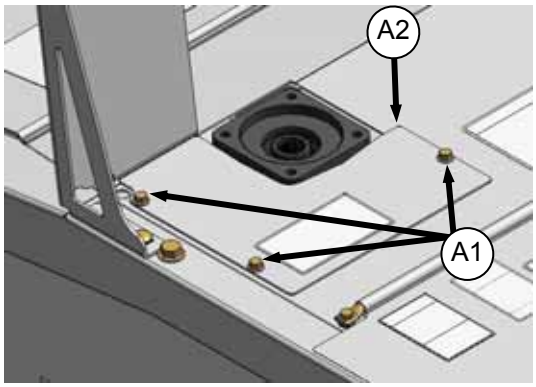
NOTE

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

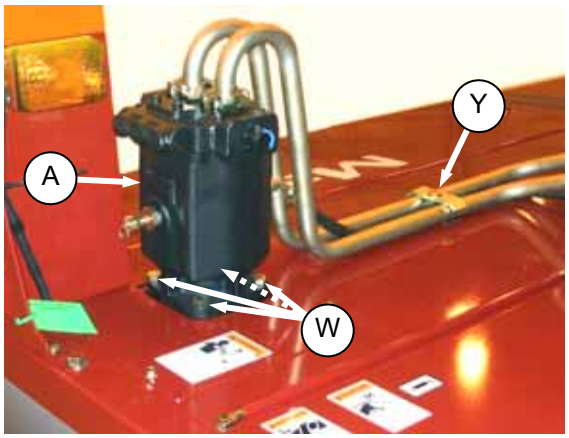
l. Tension drive belt (G). Refer to Section 7.9.3.1 Tension Adjustment.



m. Position speed sensor bracket (E) onto gearbox and install bolts (D). Adjust gap (Z) between speed sensor and pulley (J) to 0.08 in (2 mm). Tighten bolts.



n. Re-install cover (A2) with three bolts (A1).



o. Position hydraulic motor (A) on gearbox and install four bolts (W). Torque bolts to 103 ft·lbf (140 N·m).

p. Secure hydraulic lines to header with clamp (Y), bolt, and nut.

q. Close shield.

7.9.10 Conditioner Gearbox – 13 Foot

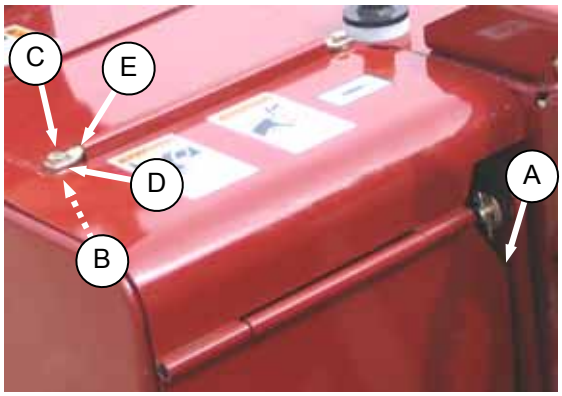
The conditioner gearbox is located inside the drive compartment at the left hand side of the header. The conditioner gearbox does not require normal maintenance or servicing, and if repairs are required, it should be removed and serviced at your dealer.

7.9.10.1 Conditioner Gearbox Removal – 13 Foot

DANGER

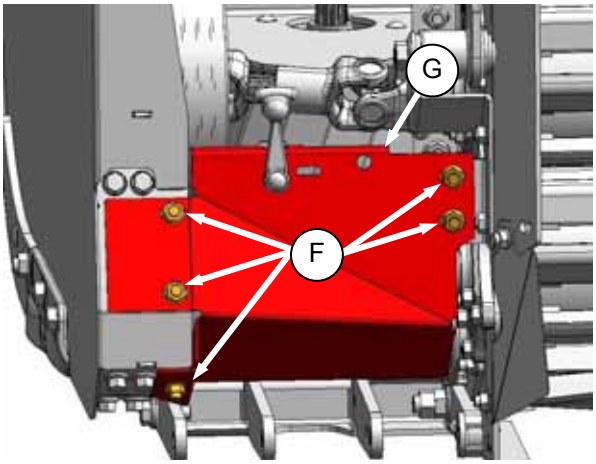
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

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

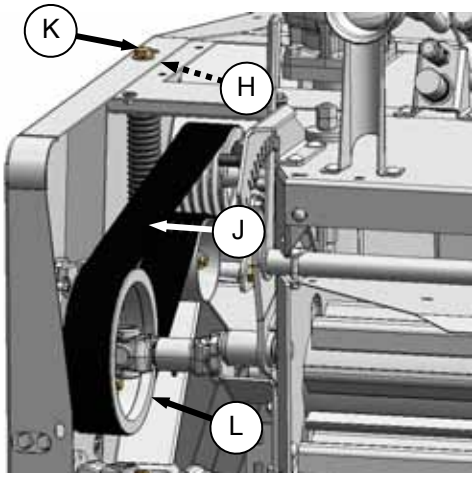


b. Open LH drive shield lower door (A).

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).

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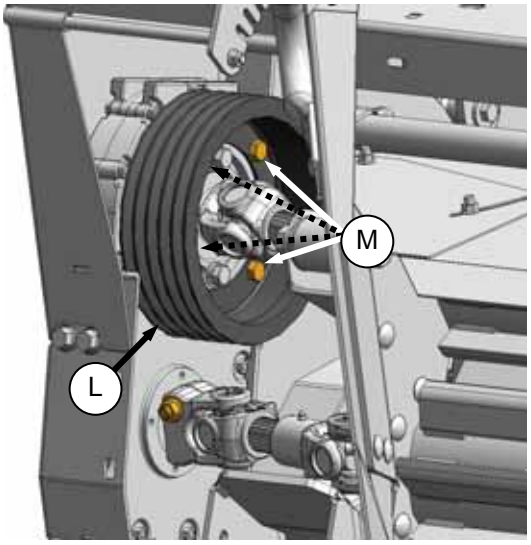
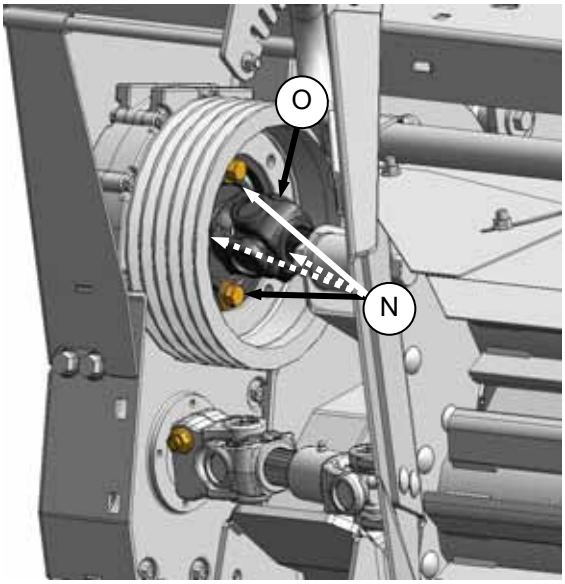
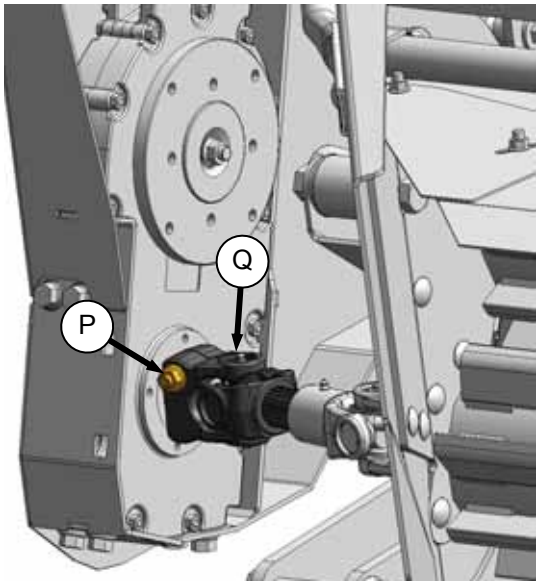


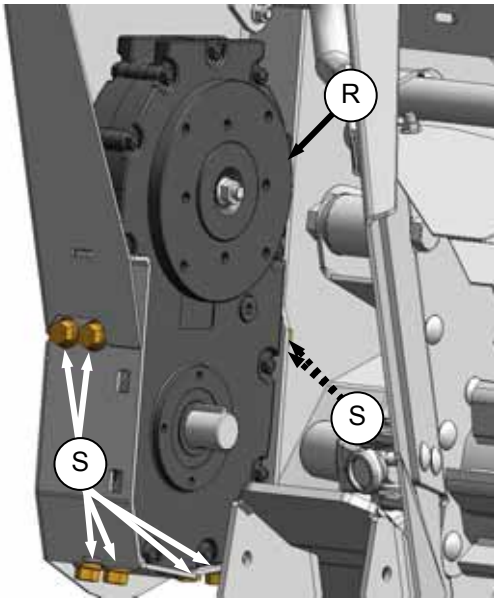
f. Remove bolts (M). Slide pulley (L) off gearbox onto driveline.



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



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



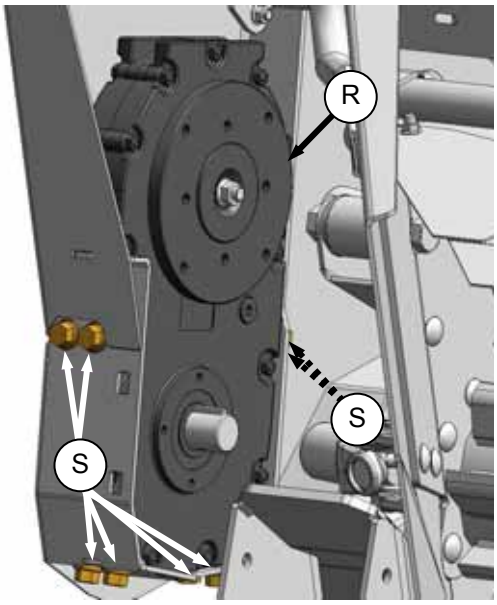
i. Remove eight bolts (S) holding gearbox (R) to frame.

j. Lift gearbox out of drive compartment.

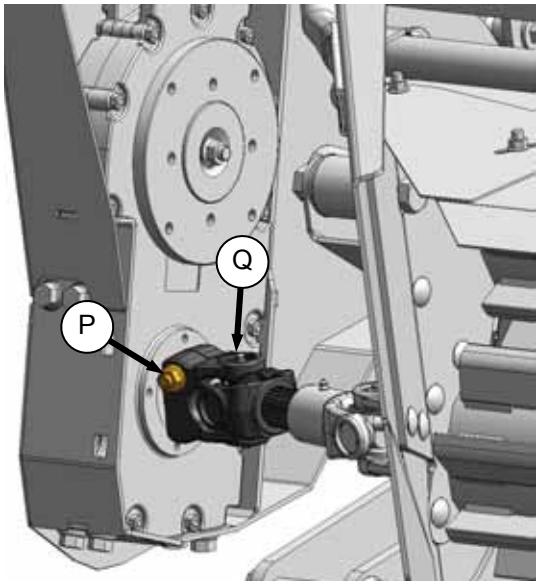
7.9.10.2 Conditioner Gearbox Installation – 13 Foot

DANGER

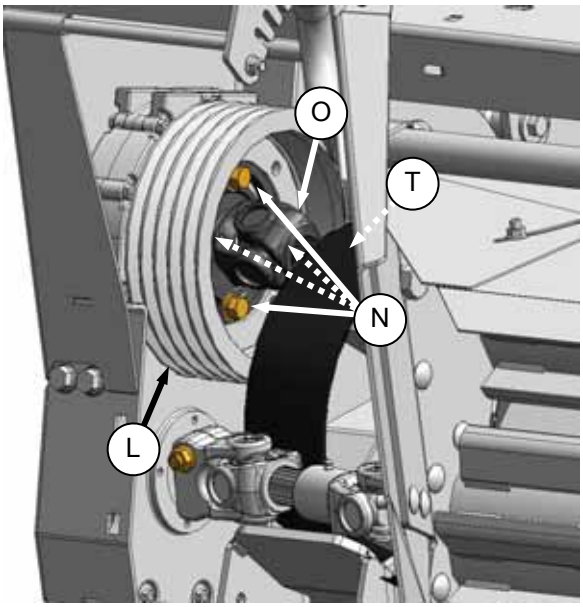
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



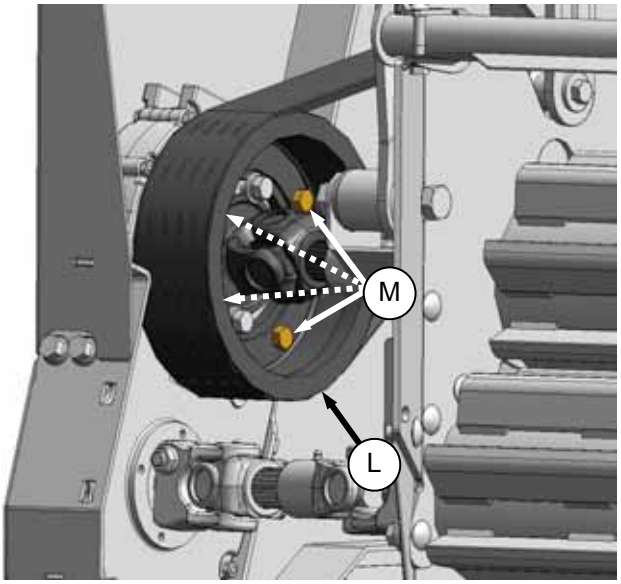
a. Position conditioner gearbox (R) in drive compartment and secure with eight bolts (S). Torque to 92 ft·lbf (125 N·m).



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).

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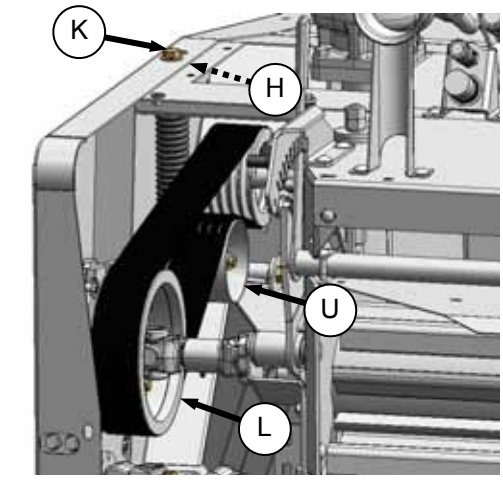
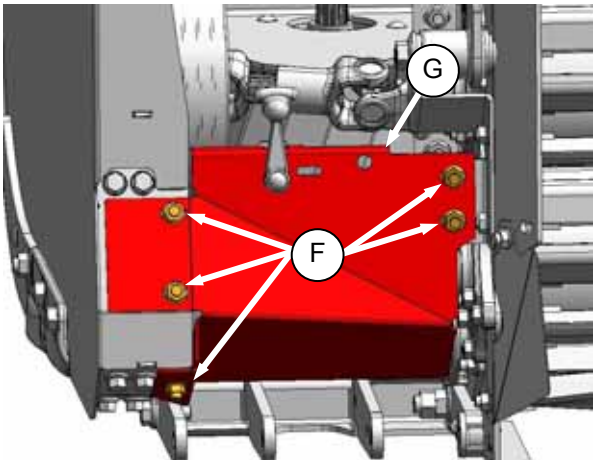
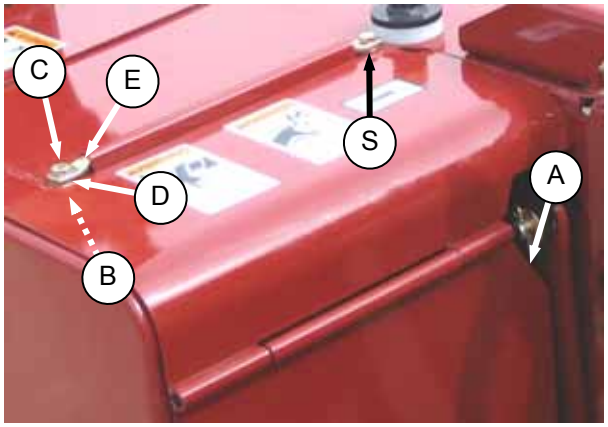


f. Re-install belt on pulley (L) and tighten idler (U) with adjuster bolt (K). See 7.9.3.1 Tension Adjustment – Conditioner Drive Belt. Tighten jam-nut (H).



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).

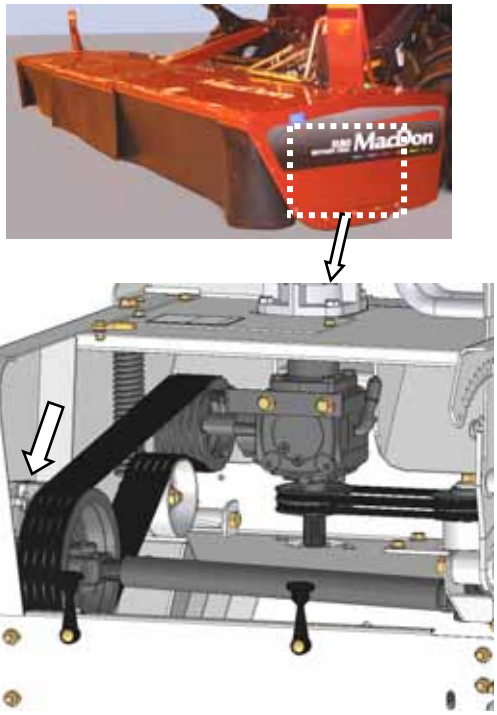
i. Position pin (E) in shield and attach to frame with two washers (D), bolt (C), and nut (B). Washers are under the pin. Tighten bolt.

j. Adjust roll timing. Refer to Section 6.12.5.2, Roll Timing.

k. Close drive shield (A).

7.9.11 Conditioner Gearbox – 16 Foot

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.

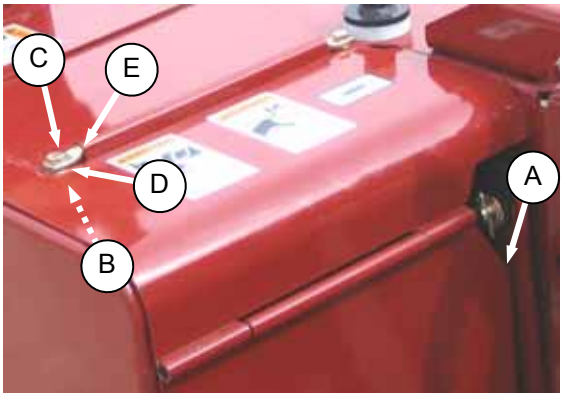


7.9.11.1 Conditioner Gearbox Removal – 16 Foot

DANGER

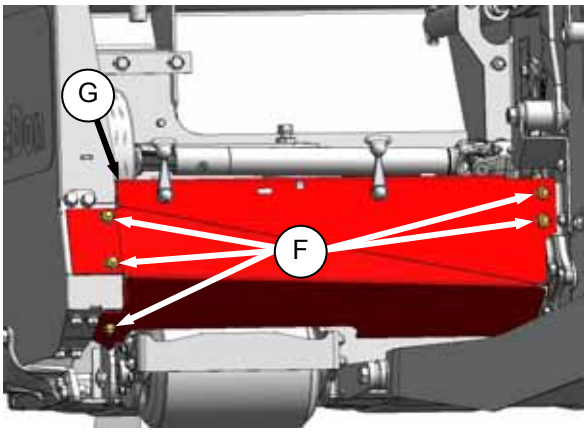
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.

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

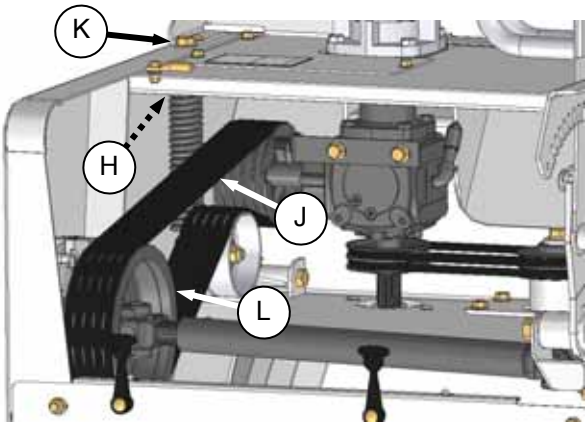


b. Open LH drive shield lower door (A).

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



d. Remove 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).

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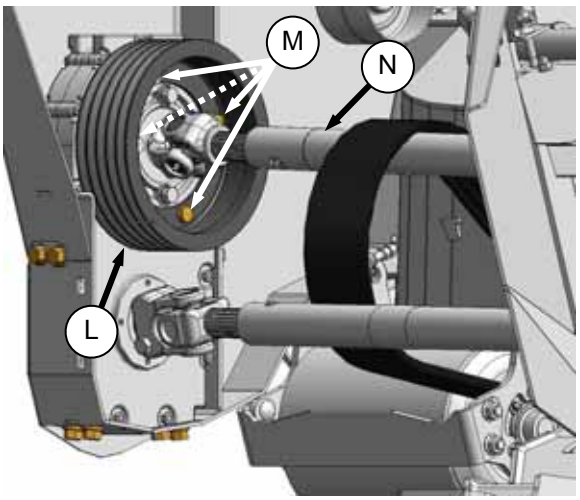
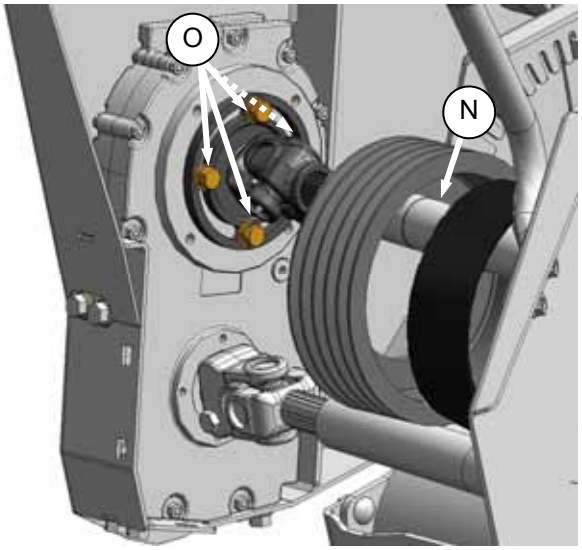
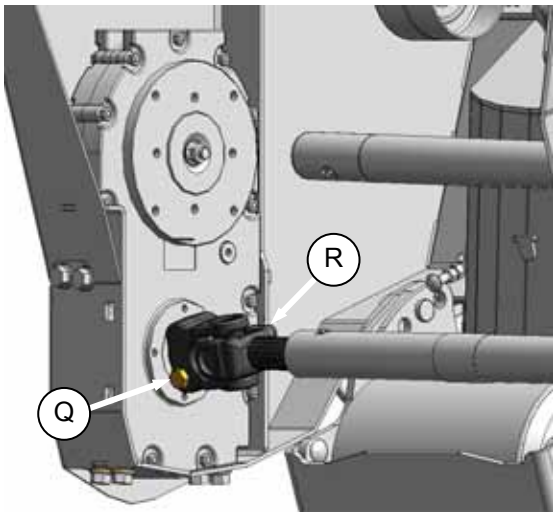


f. Remove bolts (M). Slide pulley (L) off gearbox and slide pulley over timing flange yoke onto driveshaft (N).

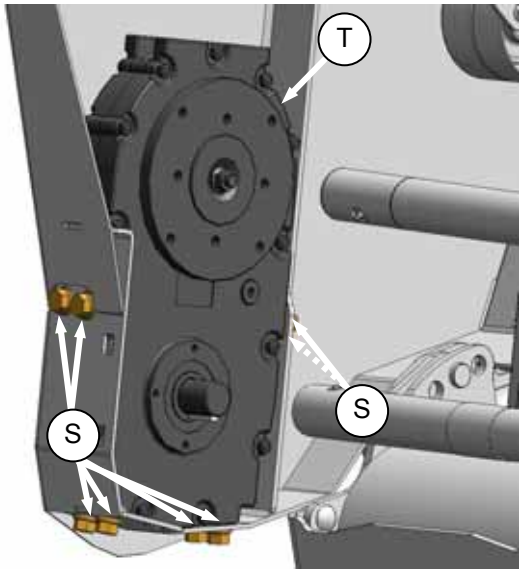


g. Remove bolts (O) and swivel driveshaft (N) so that pulley can be slipped off driveline.

h. Position driveline clear of work area.



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

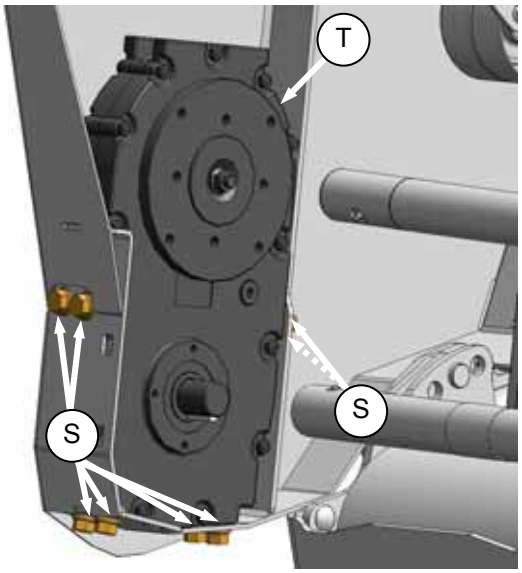


j. Remove eight bolts (S) attaching gearbox (T) to frame and lift gearbox out of drive compartment.

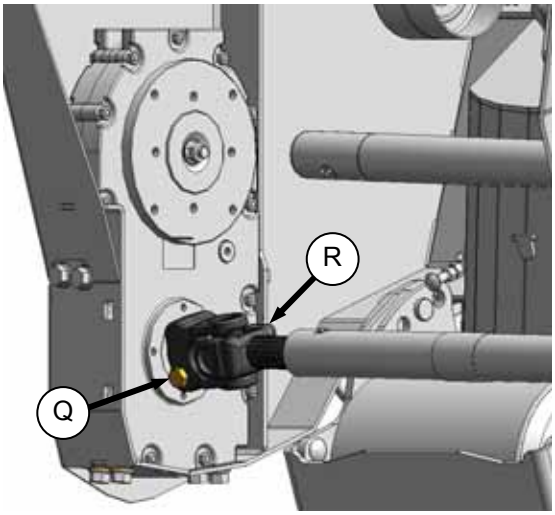
7.9.11.2 Conditioner Gearbox Installation – 16 Foot

DANGER

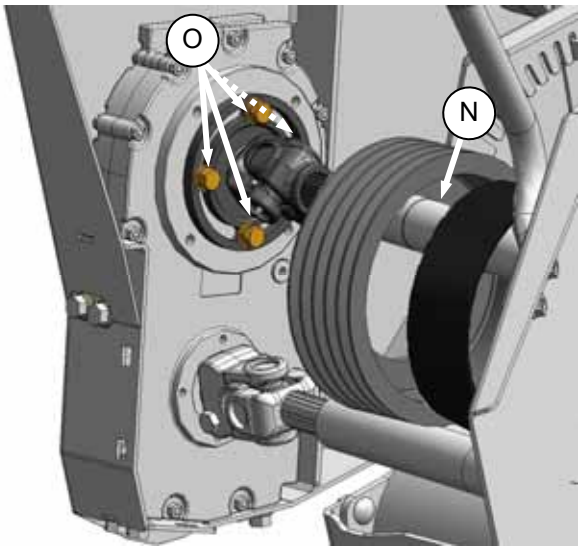
Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine.



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

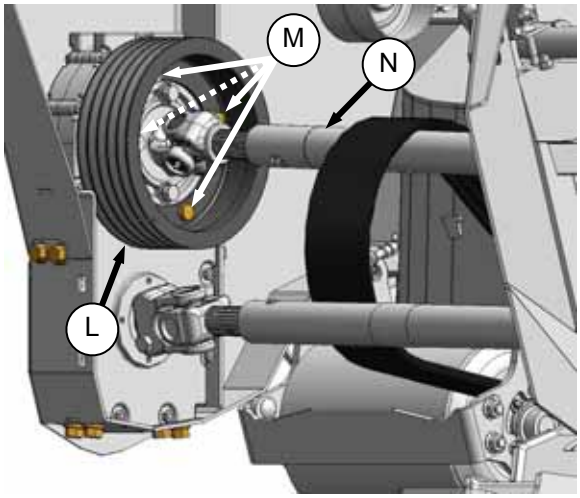


b. Ensure woodruff key is in shaft keyway and slide yoke (R) onto gearbox shaft. Tighten bolt (Q) on U-joint.



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).

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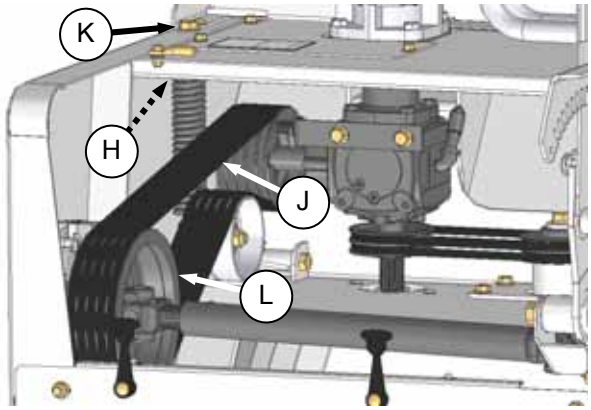
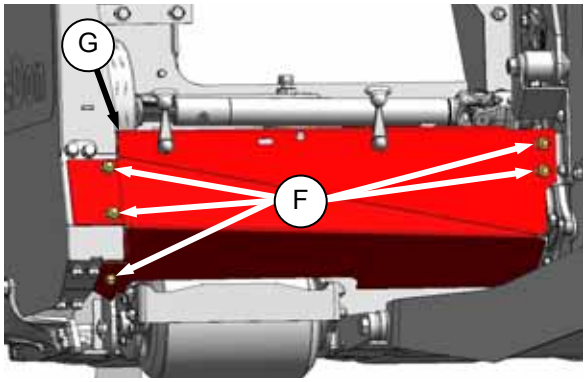
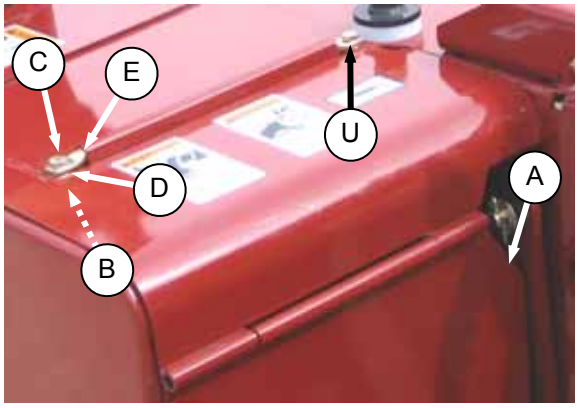


f. Position belt (J) on pulley (L) and tighten idler with adjuster bolt (K). See 7.9.3.1 Tension Adjustment – Conditioner Drive Belt. Tighten jam-nut (H).



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 6.12.5.2, Roll Timing.

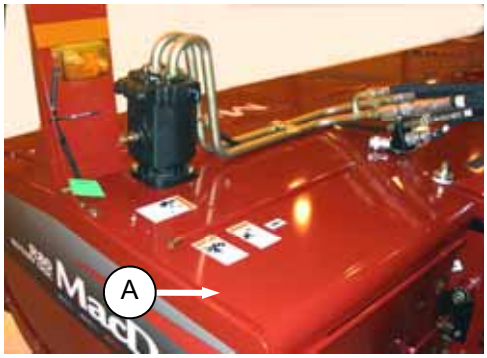
k. Close drive shield (A).

7.9.12 Gearbox Speed Sensor

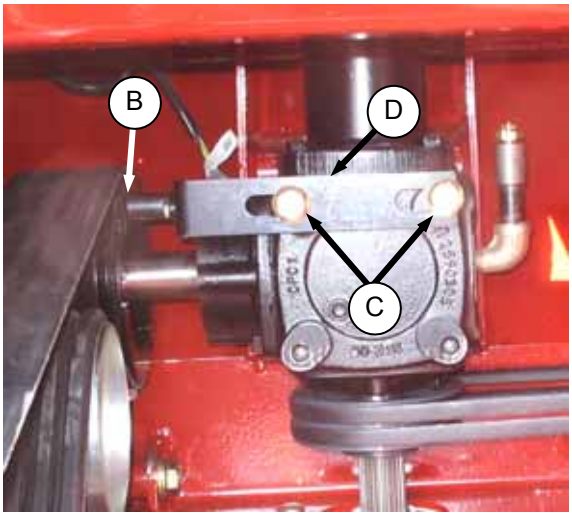
DANGER

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.



b. Open LH drive shield door (A).

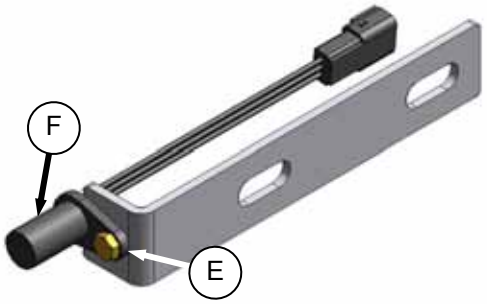


c. Gap (B) between speed sensor and pulley should be 0.08 in (2 mm).

d. To adjust gap, loosen bolts (C) and move bracket (D) to achieve gap. Tighten bolts.

e. To replace speed sensor:

1. Remove bolts (C) and remove bracket (D) and sensor from gearbox.
2. Disconnect sensor wire from wiring harness.



3. Remove nut and bolt (E) securing sensor (F) to bracket and remove sensor.
4. Install new sensor onto bracket with bolt (E) and nut.

f. Install bracket (D) onto gearbox and adjust gap (B) between sensor and pulley to 0.08 in (2 mm). Tighten bolts (C).

g. Connect sensor to wiring harness.

h. Close shield (A).

7.10 HYDRAULICS

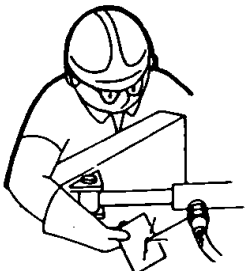
Refer to M150/M200 Self-Propelled Windrower Operator's Manual for hydraulic system maintenance procedures for self-propelled windrowers.

7.10.1 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.

7.11 ELECTRICAL

NOTE

Only the 16 foot header is equipped with lights.

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. Use electrical tape and wire clips as required to prevent wires from dragging or rubbing.

b. Keep lights clean and replace burnt bulbs.

c. To replace light bulbs:

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

NOTE

Bulb Part No. - Trade #1156.

7.12 MAINTENANCE SCHEDULE

The following maintenance schedule lists the 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, 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 7.2, Recommended Safety Procedures.

7.12.1 Break-In Inspection

HRS	ITEM	INSPECTION	REFER TO SECTION
5	Drive Belts	Check Tension.	7.9.3, 7.9.5, and 7.9.8.
	Hardware	Check For Loose Hardware. Tighten To Required Torque.	7.3.1.
25	Drive Belts	Check Tension.	7.9.3, 7.9.5, and 7.9.8.
50	Drive Belts	Check Tension.	7.9.3, 7.9.5, and 7.9.8.
	Cutterbar Lubricant	Change. **Use Only Specified Amount. Do Not Overfill.**	7.8.2
	Bevel Gearbox Lubricant	Change.	7.9.9
150	Bevel Gearbox Lubricant	Change.	7.9.9
	Cutterbar Lubricant	Change. **Use Only Specified Amount. Do Not Overfill.**	7.8.2

7.12.2 Interval Maintenance

INTERVAL	*SERVICE*
FIRST USE	Refer To BREAK-IN INSPECTIONS (previous page).
100 HOURS OR ANNUALLY *	1. Check Bevel Gearbox Lubricant Level. 2. Check Conditioner Drive Belt Tension. Except Grass Seed Header. See Section 7.9.3.1. 3. Check Hourglass Deflector Belt Tension – 16 Ft Only. See Section 7.9.2.1.
END OF SEASON	Refer To Section 6.14, STORAGE.
10 HOURS OR DAILY	1. Check Hydraulic Hoses And Lines For Leaks. 2. Check Cutter Blades For Security And Condition. 3. Check Hourglass Deflectors For Security And Condition.
25 HOURS	1. Grease Cutterbar Driveline Bearings. 2. Grease Roll Universal Shafts. Except Grass Seed Header.
50 HOURS	1. Grease Roll Universal Shafts. Except Grass Seed Header. 2. Grease Roll Shaft Bearings. Except Grass Seed Header. 3. Grease Drive Belt Tensioner. Except Grass Seed Header. 4. Grease Gauge Roller Bearings. 5. Grease Converging Drum Bearings (Grass Seed Header).
250 HOURS	1. Change Bevel Gearbox Lubricant. 2. Change Cutterbar Lubricant. **Use only specified amount. Do not overfill.**

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

7.12.3 Maintenance Record

	ACTION:	✓ - Check	♦ - Lubricate	▲ - Change																		
MAINTENANCE RECORD	Hour Meter Reading																					
	Date																					
	Serviced By																					
	FIRST USE	Refer To Section 7.12.1, BREAK-IN PERIOD																				
	100 HOURS OR ANNUALLY																					
✓	Bevel Gearbox Lubricant Level																					
	END OF SEASON	Refer To Section 6.14, STORAGE																				
	10 HOURS OR DAILY	**NOTE: A RECORD OF DAILY MAINTENANCE IS NOT NORMALLY REQUIRED BUT IS AT THE OWNER/OPERATOR'S DISCRETION.**																				
✓	Hydraulic Hoses & Lines																					
✓	Cutter Blades, Deflectors & Discs																					
	25 HOURS																					
♦	Roll Universal Shafts																					
♦	Cutterbar Driveline Bearings																					
	50 HOURS																					
▲	Cutterbar Lube – First 50 & 150 H																					
▲	Bevel Gearbox Oil - First 50 & 150 H																					
♦	Roll Universal Shafts																					
♦	Drive Belt Tensioner																					
♦	Converging Drum Bearings																					
♦	Roll Shaft Bearings																					
♦	Gauge Roller Bearings																					
	250 HOURS																					
▲	Cutterbar Lube																					
▲	Bevel Gearbox Lube																					

8 TROUBLESHOOTING

8.1 MOWER PERFORMANCE

SYMPTOM	PROBLEM	SOLUTION	SECTION
Cutterbar Plugging	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.	6.12.3 & 6.12.4
	Lift roll drive belt slipping.	Change belts.	7.9.5.1
	Conditioner drive belt slipping.	Adjust conditioner drive belt tension.	7.9.3.1
Ragged Or Uneven Cutting Of Crop.	Header angle too flat for guards to pick up down crop.	Increase header angle.	6.12.3
	Header flotation too light, causing bouncing.	Adjust to heavier float setting.	6.12.4
	Excessive ground speed.	Reduce ground speed.	6.12.8
	Downed crop.	Adjust header angle to cut closer to ground.	6.12.3
Strips Of Uncut Crop Left On Field.	Bent cutter blades.	Replace blades.	7.8.4.3
	Build-up of dirt between rock guards.	Decrease header angle and increase flotation.	6.12.3 & 6.12.4
	Ground speed too slow.	Increase ground speed.	6.12.8
	Excessive header speed.	Reduce header disc speed.	6.12.1
	Foreign object on cutterbar.	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	6.10
Conditioners Plugging.	Ground speed too fast.	Slow down.	6.12.8
	Roll gap too large for proper feeding.	Decrease roll gap.	6.12.5
	Roll gap too small in thick stemmed cane-type crops.	Increase roll gap.	6.12.5
	Baffle set too low.	Raise baffle.	6.12.7
	Roll speed too low.	Increase disc speed.	6.12.1
	Foreign object between rolls.	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	--

SYMPTOM	PROBLEM	SOLUTION	SECTION
Conditioner Plugging (cont'd)	Cutting height too low.	Decrease header angle to raise cutting height.	6.12.3
	Backing into windrow.	Raise header before backing up.	--
	Rolls improperly timed.	Adjust roll timing.	6.12.5.2
Uneven Formation And Bunching Of Windrow.	Rear deflector bypassing or dragging crop.	Adjust rear deflector for proper crop control.	6.12.7.2
	Forming shields improperly adjusted.	Adjust forming shields.	6.12.7
	Roll gap too large.	Adjust roll gap.	6.12.5
	Crop lifter roll belts slipping.	Replace belts.	7.9.5.1
	Conditioner rolls running too slow.	Maintain rated header speed.	6.12.1
Uneven Windrow Formation In Light Crop.	Uneven feeding.	Reduce header speed.	6.12.2
Cutting Height Varies From One Side To The Other	Flotation not properly balanced.	Adjust header flotation.	6.12.4
Not Cutting Short Enough In Down Crop.	Broken, bent or dull blades.	Replace blades or turn blades over.	7.8.4.3
	Ground speed too fast.	Reduce ground speed.	6.12.8
	Cutting height too high.	Adjust header angle to lower cutting height if field conditions allow.	6.12.3
Material Being Pulled Out By Roots When Cutting Tall Crop Leaning Into Machine	Crop in conditioner rolls before crop is cut.	Increase roll gap.	6.12.5
Damaged Leaves And Broken Stems	Insufficient roll gap.	Adjust roll spacing.	6.12.5
	Roll timing off.	Check roll timing and adjust if necessary.	6.12.5.2
Slow Crop Drying	Rolls not crimping crop sufficiently.	Decrease roll gap.	6.12.5
	Crop is bunched in windrow.	Adjust forming shields/baffle.	6.12.7
Excessive Drying Or Bleaching Of Crop	Excessive crimping.	Increase roll gap.	6.12.5
	Crop is spread too wide in windrow.	Adjust forming shields.	6.12.7
Plugging Behind End Hourglass Deflectors.	Ground speed too slow.	Increase ground speed.	6.12.8
	Material not moving.	Install optional feed plate.	7.8.6
Poorly Formed Or Bunchy Windrows	Forming shields not properly adjusted.	Adjust forming shields.	6.12.7

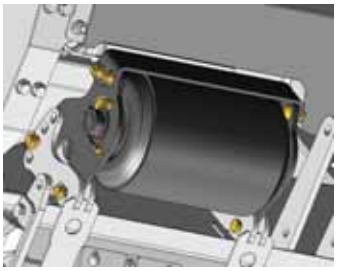
8.2 MECHANICAL

SYMPTOM	PROBLEM	SOLUTION	SECTION
Excessive Noises	Bent cutter blade.	Replace blade.	7.8.4.3
	Conditioner roll timing off.	Check roll timing and adjust if necessary.	6.12.5.2
	Conditioner roll gap too small.	Check gap and adjust if necessary.	6.12.5
Excessive Vibration Or Noise In Header	Mud deposits on conditioner rolls.	Clean rolls.	6.10
	Conditioner rolls contacting each other.	Increase roll gap.	6.12.5
		Check roll timing.	6.12.5.2
Excessive Heat In Cutterbar	Too much oil in cutterbar.	Drain oil and refill with specified amount.	7.8.2
Frequent Blade Damage	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.10
	Spindle bearing failure.	Replace spindle bearing.	See MacDon Dealer.
	Material wrapped around spindle.	Remove disc and remove material.	7.8.3.1
	Cutting too low in rocky field conditions.	Decrease header angle. Increase flotation.	6.12.3 & 6.12.4
	Header float set too heavy.	Increase flotation.	6.12.4
	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.	6.12.8
	Blade incorrectly mounted.	Check all blade mounting hardware ensure blades are free to move.	7.8.4.3
	Bevel up blades more susceptible to damage.	Switch to bevel down blades.	7.8.4.3
Excessive Wear Of Cutting Components	Header angle too steep.	Reduce header angle.	6.12.3
	Crop residue and dirt deposits on cutterbar.	Clean cutterbar.	6.10
	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.10

SYMPTOM	PROBLEM	SOLUTION	SECTION
Breakage Of Conditioner Drive Belt	Improper belt tension.	Adjust conditioner drive belt tension.	7.9.3.1
	Belt not in proper groove in pulley.	Move belt to proper groove.	7.9.3.2
	Foreign object between rolls.	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	--
	Belt pulleys and idlers misaligned.	Align pulleys and idler.	See MacDon Dealer.
Machine Pulling To One Side	Header dragging on one end and pulling to that side.	Adjust header flotation on both ends.	6.12.4
Discs Don't Turn When Engaging Cutterbar	Mud on cutterbar.	Remove mud from cutterbar. Do not allow mud to dry on cutterbar.	6.10
	Hoses not connected.	Connect hoses	6.3
	Poor connection at valve.	Check connection at tractor.	See tractor manual.
Header runs while unloaded but slows or stops when starting to cut.	Hydraulic oil level in tractor is low.	Add oil to tractor reservoir.	See tractor manual.
	Defective hydraulic motor.	Repair/replace hydraulic motor.	See tractor manual.
	Defective hydraulic pump in tractor.	Repair/replace pump.	See tractor manual.
	Defective relief valve in tractor.	Repair/replace relief valve.	See tractor manual.
	Cold oil in hydraulic drive system.	Reduce ground speed until oil reaches operating temperature.	6.12.8
Header slows when going uphill.	Hydraulic oil level in tractor is low.	Add oil to tractor reservoir.	See tractor manual.

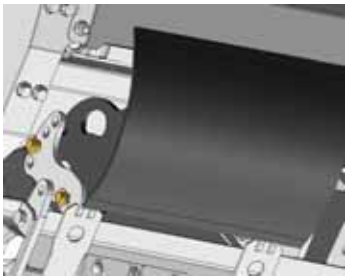
9 OPTIONS AND ATTACHMENTS

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.

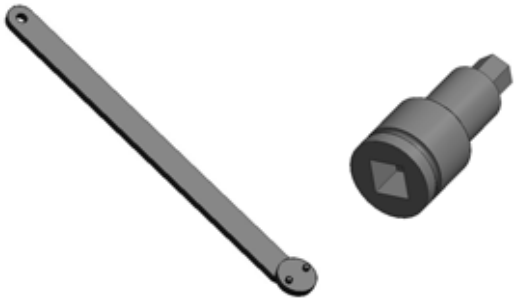
9.3 SKID PLATE LIFT KIT

The skid plate lift kit consists of spacer assemblies that attach to the existing skid plates 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 cutterbar entry in tall crops. The kit includes left and right dividers and attachment hardware.

9.5 CUTTERBAR REPAIR TOOL KIT

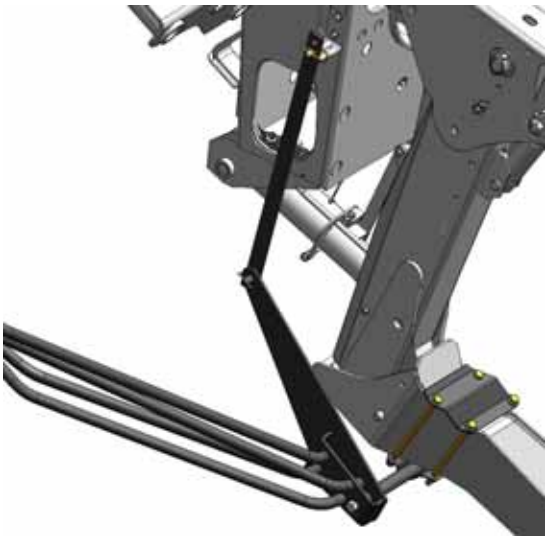


The cutterbar repair tool kit contains the necessary tools for replacement of the cutterbar idler gears. Refer to the Technical Service Manual for instructions.

9.6 DOUBLE WINDROW ATTACHMENT

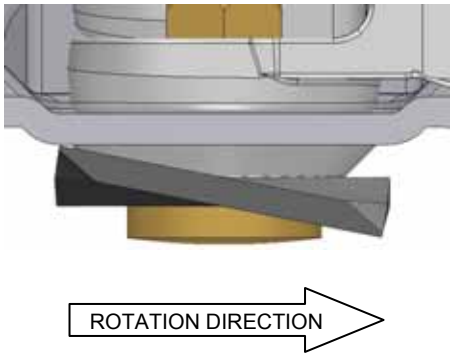
The double windrow attachment (DWA) can be attached to the M Series Windrower Tractor to enable double windrowing. The kit includes all the necessary fittings and instructions.

9.7 WINDROW FORMING RODS



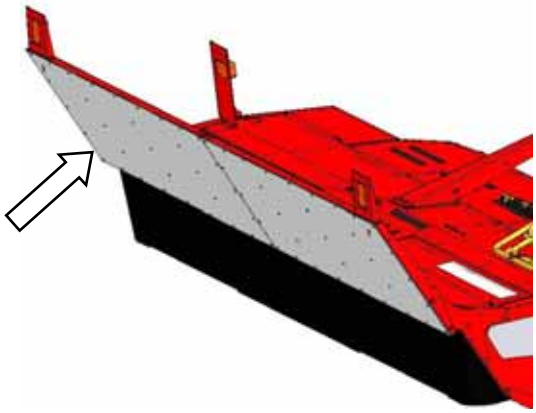
Windrow forming rods which assist in forming the desired windrow configuration and are intended for tall crops. A rod assembly is installed on either side of header opening. The kit includes all hardware and installation instructions.

9.8 11 DEGREE BEVEL UP CUTTERBLADES



11˚ bevel up cutter blades provide good cutting performance for general cutting conditions where the occurrence of hitting a stone and bending the blade downward is minimal.

9.9 TALL CROP TRANSITION SHIELD



The tall crop transition shield deflects the grass seed heads down and into the cutterbar area while minimizing head shattering and seed loss. The kit includes all hardware and installation instructions.

10 UNLOADING AND ASSEMBLY

Refer to R80 Rotary Disc Self-Propelled Windrower Header Unloading & Assembly Instructions, #169079 and Pre-Delivery Checklist that is included with your shipment.

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