

# D65 Harvest Header for Combines

**IMPORTANT: PAGE 21 HAS BEEN  
UPDATED SINCE THIS MANUAL WAS  
PUBLISHED.**

Operator's Manual

Part#169593 Rev. B

169593

Harvest Header® for Combines



## Introduction

This instructional manual contains information on the D65 Harvest Header® and the CA25 Combine Adapter. It must be used in conjunction with your combine operator's manual.

The D65 Harvest Header® is specially designed as a “straight cut” header, and is equipped to work well in all straight cut conditions, whether cutting on or above the ground.

The CA25 Combine Adapter allows any D65 header to be easily attached to your specific combine.

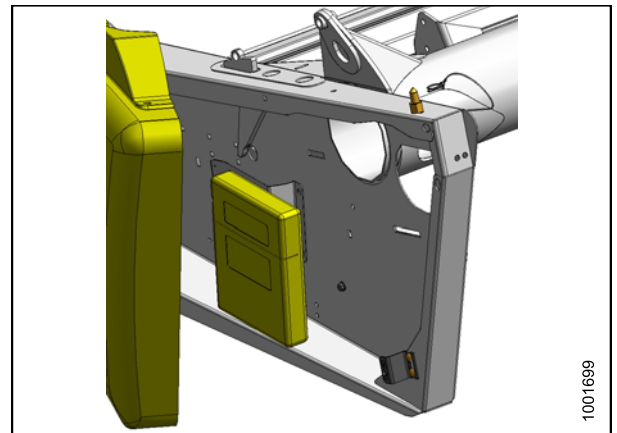
**CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.**

Use this manual as your first source of information about the machine. If you follow the instructions given here, your header will work well for many years. If you require more detailed service information, a technical manual is available from your MacDon Dealer.

The Table of Contents and Index will guide you to specific areas of this manual. Study the Table of Contents to familiarize yourself with how the information is organized.

Keep this manual handy for frequent reference, and to pass on to new Operators or Owners. A storage case for this manual is located inside the header left endshield.

Call your MacDon Dealer if you need assistance, information, or additional copies of this manual.



**Figure 1: Manual storage location**

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## Model and Serial Number

Record the Model Number, Serial Number, and Model Year of the Header, Combine Adapter, and Slow Speed Transport/Stabilizer Wheel Option (if installed) on the lines below.

**NOTE:** Right-hand (RH) and left-hand (LH) designations are determined from the Operator's position, facing forward.

### Draper Header

Header Model: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Year: \_\_\_\_\_

In shipping configuration, the serial number plate is located on the underside of the left-hand endsheet.



Figure 2: Header Serial Number Location

### Combine Adapter

Adapter Model: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Year: \_\_\_\_\_

The serial number plate is located on the underside of the reservoir at the right end.

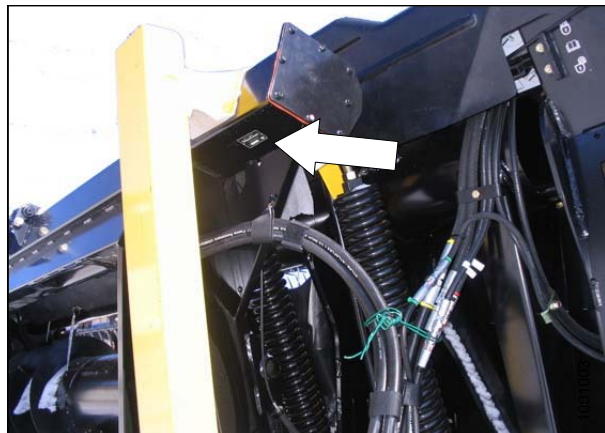


Figure 3: Adapter Serial Number Location

### Slow Speed Transport/Stabilizer Wheel Option

Serial Number: \_\_\_\_\_

Year: \_\_\_\_\_

The serial number plate is located on the left-hand wheel pivot tube.



Figure 4: Slow Speed Transport/Stabilizer Wheel Option Serial Number Location



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# 1 Safety

## 1.1 Safety Alert Symbols

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

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.



**Figure 1.1: Read Operator's Manual before operating**

# SAFETY

## 1.2 Signal Words

Three signal words, DANGER, WARNING, and CAUTION, are used to alert you to hazardous situations. The appropriate signal word for each situation 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 may also be used to alert against unsafe practices.



### **CAUTION**

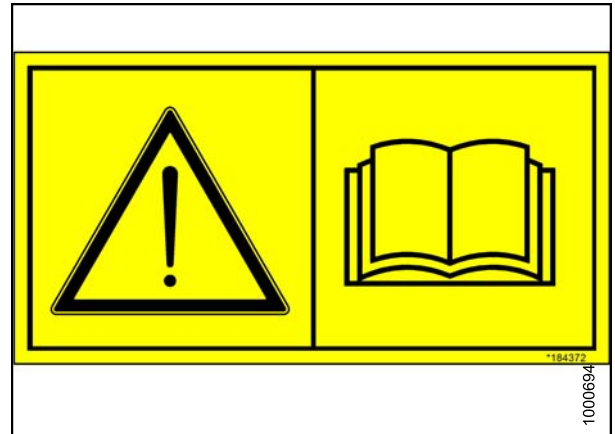
Indicates a potentially hazardous situation that, if not avoided, may result in minor, or moderate injury. It may be used to alert against unsafe practices.



# SAFETY

## 1.3 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.



**Figure 1.2: Read operator's manual before operating**

### 1.3.1 Installing Safety Decals

To install safety decals, follow these steps:

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

### 1.3.2 Safety Decal Locations

- 1.

**Figure 1.3**

# SAFETY

## 1.3.3 Safety Sign Interpretations

In the safety sign explanations below, (a) refers to the top or left position panel, (b) refers to the bottom or right position of the safety decal depending on decal orientation.

**NOTE:** If there are more than two panels in a decal, the lettering will continue downward or to the right, depending on decal orientation.

1. MD# 113482

a. General hazard pertaining to machine operation and servicing.

b. **CAUTION**

To avoid injury or death from improper or unsafe machine operation:

- Read the Operator's Manual, and follow all safety instructions. If you do not have a manual, obtain one from your dealer.
- Do not allow untrained persons to operate the machine.
- Review safety instructions with all operators annually.
- Ensure that all safety signs are installed and legible.
- Make certain everyone is clear of machine before starting engine and during operation.
- Keep riders off the machine.
- Keep all shields in place, and stay clear of moving parts.
- Disengage header drive, put transmission in neutral and wait for all movement to stop before leaving operator's position.
- Shut off engine and remove key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage locks to prevent lowering of header or reel before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

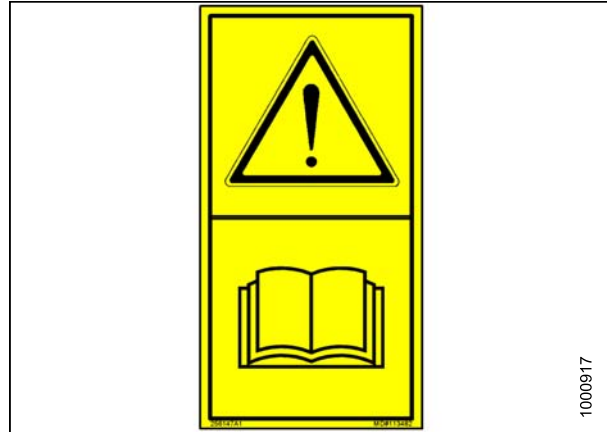


Figure 1.4: MD# 113482

## SAFETY

### 2. MD# 131391

a. Header hazard.

b. **Danger**

- Rest header on ground or engage mechanical locks before going under unit.

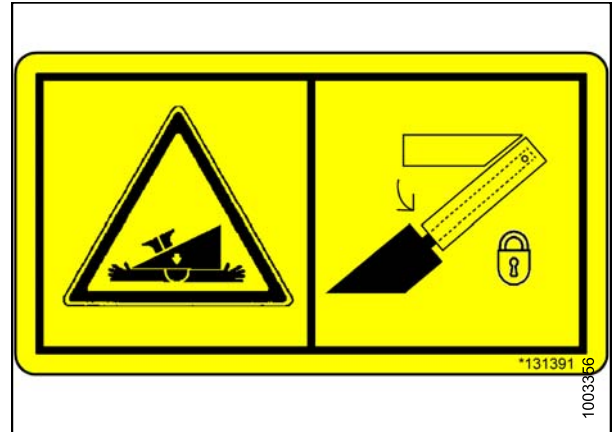


Figure 1.5: MD# 131391

### 3. MD# 131392

a. Reel hazard

b. **WARNING**

- To avoid injury from fall of raised reel; fully raise reel, stop engine, remove key, and engage mechanical lock on each reel support arm before working on or under reel.
- See Operator's Manual.

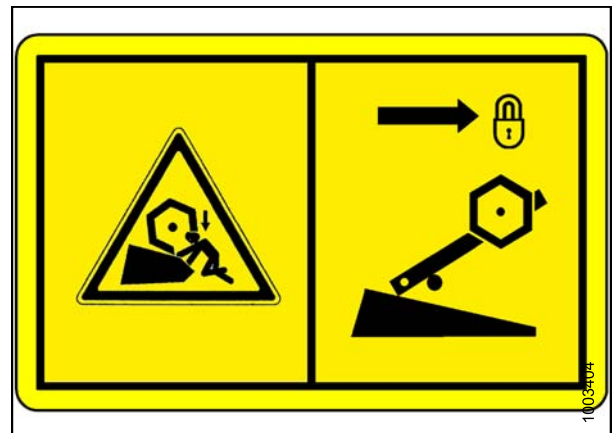


Figure 1.6: MD# 131392

### 4. MD# 131393

a. Reel hazard

b. **WARNING**

- To avoid injury from fall of raised reel; fully raise reel, stop engine, remove key, and engage mechanical lock on each reel support arm before working on or under reel.
- See Operator's Manual.



Figure 1.7: MD# 131393

## SAFETY

### 5. MD# 166466

a. High pressure oil hazard

b. **WARNING**

- High pressure oil easily punctures skin causing serious injury, gangrene or death.
- If injured, seek emergency medical help. Immediate surgery is required to remove oil.
- Do not use finger or skin to check for leaks.
- Lower load or relieve hydraulic pressure before loosening fittings.



Figure 1.8: MD# 166466

### 6. MD# 174436

a. High pressure oil hazard

b. **WARNING**

- High pressure oil easily punctures skin causing serious injury, gangrene or death.
- If injured, seek emergency medical help. Immediate surgery is required to remove oil.
- Do not use finger or skin to check for leaks.
- Lower load or relieve hydraulic pressure before loosening fittings.



Figure 1.9: MD# 174436

### 7. MD# 174632

a. Reel entanglement hazard

b. **CAUTION**

- To avoid injury from entanglement with rotating reel, stand clear of header while machine is running.



Figure 1.10: MD# 174632

## SAFETY

8. MD# 174682

a. Auger entanglement hazard

b. **CAUTION**

- To avoid injury from entanglement with rotating auger, stand clear of header while machine is running.

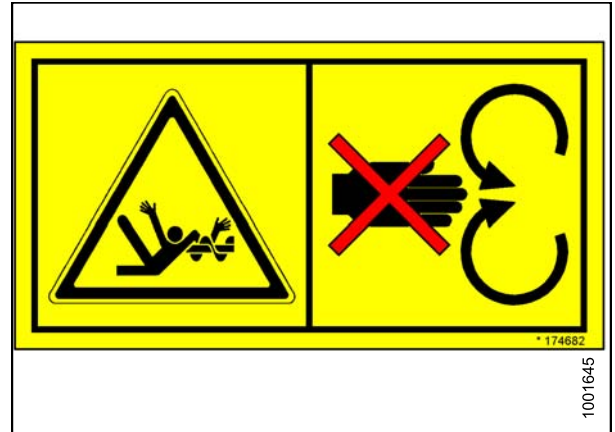


Figure 1.11: MD# 174682

9. MD# 174684

a. Sharp component hazard

b. **CAUTION**

- Wear heavy canvas or leather gloves when working with knife.
- Be sure no one is near the vertical knife when removing or rotating knife.



Figure 1.12: MD# 174684

## SAFETY

### 10. MD# 184372

- a. General hazard pertaining to machine operation and servicing.

b. **CAUTION**

To avoid injury or death from improper or unsafe machine operation:

- Read the Operator's Manual, and follow all safety instructions. If you do not have a manual, obtain one from your dealer.
- Do not allow untrained persons to operate the machine.
- Review safety instructions with all operators annually.
- Ensure that all safety signs are installed and legible.
- Make certain everyone is clear of machine before starting engine and during operation.
- Keep riders off the machine.
- Keep all shields in place, and stay clear of moving parts.
- Disengage header drive, put transmission in neutral and wait for all movement to stop before leaving operator's position.
- Shut off engine and remove key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage locks to prevent lowering of header or reel before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

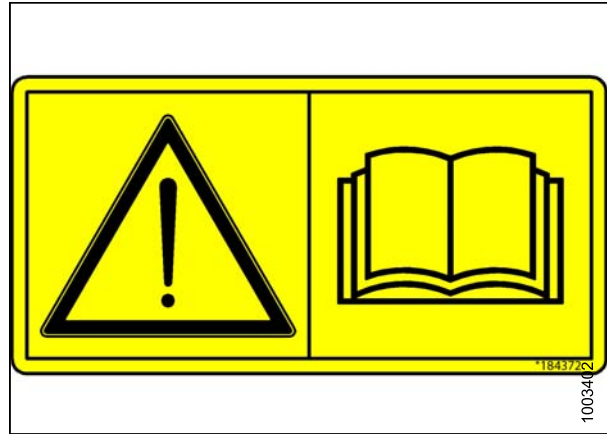


Figure 1.13: MD# 184372

### 11. MD# 184422

- a. Keep shields in place hazard

b. **WARNING**

- To avoid injury, stop engine before opening power drive system shield.
- Keep all shields in place.



Figure 1.14: MD#

## SAFETY

### 12. MD# 193147

- a. Transport/roading hazard
- b. **WARNING**
  - Ensure tow-bar lock mechanism is locked.

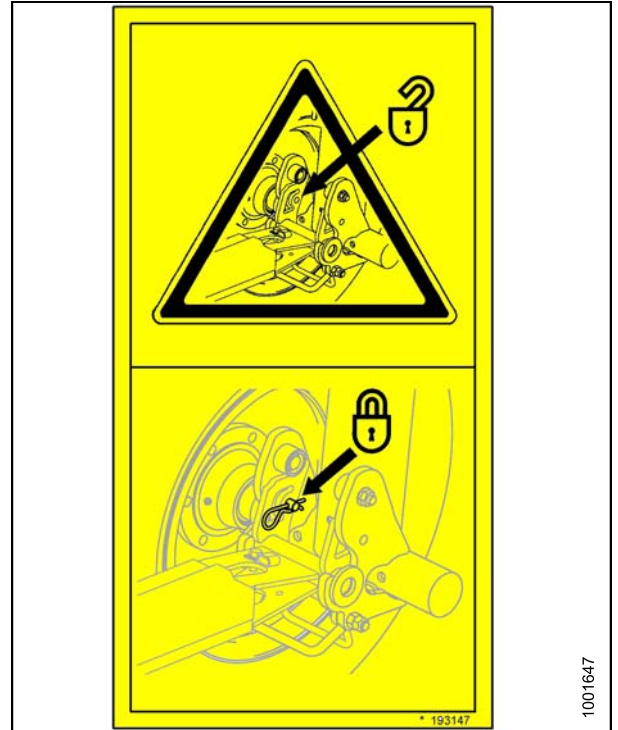


Figure 1.15: MD# 193147

### 13. MD# 220797

- a. Transport/roading hazard
- b. **WARNING**
  - Read the Operator's Manual for more information on potential tipping or roll-over of header while transporting.

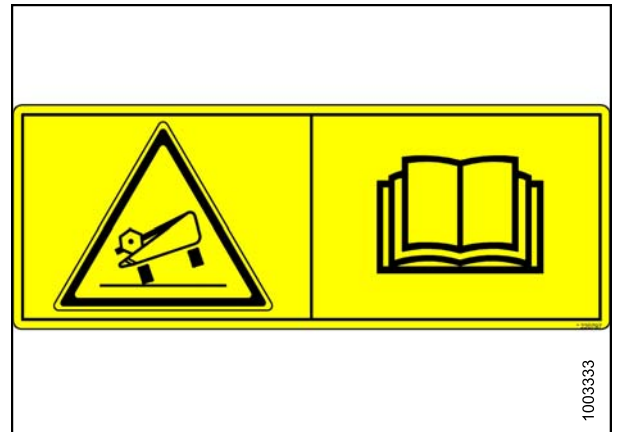


Figure 1.16: MD# 220797

## SAFETY

### 14. MD# 220798

a. Damaged equipment hazard

b. **WARNING**

- Do not tow the header with a dented or otherwise damaged tow pole (the circle with the red X shows a dent in the pole).
- Consult the Operator's Manual for more information.

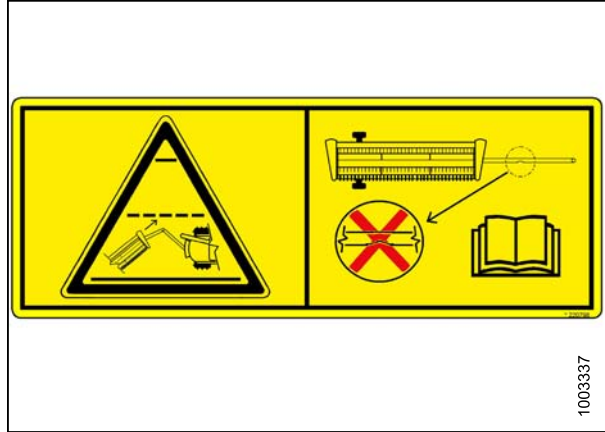


Figure 1.17: MD# 220798

### 15. MD# 220799

a. Transport/roading hazard

b. **WARNING**

- Ensure tow-bar lock mechanism is locked.



Figure 1.18: MD# 220799



## 1.4 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

1. 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.

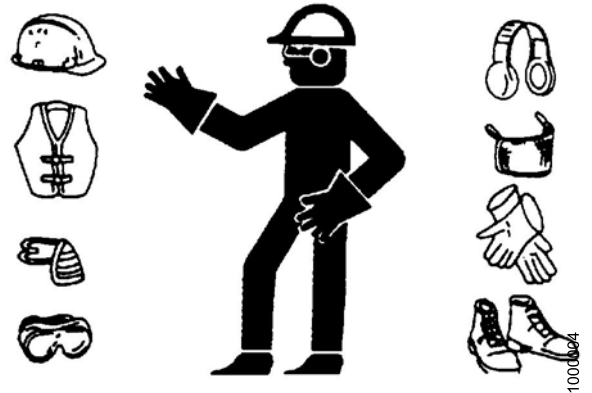


Figure 1.19

2. You may need:

- Hard hat
- Protective footwear, with slip resistant soles
- Protective glasses, or goggles
- Heavy gloves
- Wet weather gear
- Respirator, or filter mask

- Hearing protection

Be aware that exposure to loud noise can cause impairment, or loss of hearing. Wearing suitable hearing protection devices such as ear muffs, or ear plugs. These will help protect against objectionable, or loud noises.



Figure 1.20

3. Provide a First Aid Kit for use in case of emergencies.
4. Keep a Fire Extinguisher on the machine. Be sure the fire extinguisher is properly maintained. Be familiar with its proper use.
5. Keep young children away from the machinery at all times.
6. 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.

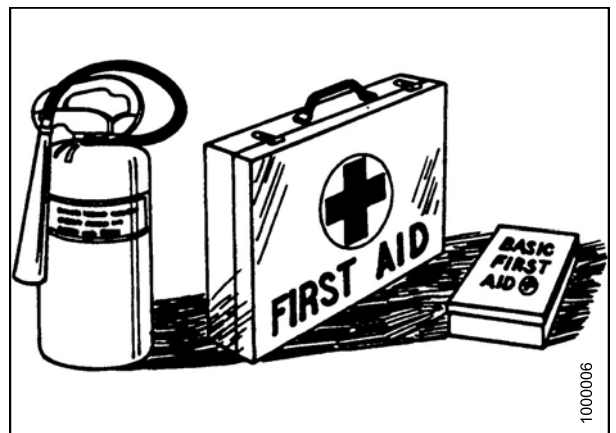


Figure 1.21

## SAFETY

7. **Wear close fitting clothing, and cover long hair. Never wear dangling items such as scarves, or bracelets**
8. **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.**
9. **Use only service, and repair parts, made, or approved by, the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.**



Figure 1.22

10. **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.**
11. **Do not modify the machine. Non authorized modifications may impair machine function, and/or safety. It may also shorten the machine's life.**
12. **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.**

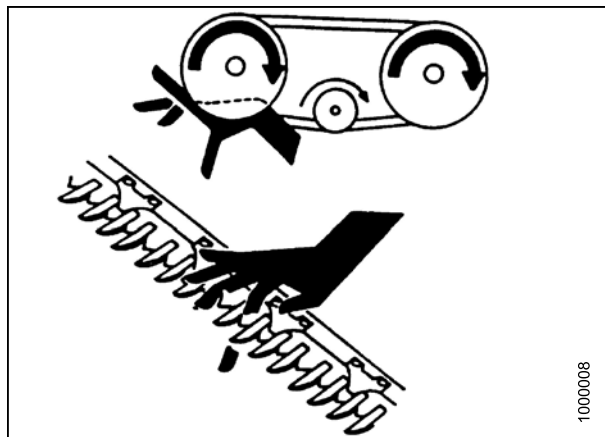


Figure 1.23

13. **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.**
14. **Keep work area well lit.**
15. **Keep machinery clean. Straw, and chaff, on a hot engine, are a fire hazard. Do not allow oil, or grease, to accumulate on service platforms, ladders, or controls. Clean machines before storage.**
16. **Never use gasoline, naphtha, or any volatile material, for cleaning purposes. These materials may be toxic, and/or flammable.**
17. **When storing machinery, cover sharp, or extending components, to prevent injury from accidental contact.**



Figure 1.24

## 2 Description

WHAT IS THIS????

### 2.1 Definitions

<b>Term</b>	<b>Definition</b>
<b>AHHC</b>	Automatic Header Height Control
<b>API</b>	American Petroleum Institute
<b>ASTM</b>	American Society of Testing and Materials
<b>Center-link</b>	A hydraulic cylinder or turnbuckle-type link between the header and the combine.
<b>DDD</b>	Double draper drive
<b>DK</b>	Double knife
<b>DKD</b>	Double-knife drive
<b>DR</b>	Double reel
<b>GSL</b>	Ground speed lever
<b>HDS</b>	Hydraulic deck shift
<b>Header</b>	A machine that cuts and lays crop into a windrow, and is attached to a self-propelled windrower or combine
<b>hp</b>	Horsepower
<b>MDS</b>	Mechanical deck shift
<b>n/a</b>	Not applicable
<b>PTO</b>	Power take off
<b>RTD</b>	Feed auger
<b>rpm</b>	Revolutions per minute
<b>SAE</b>	Society of Automotive Engineers
<b>SDD</b>	Single draper drive
<b>SK</b>	Single knife
<b>SKD</b>	Single-knife drive
<b>spm</b>	Strokes per minute
<b>Tractor</b>	Agricultural tractor
<b>Truck</b>	A four-wheel highway/road vehicle weighing no less than 7,500 lbs (3,400 kg)
<b>UCA</b>	Upper cross auger

## DESCRIPTION

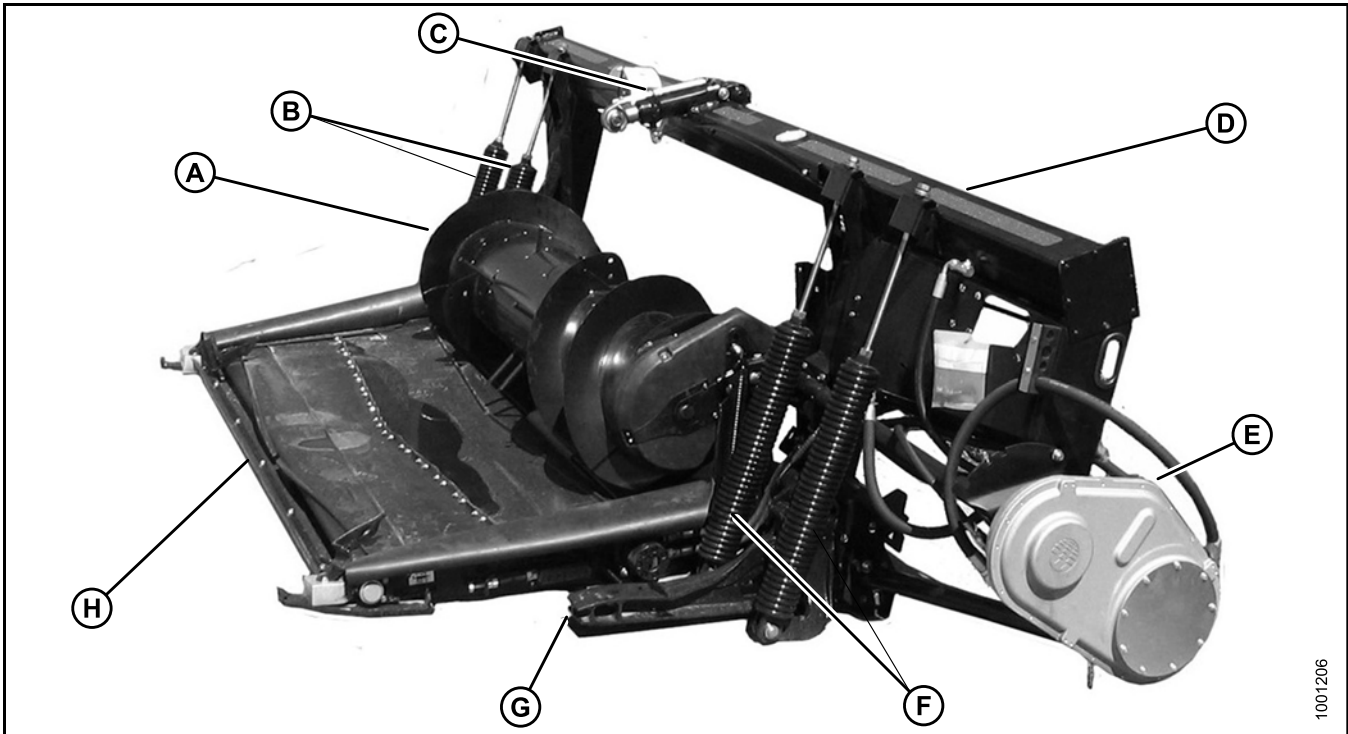
### 2.2 Component Identification

#### 2.2.1 Combine Header

**Figure 2.1**

- |                           |                            |                     |                                 |          |
|---------------------------|----------------------------|---------------------|---------------------------------|----------|
| A - Pick-up Reel          | B - Reel Drive and Cam     | C - Center-Link     | D - Center Reel Arm Prop Handle | E - CA2  |
| F - Hydraulic Connections | G - Reel Fore-Aft Cylinder | H - Transport Light | I - Endshield                   | J - Reel |
| K - Sickle Drive Box      | L - Crop Divider           | M - Reel Endshields | N - Pick-up Reel Fingers        | Mid      |

#### 2.2.2 Combine Adapter



**Figure 2.2**

- |                         |                          |                          |
|-------------------------|--------------------------|--------------------------|
| A - Auger               | B - Header Float Springs | C - Center-Link          |
| D - Hydraulic Reservoir | E - Gearbox              | F - Header Float Springs |
| G - Header Support Arm  | H - Feed Draper          |                          |

**Figure 2.3**

- |                                      |                                     |                                |
|--------------------------------------|-------------------------------------|--------------------------------|
| A - Combine Hydraulics Multi-Coupler | B - Reservoir Oil Level Sight Glass | C - Header Auto Height Control |
| D - Torque Wrench                    | E - Hoses to Header                 | F - Header Float Lock          |
| G - Transition Frame                 | H - Driveline                       | I - Draper/Knife Drive Pump    |

# DESCRIPTION

## 2.3 Specifications

<b>Draper Headers</b>			
<b>MacDon   D65   FD75   CA25   Options</b>			
<b><u>Engineering Specifications</u></b>			
Section Use: Engineering Product Sheet Only Information provided by Product Design Manager			
S : standard / O <sub>F</sub> : optional (factory installed) / O <sub>D</sub> : optional (dealer installed) / - : not available			
SPECIFICATIONS		D65	FD75
?	2/21/2013		
<b>CUTTERBAR</b>			
Effective cutting width (distance between crop divider points):			
15' header:	15.00' (180 inches) (4572 mm)	S	-
20' header:	20.00' (240 inches) (6096 mm)	S	-
25' header:	25.00' (300 inches) (7620 mm)	S	-
30' header:	30.00' (360 inches) (9144 mm)	S	S
35' header:	35.00' (420 inches) (10668 mm)	S	S
40' header:	40.00' (480 inches) (12192 mm)	S	S
45' header:	45.00' (540 inches) (13716 mm)	S	-
Single sickle drive: hydraulic motor to "C" belt to enclosed heavy duty (MD) wobble box		O <sub>F</sub>	O <sub>F</sub>
Double sickle drive 35' and smaller sizes: hydraulic motor to 2 "B" belts to enclosed heavy duty (MD) wobble boxes.		O <sub>F</sub>	O <sub>F</sub>
Double sickle drive 40' and 45': 2 hydraulic motors to "C" belts, untimed to enclosed heavy duty (MD) wobble boxes.		O <sub>F</sub>	O <sub>F</sub>
Sickle Stroke	3 inch (76 mm)	S	S
Knife Speed (strokes per minute):			
Single Knife header on SP Windrower:		<b>MIN.- MAX.strokes/min.</b>	
20' & 25':	1200-1400 strokes/min.	S	-
30':	1200-1400 strokes/min.	S	-
35':	1100-1300 strokes/min.	S	-
40':	1050-1200 strokes/min.	S	"".
Double Knife header on SP Windrower:			
15':	1500-1900 strokes/min.	S	-
20' & 25':	1400-1700 strokes/min.	S	-
30':	1200-1600 strokes/min.	S	-
35':	1200-1400 strokes/min.	S	-
40'	1100-1400 strokes/min.	S	-
Single Knife header on Combine:			
25'	1200-1450 strokes/min.	S	-
30'	1200-1400 strokes/min.	S	S
35'	1100-1300 strokes/min.	S	S
40':	1050-1200 strokes/min.	S	S
Double Knife header on Combine:			
20' & 25':	1400-1700 strokes/min.	S	-
30' & 35':	1200-1500 strokes/min.	S	-
40' & 45'	1100-1400 strokes/min.	S	S
Guards and Hold-Downs:			
Guard: Pointed / Forged / Double Heat Treated (DHT)	Hold-Down: sheet metal / adjustment bolt	O <sub>F</sub>	S
Guard: Pointed / Forged / Case Hardened (CH)	Hold-Down: sheet metal / adjustment bolt	O <sub>F</sub>	-
Guard: Stub / Forged bottom / Forged top / adjustment plate		O <sub>F</sub>	-
Guard: Stub / Forged bottom / Sheet Metal top / adjustment bolt		O <sub>F</sub>	-
Guard: 4 Point / no-choke design (2 long points with tangs / 2 short points without tangs)		O <sub>F</sub>	-
Sickle Sections:			
Over-serrated / solid / bolted / 9 serrations per inch		O <sub>F</sub>	S
Over-serrated / solid / bolted / 14 serrations per inch		O <sub>F</sub>	-
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**Figure 2.4**

## DESCRIPTION

Knife Overlap at Center (Double Knife Headers):	3 mm	S	S
Cutterbar Lift Range (measured at guard tip):			
SP Windrower Header (Center Link Fully Retracted)	49.8 inches (1265 mm)	S	-
Combine Header	Varies With Combine Model	S	S
Guard Angle (cutterbar on ground):			
Windrower (M Series Tractor) / Centerlink Retracted:15'-25'	7.5 Degrees	S	-
Windrower (M Series Tractor) / Centerlink Retracted: 30'-40'	2.5 Degrees	S	-
Windrower (M Series Tractor) / Centerlink Extended:15'-25'	17.0 Degrees	S	-
Windrower (M Series Tractor) / Centerlink Extended:30'-40'	12.0 Degrees	S	-
Combine (CA25) / Centerlink Retracted: 20'-25'	7.0 Degrees	S	-
Combine (CA25) / Centerlink Retracted: 30'-45'	2.0 Degrees	S	S
Combine (CA25) / Centerlink Extended: 20'-25'	12.4 Degrees	S	-
Combine (CA25) / Centerlink Extended: 30'-45'	7.4 Degrees	S	S
<b>CONVEYOR (Draper) &amp; DECKS</b>			
Draper Width:	41.6 inches (1057 mm)	S	S
Draper Drive:	Hydraulic	S	S
Draper Speed: CA25 (Combine Adapter)	0 - 464 fpm (141 m/min.)	S	S
SP (M Series Tractor)	0- 742 fpm (225 m/min.)	S	S
Delivery Opening Width (Center Delivery) / variable by shifting decks:			
15' (on SP Windrower)	60.61" - 69.7" (1540 mm - 1770 mm)	S	-
20', 25', 30', 35', 40' (on SP Windrower)	67.1" - 76.7" (1720 mm - 1950 mm)	S	S
20', 25', 30', 35', 40', 45' (Combine configuration)	73.6" (1870 mm)	S	S
Delivery Opening Height (under frame tube at 8" cutting height ) - <i>SP Windrower ONLY</i> :		S	-
Center Link Fully Retracted	37.6" (955 mm)		
Center Link Fully Extended	43.5" (1105 mm)		
<b>REEL</b>			
Pick-Up Reel <b>PR15</b>		S	S
Quantity of Tine Tubes	5, 6, or 9		
Center tube diameter: all reel sizes except 35' single span	8 inches (203 mm)		
35' single span (ONLY)	10 inches (254 mm)		
FingerTip Radius (adjustment range / factory assembled):	30.2" - 31.5" (766 mm - 800 mm) / 31.5" (800 mm)		
Effective Reel Diameter (via "shaped" cam action):	65 inches (1650 mm)		
Finger Length:	11 inches (290 mm)		
Finger Spacing (staggered on alternate bats):	6.0 inches (150 mm)		
Reel Drive:	Hydraulic	S	S
Reel Speed		S	S
SP Windrower (auto-adjust from cab using ground speed index)	0 - 85 RPM	S	-
Combine (adjustable from cab)	0 - 67 RPM (Varies with combine model)	S	S
export configured			

3/18/2013

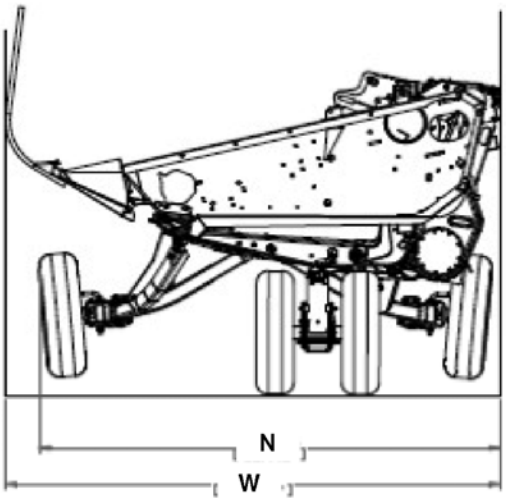
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1003447

**Figure 2.5**

## DESCRIPTION

FRAME & STRUCTURE			
Header Width (Field Position)	cut width + 15.1 inches (384 mm)	S	S
Header Width (Transport Position) - reel fore-aft fully retracted:			
Header Only (SP Configuration without external attachments):	W (Long Dividers Installed) 104 Inches (2636 mm)	-	-
	N (Long Dividers Removed) 97 inches (2452 mm)	-	-
With CA25 Combine Adapter installed (shortest centerlink):	W (Long Dividers Installed) 106 Inches (2684 mm)	-	-
	N (Long Dividers Removed) 98 inches (2500 mm)	-	-
With HC10 Hay Conditioner installed:	W (Long Dividers Installed) 112 Inches (2834 mm)	-	-
	N (Long Dividers Removed) 104 inches (2650 mm)	-	-
			
<b>ATTACHMENTS</b>			
<u>CA25 Combine Adapter</u>		O <sub>D</sub>	S
Feed Draper Width:	78.7 Inches (2000 mm)		
Feed Draper Speed:	350-400 fpm (107-122 m/min)		
Feed Auger Width:	65.3 Inches (1660 mm)		
Feed Auger Outside (Flighting) Diameter (O.D.):	22 Inches (559 mm)		
Feed Auger Tube Diameter (O.D.):	14 Inches (356 mm)		
Feed Auger Speed:	150 RPM (Varies with combine model)		
Oil Reservoir Capacity	16 US Gallons (60 Litres)		
Oil Type	15W40		
<u>HC10 Hay Conditioner</u>		O <sub>D</sub>	-
Roll Length:	72 Inches (1830 mm)		
Outside Roll Diameter (O.D.):	9.13 inches (232 mm)		
Roll Tube Diameter(O.D.):	6.61 inches (168 mm)		
Roll Speed:	847 - 915 Rpm		
<u>Upper Cross Auger</u>		O <sub>D</sub>	O <sub>D</sub>
Outside (Flighting) Diameter (O.D.):	12 inches (305 mm)		
Tube Diameter (O.D.): All sizes except 25'	6 Inches (152 mm)		
Tube Diameter 25' (O.D.):	7 Inches (178 mm)		
<u>Stabilizer Wheel / Slow Speed Transport</u>		O <sub>D</sub>	O <sub>D</sub>
Wheels:	15 inch		
Tires:	P205 75R-15		
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**Figure 2.6**

**NOTES:** 1. Specifications and design are subject to change without notice or obligation to revise previously sold units. 2. Weights do not include options.





## 3 Operation

### 3.1 Owner/Operator Responsibilities



## CAUTION

- It is your responsibility to read and understand this manual completely before operating the header. Contact your MacDon Dealer if an instruction is not clear to you.
- Follow all safety messages in the manual and on safety decals 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 header, 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.

### 3.2 Operational Safety

#### CAUTION

Follow these safety precautions:

- Follow all safety and operational instructions given in your operator's manuals. If you do not have a combine manual, get one from your Dealer and read it thoroughly.
- Never attempt to start the engine or operate the machine except from the combine seat.
- Check the operation of all controls in a safe clear area before starting work.
- Do NOT allow riders on the combine.

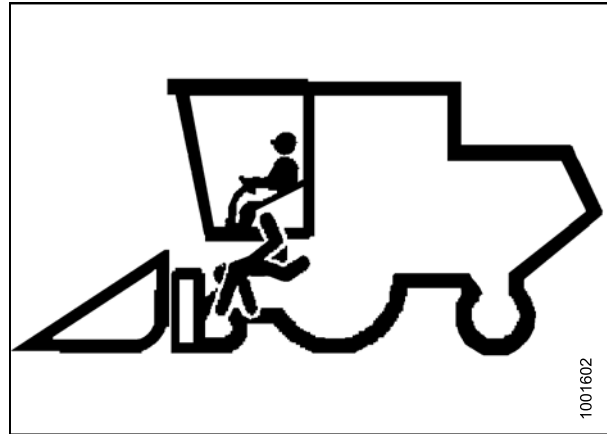


Figure 3.1

#### CAUTION

- 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.
- When working on inclines, travel uphill or downhill when possible. Be sure to keep transmission in gear when travelling downhill.
- Never attempt to get on or off a moving machine.
- Do NOT leave Operator's station while the engine is running.
- Stop 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. Refer to Section [3.6 Shutdown Procedure, page 83](#).
- Operate only in daylight or good artificial light.

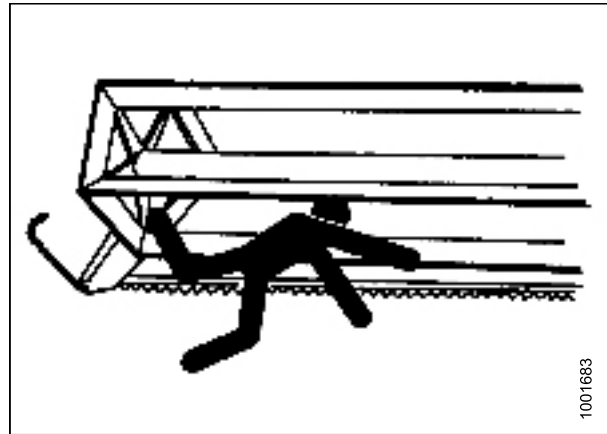


Figure 3.2

#### 3.2.1 Header Lift Cylinder Locks

#### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

## OPERATION

### 3.2.2 Reel Props



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

Reel props are located at the reel support arms.

## IMPORTANT

To prevent damage to reel support arms, do not transport header with reel props engaged.

### *Engaging Reel Props*

To engage reel props, follow these steps:



## DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.



## WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Move reel safety props (A) to the engaged position (as shown). **The prop MUST be placed on the top surface of raised lug (B), making contact with the cylinder mount, to ensure positive engagement.**

#### NOTE:

Keep pivot bolt (C) sufficiently tight so that the prop remains in the stored position when not in use, but can still be engaged using hand force.

4. Repeat the previous step on the opposite side of the header.

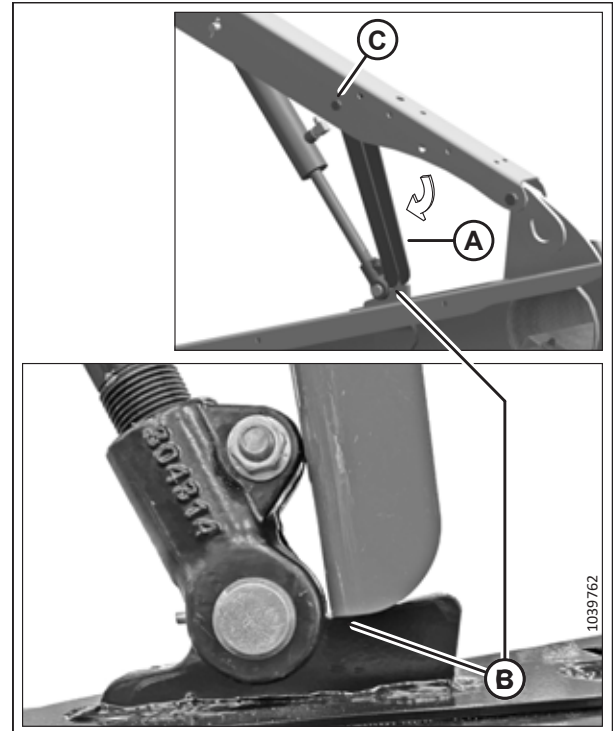
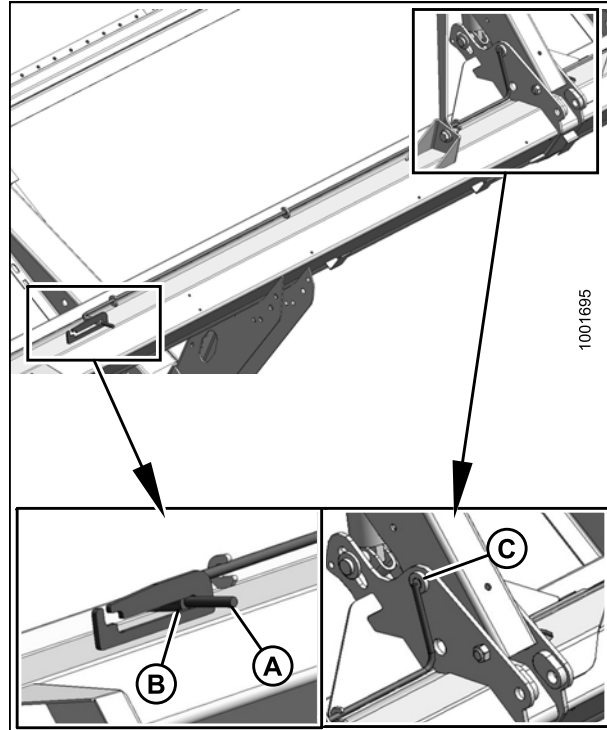


Figure 3.3: Engaged Reel Safety Prop – Left Shown

**THE CONTENT ON THIS PAGE HAS CHANGED SINCE THIS MANUAL (169593 REVISION B) WAS PUBLISHED.**

## OPERATION

3. At the center reel arm on double-reel headers, use handle (A) to move lock rod to inboard position (B), engaging pin (C) under prop.
4. Lower reel until props contact cylinder mounts on outer reel arms, and pin at center arm.



**Figure 3.4**

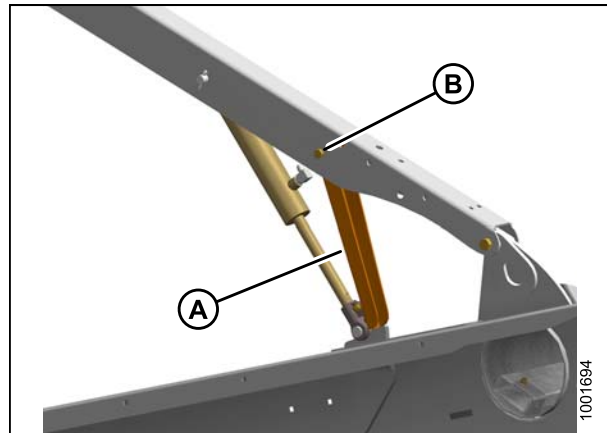
A - Handle  
C - Pin

B - Inboard position

### *Disengaging Reel Props*

To disengage reel props, follow these steps:

1. Raise reel to maximum height.
2. At outer reel arms, push props (A) back inside reel arms.



**Figure 3.5**

## OPERATION

3. For double-reel headers, at center arm, use handle (A) to move lock rod to outboard position (B).

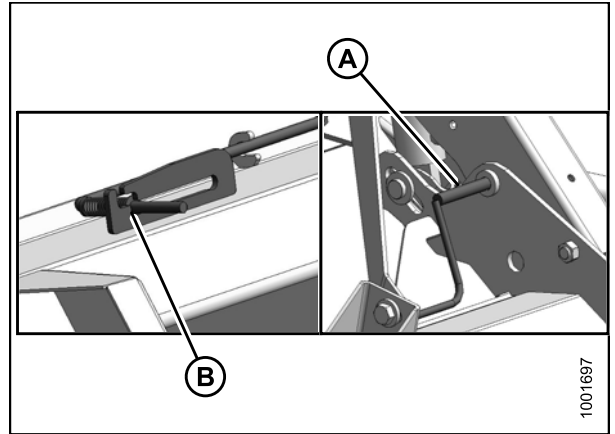


Figure 3.6

### 3.2.3 Endshields

A hinged, polyethylene endshield is fitted on each end of the header.

#### *Opening Endshields*

To open an endshield, follow these steps.

1. Remove lynch pin (A), and tool (B) from pin (C) at top rear of endshield.

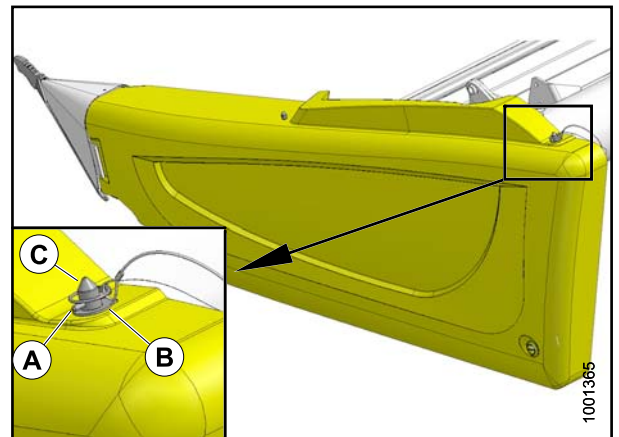


Figure 3.7

## OPERATION

2. Use tool (B) to unlock latch (A) at lower rear corner of endshield.
3. Lift shield at aft end to clear pin at top rear of endshield.
4. Swing shield out and away from header while maintaining forward pressure to prevent shield from slipping out of tab (E) at front of endsheet.

### IMPORTANT

**Do NOT force shield once it has reached its end of travel, as damage to the shield structure can occur. Shield is designed to open sufficiently for normal access to the drive system and manual case as shown.**

**NOTE:** If more access is required to the front of the drives area, carefully disengage front of shield from tab at the front of the endsheet, and then swing front of the shield away from the header.

**NOTE:** If complete access to the endsheet area is required, the shield can be removed. See [Endshield Removal, page 25](#).

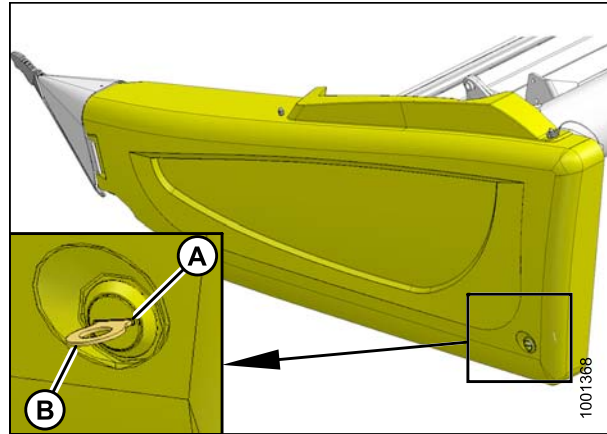


Figure 3.8

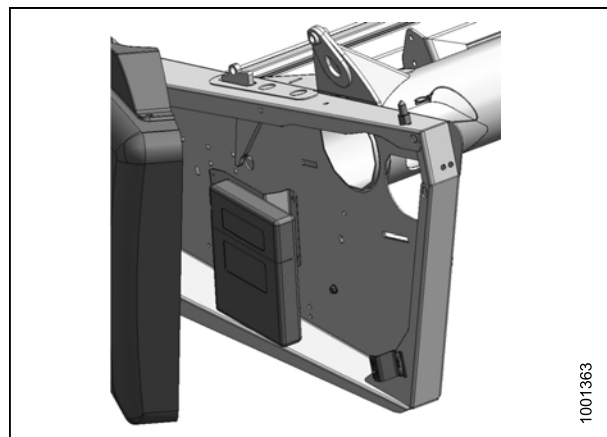


Figure 3.9

### Closing Endshields

To close an endshield, follow these steps.

1. Maintain forward pressure, and swing rear of shield towards header.
2. Lift shield, and engage pin (C) on top of frame endsheet.

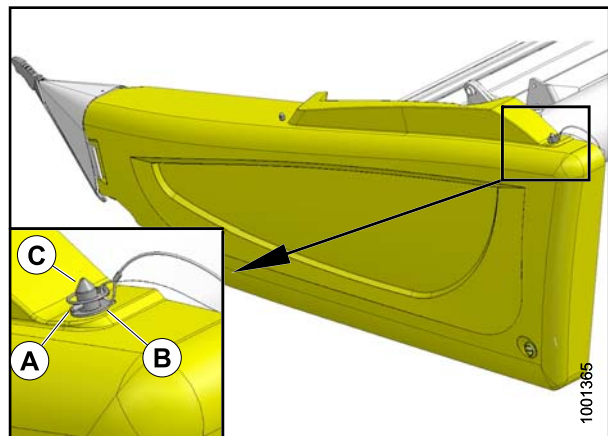


Figure 3.10

## OPERATION

3. Push in shield to engage lower latch (A).
4. Use tool (B) to lock lower latch (A).

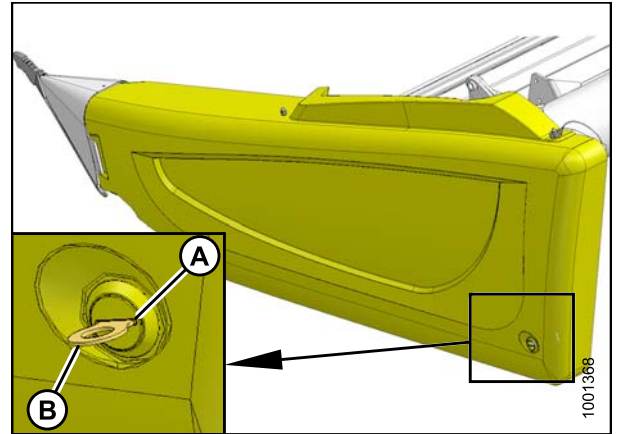


Figure 3.11

5. Replace tool (B) and lynch pin (A) on top pin (C).

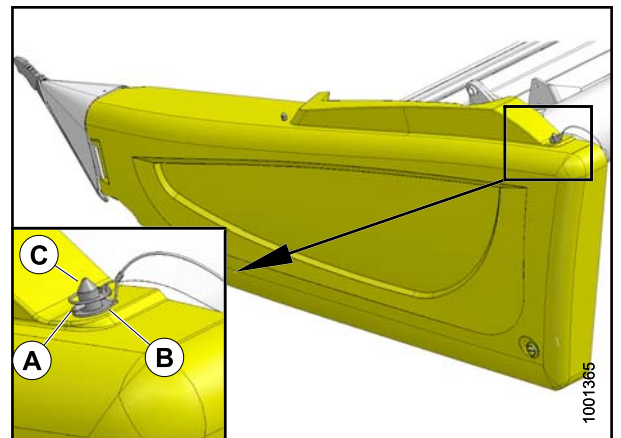


Figure 3.12

### *Removing Endshields*

To remove an endshield, follow these steps:

1. Open endshield. See Section [Opening Endshields](#), page 23.
2. Remove acorn nut (A) that secures the endshield to support (B).
3. Lift endshield off support (B).

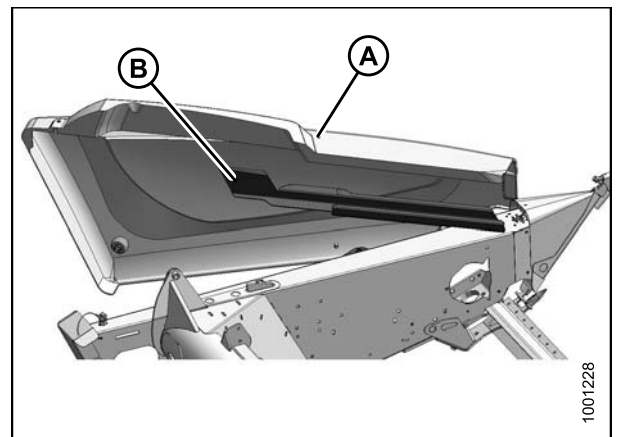


Figure 3.13

## OPERATION

### Installing Endshields

To install an endshield, follow these steps.

1. Position endshield on support (A), and align the hole in the endshield with stud (B) on the support.

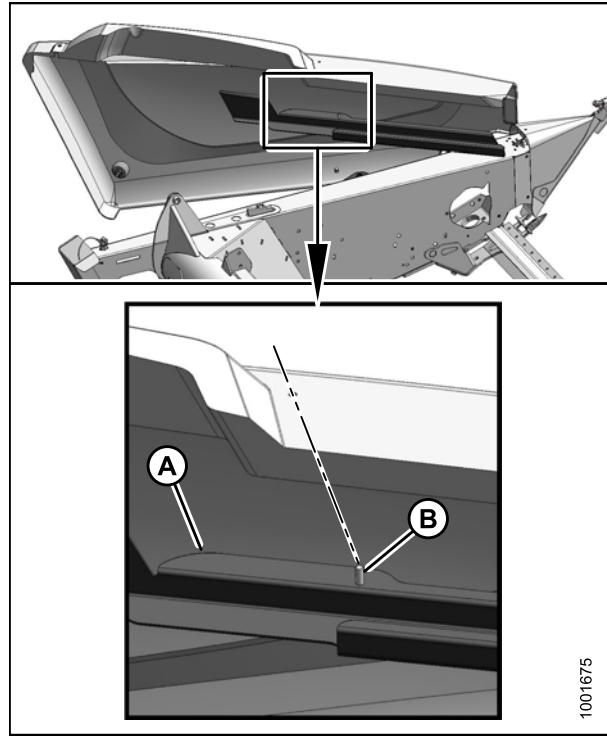


Figure 3.14

2. Secure endshield to the support with acorn nut (A).
3. Close endshield. See [Closing Endshields, page 24](#).

**NOTE:** Plastic endshields are subject to expansion or contraction depending on large temperature variations. Top pin and lower latch bracket positions can be adjusted to compensate for dimensional changes. See [Adjusting Endshields, page 27](#).

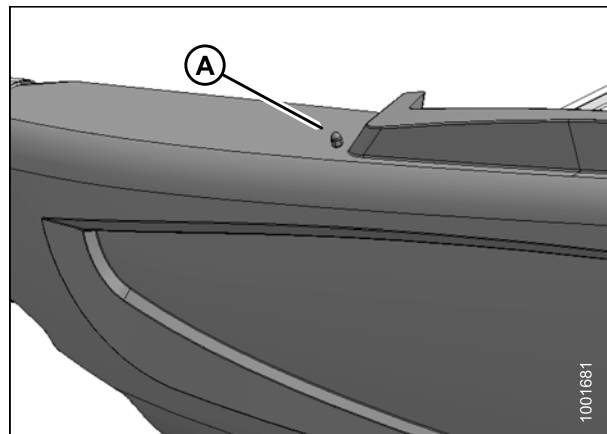


Figure 3.15



## OPERATION

### Adjusting Endshields

To adjust an endshield, follow these steps.

1. Check gap 'X' between the front end of shield and header frame, and compare to chart.

Temperature °F (°C)	Gap 'X' In (mm)
25 (-4)	1-1/8 (28)
45 (7)	1 (2.4)
65 (18)	13/16 (20)
85 (29)	5/8 (16)
105 (41)	1/2 (12)
125 (52)	5/16 (8)
145 (63)	3/16 (4)
165 (89)	0

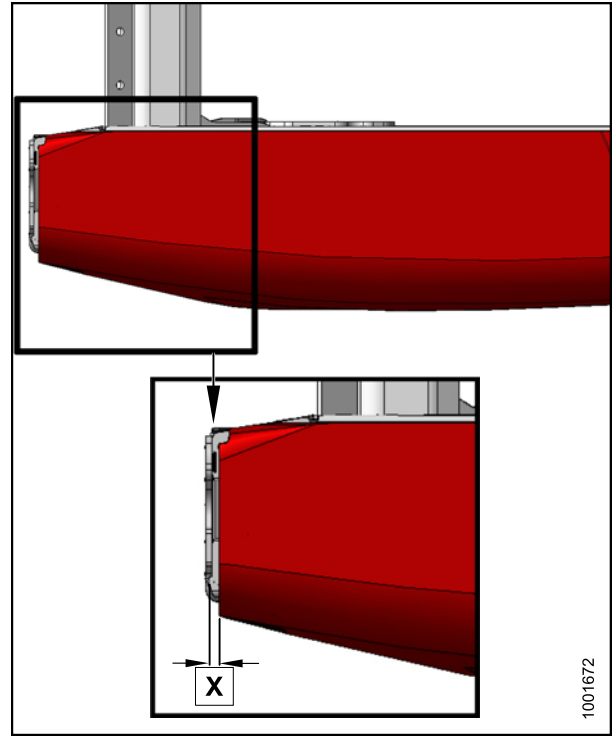


Figure 3.16

If adjustments are required, proceed as follows:

2. Open endshield. See [Opening Endshields, page 23](#).
3. From inside endsheet, loosen nut (A) on pin (B) with a 3/4 in. socket.
4. Close endshield, and adjust position to achieve the gap 'X' between the front end of shield and header frame.
5. Open endshield, and tighten nut (A).
6. To achieve a snug fit between top of shield and header frame, and to ensure that endshield is fully engaged on pin (B), loosen bolts on catch (C), and adjust catch as required to reposition shield.
7. Tighten bolts on catch (C).
8. Close endshield. See [Closing Endshields, page 24](#)

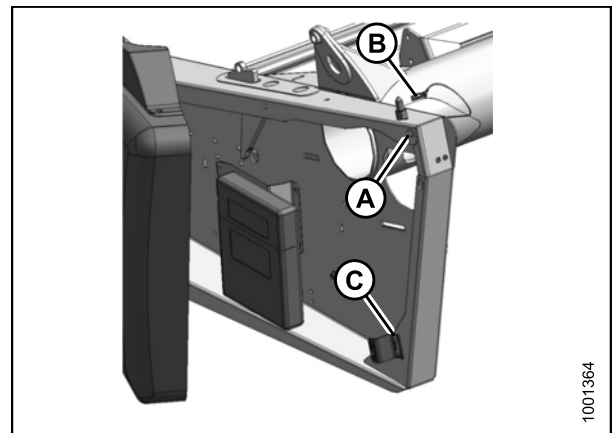


Figure 3.17

## OPERATION

### 3.2.4 Daily Start-Up Check

#### CAUTION

- Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine 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, a respirator or filter mask, or 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.

Complete the following tasks each day before start-up:

1. 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 4.5 Hydraulics, page 157](#).

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to [Section 4.4.1 Maintenance Schedule/Record, page 150](#).

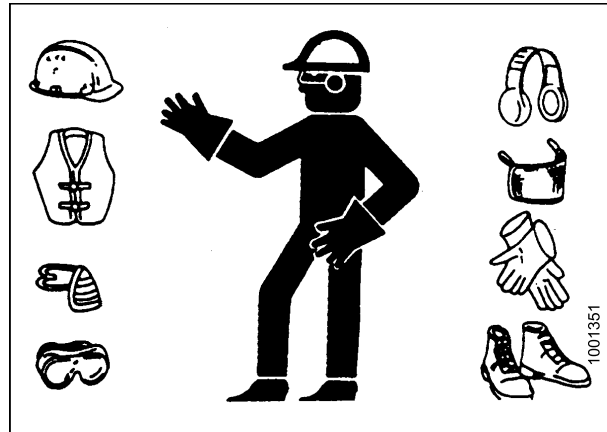


Figure 3.18: Use protective clothing and personal safety devices

## OPERATION

### 3.3 Header Attachment/Detachment

This section includes instructions on setting up, attaching, and detaching the header to the combines listed below.

Combine	Section
Case IH 7010, 8010, 7120, 8120, 5088, 6088, 7088	<a href="#">3.3.2 Case IH 7010, 8010, 7120, 8120, 5088, 6088, and 7088 Combines, page 32</a>
John Deere 60, 70 and S Series	<a href="#">3.3.3 John Deere 60, 70, and S Series Combines, page 39</a>
CAT Lexion 500, 700 (R Series)	<a href="#">3.3.4 CAT Lexion 500, 700 Series Combines, page 46</a>
New Holland CR, CX	<a href="#">3.3.5 New Holland CR, CX, page 54</a>
AGCO Gleaner R and S Series, Challenger 660, 670, 680B, Massey 9690, 9790, 9895	<a href="#">3.3.6 AGCO Combines, page 61</a>

## IMPORTANT

**Ensure applicable functions (AHHC, Draper Header Option, Hydraulic Center-Link Option, Hydraulic Reel Drive etc.) are enabled on the combine and in the combine computer. Failure to do so may result in improper header operation.**

#### 3.3.1 Adapter Setup

The following sections outline recommended adapter setup guidelines, depending on your combine and crop. The recommendations cannot cover all conditions.

If feeding problems develop with adapter operation, refer to [Section 5 Troubleshooting, page 265](#).

#### *Flighting Extensions*

Flighting extension kits may have been supplied with your header to improve feeding in certain crops such as rice. They are not recommended in cereal crops. Installation instructions are included with the kits.

If necessary, you can remove auger flighting extensions.

**NOTE:** Applicable to all combines except New Holland CR models 960, 9060, 970, 9070, and 9080.

## OPERATION

### Removing Flighting Extensions

To remove flighting extensions from the adapter auger, follow these steps:

1. Remove access cover (A).
2. Remove eight bolts (B), washers, and nuts that secure flighting extension (C) to auger, and remove extension.
3. Repeat for other flighting extension.
4. Re-install access cover (A).

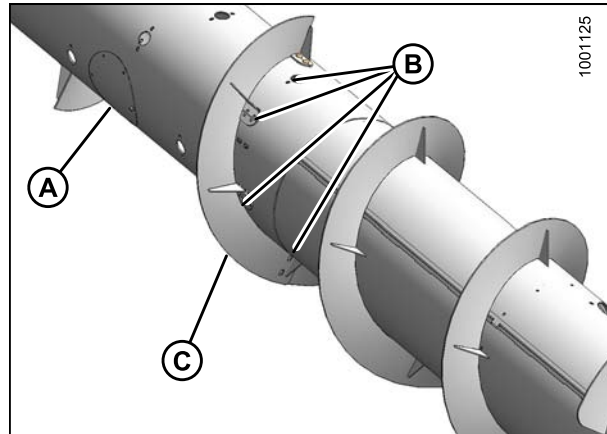


Figure 3.19: Auger Flighting Extensions

### Stripper Bars

Stripper bar kits may have been supplied with your header to improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops. Installation instructions are included with the kits.

**NOTE:** Applicable to all combines, except New Holland models CR960, 9060, 970, 9070, and 9080.

### Removing Stripper Bars

To remove stripper bars from the adapter, follow these steps:

1. Remove four bolts (A) and nuts securing stripper bars (B) to adapter frame, and remove the bars.
2. Repeat for opposite set of stripper bars.

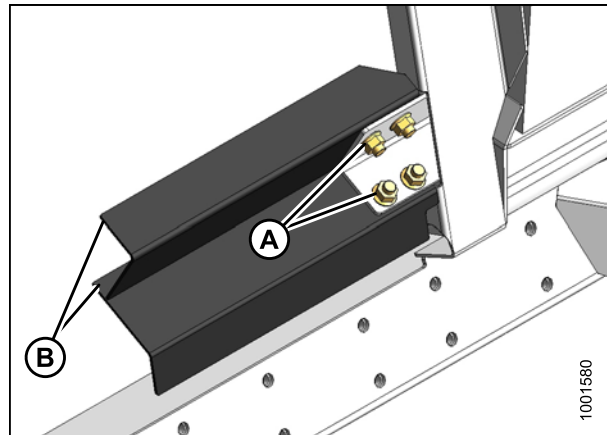


Figure 3.20: Stripper Bar

## OPERATION

### Auger Drive

The adapter auger is chain-driven from a sprocket that is mounted on the input shaft from the combine, and which is enclosed in the drive gearbox.

The auger speed is determined by the combine input shaft, and is matched to each particular combine, so no adjustment is necessary. However, optional drive sprockets are available to change the auger speed to optimize auger performance. See your MacDon Dealer.

**NOTE:** For special conditions, 20T, 22T, and 26T sprockets are available to change adapter feed auger speed. Consult with your MacDon Dealer.

### CR Feeder Deflectors

**For New Holland CR 960, 9070, and 9080 combines**, feeder kits have been installed on the adapter at the factory to improve feeding into the feeder house. They may also have been installed as an option on older machines. If necessary, they can be removed.

CA25 adapters for the CR Models listed below have short feeder kits installed at the factory. Long feeder kits are provided for narrow feeder house combines, and are Dealer-installed to replace the short feeder kits.

COMBINE MODEL	FEEDER HOUSE SIZE	FEEDER KIT SIZE
CR970, 9070, 9080	Wide	Short: 7-7/8 in. (200 mm)
CR960, 9060, 940, 9040	Narrow	Long: 12-13/16 in. (325 mm)

### Replacing Feed Deflectors

To replace feeder deflectors, follow these steps:

1. Determine position of existing deflector (A) by measuring gap 'X' between deflector forward edge and pan.

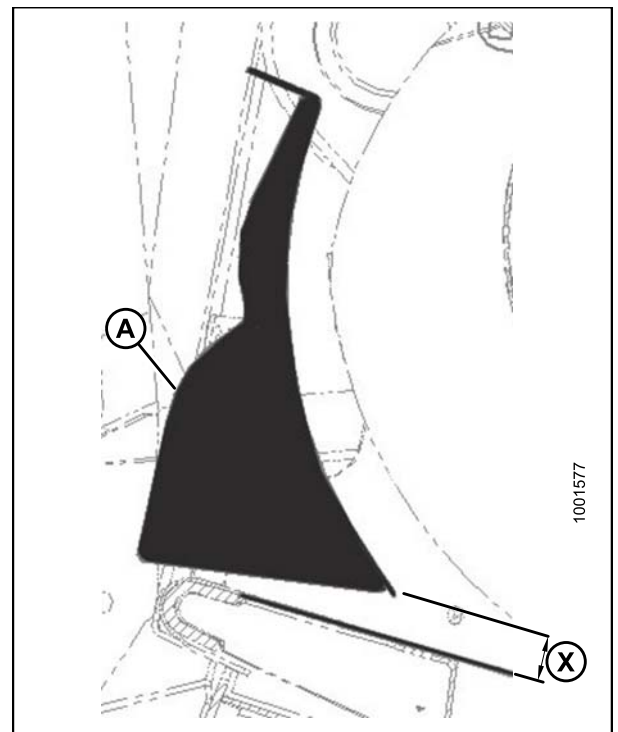


Figure 3.21

## OPERATION

2. Remove two bolts (B), and nuts securing deflector (A) to adapter frame, and remove deflector.
3. Position replacement deflector, and secure with bolts (B) and nuts. Maintain dimension 'X' from existing deflector for replacement deflector.
4. Repeat for opposite deflector.
5. After attaching header to combine, extend center-link fully, and check gap 'X' between deflector and pan. Maintain 7/8 +/- 1/8 in. (22 mm +/- 3 mm).

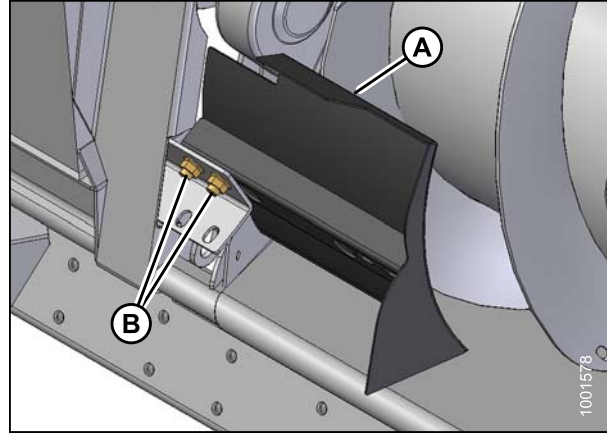


Figure 3.22

### 3.3.2 Case IH 7010, 8010, 7120, 8120, 5088, 6088, and 7088 Combines

These procedures cover Case IH combine models 7010, 8010, 7120, 8120, 5088, 6088 and 7088.

#### *Attaching Combine to Adapter*

To attach the adapter to a Case IH combine, follow these steps.

1. Slowly drive combine up to adapter until feeder house saddle (A) is directly under the adapter top cross member (B).
2. Raise feeder house slightly to lift adapter, ensuring feeder saddle is properly engaged in adapter frame.



## CAUTION

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.

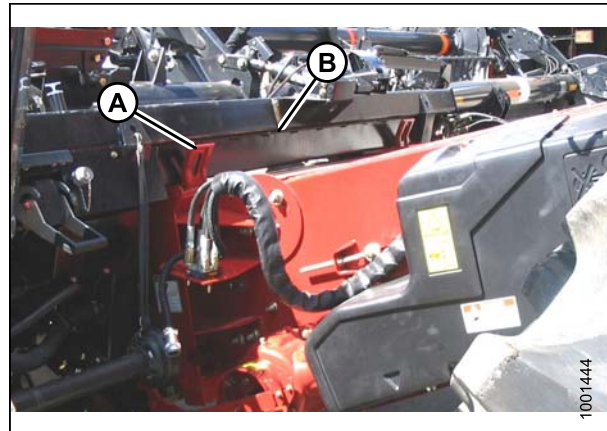
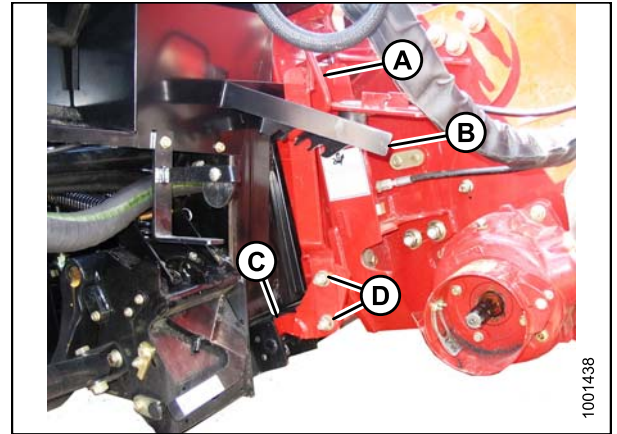


Figure 3.23

## OPERATION

3. Lift lever (A) on adapter at left side of feeder house, and push handle (B) on combine to engage locks (C) on both sides of the feeder house.
4. Push down on lever (A) so that slot in lever engages handle to lock handle in place.
5. If lock (C) does **NOT** fully engage pin on adapter when (A) and (B) are engaged, loosen bolts (D), and adjust lock as required. Retighten bolts.



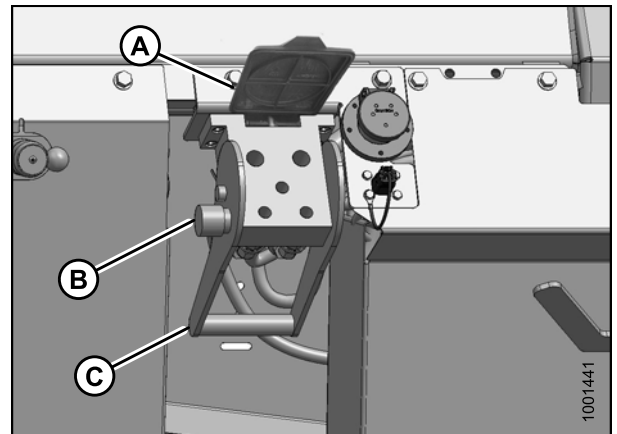
**Figure 3.24**

A - Lever  
C - Locks

B - Handle  
D - Bolts

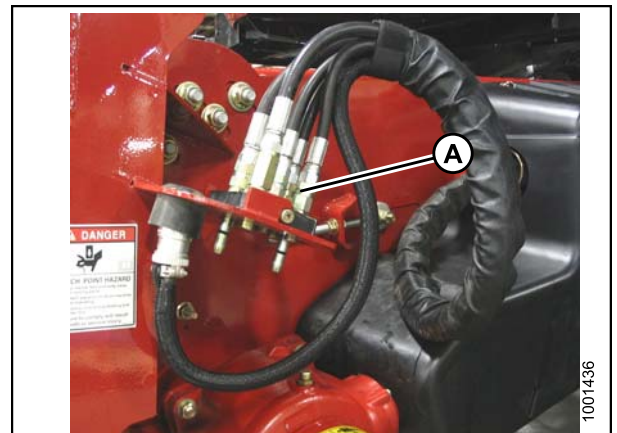
Connect the combine hydraulic quick coupler to the adapter receptacle as follows:

6. Open cover (A).
7. Push in lock button (B), and pull handle (C) to full open position.



**Figure 3.25**

8. Remove coupler (A) from combine, and clean mating surfaces.

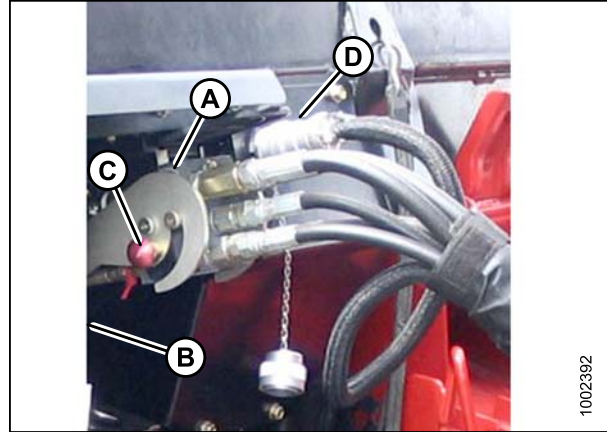


**Figure 3.26**



## OPERATION

9. Position onto adapter receptacle (A), and push handle (B) to engage coupler pins into receptacle. (Handle (B) is just out of view in the image)
10. Push handle (B) to closed position until lock button (C) snaps out.

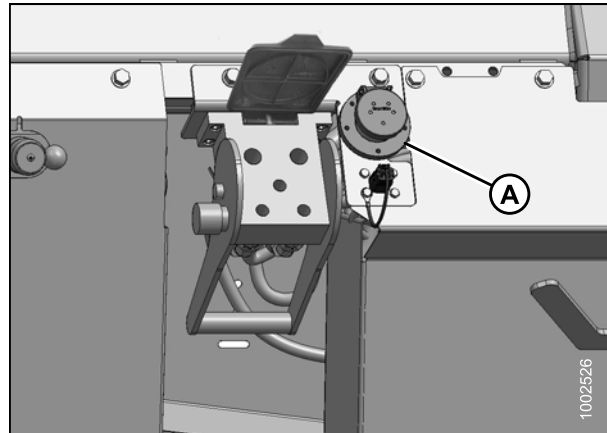


**Figure 3.27**

A - Adapter receptacle  
C - Lock Button

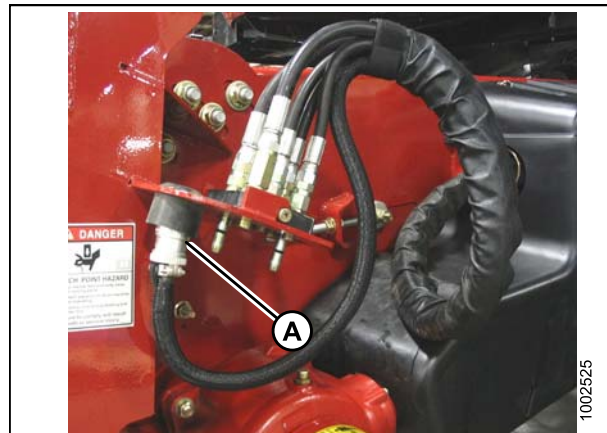
B - Handle  
D - Electrical Connector

11. Remove cover on adapter electrical receptacle (A).



**Figure 3.28**

12. Remove electrical connector (A) from storage cup on combine, and route to adapter receptacle.
13. Align lugs on connector with slots in receptacle, push connector onto receptacle, and turn collar on connector to lock it in place.



**Figure 3.29**



## OPERATION

14. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.

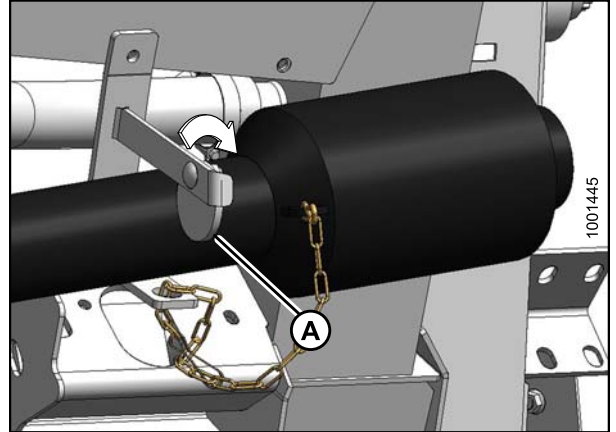


Figure 3.30

15. Pull back collar (A) on end of driveline, and push onto combine output shaft (B) until collar locks.

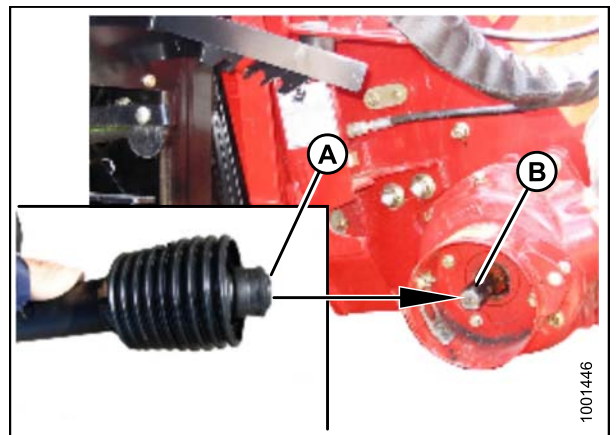


Figure 3.31

16. Disengage both adapter float locks by moving latch (A) away from adapter, and moving lever (B) at each lock to lowest position.

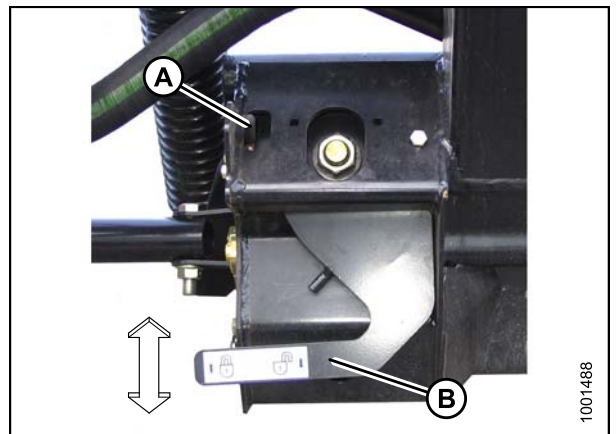


Figure 3.32: Lever Up = LOCK, Down = UNLOCK

### *Detachment*

To detach a Case IH combine from the adapter, follow these steps.

## OPERATION

1. Choose a level area. Position header slightly above ground. Stop engine, and remove key.

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

### CAUTION

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.

2. Engage both adapter float locks by lifting lever (A) at each lock until it latches into lock position.

### IMPORTANT

If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position. Refer to Section 3.9.1 Cutting Height, page 89.

### IMPORTANT

If stabilizer wheels are installed, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section 3.9.1 Cutting Height, page 89.

3. Disconnect driveshaft (A) from combine.

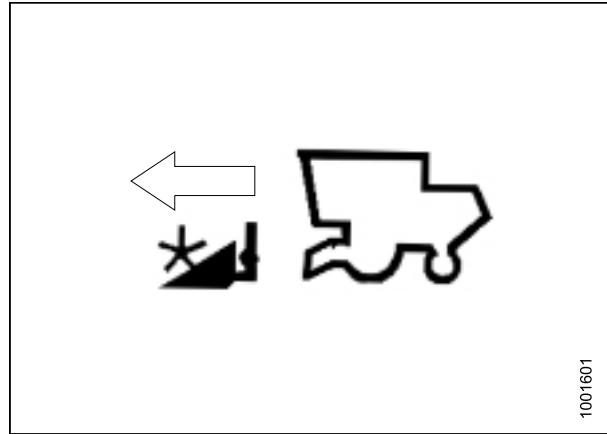


Figure 3.33

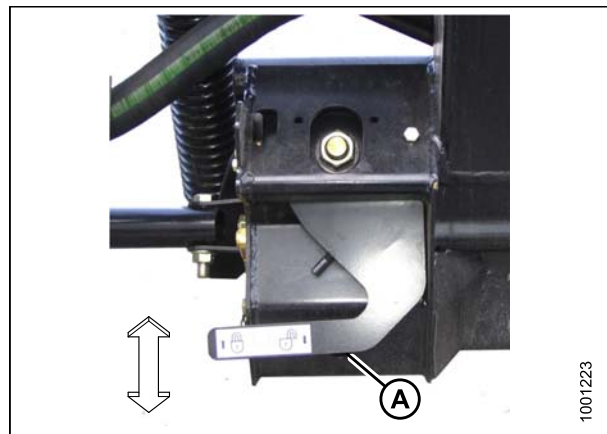


Figure 3.34: Lever Up = LOCK, Down = UNLOCK

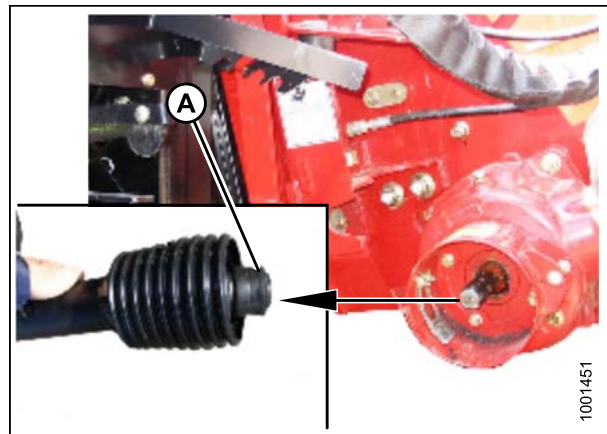
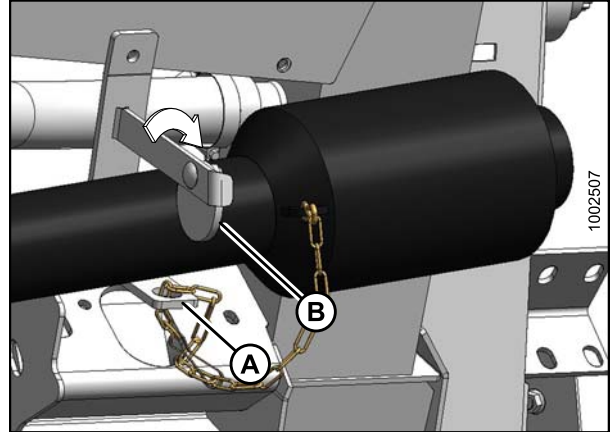


Figure 3.35

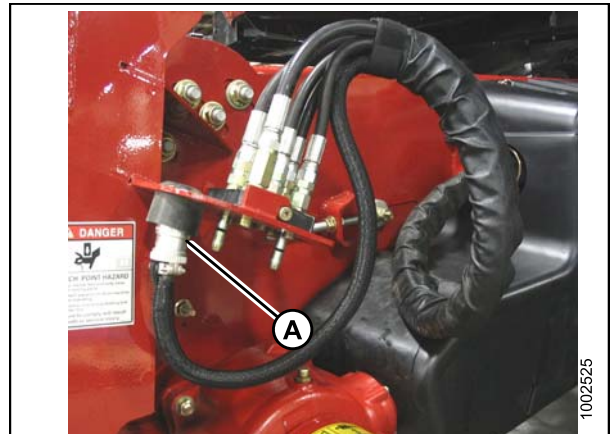
## OPERATION

- Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft.



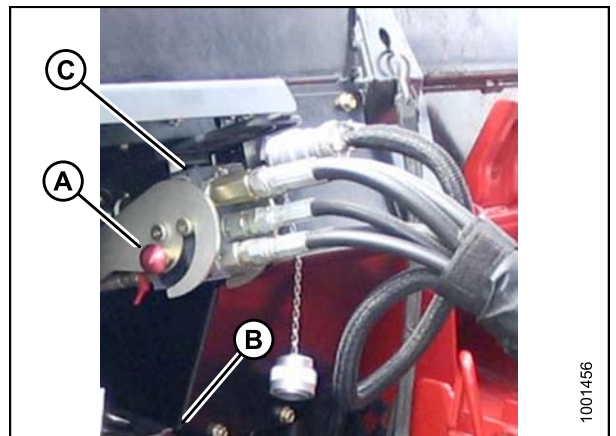
**Figure 3.36**

- Remove electrical connector (A), and replace cover.



**Figure 3.37**

- Push in lock button (A), and pull handle (B) to release coupler (C).



**Figure 3.38**

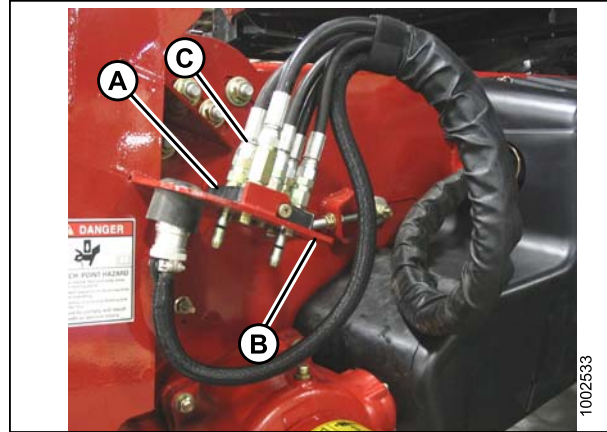
A - Lock button

B - Handle

C - Coupler

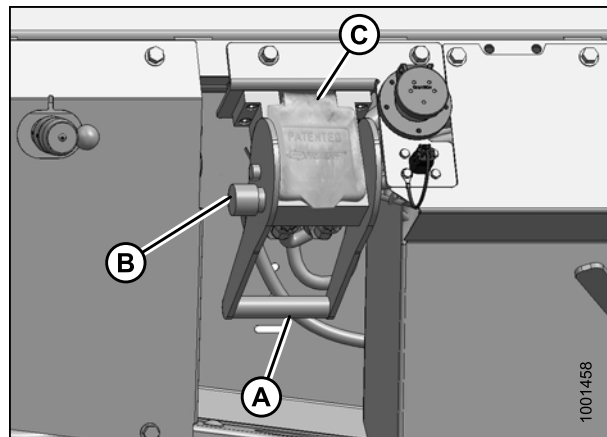
## OPERATION

7. Position coupler (A) onto storage plate (B) on combine.
8. Place electrical connector (C) in storage cup on plate on combine (B).



**Figure 3.39**

9. Push handle (A) to closed position until lock button (B) snaps out. Close cover (C).



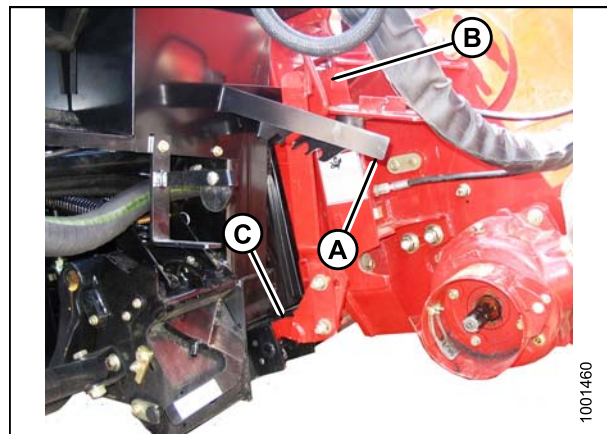
**Figure 3.40**

A - Handle

B - Lock Button

C - Cover

10. Lift lever (A), pull and lower handle (B) to disengage feeder house/adapter lock (C).
11. Lower feeder house until it disengages adapter support.
12. Slowly back combine away from adapter.



**Figure 3.41**

A - Lever

B - Handle

C - Feeder house / adapter lock

## OPERATION

### 3.3.3 John Deere 60, 70, and S Series Combines

These procedures cover John Deere 60, 70, and S Series combines.

#### Contour Master, Level Land

##### *Attaching Combine to Adapter*

To attach the adapter to a John Deere combine, follow these steps.

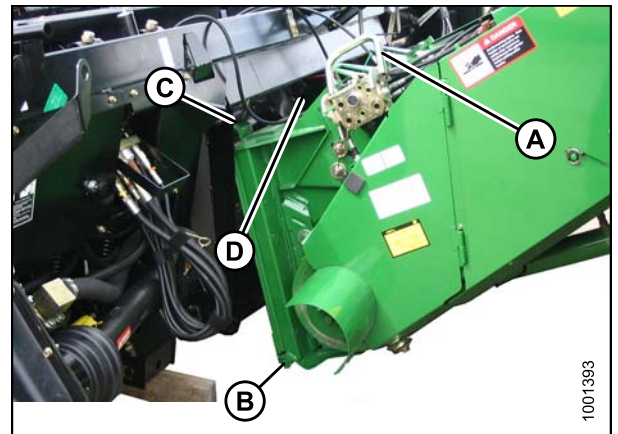
1. Push handle (A) on combine coupler toward feeder house to retract pins (B) at bottom corners of feeder house.
2. Slowly drive combine up to adapter until feeder house saddle (C) is directly under the adapter top cross member (D).
3. Raise feeder house to lift adapter, ensuring feeder saddle is properly engaged in adapter frame.
4. Raise or lower header until slightly off the ground.



## CAUTION

**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.**

5. Pull handle (A) to engage pins (B) in adapter.



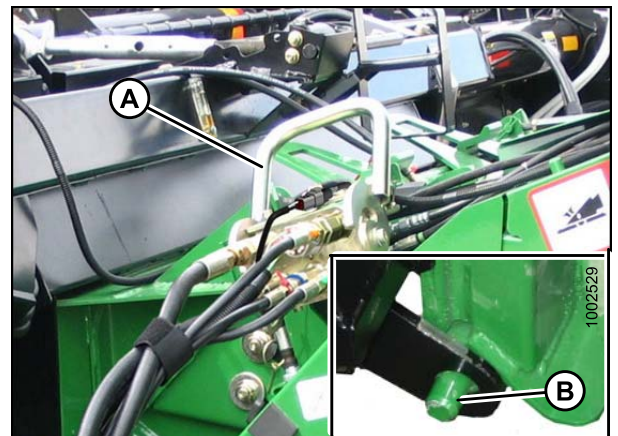
**Figure 3.42**

A - Handle

C - Feeder house saddle

B - Pins

D - Adapter top cross member



**Figure 3.43**



## OPERATION

6. Check that bolts (A) on adapter brackets are tight.
7. If pins (B) do not fully engage adapter brackets, loosen bolts (A), and adjust bracket as required. Retighten bolts.
8. Remove blocks from under cutterbar.
9. Start engine, and lower header.

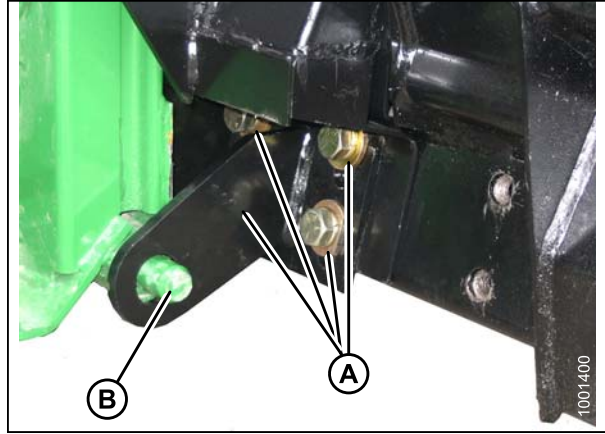


Figure 3.44

10. Pull handle (A) on adapter to release coupler (B) from storage position. Remove coupler, and push handle back into adapter to store.

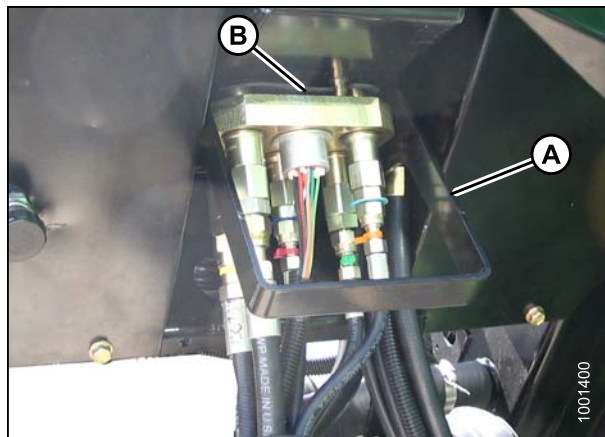


Figure 3.45

11. Before attaching coupler to combine, Handle (A) should be in the nearly-up position. Clean receptacle.

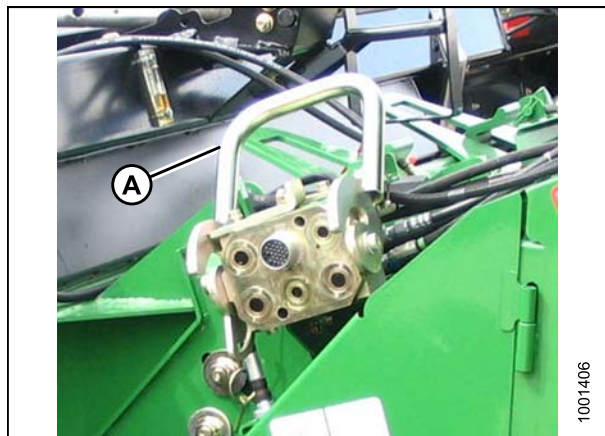
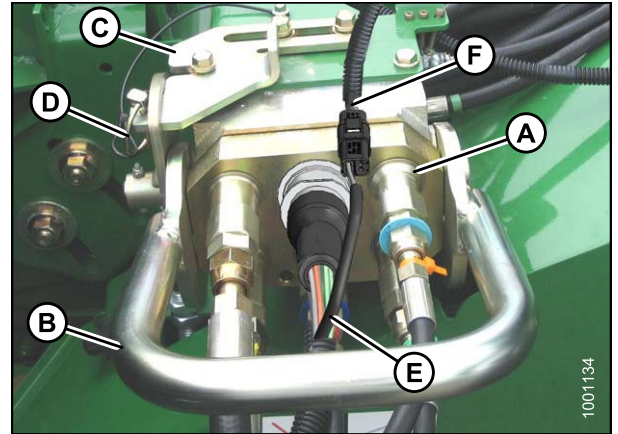


Figure 3.46

## OPERATION

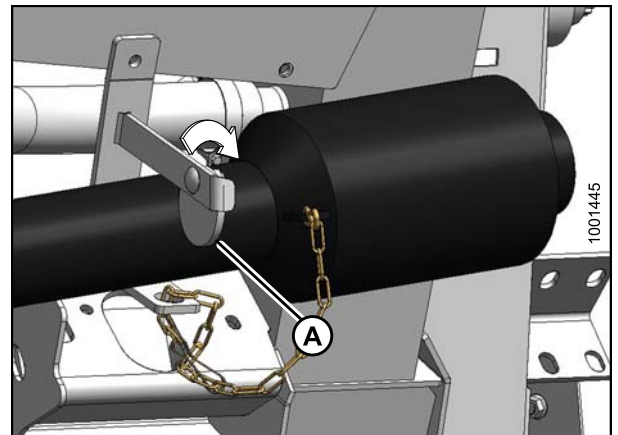
12. Attach coupler (A) to combine as follows:
  - a. Locate coupler (A) onto receptacle, and pull handle (B) so that lugs on coupler are engaged into handle.
  - b. Pull handle to full horizontal position as shown.
  - c. Slide latch (C) to lock handle in position, and secure with lynch pin (D).
  - d. If adapter is equipped with reel fore-aft / header tilt selector, connect harness (E) to combine connector (F).



**Figure 3.47**

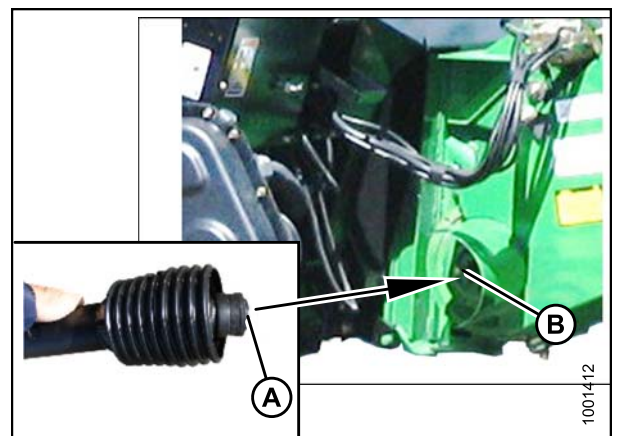
A - Coupler	B - Handle
C - Latch	D - Lynch pin
E - Harness	F - Combine connector

13. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.



**Figure 3.48**

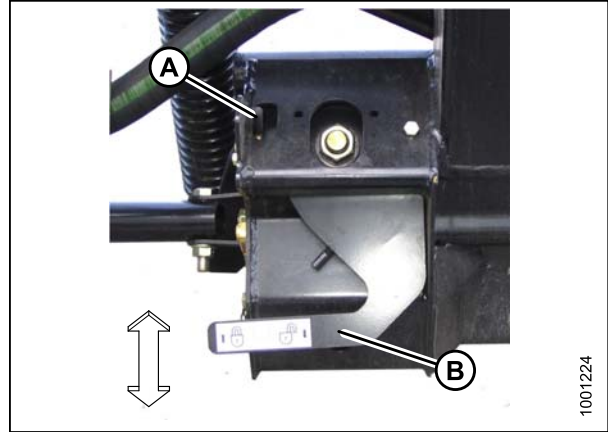
14. Pull back collar (A) on end of driveline, and push onto combine output shaft (B) until collar locks.



**Figure 3.49**

## OPERATION

15. Disengage both adapter float locks by moving latch (A) away from adapter, and moving lever (B) at each lock to lowest position.



**Figure 3.50: Lever Up = LOCK, Down = UNLOCK**

### *Detachment*

To detach a John Deere combine from the adapter, follow these steps.



## OPERATION

1. Choose a level area. Position header slightly above ground. Stop engine, and remove key.

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

### CAUTION

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.

2. Engage both adapter float locks by lifting lever (A) at each lock until it latches into the lock position.

### IMPORTANT

If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section [3.9.1 Cutting Height, page 89](#).

### IMPORTANT

If stabilizer wheels are installed, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section [3.9.1 Cutting Height, page 89](#).

3. Open shield (A) on combine. Pull back collar on driveline, and pull driveline (B) off combine output shaft.

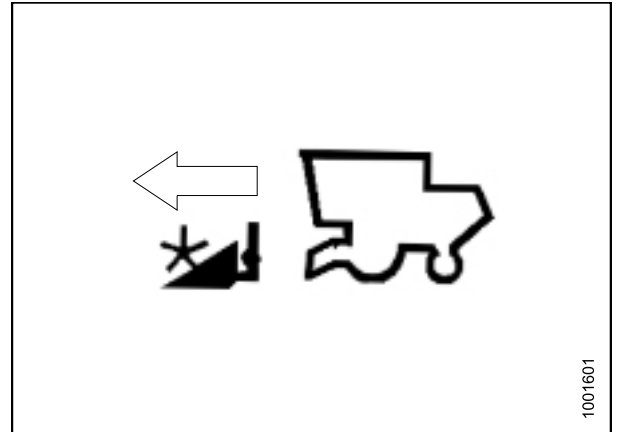


Figure 3.51

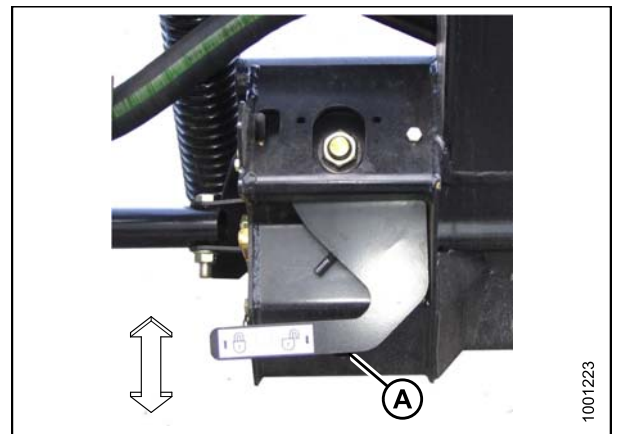


Figure 3.52: Lever Up = LOCK, Down = UNLOCK

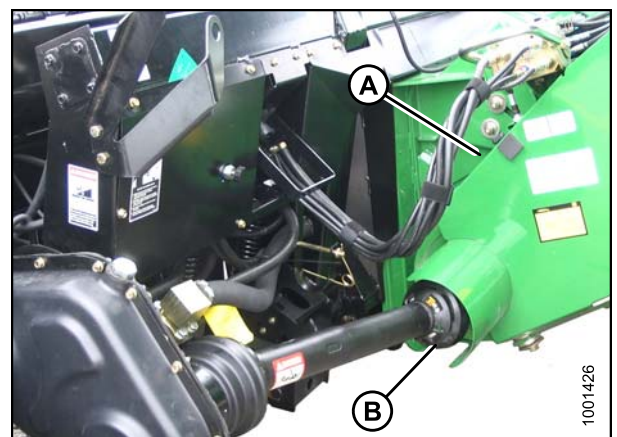


Figure 3.53

## OPERATION

- Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft.

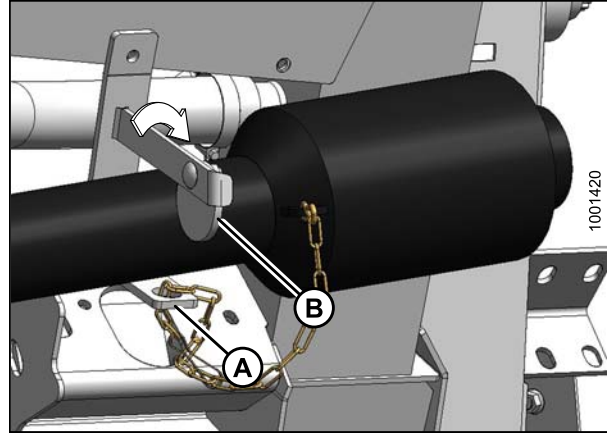


Figure 3.54

- Lift handle (A) on adapter.

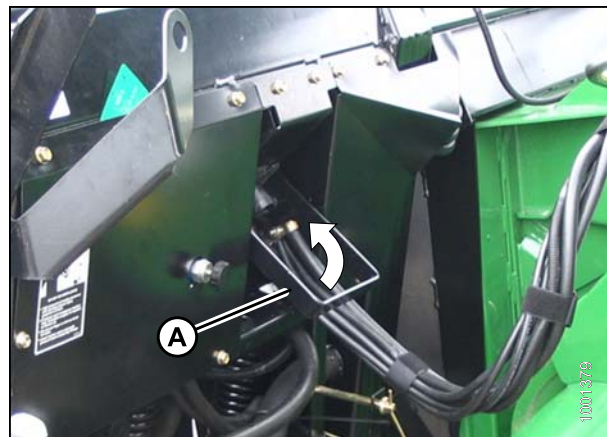


Figure 3.55

The following steps are required to disconnect the hydraulic/electrical coupler from the combine.

- Disconnect harness (A) from combine harness.
- Remove lynch pin (B), and slide lock (C) to release handle (D)
- Lift handle (D) to full vertical position to release coupler (E) from combine.

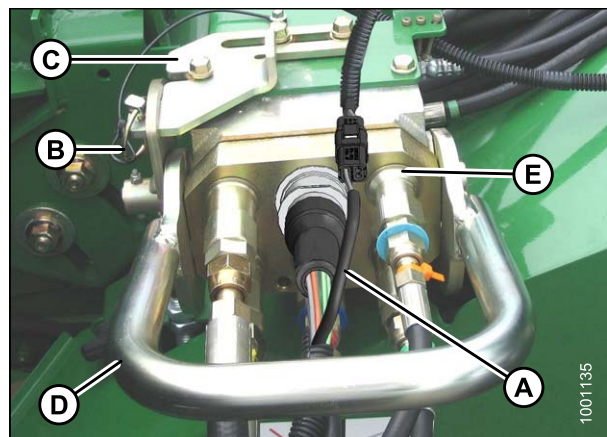


Figure 3.56

A - Harness  
C - Lock  
D - Handle

B - Lynch pin  
D - Handle  
E - Hydraulic/electrical coupler

## OPERATION

9. Position coupler (A) on adapter receptacle, and lower handle (B) to lock coupler.

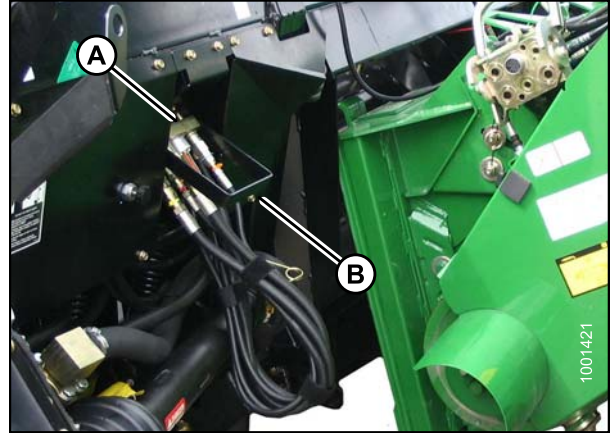


Figure 3.57

10. Push handle (A) on combine toward feeder house to disengage feeder house pin (B) from adapter.

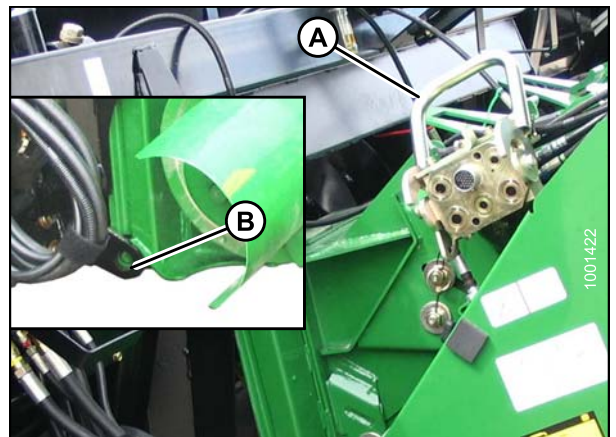


Figure 3.58

11. Lower feeder house until saddle (A) disengages and clears adapter support (B).
12. Slowly back combine away from adapter.

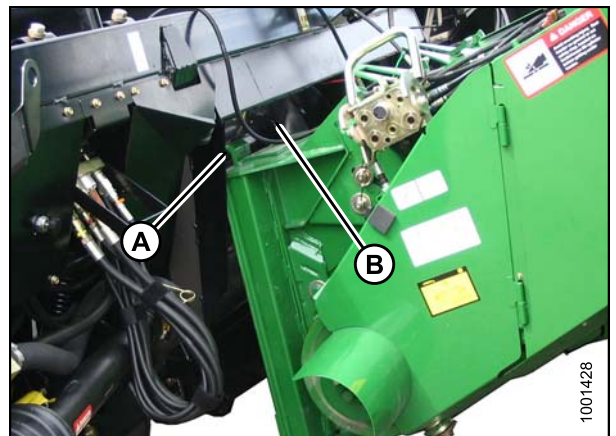


Figure 3.59

## OPERATION

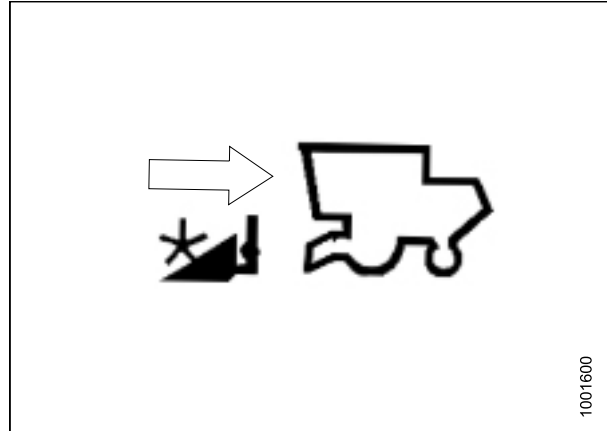
### 3.3.4 CAT Lexion 500, 700 Series Combines

These procedures cover CAT Lexion 500 and 700 Series combines.

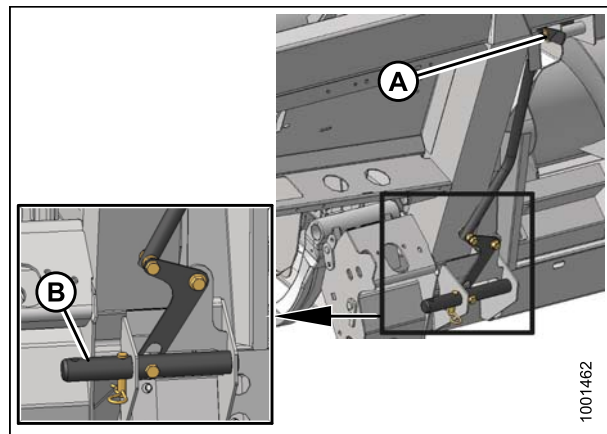
#### *Attaching Combine to Adapter*

To attach a CAT Lexion combine to the adapter, follow these steps:

1. Handle (A) on the CA25 adapter should be in raised position, and pins (B) at bottom corners of adapter retracted.
2. Slowly drive combine up to adapter until feeder house is directly under the adapter top cross member.



**Figure 3.60**



**Figure 3.61**

A - Handle

B - Pins



## OPERATION

3. Raise feeder house to lift adapter, ensuring feeder house posts (A) are properly engaged in adapter frame (B).
4. Position header slightly off the ground.



### CAUTION

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.

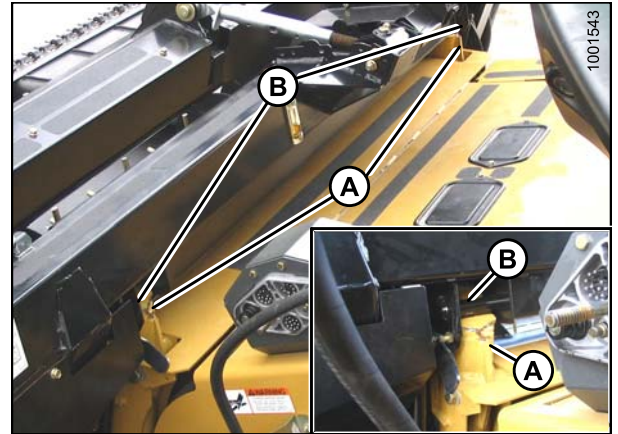


Figure 3.62

A - Feeder house posts

B - Adapter frame

5. Remove locking pin (A) from adapter pin (B).

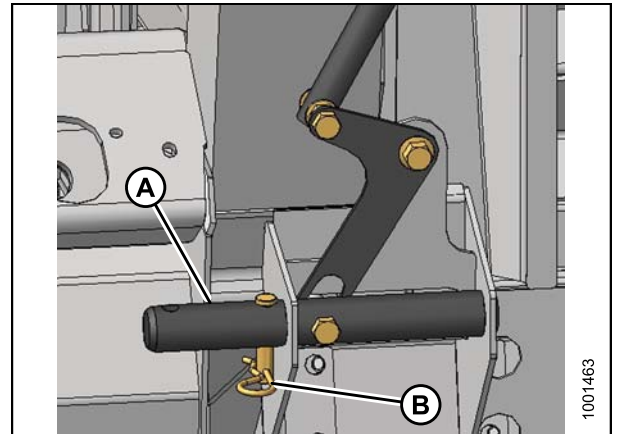


Figure 3.63

6. Lower handle (A) to engage adapter pins (B) into feeder house. Reinsert locking pin (C), and secure with hairpin.

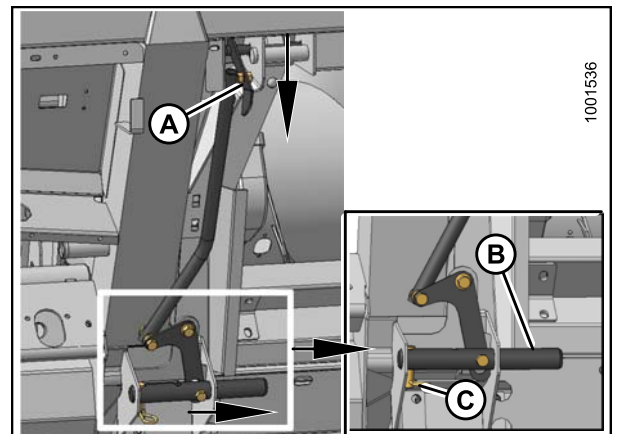


Figure 3.64

A - Handle

B - Adapter pins

C - Locking pin

The following steps show how to connect the hydraulic hoses.

## OPERATION

7. Unscrew knob (A) on combine coupler (B) to release coupler from combine receptacle.

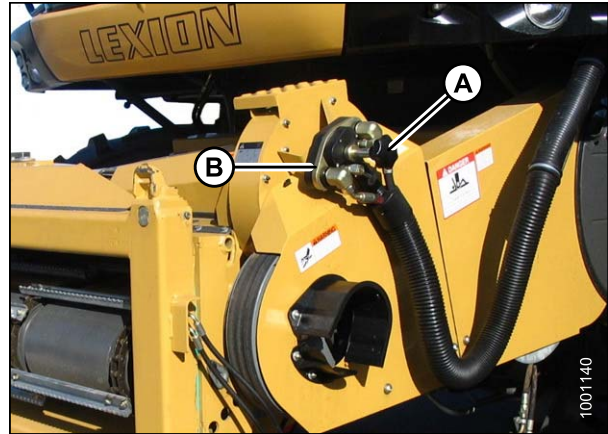


Figure 3.65

8. Remove cover (C) from adapter receptacle.

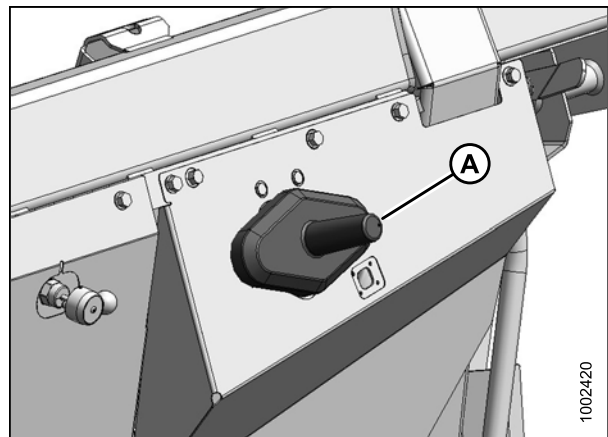


Figure 3.66

9. Clean mating surface of coupler (A), and locate onto adapter receptacle (B).
10. Turn knob (C) to secure coupler to receptacle.
11. Connect combine harness (D) to reel fore-aft/header tilt selector receptacle (E).

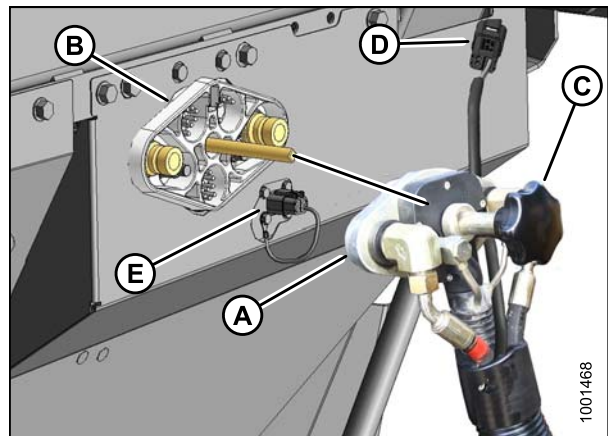


Figure 3.67

A- Coupler mating surface      B- Adapter receptacle  
C- Knob      D - Combine harness  
E - Reel fore-aft/header tilt selector receptacle

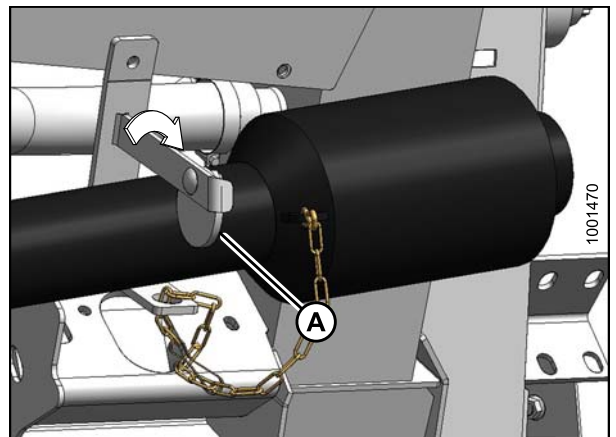
## OPERATION

12. Place cover (A) on combine receptacle.



**Figure 3.68**

13. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.



**Figure 3.69**

14. Attach driveline to combine output shaft (A).



**Figure 3.70**

## OPERATION

15. Disengage both adapter float locks by moving latch (A) away from adapter, and moving lever (B) at each lock to lowest position.

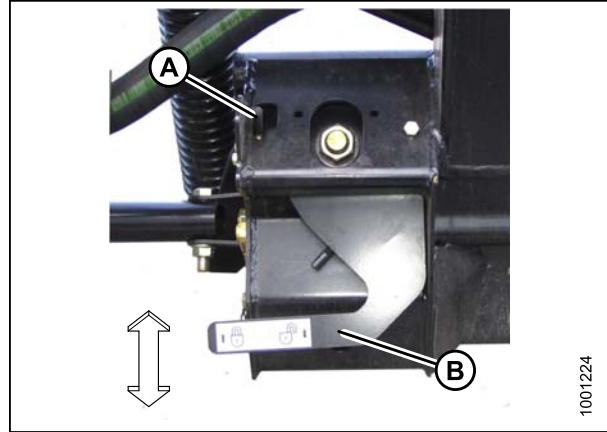


Figure 3.71: Lever Up = LOCK, Down = UNLOCK

### Detachment

To detach a CAT Lexion combine from the adapter, follow these steps:

1. Choose a level area. Position header slightly off the ground. Stop engine, and remove key.

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

### CAUTION

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.

2. Engage the adapter float locks by lifting lever (A) at both locks until it latches into the lock position.

### IMPORTANT

If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section [3.9.1 Cutting Height, page 89](#).



Figure 3.72

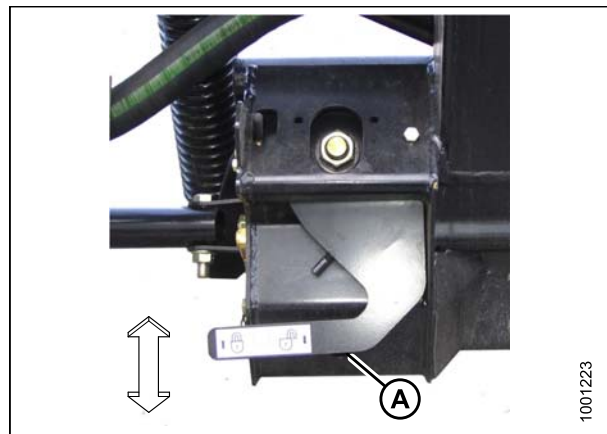


Figure 3.73: Lever Up = LOCK, Down = UNLOCK



## OPERATION

3. Disconnect driveline (A) from combine.

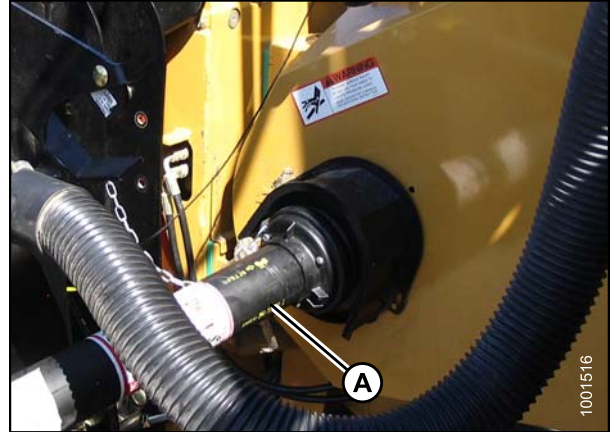


Figure 3.74

4. Slide driveline in hook (A) so that disc (B) drops to secure driveline.

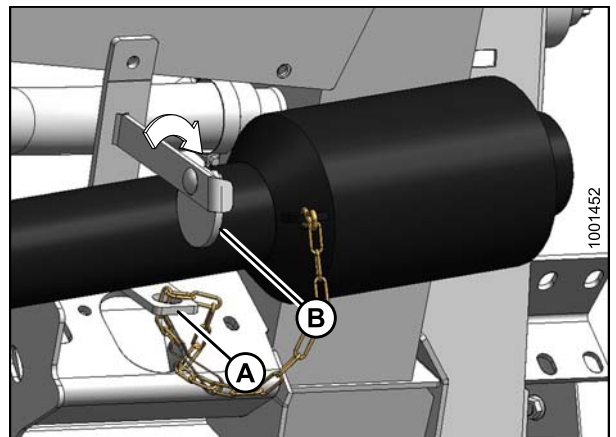


Figure 3.75

The following steps describe how to disconnect hydraulics/electrical from the adapter.

5. Unplug electrical connector (A) from adapter receptacle.
6. Unscrew knob (B) on coupler (C) to release coupler from adapter.

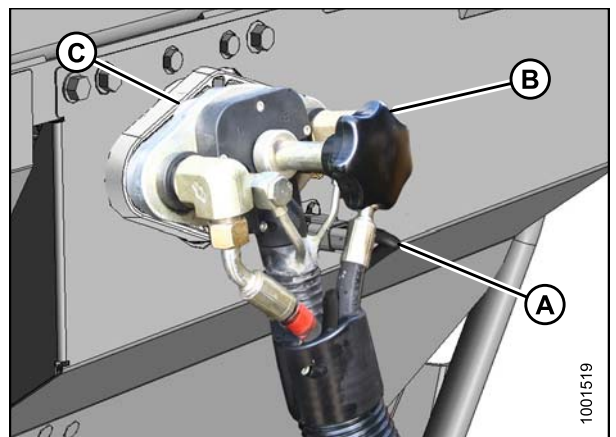


Figure 3.76

## OPERATION

7. Remove cover (A) from combine receptacle.

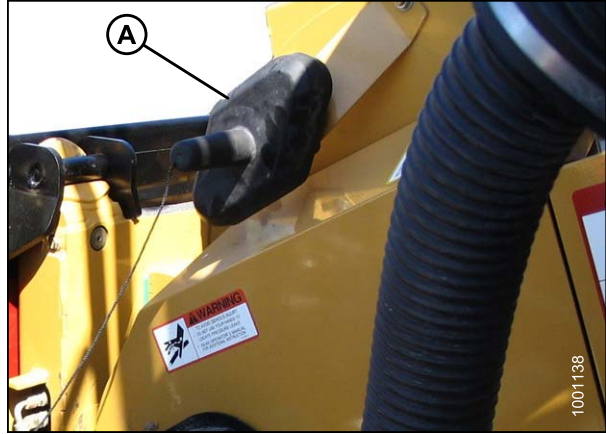


Figure 3.77

8. Locate coupler (A) onto combine receptacle, and turn knob (B) to secure coupler to receptacle.

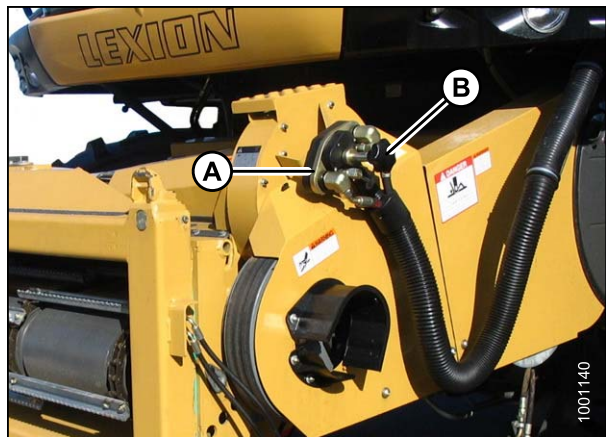


Figure 3.78

9. Place cover (A) on adapter receptacle.

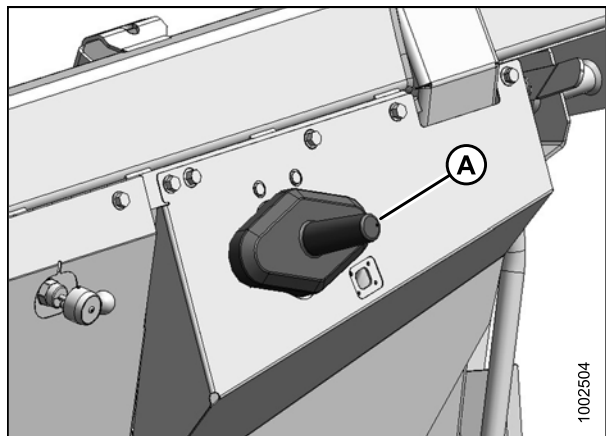
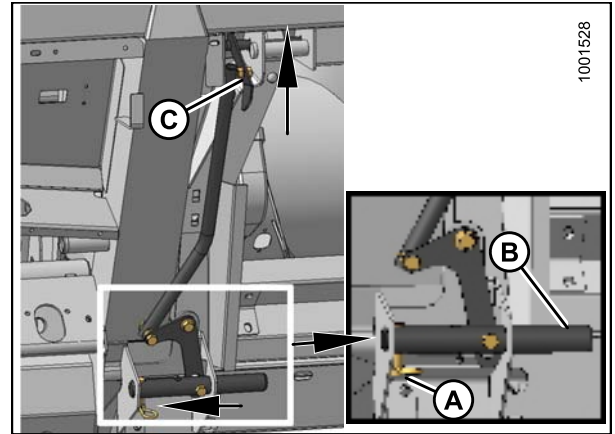


Figure 3.79

## OPERATION

10. Remove locking pin (A) from adapter pin (B).
11. Raise handle (C) to disengage adapter pins (B) from feeder house. Replace locking pin (A) in adapter pin, and secure with hairpin.



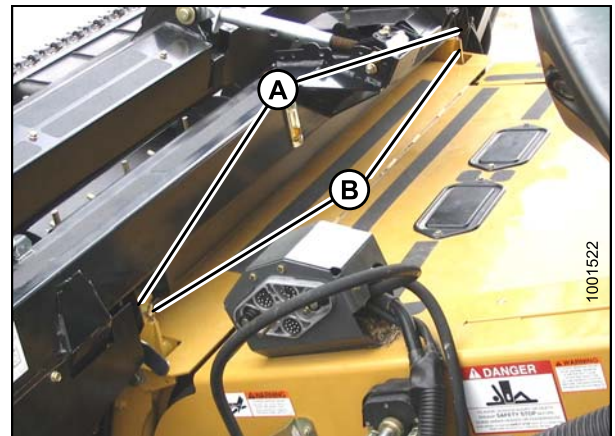
**Figure 3.80**

A - Locking pin

B - Adapter pin

C - Handle

12. Lower feeder house to ground until feeder house posts (A) disengage adapter (B).
13. Slowly back combine away from adapter.



**Figure 3.81**

A - Feeder house posts

B - Adapter

## OPERATION

### 3.3.5 New Holland CR, CX

These procedures cover New Holland CR and CX combines.

#### *Attaching Combine to Adapter*

To attach a New Holland CR or CX model combine to the adapter, follow these steps:

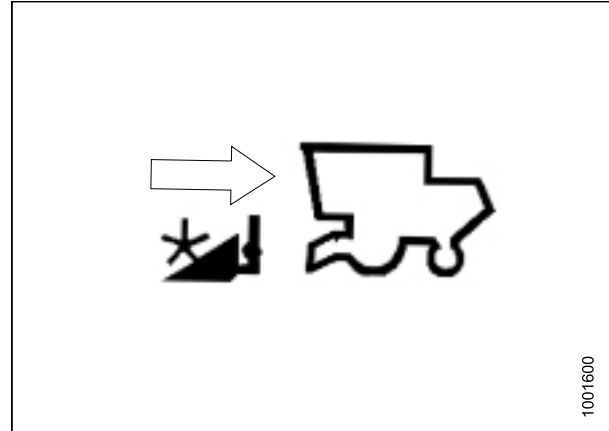


Figure 3.82

1. Ensure handle (A) is positioned so that hooks (B) can engage adapter.

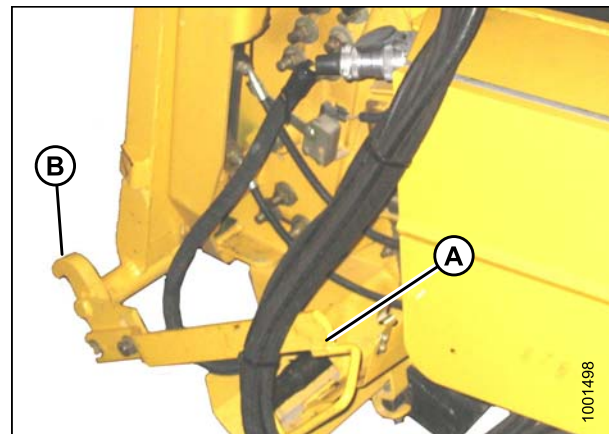


Figure 3.83

2. Slowly drive combine up to adapter until feeder house saddle (C) is directly under the adapter top cross member (D).
3. Raise feeder house to lift adapter, ensuring feeder saddle is properly engaged in adapter frame.



## CAUTION

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.

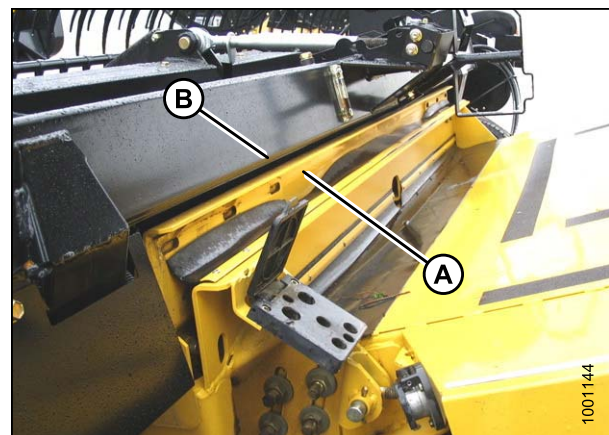
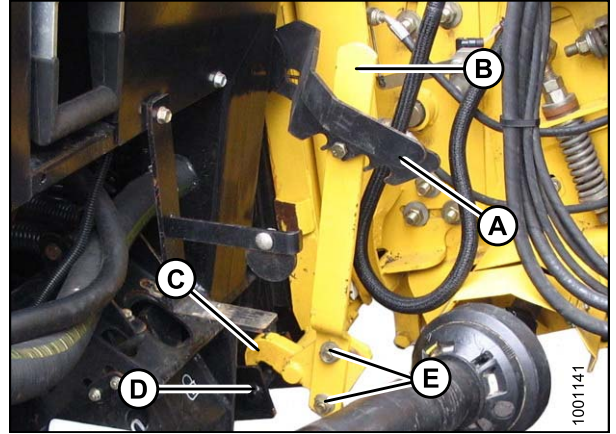


Figure 3.84



## OPERATION

4. Lift lever (A) on adapter at left side of feeder house, and push handle (B) on combine so that hooks (C) engage pins (D) on both sides of the feeder house.
5. Push down on lever (A) so that slot in lever engages handle to lock handle in place.
6. If hook (C) does **not** fully engage pin on adapter when (A) and (B) are engaged, loosen bolts (E), and adjust lock as required. Retighten bolts.

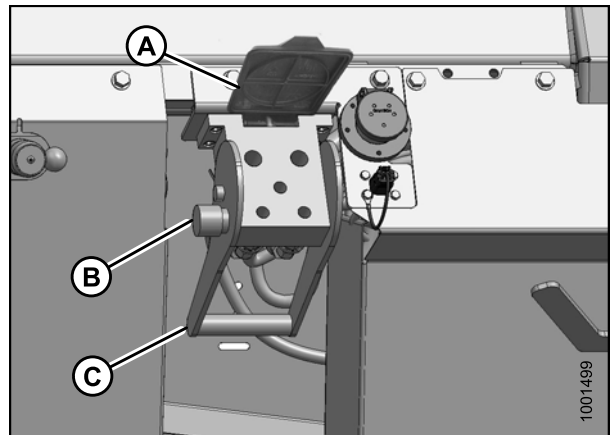


**Figure 3.85**

A - Adapter lever  
C - Combine hooks  
E - Combine bolts

B - Combine handle  
D - Adapter pins

7. Open cover (A).
8. Push in lock button (B), and pull handle (C) halfway up to open position.



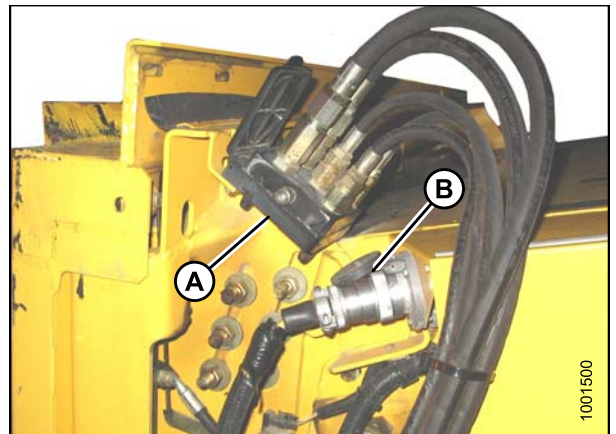
**Figure 3.86**

A - Cover

B - Lock button

C - Handle

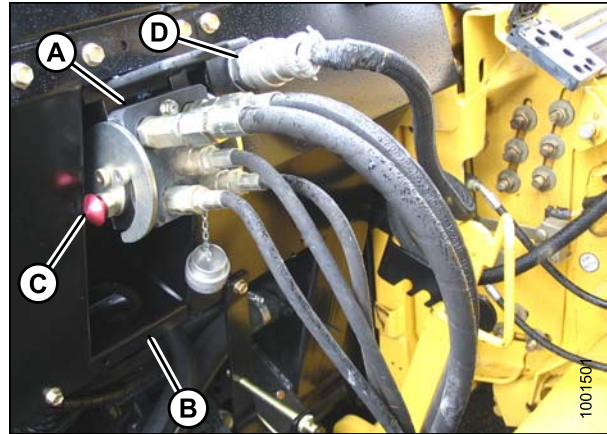
9. Remove hydraulic quick coupler (A) from storage plate on combine, and clean mating surface of coupler.



**Figure 3.87**

## OPERATION

10. Position coupler (A) onto adapter receptacle, and push handle (B) to engage pins into receptacle.
11. Push handle (B) to closed position until lock button (C) snaps out.
12. Remove cover on adapter electrical receptacle.
13. Remove connector (D) from combine.
14. Align lugs on connector (D) with slots in adapter receptacle, and push connector onto receptacle. Turn collar on connector to lock it in place.

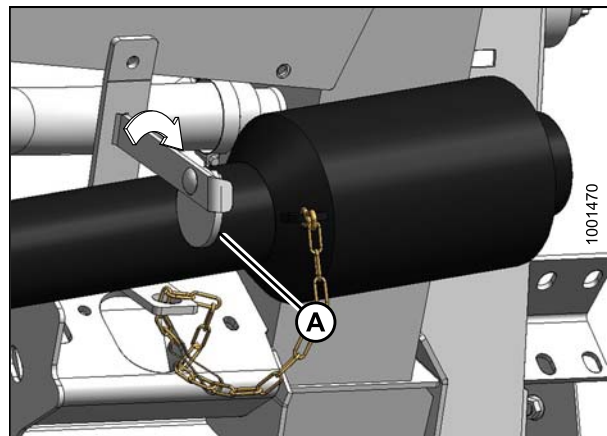


**Figure 3.88**

A - Coupler  
B - Handle

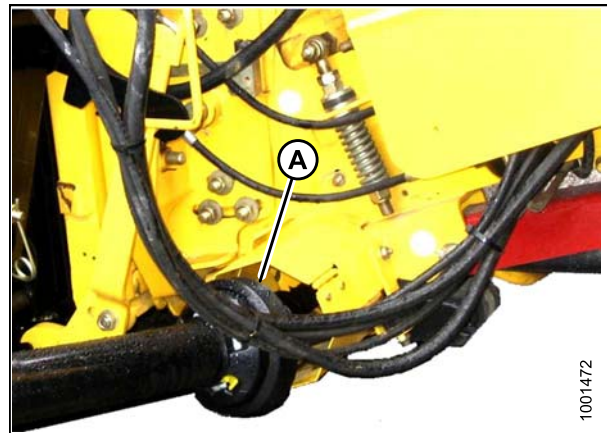
C - Lock button  
D - Connector

15. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.



**Figure 3.89**

16. Pull back collar on end of driveline, and push onto combine output shaft (A) until collar locks.



**Figure 3.90**

## OPERATION

17. Disengage both adapter float locks by moving latch (A) away from adapter, and moving lever (B) at each lock to lowest position.

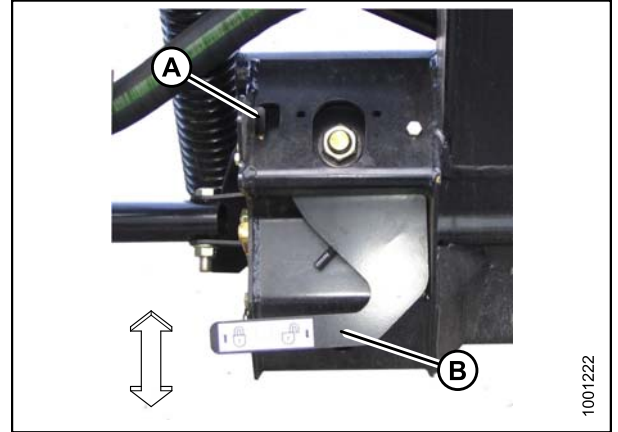


Figure 3.91: Lever Up = LOCK, Down = UNLOCK

### *Detachment*

To detach a New Holland CR or CX model combine from the adapter, follow these steps:

1. Choose a level area. Position header slightly off the ground. Stop engine, and remove key.



## **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

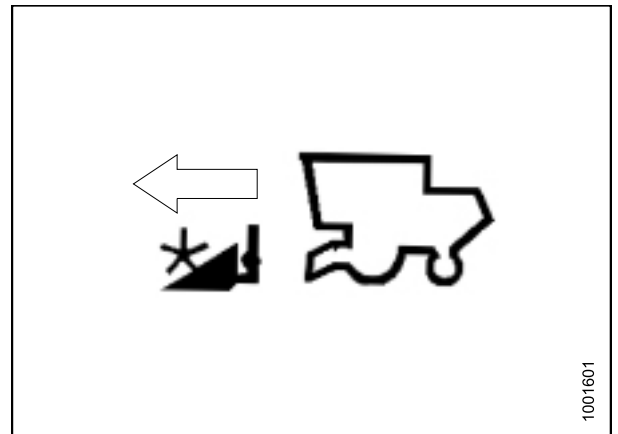


Figure 3.92

## OPERATION

### CAUTION

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

- Engage the adapter float locks by lifting lever (A) at each lock until it latches into the lock position.

### IMPORTANT

If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section [3.9.1 Cutting Height, page 89](#).

### IMPORTANT

If stabilizer wheels are installed, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to Section [3.9.1 Cutting Height, page 89](#).

- Disconnect driveshaft (A) from combine.

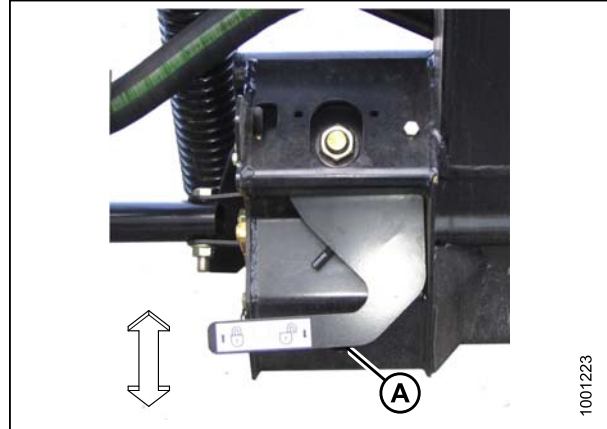


Figure 3.93: Lever Up = LOCK, Down = UNLOCK

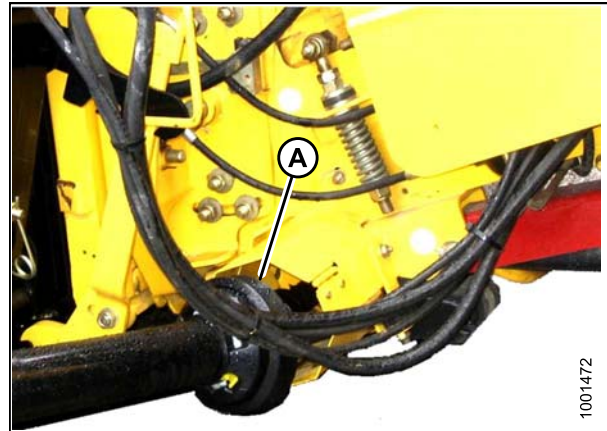


Figure 3.94



## OPERATION

- Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft.

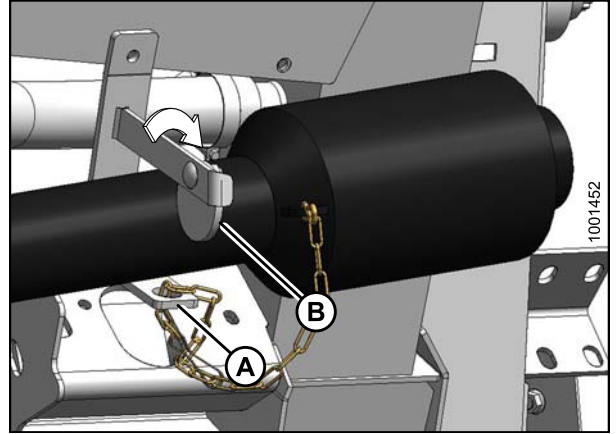


Figure 3.95

The following describes how to remove the hydraulic quick coupler (A) from the receptacle on the adapter:

- Push in lock button (B), and pull handle (C) to release coupler (A).

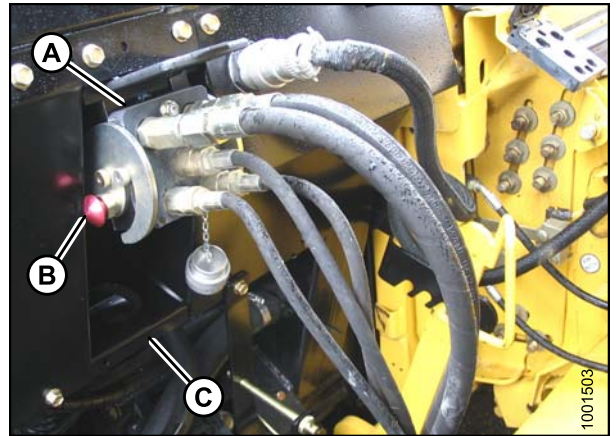


Figure 3.96

- Push handle (A) to closed position until lock button (B) snaps out. Close cover (C).

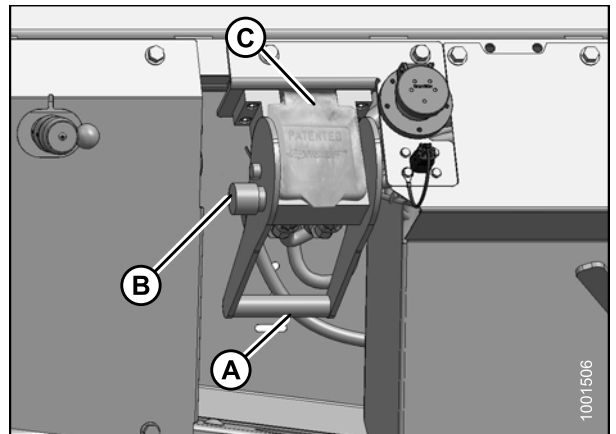
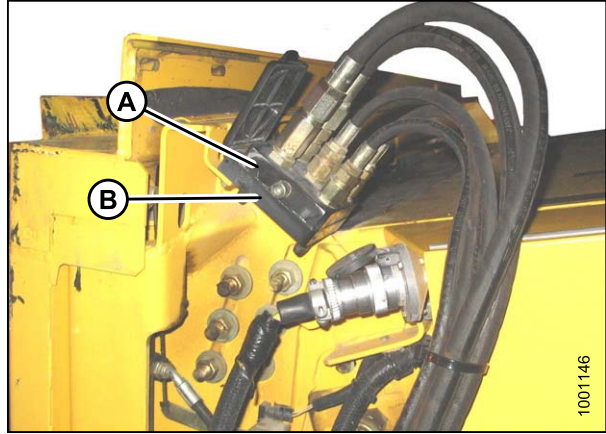


Figure 3.97

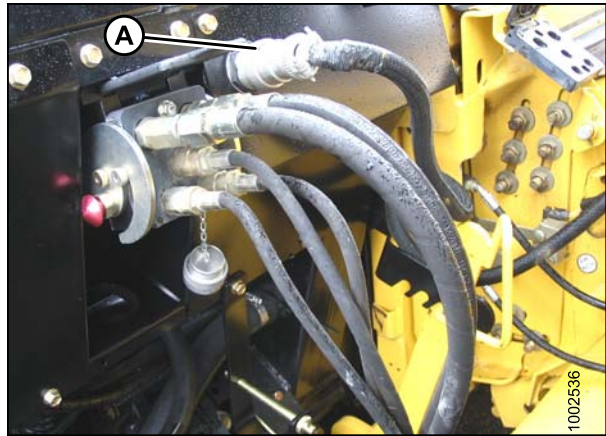
## OPERATION

7. Position coupler (A) onto storage plate (B) on combine.



**Figure 3.98**

8. Remove electrical connector (A) from adapter.



**Figure 3.99**

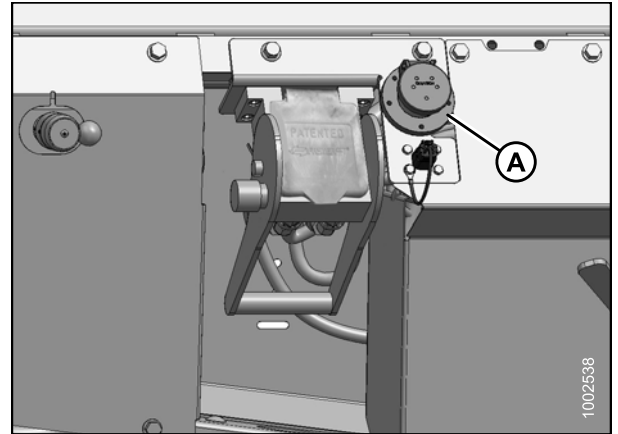
9. Connect electrical connector to combine at (A).



**Figure 3.100**

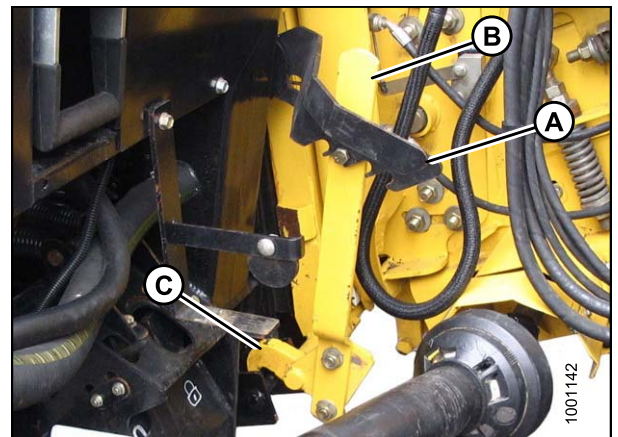
## OPERATION

10. Replace cover (A) on adapter receptacle.



**Figure 3.101**

11. Lift lever (A), and pull and lower handle (B) to disengage feeder house/adapter lock (C).



**Figure 3.102**

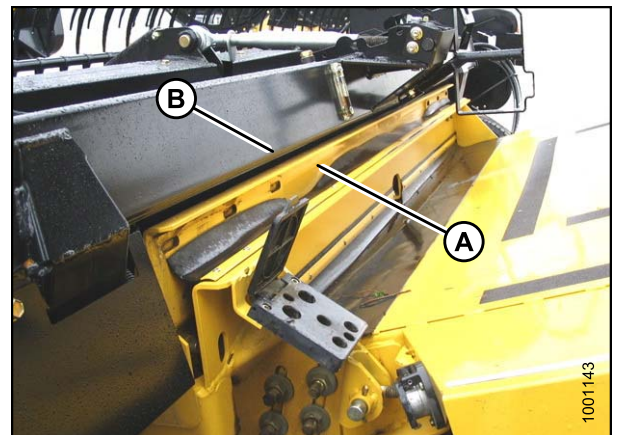
A - Adapter lever

B - Combine handle

C - Feeder house/adapter lock

12. Lower feeder house until feeder house (A) disengages adapter support (B).

13. Slowly back combine away from adapter.



**Figure 3.103**

### 3.3.6 AGCO Combines

These procedures cover the following AGCO combine models:

- Challenger 660, 670, and 680B

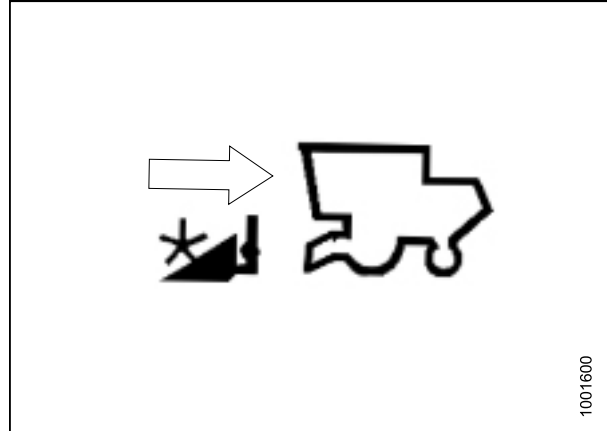
## OPERATION

- Gleaner R and S Series
- Massey 9690, 9790, and 9895

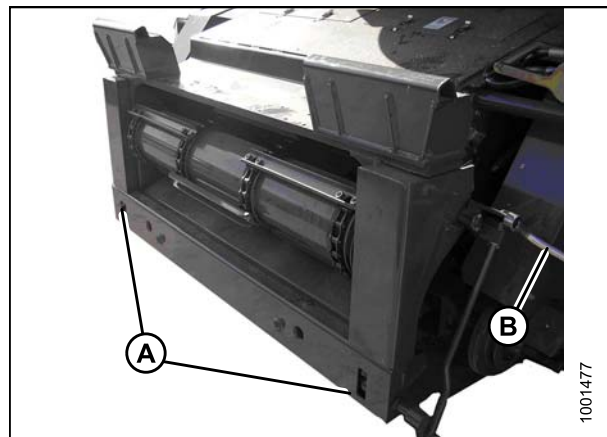
### *Attaching Combine to Adapter*

To attach an AGCO combine to the adapter, follow these steps:

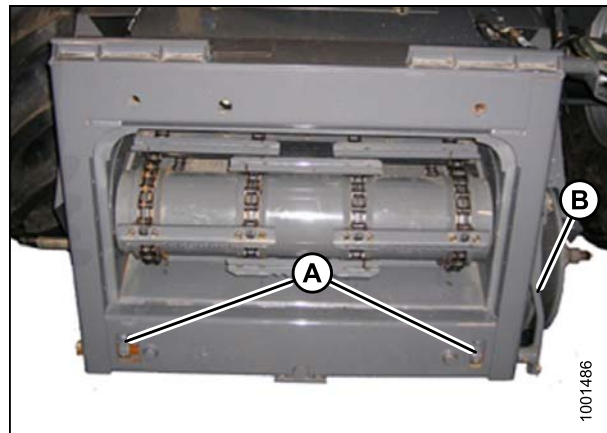
1. Retract lugs (A) at base of feeder-house with lock handle (B).



**Figure 3.104**



**Figure 3.105: All AGCO except Gleaner R and S Series**

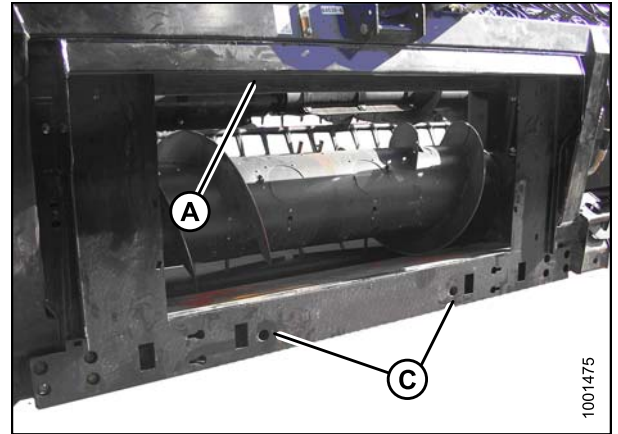


**Figure 3.106: Gleaner R and S Series**



## OPERATION

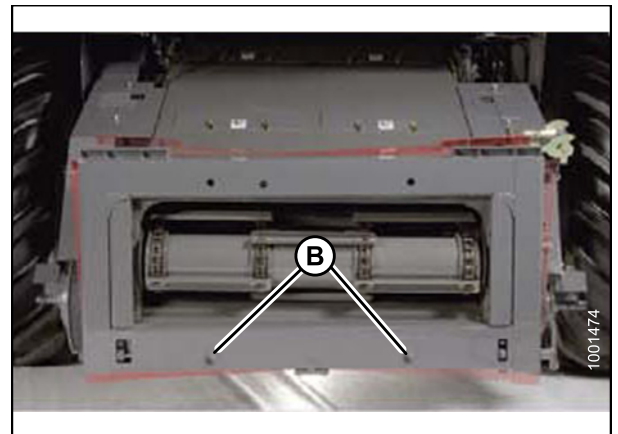
2. Slowly drive combine up to adapter until feeder house is directly under the adapter top cross member (A), and alignment pins (B) are aligned with holes (C) in adapter frame.



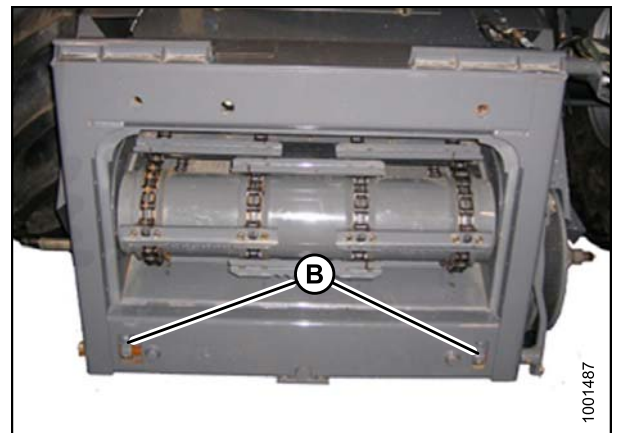
**Figure 3.107: Adapter cross member and alignment pins**

A - Adapter top cross member

C - Holes



**Figure 3.108: Alignment pins for all AGCO except Gleaner R and S Series and LL Models**



**Figure 3.109: Gleaner R and S Series alignment pins**

## OPERATION

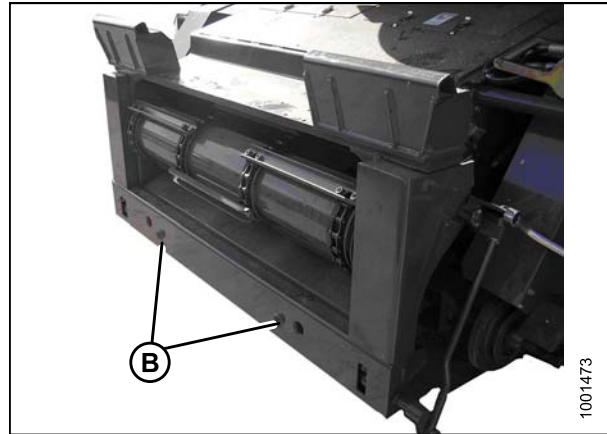


Figure 3.110: AGCO LL Model alignment pins

3. Raise feeder house to lift adapter, ensuring feeder house saddle (A) and alignment pins are properly engaged in adapter frame.
4. Raise header slightly off the ground.



### CAUTION

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.

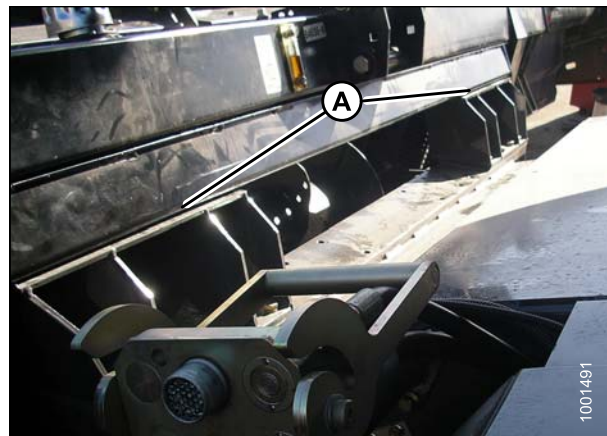


Figure 3.111

5. Engage lugs (A) with adapter using lock handle (B).

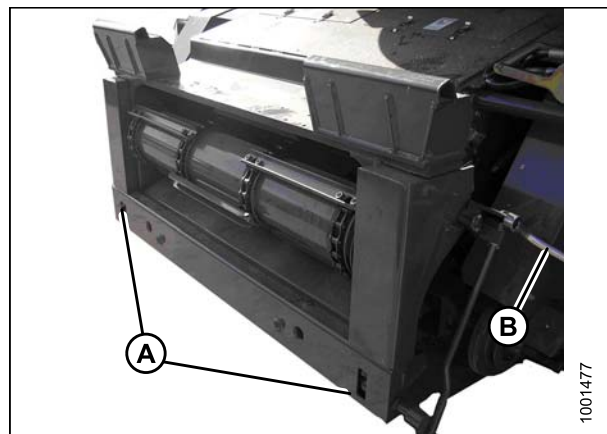


Figure 3.112: All AGCO except Gleaner R and S Series

## OPERATION

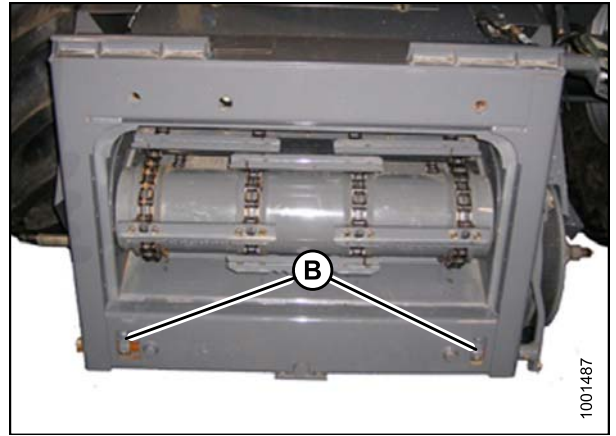


Figure 3.113: Gleaner R and S Series

The following 5 steps show how to connect the adapter hydraulic quick coupler to the combine receptacle:

6. Raise handle (A) to release coupler (B) from adapter.

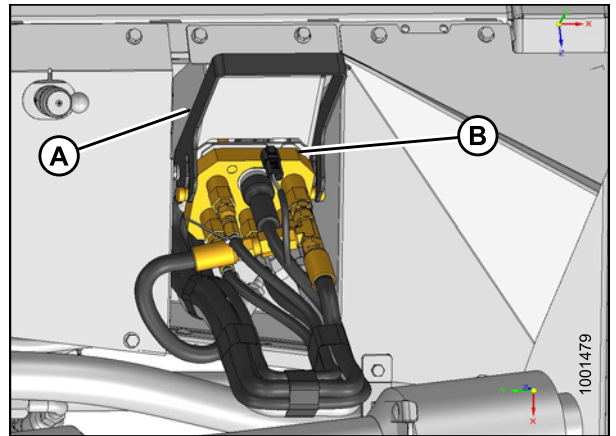


Figure 3.114

7. Push handle (A) on combine to full open position.
8. Clean mating surfaces of coupler (B) and receptacle if necessary.

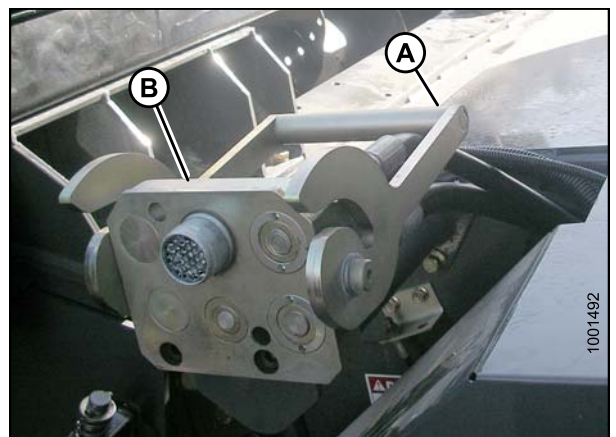


Figure 3.115

## OPERATION

9. Connect reel fore-aft/header tilt selector harness (A) to combine harness (B).

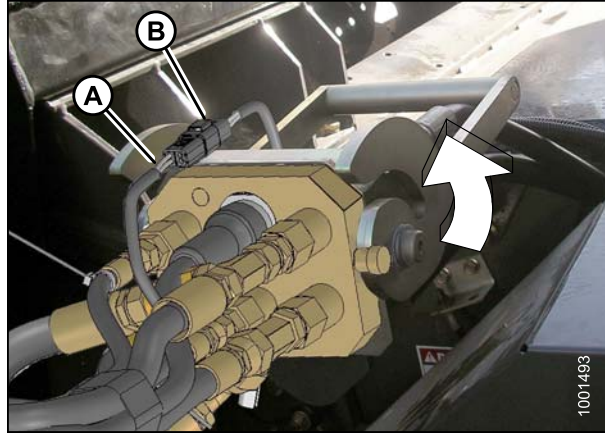


Figure 3.116

10. Rotate disc (A) on adapter driveline storage hook, and remove driveline from hook.

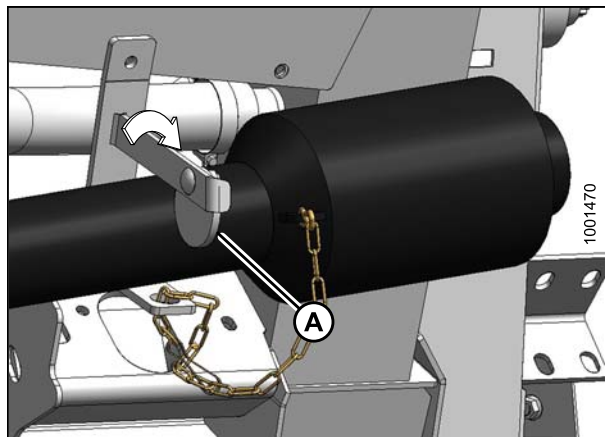


Figure 3.117

11. Pull back collar (A) on end of driveline, and push onto combine output shaft (B) until collar locks.

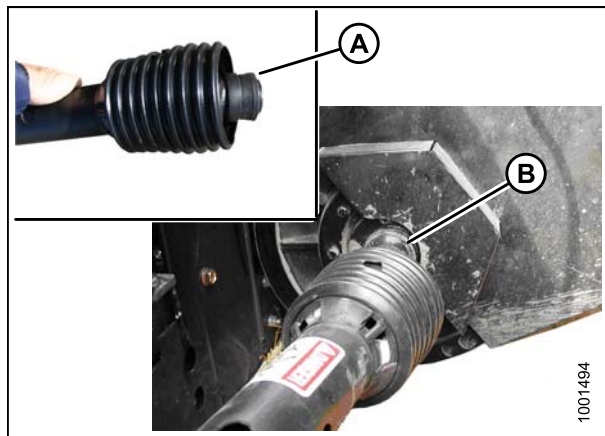


Figure 3.118



## OPERATION

12. Disengage both adapter float locks by moving latch (A) away from adapter, and moving lever (B) at each lock to lowest position.

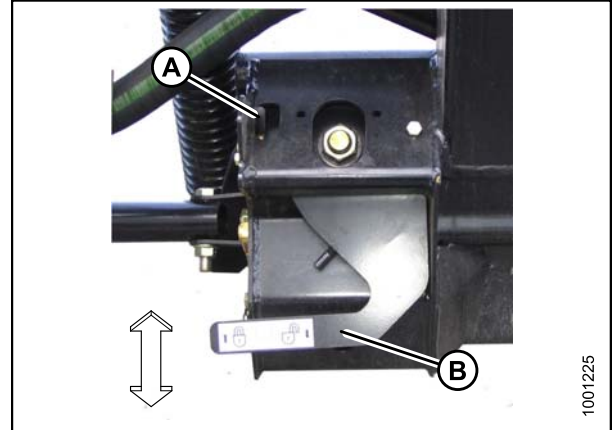


Figure 3.119: Lever Up = LOCK, Down = UNLOCK

### Detachment

To detach an AGCO combine from the adapter, follow these steps.

1. Choose a level area. Position header slightly off the ground. Stop engine, and remove key.

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

### CAUTION

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.

2. Engage the adapter float locks by lifting lever (A) at each lock until it latches into the lock position.

### IMPORTANT

If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position. Otherwise header may tilt forward so that reattachment will be difficult. Refer to [Section 3.9.1 Cutting Height, page 89](#).



Figure 3.120: Detach Header

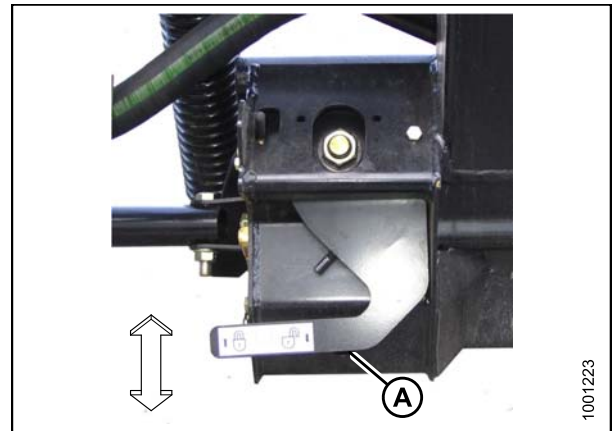


Figure 3.121: Lever Up = LOCK, Down = UNLOCK

## OPERATION

3. Disconnect driveshaft (A) from combine.



Figure 3.122: Disconnect driveshaft

4. Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft.

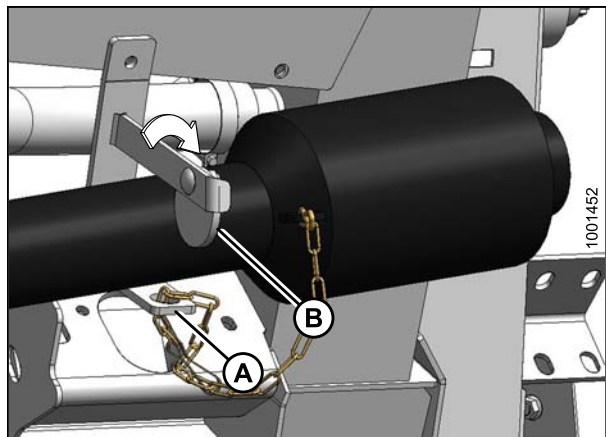


Figure 3.123

5. Disconnect harness at connector (A).
6. Move handle (B) on combine multi-coupler to full open position to release coupler (C) from combine.

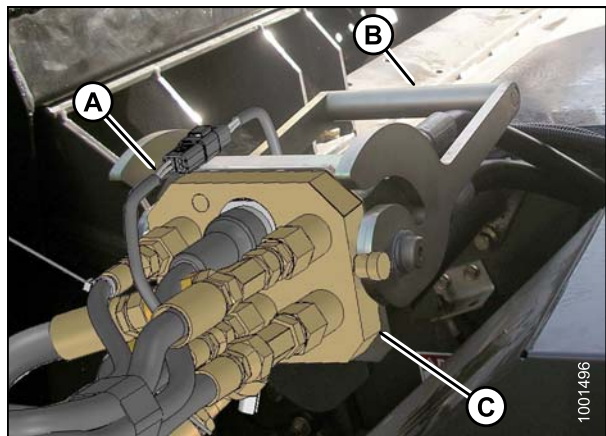
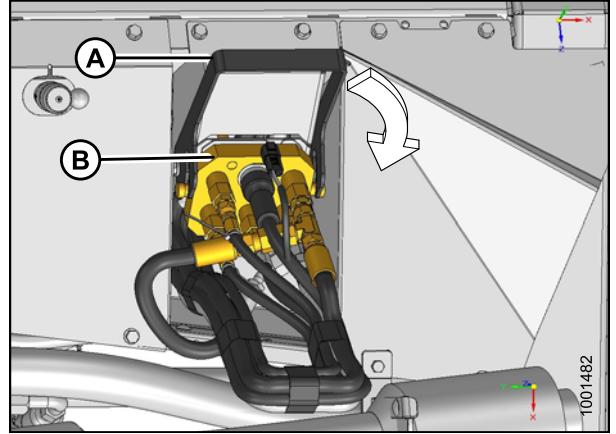


Figure 3.124

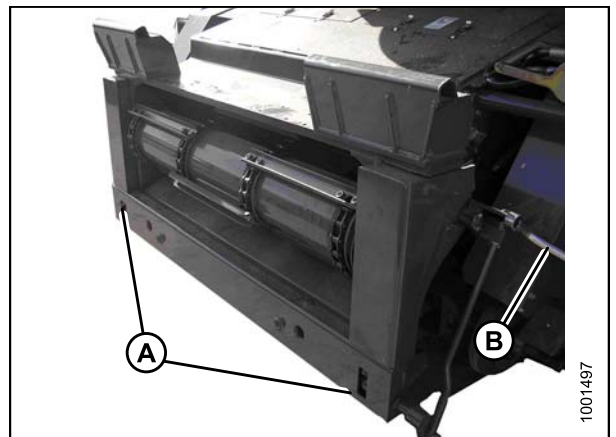
## OPERATION

7. Raise handle (A) on adapter, and place coupler (B) on adapter receptacle.
8. Lower handle (A) to lock coupler.

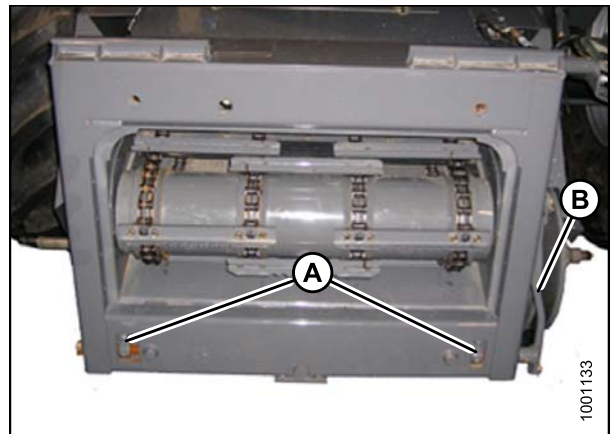


**Figure 3.125**

9. Retract lugs (A) at base of feeder-house with lock handle (B).



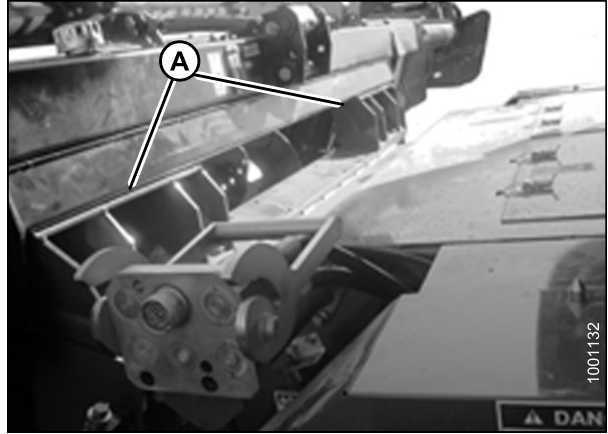
**Figure 3.126: All AGCO except Gleaner R and S Series**



**Figure 3.127: Gleaner R and S Series**

## OPERATION

10. Lower feeder house until saddle (A) disengages and clears adapter support.
11. Slowly back combine away from adapter.



**Figure 3.128**

## OPERATION

### 3.4 Attaching and Detaching Header with Adapter

In the procedures that follow, the adapter remains attached to the combine. Use these procedures when:

- Detaching the header for use on a windrower
- Changing headers
- Performing certain maintenance tasks

These procedures are the same for all makes and models of combines. The headers can be attached to the adapter from either Field configuration or Transport configuration.

#### 3.4.1 Detachment

To detach the header from the combine and adapter.

#### **WARNING**

Keep hands clear of the area between guards and sickle at all times.

#### **CAUTION**

Wear heavy gloves when working around or handling sickles.

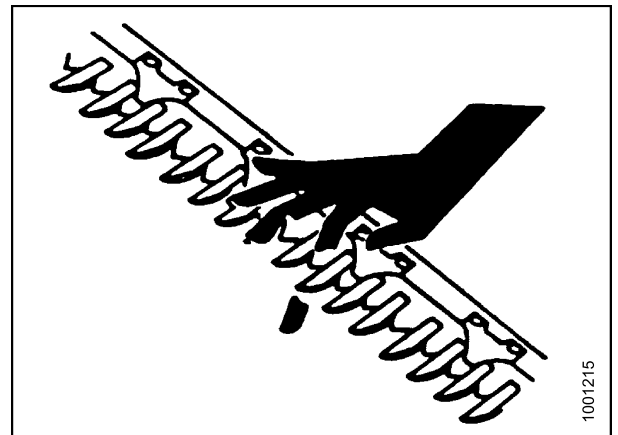


Figure 3.129

Disconnect adapter deck from cutterbar as follows:

1. Start engine, and tilt header to almost full forward position to increase clearance under adapter feed draper.
2. Stop engine, and remove key.



Figure 3.130

## OPERATION

- Remove two hex head bolts (A) attaching filler (B) to transition pan at front corners, and fold back filler (B) for access to latch (C).

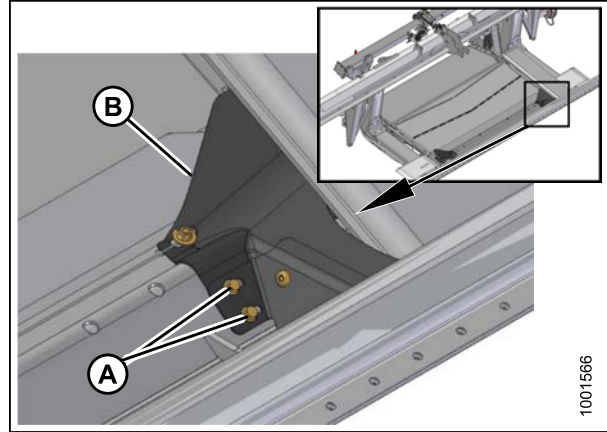


Figure 3.131

- Rotate latch (A) down with a 15/16 wrench on hex (B) so that bolt (C) can be removed.
- Rotate latch (A) up and back to lower adapter deck, and disengage transition pan tube (D).
- Reinstall bolt (C).
- Repeat for other side of the feed draper deck.

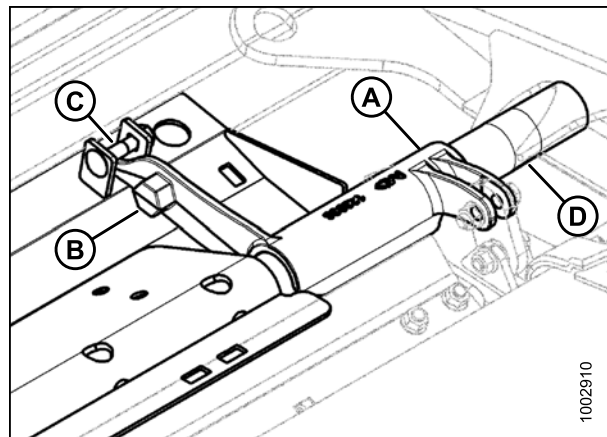


Figure 3.132

- Engage the adapter float locks by lifting lever (A) until it latches into the lock position.

### **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

- Disengage reel props, start engine, lower reel and raise header fully. Stop engine, remove key, and engage combine lift cylinder locks.

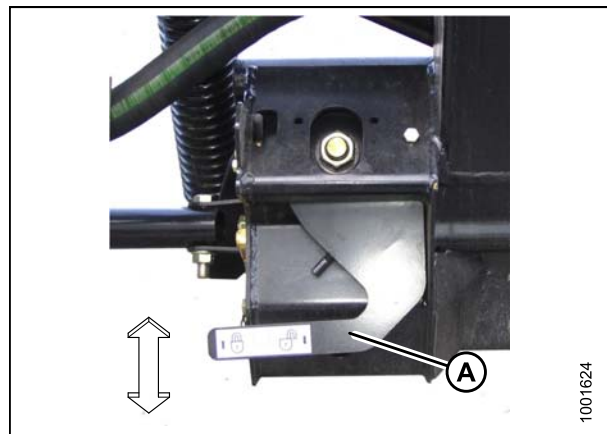


Figure 3.133: Lever Up = LOCK, Down = UNLOCK

## OPERATION

10. Remove ring (A) from pin (B), and remove pins from header legs at delivery opening.

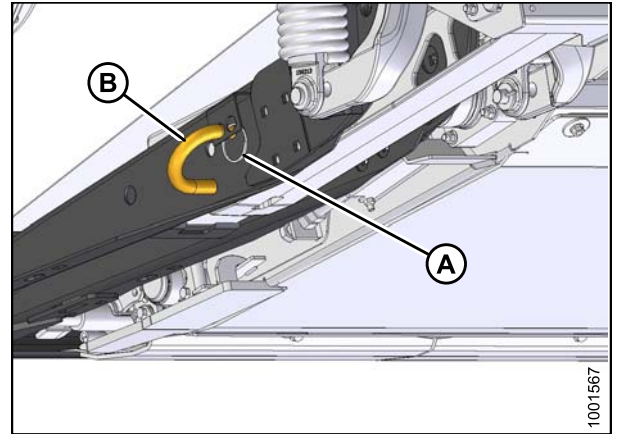


Figure 3.134: Remove ring and pins

11. Place two 6 inch (150 mm) blocks (A) under header legs at delivery opening. The blocks (A) are shown on the ground.

**NOTE:** Stabilizer/Transport wheels can be used to support header.

12. Disengage lift cylinder locks.

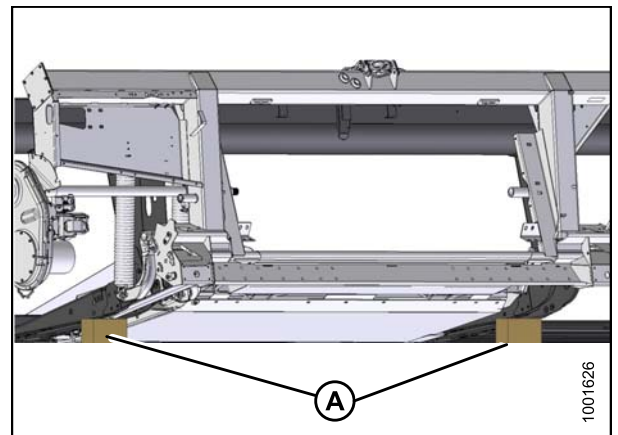


Figure 3.135: Place blocks under header legs

13. Start engine, and lower header until it rests on blocks (A) (or stabilizer wheels) and the ground.

**NOTE:** Length of hydraulic center-link may need to be adjusted to relieve load on link.



### CAUTION

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.

14. Stop engine, and remove key from ignition.

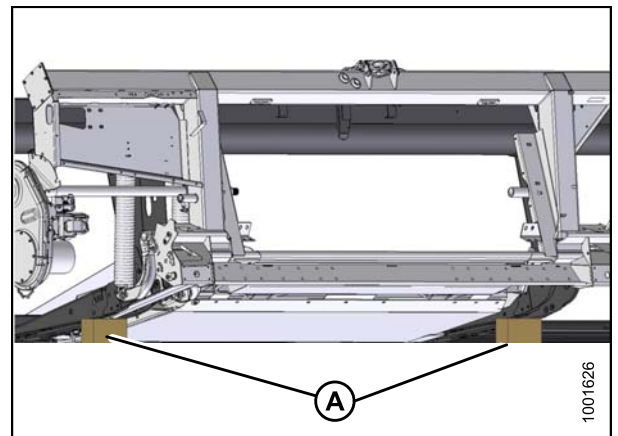
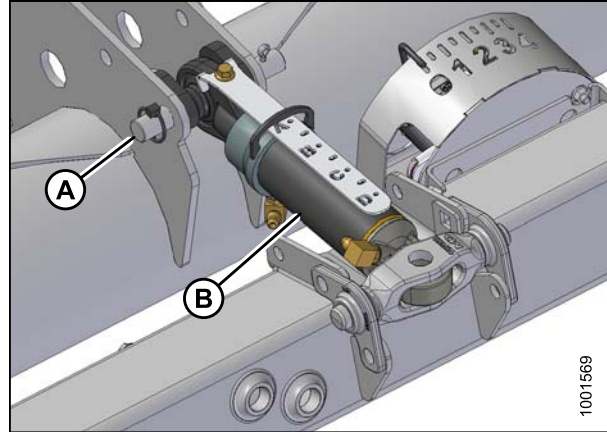


Figure 3.136: Rest header on blocks



## OPERATION

15. Disconnect hydraulic center-link:
  - a. Remove lynch pin and clevis pin (A), and then lift center-link (B) clear of bracket.
  - b. Replace pin (A), and secure with lynch pin.



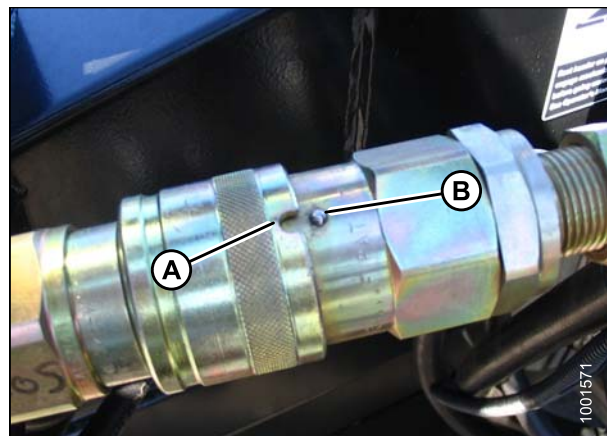
**Figure 3.137: Disconnect hydraulic center-link**

16. Disconnect knife and draper drive hydraulic hoses at bracket. Cap off ends immediately to avoid loss of oil.
17. Store and secure hoses on adapter frame.



**Figure 3.138**

18. If quick disconnects are installed, disconnect as follows:
  - a. Line up slot (A) in collar with pin (B) on connector.
  - b. Push collar toward pin, and pull connector to disengage.
  - c. Install plugs or caps on hose ends (if equipped).

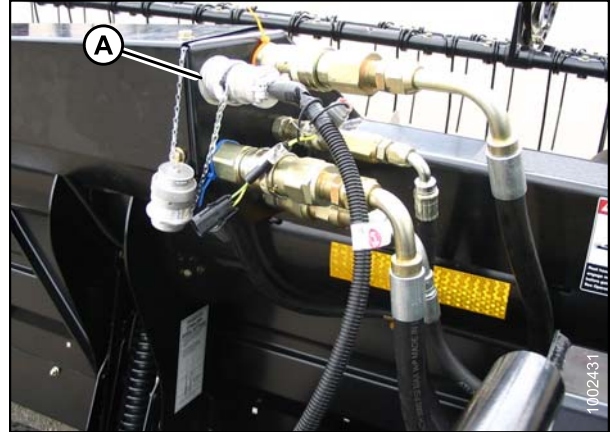


**Figure 3.139: Disconnect quick disconnects**



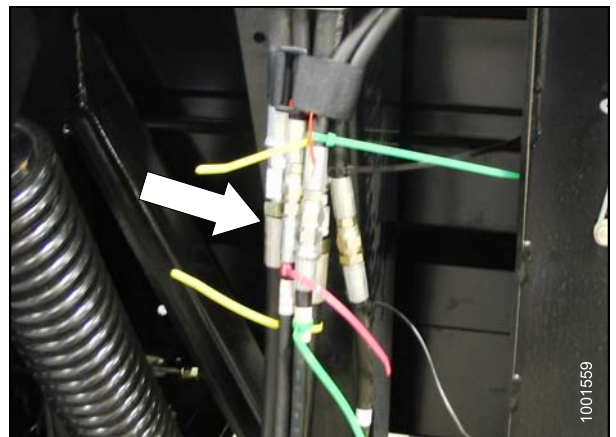
## OPERATION

19. Disconnect electrical connector (A) by turning collar counterclockwise, and pulling connector to disengage.
20. Store and secure hoses and electrical connector on adapter.



**Figure 3.140: Disconnect electrical connector**

21. Disconnect reel hydraulics. Cap off end immediately to avoid loss of oil.



**Figure 3.141: Disconnect reel hydraulics**

22. Store and secure hoses to adapter frame.
23. Ensure header is on ground, or is supported by wheels in Transport mode.
24. Start engine, and slowly back combine away from header.
25. Stop engine, and remove key.



**Figure 3.142: Store and secure hoses**

## OPERATION

26. Replace pin (A) in header legs, and secure with ring (B).

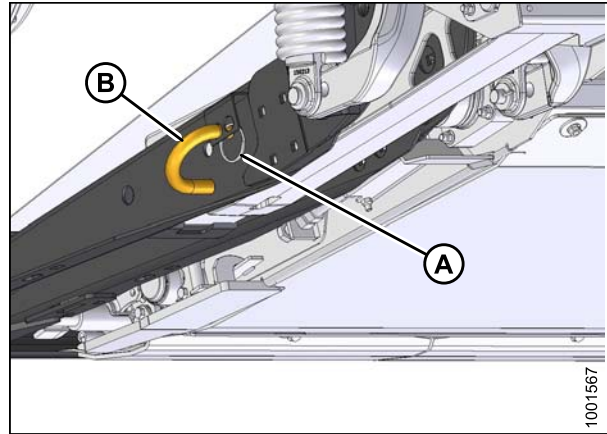


Figure 3.143

### 3.4.2 Attachment

The D65 Harvest Header® can be attached to the adapter from either Field configuration or Transport configuration.

**NOTE:** Stabilizer/Transport wheels can be used to support header. Refer to Section [3.9.1 Cutting Height](#), page 89.

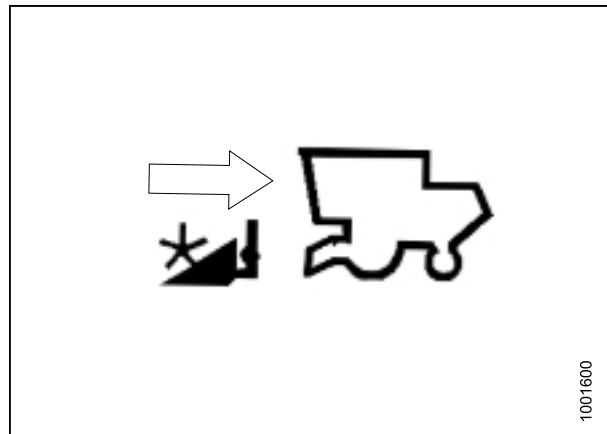


Figure 3.144

To attach the header to the combine and adapter, follow these steps:

1. Prop up hydraulic center-link (A) with pin (or equivalent tool) at (B).



## CAUTION

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.

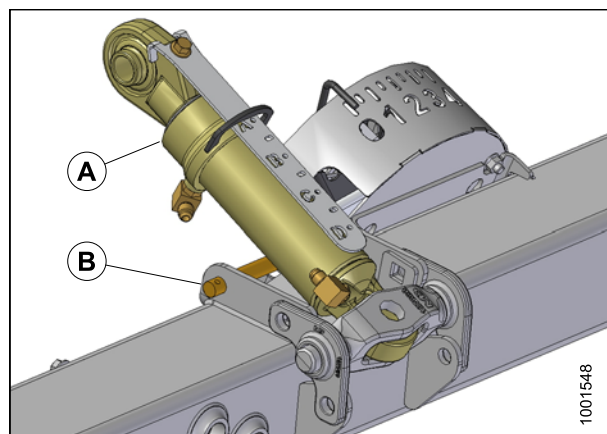


Figure 3.145

## OPERATION

2. Remove ring (A) from pin (B), and remove pins from header legs at delivery opening.

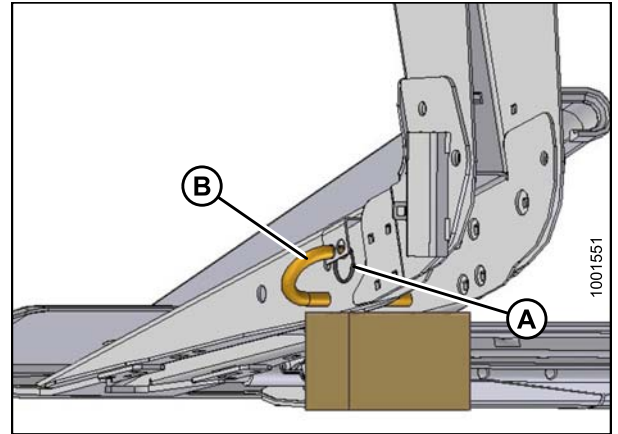


Figure 3.146

3. Ensure latches (A) at front corners of adapter are rotated towards the rear of adapter.



### CAUTION

Be sure all bystanders are clear of machine before starting engine or engaging any header drives.

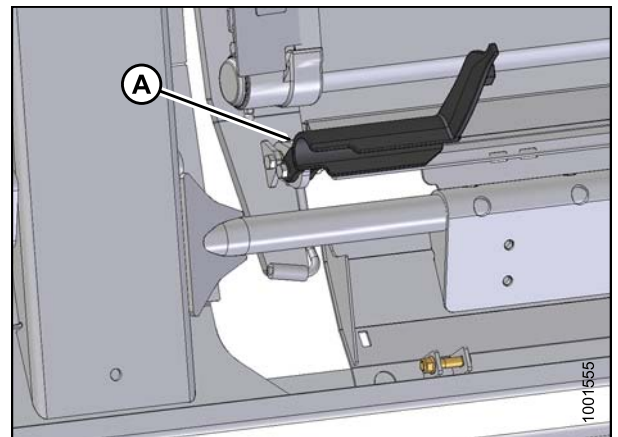


Figure 3.147: Latches

4. Start engine, and lower combine feeder house so that adapter arms (A) are aligned with header legs (B).
5. Drive slowly forward, maintaining alignment between adapter arms (A) and header legs (B).
6. Keep adapter arms (A) just under the legs (B) to ensure adapter legs seat properly in the header linkage supports at (C).

### IMPORTANT

Keep hydraulic hoses clear to prevent damage when driving into header.

7. Continue forward until adapter arms (A) contact stops in legs (C).

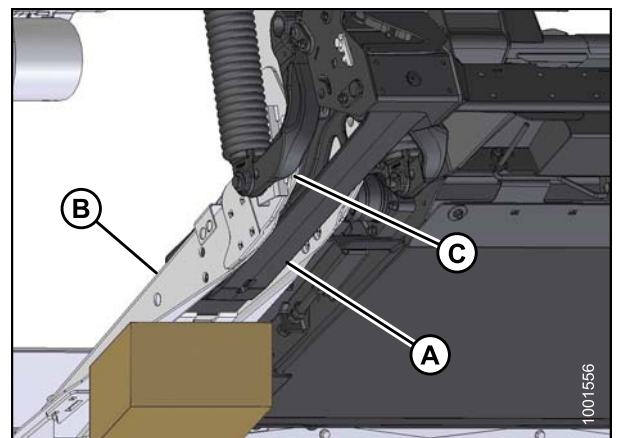


Figure 3.148

A - Adapter arms

B - Header legs

C - Header linkage supports

## OPERATION

8. Adjust length of center-link (A) with header angle hydraulics to approximately align eye (B) on center-link with hole in header bracket.
9. Shut down engine, and remove key.

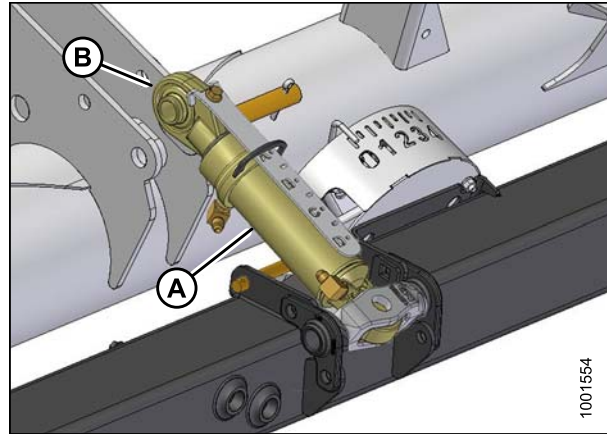


Figure 3.149

10. Connect center-link:
  - a. Pull pin (B) part way out of bracket, and remove prop from under center-link (A).
  - b. Install pin (B) through center-link (A) and bracket, and secure with lynch pin.

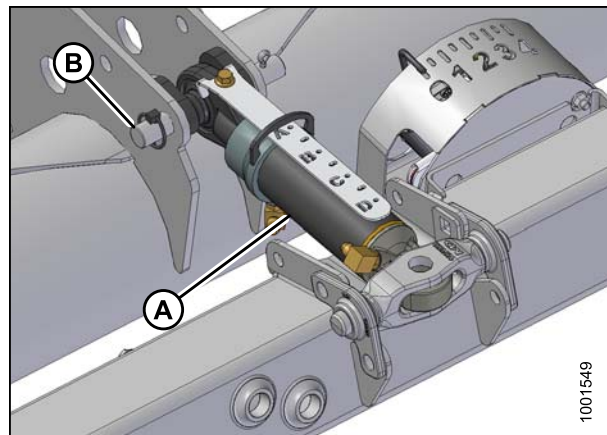


Figure 3.150

11. Connect reel hydraulics at right end of adapter matching colored cable ties.

### CAUTION

Always connect center-link before fully raising header.

### CAUTION

Be sure all bystanders are clear of machine before starting engine or engaging any header drives.

12. Start engine, and raise adapter slowly, making sure adapter legs engage in header legs.
13. Raise header fully, stop engine, and remove key.

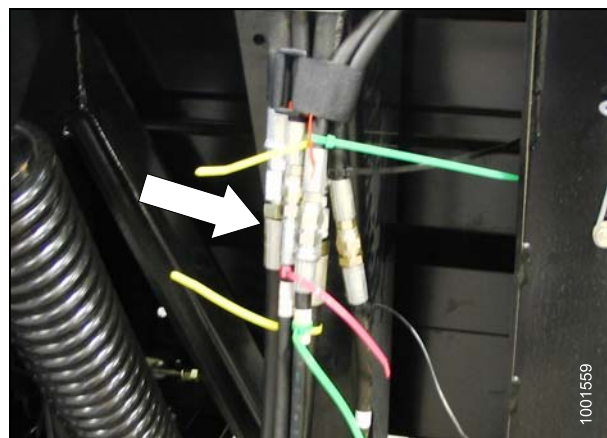


Figure 3.151: Connect reel hydraulics

## OPERATION

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

14. Engage header lift cylinder stops on combine.
15. Remove lift cylinder locks, start engine, and lower header to ground. Adjust header angle to the shallowest setting (shortest center-link).
16. Raise reel fully, shut down engine, and remove key from ignition.
17. Engage reel props.

### WARNING

Keep hands clear of the area between guards and sickle at all times.

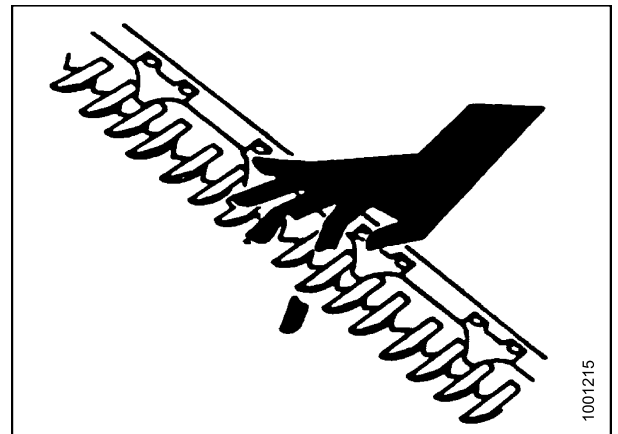


Figure 3.152

The next four steps show how to attach the adapter feeder deck.

18. Remove bolts (A) at either side of opening to allow attachment of adapter deck.
19. Rotate latches (B) forward and down engage transition pan tube (C).

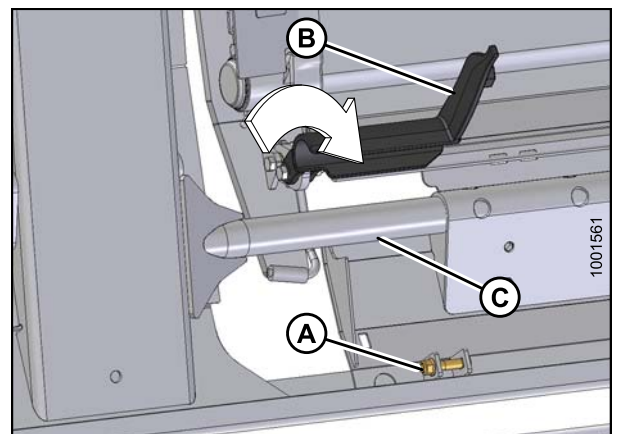


Figure 3.153



## OPERATION

20. Rotate latches (A) down with a 15/16 in. wrench on hex (B) to raise feed deck so that bolt (C) can be reinstalled to lock the latch position.
21. Repeat for other side of feed draper deck.

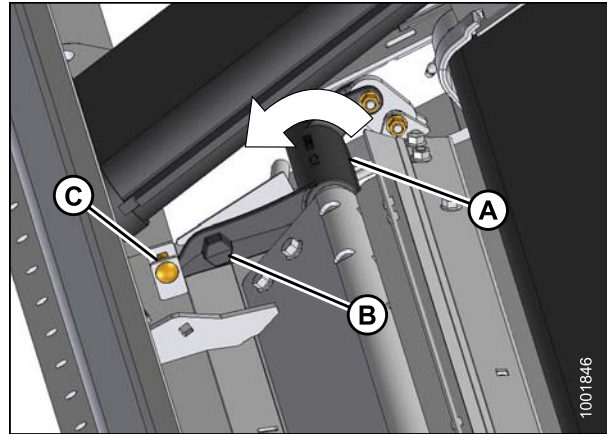


Figure 3.154

22. Install fillers (A) at each front corner of feed deck with two 3/8 inch x 0.75 long hex head bolts (B) at each location.

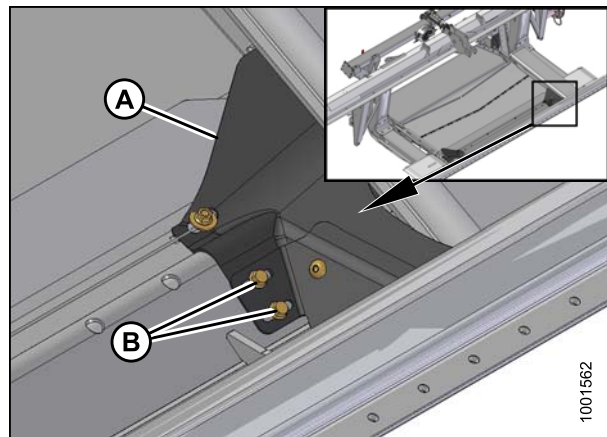


Figure 3.155

23. Connect knife and draper drive hydraulics, matching colored plastic cable ties.
24. Attach electrical connector (A):
  - a. Remove cover on receptacle.
  - b. Align lugs on connector with slots in receptacle, push connector onto receptacle, and turn collar on connector to lock it in place.
  - c. Attach cover to mating cover on combine wiring harness.

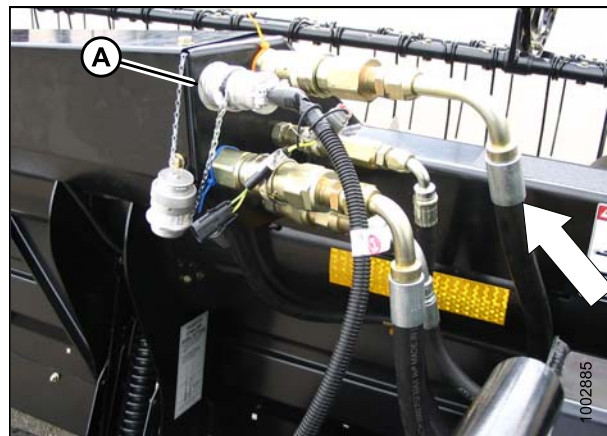


Figure 3.156

## OPERATION

25. If quick disconnects are installed, connect as follows:
- Remove covers (if installed) from receptacles and hose ends.
  - Check connectors, and clean if required.
  - Push hose connector onto mating receptacle until collar on receptacle snaps into lock position.

**NOTE:** Ensure hoses are clear of driveline and adjacent structure.

**NOTE:** It is not necessary to bleed the system by loosening fittings.

26. Check float, and confirm that the header is level. see section [Checking and Adjusting Float, page 95.](#) and section [Header Levelling.](#)



**Figure 3.157**



## OPERATION

### 3.5 Break-in Period



## CAUTION

**Before investigating an unusual sound or attempting to correct a problem, shut off engine, and remove key.**

After attaching the header to the combine for the first time, follow these steps:

1. Operate the machine with reel drapers and sickle running slowly for five minutes, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts.

**NOTE:** Reel and side drapers will not operate until oil flow fills the lines.

**NOTE:** Until you become familiar with the sound and feel of your new header, be extra alert and attentive.

2. Perform the items specified in to Section [4.4.2 Break-In Inspections, page 150](#).

### 3.6 Shutdown Procedure



## CAUTION

To shut down, and before leaving the combine seat for any reason, follow these steps:

- Park on level ground if possible.
- Lower the header fully.
- Place all controls in NEUTRAL or PARK.
- Disengage the header drive
- Stop engine, and remove key from ignition.
- Wait for all movement to stop.

### 3.7 Header Controls



## CAUTION

**Be sure all bystanders are clear of machine before starting engine or engaging any header drives.**

See your combine operator's manual for identification of in-cab controls for:

- Header Drive Clutch
- Header Height
- Header Angle
- Ground Speed
- Reel Speed
- Reel Height
- Reel Fore-Aft Position

# OPERATION

## 3.8 Header Setup

### 3.8.1 Header Settings

This table is a guideline for setting up the D65 Harvest Header®. Settings other than those suggested can be made to suit various crops and conditions not covered here

# OPERATION

D65/CA25 Combine Header Recommended Settings															
Crop Type	Stubble Height (in.)	Crop Condition	Divider Rods	Draper Speed Setting (Note 7)	Header Angle (Notes 1 and 4)	Knife Speed Setting (Note 2)	Reel Cam Setting	Reel Speed % (Note 3)	Reel Position	Skid Shoe Position (Note 4)	Stabilizer Wheel (Notes 4 and 5)	Upper Cross Auger	Notes		
<b>Cereals</b>	0	Light	Off	8	B - C	600-650	3	10-15	6 or 7	Up or Center	Storage	Not Required	<p><b>Note 1:</b> Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.</p> <p><b>Note 2:</b> Minimum knife drive pulley rpm. Applicable only to single-knife headers.</p> <p><b>Note 3:</b> Percentage above ground speed.</p> <p><b>Note 4:</b> Cutting height is controlled with a combination of skid shoes and header angle.</p> <p><b>Note 5:</b> Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain, and to minimize bouncing.</p> <p><b>Note 6:</b> Available through your Dealer Parts Department. Whisker divider not required on both ends of header.</p> <p><b>Note 7:</b> Setting on CA25 draper control.</p>		
		Normal	On	7		550-600	2	10				Recommended			
		Heavy	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
		Lodged	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
	4-8	Light	Off	8	A	600-650	4	10-15	6 or 7	Center or Down	Note 5	Not Required			
		Normal	On	7		550-600	2	10				Recommended			
		Heavy	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
		Lodged	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
	10 +	Light	Off	8	A	600-650	4	10-15	6 or 7	Not Applicable	Note 5	Not Required			
		Normal	On	7		550-600	2	10				Recommended			
		Heavy	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
		Lodged	Off	7		525-600	3 or 4	5-10				4 or 5		Not Required	
<b>Canola</b>	4-8	Light	On	7	A	600-650	2	5-10	6 or 7	Down	Note 5	Recommended	<p><b>Note 3:</b> Percentage above ground speed.</p> <p><b>Note 4:</b> Cutting height is controlled with a combination of skid shoes and header angle.</p> <p><b>Note 5:</b> Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain, and to minimize bouncing.</p> <p><b>Note 6:</b> Available through your Dealer Parts Department. Whisker divider not required on both ends of header.</p> <p><b>Note 7:</b> Setting on CA25 draper control.</p>		
		Normal		B - C	550-600	1	10	Center or Down							
		Heavy		8	D	525-600	2	5-10						3 or 4	Down
		Lodged		7	D	525-600	2	5-10						3 or 4	Center or Down
	10 +	Light	On	7	A	600-650	2	5-10	6 or 7	Not Applicable	Note 5	Recommended			
		Normal		B - C	550-600	1 or 2	10	3 or 4							
		Heavy		8	D	525-600	2 or 3	5-10						3 or 4	
		Lodged		7	D	525-600	2 or 3	5-10						3 or 4	
<b>California Rice</b>	0	Light	Whisker (Note 6)	4	D	600-650	2	10-15	6 or 7	Up or Center	Storage	Not Required		<p><b>Note 3:</b> Percentage above ground speed.</p> <p><b>Note 4:</b> Cutting height is controlled with a combination of skid shoes and header angle.</p> <p><b>Note 5:</b> Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain, and to minimize bouncing.</p> <p><b>Note 6:</b> Available through your Dealer Parts Department. Whisker divider not required on both ends of header.</p> <p><b>Note 7:</b> Setting on CA25 draper control.</p>	
		Normal			B - C	550-600		10							4 or 5
		Heavy			D	525-600		5-10							
		Lodged			D	525-600		5-10							
	4-8	Light	Whisker (Note 5)	4	D	600-650	3	10-15	6 or 7	Center or Down	Note 5	Not Required			
		Normal			B - C	550-600		10							
		Heavy			D	525-600		4					5-10		
		Lodged			D	525-600		4					5-10		
	10 +	Light	Whisker (Note 5)	4	A	600-650	3	10-15	6 or 7	Not Applicable	Note 5	Not Required			
		Normal			B - C	550-600		10							
		Heavy			D	525-600		4					5-10		
		Lodged			D	525-600		4					5-10		
<b>Delta Rice</b>	2-6	Light	Off	6	D	600-650	2 or 3	10-15	6 or 7	Center or Down	Note 5	Not Required	<p><b>Note 3:</b> Percentage above ground speed.</p> <p><b>Note 4:</b> Cutting height is controlled with a combination of skid shoes and header angle.</p> <p><b>Note 5:</b> Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain, and to minimize bouncing.</p> <p><b>Note 6:</b> Available through your Dealer Parts Department. Whisker divider not required on both ends of header.</p> <p><b>Note 7:</b> Setting on CA25 draper control.</p>		
		Normal			B - C	550-600		10						4 or 5	
		Heavy			D	525-600		3 or 4						5-10	4 or 5
		Lodged			D	525-600		3 or 4						5-10	4 or 5
	8 +	Light	Off	6	A	600-650	2 or 3	10-15	6 or 7	Not Applicable	Note 5	Not Required			
		Normal			B - C	550-600		10							
		Heavy			D	525-600		3 or 4						5-10	4 or 5
		Lodged			D	525-600		3 or 4						5-10	4 or 5
<b>Soybeans</b>	0	Light	On	8	D	600-650	2	5-10	6 or 7	Up or Center	Storage	Not Required		<p><b>Note 3:</b> Percentage above ground speed.</p> <p><b>Note 4:</b> Cutting height is controlled with a combination of skid shoes and header angle.</p> <p><b>Note 5:</b> Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain, and to minimize bouncing.</p> <p><b>Note 6:</b> Available through your Dealer Parts Department. Whisker divider not required on both ends of header.</p> <p><b>Note 7:</b> Setting on CA25 draper control.</p>	
		Normal		B - C	550-600	10									
		Heavy		D	525-600	5-10									
		Lodged		D	525-600	5-10									
<b>Flax</b>	2-6	Light	On	8	B - C	600-650	2	5-10	6 or 7	Center or Down	Note 5	Not Required			
		Normal		A	10										
		Heavy		B - C	5-10										
		Lodged		D	5-10										
<b>Peas</b>	0	Light	On	7	B - C	600-650	2	5-10	6 or 7	Up or Center	Storage	Recommended			
		Normal			550-600	10									
		Heavy			525-600	4 or 5									
		Lodged			D	525-600		5-10							
<b>Lentils</b>	0	Light	On	8	B - C	600-650	2	5-10	6 or 7	Up or Center	Storage	Not Required			
		Normal		550-600		10									
		Heavy		525-600		5-10									
		Lodged		D		525-600		5-10							

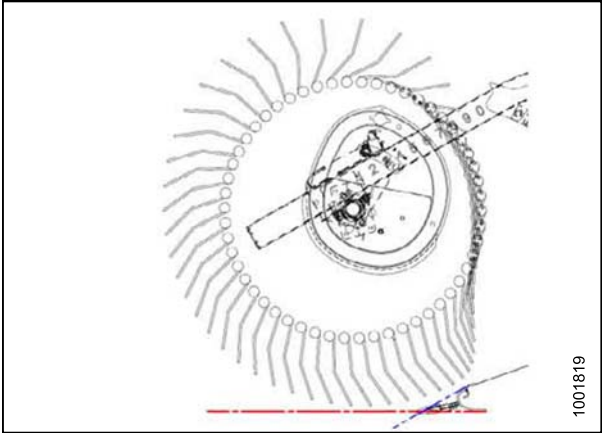
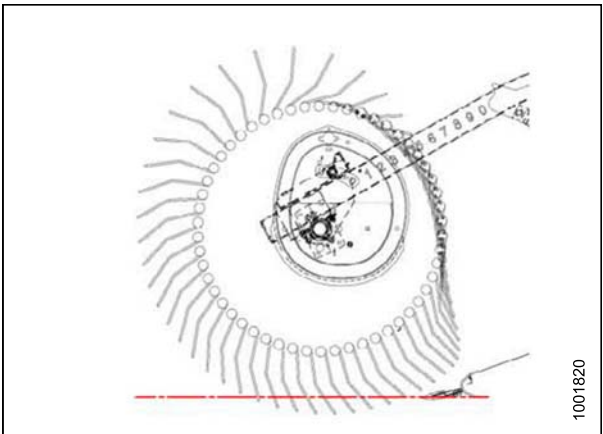
**Figure 3.158**

See also Section 3.8.2 Pickup Reel Settings, page 87.

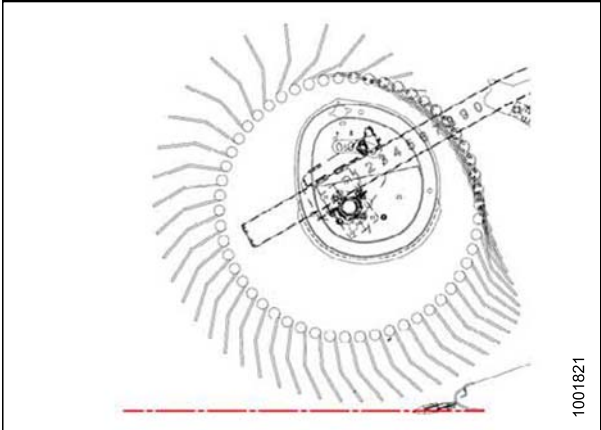
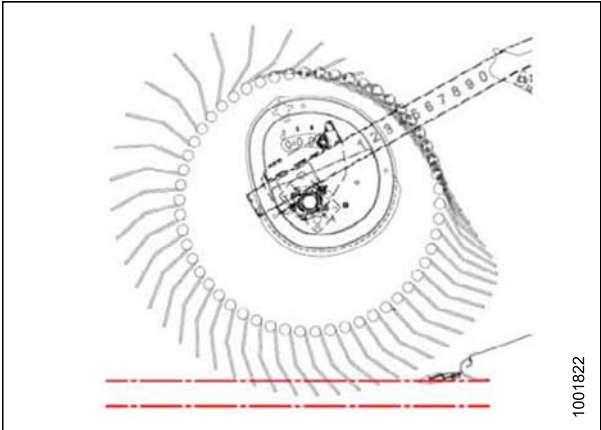
# OPERATION

## 3.8.2 Pickup Reel Settings

Table 3.1 Reel Settings Chart

CAM SETTING NUMBER (Finger Speed Gain)	REEL POSITION NUMBER	REEL FINGER PATTERN
1 (0)	6 or 7	
2 (20%)	3 or 4	

## OPERATION

CAM SETTING NUMBER (Finger Speed Gain)	REEL POSITION NUMBER	REEL FINGER PATTERN
3 (30%)	6 or 7	
4 (35%)	2 or 3	

**NOTE:**

- Adjust reel forward to get closer to ground when tilting header back. Fingers/tines will dig into ground at extreme reel forward positions, so adjust skid shoes or header angle to compensate. Adjust reel rearward to get reel further away from ground when tilting header forward.
- Header Tilt can be increased to get reel closer to ground, or decreased to get reel further away from ground while keeping material flowing onto drapers.
- To leave maximum amount of stubble behind in lodged crop, raise header but increase header tilt to keep reel close to ground. Position the reel fully forward.
- Reel may have to be moved back to prevent lumps or plugging on cutterbar in thinner crops.
- Minimum crop carrying capacity (minimum area of exposed draper between reel and header backsheet) occurs with the reel in the furthest aft position.
- Maximum crop carrying capacity (maximum area of exposed draper between reel and header backsheet) occurs with the reel in the furthest forward position.
- The tip speed of the fingers/tines at the cutterbar becomes higher than the reel speed at higher cam settings due the nature of the cam action. Refer to [3.8.2 Reel Settings Chart., page 87](#)



# OPERATION

## 3.9 Header Operating Variables

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

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

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

Variable	Section
Cutting height	<a href="#">3.9.1 Cutting Height, page 89</a>
Header float	
Header angle	<a href="#">3.9.3 Header Angle, page 99</a>
Reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
Ground speed	
Draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
Knife speed	<a href="#">3.9.7 Knife Speed, page 103</a>
Reel height	
Reel fore-aft position	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
Reel tine pitch	
Crop divider rods	<a href="#">3.9.11 Crop Divider Rods, page 113</a>

### 3.9.1 Cutting Height

Harvest Headers are designed to allow an Operator to cut the crop above the ground for a desired stubble height, or to cut the crop at ground level with the header on the ground. Cutting height will vary, depending on factors including whether windrowing or straight-cutting, type of crop, etc.

#### *Cutting Off The Ground*

Cutting height is controlled with a combination of header lift cylinder adjustment and a stabilizer wheel system, or a stabilizer/slow speed transport wheel system.

In both options, the stabilizing wheel system is designed to minimize bouncing at the header ends, and may be used to float the headers to achieve an even cutting height when cutting above ground level in cereal grains. The system can provide very even stubble height and greatly reduces operator fatigue.

The proper setting requires balancing the amount of header weight carried by the float and the stabilizer wheels. Refer to Section [3.8.1 Header Settings, page 85](#) for recommended use in specific crops and crop conditions.



## CAUTION

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

## OPERATION

To cut off the ground, follow these steps:

1. Raise the header so that the stabilizer wheels are off the ground. Shut down engine, and remove the key.
2. Check that the float is working properly. See [Checking and Adjusting Float, page 95](#).

### CAUTION

**Handle may be under tension, especially when the wheels are on the ground. Raise header so that wheels are off the ground before making adjustments.**

3. Set up the stabilizer wheels (if installed) as follows: Otherwise, proceed to step 4., [Cutting Off The Ground, page 91](#).
  - a. Support wheel weight by lifting slightly with one hand on handle (B). Pull up on handle (A) to release lock.
  - b. Lift wheel with handle (B), and engage support channel into center slot (C) in upper support.
  - c. Push down on handle (A) to lock.
  - d. Lower header to desired cutting height using combine controls, and check spring length as shown. Readjust wheels as required to achieve range (12.6 in +/- 1.0 (320 mm +/- 25)).

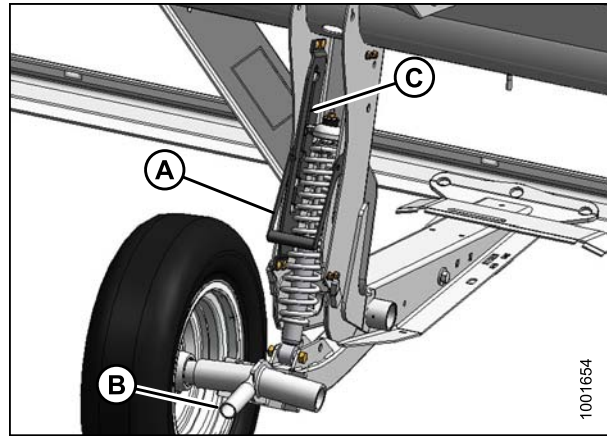


Figure 3.159

## IMPORTANT

**Continuous operation with excessive spring compression (i.e. load indicator reading shorter than 11.6 in. (295 mm) can result in damage to suspension system.**

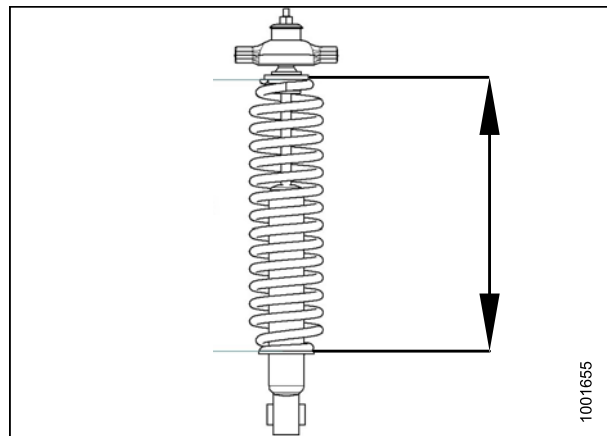
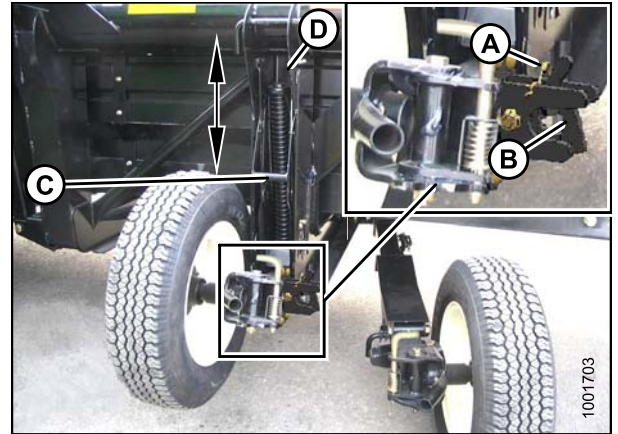


Figure 3.160: Spring Compression: 12.6 in +/- 1.0 (320 mm +/- 25)

## OPERATION

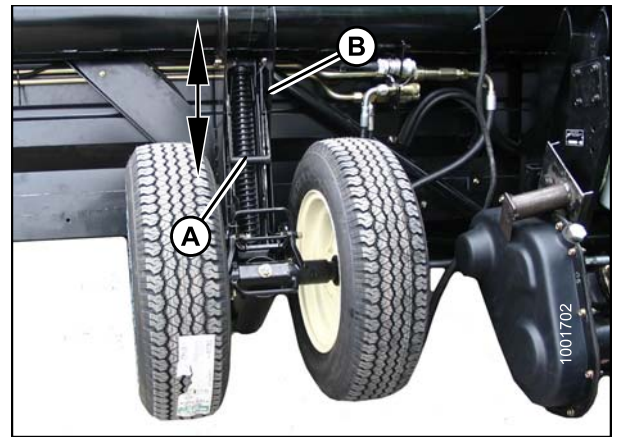
4. Set up the stabilizer/slow speed transport right wheels, if installed, as follows. Otherwise, proceed to step 6.
  - a. Remove hairpin (A) from latch.
  - b. Disengage latch (B) and lift right wheel out of hook, and place on ground as shown. This reduces weight of assembly, and makes adjusting wheel position easier.
  - c. Support left wheel weight by lifting slightly with one hand. Pull up on handle (C) to release lock.
  - d. Lift left wheel to desired height, and engage support channel into slot (D) in upper support.
  - e. Push down on handle (C) to lock.
  - f. Lift right hand wheel back into field position, and ensure latch (B) is engaged.
  - g. Secure latch with hairpin (A).
5. Set up the stabilizer/slow speed transport left wheels, if installed, as follows. Otherwise, proceed to step 6.
  - a. Support wheel weight by lifting slightly with one hand. Pull up on handle (A) to release lock.
  - b. Lift wheels to desired height, and engage support channel into slot (B) in upper support.
  - c. Push down on handle (A) to lock.
  - d. Lower header to desired cutting height using combine controls, and check load indicator as shown below. Readjust wheels as required to achieve range between '2' and '3' on Load Indicator as shown below.



**Figure 3.161: Handle Up to RELEASE. Down to LOCK.**

A - Hairpin  
C - Handle

B - Latch  
D - Slot



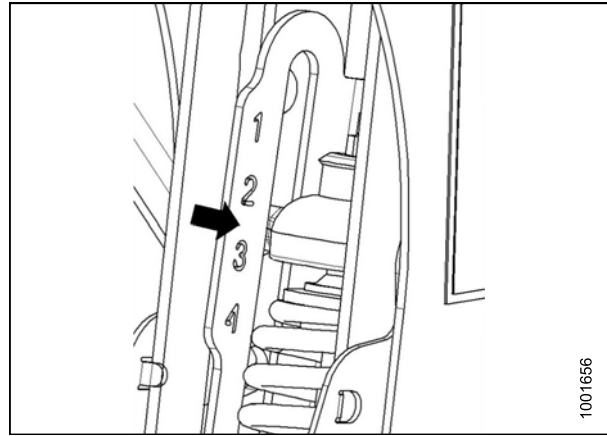
**Figure 3.162: Handle Up to RELEASE. Down to LOCK.**

## IMPORTANT

**Continuous operation with excessive spring compression (i.e. Load Indicator reading greater than '4') can result in damage to suspension system.**

6. Adjust header angle to desired working angle with the machine's header angle controls. If angle is **not** critical, set it to mid-position.
7. Use the combine's AHHC (Auto Header Height Control) to automatically maintain cutting height. Refer to your combine operator's manual and AHHC instructions for details.

**NOTE:** Header angle adjustments or AHHC ground pressure control may be used for 'on-the-go' cut height adjustments.



**Figure 3.163: Load Indicator between 2 and 3**

### *Cutting On the Ground*

Cutting on the ground is controlled with a combination of skid shoes, header angle, and float adjustment, and **NOT** with the header lift cylinders.

**NOTE:** Skid shoes are standard equipment on the D65 header.

Having the header ride on the skid shoes allows the float linkage to float the header over obstacles and follow ground contours, rather than supporting the header with the cylinders.

Lowering the skid shoes or decreasing the header angle increases the cutting height. This may be desirable in stony conditions to reduce damage to cutting components. Also, a longer stubble length helps material dry faster.

Raising the skid shoes and increasing the header angle allows the crop to be shaved.

Refer to Section [3.8.1 Header Settings, page 85](#) for recommended skid shoe positions in specific crops and crop conditions.

To set-up the header to cut on the ground, follow these steps:

1. Fully raise the stabilizer wheels, or slow speed transport wheels if installed. Refer to previous section.

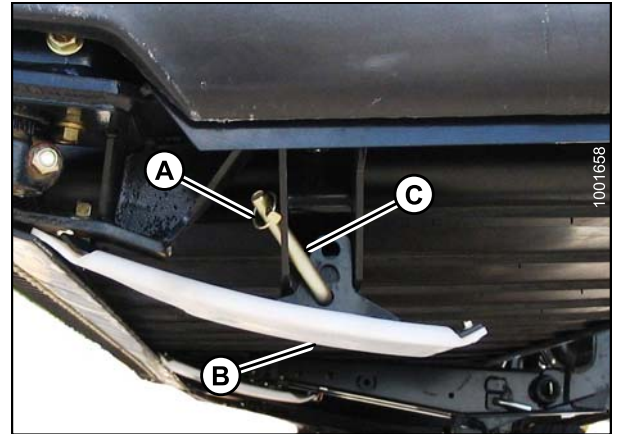
## **DANGER**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.**

2. Fully raise header, engage lift cylinder stops, shut off engine and remove key.

## OPERATION

3. Adjust outer skid shoes to achieve desired cutting height as follows:
  - a. Remove lynch pin (A) at each skid shoe (B).
  - b. Hold shoe, and remove pin (C) by disengaging frame, and then pulling away from shoe.
  - c. Raise or lower skid shoe to desired position using holes in support as a guide.
  - d. Reinstall pin (C), engage in frame, and secure with lynch pin (A).

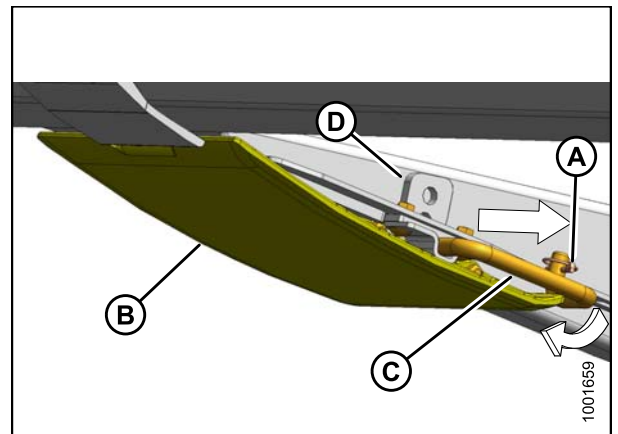


**Figure 3.164: Outer Skid Shoes**

A - Lynch pin  
B - Skid shoe  
C - Pin

Adjust inner skid shoes to achieve desired cutting height as follows:

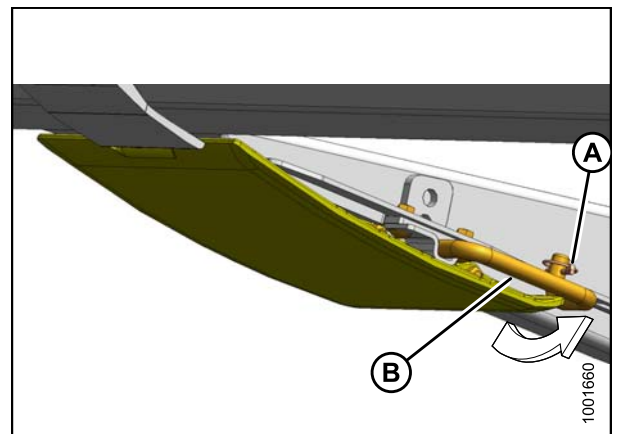
4. Remove lynch pin (A).
5. Hold shoe (B), and remove pin (C) by pulling down to disengage frame, and then pulling away from shoe.
6. Raise or lower skid shoe (B) to desired position using holes in support (D) as a guide.



**Figure 3.165: Inner Skid Shoes**

A - Lynch Pin  
B - Shoe  
C - Pin  
D - Support

7. Reinsert pin (B), engage in frame, and secure with lynch pin (A).
8. Check that skid shoes are adjusted to the same position.
9. Adjust header angle to desired working position using the machine's header angle controls. If angle is **NOT** critical, set it to mid-position.
10. Check header float. See [Checking and Adjusting Float, page 95](#).



**Figure 3.166**

## OPERATION

### 3.9.2 Header Float

Under normal conditions, D65 combine headers perform best with minimum extra weight on the header.

#### *Header Float Locks*

The function of the header float locks is to lock and unlock the header float system. There are two locks—one on each side of the adapter.

## IMPORTANT

**The float locks must be engaged when the header is being transported with the adapter attached so there is no relative movement between the adapter and header during transport. The float locks must also be locked during detachment from the combine to allow the feeder house to release the adapter.**

1. To **disengage float locks (unlock)**, move latch (A) downward, and move lever (B) at each lock to lowest position. In this position, the header is unlocked, and can float with respect to the adapter.
2. To **engage float locks (lock)**, move lever (B) up to its highest position. In this position, the header cannot move with respect to the adapter.

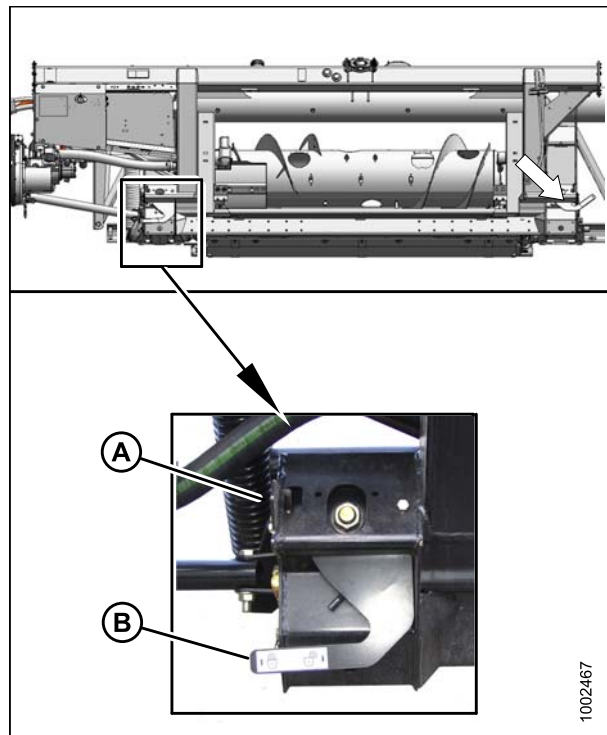


Figure 3.167: Lever Up = LOCK, Down = UNLOCK



## OPERATION

### Checking and Adjusting Float

To check and adjust the float, follow these steps.

1. Park combine on level surface.
2. Fully lower the reel, and adjust the fore-aft position between '5' and '6' on decal on the right side reel arm.

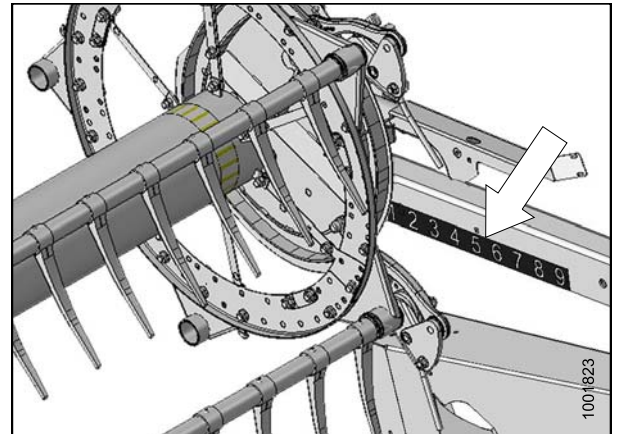


Figure 3.168: Adjust fore-aft position

3. Adjust center-link to mid-range (between 'B' and 'C' on cylinder indicator).
4. Position cutterbar 8-12 in. (200-300 mm) off the ground.



## CAUTION

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.

5. Stop engine, and remove key from ignition.

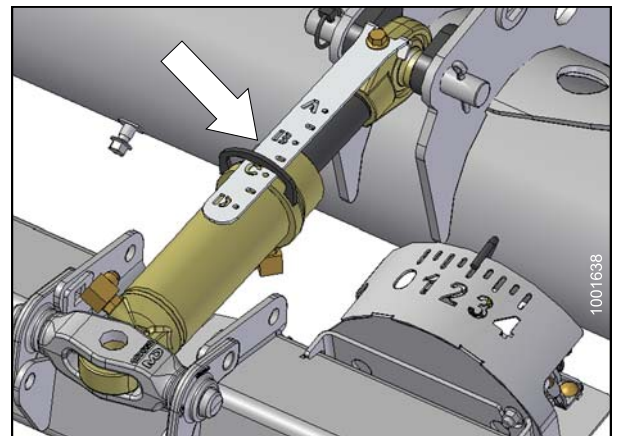


Figure 3.169: Adjust center-link

## IMPORTANT

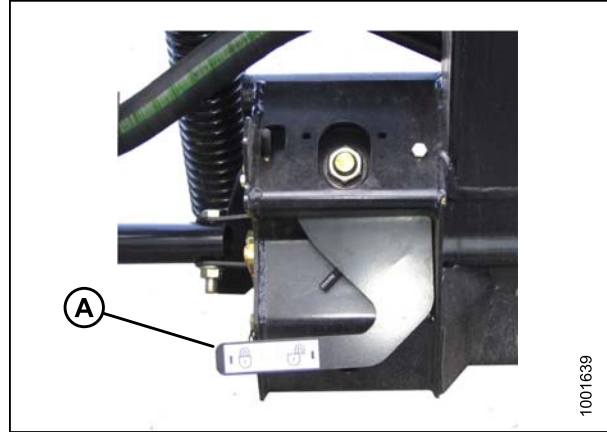
**The adapter float springs are not used to level the header.**

6. Check that adapter is level. If the adapter is **not** level, perform the following checks prior to adjusting the leveling linkages:
  - a. Check combine tire pressures.
  - b. Check that the combine feeder house is level. Refer to combine operator's manual for instructions.
  - c. Check that top of adapter is level with combine axle.



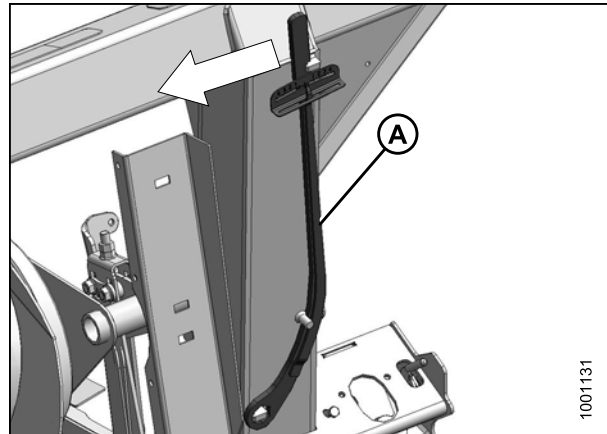
## OPERATION

7. Move both **header** float lock levers (A) down (UN-LOCK).
8. If header is equipped with stabilizer wheels or slow speed transport wheels, place them in storage position.



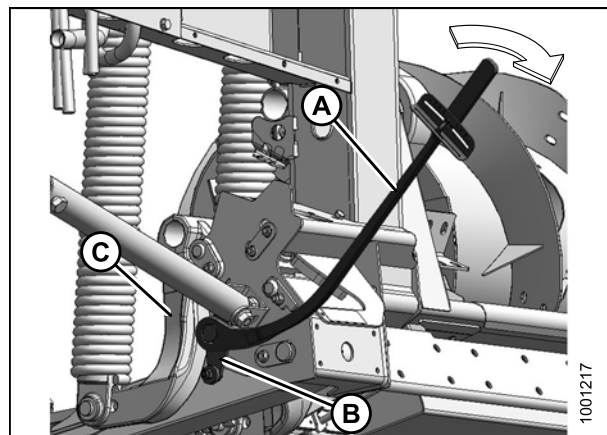
**Figure 3.170: Move float lock levers down to UNLOCK**

9. Remove torque wrench (A) from storage position at RH side of adapter frame. Pull slightly in direction shown to disengage wrench from hook.



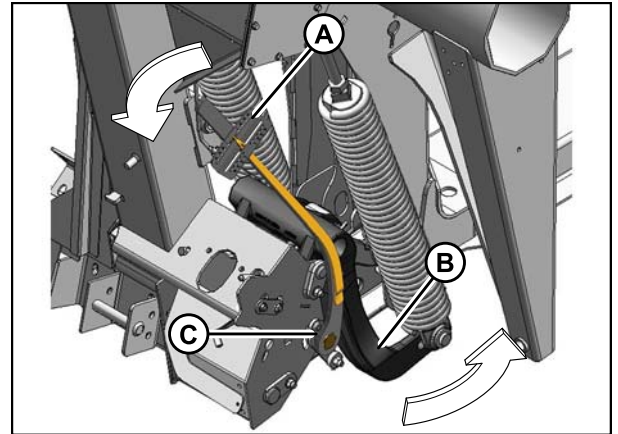
**Figure 3.171: Torque wrench**

10. Place torque wrench (A) onto float lock at (B). Note position of wrench for checking RH or LH side.
11. Push down on wrench to rotate bell crank (C) forward.



**Figure 3.172: Left side**

## OPERATION



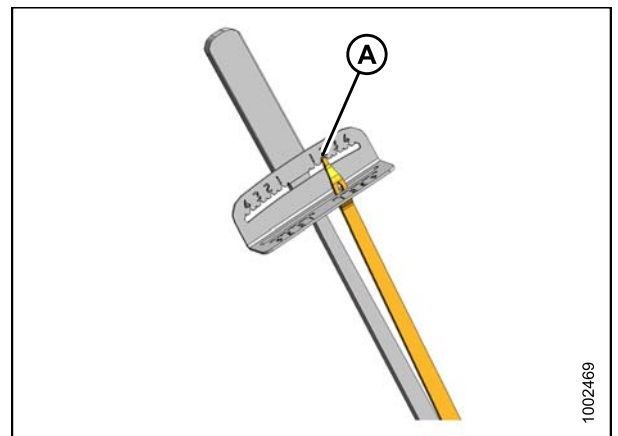
**Figure 3.173: Right side**

A - Torque wrench  
C - Bell crank

B - Float lock

12. Continue pushing down on the wrench until indicator (A) reaches a maximum reading, and begins to decrease. Note the maximum reading. Repeat for opposite side.
13. Use the table below as a guide for float settings. If reading on wrench is **high**, header is **heavy**. If reading on wrench is **low**, header is **light**.

Header Size	Torque Settings	
	Cutting on the Ground	Cutting off the Ground
20, 25, 30, and 35 FT	1-1/2 to 2	2 to 2-1/2
40 and 45 FT	2 to 2-1/2	2-1/2 to 3

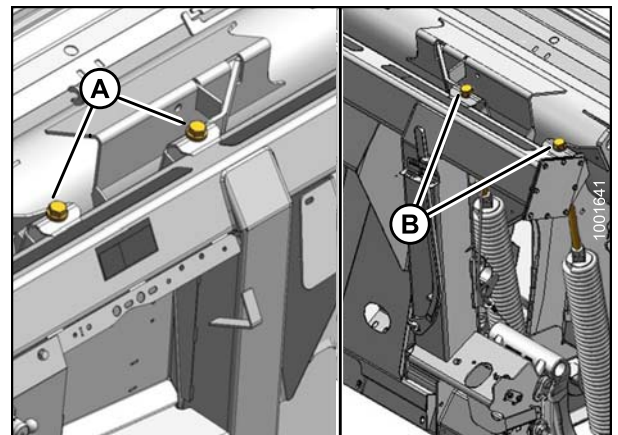


**Figure 3.174: Indicator**

14. To **increase** float (lighten header), turn bolts (A) and (B) **clockwise**.

**NOTE:** Loosen jam nuts on adjuster bolts before adjusting, and retighten once complete.

15. To **decrease** float (increase header weight), turn bolts (A) and (B) **counterclockwise**.



**Figure 3.175: Left side and Right side Float**

## OPERATION

16. Use the following guidelines when adjusting float:
- a. For **Single-Knife Headers**: Adjust the float so the wrench reading is equal for both sides.
  - b. For **40 and 45 foot Double-Knife Headers**: Adjust the float so that torque settings are equal for both sides, and then loosen both right side spring bolts two turns.
  - c. Turn each bolt pair equal amounts. After adjustment has been made, repeat torque wrench reading procedure.
  - d. To avoid frequent breakage of sickle components, scooping soil, or soil build-up at cutterbar in wet conditions, header float should be set as light as possible without causing excessive bouncing.
  - e. With a light float setting, it may be necessary to use a slower ground speed to avoid excessive bouncing, and leaving a ragged cut.
  - f. The stabilizer wheels may be used in conjunction with float to minimize bouncing at the header ends and control cut height when cutting off the ground. Refer to Section [3.9.1 Cutting Height, page 89](#) for details.

**NOTE:** If adequate header float cannot be achieved using all of the available adjustments, an optional heavy duty spring is available. See your MacDon Dealer or parts catalog for ordering information.

### *Setting Feeder House Height and Header Angle*

**NOTE:** Installation of the auto header height controller attachment is recommended for cutting on the ground if the combine is equipped to interface with it.

## OPERATION

To set the feeder house height and header angle, follow these steps:

1. Adjust feeder house height while watching float indicator (A) to set cutterbar down force (normally '2' on indicator). Lower feeder house height to increase ground pressure (decrease float). Indicator reading will increase.
2. When cutting on ground, adjust header angle to achieve desired stubble height. Header angle indicator (B) indicates 'A' for shallowest angle/higher stubble, and 'D' for steepest angle/lower stubble.
3. Decrease header angle to minimize pushing soil.

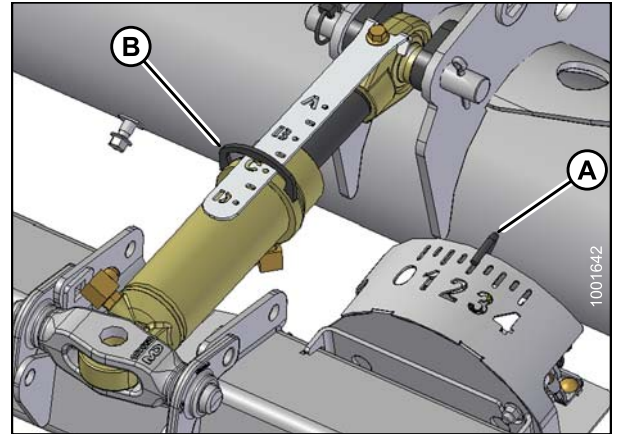
**NOTE:** Header angle and reel fore-aft position changes do not significantly affect header float (downforce).

### 3.9.3 Header Angle

Guard angle (A) is similar to header angle which is the angle between the guard upper surface and the ground.

Header angle (B) is the angle between the drapers and the ground, and is adjustable to accommodate crop conditions and/or soil type.

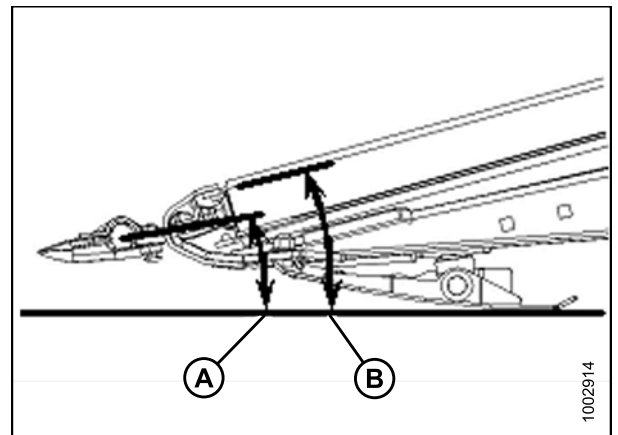
Refer to illustrations at right that show angles for shortest and longest center-link.



**Figure 3.176**

A - Float indicator

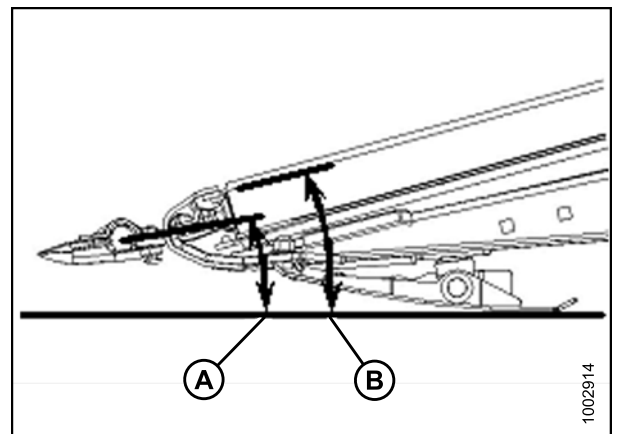
B - Header angle indicator



**Figure 3.177: Shortest Center-Link**

A - Guard Angle

B - Header Angle



**Figure 3.178: Longest Center Link**

A - Guard Angle

B - Header Angle

## OPERATION

Flatter header angles are recommended for normal crop conditions and for stony ground because it minimizes sickle section breakage and reduces soil scooping or build-up at the cutterbar in wet conditions.

Steeper angles are recommended in downed crops for better lifting action, or for cutting close to the ground in soybeans for example.

Refer to Section 3.8.1 [Header Settings](#), page 85 for recommended header angle in specific crops and crop conditions.

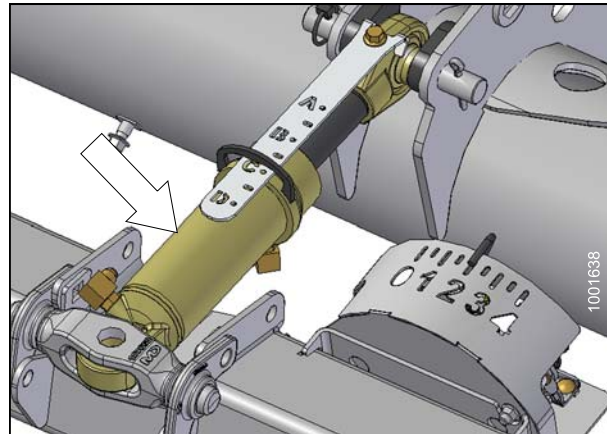
The following table summarizes the adjustment range:

HEADER SIZE (FT)	DRAPER ANGLE	GUARD ANGLE
20 and 25 ft.	13.0°–18.4°	7.0°–12.4°
30, 35, 40, and 40 ft.	13.0°–18.4°	2.0°–7.4°

### *Angle Adjustment*

The header angle is varied by adjusting the length of the center-link between the combine adapter and the header.

Refer to your combine operator's manual for more information on adjusting the header angle.



**Figure 3.179: Adjust Center-Link Length**

### **3.9.4 Reel Speed**

The reel speed is adjustable with the controls in the combine cab.

Reel speed affects feeding of crop into the sickle and onto the drapers, as well as the smoothness and evenness of the delivered crop. Operating the reel too fast or too slow relative to ground speed will cause bunching. At the proper speed, the reel discs should appear to be being driven by the ground.

- If they look like they are skidding relative to ground, the reel is turning too slow.
- If they look like they are spinning excessively relative to the ground, reel speed may be too fast.

In standing crop, reel speed should be just faster than or equal to ground speed, sweeping crop across the sickle.

Flattened crop or a crop that is leaning away from the cutterbar requires a higher reel speed in relation to ground speed. This can be achieved by increasing reel speed, decreasing ground speed, or both.

Excessive shattering of grain heads or crop loss over the header back tube may be indications that reel speed is too fast. Excessive reel speed causes undue wear of reel components and unnecessary load on reel drive, resulting in

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uneven reel motion. Generally, 9-bat reels can effectively operate at lower reel speed, while minimizing crop loss in shatter prone crops.

Refer to Section [3.8.1 Header Settings, page 85](#) for recommended reel speeds in specific crops and crop conditions.

The reel speed is adjustable with the controls in the combine cab. Refer to your combine operator's manual for adjustment details.

### *Optional Reel Drive Sprockets*

<b>MACHINE HYDRAULICS</b>	<b>COMBINE</b>	<b>APPLICATION</b>	<b>DRIVE SPROCKET</b>
All	All	Standard	19 Tooth
2000–2100 psi (13.79–14.48 MPa)	AGCO Transverse Rotary	Combining Down Rice	10 Tooth
2500 psi (17.24 MPa)	CAT 500, 700 Series, AGCO Axial Rotary		12 Tooth
3000 psi (20.68 MPa)	NH CR, CX, Case IH 7010, 8010, 7120, 8120, 88 Series		14 Tooth
Low Flow (under 11 gpm)	- - -	Combining Light Crops Above 10 mph (16 km/hr)	21 Tooth

Sprockets are available as an option to the factory-installed sprocket. See your MacDon Dealer Parts Department to order sprockets.

For installation details, refer to Section [4.12.5 Reel Drive Sprocket, page 233](#).

### **3.9.5 Ground Speed**

Ground speed should be such that the sickle can cut crop smoothly and cleanly, while giving the desired delivery of material to the opening. Excessive ground speed results in ragged cutting.

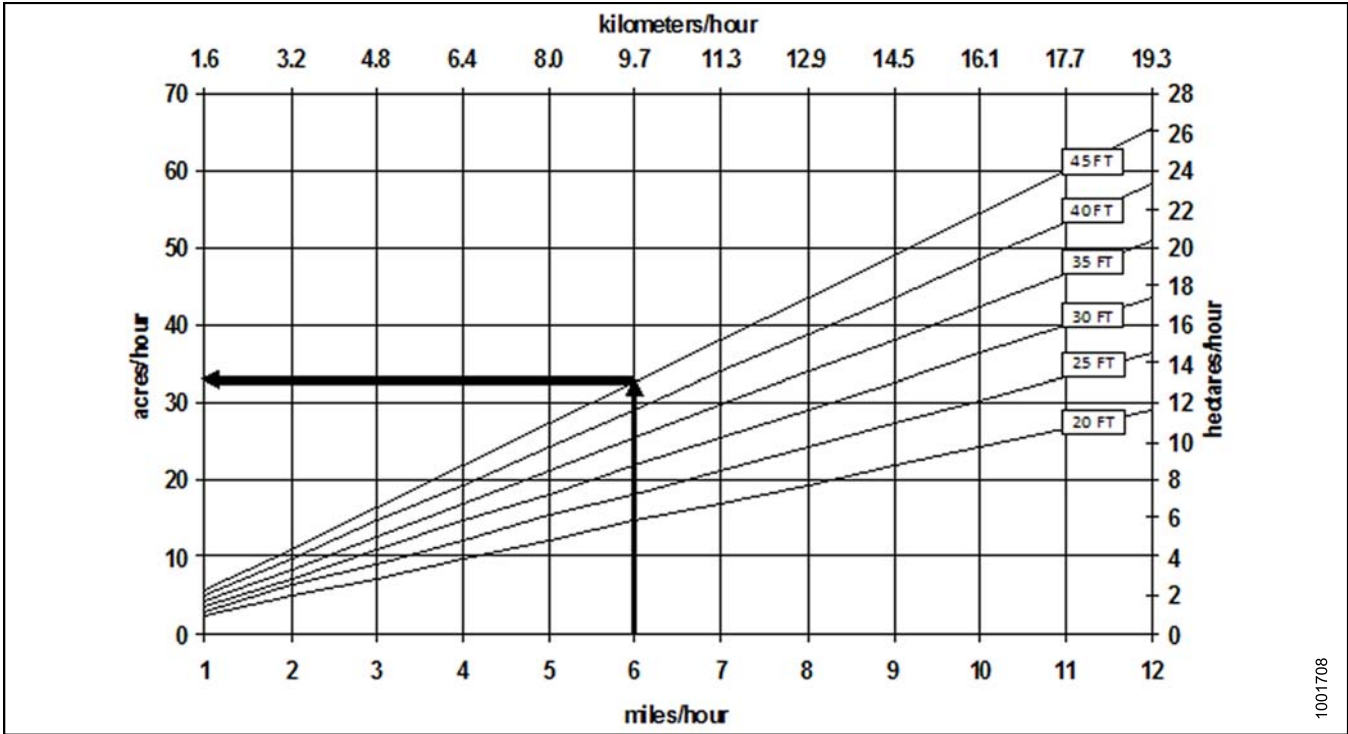
In tough-to-cut crops, reduce ground speed to reduce loads on cutting components and drives.

When cutting very light crops (for example, short soybeans), ground speed may have to be reduced to allow reel to pull in small and short plants. Start at 3.0–3.5 mph (4.8–5.8 km/h), and adjust as required.

Higher ground speeds require heavier float settings to prevent excessive bouncing that would result in increased cutting component damage. In most cases, as ground speed is increased, draper and reel speed should be increased to handle the extra material.



# OPERATION



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**Figure 3.180: Ground Speed**

Example shown above: At a ground speed of 6 miles per hour (9.7 km/h) with a 45 ft. header, the area cut in one hour would be approximately 33 acres (13.4 hectares).

### 3.9.6 Draper Speed

The speed of the header/side drapers (A) is adjusted at the flow control (B) on the CA25 adapter.



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**Figure 3.181**



## OPERATION

The flow control (B) has values 0–9 on the barrel, with a notch on the hydraulic compartment cover to set the desired draper speed. The draper speed control is factory-set to '6'. This setting should satisfy normal crop feeding.

If a different draper speed is desired, shut down the combine, and adjust the control accordingly.

Refer to the Section [3.8.1 Header Settings](#), page 85 for guidelines on setting the proper draper speed for optimum feeding of the crop.

**NOTE:** If sufficient draper speed cannot be achieved, a possible cause is low relief pressure. Refer to the technical manual for checking and adjusting relief pressure.

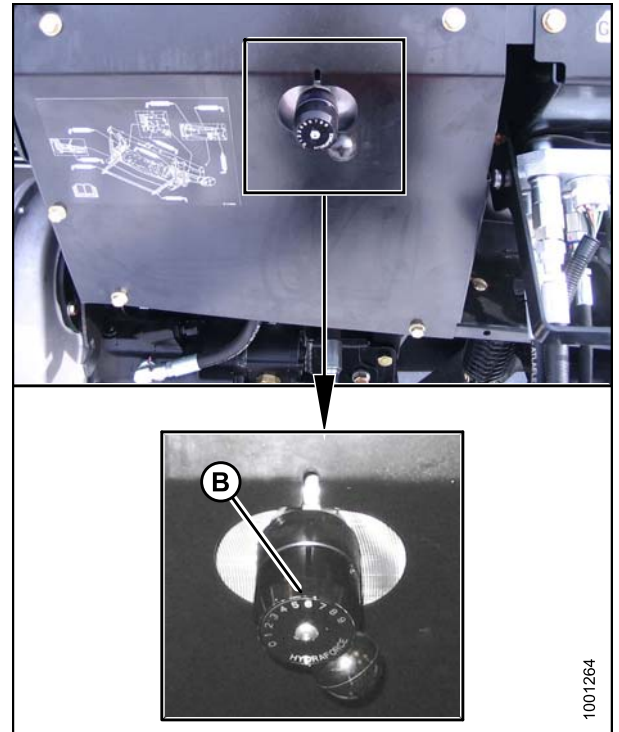


Figure 3.182: Flow Control

The adapter feed draper (A) is driven by the adapter mounted hydraulic pump. The speed is factory-set, and cannot be adjusted.



Figure 3.183

### 3.9.7 Knife Speed

The header knife drive is driven by the adapter-mounted hydraulic pump. The knife drive speed is factory-set for a feeder house speed of 575 rpm for CNH and John Deere CA25 Adapters, and 780 rpm for AGCO and Lexion CA25 Adapters.

## IMPORTANT

**For variable speed feeder houses, this will be the MINIMUM speed setting.**

## OPERATION

# IMPORTANT

To operate variable speed feeder house at greater than minimum speed, flow to the knife drive motor must be reduced to prevent excessive speeds which could result in premature knife failure.

# IMPORTANT

Check that the knife speed is in the range shown in the chart below using this [procedure, page 104](#). If adjustment is required, contact your MacDon Dealer or refer to the header technical manual.

HEADER SIZE (FT)	RECOMMENDED KNIFE DRIVE SPEED RANGE (RPM)	
	Single-Knife Drive (SKD)	Double-Knife Drive (DKD)
20 FT	N/A	700–850
25 FT	600–725	
30 FT	600–700	600–750
35 FT	550–650	
40 FT	525–600	550–700
45 FT	N/A	

Refer also to Section for recommended knife speeds in specific crops and crop conditions.

### Knife Speed Adjustment



## WARNING

Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

To adjust the knife speed, follow these steps:

1. Stop combine engine, and remove key from ignition.
2. Open the left hand endshield (A).



## WARNING

Ensure bystanders are clear before starting.



Figure 3.184: Open LH endshield

## OPERATION

3. Start combine engine, engage the header drive, and run the combine at operating rpm.
4. Have someone check the rpm of the sickle drive box pulley using a handheld tachometer.
5. Shut down the combine.
6. Compare actual pulley rpm with the values in the knife speed chart in Section [3.9.7 Knife Speed, page 103](#)
7. If adjustment to the sickle drive box pulley rpm is necessary, contact your MacDon Dealer, or refer to the header technical manual.



Figure 3.185: Check RPM

### 3.9.8 Reel Height

Depending on crop height, adjust reel height to carry material through the sickle onto the drapers. Operate combine hydraulics as required. Refer also to Section [3.9.9 Reel Fore-Aft Position, page 106](#).

Table 3.2 Reel Height Table

CROP CONDITION	REEL POSITION
Combining down rice	Down (also increase reel speed and/or cam setting)
Bushy or heavy standing	Up

Indications that reel may be too low are as follows:

- Crop loss over the header back tube
- Disturbance of crop on the drapers by the reel fingers
- Crop being pushed down by the tine tubes

Refer to Section [3.8.1 Header Settings, page 85](#) for recommended reel height in specific crops and crop conditions.

**IMPORTANT:** Maintain adequate clearance to prevent fingers contacting the knife or the ground. Refer to Section [4.12.1 Reel Clearance to Cutterbar, page 219](#).

## OPERATION

### 3.9.9 Reel Fore-Aft Position

Reel position has been found to be a critical factor in achieving good results in adverse conditions. The reel position is factory-set for average straight standing crop, and can be adjusted forward and backward for different crop conditions.

A decal is provided on the reel right support arm for identifying a preferred position. The back edge of the reel cam disc is the gauge indicator.

Refer to Section [3.8.1 Header Settings, page 85](#) for recommended reel positions in specific crops and crop conditions.

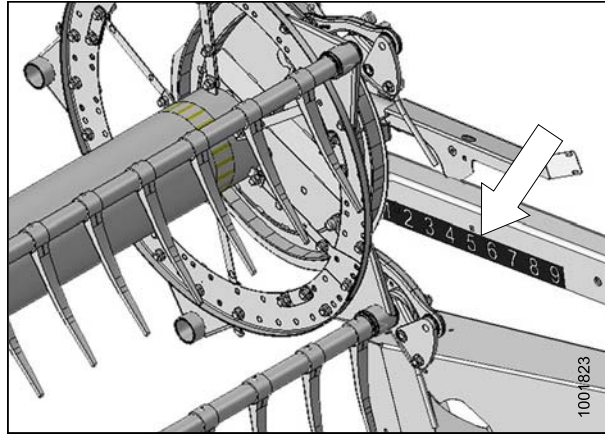


Figure 3.186: Decal

#### *Hydraulic Adjustment – Fore-Aft*

To adjust the fore-aft reel position, follow these steps.

1. Select the FORE-AFT ADJUST mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position, again using the gauge as a reference.
3. Check reel clearance to cutterbar after making changes to cam setting. Refer to Section [4.12.1 Reel Clearance to Cutterbar, page 219](#) for measurements and adjustment procedures.

## IMPORTANT

**Operating with the reel too far forward can cause the fingers to contact the ground before the cutterbar. Lower the skid shoes or adjust header tilt as required when operating with the reel in this position, otherwise, damage to the fingers will occur.**

#### *Fore-Aft Cylinder Position – Double Reel*

To reposition the cylinders on a double reel, follow these steps. The reel can be moved approximately nine inches further aft by repositioning the cylinders on the reel arms. This may be desirable when straight-combining canola.

## **WARNING**

**Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.**

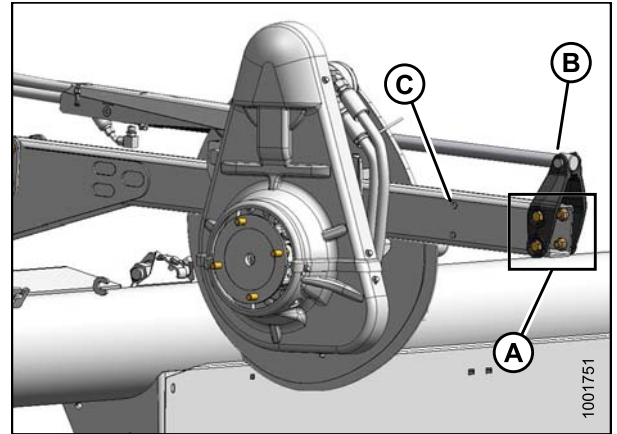
1. Position reel fully aft with support arms horizontal. Stop engine, and remove key.

## OPERATION

2. Reposition **center arm cylinder** as follows:

**NOTE:** Reel components are not shown for clarity.

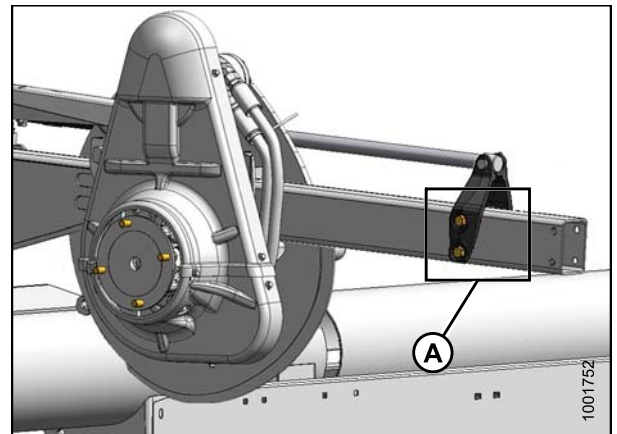
- Remove four bolts (A) securing cylinder bracket (B) to reel arm.
- Push reel back until bracket (B) lines up with the aft set of holes (C).
- Reinstall the four bolts (A) to secure bracket to reel arm at new position.



**Figure 3.187: Center Arm Cylinder-Forward Position**

A - Bolts  
C - Aft set of holes

B - Cylinder bracket

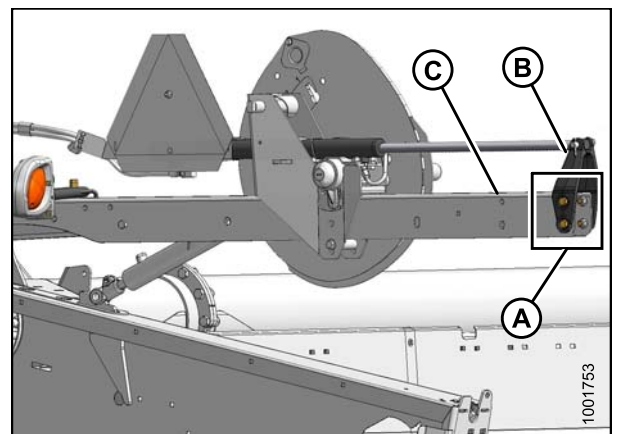


**Figure 3.188: Center Arm Cylinder-Rearward Position**

3. Reposition **right arm cylinder** as follows:

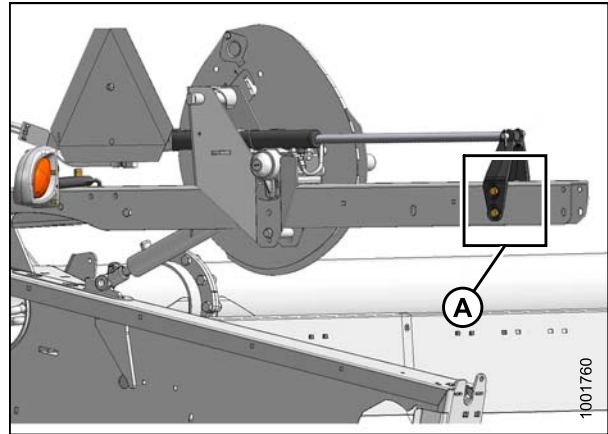
**NOTE:** Reel components are not shown for clarity.

- Remove four bolts (A) securing cylinder bracket (B) to reel arm.
- Push reel back until bracket (B) lines up with the aft set of holes (C).
- Reinstall the four bolts (A) to secure bracket to reel arm at new position.



**Figure 3.189: Right Arm Cylinder-Forward Position**

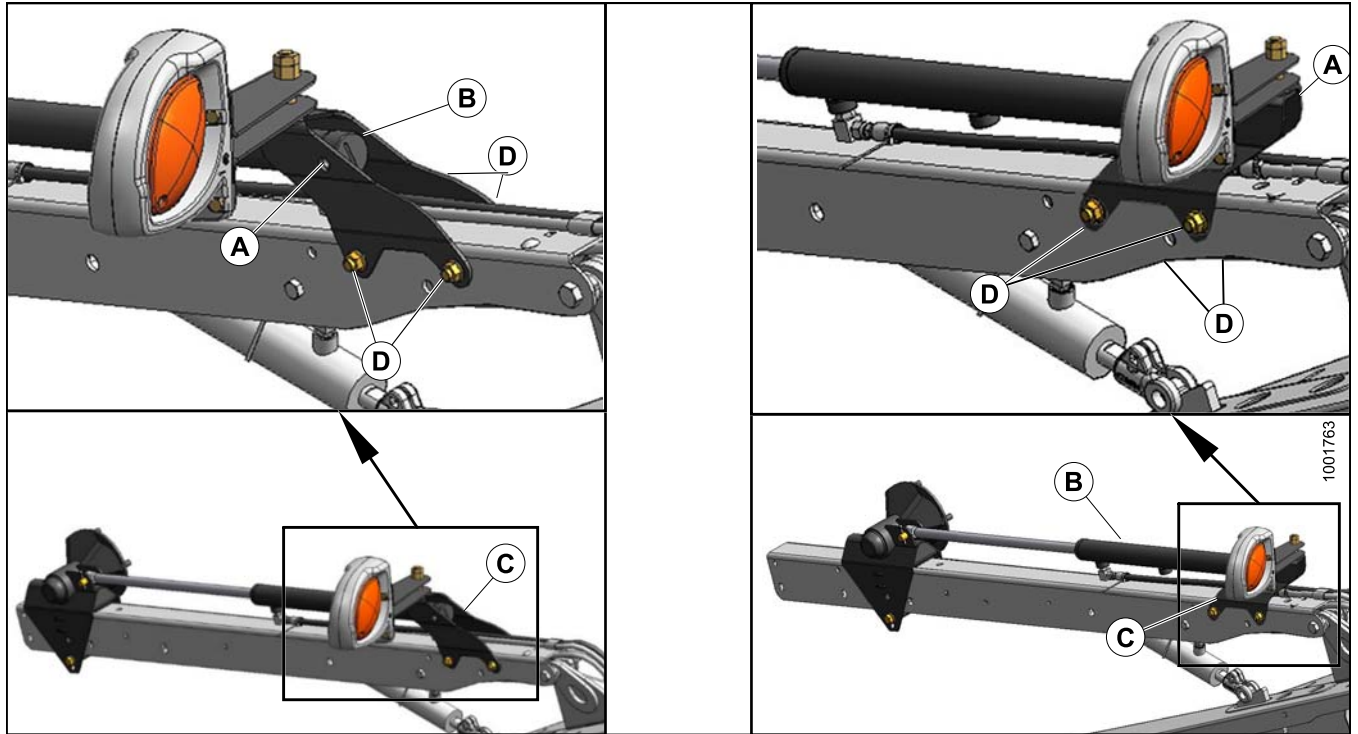
## OPERATION



**Figure 3.190: Center Arm Cylinder–Rearward Position**



## OPERATION



**Figure 3.191: Reposition Left Arm Cylinder (Left images show FORWARD POSITION. Right images show REARWARD Position.)**

A - Pin

C - Bracket/Light assembly

B - Cylinder

D - Bolts

1. Reposition **left arm cylinder** as follows:

**NOTE:** Reel components are not shown for clarity.

- a. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
  - b. Remove bolts (D) securing bracket (C) to reel arm and remove bracket/light assembly.
  - c. If necessary, remove plastic tie securing harness to bracket or reel arm.
  - d. Swivel light to working position as shown.
  - e. Reposition bracket/light assembly (C) on reel arm as shown, and reinstall the four bolts (D) to secure bracket to reel arm. Tighten bolts.
  - f. Push reel back and reinstall cylinder (B) to bracket with pin (A). Secure pin with cotter pin.
  - g. Secure light harness to bracket with plastic tie wrap.
2. Check reel clearance to back sheet, upper cross auger (if installed) and reel braces.
  3. Adjust reel tine pitch (if required). Refer to Section , or Section [4.12.1 Reel Clearance to Cutterbar, page 219](#) for adjustment procedures.



## OPERATION

### Fore-Aft Cylinder Position – Single Reel

To reposition the cylinders on a single reel, follow these steps.

The reel can be moved approximately nine inches further aft by repositioning the cylinders on the reel arms. This may be desirable when straight-combining canola.



## WARNING

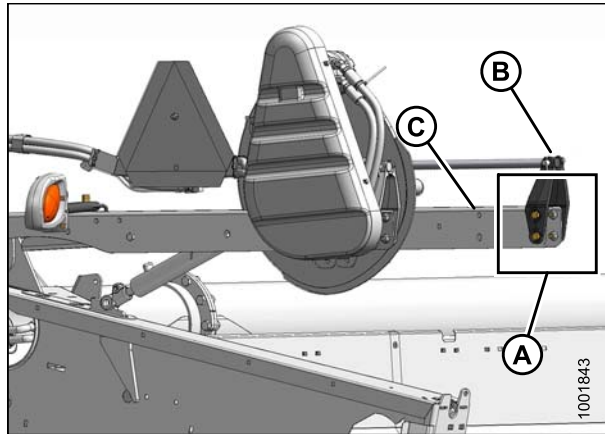
**Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.**

1. Position reel fully aft with support arms horizontal. Stop engine, and remove key.

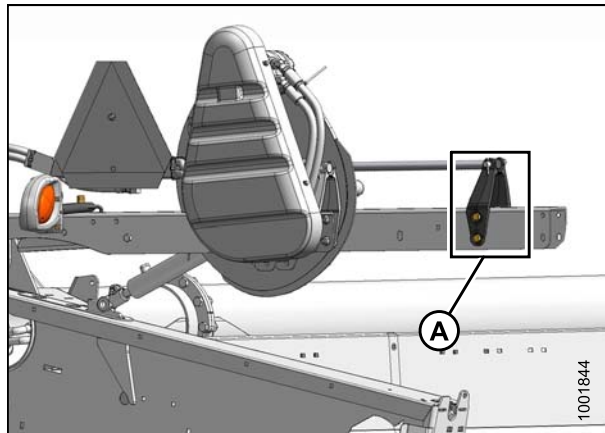
1. Reposition **right arm cylinder** as follows:

**NOTE:** Reel components are not shown for clarity.

- Remove four bolts (A) securing cylinder bracket (B) to reel arm.
- Push reel back until bracket (B) lines up with the aft set of holes (C).
- Reinstall the four bolts (A) to secure bracket to reel arm at new position.



**Figure 3.192: Right Arm Cylinder FORWARD Position**



**Figure 3.193: Right Arm Cylinder REARWARD Position**

A - Bolts  
C - Aft holes

B - Bracket

## OPERATION

2. Reposition **left arm cylinder** as per Section [Fore-Aft Cylinder Position – Double Reel, page 106](#), step d.
3. Check reel clearance to back sheet, upper cross auger (if installed) and reel braces.
4. Adjust reel tine pitch if required. Refer to Section [3.9.10 Reel Tine Pitch, page 111](#), or Section [4.12.1 Reel Clearance to Cutterbar, page 219](#) for adjustment procedures.

### 3.9.10 Reel Tine Pitch

## IMPORTANT

**The following describes the concept and operational guidelines of the pickup reel. Please read carefully before operating the machine.**

The pickup reel is designed to pick up flattened and severely lodged crops.

It is not always necessary to increase the tine pitch (higher cam setting) to pick up crops that are lodged, but rather, the cam settings are mainly used to determine how the crop will get delivered to the drapers.

The position of the fingers relative to ground (tine pitch) is not significantly affected by the cam setting. For example, the cam position range is 33 degrees, but the corresponding finger pitch range is only 5 degrees at the lowest point of reel rotation.

For best performance, use the minimum cam setting that will deliver the crop past the rear edge of the cutterbar, and onto the drapers.

# OPERATION

## *Operating Guidelines*

The following outlines the function of each cam setting and includes guidelines for set-up in various crop conditions.

The setting numbers are visible above the slots on the cam disc. Refer to [Cam Adjustment, page 113](#).

**Cam Position 1** delivers the most even crop flow onto the drapers without fluffing up or disturbing the material.

- The crop is released quite close to the cutterbar, and works best with the cutterbar on the ground.
- Some crops will not be delivered past the cutterbar when the cutterbar is raised off the ground, and the reel is pushed forward. Initially, have the reel speed set about equal to the ground speed.

**Cam Position 2** is the recommended starting position for most crops and conditions.

- This setting gives a fingertip speed approximately 20% faster than the reel speed.
- If crops tend to stall on the cutterbar with the reel in a forward position, the cam setting should be increased to push the crop past the rear edge of the cutterbar.
- If the crop getting fluffed, or the flow across the drapers is disrupted, the cam setting should be decreased.

**Cam Positions 3 and 4** are mainly used to leave long stubble.

- These positions allow the reel to reach forward and lift the crop across the knife, and onto the drapers.
- The further forward the reel, the higher the cam setting should be.

**Cam Position 4** is used with the reel being fully forward to leave maximum amount of stubble in lodged crops.

- This setting gives a finger tip speed approximately 30% faster than the reel speed.

**Cam Position 4, Header Angle At Maximum, and Reel Fully Forward** provides maximum amount of reel reach below cutterbar to pick up lodged crops, and gives a finger tip speed approximately 35% faster than the reel speed.

Cutting height is set to approximately 8 inches (203 mm) to leave a significant amount of stubble. In damp materials such as rice, it is possible to double ground speed because the amount of material that is being cut is less.

**NOTE:** High cam settings with the reel fore-aft position at 4–5, severely decrease the draper capacity because the reel disrupts crop flow across the drapers. The fingers are still engaged in the crop that is moving on the drapers. High cam settings are recommended only with the reel at or close to full forward settings.

## IMPORTANT

**The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft position.**

**IMPORTANT:**

Refer to Section [4.12.1 Reel Clearance to Cutterbar, page 219](#).

Refer to Section [3.8.1 Header Settings, page 85](#) for recommended reel tine pitch in specific crops and crop conditions.

# OPERATION

## Cam Adjustment



### WARNING

Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

To adjust the reel cam, follow these steps:

1. Using a 3/4 in. wrench, turn the cam latch pin (A) counterclockwise to release the cam disc.
2. Use the wrench on bolt (B) to rotate cam disc, and align latch pin (A) with desired hole (1 to 4) at (C) in cam disc.

**NOTE:** Bolt (B) is through cam disc. Some parts shown transparent for visibility.

3. Turn latch pin (A) clockwise to engage and lock cam disc.
4. Repeat above procedure for the other reel.

**IMPORTANT:** Secure cam position before operating machine.

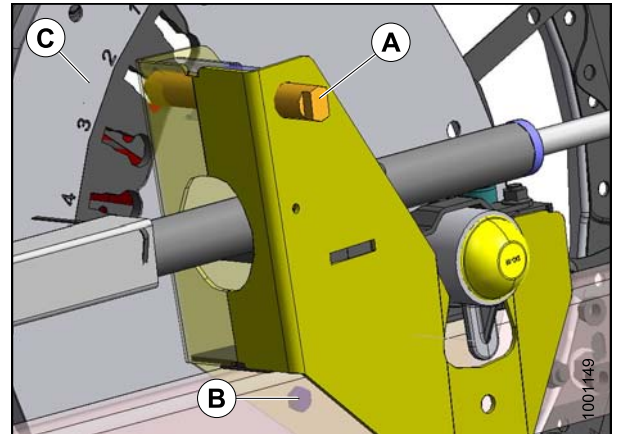


Figure 3.194

A - Cam latch pin  
C - Cam disc

B - Bolt

### 3.9.11 Crop Divider Rods

Divider rods are removable. The removable divider rods are suitable when crop is down, while the crop divider without rods is better in standing crops. See chart below for recommended rod use for various crops and Section for recommended reel height in specific crops and crop conditions.

WITH DIVIDER RODS	WITHOUT DIVIDER RODS
Alfalfa	Edible Beans
Canola	Milo
Flax	Rice
Grass Seed	Soybeans
Lentils	Standing Cereal
Lodged Cereal	
Peas	
Soybeans	
Sudan Grass	
Winter Forage	

## OPERATION

### *Crop Divider Rods Removal*

To remove divider rods, follow these steps.

1. Loosen bolt (A), and remove rod (B).

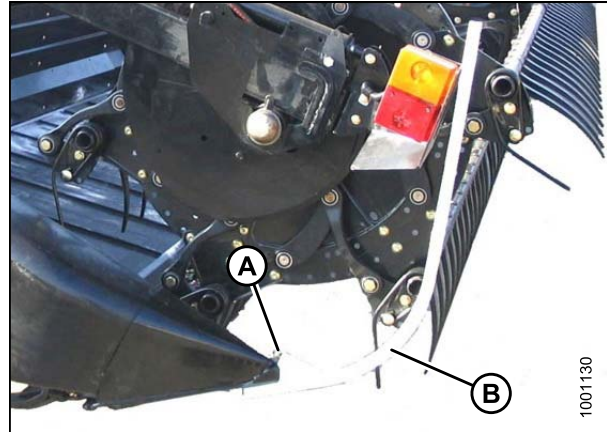


Figure 3.195

2. Store both rods on the inboard side of the right end-sheet.



Figure 3.196

### 3.9.12 Crop Dividers

The crop dividers are removable to suit installation of vertical knives, and to decrease transport width.

#### *Crop Divider Removal – Headers with Latch Option*

To remove crop dividers from a header with the latch option, follow these steps.

### **DANGER**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.**

## OPERATION

1. Raise header and engage header lift cylinder lockouts. Refer to your combine operator's manual. Stop engine, and remove key.
2. Open header endshields. See
3. Lift safety lever (A).
4. Hold onto divider (B), push lever (C) to open latch and lower divider.

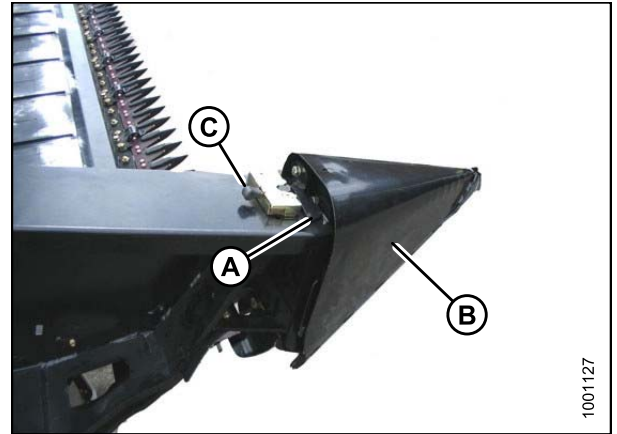


Figure 3.197

5. Lift divider off endsheet, and store as follows:
  - a. Locate pin (A) on divider in hole in endsheet at location shown.
  - b. Lift divider, and locate lugs (B) on divider into bracket on endsheet. Ensure lugs engage bracket.
6. Close header endshield.

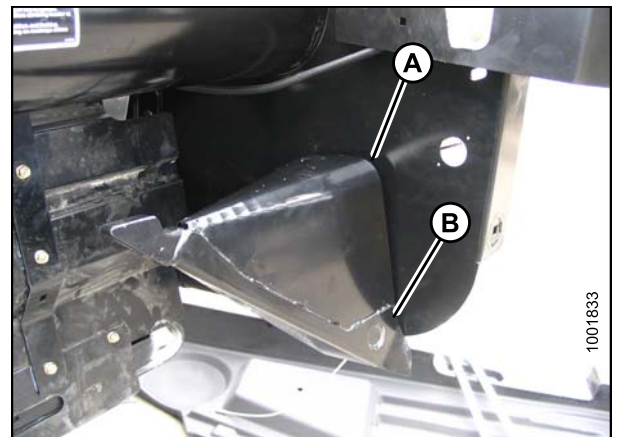


Figure 3.198

### *Crop Divider Removal – Headers without Latch Option*

To remove crop dividers from a header without the latch option, follow these steps.

## **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

## OPERATION

1. Raise header, and engage lift cylinder lockouts. Refer to combine operating manual.
2. Open header endshield. Refer to Section .
3. Remove bolt (A).
4. Lower divider (B).
5. Lift divider off endsheet.
6. Close header endshield.

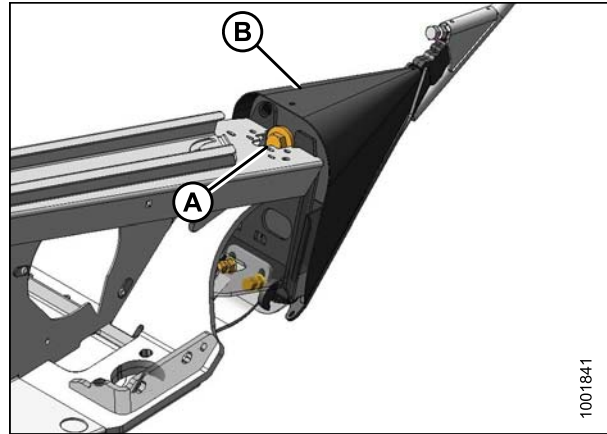


Figure 3.199

### *Crop Divider Installation – Headers with Latch Option*

To install crop dividers on a header with the latch option, follow these steps.

## DANGER

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.**

1. Open header endshield.
2. At divider storage location, lift divider to disengage lugs (A) at lower end, and then lower it slightly to disengage pin (B) from endsheet.

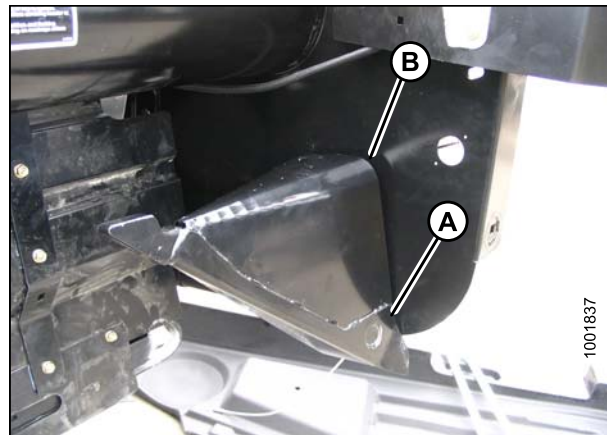


Figure 3.200



## OPERATION

3. Position crop divider as shown by locating lugs (A) in holes in endsheet.
4. Lift forward end of divider until pin (B) at top of divider engages and closes latch (C).
5. Push safety lever (D) down to lock pin in latch.

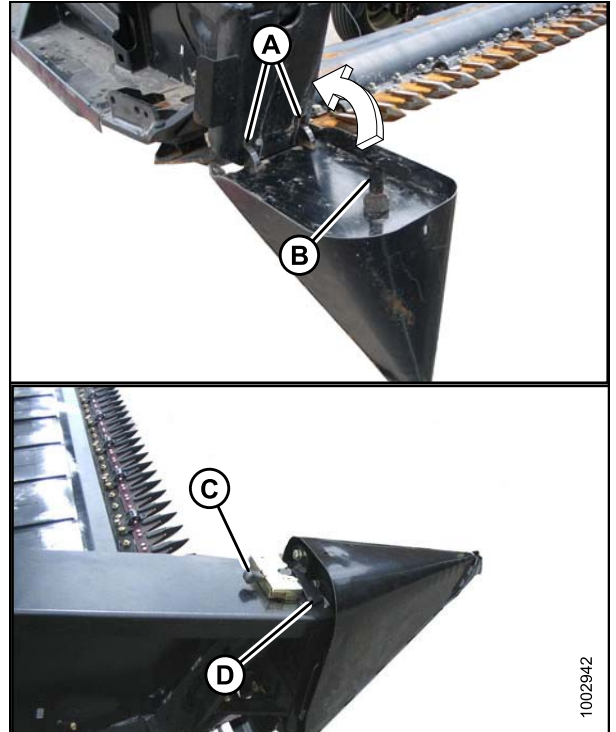


Figure 3.201

6. Check that divider does **NOT** move laterally. Adjust bolts (A) as required to tighten divider, and remove lateral play when pulling at divider tip.
7. Close endshield.



Figure 3.202

### *Crop Divider Installation – Headers without Latch Option*

To install crop dividers on a header without the latch option, follow these steps.



## DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

1. Open endshield.
2. Remove crop divider from storage.

## OPERATION

3. Position crop divider as shown by locating lugs (A) in holes in endsheet.

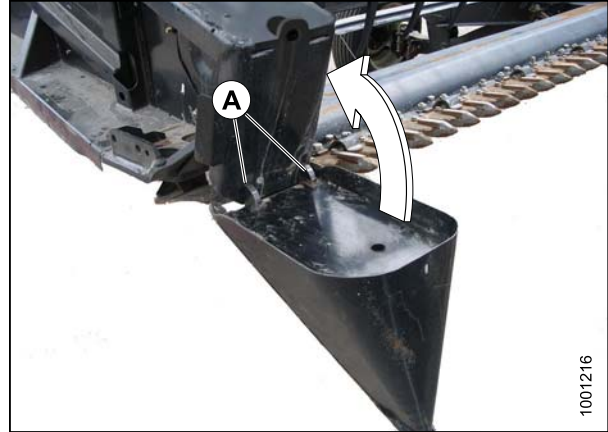


Figure 3.203

4. Lift forward end of divider, and install bolt (A) and special stepped washer (B) (step towards divider). Tighten bolt.
5. Check that divider does **not** move laterally. Adjust bolts (C) as required to tighten divider, and remove lateral play when pulling at divider tip.
6. Close endshield.

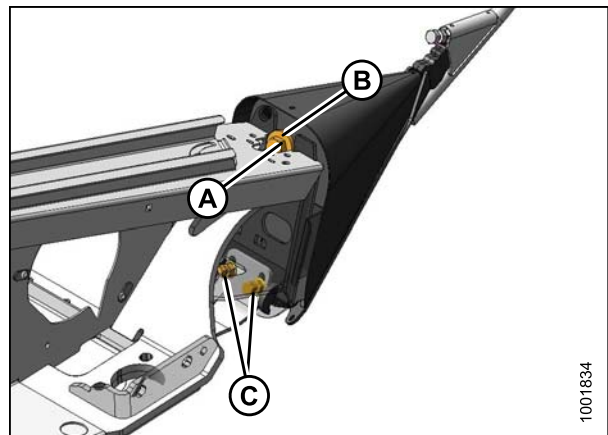


Figure 3.204

### 3.9.13 Rice Dividers

Optional special rice dividers can be installed and used when required. See Section [6.1.8 Rice Divider Rods, page 283](#).

The installation and removal procedures are the same as for the standard crop dividers.

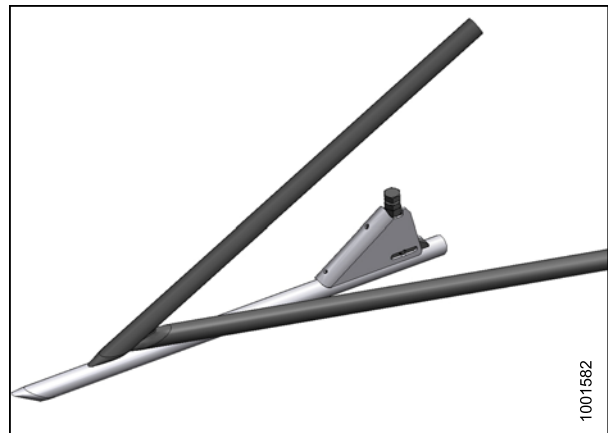


Figure 3.205

### 3.9.14 Knife Head Shield

The shield attaches to the endsheet, and reduces the knife head opening to prevent cut crop from accumulating in knife head cut-out creating plugging.

## OPERATION

It is recommended that the shield(s) be installed when harvesting severely lodged crop or any crop condition where plugging occurs at knife head cut-out.

The shield(s) and mounting hardware are available from your MacDon Dealer.

### IMPORTANT

**Shields should be removed when cutting with cutterbar on ground in muddy conditions. Mud may pack into cavity behind shield, and cause sickle drive box failures.**

#### *Knife Head Shield Installation*

To install knife head shield, follow these steps.

**NOTE:** Shields are slightly different depending on header size and guard configuration. Ensure proper shield is used. See D65 Harvest Header® for Combines and Self-Propelled Windrowers Parts Catalog for proper replacement parts.

**NOTE:** The knife head shield is supplied in flattened form, and can be bent to suit installation on pointed or stub guard cutterbars, and on double knife headers.



### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.



### WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.



### CAUTION

**Wear heavy gloves when working around or handling sickles.**

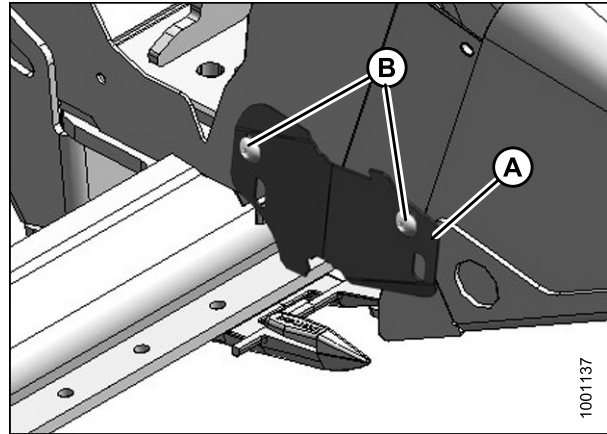
1. Raise reel fully, lower header to ground, shut down combine, and remove key.

## OPERATION

2. Locate knife head shield (A) against endsheet as shown.
3. Engage reel arm locks.
4. Orient the shield so that cutout matches profile of knife head and/or hold-downs.
5. Bend shield along slit to conform to endsheet.

**NOTE:** The knife head shield is supplied in flattened form, and can be bent to suit installation on pointed or stub guard cutterbars, and on double knife headers.

6. Place shield on endsheet, align mounting holes, and install two 3/8 in. x 1/2 Torx® head bolts (B).
7. Snug up bolts just enough so that shield can be adjusted as close as possible to knife head.
8. Manually rotate sickle drive box pulley to move knife, and check for areas of contact between the knife head and shield.
9. If required, adjust shield to avoid interference with the knife.
10. Tighten bolts.



**Figure 3.206**

1001137

### 3.10 Header Levelling

## OPERATION

### 3.11 Unplugging Cutterbar

To remove plugged material from the cutterbar, follow these steps.

1. Stop forward movement of machine, and disengage header drives.
2. With header on ground, back up several feet, and engage header drive clutch.



#### CAUTION

**Lowering rotating reel on a plugged cutterbar will damage the reel components.**

3. If plug does **not** clear, disengage header drive clutch, and raise header fully.



#### WARNING

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

4. Shut off engine, remove key, and engage park brake.
5. Engage header lift cylinder locks.



#### CAUTION

**Wear heavy gloves when working around or handling sickles.**

6. Clean off cutterbar by hand.

**NOTE:** If sickle plugging persists, see Section [5 Troubleshooting, page 265](#).

## OPERATION

### 3.12 Unplugging Adapter

To clear a plug from the adapter, follow these steps.

1. Stop forward movement of the machine, and disengage header drives.
2. Raise header slightly off the ground, and raise the reel.
3. Activate the header reverse drive control on combine, and engage the header drive.
4. When plug clears, disengage header drive, and deactivate the reverse switch.
5. Re-engage header drive.



## OPERATION

### 3.13 Upper Cross Auger

The cross auger helps deliver very bulky crops across the header onto the windrow or into the combine.

Removable beater bars assist in delivering material through the header opening, but if wrapping occurs, the beater bars can be removed.

The cross auger helps deliver very bulky crops across the header onto the windrow or into the combine.

Removable beater bars assist in delivering material through the header opening, but if wrapping occurs, the beater bars can be removed as follows:



Figure 3.207

#### 3.13.1 Beater Bar Removal

To remove beater bars, follow these steps.



### WARNING

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

1. Lower header to ground, shut down combine, and remove key.
2. Remove bolts (A) securing bars (B) and clamps (C) to auger tubes, and remove bars and clamps.

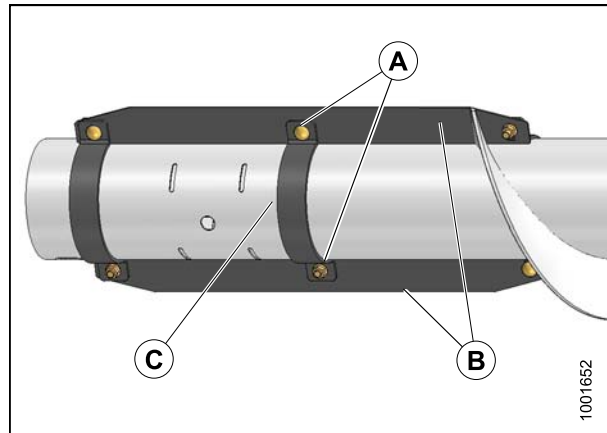


Figure 3.208: Double Reel Headers

## OPERATION

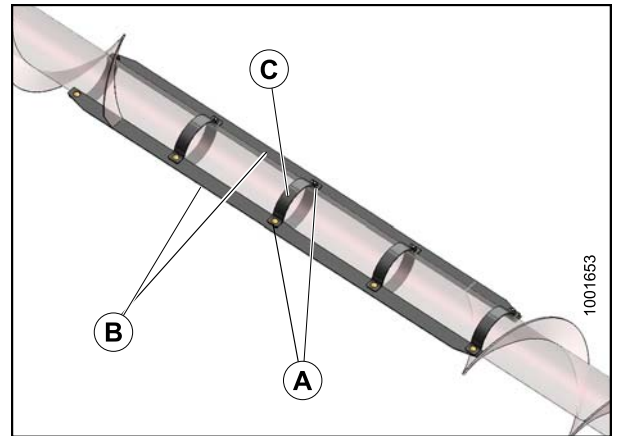


Figure 3.209: Single Reel Headers

### 3.13.2 Beater Bar Installation

To install beater bars, follow these steps.

1. Locate one beater bar (B) with one clamp set (C) on auger tube, and loosely secure with carriage bolt (A) and nut. Bolt head must face direction of auger rotation.
2. Locate remaining clamp sets on tube, and loosely attach to beater bar with carriage bolts and nuts. Bolt heads must face direction of auger rotation.
3. Position second beater bar in clamps, and secure with carriage bolts and nuts.
4. Tighten bolts.

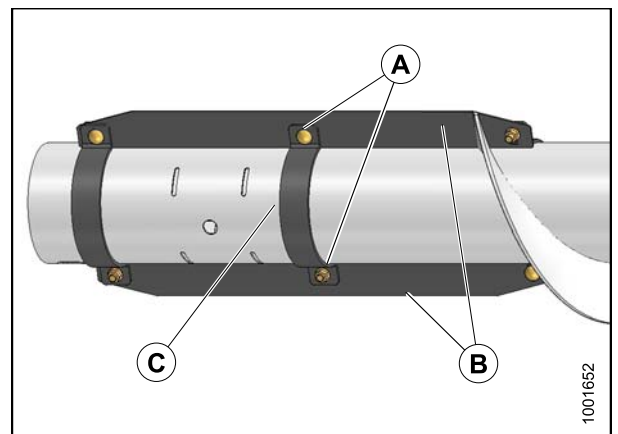


Figure 3.210: Double Reel Headers

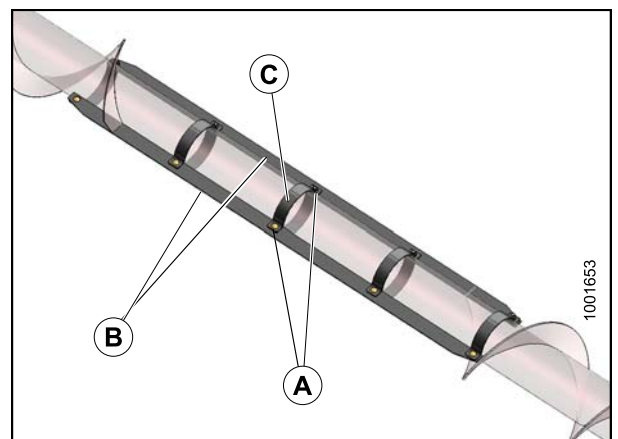


Figure 3.211: Single Reel Headers

A - Bolts  
C - Clamps

B - Bars

## OPERATION

### 3.14 Header Transportation



#### **WARNING**

Do NOT drive combine with header attached on a road or highway at night, or in conditions which reduce visibility, such as fog or rain. The width of the header may not be apparent under these conditions.

#### 3.14.1 Combine



#### **CAUTION**

- Check local laws for width regulations and lighting or marking requirements before transporting on roads.
- Follow all recommended procedures in your combine operator's manual for transporting, towing, etc.
- Disengage header drive clutch when travelling to and from the field.
- Before driving combine on a roadway, be sure flashing amber lamps, red tail lamps and head lamps are clean and working properly. Pivot amber lamps for best visibility by approaching traffic. Always use these lamps on roads to provide adequate warning to other vehicles.
- Do NOT use field lamps on roads, they may confuse other drivers.
- Before driving on a roadway, clean slow moving vehicle emblem and reflectors. Adjust rear view mirror and clean windows.
- Lower the reel fully and raise header unless transporting in hills. Maintain adequate visibility and be alert for roadside obstructions, oncoming traffic and bridges.
- When travelling downhill, reduce speed and keep header at a minimum height. This provides maximum stability if forward motion is stopped for any reason. Raise header completely at bottom of grade to avoid contacting ground.
- Travel speed should be such that complete control and machine stability are maintained at all times.

#### 3.14.2 Towing

The header can be towed behind the combine or with the Slow Speed Transport/Stabilizer Wheel option, or on an approved header transporter. Refer to your combine operator's manual, or see your MacDon Dealer.

## OPERATION

### *Attaching Header to Towing Vehicle*



## CAUTION

To avoid bodily injury and/or machine damage caused by loss of control:

- Weight of towing vehicle must exceed header weight to ensure adequate braking performance and control.
- Weight of towing vehicle must exceed header weight to ensure adequate braking performance and control.
- Do NOT tow with any highway-capable vehicle. Use only an agricultural tractor, agricultural combine, or properly configured MacDon windrower.
- Ensure that reel is down and fully back on support arms to increase header stability in transport. For headers with hydraulic reel fore-aft, never connect the fore-aft couplers to each other. This would complete the circuit, and allow the reel to creep forward in transport, resulting in instability.
- Check that all pins are properly secured in Transport position at wheel supports, hitch and cutterbar support.
- Check tire condition and pressure prior to transporting.
- Connect hitch to towing vehicle with a proper hitch pin with a spring locking pin or other suitable fastener.
- Attach safety hitch chain to towing vehicle. Adjust safety chain length to remove all slack except what is needed for turns.
- Connect header wiring harness 7-pole plug to mating receptacle on towing vehicle. (The 7-pole receptacle is available from your MacDon Dealer Parts Department).
- Ensure lights are functioning properly, and clean the slow moving vehicle emblem and other reflectors. Use flashing warning lights unless prohibited by law.

### *Towing the Header*



## CAUTION

This is intended as slow speed transport. To avoid bodily injury and/or machine damage caused by loss of control:

- Do NOT exceed 25 mph (40 km/h). Reduce transport speed to less than 5 mph (8 km/h) for corners and slippery or rough conditions.
- Do NOT accelerate when making or coming out of a turn.
- Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law.

### **3.14.3 Converting from Transport to Field Position**

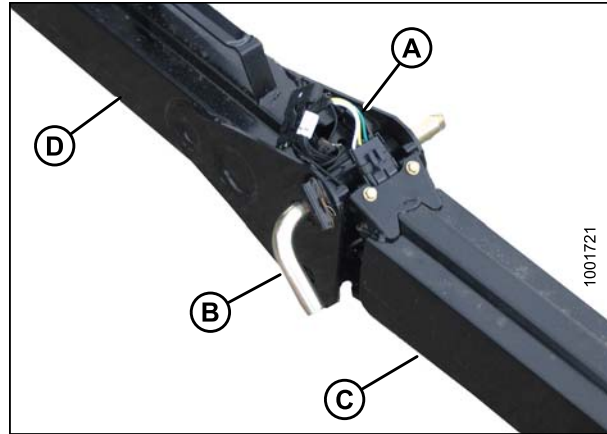
To convert the header from Transport to Field position, follow these steps.

1. Block the tires to prevent header rolling, and unhook from towing vehicle.

## OPERATION

Remove tow-bar as follows:

2. Disconnect wiring connector (A) on tow-bar.
3. Remove pin (B) from tow-bar, and disassemble forward section (C) from aft section (D).

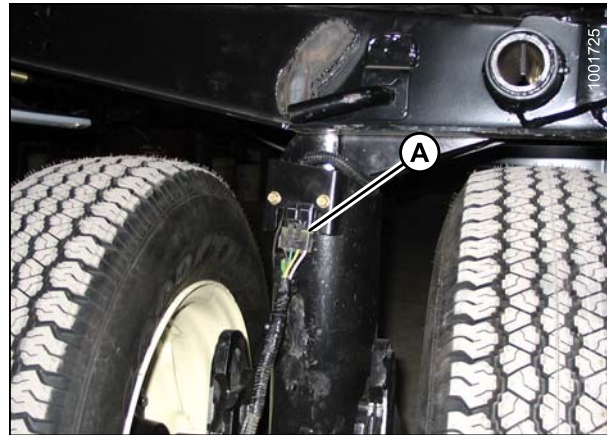


**Figure 3.212**

A - Wiring connector  
C - Forward section

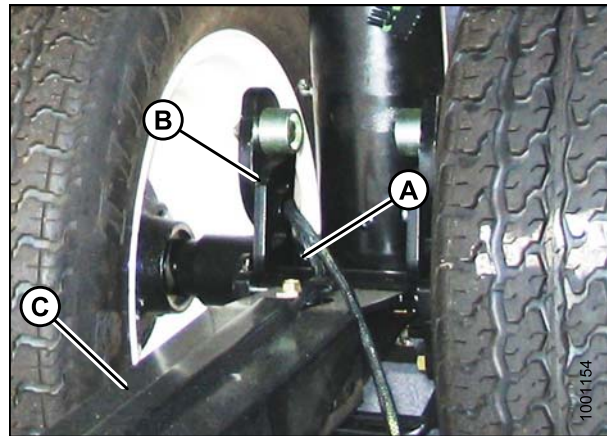
B - Pin  
D - Aft section

4. Disconnect wiring connector (E) at front wheel.



**Figure 3.213: Wiring connector**

5. Remove clevis pin (A), and set aside for later installation.
6. Push latch (B), and lift tow-bar (C) from hook. Release latch.

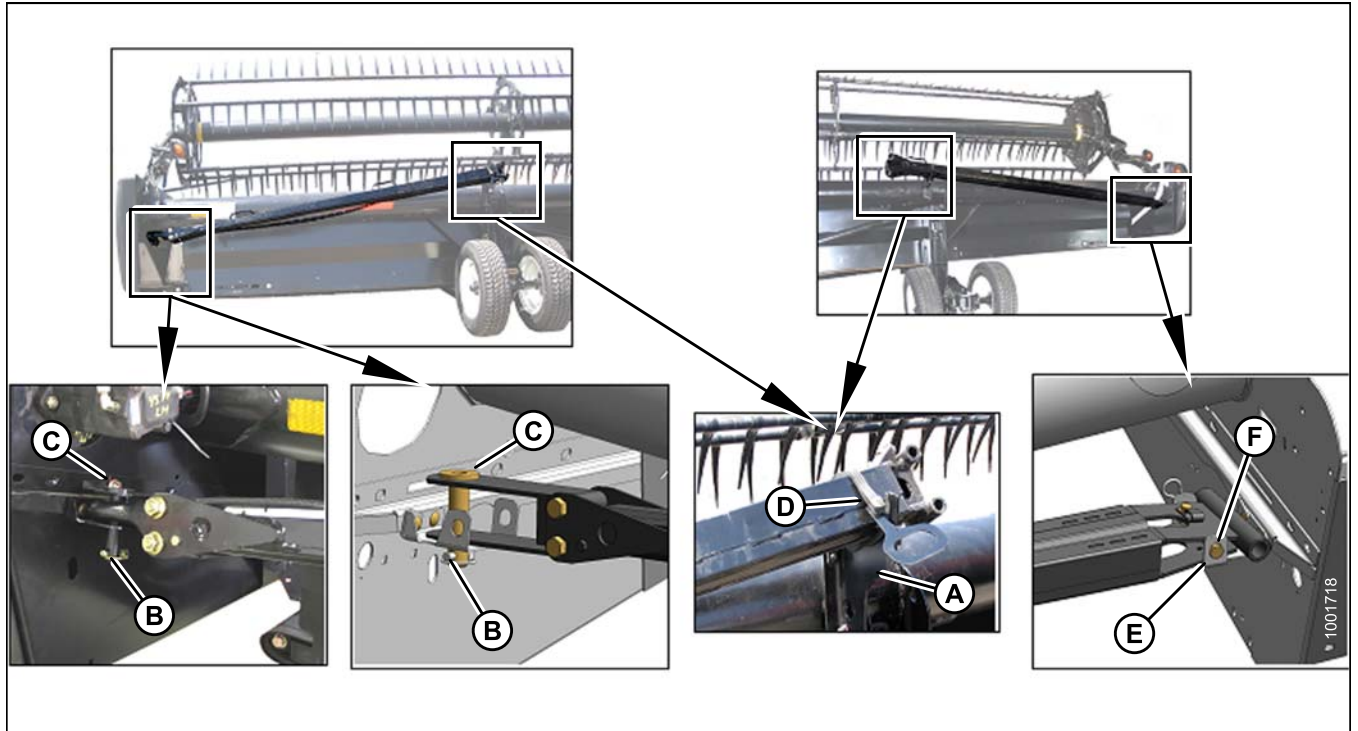


**Figure 3.214**

A - Clevis pin  
C - Tow-bar

B - Latch

## OPERATION



**Figure 3.215: Store tow bar on header**

A - Larger end of tow car section  
B - Clevis endsheet support (lower left image)  
C - Clevis hitch pin (lower left image)  
D - Rubber strap on cradle  
E - Support tube end  
F - Clevis pin

7. Store tow-bar on header as follows:
  - a. Locate larger end of one section of tow-bar in cradle (A) on header back-tube.
  - b. For clevis or pintle end of tow-bar, secure in support (B) on endsheet with hitch pin (C). Secure with lynch pin.
  - c. Install rubber strap (D) on cradle.
  - d. Similarly locate other section of tow-bar in cradle at other end of header.
  - e. Secure tube end in support (E) with clevis pin (F). Secure with hairpin.
  - f. Install rubber strap (D) on cradle.
8. Attach header to combine. Refer to [Section 3.3 Header Attachment/Detachment, page 29](#).

**IMPORTANT:** Carrying the tow-bar on the header will affect the main header float. Refer to [Section 3.9.2 Header Float, page 94](#) for adjustment procedures.



## OPERATION

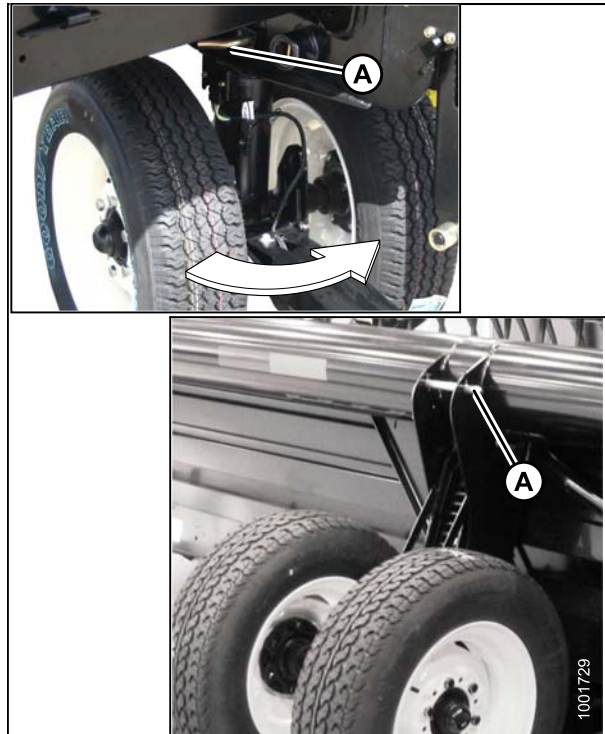
### *Front Wheels to Field Position*

To move the front transport wheels into Field position, follow these steps.

# **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

1. Raise header fully.
2. Swivel wheel assembly so that wheels are aligned with lower frame.
1. Remove pin (A), and pull wheel assembly towards rear of header. Store pin (A) in hole at top of leg.



**Figure 3.216: Transport to Field - Front Wheels**

2. Pull handle (A) to release and lower the linkage.

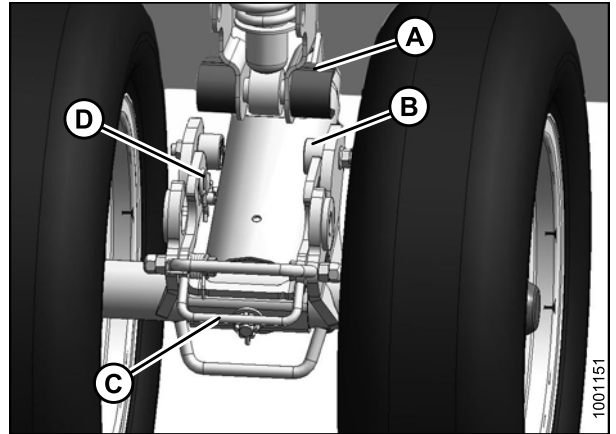


**Figure 3.217: Transport to Field - Front Wheels**



## OPERATION

3. Align lift hook (A) with lug (B), and lift wheel assembly to engage pin in hook (A). Ensure latch (C) is engaged.
4. Install clevis pin (D), and secure with hairpin.

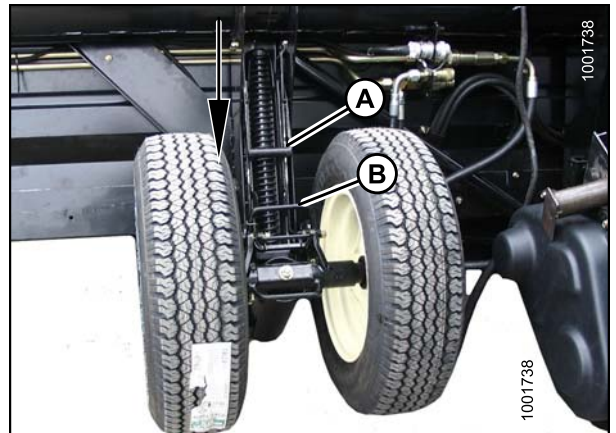


**Figure 3.218: Transport to Field - Front Wheels**

A- Lift hook  
C - Latch

B- Lug  
D - Clevis pin

5. Lift wheel assembly to desired height, and slide linkage (A) into appropriate slot in vertical support.
6. Push down on handle (B) to lock.

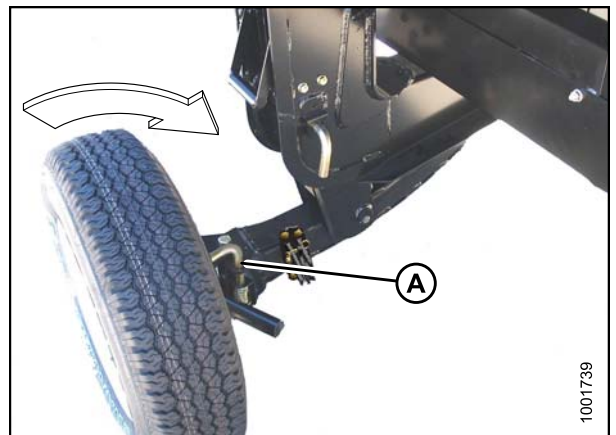


**Figure 3.219: Transport to Field - Front Wheels**

### *Rear Wheels to Field Position*

To move the rear transport wheels into Field position, follow these steps.

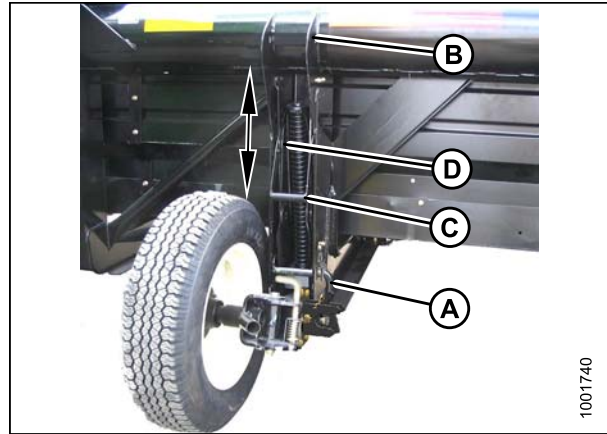
1. Pull pin (A) at left wheel, swivel wheel clockwise, and lock with pin (A).



**Figure 3.220: Transport to Field - LH Wheel**

## OPERATION

2. Remove pin at (A). Store pin at (B).
3. Pull handle (C) to release.
4. Lift wheel to desired height, and engage support channel into slot (D) in upper support.
5. Push down on handle (C) to lock.

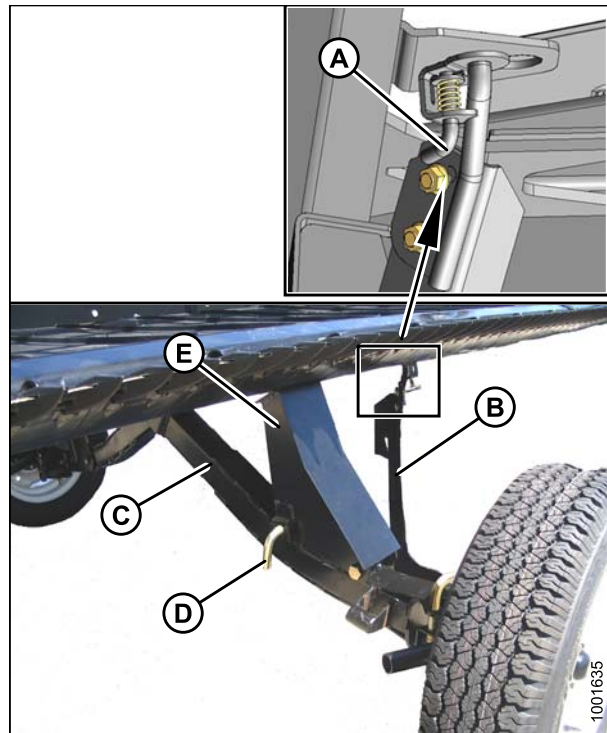


**Figure 3.221: Transport to Field - LH Wheel**

A - Pin  
C - Handle

B - Pin  
D - Slot

6. At right cutterbar wheel, pull pin (A) on brace (B), disengage brace from cutterbar, and lower the brace against axle (C).
7. Remove pin (D), lower the support (E) onto axle, and reinsert pin into support.
8. Swing axle clockwise to rear of header.



**Figure 3.222: Transport to Field - RH Wheel**

A - Pin  
C - Axle  
E - Support

B - Brace  
D - Pin

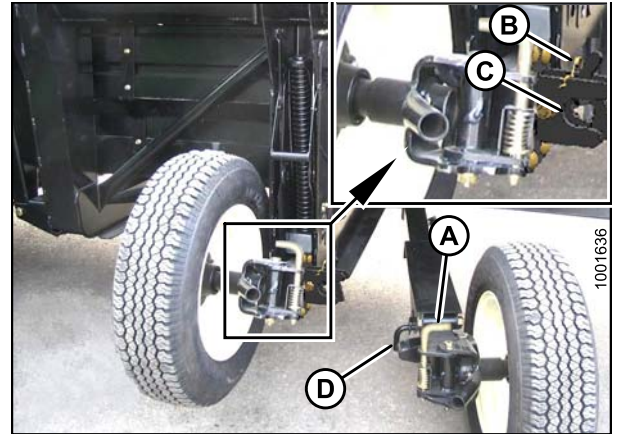
## OPERATION

9. Pull pin (A) at right wheel, swivel wheel counterclockwise to position shown, and lock with pin.
10. Remove hairpin (B) from latch (C).
11. Lift wheel, lift latch (C), and engage lug (D) onto left axle. Ensure latch closes.
12. Secure latch with hairpin (B).

### IMPORTANT

**Check that wheels are locked and that handle is in locked position.**

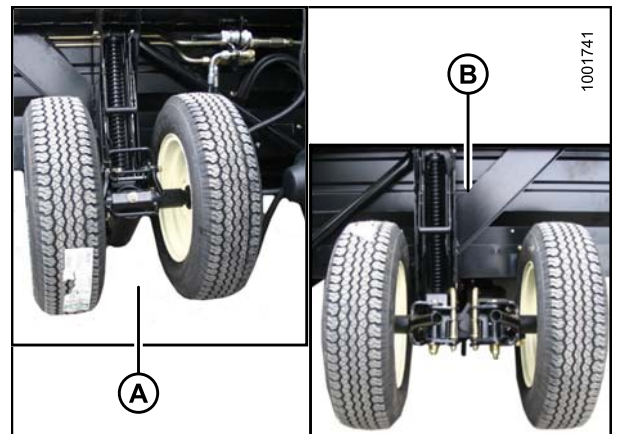
13. The conversion is complete when the wheels are as shown. In the image to the right, (A) shows Field position on left side. (B) shows Field position on right side.



**Figure 3.223: Transport to Field - RH Side**

A - Pin  
C - Latch

B - Hairpin  
D - Lug



**Figure 3.224: Field Position - (A) shows left side. (B) shows right side**

### 3.14.4 Converting from Field to Transport Position

To convert the header from Field to Transport position, follow these steps.



## DANGER

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.**

1. Raise header fully, and proceed as follows:

## OPERATION

### *Left Wheels to Transport Position*

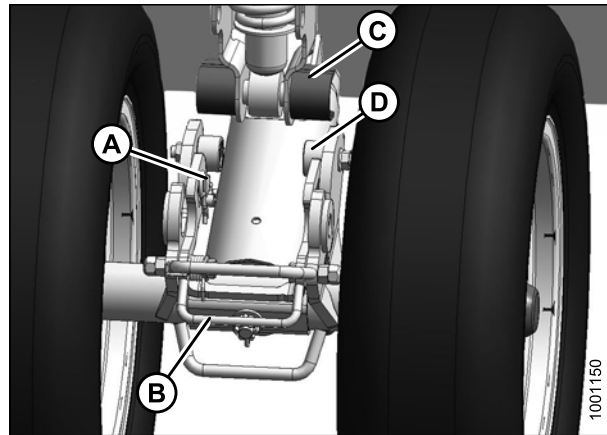
To move the left transport wheels into Transport position, follow these steps.

### CAUTION

Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.

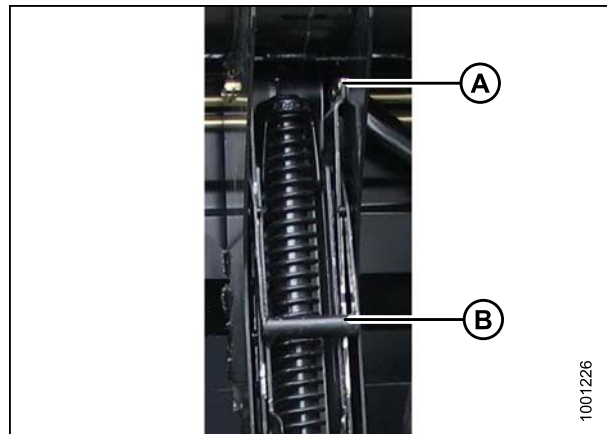
1. Remove clevis pin (A).
2. Pull latch handle (B), and disengage link (C) from lug (D) to lower wheels.
3. Place suspension assembly in full upward position (A) in leg.

4. Lower handle (A) to lock.



**Figure 3.225: Field to Transport - LH Side**

A - Clevis pin  
B - Latch handle  
C - Link  
D - Lug



**Figure 3.226: Field to Transport - LH Side**



**Figure 3.227: Field to Transport - LH Side**



## OPERATION

- Remove pin (A) from storage at top of leg, move and swivel wheels clockwise so that lug (B) faces forward.
- Insert pin (A), and turn pin to lock.

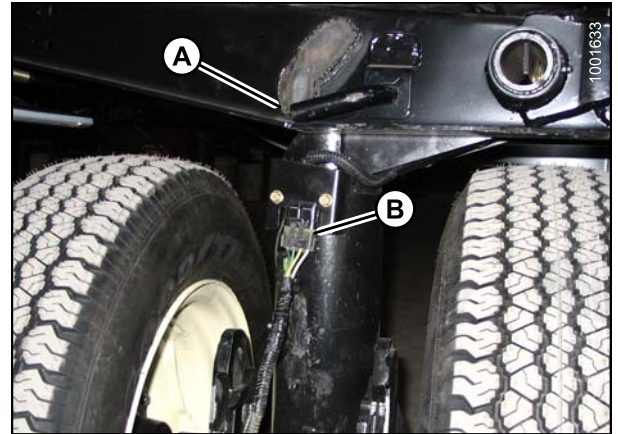


Figure 3.228: Field to Transport - LH Side

- Locate tow-bar (H) onto axle, and push against latch (J) until tow-bar pins drop into hooks (K).
- Check that latch (J) has engaged tow-bar.
- Install clevis pin (A), and secure with hairpin.
- Connect plug (L) for lights.

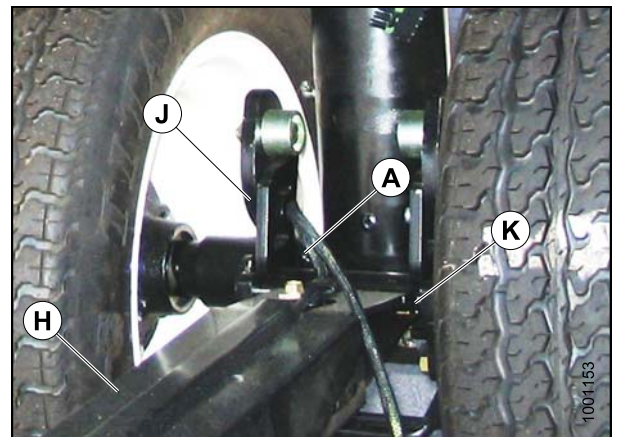


Figure 3.229: Field to Transport - LH Side

A - Clevis pin  
J - Latch

H - Tow-bar  
K - Hooks

### Right Side Wheels to Transport Position

To move the right-hand transport wheels into Transport position, follow these steps.

- At wheels at the right end of header, remove hairpin (A) from latch.
- Lift latch (B), disengage right axle, and lower to ground.



**Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.**

- Carefully pull handle (C) to release the spring, and let the wheel drop to the ground.
- Lift wheel and linkage with handle (D), and position linkage in second slot from bottom.
- Lower handle (C) to lock.

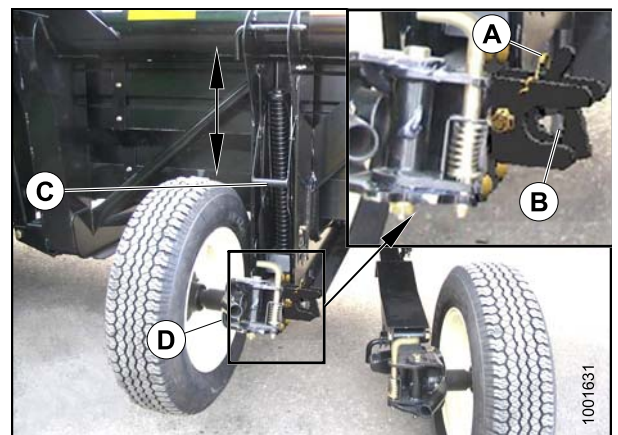


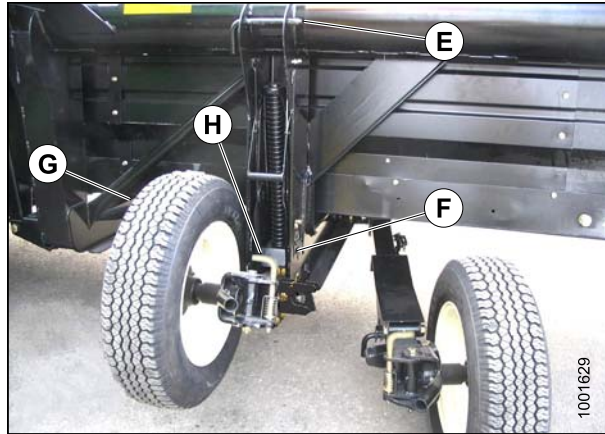
Figure 3.230: Field to Transport - RH Side

A - Hairpin  
C - Handle

B - Latch  
D - Handle

## OPERATION

- Remove pin (E), and install at (F) to secure linkage. Turn pin (E) to lock.
- To position the left wheel (G), pull pin (H), swivel wheel counterclockwise, and re-lock with pin (H).



**Figure 3.231: Field to Transport - RH Side**

E - Pin

F - Pin installation location

G - Left wheel

H - Pin

- Left wheel is now in Transport position as shown.



**Figure 3.232: Field to Transport - LH Wheel**

- Pull pin (J), swivel wheel clockwise as shown, and lock with pin (J).



**Figure 3.233: Field to Transport - RH Side**

## OPERATION

10. Swivel the right axle (K) to front of header.



Figure 3.234: Field to Transport - RH Wheel

11. Remove pin (L), raise support (M) to position shown, and reinsert pin (L).

### IMPORTANT

**Ensure pin (L) engages the tube on the axle.**

12. Swing brace (N) into position as shown, and insert brace into slot (O) behind cutterbar. Position brace so that pin (P) engages hole in bracket (Q).

13. Right hand wheel is now in Transport position.

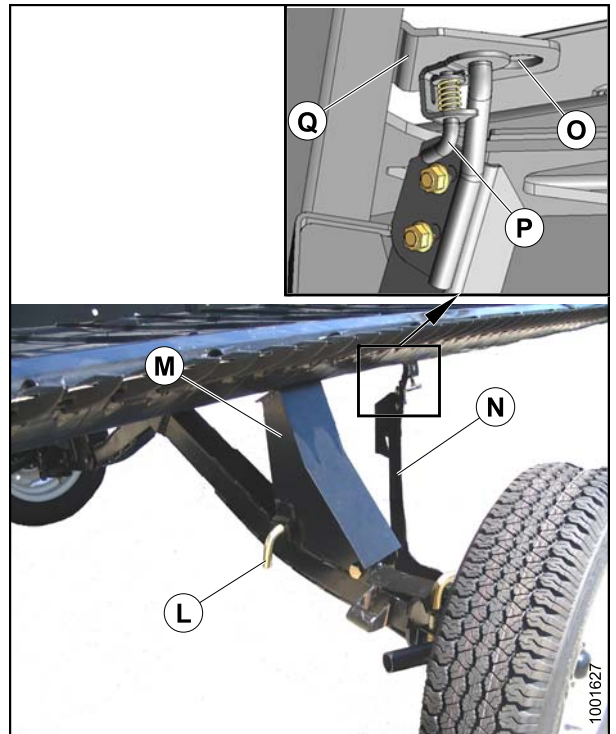


Figure 3.235: Transport Position - RH Wheel

L - Pin  
N - Brace  
P - Pin

M - Support  
O - Slot behind cutterbar  
Q - Bracket





## 4 Maintenance and Servicing

### 4.1 Preparation for Servicing

The following instructions are provided to assist Operator in the use of header.

Detailed maintenance, service, and parts information are contained in the technical manual and the parts catalog which are available from your MacDon Dealer.



## CAUTION

**To avoid personal injury, before servicing header or opening drive covers:**

1. **Fully lower the header. If necessary to service in the raised position, always engage lift cylinder stops.**
2. **Stop engine, and remove key.**
3. **Engage park brake.**
4. **Wait for all moving parts to stop.**

## MAINTENANCE AND SERVICING

### 4.2 Recommended Safety Procedures

Follow these general safety procedures:

- Park on level surface when possible. Block wheels securely if combine is parked on an incline. Follow all recommendations in your combine 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 sickle) 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.

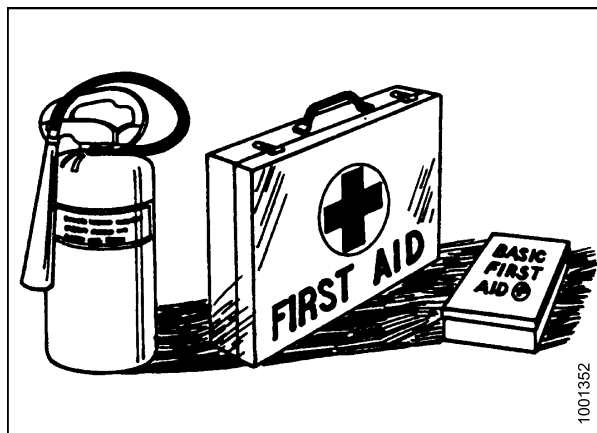


Figure 4.1



Figure 4.2

# MAINTENANCE AND SERVICING

## 4.3 Maintenance Specifications

### 4.3.1 Torque Specifications

The following tables give correct torque values for various bolts and cap screws. Some torques are reduced for specific applications; the values in these tables are to be used if torques are not specified.

Tighten all bolts and cap screws to the torque specified in the tables unless otherwise specified.

Replace hardware with the same strength bolt.

Check tightness of bolts periodically, using the tables below as a guide.

Replace hardware with the same grade bolt.

**NOTE:** When using locking elements, increase torque values by 5%.

#### *SAE Bolt Torque Specifications*

Torque values shown in this table are valid for non-greased or non-oiled threads and heads. Therefore, do NOT grease or oil bolts or cap screws unless otherwise specified in this manual.

Bolt Diameter "A" (in.)	Bolt Torque <sup>1</sup>					
	SAE-2		SAE-5		SAE-8	
	ft·lbf	Nm	ft·lbf	Nm	ft·lbf	Nm
1/4	6	8	9	12	11	15
5/16	10	13	18	24	25	34
3/8	20	27	32	43	41	56
7/16	30	41	50	68	70	95
1/2	45	61	75	102	105	142
9/16	60	95	110	149	149	202
5/8	95	128	150	203	200	271
3/4	165	225	265	359	365	495
7/8	170	230	420	569	600	813
1	225	345	640	867	890	1,205

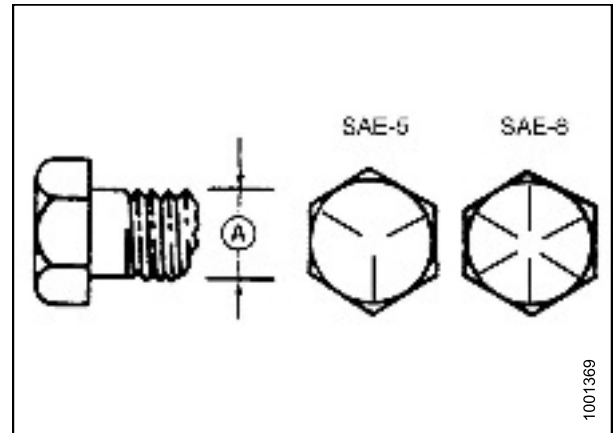


Figure 4.3

1. Torque categories for bolts and cap screws are identified by their head markings.

## MAINTENANCE AND SERVICING

### Metric Bolt Specifications

Torque values shown in this table are valid for non greased or non oiled threads and heads. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

Bolt Di- ameter. "A"	Bolt Torque <sup>2</sup>			
	8.8		10.9	
	ft·lbf	Nm	ft·lbf	Nm
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

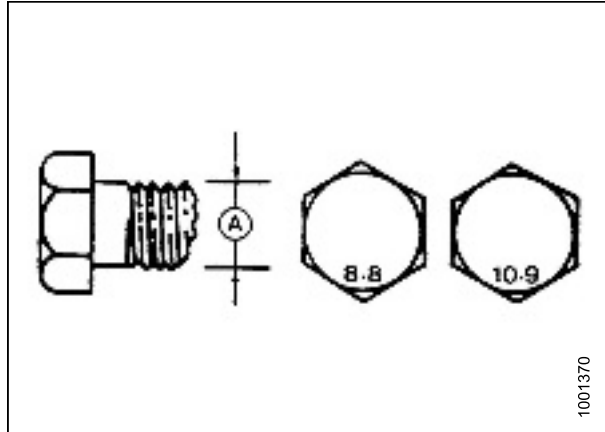


Figure 4.4

### Flare-Type Hydraulic Tube Fittings

To tighten flare-type hydraulic fittings, follow these steps:

1. Check flare (A) and flare seat (D) for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection, and hand-tighten swivel nut (B) until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body (C), and with the second, tighten the swivel nut (B) to the torque shown.

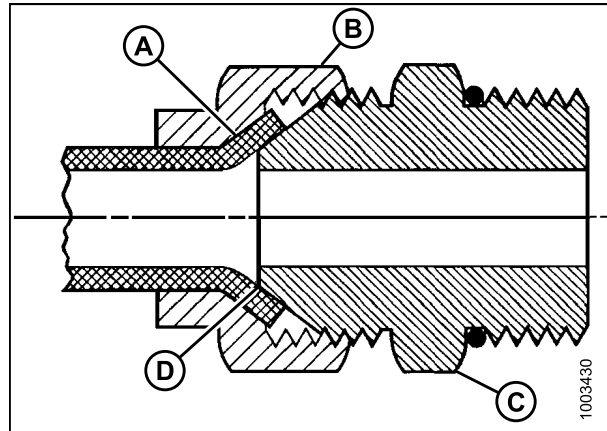


Figure 4.5

2. Torque categories for bolts and cap screws are identified by their head markings.

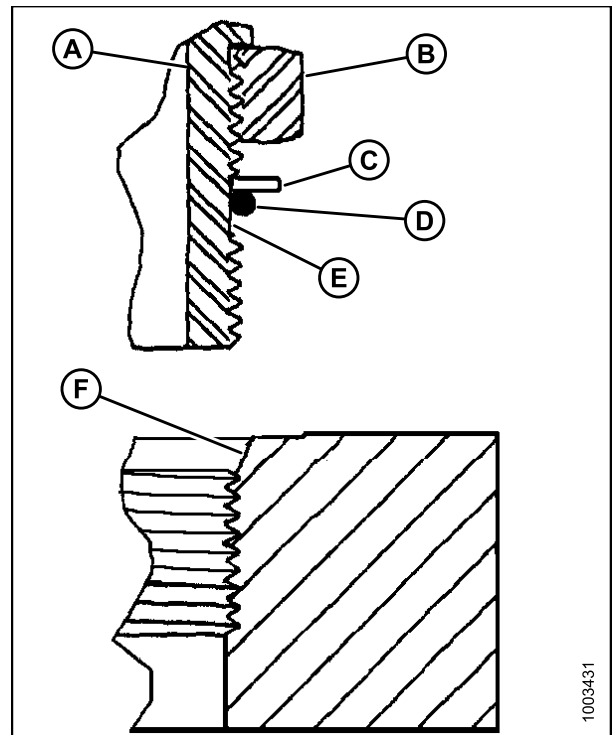
## MAINTENANCE AND SERVICING

SAE No.	Tube Size O.D. (in.)	Thread Size (in.)	Nut Size across Flats (in.)	Torque Value <sup>3</sup>		Recommended Turns to Tighten (after Finger Tightening)	
				ft·lbf	Nm	Flats	Turns
3	3/16	3/8	7/16	6	8	1	1/6
4	1/4	7/16	9/16	9	12	1	1/6
5	5/16	1/2	5/8	12	16	1	1/6
6	3/8	9/16	11/16	18	24	1	1/6
8	1/2	3/4	7/8	34	46	1	1/6
10	5/8	7/8	1	46	62	1	1/6
12	3/4	1-1/16	1-1/4	75	102	3/4	1/8
14	7/8	1-3/16	1-3/8	90	122	3/4	1/8
16	1	1-5/16	1-1/2	105	142	3/4	1/8

### *O-Ring Type Hydraulic Fittings*

To tighten an O-ring fitting, follow these steps:

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back off the lock nut until washer (A) bottoms out at top of groove (B) in fitting.



**Figure 4.6**

A - Fitting	B - Locknut
C - Washer	D - O-ring
E - Groove	F - Seat

3. Torque values shown are based on lubricated connections as in reassembly.

## MAINTENANCE AND SERVICING

3. Hand-tighten fitting until back up washer (A) or washer face (if straight fitting) bottoms on part face (C), and O-ring is seated.
4. Position angle fittings by unscrewing **NO MORE THAN** one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown in the following table, while holding body of fitting with a wrench.

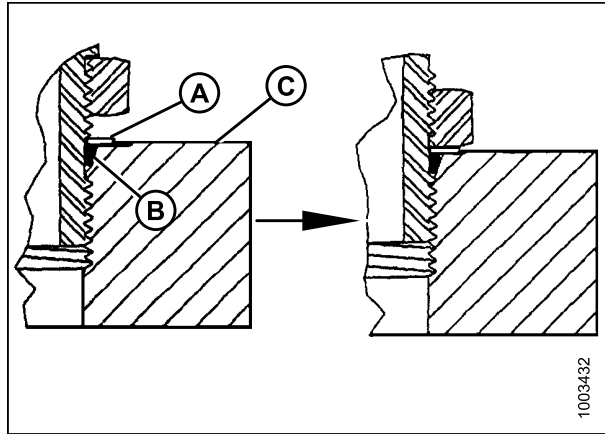


Figure 4.7

SAE No.	Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value <sup>4</sup>		Recommended Turns to tighten (after Finger Tightening)	
			ft·lbf	Nm	Flats	Turns
3	3/8	1/2	6	8	3	3/8
4	7/16	9/16	9	12	4	7/16
5	1/2	5/8	12	16	5	1/2
6	9/16	11/16	18	24	6	9/16
8	3/4	7/8	34	46	8	3/4
10	7/8	1	46	62	10	7/8
12	1-1/16	1-1/4	75	102	12	1-1/16
14	1-3/16	1-3/8	90	122	14	1-3/16
16	1-5/16	1-1/2	105	142	16	1-5/16
20	1-5/8	1-7/8	140	190	20	1-5/8
24	1-7/8	2-1/8	160	217	24	1-7/8

<sup>4</sup> Torque values shown are based on lubricated connections as in reassembly.



## MAINTENANCE AND SERVICING

### *O-Ring Face Seal (ORFS) Hydraulic Fittings*

To tighten O-ring face seal (ORFS) hydraulic fittings, follow these steps:

1. Check components to ensure that the sealing surfaces and fitting threads are free of burrs, nicks, and scratches, or any foreign material.

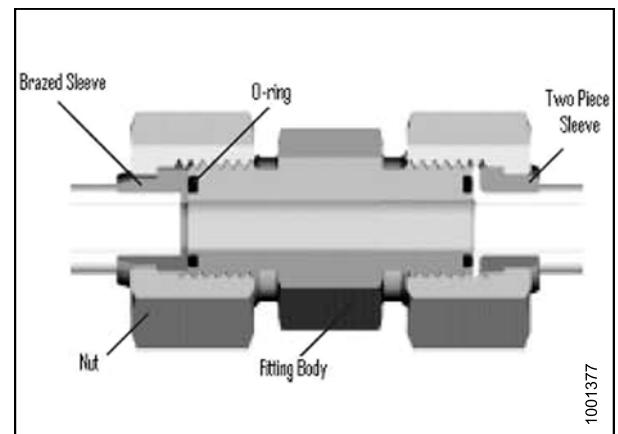


**Figure 4.8**

2. Apply lubricant (typically petroleum jelly) to O-ring and threads. If O-ring is not already installed, install O-ring. Align the tube or hose assembly.
3. Ensure that flat face of the mating flange comes in full contact with O-ring.
4. Thread tube or hose nut until hand-tight. The nut should turn freely until it is bottomed out. Torque fitting further to the specified number of F.F.T (“Flats From Finger Tight”), or to a given torque value in the table shown in the opposite column.

**NOTE:** If available, always hold the hex on the fitting body to prevent unwanted rotation of fitting body and hose when tightening the fitting nut.

5. When assembling unions or two hoses together, three wrenches will be required.



**Figure 4.9**

## MAINTENANCE AND SERVICING

SAE No.	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>5</sup>		Recommended Turns to Tighten (after Finger Tightening) <sup>6</sup>	
			ft·lbf	Nm	Tube Nuts	Swivel and Hose
4	9/16	1/4	18–21	25–28	1/4–1/2	1/2–3/4
6	11/16	3/8	29–32	40–44	1/4–1/2	1/2–3/4
8	13/16	1/2	40–45	55–61		
10	1	5/8	59–65	80–88		
12	1-3/16	3/4	85–94	115–127		1/3–1/2
16	1-7/16	1	110–122	150–165		
20	1-11/16	1-1/4	151–167	205–226		
24	2	1-1/2	232–256	315–347		
32	2-1/2	2	376–414	510–561	—	—

5. Torque values and angles shown are based on lubricated connection, as in re-assembly.

6. Always default to the torque value for evaluation of adequate torque.

## MAINTENANCE AND SERVICING

### 4.3.2 Roller Chain Installation

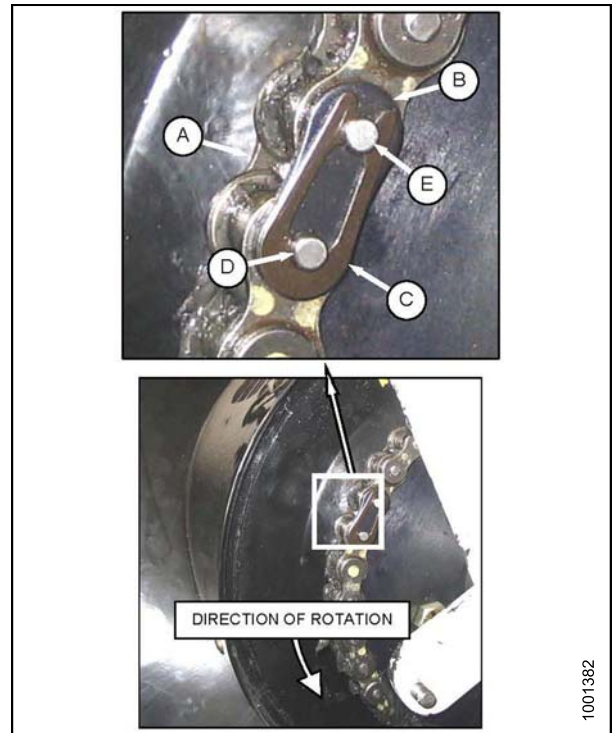
To install a roller chain, follow these steps.



## CAUTION

**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.**

1. Locate ends of chain on sprocket.
2. Install pin connector (A) into chain, preferably from the sprocket backside.
3. Install connector (B) onto pins.
4. Install spring clip (C) onto front pin (D) with closed end of clip in direction of sprocket rotation.
5. Locate one leg of clip in groove of aft pin (E).
6. Press other leg of spring clip over face of aft pin (E) until it slips into groove. Do **not** press clip lengthwise from closed end.
7. Ensure clip is seated in grooves of pins.



**Figure 4.10**

A - Pin connector  
C - Spring clip  
E - Aft pin

B - Connector  
D - Front pin

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## MAINTENANCE AND SERVICING

### 4.3.3 Sealed Bearing Installation

To install a sealed bearing, follow these steps.

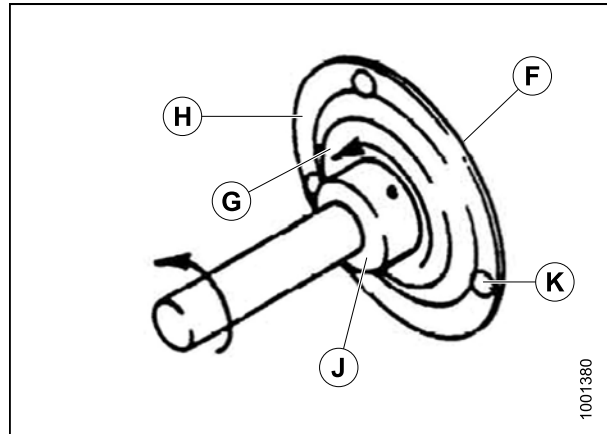
1. Clean shaft and coat with rust preventative.
2. Install flangette (F), bearing (G), second flangette (H) and lock collar (J).

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

3. Install (but do **not** tighten) flangette bolts (K).
4. 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.

5. Tighten flangette bolts.
6. Loosen flangette bolts on mating bearing one turn, and retighten. This will allow bearing to line up.



**Figure 4.11**

F - Flangette  
 H - Flangette  
 K - Flangette bolt  
 G - Bearing  
 J - Lock collar

### 4.3.4 Recommended Fluids and 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.

Lubricant	Specifica- tion	Description	Use	Capacities
Grease	SAE Multi-Purpose	High Temperature Extreme Pressure (EP2) Performance With 1% Max. Molybdenum Disulphide (NLGI Grade 2) Lithium Base	As Required Unless Otherwise Specified.	—
		High Temperature Extreme Pressure (EP) Performance With 10% Max. Molybdenum Disulphide (NLGI Grade 2) Lithium Base	Driveline Slip-Joints	—
Gear Lubricant	SAE 85W-140	API Service Class GL-5	Sickle Drive Box	2.3 quarts (2.2 liters)
			Main Drive Gearbox	5 pints (2.5 liters)
Hydraulic Oil	SAE 15W-40	Compliant With SAE Specs For API Class SJ And CH-4 Engine Oil	Header Drive Systems Reservoir	16 US gallons (60 liters)

## MAINTENANCE AND SERVICING

### 4.3.5 Conversion Chart

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

## MAINTENANCE AND SERVICING

### 4.4 Maintenance Requirements

The following maintenance schedule is a listing of periodic maintenance procedures, organized by service intervals. Regular maintenance is the best insurance against early wear and untimely breakdowns. Following this schedule will increase machine life.

For detailed instructions, refer to the specific headings in this section. Use the fluids and lubricants specified in Section [4.3.4 Recommended Fluids and Lubricants, page 148](#).

Log hours of operation, and use the Maintenance Record on the next page to keep a record of scheduled maintenance. You will want to make copies of the Maintenance Record page for this purpose.

**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 [4.1 Preparation for Servicing, page 139](#) and Section.

#### 4.4.1 Maintenance Schedule/Record

#### 4.4.2 Break-In Inspections

TIMING	ITEM	REFER TO
At 5 Minutes	Check reservoir hydraulic oil level.	Section <a href="#">4.5.1 Reservoir, page 157</a>
At 5 Hours	Check for loose hardware. Tighten to required torque.	Section
	Check sickle drive belts tension. Periodically check for first 50 hours.	Section <a href="#">4.9.8 Sickle Drive Belts – Non-Timed Drive, page 188</a>
At 10 Hours	Check sickle drive box mounting bolts.	Section <a href="#">Mounting Bolts, page 201</a>
At 50 Hours	Change adapter gearbox oil.	Section <a href="#">Main Drive Gearbox Lubrication, page 155</a>
	Change adapter hydraulic oil filter.	Section <a href="#">4.5.2 Hydraulic Oil Filter, page 159</a>
	Change sickle drive box lubricant.	Section <a href="#">Changing Oil, page 204</a>
	Check gearbox chain tension.	Section <a href="#">4.7.5 Gearbox Drive Chain Adjustment, page 169</a>

## MAINTENANCE AND SERVICING

### 4.4.3 Pre-Season/Annual Service



## CAUTION

- Review this Operator's Manual to refresh your memory on safety and operating recommendations.
- Review all safety decals 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.

Perform the following the beginning of each operating season:

1. Adjust tension on drive belts. Refer to Section [4.9.8 Sickle Drive Belts – Non-Timed Drive, page 188](#).
2. Perform all annual maintenance. See Section [4.4.1 Maintenance Schedule/Record, page 150](#).

### 4.4.4 End-of-Season Service

Do the following at the end of each operating season.

1. Clean the header thoroughly.



## CAUTION

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



## CAUTION

Cover cutterbar and sickle guards to prevent injury from accidental contact.

2. Store the machine in a dry, protected place if possible. If stored outside, always cover with a waterproof canvas or other protective material.
3. If machine is stored outside, remove drapers and store in a dark, dry place.  
**NOTE:** If drapers are not removed, store header with cutterbar lowered so water/snow will not accumulate on drapers. This accumulation of weight puts excessive stress on drapers and header.
4. Lower header onto blocks to keep cutterbar off the ground.
5. Lower reel completely. If stored outside, tie reel to frame to prevent rotation caused by wind.
6. Re-paint all worn or chipped painted surfaces to prevent rust.
7. Loosen drive belts.
8. 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 sickle components to prevent rust.
9. Check for worn or broken components and repair or order replacement from your MacDon Dealer. Attention to these items right away will save time and effort at beginning of next season.
10. Replace or tighten any missing or loose hardware. Refer to Section .



## MAINTENANCE AND SERVICING

### 4.4.5 Lubrication and Servicing

#### CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in Section 4.1 Preparation for Servicing, page 139.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to Section 4.4.1 Maintenance Schedule/Record, page 150.

#### *Service Intervals*

Refer to the illustrations on the following pages to identify the various locations that require lubrication and servicing. Illustrations are organized by the frequency of service that is required.

#### **Every 10 Hours or Daily**



Figure 4.12

Except in sandy conditions.

#### **Every 25 Hours**

To prevent binding and/or excessive wear caused by sickle pressing on guards, do **not** over grease. If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the sickle head.

Check for signs of excessive heating on first few guards after greasing. If required, relieve pressure by depressing check-ball in grease fitting.

#### **Every 50 Hours**

#### **Every 100 Hours**

#### **Every 250 Hours**

U-joint has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if U-joint stops taking grease. Overgreasing will damage U-joint. Six to eight pumps is sufficient at first grease (factory). Decrease grease interval as U-joint wears and requires more than six pumps.

## Every 500 Hours

### Greasing Procedure



## CAUTION

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.

1. The greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation.
2. Use the recommended lubricants specified in this manual. See Section 4.3.4 Recommended Fluids and Lubricants, page 148.
3. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
4. Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
5. Leave excess grease on fitting to keep out dirt.
6. Replace any loose or broken fittings immediately.
7. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
8. Master grease point location decals as shown at right are provided on the header and adapter back frames.

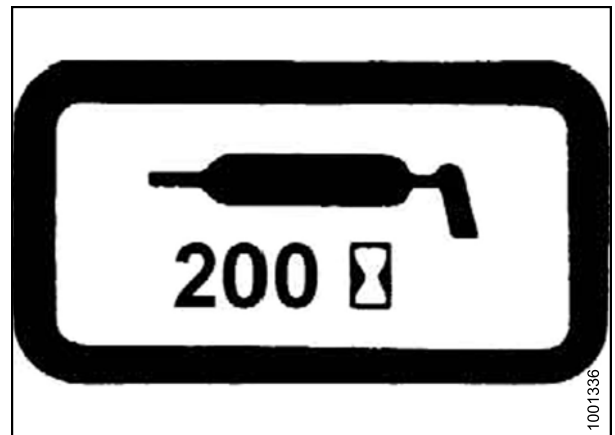


Figure 4.13

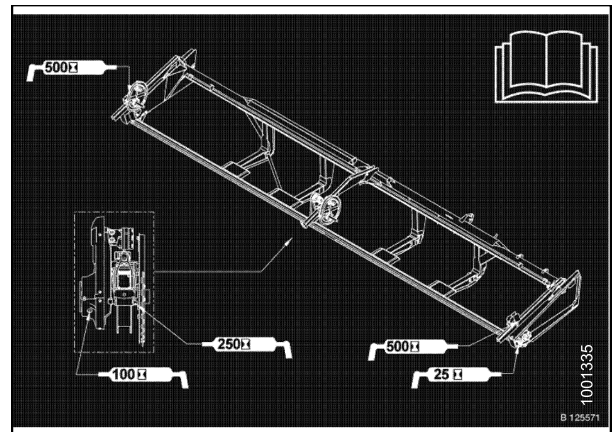


Figure 4.14: Single Knife Header

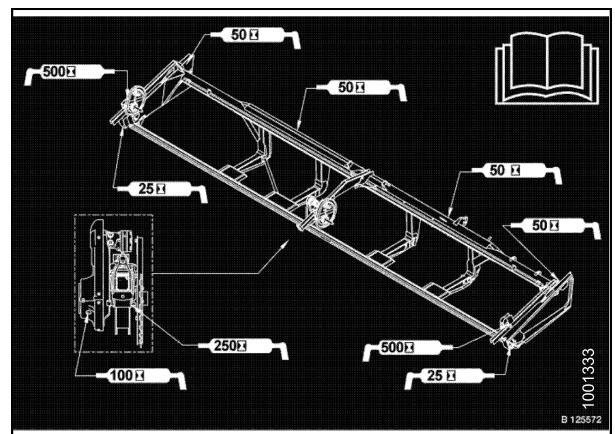


Figure 4.15: Double Knife Header

## MAINTENANCE AND SERVICING

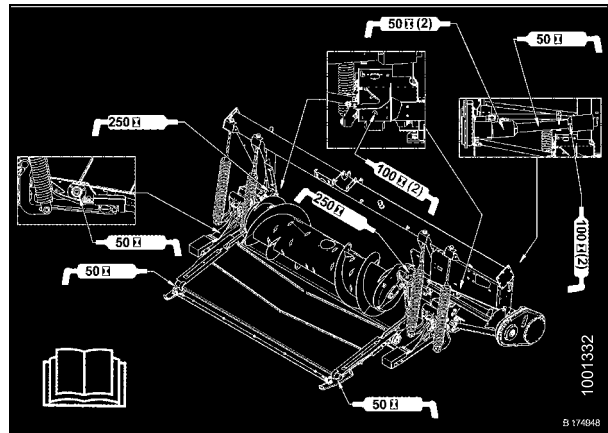


Figure 4.16: Adapter

### *Auger Drive Chain Lubrication*

Lubricate auger drive chain every 100 hours. This can be done with the adapter attached to the combine, but is easier if the adapter is detached.

To lubricate the auger drive chain, follow these steps:

1. The auger drive cover consists of an upper and a lower half. Only the upper half needs to be removed to grease the chain.
2. Remove six bolts (A), securing the upper half (C).
3. Loosen three bolts (B) at the rear of the cover.
4. Rotate upper half (C) forward to remove.

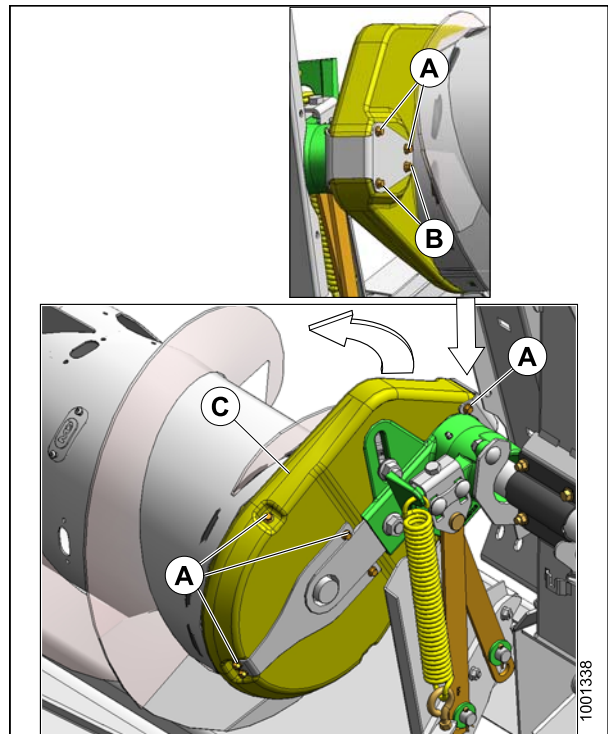


Figure 4.17

A - Bolts  
C - Upper auger drive cover

B - bolts

## MAINTENANCE AND SERVICING

5. Liberally apply grease to chain (D).
6. reinstall upper half (C), by positioning the inboard lip into the auger tube and rotating back to engage the rear support.
7. Replace and tighten bolts (A) and (B).

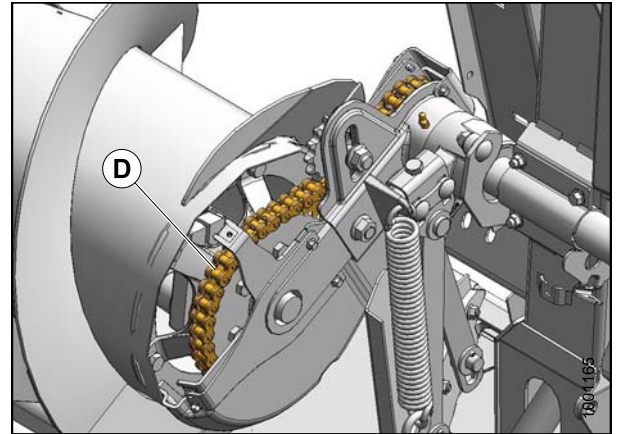


Figure 4.18

### Main Drive Gearbox Lubrication

#### Main Drive Gearbox – Checking Oil Level

Check oil level every 100 hours as follows:



## CAUTION

**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.**

1. Set cutterbar to working position.
2. Remove oil level plug (E). Level should be to bottom of hole.
3. reinstall plug (E).
4. Add oil if required. See [Main Drive Gearbox – Adding Oil](#), page 155.

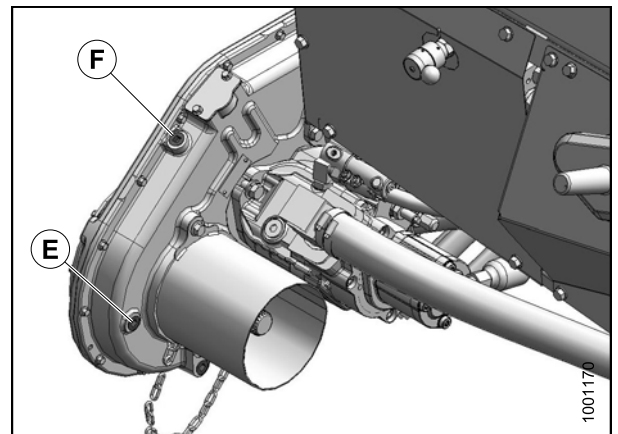


Figure 4.19

#### Main Drive Gearbox – Adding Oil

To add oil to the main drive gearbox, follow these steps:

1. Lower cutterbar to ground. Gearbox must be in working position.
2. Remove oil level plug (E) and filler plug (F).
3. Add SAE 85W-140 oil at (F) until it runs out of hole (E).
4. Replace oil level plug (E) and filler plug (F).

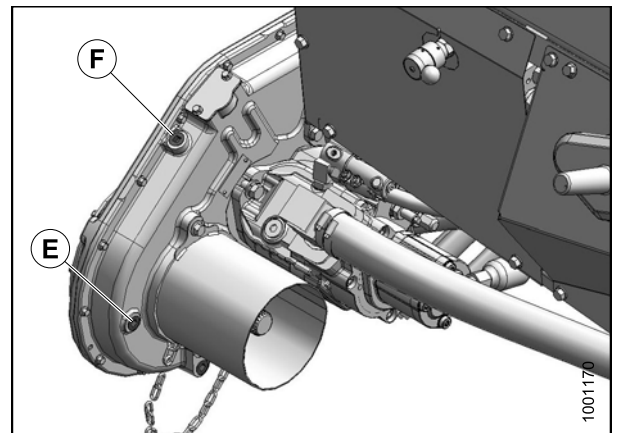


Figure 4.20

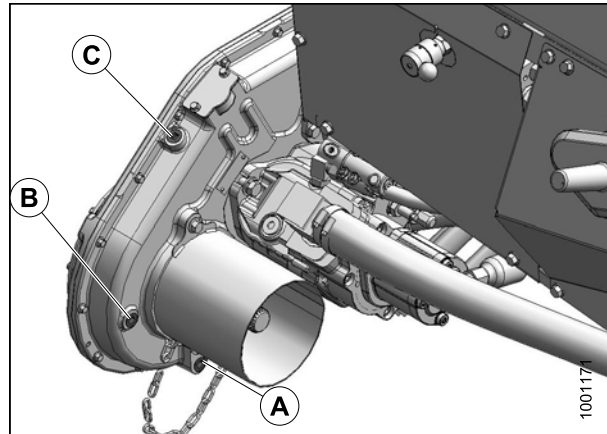
## MAINTENANCE AND SERVICING

### Main Drive Gearbox – Changing Oil

Change main drive gearbox lubricant after the first 50 hours of operation, and every 1000 hours (or 3 years) thereafter.

To change the main drive gearbox lubricant, follow these steps:

1. Raise or lower header to position oil drain plug (A) at its lowest point.
2. Place a suitable container (approximately one US gallon [4 liters]) under gearbox drain to collect oil.
3. Remove drain plug (A) and filler plug (B), and allow oil to drain.
4. Replace drain plug (A), and remove oil level plug (C).
5. Add SAE 85W-140 oil at (C) until it runs out of hole at (A). Gearbox holds approximately 5 US pints (2.5 liters).
6. Replace oil level plug (B) and filler plug (C).



**Figure 4.21**

A - Drain plug  
C - Oil level plug

B - Filler plug

# MAINTENANCE AND SERVICING

## 4.5 Hydraulics

The CA25 Combine Adapter's hydraulic system provides oil for the header draper and knife drives as well as the adapter feed draper.

Reel hydraulics are provided by the combine.

### 4.5.1 Reservoir

The adapter frame is used as a reservoir. Refer to Section [4.3.4 Recommended Fluids and Lubricants](#), page 148 for proper oil.

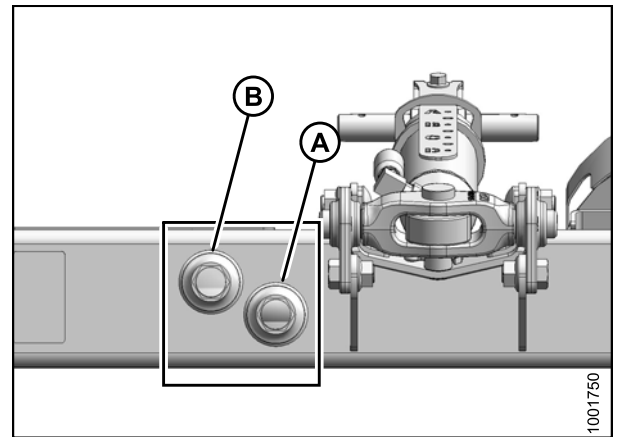
#### *Hydraulics – Checking Oil Level*

Check oil level every 25 hours at sights (A) and (B) with cutterbar just touching ground. Check when oil is cold, and with center-link retracted.

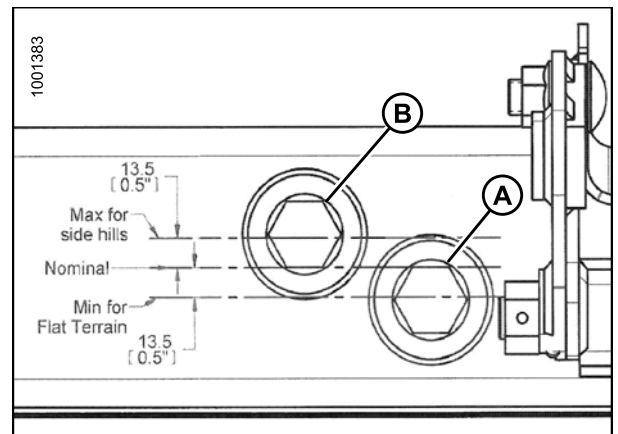
- **Nominal - Normal Terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is empty.
- **Maximum - Hilly Terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
- **Minimum - Level Ground:** For slopes of 6 degrees or less, oil level may be kept slightly lower if desired. Maintain level so lower sight (A) is one-half filled or higher.

**NOTE:** When ambient temperatures are above 95°F (35°C), to prevent overflow at breather under operating temperatures, it may be necessary to lower oil level slightly.

This image provides more detail and a closer look at the sight gauge.



**Figure 4.22: Check Oil Level**



**Figure 4.23**



## MAINTENANCE AND SERVICING

### Hydraulics – Adding Oil

To add oil to the hydraulic reservoir, follow these steps.



## CAUTION

**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.**

1. Turn filler cap (A) counterclockwise until loose, and remove cap.
2. Add warm (room temperature) SAE 15W-40 oil to required level. Refer to [Section 4.3.4 Recommended Fluids and Lubricants, page 148](#) for proper oil.

## IMPORTANT

**Warm (room temperature) oil will flow through the screen better than cold oil. DO NOT REMOVE THE SCREEN.**

3. Reinstall filler cap. Hand-tighten.

### Hydraulic Oil Change

To change the hydraulic oil in the reservoir, follow these steps.

Change hydraulic oil every 1,000 hours or 3 years.

1. Detach header from adapter. Refer to [Section 3.3 Header Attachment/Detachment, page 29](#).
2. Detach adapter from combine. Support adapter on blocks. Refer to [Section 3.3 Header Attachment/Detachment, page 29](#).



Figure 4.24

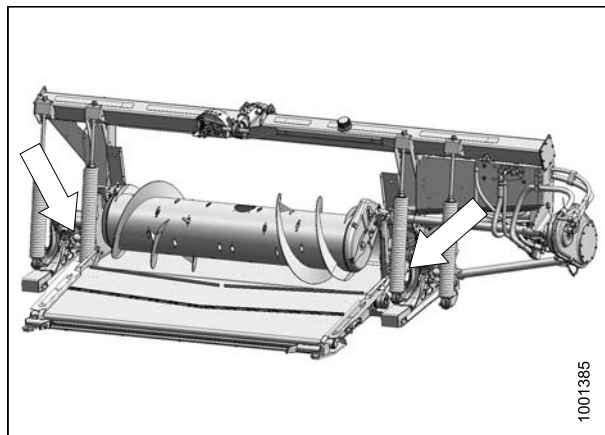


Figure 4.25



## MAINTENANCE AND SERVICING

3. There is a drain plug at the bottom of each side frame. Place a suitable container (at least 16 US gallons [60 liters]) under the two drains (A) to collect oil.
4. Using a 1-1/2 inch hex socket with extension, remove drain plugs (A).
5. Replace drain plugs when reservoir is empty.
6. Fill with 16 US gallons (60 liters) of clean SAE 15W-40 oil. Refer to previous section for filling procedures.

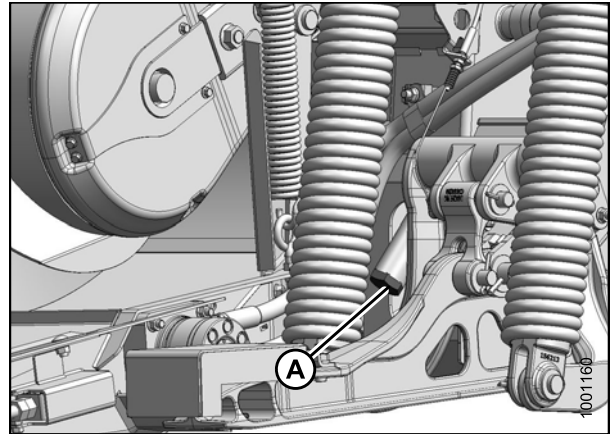


Figure 4.26

### 4.5.2 Hydraulic Oil Filter

To change hydraulic oil filter, follow these steps

Change hydraulic oil filter after the first 50 hours of operation, and every 250 hours thereafter. Part #123989 can be obtained from your MacDon Dealer.



## CAUTION

**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.**

1. Remove five screws (A), and remove panel (B).

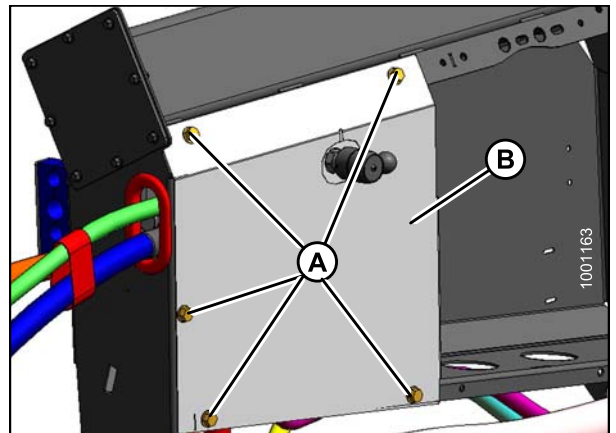


Figure 4.27

## MAINTENANCE AND SERVICING

2. Clean around mating surfaces of filter and valve block (A).
3. Remove spin-off filter (B), and clean the exposed filter port in valve block.
4. Apply a thin film of clean oil to the O-ring provided with the new filter.
5. Turn filter into the valve block until O-ring contacts mating surface. Tighten filter an additional 1/2 to 3/4 turn by hand.

### IMPORTANT

**Do not use a filter wrench to install filter. Overtightening can damage O-ring and filter.**

6. Reinstall panel (B) with screws (A).

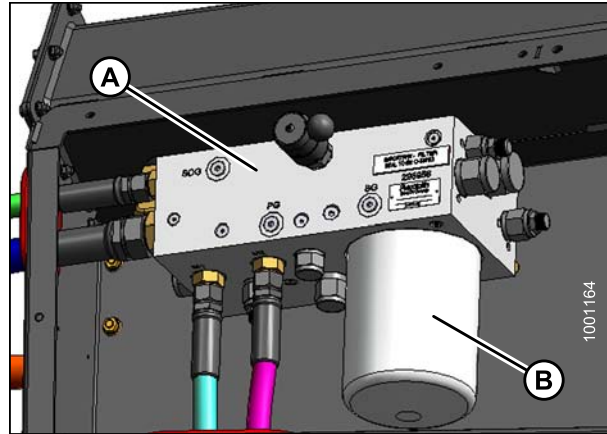


Figure 4.28

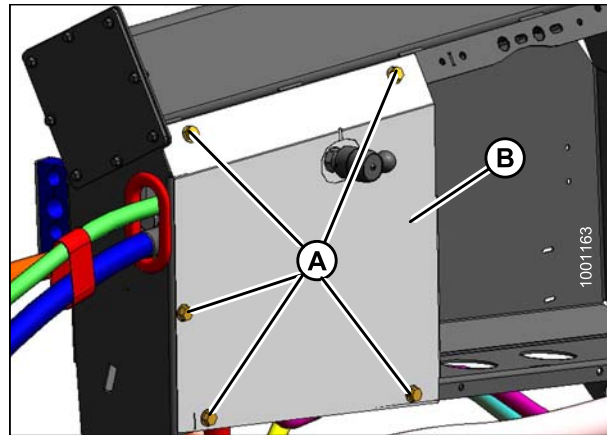


Figure 4.29

## MAINTENANCE AND SERVICING

### 4.5.3 Hydraulic 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.



Figure 4.30

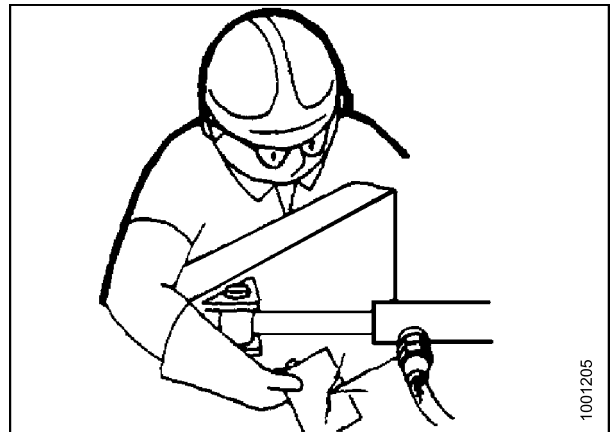


Figure 4.31

## MAINTENANCE AND SERVICING

### 4.6 Electrical

To replace a light bulb, follow these steps

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

Keep lights clean, and replace defective bulbs.

1. Using a Phillips screwdriver, remove screws (A) from fixture, and remove plastic lens.
2. Replace bulb, and reinstall plastic lens and screws.

**NOTE:** Bulb Part Numbers: Use Bulb Trade #1156 for amber clearance lights, and #1157 for red tail light (Slow Speed Transport option). #1156 is 21W (12V), and #1157 is 21/5W (12V).

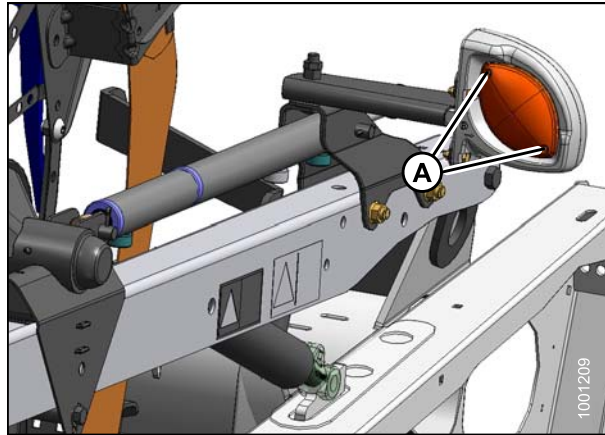


Figure 4.32

## 4.7 Main Drive

### 4.7.1 Driveline Removal

To remove the main driveline, follow these steps.

The main driveline normally remains attached to the adapter, and is stored on the hook provided when not in use.

### CAUTION

**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.**

1. If adapter is attached to combine, remove driveline from combine by pulling the quick disconnect collar to release driveline yoke at combine shaft.
2. Remove two nuts (A) attaching shield (B) to gearbox.
3. Slide shield over poly driveline shield to expose quick disconnect on gearbox. Do **NOT** disconnect tether (C).
4. Pull quick disconnect collar to release driveline yoke, and pull driveline off shaft.
5. Slide shield (B) off driveline.

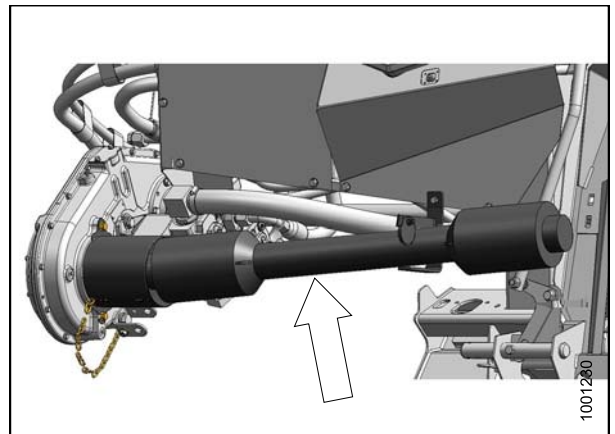


Figure 4.33

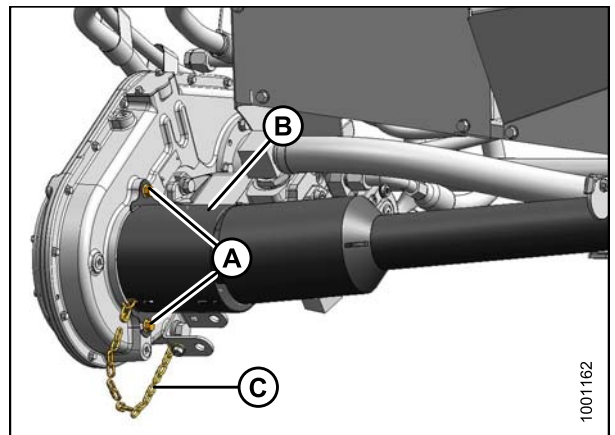


Figure 4.34

## MAINTENANCE AND SERVICING

6. Rotate disc (A) on adapter driveline storage hook, and remove the driveline from hook.

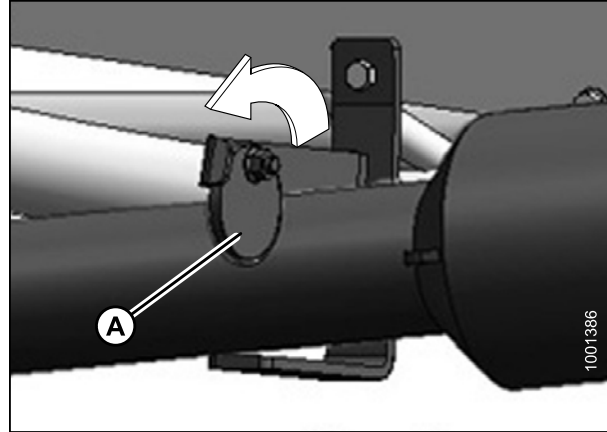


Figure 4.35

### 4.7.2 Driveline Installation

To install the main driveline, follow these steps:



## CAUTION

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.

## IMPORTANT

If combine output shaft splines match adapter input shaft splines, ensure driveline is installed with longer guard at adapter gearbox end.

1. Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft.

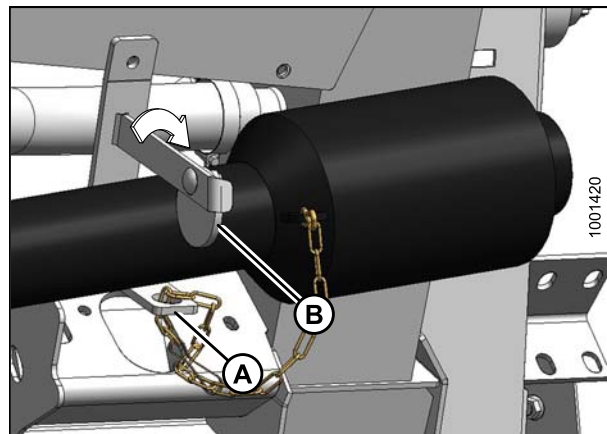


Figure 4.36

## MAINTENANCE AND SERVICING

2. Slide shield (B) over driveline.
3. Locate driveline quick disconnect onto adapter gearbox shaft, pull back collar and slide onto shaft until yoke locks onto shaft. Release collar.
4. Position shield (B) on gearbox and secure with nuts (A).
5. Re-connect other end to combine if necessary.

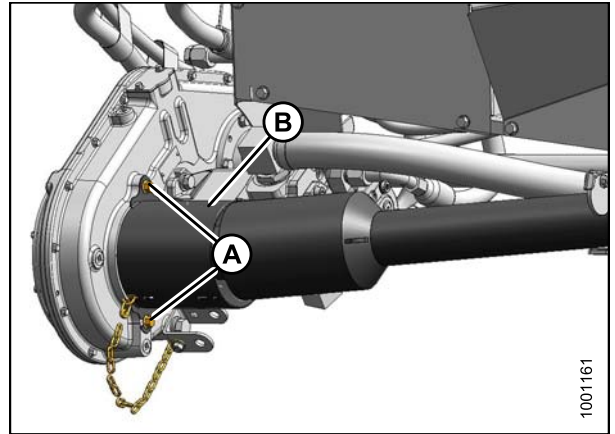


Figure 4.37

### 4.7.3 Guard Removal

To remove a main driveline guard, follow these steps.

The main driveline guard normally remains attached to the driveline, but can be removed for maintenance.



## CAUTION

**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.**

**NOTE:** The driveline does not need to be removed from the adapter in order to remove the driveline guard.

1. Rotate disc (B) on adapter driveline storage hook (A), and remove driveline from hook.

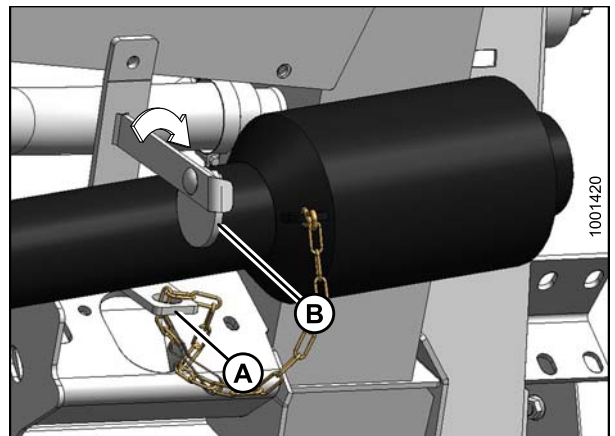


Figure 4.38



## MAINTENANCE AND SERVICING

2. Lift combine end of driveline (A) from hook, and extend driveline until it separates. Hold adapter end of driveline to prevent it from dropping and hitting the ground.



Figure 4.39

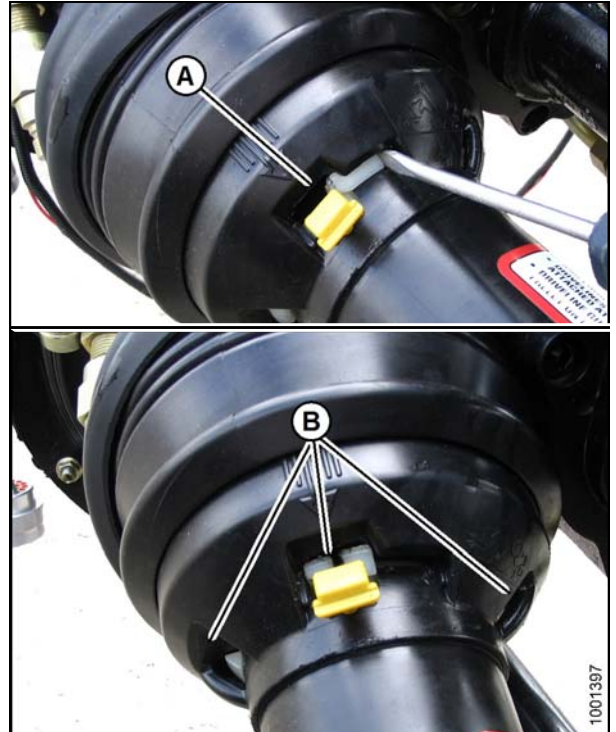
3. Release grease zerk/lock (A) with a screwdriver.



Figure 4.40

## MAINTENANCE AND SERVICING

4. Rotate guard locking ring (A) counterclockwise with a screwdriver until lugs (B) line up with slots in guard.
5. Pull guard off driveline.



**Figure 4.41**

A - Guard locking ring

B - Lugs

### 4.7.4 Guard Installation

To install the main driveline guards, follow these steps.

1. Slide guard onto driveline, and line up slotted lug on locking ring (A) with arrow (B) on guard.



**Figure 4.42**

## MAINTENANCE AND SERVICING

2. Push guard onto ring until locking ring is visible in slots (A).

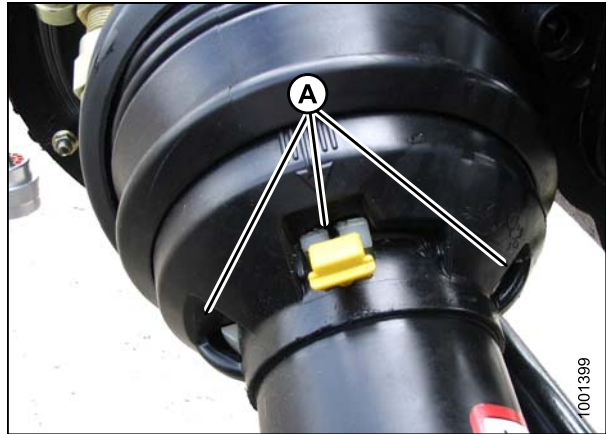


Figure 4.43

3. Rotate ring (A) clockwise with a screwdriver to lock ring in guard.



Figure 4.44

4. Push grease zerk (A) back into guard.
5. Repeat steps 1. to 4. for the other guard.



Figure 4.45

## MAINTENANCE AND SERVICING

6. Re-assemble driveline.

**NOTE:** The splines are keyed so that universals are aligned. Align weld (A) with missing spline (B) when assembling.

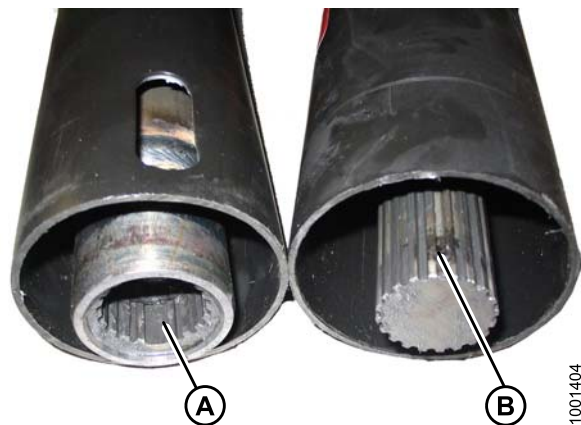


Figure 4.46

7. Slide driveshaft in hook (A) so that disc (B) drops to secure driveshaft, or connect to combine.

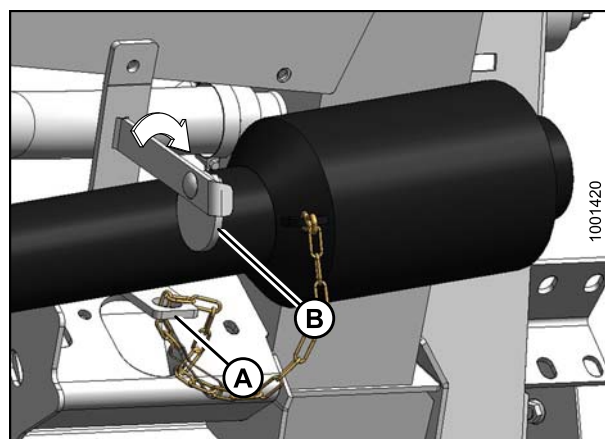


Figure 4.47

### 4.7.5 Gearbox Drive Chain Adjustment

To adjust tension on the chain in the main gearbox, follow these steps.

A sprocket on the main drive input shaft from the combine drives another shaft to the auger.

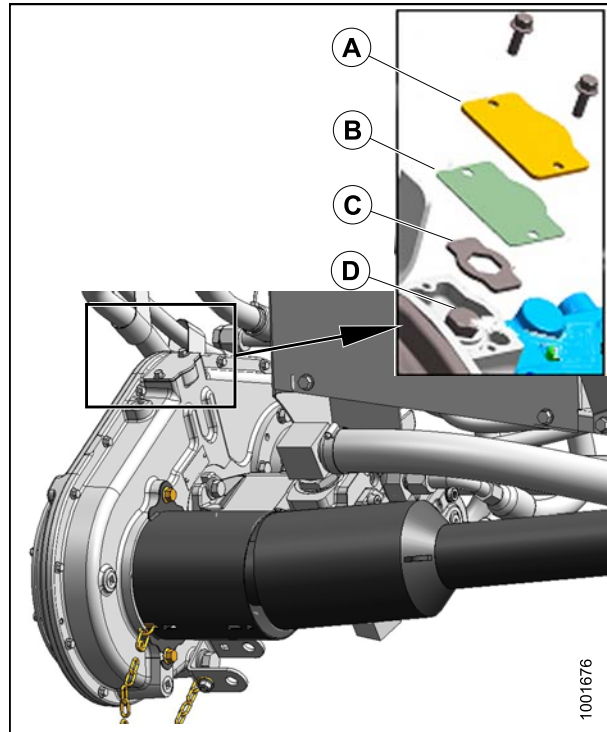


## CAUTION

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.

## MAINTENANCE AND SERVICING

1. Lower header, stop engine, and remove key.
2. Remove chain adjusting cover (A). Be sure gasket (B) is not damaged.
3. Remove retainer plate (C).
4. Tighten bolt (D) to 60 in·lbf (6.8 N·m), Then back off bolt 1-2/3 turns.
5. Reinstall retainer plate (C).
6. Reinstall chain adjusting cover (A) and gasket (B). Torque hardware to 84 in·lbf (9.5 N·m).



**Figure 4.48**

A - Cover

B - Gasket

C - Retainer plate

D - Bolt

## MAINTENANCE AND SERVICING

### 4.8 Auger

KL: Add paragraph explaining what the auger is for and where it is.

#### 4.8.1 Auger Pan Clearance

Adapters are factory-set to the proper auger clearances to the pan and feed draper.

### IMPORTANT

It is important that these clearances are maintained. Too little clearance may result in the tines or flighting contacting and damaging the draper or feed pan under certain orientations of the header.

**IMPORTANT:**

Look for evidence of contact when greasing the adapter.

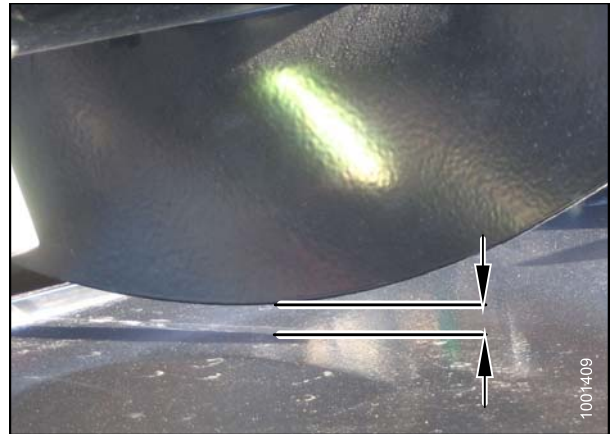


Figure 4.49: Pan Clearance at Steepest Header Angle (0.2–0.4 in. (5–10 mm))

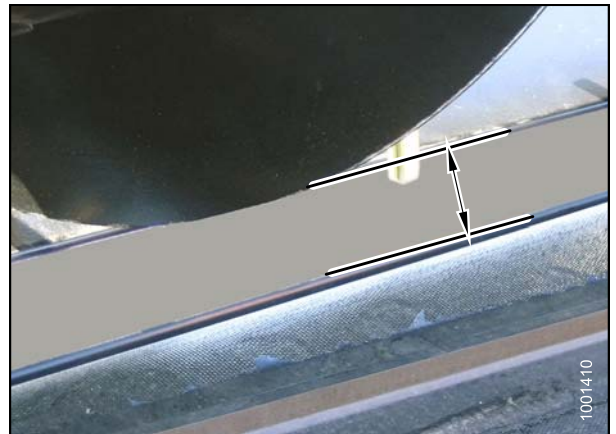


Figure 4.50: Feed Draper Clearance at Flattest Header Angle (1.0–1.5 in. (25–40 mm))



## MAINTENANCE AND SERVICING

To adjust the auger pan clearance, follow these steps:

1. Extend center-link to maximum for steepest header angle, and fully lower the header.
2. Check that adapter float linkage is on downstops (washer (A) and nut (B) cannot be moved).

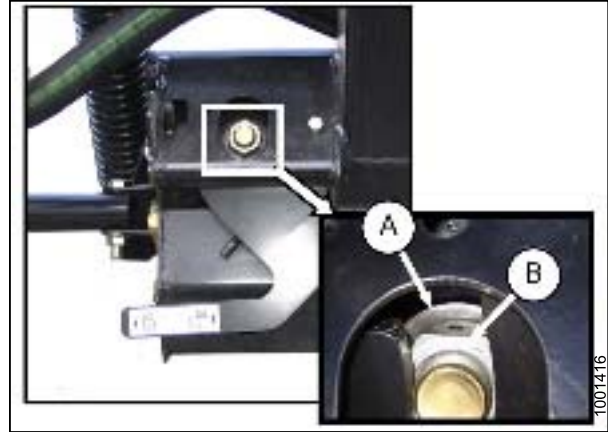


Figure 4.51

3. Loosen two nuts (A).
4. Turn bolt head (B) clockwise to raise auger and increase pan/drapeer clearance.
5. Repeat for other end of auger.
6. Check clearances, and readjust as required.
7. Tighten nuts (A) on both ends of auger.

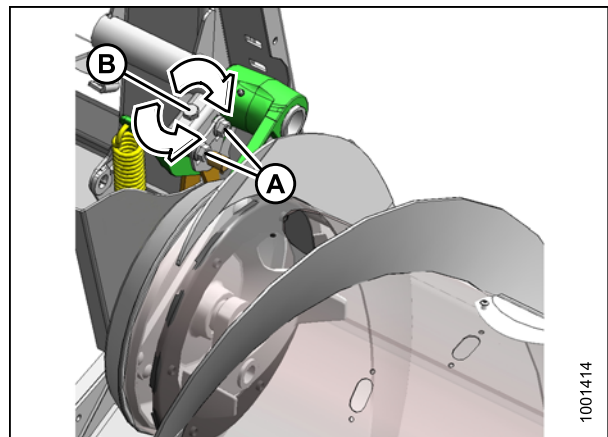


Figure 4.52: Bolt head clockwise to increase clearance; counterclockwise to decrease

### 4.8.2 Auger Drive Chain Adjustment

To adjust chain tension, follow these steps.

The auger is chain-driven from adapter drive system by a sprocket that is attached to side of the auger.



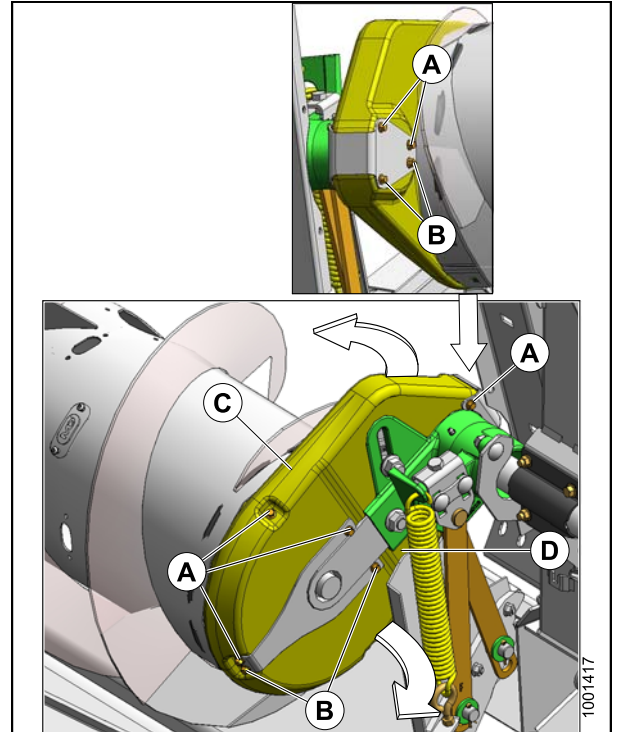
## CAUTION

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.



## MAINTENANCE AND SERVICING

1. Detach combine from adapter. Refer to Section 3.3 Header Attachment/Detachment, page 29.
2. Remove six bolts (A), securing top cover.
3. Remove six bolts (B) securing bottom cover.
4. Hinge covers (C) and (D) forward, and remove to expose drives.



**Figure 4.53**

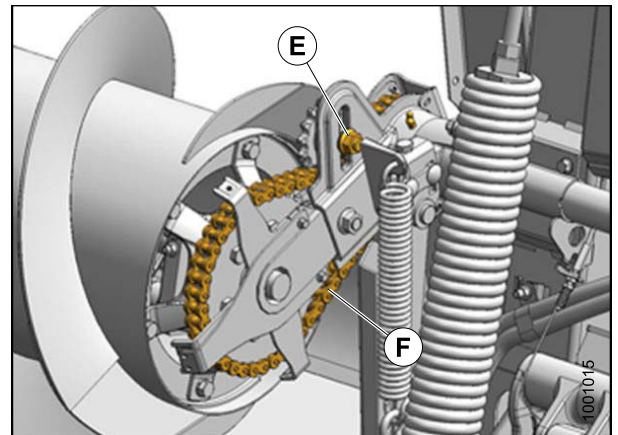
A - Bolts  
C - Drive cover

B - Bolts  
D - Drive cover

5. Loosen bolt (E) securing idler sprocket.
6. Rotate auger in reverse to take up slack in lower strand of chain (F).
7. Push idler sprocket down to eliminate remaining slack in upper strands.
8. Rotate auger back and forth to check slack, and repeat above step if necessary. A slight amount of slack is acceptable.

**NOTE:** Do **not** use excessive force on idler to tighten chain.

9. Tighten idler bolt (E), and torque to 215 ft·lbf (290 N·m).
10. To reinstall covers (C) and (D), engage inboard lip of cover into auger tube and rotate cover back to engage rear support.
11. Replace and tighten bolts (A) and (B).



**Figure 4.54**

E - Bolt

F - Chain

## MAINTENANCE AND SERVICING

### 4.8.3 Auger Drive Chain Replacement

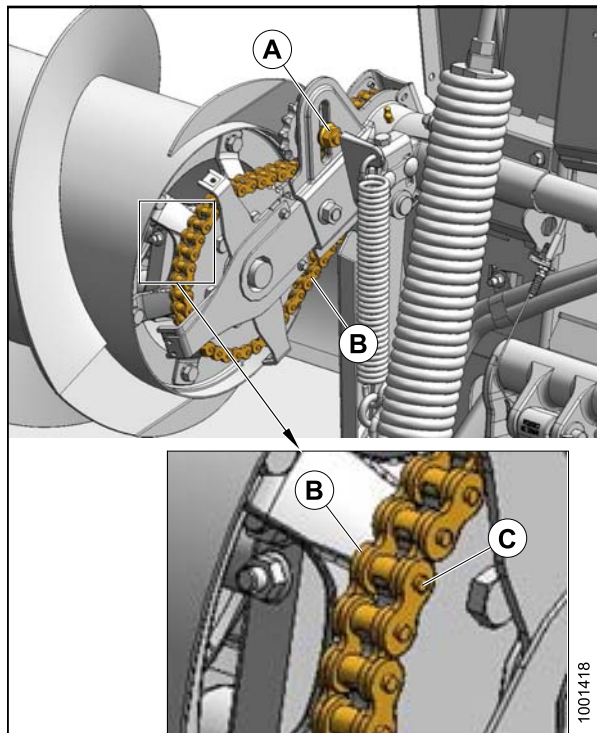
To replace the auger drive chain, follow these steps.

The chain tensioner can only take up slack for a single pitch. When the chain has worn or stretched beyond the limits of the tensioner, the chain should be replaced, or removed to replace the connector link with an offset half link.

## CAUTION

**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.**

1. Detach header from combine. Refer to Section [3.3 Header Attachment/Detachment](#), page 29.
2. Remove auger chain case. See previous page.
3. Remove chain as follows:
  - a. Loosen idler sprocket bolt (A), and raise to uppermost position to release tension on chain (B). Snug up bolt (A) to hold sprocket.
  - b. Grind off head of a link rivet (C) on chain (B), punch out the rivet, and remove chain.



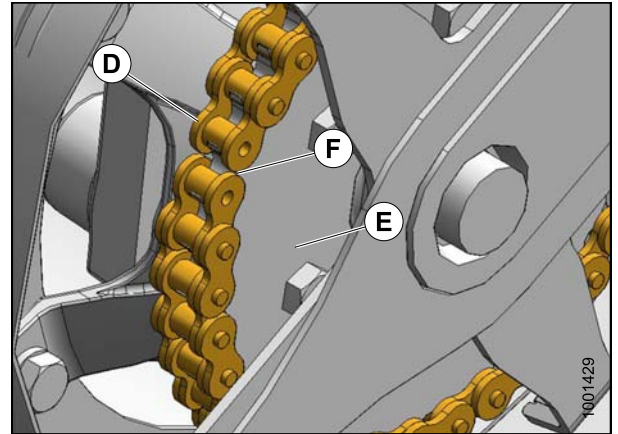
**Figure 4.55**

A - Idler sprocket bolt  
C - Link rivet

B - Auger drive chain

## MAINTENANCE AND SERVICING

4. Install new chain as follows:
  - a. Grind off the head from one of the link rivets on the new chain, and punch out rivet to separate the chain.
  - b. Feed new chain (D) around drive and driven sprockets and under idler sprocket. Position chain ends so that connection can be made on driven sprocket (E).
  - c. Install connector link at (F). Refer to Section [4.3.2 Roller Chain Installation](#), page 147.
5. Tighten chain. Refer to Section [4.8.2 Auger Drive Chain Adjustment](#), page 172.
6. Lubricate the chain with SAE Multi-Purpose High Temperature Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2).
7. Reinstall chain case. See step j. on previous page.



**Figure 4.56**

D - New drive chain  
F - Connector link

E - Sprocket

### 4.8.4 Auger Tines

CA25 Combine Adapters are fitted with tines to accommodate a wide variety and sizes of combines.

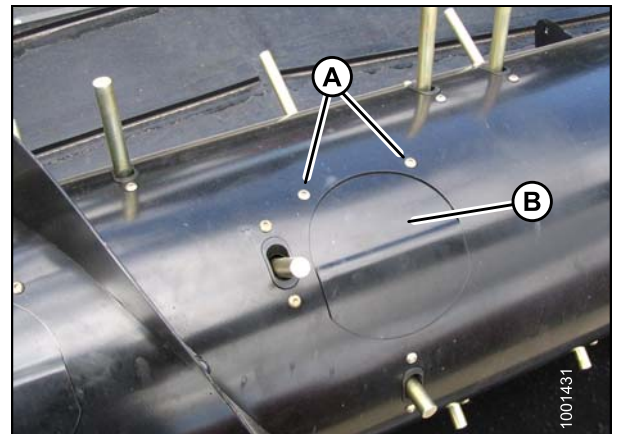
Some conditions may require the removal or addition of tines for optimal feeding of the crop. In addition, tines that become worn or damaged should be replaced.

#### *Auger Tine Removal*

**NOTE:** To simplify the procedure, detach header from combine. Refer to Section [3.3 Header Attachment/Detachment](#), page 29.

To remove an auger tine, follow these steps:

1. Remove screws (A), and remove access cover (B).



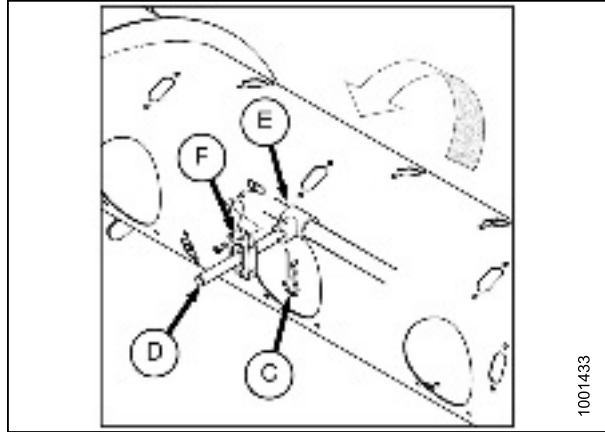
**Figure 4.57**

A - Screws

B - Access cover

## MAINTENANCE AND SERVICING

- From inside the auger, remove hairpin (C), and pull tine (D) out of bushing (E).
- From inside the auger, swivel tine away from bushing, pull from plastic guide (F), and remove from auger.



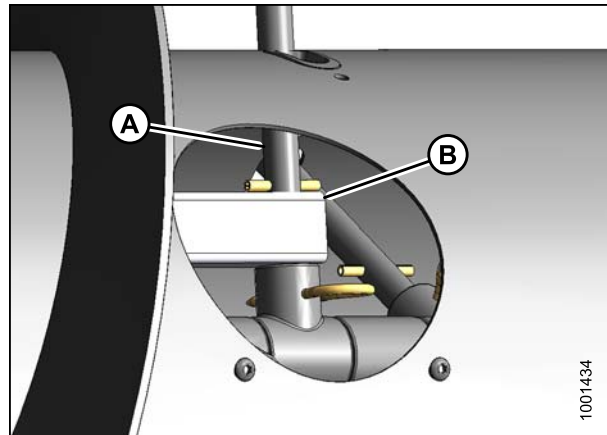
**Figure 4.58**

C - Hairpin  
E - Bushing

D - Tine  
F - Plastic guide

**NOTE:** If the sixth tine (A) opposite drive side is being replaced, it also must be slipped off drive tube (B). This particular tine cannot be removed for normal operation.

- If tine is not reinstalled, proceed to next step. Otherwise, proceed to Section [Auger Tine Installation](#), page 177.

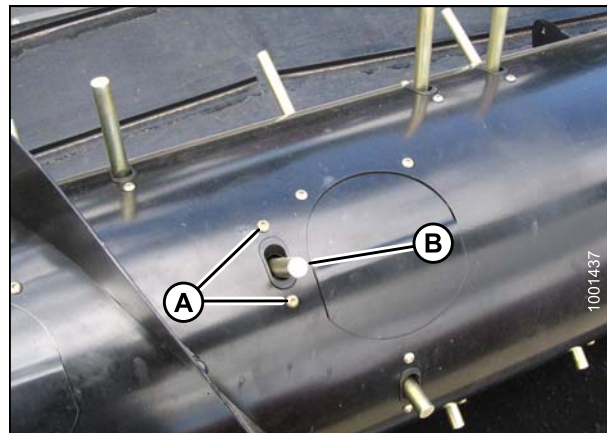


**Figure 4.59**

A - 6th tine

B - Drive tube

- Remove screws (A) securing plastic guide (B) to auger, and remove guide from inside auger.



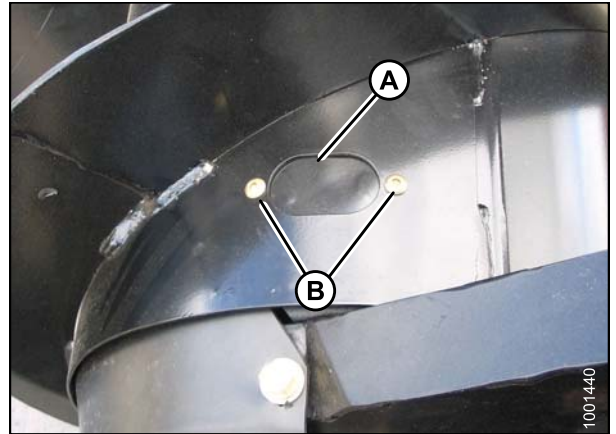
**Figure 4.60**

A - Screws

B - Plastic guide

## MAINTENANCE AND SERVICING

- Position cover (A) from inside auger over hole, and secure with screws (B). Coat screws with Loctite®#243 (or equivalent), and torque to 75 in·lbf (8.5 N·m).



**Figure 4.61**

A - Cover

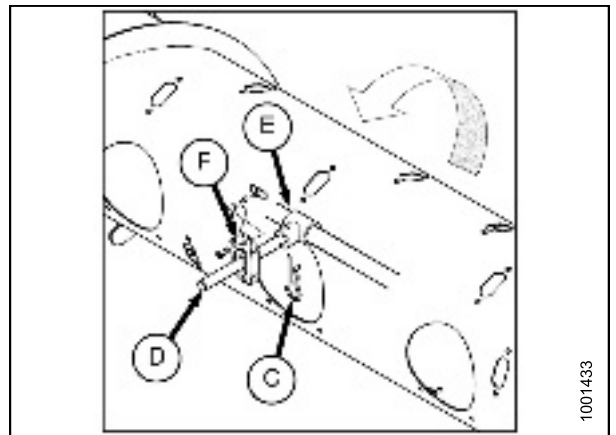
B - Screws

### Auger Tine Installation

**NOTE:** To simplify the procedure, detach header from combine. Refer to Section 3.3 [Header Attachment/Detachment](#), page 29.

To install an auger tine, follow these steps:

- If replacing a tine, skip to step 5., [Auger Tine Installation](#), page 177.
- Remove access cover (if applicable).
- Remove cover at tine location (if applicable).
- Install plastic guide.
- Insert tine (D) through plastic guide (F) from inside the auger.
- Insert tine into bushing (E).



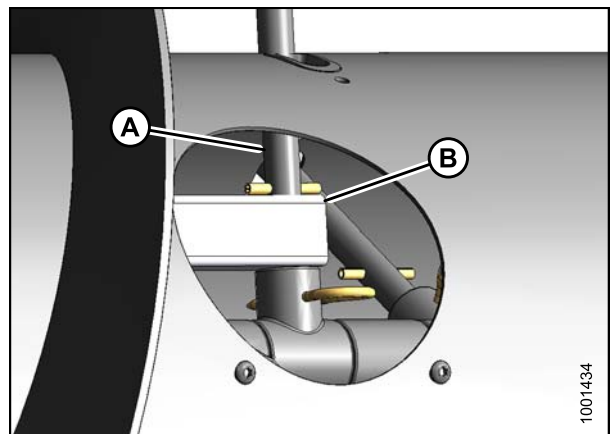
**Figure 4.62**

C - Hairpin  
E - Bushing

D - Tine  
F - Plastic guide

**NOTE:** The #6 tine (A) must also be inserted through the square tube (B).

- Secure tine in bushing with hairpin (hairpin is shown in above image as (A)). Install hairpin with closed end leading with respect to auger forward rotation.



**Figure 4.63**

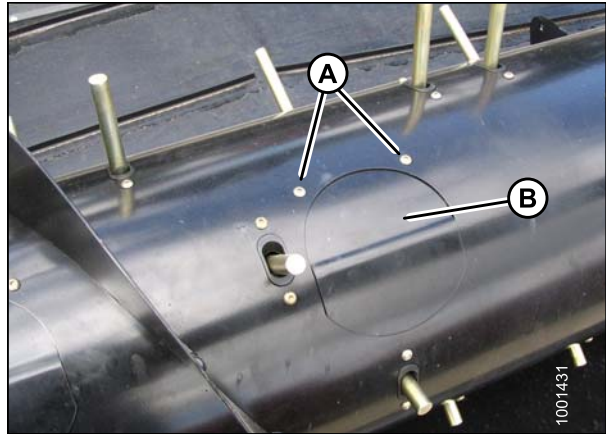
A - #6 tine

B - Square tube



## MAINTENANCE AND SERVICING

8. Replace access cover (B), and secure with screws (A). Coat screws with Loctite® #243 (or equivalent), and torque to 75 in·lbf (8.5 N·m).



**Figure 4.64**

A - Screws

B - Access cover

## 4.9 Sickle and Sickle Drive

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 4.1 Preparation for Servicing, page 139.

### WARNING

Keep hands clear of the area between guards and sickle at all times.

### CAUTION

Wear heavy gloves when working around or handling sickles.

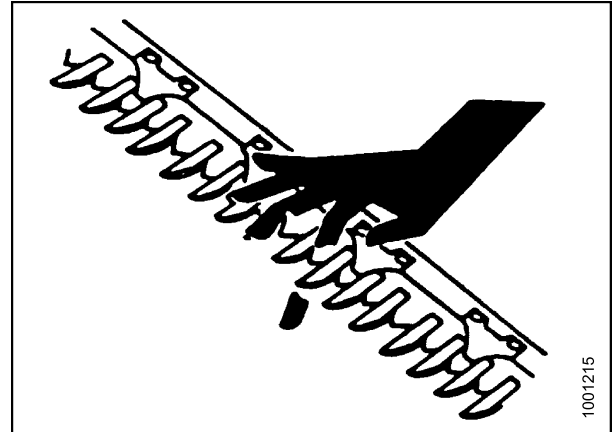


Figure 4.65

### 4.9.1 Sickle Section Replacement

Check daily that sections are firmly bolted to the sickle back, and are not worn or broken. Damaged or worn sections leave behind uncut plants.

Coarse serrated sections last longer than fine serrated sections in dirty or sandy conditions.

Fine serrated sections perform better in fine stemmed grasses and plants that contain more fibrous stems.

A worn or broken sickle section can be replaced without removing sickle from cutterbar.

To replace a sickle section, follow these steps:

1. Stroke sickle as required to expose sickle.
2. Remove lock nuts (A).
3. Remove bars (B), and lift sickle section off knife.
4. Clean any dirt off of sickle back, and position new sickle section on knife.

## IMPORTANT

**Do not mix heavy and light sickle sections on same sickle.**

5. Reposition bars (B), and install lock nuts (A).
6. Torque nuts to 7 ft-lbf (9.5 N-m).

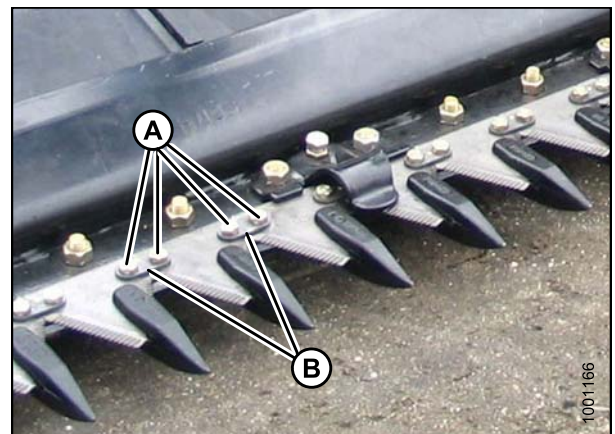


Figure 4.66

A - Lock nut

B - Bar



## MAINTENANCE AND SERVICING

### 4.9.2 Sickles Removal

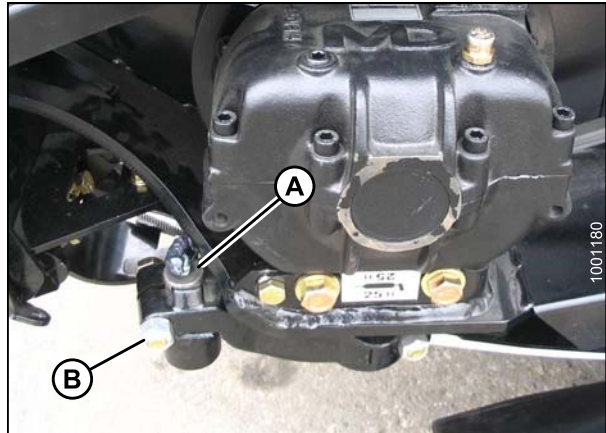
#### **WARNING**

Stand to rear of sickle during removal to reduce risk of injury from cutting edges. Wear heavy gloves when handling sickle.

To remove a sickle, follow these steps:

1. Stroke sickle to its outer limit, and clean area around sickle head.
2. Remove zerk from pin (A).
3. Remove nut and bolt (B).
4. Insert screwdriver in groove of pin (A), and pry up on sickle head pin to free sickle. Pin does **not** have to be removed from arm.
5. Seal bearing in sickle head with plastic or tape.
6. Wrap a chain around sickle head, and pull sickle out.

**NOTE:** For single drive sickles with splice plate, remove bolts from splice plate, and pull sickle out from both ends.



**Figure 4.67**

A - Pin

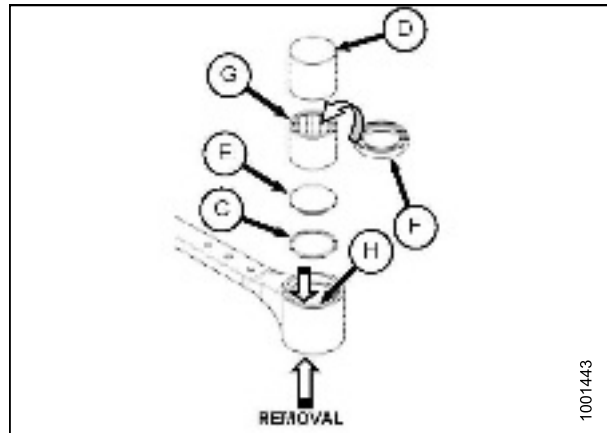
B - Nut and bolt

### 4.9.3 Sickle Head Bearing Removal

To remove a sickle head bearing, follow these steps:

1. Remove sickle. Refer to [4.9.2 previous section, page 180](#) for instructions.
2. Using a flat-ended tool (D) with approximately the same diameter as the plug (E), tap out the seal (F), bearing (G), and plug from the underside of the head.

**NOTE:** The seal can be replaced without removing the bearing. When changing seal, check pin and needle bearing for wear. Replace if necessary.



**Figure 4.68**

C - O-ring

D - Flat-ended tool

E - Plug

F - Seal

G - Bearing

H - Step in sickle head

## MAINTENANCE AND SERVICING

### 4.9.4 Sickle Head Bearing Installation

To install a sickle head bearing, follow these steps:

1. Place O-ring (C) and plug (E) in sickle head.

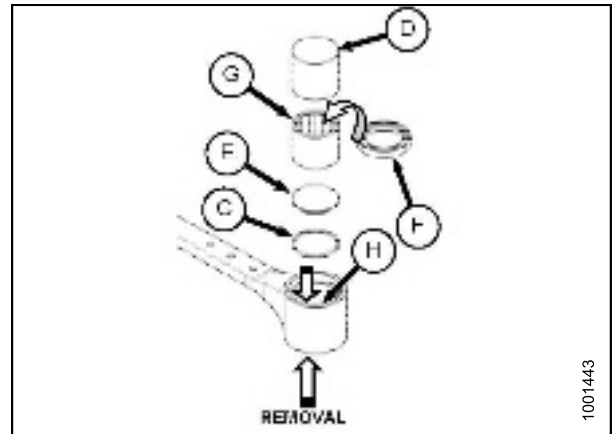
### IMPORTANT

**Install the bearing with the stamped end (the end with identification markings) against the tool.**

2. Using a flat-ended tool (D) with approximately the same diameter as the bearing (G), push the bearing into the sickle head until the top of the bearing is flush with the step (H) in sickle head.
3. Install seal (F) in top of sickle head with lip facing outwards.

### IMPORTANT

**To avoid premature sickle head or wobble box failure, be sure there is no looseness in: the fit of the sickle head pin and the needle bearing, and the fit of the sickle head pin and pitman arm.**



**Figure 4.69**

C - O-ring  
E - Plug  
G - Bearing

D - Flat-ended tool  
F - Seal  
H - Step in sickle head

**Figure 4.70**

H - Sickle head step

## MAINTENANCE AND SERVICING

### 4.9.5 Sickle Installation



## WARNING

Stand to rear of sickle during installation to reduce risk of injury from cutting edges. Wear heavy gloves when handling sickle.

## IMPORTANT

Align guards, and re-set sickle hold-downs while replacing sickle.

To install a sickle, follow these steps:

1. If sickle head pin (A) is installed in sickle head, remove pin.
2. Slide sickle into place, and align sickle head (B) with pitman arm (C).
3. Install sickle head pin (A) in pitman arm, and tap it down into sickle head, ensuring pin is bottomed out in sickle head.
4. Tap underside of sickle head (B) until the pin is flush with upper face (D) of pitman arm, and until it just contacts pitman arm (0.010 in. [0.25 mm]) gap (E).
5. Reinstall bolt and nut (F).
6. Tighten nut to 160 ft·lbf (220 N·m).
7. Reinstall grease zerk in pin.
8. Grease bearing.

### 4.9.6 Spare Sickle

A spare sickle may be stored in the header frame tube at the left end. Ensure sickle is secured in place.

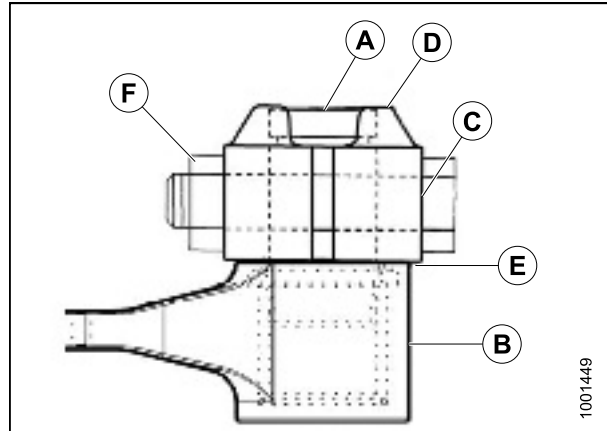


Figure 4.71

A - Sickle head pin  
C - Pitman arm

B - Sickle head  
D - Upper face of pitman arm

E - Pitman arm gap

F - Nut



Figure 4.72

## MAINTENANCE AND SERVICING

### 4.9.7 Sickle guards

Check **daily** that guards are aligned to obtain proper shear cut between sickle section and guard. Sickle sections should contact shear surface of each guard.

#### *Sickle Guard Adjustment*

To align sickle guards, follow these steps. The guard straightening tool (MacDon #140135) is available from your MacDon Dealer.

1. To adjust guard tips upward, position tool as shown, and pull up.



Figure 4.73: Upward Adjustment

2. To adjust tips downward, position tool as shown, and push down.

**TIP:** If trouble is encountered cutting tangled, or fine-stemmed material, replace lower guards with stub guards, and install a sickle hold-down on every guard.

3. If material is tough to cut, install stub guards with top guard and adjuster plate. A kit is available from your MacDon Dealer. Refer to Section [6.1.12 Stub Guard Conversion Kit](#), page 285.



Figure 4.74: Downward Adjustment

## MAINTENANCE AND SERVICING

### Sickle Guard Replacement – Pointed Guards, Single Knife

To replace pointed sickle guards on a single-knife header, follow these steps:



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

1. Stroke sickle so that sickle sections are spaced midway between the guards.
2. Remove two nuts (A) and bolts that attach guard (B) and hold-down (C) (if applicable) to cutterbar.
3. Remove guard, hold-down, and poly wear plate (if installed).
4. Position new guard and poly wear plate (if applicable) on cutterbar, and install carriage bolts.

## IMPORTANT

The first four outboard guards on drive side(s) of header do not have a ledger plate. Ensure that proper replacement is installed.

5. Install hold-down, and secure with nuts. Tighten nuts to 50 ft-lbf (68 N-m).
6. Check and adjust clearance between hold-down and sickle. Refer to Section [Sickle Hold-Downs](#), page 187.

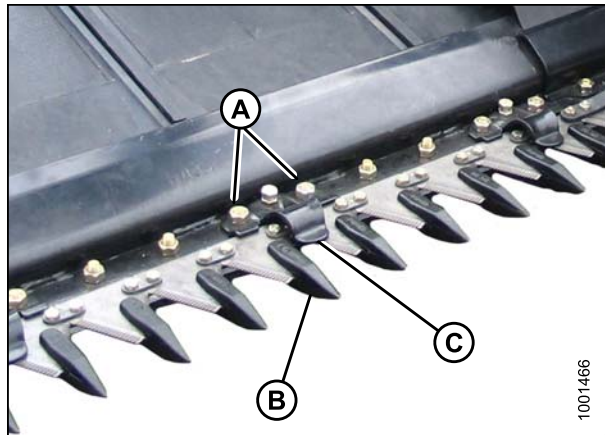


Figure 4.75

A - Nuts  
C - Hold-down

B - Sickle guard

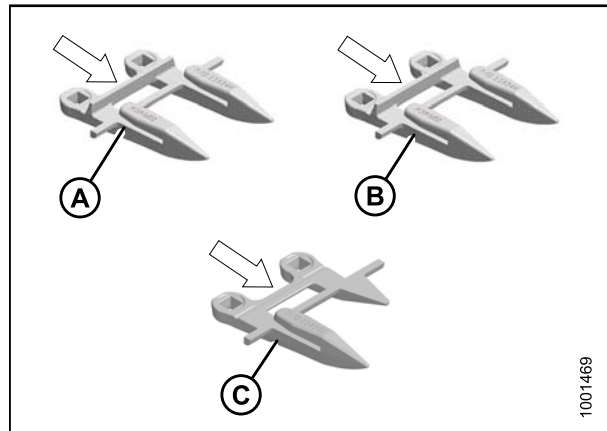


Figure 4.76: Check and adjust clearance

A - Normal  
C - End

B - Drive side

## MAINTENANCE AND SERVICING

### Sickle Guard Replacement – Pointed Guards, Double Knife



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

Refer to previous section for typical guard replacement.

The guard near the center of the double-knife header (where the two sickles overlap) requires a slightly different replacement procedure.

To replace the pointed center guard of center top guide on a double-knife header, follow these steps:

1. Remove two nuts (B) and bolts that attach guard (A) and top guide (C) to cutterbar.
2. Remove guard, poly wear plate (if installed), top guide (C), and adjuster bar (D).
3. Position poly wear plate (if applicable), replacement guard (A), adjuster bar, top guide (B). Install bolts, but do **not** tighten.

## IMPORTANT

Ensure center guard (B) (right of cutterbar split) has offset cutting surfaces.

**NOTE:** Top guide (C) must accommodate the two overlapping knives at center guard location on double-knife header. Ensure replacement is correct part.

4. Check and adjust clearance between hold-down and sickle. Refer to Section [Sickle Hold-Downs, page 187](#).

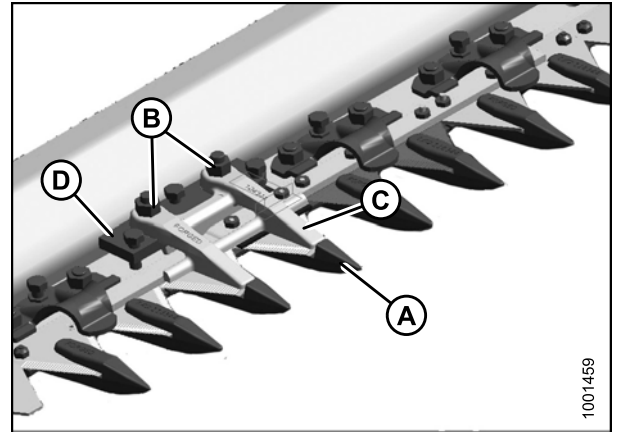


Figure 4.77

A - Sickle guard  
C - Top guide

B - Nuts  
D - Adjuster bar

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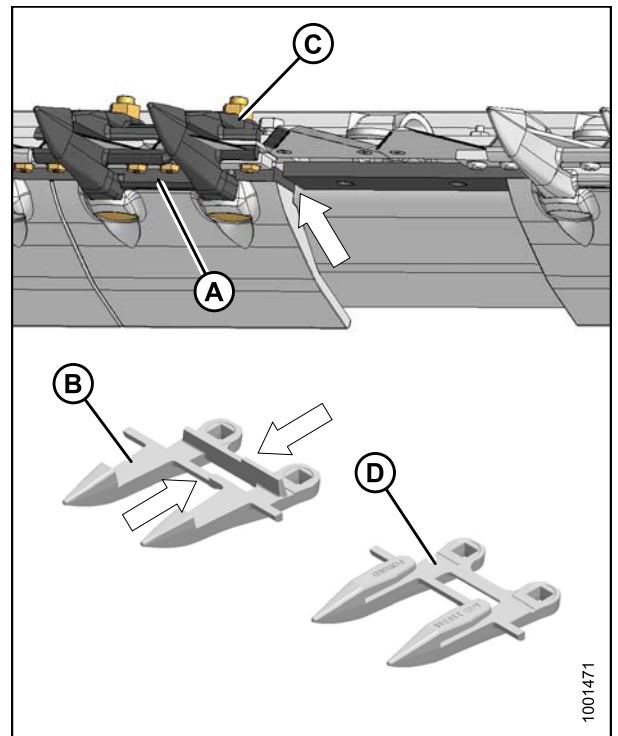


Figure 4.78

A - Sickle guard  
C - Top guide

B - Center guard  
D - Normal guard

1001471



## MAINTENANCE AND SERVICING

### Sickle Guard Replacement – Stub Guards, Single Knife



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

Stub guards, complete with top guides and adjuster plates are designed to cut tough crops. Some configurations of the D65 header come equipped with stub guards at the outer ends.

To replace stub guards, follow these steps:

1. Remove the two nuts (A) and bolts that attach guard (B) and top guide (C) to cutterbar.
2. Remove guard, poly wear plate (if installed), top guide, and adjuster bar (D).
3. Position poly wear plate (if applicable), replacement guard (B), adjuster bar (D), top guide (C), and install bolts. Do **not** tighten.

## IMPORTANT

Note position of mitre on adjuster bar (D). Bar should be reinstalled in same position. Mitres should not be adjacent to each other.

## IMPORTANT

The first four outboard guards on drive side(s) of the header do not have a ledger plate. Ensure that the proper replacement is installed.

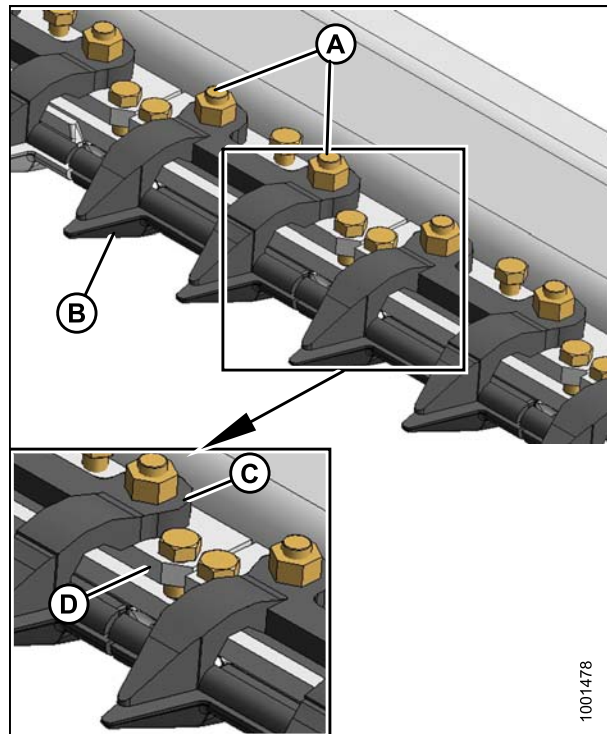


Figure 4.79

A - Nuts

C - Top guide

B - Stub guard

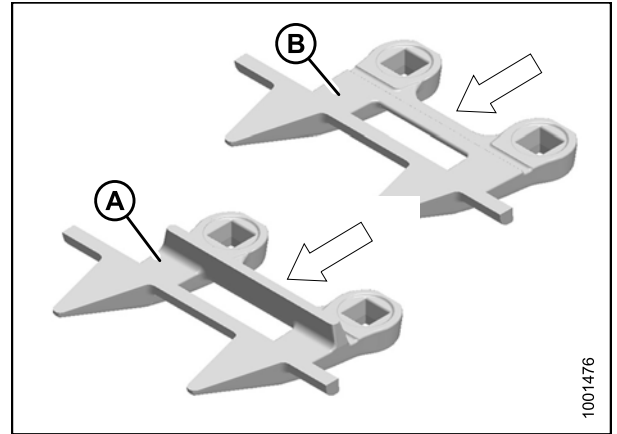
D - Adjuster bar

1001478



## MAINTENANCE AND SERVICING

4. Check and adjust clearance between top guide and sickle. Refer to Section [Sickle Hold-Downs](#), page 187.



**Figure 4.80: Check clearance**

A - Normal guard

B - Drive side guard

### *Sickle Hold-Downs*

Check daily that sickle hold-downs are set to prevent sickle sections from lifting off guards, but still permit sickle to slide without binding.

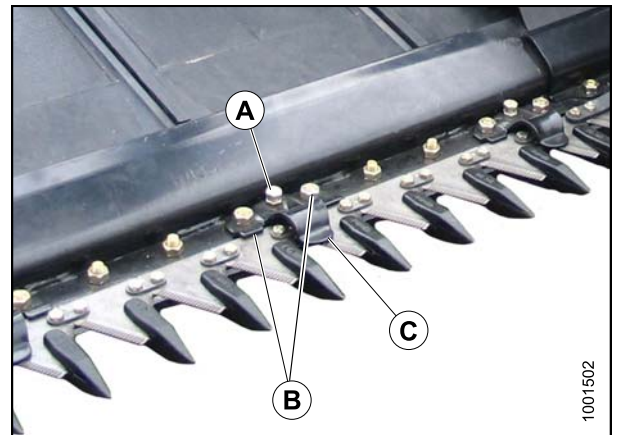
**NOTE:** Guards should be aligned prior to adjusting hold-downs.

### **Pointed Guard Adjustment**

To adjust hold-downs on header with pointed guards, follow these steps:

1. To adjust the clearance between hold-down and sickle for typical pointed guards, turn the adjuster bolts (A). Using a feeler gauge, clearance from hold-down to sickle section (C) should be 0.004–0.024 in. (0.1–0.6 mm).

**NOTE:** For larger adjustments, it may be necessary to loosen nuts (B), turn adjuster bolt (A), then retighten nuts (B).



**Figure 4.81: Clearance should be 0.004–0.024 in. (0.1–0.6 mm)**

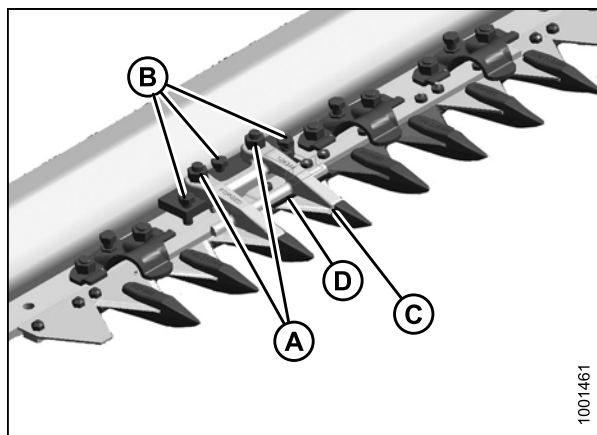
A - Adjuster bolts

B - Nuts

C - Clearance should be 0.004–0.024 in. (0.1–0.6 mm)

## MAINTENANCE AND SERVICING

2. To adjust clearance between hold-down and sickle:
  - a. Torque nuts (A) to 35 ft·lbf (46 N·m).
  - b. Turn the adjuster bolts (B). Using a feeler gauge, clearance from hold-down to sickle section should be:
    - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (C)
    - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (D)
  - c. Torque nuts (A) to 53 ft·lbf (72 N·m).
3. After adjusting all hold-downs, run header at a low engine speed, and listen for noise due to insufficient clearance. Insufficient clearance will also result in overheating of the sickle and guards. Readjust as necessary.



**Figure 4.82**

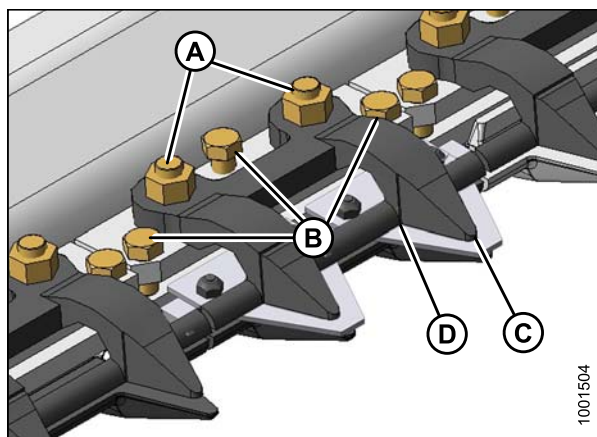
A - Nuts  
C - Guide tip

B - Adjuster bolts  
D - Rear of guide

### Stub Guard Adjustment

To adjust the clearance between the hold-down and sickle for all stub guards, follow these steps:

1. Torque nuts (A) to 35 ft·lbf (46 N·m).
2. Turn the adjuster bolts (B). Using a feeler gauge, clearance from hold-down to sickle section should be:
  - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (C)
  - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (D)
3. Torque nuts (A) to 53 ft·lbf (72 N·m).



**Figure 4.83**

A - Nuts  
C - Clearance at guide tip

B - Adjuster bolts  
D - Clearance at rear of guide

### 4.9.8 Sickle Drive Belts – Non-Timed Drive

This section applies to single-knife headers, and to 40 ft. and 45 ft. double-knife headers.

For double-knife headers with timed drives, refer to Section .

#### *Tension Adjustment*

To adjust sickle drive belt tension on a header with an non-timed sickle drive, follow these steps.

## CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 4.1 Preparation for Servicing, page 139.

## IMPORTANT

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

1. Open endshield.
2. Loosen two bolts (A) on sickle drive mounting bracket.
3. Turn adjuster bolt (B) to move drive motor until a force of 20 lbf (80 N) deflects belt (C) 3/4 in. (18 mm) at mid-span.
4. Tighten jam nut at (B) and bolts (A) on drive mounting bracket
5. Readjust tension of a new belt after a short run-in period (about 5 hours).

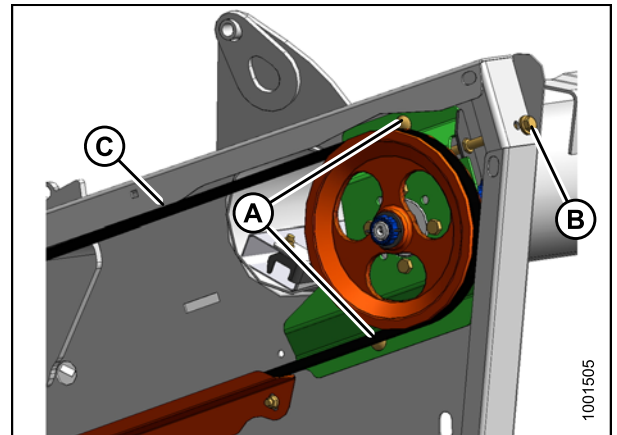


Figure 4.84

A - Bolts  
C - Sickle drive belt

B - Adjuster bolt

### *Removal*

### *Installation*

## 4.9.9 Double Knife Drive Belts: Timed Drive

### *Left-End Drive*

#### Timing Belt Tension Adjustment Double Knife – Left End

To adjust the tension of the left-end timing belt, follow these steps.

## IMPORTANT

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

## MAINTENANCE AND SERVICING

1. Remove endshield at left end of header. Refer to Section 3.2.3 Endshields, page 23 for instructions.
2. Loosen two nuts (A) on sickle drive belt idler bracket.

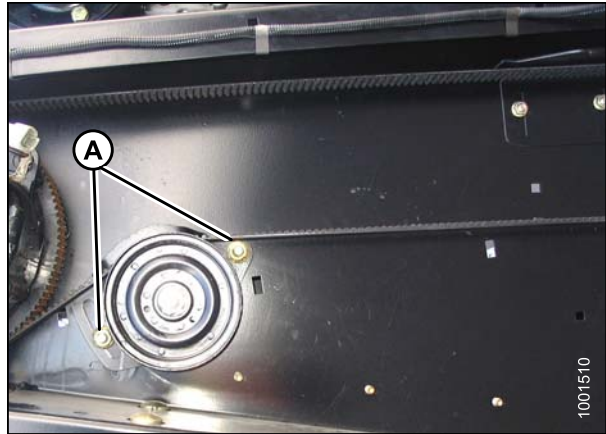


Figure 4.85

3. Insert a long punch (or equivalent) into hole (A) in idler bracket, and
- 4.

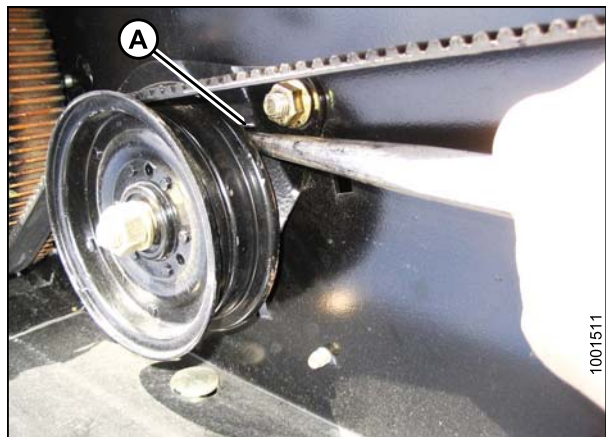


Figure 4.86

5. Pry long punch downward until a force of 6 lbf (27 N) deflects timing belt 1/2 in. (13 mm) at mid-span (B).
6. Tighten nuts (A) on idler mounting bracket.

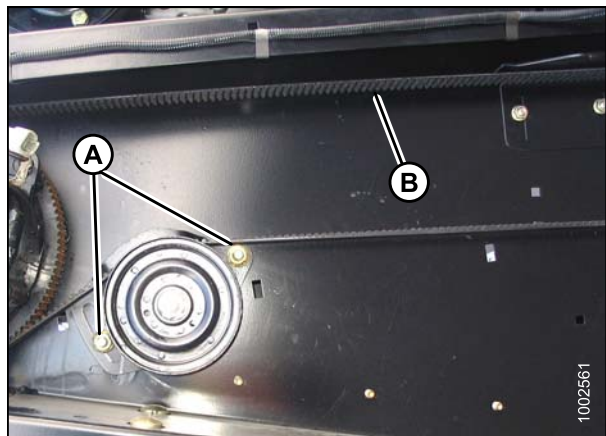


Figure 4.87

## MAINTENANCE AND SERVICING

7. Check clearance between belt (A) and belt guide (B). The measurement should be 0.02–0.04 in. (0.5–1.0 mm).
8. If necessary, adjust as follows:
  - a. Ensure belt (A) is properly tensioned.
  - b. Loosen bolts (C), and adjust position of guide (B) as required.
  - c. Tighten bolts (C).
9. Readjust tension of a new belt after a short run-in period (about 5 hours).

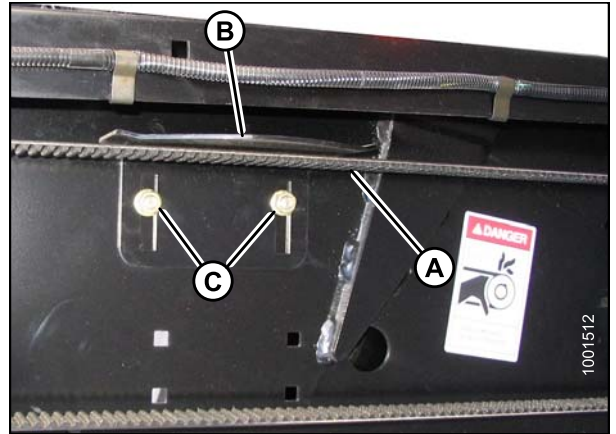


Figure 4.88: Gap: 0.02–0.04 in. (0.5–1.0 mm)

### Timing Belt Removal DK (LH)

To remove the left-end timing belt, follow these steps:

1. Remove endshield at left end of header. Refer to Section 3.2.3 Endshields, page 23 for instructions.
  2. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
  3. Loosen nut (B) on idler pulley, and slide idler down to loosen belt.
- 
4. Loosen two bolts (A) on endsheet.

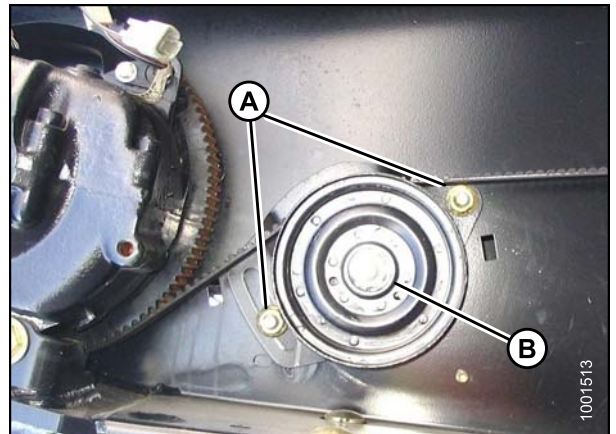


Figure 4.89

A - Nuts

B- Nut

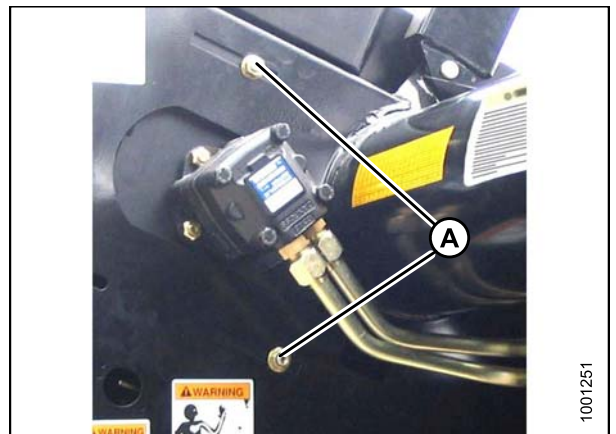


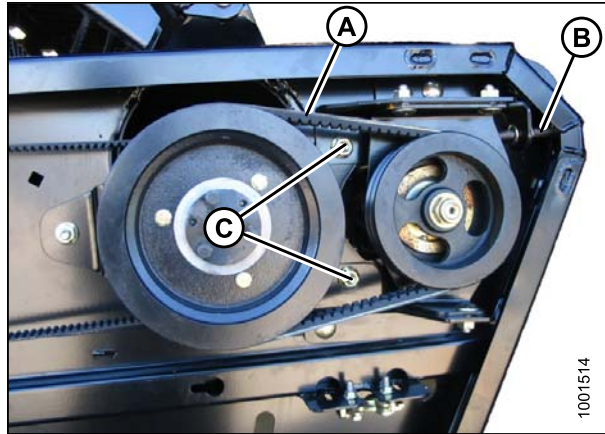
Figure 4.90

A - Bolts



## MAINTENANCE AND SERVICING

5. Loosen two bolts (C) on sickle drive mounting bracket.
6. Turn adjuster bolt (B) to loosen the two V-belts (A), and remove belts.

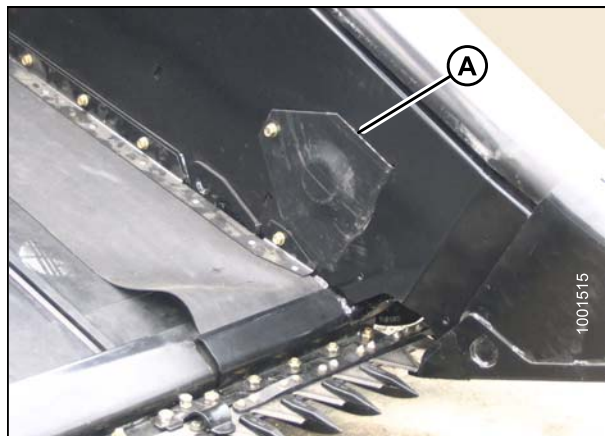


**Figure 4.91**

A - V-belt  
C- Bolts

B- Adjuster bolt

7. Remove bolt in plate (A) in left endsheet at sickle drive box, and remove plate. This provides clearance between pulley and endsheet for the belt when it is removed.
8. Slip timing belt off sickle drive box pulley, and route belt between sickle drive box pulley and endsheet.
9. Remove belt from drive pulley.



**Figure 4.92**

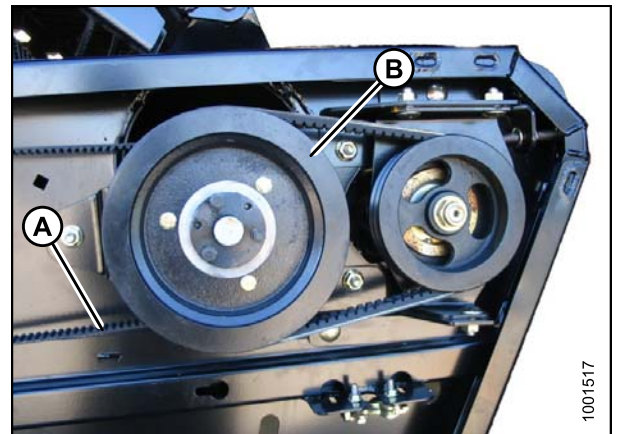
A - Plate

## MAINTENANCE AND SERVICING

### Timing Belt Installation — Double Knife, Left End

To install the left-end timing belt, follow these steps

1. Remove endshield at left end of header. Refer to Section 3.2.3 Endshields, page 23 for instructions.
2. Locate timing belt (A) onto drive pulley (B).



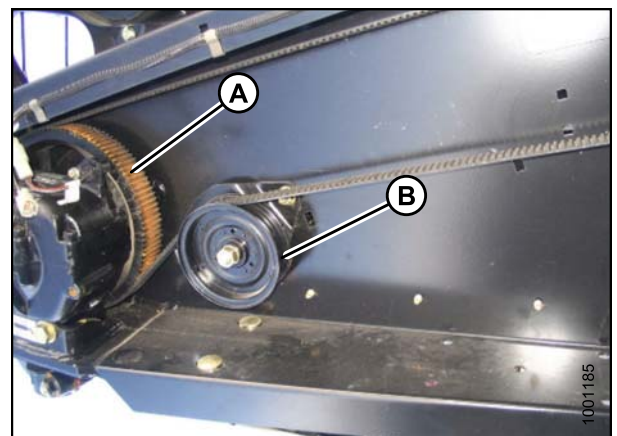
**Figure 4.93**

A - Timing belt

B - Drive pulley

3. Route belt between sickle drive box pulley (A) and end-sheet, and locate on sickle drive box pulley and over idler (B).

**NOTE:** When installing new belt, never pry belt over pulley. Be sure adjusting device is fully loosened, then tension belt.

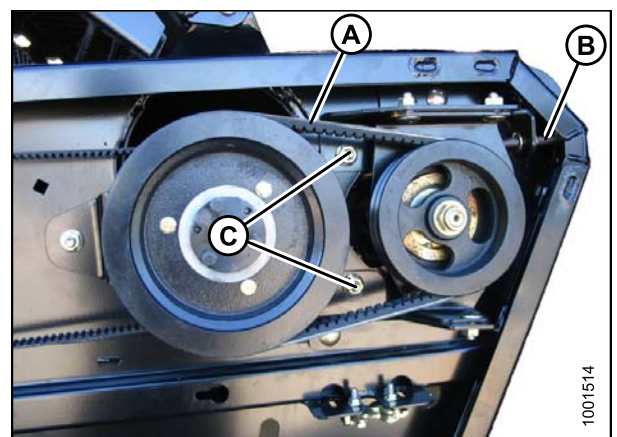


**Figure 4.94**

A - Sickle drive box pulley

B - Idler

4. Position V-belts (A) onto drive pulleys.
5. Turn adjuster bolt (B) to move drive motor until a force of 12 lbf (53 N) deflects V-belts (A) 1/8 in. (3 mm) at mid-span.
6. Tighten two bolts (C) on drive mounting brackets.



**Figure 4.95**

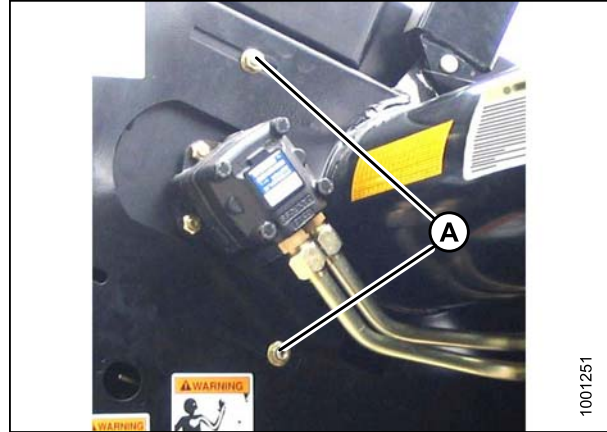
A - V-belt  
C - Bolts

B - Adjuster bolt



## MAINTENANCE AND SERVICING

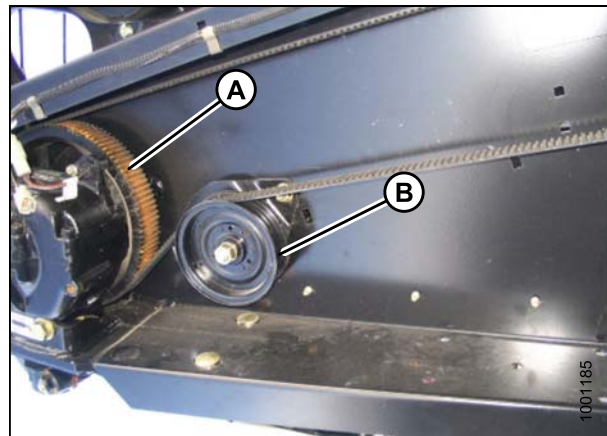
7. Tighten the two bolts (A) on the endsheet.



**Figure 4.96**

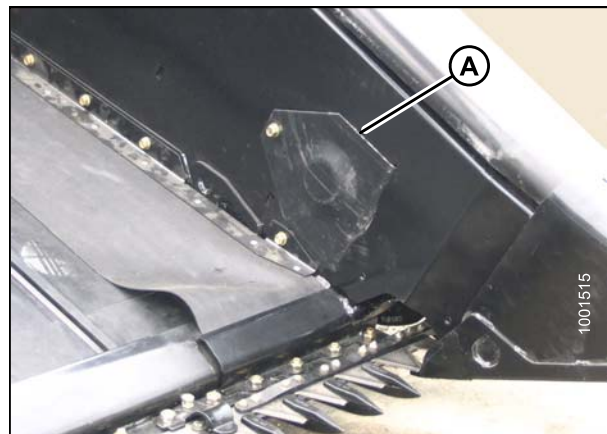
A - Nuts

8. Slide idler (A) up until most of the belt slack is taken up. Tighten idler nut (B).
9. Adjust the timing belt tension and check belt clearance to belt guide. See [Timing Belt Tension Adjustment Double Knife – Left End](#), page 189.



**Figure 4.97**

10. Reinstall plate (A) in the endsheet.
11. Close left endshield.
12. Readjust tension of a new belt after a short run-in period (about 5 hours).



**Figure 4.98**

## MAINTENANCE AND SERVICING

### Left-Drive Double V-Belt Tension Adjustment

To adjust the tension on a left-drive double V-belt, follow these steps:

1. Remove endshield at left end of header. Refer to Section [3.2.3 Endshields](#), page 23 for instructions.
2. Loosen two bolts (A) on endsheet.

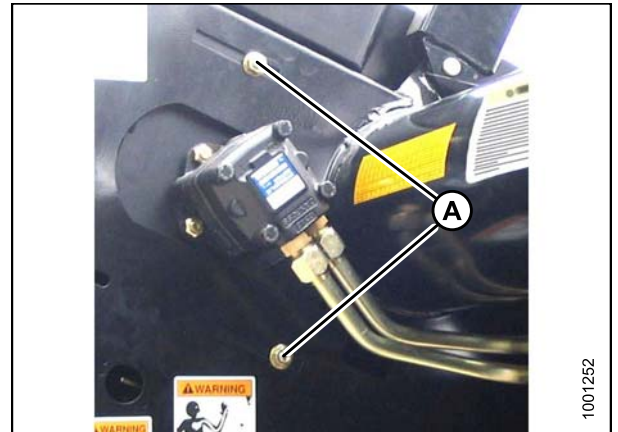


Figure 4.99

3. Loosen two bolts (B) on sickle drive mounting bracket.
4. Turn adjuster bolt (C) to move drive motor until a force of 12 lbf (53 N) deflects V-belts (D) 1/8 in. (3 mm) at mid-span.
5. Tighten bolts (A) and (B).
6. Readjust tension of a new belt after a short run-in period (about 5 hours).

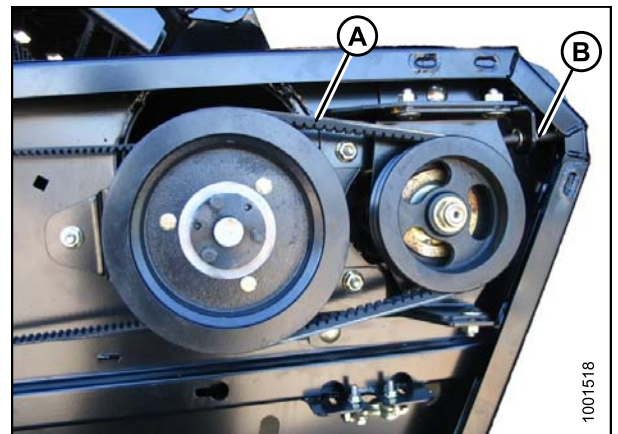


Figure 4.100

B - Bolts  
D - V-belt

C - Adjuster bolt

### Left-Drive V-Belt Removal

To remove the left-drive V-belts, follow these steps:

1. Remove endshield at left end of header. Refer to Section [3.2.3 Endshields](#), page 23 for instructions.
2. Loosen two bolts (A) on endsheet.

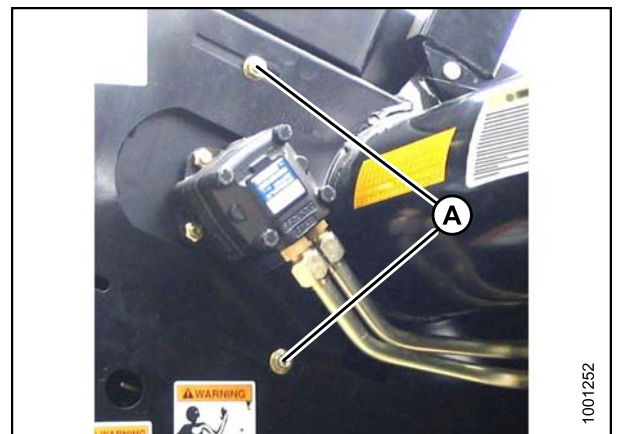


Figure 4.101

## MAINTENANCE AND SERVICING

3. Loosen two bolts (B) on sickle drive mounting bracket.
4. Turn adjuster bolt (C) to loosen the two V-belts (D) and remove belts.

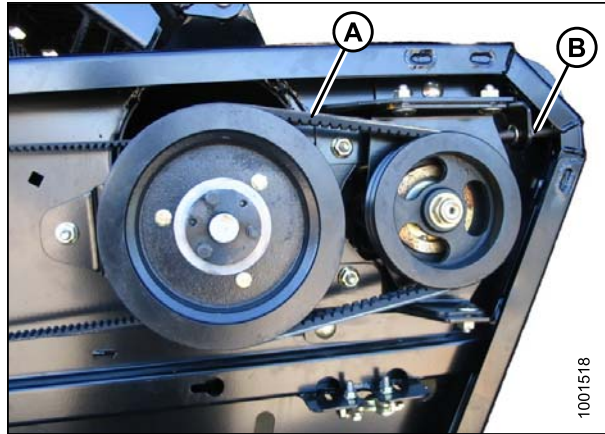


Figure 4.102

### Left Drive V-Belt Installation

To install the left drive V-belts, follow these steps.

## IMPORTANT

**Sickle drive V-belts are a matched set. Replace both drive belts even if only one needs replacing. Do not pry belt over pulley; loosen adjusting device sufficiently to allow easy installation.**

1. Remove endshield at left end of header. Refer to Section [3.2.3 Endshields](#), page 23 for instructions.
1. Install belts (A) onto drive pulleys.
2. Turn adjuster bolt (B) to move drive motor until a force of 12 lbf (53 N) deflects V-belts (A) 1/8 in. (3 mm) at mid-span.

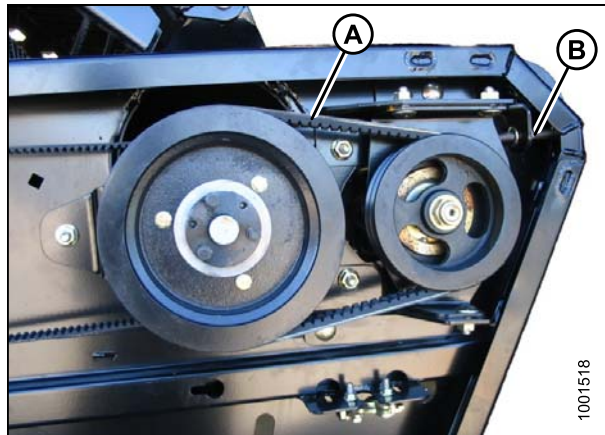


Figure 4.103

## MAINTENANCE AND SERVICING

3. Tighten bolts (A) and (B) on drive mounting bracket.
4. Readjust tension of a new belt after a short run-in period (about 5 hours).

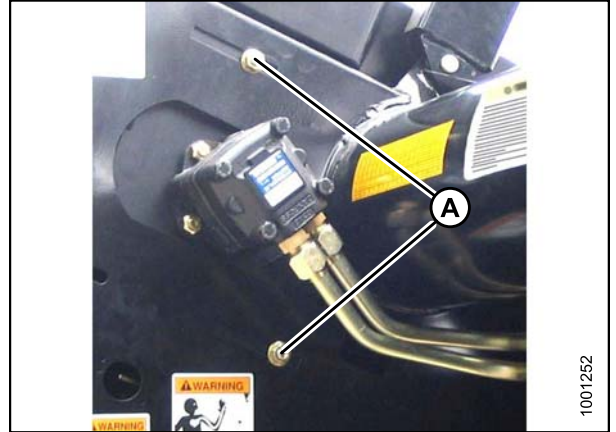


Figure 4.104

### *Right-End Drive*

#### **Timing Belt Tension Adjustment DK (RH)**

To adjust the tension of the right-end timing belt on a double knife header, follow these steps.

## **IMPORTANT**

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

1. Remove endshield at right end of header. Refer to Section [3.2.3 Endshields, page 23](#) for instructions.
1. Loosen two nuts (A) on sickle drive belt idler bracket.

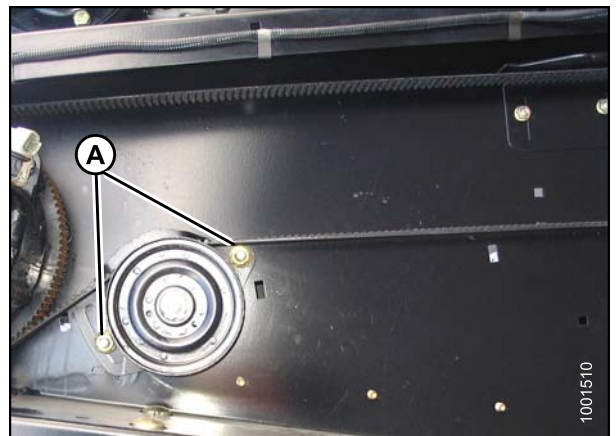


Figure 4.105



## MAINTENANCE AND SERVICING

2. Insert a long punch (or equivalent) into hole (A) in idler bracket..

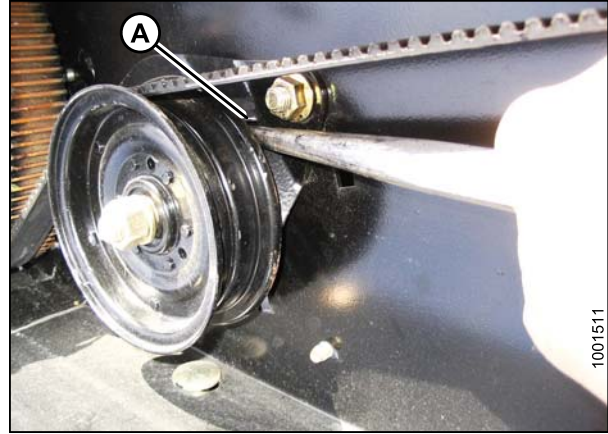


Figure 4.106

3. Pry the long punch downward until a force of 6 lbf (27 N) deflects timing belt 1/2 in. (13 mm) at mid-span (B).
4. Tighten nuts (A) on idler mounting bracket.

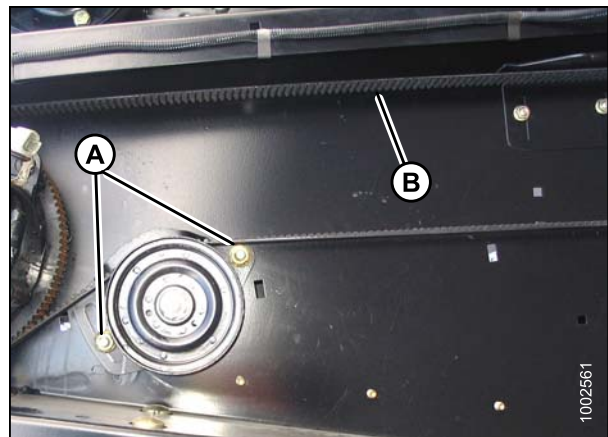


Figure 4.107

5. Check clearance between belt (A) and belt guide (B). The measurement should be 0.02–0.04 in. (0.5–1.0 mm).
6. If necessary, adjust as follows:
  - a. Ensure belt (A) is properly tensioned.
  - b. Loosen bolts (E), and adjust position of guide as required.
  - c. Tighten bolts.
7. Readjust tension of a new belt after a short run-in period (about 5 hours).

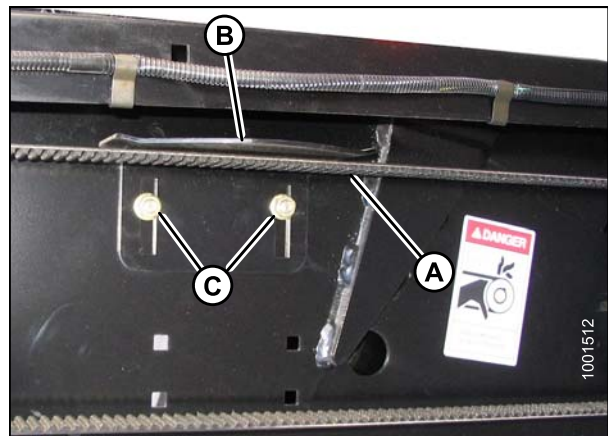


Figure 4.108

## MAINTENANCE AND SERVICING

### Timing Belt Removal DK (RH)

To remove a right-end timing belt, follow these steps:

1. Open right endshield.
2. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
3. Loosen nut (B) on idler pulley, and slide idler down to loosen belt.

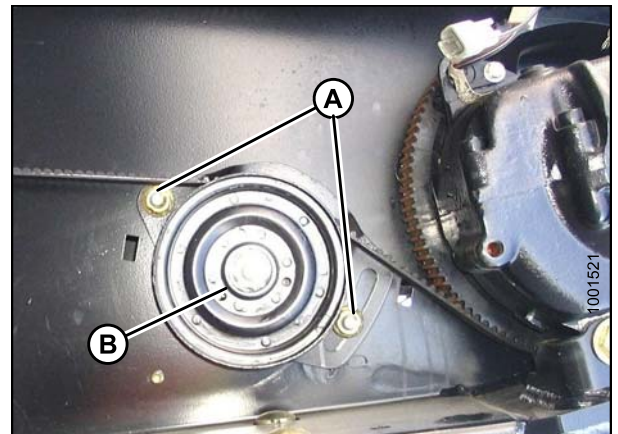


Figure 4.109

4. Remove bolt in plate (A) in right endsheet at sickle drive box, and remove plate. This provides clearance between pulley and endsheet for belt when it is removed.
5. Slip timing belt off sickle drive box pulley, and route belt between sickle drive box pulley and endsheet.
6. Remove belt from drive pulley.

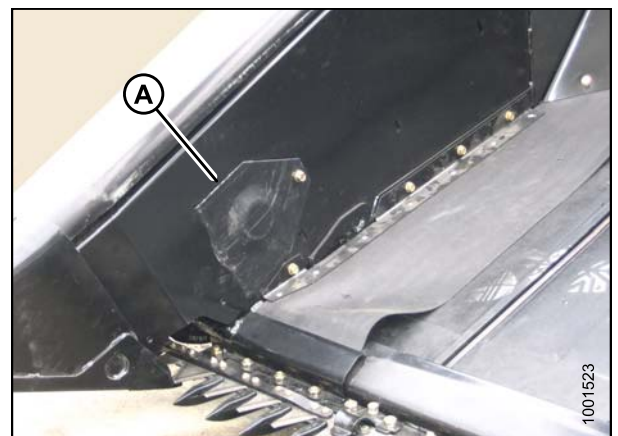


Figure 4.110

### Timing Belt Installation DK (RH)

To install a right-end timing belt, follow these steps:

1. Route timing belt (A) between sickle drive box pulley (B) and endsheet, and locate on sickle drive box pulley, and over idler (C).

**NOTE:** When installing new belt, never pry belt over pulley. Be sure adjusting device is fully loosened, then tension belt.

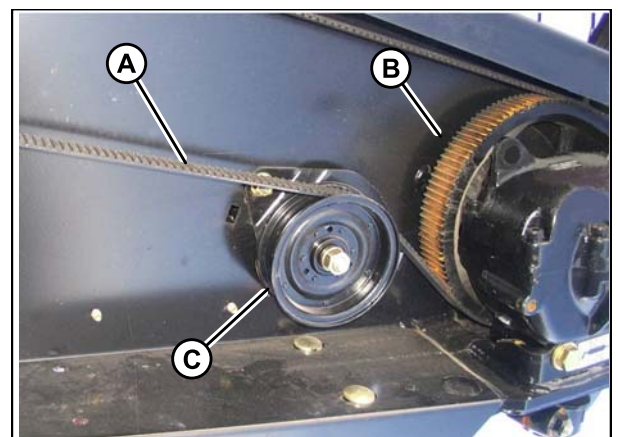


Figure 4.111

A - Timing belt  
C - Idler

B - Sickle drive box pulley

## MAINTENANCE AND SERVICING

2. Position timing belt on drive pulley (A).
3. Adjust timing belt tension and check belt clearance to belt guide. Refer to [Timing Belt Tension Adjustment Double Knife – Left End, page 189](#).

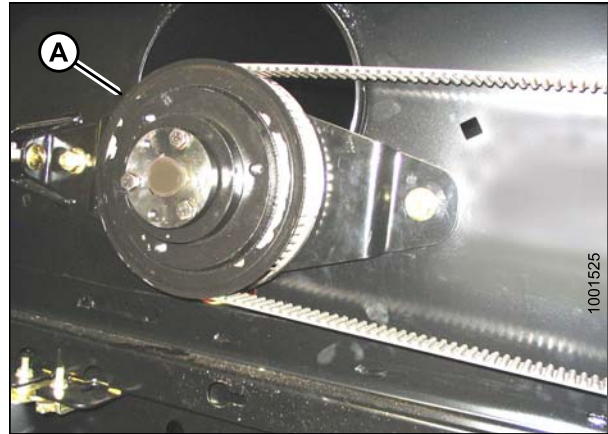


Figure 4.112

4. Reinstall plate (A) in endsheet.
5. Close endshield. See [Closing Endshields, page 24](#)
6. Readjust tension of a new belt after a short run-in period (about 5 hours).
- 7.

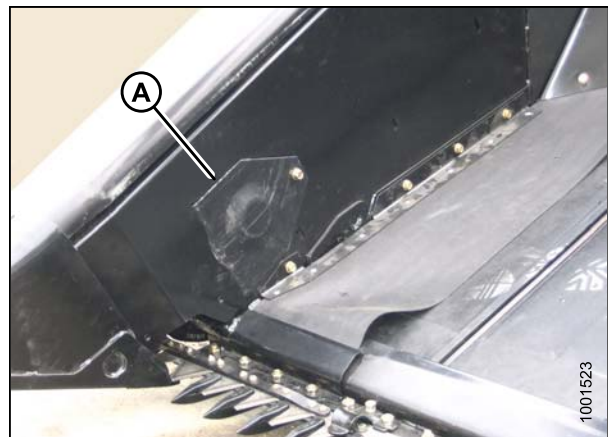


Figure 4.113

### *Sickle Drive Timing Adjustment*

#### 4.9.10 Sickle Drive Box

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section [4.1 Preparation for Servicing, page 139](#).



## MAINTENANCE AND SERVICING

### Mounting Bolts

Check four sickle drive box mounting bolts (A) torque after the first 10 hours operation, and every 100 hours thereafter. Torque should be 200 ft·lbf (270 N·m).

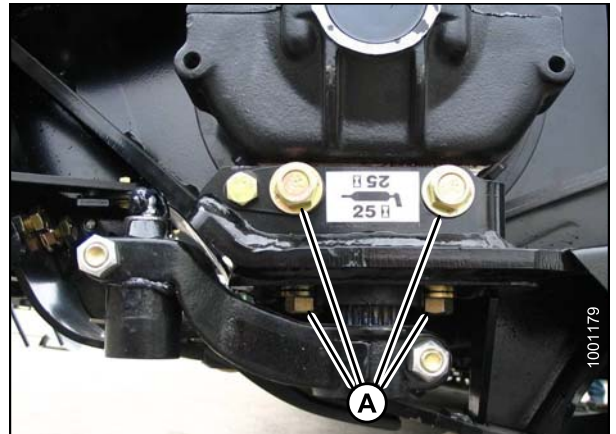


Figure 4.114

### Sickle Drive Box Removal

To remove the sickle drive box, follow these steps.

1. Loosen sickle drive belt, and slip it off sickle drive box pulley. Refer to Section [4.9.8 Sickle Drive Belts – Non-Timed Drive, page 188](#).
2. Remove sickle head pin. Refer to steps 1 and 2 of Section
  1. Remove grease zerk from pin (B).
  2. Remove bolt (B) from pitman arm.
  3. Remove pitman arm from sickle drive box shaft.
  4. Remove bolts (A) attaching sickle drive box to frame.

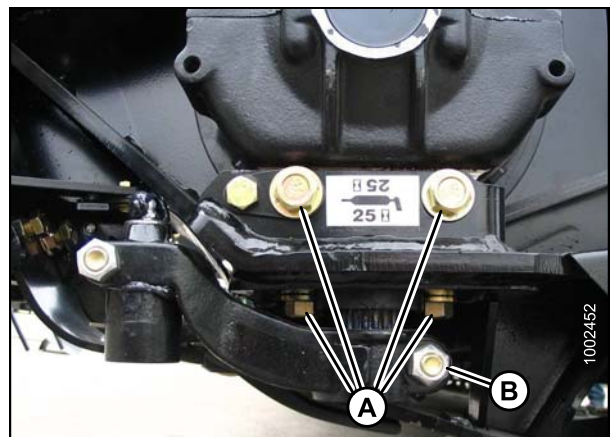


Figure 4.115

# IMPORTANT

Do NOT remove or loosen locating tab (A). This is a factory adjustment.

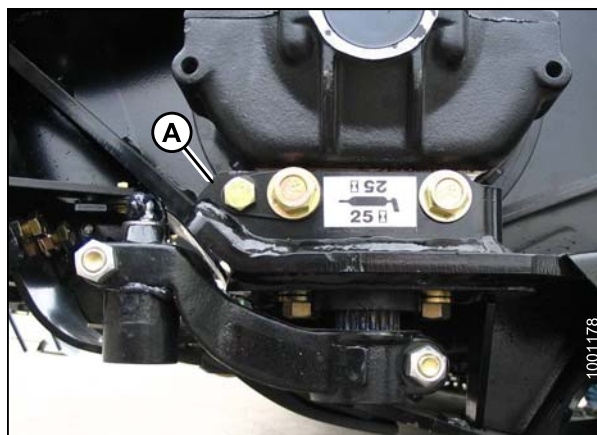


Figure 4.116

5. Remove sickle drive box.

### *Pulley Removal*

To remove sickle drive box pulley, follow these steps:

1. Loosen nut and bolt from pulley.
2. Remove pulley using a three-jaw puller.

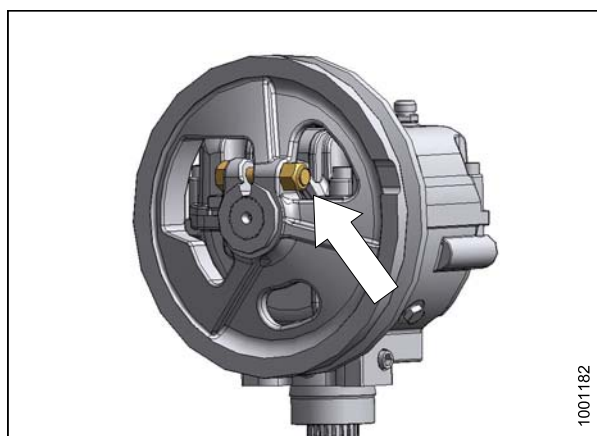


Figure 4.117

### *Pulley Installation*

To install the sickle drive box pulley, follow these steps:

1. Remove any rust or paint from shaft and pulley splines. For replacement parts, remove oil/grease with degreasing agent.
2. Apply Loctite® #243 adhesive (or equivalent) to spline. Apply in two bands around shaft as shown, with one band at end of spline, and one band approximately mid-way.
3. Install pulley on shaft until flush with end of shaft, and secure with bolt and nut. Torque bolt to 160 ft-lbf (217 N·m).

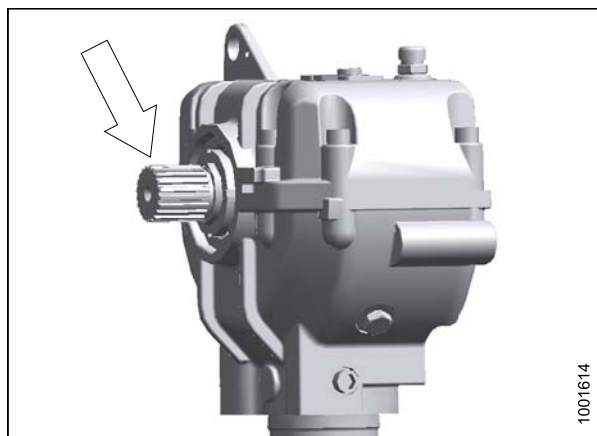


Figure 4.118

## MAINTENANCE AND SERVICING

### Sickle Drive Box Installation

To install the sickle drive box, follow these steps:

1. Position sickle drive box with locating tab (A) at original position, and install four bolts (B). Torque side bolts, and then bottom bolts to 200 ft·lbf (270 N·m).

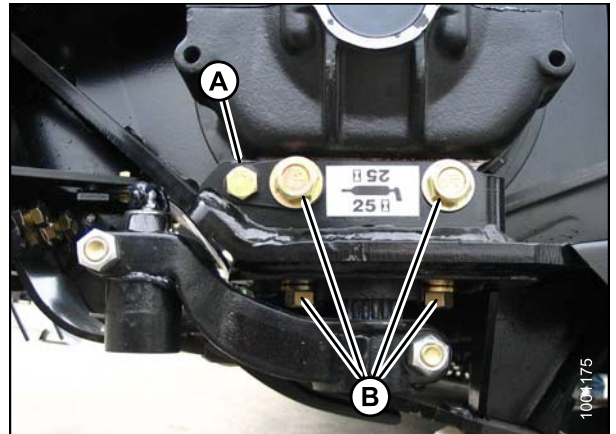


Figure 4.119

2. Apply Loctite® #243 adhesive (or equivalent) to spline. Apply in two bands around shaft as shown, with one band at end of spline, and one band approximately mid-way.
3. Remove any rust or paint from pitman arm splines. For replacement parts, remove oil/grease with degreasing agent.



Figure 4.120

4. Slide pitman arm (A) onto output shaft.
5. Slide arm up or down on shaft until it just contacts knife head (0.010 in. (0.25 mm) gap) (B).
6. Rotate pulley to ensure drive arm just clears frame to ensure proper placement on splines. Position pitman arm at furthest outboard position.
7. Install bolt (C) and nut, and torque to 160 ft·lbf (217 N·m).
8. Install sickle head pin. Refer to Section [4.9.5 Sickle Installation](#), page 182.
9. Install drive belt onto sickle drive box pulley, and tighten. Refer to Section [4.9.8 Sickle Drive Belts – Non-Timed Drive](#), page 188.

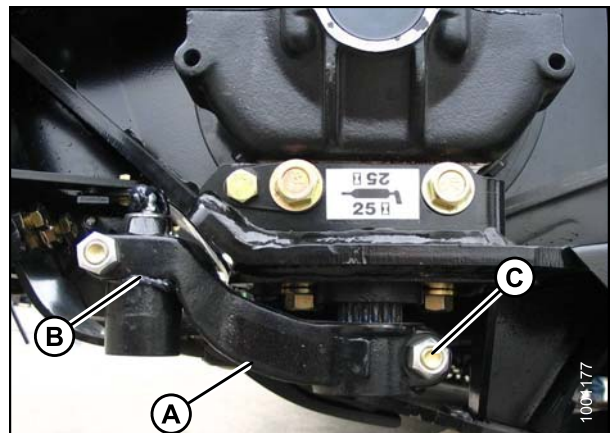


Figure 4.121

## MAINTENANCE AND SERVICING

### *Changing Oil*

To change the oil in the sickle drive box, follow these steps.

Change sickle drive box lubricant after the first 50 hours of operation and every 1,000 hours (or 3 years) thereafter.

1. Raise header to allow a suitable container to be placed under sickle box drain to collect oil.
2. Open endshield(s).
3. Remove breather/dipstick, and drain plug.
4. Reinstall drain plug, and add 2.3 US quarts (2.2 liters) SAE 85W-140 oil to required level.
5. Close endshield(s).



**Figure 4.122**

## **MAINTENANCE AND SERVICING**

### **4.10 Adapter Feed Draper**

#### **4.10.1 Draper Tension Adjustment**

#### **4.10.2 Draper Replacement**

## MAINTENANCE AND SERVICING

### 4.11 Header Drapers

#### 4.11.1 Header Draper Tension Adjustment

Draper tension should be just enough to prevent slipping, and keep draper from sagging below cutterbar. To adjust the header draper tension.

1. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller, and that idler roller is between the guides.
2. Turn bolt (A) clockwise (tighten), and the white indicator bar (B) will move inboard in direction of arrow (indicating that draper is tightening). Tighten until bar is about halfway in window.

### IMPORTANT

To avoid premature failure of draper, draper rollers and/or tightener components, do NOT operate with tension set so that white bar is not visible. Also to prevent draper from scooping dirt, ensure draper is tight enough that it does not sag below point where cutterbar contacts the ground.

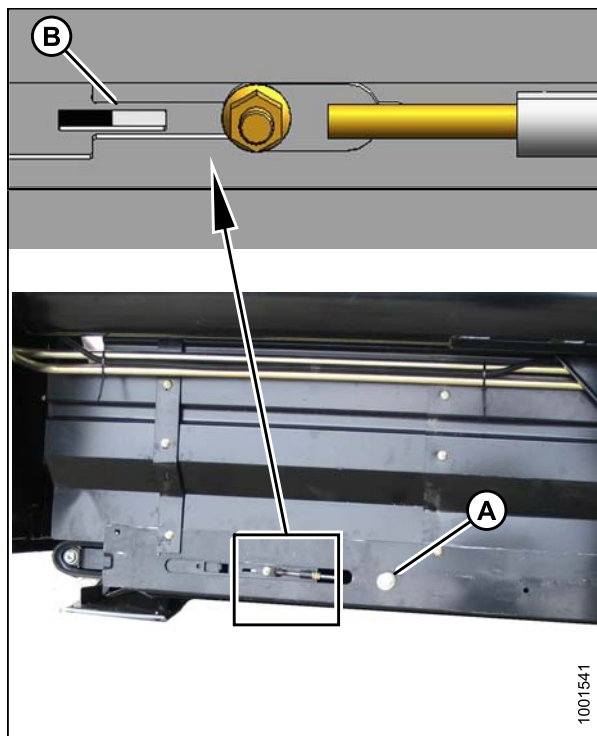


Figure 4.123

#### 4.11.2 Draper Replacement

The draper should be replaced or repaired if it is torn, missing slats, or cracked.

### WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

### DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.



## MAINTENANCE AND SERVICING

### *Draper Removal*

To remove a header draper, follow these steps.

1. Raise reel, and engage reel props.
2. Raise header, and install lift cylinder locks.
3. Stand in draper opening or on combine feed draper, and move draper until draper joint is in work area.

**NOTE:** Deck can also be shifted towards center to provide opening at endsheet.

4. Release tension on the draper. Refer to Section [4.11.1 Header Draper Tension Adjustment](#), page 206.
5. Remove nuts (A) and tube connectors (B) at draper joint.
6. Pull draper from deck.

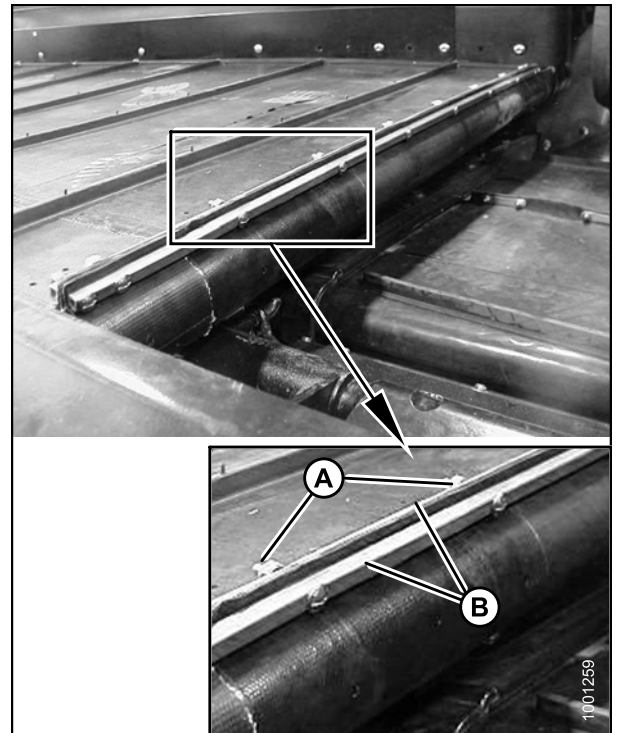


Figure 4.124



## MAINTENANCE AND SERVICING

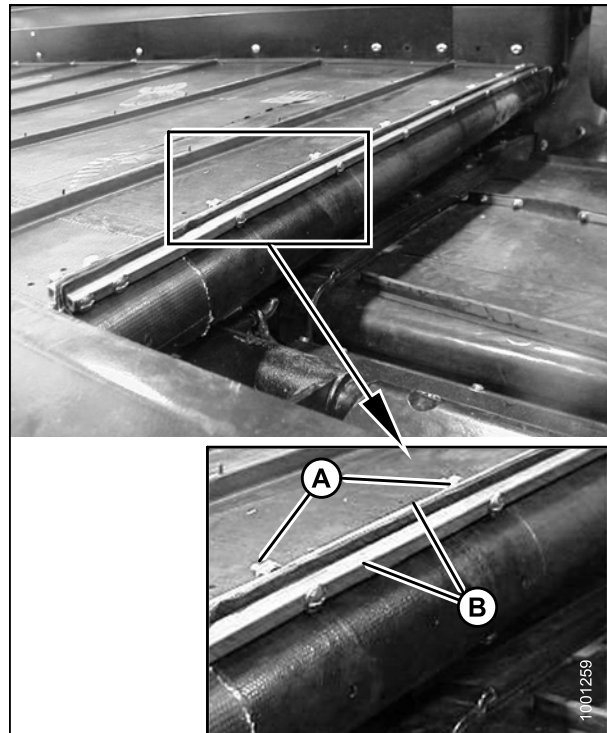
### *Draper Installation*

To install a header draper, follow these steps:

1. Insert draper into deck at outboard end, under the rollers. Pull draper into deck while feeding it at the end.
2. Feed in the draper until it can be wrapped around the drive roller.
3. Similarly insert the other end into the deck over the rollers. Pull draper fully into the deck.
4. Attach ends of draper with tube connectors (B).
5. Install screws (A) with heads facing the center opening.
6. Adjust tension. Refer to Section [4.11.1 Header Draper Tension Adjustment](#), page 206.



**Figure 4.125**



**Figure 4.126**

## MAINTENANCE AND SERVICING

### 4.11.3 Header Draper Alignment

Each draper deck has one fixed roller and one spring-loaded roller. The spring-loaded roller is located at the same end of the deck as the draper tensioner. Both rollers can be aligned by adjuster rods so that the draper tracks properly on the rollers.



## CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 4.1 Preparation for Servicing, page 139.

If the draper is tracking incorrectly, make the following adjustments to the rollers:

Tracking	At Location	Adjustment	Method
Backward	Drive Roller	Increase 'X'	Tighten nut (C)
Forward		Decrease 'X'	Loosen nut (C)
Backward	Idler Roller	Increase 'Y'	Tighten nut (D)
Forward		Decrease 'Y'	Loosen nut (D)

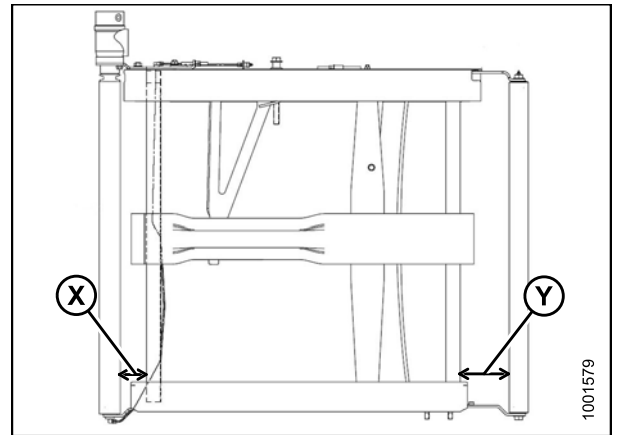
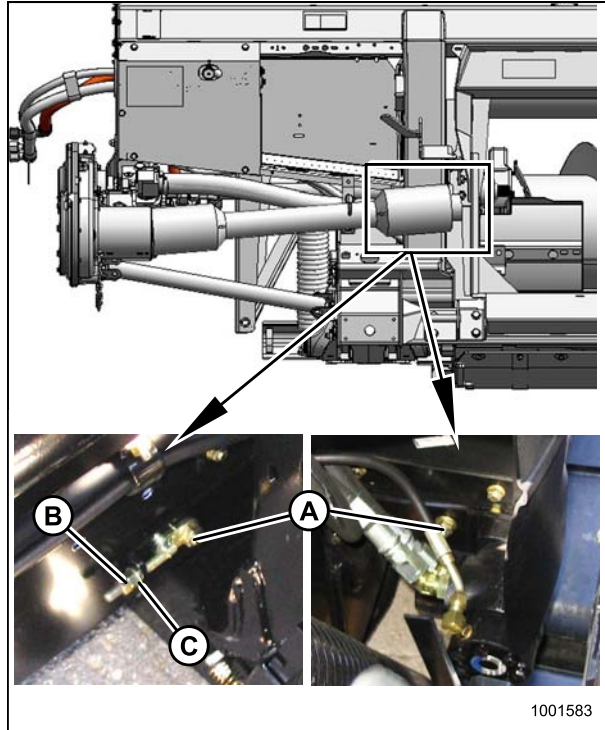


Figure 4.127

## MAINTENANCE AND SERVICING

1. Adjust the **drive** roller 'X' (shown in the image above) by loosening nuts (A), jam nut (B) on adjuster rod, and turning the adjusting nut (C).



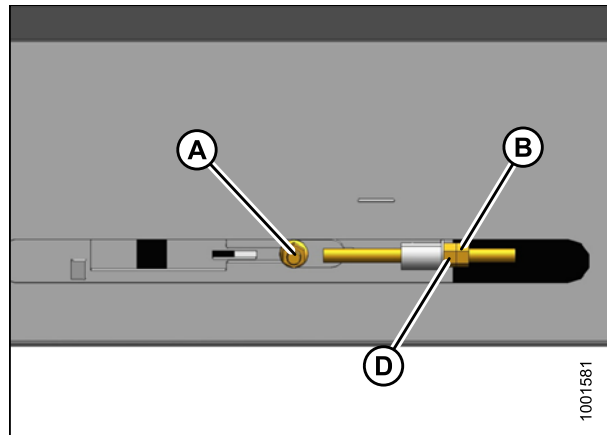
**Figure 4.128: LH Drive Roller Adjust 'X'**

A - Nuts

B - Jam nut

C - Adjusting nut

2. Adjust the **idler** roller 'Y' (shown above) by loosening nut (A), jam nut (B) on adjuster rod, and turning adjusting nut (D).
3. If the draper will not track at the idler roller end, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler.



**Figure 4.129: LH Idler Roller 'Y' Adjust**

A - Nut

B - Jam nut

D - Adjusting nut

### 4.11.4 Draper Roller Maintenance

The draper rollers have non-greaseable bearings. The external seal should be checked every 200 hours (and more frequently in sandy conditions) to obtain the maximum bearing life.



**DANGER**

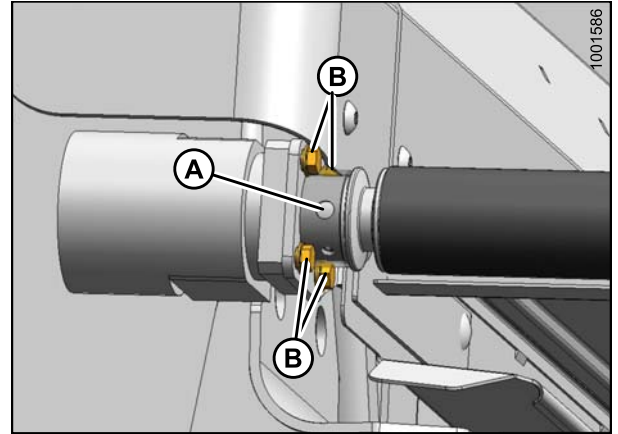
Engage header lift cylinder stops and reel props before working under header or reel.

## MAINTENANCE AND SERVICING

### Drive Roller Removal

To remove the drive roller, follow these steps.

1. Raise header and reel and engage cylinder and reel stops.
2. On deck shift headers, position deck so drive roller is easily accessible.
3. Loosen and uncouple draper. Refer to Section [4.11.2 Draper Replacement, page 206](#).
4. Loosen the two set screws in access hole (A) in the drive roller hub at motor end.
5. Remove the four bolts (B) that hold hydraulic motor to arm, and pull motor off roller.

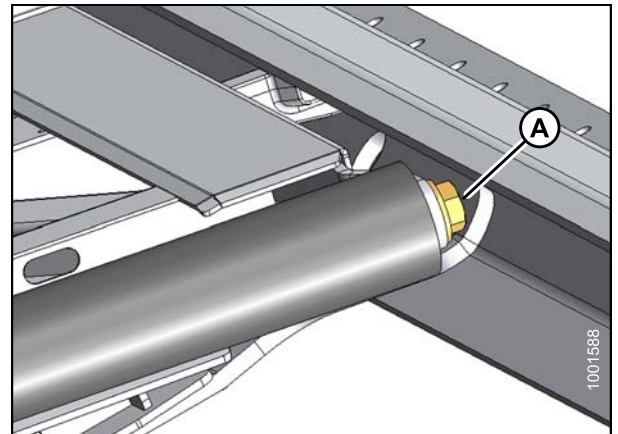


**Figure 4.130**

A - Access hole

B - Shoulder bolts

6. Remove bolt (a) at forward end of roller, and remove roller from deck.



**Figure 4.131**

## MAINTENANCE AND SERVICING

### Drive Roller Installation

To install drive roller, follow these steps.

1. Position roller in deck arms, and secure forward end with bolt (A) and washer. Do not tighten at this time.
2. Apply SAE Multi-Purpose grease to motor shaft, locate motor on roller arm, and engage motor shaft into roller.

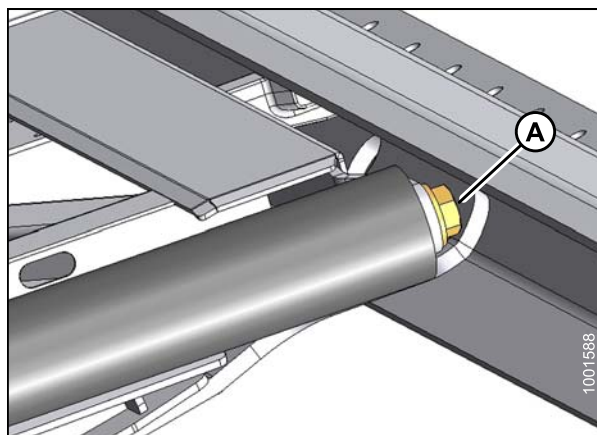


Figure 4.132

3. Secure motor with shoulder bolts (B), and tighten. The shoulder bolts allow clearance between the motor and arm. The motor is not secured tightly to the arm.
4. Push roller against shoulder on motor shaft, and hand-tighten the two set screws (A). Torque set screws to 20 ft·lbf (27 N·m).

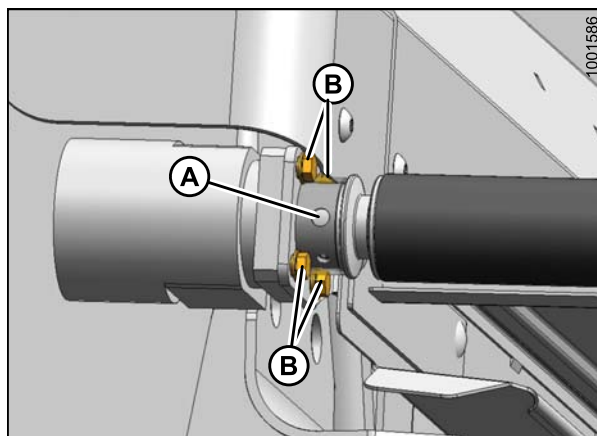


Figure 4.133

A - Set screws

B - Shoulder bolts

5. Torque bolt (A) to 70 ft·lbf (95 N·m).
6. Reattach draper. Refer to Section [4.11.2 Draper Replacement, page 206](#).
7. Adjust draper tension. Refer to Section [4.11.1 Header Draper Tension Adjustment, page 206](#).
8. Readjust hydraulic motor hoses (if required), and tighten hose clamps.
9. Run machine, and adjust tracking if required. Section [4.11.3 Header Draper Alignment, page 209](#).

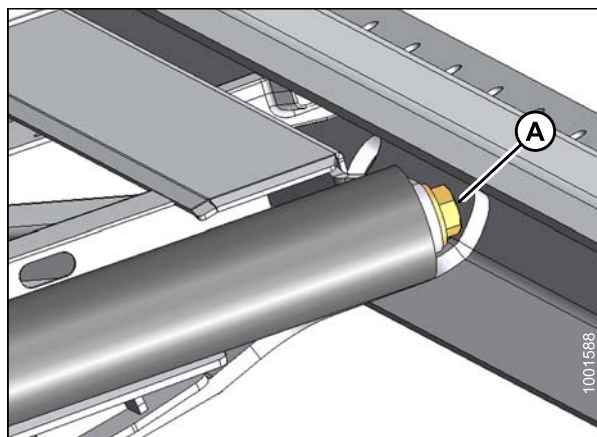


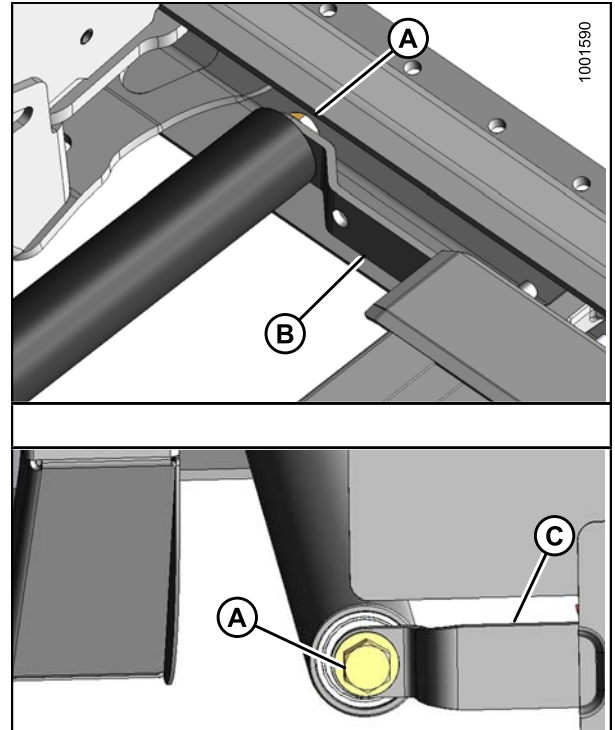
Figure 4.134

## MAINTENANCE AND SERVICING

### *Idler Roller Removal*

To remove idler roller, follow these steps.

1. Raise header and reel, and engage cylinder and reel stops.
2. On deck shift headers, position deck so idler roller is easily accessible.
3. Loosen and uncouple draper. Refer to Section [Draper Removal, page 207](#).
4. Remove bolts (A) and washer at ends of idler roller.
5. Spread roller arms (B) and (C), and remove roller.



**Figure 4.135**

A - Bolts

B - Forward roller arm

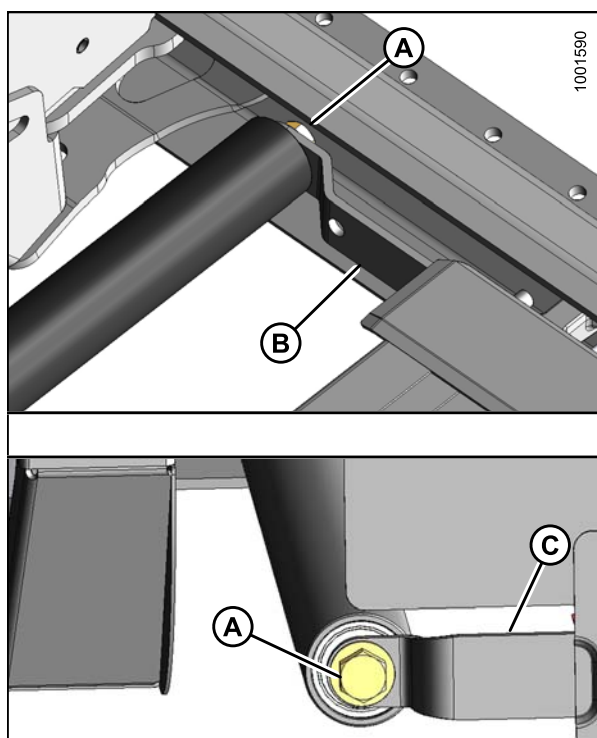
C - Rear roller arm

## MAINTENANCE AND SERVICING

### *Idler Roller Installation*

To install idler roller, follow these steps.

1. Position stub shaft in idler roller in forward arm (B) on deck.
2. Push on roller to deflect forward arm slightly so that stub shaft at rear of roller can be slipped into rear arm (C).
3. Install bolts (A) with washers, and torque to 70 ft-lbf (93 N-m).



**Figure 4.136**

A - Bolts

B - Forward roller arm

C - Rear roller arm

4. Reattach draper. Refer to Section [4.11.2 Draper Replacement, page 206](#).
5. Adjust draper tension. Refer to Section [4.11.1 Header Draper Tension Adjustment, page 206](#).
6. Run machine, and adjust tracking if required. Refer to Section [4.11.3 Header Draper Alignment, page 209](#).

### *Draper Roller Bearing/Seal Replacement*

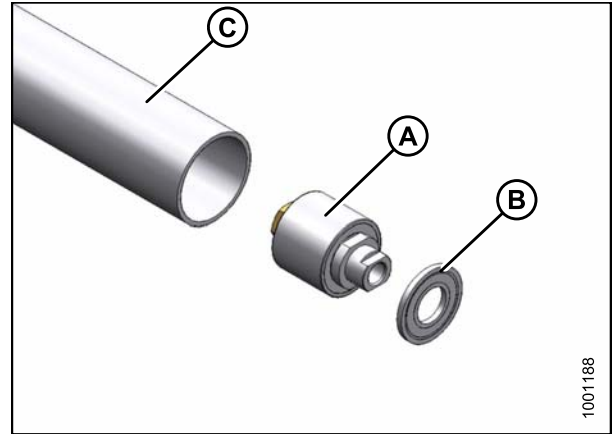
To replace draper roller bearing and seal, follow these steps.

1. Remove roller assembly. Refer to Section [Drive Roller Removal, page 211](#) or Section [Idler Roller Removal, page 213](#).



## MAINTENANCE AND SERVICING

Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:

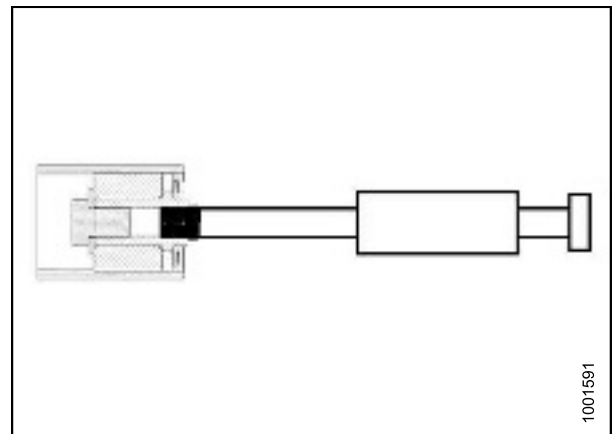


**Figure 4.137**

A - Bearing assembly  
C - Roller tube

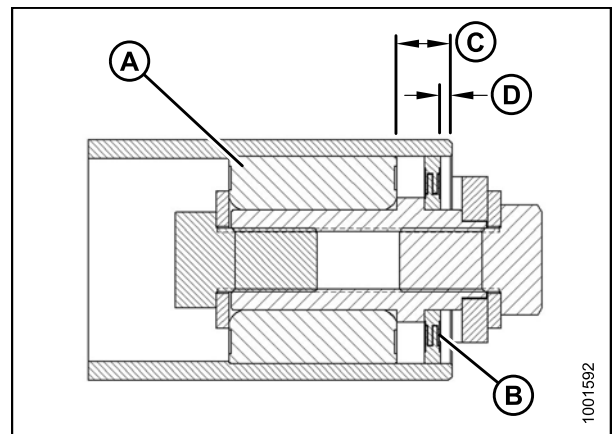
B - Seal

2. Attach a slide hammer to threaded shaft.
3. Tap out the bearing assembly.



**Figure 4.138**

4. Clean inside of roller tube. Check tube for wear or damage. Replace if necessary.
5. Install bearing and seal as follows:
  - a. Install bearing assembly (A) into roller by pushing on outer race of bearing. The bearing is fully positioned when the 9/16 inch (14 mm) dimension (C) is achieved.
  - b. Apply grease in front of bearing. Refer to [Section 4.3.4 Recommended Fluids and Lubricants, page 148](#).

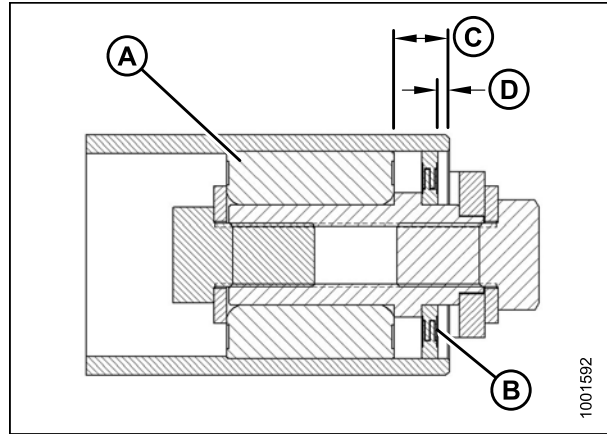


**Figure 4.139**

A - Bearing assembly  
B - Seal  
C - Bearing positioning dimension: 0.55—0.59 IN (14—15 mm)  
D - Seal positioning dimension: —/12—0.16 in. (3—4 mm)

## MAINTENANCE AND SERVICING

6. Install seal (D) as follows:
  - a. Locate seal at roller opening, and position a flat washer (1.0 in. I.D. X 2.0 in. O.D.) on seal.
  - b. Using a suitable socket to locate on the washer, tap seal into roller opening until it seats on the bearing assembly. The seal is fully positioned when the 1/8 in. (3 mm) dimension (D) is achieved.



**Figure 4.140**

- A - Bearing assembly                      B - Seal  
C - Bearing positioning dimension: 0.55—0.59 IN (14—15 mm)  
D - Seal positioning dimension:  $\frac{1}{12}$ —0.16 in. (3—4 mm)

7. Reinstall roller assembly. Refer to Section [4.11.4 Draper Roller Maintenance](#), page 210.

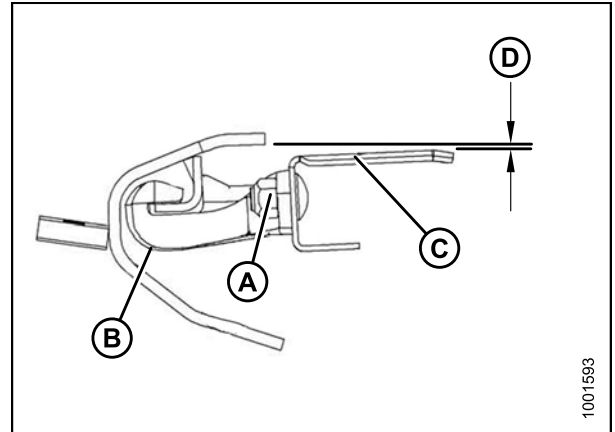
## MAINTENANCE AND SERVICING

### 4.11.5 Deck Height

To prevent material from entering drapers and cutterbar, maintain deck height so that draper runs just below cutterbar with maximum 1/32 in. (1 mm) gap, or with draper deflected down slightly (up to 1/16 in. [1.5 mm]) to create a seal.

The illustration shows the adjustment without the draper (D) (1/4—5/16 in. (7—8 mm)).

**NOTE:** Measurement is at supports with header in working position and decks slid fully ahead.



**Figure 4.141**

A - Lock nut      B - Deck support      C - Deck  
D - Adjustment without draper: 1/4—5/16 in. (7—8 mm)



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

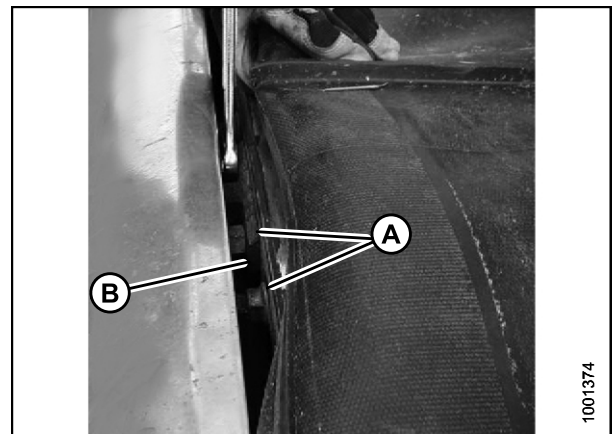


## DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

To adjust the deck height, follow these steps:

1. Loosen tension on draper. Refer to Section [4.11.1 Header Draper Tension Adjustment](#), page 206.
2. Lift draper up at front edge past cutterbar.
3. Loosen two lock nuts (A) (four if it is an endless draper) **one-half turn only** on deck support (B). There are two to four supports per deck, depending on header size.

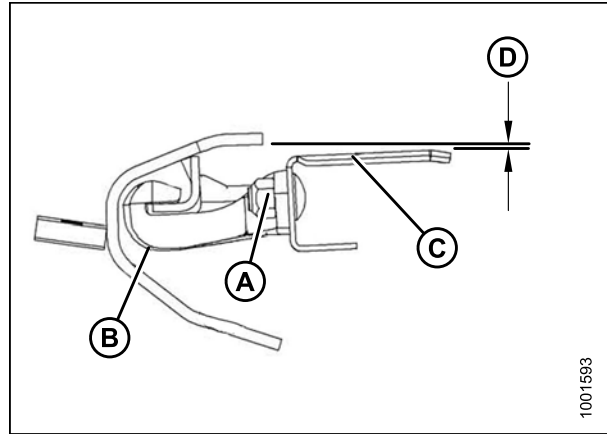


**Figure 4.142**

A - Lock nuts      B - Deck support

## MAINTENANCE AND SERVICING

4. Tap deck (C) to lower deck relative to supports to achieve setting recommended above. Tap support (B) using a punch to raise deck relative to support.
5. Tighten deck support hardware (A).
6. Tension draper. Refer to Section [4.11.1 Header Draper Tension Adjustment](#), page 206.



**Figure 4.143**

A - Lock nut      B - Deck support      C - Deck  
D - Adjustment without draper: 1/4—5/16 in. (7—8 mm)

## MAINTENANCE AND SERVICING

### 4.12 Reel and Reel Drive



## CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 4.1 Preparation for Servicing, page 139.

#### 4.12.1 Reel Clearance to Cutterbar

The finger to guard/cutterbar clearances with reel fully lowered varies with header width, and are as follows:

HEADER WIDTH (Feet)	'X' +/- .12 in. (3 mm) at Reel Ends	
	SINGLE REEL	DOUBLE REEL
20 FT	3/4 in. (20 mm)	---
25 FT	1 in. (25 mm)	
30 FT	1-3/4 in. (45 mm)	3/4 in. (20 mm)
35 FT	2-3/8 in. (60 mm)	
40 FT	---	
45 FT	---	

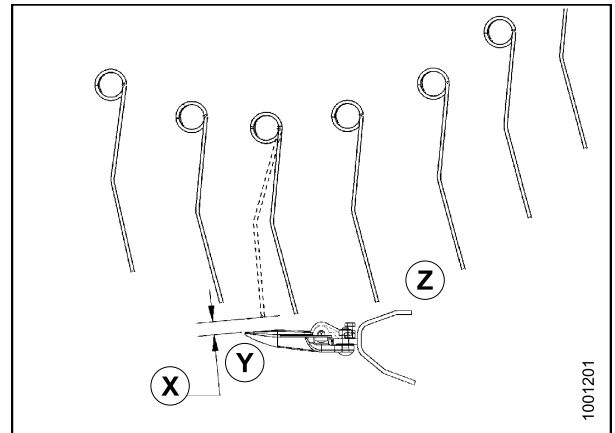


Figure 4.144

#### Clearance Measurement

To measure the finger-to-guard/cutterbar clearance, follow these steps.



## DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.

1. Park header on level ground.
2. Raise header, and place a 6 in. (150 mm) block (A) under each inboard header leg. Locations are different depending on if the header has a single reel or double reels.
3. Lower header onto the blocks. Fully lower the reel.

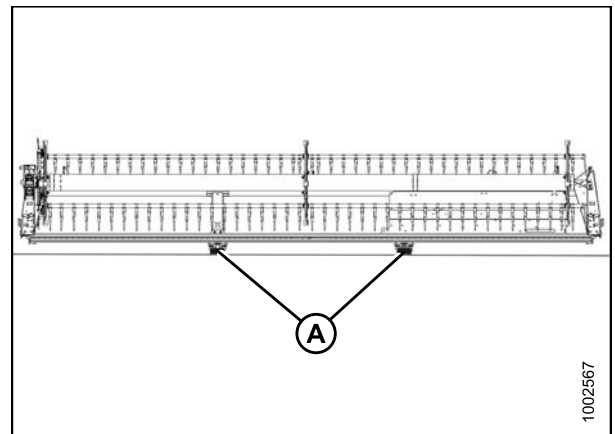
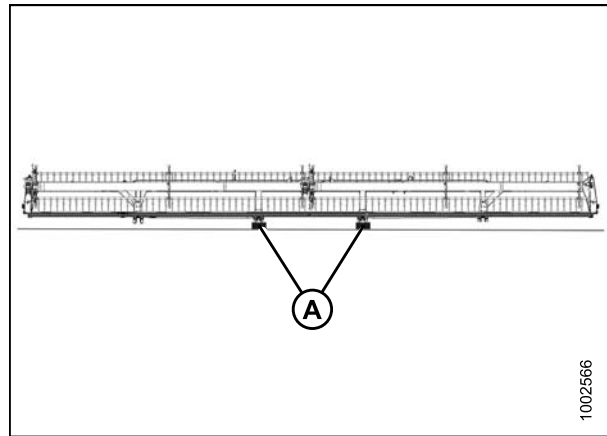


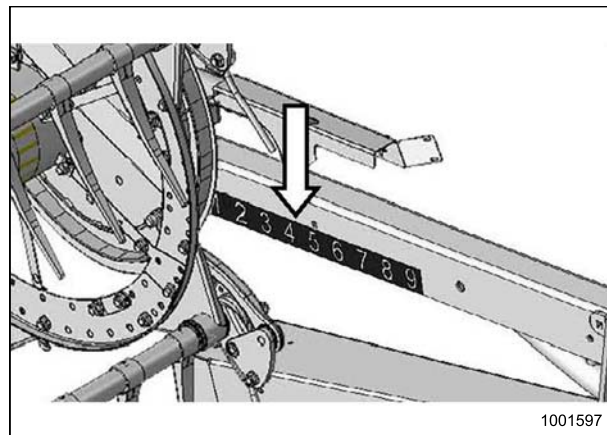
Figure 4.145: Block locations for single reel header

## MAINTENANCE AND SERVICING



**Figure 4.146: Block locations for double reel header**

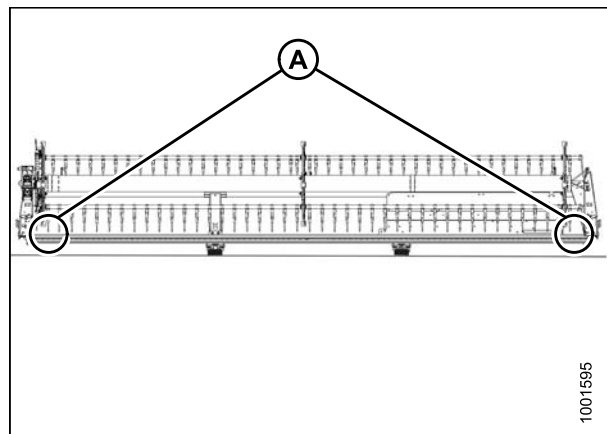
4. Adjust fore-aft reel position so that back end of cam disc is approximately between '4' and '5' on the arm decal.
5. Shut down combine. Remove key from ignition.



**Figure 4.147**

6. Measure clearance at ends of each reel (B) (shown above). On **SINGLE REEL**, take measurements in two places (A).

**NOTE:** The reel has been adjusted at the factory to provide more clearance at the center of the reel than at the ends ('frown') to compensate for reel flexing.



**Figure 4.148: Single reel measurement locations**

## MAINTENANCE AND SERVICING

7. On **DOUBLE REEL**, take clearance measurements in four places (A).

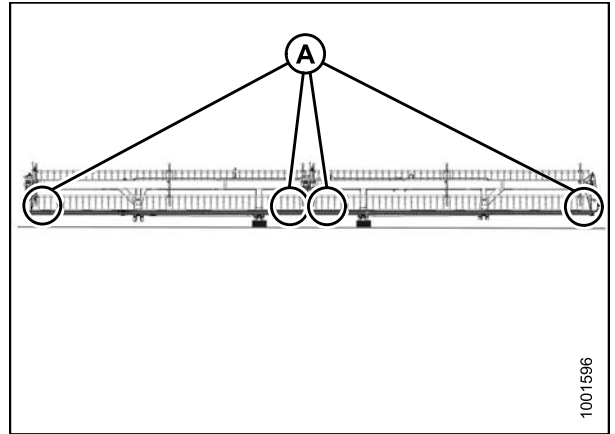


Figure 4.149: Double reel measurement locations

8. Check all possible points of contact between points 'Y' and 'Z'. Depending on reel fore-aft position, minimum clearance can occur at guard tine, hold-down, or cutterbar.
9. Refer to following section for adjustment procedure.

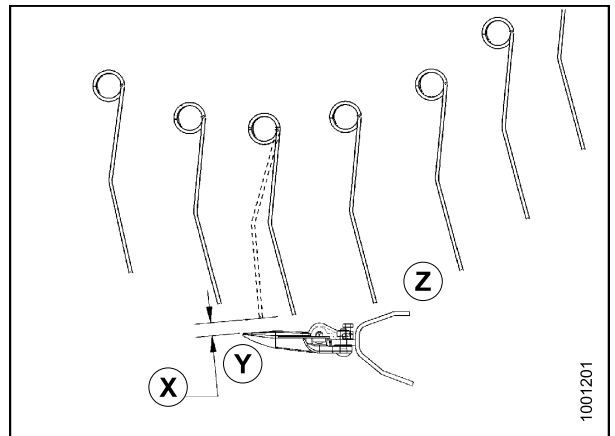


Figure 4.150

### *Reel Clearance Adjustment*

To adjust reel clearance, follow these steps.



## **DANGER**

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage lift cylinder stops before going under header for any reason. See your combine operator's manual for instructions for use and storage of header lift cylinder stops.



## MAINTENANCE AND SERVICING

1. Adjust outside arms to change clearance at ends of cutterbar as follows:
  - a. Loosen bolt (A).
  - b. Turn cylinder rod (B) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to decrease clearance/lower reel.
  - c. Tighten bolt (A).
  - d. Repeat at opposite side.

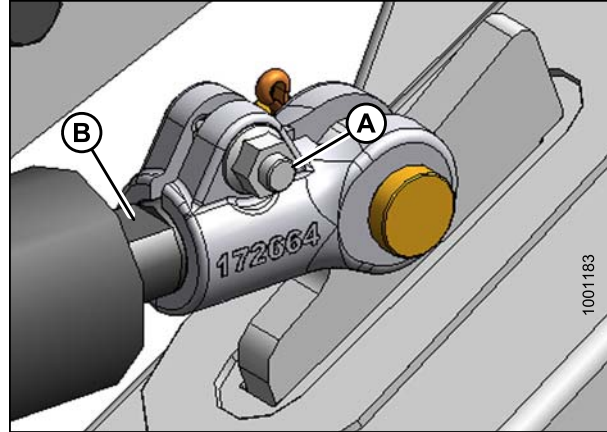


Figure 4.151

2. **DOUBLE REEL ONLY:** Adjust center arm to change clearance at center of cutterbar as follows:
  - a. Loosen nut (A).
  - b. Turn nut (B) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to decrease clearance/lower reel.
  - c. Tighten nut (A).

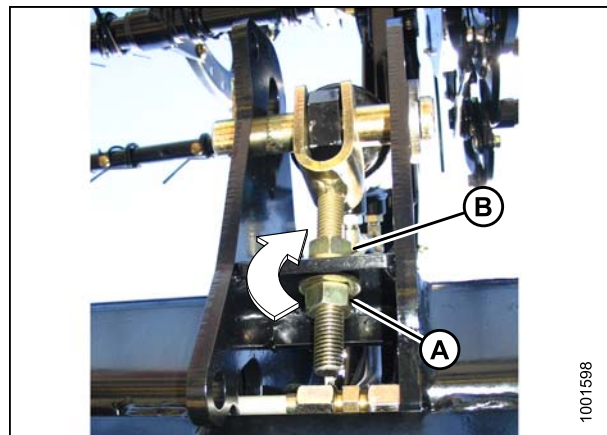


Figure 4.152: For Double Reel Only - Looking up at arm underside

### 4.12.2 Reel Frown Adjustment

To adjust the reel frown, follow these steps.

The reel has been adjusted at the factory to provide more clearance at the center of the reel than at the ends (frown) to compensate for reel flexing.

The frown is adjusted by repositioning the hardware connecting reel finger tube arms to reel discs. The frown adjustment compensates for reel flexing.

## IMPORTANT

**The frown profile should be measured prior to reel disassembly for servicing so that the profile can be maintained after re-assembly.**

## MAINTENANCE AND SERVICING

1. Position the reel over the cutterbar (between '4' and '5' on the gauge). This position provides adequate clearance at all reel fore-aft positions. Refer to Section 3.9.9 [Reel Fore-Aft Position, page 106](#).
  2. Take a measurement at each reel disc location for each reel tube.
  - 3.
  4. Adjust the profile as follows: Start with the reel disc set closest to center of header, and proceed to the ends.
    - a. Remove bolts (A).
    - b. Loosen bolt (B), and adjust arm (C) until desired measurement is obtained between reel tube and cutterbar.
- NOTE:** Allow the reel tubes to find a natural curve and position the hardware appropriately.
- c. Reinstall bolts (A) in aligned holes, and tighten.

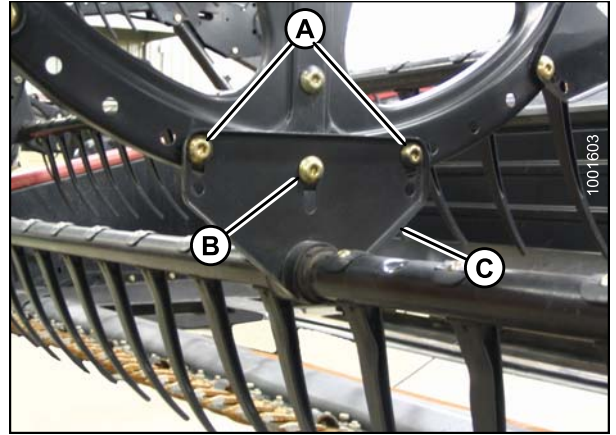


Figure 4.153

### 4.12.3 Reel Centering

The reel(s) should be centered between the endsheets.

#### *Double-Reel Header*

To center the reels on a double-reel header, follow these steps.

1. Loosen bolt (A) on each brace (B).
2. Move forward end of reel center support arm (C) laterally as required to center both reels.
3. Tighten bolts (D), and torque to 265 ft-lbf (359 N-m).

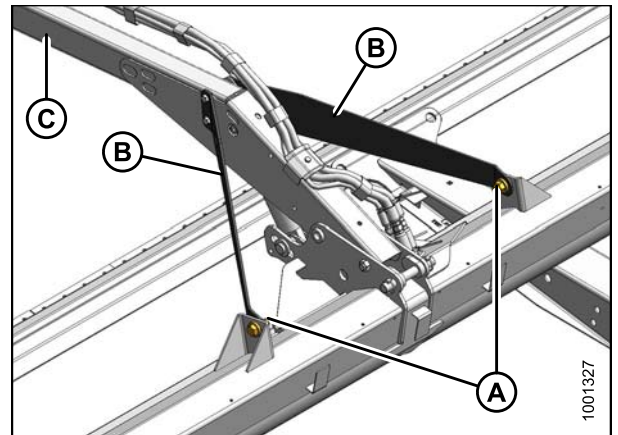


Figure 4.154: Double reel header

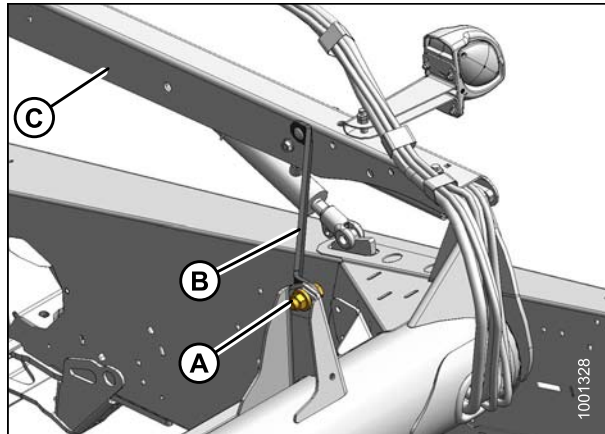
A - Bolts  
B - Brace  
C - Reel center support arm

## MAINTENANCE AND SERVICING

### Single-Reel Header

To center the reel on a single-reel header, follow these steps:

1. Loosen bolt (A) on brace (B) at both ends of reel.
2. Move forward end of reel support arm (C) laterally as required to center reel.
3. Tighten bolts (G), and torque to 265 ft·lbf (359 N·m).



**Figure 4.155: Single Reel Header**

A - Bolt

B - Brace

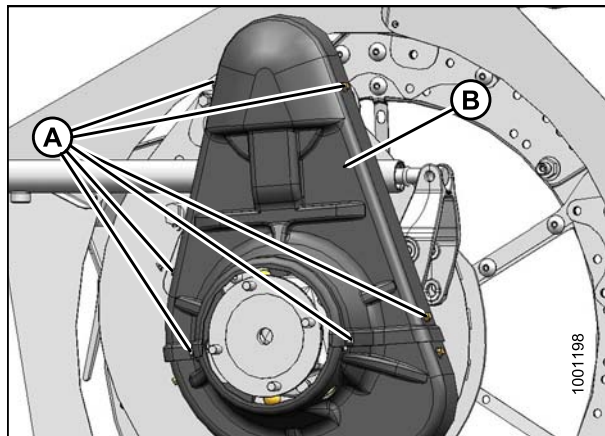
C - Reel support arm

### 4.12.4 Reel Drive Chain

#### High-Torque Reel Drive Tension Adjustment

To adjust the tension on a high-torque reel drive chain, follow these steps:

1. Lower header and reel, shut down combine, and remove key from ignition.
2. **For Double Reel:** Remove reel drive cover by removing six screws (A), and remove upper cover (B):



**Figure 4.156: Double Reel**

## MAINTENANCE AND SERVICING

3. **For Single Reel High-Torque:** Remove four screws (A) and remove cover (B).

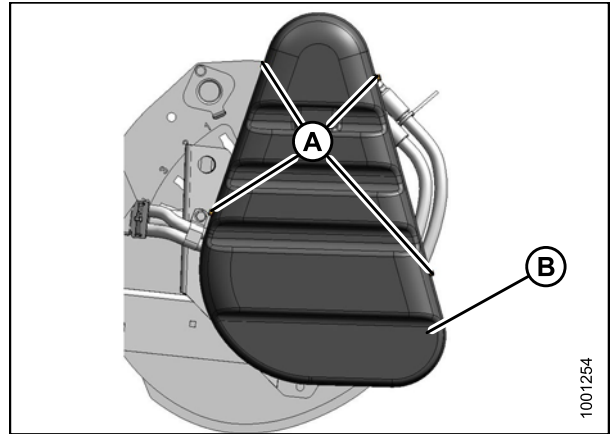


Figure 4.157: Single Reel High-Torque

4. Tension on chain (A) should be such that hand force deflects the chain 1/8 inch (3 mm) at mid-span.

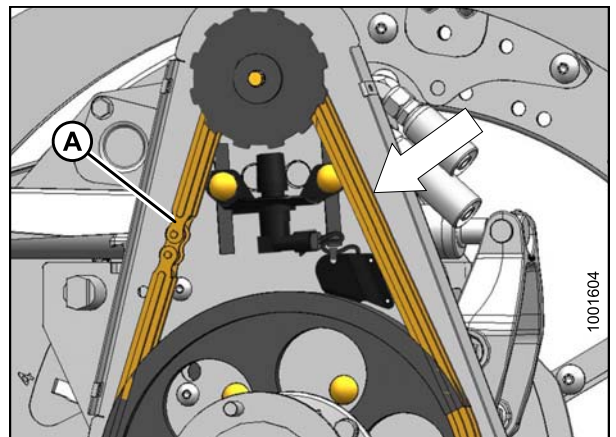


Figure 4.158: Double Reel Shown (Single is similar)

If necessary, adjust tension as follows:

5. Loosen six nuts (A) on motor mount.

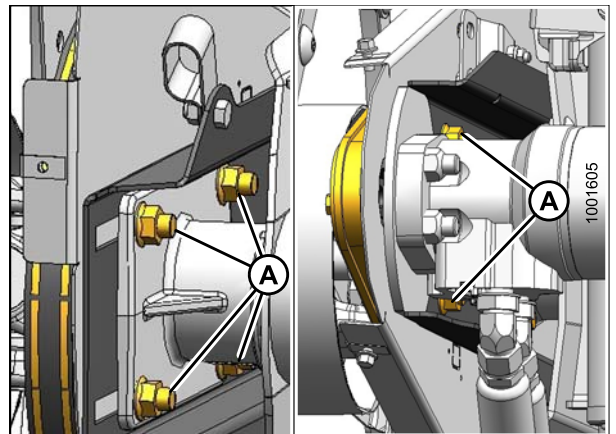


Figure 4.159

## MAINTENANCE AND SERVICING

- Slide reel drive motor (A) and motor mount (B) up or down until required tension is achieved.

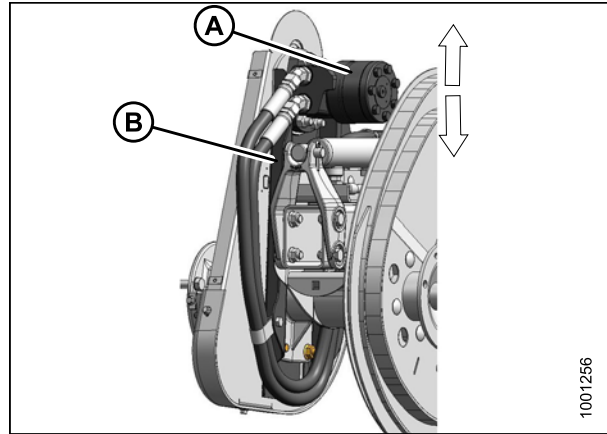


Figure 4.160

- Tighten nuts (A) to 75 ft·lbf (102 N·m).
- Reinstall drive cover.

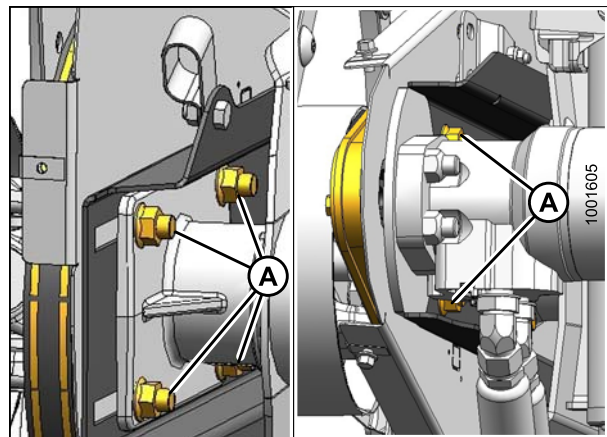


Figure 4.161

### *Single-Reel, Standard-Torque Drive Tension Adjustment*

To adjust the tension on a single-reel, standard-torque, reel drive chain, follow these steps:

- Lower header and reel, shut down combine, and remove key from ignition.
- Remove four screws (A), and remove reel drive cover (B).

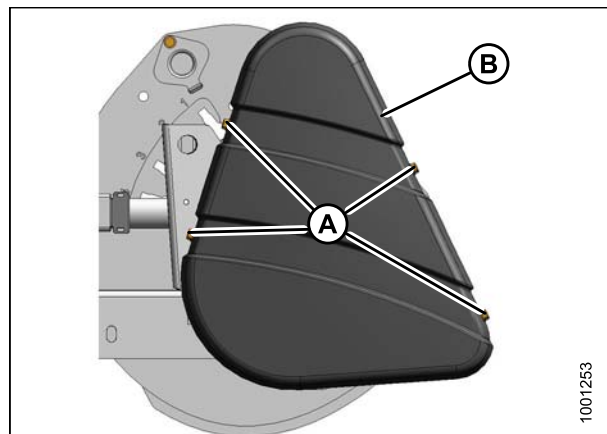


Figure 4.162



## MAINTENANCE AND SERVICING

3. Tension on chain (A) should be such that hand force deflects the chain 1/8 inch (3 mm) at mid-span.

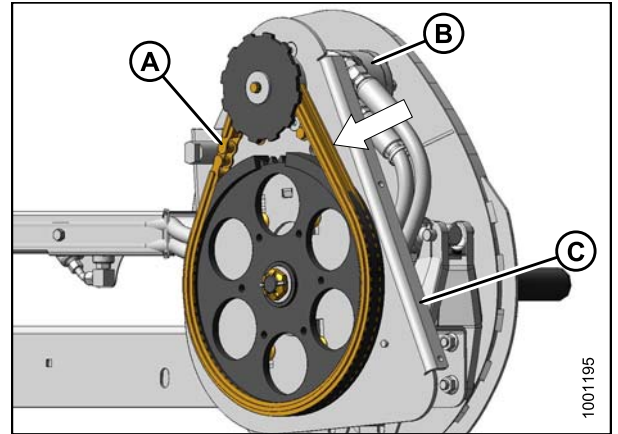


Figure 4.163

Adjust tension as follows:

4. Loosen four nuts (A) on motor mount (B).

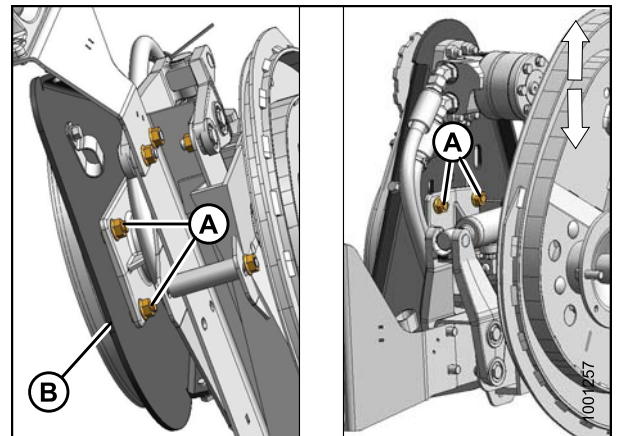


Figure 4.164

5. Slide motor (B) and motor mount (C) up or down until required chain tension is achieved.

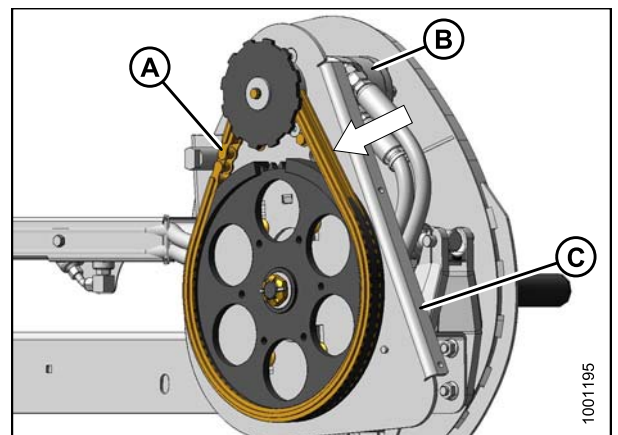


Figure 4.165

## MAINTENANCE AND SERVICING

6. Tighten nuts (A) to 75 ft·lbf (102 N·m).
7. Reinstall drive cover.

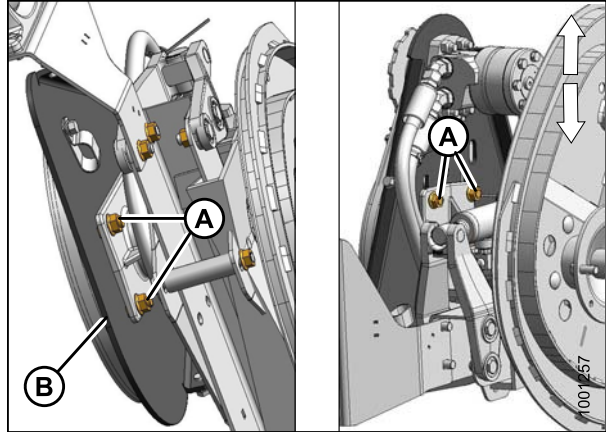


Figure 4.166

### Drive Chain Replacement – Single-Reel, High-Torque Drive

To replace a single-reel, high-torque, reel drive chain, follow these steps:

1. Lower header and reel, shut down combine and remove key from ignition.
2. Remove four screws (A), and remove reel drive cover (B).

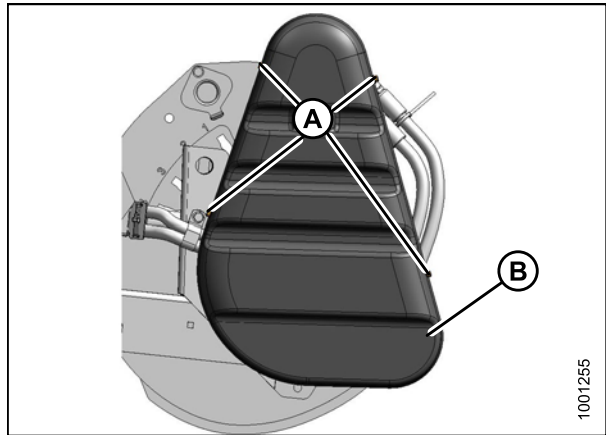


Figure 4.167

3. Loosen nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

v

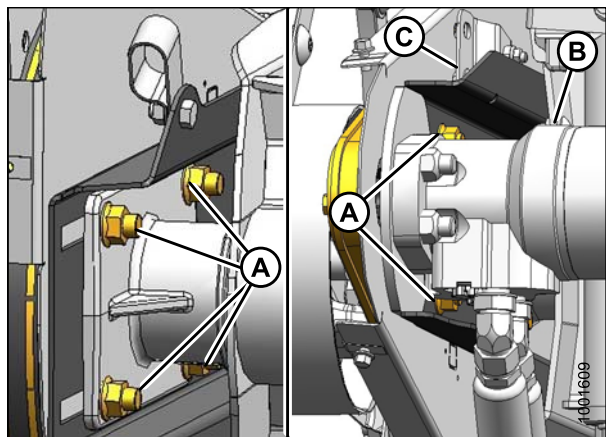


Figure 4.168

A - Nuts

C - Motor mount

B - Reel drive motor



## MAINTENANCE AND SERVICING

4. Remove chain (A).
5. Position new chain (A) around sprockets.

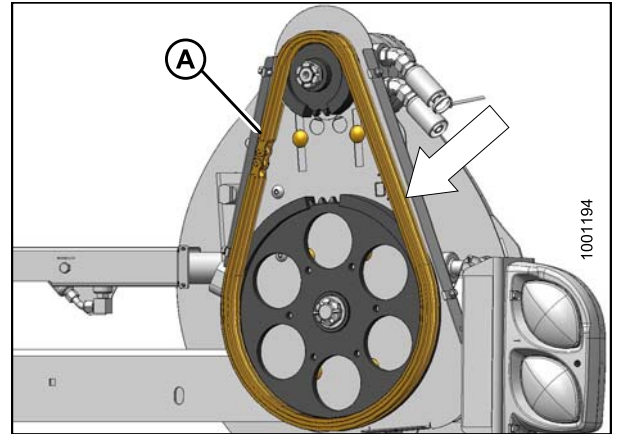


Figure 4.169

6. Slide motor (B) and motor mount (C) upward until tension on chain is such that hand force deflects the chain 1/8 inch (3 mm) at mid-span.
7. Tighten nuts (A), and re-check tension.
8. Reinstall drive cover.

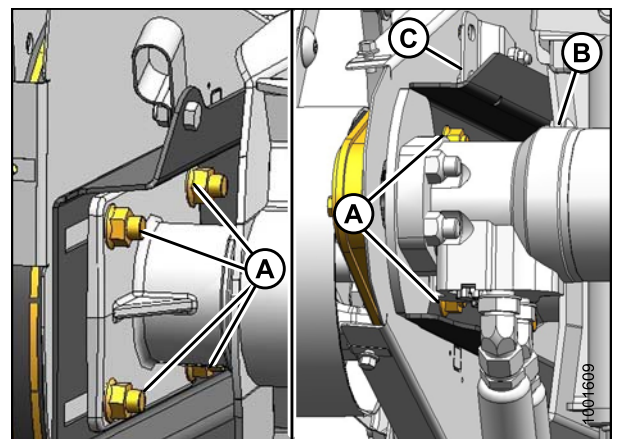


Figure 4.170

A - Nuts  
C - Motor mount

B - Reel drive motor

### *Drive Chain Replacement – Double Reel*

To replace the reel drive chain on a double-reel header, follow these steps:

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove reel drive upper cover. Refer to previous section.
3. Remove three screws (A), and remove lower cover (B).
4. Release tension on chain (C). Refer to previous section.
5. The endless chain (C) can be replaced using either of the following two methods. Method 1 is preferred because the chain integrity is not affected.

- **Method 1:** Disconnecting the Reel Drive, or
- **Method 2:** Breaking the Chain.

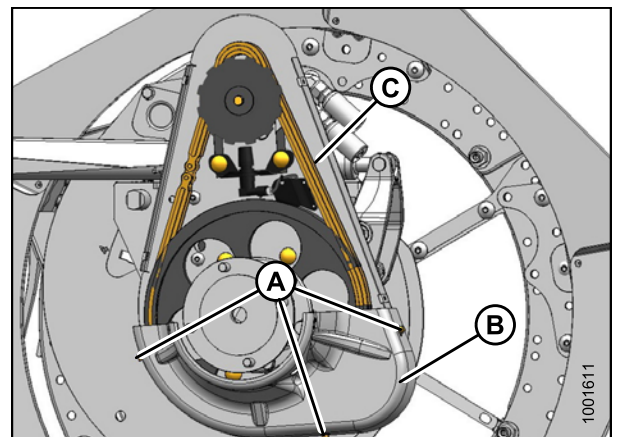


Figure 4.171

## MAINTENANCE AND SERVICING

### Method 1: Disconnecting the Reel Drive

1. Support inboard end of right reel with a front end loader and nylon slings (or equivalent set-up).

**NOTE:** To avoid damaging or denting center tube, support reel as close as possible to the end disc.



Figure 4.172

2. Remove four bolts (A) attaching reel tube to U-joint (B).

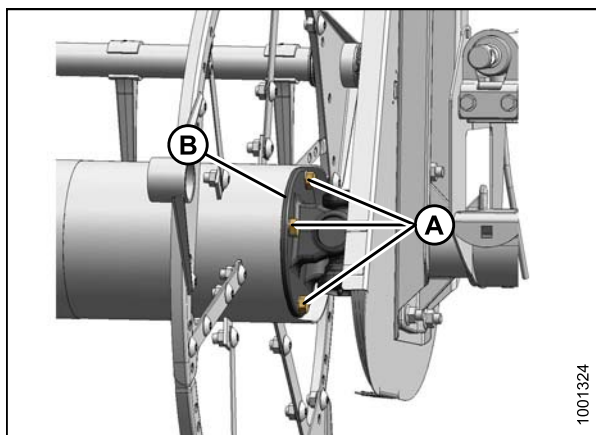


Figure 4.173

3. Move RH reel sideways to separate the reel tube (A) and U-joint (B).
4. Remove the chain (C).
5. Route new chain (C) over U-joint (B), and locate on sprockets.
6. Adjust the chain tension. Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.
7. Position RH reel tube (A) against reel drive, and engage stub shaft into U-joint (B) pilot hole.
8. Rotate reel until holes in end of reel tube and U-joint line up.

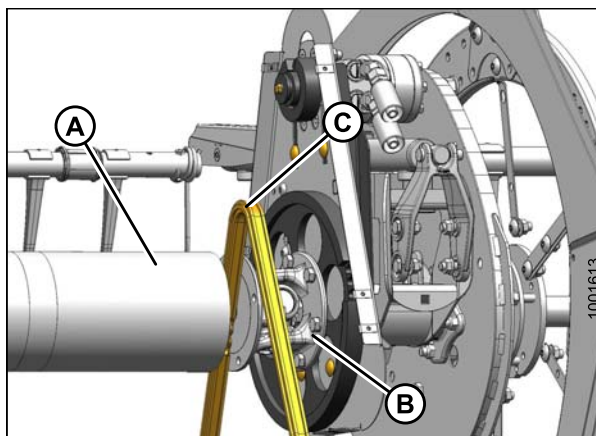


Figure 4.174

A - Reel tube  
C - Drive chain

B - U-joint

## MAINTENANCE AND SERVICING

9. Apply Loctite®#243 (or equivalent) to four 1/2 in. bolts (A), and install with lock washers.
10. Torque to 75–85 ft·lbf (102–115 N·m).
11. Remove temporary reel support.
12. Reinstall drive covers.

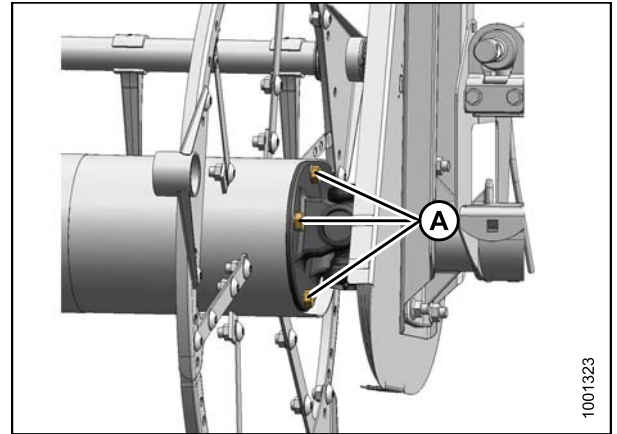


Figure 4.175

### Method 2: Breaking the Chain

1. Grind off head of a link rivet on chain (A), punch out the rivet, and remove chain.
2. Grind off the head from one of the link rivets on the new chain, and punch out rivet to separate the chain.
3. Locate ends of chain on sprocket.

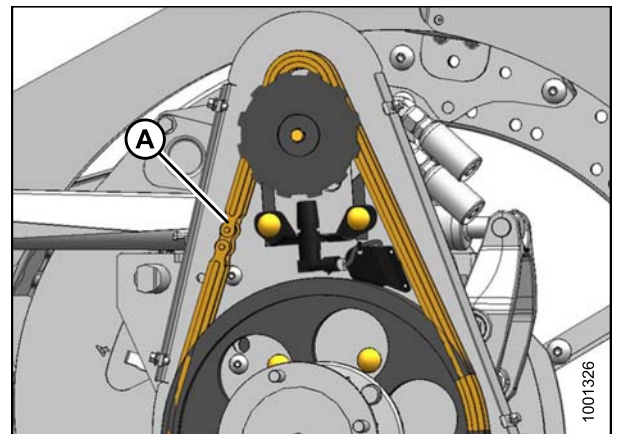


Figure 4.176

4. Install pin connector (J) (not available as a MacDon part) into chain, preferably from sprocket backside.
5. Install connector (K) onto pins.
6. Install spring clip (L) onto front pin (M) with closed end of clip in direction of sprocket rotation.
7. Locate one leg of clip in groove of aft pin (N).
8. Press other leg of spring clip over face of aft pin (N) until it slips into groove. Do not press clip lengthwise from closed end.
9. Ensure clip is seated in grooves of pins.
10. Adjust the chain tension. Refer to Section [High-Torque Reel Drive Tension Adjustment, page 224](#).
11. Reinstall drive covers.

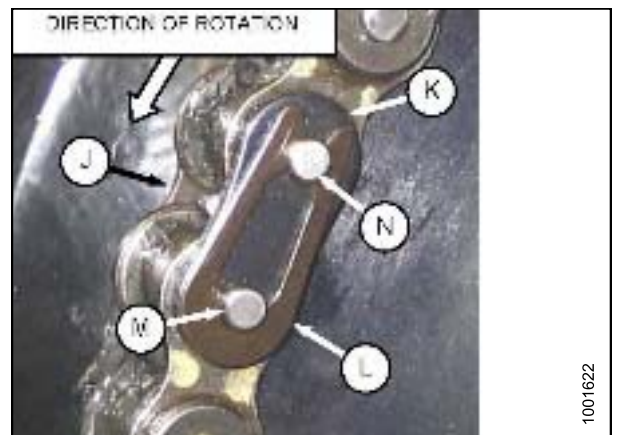


Figure 4.177

J - Pin connector  
L - Spring clip  
N - Aft pin

K - Connector  
M - Front pin

## MAINTENANCE AND SERVICING

### Drive Chain Replacement – Single-Reel, Standard-Torque Drive

To replace the standard-torque drive chain on a single-reel header, follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove four screws (A), and remove reel drive cover (B).

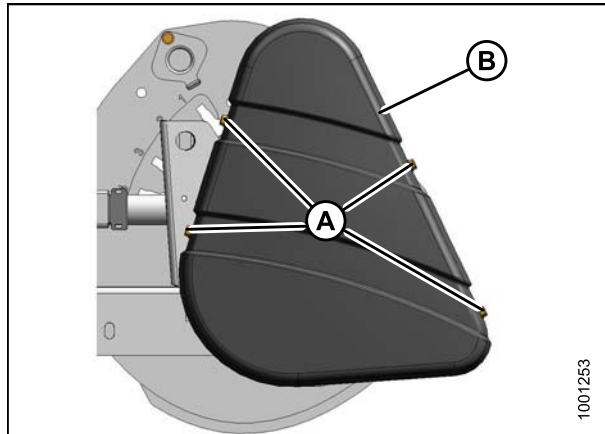


Figure 4.178

3. Loosen bolts (A). Slide motor (b) and motor mount (C) down towards reel shaft.

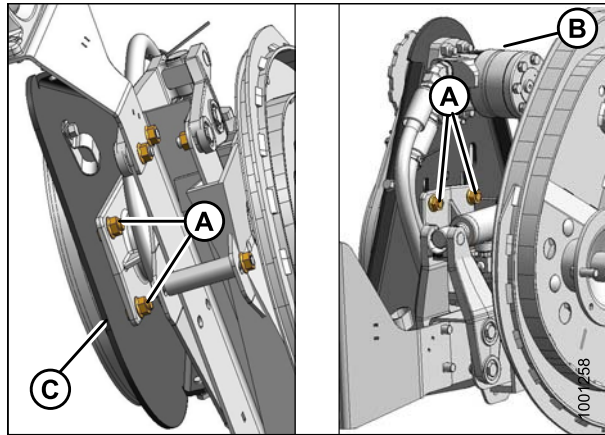


Figure 4.179

4. Remove chain (A).
5. Position new chain (A) around sprockets.
6. Slide motor (B) and motor mount (C) until tension on chain (A) is such that hand force deflects the chain 1/8 inch (3 mm) at mid-span.
7. Tighten nuts (A), and re-check tension.
8. Reinstall drive cover.

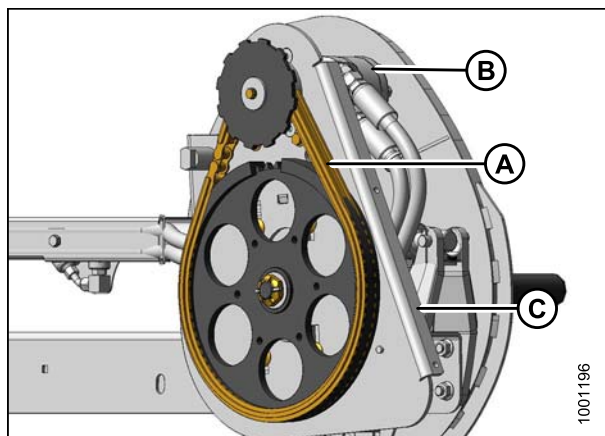


Figure 4.180

A - Drive chain  
B - Motor  
C - Motor mount



## MAINTENANCE AND SERVICING

### 4.12.5 Reel Drive Sprocket

#### *Sprocket Replacement – Double-Reel Standard-Torque and Single-Reel High-Torque Drive*

To replace the sprocket on a double-reel header with standard-torque drive or on a single-reel header with high-torque drive, follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove reel drive cover(s):
  - a. **For Double Reel:** Remove six screws (A), and remove upper cover (B).
  - b. **For Single Reel High Torque:** Remove four screws (C), and remove cover (D).

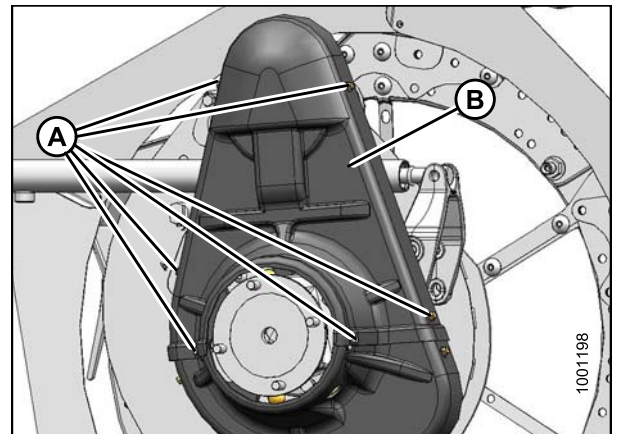


Figure 4.181: Double Reel

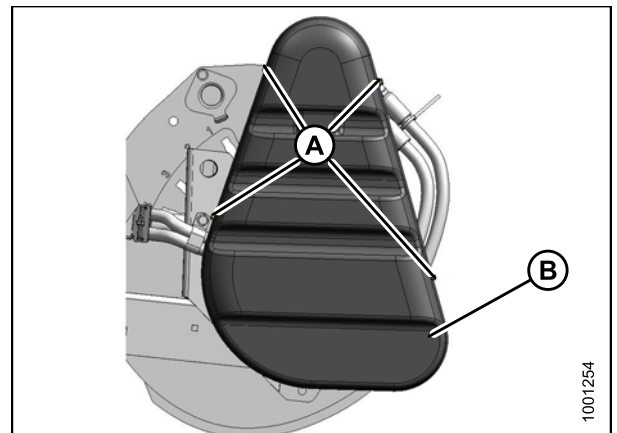


Figure 4.182: Single Reel HighTorque

3. Release tension on chain (A). Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.
4. If **STANDARD TORQUE** drive:
  - a. Remove bolt (B), lock washer, and flat washer (C).
  - b. Remove speed sensor disc (D) (if installed).

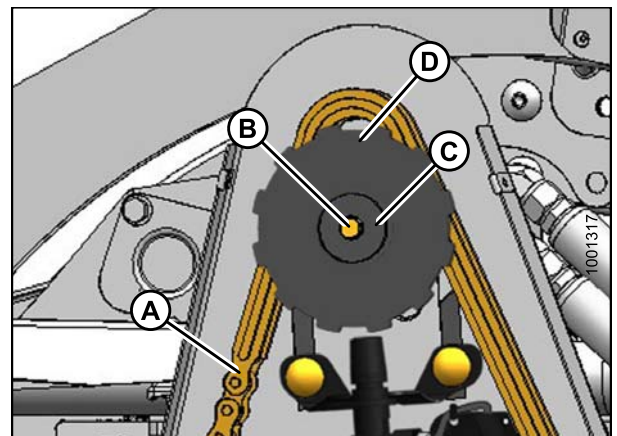


Figure 4.183: Standard Torque

## MAINTENANCE AND SERVICING

5. If **HIGH TORQUE** drive:
  - a. Remove cotter pin (A) and slotted nut (B).
  - b. Remove speed sensor disc (C) (if installed).

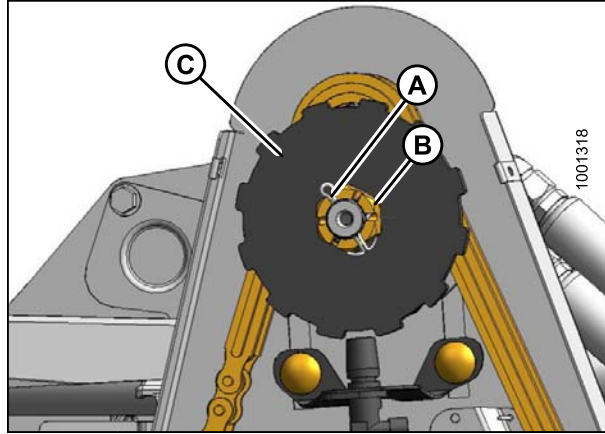


Figure 4.184: High Torque

6. Slip chain (A) off drive sprocket (B).
7. Remove sprocket (B) from shaft.

### IMPORTANT

**Do not use pry bar and/or hammer to remove sprocket; this will damage the motor. If sprocket does not come off by hand, use a puller.**

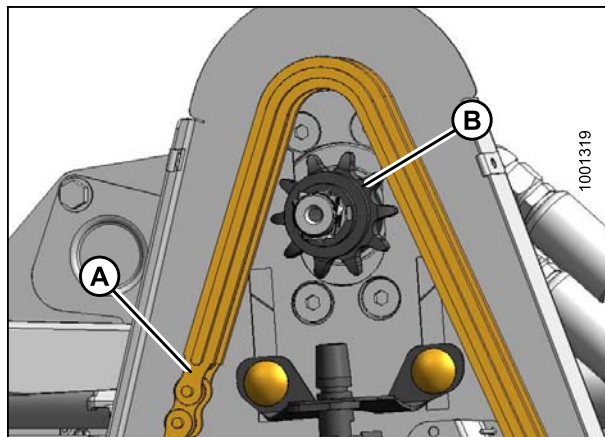


Figure 4.185

8. Align keyway (A) in new sprocket with key (B) in shaft, and slide new sprocket onto shaft.
9. Slip chain over drive sprocket.
10. Install speed sensor disc (if applicable) onto shaft.

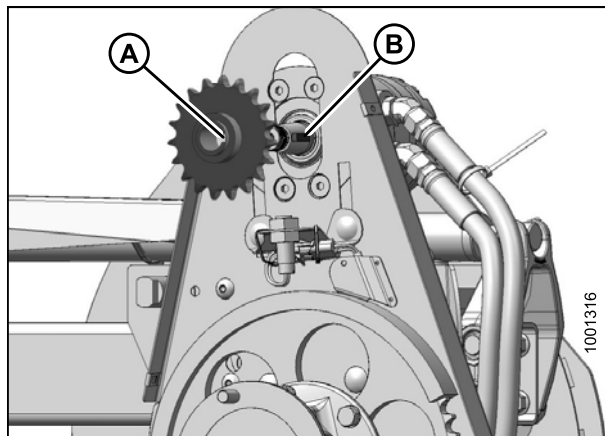


Figure 4.186

## MAINTENANCE AND SERVICING

11. If **HIGH TORQUE** drive:
  - a. Install slotted nut (B), and torque to 10–20 in-lbf (1.1–2.2 N·m).
  - b. Install cotter pin (A). Tighten nut to next slot if required.

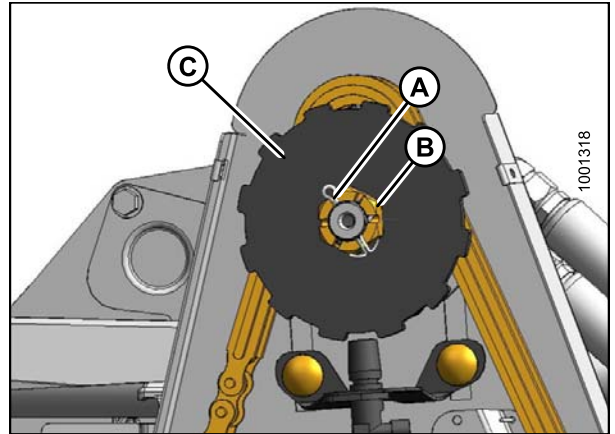


Figure 4.187

12. If **STANDARD TORQUE** drive:
  - a. Install flat washer (C), lock washer, and bolt (B).
  - b. Torque bolt to 18 lbf·ft (24 N·m).
13. Tighten chain (A). Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.

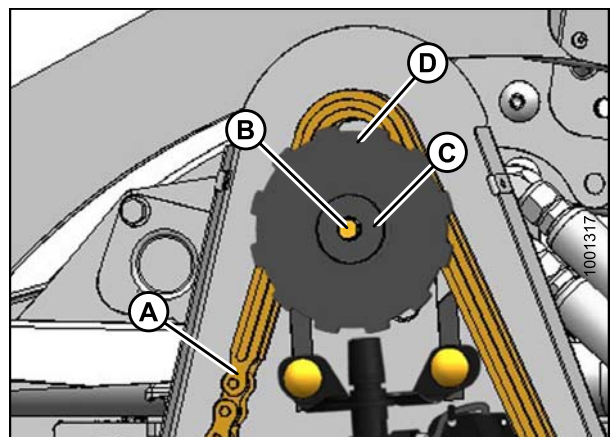


Figure 4.188

14. If **Double Reel**: Reinstall drive cover(s) by positioning upper cover (B) onto drive, and secure with six screws (A).

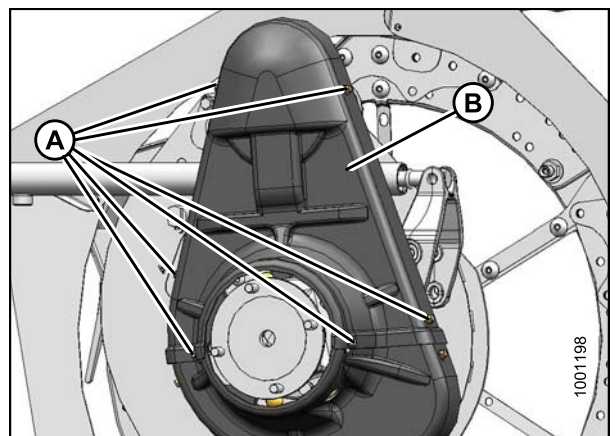


Figure 4.189: Double Reel



## MAINTENANCE AND SERVICING

15. If **Single Reel**: Reinstall drive cover by positioning cover (B) onto drive, and secure with four screws (A).

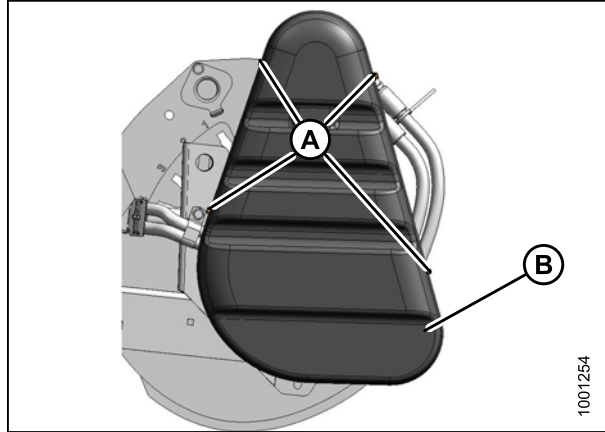


Figure 4.190: Single Reel

### Sprocket Replacement – Single-Reel Standard-Torque Drive

To replace the sprocket on a single-reel header with standard-torque drive, follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove four screws (A), and remove reel drive cover (B).

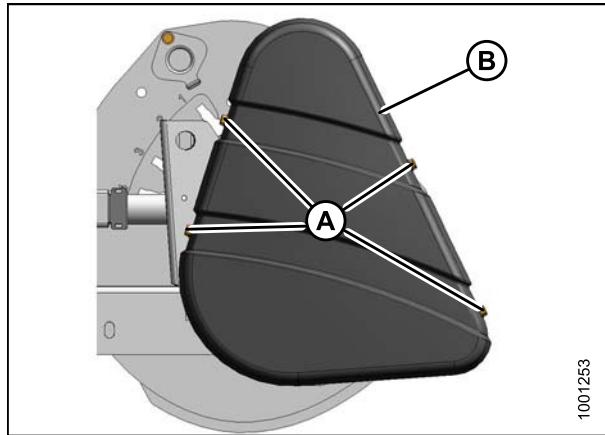


Figure 4.191

3. Loosen bolts (C).
4. Slide motor (D) and motor mount (E) down towards reel shaft.
5. Remove bolt (F), lock washer, and flat washer (G).
6. Remove speed sensor disc (H) (if installed).

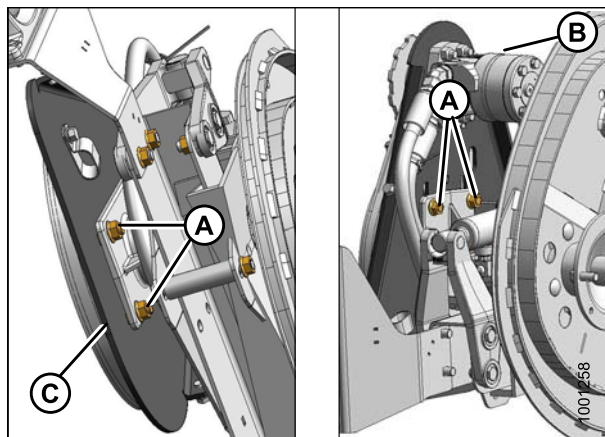


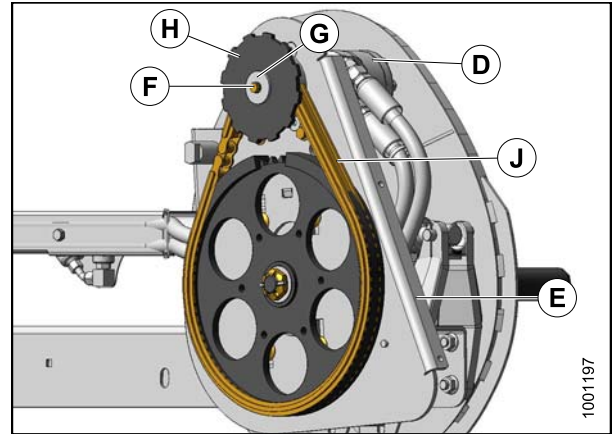
Figure 4.192

C - Bolts

E - Motor Mount

## MAINTENANCE AND SERVICING

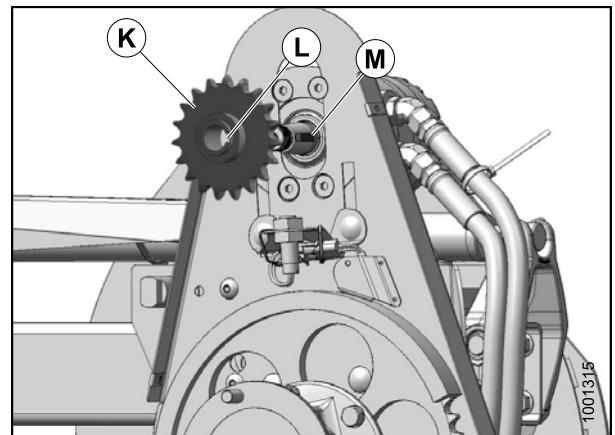
- Slip chain (J) off drive sprocket.



**Figure 4.193**

D - Reel drive motor  
E - Motor mount  
F - Bolt  
G - Flat washer  
H - Speed sensor disc  
J - Drive chain

- Remove sprocket (K) from shaft.  
**IMPORTANT:** Do **not** use pry bar and/or hammer to remove sprocket; this will damage the motor. Use a puller if sprocket does not come off by hand.
- Align keyway (L) in new sprocket with key (M) in shaft, and slide new sprocket onto shaft.
- Install speed sensor disc (H) (if applicable) onto shaft, and secure with flat washer (G), lock washer, and bolt (F).
- Torque bolt to 18 lbf·ft (24 N·m).
- Position chain (J) around sprockets.
- Slide motor (D) and motor mount (E) upward until tension on chain (D) is such that hand force deflects the chain 1/8 inch (3 mm) at mid-span.
- Tighten nuts (C), and recheck tension.
- Reinstall drive cover.



**Figure 4.194**

K - Sprocket  
L - Keyway  
M - Key

### 4.12.6 Reel Drive U-Joint – Double Reel

Lubricate the U-joint in accordance with the requirements in Section [4.4.5 Lubrication and Servicing, page 152](#). If the U-joint is severely worn or damaged, it should be replaced.

## MAINTENANCE AND SERVICING

### *U-Joint Replacement*

To replace the U-joint, follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove six screws (A), and remove upper cover (B).

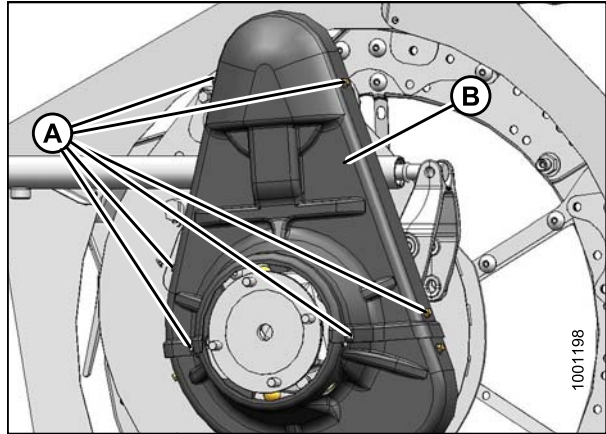


Figure 4.195

3. Remove three screws (A), and remove lower cover (B).

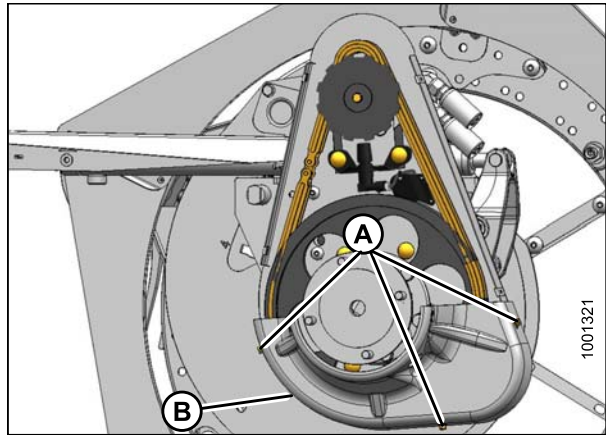


Figure 4.196

4. Support inboard end of right reel with a front end loader and nylon slings (or equivalent setup).

### **IMPORTANT**

To avoid damaging or denting center tube, support reel as close as possible to the end disc.

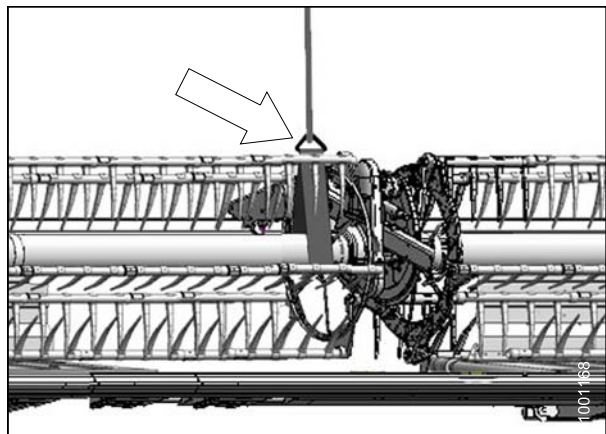


Figure 4.197

## MAINTENANCE AND SERVICING

5. Remove four bolts (A) attaching reel tube to U-joint flange (B), and move reel sideways to disengage sub shaft from U-joint.

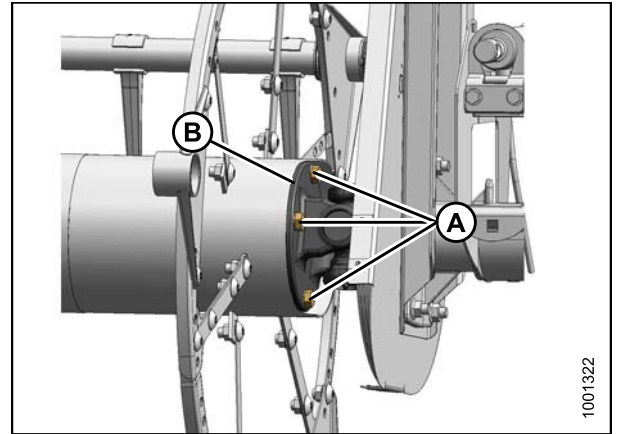


Figure 4.198

6. Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
7. Remove U-joint.

**NOTE:** Right hand reel may need to be moved sideways for U-joint to clear reel tube.

8. Position U-joint flange (B) onto driven sprocket (C) as shown. Install six bolts (A), and hand-tighten. Do **NOT** torque at this time.
9. Position RH reel tube against reel drive, and engage stub shaft into U-joint pilot hole.
10. Rotate reel until holes in end of reel tube and U-joint flange (F) line up.
11. Install four bolts (A), and torque to 70–80 ft·lbf (95–108 N·m).
12. Remove temporary reel support.
13. Reattach reel drive covers.

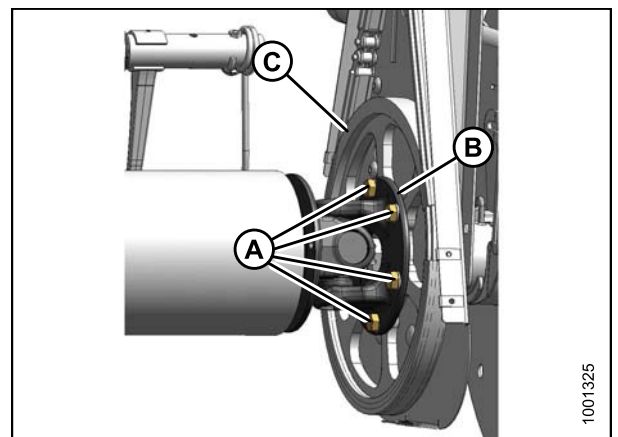


Figure 4.199

### 4.12.7 Reel Drive Motor

The reel drive motor does not require regular maintenance or servicing. If problems develop with the motor, it should be removed and serviced at your MacDon Dealer.

#### *High Torque Reel Drive Motor Replacement*

To replace a high torque drive motor, follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.

## MAINTENANCE AND SERVICING

Depending on your equipment, remove reel drive cover(s):

1. **DOUBLE REEL:** Remove six screws (A), and remove upper cover (B).

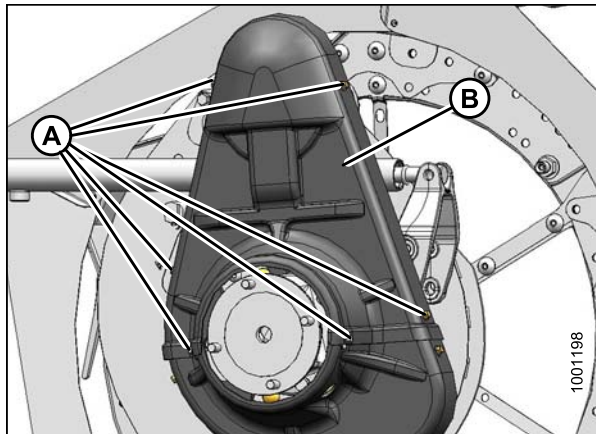


Figure 4.200: Double Reel

2. **SINGLE REEL HIGH TORQUE** Remove four screws (A), and remove cover (B).

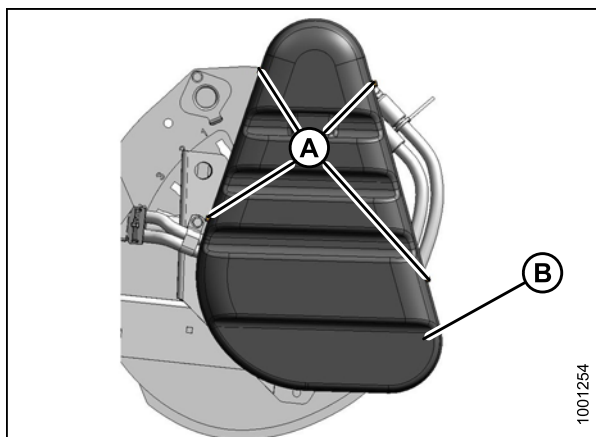


Figure 4.201: Single Reel High Torque

3. Loosen chain (A). Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.
4. If **STANDARD TORQUE** drive:
  - a. Remove bolt (B), lock washer, and flat washer (C).
  - b. Remove speed sensor disc (D) (if installed).

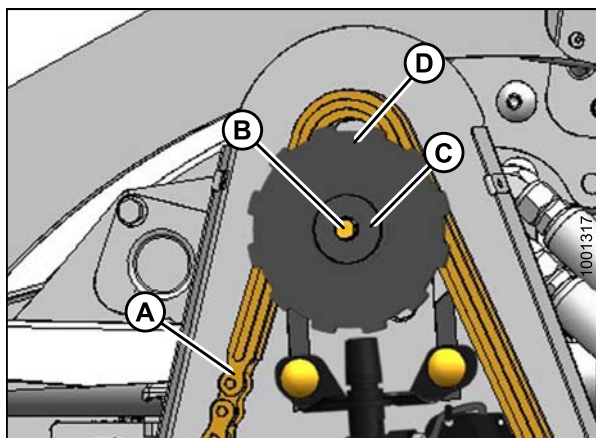


Figure 4.202

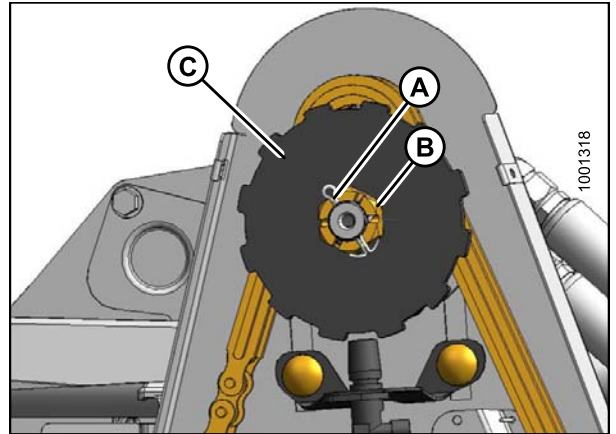
A - Drive chain  
C - Flat washer

B - Bolt  
D - Speed sensor disc



## MAINTENANCE AND SERVICING

5. If **HIGH TORQUE** drive:
  - a. Remove cotter pin (A) and slotted nut (B).
  - b. Remove speed sensor disc (C) (if installed).



**Figure 4.203: High Torque**

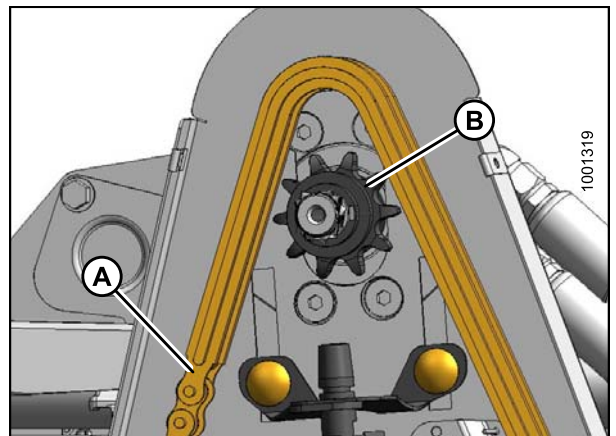
A - Cotter pin                      B - Slotted nut  
C - Speed sensor disc

6. Slip chain (A) off drive sprocket (B).
7. Remove sprocket (B) from shaft.

### **IMPORTANT**

**Do not use pry bar and/or hammer to remove sprocket; this will damage the motor. If sprocket does not come off by hand, use a puller.**

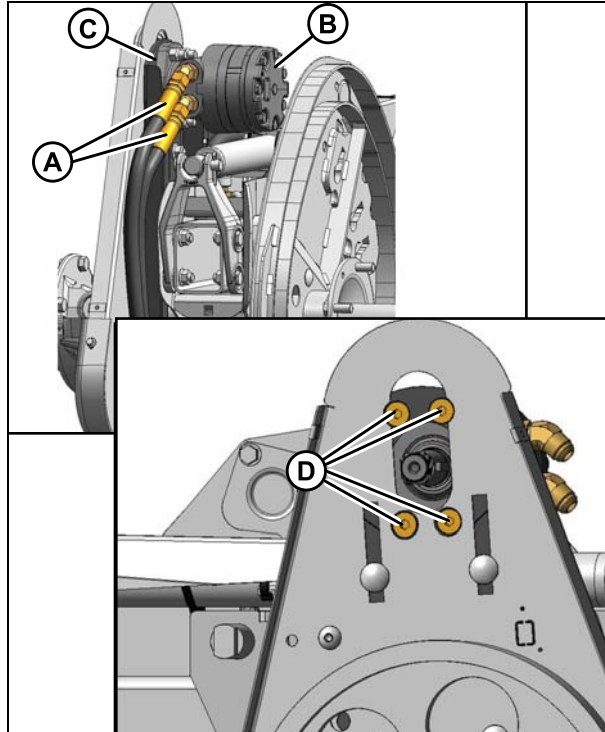
- 8.



**Figure 4.204**

## MAINTENANCE AND SERVICING

9. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.
10. Slide motor (B) and motor mount (C) up or down so that attachment bolts (D) are exposed in holes and slots in back plate.

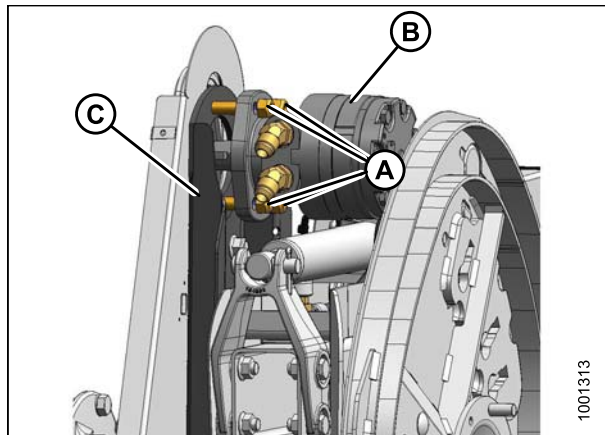


**Figure 4.205**

A - Hydraulic lines  
C - Motor mount

B - Reel drive motor  
D - Attachment bolts

11. Remove four nuts (A) and attachment bolts (shown as (D) in previous image, and remove motor (B).
12. Position new hydraulic motor (B) on motor mount (C), and install four countersunk attachment bolts (shown as (D) in previous image) through holes and slots in chain case to secure motor to motor mount.
13. Install nuts (A), and torque to 75 ft-lbf (102 N-m).



**Figure 4.206**

A - Nuts  
C - Motor mount

B - Reel drive motor



## MAINTENANCE AND SERVICING

14. Align keyway in sprocket (A) with key (B) in shaft, and slide new sprocket onto shaft.
15. Slip chain over drive sprocket.
16. Install speed sensor disc (if applicable) onto shaft.

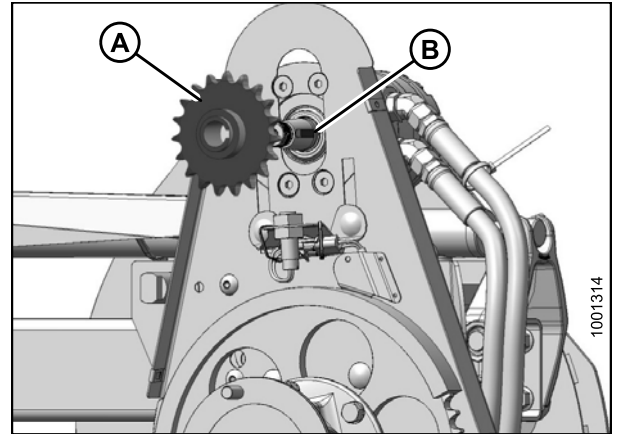


Figure 4.207

17. If **HIGH TORQUE** drive:
  - a. Install slotted nut (B), and torque to 10–20 in·lbf (1.1–2.2 N·m).
  - b. Install cotter pin (A). Tighten nut to next slot if required.

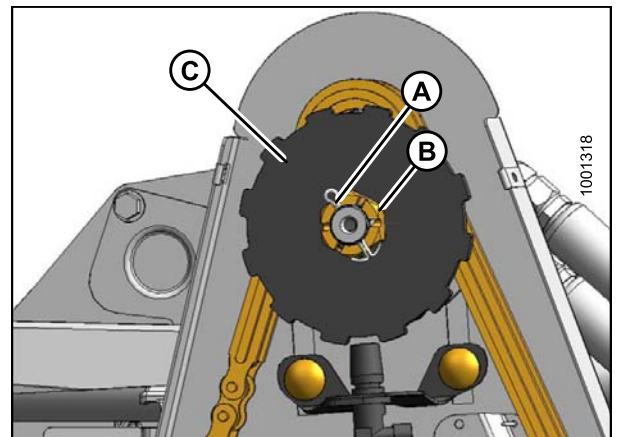


Figure 4.208: High Torque

18. If **STANDARD TORQUE** drive:
  - a. Install flat washer (C), lock washer, and bolt (B).
  - b. Torque bolt (B) to 18 lbf·ft (24 N·m).
19. Tighten chain (A). Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.

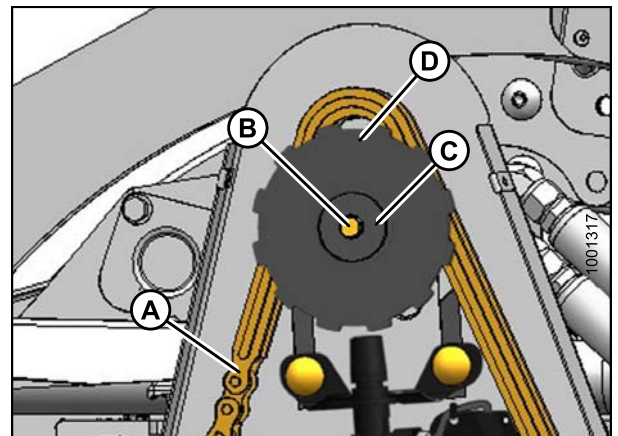


Figure 4.209: Standard Torque

## MAINTENANCE AND SERVICING

20. Reattach hydraulic lines (A) to motor (B).

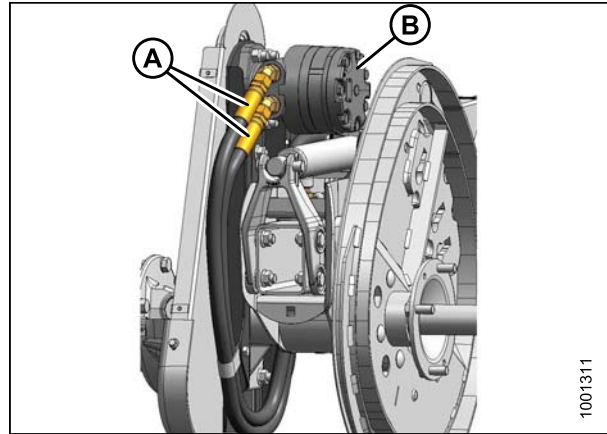


Figure 4.210

Depending on your equipment, reinstall drive cover(s):

21. **DOUBLE REEL:** Position upper cover (B) onto drive, and secure with six screws (A).

a.

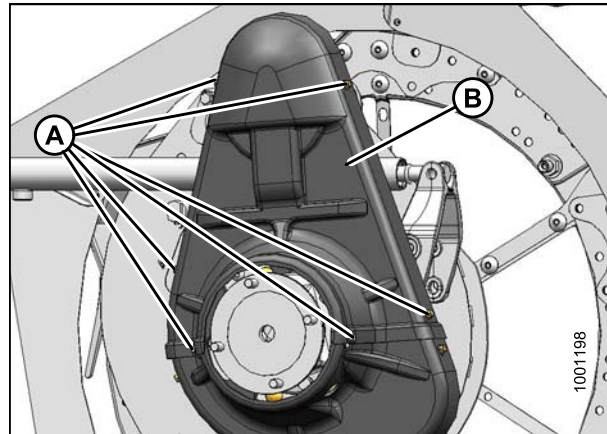


Figure 4.211: Double Reel

22. **Single Reel High Torque:** Position cover (B) onto drive, and secure with four screws (A).

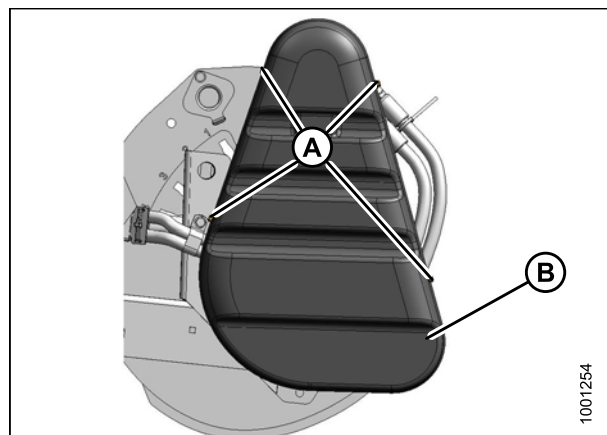


Figure 4.212: Single Reel High Torque

## MAINTENANCE AND SERVICING

### Single Reel Drive Motor Replacement – Standard Torque

To replace a single reel drive motor (standard torque), follow these steps.

1. Lower header and reel, shut down combine, and remove key from ignition.
2. Remove four screws (A), and remove reel drive cover (B).

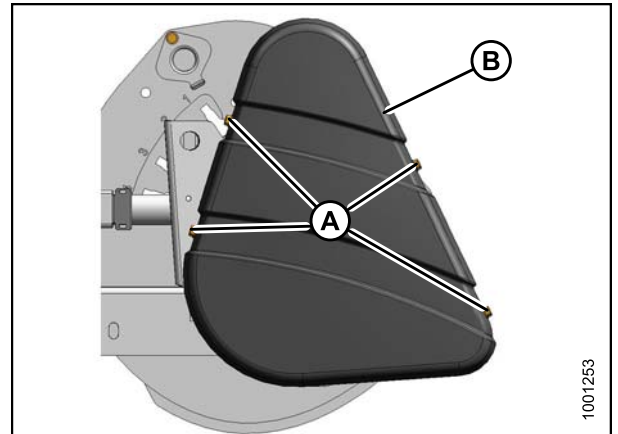


Figure 4.213

3. Loosen chain (A). Refer to Section [High-Torque Reel Drive Tension Adjustment](#), page 224.
4. Remove speed sensor disc (B) and drive sprocket. Refer to Section [Sprocket Replacement – Single-Reel Standard-Torque Drive](#), page 236.
5. Disconnect hydraulic lines (C) at motor. Cap or plug open ports and lines.

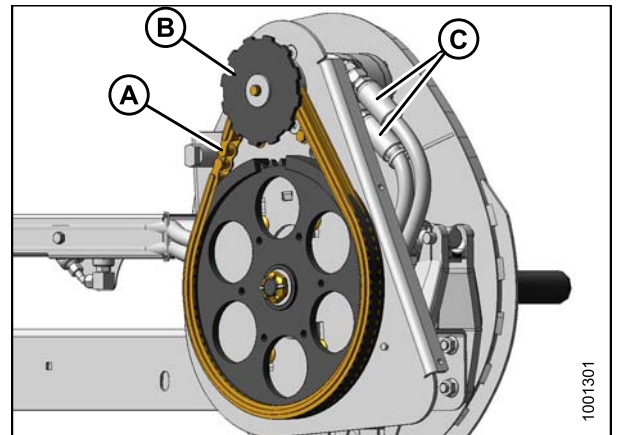


Figure 4.214

A - Drive chain B - Speed sensor disc C - Hydraulic lines

6. Remove four nuts (A) and bolts (B), and remove motor (C).
7. Position new hydraulic motor (C) on chain case (D), and install four countersunk bolts (B) through holes in chain case to secure motor.
8. Install nuts (A), and torque to 75 ft-lbf (102 N-m).
- 9.
- 10.

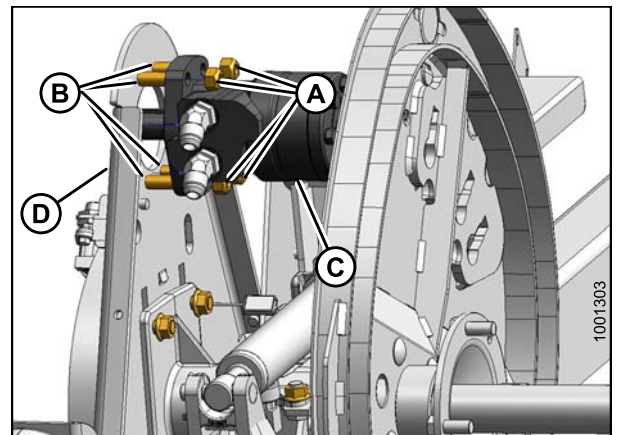


Figure 4.215

A - Nuts B - Bolts  
C - Hydraulic motor D - Chain case

## MAINTENANCE AND SERVICING

### 4.12.8 Reel Speed Sensor

#### *Reel Speed Sensor Replacement – John Deere*

To replace the reel speed sensor for a John Deere combine, follow these steps.

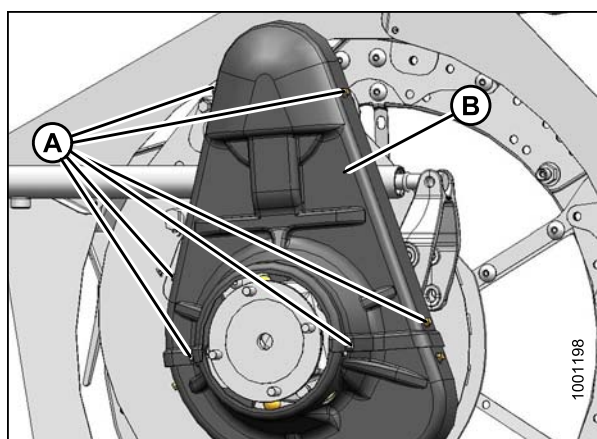
### **WARNING**

**Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.**

1. Lower header and reel, shut down combine, and remove key from ignition.

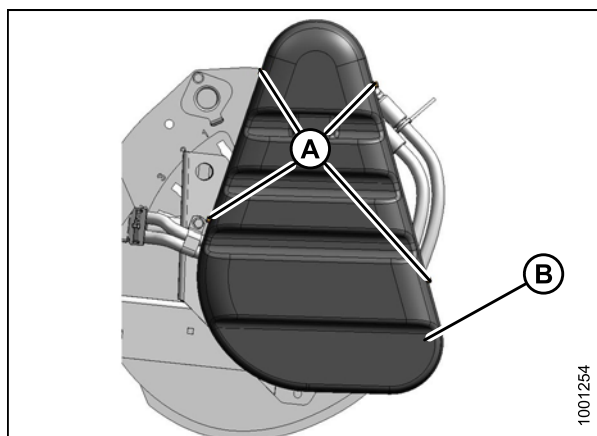
Depending on your equipment, remove reel drive cover as follows:

1. **DOUBLE REEL:** Remove six screws (A), and remove upper cover (B).



**Figure 4.216: Double Reel**

2. **SINGLE REEL HIGH TORQUE:** Remove four screws (A), and remove cover (B).



**Figure 4.217: Single Reel High Torque**

## MAINTENANCE AND SERVICING

3. Maintain a 0.12 inch (3 mm) gap between sensor disc (A) and sensor (B). Adjust with nuts (C) as required.
4. Replace sensor as follows:
  - a. Disconnect connector (D).
  - b. Remove top nut (C), and remove sensor (B).
  - c. Remove top nut from new sensor (C), and locate in support.
  - d. Secure with top nut (C).
  - e. Adjust gap between sensor disc (A) and sensor (B) to 0.12 in. (3 mm).
  - f. Connect to harness (D) to sensor.

### IMPORTANT

Ensure sensor electrical harness does NOT contact chain or sprocket.

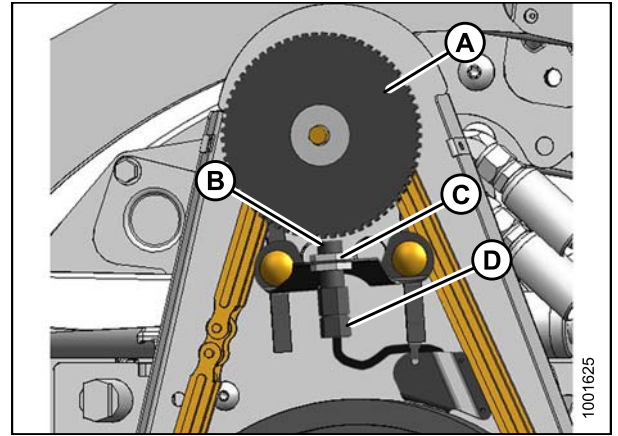


Figure 4.218

A - Sensor disc  
C - NutS

B - Speed sensor  
D- Connector

### Reel Speed Sensor Replacement – Lexion 500

To replace the reel speed sensor for a Lexion 500 series combine, follow these steps:



### WARNING

Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

1. Lower header and reel, shut down combine, and remove key from ignition.

Depending on your equipment, remove the reel drive cover as follows:

1. **DOUBLE REEL:** Remove six screws (A), and remove upper cover (B).

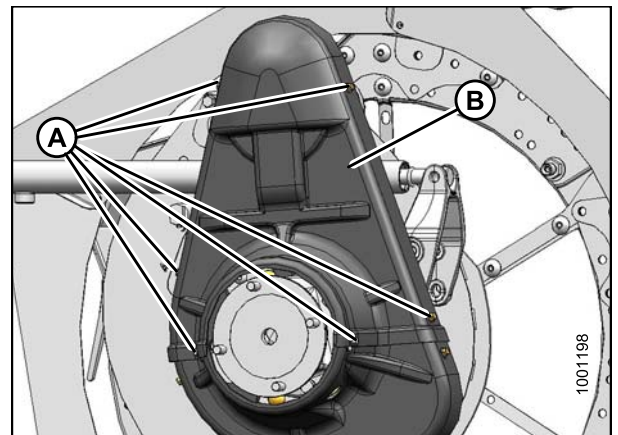


Figure 4.219: Double Reel



## MAINTENANCE AND SERVICING

2. **SINGLE REEL HIGH TORQUE:** Remove four screws (A), and remove cover (B).
  - a.
  - b.

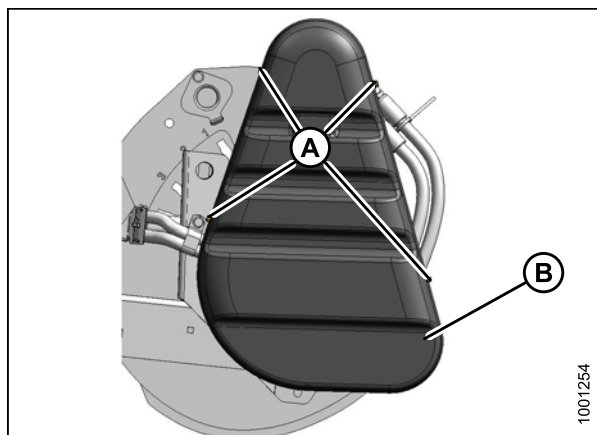


Figure 4.220: Single Reel High Torque

3. Maintain a 0.12 in. (3 mm) gap between sensor disc (A) and sensor (B). Adjust by bending support (EJ).
4. Replace sensor as follows:
  - a. Disconnect connector (C).
  - b. Remove screw (D) attaching sensor, and remove sensor (B).
  - c. Locate new sensor in support, and secure with screw (D).
  - d. Adjust gap between sensor disc (A) and sensor (B) to 0.12 in. (3 mm) by bending support (E).
  - e. Connect to harness at (C).

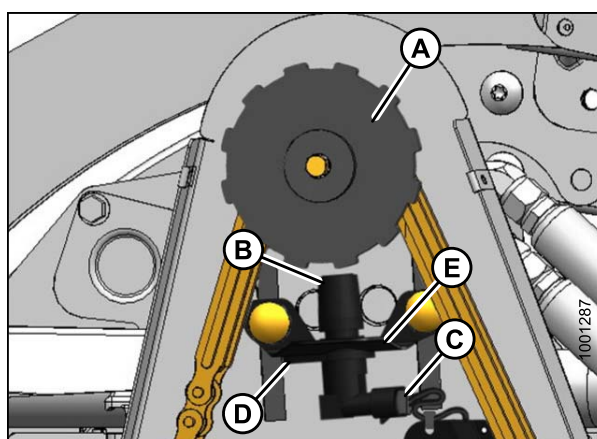


Figure 4.221

A - Sensor disc  
B - Sensor  
C - Connector  
D - Screw  
E - Support

### IMPORTANT

Ensure sensor electrical harness does not contact chain or sprocket.

### Reel Speed Sensor Replacement – Lexion 400

To replace the reel speed sensor for a Lexion 400 combine, follow these steps:

### WARNING

Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

1. Lower header and reel, shut down combine, and remove key from ignition.

## MAINTENANCE AND SERVICING

Depending on your equipment, remove reel drive cover:

1. **DOUBLE REEL:** Remove six screws (A), and remove upper cover (B).

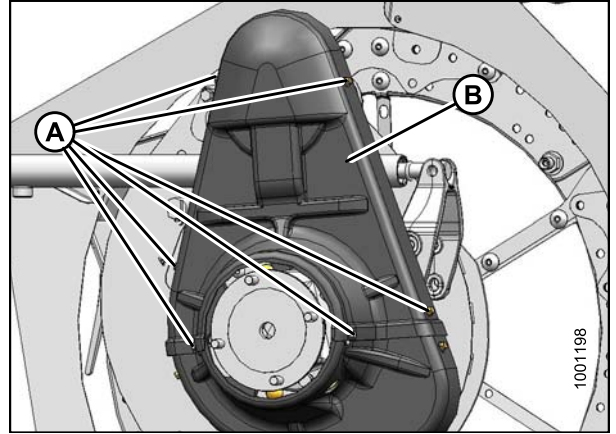


Figure 4.222: Double Reel

2. **SINGLE REEL HIGH TORQUE:** Remove four screws (A), and remove cover (B).

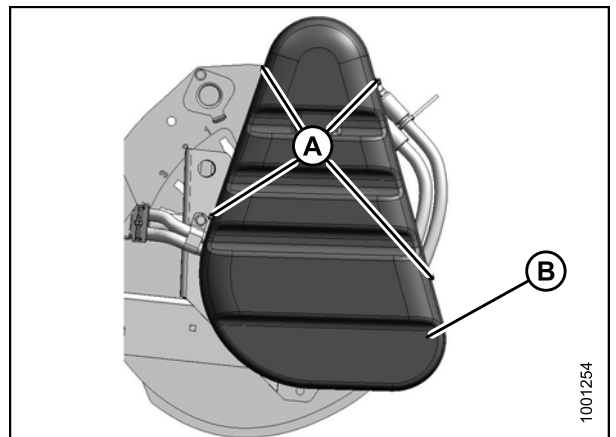


Figure 4.223: Single Reel High Torque



## MAINTENANCE AND SERVICING

3. Maintain a 0.12 in. (3 mm) gap between sensor disc (A) and sensor (B). Adjust with nuts (D) as required.
4. Replace sensor as follows:
  - a. Disconnect connector (C).
  - b. Remove top nut (D), and remove sensor (B).
  - c. Remove top nut from new sensor, and locate in support.
  - d. Secure with top nut (D).
  - e. Adjust gap between sensor disc (A) and sensor (B) to 0.12 in. (3 mm) with nuts (D).
  - f. Connect to harness at (C).

### IMPORTANT

Ensure sensor electrical harness does not contact chain or sprocket.

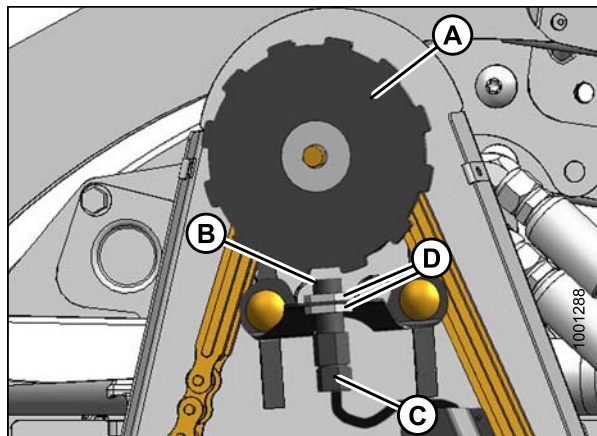


Figure 4.224

A - Sensor disc  
C - Connector

B - Sensor  
D - Nuts

### Reel Speed Sensor Replacement – AGCO

To replace the reel speed sensor for an AGCO combine, follow these steps.

### WARNING

Stop combine engine, and remove key before making adjustments to machine. A child or even a pet could engage the drive.

1. Lower header and reel, shut down combine, and remove key from ignition.

Depending on your equipment, remove reel drive cover as follows:

1. **DOUBLE REEL:** Remove reel drive cover by removing six screws (A), and remove upper cover (B):

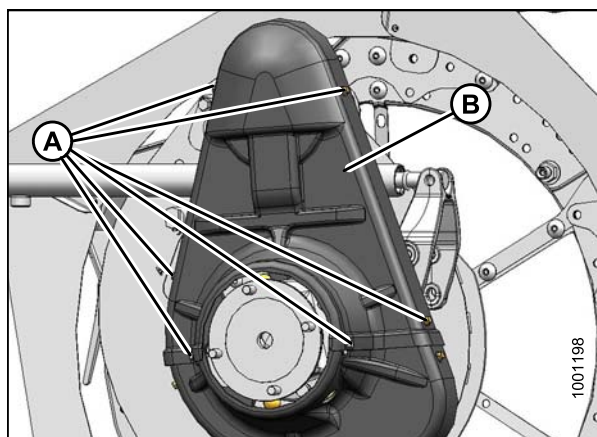


Figure 4.225: Double Reel

## MAINTENANCE AND SERVICING

2. **SINGLE REEL HIGH TORQUE:** Remove reel drive cover by removing four screws (A), and remove cover (B).

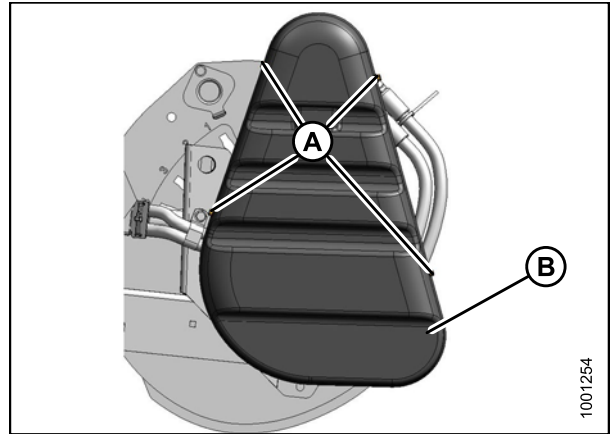


Figure 4.226: Single Reel High Torque

3. Maintain a 0.02 in. (0.5 mm) gap between sensor disc (A) and sensor (B). Adjust by bending support (C).

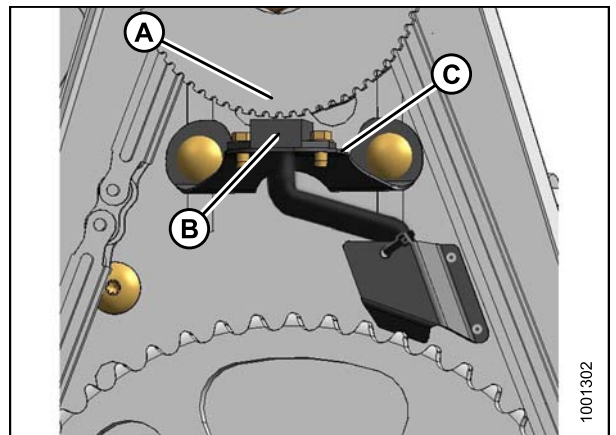


Figure 4.227

Depending on your equipment, replace sensor as follows:

4. **DUAL REEL:** Disconnect connector (A). For a single reel header, see next step.

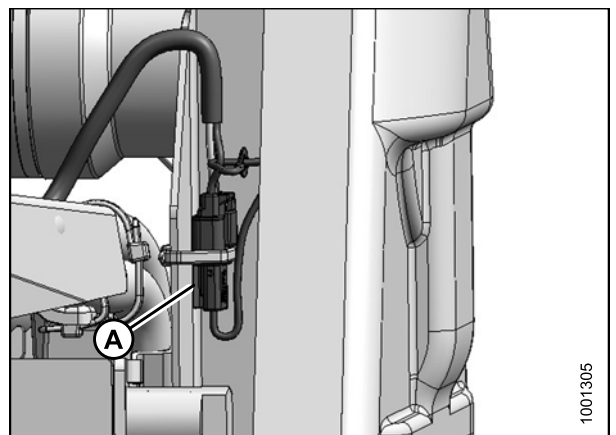


Figure 4.228: Dual Reel

## MAINTENANCE AND SERVICING

5. **SINGLE REEL:** Disconnect connector (A)

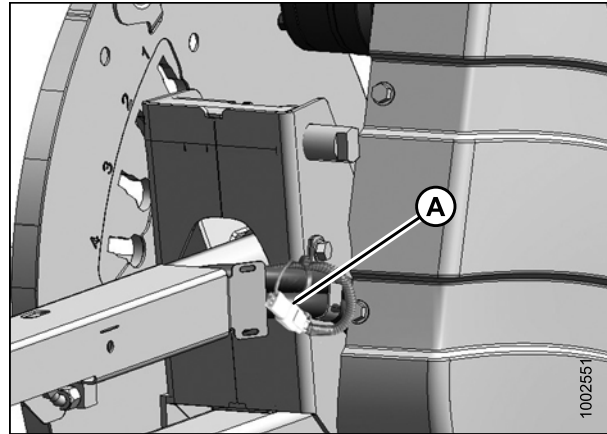


Figure 4.229: Single Reel

6. Cut cable tie (A) securing harness to cover.
7. Remove screws (B), and remove sensor (C) and harness. Bend cover (D) (if necessary) to remove harness.
8. Feed wire of new sensor behind cover (D) through chain case.
9. Locate new sensor in support (E), and attach with two screws (B).
10. Adjust gap between sensor disc (F) and sensor (C) to 0.02 in. (0.5 mm).

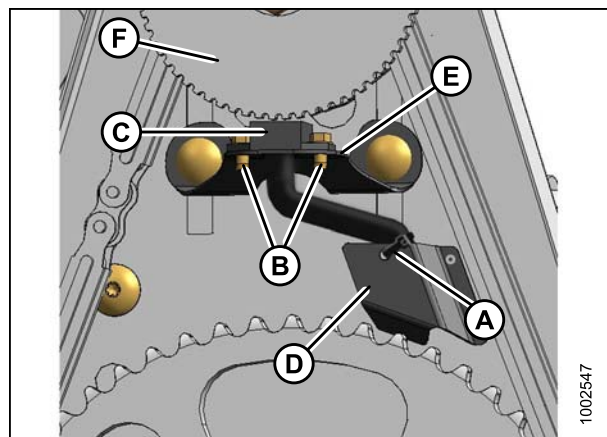


Figure 4.230

Depending on your equipment, connect to harness as follows:

11. **DUAL REEL:** Connect to harness at (A).

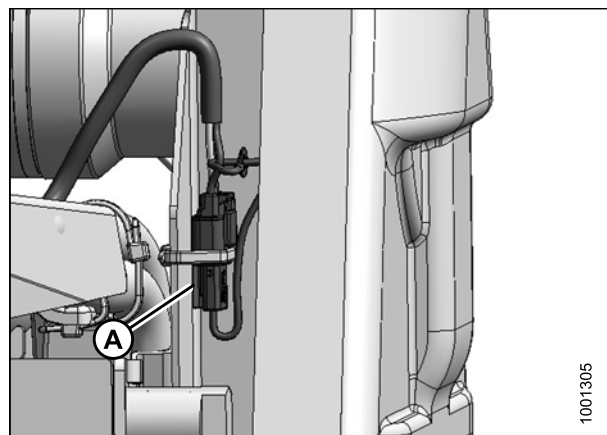


Figure 4.231: Dual Reel

## MAINTENANCE AND SERVICING

12. **SINGLE REEL:** Connect to harness at (A)

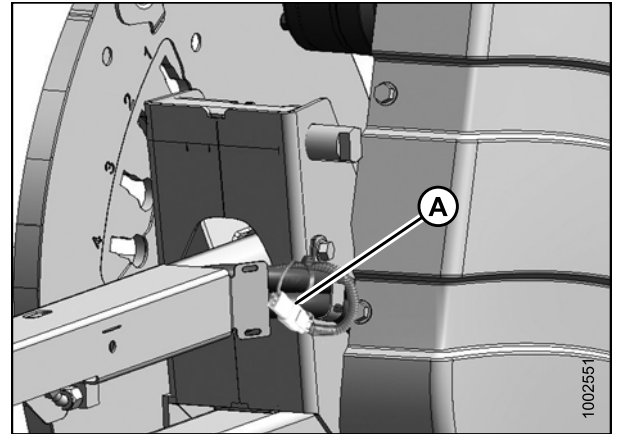


Figure 4.232: Single Reel

### 4.12.9 Reel Tines

## IMPORTANT

Keep reel tines in good condition. Straighten or replace as required.



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

### *Steel Tine Removal*

To remove steel tines, follow these steps.

1. Lower header, raise reel, and engage reel props.
2. Remove tine tube bushings from the applicable tine tube at center and left discs. Refer to Section [4.12.10 Tine Tube Bushings](#), page 256.
3. Temporarily attach reel arms (B) to reel disc, using original attachment locations (A).
4. Cut damaged tine(s) so that it can be removed from tube.
5. Remove bolts on existing tines, and slide tines over to replace tine cut off in previous step. Remove reel arms (B) from tube as required.

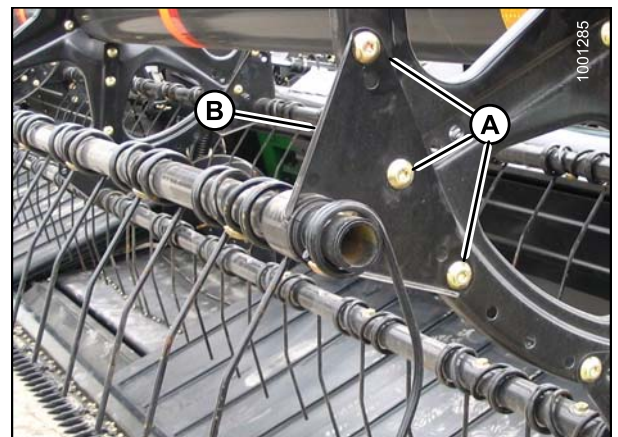


Figure 4.233

## MAINTENANCE AND SERVICING

### *Steel Tine Installation*

To install steel tines, follow these steps.

## IMPORTANT

**Ensure tine tube is supported at all times to prevent damage to the tube or other components**

1. Slide new tines and reel arms (A) onto end of tube.
2. Install tine tube bushings. Refer to Section [4.12.10 Tine Tube Bushings](#), page 256.
3. Attach tines to tine bar with bolts and nuts (C).

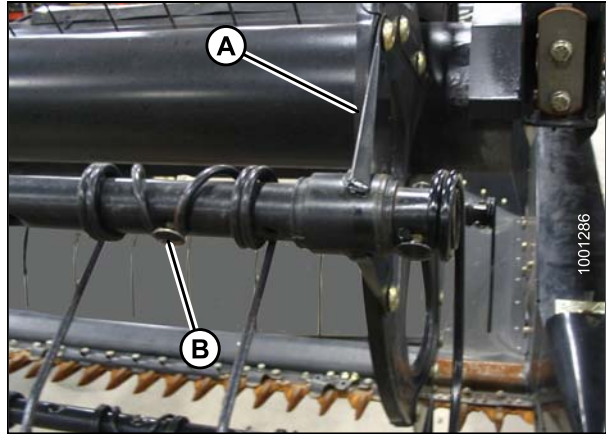


Figure 4.234

### *Plastic Finger Removal*

To remove plastic fingers, follow these steps.

1. Remove screw (A) with a Torx® Plus IP socket wrench.

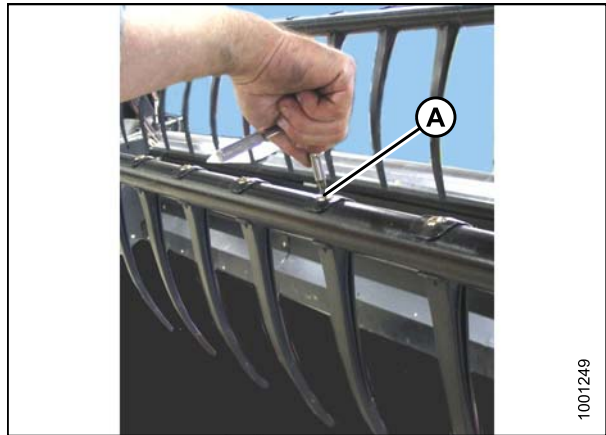


Figure 4.235



## MAINTENANCE AND SERVICING

2. Push finger top clip back toward reel tube, and remove from finger tube.



Figure 4.236

### *Plastic Finger Installation*

To install plastic fingers, follow these steps.

1. Position finger on rear of finger tube, and engage lug at bottom of finger in lower hole in finger tube.
2. Gently lift top flange, and rotate finger until lug in top flange engages upper hole in finger tube.

## **IMPORTANT**

**Do NOT apply force to finger prior to tightening mounting screw. Applying force to finger without screw tightened will break finger or shear off locating pins.**

3. Install screw (A), and torque to 75–80 in·lbf (8.5–9.0 N·m) with a Torx® -Plus 27 IP socket wrench.



Figure 4.237

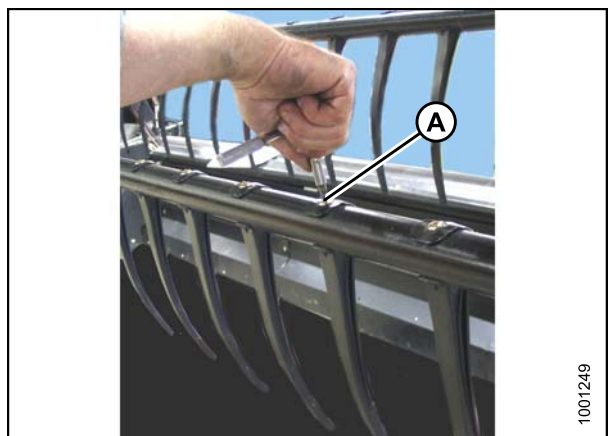


Figure 4.238



## MAINTENANCE AND SERVICING

### 4.12.10 Tine Tube Bushings



## WARNING

To avoid bodily injury from fall of raised reel, always engage reel props before going under raised reel for any reason.

#### *Bushing Removal – 6- and 9-Bat Pick-Up Reels*

To remove tine tube bushings from 6- or 9-bat pick-up reels, follow these steps.

## IMPORTANT

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

## IMPORTANT

Note the hole locations in arm and disc, and ensure bolts are reinstalled at original locations.

1. Lower header, raise reel fully and engage reel stops.
2. Remove bushings at center disc and left end disc as follows:
3. Remove bolts (A) securing arm (B) to disc at both locations.
4. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull clamp off tine tube.

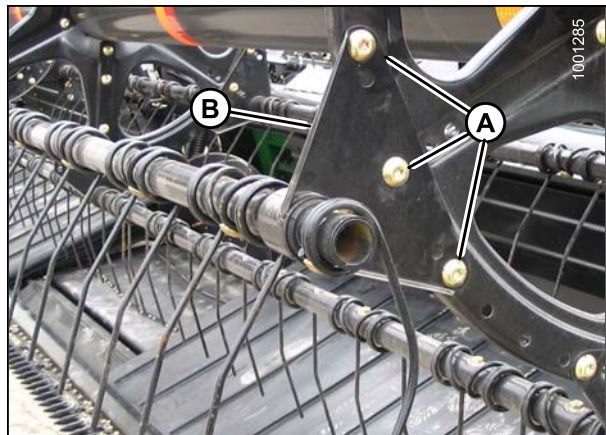


Figure 4.239

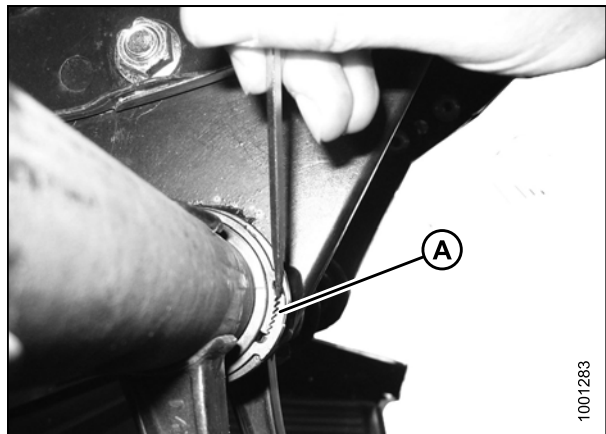


Figure 4.240

## MAINTENANCE AND SERVICING

5. Rotate arm (A) clear of disc, and slide arm inboard off bushing, and remove bushing halves (B). Remove bolt from tine next to arm (or remove plastic finger) if required so that arm can slide off bushing.

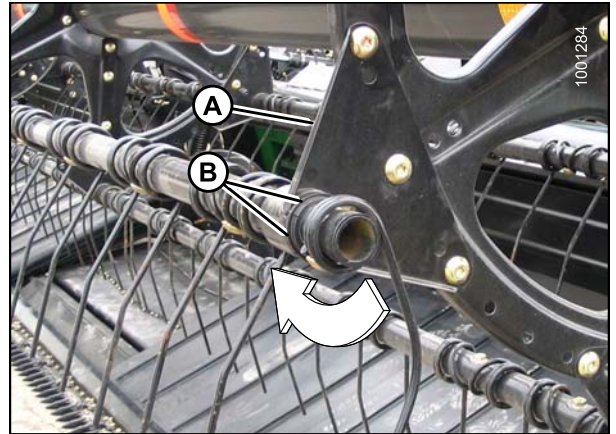


Figure 4.241

Remove cam end bushings as follows:

6. Remove bolt (A) at on cam linkage so that tine tube (B) is free to rotate.

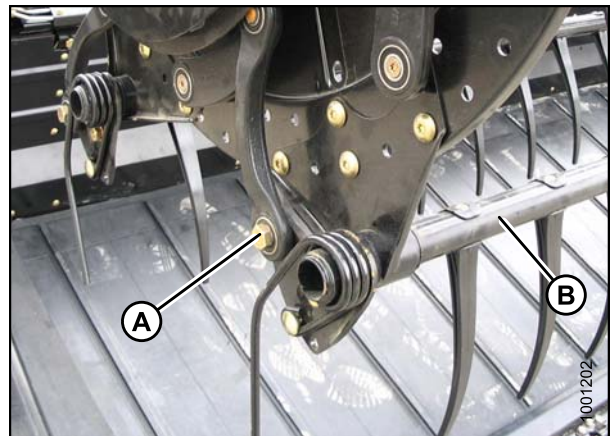


Figure 4.242

7. If required, remove bolt (A) securing the first tine to the left of the support so that tine is free to move inboard (to the right). If plastic finger is installed, refer to previous section for removal procedure
8. Slide tine tube to expose bushing. **Remove bushing halves (B).**

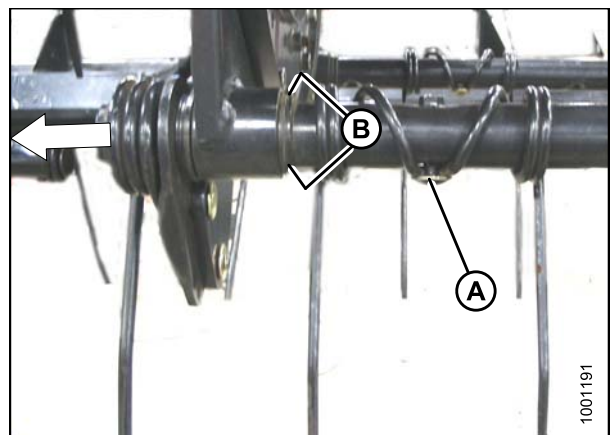


Figure 4.243

## MAINTENANCE AND SERVICING

### Bushing Installation – 6- and 9-Bat Pick-Up Reels

# IMPORTANT

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

To install tine tube bushings on 6- and 9-bat pick-up reels, follow these steps:

1. Lower header, raise reel fully and engage reel stops.
2. At cam end, position bushing halves (H) on tine tube so that lug in each bushing half locates in hole in tine tube.
3. Slide tine tube to the left side of header to locate bushings in reel arm.
4. At the center and left side disc, position bushing halves (D) on tine tube so that lug in each bushing half locates in hole in tine tube.
5. Slide reel arm (B) onto bushing, and position against disc at original location.
6. Install bolts (A) in original holes, and tighten.
7. Reinstall any fingers or tines that were removed.

8. Install bushing clamps as follows:
  - a. Spread clamp (J), and slip over tine tube adjacent to flangeless end of bushing.
  - b. Locate clamp on bushings (D) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.
  - c. Tighten clamp with modified channel lock pliers (K) so that finger pressure will **not** move clamp.

# IMPORTANT

Over-tightening clamp may result in breakage.

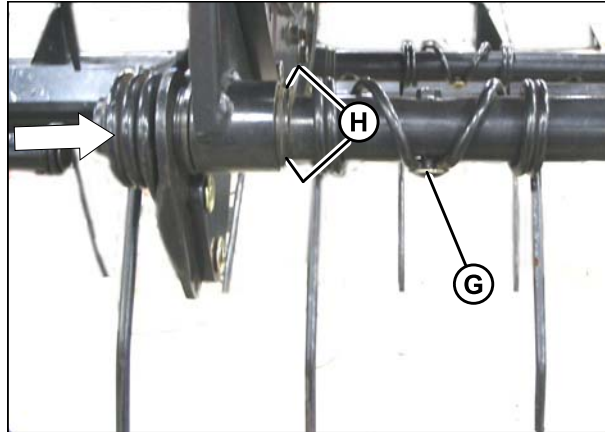


Figure 4.244

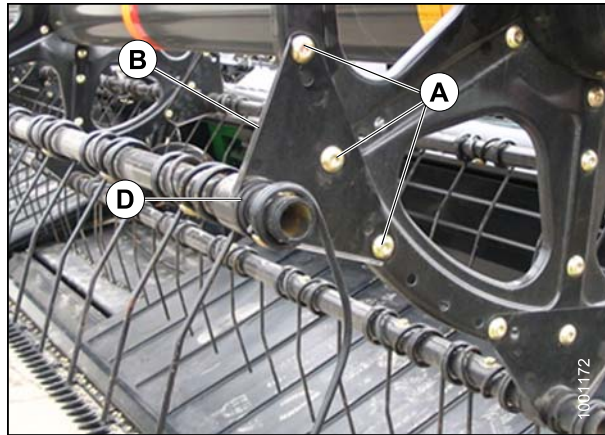


Figure 4.245

A - Bolts

B - Reel arm

D - Bushing half

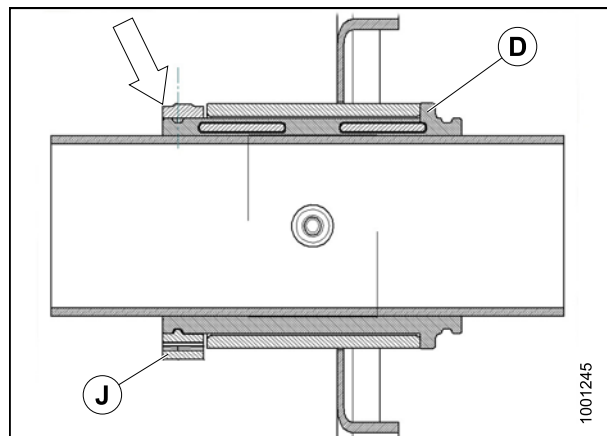


Figure 4.246

D - Bushing

J - Bushing clamp

## MAINTENANCE AND SERVICING



**Figure 4.247**

J - Bushing clamp

K - Channel lock pliers

### *Bushing Removal – 5-Bat Pick-Up Reels*

To remove tine tube bushings from a 5-bat pick-up reel, follow these steps.

## **IMPORTANT**

**Ensure tine tube is supported at all times to prevent damage to the tube or other components.**

## **IMPORTANT**

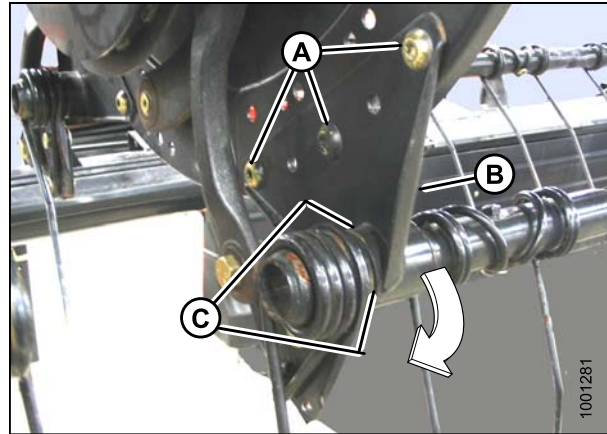
**Note the hole locations in arm and disc, and ensure bolts are reinstalled at original locations.**



## MAINTENANCE AND SERVICING

Remove bushings at cam end disc:

1. Remove bolts (A) securing arm (B) to disc.
2. Remove bushing clamp as described in .
3. Rotate arm (B) clear of disc, and slide arm off bushing. Remove bolt from tine next to arm (or remove plastic finger) if required so that arm can slide off bushing.
4. Remove bushing halves (C).



**Figure 4.248**

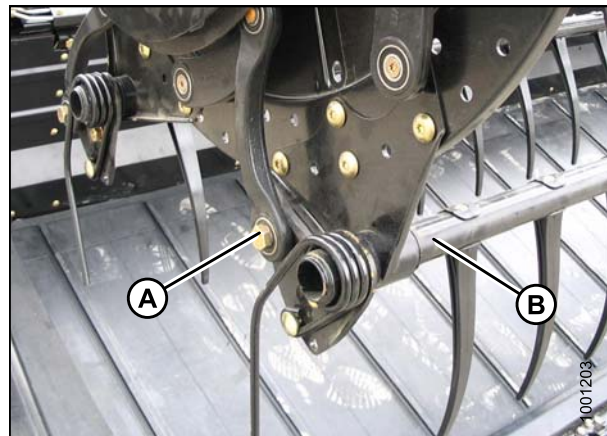
A - Bolts

B - Arm

C - Bushing halves

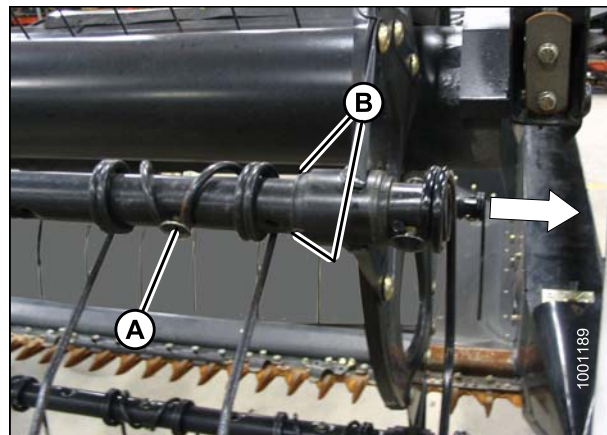
Remove bushings at center disc and left end disc:

5. Disconnect reel arm at cam end so that tine tube is free to move. See step .
6. Remove bolt (A) at on cam linkage so that tine tube (B) is free to rotate.
7. Slide tine tube outboard to expose bushings.



**Figure 4.249**

8. Remove bolt (A) from tine (or remove plastic finger) next to arm if required so that tube can slide through arm.
9. Remove bushing halves (B).



**Figure 4.250**

## MAINTENANCE AND SERVICING

### Bushing Installation – 5-Bat Pick-Up Reels

To install tine tube bushings on 5-bat pickup reels, follow these steps:

1. Lower header, raise reel fully, and engage reel stops.
2. At center disc and left end disc, position bushing halves (A) on tine tube so that lug in each bushing half locates in hole in tine tube.
3. Slide tine tube inboard (towards cam end) to locate bushing in reel arm.

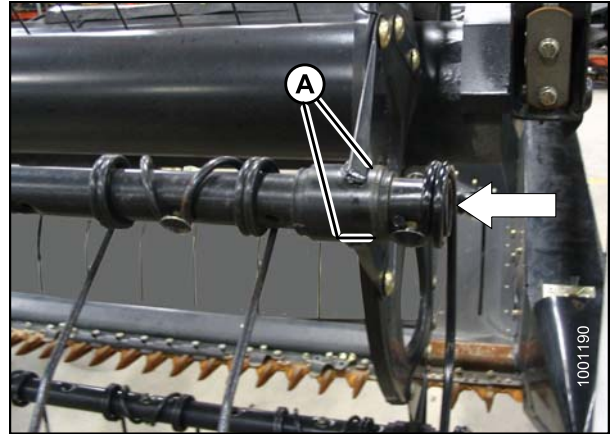


Figure 4.251

4. At the cam end disc, position bushing halves (A) on tine tube so that lug in each bushing half locates in hole in tine tube.
5. Slide reel arm (B) onto bushing, and position against disc at original location.
6. Install bolts (C) in original holes, and tighten.
7. Reinstall any fingers or tines that were removed.
8. Reinstall bolt (D) at on cam linkage.
9. Install bushing clamps as previously described.

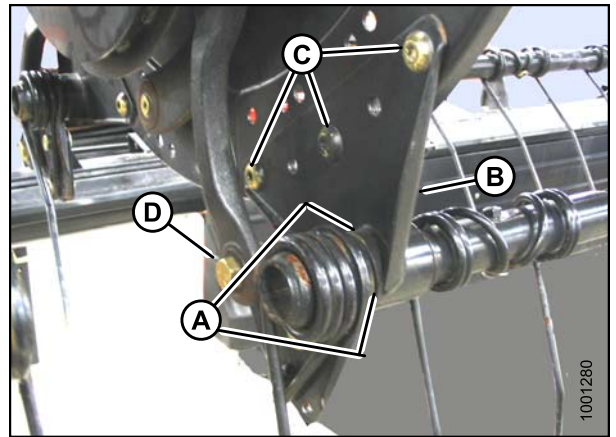


Figure 4.252

A - Bolts  
C - Bushing halves

B - Reel arm  
D - Bolt

### 4.12.11 Transport System (Optional)

#### Wheel Bolt Torque

## IMPORTANT

Whenever a wheel is removed and reinstalled, check torque after one hour of operation. Whenever a wheel is removed and reinstalled, check torque after one hour of operation. Maintain 80–90 ft·lbf (110–120 N·m) torque.

## IMPORTANT

Follow proper bolt tightening sequence shown below.



## MAINTENANCE AND SERVICING

1. Check and tighten wheel bolts after the first hour of operation, and every 100 hours thereafter. Maintain 80–90 ft·lbf (110–120 N·m) torque.

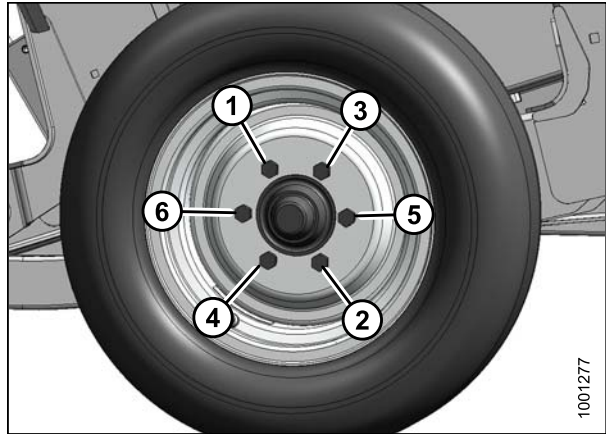


Figure 4.253

# MAINTENANCE AND SERVICING

## Axle Bolts

1. Check and tighten axle bolts **DAILY** until torque is maintained as follows:
  - (A): 180 ft·lbf (244 N·m)
  - (B): 150 ft·lbf (203 N·m)
  - (C): 180 ft·lbf (244 N·m)

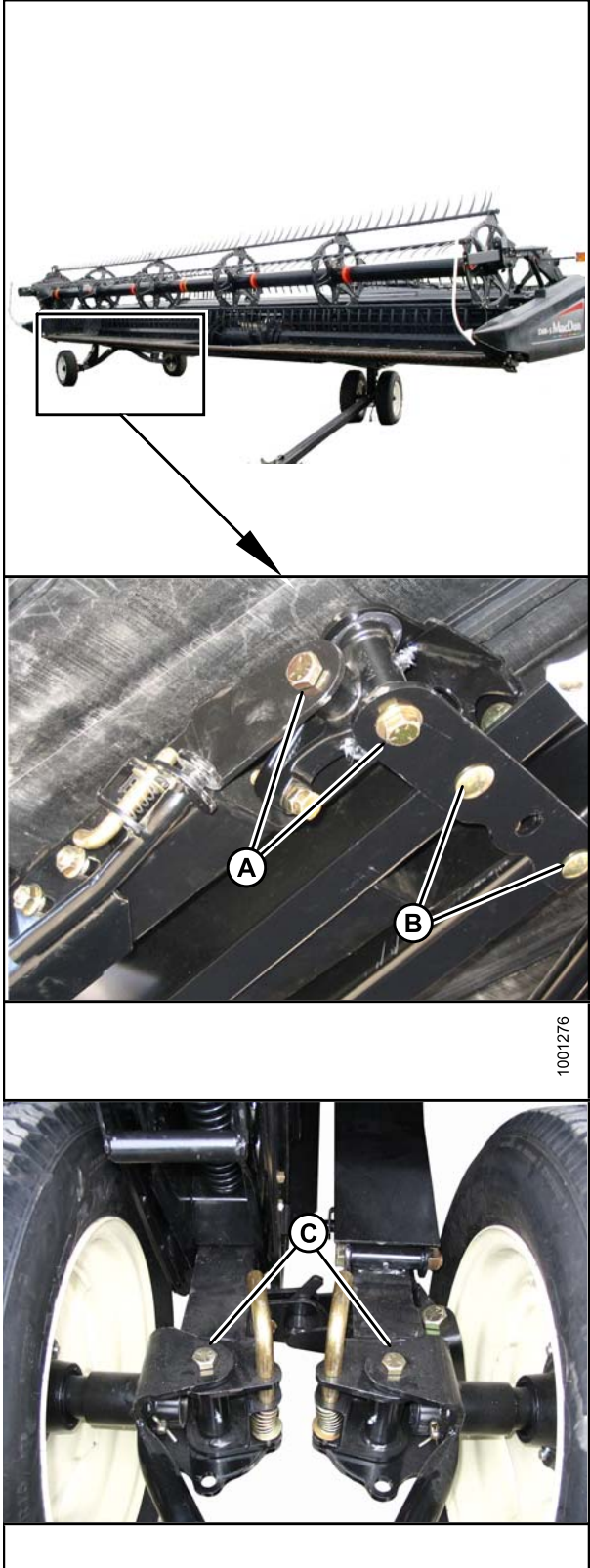


Figure 4.254

## MAINTENANCE AND SERVICING

### Tire Inflation

1. Check tire pressure daily. Maintain pressures recommended in following table:

SIZE	LOAD RANGE	PRESSURE
ST205/75 R15	D	65 psi (448 kPa)
	E	80 psi (552 kPa)



## WARNING

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

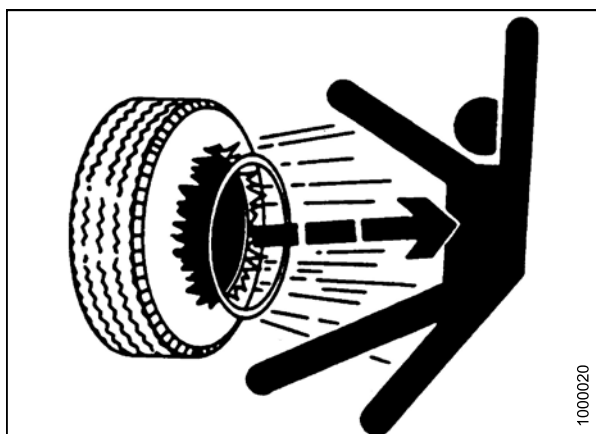


Figure 4.255

## 5 Troubleshooting

### 5.1 Crop Loss at Cutterbar

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Does not pick up down crop</b>	Cutterbar too high	Lower cutterbar	<a href="#">3.9.1 Cutting Height, page 89</a>
	Header angle too flat	Steepen header height	<a href="#">3.9.3 Header Angle, page 99</a>
	Reel too high	Lower reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Reel too far back	Move reel forward	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<a href="#">3.9.4 Reel Speed, page 100</a> & <a href="#">3.9.5 Ground Speed, page 101</a>
	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	
Install lifter guards			7
<b>Heads shattering or breaking off</b>	Reel speed too fast	Reduce reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Reel too low	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Ground speed too fast	Reduce ground speed	<a href="#">3.9.5 Ground Speed, page 101</a>
	Crop too ripe	Operate at night when humidity is higher	—

7. See your MacDon Dealer.

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Cut grain falling ahead of cutterbar</b>	Ground speed too slow	Increase ground speed	<a href="#">3.9.5 Ground Speed, page 101</a>
	Reel speed too slow	Increase reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Reel too high	Lower reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Cutterbar too high	Lower cutterbar	<a href="#">3.9.1 Cutting Height, page 89</a>
	Reel too far forward	Move reel back on arms	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
	Cutting at speeds over 6 mph (10 km/h) with high torque (10 tooth) reel drive sprocket	Replace with high speed (19 tooth) reel drive sprocket	<a href="#">4.12.5 Reel Drive Sprocket, page 233</a>
	Worn or broken sickle components	Replace components	<a href="#">4.9 Sickle and Sickle Drive, page 179</a>
<b>Strips of uncut material</b>	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
	Broken sickle sections	Replace broken sections	<a href="#">4.9.1 Sickle Section Replacement, page 179</a>
<b>Excessive bouncing at normal field speed</b>	Float set too light	Adjust header float	<a href="#">3.9.2 Header Float, page 94</a>
<b>Divider rod running down standing crop</b>	Divider rods too long	Remove divider rod	<a href="#">3.9.11 Crop Divider Rods, page 113</a>
<b>Bushy or tangled crop flows over divider rod, builds up on endsheets</b>	Divider rods providing insufficient separation	Install long divider rods or floating dividers	<a href="#">3.9.11 Crop Divider Rods, page 113</a>

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Crop not being cut at ends</b>	Reel not “frowning” or not centered in header	Adjust reel “frown” or reel horizontal position	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a> & <a href="#">4.12.2 Reel Frown Adjustment, page 222</a>
	Sickle hold-downs not adjusted properly	Adjust hold-downs so sickle works freely, but still keep sections from lifting off guards	<a href="#">Sickle Hold-Downs, page 187</a>
	Sickle sections or guards are worn or broken	Replace all worn and broken cutting parts	<a href="#">4.9 Sickle and Sickle Drive, page 179</a>
	Header is not level	Level header	
	Reel fingers not lifting crop properly ahead of sickle	Adjust reel position/finger pitch	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a> & <a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Divider runs down thick crop at ends, preventing proper feeding due to material bridging the cutter guards	Replace 3 or 4 end guards with stub guards	<a href="#">7</a> , <a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>



## TROUBLESHOOTING

### 5.2 Cutting Action and Sickle Components

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Ragged or uneven cutting of crop</b>	Sickle hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Sickle Hold-Downs, page 187</a>
	Sickle sections or guards are worn or broken	Replace all worn and broken cutting parts	<a href="#">4.9 Sickle and Sickle Drive, page 179</a>
	Sickle is not operating at recommended speed	Check engine speed of combine	8
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<a href="#">3.9.4 Reel Speed, page 100</a> & <a href="#">3.9.5 Ground Speed, page 101</a>
	Reel fingers not lifting crop properly ahead of sickle	Adjust reel position/finger pitch	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a> & <a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Cutterbar too high	Lower cutting height	<a href="#">3.9.1 Cutting Height, page 89</a>
	Header angle too flat	Steeepen header angle	<a href="#">3.9.3 Header Angle, page 99</a>
	Bent sickle, causing binding of cutting parts	Straighten bent sickle and align guards	<a href="#">4.9.7 Sickle guards, page 183</a>
	Cutting edge of guards not close enough, or parallel to sickle sections	Align guards	
	Tangled/tough-to-cut crop	Install stub guards	<sup>9</sup> , <a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>
	Reel too far back	Move reel forward	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
	Loose sickle drive belt	Adjust drive belt tension	<a href="#">4.9.8 Sickle Drive Belts – Non-Timed Drive, page 188</a>

8. Refer to your combine's operator's manual.

9. See your MacDon Dealer.

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Sickle plugging</b>	Reel too high or too far forward	Lower reel or move reel rearward	<a href="#">3.9.8 Reel Height, page 105</a> & <a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
	Ground speed too slow	Increase ground speed	<a href="#">3.9.5 Ground Speed, page 101</a>
	Loose sickle drive belt	Adjust drive belt tension	<a href="#">4.9.8 Sickle Drive Belts – Non-Timed Drive, page 188</a>
	Improper sickle hold-down adjustment	Adjust hold-down	<a href="#">Sickle Hold-Downs, page 187</a>
	Dull or broken sickle section	Replace sickle section	<a href="#">4.9.1 Sickle Section Replacement, page 179</a>
	Bent or broken guards	Align or replace guards	<a href="#">4.9.7 Sickle guards, page 183</a>
	Reel fingers not lifting crop properly ahead of sickle	Adjust reel position/finger pitch	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a> & <a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Steel pick-up fingers contacting sickle	Increase reel clearance to cutterbar or adjust “frown”	<a href="#">4.12.1 Reel Clearance to Cutterbar, page 219</a> & <a href="#">4.12.2 Reel Frown Adjustment, page 222</a>
	Float too heavy	Adjust springs for lighter float	<a href="#">3.9.2 Header Float, page 94</a>
	Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	<a href="#">Cutting On the Ground, page 92</a>
		Install cut-out sections	9
		Flatten header angle	<a href="#">3.9.3 Header Angle, page 99</a>
Sickle is not operating at recommended speed	Check engine speed of combine	9	
<b>Excessive header vibration</b>	Sickle hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Sickle Hold-Downs, page 187</a>
	Sickles on double knife drive not timed	Adjust sickle timing	
	Sickle not operating at recommended speed	Check engine speed of combine	9
	Excessive sickle wear	Replace sickle	<a href="#">4.9.2 Sickle Removal, page 180</a> & <a href="#">4.9.5 Sickle Installation, page 182</a>
	Loose or worn sickle head pin or drive arm	Tighten or replace parts	<a href="#">4.9.1 Sickle Section Replacement, page 179</a>

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Excessive vibration of adapter and header</b>	Incorrect knife speed	Adjust knife speed	<a href="#">3.9.7 Knife Speed, page 103</a>
	Driveline U-joints worn	Replace U-joints	10
	Bent cutterbar	Straighten cutterbar	9
<b>Excessive breakage of sickle sections or guards</b>	Sickle hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Sickle Hold-Downs, page 187</a>
	Cutterbar operating too low in stony conditions	Raise cutterbar, using skid shoes	<a href="#">Cutting On the Ground, page 92</a>
	Float is set too heavy	Adjust float springs for lighter float	<a href="#">3.9.2 Header Float, page 94</a>
	Bent or broken guard	Straighten or replace guard	<a href="#">4.9.7 Sickle guards, page 183</a>
	Header angle too steep	Flatten header angle	<a href="#">3.9.3 Header Angle, page 99</a>
<b>Sickle back breakage</b>	Bent or broken guard	Straighten or replace guard	<a href="#">4.9.7 Sickle guards, page 183</a>
	Worn sickle head pin	Replace sickle head pin	<a href="#">4.9.3 Sickle Head Bearing Removal, page 180</a>
	Dull sickle	Replace sickle	<a href="#">4.9.2 Sickle Removal, page 180</a> & <a href="#">4.9.5 Sickle Installation, page 182</a>

10. Refer to your header's technical manual.

## TROUBLESHOOTING

### 5.3 Reel Delivery

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Reel Not Releasing Material in Normal Standing Crop</b>	Reel speed too fast	Reduce reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Reel too low	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Reel tines too aggressive	Reduce cam setting	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too far back	Move reel forward	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
<b>Reel Not Releasing Material in Lodged and Standing Crop (Reel Fully Lowered)</b>	Reel tines too aggressive for standing crop	Reduce cam setting (1 or 2)	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
<b>Wrapping On Reel End</b>	Reel tines too aggressive	Reduce cam setting	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too low	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Reel speed too fast	Reduce reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Crop conditions	Install optional endshields	<sup>11</sup> & <a href="#">6.1.7 Reel Endshield Kit, page 283</a>
	Reel not centered in header	Center reel in header	<a href="#">4.12.3 Reel Centering, page 223</a>
<b>Reel Releases Crop Too Quickly</b>	Reel tines not aggressive enough	Increase cam setting	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too far forward	Move reel back	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
<b>Reel Will Not Lift</b>	Reel lift couplers are incompatible or defective	Change quick coupler	—
<b>Reel Will Not Turn</b>	Quick couplers not properly connected	Connect couplers	<sup>12</sup>
	Reel drive chain disconnected	Connect chain	<a href="#">4.12.4 Reel Drive Chain, page 224</a>
<b>Reel Motion Uneven Under No Load</b>	Excessive slack in reel drive chain	Tighten chain	<a href="#">4.12.4 Reel Drive Chain, page 224</a>

11. See your MacDon Dealer.

12. Refer to your combine's operator's manual.

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Reel Motion Is Uneven or stalls In heavy crops</b>	Reel speed too fast	Reduce reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too low	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
	Relief valve on combine (not on combine adapter) has low relief pressure setting	Increase relief pressure to manufacturer's recommendations	12
<b>Reel Motion Is Uneven Or Stalls In Heavy Crop</b>	Low oil reservoir level on combine ( <b>NOTE:</b> Sometimes more than one reservoir)	Fill to proper level	12
	Relief valve malfunction	Replace relief valve	
	Cutting tough crops with high-speed (19 tooth) reel drive sprocket	Replace with high torque (10 tooth) or 14 tooth reel drive sprocket	<a href="#">4.12.5 Reel Drive Sprocket, page 233</a>
<b>Plastic Fingers Cut at Tip</b>	Insufficient reel to cutterbar clearance	Increase clearance on D65	<a href="#">4.12.1 Reel Clearance to Cutterbar, page 219</a>
<b>Plastic Fingers Bent Rearward at Tip</b>	Reel digging into ground with reel speed slower than ground speed	Raise header	<a href="#">3.9.1 Cutting Height, page 89</a>
		Decrease header tilt	<a href="#">3.9.3 Header Angle, page 99</a>
		Move reel aft	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
<b>Plastic fingers Bent Forward at Tip (opposite of above)</b>	Reel digging into ground with reel speed faster than ground speed	Raise header	<a href="#">3.9.1 Cutting Height, page 89</a>
		Decrease header tilt	<a href="#">3.9.3 Header Angle, page 99</a>
		Move reel aft	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>

## TROUBLESHOOTING

### 5.4 Header and Drapers

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Header Lift Insufficient</b>	Low relief pressure	Increase relief pressure	13
<b>Insufficient Side Draper Speed</b>	Speed control set too low	Increase control setting	<a href="#">3.9.6 Draper Speed, page 102</a>
	Relief pressure too low	Increase relief pressure to recommended setting	14
	Worn out gear pump	Replace pump	
	Combine header drive too slow	Adjust to correct speed for combine model	13
	Pressure compensator (V7) set too low	Adjust to increase setting	
<b>Draper Will Not Drive</b>	Drapers are loose	Tighten drapers	
	Drive or idler roller wrapped with material	Loosen draper and clean rollers	<a href="#">4.11.1 Header Draper Tension Adjustment, page 206</a>
	Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	
	Roller bearing seized	Replace	
	Low hydraulic oil	Fill reservoir to full level	<a href="#">Hydraulics – Adding Oil, page 158</a>
	Incorrect relief setting at flow control valve	Adjust relief setting	14
<b>Draper Stalling</b>	Material not feeding evenly off sickle	Lower reel	<a href="#">3.9.8 Reel Height, page 105</a>
		Install stub guards	15, <a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>

13. Refer to your combine's operator's manual.

14. Refer to your header's technical manual.

15. See your MacDon Dealer.



## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Adapter Auger Back-Feeds</b>	Auger set too high	Check reversing mechanism inside auger	14
		Lower auger	<a href="#">4.8.1 Auger Pan Clearance, page 171</a>
	<b>John Deere:</b> Feeder chain running too slow	Run feeder chain at high speed	13
	<b>John Deere:</b> Equipped with feeder chain with 4 pitches per bar	Replace with 6 pitch per bar feeder chain, or remove every other bar	
<b>Case:</b> Stone retarding drum installed, or smooth feeder chain bars installed	Install standard drum or fill slots in stone retarding drum, or install serrated feed chain bars		
<b>Hesitation In Flow Of Bulky Crop</b>	Header angle too flat	Steepen header angle	<a href="#">3.9.3 Header Angle, page 99</a>
	Material overload on drapers	Increase side draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
		Install upper cross auger	15
		Add flighting extensions	
	Material accumulation at auger ends	Install stripper bars	<a href="#">Stripper Bars, page 30</a>
	<b>Case:</b> Stone retarder blocks interfering with crop flow	Adjust blocks to minimum height	13
	Side drapers running too fast, piling material in center of feeder draper	Reduce header side draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
Feed chain drum too low	Move drum to corn position	13	
<b>Adapter Auger Wraps Crop</b>	Crop susceptible to wrapping (flax)	Add flighting extensions or stripper bars	<a href="#">&amp; Stripper Bars, page 30</a>
	Auger speed too fast	Install slow down kit	15
<b>Combine Feeder Drum Wraps Crop</b>	Crop susceptible to wrapping (flax)	Add stripper bars	<a href="#">Stripper Bars, page 30</a>

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Crop Backs Up Or Hesitates On Feed Draper</b>	Feed draper stalling	Clean debris from poly pan	—
		Check feed draper tension	<a href="#">4.11.3 Header Draper Alignment, page 209</a>
		Replace roller bearing(s)	14
		Check feed draper motor	
	Heavy crop plugging between adapter auger and feed draper	Check auger clearance	<a href="#">4.8.1 Auger Pan Clearance, page 171</a>
		See also “Adapter Auger Back-Feeds” on previous page	—
Auger speed too low	Install auger speed up kit	15	
<b>Crop Back Feeds On Center Feed Draper</b>	Excessive clearance from auger to drive roller	Lower auger	<a href="#">4.8.1 Auger Pan Clearance, page 171</a>
	Auger speed too slow	Install auger speed-up kit	15
<b>Side Drapers Back-Feed</b>	Side drapers running too slow in heavy crop	Increase side draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
<b>Crop Is Thrown Across Opening And Under Opposite Side Draper</b>	Side drapers running too fast in light crop	Reduce side draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
	Excessive overlap of feeder draper	Center side draper drive rollers over feed draper side deflectors	14
<b>Crop Feeding Into Feeder House At Sides More Than At Center</b>	Auger not delivering crop properly	Add flighting extensions	
		Add stripper bars	<a href="#">Stripper Bars, page 30</a>
		Remove auger outer tines	<a href="#">Auger Tine Removal, page 175</a>
		Install auger speed-up kit	15
<b>Crop Feeding Into Feeder House At Center More Than At Sides</b>	Auger not delivering crop properly	Add auger outer tines	<a href="#">Auger Tine Removal, page 175</a>
		Remove flighting extensions	
		Remove auger stripper bars	<a href="#">Stripper Bars, page 30</a>
<b>Crop Getting Stuffed In Gap Between Cut-out in Endsheets and Knife Head</b>	Crop heads leaning away from knife head hole in endsheet	Add shields, except in damp/sticky soils	<a href="#">3.9.14 Knife Head Shield, page 118</a>
<b>Material Accumulates Inside Or Under Front Edge Of Draper</b>	Deck height improperly adjusted	Adjust deck height	<a href="#">4.11.5 Deck Height, page 217</a>
<b>Material Wrapping At Upper Cross Auger Beater Bars</b>	Crop conditions do not require beater bars	Remove beater bars	<a href="#">3.13 Upper Cross Auger, page 124</a>

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Material Accumulating On End Deflectors And Releasing In Bunches</b>	End deflectors too wide	Trim deflector or replace with narrow deflector (MacDon part #172381)	—
<b>Cutterbar Pushes Dirt Across Entire Length</b>	Header height too low	Raise header height with float optimizer control	13
	Float locked	Unlock float	<a href="#">3.9.2 Header Float, page 94</a>
	Float set too heavy	Adjust float	
	Header angle too steep	Adjust header to optimum angle	<a href="#">3.9.3 Header Angle, page 99</a>
<b>Pushing Dirt At Combine Adapter Lower Beam</b>	Combine face plate incorrectly installed	Remove adapter and check combine faceplate	13
	Header angle too flat	Increase header angle	<a href="#">3.9.3 Header Angle, page 99</a>
	Float too light, header legs do not rest on stops	Adjust to heavier float	<a href="#">3.9.2 Header Float, page 94</a>
<b>Wing Float Assembly Binding</b>	Float locked out	Disengage adapter float lockout	<a href="#">3.9.2 Header Float, page 94</a>
	Float set too heavy	Adjust adapter springs to lighter float	
<b>Reel Contacts Endsheets, Especially In Smile Condition</b>	Reel not centered in header	Center reel in header	<a href="#">4.12.3 Reel Centering, page 223</a>
	Loose reel arm brace	Center reel in header and tighten brace	
<b>Reel Fingers Being Cut At Header Hinge Points In Frown Condition</b>	Reel clearance inadequate	Adjust reel clearance to cutterbar	<a href="#">4.12.1 Reel Clearance to Cutterbar, page 219</a>
		Adjust reel frown at finger tubes	<a href="#">4.12.2 Reel Frown Adjustment, page 222</a>

## TROUBLESHOOTING

### 5.5 Cutting Edible Beans

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Excessive losses at dividers</b>	Divider rod running down crop and shattering pods	Remove divider rod	<a href="#">3.9.11 Crop Divider Rods, page 113</a>
	Vines and plants build up on endsheet	Install divider rod	
<b>Reel ends wrap up with crop</b>	Uncut crop interfering on reel ends	Add reel endshields	<a href="#">3.2.3 Endshields, page 23</a>
<b>Reel wraps up with crop</b>	Reel too low	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
<b>Plants being stripped, and complete or partial plants left behind</b>	Header being carried off ground	Lower header to ground, and run on skid shoes and/or cutterbar	<a href="#">Cutting On the Ground, page 92</a>
	Float set too light—rides on high spots and does not get back down soon enough	Set float for: <ul style="list-style-type: none"> <li>• Dry ground: 100–150 lbf</li> <li>• Wet ground: 50–100 lbf</li> </ul>	<a href="#">3.9.2 Header Float, page 94</a>
	Reel being operated too high	Fully retract reel cylinders	<a href="#">3.9.8 Reel Height, page 105</a>
	Reel too high with cylinders fully retracted	Adjust reel height	<a href="#">4.12.1 Reel Clearance to Cutterbar, page 219</a>
	Finger pitch not aggressive enough	Adjust finger pitch	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too far back on reel support arms	Move reel forward until the fingertips skim the soil surface with header on ground and center-link properly adjusted	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
	Header angle too shallow	Lengthen center-link; if cutting on ground, header angle can be increased by fully retracting lift cylinders	<a href="#">3.9.3 Header Angle, page 99</a>
	Reel too slow	Adjust reel speed to be marginally faster than ground speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Ground speed too high	Lower ground speed	<a href="#">3.9.5 Ground Speed, page 101</a>
	Header skid shoes adjusted too low	Raise skid shoes to maximum up position	<a href="#">Cutting On the Ground, page 92</a>

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION	
<b>Plants being stripped, and complete or partial plants left behind</b>	Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install plastic wear strips on bottom of cutterbar and skid shoes	16	
	Worn/damaged knife sections	Replace sections or complete knife	<a href="#">4.9.1 Sickle Section Replacement, page 179</a> , <a href="#">4.9.2 Sickle Removal, page 180</a> , & <a href="#">4.9.5 Sickle Installation, page 182</a>	
	Dirt packing on bottom of cutterbar with poly wear strips on cutterbar and raises cutterbar off the ground	Ground too wet; allow soil to dry	Manually clean the bottom of cutterbar when accumulation gets unacceptable	—
		Plastic wear strip for cutterbar has been installed over top of steel wear plates		
	Header is not level	Level header		
	Parts of vines get caught in pointed guard tip (occurs more in row-cropped beans that are hilled from cultivating)	Install stub guard kit	<a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>	
<b>Plant Vines Pinched Between Top Of Draper And Cutterbar</b>	Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted	Raise header fully at each end of field or as required and shift decks back and forth to help clean out cutterbar	—	
	Shifting of decks with header raised does not clean out cutterbar debris	Manually remove debris from cutterbar cavity to prevent damage to drapers		
<b>Crop Accumulating At Guards And Not Moving Rearward Onto Drapers</b>	Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>	
	Reel too high relative to knife	Readjust reel minimum height with cylinders fully retracted	<a href="#">4.12.1 Reel Clearance to Cutterbar, page 219</a>	
	Reel too far forward of cutterbar C-section	Reposition reel	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>	

16. See your MacDon Dealer.

## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Cutterbar Guards Breaking</b>	Float insufficient	Increase float	<a href="#">3.9.2 Header Float, page 94</a>
	Excessive amount of rocks in field	Consider installing optional stub guards <b>Tip:</b> Experiment with a few guards on a section of cutterbar to compare the performance of the two different styles of guards	<a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>
<b>Reel Shattering Pods</b>	Reel running too fast	Reduce reel speed	<a href="#">3.9.4 Reel Speed, page 100</a>
	Bean pods are too dry	Cut at night with heavy dew once pods have softened	—
	Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>
	Reel too far forward of cutterbar C-section	Reposition reel	
<b>Cutterbar Pushing Too Much Trash And Dirt</b>	Header too heavy	Readjust float to make header lighter	<a href="#">3.9.2 Header Float, page 94</a>
	Header angle too steep	Decrease header angle with lift cylinders	<a href="#">3.9.3 Header Angle, page 99</a>
		Shorten the center-link	
	Regular guards push dirt and plug up with trash or plug up with trash and then push dirt	Install Stub Guard Conversion kit	<a href="#">4.9.7 Sickle guards, page 183</a> , <a href="#">Sickle Hold-Downs, page 187</a> , & <a href="#">6.1.12 Stub Guard Conversion Kit, page 285</a>
	Improper support for header	Install center skid shoes on header	*
<b>Cutterbar Pushing Too Much Dirt In Certain Locations For Length Of Field</b>	Tire tracks or row crop ridges caused by seeding or spraying operations	Cut at angle to ridges or crop rows to allow knife and guards to clean out better	—
	Rolling land along length of field due to cultivating	Cut at 90° to undulations, provided knife floats across without digging in	



## TROUBLESHOOTING

SYMPTOM	PROBLEM	SOLUTION	SECTION
<b>Cutterbar Fills Up With Dirt</b>	Excessive gap between top of front of draper and cutterbar	Adjust front deck hooks to obtain proper clearance between cutterbar and draper	<a href="#">4.11.5 Deck Height, page 217</a>
		Raise header fully at each end of field or as required and shift decks back and forth to help clean out cutterbar	—
<b>Reel Carries Over Odd Plants In Same Location</b>	Reel fingers (steel) bent and hook plants out of the crop flow on drapers	Straighten fingers (steel)	—
	Dirt accumulation on end of fingers do not let plants slide off fingers over drapers	Raise reel	<a href="#">3.9.8 Reel Height, page 105</a>
		Adjust reel fore and aft location to move fingers out of the ground	<a href="#">3.9.9 Reel Fore-Aft Position, page 106</a>
<b>Reel Carries Over Excessive Amounts Of Plants Or Wads</b>	Excessive accumulation of crop on drapers (up to height of reel center tube)	Increase draper speed	<a href="#">3.9.6 Draper Speed, page 102</a>
	Finger pitch too retarded	Increase finger pitch	<a href="#">3.9.10 Reel Tine Pitch, page 111</a>

## 6 Options and Attachments

### 6.1 Options and Attachments

The following options and attachments are available for use with your header. Most come with installation instructions. See your MacDon Dealer for availability and ordering information.

#### 6.1.1 Adjustable Skid Shoes with Poly Cover

Inner skid shoes are available as an optional attachment. They are recommended for cutting on the ground.

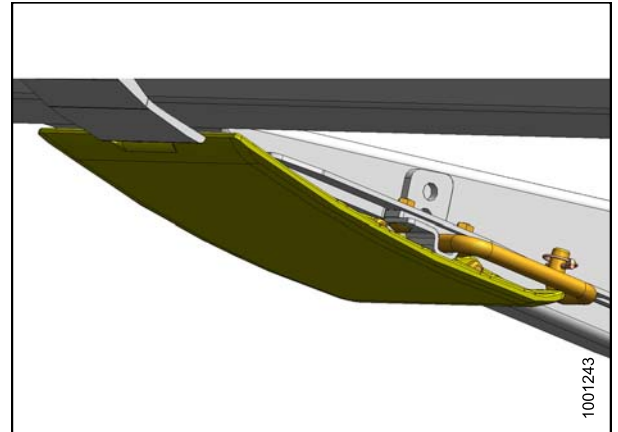


Figure 6.1

#### 6.1.2 Divider Latch Kit

The latches, which attach to the endsheets, allow for quick removal of endsheet divider cones to accommodate storage and if required, to reduce the transport width of the header. Installation instructions are included with the kit.

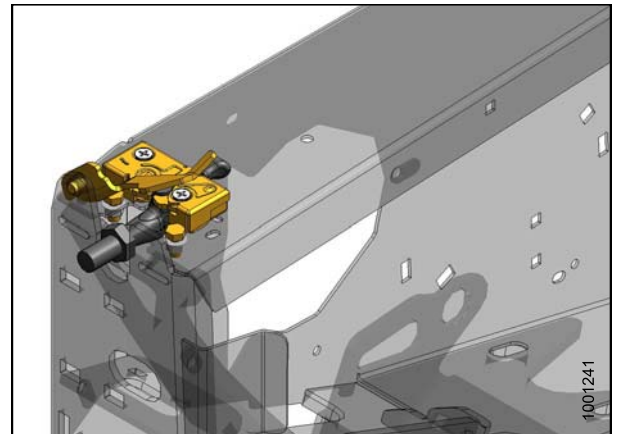


Figure 6.2

## OPTIONS AND ATTACHMENTS

### 6.1.3 Draper Wide Deflector Kit

Rubber deflectors that attach to the inboard side of the endsheets, prevent material from falling through the gap between the endsheet and draper.

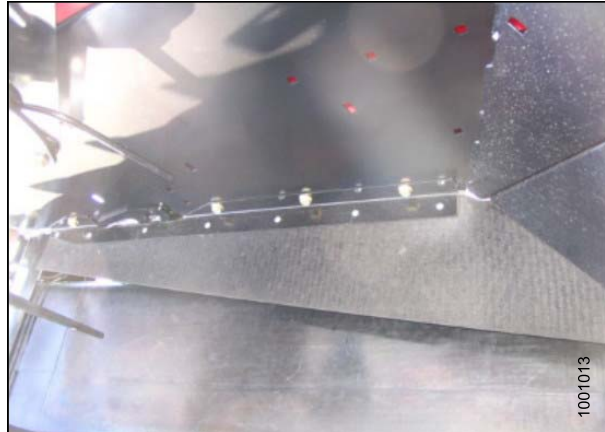


Figure 6.3

### 6.1.4 European Adapter Seal Kit

It is a kit that encloses the transition area of the feed draper and side draper area near the front of the header and also includes side rubber flaps to close off areas in between the adapter and header.

This kit is **not recommended** for use if there are rocks present.

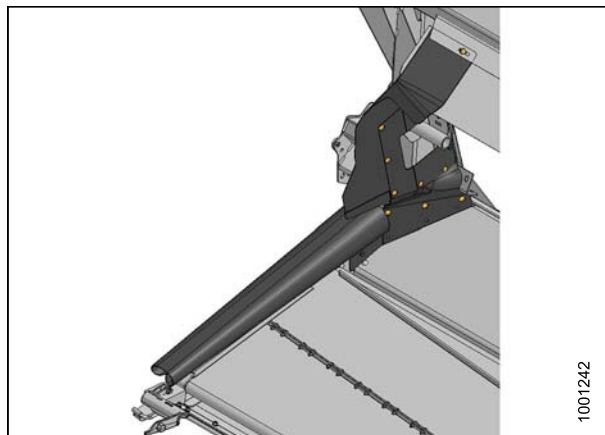


Figure 6.4

### 6.1.5 Knife Head Shield

The shields attach to the endsheets, and reduce the knife head opening to prevent cut crop from accumulating over the knife head. They are slightly different depending on header size. See the D65 Parts Catalog for details.

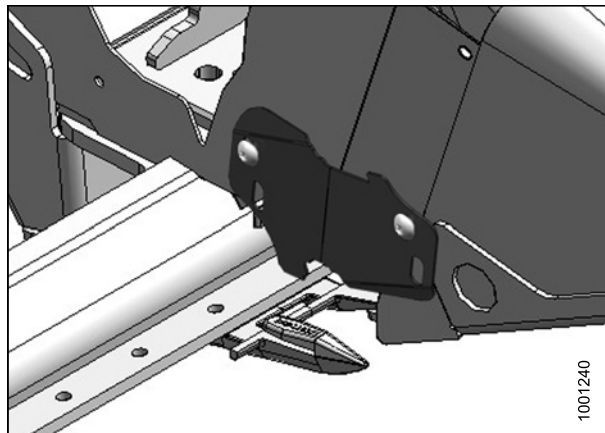


Figure 6.5

## OPTIONS AND ATTACHMENTS

### 6.1.6 Lodged Crop Reel Finger Kit

The steel fingers attach to ends of every other tine bar, and help in clearing material in heavy, lodged rice.

Two kits are required for modifying each bar of a 6-bat reel. Installation and adjustment instructions are included with the kit.



Figure 6.6

### 6.1.7 Reel Endshield Kit

The steel shields attach to ends of the reel and help in clearing material in heavy hard to cut crops. Installation and adjustment instructions are included with the kit.



Figure 6.7

### 6.1.8 Rice Divider Rods

The rice divider rods attach to the left-hand and right-hand endsheet cones, and perform the same function in tall and tangled rice crops as standard equipment crop dividers. Installation instructions are included with the kit.

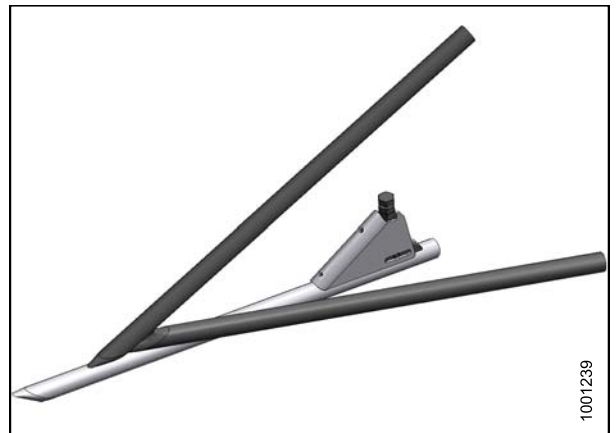


Figure 6.8

## OPTIONS AND ATTACHMENTS

### 6.1.9 Rock Retarder Kit

The rock retarder kit keeps rocks from rolling past the cutterbar and onto the drapers. Installation instructions are included with the kit.



Figure 6.9

### 6.1.10 Stabilizer Wheels

Available as an attachment, the stabilizer wheels help stabilize the header in field conditions that would otherwise cause the header to bounce and result in uneven cutting height. Installation and adjustment instructions are included with the kit.

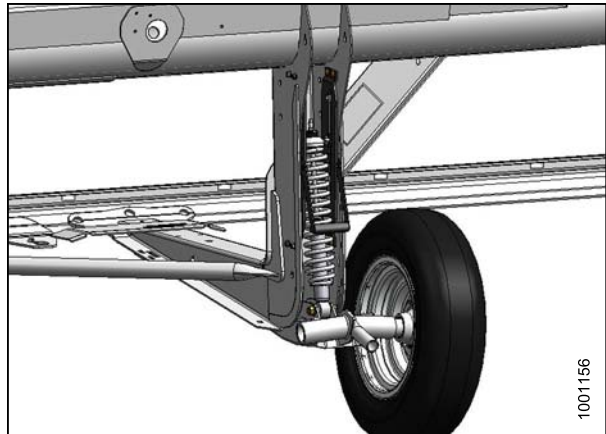


Figure 6.10

### 6.1.11 Stabilizer/Transport Wheels

Available as an attachment, stabilizer/transport wheels help stabilize the header in field conditions that would otherwise cause the header to bounce and result in uneven cutting height.

The wheels convert to Transport mode to allow the header to be towed behind a combine or pickup truck at slow speed.



Figure 6.11

## OPTIONS AND ATTACHMENTS

### 6.1.12 Stub Guard Conversion Kit

Stub guards, complete with top guides and adjuster shoes, are designed to cut tough crops.

Installation and adjustment instructions are included in the kit.

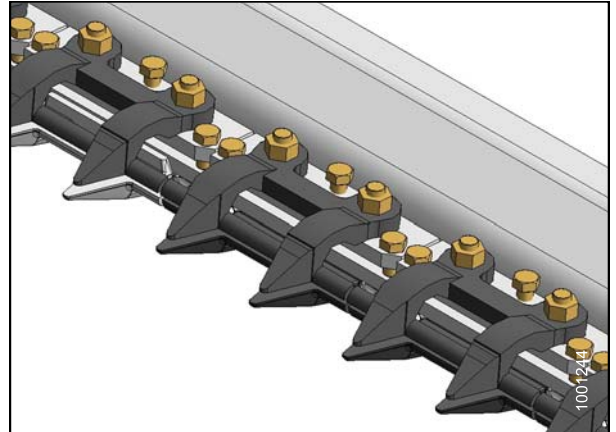


Figure 6.12

### 6.1.13 Upper Cross Auger Kit

The cross auger helps deliver very bulky crops across the header onto the windrow or into the combine.

Installation and adjustment instructions are included with the kit.



Figure 6.13

### 6.1.14 Vertical Knife Mount Kit

The vertical knife mounts allow installation of vertically oriented sickles onto both ends of the header.

Installation and adjustment instructions are included with the kit. The vertical knife itself must be purchased from a separate supplier.

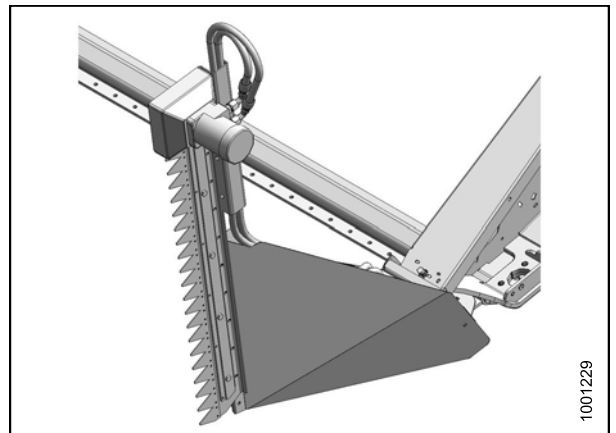


Figure 6.14





## 7 Unloading and Assembly

Refer to the header-specific instructions for unloading, assembly, and setup procedures that are included with your shipment. The instruction part numbers are shown in the following table.

<b>SHIPPING DESTINATION</b>	<b>HEADER DESCRIPTION</b>	<b>MACDON INSTRUCTION PART NUMBER</b>
North America	D65 Harvest Header® and CA25 Combine Adapter	MD #169602
Export (that is, anywhere except North America)	D65 Harvest Header® and CA25 Combine Adapter	MD #169604



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