



**MacDon®**

# **FD75 FlexDraper® Combine Header**

**IMPORTANT: PAGE 31 HAS BEEN  
UPDATED SINCE THIS MANUAL WAS  
PUBLISHED.**

**Operator's Manual**

147695 Revision A  
2016 Model Year  
Original Instruction

*Featuring MacDon FLEX-FLOAT Technology™*

*The harvesting specialists.*

## FD75 FlexDraper® Header for Combines



1000310

Published: May 2015

# Declaration of Conformity



## EC Declaration of Conformity

[1] **MacDon**

MacDon Industries Ltd.  
680 Moray Street,  
Winnipeg, Manitoba, Canada  
R3J 3S3

[4] As Per Shipping Document

[5] July 31, 2014

[2] Combine Header

[3] MacDon FD75 Series

[6] \_\_\_\_\_  
Natalia Kleban  
Product Integrity

EN	BG	CZ	DA
We, [1] Declare, that the product: Machine Type: [2] Name & Model: [3] Serial Number(s): [4] fulfils all the relevant provisions of the Directive 2006/42/EC. Harmonized standards used, as referred to in Article 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Place and date of declaration: [5] Identity and signature of the person empowered to draw up the declaration: [6] Name and address of the person authorized to compile the technical file: Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Germany) hartmut.hartmann@prodoku.com	Ние, [1] декларираме, че следният продукт: Тип машина: [2] Наименование и модел: [3] Серийен номер(а): [4] отговаря на всички приложими разпоредби на директива 2006/42/ЕО. Използвани са следните хармонизирани стандарти според чл. 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Място и дата на декларацията: [5] Име и подпис на лицето, упълномощено да изготви декларацията: [6] Име и адрес на лицето, упълномощено да състави техническия файл: Хартмут Хартманн Хартмут Хартманн Wersener Holz 2a D-49504 Lotte (Германия) hartmut.hartmann@prodoku.com	My, [1] Prohláshujeme, že produkt: Typ zařízení: [2] Název a model: [3] Sériové(á) číslo(a): [4] splňuje všechna relevantní ustanovení směrnice 2006/42/EC. Byly použity harmonizované standardy, jak je uvedeno v článku 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Místo a datum prohlášení: [5] Identita a podpis osoby oprávněné k vydání prohlášení: [6] Jméno a adresa osoby oprávněné k vyplnění technického souboru: Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Německo) hartmut.hartmann@prodoku.com	Vi, [1] erklærer, at produktet: Maskintype [2] Navn og model: [3] Serienummer (-numre): [4] Opfylder alle bestemmelser i direktiv 2006/42/EF. Anvendte harmoniserede standarder, som henviser til i paragraf 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Sted og dato for erklæringen: [5] Identitet på og underskrift fra den person, som er bemyndiget til at udarbejde erklæringen: [6] Navn og adresse på den person, som er bemyndiget til at udarbejde den tekniske fil: Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Tyskland) hartmut.hartmann@prodoku.com
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Wir, [1] Erklären hiermit, dass das Produkt: Maschinentyp: [2] Name & Modell: [3] Seriennummer (n): [4] alle relevanten Vorschriften der Richtlinie 2006/42/EG erfüllt. Harmonisierte Standards wurden, wie in folgenden Artikeln angegeben, verwendet 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Ort und Datum der Erklärung: [5] Name und Unterschrift der Person, die dazu befugt ist, die Erklärung auszustellen: [6] Name und Anschrift der Person, die dazu berechtigt ist, die technischen Unterlagen zu erstellen: Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Deutschland) hartmut.hartmann@prodoku.com	Nosotros [1] declaramos que el producto: Tipo de máquina: [2] Nombre y modelo: [3] Números de serie: [4] cumple con todas las disposiciones pertinentes de la directriz 2006/42/EC. Se utilizaron normas armonizadas, según lo dispuesto en el artículo 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Lugar y fecha de la declaración: [5] Identidad y firma de la persona facultada para draw redactar la declaración: [6] Nombre y dirección de la persona autorizada para elaborar el expediente técnico: Hartmut Hartmann Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Germany) hartmut.hartmann@prodoku.com	Meie, [1] deklareerime, et toode: Seadme tüüp: [2] Nimi ja mudel: [3] Seerianumbri(d): [4] vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele. Kasutatud on järgnevald harmoniseeritud standardeid, millele on viidatud ka punktis 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Deklaratsiooni koht ja kuupäev: [5] Deklaratsiooni koostamiseks volitatud isiku nimi ja allkiri: [6] Tehnilise dokumendi koostamiseks volitatud isiku nimi ja aadress: Hartmut Hartmann Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Saksamaa) hartmut.hartmann@prodoku.com	Nous soussignés, [1] Déclarons que le produit : Type de machine : [2] Nom et modèle : [3] Numéro(s) de série : [4] Est conforme à toutes les dispositions pertinentes de la directive 2006/42/EC. Utilisation des normes harmonisées, comme indiqué dans l'Article 7(2): EN ISO 4254-1:2013 EN ISO 4254-7:2009 Lieu et date de la déclaration : [5] Identité et signature de la personne ayant reçu le pouvoir de rédiger cette déclaration : [6] Nom et adresse de la personne autorisée à constituer le dossier technique : Hartmut Hartmann Hartmut Hartmann Wersener Holz 2a D-49504 Lotte (Allemagne) hartmut.hartmann@prodoku.com

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# Introduction

This instructional manual contains information on the FD75 FlexDraper® and the CA25 Combine Adapter. It must be used in conjunction with your combine operator's manual.

The FD75 FlexDraper® 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, using a three-piece flexible frame to closely follow ground contours.

**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.

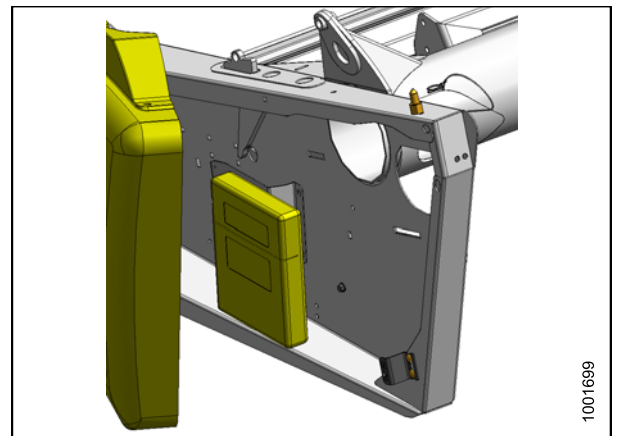
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This manual is also available in the following languages:

- French
- Russian
- Portuguese
- Spanish

They can be ordered from MacDon, downloaded from the Dealer Portal (<https://portal.macdon.com>) or from our International website (<http://www.macdon.com/world>).



**Figure 1: Manual Storage Location**

# List of Revisions

The following lists the changes from the previous version (169894 Revision A) of this document.

Summary of Change	Refer To
New Book Part Number	<ul style="list-style-type: none"> <li>FD75 FlexDraper® Header Operator's Manual from MD #196894_A to MD #147695_A</li> <li><a href="#">8.3 Unloading and Assembly, page 446</a></li> </ul>
New Declaration of Conformity	<a href="#">Declaration of Conformity, page i</a>
Added a step in Calibrating the Auto Header Height Control	<ul style="list-style-type: none"> <li><a href="#">Calibrating the Auto Header Height Control (Challenger 6 Series), page 97</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Case IH 2300/2500 and 5088/6088/7088), page 103</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230), page 110</a></li> <li><a href="#">Calibrating the Auto Header Height Control System (Case Combines with Version 28.00 Software), page 112</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Gleaner R62/R72), page 114</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Gleaner R65/R75), page 120</a></li> <li><a href="#">Calibrating the Auto Header Height Control (John Deere 50 Series), page 129</a></li> <li><a href="#">Calibrating the Auto Header Height Control (John Deere 60 Series), page 132</a></li> <li><a href="#">Calibrating the Auto Header Height Control (John Deere 70 Series), page 141</a></li> <li><a href="#">Calibrating the Auto Header Height Control (John Deere S Series), page 146</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Lexion 500 Series), page 150</a></li> <li><a href="#">Calibrating the Auto Header Height Control (Lexion 700 Series), page 157</a></li> <li><a href="#">Calibrating the Auto Header Height Control (New Holland CR/CX Series), page 167</a></li> </ul>
Added new kit	<a href="#">6.1.1 Multi-Crop Rapid Reel Conversion Kit, page 407</a>
Revised Header Settings	<a href="#">3.6.2 Header Settings, page 44</a>

# Model and Serial Number

Record the model number, serial number, and model year of the header, combine adapter, and 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: \_\_\_\_\_

The serial number plate (A) is located beside the knife drive motor on the left-hand endsheet.

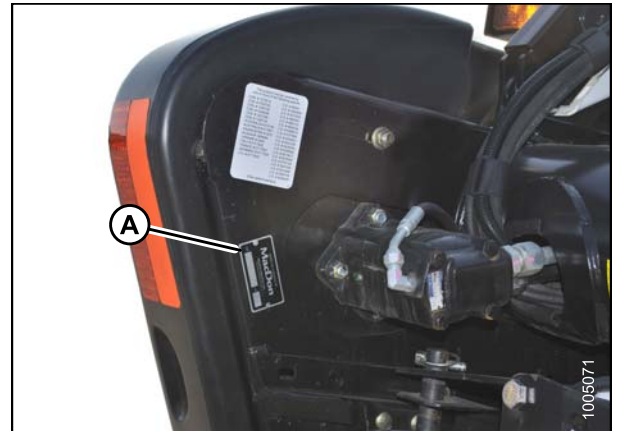


Figure 2: Header

### Combine Adapter

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

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

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

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

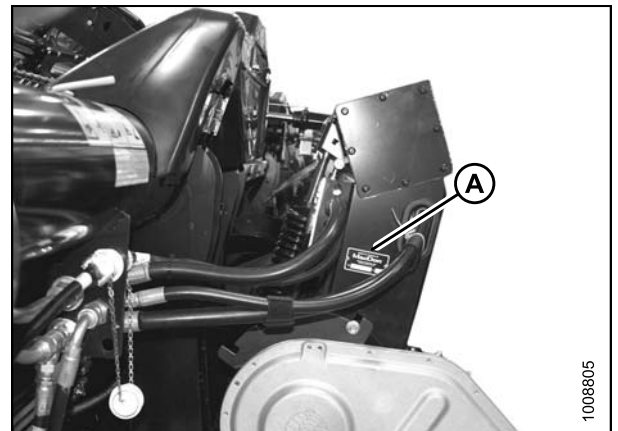


Figure 3: Adapter

### Slow Speed Transport/Stabilizer Wheel Option

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

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

The serial number plate (A) is located on the right-hand axle assembly.

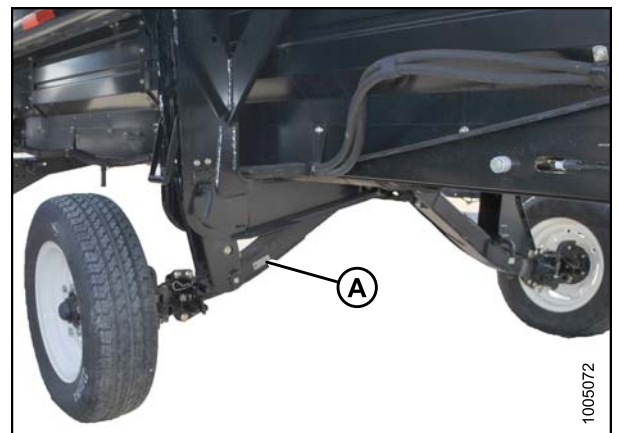


Figure 4: Transport/Stabilizer Option



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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: Safety Symbol**

## 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.



## 1.3 General Safety

### CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all the protective clothing and personal safety devices that **could** be necessary for the job at hand. Don't take chances. You may need the following:
  - Hard hat
  - Protective footwear with slip resistant soles
  - Protective glasses or goggles
  - Heavy gloves
  - Wet weather gear
  - Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

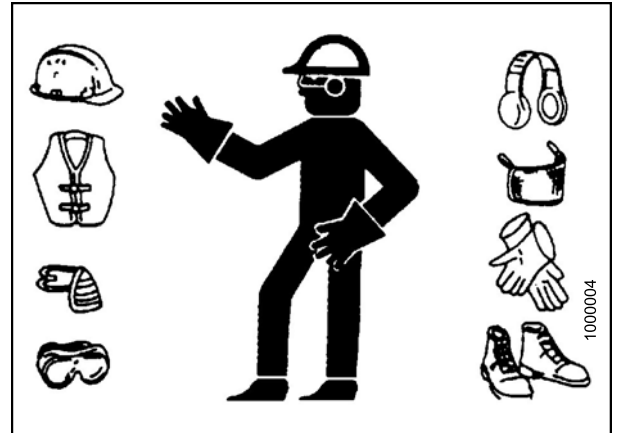


Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

- Provide a first aid kit for use in case of emergencies.
- Keep a fire extinguisher on the machine. Be sure the fire extinguisher is properly maintained. Be familiar with its proper use.
- Keep young children away from the machinery at all times.
- Be aware that accidents often happen when the Operator is tired or in a hurry. Take the time to consider the safest way. Never ignore the warning signs of fatigue.

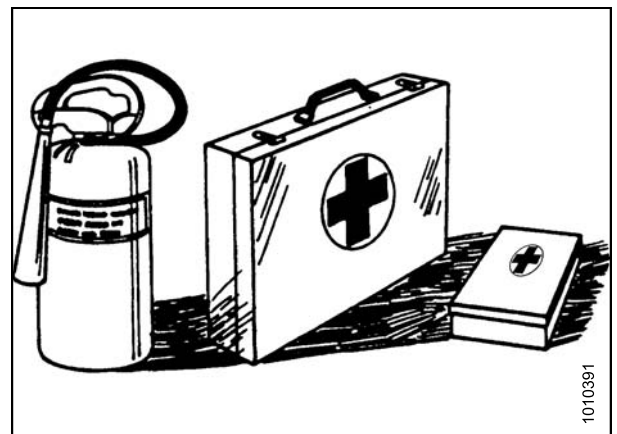


Figure 1.4: Safety Equipment

## SAFETY

- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.



Figure 1.5: Safety Around Equipment

- 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.
- Do **NOT** modify the machine. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

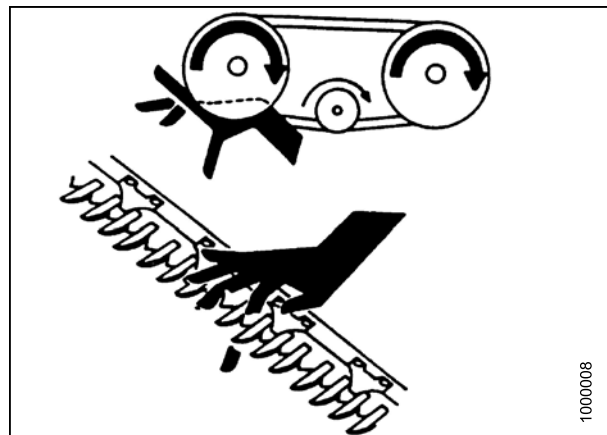


Figure 1.6: Safety Around Equipment

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



Figure 1.7: Safety Around Equipment

## 1.4 Maintenance Safety

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operation and/or maintenance of the machine.
- Place all controls in Neutral, stop the engine, set the park brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices:
  - Keep service areas clean and dry
  - Be sure electrical outlets and tools are properly grounded
  - Use adequate lighting for the job at hand
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Make sure all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to hydraulic systems.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear the area of bystanders, especially children, when carrying out any maintenance, repairs or, adjustments.
- Install transport lock or place safety stands under the frame before working under the header.
- 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 knives) to move. Stay clear of driven components at all times.
- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.



Figure 1.8: Safety Around Equipment

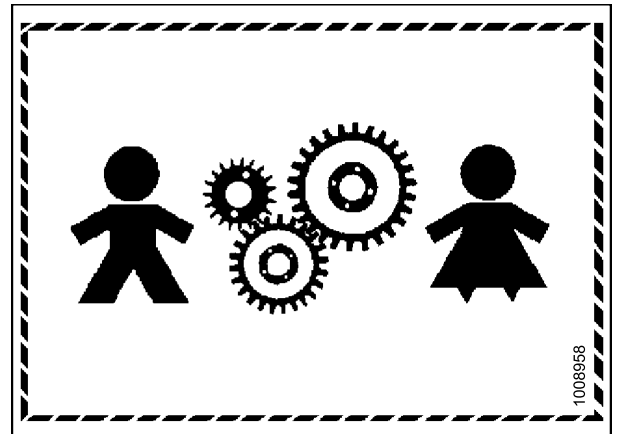


Figure 1.9: Equipment NOT Safe for Children

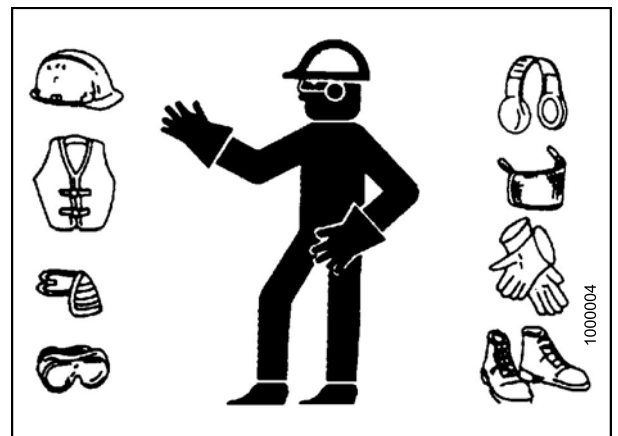


Figure 1.10: Safety Equipment

## 1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all components in the hydraulic system are kept clean and in good condition.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do **NOT** attempt any makeshift repairs to the hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs will fail suddenly and create hazardous and unsafe conditions.

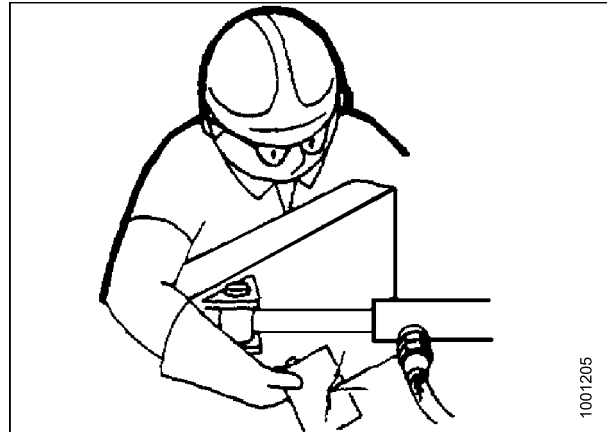


Figure 1.11: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic leaks. Use a piece of cardboard as a backstop instead of hands to isolate and identify a leak.
- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin.



Figure 1.12: Hydraulic Pressure Hazard

- Make sure all components are tight and steel lines, hoses, and couplings are in good condition before applying pressure to a hydraulic system.

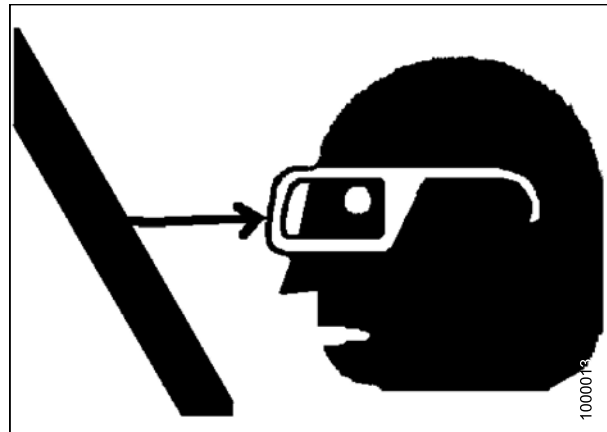


Figure 1.13: Safety Around Equipment

## 1.6 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.

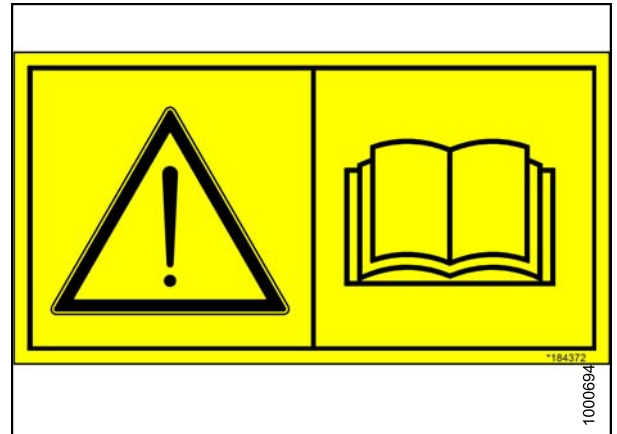
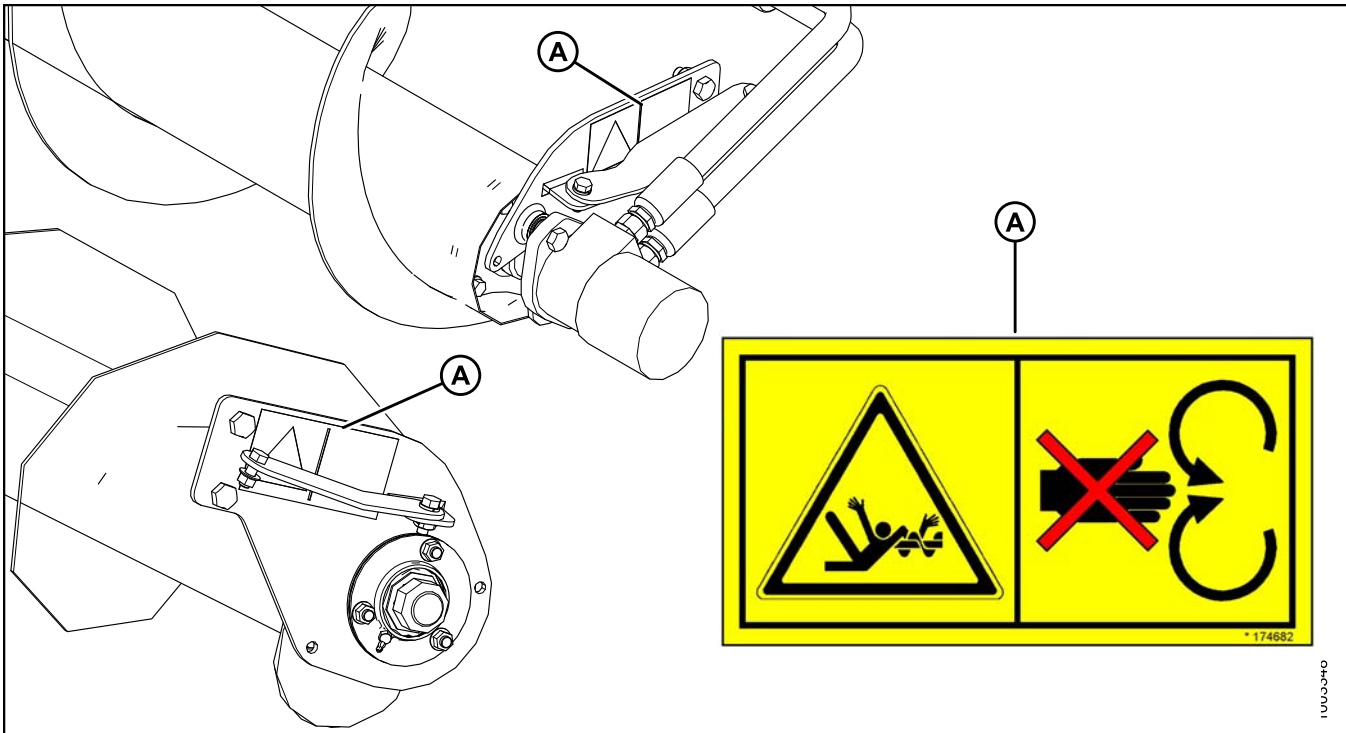


Figure 1.14: Operator's Manual Decal

### 1.6.1 Installing Safety Decals

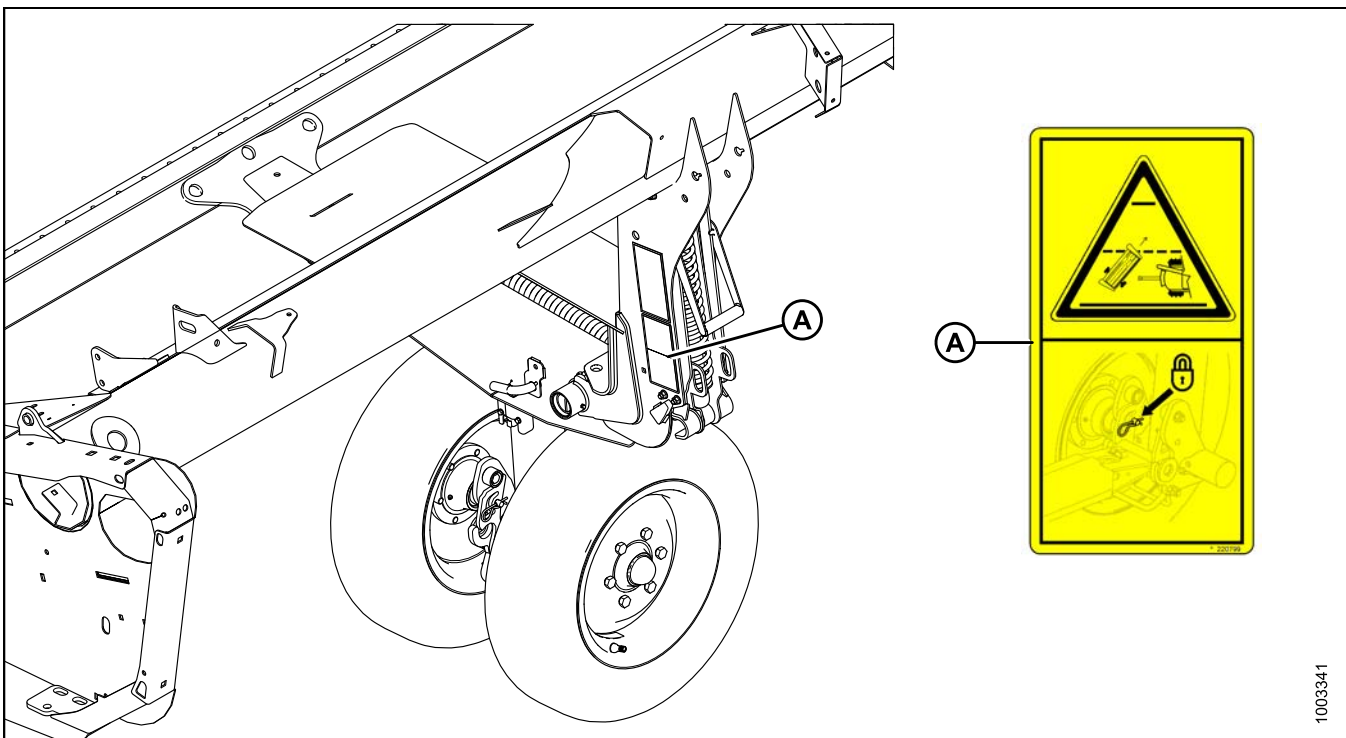
1. Clean and dry the installation area.
2. Decide on the exact location before you remove the decal backing paper.
3. Remove the smaller portion of the split backing paper.
4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
5. Prick small air pockets with a pin and smooth out.

## 1.7 Safety Decal Locations



**Figure 1.15: Upper Cross Auger**

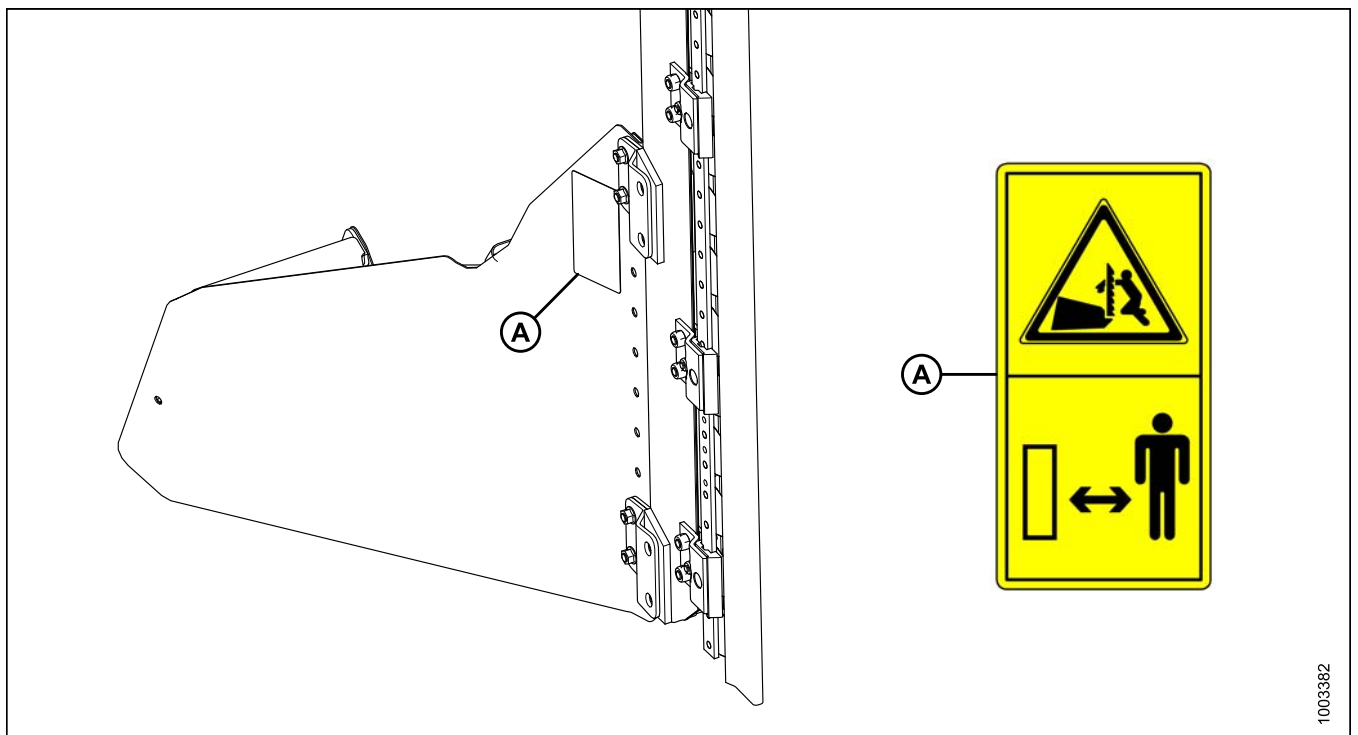
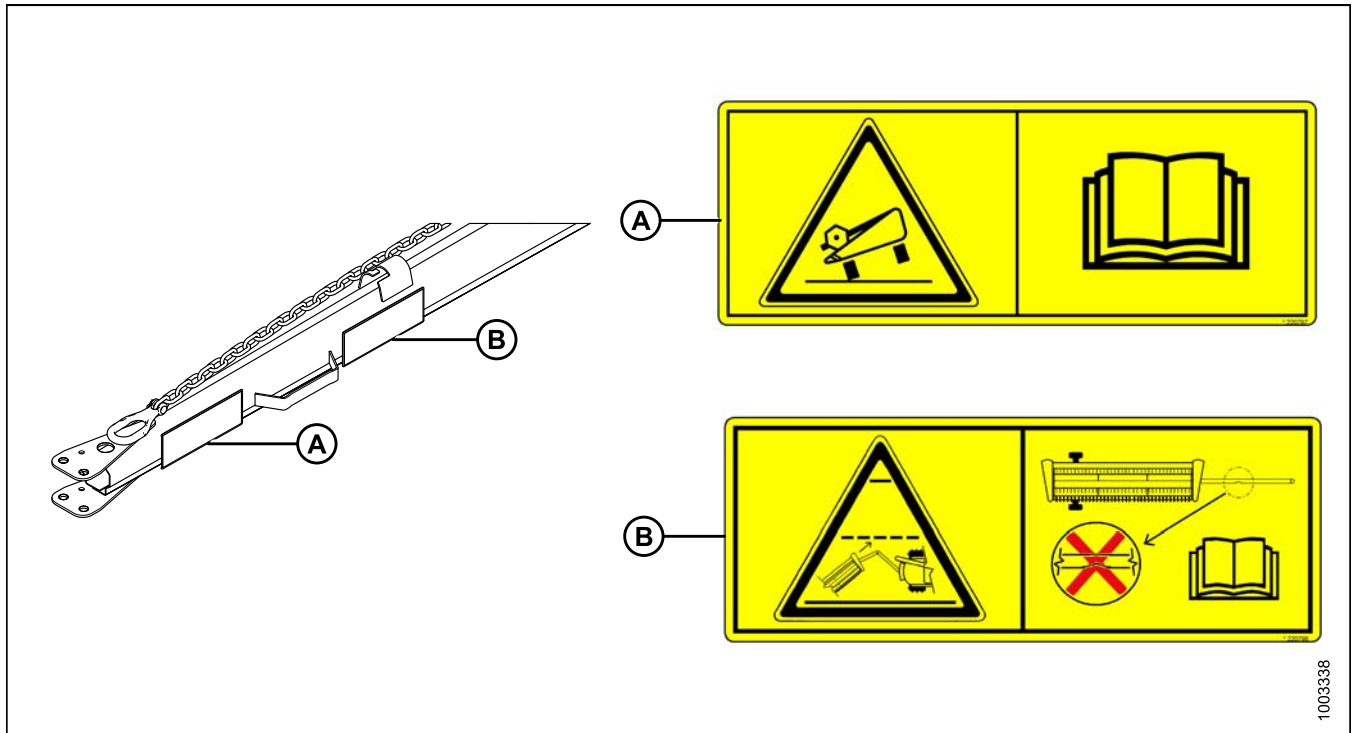
A - MD #174682



**Figure 1.16: Slow Speed Transport**

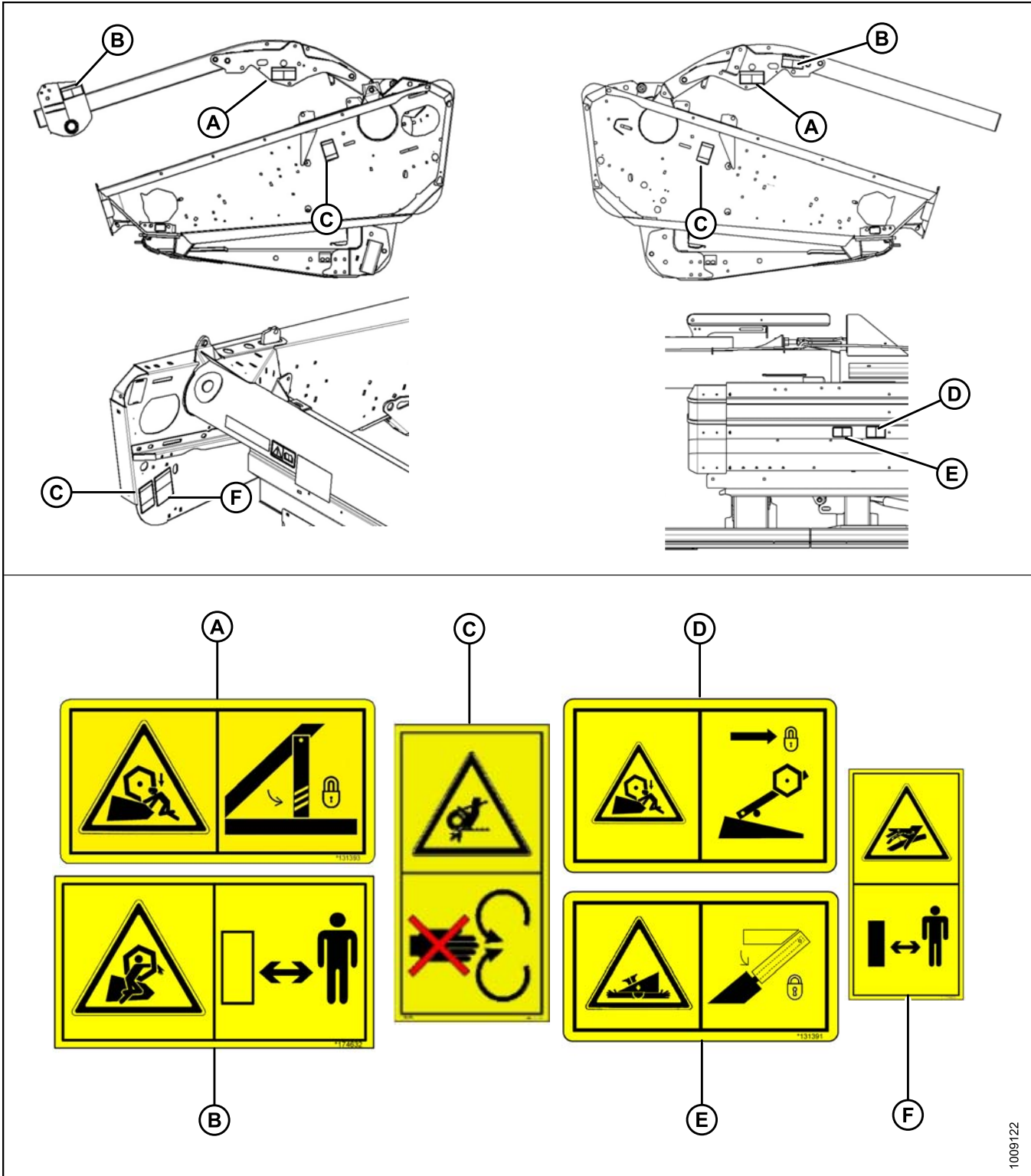
A - MD #220799

## SAFETY





## SAFETY



1009122

**Figure 1.19: Endsheets, Reel Arms, Backsheet**

A - MD #131393

B - MD #174632

C - MD #184371

D - MD #184371 (DK Only)

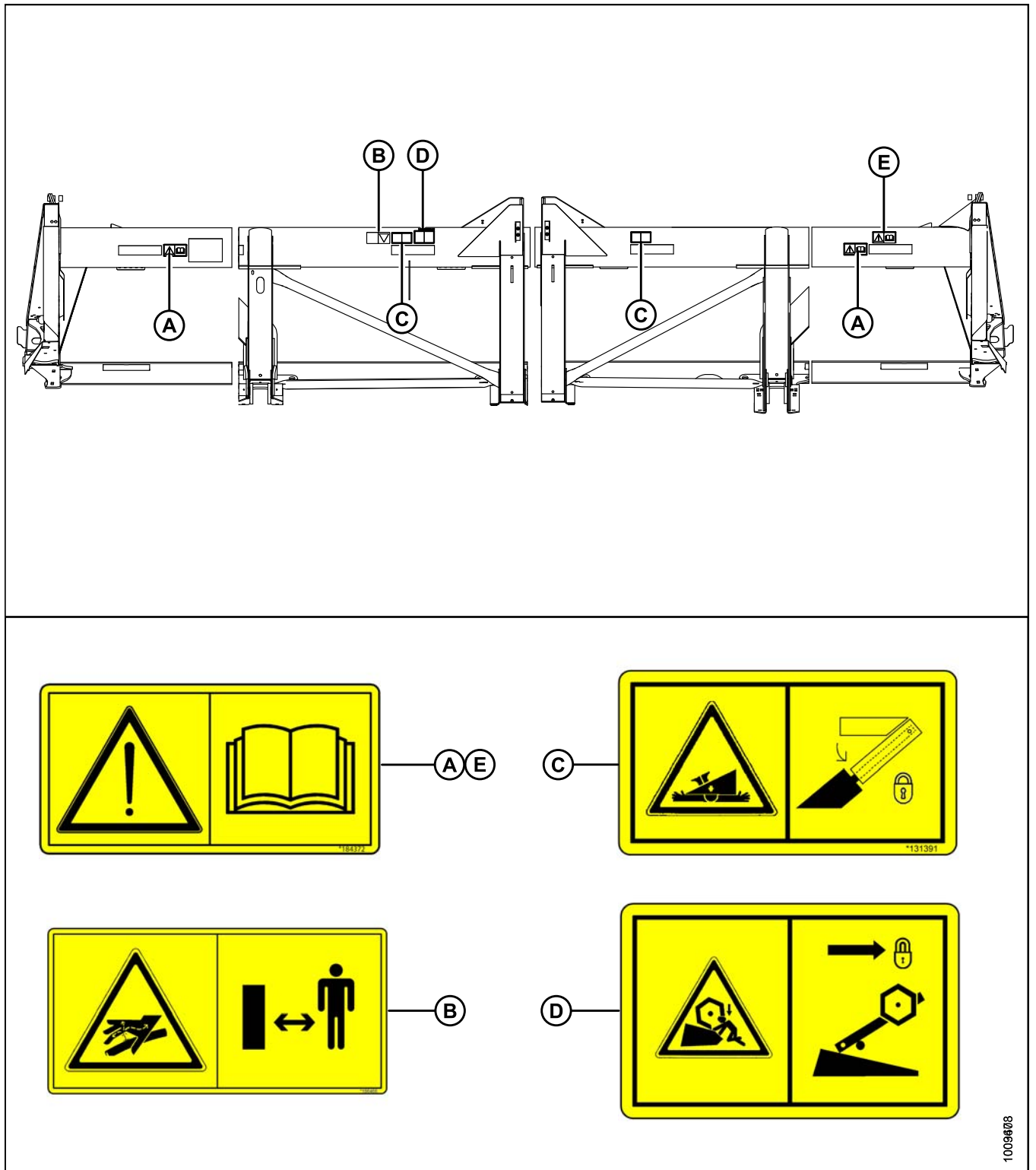
E - MD #131392 (2 Places)

F - MD #131391 (2 Places)

G - MD #174436

H - MD #184371 (DK 2 Places)

## SAFETY



**Figure 1.20: Backtube**

A - MD #184372  
D - MD #131392

B - MD #166466  
E - MD #184372 (Split Frame)

C - MD #131391

## 1.8 Understanding Safety Signs

### MD #131391

Crushing hazard

#### DANGER

- Rest header on ground or engage safety props before going under unit.

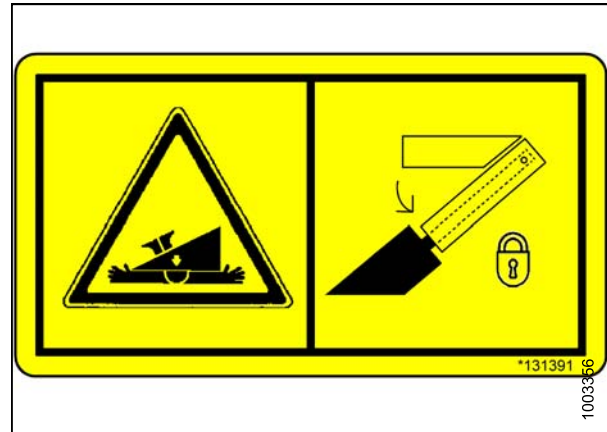


Figure 1.21: MD #131391

### MD #131392

Crushing hazard

#### WARNING

- To avoid injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage safety prop on each reel support arm before working on or under reel.
- Refer to header operator's manual.

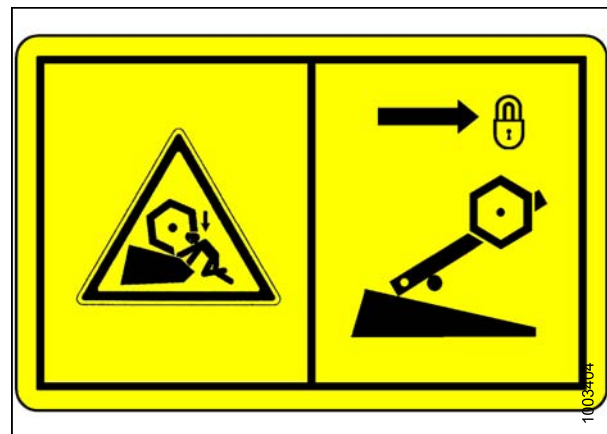


Figure 1.22: MD #131392

### MD #131393

Reel hazard

#### WARNING

- To avoid injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage safety prop on each reel support arm before working on or under reel.
- Refer to header operator's manual.



Figure 1.23: MD #131393

## SAFETY

### MD #166466

High pressure oil hazard

#### WARNING

- Do not go near leaks.
- 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 1.24: MD #166466

### MD #166833

Run-over hazard

#### WARNING

- Remove key from ignition.
- Read tractor and mower manufacturer's manuals for inspection and maintenance instructions.
- Read the windrower and header manuals for inspection and maintenance instructions.

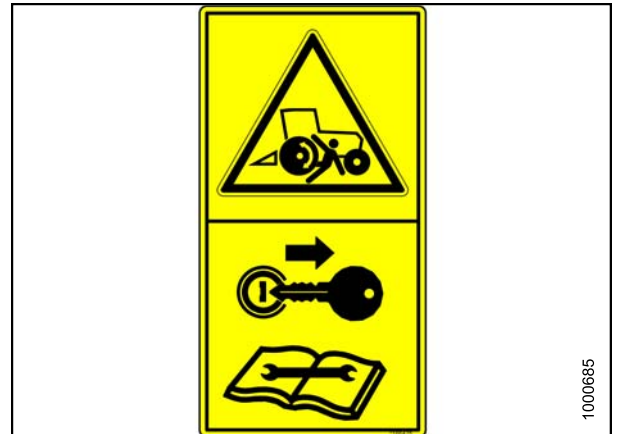


Figure 1.25: MD #166425

### MD #174432

Reel hazard

#### WARNING

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



Figure 1.26: MD #174432

## SAFETY

### MD #174434

Header hazard

#### DANGER

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

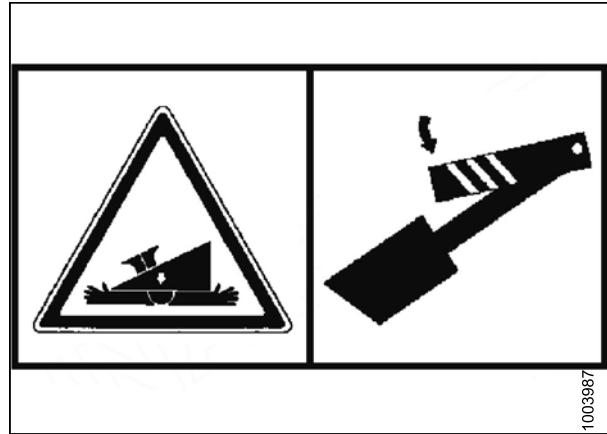


Figure 1.27: MD #174434

### MD #174436

High pressure oil hazard

#### WARNING

- Do not go near leaks
- 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 1.28: MD #174436

### MD #174632

Reel entanglement hazard

#### CAUTION

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

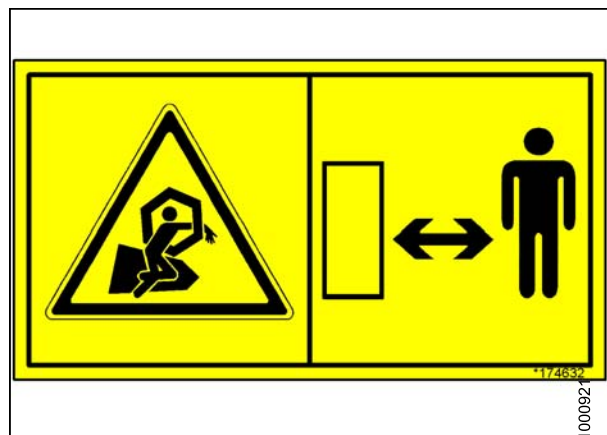


Figure 1.29: MD #174632

## SAFETY

### MD #174682

Auger entanglement hazard

#### CAUTION

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

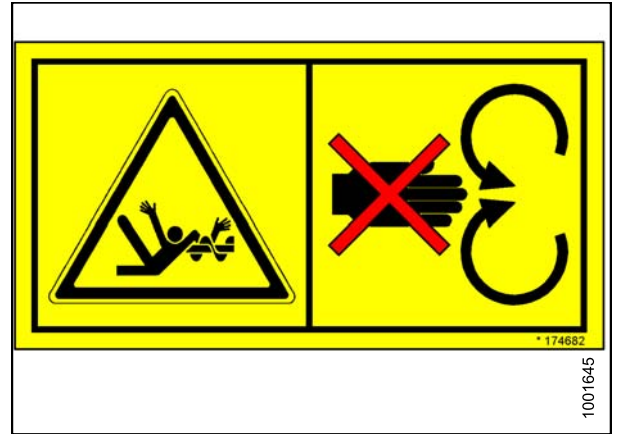


Figure 1.30: MD #174682

### MD #174684

Sharp component hazard

#### 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 1.31: MD #174684

## SAFETY

### MD #184372

General hazard pertaining to machine operation and servicing

#### 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 the engine and remove the key from ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage safety props to prevent lowering of raised unit before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

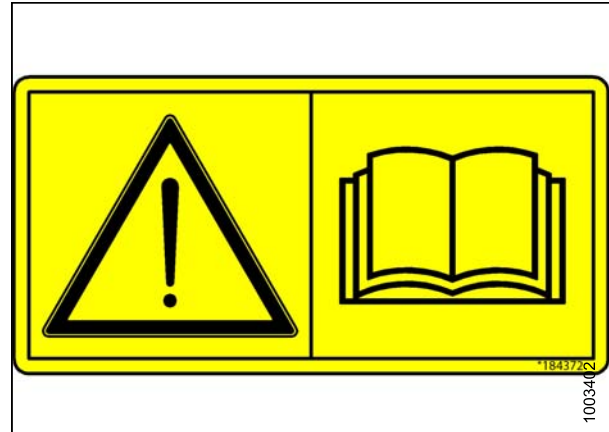


Figure 1.32: MD #184372

### MD #184422

Keep shields in place hazard

#### WARNING

- Do not place hand.
- To avoid injury, stop the engine and remove the key before opening power drive system shield.
- Keep all shields in place.



Figure 1.33: MD #184422



## SAFETY

### MD #190546

Slippery surface

#### WARNING

- Do not use this area as a step or platform.
- Failure to comply could result in serious injury or death.

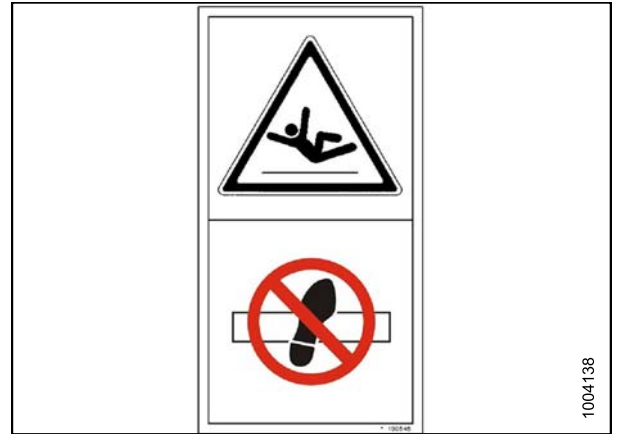


Figure 1.34: MD #190546

### MD #193147

Transport/roading hazard

#### WARNING

- Ensure tow-bar lock mechanism is locked.

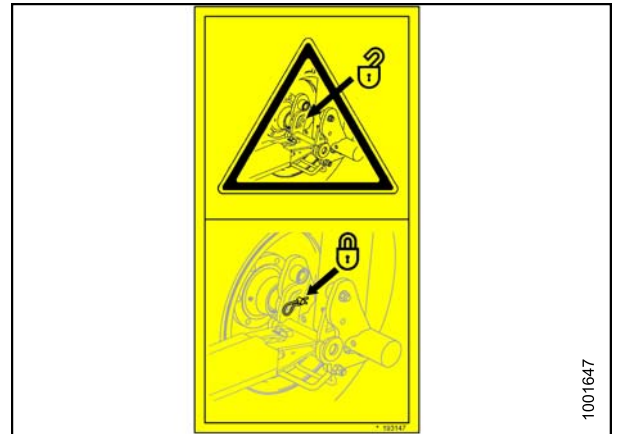


Figure 1.35: MD #193147

## SAFETY

### MD #194521

Auger entanglement hazard

#### CAUTION

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

General hazard pertaining to machine operation and servicing.

#### CAUTION

- Read the operator's manual and follow 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 every year.
- 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.
- Stop the engine and remove the 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.

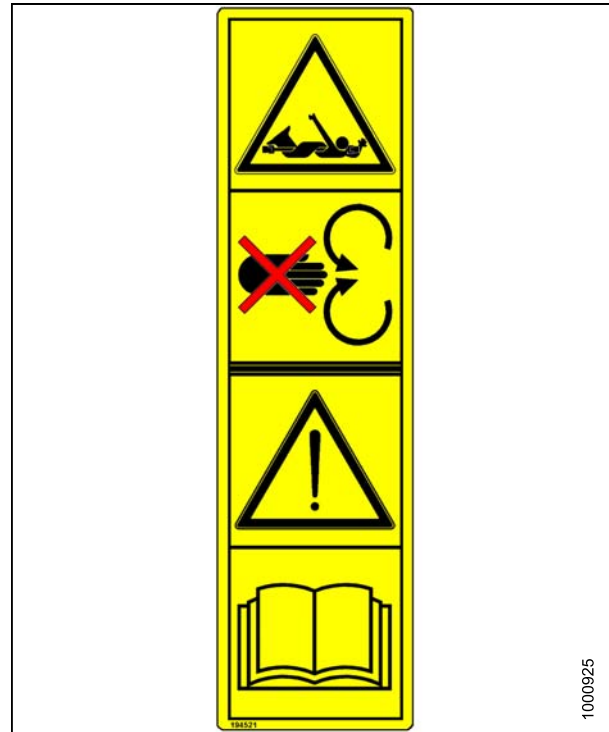


Figure 1.36: MD #194521

### MD #220797

Tipping hazard in transport mode

#### WARNING

- Read the operator's manual for more information on potential tipping or roll-over of header while transporting.

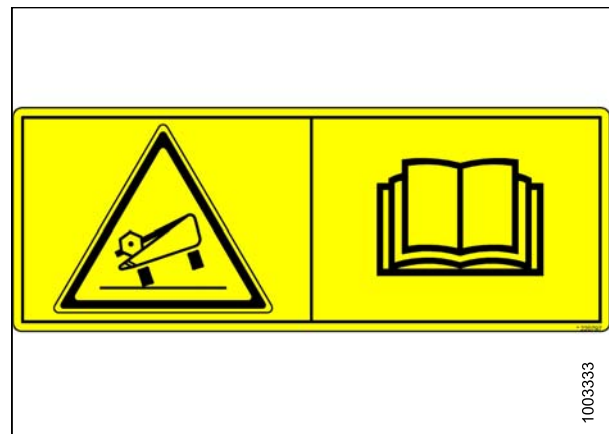


Figure 1.37: MD #220797

## SAFETY

### MD #220798

Loss of control hazard in transport

#### CAUTION

- 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.

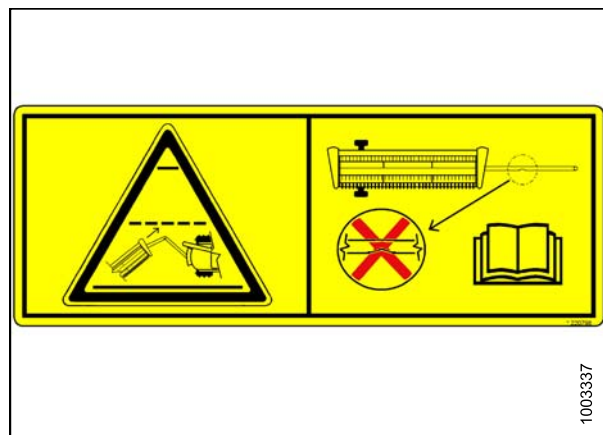


Figure 1.38: MD #220798

### MD #220799

Transport/roading hazard

#### WARNING

- Ensure tow-bar lock mechanism is locked

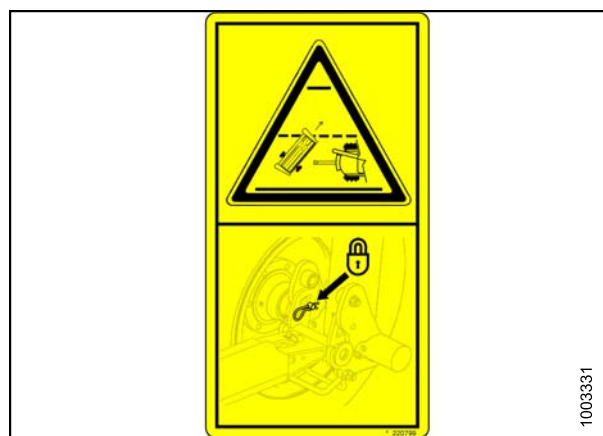


Figure 1.39: MD #220799



## 2 Product Overview

### 2.1 Definitions

The following terms and acronyms may be used in this manual.

Term	Definition
AHHC	Automatic Header Height Control
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between the header and the machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
D-Series header	MacDon's D50, D60, and D65 rigid draper headers
DK	Double knife
DKD	Double-knife drive
DDD	Double-draper drive
DR	Double reel
FD-Series header	MacDon's FD70 and FD75 FlexDraper® headers
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose
FFFT	Flats from finger tight
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible
Header	A machine that cuts crop and feeds it into an attached combine
Hex key	A hex key or Allen key (also known by various other synonyms) is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive)
HDS	Hydraulic deck shift
hp	Horsepower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed the standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
MDS	Mechanical deck shift
n/a	Not applicable

## PRODUCT OVERVIEW

Term	Definition
Nut	An internally threaded fastener that is designed to be paired with a bolt
NPT	National Pipe Thread: A style of fitting used for low pressure port openings Threads on NPT fittings are uniquely tapered for an interference fit
ORB	O-ring boss: A style of fitting commonly used in port opening on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes This style of fitting is also commonly called ORS, which stands for O-ring seal
PTO	Power take-off
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts
SDD	Single-drawer drive
SK	Single knife
SKD	Single-knife drive
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
SR	Single reel
Tractor	Agricultural type tractor
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg)
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb) or Newtons (N)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft·lbf) or Newton-meters (N·m)
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism

## 2.2 Specifications

### | FD75 | CA25 | Attachments

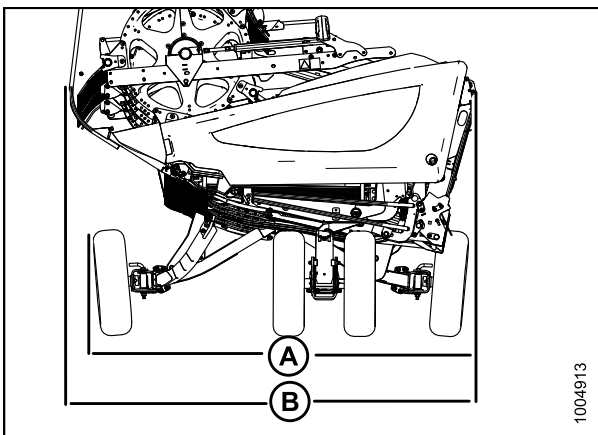
S: standard / O<sub>F</sub>: optional (factory installed) / O<sub>D</sub>: optional (dealer installed) / -: not available

<b>Cutterbar</b>			
Effective cutting width (distance between crop divider points)			
30-ft. header		30 ft. (360 in. [9144 mm])	S
35-ft. header		35 ft. (420 in. [10668 mm])	S
40-ft. header		40 ft. (480 in. [12192 mm])	S
45-ft. header		45 ft. (540 in. [13716 mm])	S
Cutterbar lift range		Varies with combine model	S
<b>Knife</b>			
Single-knife drive (all sizes): One hydraulic motor with V-belt to one heavy duty (MD) knife drive box			O <sub>F</sub>
Double-knife drive (40-, 45-ft. only, untimed): Two hydraulic motors with banded-belts, to two heavy duty (MD) knife drive boxes.			O <sub>F</sub>
Knife stroke		3 in. (76 mm)	S
Single-knife speed (strokes per minute) <sup>1</sup>	30 ft.	1200–1400 spm	S
	35 ft.	1100–1300 spm	S
	40 ft.	1050–1200 spm	S
Double-knife speed (strokes per minute) <sup>1</sup>	40, 45 ft.	1100–1400 spm	S
<b>Knife Sections</b>			
Over-serrated / solid / bolted / 9 serrations per inch			S
Knife overlap at center (double-knife headers)		1/8 in. (3 mm)	S
<b>Guards and Hold-Downs</b>			
Guard: pointed / forged / double heat treated (DHT) Hold-down: sheet metal / adjustment bolt			S
<b>Guard Angle (Cutterbar on Ground)</b>			
Center-link retracted		2.0 Degrees	S
Center-link extended		7.4 Degrees	S

1. Under normal cutting conditions, knife speed taken at the knife drive pulley should be set between 600 and 640 rpm (1200 and 1280 spm). If set to low side of chart, you could experience knife stalling.

## PRODUCT OVERVIEW

Conveyor (Draper) and Decks			
Draper width		41-19/32 in. (1057 mm)	S
Draper drive		Hydraulic	S
Draper speed: CA25 Combine Adapter controlled		0–464 fpm (141 m/min.)	S
Delivery opening width		73-19/32 in. (1870 mm)	S
PR15 Pick-Up Reel			
Quantity of tine tubes		5-, 6-, or 9-tine tubes	
Center tube diameter		8 in. (203 mm)	S
Finger tip radius	Factory-set	31-1/2 in. (800 mm)	S
	Adjustment range	30-3/16 – 31-1/2 in. (766–800 mm)	S
Effective reel diameter (via cam profile)		65 in. (1650 mm)	S
Finger length		11 in. (290 mm)	S
Finger spacing (staggered on alternate bats)		6 in. (150 mm)	S
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S
Frame and Structure			
Header width	Field mode		Cut Width + 15-1/8 in. (384 mm) S
	Transport position - reel fore-aft fully retracted (shortest center-link)	(A) Long dividers installed (refer to figure 2.1: <a href="#">Header Width, page 24</a> )	106 in. (2684 mm) -
		(B) Long dividers removed (refer to figure 2.1: <a href="#">Header Width, page 24</a> )	98 in. (2500 mm) -



**Figure 2.1: Header Width**



## PRODUCT OVERVIEW

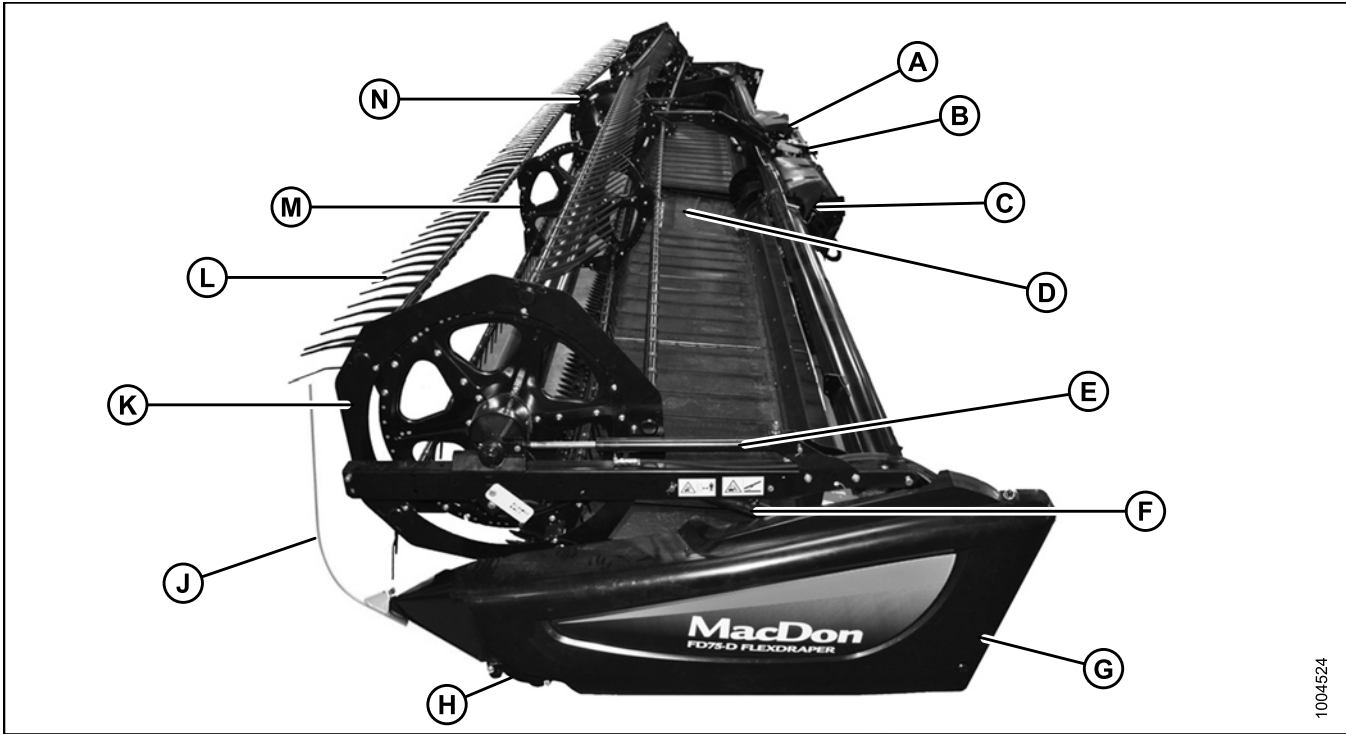
Attachments				
CA25 Combine Adapter				S
Feed draper		Width	78-11/16 in. (2000 mm)	S
		Speed	350–400 fpm (107–122 m/min)	S
Feed auger		Width	65-5/16 in. (1660 mm)	S
		Outside diameter	22 in. (559 mm)	S
		Tube diameter	14 in. (356 mm)	S
		Speed (varies with combine model)	150 rpm	S
Oil reservoir capacity			16 US Gallons (60 Litres)	S
Oil type			15W40	
Driveline overall length <sup>2</sup>	Case, New Holland	Maximum (extended)	48-7/16 in. (1230 mm)	O <sub>F</sub>
		Minimum (compressed)	38-3/16 in. (970 mm)	
	Challenger, Gleaner, John Deere, Lexion, Massey Ferguson	Maximum (extended)	49-11/16 in. (1262 mm)	
		Minimum (compressed)	36-1/16 in. (916 mm)	
Upper Cross Auger				O <sub>D</sub>
Outside diameter			12 in. (305 mm)	
Tube diameter			6 in. (152 mm)	
Stabilizer Wheel / Slow Speed Transport				O <sub>D</sub>
Wheels			15 in.	
Tires			P205/75 R-15	

Weight		
Estimated weight range – base header, no adapter – variances are due to different package configurations.		
30-ft. header		6746–6971 lb (1981–2178 kg)
35-ft. header		7167–7430 lb (2181–2480 kg)
40-ft. header	North America frame	7589–7789 lb (2352–2593 kg)
	Export frame	7824 lb (3549 kg)
45-ft. header	North America frame	8218 lb (3728 kg)
	Export frame	8253 lb (3744 kg)

2. Subtract 10-7/16 in. (265 mm) for length between yoke pins.

## 2.3 Component Identification

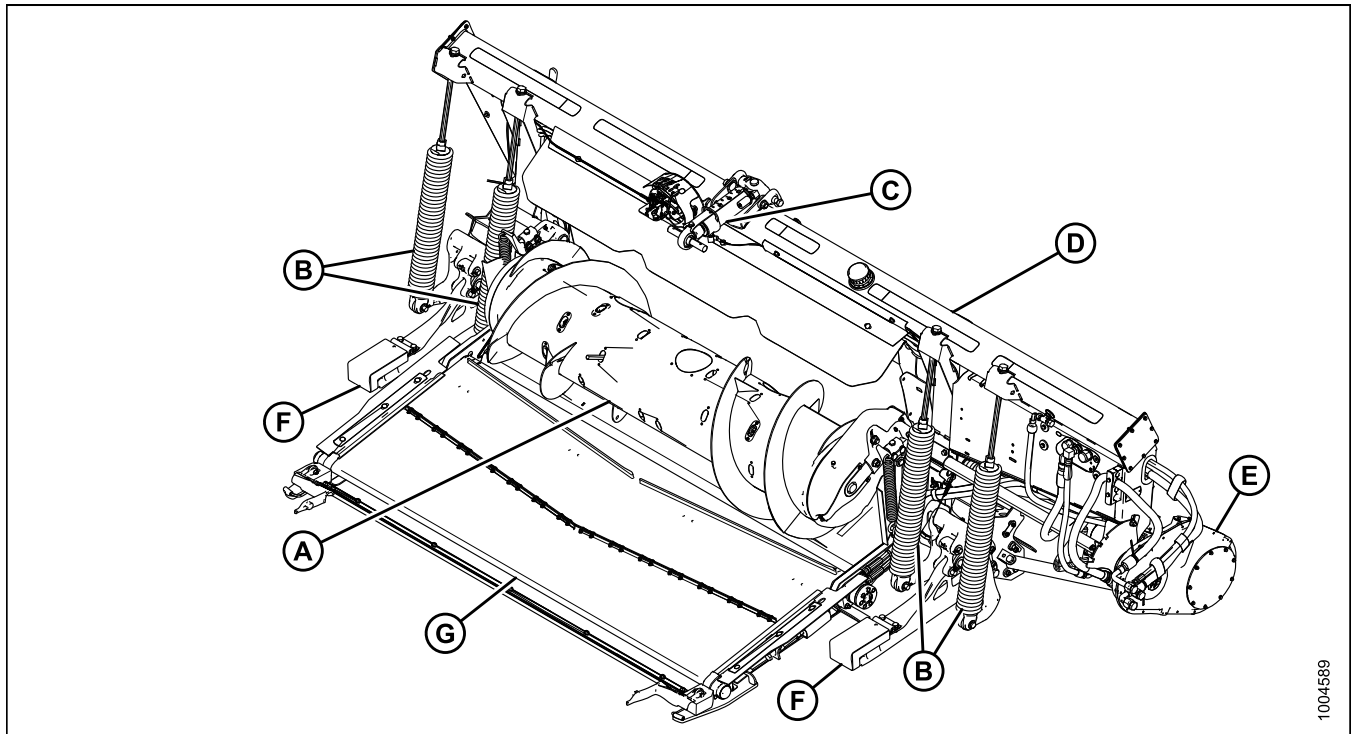
### 2.3.1 FD75 FlexDraper®



**Figure 2.2: FD75 FlexDraper® Components**

- |                        |                            |                                 |
|------------------------|----------------------------|---------------------------------|
| A - Wing Float Linkage | B - Center-Link            | C - Center Reel Arm Prop Handle |
| D - Transition Pan     | E - Reel Fore-Aft Cylinder | F - Reel Lift Cylinder          |
| G - Endshield          | H - Knife Drive            | J - Crop Divider                |
| K - Reel Endshield     | L - Pick-up Fingers        | M - Pick-up Reel                |
| N - Reel Cam           |                            |                                 |

## 2.3.2 CA25 Combine Adapter



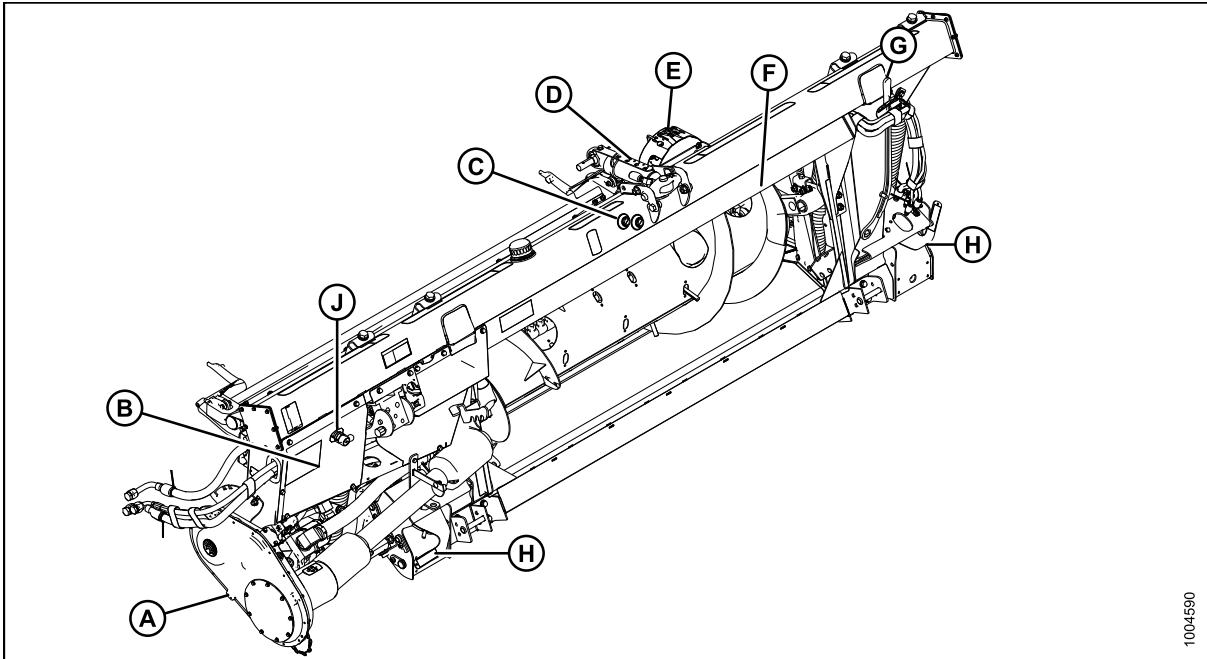
**Figure 2.3: Header Side of CA25 Combine Adapter**

A - Feed Auger  
D - Hydraulic Reservoir  
G - Feed Draper

B - Header Float Springs  
E - Gearbox

C - Center-Link  
F - Header Support Arm

## PRODUCT OVERVIEW



**Figure 2.4: Combine Side of CA25 Combine Adapter**

A - Adapter Gearbox  
D - Center-Link  
G - Torque Wrench

B - Hydraulic Compartment Cover  
E - Header Height Control Indicator  
H - Header Float Lock

C - Reservoir Oil Level Sight Glass  
F - Transition Frame  
J - Side Draper Speed Control

## 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.

### 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.
- To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting or removing plugged material from the machine.
- 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 [3.4 Shutting Down the Machine, page 42](#).
- Operate only in daylight or good artificial light.

### 3.2.1 Header Safety Props

The header safety props are located on the header lift cylinders beneath the combine feeder house. The safety props prevent the lift cylinders from inadvertently retracting and lowering the header. Refer to your combine operator's manual.

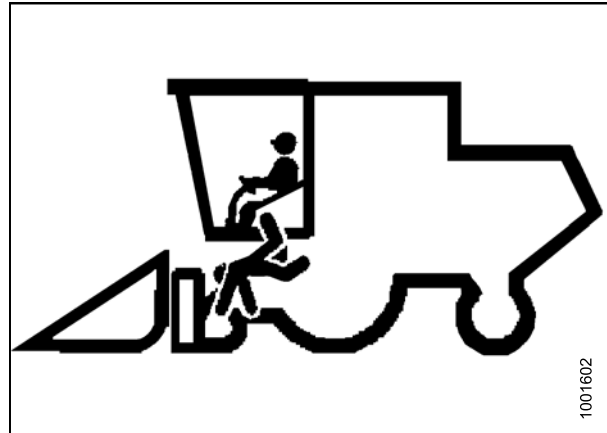


Figure 3.1: No Riders

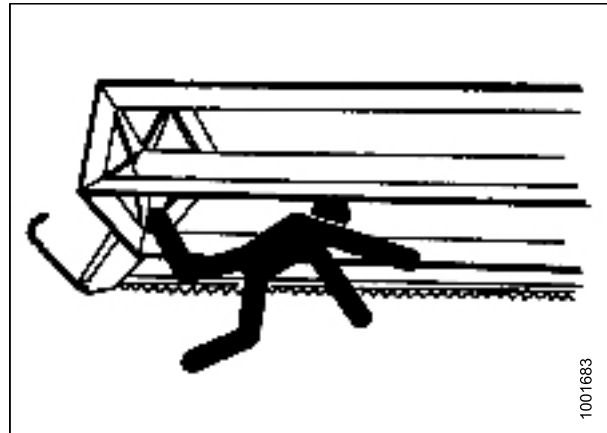


Figure 3.2: Bystander Safety

## DANGER

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

### 3.2.2 Reel Safety Props

## WARNING

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

Reel safety props are located at the reel support arms.

#### IMPORTANT:

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

#### *Engaging Reel Safety Props*

Engage the reel safety props whenever you intend to work on or around a raised reel. When engaged, the reel safety props prevent the reel from falling unexpectedly.

## 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.

**THE CONTENT ON THIS PAGE HAS CHANGED SINCE THIS MANUAL (147695 REVISION A) WAS PUBLISHED.**

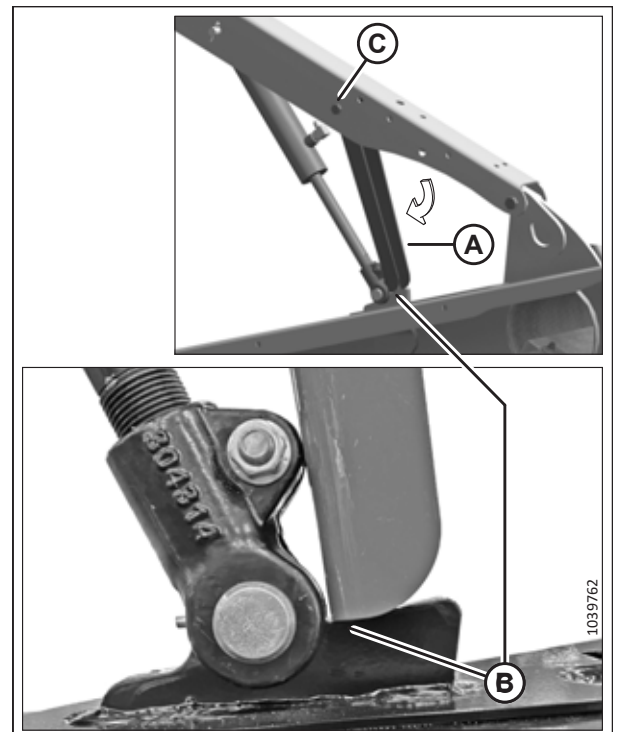
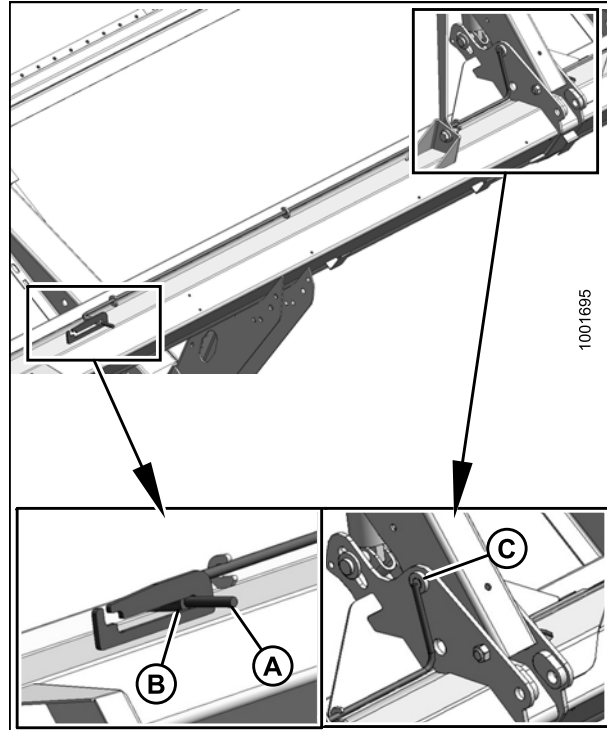


Figure 3.3: Engaged Reel Safety Prop – Left Shown

## OPERATION

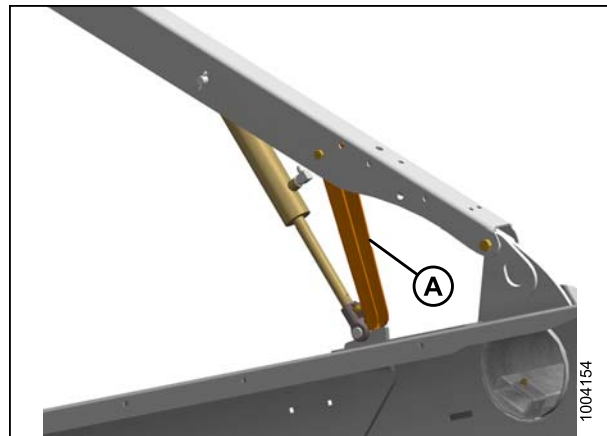
3. At the center reel arm on double-reel headers, use handle (A) to move lock rod to inboard position (B), engaging pin (C) under prop.
4. Lower reel until safety props contact cylinder mounts on outer reel arms and pin at center arm.



**Figure 3.4: Center Arm Reel Prop**

### *Disengaging Reel Safety Props*

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



**Figure 3.5: Reel Arm Safety Prop**



## OPERATION

3. Use handle (B) to move lock rod (A) to outboard position.

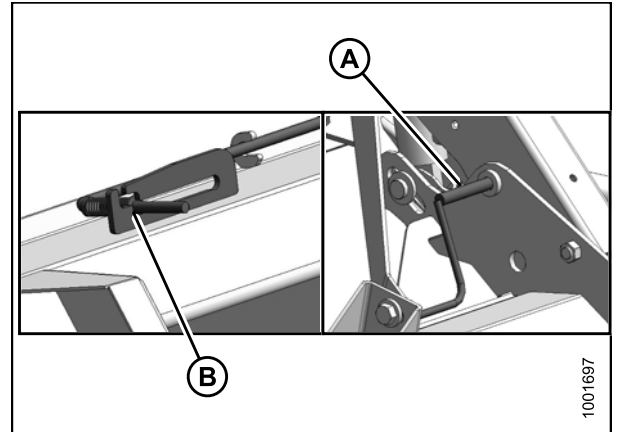


Figure 3.6: Center Arm Safety Prop

### 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.

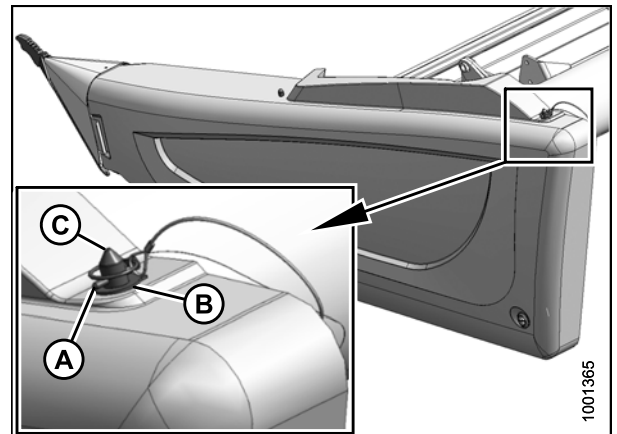


Figure 3.7: Left-Hand Endshield

## 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 (C) 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. Refer to [Removing Endshields, page 35](#).

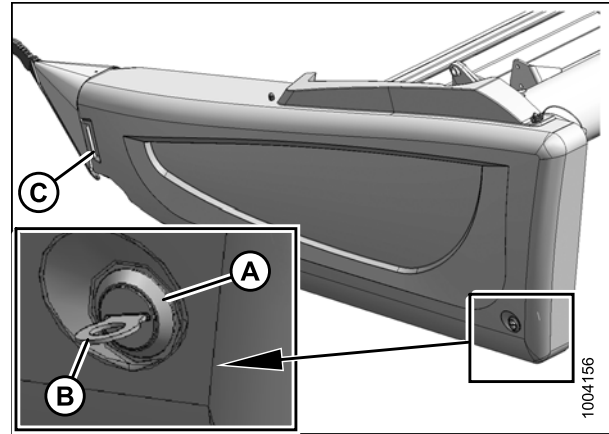


Figure 3.8: Left-Hand Endshield

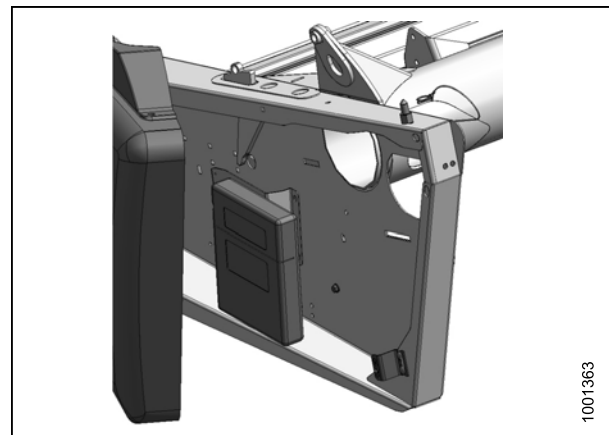


Figure 3.9: Left-Hand Endshield Open

## 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.

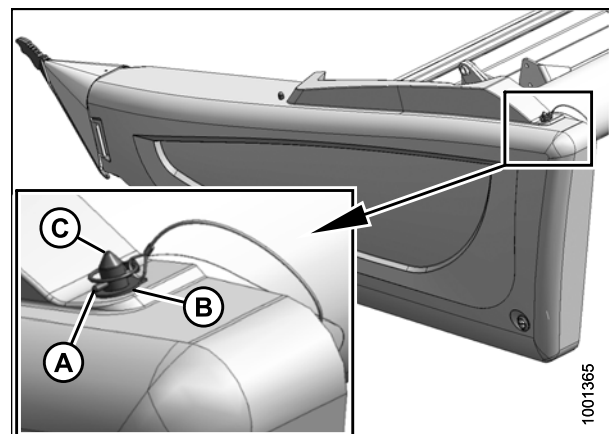
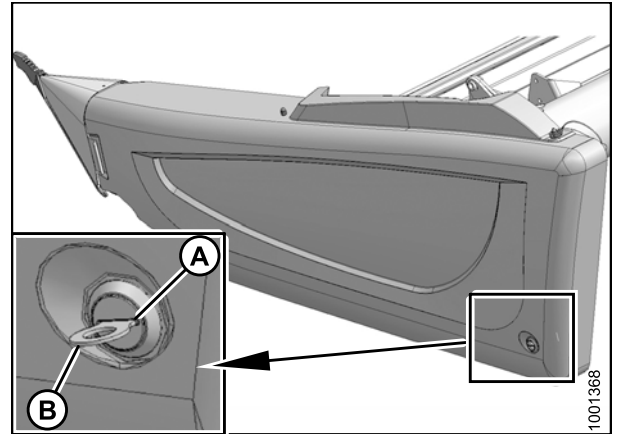


Figure 3.10: Left-Hand Endshield

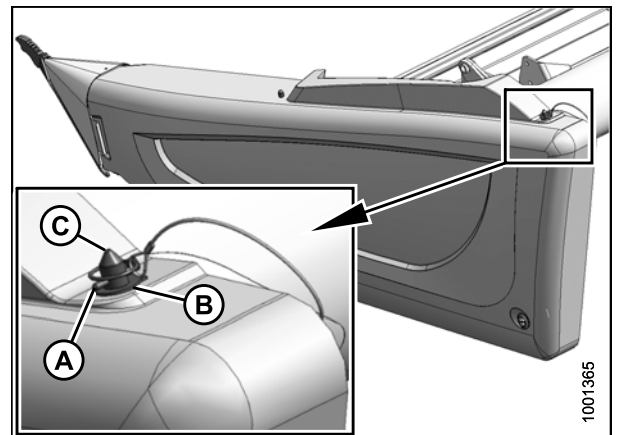
## OPERATION

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



**Figure 3.11: Left-Hand Endshield**

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

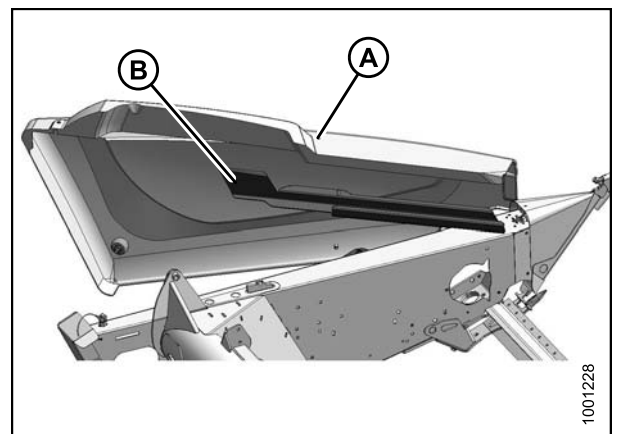


**Figure 3.12: Left-Hand Endshield Pin**

### *Removing Endshields*

To remove an endshield, follow these steps:

1. Open endshield. Refer to [Opening Endshields, page 33](#).
2. Remove acorn nut (A) that secures the endshield to support (B).
3. Lift endshield off support (B).



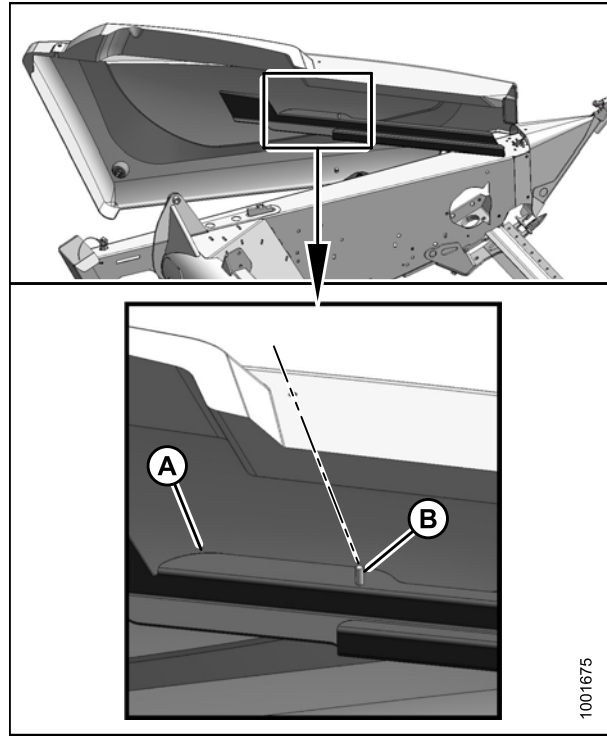
**Figure 3.13: Left-Hand Endshield**

## 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.

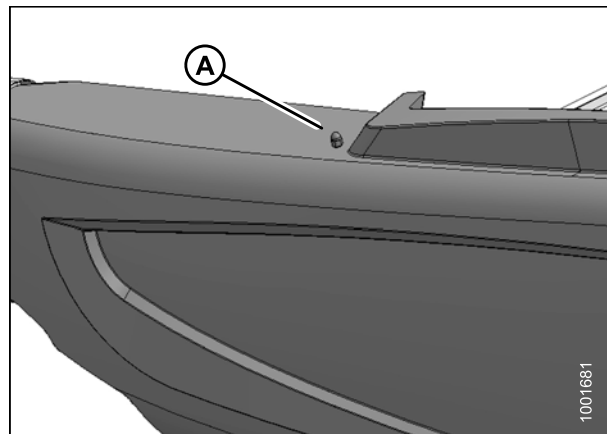


**Figure 3.14: Left-Hand Endshield**

2. Secure endshield to the support with acorn nut (A).
3. Close endshield. Refer to [Closing Endshields, page 34](#).

**NOTE:**

Plastic endshields may expand or contract when subjected to large temperature changes. Top pin and lower latch bracket positions can be adjusted to compensate for dimensional changes. Refer to [Adjusting Endshields, page 37](#).



**Figure 3.15: Left-Hand Endshield**

## OPERATION

### Adjusting Endshields

Plastic endshields may expand or contract when subjected to large temperature changes. The position of the top pin and lower catch can be adjusted to compensate for dimensional changes.

To adjust the endshield, perform the following:

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 (24)
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

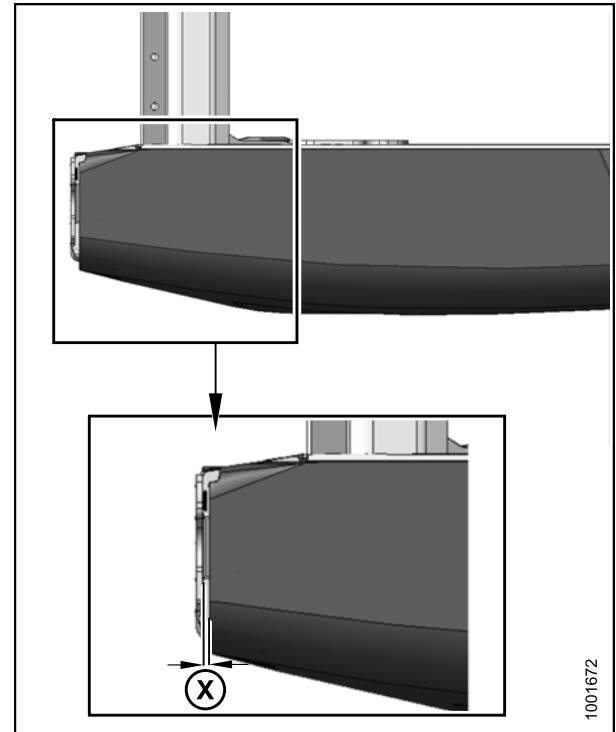


Figure 3.16: Left-Hand Endshield

If adjustments are required, proceed as follows:

2. Open endshield. Refer to [Opening Endshields, page 33](#).
3. From inside endsheet, loosen nut (A) on pin (B) with a 3/4 in. (19 mm) 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. Refer to [Closing Endshields, page 34](#).

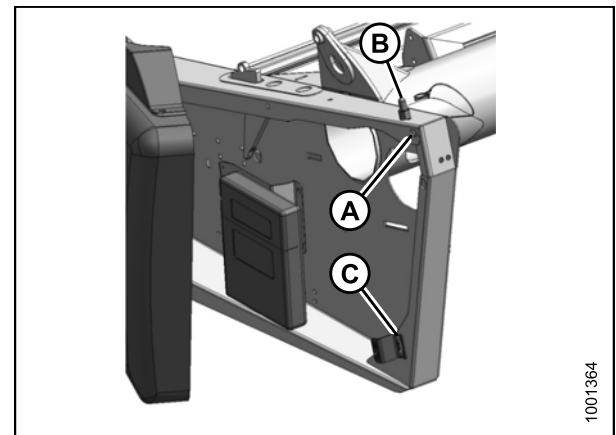


Figure 3.17: Left-Hand Endshield

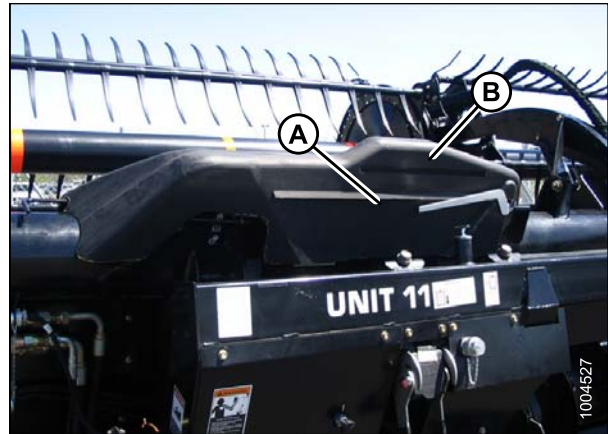
### 3.2.4 Linkage Covers

Plastic covers that are attached to the header frame protect the header wing balance mechanism from debris and weather.

#### *Removing Linkage Covers*

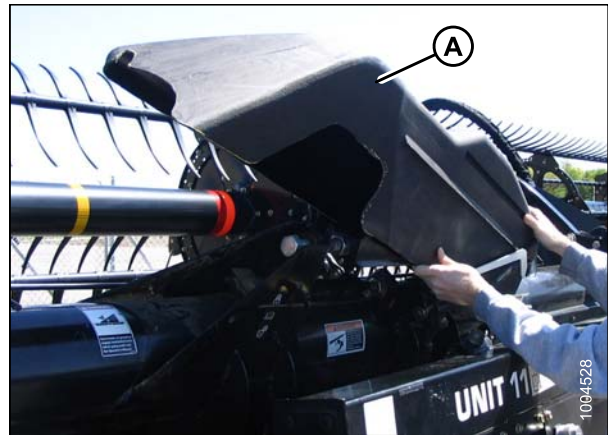
To remove a linkage cover, follow these steps:

1. Remove screw (A) and lift outboard end of cover (B).



**Figure 3.18: Linkage Cover**

2. Rotate cover (A) upward until inboard end can be lifted off.



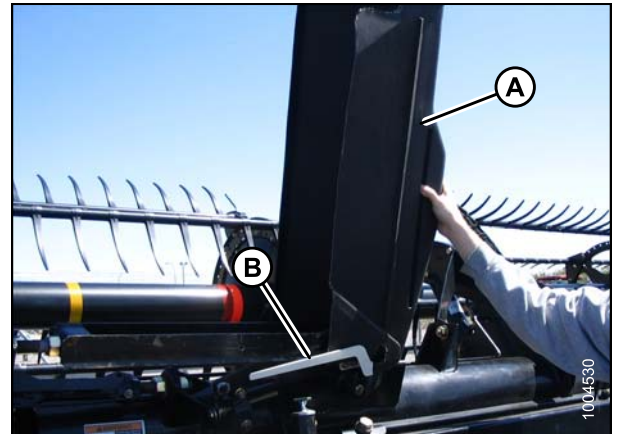
**Figure 3.19: Linkage Cover**

## OPERATION

### *Installing Linkage Covers*

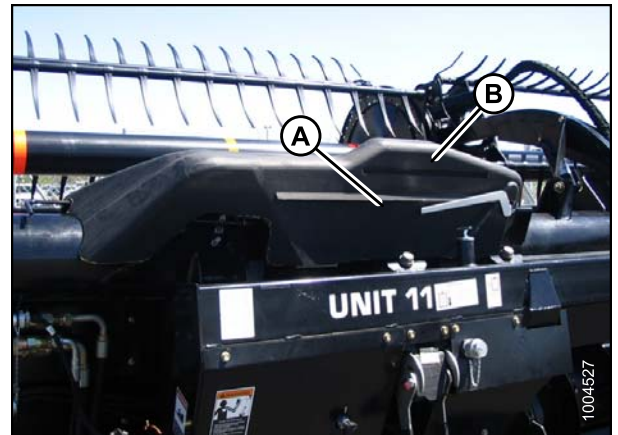
To install a linkage cover, follow these steps:

1. Position inboard end of cover (A) over linkage and behind indicator bar (B).
2. Lower cover until secure and against header tube.



**Figure 3.20: Linkage Cover**

3. Install screw (A) to hold cover (B) in place.



**Figure 3.21: Linkage Cover**

### 3.2.5 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. Do NOT 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 [5.3.5 Checking Hydraulic Hoses and Lines, page 259](#).

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to [5.3.1 Maintenance Schedule/Record, page 255](#).

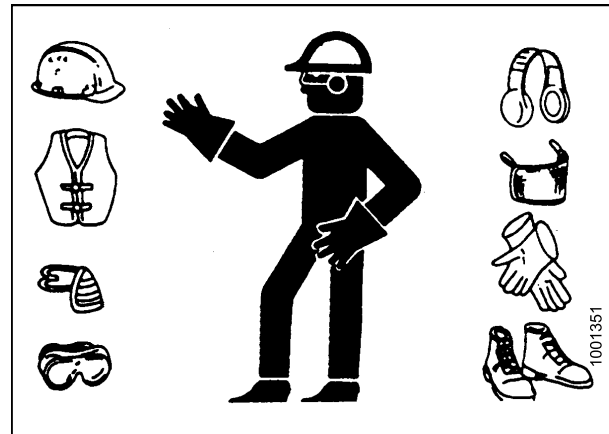


Figure 3.22: Safety Devices



### 3.3 Break-in Period

**NOTE:**

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

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

1. Operate the machine with reel drapers and knife 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.

2. Perform the items specified. Refer to [5.3.2 Break-In Inspection, page 257](#).



#### **CAUTION**

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

## 3.4 Shutting Down the Machine

### 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.
- Lower and retract reel fully.
- Stop engine and remove key from ignition.
- Wait for all movement to stop.

## 3.5 Cab Controls

### CAUTION

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

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

- Header engage/disengage control
- Header height
- Header angle
- Ground speed
- Reel speed
- Reel height
- Reel fore-aft position

## 3.6 Header Setup

### 3.6.1 Header Attachments

Several attachments to improve performance of your FD75 header are available as options that can be installed by your MacDon Dealer. Refer to [6 Options and Attachments, page 407](#) in this manual for a description of each item.

### 3.6.2 Header Settings

This table is a guideline for setting up the FD75 FlexDraper® Header. Settings other than those suggested can be selected to suit various crops and conditions not covered here.

Also, refer to [3.6.4 Reel Settings, page 50](#).

# OPERATION

Table 3.1 FD75/CA25 Combine Header Recommended Settings

Crop Type	Stubble Height (In.)	Crop Condition	Divider Rods	Draper Speed Setting <sup>3</sup>	Header Angle <sup>4 5</sup>	Reel Cam Setting	Reel Speed % <sup>6</sup>	Reel Position	Skid Shoe Position <sup>5</sup>	Stabilizer Wheel <sup>5 7</sup>	Upper Cross Auger
Cereals	< 4	Light	Off	8	B - C	3	10–15	6 or 7	Up or center	Storage	Not required
		Normal	On	7		2	10	Recommended			
		Heavy				Off	3 or 4	5–10	4 or 5		Not required
		Lodged	Off	4		10–15	6 or 7	Center or down	Not required		
	4–8	Light	Off	8	A	2	10	4 or 5	Down	7	Not required
		Normal	On	7		4	10–15	6 or 7	Not applicable		Not required
		Heavy									
		Lodged	Off	D		3 or 4	5–10	4 or 5	Down		Not required
	> 8	Light	Off	8	B - C	2	10	6 or 7	Not applicable	7	Not required
		Normal	On	7		4	10–15	6 or 7			
		Heavy									
		Lodged	Off	A		2	5–10	4 or 5			
Canola	4–8	Light	On	7	A	2	5–10	6 or 7	Down	7	Recommended
		Normal		8		1	10	3 or 4	Center or down		
		Heavy							2		
		Lodged		7		D	2	5–10	3 or 4		
	> 8	Light	On	7	B - C	2	5–10	6 or 7	Not applicable	7	Recommended
		Normal		8		1 or 2	10	3 or 4			
		Heavy									
		Lodged		7		D	2 or 3	5–10			

- Setting on CA25 draper control.
- Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
- Cutting height is controlled with a combination of skid shoes and header angle.
- Percentage above ground speed.
- Stabilizer wheels are used to limit the side to side movement when cutting off the ground in rolling terrain and to minimize bouncing.

# OPERATION

Crop Type	Stubble Height (In.)	Crop Condition	Divider Rods	Draper Speed Setting <sup>3</sup>	Header Angle <sup>4 5</sup>	Reel Cam Setting	Reel Speed % <sup>6</sup>	Reel Position	Skid Shoe Position <sup>5</sup>	Stabilizer Wheel <sup>5 7</sup>	Upper Cross Auger
California rice	< 4	Light	Rice divider rod <sup>8</sup>	4	D	2	10–15	6 or 7	Up or center	Storage	Not required
		Normal			B - C		10	4 or 5			
		Heavy			D		5–10				
		Lodged									
	4–8	Light	Rice divider rod <sup>8</sup>	4	D	3	10–15	6 or 7	Center or down	7	Not required
		Normal			B - C		10				
		Heavy			D		5–10				
		Lodged									
	> 8	Light	Rice divider rod <sup>8</sup>	4	A	3	10–15	6 or 7	Not applicable	7	Not required
		Normal			B - C		10				
		Heavy			D		5–10				
		Lodged									
Delta rice	2–6	Light	Off	6	D	2 or 3	10–15	6 or 7	Center or down	7	Not required
		Normal			B - C		10				
		Heavy			D		5–10				
		Lodged									
	> 6	Light	Off	6	A	2 or 3	10–15	6 or 7	Not applicable	7	Not required
		Normal			B - C		10				
		Heavy			D		5–10				
		Lodged									
Soybeans	On ground	Light	On	8	D	2	5–10	6 or 7	Up or center	Storage	Not required
		Normal		7	B - C		10				
		Heavy			D		5–10				
		Lodged									

8. Available through your Dealer. Rice divider rod not required on both ends of header.

# OPERATION

Crop Type	Stubble Height (In.)	Crop Condition	Divider Rods	Draper Speed Setting <sup>3</sup>	Header Angle <sup>4 5</sup>	Reel Cam Setting	Reel Speed % <sup>6</sup>	Reel Position	Skid Shoe Position <sup>5</sup>	Stabilizer Wheel <sup>5 7</sup>	Upper Cross Auger	
Flax	2-6	Light	On	8	B - C	2	5-10	6 or 7	Center or down	7	Not required	
		Normal		A	10							
		Heavy		B - C	5-10							
		Lodged		D								
Peas	On ground	Light	On	7	B - C	2	5-10	6 or 7	Up or center	Storage	Recommended	
		Normal					10					
		Heavy					5-10					4 or 5
		Lodged										
Lentils	On ground	Light	On	8	B - C	2	5-10	6 or 7	Up or center	Storage	Not required	
		Normal		10								
		Heavy		5-10								
		Lodged										

### 3.6.3 Optimizing Header for Straight Combining Canola

Ripe canola can be straight combined, but most varieties are very susceptible to shelling and subsequent seed loss. This section provides recommended attachments, settings, and adjustments to optimize FD75 FlexDraper® headers for straight combining canola.

The optimization process includes the following modifications to the header:

- Installing Full Length Upper Cross Auger
- Installing European Adapter Seal Kit
- Installing Vertical Knives
- Installing Short Center Reel Braces
- Changing to High Speed Auger Drive Sprocket
- Adding Auger Fingers

**Table 3.2 Auger Finger Quantity**

Feeder Opening	Quantity Installed at Factory		Total Quantity for Optimizing
	2012 and Prior	2013 and Newer	
56–66 in. (1422–676 mm)	15	17	25
45–55 in. (1143–1397 mm)			23
30–44 in. (762–1118 mm)			17–19

**NOTE:**

Each kit includes installation instructions and necessary hardware. Refer to [6 Options and Attachments, page 407](#).

The optimization process also includes specific settings for the header:

- Moving the reel fore-aft cylinders to the alternate aft location; refer to [Repositioning Fore-Aft Cylinders, page 75](#)
- Adjusting reel fore-aft position; refer to [Adjusting Reel Fore-Aft Position, page 74](#)
- Adjusting reel height so that fingers just engage the crop; refer to [3.7.8 Reel Height, page 73](#)
- Setting reel cam to position 1; refer to [Adjusting Reel Cam, page 82](#)
- Setting reel speed equal to ground speed and increase as required; refer to [3.7.4 Reel Speed, page 67](#)
- Decreasing feed auger spring tension by loosening tension bolt by 1–1-3/8 in. (25–35 mm); refer to [Adjusting Feed Auger Springs, page 49](#)
- Setting side draper speed to position 9 on CA25 control; refer to [3.7.6 Draper Speed, page 69](#)



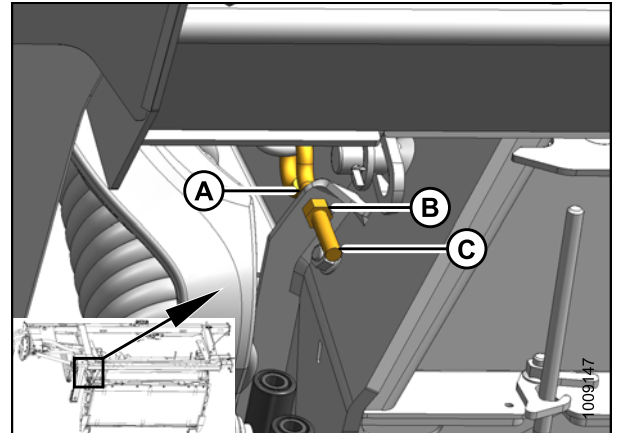
## OPERATION

### *Adjusting Feed Auger Springs*

The CA25 feed auger has an adjustable spring tensioning system that allows the auger to float on the crop instead of crushing and damaging it. The tension is set at factory setting and is adequate for most crop conditions.

If necessary, adjust the auger tension springs as follows:

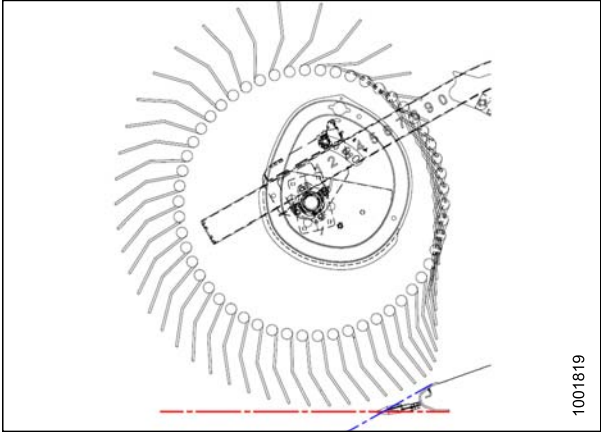
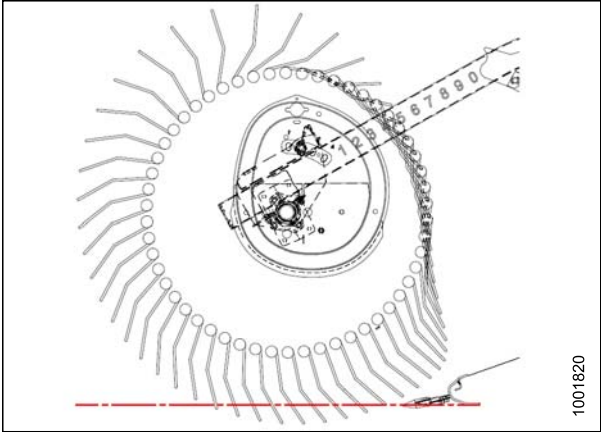
1. Raise header to full height, shut down combine, and remove key from ignition.
2. Engage header lift cylinder safety props.
3. Loosen upper jam nut (A) on spring tensioner.
4. Turn lower nut (B) to decrease tension until length of protruding thread (C) on tensioner decreases 1-1-3/8 in. (25-35 mm) from its original position.
5. Tighten jam nut (A).
6. Repeat above for opposite side.



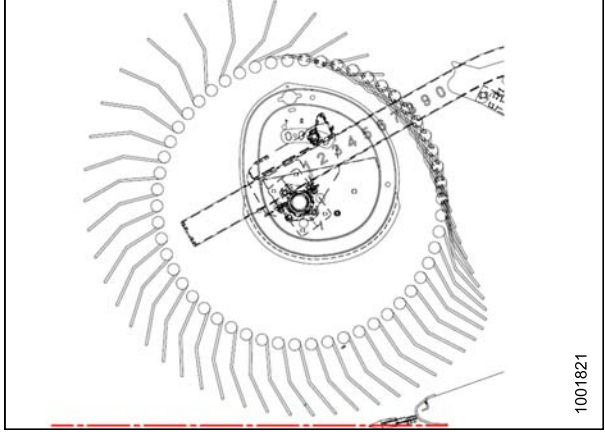
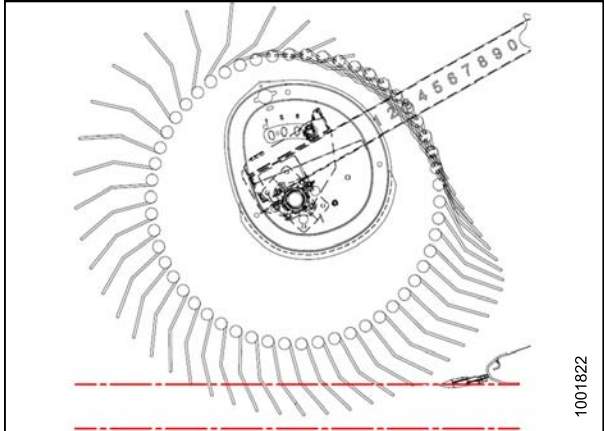
**Figure 3.23: Tensioner**

3.6.4 Reel Settings

Table 3.3 FD75 Reel Settings Chart

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0)	6 or 7	
2 (20%)	6 or 7	

## OPERATION

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
3 (30%)	3 or 4	
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 Table [3.3 FD75 Reel Settings Chart, page 50](#).

## 3.7 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="#">3.7.1 Cutting Height, page 52</a>
Header float	<a href="#">3.7.2 Header Float, page 58</a>
Header angle	<a href="#">3.7.3 Header Angle, page 66</a>
Reel speed	<a href="#">3.7.4 Reel Speed, page 67</a>
Ground speed	<a href="#">3.7.5 Ground Speed, page 68</a>
Draper speed	<a href="#">3.7.6 Draper Speed, page 69</a>
Knife speed	<a href="#">3.7.7 Knife Speed, page 71</a>
Reel height	<a href="#">3.7.8 Reel Height, page 73</a>
Reel fore-aft position	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>
Reel tine pitch	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
Crop divider rods	<a href="#">3.7.13 Crop Divider Rods, page 87</a>

### 3.7.1 Cutting Height

The header is designed to allow you 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 type of crop, crop condition, etc.

#### *Cutting Off the Ground*

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.

Cutting height is controlled with a combination of the combine header height control and a stabilizer wheel system, or a stabilizer/slow speed transport wheel system.

If stabilizer wheels are installed, refer to [Adjusting Stabilizer Wheels, page 54](#) to change the wheel position.

If stabilizer/slow speed transport wheels are installed, refer to [Adjusting Stabilizer/Slow Speed Transport Wheels, page 53](#) to change the wheel position.

## OPERATION

### Adjusting Stabilizer/Slow Speed Transport Wheels

The proper setting requires balancing the amount of header weight carried by the float and the stabilizer/slow speed transport wheels.

Refer to [3.6.2 Header Settings, page 44](#) for recommended use in specific crops and crop conditions.

### DANGER

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

1. Raise the header so that the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. On the right wheel assembly, remove hairpin (A) from latch.
3. 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.
4. Support left wheel weight by lifting slightly with one hand. Pull up on handle (C) to release lock.
5. Lift left wheel to desired height and engage support channel into slot (D) in upper support.
6. Push down on handle (C) to lock.
7. Lift right wheel back into field position and ensure latch (B) is engaged.
8. Secure latch with hairpin (A).
9. Support the left wheel assembly's wheel weight by lifting slightly with one hand. Pull up on handle (A) to release lock.
10. Lift wheels to desired height and engage support channel into slot (B) in upper support.
11. Push down on handle (A) to lock.

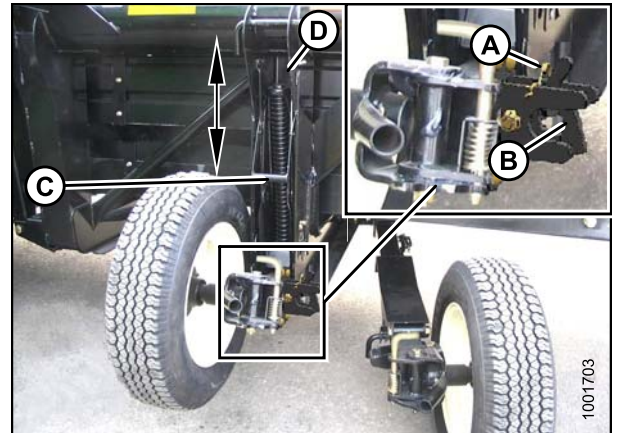


Figure 3.24: Right Wheel

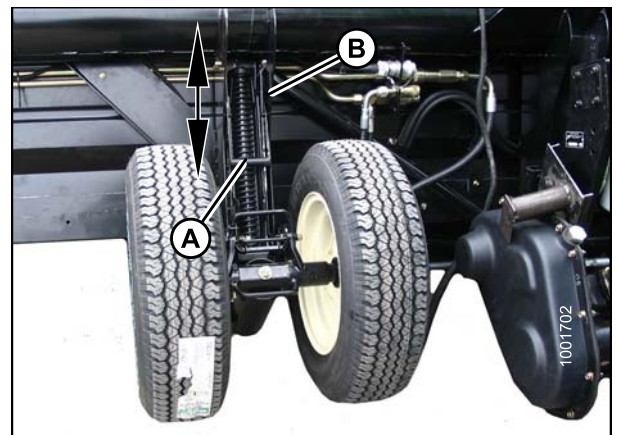


Figure 3.25: Left Wheel

## OPERATION

- Lower header to desired cutting height using combine controls and check load indicator. As an example the image shows that the wheels are set to a range between '2' and '3' on load indicator.

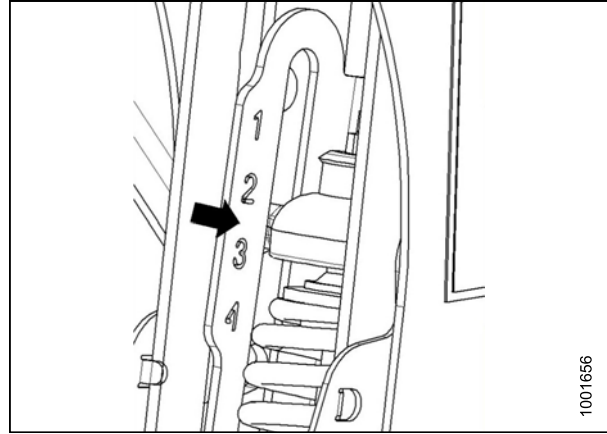


Figure 3.26: Load Indicator

### IMPORTANT:

Continuous operation with excessive spring compression (i.e., load indicator reading greater than '4' or a compressed length (A) less than 11-5/8 in. [295 mm]) can result in damage to suspension system.

- Adjust header angle to desired working angle with the machine's header angle controls. If angle is not critical, set it to mid-position.
- Use the combine's Auto Header Height Control (AHHC) to automatically maintain cutting height. Refer to [3.8 Auto Header Height Control \(AHHC\)](#), page 89 and your combine operator's manual for details.

### NOTE:

The height sensor on the CA25 adapter must be connected to the combine header control module in the cab.

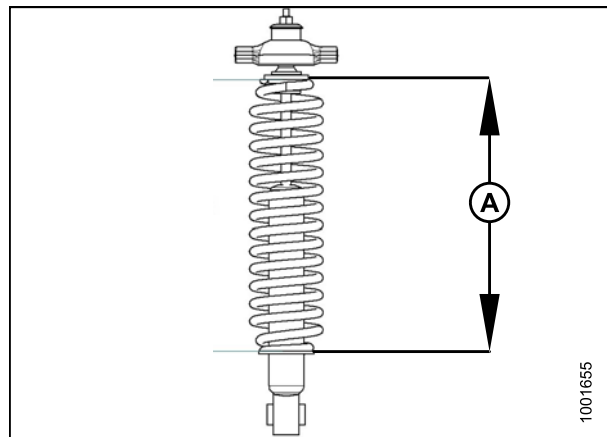


Figure 3.27: Spring Compression

## Adjusting Stabilizer Wheels

The proper setting requires balancing the amount of header weight carried by the float and the stabilizer wheels.

Refer to [3.6.2 Header Settings](#), page 44 for recommended use in specific crops and crop conditions.

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

- Raise the header so that the stabilizer wheels are off the ground. Shut down engine and remove the key.

### 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.

## OPERATION

2. Support wheel weight by lifting slightly with one hand on handle (B). Pull up on handle (A) to release lock.
3. Lift wheel with handle (B) and engage support channel into center slot (C) in upper support.
4. Push down on handle (A) to lock.

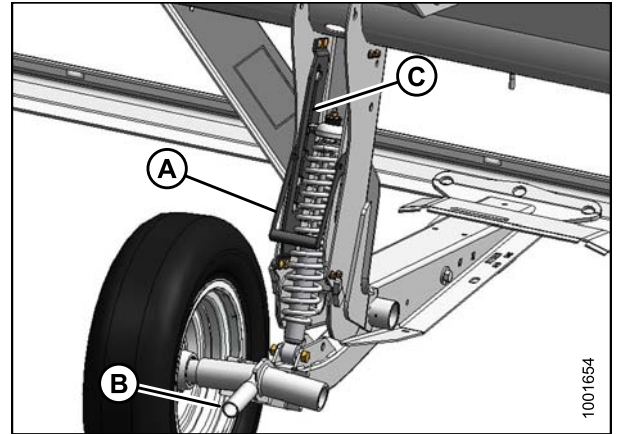


Figure 3.28: Stabilizer Wheel

5. Lower header to desired cutting height using combinecontrols and check load indicator. As an example the image shows that the wheels are set to a range between '2' and '3' on load indicator.

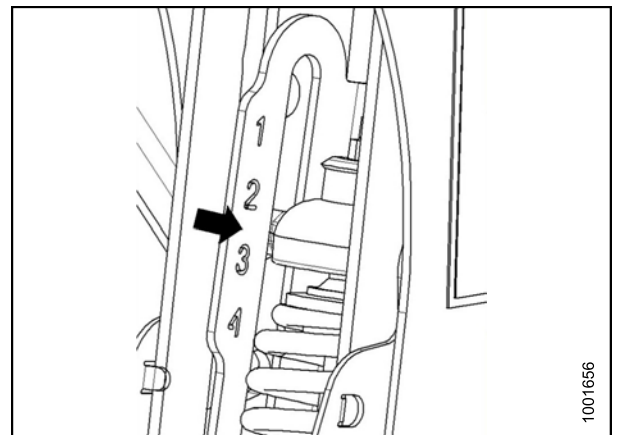


Figure 3.29: Load Indicator

### IMPORTANT:

Continuous operation with excessive spring compression (i.e., load indicator reading greater than '4' or a compressed length less than 11-5/8 in. [295 mm]) (A) 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 Auto Header Height Control (AHHC) to automatically maintain cutting height. Refer to [3.8 Auto Header Height Control \(AHHC\), page 89](#) and your combine operator's manual for details.

### NOTE:

The height sensor on the CA25 adapter must be connected to the combine height control system in the cab.

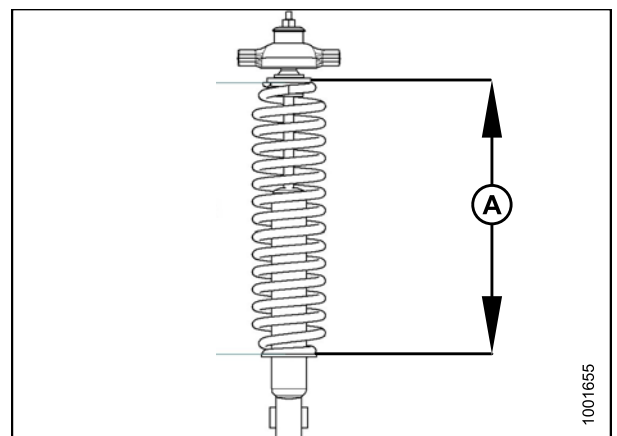


Figure 3.30: Spring Compression



## OPERATION

### *Cutting On the Ground*

Cutting on the ground is performed with the header fully lowered so that the cutterbar is on the ground. The orientation of the knife and knife guards relative to the ground (or header angle) is controlled with the skid shoes and center-link, and **NOT** with the header lift cylinders. These two features allow you to adjust to field conditions to maximize the amount of material cut and to reduce damage to the knife from stones and debris.

The header is equipped with a type of suspension system that floats the header over the surface to compensate for ridges, trenches, and other variations in ground contour instead of pushing the cutterbar into the ground or leaving uncut crop.

Refer to the following sections for further information about each feature:

- [Adjusting Inner Skid Shoe, page 56](#)
- [Adjusting Outer Skid Shoe, page 57](#)
- [3.7.3 Header Angle, page 66](#)
- [3.7.2 Header Float, page 58](#)

Also refer to [3.6.2 Header Settings, page 44](#).

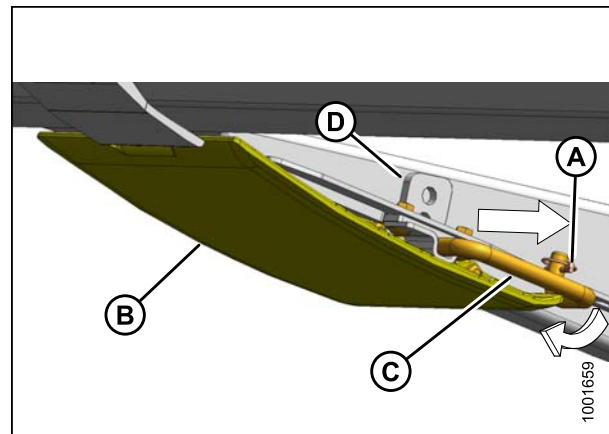
#### **Adjusting Inner Skid Shoe**

1. Fully raise the stabilizer wheels or slow speed transport wheels (if installed). Refer to:
  - [Adjusting Stabilizer Wheels, page 54](#)
  - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 53](#)

### **⚠ DANGER**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

2. Fully raise header, engage safety props, shut off engine, and remove key.
3. Remove lynch pin (A).
4. Hold shoe (B) and remove pin (C) by pulling down to disengage frame and then pulling away from shoe.
5. Raise or lower skid shoe (B) to desired position using holes in support (D) as a guide.



**Figure 3.31: Inner Skid Shoe**



## OPERATION

6. Reinsert pin (B), engage in frame, and secure with lynch pin (A).
7. Check that all of the skid shoes are adjusted to the same position.
8. Adjust header angle to desired working position using the machine's header angle controls. If angle is not critical, set it to mid-position.
9. Check header float. Refer to [3.7.2 Header Float, page 58](#).

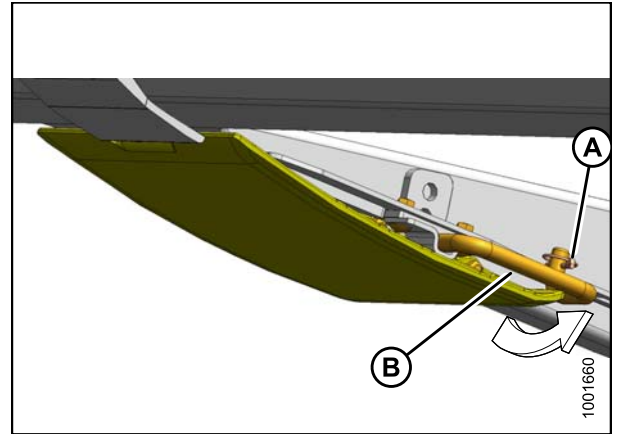


Figure 3.32: Inner Skid Shoe

### Adjusting Outer Skid Shoe

1. Fully raise the stabilizer wheels or slow speed transport wheels if installed. Refer to:
  - [Adjusting Stabilizer Wheels, page 54](#)
  - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 53](#)

### DANGER

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

2. Fully raise header, engage safety props, shut off engine, and remove key.
3. Remove lynch pin (A) at each skid shoe (B).
4. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
5. Raise or lower skid shoe to desired position using holes in support as a guide.
6. Reinstall pin (C), engage in frame, and secure with lynch pin (A).
7. Check that skid shoes are adjusted to the same position.
8. Check header float. Refer to [Checking and Adjusting Header Float, page 58](#).

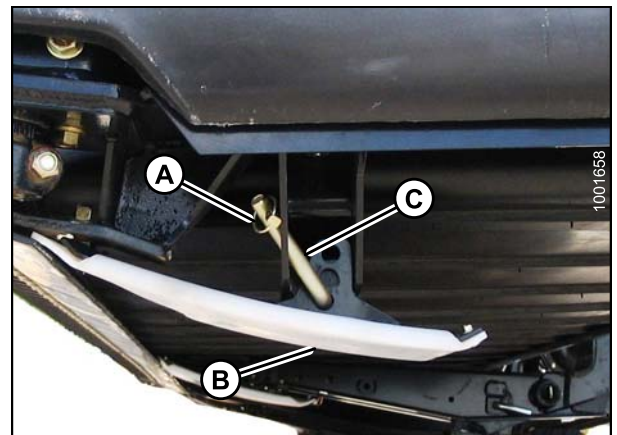


Figure 3.33: Outer Skid Shoe

### 3.7.2 Header Float

The header float system reduces the ground pressure at the cutterbar and allows it to more easily follow the ground and quickly respond to sudden ground contour changes or obstacles.

Header float is indicated on the CA25 float indicator (A) and the values 0 to 4 represent the force of the cutterbar on the ground, with '0' being the least and '4' the highest.

The maximum force is determined by the tension on the adapter float springs which are adjustable. The tension is factory set but can be changed to suit field and crop conditions. Refer to [Checking and Adjusting Header Float, page 58](#).

The FD75 combine header performs best with minimum ground pressure, under normal conditions. Readjust the float if adding optional attachments that affect the weight of the header.

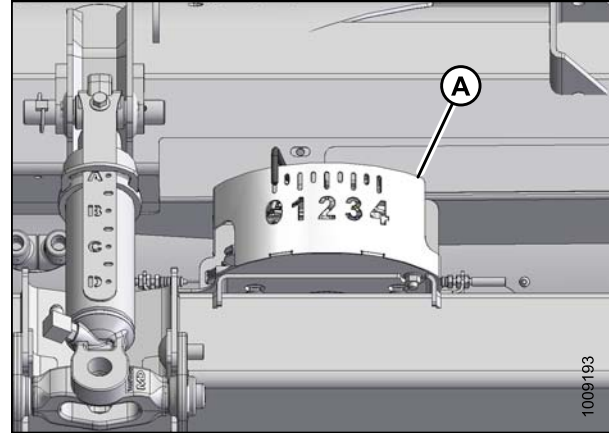


Figure 3.34: Float Indicator

1. To set the float for cutting on the ground:
  - a. Ensure that the header float locks are disengaged. Refer to [Locking/Unlocking Header Float, page 63](#).
  - b. Lower feeder house with combine header controls until float indicator (A) reaches the desired float value (cutterbar ground force). Use "2" initially and adjust accordingly.

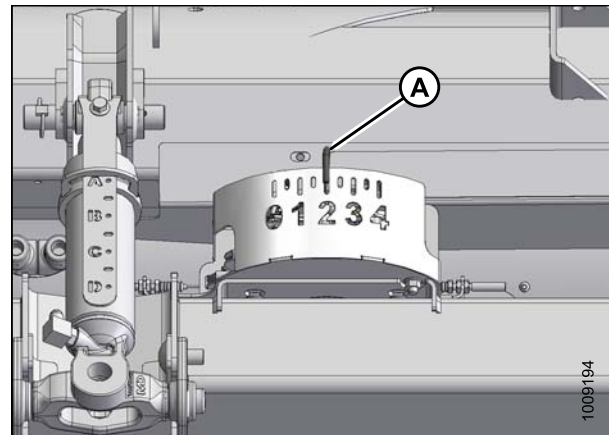


Figure 3.35: Cutting on the Ground

2. To set the float for cutting off the ground:
  - a. Set up the stabilizer wheels. Refer to [Cutting Off the Ground, page 52](#).
  - b. Note the float value on the float indicator and maintain this value during operation, disregarding minor fluctuations on the indicator.

#### Checking and Adjusting Header Float

To check and adjust the header float, follow these steps:

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

## OPERATION

1. Park combine on level surface.
2. Fully lower the reel and adjust the fore-aft position to between five and six on the position indicator decal (A) at the right side reel arm.

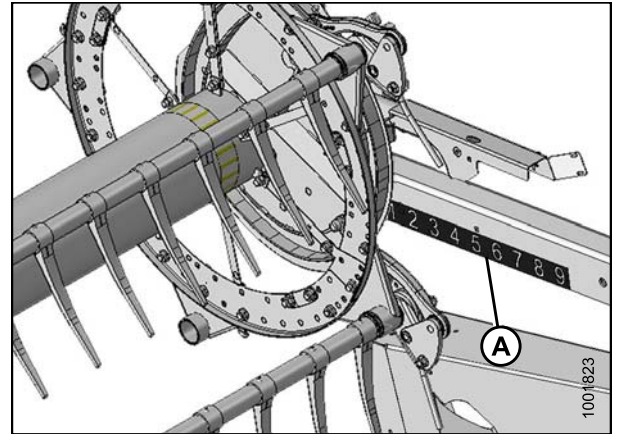


Figure 3.36: Fore-Aft Position

3. Adjust the center-link to a position between 'B' and 'C' on the indicator (A).
4. Position cutterbar 8–12 in. (200–300 mm) off the ground.
5. Stop engine and remove key from ignition.

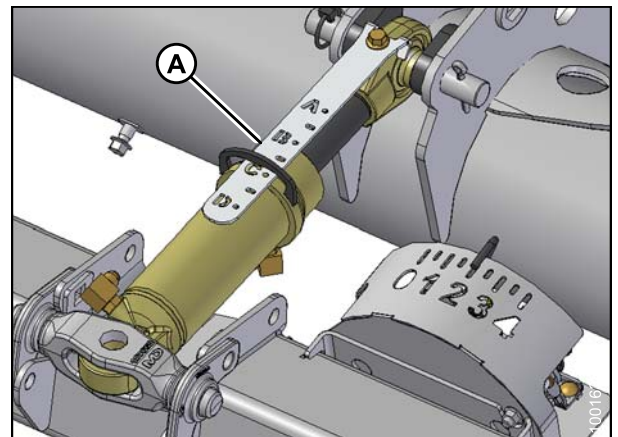


Figure 3.37: Center-Link between 'B' and 'C'

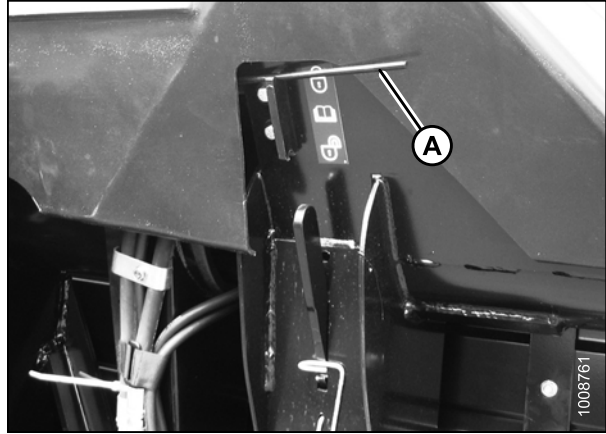
### IMPORTANT:

Do **NOT** use the adapter float springs to level the header.

6. Check that adapter is level. If the adapter is **NOT** level, perform the following checks prior to adjusting the levelling 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.

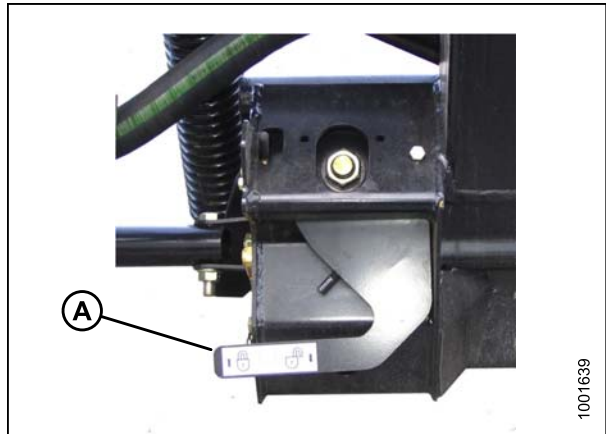
## OPERATION

7. Place wing lock spring handles (A) in lock (upper) position.



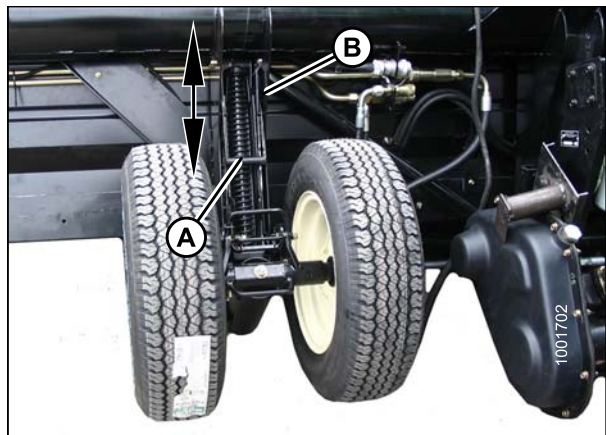
**Figure 3.38: Wing Lock in Lock Position**

8. Move both header float lock levers (A) down (UNLOCK).



**Figure 3.39: Header Float Lock in UNLOCK Position**

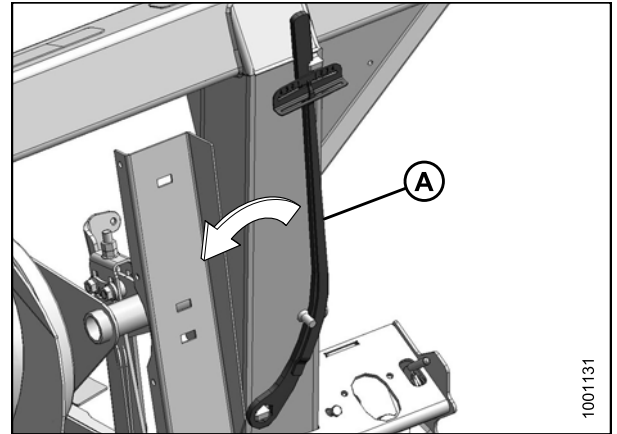
9. Place stabilizer wheels and slow speed transport wheels (if equipped) in storage position as follows:
  - a. Support the left wheel assembly's wheel weight by lifting slightly with one hand. Pull up on handle (A) to release lock.
  - b. Lift wheels to desired height and engage support channel into slot (B) in upper support.
  - c. Push down on handle (A) to lock.



**Figure 3.40: Left Wheels Shown – Right Wheels Similar**

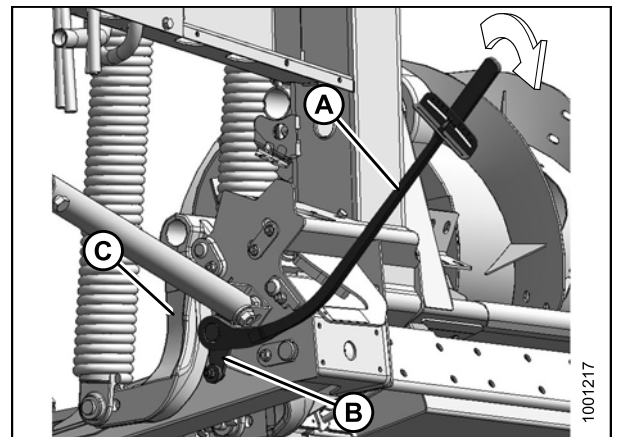
## OPERATION

10. Remove supplied torque wrench (A) from storage position at right-hand side of adapter frame. Pull slightly in direction shown to disengage wrench from hook.

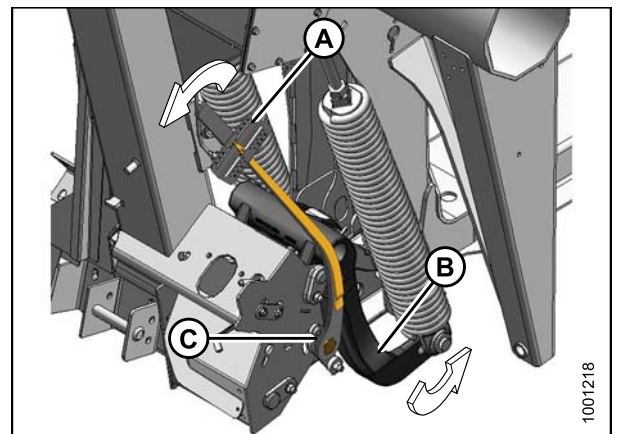


**Figure 3.41: Torque Wrench**

11. Place supplied torque wrench (A) onto float lock at (B). Note position of wrench for checking right- or left-hand side.
12. Push down on wrench to rotate bell crank (C) forward.



**Figure 3.42: Left Side**



**Figure 3.43: Right Side**



## OPERATION

13. Continue pushing down on the wrench until indicator (A) reaches a maximum reading, and begins to decrease. Note the maximum reading. Repeat at opposite side.

14. Use the following table as a guide for float settings:

- If reading on wrench is high, the header is heavy.
- If reading on wrench is low, the header is light.

**Table 3.4 Float Settings**

Header Size	Torque Settings	
	Cutting on the Ground	Cutting off the Ground
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

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

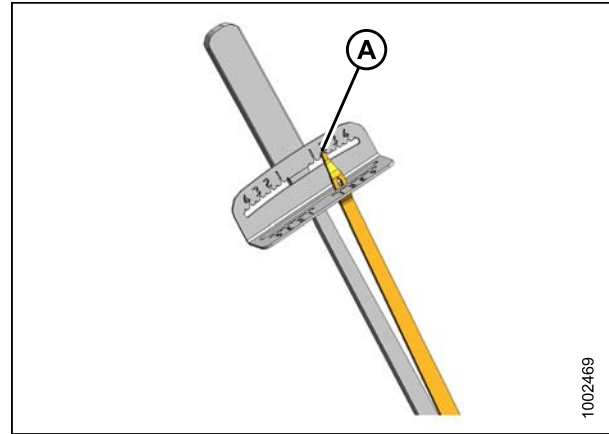
**NOTE:**

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

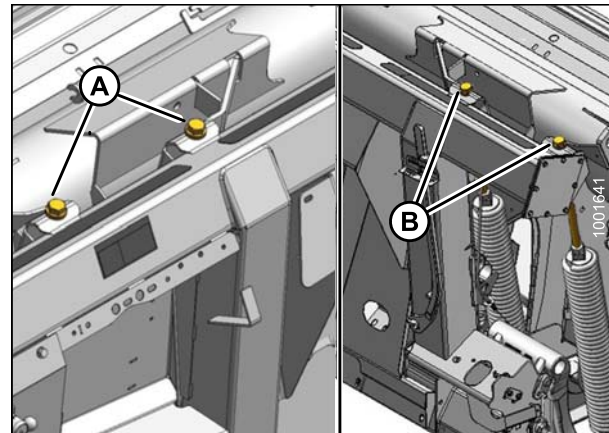
16. To **decrease** float (increase header weight), turn bolts (A) and (B) **counterclockwise**.

**NOTE:**

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



**Figure 3.44: Indicator**



**Figure 3.45: Float Adjustment**

A - Left-Side Adjustment

B - Right-Side Adjustment

17. Use the following guidelines when adjusting float:

- Adjust the float so the wrench readings are equal at both sides.
- **For 40- and 45-foot double-knife headers:** adjust the float so the wrench readings are equal at both sides, and then loosen both right side spring bolts two turns.
- Turn each bolt pair equal amounts. After adjustment has been made, repeat torque wrench reading procedure.
- Set header float as light as possible without causing excessive bouncing to avoid frequent breakage of knife components, scooping soil, or soil build-up at cutterbar in wet conditions.
- Use a slower ground speed with a light float setting, if necessary, to avoid excessive bouncing and leaving a ragged cut.
- Use the stabilizer wheels in conjunction with header float to minimize bouncing at the header ends, and to control cut height when cutting off the ground. Refer to [3.7.1 Cutting Height, page 52](#) 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 refer to the parts catalog for ordering information.

## OPERATION

18. Return torque wrench (A) to storage location at right-hand side of adapter frame.

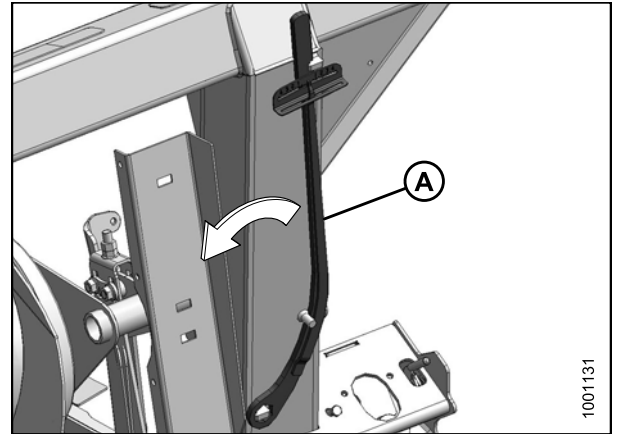


Figure 3.46: Torque Wrench

### *Locking/Unlocking Header Float*

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 that 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.

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.

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.

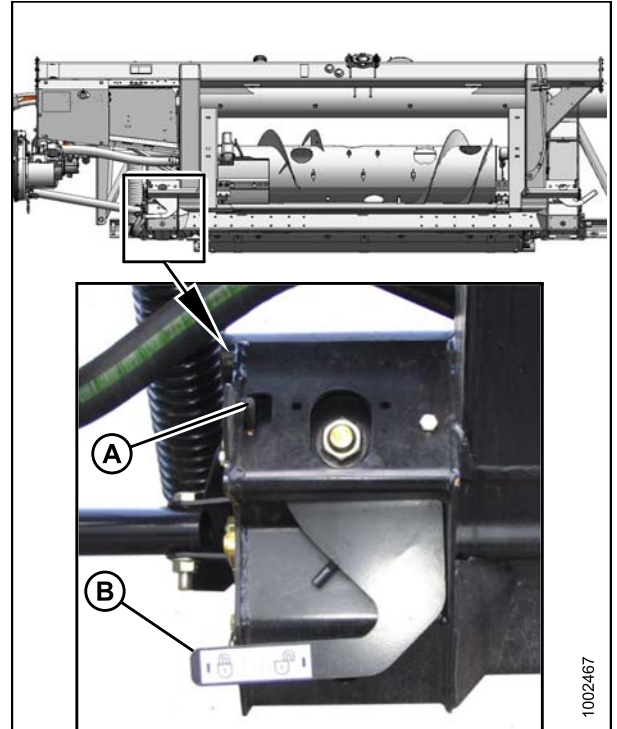


Figure 3.47: Float Lock

## OPERATION

### *Locking/Unlocking Header Wings*

The FD75 is designed to operate with the cutterbar on the ground. The three sections move independently to follow the ground contours. In this mode, each wing is **unlocked** and is free to move up and down.

The FD75 can also be operated as a rigid header with the cutterbar straight. A typical application is in cereals when cutting above the ground. In this mode, the wing is **locked**.

### *Operating in Flex Mode*

The three sections move independently to follow the ground contours.

Unlock the wings as follows:

1. Move spring handle (A) in the lower slot to unlock the wing. The unlocking should be audible.
2. If the lock link does not disengage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it disengages.

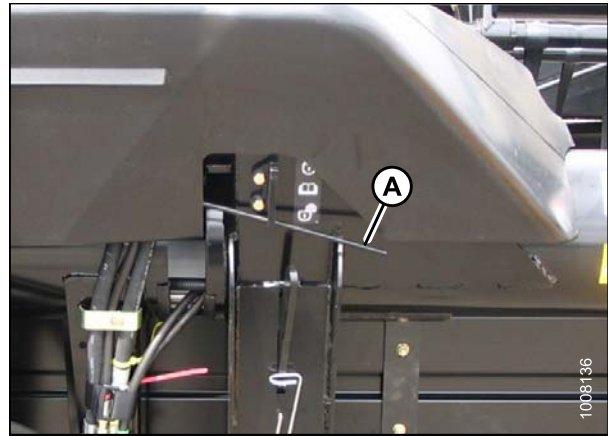


Figure 3.48: Wing Lock

#### **NOTE:**

The following steps are only required if the above has not worked.

3. Remove the linkage cover. Refer to [Removing Linkage Covers, page 38](#).
4. Retrieve the supplied torque wrench (A) that is stored on the adapter frame on the right-hand side.

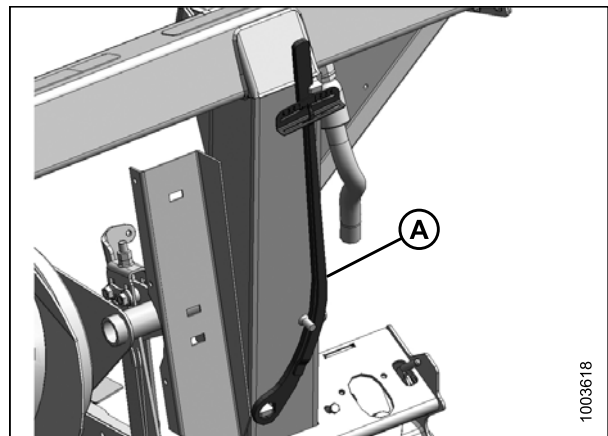


Figure 3.49: Torque Wrench



## OPERATION

5. Place the torque wrench (A) on bolt (B) and use it to move the wing until the lock disengages.
6. Replace the torque wrench (A) and reinstall the linkage cover.
7. The wings should now freely move up and down with equal hand force and the cutterbar should be straight. Otherwise, the wings are not balanced.
8. If necessary, balance the wing. Refer to [5.16 Checking and Adjusting Header Wing Balance](#), page 396.

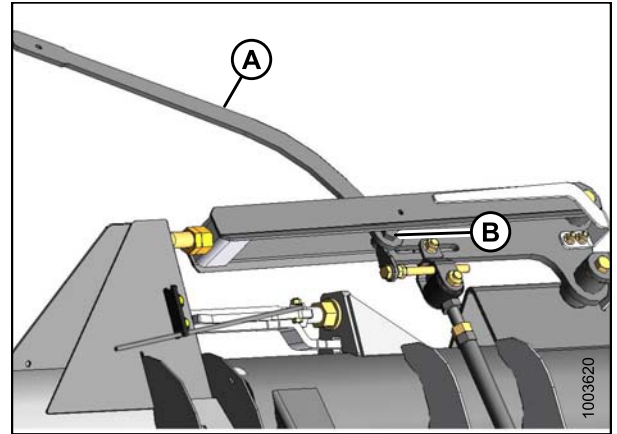


Figure 3.50: Torque Wrench on Wing Nut

### Operating in Rigid Mode

The three sections will be locked and operate as a rigid cutterbar.

Lock the wings as follows:

1. Move spring handle (A) in the upper slot to lock the wing. The locking should be audible.
2. If the lock link does not engage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it engages.

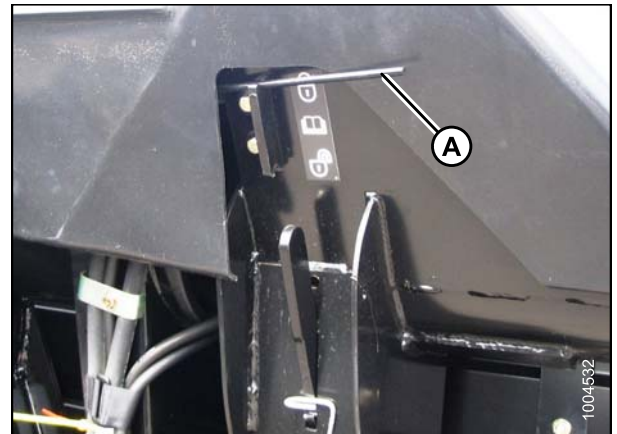


Figure 3.51: Wing Lock

#### NOTE:

The following steps are only required if the above has not worked.

3. Remove the linkage cover. Refer to [Removing Linkage Covers](#), page 38.
4. Retrieve the supplied torque wrench (A) that is stored on the adapter frame on the right-hand side.

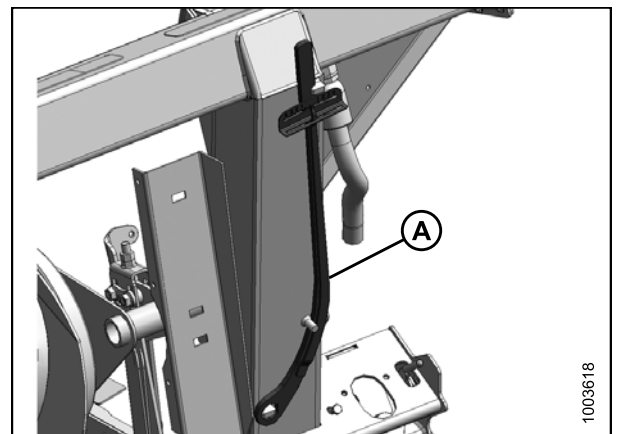


Figure 3.52: Torque Wrench

## OPERATION

5. Place the torque wrench (A) on bolt (B) and use it to move the wing until the lock engages.
6. Replace the torque wrench (A) and reinstall the linkage cover.
7. The wings will not move relative to the header.

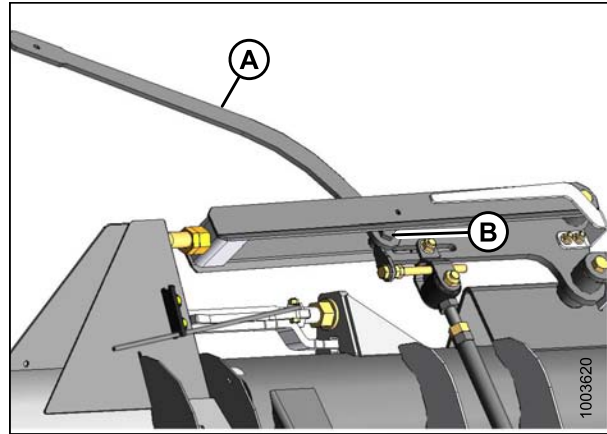


Figure 3.53: Header Wing

### 3.7.3 Header Angle

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

The header angle (A) is a critical factor for effective cutting on the ground applications because it determines the actual distance (B) between the knife and the ground. The header rotates about the point of skid shoe/ground contact (C) by adjusting the length of the center-link thereby adjusting the position of the guards and knife.

Header angle (A) is synonymous with guard angle (D) which is the angle between the guard upper surface and the ground.

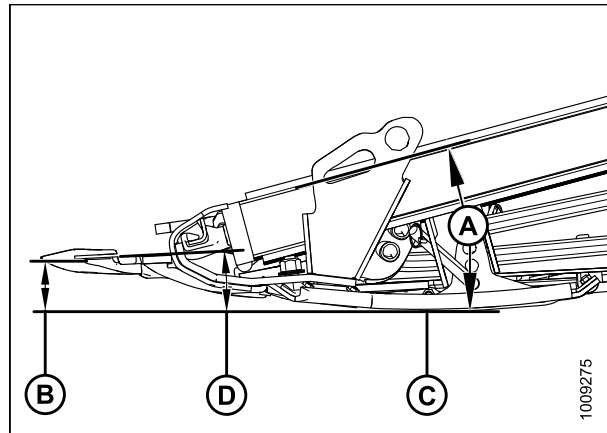


Figure 3.54: Header Angle

## OPERATION

### Controlling Header Angle

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

The header/guard angle is controlled from the combine cab with a switch on the operator's control console, and an indicator on the center-link.

Set the header angle according to the type and condition of crop, and soil conditions. Use a lower angle setting ('A' on the indicator) for normal cutting conditions and wet soil to reduce soil build-up at the cutterbar. Also lower angle settings minimize damage to the knife in stony fields.

Use steeper settings ('D' on the indicator) for crops that have lodged or are close to the ground, such as soybeans.

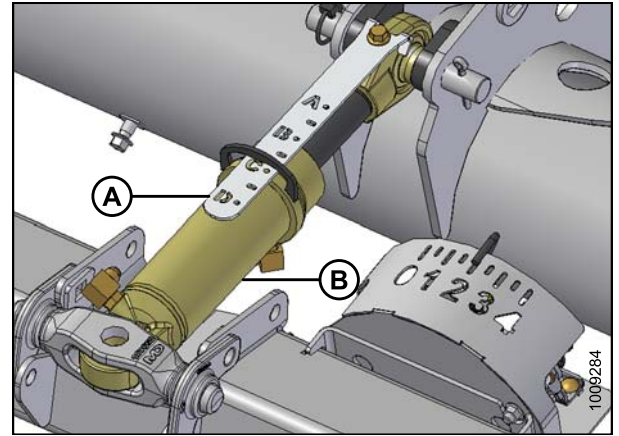


Figure 3.55: Center-Link

The shallowest angle "A" (center-link fully retracted) provides highest stubble when cutting on the ground.

The steepest angle "D" (center-link fully extended) provides lowest stubble when cutting on the ground.

Choose an angle that maximizes performance for your crop and field conditions. The table below summarizes the adjustment range:

Table 3.5 FD75 Header Angle

Header Size	Guard Angle
30–45 ft.	2.0–7.4°

Refer to [3.6.2 Header Settings, page 44](#) for recommended header/guard angle settings for your particular crop conditions.

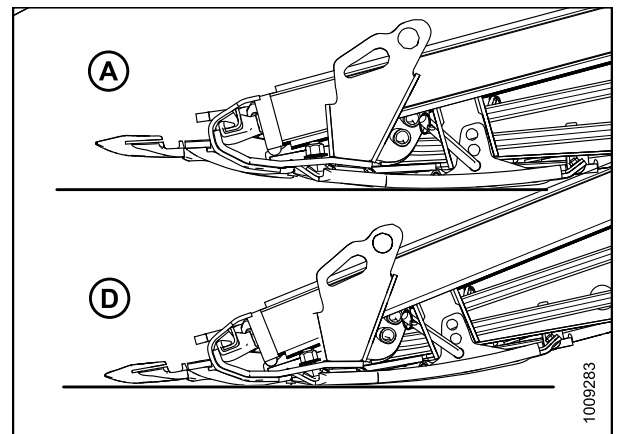


Figure 3.56: Guard Angles

### 3.7.4 Reel Speed

Reel speed is one of the factors that determines the manner in which the crop is moved from the cutterbar onto the drapers.

The reel performs best when it appears to be driven by the ground. It should move the cut crop evenly through the cutterbar and onto the drapers without bunching and with minimal disturbance.

In standing crop, reel speed should be slightly higher than or equal to ground speed.

In flattened crop or a crop that is leaning away from the cutterbar the reel speed needs to be higher than the ground speed, either by increasing the reel speed or decreasing the ground speed.

Excessive shattering of grain heads or crop loss over the header backtube may be indications that the reel speed is too high. Excessive reel speed also increases wear of reel components and overloads the reel drive.

Lower reel speeds can be used with 9-bat reels which is an advantage in shatter prone crops.

## OPERATION

### NOTE:

A conversion kit to change a six-bat reel to a nine-bat reel for 30- and 35-ft. headers. Refer to [6.1.3 PR15 Tine Tube Reel Conversion Kit, page 408](#) for more information.

Refer to [3.6.2 Header Settings, page 44](#) 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

Optional reel drive sprockets are available as an alternative to the factory-installed sprocket for use in special crop conditions.

The header is factory equipped with a 19-tooth sprocket to drive the reel which is satisfactory for most crops. Other sprockets are available to provide more torque to the reel in heavy cutting conditions, or to allow higher reel speeds in light crops where increased ground speeds are used. Refer to the following table and contact your MacDon Dealer for ordering information.

Machine Hydraulics	Combine	Application	Optional Drive Sprocket
2000–2100 psi (13.79–14.48 MPa)	Gleaner Transverse Rotary	Combining down rice	10-tooth
2500 psi (17.24 MPa)	Lexion 500, 700 Series, Challenger 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

For installation details, Refer to [5.14.1 Replacing Reel Drive Sprocket, page 372](#).

## 3.7.5 Ground Speed

Using the proper ground speed will result in cleanly cut crop and even delivery of material into the combine.

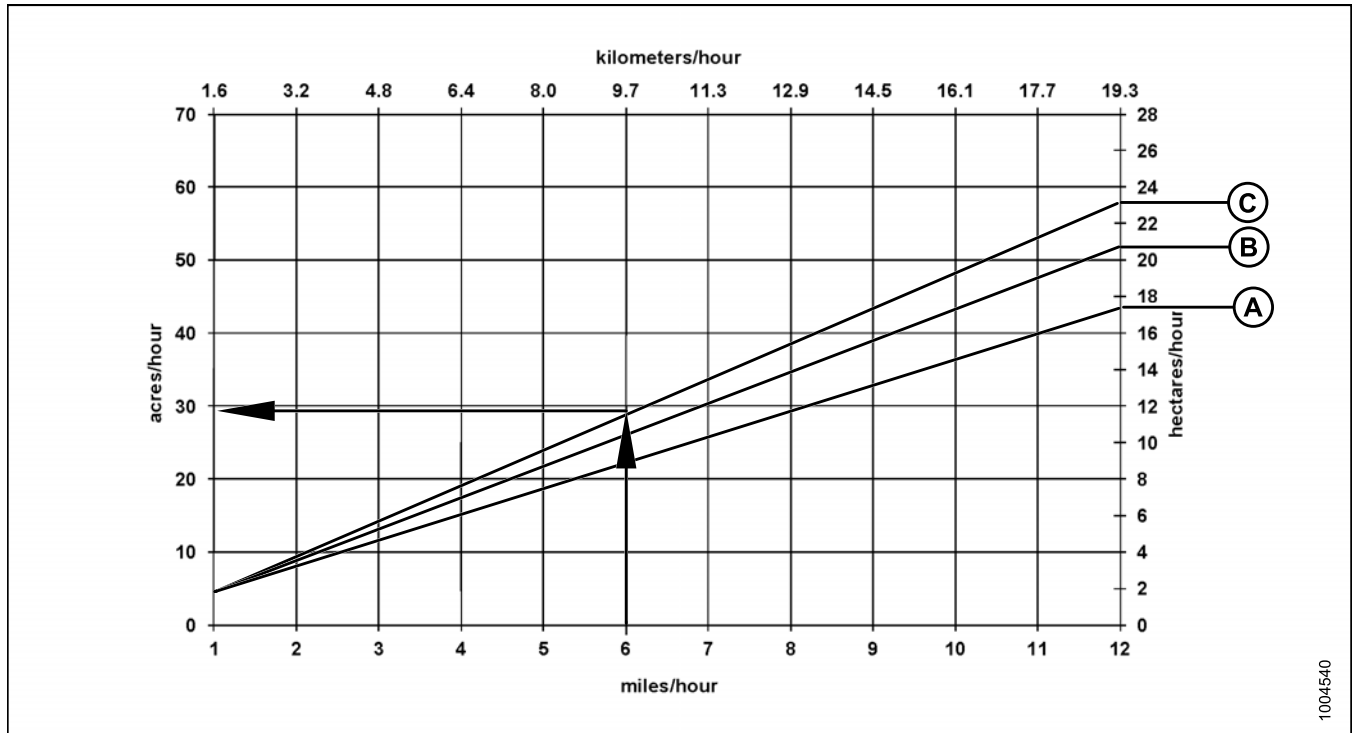
Reduce ground speed in difficult cutting conditions to reduce loads on cutting components and drives.

Use lower ground speeds in very light crops (for example, short soybeans), to allow the reel to pull in short plants. Start at 3.0–3.5 mph (4.8–5.8 km/h) and adjust as required.

Higher ground speeds may require heavier float settings to prevent abnormal bouncing that would cause uneven cutting and possible cutting component damage. Generally, if ground speed is increased, draper and reel speeds should be increased to handle the extra material.

The following chart indicates the relationship between ground speed and area cut for the various header sizes.

## OPERATION



**Figure 3.57: Ground Speed vs Acres**

A - 30 ft.

B - 35 ft.

C - 40 ft.

Example shown above: At a ground speed of 6 miles per hour (9.7 km/h) with a 40 ft. header, the area cut in one hour would be approximately 28 acres (11.3 hectares).

### 3.7.6 Draper Speed

Using the correct draper speed is one of the factors in achieving good flow of the cut crop away from the cutterbar.

The side drapers and feed draper operate independently of each other and therefore the speeds are controlled differently. The side draper speed is adjusted with a manually adjustable control valve that is mounted on the adapter. The adapter feed draper speed is fixed to the combine feeder house speed and cannot be independently adjusted.

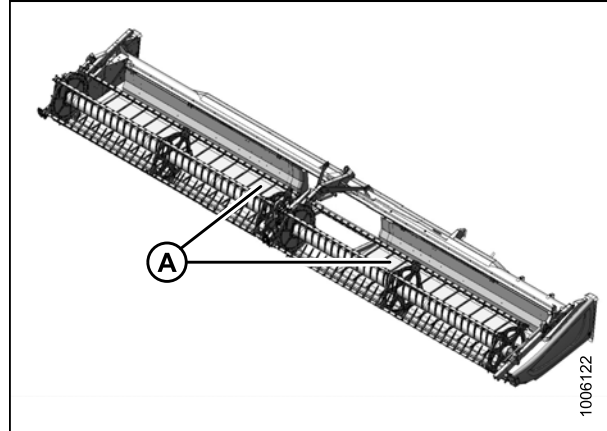
Adjust the draper speeds to achieve good feeding of the crop onto the adapter feed draper. Refer to [Adjusting Side Draper Speed, page 70](#).

## OPERATION

### *Adjusting Side Draper Speed*

The side drapers carry the cut crop to the adapter feed draper which then feeds it into the combine. The speed is adjustable to suit crops and crop conditions.

The side drapers (A) are driven by hydraulic motors from a pump which is powered by the combine feeder house drive through a gearbox on the adapter. A flow control valve on the adapter regulates the flow to the draper motors to set the speed.



**Figure 3.58: Side Drapers**

The flow control (A) has values 0–9 on the barrel, that line up with a notch on the hydraulic compartment cover to indicate the draper speed. The draper speed control is factory-set to '6' which should satisfy normal crop feeding.

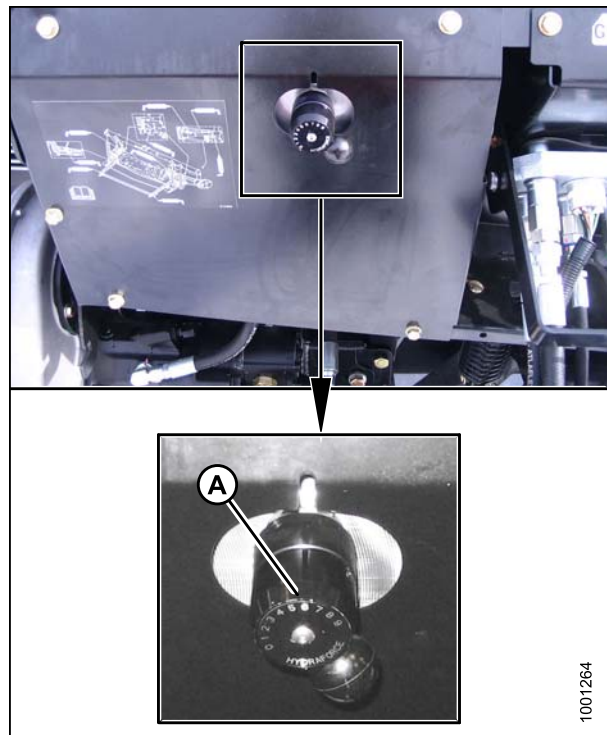
To change the draper speed, shut down the combine, and adjust the control by simply rotating the dial.

Refer to one of the following for recommended draper speed settings:

- [3.6.2 Header Settings, page 44](#)
- [3.6.3 Optimizing Header for Straight Combining Canola, page 48](#)

**NOTE:**

Insufficient draper speed may be caused by low relief pressure. See your MacDon Dealer for checking and adjusting relief pressure in the CA25 hydraulics.



**Figure 3.59: Flow Control Valve**

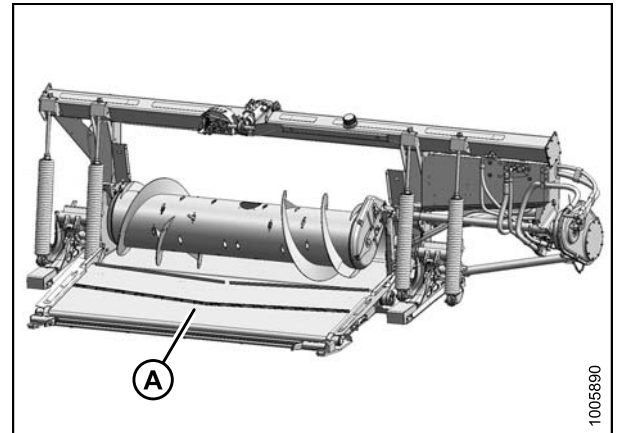
## OPERATION

### *Adjusting Feed Draper Speed*

The feed draper moves the cut crop from the side drapers into the adapter feed auger.

The adapter feed draper (A) is driven by a hydraulic motor from a pump which is powered by the combine feeder house drive through a gearbox on the adapter.

The feed draper speed is fixed to the combine feeder house speed and cannot be independently adjusted.



**Figure 3.60: CA25 Combine Adapter**

### **3.7.7 Knife Speed**

The header knife drive is driven by the adapter hydraulic pump which is driven by the combine feeder house. There is no separate adjustment to control the knife speed.

#### **IMPORTANT:**

For variable speed feeder houses, the values in the table are the MINIMUM feeder house speeds. Reduce the flow to the knife drive motor if operating above these values to prevent over-speeding the knife and knife failure.

**Table 3.6 Feeder House Speed**

Combine	Feeder House Speed (rpm)
John Deere	490
Case IH	575
Gleaner	624
Massey Ferguson	624
Challenger	624
New Holland	575
Lexion <sup>9</sup>	420

9. 420 is the rear shaft speed on Lexion combines (speed shown on cab monitor will also be 420). The output shaft speed is actually 750 rpm.



## OPERATION

### IMPORTANT:

Check that the knife speed is within the values in the table. For procedure, refer to [Checking Knife Speed, page 72](#).

### IMPORTANT:

Under normal cutting conditions, knife speed taken at the knife drive pulley should be set between 600–640 rpm (1200–1280 spm). If set to low side of chart, you could experience knife stalling.

Table 3.7 FD75 Header Knife Speed

Header Size	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
30 ft	600–700	—
35 ft	550–650	—
40 ft	525–600	550–700
45 ft	—	550–700

### Checking Knife Speed

This section contains the procedure for checking the knife speed. If it is higher than the specified range, contact your MacDon Dealer.

### WARNING

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

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

### WARNING

**Ensure bystanders are clear before starting engine.**

3. Start combine engine, engage the header drive, and run the combine at operating rpm.
4. Measure the rpm of the knife drive box pulley (A) with a hand-held tachometer.
5. Shut down the combine.
6. Compare measured pulley rpm with the values in the knife speed chart. Refer to [3.7.7 Knife Speed, page 71](#).
7. If it is higher than the specified range for your header, contact your MacDon dealer.



Figure 3.61: Left Endshield

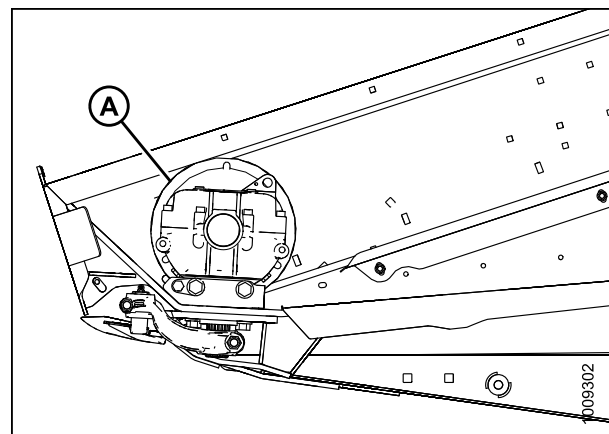


Figure 3.62: Knife Drive Pulley



### 3.7.8 Reel Height

The crop type and condition determine the operating height of the reel.

Set reel height to carry material past the knife onto the drapers with minimal disturbance and damage to the cut crop. Also refer to [3.7.9 Reel Fore-Aft Position, page 73](#).

The reel height is controlled with switches in the cab.

**Table 3.8 Reel Height**

Crop Condition	Reel Position
Lodged rice	Lowered (also change reel speed and/or cam setting)
Bushy or heavy standing (all)	Raised

Indications that reel may be too low:

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

Indications that the reel may be too high:

- Cutterbar plugging
- Leaving uncut lodged crop
- Grain stalks dropping ahead of cutterbar

Refer to [3.6.2 Header Settings, page 44](#) 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 [5.13.1 Reel Clearance to Cutterbar, page 350](#).

### 3.7.9 Reel Fore-Aft Position

Reel fore-aft position is a critical factor for good results in adverse conditions. The reel position is factory-set for normal conditions and can be adjusted forward or backward as required using controls in the cab.

The reel can also be moved approximately 9 in. (227 mm) further aft by repositioning the fore-aft cylinders on the reel arms to accommodate certain crop conditions.

For double-reel headers, refer to [Repositioning Fore-Aft Cylinders, page 75](#).

If the combine is equipped with the Multi-Drop Rapid Reel Conversion option, refer to [3.7.10 Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 78](#).

## OPERATION

A decal (A) is provided on the reel right support arm for identifying reel position. The cam disc aft edge (B) is the gauge indicator.

For straight standing crop, center the reel over the cutterbar (4–5 on decal).

For crops that are down, tangled, or leaning, it may be necessary to move the reel ahead of the cutterbar (lower number on decal).

### IMPORTANT:

When having difficulty picking up flattened crop, adjust header angle to a steeper position. Refer to [Controlling Header Angle, page 67](#) for adjustment details. Adjust reel position only if header angle adjustments are not satisfactory.

Refer to [3.6.2 Header Settings, page 44](#) for recommended reel positions in specific crops and crop conditions.

### NOTE:

In crops that are difficult to pick up such as rice, or severely lodged crops that require full forward positioning of the reel, the reel tine pitch can be set to provide proper placement of the crop onto the drapers. Refer to [3.7.11 Reel Tine Pitch, page 80](#) for adjustment details.

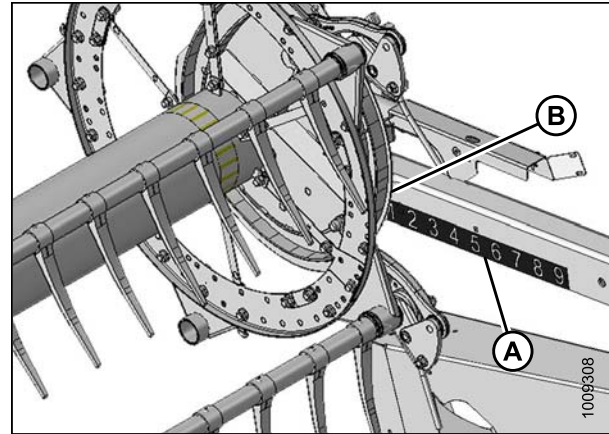


Figure 3.63: Fore-Aft Decal

### Adjusting Reel Fore-Aft Position

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

1. Select FORE-AFT 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 the following for measurements and adjustment procedures:
  - [5.13.1 Reel Clearance to Cutterbar, page 350](#)
  - [5.13.2 Reel Frown, page 353](#).

### IMPORTANT:

Operating with the reel too far forward can cause the fingers to contact the ground. Lower the skid shoes or adjust header tilt as required when operating with the reel in this position to prevent damage to the fingers.

## OPERATION

### Repositioning Fore-Aft Cylinders

The reel can be moved approximately 9 in. (227 mm) further aft by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola. If the Multi-Crop Rapid Reel Conversion option is installed, refer to [3.7.10 Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 78](#). To reposition the cylinders on a double reel, 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.**

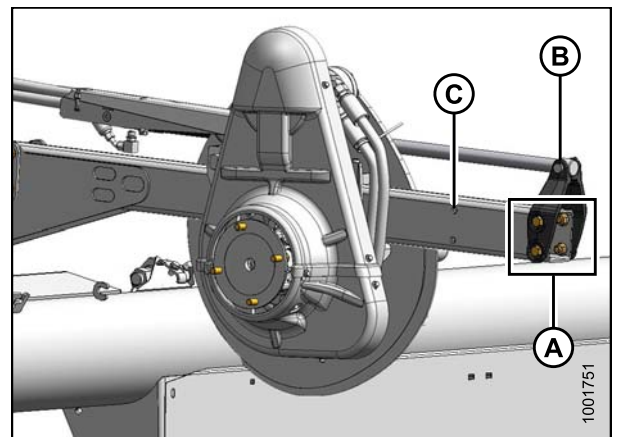
1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.

Reposition center arm cylinder as follows:

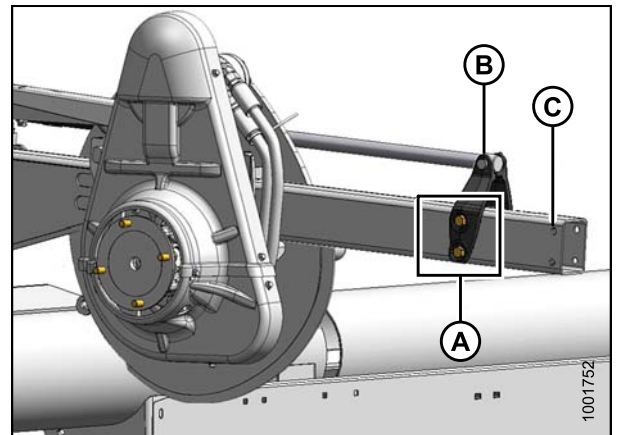
#### **NOTE:**

Reel components are not shown for clarity.

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



**Figure 3.64: Forward Position**



**Figure 3.65: Rearward Position**

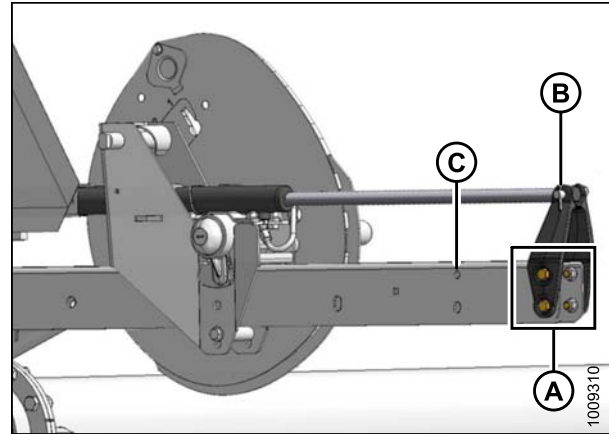
## OPERATION

Reposition right arm cylinder as follows:

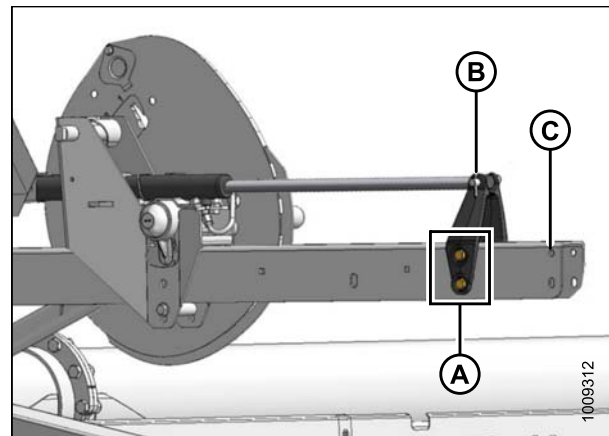
**NOTE:**

Reel components are not shown for clarity.

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



**Figure 3.66: Forward Position**



**Figure 3.67: Rearward Position**

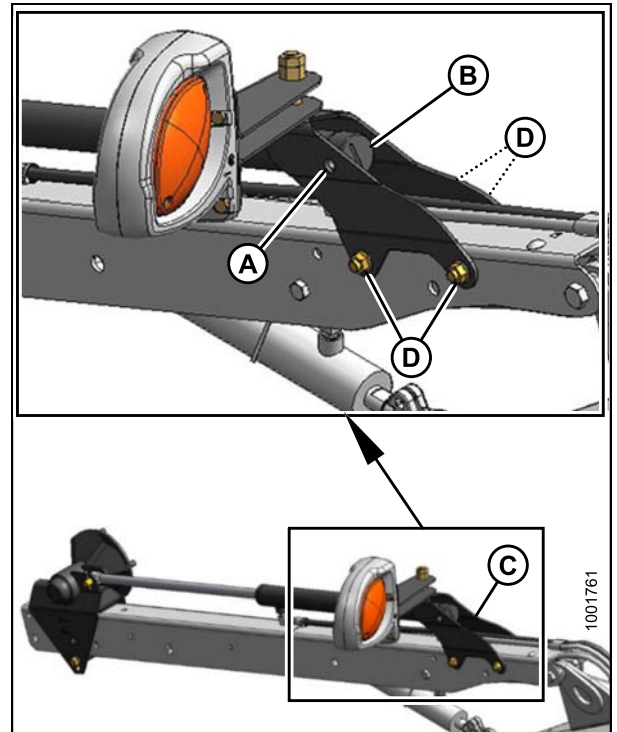
## OPERATION

Reposition left arm cylinder as follows:

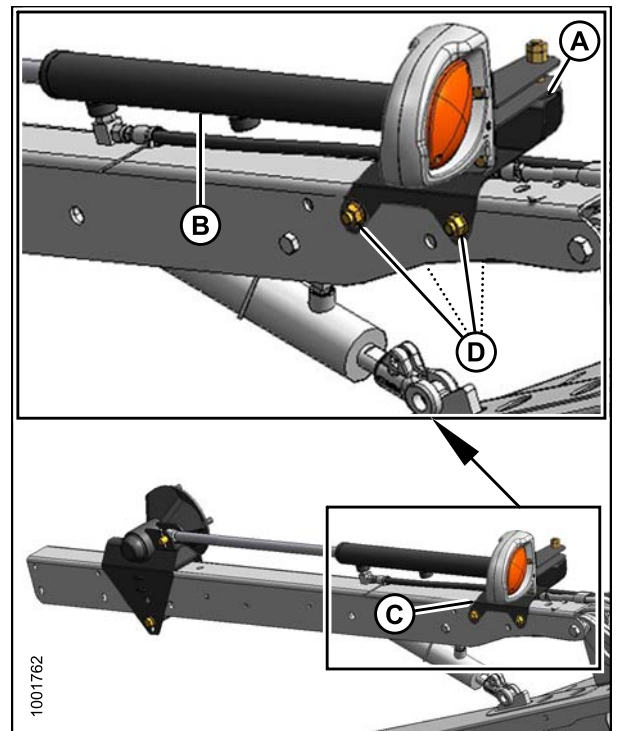
**NOTE:**

Reel components are not shown for clarity.

9. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
10. Remove bolts (D) securing bracket (C) to reel arm and remove bracket/light assembly (C).
11. If necessary, remove cable tie securing harness to bracket or reel arm.
12. Swivel light to working position as shown.



13. Reposition bracket/light assembly (C) on reel arm as shown and reinstall the four bolts (D) to secure bracket to reel arm. Tighten bolts.
14. Push reel back and reinstall cylinder (B) to bracket with pin (A). Secure pin with cotter pin.
15. Secure light harness to bracket with cable tie wrap.
16. Check reel clearance to backsheet, upper cross auger (if installed) and reel braces.
17. Adjust reel tine pitch (if required). For adjustment procedures, refer to [3.7.11 Reel Tine Pitch, page 80](#).



### 3.7.10 Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option

The reel can be moved approximately 9 in. (227 mm) further aft by repositioning the fore-aft cylinders on the reel arms. The Multi-Crop Conversion option is applicable to double-reel headers only.

#### **WARNING**

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

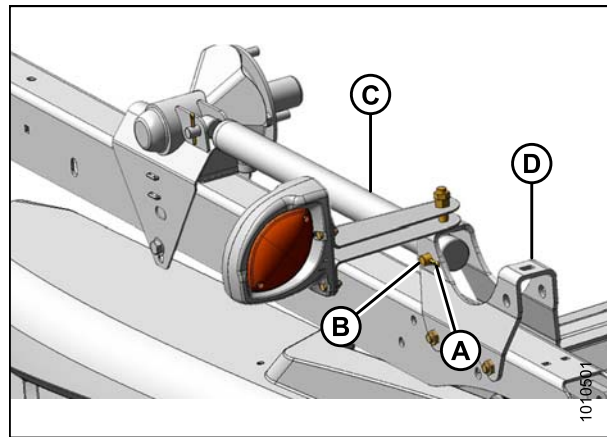
1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.

Reposition left arm cylinder as follows:

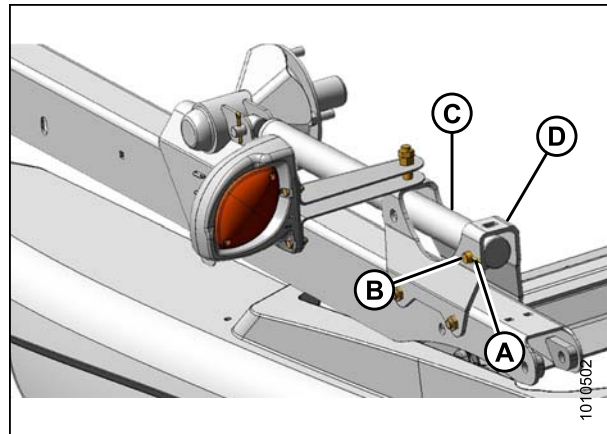
#### **NOTE:**

Reel components are not shown for clarity.

3. Remove cotter pin (A) and remove clevis pin (B).
4. Push reel back until cylinder barrel (C) lines up with the aft hole in bracket (D).
5. Reinstall the clevis pin (B) at new position and secure with cotter pin (A).



**Figure 3.70: Forward Position – Left Arm**



**Figure 3.71: Aft Position – Left Arm**



## OPERATION

Reposition center arm cylinder as follows:

**NOTE:**

Reel components are not shown for clarity.

6. Remove cotter pin (A) and remove clevis pin (B).
7. Push reel back until cylinder rod (C) lines up with the aft hole in brackets (D).
8. Reinstall the clevis pin (B) at new position and secure with cotter pin (A).

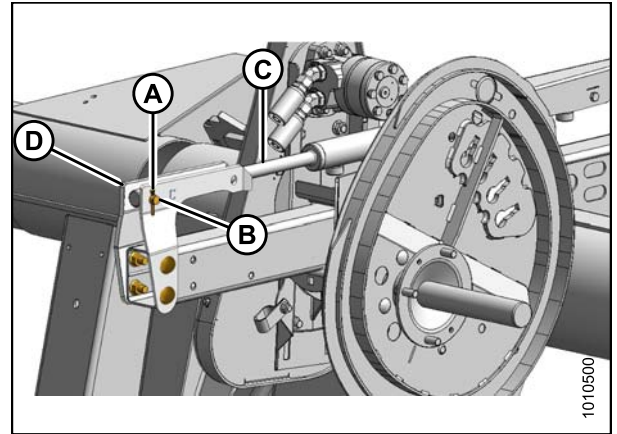


Figure 3.72: Forward Position – Center Arm

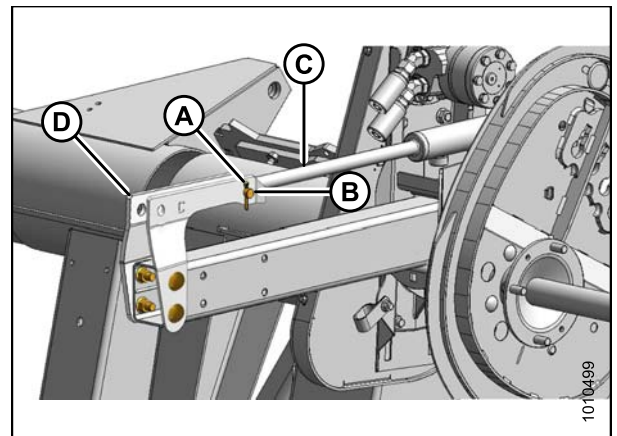


Figure 3.73: Aft Position – Center Arm

Reposition right arm cylinder as follows:

**NOTE:**

Reel components are not shown for clarity.

9. Remove cotter pin (A) and remove clevis pin (B).
10. Push reel back until cylinder rod (C) lines up with the aft hole in brackets (D).
11. Reinstall the clevis pin (B) at new position and secure with cotter pin (A).

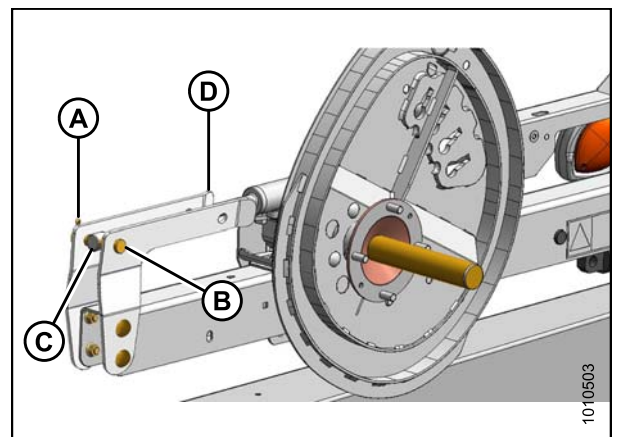


Figure 3.74: Forward Position – Right Arm

## OPERATION

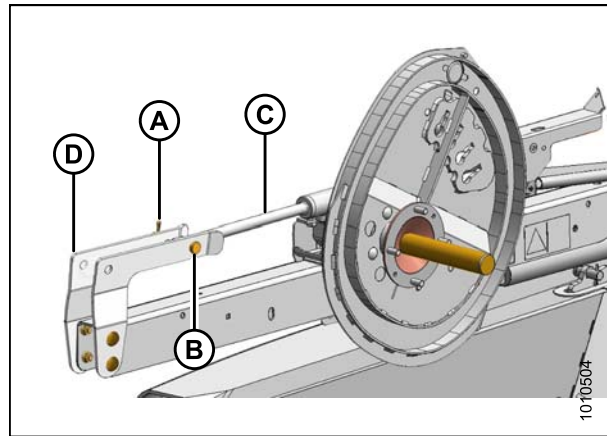


Figure 3.75: Aft Position – Right Arm

### 3.7.11 Reel Tine Pitch

The pick-up 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 the ground (tine pitch) is not significantly affected by the cam setting. For example, the cam position range is 33°, but the corresponding finger pitch range is only 5° 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. Refer to [3.6.2 Header Settings, page 44](#).

#### *Reel Cam Settings*

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 [Adjusting Reel Cam, page 82](#).

**Cam Position 1, Reel Position 6 or 7** 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.

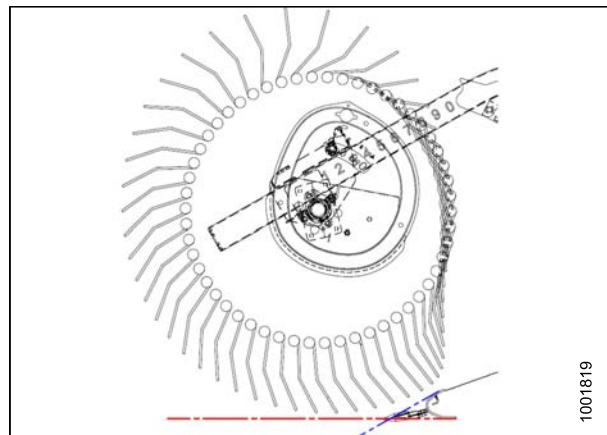


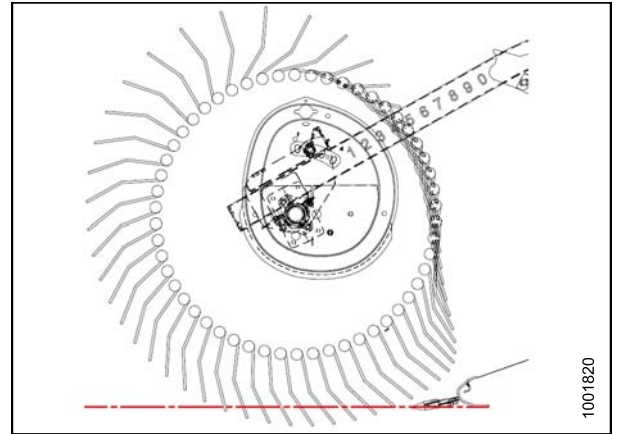
Figure 3.76: Finger Profile – Position 1



## OPERATION

**Cam Position 2, Reel Position 3 or 4** is the recommended starting position for most crops and conditions.

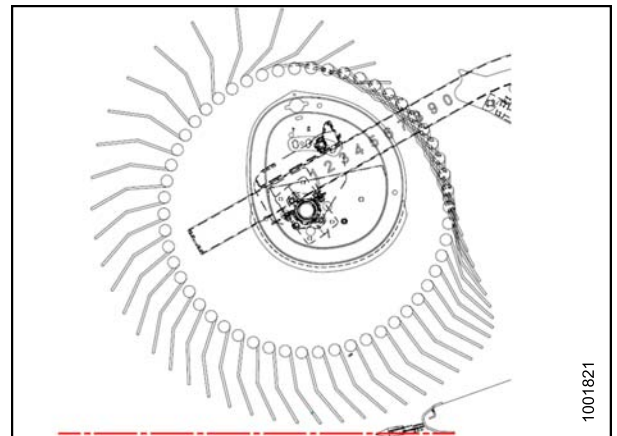
- This setting gives a fingertip speed approximately 20% faster than the reel speed.
- If crops tend to stall on the cutterbar with the reel in a forward position, the cam setting should be increased to push the crop past the rear edge of the cutterbar.
- If the crop getting fluffed, or the flow across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



**Figure 3.77: Finger Profile – Position 2**

**Cam Position 3, Reel Position 6 or 7** are mainly used to leave long stubble.

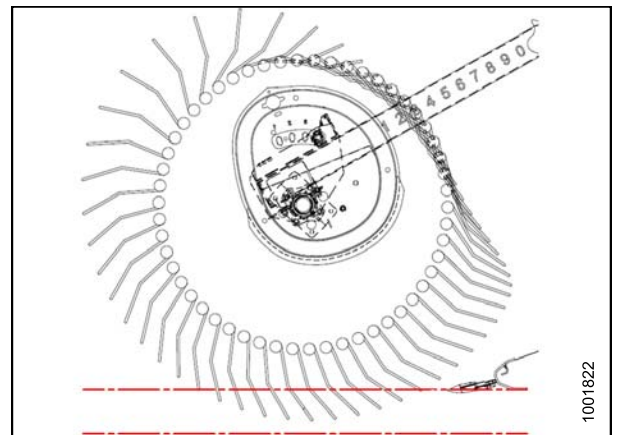
- This position allows the reel to reach forward and lift the crop across the knife and onto the drapers.
- This setting gives a finger tip speed approximately 30% faster than the reel speed.



**Figure 3.78: Finger Profile – Position 3**

**Cam Position 4, Reel Position 2 or 3** is used with the reel fully forward to leave the maximum amount of stubble in lodged crops.

- This position allows the reel to reach forward and lift the crop across the knife and onto the drapers.
- This setting gives a finger tip speed approximately 35% faster than the reel speed.



**Figure 3.79: Finger Profile – Position 4**

## OPERATION

**Cam Position 4, Header Angle At Maximum, and Reel Fully Forward** provides the maximum amount of reel reach below the 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 in. (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 decreases 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.

Refer to [3.6.2 Header Settings, page 44](#) for recommended reel tine pitch in specific crops and crop conditions.

### Adjusting Reel Cam



## WARNING

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

1. Using a 3/4 in. (19 mm) 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.

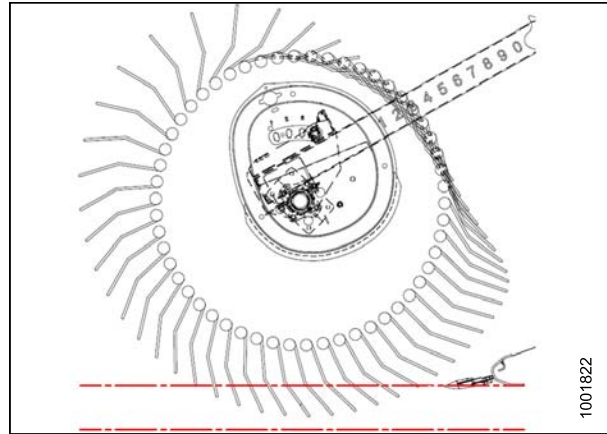
### NOTE:

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

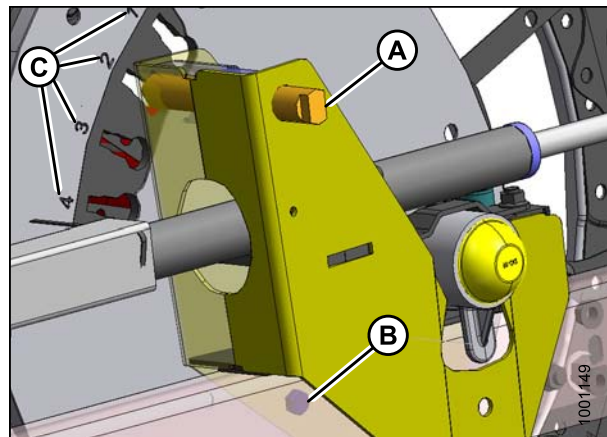
3. Turn latch pin (A) clockwise to engage and lock cam disc.
4. Repeat above procedure for the other reel.

### IMPORTANT:

Secure cam position before operating machine.



**Figure 3.80: Finger Profile – Position 4**



**Figure 3.81: Reel Cam Positioner**

### 3.7.12 Crop Dividers

Crop dividers are used to help divide the crop when harvesting. They are removable to allow installation of vertical knives and to decrease transport width.

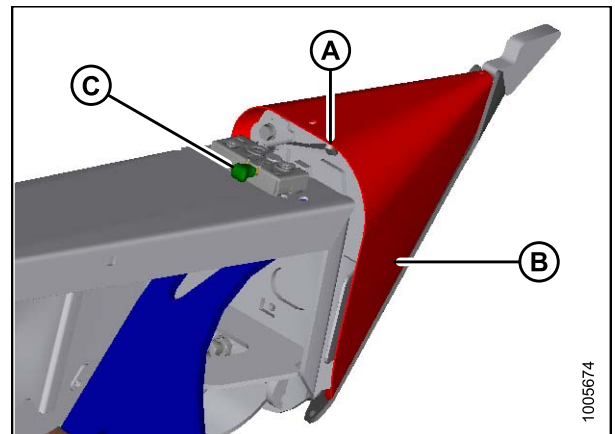
#### *Removing Crop Dividers from Header with Latch Option*

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

#### **⚠ DANGER**

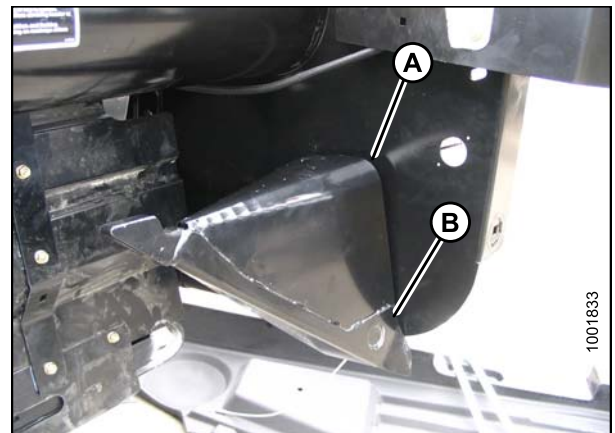
**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

1. Lower reel, raise header, stop engine, remove key, and engage header safety props. For instructions, refer to your combine operator's manual.
2. Open/remove header endshields. Refer to [3.2.3 Endshields, page 33](#).
3. Lift safety lever (A).
4. Hold onto divider (B), push lever (C) to open latch and lower divider.



**Figure 3.82: Crop Divider**

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/replace header endshields. Refer to [3.2.3 Endshields, page 33](#).



**Figure 3.83: Stored Crop Divider**

## OPERATION

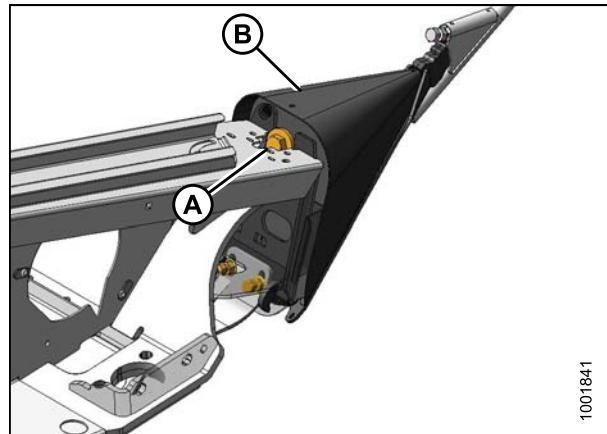
### *Removing Crop Dividers from Header without Latch Option*

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 safety props before going under header for any reason.**

1. Lower reel, raise header, stop engine, remove key, and engage safety props. For instructions, refer to your combine operator's manual.
2. Open/remove header endshields. Refer to [3.2.3 Endshields, page 33](#).
3. Remove bolt (A), lock washer, and flat washer.
4. Lower divider (B) and lift off endsheet.
5. Close/replace header endshields. Refer to [3.2.3 Endshields, page 33](#).



**Figure 3.84: Crop Divider**

### *Installing Crop Dividers on Header with Latch Option*

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

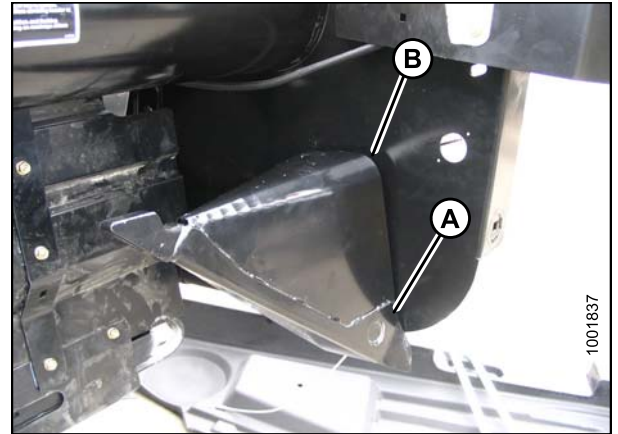
#### **DANGER**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

1. Lower reel, raise header, stop engine, remove key, and engage safety props. For instructions, refer to your combine operator's manual.
2. Open header and remove endshields.

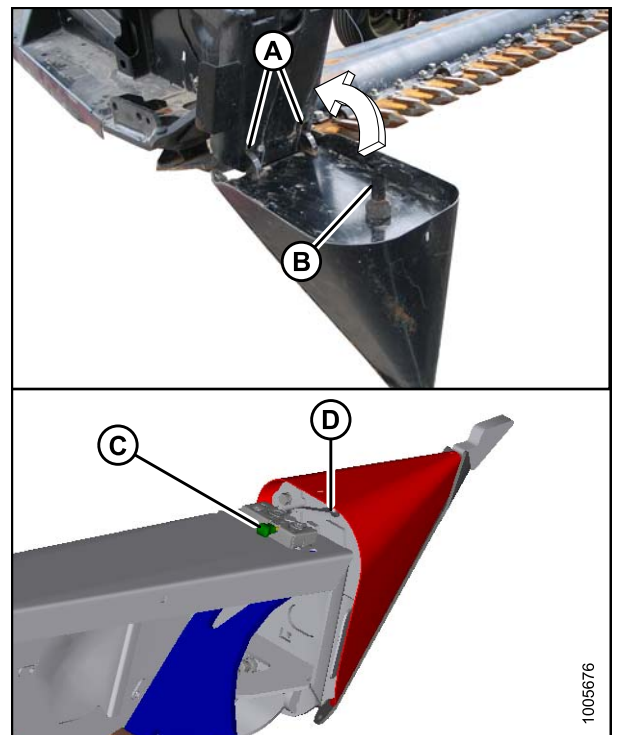
## OPERATION

3. 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 3.85: Stored Crop Divider**

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



**Figure 3.86: Crop Divider**

## OPERATION

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



Figure 3.87: Crop Divider

### *Installing Crop Dividers on Header 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 safety props before going under header for any reason.**

1. Lower reel, raise header, stop engine, remove key, and engage safety props. For instructions, refer to your combine operator's manual.
2. Open/remove endshields. Refer to [3.2.3 Endshields, page 33](#).
3. Remove crop divider from storage.
4. Position crop divider as shown by locating lugs (A) in holes in endsheet.

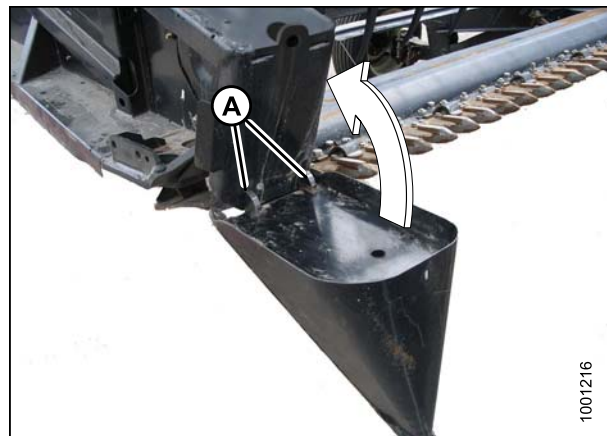


Figure 3.88: Crop Divider



## OPERATION

5. Lift forward end of divider and install bolt (A) and special stepped washer (B) (step towards divider). Tighten bolt.
6. Check that divider does not move laterally. Adjust bolts (C) as required to tighten divider and remove lateral play when pulling at divider tip.
7. Close endshield. Refer to [3.2.3 Endshields, page 33](#).

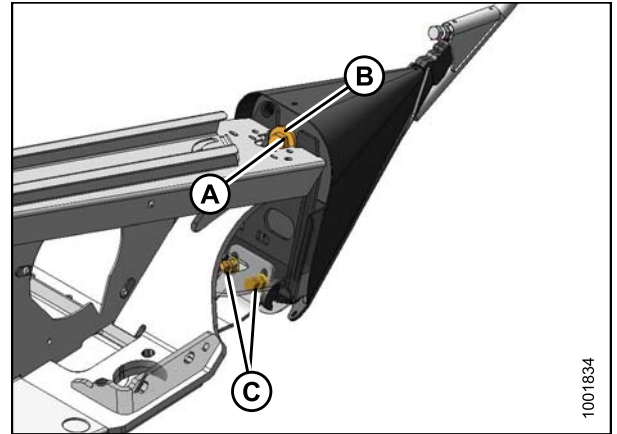


Figure 3.89: Crop Divider

### 3.7.13 Crop Divider Rods

Crop divider rods are used in conjunction with crop dividers. The removable crop divider rods are most useful when crop is down, but in standing crops using only crop dividers is recommended.

Table 3.9 Crop Divider Rods Recommended Use

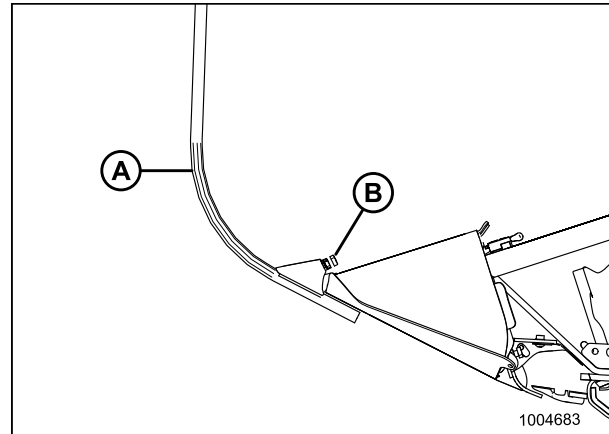
With Divider Rods	Without Divider Rods
Alfalfa	Edible beans
Canola	Milo
Flax	Rice
Grass seed	Soybeans
Lentils	Standing cereal
Lodged cereal	
Peas	
Soybeans	
Sudan grass	
Winter forage	

## OPERATION

### *Removing Crop Divider Rods*

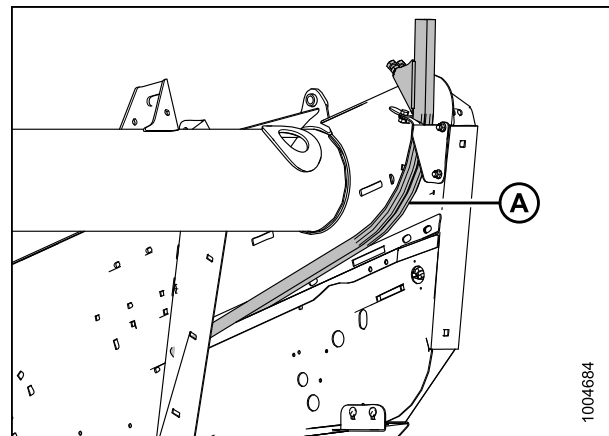
To remove divider rods, follow these steps:

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



**Figure 3.90: Crop Divider Rod**

2. Store both rods on the inboard side of the right endsheet.

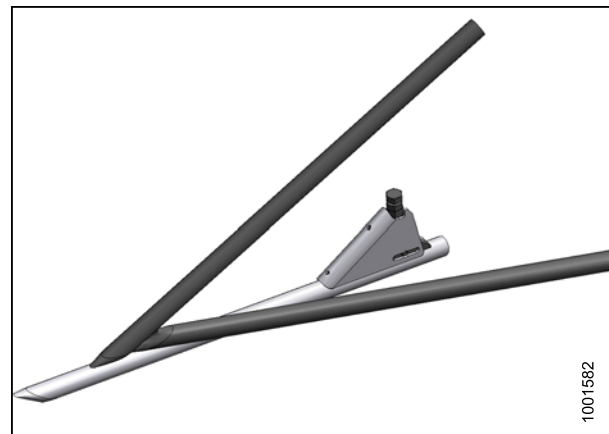


**Figure 3.91: Stored Divider Rod**

### *Rice Dividers*

Optional special rice dividers can be installed and used when required. Refer to [6.3.3 Rice Divider Rods, page 412](#).

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



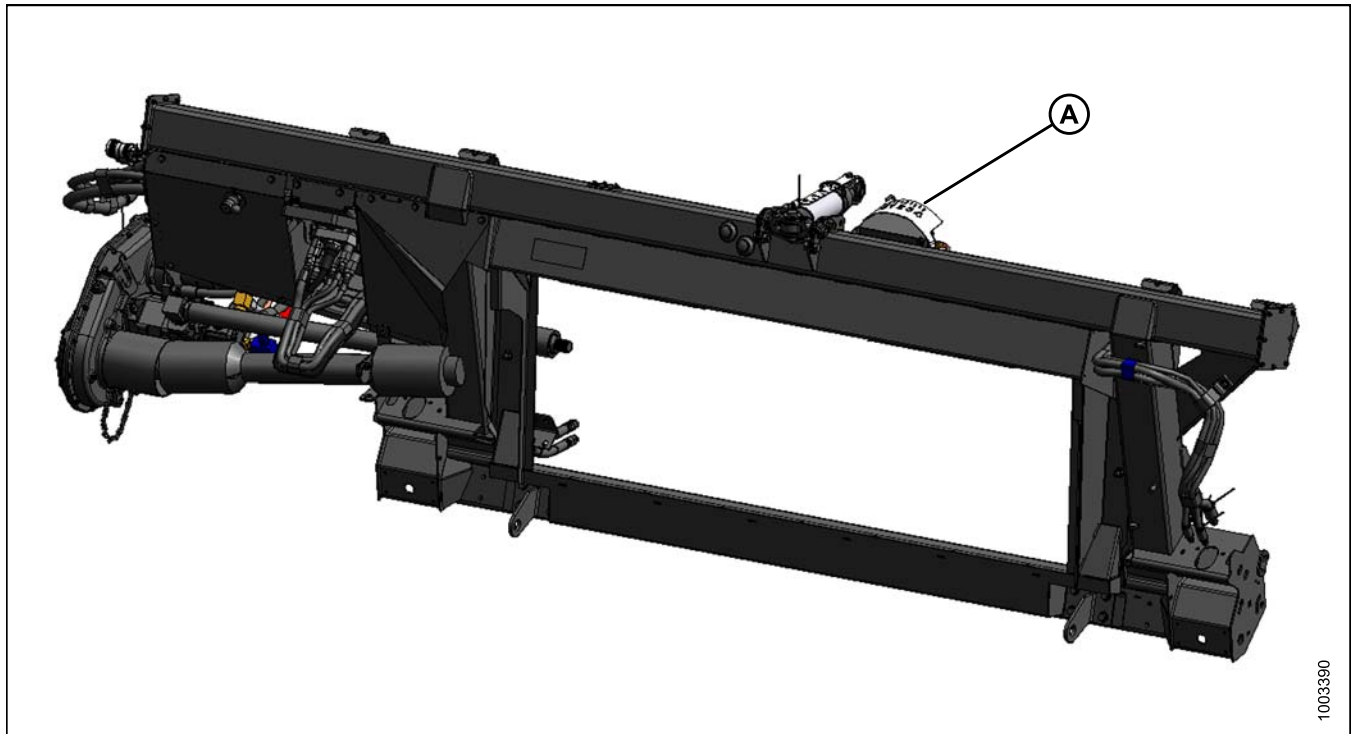
**Figure 3.92: Divider Rod for Rice**



### 3.8 Auto Header Height Control (AHHC)

MacDon's Auto Header Height Control (AHHC) feature works in conjunction with the AHHC option available on certain combine models.

A sensor is installed in the float indicator box (A) on the CA25 Combine Adapter. This sensor send a signal to the combine allowing it to maintain a consistent cutting height and an optimum adapter float as the header follows ground contours.



**Figure 3.93: CA25 Combine Adapter**

CA25 Combine Adapters are factory-equipped for AHHC; however, before using the AHHC feature, you must do the following:

1. Ensure that the AHHC sensor's output voltage range is appropriate for the combine.  
For more information, refer to [3.8.1 Auto Header Height Control Sensor Output Voltage Range – Combine Requirements, page 91](#).
2. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the instructions for your combine).
3. Calibrate the AHHC system so that the combine can correctly interpret data from the height sensor on the combine adapter (refer to the instructions for your combine).

**NOTE:**

Once calibration is complete, you are ready to use the AHHC feature in the field. For each combine, certain operation settings can be used to improve the performance of the AHHC feature (refer to the instructions for your combine).

## OPERATION

### NOTE:

If your CA25 Combine Adapter is not equipped to work with a specific combine model, you will need to install the appropriate combine completion package. Completion packages come with instructions for installing the AHHC sensor on the combine adapter.

Refer to the following instructions for your specific combine model:

- [\*3.8.2 Challenger 6 and 7 Series Combines, page 94\*](#)
- [\*3.8.3 Case IH 2300/2500 and 5088/6088/7088 Combines, page 101\*](#)
- [\*3.8.4 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230 Combines, page 105\*](#)
- [\*3.8.5 Gleaner R62/R72 Combines, page 114\*](#)
- [\*3.8.6 Gleaner R65/R75 Combines, page 117\*](#)
- [\*3.8.7 John Deere 50 Series Combines, page 127\*](#)
- [\*3.8.8 John Deere 60 Series Combines, page 131\*](#)
- [\*3.8.9 John Deere 70 Series Combines, page 137\*](#)
- [\*3.8.10 John Deere S Series Combines, page 143\*](#)
- [\*3.8.11 Lexion 500 Series Combines, page 150\*](#)
- [\*3.8.12 Lexion 700 Series Combines, page 157\*](#)
- [\*3.8.13 New Holland Combines, page 163\*](#)

### 3.8.1 Auto Header Height Control Sensor Output Voltage Range – Combine Requirements

The Auto Header Height Control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly.

**Table 3.10 Combine Voltage Limits**

Combine	Low Voltage Limit	High Voltage Limit	Range (Difference between High and Low Limits)
Challenger, Gleaner A, Massey Ferguson	0.5 V	4.5 V	2.5 V
Case IH 5088/6088/7088, 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230	0.5 V	4.5 V	2.5 V
Case IH 2300/2500	2.8 V	7.2 V	4.0 V
Gleaner R and S Series	0.5 V	4.5 V	2.5 V
John Deere 50, 60, 70, and S Series	0.5 V	4.5 V	2.5 V
Lexion 500/600/700 Series	0.5 V	4.5 V	2.5 V
New Holland CR/CX - 5 V system	0.7 V	4.3 V	2.5 V
New Holland CR/CX - 10 V system	2.8 V	7.2 V	4.1–4.4 V

**NOTE:**  
Some combine models do not support checking sensor output voltage from the cab (early 23/2588 series, Lexion 500/700 series). For these models, check output voltage manually—refer to [Manually Checking Voltage Range, page 91](#).

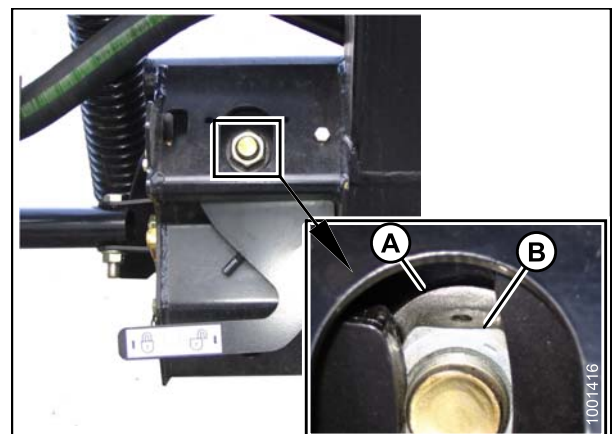
#### Manually Checking Voltage Range

You can manually check the output voltage range of the Auto Header Height Control (AHHC) sensor at the float indicator box; however, some combines will allow you to check the voltage range from the cab. Refer to your combine operator's manual or the AHHC instructions for your combine model in this document.

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**

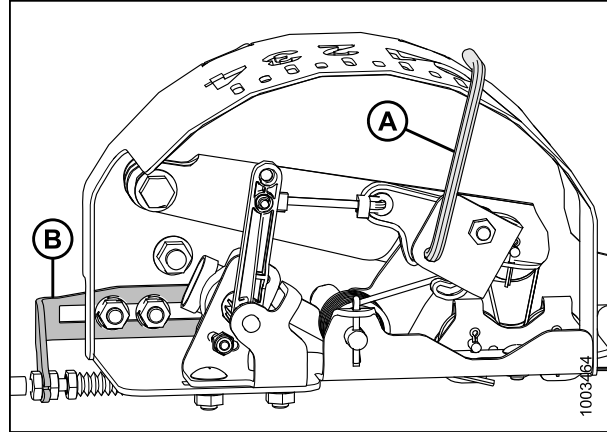
If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



**Figure 3.94: Float Lock**

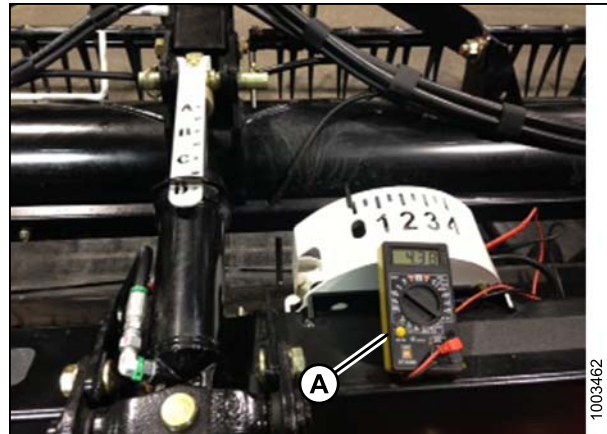
## OPERATION

- Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.95: Float Indicator Box (Most Common 5 Volt AHHC Sensor Assembly Shown)**

- Using a voltmeter (A), measure the voltage between the ground (Pin 2) and signal (Pin 3) wires at the AHHC sensor in the float indicator box. It should be at the high voltage limit for the combine—refer to Table [3.10 Combine Voltage Limits](#), page 91.



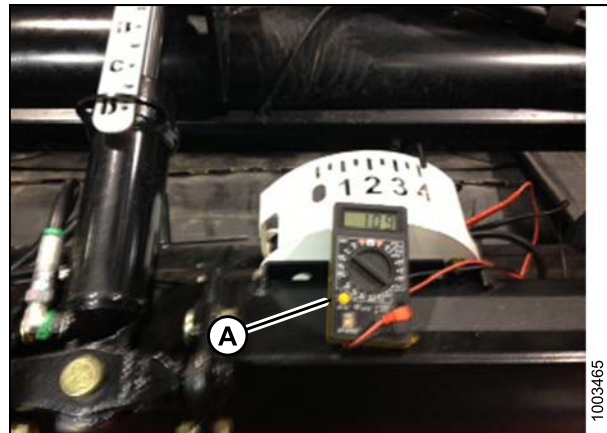
**Figure 3.96: Voltmeter between Ground and Signal Wires**

- Fully lower the combine feeder house, and float the header up off the down stops (float indicator should be at '4', and the adapter should be fully separated from the header).

### NOTE:

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

- Using a voltmeter (A), measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator box. It should be at the low voltage limit for the combine—refer to Table [3.10 Combine Voltage Limits](#), page 91.
- Adjust the voltage limits (refer to [Adjusting Voltage Limits](#), page 93) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits](#), page 91).



**Figure 3.97: Voltmeter between Ground and Signal Wires**

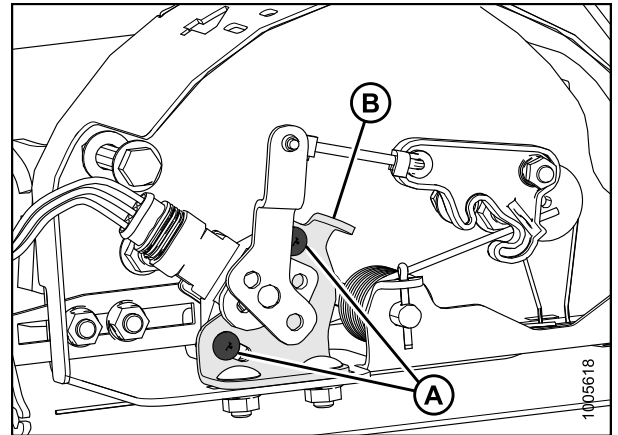
## OPERATION

### *Adjusting Voltage Limits*

#### **NOTE:**

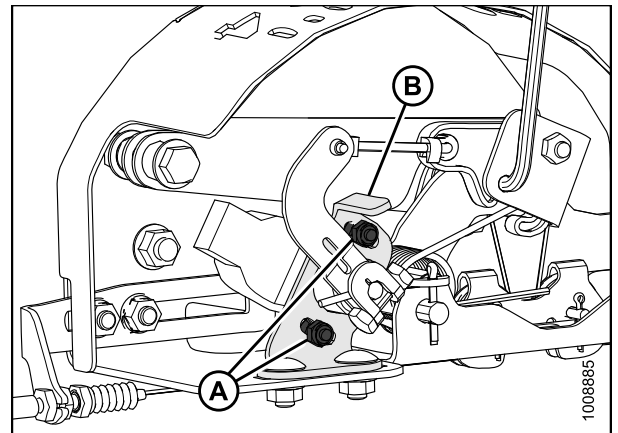
The Auto Header Height Control (AHHC) sensor assemblies used for Lexion and some New Holland combines are slightly different from the sensor assemblies used for other combine models—all three assemblies are illustrated in this procedure.

1. Complete the following steps to adjust the high voltage limit:
  - a. Extend guard angle fully; the header angle indicator should be at 'D'.
  - b. Position header 6–10 in. above the ground; the float indicator should be at '0'.
  - c. Loosen sensor mounting bolts (A).
  - d. Rotate potentiometer (B) clockwise to increase the low voltage limit, and counterclockwise to decrease it.
  - e. Tighten sensor mounting bolts (A).

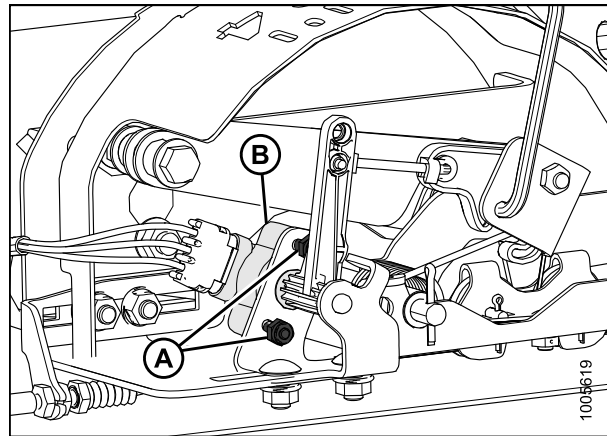


**Figure 3.98: AHHC Sensor Assembly for Use with Lexion Combines**

2. Complete the following steps to adjust the low voltage limit:
  - a. Extend guard angle fully; the header angle indicator should be at 'D'.
  - b. Fully lower header on the ground; the float indicator should be at '4'.
  - c. Loosen mounting bolts (A).
  - d. Rotate potentiometer (B) clockwise to increase the low voltage limit, and counterclockwise to decrease it.
  - e. Tighten sensor mounting bolts (A).



**Figure 3.99: 10 Volt AHHC Sensor Assembly for Use with Some New Holland Combines**



**Figure 3.100: Most Common 5 Volt AHHC Sensor Assembly**

### 3.8.2 Challenger 6 and 7 Series Combines

#### *Checking Voltage Range from the Combine Cab (Challenger 6 and 7 Series)*

**NOTE:**

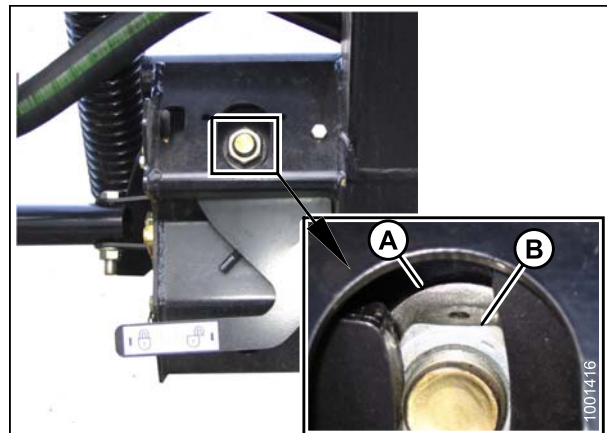
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor's output voltage range from the combine cab, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

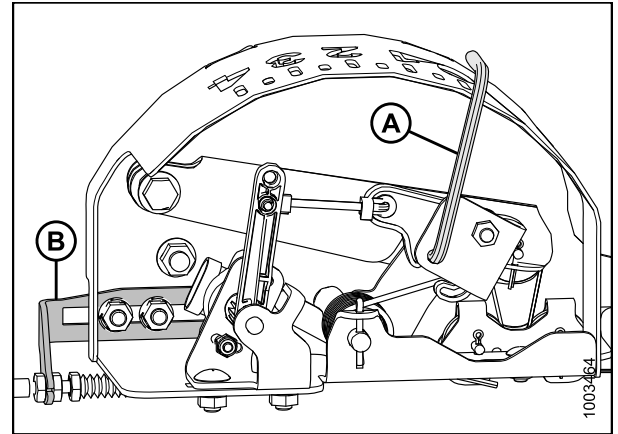


**Figure 3.101: Float Lock**



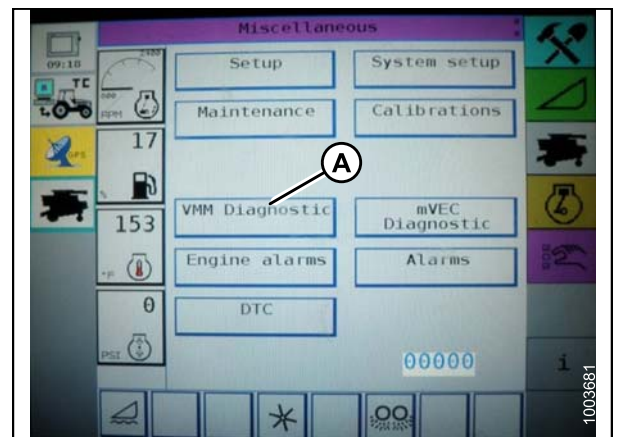
## OPERATION

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



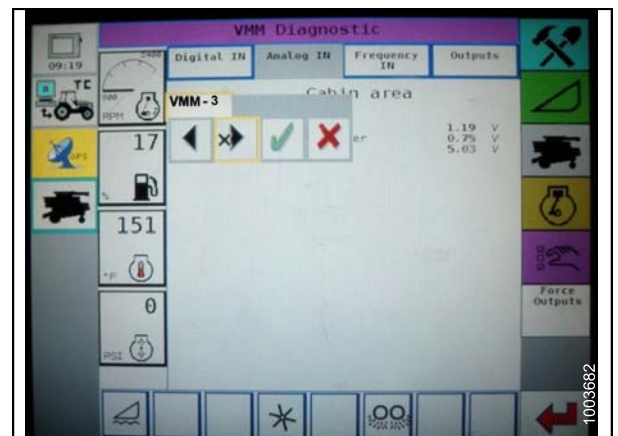
**Figure 3.102: Float Indicator Box**

4. Go to the FIELD page on the combine monitor, and then press the diagnostics icon. The MISCELLANEOUS page displays.
5. Press the VMM DIAGNOSTIC button (A). The VMM DIAGNOSTIC page displays.



**Figure 3.103: Challenger Combine Display**

6. Go to the ANALOG IN tab, and then select VMM MODULE 3 by pressing the text box below the four tabs. The voltage from the AHHC sensor is now displayed on screen as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. Both readings should be identical.



**Figure 3.104: Challenger Combine Display**

## OPERATION

7. Fully lower the combine feeder house adapter should be fully separated from the header).

**NOTE:**

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

8. Read voltage.
9. Raise header so cutterbar is 6 in. (150 mm) off the ground.
10. Read voltage.
11. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).



**Figure 3.105: Challenger Combine Display**

### *Engaging the Auto Header Height Control (Challenger 6 Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The following system components are required in order for the Auto Header Height Control (AHHC) to work:

- Main module (PCB board) and header driver module (PCB board) mounted in card box in Fuse Panel Module (FP).
- Multi-Function Control Handle operator inputs.
- Operator inputs mounted in the control console module (CC) panel.

**NOTE:**

In addition to the above components, the electro hydraulic header lift control valve also is an integral part of the system.

Engage the AHHC as follows:

1. Scroll through the header control options on the combine display using the header control switch until the AHHC icon is displayed in the first message box. The AHHC will adjust the header height in relation to the ground according to the height setting and sensitivity setting.



**Figure 3.106: Challenger Combine Display**



## OPERATION

### *Calibrating the Auto Header Height Control (Challenger 6 Series)*

#### **NOTE:**

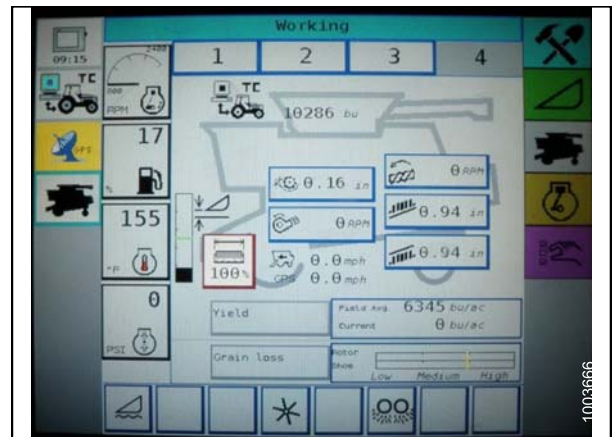
For best performance of the Auto Header Height Control (AHHC) system, perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

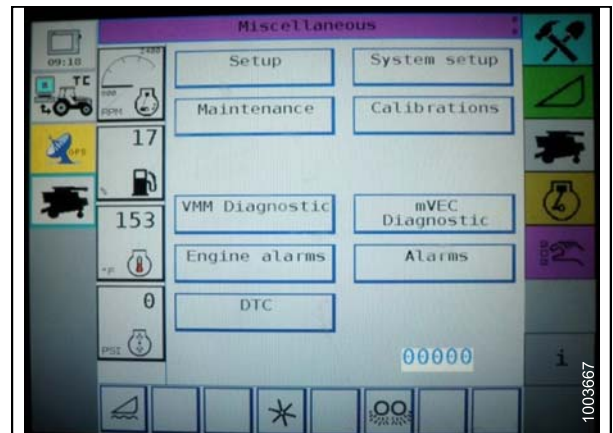
To calibrate the AHHC system, follow these steps:

1. Ensure center-link is set to D.
2. On the FIELD page, press the DIAGNOSTICS icon. The MISCELLANEOUS page appears.



**Figure 3.107: Challenger Combine Display**

3. Press the CALIBRATIONS button. The CALIBRATIONS page appears.



**Figure 3.108: Challenger Combine Display**

## OPERATION

4. Press the HEADER button. The HEADER CALIBRATION page displays a warning.

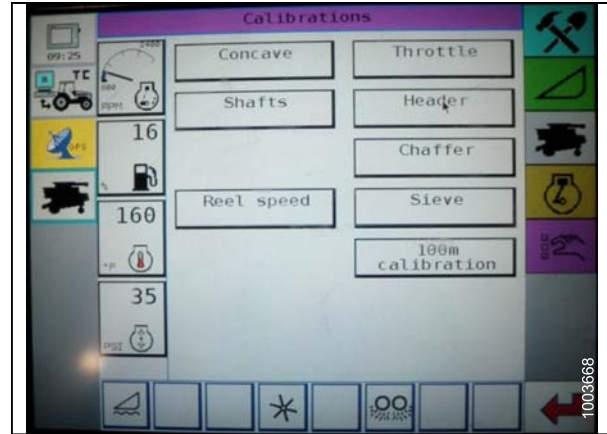


Figure 3.109: Challenger Combine Display

5. Read the warning message, and then press the green check mark button.

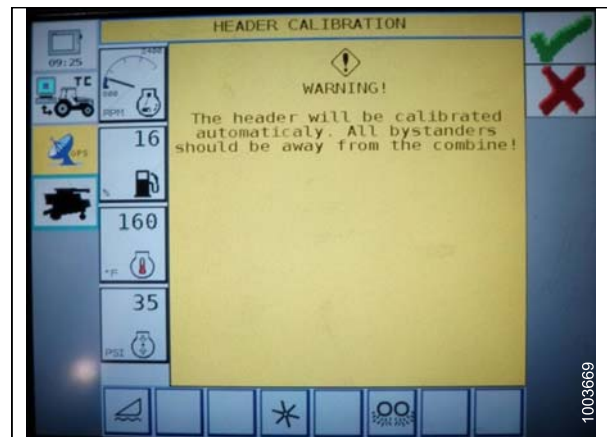


Figure 3.110: Challenger Combine Display

6. Follow the on-screen prompts to complete calibration.

### NOTE:

The calibration procedure can be cancelled at anytime by pressing the cancel button in the bottom right corner of the screen. While the header calibration is running, the calibration can also be canceled by using the up, down, tilt right, or tilt left buttons on the control handle.

### NOTE:

If the combine does not have header tilt installed or if it is inoperable, you may receive warnings during calibration. Press the green check mark if these warnings appear. This will not affect the AHHC calibration.

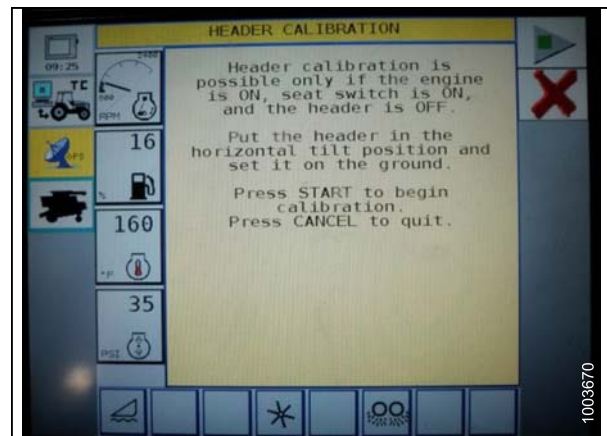


Figure 3.111: Challenger Combine Display

## OPERATION

### *Adjusting the Header Height (Challenger 6 Series)*

Once the Auto Header Height Control (AHHC) is activated, press and release the header lower button on the control handle. The AHHC will automatically lower the header to the selected height setting.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The selected AHHC height is adjusted using the height adjustment knob on the control console. Turning the knob clockwise increases the selected height, and turning the knob counterclockwise decreases the selected height.



**Figure 3.112: Height Adjustment Knob on the Combine Control Console**

### *Adjusting the Header Raise/Lower Rate (Challenger 6 Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the Header icon on the FIELD page. The HEADER page displays.



**Figure 3.113: Challenger Combine Display**

## OPERATION

2. Press HEADER CONTROL (A). The HEADER CONTROL page displays.

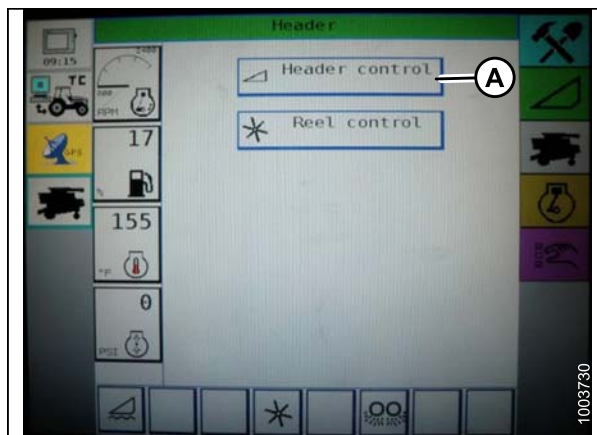


Figure 3.114: Challenger Combine Display

3. Go to the TABLE SETTINGS tab.
4. Press up arrow on MAX UP PWM to increase percentage number and increase raise speed; Press down arrow on MAX UP PWM to decrease percentage number and decrease raise speed.
5. Press up arrow on MAX DOWN PWM to increase percentage number and increase lower speed; Press down arrow on MAX DOWN PWM to decrease percentage number and decrease lower speed.

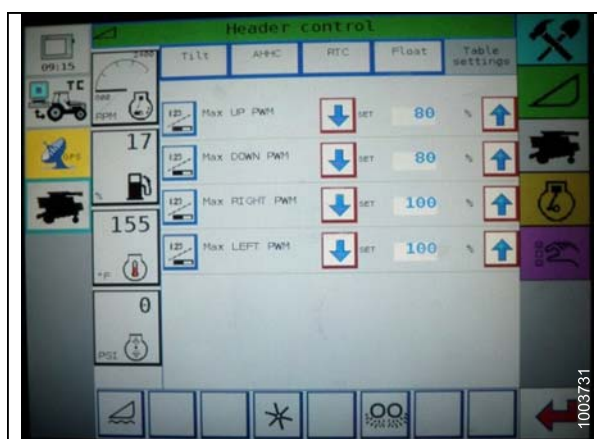


Figure 3.115: Challenger Combine Display

### *Setting the Sensitivity of the Auto Header Height Control (Challenger 6 Series)*

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the Auto Header Height Control (AHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the HEADER icon on the FIELD page. The HEADER page appears.

## OPERATION

2. Press the HEADER CONTROL button (A). The HEADER CONTROL page appears. You can adjust sensitivity on this page using the up and down arrows.

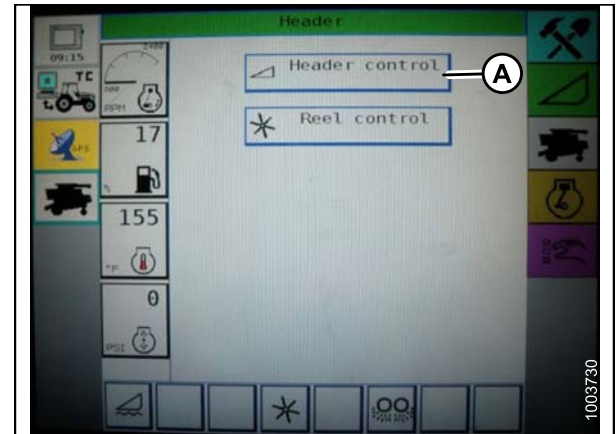


Figure 3.116: Challenger Combine Display

3. Adjust the sensitivity to the maximum setting.
4. Activate the AHHC, and press the header lower button on the control handle.
5. Decrease the sensitivity until the feeder house remains steady and does not bounce up and down.

### NOTE:

This is the maximum sensitivity and is only an initial setting. The final setting must be made in the field as the system reaction will vary with changing surfaces and operating conditions.

### NOTE:

If maximum sensitivity is not needed, a less sensitive setting will reduce the frequency of header height corrections and component wear. Partially opening the accumulator valve will cushion the action of the header lift cylinders and reduce header hunting.

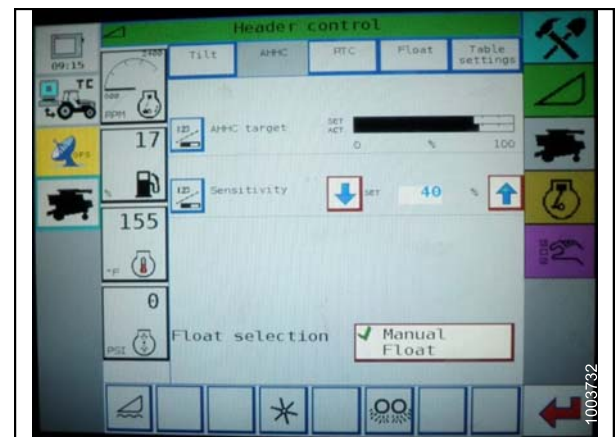


Figure 3.117: Challenger Combine Display

### 3.8.3 Case IH 2300/2500 and 5088/6088/7088 Combines

#### *Engaging the Auto Header Height Control (Case IH 2300)*

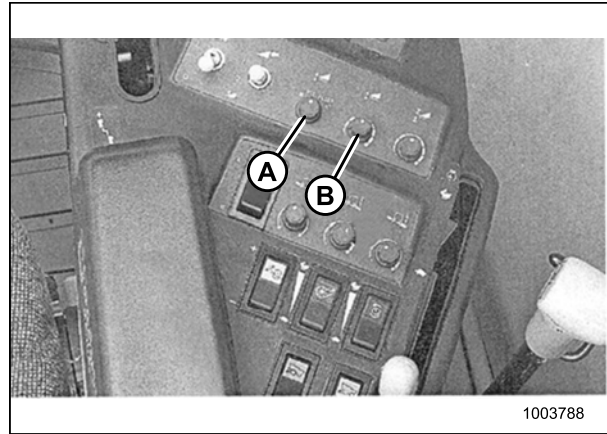
### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.



## OPERATION

1. Turn mode select switch (A) to HT.
2. Set the desired header height with position control knob (B). The AHHC will raise and lower the header to maintain this fixed distance from the ground.
3. Turn feeder ON.
4. Push header LOWER switch.



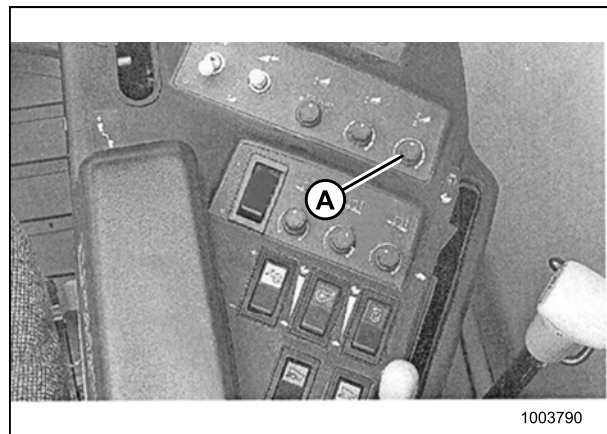
**Figure 3.118: Combine Controls**

5. Use header raise rate control (A) and header lower rate control (B) as required to adjust the rate at which the header raises or lowers to maintain the desired header height.



**Figure 3.119: Combine Controls**

6. Use sensitivity control (A) to set the sensitivity to changing ground conditions.



**Figure 3.120: Combine Controls**

## OPERATION

### *Calibrating the Auto Header Height Control (Case IH 2300/2500 and 5088/6088/7088)*

For best performance of the Auto Header Height Control (AHHC) system, perform ground calibration with center-link set to D. When calibration is complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

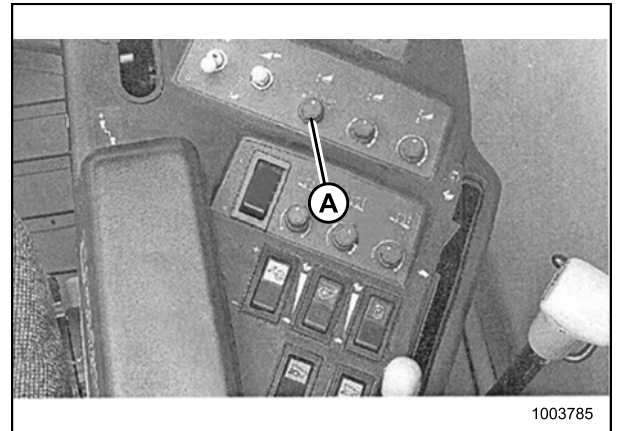
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the AHHC system, follow these steps:

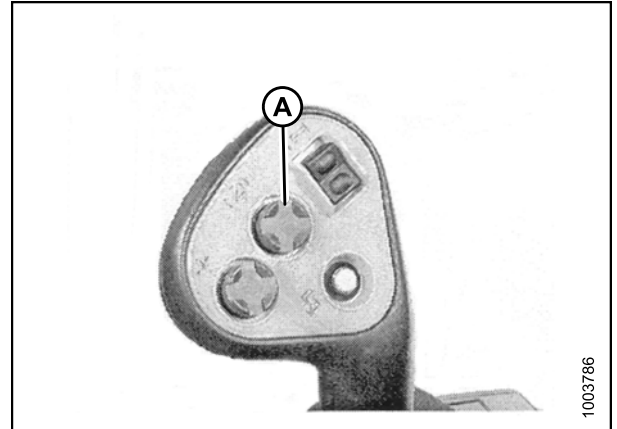
1. Ensure center-link is set to D.
  2. Set the flotation on the header and adapter package, refer to [3.7.2 Header Float, page 58](#). Position fore-aft in mid span.
  3. Start combine engine, but do NOT have separator or feeder house engaged.
  4. Locate header control switch (A) on the right-hand console, and set to "HT" (this is AHHC mode).
- 
5. Press the header lower switch (A) on the joystick lever until the adapter and header are fully lowered. You may need to hold the switch for several seconds.
  6. Press the header raise switch (A) on the joystick lever. The header should stop at about the halfway point. Continue holding the header raise switch, and the header will rise until the feeder house reaches its upper limit. The AHHC system is now calibrated.

#### **NOTE:**

If float was set heavier to complete the ground calibration procedure, adjust to recommended operating float after the calibration is complete.

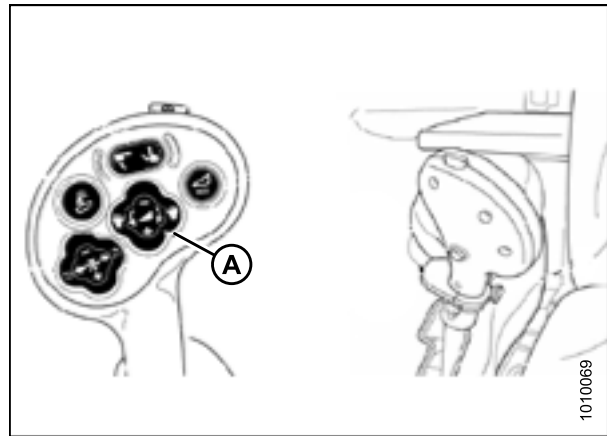


**Figure 3.121: Right-Hand Console**



**Figure 3.122: Joystick Lever (Case IH 2300/2500)**

## OPERATION



**Figure 3.123: Joystick Lever (Case IH 5088/6088/7088)**

### *Setting the Sensitivity of the Auto Header Height (Case IH 2300/2500 and 5088/6088/7088)*

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the Auto Header Height Control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

#### **NOTE:**

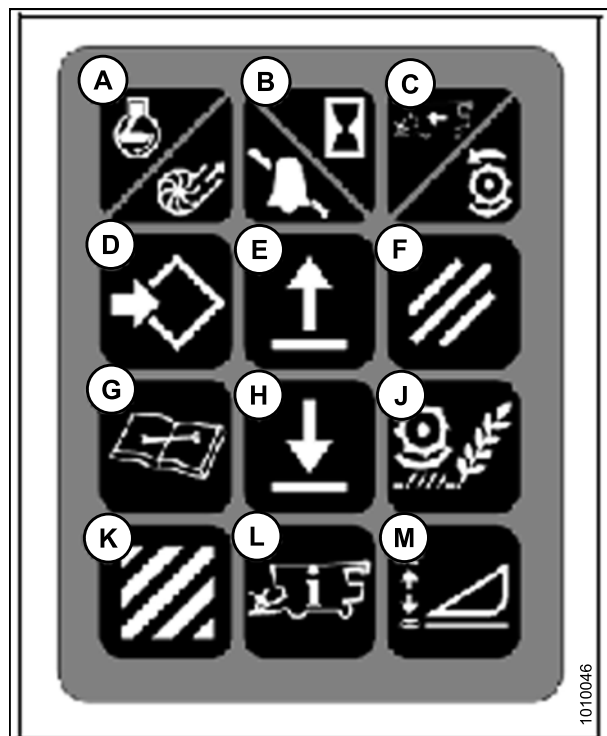
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use the HEADER SETTINGS key (M) to display the HEADER SENSITIVITY CHANGE SCREEN.
2. Use the UP or DOWN keys (E and H) to adjust the highlighted item. The height sensitivity setting range is 0 (least sensitive) to 250 (most sensitive) in increments of 10.

#### **NOTE:**

Adjustments take effect immediately. Use the CANCEL key to return to the original settings.

3. Use the HEADER SETTINGS key (M) to highlight the next changeable item.
4. Use the ENTER key (D) to save changes and return to the monitor screen. If there are no changes, the screen will return to the monitor screen after five seconds.



**Figure 3.124: Combine Controls**



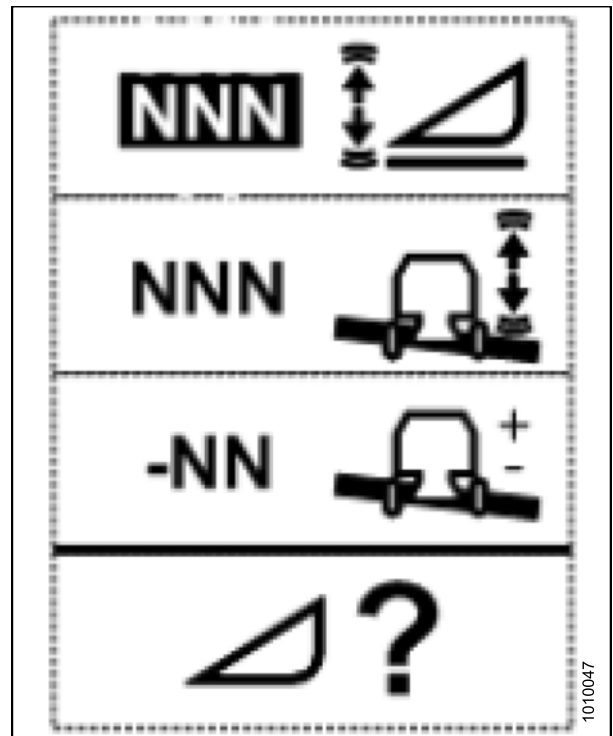


Figure 3.125: Height Sensitivity Change Screen

### 3.8.4 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, and 7230/8230/9230 Combines

#### *Checking Voltage Range from the Combine Cab (Case 8010)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab for Universal Display, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

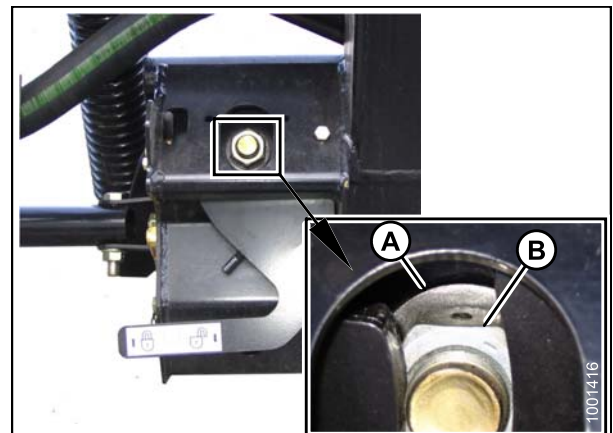
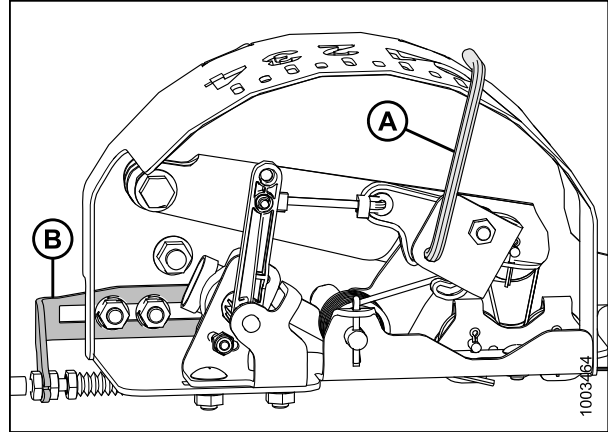


Figure 3.126: Float Lock

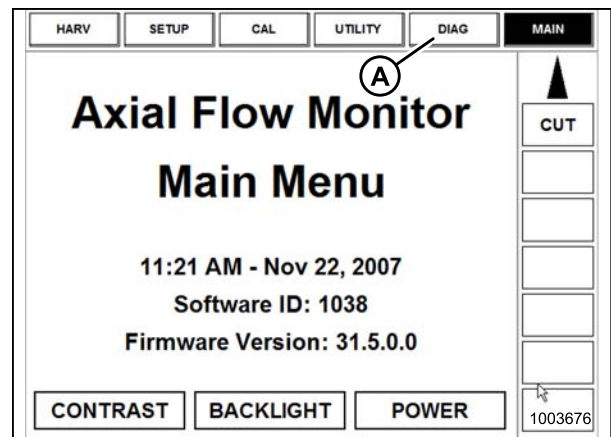
## OPERATION

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



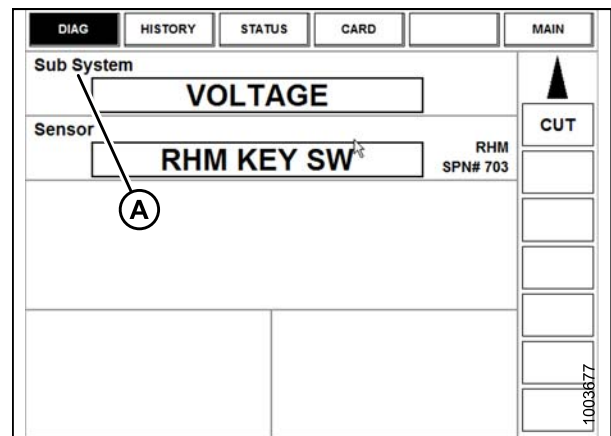
**Figure 3.127: Float Indicator Box**

4. Ensure header float is unlocked.
5. Select DIAG (A) on the Universal display MAIN screen. The DIAG screen opens.



**Figure 3.128: Case 8010 Combine Display**

6. Select SUB SYSTEM (A). The SUB SYSTEM window opens.



**Figure 3.129: Case 8010 Combine Display**

## OPERATION

7. Select HDR HEIGHT/TILT (A). The SENSOR window opens.

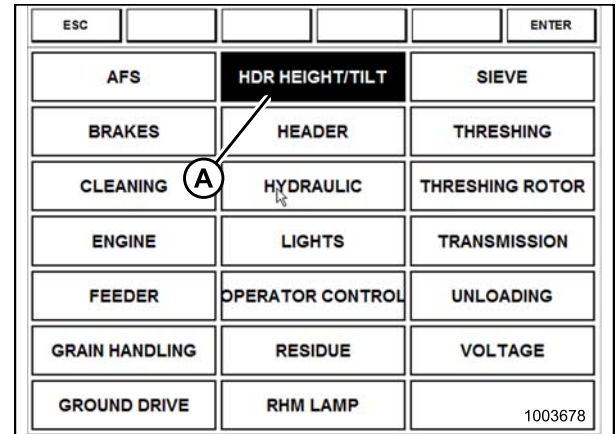


Figure 3.130: Case 8010 Combine Display

8. Select LEFT SEN (A). The exact voltage is displayed. Raise and lower the header to see the full range of voltage readings.

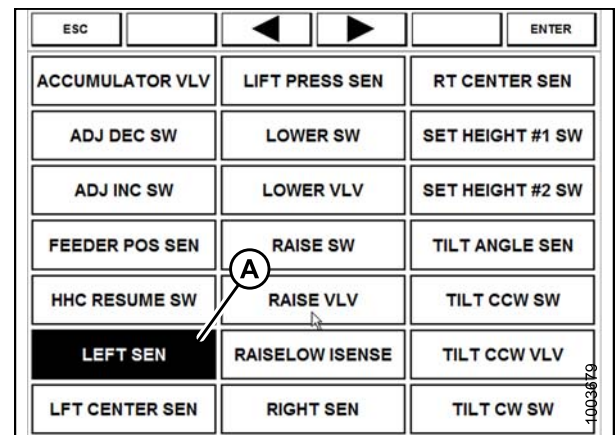


Figure 3.131: Case 8010 Combine Display

9. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table 3.10 [Combine Voltage Limits, page 91](#)).

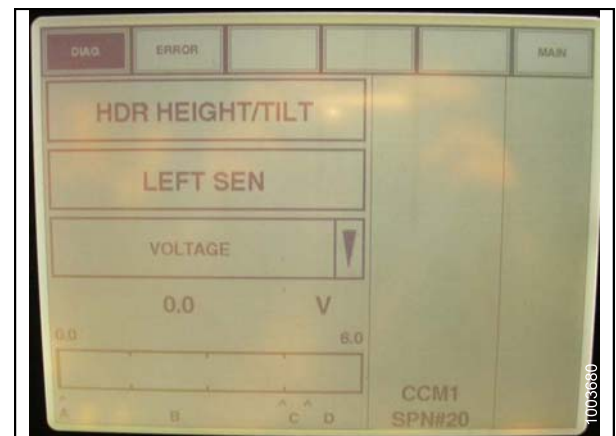


Figure 3.132: Case 8010 Combine Display

## OPERATION

### *Checking Voltage Range from the Combine Cab (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)*

#### **NOTE:**

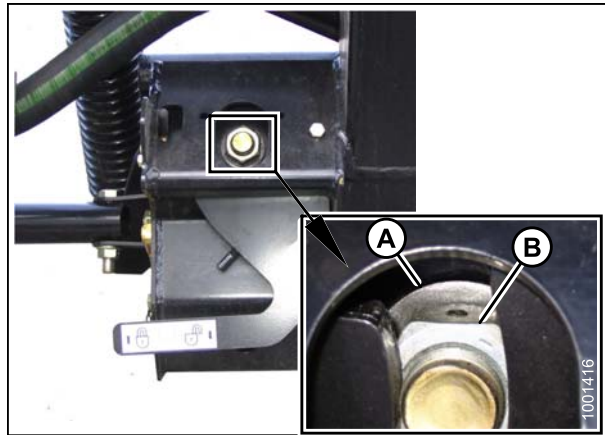
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab for Pro 600 Display, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

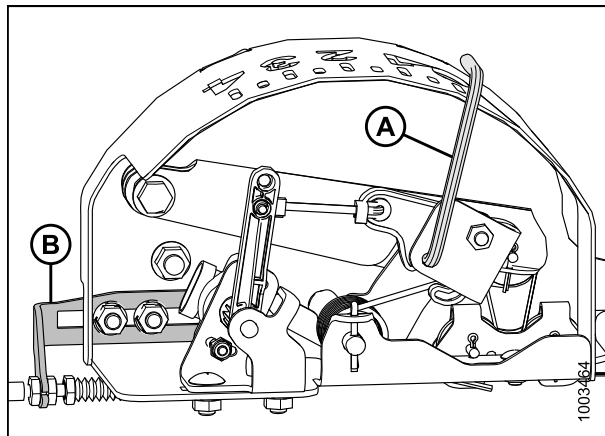
#### **NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



**Figure 3.133: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.134: Float Indicator Box**

## OPERATION

4. Ensure header float is unlocked.
5. Select DIAGNOSTICS (A) on the MAIN screen. The DIAGNOSTICS screen opens.
6. Select SETTINGS. The SETTINGS screen displays.

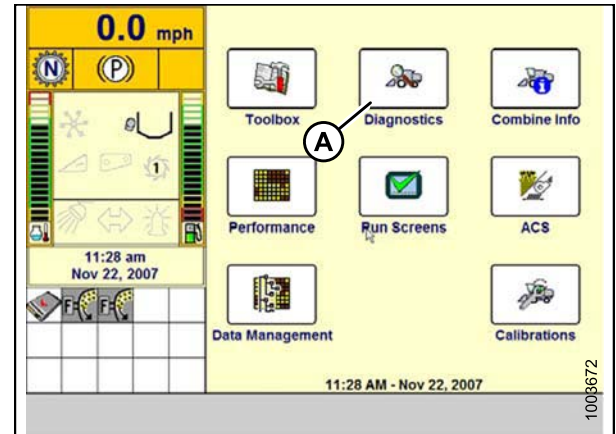


Figure 3.135: Case IH Combine Display

7. Select the GROUP arrow (A). The GROUP window opens.

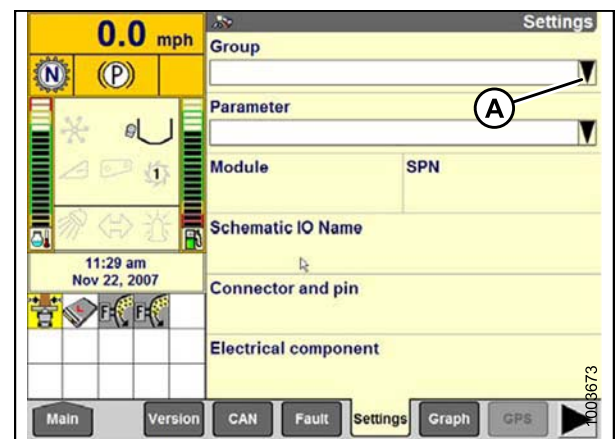


Figure 3.136: Case IH Combine Display

8. Select HEADER HEIGHT/TILT (A). The PARAMETER window opens.

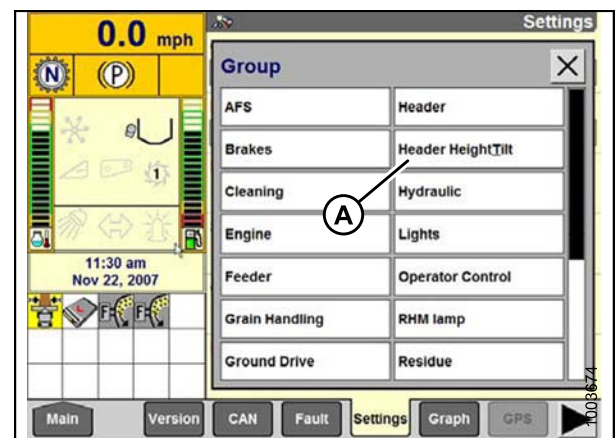


Figure 3.137: Case IH Combine Display

## OPERATION

9. Select LEFT HEADER HEIGHT SEN (A), and then select the GRAPH button (B). The exact voltage is displayed at top of screen. Raise and lower the header to see the full range of voltage readings.
10. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).

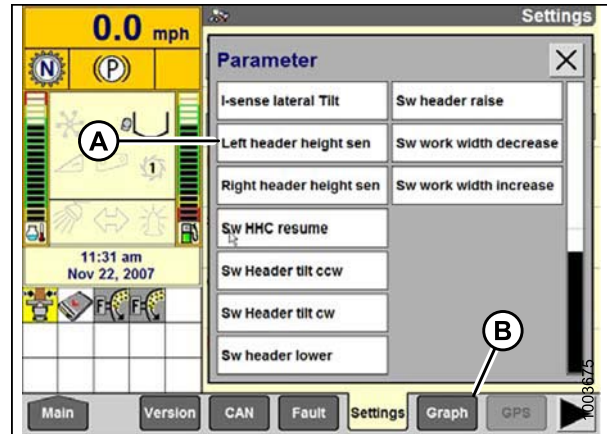


Figure 3.138: Case IH Combine Display

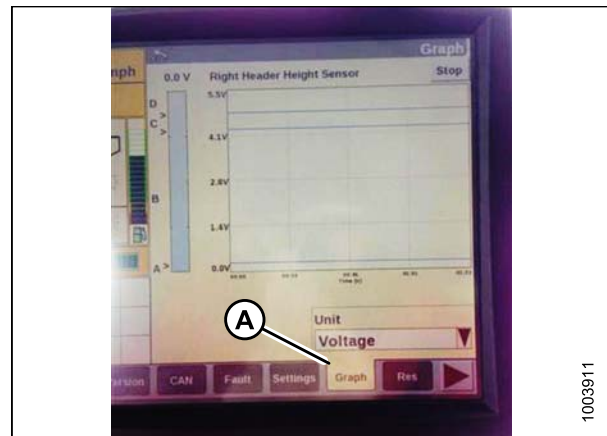


Figure 3.139: Case IH Combine Display

### Calibrating the Auto Header Height Control (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to [Calibrating the Auto Header Height Control System \(Case Combines with Version 28.00 Software\), page 112](#).

#### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the AHHC, follow these steps:



## OPERATION

1. Ensure center-link is set to D.
2. Ensure all header and adapter electrical and hydraulic connections are made.
3. Select TOOLBOX on the MAIN screen, and then select HEADER.
4. Set appropriate HEADER STYLE.



Figure 3.140: Case IH Combine Display

5. Set AUTO REEL SPEED SLOPE.
6. Set HEADER PRESSURE FLOAT to YES if equipped, and ensure REEL DRIVE is HYDRAULIC.



Figure 3.141: Case IH Combine Display

7. Install REEL FORE-BACK (if applicable).
8. Set HEIGHT SENSITIVITY to desired value. The recommended starting point is 180.

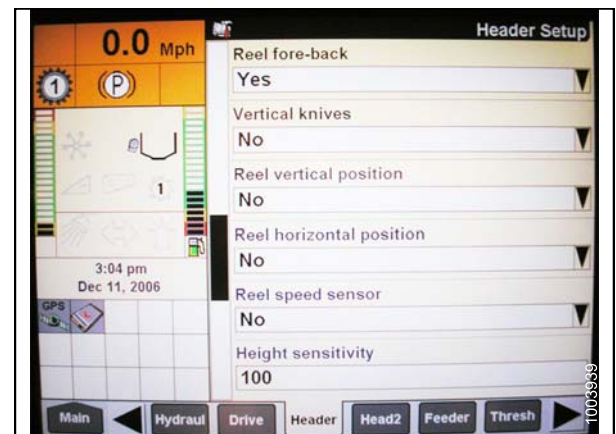


Figure 3.142: Case IH Combine Display

## OPERATION

9. Install FORE-AFT CONTROL, and HDR FORE-AFT TILT (if applicable).

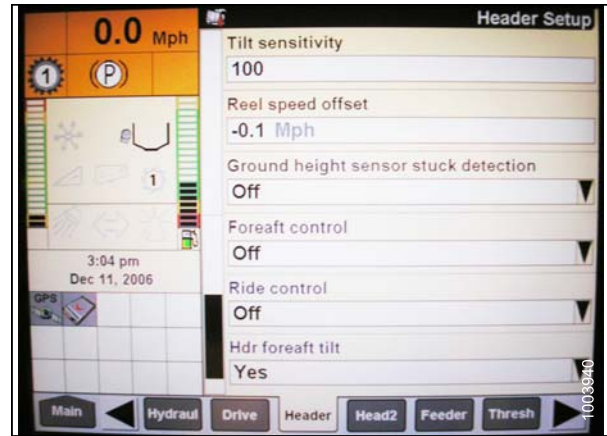


Figure 3.143: Case IH Combine Display

10. Press HEAD2 at bottom of screen.
11. Ensure HEADER TYPE is DRAPER.

**NOTE:**

If recognition resistor is plugged in to header harness, you will not be able to change this.

12. Set cutting type to PLATFORM.
13. Set appropriate HEADER WIDTH and HEADER USAGE.

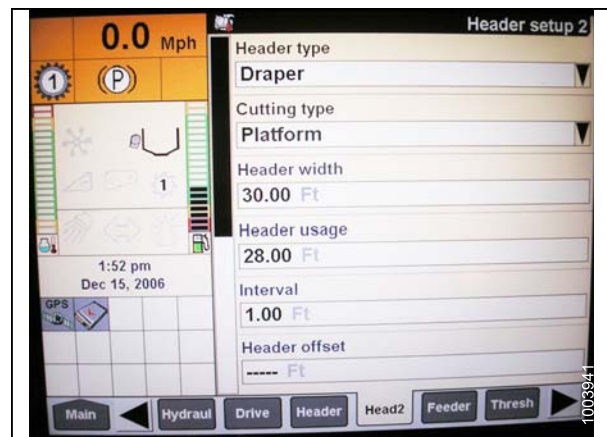


Figure 3.144: Case IH Combine Display

### *Calibrating the Auto Header Height Control System (Case Combines with Version 28.00 Software)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.



## OPERATION

2. Select TOOLBOX on the MAIN screen, and then select HEADER SETUP.
3. Locate the HEADER SUB TYPE field. It will be located on either the HEAD 1 or the HEAD 2 tab.
4. Select 2000 (A).

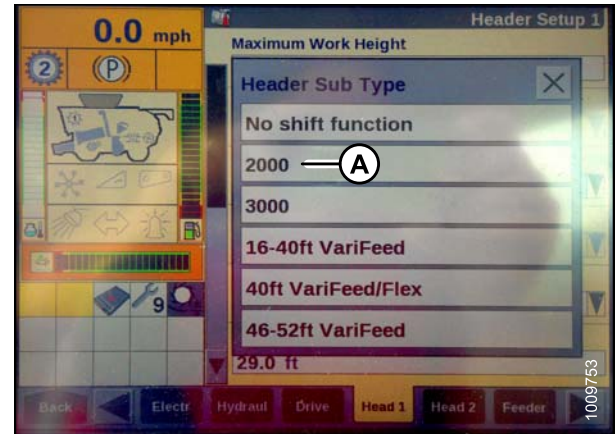


Figure 3.145: Combine Display

5. Locate the HEADER SENSORS and HEADER PRESSURE FLAT fields. They will be located on either the HEAD 1 or the HEAD 2 tab.
6. Select ENABLE (A) in the HEADER SENSORS field.
7. Select NO (B) in the HEADER PRESSURE FLAT field.

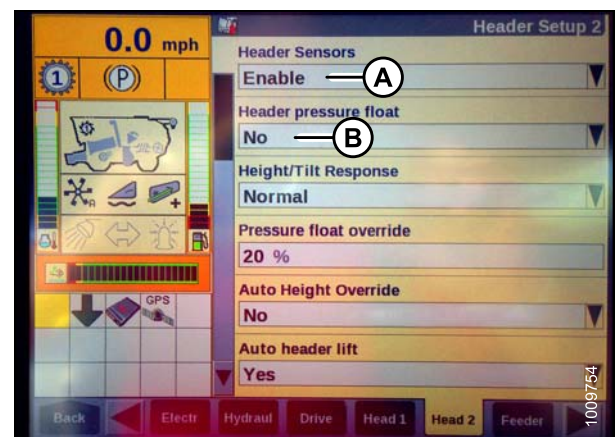


Figure 3.146: Combine Display

8. Ensure AUTO HEIGHT icon (A) appears on the monitor and is displayed as shown at (B). When the header is set for cutting on the ground, this verifies that the combine is correctly using the potentiometer on the header to sense ground pressure.

**NOTE:**

AUTO HEIGHT field (B) may appear on any of the RUN tabs and not necessarily on the RUN 1 tab.

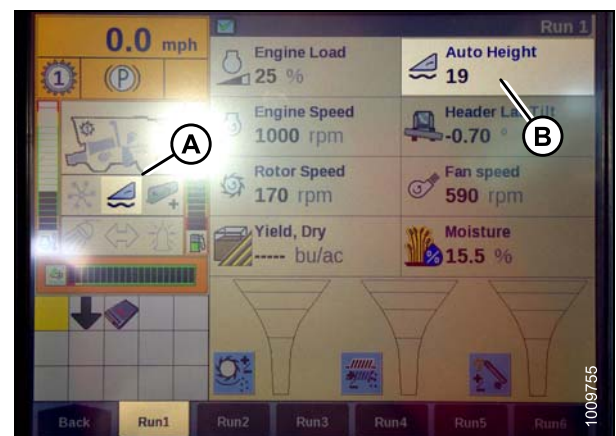


Figure 3.147: Combine Display

### 3.8.5 Gleaner R62/R72 Combines

#### *Determining System Requirements (Gleaner R62/R72)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The following system components are required in order for the Auto Header Height Control (AHHC) system to work:

- Main module (PCB board) and header driver module (PCB board) mounted in card box in Fuse Panel Module (FP).
- Multi-Function Control Handle operator inputs.
- Operator inputs mounted in the control console module (CC) panel.

**NOTE:**

In addition to the above components, the electro hydraulic header lift control valve also is an integral part of the system.

#### *Calibrating the Auto Header Height Control (Gleaner R62/R72)*

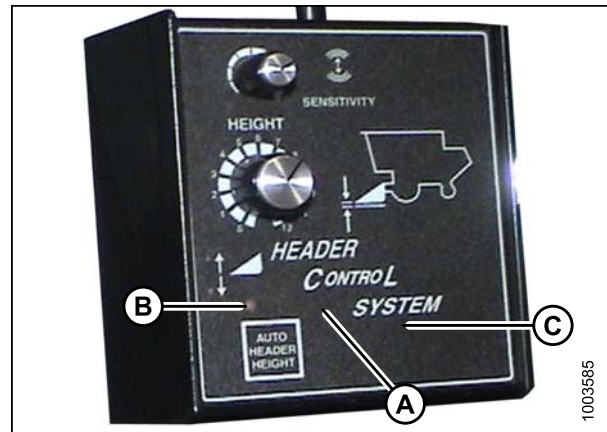
For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the AHHC, follow these steps:

1. Ensure center-link is set to D.
2. Start the combine engine, and press and hold the hidden C1 button (A) until the LED light (B) flashes briefly.
3. Lower the feeder house as far as it will go.
4. Press and hold the hidden L2 button (C) until the LED light (B) flashes briefly. The AHHC system is now calibrated.



**Figure 3.148: Combine Header Control System**

#### *Setting the Sensitivity of the Auto Header Height Control (Gleaner R62/R72 Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

1. Engage the Main Threshing Clutch (A) and Header Clutch (B).

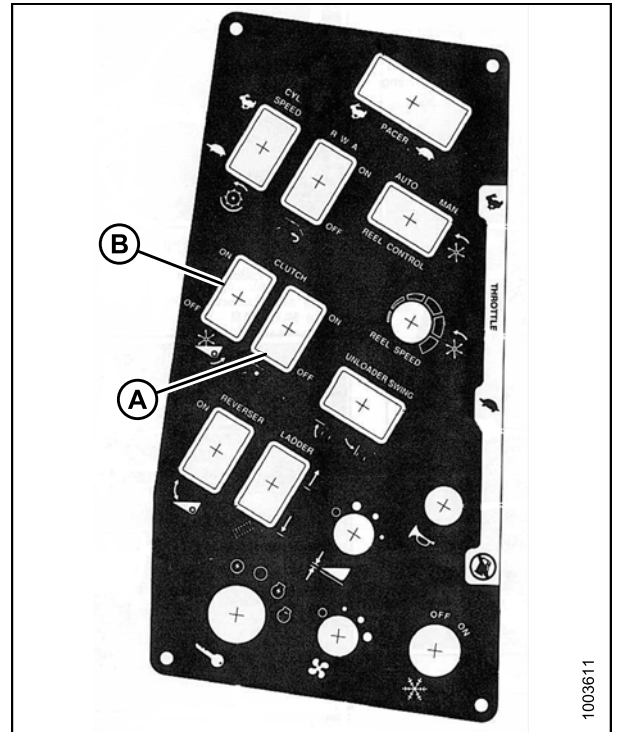


Figure 3.149: Combine Control Console

2. Speed the throttle (A) to over 2000 rpm.

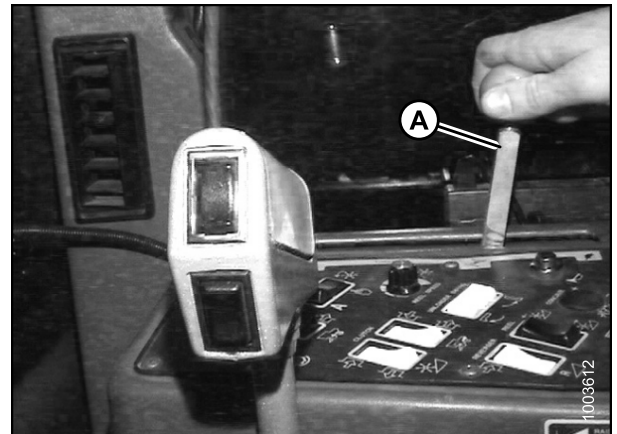


Figure 3.150: Throttle

## OPERATION

3. Push the AUTO HEADER HEIGHT button (A). The LED light (B) should flash continuously indicating that it is in standby mode and waiting for a response from the operator.

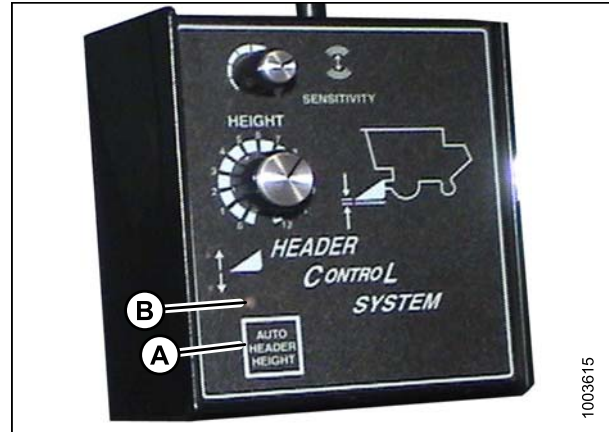


Figure 3.151: Combine Header Control System

4. Briefly press the header down button (A). The header should lower automatically and the LED light should stay illuminated indicating that the auto height system is engaged and working.

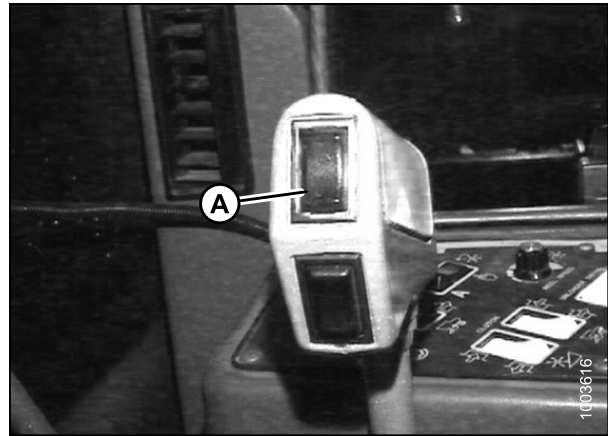


Figure 3.152: Header Down Button

5. Turn Height dial (A) to increase or decrease ground pressure.
6. Turn the Sensitivity dial (B) to control how quickly the AHHC reacts to varying ground conditions.

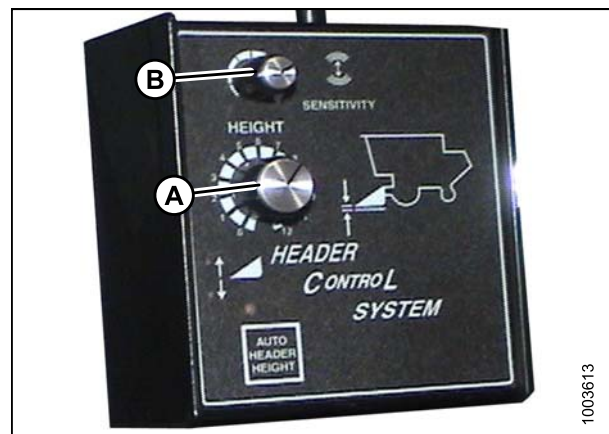


Figure 3.153: Combine Header Control System

### 3.8.6 Gleaner R65/R75 Combines

#### *Checking Voltage Range from the Combine Cab (Gleaner R65/R75)*

**NOTE:**

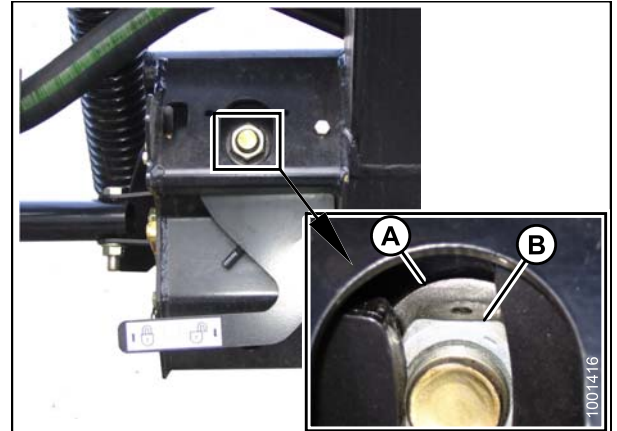
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensors output voltage range from the combine cab, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

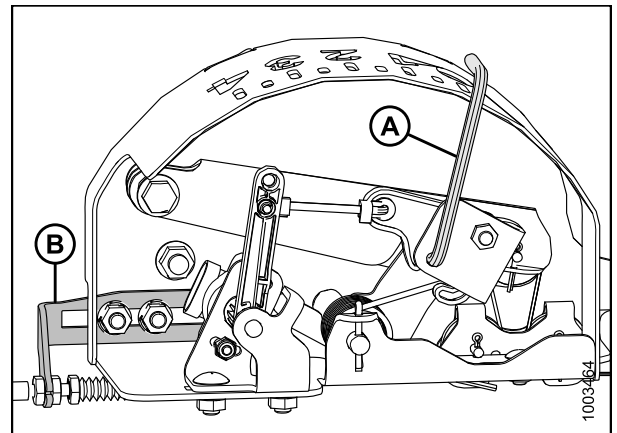
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



**Figure 3.154: Float Lock**

3. Ensure pointer (A) on the float indicator box is on '0'. If necessary, adjust the cable take-up bracket (B) until pointer is on '0'.



**Figure 3.155: Float Indicator Box**

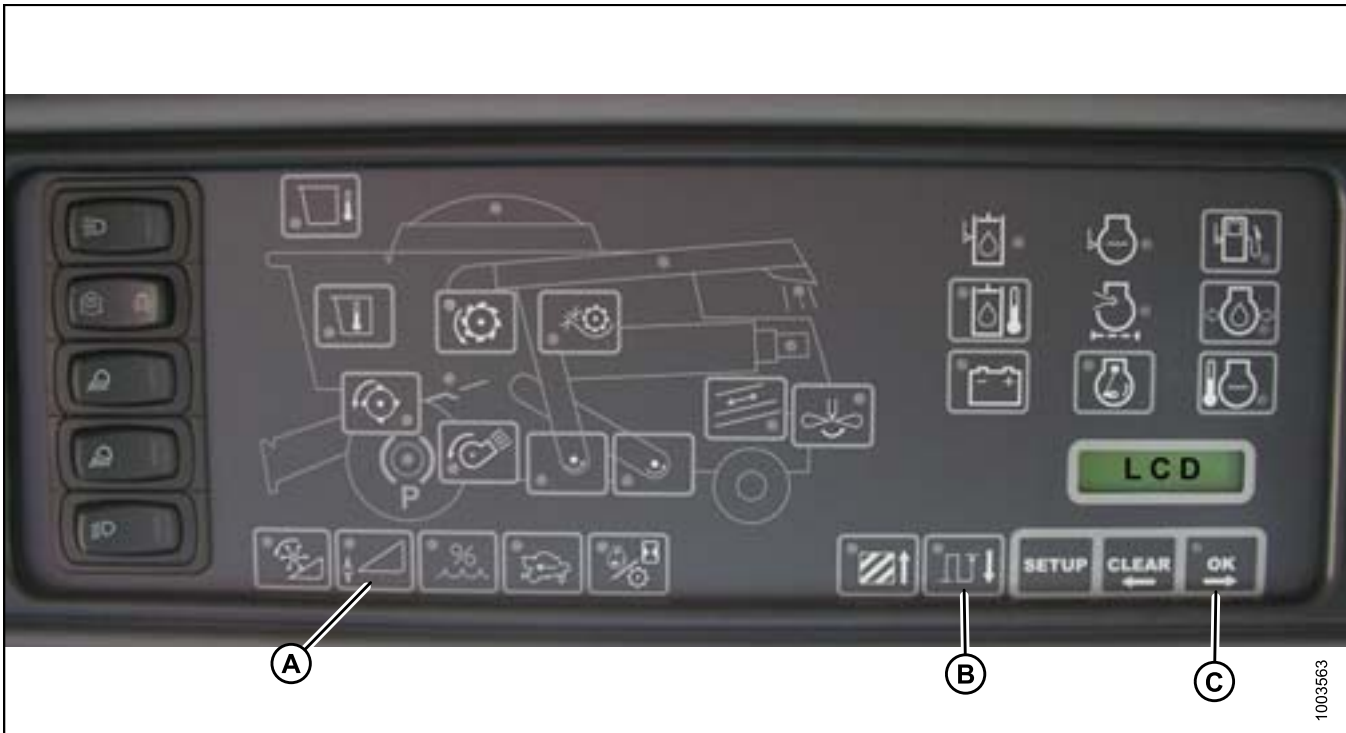


Figure 3.156: Combine Heads Up Display

### *Engaging the Auto Header Height Control (Gleaner R65/R75)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The following system components are required in order for the Auto Header Height Control (AHHC) to work:

- Main module (PCB board) and header driver module (PCB board) mounted in card box in Fuse Panel Module (FP).
- Multi-Function Control Handle operator inputs.
- Operator inputs mounted in the control console module (CC) panel.

**NOTE:**

In addition to the above components, the electro hydraulic header lift control valve also is an integral part of the system.

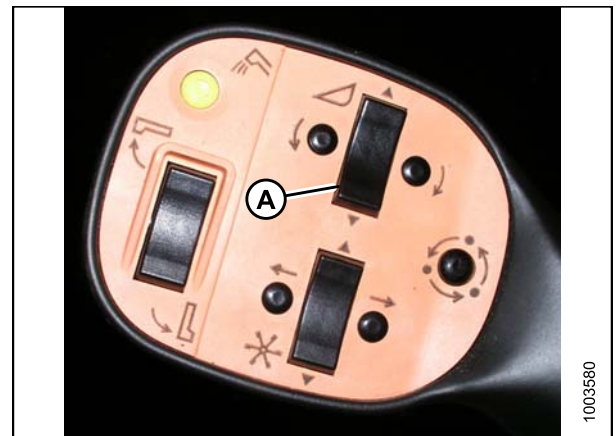


## OPERATION



**Figure 3.157: Combine AHHCs**

1. Press the AUTO MODE (A) button until the AHHC LED light (B) begins flashing. If the RTC light is flashing, press the AUTO MODE (A) button again until it switches to AHHC.
2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header also should drop toward the ground. The AHHC is now engaged and can be adjusted for height and sensitivity.
3. Use controls to adjust height and sensitivity to changing ground conditions such as shallow gullies and field drainage trenches.



**Figure 3.158: Control Handle**

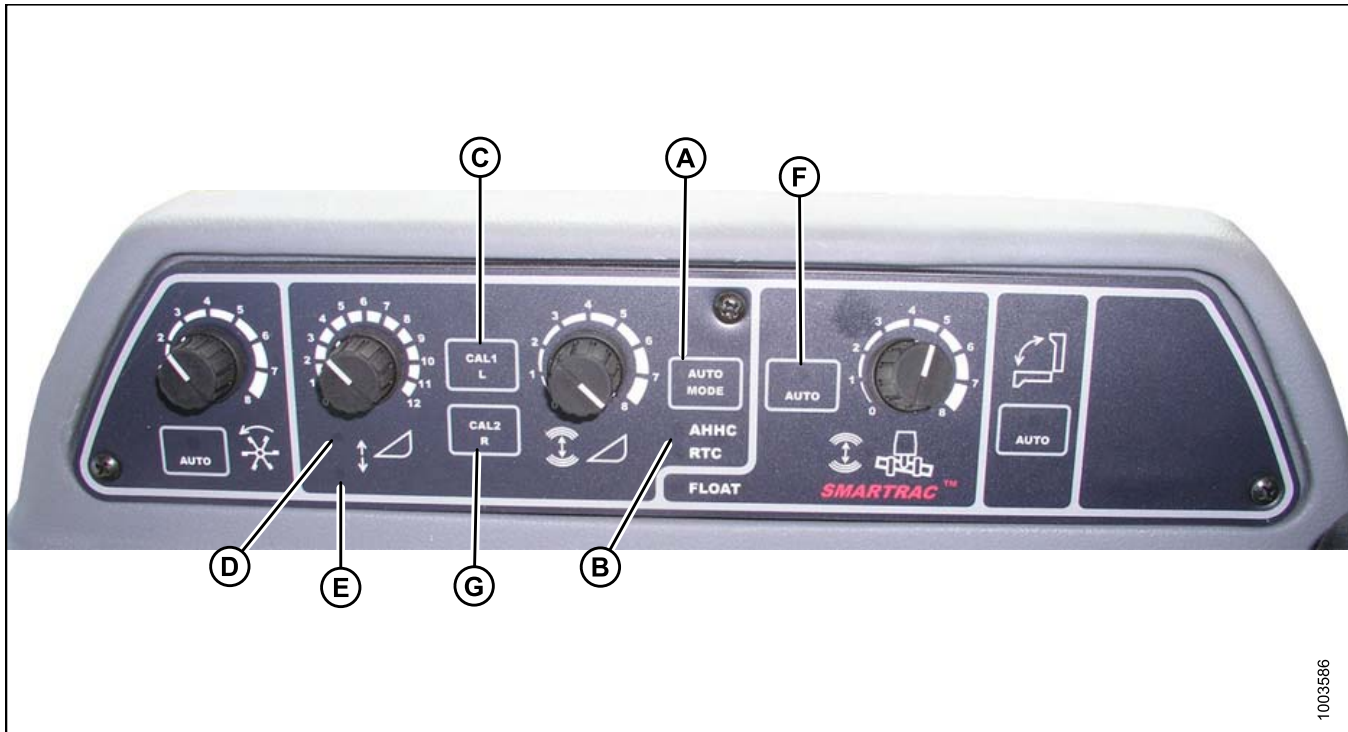
## OPERATION

### *Calibrating the Auto Header Height Control (Gleaner R65/R75)*

Calibration should be done on flat, level ground without the header clutches engaged. Header height and header tilt must not be in auto or standby modes. The engine rpm also must be above 2000 rpm. The Header Tilt option on 2004 and earlier model combines does not work with MacDon headers. This system will have to be removed and disabled in order to calibrate the Auto Header Height Control (AHHC). Refer to combine manual for instructions.

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.



**Figure 3.159: Combine AHHCs**

A - AUTO MODE Button  
D - Raise Header  
G - CAL2 Button

B - AHHC Light  
E - Lower Header

C - CAL1 Button  
F - Auto Mode

#### **NOTE:**

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

1. Ensure center-link is set to D.
2. Press AUTO MODE button (A) until the AHHC light (B) is illuminated.
3. Press and hold CAL1 button (C) until you see the following lights flash: raise header (D), lower header (E), tilt auto mode (F), and AHHC (B).
4. Fully lower the header, and continue to hold the header lower button for 5–8 seconds to ensure adapter has separated from header.



## OPERATION

5. Press CAL2 button (G) until lower header light (E) stops flashing, and release it when the raise header light (D) begins flashing.
6. Raise header to its maximum height (ensure the header is resting on the down-stop pads).
7. Press CAL2 button (G) until the raise header light (D) turns off.

### NOTE:

The following steps are applicable only to 2005 and newer combines with the Smartrac feeder house.

8. Wait for the HEADER TILT LEFT light (not shown) to start flashing, and then tilt header to the maximum left position.
9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing, and release button when the HEADER TILT RIGHT light (not shown) begins flashing.
10. Tilt the header to the maximum right position.
11. Press CAL2 button (G) until all of the following lights flash: raise header (D), lower header (E), height auto mode (A), right header and left header (not shown), and tilt auto mode (F).
12. Center the header.
13. Press CAL1 button (C) to exit calibration and save all values to the memory. All lights should stop flashing.

### *Turning the Accumulator Off (Gleaner R65/R75)*

The accumulator will affect the combine's reaction time and greatly inhibit the Auto Header Height Control's performance.

Refer to the combine operator's manual for proper procedure when turning accumulator off and on. For best performance, turn the feeder house accumulator off.

### NOTE:

The accumulator is located in front of the front left axle beam.



**Figure 3.160: Combine Accumulator On/Off Switch**

A - Accumulator Lever (Off Position)

## OPERATION

### *Adjusting the Header Raise/Lower Rate (Gleaner R65/R75)*

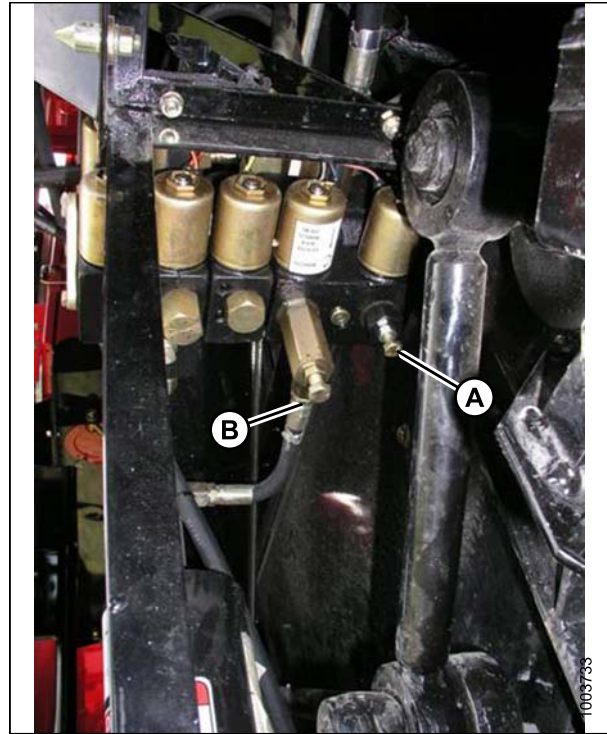
**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The Auto Header Height Control (AHHC) system's stability is affected by hydraulic flow rates. Ensure that the header raise (A) and header lower (B) adjustable restrictors in the hydraulic valve block are adjusted so it takes approximately six seconds to raise the header from ground level to maximum height (hydraulic cylinders fully extended), and approximately six seconds to lower the header from maximum height to ground level.

**NOTE:**

Make this adjustment with the hydraulic system at normal operating temperature (130°F [54.4°C]) and the engine running at full throttle.



**Figure 3.161: Header Raise and Lower Adjustable Restrictors**

### *Adjusting Ground Pressure (Gleaner R65/R75)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

To adjust header height, ensure the header is in Auto Header Height Control (AHHC) mode. This is indicated by the AUTO MODE LED light (A) displaying a continuous, solid light. The header will lower to the height (ground pressure) corresponding to the position selected with the height control knob (B).

Turn the knob counterclockwise for minimum ground pressure, and clockwise for maximum ground pressure.

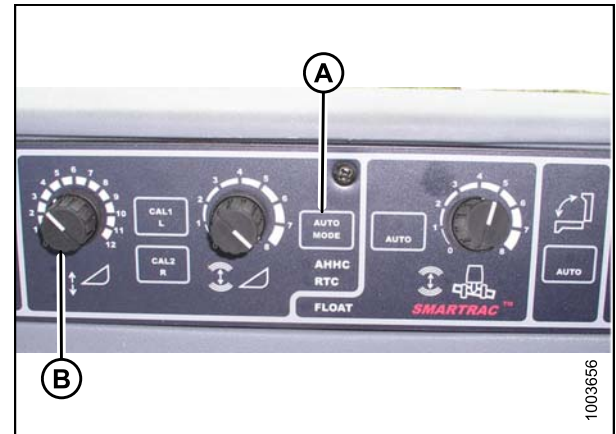


Figure 3.162: AHHC Console

### NOTE:

The ideal ground pressure, in most cases, is one number of separation on the AHHC from having the header fully suspended off the ground (B) to just resting on the ground (A).

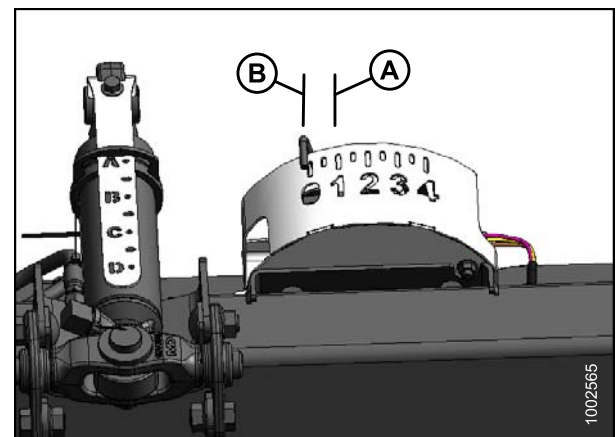


Figure 3.163: Float Indicator Box

### *Adjusting the Sensitivity of the Auto Header Height Control (Gleaner R65/R75)*

### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION



**Figure 3.164: Auto Header Height Control (AHHC) Console**

The sensitivity adjustment dial (A) controls the distance the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

When the sensitivity adjustment dial (A) is set to maximum (turned completely clockwise), only small changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 3/4 in. (19 mm) before the control module signals the hydraulic control valve to raise or lower the header frame.

When the sensitivity adjustment dial (A) is set to minimum (turned completely counterclockwise), large changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 2 in. (51 mm) before the control module signals the hydraulic control valve to raise or lower the header frame.

The HEADER SENSE LINE input also changes the range of the sensitivity. When connected to a draper, the counterclockwise position (least sensitive) allows for approximately 4 in. (102 mm) of vertical travel before correction is made.

### *Troubleshooting Alarms and Diagnostic Faults (Gleaner R65/R75)*

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

### Display type:

Displayed on tachometer (A) as 'XX' or 'XXX'.



Figure 3.165: Tachometer

Displayed on LCD (A) as 'XX in.' or 'XXX cm'.

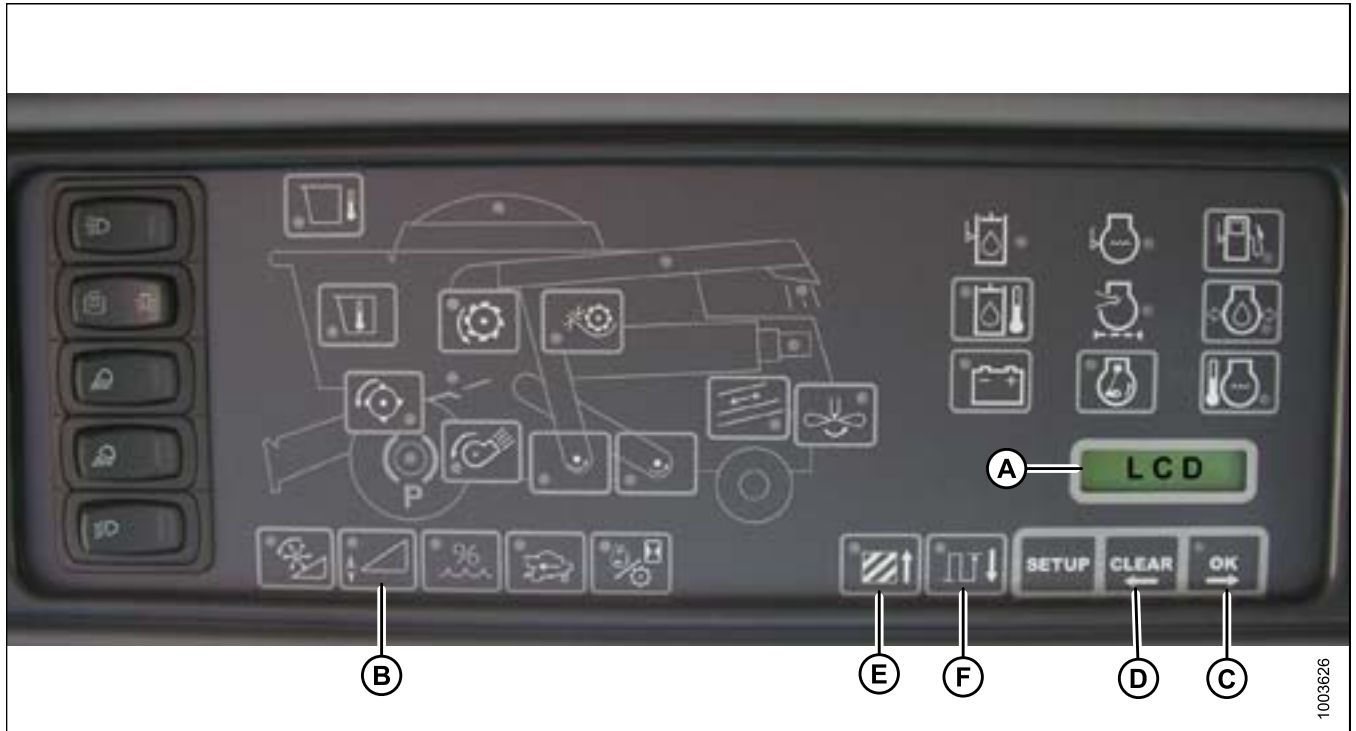


Figure 3.166: Combine LCD Display

## OPERATION

### Alarm conditions:

If an error is indicated in message received from the fuse panel, an audible alarm sounds. The LCD on the EIP indicates the header system in error as HDR CTRL followed by HGT ERR for height, and HDR CTRL followed by TILT ERR for tilt. The header height LED flashes yellow two times every second.

The alarm also is noted by the buzzer sounding five times every ten seconds.

### NOTE:

If the header height switch (B) is pressed for five seconds or longer, the EIP goes into auto header height/tilt (HTC) control diagnostic mode.

When an alarm condition occurs, switch green LED flashes on and off (green, yellow, or red depending on the input).

In addition, a message is displayed on the LCD to identify the nature of the alarm. For example, HYD TEMP, OPEN, SHRT will be flashed alternately.

### Diagnostic fault failures:

Pressing the header height switch (B) for a minimum of five seconds will put Electronic Instrument Panel (EIP) in header diagnostic mode.

The LCD (shown on previous page) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after three seconds, header fault parameter labels are displayed on the EIP LCD.

### NOTE:

All the information displayed is read-only.

The OK (C) and CLEAR (D) buttons allow the operator to scroll through the list of parameters.

### NOTE:

If there are no active fault codes, the EIP LCD will display NO CODE.

When a parameter is displayed, its label is displayed for three seconds, after which its value is automatically displayed.

Pressing OK button (C) while the value is displayed will advance to the next parameter and display its label.

When a parameter label is displayed, and the OK button (C) is pressed before three seconds, the parameters value will be displayed.

Pressing AREA (E) will cycle through the options.

### NOTE:

When LEFT is displayed in LCD, press the OK button (C), and the Auto Header Height Control (AHHC) voltage will be shown in display.

Press the DIST button (F) to cycle back through the table.

Press the CLEAR button (D) to exit header diagnostics and return to normal mode.

Refer to [3.8.14 Sensor Operation, page 171](#).



### 3.8.7 John Deere 50 Series Combines

#### *Checking Voltage Range from the Combine Cab (John Deere 50 Series)*

**NOTE:**

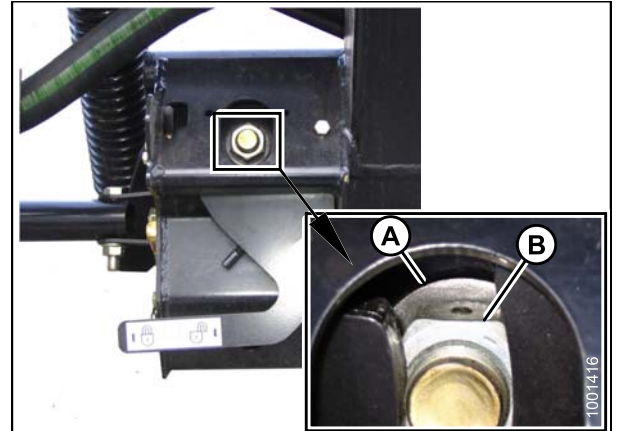
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

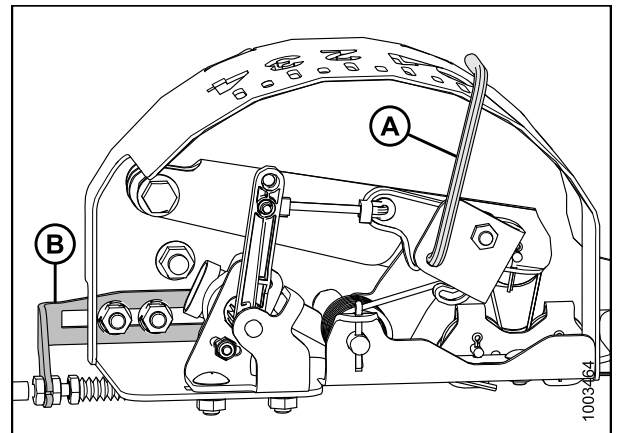
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



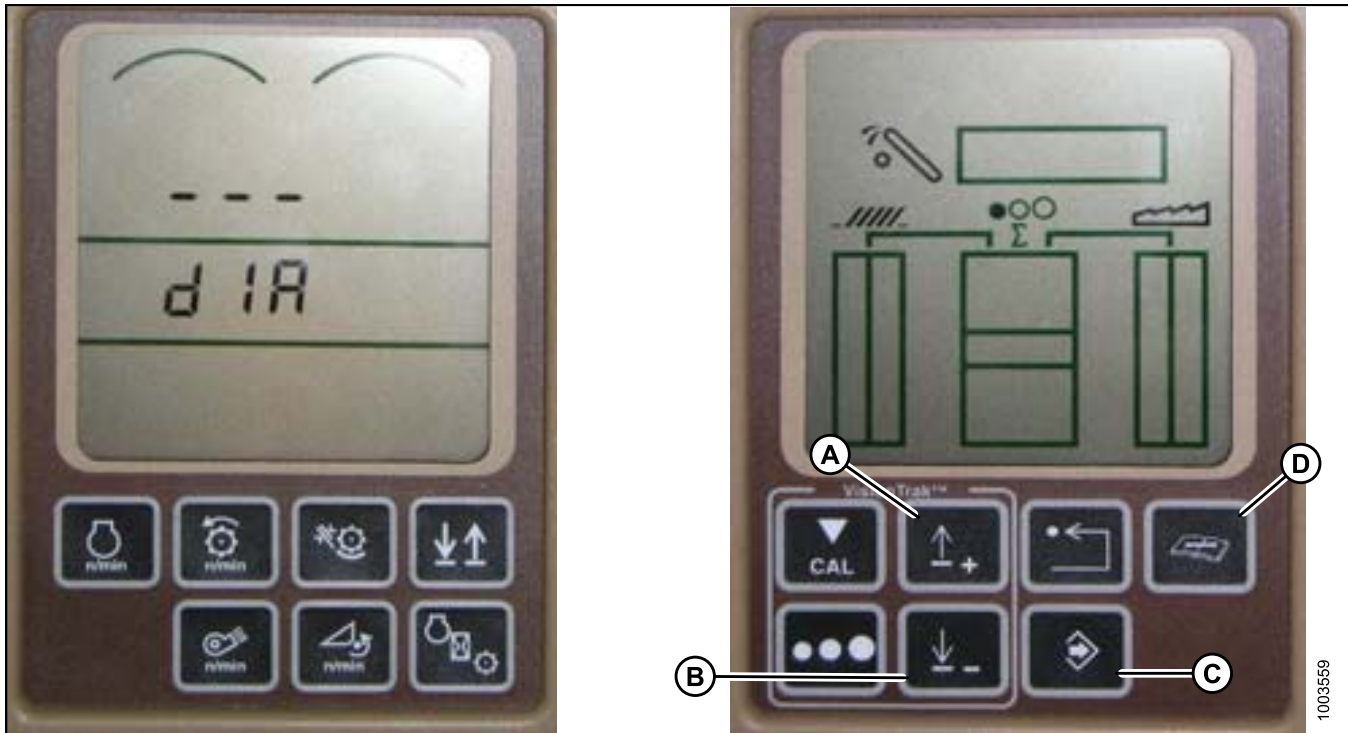
**Figure 3.167: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.168: Float Indicator Box**

## OPERATION



**Figure 3.169: Combine HHS Monitor**

4. Press the DIAGNOSTIC button (D) on the monitor – DIA appears on the monitor.
5. Press the UP button (A) until EO1 appears on the monitor – this is the header adjustments.
6. Press the ENTER button (C).
7. Press the UP (A) or DOWN button (B) until '24' is displayed on the top portion of the monitor – this is the voltage reading for the sensor.
8. Ensure header float is unlocked.
9. Start the combine, and fully lower feeder house to the ground.

**NOTE:**

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

10. Check the sensor reading on the monitor.
11. Raise the header so it is just off the ground, and recheck the sensor reading.
12. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).



## OPERATION

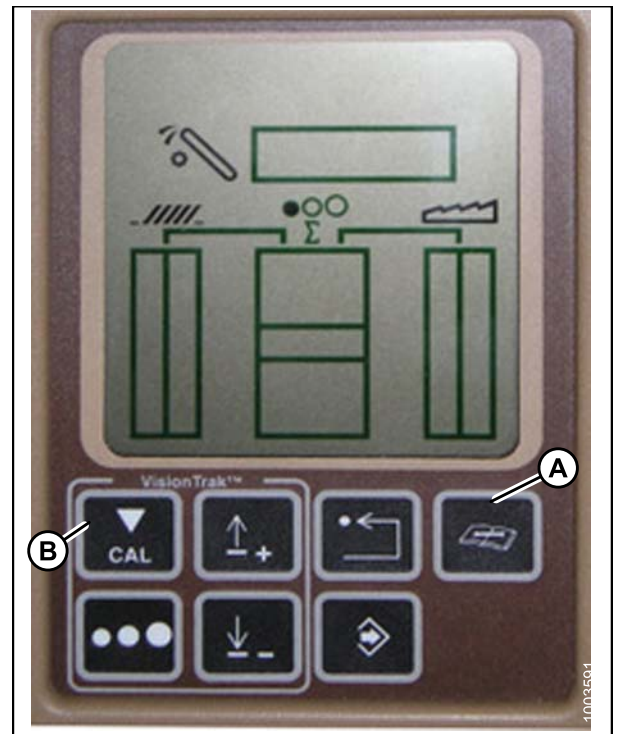
### *Calibrating the Auto Header Height Control (John Deere 50 Series)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Rest header on down stops, and unlock adapter float.
3. Put wings in locked position.
4. Start the combine.
5. Press the DIAGNOSTIC button (D) on the monitor—DIA appears on the monitor.
6. Press the CAL button (B) – DIA-CAL appears on the monitor.



**Figure 3.170: Combine Display**

## OPERATION

7. Press the UP or DOWN buttons until `hdr` appears on the monitor.
8. Press the enter button – HDR H-DN appears on the monitor.

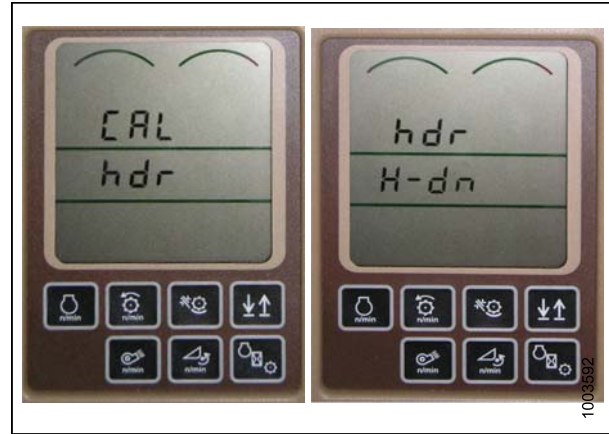


Figure 3.171: Combine Display

9. Fully lower feeder house to the ground.

**NOTE:**

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

10. Press the CAL button (A) to save the calibration of the header – HDR H-UP appears on the monitor.
11. Raise the header three feet off the ground, and press the CAL (A) button – EOC appears on the monitor.
12. Press the enter button (B) to save the calibration of the header. Your AHHC is now calibrated.

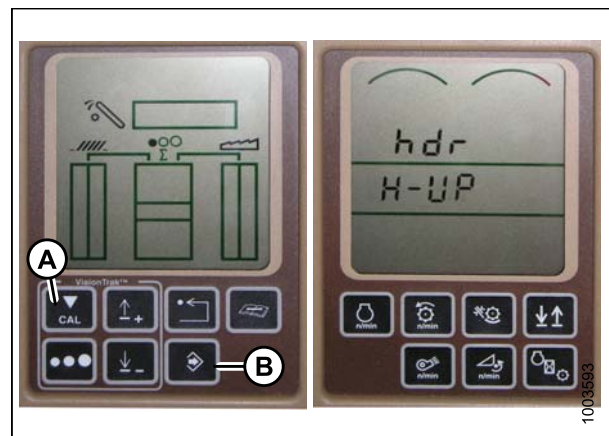


Figure 3.172: Combine Display

13. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).

**NOTE:**

After the calibration is complete, specific combine operation settings need to be made to ensure proper field operation.

### 3.8.8 John Deere 60 Series Combines

#### *Checking Voltage Range from the Combine Cab (John Deere 60 Series)*

**NOTE:**

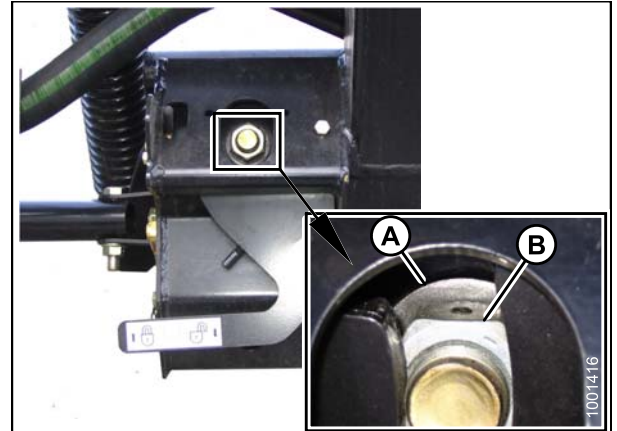
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.
2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

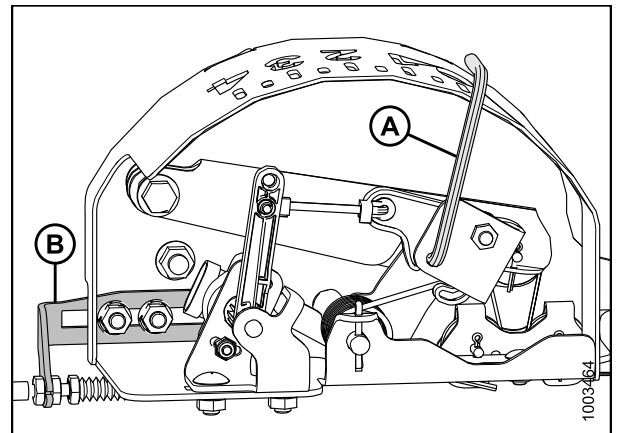
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



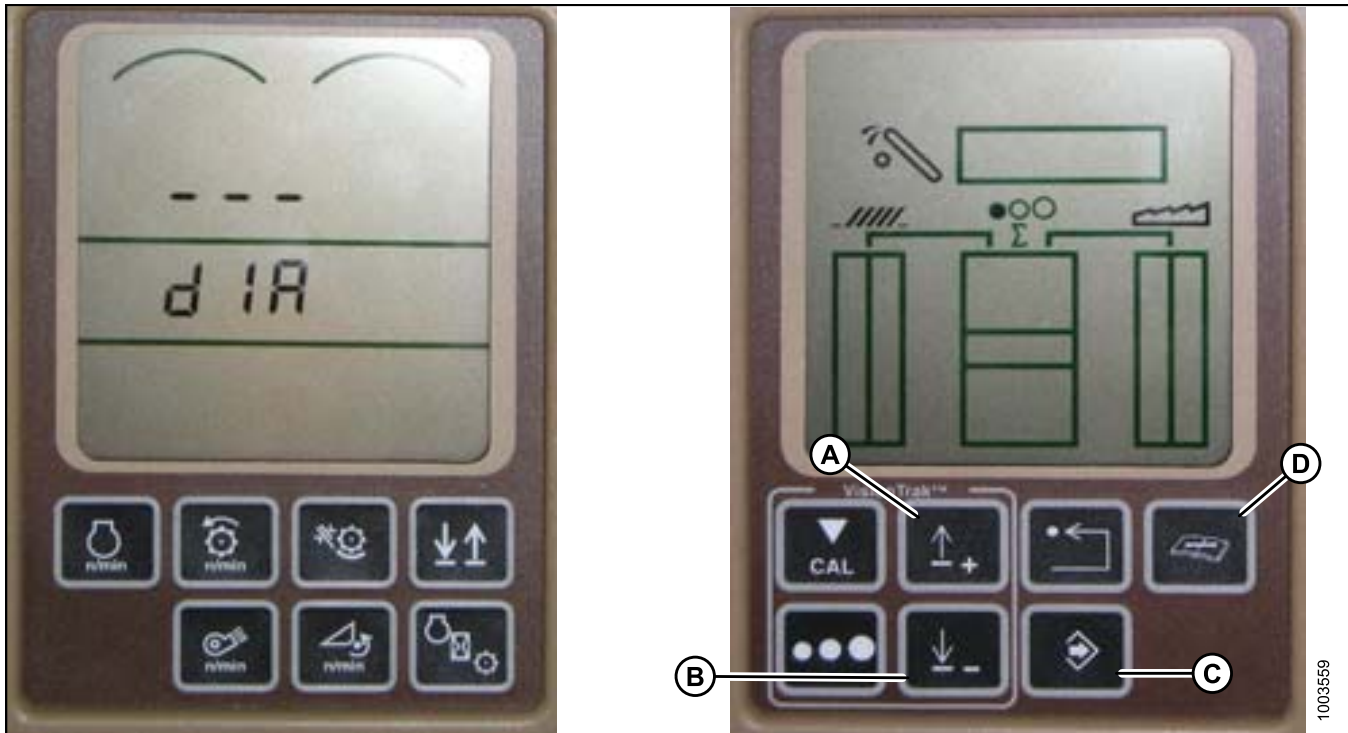
**Figure 3.173: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.174: Float Indicator Box**

## OPERATION



**Figure 3.175: Combine HHS Monitor**

4. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to [Table 3.10 Combine Voltage Limits, page 91](#)).

### *Calibrating the Auto Header Height Control (John Deere 60 Series)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Rest header on down stops, and unlock adapter float.
3. Put wings in locked position.
4. Start the combine.

## OPERATION

5. Press the DIAGNOSTIC button (A) on the monitor – DIA appears on the monitor.
6. Press the CAL button (B) – DIA-CAL appears on the monitor.

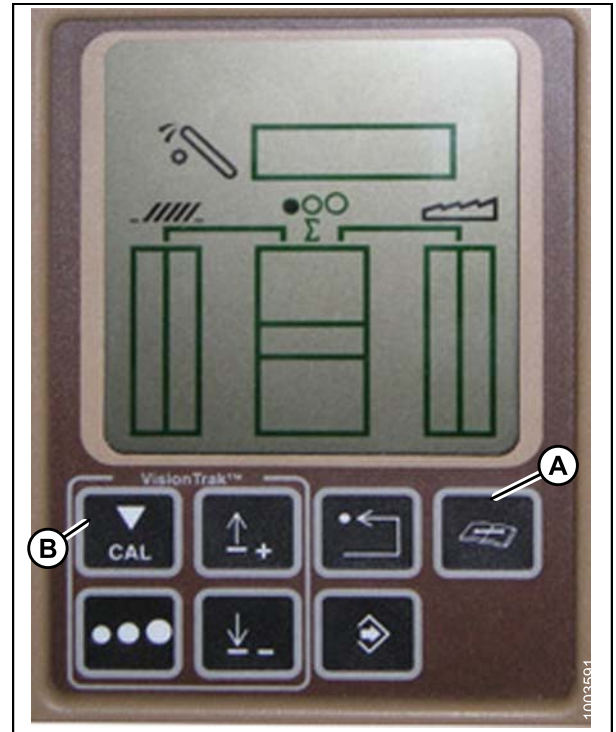


Figure 3.176: Combine Display

7. Press the UP or DOWN buttons until HDR appears on the monitor.
8. Press the enter button – HDR H-DN appears on the monitor.

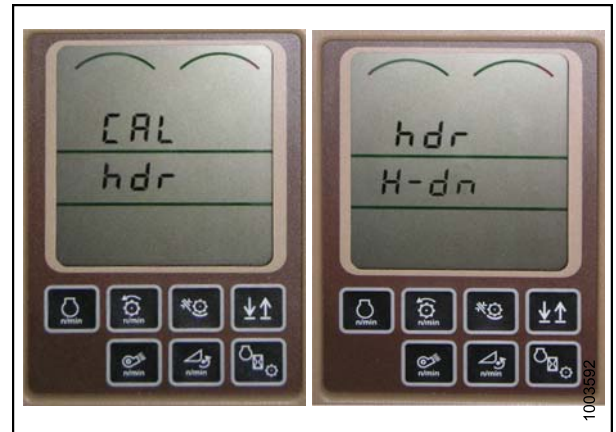


Figure 3.177: Combine Display

9. Fully lower feeder house to the ground.

### NOTE:

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.



## OPERATION

10. Press the CAL button (A) to save the calibration of the header – HDR H-UP appears on the monitor.
11. Raise the header three feet off the ground and press the CAL (A) button – EOC appears on the monitor.
12. Press the enter button (B) to save the calibration of the header. Your AHHC is now calibrated.

### NOTE:

If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. Refer to [Checking Voltage Range from the Combine Cab \(John Deere 60 Series\)](#), page 131.

### NOTE:

After the calibration is complete, adjust combine operation settings to ensure proper field operation.

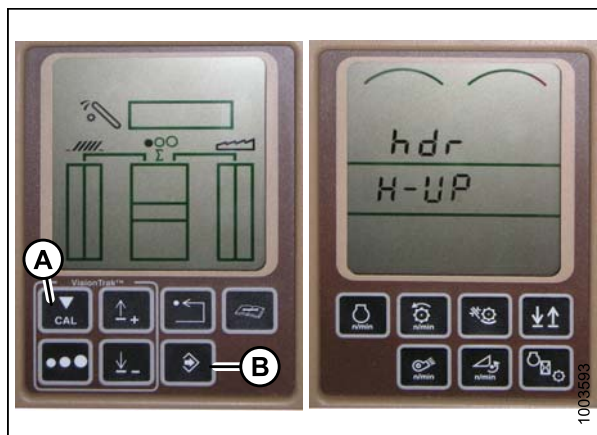


Figure 3.178: Combine Display

## Turning the Accumulator Off (John Deere 60 Series)

### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the DIAGNOSTIC button (A) on the monitor – DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D) – this is the header adjustment.
3. Press the UP (B) or DOWN (C) button until '132' is displayed on the top portion of the monitor – this is the reading for the accumulator.
4. Press ENTER (D) to select '132' as the accumulator reading (this will allow you to change the display to a three-digit number so it has a '0' in it. For example, 'x0x').
5. Press the UP (B) or DOWN (C) button until the desired number is displayed, and press the CAL (E) button.
6. Press ENTER (D) to save the changes. The accumulator is now deactivated.

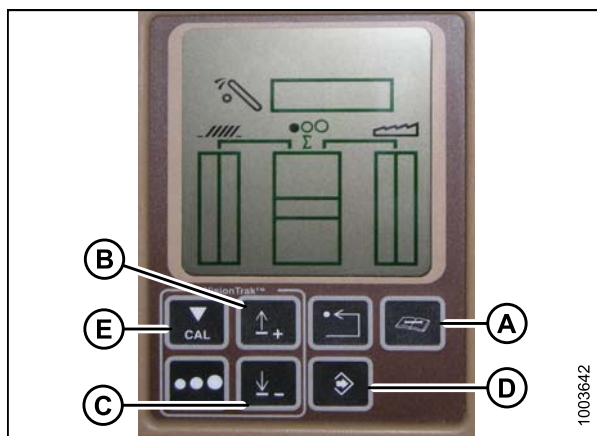


Figure 3.179: Combine Display

## Setting the Sensing Grain Header Height to 50 (John Deere 60 Series)

### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

To set the sensing grain header height, follow these steps:

1. Press the DIAGNOSTIC button (A) on the monitor – DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D) – this is the header adjustment.
3. Press the UP (B) or DOWN (C) button until '128' is displayed on the top portion of the monitor – this is the reading for the sensor.
4. Press ENTER (D) to select '128' as the sensor reading (this will allow you to change the display to a three-digit number so it has a '50' in it).
5. Press the UP (B) or DOWN (C) button until the desired number is displayed, and press the CAL (E) button.
6. Press ENTER (D) to save the changes. The height is now set.

### NOTE:

Do **NOT** use the active header float function (A) in combination with the MacDon Auto Header Height Control (AHHC) – the two systems will counteract one another. The header symbol (B) on the display should NOT have a wavy line under it and should appear exactly as shown on the Active Header Control Display in Figure 3.181: *Combine Display*, page 135.

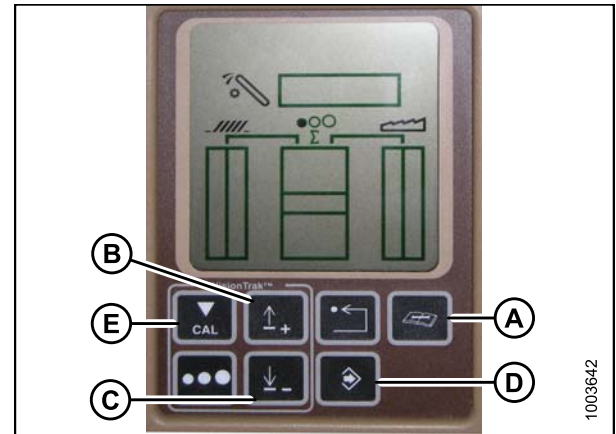


Figure 3.180: Combine Display

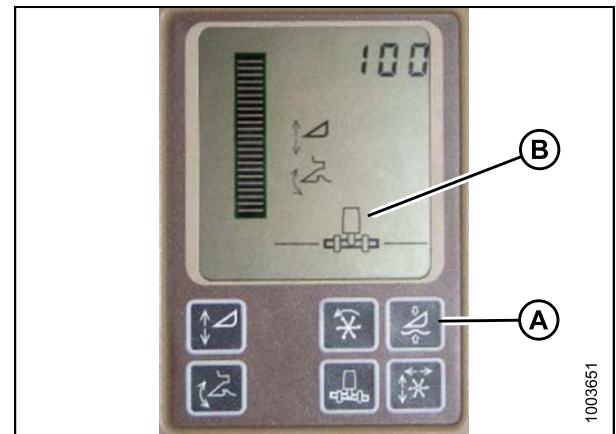


Figure 3.181: Combine Display

### *Setting the Sensitivity of the Auto Header Height Control (John Deere 60 Series)*

This is also known as dead band adjustment.

### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

1. Press the DIAGNOSTIC button (A) on the monitor – DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D) – this is the header adjustment.
3. Press the UP (B) or DOWN (C) button until '112' is displayed on the monitor – this is your sensitivity setting.

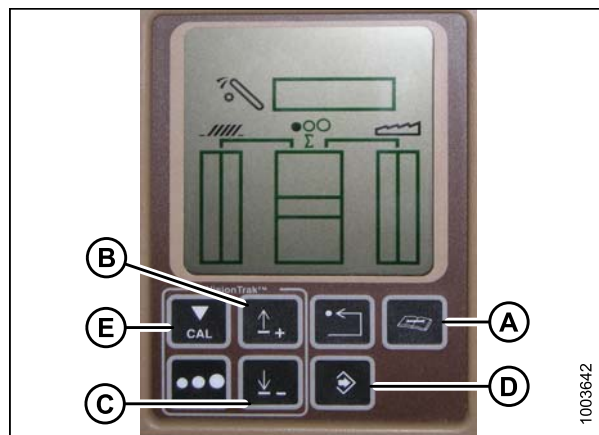
**NOTE:**

The lower the reading, the higher the sensitivity.  
Ideal operating range is typically between 50–80.

4. Press ENTER (D) to select '112' as the sensitivity setting (this will allow you to change the first digit of the number sequence).
5. Press UP (B) or DOWN (C) until the desired number is displayed, then press the CAL (E) button. This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save changes.

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.



**Figure 3.182: Combine Display**

### *Adjusting the Threshold for the Drop Rate Valve (John Deere 60 Series)*

This adjusts the point at which the restrictor valve opens allowing full flow to the lift cylinders.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

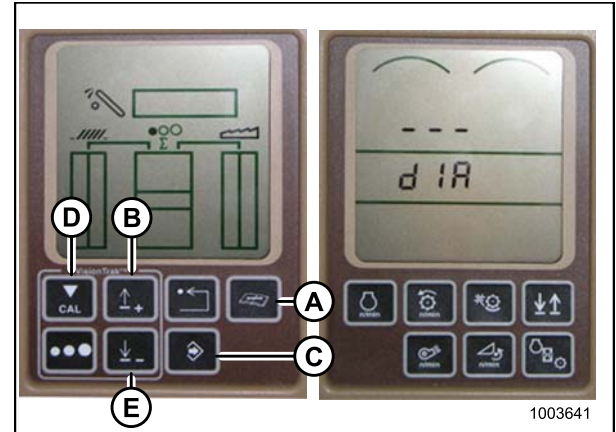


## OPERATION

1. Press the DIAGNOSTIC button (A) on the monitor – DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor and press ENTER (C) – this is the header adjustment.
3. Press the UP (B) or DOWN button until '114' is displayed on the top portion of the monitor – this is the setting that adjusts when the fast drop rate starts with respect to the dead band.

**NOTE:**

The default setting is 100. Ideal operating range is typically between 60–85.



**Figure 3.183: Combine Display**

4. Press ENTER (C) to select 114 as the fast drop rate (this will allow you to change the first digit of the number sequence).
5. Press UP (B) or DOWN (E) until the desired number is displayed, then press the CAL button (D). This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (C) to save changes.

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

### 3.8.9 John Deere 70 Series Combines

#### *Checking Voltage Range from the Combine Cab (John Deere 70 Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab, follow these steps:

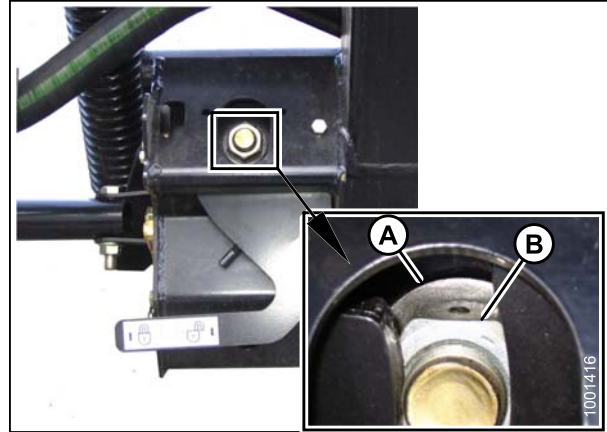
1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.

## OPERATION

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

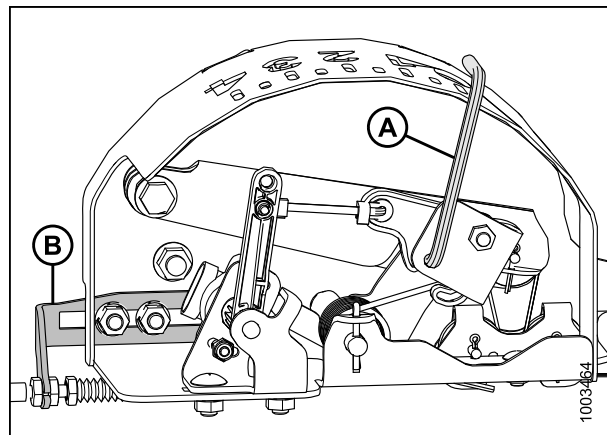
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



**Figure 3.184: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.185: Float Indicator Box**

4. Press the HOME PAGE button (A) on the main page of the monitor.



**Figure 3.186: Combine Display**

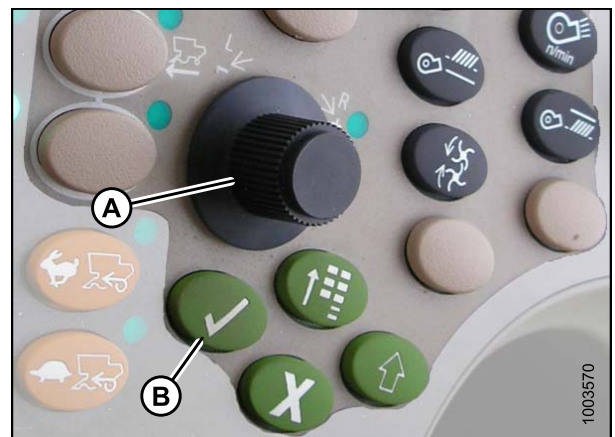
## OPERATION

5. Ensure the three icons (A) depicted in the illustration at right appear on the monitor.



**Figure 3.187: Combine Display**

6. Use scroll knob (A) to highlight the middle icon (the green 'i') and press the check mark button (B) to select it. This will bring up the Message Center.



**Figure 3.188: Combine Controls**

7. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right-hand column and select it by pressing the check mark button.
8. Use the scroll knob to highlight drop down box (B) and press the check mark button to select it.



**Figure 3.189: Combine Display**

## OPERATION

9. Use the scroll knob to highlight LC 1.001 VEHICLE (A) is highlighted and press the check mark button to select it.



Figure 3.190: Combine Display

10. Use the scroll knob to highlight the DOWN ARROW (A) and press the check mark button to scroll through the list until 029 DATA (B) is displayed and voltage reading (C) appears on the monitor.

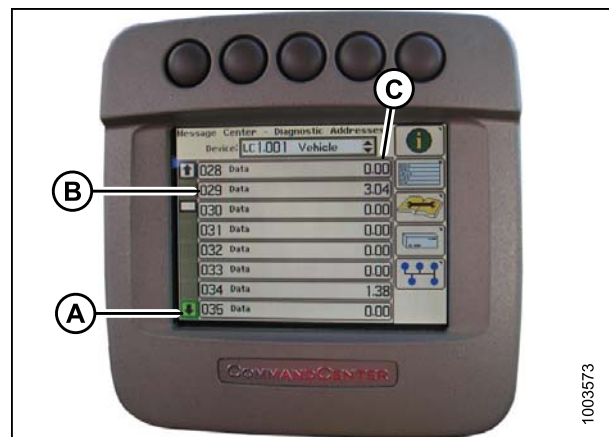


Figure 3.191: Combine Display

11. Ensure header float is unlocked.
12. Start the combine and fully lower feeder house to the ground.

### NOTE:

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

13. Check the sensor reading on the monitor.
14. Raise the header so it is just off the ground and recheck the sensor reading.
15. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).

## OPERATION

### Calibrating Feeder House Speed (John Deere 70 Series)

The feeder house speed must be calibrated before you calibrate the Auto Header Height Control (AHHC) system. Refer to the combine operator's manual for instructions.

### Calibrating the Auto Header Height Control (John Deere 70 Series)

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock adapter float.
3. Place wings in locked position.
4. Start the combine.
5. Press the button located fourth from the left along the top of the monitor (A) to select the icon that resembles an open book with a wrench on it (B).
6. Press the top button (A) a second time to enter diagnostics and calibration mode.



Figure 3.192: Combine Display

7. Use scroll knob (A) to highlight the HEADER option and press the check mark button (B) to select it.
8. Use the scroll knob (A) to highlight the lower right-hand icon that resembles an arrow in a diamond and press the check mark button (B) to select it.
9. Follow the steps listed on the monitor to perform the calibration.

#### NOTE:

If an error code appears on screen, the sensor is not in the correct working range. Refer to [Checking Voltage Range from the Combine Cab \(John Deere 70 Series\), page 137](#) to check and adjust the range.

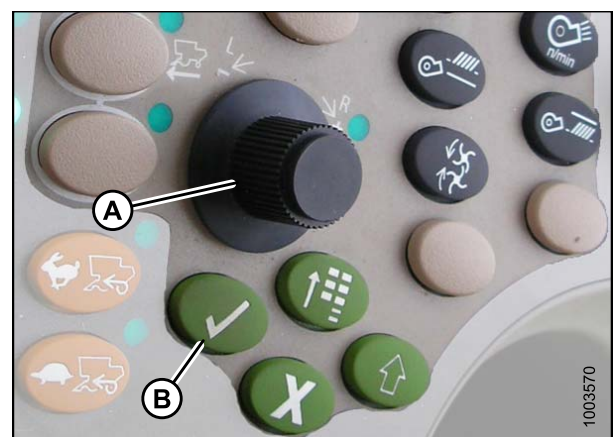


Figure 3.193: Combine Control Console



## OPERATION

### *Setting the Sensitivity of the Auto Header Height Control (John Deere 70 Series)*

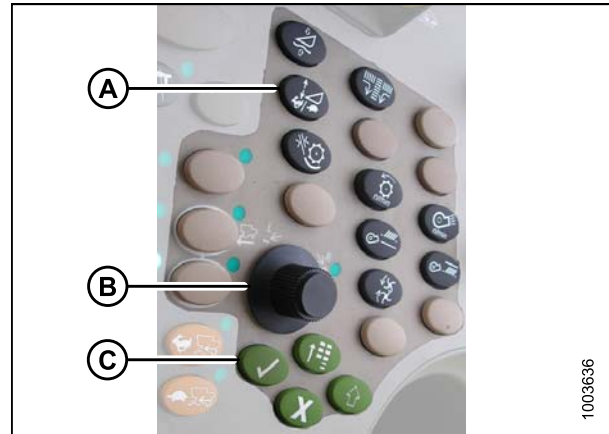
**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) twice and the current sensitivity setting will appear on the monitor (the lower the reading, the lower the sensitivity).
2. Use scroll knob (B) to adjust the sensitivity setting. The adjustment will be saved automatically.

**NOTE:**

If the page remains idle for a short period of time, it will automatically return to the previous page. Pressing the check mark button (C) also will return the monitor to the previous page.



**Figure 3.194: Combine Control Console**

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.



**Figure 3.195: Combine Display**

### *Adjusting the Manual Header Raise/Lower Rate (John Deere 70 Series)*

**NOTE:**

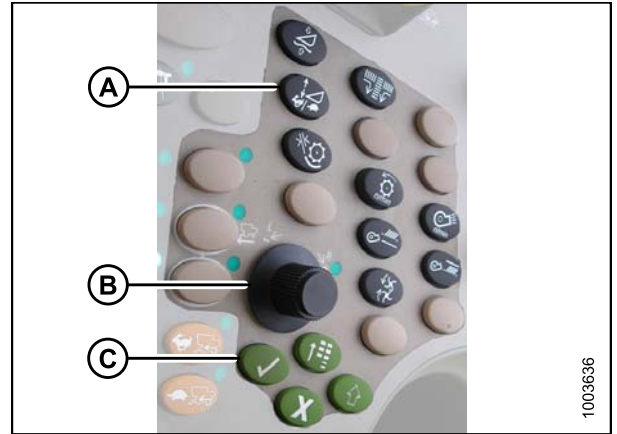
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

1. Press button (A) and the current raise/lower rate setting will appear on the monitor (the lower the reading, the slower the rate).
2. Use scroll knob (B) to adjust the rate. The adjustment will be saved automatically.

**NOTE:**

If the page remains idle for a short period of time, it will automatically return to the previous page. Pressing the check mark button (C) will also return the monitor to the previous page.



**Figure 3.196: Combine Control Console**

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.



**Figure 3.197: Combine Display**

### 3.8.10 John Deere S Series Combines

#### *Checking Voltage Range from the Combine Cab (John Deere S Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab, follow these steps:

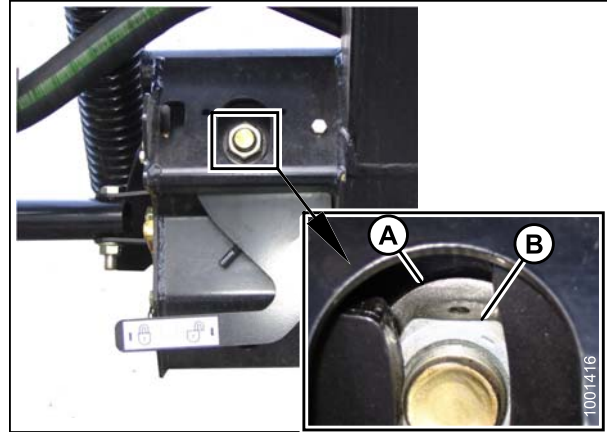
1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.

## OPERATION

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

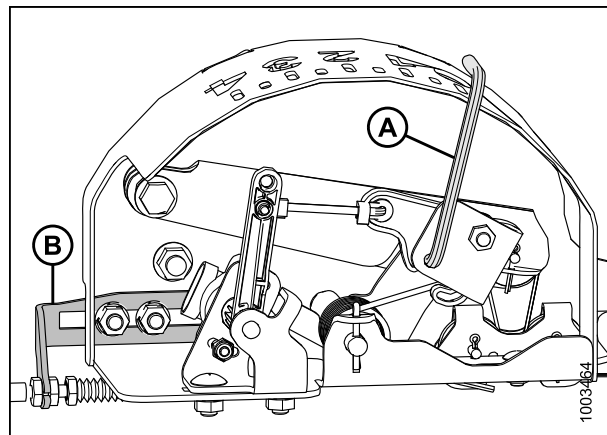
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.



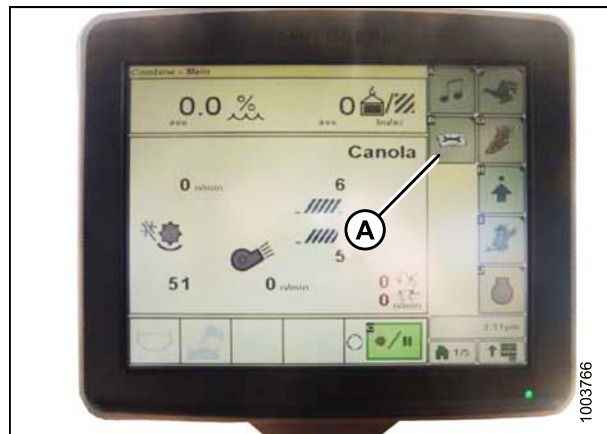
**Figure 3.198: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.199: Float Indicator Box**

4. Press the CALIBRATION icon (A) on the main page of the monitor. The CALIBRATION page appears.



**Figure 3.200: Combine Display**



## OPERATION

5. Press the DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

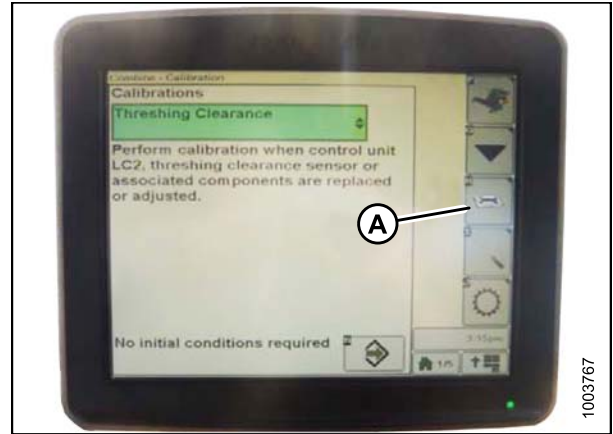


Figure 3.201: Combine Display

6. Select AHHC RESUME (A) and a list of calibration options appears.

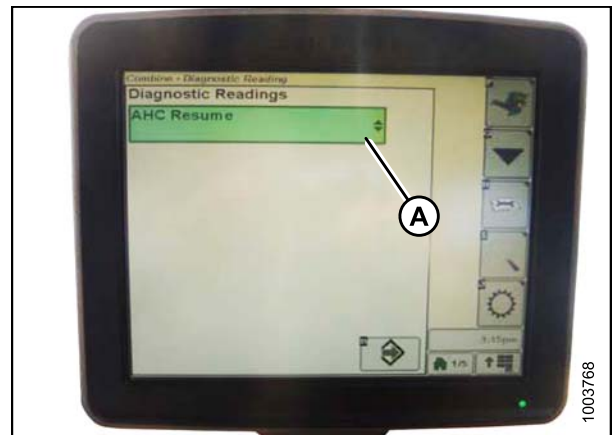


Figure 3.202: Combine Display

7. Select the AHHC SENSING option.
8. Press the icon that resembles an arrow in a box (A). The AHHC SENSING menu appears and five pages of information are displayed.



Figure 3.203: Combine Display

## OPERATION

9. Press icon (A) until it reads 'Page 5' near the top of the page and the following sensor readings appear:

- LEFT HEADER HEIGHT
- CENTER HEADER HEIGHT
- RIGHT HEADER HEIGHT

A reading is displayed for only the center header height sensor. On the MacDon header, there is only one sensor located in the float indicator box on top of the CA25.

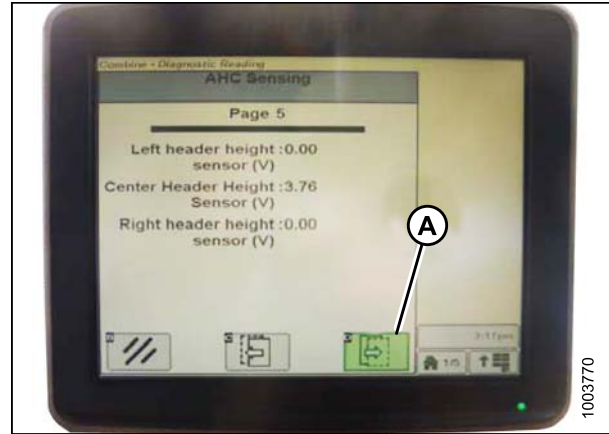


Figure 3.204: Combine Display

10. Ensure header float is unlocked.
11. Start the combine and fully lower feeder house to the ground.

**NOTE:**

You may need to hold the header down switch for a few seconds to ensure the feeder house is fully lowered.

12. Check the sensor reading on the monitor.
13. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to [Table 3.10 Combine Voltage Limits, page 91](#)).

### *Calibrating the Auto Header Height Control (John Deere S Series)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the AHHC, follow these steps:

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock adapter float.
3. Place wings in locked position.

## OPERATION

4. Press the DIAGNOSTIC icon (A) on the main page of the monitor. The CALIBRATION page appears.

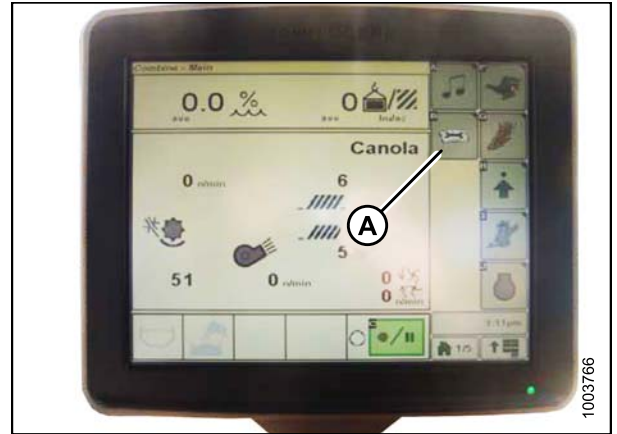


Figure 3.205: Combine Display

5. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

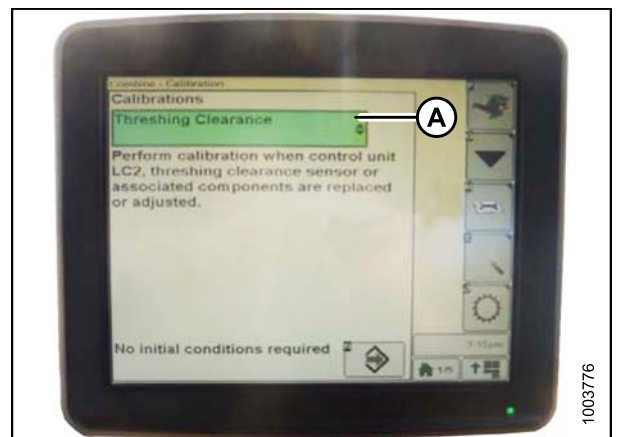


Figure 3.206: Combine Display

6. Select FEEDER HOUSE SPEED (A) and calibrate.
7. Select HEADER (B) and calibrate.

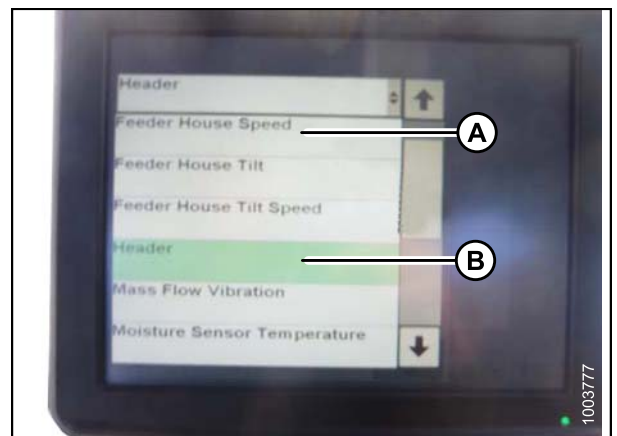


Figure 3.207: Combine Display

## OPERATION

- Press icon (A) with either FEEDER HOUSE SPEED or HEADER selected and the icon will turn green.

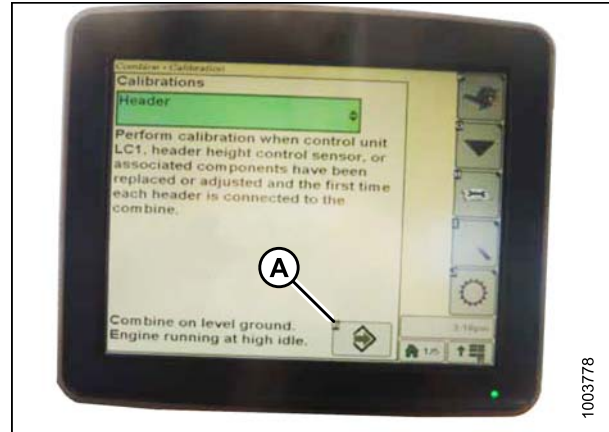


Figure 3.208: Combine Display

- Click button (A) and instructions will appear on screen to guide you through the remaining calibration steps.

**NOTE:**

If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. Refer to [Checking Voltage Range from the Combine Cab \(John Deere S Series\)](#), page 143.

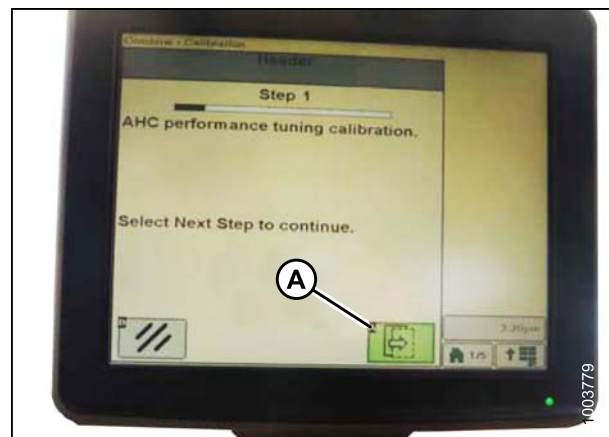


Figure 3.209: Combine Display

### Setting the Sensitivity of the Auto Header Height Control (John Deere S Series)

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

- Press button (A) twice and the current sensitivity setting will appear on the monitor.



Figure 3.210: Combine Command Center

## OPERATION

2. Press the '-' or '+' icon (A) to adjust rates.

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

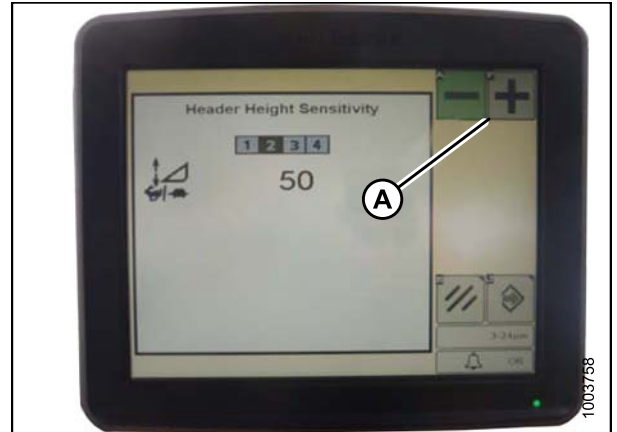


Figure 3.211: Combine Display

### *Adjusting the Manual Header Raise/Lower Rate (John Deere S Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) and the current sensitivity setting will appear on the monitor.



Figure 3.212: Combine Command Center

2. Press the '-' or '+' icon (A) to adjust rates.

**NOTE:**

The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

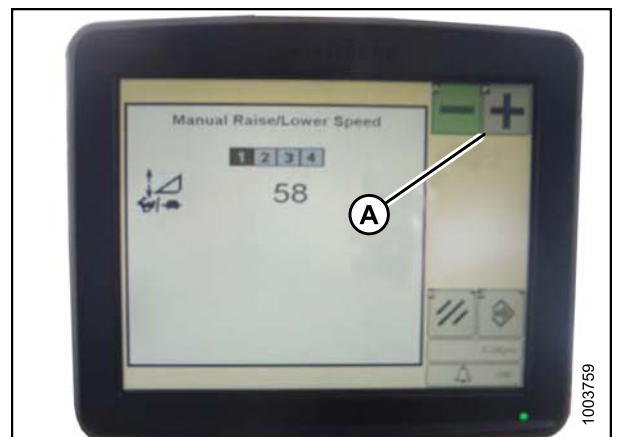


Figure 3.213: Combine Display

### 3.8.11 Lexion 500 Series Combines

#### *Calibrating the Auto Header Height Control (Lexion 500 Series)*

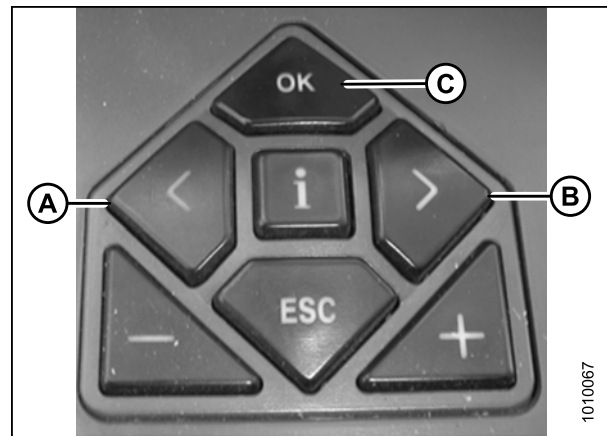
For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

**NOTE:**

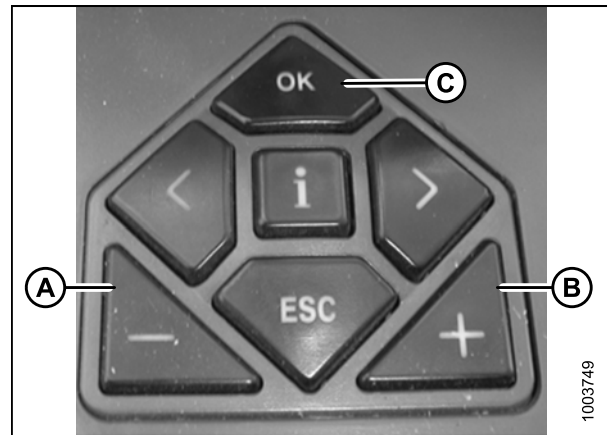
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the (AHHC), follow these steps:

1. Ensure center-link is set to D.
2. Use the '<' key (A) or '>' key (B) to select AUTO HEADER, and press the OK key (C). The 'E5' window displays whether the automatic header height is on or off.
3. Use the '-' key (A) or the '+' key (B) to turn the AHHC on, and press the OK key (C). The 'E5' window displays whether the automatic header height is on or off.
4. Engage the threshing mechanism and the header.



**Figure 3.214: Combine Controls**



**Figure 3.215: Combine Controls**



## OPERATION

5. Use the '<' or '>' key to select CUTT.HEIGHT LIMITS, and press the OK key (C).
6. Follow the procedure displayed on the screen to program the upper and lower limits of the header into the CEBIS.

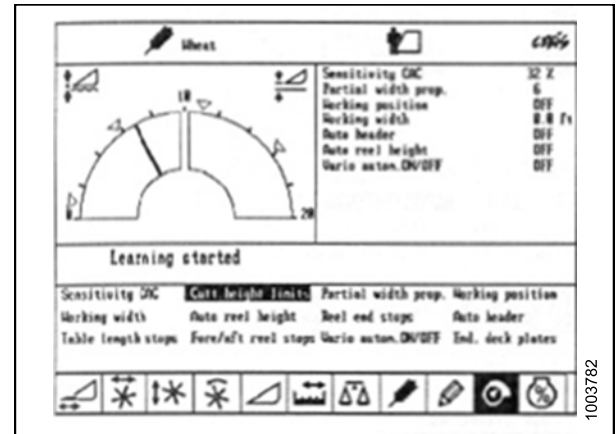


Figure 3.216: Combine Display

7. Use the '<' or '>' key to select SENSITIVITY CAC, and press the OK key (C).

**NOTE:**

Setting the sensitivity of the AHHC system impacts the reaction speed of the AHHC on the header.

8. Use the '-' key or the '+' key to change the setting of the reaction speed, and press the OK key (C).

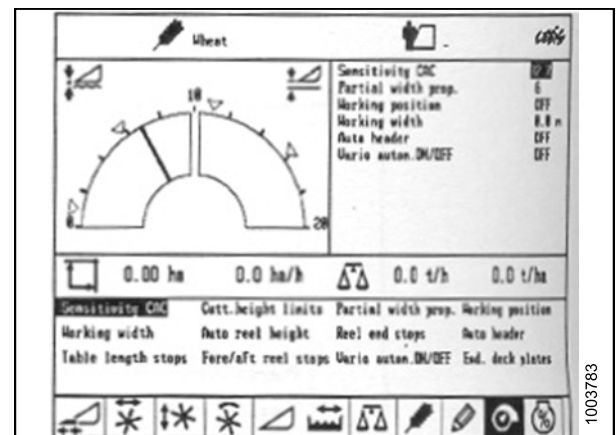


Figure 3.217: Combine Display

9. Use line (A) or value (B) to determine the sensitivity setting.

**NOTE:**

The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

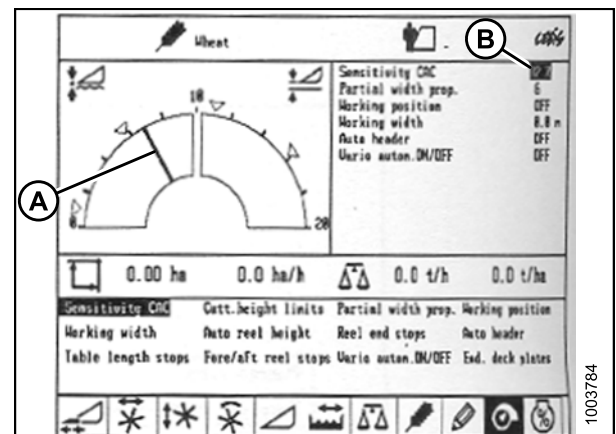


Figure 3.218: Combine Display



## OPERATION

### Setting Cutting Height (Lexion 500 Series)

Cutting heights can be programmed into the preset cutting height and auto contour systems. Use the preset cutting height system for cutting heights above 5.9 in. (150 mm), and use the auto contour system for cutting heights below 5.9 in. (150 mm).

#### Setting Preset Cutting Height (Lexion 500 Series)

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Start the engine.
2. Activate the machine enable switch.
3. Engage the threshing mechanism.
4. Engage the header.
5. Briefly press button (A) in order to activate the auto contour system, or briefly press button (B) in order to activate the preset cutting height system.

**NOTE:**

Button (A) is used only with Auto Header Height Control (AHHC) function. Button (B) is used only with the return to cut function.



Figure 3.219: Joystick Buttons

6. Use the '<' key (C) or '>' key (D) to select the CUTTING HEIGHT window, and press the OK key (E).
7. Use the '-' key (A) or the '+' key (B) to set the desired cutting height. An arrow indicates the selected cutting height on the scale.

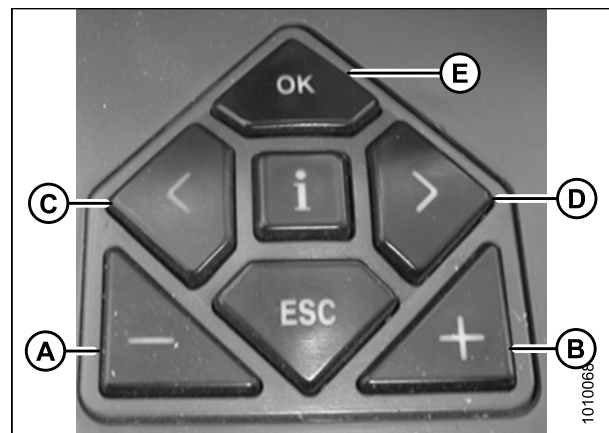


Figure 3.220: Combine Controls

## OPERATION

- Briefly press button (A) or button (B) in order to select the set point.
- Repeat Step 7., [page 152](#) for the set point.



Figure 3.221: Joystick Buttons

### Setting Cutting Height Manually (Lexion 500 Series)

#### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

- Use button (A) to raise the header or button (B) to lower the header to the desired cutting height.
- Press and hold button (C) for three seconds to store the cutting height into the CEBIS (an alarm will sound when the new setting has been stored).
- Program a second set point, if desired, by using button (A) to raise the header or button (B) to lower the header to the desired cutting height, and briefly press button (C) to store the second set point into the CEBIS (an alarm will sound when the new setting has been stored).



Figure 3.222: Joystick Buttons

#### NOTE:

For above the ground cutting, repeat Step 1., [page 153](#), and use button (D) instead of button (C) while repeating Step 2., [page 153](#).

### Setting the Sensitivity of the Auto Header Height Control (Lexion 500 Series)

Setting the sensitivity of the Auto Header Height Control (AHHC) system impacts the reaction speed of the AHHC on the header.

#### NOTE:

The upper and lower limits of the header must be programmed into the CEBIS before adjusting the sensitivity of the AHHC system. The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

## OPERATION

### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use the '<' key (C) or the '>' key (D) to select SENSITIVITY CAC, and press the OK key (E).
2. Use the '-' key (A) or the '+' key (B) to change the reaction speed setting, and press the OK key (E).

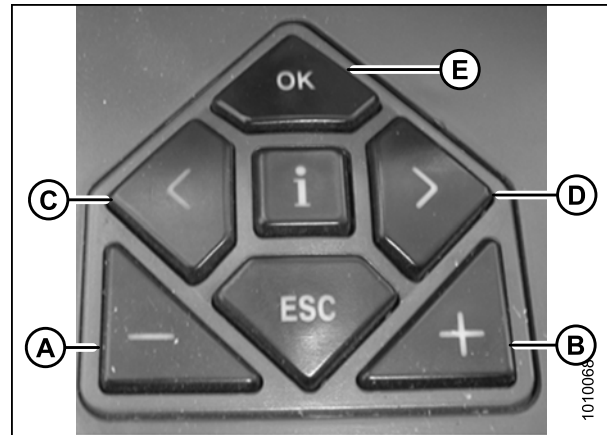


Figure 3.223: Combine Controls

3. Use line (A) or value (B) to determine the sensitivity setting.

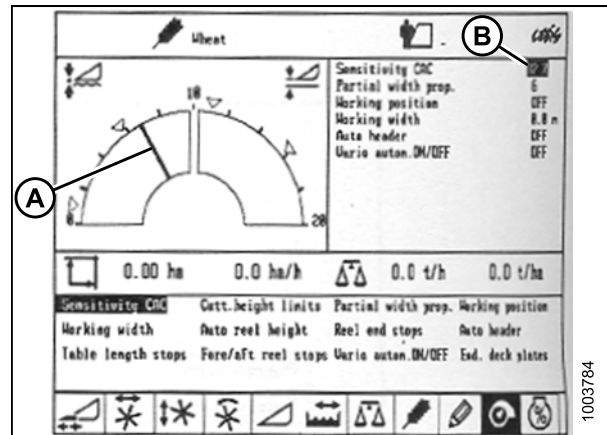
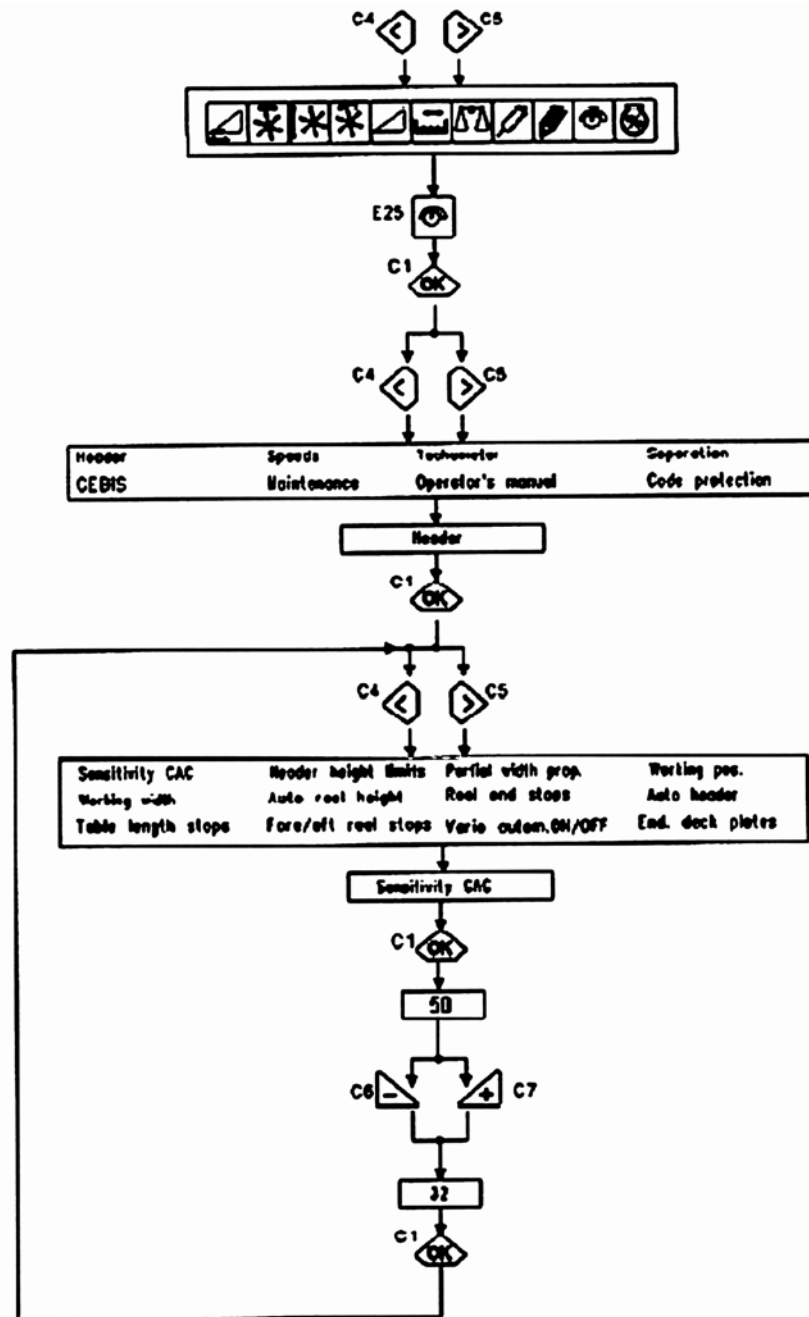


Figure 3.224: Combine Display

## OPERATION



1003798

Figure 3.225: Flow Chart for Setting the Sensitivity of the Float Optimizer

## OPERATION

### Adjusting Auto Reel Speed (Lexion 700 Series)

#### NOTE:

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use control knob (A) to highlight the HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL window opens.

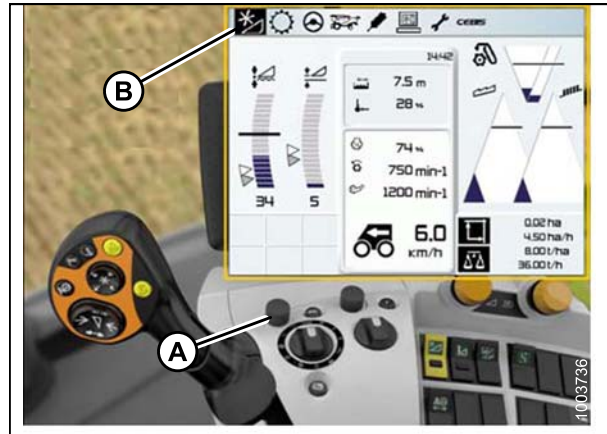


Figure 3.226: Combine Display, Console, and Joystick Lever

2. Use control knob (A) to select REEL SPEED (B), and adjust the reel speed (if you are NOT using Auto Reel Speed). A graph displays in the window.



Figure 3.227: Combine Display, Console, and Joystick Lever

## OPERATION

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED window (if you are using Auto Reel Speed). The ACTUAL VALUE window opens and displays the auto reel speed.



Figure 3.228: Combine Display, Console, and Joystick Lever

4. Use control knob (A) to raise or lower the reel speed.



Figure 3.229: Combine Display, Console, and Joystick Lever

### 3.8.12 Lexion 700 Series Combines

#### *Calibrating the Auto Header Height Control (Lexion 700 Series)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate the AHHC, follow these steps:

1. Ensure center-link is set to D.
2. Ensure that the header float is unlocked (A).

## OPERATION

3. Use control knob (A) to highlight the AUTO CONTOUR icon (B) and press control knob (A) to select it.



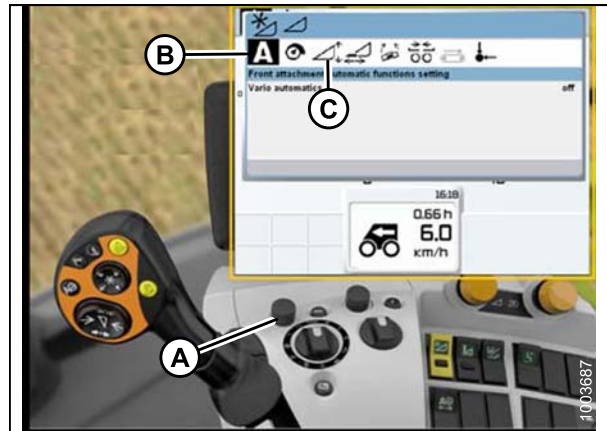
**Figure 3.230: Combine Display, Console, and Joystick Lever**

4. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (not shown), and press control knob (A) to select it. The highlighted header icon (B) will be displayed on the screen.



**Figure 3.231: Combine Display, Console, and Joystick Lever**

5. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (C), and press control knob (A) to select it.



**Figure 3.232: Combine Display, Console, and Joystick Lever**



## OPERATION

6. Use control knob (A) to highlight the icon that resembles a screwdriver (B).
7. Engage the combine separator and feeder house.
8. Press control knob (A) and a progress bar chart will appear.



**Figure 3.233: Combine Display, Console, and Joystick Lever**

9. Fully raise the feeder house and the progress bar chart will advance to 25% (A).
10. Fully lower the feeder house, and the progress bar chart will advance to 50%.
11. Fully raise the feeder house and the progress bar chart will advance to 75%.
12. Fully lower the feeder house, and the progress bar chart will advance to 100%.



**Figure 3.234: Combine Display, Console, and Joystick Lever**

13. Ensure the progress bar chart displays 100% (A). The calibration procedure is now complete.

### NOTE:

If the voltage is not within the range of 0.5–4.5 volts at any time throughout the calibration process, the monitor will indicate learning procedure not concluded.

### NOTE:

If header float is set too light, an error message will appear. Back float off three full-turns of the adjuster bolts to adjust float to approximately 100–125 lbs.



**Figure 3.235: Combine Display, Console, and Joystick Lever**

## OPERATION

### Setting Cutting Height (Lexion 700 Series)

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Lower the header to desired cutting height or ground pressure setting. The float indicator box should be set to 1.5.

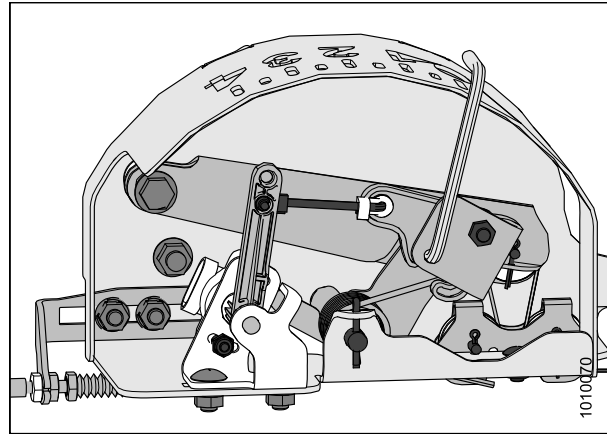


Figure 3.236: Float Indicator Box

2. Hold the left side of the header raise and lower switch (A) until you hear a ping.

**NOTE:**

You can set two different cutting heights.



Figure 3.237: Combine Display, Console, and Joystick Lever

### Setting the Sensitivity of the Auto Header Height Control (Lexion 700 Series)

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

1. Use control knob (A) to highlight the HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL window opens.
2. Select HEADER icon.

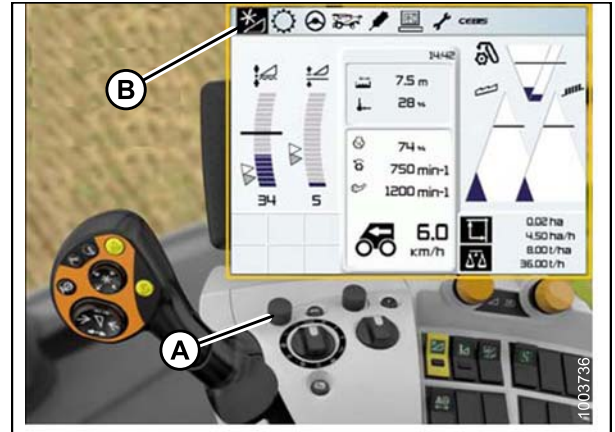


Figure 3.238: Combine Display, Console, and Joystick Lever

3. Select the FRONT ATTACHMENT PARAMETER SETTINGS icon (A). A list of settings appears.
4. Select SENSITIVITY CAC (B) from the list.



Figure 3.239: Combine Display, Console, and Joystick Lever

5. Select the SENSITIVITY CAC icon (A).

### NOTE:

To set the sensitivity, you will have to change the CUTTING HEIGHT ADJUSTMENT from the '0' default. The settings from 1–50 provide a faster response, whereas the settings from -1– -50 provide a slower response. For best results, make adjustments in increments of five.

6. Increase the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the adapter is too slow while cutting on the ground, and decrease the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the adapter is too fast.
7. Increase the sensitivity if the header is lowered too slowly, and decrease the sensitivity if the header hits the ground too hard or is lowered too quickly.



Figure 3.240: Combine Display

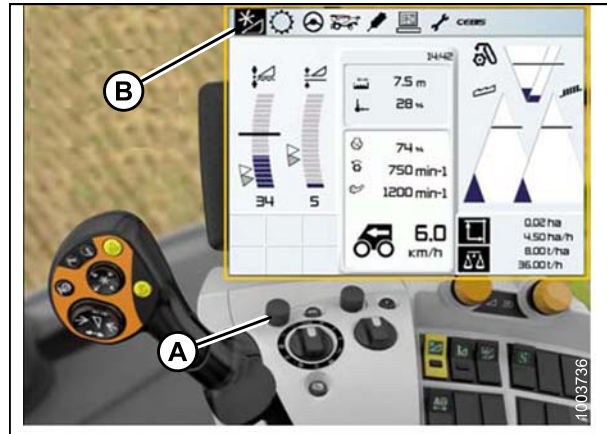
## OPERATION

### *Adjusting Auto Reel Speed (Lexion 700 Series)*

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use control knob (A) to highlight the HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL window opens.



**Figure 3.241: Combine Display, Console, and Joystick Lever**

2. Use control knob (A) to select REEL SPEED (B), and adjust the reel speed (if you are NOT using Auto Reel Speed). A graph displays in the window.



**Figure 3.242: Combine Display, Console, and Joystick Lever**

## OPERATION

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED window (if you are using Auto Reel Speed). The ACTUAL VALUE window opens and displays the auto reel speed.



Figure 3.243: Combine Display, Console, and Joystick Lever

4. Use control knob (A) to raise or lower the reel speed.



Figure 3.244: Combine Display, Console, and Joystick Lever

### 3.8.13 New Holland Combines

#### *Checking Voltage Range from the Combine Cab (New Holland)*

##### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To check the sensor output voltage range from the combine cab, follow these steps:

1. Position the header 6 in. (150 mm) above the ground, and unlock the adapter float.

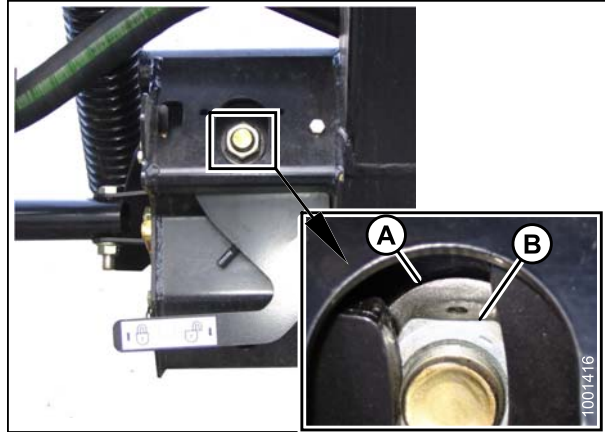


## OPERATION

2. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

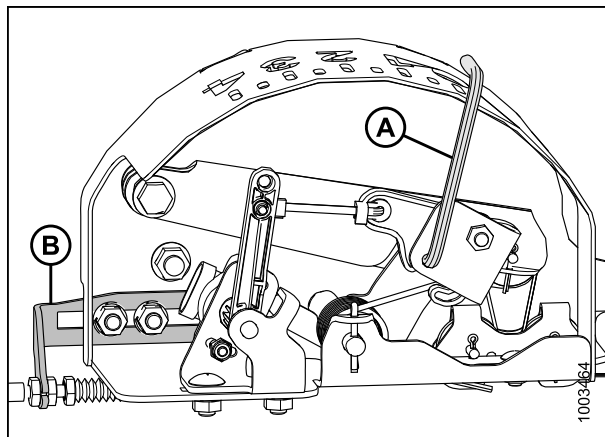
**NOTE:**

If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

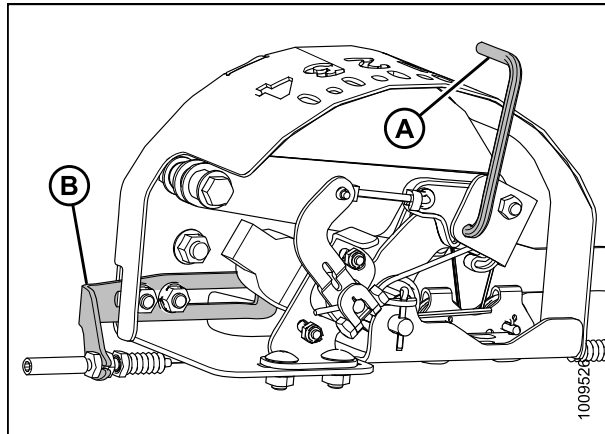


**Figure 3.245: Float Lock**

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on '0'.



**Figure 3.246: 5 Volt AHHC Sensor Assembly**



**Figure 3.247: 10 Volt AHHC Sensor Assembly**

## OPERATION

4. Ensure header float is unlocked.
5. Select DIAGNOSTICS (A) on the main screen. The DIAGNOSTICS screen displays.
6. Select SETTINGS. The SETTINGS screen displays.

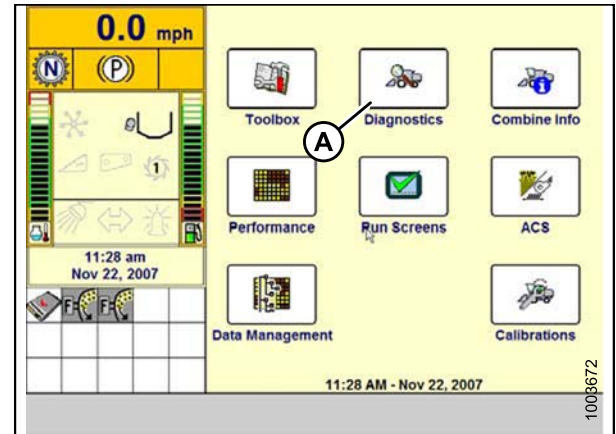


Figure 3.248: Combine Display

7. Select the GROUP drop-down arrow (A). The GROUP window opens.

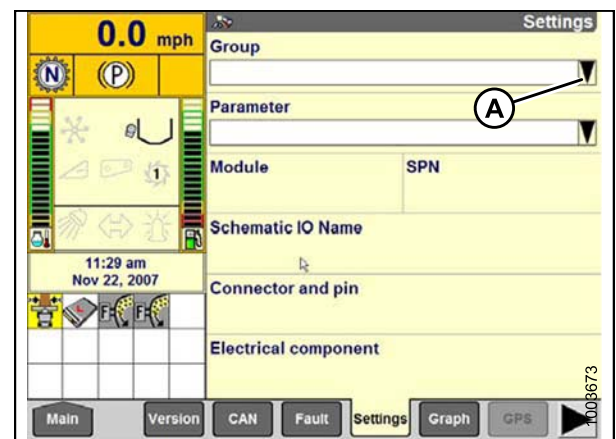


Figure 3.249: Combine Display

8. Select HEADER HEIGHT/TILT(A). The PARAMETER window opens.

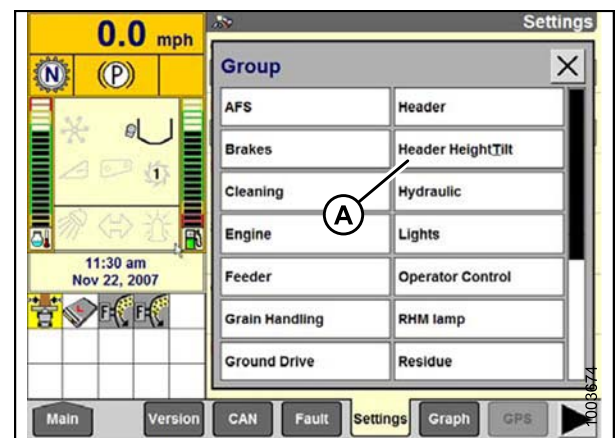


Figure 3.250: Combine Display



## OPERATION

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of screen.
10. Raise and lower the header to see the full range of voltage readings.
11. Adjust the voltage limits (refer to [Adjusting Voltage Limits, page 93](#)) if the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient (refer to Table [3.10 Combine Voltage Limits, page 91](#)).

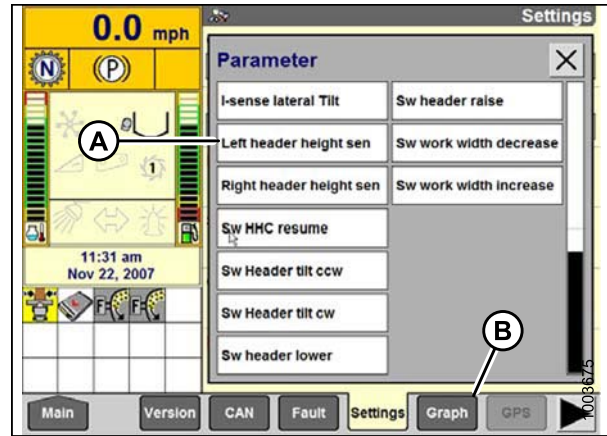


Figure 3.251: Combine Display

### *Engaging the Auto Header Height Control (New Holland CR/CX Series)*

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Select HEADER LATERAL FLOAT on the combine display screen, and press ENTER.
2. Use the up and down navigation keys to move between options, and select INSTALLED from the open window.



Figure 3.252: Combine Display

3. Select HEADER AUTOFLOAT on the combine display screen, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED from the open window.



Figure 3.253: Combine Display

## OPERATION

### *Calibrating the Auto Header Height Control (New Holland CR/CX Series)*

For best performance of the Auto Header Height Control (AHHC), perform these procedures with the center-link set to D. When setup and calibration are complete, adjust the center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 66](#).

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

Check the following conditions before starting the header calibration procedure:

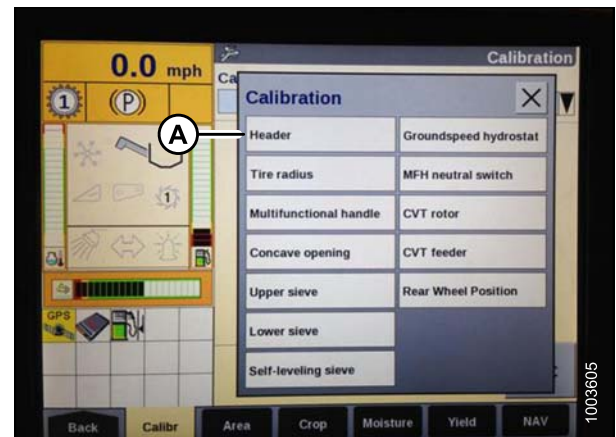
- The header is attached to the combine.
- The combine is on level ground, with the header level to the ground.
- The header is on down stops and the center-link is set to D.
- The engine is running.
- The combine is not moving.
- No faults have been received from the Header Height Controller (HHC) module.
- Header/feeder is disengaged.
- Lateral flotation buttons are NOT pressed.
- ESC key is NOT pressed.

To calibrate the Auto Header Height Control, follow these steps:

1. Select CALIBRATION on the combine display, and press the right arrow navigation key to enter the information box.
2. Select HEADER (A), and press ENTER. The CALIBRATION window opens.

#### **NOTE:**

You can use the up and down navigation keys to move between options.



**Figure 3.254: Combine Display**

## OPERATION

- Follow the calibration steps in the order in which they appear in the window. As you proceed through the calibration process, the display will automatically update to show the next step.

**NOTE:**

Pressing the ESC key during any of the steps or letting the system sit idle for more than three minutes will cause the calibration procedure to stop.

**NOTE:**

Refer to your combine operator's manual for an explanation of any error codes.



**Figure 3.255: Combine Display**

- Ensure that CALIBRATION SUCCESSFUL message is displayed on the screen when all steps have been completed, and exit the CALIBRATION menu by pressing the ENTER or ESC key.

**NOTE:**

If float was set heavier to complete ground calibration procedure, adjust to recommended operating float after the calibration is complete.

- Conduct the maximum stubble height calibration if unit does not function properly.

### Calibrating Maximum Stubble Height

This procedure describes how to calibrate the area counter to know from which height it should stop or start counting. When the header is raised above this level, the area counter assumes you are not cutting crop; therefore, you must raise the header to a specific height that you will always exceed when not cutting, and lower the header to a specific height you will always stay below when cutting.

Select the height of the header that corresponds to the description above.

**IMPORTANT:**

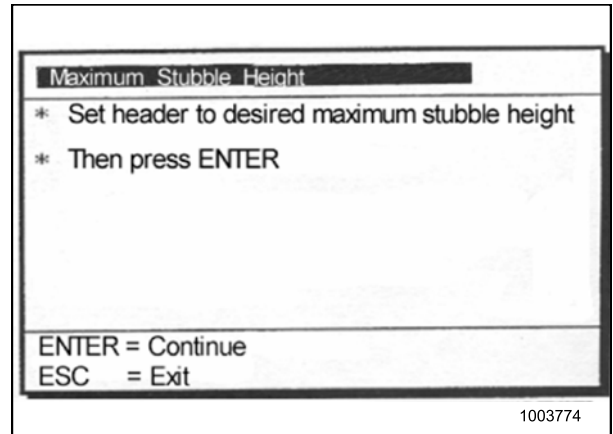
- If the value is set too low, area may NOT be counted since the header is sometimes raised above this threshold although the combine is still cutting.
- If the value is set too high, the area counter will keep counting even when the header is raised (but below this threshold) and the combine is no longer cutting crop.

## OPERATION

1. Select the MAXIMUM STUBBLE HEIGHT calibration window.

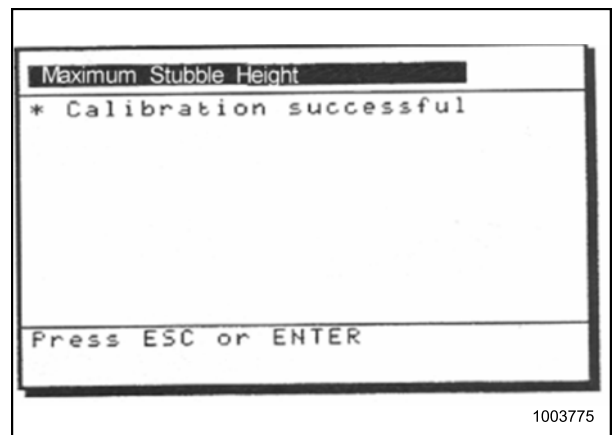
Message: "Set header to desired maximum stubble height".

Message: "Then press ENTER".



**Figure 3.256: Calibration Window**

2. Move header to the correct position using the header up or down control switch on the multifunction handle.
3. Press ENTER to continue.  
Message: "Calibration successful".
4. Press ENTER or ESC to close the calibration window.  
The calibration is now complete.



**Figure 3.257: Calibration Window**

### *Adjusting Header Raise Rate (New Holland CR/CX Series)*

If necessary, the header raise rate (the first speed on the header height rocker switch of the multifunctional handle) can be adjusted.

#### **NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## OPERATION

1. Select HEADER RAISE RATE on the combine display screen.
2. Use the '+' or '-' buttons to change the setting.
3. Press ENTER to save the new setting.

**NOTE:**

The raise rate can be changed from 32–236 in steps of 34. The factory setting is 100.

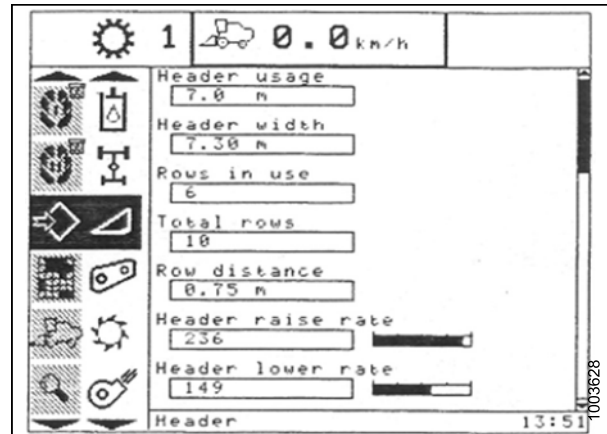


Figure 3.258: Combine Display

### *Setting the Header Lower Rate to 50 (New Holland CR/CX Series)*

If necessary, the header lower rate (the automatic header height control button or second speed on the header height rocker switch of the multi-function handle) can be adjusted.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Select HEADER LOWER RATE on the combine display screen.
2. Use the '+' or '-' buttons to change the setting to 50.
3. Press ENTER to save the new setting.

**NOTE:**

The lower rate can be changed from 2–247 in steps of 7. It is factory set to 100.

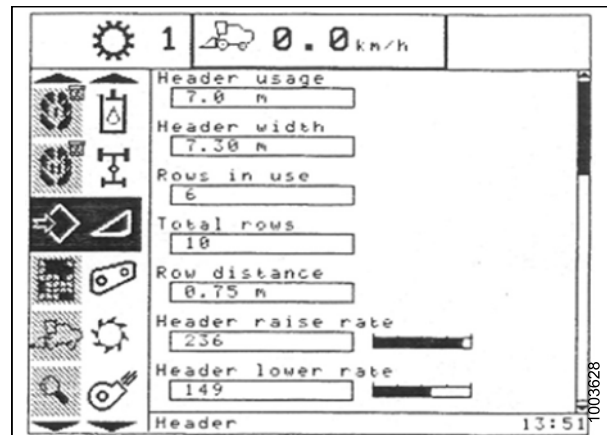


Figure 3.259: Combine Display

### *Setting the Sensitivity of the Auto Header Height Control to 200 (New Holland CR/CX Series)*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To set the Auto Header Height Control sensitivity, follow these steps:

## OPERATION

1. Engage threshing and feeder house.
2. Select HEIGHT SENSITIVITY on the combine display screen.
3. Use the '+' or '-' buttons to change the setting to 200.
4. Press ENTER to save the new setting.

**NOTE:**

The sensitivity can be changed from 10–250 in steps of 10. It is factory set to 100.

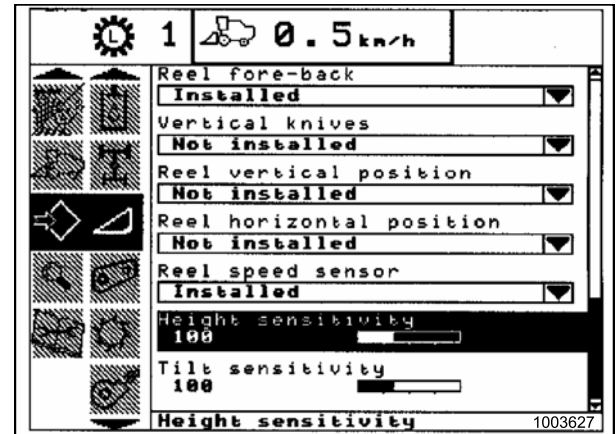


Figure 3.260: Combine Display

### 3.8.14 Sensor Operation

The position sensors supplied with the Auto Header Height Control (AHHC) system are (1K) 1000 ohm industrial series sensors containing sealed connectors. Normal operating signal voltages for the sensors fall between 10% (0.5VDC) and 90% (4.5VDC).

A sensor operating with a signal voltage below 5% is considered to be shorted, and a sensor with a signal voltage above 95% is considered to be open. An increase in sensor voltage correlates to an increase in header height.

Each sensor is constructed with a power wire and a ground wire. Inside the sensor, these two wires are connected by a high resistance filament band (C). The resistance measured across the power (A) and ground (B) wires should read a constant value between 800 and 1200 ohms (0.8–1.2 k) with the nominal reading being 1000 ohms (1 k).

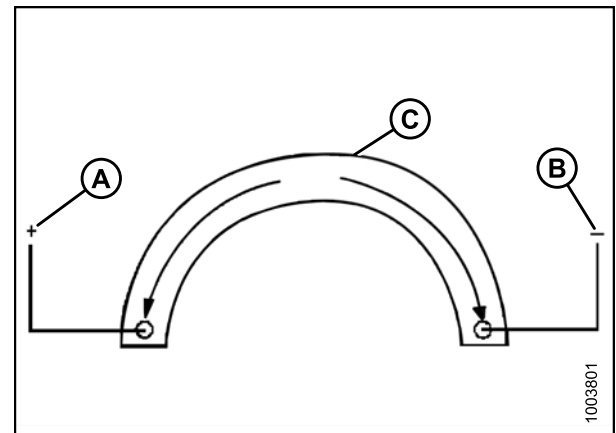


Figure 3.261: Power, Ground, and Signal Wires

## OPERATION

In addition to the power (A) and ground (B) wires, a signal wire (C) is connected internally to a movable wiper that is attached to an external arm and sweeps the high resistance filament band. As the external arm is rotated and the wiper is moved toward or away from the power wire connection, the measured resistance at the signal wire (C) changes.

The resistance measured across the signal and ground wires should increase uniformly from a low (80–100 ohms) to a high (800–1200 ohms). This can be observed if an ohmmeter is connected across the signal and power wires and the sensor shaft rotated. When an input voltage is applied to the high resistance filament band through the power wire (A), the output (or 'measured') voltage in the signal wire (C) is changed by this variable resistance.

### NOTE:

Ground and power wires may differ depending on combine.

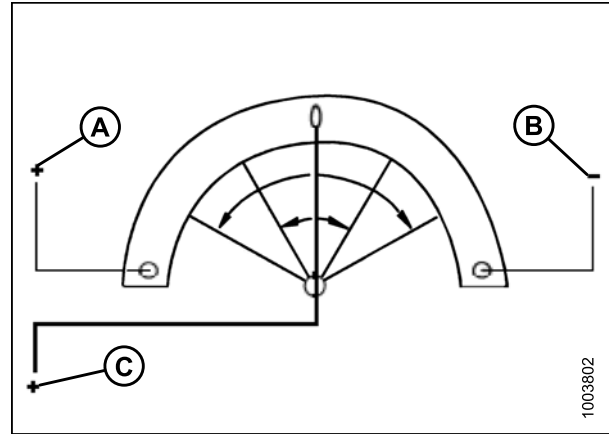


Figure 3.262: Power, Ground, and Signal Wires



## 3.9 Levelling the Header

The adapter is factory-set to provide the proper level for the header, and should not normally require adjustment.

If the header is **NOT** level, perform the following checks prior to adjusting the levelling linkages:

- Check combine tire pressures.
- Check that the combine feeder house is level. Refer to your combine operator's manual for instructions.
- Check that top of adapter is level and parallel with the feeder house.

**NOTE:**

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

To make fine adjustments to header levelling, follow these steps:

1. Park combine on level ground.
2. Set header approximately 6 in. (150 mm) off ground, and check that float linkage is against down stops. Note high and low end of header.
3. Set wing float lock (A) to engaged. Refer to [5.16.1 Checking Wing Balance, page 396](#) and [5.16.2 Adjusting Wing Balance, page 401](#).
4. Check and set float adjustment. Refer to [Checking and Adjusting Header Float, page 58](#).
5. Adjust level with nut (A) at each float lock as follows. Use small adjustments (1/4–1/2 turn), and adjust each side equally but in opposite directions:

**NOTE:**

Setscrew (B) does not require loosening for adjustments up to one-half turn of nut (A).

- a. Turn low-side nut **clockwise** to raise header.
- b. Turn high-side nut **counterclockwise** to lower header.

**NOTE:**

Adjustment of more than two turns in either direction may adversely affect header float.

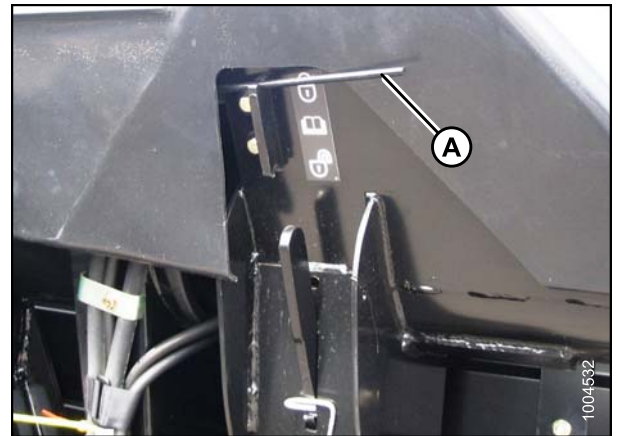


Figure 3.263: Wing Lock

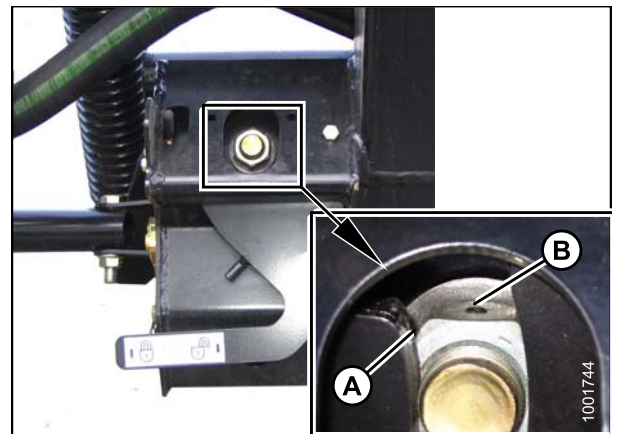


Figure 3.264: Float Lock

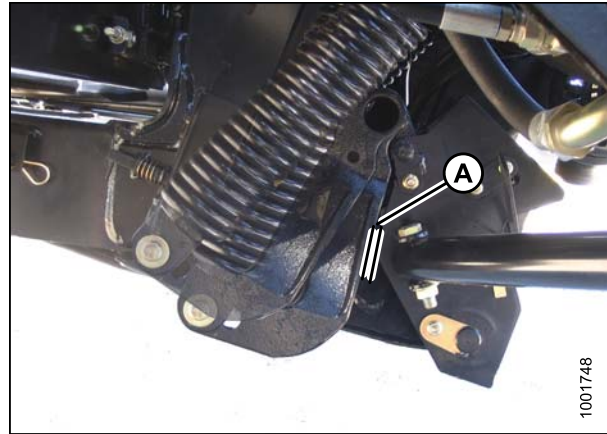
## OPERATION

**NOTE:**

Always be sure there is a minimum 1/8 in. (2–3 mm) clearance (A) between frame and back of bell crank lever.

**NOTE:**

Float should be checked after levelling header. Refer to [Checking and Adjusting Header Float, page 58](#).



**Figure 3.265: Bell Crank**

## 3.10 Unplugging Cutterbar

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

1. Stop forward movement of machine and disengage header drives.
2. Raise header to prevent it from filling with dirt, and engage header drive clutch.
3. If plug does **NOT** clear, disengage header drive clutch and raise header fully.

### **CAUTION**

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

### **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 and remove key.
5. Engage header safety props.

### **CAUTION**

Wear heavy gloves when working around or handling knives.

6. Clean off cutterbar by hand.

**NOTE:**

If cutterbar plugging persists, refer to [7 Troubleshooting, page 417](#).

## 3.11 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. Reverse the combine feed as per manufacturers specification (reverse feed varies for different combines).
4. Re-engage header drive.

## 3.12 Upper Cross Auger (UCA)

The UCA improves delivery of very bulky crops across the header into the combine.

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

### IMPORTANT:

The upper cross auger drive motor must be equipped with a case drain kit when used on single draper drive headers. See your MacDon Dealer for details.

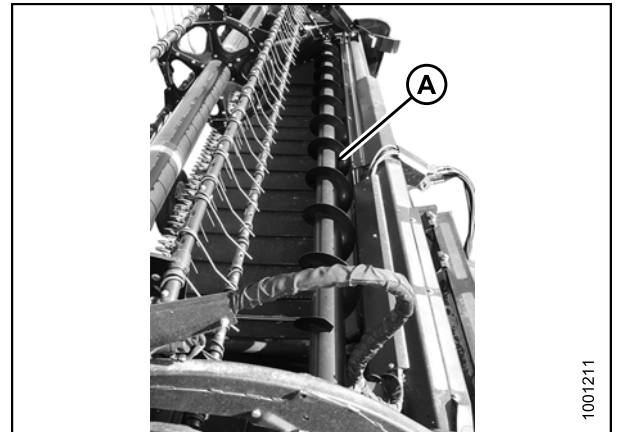


Figure 3.266: Upper Cross Auger

### 3.12.1 Removing Beater Bars

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 off engine, and remove key.
2. Remove bolts (A) securing bars (B) and clamps (C) to auger tubes, and remove bars and clamps.

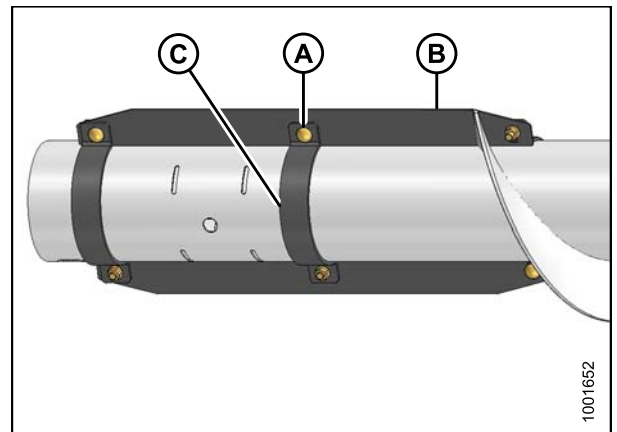


Figure 3.267: Beater Bars

### 3.12.2 Installing Beater Bars

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.

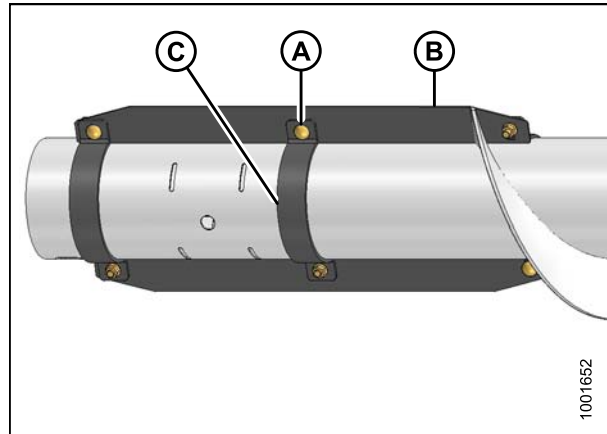


Figure 3.268: Beater Bars

## 3.13 Transporting Header

### 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.

### 3.13.1 Transporting Header on 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.

### 3.13.2 Towing

Headers with the Slow Speed Transport/Stabilizer Wheel option can be towed behind a properly configured MacDon windrower or an agricultural tractor. Refer to the combine operator's manual for instructions.



### *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.
- 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.
- Turn corners only at very low speeds (5 mph [8km/h]) or less). While cornering, header stability is reduced as front wheel moves to the left.
- 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.

### 3.13.3 Converting from Transport to Field Position

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

#### *Removing Tow-Bar*

Remove tow-bar as follows:

1. Block the tires to prevent header rolling, and unhook from towing vehicle.
2. Disconnect wiring connector (A) on tow-bar.
3. Remove pin (B) from tow-bar and disassemble outer section (C) from inner section (D).

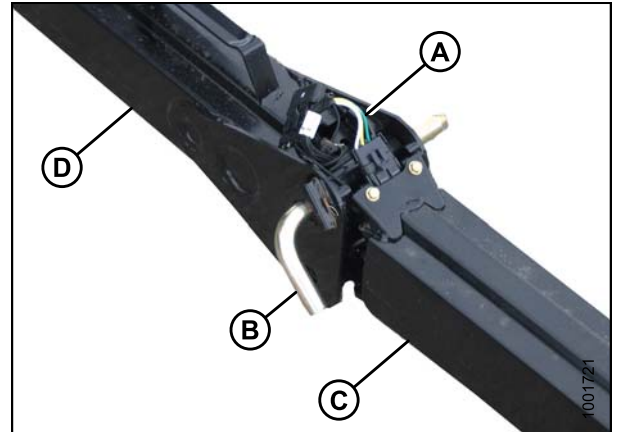


Figure 3.269: Tow-Bar Assembly

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

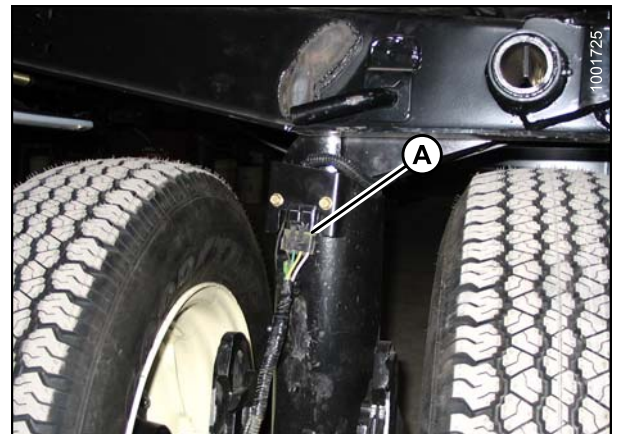


Figure 3.270: Wiring Connector

## OPERATION

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

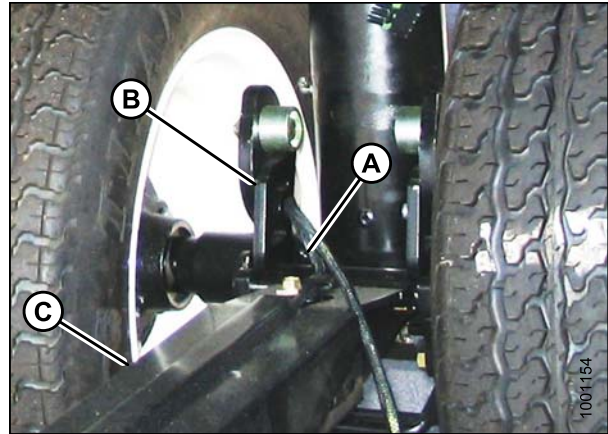


Figure 3.271: Tow-Bar Latch

### *Storing Tow-Bar*

Store tow-bar as follows:

1. At the left end of the header, place the inner end of the outer half of the tow-bar in cradle (A) on header backtube.
2. For clevis or pintle end of tow-bar, secure in support (B) on endsheet with hitch pin (C). Secure with lynch pin.
3. Install rubber strap (D) on cradle (A).

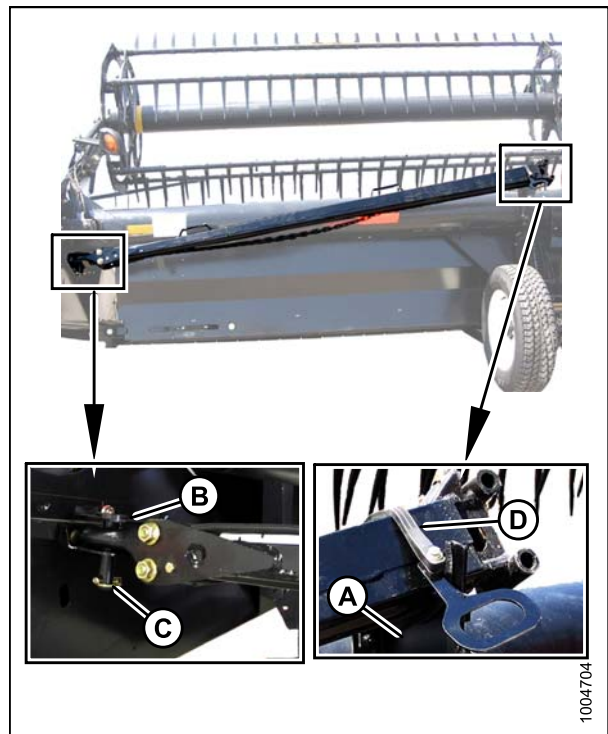


Figure 3.272: Tow-Bar Storage

## OPERATION

4. At the right end of the header, place the inner end of the inner half of the tow-bar in cradle (A) on header backtube.
5. Secure tube end in support (B) with clevis pin (C). Secure with hairpin.
6. Install rubber strap (D) on cradle (A).

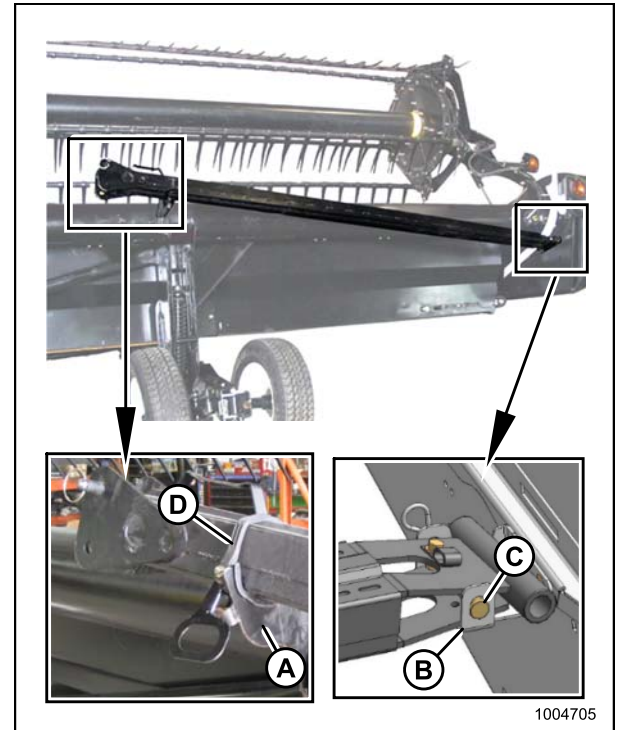


Figure 3.273: Tow-Bar Storage

7. Attach header to combine. Refer to [4 Header Attachment/Detachment, page 197](#).
8. Place transport wheels into field position. Refer to:
  - [Moving Front \(Left\) Wheels into Field Position, page 183](#)
  - [Moving Rear \(Right\) Wheels into Field Position, page 185](#)

### *Moving Front (Left) Wheels into Field Position*

To move the front (left) 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 safety props before going under header for any reason.**

1. Raise header fully. Engage header safety props.

## OPERATION

2. Swivel front wheel assembly (A), so wheels are aligned with lower frame.
3. Remove pin (B) and pull wheel assembly towards rear of header. Store pin (B) in hole (C) at top of leg.
4. Pull handle (D) up to release and lower the linkage in the vertical support.

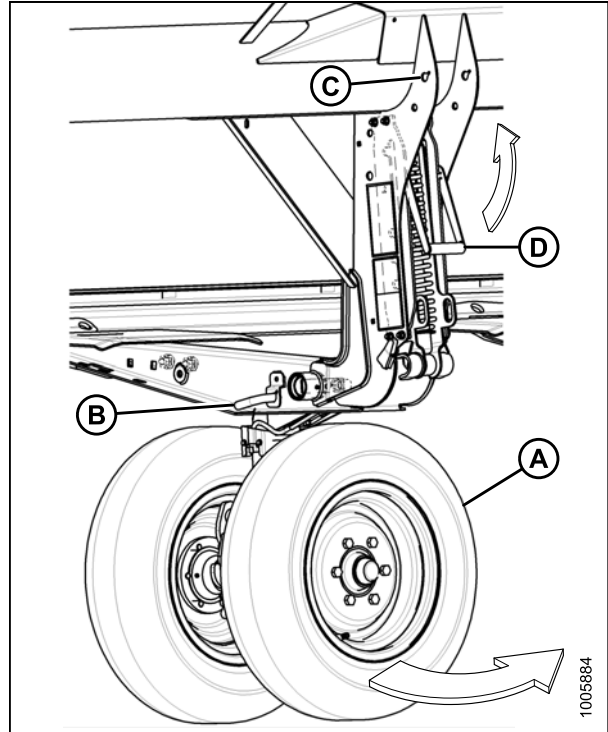


Figure 3.274: Front (Left) Wheels

5. Align lift hook (A) with lug (B) and lift wheel assembly to engage pin in hook (A). Ensure latch (C) is engaged.
6. Install clevis pin (D) and secure with hairpin to center of axle.

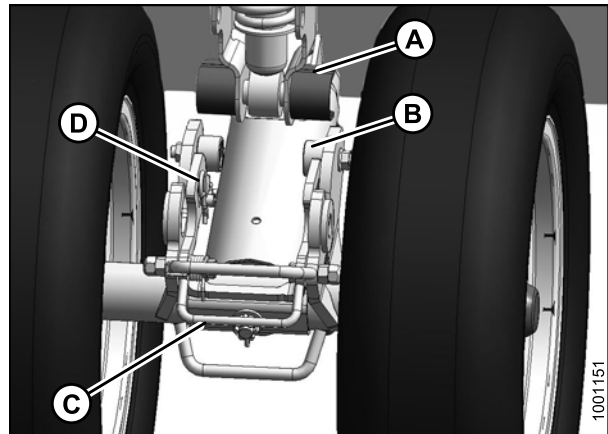
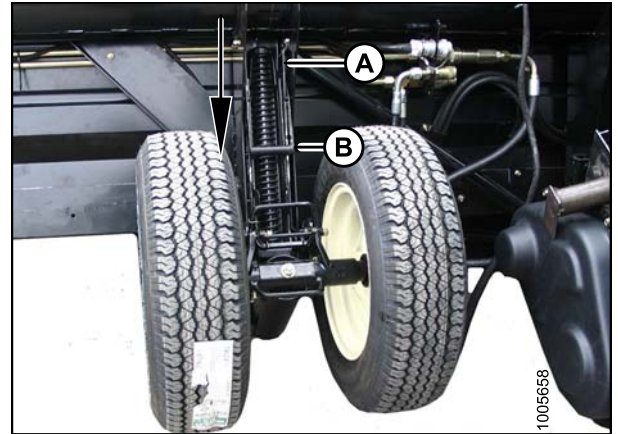


Figure 3.275: Front (Left) Wheels

## OPERATION

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

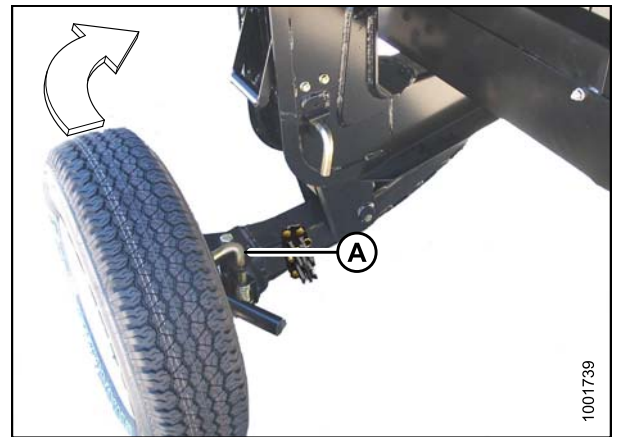


**Figure 3.276: Front (Left) Wheels**

### *Moving Rear (Right) Wheels into Field Position*

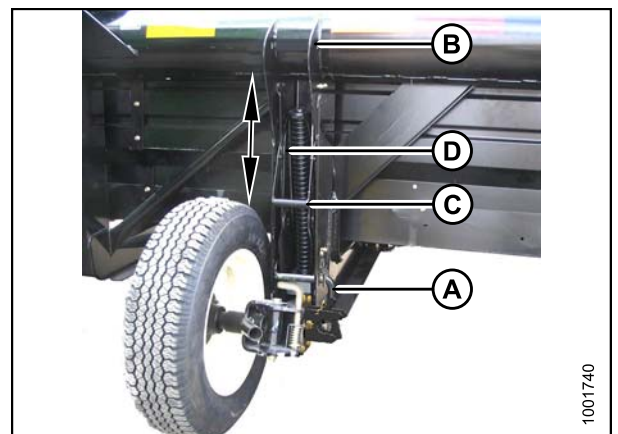
To move the rear (right) transport wheels into field position, follow these steps:

1. Pull pin (A) on the left-hand wheel behind the header. Swivel wheel clockwise and lock with pin (A).



**Figure 3.277: Left Rear Wheel**

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



**Figure 3.278: Left Rear Wheel**



## OPERATION

6. Pull pin (A) on brace (B) on the left-hand wheel in front of the cutterbar. 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 (C) clockwise towards the rear of the header.

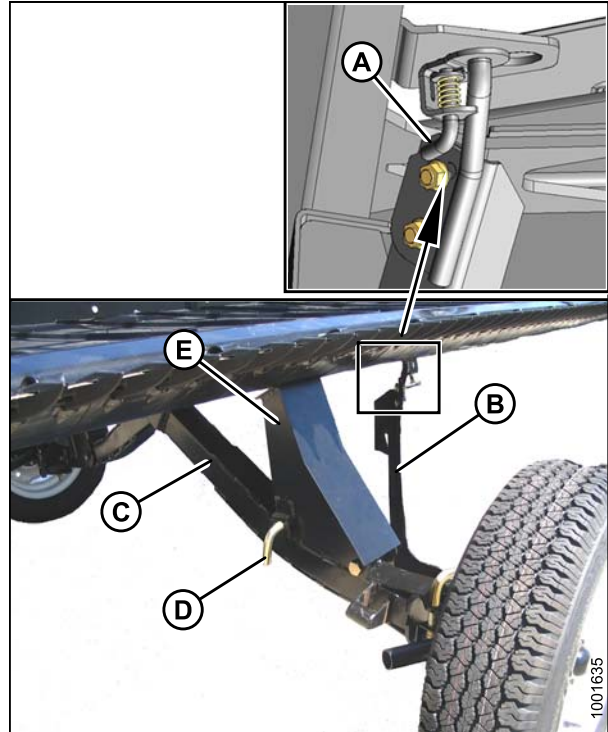


Figure 3.279: Right Rear Axle

9. Pull pin (A) at right wheel, swivel wheel counterclockwise to position shown and lock with pin (A).
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), with open end of pin facing rear of combine.

### NOTE:

Installing hairpin with the open end facing the cutterbar will cause it to be dislodged by crop during operation.

### IMPORTANT:

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

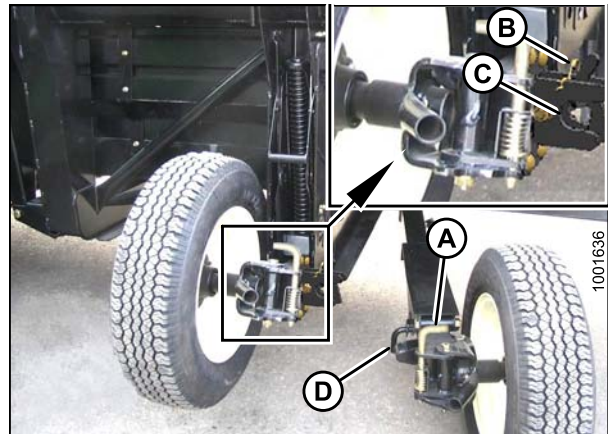
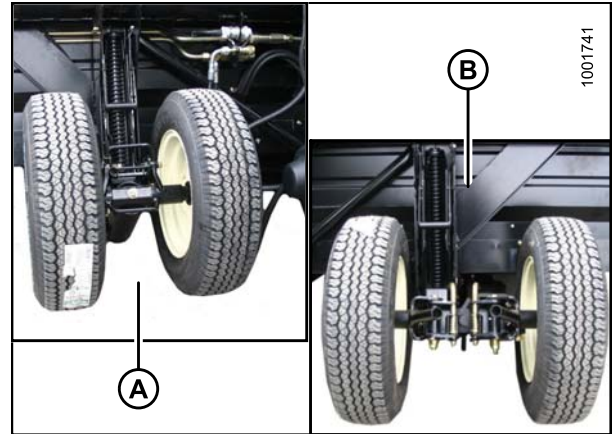


Figure 3.280: Rear Axles



## OPERATION

13. The conversion is complete when the wheels are as shown.



**Figure 3.281: Field Position**

A - Left Side

B - Right Side

### 3.13.4 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 safety props before going under header for any reason.

#### *Moving Front (Left) Wheels into Transport Position*

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

#### **CAUTION**

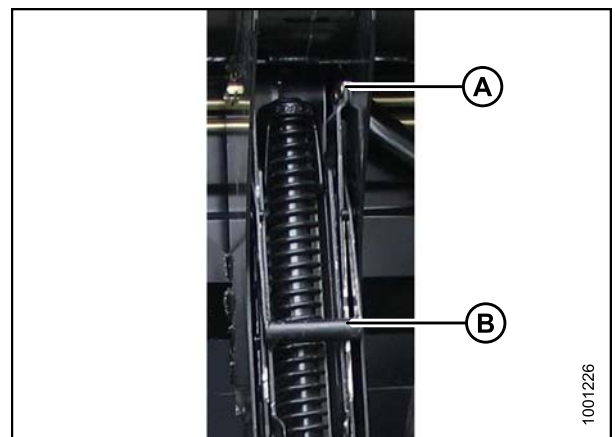
Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.

1. Pull handle (B) up to release and raise the linkage (A) fully upward in the vertical support.

#### **DANGER**

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

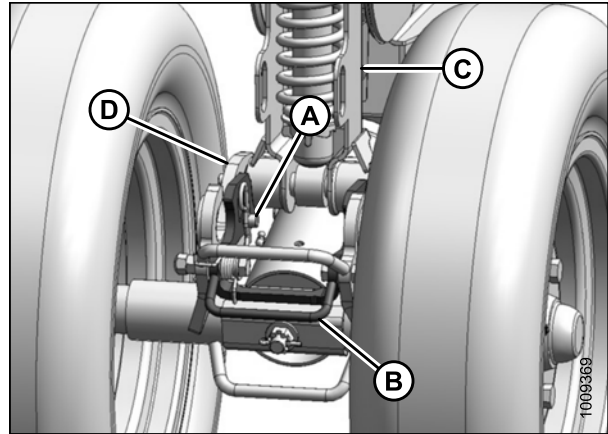
2. Raise header fully, stop engine, and remove key from ignition. Engage header safety props.



**Figure 3.282: Wheel Linkage**

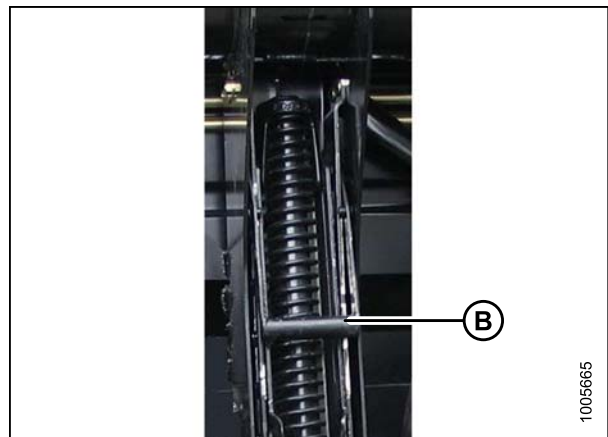
## OPERATION

3. Remove hair pin and clevis pin (A).
4. Pull latch handle (B) to release suspension linkage (C) and pull suspension linkage (C) away from spindle (D).
5. Slowly lower the wheels.



**Figure 3.283: Wheels**

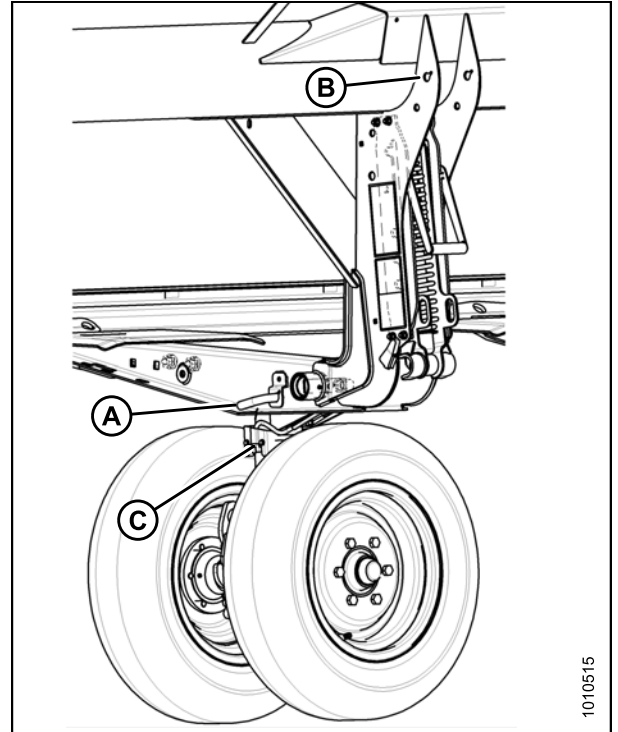
6. Lower handle (B) to lock.



**Figure 3.284: Wheel Linkage**

## OPERATION

7. Remove pin (A) from storage at top of leg (B).
8. Move and swivel wheels clockwise so that connector (C) is turned towards the front end of the header.
9. Insert pin (A) and turn to lock.
10. Lower header so that left wheels are just touching the ground.



**Figure 3.285: Wheels**

## OPERATION

### *Moving Rear (Right) Wheels into Transport Position*

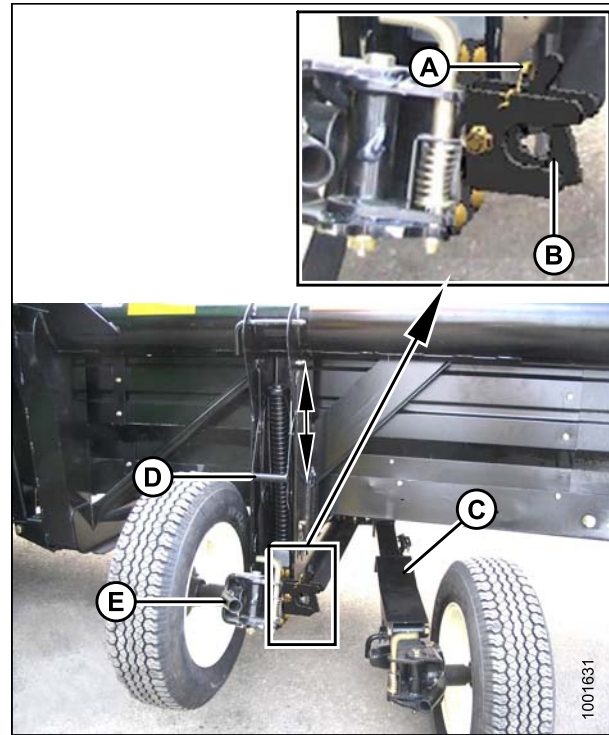
To move the right (rear) transport wheels into transport position, follow these steps:

1. Remove hairpin (A) from latch (B).
2. Lift latch (B), disengage right axle (C), and lower to the ground.

#### **CAUTION**

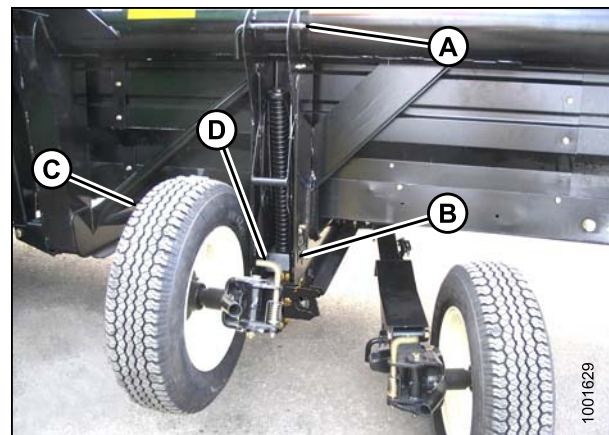
**Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.**

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



**Figure 3.286: Axles**

6. Remove pin (A) and install at (B) to secure linkage. Turn pin (A) to lock.
7. Pull pin (D), swivel wheel (C) counterclockwise 90°, and re-lock with pin (D).



**Figure 3.287: Wheels**

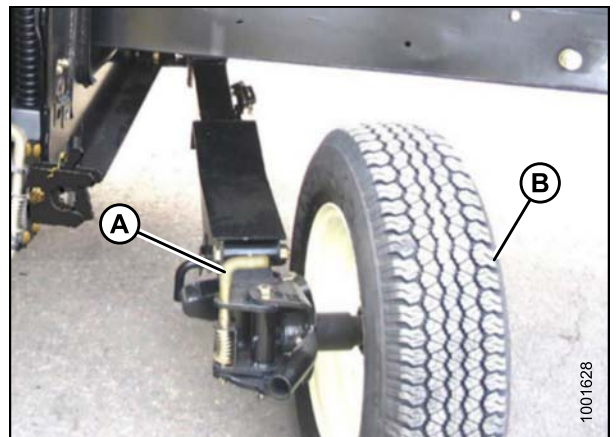
## OPERATION

8. Left wheel is now in Transport position as shown.



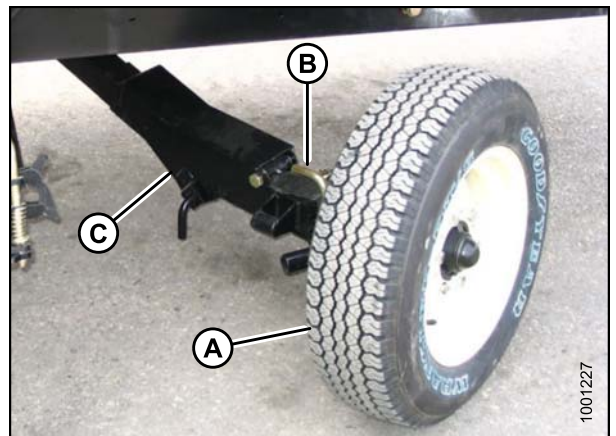
**Figure 3.288: Transport Position**

9. Pull pin (A), and swivel wheel (B) clockwise 90 .



**Figure 3.289: Right Rear Wheel**

10. Lock wheel (A) with pin (B). Move the right axle (C) to front of header.



**Figure 3.290: Right Rear Wheel**

## OPERATION

11. Remove pin (A), raise support (B) to position shown, and reinsert pin (A).

### IMPORTANT:

Ensure pin (A) engages the tube on the axle.

12. Swing brace (C) into position as shown and insert brace into slot (D) behind cutterbar. Position brace so that pin (E) engages hole in bracket (F). Right-hand wheel is now in Transport position.
13. Disengage the header cylinder lift stops.
14. Detach the header's hydraulic and electrical connections from the combine. Refer to [4 Header Attachment/Detachment, page 197](#).
15. Start combine and lower header to the ground.

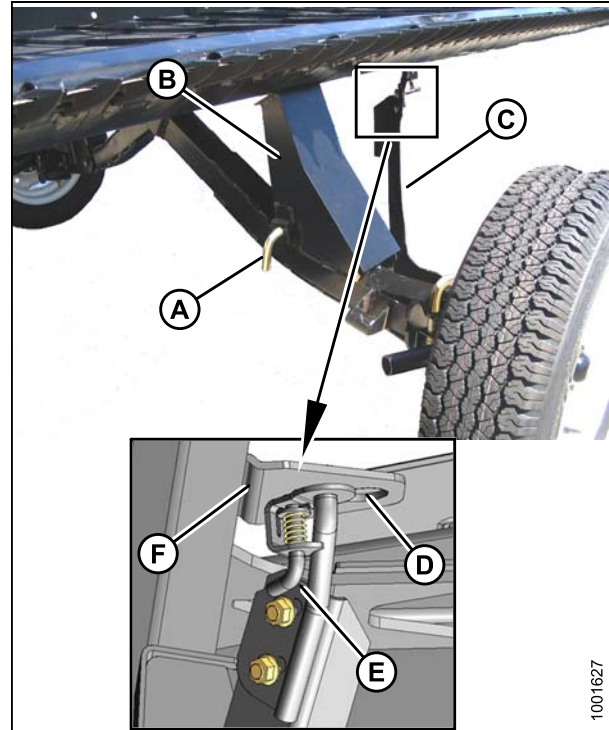


Figure 3.291: Right Rear Wheel

### Attaching Tow-Bar

The tow-bar consists of two sections which make storage and handling easier.

1. On the right side of the header, unhook rubber strap (D) on cradle (A).
2. Remove clevis pin (C). Detach tube end from support (B).
3. Replace clevis pin.
4. Lift inner half of tow-bar off of header, and place it near the left side of the header.

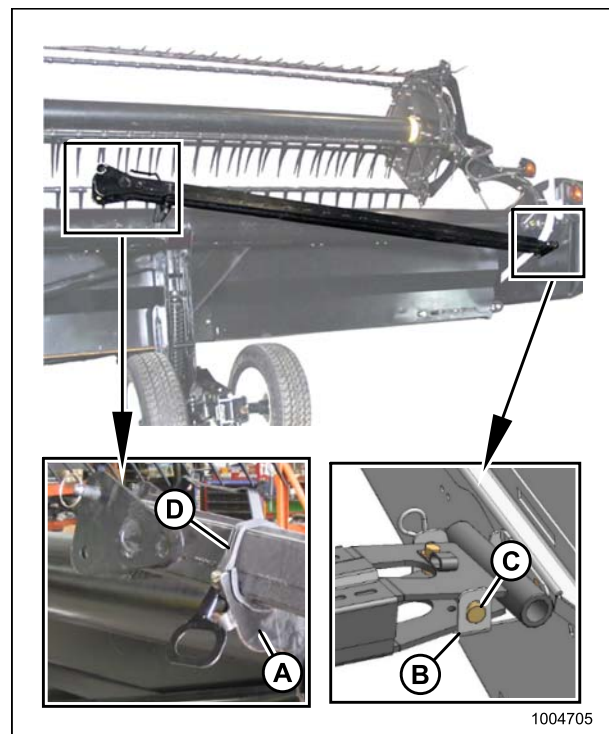
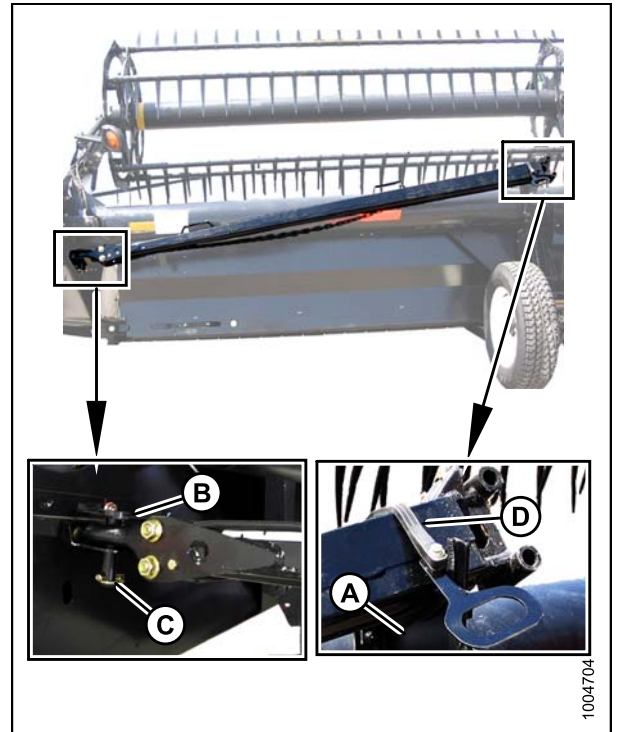


Figure 3.292: Tow-Bar



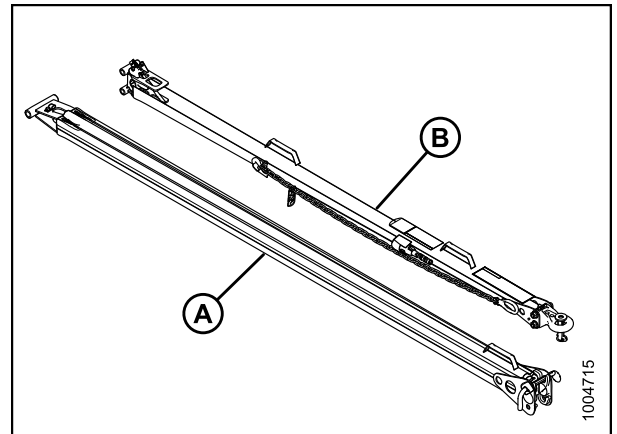
## OPERATION

5. At left side of the header, unhook rubber strap (D) on cradle (A).
6. Remove hitch pin (C) from support (B), and remove tow-bar.
7. Install rubber strap (D) on cradle (A).



**Figure 3.293: Tow-Bar**

8. Connect the outer half (B) of the tow-bar to the inner half (A).

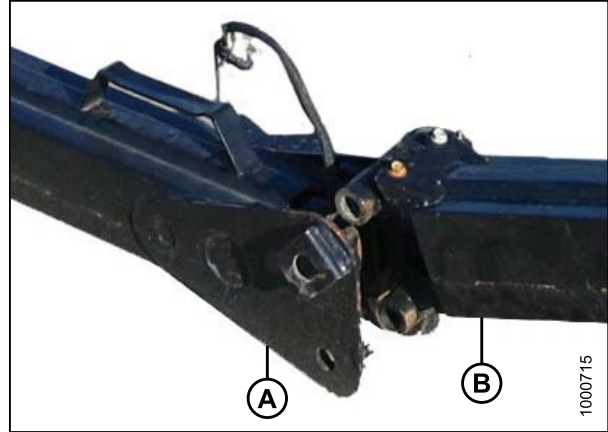


**Figure 3.294: Tow-Bar**



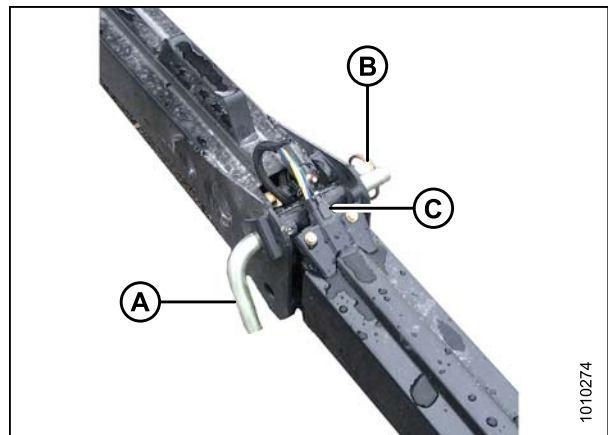
## OPERATION

9. Lift the outer half (B) and insert it into the inner half (A).



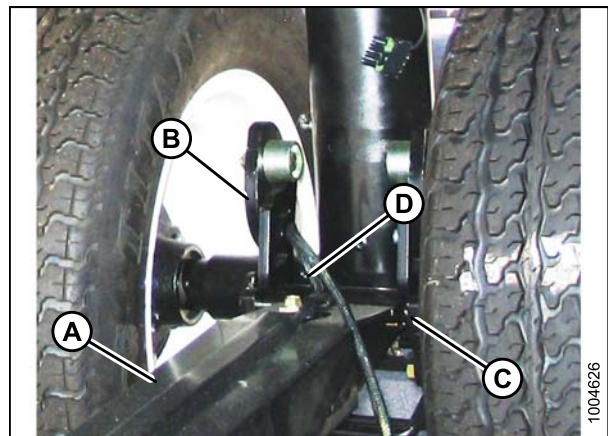
**Figure 3.295: Tow-Bar**

10. Secure the two halves together with L-pin (A), then turn to lock. Secure pin with ring (B).
11. Connect electrical harness to connector (C).



**Figure 3.296: Tow-Bar**

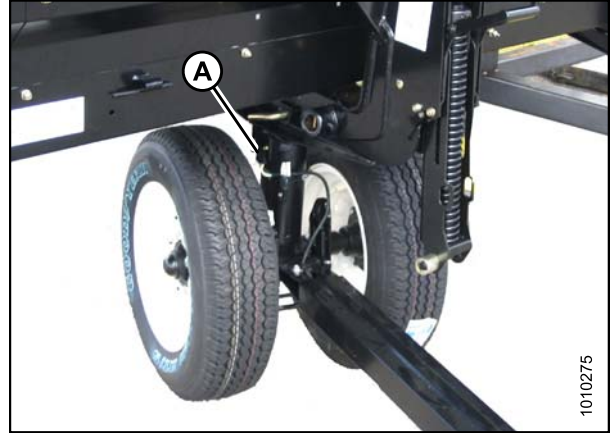
12. Position tow-bar (A) onto axle, and push against latch (B) until tow-bar pins drop into hooks (C).
13. Check that latch (B) has engaged tow-bar.
14. Install clevis pin (D), and secure with hairpin.



**Figure 3.297: Tow-Bar**

## OPERATION

15. Make the electrical connection (A) at the front wheel.



**Figure 3.298: Tow-Bar Harness**

## 3.14 Storing Header

The following should be done at the end of each operating season:

### CAUTION

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

### CAUTION

**Cover cutterbar and knife guards to prevent injury from accidental contact.**

1. Clean header thoroughly.
2. Store machine in a dry, protected place if possible. If stored outside, always cover with a waterproof canvas or other protective material.

#### **NOTE:**

If machine is stored outside, remove drapers and store in a dark, dry place. 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.

3. Lower header onto blocks to keep cutterbar off the ground.
4. Lower reel completely. If stored outside, tie reel to frame to prevent rotation caused by wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen drive belts.
7. Lubricate 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 knife components to prevent rust.
8. Check for worn or broken components, and repair or order replacements from your MacDon Dealer. Attention to these items right away will save time and effort at beginning of next season.
9. Replace or tighten any missing or loose hardware.

## 4 Header Attachment/Detachment

This chapter includes instructions for setting up, attaching, and detaching the header.

Combine	Section
Case IH 7010, 8010, 7120, 8120, 9120, 5088, 6088, 7088, 5130, 6130, 7130, 7230, 8230, 9230	<a href="#">4.2 Case IH Combines, page 199</a>
John Deere 60, 70, and S Series	<a href="#">4.3 John Deere Combines, page 207</a>
Lexion 500, 700 (R Series)	<a href="#">4.4 Lexion Combines, page 214</a>
New Holland CR, CX	<a href="#">4.5 New Holland Combines, page 222</a>
Gleaner R and S Series, Challenger 660, 670, 680B, 540C, 560C, Massey Ferguson 9690, 9790, 9895, 9520, 9540, 9560	<a href="#">4.6 Challenger, Gleaner, and Massey Ferguson Combines, page 231</a>

### NOTE:

Ensure applicable functions (Automatic Header Height Control [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.

## 4.1 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 [7 Troubleshooting, page 417](#).

### 4.1.1 Using Flighting Extensions

The flighting extension kit may improve feeding in certain crops such as rice or heavy green crop, but it is not recommended in cereal crops.

Refer to [6.4.1 CA25 Feed Auger Flighting, page 413](#) for more information.

For servicing information, refer to:

- [Installing Flighting Extensions, page 297](#)
- [Removing Flighting Extensions, page 298](#)

### 4.1.2 Using 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.

For servicing information, refer to [5.11 Adapter Stripper Bars and Feed Deflectors, page 332](#).

### 4.1.3 Adjusting Auger Speed

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, 20-, 22-, and 26-tooth sprockets are available to change adapter feed auger speed. Consult with your MacDon Dealer.

## 4.2 Case IH Combines

### 4.2.1 Attaching Header to Case IH Combine

To attach the FD75 FlexDraper® header and adapter to a Case IH combine, complete the following steps:

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

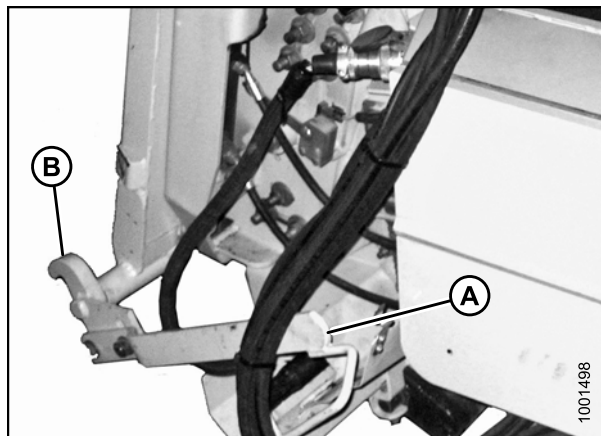


Figure 4.1: Feeder House Locks

#### CAUTION

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

2. Start engine and slowly drive combine up to header until feeder house saddle (A) is directly under the adapter top cross member (B).
3. Raise feeder house slightly to lift header ensuring feeder saddle is properly engaged in adapter frame.

#### DANGER

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

4. Stop engine and remove key from ignition.

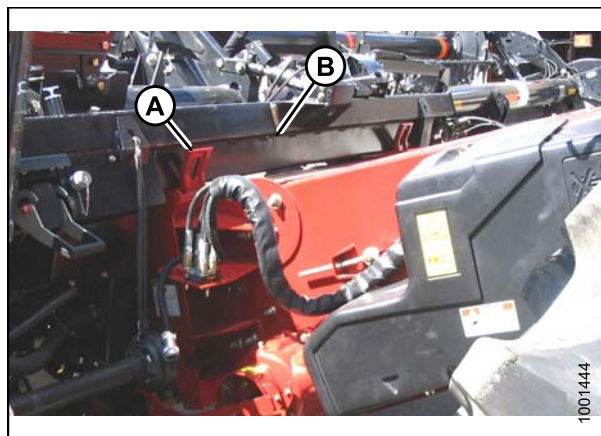
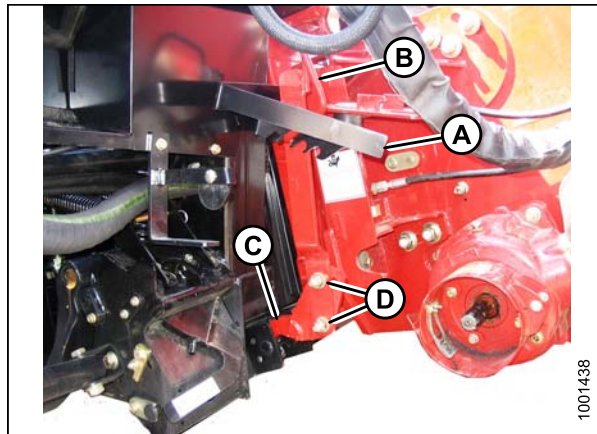


Figure 4.2: Combine and Adapter

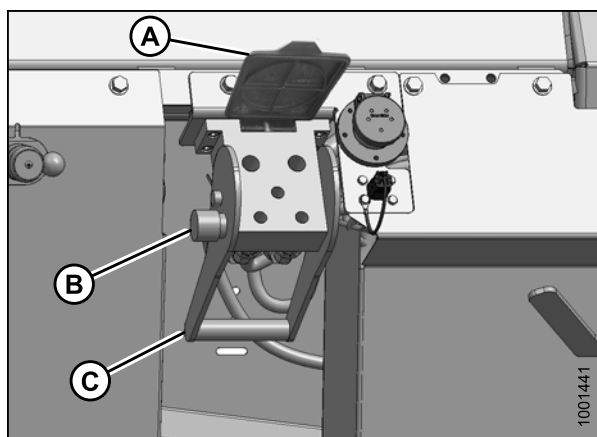
## HEADER ATTACHMENT/DETACHMENT

5. 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.
6. Push down on lever (A) so that slot in lever engages handle and locks handle in place.
7. If lock (C) does not fully engage pin on adapter when lever (A) and handle (B) are engaged, loosen bolts (D), and adjust lock as required. Retighten bolts.



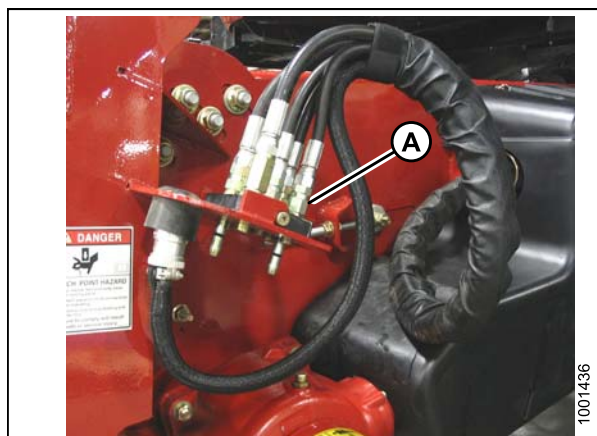
**Figure 4.3: Combine and Adapter**

8. Open receptacle cover (A) on header.
9. Push in lock button (B), and pull handle (C) to full open position.
10. Clean coupler face on header.



**Figure 4.4: Adapter Receptacle**

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

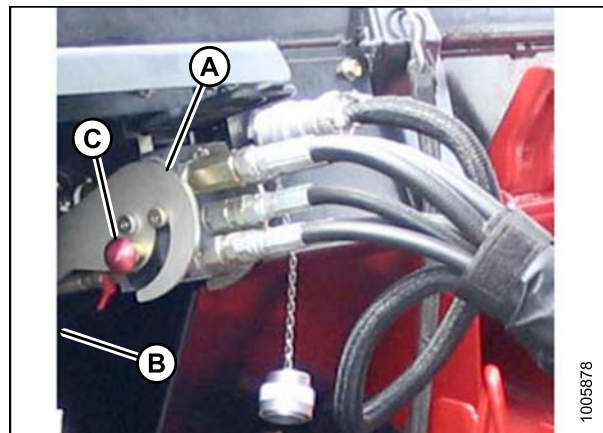


**Figure 4.5: Combine**



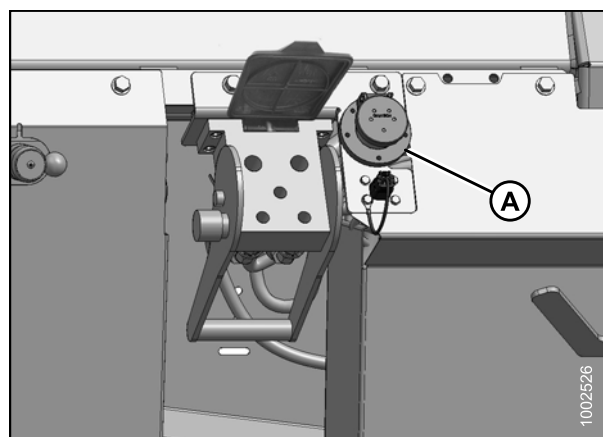
## HEADER ATTACHMENT/DETACHMENT

12. Position coupler on header receptacle (A), and push handle (B) (not shown) to engage coupler pins into receptacle.
13. Push handle (B) to closed position until lock button (C) snaps out.



**Figure 4.6: Hydraulic Connection**

14. Remove cover on electrical receptacle (A). Ensure receptacle is clean and has no signs of damage.



**Figure 4.7: Electrical Receptacle**

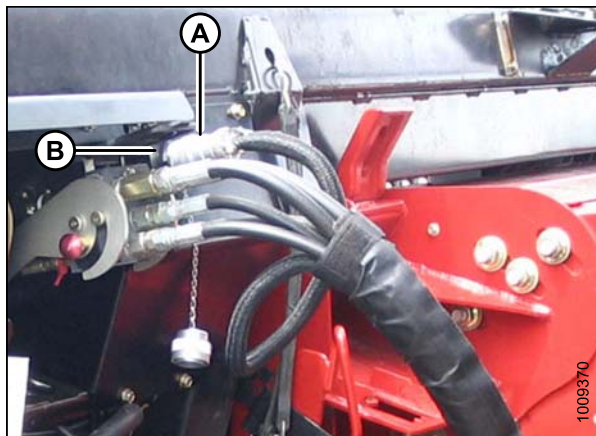
15. Remove electrical connector (A) from storage cup on combine, and route to adapter receptacle.



**Figure 4.8: Combine**

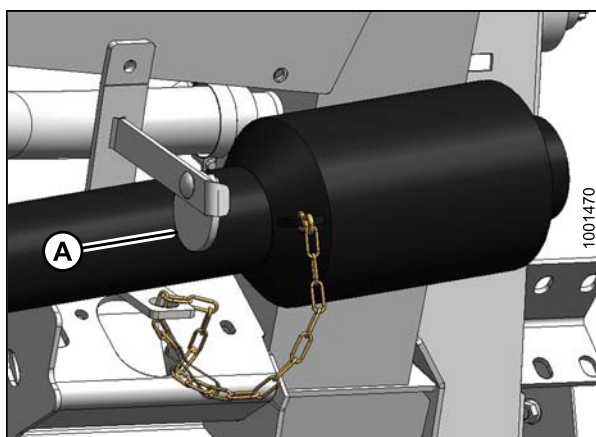
## HEADER ATTACHMENT/DETACHMENT

16. Align lugs on connector (A) with slots in receptacle (B), push connector onto receptacle, and turn collar on connector to lock it in place.



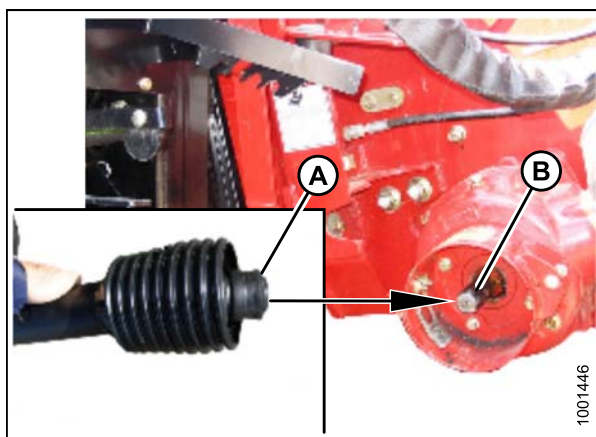
**Figure 4.9: Electrical Connection**

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



**Figure 4.10: Disc on Adapter Driveline Storage Hook**

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



**Figure 4.11: Combine Output Shaft**

## HEADER ATTACHMENT/DETACHMENT

19. Disengage both adapter float locks by moving latch (A) away from adapter, and moving both header float lock levers (B) down (UNLOCK).

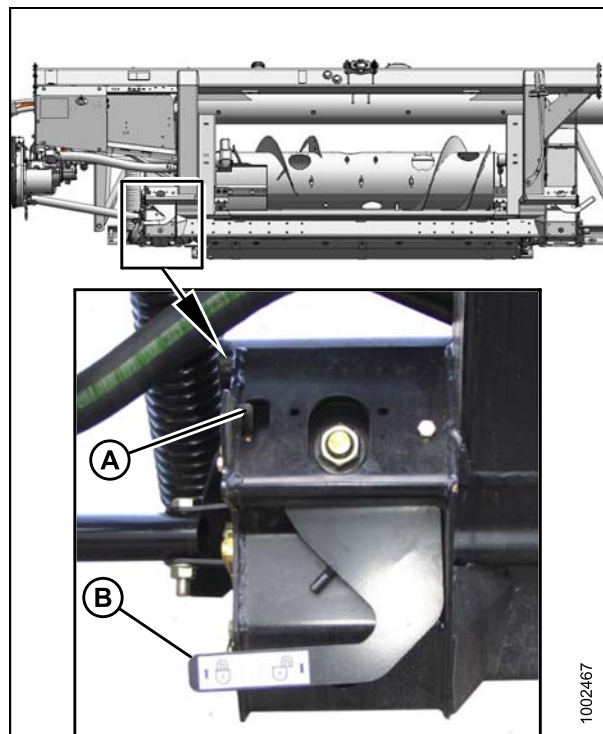


Figure 4.12: Float Lock in UNLOCK Position

### 4.2.2 Detaching Header from Case IH Combine

To detach the header from a Case IH combine, 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 safety props before going under header for any reason.

#### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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

## HEADER ATTACHMENT/DETACHMENT

- Engage both float locks by moving lever (A) upwards at each lock until it latches into lock position.

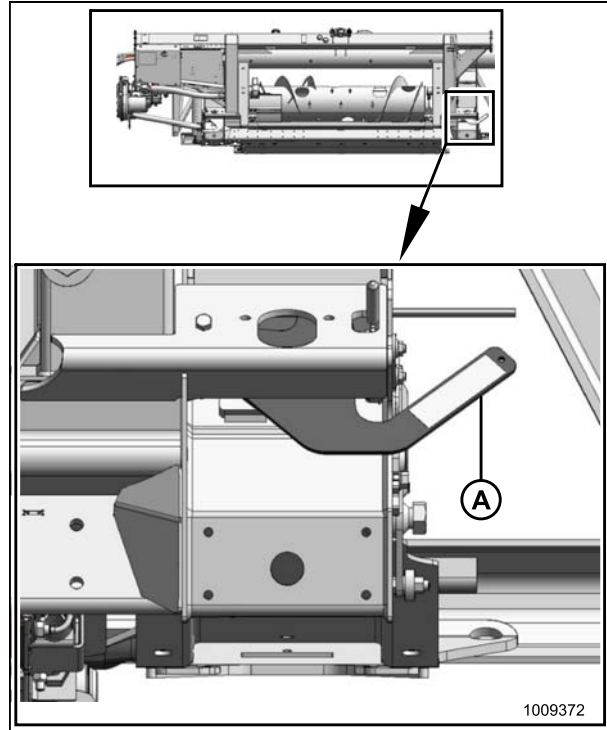


Figure 4.13: Float Locked

**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 [3.7.1 Cutting Height, page 52](#).

**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 [3.7.1 Cutting Height, page 52](#).

- Disconnect driveline (A) from combine.

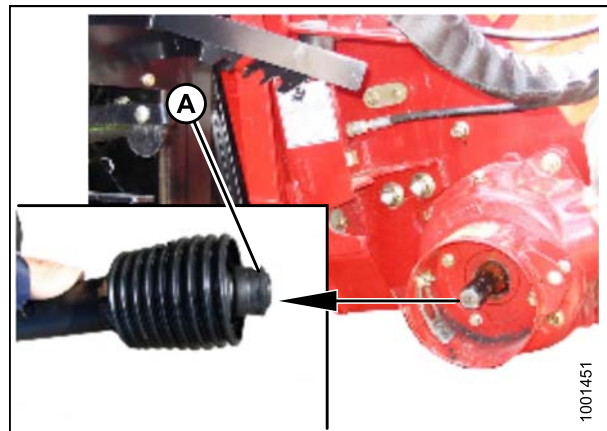
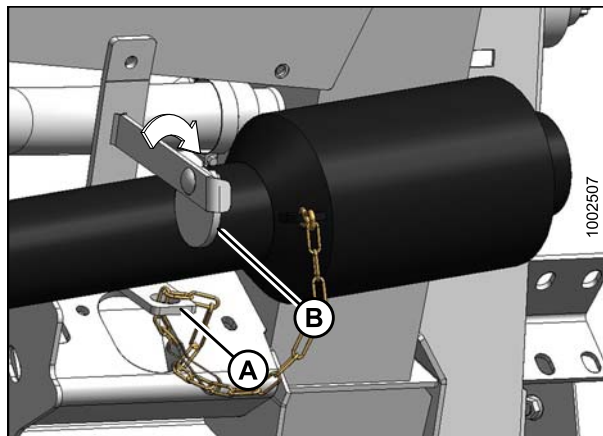


Figure 4.14: Driveline

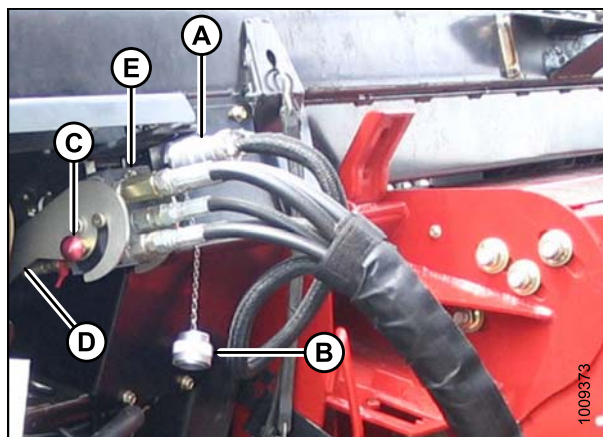
## HEADER ATTACHMENT/DETACHMENT

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



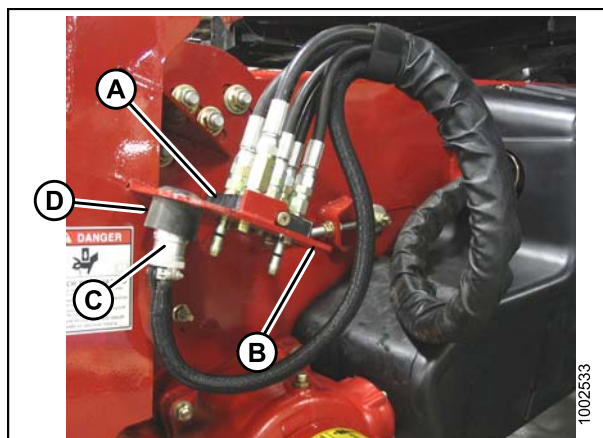
**Figure 4.15: Driveline**

- Remove electrical connector (A) and replace cover (B).
- Push in lock button (C) and pull handle (D) to release coupler (E).



**Figure 4.16: Multicoupler**

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

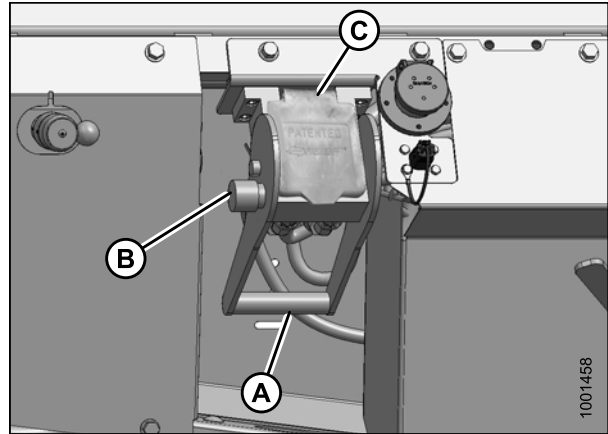


**Figure 4.17: Coupler Storage**



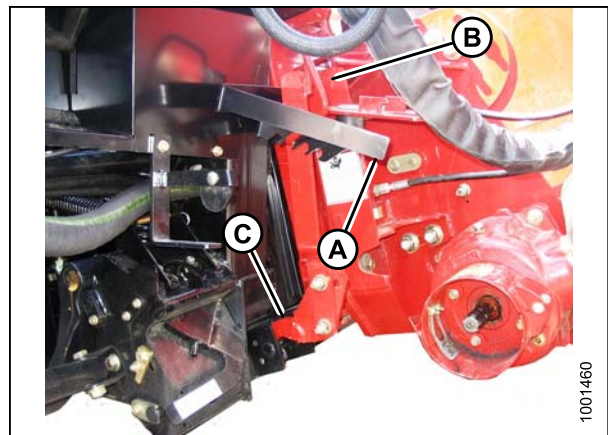
## HEADER ATTACHMENT/DETACHMENT

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



**Figure 4.18: Header Receptacle**

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 header.



**Figure 4.19: Feeder House Locks**

## 4.3 John Deere Combines

### 4.3.1 Attaching Header to John Deere Combine

To attach the header to a John Deere combine, complete the following steps:

#### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

1. Push handle (A) on combine coupler receptacle toward feeder house to retract pins (B) at bottom corners of feeder house. Clean receptacle.

#### **CAUTION**

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

2. Start engine and slowly drive combine up to header until feeder house saddle (C) is directly under the adapter top cross member (D).
3. Raise feeder house to lift header ensuring feeder saddle is properly engaged in adapter frame.
4. Position header slightly off the ground.
5. Stop engine and remove key from ignition.
6. Pull handle (A) on adapter to release coupler (B) from storage position. Remove coupler and push handle back into adapter to store.

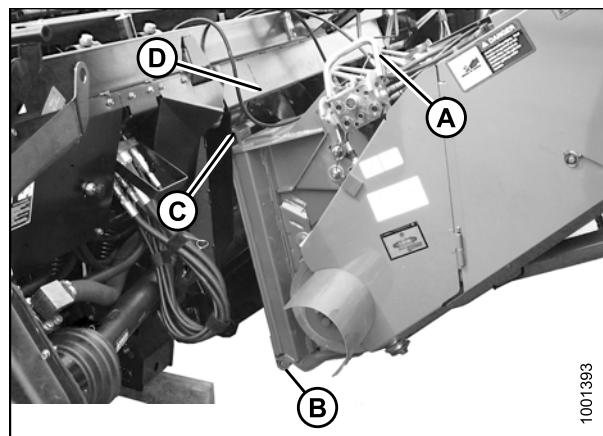


Figure 4.20: Combine and Adapter

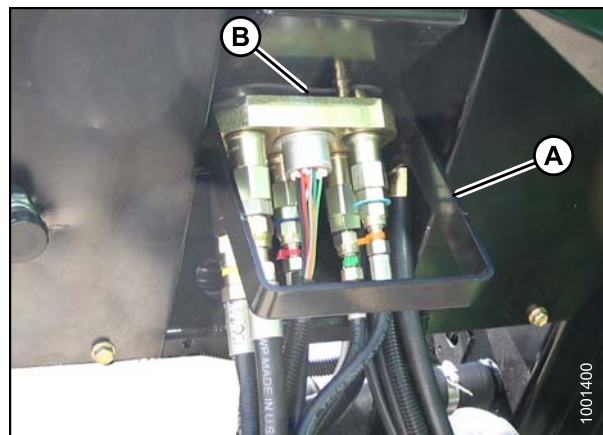


Figure 4.21: Coupler Storage

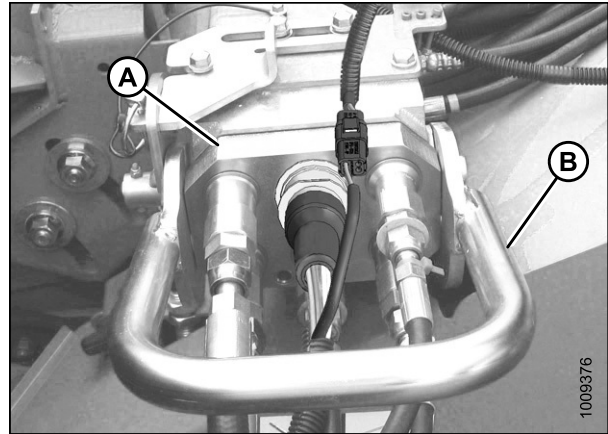


## HEADER ATTACHMENT/DETACHMENT

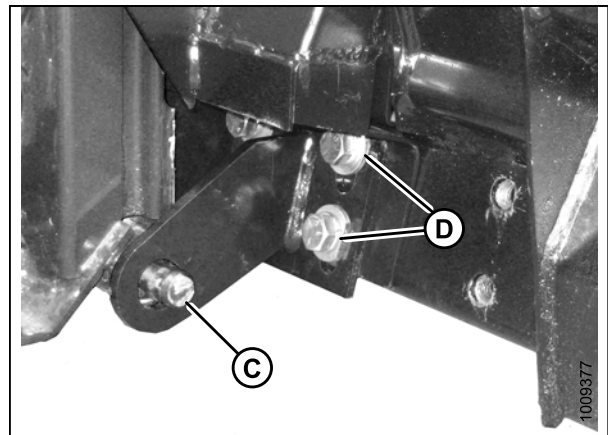
7. Position coupler (A) onto receptacle, and pull handle (B) so that lugs on coupler are engaged into handle.
8. Pull handle (B) to full horizontal position and ensure that coupler (A) is fully engaged into receptacle, and that the two feeder house pins (C) are engaged into adapter brackets.
9. Check that bolts (D) are tight.

**NOTE:**

If pins (C) do not fully engage adapter brackets, loosen bolts (D) and adjust bracket as required. Retighten bolts.

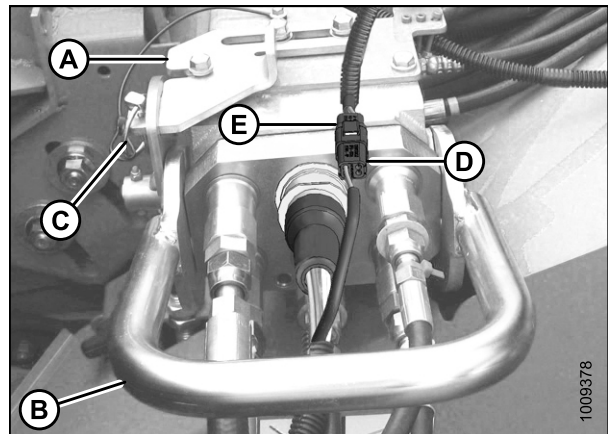


**Figure 4.22: Coupler**



**Figure 4.23: Feeder House Pin**

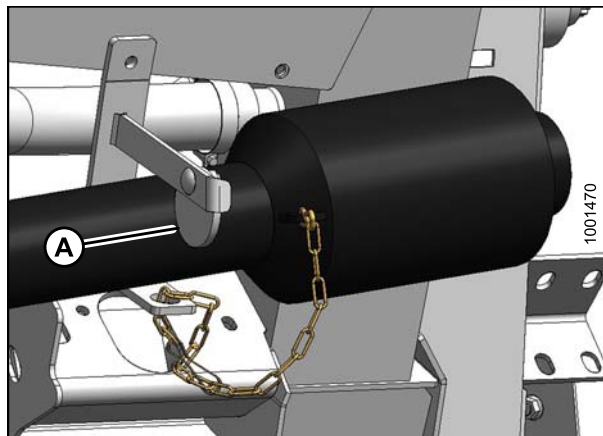
10. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).
11. Connect harness (D) to combine connector (E) (only if adapter is equipped with reel fore-aft/header tilt selector).



**Figure 4.24: Coupler**

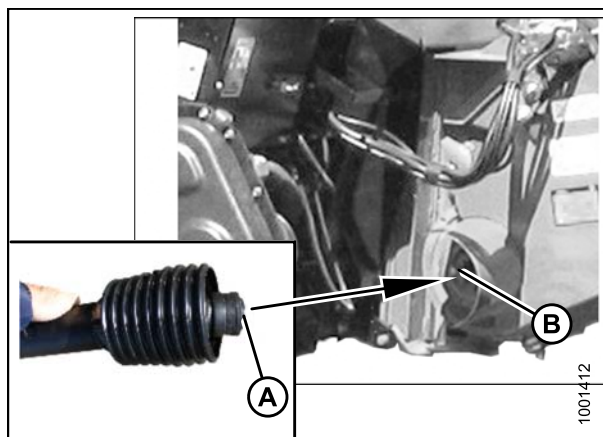
## HEADER ATTACHMENT/DETACHMENT

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



**Figure 4.25: Driveline**

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



**Figure 4.26: Driveline**

## HEADER ATTACHMENT/DETACHMENT

14. Disengage both adapter float locks by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

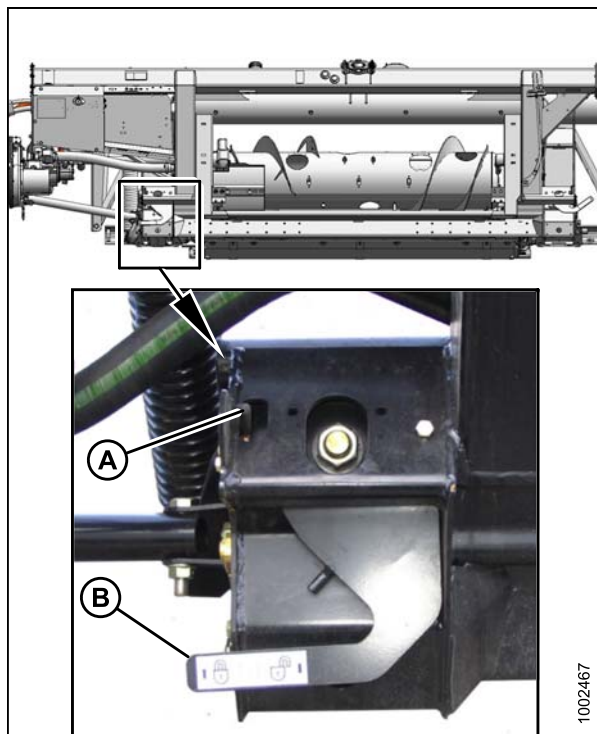


Figure 4.27: Float Lock in UNLOCK Position

### 4.3.2 Detaching Header from John Deere Combine

#### **⚠ DANGER**

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

#### **⚠ DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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

## HEADER ATTACHMENT/DETACHMENT

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

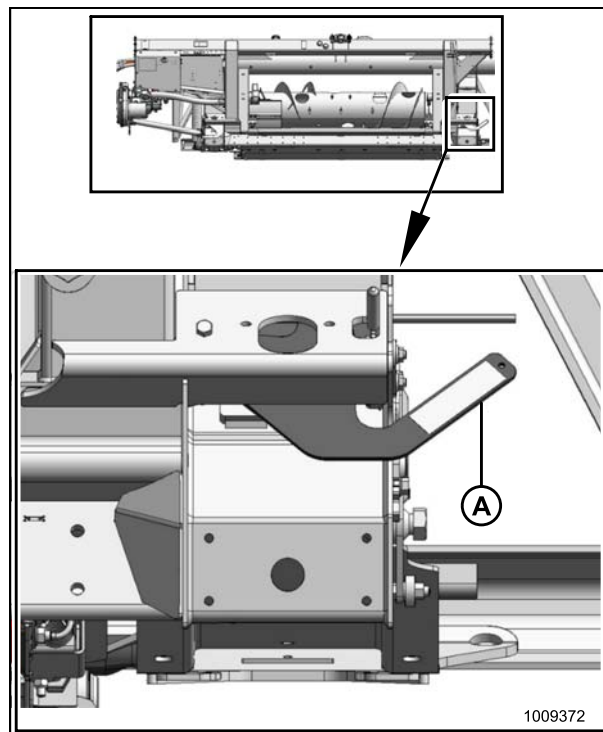


Figure 4.28: Float Locked

### 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 [3.7.1 Cutting Height, page 52](#).

### 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 [3.7.1 Cutting Height, page 52](#).

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

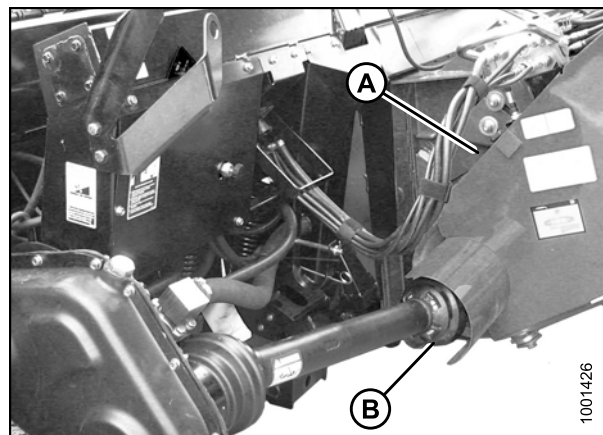
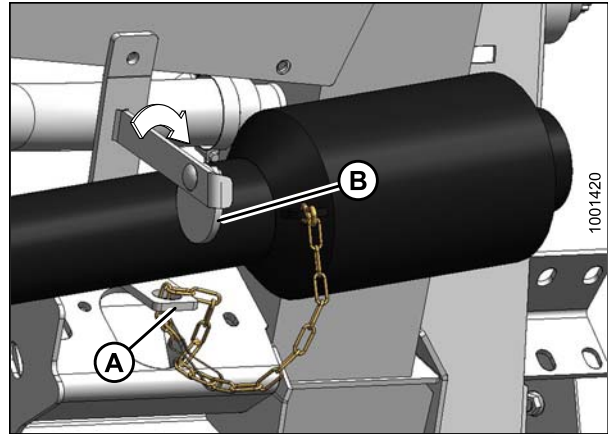


Figure 4.29: Driveline

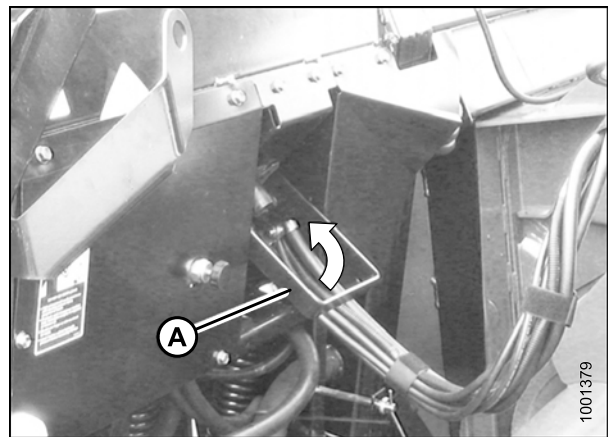
## HEADER ATTACHMENT/DETACHMENT

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



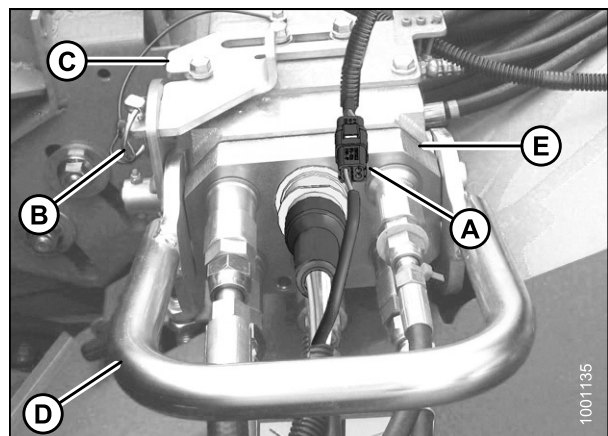
**Figure 4.30: Driveline**

- Lift handle (A) on adapter.



**Figure 4.31: Coupler Storage**

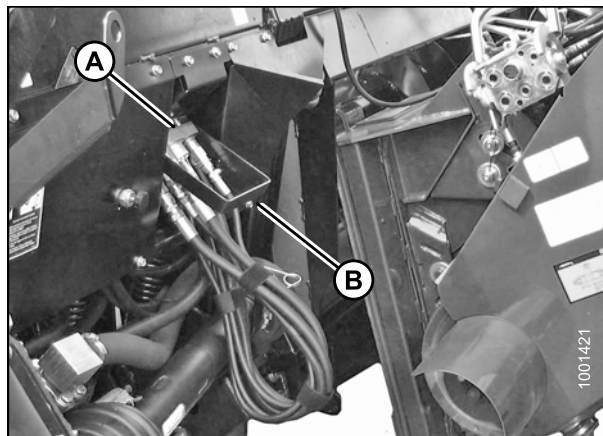
- Disconnect harness (A) from combine connector.
- Remove lynch pin (B) and slide lock (C) to release handle (D).
- Lift handle (D) to full vertical position to release coupler (E) from combine.



**Figure 4.32: Multicoupler**

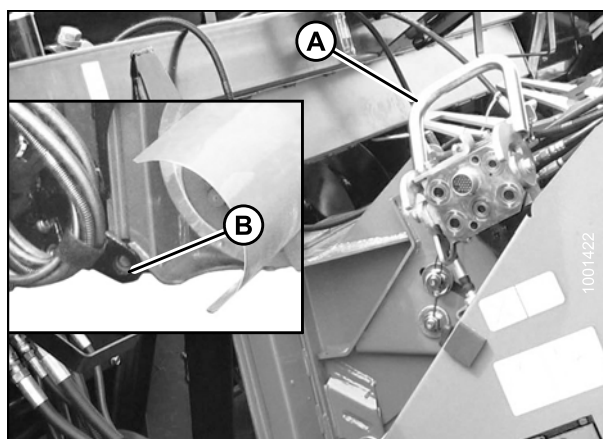
## HEADER ATTACHMENT/DETACHMENT

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



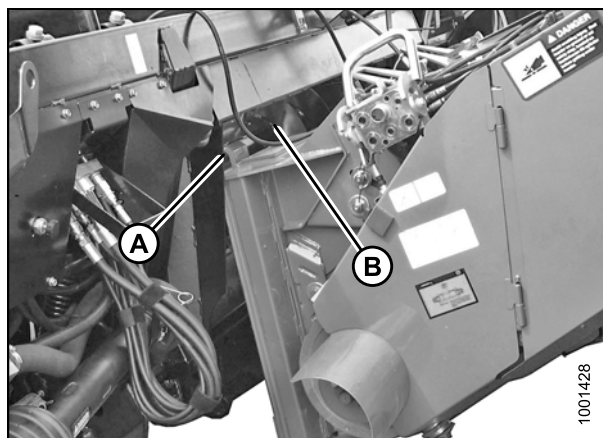
**Figure 4.33: Coupler Storage**

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



**Figure 4.34: Feeder House Locks**

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



**Figure 4.35: Header/Feeder House**

## 4.4 Lexion Combines

### 4.4.1 Attaching Header to Lexion Combine

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

To attach the header to a Lexion combine, complete the following steps:

1. Move handle (A) on the CA25 Combine Adapter into raised position, and ensure pins (B) at bottom corners of adapter are retracted.

#### CAUTION

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

2. Start engine and slowly drive combine up to adapter until feeder house is directly under the adapter top cross member.
3. Raise feeder house to lift header, ensuring feeder house posts (A) are properly engaged in adapter frame (B).
4. Position header slightly off the ground.
5. Stop engine and remove key from ignition.

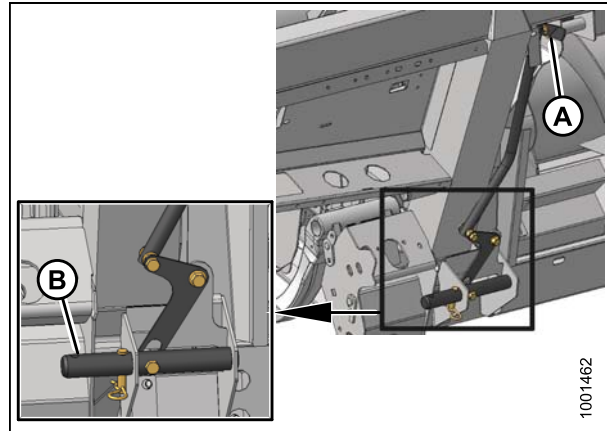


Figure 4.36: Pins Retracted

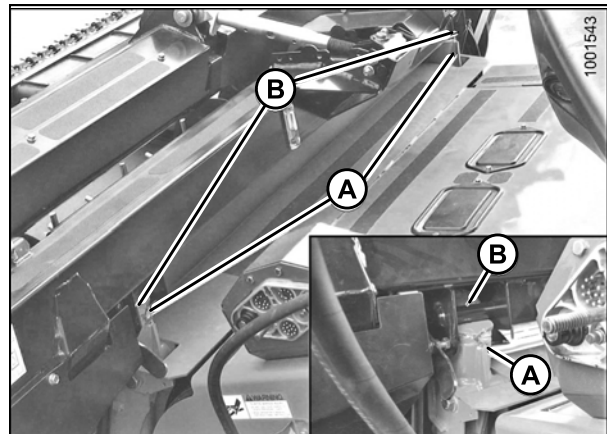
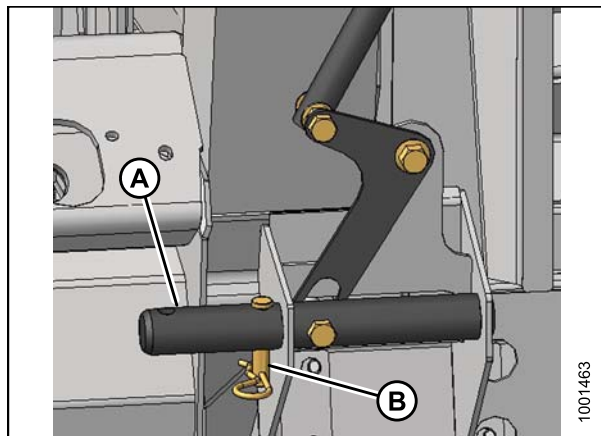


Figure 4.37: Header on Combine



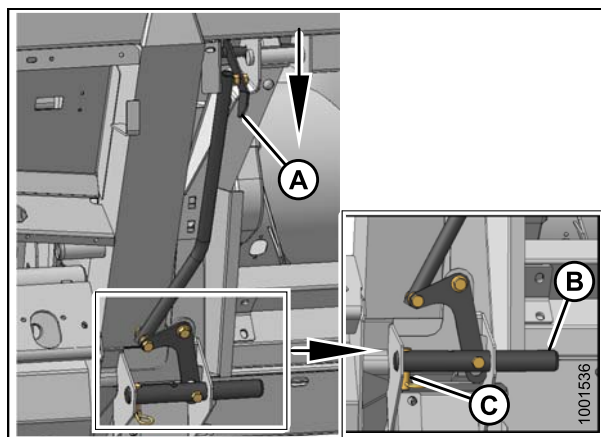
## HEADER ATTACHMENT/DETACHMENT

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



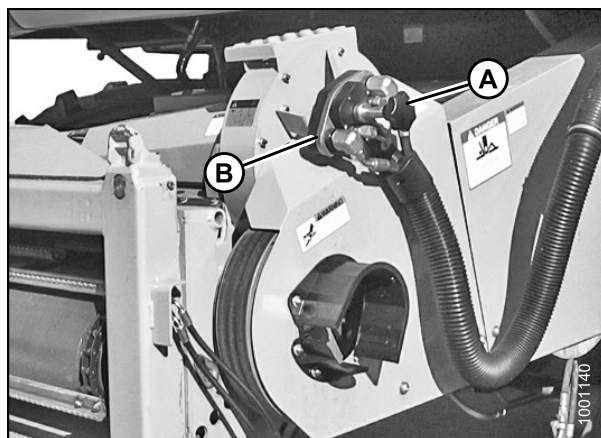
**Figure 4.38: Locking Pins**

7. Lower handle (A) to engage adapter pins (B) into feeder house. Reinsert locking pin (C) and secure with hairpin.
8. Stop engine and remove key from ignition.



**Figure 4.39: Engaging Pins**

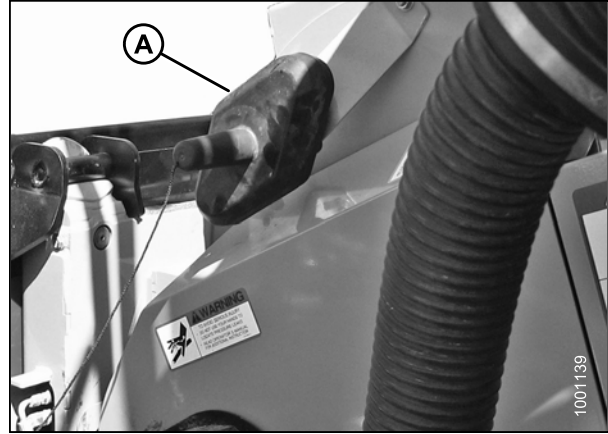
9. Unscrew knob (A) on combine coupler (B) to release coupler from combine receptacle and clean coupler.



**Figure 4.40: Combine Coupler**

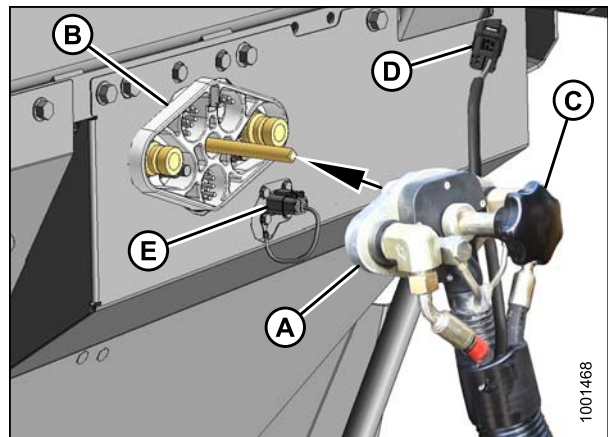
## HEADER ATTACHMENT/DETACHMENT

10. Place adapter receptacle cover (A) onto combine receptacle.



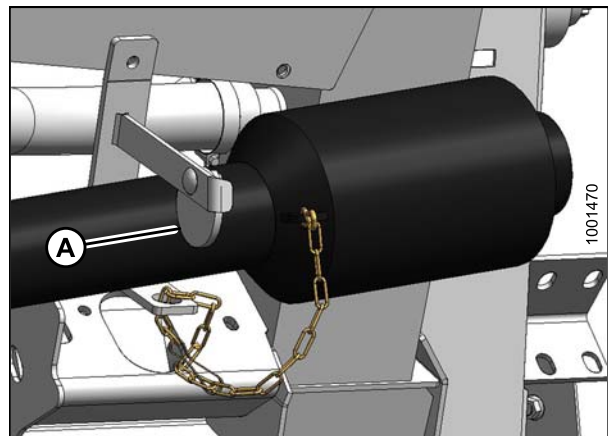
**Figure 4.41: Receptacle Cover**

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



**Figure 4.42: Coupler**

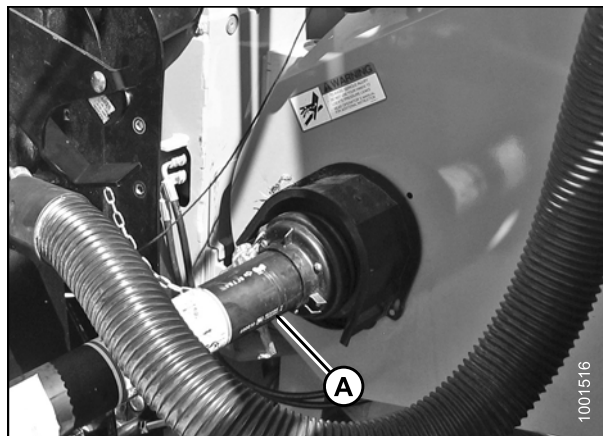
14. Rotate disc (A) on adapter driveline storage hook and remove driveline from hook.



**Figure 4.43: Driveline**

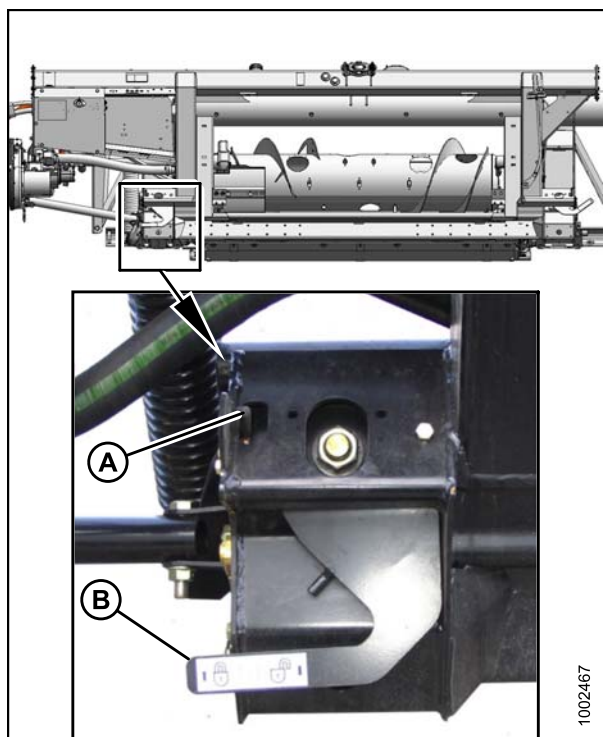
## HEADER ATTACHMENT/DETACHMENT

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



**Figure 4.44: Driveline and Output Shaft**

16. Disengage both adapter float locks by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).



**Figure 4.45: Float Lock in UNLOCK Position**

## 4.4.2 Detaching Header from Lexion Combine

### DANGER

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

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

To detach a header from combine, follow these steps:

1. Choose a level area. Position header slightly off the ground. Stop engine and remove key.
2. Engage the adapter float locks by lifting lever (A) at both locks until it latches into the lock position.

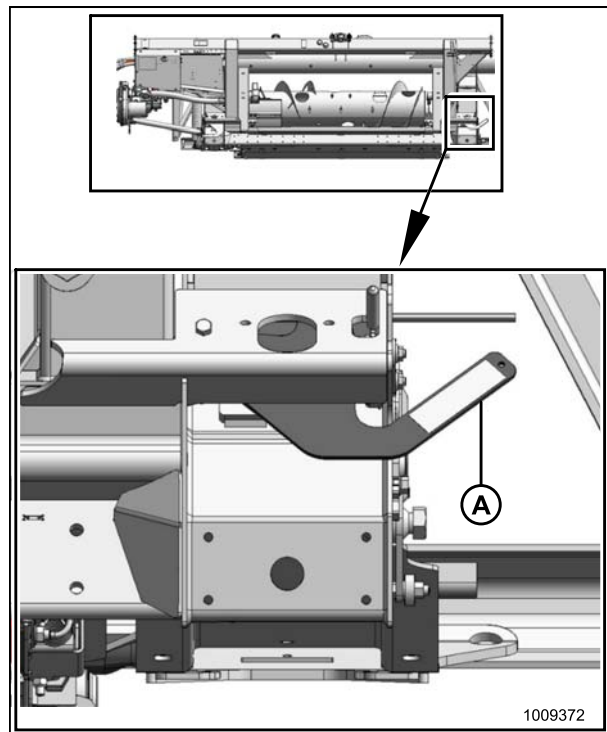


Figure 4.46: Float Locked

#### **IMPORTANT:**

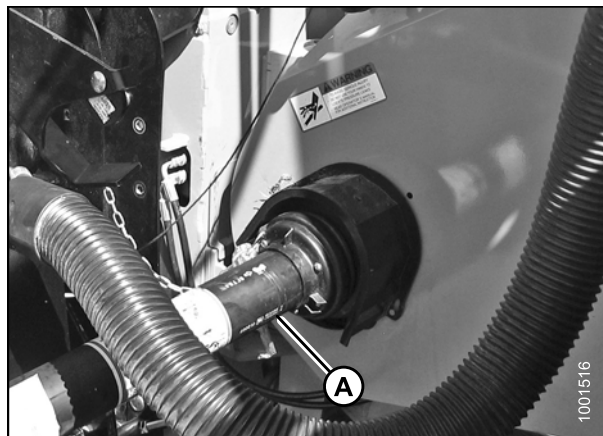
If slow speed transport wheels are installed, header may be detached in either Transport or Field mode. If detaching with wheel in Field mode, set wheels to storage or uppermost working position; otherwise, header may tilt forward so that reattachment will be difficult. Refer to [3.7.1 Cutting Height, page 52](#).

#### **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 [3.7.1 Cutting Height, page 52](#).

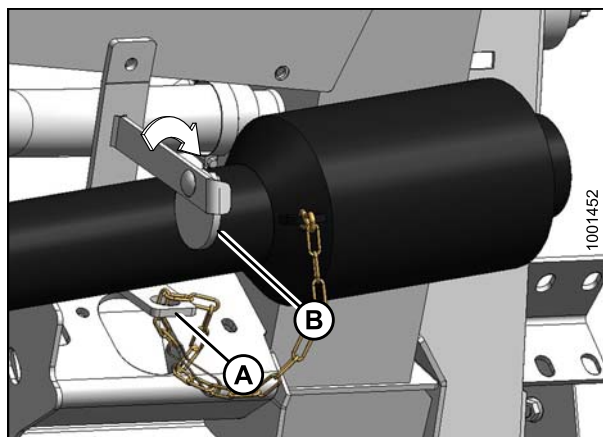
## HEADER ATTACHMENT/DETACHMENT

3. Disconnect driveline (A) from combine.



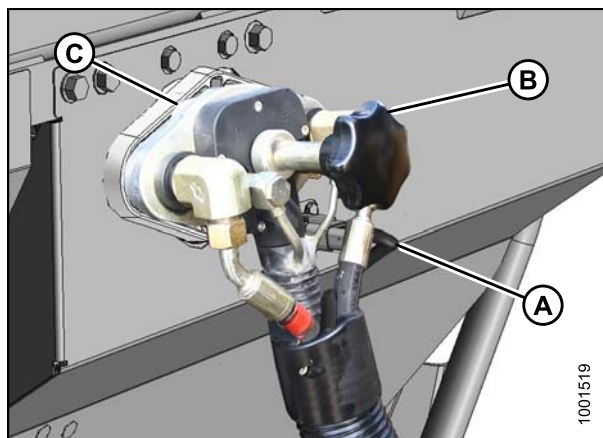
**Figure 4.47: Driveline**

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



**Figure 4.48: Driveline**

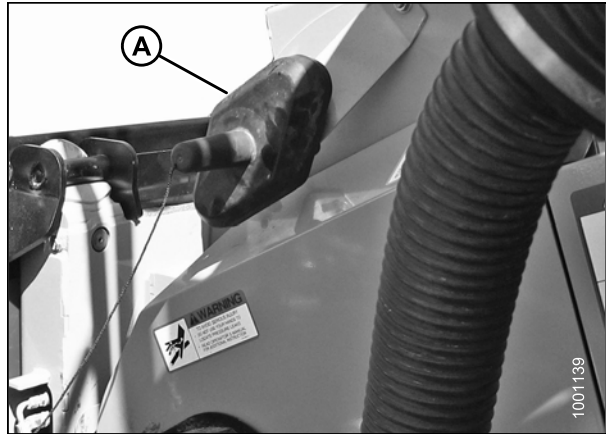
5. Unplug electrical connector (A) from adapter receptacle.
6. Unscrew knob (B) on coupler (C) to release coupler from adapter.



**Figure 4.49: Coupler**

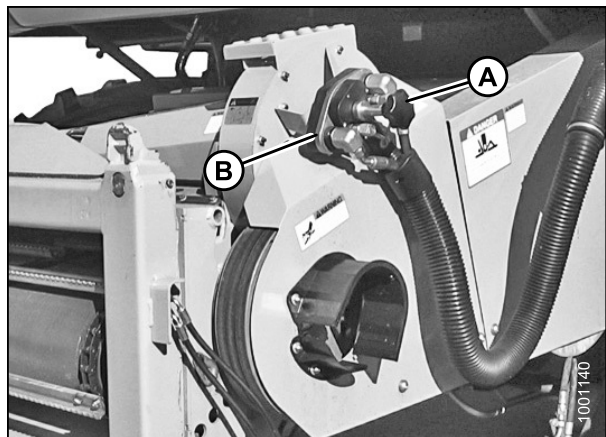
## HEADER ATTACHMENT/DETACHMENT

7. Remove cover (A) from combine receptacle.



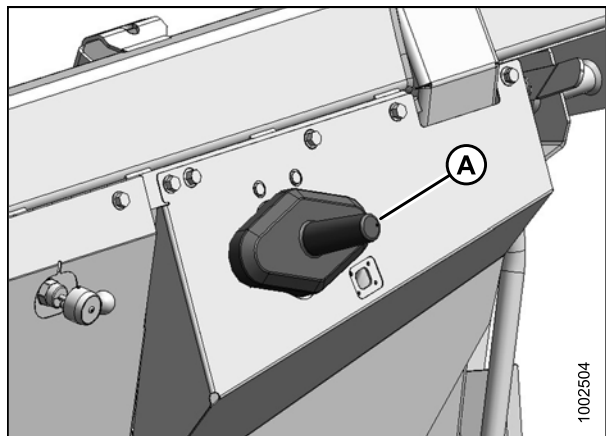
**Figure 4.50: Cover**

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



**Figure 4.51: Combine Coupler**

9. Place cover (A) on adapter receptacle.

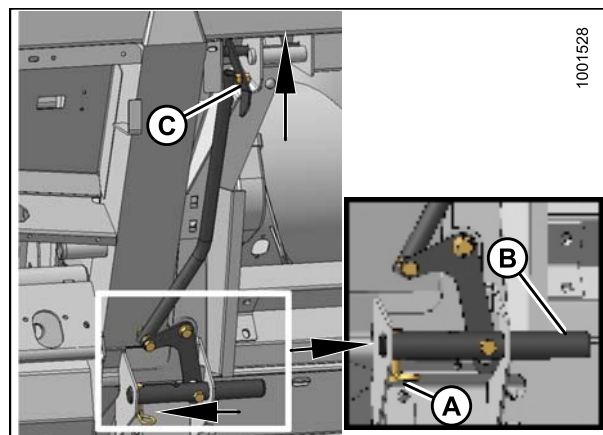


**Figure 4.52: Adapter**



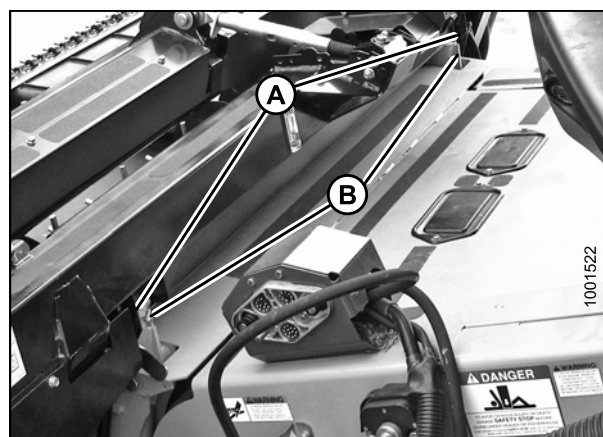
## HEADER ATTACHMENT/DETACHMENT

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 4.53: Feeder House Locks**

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



**Figure 4.54: Header on Combine**



## 4.5 New Holland Combines

### 4.5.1 Attaching Header to New Holland CR/CX Combine

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

To attach a header to a New Holland combine, complete the following steps:

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

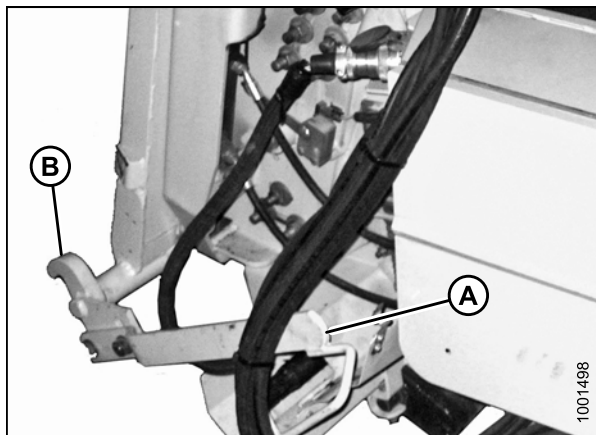


Figure 4.55: Feeder House Locks

#### CAUTION

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

2. Start engine and slowly drive combine up to adapter until feeder house saddle (A) is directly under the adapter top cross member (B).
3. Raise feeder house to lift header ensuring feeder saddle is properly engaged in adapter frame.
4. Stop engine and remove key from ignition.

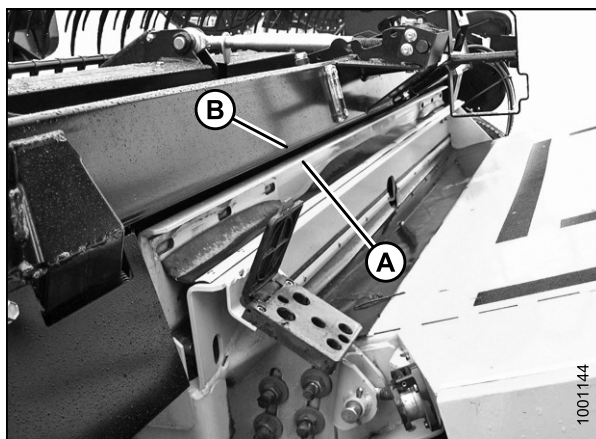
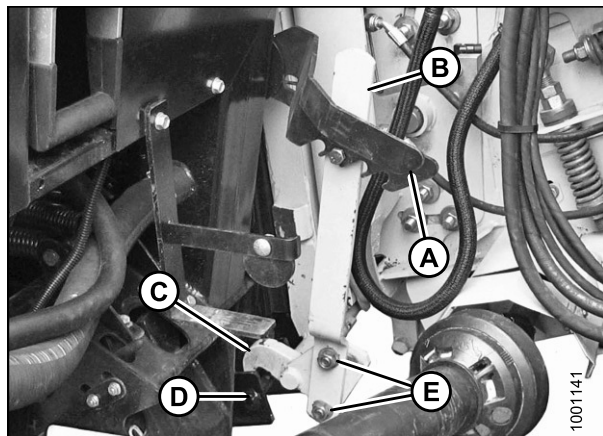


Figure 4.56: Header on Combine

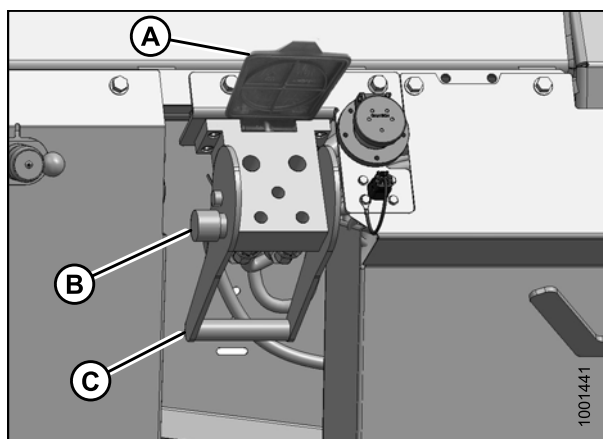
## HEADER ATTACHMENT/DETACHMENT

5. 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.
6. Push down on lever (A) so that slot in lever engages handle and locks handle in place.
7. If hooks (C) do not fully engage pins (D) on adapter when (A) and (B) are engaged, loosen bolts (E) and adjust locks as required. Retighten bolts.



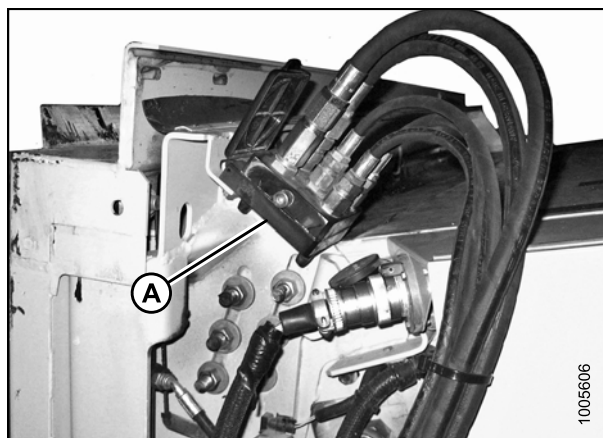
**Figure 4.57: Feeder House Locks**

8. Open receptacle cover (A) on adapter.
9. Push in lock button (B) and pull handle (C) to full open position.
10. Clean coupler face on adapter.



**Figure 4.58: Adapter Receptacle**

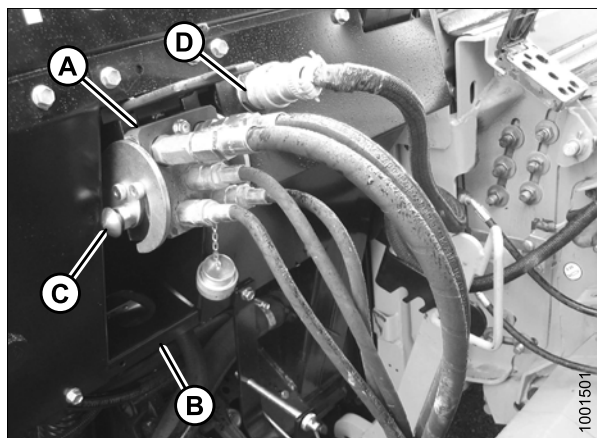
11. Remove hydraulic quick coupler (A) from storage plate on combine, and clean mating surface of coupler.



**Figure 4.59: Combine Coupler**

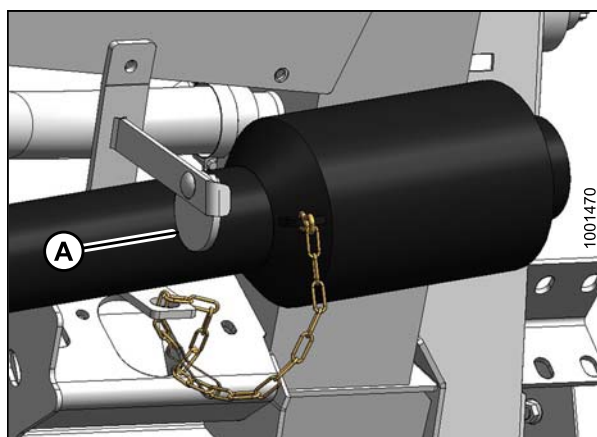
## HEADER ATTACHMENT/DETACHMENT

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



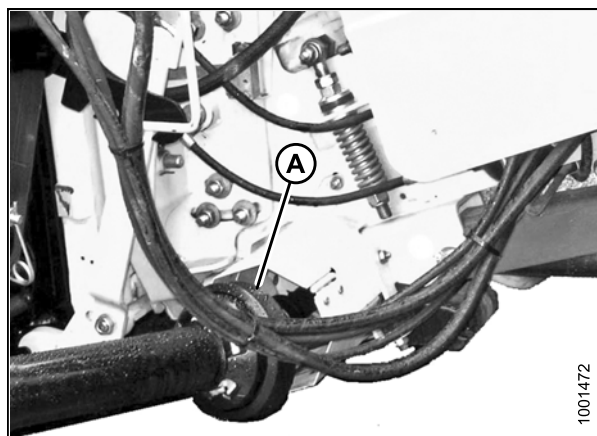
**Figure 4.60: Connections**

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



**Figure 4.61: Driveline**

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



**Figure 4.62: Driveline and Output Shaft**

## HEADER ATTACHMENT/DETACHMENT

19. Disengage both adapter float locks by moving latch (A) away from adapter, and moving both header float lock levers (B) down (UNLOCK).

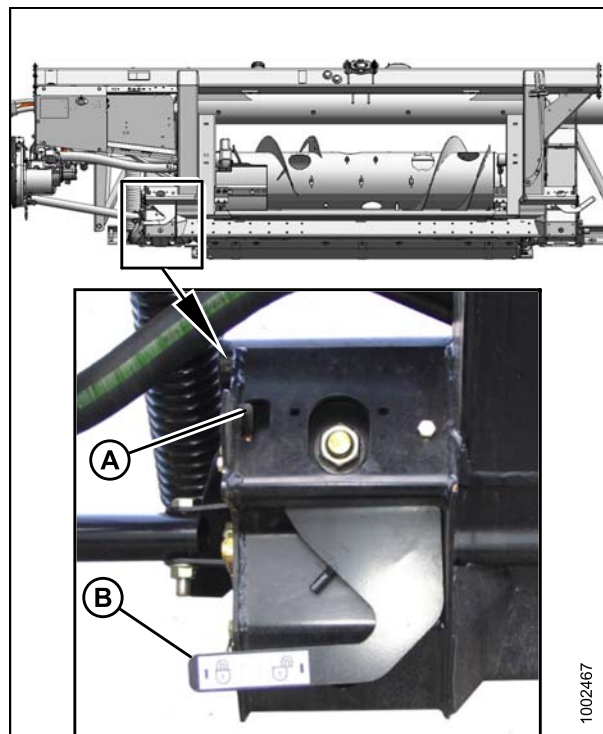


Figure 4.63: Float Lock in UNLOCK Position

### 4.5.2 Detaching Header from New Holland Combine

#### DANGER

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

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

To detach a header from a New Holland combine, follow these steps:

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

## HEADER ATTACHMENT/DETACHMENT

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

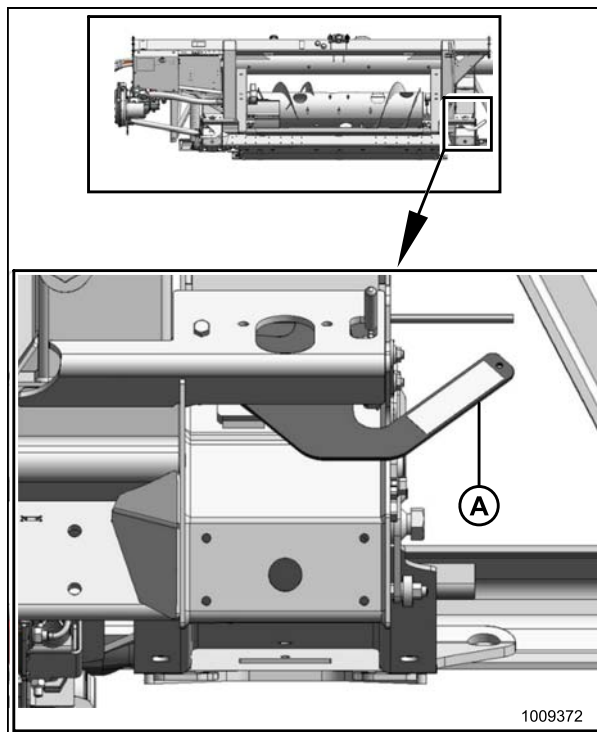


Figure 4.64: Float Locked

### 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 [3.7.1 Cutting Height, page 52](#).

### 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 [3.7.1 Cutting Height, page 52](#).

- Disconnect driveline (A) from combine.

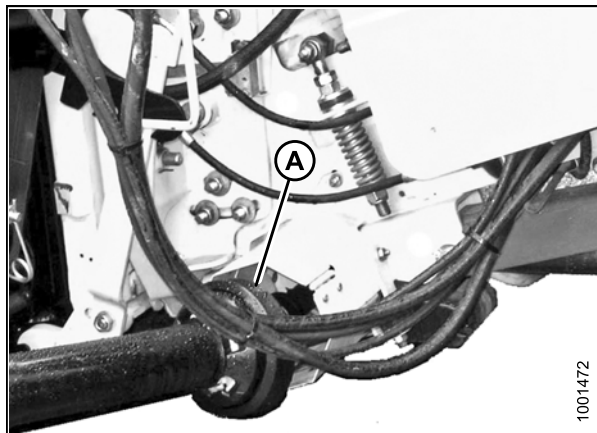
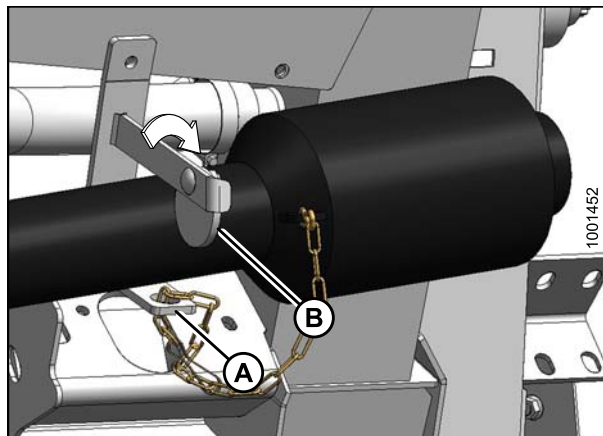


Figure 4.65: Driveline

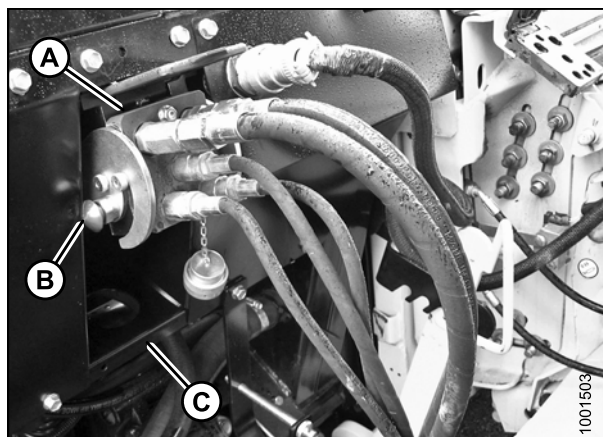
## HEADER ATTACHMENT/DETACHMENT

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



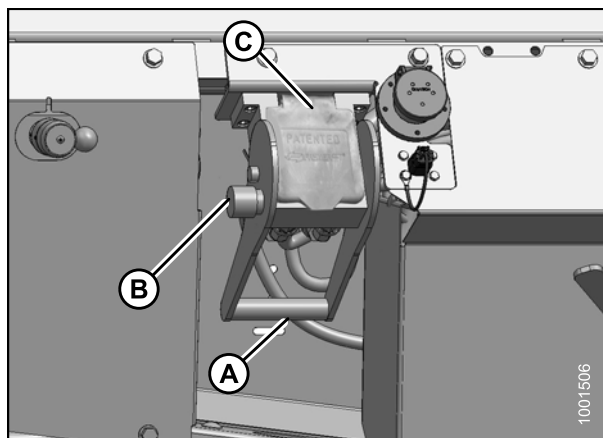
**Figure 4.66: Driveline**

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



**Figure 4.67: Adapter Connections**

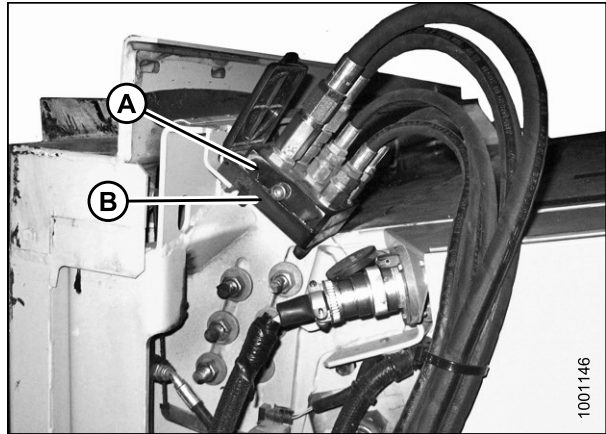
- Push handle (A) to closed position until lock button (B) snaps out. Close cover (C).



**Figure 4.68: Adapter Receptacles**

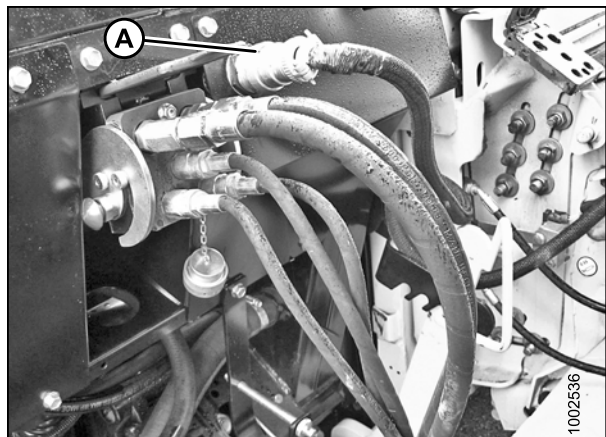
## HEADER ATTACHMENT/DETACHMENT

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



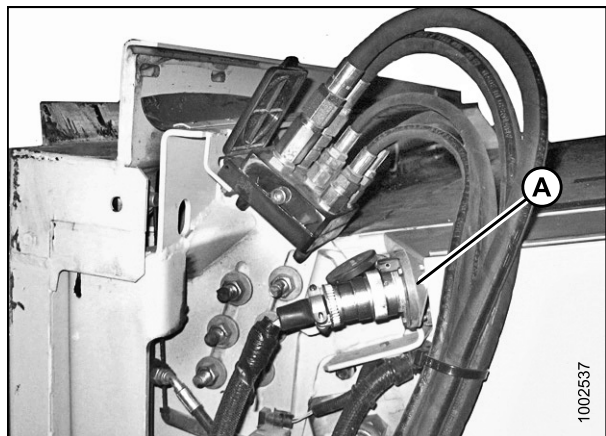
**Figure 4.69: Combine Coupler**

8. Remove electrical connector (A) from adapter.



**Figure 4.70: Adapter Connections**

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

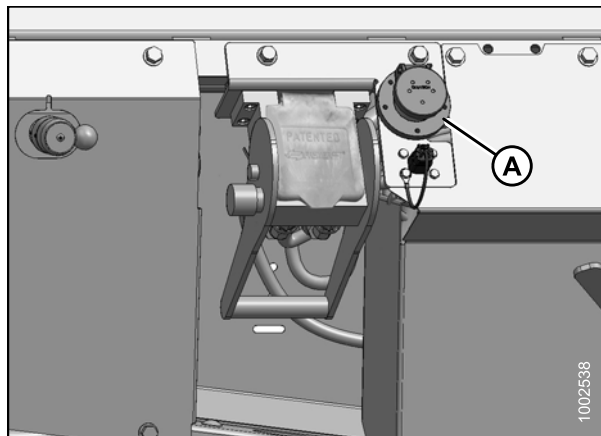


**Figure 4.71: Combine Couplers**



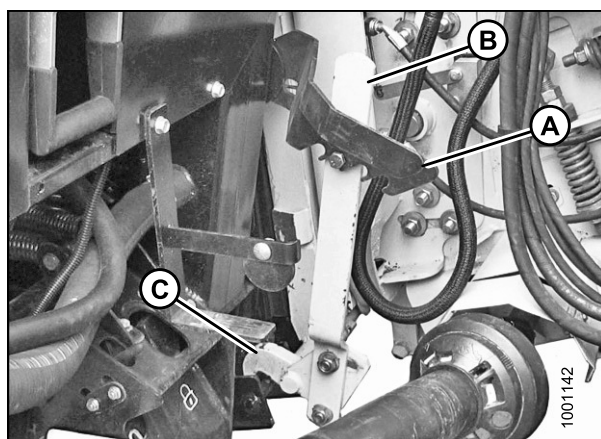
## HEADER ATTACHMENT/DETACHMENT

10. Replace cover (A) on adapter receptacle.



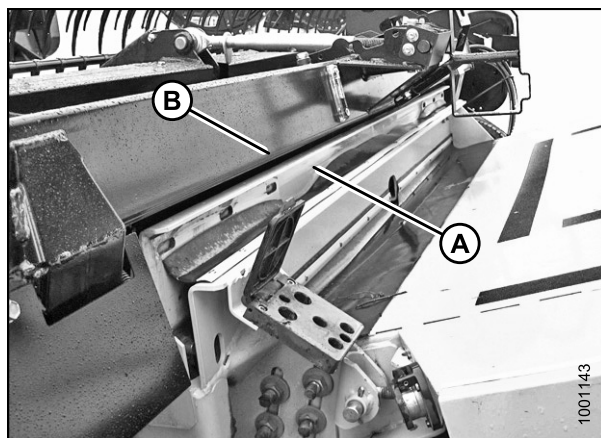
**Figure 4.72: Adapter Receptacles**

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



**Figure 4.73: Feeder House Locks**

12. Lower feeder house until feeder house (A) disengages adapter support (B).
13. Slowly back combine away from header.



**Figure 4.74: Header on Combine**

### 4.5.3 CR Feeder Deflectors

**For New Holland combines:** Feeder short deflectors have been factory-installed on the adapter 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. Refer to [5.11.3 Replacing Feed Deflectors, page 332](#).

Long feeder kits are provided for narrow feeder house combines, and can be installed to replace the short feeder deflectors.

Combine Model	Feeder House Size	Feeder Kit Size	Part Number
CR970, 9070, 9080, 9090	Wide	Short: 7-7/8 in. (200 mm)	MD #B5405
CR960, 9060, 940, 9040	Narrow	Long: 12-13/16 in. (325 mm)	MD #B5404

## 4.6 Challenger, Gleaner, and Massey Ferguson Combines

### 4.6.1 Attaching Header to Challenger, Gleaner, or Massey Ferguson Combine

To attach a header to a Challenger, Gleaner, or Massey Ferguson combine, complete the following steps:

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

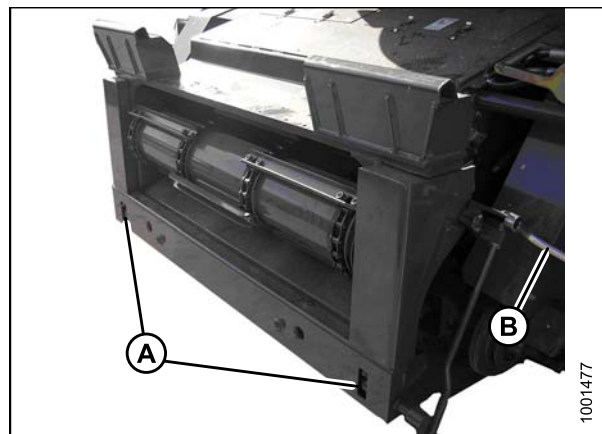


Figure 4.75: Challenger and Massey Ferguson

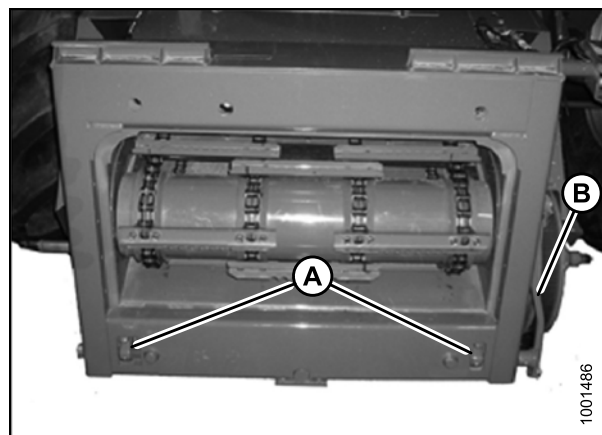


Figure 4.76: Gleaner R and S Series

## HEADER ATTACHMENT/DETACHMENT

### CAUTION

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

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

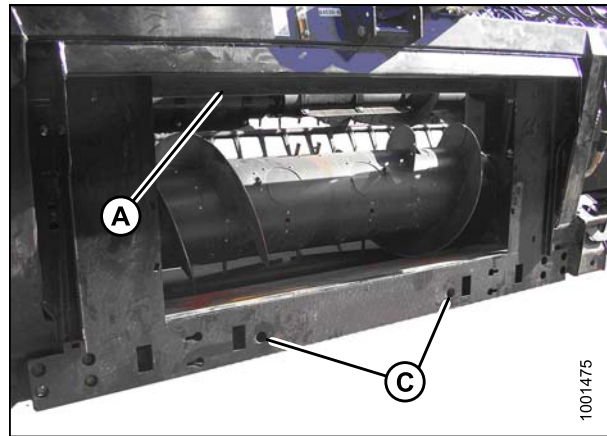


Figure 4.77: Adapter

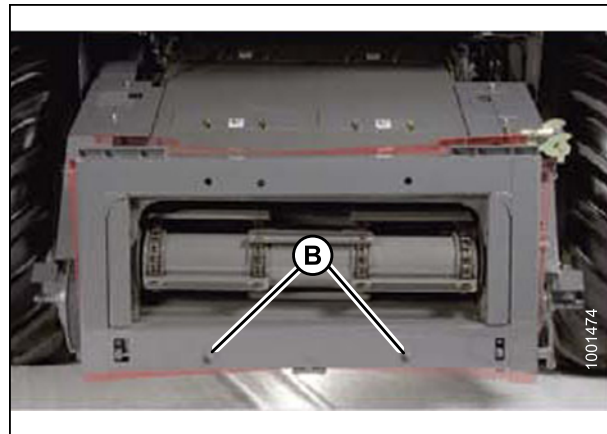


Figure 4.78: Challenger and Massey Ferguson Alignment Pins

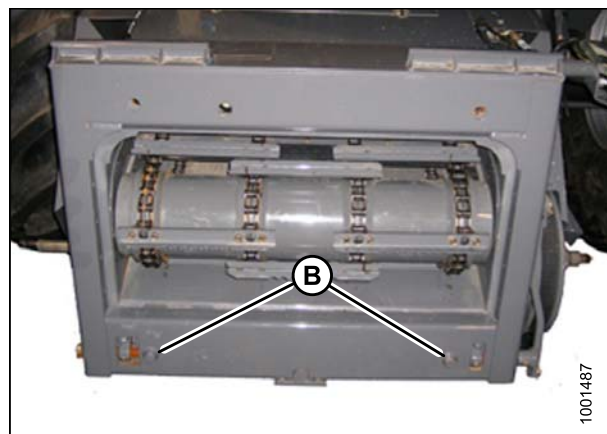


Figure 4.79: Gleaner R and S Series Alignment Pins

## HEADER ATTACHMENT/DETACHMENT

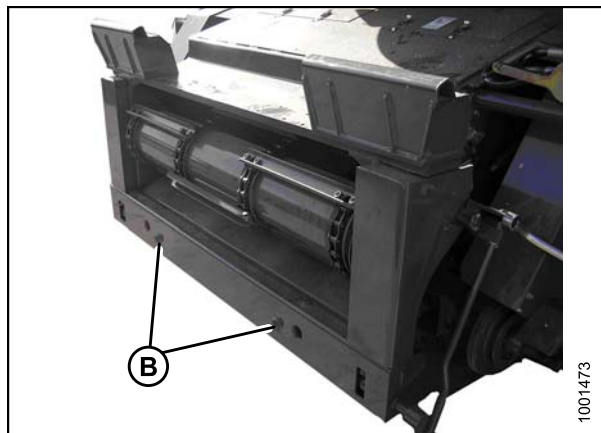


Figure 4.80: Gleaner LL Model Alignment Pins

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

### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

5. Stop engine and remove key from ignition.
6. Engage lugs (A) with adapter using lock handle (B).



Figure 4.81: Feeder House and Adapter

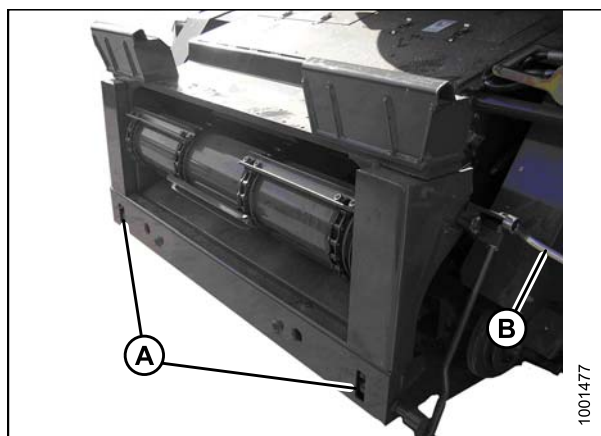
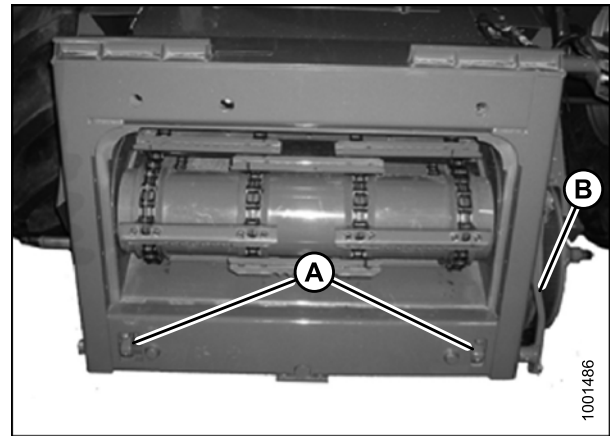


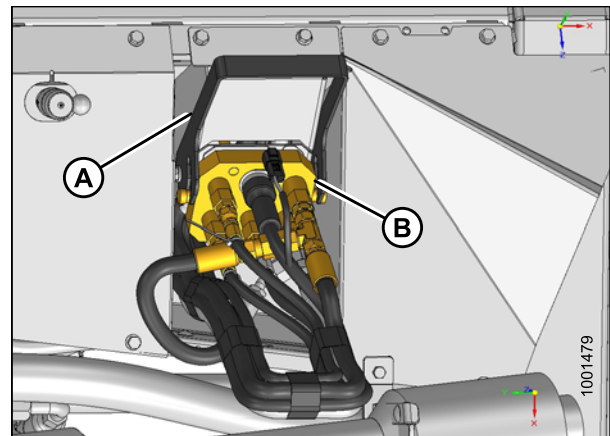
Figure 4.82: Challenger and Massey Ferguson

## HEADER ATTACHMENT/DETACHMENT



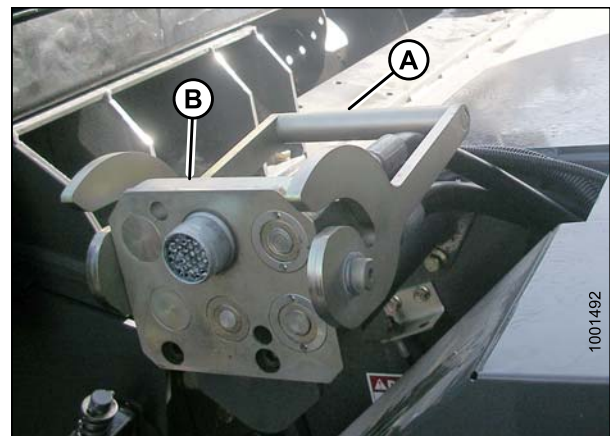
**Figure 4.83: Gleaner R and S Series**

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



**Figure 4.84: Adapter Coupler**

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

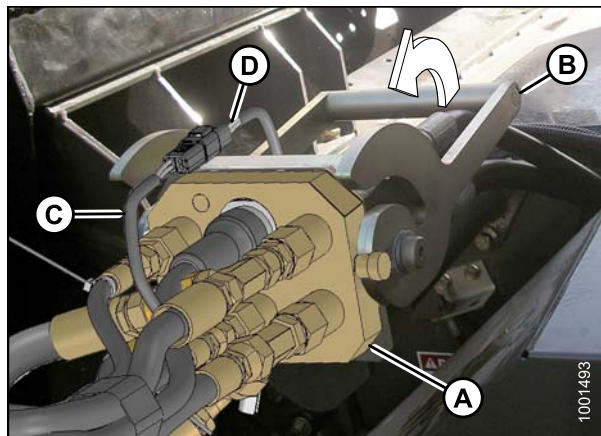


**Figure 4.85: Combine Receptacle**



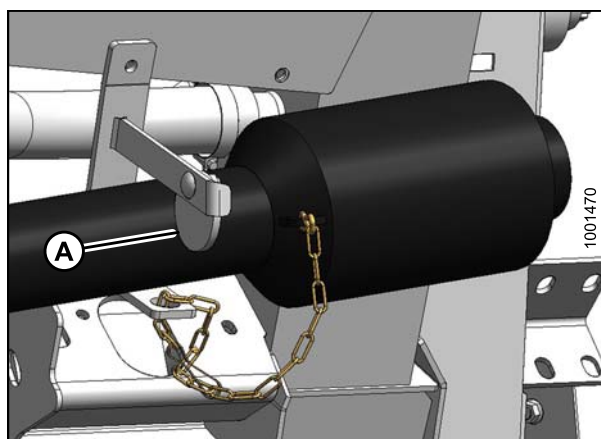
## HEADER ATTACHMENT/DETACHMENT

10. Position coupler (A) onto combine receptacle, and pull handle (B) to fully engage coupler into receptacle.
11. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).



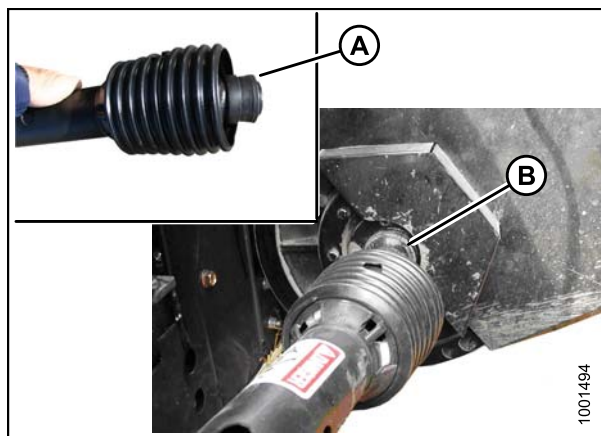
**Figure 4.86: Coupler**

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



**Figure 4.87: Driveline**

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



**Figure 4.88: Driveline**



## HEADER ATTACHMENT/DETACHMENT

14. Disengage both adapter float locks by moving latch (A) away from adapter, and moving both header float lock levers (B) down (UNLOCK).
15. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (UNLOCK).

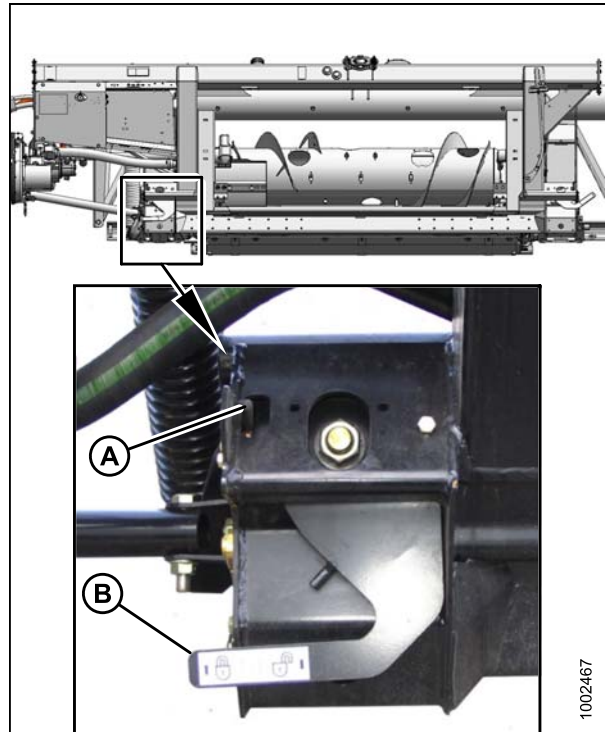


Figure 4.89: Float Lock in UNLOCK Position

### 4.6.2 Detaching Header from Challenger, Gleaner, or Massey Ferguson Combine

To detach a header from a Challenger, Gleaner, or Massey Ferguson combine, follow these steps:

#### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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 safety props before going under header for any reason.

## HEADER ATTACHMENT/DETACHMENT

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

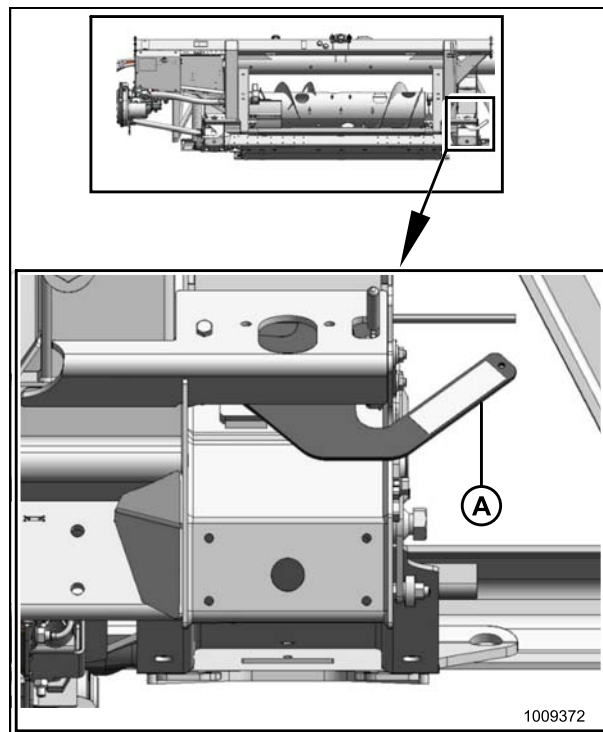


Figure 4.90: Float Locked

**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 [3.7.1 Cutting Height, page 52](#).

**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 [3.7.1 Cutting Height, page 52](#).

- Disconnect driveline from combine output shaft (A).

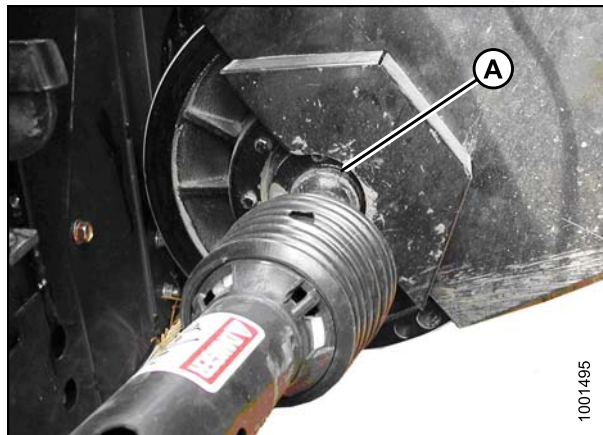
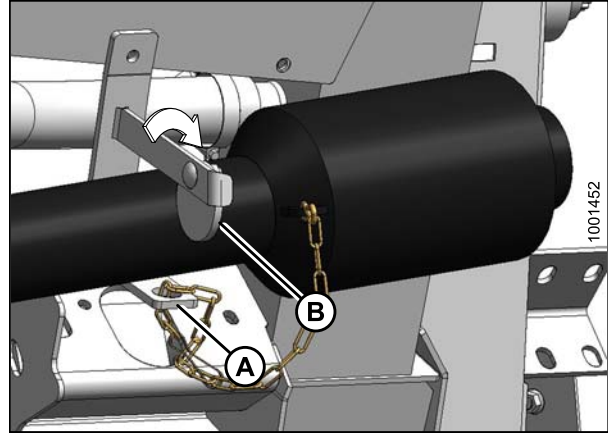


Figure 4.91: Disconnect Driveline

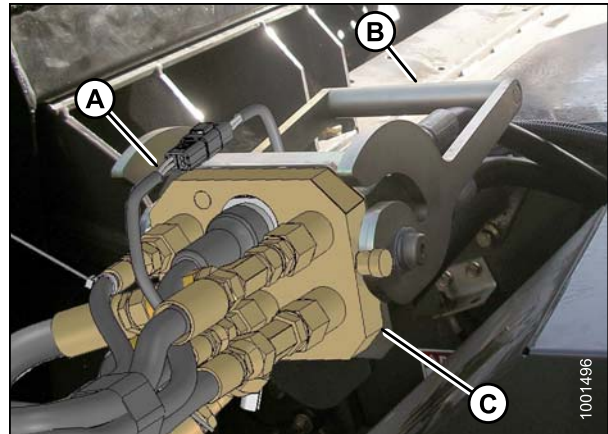
## HEADER ATTACHMENT/DETACHMENT

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



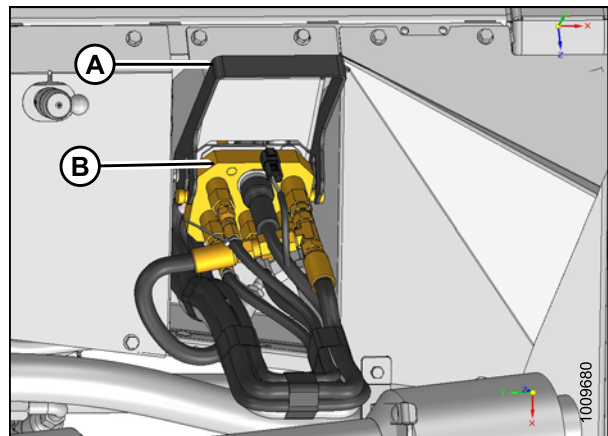
**Figure 4.92: Driveline**

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



**Figure 4.93: Couplers**

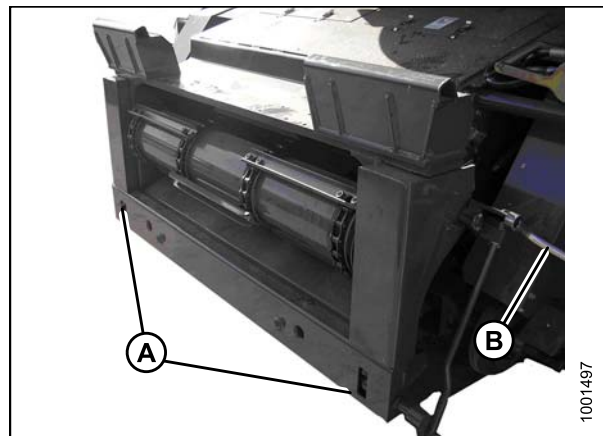
- Raise handle (A) on adapter, and place coupler (B) on adapter receptacle.
- Lower handle (A) to lock coupler.



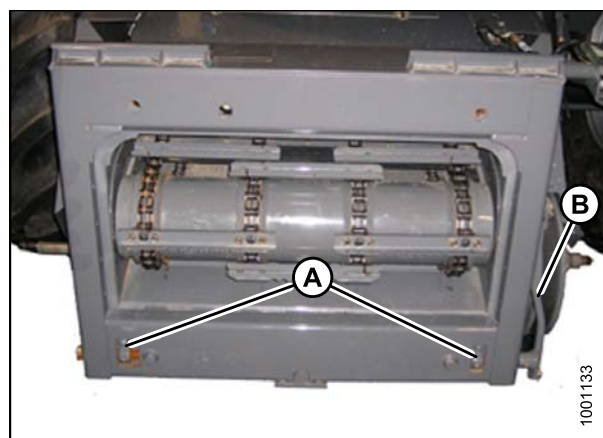
**Figure 4.94: Adapter Couplers**

## HEADER ATTACHMENT/DETACHMENT

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

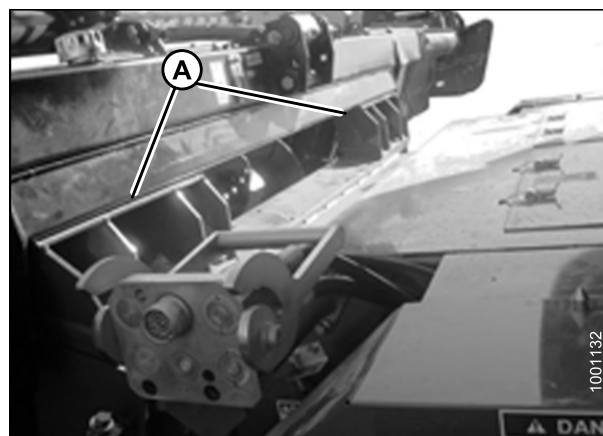


**Figure 4.95: Challenger and Massey Ferguson**



**Figure 4.96: Gleaner R and S Series**

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



**Figure 4.97: Adapter on Combine**

## 4.7 Attaching and Detaching Header from Adapter and Combine

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

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

### 4.7.1 Detaching Header from Adapter and Combine

To detach the header from the adapter and combine 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 safety props before going under header for any reason.

#### WARNING

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

#### CAUTION

Wear heavy gloves when working around or handling knives.

1. Start engine and lower header. Tilt header until cylinder (B) is fully extended and indicator (A) is at "D". This will increase clearance under adapter feed draper.
2. Raise reel fully.
3. Stop engine and remove key.
4. Engage reel safety props.

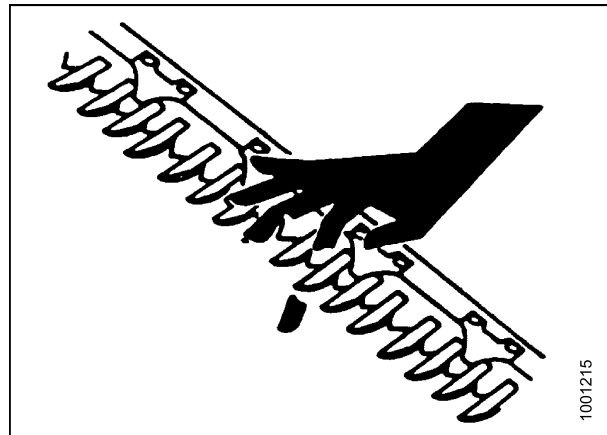


Figure 4.98: Cutterbar Hazard

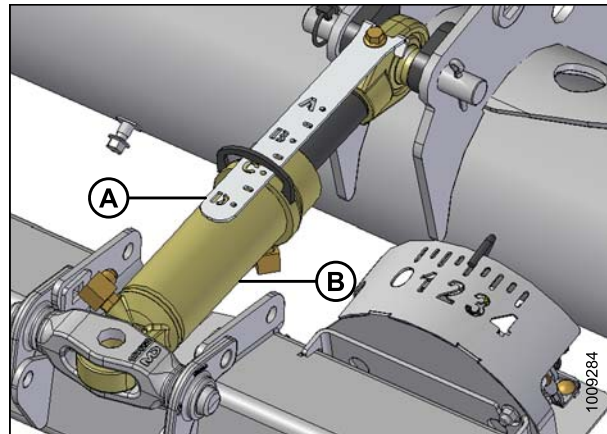


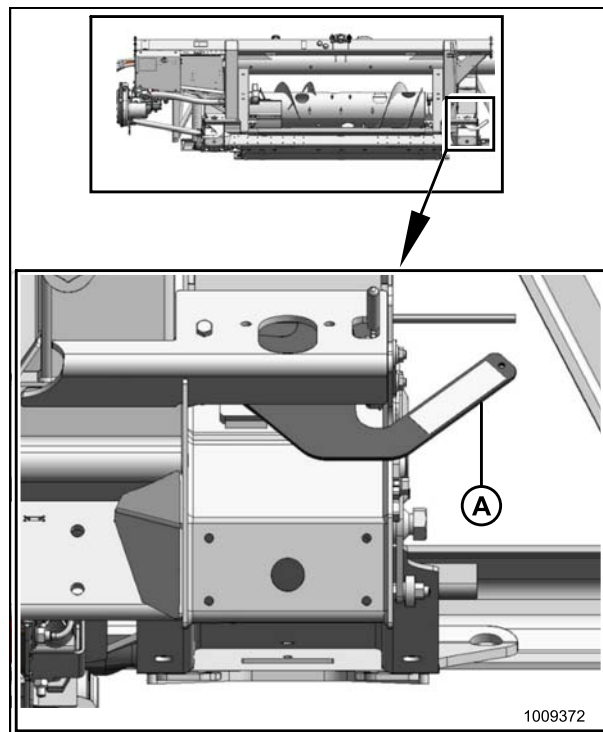
Figure 4.99: Center-Link

## HEADER ATTACHMENT/DETACHMENT

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

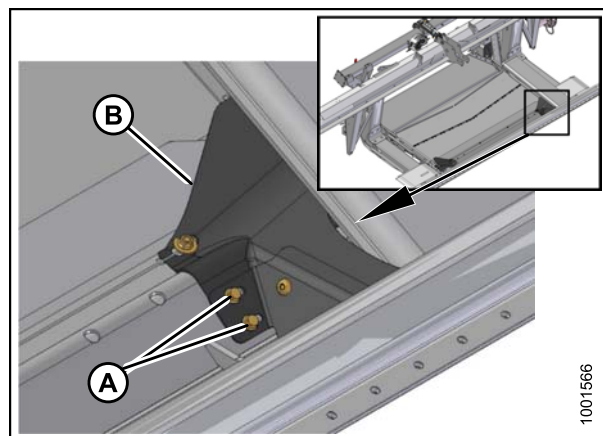
**NOTE:**

Stabilizer/Slow Speed Transport wheels can be used to support header.



**Figure 4.100: Float Locked**

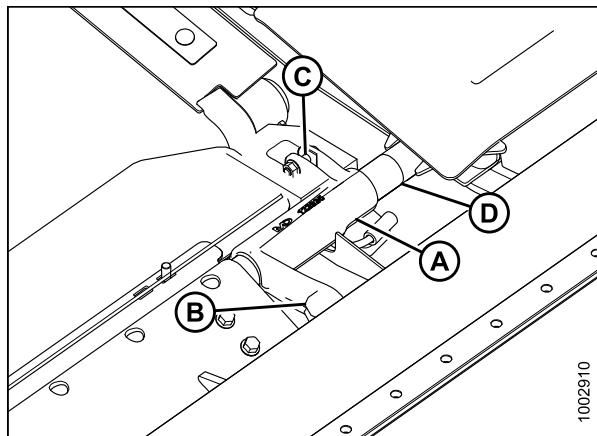
- Remove two hex head bolts (A) attaching filler (B) to transition pan at front corners, fold back filler (B) for access to latch, shown in next image.



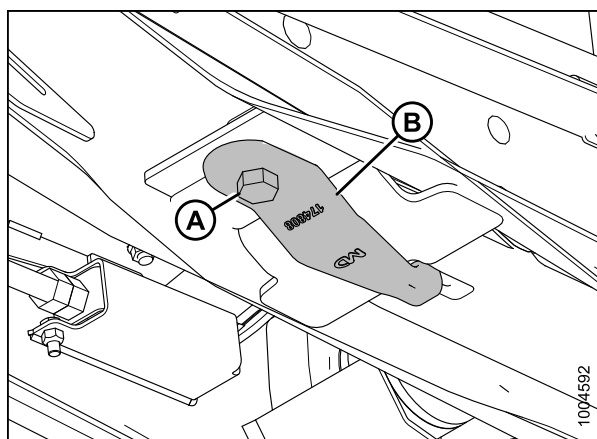
**Figure 4.101: Fillers**

## HEADER ATTACHMENT/DETACHMENT

7. Remove 9/16 in. nut from bolt (C).
8. Rotate latch (A) down with a 15/16 in. (24 mm) wrench on hex (B) to raise feed deck slightly so that bolt (C) can be removed.
9. Rotate latch (A) up and back to lower adapter deck and disengage transition pan tube (D).
10. Reinstall bolt (C).
11. Repeat for other side of the feed draper deck.
12. Disengage reel safety props, start engine, lower reel and raise header fully. Stop engine, remove key, and engage combine lift safety props.
13. Loosen nut and bolt (A), and disengage hook (B) from leg on both sides of adapter.

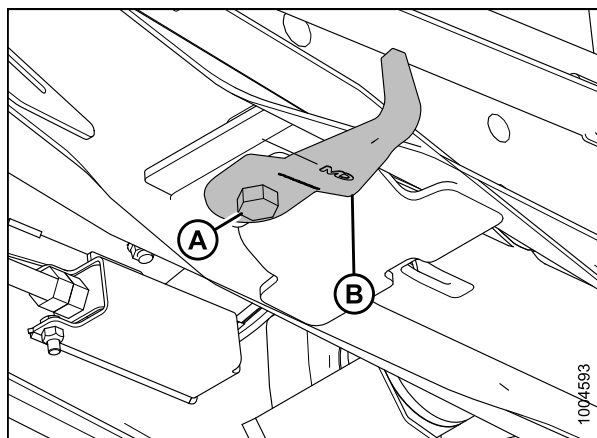


**Figure 4.102: Adapter Latch**



**Figure 4.103: AdapterUnderside**

14. Rotate hook (B) 90° for storage, and retighten bolt (A) and nut.



**Figure 4.104: AdapterUnderside**



## HEADER ATTACHMENT/DETACHMENT

15. Place a 6 in. (150 mm) block (A) under the header leg. This will assist with disconnecting the center-link.
16. Disengage combine lift cylinder locks, start engine, and lower header until the header leg rests on the block or stabilizer wheels are the ground.

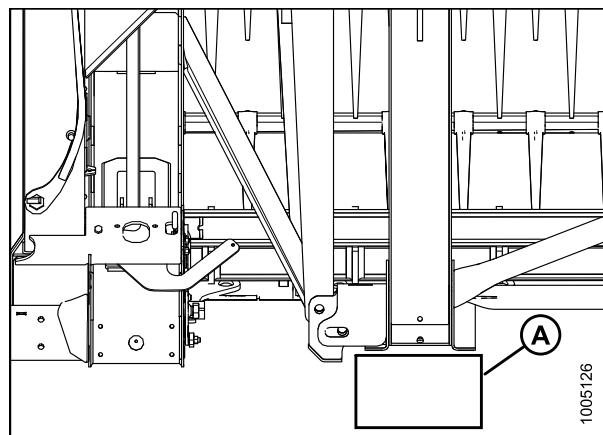


Figure 4.105: Header Leg on Block

17. 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.

**NOTE:**

Feeder house may need to be raised or lowered, or length of link adjusted, to relieve load on link.

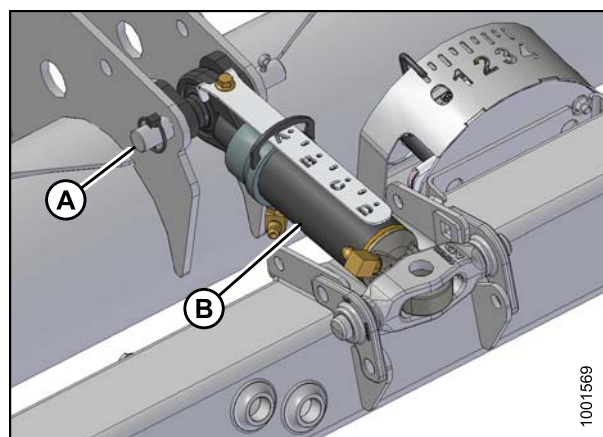


Figure 4.106: Hydraulic Center-Link

**NOTE:**

- If on the ground: Push reel fully forward to reduce oil loss.
- If on transport: Pull reel fully back.

18. Disconnect electrical connector (B).
19. Disconnect knife and draper drive hydraulic hoses (A) at bracket. Cap off ends immediately to avoid loss of oil.
20. Store and secure hoses on adapter frame.

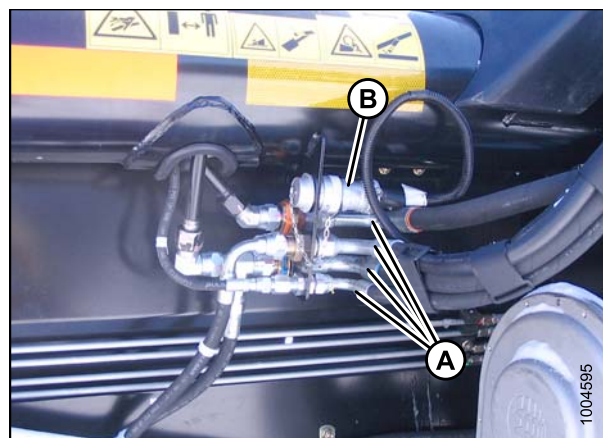
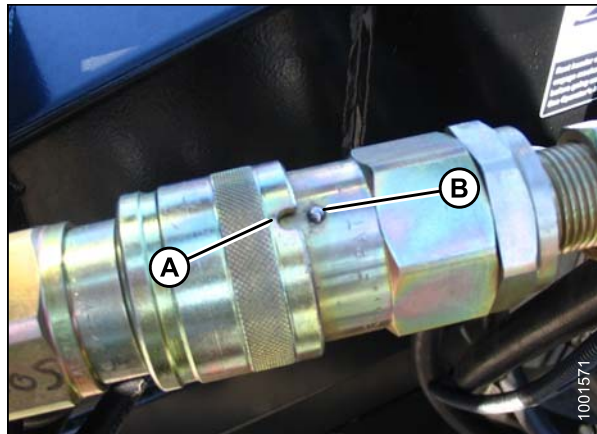


Figure 4.107: Header Connections

## HEADER ATTACHMENT/DETACHMENT

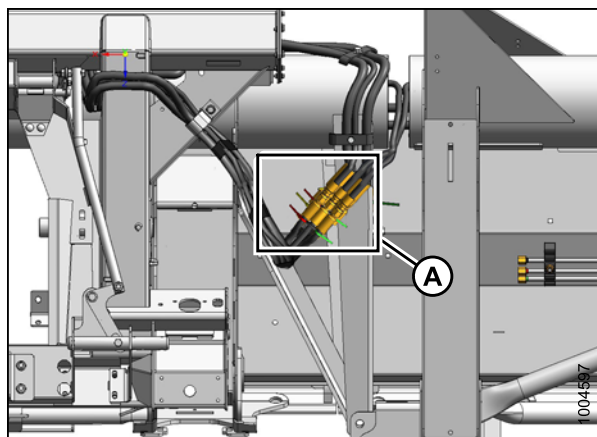
21. If quick disconnects are installed, disconnect as follows:

- 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 4.108: Quick Disconnect**

22. Disconnect reel hydraulics (A). Cap off end immediately to avoid loss of oil.



**Figure 4.109: Reel Hydraulics**

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



**Figure 4.110: Hose Storage**

## 4.7.2 Attaching Header to Adapter and Combine

The FD75 can be attached to the adapter from either Field configuration or Transport configuration.

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

#### NOTE:

Stabilizer/Slow Speed Transport wheels can be used to support header. Refer to [3.7.1 Cutting Height, page 52](#).

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

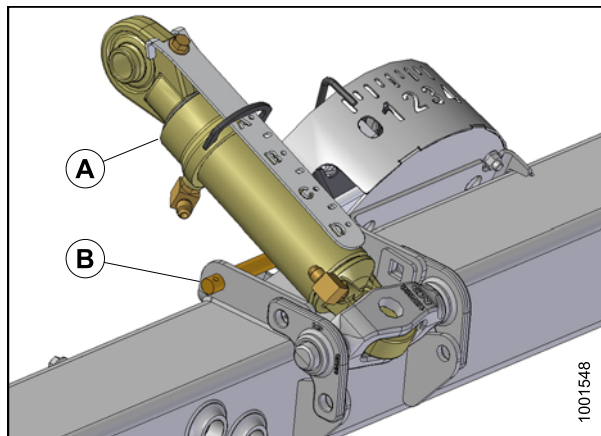


Figure 4.111: Center-Link

2. Ensure hooks (A) are in storage position as shown, not interfering with entrance of adapter arms into channel (B).

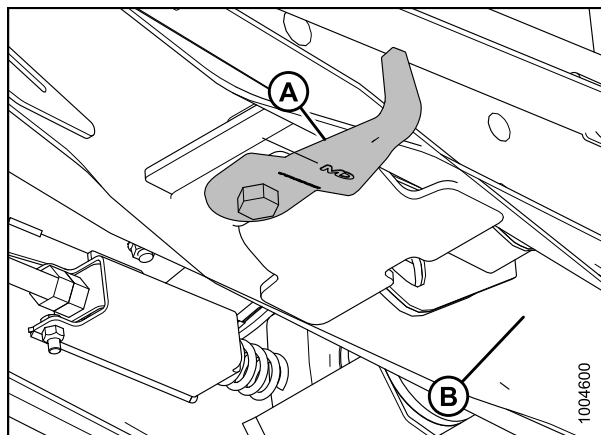


Figure 4.112: Header Underside

## HEADER ATTACHMENT/DETACHMENT

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.

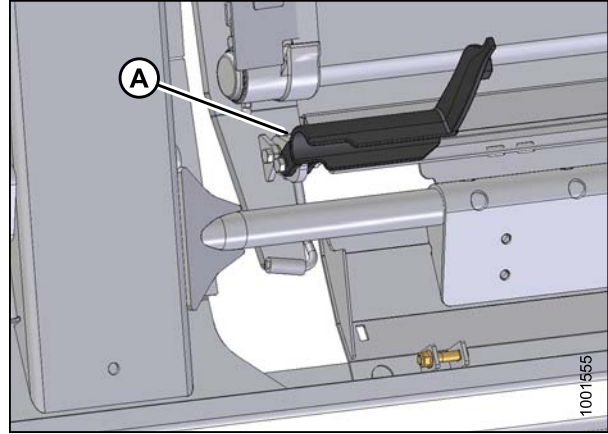


Figure 4.113: Latches

4. Start engine, and lower combine feeder house so that adapter arms (B) are aligned with header balance channels (B).
5. Drive slowly forward, maintaining alignment between adapter arms (A) and header balance channels (B).
6. Keep adapter arms (A) just under the balance channels (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 balance channels (B).
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.

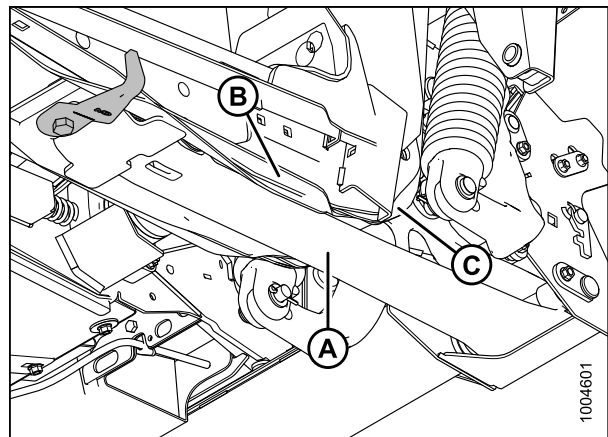


Figure 4.114: Adapter Underside

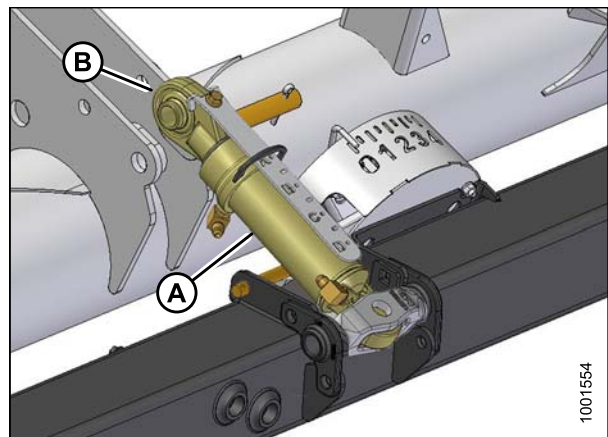


Figure 4.115: Center-Link

## HEADER ATTACHMENT/DETACHMENT

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.

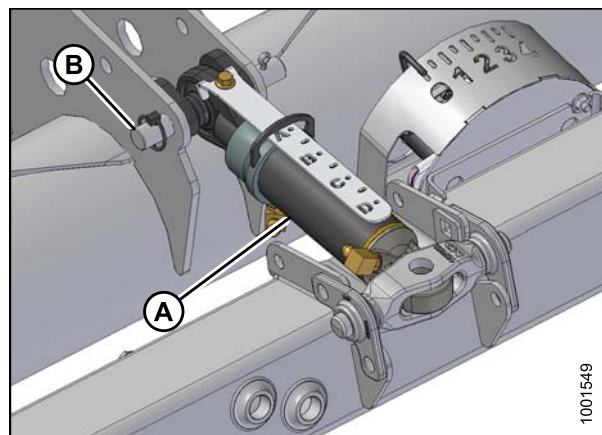


Figure 4.116: Center-Link

11. Connect reel hydraulics (A) 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.
14. Engage header lift cylinder stops on combine.
15. Loosen nut and bolt (A), and reposition hook (B) as shown to engage adapter arm. Tighten bolt and nut (A).
16. Remove lift cylinder locks, start engine, and lower header to ground. Adjust header angle to the shallowest setting (shortest center-link).

17. Raise reel fully.



### DANGER

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

18. Shut down engine and remove key from ignition.
19. Engage reel safety props.

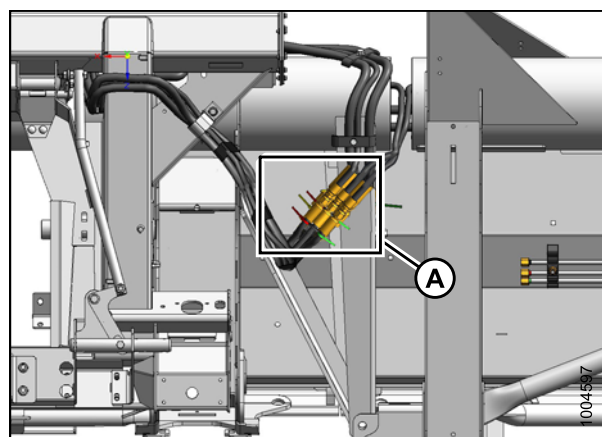


Figure 4.117: Reel Hydraulics

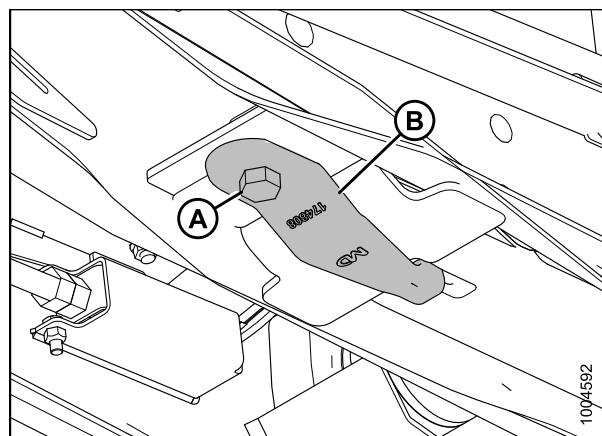


Figure 4.118: Adapter Underside



## HEADER ATTACHMENT/DETACHMENT

### **WARNING**

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

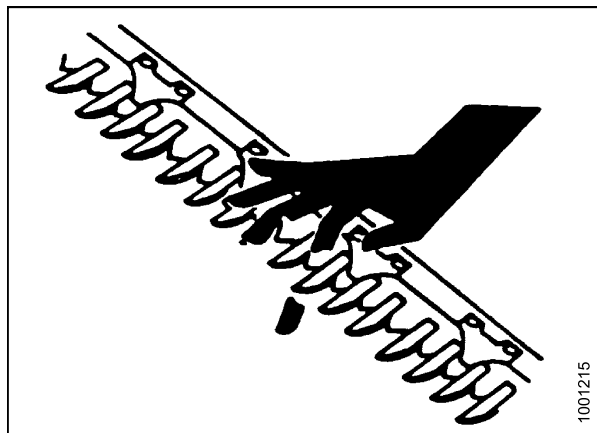


Figure 4.119: Cutterbar Hazard

20. Remove bolt (A) at both sides of opening to allow attachment of adapter deck.
21. Rotate latch (B) forward and down to engage transition pan tube (C).

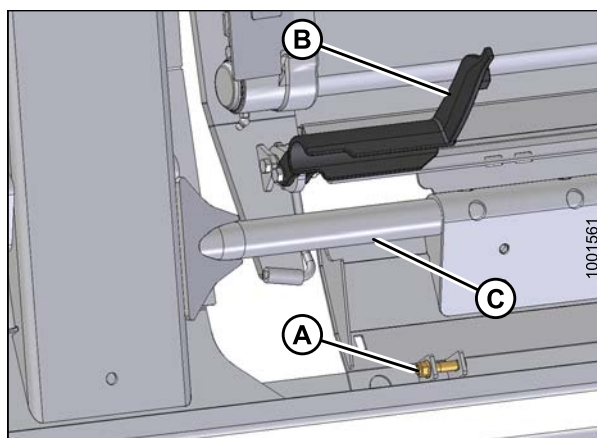


Figure 4.120: AdapterLatch

22. Rotate latch (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.
23. Repeat for other side of feed draper deck.

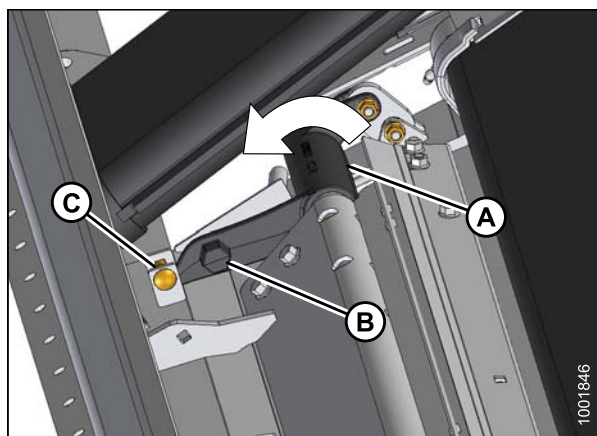
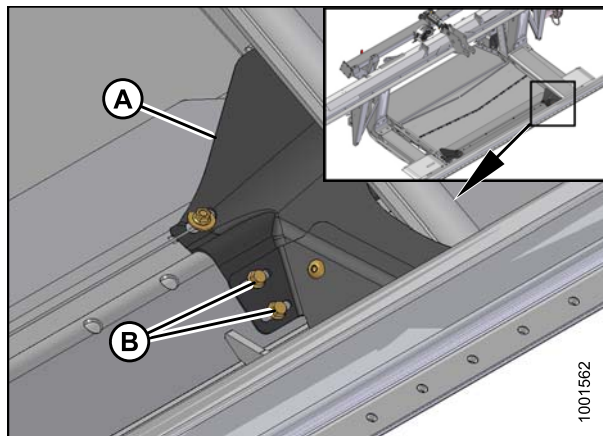


Figure 4.121: Adapter Latch

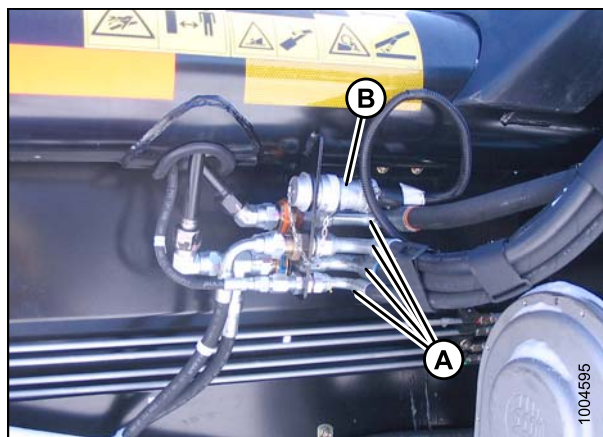
## HEADER ATTACHMENT/DETACHMENT

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



**Figure 4.122: Fillers**

25. Connect knife and draper drive hydraulic hoses (B) at bracket.
26. Attach electrical connector (B).



**Figure 4.123: Header Connections**



## HEADER ATTACHMENT/DETACHMENT

27. 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.



**Figure 4.124: Quick Disconnect**

28. Check float, and confirm that the header is level. Refer to:
- [Checking and Adjusting Header Float, page 58.](#)
  - [3.9 Levelling the Header, page 173.](#)
29. Start combine and perform the following:
- Raise and lower reel to ensure hoses are properly connected.
  - Run the header to ensure hoses are properly connected.
30. Check for leaks.

## 5 Maintenance and Servicing

### 5.1 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 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 safety props.**
2. **Stop engine and remove key.**
3. **Engage park brake.**
4. **Wait for all moving parts to stop.**

## 5.2 Maintenance Specifications

### 5.2.1 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	Specification	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	Knife drive box	2.3 quarts (2.2 liters)
			Main drive gearbox	2.6 quarts (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)

### 5.2.2 Installing a Roller Chain

To install a roller chain, follow these steps:

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

## MAINTENANCE AND SERVICING

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.

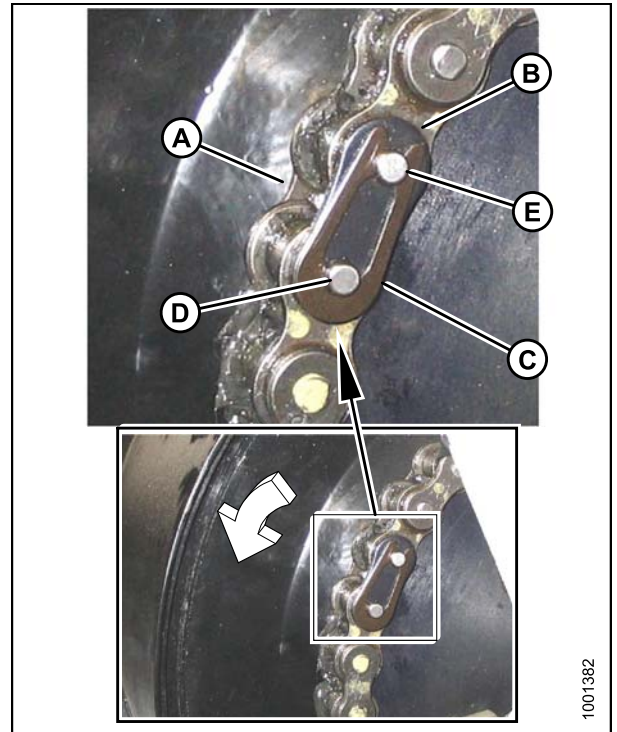


Figure 5.1: Arrow Shows Direction of Rotation

### 5.2.3 Installing a Sealed Bearing

To install a sealed bearing, follow these steps:

1. Clean shaft and coat with rust preventative.
2. Install flangette (A), bearing (B), second flangette (C), and lock collar (D).

**NOTE:**

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

3. Install (but do **NOT** tighten) flangette bolts (E).
4. When the shaft is correctly located, lock the lock collar with a punch. The collar should be locked in the same direction the shaft rotates. Tighten the setscrew in the collar.
5. Tighten flangette bolts.
6. Loosen flangette bolts on mating bearing one turn and retighten. This will allow the bearing to line up.

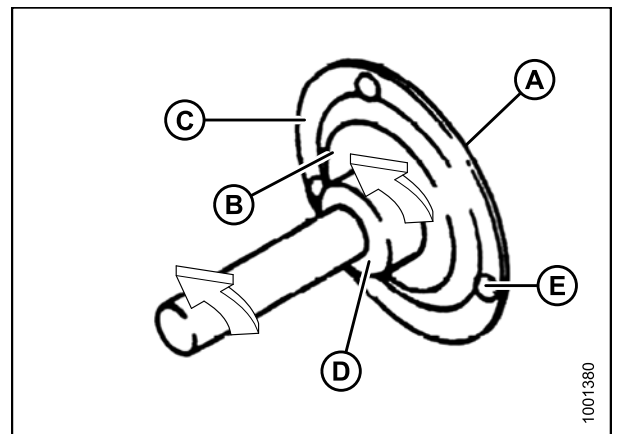


Figure 5.2: Sealed Bearing

## 5.3 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, Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#).

Log hours of operation and use the Maintenance Record on the next page to keep a record of scheduled maintenance. Make copies of the Maintenance Record page as required.

**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.

**NOTE:**

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. Refer to [5.1 Preparation for Servicing, page 251](#) and Maintenance Safety ([1 Safety, page 1](#)).

## MAINTENANCE AND SERVICING

### 5.3.1 Maintenance Schedule/Record

Copy this page to continue record.

Maintenance Record	Action:	✓ - Check	⬮ - Lubricate	▲ - Change
Hour Meter Reading				
Date				
Serviced by				
First Use, Refer to <a href="#">5.3.2 Break-In Inspection, page 257</a>				
End of Season, Refer to <a href="#">5.3.4 End-of-Season Service, page 257</a>				
<b>10 Hours or Daily<sup>10</sup></b>				
✓ Hydraulic hoses and lines <sup>11</sup>				
✓ Knife sections, guards, and hold-downs <sup>11</sup>				
✓ Tire pressure <sup>11</sup>				
⬮ Knife (except in sandy conditions) <sup>11</sup>				
<b>25 Hours</b>				
✓ Hydraulic oil level at reservoir <sup>11</sup>				
⬮ Knifehead(s) <sup>11</sup>				
<b>50 Hours</b>				
⚙ Draper roller bearings				
⬮ Driveline and driveline universals				
▲ Knife drive box oil - first 50 hours only				
<b>100 Hours or Annually<sup>10</sup></b>				
✓ Auger to pan and feed draper clearance				
✓ Draper seal				
✓ Gearbox lubricant level				
✓ Reel drive chain tension				
✓ Reel tine/cutterbar clearance				
✓ Knife drive belt tension				

10. Whichever occurs first.

11. A record of daily maintenance is not normally required, but is at the Owner's/Operator's discretion.

# MAINTENANCE AND SERVICING

Maintenance Record		Action:	✓ - Check						⬮ - Lubricate						▲ - Change					
✓	Wheel bolt torque																			
✓	Knife drive box lubricant level																			
✓	Knife drive box mounting bolts																			
⬮	Auger drive chain																			
⬮	Float pivots																			
⬮	Float spring tensioners																			
⬮	Reel drive chain																			
⬮	Upper cross auger right-hand bearing																			
<b>250 Hours or Annually<sup>10</sup></b>																				
✓	Draper seal																			
⬮	Adapter auger pivots																			
⬮	Upper cross auger center support and U-joint																			
⬮	Reel drive U-joint																			
⬮	Bell crank linkage																			
⬮	Transport axle pivot bushings																			
▲	Hydraulic oil filter																			
<b>500 Hours or Annually<sup>10</sup></b>																				
✓	Draper seal																			
⬮	Reel shaft bearings																			
⬮	Stabilizer/slow speed transport wheel bearings																			
✓	Gearbox chain tension																			
<b>1000 Hours or 3 Years<sup>10</sup></b>																				
▲	Knife drive box lubricant																			
▲	Gearbox lubricant																			
▲	Hydraulic oil																			



### 5.3.2 Break-In Inspection

A break-in inspection includes checking belts, fluids, and a general machine inspection for loose hardware or other areas of concern. The break-in inspection ensures that all components can operate for an extended period without requiring service or replacement.

Timing	Item	Refer To
At 5 minutes	Check reservoir hydraulic oil level.	<a href="#">Checking Oil Level in Hydraulic Reservoir, page 273</a>
At 5 hours	Check for loose hardware. Tighten to required torque.	<a href="#">8.1 Torque Specifications, page 433</a>
	Check knife drive belt tension. Periodically check for first 50 hours.	<a href="#">Tensioning Knife Drive Belts, page 320</a>
At 10 hours	Check knife drive box mounting bolts.	<a href="#">Checking Mounting Bolts, page 312</a>
At 50 hours	Change adapter gearbox oil.	<a href="#">Changing Oil in Header Drive Gearbox, page 272</a>
	Change adapter hydraulic oil filter.	<a href="#">5.4.2 Changing Oil Filter, page 275</a>
	Change knife drive box lubricant.	<a href="#">Changing Oil in Knife Drive Box, page 318</a>
	Check gearbox chain tension.	<a href="#">5.6.5 Adjusting Tension on Gearbox Drive Chain, page 284</a>

### 5.3.3 Preseason/Annual Service

Perform the following the beginning of each operating season.



#### CAUTION

- Review this 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.
1. Adjust tension on drive belts, refer to [Tensioning Knife Drive Belts, page 320](#).
  2. Perform all annual maintenance, refer to [5.3.1 Maintenance Schedule/Record, page 255](#).

### 5.3.4 End-of-Season Service

Do the following at the end of each operating season.



#### CAUTION

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



#### CAUTION

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

## MAINTENANCE AND SERVICING

1. Clean the header thoroughly.
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. Repaint 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 knife 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 [5.2 Maintenance Specifications, page 252](#).

### 5.3.5 Checking 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 5.3: High Pressure Warning

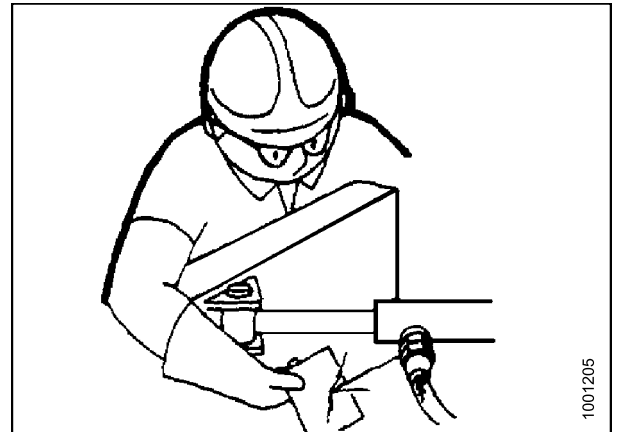


Figure 5.4: Checking Leak

### 5.3.6 Lubrication and Servicing

#### CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in [5.1 Preparation for Servicing, page 251](#).

Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#) for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to [5.3.1 Maintenance Schedule/Record, page 255](#).

## MAINTENANCE AND SERVICING

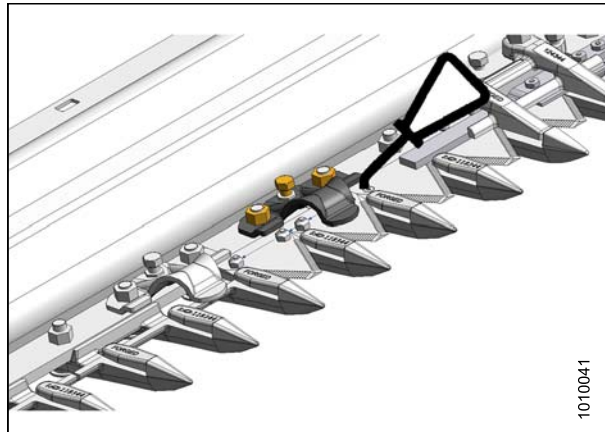
### Service Intervals

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.

#### IMPORTANT:

Unless otherwise specified, use High Temperature Extreme Pressure (EP2) Performance with 1% Maximum Molybdenum Disulphide (NLGI Grade 2) Lithium Base.

**Knife:** Except in sandy conditions.



**Figure 5.5: Every 10 Hours or Daily**

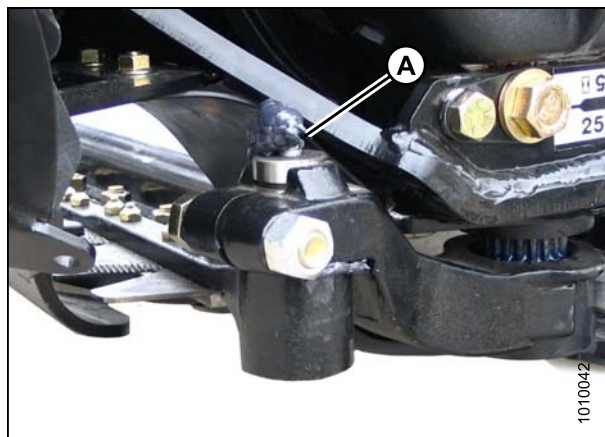
#### Knifehead:

##### NOTE:

To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** over grease the knifehead (A). Only, one to two pumps with a mechanical grease gun (do **NOT** use an electric grease gun) is required. If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead. Refer to [5.8.3 Removing Knifehead Bearing, page 301](#).

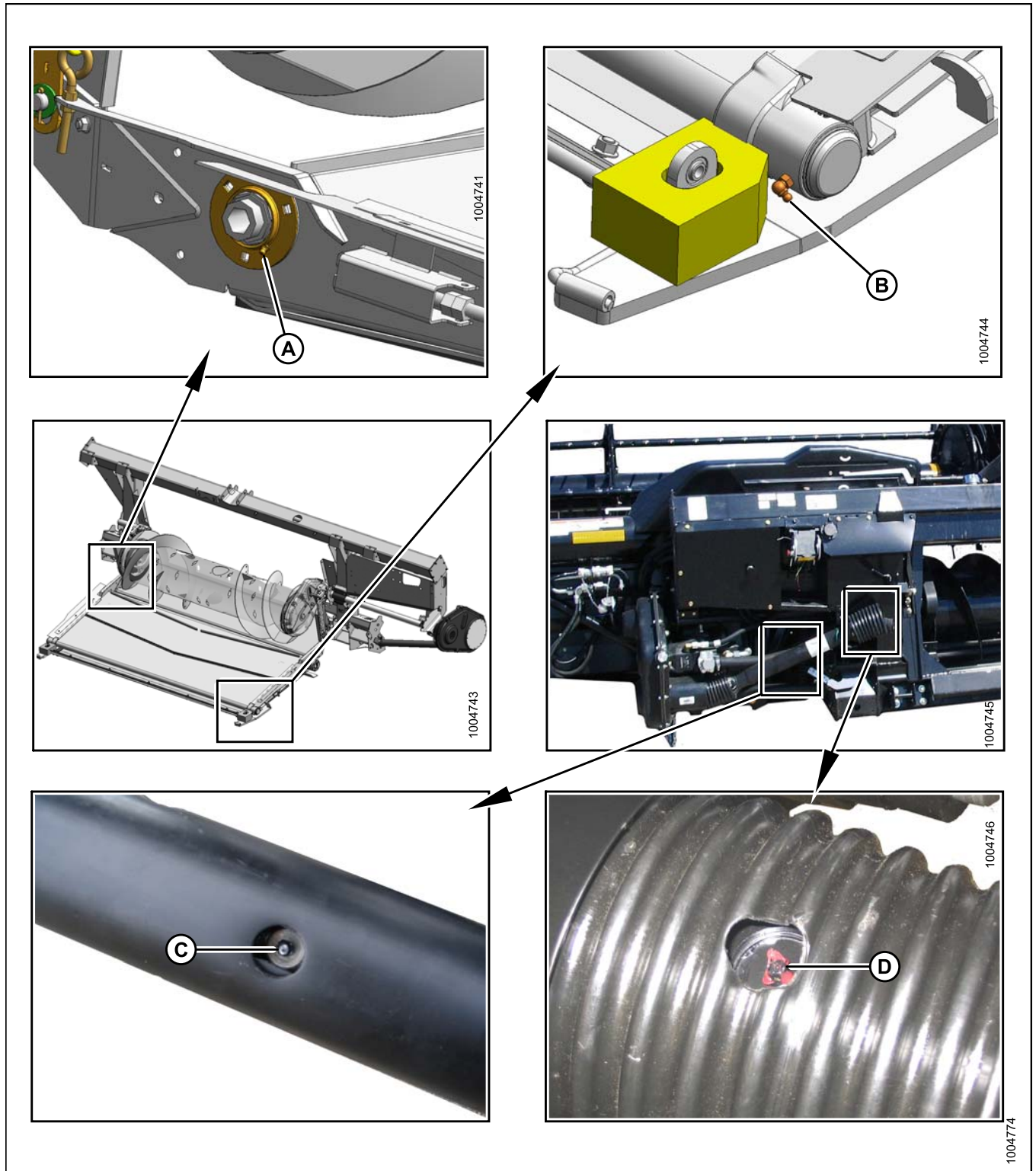
##### NOTE:

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



**Figure 5.6: Every 25 Hours**

A - Knifehead (Single Knife [1 Place]; Double Knife - [2 Places])



**Figure 5.7: Every 50 Hours**

A - Drive Roller Bearing

B - Idler Roller Bearing (Both Sides)

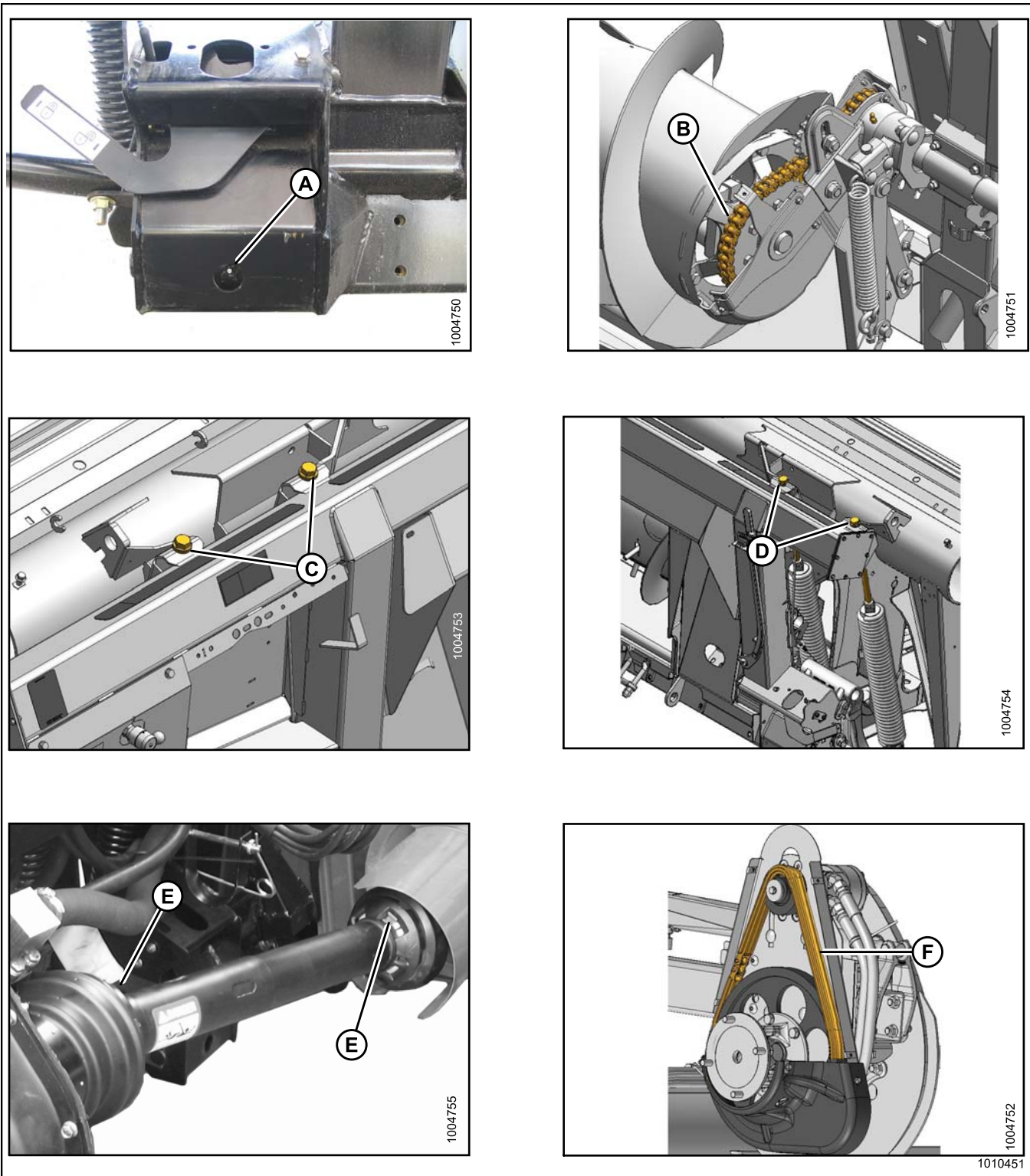
C - Driveline Slip Joint<sup>12</sup>

D - Driveline Universal (2 Places)

12. Use High Temperature Extreme Pressure (EP2) Performance With 10% Max Molybdenum Disulphide (NLGI Grade 2) Lithium Base



## MAINTENANCE AND SERVICING



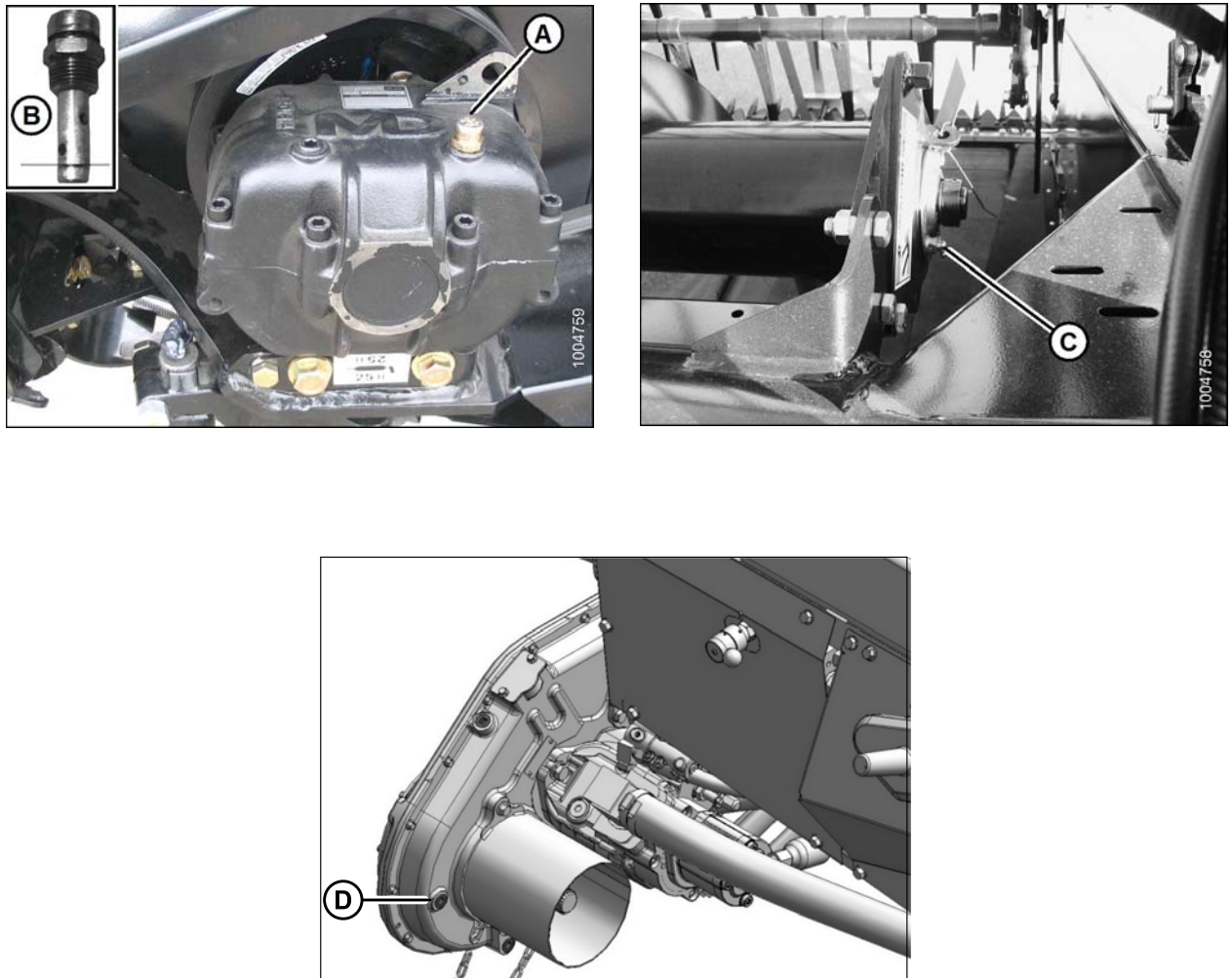
**Figure 5.8: Every 100 Hours**

A - Float Pivot - RH and LH  
C - LH Float Spring Tensioners

B - Auger Drive Chain - Refer to [Lubricating Auger Drive Chain, page 270](#)  
D - RH Float Spring Tensioners

E - Driveline Guard - 2 Places

F - Reel Drive Chain- 1 Place - Refer to [Lubricating Reel Drive Chain, page 269](#)



**Figure 5.9: Every 100 Hours (Continued)**

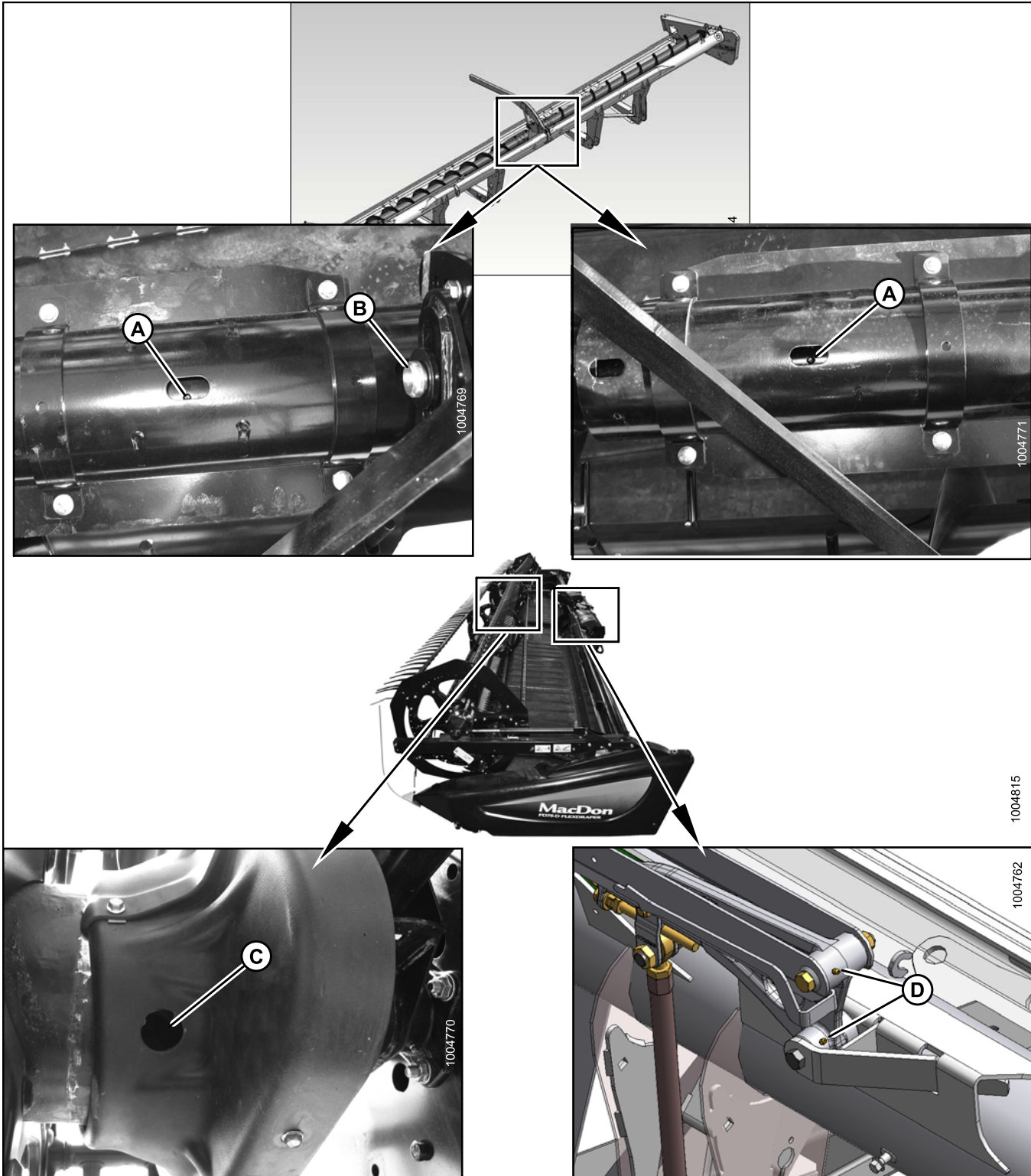
A - Knife Drive Box (Check Oil Level Between Lower Hole and End of Dipstick)

B - Upper Cross Auger Bearing (1 Place)

C - Main Drive Gearbox Oil Level - Refer to [Lubricating Header Drive Gearbox, page 271](#)



## MAINTENANCE AND SERVICING



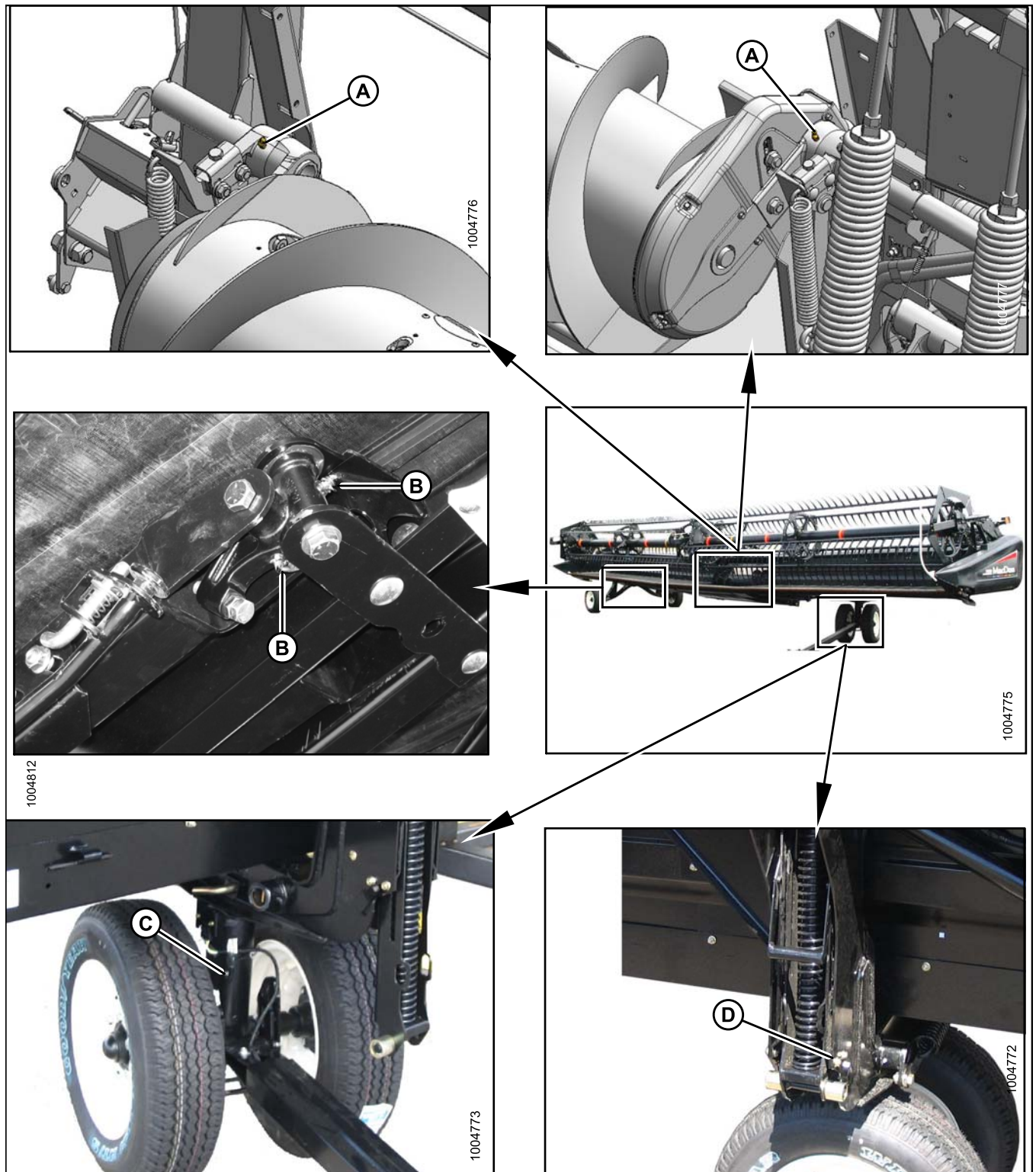
**Figure 5.10: Every 250 Hours**

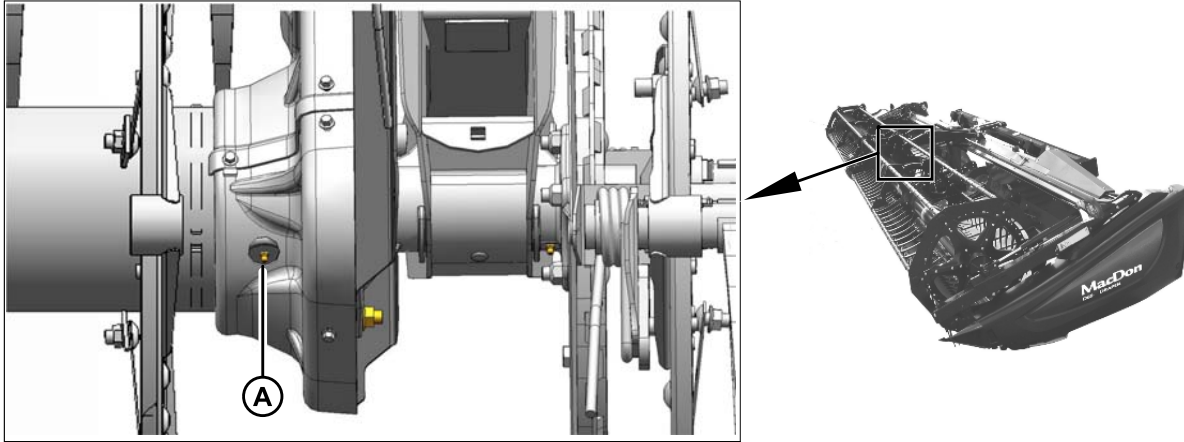
A - Upper Cross Auger U-joint and Bearing<sup>13</sup>  
C - Reel U-joint (1 Place)

B - Upper Cross Auger Bearing (2 Places)  
D - Flex Linkage (2 Places) - Both Sides

13. 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 are sufficient at first grease (factory). Decrease grease interval as U-joint wears and requires more than six pumps.

## MAINTENANCE AND SERVICING





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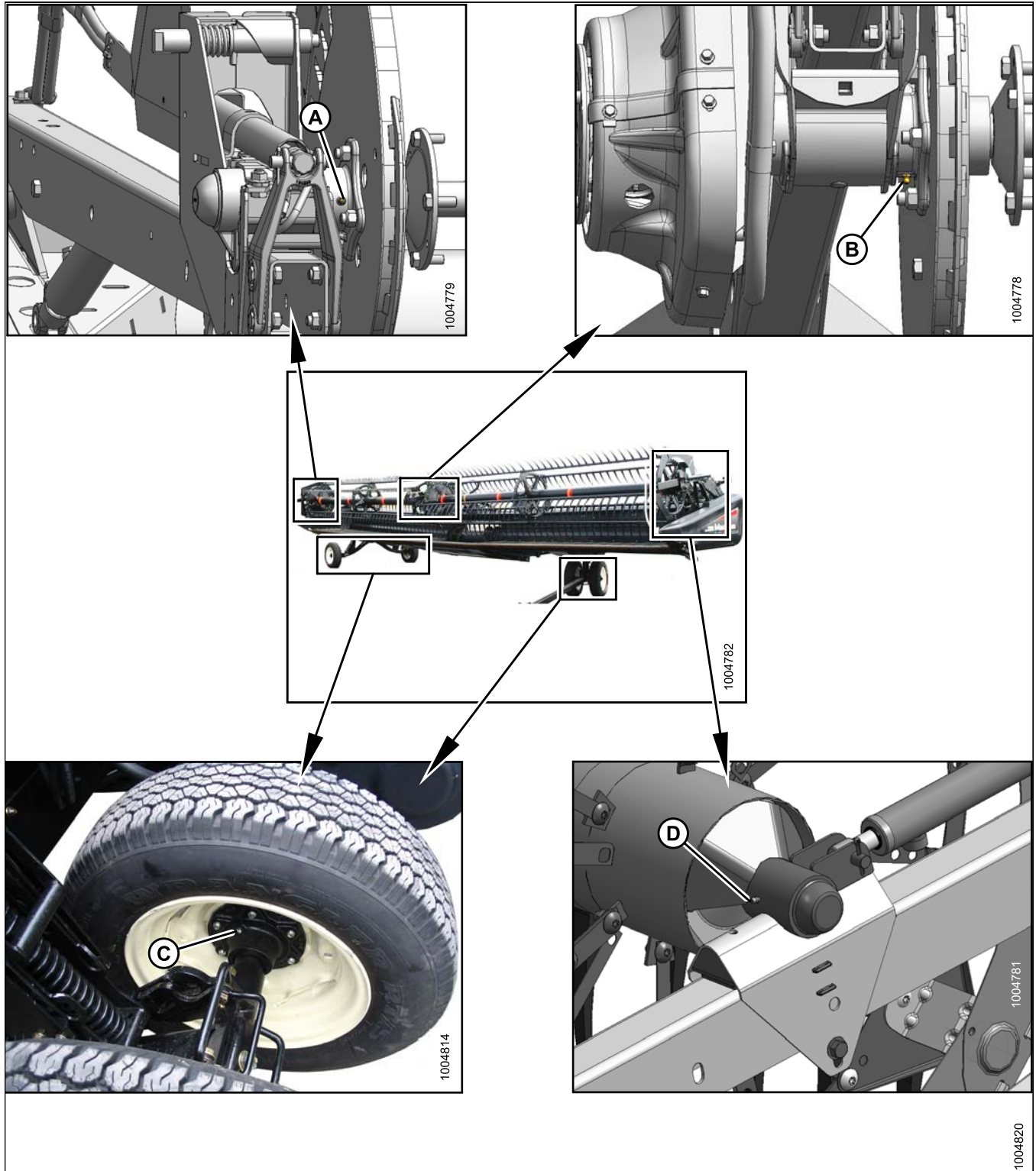
**Figure 5.12: Every 250 Hours (Continued)**

A - Double Reel U-Joint<sup>14</sup>

14. 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 are sufficient at first grease (factory). Decrease grease interval as U-joint wears and requires more than six pumps.



## MAINTENANCE AND SERVICING



**Figure 5.13: Every 500 Hours**

A - Reel Right Bearing (1 Place)

B - Reel Center Bearing (1 Place)

C - Wheel Bearings (4 Places)

D - Reel Left Bearing (1 Place)

## Greasing Procedure

Greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals as shown below are provided on the header and adapter back frame.

Use the recommended lubricants specified in this manual. Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#).

## **! DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

1. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting (except where noted).
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Also clean lubricant passageway. Replace fitting if necessary.
6. Use clean High Temperature Extreme Pressure grease as shown.

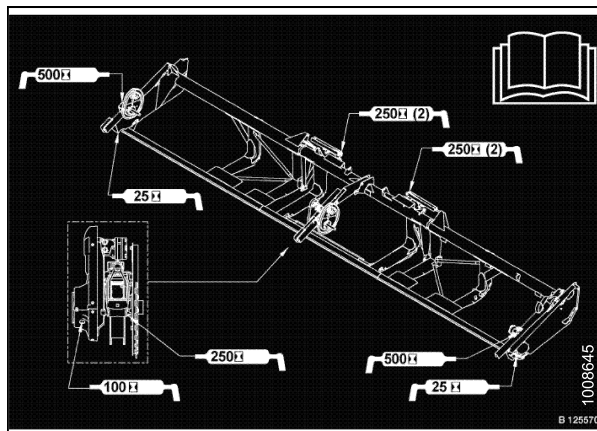


Figure 5.14: FD75 Greasing Decal

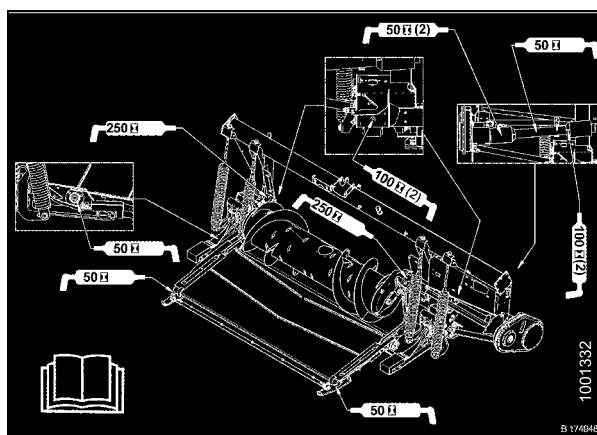


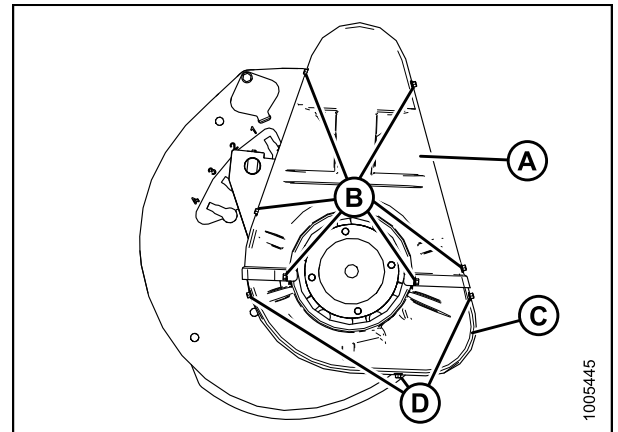
Figure 5.15: CA25 Adapter Greasing Decal

## *Lubricating Reel Drive Chain*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

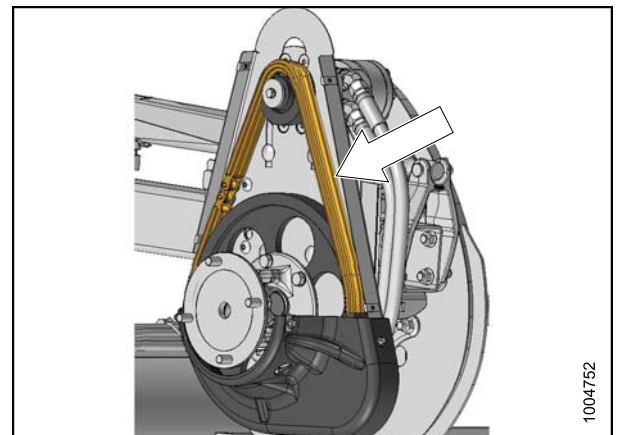
**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).



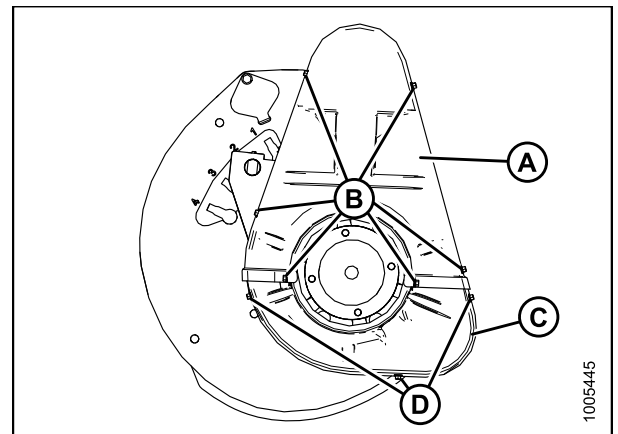
**Figure 5.16: Drive Cover**

2. Liberally apply grease to chain (A).



**Figure 5.17: Drive Chain**

3. Position the lower cover (C) first (if removed) and secure with three bolts (D).
4. Install upper cover (A) using the six bolts (B).



**Figure 5.18: Reel Drive Cover**

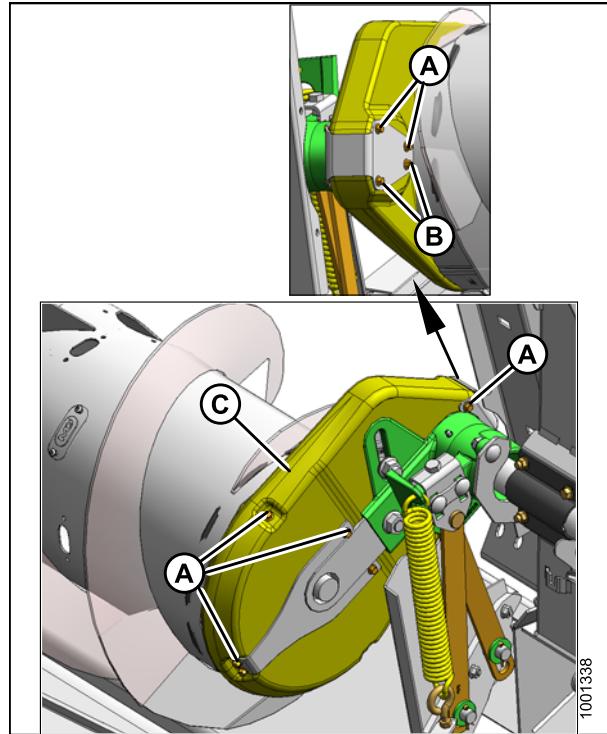
### *Lubricating Auger Drive Chain*

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.

The auger drive cover consists of an upper and a lower half. Only the upper half needs to be removed to grease the chain.

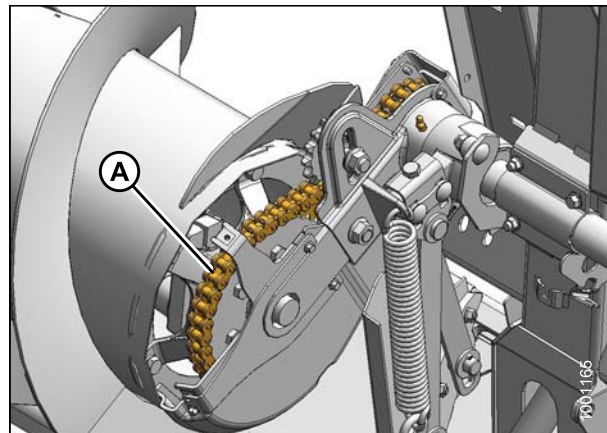
To lubricate the auger drive chain, follow these steps:

1. Remove six bolts (A) securing the upper half (C).
2. Loosen two bolts (B) at the rear of the cover.
3. Rotate upper half (C) forward to remove.



**Figure 5.19: Auger Drive**

4. Liberally apply grease to chain (A), drive sprocket (B), and idler sprocket (C).



**Figure 5.20: Auger Drive Chain**



## MAINTENANCE AND SERVICING

5. Reinstall cover (C) by positioning the inboard lip into the auger tube and rotating back to engage the rear support.
6. Replace and tighten bolts (A) and (B).

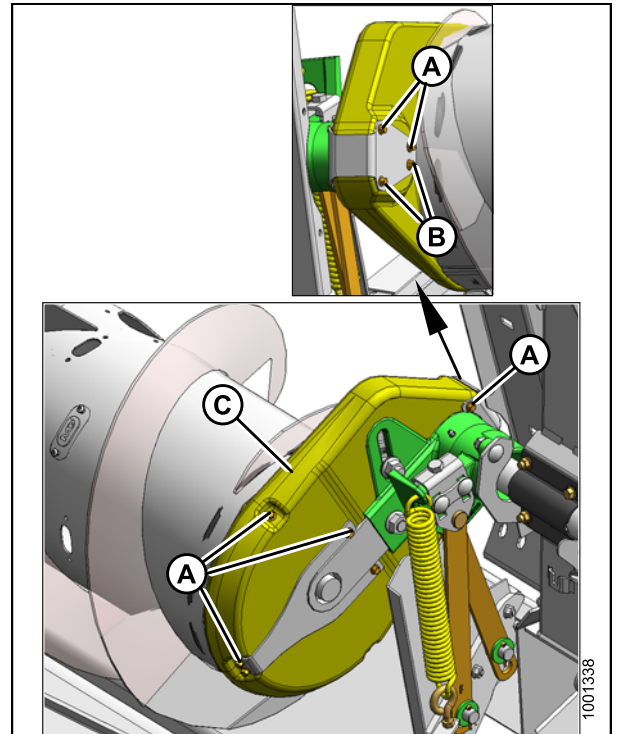


Figure 5.21: Auger Drive

### *Lubricating Header Drive Gearbox*

#### Checking Oil Level in Header Drive Gearbox

#### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

Check oil level every 100 hours as follows:

1. Set cutterbar to working position. Shutdown combine and remove key from ignition.
2. Remove plug (A). Oil level should be to bottom of hole.
3. Install plug (A).
4. Add oil if required. Refer to [Adding Oil to Header Drive Gearbox, page 272](#).

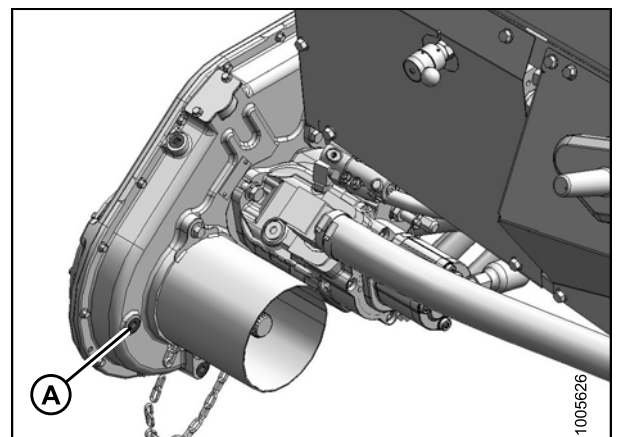


Figure 5.22: Gearbox

## Adding Oil to Header Drive Gearbox

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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

1. Lower cutterbar to ground. Gearbox must be in working position. Shut down combine and remove key from ignition.
2. Remove plug (A) and filler plug (B).
3. Add SAE 85W-140 (API Service Class GL-5) oil at (B) until it runs out of hole (A).
4. Replace plug (A) and filler plug (B).

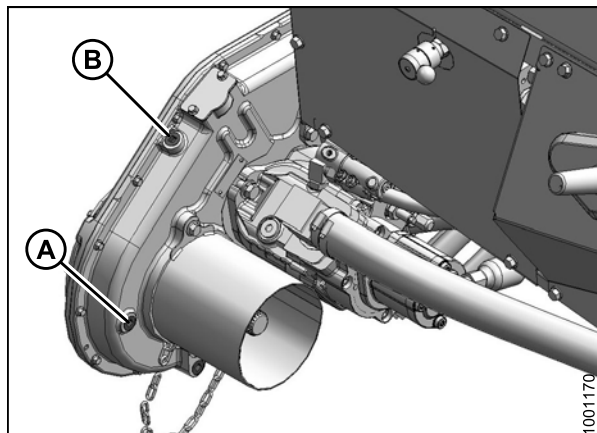


Figure 5.23: Gearbox

## Changing Oil in Header Drive Gearbox

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

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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

1. Raise or lower header to position oil drain plug (A) at its lowest point. Shutdown combine and remove key from ignition.
2. Place a suitable container (approximately 1 US gallon [4 liters]) under gearbox drain to collect oil.
3. Remove drain plug (A) and filler plug (C), and allow oil to drain.
4. Replace drain plug (A) and remove oil level plug (B).
5. Add SAE 85W-140 (API Service Class GL-5) oil at filler plug (C). Gearbox holds approximately 5 US pints (2.5 liters).
6. Replace oil level plug (B) and filler plug (C).

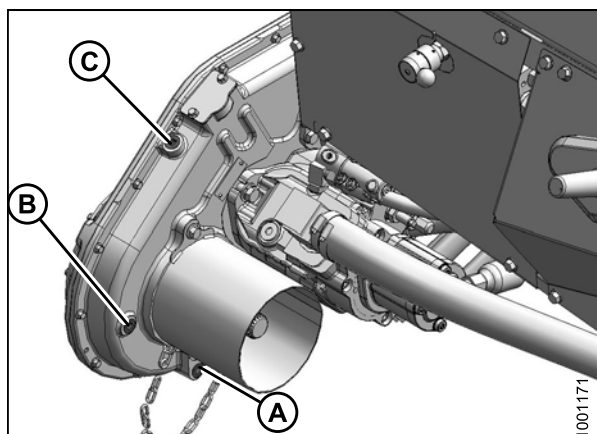


Figure 5.24: Gearbox

## 5.4 Hydraulics

The CA25 Combine Adapter's hydraulic system drives the adapter feed draper, the header drapers, and knife drive(s). Reel hydraulics are provided by the combine.

### 5.4.1 Reservoir

The adapter frame is used as a reservoir.

Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#) for oil requirements.

#### Checking Oil Level in Hydraulic Reservoir

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

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

#### NOTE:

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

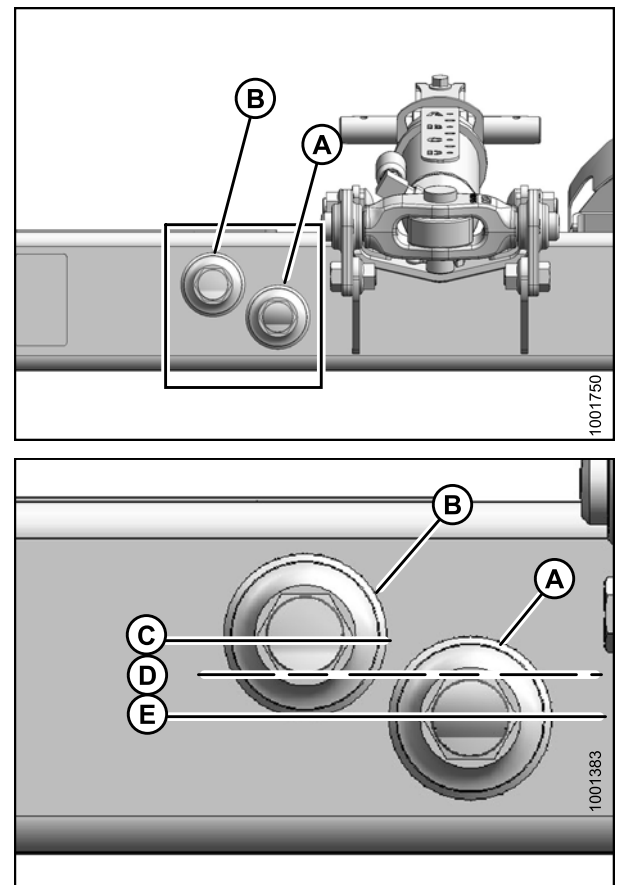


Figure 5.25: Oil Level Sights

#### Adding Oil

To add oil to the reservoir, follow these steps:



#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

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1. Clean filler cap (A) of any dirt or debris.
2. Turn filler cap (A) counterclockwise until loose, and then remove cap.
3. Add warm oil (approximately 70°F [21°C.]) and fill to required level. Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#) for specifications.

### IMPORTANT:

Warm oil will flow through the screen better than cold oil. DO NOT REMOVE THE SCREEN.

4. Reinstall filler cap (A).

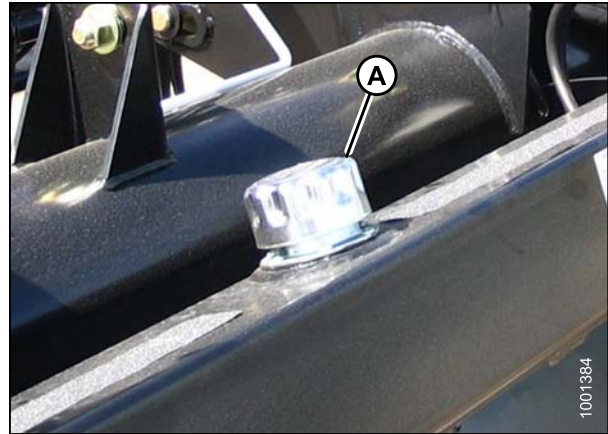


Figure 5.26: Oil Reservoir

## Changing Oil

To change the oil in the reservoir, follow these steps:

Change oil every 1000 hours or 3 years.

1. Detach header from adapter. Refer to [4 Header Attachment/Detachment, page 197](#).
2. Raise feeder house and engage lift cylinder safety props.

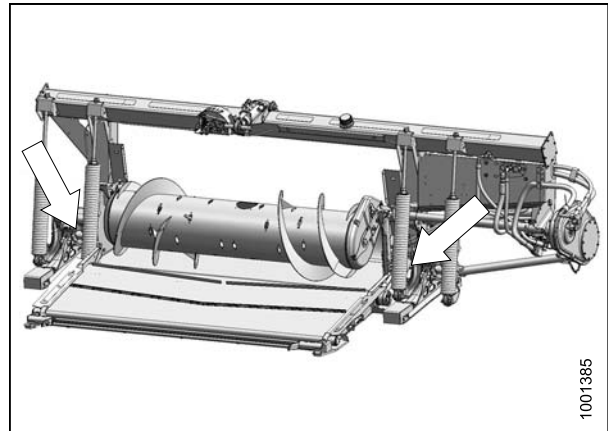


Figure 5.27: Adapter Reservoir Drains

3. Place a suitable container (at least 8 US gallons [30 liters]) under each of the two drains (A) located at the base of each side frame.
4. Remove drain plugs (A) with a 1-1/2 in. hex socket and allow the oil to drain.
5. Replace drain plugs when reservoir is empty.
6. Change filter if required. Refer to [5.4.2 Changing Oil Filter, page 275](#).
7. Add approximately 16 US gallons (60 liters) of oil to the reservoir. Refer to [Adding Oil, page 273](#).

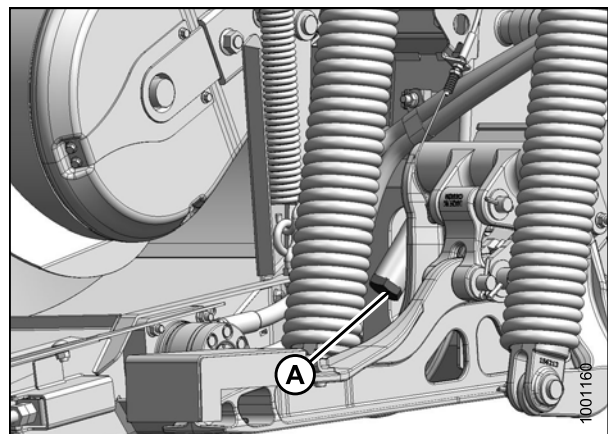


Figure 5.28: Reservoir Drain

## 5.4.2 Changing Oil Filter

Change oil filter after the first 50 hours of operation and every 250 hours thereafter.

Depending on the manifold installed, obtain filter part MD #123989 for Bosch manifold or MD #151975 for Parker manifold from your MacDon Dealer.

To change the oil filter, follow these steps:

### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

1. Remove five screws (A) and remove cover (B).

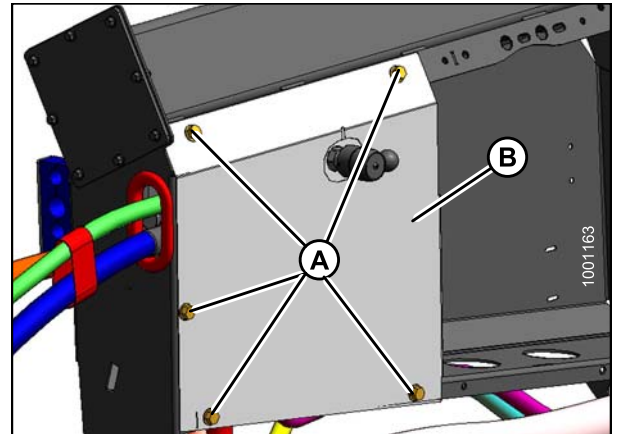


Figure 5.29: Adapter Hydraulics

2. Clean around mating surfaces of filter (B) 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. Over-tightening can damage O-ring and filter.

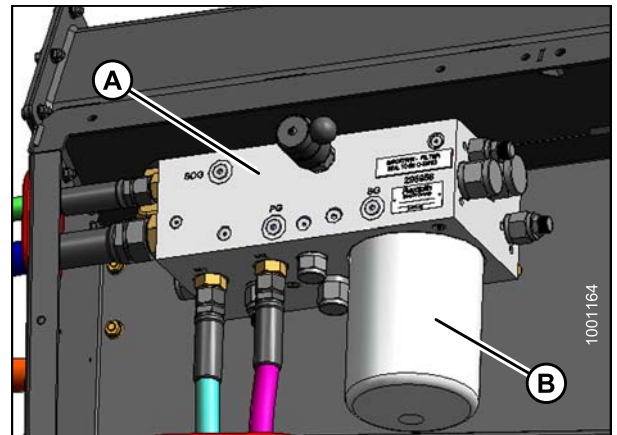
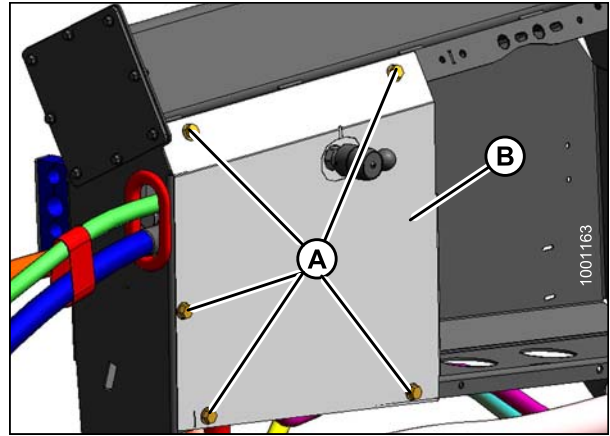


Figure 5.30: Adapter Hydraulics

## MAINTENANCE AND SERVICING

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



**Figure 5.31: Adapter Hydraulics**

## 5.5 Electrical

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

Keep lights clean and replace defective bulbs.

### 5.5.1 Replacing Light Bulbs

To replace a light bulb, follow these steps:

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

**NOTE:**

Use bulb trade #1156 for amber clearance lights and #1157 for red tail light (Slow Speed Transport option).

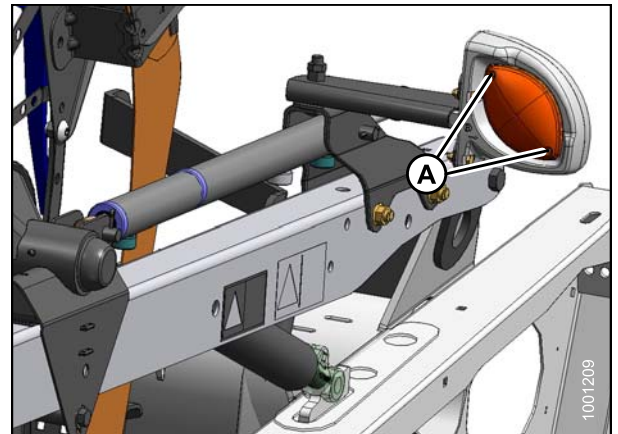


Figure 5.32: Clearance Light



## 5.6 Header Drive

The header drive consists of a driveline from the combine to the CA25 Combine Adapter gearbox that drives the feed auger and a hydraulic pump. The pump provides hydraulic power to the drapers, knife, and optional equipment.

### 5.6.1 Removing Driveline

To remove the driveline, follow these steps:

#### **DANGER**

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

#### **NOTE:**

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

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 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.

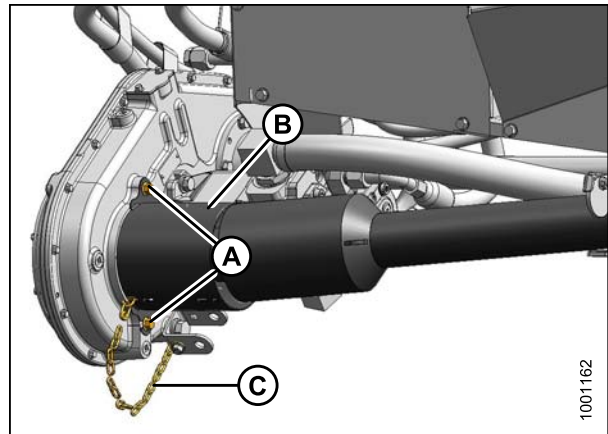


Figure 5.33: Driveline

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

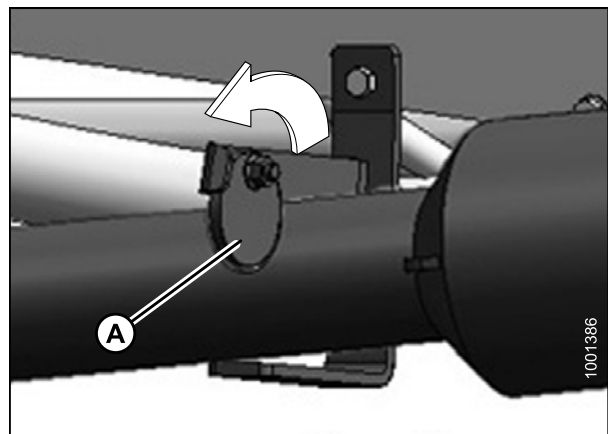


Figure 5.34: Driveline

## 5.6.2 Installing Driveline

To install the driveline, follow these steps:

### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

#### IMPORTANT:

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

#### IMPORTANT:

Ensure driveline is concurrent with length specifications. Refer to [2.2 Specifications, page 23](#).

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

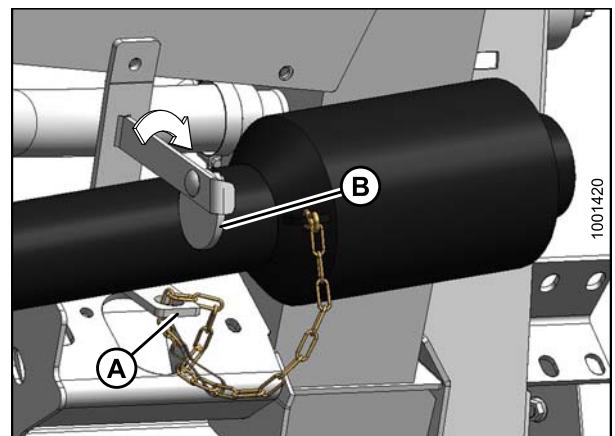


Figure 5.35: Driveline

2. Slide shield (B) over driveline.
3. Position 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. Reconnect other end to combine if necessary.

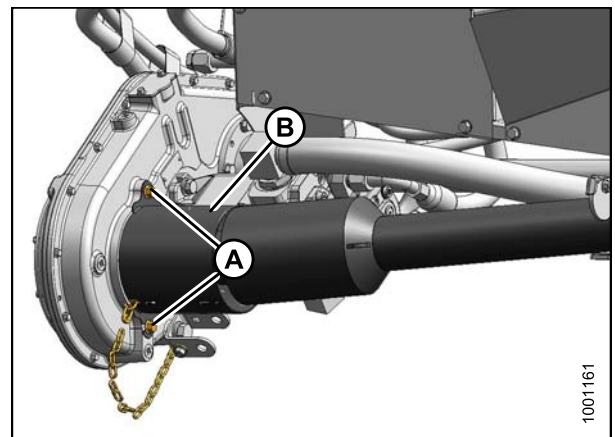


Figure 5.36: Driveline

### 5.6.3 Removing Driveline Guard

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

#### **DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

#### **NOTE:**

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

To remove a main driveline guard, follow these steps:

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

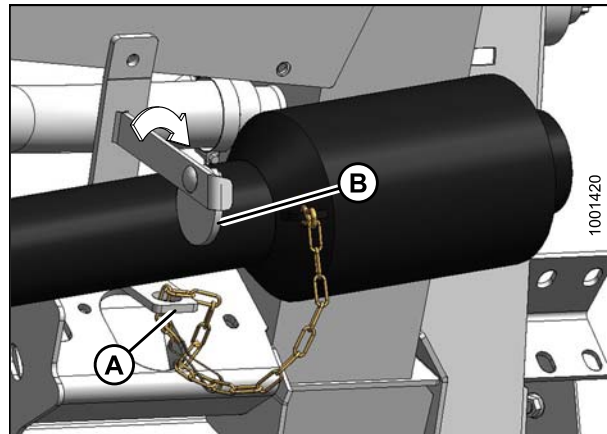


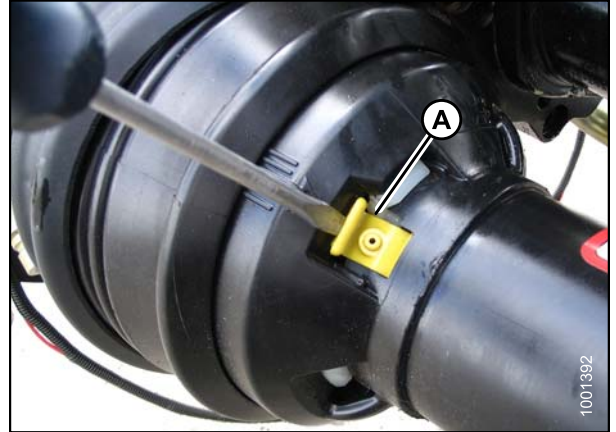
Figure 5.37: Driveline



Figure 5.38: Guard

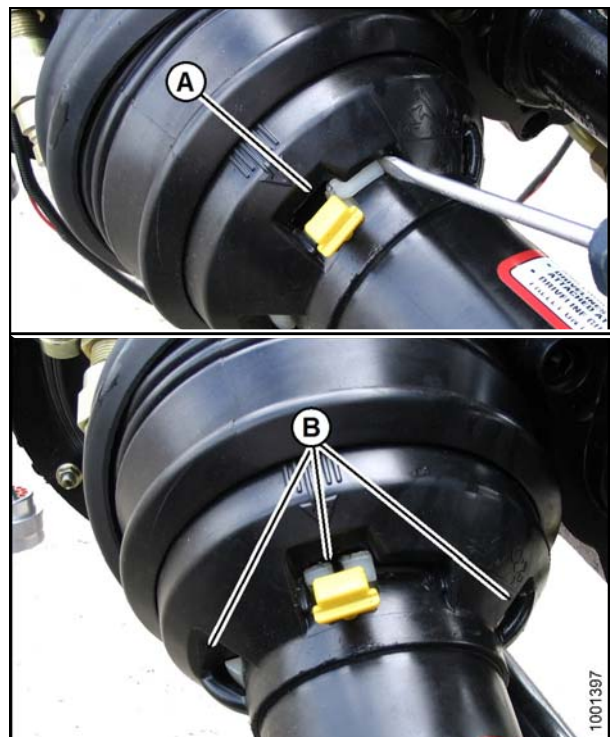
## MAINTENANCE AND SERVICING

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



**Figure 5.39: Guard**

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 5.40: Guard**

## 5.6.4 Installing Driveline Guard

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 5.41: Guard

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

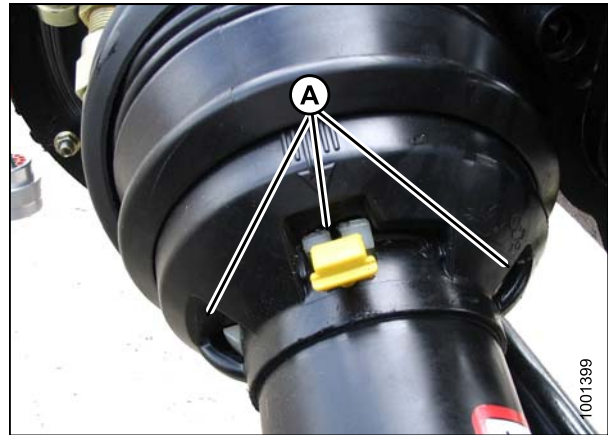


Figure 5.42: Guard

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

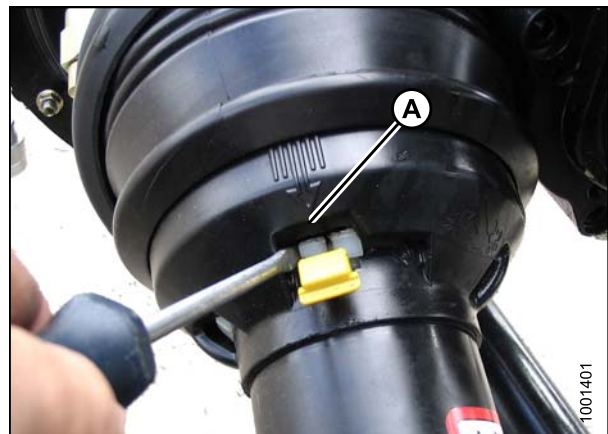


Figure 5.43: Guard

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4. Push grease zerk (A) back into guard.



Figure 5.44: Guard

5. Reassemble driveline.

**NOTE:**

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

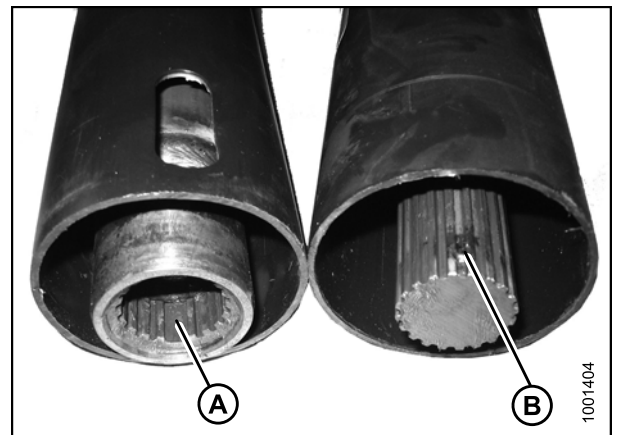


Figure 5.45: Driveline

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

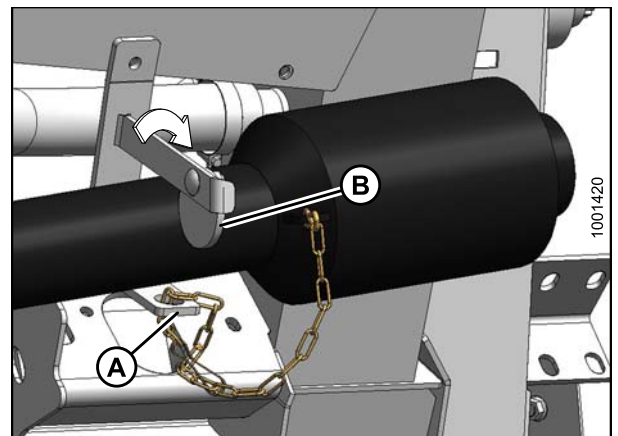


Figure 5.46: Driveline



## 5.6.5 Adjusting Tension on Gearbox Drive Chain

The chain inside the gearbox has been tensioned at the factory and requires no maintenance, other than to adjust the tension every 500 hours or annually. To adjust chain tension, follow these steps:

### DANGER

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

1. Lower header, stop engine, and remove key.
2. Remove two bolts and 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).

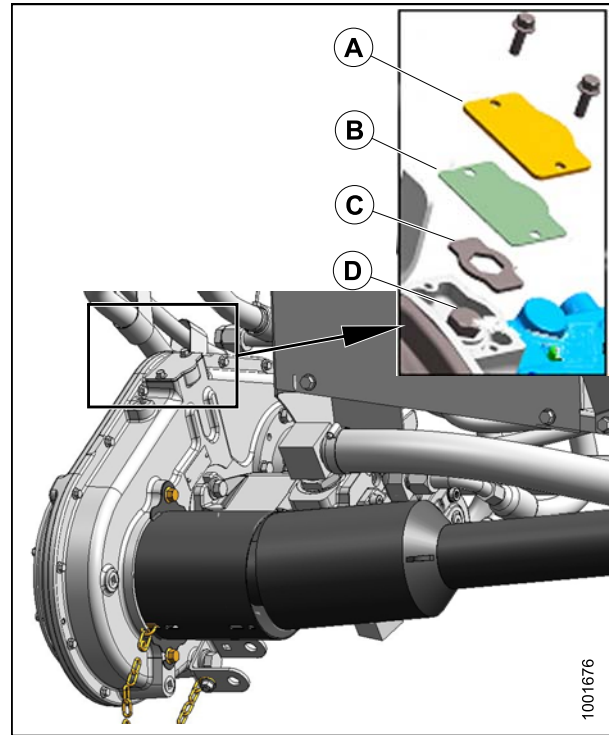


Figure 5.47: Chain Tensioner



## 5.7 Auger

The CA25 Combine Adapter auger feeds the cut crop from the draper decks into the combine feeder house.

### 5.7.1 Adjusting Auger to Pan Clearance

**IMPORTANT:**

An appropriate distance must be maintained between the auger and the auger pan. Too little clearance may result in the tines or flighting contacting and damaging the draper or feed pan under certain orientations of the header. Look for evidence of contact when greasing the adapter.

To adjust the auger pan clearance, follow these steps:

1. Extend center-link to maximum for steepest header angle, and position the header 6–10 in. (150–254 mm) off the ground.
2. Lock header wings. Refer to [Locking/Unlocking Header Wings, page 64](#).



**DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

3. Shut down combine and remove key from ignition.
4. Check that float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

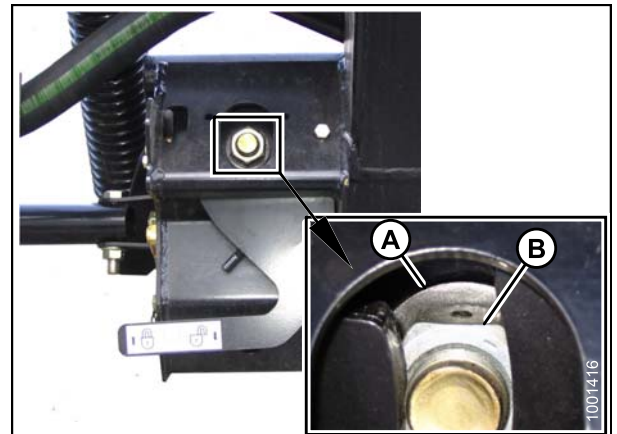


Figure 5.48: Float Lock

5. Check that linkage bars (A) are against studs (B) at lower end of bars at both ends of the auger.

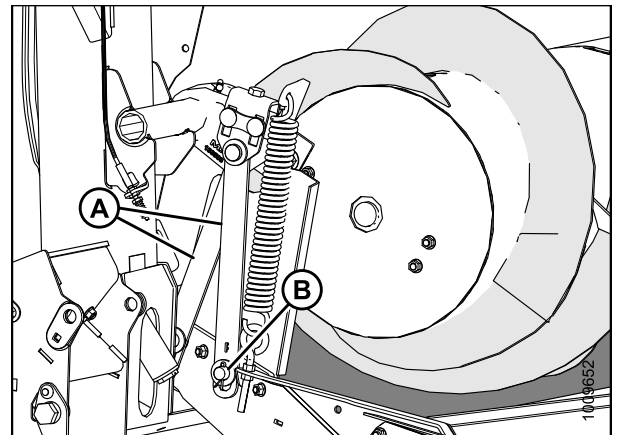


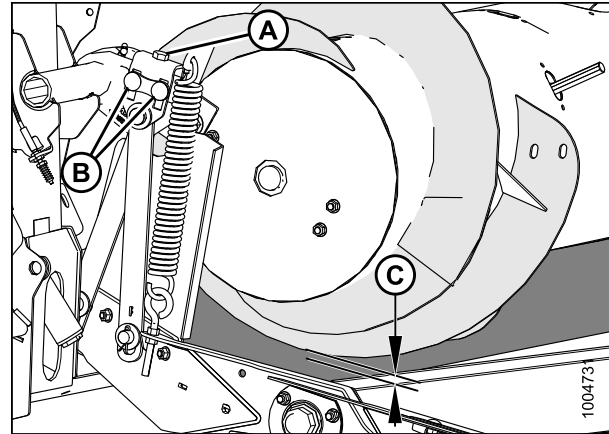
Figure 5.49: Linkage Bars

6. Loosen two nuts (B).
7. Set clearance (C) to 3/16–3/8 in. (5–10 mm) with adjuster bolt (A). Turn bolt clockwise to increase clearance, counterclockwise to decrease.

**NOTE:**

The clearance increases to 1–1-1/2 in. (25–40 mm) when the center-link fully retracts for a flatter header angle.

8. Repeat Steps [6., page 286](#) and [7., page 286](#) for other end of auger.
9. Tighten nuts (B) on both ends of feed auger. Torque nuts to 79–87 ft-lbf (106–118 N·m).



**Figure 5.50: Auger Clearance**

## 5.7.2 Adjusting Auger Drive Chain Tension

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

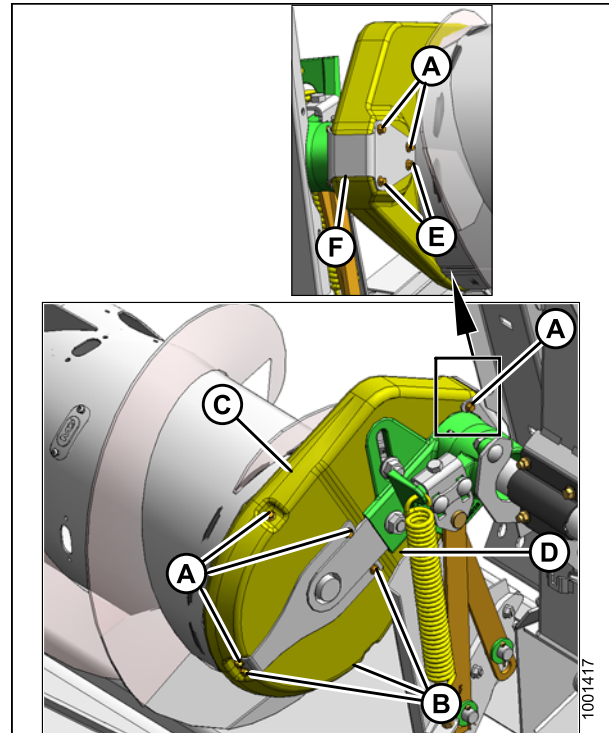
To adjust chain slack, follow these steps:



### DANGER

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

1. Detach header from combine. For instructions, refer to [4 Header Attachment/Detachment, page 197](#).
2. Remove the six bolts (A) that secure the top cover on the auger chain case.
3. Remove the three bolts (B) and loosen two bolts (E) that secure the bottom cover.
4. Remove cover retainer (F).
5. Rotate top cover (C) and bottom cover (D) forward to remove.



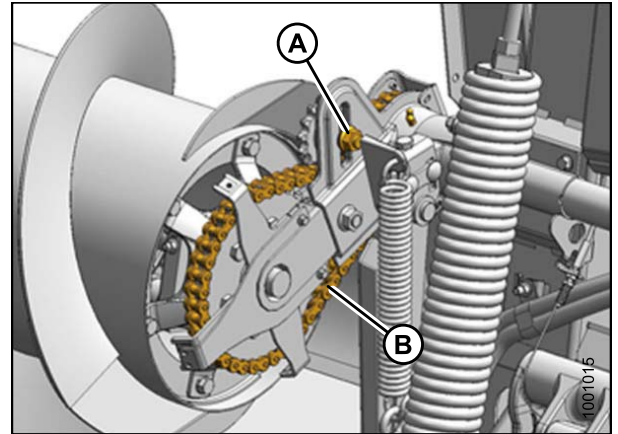
**Figure 5.51: Auger Drive**

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

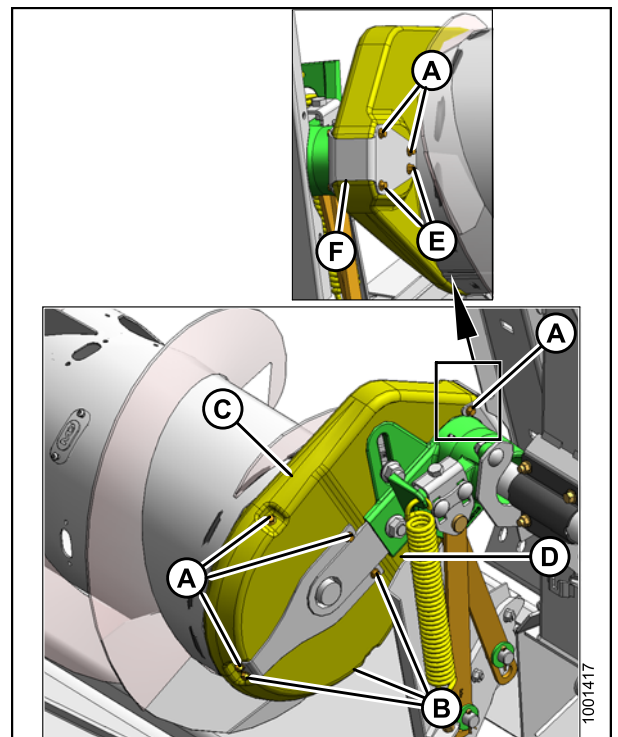
**NOTE:**

Do **NOT** use excessive force on idler to tighten chain.

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



**Figure 5.52: Auger Drive**



**Figure 5.53: Auger Drive**

## 5.7.3 Removing Auger Drive Chain

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.

To replace the auger drive chain, follow these steps:

## **⚠ DANGER**

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

## MAINTENANCE AND SERVICING

1. Detach header from combine. For instructions, refer to [4 Header Attachment/Detachment, page 197](#).
2. Remove the six bolts (A) that secure the top cover on the auger chain case.
3. Remove the three bolts (B) and loosen two bolts (E) that secure the bottom cover.
4. Remove cover retainer (F).
5. Rotate top cover (C) and bottom cover (D) forward to remove.

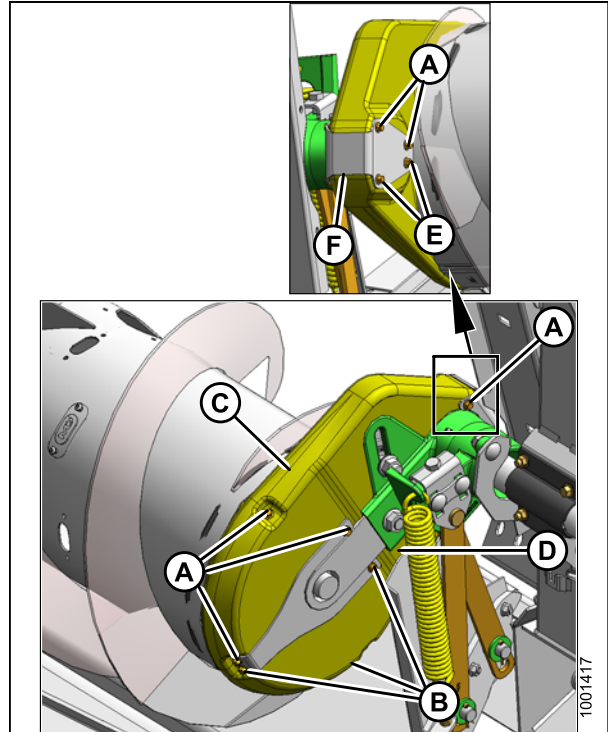


Figure 5.54: Auger Drive

6. Loosen idler sprocket bolt (A), and raise sprocket (B) to uppermost position to release tension on chain. Tighten bolt (A) to hold sprocket.

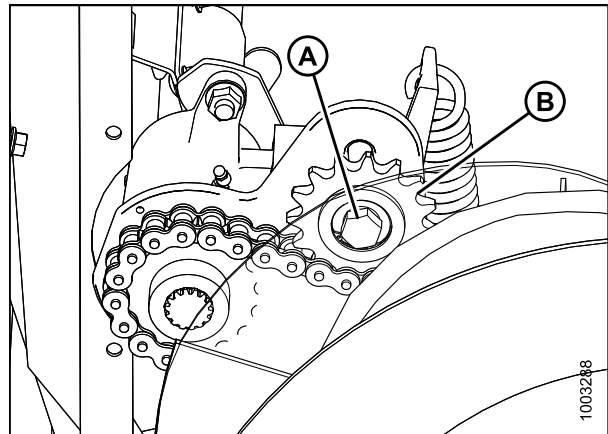


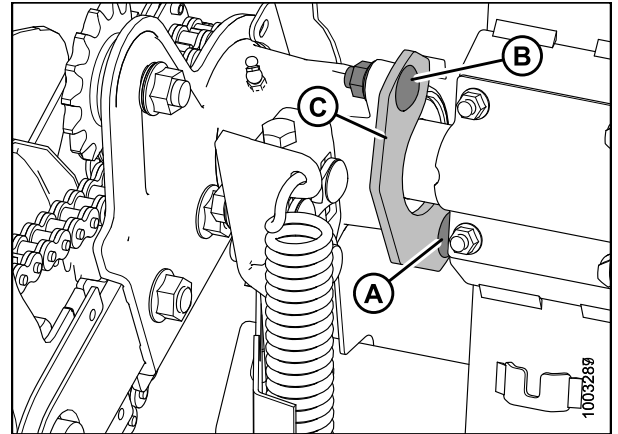
Figure 5.55: Auger Drive

## MAINTENANCE AND SERVICING

7. Remove lower bolt (A) and loosen top bolt (B). Swing C-clamp (C) and slide drive assembly to the right.

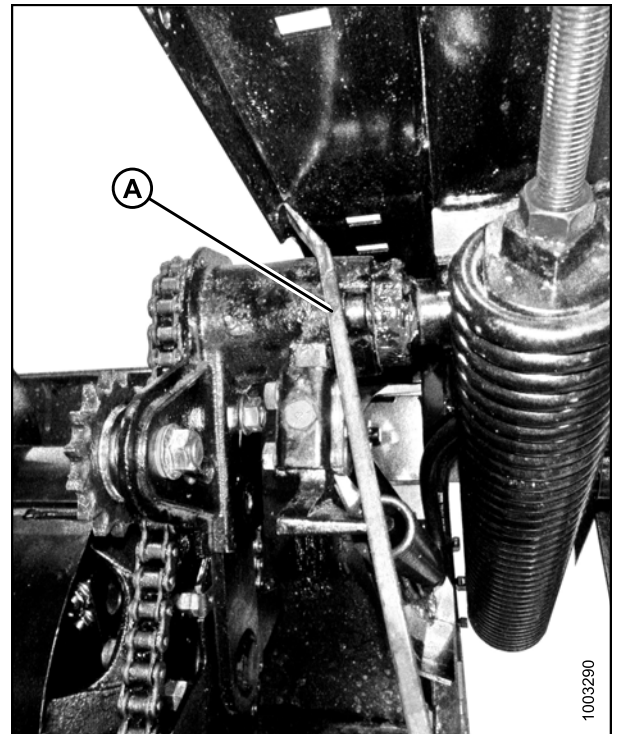
**NOTE:**

This will allow the drive sprocket to fall off shaft.



**Figure 5.56: Auger Support**

8. Using a pry bar (A), slide drum assembly to the right side of the CA25.

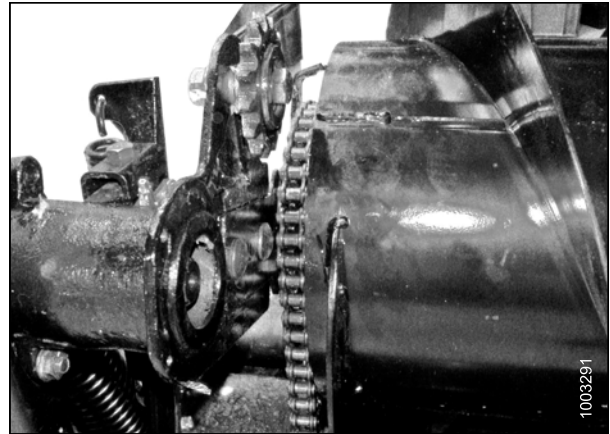


**Figure 5.57: Auger Drive**

## MAINTENANCE AND SERVICING

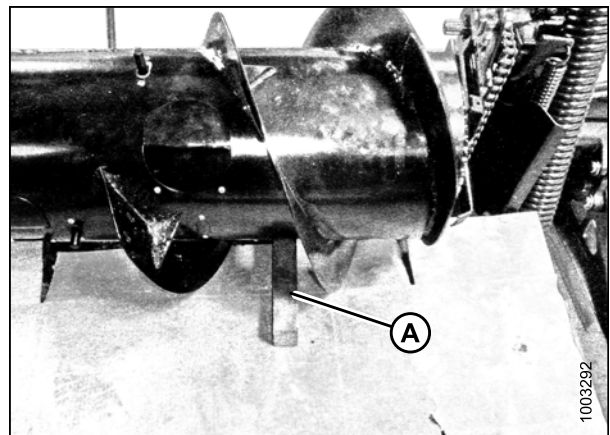
**NOTE:**

Once the drum starts sliding to the right, the drive sprocket will fall off.



**Figure 5.58: Auger Drive**

9. Place a wooden block (A) under the drive end of the auger to prevent the auger from dropping onto the feed draper and damaging it.



**Figure 5.59: Auger**

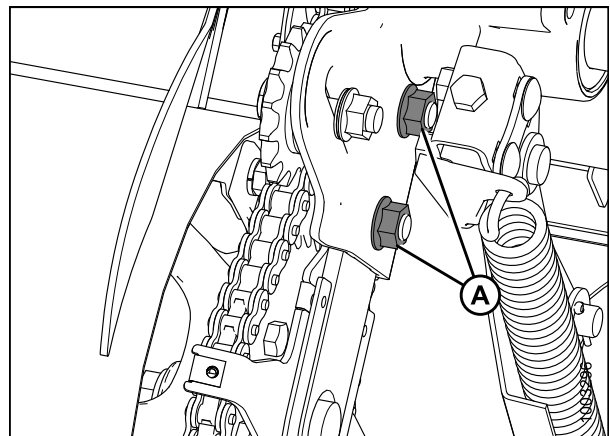
10. Remove the two bolts and nuts (A), and separate the drive housing from the auger mount bracket.

**NOTE:**

You may need to lift or support drum to remove bolts.

**NOTE:**

Bolts on the left side housing are longer than the bolts on the right side housing.



**Figure 5.60: Auger Support**

11. Slide left housing (A) back into position so the endless chain (B) can be removed.

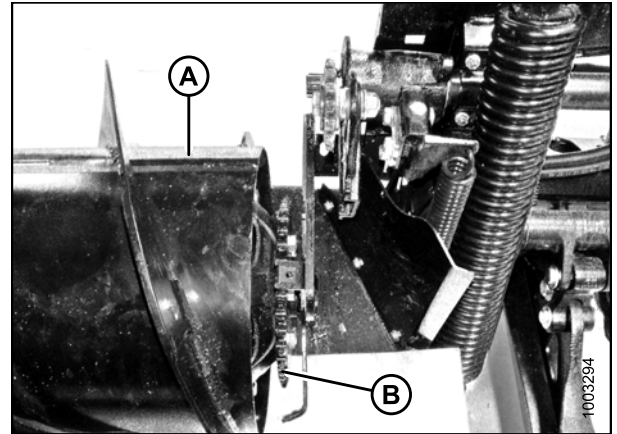


Figure 5.61: Auger Drive

## 5.7.4 Installing Auger Drive Chain

To install the auger drive chain, follow these steps:

1. Place the drive chain over the sprocket. Slide the left-hand housing toward the drum and mount just enough to still leave the driveshaft 1/2 in. (13 mm) exposed. Bolt the assembly together.

**NOTE:**

Blocking the left side of the drum may make this step easier.

2. Remove block if used. Prior to hooking up the chain to the drive assembly, rotate drum in forward and reverse a couple of times. This will ensure the drum has been rebuilt correctly.

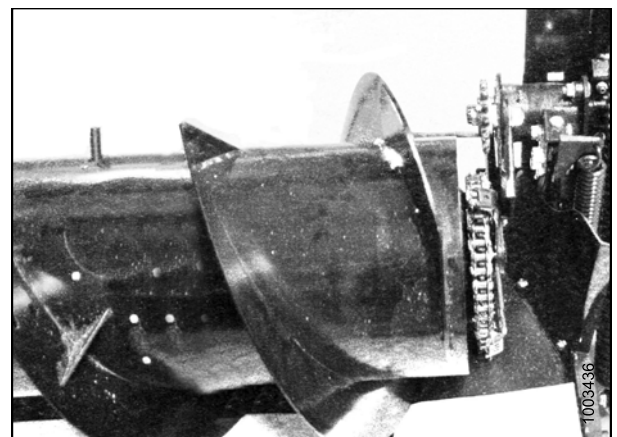


Figure 5.62: Auger Drive

3. Align sprocket on shaft and put drive sprocket (A) into chain (B).

**NOTE:**

The shoulder of the drive sprocket (A) faces the auger.

4. Slide entire drum assembly back in place and bolt down the C-clamp (C) over the housing.

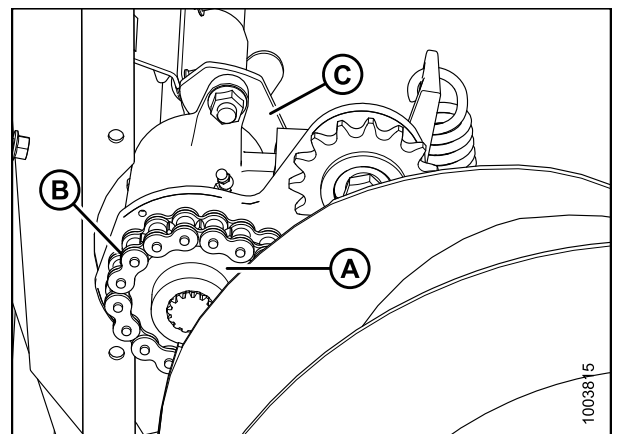


Figure 5.63: Auger Drive



## MAINTENANCE AND SERVICING

5. Loosen bolt (A) securing idler sprocket (B).
6. Rotate auger in reverse to take up slack in lower strand of chain (C).

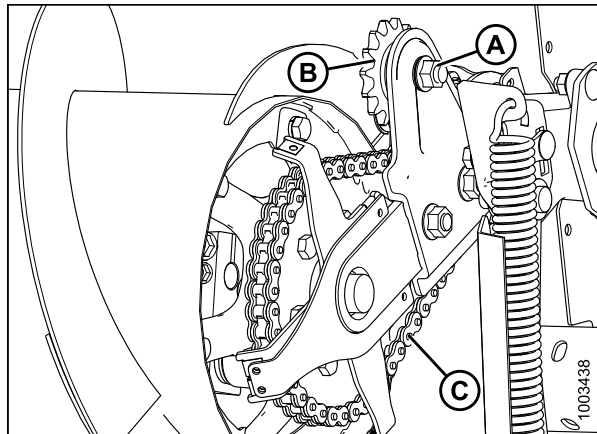


Figure 5.64: Auger Drive

7. Push idler sprocket (A) down to eliminate remaining slack in upper strands (B).
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 sprocket (A) to tighten chain (B).

9. Torque idler bolt (C) to 121–134 ft·lbf (163–181 N·m).

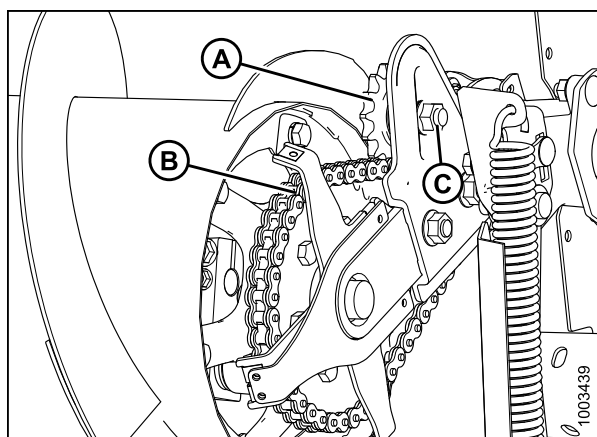


Figure 5.65: Auger Drive

## MAINTENANCE AND SERVICING

10. Reinstall covers (C) and (D). Engage inboard lip of cover into auger tube and rotate cover back to engage rear support.
11. Install cover retainer (F).
12. Replace and tighten bolts (A), (B), and (E).

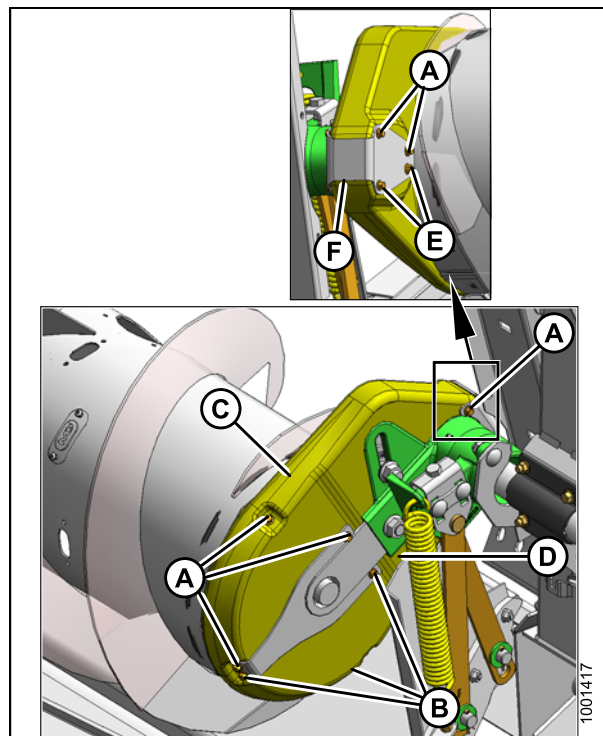


Figure 5.66: Auger Drive

### 5.7.5 Auger Tines

The CA25 auger uses retracting tines to feed the crop into the combine feeder house. Some conditions may require the removal or addition of tines for optimal feeding of the crop. Tines that become worn or damaged should be replaced.

#### *Removing Feed Auger Tines*



#### **DANGER**

**To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.**

1. Raise reel, shutdown combine and remove key from ignition.
2. Engage reel safety props.

## MAINTENANCE AND SERVICING

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

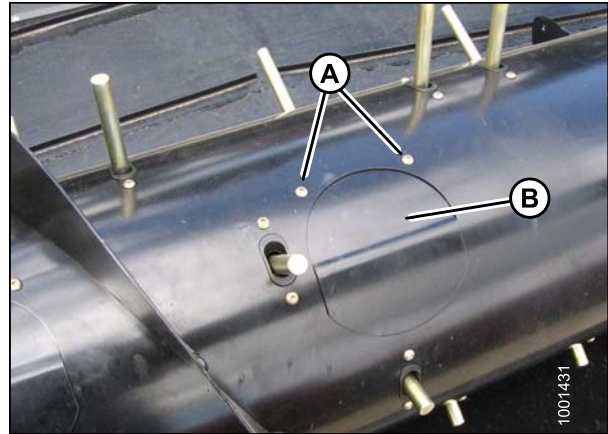


Figure 5.67: Auger

4. From inside the auger, remove hairpin (A), and pull tine (B) out of bushing (C).
5. From inside the auger, swivel tine away from bushing, pull from plastic guide (D), and remove from auger.

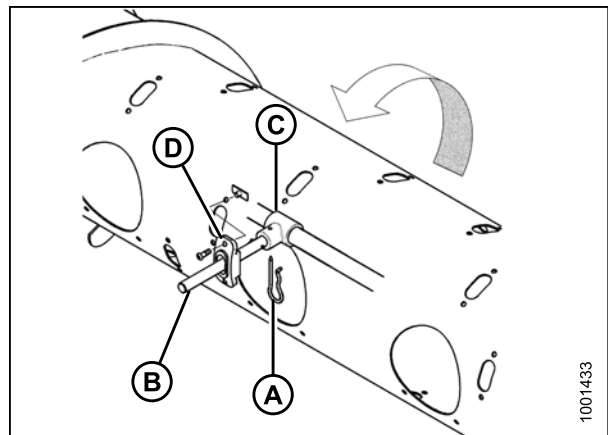


Figure 5.68: Auger

### 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.

6. If tine is not reinstalled, proceed to next step. Otherwise, refer to [Installing Feed Auger Tines, page 295](#).

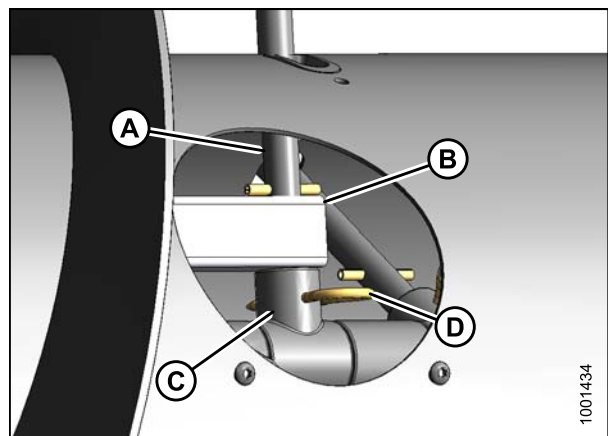


Figure 5.69: Inside Auger

## MAINTENANCE AND SERVICING

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

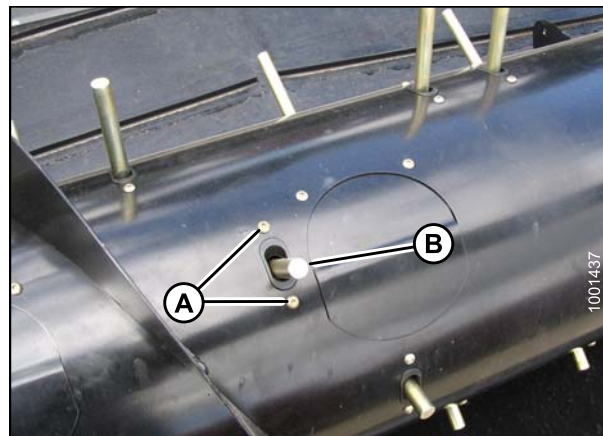


Figure 5.70: Auger

8. 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).

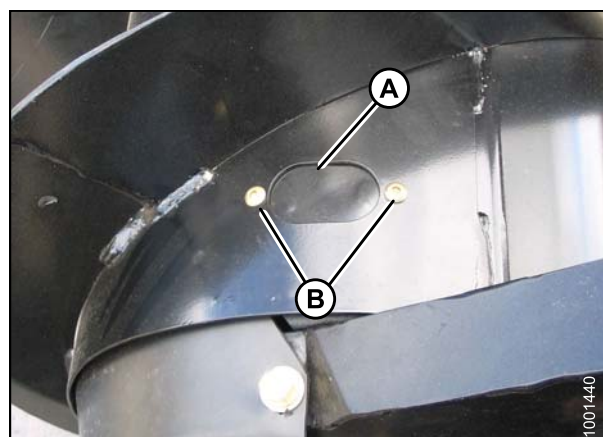


Figure 5.71: Auger

### *Installing Feed Auger Tines*

1. Remove access cover (if applicable).
2. Insert tine (B) through plastic guide (D) from inside the auger.
3. Insert tine into bushing (C).

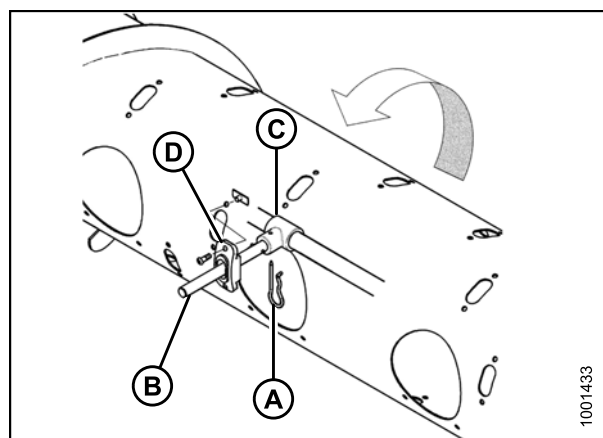


Figure 5.72: Tine

A - Hairpin  
C - Bushing

B - Tine  
D - Plastic Guide

## MAINTENANCE AND SERVICING

### NOTE:

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

- Secure tine (A) in bushing (C) with hairpin (D). Install hairpin with closed end leading with respect to auger forward rotation.
- 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).

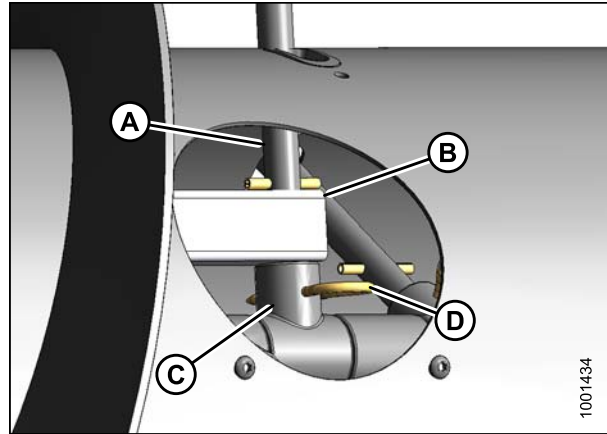


Figure 5.73: Tine

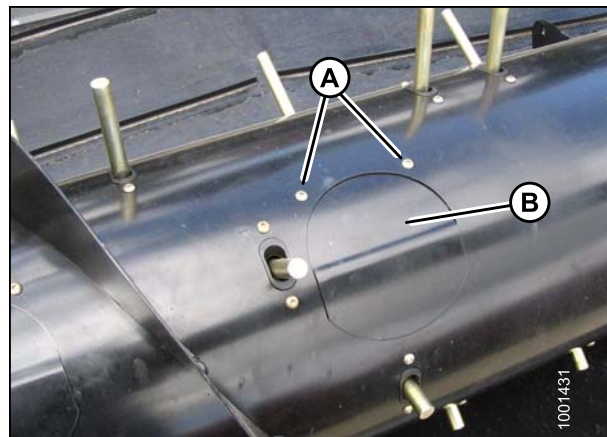


Figure 5.74: Auger

### Replacing Auger Tine Guides

- Remove tine (B) and plastic guide (D). Refer to [Removing Feed Auger Tines, page 293](#).

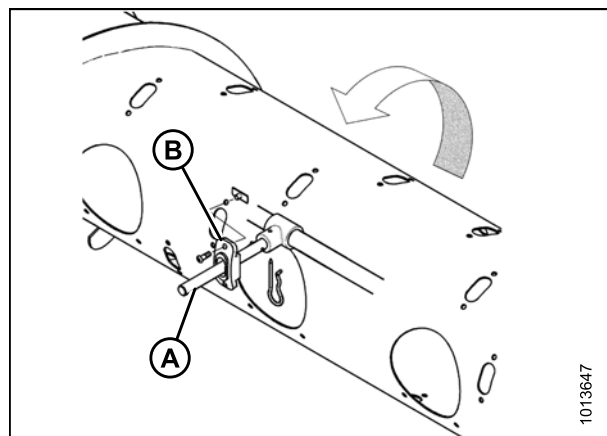


Figure 5.75: Auger

2. Position plastic guide (B) from inside auger and secure with screws (A). Coat screws with Loctite® #243 (or equivalent), and torque to 75 in·lbf (8.5 N·m).
3. Reinstall tine. Refer to [Installing Feed Auger Tines](#), page 295.

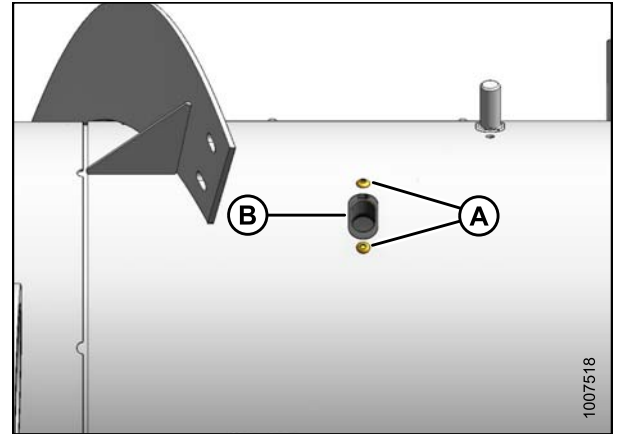


Figure 5.76: Auger

## 5.7.6 Flighting Extensions

### Installing Flighting Extensions

To install flighting extensions to the adapter, follow these steps:

1. Place the flighting extensions (A) outboard of the auger flighting (B). Tighten hardware, finger tight making sure that carriage bolt heads are on the crop side (inside) and nuts (C) are on the outside of the flighting.
2. Stretch flighting extensions (A) to fit auger tube. Use slotted holes on flighting extension to get the best fit around the auger tube.

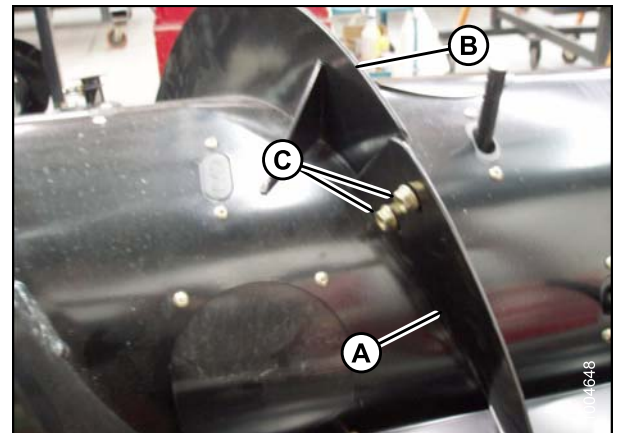


Figure 5.77: Flighting Extension

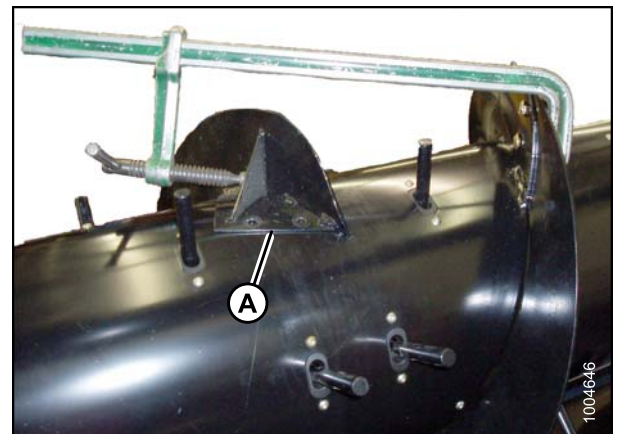


Figure 5.78: Flighting Extension



## MAINTENANCE AND SERVICING

3. With flighting in desired place, mark holes (A) (three per extension), and drill 3/8 in. (76 mm) holes in auger tube.

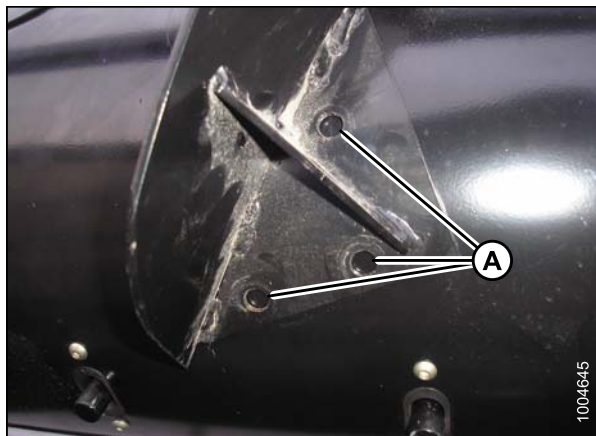


Figure 5.79: Flighting Extension

4. Install bolts. Remove nearest access cover (A) to access inside of drum to install nuts. Tighten all hardware.
5. Replace access cover, and add Loctite® #272 to cover hardware to prevent it from coming loose.

### NOTE:

Ideally the flighting extensions will fit tight to the auger tube. However, it is not unusual for the right-hand flighting extension to overlap the cover panel causing a gap to the auger tube. Even with no interference with the cover, it is not uncommon to have a gap. Crop material may hairpin in this gap, but generally this will not affect performance. If desired, silicone sealant may be used to fill these gaps, preventing material from catching in gap.



Figure 5.80: Auger Access Cover

### Removing Flighting Extensions

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

1. Remove access cover (A).
2. Remove five bolts (B), washers, and nuts that secure flighting extension (C) to the auger.
3. Remove extension (C).
4. Repeat for other flighting extension.
5. Reinstall access cover (A).

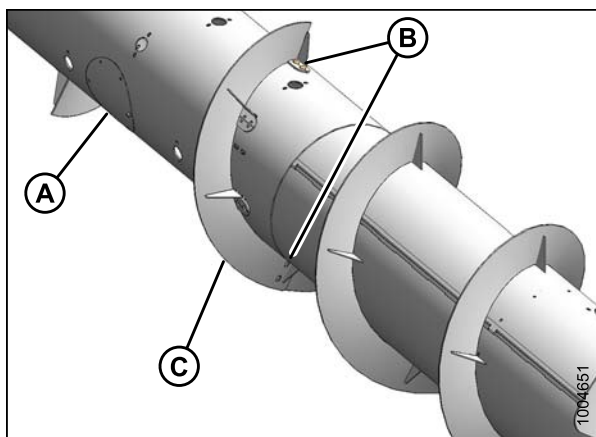


Figure 5.81: Auger Flighting Extensions



## 5.8 Knife

### WARNING

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

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

### CAUTION

Wear heavy gloves when working around or handling knives.

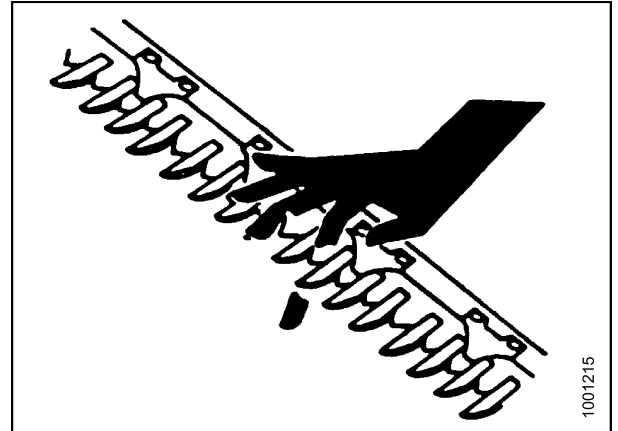


Figure 5.82: Cutterbar Hazard

### 5.8.1 Replacing Knife Section

Check daily that knife sections are firmly bolted to the knife back and are not worn or broken. Damaged or worn sections leave behind uncut plants. A worn or broken section can be replaced without removing knife from cutterbar.

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.

## MAINTENANCE AND SERVICING

To replace a section, follow these steps:

1. Stroke knife as required to center the section (A) between guards.
2. Remove nuts (B).
3. Remove bars (C) and lift section off the knife bar.
4. If section is under a splice bar (D), remove the bar.
5. Clean any dirt off of knife back and position new section on knife.

**IMPORTANT:**

Do NOT mix fine or coarse sections on same knife.

6. Reposition bars (C) and/or (D) and install lock nuts (B).

**NOTE:**

If replacing a screw, make sure to fully insert it. Do not use the nut to draw the screw into the knife bar.

7. Torque nuts to 7 ft·lbf (9.5 N·m).

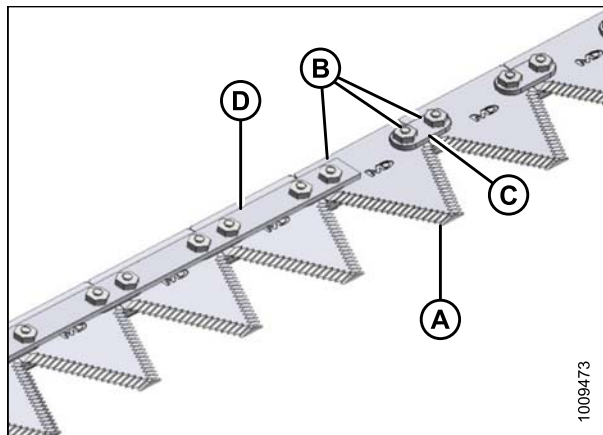
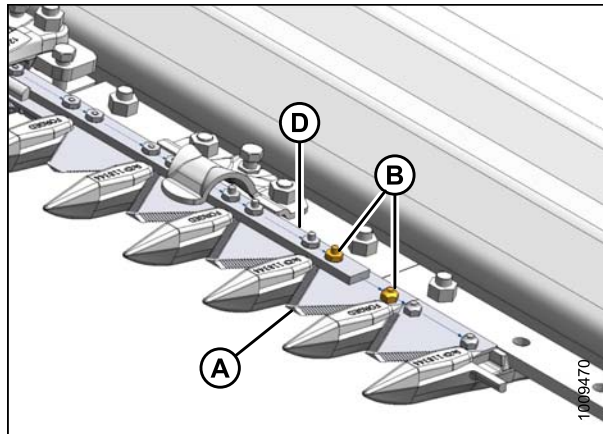


Figure 5.83: Cutterbar

## 5.8.2 Removing Knife

### WARNING

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

Manually stroke knife to its outer limit and clean area around the knifehead.

1. Wrap a chain around knifehead and pull knife out.
2. For **SINGLE-KNIFE DRIVE** with splice plate, remove bolts from splice plate and pull knife out from both ends.

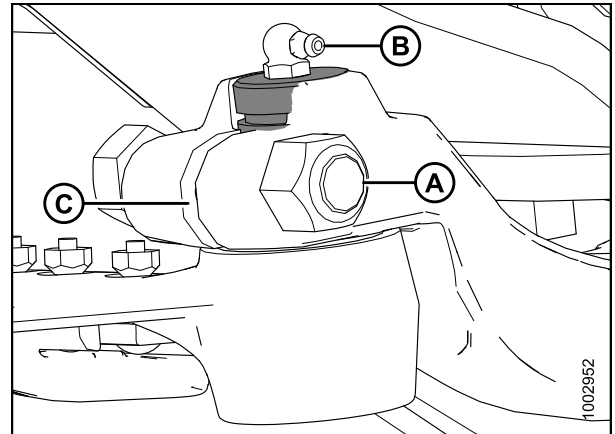


Figure 5.84: Knifehead

## 5.8.3 Removing Knifehead Bearing

Procedure to remove knifehead bearing.

1. Manually stroke knife to its outer limit and clean area around the knifehead.
2. Remove bolt (A).
3. Remove the grease zerk (B) from the pin.
4. Use a screwdriver or a chisel in slot (C) to release load on knifehead pin.
5. Pry pin upward with a screwdriver in pin groove until pin is clear of knifehead.
6. Push the knife assembly inboard until it is clear of the output arm.
7. Seal bearing in knifehead with plastic or tape, unless it is being replaced.

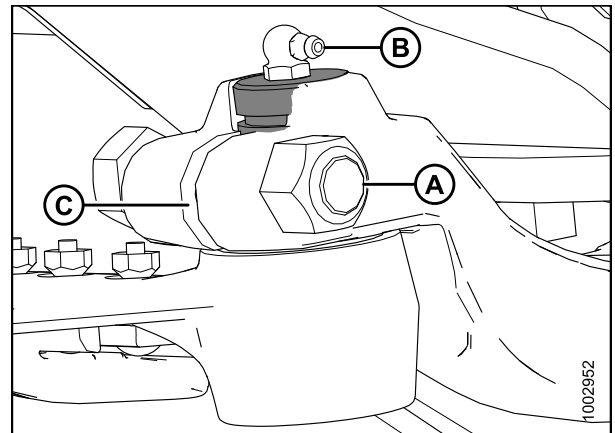
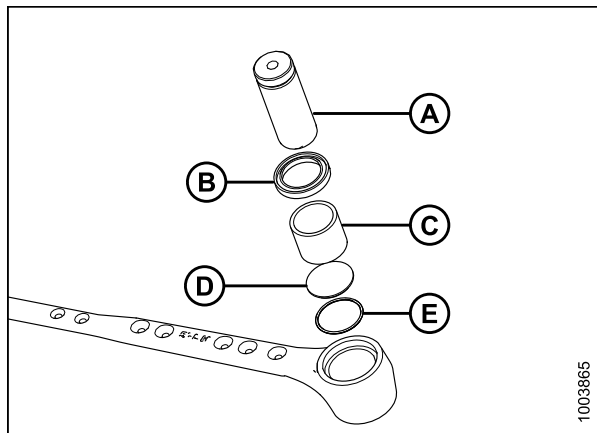


Figure 5.85: Knifehead

8. Using a flat-ended tool with approximately the same diameter as pin (A). From the underside of the knifehead, tap the seal (B), bearing (C), plug (D), and O-ring (E) from the knifehead.

**NOTE:**

Seal (B) can be replaced without removing the bearing. When changing seal, check pin and needle bearing for wear. Replace if necessary.



**Figure 5.86: Knifehead Bearing Assembly**

## 5.8.4 Installing Knifehead Bearing

To install the knifehead bearing, follow these steps:

1. Place O-ring (E) and plug (D) in knifehead.

**IMPORTANT:**

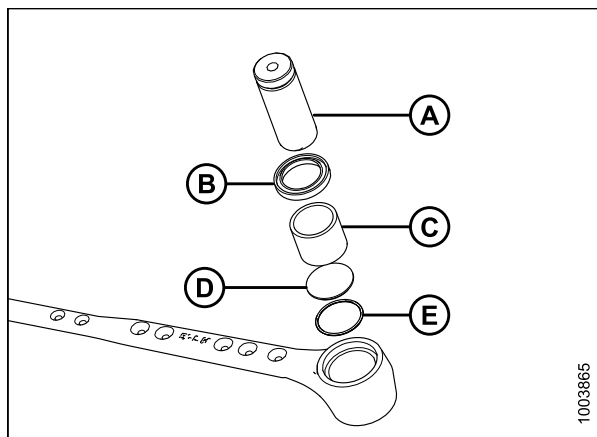
Install the bearing with the stamped end (the end with identification markings) facing up.

2. Using a flat-ended tool (A) with approximately the same diameter as the bearing (C), push the bearing into the knifehead until the top of the bearing is flush with the step in knifehead.
3. Install seal (B) into the knifehead with the lip facing outwards.

**IMPORTANT:**

To avoid premature knifehead or knife drive box failure, be sure there is no looseness in the fit of the knifehead pin and the needle bearing, and the fit of the knifehead pin and output arm.

4. Install knife. Refer to [Installing Knife5.8.5 Installing Knife, page 302](#).



**Figure 5.87: Knifehead Bearing Assembly**

## 5.8.5 Installing Knife



**WARNING**

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

To install a knife, follow these steps:

1. Slide knife into place and align knifehead with the output arm.

## MAINTENANCE AND SERVICING

### NOTE:

For ease of removing or installing knifehead pin, remove grease zerk from pin.

2. Install knifehead pin (A) through the output arm and into the knifehead.
3. Set groove (B) in knifehead pin 1/16 in. (1.5 mm) above (C). Install the 5/8 in. x 3 hex head bolt (D) and nut and torque to 160 ft-lbf (217 N-m).

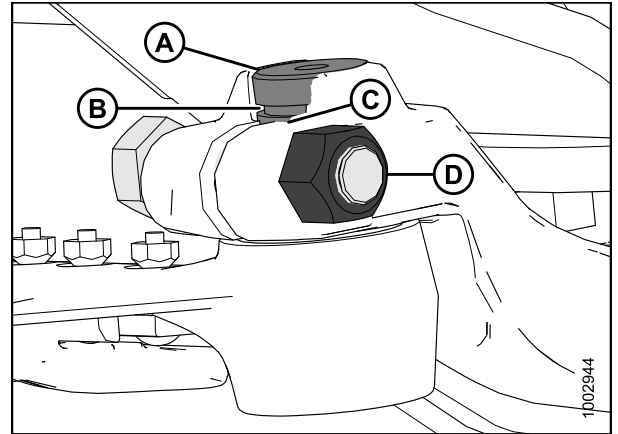


Figure 5.88: Knifehead

4. Install grease zerk (A) into the knifehead pin, turn the grease zerk for easy access.

### IMPORTANT:

Grease knifehead just enough to start a slight downward movement of knifehead. Over-greasing will lead to knife misalignment of the knife which causes guards to overheat and drive systems to overload.

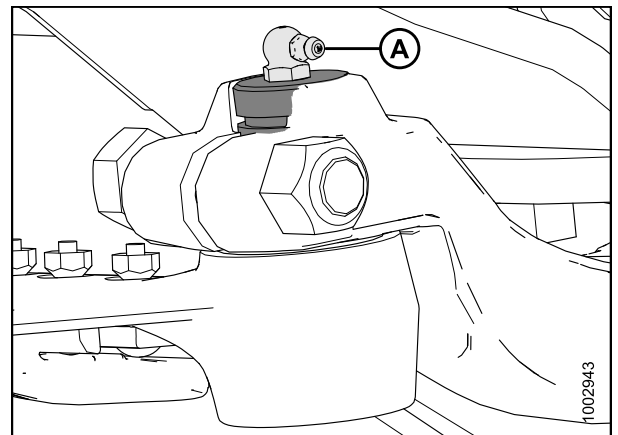


Figure 5.89: Knifehead

### 5.8.6 Spare Knife

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



Figure 5.90: Spare Knife

### 5.8.7 Knife Guards

Check **DAILY** that guards are aligned and that knife sections are contacting shear surface of each guard.

### *Adjusting Knife Guards*

To adjust knife guards, follow these steps:

**NOTE:**

The guard straightening tool (MD #140135) is available from your MacDon Dealer.

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



**Figure 5.91: 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, install a knife hold-down on every guard and then replace lower guards with stub guards.

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 [6.2.3 Stub Guard Conversion Kit, page 410](#).



**Figure 5.92: Downward Adjustment**

## *Replacing Pointed Guards on a Single-Knife Header*

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

### **! WARNING**

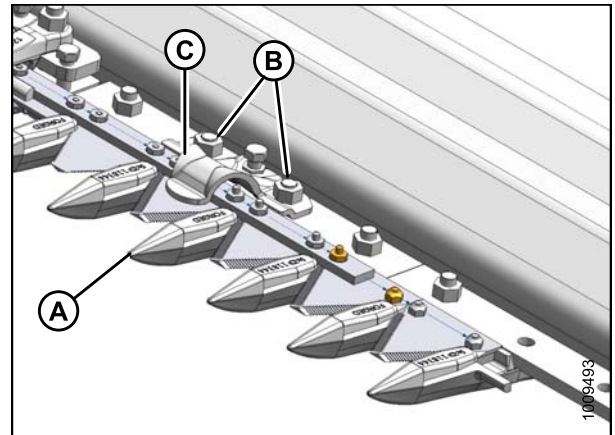
**To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.**

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

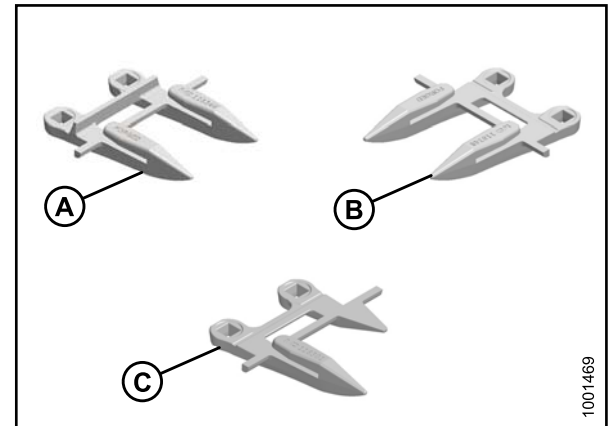
#### **IMPORTANT:**

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 knife. Refer to [Checking Knife Hold-Downs, page 308](#).



**Figure 5.93: Cutterbar**



**Figure 5.94: Guards**

A - Normal

B - Drive Side

C - Half Guard (End)

## *Replacing Pointed Guards on a Double-Knife Header*

### **! WARNING**

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

Refer to [Replacing Pointed Guards on a Single-Knife Header, page 305](#) for typical guard replacement.

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

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



## MAINTENANCE AND SERVICING

1. Remove two bolts and nuts (B) that attach knife guard (A) and top guide (C) to cutterbar.
2. Remove knife guard, plastic wear plate (if installed), top guide (C), and adjuster bar (D).

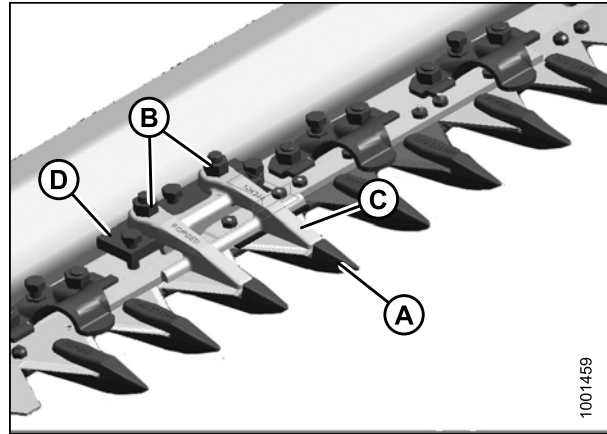


Figure 5.95: Double-Knife Guard

3. Position plastic wear plate (if applicable), replacement guard (A), adjuster bar, and top guide (B). Install bolts, but do **NOT** tighten.

**IMPORTANT:**

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

**NOTE:**

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

4. Check and adjust clearance between hold-down and knife. Refer to [Checking Knife Hold-Downs, page 308](#).

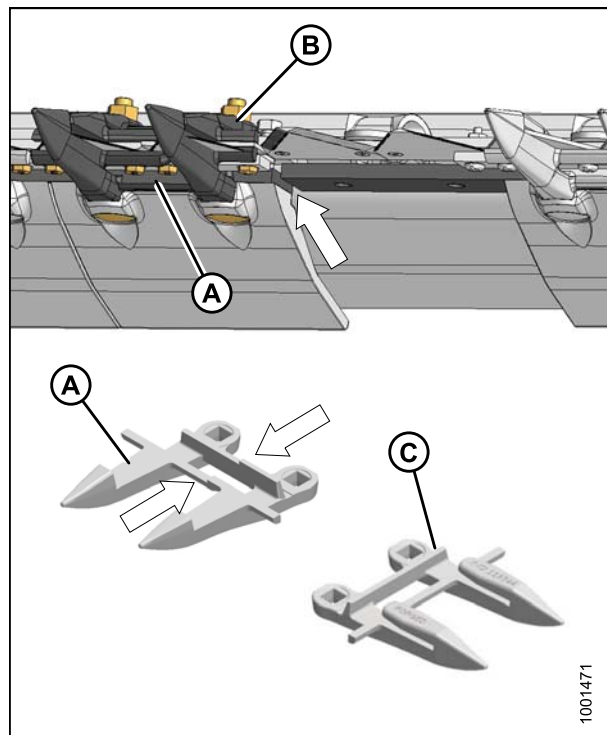


Figure 5.96: Double-Knife Guard

### Replacing Stub Guards on a Single-Knife Header



## WARNING

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

Stub guards are designed for cutting tough crops and are factory installed at the outer ends of specific headers.

## MAINTENANCE AND SERVICING

To replace stub guards, follow these steps:

1. Remove the two nuts (A) and bolts that attach stub guard (B) and top guide (C) to cutterbar.
2. Remove guard, plastic wear plate (if installed), top guide, and adjuster bar (D).
3. Position plastic wear plate (if applicable), replacement stub guard (B), adjuster bar (D), top guide (C), and install bolts and nuts (A). 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.

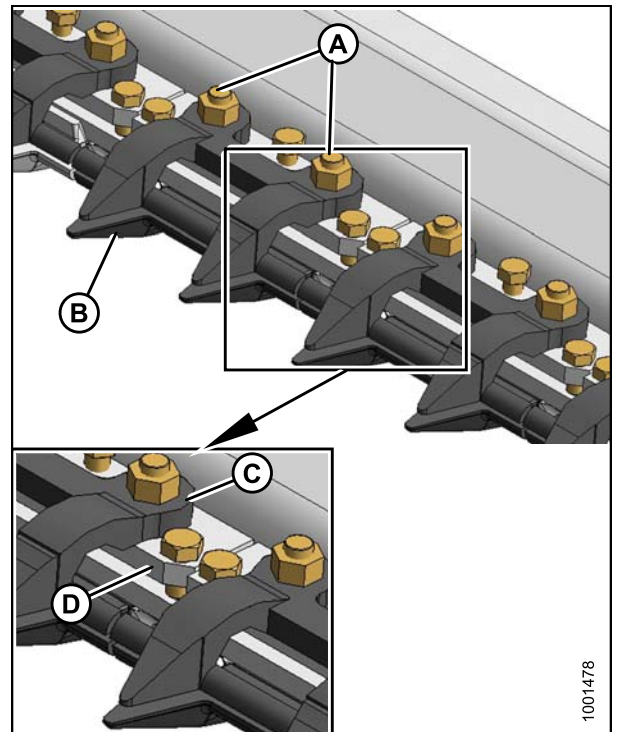


Figure 5.97: Stub Guards

**IMPORTANT:**

The first four outboard guards (B) on the drive side(s) of the header do **NOT** have a ledger plate like the normal guards (A). Ensure that the proper replacement is installed.

4. Check and adjust clearance between hold-down and knife. Refer to [Checking Knife Hold-Downs](#), page 308.

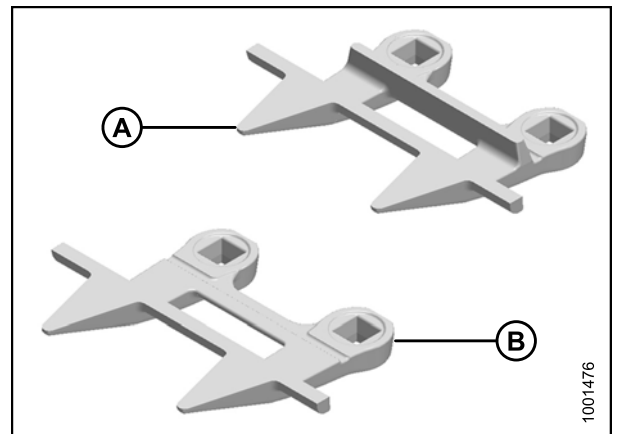


Figure 5.98: Stub Guards

### *Replacing Stub Guards on a Double-Knife Header*

Refer to [Replacing Stub Guards on a Single-Knife Header](#), page 306 for typical guard replacement.

The guard at the center of the double-knife header, where the two knives overlap, requires a slightly different replacement procedure.

To replace the center guard or center top guide, follow these steps:

## MAINTENANCE AND SERVICING

1. Remove the two nuts (A) and bolts that attach guard (B) and top guide (C) and adjuster bar (D) to cutterbar.
2. Remove guard, plastic wear plate (if installed), top guide (C), and adjuster bar (D).
3. Locate plastic wear plate (if applicable), replacement guard (B), adjuster bar (D), top guide (C), and install bolts, but do **NOT** tighten.

### IMPORTANT:

Ensure center guard (B) has offset cutting surfaces. The top guide (C), which is an inverted normal stub guard, must accommodate the two overlapping knives at center guard location on double-knife header. Ensure replacements are correct part.

4. Check and adjust clearance between hold-down and knife. Refer to [Checking Knife Hold-Downs, page 308](#).

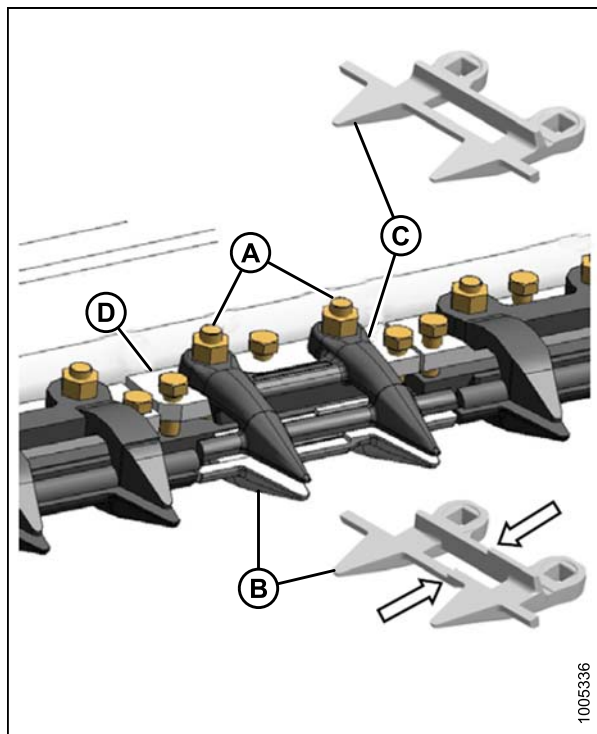


Figure 5.99: Stub Guards

### Checking Knife Hold-Downs

Check daily that knife hold-downs are set to prevent knife sections from lifting off guards, but still permit knife to slide without binding. If there is obvious evidence that the hold-downs are not properly adjusted, check the clearance between the hold down and knife section with a feeler gauge.

Refer to:

- [Adjusting Hold-Downs with Pointed Guards, page 309](#)
- [Adjusting Hold-Downs with Stub Guards, page 310](#)

### NOTE:

Guards should be aligned prior to adjusting hold-downs. Refer to [Adjusting Knife Guards, page 304](#).

### Adjusting Hold-Downs with Pointed Guards

To adjust the clearance between hold-downs and knife on header with pointed guards, follow these steps:

1. Check the clearance (A) between the normal hold-down and knife section with a feeler gauge. The clearance should be 0.004–0.024 in. (0.1–0.6 mm).
2. Adjust as required by turning bolt (B).

**NOTE:**

For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), then retighten nuts (C).

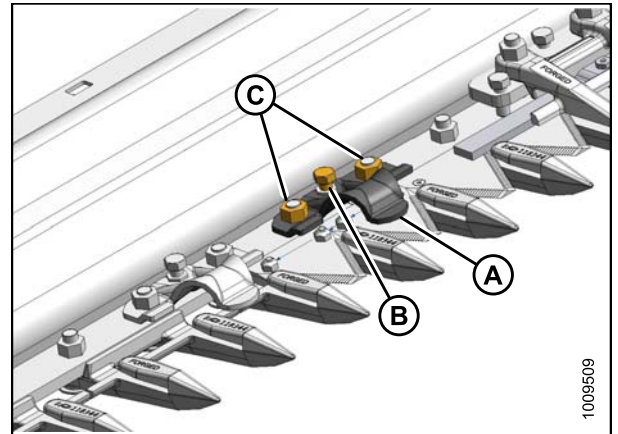


Figure 5.100: Hold-Down Clearance

3. Check the clearances between the center guard hold-down (A) and knife section with a feeler gauge. The clearances should be:
  - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (B)
  - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (C)
4. If required, adjust clearances as follows:
  - a. Torque nuts (D) to 35 ft·lbf (46 N·m).
  - b. Turn the three adjuster bolts (E) as required.
  - c. Torque nuts (D) to 53 ft·lbf (72 N·m).
5. 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 knife and guards. Readjust as necessary.

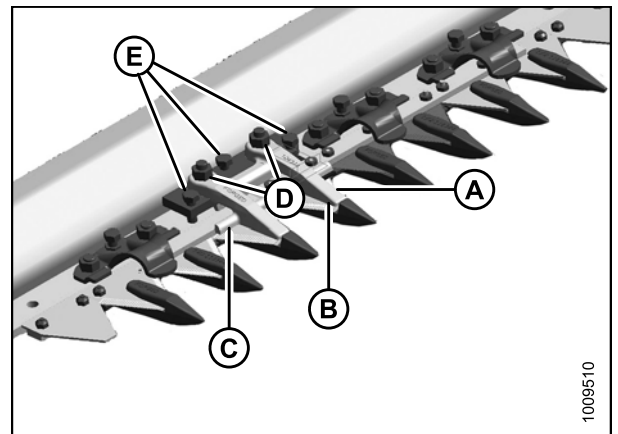
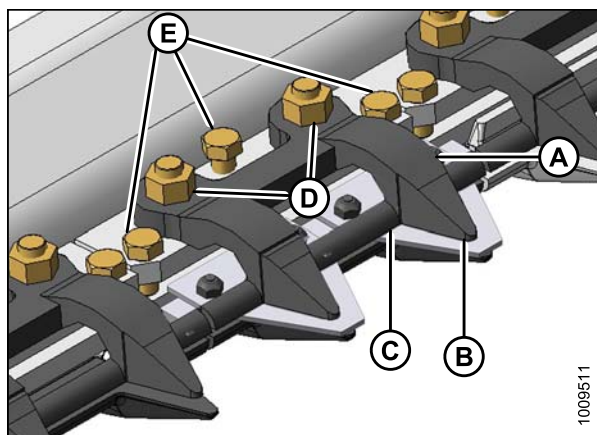


Figure 5.101: Hold-Down Clearance

## Adjusting Hold-Downs with Stub Guards

To adjust the clearance between hold-downs and knife for all stub guards, follow these steps:

1. Check the clearances between the center guard hold-down (A) and knife section with a feeler gauge. The clearances should be:
  - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (B)
  - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (C)
2. If required, adjust clearances as follows:
  - a. Torque nuts (D) to 35 ft·lbf (46 N·m).
  - b. Turn the three adjuster bolts (E) as required.
  - c. Torque nuts (D) 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 knife and guards. Readjust as necessary.



**Figure 5.102: Stub Guards**

## 5.8.8 Knifehead Shield

The shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cut-out, especially in severely lodged crops.

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

### **IMPORTANT:**

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

### *Installing Knifehead Shield*

The knifehead shield is supplied in flattened form and can be bent to suit installation on pointed or stub guard cutterbars and on double-knife headers. Shields are slightly different depending on header size and guard configuration. Ensure proper shield is used. Refer to the header parts catalog for proper replacement parts.



### **DANGER**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

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

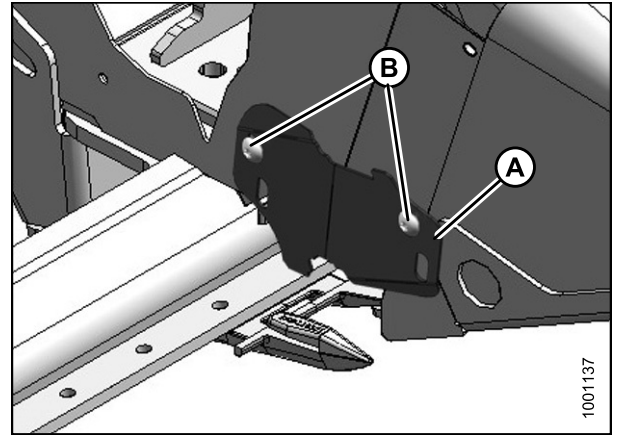


### **CAUTION**

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

## MAINTENANCE AND SERVICING

3. Place knifehead shield (A) against endsheet as shown. Orient the shield so that cutout matches profile of knifehead and/or hold-downs.
4. Bend shield along slit to conform to endsheet.
5. Align mounting holes and then install two 3/8 in. x 1/2 Torx® head bolts (B).
6. Snug up bolts just enough so that shield can be adjusted as close as possible to the knifehead.
7. Manually rotate knife drive box pulley to move knife and check for areas of contact between the knifehead and shield.
8. If required, adjust shield to avoid interference with the knife.
9. Tighten bolts.



**Figure 5.103: Knifehead Shield**

## 5.9 Knife and Knife Drive

### 5.9.1 Knife Drive Box

The knife drive box converts rotational motion into reciprocating motion to the knife. It is belt driven from a hydraulic motor that is powered by the adapter hydraulic pump.

#### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

#### *Checking Mounting Bolts*

Check the torque on the four knife drive box mounting bolts (A) and (B) after the first 10 hours operation and every 100 hours thereafter.

1. Torque side bolts (A) first, then the bottom bolts (B).  
Torque to 200 ft·lbf (271 N m).

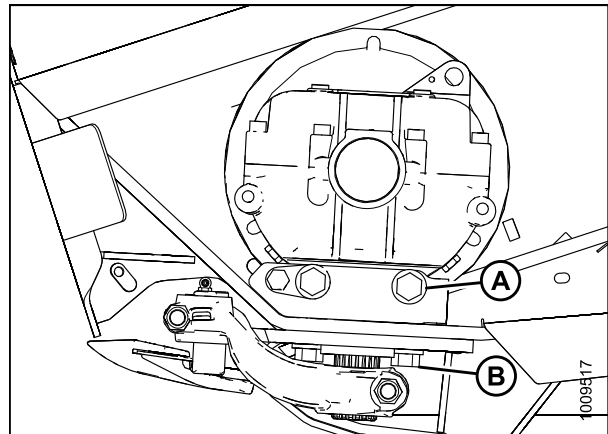


Figure 5.104: Knife Drive Box

#### *Removing Knife Drive Box*

1. Open endshield. Refer to [Opening Endshields, page 33](#).
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Loosen the tension on the belt by turning the tensioning bolt (B) counterclockwise.

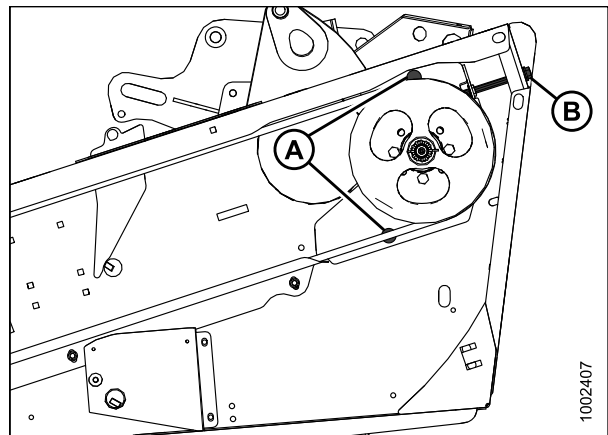
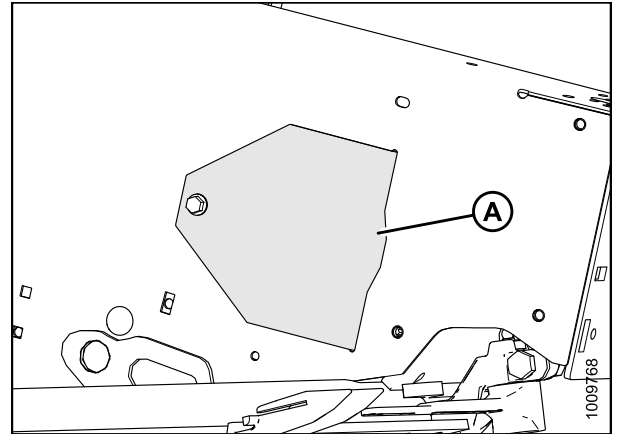


Figure 5.105: Knife Drive



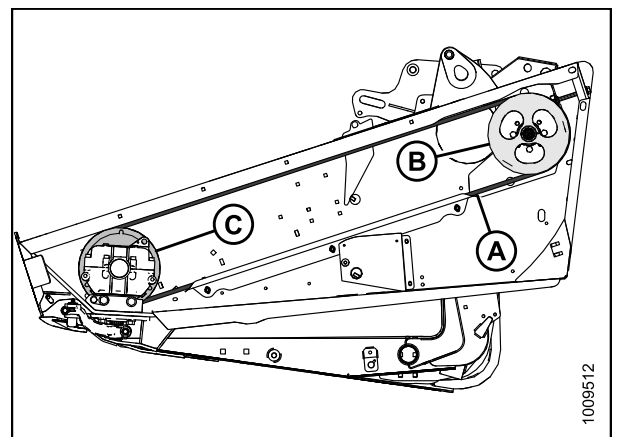
## MAINTENANCE AND SERVICING

4. Open the access cover (A) on the endsheet behind cutterbar to provide clearance between the knife drive box pulley and the endsheet.



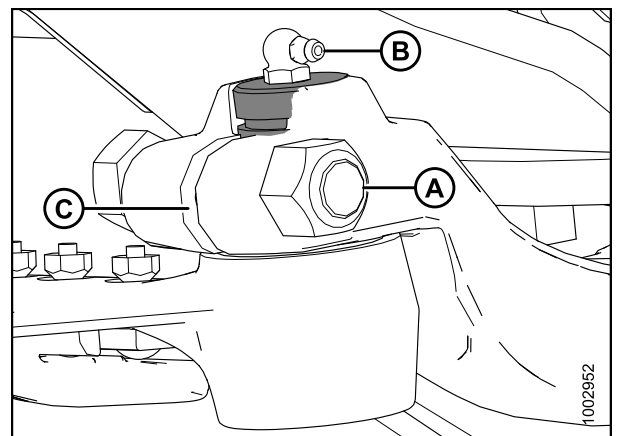
**Figure 5.106: Access Cover**

5. Remove belt (A) from drive pulley (B).
6. Slip belt (A) over and behind the knife drive box pulley (C). Use notch in pulley to assist in removing belt.



**Figure 5.107: Knife Drive**

7. Manually stroke knife to its outer limit and clean area around the knifehead.
8. Remove bolt (A).
9. Remove the grease zerk (B) from the pin.
10. Use a screwdriver or a chisel in slot (C) to release load on knifehead pin.
11. Pry pin upward with a screwdriver in pin groove until pin is clear of knifehead.
12. Push the knife assembly inboard until it is clear of the output arm.
13. Seal bearing in knifehead with plastic or tape, unless it is being replaced.



**Figure 5.108: Knifehead**

## MAINTENANCE AND SERVICING

14. Remove bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
15. Remove the knife drive arm (B) from the knife drive box output shaft.
16. Remove the four knife drive box mounting bolts (C, D).

**NOTE:**

Do **NOT** remove bolt (E), this is factory set. It is used to position the knife drive box in the proper fore-aft position.

17. Remove knife drive box and place on a bench for disassembly.

**CAUTION**

Knife drive box with pulley weighs over 65 lb (35 kg). Use care when removing or installing. Lug (L) can be used for lifting.

18. For double-knife headers, repeat procedure for opposite end.

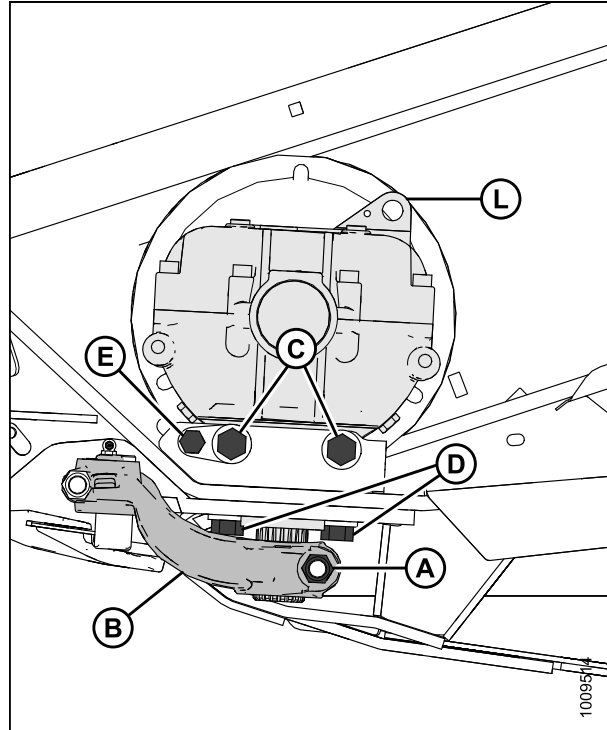


Figure 5.109: Knife Drive Box

### *Removing Knife Drive Box Pulley*

To remove knife drive box pulley, follow these steps:

1. Loosen and remove the knife drive box pulley clamping bolt (A) and nut (B) and remove knife drive box pulley (C).
2. Remove pulley using a three-jaw puller.

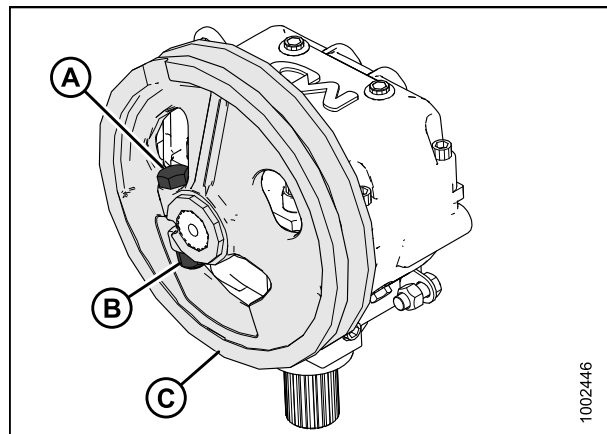


Figure 5.110: Knife Drive Box and Pulley

## *Installing Knife Drive Box Pulley*

To install the knife drive box pulley, follow these steps:

1. Ensure splines and bores in pulley or drive arm are free of paint oil and solvents.
2. Apply Loctite® #243 adhesive (or equivalent) to spline. Apply in two bands (A) around shaft as shown, with one band at end of spline and one band approximately mid-way.
3. Install pulley (B) until flush with end of shaft.
4. Secure pulley with 5/8 in. x 3 hex head bolt with distorted thread NC lock nut and torque to 160 ft-lbf (217 N-m).

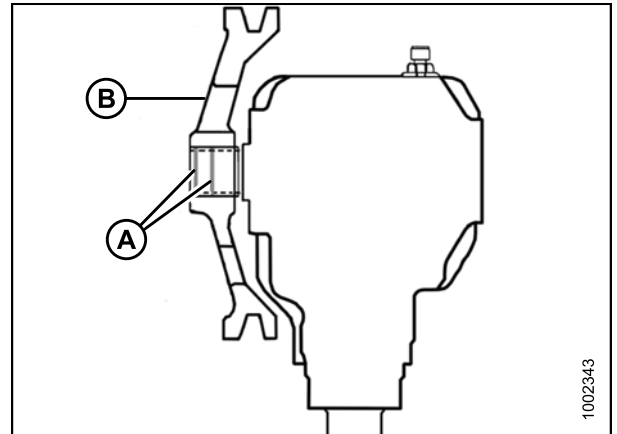


Figure 5.111: Knife Drive Box Pulley

## *Installing Knife Drive Box*

This procedure can be used for single- and double-knife headers.

### **NOTE:**

If the pulley was removed from the knife drive box, refer to [Installing Knife Drive Box Pulley, page 315](#). If the pulley was not removed, then proceed to Step 1., [page 315](#).



### **CAUTION**

**Knife drive box with pulley weighs over 65 lb (35 kg). Use care when removing or installing. Lug (L) can be used for lifting.**

1. Place knife drive box into position on header mount and locate belt on pulley.
2. Install two 5/8 in. x 1.75 grade 8 hex head bolts (A) at the side and two 5/8 in. x 2.25 grade 8 hex head bolts (B) underneath to mount knife drive box to frame.
3. Slightly tighten knife drive box side bolts (A) first, then the bottom bolts (B), to ensure proper contact with vertical and horizontal mounting surfaces. Do **NOT** torque bolts at this time.

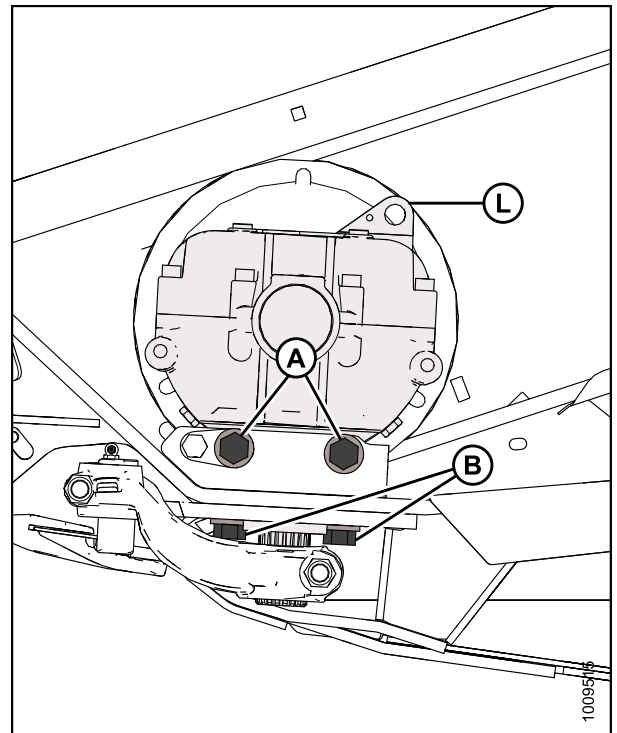
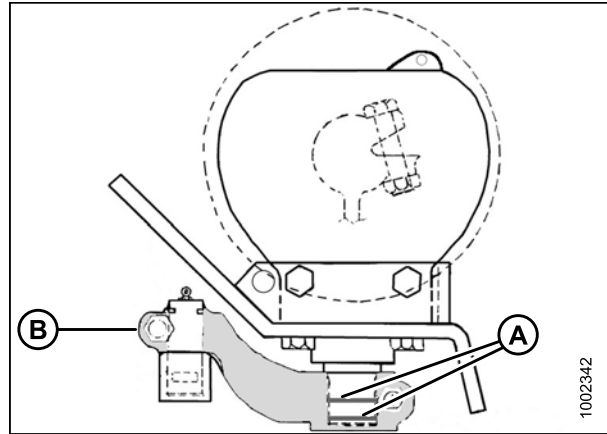


Figure 5.112: Knife Drive Box

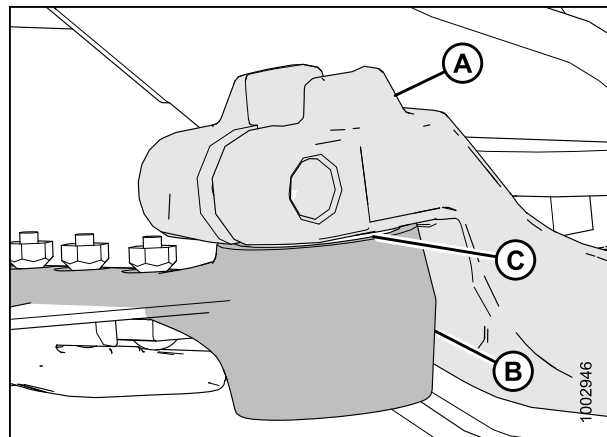
## MAINTENANCE AND SERVICING

4. Apply Loctite® #243 to the output shaft in two bands as shown at (A).
5. Slide output arm (B) onto output shaft. Rotate pulley to ensure drive arm just clears frame on inboard stroke to ensure proper placement on splines.



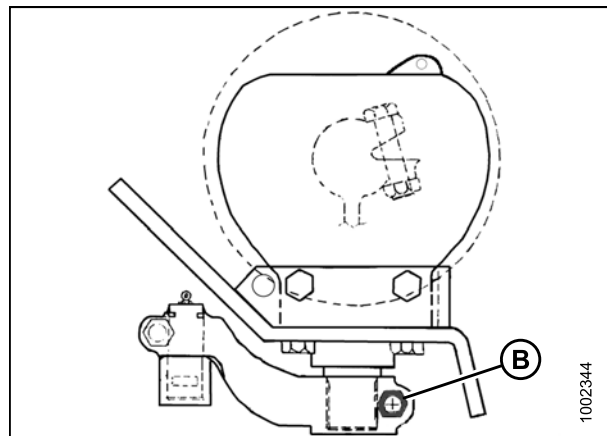
**Figure 5.113: Knife Drive Box**

6. Position output arm (A) to farthest outboard position. Move output arm (A) up or down on splined shaft until it almost contacts knifehead (B). Exact clearance (C) will be set when installing knifehead pin.



**Figure 5.114: Knifehead**

7. Torque output arm bolt (B) to 160 ft·lbf (217 N·m) to secure arm to knife drive output shaft.



**Figure 5.115: Knife Drive Box**

## MAINTENANCE AND SERVICING

### NOTE:

For ease of removing or installing knifehead pin, remove grease zerk from pin.

8. Install knifehead pin (A) through the output arm and into the knifehead.
9. Set groove (B) in knifehead pin 1/16 in. (1.5 mm) above (C). Install the 5/8 in. x 3 hex head bolt (D) and nut and torque to 160 ft·lbf (217 N·m).

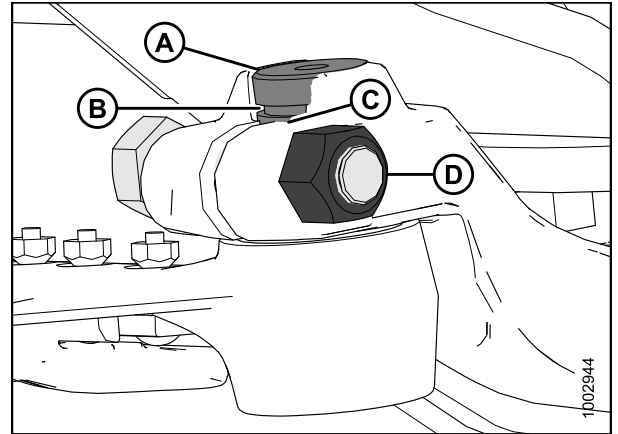


Figure 5.116: Knifehead

10. Install grease zerk (A) into the knifehead pin, turn the grease zerk for easy access.

### IMPORTANT:

Grease knifehead just enough to start a slight downward movement of knifehead. Over-greasing will lead to knife misalignment of the knife which causes guards to overheat and drive systems to overload.

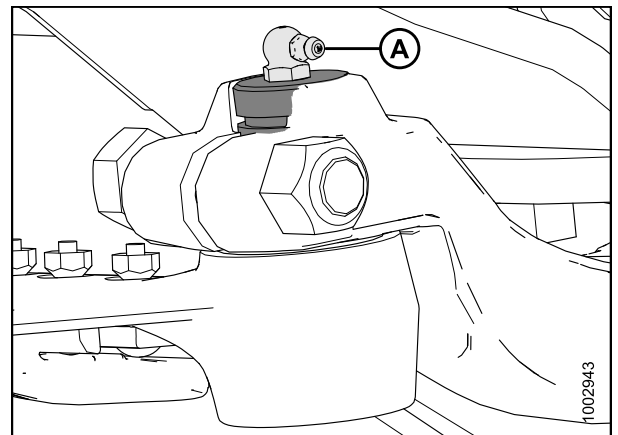


Figure 5.117: Knifehead

11. Check the knife drive box pulley and drive pulley alignment. If adjustment is required, contact your MacDon Dealer.
12. Tighten knife drive box side bolts (A) first, then the bottom bolts (B). Torque to 200 ft·lbf (271 N·m).
13. Stroke the output arm to mid stroke, check and ensure that the knife bar does not contact the front of the first guard. If adjustment is required, contact your MacDon Dealer.
14. Install and tension the knife drive belt(s). Refer to [5.9.2 Knife Drive Belts, page 318](#).
15. Close endshield. Refer to [Closing Endshields, page 34](#).

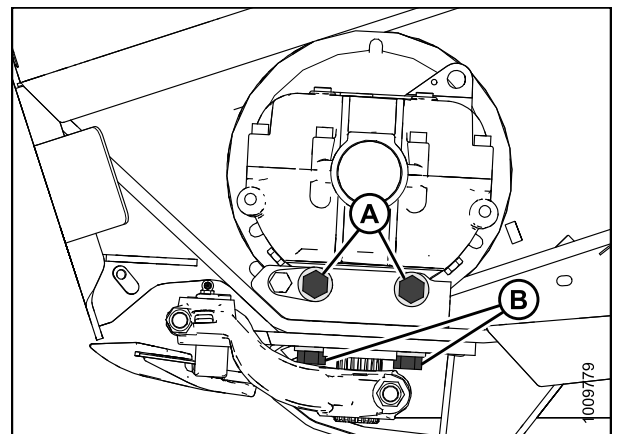


Figure 5.118: Knife Drive Box

### *Changing Oil in Knife Drive Box*

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

To change the oil in the knife drive box, follow these steps:

1. Raise header to allow a suitable container to be placed under the knife box drain to collect oil.
2. Open endshield(s). Refer to [Opening Endshields, page 33](#).
3. Remove breather/dipstick (A) and drain plug (B).
4. Allow oil to drain.
5. Reinstall drain plug (B).
6. Add oil to knife drive box. Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#) for quantity.
7. Close endshield(s). Refer to [Closing Endshields, page 34](#).

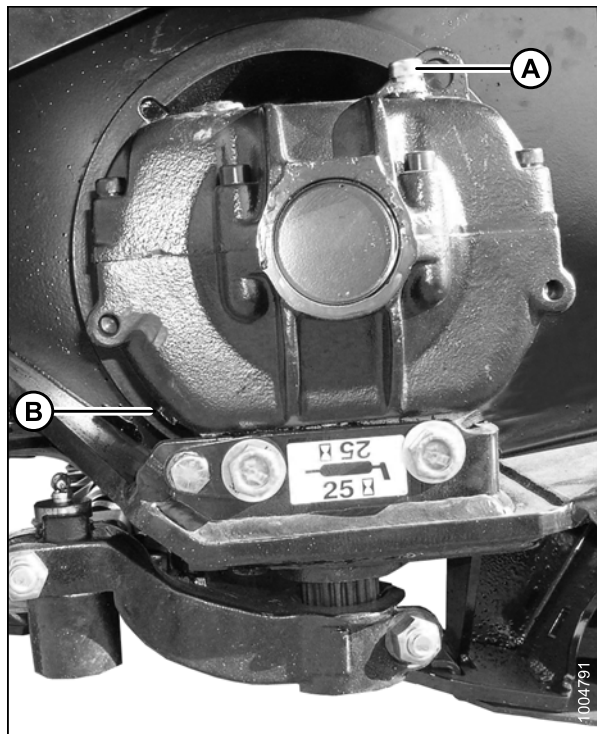


Figure 5.119: Knife Drive Box

### 5.9.2 Knife Drive Belts

The knife drive box is driven with a V-belt from a hydraulic motor on the header left endsheet. An identical drive system is used at the opposite end for 40- and 45-foot double-knife headers.

#### *Removing Knife Drive Belt*

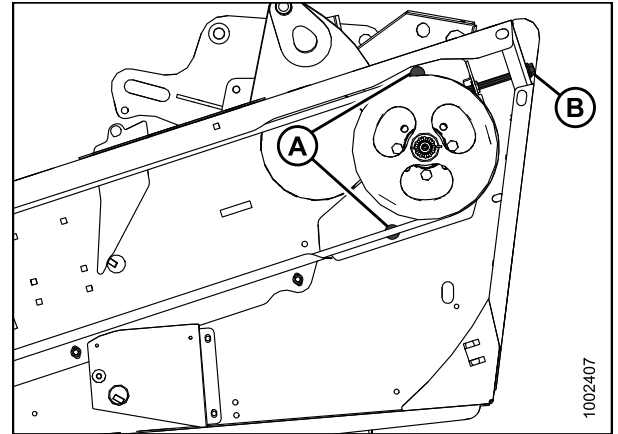
This procedure describes the removal of the knife drive belt on single-knife headers and double-knife headers.

#### **NOTE:**

Procedure is the same for both ends of a double-knife header.

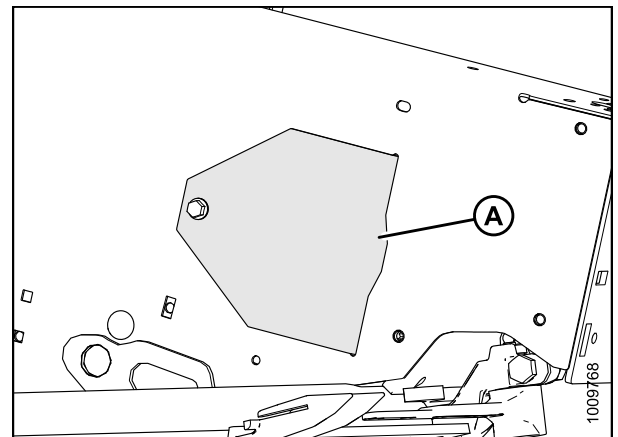
## MAINTENANCE AND SERVICING

1. Open endshield. Refer to [Opening Endshields, page 33](#).
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Loosen the belt by turning the tensioning bolt (B) counterclockwise.



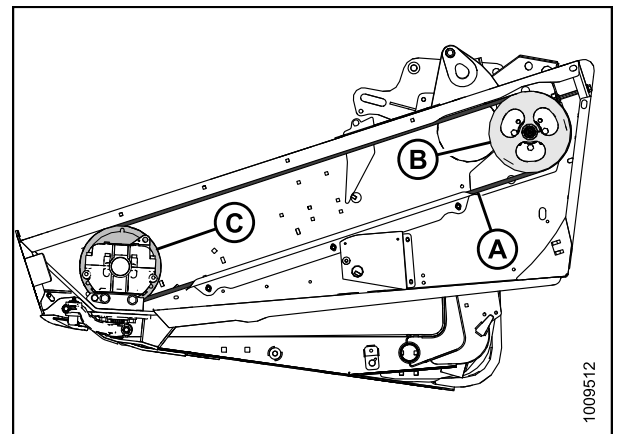
**Figure 5.120: Knife Drive**

4. Open the access cover (A) on the endsheet behind cutterbar to provide clearance between the knife drive box pulley and the endsheet.



**Figure 5.121: Access Cover**

5. Remove belt (A) from drive pulley (B).
6. Slip belt (A) over and behind the knife drive box pulley (C). Use notch in pulley to assist in removing belt.



**Figure 5.122: Knife Drive**

### *Installing Knife Drive Belts*

#### **NOTE:**

Procedure is the same for both ends of the double-knife header.



## MAINTENANCE AND SERVICING

1. Route knife drive belt (A) around knife drive box pulley (C) and knife drive pulley (B). Use notch in pulley (C) to assist in installing belt.

### NOTE:

When installing new belt, never pry belt over pulley. Be sure drive motor is fully forward.

2. Tension knife drive belt. Refer to [Tensioning Knife Drive Belts, page 320](#).

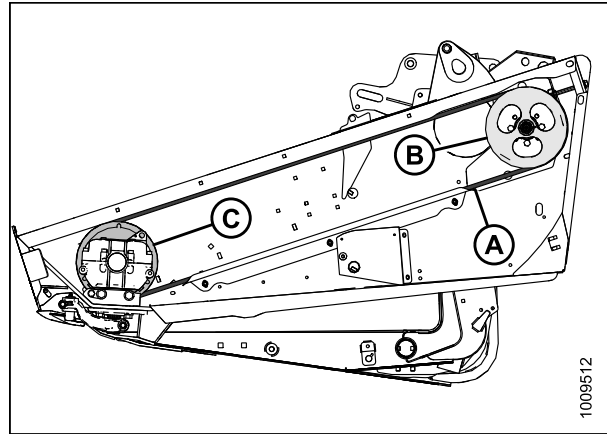


Figure 5.123: Knife Drive

3. Reinstall the access cover (A) and secure it with bolt.
4. Close endshield. Refer to [Closing Endshields, page 34](#).

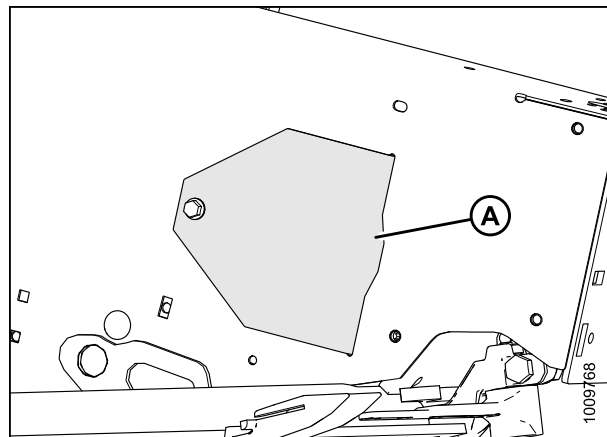


Figure 5.124: Access Cover

### Tensioning Knife Drive Belts

#### IMPORTANT:

To prolong belt and drive life, do **NOT** overtighten belt.

1. Open left endshield.
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Turn adjuster bolt (B) clockwise to move the drive motor until a force of 20 lbf (80 N) deflects belt (C) 3/4 in. (18 mm) at mid-span.

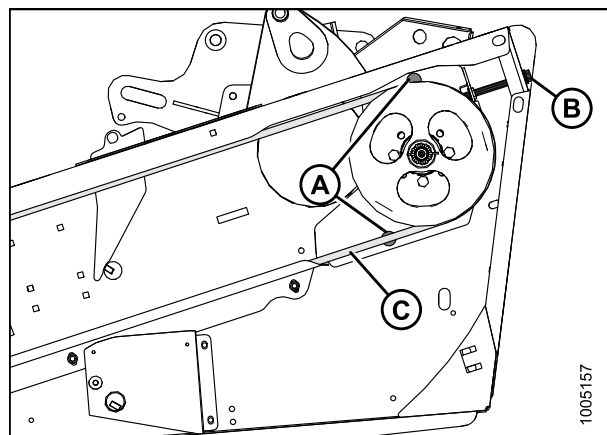
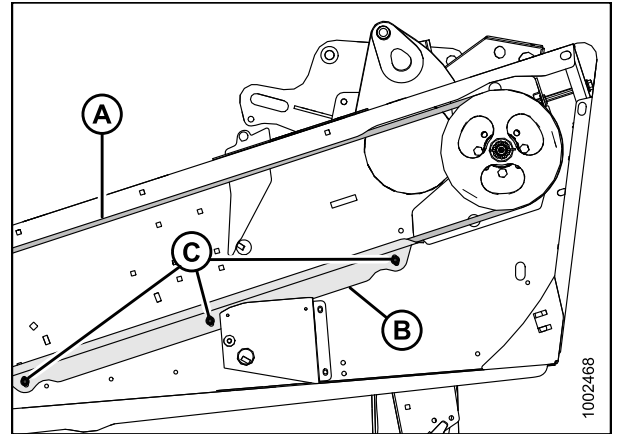


Figure 5.125: Left-Hand Shown – Right-Hand Opposite for Double-Knife Headers

## MAINTENANCE AND SERVICING

4. Ensure that clearance between belt (A) and belt guide (B) is 1/32 in. (1 mm).
5. Loosen three bolts (C), and adjust position of guide (B) as required.
6. Tighten bolts (C).
7. Close endshield.



**Figure 5.126: Knife Drive**

## 5.10 Adapter Feed Draper

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

### 5.10.1 Replacing Adapter Feed Draper

The draper should be replaced or repaired if it is torn, missing slats, or cracked.

1. If header is attached to combine, detach the header from the adapter. Refer to [4.7.1 Detaching Header from Adapter and Combine, page 240](#).

### WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.

2. Raise header fully, stop engine, and remove key. Engage header safety props.
3. To loosen draper tension, loosen jam nut (A) and then hold nut (B) with a wrench and turn bolt (C) counterclockwise to release tension. Repeat at opposite side.
4. Disengage header safety props and lower feeder house and adapter onto blocks to keep adapter slightly off the ground.

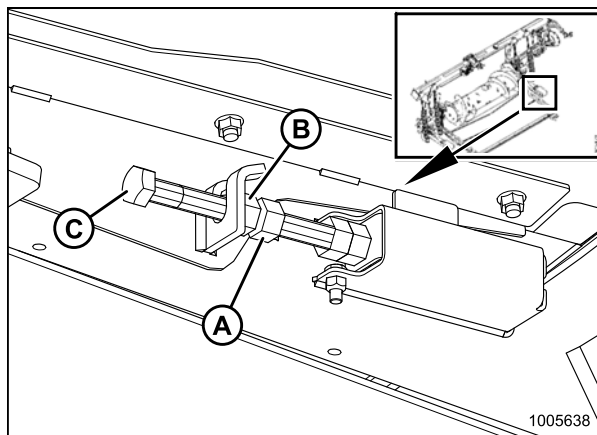


Figure 5.127: Tensioner

5. Remove the draper connector straps (A) along draper joint.
6. Pull draper from deck.

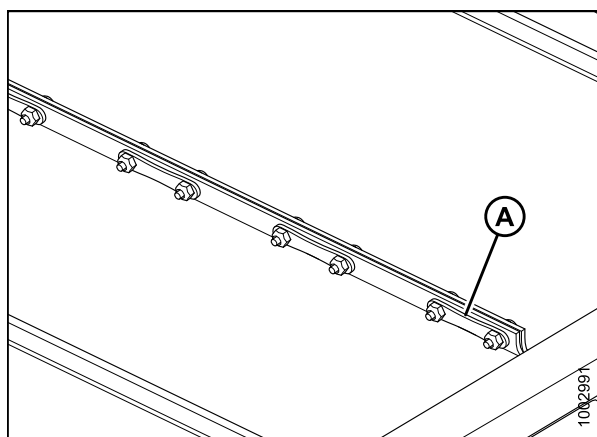


Figure 5.128: Draper Connector

7. Install new draper over drive roller (A) with chevron cleat (B) pointing to front of adapter. Make sure draper guides fit in drive roller grooves (C).
8. Pull draper along bottom of adapter deck and over draper supports (D).

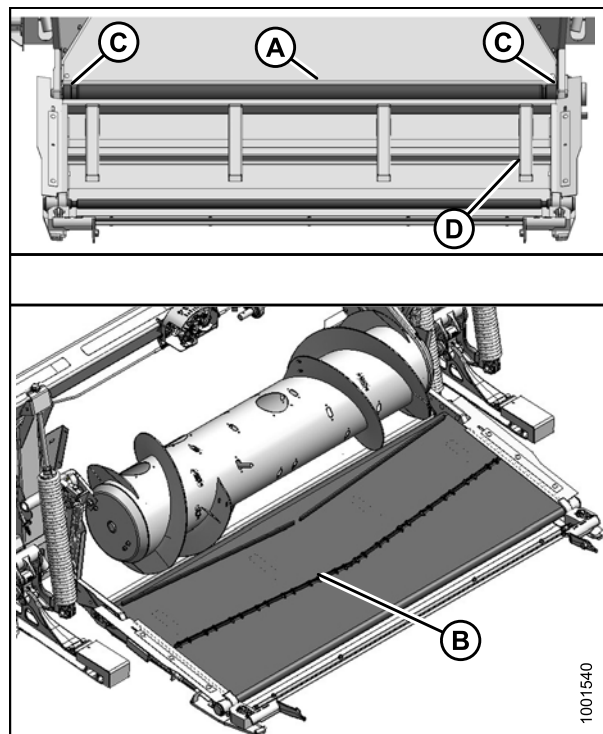


Figure 5.129: Adapter Draper

9. Connect draper joint with straps (A). Secure with nuts and screws. Screw heads should face toward rear of the deck. Tighten nuts so that end of screw is approximately flush with nut.
10. Adjust draper tension. For instructions, refer to [5.10.2 Adjusting Feed Draper Tension, page 323](#).

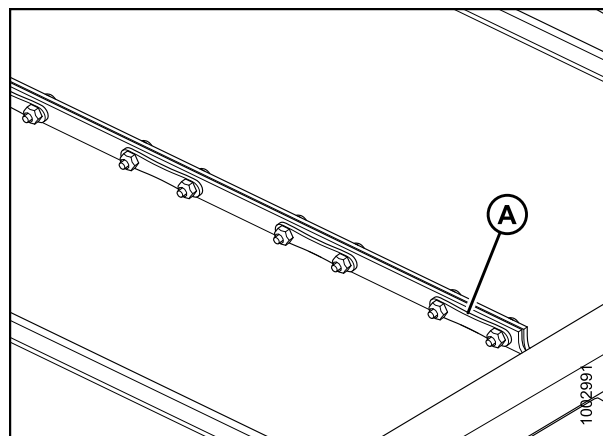


Figure 5.130: Draper Connector Straps

## 5.10.2 Adjusting Feed Draper Tension

### **⚠ DANGER**

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

1. Raise header fully, stop engine, and remove key. Engage header safety props.
2. 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.

## MAINTENANCE AND SERVICING

3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) clockwise to increase tension and counterclockwise to decrease tension.

### IMPORTANT:

Adjust both sides equally.

5. Correct tension is when retainer (D) is flush with spring holder and bolt (E) is free.

### NOTE:

Draper tension should be just enough to prevent slipping and keep draper from sagging below cutterbar.

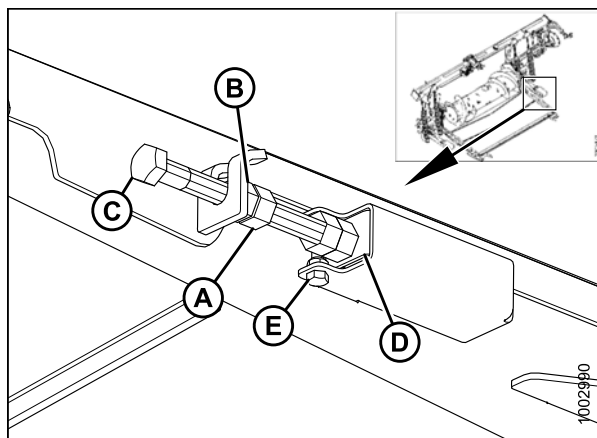


Figure 5.131: Tensioner

6. Tighten jam nut (A).

### 5.10.3 Adapter Drive Roller

#### *Removing Adapter Feed Draper Drive Roller*

1. If header is attached to combine, detach header from the adapter. For instructions, refer to [4.7.1 Detaching Header from Adapter and Combine, page 240](#).



### WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.

2. Raise header fully, stop engine, and remove key. Engage header safety props.
3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) counterclockwise to decrease tension. Repeat at opposite side.

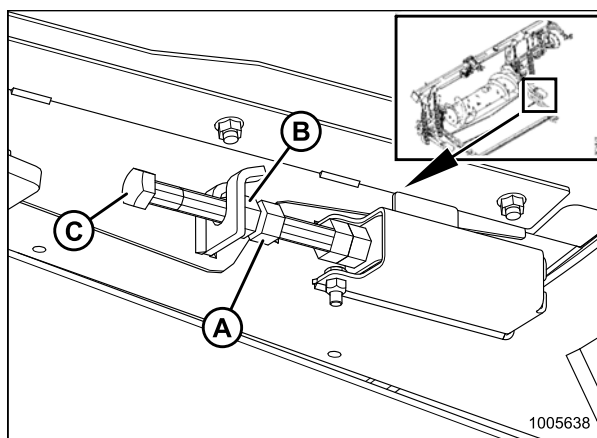
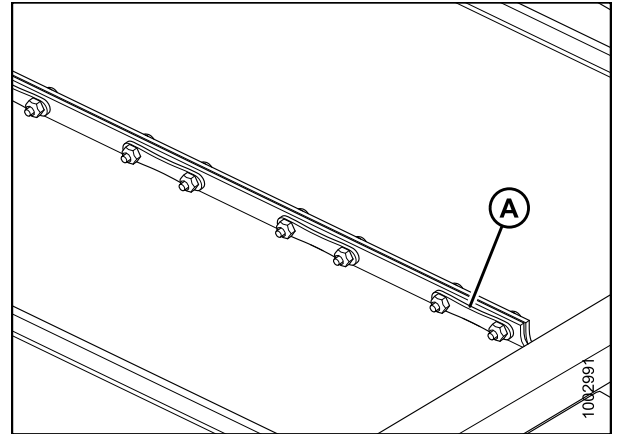


Figure 5.132: Tensioner

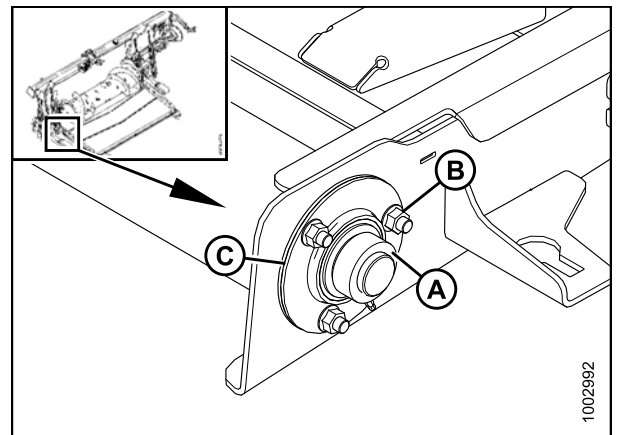
## MAINTENANCE AND SERVICING

5. Remove the draper connector straps (A) along the draper joint.
6. Open the draper.



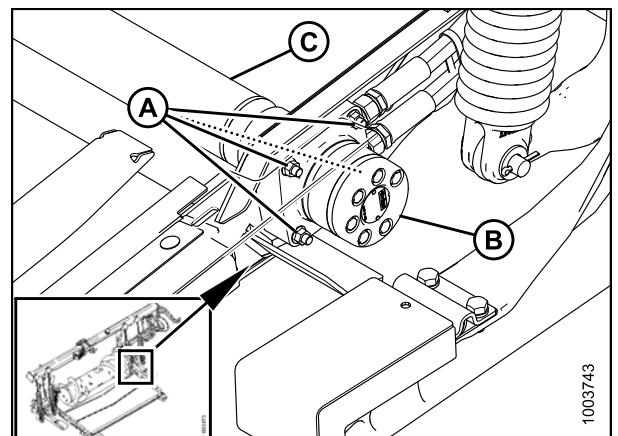
**Figure 5.133: Draper Connection**

7. Loosen setscrew and unlock the bearing lock collar (A).
8. Remove three bolts (B).
9. Remove bearing flangettes (C) and bearing.



**Figure 5.134: Bearing**

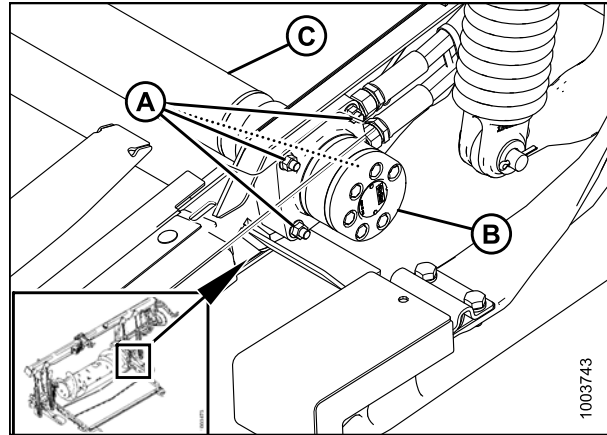
10. Remove the four bolts (A) that secure hydraulic motor (B) to the frame. Slide hydraulic motor (B) away from the drive roller.
11. Remove drive roller (C).



**Figure 5.135: Hydraulic Motor**

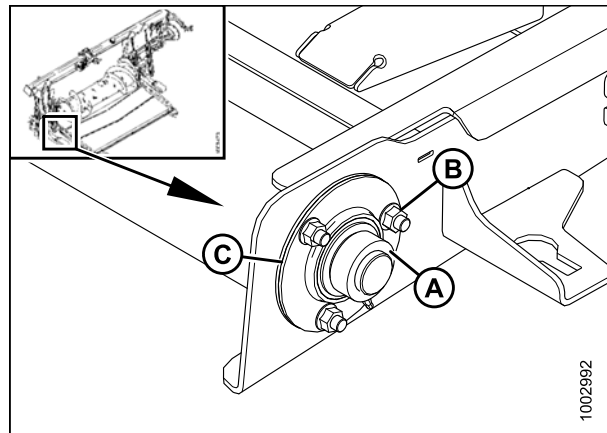
## *Installing Adapter Feed Draper Drive Roller*

1. Apply grease to spline.
2. Position roller (C) in adapter frame.
3. Slide motor (B) into the drive roller. Secure the motor to the feed deck with four bolts (A).



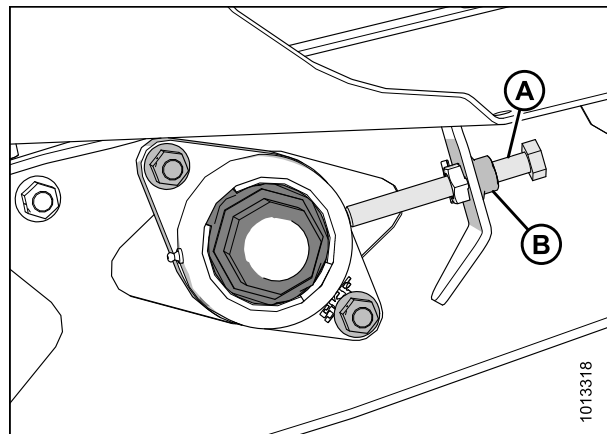
**Figure 5.136: Motor**

4. Install bearing flangettes (C) and bearing.
5. Install three bolts (B) to secure bearing and flangettes to the feed deck.
6. Lock bearing collar (A) and tighten setscrew.
7. Install the feed deck draper. Refer to [5.10.1 Replacing Adapter Feed Draper, page 322](#).
8. Tension the feed draper. Refer to [5.10.2 Adjusting Feed Draper Tension, page 323](#).
9. Attach the header to the adapter. For instructions, refer to [4.7.2 Attaching Header to Adapter and Combine, page 245](#).



**Figure 5.137: Bearing**

10. Turn adjuster bolt (A) clockwise until it touches the bearing housing (B). Secure using the jam nut (C).
11. Install the feed deck draper. Refer to [5.10.1 Replacing Adapter Feed Draper, page 322](#).
12. Tension the feed draper. Refer to [5.10.2 Adjusting Feed Draper Tension, page 323](#).



**Figure 5.138: Bearing**



## Replacing Adapter Feed Draper Drive Roller Bearing

### Removing Adapter Feed Draper Drive Roller Bearing

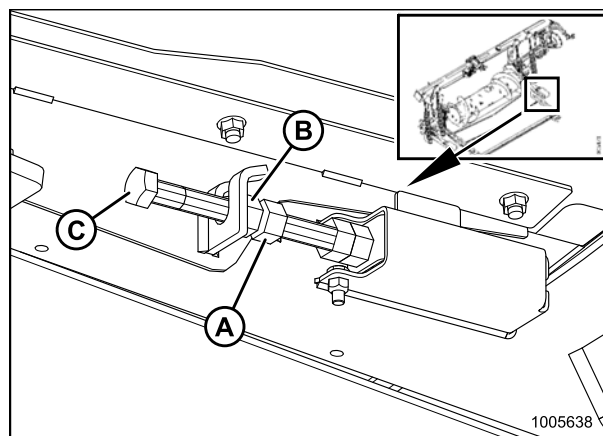
1. Remove the header from the adapter. For instructions, refer to [4.7.1 Detaching Header from Adapter and Combine, page 240](#).



### WARNING

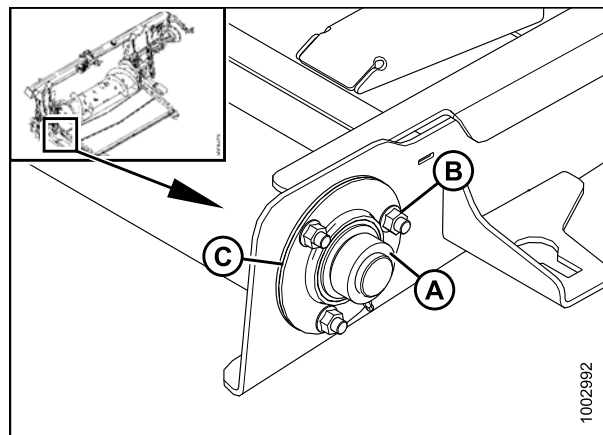
**To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.**

2. Raise header fully, stop engine, and remove key. Engage header safety props.
3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) counterclockwise to decrease tension. Repeat at opposite side.



**Figure 5.139: Tensioner**

5. Loosen setscrew and unlock the bearing lock collar (A).
6. Remove three bolts (B).
7. Remove bearing flangettes (C) and bearing.



**Figure 5.140: Bearing**

## Installing Adapter Feed Draper Drive Roller Bearing

1. Install bearing flangettes (C) and new bearing.
2. Install three bolts (B) to secure bearing and flangettes to the feed deck.
3. Lock bearing collar (A) and tighten setscrew.
4. Tension the feed draper. Refer to [5.10.2 Adjusting Feed Draper Tension, page 323](#).
5. Attach the header to the adapter. Refer to [4.7.2 Attaching Header to Adapter and Combine, page 245](#) for procedure.

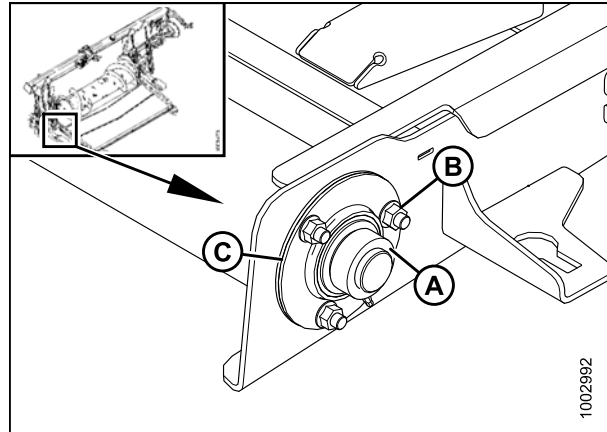


Figure 5.141: Drive Roller

## 5.10.4 Adapter Idler Roller

### *Removing Adapter Feed Draper Idler Roller*

Left-hand side shown:

1. Remove the header from the adapter. Refer to [4.7.1 Detaching Header from Adapter and Combine, page 240](#).
2. Leave adapter attached to combine. Engage the feeder house safety props.
3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) counterclockwise to decrease tension. Repeat at opposite side.

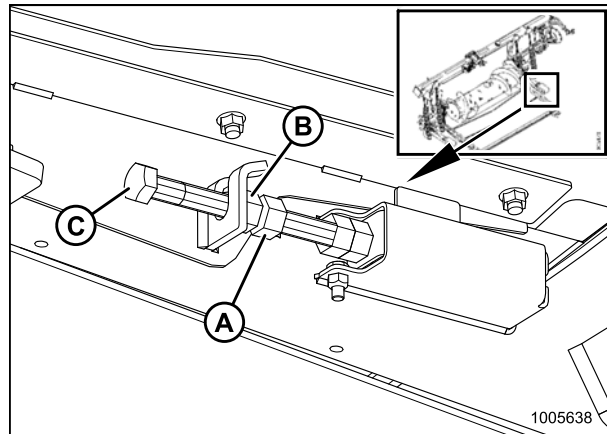
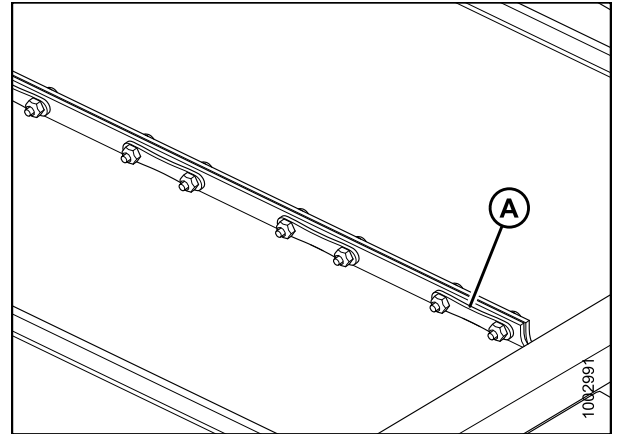


Figure 5.142: Tensioner

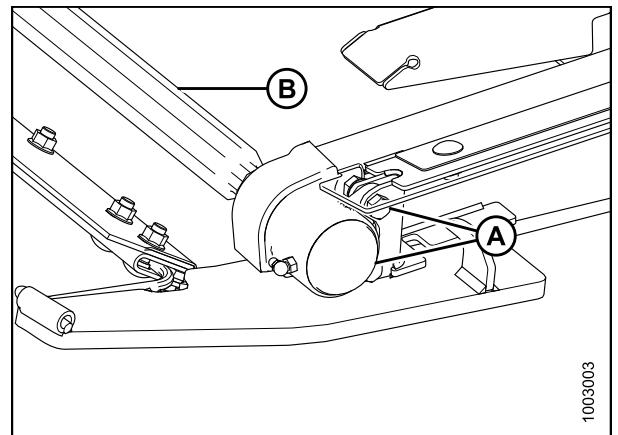
## MAINTENANCE AND SERVICING

5. Remove draper connector straps (A).
6. Open the feed draper.



**Figure 5.143: Draper Connector**

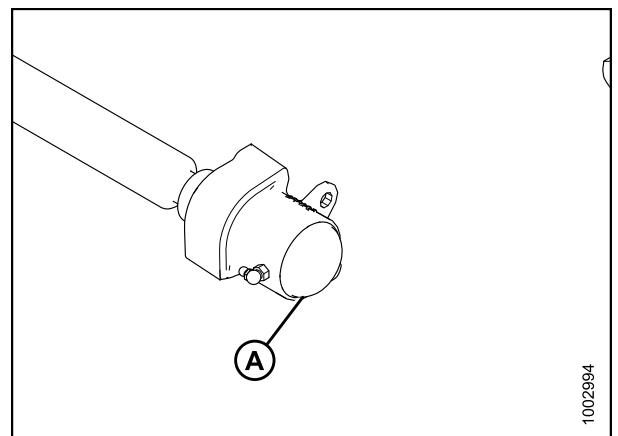
7. Remove two bolts (A) at both ends of the idler roller.
8. Remove the idler roller assembly (B).



**Figure 5.144: Idler Roller**

### *Replacing Adapter Feed Draper Idler Roller Bearing*

1. Remove dust cap (A).



**Figure 5.145: Idler Roller**

## MAINTENANCE AND SERVICING

2. Remove nut (A).
3. Using a hammer, tap the bearing assembly (B) until it slides off the shaft.

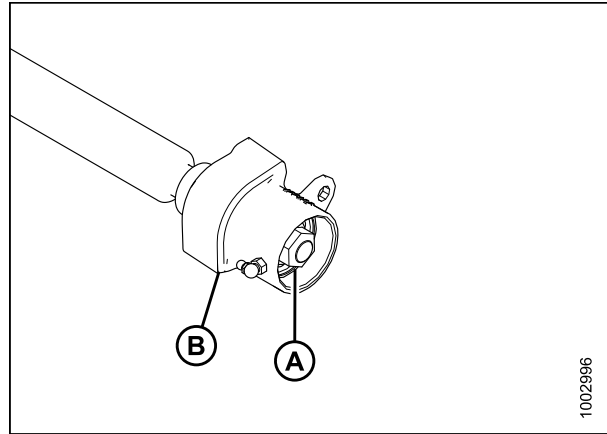


Figure 5.146: Idler Roller

4. Secure the housing (D) and remove the internal retaining ring (A), bearing (B), and two seals (C).
5. Install seals (C) into housing (D).

**NOTE:**

Flat side of seal should be facing inboard.

6. Brush shaft with oil. Carefully rotate the housing (D) with seals (C) onto the shaft by hand to prevent seal damage.
7. Install bearing (B).
8. Install retaining ring (A).

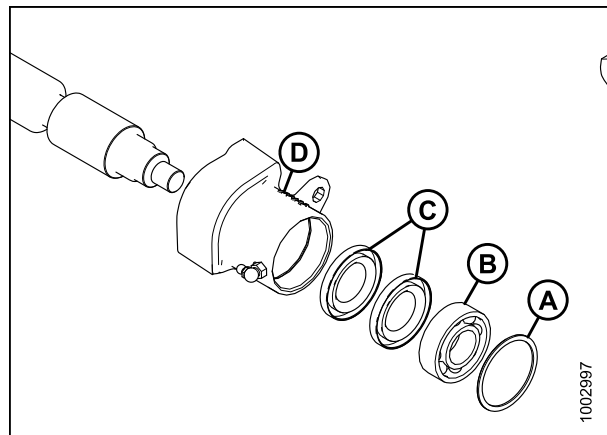


Figure 5.147: Bearing Assembly

9. Install nut (A) to secure the bearing assembly to the shaft.
10. Install the dust cap (B).
11. Pump grease into bearing assembly.

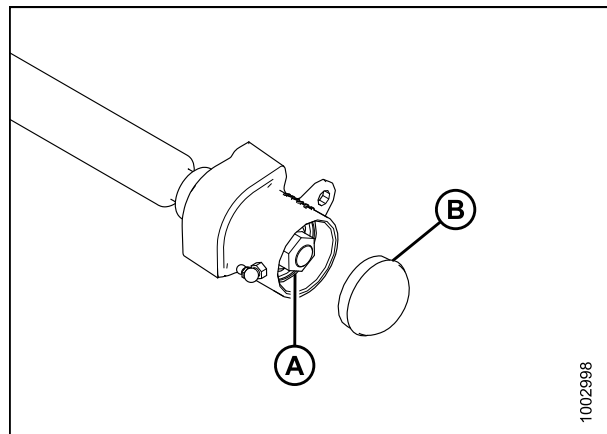
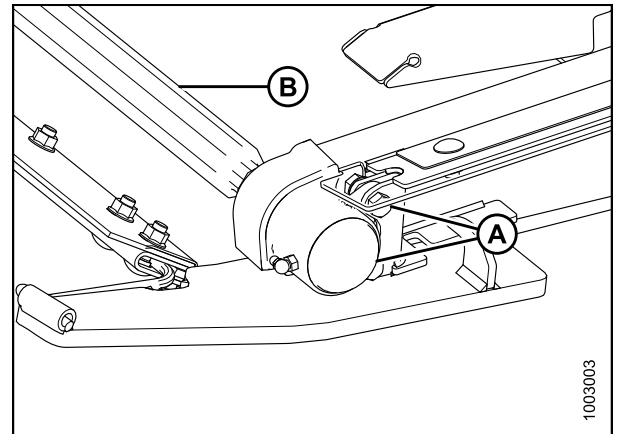


Figure 5.148: Idler Roller

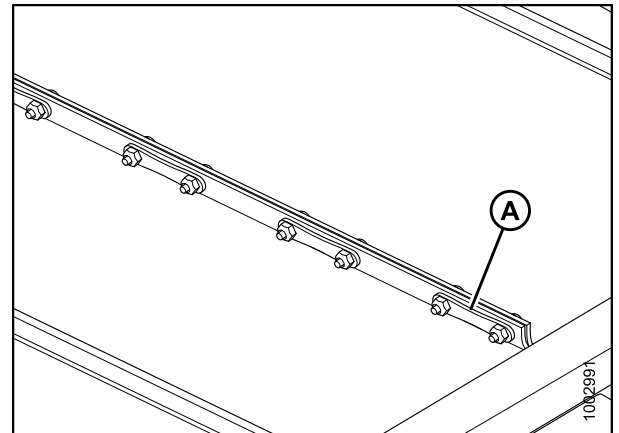
### *Installing Adapter Feed Draper Idler Roller*

1. Position the idler roller assembly (B) in adapter deck.
2. Install two bolts (A) at both ends of the idler roller.



**Figure 5.149: Idler Roller**

3. Close the feed draper and connect with connector straps (A), bolts, and nuts.
4. Tension the feed draper. Refer to [5.10.2 Adjusting Feed Draper Tension, page 323](#).
5. Attach the header to the adapter. Refer to [4.7.2 Attaching Header to Adapter and Combine, page 245](#).



**Figure 5.150: Draper Connector**

## 5.11 Adapter Stripper Bars and Feed Deflectors

### 5.11.1 Installing Stripper Bars

To install stripper bars to the adapter, follow these steps:

1. Detach header from combine. Refer to [4 Header Attachment/Detachment, page 197](#) for your specific combine.
2. Position stripper bar (A) so notch (B) is at corner of frame. Secure it to the adapter with four bolts and nuts (C). Nuts toward combine.
3. Repeat at opposite side.
4. Attach header onto the combine. Refer to [4 Header Attachment/Detachment, page 197](#).

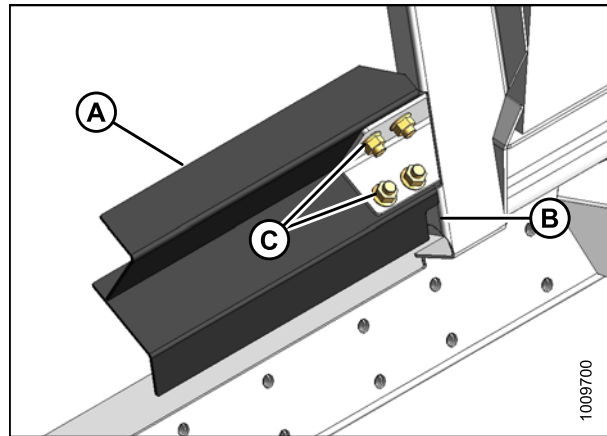


Figure 5.151: Stripper Bar

### 5.11.2 Removing Stripper Bars

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

1. Detach header from combine. Refer to [4 Header Attachment/Detachment, page 197](#) for your specific combine.
2. Remove four bolts and nuts (A) securing stripper bar (B) to adapter frame, and remove bar.
3. Repeat at opposite side.
4. Attach header onto the combine. Refer to [4 Header Attachment/Detachment, page 197](#).

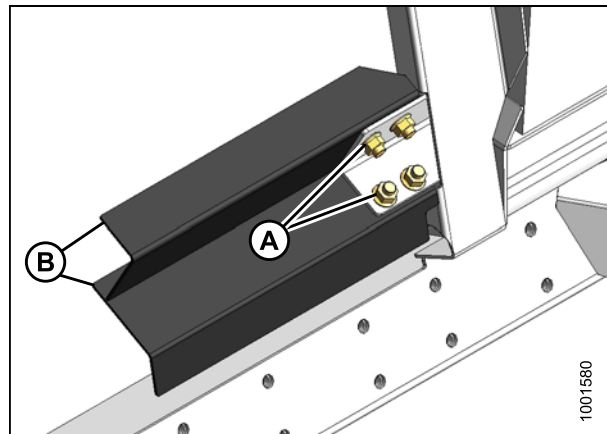


Figure 5.152: Stripper Bar

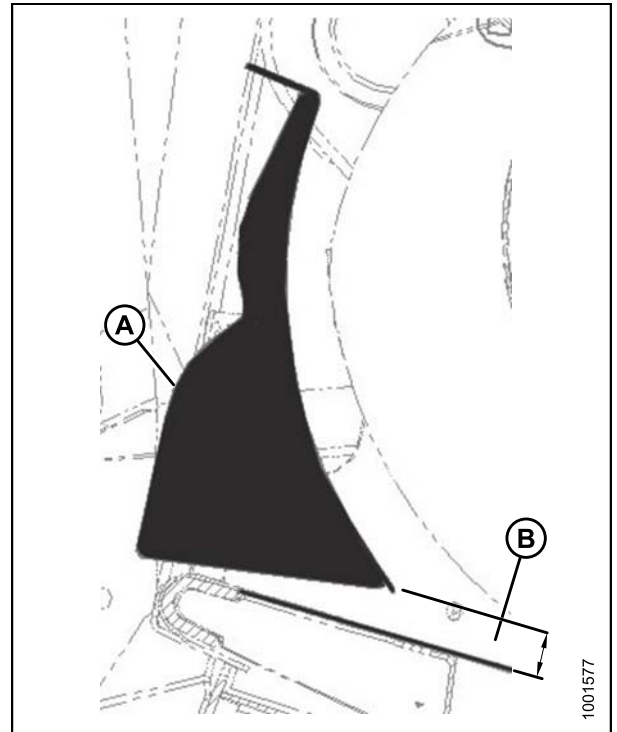
### 5.11.3 Replacing Feed Deflectors

To replace feeder deflectors in New Holland CR model combines, follow these steps:

1. Detach header from combine. Refer to [4 Header Attachment/Detachment, page 197](#) for your specific combine.

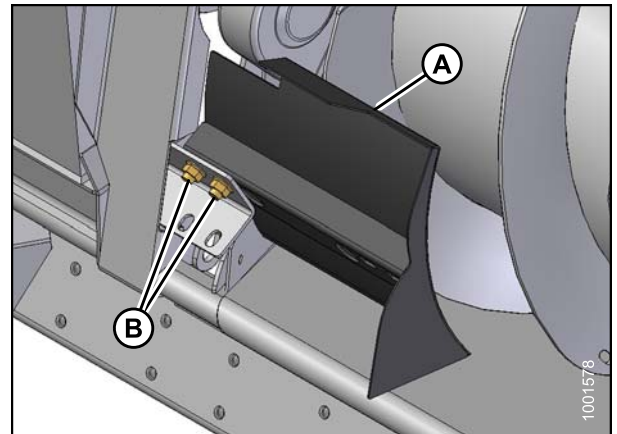
## MAINTENANCE AND SERVICING

2. Determine position of existing deflector (A) by measuring gap (B) between deflector forward edge and pan.



**Figure 5.153: Feed Deflector-End View**

3. Remove two bolts and nuts (B) securing deflector (A) to adapter frame, and remove deflector.
4. Position replacement deflector, and secure with bolts and nuts (B) (nuts toward combine). Maintain the previous gap between deflector forward edge and pan.
5. Repeat for opposite deflector.
6. Attach header onto the combine. Refer to [4 Header Attachment/Detachment, page 197](#).
7. After attaching header to combine, extend center-link fully, and check gap between deflector and pan. Maintain the 3/4–1 in. (19–25 mm) gap.



**Figure 5.154: Feed Deflector**



## 5.12 Header Drapers

The draper should be replaced or repaired if it is torn, missing slats, or cracked.

### 5.12.1 Removing Drapers

To remove a side draper, follow these steps:

#### **WARNING**

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

1. Raise reel and engage reel safety props.
2. Raise header and engage safety props.
3. Move draper until draper joint is in work area.
4. Release tension on the draper. Refer to [5.12.3 Adjusting Side Draper Tension, page 335](#).
5. Remove fasteners (A) and tube connectors (B) at the draper joint.
6. Pull draper from deck.

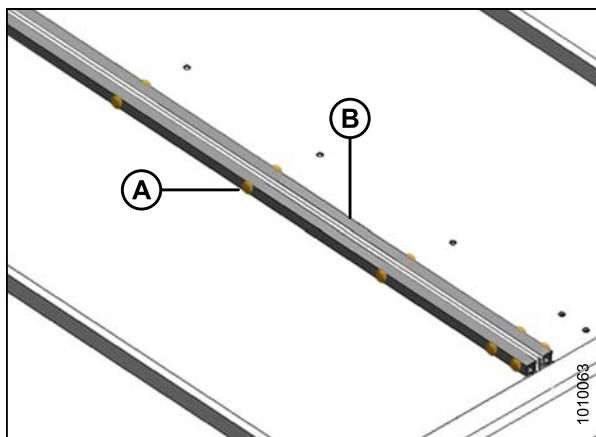


Figure 5.155: Draper Connector

### 5.12.2 Installing Drapers

To install a side draper, follow these steps:

#### **WARNING**

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

#### **NOTE:**

Check deck height before installing drapers. Refer to [5.12.5 Adjusting Deck Height, page 339](#).

## MAINTENANCE AND SERVICING

1. Apply talc (baby powder) or talc/graphite lubricant mix to the draper surface that forms the seal with the cutterbar and to the underside draper guides.
2. Insert draper into deck at outboard end, under the rollers. Pull draper into deck while feeding it at the end.
3. Feed in the draper until it can be wrapped around the drive roller.
4. Similarly, insert the other end into the deck over the rollers. Pull draper fully into the deck.



Figure 5.156: Draper Installation

5. Attach ends of draper with tube connectors (B), screws (A) with heads facing the center opening, and nuts.
6. Adjust tension. Refer to [5.12.3 Adjusting Side Draper Tension, page 335](#).

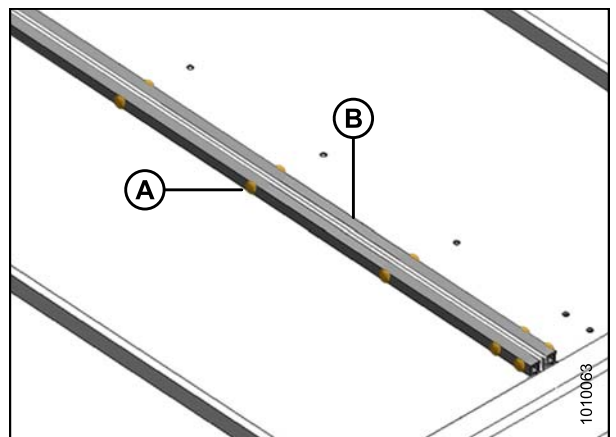


Figure 5.157: Draper Connector

7. Check for seal between the drapers and the cutterbar. There should be a 0.04–0.08 in. (1–2 mm) gap (A) between the cutterbar (C) and the draper (B).
8. To achieve the proper gap, refer to [5.12.5 Adjusting Deck Height, page 339](#).

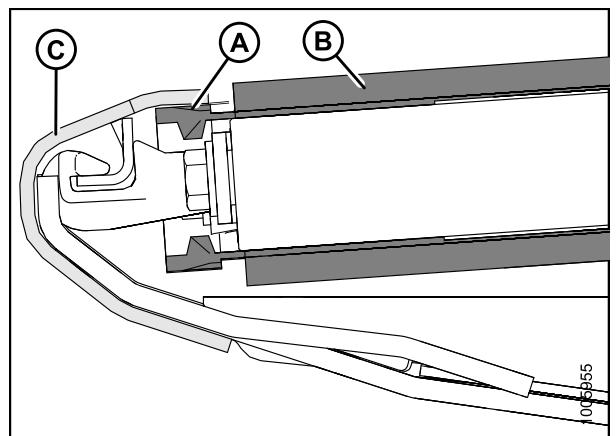


Figure 5.158: Draper Seal

### 5.12.3 Adjusting Side Draper Tension

#### WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.

## MAINTENANCE AND SERVICING

### NOTE:

The drapers are tensioned at the factory and should NOT require adjustment. If adjustment is required, draper tension should be just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure white bar (A) is about halfway in the window.



### CAUTION

Check to be sure all bystanders have cleared the area.

2. Start engine and raise header.
3. Stop engine, remove key, and engage header safety props.

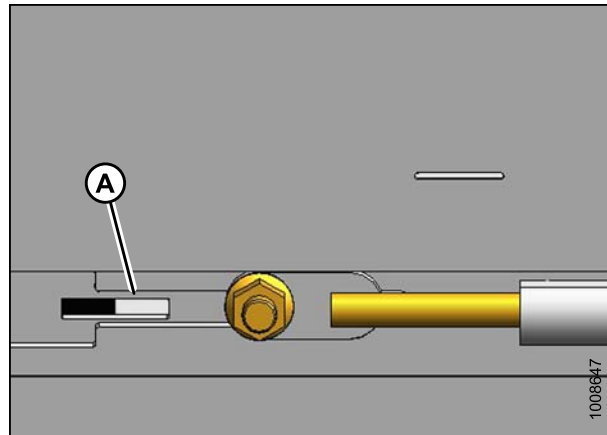


Figure 5.159: Tension Adjuster: Left-Hand Shown – Right-Hand Opposite

4. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller.

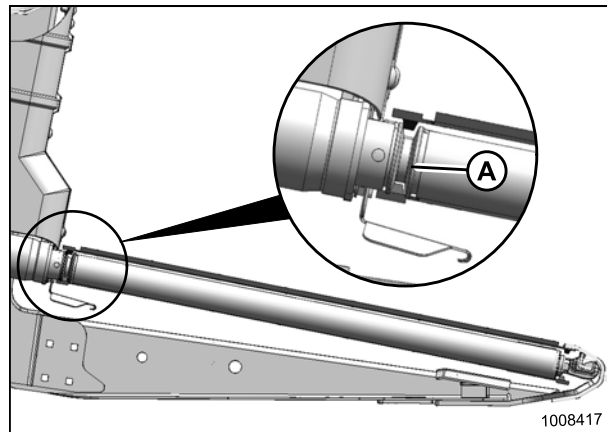


Figure 5.160: Drive Roller

5. Check that idler roller is between the guides.

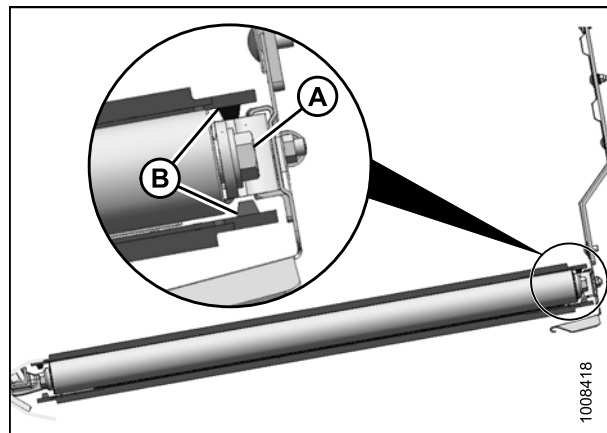


Figure 5.161: Idler Roller

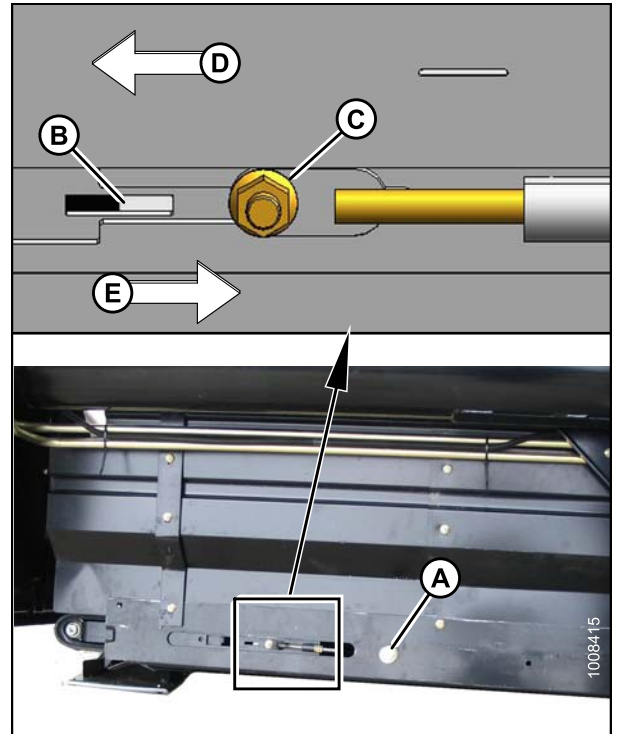
**IMPORTANT:**

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn adjuster bolt (A) counterclockwise to loosen, and white indicator bar (B) will move outboard in direction of arrow (D) to indicate that draper is loosening. Loosen until bar is about halfway in window.
7. Turn adjuster bolt (A) clockwise to tighten, and white indicator bar (B) will move inboard in direction of arrow (E) to indicate 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.
- To prevent the draper from scooping dirt, ensure draper is tight enough that it does not sag below point where cutterbar contacts the ground.



**Figure 5.162: Tension Adjuster: Left-Hand Shown – Right-Hand Opposite**

## 5.12.4 Adjusting Header Draper Tracking

Each draper deck has a fixed drive roller (A) and a spring-loaded idler roller (B) that can be aligned by adjuster rods so that the draper tracks properly on the rollers.

If the draper is tracking incorrectly, refer to the following directions to correct the tracking:



**CAUTION**

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

**Table 5.1 Header Draper Tracking**

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 (C)
Forward		Decrease 'Y'	Loosen nut (C)

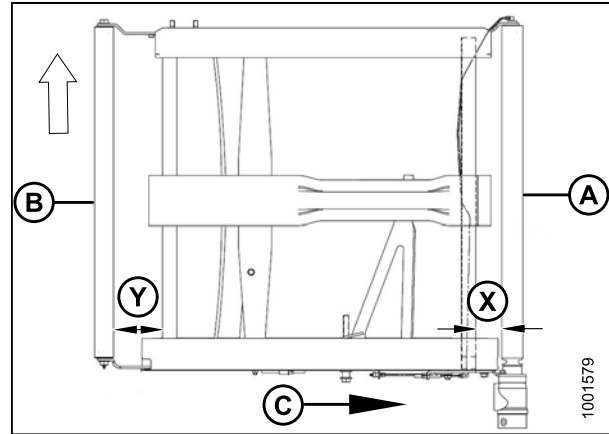
1. Refer to Table [5.1 Header Draper Tracking, page 338](#) to determine which roller requires adjustment and the required adjustment.

**NOTE:**

To change 'X', the back end of the roller is adjusted with the adjuster mechanism at the inboard end of the deck.

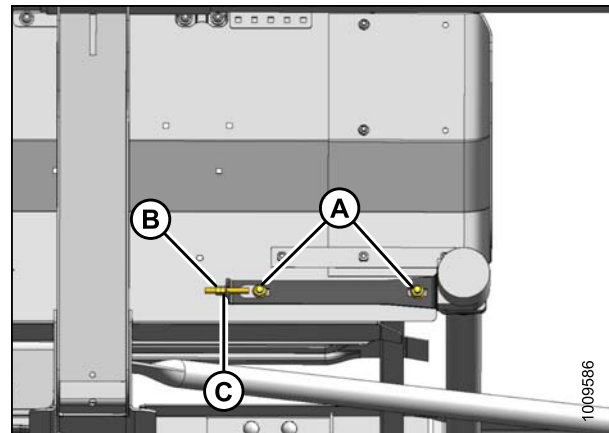
2. Adjust the **drive** roller at 'X' as follows:
  - a. Loosen nuts (A) and jam nut (B).
  - b. Turn adjuster nut (C).

3. Adjust the **idler** roller 'Y' as follows:
  - a. Loosen nut (A) and jam nut (B).
  - b. Turn adjuster nut (C).
4. If the draper does not track at the idler roller end after adjusting the idler roller, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

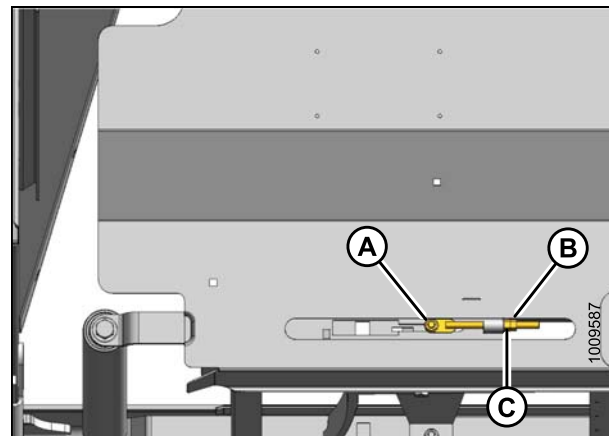


**Figure 5.163: Adjustments**

A - Drive Roller  
B - Idler Roller  
C - Draper Direction  
X - Drive Roller Adjust  
Y - Idler Roller Adjust.



**Figure 5.164: Drive Roller**



**Figure 5.165: Idler Roller**

## 5.12.5 Adjusting Deck Height

To prevent material from entering drapers and cutterbar, maintain deck height so that the draper runs just below the cutterbar with maximum 1/32 in. (1 mm) gap (A), or with draper deflected down slightly (up to 1/16 in. [1.5 mm]) to create a seal.

**NOTE:**

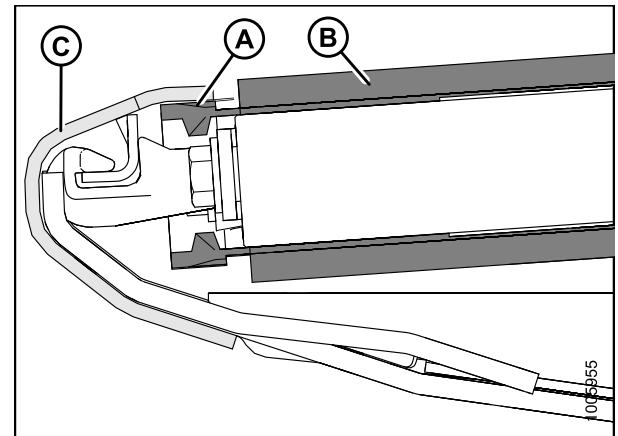
Measurement is at supports with header in working position and decks slid fully ahead.

**⚠ WARNING**

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



**Figure 5.166: Draper Seal**

A - Gap (Draper to Cutterbar) B - Draper C - Cutterbar

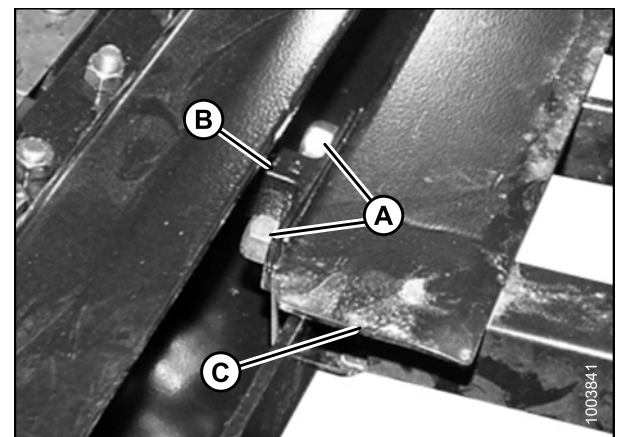
To adjust deck height, follow these steps:

1. Loosen tension on draper. Refer to [5.12.3 Adjusting Side Draper Tension, page 335](#).
2. Lift draper at front edge past cutterbar to expose the support.
3. Loosen two lock nuts (A) **ONE-HALF TURN ONLY** on deck support (B).

**NOTE:**

There are two to four supports per deck depending on header size.

4. Tap deck (C) to lower deck relative to supports. Tap support (B) using a punch to raise deck relative to support.



**Figure 5.167: Deck Support**

## MAINTENANCE AND SERVICING

5. Set deck (A) to 5/16–3/8 in. (8–9 mm) below the cutterbar (C) to create a seal.
6. Tighten deck support hardware (D).
7. Check dimension (B) again it should be set to 5/16–3/8 in. (8–9 mm).
8. Tension draper. Refer to [5.12.3 Adjusting Side Draper Tension, page 335](#).

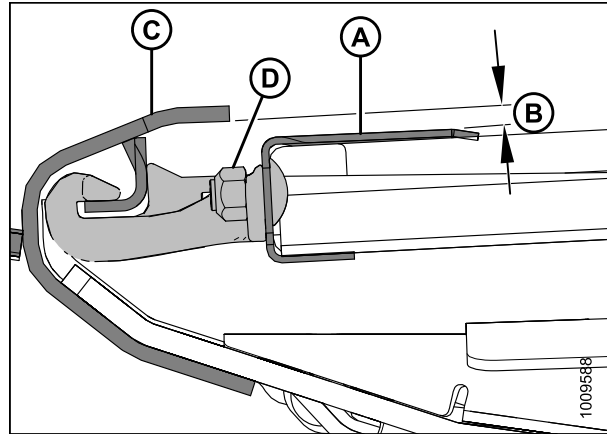


Figure 5.168: Deck Support

### 5.12.6 Draper Roller Maintenance

The draper rollers have non-greaseable bearings. The external seal should be checked every 200 hours (more frequently in sandy conditions) to obtain the maximum bearing life.

#### *Inspecting Side Draper Roller Bearing*

If a bad bearing is suspected in one of the draper rollers, a quick way to check is by using an infrared thermometer.

1. Engage header and run for approximately three minutes.
2. Check the temperature of each of the roller arms (A), (B), and (C) on each deck. The temperature should not exceed 80°F (44°C) above ambient temperature.

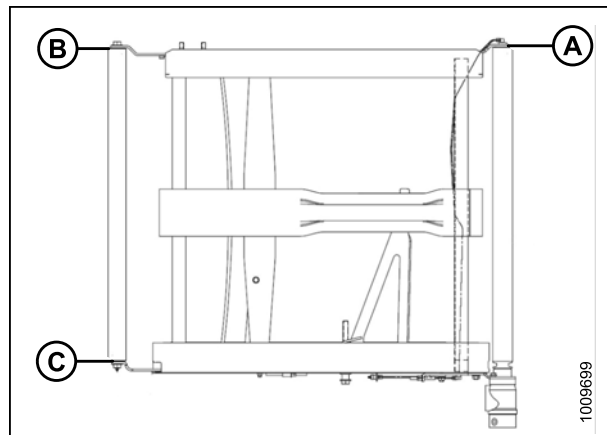


Figure 5.169: Roller Arms



## Side Draper Idler Roller

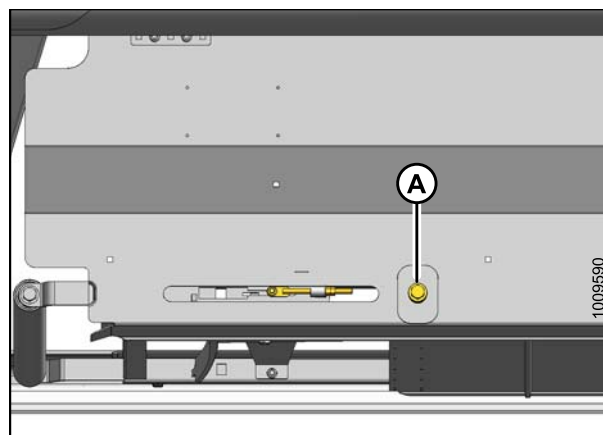
### Removing Side Draper Idler Roller

1. If draper connector is not visible, engage the header until the connector is accessible, preferably close to the outboard end of the deck.

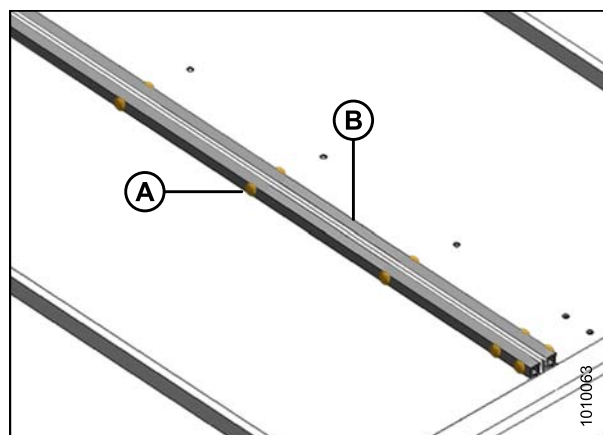
### **WARNING**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.**

2. Raise header and reel, and then shutdown the combine.
3. Engage combine safety props and reel lift cylinder safety props.
4. Loosen draper by turning adjuster bolt (A) counterclockwise.
5. Remove fasteners (A) and tube connectors (B) at the draper joint to uncouple the draper.
6. Pull the draper off the idler roller.

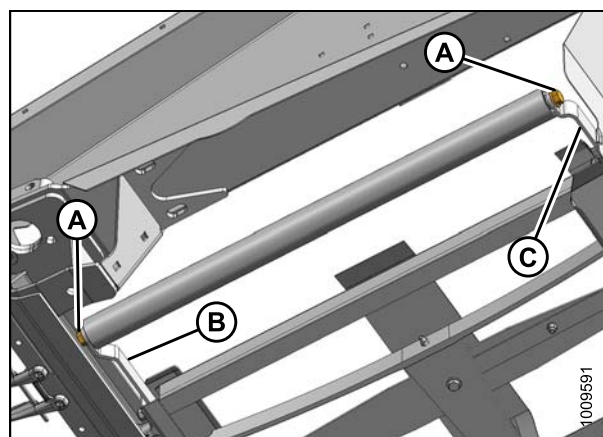


**Figure 5.170: Tensioner**



**Figure 5.171: Draper Connector**

7. Remove bolts (A) and washer at ends of idler roller.
8. Spread roller arms (B) and (C), and remove idler roller.



**Figure 5.172: Idler Roller**

## Replacing Side Draper Idler Roller Bearing

1. Remove draper idler roller assembly. Refer to [Removing Side Draper Idler Roller, page 341](#).
2. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
  - a. Attach a slide hammer (D) to threaded shaft (E) in bearing assembly.
  - b. Tap out the bearing assembly (A) and seal (B).
3. Clean inside of roller tube (C). Check tube for wear or damage and replace if necessary.

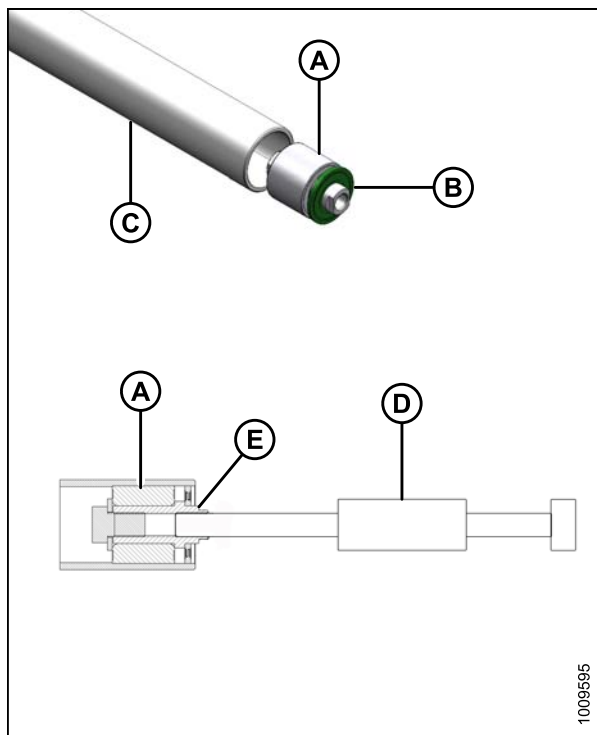


Figure 5.173: Idler Roller Bearing

4. Install new bearing assembly (A) into roller by pushing on outer race of bearing. The bearing is fully positioned when the 9/16 in. (14 mm) dimension (B) is achieved.
5. Apply the recommended grease in front of bearing. Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#).
6. Locate seal (C) at roller opening, and position a flat washer (1.0 in. I.D. x 2.0 in. O.D.) on seal.
7. Tap seal into roller opening with a suitable socket on the washer until it seats on the bearing assembly (A). The seal (C) is fully positioned when the 1/8 in. (3 mm) dimension (D) is achieved.

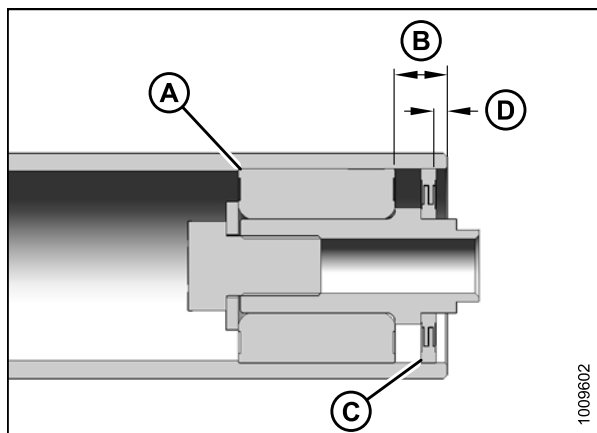


Figure 5.174: Idler Roller Bearing

## Installing Side Draper Idler Roller

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).
4. Wrap the draper over the idler roller, reconnect it and set the tension. Refer to [5.12.2 Installing Drapers](#), page 334.
5. Run machine to verify that draper tracks correctly. Adjust tracking if required. Refer to [5.12.4 Adjusting Header Draper Tracking](#), page 337.

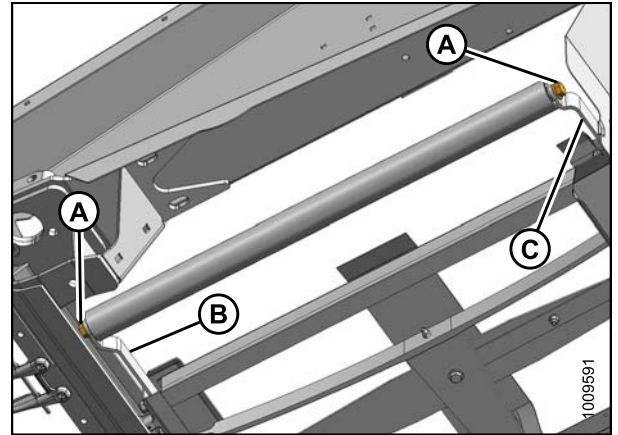


Figure 5.175: Idler Roller

## Side Draper Deck Drive Roller

### Removing Side Draper Drive Roller

1. If draper connector is not visible, engage the header until the connector is accessible, preferably close to the outboard end of the deck.



## **WARNING**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.**

2. Raise header and reel, and then shutdown the engine.
3. Engage header lift cylinder safety props and reel lift cylinder safety props.
4. Loosen draper by turning adjuster bolt (A) counterclockwise.

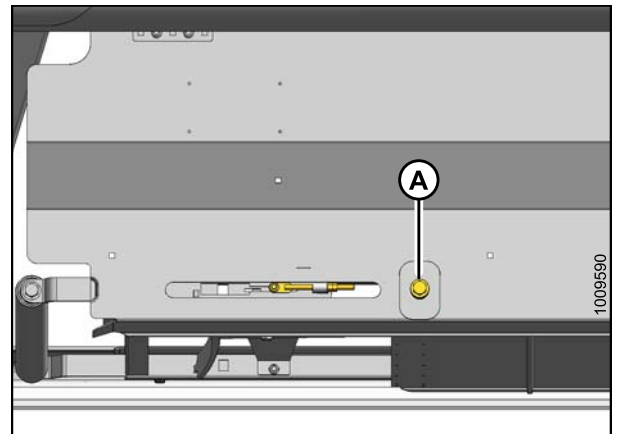


Figure 5.176: Tensioner

## MAINTENANCE AND SERVICING

5. Remove fasteners (A) and tube connectors (B) at the draper joint to uncouple the draper.
6. Pull the draper off the drive roller.

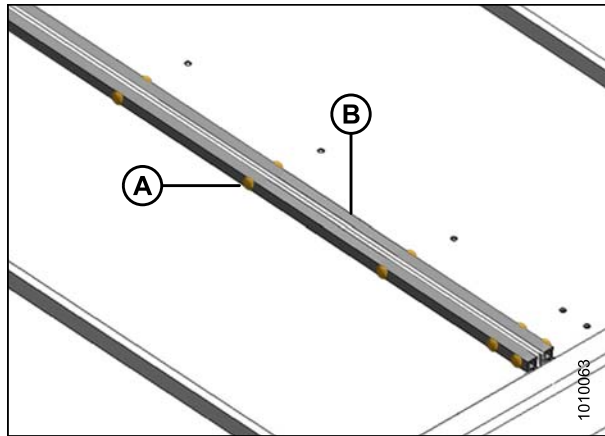


Figure 5.177: Draper Connector

7. Line up the setscrews with the hole (A) in the guard. Remove the two setscrews that hold the motor onto the drive roller.

**NOTE:**

The setscrews are a 1/4 turn apart.

8. Remove the four bolts (B) that hold motor to the drive roller arm.

**NOTE:**

Plastic shield (C) may require removal to gain access to the top bolt.

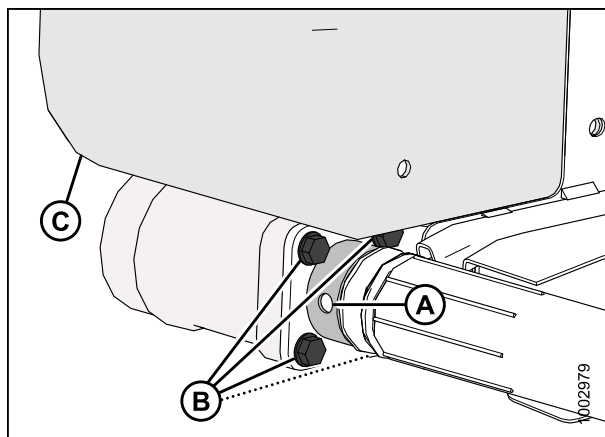


Figure 5.178: Drive Roller

9. Remove bolt (A) that secures the other end of the drive roller (B) to the support arm.
10. Remove the drive roller (B).

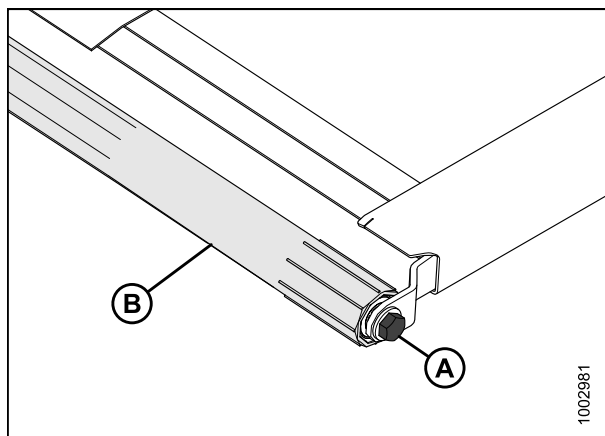


Figure 5.179: Drive Roller

### Replacing Side Draper Drive Roller Bearing

1. Remove draper idler roller assembly. Refer to [Removing Side Draper Drive Roller, page 343](#).

## MAINTENANCE AND SERVICING

2. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
  - a. Attach a slide hammer (D) to threaded shaft (E) in bearing assembly.
  - b. Tap out the bearing assembly (A) and seal (B).
3. Clean inside of roller tube (C). Check tube for wear or damage and replace if necessary.

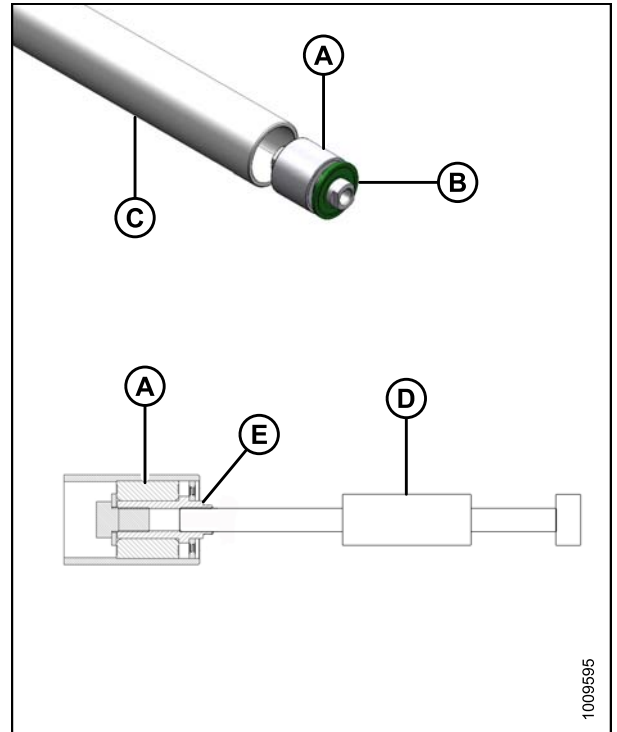


Figure 5.180: Drive Roller Bearing

4. Install new bearing assembly (A) into roller by pushing on outer race of bearing. The bearing is fully positioned when the 9/16 in. (14 mm) dimension (B) is achieved.
5. Apply the recommended grease in front of bearing. Refer to [5.2.1 Recommended Fluids and Lubricants, page 252](#).
6. Locate seal (C) at roller opening, and position a flat washer (1.0 in. I.D. x 2.0 in. O.D.) on seal.
7. Tap seal into roller opening with a suitable socket on the washer until it seats on the bearing assembly (A). The seal (C) is fully positioned when the 1/8 in. (3 mm) dimension (D) is achieved.

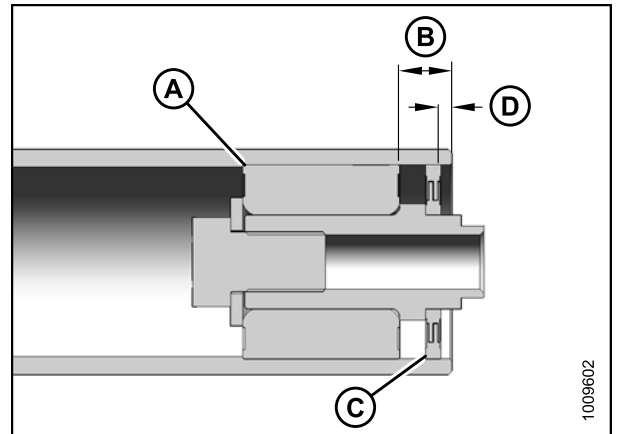


Figure 5.181: Drive Roller Bearing

## Installing Side Draper Drive Roller

1. Position the drive roller (B) between the roller support arms.
2. Install bolt (A) that holds the drive roller to the arm closest to the cutterbar. Torque bolt to 70 ft·lbf (95 N·m).
3. Grease motor shaft and insert into the end of the drive roller.

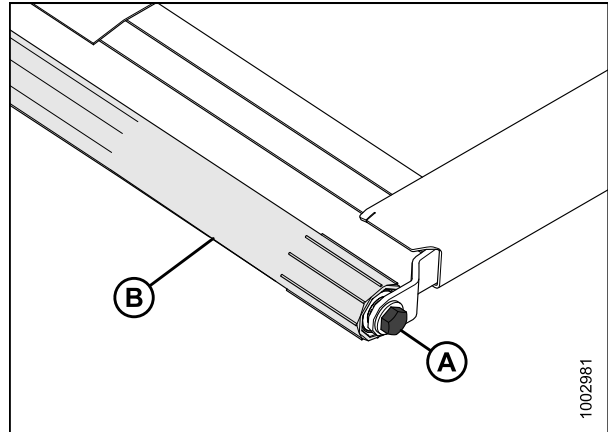


Figure 5.182: Drive Roller

4. Secure motor to the roller support with four bolts (A). Torque to 20 ft·lbf (27 N·m).

**NOTE:**

Tighten any loosened bolts and reinstall plastic shield (B), if removed.

5. Tighten the two setscrews through access hole (C).

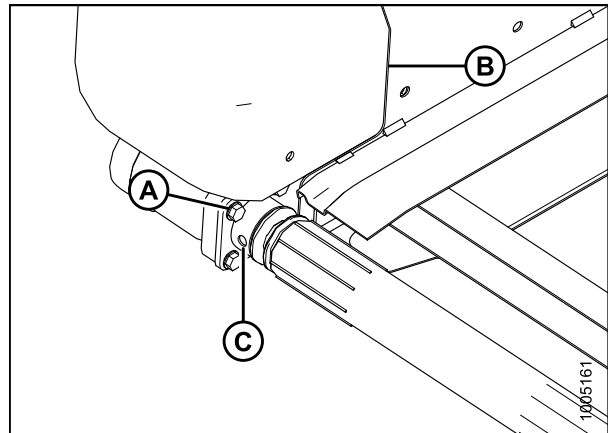


Figure 5.183: Drive Roller

6. Wrap the draper over the drive roller and attach ends of draper with tube connectors (B), screws (A), and nuts.

**NOTE:**

Head of screws must face the center opening.

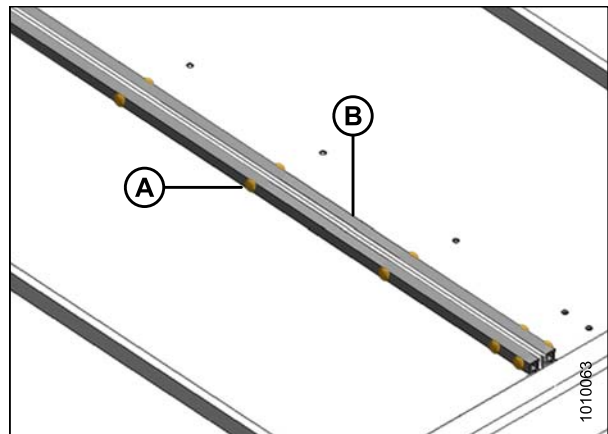
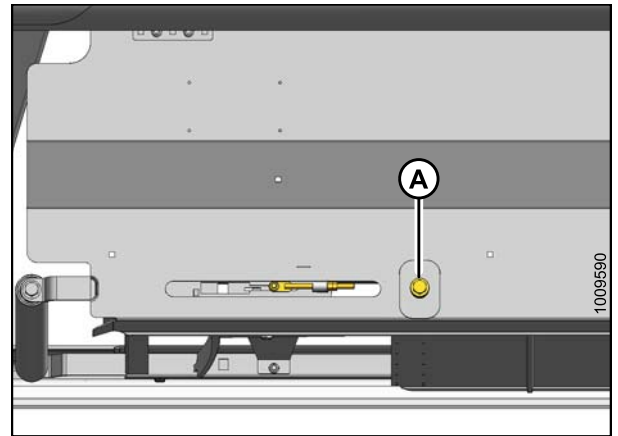


Figure 5.184: Draper Connector

7. Tension the draper with tensioner bolt (A) and follow the directions on the decal for proper draper tensioning.
8. Disengage the reel and header safety props.
9. Start the engine and lower header and reel.
10. Run machine to verify that draper tracks correctly.
11. If adjustment is required, refer to [5.12.4 Adjusting Header Draper Tracking](#), page 337.



**Figure 5.185: Draper Tensioner**

### 5.12.7 Replacing Draper Deflectors

#### *Removing Narrow Draper Deflectors*

To remove narrow draper deflectors, follow these steps:

**NOTE:**

Left-end removal is illustrated.

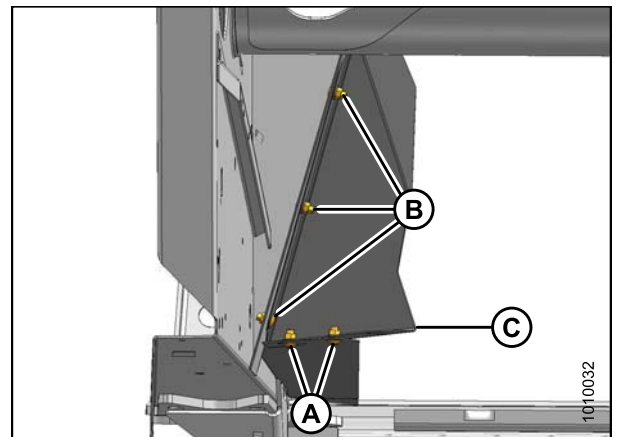
1. Raise reel fully and lower header to ground.
2. Shift decks to allow work space at one end of header if hydraulic deck shift installed, otherwise move decks manually after shutting down windrower.



#### **WARNING**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.**

3. Stop engine, remove key, and engage reel safety props.
4. Open endshield.
5. Remove the two Torx® head screws (A) and lock nuts.
6. Remove the three carriage bolts (B) and lock nuts and remove aft deflector (C).



**Figure 5.186: Aft Deflector**



## MAINTENANCE AND SERVICING

7. Remove the four screws (A) and remove deflector (B).
8. Repeat above steps for opposite end.

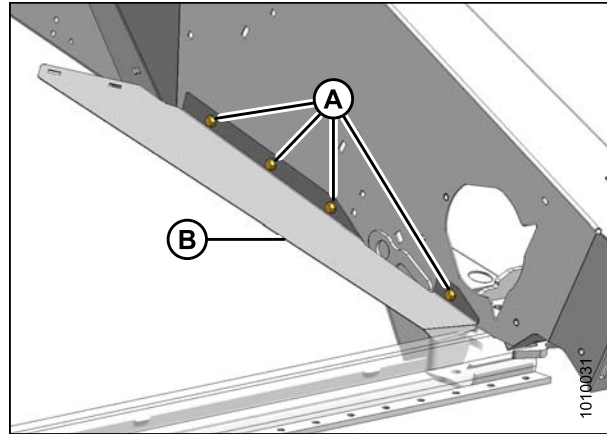


Figure 5.187: Forward Deflector

### *Installing Narrow Draper Deflectors*

Narrow deflectors can replace wide deflectors if bunching occurs at the ends of the header when decks are set for center delivery.

To install narrow draper deflectors, follow these steps:

#### **NOTE:**

Left-end installation is illustrated.

1. Raise reel fully and lower header to ground.
2. Shift decks to allow work space at one end of header if hydraulic deck shift installed, otherwise move decks manually after shutting down windrower.



#### **WARNING**

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.**

3. Stop engine, remove key, and engage reel safety props.
4. Open endshield.
5. Position forward deflector (B) onto endsheet and temporarily install forward and aft 3/8 in. x 5/8 self tapping screws (A).
6. Check fit of forward end of deflector onto cutterbar. There should be no gap between deflector and cutterbar. Remove and bend deflector as required to obtain best fit.
7. Install the four 3/8 in. x 5/8 self-tapping screws (A) and tighten.

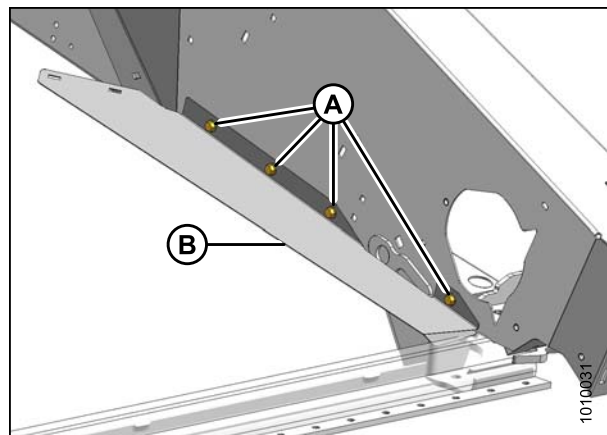
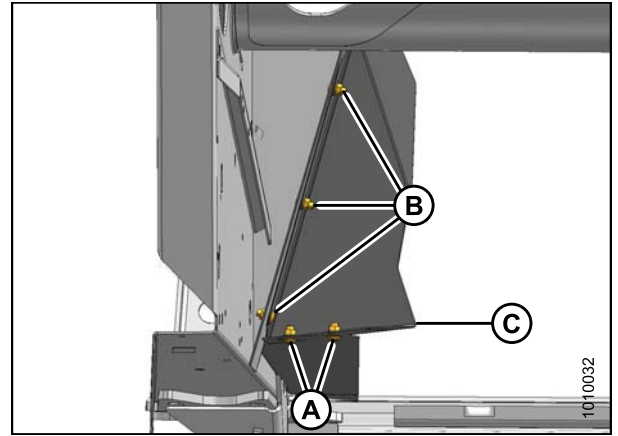


Figure 5.188: Forward Deflector

## MAINTENANCE AND SERVICING

8. Position aft deflector (C) as shown and install three 3/8 in. x 3/4 carriage bolts (B) and lock nuts. Orientation of bolts not important.
9. Install two Torx® head screws (A) and lock nuts with heads facing down.
10. Tighten all fasteners.
11. Repeat above steps for opposite end.



**Figure 5.189: Aft Deflector**

## 5.13 Reel

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

### 5.13.1 Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar during operation. The clearance is adjusted at the factory, but adjustments may be necessary before the header is put into operation.

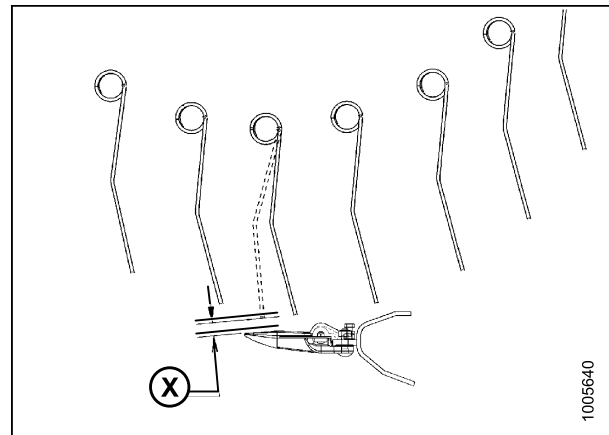
The finger to guard/cutterbar clearances with reels fully lowered are shown in Table [5.2 Finger to Guard/Cutterbar Clearance, page 350](#).

#### IMPORTANT:

Measurements must be taken at **both ends of each reel** and at the **cutterbar flex locations** with the header in full-frown mode.

**Table 5.2 Finger to Guard/Cutterbar Clearance**

Header Width	'X' +/- 1/8 in. (3 mm) at Reel Ends and Flex Locations
30 ft.	3/4 in. (20 mm)
35 ft.	
40 ft.	
45 ft.	



**Figure 5.190: Finger Clearance**

#### *Measuring Reel Clearance*

To measure the finger-to-guard/cutterbar clearance, follow these steps:

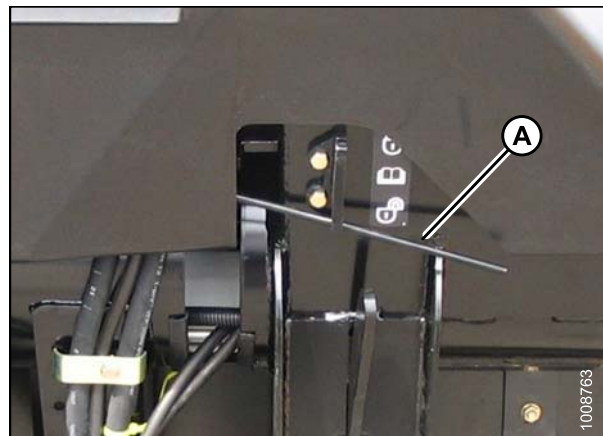
### DANGER

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

1. Park header on level ground.

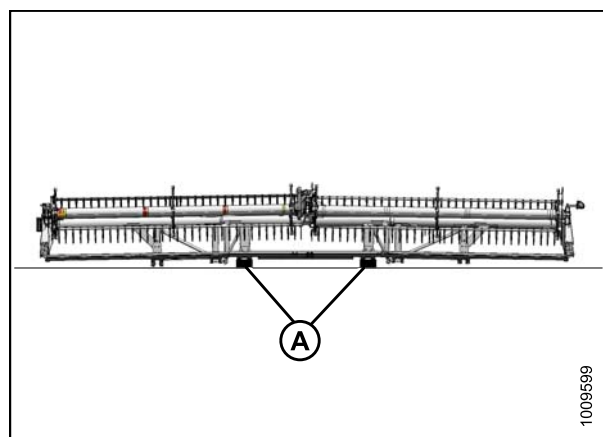
## MAINTENANCE AND SERVICING

2. Move spring handles (A) down to (UNLOCK) position.



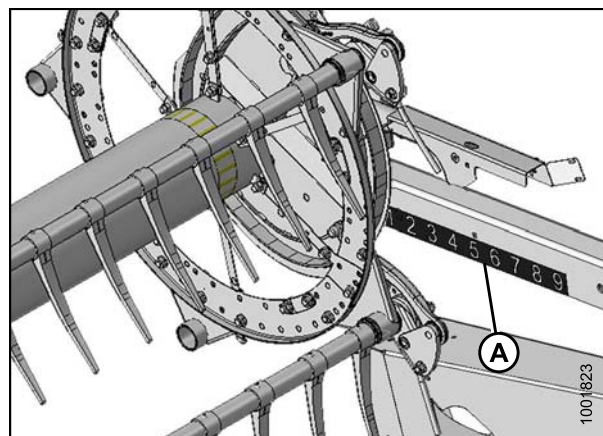
**Figure 5.191: Wing Lock in UNLOCK Position**

3. Raise header and place two 6 in. (150 mm) blocks (A) under the cutterbar, just inboard of the wing flex points.
4. Lower header fully, allowing it to flex into 'full frown' mode.



**Figure 5.192: FlexDraper® Block Locations**

5. Set the fore-aft position to the middle position on the reel arm indicator decal (A).
6. Fully lower the reel.
7. Shut down engine. Remove key from ignition.



**Figure 5.193: Fore-Aft Position**

## MAINTENANCE AND SERVICING

8. Measure clearance (X) between points (Y) and (Z) at ends of each reel (A), and at flex locations (B).

### 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.

9. 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.

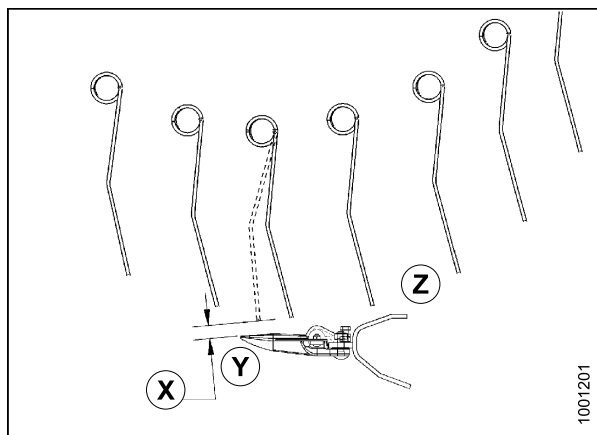


Figure 5.194: Clearance

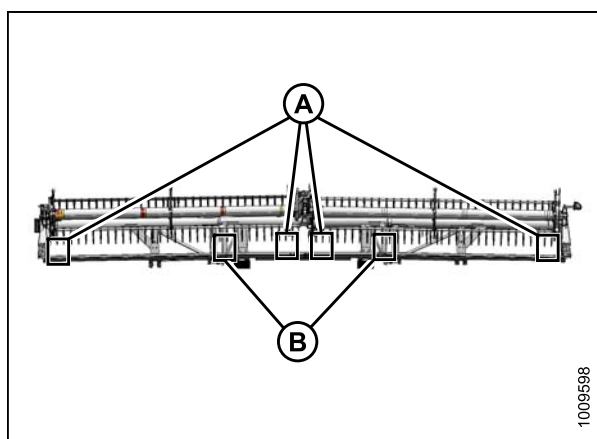


Figure 5.195: Measurement Locations

10. If necessary, refer to [Adjusting Reel Clearance, page 352](#) for adjustment procedure.

### Adjusting Reel Clearance



**DANGER**

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

## MAINTENANCE AND SERVICING

1. Adjust outboard reel arm lift cylinders to set clearance at outboard ends of reel as follows:
  - a. Loosen bolt (A).
  - b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
  - c. Tighten bolt (A).
  - d. Repeat at opposite side.

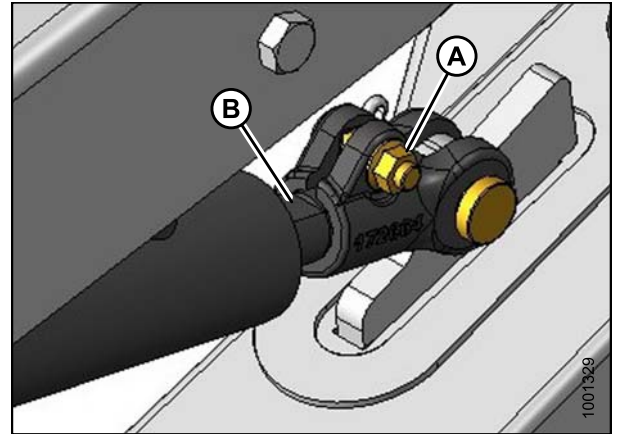


Figure 5.196: Outside Reel Arm

2. Adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels and clearance at flex points as follows:
  - a. Loosen nut (B).
  - b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
  - c. Tighten nut (B).

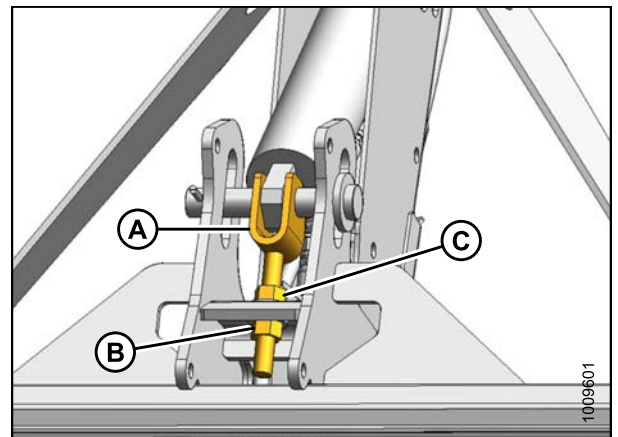


Figure 5.197: Looking Up at Arm Underside

### 5.13.2 Reel Frown

The reel is factory-set to provide more clearance at the center of the reel than at the ends ('frown') to compensate for reel flexing.

#### *Adjusting Reel Frown*

The frown is adjusted by repositioning the hardware connecting the reel tube arms to the reel discs.

#### **NOTE:**

Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.

## MAINTENANCE AND SERVICING

1. Position the reel over the cutterbar (between '4' and '5' on the fore-aft position decal). This position provides adequate clearance at all reel fore-aft positions.
2. Record the measurement at each reel disc location for each reel tube.

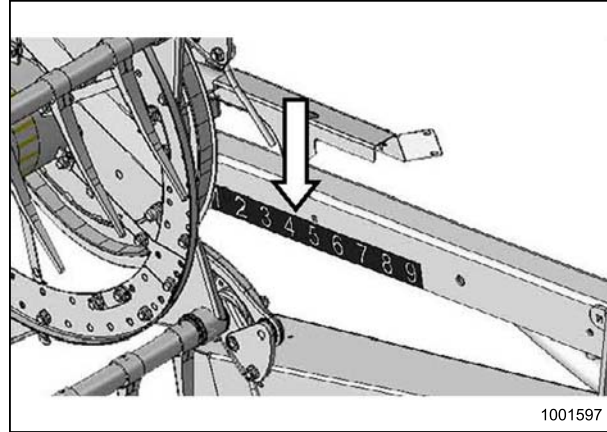


Figure 5.198: Fore-Aft Position Decal

3. Starting with the reel disc closest to the center of the header and proceeding outward towards the ends, adjust the header profile as follows:

- a. Remove bolts (A).
- b. Loosen bolt (B) and adjust arm (C) until desired measurement is obtained between the reel tube and the cutterbar.

**NOTE:**

Allow the reel tubes to curve naturally and position the hardware accordingly.

- c. Reinstall bolts (A) in aligned holes and tighten.

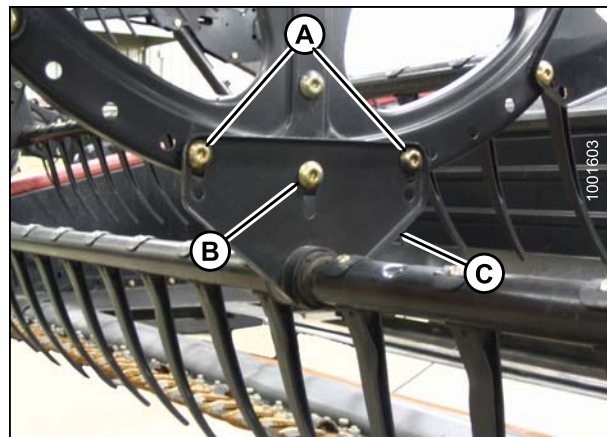


Figure 5.199: Reel Arm

### 5.13.3 Centering the Reel

The reel(s) should be centered between the endsheets.

To center the reels, follow these steps:

1. Raise the header enough to put 6 in. blocks under the outboard skid shoes. Lower the header slowly to force it into a full smile.



2. Loosen bolt (A) on each brace (B).
3. Move forward end of reel center support arm (C) laterally as required to center both reels.
4. Tighten bolts (A) and torque to 265 ft-lbf (359 N·m).

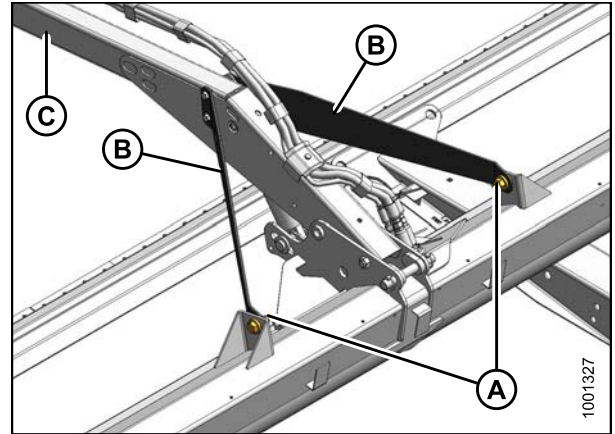


Figure 5.200: Reel Center Support Arm

## 5.13.4 Reel Tines

### IMPORTANT:

Keep reel tines in good condition. Straighten or replace as required.

### Removing Steel Tines



### WARNING

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

1. Lower header and raise reel. Engage reel safety props.



### WARNING

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason.

2. Shut down engine and remove key from ignition.
3. Remove tine tube bushings from the applicable tine tube at center and left discs. Refer to [Removing Bushings from 5-, 6- or 9-Bat Reels, page 358](#).
4. Temporarily attach reel arms (B) to reel disc, using original attachment locations (A).
5. Cut damaged tine(s) so that it can be removed from tube.
6. Remove bolts on existing tines and slide tines over to replace tine that was cut off in previous step. Remove reel arms (B) from tube as required.

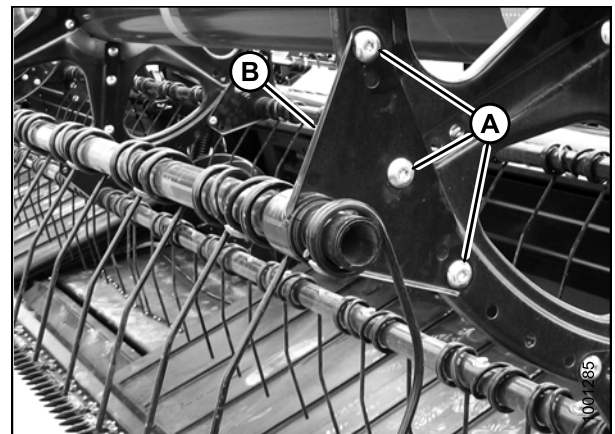


Figure 5.201: Reel Arm

### Installing Steel Tines

#### **WARNING**

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

#### **IMPORTANT:**

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

1. Slide new tines and reel arm (A) onto end of tube.
2. Install tine tube bushings. Refer to [5.13.5 Tine Tube Bushings, page 358](#).
3. Attach tines to tine bar with bolts and nuts (B).

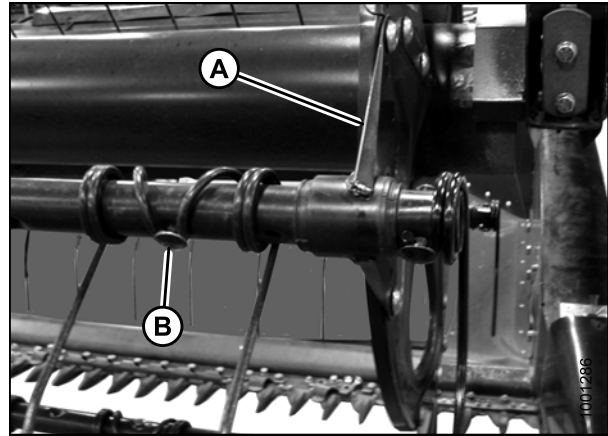


Figure 5.202: Tine Tube

### Removing Plastic Fingers

#### **WARNING**

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

1. Remove screw (A) with a Torx® Plus 27 IP socket wrench.

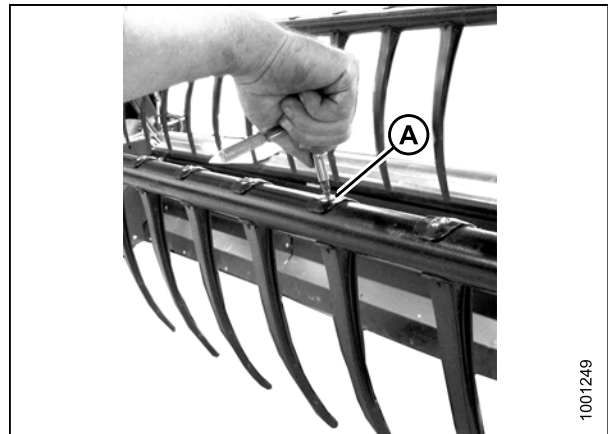


Figure 5.203: Plastic Fingers

## MAINTENANCE AND SERVICING

2. Push finger top clip back toward reel tube and remove from finger tube.



Figure 5.204: Plastic Fingers

### *Installing Plastic Fingers*

#### **WARNING**

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

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.



Figure 5.205: Plastic Fingers

#### **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.

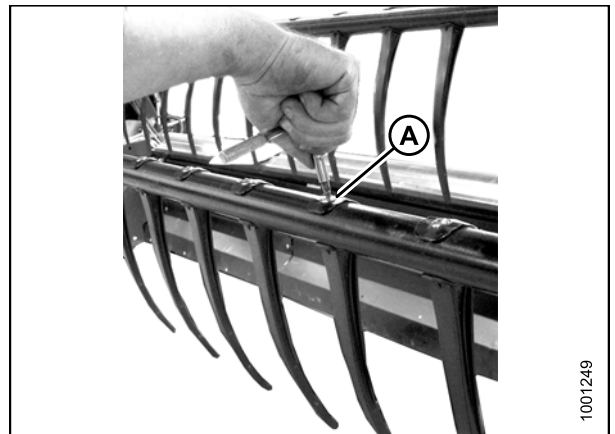


Figure 5.206: Plastic Fingers

## 5.13.5 Tine Tube Bushings

### *Removing Bushings from 5-, 6- or 9-Bat Reels*

#### **WARNING**

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

#### **NOTE:**

If only replacing the cam end bushing, refer to **Cam End Bushings**.

#### **Center Disc and Tail-End Bushings**

1. Lower header, raise reel fully, and engage reel safety props.

#### **IMPORTANT:**

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

2. Remove reel endshields and endshield support (C) from the tail end of the reel at applicable tine tube location.

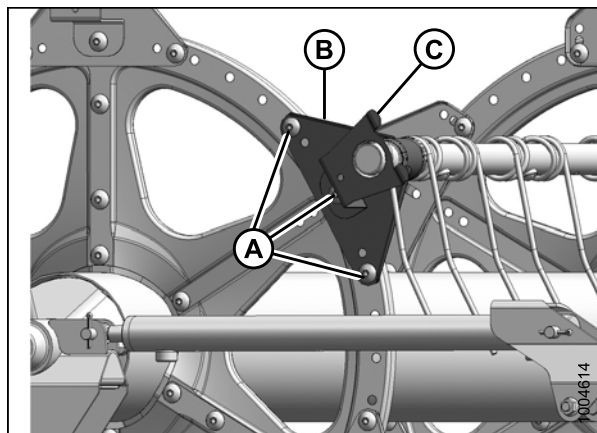
#### **NOTE:**

There are no endshields on the center disc.

3. Remove bolts (A) securing arm (B) to disc.

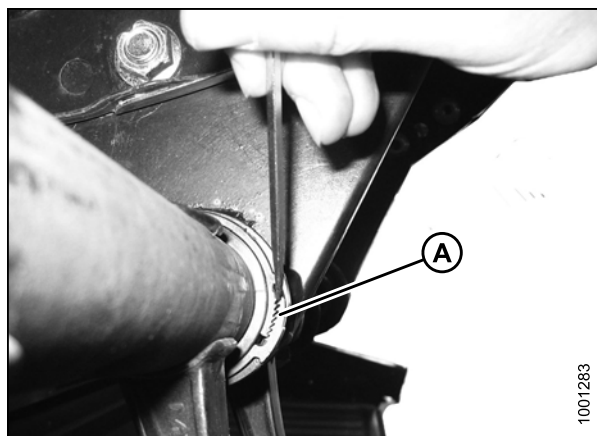
#### **IMPORTANT:**

Note the hole locations in arm and disc and ensure bolts are reinstalled at original locations.



**Figure 5.207: Tail End**

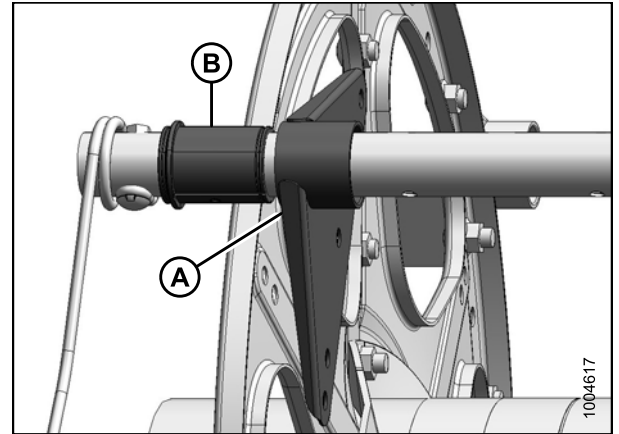
4. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull clamp off tine tube.



**Figure 5.208: Bushing Clamp**

5. Rotate arm (A) clear of disc and slide arm inboard off bushing and remove bushing halves (B). If required remove the next tine or plastic finger, so that the arm can slide off the bushing. Refer to:

- [Removing Plastic Fingers, page 356](#)
- [Removing Steel Tines, page 355](#)



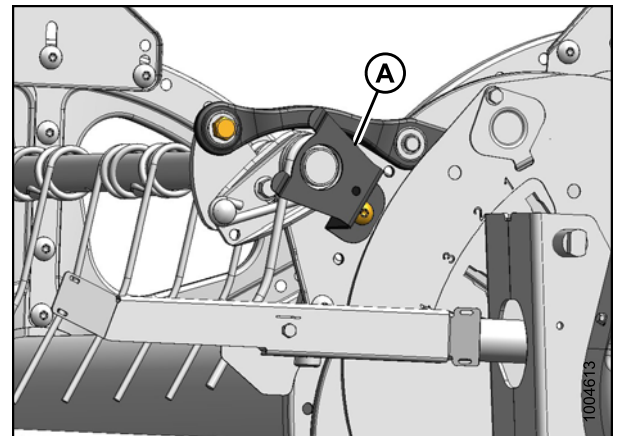
**Figure 5.209: Bushing**

## Cam End Bushings

### **NOTE:**

Removing cam end bushings requires that the tine tube be moved through the disc arms to expose the bushing.

6. At the cam end, remove endshields and endshield support (A) at applicable tine tube location on the cam end.



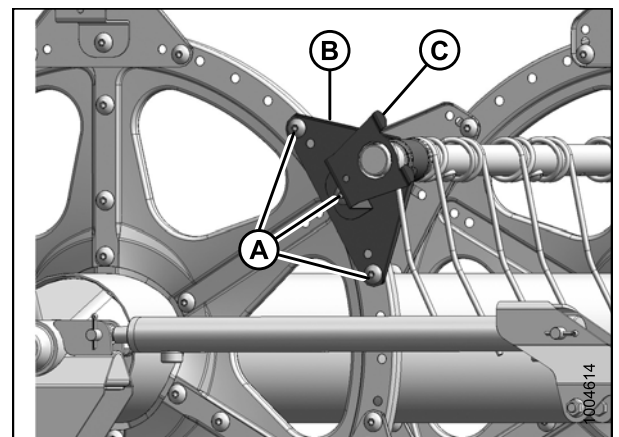
**Figure 5.210: Cam End**

7. At the tail end, remove reel endshields and endshield support (C) at applicable tine tube location.

### **NOTE:**

There are no endshields on the center discs.

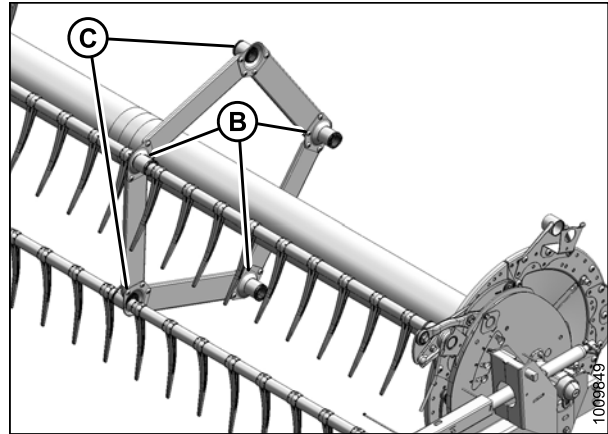
8. At the tail and center discs, remove bolts (A) securing arm (B) to disc.



**Figure 5.211: Tail End**

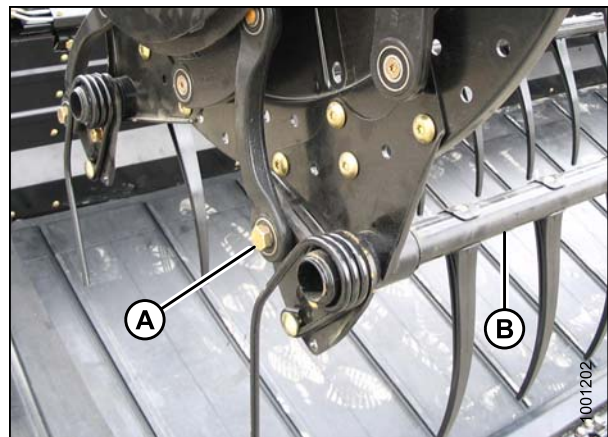
## MAINTENANCE AND SERVICING

9. At the tine tube support (if installed) locations ,either release the bushing clamps or disconnect the support channels from the tube support, depending on which tine tube is being moved. Three tine tubes (B) require that the channels be disconnected and two (C) require only to remove the bushing clamp.



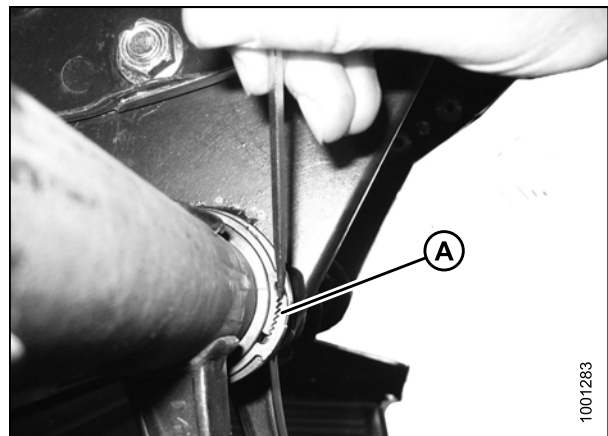
**Figure 5.212: Tine Tube Supports**

10. Remove bolt (A) at on cam linkage so that tine tube (B) is free to rotate.



**Figure 5.213: Cam End**

11. Release bushing clamps (A) at the cam disc with a small screwdriver to separate the serrations. Move clamps off bushings.



**Figure 5.214: Bushing Clamp**



## MAINTENANCE AND SERVICING

12. Slide tine tube (A) outboard to expose the bushing. Remove the bushing halves (B). If required, remove the next tine or plastic finger, so that the arm can slide off the bushing. Refer to:

- [Removing Plastic Fingers, page 356](#)
- [Removing Steel Tines, page 355](#)

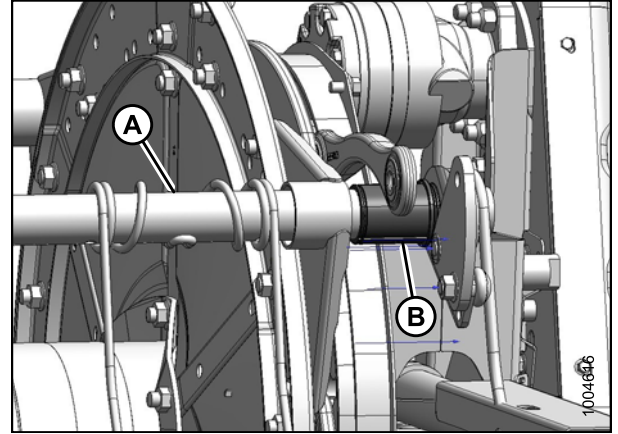


Figure 5.215: Cam End

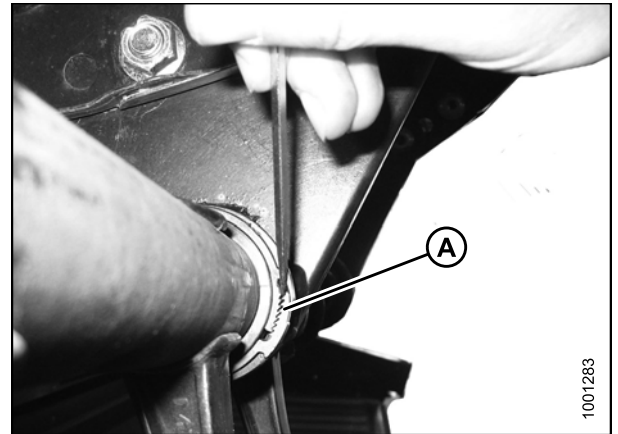


Figure 5.216: Bushing Clamp



## MAINTENANCE AND SERVICING

13. Slide support (A) off of the bushing halves (B).

**NOTE:**

Two tine tubes have supports that are assembled opposite to what is shown. Those supports (A) can be rotated for the flange to clear the channels before they can be moved off the bushing. The tine tube can also be moved outward slightly.

14. Remove the bushing halves (B).

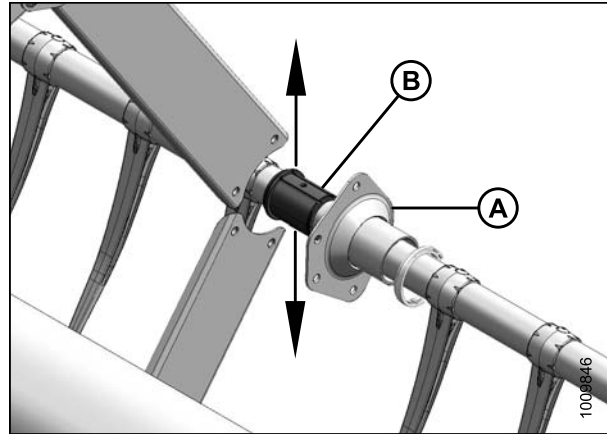


Figure 5.217: Support

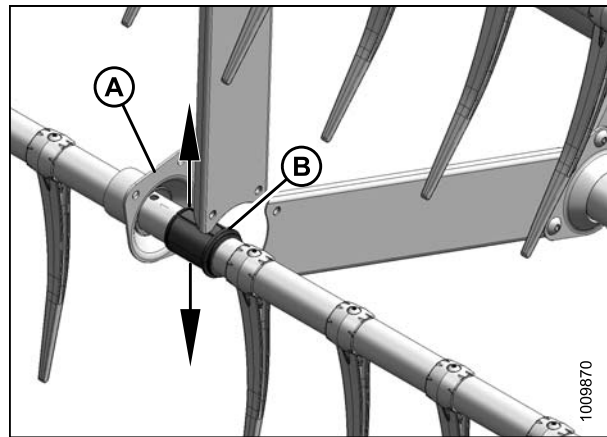


Figure 5.218: Opposite Support

### *Installing Bushings on 5-, 6- or 9-Bat Reels*



## WARNING

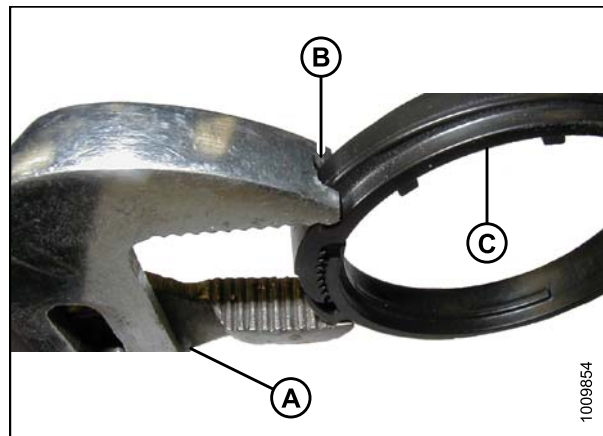
To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

**IMPORTANT:**

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

## **NOTE:**

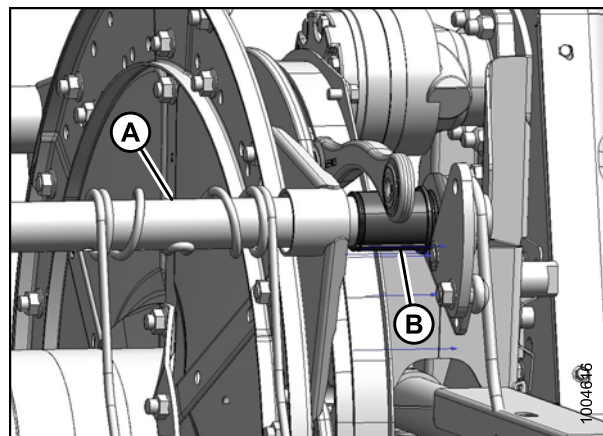
A pair of modified channel lock pliers is recommended to install the bushing clamps. Secure pliers (A) in vice and grind in a notch (B) at the end of each arm that fits the clamp (C).



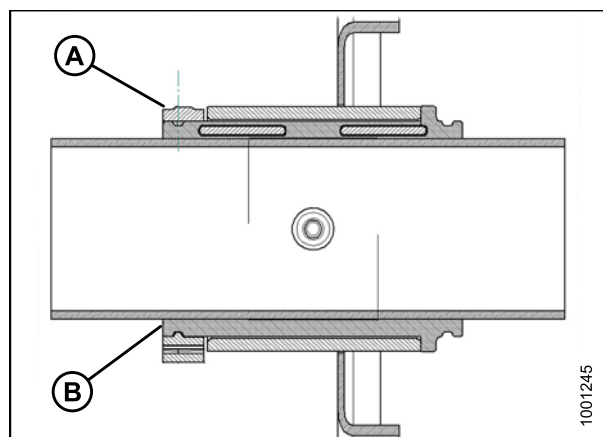
**Figure 5.219: Modified Pliers**

## **Cam End Bushings**

1. Position bushing halves (B) on tine tube with flangeless end adjacent to reel arm, and locate lug in each bushing half in hole in tine tube.
2. Slide tine tube (A) toward tail end of reel to insert the bushing (B) into the reel arm. If s are installed, ensure that the bushings at those locations slide into the support.
3. Reinstall fingers or tines if removed. Refer to:
  - [Installing Steel Tines, page 356](#)
  - [Installing Plastic Fingers, page 357](#)
4. Install bushing clamp (A) onto tine tube adjacent to flangeless end of bushing (B).
5. Position clamp (A) on bushings (B) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.



**Figure 5.220: Cam End**



**Figure 5.221: Bushing**

## MAINTENANCE AND SERVICING

6. Tighten clamp (A) with modified channel lock pliers (B) so that finger pressure will **NOT** move clamp.

**IMPORTANT:**

Overtightening clamp may result in breakage.

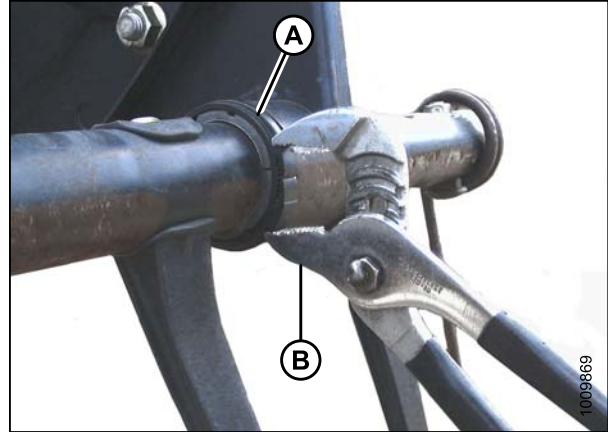


Figure 5.222: Installing Clamp

7. Line up tine bar (B) with cam arm and install bolt (A). Torque bolt to 120 ft·lbf (165 N·m).

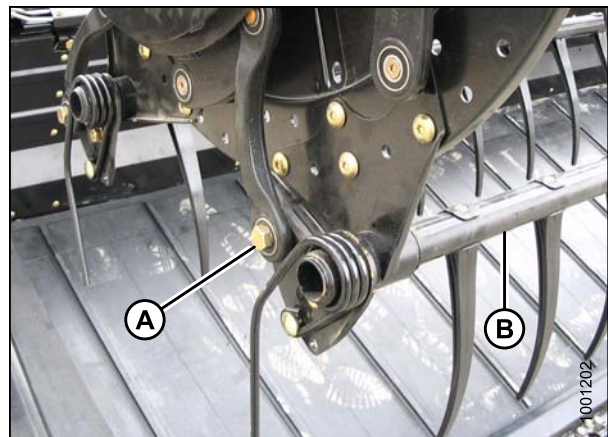


Figure 5.223: Cam End

8. At the center disc, install the bolts (A) securing arm (B) to disc.
9. At the tail end, install reel arm (B) and endshield support (C) from the tail end of the reel at applicable tine tube location with bolts (A).

**NOTE:**

There are no endshields on the center discs.

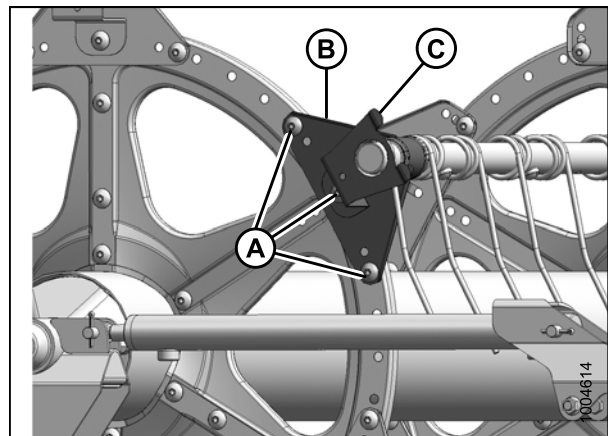
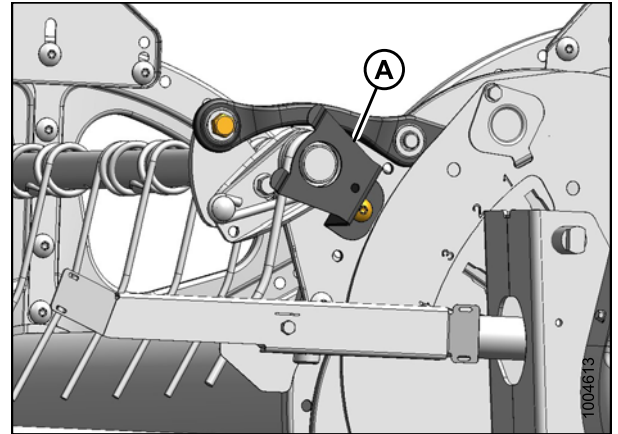


Figure 5.224: Tail End

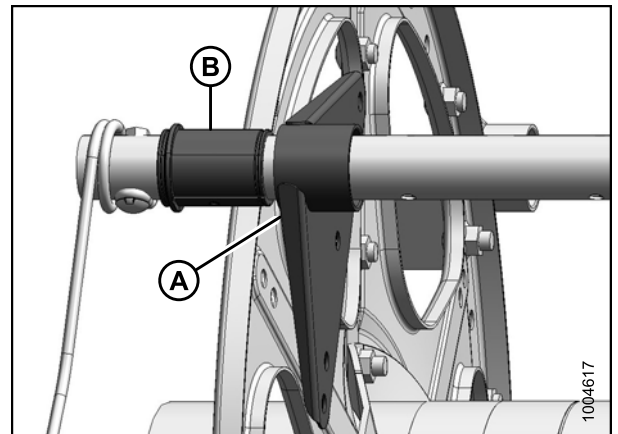
10. At the cam end, install endshield support (A) at applicable tine tube location on the cam end.
11. Reinstall reel endshields. Refer to [5.13.6 Reel Endshields, page 369](#).



**Figure 5.225: Cam End**

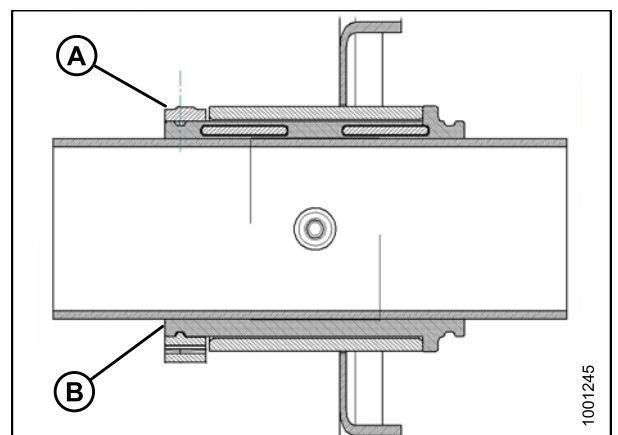
## **Center Disc and Tail End Bushings**

12. Position bushing halves (B) on tine tube with flangeless end adjacent to reel arm, and locate lug in each bushing half in hole in tine tube.
13. Slide reel arm (A) onto bushing (B) and position against disc at original location.
14. Reinstall any fingers or tines that were removed. Refer to:
  - [Installing Steel Tines, page 356](#)
  - [Installing Plastic Fingers, page 357](#)



**Figure 5.226: Tail End**

15. Install bushing clamp (A) onto tine tube adjacent to flangeless end of bushing (B).
16. Position clamp (A) on bushings (B) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.



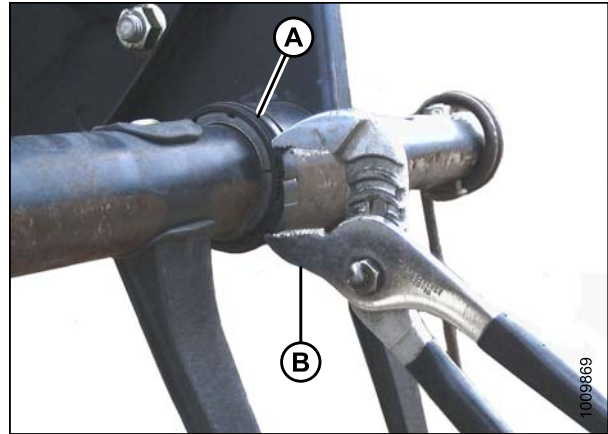
**Figure 5.227: Bushing**

## MAINTENANCE AND SERVICING

17. Tighten clamp (A) with modified channel lock pliers (B) so that finger pressure will **NOT** move clamp.

**IMPORTANT:**

Over-tightening clamp may result in breakage.

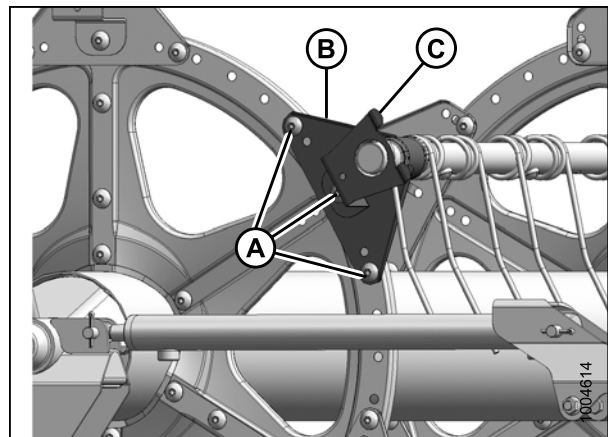


**Figure 5.228: Clamp**

18. At the center disc, install the bolts (A) securing arm (B) to disc.
19. At the tail end, install reel arm (B) and endshield support (C) at applicable tine tube location with bolts (A). Reinstall endshields.

**NOTE:**

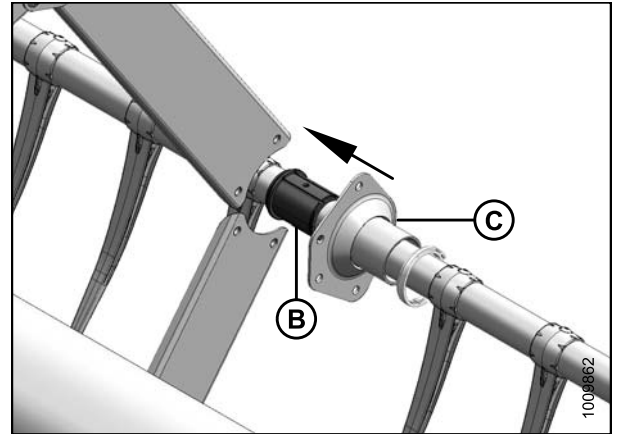
There are no endshields on the center discs.



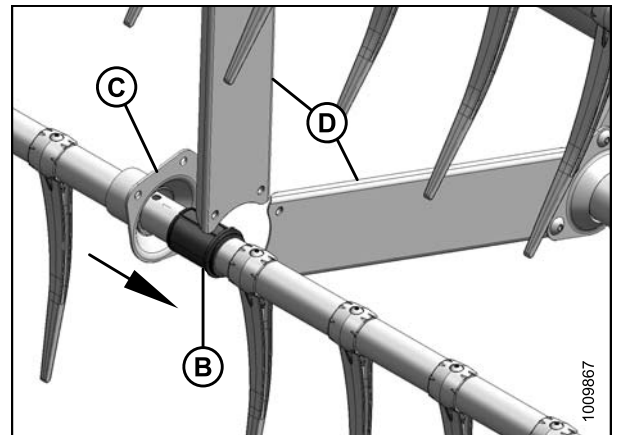
**Figure 5.229: Tail End**

## **Tine Tube Support (If installed) Bushings**

20. Position bushing halves (B) on tine tube with flangeless end adjacent to reel arm, and locate lug in each bushing half in hole in tine tube.
21. Slide support (C) onto bushing (B). For the opposite tine tube, rotate support (C), or slightly move tine tube so that it clears channels (D).

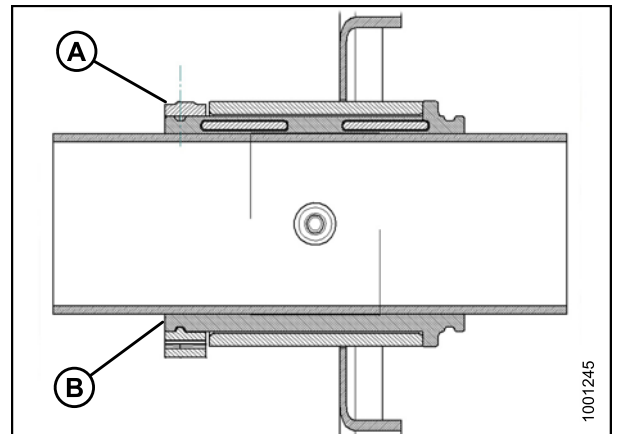


**Figure 5.230: Support**



**Figure 5.231: Opposite Support**

22. Install bushing clamp (A) onto tine tube adjacent to flangeless end of bushing (B).
23. Position clamp (A) on bushings (B) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.



**Figure 5.232: Bushing Clamp**



## MAINTENANCE AND SERVICING

24. Tighten clamp (A) with modified channel lock pliers (B) so that finger pressure will not move clamp.

**IMPORTANT:**

Over-tightening clamp may result in breakage.

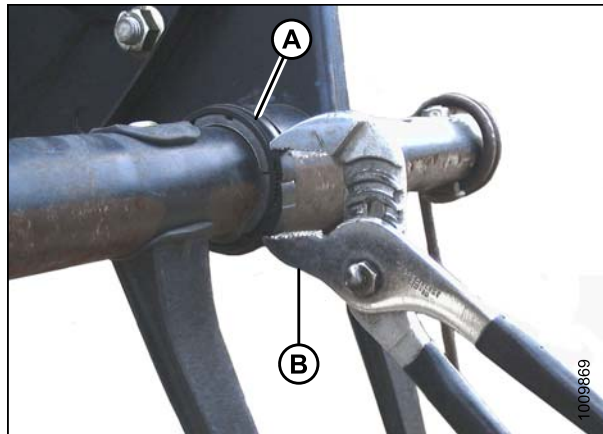


Figure 5.233: Clamp

25. Reattach channels (C) to support (A) with screws (B) and nuts. Torque screws to 32 ft·lbf (43 N·m).
26. Reinstall any fingers (D) that were removed with screws (E). Refer to [Installing Plastic Fingers, page 357](#).

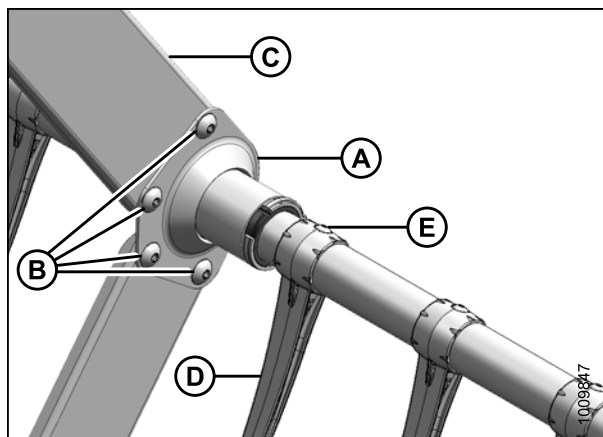


Figure 5.234: Support

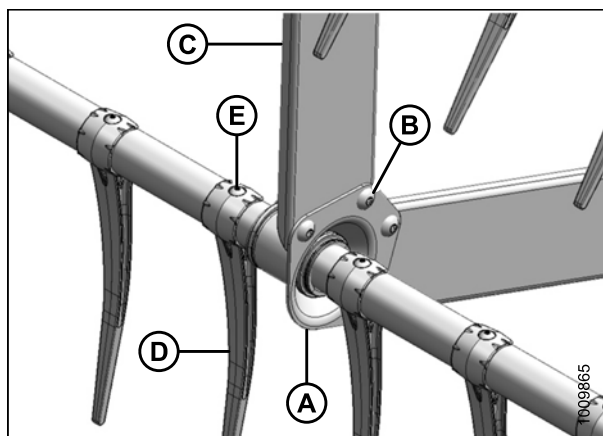


Figure 5.235: Opposite Support



## 5.13.6 Reel Endshields

The reel endshields and supports do not require regular maintenance, but should be checked periodically for damage and loose or missing fasteners. Endshields or supports that are slightly dented or deformed may be repaired. Severely damaged components should be replaced.

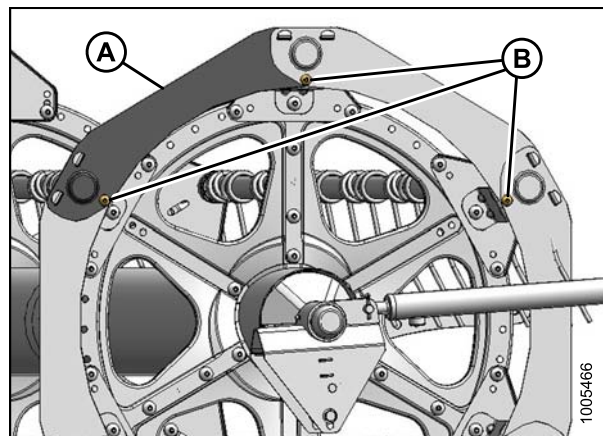
Reel endshields can be attached to either end of the reel.

### *Replacing Endshield*

#### **WARNING**

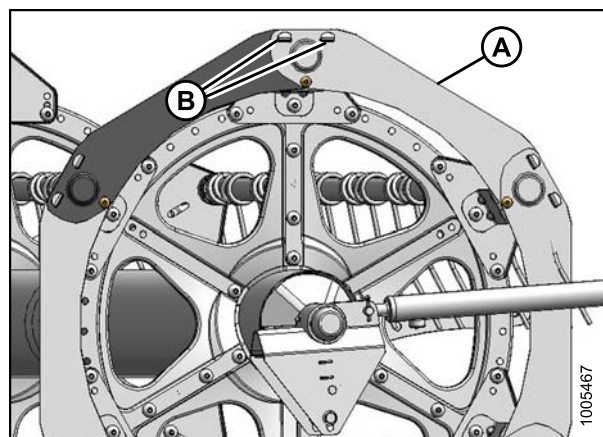
**To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.**

1. Lower header and reel, and shutdown engine. Remove key from ignition.
2. Manually rotate reel for access to endshield (A) to be replaced.
3. Remove three bolts (B).



**Figure 5.236: Reel Endshields**

4. Lift end of endshield (A) off support (B).



**Figure 5.237: Reel Endshields**

## MAINTENANCE AND SERVICING

5. Lift endshield off supports.

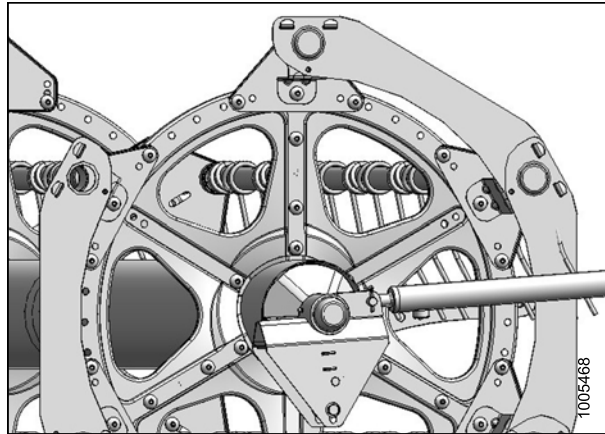


Figure 5.238: Reel Endshields

6. Move endshield (A) away from support (B), and place new endshield (C) onto supports.
7. Reattach end of endshield (A) to support (B).
8. Reinstall bolts (D).
9. Tighten all hardware.

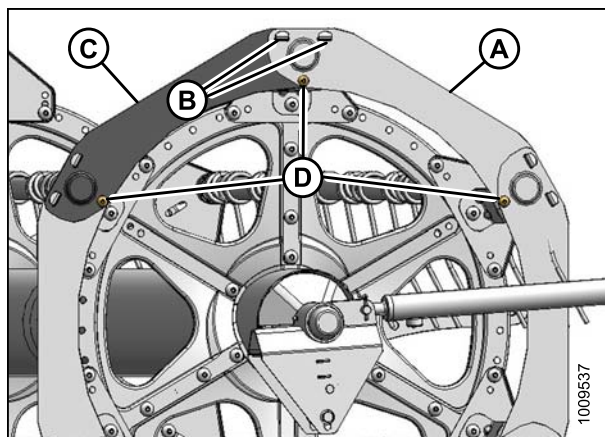


Figure 5.239: Reel Endshields

### Replacing Support

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving operator's seat for any reason.

1. Lower header and reel, and shut down engine. Remove key from ignition.
2. Manually rotate reel for access to endshield support (A) to be replaced.
3. Remove bolt (B) from support (A).
4. Remove bolts (C) from support (A) and two adjacent supports.

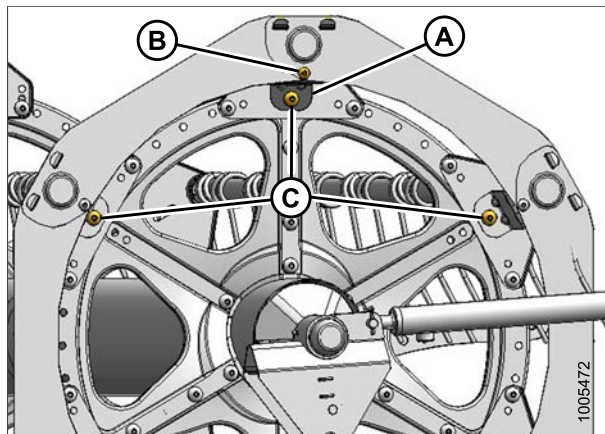
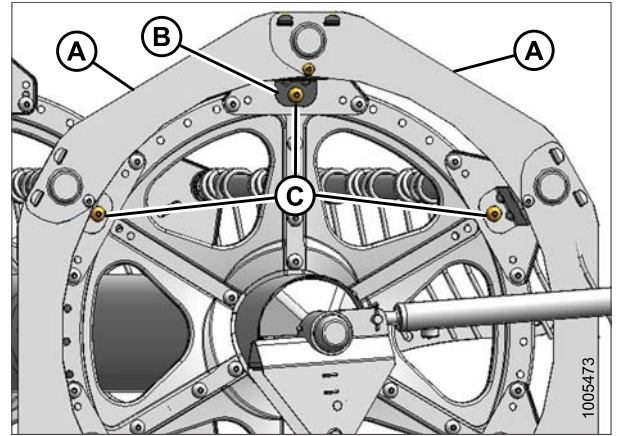


Figure 5.240: Endshield Supports

## MAINTENANCE AND SERVICING

5. Move endshields (A) away from tine tube and rotate support (B) towards reel to remove it.
6. Insert tabs of new support (B) into slots in endshields and rotate into endshields. Ensure tabs engage both endshields.
7. Secure support (B) to disc with bolt (C) and nut. Do not tighten.
8. Secure endshields (A) to support (B) with bolt (C) and nut. Do not tighten.
9. Reattach supports with bolts (C) and nuts.
10. Check clearance between tine tube and endshield support, and adjust if necessary.
11. Torque nuts to 20 ft·lbf (27 N·m).



**Figure 5.241: Endshield Supports**

## 5.14 Reel Drive

The reel is hydraulically driven through a chain case that is attached to the right end on a single reel header, and between the reels on a double-reel header.

### 5.14.1 Replacing Reel Drive Sprocket

For Case IH and New Holland combine models, the combine needs to be configured for reel sprocket size to optimize the auto reel to ground speed control. For more information, refer to combine service manual.

#### *Removing Drive Cover*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

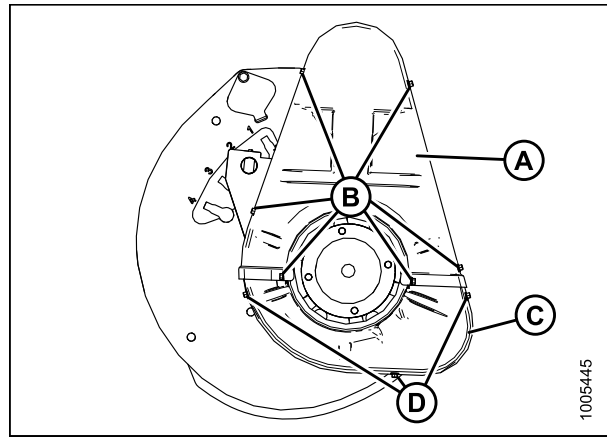


Figure 5.242: Drive Cover

#### *Loosening Drive Chain*

1. Loosen nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

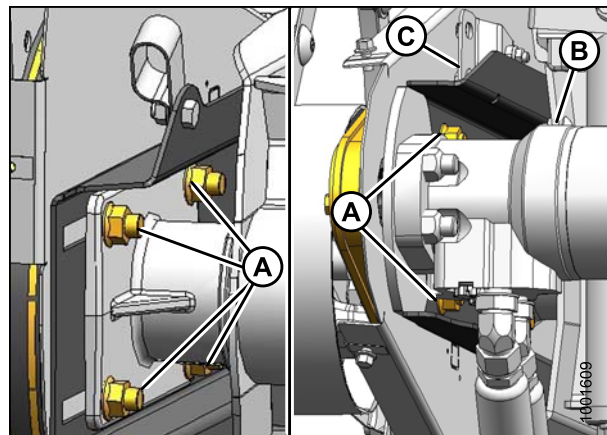


Figure 5.243: Reel Drive

## Removing Drive Sprocket

1. Remove the drive chain (A) from the drive sprocket (B).

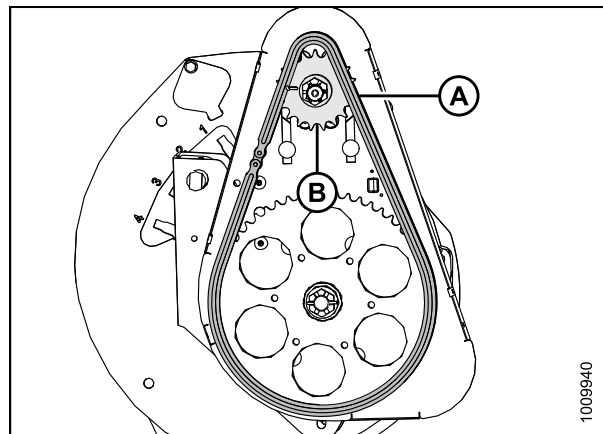


Figure 5.244: Reel Drive

2. Remove the cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
3. Remove the drive sprocket (D). Ensure key remains in the shaft.

### IMPORTANT:

Do **NOT** use pry bar and/or hammer to remove drive sprocket (D). This will damage the motor. Use a puller if drive sprocket does not come off by hand.

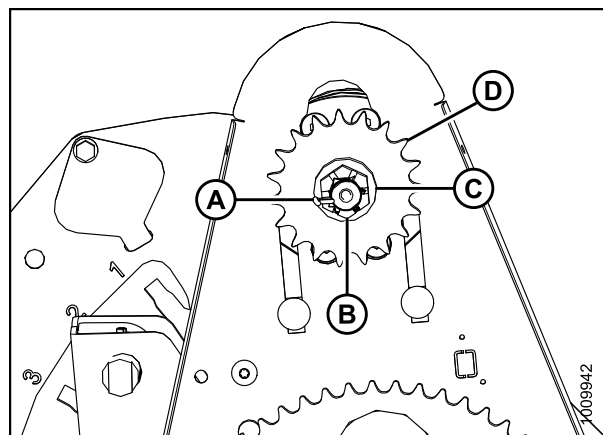


Figure 5.245: Reel Drive

## Installing Drive Sprocket

1. Install the new drive sprocket (D), flat washer (C), and slotted nut (B), onto the motor shaft.
2. Torque nut to 40 ft·lbf (54 N·m). Tighten to next slot if necessary to install cotter pin (A).

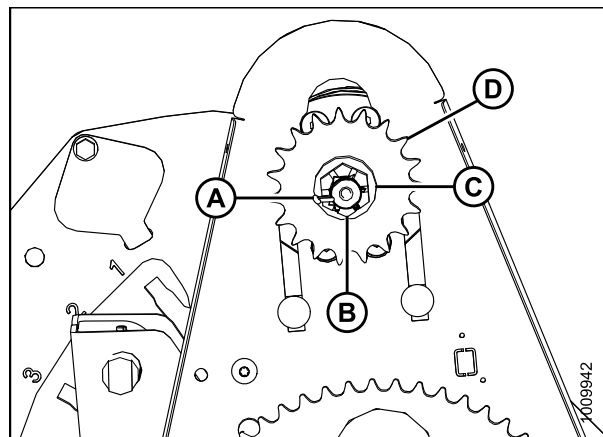
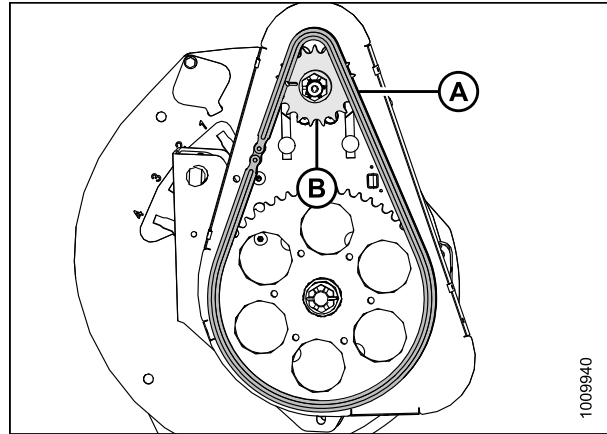


Figure 5.246: Reel Drive Sprocket

## MAINTENANCE AND SERVICING

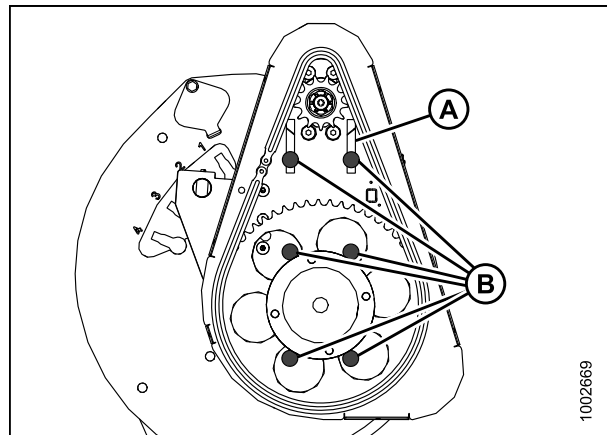
3. Install the chain (A) onto drive sprocket (B).



**Figure 5.247: Reel Drive**

### *Tightening Drive Chain*

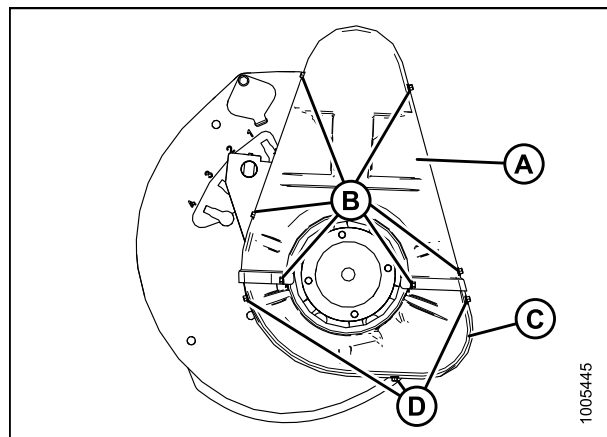
1. Ensure the six bolts (B) securing motor mount to chain case are loose.
2. Slide motor and motor mount upwards until chain (A) is tight, and tighten bolts (nuts on backside).
3. There should be 1/8 in. (3 mm) of slack in the chain. Adjust if necessary.
4. Torque bolts (B) to 54 ft·lbf (73 N·m).



**Figure 5.248: Reel Drive**

### *Installing Drive Cover*

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).



**Figure 5.249: Reel Drive Cover**

## 5.14.2 Replacing Double Reel U-Joint

The reel drive U-joint allows movement between the two reels. This allows either reel to move independently.

Lubricate the U-joint in accordance with the requirements. Refer to [5.3.6 Lubrication and Servicing, page 259](#). U-joint should be replaced if severely worn or damaged. Refer to [Removing Double Reel U-Joint, page 375](#).

### *Removing Drive Cover*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

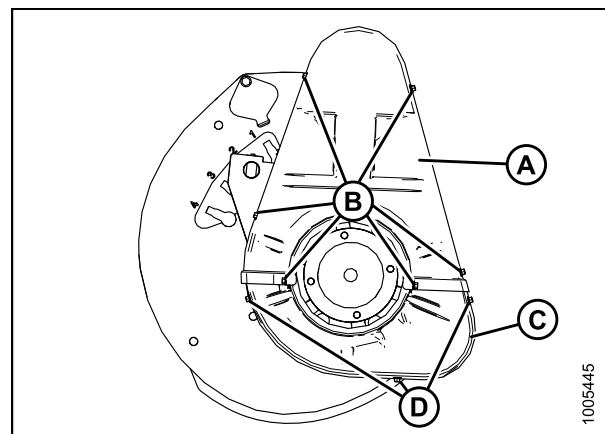


Figure 5.250: Double Reel

### *Removing Double Reel U-Joint*

To remove the U-joint, follow these steps:

1. 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.

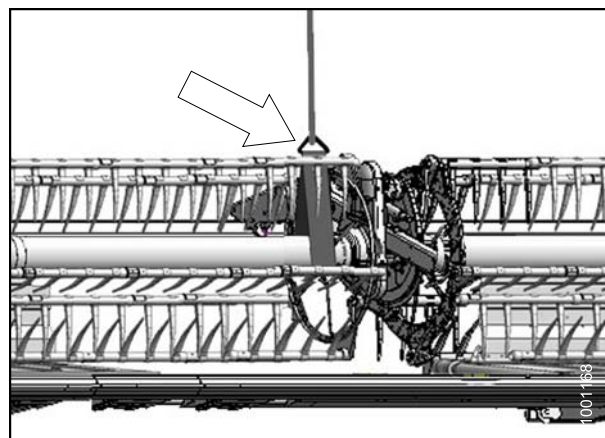


Figure 5.251: Reel and Reel Support



## MAINTENANCE AND SERVICING

2. Remove four bolts (A) attaching reel tube to U-joint flange (B) and move reel sideways to disengage stub shaft from U-joint.

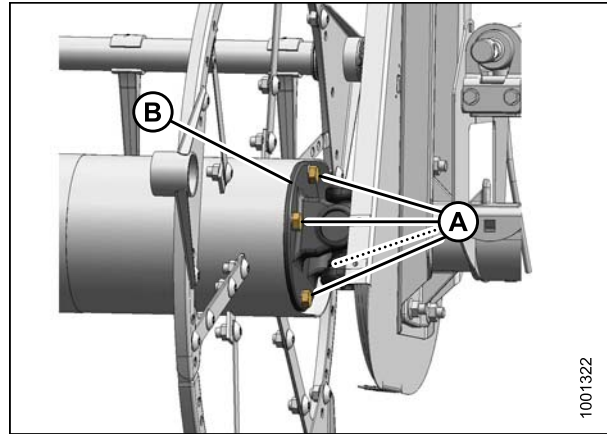


Figure 5.252: U-Joint

3. Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
4. Remove U-joint.

**NOTE:**

Right-hand reel may need to be moved sideways for U-joint to clear reel tube.

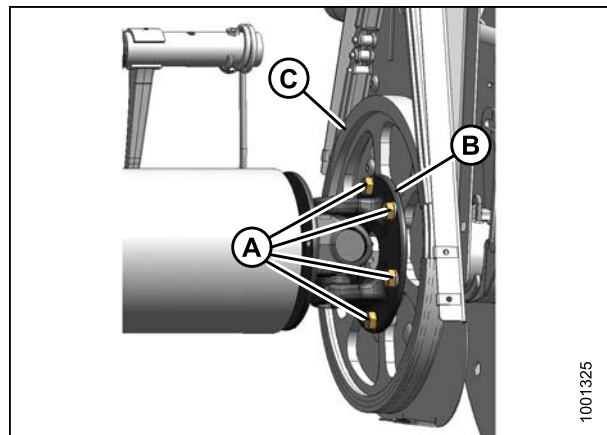


Figure 5.253: U-Joint

### *Installing Double Reel U-Joint*

To install the U-joint, follow these steps:

**NOTE:**

Right-hand reel may need to be moved sideways for U-joint to clear reel tube.

1. Position U-joint flange (B) onto driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque at this time.

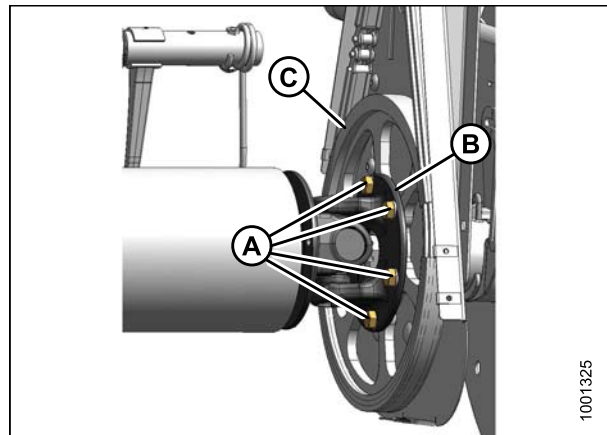
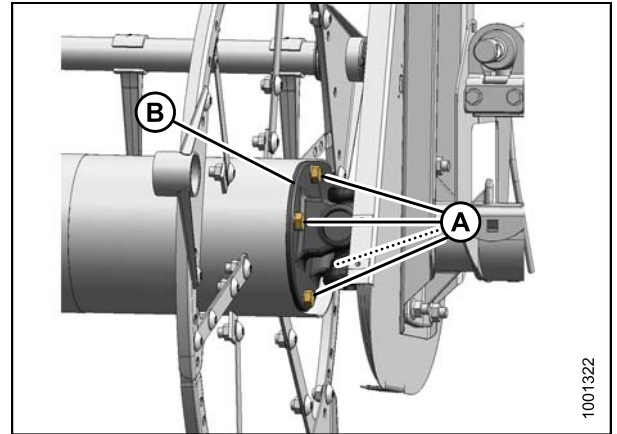


Figure 5.254: U-Joint

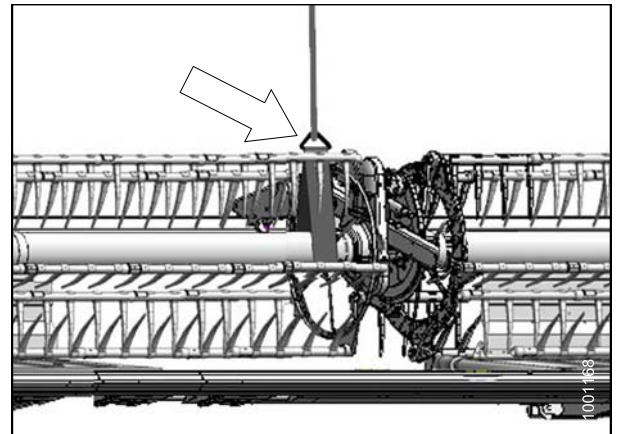
## MAINTENANCE AND SERVICING

2. Position right-hand reel tube against reel drive and engage stub shaft into U-joint pilot hole.
3. Rotate reel until holes in end of reel tube and U-joint flange (B) line up.
4. Install four bolts (A) and torque to 70–80 ft·lbf (95–108 N·m).



**Figure 5.255: U-Joint**

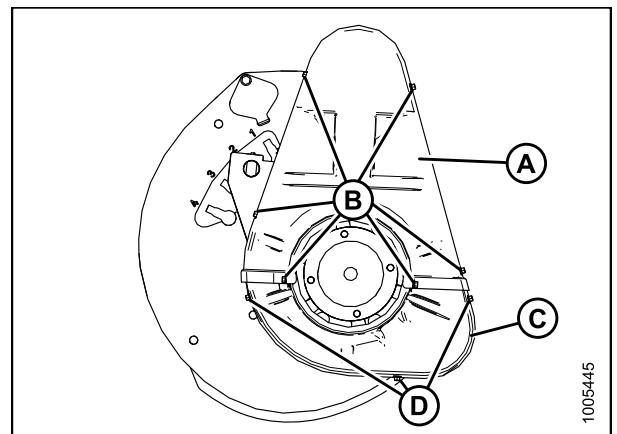
5. Remove temporary reel support.



**Figure 5.256: Reel and Reel Support**

### *Installing Drive Cover*

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).



**Figure 5.257: Double-Reel Drive Cover**

### 5.14.3 Replacing 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.

#### *Removing Drive Cover*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

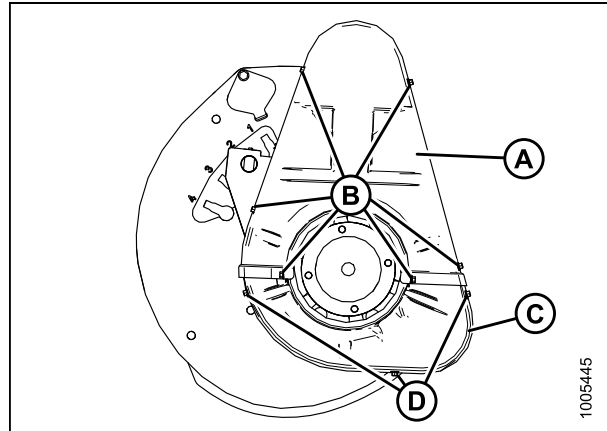


Figure 5.258: Drive Cover

#### *Loosening Drive Chain*

1. Loosen nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

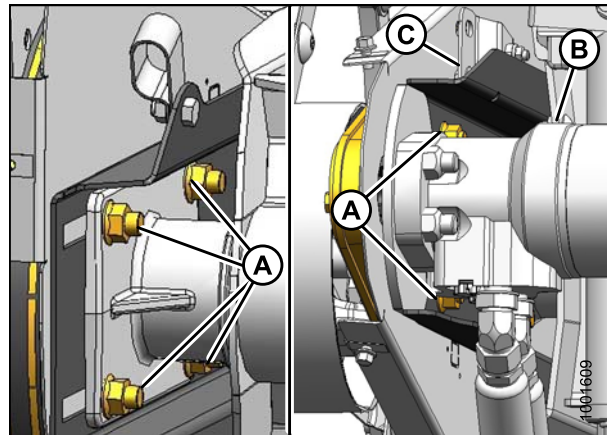
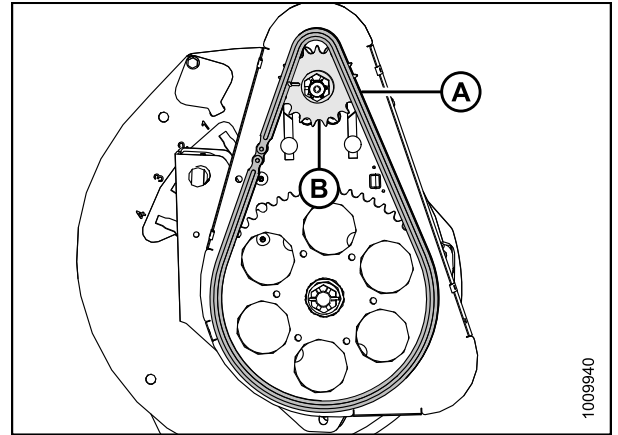


Figure 5.259: Reel Drive

### *Removing Drive Sprocket*

1. Remove the drive chain (A) from the drive sprocket (B).

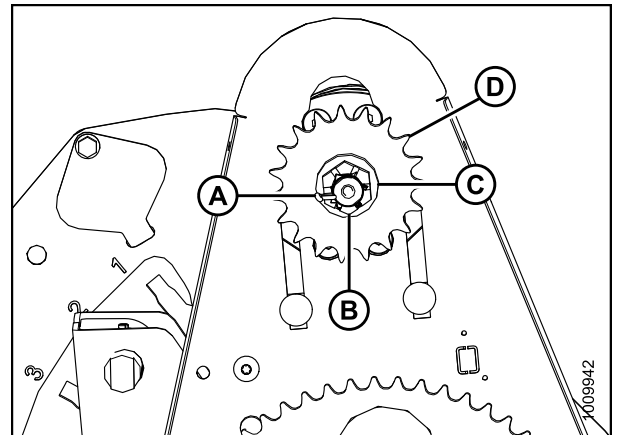


**Figure 5.260: Reel Drive**

2. Remove the cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
3. Remove the drive sprocket (D). Ensure key remains in the shaft.

**IMPORTANT:**

Do **NOT** use pry bar and/or hammer to remove drive sprocket (D). This will damage the motor. Use a puller if drive sprocket does not come off by hand.

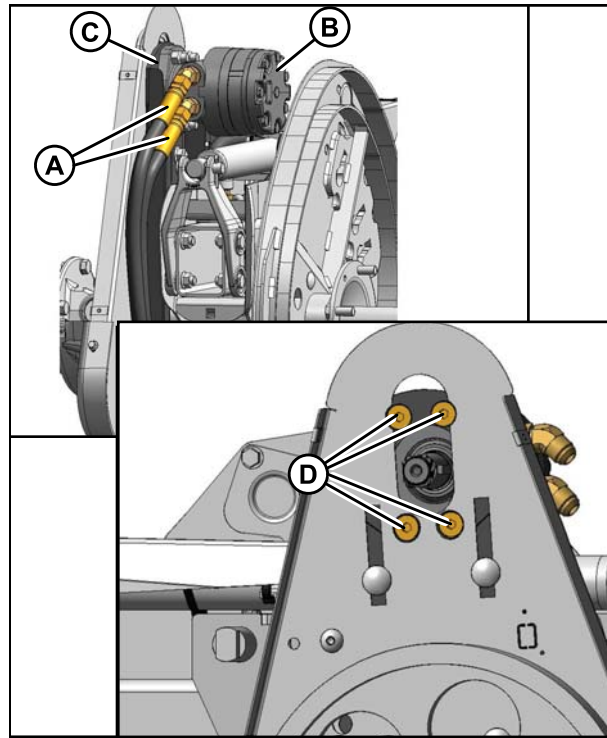


**Figure 5.261: Reel Drive**

## *Removing Reel Drive Motor*

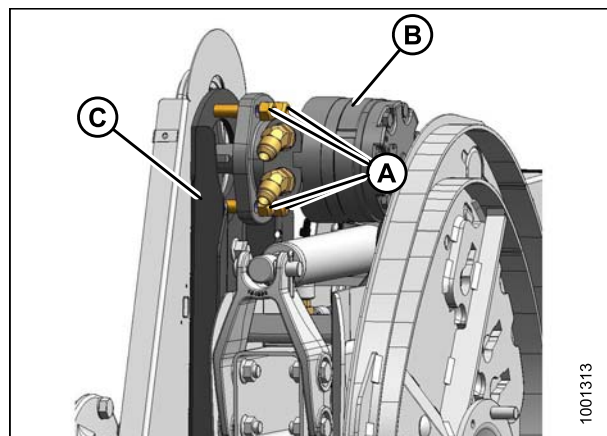
To remove the reel drive motor from a single or double-reel header, follow these steps:

1. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.
2. 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 5.262: Reel Drive Motor**

3. Remove four nuts (A) and attachment bolts and remove motor (B) from motor mount (C). Retrieve the spacer (if installed) from between the motor (B) and motor mount (C).



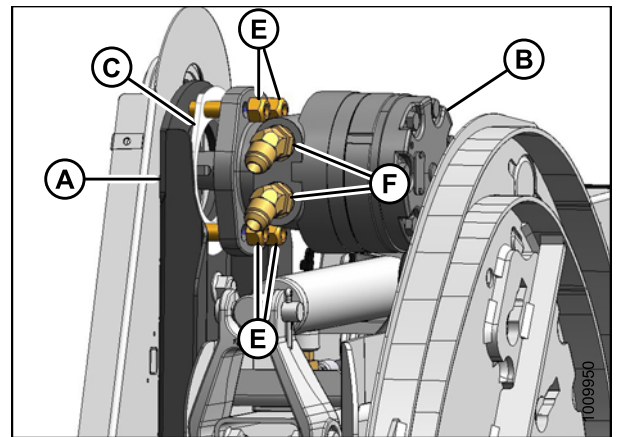
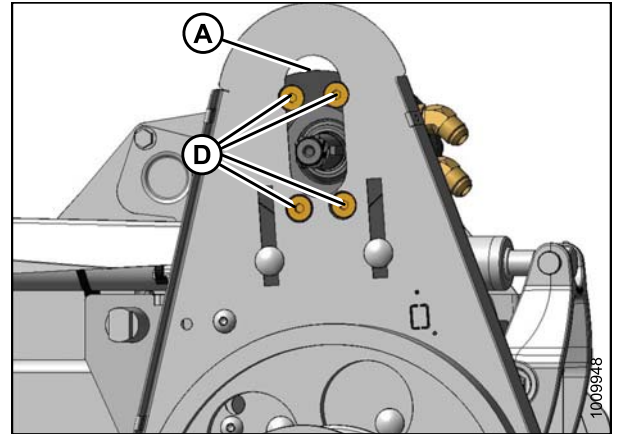
**Figure 5.263: Reel Drive Motor**

## *Installing Reel Drive Motor*

To install the reel drive hydraulic motor, follow these steps:

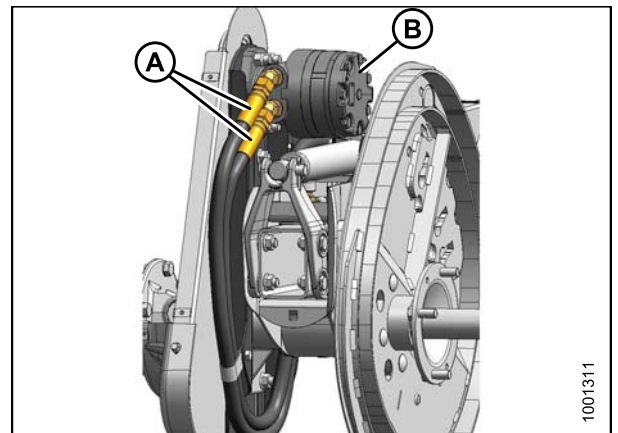
## MAINTENANCE AND SERVICING

1. Slide motor mount (A) up or down so that mounting holes are accessible through openings in chain case.
2. Attach hydraulic motor (B) and spacer (C) to motor mount with four 1/2 in. x 1.75 countersunk bolts (D).
3. Secure motor with lock nuts (E).
4. Torque nuts to 54 ft·lbf (73 N·m).
5. If installing new motor, install fittings (F) from old motor onto new motor.



**Figure 5.264: Reel Drive Motor**

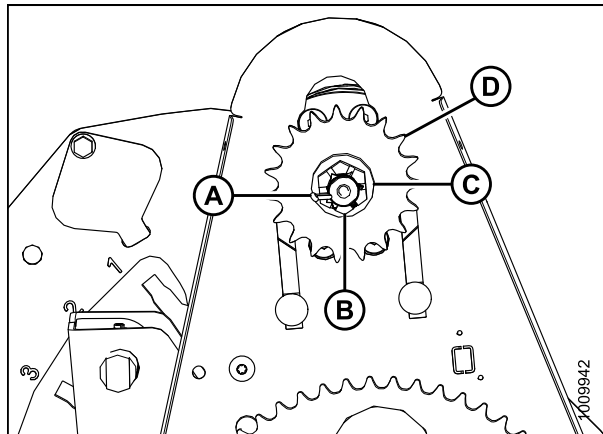
6. Reattach hydraulic lines (A) to motor (B).



**Figure 5.265: Reel Drive**

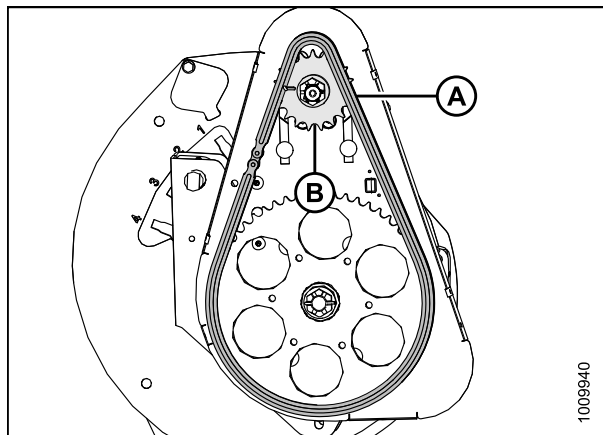
## *Installing Drive Sprocket*

1. Install the new drive sprocket (D), flat washer (C), and slotted nut (B), onto the motor shaft.
2. Torque nut to 40 ft·lbf (54 N·m). Tighten to next slot if necessary to install cotter pin (A).



**Figure 5.266: Reel Drive Sprocket**

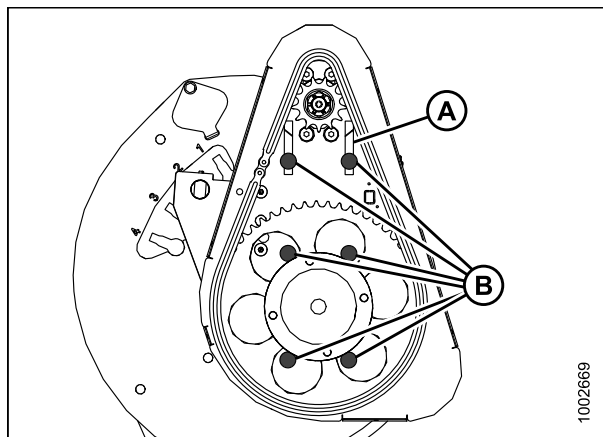
3. Install the chain (A) onto drive sprocket (B).



**Figure 5.267: Reel Drive**

## *Tightening Drive Chain*

1. Ensure the six bolts (B) securing motor mount to chain case are loose.
2. Slide motor and motor mount upwards until chain (A) is tight, and tighten bolts (nuts on backside).
3. There should be 1/8 in. (3 mm) of slack in the chain. Adjust if necessary.
4. Torque bolts (B) to 54 ft·lbf (73 N·m).



**Figure 5.268: Reel Drive**



### Installing Drive Cover

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).

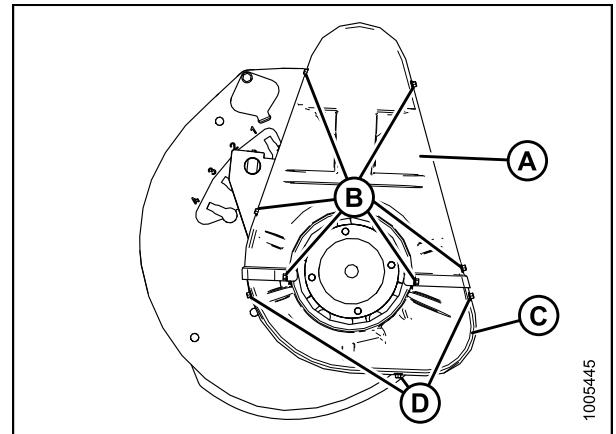


Figure 5.269: Reel Drive Cover

### 5.14.4 Replacing Drive Chain

The drive chain on a high-torque double-reel drive can be replaced using two methods. Refer to:

- [Disconnecting the Reel Drive Method, page 384](#)
- [Breaking the Chain Method, page 386](#)

Both procedures are acceptable, but disconnecting the reel drive method is preferred because the chain integrity is not affected.

### Removing Drive Cover

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

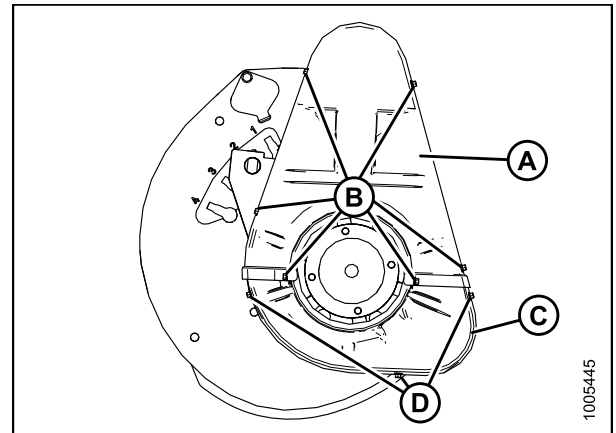


Figure 5.270: Double Reel

## Loosening Drive Chain

1. Loosen nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

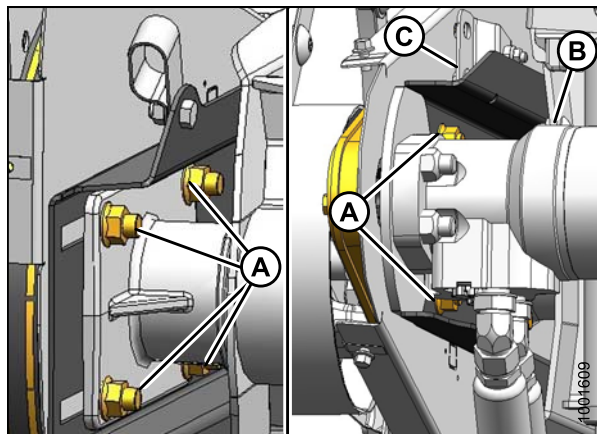


Figure 5.271: Reel Drive

## Disconnecting the Reel Drive Method

1. Support inboard end of right reel with a front end loader and nylon slings (or equivalent setup).

### NOTE:

To avoid damaging or denting center tube, support reel as close as possible to the end disc.



Figure 5.272: Reel and Reel Support

2. Remove four bolts (A) attaching reel tube to U-joint (B).

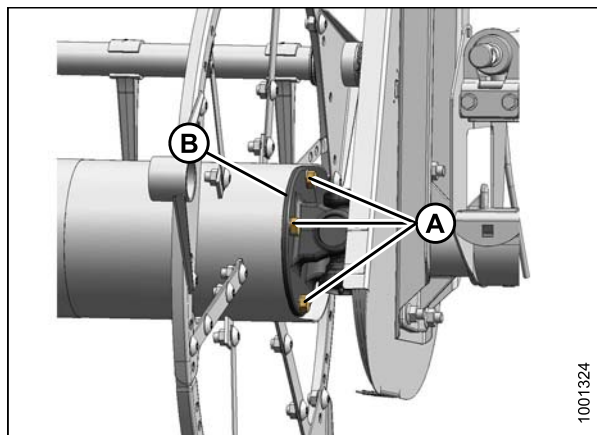
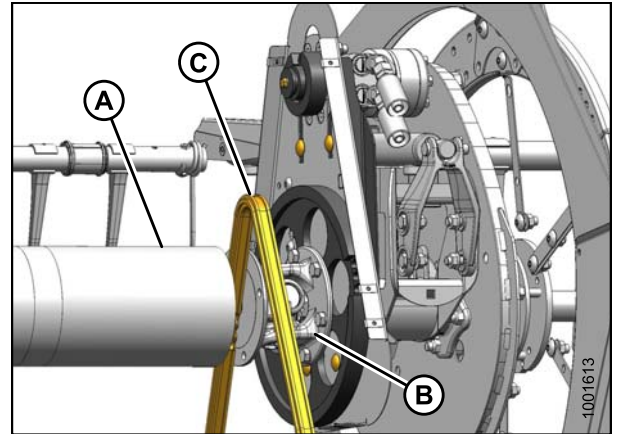


Figure 5.273: U-Joint

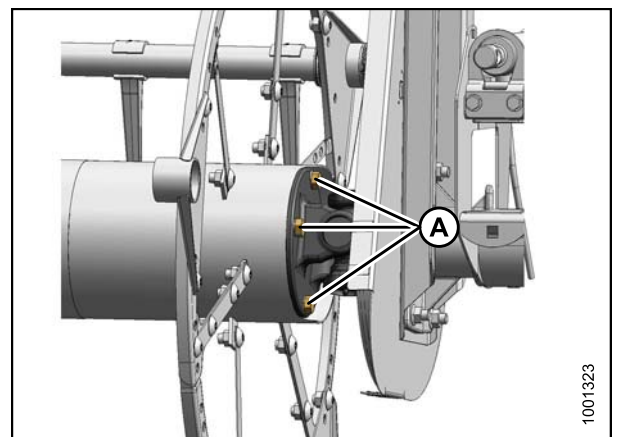
## MAINTENANCE AND SERVICING

3. Move right-hand 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.



**Figure 5.274: Reel Drive Chain**

6. Position right-hand reel tube (A) against reel drive and engage stub shaft into U-joint (B) pilot hole.
7. Rotate reel until holes in end of reel tube and U-joint line up.
8. Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and install with lock washers.
9. Torque to 75–85 ft·lbf (102–115 N·m).



**Figure 5.275: U-Joint**

10. Remove temporary reel support.
11. Tighten drive chain. Refer to [Tightening Drive Chain, page 382](#).



**Figure 5.276: Reel and Reel Support**

## Breaking the Chain Method

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 (B).

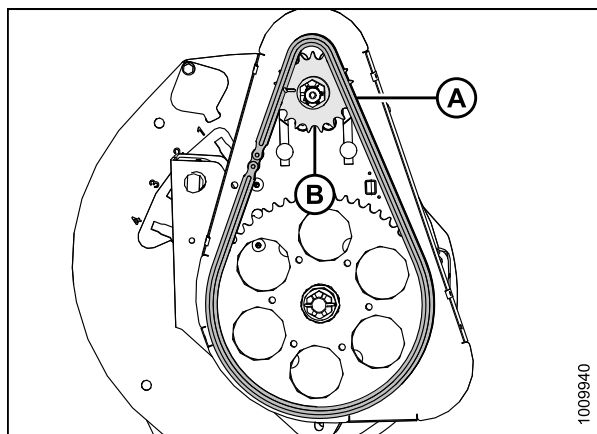


Figure 5.277: Reel Drive

4. Install pin connector (A) (not available as a MacDon part) into chain, preferably from sprocket backside.
5. Install connector (B) onto pins.
6. Install spring clip (C) onto front pin (D) with closed end of clip in direction of sprocket rotation.
7. Locate one leg of clip in groove of aft pin (E).
8. 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.
9. Ensure clip is seated in grooves of pins.

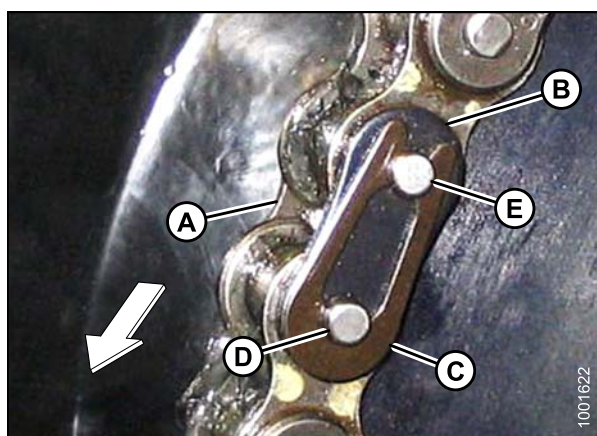


Figure 5.278: Chain

## Tightening Drive Chain

1. Ensure the six bolts (B) securing motor mount to chain case are loose.
2. Slide motor and motor mount upwards until chain (A) is tight, and tighten bolts (nuts on backside).
3. There should be 1/8 in. (3 mm) of slack in the chain. Adjust if necessary.
4. Torque bolts (B) to 54 ft·lbf (73 N·m).

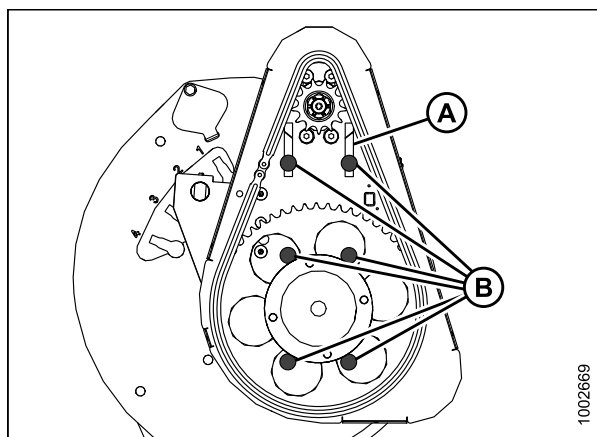


Figure 5.279: Reel Drive

### *Installing Drive Cover*

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).

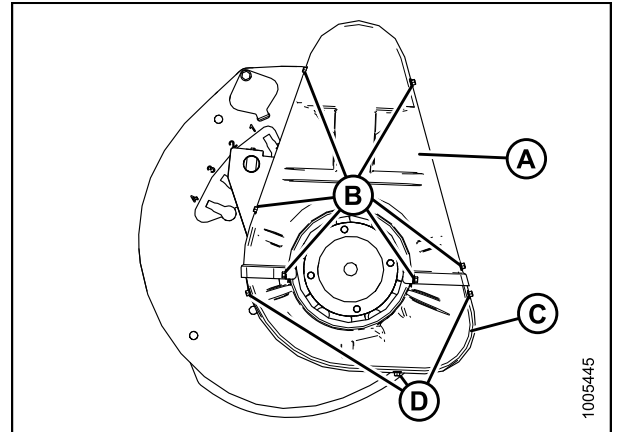


Figure 5.280: Double-Reel Drive Cover

## 5.14.5 Adjusting Reel Drive Chain Tension

### *Removing Drive Cover*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

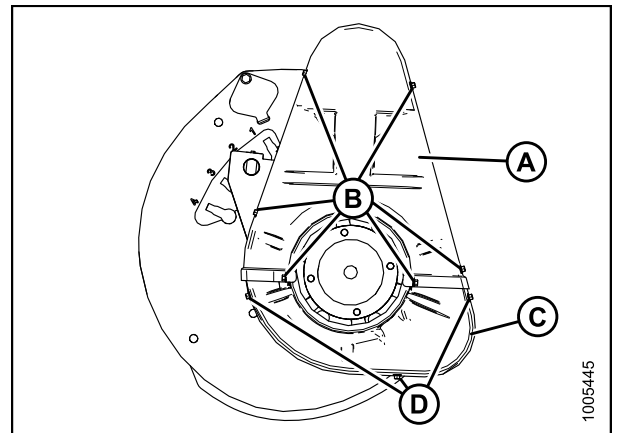
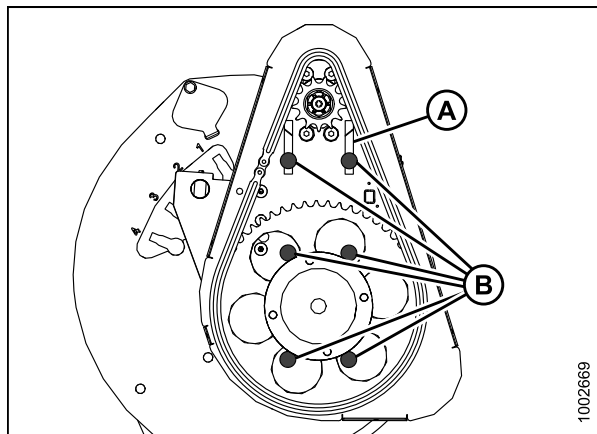


Figure 5.281: Drive Cover

## *Tightening Drive Chain*

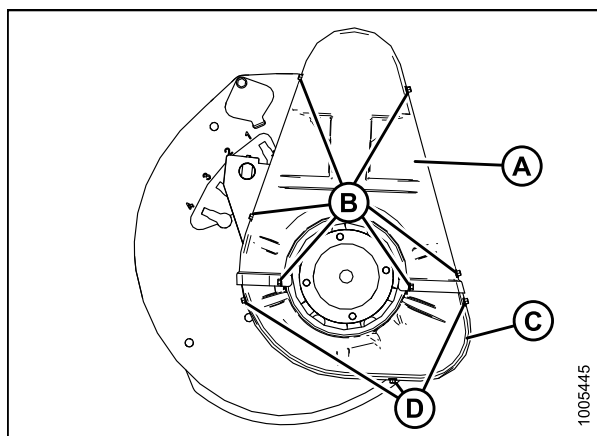
1. Ensure the six bolts (B) securing motor mount to chain case are loose.
2. Slide motor and motor mount upwards until chain (A) is tight, and tighten bolts (nuts on backside).
3. There should be 1/8 in. (3 mm) of slack in the chain. Adjust if necessary.
4. Torque bolts (B) to 54 ft·lbf (73 N·m).



**Figure 5.282: Reel Drive**

## *Installing Drive Cover*

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).



**Figure 5.283: Reel Drive Cover**

## 5.14.6 Replacing Reel Speed Sensor

The reel speed sensor system is located inside the reel drive cover.

### *Removing Drive Cover*

1. Remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

**NOTE:**

The lower cover (C) may also be removed by taking off the three bolts (D).

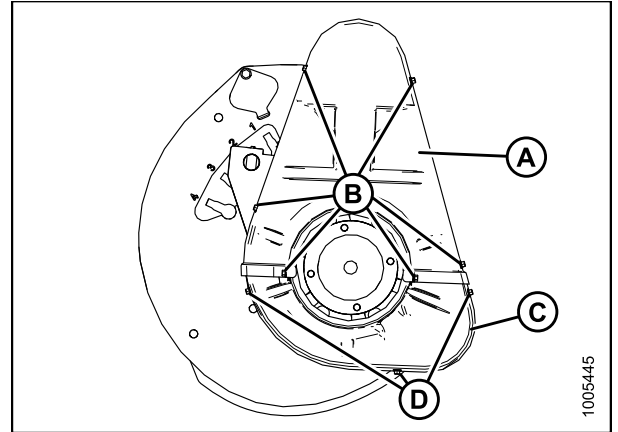


Figure 5.284: Drive Cover

### *Replacing AGCO Sensor*

To replace the reel speed sensor for an AGCO combine, follow these steps:

1. Disconnect connector (A).

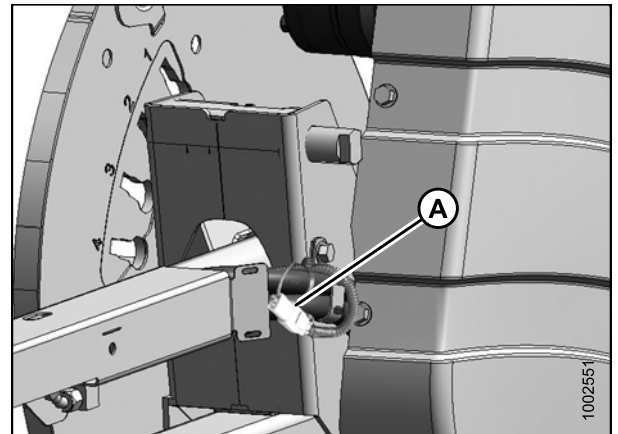


Figure 5.285: Electrical Harness



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2. Cut cable tie (A) securing harness to cover.
3. Remove screws (B) and remove sensor (C) and harness. Bend cover (D) (if necessary) to remove harness.
4. Feed wire of new sensor behind cover (D) through chain case.
5. Locate new sensor in support (E) and attach with two screws (B).
6. Adjust gap between sensor disc (F) and sensor (C) to 0.02 in. (0.5 mm).

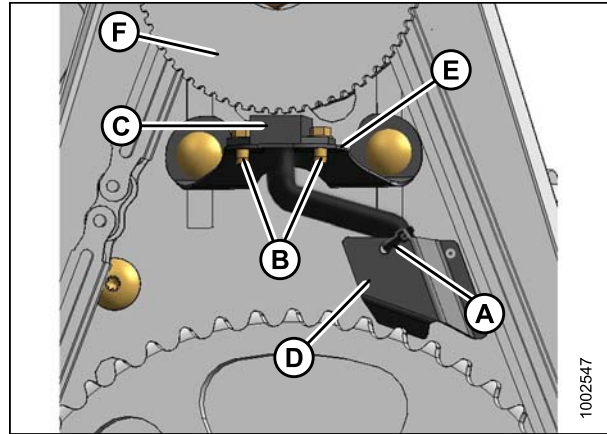


Figure 5.286: Speed Sensor

7. Connect to harness at (A).

### IMPORTANT:

Ensure sensor electrical harness does NOT contact chain or sprocket.

8. Reinstall cover. Refer to [Installing Drive Cover, page 388](#).

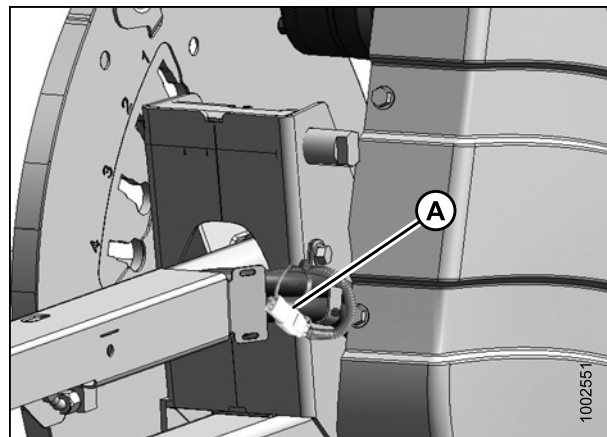


Figure 5.287: Electrical Harness

## Replacing John Deere Sensor

To replace the reel speed sensor for a John Deere combine, follow these steps:

1. Disconnect connector (D).
2. Remove top nut (C) and remove sensor (B).
3. Remove top nut from new sensor and position sensor in support. Secure with top nut (C).
4. Adjust gap between sensor disc (A) and sensor (B) to 1/8 in. (3 mm) with nut (C).
5. Connect to harness at (D).

### IMPORTANT:

Ensure sensor electrical harness does NOT contact chain or sprocket.

6. Reinstall cover. Refer to [Installing Drive Cover, page 388](#).

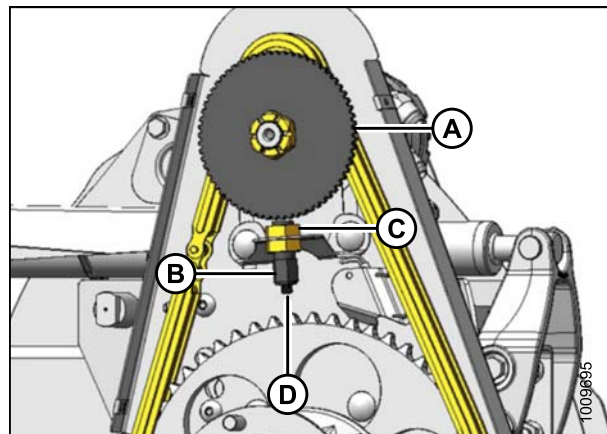


Figure 5.288: Speed Sensor

## *Replacing Lexion 400 Series Sensor*

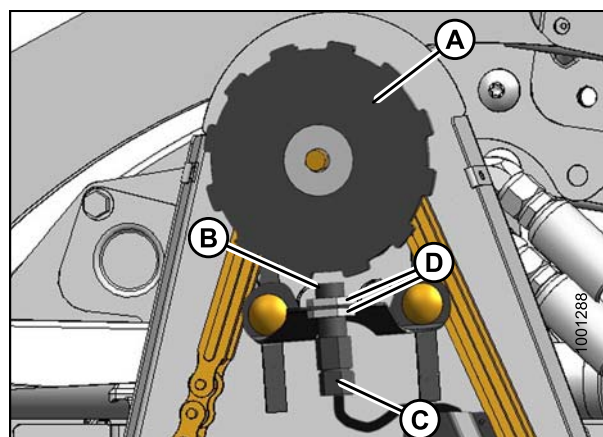
To replace the reel speed sensor for a Lexion 400 series combine, follow these steps:

1. Disconnect connector (C).
2. Remove top nuts (D) and remove sensor (B).
3. Remove top nut from new sensor and locate in support. Secure with top nut (D).
4. Adjust gap between sensor disc (A) and sensor (B) to 0.12 in. (3 mm) with nuts (D).
5. Connect to harness at (C).

### **IMPORTANT:**

Ensure sensor electrical harness does NOT contact chain or sprocket.

6. Reinstall cover. Refer to [Installing Drive Cover, page 388](#).



**Figure 5.289: Speed Sensor**

## *Replacing Lexion 500/700 Series Sensor*

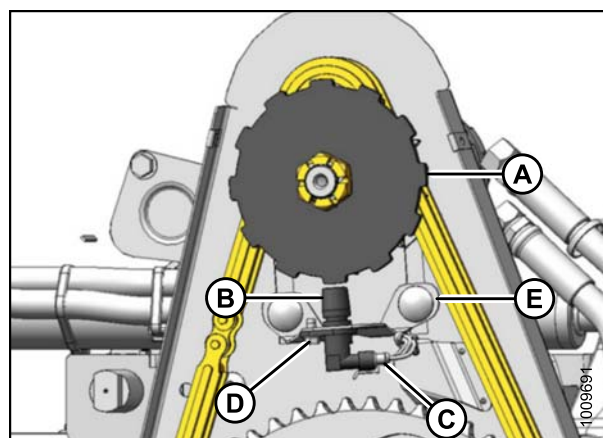
To replace the reel speed sensor for a Lexion 500 or 700 series combine, follow these steps:

1. Disconnect connector (C).
2. Remove screw (D) attaching sensor and remove sensor (B).
3. Locate new sensor in support and secure with screw (D).
4. Adjust gap between sensor disc (A) and sensor (B) to 1/8 in. (3 mm) by bending support (E).
5. Connect to harness at (C).

### **IMPORTANT:**

Ensure sensor electrical harness does NOT contact chain or sprocket.

6. Reinstall cover. Refer to [Installing Drive Cover, page 388](#).

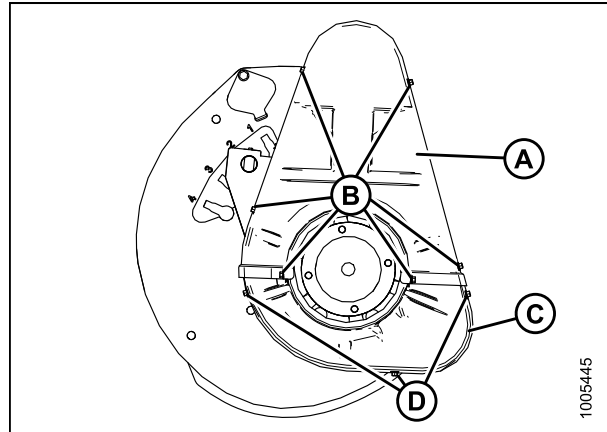


**Figure 5.290: Speed Sensor**

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### *Installing Drive Cover*

1. Position the lower cover (C) first (if removed) and secure with three bolts (D).
2. Install upper cover (A) using the six bolts (B).



**Figure 5.291: Reel Drive Cover**

## 5.15 Transport System (Optional)

Refer to [6.3.4 Stabilizer/Slow Speed Transport Wheels, page 412](#) for more information.

### 5.15.1 Checking Wheel Bolt Torque

If a Transport System is installed, follow procedure for torquing the wheel bolts.

**IMPORTANT:**

Whenever a wheel is removed and reinstalled, check torque after one hour of operation and every 100 hours thereafter. Maintain 80–90 ft·lbf (110–120 N·m) torque. Follow bolt tightening sequence as shown.

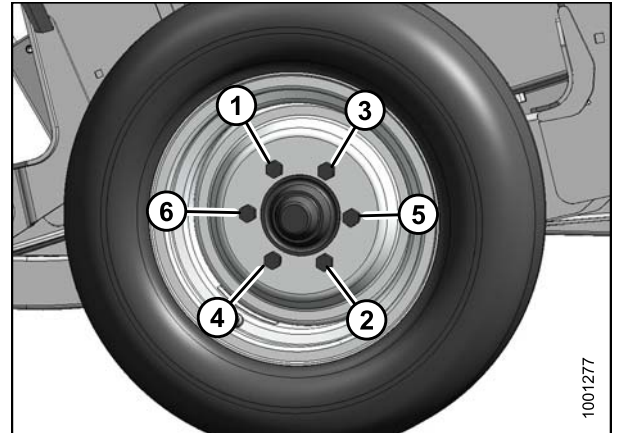
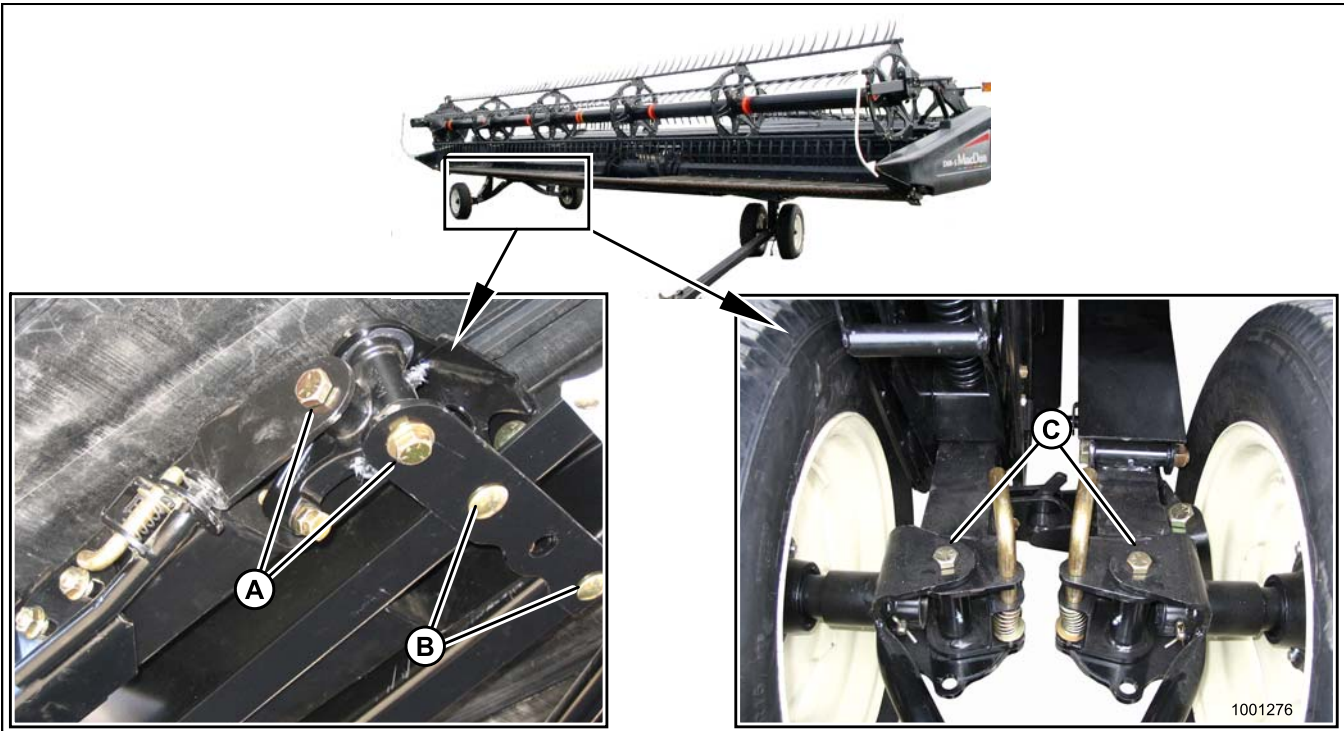


Figure 5.292: Bolt Tightening Sequence

## 5.15.2 Checking Axle Bolt Torque

If a transport system is installed, follow this procedure for torquing the axle bolts.



**Figure 5.293: 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)

### 5.15.3 Checking Tire Pressure

Check tire pressure daily. Maintain pressure 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 sidewall 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.

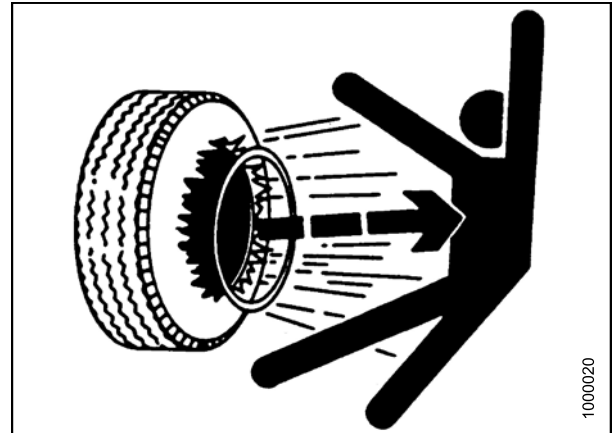


Figure 5.294: Inflation Warning

## 5.16 Checking and Adjusting Header Wing Balance

The header wing float allows the wings to react to changing ground conditions. If set too light, the wings will bounce on the ground. If set too heavy, the wings will dig into the ground. The wings need to be balanced for the float system to work properly.

### CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparation for Servicing, page 251](#).

### 5.16.1 Checking Wing Balance

This procedure describes how to check the balance of each wing.

If a wing has a tendency to be in a smile (A) or frown (B) position, wing balance may require adjusting. Perform the following steps to verify if the wings are not balanced and the degree of imbalance:

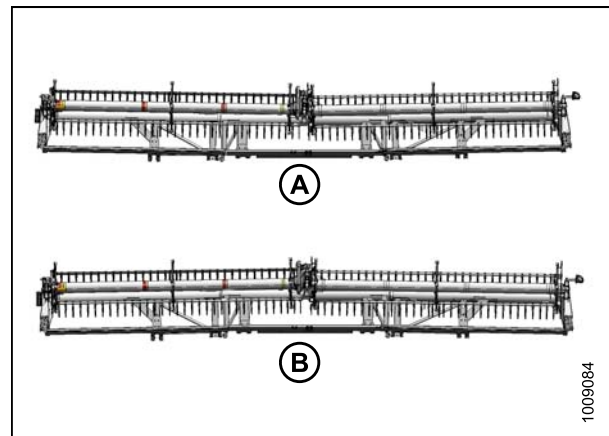


Figure 5.295: Wing Imbalance

1. Adjust the header center-link to approximately halfway between 'B' and 'C' on indicator (A).
2. Park combine on level ground and raise header until cutterbar is 6–10 in. (152–254 mm) off the ground.

### WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.

3. Stop engine and remove key.
4. If installed, move transport/stabilizer wheels so that they are supported by header. Refer to [3.7.1 Cutting Height, page 52](#).

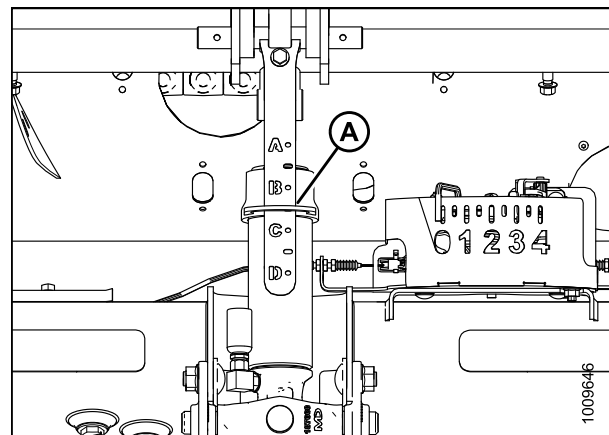


Figure 5.296: Center-Link



## MAINTENANCE AND SERVICING

5. Remove linkage cover (A) by removing bolt (B) and rotating cover upward until inboard end can be lifted off.

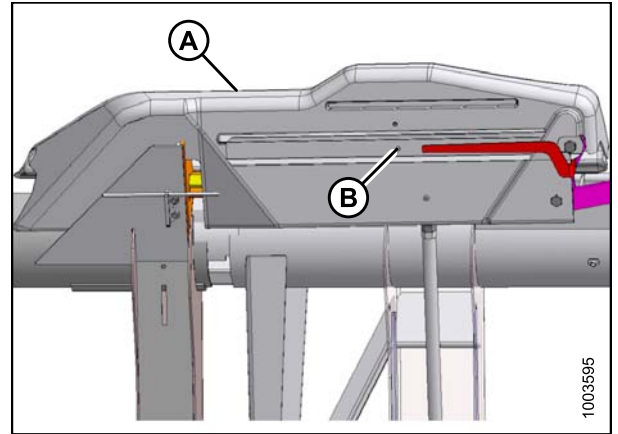


Figure 5.297: Linkage Cover

**NOTE:**

Refer to the decal (A) inside each linkage cover.

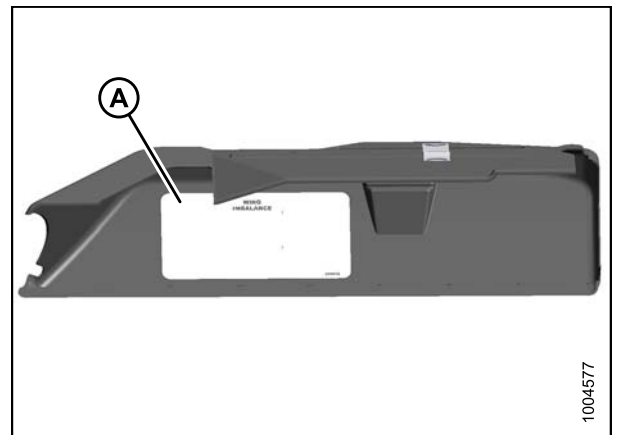


Figure 5.298: Linkage Cover

6. Unlock the wings by moving spring handles (A) to lower (UNLOCK) position.

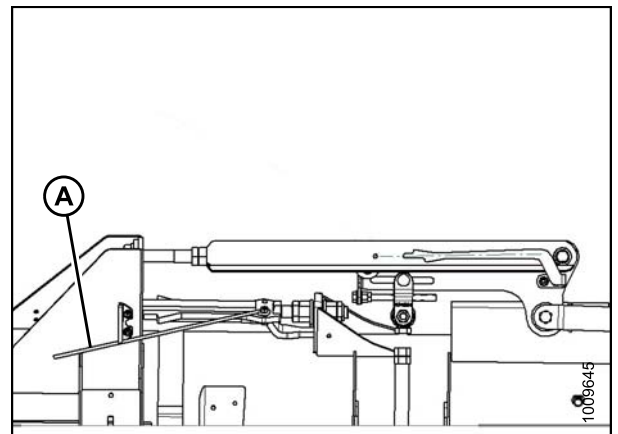
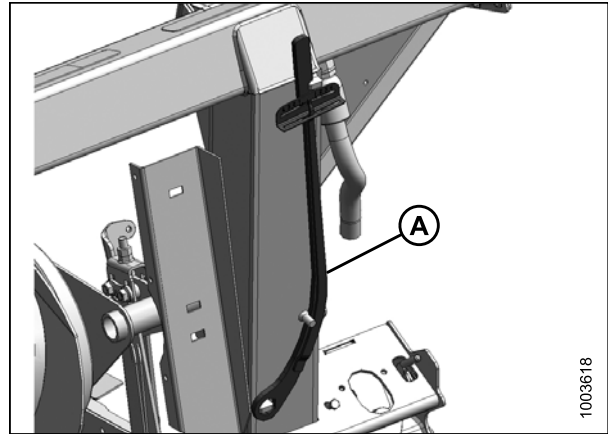


Figure 5.299: Wing Lock in UNLOCK Position

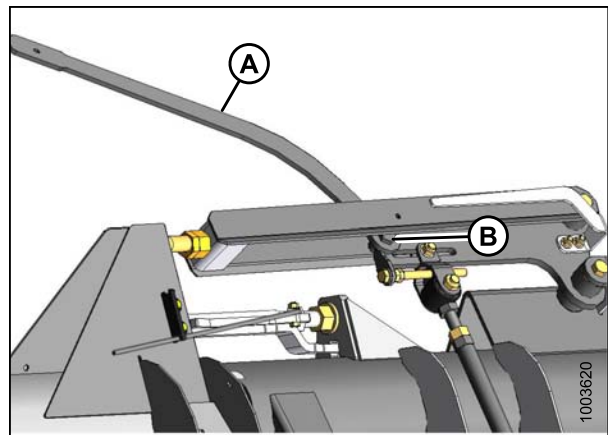
## MAINTENANCE AND SERVICING

7. Retrieve wrench (A) from right-hand adapter leg.



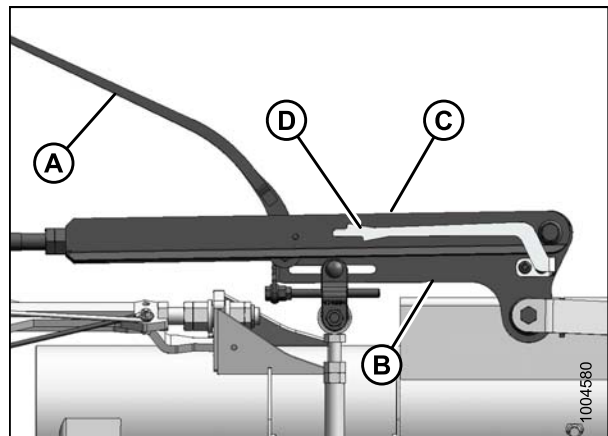
**Figure 5.300: Torque Wrench**

8. Place torque wrench (A) on bolt (B).



**Figure 5.301: Balance Linkage**

9. Check that pointer (D) is properly positioned as follows:
  - a. Use wrench (A) to move bell crank (B) so that lower edge of bell crank is parallel to top-link (C).
  - b. Check that pointer (D) is lined up with the top-link (C). Bend pointer if necessary.



**Figure 5.302: Balance Linkage**

## MAINTENANCE AND SERVICING

10. Move wing upward with torque wrench (A) until pointer lower alignment tab (C) lines up with upper edge of top-link (B). Observe indicator reading (A) on wrench and record it.

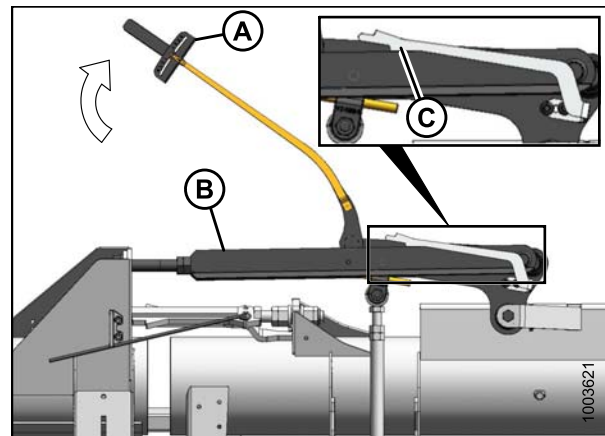


Figure 5.303: Balance Linkage

11. Move wing downward with torque wrench (A) until pointer upper alignment tab (C) lines up with the lower edge of the top-link (B). Observe indicator reading (A) on the wrench and record it.

- If the difference between the readings is 1 or less, the wing is balanced and no further adjustment is required. Follow the steps below to reinstall the linkage cover.
- If the difference between the readings is more than 1, the wing is not balanced. Refer to [5.16.2 Adjusting Wing Balance, page 401](#).

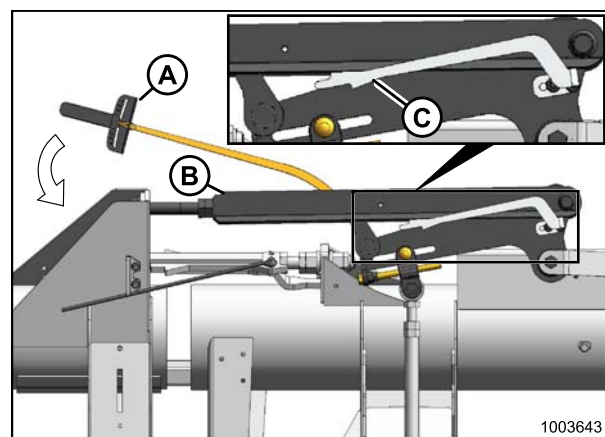


Figure 5.304: Balance Linkage

- If the indicator range is as shown at right, the wing is too light.

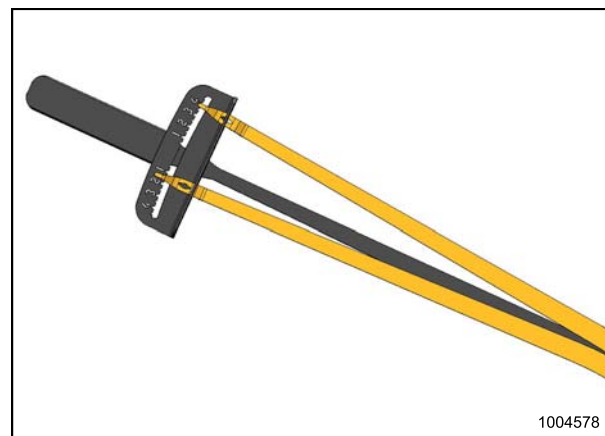
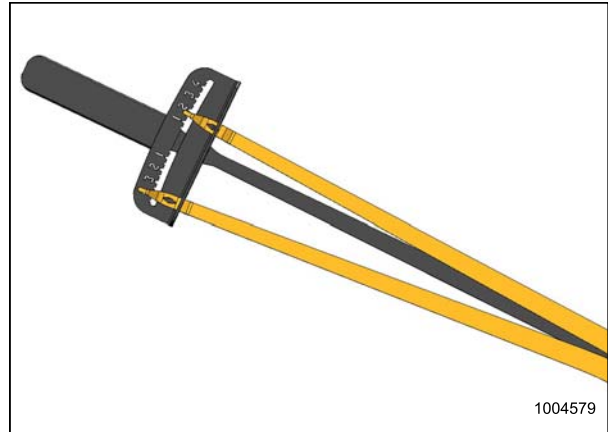


Figure 5.305: Wrench Indicator

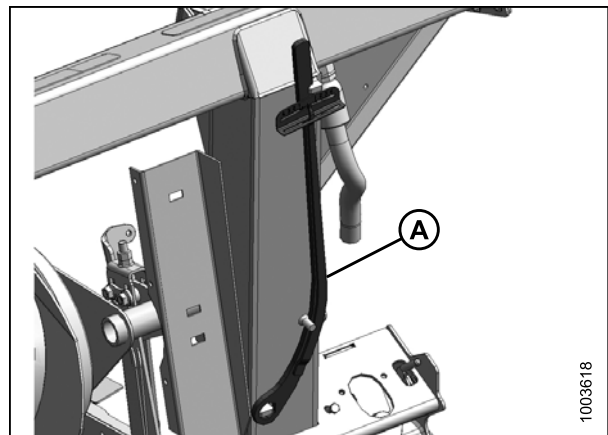
## MAINTENANCE AND SERVICING

- If the indicator range is as shown at right, the wing is too heavy.



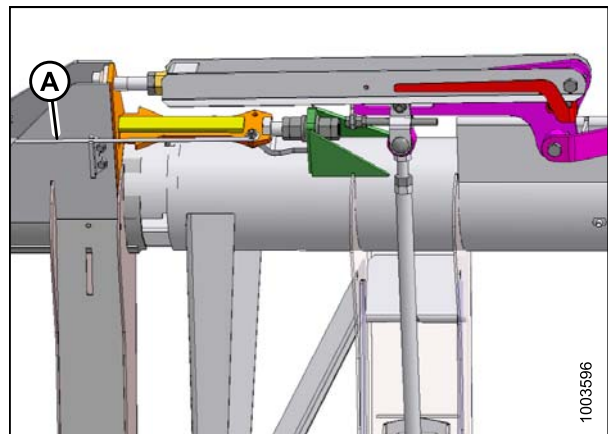
**Figure 5.306: Wrench Indicator**

12. Place wrench (A) back onto the right-hand adapter leg.



**Figure 5.307: Torque Wrench**

13. Lock the wings by moving spring handles (A) to upper LOCK position.



**Figure 5.308: Wing Lock in Lock Position**

14. Reinstall linkage cover (A), secure with bolt (B).

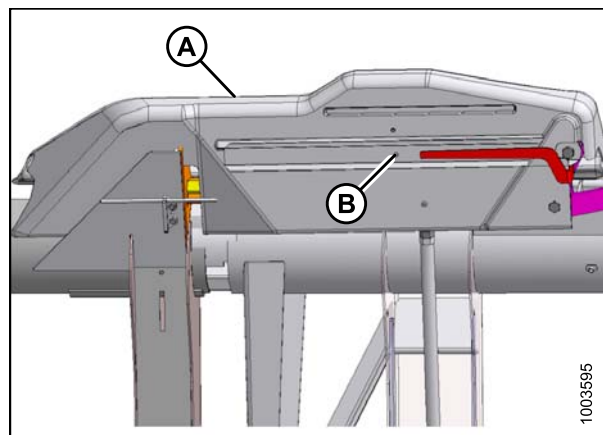


Figure 5.309: Linkage Cover

## 5.16.2 Adjusting Wing Balance

Before proceeding, check the wing balance to verify how to adjust the wing. Refer to [5.16.1 Checking Wing Balance](#), page 396.

### **NOTE:**

Left-hand side is shown.

1. Extend the header center-link to between B and C on indicator (A).
2. Park combine on level ground and raise header until cutterbar is 6–10 in. (152–254 mm) off the ground.



### **WARNING**

To avoid bodily injury or death from unexpected startup of machine, always stop combine engine and remove key before making adjustments to machine.

3. Stop engine and remove key.
4. If installed, move transport/stabilizer wheels so that they are supported by header. Refer to [3.7.1 Cutting Height](#), page 52.

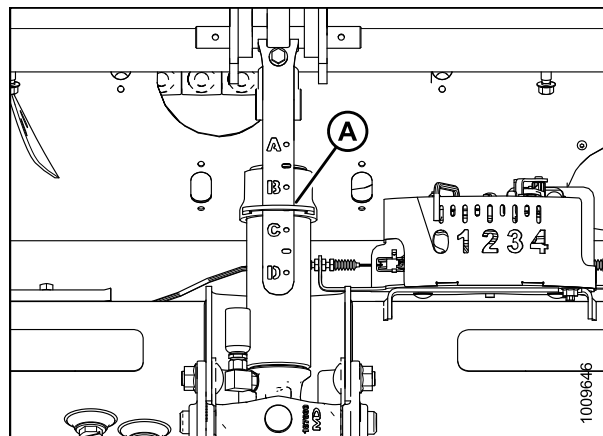
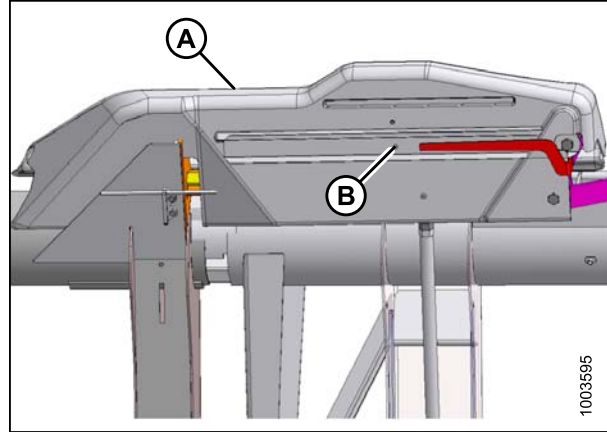


Figure 5.310: Center-Link

## MAINTENANCE AND SERVICING

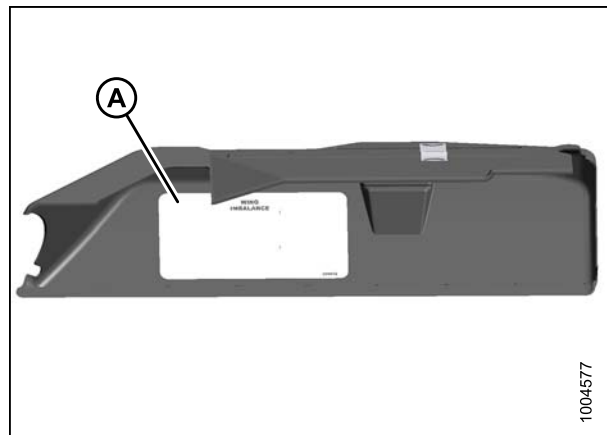
5. Remove linkage cover (A) by removing bolt (B).



**Figure 5.311: Linkage Cover**

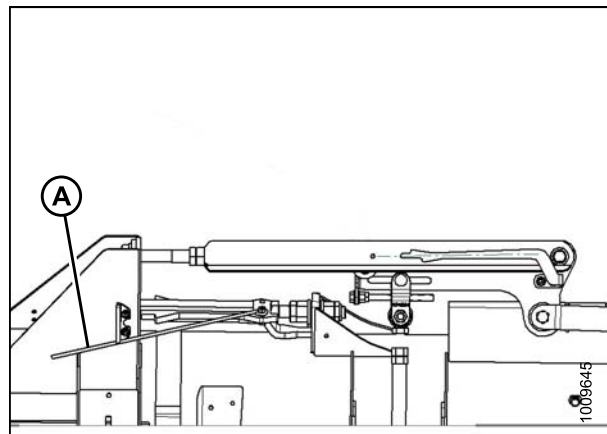
**NOTE:**

Refer to decal (A) inside each linkage cover.



**Figure 5.312: Linkage Cover**

6. Unlock the wings by moving handle (A) to lower (UNLOCK) position.



**Figure 5.313: Wing Lock in UNLOCK Position**

## MAINTENANCE AND SERVICING

7. Retrieve wrench (A) from adapter leg.

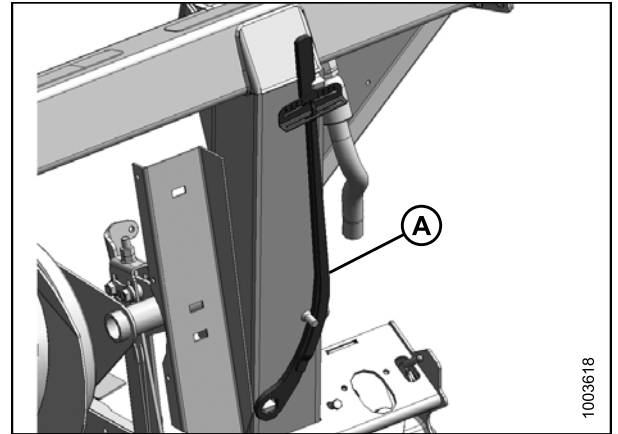


Figure 5.314: Torque Wrench

8. Place torque wrench (A) on bolt (B).

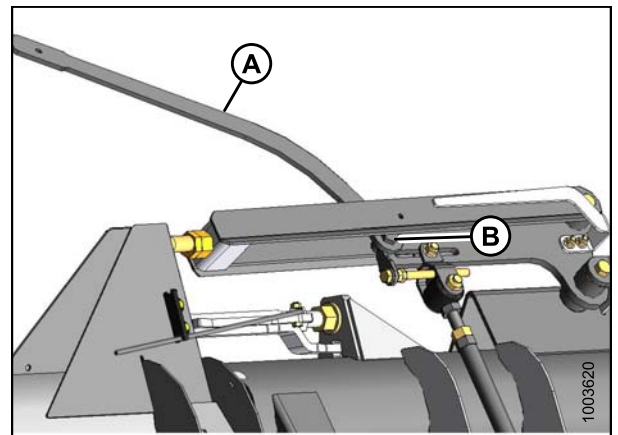


Figure 5.315: Balance Linkage

9. Loosen the clevis bolt (A) for the wing requiring adjustment as determined by the wing balance check.

**NOTE:**

Do **NOT** loosen any other hardware.

10. Adjust bolt (B) and set dimension (C), refer to Table [5.3 Wing Balance Chart, page 404](#).

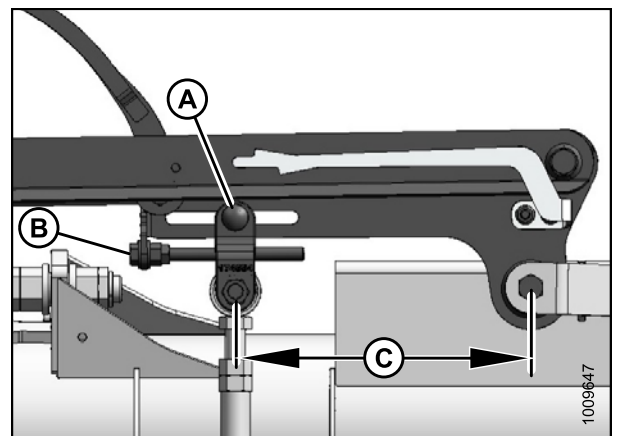


Figure 5.316: Balance Linkage



## MAINTENANCE AND SERVICING

**Table 5.3 Wing Balance Chart**

Header Configuration	Wing Dimension (B) <sup>15</sup>	
	Left Wing in. (mm)	Right Wing in. (mm)
30-foot	11-13/32 (290)	11-1/4 (285)
35-foot	11-13/16 (300)	11-13/16 (300)
40-foot single-knife drive (SKD)	12 (305)	12-19/32 (320)
40-foot double-knife drive (DKD)	12 (305)	12-3/16 (310)
40-foot double-knife drive (DKD) split frame	12 (305)	12-3/16 (310)
45-foot double-knife drive (DKD) split frame	12-3/16 (310)	12-3/16 (310)

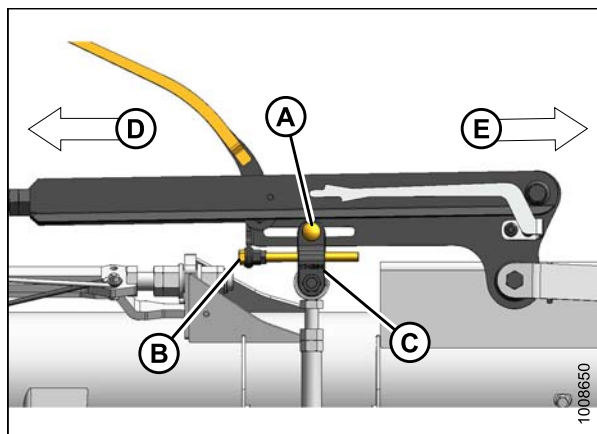
11. Recheck the wing balance. Refer to [5.16.1 Checking Wing Balance, page 396](#).

12. If necessary, perform the following adjustments:

- If the wing is too heavy, turn adjuster bolt (B) to move clevis (C) outboard (D).
- If the wing is too light, turn adjuster bolt (B) to move clevis (C) inboard (E).

13. Adjust clevis (C) position if necessary until indicator readings are within one increment.

14. Tighten clevis bolt (A).

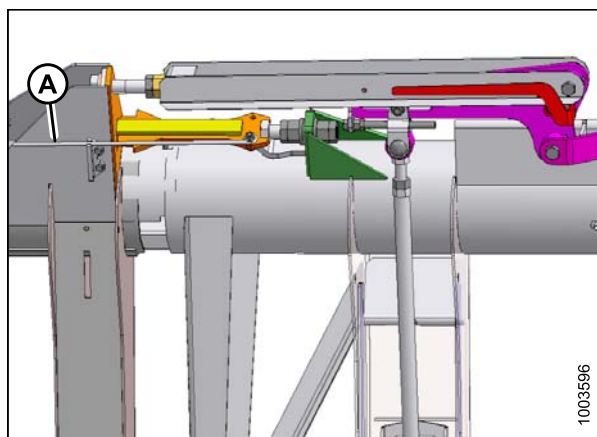


**Figure 5.317: Balance Linkage**

15. Move handle to the upper LOCK position.

16. If lock does not engage, move the wing up and down with torque wrench until it locks. When locked, there will be some movement in the linkage.

17. If the cutterbar is not straight when wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.

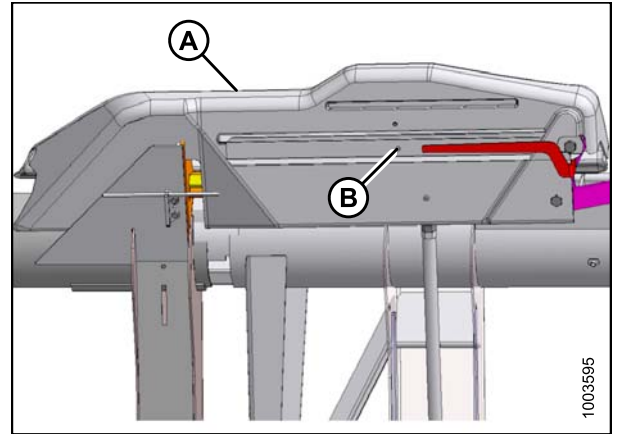


**Figure 5.318: Wing Lock in Lock Position**

15. These dimensions are initial settings. Further adjustment will be required if any optional kits have been installed by the Dealer.

## MAINTENANCE AND SERVICING

18. Replace torque wrench on adapter frame.
19. Reinstall linkage cover (A) and secure it with bolt (B).



**Figure 5.319: Linkage Cover**



## 6 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 Reel

#### 6.1.1 Multi-Crop Rapid Reel Conversion Kit

This kit decreases the time required to change the fore-aft cylinder position on the reel support arm from the normal operating location to a farther aft location that minimizes disturbance of the crop. The reel fore-aft cylinders can also be quickly relocated back to the normal operating position.

MD #B5943

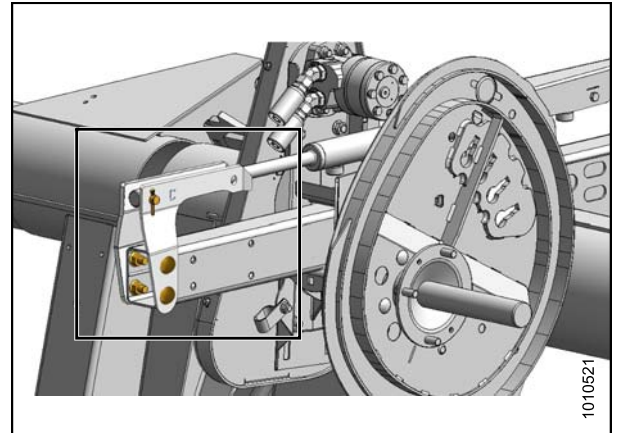


Figure 6.1: Center Arm – Left and Right Similar

#### 6.1.2 Lodged Crop Reel Finger Kit

The steel fingers attach to ends of every other tine bar and help in clearing material in heavy, hard-to-cut crops such as lodged rice.

Each kit contains three fingers for the cam end and three fingers for the tail end of the reel. Hardware, installation and adjustment instructions are included with the kit.

MD #B4831



Figure 6.2: Lodged Crop Finger

### 6.1.3 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion of a six-bat reel to a nine-bat reel.

Order bundles by header size and type:

- 30 ft. – Plastic Fingers MD #B5278<sup>16</sup>
- 30 ft. – Steel Fingers MD #B5657
- 35 ft. – Plastic Fingers MD #B5674

**NOTE:**

Must order additional endshields when converting reel.

### 6.1.4 Reel Endshield Kit

The steel shields attach to ends of the reel(s) and help in clearing material in heavy, hard-to-cut crops. They are standard equipment on all, except nine-bat headers. See your MacDon Dealer for more information. Installation and adjustment instructions are included with the kit.

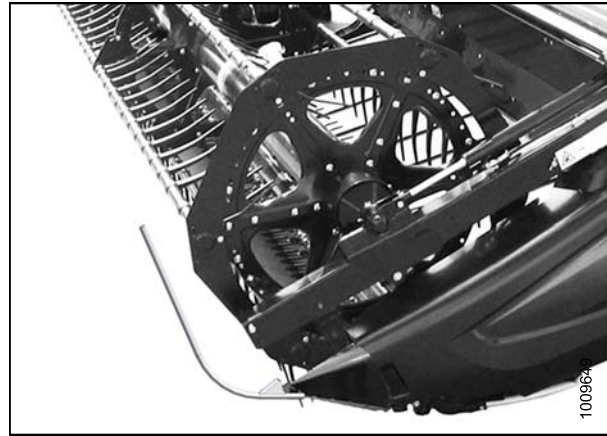


Figure 6.3: Reel Endshields

### 6.1.5 Reel Tine Tube Reinforcing Kit

The reel tine tube reinforcing kit is available for five-bat and six-bat reels when cutting extremely heavy crops where high reel loads are experienced.

- 5-Bat – MD #B5825
- 6-Bat – MD #B5826

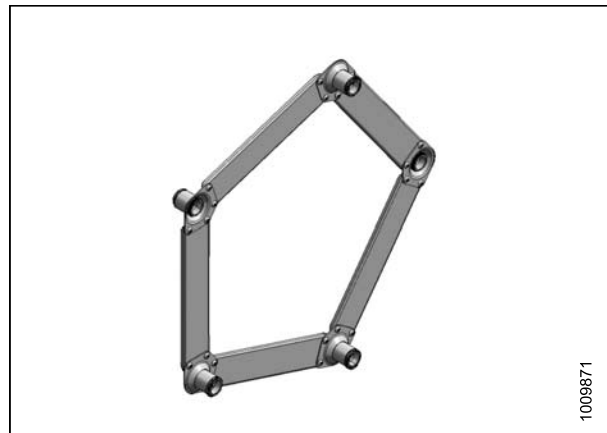


Figure 6.4: 5-Bat Shown – 6-Bat Similar

<sup>16</sup>. Double-reel units only

## 6.2 Cutterbar

### 6.2.1 Cutterbar Wearplate

Available as an attachment, they are recommended for cutting on the ground where soil adheres to steel.

Bundles by header size:

- 30 ft. – MD #B4839
- 35 ft. – MD #B4840
- 40 ft. – MD #B4841
- 45 ft. – MD #B5114



Figure 6.5: Cutterbar Wearplate

### 6.2.2 Knifehead Shield

The shields attach to the endsheets and reduce the knifehead opening to prevent cut crop, particularly severely lodged crop, from accumulating over the knifehead, which could damage the knife drive box and the endsheet.

Order kit according to header size and guard type.

**Regular Guards:**

- 30 ft. and larger – MD #220101

**Stub Guards:**

- 30 ft. and larger – MD #220103

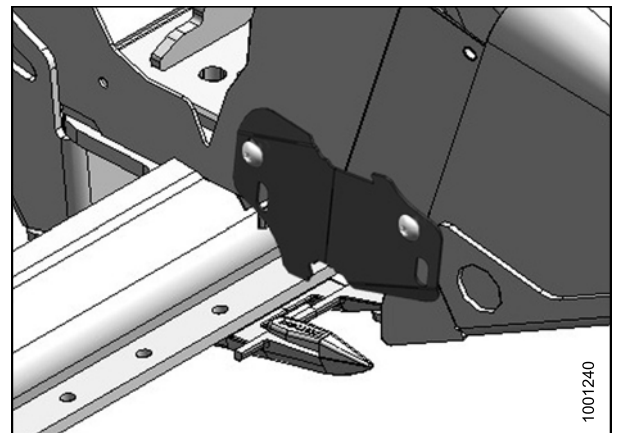


Figure 6.6: Knifehead Shield

### 6.2.3 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.

Order bundle according to the length of your header:

- 30 ft. – MD #B5012
- 35 ft. – MD #B5013

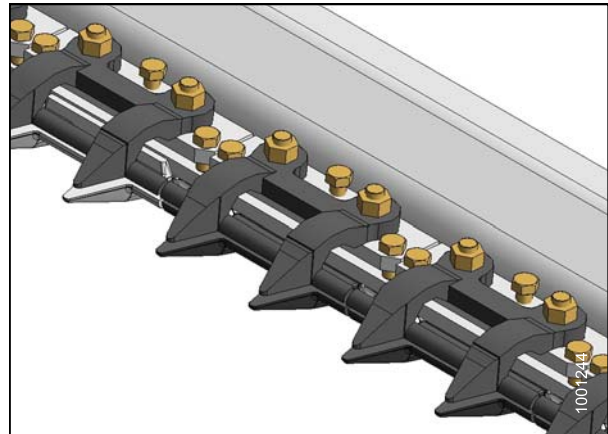


Figure 6.7: Stub Guards

### 6.2.4 Vertical Knife Mounts

The vertical knife<sup>17</sup> mounts allow installation of vertically oriented knives onto both ends of the header.

Installation and adjustment instructions are included with the bundle.

Order bundles based on left or right side:

- Left-hand – MD #B5757
- Right-hand – MD #B5758

**NOTE:**

If mounting on multiple headers, you will also require the auxiliary vertical knife plumbing kit MD #B5406.

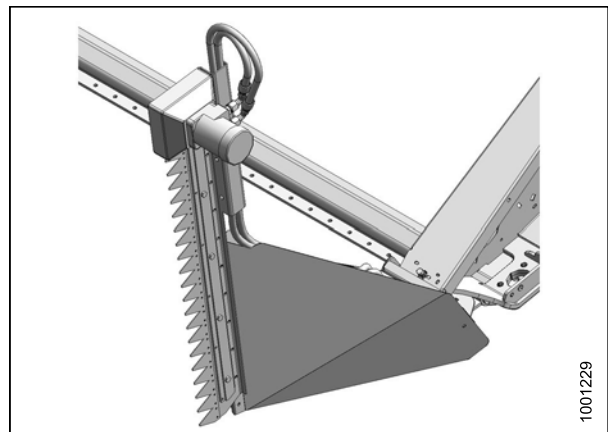


Figure 6.8: Vertical Knife Mount

17. Must be purchased from a separate supplier.



## 6.3 Header

### 6.3.1 Divider Latch Kit

The latches attach to the endsheets. They 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.

MD #B5607

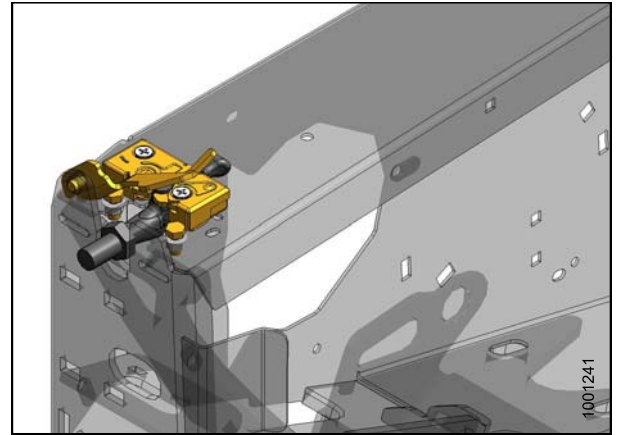


Figure 6.9: Divider Latch

### 6.3.2 Stabilizer Wheels

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.

Available as an attachment for use with 30-, 35-, 40-, and 45-ft. headers.

MD #C1986

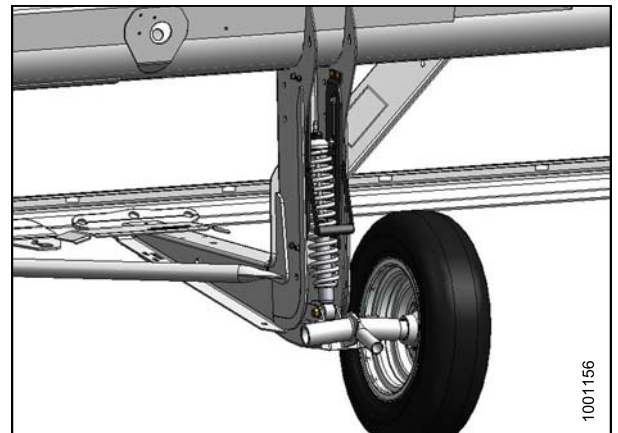


Figure 6.10: Stabilizer Wheel

### 6.3.3 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.

MD #B5609



Figure 6.11: Rice Divider Rod

### 6.3.4 Stabilizer/Slow Speed Transport Wheels

The Stabilizer/Slow Speed Transport Wheels help stabilize the header in field conditions that would otherwise cause the header to bounce, and result in uneven cutting height. This system is similar to the Stabilizer Wheel option.

The Stabilizer/Slow Speed Transport Wheels convert to transport mode to allow the header to be towed behind a properly configured MacDon windrower (or agricultural tractor) at slow speed. A tow pole is included in the kit.

For use on 30-, 35-, 40-, and 45-ft. headers.

MD #C1997



Figure 6.12: Stabilizer/Transport Wheels

## 6.4 Crop Delivery

### 6.4.1 CA25 Feed Auger Flighting

Flighting extensions are available as an option for the CA25 feed auger.

The flighting extension kit may improve feeding in certain crops such as rice or heavy green crop. It is not recommended in cereal crops.

MD #B4829

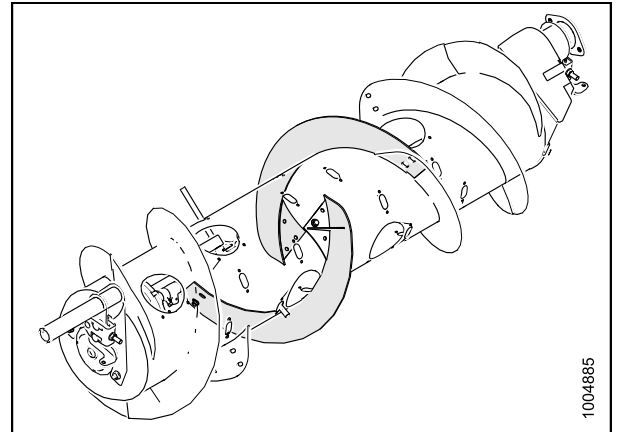


Figure 6.13: CA25 Feed Auger Flighting

### 6.4.2 European Adapter Seal Kit

The European Adapter Seal kit 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.

MD #B5612

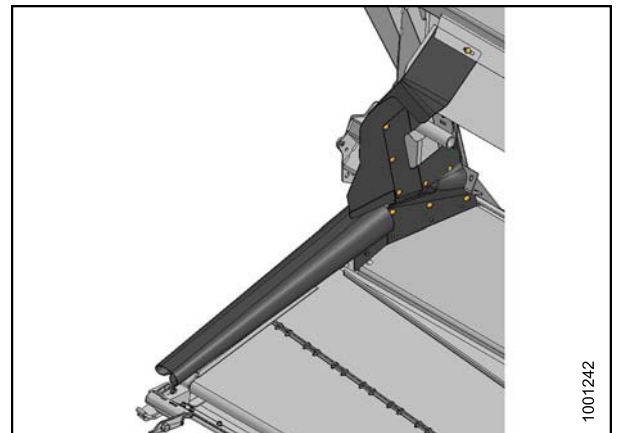


Figure 6.14: European Adapter Seal Kit

### 6.4.3 Draper Deflector (Narrow)

Narrow metal deflectors attach to the inboard side of the endsheets and prevent material from falling through the gap between the endsheet and draper while minimizing reel carryover in bushy type crops.

Refer to the FD75 FlexDraper® Combine Header Parts Catalog for required parts.

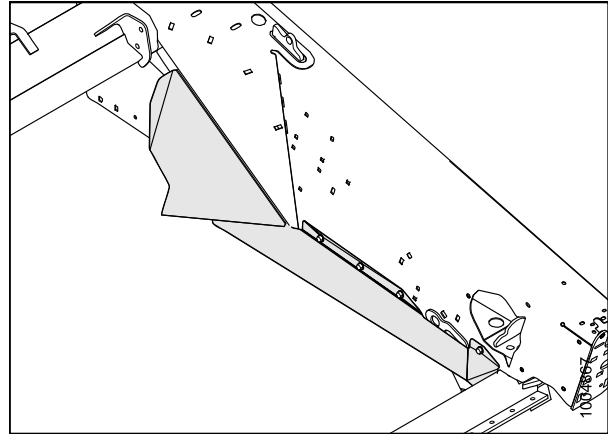


Figure 6.15: Draper Deflector

### 6.4.4 Stripper Bars

Stripper Bar kits are available as an option to improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

The model of combine determines which Stripper Bar kit is required.

Order the correct bundle listed below for your combine:

- Lexion (Narrow Body) – MD #B4830
- Lexion (Wide Body) – MD #B4920
- CIH 2377/88 and 2577/2588 – MD #B4830
- JD CTS/STS – MD #B4921
- CIH 7010/8010 – MD #B4922
- NH CR 970/980/9070/9080 – MD #B4922
- NH CX/TX CIH 2366 – MD #B4920
- NH CR 940/960/9040/9060 – MD #B4923

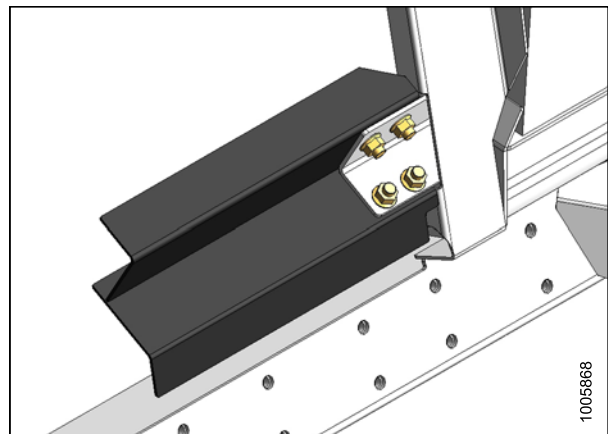


Figure 6.16: Stripper Bar

### 6.4.5 Upper Cross Auger (UCA)

Attaches in front of the backtube, the UCA improves feeding of crop to the center of the header in heavy crop conditions. Ideal for high volume harvesting of forages, oats, canola, mustard and other tall, bushy, hard to feed crops.

Order bundle according to the length of your header:

- 25 ft. – MD #B4846
- 30 ft. – MD #B4847
- 35 ft. – MD #B4848
- 40 ft. – MD #B4849
- 45 ft. – MD #B4849

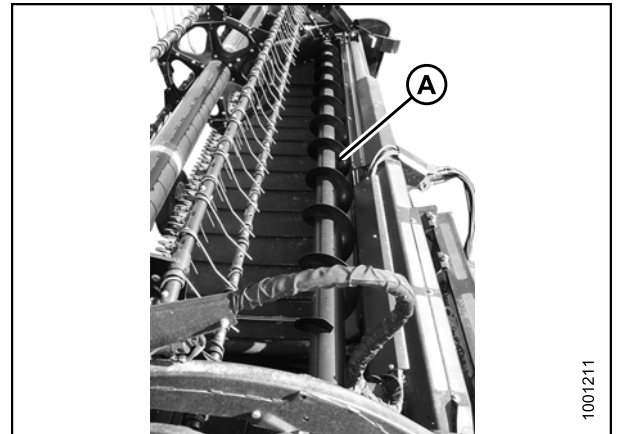


Figure 6.17: Upper Cross Auger



## 7 Troubleshooting

### 7.1 Crop Loss at Cutterbar

Symptom	Problem	Solution	Section
<b>Does not pick up down crop</b>	Cutterbar too high	Lower cutterbar	<a href="#">3.7.1 Cutting Height, page 52</a>
	Header angle too low	Increase header angle	<a href="#">3.7.3 Header Angle, page 66</a>
	Reel too high	Lower reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Reel too far back	Move reel forward	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<ul style="list-style-type: none"> <li><a href="#">3.7.4 Reel Speed, page 67</a></li> <li><a href="#">3.7.5 Ground Speed, page 68</a></li> </ul>
	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
		Install lifter guards	See your MacDon Dealer
<b>Heads shattering or breaking off</b>	Reel speed too fast	Reduce reel speed	<a href="#">3.7.4 Reel Speed, page 67</a>
	Reel too low	Raise reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Ground speed too fast	Reduce ground speed	<a href="#">3.7.5 Ground Speed, page 68</a>
	Crop too ripe	Operate at night when humidity is higher	—
<b>Cut grain falling ahead of cutterbar</b>	Ground speed too slow	Increase ground speed	<a href="#">3.7.5 Ground Speed, page 68</a>
	Reel speed too slow	Increase reel speed	<a href="#">3.7.4 Reel Speed, page 67</a>
	Reel too high	Lower reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Cutterbar too high	Lower cutterbar	<a href="#">3.7.1 Cutting Height, page 52</a>
	Reel too far forward	Move reel back on arms	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>
	Cutting at speeds over 6 mph (10 km/h) with high torque (10-tooth) reel drive sprocket	Replace with standard torque (19-tooth) reel drive sprocket	<ul style="list-style-type: none"> <li>See your MacDon Dealer</li> <li><a href="#">5.14.1 Replacing Reel Drive Sprocket, page 372</a></li> </ul>
	Worn or broken knife components	Replace components	<a href="#">5.8 Knife, page 299</a>



## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Strips of uncut material</b>	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
	Broken knife sections	Replace broken sections	<a href="#">5.8.1 Replacing Knife Section, page 299</a>
<b>Excessive bouncing at normal field speed</b>	Float set too light	Adjust header float	<a href="#">3.7.2 Header Float, page 58</a>
<b>Divider rod running down standing crop</b>	Divider rods too long	Remove divider rod	<a href="#">3.7.13 Crop Divider Rods, page 87</a>
<b>Bushy or tangled crop flows over divider rod, builds up on endsheets</b>	Divider rods providing insufficient separation	Install long divider rods	<a href="#">3.7.13 Crop Divider Rods, page 87</a>
<b>Crop not being cut at ends</b>	Reel not frowning or not centered in header	Adjust reel frown or reel horizontal position	<ul style="list-style-type: none"> <li>• <a href="#">3.7.9 Reel Fore-Aft Position, page 73</a></li> <li>• <a href="#">5.13.2 Reel Frown, page 353</a></li> </ul>
	Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely, but still keep sections from lifting off guards	<a href="#">Checking Knife Hold-Downs, page 308</a>
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	<a href="#">5.8 Knife, page 299</a>
	Header is not level	Level header	<a href="#">3.9 Levelling the Header, page 173</a>
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	<ul style="list-style-type: none"> <li>• <a href="#">3.7.9 Reel Fore-Aft Position, page 73</a></li> <li>• <a href="#">3.7.11 Reel Tine Pitch, page 80</a></li> </ul>
	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	<ul style="list-style-type: none"> <li>• See your MacDon Dealer</li> <li>• <a href="#">5.8.7 Knife Guards, page 303</a></li> <li>• <a href="#">6.2.3 Stub Guard Conversion Kit, page 410</a></li> </ul>
<b>Material accumulating in gap between cut-out in endsheet and knifehead</b>	Crop heads leaning away from knifehead hole in endsheet	Add knifehead shield(s), except in damp/sticky soils	<a href="#">6.2.2 Knifehead Shield, page 409</a>

## 7.2 Cutting Action and Knife Components

Symptom	Problem	Solution	Section
<b>Ragged or uneven cutting of crop</b>	Knife hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Checking Knife Hold-Downs, page 308</a>
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	<a href="#">5.8 Knife, page 299</a>
	Knife is not operating at recommended speed	Check engine speed of combine	Refer to the combine operator's manual
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<ul style="list-style-type: none"> <li>• <a href="#">3.7.4 Reel Speed, page 67</a></li> <li>• <a href="#">3.7.5 Ground Speed, page 68</a></li> </ul>
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	<ul style="list-style-type: none"> <li>• <a href="#">3.7.9 Reel Fore-Aft Position, page 73</a></li> <li>• <a href="#">3.7.11 Reel Tine Pitch, page 80</a></li> </ul>
	Cutterbar too high	Lower cutting height	<a href="#">3.7.1 Cutting Height, page 52</a>
	Header angle too flat	Steepen header angle	<a href="#">3.7.3 Header Angle, page 66</a>
	Bent knife causing binding of cutting parts	Straighten bent knife and align guards	<a href="#">5.8.7 Knife Guards, page 303</a>
	Cutting edge of guards not close enough or parallel to knife sections	Align guards	
	Tangled/tough-to-cut crop	Install stub guards	<ul style="list-style-type: none"> <li>• See your MacDon Dealer</li> <li>• <a href="#">Checking Knife Hold-Downs, page 308</a></li> <li>• <a href="#">6.2.3 Stub Guard Conversion Kit, page 410</a></li> </ul>
	Reel too far back	Move reel forward	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>
	Loose knife drive belt	Adjust drive belt tension	<a href="#">5.9.2 Knife Drive Belts, page 318</a>

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
Knife plugging	Reel too high or too far forward	Lower reel or move reel rearward	<ul style="list-style-type: none"> <li>• <a href="#">3.7.8 Reel Height, page 73</a></li> <li>• <a href="#">3.7.9 Reel Fore-Aft Position, page 73</a></li> </ul>
	Ground speed too slow	Increase ground speed	<a href="#">3.7.5 Ground Speed, page 68</a>
	Loose knife drive belt	Adjust drive belt tension	<a href="#">5.9.2 Knife Drive Belts, page 318</a>
	Improper knife hold-down adjustment	Adjust hold-down	<a href="#">Checking Knife Hold-Downs, page 308</a>
	Dull or broken knife section	Replace knife section	<a href="#">5.8.1 Replacing Knife Section, page 299</a>
	Bent or broken guards	Align or replace guards	<a href="#">5.8.7 Knife Guards, page 303</a>
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	<ul style="list-style-type: none"> <li>• <a href="#">3.7.9 Reel Fore-Aft Position, page 73</a></li> <li>• <a href="#">3.7.11 Reel Tine Pitch, page 80</a></li> </ul>
	Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	<ul style="list-style-type: none"> <li>• <a href="#">5.13.1 Reel Clearance to Cutterbar, page 350</a></li> <li>• <a href="#">5.13.2 Reel Frown, page 353</a></li> </ul>
	Float too heavy	Adjust springs for lighter float	<a href="#">3.7.2 Header Float, page 58</a>
	Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	<a href="#">Cutting On the Ground, page 56</a>
		Install cut-out sections	<a href="#">Installing Knifehead Shield, page 310</a>
		Flatten header angle	<a href="#">3.7.3 Header Angle, page 66</a>
	Knife is not operating at recommended speed	Check engine speed of combine	Refer to combine operator's manual

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Excessive header vibration</b>	Knife hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Checking Knife Hold-Downs, page 308</a>
	Knife not operating at recommended speed	Check engine speed of combine	Refer to combine operator's manual
	Excessive knife wear	Replace knife	<ul style="list-style-type: none"> <li>• <a href="#">5.8.2 Removing Knife, page 301</a></li> <li>• <a href="#">5.8.5 Installing Knife, page 302</a></li> </ul>
	Loose or worn knifehead pin or drive arm	Tighten or replace parts	<a href="#">5.8.1 Replacing Knife Section, page 299</a>
<b>Excessive vibration of adapter and header</b>	Incorrect knife speed	Adjust knife speed	<a href="#">3.7.7 Knife Speed, page 71</a>
	Driveline U-joints worn	Replace U-joints	See your MacDon Dealer
	Bent cutterbar	Straighten cutterbar	See your MacDon Dealer
<b>Excessive breakage of knife sections or guards</b>	Knife hold-downs not adjusted properly	Adjust hold-downs	<a href="#">Checking Knife Hold-Downs, page 308</a>
	Cutterbar operating too low in stony conditions	Raise cutterbar, using skid shoes	<a href="#">Cutting On the Ground, page 56</a>
	Float is set too heavy	Adjust float springs for lighter float	<a href="#">3.7.2 Header Float, page 58</a>
	Bent or broken guard	Straighten or replace guard	<a href="#">5.8.7 Knife Guards, page 303</a>
	Header angle too steep	Flatten header angle	<a href="#">3.7.3 Header Angle, page 66</a>
<b>Knife back breakage</b>	Bent or broken guard	Straighten or replace guard	<a href="#">5.8.7 Knife Guards, page 303</a>
	Worn knifehead pin	Replace knifehead pin	<ul style="list-style-type: none"> <li>• <a href="#">5.8.3 Removing Knifehead Bearing, page 301</a></li> <li>• <a href="#">5.8.4 Installing Knifehead Bearing, page 302</a></li> </ul>
	Dull knife	Replace knife	<ul style="list-style-type: none"> <li>• <a href="#">5.8.2 Removing Knife, page 301</a></li> <li>• <a href="#">5.8.5 Installing Knife, page 302</a></li> </ul>

## TROUBLESHOOTING

### 7.3 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="#">3.7.4 Reel Speed, page 67</a>
	Reel too low	Raise reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Reel tines too aggressive	Reduce cam setting	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
	Reel too far back	Move reel forward	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</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="#">3.7.11 Reel Tine Pitch, page 80</a>
<b>Wrapping on reel end</b>	Reel tines too aggressive	Reduce cam setting	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
	Reel too low	Raise reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Reel speed too fast	Reduce reel speed	<a href="#">3.7.4 Reel Speed, page 67</a>
	Crop conditions	Install optional endshields	See your MacDon Dealer
	Reel not centered in header	Center reel in header	<a href="#">5.13.3 Centering the Reel, page 354</a>
<b>Reel releases crop too quickly</b>	Reel tines not aggressive enough	Increase cam setting	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
	Reel too far forward	Move reel back	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</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	Refer to the combine operator's manual
	Reel drive chain disconnected	Connect chain	<a href="#">5.14.4 Replacing Drive Chain, page 383</a>
<b>Reel motion uneven under no load</b>	Excessive slack in reel drive chain	Tighten chain	<a href="#">5.14.5 Adjusting Reel Drive Chain Tension, page 387</a>

## 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="#">3.7.4 Reel Speed, page 67</a>
	Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
	Reel too low	Raise reel	<a href="#">3.7.8 Reel Height, page 73</a>
	Relief valve on combine (not on combine adapter) has low relief pressure setting	Increase relief pressure to manufacturer's recommendations	Refer to the combine operator's manual
	Low oil reservoir level on combine <b>NOTE:</b> Sometimes there is more than one reservoir	Fill to proper level	
	Relief valve malfunction	Replace relief valve	
	Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace with high torque (10-tooth or 14-tooth) reel drive sprocket	<a href="#">5.14.1 Replacing Reel Drive Sprocket, page 372</a>
<b>Plastic fingers cut at tip</b>	Insufficient reel to cutterbar clearance	Increase clearance	<a href="#">5.13.1 Reel Clearance to Cutterbar, page 350</a>
<b>Plastic fingers bent rearward at tip</b>	Reel digging into ground with reel speed slower than ground speed	Raise header	<a href="#">3.7.1 Cutting Height, page 52</a>
		Decrease header tilt	<a href="#">3.7.3 Header Angle, page 66</a>
		Move reel aft	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</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="#">3.7.1 Cutting Height, page 52</a>
		Decrease header tilt	<a href="#">3.7.3 Header Angle, page 66</a>
		Move reel aft	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>
<b>Plastic fingers bent close to tine tube.</b>	Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Correct plugging/cutting issues	<a href="#">3.10 Unplugging Cutterbar, page 175</a>
		Stop reel before plugging becomes excessive	

## TROUBLESHOOTING

### 7.4 Header and Drapers

Symptom	Problem	Solution	Section
Insufficient header lift	Low relief pressure	Increase relief pressure	Refer to the combine operator's manual
Insufficient side draper speed	Speed control set too low	Increase control setting	<a href="#">3.7.6 Draper Speed, page 69</a>
	Relief pressure too low	Increase relief pressure to recommended setting	See your MacDon Dealer
	Worn out gear pump	Replace pump	
	Combine header drive too slow	Adjust to correct speed for combine model	Refer to the combine operator's manual
	Pressure compensator (V7) set too low	Adjust to increase setting	
Draper will not drive	Drapers are loose	Tighten drapers	<a href="#">5.12.3 Adjusting Side Draper Tension, page 335</a>
	Drive or idler roller wrapped with material	Loosen draper and clean rollers	
	Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	
	Roller bearing seized	Replace roller bearing	<a href="#">5.12.6 Draper Roller Maintenance, page 340</a>
	Low hydraulic oil	Fill reservoir to full level	<a href="#">Adding Oil, page 273</a>
	Incorrect relief setting at flow control valve	Adjust relief setting	See your MacDon Dealer
Draper stalling	Material not feeding evenly off knife	Lower reel	<a href="#">3.7.8 Reel Height, page 73</a>
		Install stub guards	<a href="#">6.2.3 Stub Guard Conversion Kit, page 410</a>
	Material accumulates inside or under front edge of draper	Adjust deck height	<a href="#">5.12.5 Adjusting Deck Height, page 339</a>



## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Adapter auger back-feeds</b>	Auger set too high	Check reversing mechanism inside auger	Refer to the combine operator's manual
		Lower auger	<a href="#">5.7.1 Adjusting Auger to Pan Clearance, page 285</a>
	<b>John Deere:</b> Feeder chain running too slow	Run feeder chain at high speed	Refer to the combine operator's manual
	<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="#">3.7.3 Header Angle, page 66</a>
	Material overload on drapers	Increase side draper speed	<a href="#">3.7.6 Draper Speed, page 69</a>
		Install upper cross auger (UCA)	See your MacDon Dealer
		Add flighting extensions	<a href="#">4.1.1 Using Flighting Extensions, page 197</a>
	Material accumulation at auger ends	Install stripper bars	<a href="#">4.1.2 Using Stripper Bars, page 197</a>
	<b>CASE:</b> Stone retarder blocks interfering with crop flow	Adjust blocks to minimum height	Refer to the combine operator's manual
	Side drapers running too fast, piling material in center of feeder draper	Reduce header side draper speed	<a href="#">3.7.6 Draper Speed, page 69</a>
	Feeder house chain drum too low	Move drum to corn position	Refer to the combine operator's manual
<b>Adapter auger wraps crop</b>	Crop susceptible to wrapping (flax)	Add flighting extensions or stripper bars	<ul style="list-style-type: none"> <li><a href="#">4.1.2 Using Stripper Bars, page 197</a></li> <li><a href="#">4.1.1 Using Flighting Extensions, page 197</a></li> </ul>
	Auger speed too fast	Install slow down kit	See your MacDon Dealer
<b>Combine feeder drum wraps crop</b>	Crop susceptible to wrapping (flax)	Add stripper bars	<a href="#">4.1.2 Using Stripper Bars, page 197</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="#">5.12.4 Adjusting Header Draper Tracking, page 337</a>
		Replace roller bearing(s)	<a href="#">Replacing Adapter Feed Draper Drive Roller Bearing, page 327</a>
		Check feed draper motor	—
	Heavy crop plugging between adapter auger and feed draper	Check auger clearance	<a href="#">5.7.1 Adjusting Auger to Pan Clearance, page 285</a>
		Refer to “Adapter auger back-feeds” earlier in this table	—
	Excessive clearance from auger to drive roller	Lower auger	<a href="#">5.7.1 Adjusting Auger to Pan Clearance, page 285</a>
	Auger speed too slow	Install auger speed-up kit	See your MacDon Dealer
<b>Side drapers back-feed</b>	Side drapers running too slow in heavy crop	Increase side draper speed	<a href="#">3.7.6 Draper Speed, page 69</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="#">3.7.6 Draper Speed, page 69</a>
	Excessive overlap of feeder draper	Center side draper drive rollers over feed draper side deflectors	See your MacDon Dealer
<b>Crop feeding into feeder house at sides more than at center</b>	Auger not delivering crop properly	Add flighting extensions	<a href="#">4.1.1 Using Flighting Extensions, page 197</a>
		Add stripper bars	<a href="#">4.1.2 Using Stripper Bars, page 197</a>
		Remove auger outer tines	<a href="#">Removing Feed Auger Tines, page 293</a>
		Install auger speed-up kit	See your MacDon Dealer
<b>Crop feeding into feeder house at center more than at sides</b>	Auger not delivering crop properly	Add auger outer tines	<a href="#">Removing Feed Auger Tines, page 293</a>
		Remove flighting extensions	<a href="#">4.1.1 Using Flighting Extensions, page 197</a>
		Remove auger stripper bars	<a href="#">4.1.2 Using Stripper Bars, page 197</a>
<b>Crop getting stuffed in gap between cut-out in endsheet and knifehead</b>	Crop heads leaning away from knifehead hole in endsheet	Add shields, except in damp/sticky soils	<a href="#">5.8.8 Knifehead Shield, page 310</a>
<b>Material accumulates inside or under front edge of draper</b>	Deck height improperly adjusted	Adjust deck height	<a href="#">5.12.5 Adjusting Deck Height, page 339</a>

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Material wrapping at upper cross auger (UCA) beater bars</b>	Crop conditions do not require beater bars	Remove beater bars	<a href="#">3.12 Upper Cross Auger (UCA), page 177</a>
<b>Material accumulating on end deflectors and releasing in bunches</b>	End deflectors too wide	Trim deflector or replace with narrow deflector (MD #172381)	—
<b>Cutterbar pushes dirt across entire length</b>	Header height too low	Raise header height with float optimizer control	Refer to the combine operator's manual
	Float locked	Unlock float	<a href="#">3.7.2 Header Float, page 58</a>
	Float set too heavy	Adjust float	
	Header angle too steep	Adjust header to optimum angle	<a href="#">3.7.3 Header Angle, page 66</a>
<b>Pushing dirt at combine adapter lower beam</b>	Combine face plate incorrectly installed	Remove adapter and check combine faceplate	Refer to the combine operator's manual
	Header angle too flat	Increase header angle	<a href="#">3.7.3 Header Angle, page 66</a>
	Float too light, header legs do not rest on stops	Adjust to heavier float	<a href="#">3.7.2 Header Float, page 58</a>
<b>Wing float assembly binding</b>	Float locked out	Disengage adapter float lockout	<a href="#">3.7.2 Header Float, page 58</a>
	Float set too heavy	Adjust adapter springs to lighter float	
<b>Reel contacts endsheet, especially in smile condition</b>	Reel not centered in header	Center reel in header	<a href="#">5.13.3 Centering the Reel, page 354</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="#">Adjusting Reel Clearance, page 352</a>
		Adjust reel frown at finger tubes	<a href="#">5.13.2 Reel Frown, page 353</a>
<b>Longer stubble in middle than at ends, or cutterbar pushes dirt at ends</b>	Too much weight on wings	Adjust wing balance	<a href="#">5.16.1 Checking Wing Balance, page 396</a>
<b>Longer stubble at ends than in middle, or cutterbar pushes dirt in middle</b>	Too much weight at middle of header		
<b>Wings will not frown without excessive down force</b>	Wings set too light	Adjust wing balance	<a href="#">5.16.1 Checking Wing Balance, page 396</a>

## 7.5 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="#">3.7.13 Crop Divider Rods, page 87</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	See your MacDon Dealer
<b>Reel wraps up with crop</b>	Reel too low	Raise reel	<a href="#">3.7.8 Reel Height, page 73</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 56</a>
	Float set too light—cutterbar not following ground	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="#">3.7.2 Header Float, page 58</a>
	Reel too high	Fully retract reel cylinders	<a href="#">3.7.8 Reel Height, page 73</a>
	Reel too high with cylinders fully retracted	Adjust reel height	<a href="#">Adjusting Reel Clearance, page 352</a>
	Finger pitch too retarded	Adjust finger pitch	<a href="#">3.7.11 Reel Tine Pitch, page 80</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="#">3.7.9 Reel Fore-Aft Position, page 73</a>
	Header angle too shallow	Lengthen center-link; if cutting on ground, header angle can be increased by fully retracting lift cylinders	<a href="#">3.7.3 Header Angle, page 66</a>
	Reel too slow	Adjust reel speed to be marginally faster than ground speed	<a href="#">3.7.4 Reel Speed, page 67</a>
	Ground speed too high	Lower ground speed	<a href="#">3.7.5 Ground Speed, page 68</a>
	Header skid shoes adjusted too low	Raise skid shoes to maximum up position	<a href="#">Cutting On the Ground, page 56</a>

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Plants being stripped and complete or partial plans left behind</b>	Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install cutterbar wearplate on bottom of cutterbar and skid shoes	See your MacDon Dealer
	Worn/damaged knife sections	Replace sections or complete knife	<ul style="list-style-type: none"> <li>• <a href="#">5.8.1 Replacing Knife Section, page 299</a></li> <li>• <a href="#">5.8.2 Removing Knife, page 301</a></li> <li>• <a href="#">5.8.5 Installing Knife, page 302</a></li> </ul>
	Dirt packs on bottom of cutterbar with wearplate and raises cutterbar off the ground	Ground too wet; allow soil to dry	—
		Manually clean the bottom of cutterbar when accumulation gets unacceptable	
	Plastic wearplate for cutterbar has been installed over top of steel wearplates	Remove steel cutterbar wearplate when installing the wearplate for cutterbar	
	Header is not level	Level header	<a href="#">3.9 Levelling the Header, page 173</a>
	Parts of vines get caught in pointed guard tip (occurs more in row-cropped beans that are hilled from cultivating)	Install stub guard kit	See your MacDon Dealer
<b>Plant vines pinched between top of draper and cutterbar</b>	Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted	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 too retarded	Increase finger aggressiveness (cam position)	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>
	Reel too high relative to knife	Readjust reel minimum height with cylinders fully retracted	<a href="#">Adjusting Reel Clearance, page 352</a>
	Reel too far forward of cutterbar	Reposition reel	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</a>

## TROUBLESHOOTING

Symptom	Problem	Solution	Section
<b>Cutterbar guards breaking</b>	Float insufficient	Increase float	<a href="#">3.7.2 Header Float, page 58</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	<ul style="list-style-type: none"> <li>• <a href="#">6.2.3 Stub Guard Conversion Kit, page 410</a></li> <li>• See your MacDon Dealer</li> </ul>
<b>Reel shattering pods</b>	Reel running too fast	Reduce reel speed	<a href="#">3.7.4 Reel Speed, page 67</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="#">3.7.11 Reel Tine Pitch, page 80</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="#">3.7.2 Header Float, page 58</a>
	Header angle too steep	Decrease header angle with lift cylinders	<a href="#">3.7.3 Header Angle, page 66</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	See your MacDon Dealer
	Improper support for header	Install center skid shoes on header	See your MacDon Dealer
<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="#">5.12.5 Adjusting Deck Height, page 339</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="#">3.7.8 Reel Height, page 73</a>
		Adjust reel fore and aft location to move fingers out of the ground	<a href="#">3.7.9 Reel Fore-Aft Position, page 73</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="#">3.7.6 Draper Speed, page 69</a>
	Finger pitch too retarded	Increase finger pitch	<a href="#">3.7.11 Reel Tine Pitch, page 80</a>





## 8 Reference

### 8.1 Torque Specifications

The following tables provide the correct torque values for various bolts, cap screws, and hydraulic fittings.

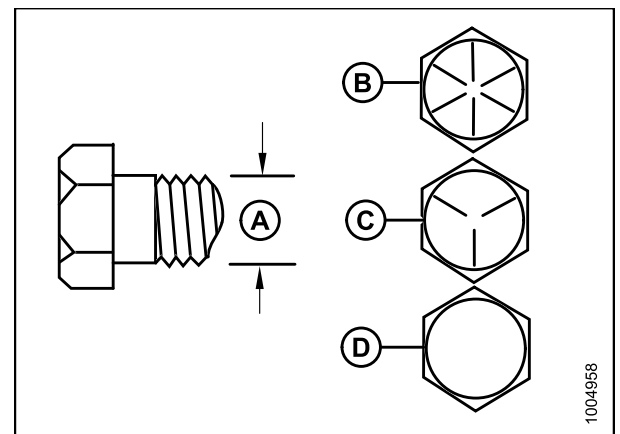
- Tighten all bolts to the torque values specified in the charts (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade of bolt.
- Use the torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

#### 8.1.1 SAE Bolt Torque Specifications

Torque values shown in the following tables 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.

**Table 8.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut**

Nominal Size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*106	*117	11.9	13.2
5/16-18	*218	*241	24.6	27.1
3/8-16	32	36	44	48
7/16-14	52	57	70	77
1/2-13	79	87	106	118
9/16-12	114	126	153	170
5/8-11	157	173	212	234
3/4-10	281	311	380	420
7/8-9	449	496	606	669
1-8	611	676	825	912



**Figure 8.1: Bolt Grades**

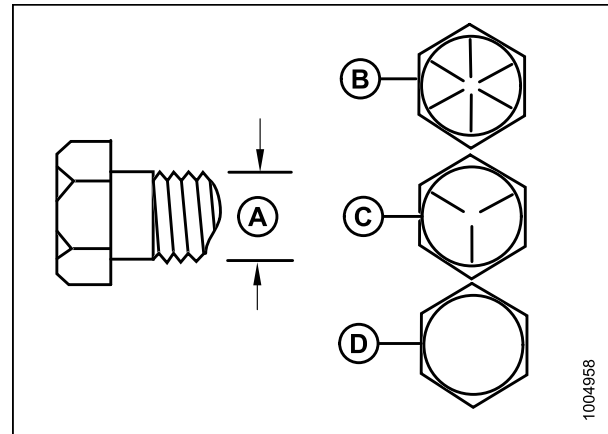
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

## REFERENCE

**Table 8.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
1/4-20	*72	*80	8.1	9
5/16-18	*149	*164	16.7	18.5
3/8-16	22	24	30	33
7/16-14	35	39	48	53
1/2-13	54	59	73	80
9/16-12	77	86	105	116
5/8-11	107	118	144	160
3/4-10	192	212	259	286
7/8-9	306	338	413	456
1-8	459	507	619	684



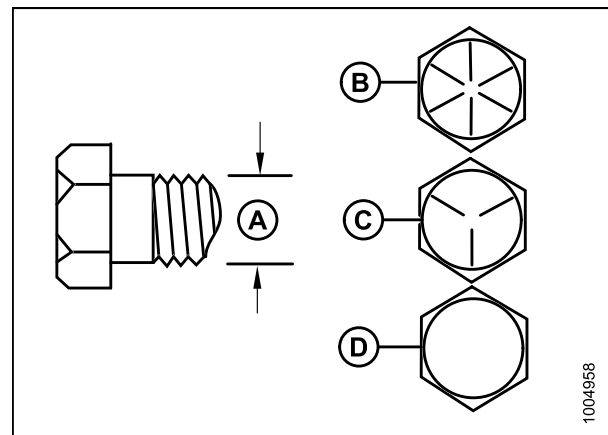
**Figure 8.2: Bolt Grades**

A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

**Table 8.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	18	19	24	26
3/8-16	31	34	42	46
7/16-14	50	55	67	74
1/2-13	76	84	102	113
9/16-12	109	121	148	163
5/8-11	151	167	204	225
3/4-10	268	296	362	400
7/8-9	432	477	583	644
1-8	647	716	874	966



**Figure 8.3: Bolt Grades**

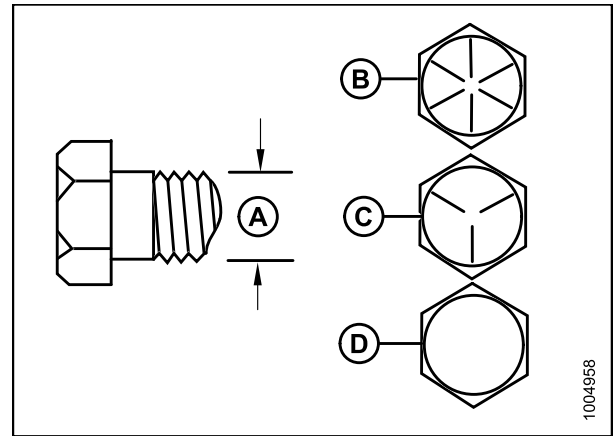
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

## REFERENCE

**Table 8.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	26	28	35	38
3/8-16	46	50	61	68
7/16-14	73	81	98	109
1/2-13	111	123	150	166
9/16-12	160	177	217	239
5/8-11	221	345	299	330
3/4-10	393	435	531	587
7/8-9	633	700	855	945
1-8	863	954	1165	1288



**Figure 8.4: Bolt Grades**

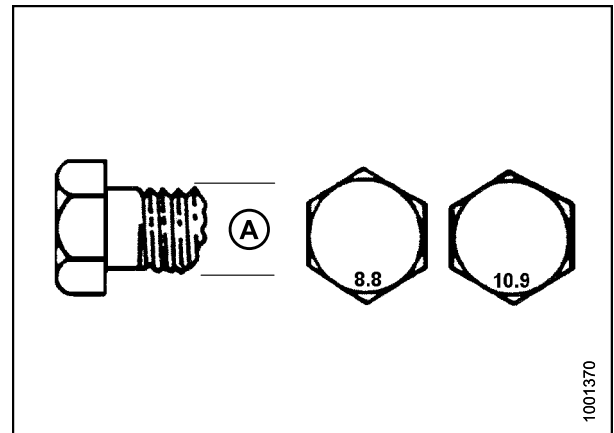
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

### 8.1.2 Metric Bolt Specifications

**Table 8.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*13	*14	1.4	1.6
3.5-0.6	*20	*22	2.2	2.5
4-0.7	*29	*32	3.3	3.7
5-0.8	*59	*66	6.7	7.4
6-1.0	*101	*112	11.4	12.6
8-1.25	20	23	28	30
10-1.5	40	45	55	60
12-1.75	70	78	95	105
14-2.0	113	124	152	168
16-2.0	175	193	236	261
20-2.5	341	377	460	509
24-3.0	589	651	796	879

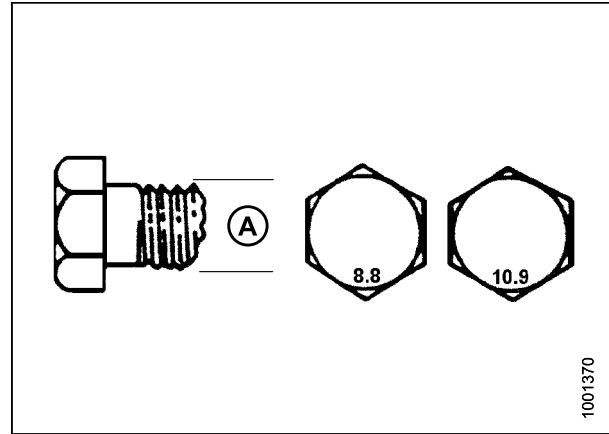


**Figure 8.5: Bolt Grades**

## REFERENCE

**Table 8.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut**

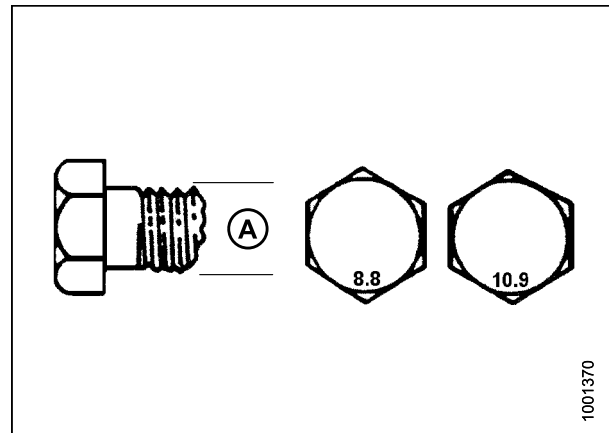
Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*9	*10	1	1.1
3.5-0.6	*14	*15	1.5	1.7
4-0.7	*20	*22	2.3	2.5
5-0.8	*40	*45	4.5	5
6-1.0	*69	*76	7.7	8.6
8-1.25	*167	*185	18.8	20.8
10-1.5	28	30	37	41
12-1.75	48	53	65	72
14-2.0	77	85	104	115
16-2.0	119	132	161	178
20-2.5	233	257	314	347
24-3.0	402	444	543	600



**Figure 8.6: Bolt Grades**

**Table 8.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*18	*19	1.8	2
3.5-0.6	*27	*30	2.8	3.1
4-0.7	*41	*45	4.2	4.6
5-0.8	*82	*91	8.4	9.3
6-1.0	*140	*154	14.3	15.8
8-1.25	28	31	38	42
10-1.5	56	62	75	83
12-1.75	97	108	132	145
14-2.0	156	172	210	232
16-2.0	242	267	326	360
20-2.5	472	521	637	704
24-3.0	815	901	1101	1217

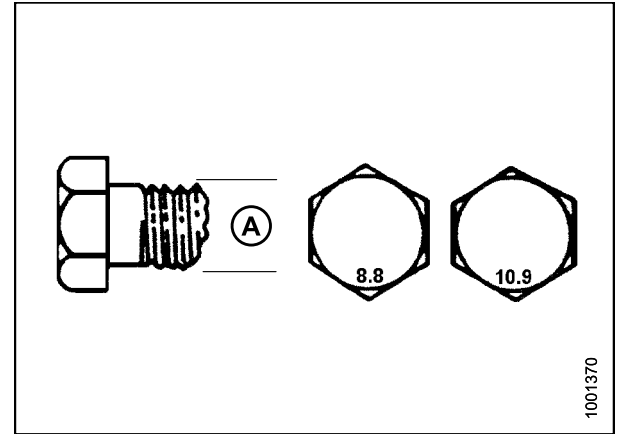


**Figure 8.7: Bolt Grades**

## REFERENCE

**Table 8.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut**

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*12	*13	1.3	1.5
3.5-0.6	*19	*21	2.1	2.3
4-0.7	*28	*31	3.1	3.4
5-0.8	*56	*62	6.3	7
6-1.0	*95	*105	10.7	11.8
8-1.25	19	21	26	29
10-1.5	38	42	51	57
12-1.75	66	73	90	99
14-2.0	106	117	143	158
16-2.0	165	182	222	246
20-2.5	322	356	434	480
24-3.0	556	614	750	829



**Figure 8.8: Bolt Grades**

### 8.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	ft-lbf	N-m	ft-lbf	N-m
M3	–	–	1	–
M4	–	–	2.6	4
M5	–	–	5.5	8
M6	6	9	9	12
M8	14	20	20	28
M10	28	40	40	55
M12	52	70	73	100
M14	–	–	–	–
M16	–	–	–	–

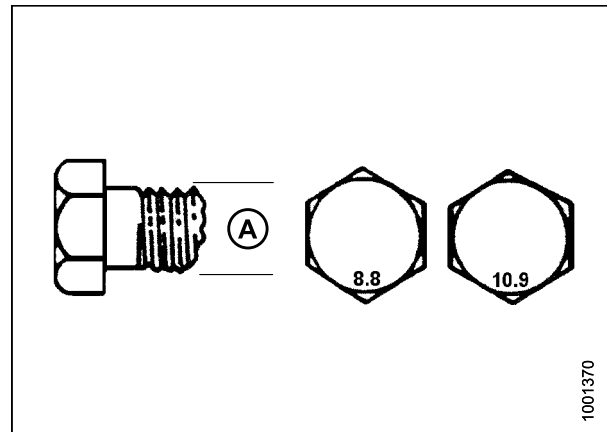


Figure 8.9: Bolt Grades

### 8.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between the flared surfaces.
3. Torque the fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table [8.10 Flare-Type Hydraulic Tube Fittings, page 439](#).
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on the fitting body (D) and tighten nut (E) with the other wrench to the torque shown.
5. Assess the final condition of the connection.

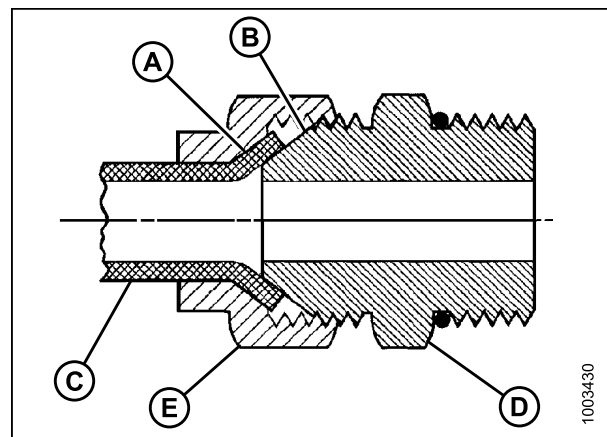


Figure 8.10: Hydraulic Fitting



## REFERENCE

**Table 8.10 Flare-Type Hydraulic Tube Fittings**

SAE Dash Size	Thread Size (in.)	Torque Value <sup>18</sup>		Flats from Finger Tight (FFFT)	
		ft·lbf	N·m	Tube	Swivel Nut or Hose
-2	5/16–24	3–4	4–5	—	—
-3	3/8–24	5–6	7–8	—	—
-4	7/16–20	13–14	18–19	2-1/2	2
-5	1/2–20	14–15	19–21	2	2
-6	9/16–18	22–24	30–33	2	1-1/2
-8	3/4–16	42–46	57–63	2	1-1/2
-10	7/8–14	60–66	81–89	1-1/2	1-1/2
-12	1-1/16–12	83–91	113–124	1-1/2	1-1/4
-14	1-3/16–12	100–110	136–149	1-1/2	1-1/4
-16	1-5/16–12	118–130	160–176	1-1/2	1
-20	1-5/8–12	168–184	228–250	1	1
-24	1-7/8–12	195–215	264–291	1	1
-32	2-1/2–12	265–291	359–395	1	1
-40	3–12	—	—	1	1

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

## 8.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off the lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward the lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
4. Apply hydraulic system oil to the O-ring (A).

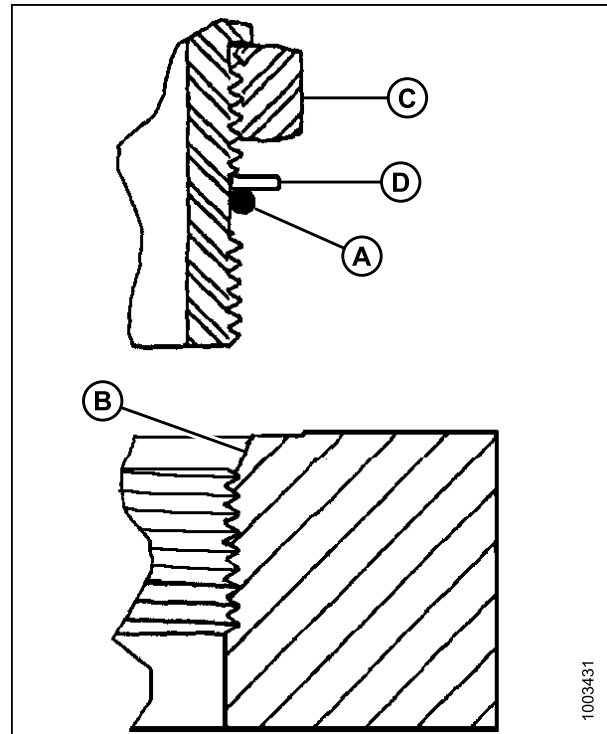


Figure 8.11: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact the part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Check the final condition of the fitting.

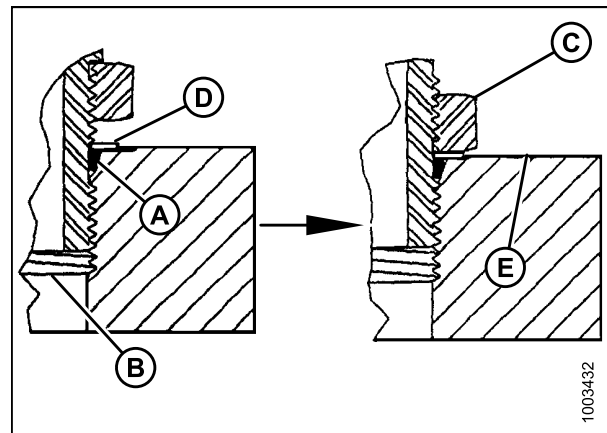


Figure 8.12: Hydraulic Fitting

## REFERENCE

**Table 8.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)**

SAE Dash Size	Thread Size (in.)	Torque Value <sup>19</sup>	
		ft·lbf (*in·lbf)	N·m
-2	5/16–24	*53–62	6–7
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298
-32	2-1/2–12	245–269	332–365

---

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

## REFERENCE

### 8.1.6 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to the values in Table 8.12 *O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)*, page 442.
6. Check the final condition of the fitting.

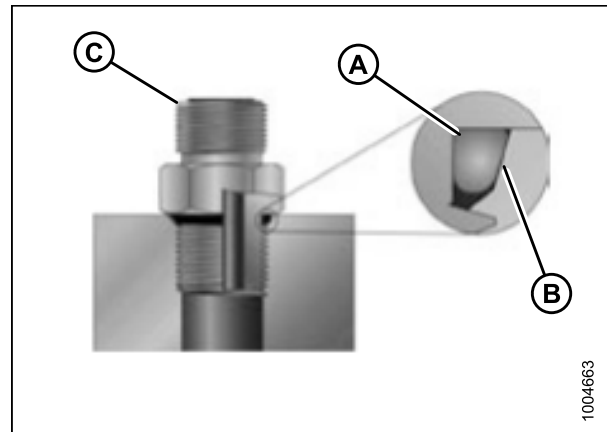


Figure 8.13: Hydraulic Fitting

Table 8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value <sup>20</sup>	
		ft·lbf (*in·lbf)	N·m
-2	5/16–24	*53–62	6–7
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298
-32	2-1/2–12	245–269	332–365

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

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

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



Figure 8.14: Hydraulic Fitting

2. Apply hydraulic system oil to the O-ring (B).
3. Align the tube or hose assembly so that the flat face of the sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to the values in Table [8.13 O-Ring Face Seal \(ORFS\) Hydraulic Fittings, page 444](#).

**NOTE:**

If applicable, hold the hex on the fitting body (E) to prevent rotation of fitting body and hose when tightening the fitting nut (D).

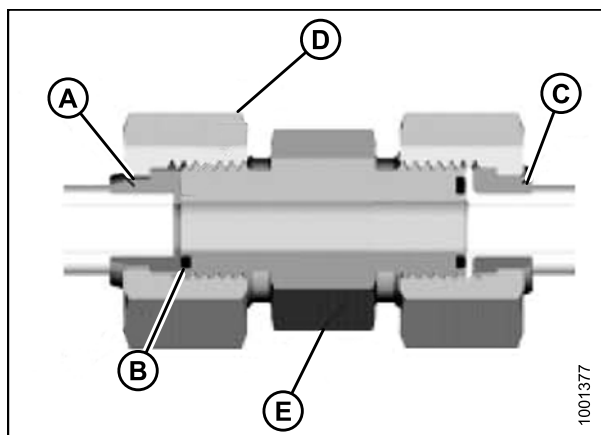


Figure 8.15: Hydraulic Fitting

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check the final condition of the fitting.

## REFERENCE

**Table 8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings**

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>21</sup>	
			ft-lbf	N·m
-3	Note <sup>22</sup>	3/16	—	—
-4	9/16	1/4	18–21	25–28
-5	Note <sup>22</sup>	5/16	—	—
-6	11/16	3/8	29–32	40–44
-8	13/16	1/2	41–45	55–61
-10	1	5/8	59–65	80–88
-12	1-3/16	3/4	85–94	115–127
-14	Note <sup>22</sup>	7/8	—	—
-16	1-7/16	1	111–122	150–165
-20	1-11/16	1-1/4	151–167	205–226
-24	1–2	1-1/2	232–256	315–347
-32	2-1/2	2	376–414	510–561

21. Torque values and angles shown are based on lubricated connection as in reassembly.

22. O-ring face seal type end not defined for this tube size.

## 8.2 Conversion Chart

Table 8.14 Conversion Chart

Quantity	Inch-Pound 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
			$\div 14.5038 =$	Bar (Non-SI)	bar
Torque	Pound feet or foot pounds	ft-lbf	$\times 1.3558 =$	Newton meters	N·m
	Pound inches or inch pounds	in-lbf	$\times 0.1129 =$	Newton meters	N·m
Temperature	Degrees Fahrenheit	°F	$(^{\circ}\text{F}-32) \times 0.56 =$	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	$\times 1.6063 =$	Kilometres 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	lbs	$\times 0.4536 =$	Kilograms	kg



## 8.3 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:

Shipping Destination	Header Description	MacDon Instruction Part Number
North America	FD75 FlexDraper® Header and CA25 Combine Adapter	MD #147698
Export (anywhere other than North America)	FD75 FlexDraper® Header and CA25 Combine Adapter	MD #147699

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