FD75
FlexDraper® Combine Header

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

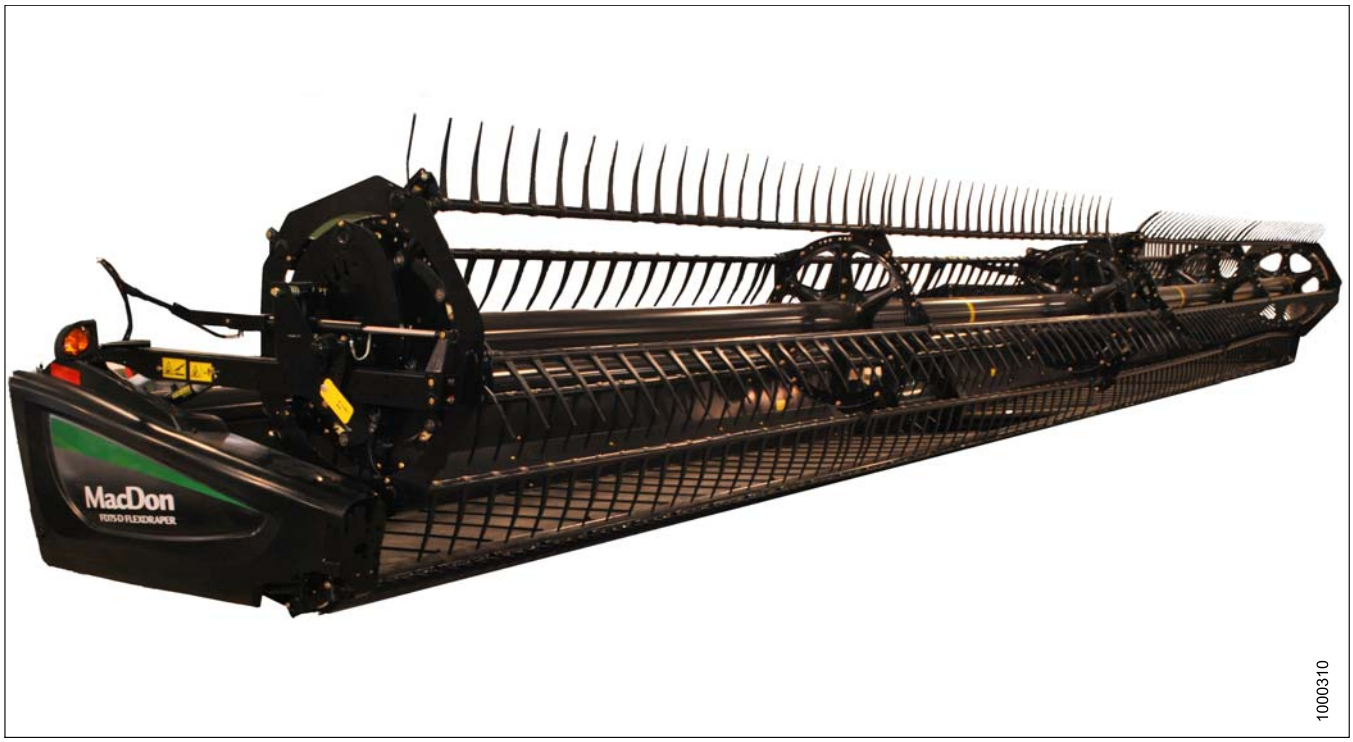
Operator's Manual

147943 Revision B
2017 Model Year
Original Instruction

Featuring MacDon FLEX-FLOAT Technology™

The harvesting specialists.

FD75 FlexDraper® Combine Header



Published: August 2016

Declaration of Conformity

EC Declaration of Conformity

[1] MacDon

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

[2] Combine Header

[3] MacDon FD75 Series

[4] As Per Shipping Document

[5] July 22, 2016

[6] _____
Christoph Martens
Product Integrity

EN

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

fulfills 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

BG

Ние, [1]

декларираме, че следният продукт:

Тип машина: [2]

Наименование и модел: [3]

Сериен 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 Хартман
Wersener Holz 2a
D-49504 Lotte (Германия)
hartmut.hartmann@prodoku.com

CZ

My, [1]

Prohlašujeme, 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

DA

Vi, [1]

erklærer, at prduktet:

Maskintype [2]

Navn og model: [3]

Serienummer (-numre): [4]

Opfylder alle bestemmelser i direktiv 2006/42/EF.

Anvendte harmoniserede standarder, som henvist 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

DE

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

ES

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
Wersener Holz 2a
D-49504 Lotte (Germany)
hartmut.hartmann@prodoku.com

ET

Meie, [1]

deklareerime, et toode

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumbrid: [4]

vastab kõigile direktivi 2006/42/EÜ asjakohastele sätetele.

Kasutatud on järgnevaid 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
Wersener Holz 2a
D-49504 Lotte (Saksamaa)
hartmut.hartmann@prodoku.com

FR

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
Wersener Holz 2a
D-49504 Lotte (Allemagne)
hartmut.hartmann@prodoku.com

The Harvesting Specialists MacDon

EC Declaration of Conformity

IT

Noi, [1]

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero(i) di serie: [4]

soddisfa tutte le disposizioni rilevanti della direttiva 2006/42/CE.

Utilizzo degli standard armonizzati, come indicato nell'Articolo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Luogo e data della dichiarazione: [5]

Nome e firma della persona autorizzata a redigere la dichiarazione: [6]

Nome e persona autorizzata a compilare il file tecnico:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germania)
hartmut.hartmann@prodoku.com

HU

Mi, [1]

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Név és modell: [3]

Szériaszám(ok): [4]

teljesíti a következő irányelv összes vonatkozó előírásait: 2006/42/EK.

Az alábbi harmonizált szabványok kerültek alkalmazásra a 7(2) cikkely szerint:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

A nyilatkozattétel ideje és helye: [5]

Azon személy kiléte és aláírása, aki jogosult a nyilatkozat elkészítésére: [6]

Azon személy neve és aláírása, aki felhatalmazott a műszaki dokumentáció összeállítására:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Németország)
hartmut.hartmann@prodoku.com

LT

Mes, [1]

Pareiškiame, kad šis produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.

Naudojami harmonizuoti standartai, kai nurodoma straipsnyje 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklaracijos vieta ir data: [5]

Asmens tapatybės duomenys ir parašas asmens, įgalioto sudaryti šią deklaraciją: [6]

Vardas ir pavardė asmens, kuris įgaliotas sudaryti šį techninį failą:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Vokietija)
hartmut.hartmann@prodoku.com

LV

Mēs, [1]

Deklarējam, ka produkts:

Mašīnas tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.

Piemēroti šādi saskaņotie standarti , kā minēts 7. panta 2. punktā:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklarācijas parakstīšanas vieta un datums: [5]

Tās personas vārds, uzvārds un paraksts, kas ir pilnvarota sagatavot šo deklarāciju: [6]

Tās personas vārds, uzvārds un adrese, kas ir pilnvarota sastādīt tehnisko dokumentāciju:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Vācija)
harttmut.hartmann@prodoku.com

NL

Wij, [1]

Verklaren dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

voldoet aan alle relevante bepalingen van de Richtlijn 2006/42/EC.

Geharmoniseerde normen toegepast, zoals vermeld in Artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plaats en datum van verklaring: [5]

Naam en handtekening van de bevoegde persoon om de verklaring op te stellen: [6]

Naam en adres van de geautoriseerde persoon om het technisch dossier samen te stellen:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Duitsland)
hartmut.hartmann@prodoku.com

PO

My niżej podpisani, [1]

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

spełnia wszystkie odpowiednie przepisy dyrektywy 2006/42/WE.

Zastosowaliśmy następujące (zharmonizowane) normy zgodnie z artykułem 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data i miejsce oświadczenia: [5]

Imię i nazwisko oraz podpis osoby upoważnionej do przygotowania deklaracji: [6]

Imię i nazwisko oraz adres osoby upoważnionej do przygotowania dokumentacji technicznej:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Niemcy)
hartmut.hartmann@prodoku.com

PT

Nós, [1]

Declaramos, que o produto:

Tipo de máquina: [2]

Nome e Modelo: [3]

Número(s) de Série: [4]

cumpre todas as disposições relevantes da Directiva 2006/42/CE.

Normas harmonizadas aplicadas, conforme referido no Artigo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Local e data da declaração: [5]

Identidade e assinatura da pessoa autorizada a elaborar a declaração: [6]

Nome e endereço da pessoa autorizada a compilar o ficheiro técnico:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Alemanha)
hartmut.hartmann@prodoku.com

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul maşinii: [2]

Denumirea şi modelul: [3]

Număr (numere) serie: [4]

corespunde tuturor dispoziţiilor esenţiale ale directivei 2006/42/EC.

Au fost aplicate următoarele standarde armonizate conform articolului 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data şi locul declaraţiei: [5]

Identitatea şi semnătura persoanei împuternicite pentru întocmirea declaraţiei: [6]

Numele şi semnătura persoanei autorizate pentru întocmirea cărţii tehnice:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germania)
hartmut.hartmann@prodoku.com

RS

Mi, [1]

Izjavljujemo da proizvod

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Ispunjava sve relevantne odredbe direktive 2006/42/EC.

Korišæeni su usklaðeni standardi kao što je navedeno u èlanu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Datum i mesto izdavanja deklaracije: [5]

Identitet i potpis lica ovlašæenog za sastavljanje deklaracije: [6]

Ime i adresa osobe ovlašæene za sastavljanje tehnièke datoteke:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemaèka)
hartmut.hartmann@prodoku.com

SE

Vi, [1]

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

uppfyller alla relevanta villkor i direktivet 2006/42/EG.

Harmonierade standarder används, såsom anges i artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plats och datum för intyget: [5]

Identitet och signatur för person med befogenhet att upprätta intyget: [6]

Namn och adress för person behörig att upprätta den tekniska dokumentationen:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Tyskland)
hartmut.hartmann@prodoku.com

SI

Mi, [1]

izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska/-e številka/-e: [4]

ustreza vsem zadevnim določbam Direktive 2006/42/ES.

Uporabljeni usklajeni standardi, kot je navedeno v členu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Kraj in datum izjave: [5]

Istovetnost in podpis osebe, opolnomočene za pripravo izjave: [6]

Ime in naslov osebe, pooblaščene za pripravo tehnične datoteke:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemčija)
hartmut.hartmann@prodoku.com

SK

My, [1]

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

spĺňa príslušné ustanovenia a základné požiadavky smernice č. 2006/42/ES.

Použité harmonizované normy, ktoré sa uvádzajú v Článku č. 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Miesto a dátum prehlásenia: [5]

Meno a podpis osoby oprávnenej vypracovať toto prehlásenie: [6]

Meno a adresa osoby oprávnenej zostaviť technický súbor:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemecko)
hartmut.hartmann@prodoku.com

1018688

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 use the machine.

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

When setting up the machine or making adjustments, review and follow the recommended machine settings in all relevant MacDon publications. Failure to do so may compromise machine function and machine life and may result in a hazardous situation.

MacDon provides warranty for Customers who operate and maintain their equipment as described in this manual. A copy of the MacDon Industries Limited Warranty Policy, which explains this warranty, should have been provided to you by your Dealer. Damage resulting from any of the following conditions will void the warranty:

- Accident
- Misuse
- Abuse
- Improper maintenance or neglect
- Abnormal or extraordinary use of the machine
- Failure to use the machine, equipment, component, or part in accordance with the manufacturer’s instructions

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 manual storage case is located inside the header left endshield.

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

NOTE:
Keep your MacDon publications up-to-date. The most current version can be downloaded from our website (*www.macdon.com*) or from our Dealer-only site (*https://portal.macdon.com*) (login required).

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*).

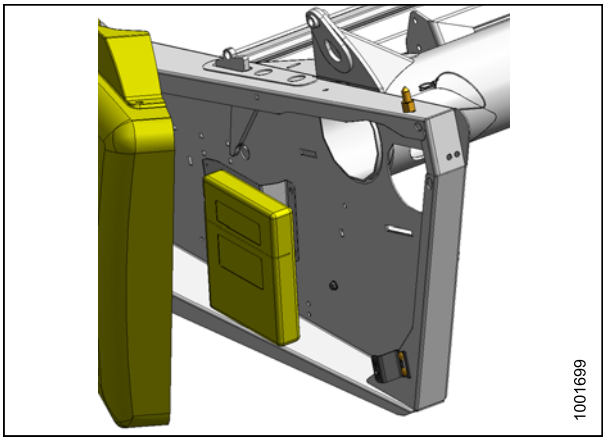


Figure 1: Manual Storage Location

List of Revisions

At MacDon, we're continuously making improvements, and occasionally these improvements affect product documentation. The following list provides an account of major changes from the previous version of this document.

Summary of Change	Refer To
Updated Declaration of Conformity	*Declaration of Conformity, page i*

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) in the spaces provided.

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.

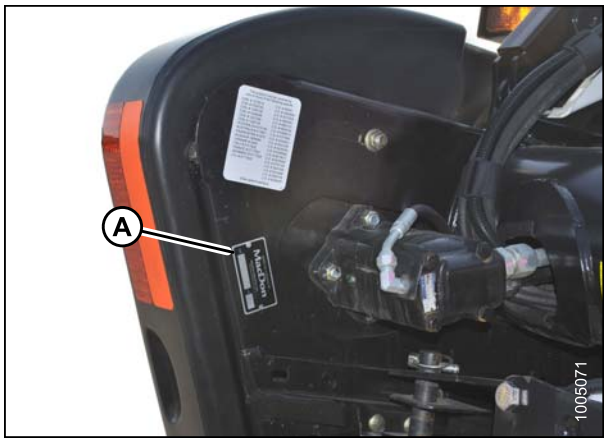


Figure 2: Header

Combine Adapter

Adapter Model: _____

Serial Number: _____

Year: _____

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

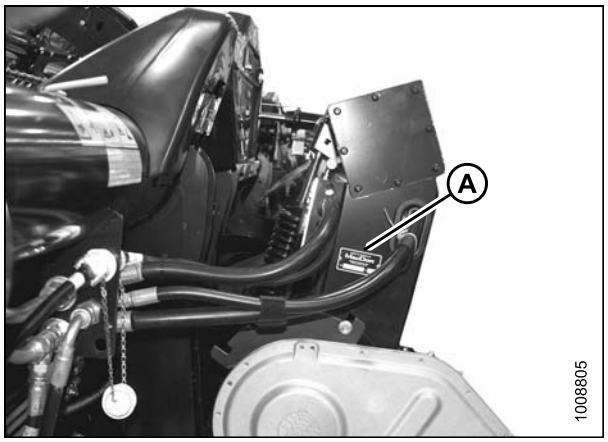


Figure 3: Adapter

Slow Speed Transport/Stabilizer Wheel Option

Serial Number: _____

Year: _____

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

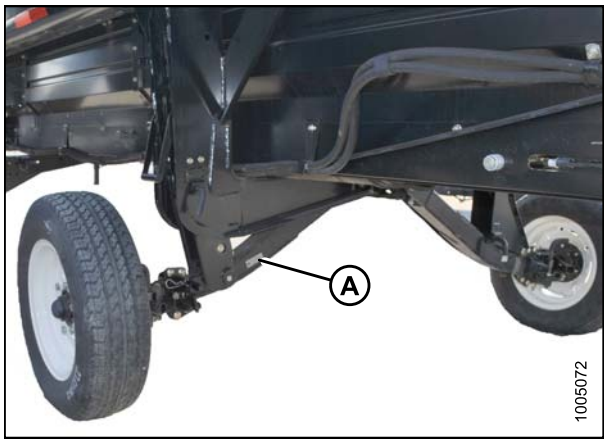


Figure 4: Transport/Stabilizer Option

1 Safety

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

- Accidents disable and kill
- Accidents cost
- Accidents can be avoided

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. Do **NOT** 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.

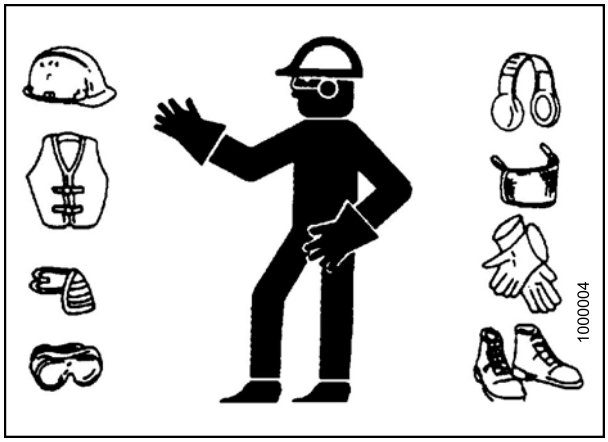


Figure 1.2: Safety Equipment

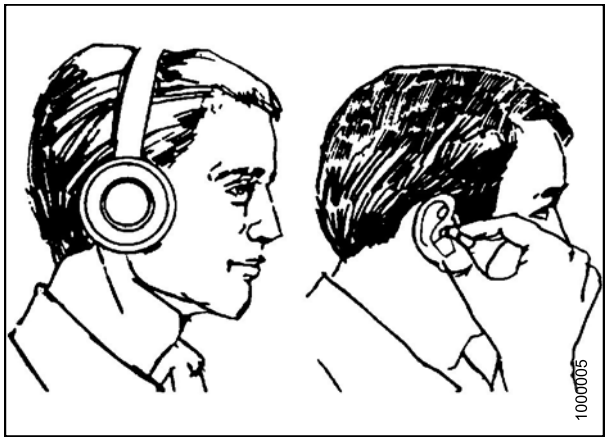


Figure 1.3: Safety Equipment

- 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.

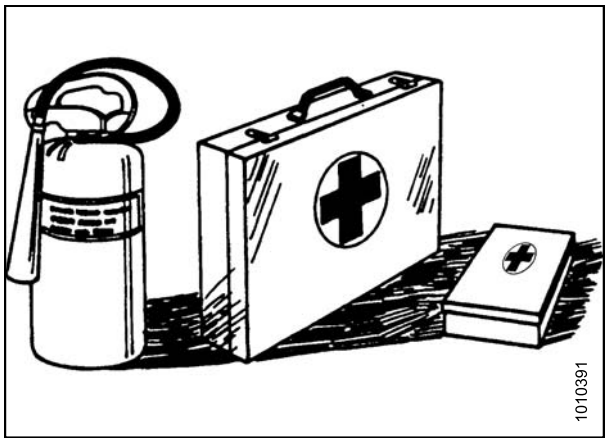


Figure 1.4: Safety Equipment

- 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 the engine and remove the key from ignition before leaving operator's seat for any reason.

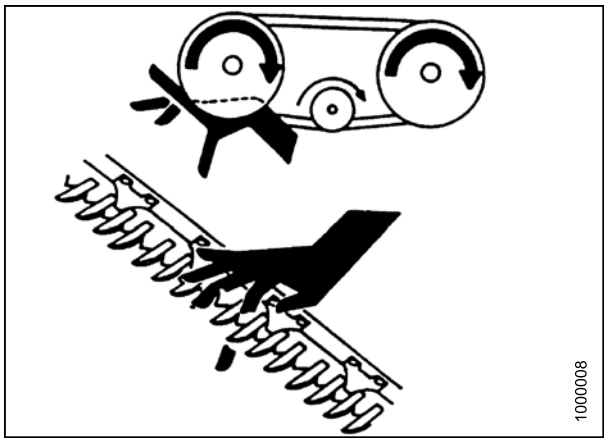


Figure 1.6: Safety around Equipment

- 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 machine.
- 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

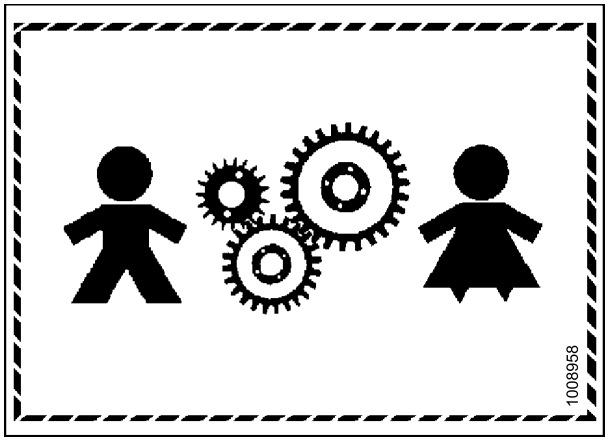


Figure 1.9: Equipment NOT Safe for Children

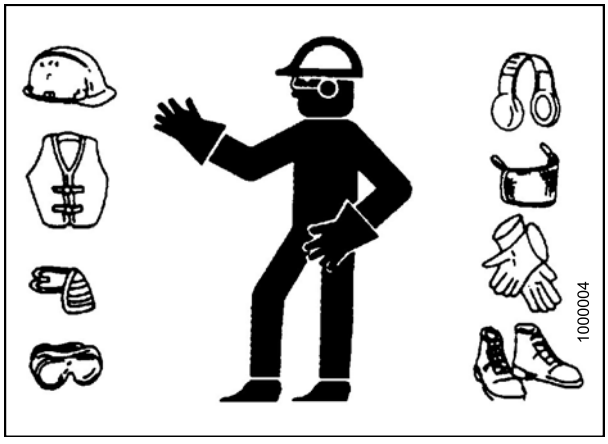


Figure 1.10: Safety Equipment

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.

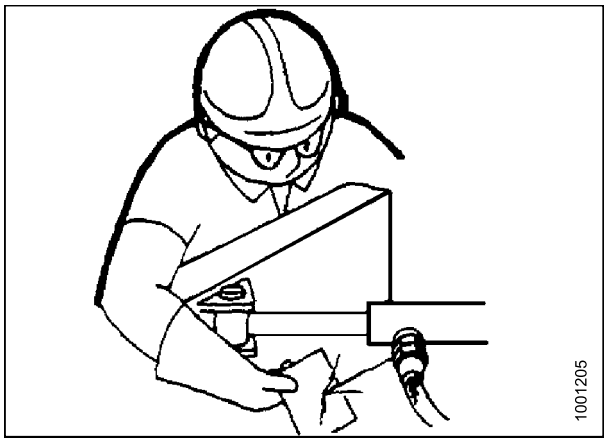


Figure 1.11: Testing for Hydraulic Leaks

- 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.

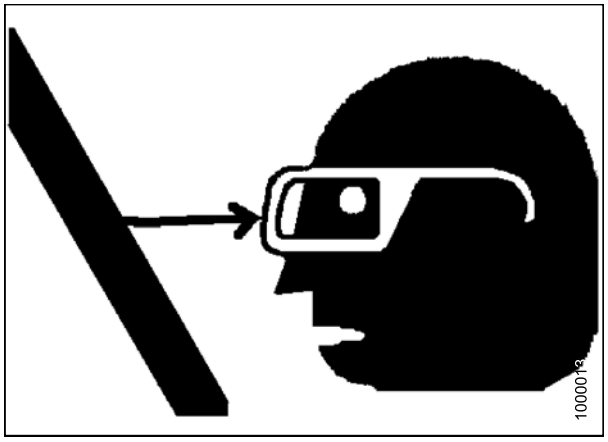


Figure 1.13: Safety around Equipment

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.

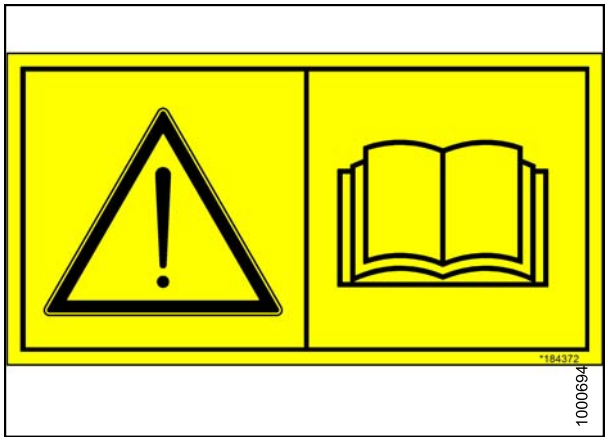


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

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

1.7 Safety Decal Locations

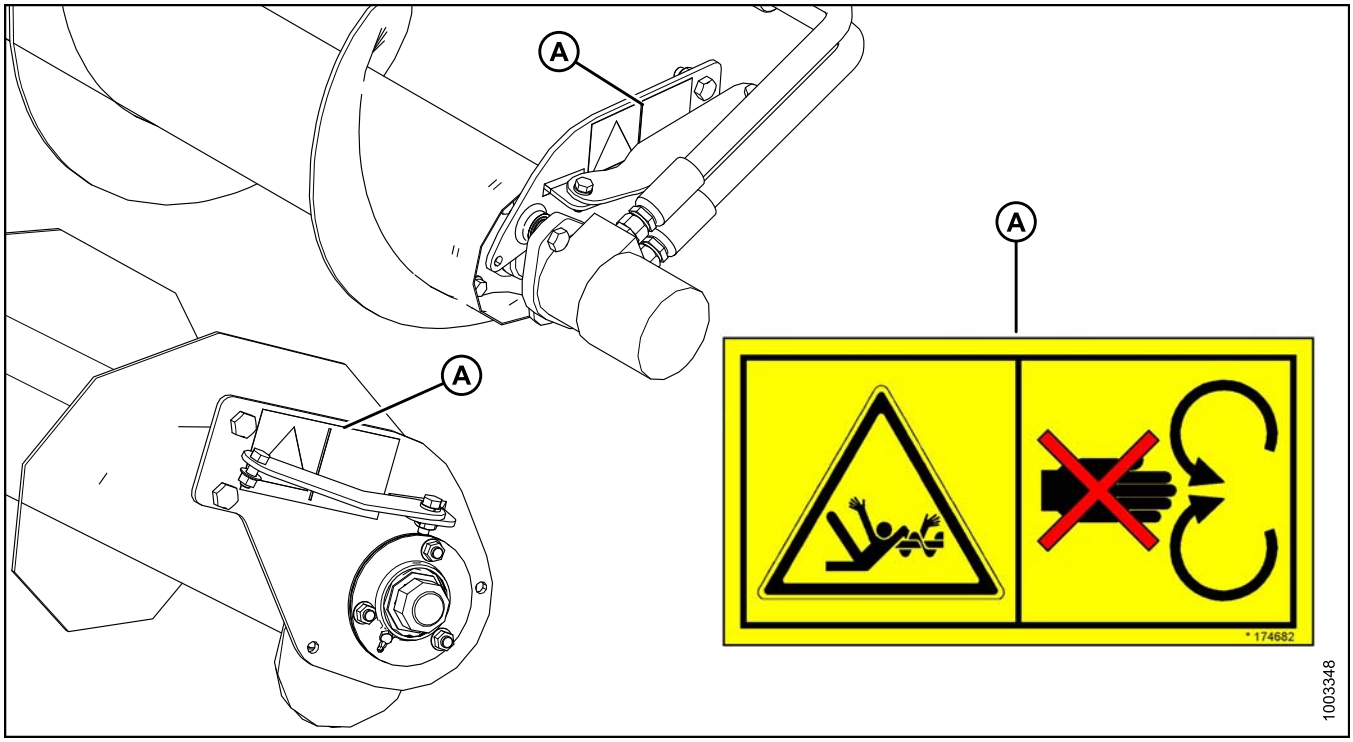


Figure 1.15: Upper Cross Auger

A - MD #174682

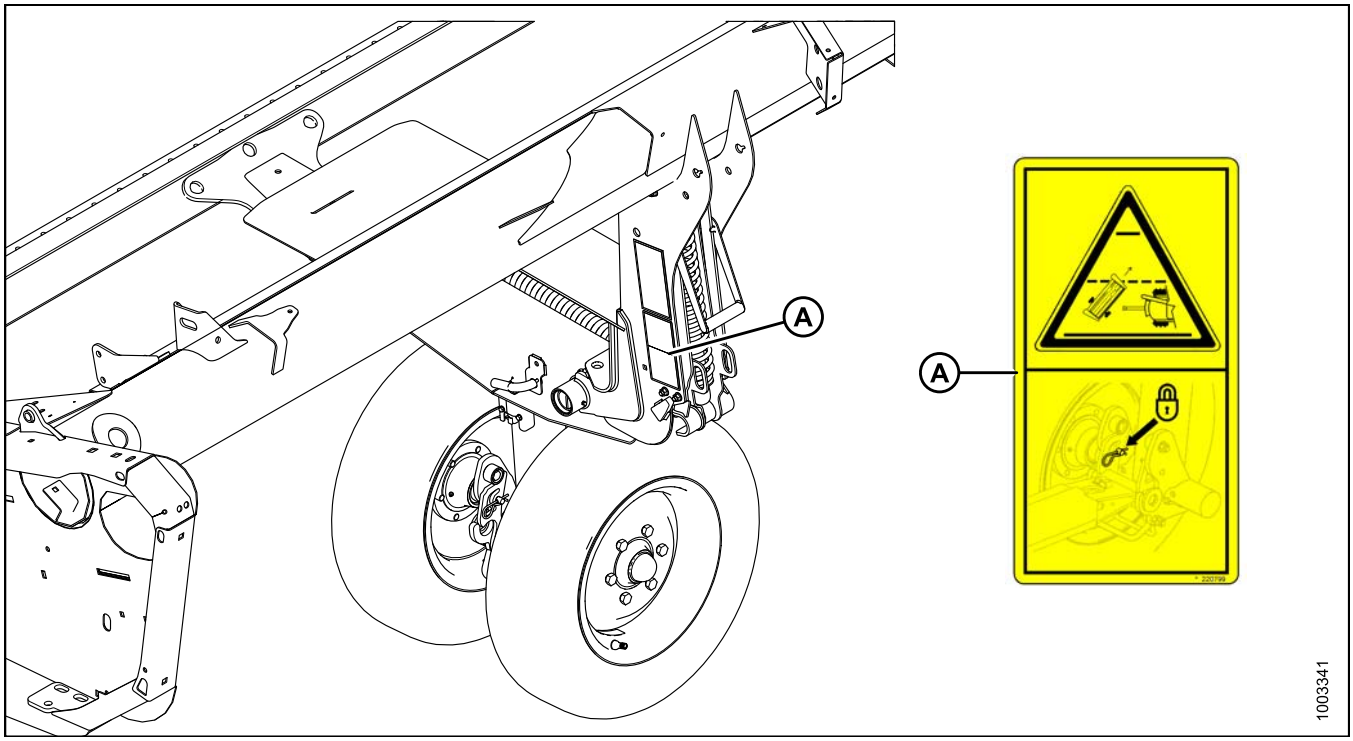


Figure 1.16: Slow Speed Transport

A - MD #220799

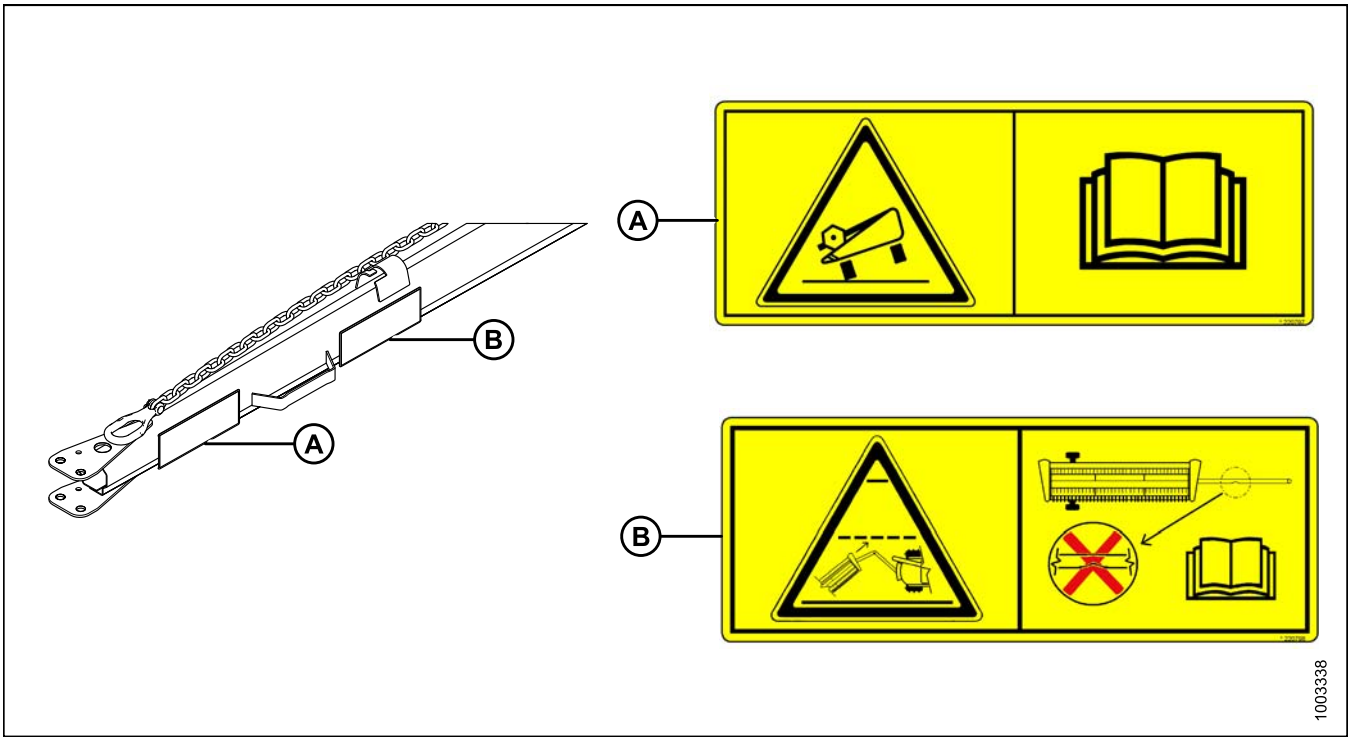


Figure 1.17: Slow Speed Transport Tow-Bar

A - MD #220797 **B - MD #220798**

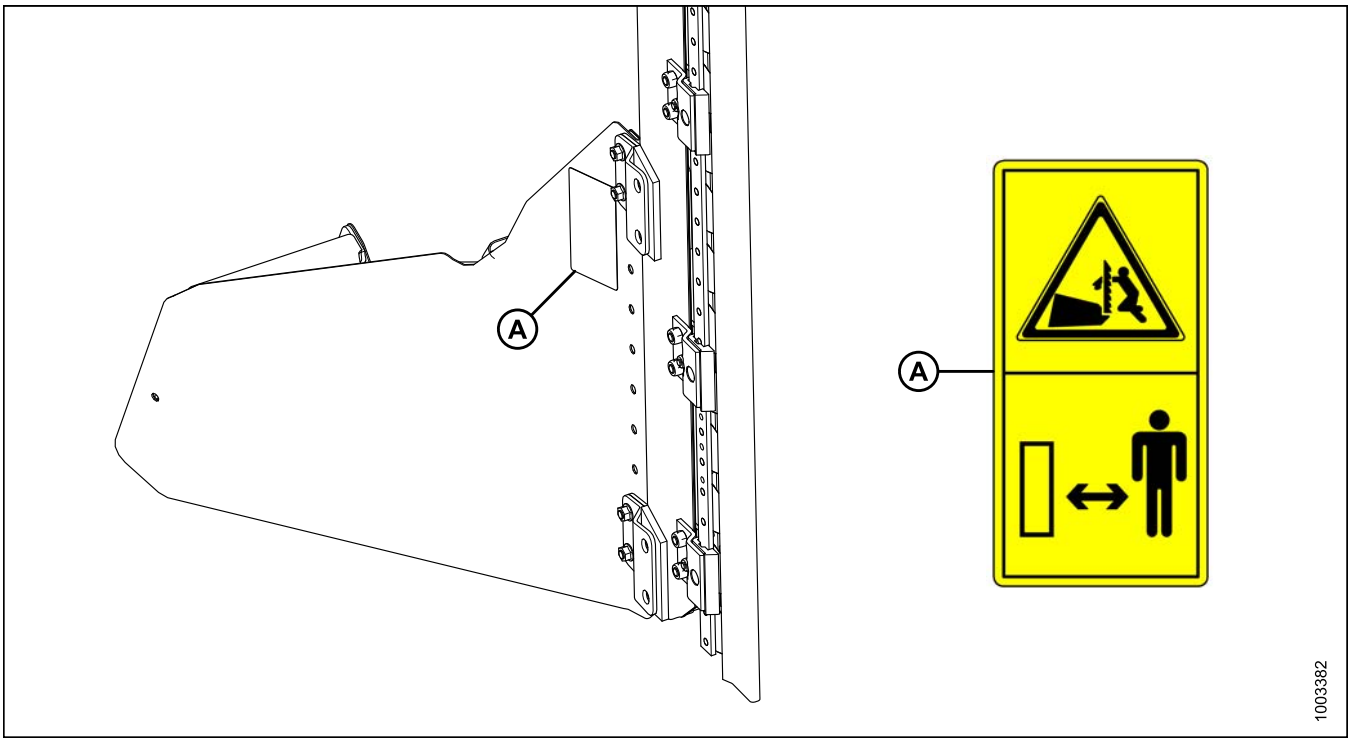


Figure 1.18: Vertical Knife

A - MD #174684

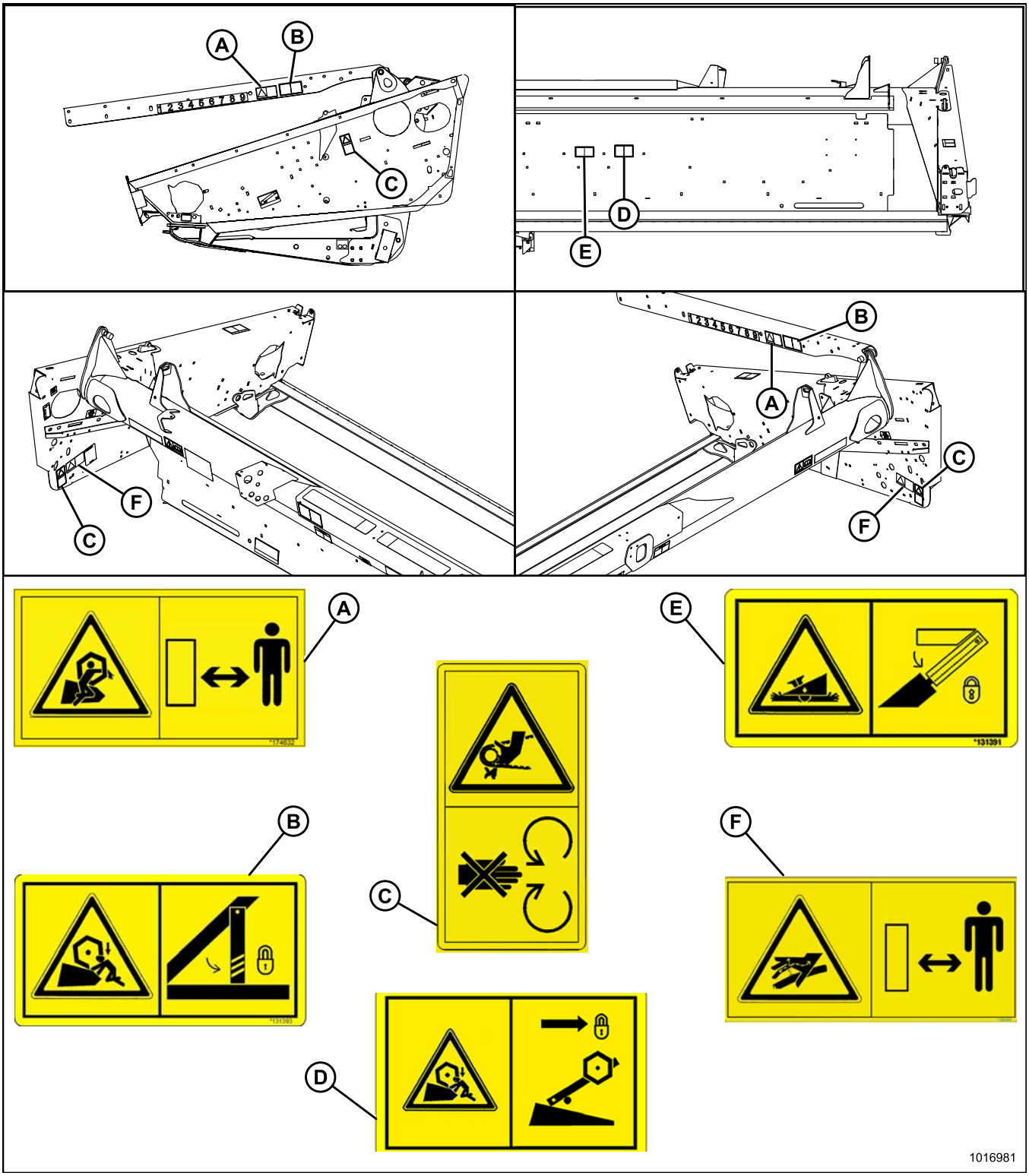


Figure 1.19: Endsheets, Reel Arms, and Backsheet

A - MD #174632
B - MD #131393
C - MD #184422
D - MD #131392 (Double Reel Only)
E - MD #131391 (Two Places)
F - MD #166466

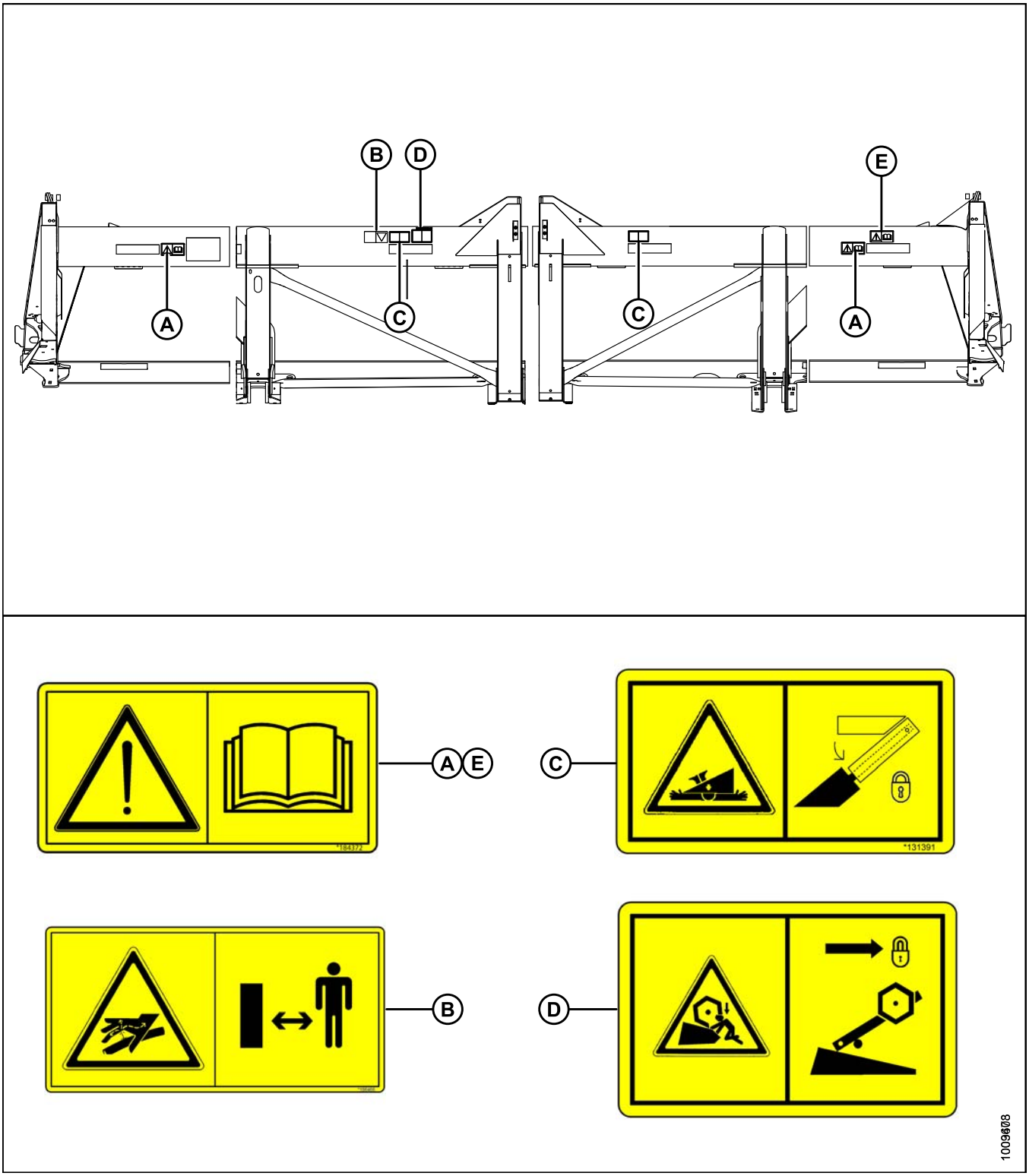


Figure 1.20: Backtube

A - MD #184372
B - MD #166466
C - MD #131391
D - MD #131392
E - MD #184372 (Split Frame)

1.8 Understanding Safety Signs

MD #131391

Crushing hazard

DANGER

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

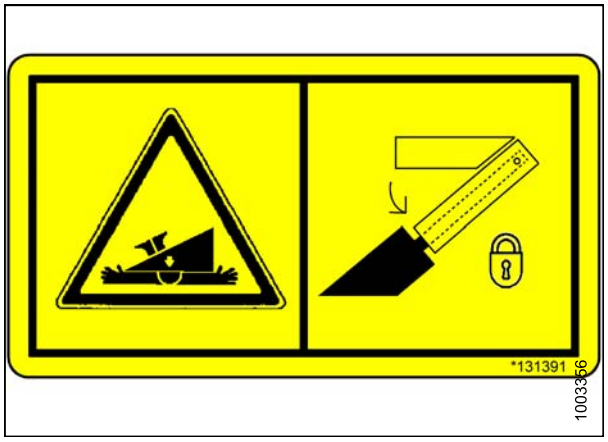


Figure 1.21: MD #131391

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.

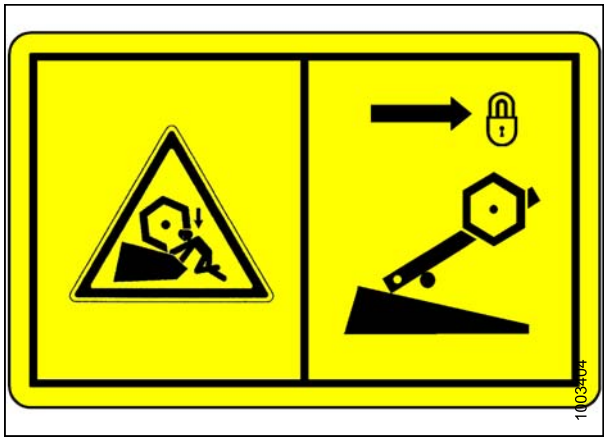


Figure 1.22: MD #131392

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.

Figure 1.23: MD #131393

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 #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.

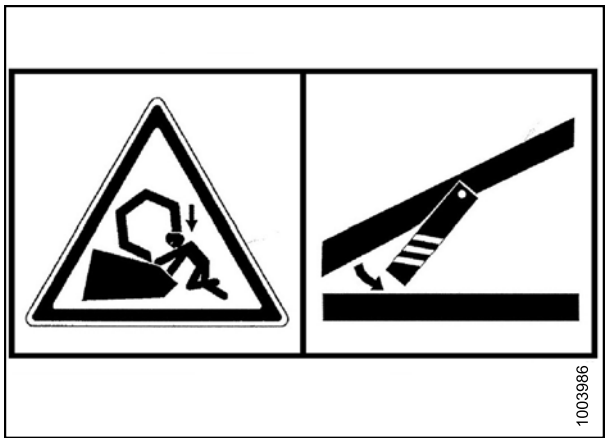


Figure 1.25: MD #174432

MD #174434

Header hazard

DANGER

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

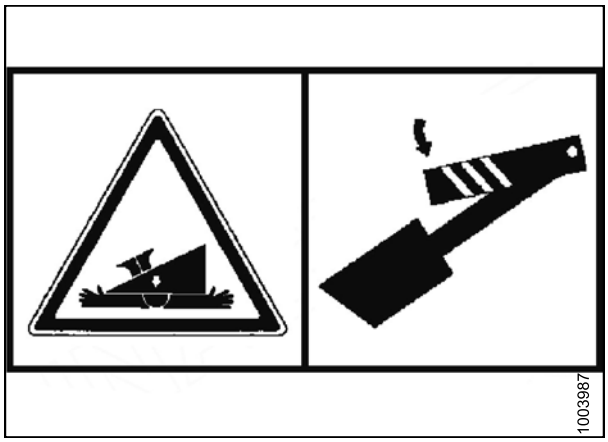


Figure 1.26: MD #174434

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 1.27: MD #174436

MD #174632

Reel entanglement hazard

CAUTION

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

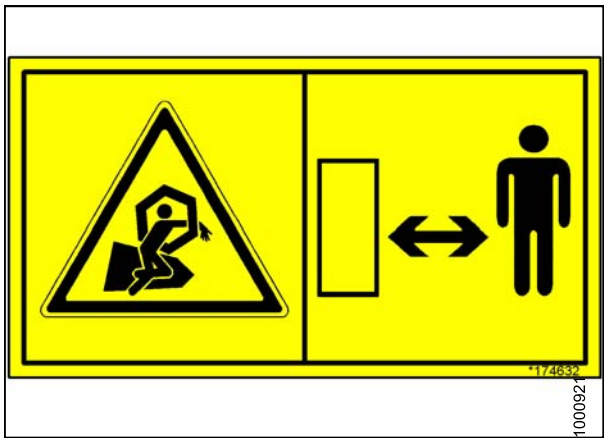


Figure 1.28: MD #174632

MD #174682

Auger entanglement hazard

CAUTION

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

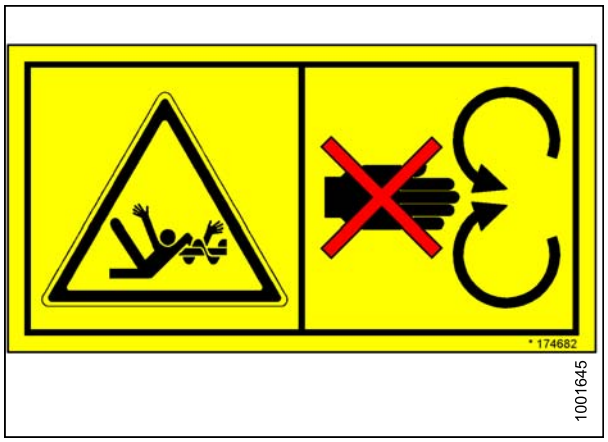


Figure 1.29: MD #174682

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 1.30: MD #174684

MD #184371

Open drive hazard

WARNING

- Guard missing. Do not operate.
- Keep all shields in place.

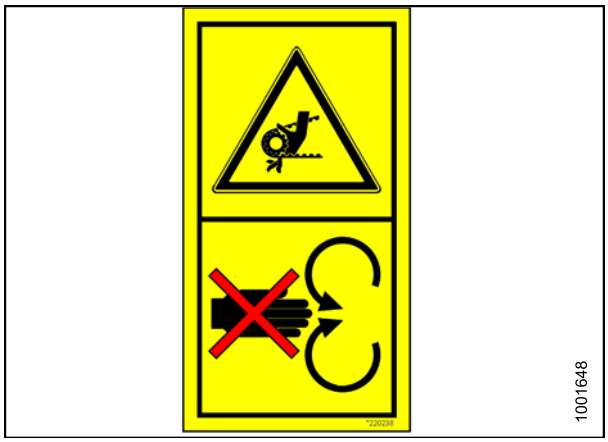


Figure 1.31: MD #184371

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.
- Stop 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.

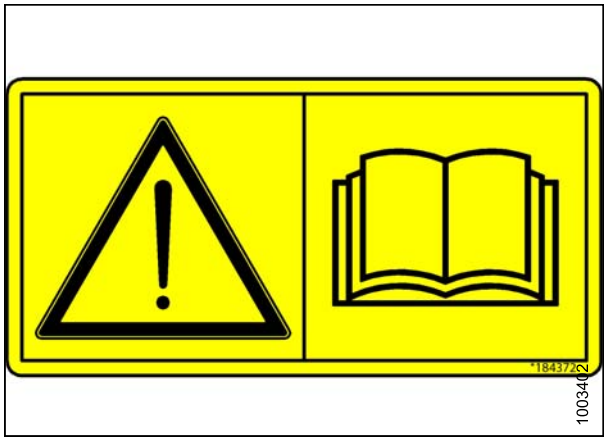


Figure 1.32: MD #184372

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.

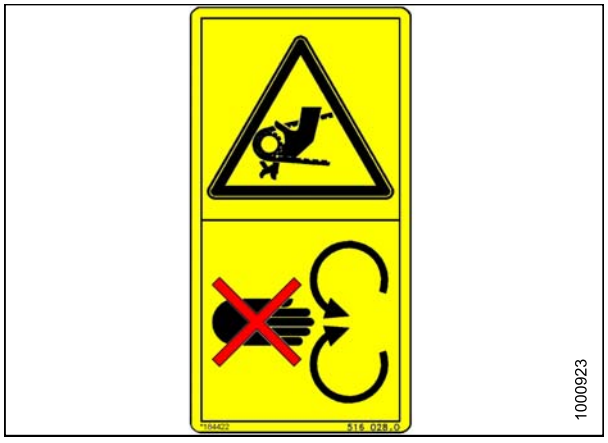


Figure 1.33: MD #184422

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.

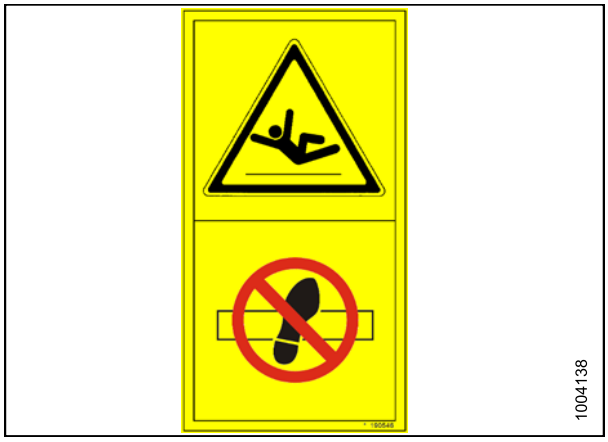


Figure 1.34: MD #190546

MD #193147

Transport/roading hazard

WARNING

- Ensure tow-bar lock mechanism is locked.

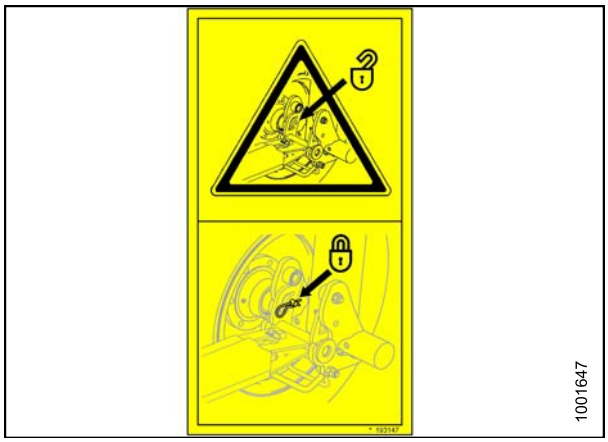


Figure 1.35: MD #193147

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.

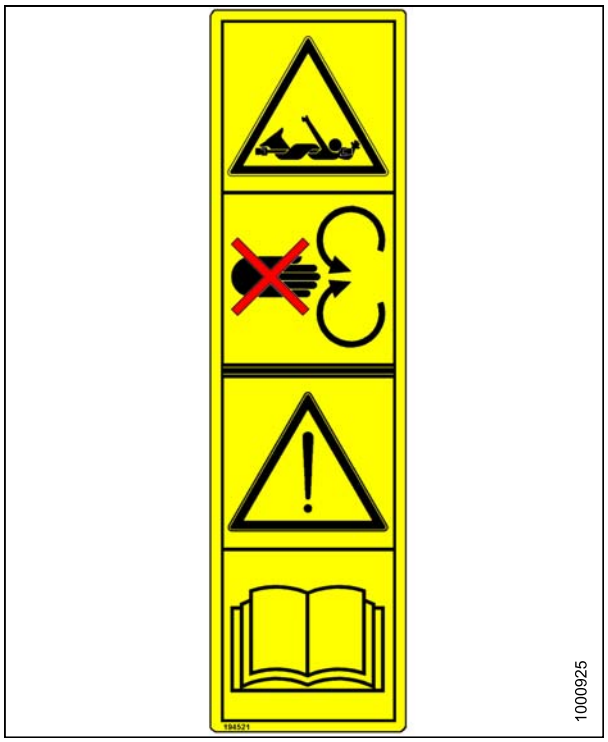


Figure 1.36: MD #194521

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.

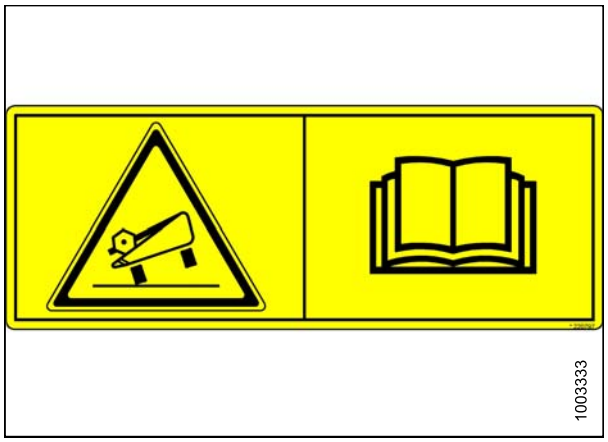


Figure 1.37: MD #220797

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.

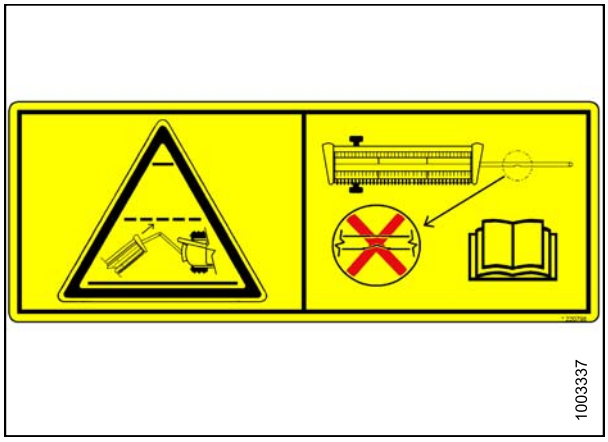


Figure 1.38: MD #220798

MD #220799

Transport/roading hazard

WARNING

- Ensure tow-bar lock mechanism is locked.

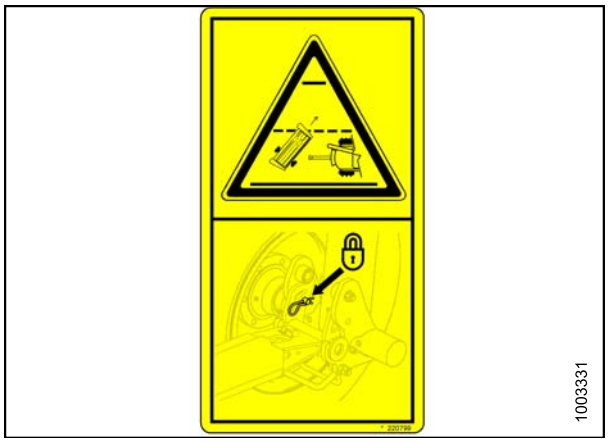


Figure 1.39: MD #220799

2 Product Overview

2.1 Definitions

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

Term	Definition
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 header and machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
DWA	Double Windrow Attachment
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and fitting has been tightened to a point where 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 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 head (internal-wrenching hexagon drive)
hp	Horsepower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
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
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers

Term	Definition
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of mating parts
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (N·m) or foot-pounds (ft·lbf)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
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

The following symbol and letters are used in Table *2.1 Header Specifications, page 23* and Table *2.2 Header Attachments, page 25*:

| FD75 | CA25 | Attachments

S: standard / O_F: optional (factory installed) / O_D: optional (dealer installed) / -: not available

Table 2.1 Header Specifications

Cutterbar			
Effective cutting width (distance between crop divider points)			
30-foot header		9144 mm (360 in.)	S
35-foot header		10668 mm (420 in.)	S
40-foot header		12192 mm (480 in.)	S
45-foot header		13716 mm [540 in.)	S
Cutterbar lift range		Varies with combine model	S
Knife			
Single-knife drive (all sizes): One hydraulic motor with V-belt to one heavy duty knife drive box			O_F
Double-knife drive (40-, 45-foot only, untimed): Two hydraulic motors with banded-belts, to two heavy duty knife drive boxes.			O_F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute)[1]	30 foot	1200–1400 spm	S
	35 foot	1100–1300 spm	S
	40 foot	1050–1200 spm	S
Double-knife speed (strokes per minute)[1]	40, 45 foot	1100–1400 spm	S
Knife Sections			
Over-serrated / solid / bolted / 9 serrations per inch			S
Knife overlap at center (double-knife headers)		3 mm (0.1 in.)	S
Guards and Hold-Downs			
Guard: pointed / forged / double heat treated (DHT) Hold-down: sheet metal / adjustment bolt			S
Guard Angle (Cutterbar on Ground)			
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.

Conveyor (Draper) and Decks				
Draper width			1057 mm (41.61 in.)	S
Draper drive			Hydraulic	S
Draper speed: CA25 Combine Adapter controlled			141 m/min. (0–464 fpm)	S
Delivery opening width			1870 mm (73.62 in.)	S
PR15 Pick-Up Reel				
Quantity of tine tubes			5-, 6-, or 9-tine tubes	
Center tube diameter			203 mm (8 in.)	S
Finger tip radius		Factory-set	800 mm (31.5 in.)	S
		Adjustment range	766–800 mm (30.18–31.5 in.)	S
Effective reel diameter (via cam profile)			1650 mm (65 in.)	S
Finger length			290 mm (11 in.)	S
Finger spacing (staggered on alternate bats)			150 mm (6 in.)	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 + 384 mm (15.12 in.)	S
	Transport position - reel fore-aft fully retracted (shortest center-link)	(A)[2],[3]	2684 mm (106 in.)	-
		(B)[2] ,[4]	2500 mm (98 in.)	-

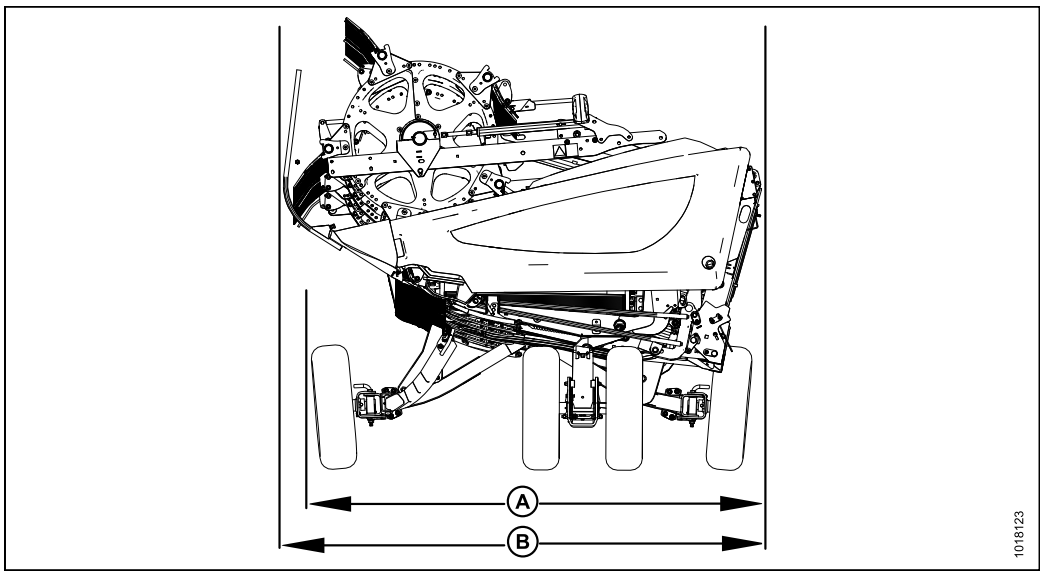


Figure 2.1: Header Width

2. Refer to Figure *Header Width*
3. Long dividers removed
4. Long dividers installed

Table 2.2 Header Attachments

CA25 Combine Adapter				S
Feed draper		Width	2000 mm (78.7 in.)	S
		Speed	107–122 m/min (350–400 fpm)	S
Feed auger		Width	1660 mm (65.3 in.)	S
		Outside diameter	559 mm (22 in.)	S
		Tube diameter	356 mm (14 in.)	S
		Speed (varies with combine model)	150 rpm	S
Oil reservoir capacity			(60 Litres) 16 US Gallons	S
Oil type			15W40	—
Driveline overall length[5]	Case, New Holland	Maximum (extended)	1230 mm (48.4 in.)	O_F
		Minimum (compressed)	970 mm (38.2 in.)	
	Challenger, Gleaner, John Deere, Lexion, Massey Ferguson	Maximum (extended)	1262 mm (49.7 in.)	
		Minimum (compressed)	916 mm (36.1 in.)	
Upper Cross Auger				O_D
Flighting (Outside diameter [O.D])			305 mm (12 in.)	—
Tube diameter (O.D):		All size except 25 foot	152 mm (6 in.)	—
		25 foot	178 mm (7 in.)	
Stabilizer Wheel / Slow Speed Transport				O_D
Wheels			381 mm (15 in.)	—
Tires			P205/75 R-15	—

Weight		
Estimated weight range with base header (variances are due to different package configurations)		
30-foot header		3060–3162 kg (6746–6971 lb.)
35-foot header		3251–3370 kg (7167–7430 lb.)
40-foot header	North America frame	3442–3533 kg (7589–7789 lb.)
	Export frame	3549 kg (7824 lb.)
45-foot header	North America frame	3728 kg (8218 lb.)
	Export frame	3744 kg (8253 lb.)

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

2.3 Component Identification

2.3.1 FD75 FlexDraper®

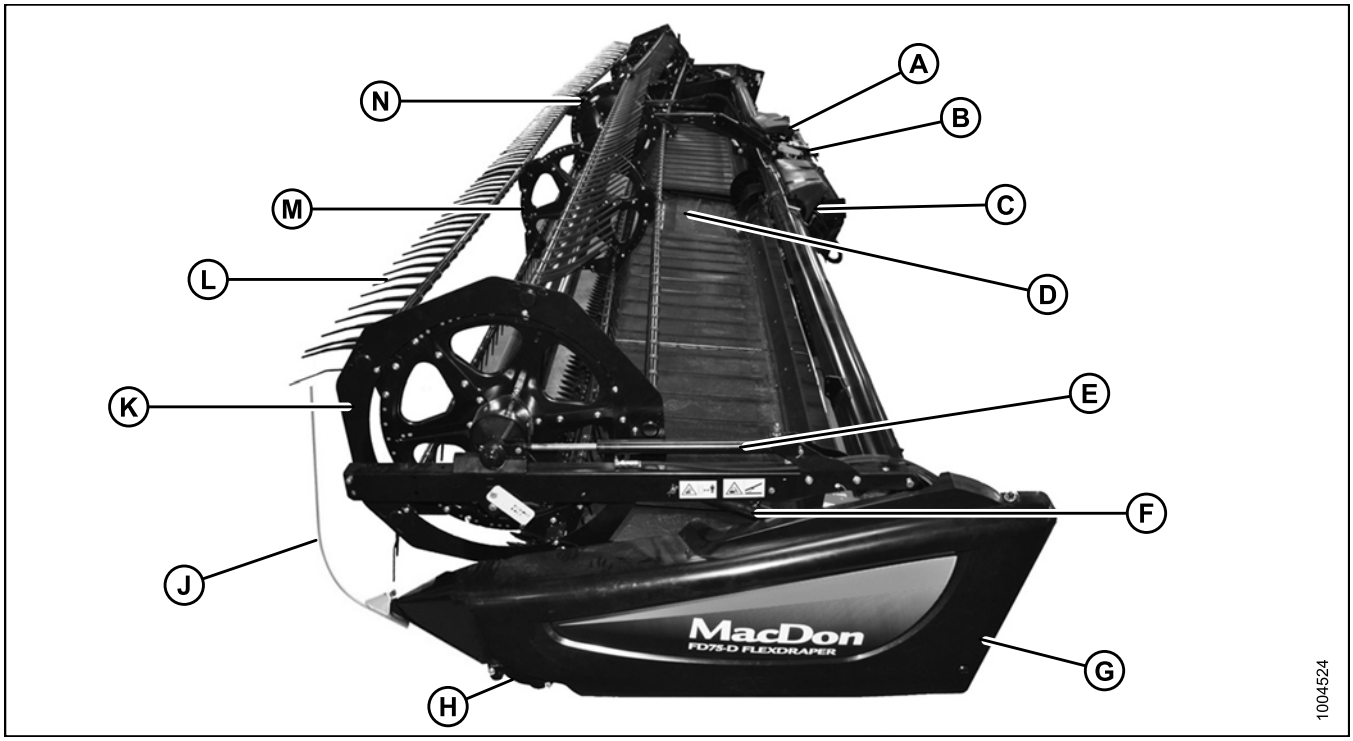


Figure 2.2: FD75 FlexDraper® Components

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

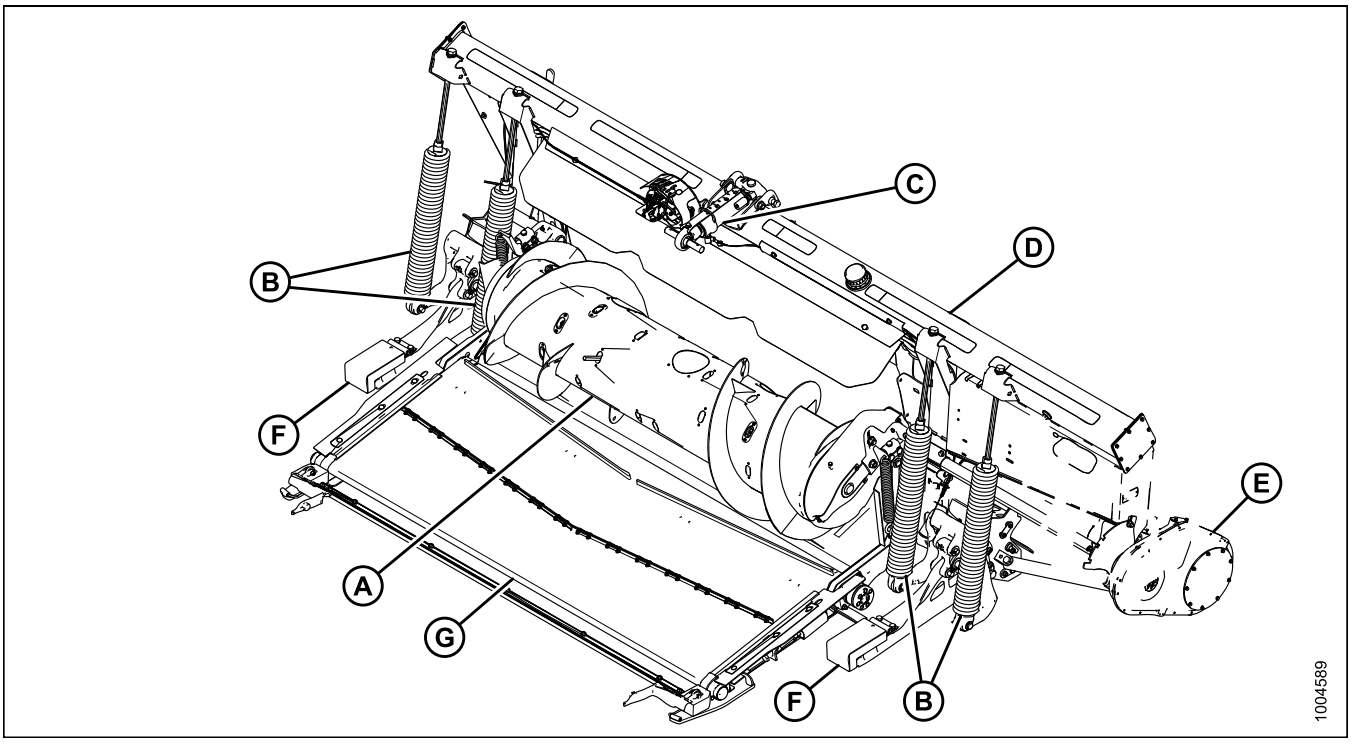


Figure 2.3: Header Side of CA25 Combine Adapter

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

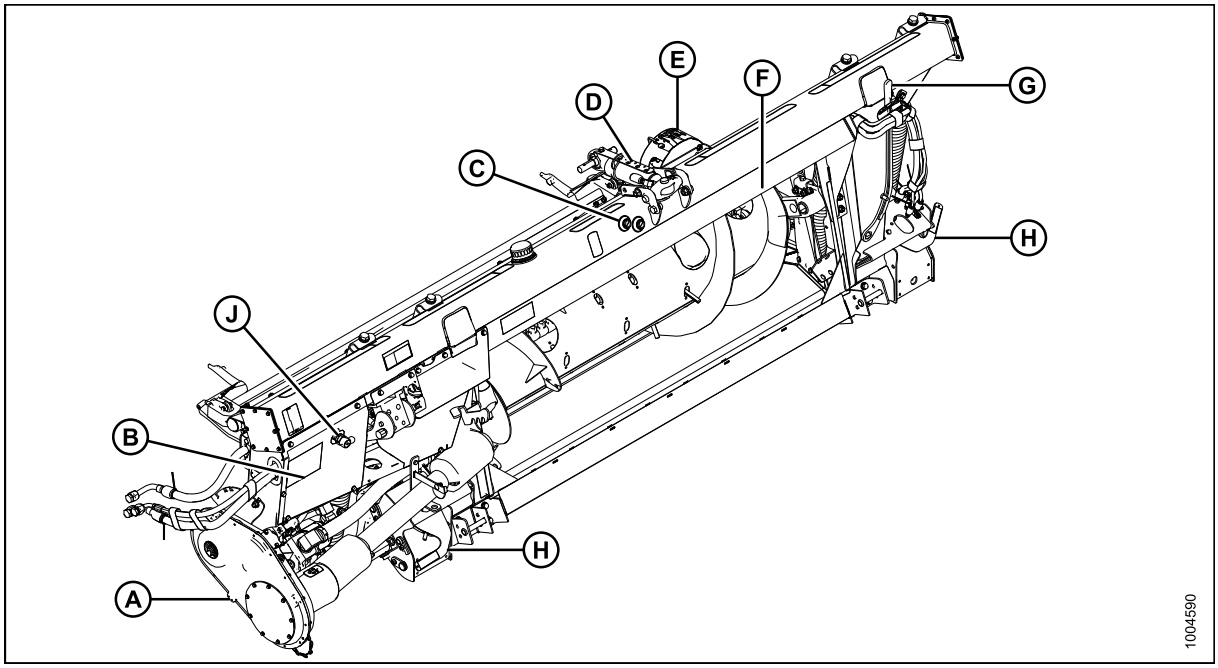


Figure 2.4: Combine Side of CA25 Combine Adapter

A - Adapter Gearbox
B - Hydraulic Compartment Cover
C - Reservoir Oil Level Sight Glass
D - Center-Link
E - Header Height Control Indicator
F - Transition Frame
G - Torque Wrench
H - Header Float Lock
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 of the machine and also may reduce the length of service you receive from your machine.**
- **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

Adhere to the following safety precautions:

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

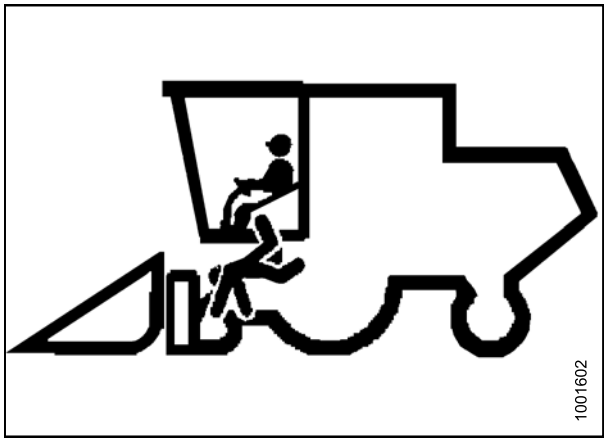


Figure 3.1: No Riders

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 whenever 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 a machine, always stop the engine and remove the 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.**

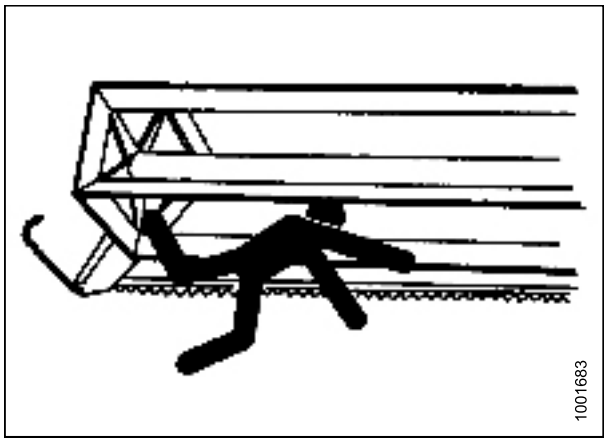


Figure 3.2: Bystander Safety

3.2.1 Header Safety Props

The header safety props, located on the header lift cylinders, prevent the lift cylinders from unexpectedly retracting and lowering the header. Refer to your combine operator's manual for instructions.

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

The reel safety props, located on the reel support arms, prevent the reel from unexpectedly lowering.

WARNING

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

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

Engaging Reel Safety Props

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.

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Move reel safety props (A) to the engaged position (as shown). **The prop MUST be placed on the top surface of raised lug (B), making contact with the cylinder mount, to ensure positive engagement.**
   NOTE:
   Keep pivot bolt (C) sufficiently tight so that the prop remains in the stored position when not in use, but can still be engaged using hand force.
4. Repeat the previous step on the opposite side of the header.

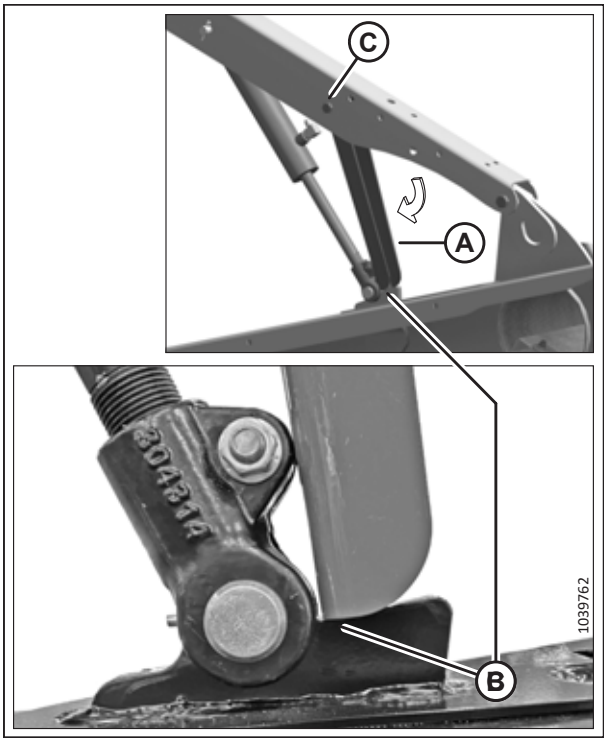


Figure 3.3: Engaged Reel Safety Prop – Left Shown

THE CONTENT ON THIS PAGE HAS CHANGED SINCE THIS MANUAL (147943 REVISION B) WAS PUBLISHED.

3. Use handle (A) to move lock rod to inboard position (B) which engages pin (C) under prop.
4. Lower reel until safety props contact the outer arm cylinder mounts and the center arm pins.

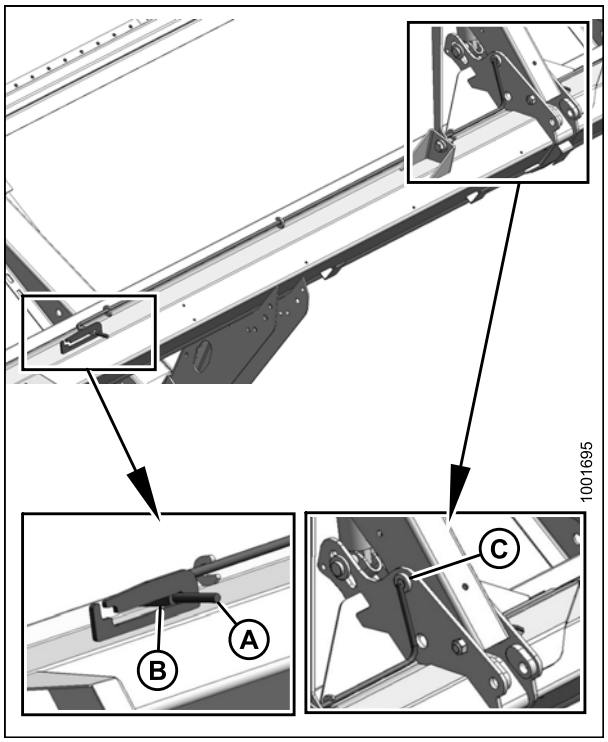


Figure 3.4: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

1. Raise the reel to maximum height.
2. Move the reel safety props (A) back inside the reel arms.

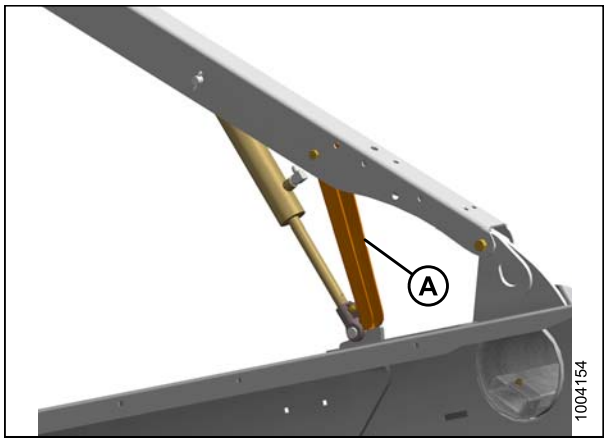


Figure 3.5: Reel Safety Prop – Left Side Outer Arm

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

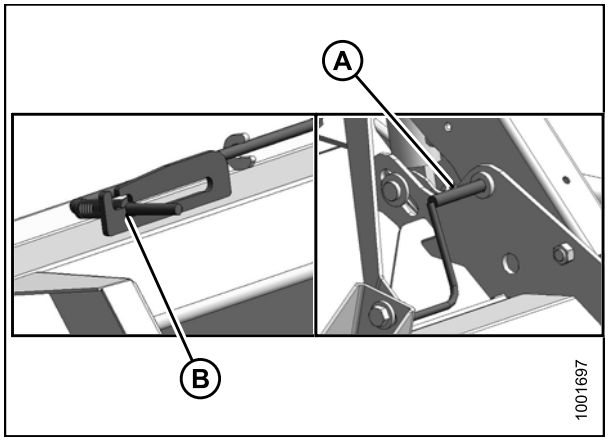


Figure 3.6: Reel Safety Prop – Center Arm

3.2.3 Endshields

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

Opening Endshield

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

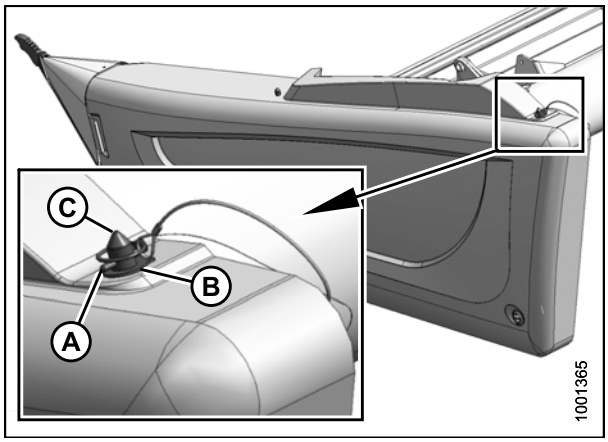


Figure 3.7: Left Endshield

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

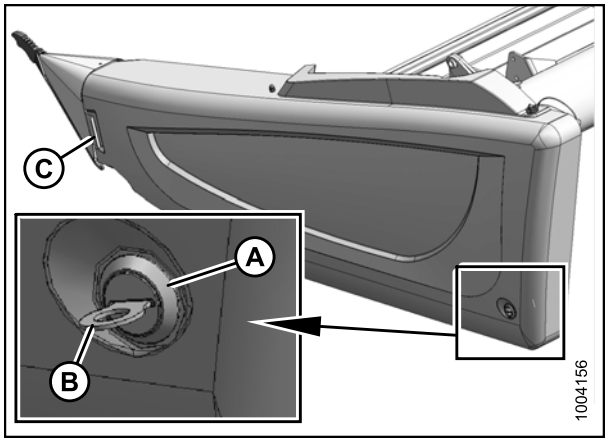


Figure 3.8: Left Endshield Open

IMPORTANT:
Do **NOT** force endshield once it has reached its end of travel or damage to endshield structure may result. The endshield is designed to open sufficiently to allow access to drive system and manual case.

NOTE:
If additional access is required to front of drives area, carefully disengage front of endshield from tab (C) at front of endsheet and swing front of endshield away from header.

NOTE:
If complete access to endsheet area is required, remove endshield. Refer to *Removing Endshield, page 35*.

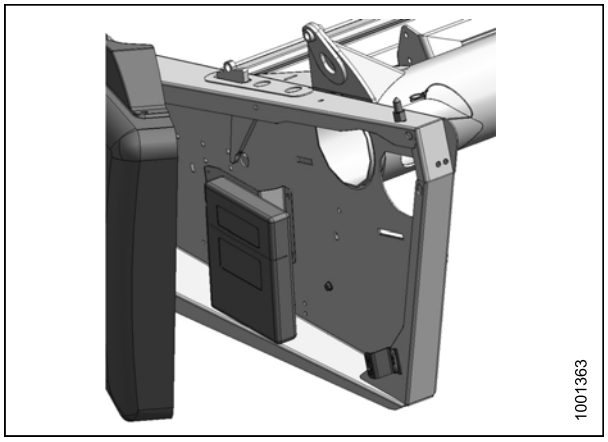


Figure 3.9: Left Endshield Open

Closing Endshield

1. Maintain forward pressure and swing the rear of the endshield towards the header.
2. Lift the endshield and engage pin (A) located on the top of the endsheet frame with the hole in endshield (B).

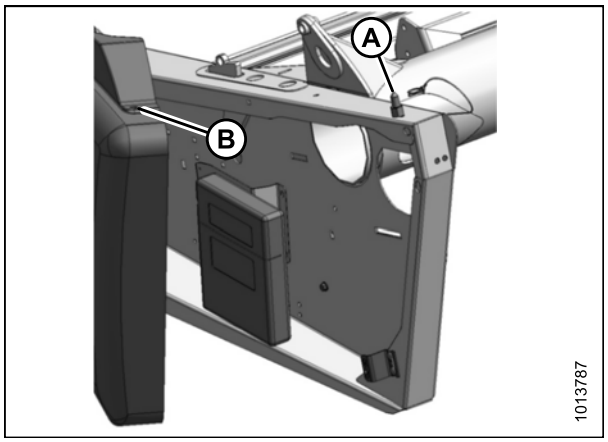


Figure 3.10: Left Endshield

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

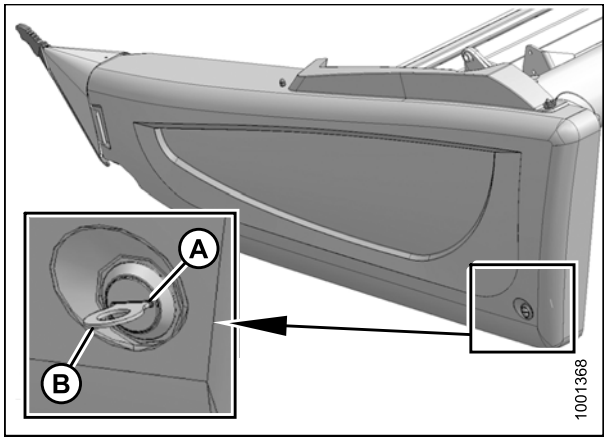


Figure 3.11: Left Endshield

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

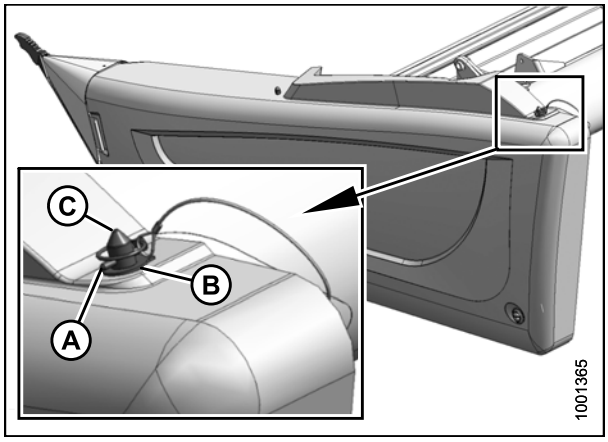


Figure 3.12: Left Endshield Pin

Removing Endshield

1. Open the endshield. Refer to *Opening Endshield, page 33*.
2. Remove the acorn nut (A) securing the endshield to support (B).
3. Lift the endshield off support (B).

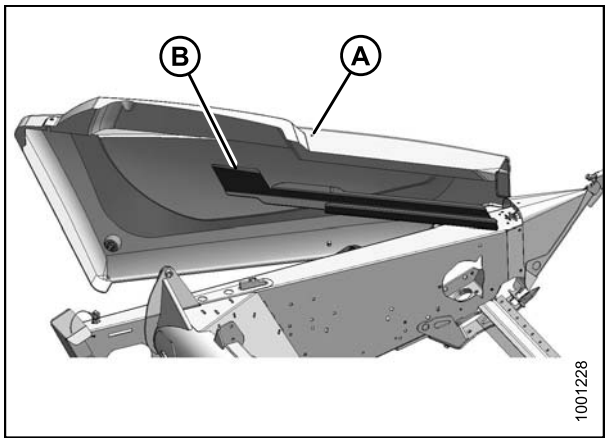


Figure 3.13: Left-Hand Endshield

Installing Endshield

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

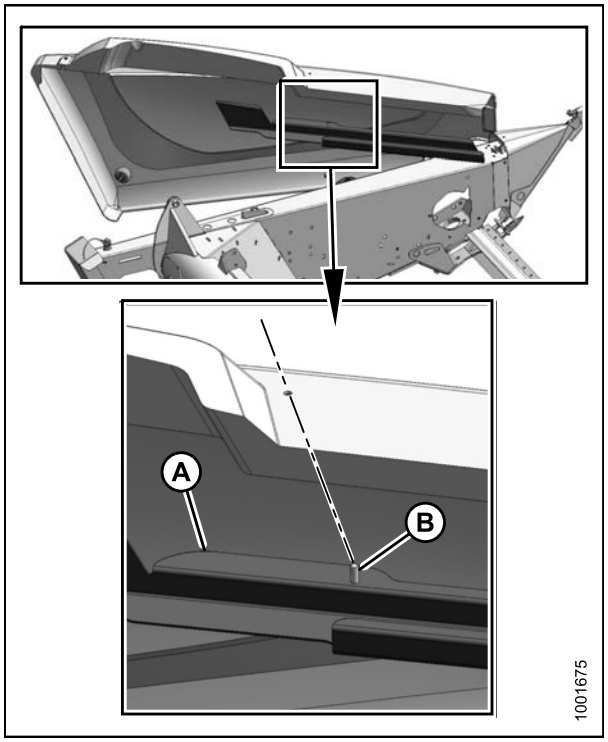


Figure 3.14: Left-Hand Endshield

2. Secure the endshield to the support with acorn nut (A).
3. Close the endshield. Refer to *Closing Endshield, page 34*.

NOTE:
Plastic endshields may expand or contract when subjected to large temperature changes. Top pin and lower catch bracket positions can be adjusted to compensate for dimensional changes. Refer to *Adjusting Endshield, page 37*.

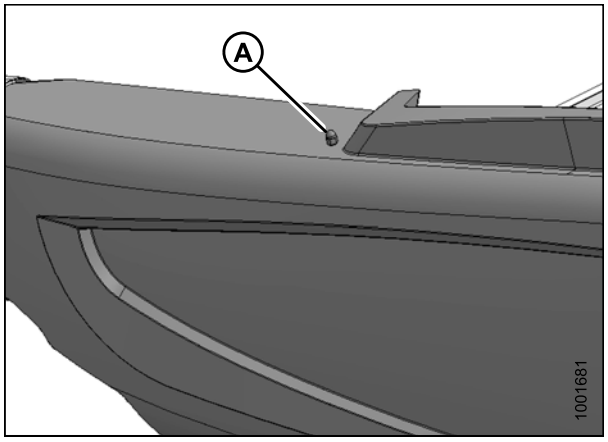


Figure 3.15: Left-Hand Endshield

Adjusting Endshield

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.

1. Measure gap (X) between the front end of the endshield and the header frame and compare the measurement to the values provided in Table *3.1 Gap (X) Chart, page 37*.

Table 3.1 Gap (X) Chart

Temperature °C (°F)	Gap (X) between Endshield and Frame mm (in.)
-4 (25)	28 (1-1/8)
7 (45)	24 (1)
18(65)	20 (13/16)
29 (85)	16 (5/8)
41 (105)	12 (1/2)
52 (125)	8 (5/16)
63 (145)	4 (3/16)
89 (165)	0

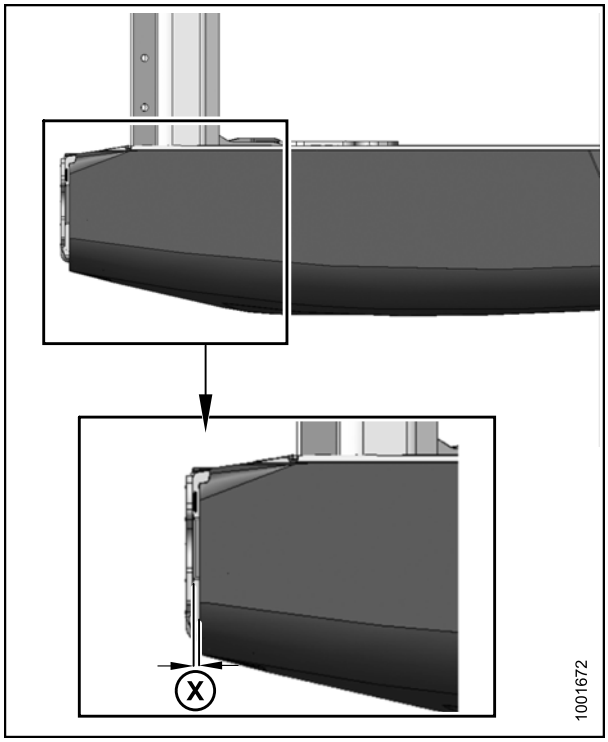


Figure 3.16: Left-Hand Endshield

If adjustments are required, proceed as follows:

2. Open the endshield. Refer to *Opening Endshield, page 33*.
3. Loosen nut (A) on pin (B) from inside the endsheet using a 19 mm (3/4 in.) socket.
4. Close the endshield and adjust its position to achieve the gap (X) between the front end of the endshield and the header frame.
5. Open the endshield and tighten nut (A).
6. Loosen the bolts on catch (C), and adjust the catch as required to reposition the endshield. Ensure there is a snug fit between the top of the endshield and the header frame and that the endshield is fully engaged on pin (B).
7. Tighten the bolts on catch (C).
8. Close the endshield. Refer to *Adjusting Endshield, page 37*.

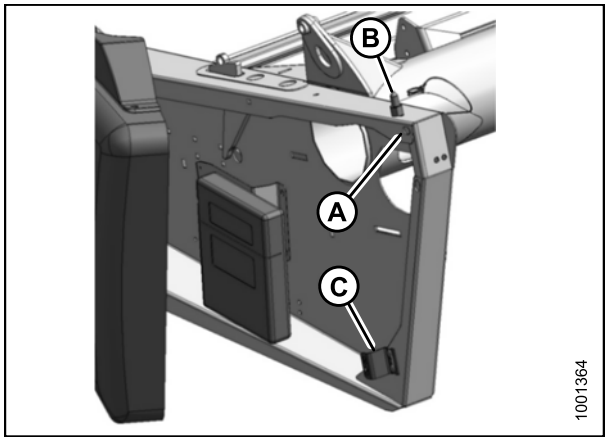


Figure 3.17: Left-Hand Endshield

3.2.4 Linkage Covers

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

Removing Linkage Covers

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

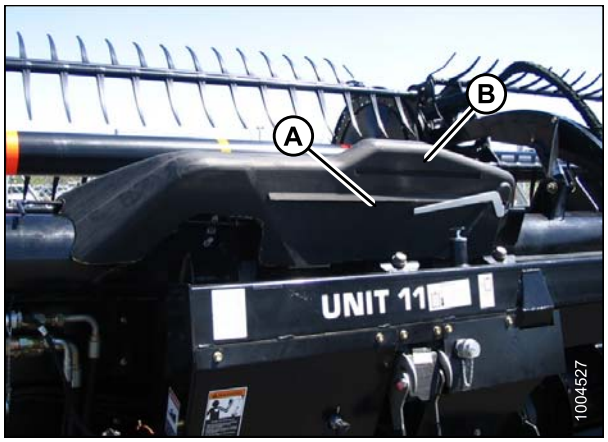


Figure 3.18: Linkage Cover

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

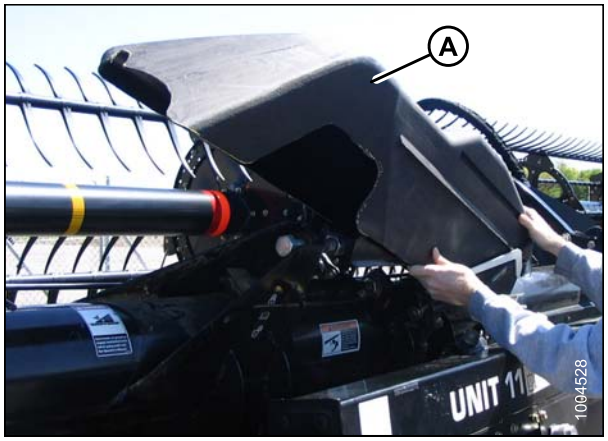


Figure 3.19: Linkage Cover

Installing Linkage Covers

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

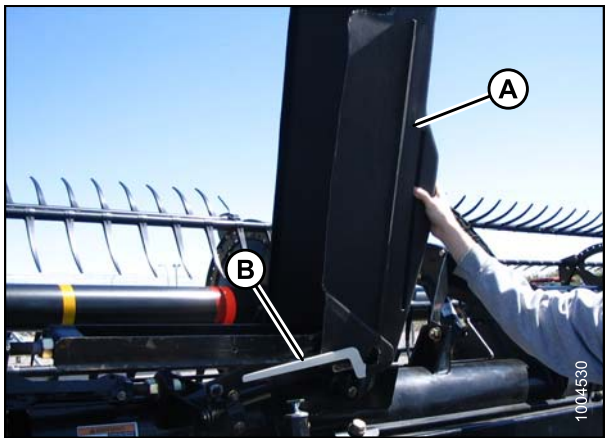


Figure 3.20: Linkage Cover

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

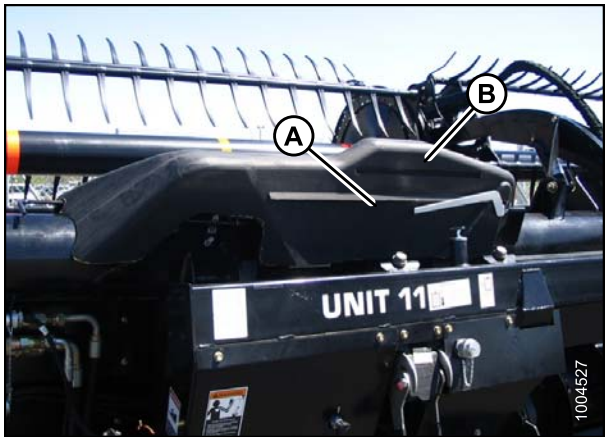


Figure 3.21: Linkage Cover

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.**
- **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 uncomfortably loud noises.**

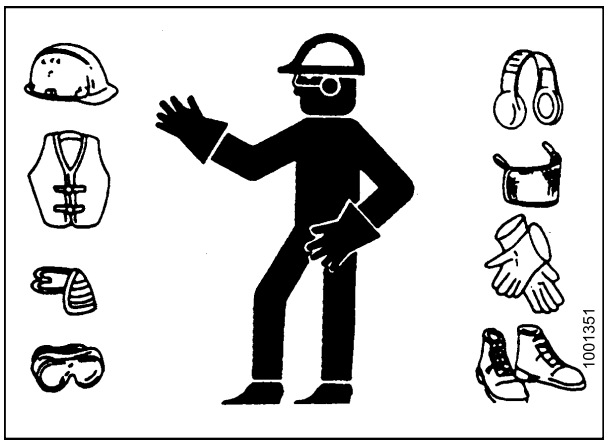


Figure 3.22: Safety Devices

Complete the following tasks each day before start-up:

1. Check the machine for leaks and 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 320*.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 316*.

3.3 Break-in Period

CAUTION

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

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 the reels, drapers, and knives running slowly for five minutes. Watch and listen **FROM THE OPERATOR'S SEAT** for binding or interfering parts.

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

2. Refer to *5.3.2 Break-In Inspection, page 318* and perform all the specified tasks.

3.4 Shutting Down the Machine

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

- Park on level ground whenever possible.
- Lower the header fully.
- Place all controls in NEUTRAL or PARK.
- Disengage the header drive.
- Lower and fully retract the reel.
- Stop the engine and remove the key from the 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 the following in-cab controls:

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

3.6 Header Setup

3.6.1 Header Attachments

Several attachments to increase the performance of your FD75 header are available as options that can be installed at your MacDon dealer. Refer to *6 Options and Attachments, page 469* for descriptions of available items.

3.6.2 Header Settings

Table *3.2 FD75/CA25 Combine Header Recommended Settings, page 44* provides a guideline for setting up the FD75 FlexDraper® Header; however, the suggested settings can be changed to suit various crops and conditions not covered in the table.

Refer also to *3.6.4 Reel Settings, page 49*.

Table 3.2 FD75/CA25 Combine Header Recommended Settings

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[6]	Header Angle[7,8]	Reel Cam	Reel Speed % [9]	Reel Position	Skid Shoe Position[8]	Stabilizer Wheels[10]	Upper Cross Auger
Cereals	<102 (<4)	Light	Off	8	B – C	3	10–15	6 or 7	Up or middle	Storage	Not required
		Normal	On	7		2	10				Recom-mended
		Heavy									
		Lodged	Off			3 or 4	5–10	4 or 5			Not required
	102–203 (4–8)	Light	Off	8	B – C	4	10–15	6 or 7	Middle or down	As required[8]	Not required
		Normal	On	7	A	2	10				Recom-mended
		Heavy									
		Lodged	Off		D	3 or 4	5–10	4 or 5	Down		Not required
	203+ (8+)	Light	Off	8	A	4	10–15	6 or 7	Not applicable	As required[8]	Not required
		Normal	On	7		2	10				
		Heavy			B – C						
		Lodged	Off			3 or 4	5–10	4 or 5			

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

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[6]	Header Angle[7,8]	Reel Cam	Reel Speed % [9]	Reel Position	Skid Shoe Position[8]	Stabilizer Wheels[10]	Upper Cross Auger
Canola	102–203 (4–8)	Light	On	7	A	2	5–10	6 or 7	Down	As required[8]	Recommended
		Normal			B – C	1	10		Middle or down		
		Heavy		8				3 or 4	Down		
		Lodged		7	D	2	5–10		Middle or down		
	203+ (8+)	Light	On	7	A	2	5–10	6 or 7	Not applicable	As required[8]	Recommended
		Normal			B – C		10				
		Heavy		8		1 or 2		3 or 4			
		Lodged		7	D	2 or 3	5–10				
California Rice	<102 (<4)	Light	Rice divider rod[11]	4	D	2	10–15	6 or 7	Up or middle	Storage	Not required
		Normal			B – C		10	4 or 5			
		Heavy									
		Lodged			D		5–10				
	102–203 (4–8)	Light	Rice divider rod[11]	4	D	3	10–15	6 or 7	Middle or down	As required[8]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	4	5–10				
	203+ (8+)	Light	Rice divider rod[11]	4	A	3	10–15	6 or 7	Not applicable	As required[8]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	4	5–10				
Delta Rice	51–152 (2–6)	Light	Off	6	D	2 or 3	10–15	6 or 7	Middle or down	As required[8]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	3 or 4	5–10	4 or 5			
	152+ (6+)	Light	Off	6	A	2 or 3	10–15	6 or 7	Not applicable	As required[8]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	3 or 4	5–10	4 or 5			
Edible Beans	On ground	Light	On	8	D	2	5–10	6 or 7	Up or middle	Storage	Not required
		Normal		7	B – C		10				
		Heavy									
		Lodged			D		5–10				
Flax	51–153 (2–6)	Light	On	8	B – C	2	5–10	6 or 7	Middle or down	As required[8]	Not required
		Normal		7	A		10				
		Heavy			B – C						
		Lodged			D		5–10		Down		

11. Available from your Dealer. Rice divider rod not required on both ends of header.

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[6]	Header Angle[78]	Reel Cam	Reel Speed % [9]	Reel Position	Skid Shoe Position[8]	Stabilizer Wheels[10]	Upper Cross Auger
Peas	On ground	Light	On	7	B – C	2	5–10	6 or 7	Up or middle	Storage	Recom-mended
		Normal					10				
		Heavy						4 or 5			
		Lodged			D		5–10				
Lentils	On ground	Light	On	8	B – C	2	5–10	6 or 7	Up or middle	Storage	Not required
		Normal		7			10				
		Heavy									
		Lodged			D		5–10				

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.

Recommended Attachments

The optimization process includes the following modifications to the header:

- Installing a full-length upper cross auger
- Installing a European adapter seal kit
- Installing vertical knives
- Installing short center reel braces
- Changing to high-speed auger drive sprocket
- Adding auger fingers

Table 3.3 Auger Finger Quantity

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

NOTE:
Each kit includes installation instructions and the necessary hardware. Refer to *6 Options and Attachments, page 469*.

Recommended Settings

Optimizing the header requires adjustments to the following settings:

- Move the reel fore-aft cylinders to the alternate aft location. Refer to *Repositioning Fore-Aft Cylinders, page 87*.
- Adjust the reel fore-aft position. Refer to *Adjusting Reel Fore-Aft Position, page 84*.
- Adjust the reel height so the fingers just engage the crop. Refer to *3.7.9 Reel Height, page 82*.
- Set the reel cam to position one. Refer to *Adjusting Reel Cam, page 94*.
- Set the reel speed equal to the ground speed and increase as required. Refer to *3.7.5 Reel Speed, page 76*.
- Decrease the feed auger spring tension. Refer to *Adjusting Feed Auger Springs, page 48*.
- Set the side draper speed to position nine on CA25 control. Refer to *3.7.7 Draper Speed, page 78*.

Adjusting Feed Auger Springs

The feed auger has an adjustable spring tensioning system that allows the auger to float on top of the crop instead of crushing and damaging it. The factory-set tension is adequate for most 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 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) until the thread (C) protrudes 15 mm (0.60 in.).
5. Tighten jam nut (A).
6. Repeat above for opposite side.

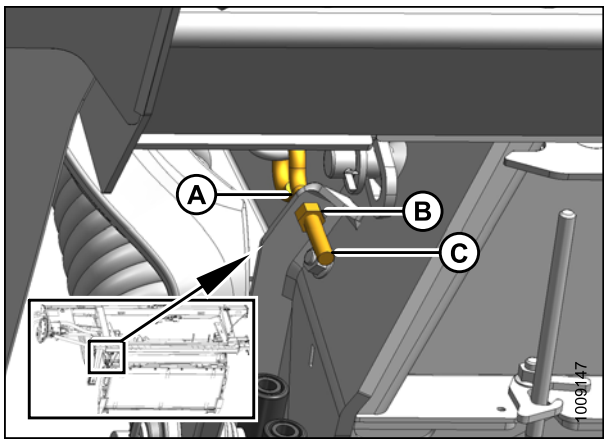
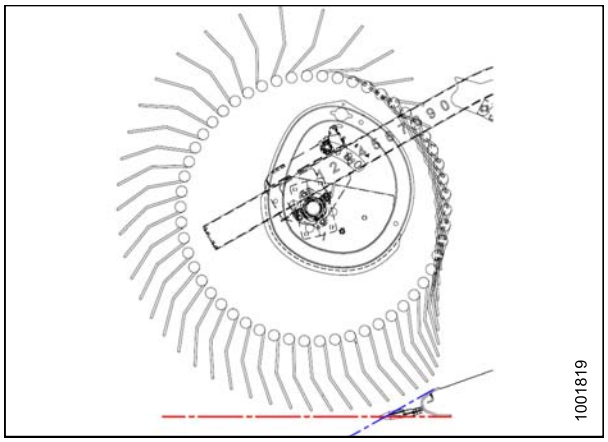
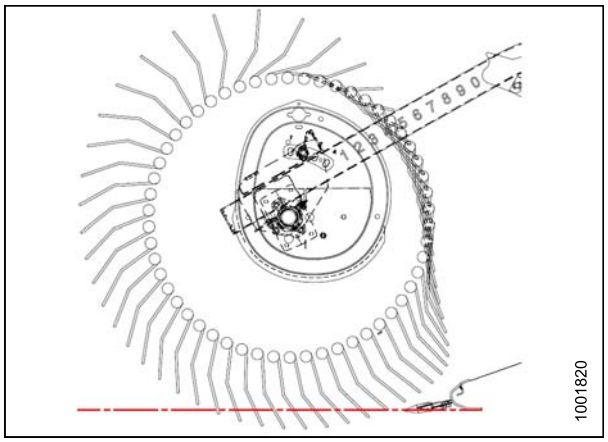


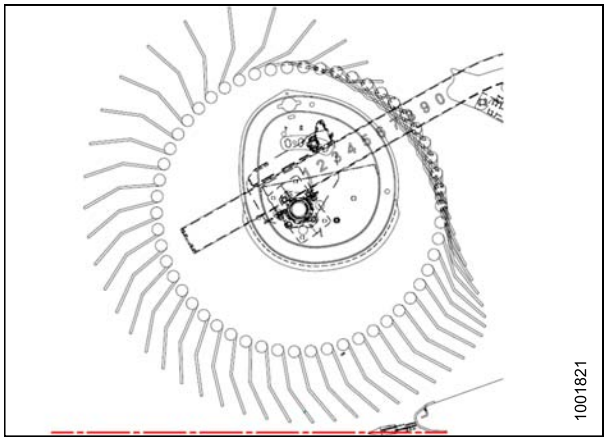
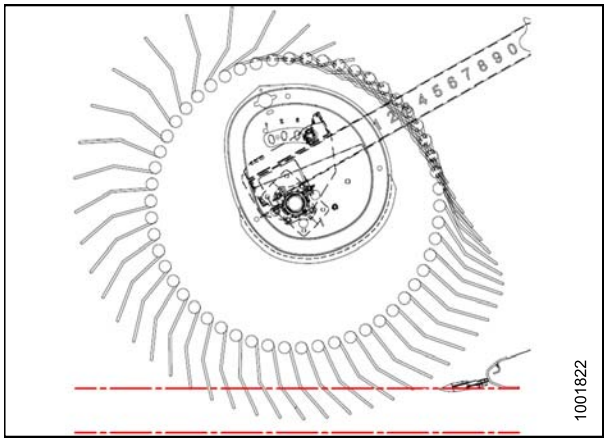
Figure 3.23: Spring Tensioner

3.6.4 Reel Settings

NOTE:
The reel settings chart is also applicable for reel tines.

Table 3.4 FD75 Recommended Reel Settings

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

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
3 (30%)	3 or 4	
4 (35%)	2 or 3	

NOTE:

- Adjust the reel forward, to position the fingers closer to the ground, while tilting the header back. Fingers/tines will dig into the ground at extreme reel-forward positions, so adjust skid shoes or header angle to compensate.
- Adjust the reel aft in thinner crops to prevent plugging on the cutterbar.
- Increase the header angle to position the reel closer to the ground, or decrease angle to position the reel further from the ground.
- Raise header, increase header angle, and position reel fully forward in lodged crop for maximum stubble height.
- Minimum crop carrying capacity (minimum area of exposed draper between the reel and the header backsheet) occurs with the reel in the furthest aft position.
- Maximum crop carrying capacity (maximum area of exposed draper between the reel and the header backsheet) occurs with the reel in the furthest forward position.
- The finger tip speed at the cutterbar is higher than the reel speed at higher cam settings due to the nature of the cam action. Refer to Table *3.4 FD75 Recommended Reel Settings, page 49*.

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 increases productivity. As well, proper adjustments and timely maintenance will increase the length of service you receive from your machine.

The variables listed in Table *3.5 Operating Variables, page 51* and detailed on the following pages will affect the performance of the header.

You will quickly become adept at adjusting the machine to achieve the results you desire. Most of the adjustments have been preset at the factory, but the settings can be changed to suit crop conditions.

Table 3.5 Operating Variables

Variable	Refer to
Cutting height	*3.7.1 Cutting Height, page 51*
Header float	*3.7.2 Header Float, page 57*
Header angle	*3.7.4 Header Angle, page 75*
Reel speed	*3.7.5 Reel Speed, page 76*
Ground speed	*3.7.6 Ground Speed, page 77*
Draper speed	*3.7.7 Draper Speed, page 78*
Knife speed	*3.7.8 Knife Speed, page 80*
Reel height	*3.7.9 Reel Height, page 82*
Reel fore-aft position	*3.7.10 Reel Fore-Aft Position, page 83*
Reel tine pitch	*3.7.11 Reel Tine Pitch, page 92*
Crop divider rods	*3.7.12 Crop Dividers, page 95*

3.7.1 Cutting Height

The FD75 header is capable of cutting the crop to a desired stubble height or cutting as close as possible to the ground. Cutting height will vary depending on the type of crop, crop conditions, etc.

Cutting off the Ground

The stabilizer wheel system is designed to minimize bouncing at the header ends and float the header to achieve an even cutting height when cutting above ground level in cereal crops. The system produces even stubble height and greatly reduces operator fatigue.

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

If stabilizer wheels are installed, refer to *Adjusting Stabilizer Wheels, page 53* to change the wheel position.

If stabilizer/slow speed transport wheels are installed, refer to *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52* to change the wheel position.

Adjusting Stabilizer/Slow Speed Transport Wheels

A properly adjusted header will achieve a balance between the amount of header weight carried by the float and the amount carried by 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 the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Remove the hairpin (A) from the latch on the right wheel assembly.
3. Disengage the latch (B), lift the wheel out of the hook, and place on the ground as shown. (This reduces weight of assembly and makes adjusting the wheel position easier.)
4. Lift the left wheel slightly to support the weight, and the pull handle (C) upwards to release the lock.
5. Lift the left wheel to the desired height and engage the support channel into the slot (D) in the upper support.
6. Push down on the handle (C) to lock.
7. Lift the right wheel back into the field position and ensure the latch (B) is engaged.
8. Secure the latch with hairpin (A).
9. Support the wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.
10. Lift the wheels to the desired height, and engage the support channel into the slot (B) in the upper support.
11. Push down on the handle (A) to lock.

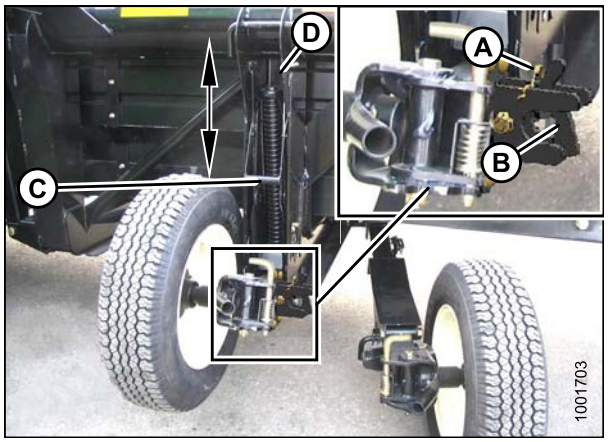


Figure 3.24: Right Wheel

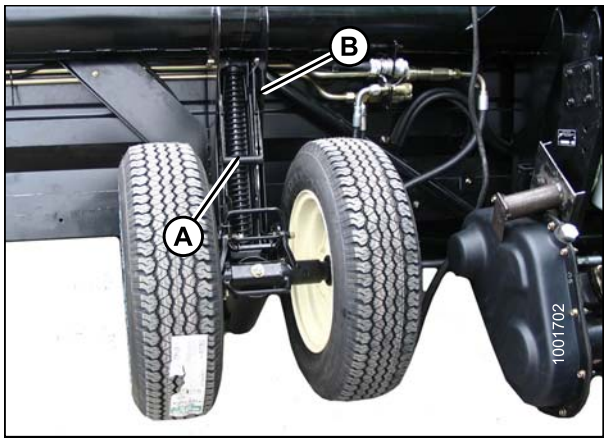


Figure 3.25: Left Wheel

12. Lower the header to the desired cutting height using the combine controls and check the load indicator.

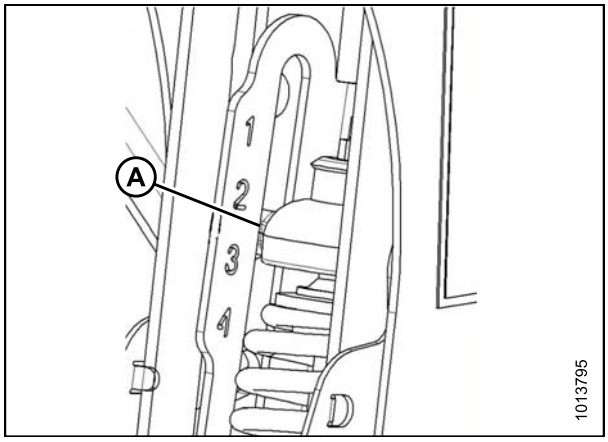


Figure 3.26: Load Indicator

IMPORTANT:
Continuous operation with excessive spring compression (i.e., load indicator reading greater than 4 [refer to *3.26: Load Indicator, page 53*] or a compressed length [A] less than 295 mm [11-5/8 in.]) can result in damage to the suspension system.

13. Adjust the header angle to the desired working angle with the machine's header angle controls. If header angle is not critical, set it to mid-position.
14. Use the combine's auto header height control (AHHC) to automatically maintain cutting height. Refer to *3.8 Auto Header Height Control (AHHC), page 102* and your combine operator's manual for details.

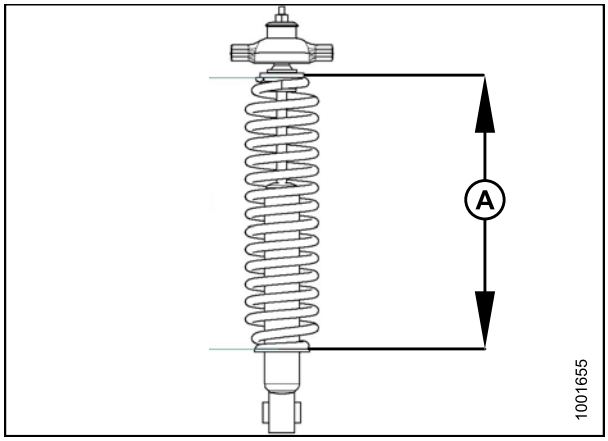


Figure 3.27: Spring Compression

NOTE:
The height sensor on the CA25 Combine Adapter must be connected to the combine header control module in the cab.

Adjusting Stabilizer Wheels

A properly adjusted header will achieve a balance between the amount of header weight carried by the float and the amount carried by the stabilizer wheels.

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 until 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 the header until the wheels are off the ground before making adjustments.

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

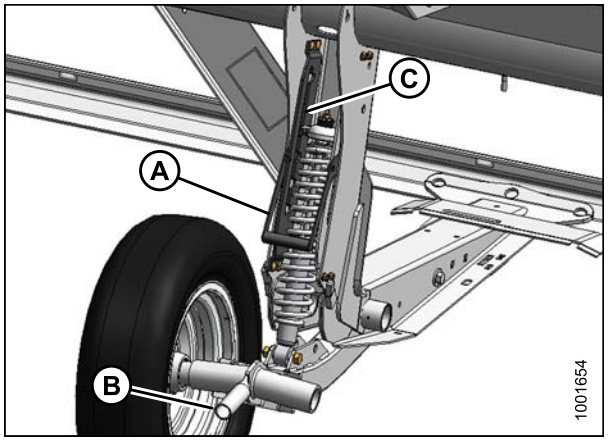


Figure 3.28: Stabilizer Wheel

5. Lower the header to the desired cutting height using the combine controls and check the load indicator.

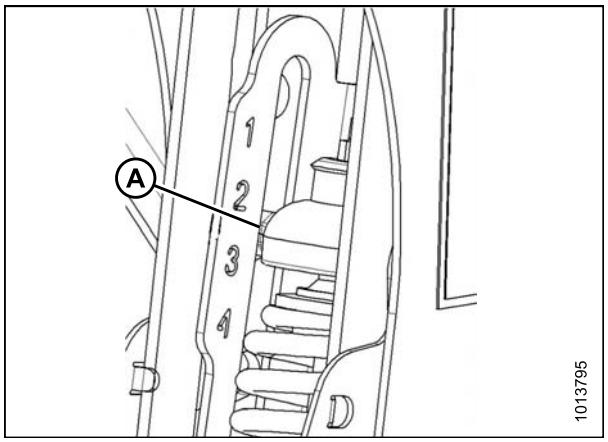


Figure 3.29: Load Indicator

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

6. Adjust the header angle to the desired working angle with the machine's header angle controls. If header angle is not critical, set it to mid-position.

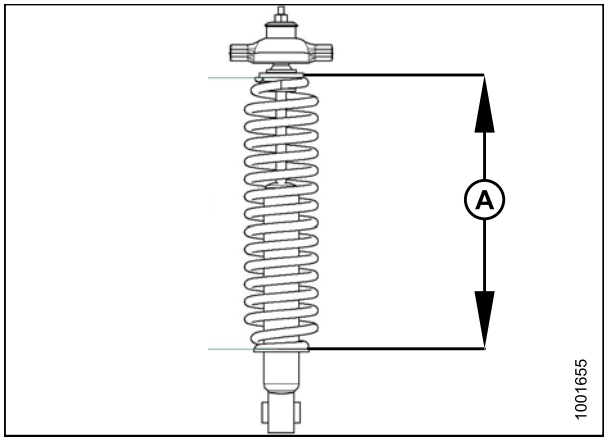


Figure 3.30: Spring Compression

Cutting on the Ground

Cutting on the ground is performed with the header fully lowered and the cutterbar on the ground. The orientation of the knife and knife guards relative to the ground (header angle) is controlled by the skid shoes and the center-link—it is **NOT** controlled by the header lift cylinders. The skid shoes and center-link allow you to adjust to field conditions and maximize the amount of material cut while reducing damage to the knife caused by stones and debris.

The header float system floats the header over the surface to compensate for ridges, trenches, and other variations in ground contour to prevent the cutterbar from pushing into the ground or leaving uncut crop.

Refer to the following for additional information:

- *Adjusting Inner Skid Shoes, page 56*
- *Adjusting Outer Skid Shoes, page 56*
- *3.7.4 Header Angle, page 75*
- *3.7.2 Header Float, page 57*

Also refer to *3.6.2 Header Settings, page 44*

Adjusting Inner Skid Shoes

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 to full height, engage safety props, shut off engine, and remove key.
2. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
   - *Adjusting Stabilizer Wheels, page 53*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52*
3. Remove the lynch pin (A) from each skid shoe.
4. Hold the shoe (B) and remove the pin (C) by disengaging from the frame and pulling away from the shoe.
5. Raise or lower the skid shoe (B) to achieve the desired position using the holes in the support (D) as a guide.
6. Install the pin (C), engage in frame, and secure with lynch pin (A).
7. Check that all skid shoes are equally adjusted.
8. Adjust the header angle to the desired working position using the machine's header angle controls. If the header angle is not critical, set it to the mid-position.
9. Check the header float. Refer to *3.7.2 Header Float, page 57*.

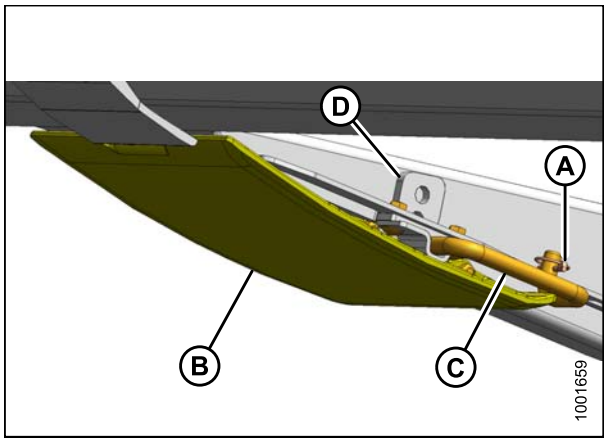


Figure 3.31: Inner Skid Shoe

Adjusting Outer Skid Shoes

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 the header to its full height, engage the safety props, shut off the engine, and remove the key from the ignition.
2. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
   - *Adjusting Stabilizer Wheels, page 53*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52*

3. Remove the lynch pin (A) from each skid shoe (B).
4. Hold the shoe (B) and remove the pin (C) by disengaging from the frame and pulling away from the shoe.
5. Raise or lower the skid shoe (B) to achieve the desired position using the holes in the support (D) as a guide.
6. Reinstall pin (C), engage in frame, and secure with lynch pin (A).
7. Check that all skid shoes are equally adjusted.
8. Check the header float. Refer to *3.7.2 Header Float, page 57*.

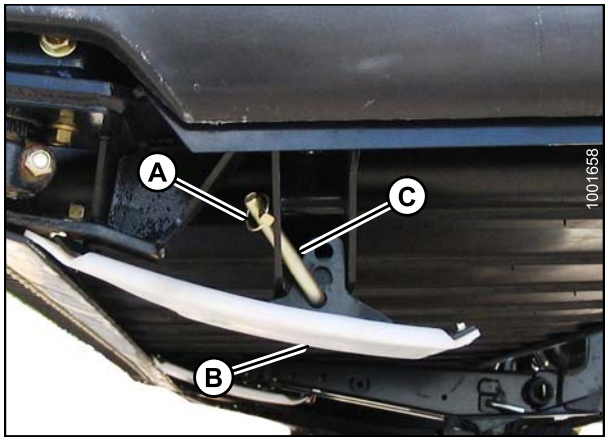


Figure 3.32: Outer Skid Shoe

3.7.2 Header Float

The header float system reduces the ground pressure at the cutterbar allowing the header 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). The values 0 to 4 represent the force of the cutterbar on the ground with 0 being the minimum and 4 being the maximum.

The maximum force is determined by the tension on the adapter's adjustable float springs. The tension is factory-set, but it can be changed to suit field and crop conditions. Refer to *Checking and Adjusting Header Float, page 58*.

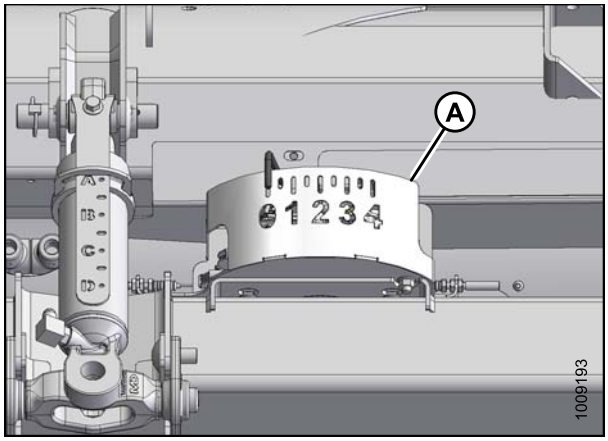


Figure 3.33: Float Indicator

1. Set the float for cutting on the ground as follows:
   a. Ensure the header float locks are disengaged. Refer to *Locking/Unlocking Header Float, page 63*.
   b. Lower feeder house using the combine header controls until the float indicator (A) reaches the desired float value (cutterbar ground force). Set the float indicator to 2 initially and adjust as necessary.

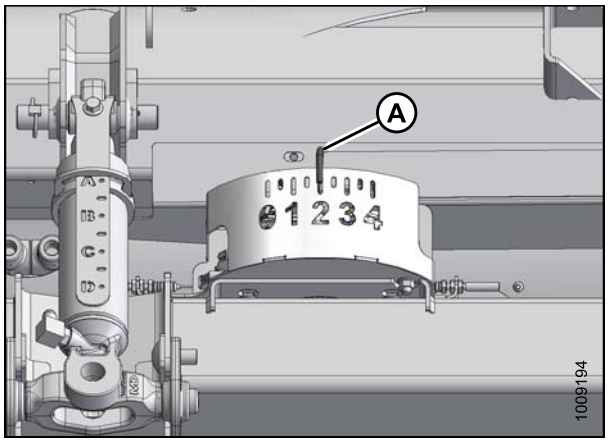


Figure 3.34: Cutting on the Ground

2. Set the float for cutting off the ground as follows:
   a. Set up the stabilizer wheels. Refer to *Cutting off the Ground, page 51*.
   b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

Checking and Adjusting Header Float

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. Park combine on level surface.
2. Lower the reel fully.
3. Adjust the fore-aft position to between 5 and 6 on the position indicator decal (A) located on the right side reel arm.

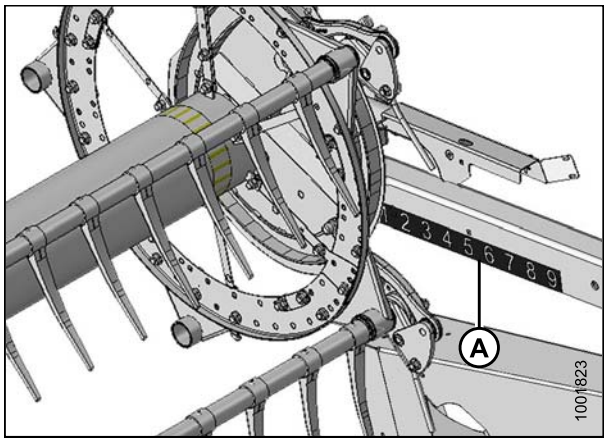


Figure 3.35: Fore-Aft Position

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

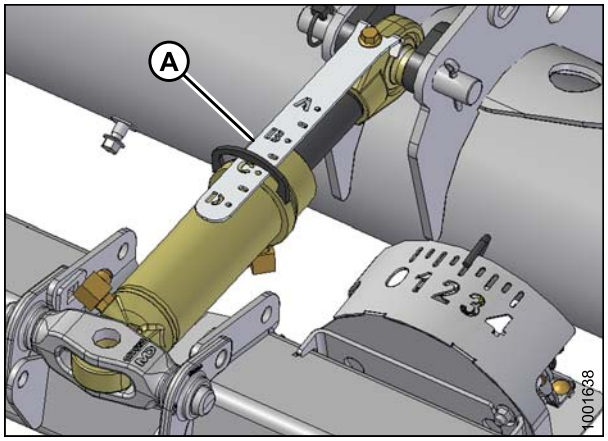


Figure 3.36: Center-Link

IMPORTANT:
Do **NOT** use the CA25 float springs to level the header.

7. Check that the CA25 is level. If the CA25 is not level, perform the following checks prior to adjusting the levelling linkages:
   a. Check the combine tire pressures.
   b. Check that the combine feeder house is level. Refer to your combine operator's manual for instructions.
   c. Check that the top of the CA25 is level with the combine axle.
8. Place wing lock spring handles (A) in lock (upper) position.

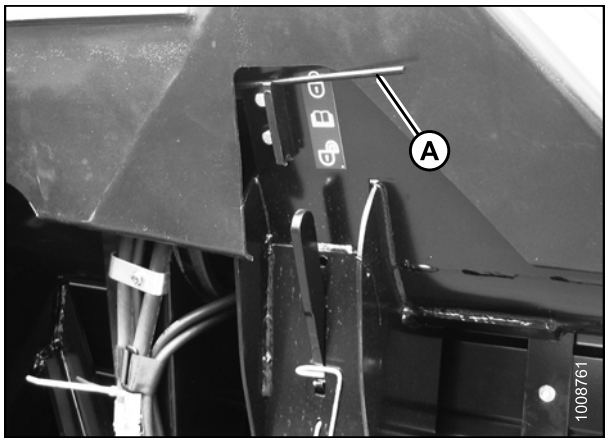


Figure 3.37: Wing Lock in Lock Position

9. Check that both header float lock levers (A) are in the down (UNLOCK) position.

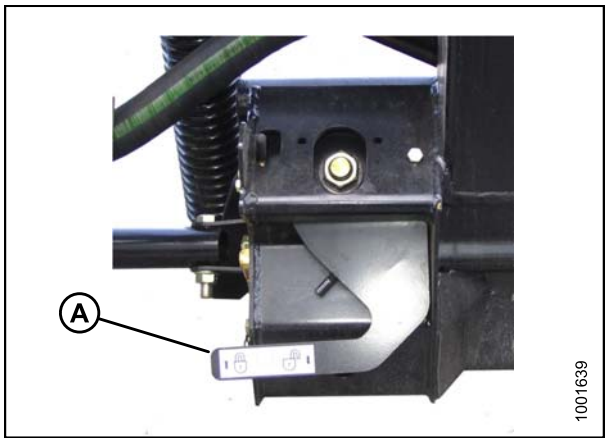


Figure 3.38: Header Float Lock in Unlock Position

10. Place stabilizer wheels and slow speed transport wheels (if equipped) in storage position as follows:

    a. Support the wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.

    b. Lift the wheels to the desired height, and engage the support channel into the slot (B) in the upper support.

    c. Push down on the handle (A) to lock.

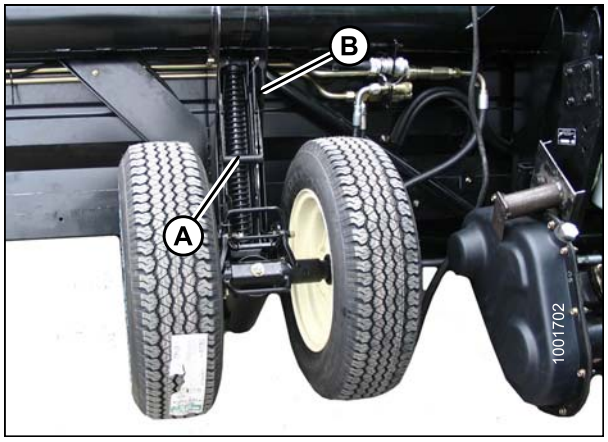


Figure 3.39: Left Wheel

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

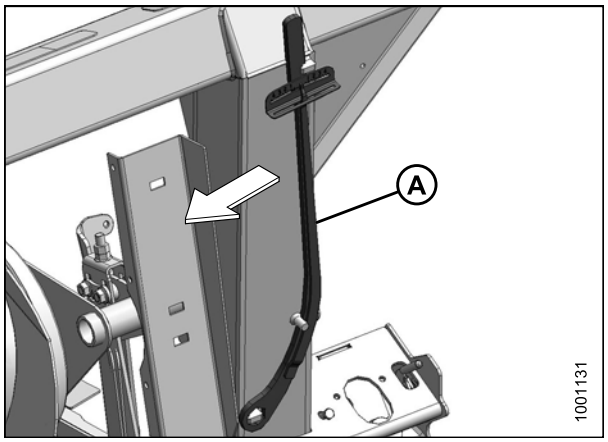


Figure 3.40: Torque Wrench

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

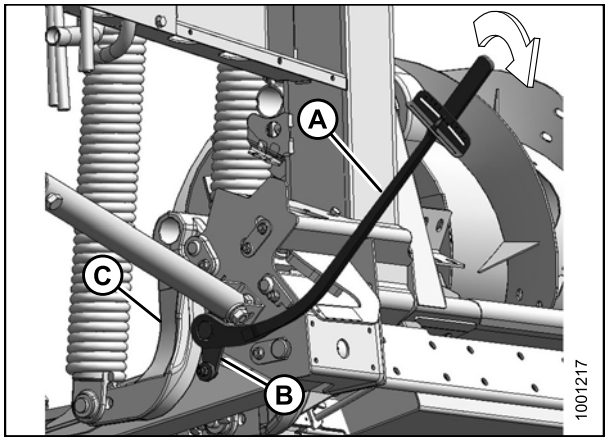


Figure 3.41: Left Side

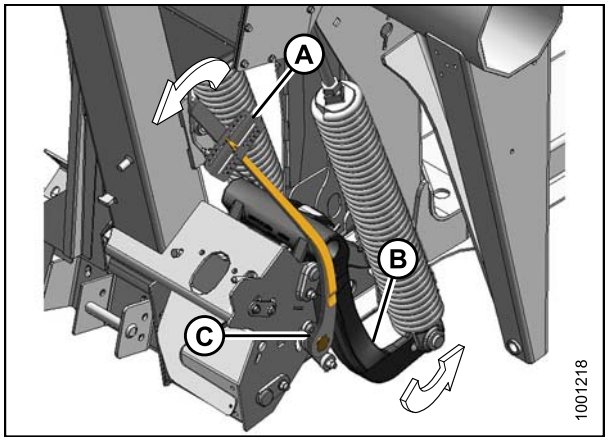


Figure 3.42: Right Side

14. Push down on the wrench until indicator (A) reaches a maximum reading and then begins to decrease. Note the maximum reading and repeat at opposite side.
15. Use the following table as a guide for float settings:
    - If reading on the wrench is high, the header is heavy
    - If reading on the wrench is low, the header is light

Table 3.6 Float Settings

Header Size (feet)	Torque Settings	
	Cutting on the Ground	Cutting off the Ground
30 and 35	1-1/2 to 2	2 to 2-1/2
40 and 45	2 to 2-1/2	2-1/2 to 3

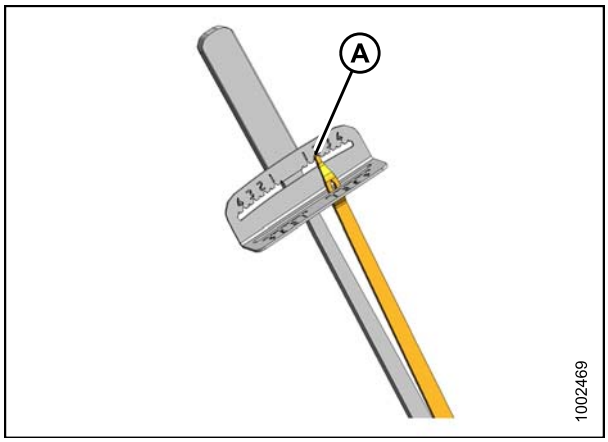


Figure 3.43: Indicator

16. Increase float (decrease header weight) by loosening jam nuts, turning left side adjustment bolts (A) and right side adjustment bolts (B) clockwise, and tightening jam nuts.
17. Decrease float (increase header weight) by loosening jam nuts, turning left side adjustment bolts (A) and right side adjustment bolts (B) counterclockwise, and tightening jam nuts.

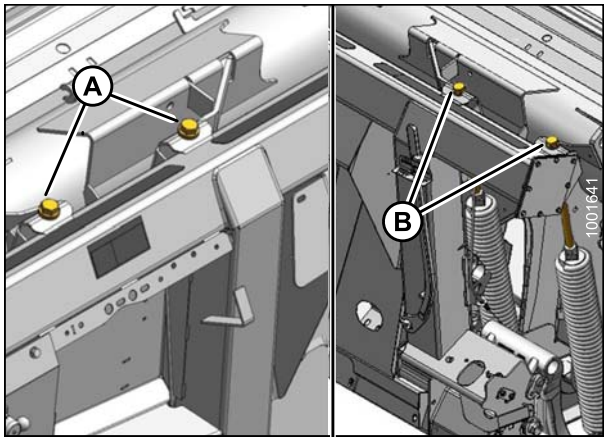


Figure 3.44: Float Adjustment

18. Use the following guidelines when adjusting float:
    - Adjust the float so the wrench readings are equal on both sides of the header.
    - **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. Refer to Step *14., page 61*, and repeat torque wrench reading procedure.
    - Set header float as light as possible without causing excessive bouncing to prevent knife component breakage, soil scooping, or soil build-up at the 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 51*.

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.

19. Return the torque wrench (A) to its storage location at the right side of the adapter frame.

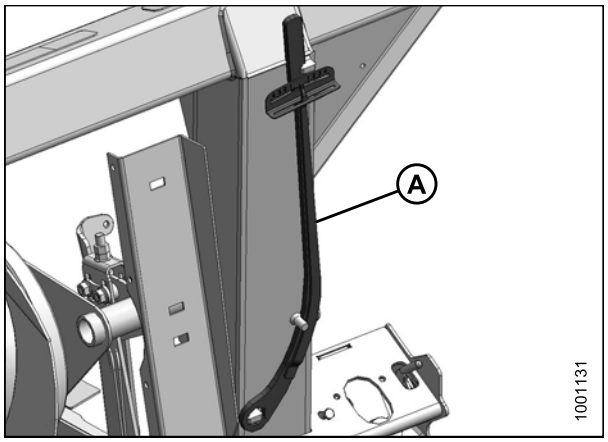


Figure 3.45: Torque Wrench

Locking/Unlocking Header Float

Two header float locks—one on each side of the adapter—lock and unlock the header float system.

IMPORTANT:
The float locks must be engaged when the header is being transported with the adapter attached so there is no relative movement between the adapter and the header. The float locks also must be locked when detaching from the combine to enable the feeder house to release the adapter.

1. Disengage each float lock (unlock) by moving latch (A) downwards and moving lever (B) down to its lowest position. In this position, the header is unlocked and can float with respect to the adapter.
2. Engage each float lock (lock) by moving lever (B) upwards to its highest position. In this position, the header cannot move with respect to the adapter.

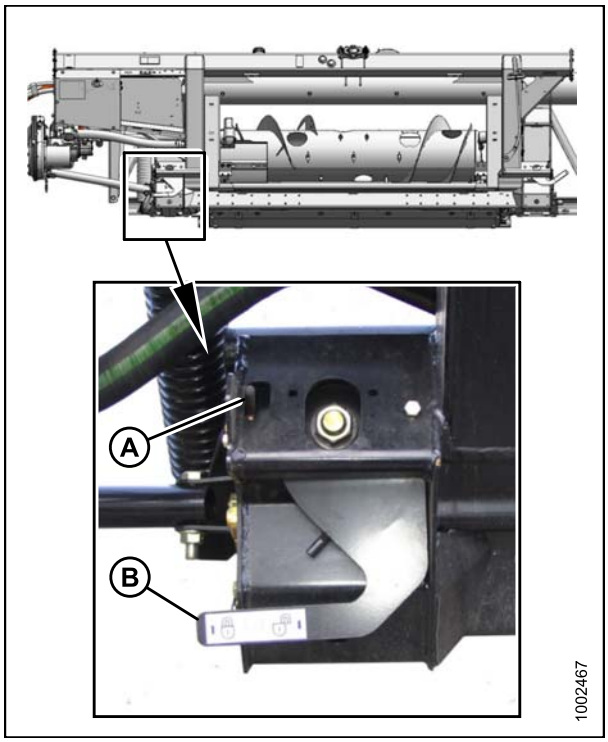


Figure 3.46: Float Lock

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.

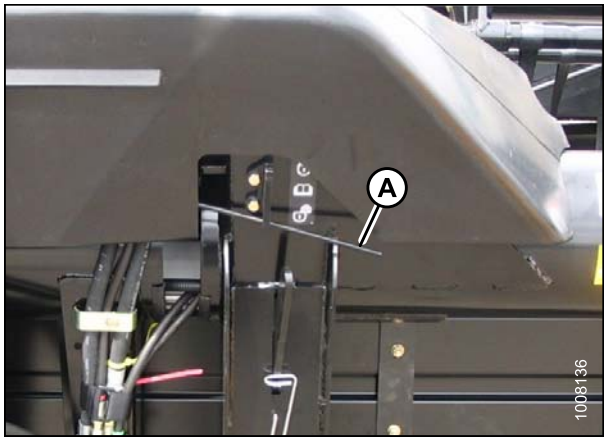


Figure 3.47: Wing Lock

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.

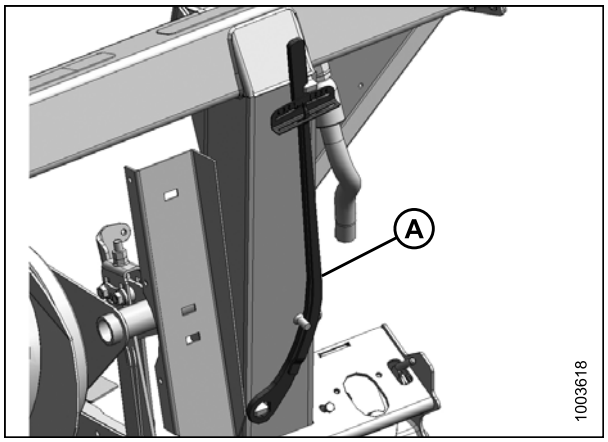


Figure 3.48: Torque Wrench

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 *3.7.3 Checking and Adjusting Header Wing Balance, page 66*.

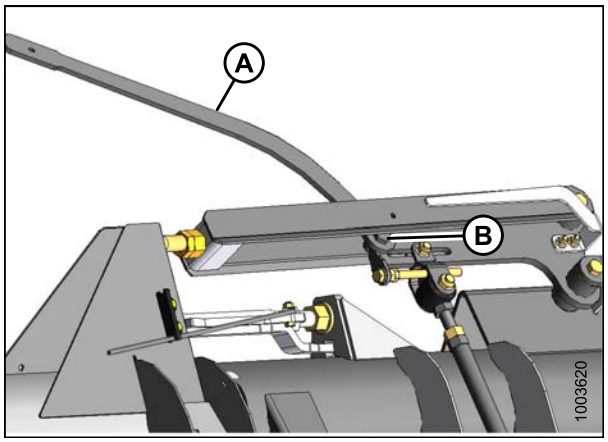


Figure 3.49: Torque Wrench on Wing Nut

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.

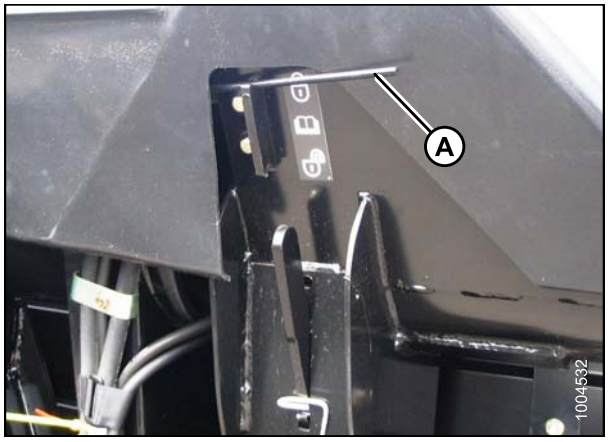


Figure 3.50: Wing Lock

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.

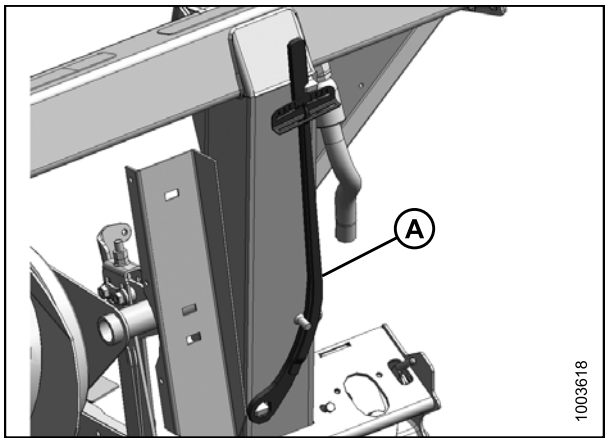


Figure 3.51: Torque Wrench

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.

NOTE:
The wings will not move relative to the header.

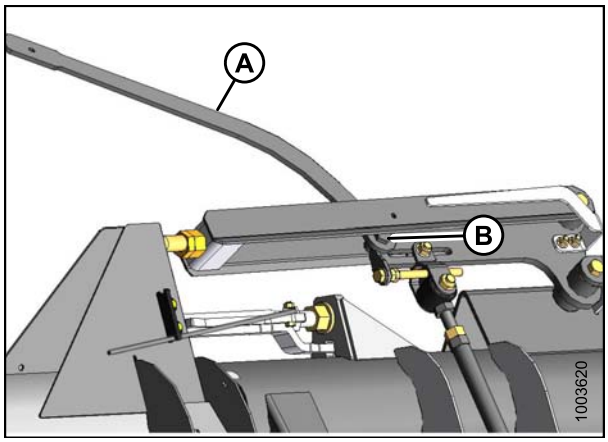


Figure 3.52: Header Wing

3.7.3 Checking and Adjusting Header Wing Balance

NOTE:
Before proceeding, the header float must be set properly. Refer to *Checking and Adjusting Header Float, page 58*.

The header wing balance allows the wings to react to changing ground conditions. If set too light, the wings will bounce or not follow ground contours, leaving uncut crop. If set too heavy, the end of the header will dig into the ground. After the header float has been set, the wings must be balanced for the header to follow the ground contours properly.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 313*.

Checking Wing Balance

This procedure describes how to check the balance of each wing.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

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:

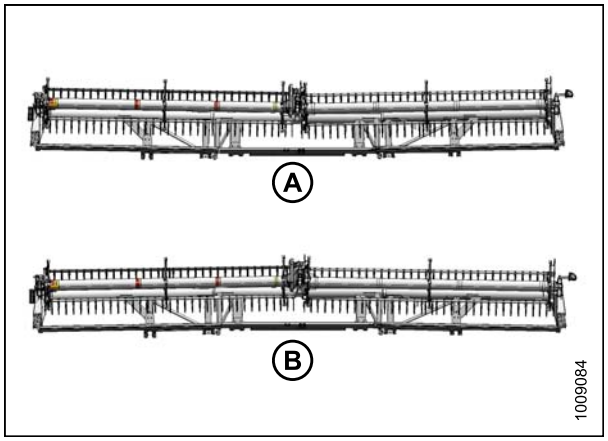


Figure 3.53: Wing Imbalance

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 152–254 mm (6–10 in.) off the ground.
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 51*.

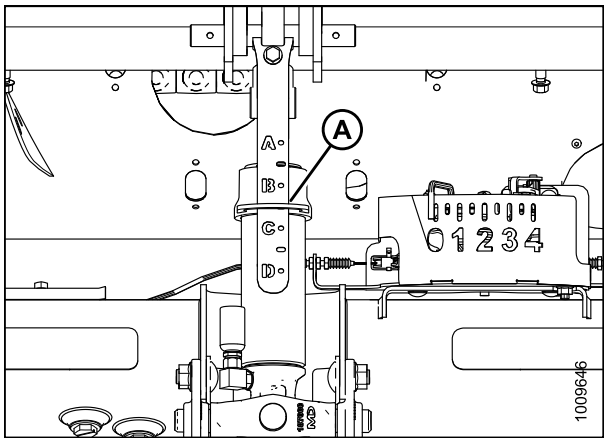


Figure 3.54: Center-Link

5. Remove linkage cover (A) by removing bolt (B) and rotating cover upward until inboard end can be lifted off.

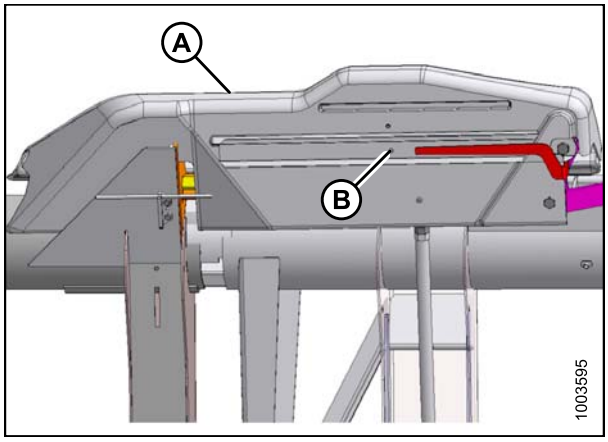


Figure 3.55: Linkage Cover

NOTE:
Refer to the decal (A) inside each linkage cover.

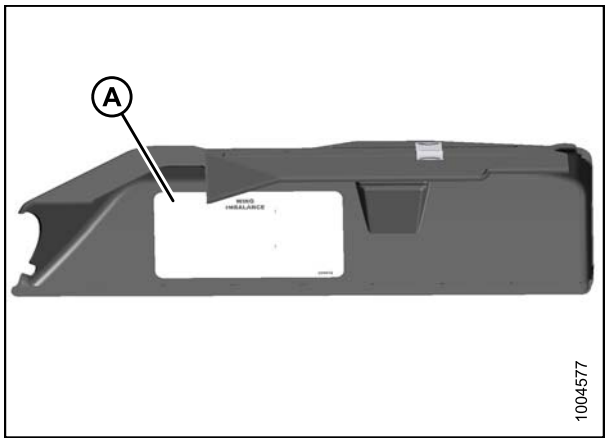


Figure 3.56: Linkage Cover

6. Unlock the wings by moving spring handles (A) to lower (UNLOCK) position.

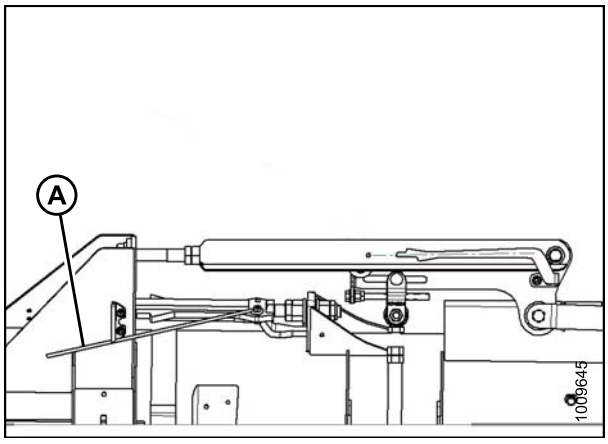


Figure 3.57: Wing Lock in UNLOCK Position

7. Retrieve wrench (A) from right adapter leg.

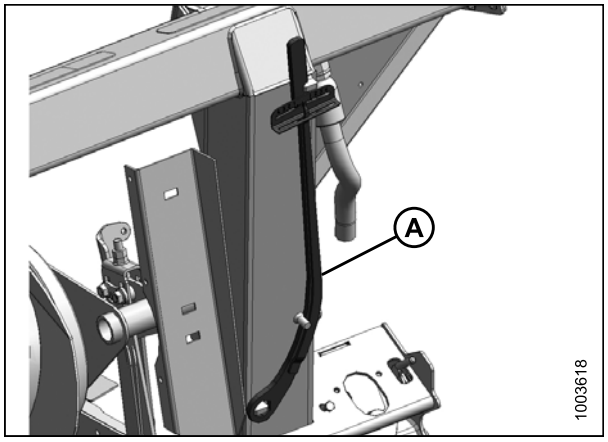


Figure 3.58: Torque Wrench

8. Place torque wrench (A) on bolt (B).

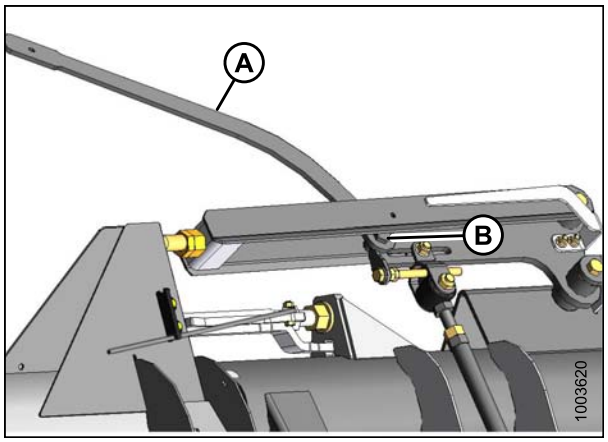


Figure 3.59: Balance Linkage

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.

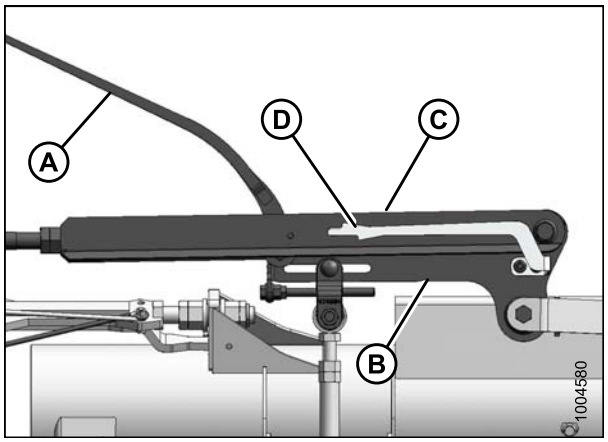


Figure 3.60: Balance Linkage

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.

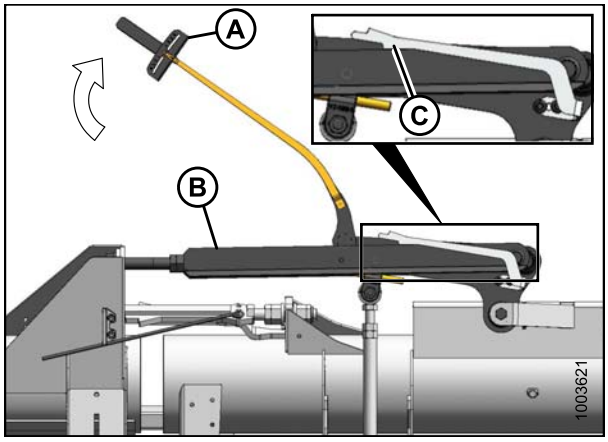


Figure 3.61: Balance Linkage

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 0.5 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 0.5, the wing is not balanced. Refer to *Adjusting Wing Balance, page 71*.

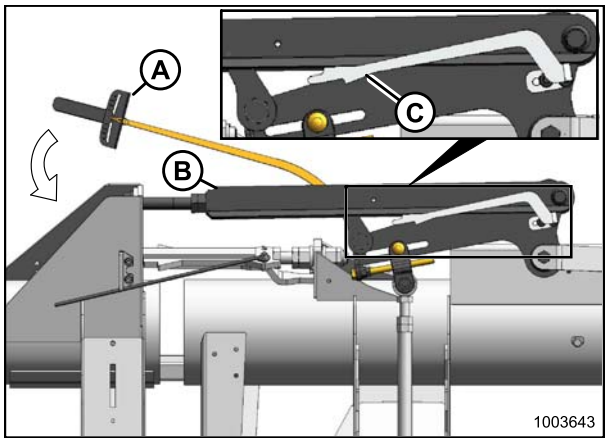


Figure 3.62: Balance Linkage

    - If the indicator range is as shown at right, the wing is too light.

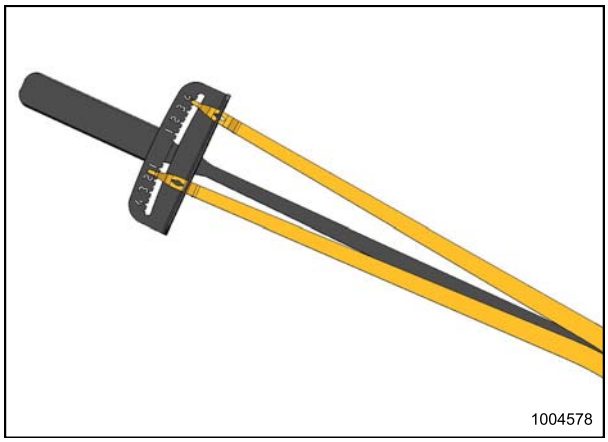


Figure 3.63: Wrench Indicator

- If the indicator range is as shown at right, the wing is too heavy.

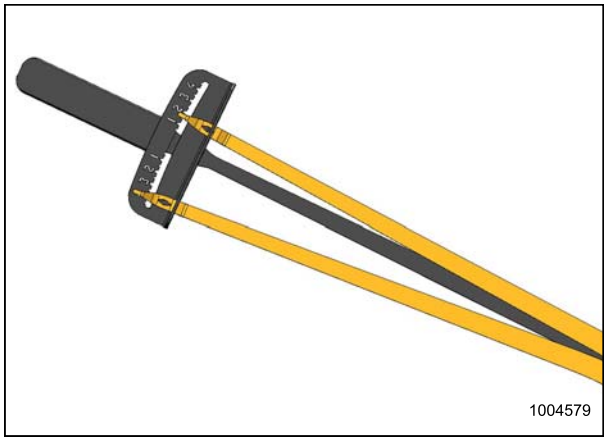


Figure 3.64: Wrench Indicator

12. Place wrench (A) back onto the right adapter leg.

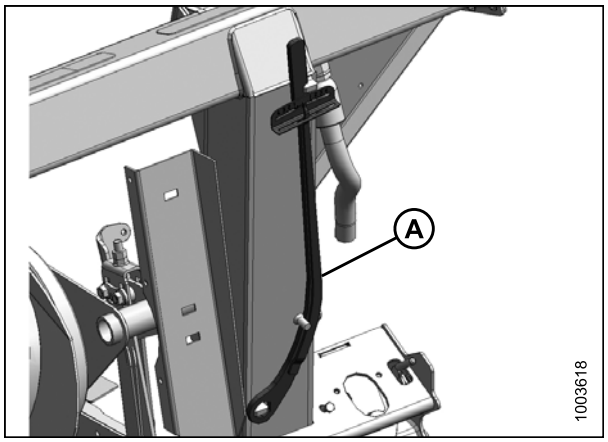


Figure 3.65: Torque Wrench

13. Lock the wings by moving spring handles (A) to upper LOCK position.

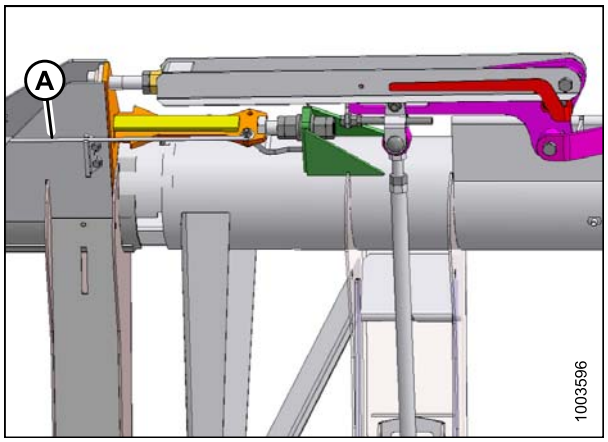


Figure 3.66: Wing Lock in Lock Position

14. Reinstall linkage cover (A) and secure it with bolt (B).

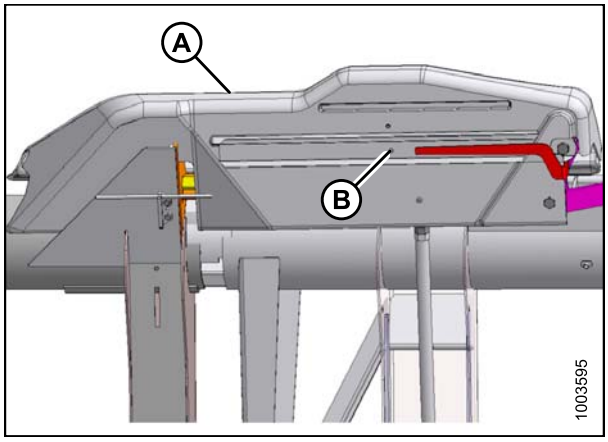


Figure 3.67: Linkage Cover

Adjusting Wing Balance

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Before proceeding, check the wing balance to verify how to adjust the wing. Refer to *Checking Wing Balance, page 66*.

NOTE:
left 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 152–254 mm (6–10 in.) off the ground.
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 51*.

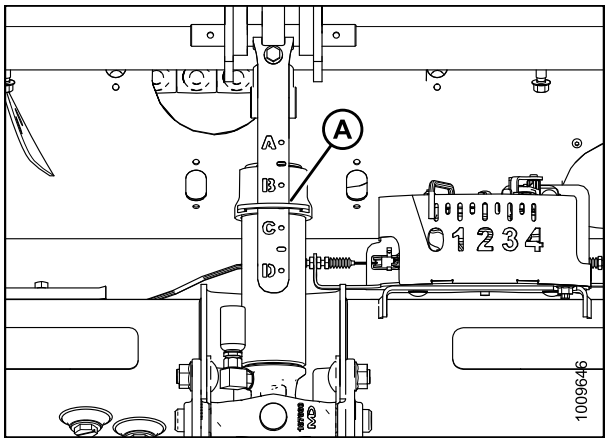


Figure 3.68: Center-Link

5. Remove linkage cover (A) by removing bolt (B).

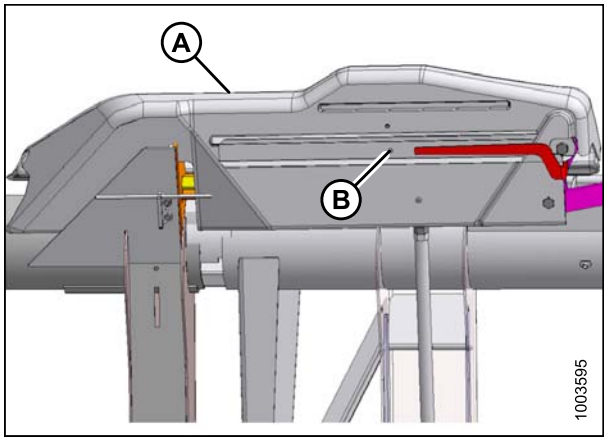


Figure 3.69: Linkage Cover

NOTE:
Refer to the decal (A) inside each linkage cover.

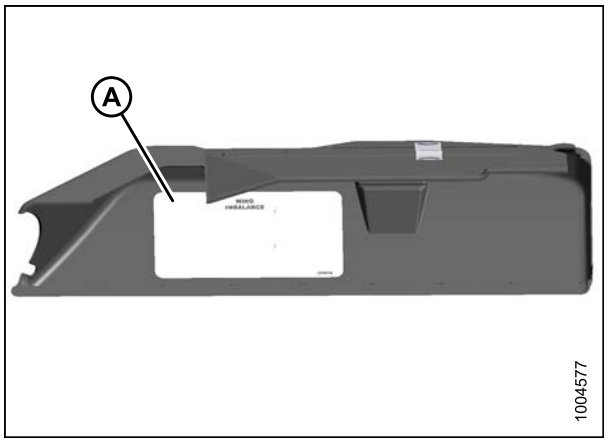


Figure 3.70: Linkage Cover

6. Unlock the wings by moving handle (A) to lower (UNLOCK) position.

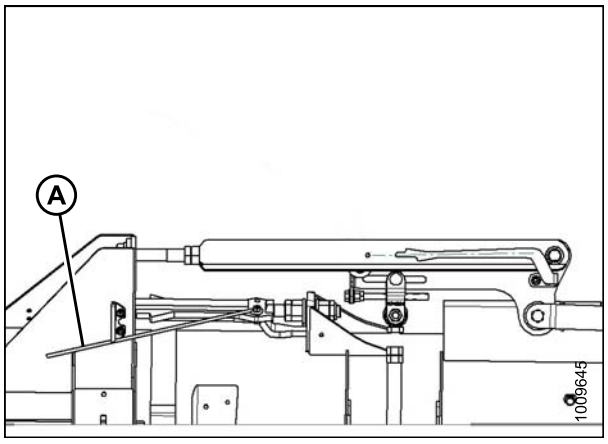


Figure 3.71: Wing Lock in UNLOCK Position

7. Retrieve wrench (A) from adapter leg.

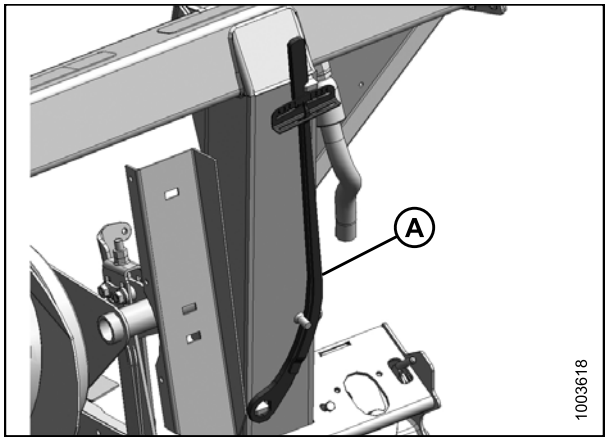


Figure 3.72: Torque Wrench

8. Place torque wrench (A) on bolt (B).

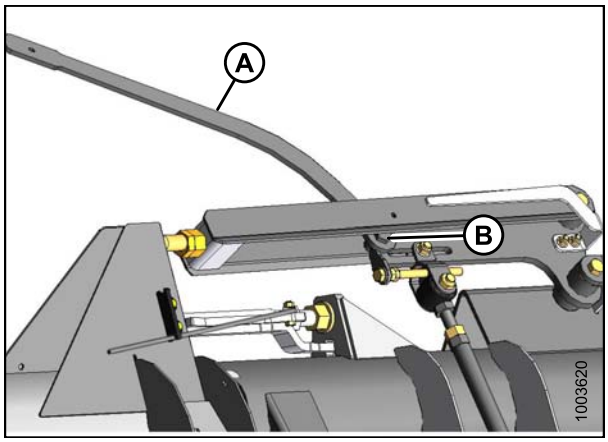


Figure 3.73: Balance Linkage

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 *3.7 Wing Balance Chart, page 74*.

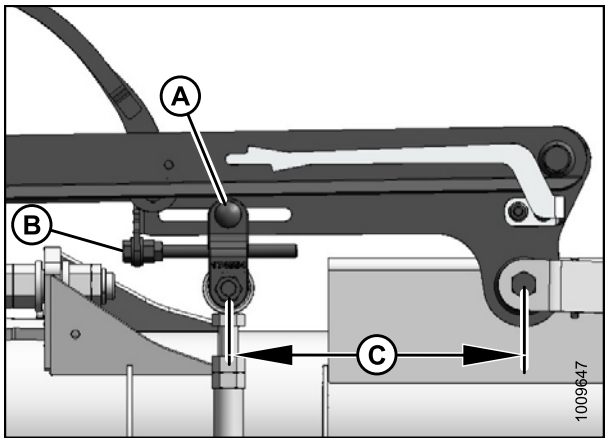


Figure 3.74: Balance Linkage

Table 3.7 Wing Balance Chart

Header Configuration	Linkage Dimension (C)[12]	
	Left Wing mm (in.)	Right Wing mm (in.)
30-foot	290 (11-13/32)	285 (11-1/4)
35-foot	300 (11-13/16)	300 (11-13/16)
40-foot single-knife drive (SKD)	305 (12)	320 (12-19/32)
40-foot double-knife drive (DKD)	305 (12)	310 (12-3/16)
40-foot double-knife drive (DKD) split frame	305 (12)	310 (12-3/16)
45-foot double-knife drive (DKD) split frame	310 (12-3/16)	310 (12-3/16)

11. Recheck the wing balance. Refer to *Checking Wing Balance, page 66*.
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).

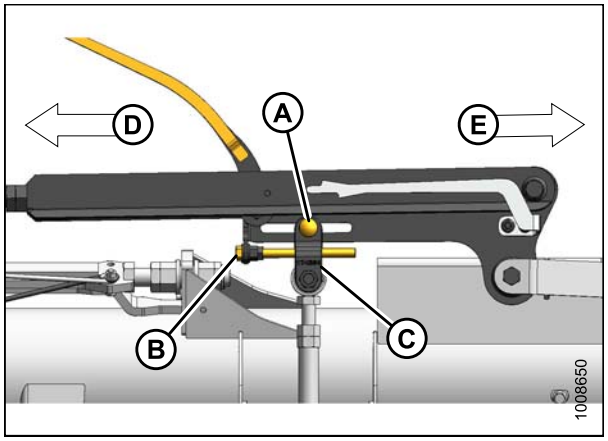


Figure 3.75: Balance Linkage

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.

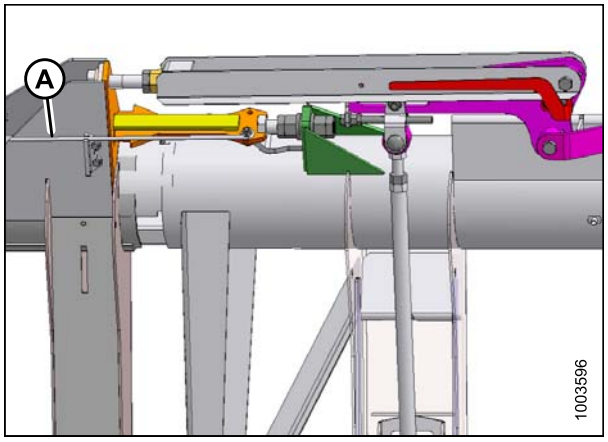


Figure 3.76: Wing Lock in Lock Position

12. These dimensions are initial settings. Further adjustment will be required if any optional kits have been installed by the Dealer.

18. Replace torque wrench on adapter frame.
19. Reinstall linkage cover (A) and secure it with bolt (B).

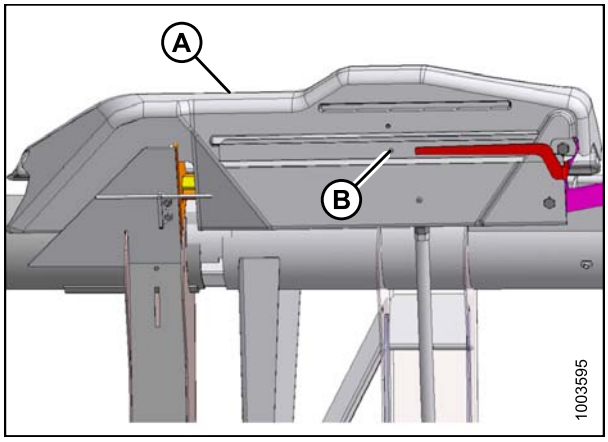


Figure 3.77: Linkage Cover

3.7.4 Header Angle

Header angle is adjustable to accommodate different crop conditions and/or soil types.

Header angle (A) controls the distance (B) between the knife and the ground and is a critical component for effective cutting on the ground. Adjusting the center-link determines the position of the knife and guards and pivots the header at the point of skid shoe/ground contact (C).

Header angle (A) is equal to guard angle (D) which is the angle between the upper surface of the guards and the ground.

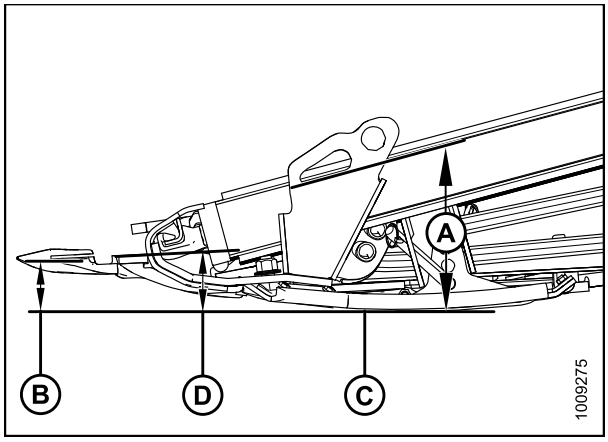


Figure 3.78: Header Angle

Controlling Header Angle

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. To change the header/guard angle, adjust the length of the center-link between the combine adapter and the header.

1. Set the header angle according to the type and condition of crop and soil as follows:
   a. Use shallower settings (A) (position A on the indicator) for normal cutting conditions and wet soil to reduce soil build-up at the cutterbar. Shallow angle settings also minimize damage to the knife in stony fields.
   b. Use steeper settings (D) (position D on the indicator) for lodged crops and crops that are close to the ground such as soybeans.

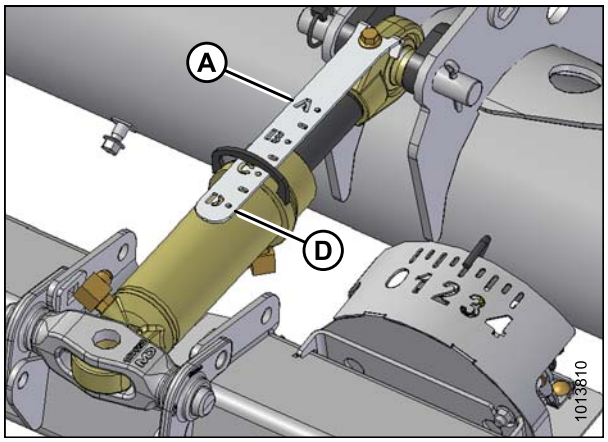


Figure 3.79: Center-Link

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

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

Choose an angle that maximizes performance for your crop and field conditions. Refer to Table *3.8 FD75 Header Angle, page 76* for a summary of adjustment ranges.

Table 3.8 FD75 Header Angle

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

Refer to *3.6.2 Header Settings, page 44* for recommended header/guard angle settings for your particular crop conditions.

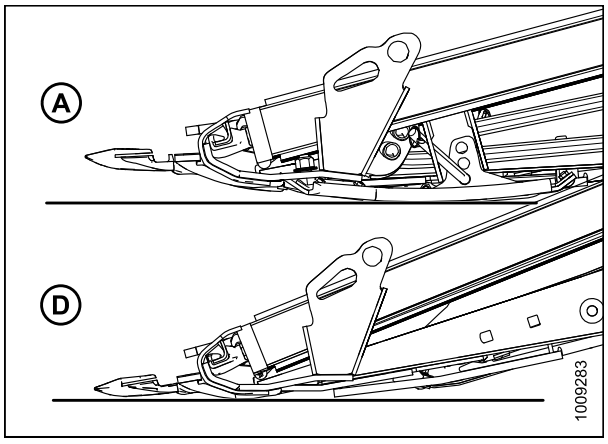


Figure 3.80: Guard Angles

3.7.5 Reel Speed

Reel speed is one of the factors that determines how 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 crop that is leaning away from the cutterbar, the reel speed needs to be higher than the ground speed. To achieve this, either increase the reel speed or decrease the ground speed.

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

Slower reel speeds can be used with nine-bat reels which is advantageous in shatter–prone crops.

NOTE:
A conversion kit to change a six-bat reel to a nine-bat reel for 30- and 35-ft. headers. Refer to *6.2.3 PR15 Tine Tube Reel Conversion Kit, page 470* 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 using the controls in the combine cab. Refer to your combine operator's manual for adjustment details.

Optional Reel Drive Sprockets

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

The header is factory-equipped with a 19-tooth sprocket that drives the reel and it is suitable for most crops. Other sprockets are available that provide more torque to the reel in heavy cutting conditions or allow for higher reel speeds in light crops when operating at increased ground speeds. Refer to Table *3.9 Optional Reel Drive Sprockets, page 77*, and contact your MacDon Dealer for ordering information.

Table 3.9 Optional Reel Drive Sprockets

Machine Hydraulics	Combine	Application	Optional Drive Sprocket
13.79–14.48 MPa (2000–2100 psi)	Gleaner Transverse Rotary	Combining down rice	10 tooth
17.24 MPa (2500 psi)	Lexion 500, 700 Series, Challenger Axial Rotary		12 tooth
20.68 MPa (3000 psi)	NH CR, CX, Case IH 7010, 8010, 7120, 8120, 88 Series		14 tooth
Low flow (under 42 L/min [11 gpm])	—	Combining light crops above 16 km/hr (10 mph)	21 tooth

For installation details, refer to *5.14.3 Replacing Reel Drive Sprocket, page 454*.

3.7.6 Ground Speed

Operating at the proper ground speed will result in cleanly cut crops and evenly distributed 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 (e.g., short soybeans) to allow the reel to pull in short plants. Start at 4.8–5.8 km/h (3.0–3.5 mph) and adjust as required.

Higher ground speeds may require heavier float settings to prevent excessive bouncing that causes uneven cutting and possible damage to the cutting components. If ground speed is increased, draper and reel speeds should generally be increased to handle the extra material.

Figure *3.81: Ground Speed vs Acres, page 78* illustrates the relationship between ground speed and area cut for the various sized headers.

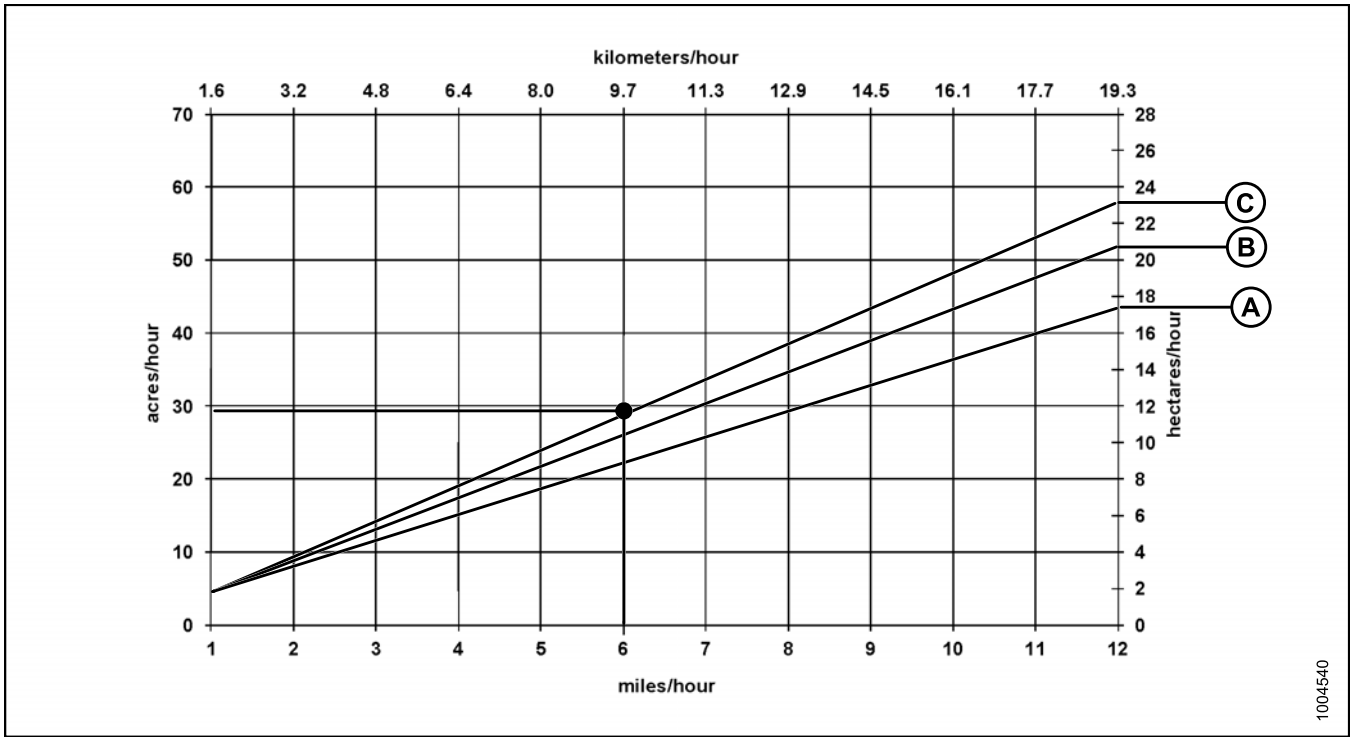


Figure 3.81: Ground Speed vs Acres

A - 30 ft. **B - 35 ft.** **C - 40 ft.**

Example: A 40-foot header operating at a ground speed of 9.7 km/h (6 mph) would produce a cut area of approximately 11.3 hectares (28 acres) in one hour.

3.7.7 Draper Speed

Correct draper speed is an important factor for achieving good flow of the cut crop away from the cutterbar.

The side drapers and feed draper operate independently of each other, 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 speed to achieve efficient crop feeding onto the adapter feed draper. Refer to *Adjusting Header Draper Speed, page 79*.

Adjusting Header 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 and a pump that is powered by the combine feeder house drive through a gearbox on the adapter. Side draper speed is set by using the flow control valve on the adapter which regulates the flow to the draper hydraulic motors.

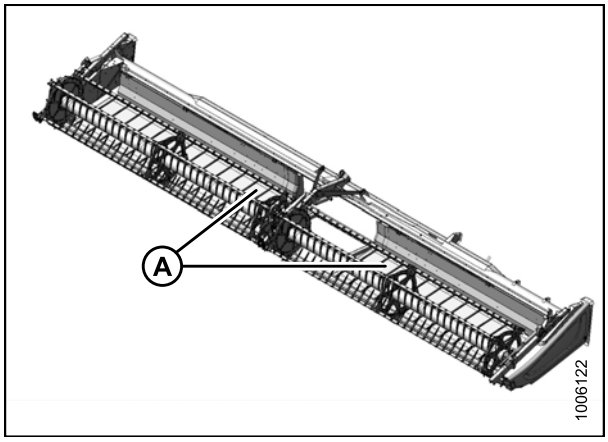


Figure 3.82: Side Drapers

The flow control (A) valve has settings from 0–9 on the barrel that line up with a notch on the hydraulic compartment cover to indicate the draper speed. The flow control valve is factory-set to 6 which should be sufficient for normal crop feeding.

To change the draper speed, shut down the combine and rotate the flow control valve dial to adjust the control.

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 47*

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

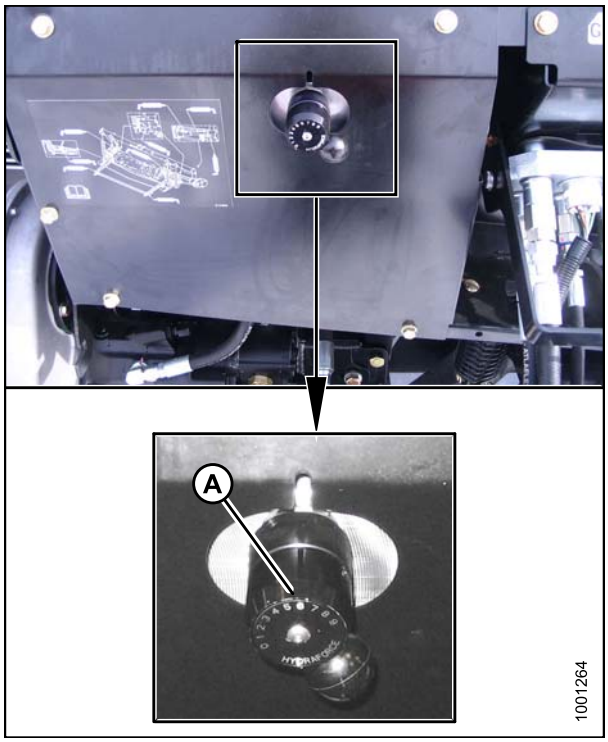


Figure 3.83: Flow Control Valve

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 and a pump that is powered by the combine feeder house drive through a gearbox on the adapter.

The feed draper speed is determined by the combine feeder house speed and cannot be independently adjusted.

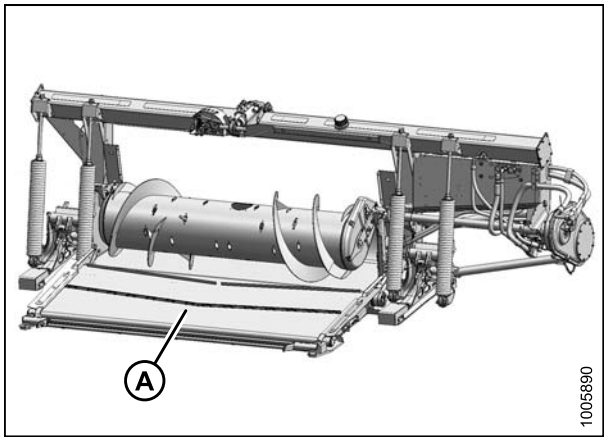


Figure 3.84: CA25 Combine Adapter

3.7.8 Knife Speed

The header knife drive is powered 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 rpm values shown at right represent the MINIMUM feeder house speeds. Reduce the flow to the knife drive motor if operating above these rpm values to prevent knife over-speeding and knife failure.

Table 3.10 Feeder House Speed

Combine	Feeder House Speed (rpm)
John Deere	490
Case IH	580
Gleaner	625
Massey Ferguson	625
Challenger	625
New Holland	580
Lexion[13]	420

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

IMPORTANT:
Ensure the knife speed is within the range of rpm values in Table *3.11 FD75 Header Knife Speed, page 81*. Refer to *Checking Knife Speed, page 81*.

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 3.11 FD75 Header Knife Speed

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

Checking Knife Speed

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

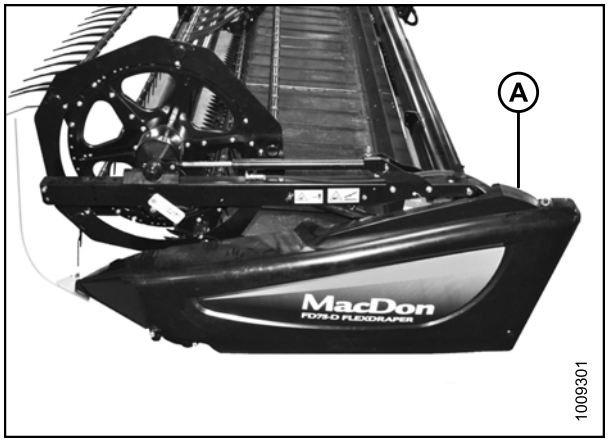


Figure 3.85: Left Endshield

WARNING

Check to be sure all bystanders have cleared the area.

3. Start the 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 pulley rpm measurement with the rpm values in the knife speed chart. Refer to *3.7.8 Knife Speed, page 80*.
7. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

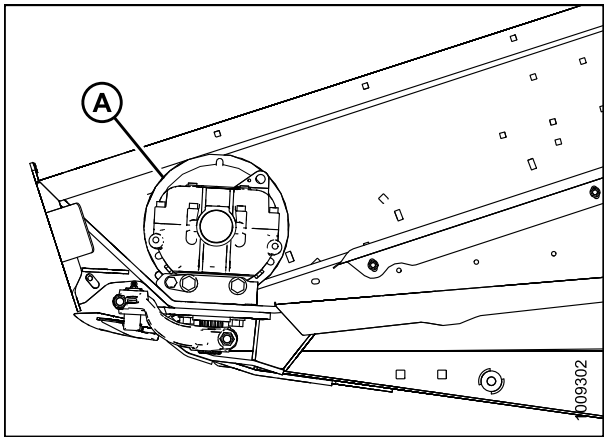


Figure 3.86: Knife Drive Pulley

3.7.9 Reel Height

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

Set the reel height to carry material past the knife and onto the drapers with minimal disturbance and damage to the cut crop. Refer to *3.7.10 Reel Fore-Aft Position, page 83*.

The reel height is controlled using switches in the combine cab.

Table 3.12 Reel Height

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

The following conditions might result if the reel is set too low:

- Crop loss over the header backtube
- Crop disturbance on the drapers caused by the reel fingers
- Crop being pushed down by the tine tubes

The following conditions might result if the reel is set too high:

- Cutterbar plugging
- Crop lodging and being left uncut
- Grain stalks dropping ahead of cutterbar

Refer to *3.6.2 Header Settings, page 44* to determine recommended reel heights for 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 428*.

3.7.10 Reel Fore-Aft Position

Reel fore-aft position is a critical factor for achieving the best results in adverse conditions. The reel position is factory-set for normal conditions, but it can be adjusted forwards or backwards as required using the controls inside the cab.

The reel can be moved approximately 227 mm (9 in.) 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 87*.

If the combine is equipped with the Multi-Crop Rapid Reel Conversion option, refer to *Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 90*.

A decal (A) is attached to the right reel support arm for identifying reel position. The aft edge of the cam disc (B) is the reel fore-aft position marker.

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:
Adjust to a steeper header angle if experiencing difficulty picking up flattened crop. Refer to *Controlling Header Angle, page 76* for adjustment instructions. 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.

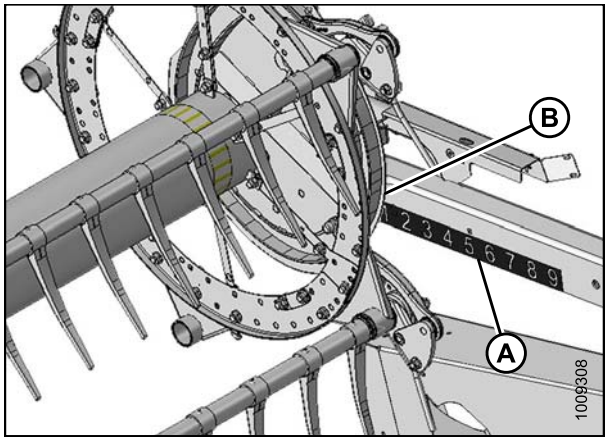


Figure 3.87: Fore-Aft Decal

NOTE:
In crops that are difficult to pick up such as rice, or severely lodged crops that require full forward positioning of the reel, set the reel tine pitch to provide proper placement of the crop onto the drapers. Refer to *3.7.11 Reel Tine Pitch, page 92* for adjustment details.

Adjusting Reel Fore-Aft Position

1. Select FORE-AFT mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position while using the decal (A) as a reference.
3. Check the reel clearance to cutterbar after making changes to the cam setting. Refer to the following for measurement and adjustment procedures:
   - *5.13.1 Reel Clearance to Cutterbar, page 428*
   - *5.13.2 Reel Frown, page 431*

   IMPORTANT:
   Operating with the reel too far forward can result in the fingers contacting the ground. When operating with the reel in this position, lower the skid shoes or adjust the header angle as required to prevent damaging the fingers.

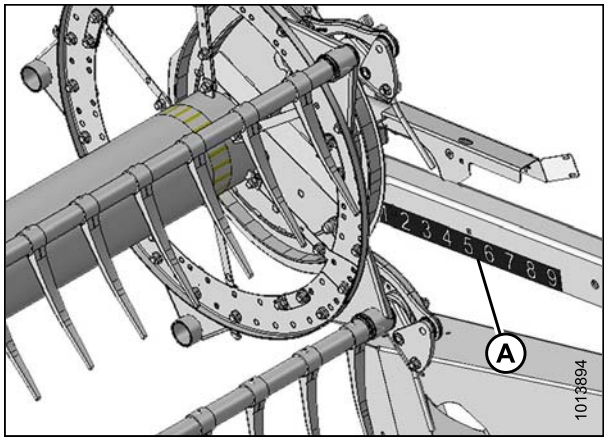


Figure 3.88: Fore-Aft Decal

Repositioning Fore-Aft Cylinders on Single Reel

The reel can be moved approximately 227 mm (9 in.) further aft by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola.

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.

Reposition the right reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop the engine and remove the key from the ignition.
3. Remove the four bolts (A) securing the cylinder bracket (B) to the reel arm.
4. Push/pull the reel until bracket (B) lines up with the fore/aft set of holes (C).
5. Reinstall the four bolts (A) securing the cylinder bracket (B) to the reel arm at the new position.

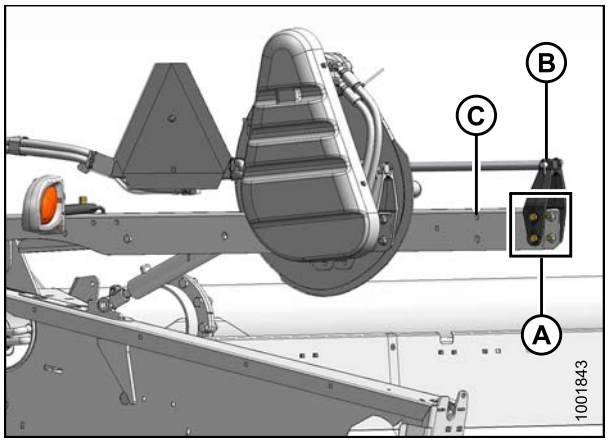


Figure 3.89: Right Arm Cylinder – Forward Position

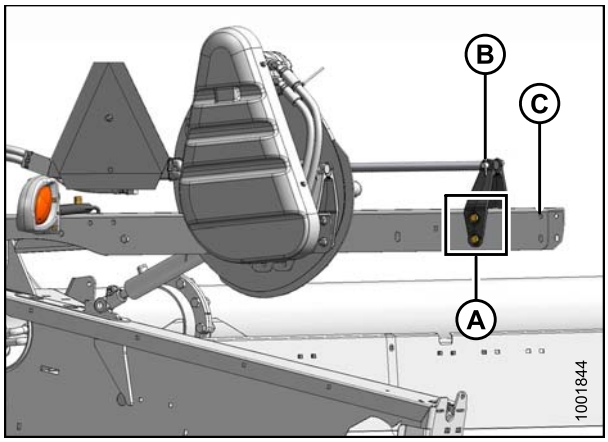


Figure 3.90: Right Arm Cylinder – Rearward Position

Reposition the left reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
2. Remove bolts (D) securing bracket/light assembly (C) to the reel arm, and remove the bracket/light assembly.
3. Remove the cable tie securing the harness to the bracket/light assembly (C) or reel arm if necessary.
4. Swivel the light to the working position as shown.

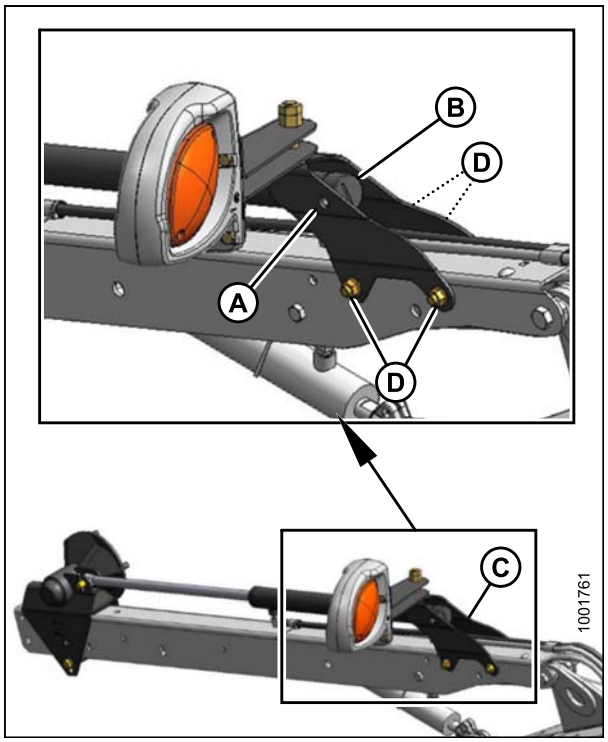


Figure 3.91: Forward Position

5. Reposition the bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
6. Push the reel back and attach cylinder (B) to the bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
7. Secure the light harness to the bracket/light assembly (C) using a cable tie.
8. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
9. Adjust the reel tine pitch if necessary. Refer to *3.7.11 Reel Tine Pitch, page 92*.

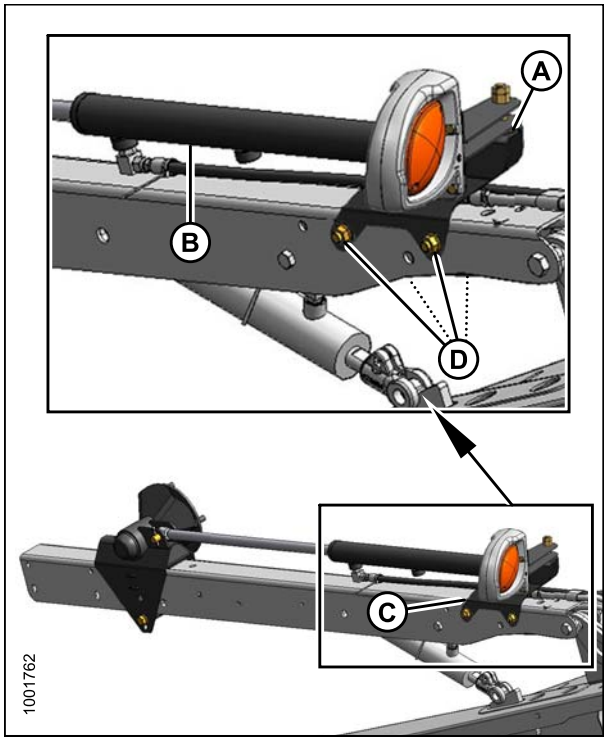


Figure 3.92: Rearward Position

Repositioning Fore-Aft Cylinders

The reel can be moved approximately 227 mm (9 in.) 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 *Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 90*.

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.

Reposition the center arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.
3. Remove four bolts (A) securing cylinder bracket (B) to reel arm.
4. Push/pull reel until bracket (B) lines up with the fore/aft set of holes (C).
5. Reinstall four bolts (A) to secure bracket (B) to reel arm at new position.

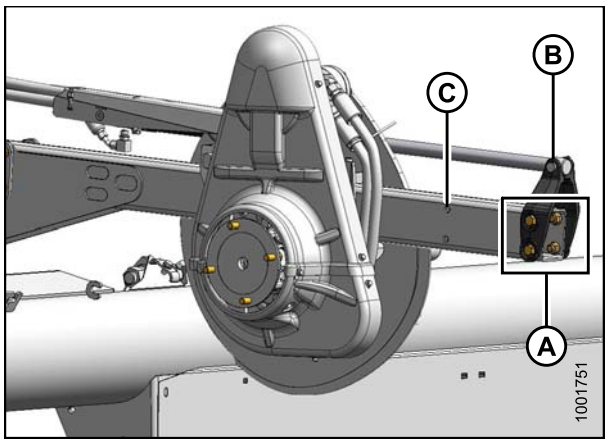


Figure 3.93: Forward Position

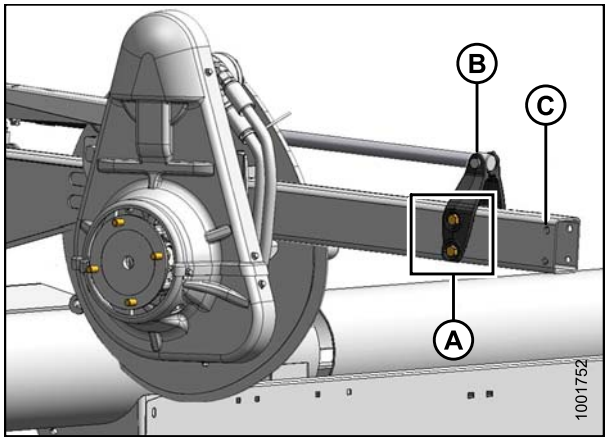


Figure 3.94: Rearward Position

Reposition right arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

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

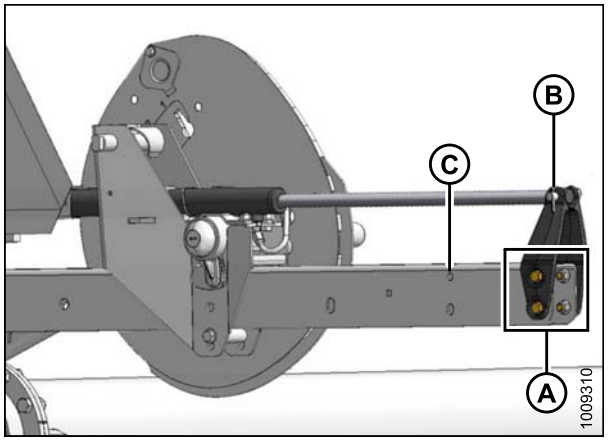


Figure 3.95: Forward Position

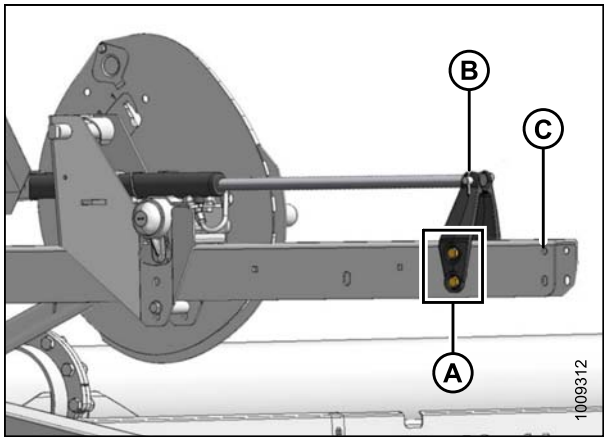


Figure 3.96: Rearward Position

Reposition the left reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
2. Remove bolts (D) securing bracket/light assembly (C) to the reel arm, and remove the bracket/light assembly.
3. Remove the cable tie securing the harness to the bracket/light assembly (C) or reel arm if necessary.
4. Swivel the light to the working position as shown.

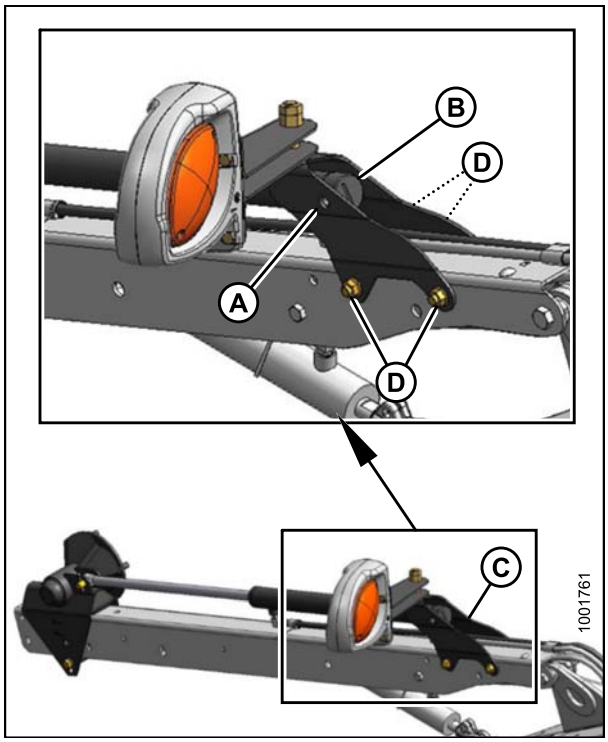


Figure 3.97: Forward Position

5. Reposition the bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
6. Push the reel back and attach cylinder (B) to the bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
7. Secure the light harness to the bracket/light assembly (C) using a cable tie.
8. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
9. Adjust the reel tine pitch if necessary. Refer to *3.7.11 Reel Tine Pitch, page 92*.

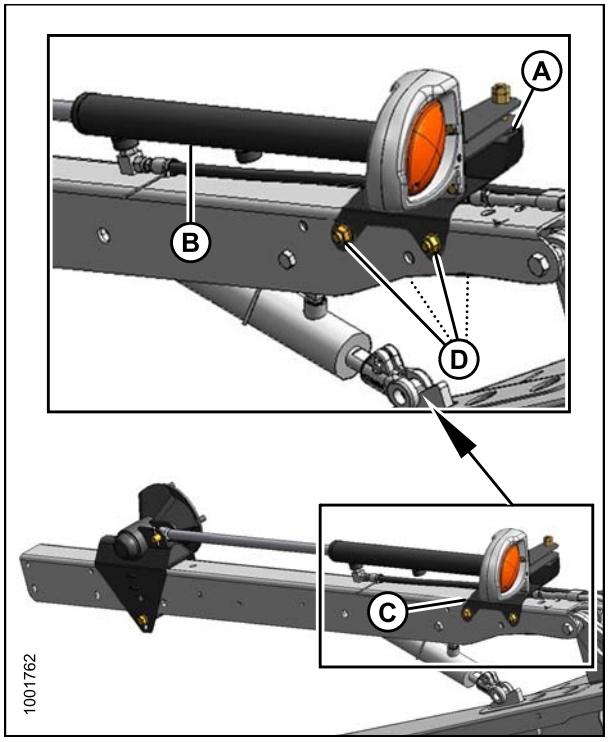


Figure 3.98: Rearward Position

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

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

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.

Reposition the left arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop the engine and remove the key from the ignition.
3. Remove cotter pin (A) and clevis pin (B).
4. Push the reel back until the cylinder barrel (C) lines up with the aft holes in bracket (D).
5. Reinstall clevis pin (B) at the new position and secure with cotter pin (A).

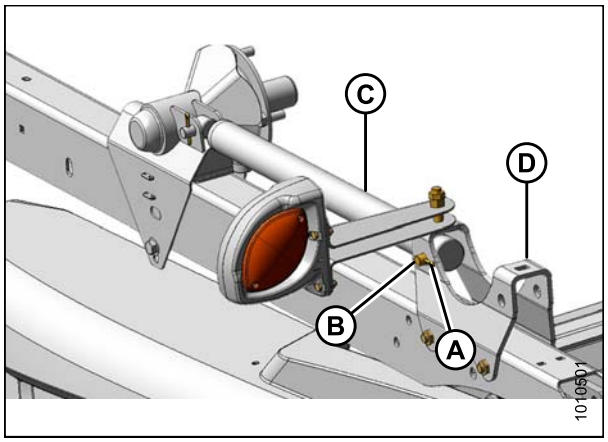


Figure 3.99: Forward Position – Left Arm

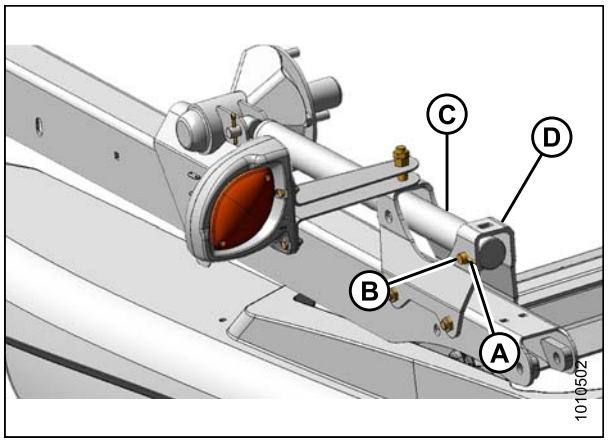


Figure 3.100: Aft Position – Left Arm

Reposition the center arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

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

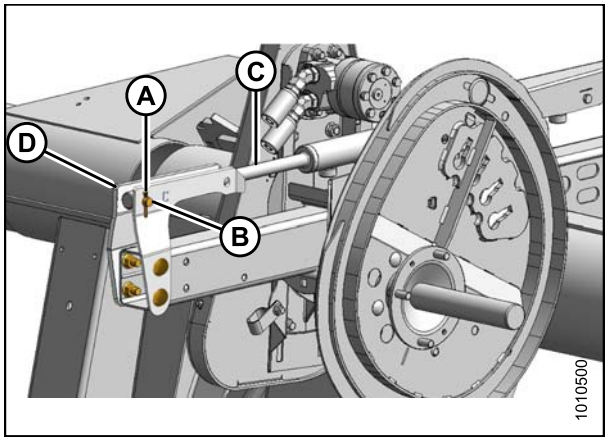


Figure 3.101: Forward Position – Center Arm

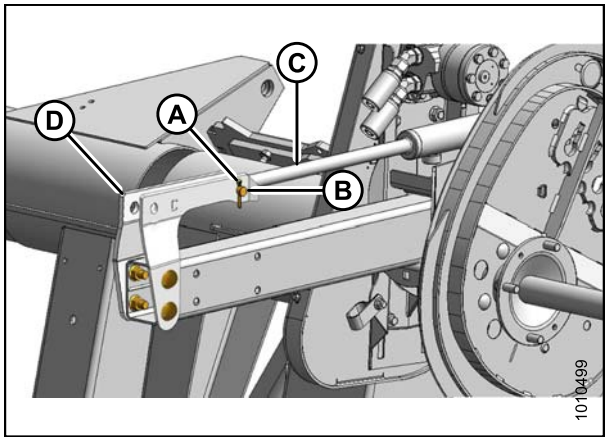


Figure 3.102: Aft Position – Center Arm

Reposition the right arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Remove cotter pin (A) and clevis pin (B).
2. Push the reel back until cylinder rod (C) lines up with the aft holes in bracket (D).
3. Reinstall clevis pin (B) at the new position and secure with cotter pin (A).

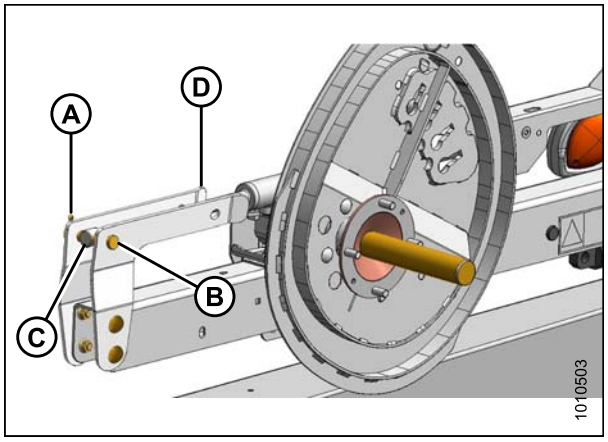


Figure 3.103: Forward Position – Right Arm

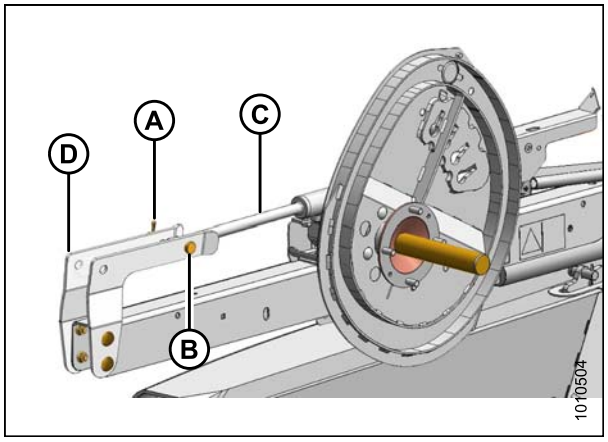


Figure 3.104: Aft Position – Right Arm

3.7.11 Reel Tine Pitch

IMPORTANT:
The following describes the conceptual and operational guidelines of the pick-up reel. Please read carefully before operating the machine.

The pick-up reel is designed to pick up flattened and severely lodged crops. It is not always necessary to increase the tine pitch (select a higher cam setting) to pick up lodged crops, however, because the cam setting is mainly used to determine how the crop gets delivered onto the drapers.

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

For the best results, use the minimum cam setting that delivers 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 provides set-up guidelines for various crop conditions.

The setting numbers are visible above the slots on the cam disc. Refer to *Adjusting Reel Cam, page 94* if adjustments are necessary.

Cam Position 1, Reel Position 6 or 7 delivers the most even crop flow onto the drapers without fluffing up or disturbing the material.

- This setting will release crop close to the cutterbar and works best if the cutterbar is 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; therefore, set the initial reel speed approximately equal to the ground speed.

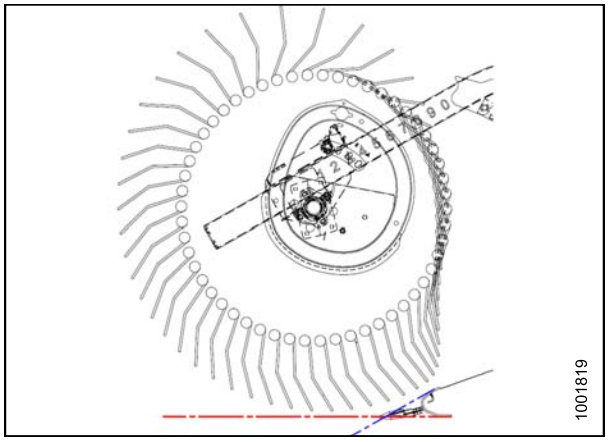


Figure 3.105: Finger Profile – Position 1

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

- If the crop is stalling on the cutterbar when the reel is in the forward position, increase the cam setting to push the crop past the rear edge of the cutterbar.
- If the crop is getting fluffed or if there is a disruption to the flow across the drapers, decrease the cam setting.
- This setting generates a fingertip speed that is approximately 20% faster than the reel speed.

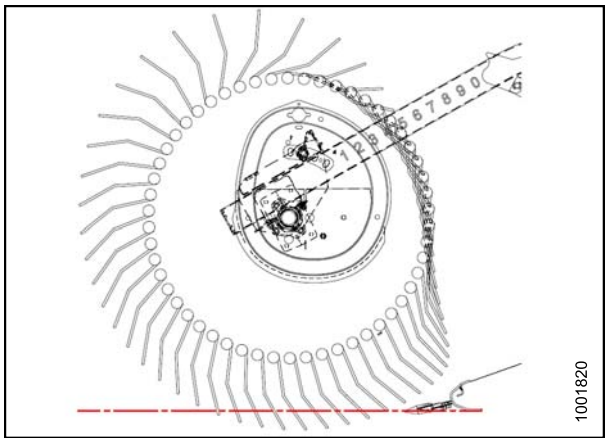


Figure 3.106: Finger Profile – Position 2

Cam Position 3, Reel Position 6 or 7 is 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 generates a fingertip speed that is approximately 30% faster than the reel speed.

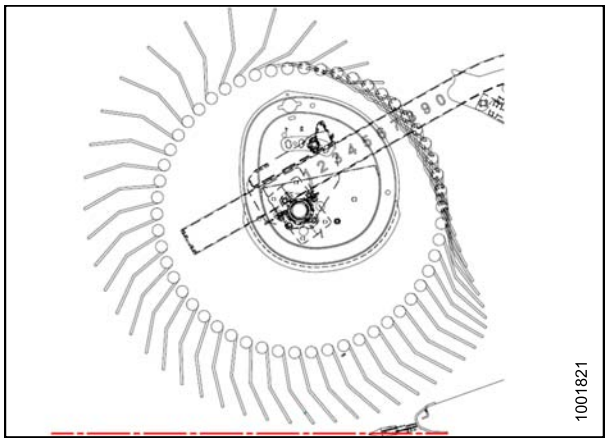


Figure 3.107: Finger Profile – Position 3

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 generates a fingertip speed that is approximately 35% faster than the reel speed.

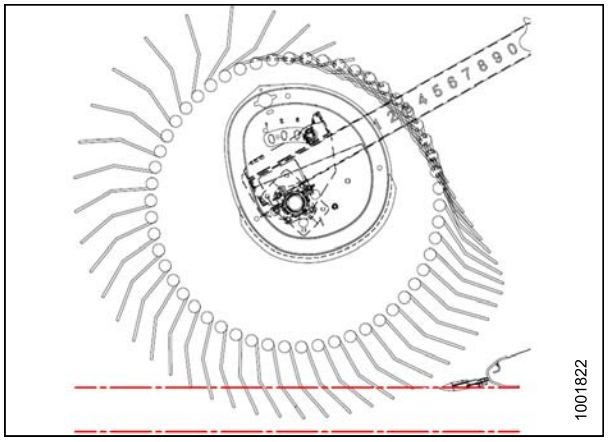


Figure 3.108: Finger Profile – Position 4

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.

- Leaves a significant amount of stubble when cutting height is set to approximately 203 mm (8 in.). In damp materials such as rice, it's possible to double the ground speed because of the reduction of cut material.
- This setting generates a fingertip speed that is approximately 35% faster than the reel speed.

NOTE:
Higher cam settings with the reel fore-aft position set between 4–5 sharply decreases the draper capacity because the reel disrupts the crop flow across the drapers and the fingers engage the crop that is moving on the drapers. High cam settings are recommended only with the reel at, or close to, full forward settings.

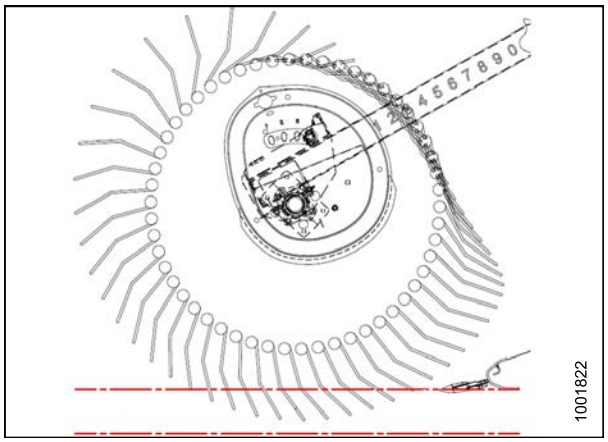


Figure 3.109: Finger Profile – Position 4

IMPORTANT:
The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft position. Refer to *5.13.1 Reel Clearance to Cutterbar, page 428*.

Refer to *3.6.2 Header Settings, page 44* for recommended reel tine pitch in specific crops and crop conditions.

Adjusting Reel Cam

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

   NOTE:
   Bolt (B) is positioned through the cam disc (transparent view shown in illustration for improved clarity).

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

   IMPORTANT:
   Ensure the cam is secured into position before operating the machine.

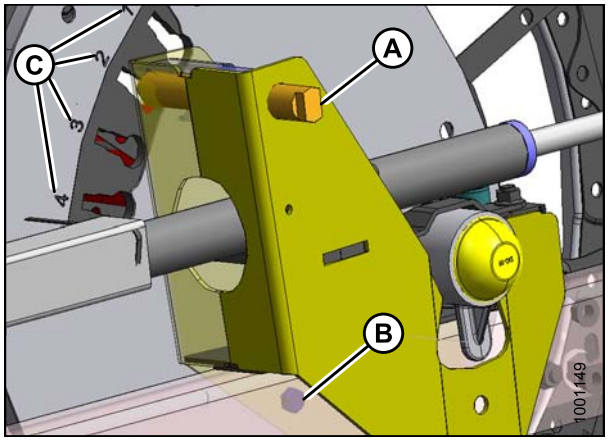


Figure 3.110: Cam Disc Positions

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 with Latch Option from Header

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. Refer to your combine operator's manual for instructions.
2. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
3. Lift safety lever (A).
4. Hold onto crop divider (B), push lever (C) to open latch, and lower crop divider.

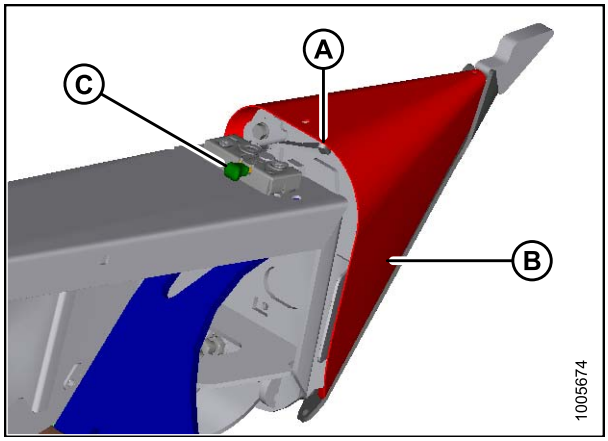


Figure 3.111: Crop Divider

5. Lift crop divider off endsheet and store as follows:
   a. Insert pin (A) on crop divider into hole in endsheet at location shown.
   b. Lift crop divider and position lugs (B) on crop divider into bracket on endsheet. Ensure lugs engage bracket.
6. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

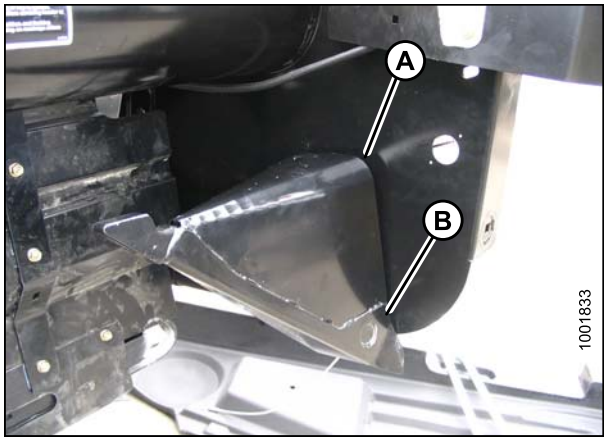


Figure 3.112: Stored Crop Divider

Removing Crop Dividers without Latch Option from Header

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. Refer to your combine operator's manual for instructions.
2. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
3. Remove bolt (A), lock washer, and flat washer.
4. Lower crop divider (B) and then lift to remove from endsheet.
5. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

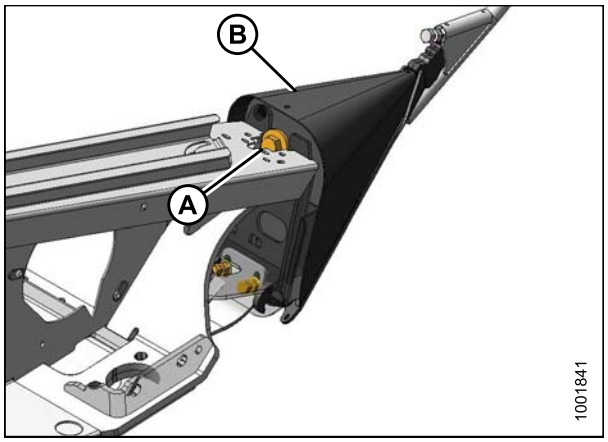


Figure 3.113: Crop Divider

Installing Crop Dividers with Latch Option onto Header

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. Refer to your combine operator's manual for instructions.
2. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.

3. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

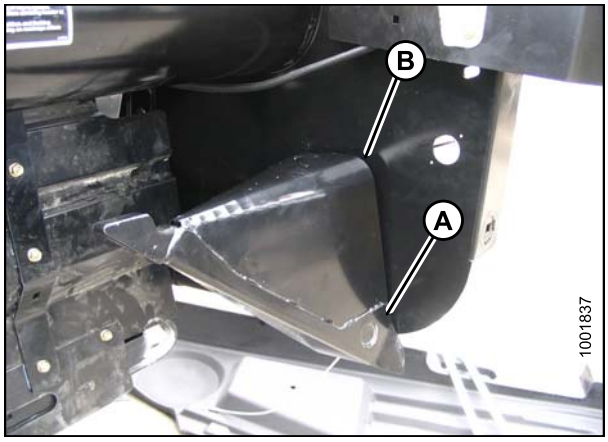


Figure 3.114: Stored Crop Divider

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

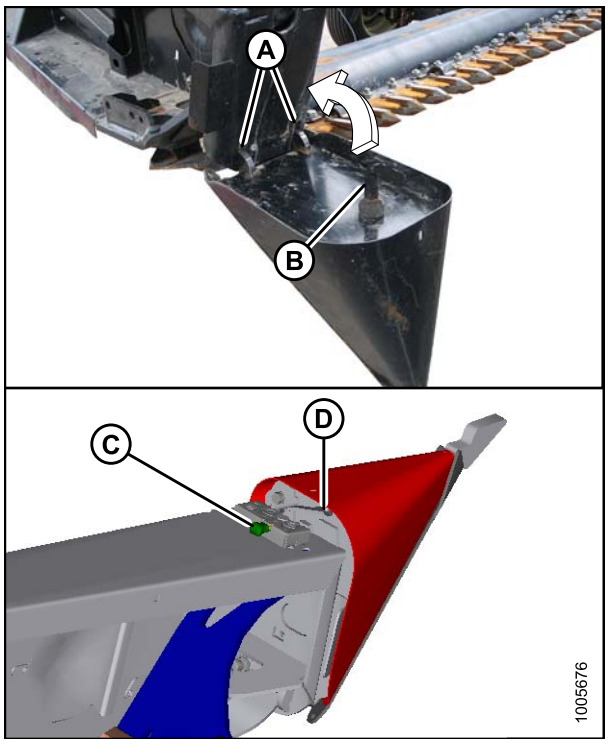


Figure 3.115: Crop Divider

7. Pull at the tip of the crop divider and ensure there is no lateral movement. If necessary, adjust bolts (A) to tighten crop divider and eliminate lateral movement.
8. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

Figure 3.116: Crop Divider

Installing Crop Dividers without Latch Option onto Header

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. Refer to your combine operator's manual for instructions.
2. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
3. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

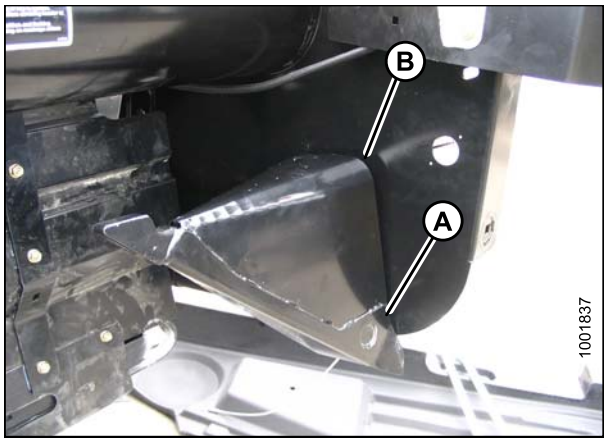


Figure 3.117: Stored Crop Divider

4. Position crop divider as shown by inserting lugs (A) into holes in endsheet.

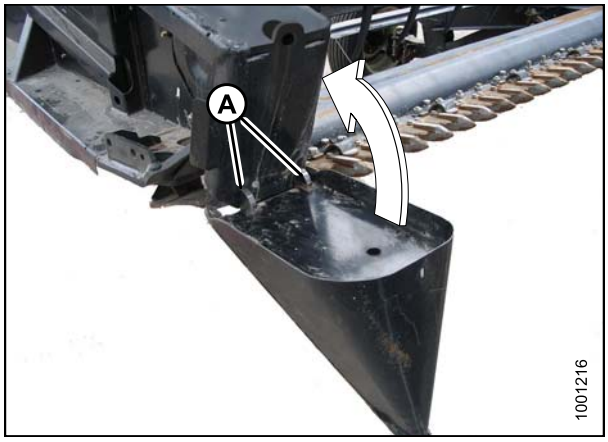


Figure 3.118: Crop Divider

5. Lift forward end of crop divider and install bolt (A) and special stepped washer (B) (step towards divider). Tighten bolt.
6. Pull at the tip of the crop divider and ensure there is no lateral movement. If necessary, adjust bolts (A) to tighten crop divider and eliminate lateral movement.
7. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

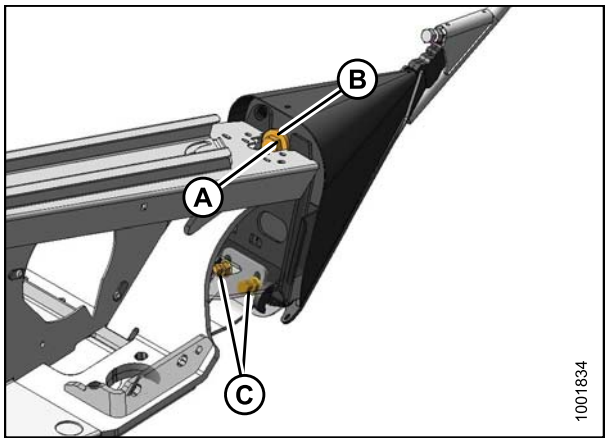


Figure 3.119: Crop Divider

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 3.13 Crop Divider Rods Recommended Use

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

Removing Crop Divider Rods

1. Loosen bolt (A) and remove crop divider rod (B) from both sides of header.

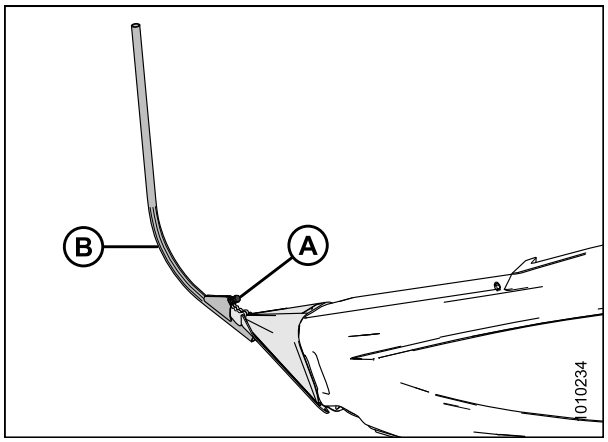


Figure 3.120: Crop Divider Rod

2. Store both crop divider rods inboard on the right side endsheet.

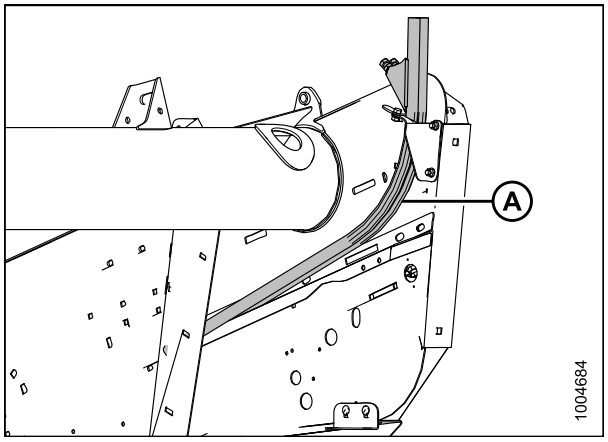


Figure 3.121: Right Side Endsheet

Installing Crop Divider Rods

1. Remove crop divider rods from storage location on inboard of right side endsheet.

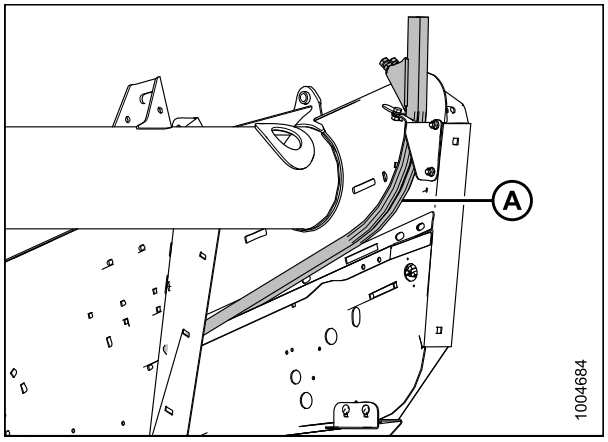


Figure 3.122: Right Side Endsheet

2. Position crop divider rod (B) on tip of crop divider as shown and tighten bolt (A).
3. Repeat procedure at opposite end of header.

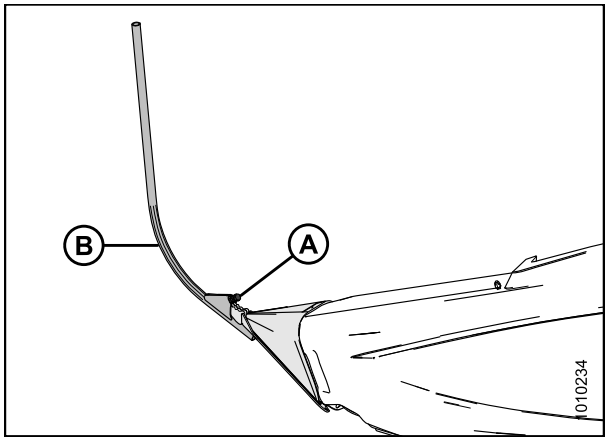


Figure 3.123: Divider Rod on Crop Divider

Rice Divider Rods

Optional rice divider rods provide improved performance in tall and tangled rice crops. Refer to *6.5.6 Rice Divider Rods, page 478*.

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

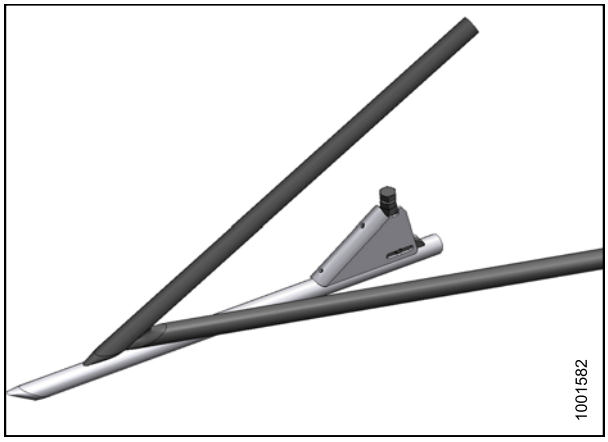


Figure 3.124: Divider Rod for Rice

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 sends a signal to the combine allowing it to maintain a consistent cutting height and an optimum adapter float as the header follows ground contours.

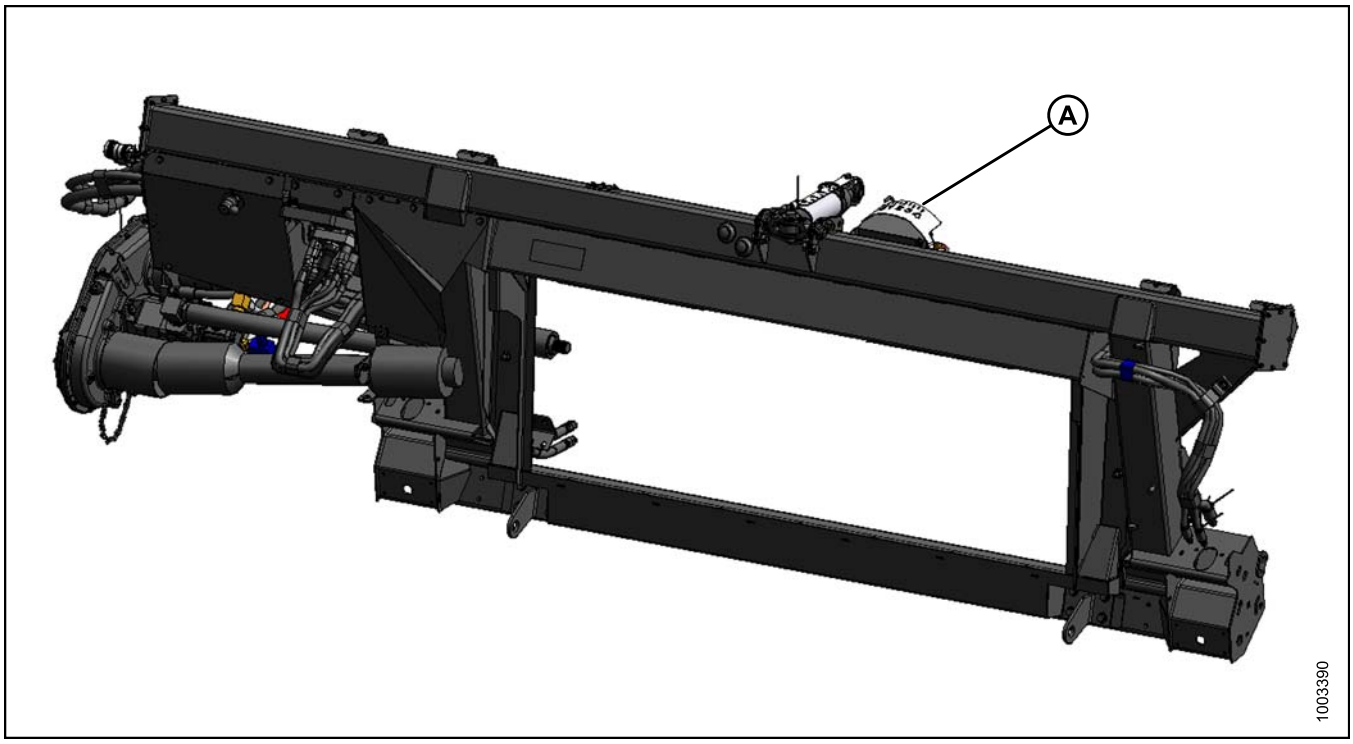


Figure 3.125: CA25 Combine Adapter

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 Sensor Output Voltage Range – Combine Requirements, page 103*.
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. Individual combine settings can improve AHHC performance (refer to your combine instruction manual).

   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:

3.8.1 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 3.14 Sensor Voltage Limits

Combine	Low Voltage Limit	High Voltage Limit	Minimum Voltage Range
Challenger, Gleaner A, Gleaner S, 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	0.7 V	4.3 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 104*.

Manually Checking Voltage Range

The output voltage range of the auto header height control (AHHC) sensors in some combines can be checked from the cab. For instructions, refer to your combine operator's manual or the AHHC instructions later in this document.

To manually check the sensor's output voltage range, follow these steps:

1. Position the header 150 mm (6 in.) 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.

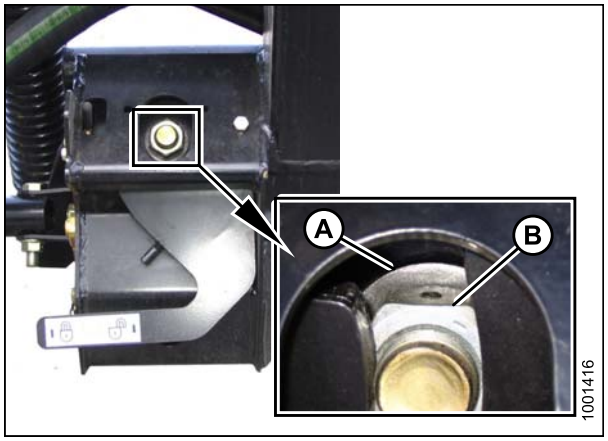


Figure 3.126: Float Lock

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

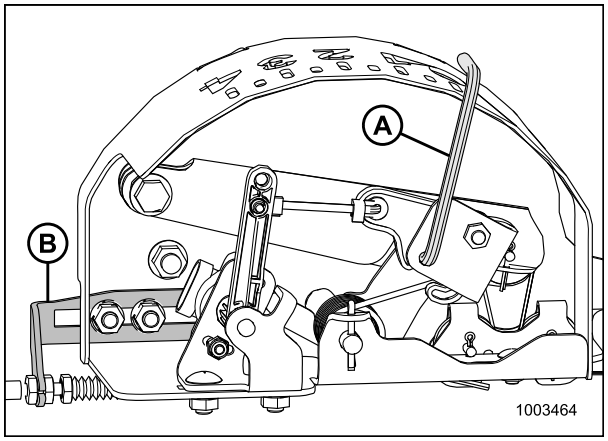


Figure 3.127: Float Indicator Box (Most Common 5 Volt AHHC Sensor Assembly Shown)

4. Use a voltmeter (A) to measure the voltage between the ground (Pin 2) and signal (Pin 3) wires at the AHHC sensor in the float indicator box. Ensure it is at the high voltage limit for the combine. Refer to Table *3.14 Sensor Voltage Limits, page 103*.

   NOTE:
   The harness connector must be plugged into the sensor.

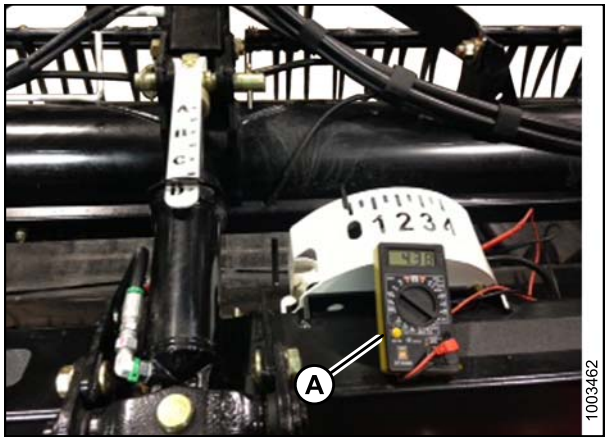


Figure 3.128: Measuring Voltage at Float Indicator Box

5. 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.

6. Use a voltmeter (A) to 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 *3.14 Sensor Voltage Limits, page 103*.

   NOTE:
   The harness connector must be plugged into the sensor.

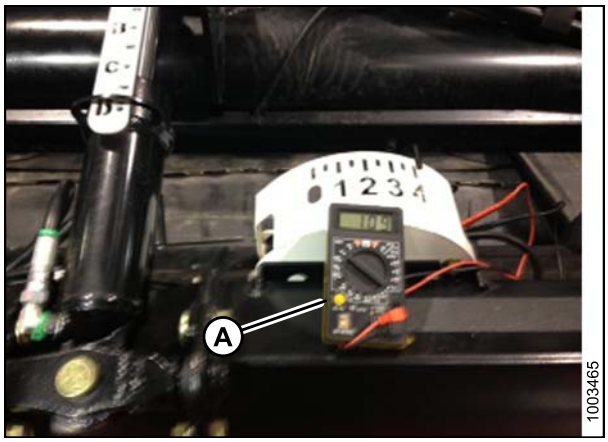


Figure 3.129: Measuring Voltage at Float Indicator Box

7. Adjust the voltage limits (refer to *Adjusting Voltage Limits, page 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

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 152–254 mm (6–10 in.) above the ground; the float indicator should be at the 0.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to the right to increase the high voltage limit and to the left to decrease it.
   e. Tighten sensor mounting bolts (A).

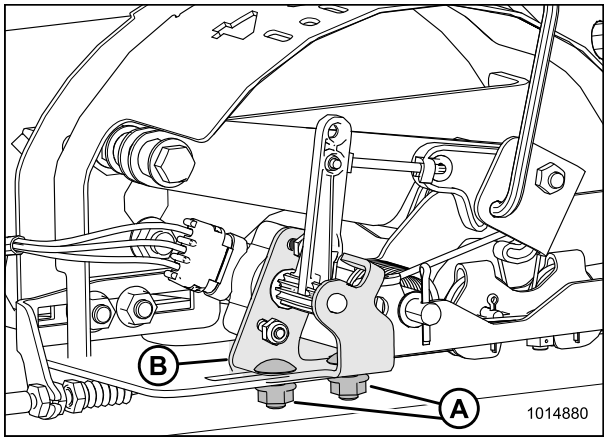


Figure 3.130: AHHC Sensor Assembly for Use with Lexion Combines

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 sensor (B) clockwise to increase the low voltage limit, and counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (A).

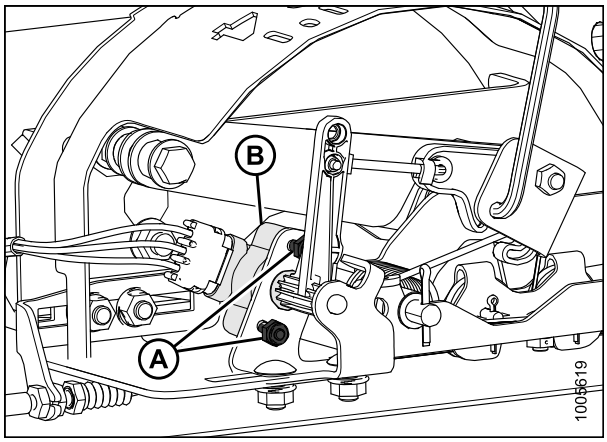


Figure 3.131: Most Common 5 Volt AHHC Sensor Assembly

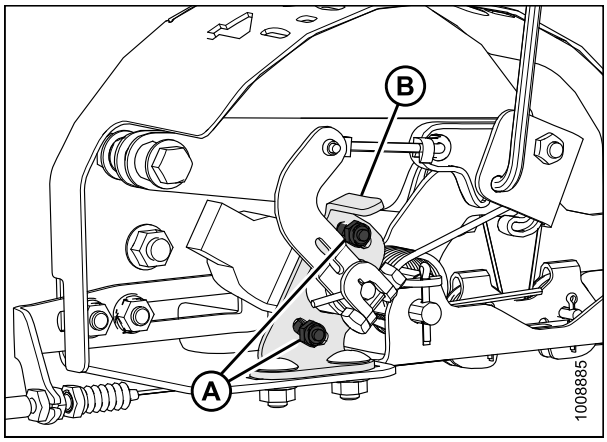


Figure 3.132: 10 Volt AHHC Sensor Assembly for Use with Some New Holland Combines

3.8.2 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.

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.

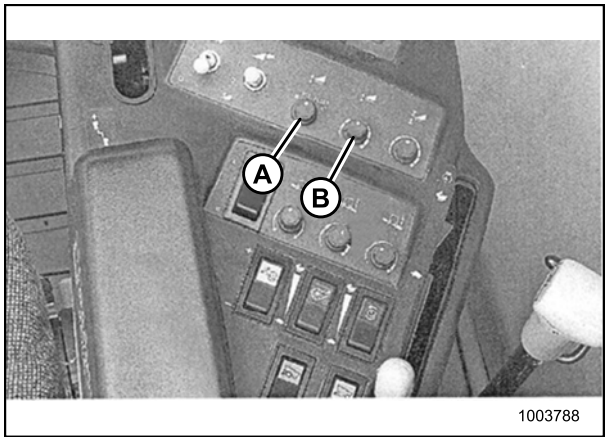


Figure 3.133: Combine Controls

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 3.134: Combine Controls

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

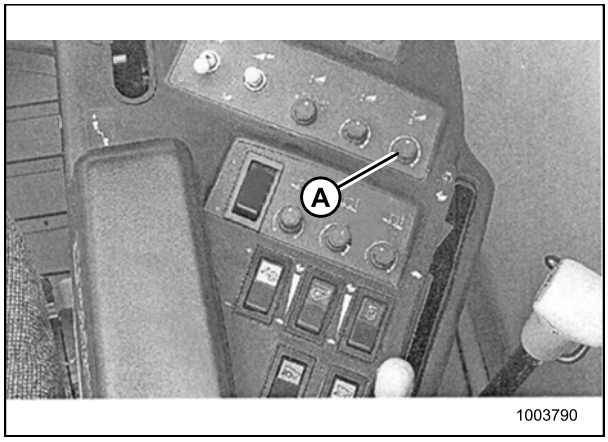


Figure 3.135: Combine Controls

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

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. Set the flotation on the header and adapter package (refer to operator's manual for instructions). Position fore-aft and center-link in mid span.
2. Start combine engine, but do **NOT** engage separator or feeder house.
3. Locate header control switch (A) on the right console, and set to "HT" (this is AHHC mode).

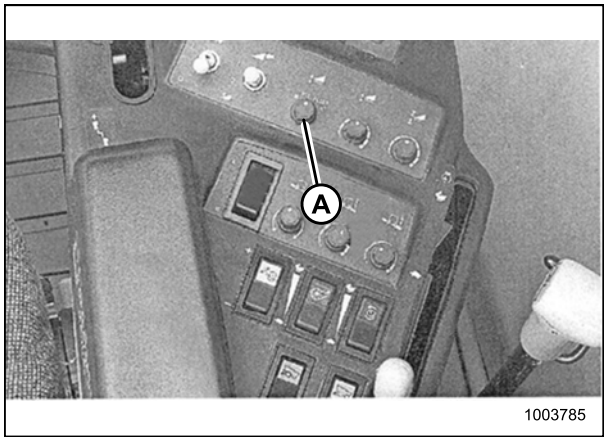


Figure 3.136: Right Console

4. 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.
5. 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.

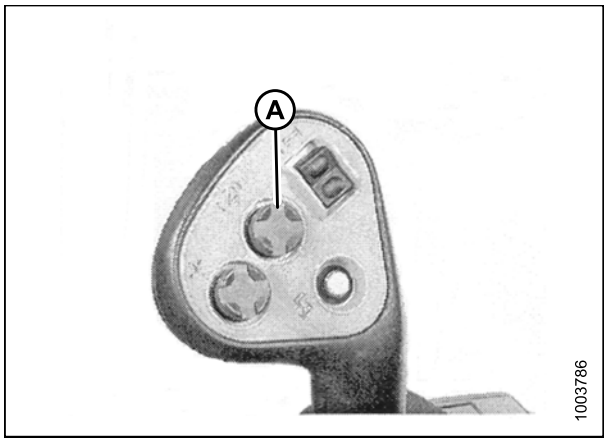


Figure 3.137: Joystick Lever (Case IH 2300/2500)

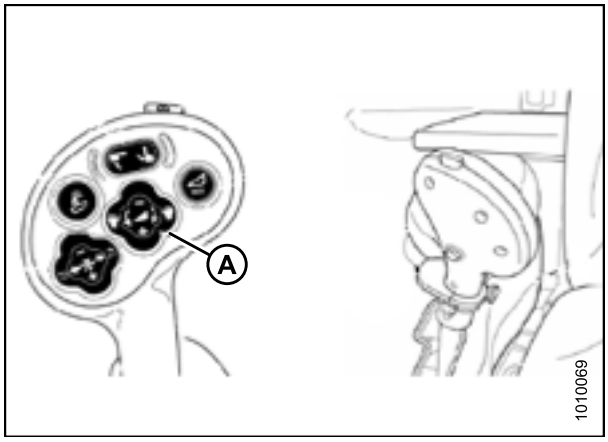


Figure 3.138: Joystick Lever (Case IH 5088/6088/7088)

NOTE:
The ideal ground pressure—in most cases—is one number (on the float indicator box) above the header suspended off the ground. For example, if the float indicator needle (B) is positioned at 0 with the header suspended off the ground, then the ideal ground pressure will be achieved with the needle positioned at 1 (A). Operating with heavier pressures can wear the cutterbar wearplate prematurely.

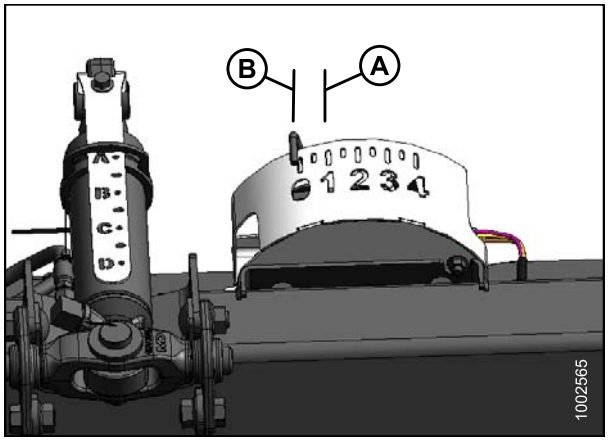


Figure 3.139: Float Indicator Box

Setting the Sensitivity of the Auto Header Height Control (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 page.
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 page. If there are no changes, the screen will return to the monitor page after five seconds.

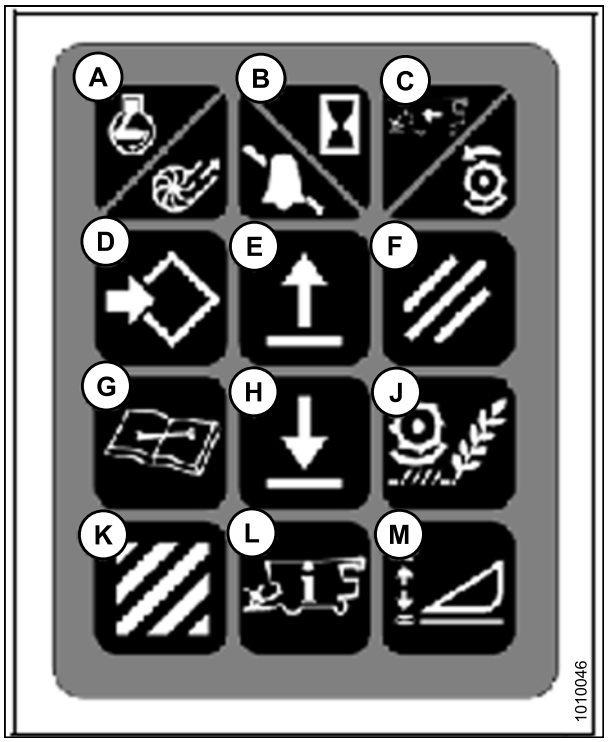


Figure 3.140: Combine Controls

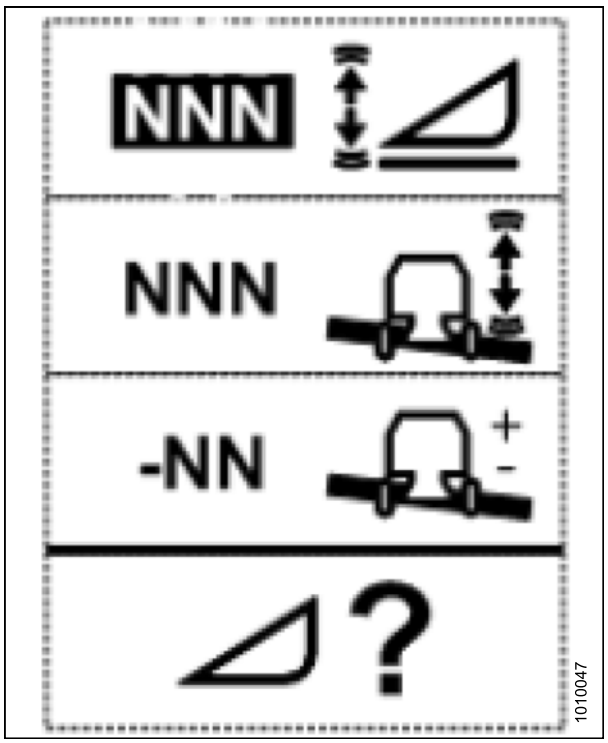


Figure 3.141: Height Sensitivity Change Page

3.8.3 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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the CA25 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.

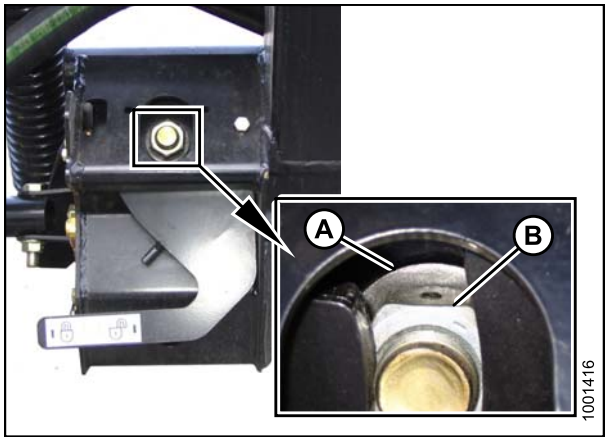


Figure 3.142: Float Lock

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

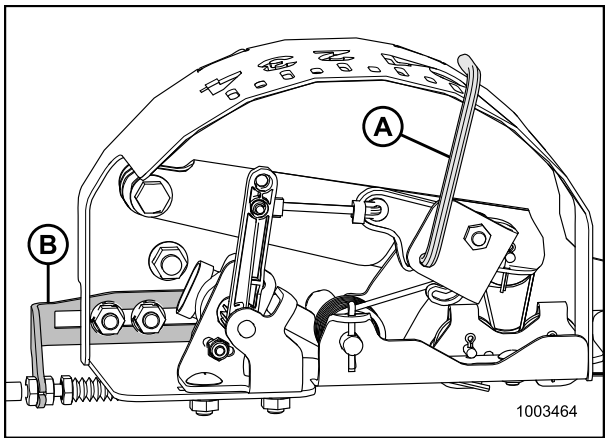


Figure 3.143: Float Indicator Box

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

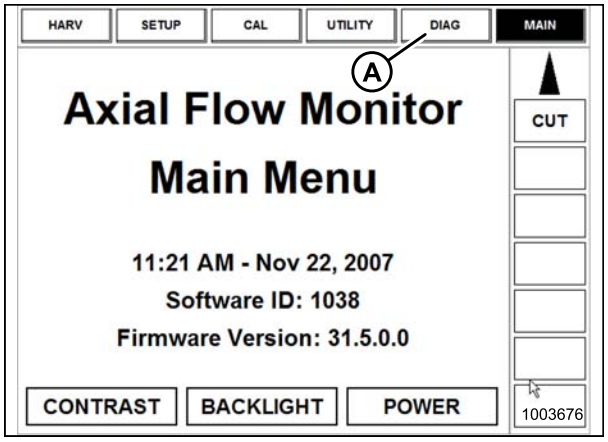


Figure 3.144: Case 8010 Combine Display

6. Select SUB SYSTEM (A). The SUB SYSTEM page displays.

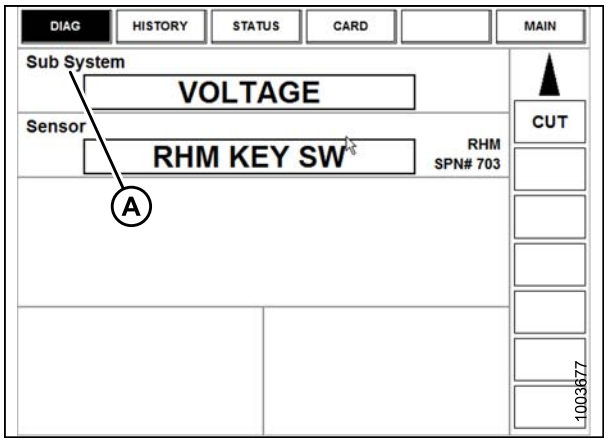


Figure 3.145: Case 8010 Combine Display

7. Select HDR HEIGHT/TILT (A). The SENSOR page displays.

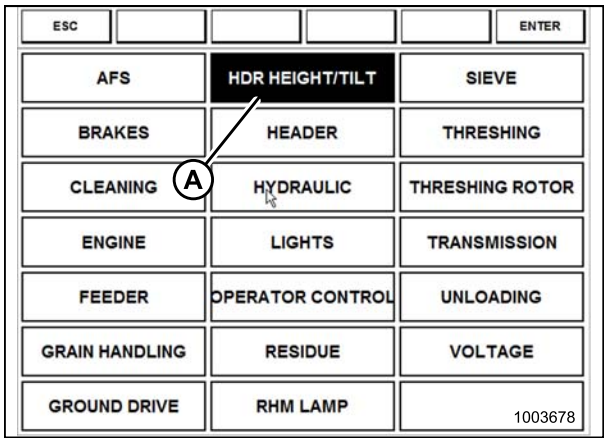


Figure 3.146: Case 8010 Combine Display

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

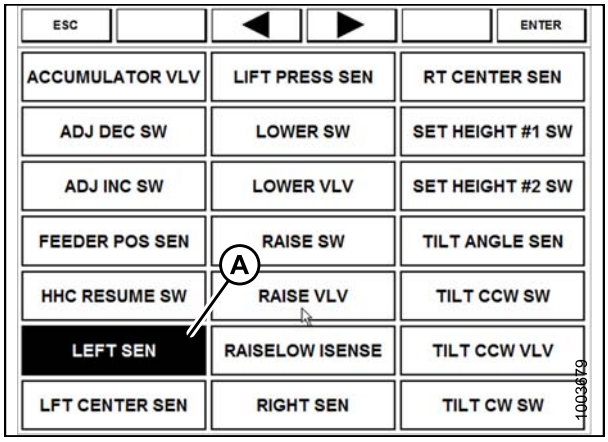


Figure 3.147: Case 8010 Combine Display

9. Adjust the voltage limits (refer to *Adjusting Voltage Limits, page 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

Figure 3.148: Case 8010 Combine Display

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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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.

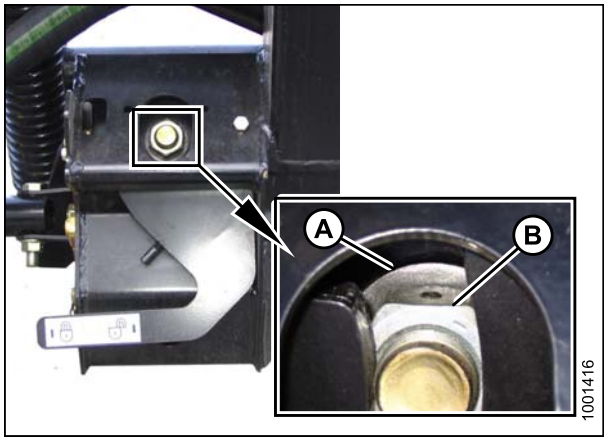


Figure 3.149: Float Lock

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

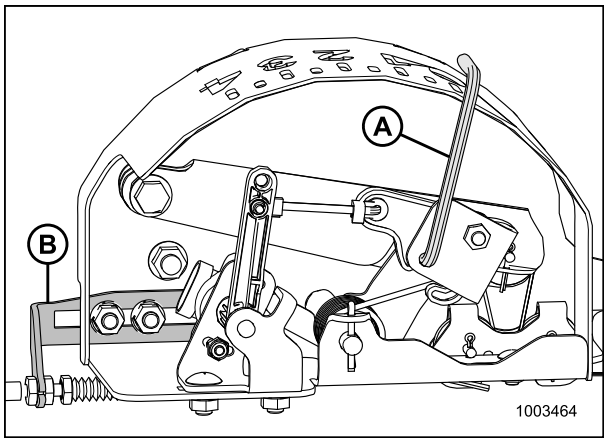


Figure 3.150: Float Indicator Box

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

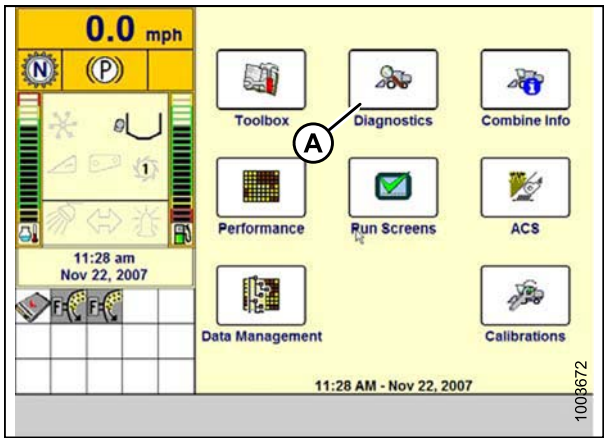


Figure 3.151: Case IH Combine Display

7. Select the GROUP drop-down arrow (A). The GROUP dialog box displays.

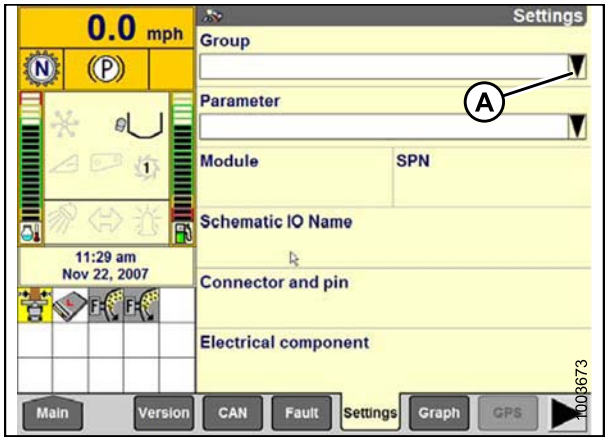


Figure 3.152: Case IH Combine Display

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

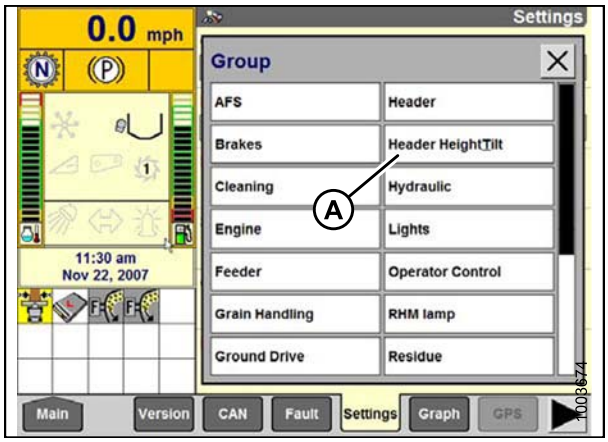


Figure 3.153: Case IH Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select the GRAPH button (B). The exact voltage is displayed at top of page. Raise and lower the header to see the full range of voltage readings.
10. Adjust the voltage limits (refer to *Adjusting Voltage Limits, page 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

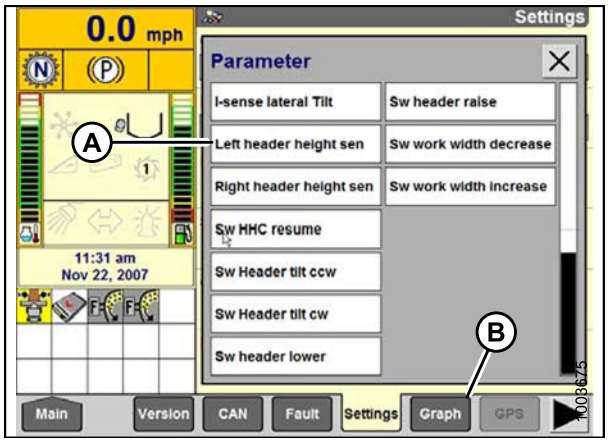


Figure 3.154: Case IH Combine Display

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

For best performance from 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 *3.7.4 Header Angle, page 75*.

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 (Case Combines with Version 28.00 or Higher Software), page 118*.

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. Ensure all header and adapter electrical and hydraulic connections are made.
3. Select TOOLBOX on the MAIN page, and then select HEADER.
4. Set appropriate HEADER STYLE.

Figure 3.155: Case IH Combine Display

5. Set AUTO REEL SPEED SLOPE.
6. Set HEADER PRESSURE FLOAT to NO if equipped, and ensure REEL DRIVE is HYDRAULIC.

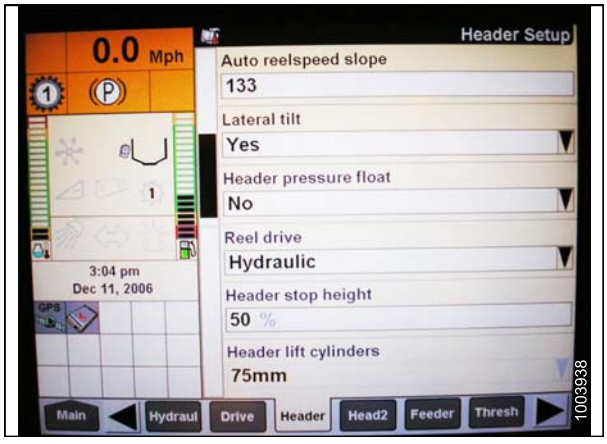


Figure 3.156: Case IH Combine Display

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

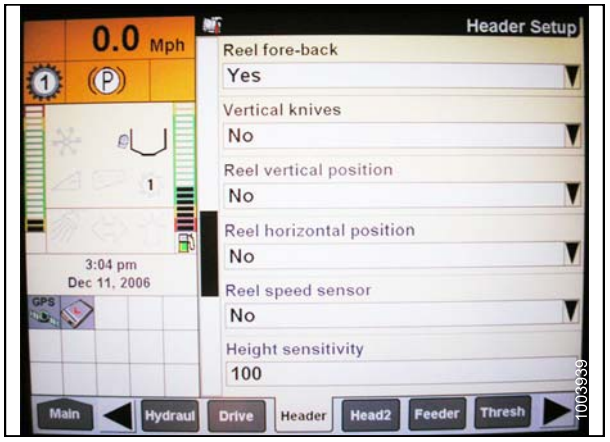


Figure 3.157: Case IH Combine Display

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

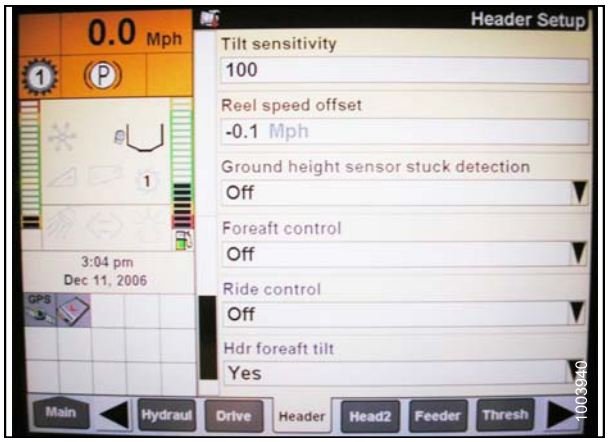


Figure 3.158: Case IH Combine Display

10. Press HEAD2 at bottom of page.
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.

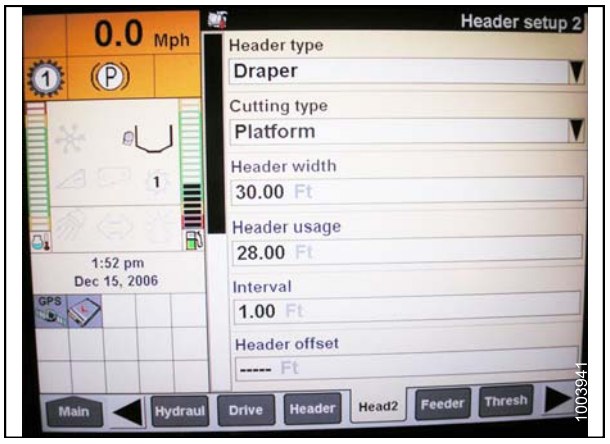


Figure 3.159: Case IH Combine Display

Calibrating the Auto Header Height Control (Case Combines with Version 28.00 or Higher 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 *3.7.4 Header Angle, page 75*.

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. Select TOOLBOX on the MAIN page, 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).

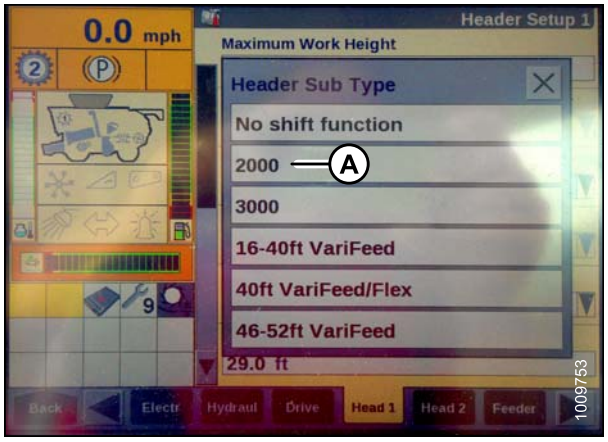


Figure 3.160: Case IH Combine Display

5. Locate the HEADER SENSORS and HEADER PRESSURE FLOAT 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 FLOAT field.

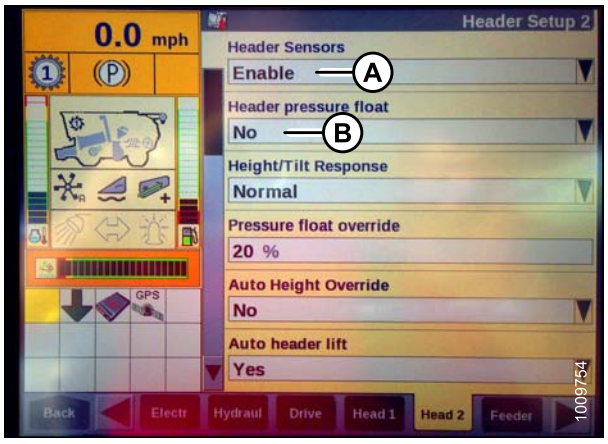


Figure 3.161: Case IH Combine Display

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.

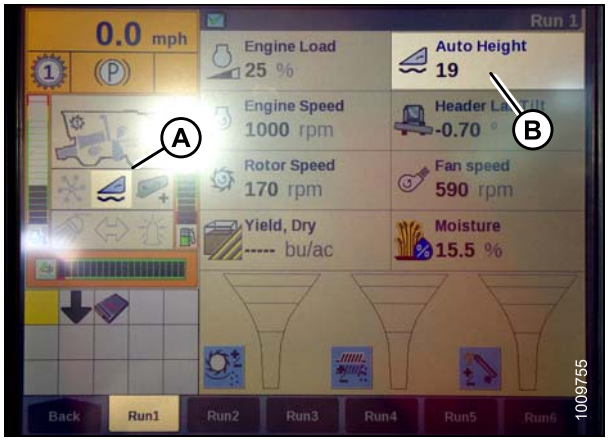


Figure 3.162: Case IH Combine Display

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

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

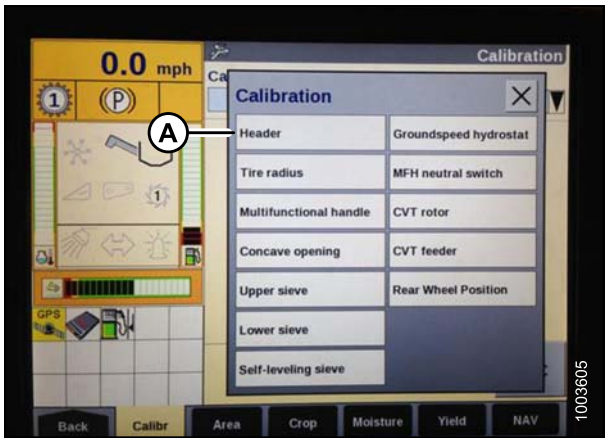


Figure 3.163: Case IH Combine Display

11. Follow the calibration steps in the order in which they appear in the dialog box. 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.

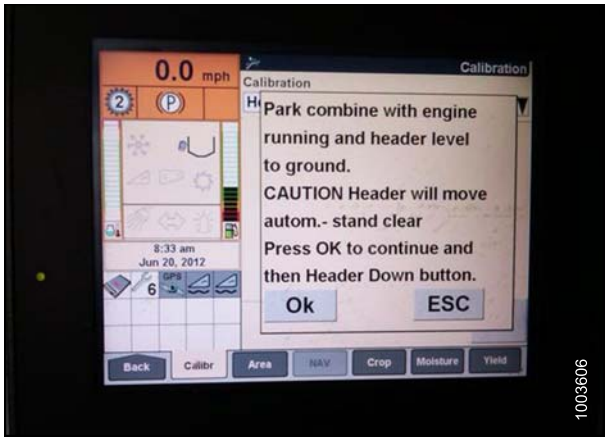


Figure 3.164: Case IH Combine Display

12. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on the page. 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.

13. If the unit does not function properly, conduct the maximum stubble height calibration.

Setting Preset Cutting Height (Case 7010/8010, 7120/8120/9120, 7230/8230/9230)

To set the preset cutting height, follow these steps:

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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Engage separator and header.
2. Manually raise or lower the header to the desired cutting height.
3. Press the SET #1 switch (A). The HEADER HEIGHT MODE lamp (C), next to the SET #1 switch, turns on.
4. Manually raise or lower the header to a second desired cutting height.
5. Press the SET #2 switch (B). The HEADER HEIGHT MODE lamp (D), next to the SET #2 switch, turns on.

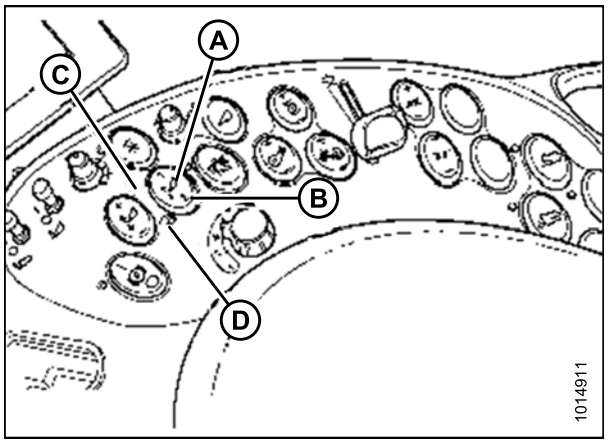


Figure 3.165: Case Combine Controls

6. To swap between set points, press HEADER RESUME (A).
7. To pick up header at headlands, press HEADER RESUME (A) twice. To lower, press HEADER RESUME (A).

NOTE:
You can fine adjust these set points by using the FINE ADJUST switch (A).

NOTE:
Pressing the HEADER RAISE/LOWER switch will disengage AUTO HEIGHT mode. Press HEADER RESUME to reengage.

NOTE:
The ideal ground pressure—in most cases—is one number (on the float indicator box) above the header suspended off the ground. For example, if the float indicator needle (A) is positioned at 0 with the header suspended off the ground, then the ideal ground pressure will be achieved with the needle positioned at 1. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

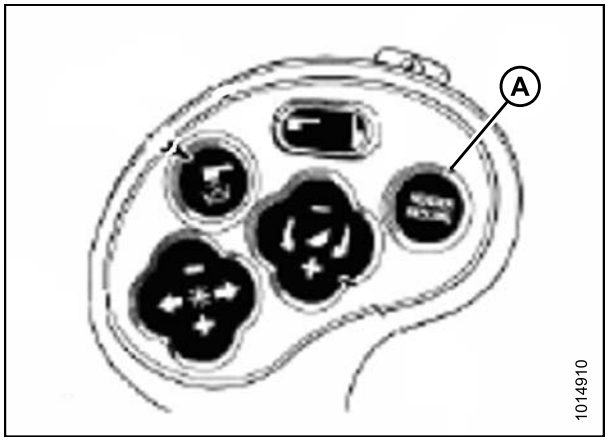


Figure 3.166: Case Combine Controls

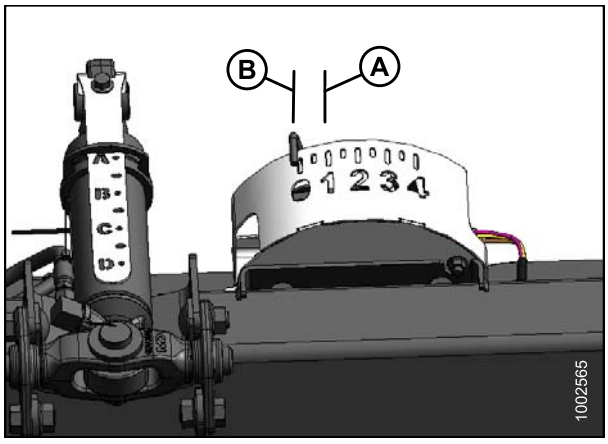


Figure 3.167: Float Indicator Box

3.8.4 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.

1. Position the header 150 mm (6 in.) 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.

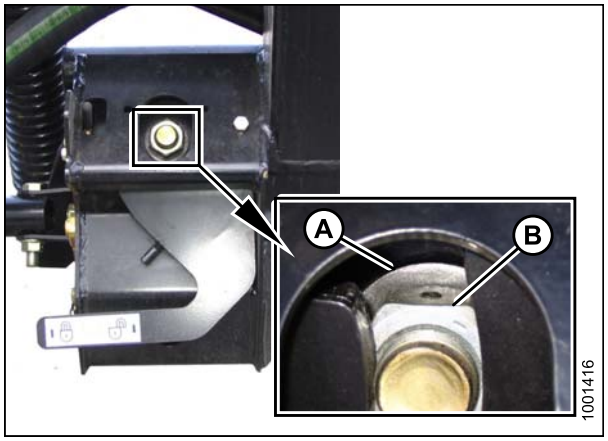


Figure 3.168: Float Lock

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

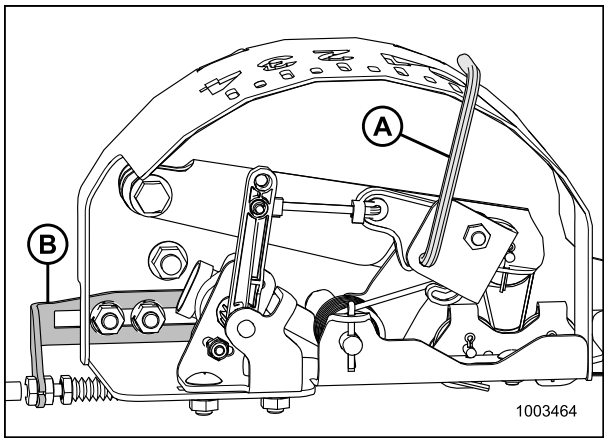


Figure 3.169: Float Indicator Box

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.

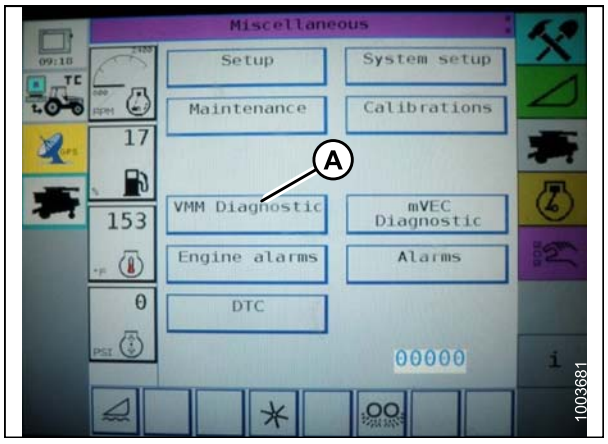


Figure 3.170: Challenger Combine Display

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 page as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. Both readings should be identical.

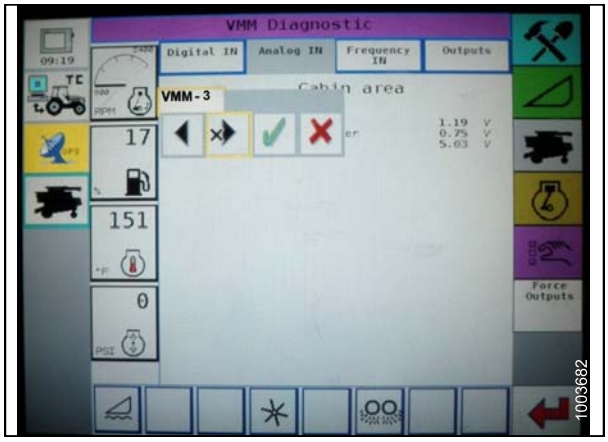


Figure 3.171: Challenger Combine Display

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 150 mm (6 in.) off the ground.
10. Read voltage.
11. Adjust the voltage limits (refer to *Adjusting Voltage Limits, page 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

Figure 3.172: 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 is an integral part of the system.

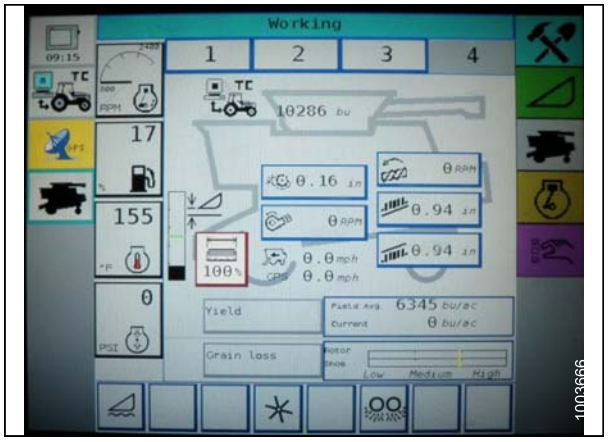


Figure 3.173: Challenger Combine Display

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.

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 *3.7.4 Header Angle, page 75*.

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. On the FIELD page, press the DIAGNOSTICS icon. The MISCELLANEOUS page appears.

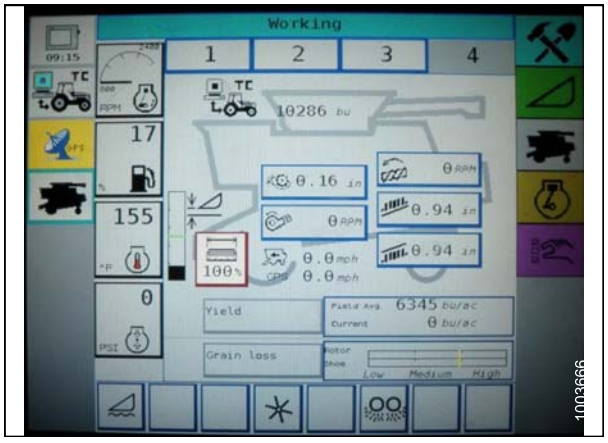


Figure 3.174: Challenger Combine Display

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

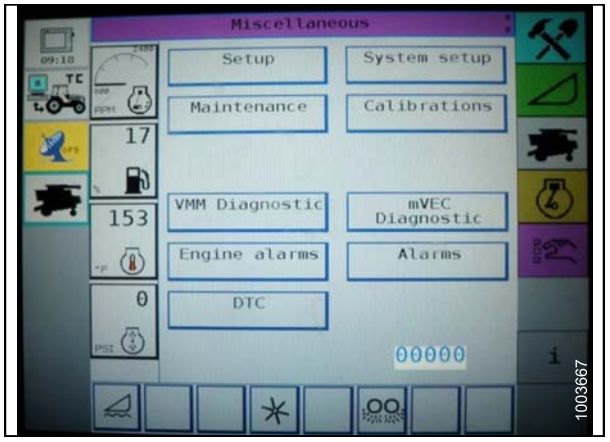


Figure 3.175: Challenger Combine Display

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

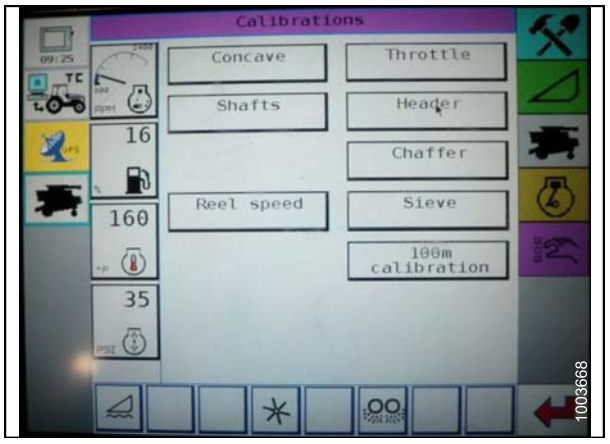


Figure 3.176: Challenger Combine Display

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

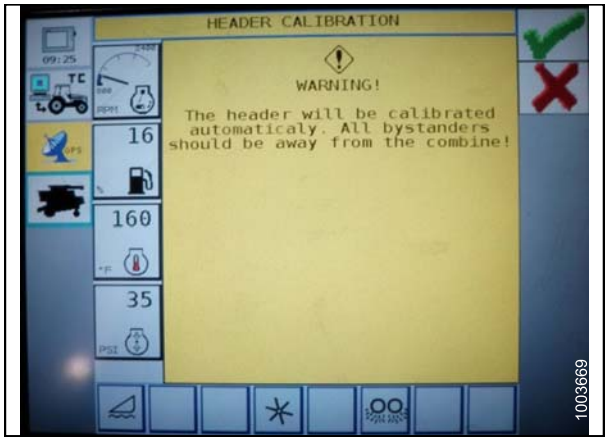


Figure 3.177: Challenger Combine Display

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 page. 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.

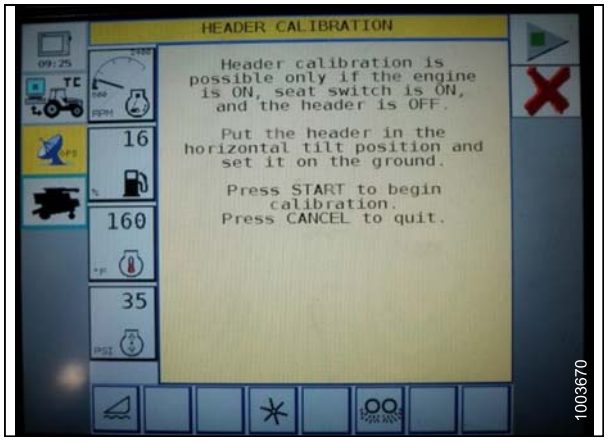


Figure 3.178: Challenger Combine Display

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 3.179: 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.

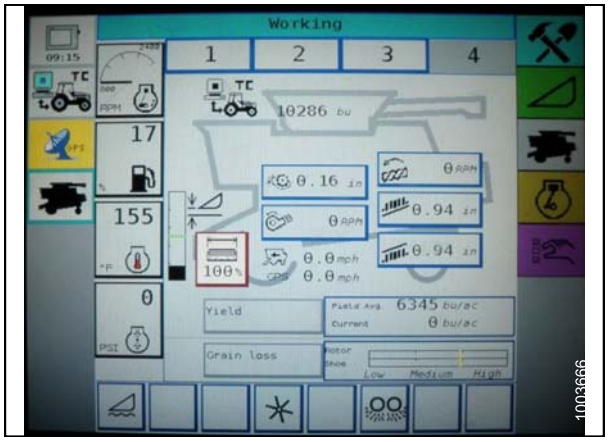


Figure 3.180: Challenger Combine Display

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

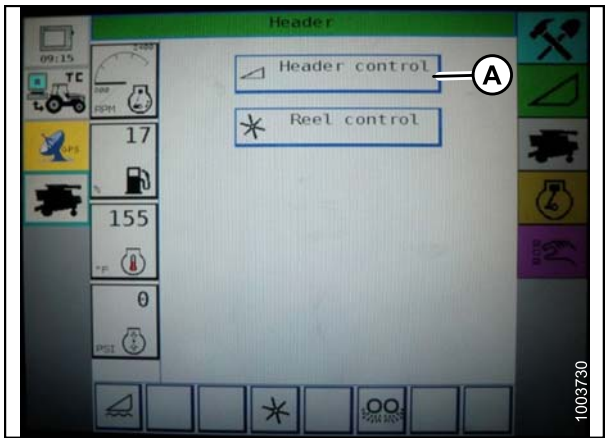


Figure 3.181: Challenger Combine Display

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.

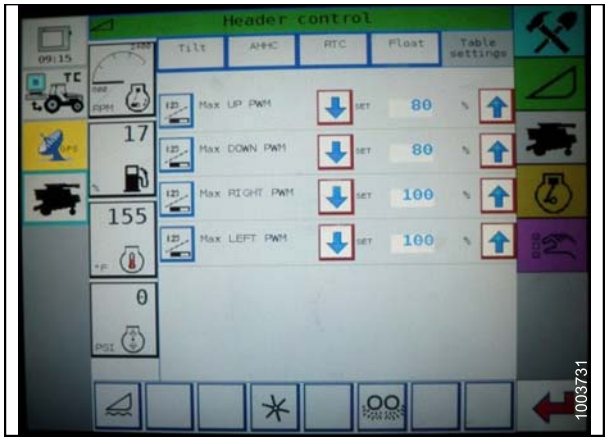


Figure 3.182: Challenger Combine Display

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

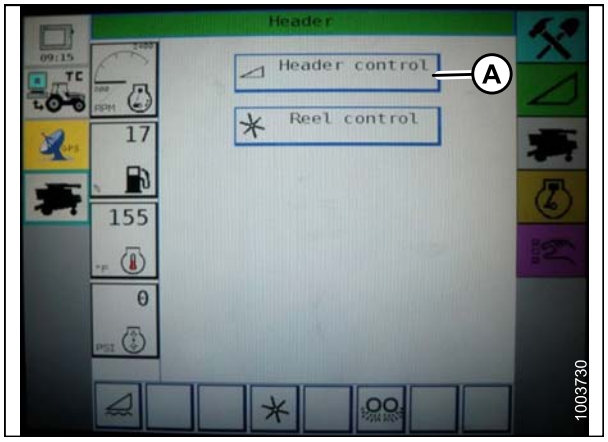


Figure 3.183: Challenger Combine Display

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.

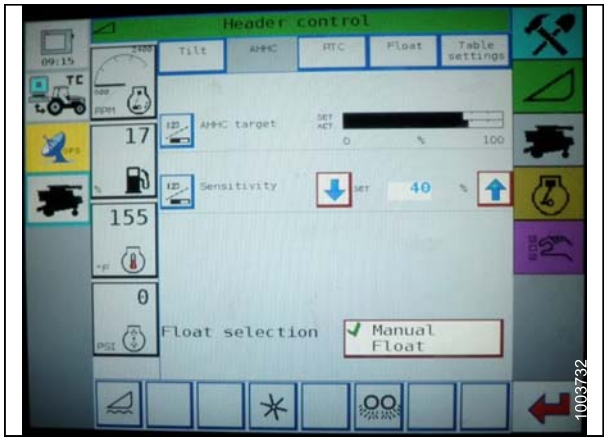


Figure 3.184: Challenger Combine Display

3.8.5 Gleaner R62/R72 Combines

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 components listed above, the electro hydraulic header lift control valve 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 *3.7.4 Header Angle, page 75*.

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 auto header height control, follow these steps:

CAUTION

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

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.

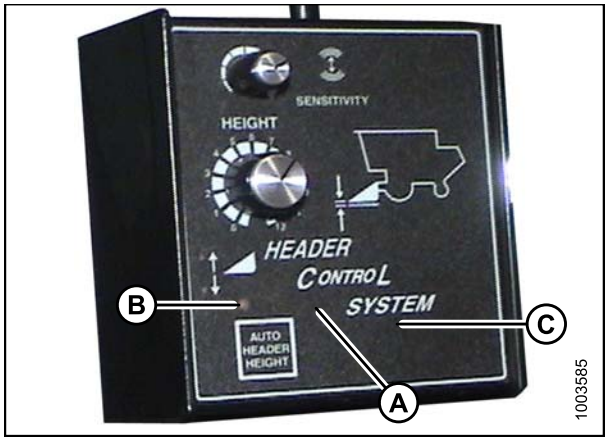


Figure 3.185: Combine Header Control System

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.

1. Engage the main threshing clutch (A) and header clutch (B).

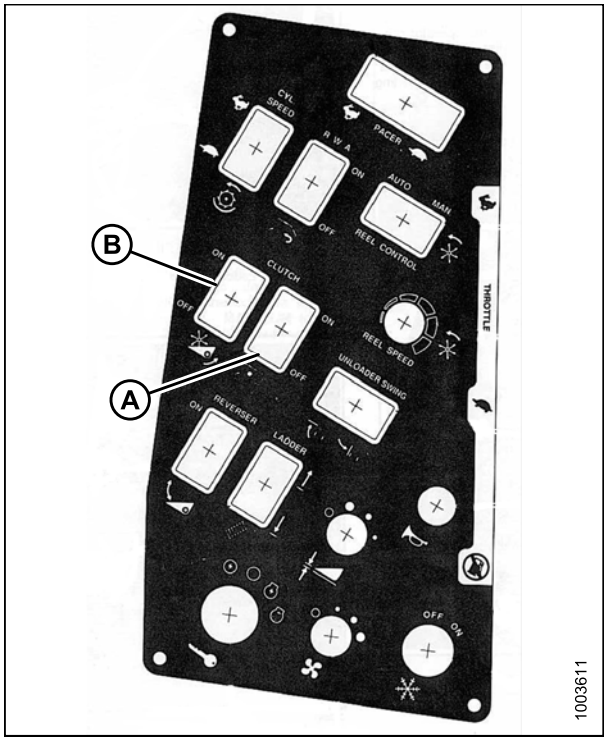


Figure 3.186: Combine Control Console

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

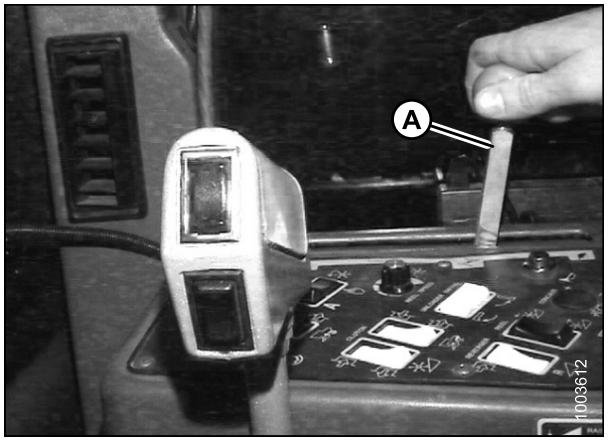


Figure 3.187: Throttle

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.

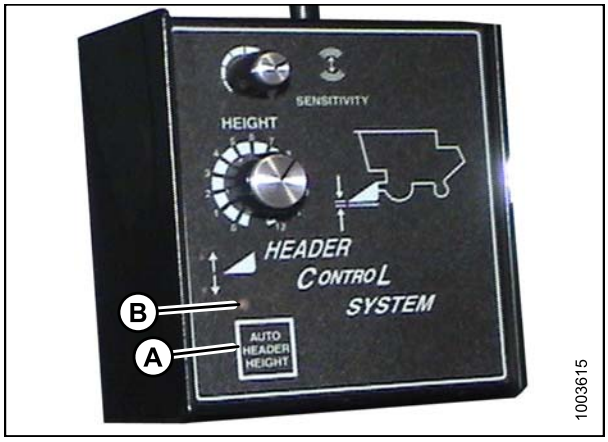


Figure 3.188: Combine Header Control System

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.

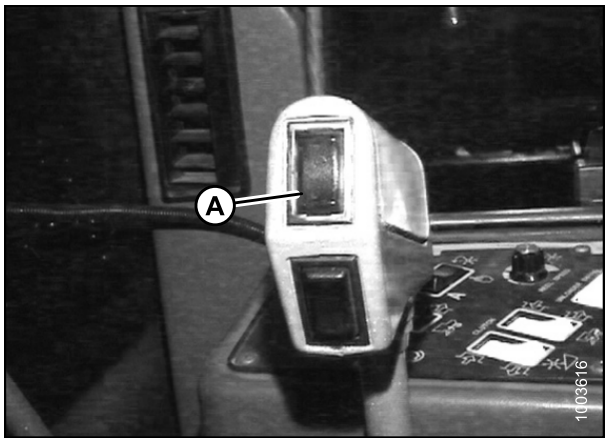


Figure 3.189: Header Down Button

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.

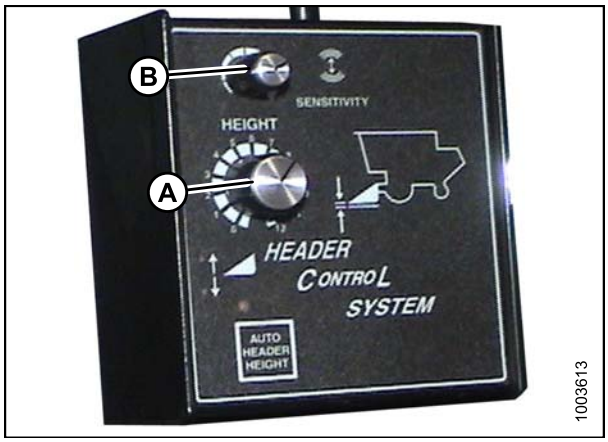


Figure 3.190: Combine Header Control System

3.8.6 Gleaner R65/R66/R75/R76 and S Series Combines

Checking Voltage Range from the Combine Cab (Gleaner R65/R66/R75/R76 and 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.

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 Series.

1. Position the header 150 mm (6 in.) above the ground, and unlock the CA25 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.

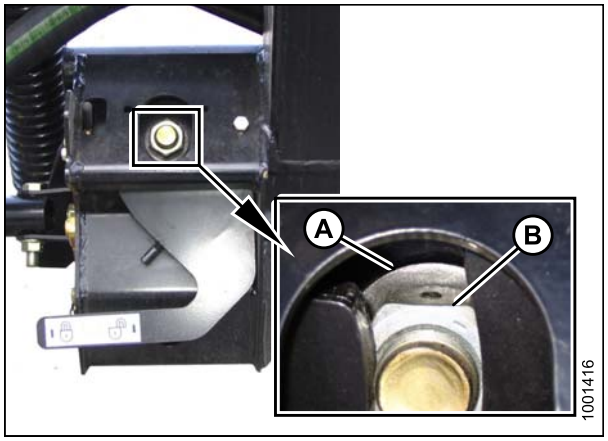


Figure 3.191: Float Lock

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.

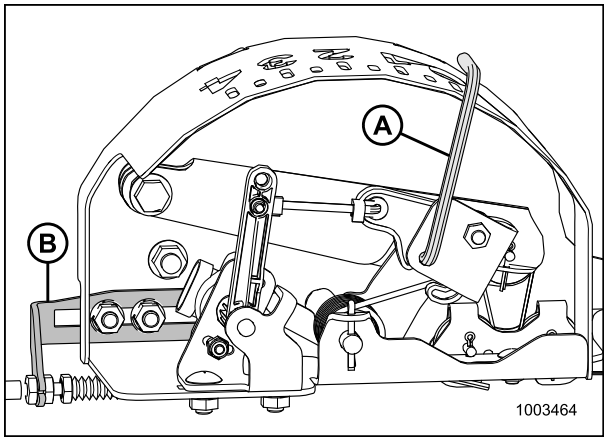


Figure 3.192: Float Indicator Box

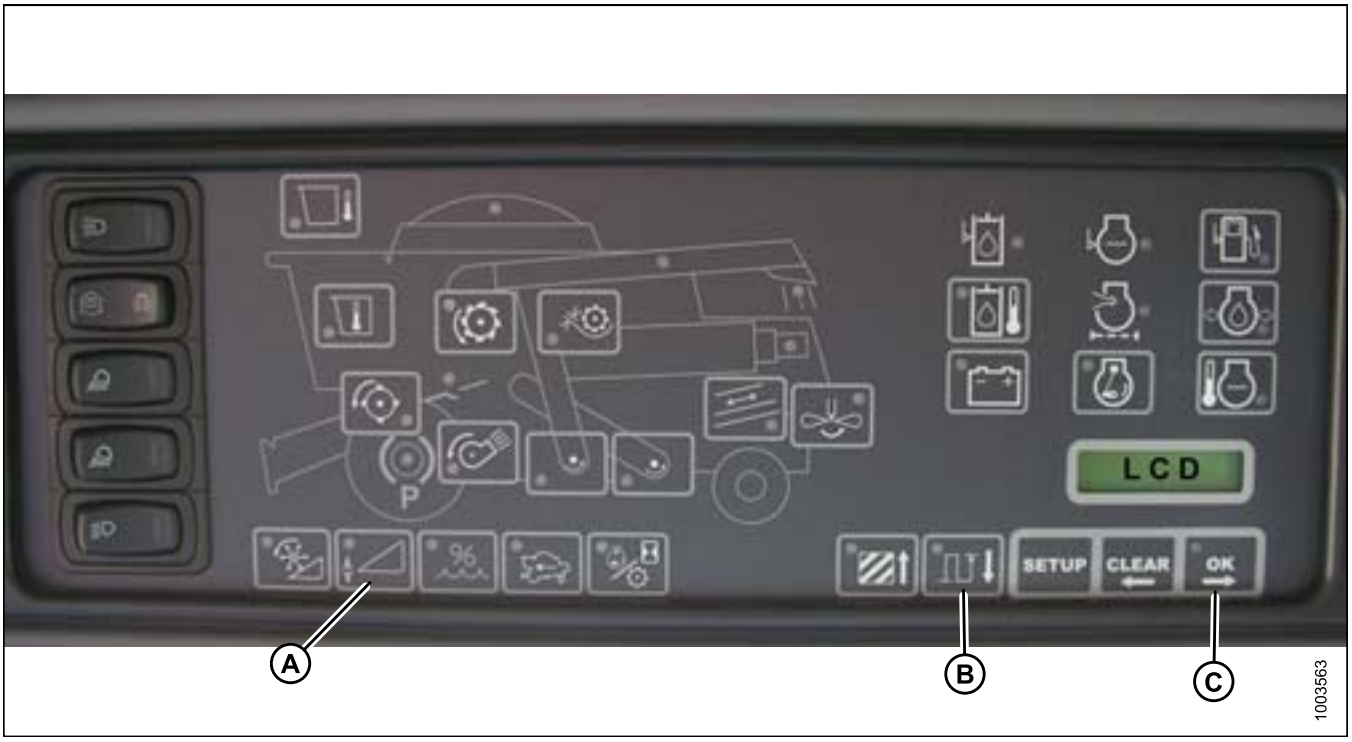


Figure 3.193: Combine Heads-Up Display

4. Ensure header float is unlocked.
5. Press and hold button (A) on the heads-up display for three seconds to enter diagnostic mode.
6. Scroll down using button (B) until LEFT is displayed on the LCD screen.
7. Press the OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the AHHC. Raise and lower the header to see the full range of voltage readings.

Engaging the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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 pane 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.

Figure 3.194: Combine Auto Header Height Controls

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.

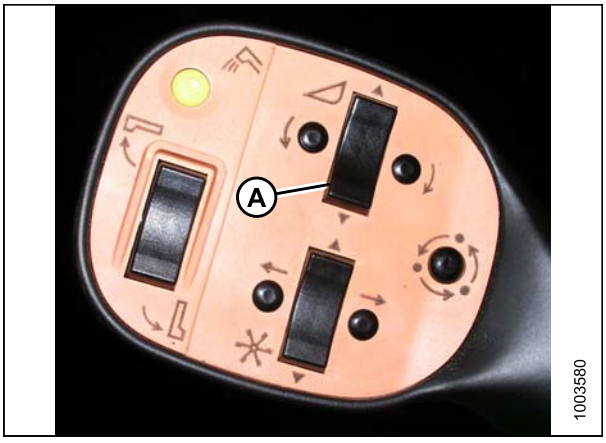


Figure 3.195: Control Handle

Calibrating the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

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 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:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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.

Figure 3.196: Combine Auto Header Height Controls

A - AUTO MODE Button
B - AHHC Light
C - CAL1 Button
D - Raise Header
E - Lower Header
F - Auto Mode
G - CAL2 Button

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 *3.7.4 Header Angle, page 75*.

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.
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 off the Accumulator (Gleaner R65/R66/R75/R76 and S Series)

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 3.197: Combine Accumulator ON/OFF Switch

A - Accumulator Lever (Off Position)

Adjusting the Header Raise/Lower Rate (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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 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 that 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.

If there is too much header movement (for example, hunting) when the header is on the ground, adjust the lower rate to a slower rate of drop: seven or eight seconds.

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

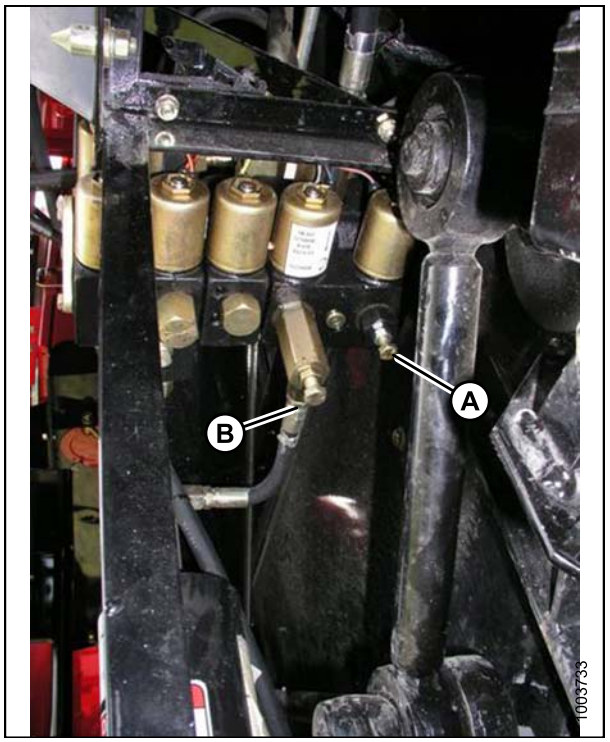


Figure 3.198: Header Raise and Lower Adjustable Restrictors

Adjusting Ground Pressure (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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 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.

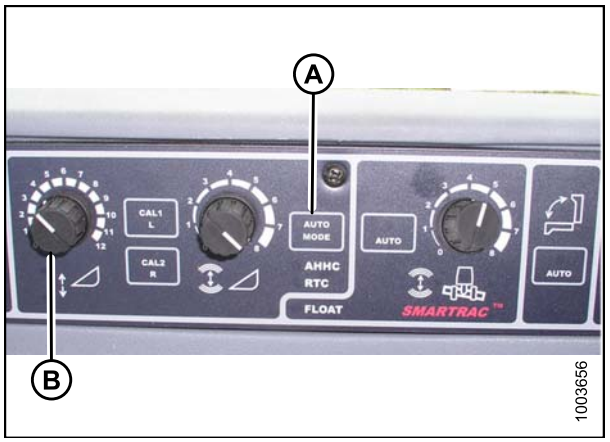


Figure 3.199: Auto Header Height Control Console

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).

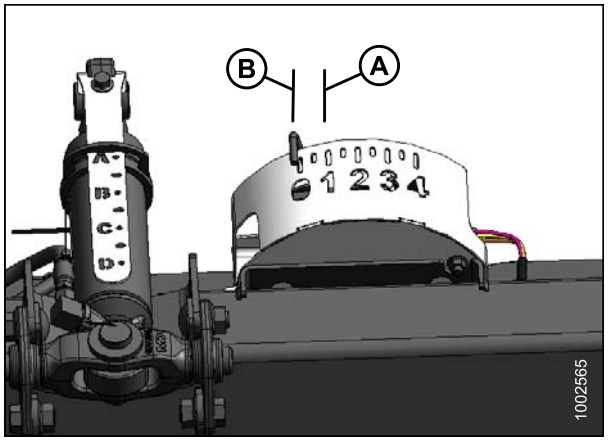


Figure 3.200: Float Indicator Box

Adjusting the Sensitivity of the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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.

Figure 3.201: Auto Header Height Control 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 19 mm (3/4 in.) 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 51 mm (2 in.) 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 102 mm (4 in.) of vertical travel before correction is made.

Troubleshooting Alarms and Diagnostic Faults (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Refer to *3.8.7 Gleaner S9 Series Combines, page 141* for information specific to the Gleaner S9 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.

Display type:

Displayed on tachometer (A) as XX or XXX.

Figure 3.202: Tachometer

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

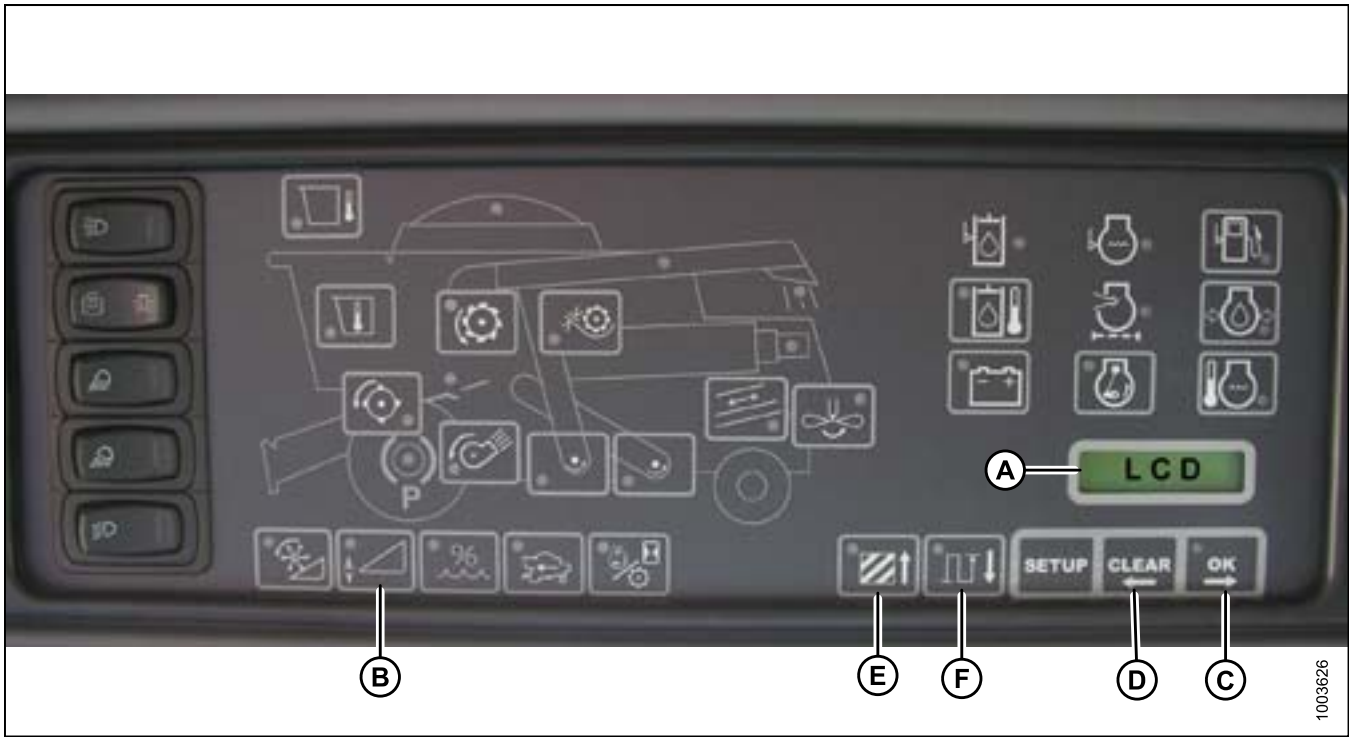


Figure 3.203: Combine Heads-Up Display

Alarm conditions:

If an error message is received from the fuse panel, an audible alarm sounds. The LCD on the electronic instrument panel (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.

When an alarm condition occurs, a 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: Refer to Figure *3.203: Combine Heads-Up Display, page 140*.

Pressing the header height switch (B) for a minimum of five seconds will put the 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. All the information displayed is read-only.

The OK (C) and CLEAR (D) buttons allow you to scroll through the list of parameters. 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 the 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 parameter's value will be displayed.

Pressing AREA (E) will cycle through the options. When LEFT is displayed on the LCD, press the OK button (C), and the auto header height control (AHHC) voltage will be shown on the 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 *3.8.16 Sensor Operation, page 235*.

3.8.7 Gleaner S9 Series Combines

This section is for Gleaner S9 Series combines only.

Setting up the Header (Gleaner S9)

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 AGCO Tyton terminal is used to set up and manage a MacDon draper header on an Gleaner S9 combine. The terminal has a touch screen so you can simply touch the desired area on the terminal screen to select an item.

Figure 3.204: Gleaner S9

A - Tyton Terminal **B - Hydro Handle / Ground Speed Lever**
C - Throttle Lever **D - Header Control Cluster**

1. On the top right quadrant of the home page, touch the COMBINE icon (A) on the top right. The COMBINE MAIN MENU opens.

Figure 3.205: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

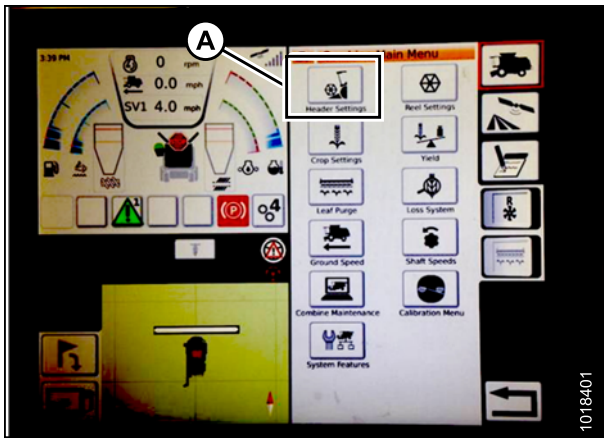


Figure 3.206: Header Settings in Combine Main Menu

3. Touch the HEADER CONFIGURATION field (A). A page showing pre-defined headers opens.
   - If your MacDon header is already set up, it appears on the header list. Touch the MacDon header title (B) to highlight the selection in blue, and then touch the green check mark (E) to continue.
   - If only the default header (D) is shown, touch the ADD/KEYBOARD button (C), and use the on-screen keyboard to enter the MacDon header information. When complete, touch one of the areas at the bottom of the page and you will be returned to the HEADER SETTINGS page.
     – The green check mark saves the settings
     – The garbage can icon deletes the highighted header from the list
     – The red X cancels the change(s)

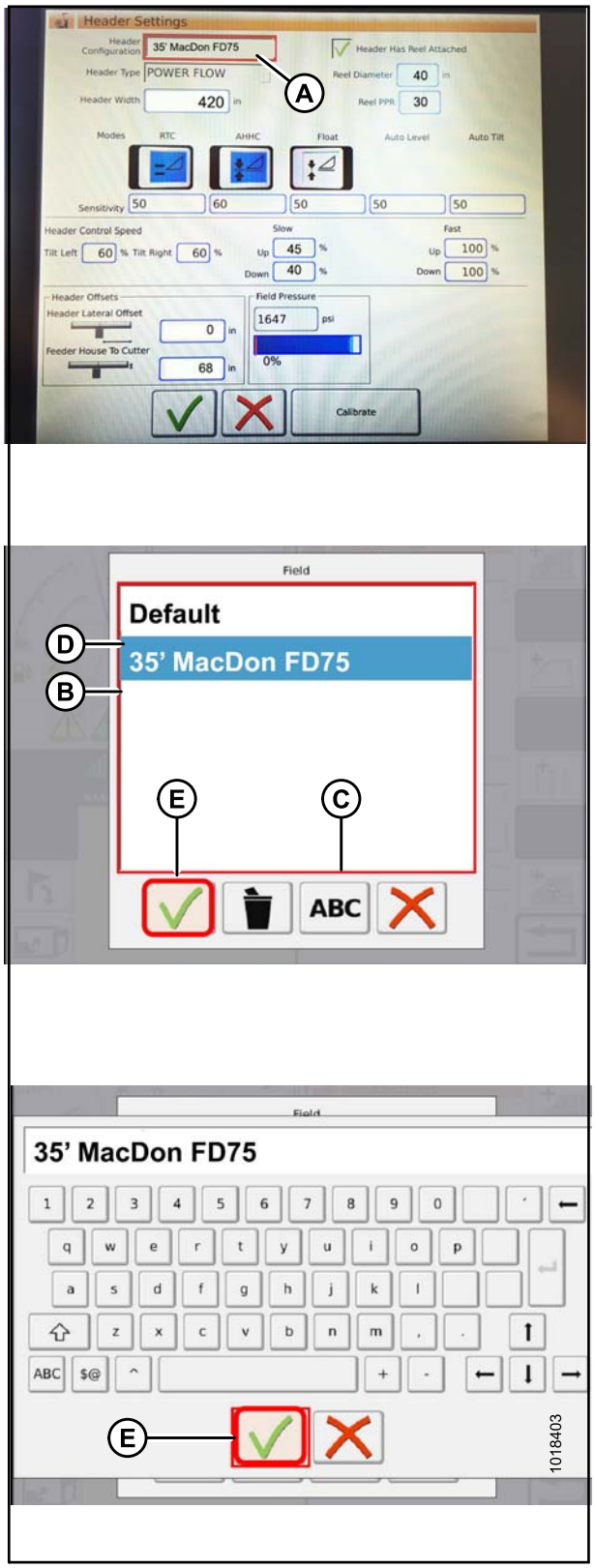


Figure 3.207: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, touch the HEADER TYPE field (A).

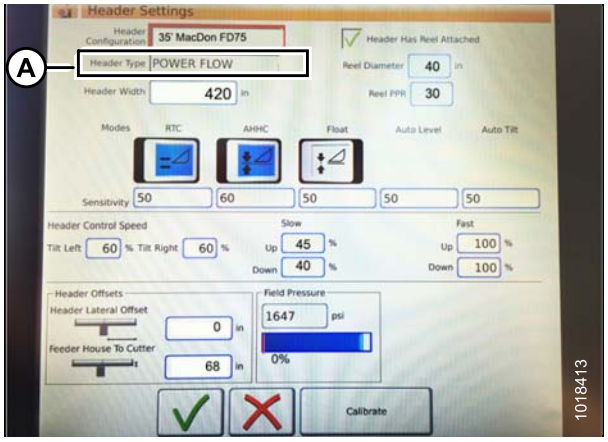


Figure 3.208: Header Settings

5. A list of pre-defined header types appears.
   - For MacDon D65 and FD75 FlexDraper headers, touch POWER FLOW (A)
   - Touch the green check mark (B) to save the selection and continue.

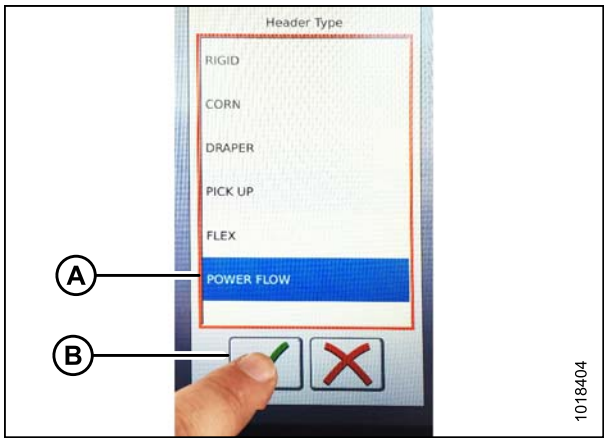


Figure 3.209: Header Type

6. Make sure that the HEADER HAS REEL ATTACHED green check box (A) is checked.

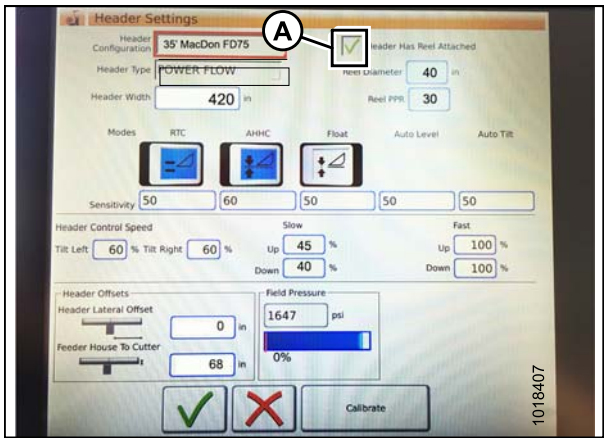


Figure 3.210: Header Settings

7. Touch the REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** as the MacDon Reel Diameter.
8. Touch the REEL PPR (Speed Pulses Per Revolution) field (B) and enter **30** as the PPR value for your MacDon header. (PPR is the number of teeth on the reel speed sprocket. MacDon headers have 30 teeth on the sensor pickup reel).

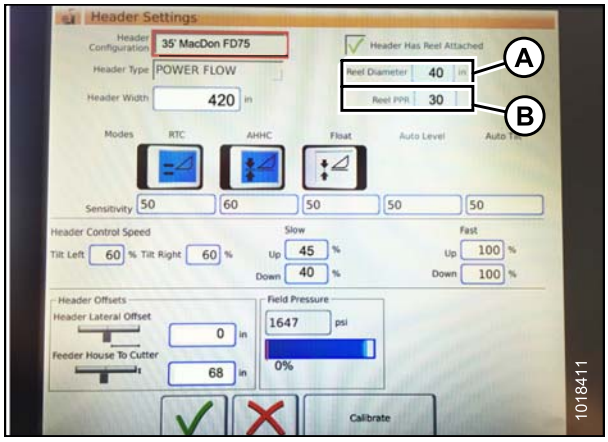


Figure 3.211: Header Settings

9. Touch the green check mark (B) at the bottom of the numeric keypad (A) when complete, or the red X to cancel.

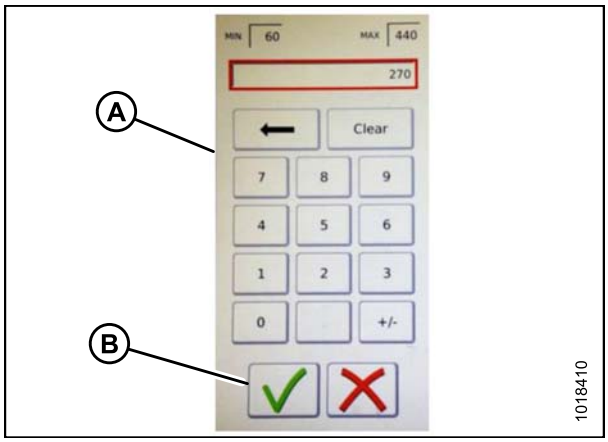


Figure 3.212: Numeric Keypad

10. When entries are complete, touch the green check mark (A) at the bottom of the HEADER SETTINGS page.

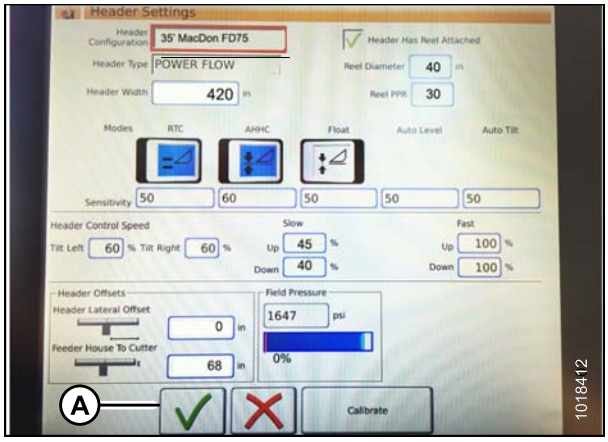


Figure 3.213: Header Settings Page

Setting up Reel Settings (Gleaner S9)

⚠ 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.

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. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

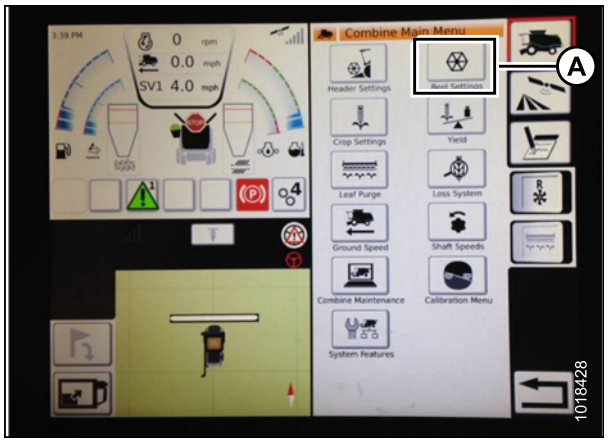


Figure 3.214: Reel Settings on Combine Main Menu

2. To set minimum reel speed, touch the SPEED MINIMUM FIELD (B). The on-screen keyboard displays. Enter the desired value. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed (in mph) and rpm are shown.

   NOTE:
   At the bottom of the REEL SETTINGS page, the reel diameter and reel pulses per revolution are displayed. These values have already been set in the HEADER SETTINGS page.

3. Reel speed is calibrated in the REEL SETTINGS page by touching the CALIBRATE button (A) in the top right of the page.

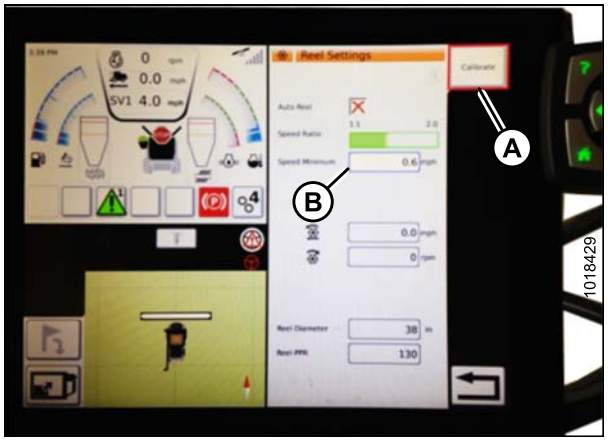


Figure 3.215: Reel Settings Calibration

4. The CALIBRATION WIZARD opens and displays a hazard message warning page.

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.

5. Make sure all the conditions listed on the CALIBRATION WIZARD warning page are met. Press the green check mark to accept and start reel calibration. Pressing the red X will cancel the calibration procedure.

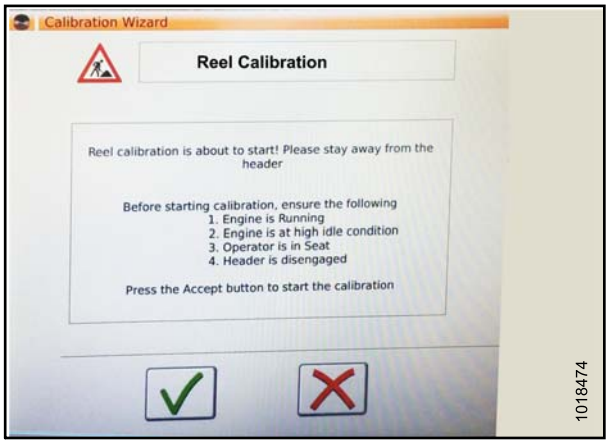


Figure 3.216: Calibration Wizard

6. An informational message appears in the CALIBRATION WIZARD that reel calibration has started. The reel will begin turning slowly and increase to high speed. A progress bar is provided. If necessary, touch the red X to cancel. Otherwise, wait for the message that reel calibration has completed successfully. Touch the green check mark to save the calibrated settings.

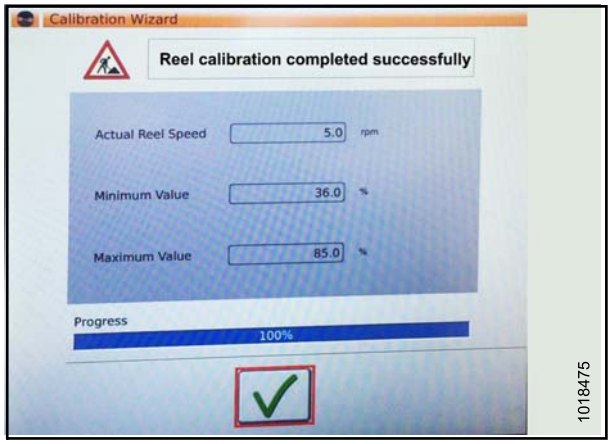


Figure 3.217: Calibration Progress

Setting up Automatic Header Controls (Gleaner S9 Series)

Automatic header functions are configured on the HEADER SETTINGS page.

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. **Automatic Control Functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches are disabled (and are not highlighted).

2. The **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - If the combine does not change the feeder position quickly enough when in Auto Mode, increase sensitivity.
   - If the combine hunts for a position in Auto Mode, decrease sensitivity.

   NOTE:
   Recommended sensitivity starting points for MacDon headers are:

   - **50** for RTC (A)
   - **60** for AHHC (B)

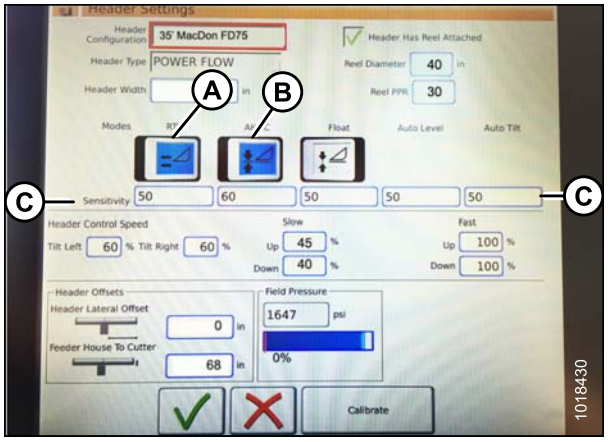


Figure 3.218: Automatic Controls and Sensitivity Settings

3. **Header Speed:** The speed at which the header moves is adjusted in the HEADER CONTROL SPEED area (A) of the HEADER SETTINGS page. The following speeds can be adjusted:

   - Tilt left and right is the lateral tilt of the combine faceplate.
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on the first detent and fast on the second.

   NOTE:
   Recommended header control speed starting points for MacDon headers are:

   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

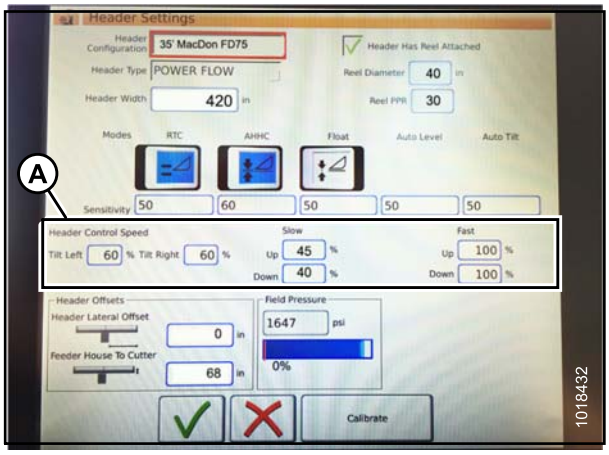


Figure 3.219: Header Speed Control Settings

4. **Header Offsets (A):** Offset distances are important for yield mapping. There are two dimensions that can be adjusted on the HEADER SETTINGS page:
   - Header Lateral Offset: the distance between the centerline of the header and the centerline of the machine. This should be set at **0** for a MacDon header.
   - Feeder House to Cutter: the distance from the machine interface to the cutterbar. This should be set at **68** for a MacDon header.

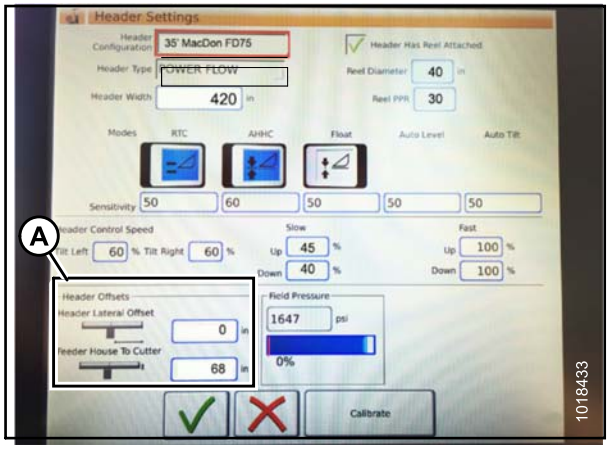


Figure 3.220: Header Offset Settings

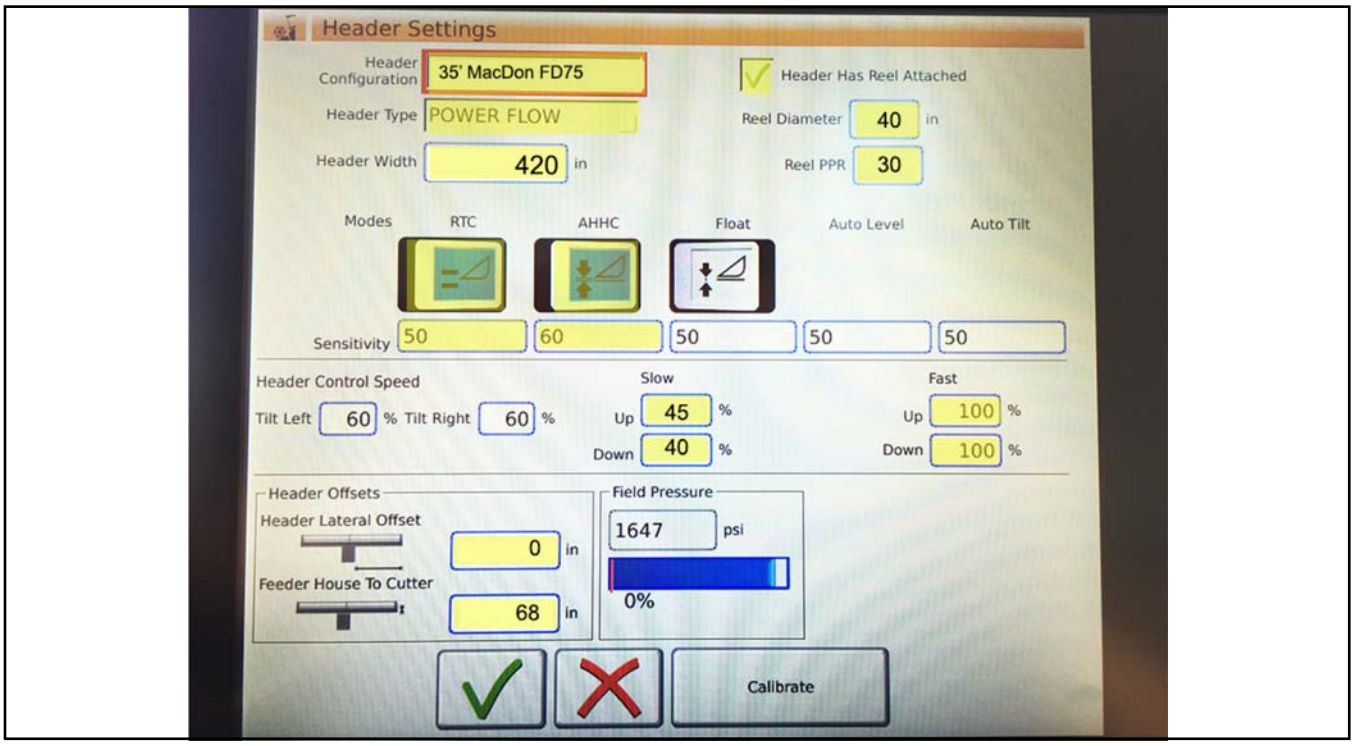


Figure 3.221: Header Settings Inputs for MacDon Headers

Calibrating the Header (Gleaner S9 Series)

The auto header control functions are configured on the HEADER SETTINGS page.

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.

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. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A).

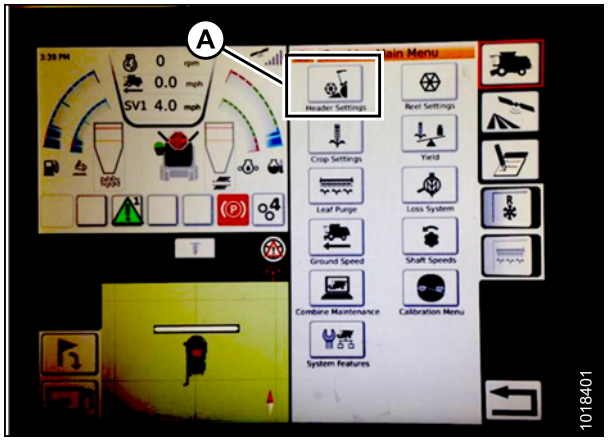


Figure 3.222: Combine Main Menu

2. Touch CALIBRATE (A) at the bottom right of the page. The HEADER CALIBRATION page displays.

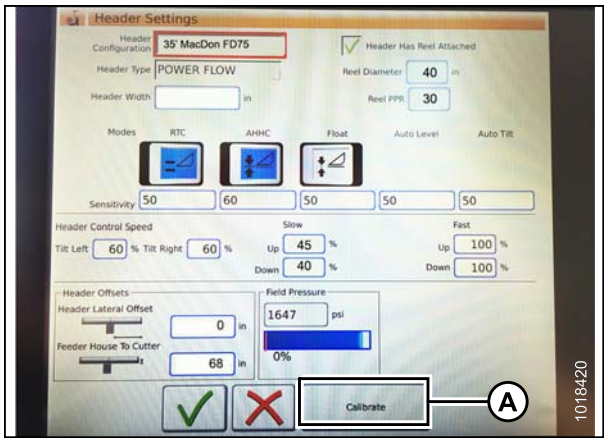


Figure 3.223: Calibration

The right side of the page shows calibration information (A). Results are shown for a variety of sensors (B) at the top of the list:

- Left and right header sensor (v) (values will be the same with MacDon headers)
- Header height sensor (mA)
- Tilt position sensor (mA)

The modes applicable to MacDon headers are shown with check marks below line (C):

- Return to cut
- Automatic header height control

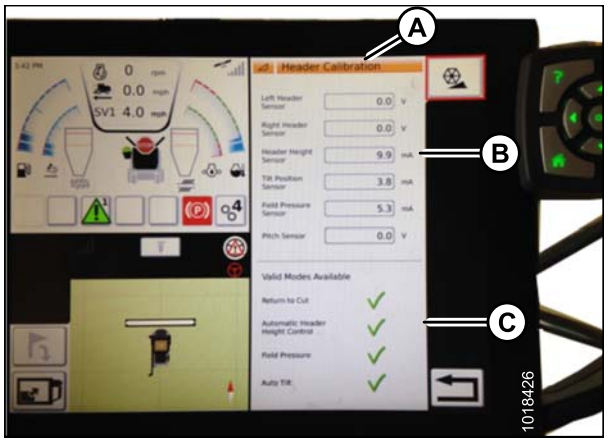


Figure 3.224: Header Calibration Page

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.

3. On the ground speed lever (GSL), touch the HEADER DOWN button (A). Sensor values start changing on the HEADER CALIBRATION page as the header lowers.

   NOTE:
   The header needs to be lowered all the way, and then raised off the ground. The range should be between **0.5 and 4.5v**. If the value is not in that range, the sensor needs to be adjusted.

4. When the sensor values are stable, touch the CALIBRATE icon (A).

Figure 3.225: Header Down Switch

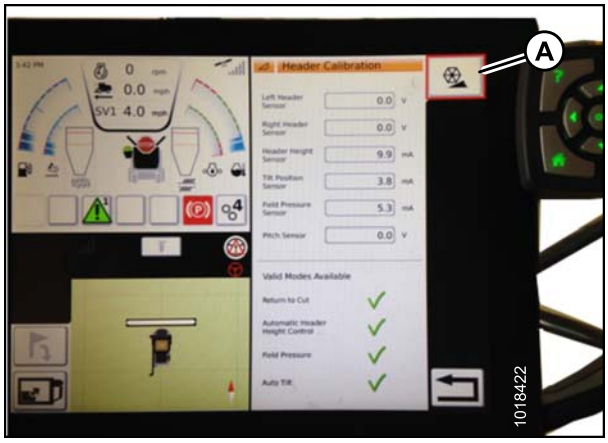


Figure 3.226: Header Calibration

5. The hazard message warning page for HEADER CALIBRATION appears. Before proceeding with calibration by touching the green check mark, make sure that all conditions on the page are met.
6. Touch the green check mark at the bottom of the page to start the CALIBRATION WIZARD.

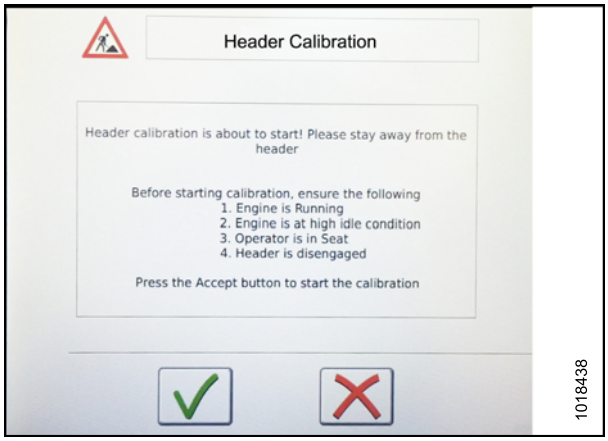


Figure 3.227: Header Calibration Warning

A progress bar is provided and the wizard can be stopped at any time by touching the red X. The header moves automatically and erratically during this process.

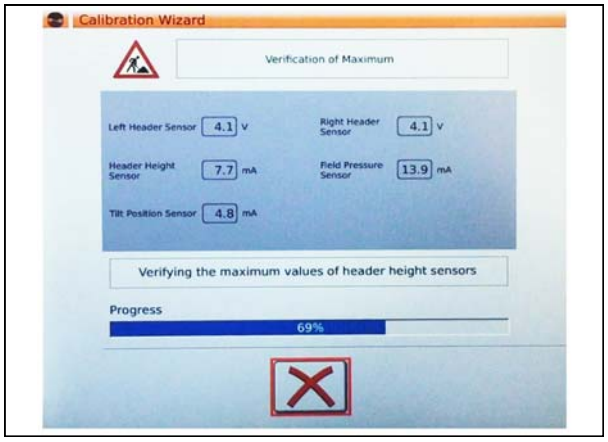


Figure 3.228: Calibration In Progress

7. When the calibration is complete, a message displays, and summary information (A) is shown. Green check marks confirm the functions have been calibrated (B). Touch the bottom green check mark (C) to save.

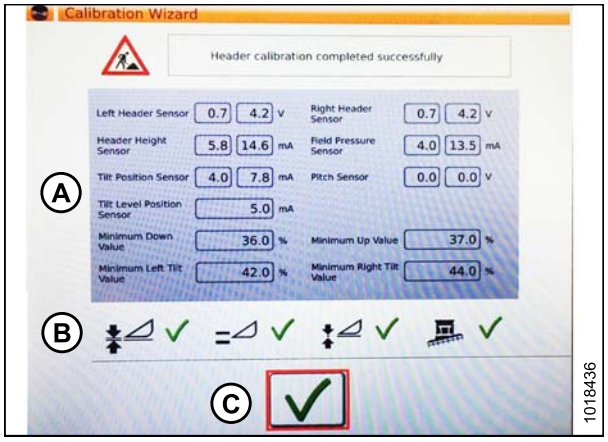


Figure 3.229: Completed Calibration Page

TIP:
On the COMBINE MAIN MENU page, there is a CALIBRATION icon (A) that when touched opens a general CALIBRATION menu where you can directly choose from a variety of calibrations including header and reel calibration.

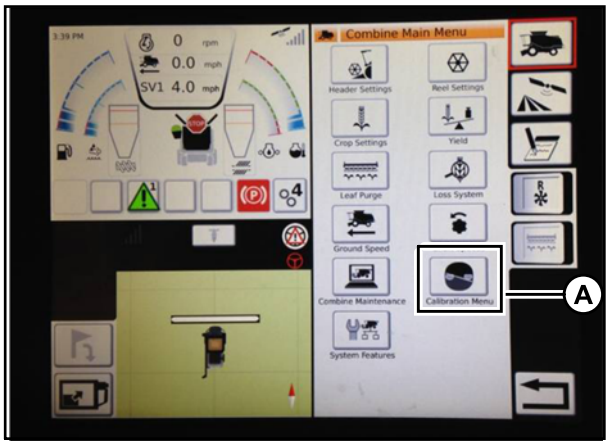


Figure 3.230: Direct Calibration Menu

Operating with a Gleaner S9 Combine

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.

These are the primary controls to be used to engage and use the auto header height control (AHHC) function.

Figure 3.231: Gleaner S9

A - Tyton Terminal **B - Hydro Handle / Ground Speed Lever**
C - Throttle Lever **D - Header Control Cluster**

1. With the header running, set Lateral Tilt to MANUAL by pressing switch (A) upward to the MAN position.
2. Engage the AHHC by pressing the switch (B) upward to the **I** position

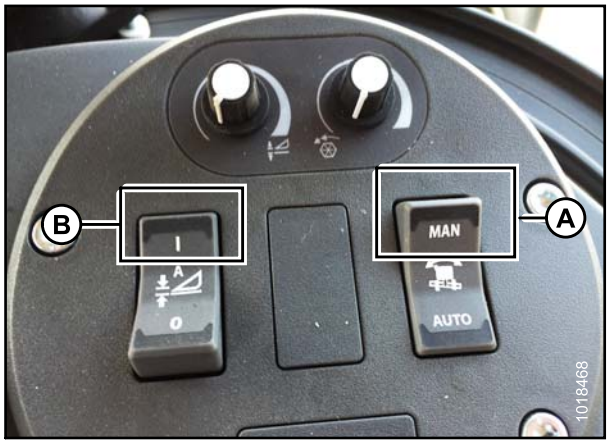


Figure 3.232: Header Control Cluster

3. Press the AHHC control switch (A) on the ground speed lever (GSL) to engage the AHHC. The header positions itself in the current setpoint position.

Figure 3.233: AHHC on GSL

4. Use the HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the setpoint position.

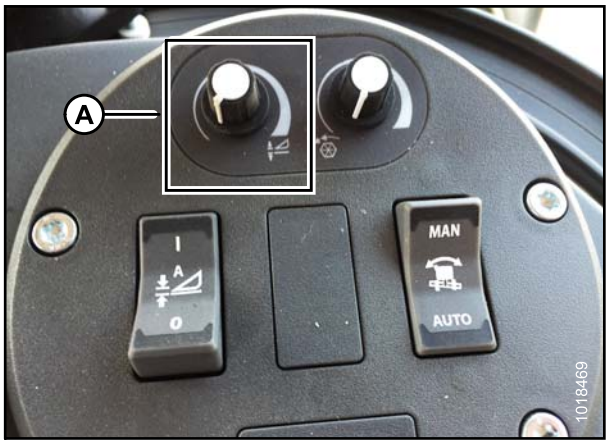


Figure 3.234: Header Control Cluster

Header In-Field Settings

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. To quickly view header group settings, touch the HEADER icon (A) that is second from the bottom on the right side of the Tryton Terminal home page.
2. The display area shows:
   - (B) – The left header height indicator is the current position of the header.
   - (C) – The red line on the current header height position indicator (B) shows the setpoint cut-off position.
   - (D) – Adjust the setpoint cut-off position by touching the HEADER symbol and using the scroll wheel on the right side of the Tyton terminal. As the scroll wheel is moved, the position of the cut-off will move.
   - (E) – The right indicator is the set cut height for the AHHC. Fine-tune the cutting height with the header height setpoint control dial on the header control cluster. As the control is adjusted, the cut height indicator will move.
   - (F) – The header working width.
   - (G) – Header pitch.
3. Touching a field opens the on-screen keyboard so that values can be adjusted. Enter the new value and touch the green check mark when complete.

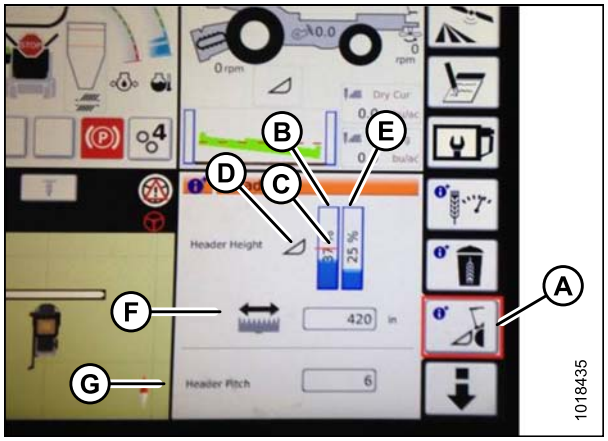


Figure 3.235: Header Groups

The scroll wheel (A) is on the right side of the Tyton terminal.

Figure 3.236: Scroll Wheel for Adjustments

Header height setpoint control dial (A) is on the header control cluster.

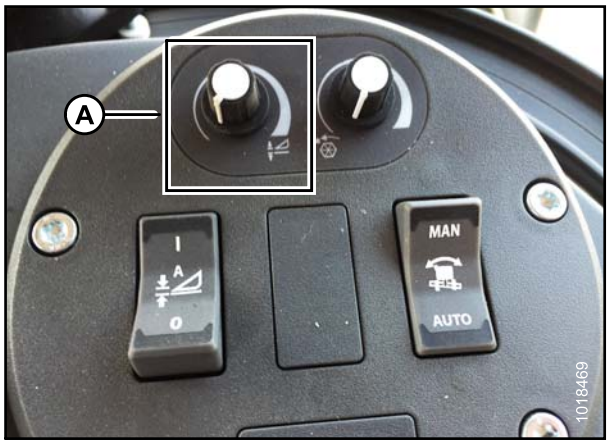


Figure 3.237: Header Control Cluster

3.8.8 John Deere 50 Series Combines

Output Voltage Range

The auto header height sensor output must be within a specific range, or the feature will not work properly.

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere 50 Series	0.5 V	4.5 V	3.0 V

Check the sensor's output voltage range from the combine cab or manually at the float indicator box according to instructions that follow.

Manually Checking the Output Voltage Range

To manually check the sensor's output voltage range, follow these steps:

1. Position the header 150 mm (6 in.) above the ground, and rest it on the safety props. Unlock the adapter float.

   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 auto header height control (AHHC) system.

2. The pointer (A) on the float indicator box should point at **0**. If it does not, adjust the cable take-up bracket (B) until the pointer (A) on the float indicator box points to **0**.

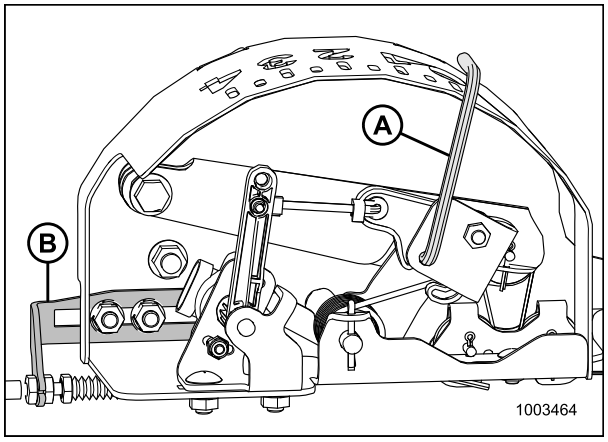


Figure 3.238: Float Indicator Box with Auto Header Height Sensor

3. Use a voltmeter (A) to measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator box.

   NOTE:
   The voltage reading should be below **4.5 V**.

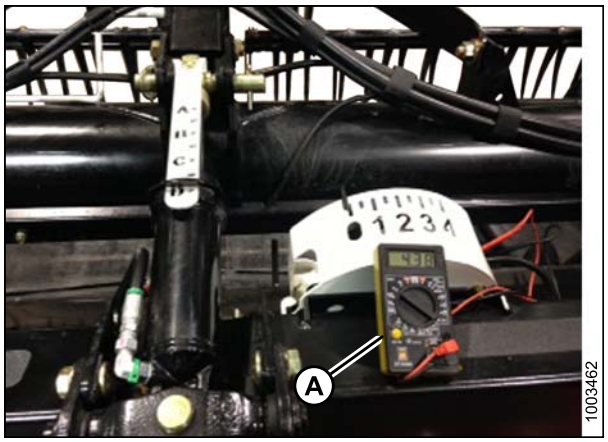


Figure 3.239: Checking Voltage with Voltmeter

4. Fully lower the combine feeder house, and float the header up off the safety props (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.

5. Use a voltmeter (A) to 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—**0.5 V**.

6. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient (on this combine, it should be **at least 3.0 V)**, make adjustments according to *Adjusting Voltage Limits, page 159*).

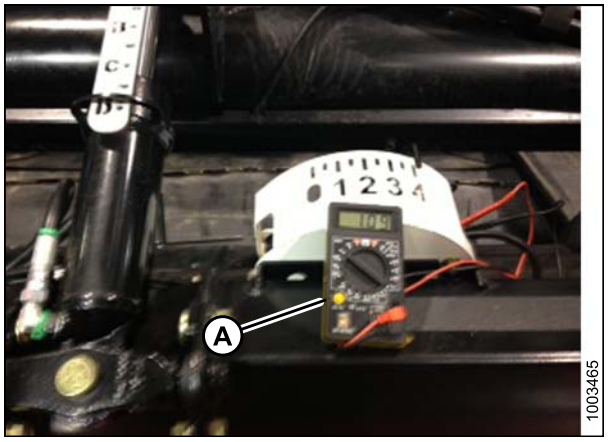


Figure 3.240: Checking Voltage with Voltmeter

Checking Voltage Range from the Combine Cab

Before checking the voltage range, follow these steps:

1. Position the header 150 mm (6 in.) 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.

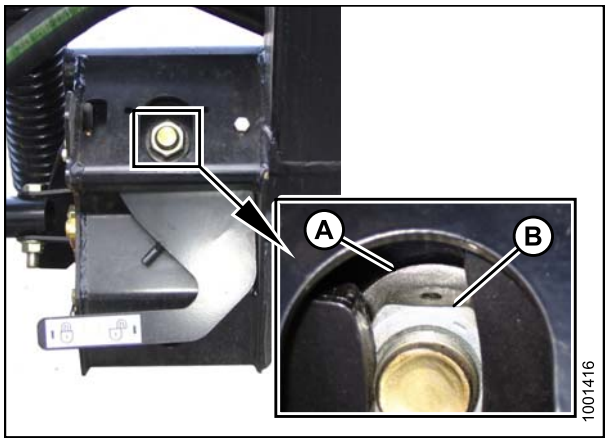


Figure 3.241: Float Lock

3. The pointer (A) on the float indicator box should point at **0**. If it does not point at zero, adjust the cable take-up bracket (B) until it does.

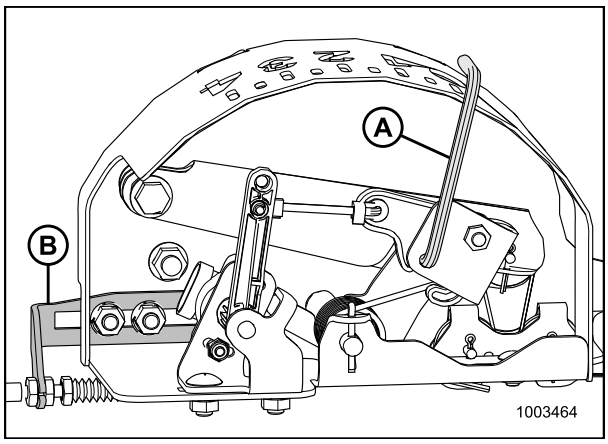


Figure 3.242: Float Indicator Box with Auto Header Height Sensor

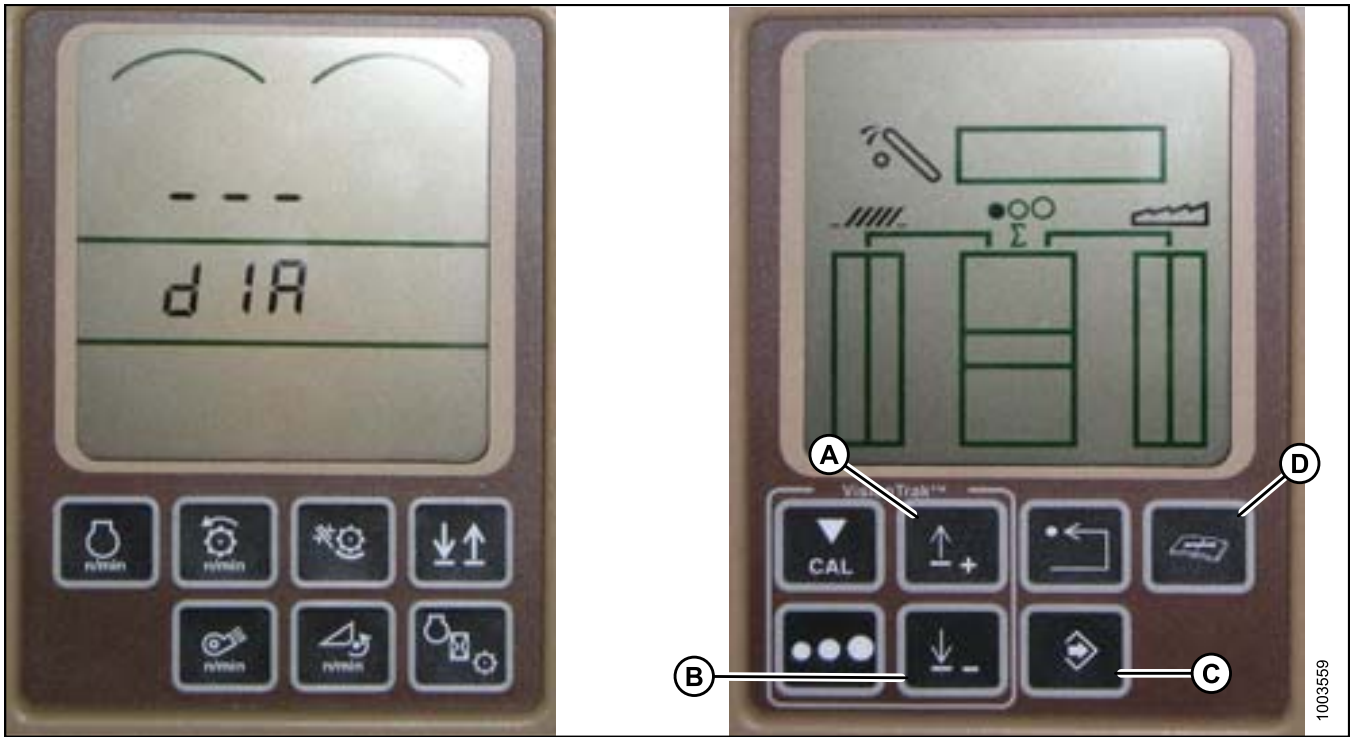


Figure 3.243: John Deere Combine Display

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 adjustment.
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. The adapter should be completely 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.

10. Check the sensor reading on the monitor. It should be at or above **0.5 V**.
11. Raise the header so it is just off the ground, and recheck the sensor reading.
12. Raise the header so it is just off the ground and check the sensor reading again. It should be below **4.5 V**.
13. If the sensor voltage is not within the low and high limits (**0.5–4.5 V**), or if the range between the low and high limits is less than **3.0 V**, you need to make adjustments according to *Adjusting Voltage Limits, page 159*.

Adjusting Voltage Limits

1. To adjust the high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at **D**.
   b. Position header 150–254 mm (6–10 in.) above the ground. Float indicator should be at **0**.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to the right to increase the high voltage limit, or to the left to decrease it.
   e. Tighten sensor mounting bolts (A).
2. To adjust the low voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at **D**.
   b. Fully lower header on the ground. Float indicator should be at **4**.
   c. Loosen mounting bolts (C).
   d. Rotate the potentiometer (D) clockwise to increase the low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).
3. If the readings are in the proper range, the auto header height control can be calibrated.

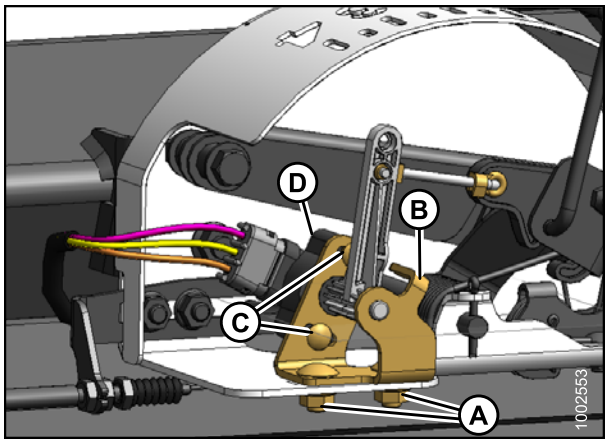


Figure 3.244: AHHC Sensor Assembly

A - Sensor Support Mounting Bolts **B - Sensor Support**
C - Sensor Mounting Bolts **D - Potentiometer**

Calibrating Auto Header Height

The calibration procedure determines the limits of the auto header height sensor for John Deere 50 series combines.

Calibrate the auto header height system after initial header installation and after replacement or adjustment of any component of the auto header height system. If the system does not function properly, repeat calibration before proceeding to other troubleshooting steps.

NOTE:
For best performance of the auto header height system, perform these procedures with the center-link adjusted as long as possible. When setup and calibration is complete, adjust the center-link back to desired header angle. See header angle topic in the operations section of the header operator's manual.

1. Rest header on down stops, and unlock adapter float.
2. Put wings in locked position.
3. Start the combine.

4. Press the DIAGNOSTIC button (D) on the monitor—**dIA** appears on the monitor.

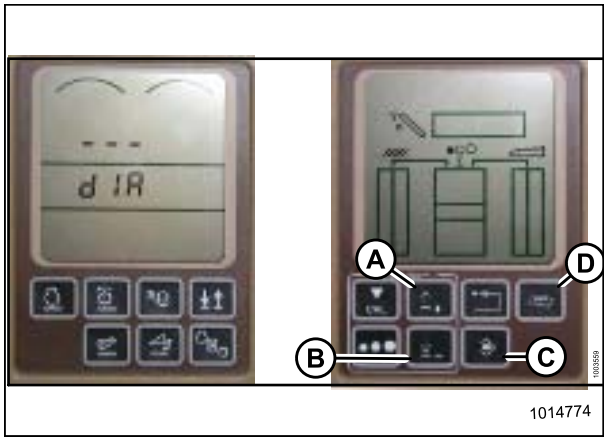


Figure 3.245: Diagnostic Button on Monitor

5. Press the CAL button (B)—**dIA-CAL** appears on the monitor.

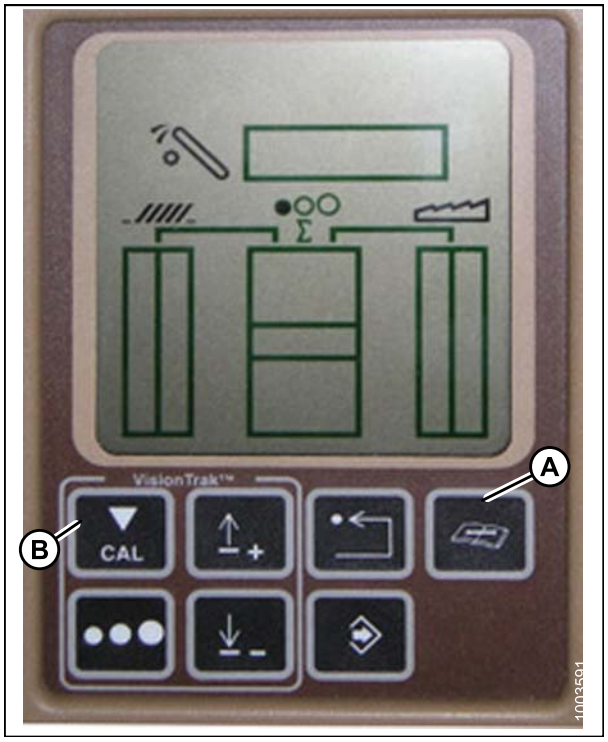


Figure 3.246: VisionTrak Monitor

6. Press the UP or DOWN buttons until **hdr** appears on the monitor.
7. Press the ENTER button—**hdr H-dn** appears on the monitor.

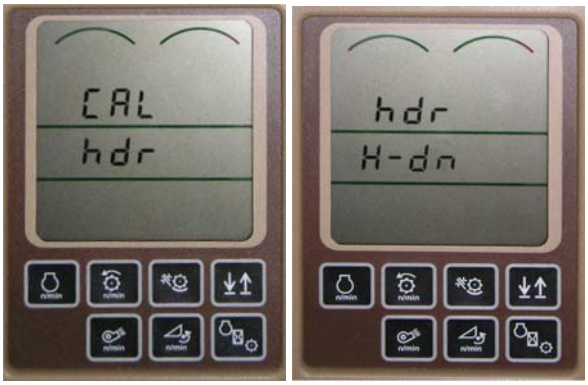


Figure 3.247: Triple Display Tachometer

8. Fully lower feeder house to the ground.

   NOTE:
   Hold the HEADER DOWN switch for 5–8 seconds to ensure the feeder house is fully lowered.

9. Press the CAL button (A) to save the lower calibration of the header—**hdr H-UP** appears on the monitor.
10. Raise the header three feet off the ground, and press the CAL (A) button—**EOC** appears on the monitor.
11. Press the ENTER button (B) to save the calibration of the header. Your AHHC is now calibrated.

    NOTE:
    If an error code appears on the screen, the sensor is not in the correct working range. Refer to *Output Voltage Range, page 155* to check and adjust the range.

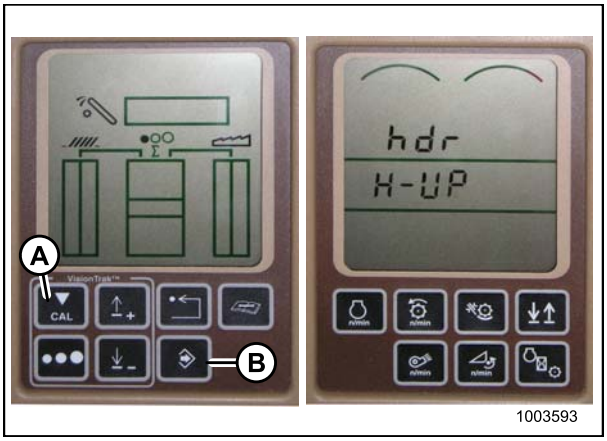


Figure 3.248: Combine Display

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

Setting the Sensitivity of the Auto Header Height Control

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.

To increase the sensitivity of the auto 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 **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 and 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.

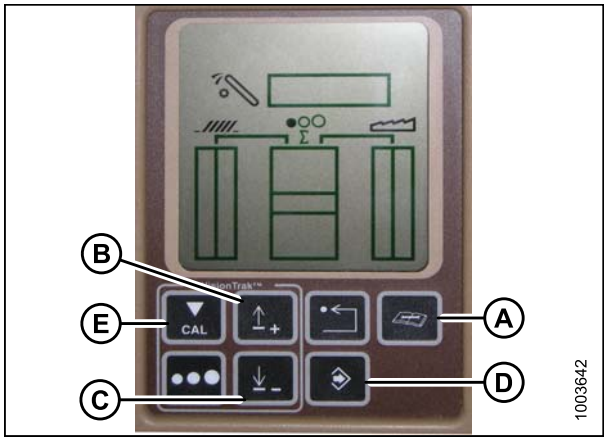


Figure 3.249: John Deere Combine Display

Adjusting the Threshold for the Drop Rate Valve

This procedure explains how to adjust 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.

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 and 85.

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.

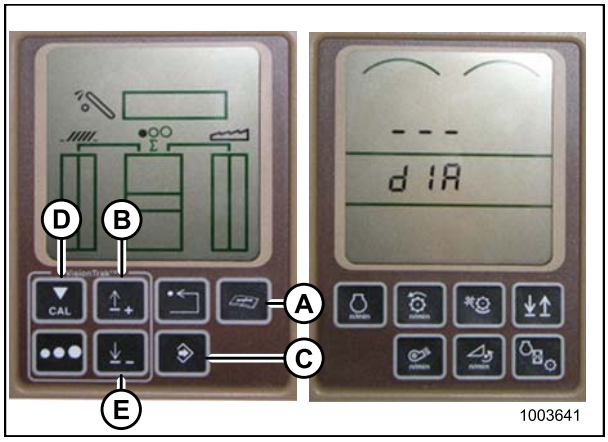


Figure 3.250: John Deere Combine Display

Operating Auto Header Height

To operate your auto header height, follow these steps:

IMPORTANT:
For proper performance, deactivate the accumulator (A) as described in the combine's operator's manual.

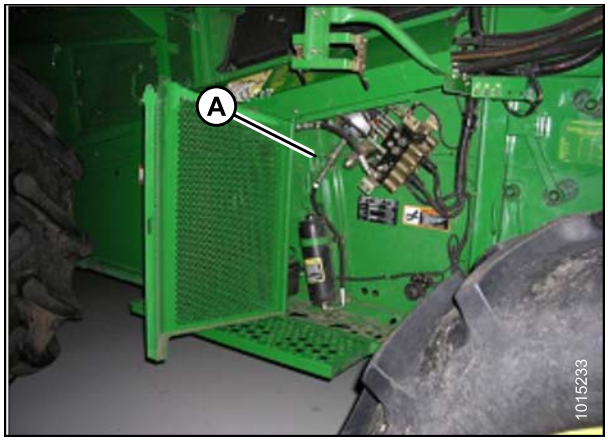


Figure 3.251: Accumulator Shut-off

1. Ensure HEADER HEIGHT RESUME and ACTIVE HEADER CONTROL functions are ON by pressing the buttons on the top monitor. Icons will appear on the monitor with the same picture that is displayed on the buttons. This indicates that your auto header height, resume, and active header control are turned ON.
   - **ACTIVE HEADER HEIGHT** (A) is indicated with an arrow going up and down in front of it (A).
   - **HEADER HEIGHT RESUME** (B) is indicated with a header diagram with a curved arrow in front of it (B).

Figure 3.252: Active Header Control Display

2. Once HEADER HEIGHT RESUME and AUTO HEADER CONTROL are turned ON, use buttons 2 (B) and 3 (C) on your hydrostatic lever for active header control.

   NOTE:
   Button 1 (A) is reserved for AUTO HEIGHT RESUME which will return the header to a certain height, but will not automatically compensate for ground variation.

   NOTE:
   In order to use any of the buttons the combine must be running, the AUTO HEADER HEIGHT SENSING must be turned ON, and the header switch and feeder house must also be engaged.

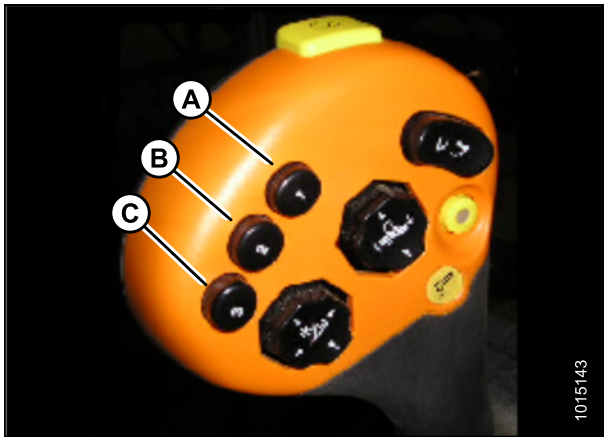


Figure 3.253: Hydrostatic Lever

3. Push the button you would like to use, and the header will position itself at a default height.

4. Adjust the header to the desired ground pressure by turning your auto header control dial located at the upper right corner of the console (A). Once you have set your desired ground pressure, the auto header height will now maintain constant float at this ground pressure (it will lower or raise the feeder house to compensate for the changes in ground height).

   NOTE:
   Auto header height is designed to optimize your float when cutting on the ground. It does not function when the cutterbar is off the ground.

Figure 3.254: Auto Header Control Dial

   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). Operating with heavier pressures can wear the cutterbar wearplate prematurely.

5. The additional buttons (2 or 3) on the hydrostatic lever are used for two different ground pressure settings. The header control dial on the console will work for the specific button that was pushed to activate auto header height control. Each time the button is pushed, the header will return to that specific ground pressure.

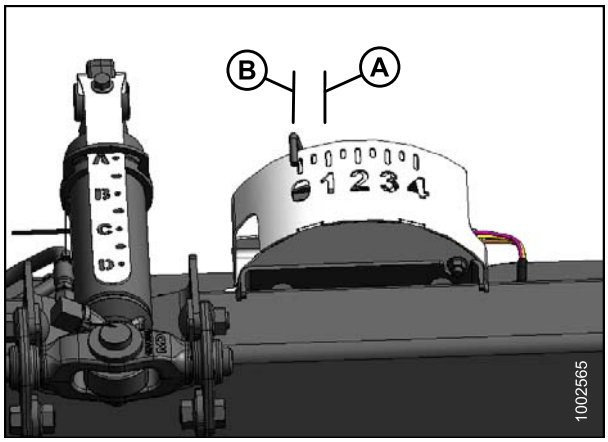


Figure 3.255: Float Indicator Box

Replacing the Auto Header Height Control (AHHC) Sensor

The auto header height control (AHHC) sensor/potentiometer sends a signal to the combine allowing it to maintain a cutting height and optimize float as the header follows ground contours. To replace the AHHC sensor, follow these steps:

1. Disconnect the wiring harness from the existing sensor (A).
2. Remove the two nuts and bolts (B) that secure the sensor to the bracket and remove the sensor (A).

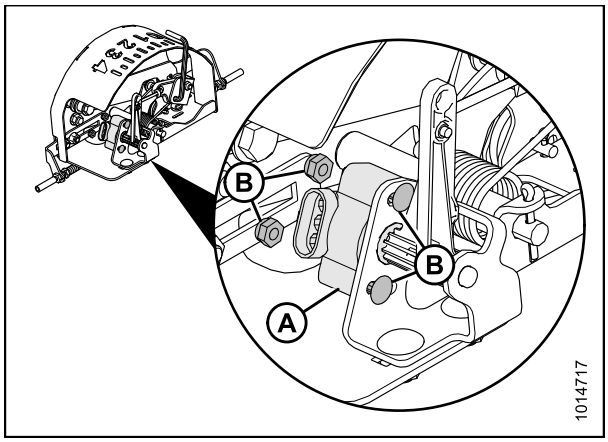


Figure 3.256: AHHC Sensor

IMPORTANT:
To avoid damaging the new sensor, install sensor as follows:

3. Position the sensor control arm (A) against the stop (B).
4. Install the new sensor (C) onto the linkage arm with the wiring plug facing away from the stop.
5. Pretension the sensor's internal spring by rotating the sensor (C) until the bolt holes align with holes on the bracket.

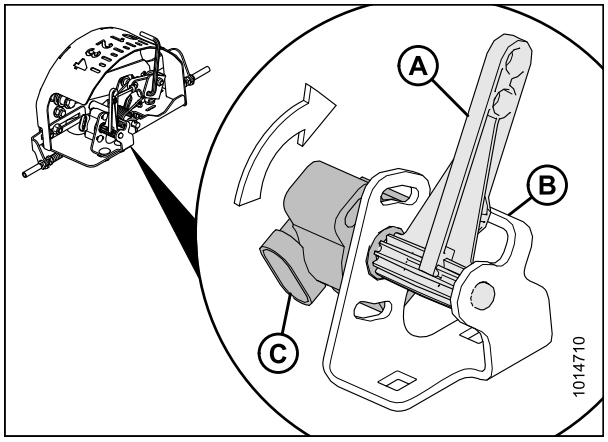


Figure 3.257: AHHC Sensor

6. Secure the new sensor (A) to the bracket with two nuts and bolts (B).

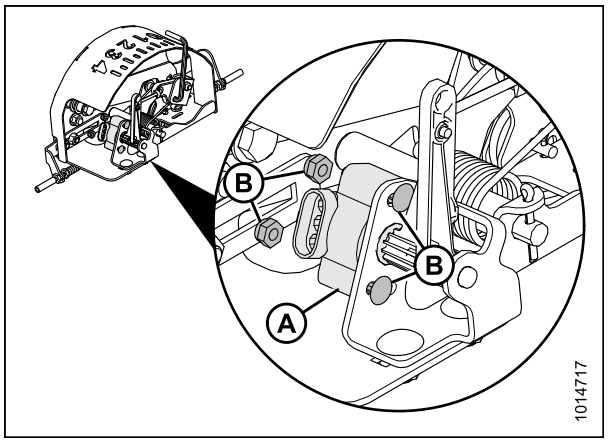


Figure 3.258: AHHC Sensor

7. Ensure linkage (A) operates freely (arrow indicates the approximate range).
8. Reconnect the wiring harness to the plug (B) on the sensor.
9. Check the voltage range of the new sensor and adjust if necessary.

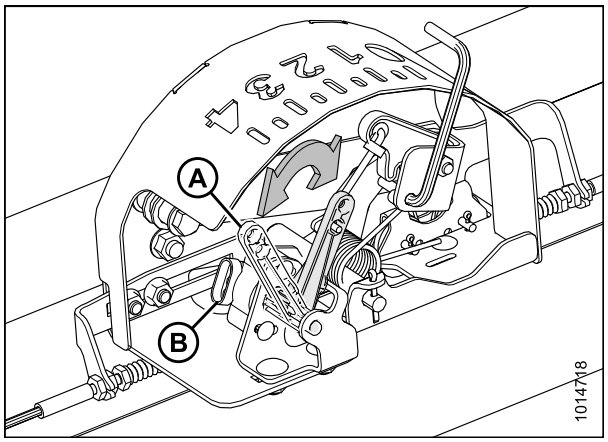


Figure 3.259: AHHC Sensor Range

3.8.9 John Deere 60 Series Combines

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

The auto header height sensor output must be within a specific range, or the feature will not work properly.

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere 60 Series	0.5 V	4.5 V	3.0 V

Check the sensor's output voltage range from the combine cab according to instructions that follow.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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.

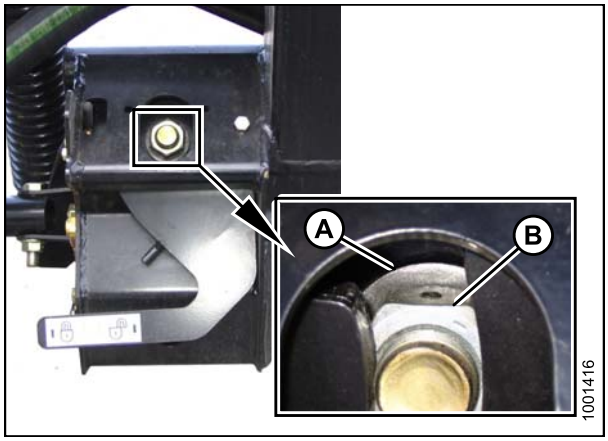


Figure 3.260: Float Lock

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

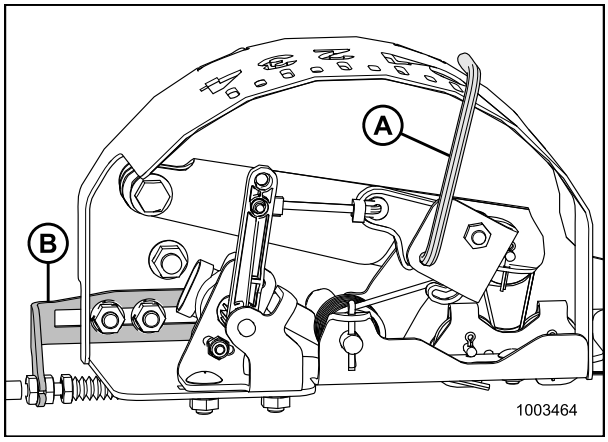


Figure 3.261: Float Indicator Box

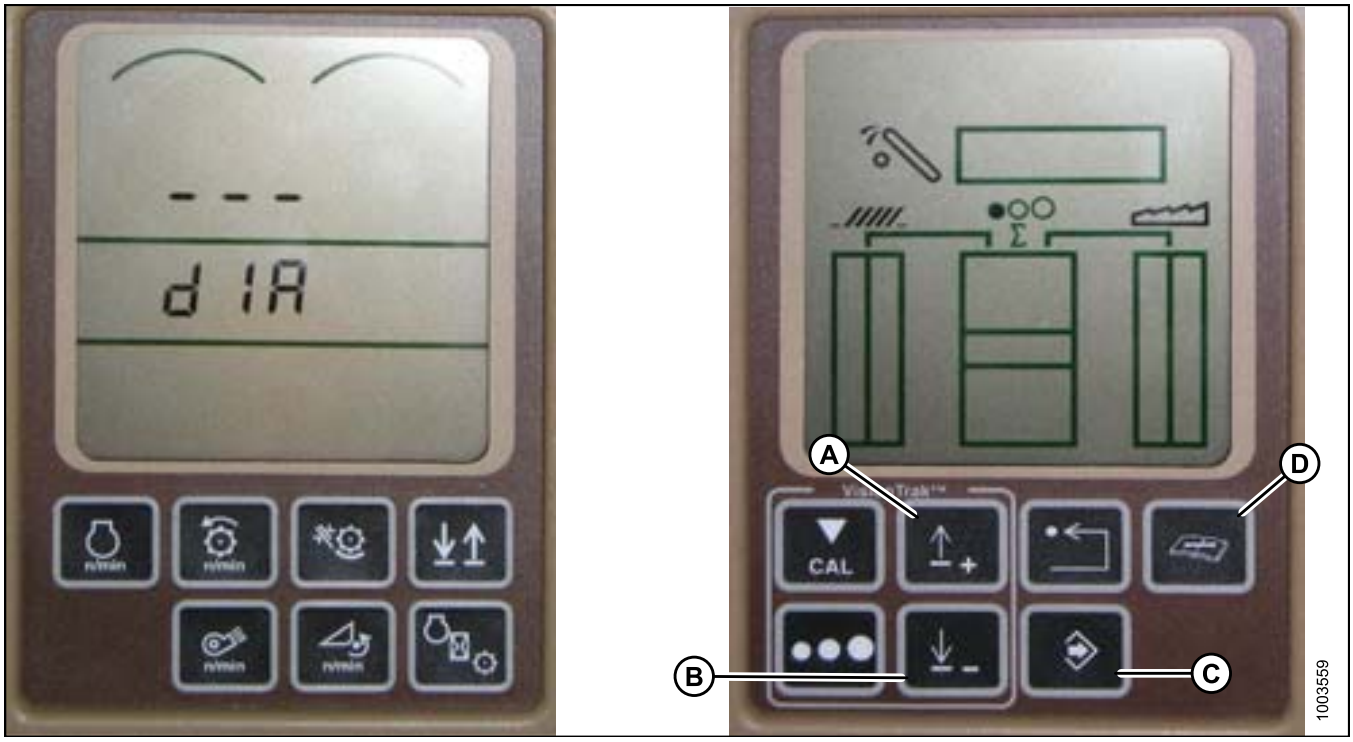


Figure 3.262: John Deere Combine Display

4. 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 *Adjusting Voltage Limits, page 105*.

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 *3.7.4 Header Angle, page 75*.

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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

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

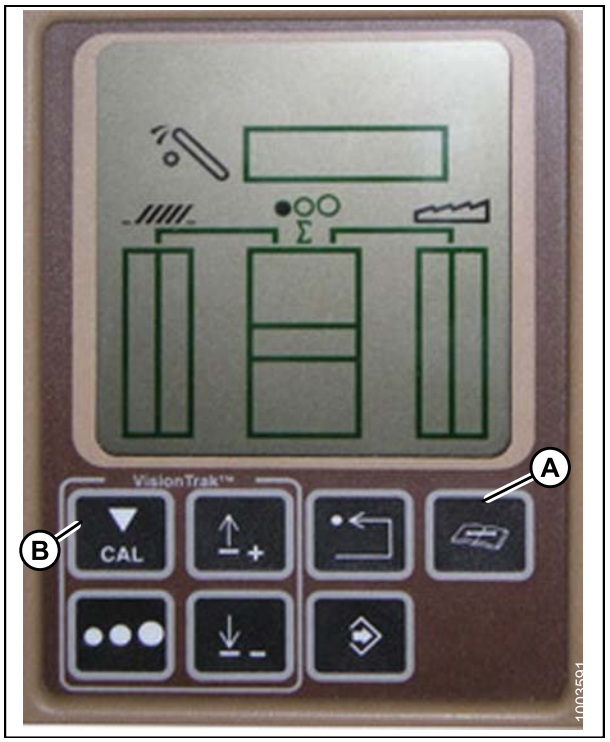


Figure 3.263: John Deere Combine Display

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.

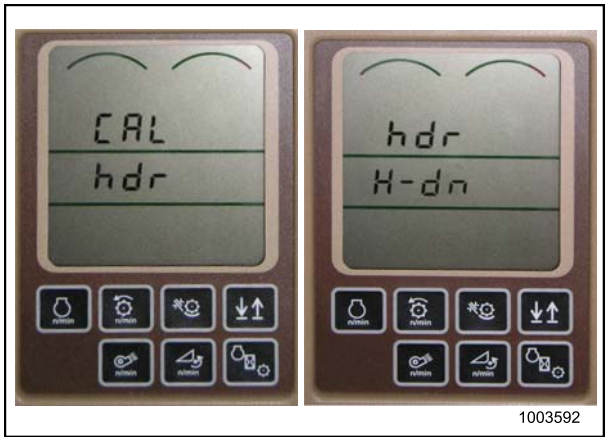


Figure 3.264: John Deere Combine Display

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.

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 167*.

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

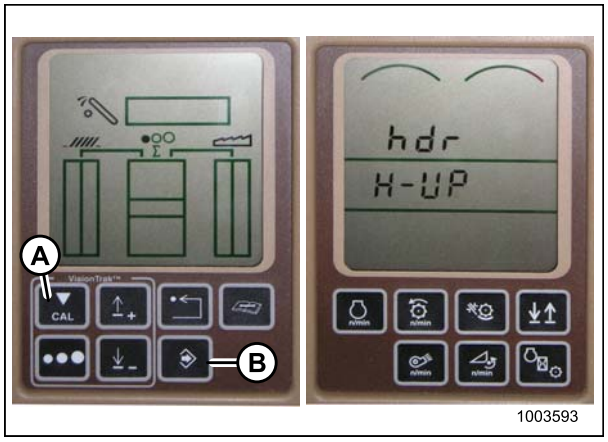


Figure 3.265: John Deere Combine Display

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.

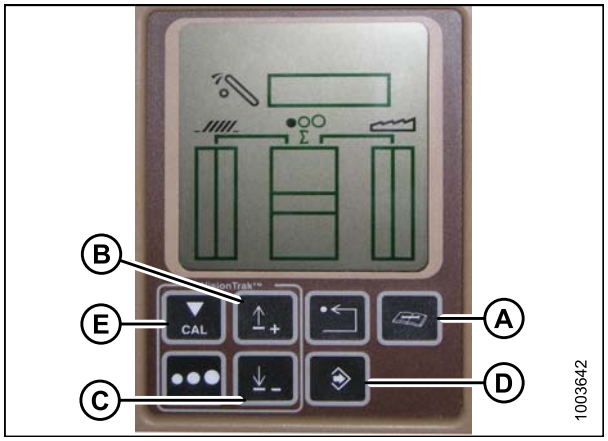


Figure 3.266: John Deere Combine Display

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.

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.

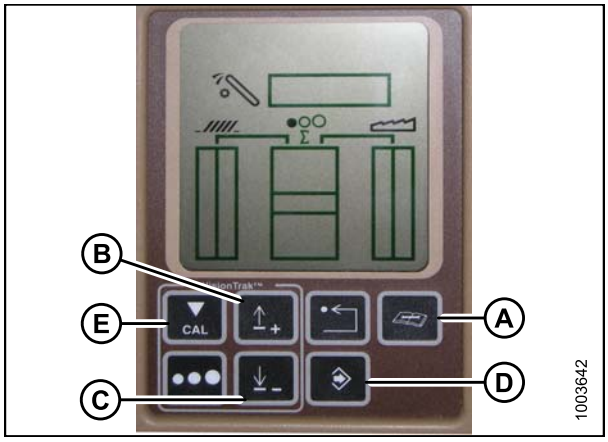


Figure 3.267: John Deere Combine Display

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 *3.268: John Deere Combine Display, page 171*.

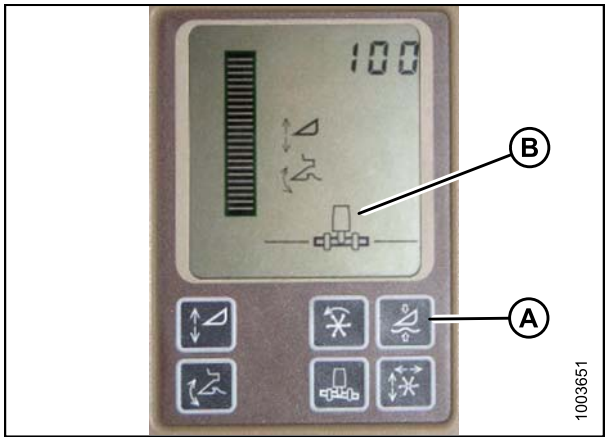


Figure 3.268: John Deere Combine Display

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.

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 and 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.

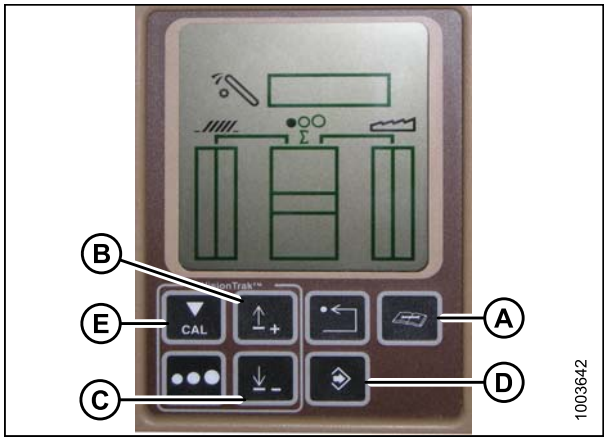


Figure 3.269: John Deere Combine Display

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

This procedure explains how to adjust 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.

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 and 85.

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.

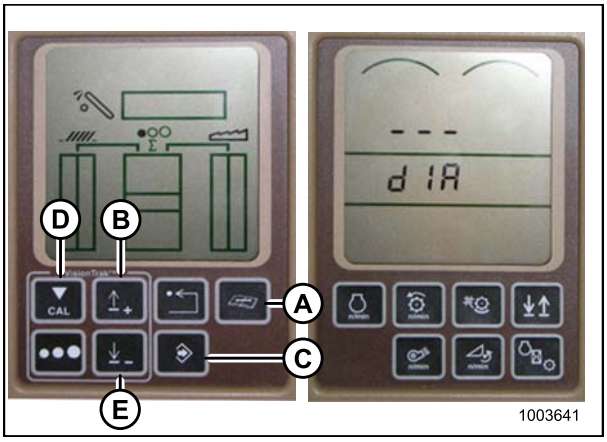


Figure 3.270: John Deere Combine Display

3.8.10 John Deere 70 Series Combines

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

The auto header height sensor output must be within a specific range, or the feature will not work properly.

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere 70 Series	0.5 V	4.5 V	3.0 V

Check the sensor's output voltage range from the combine cab according to instructions that follow.

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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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.

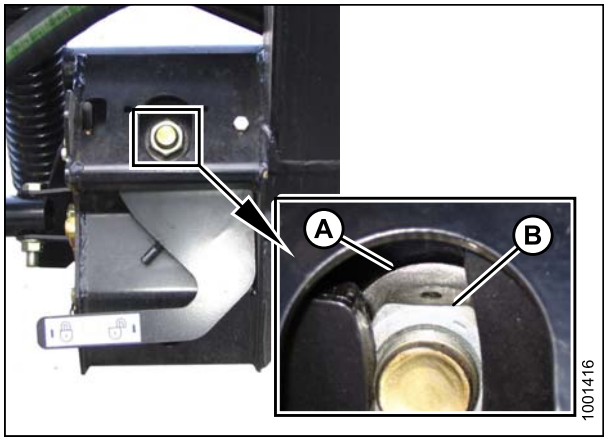


Figure 3.271: Float Lock

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

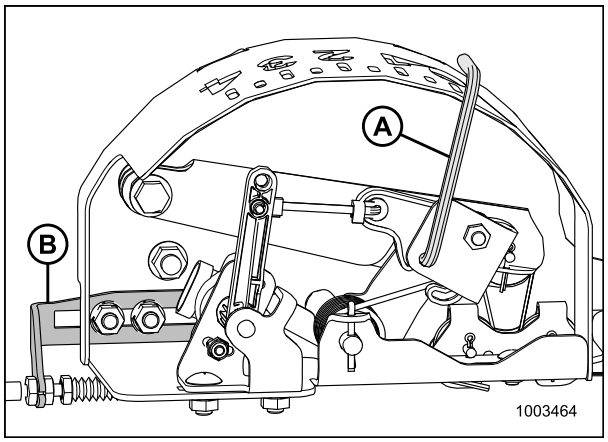


Figure 3.272: Float Indicator Box

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

Figure 3.273: John Deere Combine Display

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

Figure 3.274: John Deere 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 display the Message Center.

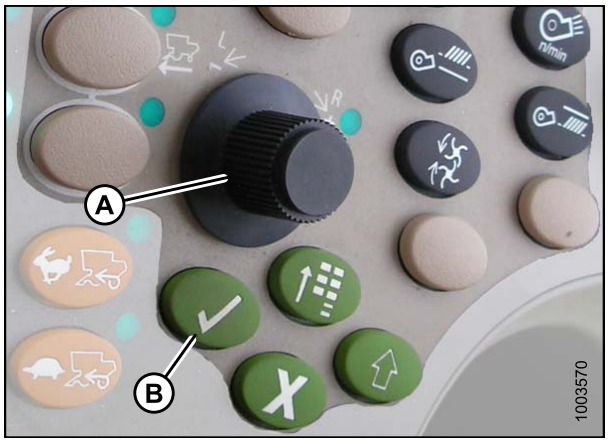


Figure 3.275: John Deere Combine Control Console

7. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column, and then 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 3.276: John Deere Combine Display

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

Figure 3.277: John Deere 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 combine display.

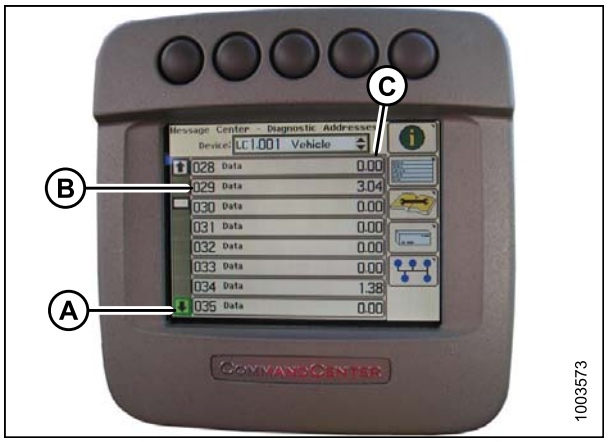


Figure 3.278: John Deere Combine Display

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. 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 *Adjusting Voltage Limits, page 105*.

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 *3.7.4 Header Angle, page 75*.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

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 3.279: John Deere Combine Display

7. Select HEADER in box (A) by scrolling down to the box using the scroll knob, and then pressing the check mark button (knob and button are shown in Figure *3.281: John Deere Combine Control Console, page 178*).
8. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.

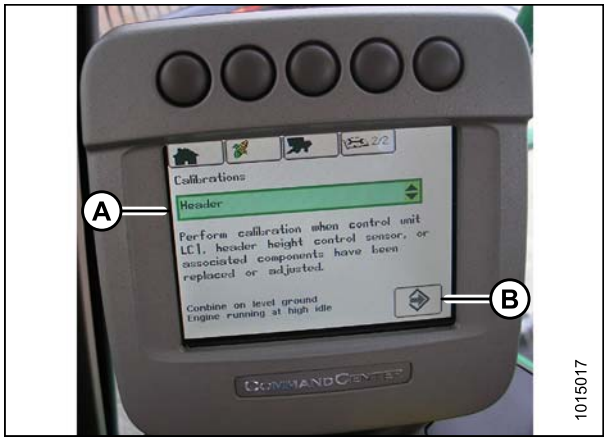


Figure 3.280: John Deere Combine Display

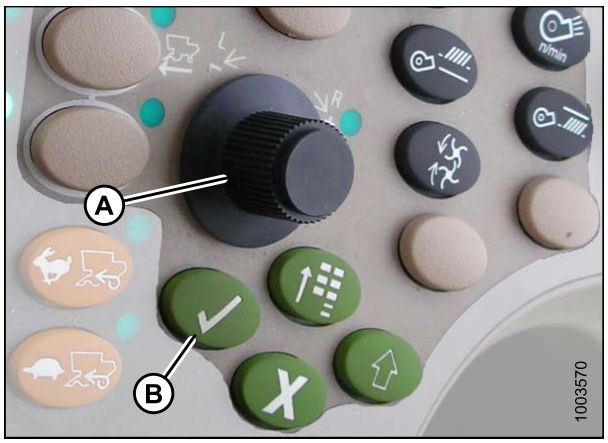


Figure 3.281: John Deere Combine Control Console

A - Scroll Knob **B - Check Mark Button**

9. Follow the steps listed on the combine display to perform the calibration.

   NOTE:
   If an error code appears on page, the sensor is not in the correct working range. Refer to *Checking Voltage Range from the Combine Cab (John Deere 70 Series), page 173* to check and adjust the range.

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 combine display (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 combine display to the previous page.

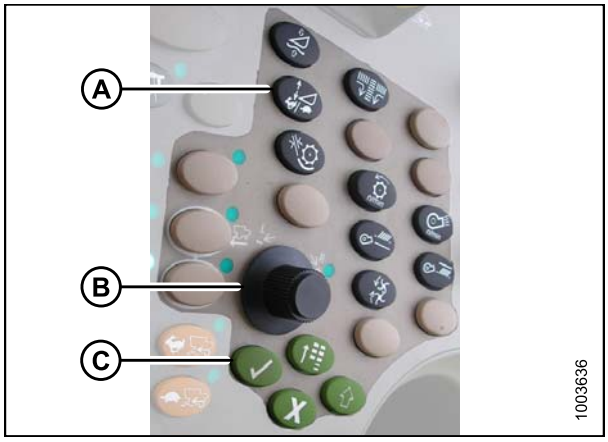


Figure 3.282: John Deere Combine Control Console

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 3.283: John Deere 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.

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.

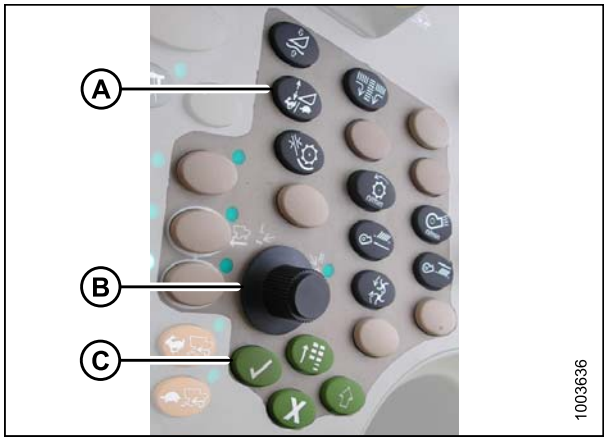


Figure 3.284: John Deere Combine Control Console

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 3.285: John Deere Combine Display

3.8.11 John Deere S-Series and T-Series Combines

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

The auto header height sensor output must be within a specific range, or the feature will not work properly.

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere S and T-Series	0.5 V	4.5 V	3.0 V

Check the sensor's output voltage range from the combine cab according to instructions that follow.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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.

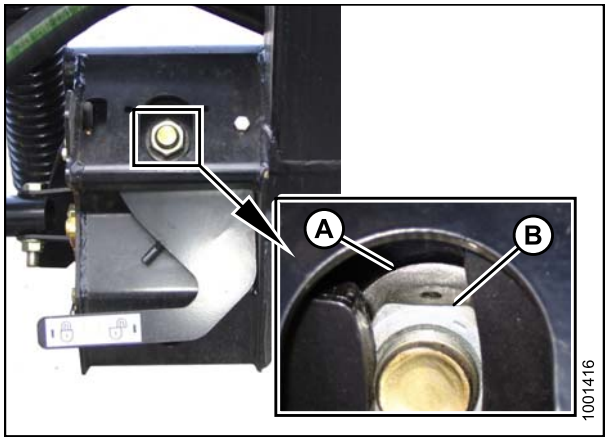


Figure 3.286: Float Lock

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

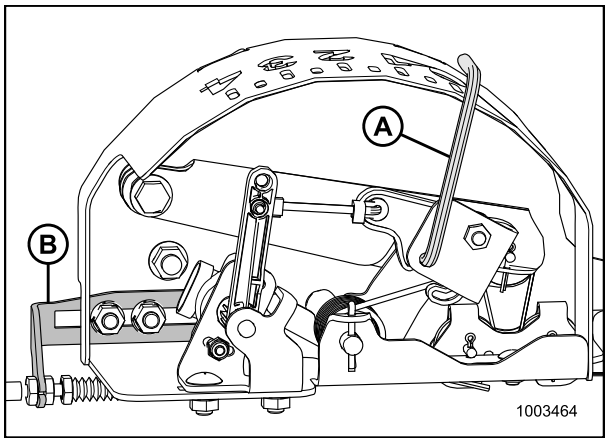


Figure 3.287: Float Indicator Box

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

Figure 3.288: John Deere Combine Display

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.

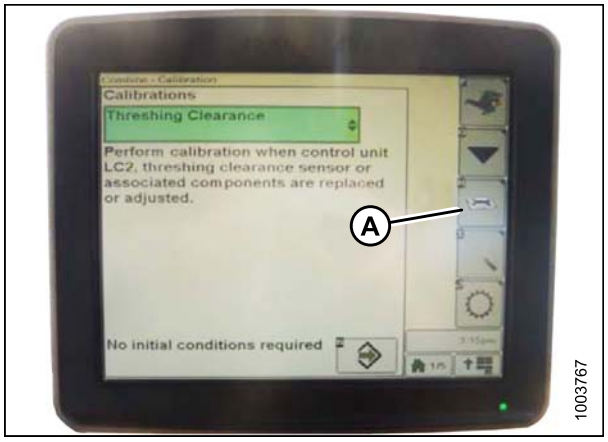


Figure 3.289: John Deere Combine Display

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

Figure 3.290: John Deere 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 3.291: John Deere Combine Display

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 3.292: John Deere 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. 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 *Adjusting Voltage Limits, page 105*.

Calibrating Feeder House Fore/Aft Tilt Range (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 *3.7.4 Header Angle, page 75*.

This procedure applies only to model year 2015 and later John Deere S-Series combines.

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 feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the hydro handle.

Figure 3.293: John Deere Hydro Handle

NOTE:
The feeder house fore/aft tilt controls can be changed to work with buttons E and F by pressing the hydro handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from the drop-down menu (B) on the combine display.

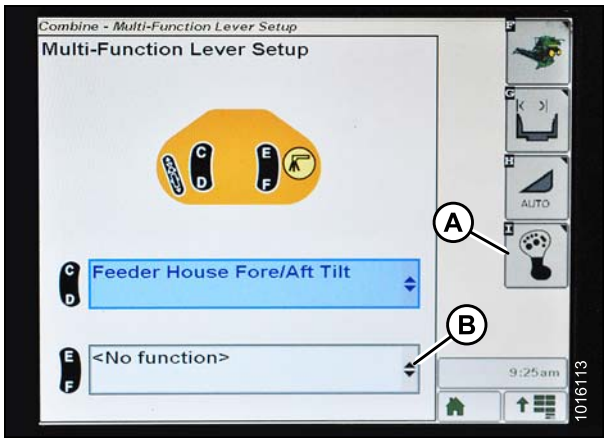


Figure 3.294: John Deere Combine Display

To calibrate the feeder house fore/aft tilt range, 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.
4. Press the DIAGNOSTIC icon (A) on the main page of the combine display. The CALIBRATION page displays.

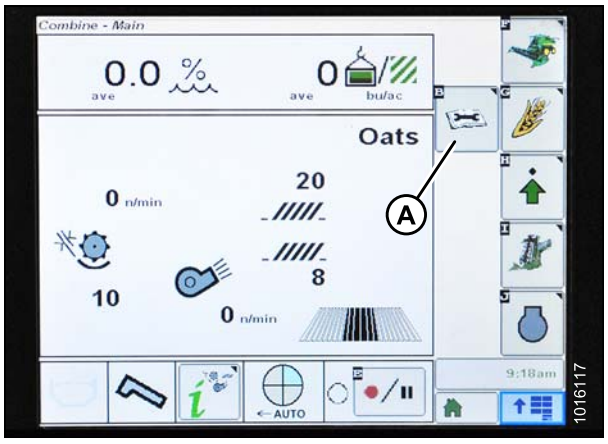


Figure 3.295: John Deere Combine Display

5. Select the CALIBRATIONS drop-down menu (A) to view the list of calibration options.

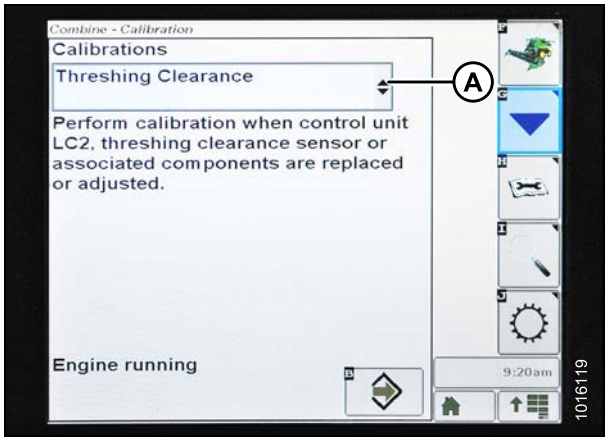


Figure 3.296: John Deere Combine Display

6. Press the arrow (A) to cycle up though the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

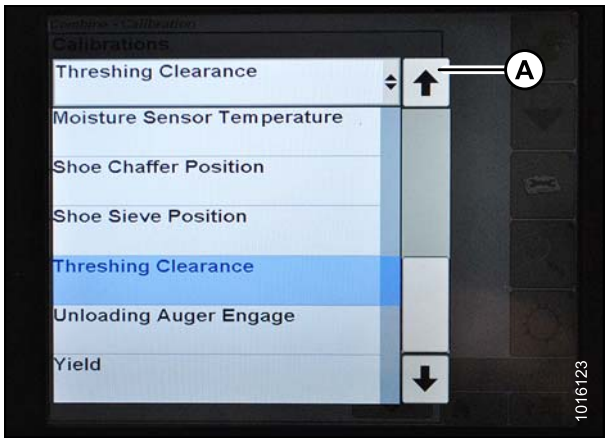


Figure 3.297: John Deere Combine Display

7. Press the ENTER icon (A).

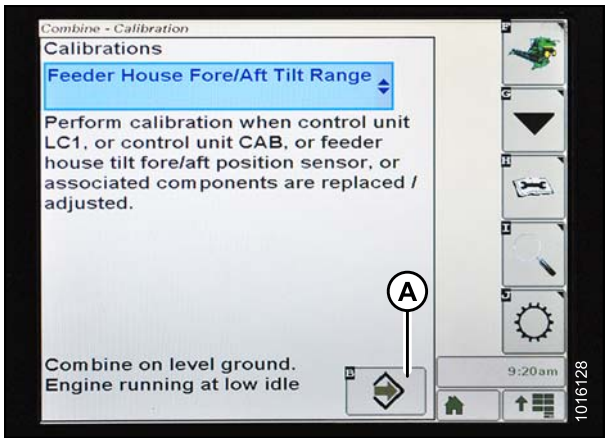


Figure 3.298: John Deere Combine Display

8. Follow the instructions that appear on the combine display. As you proceed through the calibration process, the display will automatically update to show the next step.

   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 180*.

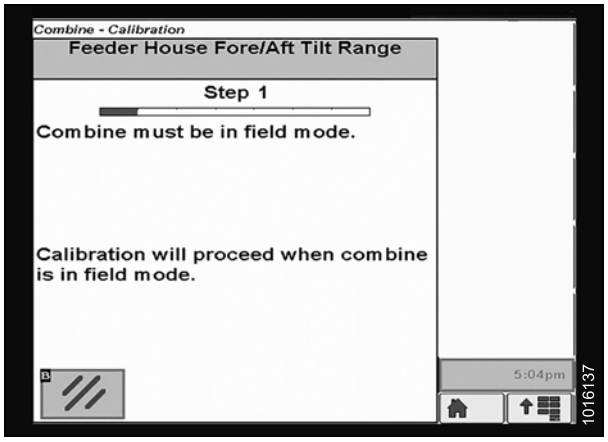


Figure 3.299: John Deere Combine Display

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 *3.7.4 Header Angle, page 75*.

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

Figure 3.300: John Deere Combine Display

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

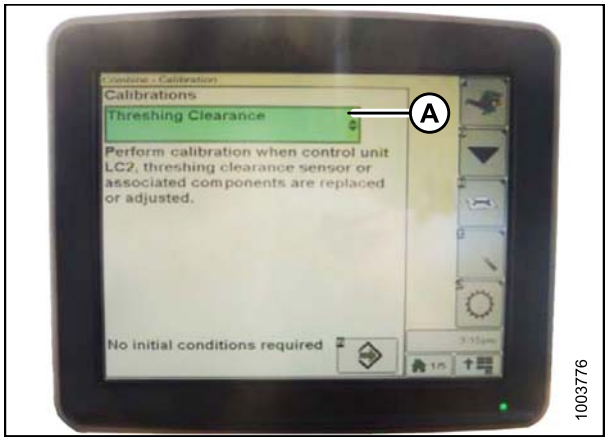


Figure 3.301: John Deere Combine Display

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

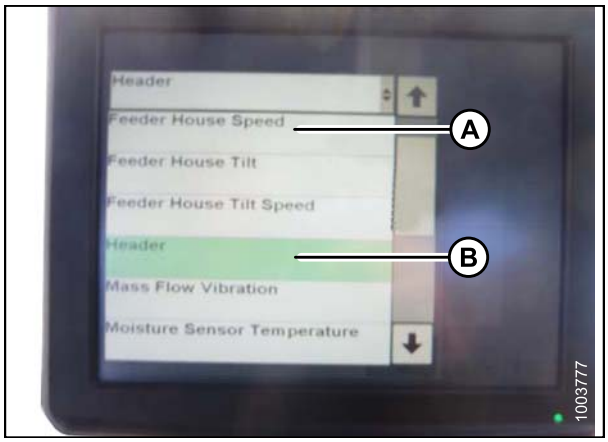


Figure 3.302: John Deere Combine Display

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

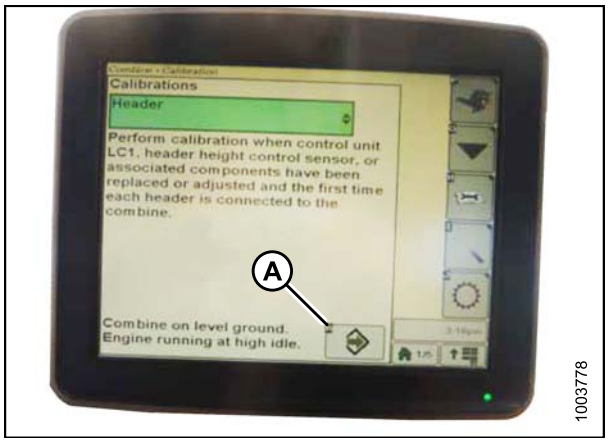


Figure 3.303: John Deere Combine Display

9. 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 *Adjusting Voltage Limits, page 105*.

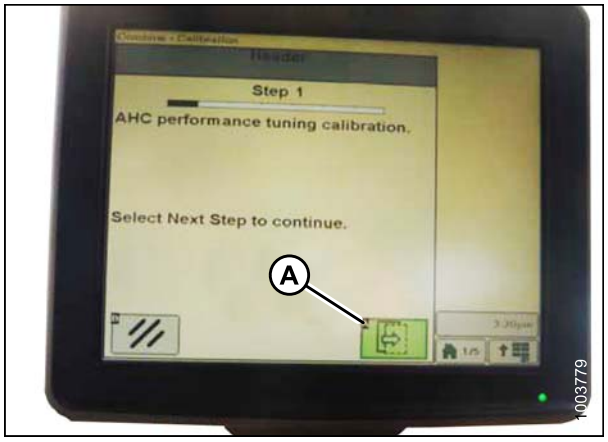


Figure 3.304: John Deere Combine Display

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.

1. Press button (A) twice and the current sensitivity setting will appear on the combine display.

Figure 3.305: John Deere 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.

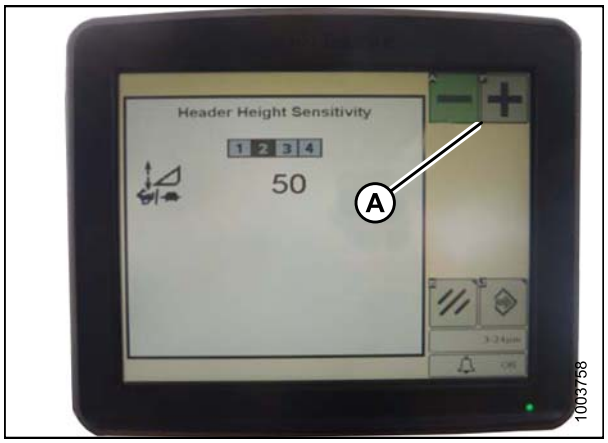


Figure 3.306: John Deere Combine Display

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 3.307: John Deere 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.

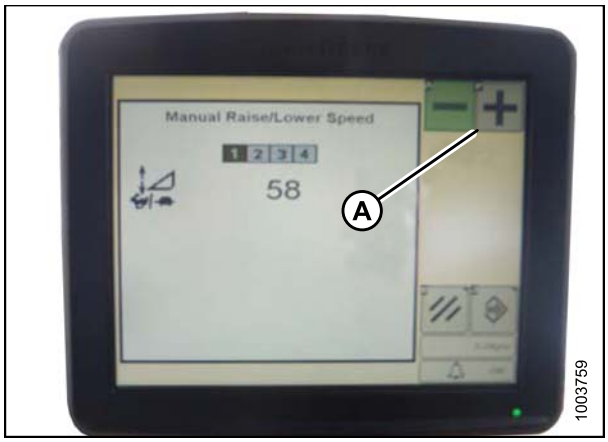


Figure 3.308: John Deere Combine Display

NOTE:
The ideal ground pressure—in most cases—is one number (on the float indicator box) above the header suspended off the ground. For example, if the float indicator needle (A) is positioned at 0 with the header suspended off the ground, then the ideal ground pressure will be achieved with the needle positioned at 1. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

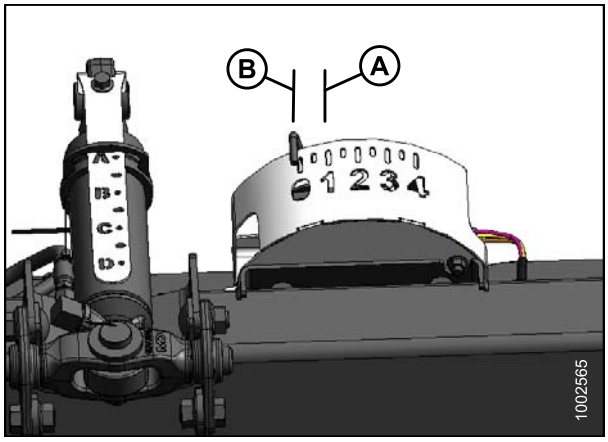


Figure 3.309: Float Indicator Box

Setting Preset Cutting Height (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 the COMBINE – HEADER SETUP icon (A) on the main page. The COMBINE – HEADER SETUP page appears. This page is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.

Figure 3.310: Combine Display

2. Select the COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC screen appears.

Figure 3.311: Combine Display

3. Select the top-left (A) and top-center (B) icons for auto height sensing and return to cut.

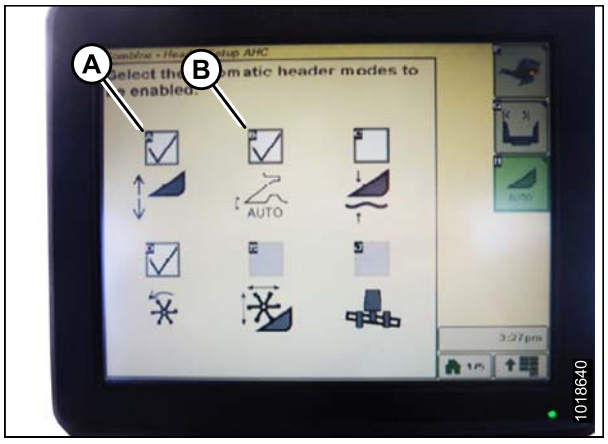


Figure 3.312: Combine Display

4. Select an appropriate ground pressure setting. Preset button 2 (B) on the joystick for a light ground pressure setting in muddy or soft soil conditions, or preset button 3 (C) for a heavy ground pressure setting in harder soil conditions and a faster ground speed.

   NOTE:
   Preset button 1 (A) is reserved for header lift on the headland and is not used for ground cutting.

Figure 3.313: Joystick Buttons

   NOTE:
   The ideal ground pressure—in most cases—is one number (on the float indicator box) above the header suspended off the ground. For example, if the float indicator needle (A) is positioned at 0 with the header suspended off the ground, then the ideal ground pressure will be achieved with the needle positioned at 1. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

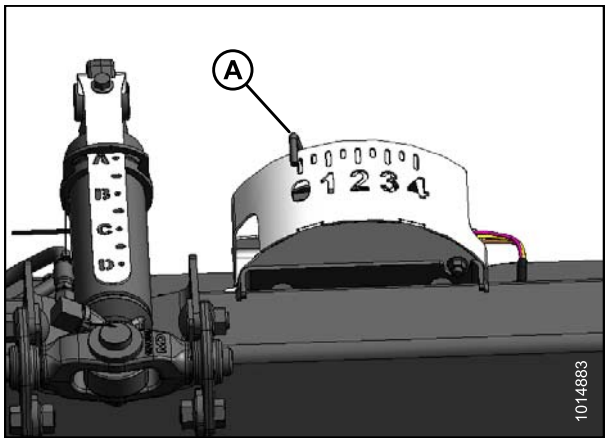


Figure 3.314: Float Indicator Box

5. Use control knob (A) to scroll through the different button options.

Figure 3.315: Combine Control Console

NOTE:
When the AHHC is engaged, the AHHC icon (A) appears on the monitor and the number indicating which button was pressed (B) is displayed on the screen.

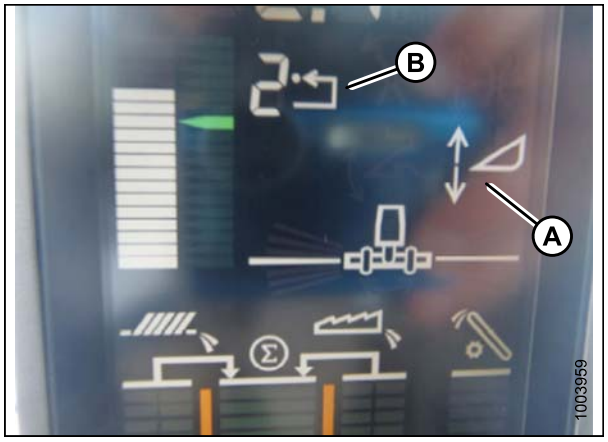


Figure 3.316: Combine Display

3.8.12 Lexion 500-Series Combines

Auto Header Height Sensor Voltage Requirements

The auto header height sensor output must be within a specific voltage range for the feature to work properly.

Combine	Lower voltage limit (+/- 0.2)	Upper voltage limit (+/- 0.2)	Minimum range difference
Lexion 500/600/700 Series	0.7 V	4.3 V	2.5 V

Check the sensor's output voltage range at the float indicator according to instructions that follow.

Checking the Sensor's Output Voltage Range

The auto header height sensor output must be within a specific range for the feature to work properly. To check the sensor's output voltage range, follow these steps:

1. Position the header 150 mm (6 in.) above the ground, and rest it on the safety props. Unlock the adapter float.

   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.

2. The pointer (A) on the float indicator should point at **0**. If it does not, adjust the cable bracket (B) until the pointer (A) on the float indicator points to **0**.

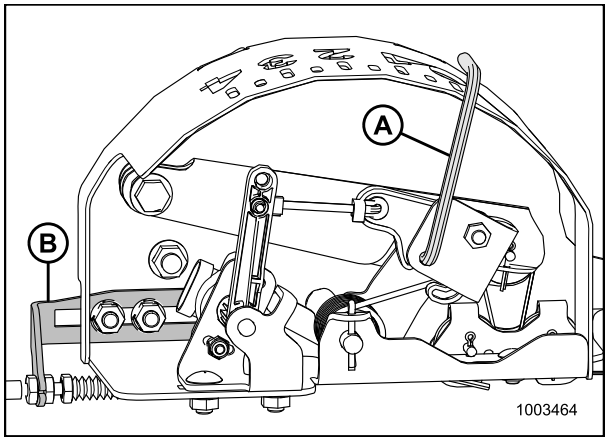


Figure 3.317: Float Indicator with Auto Header Height Sensor

3. Measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator with a voltmeter.

   NOTE:
   The voltage reading should be below **4.5 V**.

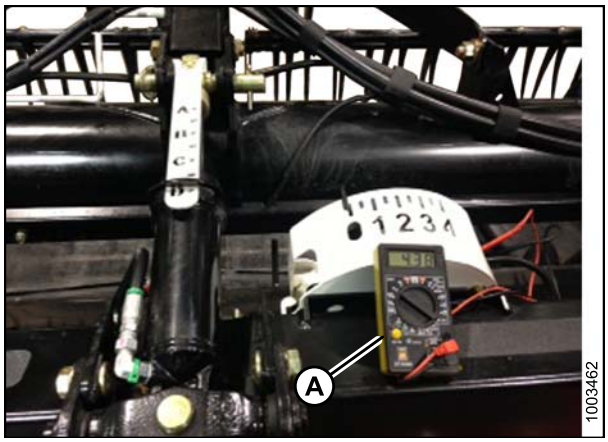


Figure 3.318: Float Indicator Reading 1 V

4. Fully lower the combine feeder house until the adapter is no longer supporting the header. The float indicator should read **4**.

   NOTE:
   You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

5. Measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator with a voltmeter (A). It should be at the low voltage limit for the combine – **0.5 V**.

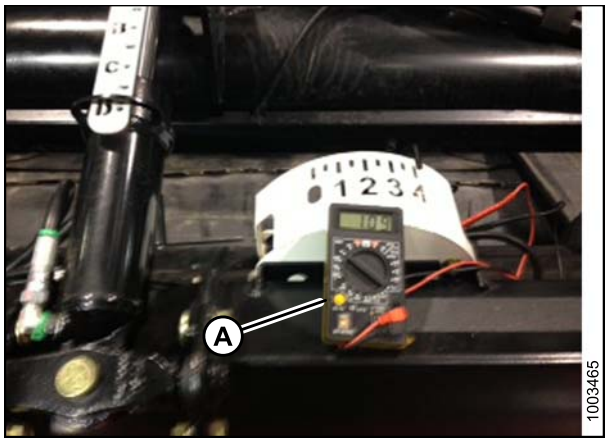


Figure 3.319: Float Indicator Reading 4.5 V

6. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits less than **3.0 V**, make adjustments according to *Adjusting Voltage Limits, page 194*).

Adjusting Voltage Limits

1. To adjust the high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at **D**.
   b. Position header 150–254 mm (6–10 in.) above the ground. Float indicator should be at **0**.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to the right to increase the high voltage limit, or to the left to decrease it.
   e. Tighten sensor mounting bolts (A).
2. To adjust the low voltage limit:
   a. Fully extend center-link, (i.e. increase header/guard angle to maximum). Header angle indicator should be at **D**.
   b. Fully lower header to the ground. Float indicator should be at **4**.
   c. Loosen mounting bolts (C).
   d. Rotate the potentiometer (D) clockwise to increase the low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).
3. When the readings are in the proper range, the auto header height control can be calibrated.

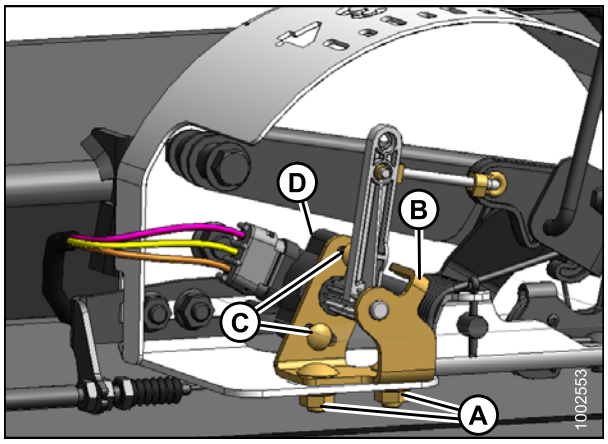


Figure 3.320: AHHC Sensor Assembly

A - Sensor Mounting Bolts **B - Sensor Support**
C - Potentiometer Mounting Bolts **D - Potentiometer**

Calibrating the Auto Header Height System

The calibration procedure determines the limits of the auto header height sensor.

Calibrate the auto header height system after initial header installation, and after replacing or adjusting any component of the auto header height system. If the system does not function, calibrate it again.

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 *3.7.4 Header Angle, page 75*.

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. Use the < key (A) or > key (B) to select AUTO HEADER, and press the OK key (C). The E5 page displays whether the automatic header height is ON or OFF.

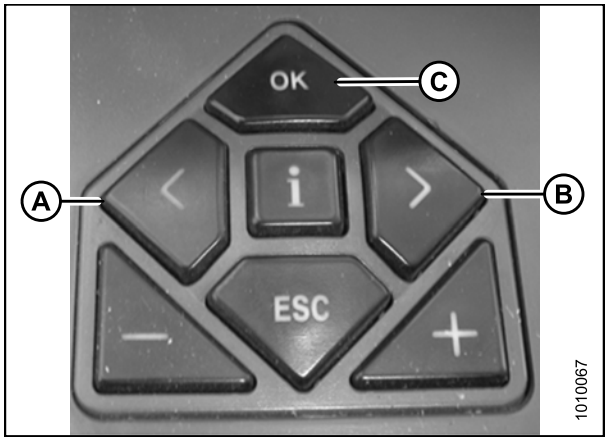


Figure 3.321: Lexion Combine Controls

3. Use the – key (A) or the + key (B) to turn ON the AHHC, and press OK (C).
4. Engage the threshing mechanism and the header.

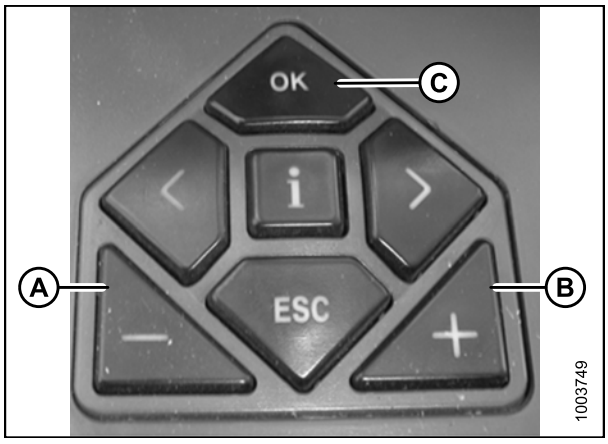


Figure 3.322: Lexion Combine Controls

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

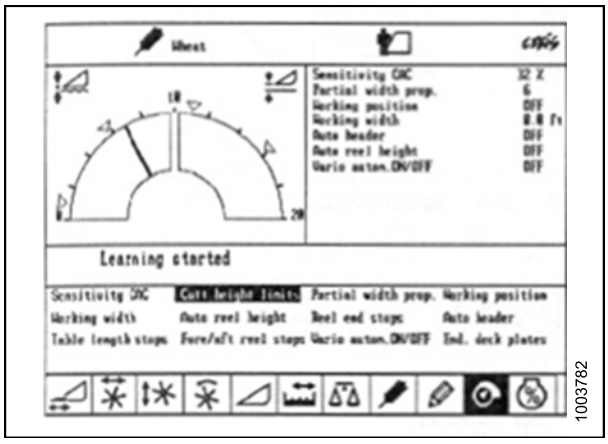


Figure 3.323: Lexion Combine Display

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

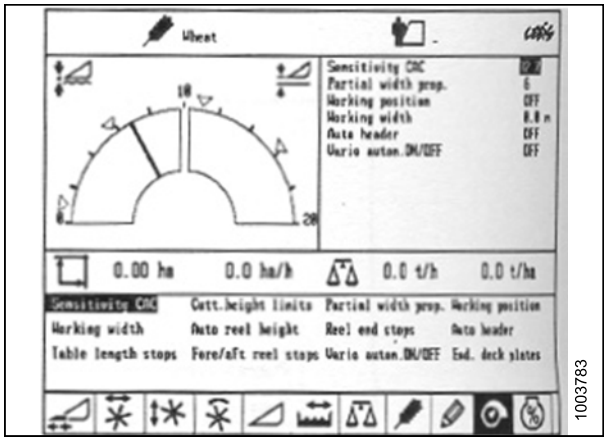


Figure 3.324: Lexion Combine Display

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%.

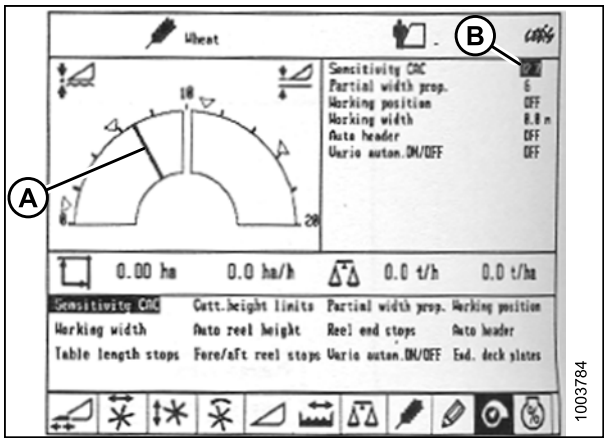


Figure 3.325: Lexion Combine Display

Auto Header Height Sensor Voltage Requirements

The auto header height sensor output must be within a specific voltage range for the feature to work properly.

Combine	Lower voltage limit (+/- 0.2)	Upper voltage limit (+/- 0.2)	Minimum range difference
Lexion 500/600/700 Series	0.7 V	4.3 V	2.5 V

Check the sensor's output voltage range at the float indicator according to instructions that follow.

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 150 mm (5.9 in.), and use the auto contour system for cutting heights below 150 mm (5.9 in.).

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 3.326: Joystick Buttons

6. Use the < key (C) or > key (D) to select the CUTTING HEIGHT page, 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.

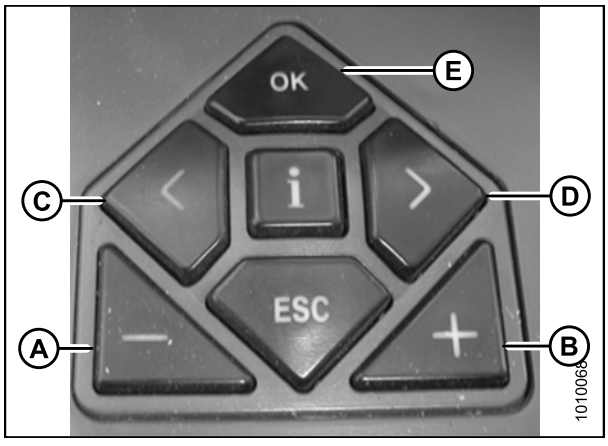


Figure 3.327: Lexion Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7., page 197* for the set point.

Figure 3.328: Joystick Buttons

Setting Cutting Height Manually (Lexion 500 Series)

To set the cutting height manually, follow these steps:

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 button (A) to raise the header, or button (B) to lower the header to the desired cutting height.
2. Then press and hold button (C) for three seconds to store the cutting height into the CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when the new setting has been stored.
3. If desired, program a second set point 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.

   NOTE:
   For above the ground cutting, repeat Step *1., page 198*, and use button (D) instead of button (C) while repeating Step *2., page 198*.

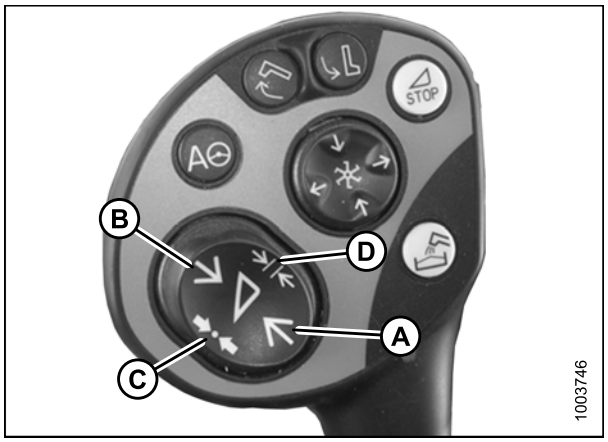


Figure 3.329: Joystick Buttons

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%.

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 + (B) key to change the reaction speed setting, and press the OK key (E).

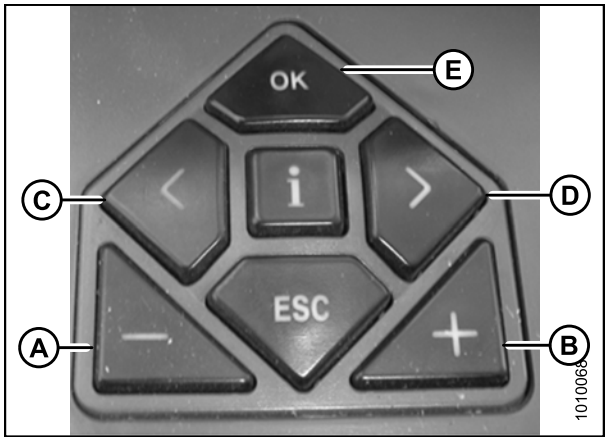


Figure 3.330: Lexion Combine Controls

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

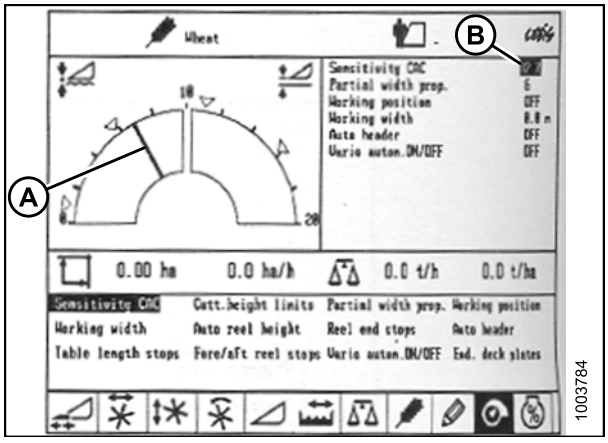


Figure 3.331: Lexion Combine Display

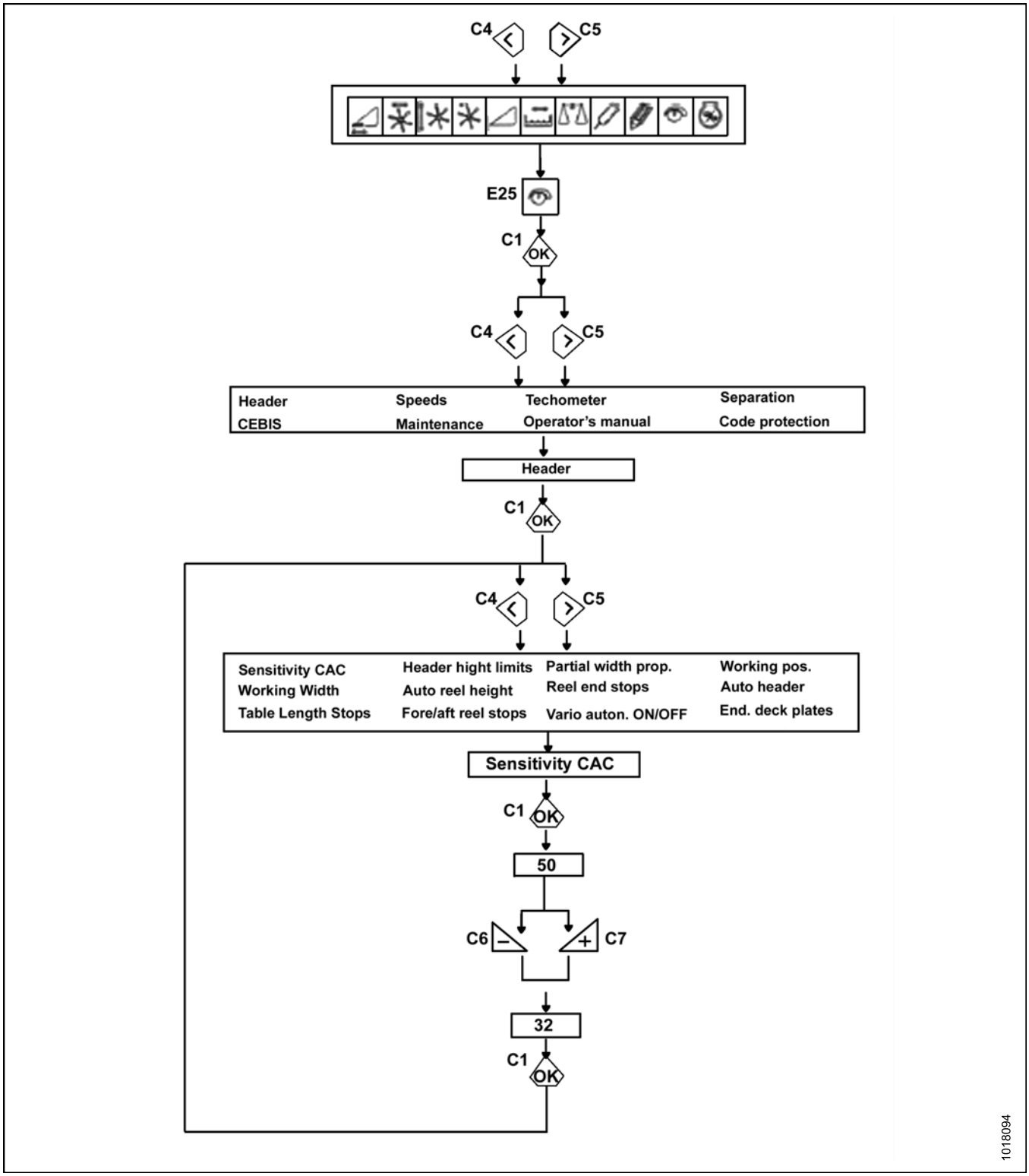


Figure 3.332: Flow Chart for Setting the Sensitivity of the Float Optimizer

Adjusting Auto Reel Speed (Lexion 500 Series)

The reel speed can be preset when the automatic header functions are activated. Follow these steps to preset the reel speed.

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 < or > key to select REEL WINDOW. Window **E15** will display the current advance or retard speed of the reel in relation to the ground speed.

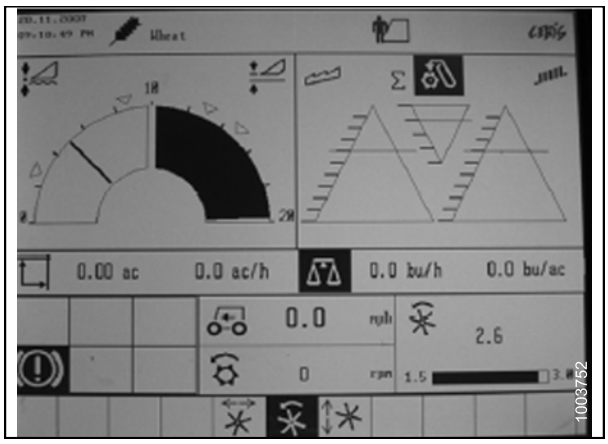


Figure 3.333: Combine Display

2. Press the OK key (C) to open the REEL SPEED window.
3. Use the – key (A) or the + key (B) to set the reel speed in relation to the current ground speed. Window **E15** will display the selected reel speed.

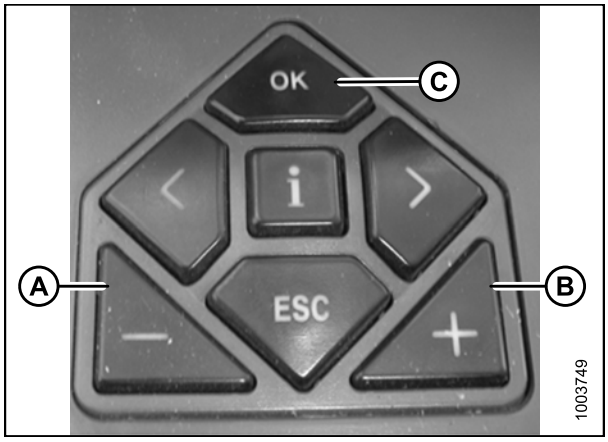


Figure 3.334: Combine Controls

4. If desired, manually adjust the reel speed by rotating the rotary switch to the reel position (A), and then use the – or + key to set the reel speed. Window **E15** will display the selected reel speed.

Figure 3.335: Combine Rotary Switch

5. Press and hold button (A) or button (B) for three seconds to store the setting into the CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when the new setting has been stored.

   NOTE:
   Whenever button (A) or button (B) is pressed for three seconds, the current positions for reel speed and cutting height are stored.

Figure 3.336: Joystick Buttons

6. Use the < or > key to select the REEL WINDOW. When the reel window is selected, window **E15** will display the current advance or retard speed of the reel in relation to the ground speed.

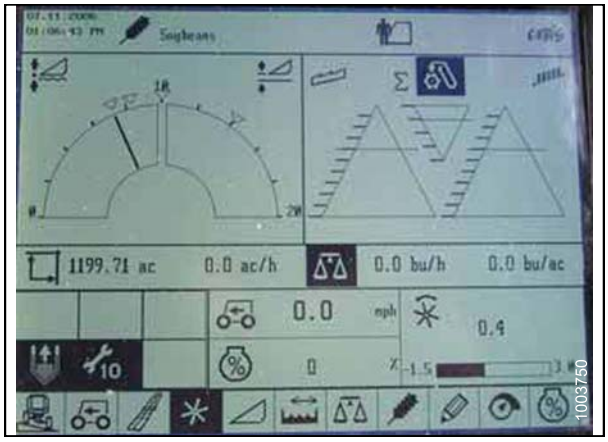


Figure 3.337: Combine Display

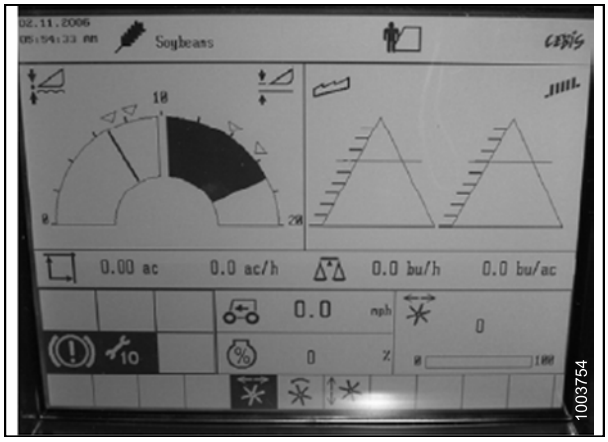


Figure 3.338: Combine Display

7. Press the OK key (E), and use the < key (C) or the > key (D) to select the REEL FORE AND AFT window.
8. Use the – key (A) or the + key (B) to set the reel fore-aft position.

   NOTE:
   Joystick button (A) or button (B) also can be used to set the reel fore-aft position.

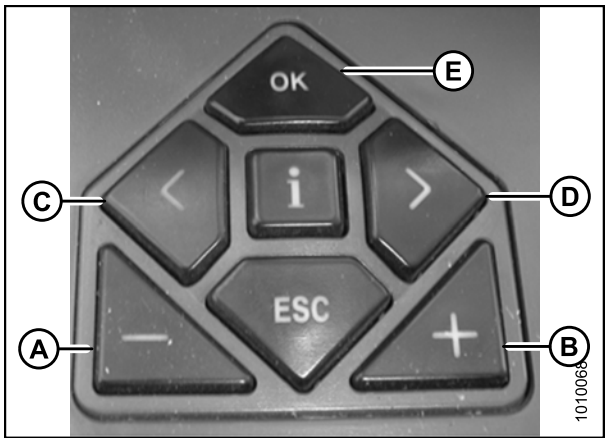


Figure 3.339: Combine Controls

9. Buttons (A) or (B) set the fore-aft position of the reel.
10. Press and hold button (C) or button (D) for three seconds to store the setting into the CEBIS (CLAAS Electronic on-Board Information System). An alarm will sound when the new setting has been stored.

NOTE:
Whenever button (C) or button (D) is pressed for three seconds, the current positions for reel speed and cutting height are stored.

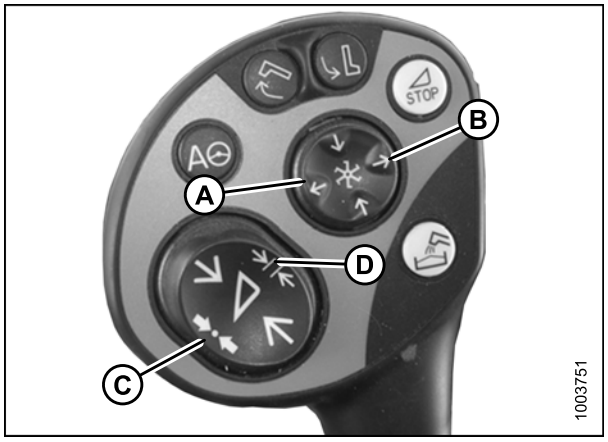


Figure 3.340: Joystick Buttons

3.8.13 Lexion 700-Series Combines

This section applies to Lexion 700-series combines. Refer to *3.8.12 Lexion 500-Series Combines, page 192* for Lexion 500-series.

Auto Header Height Sensor Voltage Requirements

The auto header height sensor output must be within a specific voltage range for the feature to work properly.

Combine	Lower voltage limit (+/- 0.2)	Upper voltage limit (+/- 0.2)	Minimum range difference
Lexion 500/600/700 Series	0.7 V	4.3 V	2.5 V

Check the sensor's output voltage range at the float indicator according to instructions that follow.

Checking the Sensor's Output Voltage Range

The auto header height sensor output must be within a specific range for the feature to work properly. To check the sensor's output voltage range, follow these steps:

1. Position the header 150 mm (6 in.) above the ground, and rest it on the safety props. Unlock the adapter float.

   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.

2. The pointer (A) on the float indicator should point at **0**. If it does not, adjust the cable bracket (B) until the pointer (A) on the float indicator points to **0**.

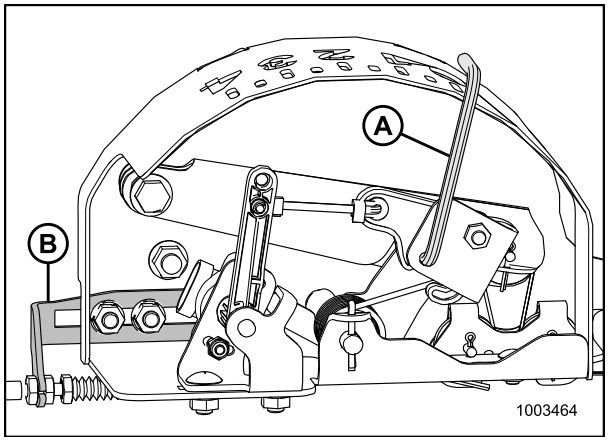


Figure 3.341: Float Indicator with Auto Header Height Sensor

3. Measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator with a voltmeter.

   NOTE:
   The voltage reading should be below **4.5 V**.

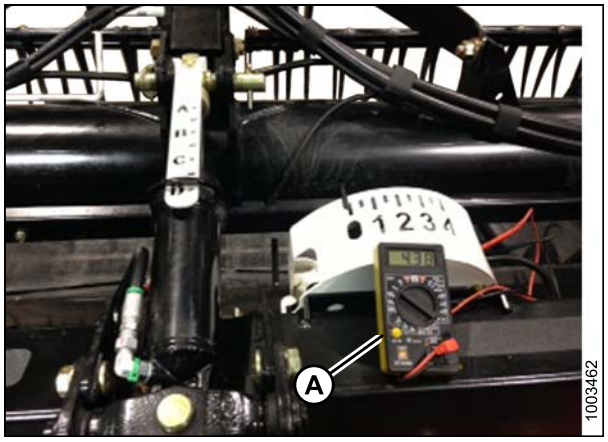


Figure 3.342: Float Indicator Reading 1 V

4. Fully lower the combine feeder house until the adapter is no longer supporting the header. The float indicator should read **4**.

   NOTE:
   You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

5. Measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator with a voltmeter (A). It should be at the low voltage limit for the combine – **0.5 V**.

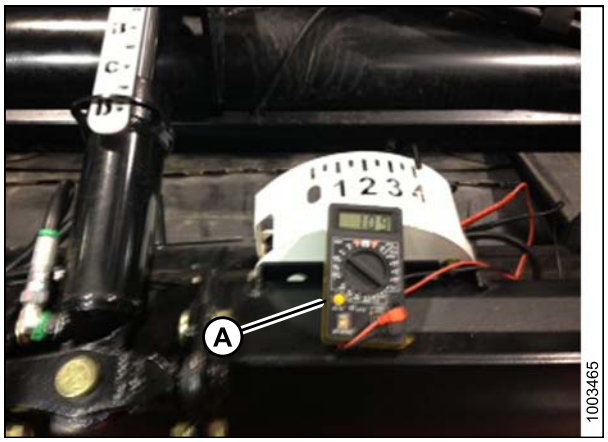


Figure 3.343: Float Indicator Reading 4.5 V

6. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits less than **3.0 V**, make adjustments according to *Adjusting Voltage Limits, page 194*).

Adjusting Voltage Limits

1. To adjust the high voltage limit:
   a. Extend guard angle fully. Header angle indicator should be at **D**.
   b. Position header 150–254 mm (6–10 in.) above the ground. Float indicator should be at **0**.
   c. Loosen sensor mounting bolts (A).
   d. Slide sensor support (B) to the right to increase the high voltage limit, or to the left to decrease it.
   e. Tighten sensor mounting bolts (A).
2. To adjust the low voltage limit:
   a. Fully extend center-link, (i.e. increase header/guard angle to maximum). Header angle indicator should be at **D**.
   b. Fully lower header to the ground. Float indicator should be at **4**.
   c. Loosen mounting bolts (C).
   d. Rotate the potentiometer (D) clockwise to increase the low voltage limit, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (C).
3. When the readings are in the proper range, the auto header height control can be calibrated.

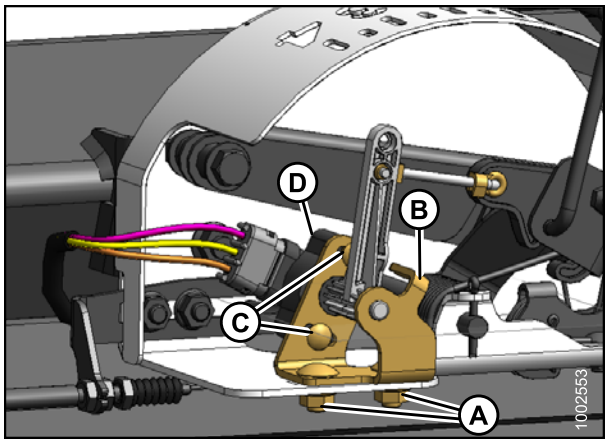


Figure 3.344: AHHC Sensor Assembly

A - Sensor Mounting Bolts **B - Sensor Support**
C - Potentiometer Mounting Bolts **D - Potentiometer**

Calibrating the Auto Header Height System

The calibration procedure determines the limits of the auto header height sensor.

Calibrate the auto header height system after initial header installation, and after replacing or adjusting any component of the auto header height system. If the system does not function, calibrate it again.

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 *3.7.4 Header Angle, page 75*.

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. Ensure that the header float is unlocked.

3. To calibrate the AUTO CONTOUR, use control knob (A) to scroll left and right in the top row until the AUTO CONTOUR icon (B) is highlighted. Press control knob (A) to select it.

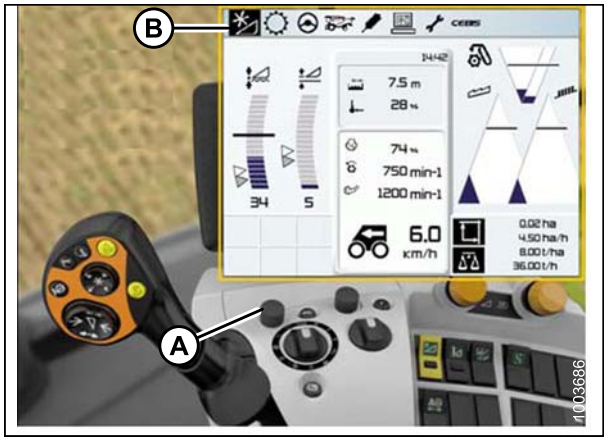


Figure 3.345: Lexion Combine Display, Console, and Joystick

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 3.346: Lexion Combine Display, Console, and Joystick

5. With the letter **A** highlighted (shown as B in the image to the right), use the control knob (A) to move to highlight the icon that resembles a header with up and down arrows (C), and press the control knob (A) to select it.

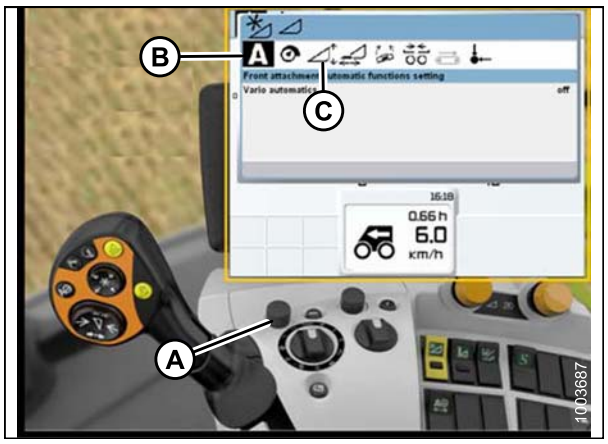


Figure 3.347: Lexion Combine Display, Console, and Joystick

6. After pressing the control knob, the letter **A** and the screwdriver icon appear on the screen (as shown).
7. Use control knob (A) to move to highlight the icon that resembles a screwdriver (B).
8. Exit the cab to engage the combine separator and feeder house.
9. Press control knob (A) and a progress bar chart will appear.

Figure 3.348: Lexion Combine Display, Console, and Joystick

10. Fully raise the feeder house and the progress bar chart will advance to 25% (A).
11. Fully lower the feeder house until the header stops moving. Header float should be unlocked. The progress bar chart will advance to 50%.
12. Fully raise the feeder house a second time and the progress bar chart will advance to 75%.
13. Fully lower the feeder house until the header stops moving, and the progress bar chart will advance to 100%.

Figure 3.349: Lexion Combine Display, Console, and Joystick

14. Once the calibrations are complete, the progress bar chart displays 100% (A). The procedure is now complete.

    NOTE:
    At any time during the calibration, if the voltage is not within the range of 0.5–4.5 volts, the monitor will indicate that the learning procedure has not concluded.

    NOTE:
    If header float is set too light, an error message will appear. If the error message appears, back float off three full-turns of the adjuster bolts to adjust float to approximately 45–55 kg (100–125 lb.).

15. The calibration procedure is now complete.

Figure 3.350: Lexion Combine Display, Console, and Joystick

Setting Cutting Height (Lexion 700 Series)

To set cutting height, follow these steps.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

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 (the white module on top of the CA25 adapter) should be set to **1.5**.

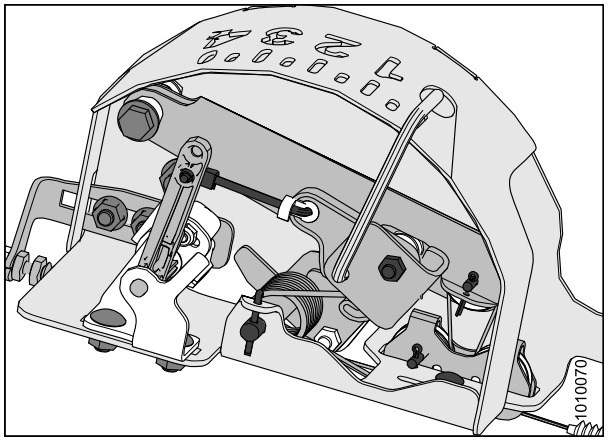


Figure 3.351: Float Indicator

2. Push and hold the left side of the header. Raise and lower switch (A) until you hear a ping.

   NOTE:
   Two different cutting heights can be programmed.

Figure 3.352: Lexion Combine Display, Console, and Joystick

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.

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

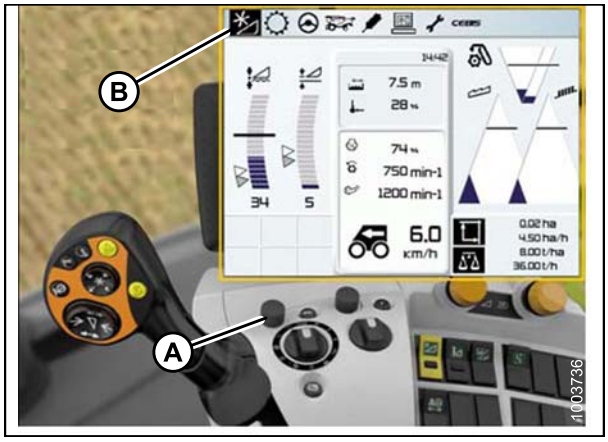


Figure 3.353: Lexion Combine Display, Console, and Joystick Lever

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

Figure 3.354: Lexion 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 (B) from the 0 default. The settings from 1–50 provide a faster response, whereas the settings from -1 to -50 provide a slower response. For best results, make adjustments in increments of five.

6. Increase the CUTTING HEIGHT ADJUSTMENT setting (B) 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 (B) 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 3.355: Lexion Combine Display

Adjusting Auto Reel Speed (Lexion 700 Series)

Adjust the auto reel speed as follows:

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. Turn control knob (A) to highlight the HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog menu opens.

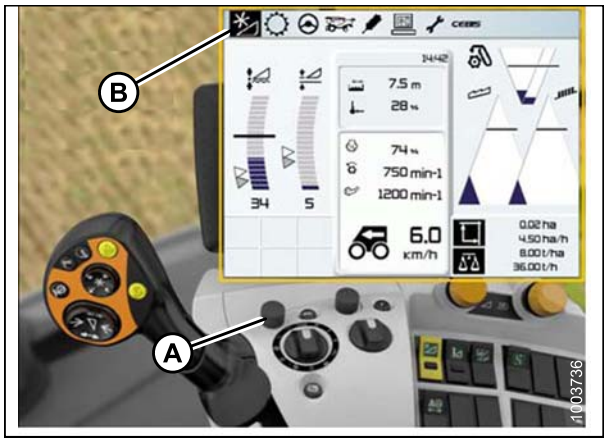


Figure 3.356: Lexion Combine Display, Console, and Joystick

2. Turn 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 dialog menu.

Figure 3.357: Lexion Combine Display, Console, and Joystick

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED dialog menu (if you are using Auto Reel Speed). The ACTUAL VALUE indicates the auto reel speed.

Figure 3.358: Lexion Combine Display, Console, and Joystick

4. Use control knob (A) to change the reel speed.

Figure 3.359: Lexion Combine Display, Console, and Joystick

NOTE:
In most cases, the ideal ground pressure is one number higher than the value on the float indicator with the header off the ground. For example, if the float indicator needle (A) is positioned at **0** with the header off the ground, then the ideal ground pressure will be achieved with the needle positioned at **1**. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

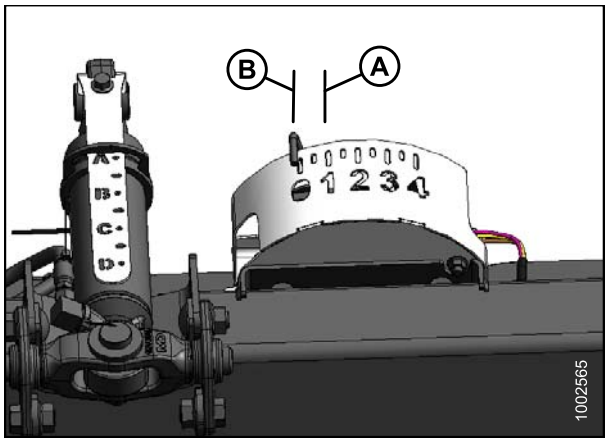


Figure 3.360: Float Indicator

3.8.14 New Holland Combines CX/CR Series (CR Series—Model Year 2014 and Earlier)

NOTE:
For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.15 New Holland Combines (CR Series—Model Year 2015 and Later), page 225*.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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.

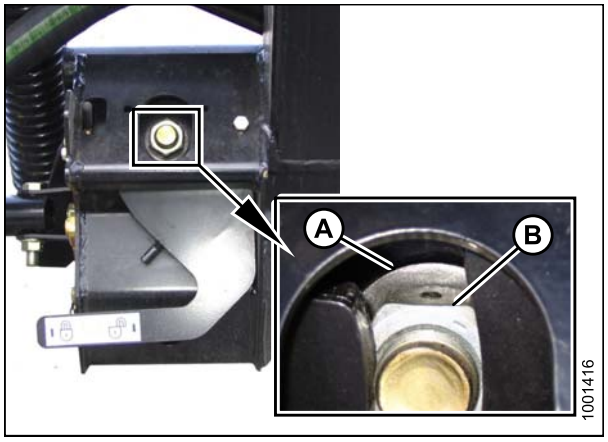


Figure 3.361: Float Lock

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

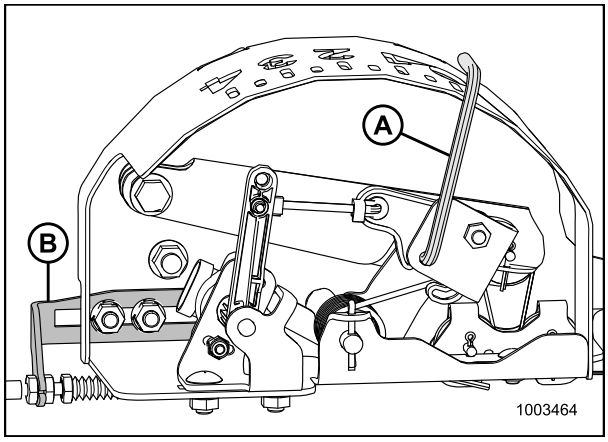


Figure 3.362: 5-Volt AHHC Sensor Assembly

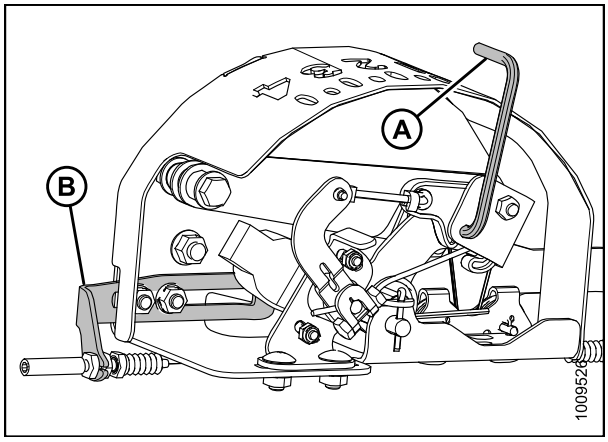


Figure 3.363: 10-Volt AHHC Sensor Assembly

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

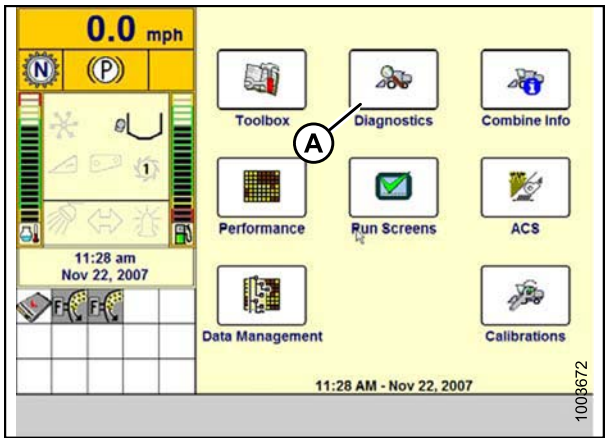


Figure 3.364: New Holland Combine Display

7. Select the GROUP drop-down arrow (A). The GROUP dialog box displays.

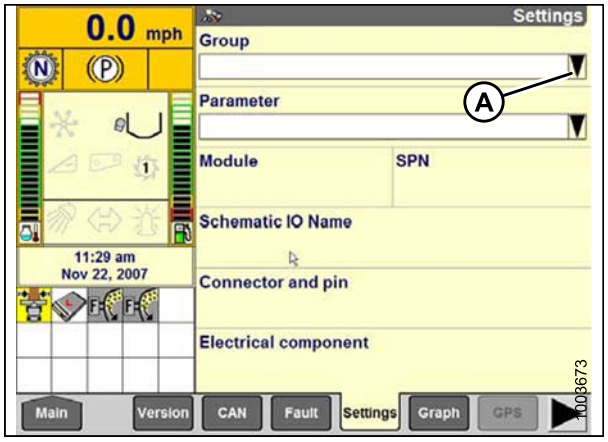


Figure 3.365: New Holland Combine Display

8. Select HEADER HEIGHT/TILT(A). The PARAMETER page displays.

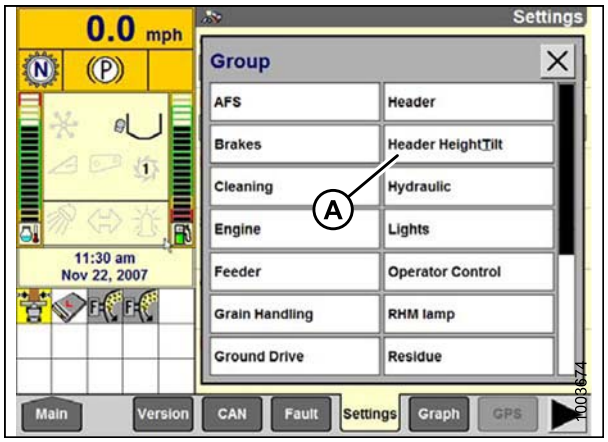


Figure 3.366: New Holland Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at the top of the page.
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 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

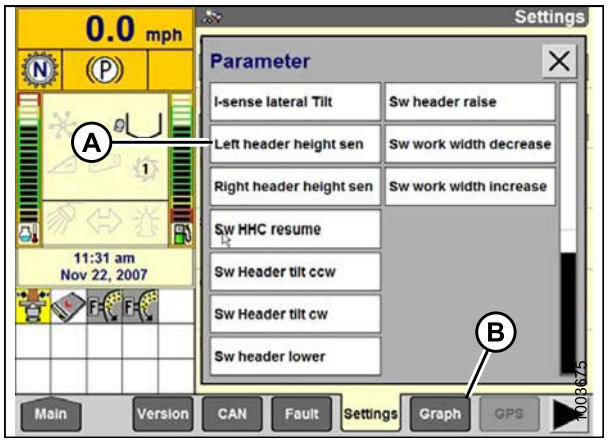


Figure 3.367: New Holland Combine Display

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, and press ENTER.
2. Use the up and down navigation keys to move between options, and select INSTALLED.

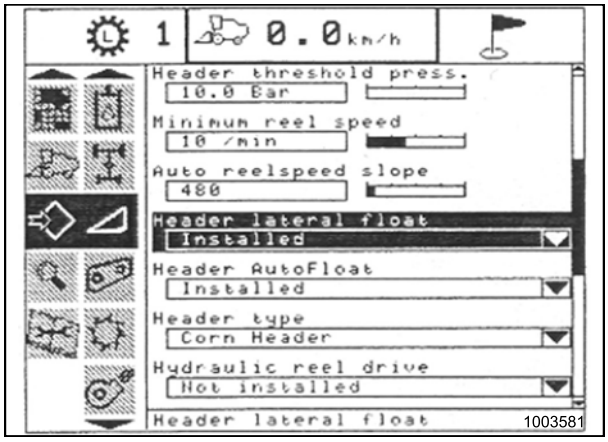


Figure 3.368: New Holland Combine Display

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

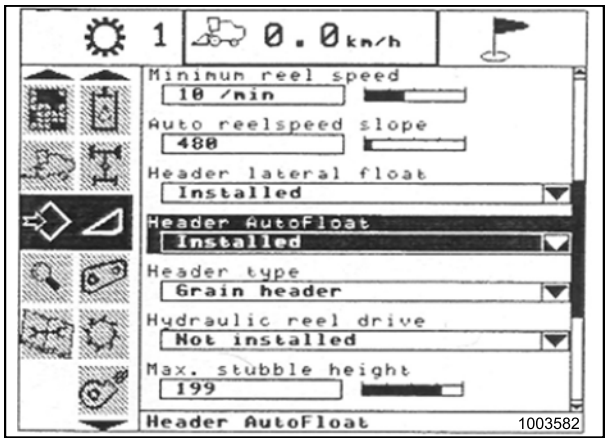


Figure 3.369: New Holland Combine Display

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 *3.7.4 Header Angle, page 75*.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

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 AHHC, 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 dialog box opens.

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

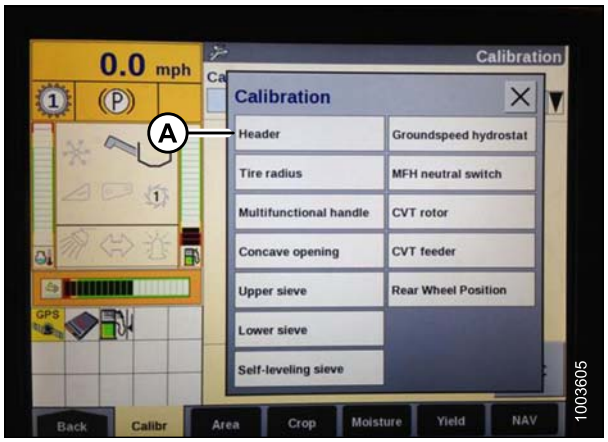


Figure 3.370: New Holland Combine Display

3. Follow the calibration steps in the order in which they appear in the dialog box. 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.

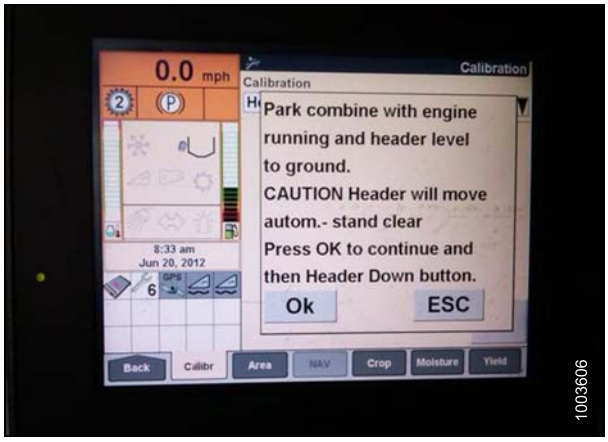


Figure 3.371: New Holland Combine Display

4. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on the page. 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.

5. If the unit does not function properly, conduct the maximum stubble height calibration.

Calibrating Maximum Stubble Height

This procedure describes how to calibrate the area counter to stop or start counting at the correct height. Program the header to a height that will never be reached while cutting. The area counter will stop counting when the header is above the programmed height, and will begin counting when the header is below the programmed height.

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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Select the MAXIMUM STUBBLE HEIGHT calibration dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

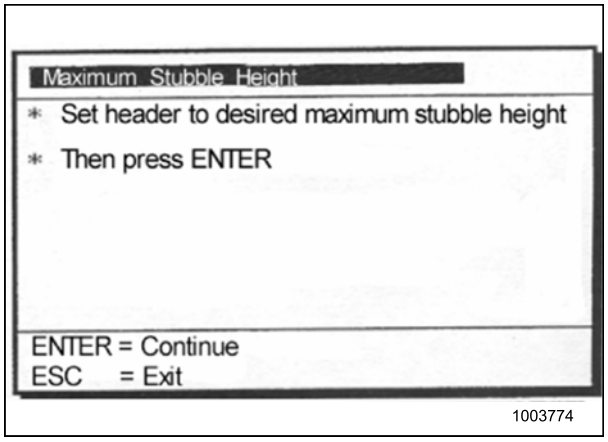


Figure 3.372: New Holland Calibration Dialog Box

2. Move header to the correct position using the header up or down control switch on the multifunction handle.
3. Press ENTER to continue. As you proceed through the calibration process, the display will automatically update to show the next step.
4. Press ENTER or ESC to close the calibration page. The calibration is now complete.

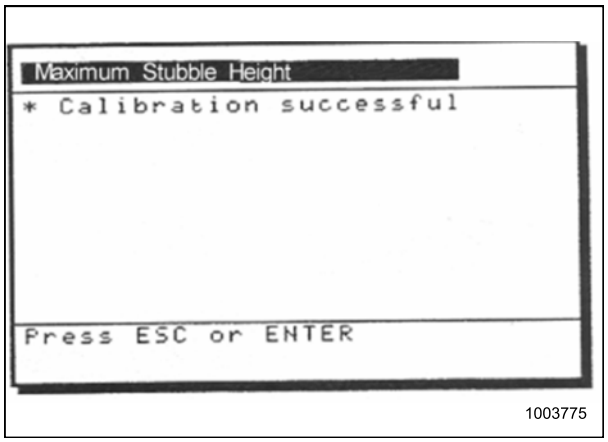


Figure 3.373: New Holland Calibration Dialog Box

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.

1. Select HEADER RAISE RATE on the combine display.
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 to 236 in steps of 34. The factory setting is 100.

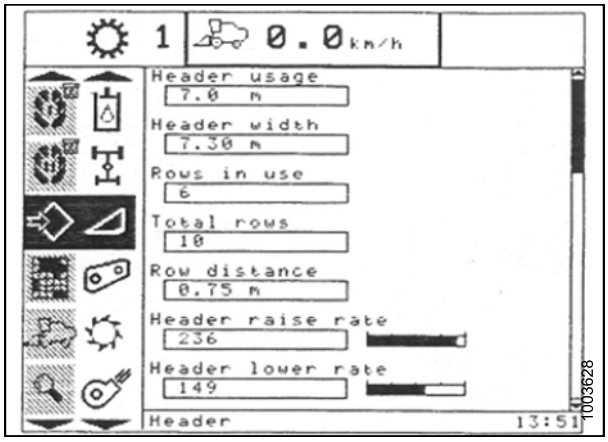


Figure 3.374: New Holland Combine Display

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.
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 to 247 in steps of 7. It is factory-set to 100.

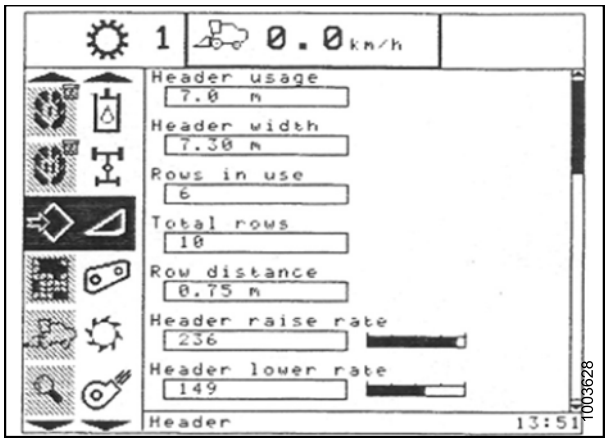


Figure 3.375: New Holland Combine Display

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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

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 to 250 in steps of 10. It is factory-set to 100.

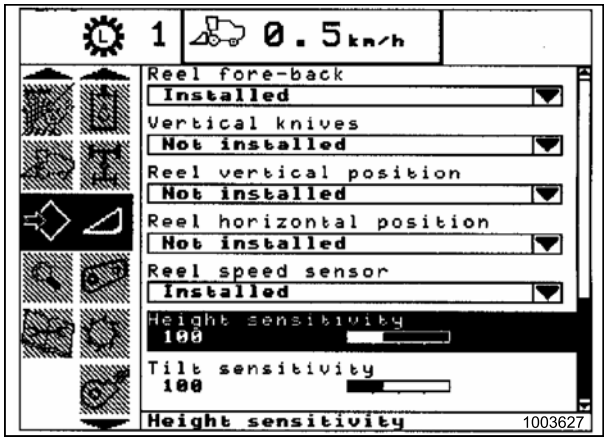


Figure 3.376: New Holland Combine Display

Setting Preset Cutting Height (New Holland CR/CX Series)

To set the preset cutting height, follow these steps:

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. Engage the threshing mechanism and the feeder with switches (A) and (B).
2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT MODE position (A) or (B).
3. Lower the header to the desired cutting height using the HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C).
4. Press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of two seconds to store the height position. A beep will confirm the setting.

   NOTE:
   It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT MODE position (A) or (B).

5. To change one of the memorized header height set points while the combine is in use, use the HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C) (slow up/down) to raise or lower header to the desired value. Press the AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of two seconds to store the new height position. A beep will confirm setting.

   NOTE:
   Do not press too hard on AUTOMATIC HEADER HEIGHT CONTROL button (E), or float mode will be disengaged.

   NOTE:
   It is not necessary to press rocker switch (D) again after adjusting.

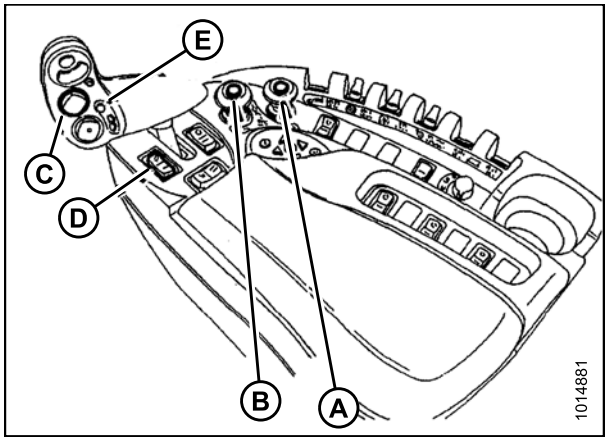


Figure 3.377: New Holland Combine Controls

NOTE:
The ideal ground pressure—in most cases—is one number (on the float indicator box) above the header suspended off the ground. For example, if the float indicator needle (A) is positioned at 0 with the header suspended off the ground, then the ideal ground pressure will be achieved with the needle positioned at 1. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

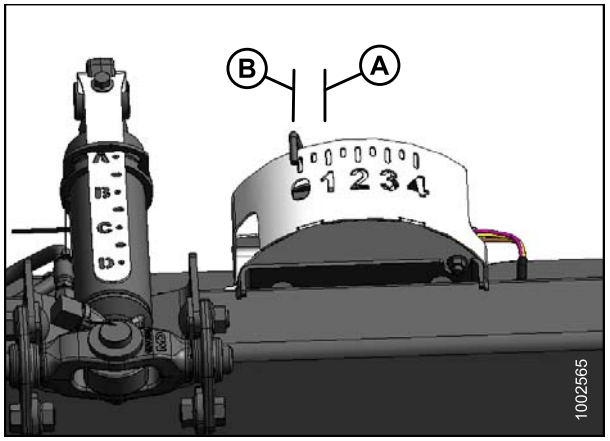


Figure 3.378: Float Indicator Box

Configuring Reel Fore-Aft, Header Tilt, and Header Type (New Holland CR Series)

This procedure applies only to 2016 New Holland CR models 6.90, 7.90, 8.90, and 9.90.

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. Simultaneously press both the UNLOAD (A) and RESUME (B) buttons on the hydro handle.

Figure 3.379: New Holland Combine Controls

2. On the HEAD 1 page, change the CUTTING TYPE from FLEX to PLATFORM as shown at (A).

Figure 3.380: New Holland Combine Display

3. On the HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at (A).

Figure 3.381: New Holland Combine Display

There are now two different buttons for ON GROUND presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require the first two buttons (A and B). The third button down (C) is not configured.

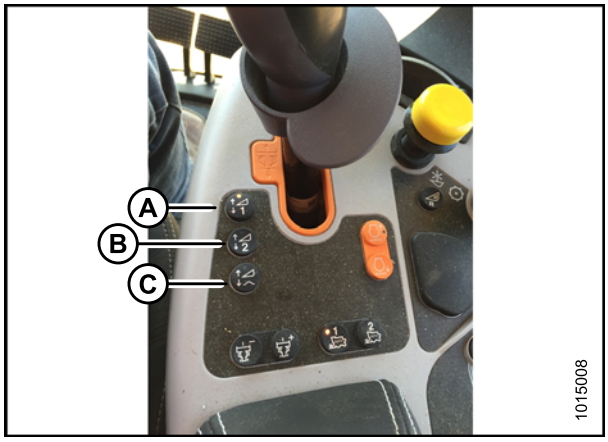


Figure 3.382: New Holland Combine Controls

3.8.15 New Holland Combines (CR Series—Model Year 2015 and Later)

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other New Holland combine models, refer to *3.8.14 New Holland Combines CX/CR Series (CR Series—Model Year 2014 and Earlier), page 214*.

Engaging the Auto Header Height Control (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

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.

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. Select TOOLBOX (A) on the main page. The TOOLBOX page displays.

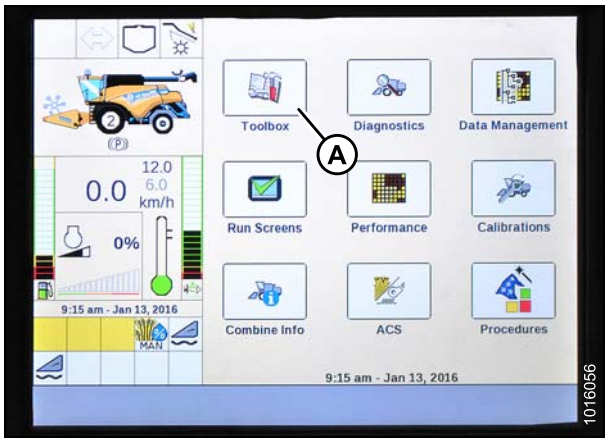


Figure 3.383: New Holland Combine Display

3. Simultaneously press both the UNLOAD (A) and RESUME (B) buttons on the hydro handle.

Figure 3.384: New Holland Combine Controls

4. Select HEAD 1 (A). The HEADER SETUP 1 page displays.
5. Select the CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

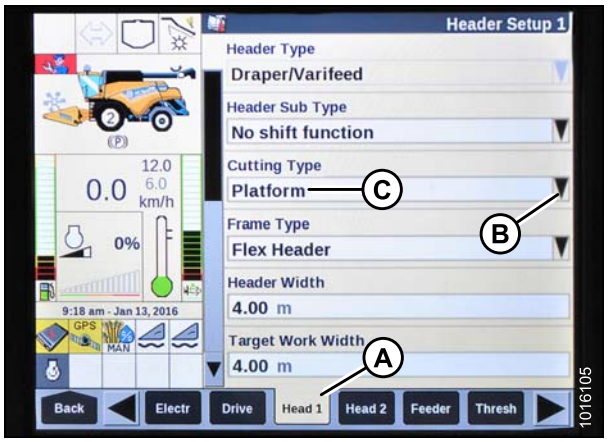


Figure 3.385: New Holland Combine Display

6. Select the HEADER SUB TYPE drop-down arrow (A). The HEADER SUB TYPE dialog box displays.

Figure 3.386: New Holland Combine Display

7. Select 80/90 (A).

Figure 3.387: New Holland Combine Display

8. Select HEAD 2 (A). The HEADER SETUP 2 page displays.

Figure 3.388: New Holland Combine Display

9. Select the AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).
10. Select the AUTO HEADER LIFT drop-down arrow and set AUTO HEADER LIFT to INSTALLED (B).

    NOTE:
    With AUTO HEADER LIFT installed and AHHC engaged, the header will lift up automatically when you pull back on the GSL.

11. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.

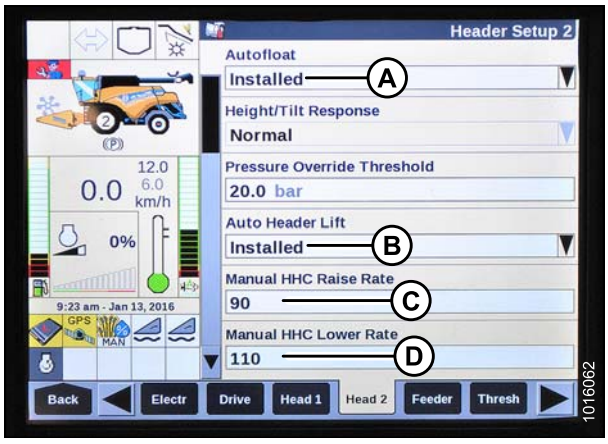


Figure 3.389: New Holland Combine Display

12. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

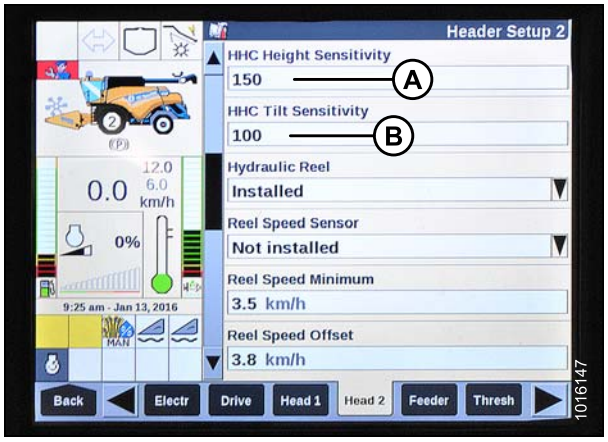


Figure 3.390: New Holland Combine Display

Checking Voltage Range from the Combine Cab (New Holland CR 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.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) 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 the down stops, the float is too light. Readjust the float if necessary.

   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.

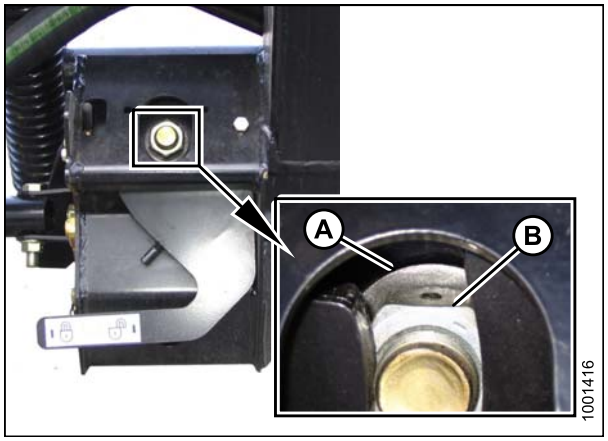


Figure 3.391: Float Lock

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

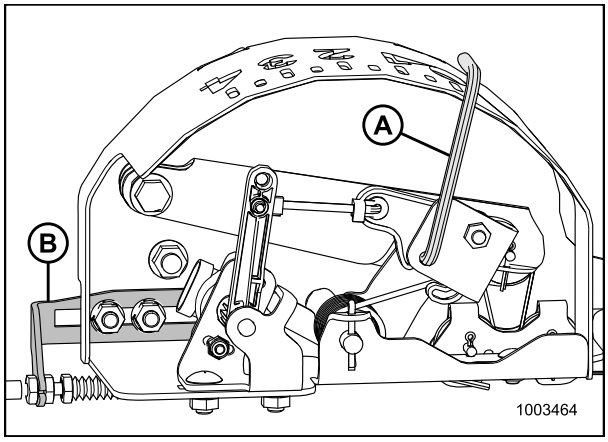


Figure 3.392: 5 Volt AHHC Sensor Assembly

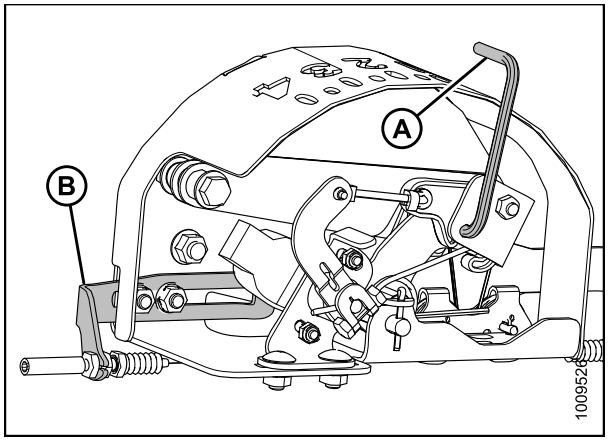


Figure 3.393: 10 Volt AHHC Sensor Assembly

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

Figure 3.394: New Holland Combine Display

6. Select SETTINGS (A). The SETTINGS page displays.

Figure 3.395: New Holland Combine Display

7. Select HEADER HEIGHT/TILT (A) from the GROUP drop-down menu.
8. Select HEADER HEIGHT SENS. L (B) from the PARAMETER drop-down menu.

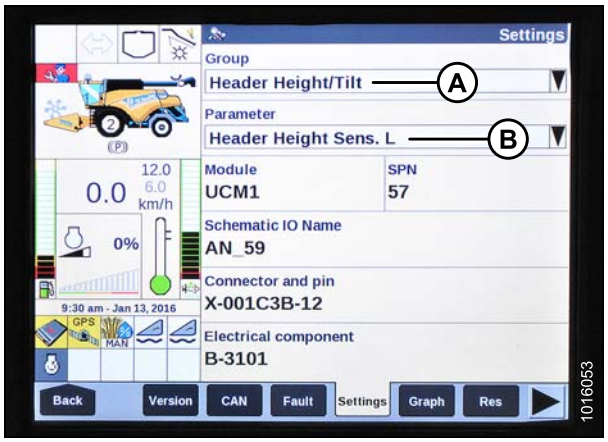


Figure 3.396: New Holland Combine Display

9. Select GRAPH (A). The exact voltage (B) is displayed at the top of the page.
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 105*) 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 *3.14 Sensor Voltage Limits, page 103*).

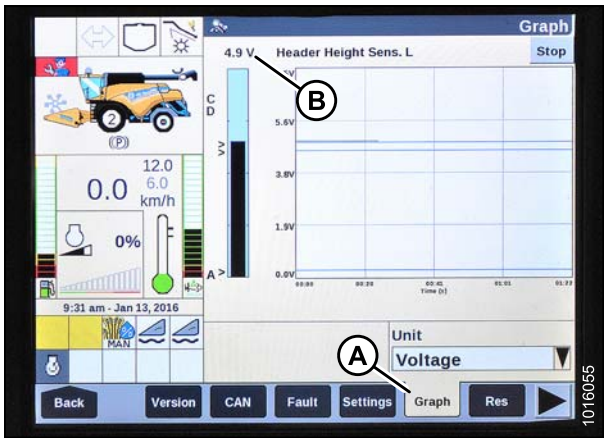


Figure 3.397: New Holland Combine Display

Calibrating the Auto Header Height Control (New Holland CR 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 *3.7.4 Header Angle, page 75*.

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.

CAUTION

Check to be sure all bystanders have cleared the area.

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 AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main page. The CALIBRATION page displays.

Figure 3.398: New Holland Combine Display

2. Select the CALIBRATION drop-down arrow (A).

Figure 3.399: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

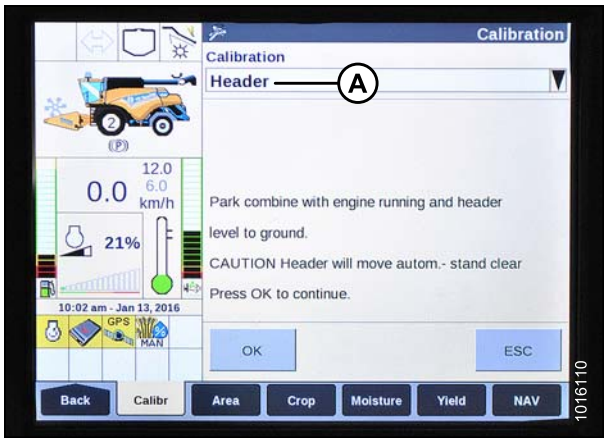


Figure 3.400: New Holland Combine Display

4. Follow the calibration steps in the order in which they appear on the screen. 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 3.401: New Holland Combine Display

5. When all steps have been completed, CALIBRATION COMPLETED message is displayed on the screen.

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

Figure 3.402: New Holland Combine Display

Setting Auto Height (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

The console has two buttons used for auto height presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require the first two buttons (A and B). The third button (C) is not configured.

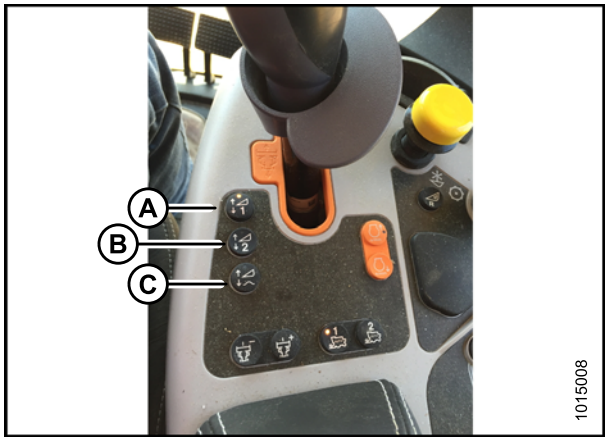


Figure 3.403: New Holland Combine Controls

To set the auto height, follow these steps:

1. Engage separator and header.
2. Select RUN SCREENS (A) on the main page.

Figure 3.404: New Holland Combine Display

3. Select the RUN tab that shows MANUAL HEIGHT.

   NOTE:
   The MANUAL HEIGHT field may appear on any of the RUN tabs. When an auto height set point button is pressed, the display will change to AUTO HEIGHT (A).

4. Lower the header to the ground.
5. Select one of the auto height set point buttons shown in Figure *3.403: New Holland Combine Controls, page 233*.
   - Press the SET 1 button for a light ground setting (1 on the float indicator box)
   - Press the SET 2 button for a heavier ground setting (2 on the float indicator box)

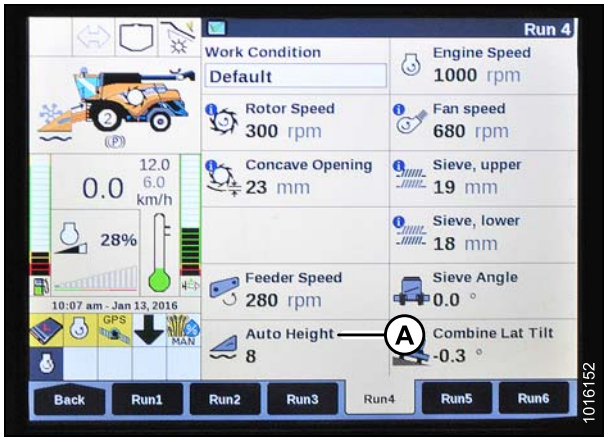


Figure 3.405: New Holland Combine Display

Setting Maximum Work Height (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

1. Select TOOLBOX (A) on the main page. The TOOLBOX page displays.

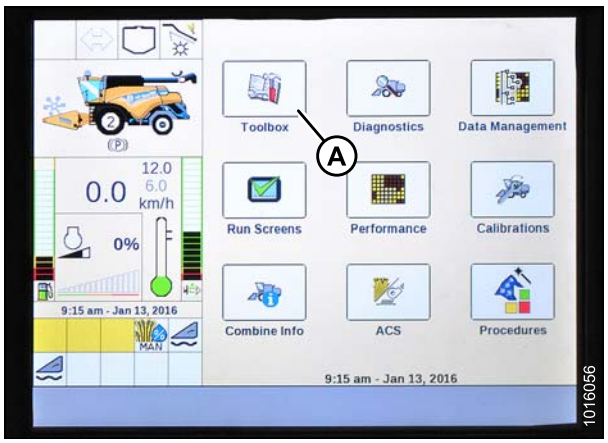


Figure 3.406: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP page displays.
3. Select the MAXIMUM WORK HEIGHT field (B).

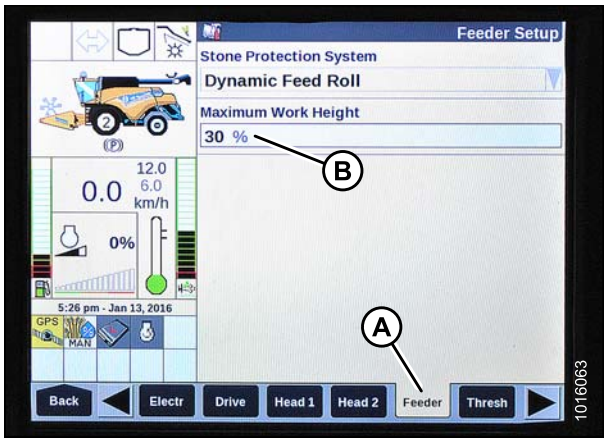


Figure 3.407: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to desired value.
5. Press SET and then press ENTER.

Figure 3.408: New Holland Combine Display

3.8.16 Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system are 1000 ohm (1k) 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
- 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).

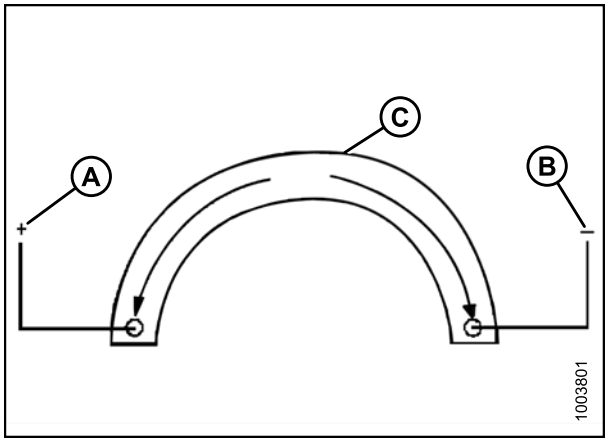


Figure 3.409: Power, Ground, and Signal Wires

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 (.08–0.1 k) to a high 800–1200 ohms (0.8–1.2 k). 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.

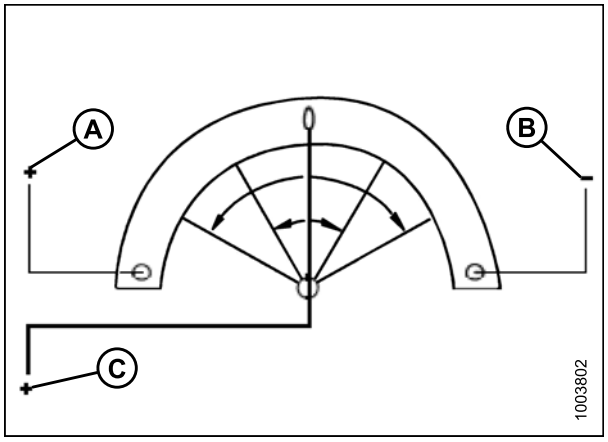


Figure 3.410: Power, Ground, and Signal Wires

NOTE:
Ground and power wires may differ depending on combine.

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

NOTE:
The adapter float springs are **NOT** used to level the header.

1. Park the combine on level ground.
2. Set the header approximately 150 mm (6 in.) off the ground, and check that the float linkage is against the down stops. Note the high and low end of the header.
3. Set wing float lock (A) to engaged. Refer to *Checking Wing Balance, page 66* and *Adjusting Wing Balance, page 71*.
4. Check and set float adjustment. Refer to *Checking and Adjusting Header Float, page 58*.

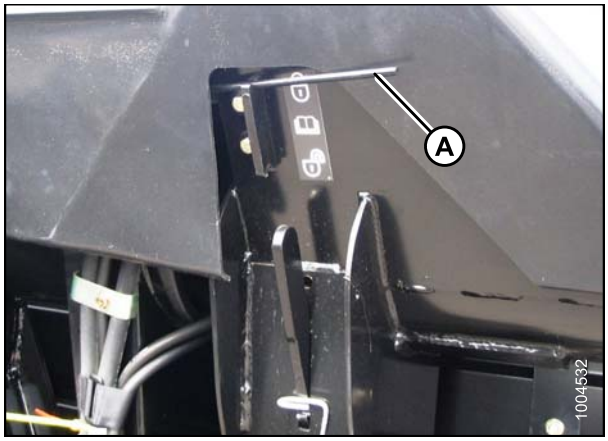


Figure 3.411: Wing Lock

5. Adjust the header level by making small adjustments (1/4–1/2 turn) to nut (A) on each float lock. Adjust each side equally but in opposite directions as follows:

   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.

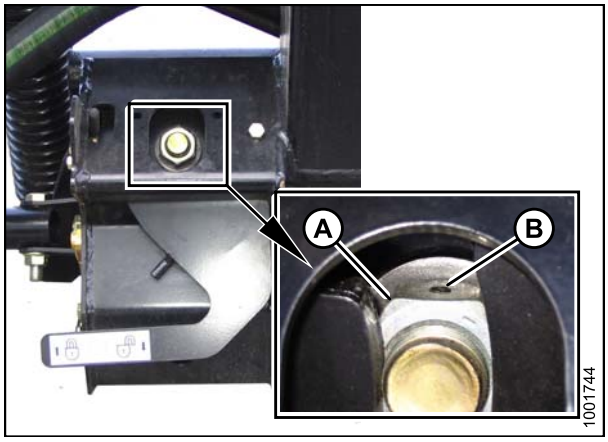


Figure 3.412: Float Lock

NOTE:
Ensure a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.

NOTE:
Check the float after levelling header. Refer to *Checking and Adjusting Header Float, page 58*.

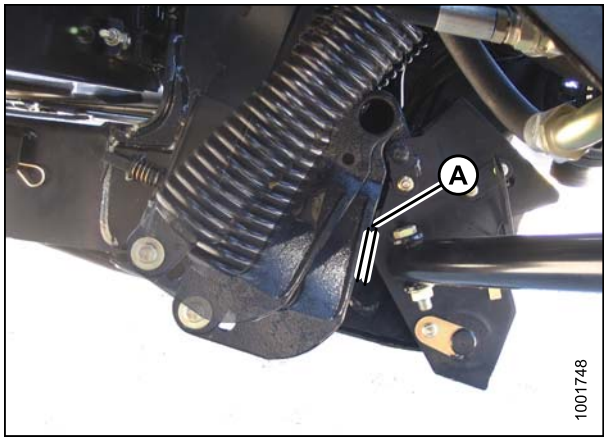


Figure 3.413: Bell Crank

3.10 Unplugging the Cutterbar

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header to prevent it from filling with dirt, and engage the header drive clutch.

   CAUTION

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

3. Disengage the header drive clutch and fully raise the header if plug does **NOT** clear.

   DANGER

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

4. Shut off the engine, remove the key from the ignition, and engage the park brake.
5. Engage the header safety props.

   CAUTION

   Wear heavy gloves when working around or handling knives.

6. Clean off the cutterbar by hand.

   NOTE:
   If cutterbar plugging persists, refer to *7 Troubleshooting, page 481*.

3.11 Unplugging the Adapter

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header slightly off the ground, and raise the reel.
3. Reverse the combine feed according to the manufacturers specifications (reverse feed varies among different combine models).
4. Engage the header drive.

3.12 Upper Cross Auger (UCA)

The UCA (A) improves delivery of very bulky crops across the header and into the combine.

Beater bars assist in delivering material through the header opening, but the beater bars are removable if wrapping occurs.

IMPORTANT:
The UCA drive motor must be equipped with a case drain kit when used on single draper drive headers. See your MacDon Dealer for details.

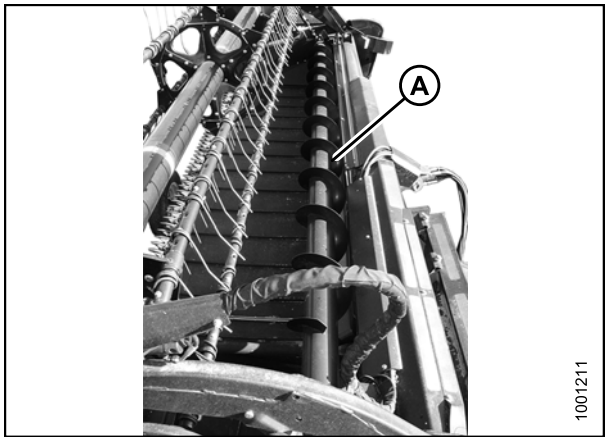


Figure 3.414: Upper Cross Auger

3.12.1 Removing Beater Bars

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 the header to the ground, stop the engine, and remove the key from the ignition.
2. Remove bolts (A) securing the beater bars (B) and clamps (C) to the auger tubes, and remove the beater bars and clamps.

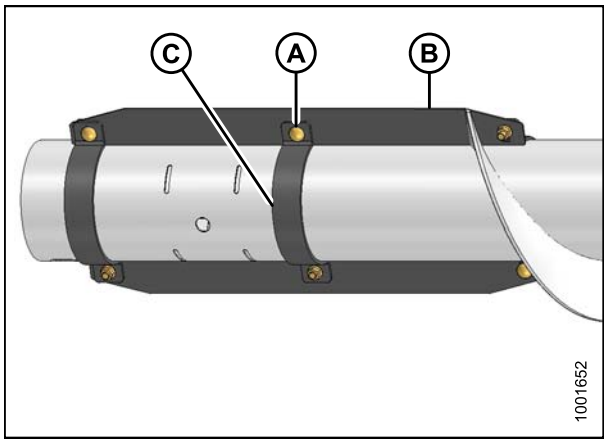


Figure 3.415: Beater Bars

3.12.2 Installing Beater Bars

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Lower the header to the ground, stop the engine, and remove the key from the ignition.
2. Position one beater bar (B) and one clamp set (C) onto the auger tube and loosely secure with carriage bolt (A) and nut. Bolt head **MUST** face the direction of auger rotation.
3. Position the remaining clamp sets (C) onto the auger tube and loosely attach to the beater bar (B) with carriage bolts (A) and nuts. Bolt heads **MUST** face the direction of auger rotation.
4. Position the second beater bar (B) in clamp sets (C) and secure with carriage bolts (A) and nuts.
5. Tighten bolts.

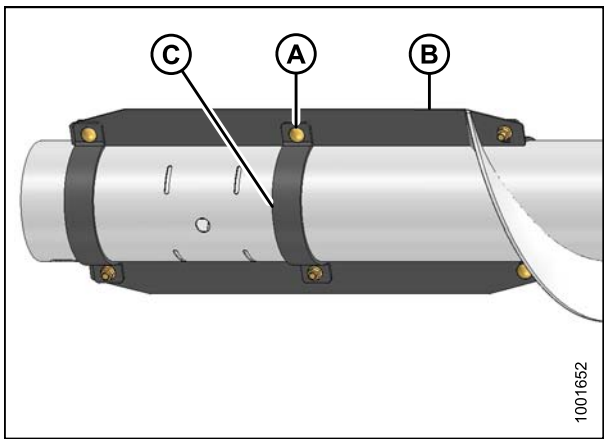


Figure 3.416: Beater Bars

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 lamps when travelling 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 signs and reflectors, adjust rear view mirrors, and clean windows.**
- **Lower the reel fully and raise the 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 to provide maximum stability if forward momentum is stopped for any reason. Raise header completely at bottom of grade to avoid contacting the ground.**
- **Travel at safe speeds to ensure complete machine control and stability 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 towing vehicles operator's manual for instructions.

Attaching Header to Towing Vehicle

CAUTION

Adhere to the following slow speed transport instructions to prevent loss of control leading to bodily injury and/or machine damage:

- **Weight of towing vehicle must exceed header weight to ensure adequate control and braking performance.**
- **Do NOT tow with any highway-capable vehicle. Use only an agricultural tractor, agricultural combine, or a properly configured MacDon windrower.**
- **Ensure reel is fully lowered and back on support arms to increase header stability during transport. For headers with hydraulic reel fore-aft, never connect the fore-aft couplers to each other or the circuit will be complete and the reel could creep forward during transport.**
- **Check that all pins are properly secured in transport position at wheel supports, cutterbar support, and hitch.**
- **Check tire condition and pressure prior to transporting.**
- **Connect hitch to towing vehicle using a proper hitch pin with a spring locking pin or other suitable fastener.**
- **Attach hitch safety chain to towing vehicle. Adjust safety chain length to provide only enough slack to permit turning.**
- **Connect header 7-pole plug wiring harness 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 sign and other reflectors. Use flashing warning lights unless prohibited by law.**

Towing the Header

CAUTION

Adhere to the following slow speed transport instructions to prevent loss of control leading to bodily injury and/or machine damage:

- **Do NOT exceed 32 km/h (20 mph). Reduce transport speed to less than 8 km/h (5 mph) for corners and slippery or rough conditions.**
- **Turn corners at only very low speeds 8km/h ([5 mph] or less). Header stability is reduced while cornering because 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

Removing Tow-Bar

1. Block the tires to prevent the header from rolling, and unhook the header from the towing vehicle.
2. Disconnect the electrical connector (A) on the tow-bar.
3. Remove pin (B) from the tow-bar, and disassemble the outer section (C) from the inner section (D).

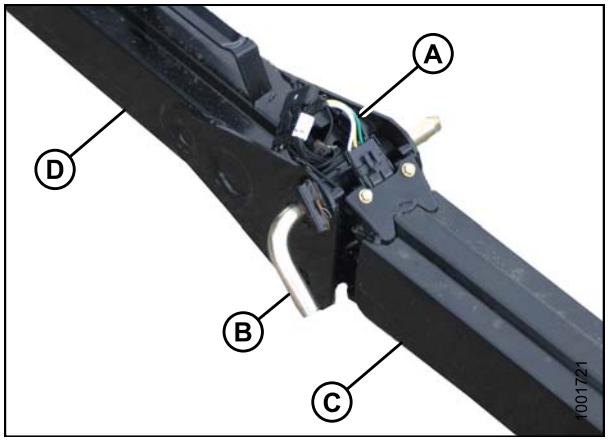


Figure 3.417: Tow-Bar Assembly

4. Disconnect the electrical connector (A) at the front wheel.

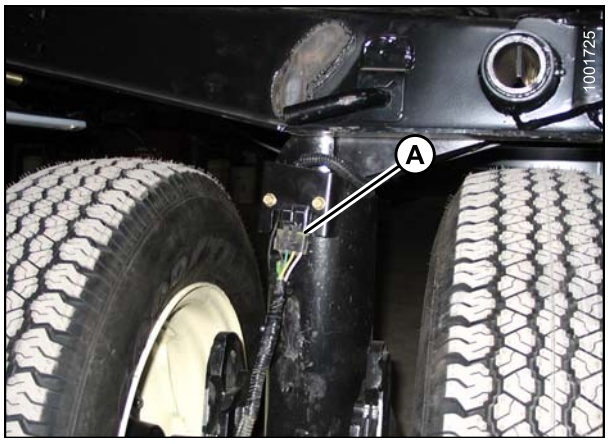


Figure 3.418: Wiring Connector

5. Remove clevis pin (A) and set aside for reinstallation.
6. Push latch (B) and lift the tow-bar (C) from the hook. Release latch.
7. Install clevis pin (A).

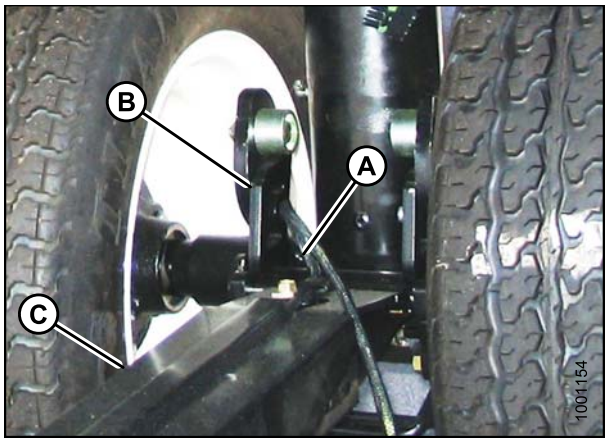


Figure 3.419: Tow-Bar Latch

Storing the Tow-Bar

1. Place the inner end of the outer half of the tow-bar into the cradle (A) on the left side of the header backtube.
2. Secure clevis/pintle end of the tow-bar in support (B) on the endsheet using hitch pin (C). Secure with lynch pin.
3. Install the rubber strap (D) on the cradle (A).

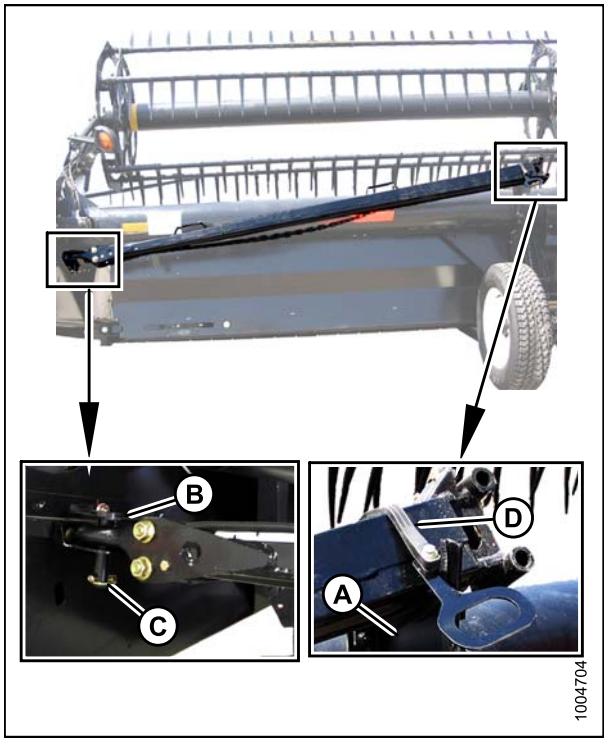


Figure 3.420: Tow-Bar Storage

4. Place the inner end of the inner half of the tow-bar into the cradle (A) on the right side of the header backtube.
5. Secure the tube end of the tow-bar in support (B) on the endsheet using clevis pin (C). Secure with hairpin.
6. Install the rubber strap (D) on the cradle (A).

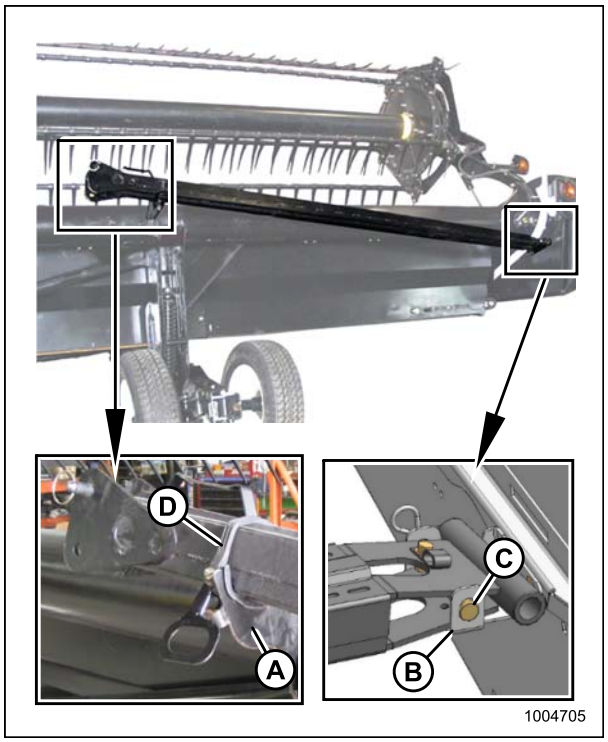


Figure 3.421: Tow-Bar Storage

7. Attach the header to the combine. Refer to *4 Header Attachment/Detachment, page 259*.
8. Place the transport wheels into field position. Refer to the following:
   - *Moving Front (Left) Wheels into Field Position, page 247*
   - *Moving Rear (Right) Wheels into Field Position, page 248*

Moving Front (Left) Wheels into Field Position

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 the header fully and engage the header safety props.
2. Swivel the front wheel assembly (A) so the wheels are aligned with the lower frame.
3. Remove pin (B) and pull the wheel assembly towards the rear of header. Store the pin in hole (C) at the top of the leg.
4. Pull handle (D) upwards to release and lower the linkage into the vertical support.

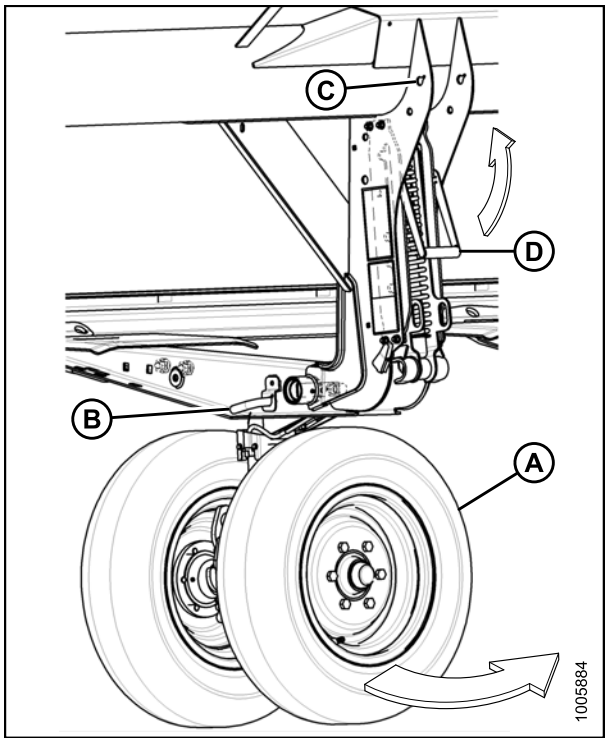


Figure 3.422: Front (Left) Wheels

5. Align lift hook (A) with lug (B) and lift the wheel assembly to engage the pin in the lift hook. Ensure latch (C) is engaged.
6. Install clevis pin (D) and secure to the center of the axle with hairpin.

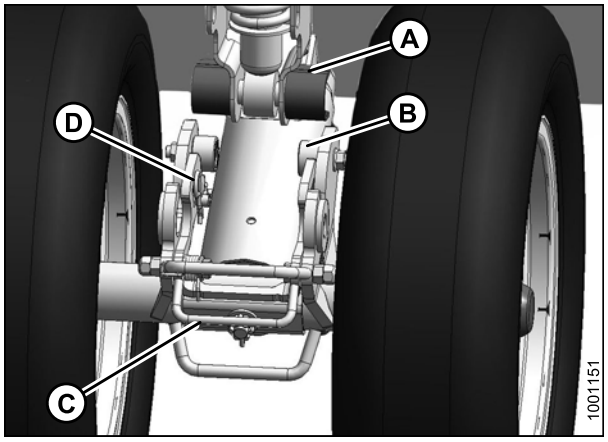


Figure 3.423: Front (Left) Wheels

7. Lift the wheel assembly to the desired height and slide the linkage (A) into the appropriate slot in the vertical support.
8. Push handle (B) down to lock.

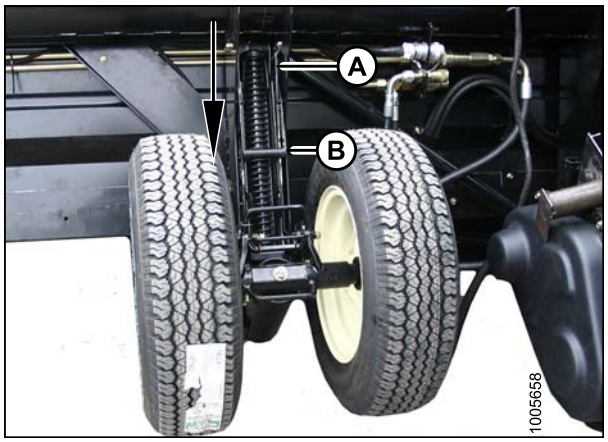


Figure 3.424: Front (Left) Wheels

Moving Rear (Right) Wheels into Field Position

1. Pull pin (A) on the left side rear wheel. Swivel the wheel clockwise and lock with pin.

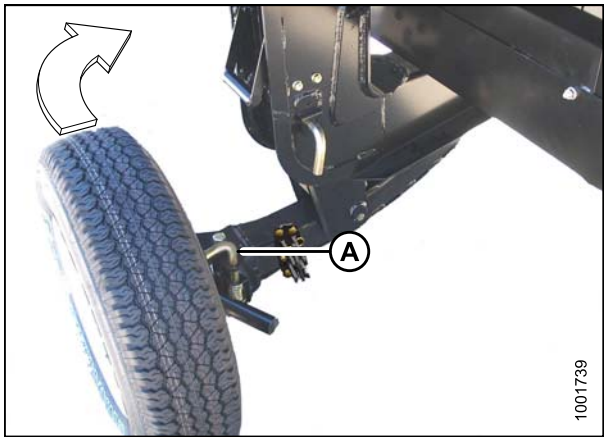


Figure 3.425: Rear Wheel – Left Side

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

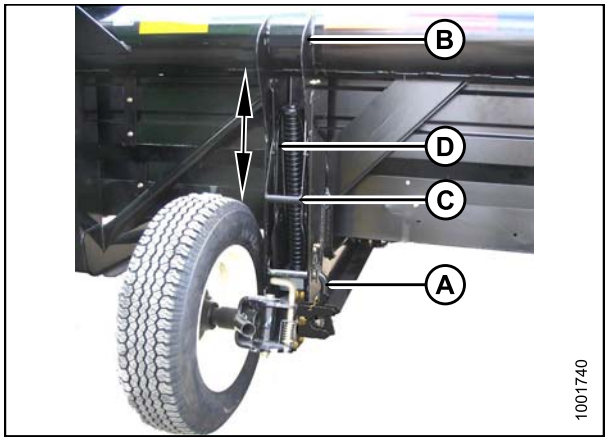


Figure 3.426: Rear Wheel – Left Side

6. Pull the pin (A) on brace (B) on the left-hand wheel in front of the cutterbar. Disengage the brace from the cutterbar, and lower the brace against the axle (C).
7. Remove pin (D), lower support (E) onto axle, and reinsert pin into support.
8. Swing the axle (C) clockwise towards the rear of the header.

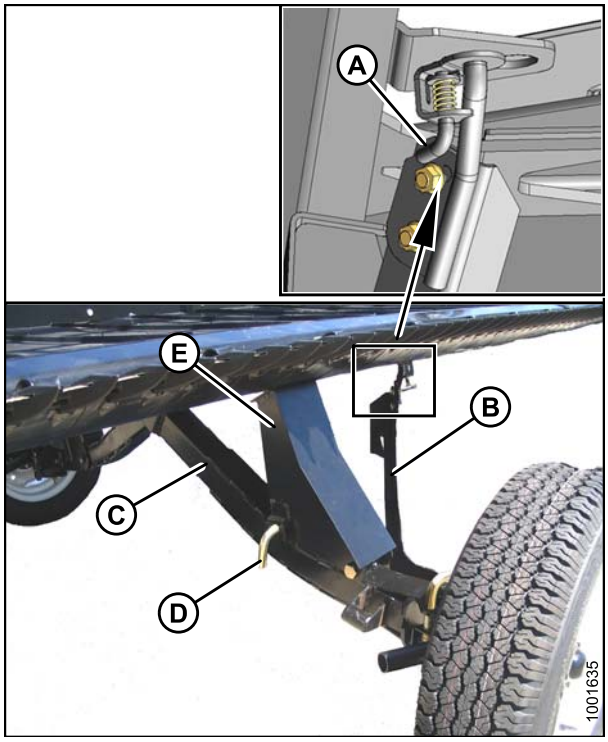


Figure 3.427: Right Rear Axle

9. Pull pin (A) on right-hand wheel, swivel the wheel counterclockwise to position shown, and lock with pin (A).
10. Remove the hairpin (B) from the latch (C).
11. Lift the wheel, lift latch (C), and engage lug (D) onto the left axle. Ensure the latch closes.
12. Secure the latch with hairpin (B), ensuring the open end of the pin faces the rear of the combine.

    NOTE:
    The hairpin can become dislodged by crop if installed with the open end facing the cutterbar.

    IMPORTANT:
    Check that wheels are locked and that handle is in locked position.

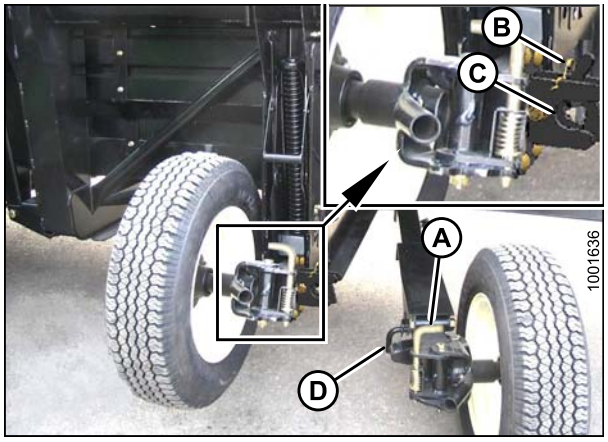


Figure 3.428: Rear Axles

13. Complete the conversion by ensuring the left side (A) and right side (B) wheels are in the position shown.

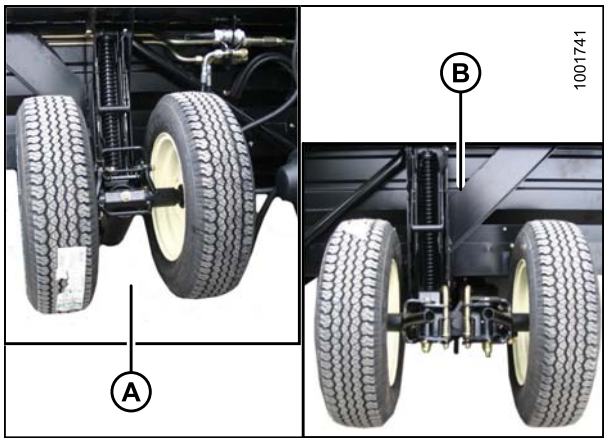


Figure 3.429: Field Position

3.13.4 Converting from Field to Transport Position

Moving Front (Left) Wheels into Transport Position

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.

CAUTION

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

1. Pull the handle (B) upwards to release and raise the linkage (A) fully upwards into the vertical support.
2. Raise the header fully, stop the engine, and remove the key from ignition. Engage the header safety props.

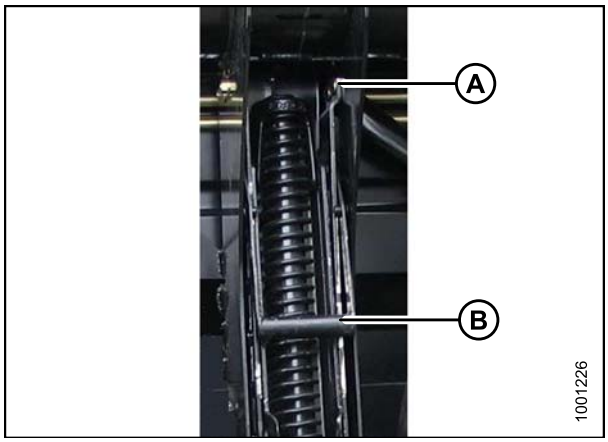


Figure 3.430: Raising Linkage

3. Remove the hair pin and clevis pin (A).
4. Pull the latch handle (B) to release the suspension linkage (C), and pull the suspension linkage away from the spindle (D).
5. Lower the wheels slowly.

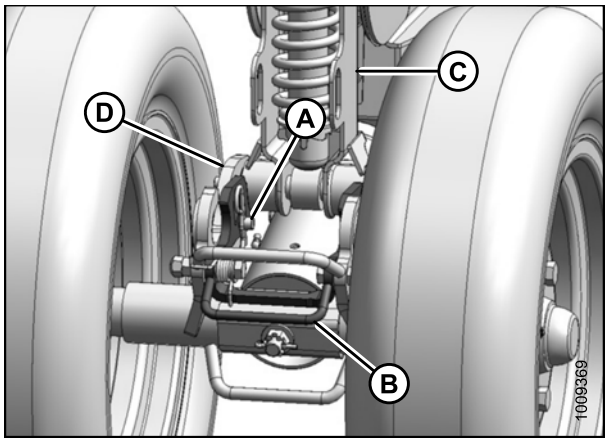


Figure 3.431: Left Front Wheels

6. Lower the handle (B) to lock.

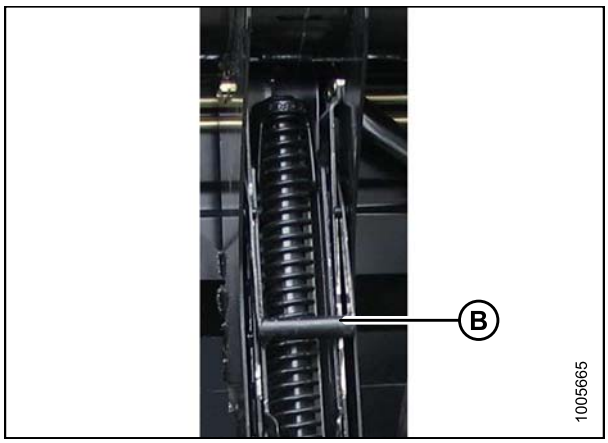


Figure 3.432: Locking Linkage

7. Remove the pin (A) from storage at the top of the leg (B).
8. Move and swivel the wheels clockwise until the connector (C) is turned towards the front end of the header.
9. Insert pin (A) and turn to lock.
10. Lower the header until the left wheels are just touching the ground.

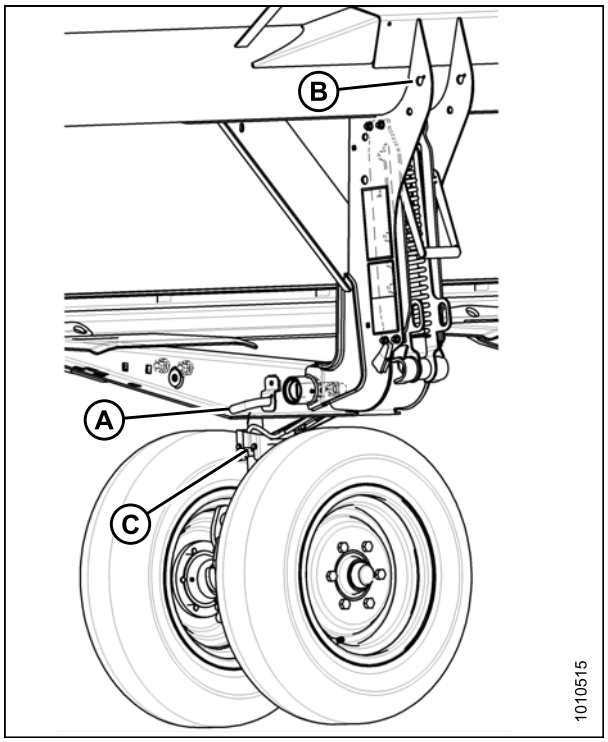


Figure 3.433: Left Front Wheels

Moving Rear (Right) Wheels into Transport Position

1. Remove the hairpin (A) from the latch (B).
2. Lift the latch (B), disengage the 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. Pull handle (D) carefully to release the spring and lower the wheel to the ground.
4. Lift the wheel and linkage with handle (E) and position the linkage in the bottom slot.
5. Lower the handle (C) to lock.

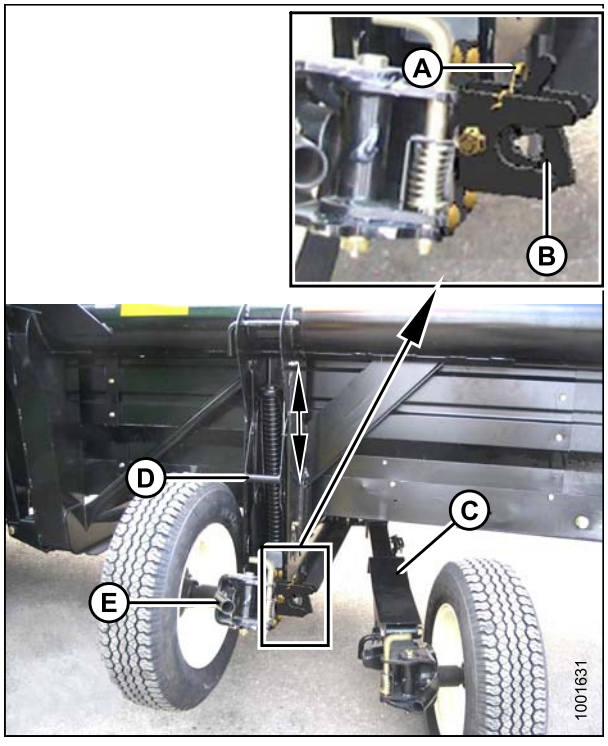


Figure 3.434: Separating Axles

6. Remove the pin (A) and install at location (B) to secure the linkage. Turn the pin to lock.
7. Pull the pin (D), swivel the wheel (C) counterclockwise 90°, and release the pin to lock.

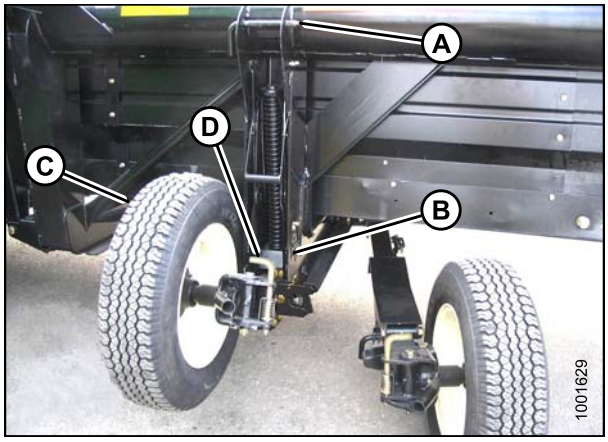


Figure 3.435: Wheel Position

8. Ensure the left wheel is in the transport position as shown.

Figure 3.436: Left Wheel in Transport Position

9. Pull the pin (A) and swivel the right rear wheel (B) clockwise 90°.

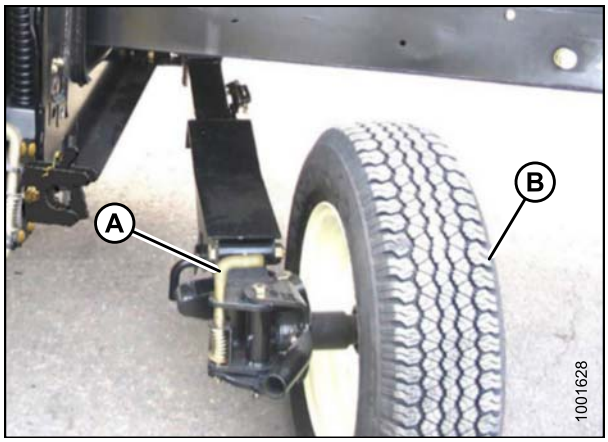


Figure 3.437: Right Rear Wheel

10. Lock the wheel (A) with pin (B). Move the right axle (C) to the front of the header.

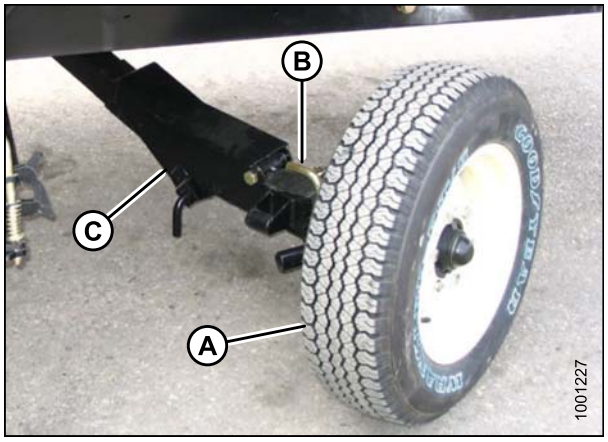


Figure 3.438: Right Rear Wheel

11. Remove the pin (A), raise support (B) to the position shown, and reinsert pin.

    IMPORTANT:
    Ensure the pin (A) engages the tube on the axle.

12. Swing the brace (C) into the position shown and insert the brace into the slot (D) behind the cutterbar. Position the brace so that pin (E) engages the hole in the bracket (F). The 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 259*.
15. Start the combine and lower the header to the ground.

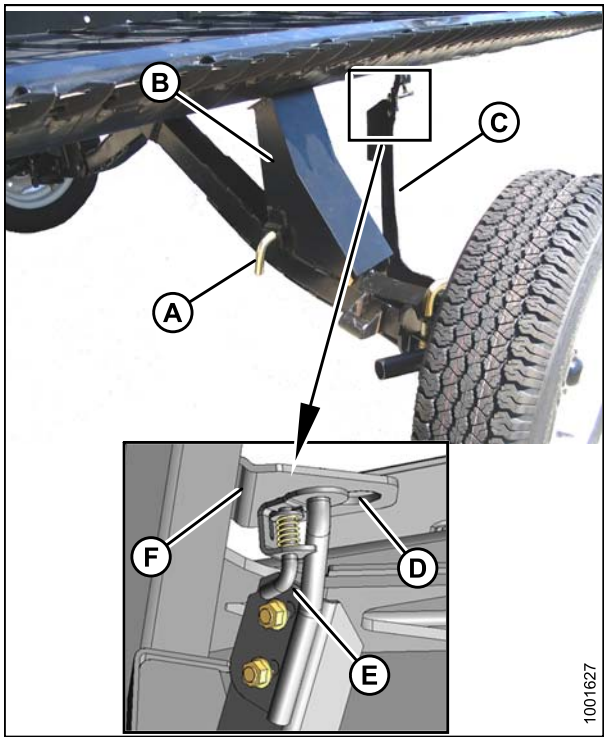


Figure 3.439: Right Rear Wheel Position

Attaching Tow-Bar

The tow-bar consists of two sections which make storage and handling easier.

1. Unhook the rubber strap (D) from the cradle (A) on the right side of the header.
2. Remove the clevis pin (C) and detach the tube end from the support (B).
3. Replace the clevis pin (C).
4. Lift the inner half of the tow-bar off the header and place it near the left side of the header.

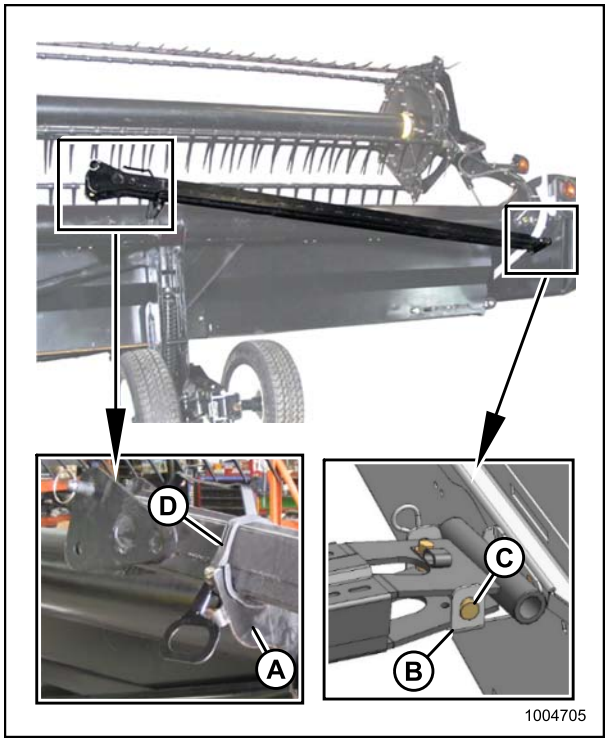


Figure 3.440: Tow-Bar Removal – Right Side

5. Unhook the rubber strap (D) from the cradle (A) on the left side of the header.
6. Remove the hitch pin (C) from the support (B), and remove the tow-bar.
7. Install the rubber strap (D) on the cradle (A).

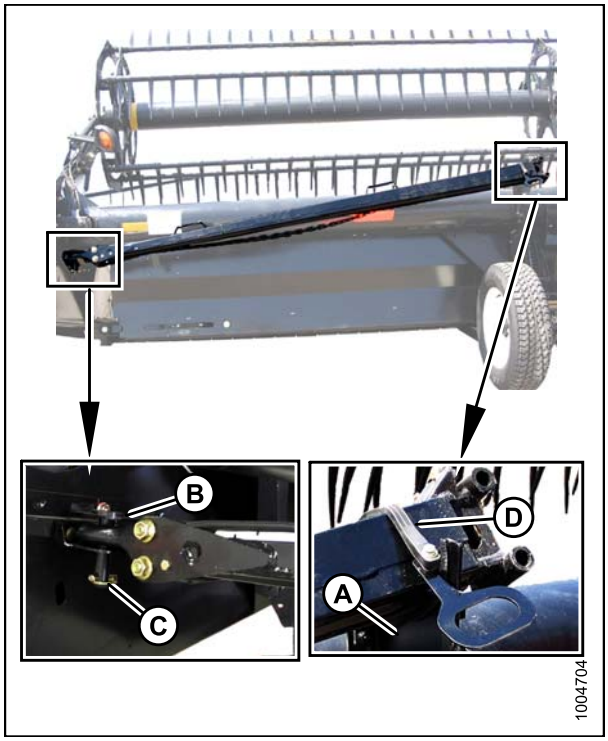


Figure 3.441: Tow-Bar Removal – Left Side

8. Connect the outer half (B) of the tow-bar to the inner half (A).

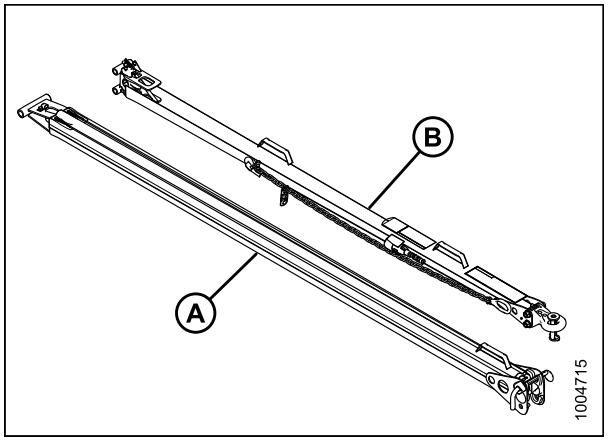


Figure 3.442: Tow-Bar Assembly

9. Lift the outer half (B) and insert it into the inner half (A).

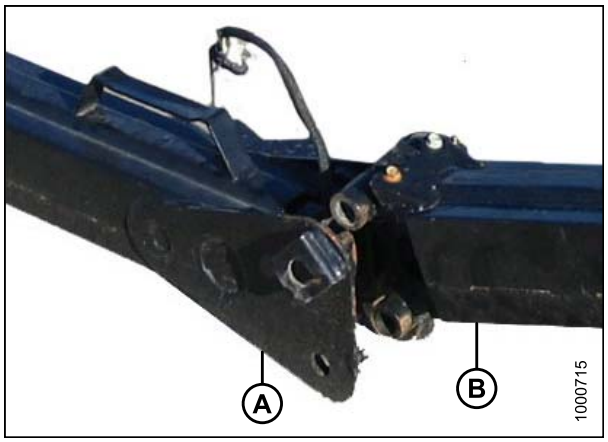


Figure 3.443: Tow-Bar Assembly

10. Secure the two halves together with the L-pin (A) and then turn to lock. Secure the L-pin with ring (B).
11. Connect the electrical harness to connector (C).

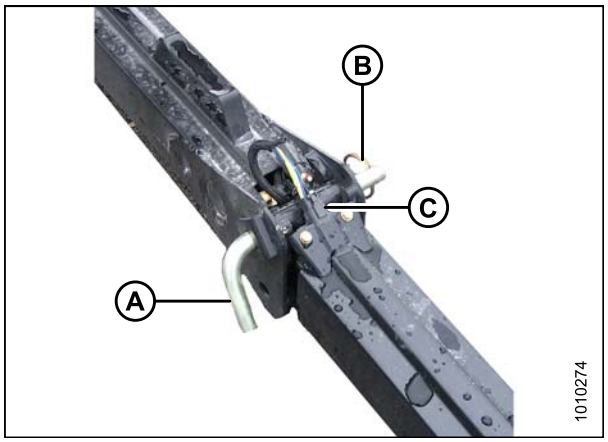


Figure 3.444: Tow-Bar Assembly

12. Position the tow-bar (A) onto the axle, and push against the latch (B) until the tow-bar pins drop into the hooks (C).
13. Check that latch (B) has engaged the tow-bar.
14. Install the clevis pin (D) and secure with hairpin.

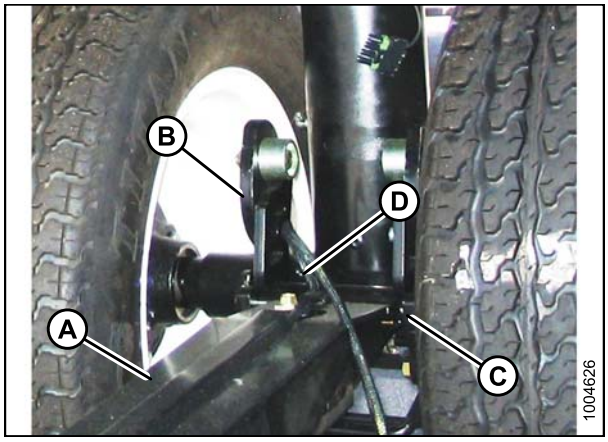


Figure 3.445: Attaching Tow-Bar

15. Connect the electrical harness (A) at the front wheel.

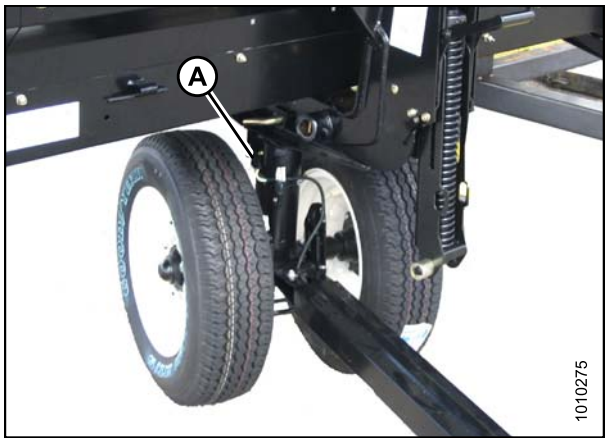


Figure 3.446: Harness Connection

3.14 Storing the Header

Perform the following procedures 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.

1. Clean the header thoroughly.
2. Store the machine in a dry, protected place if possible. If storing outside, always cover with a waterproof canvas or other protective material.

   NOTE:
   If storing the machine outside, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so water and snow will not accumulate on the drapers. The weight of water and snow accumulation puts excessive stress on the drapers and header.

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.
10. Check for broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
11. Replace or tighten any missing or loose hardware. Refer to *8.1 Torque Specifications, page 497*.

4 Header Attachment/Detachment

This chapter includes instructions for setting up, attaching, and detaching the header.

Combine	Refer to
Case IH 7010, 8010, 7120, 8120, 9120, 5088, 6088, 7088, 5130, 6130, 7130, 7230, 8230, 9230	*4.2 Case IH Combines, page 260*
John Deere 60, 70, and S Series	*4.4 John Deere Combines, page 276*
Lexion 500, 700 (R Series)	*4.5 Lexion Combines, page 283*
New Holland CR, CX	*4.6 New Holland Combines, page 291*
Gleaner R and S Series, Challenger 660, 670, 680B, 540C, 560C, Massey Ferguson 9690, 9790, 9895, 9520, 9540, 9560	*4.3 Challenger, Gleaner, and Massey Ferguson Combines, page 268*

NOTE:
Ensure the applicable functions (e.g., auto header height control [AHHC], draper header option, hydraulic center-link option, hydraulic reel drive, etc.) are enabled on the combine and the combine computer. Failure to do so may result in improper header operation.

4.1 Adapter Setup

The following sections outline the recommended adapter setup guidelines for your specific combine model and crop type; however, the recommendations cannot cover all conditions.

If feeding problems develop with the adapter, refer to *7 Troubleshooting, page 481*.

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 *5.7.7 Flighting Extensions, page 366* for more information.

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 408*.

4.1.3 Adjusting Auger Speed

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

The auger speed is determined by the combine input shaft and is matched to each specific combine model; therefore, no adjustment is necessary. However, optional 20-, 22-, and 26-tooth drive sprockets are available to change the adapter feed auger speed and optimize performance. See your MacDon Dealer.

4.2 Case IH Combines

4.2.1 Attaching Header to Case IH 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.

1. On the combine, ensure the lock handle (A) is positioned so the hooks (B) can engage the adapter.

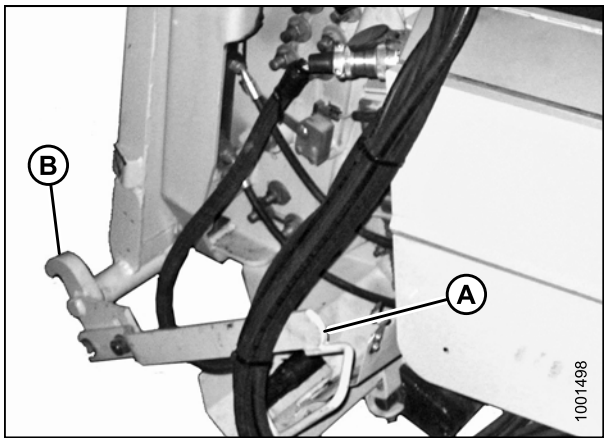


Figure 4.1: Feeder House Lock

CAUTION

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

2. Start the engine and slowly drive the combine up to the header until the feeder house saddle (A) is directly under the adapter top cross member (B).
3. Raise the feeder house slightly to lift the header, ensuring the feeder saddle is properly engaged in the adapter frame.
4. Stop the engine and remove the key from the ignition.

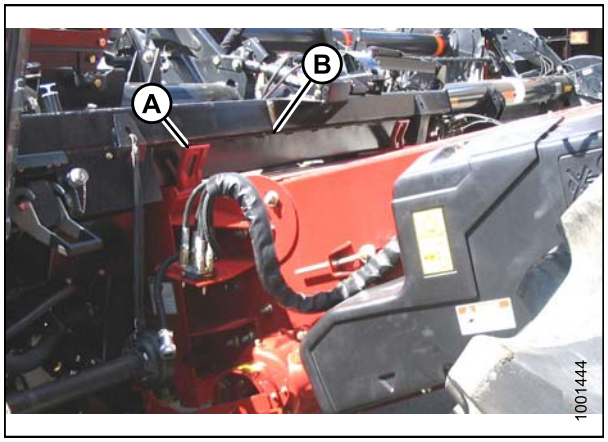


Figure 4.2: Combine and Adapter

5. On the left side of the feeder house, lift lever (A) on the adapter and push the handle (B) on the combine to engage the locks (C) on both sides of the feeder house.
6. Push down on the lever (A) so the slot in the lever engages the handle and locks the handle in place.
7. If lock (C) does not fully engage the pin on the adapter, loosen bolts (D) and adjust lock. Retighten bolts.

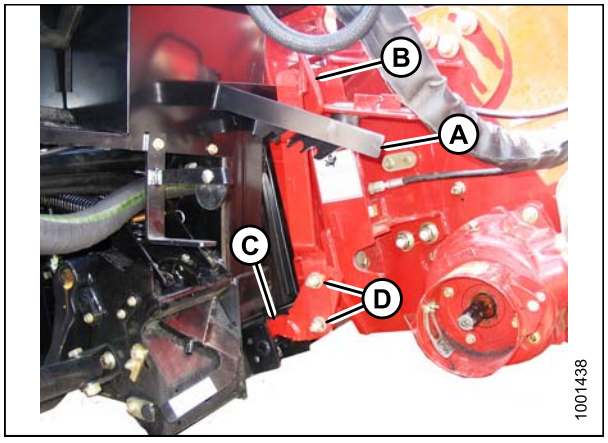


Figure 4.3: Combine and Adapter

8. Open the receptacle cover (A) on the adapter.
9. Press the lock button (B) and pull the handle (C) to the fully open position.
10. Clean the receptacle mating surfaces.

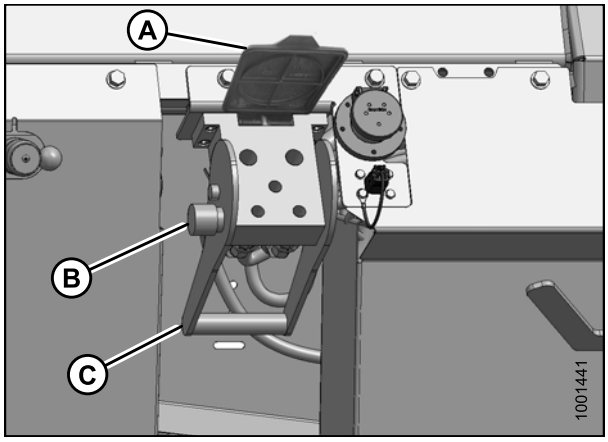


Figure 4.4: Adapter Receptacle

11. Remove the hydraulic quick coupler (A) from the combine and clean the mating surfaces.

Figure 4.5: Combine Connectors

12. Position the coupler onto the adapter receptacle (A) and push the handle (B) (not shown) to engage the multicoupler pins into the receptacle.
13. Push the handle (B) to the closed position until the lock button (C) snaps out.

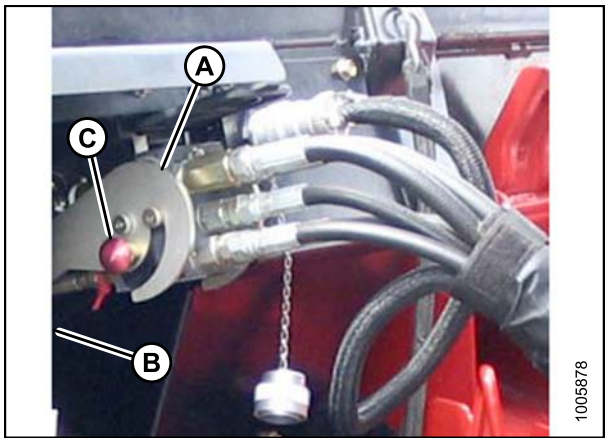


Figure 4.6: Hydraulic Connection

14. Remove the cover from the electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

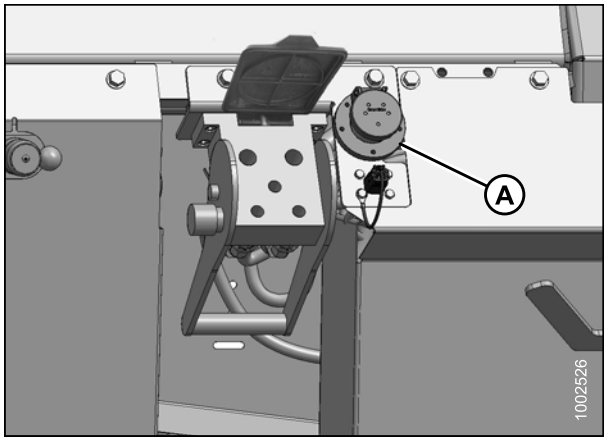


Figure 4.7: Electrical Receptacle

15. Remove the electrical connector (A) from the storage cup on the combine and route it to the adapter receptacle.

Figure 4.8: Combine Connectors

16. Align the lugs on the connector (A) with the slots in the receptacle (B), push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

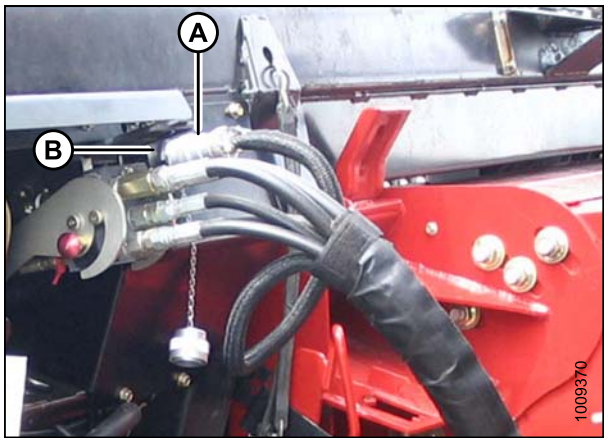


Figure 4.9: Electrical Connection

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

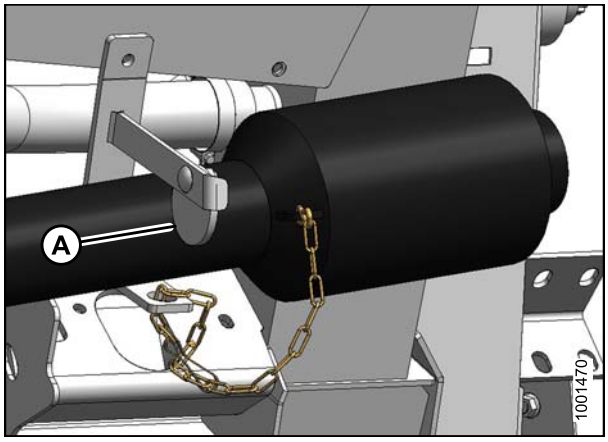


Figure 4.10: Driveline Storage Hook

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

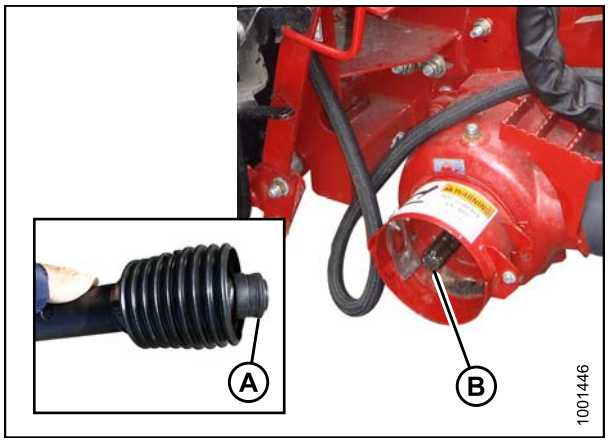


Figure 4.11: Combine Output Shaft

19. Disengage each adapter float lock by moving the latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK).

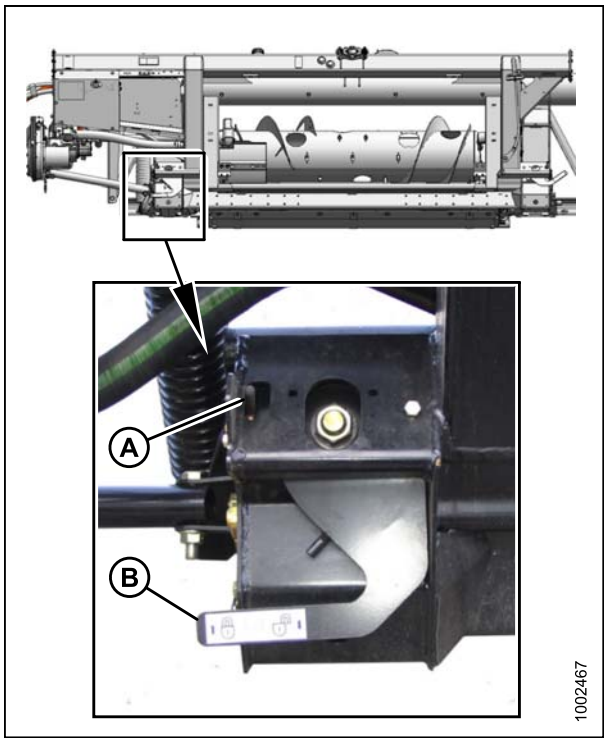


Figure 4.12: Float Lock in UNLOCK Position

4.2.2 Detaching Header from Case IH Combine

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. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:
   If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

   IMPORTANT:
   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

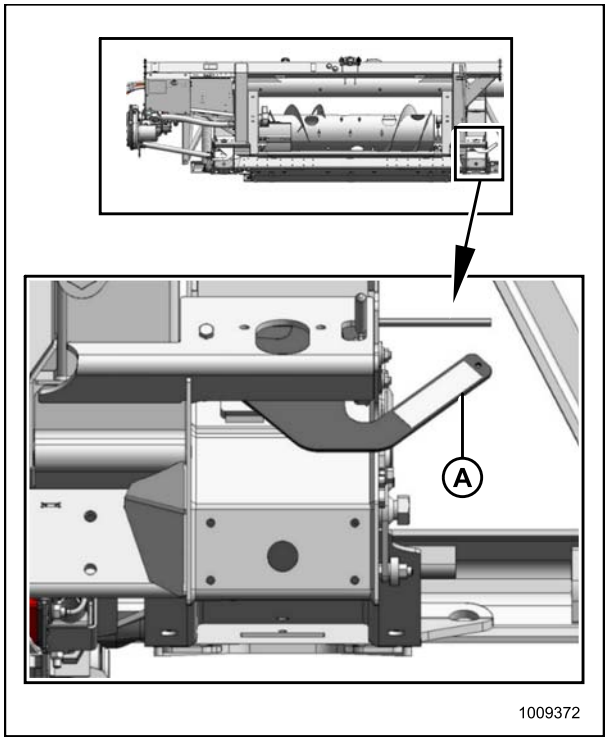


Figure 4.13: Float Locked

4. Disconnect the driveline (A) from the combine.

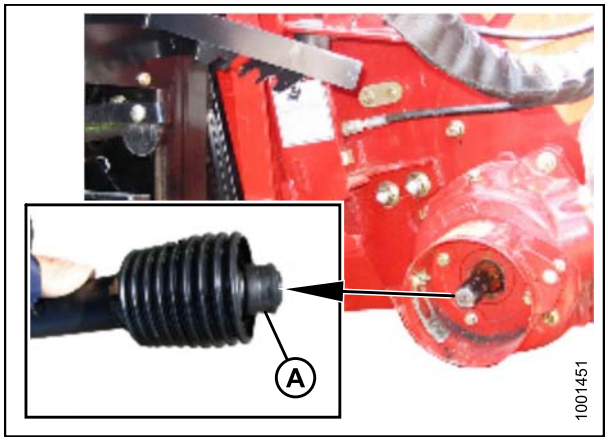


Figure 4.14: Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

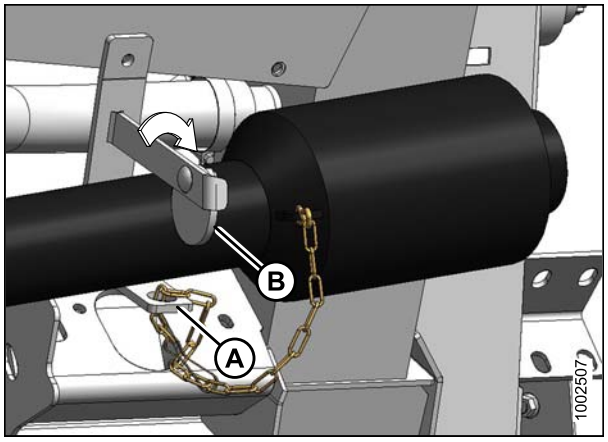


Figure 4.15: Driveline

6. Remove the electrical connector (A) and replace the cover (B).
7. Push in the lock button (C) and pull the handle (D) to release the multicoupler (E).

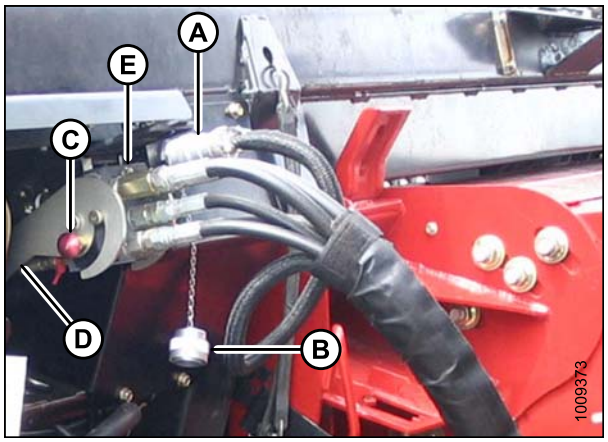


Figure 4.16: Multicoupler

8. Position the multicoupler (A) onto the storage plate (B) on the combine.
9. Place the electrical connector (C) in the storage cup (D).

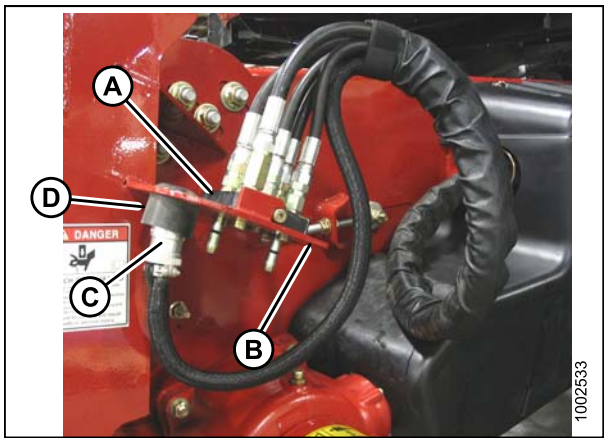


Figure 4.17: Multicoupler Storage

10. Push the handle (A) on the adapter receptacle to the closed position until the lock button (B) snaps out. Close the cover (C).

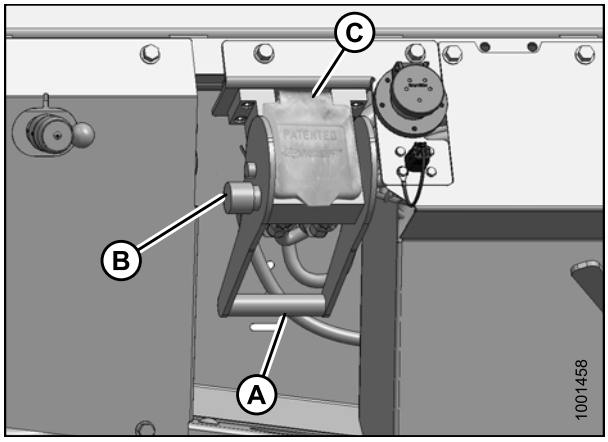


Figure 4.18: Adapter Receptacle

11. Lift the lever (A) and pull and lower the handle (B) to disengage the feeder house/adapter lock (C).
12. Lower the feeder house until it disengages the adapter support.
13. Back the combine away slowly from the adapter.

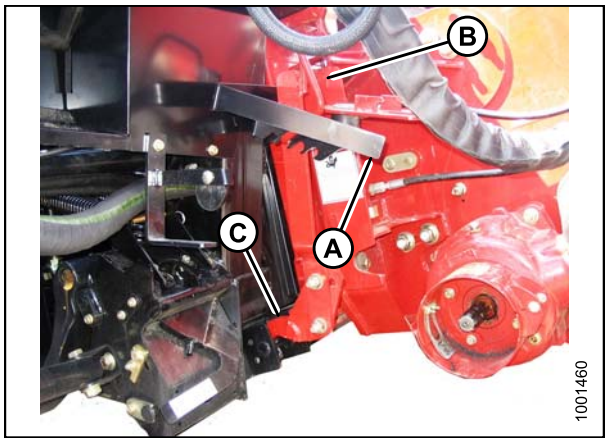


Figure 4.19: Feeder House Locks

4.3 Challenger, Gleaner, and Massey Ferguson Combines

4.3.1 Attaching Header to a Challenger, Gleaner, or Massey Ferguson 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.

1. Use the lock handle (B) to retract the lugs (A) at the base of the feeder house.

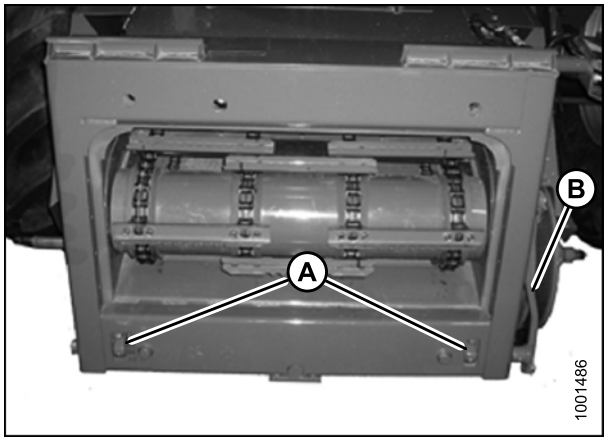


Figure 4.20: AGCO Group Feeder House

CAUTION

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

2. Start the engine and slowly approach the header until the feeder house is directly under the adapter top cross member (A) and the alignment pins (C) on the feeder house (shown in the image below) are aligned with the holes (B) in the adapter frame.

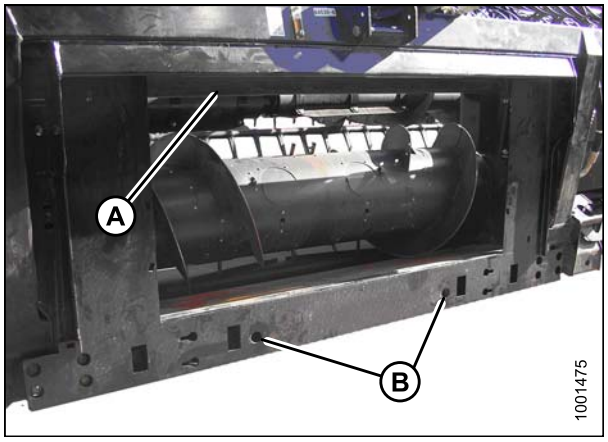


Figure 4.21: Adapter

Alignment pins (C).

NOTE:
Your AGCO Group combine feeder house may not be exactly as shown.

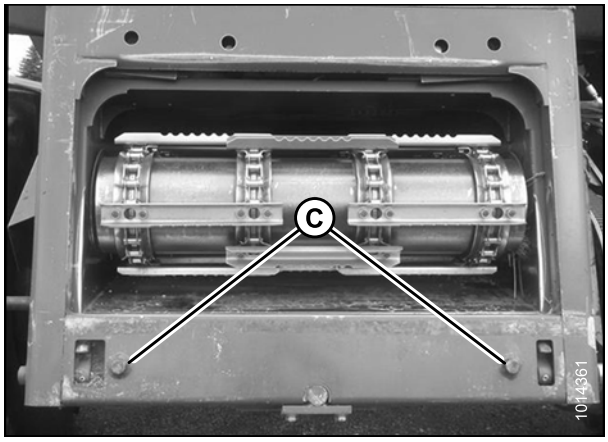


Figure 4.22: AGCO Group Alignment Pins

3. Raise the feeder house slightly to lift the header, ensuring the feeder house saddle (A) is properly engaged in the adapter frame.
4. Stop the engine and remove the key from the ignition.

Figure 4.23: Feeder House and Adapter

5. Use the lock handle (B) to engage lugs (A) with the adapter.

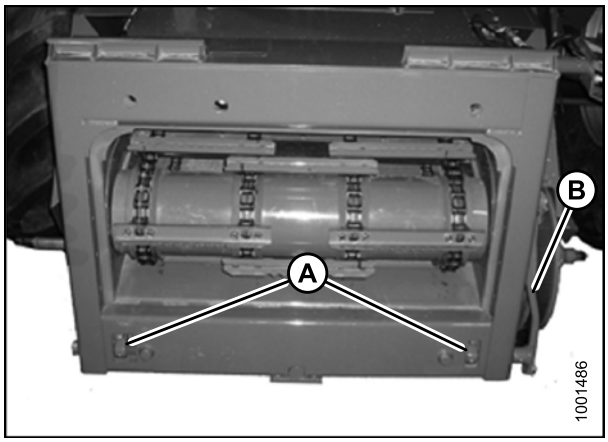


Figure 4.24: AGCO Group Feeder House

CAUTION

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

6. Start the engine and lower the header.
7. Stop the engine and remove the key from the ignition.

NOTE:
The CA25 Combine Adapter is equipped with a multicoupler that connects to the combine. If your combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *4.1 Multicoupler Kits, page 270* for a list of kits and installation instructions that are available through your combine Dealer.

Table 4.1 Multicoupler Kits

Combine	Kit Number
Challenger	71530662
Gleaner R/S Series	71414706
Massey Ferguson	71411594

8. Disengage each adapter float lock by moving the latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK).

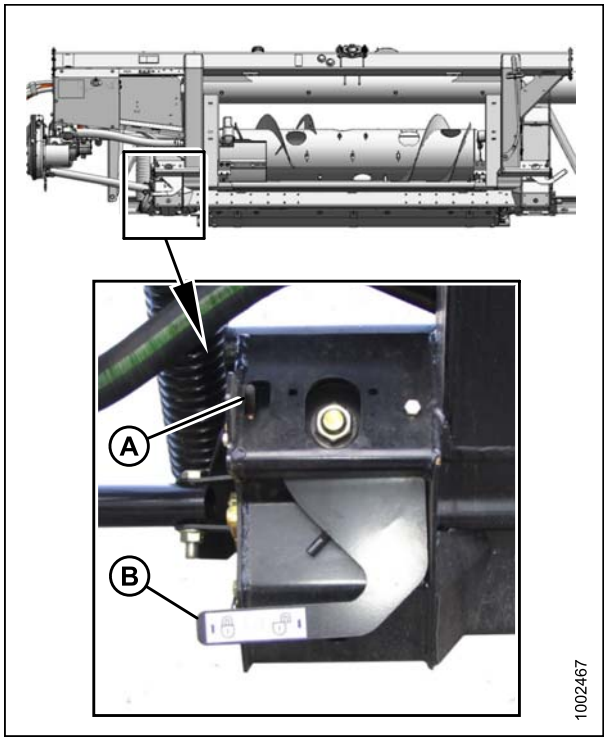


Figure 4.25: Float Lock in UNLOCK Position

9. Raise the handle (A) to release the multicoupler (B) from the adapter.

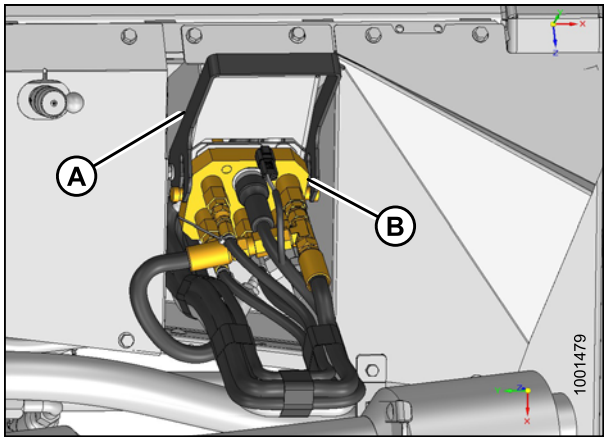


Figure 4.26: Adapter Multicoupler

10. Push the handle (A) on the combine to the fully open position.
11. Clean the mating surfaces of the multicoupler (B) and receptacle if necessary.

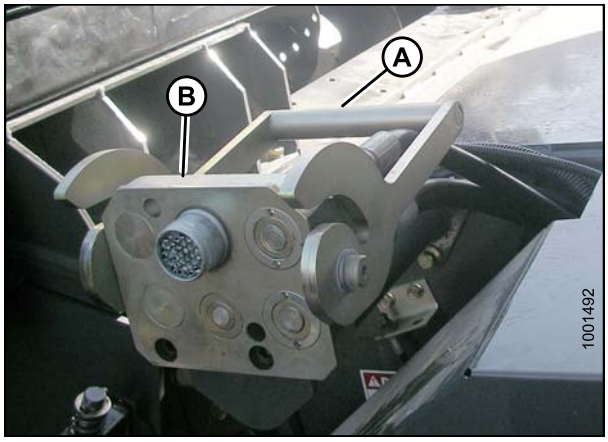


Figure 4.27: Combine Receptacle

12. Position the multicoupler (A) onto the combine receptacle, and pull the handle (B) to fully engage the multicoupler into the receptacle.
13. Connect the reel fore-aft/header tilt selector harness (C) to the combine harness (D).

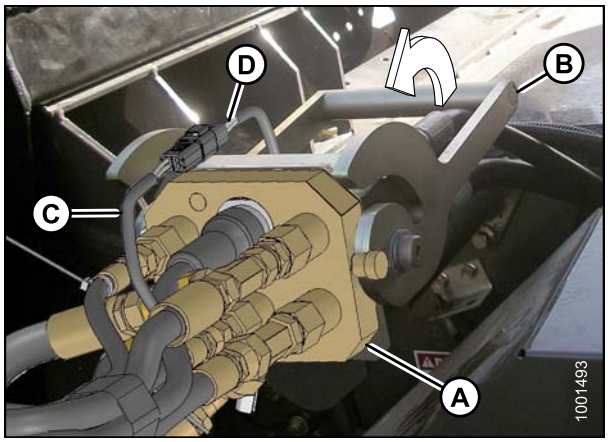


Figure 4.28: Multicoupler

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

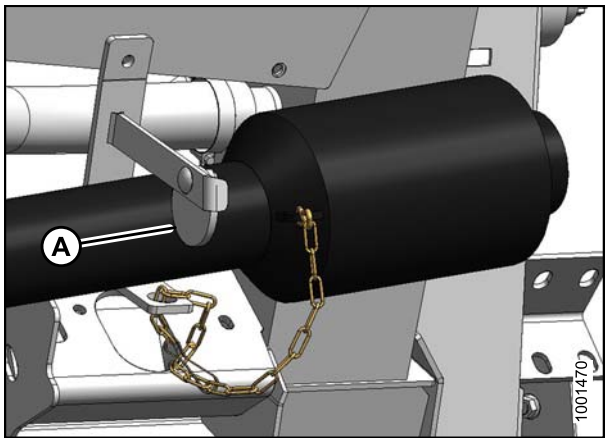


Figure 4.29: Driveline

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

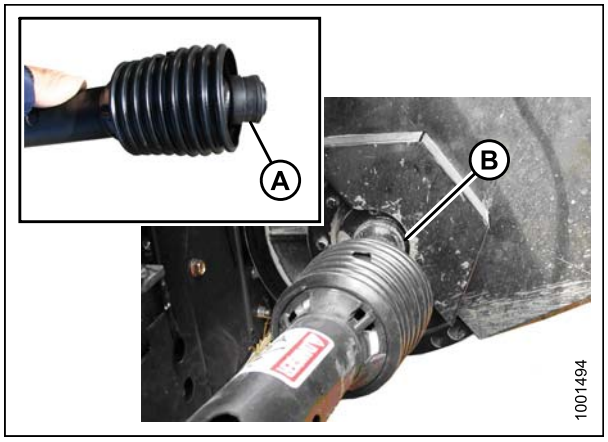


Figure 4.30: Driveline

4.3.2 Detaching Header from Challenger, Gleaner, or Massey Ferguson Combines

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. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:
   If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

   IMPORTANT:
   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

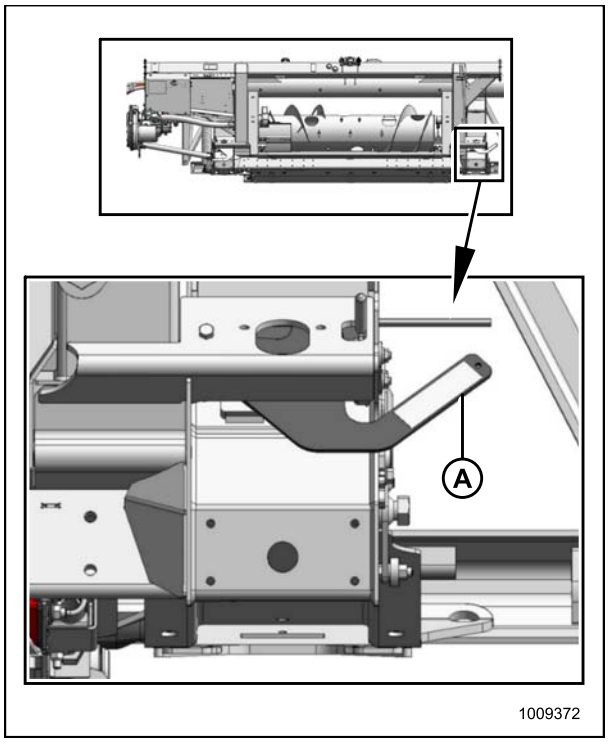


Figure 4.31: Float Locked

4. Disconnect the driveline from the combine output shaft (A).

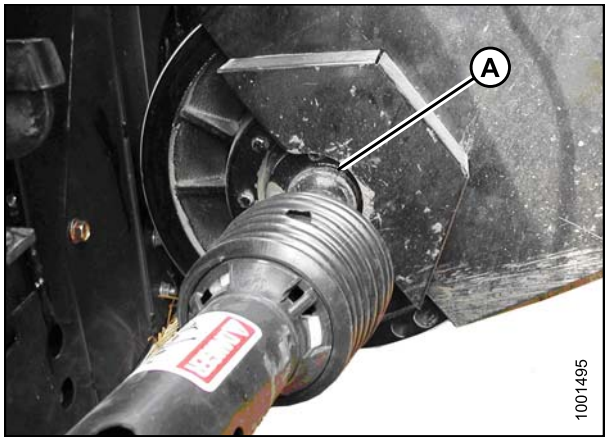


Figure 4.32: Disconnect Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

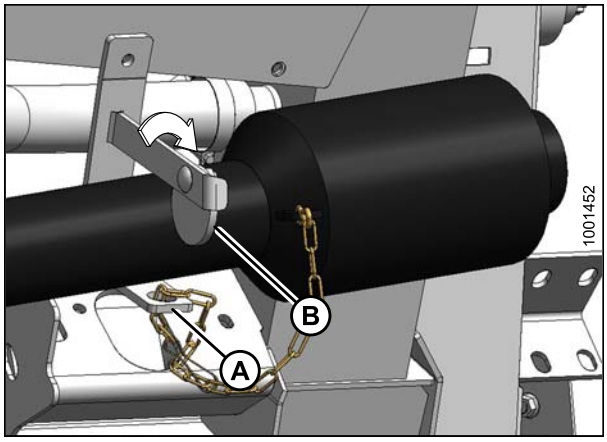


Figure 4.33: Driveline

6. Disconnect the harness at the connector (A).
7. Move the handle (B) on the combine multicoupler to the full open position to release the multicoupler (C) from the combine.

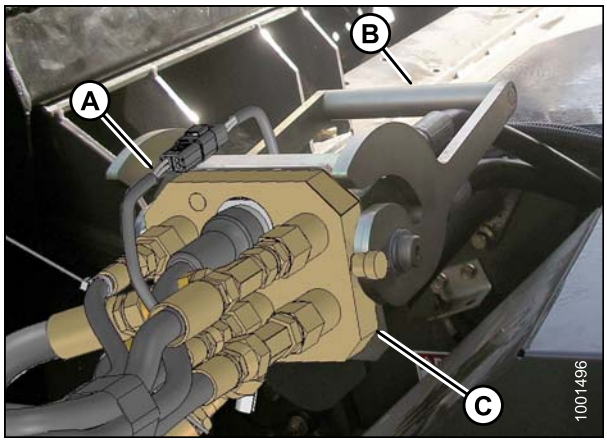


Figure 4.34: Multicoupler

8. Raise the handle (A) on the adapter, and place the multicoupler (B) on the adapter receptacle.
9. Lower the handle (A) to lock the multicoupler.

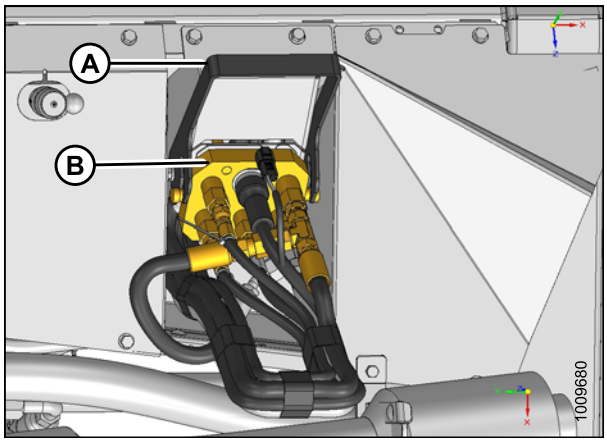


Figure 4.35: Adapter Multicoupler

10. Use the lock handle (B) to retract the lugs (A) at the base of the feeder house.

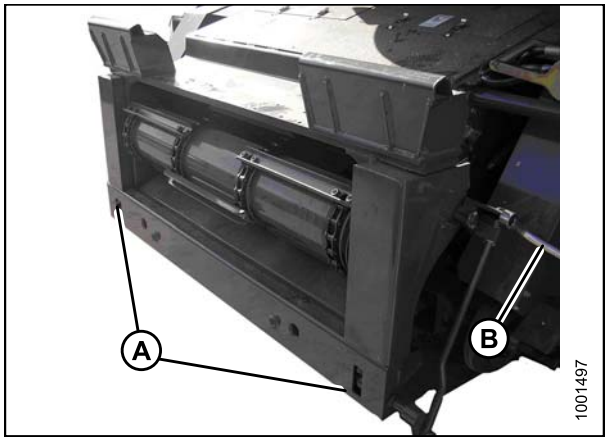


Figure 4.36: Challenger and Massey Ferguson

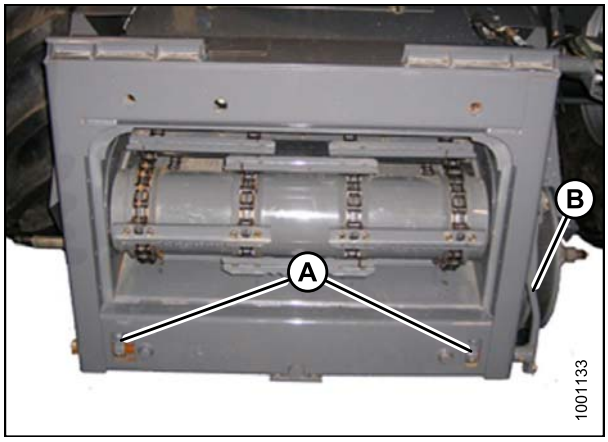


Figure 4.37: Gleaner R and S Series

11. Lower the feeder house until the saddle (A) disengages and clears the adapter support.
12. Back the combine away slowly from the adapter.

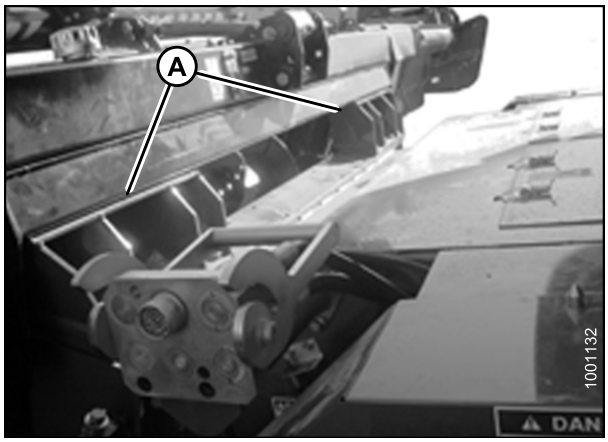


Figure 4.38: Adapter on Combine

4.4 John Deere Combines

4.4.1 Attaching Header to John Deere 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.

1. Push the handle (A) on the combine multicoupler receptacle towards the feeder house to retract the pins (B) at the bottom corners of the feeder house. Clean the receptacle.

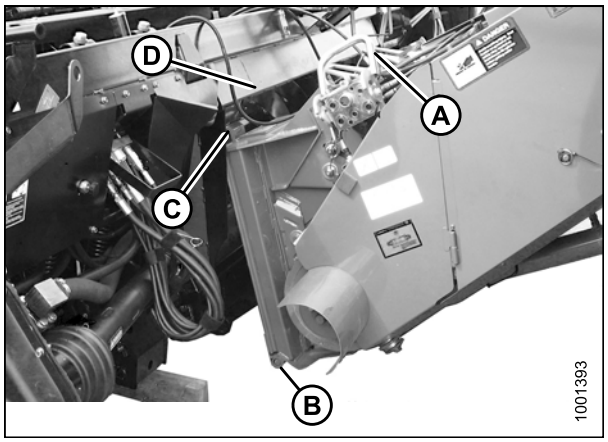


Figure 4.39: Combine and Adapter

CAUTION

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

2. Start the engine and slowly drive the combine up to the header until the feeder house saddle (C) is directly under the adapter top cross member (D).
3. Raise the feeder house slightly to lift the header ensuring the feeder house saddle is properly engaged in the adapter frame.
4. Stop the engine and remove the key from the ignition.
5. Pull the handle (A) on the adapter to release the multicoupler (B) from the storage position. Remove the multicoupler, and push the handle back into the adapter to store.

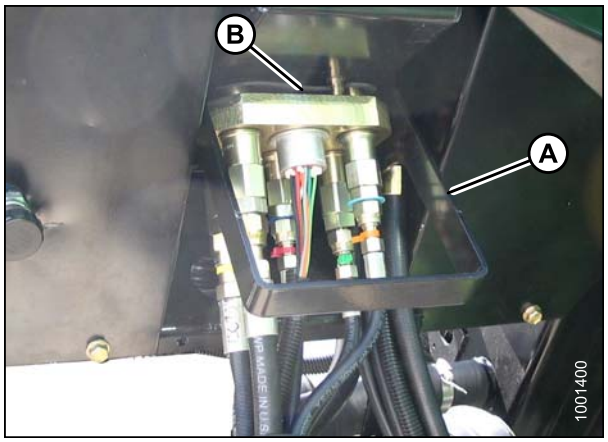


Figure 4.40: Multicoupler Storage

6. Position the multicoupler (A) onto the receptacle, and pull the handle (B) to engage the lugs on the multicoupler into the handle.
7. Pull the handle (B) to a horizontal position and ensure the multicoupler (A) is fully engaged into the receptacle.

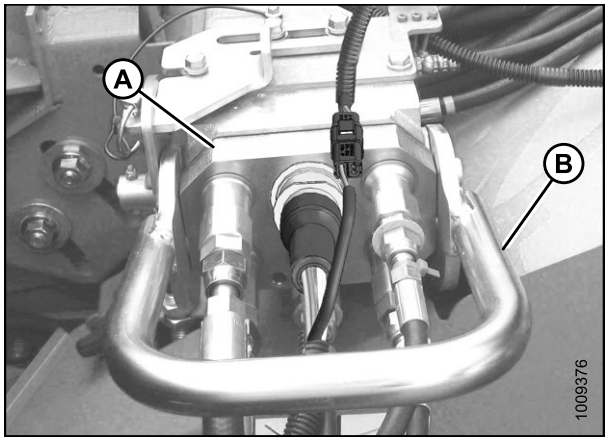


Figure 4.41: Multicoupler

8. Ensure that both feeder house pins (C) are fully engaged into the adapter brackets.

   NOTE:
   If the pins (C) do not fully engage the adapter brackets, loosen the bolts (D) and adjust the bracket as required.
9. Tighten bolts (D).

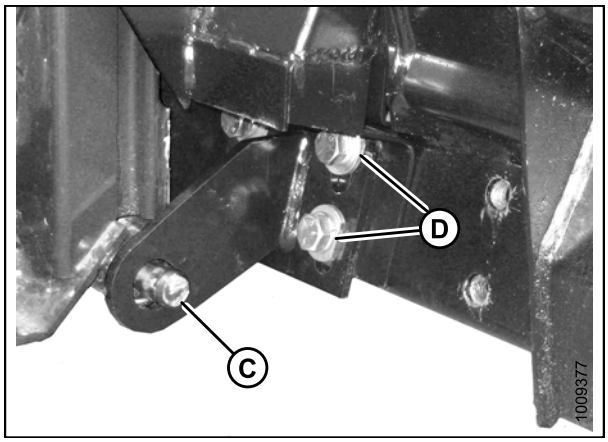


Figure 4.42: Feeder House Pin

10. Slide the latch (A) to lock the handle (B) in position and secure with the lynch pin (C).
11. Connect the harness (D) to the combine connector (E).

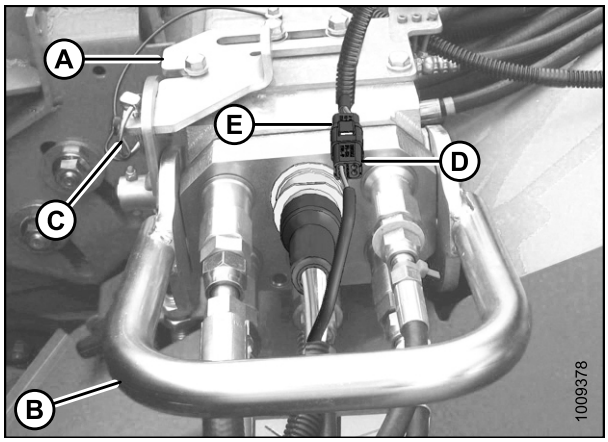


Figure 4.43: Multicoupler

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

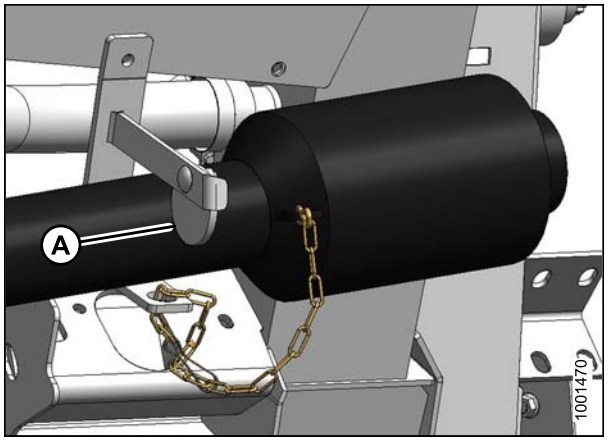


Figure 4.44: Driveline

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

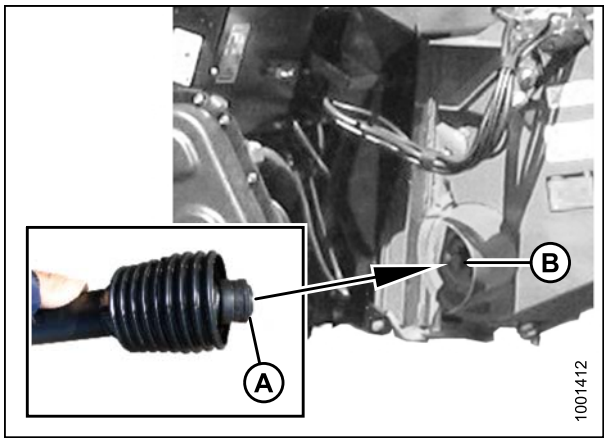


Figure 4.45: Driveline

14. Disengage each adapter float lock by moving the latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK).

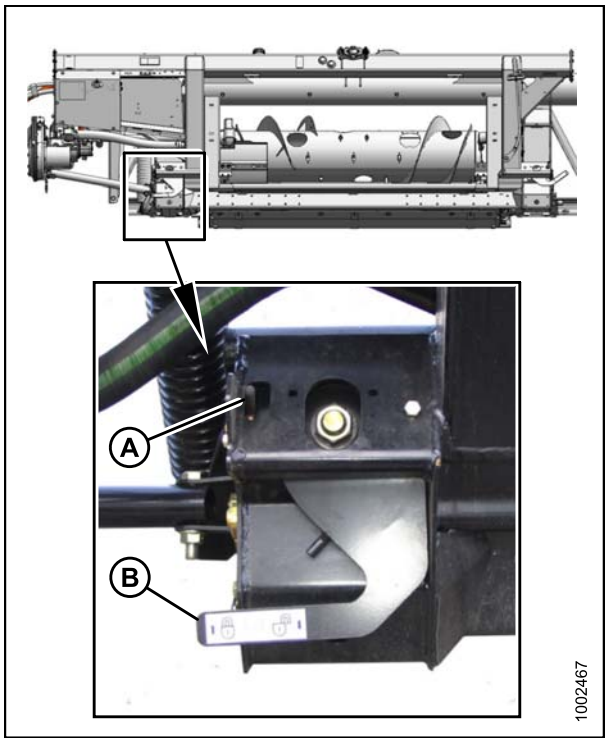


Figure 4.46: Float Lock in UNLOCK Position

4.4.2 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.

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:
   If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

   IMPORTANT:
   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

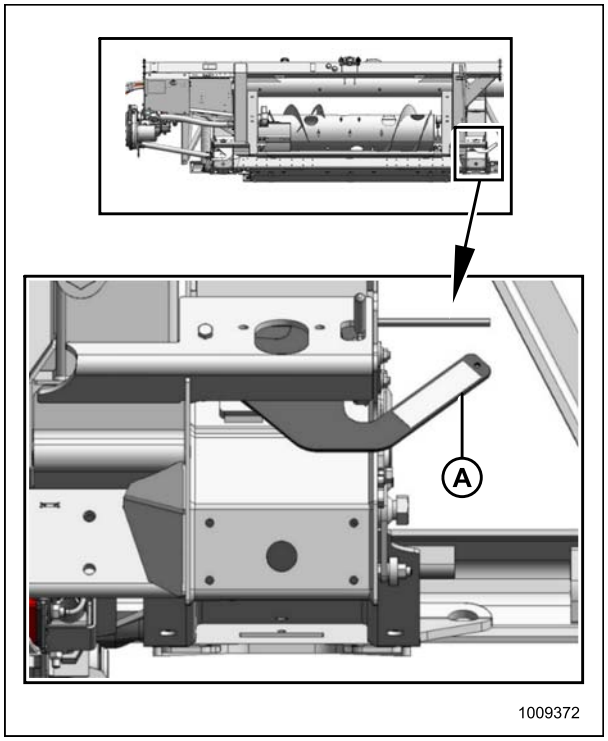


Figure 4.47: Float Locked

4. Open the shield (A) on the combine, pull back the collar on the driveline (B), and pull the driveline off the combine output shift.

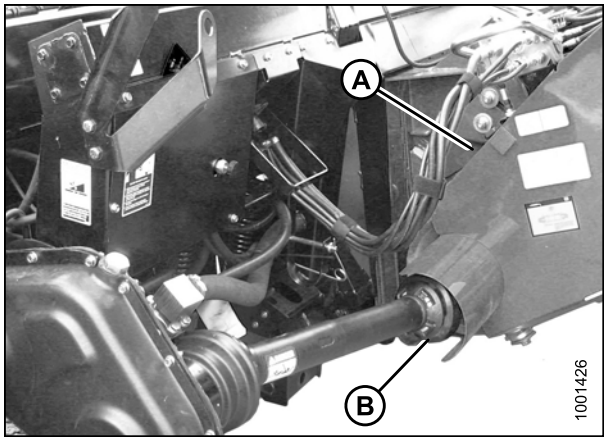


Figure 4.48: Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

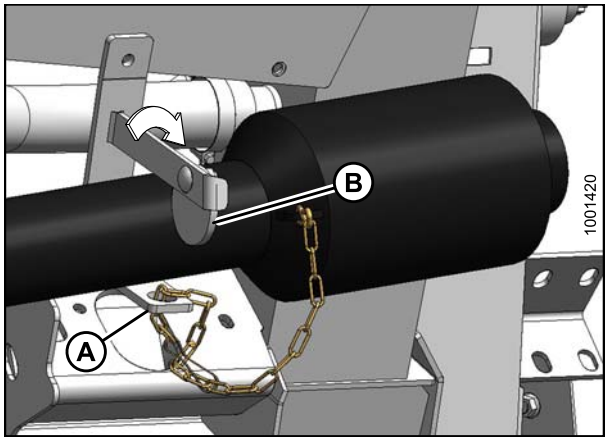


Figure 4.49: Driveline

6. Lift the handle (A) on the adapter.

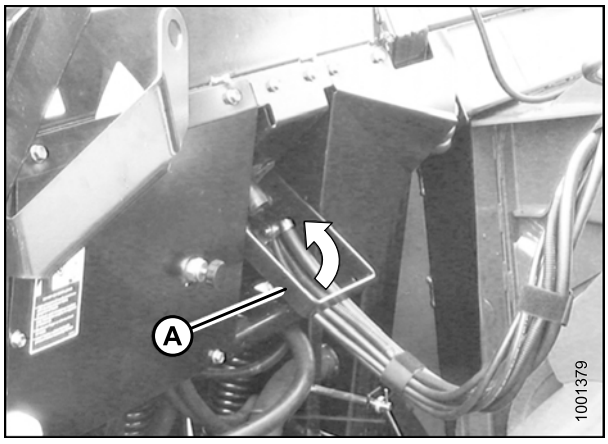


Figure 4.50: Multicoupler Storage

7. Disconnect the harness (A) from the combine connector.
8. Remove the lynch pin (B) and slide the lock (C) to release the handle (D).
9. Lift the handle (D) to full vertical position to release the multicoupler (E) from the combine.

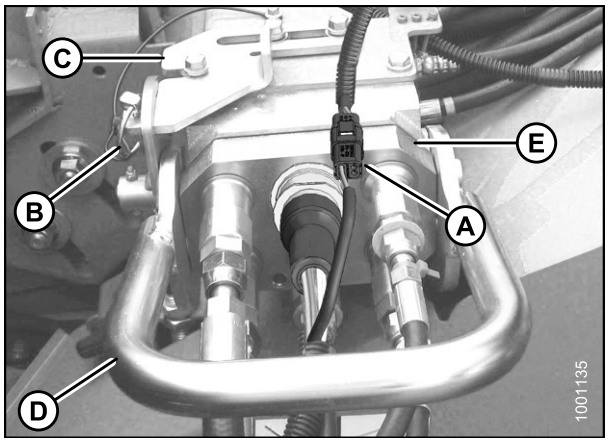


Figure 4.51: Multicoupler

10. Position the multicoupler (A) on the adapter receptacle and lower the handle (B) to lock the multicoupler.

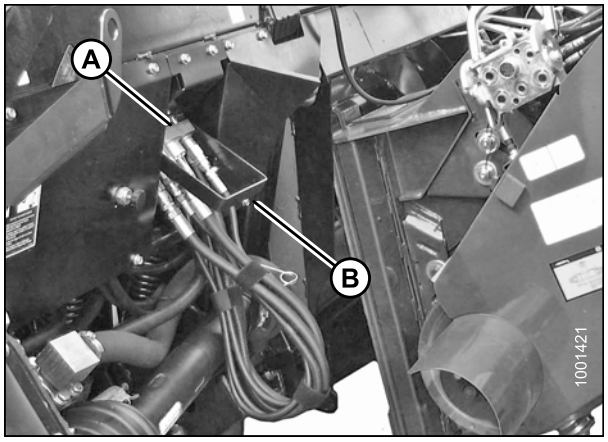


Figure 4.52: Multicoupler Storage

11. Push the handle (A) on the combine towards the feeder house to disengage the feeder house pin (B) from the adapter.

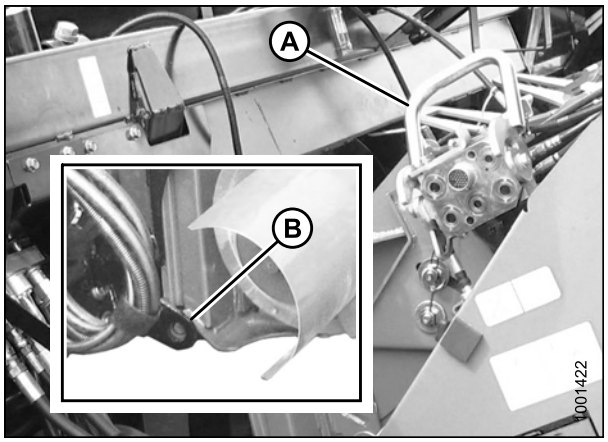


Figure 4.53: Feeder House Locks

12. Lower the feeder house until the saddle (A) disengages and clears the adapter support (B).
13. Back the combine away slowly from the adapter.

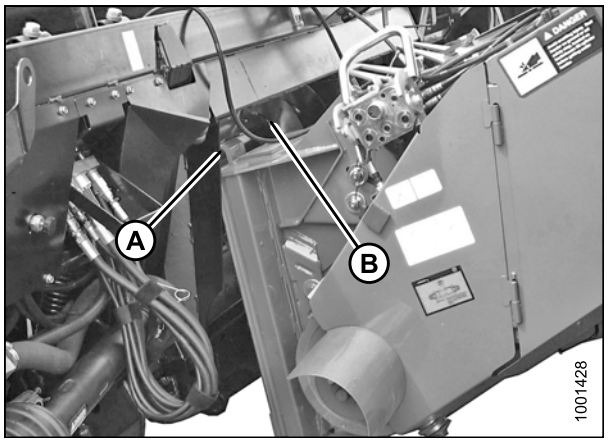


Figure 4.54: Header/Feeder House

4.5 Lexion Combines

4.5.1 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.

1. Move the handle (A) on the CA25 Combine Adapter into the raised position, and ensure the pins (B) at the bottom corners of the adapter are retracted.

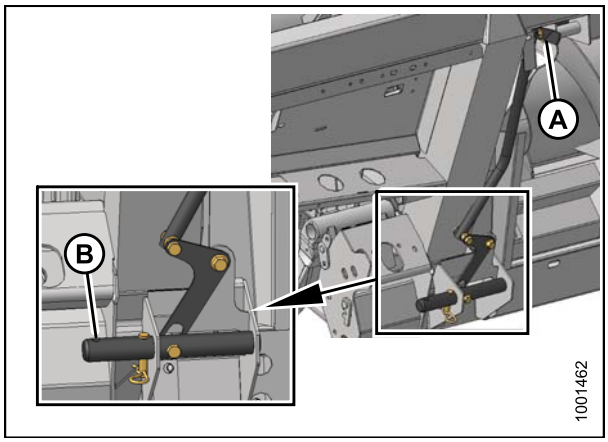


Figure 4.55: Pins Retracted

CAUTION

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

2. Start the engine and slowly drive the combine up to the header until the feeder house saddle (A) is directly under the adapter top cross member (B).
3. Raise the feeder house slightly to lift the header ensuring the feeder saddle is properly engaged in the adapter frame.
4. Stop the engine and remove the key from the ignition.

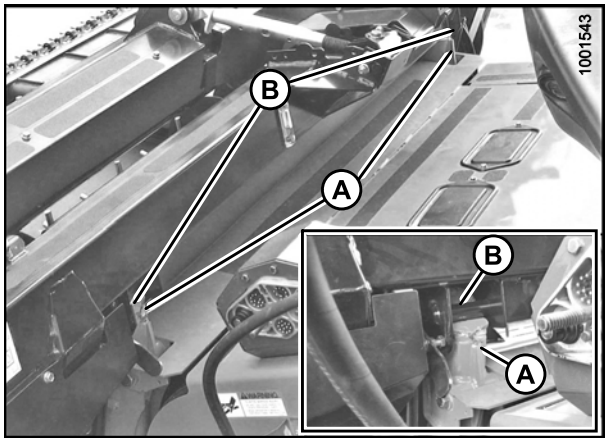


Figure 4.56: Header on Combine

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

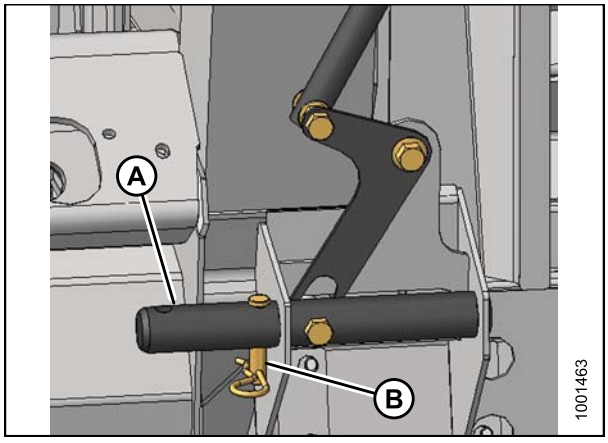


Figure 4.57: Locking Pins

6. Lower the handle (A) to engage the CA25 pins (B) into the feeder house. Reinsert the locking pin (C) and secure with the hairpin.
7. Stop the engine and remove the key from the ignition.

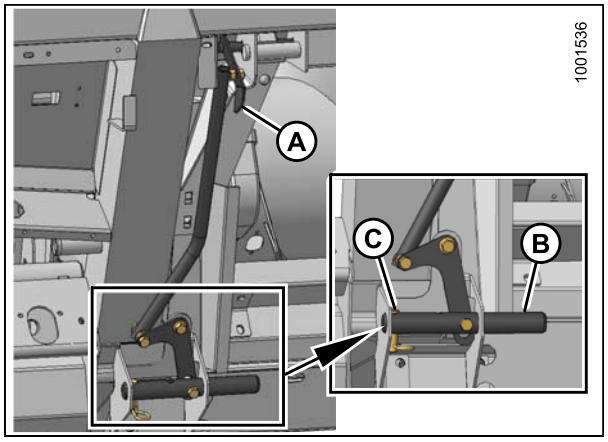


Figure 4.58: Engaging Pins

8. Unscrew the knob (A) on the combine coupler (B) to release the coupler from the combine receptacle and clean the coupler.

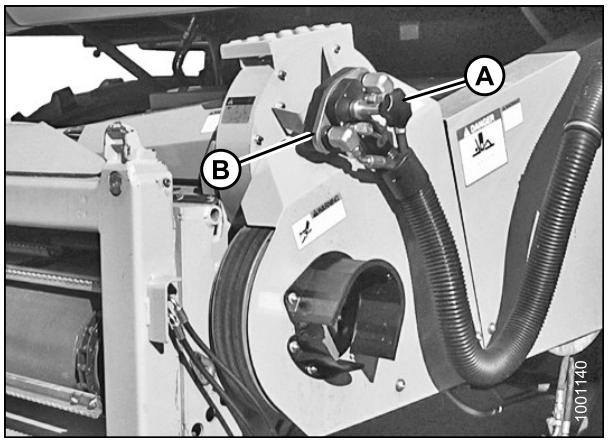


Figure 4.59: Combine Coupler

9. Place the CA25 receptacle cover (A) onto the combine receptacle.

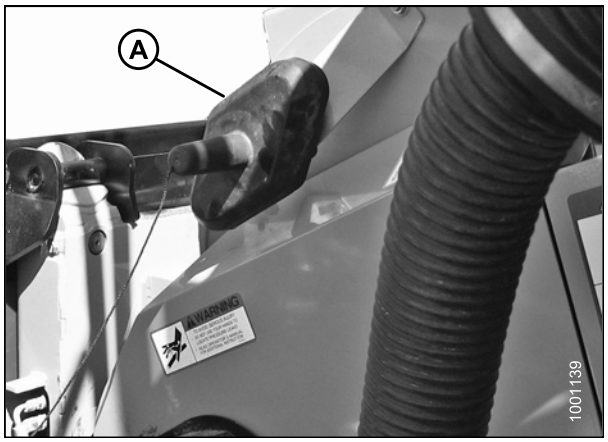


Figure 4.60: Receptacle Cover

10. Clean the mating surface of the coupler (A) and position onto the CA25 receptacle (B).
11. Turn the knob (C) to secure the coupler to the receptacle.
12. Connect the combine harness (D) to the reel fore-aft/header tilt selector receptacle (E).

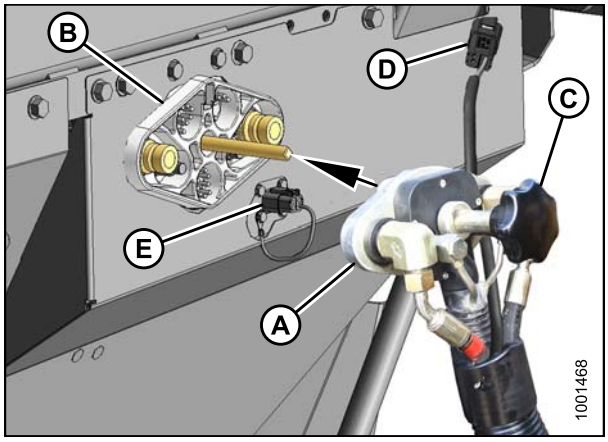


Figure 4.61: Coupler

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

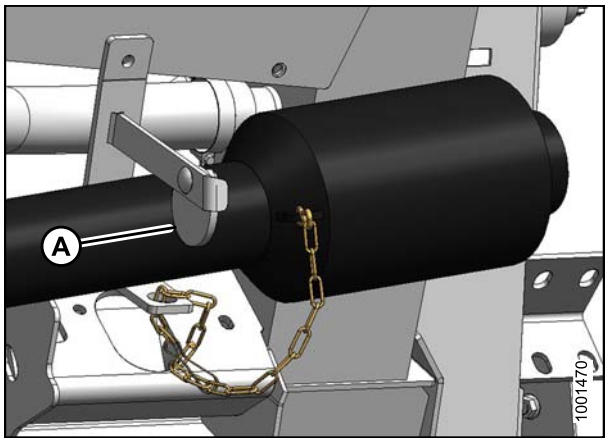


Figure 4.62: Driveline

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

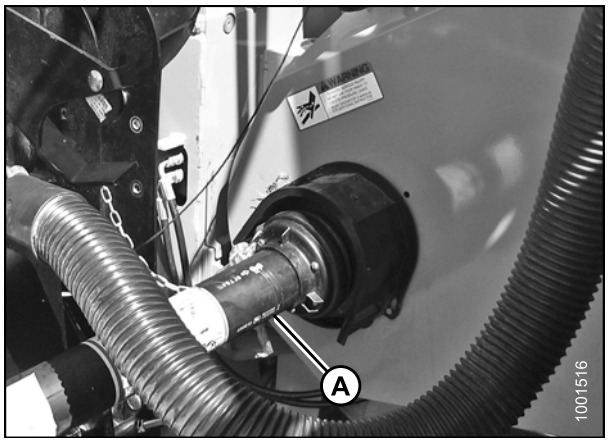


Figure 4.63: Driveline and Output Shaft

15. Disengage each adapter float lock by moving the latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK).

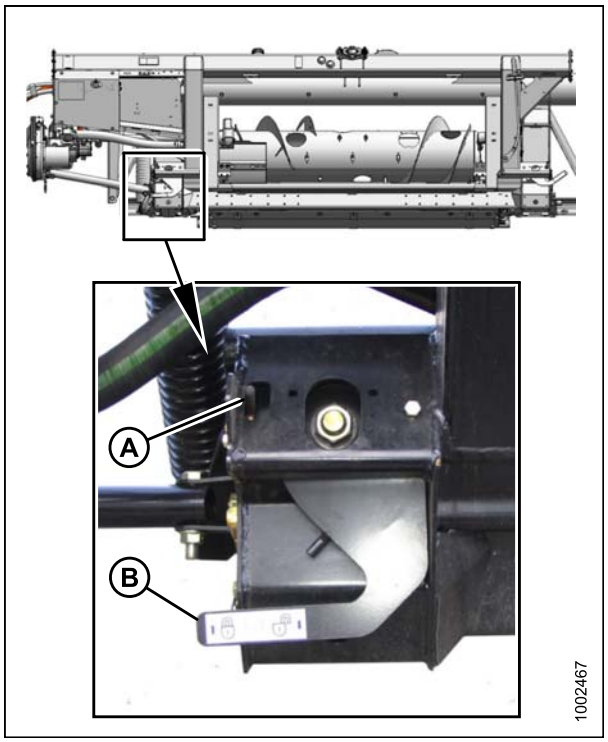


Figure 4.64: Float Lock in UNLOCK Position

4.5.2 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.

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:
   If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

   IMPORTANT:
   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

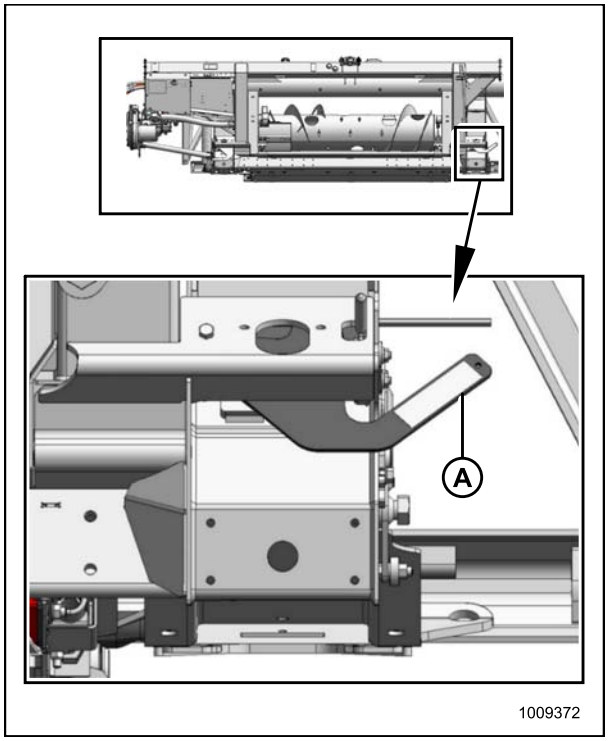


Figure 4.65: Float Locked

4. Disconnect the driveline (A) from the combine.

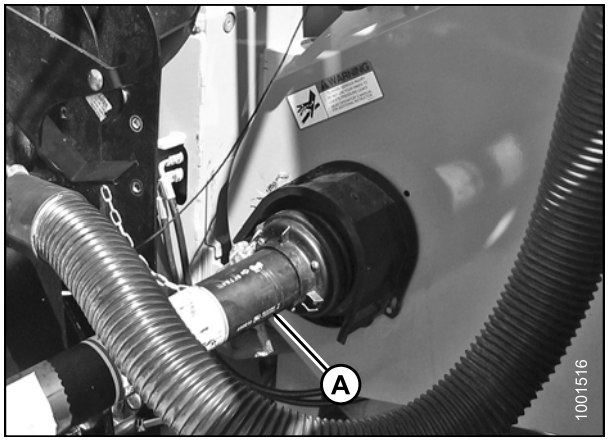


Figure 4.66: Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

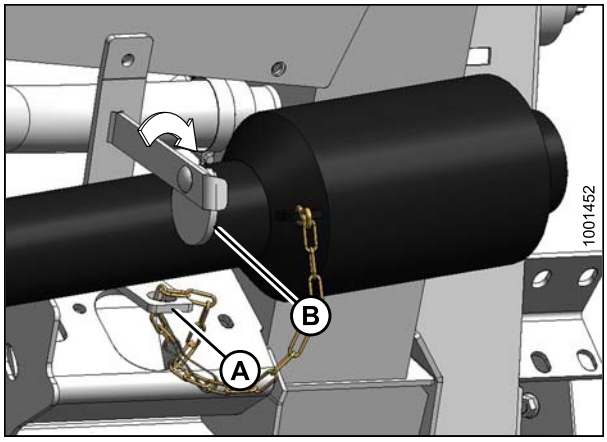


Figure 4.67: Driveline

6. Remove the electrical connector (A) from the adapter receptacle.
7. Unscrew the knob (B) on the coupler (C) to release the coupler from the adapter.

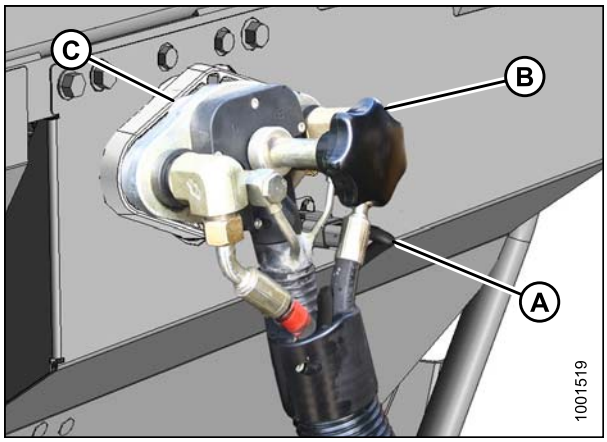


Figure 4.68: Coupler

8. Remove the cover (A) from the combine receptacle.

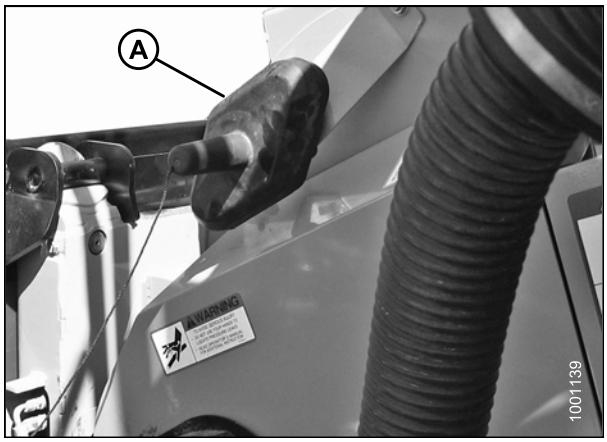


Figure 4.69: Cover

9. Position the coupler (A) onto the combine receptacle, and turn the knob (B) to secure the coupler to the receptacle.

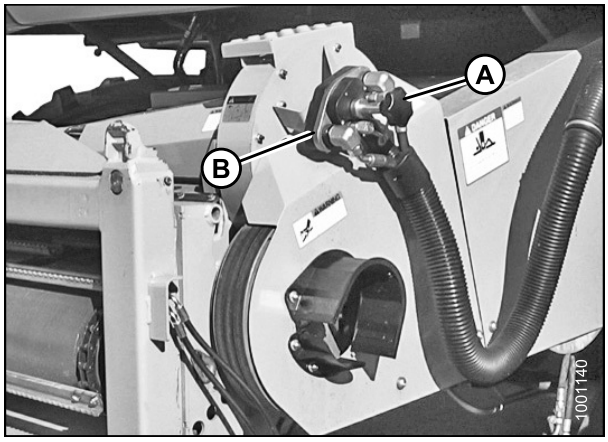


Figure 4.70: Combine Coupler

10. Place the cover (A) on the adapter receptacle.

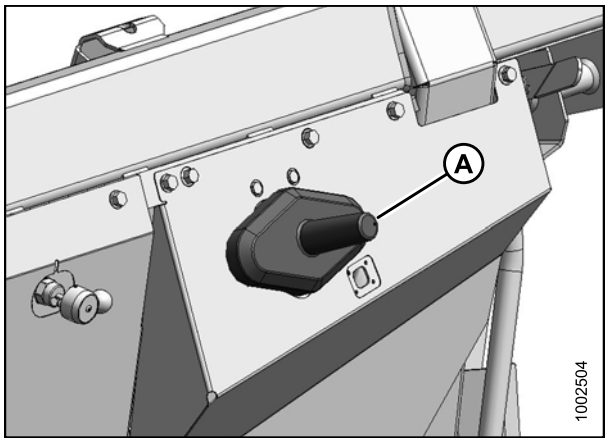


Figure 4.71: Adapter

11. Remove the locking pin (A) from the CA25 pin (B).
12. Raise the handle (C) to disengage the CA25 pins (B) from the feeder house.
13. Replace the locking pin (A) in the CA25 pin, and secure with the hairpin.

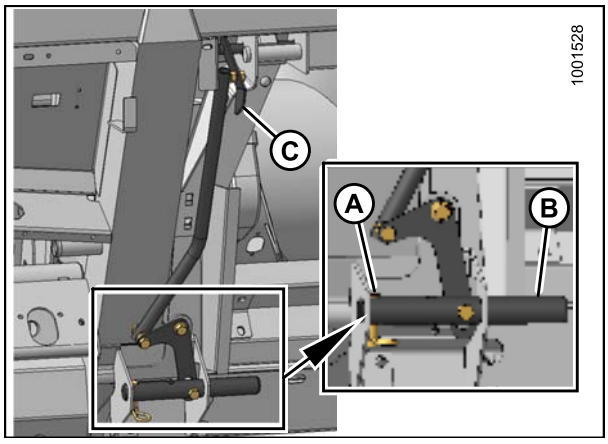


Figure 4.72: Feeder House Locks

14. Lower the feeder house until the feeder house posts (A) disengage the CA25 (B).
15. Back the combine away slowly from the CA25.

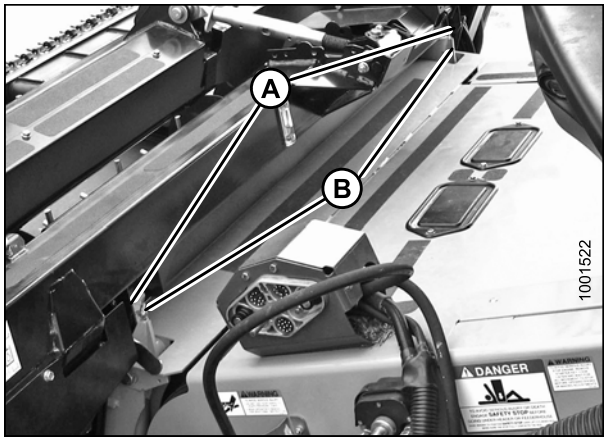


Figure 4.73: Header on Combine

4.6 New Holland Combines

4.6.1 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.

1. Ensure the handle (A) is positioned so the hooks (B) can engage the CA25.

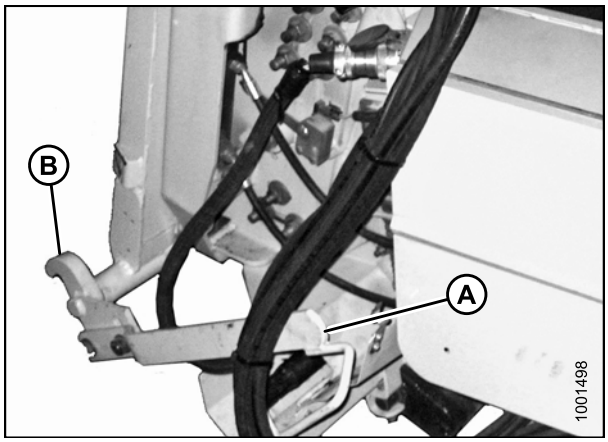


Figure 4.74: Feeder House Locks

CAUTION

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

2. Start the engine and slowly drive the combine up to the CA25 until the feeder house saddle (A) is directly under the CA25 top cross member (B).
3. Raise the feeder house slightly to lift the header ensuring the feeder saddle is properly engaged in the CA25 frame.
4. Stop the engine and remove the key from the ignition.

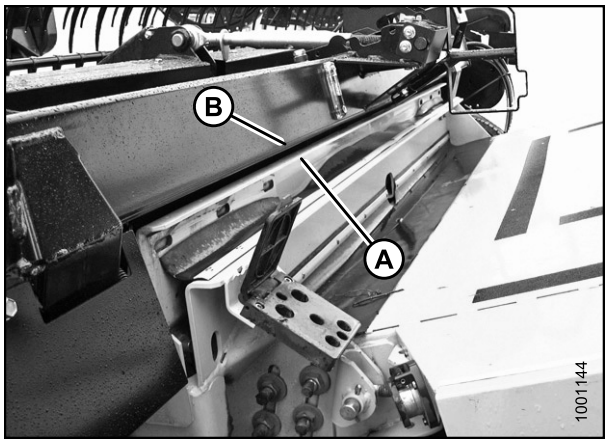


Figure 4.75: Header on Combine

5. Lift lever (A) on the CA25 on the left side of the feeder house, and push the handle (B) on the combine to engage the locks (C) on both sides of the feeder house.
6. Push down on the lever (A) so the slot in the lever engages the handle and locks the handle in place.
7. Loosen bolts (E) and adjust the lock (C) if lock does not fully engage the pin on the CA25 when the lever (A) and handle (B) are engaged. Retighten bolts.

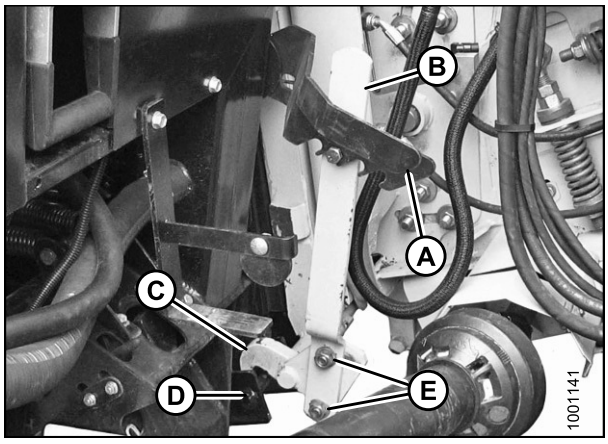


Figure 4.76: Feeder House Locks

8. Open the receptacle cover (A) on the CA25.
9. Push in the lock button (B) and pull the handle (C) to the full open position.
10. Clean the receptacle mating surfaces.

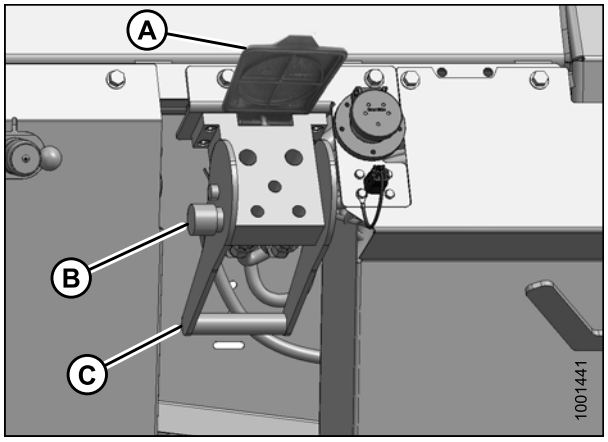


Figure 4.77: Adapter Receptacle

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

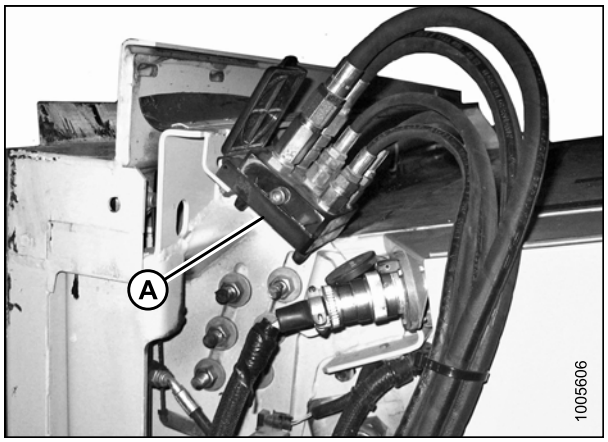


Figure 4.78: Combine Coupler

12. Position the coupler (A) onto the CA25 receptacle, and push the handle (B) to engage the pins into the receptacle.
13. Push the handle (B) to closed position until the lock button (C) snaps out.
14. Remove the cover on the CA25 electrical receptacle.
15. Remove the connector (D) from the combine.
16. Align the lugs on the connector (D) with the slots in the CA25 receptacle, and push the connector onto the receptacle. Turn the collar on the connector to lock it in place.

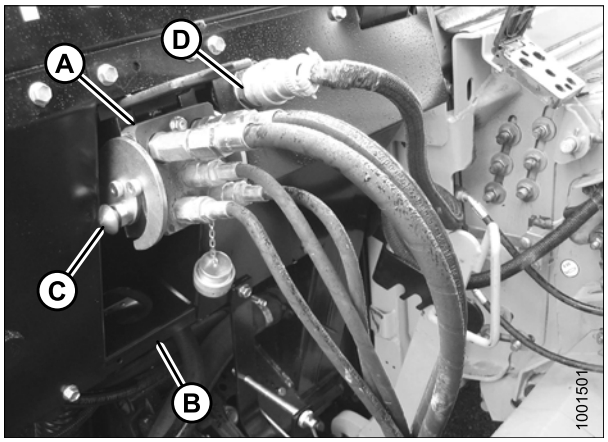


Figure 4.79: Connections

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

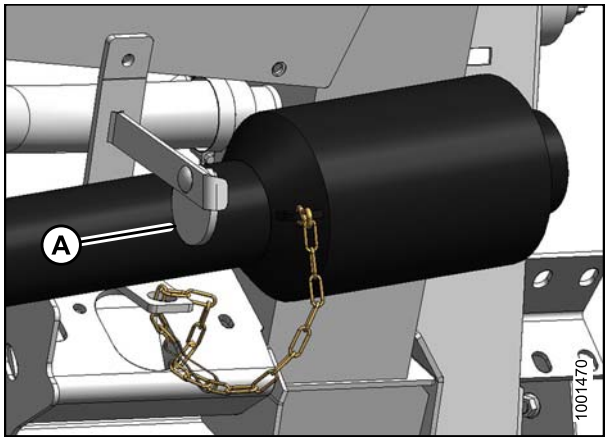


Figure 4.80: Driveline

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

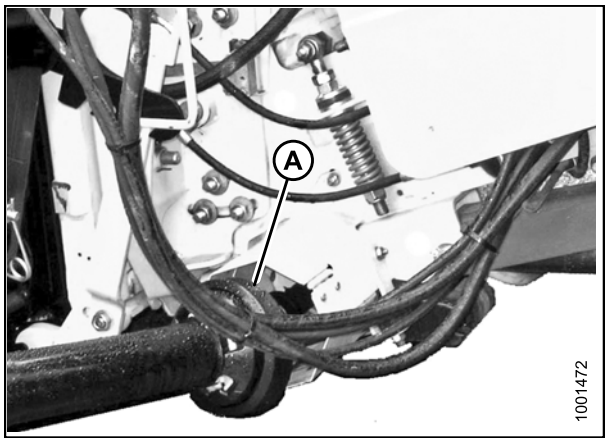


Figure 4.81: Driveline and Output Shaft

19. Disengage each adapter float lock by moving the latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK).

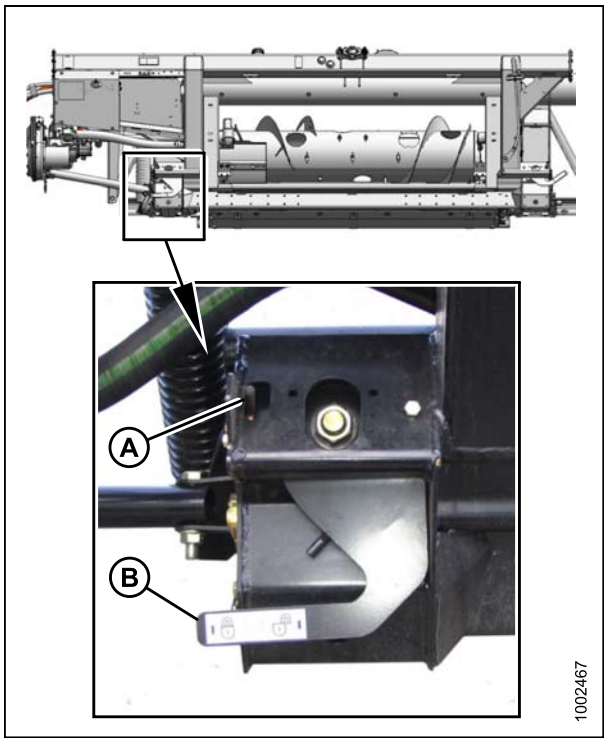


Figure 4.82: Float Lock in UNLOCK Position

4.6.2 Detaching Header from New Holland CR/CX 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.

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:
   If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

   IMPORTANT:
   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

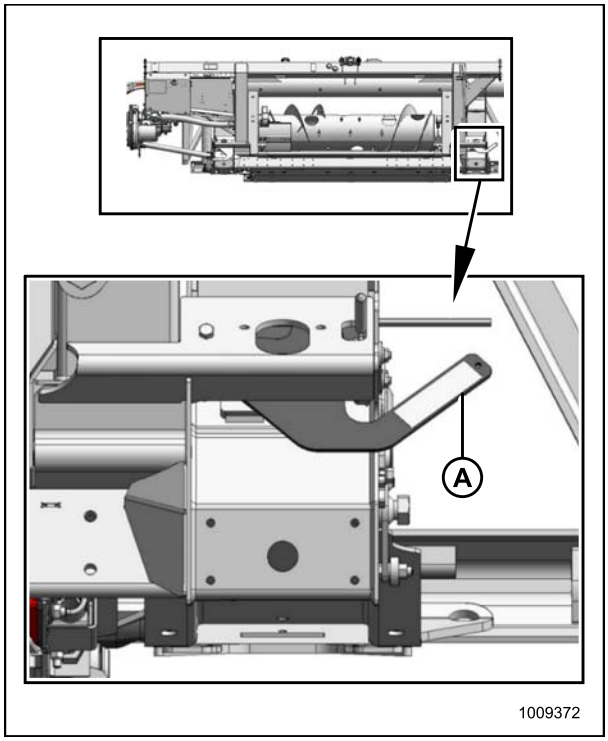


Figure 4.83: Float Locked

4. Disconnect the driveline (A) from the combine.

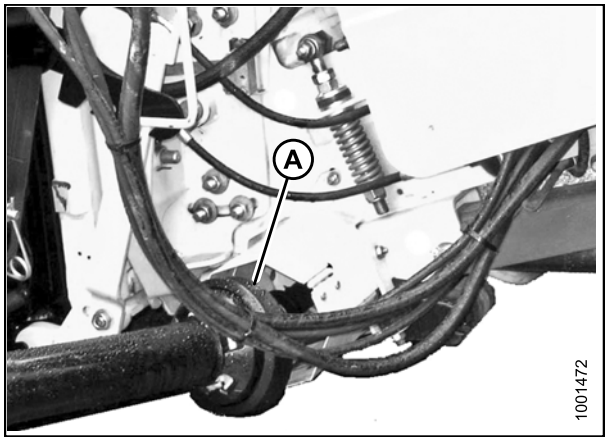


Figure 4.84: Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

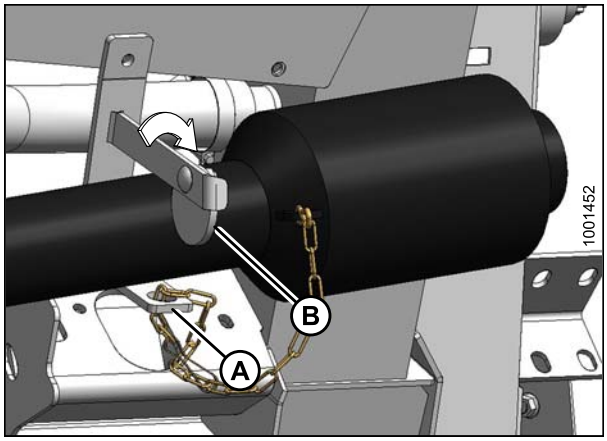


Figure 4.85: Driveline

6. Push in the lock button (B), and pull the handle (C) to release the multicoupler (A).

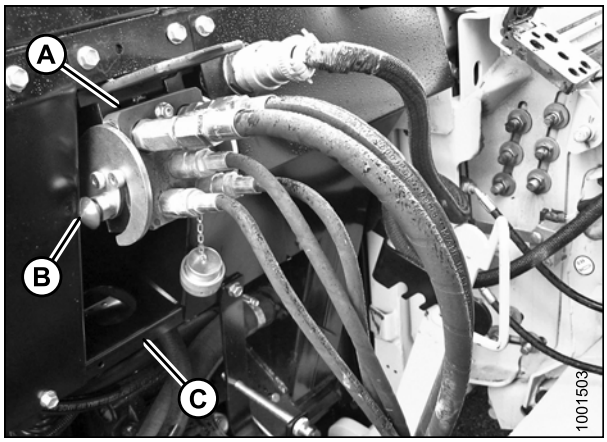


Figure 4.86: Adapter Connections

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

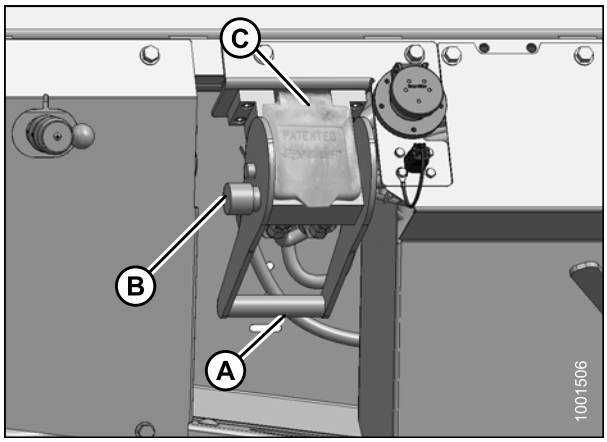


Figure 4.87: Adapter Receptacles

8. Position the hydraulic quick coupler (A) onto the storage plate (B) on the combine.

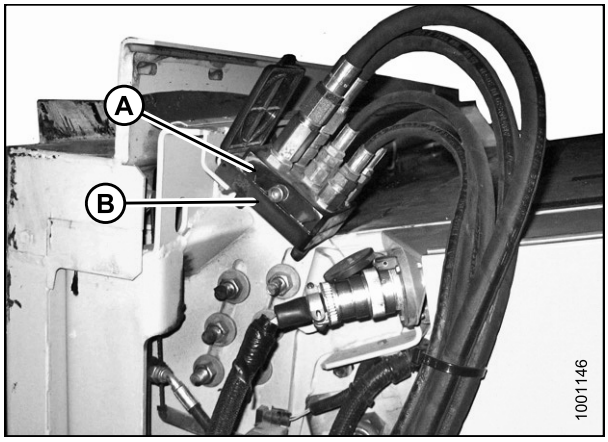


Figure 4.88: Combine Coupler

9. Remove the electrical connector (A) from the adapter.

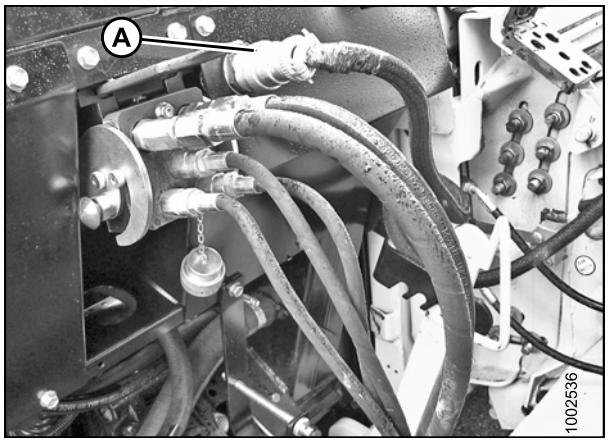


Figure 4.89: Adapter Connections

10. Connect the electrical connector to the combine at the location shown (A).

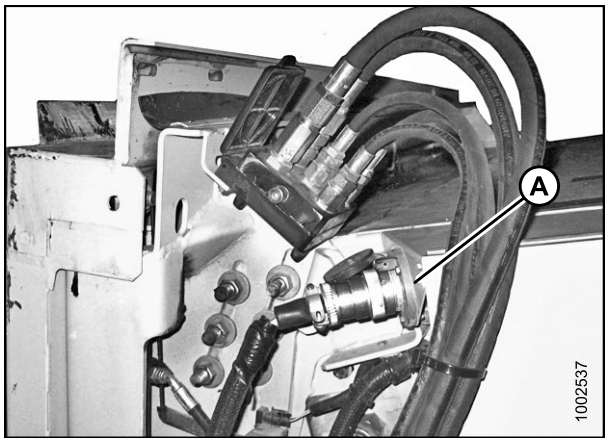


Figure 4.90: Combine Couplers

11. Replace the cover (A) on the adapter receptacle.

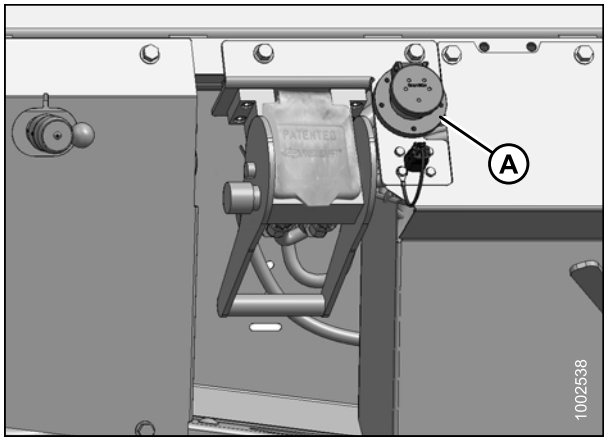


Figure 4.91: Adapter Receptacles

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

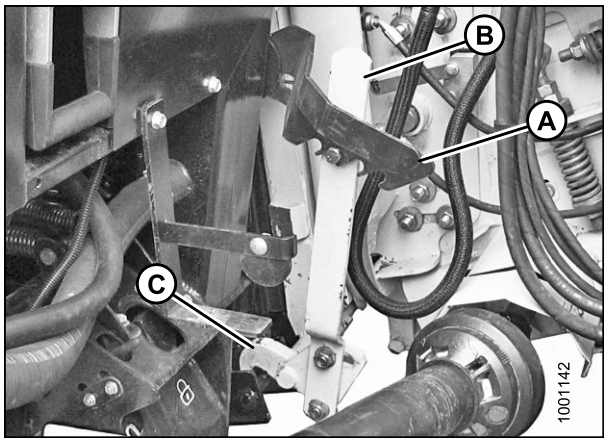


Figure 4.92: Feeder House Locks

13. Lower the feeder house until the feeder house (A) disengages the adapter support (B).
14. Back the combine slowly away from the header.

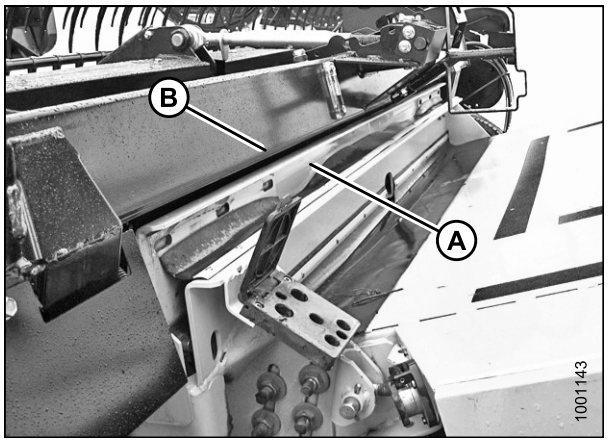


Figure 4.93: Header on Combine

4.6.3 CR Feeder Deflectors

For New Holland combines only: Short feeder 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. Remove the feeder deflectors if necessary. Refer to *5.11.3 Replacing Feed Deflectors on New Holland CR Combines, page 409*.

Long feeder kits are provided for narrow feeder house combines and can be installed to replace the short feeder deflectors.

Table 4.2 CR Feeder Kits

Combine Model	Feeder House Size	Feeder Kit Size	Part Number
CR970, CR9070, CR9080, CR9090	Wide	Short: 200 mm (7-7/8 in.)	MD #B5405
CR960, CR9060, CR940, CR9040	Narrow	Long: 325 mm (12-13/16 in.)	MD #B5404

4.7 Attaching and Detaching Header from CA25 and Combine

Attaching/detaching procedures are the same for all makes and models of combines. Headers can be attached to the CA25 from either field or transport configurations.

The procedures in this manual require that the CA25 remains attached to the combine. Attach/detach the CA25 only if performing the following tasks:

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

4.7.1 Attaching Header to CA25 and Combine

The FD75 can be attached to the CA25 from either field 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 the header. Refer to *3.7.1 Cutting Height, page 51*.

1. Prop up the hydraulic center-link (A) with a pin (or equivalent tool) at location (B) as shown.

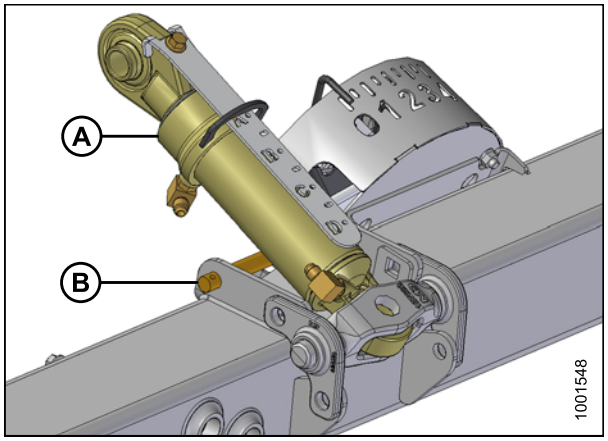


Figure 4.94: Center-Link

2. Ensure the hooks (A) are in the storage position as shown and do not interfere with the installation of the adapter arms into the channel (B).

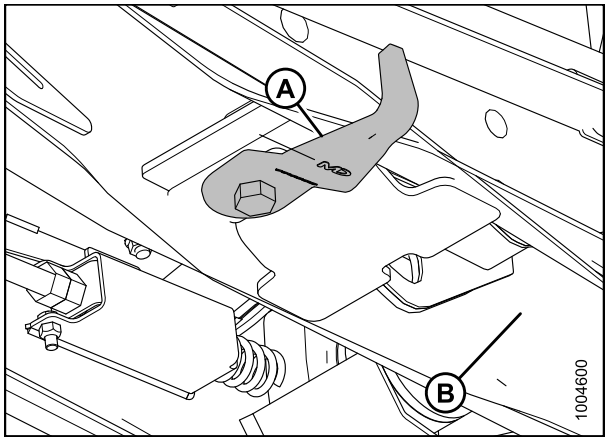


Figure 4.95: Header Underside

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

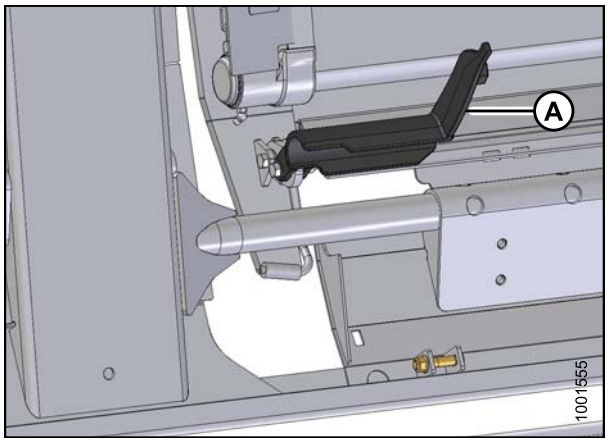


Figure 4.96: Latch

⚠ CAUTION

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

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

   IMPORTANT:
   Keep the hydraulic hoses clear to prevent damaging then while driving into the header.

7. Drive slowly forward until the adapter arms (A) contact the stops in the legs (C).

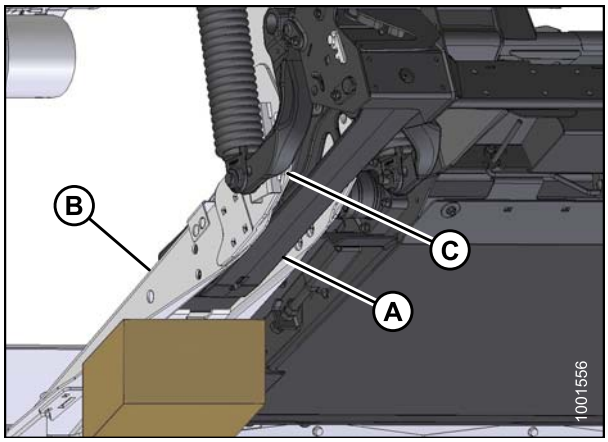


Figure 4.97: Adapter Underside

8. Start engine, and lower combine feeder house so that adapter arms (B) are aligned with header balance channels (B).
9. Drive slowly forward, maintaining alignment between adapter arms (A) and header balance channels (B).
10. 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.

11. Continue forward until adapter arms (A) contact stops in balance channels (B).
12. Adjust the length of the center-link (A) using the header angle hydraulics to approximately align the center-link eye (B) with the hole in the header bracket.
13. Shut down the engine and remove the key from the ignition.
14. Connect the center-link as follows:
    a. Pull pin (B) part way out of the bracket, and remove the prop from under the center-link (A).
    b. Install the pin (B) through the center-link (A) bracket, and secure with lynch pin.

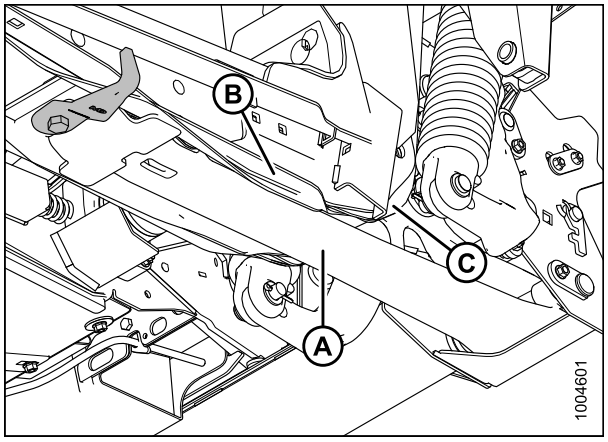


Figure 4.98: Adapter Underside

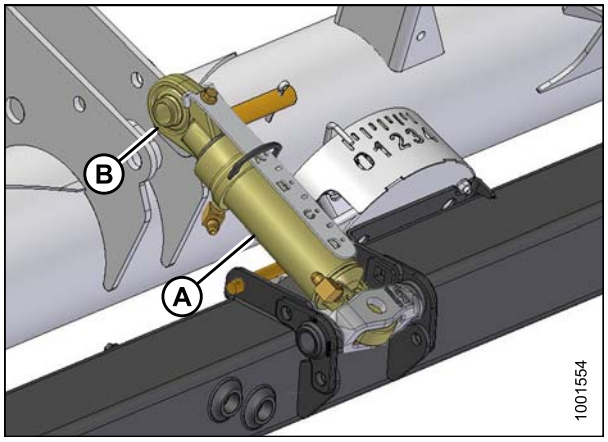


Figure 4.99: Center-Link

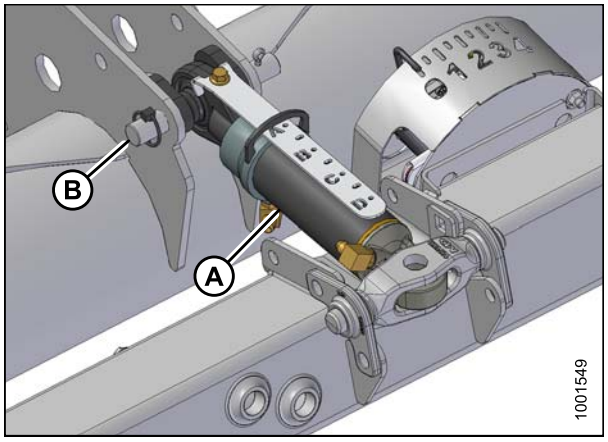


Figure 4.100: Center-Link

CAUTION

Always connect center-link before fully raising header.

15. Match the colored cable ties and connect the reel hydraulics (A) at the right end of the adapter.

CAUTION

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

16. Start the engine and slowly raise the adapter while making sure the adapter legs engage the header legs.
17. Raise the header to its full height, stop the engine, and remove the key from the ignition.
18. Engage the header lift cylinder stops on the combine.
19. Loosen nut and bolt (A), and reposition hook (B) as shown to engage adapter arm. Tighten bolt and nut (A).

CAUTION

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

20. Remove the lift cylinder locks, start the engine, and lower the header to the ground. Adjust the header angle to the shallowest setting (shortest center-link).
21. Raise the reel to its full height.
22. Shut down the engine and remove the key from the ignition.
23. Engage the reel safety props.

WARNING

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

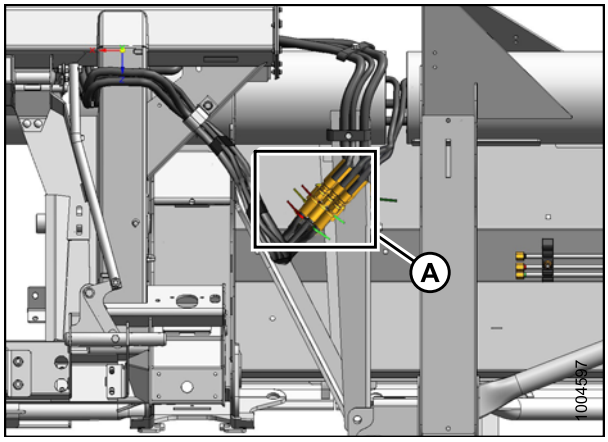


Figure 4.101: Reel Hydraulics

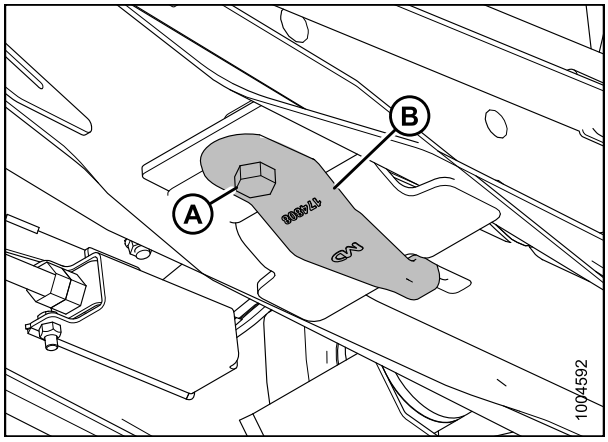


Figure 4.102: Adapter Underside

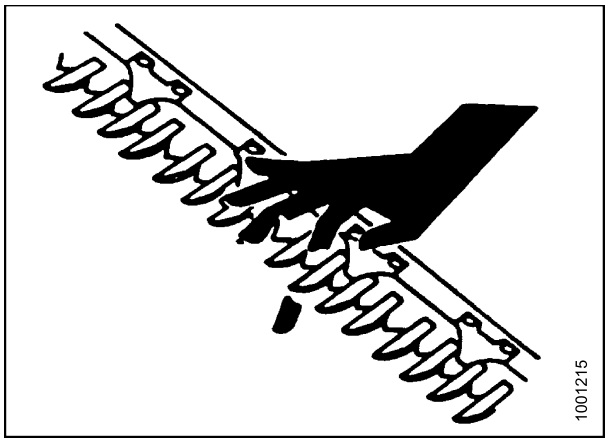


Figure 4.103: Cutterbar Hazard

24. Remove bolt (A) from both sides of the opening to allow the attachment of the adapter deck.
25. Rotate the latch (B) forward and down to engage the transition pan tube (C).

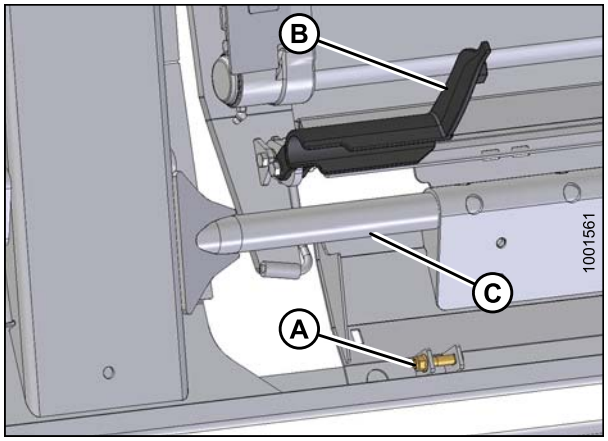


Figure 4.104: Adapter Latch

26. Use a 24 mm (15/16 in.) wrench on hex bolt (B) to rotate latch (A) downwards and slightly raise the feed deck. Install bolt (C) to lock the latch position.
27. Repeat for the opposite side of the feed draper deck.

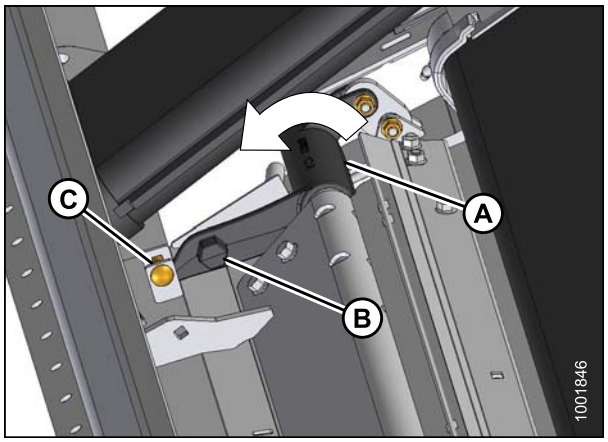


Figure 4.105: CA25 Latch

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

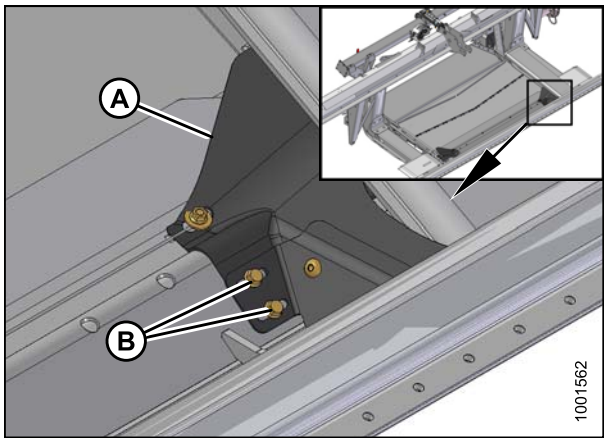


Figure 4.106: CA25 Fillers

29. Connect knife and draper drive hydraulic hoses (B) at bracket.
30. Attach electrical connector (B).

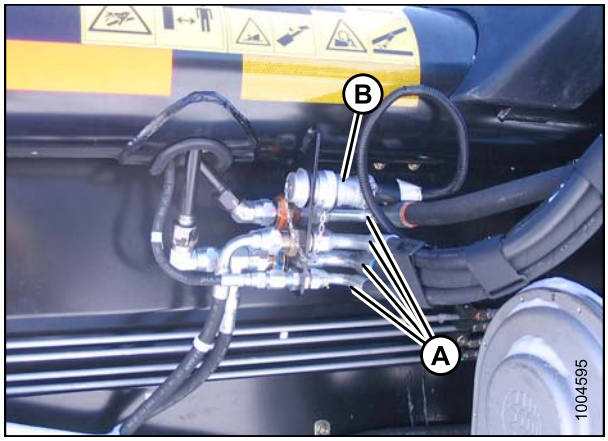


Figure 4.107: Header Connections

31. Connect the quick disconnects (if installed) as follows:
    a. Remove the covers (if installed) from the receptacles and hose ends.
    b. Check the connectors and clean if necessary.
    c. Push the hose connector (A) onto the mating receptacle (B) until the collar on the mating receptacle snaps into the lock position.

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

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

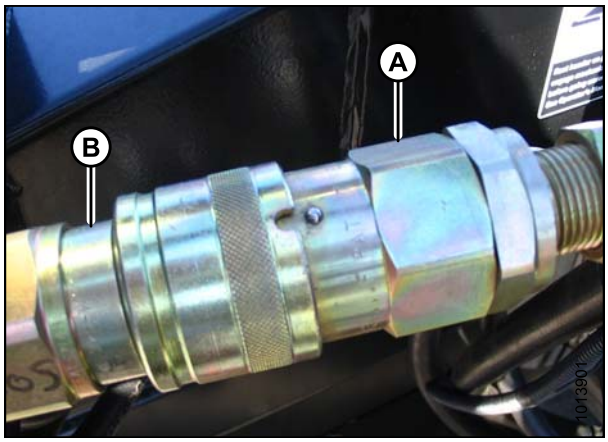


Figure 4.108: Quick Disconnect Coupling

32. Check the float and confirm the header is level. Refer to the following:
    - *Checking and Adjusting Header Float, page 58*
    - *3.9 Levelling the Header, page 237*

CAUTION

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

33. Start the combine and perform the following inspections:
    - Raise and lower the reel to ensure the hoses are properly connected.
    - Run the header to ensure the hoses are properly connected.
34. Check for leaks.

4.7.2 Detaching Header from Adapter and 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.

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 the engine and the lower header.
2. Increase clearance under the CA25 feed draper by tilting the header until the cylinder (B) is fully extended and the indicator (A) is at D.
3. Raise the reel to its full height.
4. Stop the engine and the remove key from the ignition.
5. Engage the reel safety props.

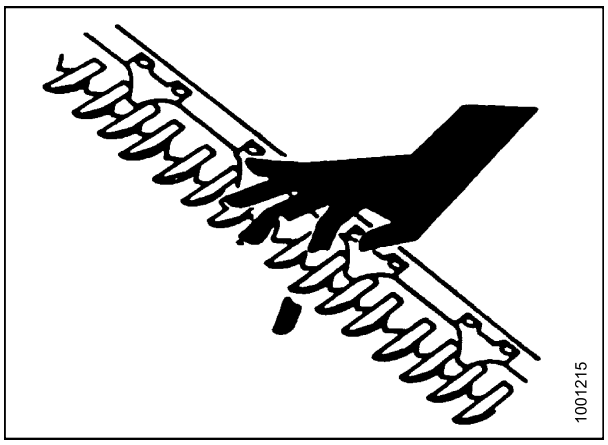


Figure 4.109: Cutterbar Hazard

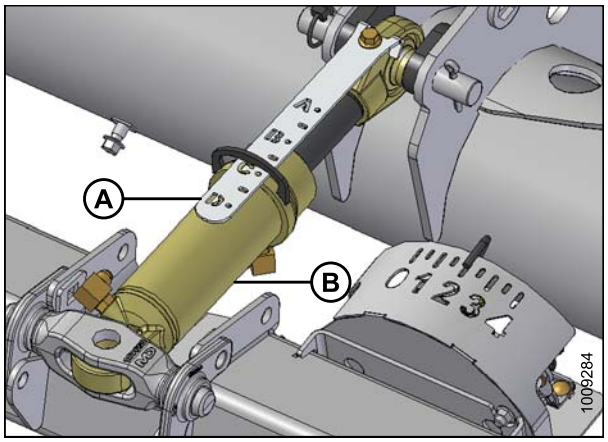


Figure 4.110: Center-Link

6. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

   NOTE:
   Stabilizer/Slow Speed Transport wheels can be used to support the header.

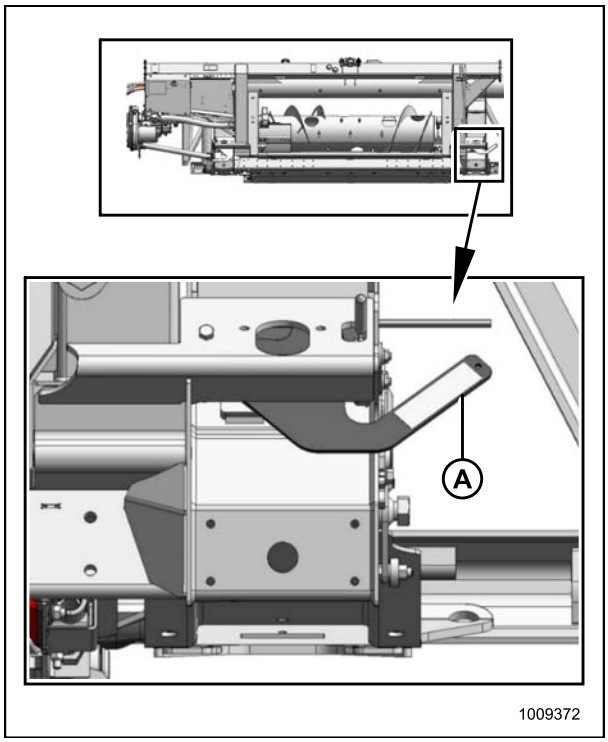


Figure 4.111: Float Locked

7. Remove the two hex head bolts (A) attaching the filler (B) to the transition pan at the front corners.
8. Fold back the filler (B) to access the latch.

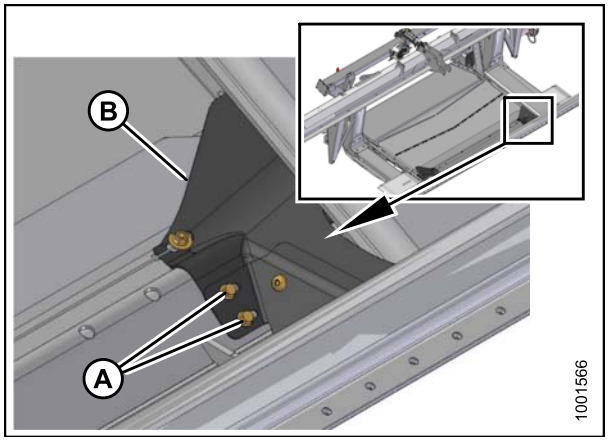


Figure 4.112: Fillers

9. Remove the 9/16 in. nut from bolt (C).
10. Use a 24 mm (15/16 in.) wrench on hex bolt (B) to rotate latch (A) downwards and slightly raise the feed deck to access and remove bolt (C).
11. Rotate the latch (A) up and back to lower the CA25 deck and disengage the transition pan tube (D).
12. Reinstall bolt (C).
13. Repeat for opposite side of the feed draper deck.

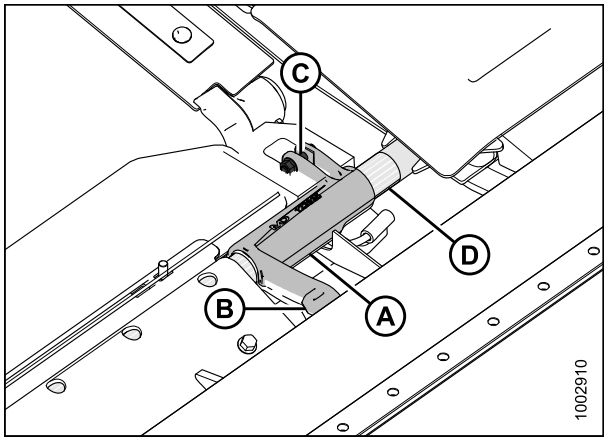


Figure 4.113: CA25 Latch

CAUTION

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

14. Disengage the reel safety props, start the engine, lower the reel, and fully raise the header.
15. Stop the engine, remove the key from the ignition, and engage the combine lift safety props.
16. Loosen nut and bolt (A), and disengage hook (B) from leg on both sides of CA25.

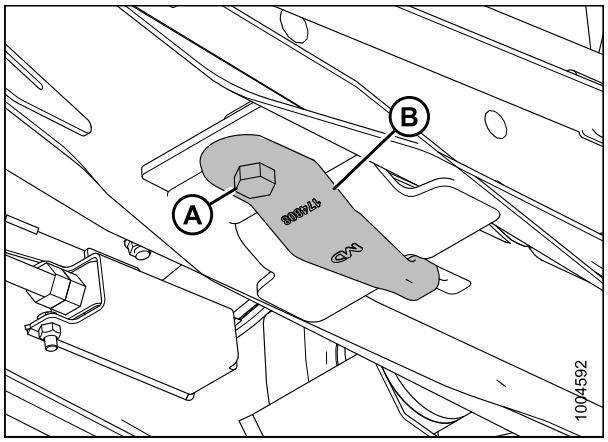


Figure 4.114: CA25 Underside

17. Rotate hook (B) 90° for storage, and retighten bolt (A) and nut.

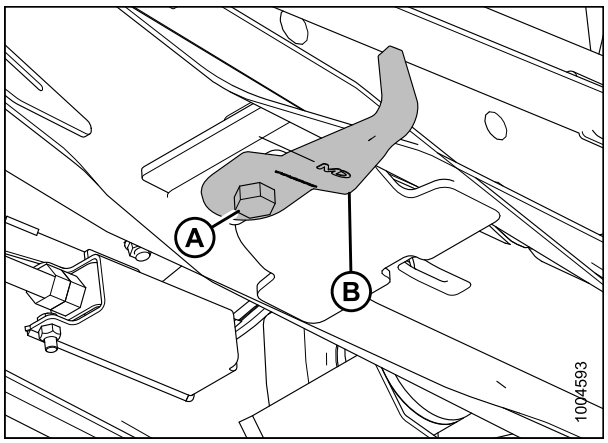


Figure 4.115: CA25Underside

18. Place a 150 mm (6 in.) block (A) under the header leg. This will assist with disconnecting the center-link.
19. Disengage combine lift cylinder locks, start engine, and lower header until the header leg rests on the block or stabilizer wheels are the ground.

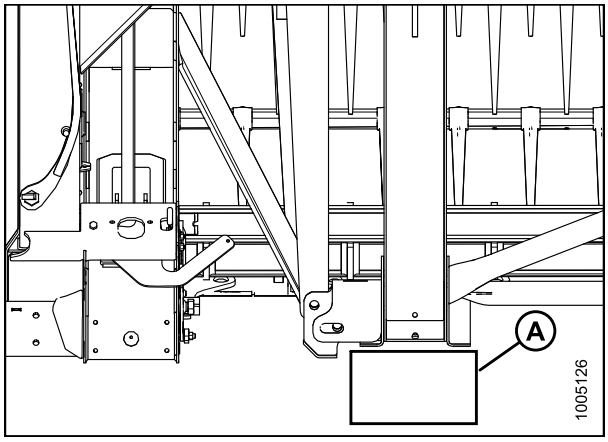


Figure 4.116: Header Leg on Block

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

    NOTE:
    It may be necessary to raise or lower the feeder house to adjust the length of the center-link and relieve excess load on the center-link.

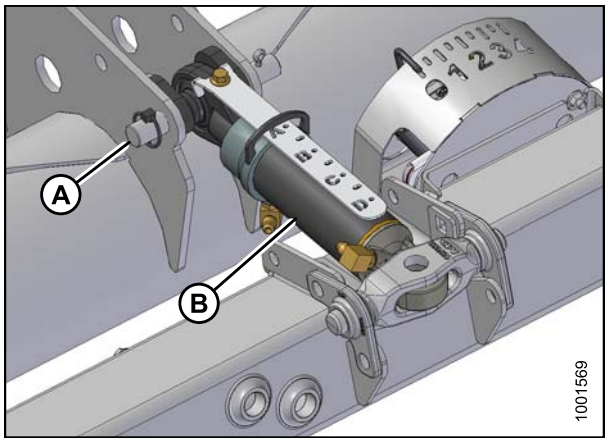


Figure 4.117: Hydraulic Center-Link

21. Disconnect the knife and draper drive hydraulic hoses (A). Immediately cap hoses to prevent oil loss.
22. Store and secure the hoses on the adapter frame.
23. Disconnect the electrical connector (B) by turning the collar counterclockwise and pulling the connector to disengage.
24. Store and secure the hoses and electrical connector on the adapter.

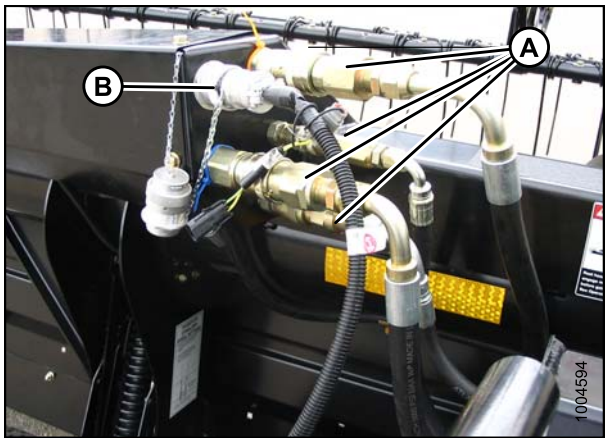


Figure 4.118: Header Connections

NOTE:

- If on the ground: Push reel fully forward to reduce oil loss.
- If on transport: Pull reel fully back.
- If colored ties on hydraulic hoses are missing, replace them before disconnecting hoses.

25. Disconnect electrical connector (B).
26. Disconnect knife and draper drive hydraulic hoses (A) at bracket. Cap off ends immediately to avoid loss of oil.
27. Store and secure hoses on adapterfloat module frame.
28. Disconnect the quick disconnects (if installed) as follows:
    a. Line up the slot (A) in the collar with the pin (B) on the connector.
    b. Push the collar towards the pin, and pull the connector to disengage.
    c. Install plugs or caps on the hose ends (if equipped).
29. Disconnect the reel hydraulics (A). Immediately cap hoses to prevent oil loss.

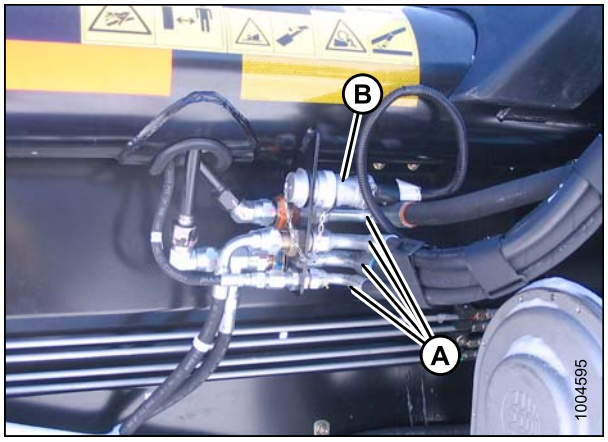


Figure 4.119: Header Connections

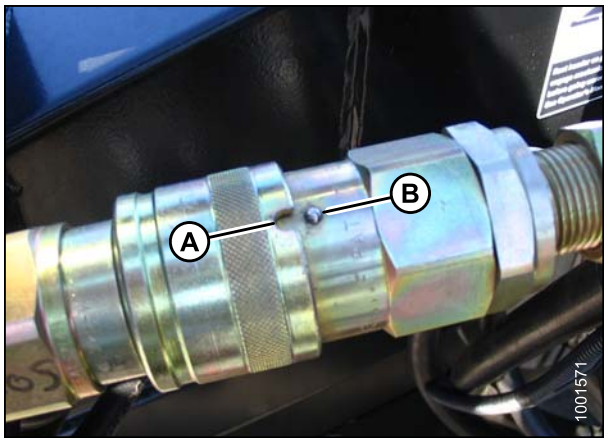


Figure 4.120: Quick Disconnect Coupling

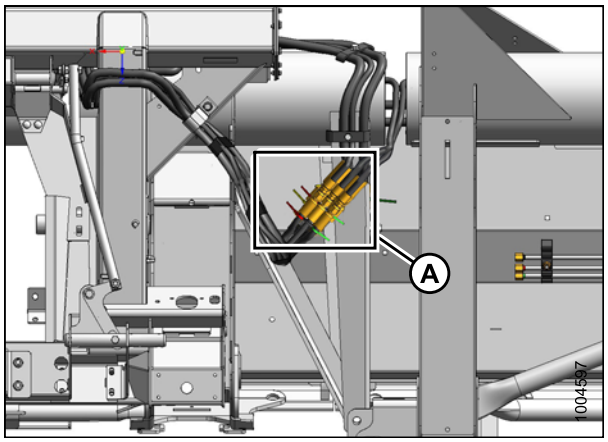


Figure 4.121: Reel Hydraulics

30. Store and secure the hoses and electrical connector on the adapter at position (A) as shown.
31. Ensure the header is on the ground or is supported by the wheels in transport mode.

CAUTION

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

32. Start the engine and slowly back the combine away from header.
33. Stop the engine and remove the key from the ignition.

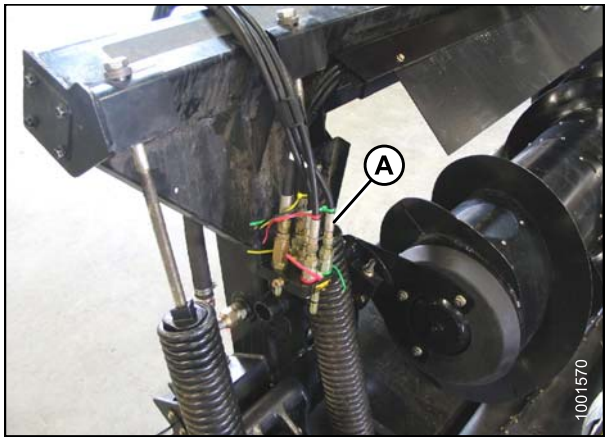


Figure 4.122: Hose Storage

5 Maintenance and Servicing

The following instructions provide information about routine header service. Detailed maintenance and service information is contained in the technical service manual that is available from your Dealer. A parts catalog is provided in the plastic manuals case inside the left endshield.

Log hours of operation and use the maintenance record provided (refer to *5.3.1 Maintenance Schedule/Record, page 316*) to keep track of your scheduled maintenance.

5.1 Preparing Machine for Servicing

DANGER

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

CAUTION

To avoid personal injury, follow all the safety precautions listed before servicing header or opening drive covers.

1. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
2. Stop the engine and remove the key from the ignition.
3. Engage the park brake.
4. Wait for all moving parts to stop.

5.2 Maintenance Specifications

5.2.1 Recommended Fluids and Lubricants

Ensure your machine operates at top efficiency by using clean fluids and lubricants only.

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

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) 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	2.2 liters (2.3 quarts)
			Main drive gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	SAE 15W-40	Compliant with SAE specs for API class SJ and CH-4 engine oil	Header drive systems reservoir	60 liters (16 US gallons)

5.2.2 Installing a Sealed Bearing

1. Clean the shaft and apply a rust preventive coating.
2. Install the flangette (A), bearing (B), second flangette (C), and lock the collar (D).

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

3. Install, but do not tighten, the flangette bolts (E).
4. Position the shaft correctly, and lock the lock collar with a punch. Lock the collar in the same direction the shaft rotates, and tighten the setscrew in the collar.
5. Tighten the flangette bolts (E).
6. Loosen the flangette bolts on the mating bearing one turn and then retighten. This will enable the bearing to properly line up.

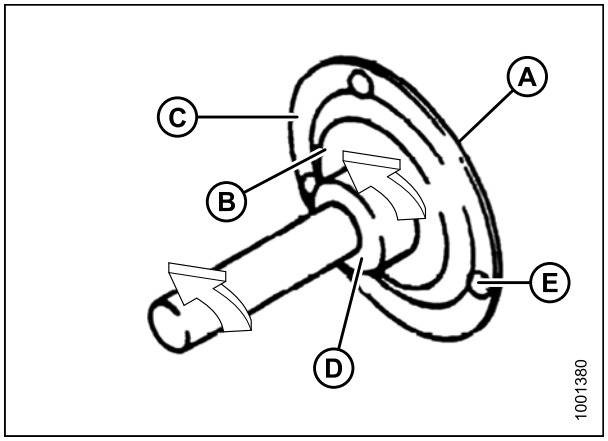


Figure 5.1: Sealed Bearing

5.3 Maintenance Requirements

Periodic maintenance requirements are organized according to service intervals.

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following the maintenance schedule will increase your machine's life.

When servicing the machine, refer to the appropriate section in this "Maintenance and Servicing" chapter and use only fluids and lubricants specified in *5.2.1 Recommended Fluids and Lubricants, page 314*.

Log hours of operation, use the maintenance record, and keep copies of your maintenance records (refer to *5.3.1 Maintenance Schedule/Record, page 316*).

If a service interval specifies more than one timeframe, e.g., "100 hours or annually", service the machine at whichever interval is reached first.

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

CAUTION

Carefully follow safety messages. Refer to *5.1 Preparing Machine for Servicing, page 313* and *1 Safety, page 1*.

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 *5.3.2 Break-In Inspection, page 318*																						
End of Season, Refer to *5.3.4 End-of-Season Service, page 319*																						
10 Hours or Daily[14]																						
✓	Hydraulic hoses and lines[15]																					
✓	Auger Drive Chain Tension																					
✓	Knife sections, guards, and hold-downs[15]																					
✓	Tire pressure[15]																					
♦	Knife (except in sandy conditions)[15]																					
25 Hours																						
✓	Hydraulic oil level at reservoir[15]																					
♦	Knifehead(s)[15]																					
50 Hours																						
✹	Draper roller bearings																					
♦	Driveline and driveline universals																					
▲	Knife drive box oil - first 50 hours only																					
100 Hours or Annually[14]																						
✓	Auger to pan and feed draper clearance																					
✓	Draper seal																					
✓	Gearbox lubricant level																					
✓	Reel drive chain tension																					
✓	Reel tine/cutterbar clearance																					

14. Whichever occurs first.
15. A record of daily maintenance is not required, but is at the Owner's/Operator's discretion.

Maintenance Record	Action:	✓ - Check							♦ - Lubricate							▲ - Change						
✓	Knife drive belt tension																					
✓	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																					
250 Hours or Annually[14]																						
✓	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																					
500 Hours or Annually[14]																						
✓	Draper seal																					
♦	Reel shaft bearings																					
♦	Stabilizer/slow speed transport wheel bearings																					
✓	Gearbox chain tension																					
1000 Hours or 3 Years[14]																						
▲	Knife drive box lubricant																					
▲	Gearbox lubricant																					
▲	Hydraulic oil																					

5.3.2 Break-In Inspection

Break-in inspections involve checking belts, fluids, and performing general machine inspections for loose hardware or other areas of concern. Break-in inspections ensure that all components can operate for an extended period without requiring service or replacement.

Inspection Interval	Item	Refer to
5 Minutes	Check hydraulic oil level in reservoir.	*5.4.1 Checking Oil Level in Hydraulic Reservoir, page 338*
5 Hours	Check for loose hardware and tighten to required torque.	*8.1 Torque Specifications, page 497*
	Check knife drive belts tension (check periodically for first 50 hours).	*Tensioning Knife Drive Belts, page 396*
10 Hours	Check knife drive box mounting bolts.	*Checking Mounting Bolts, page 387*
50 Hours	Change adapter gearbox oil.	*Changing Oil in Header Drive Gearbox, page 337*
	Change adapter hydraulic oil filter.	*5.4.4 Changing Oil Filter, page 340*
	Change knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 394*
	Check gearbox chain tension.	*5.6.5 Adjusting Tension on Gearbox Drive Chain, page 349*

5.3.3 Preseason/Annual Service

Perform the following procedures at the beginning of each operating season:

CAUTION

- **Review this manual to refresh your memory on the safety and operating recommendations.**
- **Review all the safety decals and other decals on the header and note the hazard areas.**
- **Be sure all the 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. Lubricate the machine completely. Refer to *Service Intervals, page 320*.
2. Adjust the tension on the drive belts. Refer to *Tensioning Knife Drive Belts, page 396*.
3. Perform all the annual maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 316*.

5.3.4 End-of-Season Service

Perform the following procedures 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.

1. Clean the header thoroughly.
2. Store the machine in a dry, protected place if possible. If storing outside, always cover with a waterproof canvas or other protective material.

   NOTE:
   If storing the machine outside, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so water and snow will not accumulate on the drapers. The weight of water and snow accumulation puts excessive stress on the drapers and header.

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.
10. Check for broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
11. Replace or tighten any missing or loose hardware. Refer to *5.2 Maintenance Specifications, page 314*.

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.**

Figure 5.2: Hydraulic Pressure Hazard

- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT:
Keep hydraulic coupler tips and connectors clean. Allowing dust, dirt, water, or foreign material to enter the system is the major cause of hydraulic system damage. Do NOT attempt to service hydraulic systems in the field. Precision fits require a perfectly clean connection during overhaul.

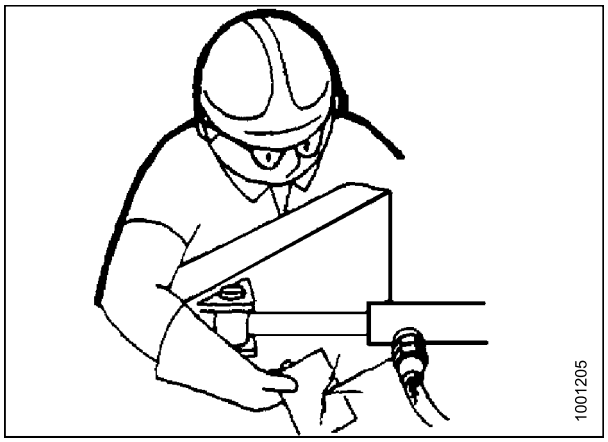


Figure 5.3: Testing for Hydraulic Leaks

5.3.6 Lubrication and Servicing

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in *5.1 Preparing Machine for Servicing, page 313*.

Refer to *5.2.1 Recommended Fluids and Lubricants, page 314* 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 316*.

Service Intervals

Every 10 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knife: Lubricate the knife every 10 hours or daily, except in sandy conditions.

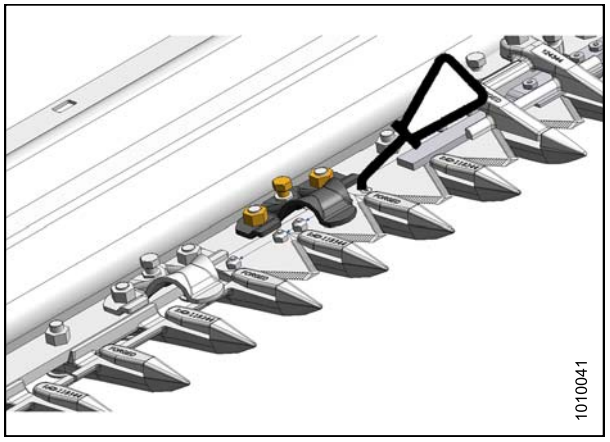


Figure 5.4: Every 10 Hours or Daily

Every 25 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knifehead: Lubricate the knifehead every 25 hours. Check for signs of excessive heating on the first few guards after greasing. If required, relieve the pressure by pressing the check-ball in the grease fitting.

IMPORTANT:
To prevent binding and/or excessive wear caused by knife pressure on the guards, do **NOT** over grease the knifehead (A). Apply only one to two pumps using a mechanical grease gun (do **NOT** use an electric grease gun). 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 371*.

Figure 5.5: Every 25 Hours

Every 50 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

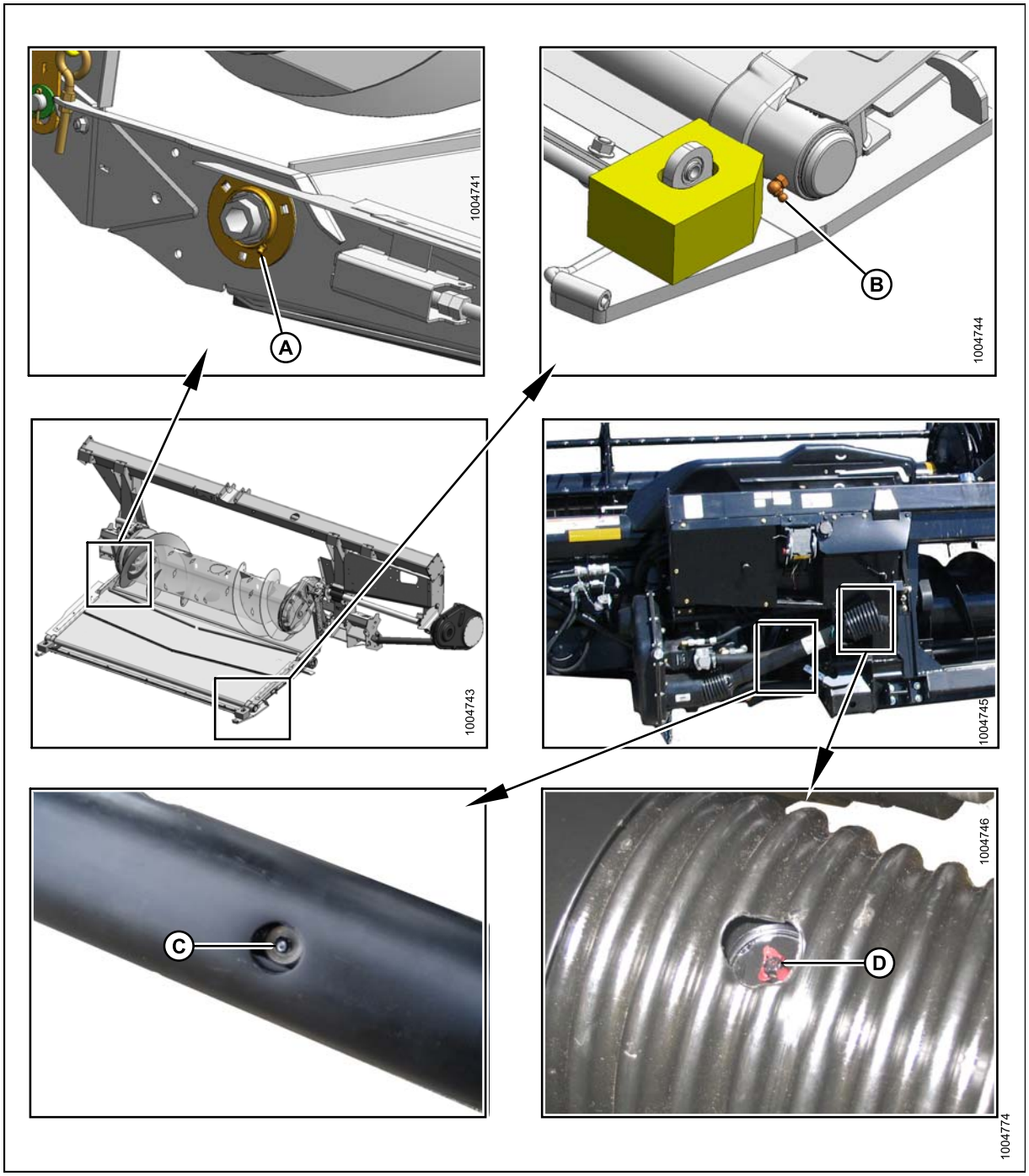


Figure 5.6: Every 50 Hours

A - Drive Roller Bearing **B - Idler Roller Bearing (Both Sides)** **C - Driveline Slip Joint**[16] **D - Driveline Universal (Two Places)**

16. Use high temperature extreme pressure (EP2) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Every 100 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

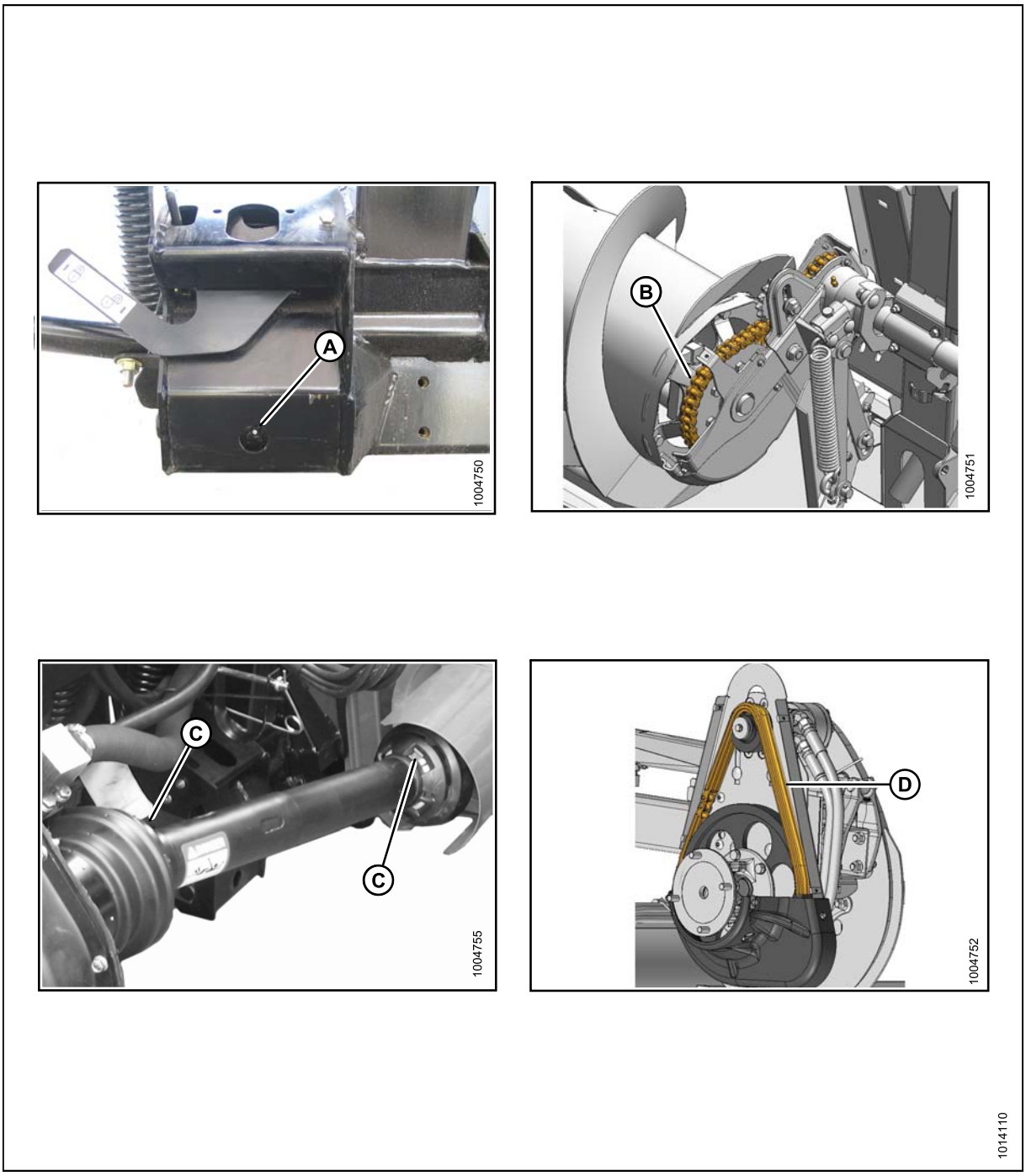


Figure 5.7: Every 100 Hours

A - Float Pivot - Right- and Left-Hand
B - Auger Drive Chain. Refer to *Lubricating Auger Drive Chain, page 333*
C - Driveline Guard - Two Places
D - Reel Drive Chain- One Place. Refer to *Lubricating Reel Drive Chain – Single Reel, page 331* or *Lubricating Reel Drive Chain – Double Reel, page 331*

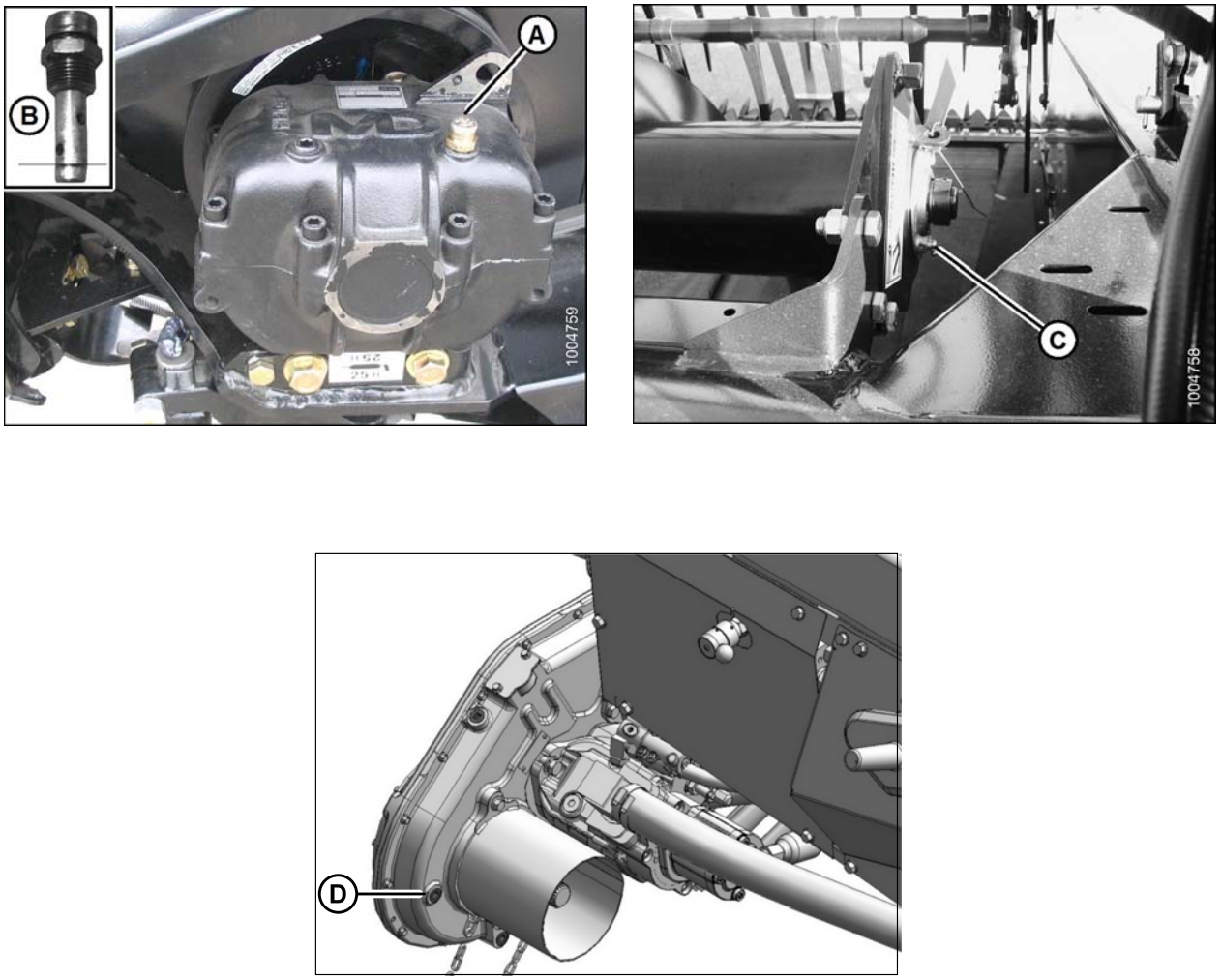


Figure 5.8: Every 100 Hours

A - Knife Drive Box (Check Oil Level Between Lower Hole and End of Dipstick [B])
C - Upper Cross Auger Bearing (One Place)
D - Main Drive Gearbox Oil Level. Refer to *Lubricating Header Drive Gearbox, page 336*

Every 250 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

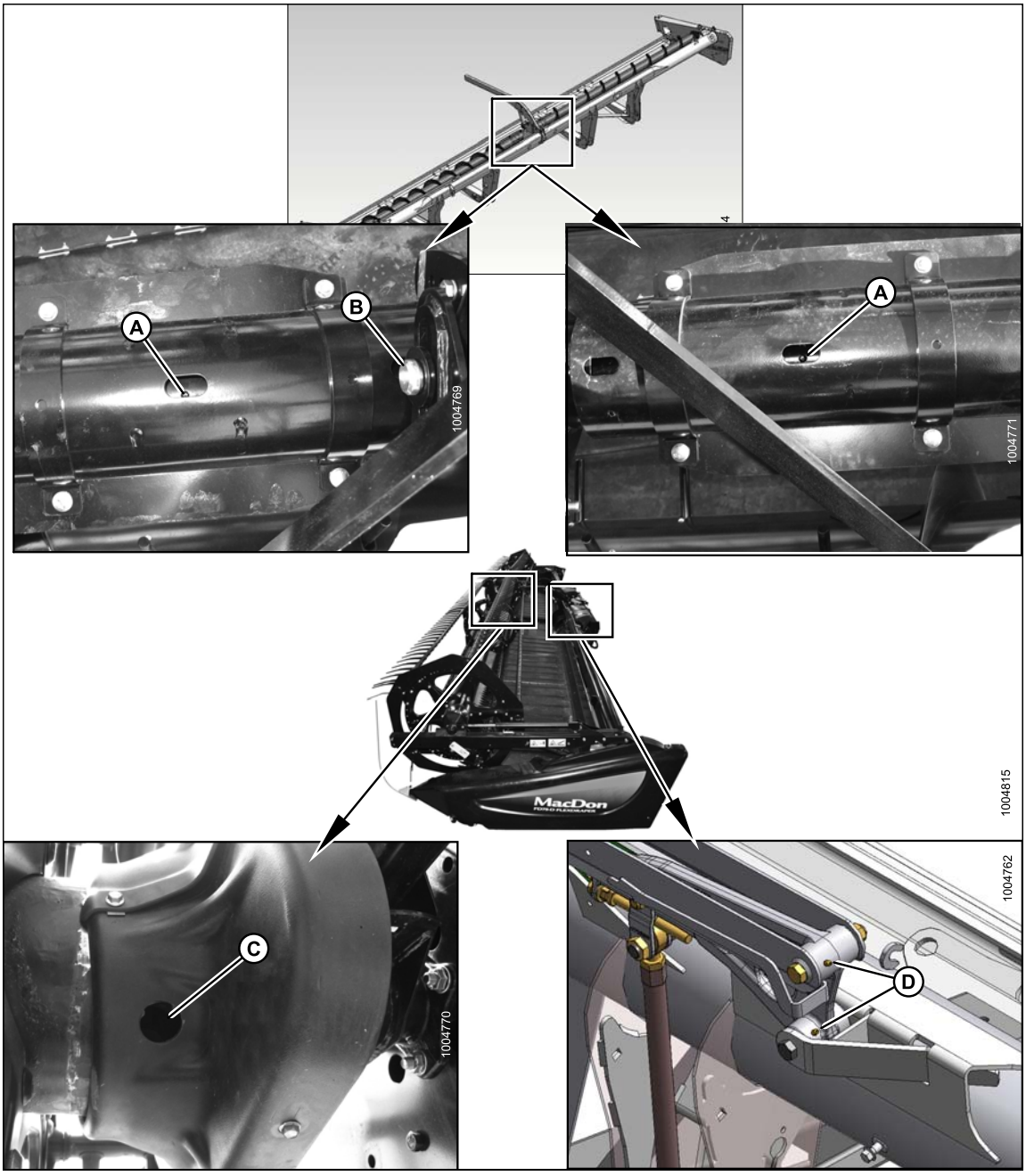


Figure 5.9: Every 250 Hours

A - Upper Cross Auger U-joint and Bearing[17]
B - Upper Cross Auger Bearing (Two Places)
C - Reel U-joint (One Place)
D - Flex Linkage (Two Places) - Both Sides

17. 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.

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

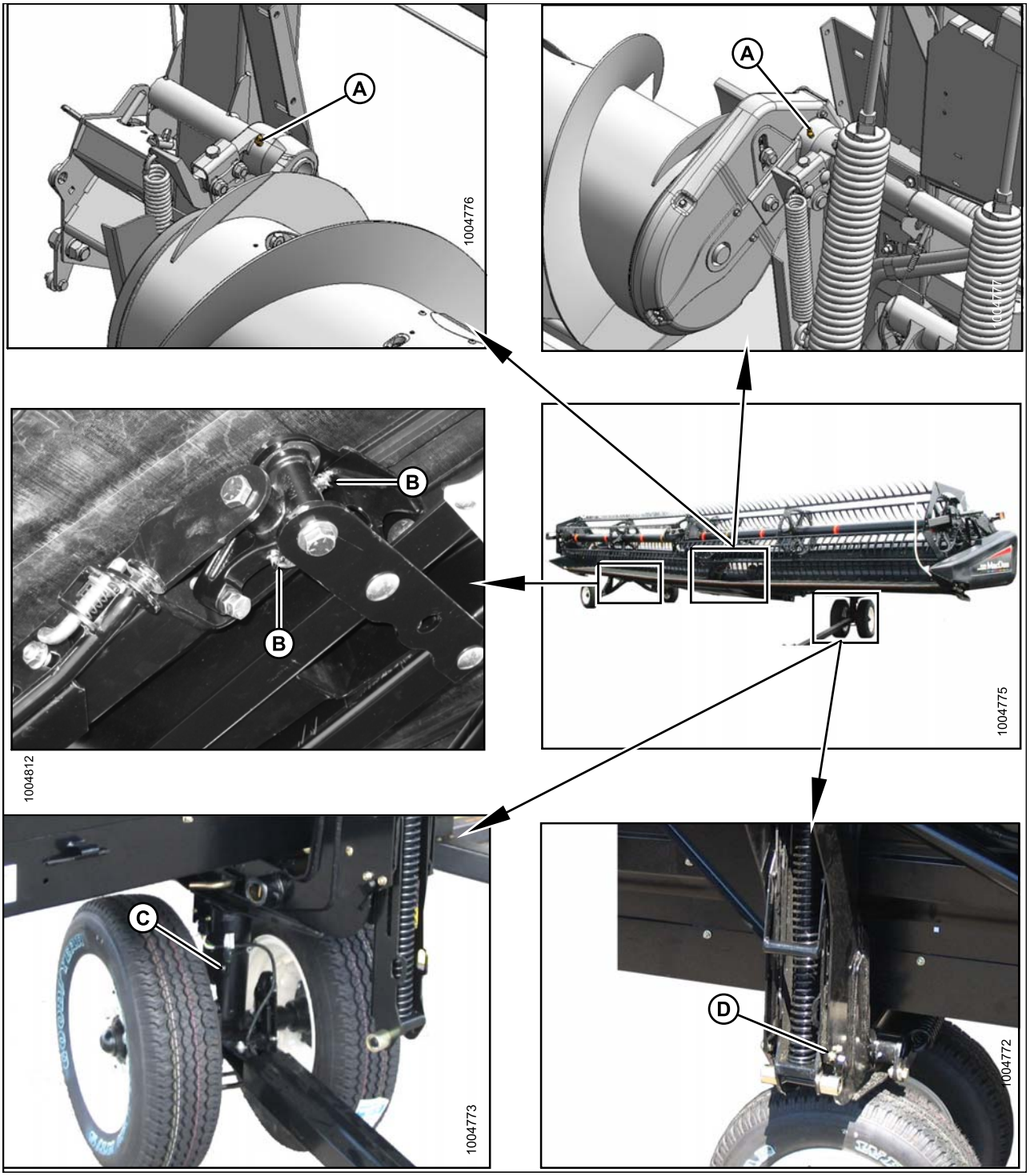


Figure 5.10: Every 250 Hours

A - Auger Pivots
B - Rear Axle Pivots
C - Front Wheel Pivot (One Place)
D - Frame/Wheel Pivot (One Place) - Both Sides

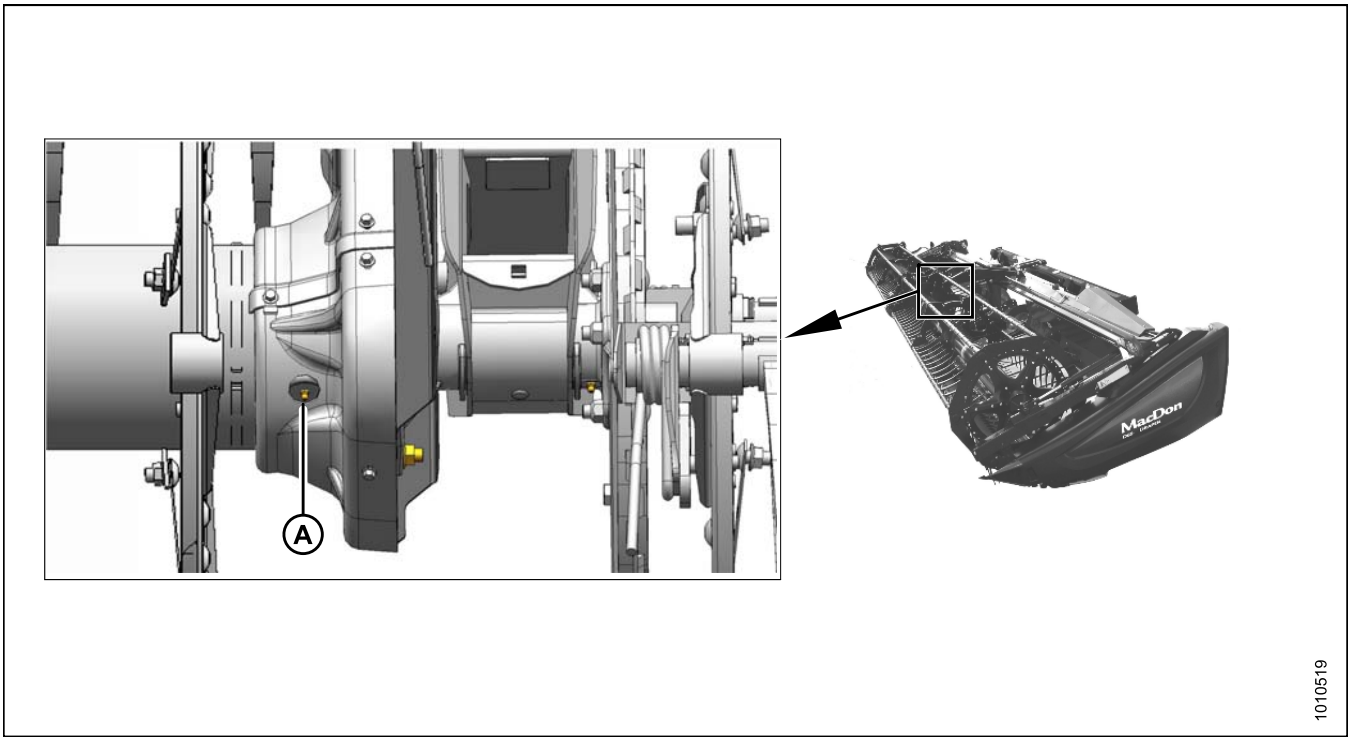


Figure 5.11: Every 250 Hours

A - Double Reel U-Joint[18]

Every 500 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

18. 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). Increase grease interval as U-joint wears and requires more than six pumps.

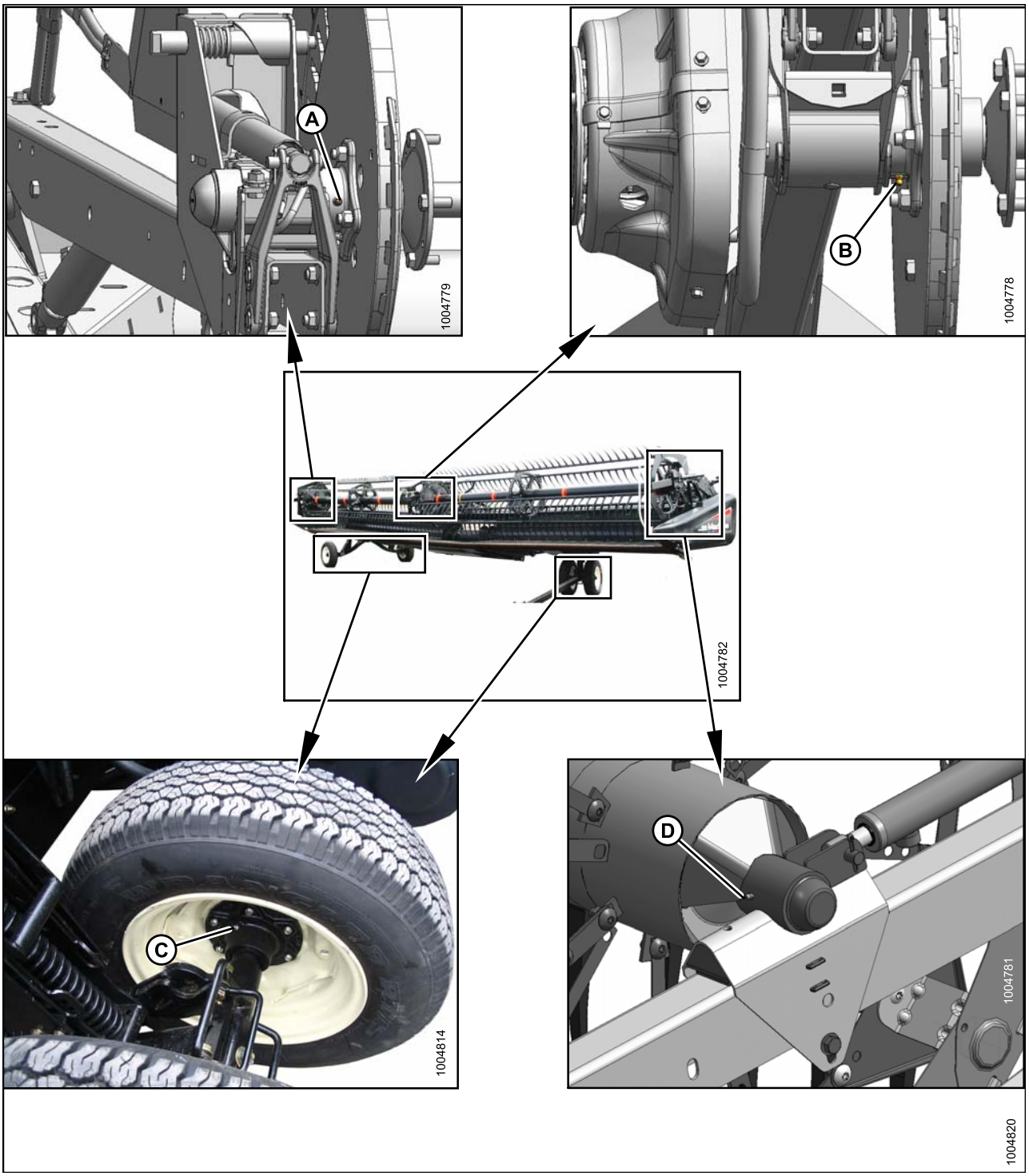


Figure 5.12: Every 500 Hours

A - Reel Right Bearing (One Place)
B - Reel Center Bearing (One Place)
C - Wheel Bearings (Four Places)
D - Reel Left Bearing (One Place)

Greasing Procedure

Greasing points are marked on machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals are provided on header and adapter back 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.

Refer to *5.2.1 Recommended Fluids and Lubricants, page 314* 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 316*.

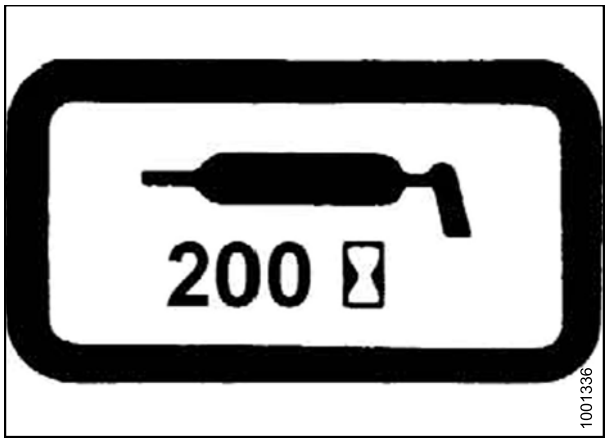


Figure 5.13: Greasing Interval Decal

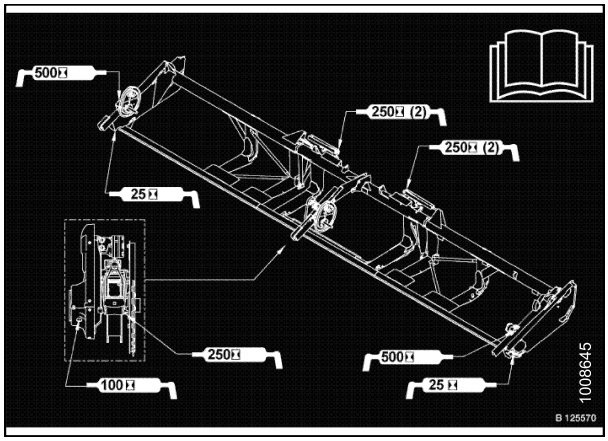


Figure 5.14: FD75 Master Grease Point Decal

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 high temperature, extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

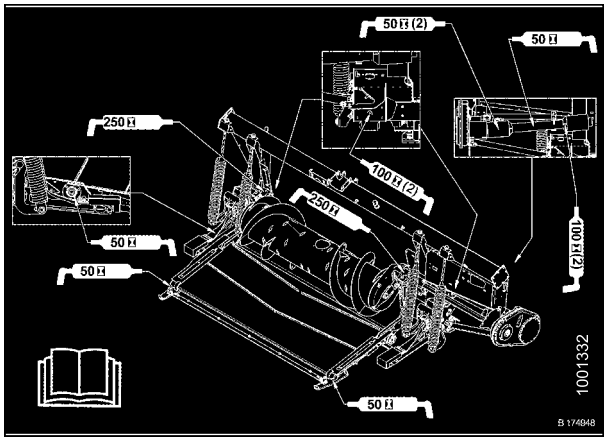


Figure 5.15: CA25 Adapter Master Grease Point Decal

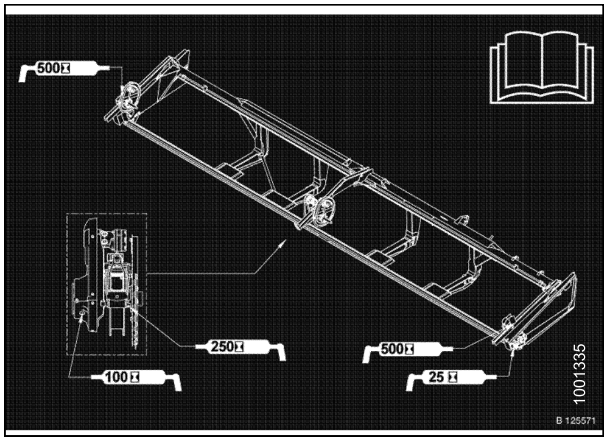


Figure 5.16: Single-Knife Header Master Grease Point Decal

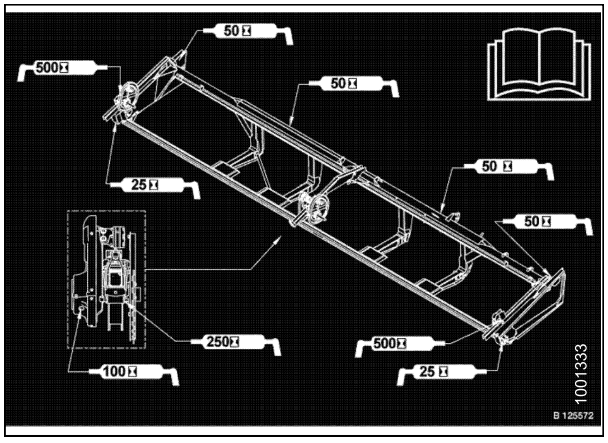


Figure 5.17: Double-Knife Header Master Grease Point Decal

Lubricating Reel Drive Chain – Single Reel

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. Apply a liberal amount of grease to the chain (A).

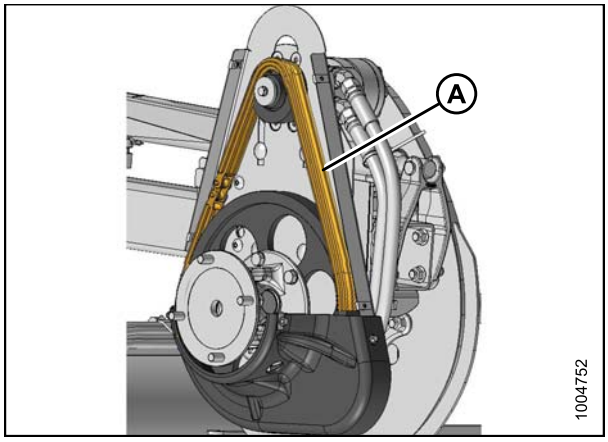


Figure 5.18: Drive Chain

2. Position the drive cover (B) onto the reel drive and secure with four bolts (A).

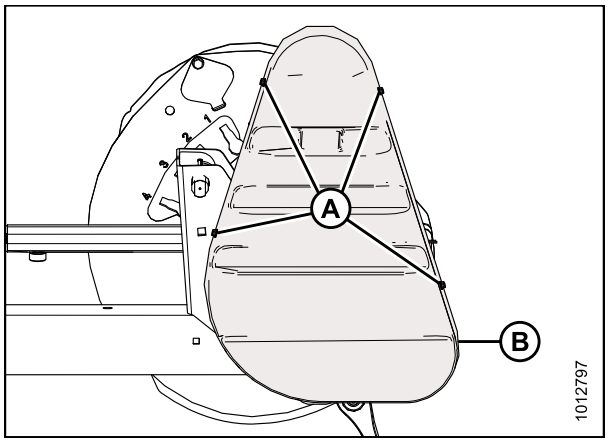


Figure 5.19: Drive Cover – Single Reel

Lubricating Reel Drive Chain – Double Reel

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. Stop the engine and remove the key from the ignition.
2. Remove six bolts (A) securing the upper cover (B) to the reel drive and lower cover (C).

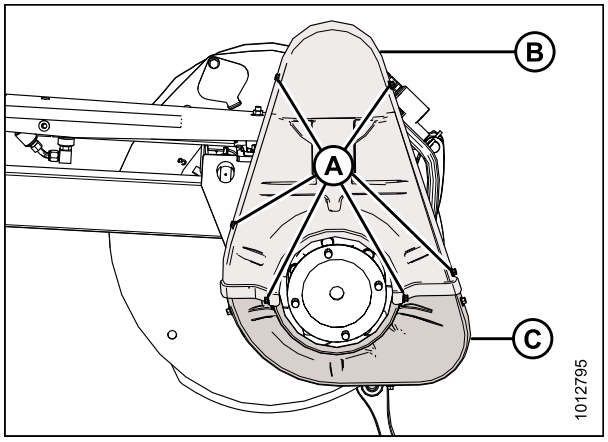


Figure 5.20: Drive Cover – Double Reel

3. Remove three bolts (A) and remove the lower cover (B) if necessary.

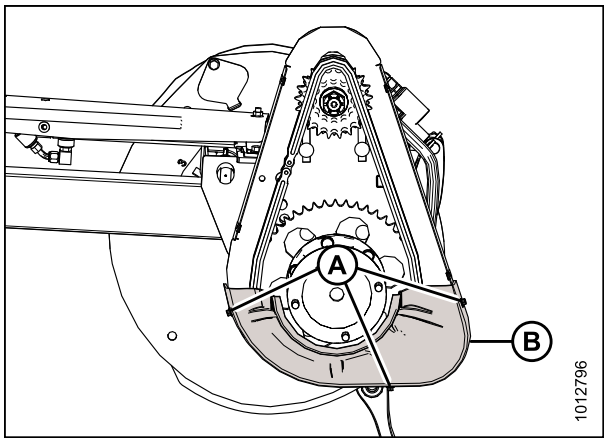


Figure 5.21: Drive Cover – Double Reel

4. Apply a liberal amount of grease to the chain (A).

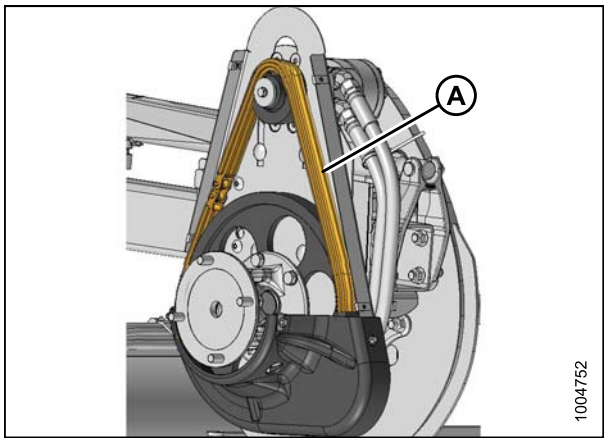


Figure 5.22: Drive Chain

5. Position the lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

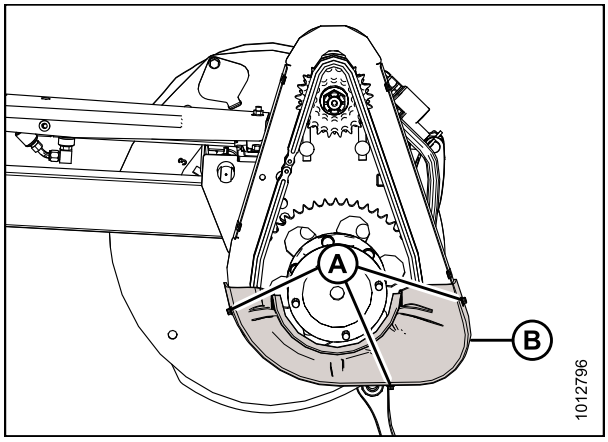


Figure 5.23: Drive Cover – Double Reel

6. Position the upper drive cover (B) onto the reel drive and lower cover (C) and secure with six bolts (A).

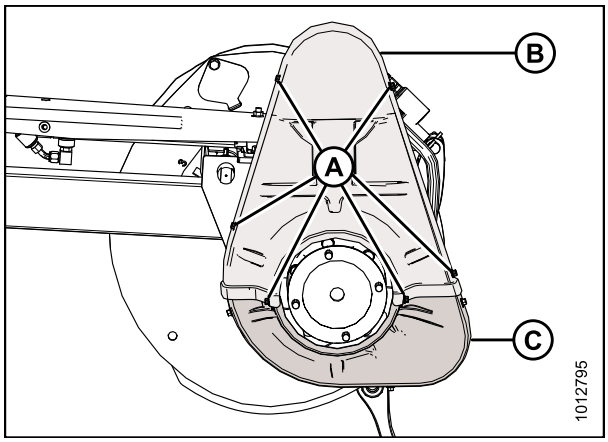


Figure 5.24: Drive Cover – Double Reel

Lubricating Auger Drive Chain

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.

Lubricate the auger drive chain every 100 hours. Lubrication can be done with the CA25 attached to the combine, but it is easier with the CA25 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.

1. Remove the six bolts (A) securing the upper half (C).
2. Loosen two bolts (B) at the rear of the cover.
3. Rotate the upper half (C) forwards to remove.

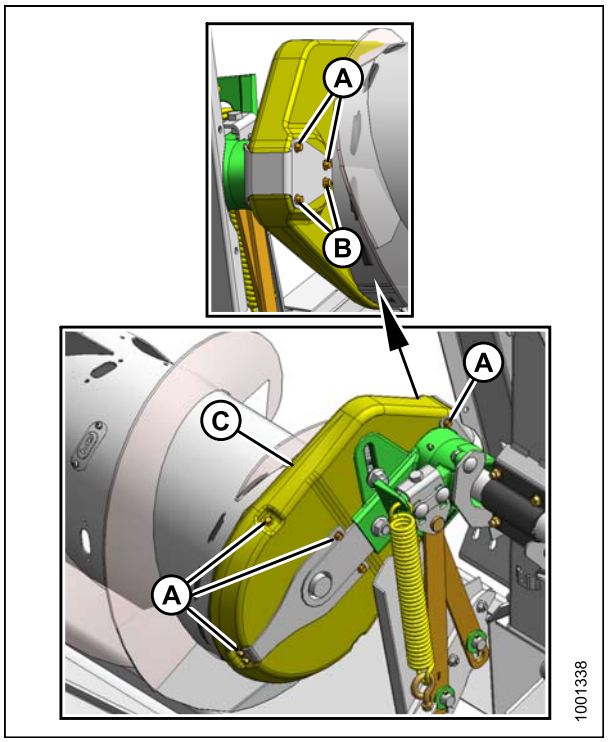


Figure 5.25: Auger Drive

4. Apply a liberal amount of grease to the chain (A), drive sprocket (B), and idler sprocket (C).

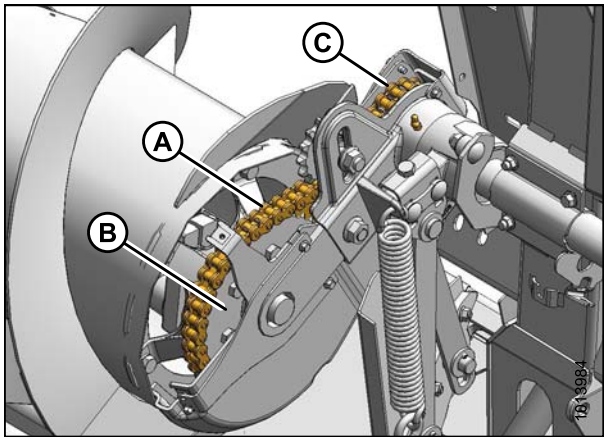


Figure 5.26: Auger Drive Chain

5. Reinstall the 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).

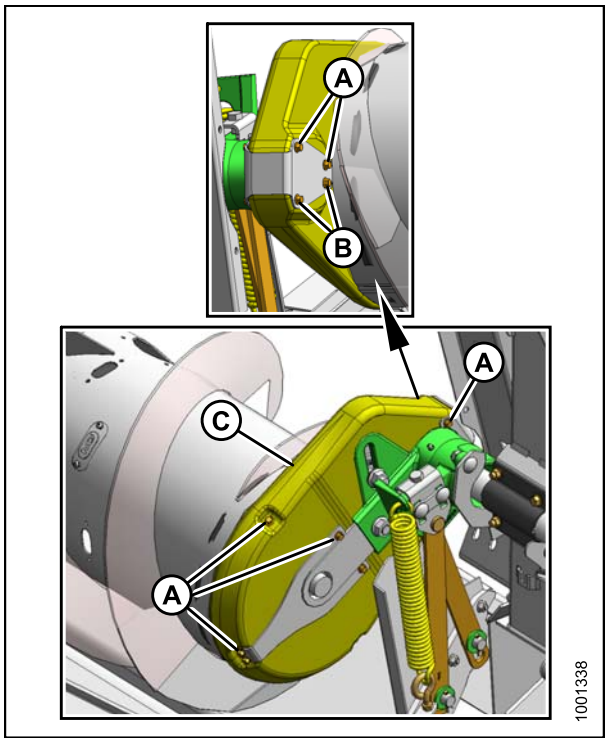


Figure 5.27: Auger Drive

Lubricating Header Drive Gearbox

Checking Oil Level in Header Drive Gearbox

Check the header drive gearbox oil level every 100 hours.

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 the cutterbar to the ground and ensure the gearbox is in working position.
2. Shut down the combine and remove the key from the ignition.
3. Remove the oil level plug (A) and check that the oil level is up to the bottom of the hole.
4. If no oil is required, replace the oil level plug (A).
5. Add oil if required. Refer to *Adding Oil to Header Drive Gearbox, page 336*.

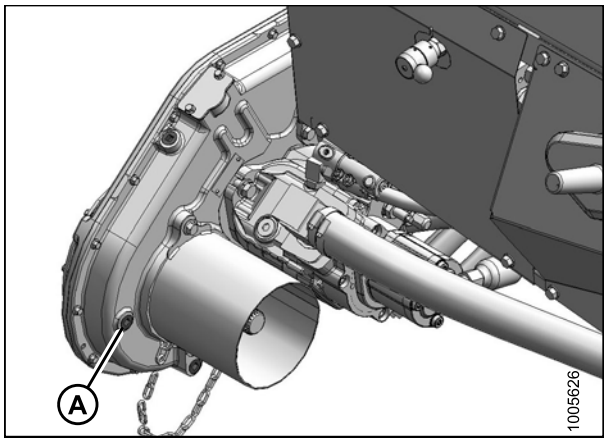


Figure 5.28: Header Drive Gearbox

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.

1. Lower the cutterbar to the ground, and ensure the gearbox is in working position.
2. Shut down the combine, and remove the key from the ignition.
3. Remove the oil level plug (A) and the filler plug (B).
4. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (B) until it runs out of the oil level plug hole (A).
5. Replace the oil level plug (A) and the filler plug (B).

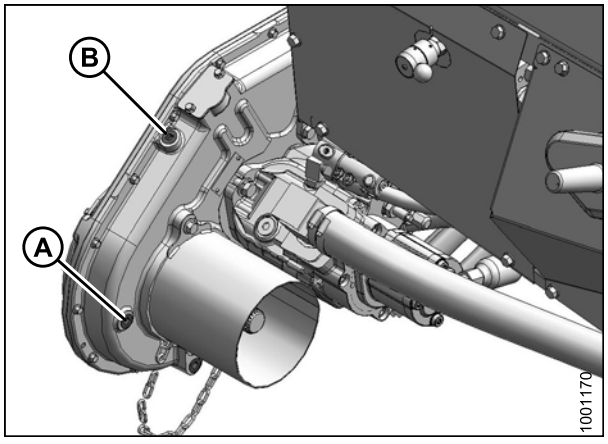


Figure 5.29: Header Drive Gearbox

Changing Oil in Header Drive Gearbox

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

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 or lower the header to position the oil drain plug (A) at its lowest point.
2. Shut down the combine, and remove the key from the ignition.
3. Place a suitably sized container (approximately 1 US gallon [4 liters]) underneath the gearbox drain to collect the oil.
4. Remove the oil drain plug (A) and the filler plug (C), and allow the oil to drain.
5. Replace the oil drain plug (A) and remove the oil level plug (B).
6. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (C) until it runs out of the oil level hole (B).

   NOTE:
   The header drive gearbox holds approximately 5 US pints (2.5 liters) of oil.

7. Replace the oil level plug (B) and the filler plug (C).

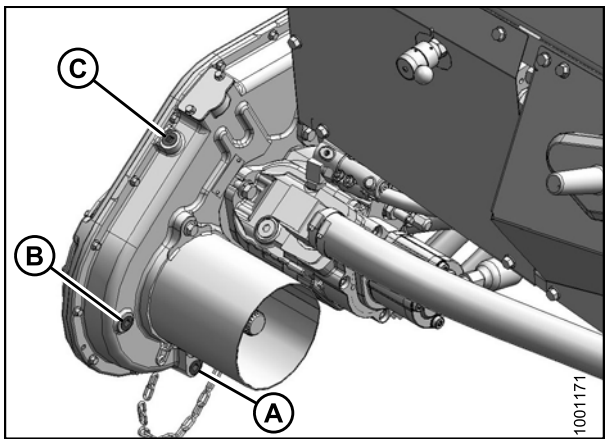


Figure 5.30: Header Drive Gearbox

5.4 Hydraulics

The CA25 Combine Adapter's hydraulic system drives the adapter feed draper, header drapers, and knife drives. The combine's hydraulic system drives the reel hydraulics.

The adapter frame acts as an oil reservoir. Refer to *5.2.1 Recommended Fluids and Lubricants, page 314* for oil requirements.

5.4.1 Checking Oil Level in Hydraulic Reservoir

Check the hydraulic oil level in the reservoir every 25 hours.

1. Check the oil level using the lower sight (A) and the upper sight (B) with the cutterbar just touching the ground.

   NOTE:
   Check the level when the oil is cold and with center-link retracted.

2. Ensure the oil is at the appropriate level for the terrain as follows:

   - **Hilly terrain (C):** Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
   - **Normal terrain (D):** Maintain level so lower sight (A) is full, and upper sight (B) is empty.
   - **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:
   It may be necessary to slightly reduce the oil level when ambient temperatures are above 35°C (95°F) to prevent overflow at the breather when normal operating temperatures are reached.

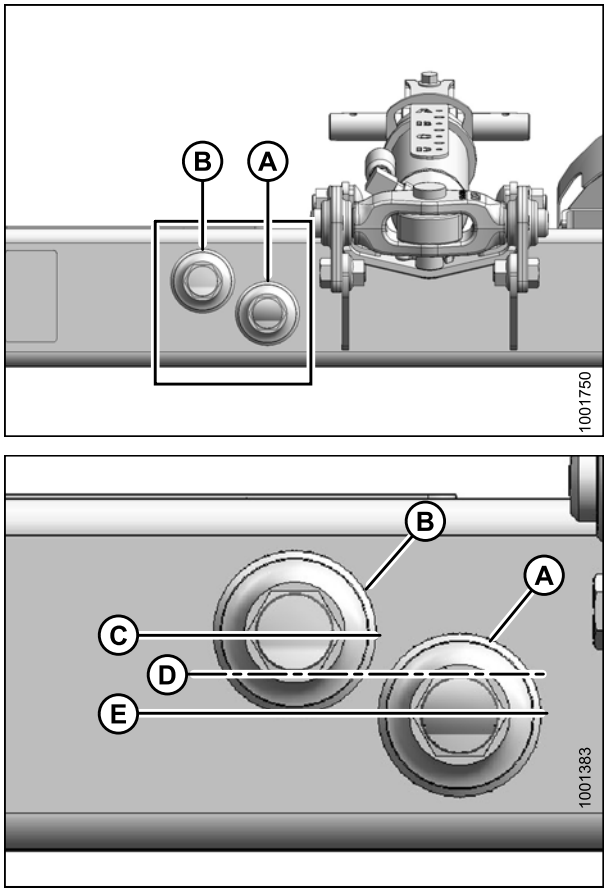


Figure 5.31: Oil Level Sight Glass

5.4.2 Adding Oil to Hydraulic Reservoir

Follow this procedure to top up the oil in the hydraulic reservoir. To change the hydraulic oil, refer to *5.4.3 Changing Oil in Hydraulic Reservoir, page 339*.

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. Shut down the combine, and remove the key from the ignition.
2. Clean any dirt or debris from the filler cap (A).
3. Loosen and remove the filler cap (A) by turning it counterclockwise.
4. Add warm oil (approximately 21°C [70°F]) and fill to the required level. Refer to *5.2.1 Recommended Fluids and Lubricants, page 314* for specifications.

   IMPORTANT:
   Warm oil will flow through the screen better than cold oil. Do **NOT** remove the screen.
5. Reinstall the filler cap (A).

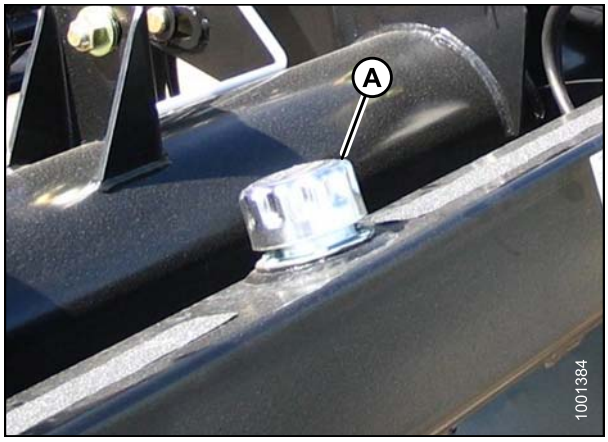


Figure 5.32: Oil Reservoir Filler Cap

5.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

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 the header from the adapter. Refer to *4 Header Attachment/Detachment, page 259*.
2. Raise the feeder house and engage the lift cylinder safety props.
3. Place a suitably sized container (at least 8 US gallons [30 liters]) under each of the two oil drain plugs (A) located at the base on each side of the frame.
4. Remove the oil drain plugs (A) with a 1-1/2 in. hex socket and allow the oil to drain.
5. Replace the oil drain plugs (A) when reservoir is empty.
6. Change the oil filter if required. Refer to *5.4.4 Changing Oil Filter, page 340*.
7. Add approximately 16 US gallons (60 liters) of oil to the reservoir. Refer to *5.4.2 Adding Oil to Hydraulic Reservoir, page 338*.

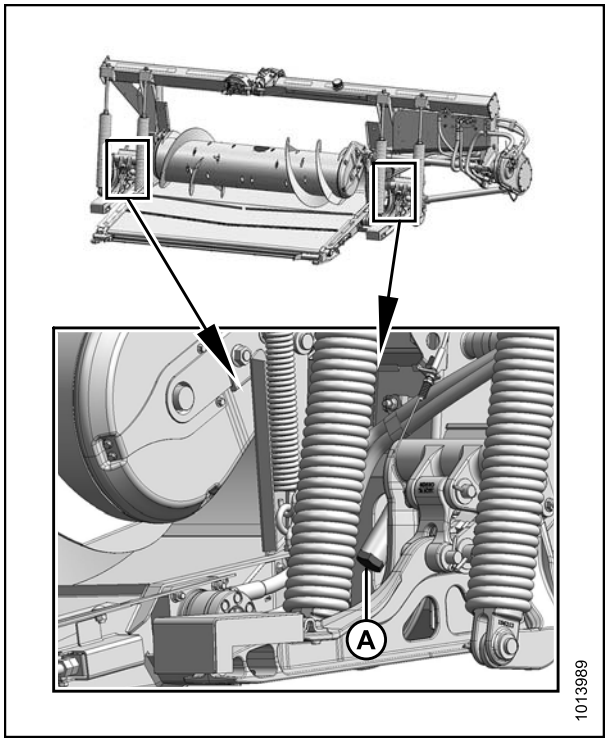


Figure 5.33: Reservoir Drain

5.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

For adaptors with a Bosch manifold, obtain filter part MD #123989. For adaptors with a Parker manifold, obtain filter part MD# 151975 from your MacDon Dealer.

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).

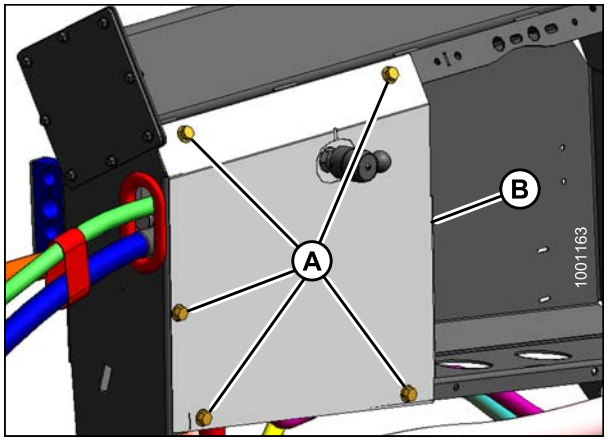


Figure 5.34: Adapter Hydraulics Cover

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

   IMPORTANT:
   Do **NOT** use a filter wrench to install the new filter. Overtightening can damage the O-ring and filter.

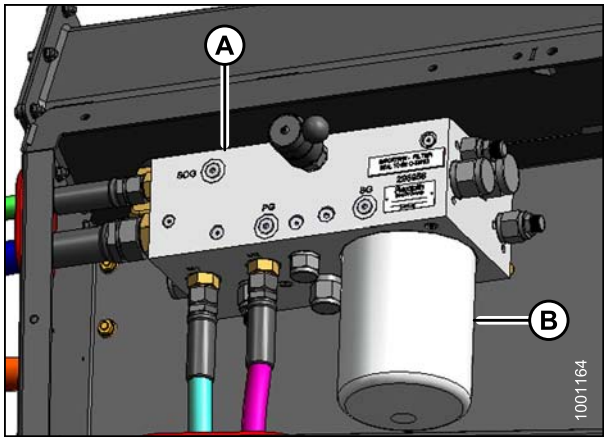


Figure 5.35: Adapter Hydraulics

6. Reinstall cover (B) with five screws (A).

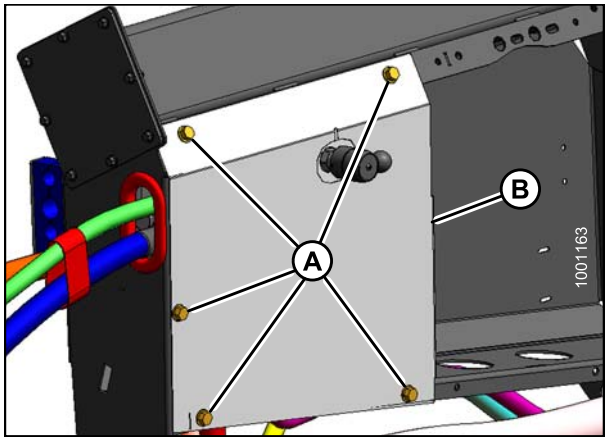


Figure 5.36: Adapter Hydraulics

5.5 Electrical System

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

1. Use a Phillips screwdriver to remove the screws (A) from the fixture and remove the plastic lens.
2. Replace the bulb and reinstall the plastic lens and screws.

   NOTE:
   Use bulb trade #1156 for amber clearance lights and #1157 for red tail light (Slow Speed Transport option).

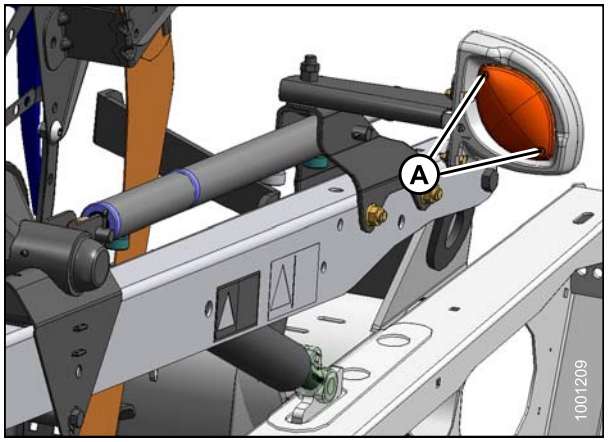


Figure 5.37: Clearance Light

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, knives, and optional equipment.

5.6.1 Removing Driveline

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

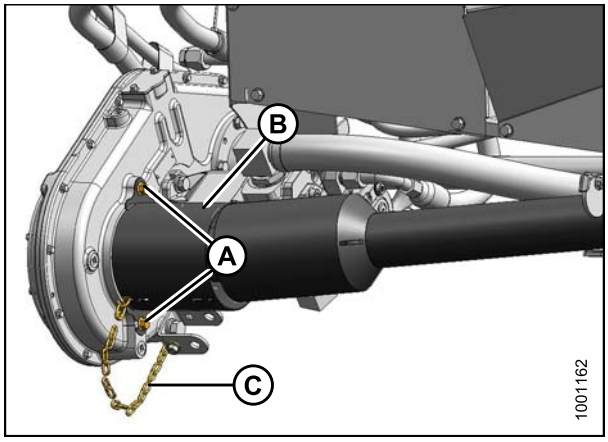


Figure 5.38: Adapter End of Driveline

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

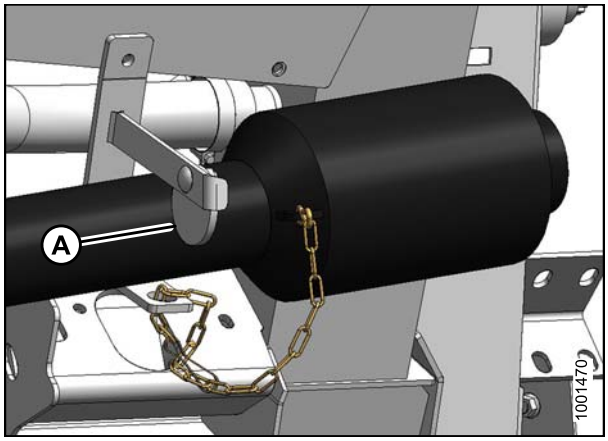


Figure 5.39: Combine End of Driveline

5.6.2 Installing Driveline

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

IMPORTANT:
Ensure the driveline length corresponds with the length specifications for your specific equipment. Refer to *2.2 Specifications, page 23*.

1. Slide the driveline into the hook (A) so the disc (B) drops and secures the driveline.

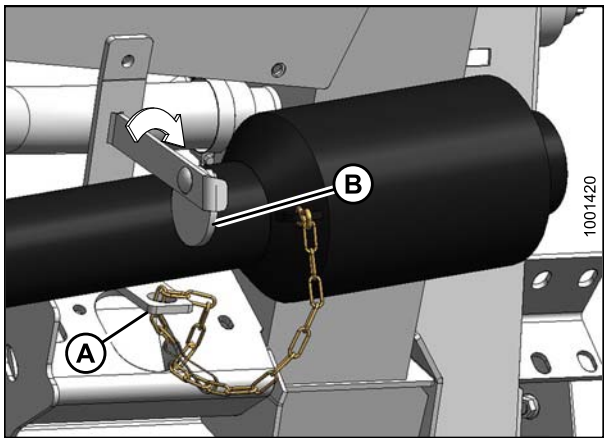


Figure 5.40: Combine End of Driveline

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

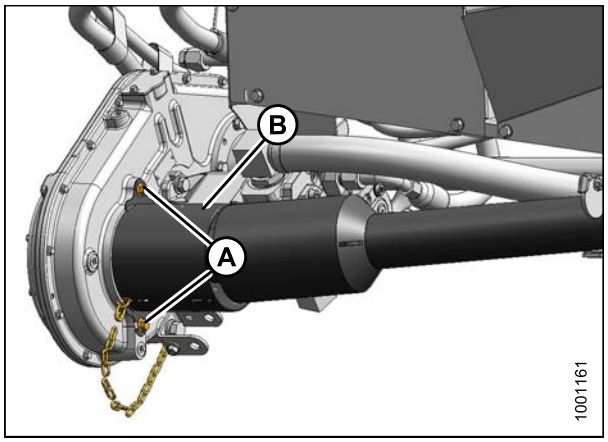


Figure 5.41: Adapter End of Driveline

5.6.3 Removing Driveline Guard

The main driveline guard must remain attached to the driveline during operation, but it can be removed for maintenance purposes.

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.

1. Shut down the combine, and remove the key from the ignition.
2. If the driveline is in the storage position, rotate disc (B) on the adapter driveline storage hook (A), and remove the driveline from the hook. If the driveline is attached to the combine, remove the driveline from the combine by pulling the quick disconnect collar to release the driveline yoke at the combine shaft. Refer to *4 Header Attachment/Detachment, page 259*.

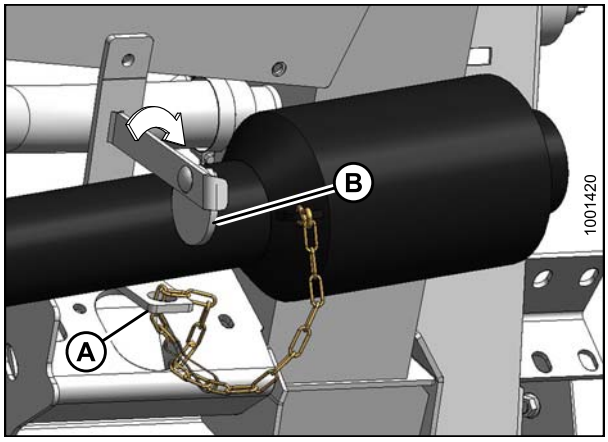


Figure 5.42: Combine End of Driveline

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

Figure 5.43: Separated Driveline

4. Use a slotted screwdriver to release grease zerk/lock (A).

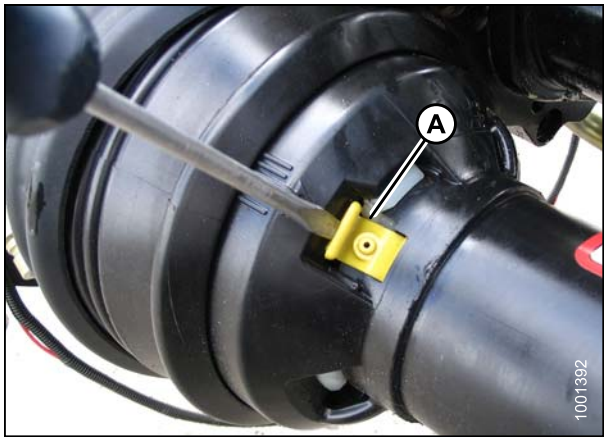


Figure 5.44: Driveline Guard

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

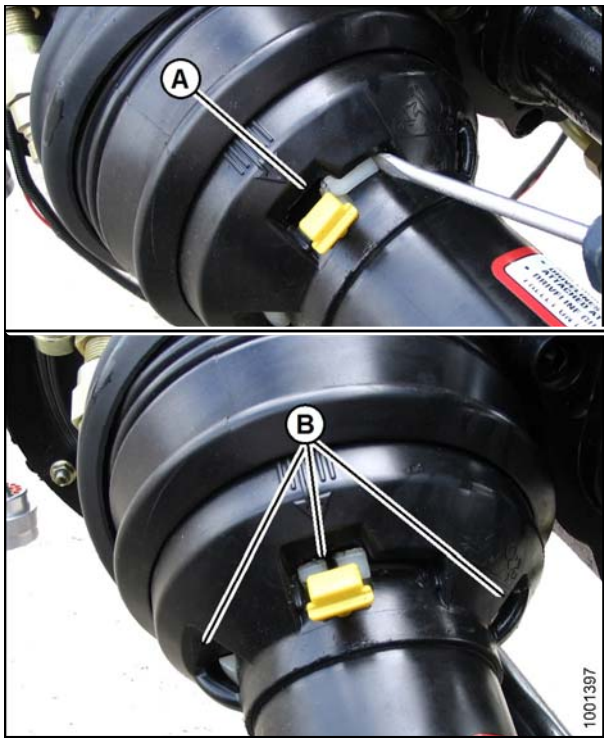


Figure 5.45: Driveline Guard

5.6.4 Installing Driveline Guard

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

Figure 5.46: Driveline Guard

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

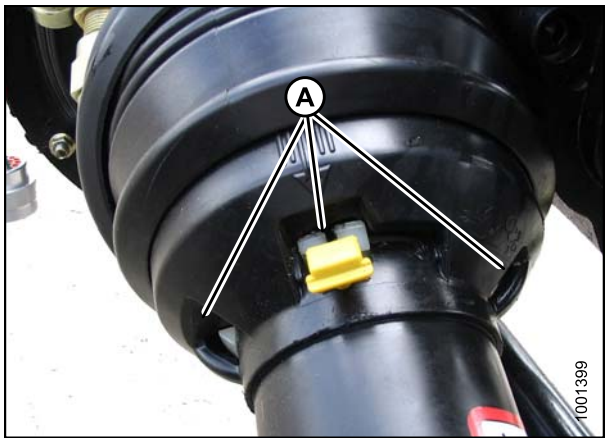


Figure 5.47: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise and lock ring in guard.

Figure 5.48: Driveline Guard

4. Push the grease zerk (A) back into the guard.

Figure 5.49: Driveline Guard

5. Assemble the driveline.

   NOTE:
   The splines are keyed to align the universals. Align weld (A) with the missing spline (B) when assembling.

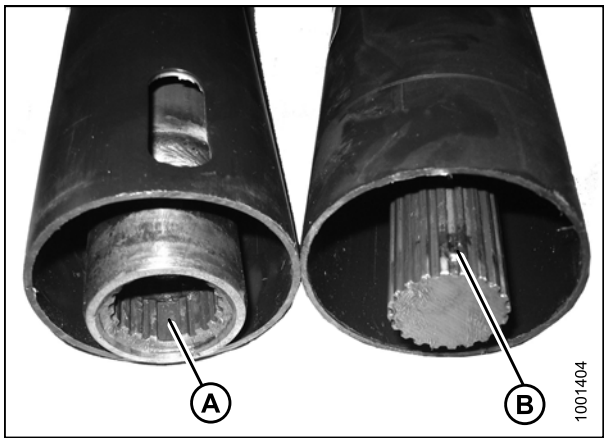


Figure 5.50: Driveline

6. Slide the driveline into the hook (A) so the disc (B) drops and secures the driveline (or connect to the combine).

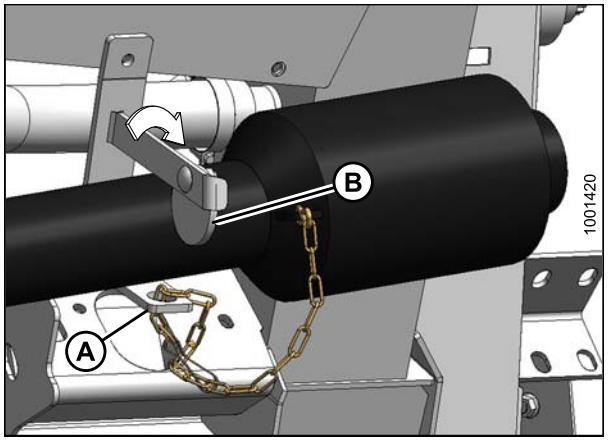


Figure 5.51: Combine End of Driveline

5.6.5 Adjusting Tension on Gearbox Drive Chain

The gearbox drive chain tension is factory-set, but tension adjustments are required every 500 hours or annually (whichever comes first). The gearbox drive chain, located inside the gearbox, requires no other regular 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.

1. Lower the header.
2. Stop the engine, and remove the key from the ignition.
3. Remove two bolts and the chain adjusting cover (A). Ensure there is no gasket (B) damage.
4. Remove the retainer plate (C).
5. Tighten bolt (D) to 6.8 N·m (60 in·lbf), then back off the bolt 1-2/3 turns.
6. Reinstall the retainer plate (C).
7. Reinstall the chain adjusting cover (A) and gasket (B). Torque hardware to 9.5 N·m (84 in·lbf).

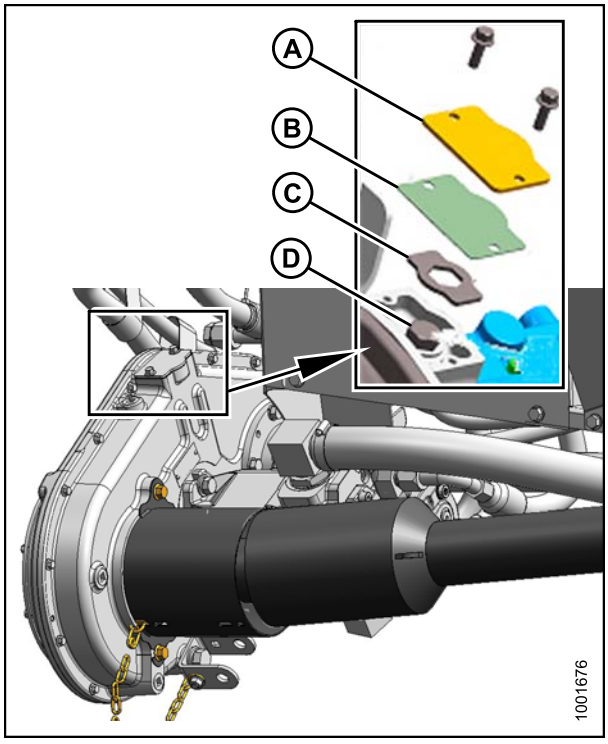


Figure 5.52: Chain Tensioner

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

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:
Maintain an appropriate distance between the auger and the auger pan. Too little clearance may result in the tines or flighting contacting and damaging the feed draper or pan when operating the header at certain angles. Look for evidence of contact when greasing the adapter.

1. Extend the center-link to the steepest header angle, and position the header 150–254 mm (6–10 in.) off the ground.
2. Lock header wings. Refer to *Locking/Unlocking Header Wings, page 63*.
3. Shut down the combine and remove the key from the ignition.
4. Ensure the float lock linkage is on the down stops (washer [A] and nut [B] cannot be moved) at both locations.

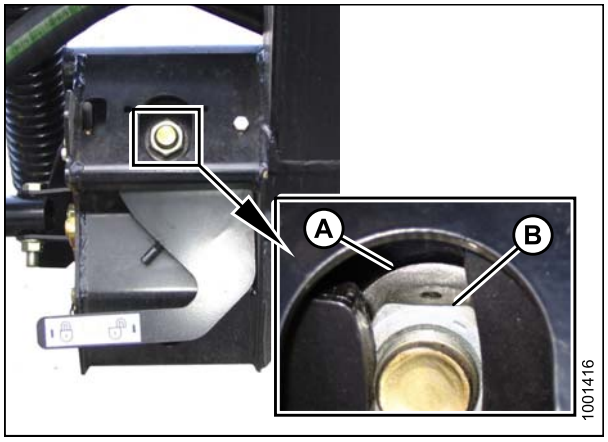


Figure 5.53: Float Lock

5. Ensure the lower end of the linkage bars (A) are against the studs (B) at both ends of the auger.

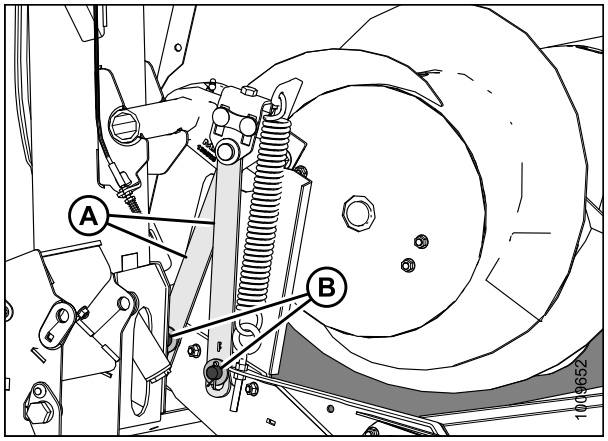


Figure 5.54: Linkage Bars

6. Loosen two nuts (B).
7. Use adjuster bolt (A) to set the clearance (C) to 5–10 mm (3/16–3/8 in.). Turn the adjuster bolt (A) clockwise to increase the clearance and counterclockwise to decrease the clearance.

   NOTE:
   The clearance increases 25–40 mm (1–1-1/2 in.) when the center-link is fully retracted.
8. Repeat Step *6., page 351* and Step *7., page 351* for the opposite end of the auger.
9. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 106–118 N·m (79–87 ft·lbf).

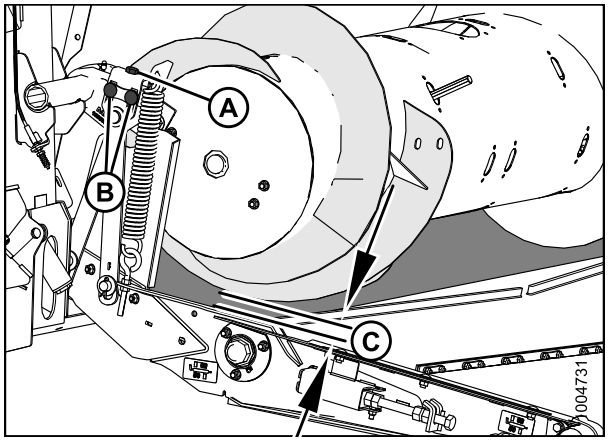


Figure 5.55: Auger Clearance

5.7.2 Checking Auger Drive Chain Tension

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

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 the header to the ground.
2. Raise the reel and engage the reel safety props. Refer to *Engaging Reel Safety Props, page 31*.
3. Shut down the combine, and remove the key from the ignition.
4. Inspect the auger drive chain through the adjustment slot (A).

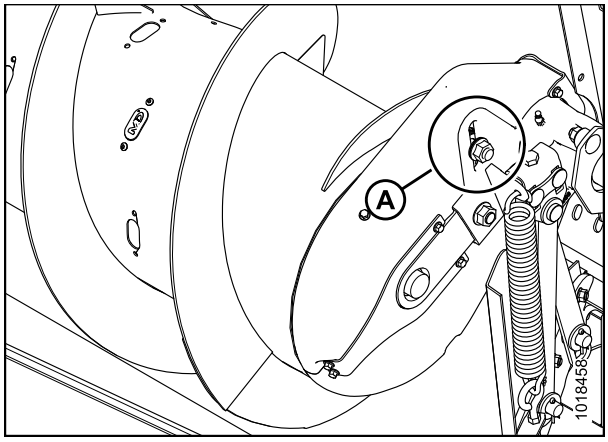


Figure 5.56: Auger Drive Chain Inspection Location

5. Verify that the auger drive sprocket (A) is engaging the chain (B) completely through the adjustment slot (C).

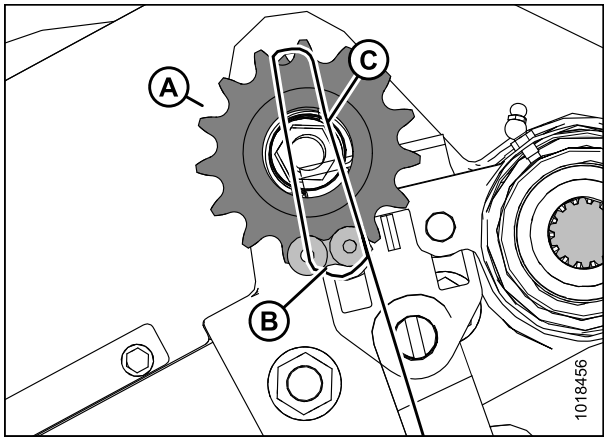


Figure 5.57: Auger Drive Sprocket (Correct)

NOTE:
If the auger drive sprocket (A) is not properly engaged, you will need to adjust the chain tension. Refer to *5.7.3 Adjusting Auger Drive Chain Tension, page 353*.

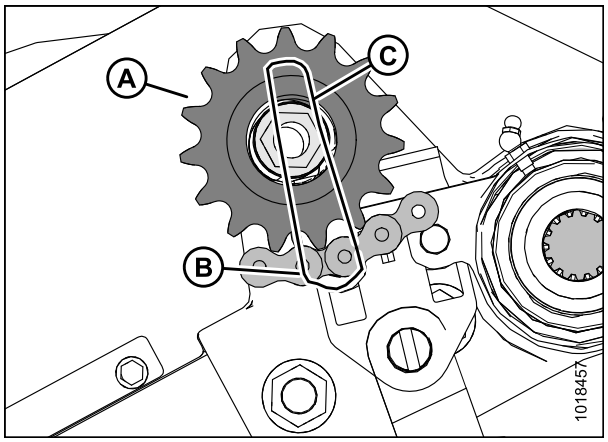


Figure 5.58: Auger Drive Sprocket (Incorrect)

6. Rotate the auger (A) by hand, in the reverse direction, until it cannot turn anymore.
7. Mark a line (B) across the drum and cover.

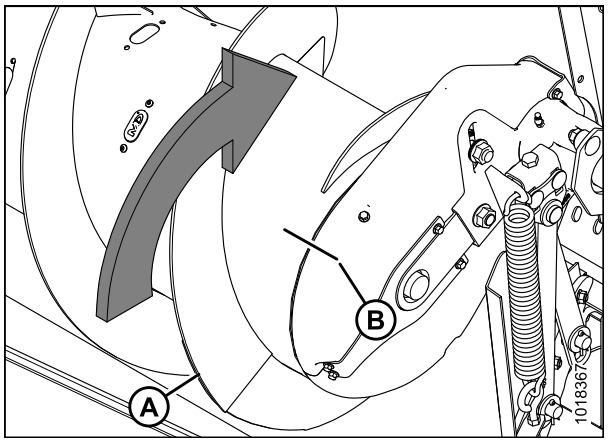


Figure 5.59: Auger Drive

8. Rotate the auger (A) by hand, in forward direction, until it cannot turn anymore.
9. Measure the distance between the two lines (B).
   - If the difference (B) is 3–8 mm (0.12–0.31 in.), no adjustment is required.
   - If the difference (B) is greater than 8 mm (0.31 in.), the auger drive chain tension needs adjusting. Refer to *5.7.3 Adjusting Auger Drive Chain Tension, page 353*.

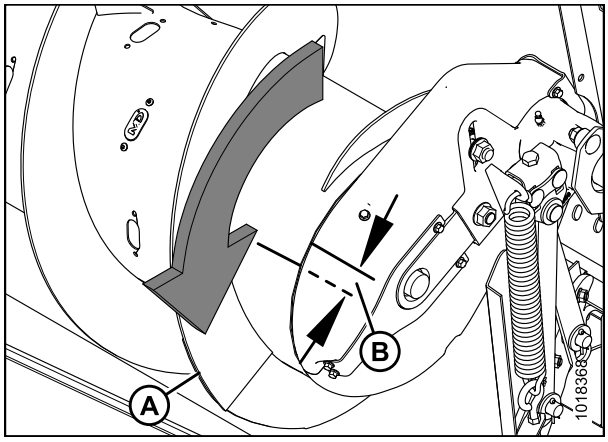


Figure 5.60: Auger Drive

5.7.3 Adjusting Auger Drive Chain Tension

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

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:
Check the auger tension before making any adjustments. Refer to *5.7.2 Checking Auger Drive Chain Tension, page 351*.

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 259*.
2. Shut down the combine, and remove the key from the ignition.
3. Remove the four bolts (A) securing the top cover to the left side of the auger chain case.
4. Remove bolt (B) on the cover retainer plate (F).
5. Remove top cover (C).

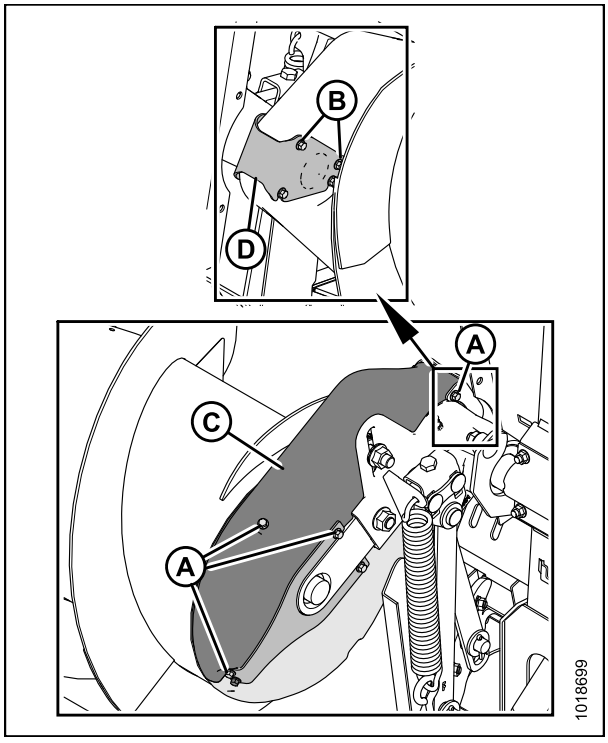


Figure 5.61: Auger Drive

6. Loosen the bolt (C) securing the idler sprocket (A).
7. Rotate the auger in reverse to take up the slack in the lower strand of the chain (B).
8. Push down the idler sprocket (A) to eliminate the remaining slack in the lower strands (B).
9. Rotate the auger back and forth to check the slack, and repeat Step *8., page 354* if necessary. A slight amount of slack is acceptable.

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

10. Tighten the idler bolt (C) and torque to 290 N·m (215 ft·lbf).
11. Rotate the auger (A) by hand, in the reverse direction, until it cannot turn anymore.
12. Mark a line (B) on the drum that lines up with the one of the cover supports.

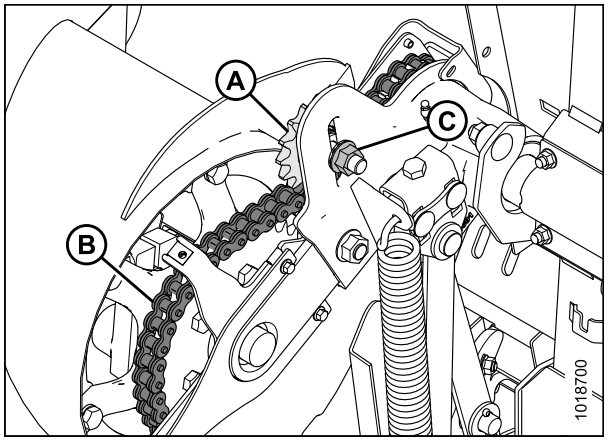


Figure 5.62: Auger Drive

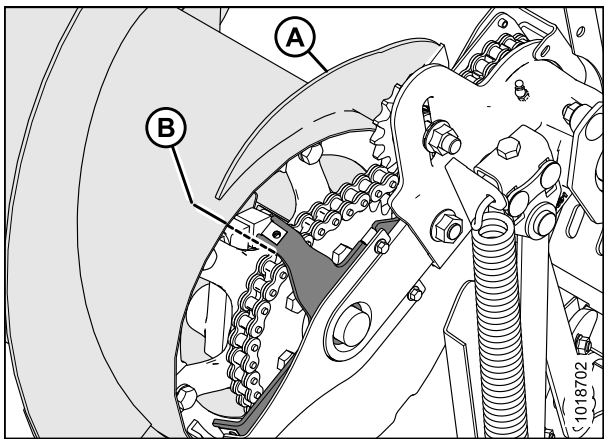


Figure 5.63: Auger Drive

13. Rotate the auger (A) by hand, in forward direction, until it cannot turn anymore.
14. Measure the distance between the two lines (B).
    - If the difference (B) is 3–8 mm (0.12–0.31 in.), no more adjustment is required.
    - If the difference (B) is greater than 8 mm (0.31 in.), repeat Steps *6., page 354* to *10., page 354*.
15. Check the distance between the two lines (B) again.

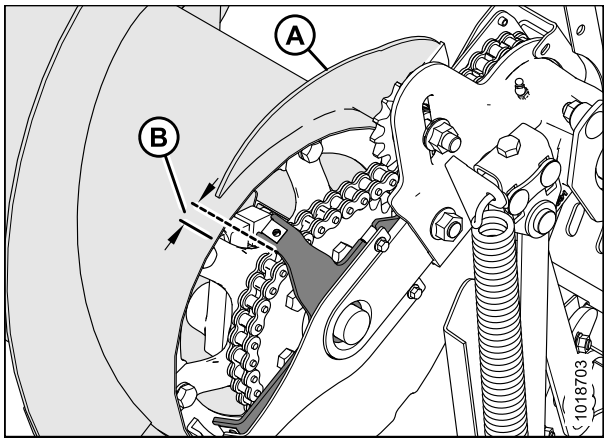


Figure 5.64: Auger Drive

16. Install top cover (C).
17. Install four bolts (A).
18. Install bolt (B) on the cover retainer plate (F).

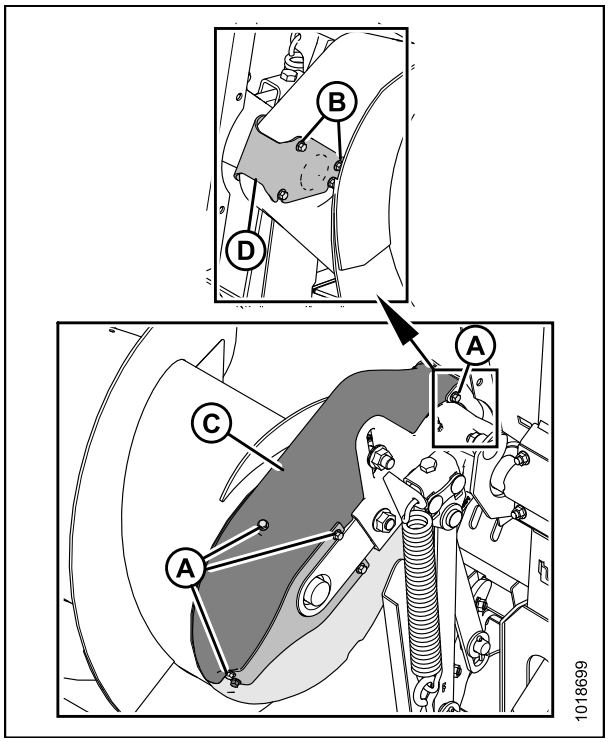


Figure 5.65: Auger Drive

5.7.4 Removing Auger Drive Chain

The chain tensioner can take up slack for only a single pitch. Replace the chain when the chain has worn or stretched beyond the limits of the tensioner.

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 the header from the combine. Refer to *4 Header Attachment/Detachment, page 259*.
2. Shut down the combine, and remove the key from the ignition.
3. Remove the four bolts (A) securing the top cover to the left side of the auger chain case.
4. Loosen bolts (B) on the cover retainer plate (F).
5. Remove top cover (C) complete with cover retainer plate (F).
6. Remove three bolts (D).
7. Remove drive cover retainer (G).
8. Remove bottom cover (E).

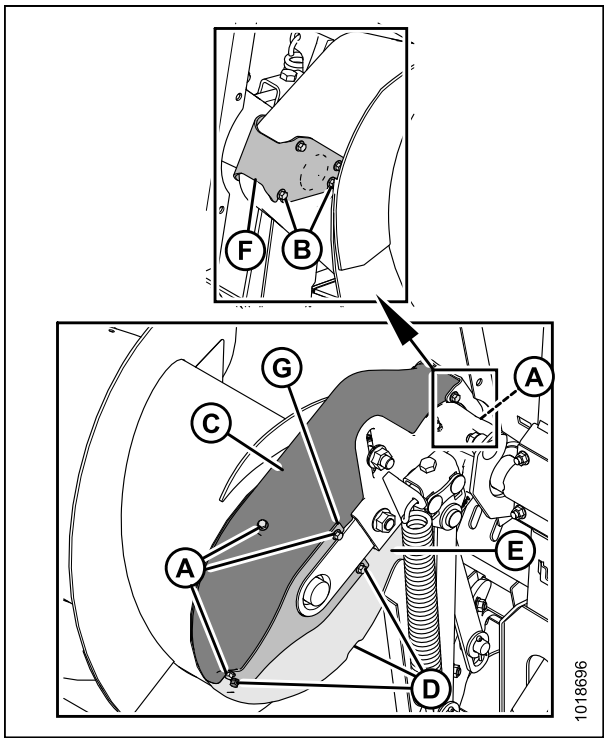


Figure 5.66: Auger Drive

9. Loosen the idler sprocket bolt (A), and raise the sprocket (B) to the highest position to release the tension on the chain. Tighten bolt (A) to hold sprocket.

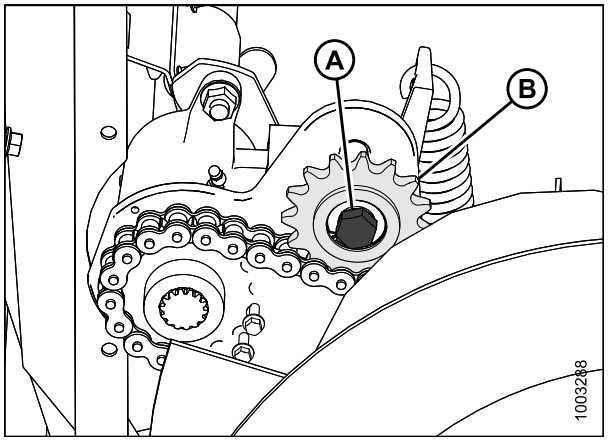


Figure 5.67: Auger Drive

10. Remove the lower bolt (A) and loosen the top bolt (B). Swing the C-clamp (C) up, and then slide the drive assembly to the right to allow the drive sprocket to fall off the shaft.

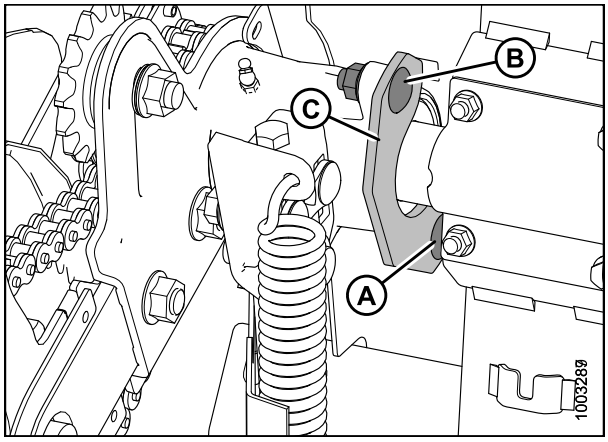


Figure 5.68: Auger Support

11. Use a pry bar (A) to slide the drum assembly to the right side of the CA25.

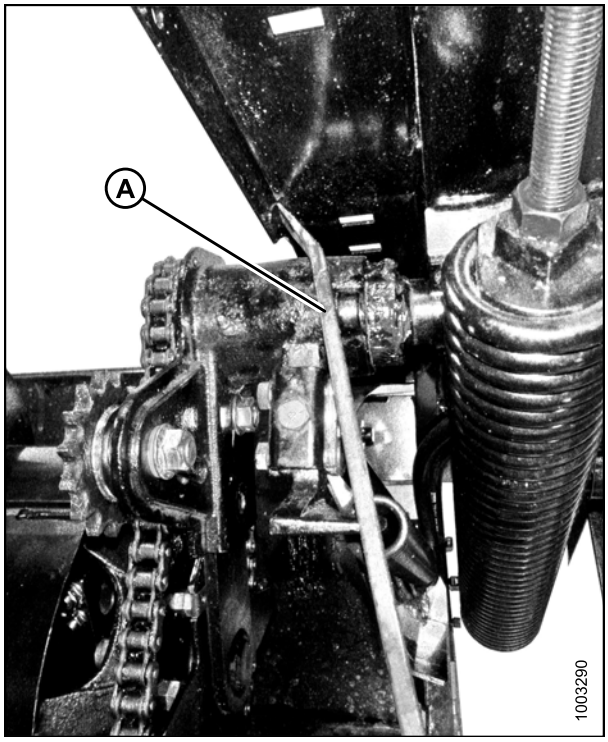


Figure 5.69: Auger Drive

NOTE:
Once the drum starts sliding to the right, the drive sprocket will fall off.

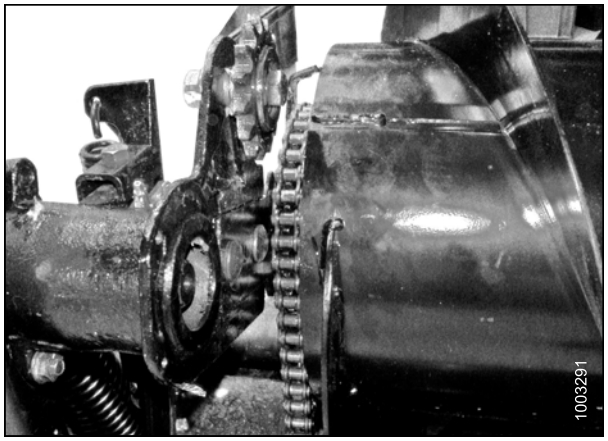


Figure 5.70: Auger Drive

12. 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.

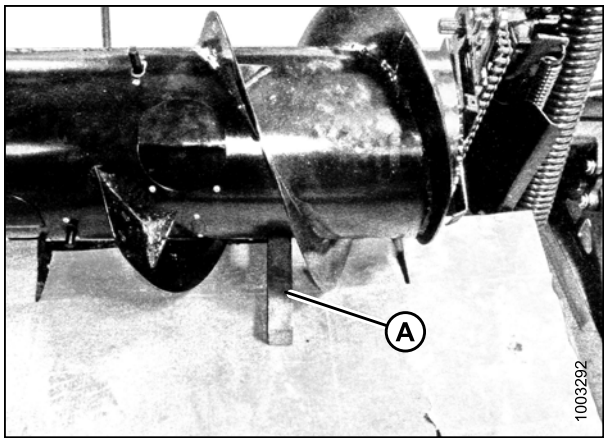


Figure 5.71: Auger

13. 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 the drum to remove the bolts.

NOTE:
The bolts on the left side housing are longer than the bolts on the right side housing.

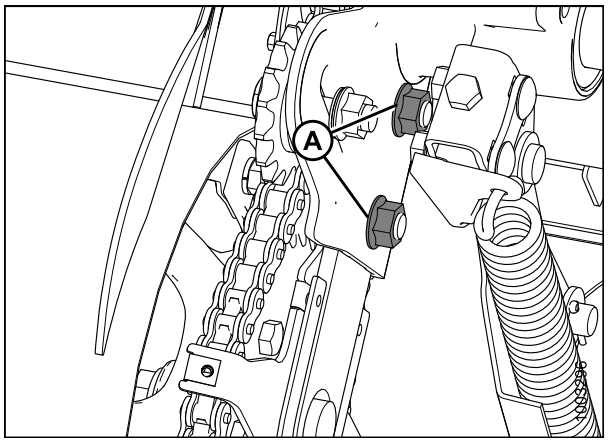


Figure 5.72: Auger Support

14. Slide the left housing (A) back into position so the endless chain (B) can be removed.

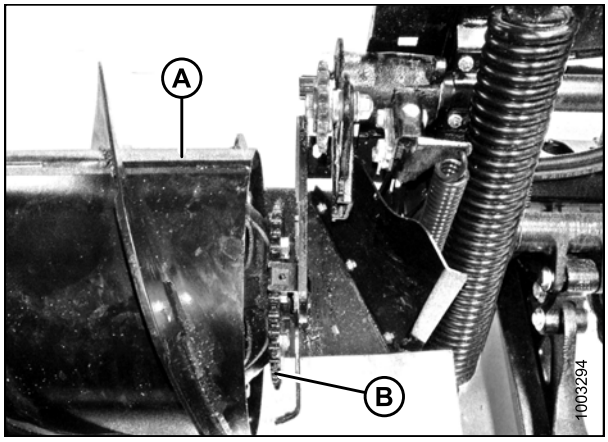


Figure 5.73: Auger Drive

5.7.5 Installing Auger Drive Chain

1. Place the drive chain over the sprocket on the left side of the adapter. Slide the left-hand housing towards the drum and mount leaving the driveshaft exposed 13 mm (1/2 in.). Bolt the assembly together.

   NOTE:
   Use blocking on the left side of the drum if necessary.

2. Remove the block if used.
3. Rotate the drum in forward and reverse a couple of times to ensure the drum has been correctly rebuilt before connecting the chain to the drive assembly.

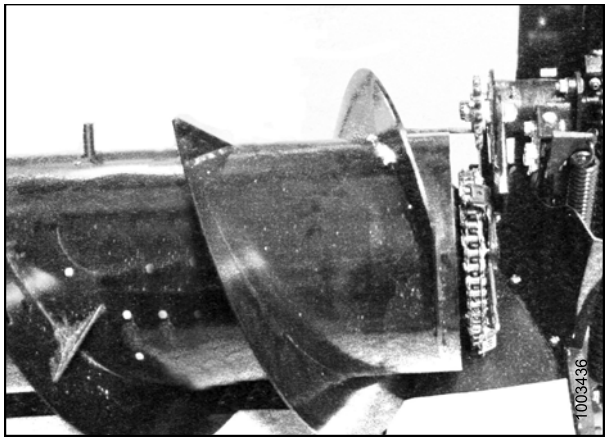


Figure 5.74: Auger Drive

4. Align the sprocket on the shaft, and put the drive sprocket (A) into the chain (B).

   NOTE:
   The shoulder of the drive sprocket (A) faces the auger.

5. Slide the entire drum assembly back into place, and bolt the C-clamp (C) over the housing.
6. Apply Loctite® 242 to threads of the screw. Install screw (E) and washer (D).

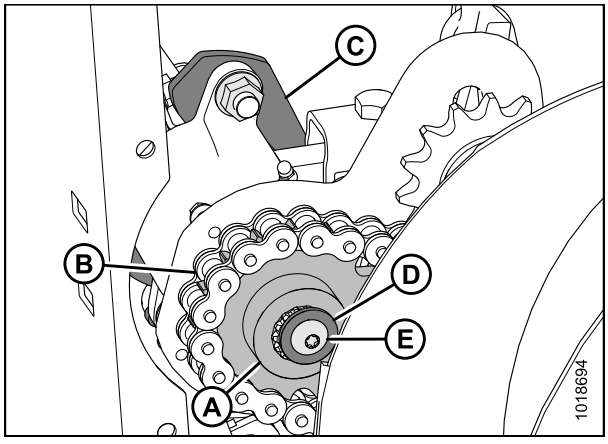


Figure 5.75: Auger Drive

7. Loosen nut (A) securing the idler sprocket (B).
8. Rotate the auger in reverse to take up the slack in the lower strand of the chain (C).
9. Push down the idler sprocket (B) to eliminate the remaining slack in the lower strands (C).
10. Rotate the auger back and forth to check the slack, and repeat Step *Installing Feed Auger* if necessary. A slight amount of slack is acceptable.

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

11. Tighten the idler nut (A) and torque to 290 N·m (215 ft·lbf).
12. Rotate the auger (A) by hand, in the reverse direction, until it cannot turn anymore.
13. Mark a line (B) on the drum that lines up with one of the cover supports.

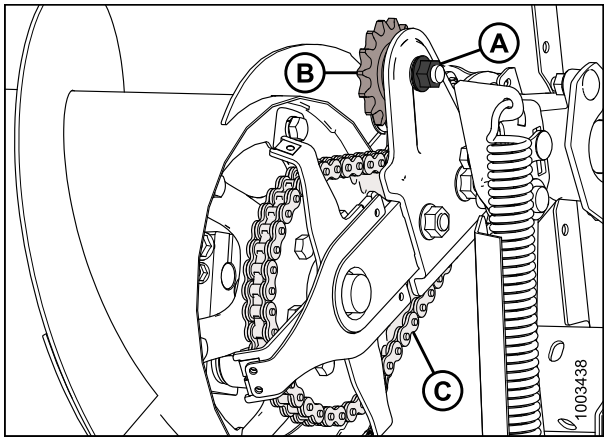


Figure 5.76: Auger Drive

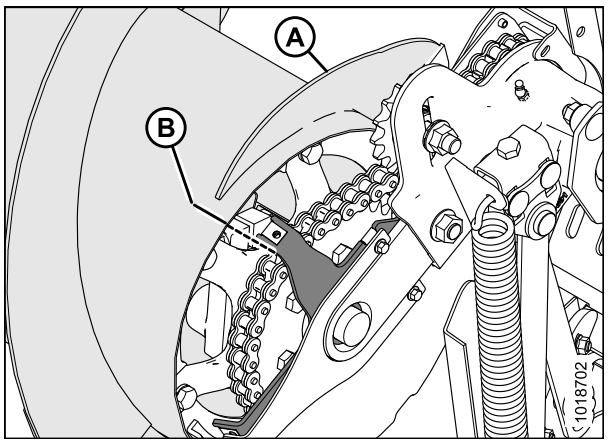


Figure 5.77: Auger Drive

14. Rotate the auger (A) by hand, in forward direction, until it cannot turn anymore.
15. Measure the distance between the two lines (B).
    For a new chain:
    - If the difference (B) is 1–4 mm (0.04–0.16 in.), no more adjustment is required.
    - If the difference (B) is greater than 4 mm (0.16 in.), repeat Steps *7., page 360* to *11., page 360*.

    For a used chain:
    - If the difference (B) is 3–8 mm (0.12–0.31 in.), no more adjustment is required.
    - If the difference (B) is greater than 8 mm (0.31 in.), repeat Steps *7., page 360* to *11., page 360*.
16. Check the distance between the two lines (B) again.
17. Coat chain with grease

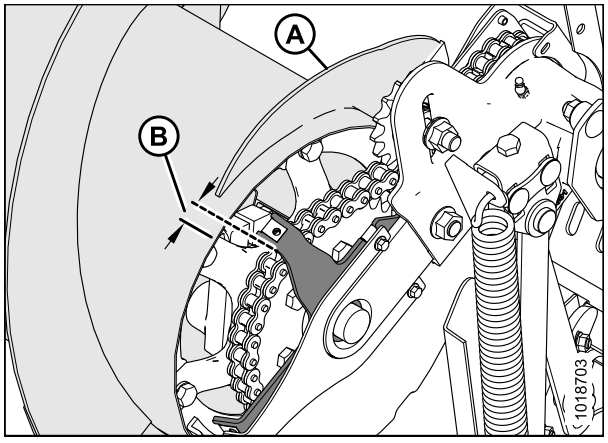


Figure 5.78: Auger Drive

18. Reinstall bottom cover (D) and drive cover retainer (G). Engage the inboard lip of the cover into the auger tube and rotate the cover back to engage the rear support.
19. Secure with bolts (D).
20. Install the top cover (C) complete with cover retainer plate (F).
21. Replace and tighten bolts (A) and (B).

NOTE:
The covers should be as close together as possible to avoid crop entering the auger drive.

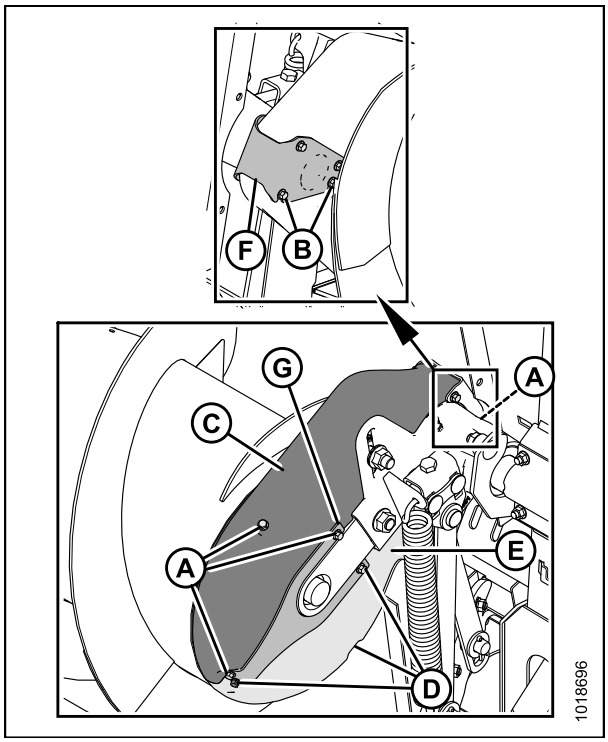


Figure 5.79: Auger Drive

5.7.6 Auger Tines

The CA25 auger uses retracting tines to feed the crop into the combine feeder house. Some conditions may require the removal or installation of tines for optimal crop feeding. Replace any worn or damaged tines.

Removing Feed Auger Tines

DANGER

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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.

4. Remove screws (A) and remove the access cover (B) closest to the tine you are removing.

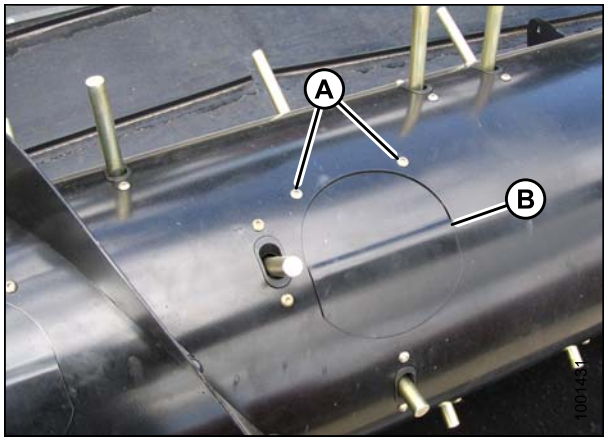


Figure 5.80: Auger

5. Remove the hairpin (A), pull the tine (B) out of the bushing (C) from inside the auger, and remove the tine from the auger by pulling it out through the plastic guide (D).

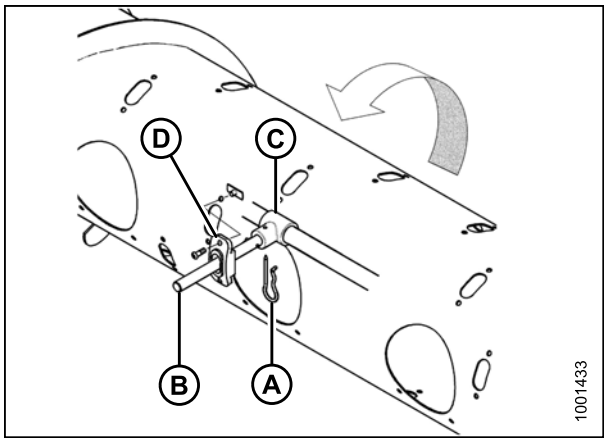


Figure 5.81: Auger

NOTE:
If replacing the #6 tine (A), it must be slipped off the square drive tube (B). This particular tine cannot be removed for normal operation.

6. Proceed to Step *7., page 363* if not reinstalling the #6 tine (A); otherwise, refer to *Installing Feed Auger Tines, page 363*.

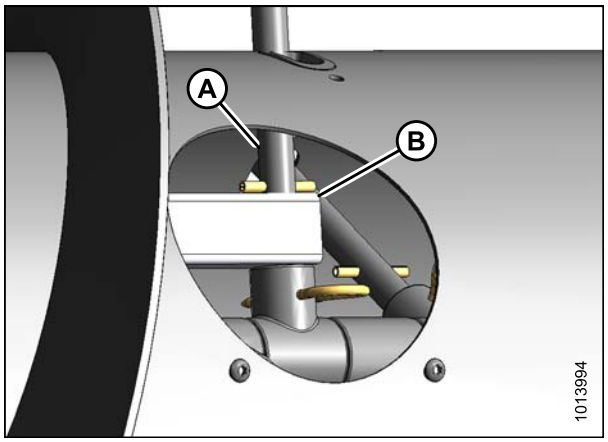


Figure 5.82: Inside Auger

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

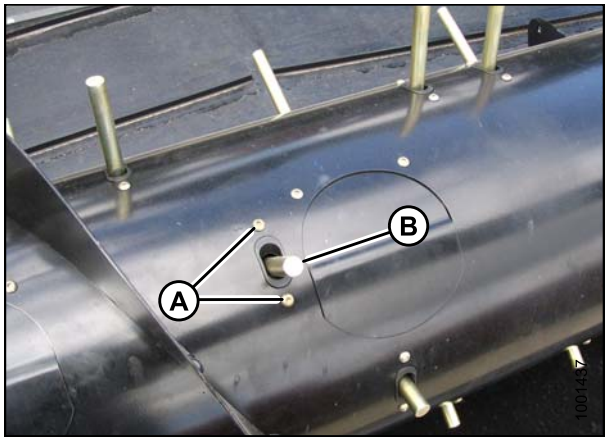


Figure 5.83: Auger

8. Position plug (A) (MD #187137 available from MacDon Parts) into the hole from inside the auger, and secure with two socket button head screws (B). Coat the screws with Loctite® #243 (or equivalent), and torque to 8.5 N·m (75 in·lbf).

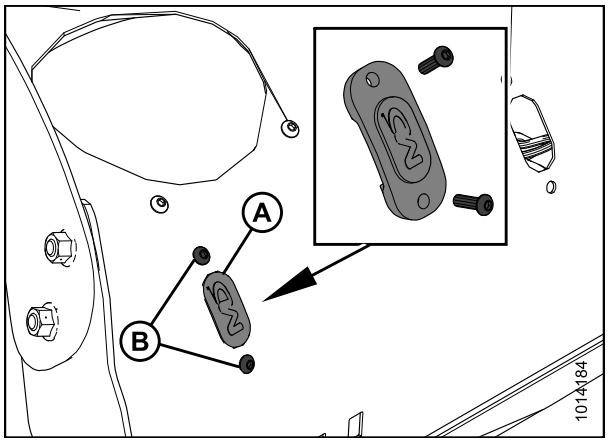


Figure 5.84: Plug

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

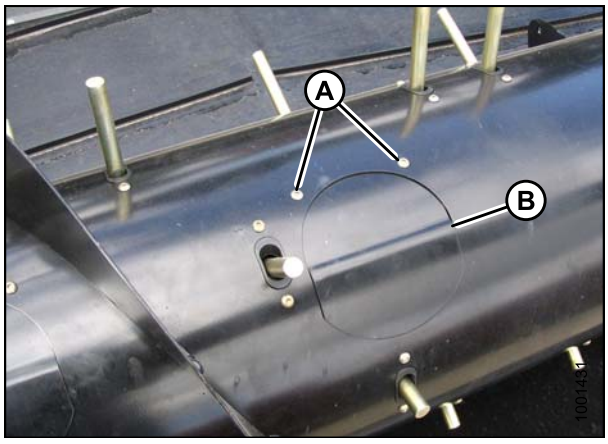


Figure 5.85: Auger

Installing Feed Auger Tines

DANGER

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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.
4. Remove screws (A) and remove the access cover (B) (if not previously removed).

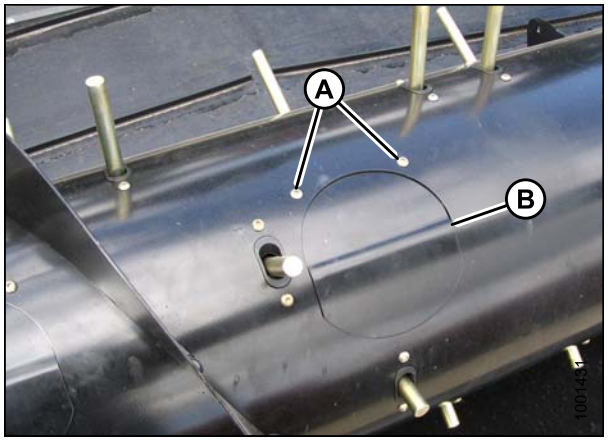


Figure 5.86: Auger

5. Insert the tine (B) through the plastic guide (D) from inside the auger.
6. Insert the tine into the bushing (C) and secure with hairpin (A).

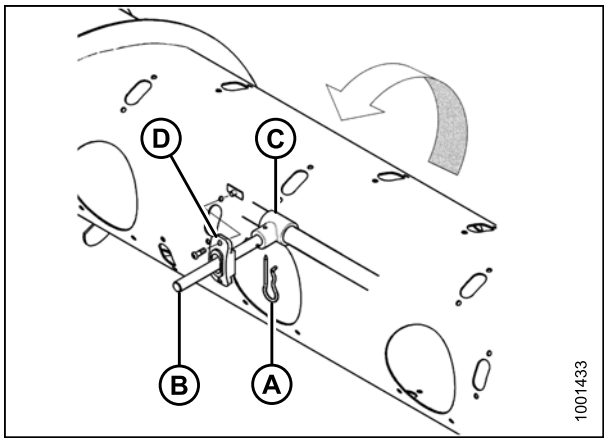


Figure 5.87: Tine

NOTE:
If installing the #6 tine (A), it must be inserted through the square drive tube (B).

7. Secure the #6 tine (A) in the bushing (C) with hairpin (D). Install the hairpin with the closed end leading with respect to auger forward rotation.

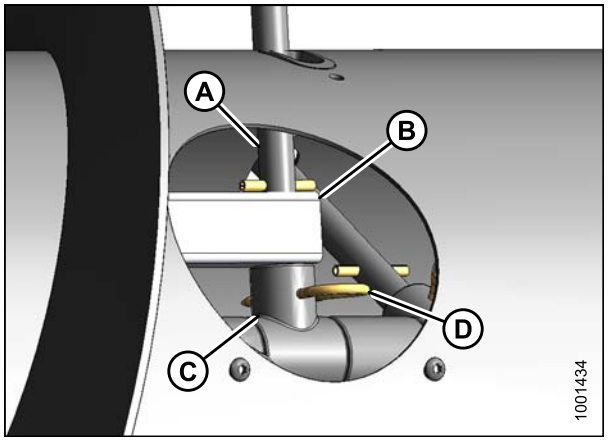


Figure 5.88: Tine

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

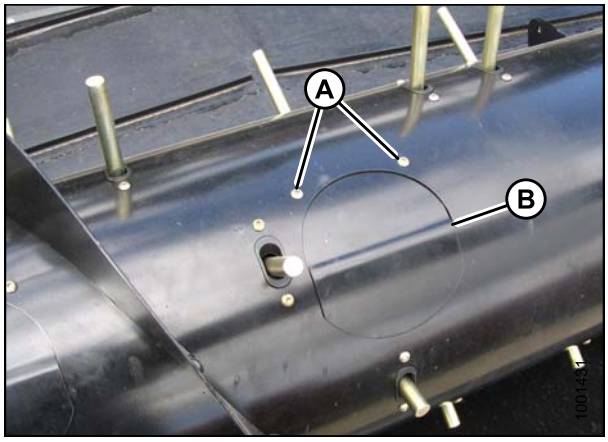


Figure 5.89: Auger

Replacing Feed Auger Tine Guides

1. Remove the tine (B) and the plastic guide (D). Refer to *Removing Feed Auger Tines, page 361*.

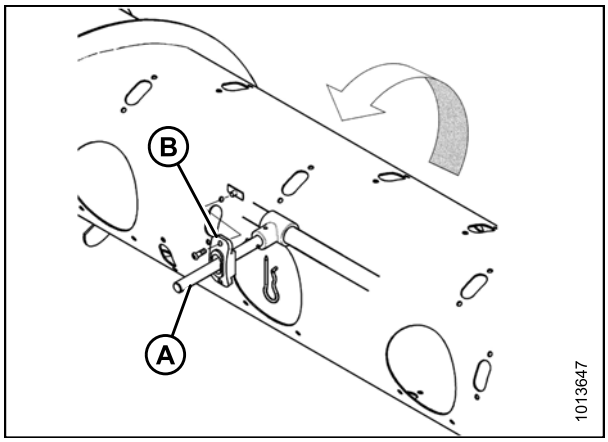


Figure 5.90: Auger

2. Position the plastic guide (B) from inside the auger and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 N·m (75 in·lbf).
3. Install the replacement tine. Refer to *Installing Feed Auger Tines, page 363*.

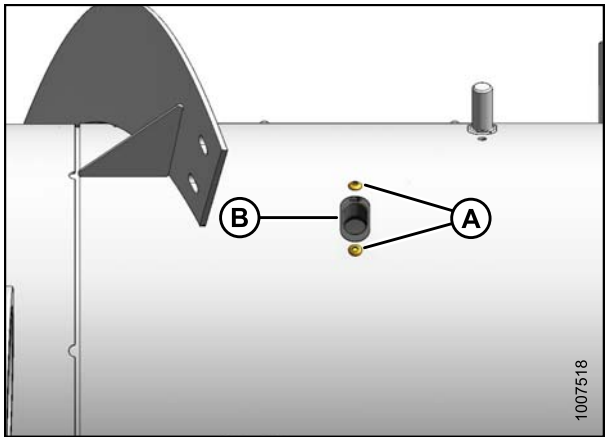


Figure 5.91: Auger

5.7.7 Flighting Extensions

Removing Flighting Extensions

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

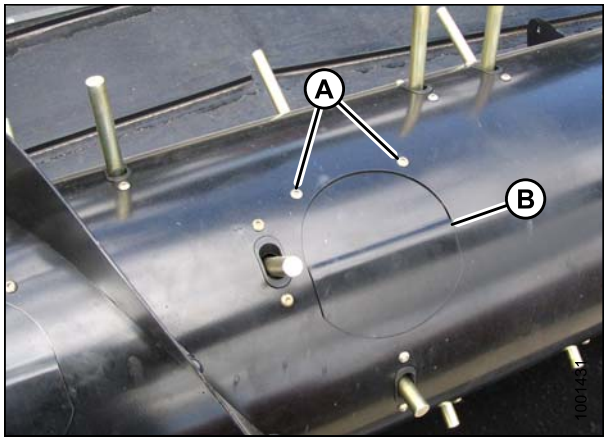


Figure 5.92: Auger

2. Remove five bolts (B), washers, and nuts securing the flighting extension (C) to the auger.
3. Remove the flighting extension (C).
4. Repeat for opposite flighting extension.

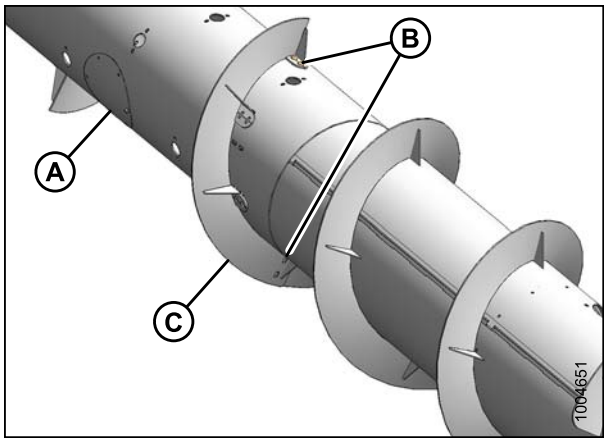


Figure 5.93: Auger Flighting Extensions

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

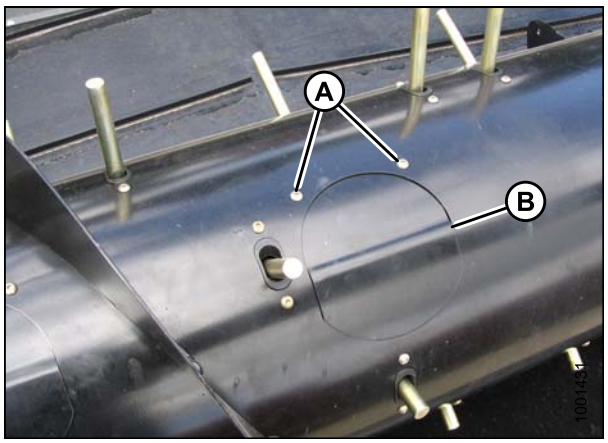


Figure 5.94: Auger

Installing Flighting Extensions

1. Place the flighting extensions (A) on the outboard side of the auger flighting (B). Tighten the hardware finger tight making sure the carriage bolt heads are on the inboard side (crop side) and the nuts (C) are on the outboard side of the flighting.

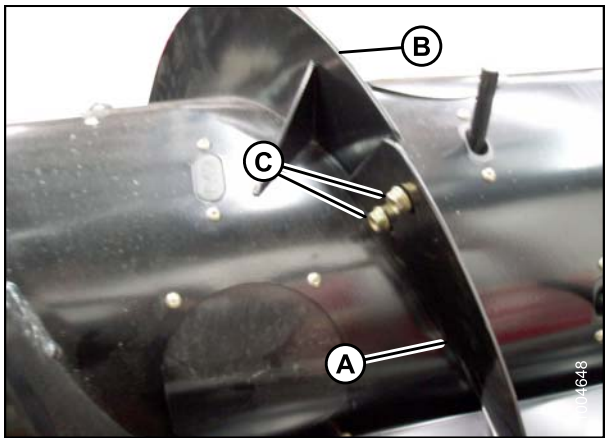


Figure 5.95: Flighting Extension

2. Stretch the flighting extensions (A) to fit the auger tube. Use the slotted holes on the flighting extension to achieve the best fit around the auger tube.

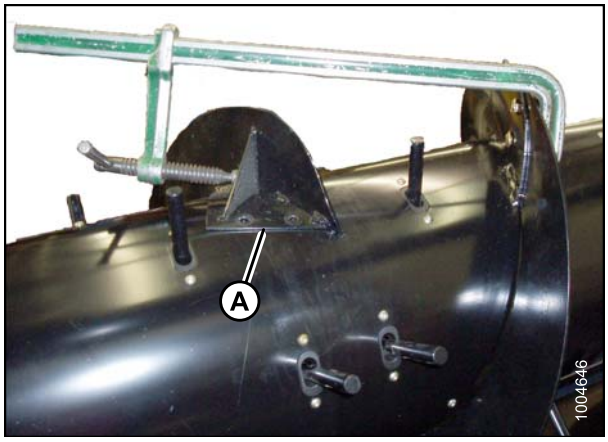


Figure 5.96: Flighting Extension

3. Mark hole locations (A) (three per extension), and drill 76 mm (3/8 in.) holes into the auger tube.

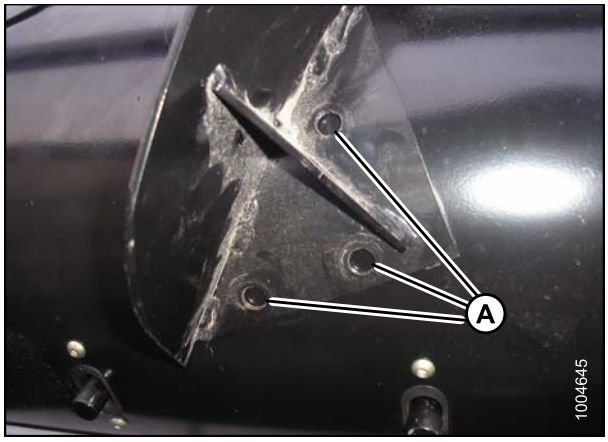


Figure 5.97: Flighting Extension

4. Install bolts to secure the flighting extensions in place.
5. Remove screws (A) and remove the nearest access cover (B).
6. Install nuts from inside the drum, and tighten all hardware.

NOTE:
The flighting extensions will normally fit tight to the auger tube; however, it is not unusual for the right-hand flighting extension to overlap the cover panel creating a gap between the flighting extension and the auger tube. Gaps that appear over the cover panels or in other locations cause crop material to gather in the gap openings, but this will not generally affect performance. Use silicone sealant to fill the gaps if necessary.

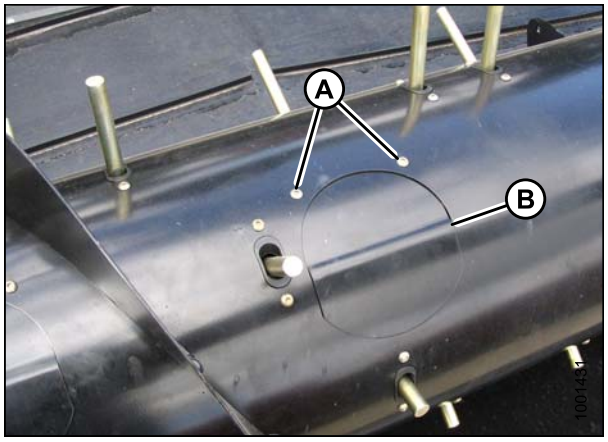


Figure 5.98: Auger

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

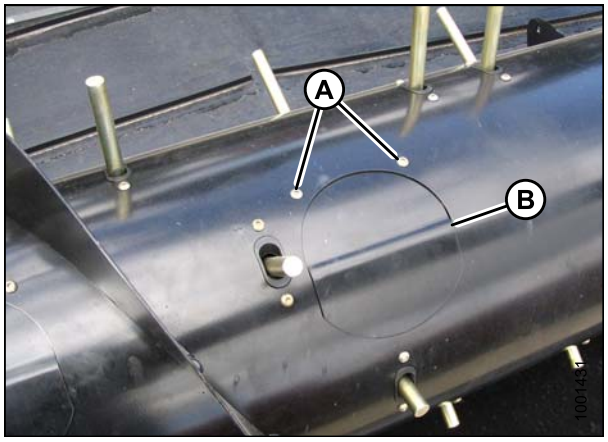


Figure 5.99: Auger

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 Preparing Machine for Servicing, page 313*.

CAUTION

Wear heavy gloves when working around or handling knives.

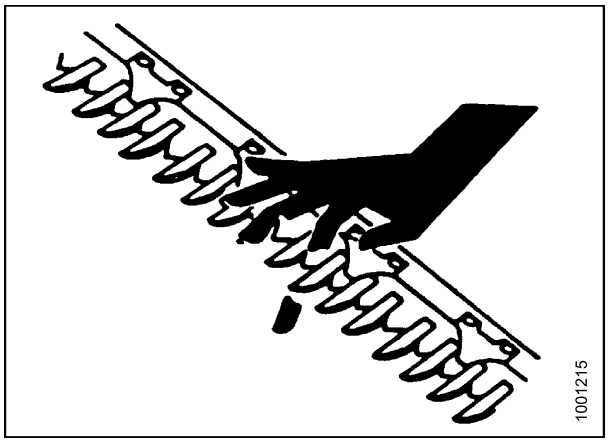


Figure 5.100: Cutterbar Hazard

5.8.1 Replacing Knife Section

Inspect the knife sections daily and ensure they are firmly bolted to the knife back and are not worn or damaged (worn or damaged sections leave behind uncut plants). Worn or damaged sections can be replaced without removing the knife from the cutterbar.

NOTE:
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.

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife as required to center the knife section (A) between the guards.
3. Remove nuts (B).
4. Remove bars (C) and lift the knife section off the knife bar.
5. Remove the splice bar (D) if knife section is under the bar.
6. Clean any dirt off the knife back and position the new knife section onto the knife.

   IMPORTANT:
   Do NOT mix fine and coarse sections on the same knife.

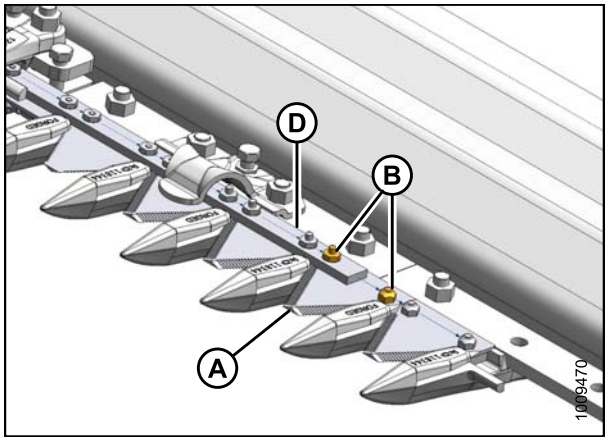


Figure 5.101: Knife Bar

7. Reposition bars (C) and/or (D) and install lock nuts (A).

   NOTE:
   If replacing screws, ensure they are fully inserted. Do not use nuts to draw screws into the knife bar.

8. Torque nuts to 9.5 N·m (7 ft·lbf).

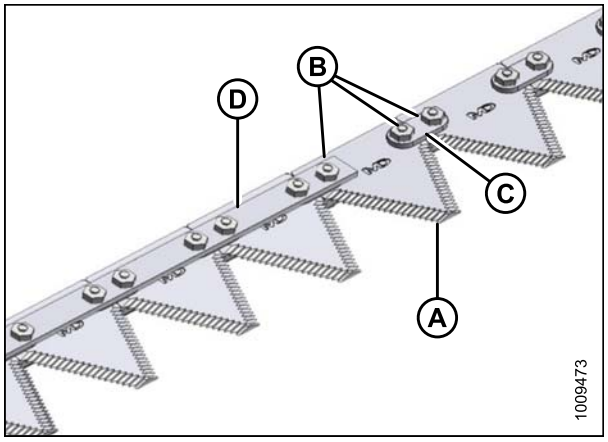


Figure 5.102: Knife Bar

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.

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually to its outer limit.
3. Clean the area around the knifehead.
4. Remove bolt (A).
5. Remove the grease zerk (B) from the pin.
6. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
7. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
8. Push the knife assembly inboard until it is clear of the output arm.
9. Seal the knifehead bearing with plastic or tape unless it is being replaced.
10. Wrap a chain around the knifehead and pull out the knife.

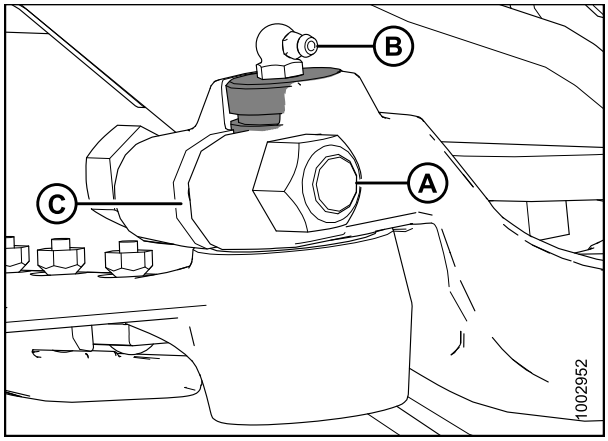


Figure 5.103: Knifehead

5.8.3 Removing Knifehead Bearing

WARNING

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

IMPORTANT:
Repeat this procedure for each knife.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the knife. Refer to *5.8.2 Removing Knife, page 371*.

   NOTE:
   Because the bearing is being replaced, it is not necessary to wrap the knifehead to protect the bearing.

3. Use a flat-ended tool with the same approximate diameter as the pin (A). Tap the seal (B), bearing (C), plug (D), and O-ring (E) from the underside of the knifehead.

   NOTE:
   Seal (B) can be replaced without removing the bearing. When changing the seal, check the pin and needle bearing for wear and replace if necessary.

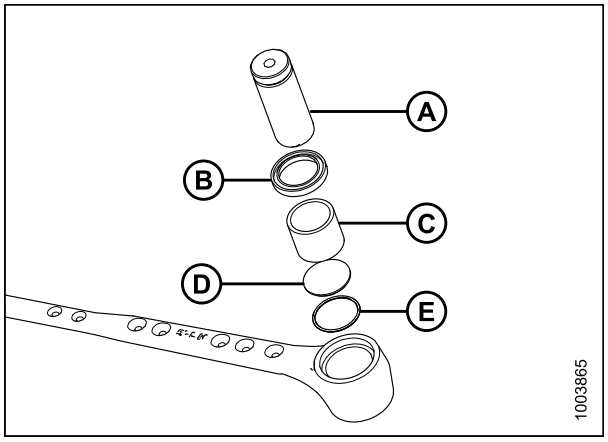


Figure 5.104: Knifehead Bearing Assembly

5.8.4 Installing Knifehead Bearing

1. Place O-ring (E) and plug (D) into knifehead.

   IMPORTANT:
   Install the bearing with the stamped end (the end with the identification markings) facing up.

2. Use a flat-ended tool (A) with the same approximate diameter as the bearing (C), and push the bearing into the knifehead until the top of the bearing is flush with the step in the knifehead.
3. Install seal (B) into knifehead with the lip facing outwards.

   IMPORTANT:
   To prevent premature knifehead or knife drive box failure, ensure there's a tight fit between the knifehead pin and the needle bearing, and also between the knifehead pin and the output arm.

4. Install the knife. Refer to *5.8.5 Installing Knife, page 372*.

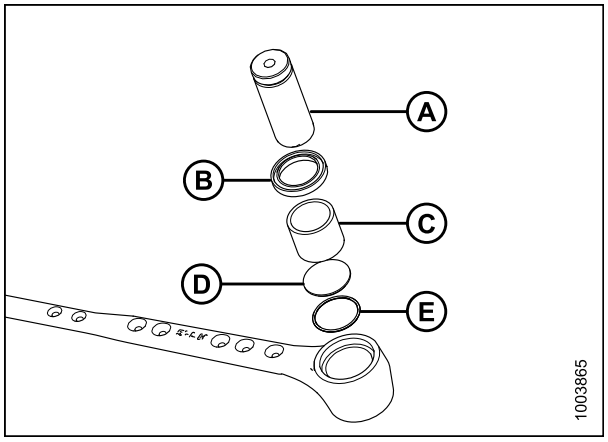


Figure 5.105: Knifehead Bearing Assembly

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.

1. Slide the knife into place and align the knifehead with the output arm.

   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. Tap the knifehead pin (A) down, make sure the pin is seated at the bottom of the knifehead.

3. Set the groove (B) in the knifehead pin 1.5 mm (1/16 in.) above the output arm (C). Secure with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 217 N·m (160 ft·lbf).

4. Using a feeler gauge, check that the gap at (E) is 0.25 mm (0.01 in.).

5. Install the grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

   IMPORTANT:
   Grease knifehead just enough to start a slight downward movement. Over-greasing will lead to knife misalignment which causes guards to overheat and drive systems to overload.

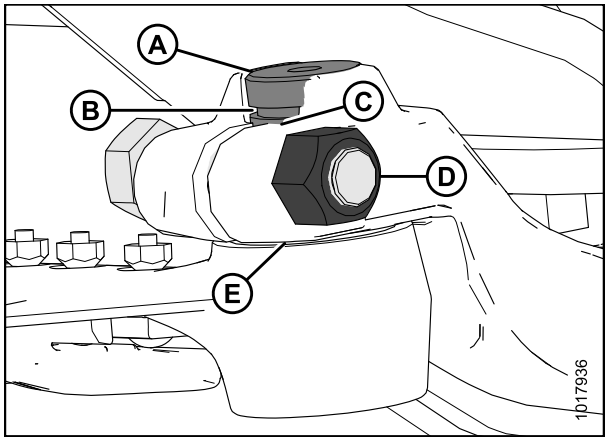


Figure 5.106: Knifehead

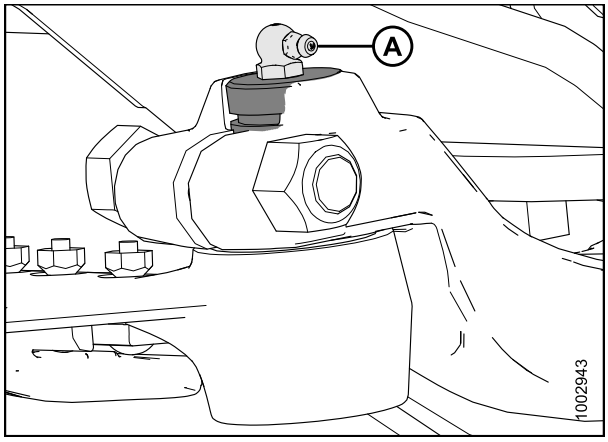


Figure 5.107: Knifehead

5.8.6 Spare Knife

A spare knife can be stored in the header frame tube (A) at the left end. Ensure the spare knife is secured in place.

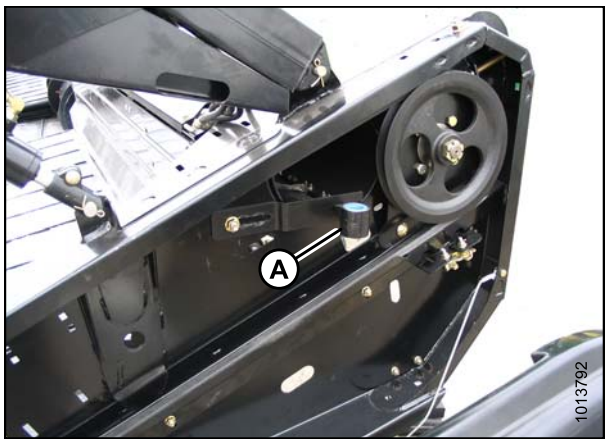


Figure 5.108: Spare Knife

5.8.7 Knife Guards

Perform **DAILY** inspections to ensure the knife guards are aligned and the knife sections are contacting the shear surfaces of the knife guards.

Adjusting Knife Guards

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 machine for any reason.

NOTE:
Use guard straightening tool (MD #140135) available from your MacDon Dealer.

1. Position the tool as shown, and pull up to adjust the guard tips upwards.

Figure 5.109: Upward Adjustment

2. Position the tool as shown, and push down to adjust the guard tips downwards.

   TIP:
   If crop is difficult to cut, install stub guards with top guards and adjuster plates. A kit is available from your MacDon Dealer. Refer to *6.3.3 Stub Guard Conversion Kit, page 473*.

Figure 5.110: Downward Adjustment

Replacing Pointed Guards

Normal, Drive Side, and End Guard Replacement

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove two nuts (B) and bolts attaching the guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove the guard (A), hold-down (C), and plastic wear plate (if installed).

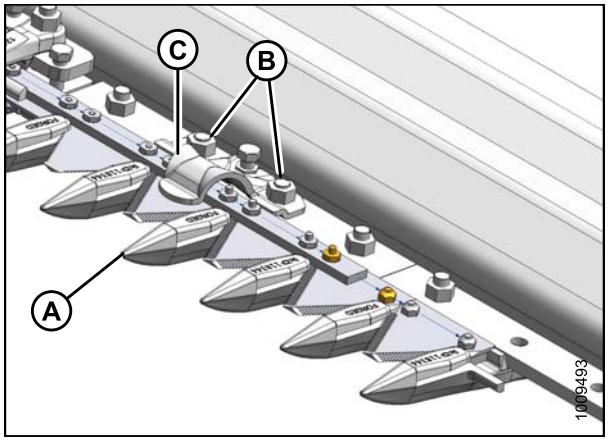


Figure 5.111: Pointed Guards

IMPORTANT:
The first four outboard guards (B) on the drive sides of the header do not have ledger plates. Ensure proper replacement guards are installed at these locations.

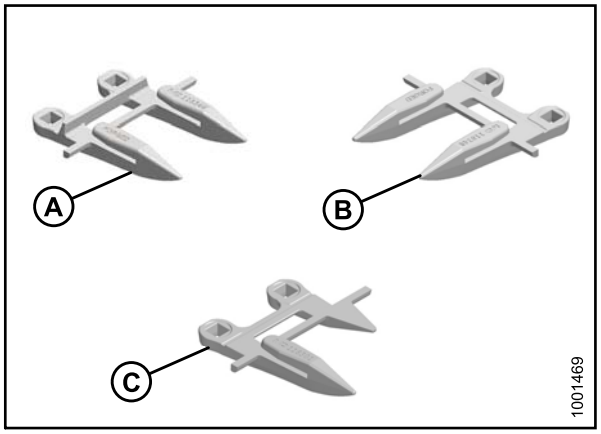


Figure 5.112: Pointed Guards

A - Normal **B - Drive Side** **C - Half Guard (End)**

5. Position the new guard (A), hold-down (C), and plastic wear plate (if applicable) onto the cutterbar. Secure with two nuts (B) and bolts, but do **NOT** tighten.
6. Check and adjust the clearance between the hold-downs and the knife. Refer to *Checking and Adjusting Knife Hold-Downs, page 379*.

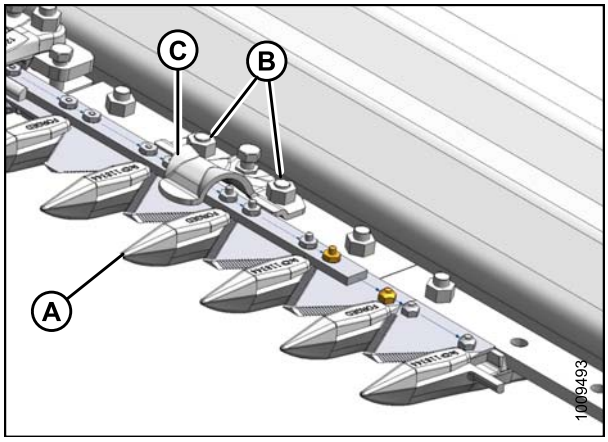


Figure 5.113: Pointed Guards

Center Guard Replacement

NOTE:
The guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the two nuts (B) and bolts attaching the guard (A) and top guide (C) to the cutterbar.
3. Remove the guard (A), plastic wear plate (if installed), top guide (C), and adjuster bar (D).

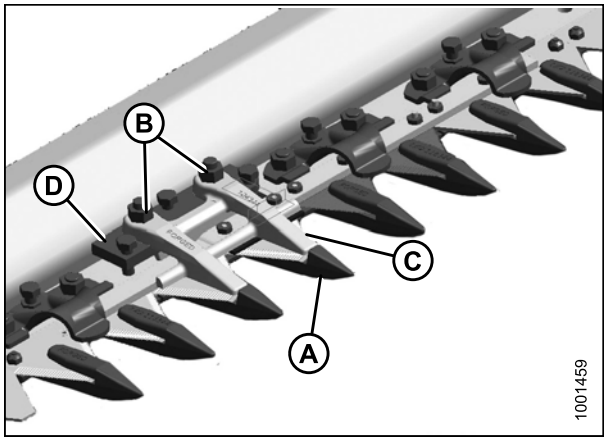


Figure 5.114: Center Guards

4. Position the plastic wear plate (if applicable), replacement center guard (A), adjuster bar, and top guide (B) onto the cutterbar. Install bolts, but do **NOT** tighten.

   IMPORTANT:
   Ensure the center guard (A) (right of the cutterbar split) has offset cutting surfaces.

   NOTE:
   The top guide (B) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.

5. Check and adjust the clearance between the hold-down and knife. Refer to *Checking and Adjusting Knife Hold-Downs, page 379*.

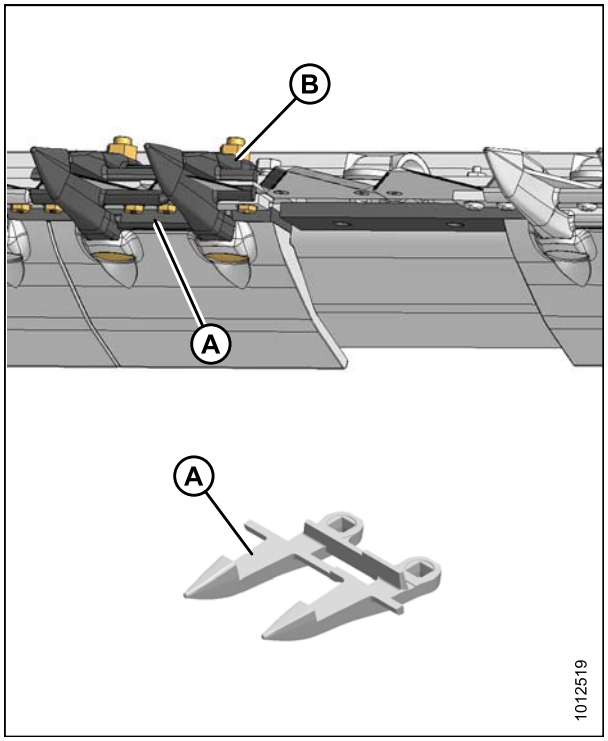


Figure 5.115: Center Guards

Replacing Stub Guards

Stub guards, complete with top guides and adjuster plates, are designed to cut tough crops and are factory-installed at the outer ends of specific headers.

Normal, Drive Side, and End Guard Replacement

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove the two nuts (A) and bolts attaching the guard (B) and top guide (C) to the cutterbar.
4. Remove the guard (B), plastic wear plate (if installed), top guide (C), and adjuster bar (D).

   IMPORTANT:
   Note the position of the mitre on the adjuster bar (D), and reinstall the adjuster bar in the same position. Mitres should not be adjacent to each other.

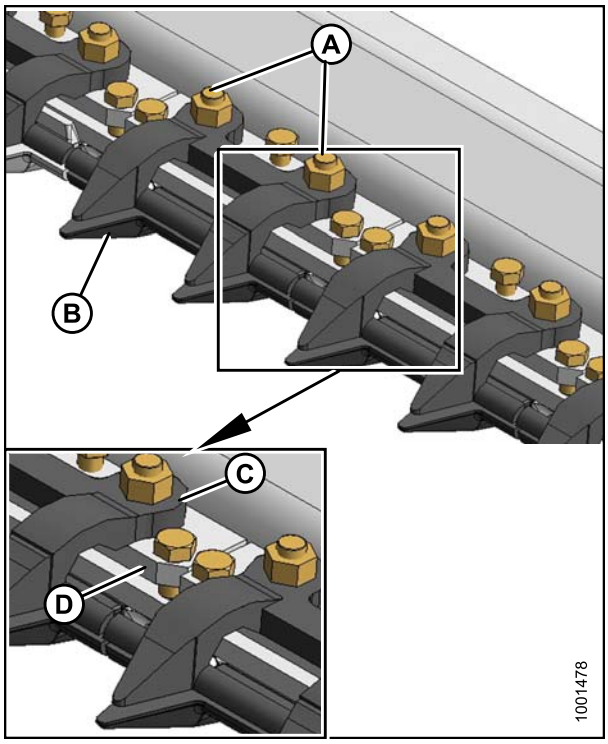


Figure 5.116: Stub Guards

IMPORTANT:
The first four outboard guards (B) on the drive sides of the header do not have ledger plates. Ensure the proper replacement guards are installed at these locations.

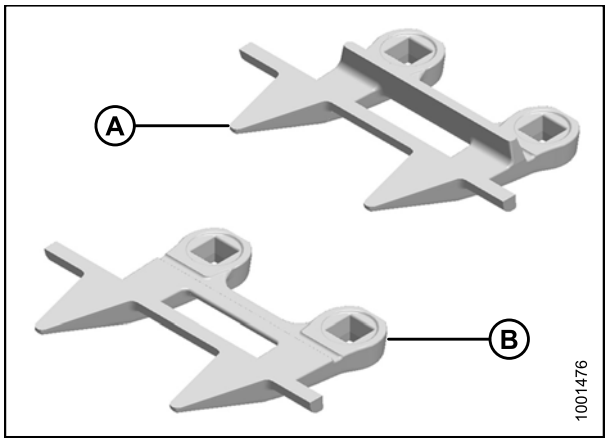


Figure 5.117: Stub Guards

A - Normal Guard **B - Drive Side Guard**

5. Position the plastic wear plate (if applicable), replacement guard (B), adjuster bar (D), top guide (C), and install bolts and nuts (A). Do **NOT** tighten.
6. Check and adjust the clearance between the hold-downs and the knife. Refer to *Checking and Adjusting Knife Hold-Downs, page 379*.

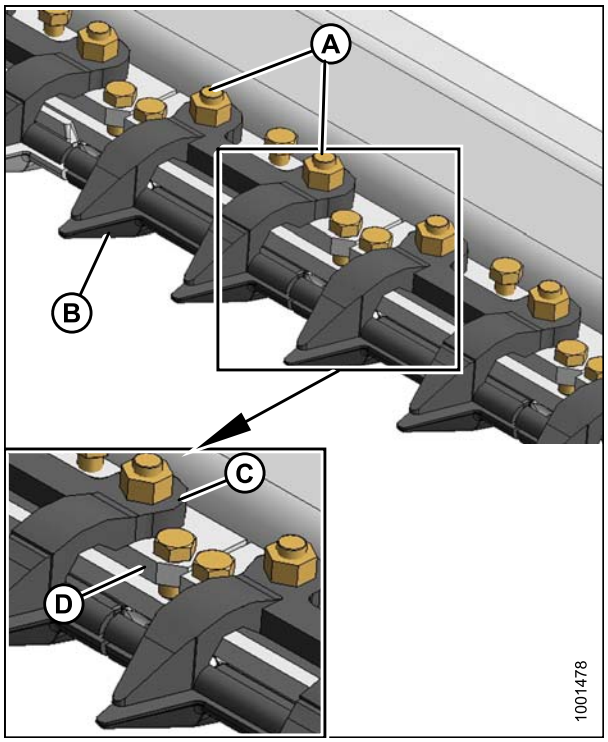


Figure 5.118: Stub Guards

Center Guard Replacement

NOTE:
The guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the two nuts (A) and bolts attaching the guard (B), top guide (C), and adjuster bar (D) to the cutterbar.
3. Remove the guard (B), plastic wear plate (if installed), top guide (C), and adjuster bar (D).
4. Position the plastic wear plate (if applicable), replacement guard (B), adjuster bar (D), and top guide (C) onto the cutterbar. Install bolts, but do **NOT** tighten.

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

   NOTE:
   The top guide (C) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.
5. Check and adjust the clearance between the hold-down and the knife. Refer to *Checking and Adjusting Knife Hold-Downs, page 379*.

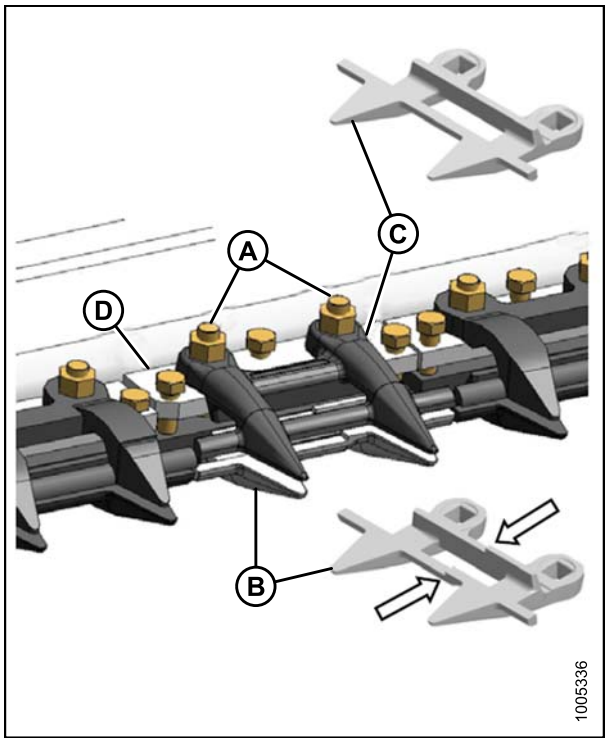


Figure 5.119: Center Guards

Checking and Adjusting Knife Hold-Downs

NOTE:
Align guards prior to checking and adjusting the hold-downs. Refer to *Adjusting Knife Guards, page 374*.

Perform daily inspections to ensure the knife hold-downs are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding. Refer to the following procedures as applicable:

- *Checking Pointed Guard Hold-Downs, page 380*

Checking Pointed Guard Hold-Downs

This procedure is applicable to single- and double-knife headers with pointed guards.

Measure the clearance between the hold-downs and knife sections as follows:

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Manually stroke knife to locate section (A) under the hold-down (B).
3. At the standard guard locations, push the knife section (A) down against the guard (C) and measure the clearance between the hold-down (B) and the knife section (A) with a feeler gauge. The clearance should be 0.1–0.6 mm (0.004–0.024 in.).
4. If necessary, refer to *Adjusting Pointed Guard Hold-Downs, page 380*.

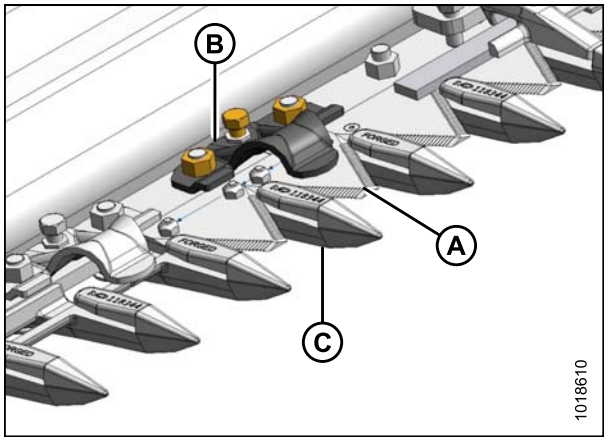


Figure 5.120: Normal Guard Hold-Down

Double-Knife:

5. Manually stroke knife to locate sections (A) and (C) under the center hold-down (B).
6. Insert a screwdriver or equivalent between the sections at center guard location to force upper section (A) against the hold-down (B) and lower section (C) against the guard (D).
7. Measure the clearance between the knife sections (A) and (C) with a feeler gauge. The clearances should be:
   - **At Hold-Down Tip (B):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At Rear of Hold-Down (C):** 0.1–1.0 mm (0.004–0.040 in.)
8. If necessary, refer to *Adjusting Hold-Down at Double-Knife Center Pointed Guard, page 381*.

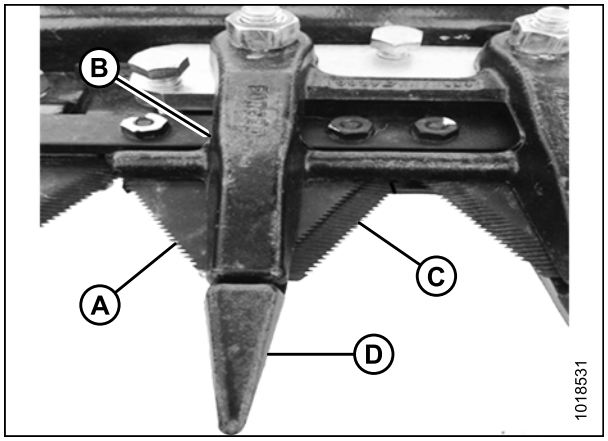


Figure 5.121: Double-Knife Center Guard Hold-Down

Adjusting Pointed Guard Hold-Downs

This procedure is applicable to normal formed sheet metal hold-downs on single- and double-knife headers. Do NOT use this procedure for the hold-down at the center guard position where the knives overlap on double-knife (DK) headers. For the center guard, refer to *Adjusting Hold-Down at Double-Knife Center Pointed Guard, page 381*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down the combine, and remove the key from the ignition.
2. Adjust hold-down (A) by turning bolt (B) clockwise to lower the front of the hold-down and decrease clearance, or counterclockwise to raise the front of the hold-down and increase clearance.

   NOTE:
   For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), and then retighten nuts.

3. Recheck clearance and readjust as required.

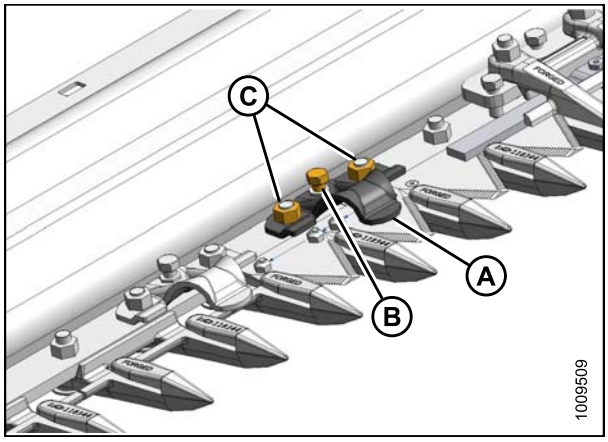


Figure 5.122: Normal Guard Hold-Down

WARNING

Check to be sure all bystanders have cleared the area.

4. Complete the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   NOTE:
   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

Adjusting Hold-Down at Double-Knife Center Pointed Guard

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Manually stroke the knives so that the sections (A) are under the hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) until they don't contact the cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (C) and torque to 45 N·m (35 lbf·ft).
8. Check clearances. Refer to *Checking Pointed Guard Hold-Downs, page 380*.

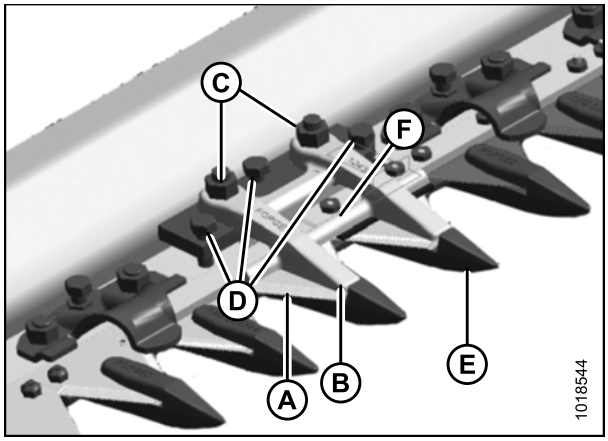


Figure 5.123: Center Guard

Checking Stub Guard Hold-Downs

This procedure is applicable to single- and double-knife headers with stub guards.

Measure the clearance between the hold-downs and knife sections as follows:

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down combine, and remove key from ignition.
2. Manually stroke knife to locate section under the hold-down (A).
3. **Standard Guard:**
   At the standard guard locations, push the knife section (B) down against the guard (C) and measure the clearance between the hold-down (A) and the knife section (B) with a feeler gauge. The clearance should be:
   - **At Hold-Down Tip (D):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At Rear of Hold-Down (E):** 0.1–1.0 mm (0.004–0.040 in.)
   - **At Sheet Metal Hold-Down (F):** 0.1–0.6 mm (0.004–0.024 in.)
4. If necessary, refer to *Adjusting Stub Guard Hold-Downs, page 383*.

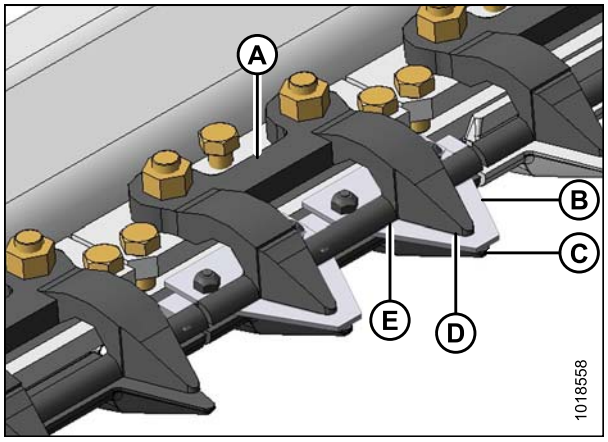


Figure 5.124: Standard Stub Forged Hold-Down

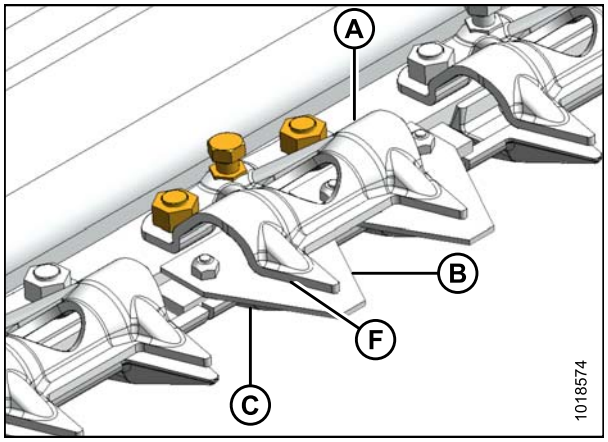


Figure 5.125: Standard Stub Sheet Metal Hold-Down

Double-Knife Center Guard:

5. Manually stroke knife to locate sections under the hold-down (B).
6. At the center guard location, Insert a screwdriver or equivalent between the sections at center guard location to force upper section (A) against the hold-down (B) and lower section (C) against the guard (D).
7. Measure the clearance between the knife sections (A) and (C) with a feeler gauge. The clearance should be:
   - **At Hold-Down Tip (E):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At Rear of Hold-Down (F):** 0.1–1.0 mm (0.004–0.040 in.)
8. If necessary, refer to *Adjusting Stub Guard Hold-Downs, page 383*.

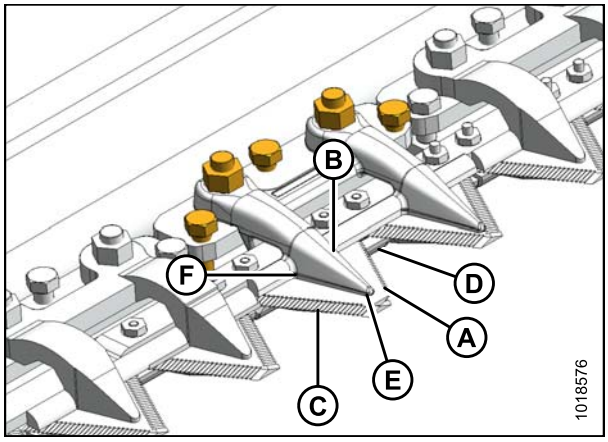


Figure 5.126: Double-Knife Center Stub Guard Hold-Down

Adjusting Stub Guard Hold-Downs

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Forged Hold-Down:

1. Shut downcombine, and remove key from ignition.
2. Manually stroke knife to center the section(s) (A) under hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) until they don't contact the cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (B) and torque to 45 N·m (35 lbf·ft).
8. Check that the specified clearances are achieved. Refer to *Checking Stub Guard Hold-Downs, page 382*.

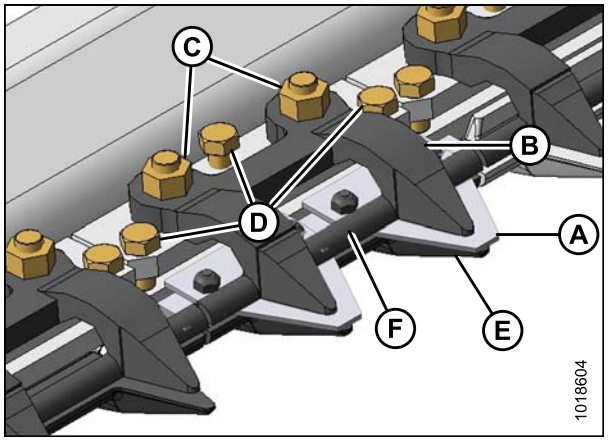


Figure 5.127: Normal Stub Guard Forged Hold-Down

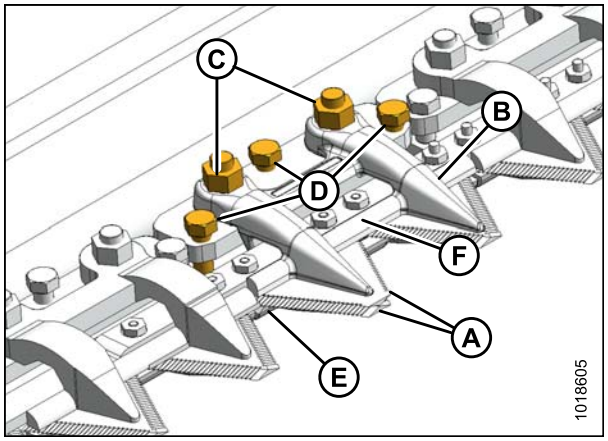


Figure 5.128: Double-Knife Center Stub Guard

Sheet Metal Hold-Down:

9. Manually stroke knife to center the section (A) under hold-down (B) as shown.
10. Adjust hold-down (B) by turning bolt (C) clockwise to lower the front of the hold-down and decrease clearance, or counterclockwise to raise the front of the hold-down and increase clearance. Clearance should be 0.1–0.6 mm (0.004–0.024 in.).

    NOTE:
    For larger adjustments, it may be necessary to loosen nuts (D), turn adjuster bolt (C), and then retighten nuts.

11. Torque the nuts (D) to 53 ft·lbf (72 N·m) after all the adjustments are complete and the specified clearances are achieved. Refer to *Checking Stub Guard Hold-Downs, page 382*.

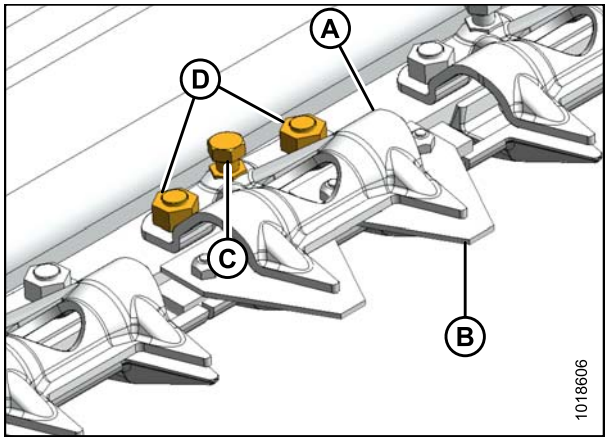


Figure 5.129: Stub Guard Sheet Metal Hold-Down

WARNING

Check to be sure all bystanders have cleared the area.

12. Complete the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

    NOTE:
    Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

5.8.8 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cut-out.

The shields and mounting hardware are available from your MacDon Dealer.

IMPORTANT:
Remove the shields when cutting with the cutterbar on the ground in muddy conditions. Mud may pack into the cavity behind the shield which could result in knife drive box failure.

Installing Knifehead Shield

The knifehead shield is supplied in flattened form, but it can be bent to suit installation on pointed or stub guard cutterbars. Knifehead shields differ slightly depending on header size and guard configuration, so ensure you are using the proper knifehead shield for your header. Refer to your 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.

CAUTION

Wear heavy gloves when working around or handling knives.

1. Raise the reel to its full height, lower the header to the ground, shut down the engine, and remove the key from the ignition.
2. Engage the reel arm locks.
3. Place the knifehead shield (A) against the endsheet as shown. Align the shield so the cutout matches the profile of the knifehead and/or hold-downs.
4. Bend the knifehead shield (A) along the slit to conform to the endsheet.
5. Align the mounting holes and secure with two 3/8 in. x 1/2 in. Torx® head bolts (B).
6. Tighten the bolts (B) just enough to hold the knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
7. Rotate the knife drive box pulley manually to move the knife and check for areas of contact between the knifehead and knifehead shield (A). Adjust the shield to eliminate interference with the knife if necessary.
8. Tighten the bolts (B).

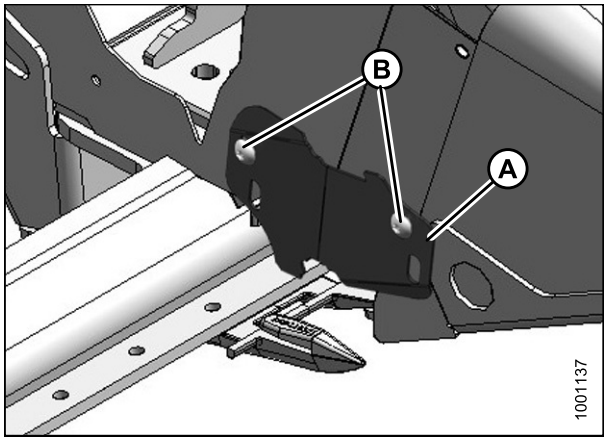


Figure 5.130: Knifehead Shield

5.9 Knife Drive

5.9.1 Knife Drive Box

Knife drive boxes are belt driven by a hydraulic motor that is powered by the adapter hydraulic pump, and convert rotational motion into the reciprocating motion of the knife. There is one knife drive box on single-reel headers and two knife drive boxes on double-reel headers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 313*.

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.

DANGER

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

1. Torque the side bolts (A) first, then torque the bottom bolts (B). Torque all bolts to 271 N m (200 ft·lbf). When tightening, start with the side mounting bolts.

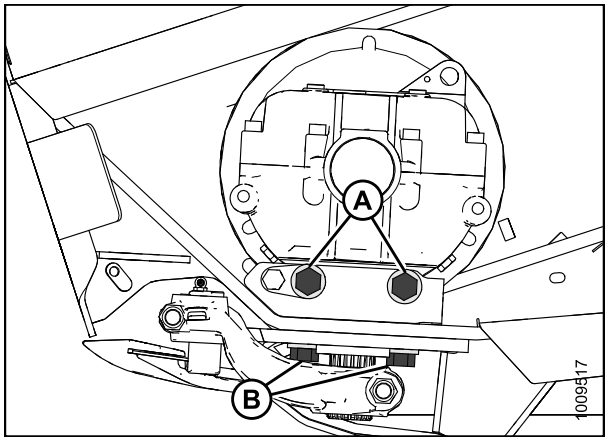


Figure 5.131: Knife Drive Box

Removing Knife Drive Box

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshield, page 33*.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning the tensioning bolt (B) counterclockwise.

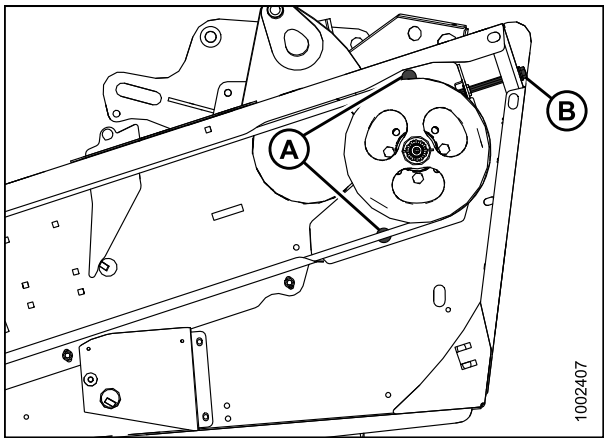


Figure 5.132: Knife Drive

5. Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

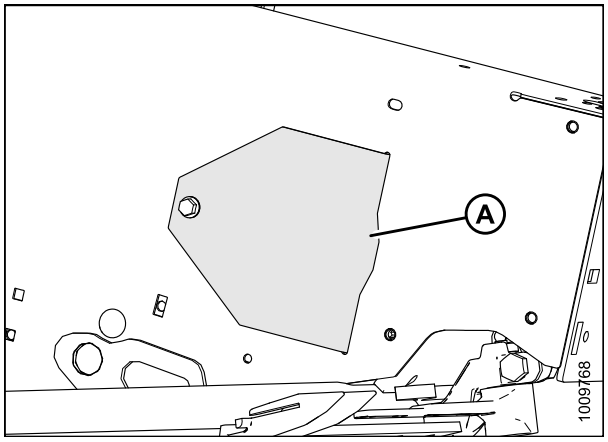


Figure 5.133: Access Cover

6. Remove the belt (A) from the drive pulley (B).
7. Slip the belt (A) over and behind the knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

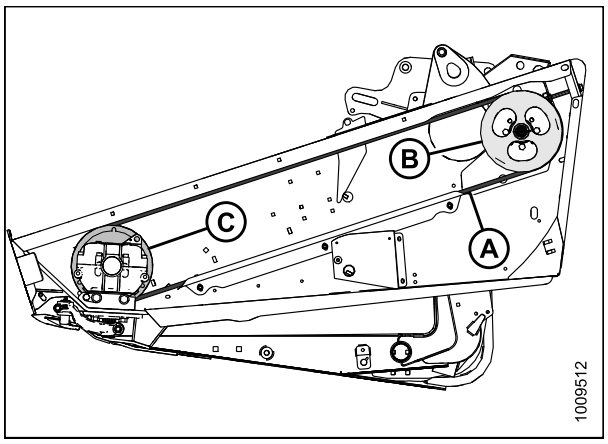


Figure 5.134: Knife Drive

8. Stroke the knife manually to its outer limit.
9. Remove bolt (A).
10. Remove the grease zerk (B) from the pin.
11. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
12. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
13. Push the knife assembly inboard until it is clear of the output arm.
14. Seal the knifehead bearing with plastic or tape unless it is being replaced.

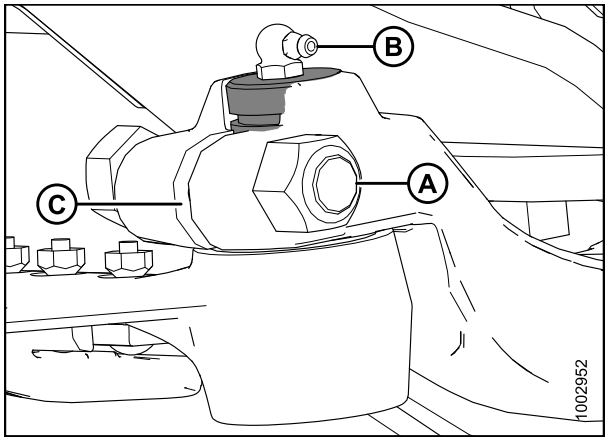


Figure 5.135: Knifehead

15. Remove the bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
16. Remove the knife drive arm (B) from the knife drive box output shaft.
17. Remove the four knife drive box mounting bolts (C, D).

NOTE:
Do **NOT** remove bolt (E); it is factory-set to properly position the knife drive box in the correct fore-aft position.

CAUTION

Extension may shift when supports are removed. Use care when removing fasteners and supports.

18. Remove the knife drive box and place it on a bench for disassembly.
19. Repeat procedure for the opposite end of the header.

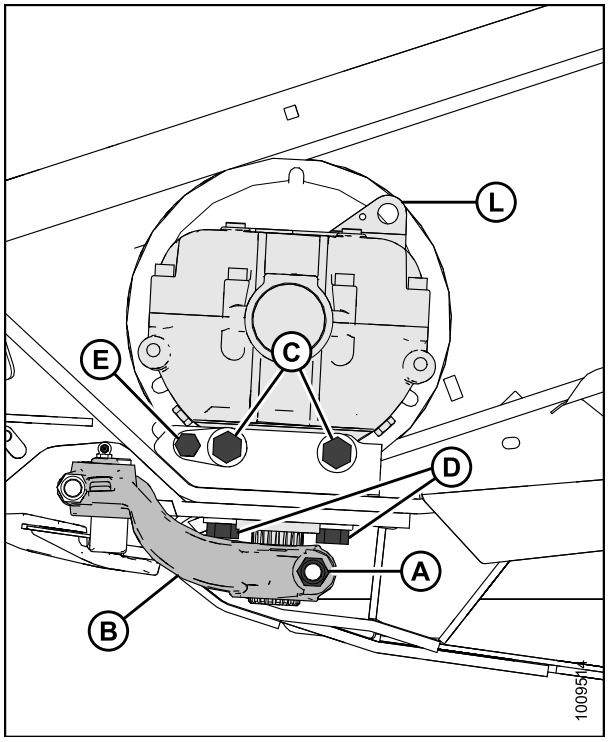


Figure 5.136: Knife Drive Box

Removing Knife Drive Box Pulley

1. Loosen and remove the knife drive box pulley clamping bolt (A) and nut (B).
2. Remove the knife drive box pulley (C) using a three-jaw puller.

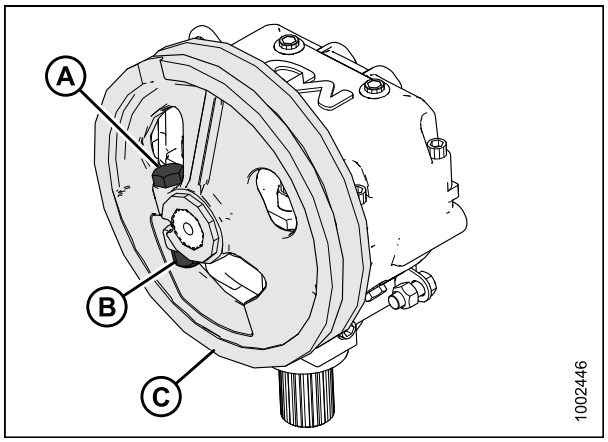


Figure 5.137: Knife Drive Box and Pulley

Installing Knife Drive Box Pulley

1. Ensure the splines and bores in the pulley and drive arm are free of paint, oil, and solvents.
2. Apply two bands (A) of Loctite® #243 adhesive (or equivalent) around the shaft as shown. Apply one band at the end of the spline and the second band at the approximate mid-point location.
3. Install the pulley (B) until flush with the end of the shaft.
4. Secure the pulley with 5/8 in. x 3 in. hex head bolt with distorted thread NC lock nut and torque to 217 N·m (160 ft·lbf).

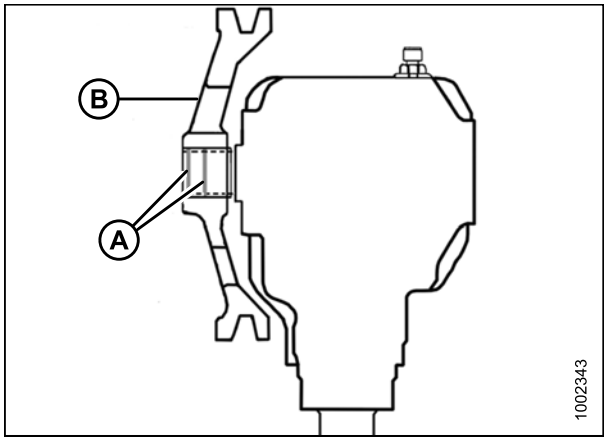


Figure 5.138: Knife Drive Box

Installing Knife Drive Box

NOTE:
If the pulley was removed from the knife drive box, refer to *Installing Knife Drive Box Pulley, page 390*. If the pulley was not removed, proceed to Step *1., page 391*.

CAUTION

Extension may shift when supports are removed. Use care when removing fasteners and supports.

1. Position the knife drive box onto the header mount and install the belt onto the pulley.
2. Secure the knife drive box to the frame using two 5/8 in. x 1-3/4 in. grade 8 hex head bolts (A) on the side and two 5/8 in. x 2-1/4 in. grade 8 hex head bolts (B) on the bottom.
3. Tighten the knife drive box side bolts (A) slightly, then tighten the bottom bolts (B) to ensure proper contact with the vertical and horizontal mounting surfaces. Do **NOT** torque the bolts at this time.

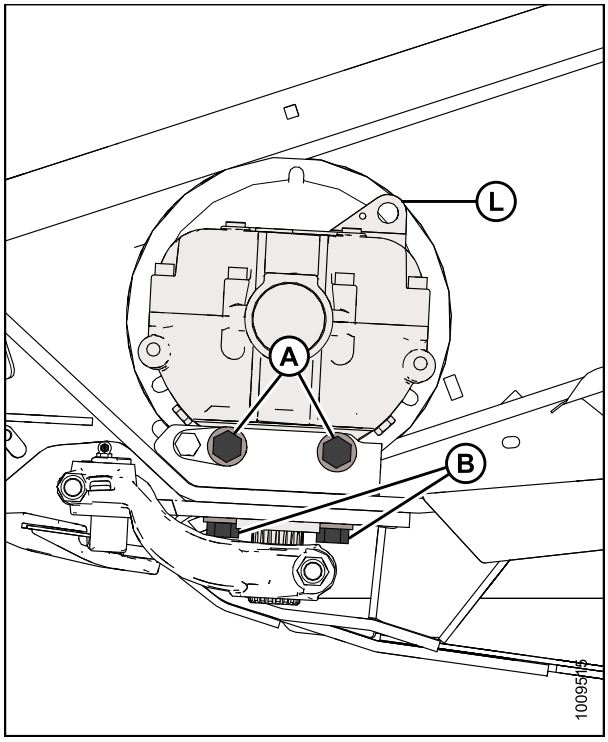


Figure 5.139: Knife Drive Box

4. Apply two bands (A) of Loctite® #243 (or equivalent) to the output shaft as shown. Apply one band at the end of the output shaft and the second band at the approximate mid-point location.
5. Slide the output arm (B) onto the output shaft. Rotate the pulley to ensure the splines are properly aligned and the drive arm clears the frame on the inboard stroke.

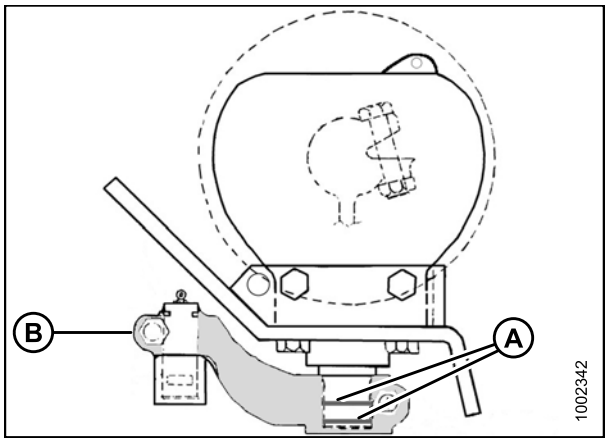


Figure 5.140: Knife Drive Box

6. Position the output arm (A) the to farthest outboard position. Move the output arm (A) up or down on the splined shaft until it is almost contacting the knifehead (B) (exact clearance (C) is set during the knifehead pin installation).

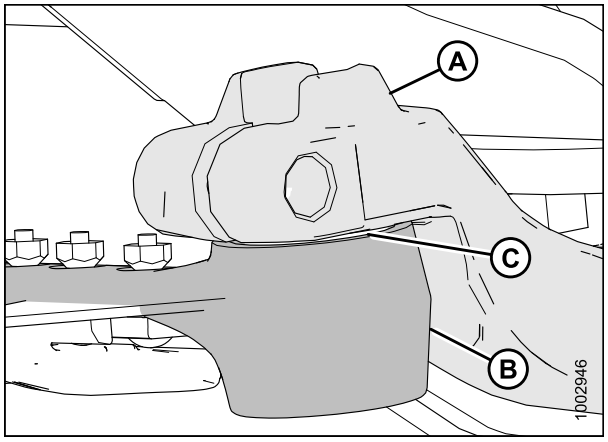


Figure 5.141: Knifehead

7. Torque the output arm bolt (B) to 217 N·m (160 ft·lbf).

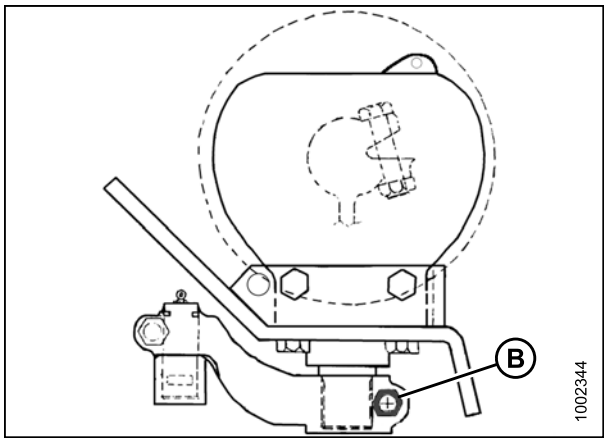


Figure 5.142: Knife Drive Box

8. Slide the knife into place and align the knifehead with the output arm.

   NOTE:
   For ease of removing or installing knifehead pin, remove grease zerk from pin.

9. Install knifehead pin (A) through the output arm and into the knifehead. Tap the knifehead pin (A) down, make sure the pin is seated at the bottom of the knifehead.
10. Set the groove (B) in the knifehead pin 1.5 mm (1/16 in.) above the output arm (C). Secure with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 217 N·m (160 ft·lbf).
11. Using a feeler gauge, check that the gap at (E) is 0.25 mm (0.01 in.).

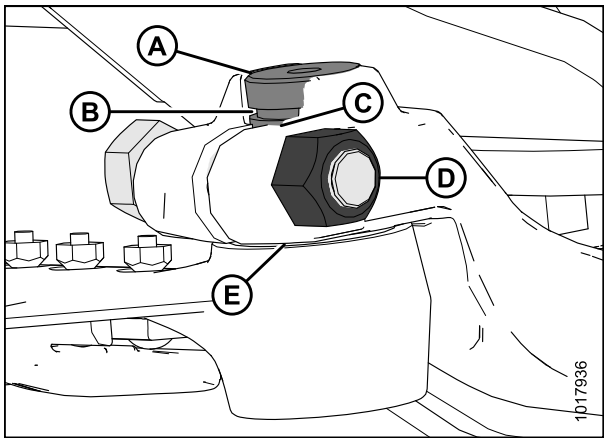


Figure 5.143: Knifehead

12. Install the grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

    IMPORTANT:
    Grease knifehead just enough to start a slight downward movement. Over-greasing will lead to knife misalignment which causes guards to overheat and drive systems to overload.

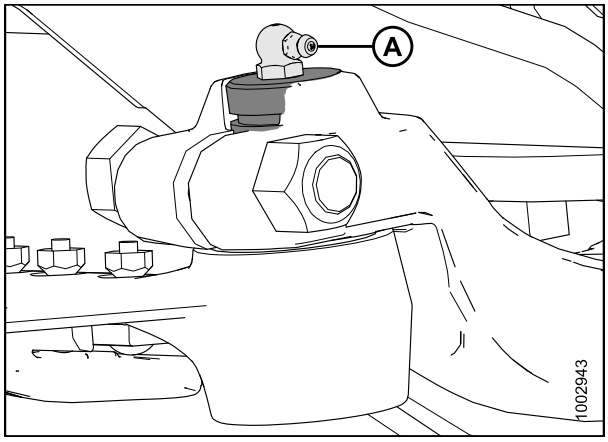


Figure 5.144: Knifehead

13. Tighten the knife drive box side bolts (A) first, then tighten the bottom bolts (B). Torque to 271 N·m (200 ft·lbf).
14. Move the output arm to the mid-stroke position, and ensure the knife bar doesn't contact the front of the first guard. If the knife drive box requires adjustment, contact your MacDon Dealer.
15. Install and tension the knife drive belts. For untimed belts refer to *Tensioning Knife Drive Belts, page 396*.
16. Close the endshield. Refer to *Closing Endshield, page 34*.

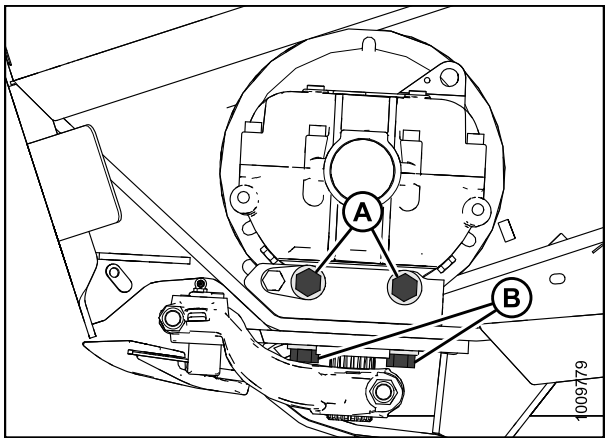


Figure 5.145: Knife Drive Box

Changing Oil in Knife Drive Box

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

1. Shut down the combine, and remove the key from the ignition.
2. Raise the header to allow a suitably sized container to fit under the knife box drain and collect the oil.
3. Open the endshield. Refer to *Opening Endshield, page 33* .
4. Remove the breather/dipstick (A) and the drain plug (B).
5. Allow the oil to drain.
6. Reinstall the drain plug (B).
7. Add oil to the knife drive box. Refer to *5.2.1 Recommended Fluids and Lubricants, page 314*.
8. Close the endshield. Refer to *Closing Endshield, page 34*.

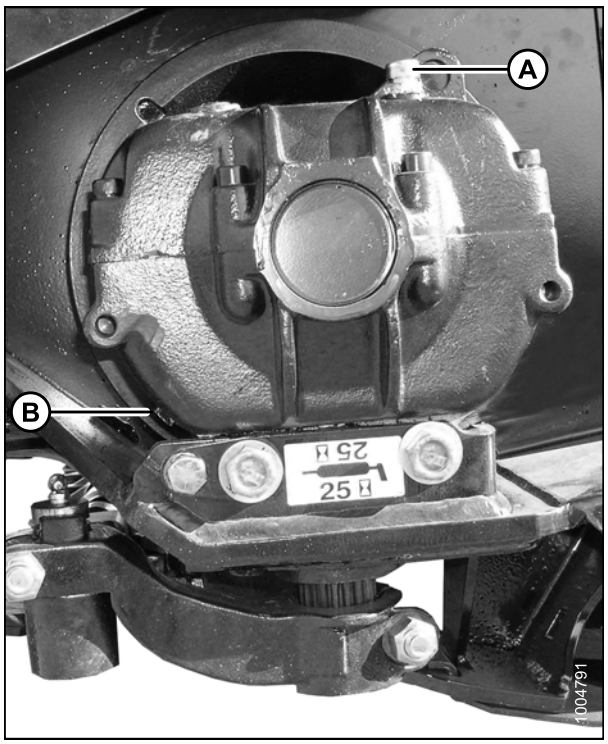


Figure 5.146: Knife Drive Box

5.9.2 Knife Drive Belts

Non-Timed Knife Drive Belts

The knife drive box is driven by a V-belt that is powered by a hydraulic motor on the header endsheets.

Removing Non-Timed Knife Drive Belt

The non-timed knife drive belt removal procedure is the same for both sides of a double-knife header.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshield, page 33*.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning the tensioning bolt (B) counterclockwise.

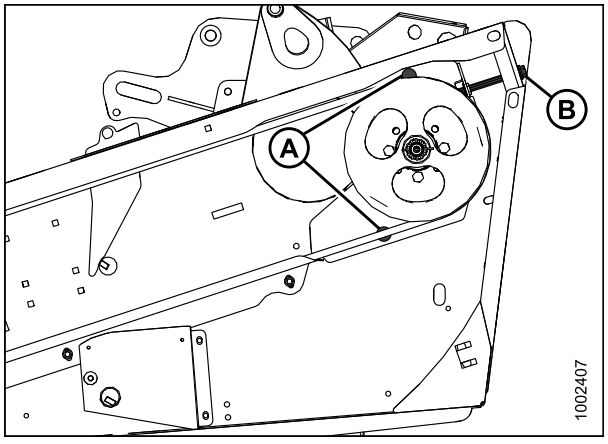


Figure 5.147: Knife Drive

5. Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

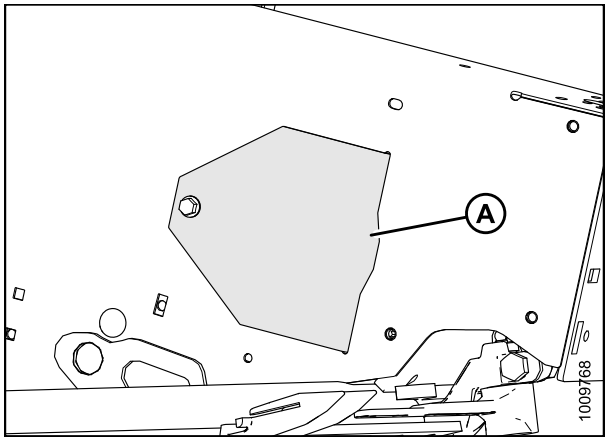


Figure 5.148: Access Cover

6. Remove the belt (A) from the drive pulley (B).
7. Slip the belt (A) over and behind the knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

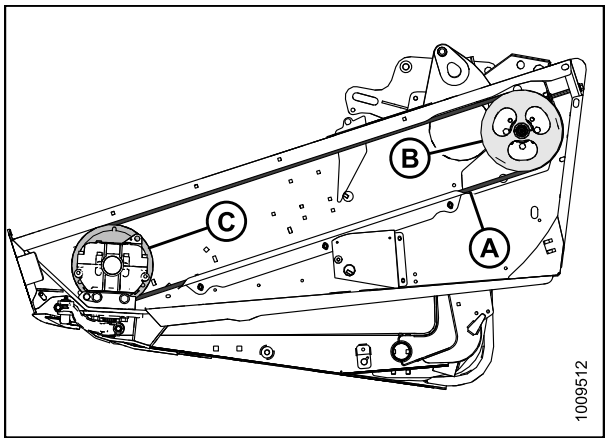


Figure 5.149: Knife Drive

Installing Knife Drive Belts

The procedure for installing non-timed knife drive belts is the same for both sides of the header.

1. Shut down the combine, and remove the key from the ignition.
2. Route the knife drive belt (A) around the knife drive box pulley (C) and knife drive pulley (B). Use the notch in the pulley to assist with the belt installation.

   NOTE:
   Ensure the drive motor is fully forward, do **NOT** pry the belt over the pulley.

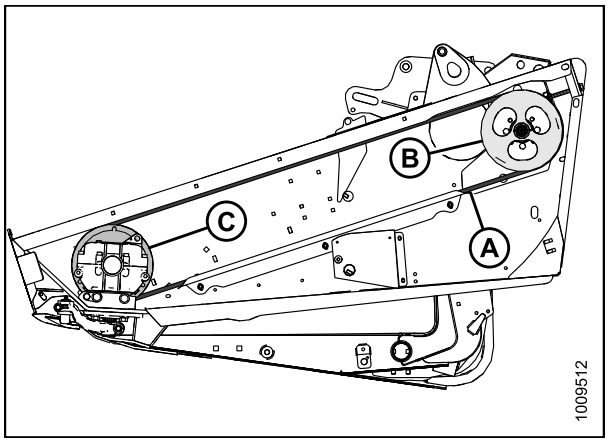


Figure 5.150: Knife Drive

3. Tension the knife drive belt. Refer to *Tensioning Knife Drive Belts, page 396*.
4. Install the access cover (A) and secure with bolt.
5. Close the endshield. Refer to *Closing Endshield, page 34*.

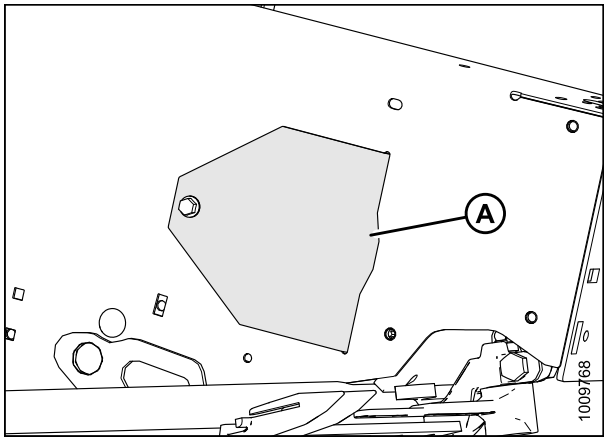


Figure 5.151: Access Cover

Tensioning Knife Drive Belts

IMPORTANT:
To prolong belt and drive life, do **NOT** overtighten the belt.

1. Shut down machine, and remove key from the ignition.
2. Open the endshield. Refer to *Opening Endshield, page 33*.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Turn adjuster bolt (B) clockwise to move drive motor until a force of 89 N (20 lbf) deflects belt (C) 20–25 mm (3/4–1 in.) at mid-span.

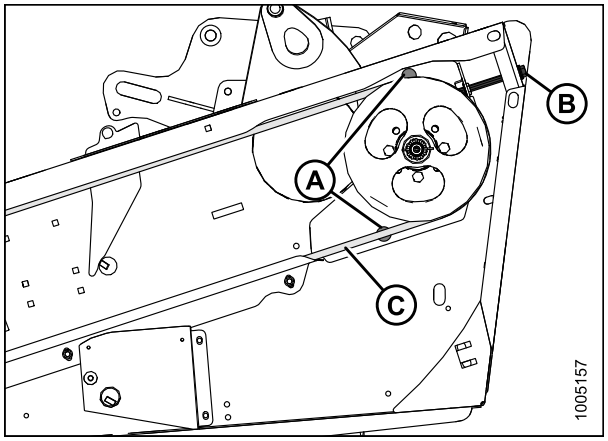


Figure 5.152: Non-Timed Knife Drive

5. Ensure clearance between belt (A) and belt guide (B) is 1 mm (1/32 in.).
6. Loosen three bolts (C), and adjust position of guide (B) as required.
7. Tighten three bolts (C).
8. Close endshield. Refer to *Closing Endshield, page 34*.

   NOTE:
   Readjust tension of a new belt after a short run-in period (about five hours).

9. Repeat above steps for opposite end on double-knife headers.

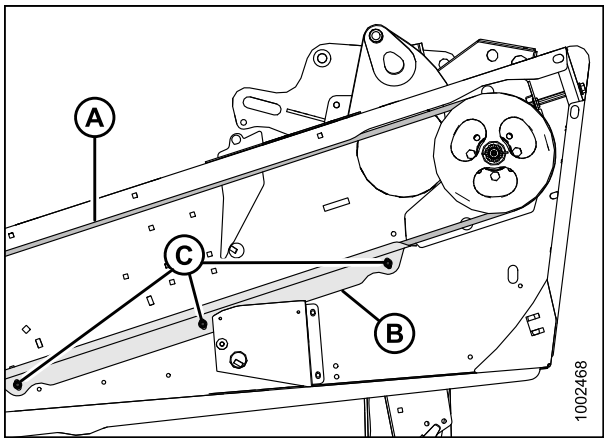


Figure 5.153: Non-Timed Knife Drive

5.10 Adapter Feed Draper

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 313*.

5.10.1 Replacing Adapter Feed Draper

Replace draper if torn, cracked, or missing slats.

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to *4.7.2 Detaching Header from Adapter and Combine, page 306*.
2. Raise the header to its full height, stop the engine, and the remove key from the ignition.
3. Engage the header safety props.
4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.
5. Disengage the header safety props and lower the feeder house and adapter onto blocks to keep the adapter slightly off the ground.

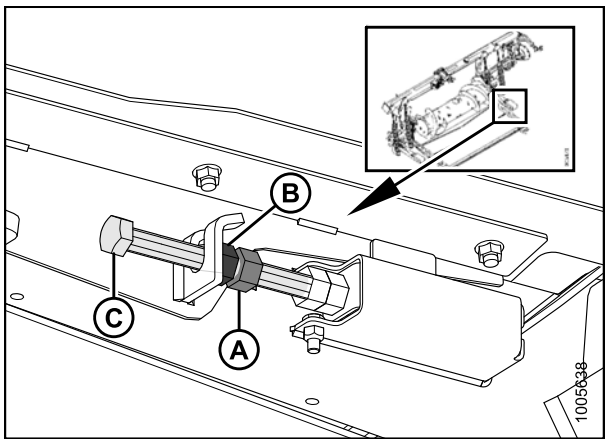


Figure 5.154: Tensioner

6. Remove screws (A) and nuts, and remove the draper connector straps (B).
7. Pull the draper from the deck.

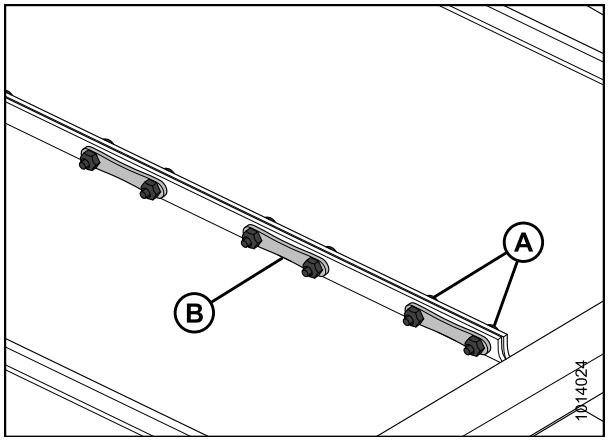


Figure 5.155: Draper Connector

8. Install the new draper over the drive roller (A) with the chevron cleat (B) pointing towards the front of the adapter. Make sure the draper guides fit in the drive roller grooves (C).
9. Pull the draper along the bottom of the adapter deck and over the draper supports (D).

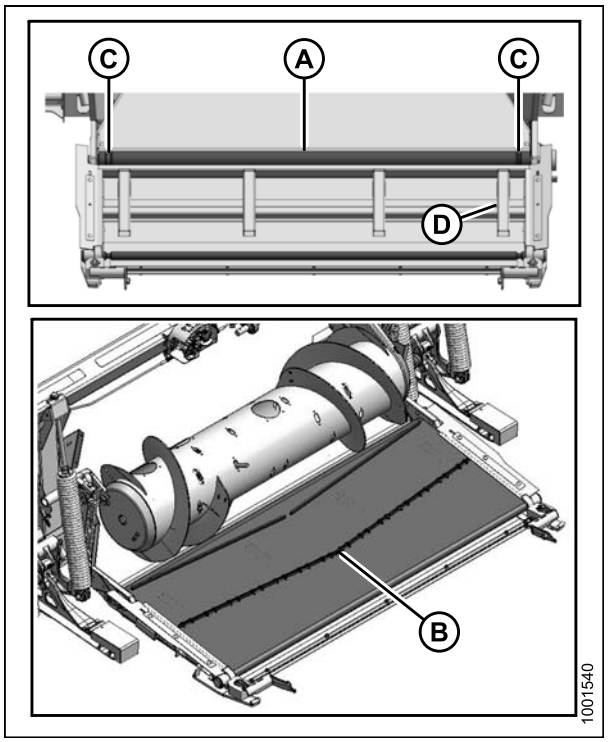


Figure 5.156: Adapter Feed Draper

10. Connect the draper joint with the connector straps (B) and secure with screws (A) and nuts. Ensure the screw heads face towards the rear of the deck, and tighten only until the end of the screws are flush with the nuts.
11. Adjust the draper tension. Refer to *5.10.2 Adjusting Adapter Feed Draper Tension, page 398*.

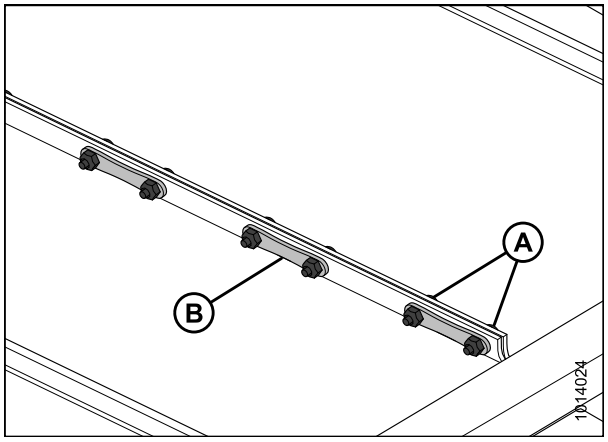


Figure 5.157: Draper Connector Straps

5.10.2 Adjusting Adapter Feed Draper Tension

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.
3. Ensure the draper guide (rubber track on the underside of the draper) is properly engaged in the groove of the drive roller and the idler roller is between the guides.

4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) clockwise to increase draper tension or counterclockwise to decrease draper tension.

   IMPORTANT:
   Adjust both sides equally.

5. Tension the draper until the spring retainer (D) is flush with the spring box and bolt (E) is free.
6. Tighten jam nut (A).

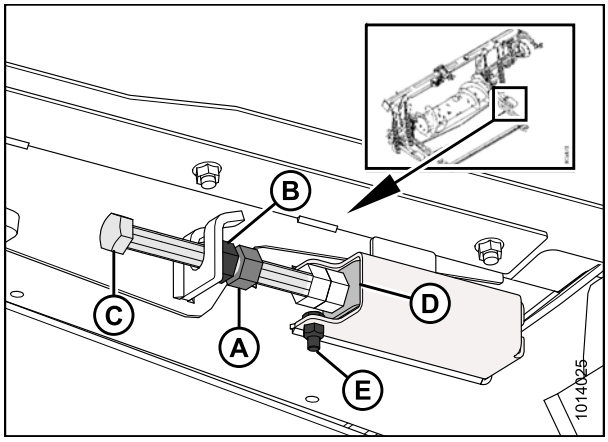


Figure 5.158: Tensioner

5.10.3 Adapter Drive Roller

Removing Adapter Feed Draper Drive Roller

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to *4.7.2 Detaching Header from Adapter and Combine, page 306*.
2. Raise the header to its full height, stop the engine, and the remove key from the ignition.
3. Engage the header safety props.
4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

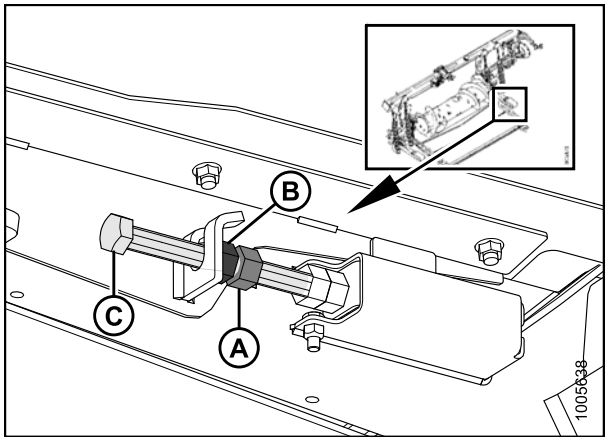


Figure 5.159: Tensioner

5. Remove screws (A) and nuts, and remove the draper connector straps (B).
6. Open the feed draper.

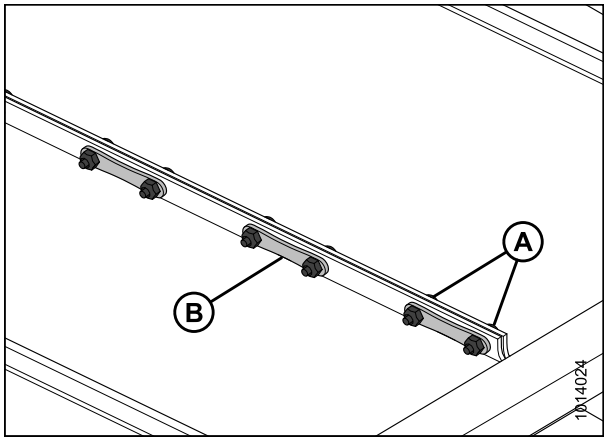


Figure 5.160: Draper Connector

7. Loosen the setscrew and unlock the bearing lock collar (A).
8. Remove three bolts (B).
9. Remove the bearing flanges (C) and the bearing.

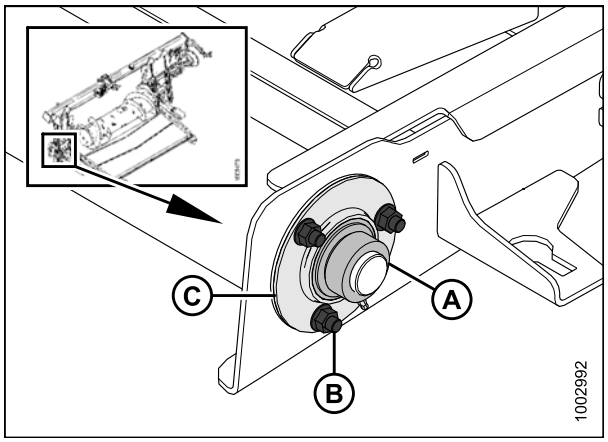


Figure 5.161: Bearing

10. Remove the four bolts (A) securing the hydraulic motor (B) to the frame. Slide the hydraulic motor away from the drive roller (C).
11. Remove the drive roller (C).

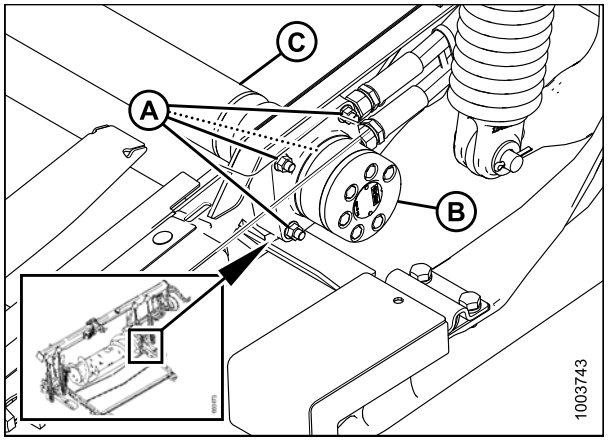


Figure 5.162: Hydraulic Motor

Installing Adapter Feed Draper Drive Roller

1. Apply grease to the spline.
2. Position the drive roller (C) in the adapter frame.
3. Slide the hydraulic motor (B) into the drive roller (C). Secure the motor to the feed deck with four bolts (A).

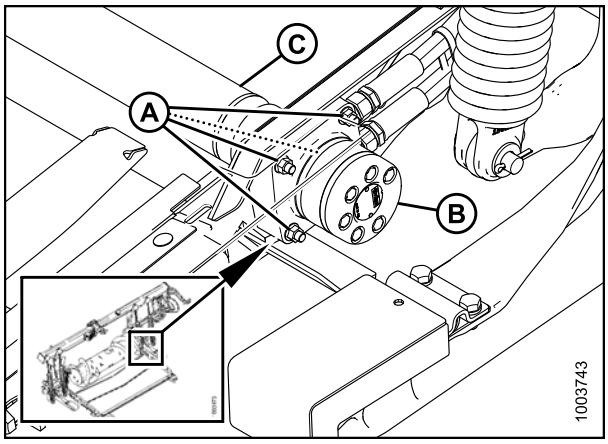


Figure 5.163: Motor

4. Install the bearing flanges (C) and the bearing.
5. Install three bolts (B) to secure the bearing and flanges (C) to the feed deck.
6. Lock the bearing collar (A) and tighten the setscrew.
7. Install the feed deck draper. Refer to *5.10.1 Replacing Adapter Feed Draper, page 397*.
8. Tension the feed draper. Refer to *5.10.2 Adjusting Adapter Feed Draper Tension, page 398*.
9. Attach the header to the adapter. Refer to *4.7.1 Attaching Header to CA25 and Combine, page 300*.

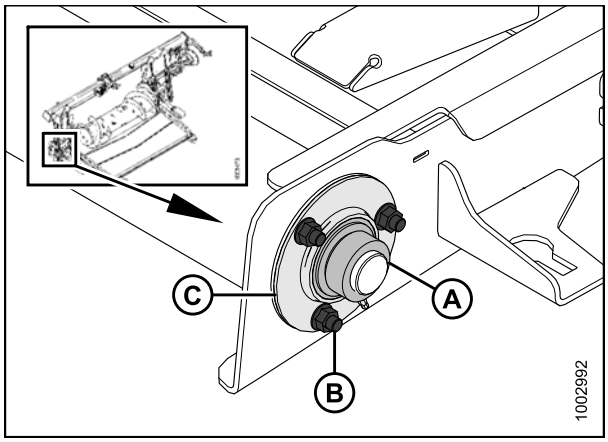


Figure 5.164: Bearing

Replacing Adapter Feed Draper Drive Roller Bearing

Removing Adapter Feed Draper Drive Roller Bearing

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to *4.7.2 Detaching Header from Adapter and Combine, page 306*.
2. Raise the header to its full height, stop the engine, and the remove key from the ignition.
3. Engage the header safety props.

4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

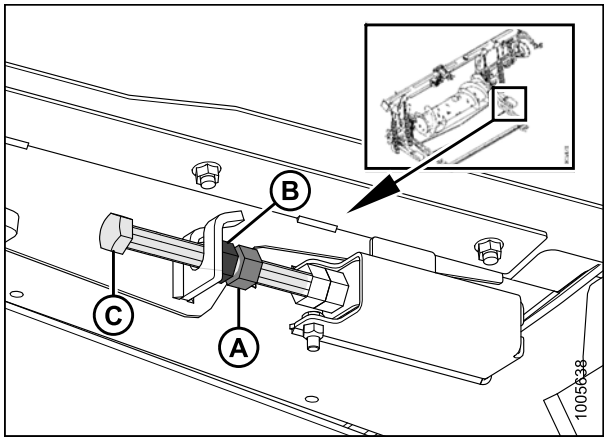


Figure 5.165: Tensioner

5. Loosen the setscrew and unlock the bearing lock collar (A).
6. Remove three bolts (B).
7. Remove the bearing flanges (C) and the bearing.

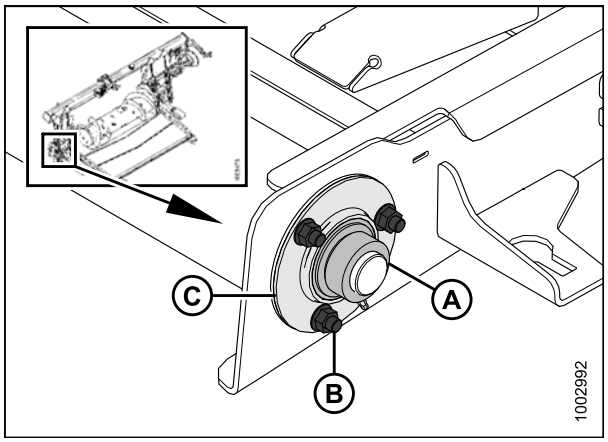


Figure 5.166: Bearing

Installing Adapter Feed Draper Drive Roller Bearing

1. Install the bearing flanges (C) and the bearing.
2. Install three bolts (B) to secure the bearing and flanges (C) to the feed deck.
3. Lock the bearing collar (A) and tighten the setscrew.
4. Tension the feed draper. Refer to *5.10.2 Adjusting Adapter Feed Draper Tension, page 398*.
5. Attach the header to the adapter. Refer to *4.7.1 Attaching Header to CA25 and Combine, page 300*.

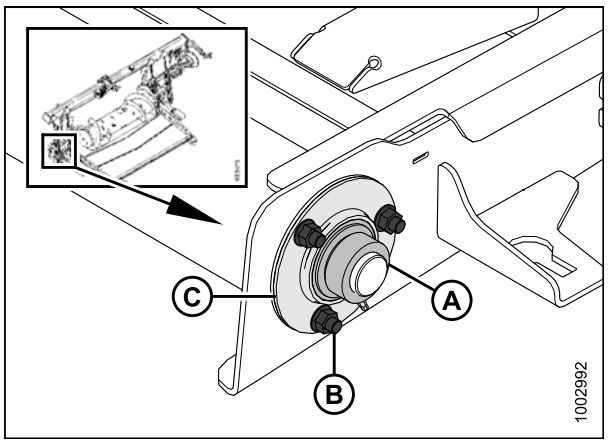


Figure 5.167: Bearing

5.10.4 Adapter Idler Roller

Removing Adapter Feed Draper Idler Roller

1. Remove the header from the adapter, but leave the adapter attached to the combine. Refer to *4.7.2 Detaching Header from Adapter and Combine, page 306*.
2. Engage the feeder house safety props.
3. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

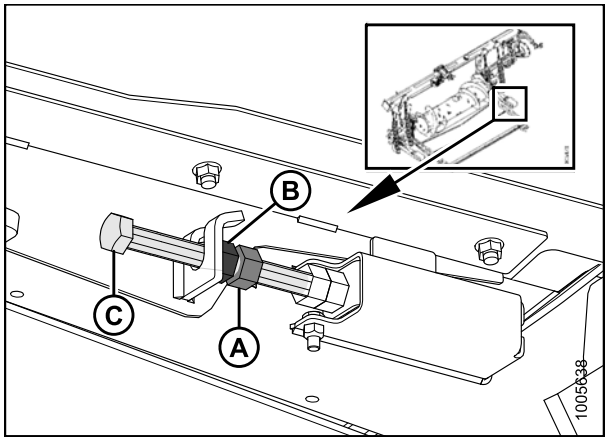


Figure 5.168: Tensioner

4. Remove screws (A) and nuts, and remove the draper connector straps (B).
5. Open the feed draper.

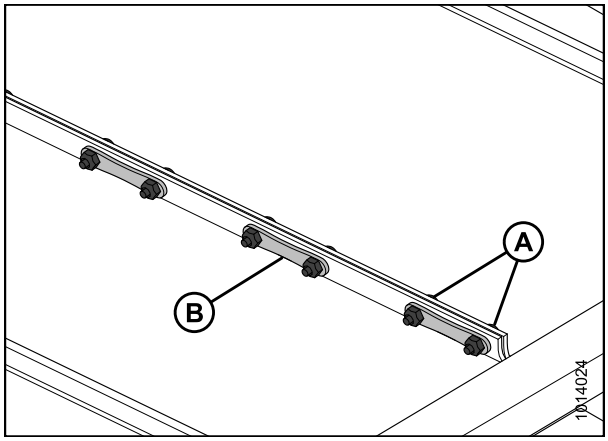


Figure 5.169: Draper Connector

6. Remove two bolts (A) and nuts (C) from both ends of the idler roller.
7. Remove the idler roller assembly (B).

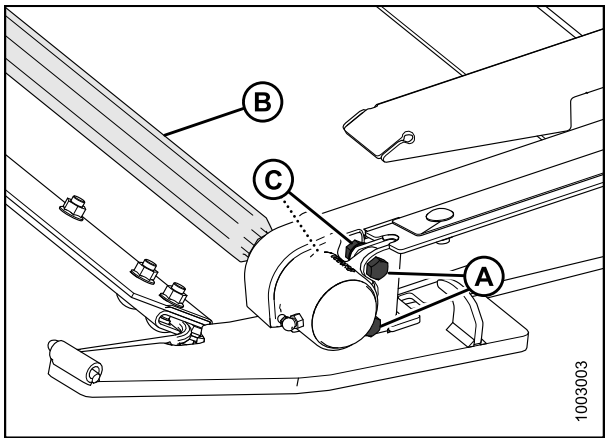


Figure 5.170: Idler Roller

Replacing Adapter Feed Draper Idler Roller Bearing

1. Remove the dust cap (A).

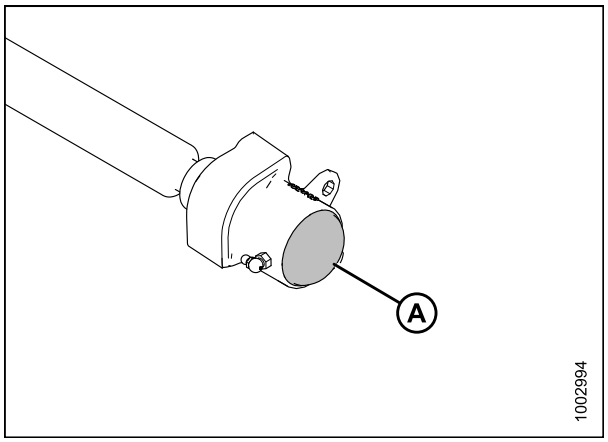


Figure 5.171: Idler Roller

2. Remove nut (A).
3. Use a hammer to tap the bearing assembly (B) until it slides off the shaft.

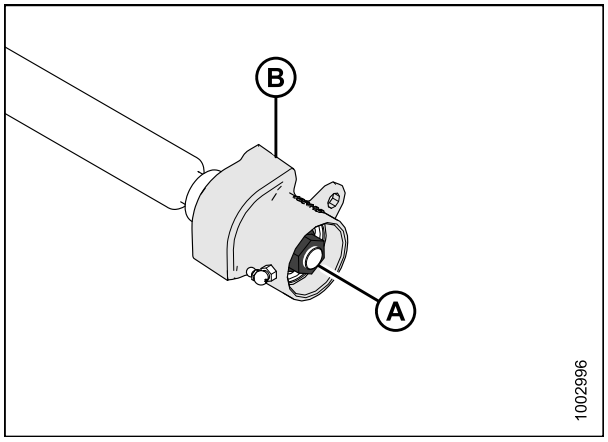


Figure 5.172: Idler Roller

4. Secure the housing (D) and remove the internal retaining ring (A), bearing (B), and two seals (C).
5. Install the seals (C) into the housing (D).

   NOTE:
   Ensure the flat side of the seal is facing inboard.

6. Brush the shaft with oil, and carefully rotate the housing (D) with seals (C) onto the shaft by hand to prevent damaging the seals.
7. Install the bearing (B).
8. Install the retaining ring (A).

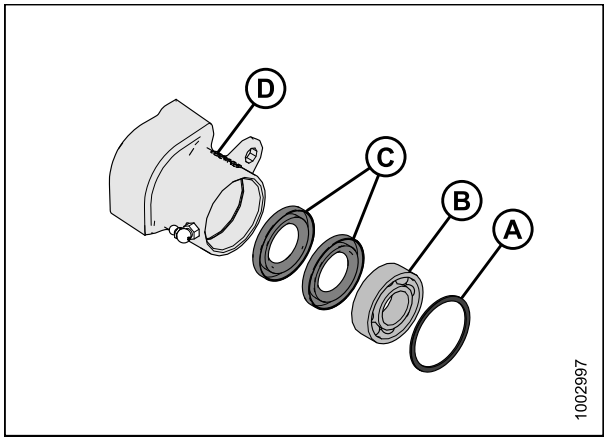


Figure 5.173: Bearing Assembly

9. Secure the bearing assembly to the shaft with nut (A) and torque to 81–95 N·m (60–70 ft·lbf).
10. Install the dust cap (B).
11. Pump grease into the bearing assembly.

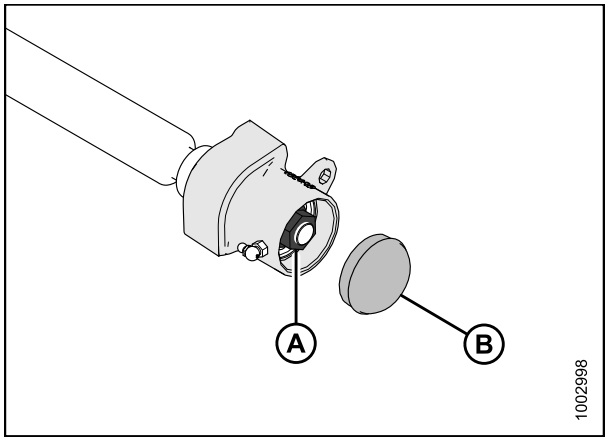


Figure 5.174: Idler Roller

Installing Adapter Feed Draper Idler Roller

1. Position the idler roller assembly (B) in the adapter deck.
2. Install two bolts (A) and nuts (C) at both ends of the idler roller.

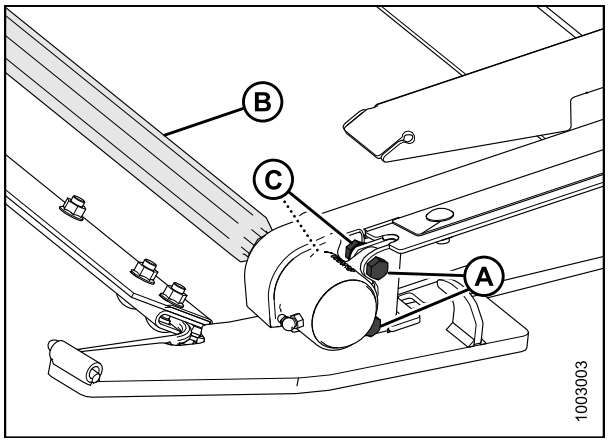


Figure 5.175: Idler Roller

3. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
4. Tension the feed draper. Refer to *5.10.2 Adjusting Adapter Feed Draper Tension, page 398*.
5. Attach the header to the adapter. Refer to *4.7.1 Attaching Header to CA25 and Combine, page 300*.

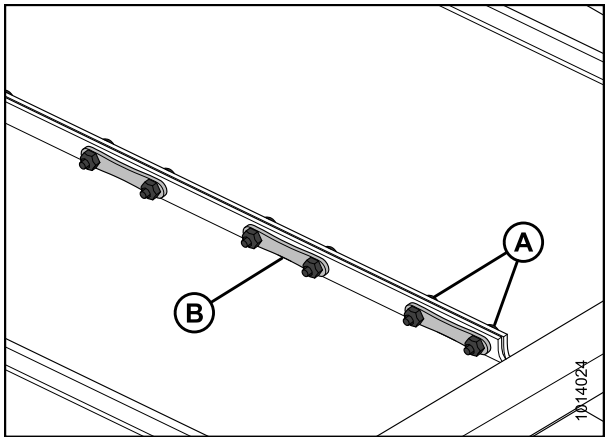


Figure 5.176: Draper Connector

5.10.5 Lowering Adapter Feed Deck Pan

DANGER

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

1. Start combine, raise header fully, and engage header lift cylinder locks.
2. Stop engine and remove key.
3. Rotate latches (A) to unlock handles (B).
4. Hold pan (C) and rotate handles (B) downward to release pan.

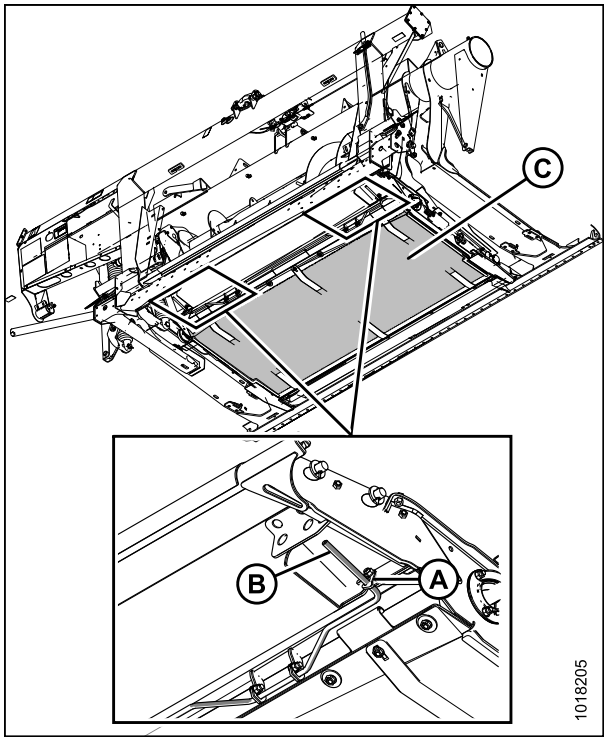


Figure 5.177: Feed Deck Poly Pan

5. Lower plastic pan (A) and check for shipping materials/debris that may have fallen under adapter draper.

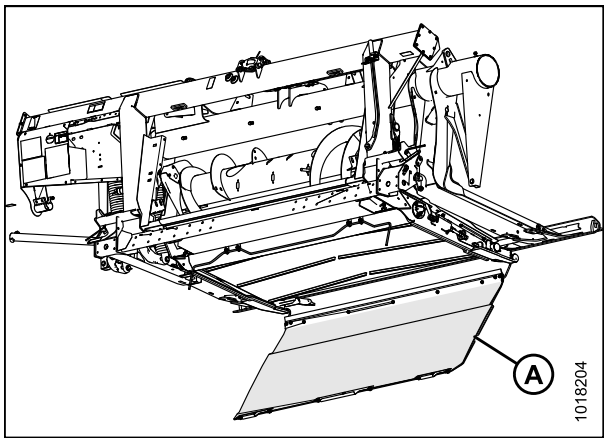


Figure 5.178: Feed Deck Poly Pan

5.10.6 Raising Adapter Feed Deck Pan

1. Raise plastic pan (A).
2. Attach hooks (B) to lock handle (C).

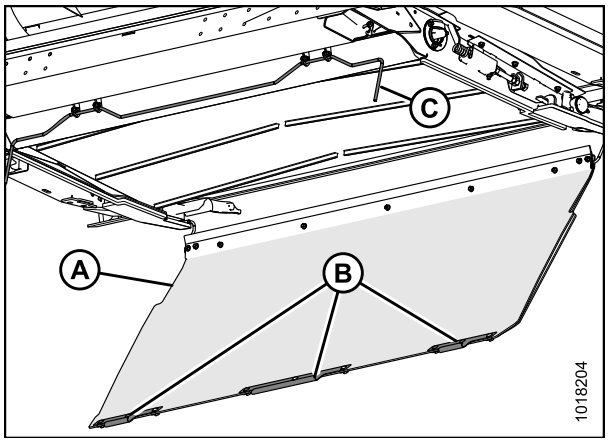


Figure 5.179: Feed Deck Poly Pan

3. Hold pan (C) and rotate handles (B) upward to secure pan.
4. Rotate latches (A) to unlock handles (B).

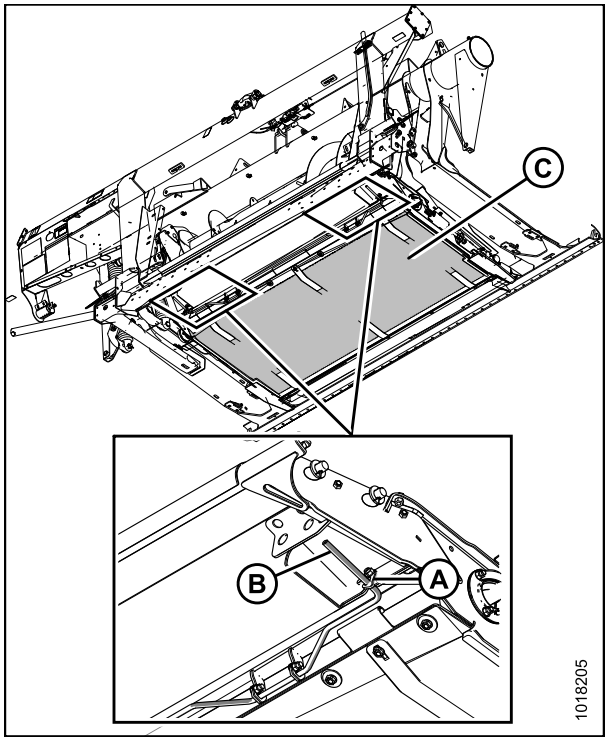


Figure 5.180: Feed Deck Poly Pan

5.11 Adapter Stripper Bars and Feed Deflectors

5.11.1 Removing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 259*.
2. Remove the four bolts and nuts (A) securing the stripper bar (B) to the adapter frame, and remove the stripper bar.
3. Repeat at the opposite side.

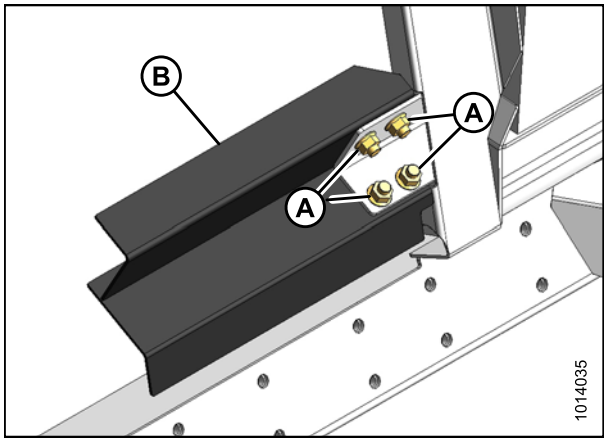


Figure 5.181: Stripper Bar

5.11.2 Installing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 259*.
2. Position the stripper bar (A) so the notch (B) is at the corner of the frame.
3. Secure the stripper bar (A) to the adapter with four bolts and nuts (C). Ensure the nuts are facing the combine.
4. Repeat at the opposite side.

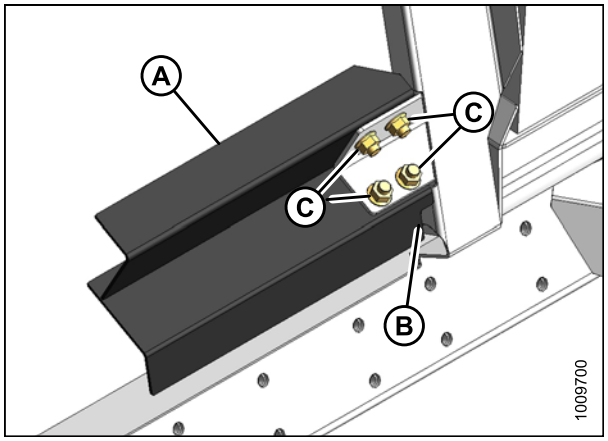


Figure 5.182: Stripper Bar

5.11.3 Replacing Feed Deflectors on New Holland CR Combines

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 259*.
2. Measure the gap (B) between the existing feed deflector (A) and the forward edge of the pan.

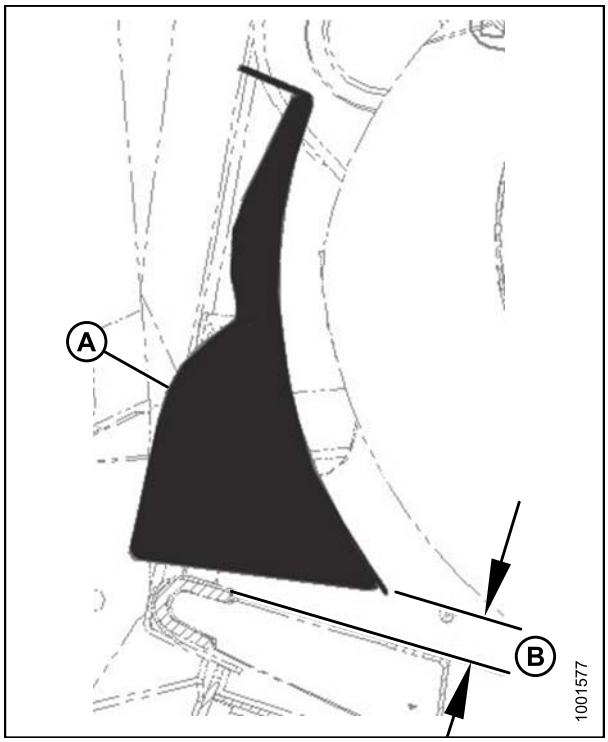


Figure 5.183: Feed Deflector – End View

3. Remove the two bolts and nuts (B) securing the feed deflector (A) to the adapter frame, and remove the feed deflector.
4. Position the replacement feed deflector (A), and secure with bolts and nuts (B) (ensure the nuts are facing the combine). Maintain the original gap, measured in Step *2., page 409*, between the feed deflector and the forward edge of the pan.
5. Repeat for the opposite deflector.
6. Attach the header to the combine. Refer to *4 Header Attachment/Detachment, page 259*.
7. Extend the center-link fully, and check the gap between the feed deflector (A) and the pan. Maintain a 19–25 mm (3/4–1 in.) gap.

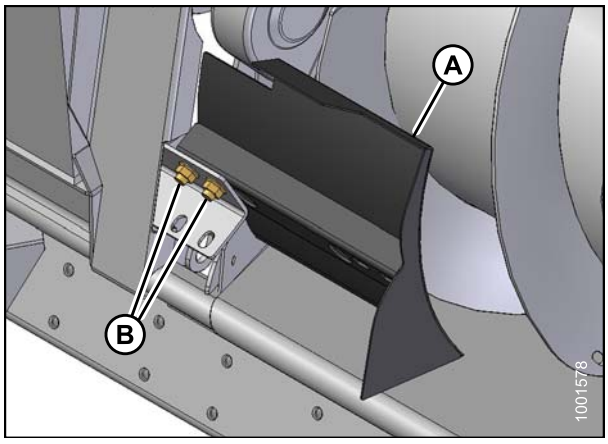


Figure 5.184: Feed Deflector

5.12 Side Drapers

Two side drapers convey cut crop to the adapter's feed draper and auger. Replace side drapers if torn, cracked, or missing slats.

5.12.1 Removing Header Drapers

DANGER

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

1. Raise the reel and engage the reel safety props.
2. Raise the header and engage the safety props.
3. Move the draper until the draper joint is in the work area.

   NOTE:
   The deck also can be shifted towards the center to provide an opening at the endsheet.

4. Stop the engine and remove the key from the ignition.
5. Release the tension on the draper. Refer to *5.12.3 Adjusting Side Draper Tension, page 412*.
6. Remove the screws (A) and tube connectors (B) at the draper joint.
7. Pull the draper from deck.

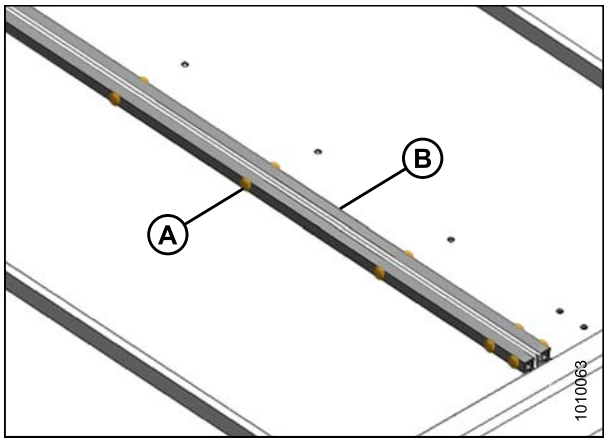


Figure 5.185: Draper Connector

5.12.2 Installing Header Drapers

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 the deck height before installing the drapers. Refer to *5.12.5 Adjusting Deck Height, page 416*.

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 of the draper guides.
2. Insert the draper into the deck at the outboard end under the rollers. Pull the draper into the deck while feeding it at the end.
3. Feed in the draper until it can be wrapped around the drive roller.
4. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.

Figure 5.186: Installing Draper

5. Loosen the mounting bolts (B) on the rear deck deflector (A) (this may help with draper installation).

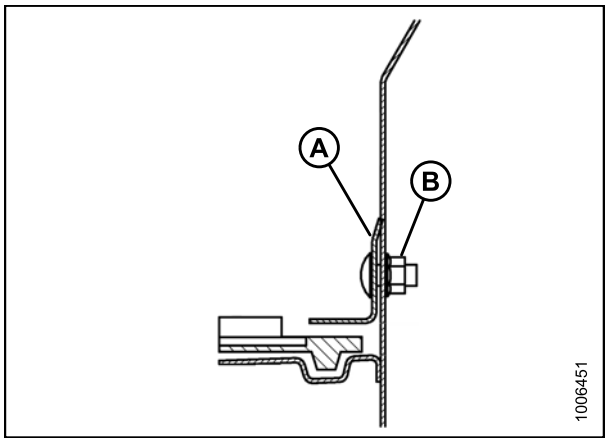


Figure 5.187: Draper Seal

6. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.
7. Adjust the draper tension. Refer to *5.12.3 Adjusting Side Draper Tension, page 412*.

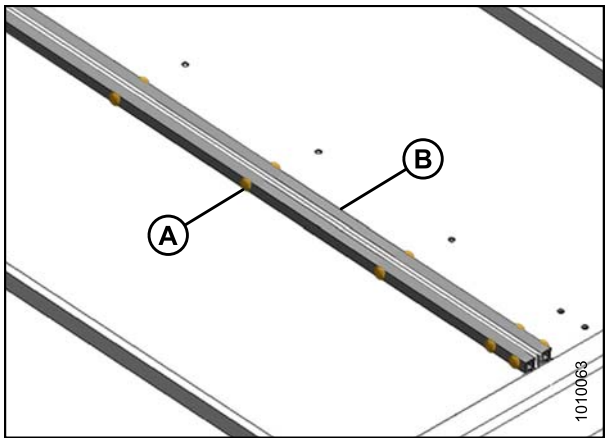


Figure 5.188: Draper Connector

8. Check the draper seal between the drapers and the cutterbar. Ensure there is a 1–2 mm (0.04–0.08 in.) gap (A) between the cutterbar (C) and the draper (B).
9. Refer to *5.12.5 Adjusting Deck Height, page 416* to achieve the proper gap.

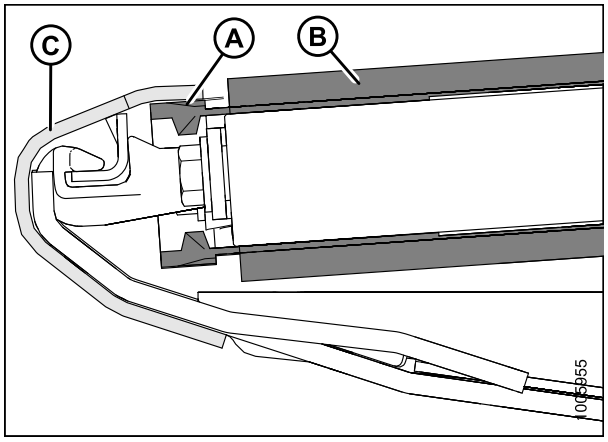


Figure 5.189: Draper Seal

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.

NOTE:
The drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure the white indicator bar (A) is at the halfway point in the window.

WARNING

Check to be sure all bystanders have cleared the area.

2. Start the engine and raise the header.
3. Stop the engine, remove the key from the ignition, and engage the header safety props.

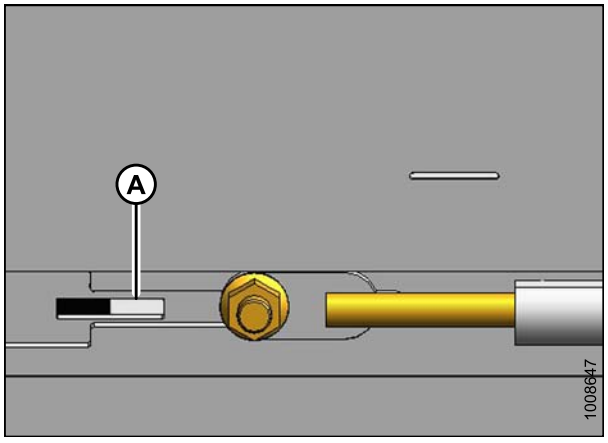


Figure 5.190: Left Adjuster Shown – Right Opposite

4. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove on the drive roller.

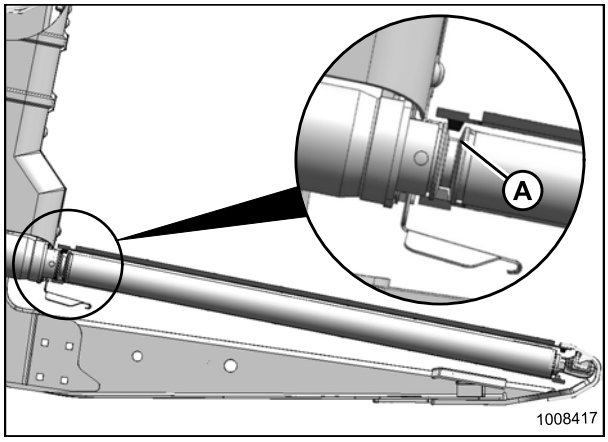


Figure 5.191: Drive Roller

5. Ensure the idler roller is between the draper guides.

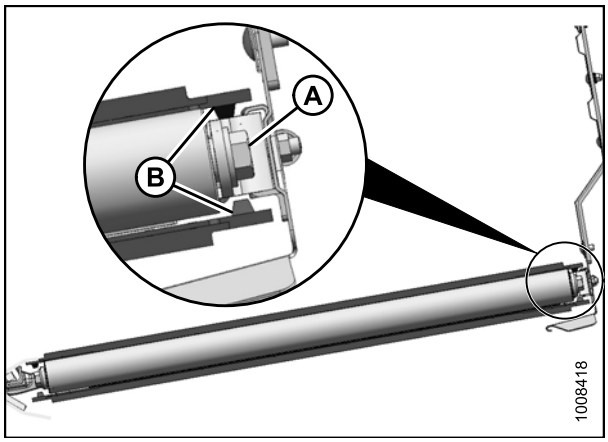


Figure 5.192: Idler Roller

IMPORTANT:
Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn the adjuster bolt (A) counterclockwise to loosen. The white indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the draper is loosening. Loosen until the white indicator bar is at the halfway point in the window.
7. Turn the adjuster bolt (A) clockwise to tighten. The white indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten until the white indicator bar is at the halfway point in the window.

IMPORTANT:

- To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tension set so the white bar is not visible.
- To prevent scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

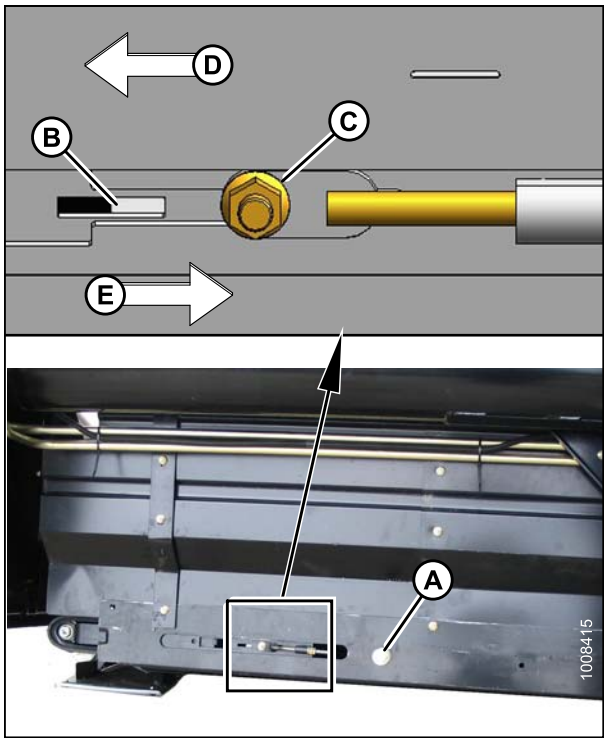


Figure 5.193: Draper Tensioner

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 using the adjuster rods so the draper tracks properly on the rollers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 313*.

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)

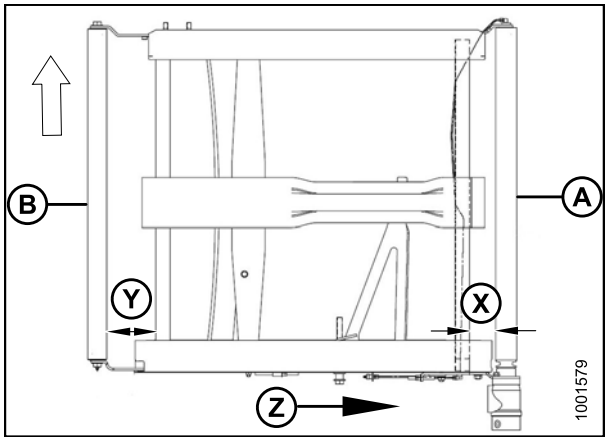


Figure 5.194: Draper Tracking Adjustments

A - Drive Roller **B - Idler Roller** **C - Draper Direction**
X - Drive Roller Adjust **Y - Idler Roller Adjust**
Z - Draper Rotation Direction

1. Refer to Table *5.1 Header Draper Tracking, page 415* to determine which roller requires adjustment and which adjustments are necessary.

   NOTE:
   To change **X**, adjust the back end of the roller using 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 the adjuster nut (C).

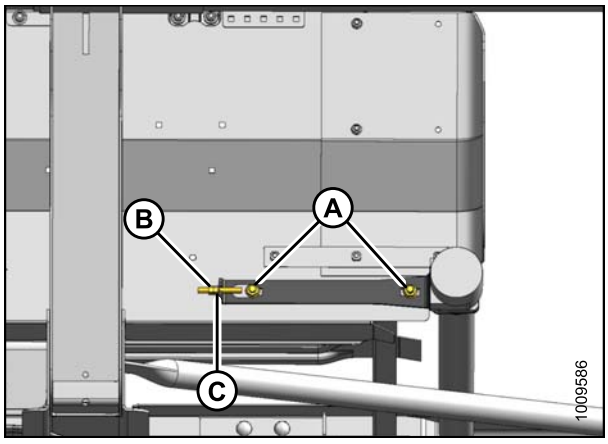


Figure 5.195: Left Side Drive Roller

3. Adjust the **IDLER** roller **Y** as follows:
   a. Loosen nut (F) and jam nut (G).
   b. Turn the adjuster nut (H).

   NOTE:
   If the draper does not track at the idler roller end after the idler roller adjustment, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

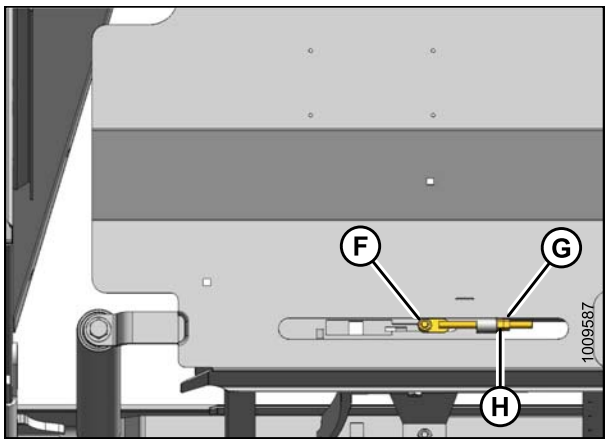


Figure 5.196: Left Side Idler Roller

5.12.5 Adjusting Deck Height

Maintain the deck height so that the draper runs just below the cutterbar. With a new header or newly installed draper, set the initial gap to 3 mm (0.12 in.). To prevent material from entering the drapers and cutterbar, you may need to decrease the deck clearance to 0–1 mm (0–0.04 in.) after the initial break-in period of approximately 50 hours.

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. Shut down the combine, and remove the key from the ignition.
2. Check the deck height and ensure the draper (B) runs just below the cutterbar (C) with a gap (A) of 3 mm (0.12 in.) between the top of the draper and the cutterbar. If the draper is used, the gap (A) should be 1–2 mm (0.04–0.07 in.)

   NOTE:
   Measurement is at the supports with the header in working position and the decks fully forward.

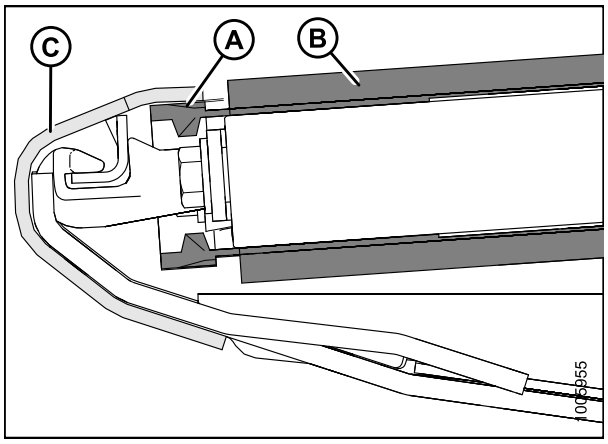


Figure 5.197: Draper Seal

3. Loosen the draper tension. Refer to *5.12.3 Adjusting Side Draper Tension, page 412*.
4. Lift the front edge of the draper (A) past the cutterbar (B) to expose the deck support.

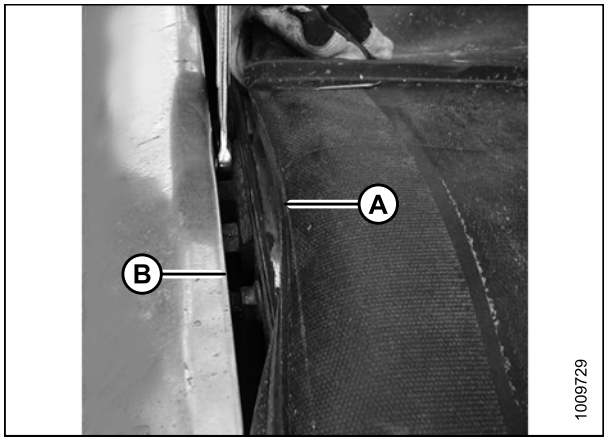


Figure 5.198: Draper Adjustment

5. Loosen the two lock nuts (A) on the deck support (B) **one-half turn only**.

   NOTE:
   The number of deck supports (B) is determined by the header size: four on single reels, and eight on double reels.

6. Tap the deck (C) to lower the deck relative to the deck supports. Tap the deck support (B) using a punch to raise the deck relative to the deck supports.

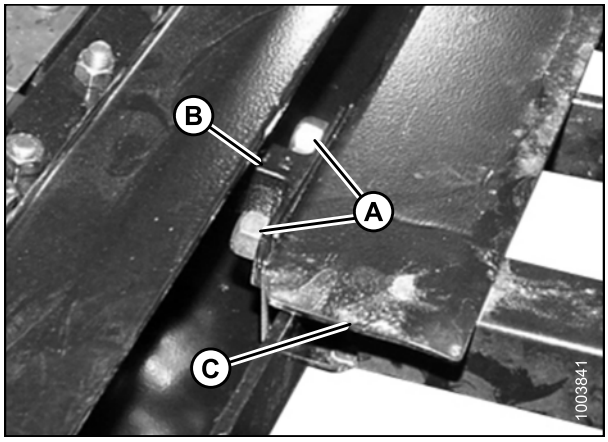


Figure 5.199: Deck Support

7. On the draper, measure the draper thickness at the sealing location. Add 1–2 mm (0.04–0.07 in.) for used drapers, to the measurement of draper sealing location. Set deck (A), so that gap (B) is equal to the draper sealing location thickness, plus 1–2 mm (0.04–0.07 in.) below the top of the cutterbar (C).
8. Tighten the deck support hardware (D).
9. Recheck gap (B) to ensure it is equal to the draper sealing location thickness plus 1–2 mm (0.04–0.07 in.).
10. Tension the draper. Refer to *5.12.3 Adjusting Side Draper Tension, page 412*.

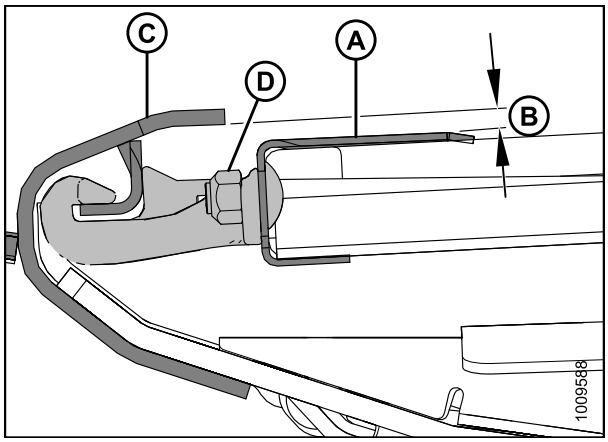


Figure 5.200: Deck Support

5.12.6 Header Draper Roller Maintenance

The draper rollers have non-greaseable bearings; however, the external seal should be checked every 200 hours (more frequently in sandy conditions) to achieve maximum bearing life.

Inspecting Header Draper Roller Bearing

Check for bad draper roller bearings using an infrared thermometer as follows:

1. Engage the header and run the drapers for approximately three minutes.
2. Check the temperature of the draper roller bearings at each of the roller arms (A), (B), and (C) on each deck. Ensure the temperature does not exceed 44°C (80°F) above the ambient temperature.

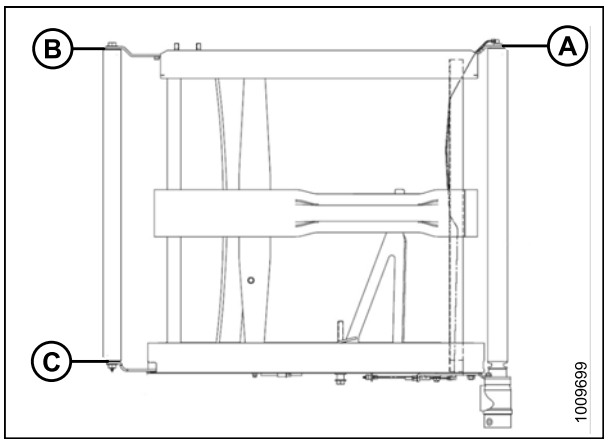


Figure 5.201: Roller Arms

Header Draper Idler Roller

Removing Header Draper Idler Roller

DANGER

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

NOTE:
If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine, raise the header, and raise the reel.
2. Stop the engine, and remove the key from the ignition.
3. Engage the reel safety props, and engage the header safety props.
4. Loosen the draper by turning adjuster bolt (A) counterclockwise.

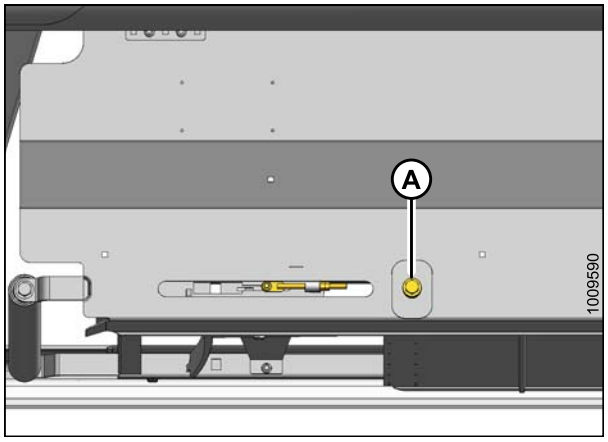


Figure 5.202: Tensioner

5. Remove the screws (A), tube connectors (B), and nuts from the draper joint to uncouple the draper.
6. Pull the draper off the idler roller.

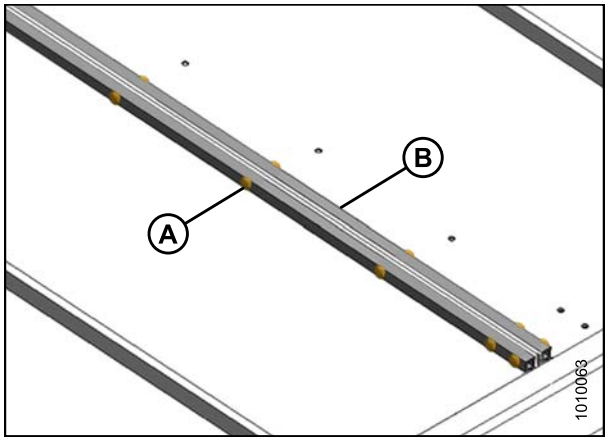


Figure 5.203: Draper Connector

7. Remove the bolts (A) and washer at the ends of the idler roller.
8. Spread the roller arms (B) and (C) and remove the idler roller.

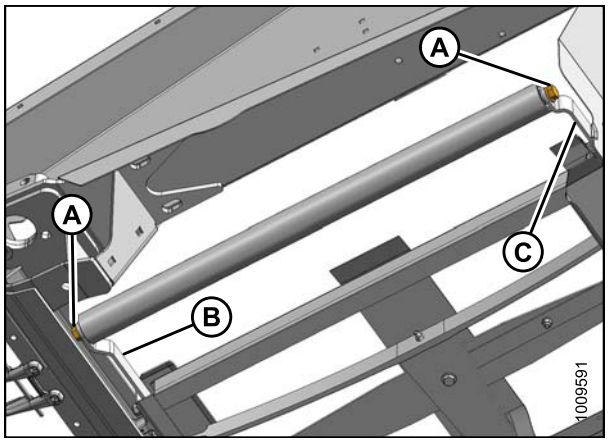


Figure 5.204: Idler Roller

Replacing Header Draper Idler Roller Bearing

1. Remove the draper idler roller assembly. Refer to *Removing Header Draper Idler Roller, page 418*.

2. Remove the bearing assembly (A) and seal (B) from the roller tube (C) as follows:
   a. Attach a slide hammer (D) to the threaded shaft (E) in the bearing assembly.
   b. Tap out the bearing assembly (A) and seal (B).
3. Clean the inside of the roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

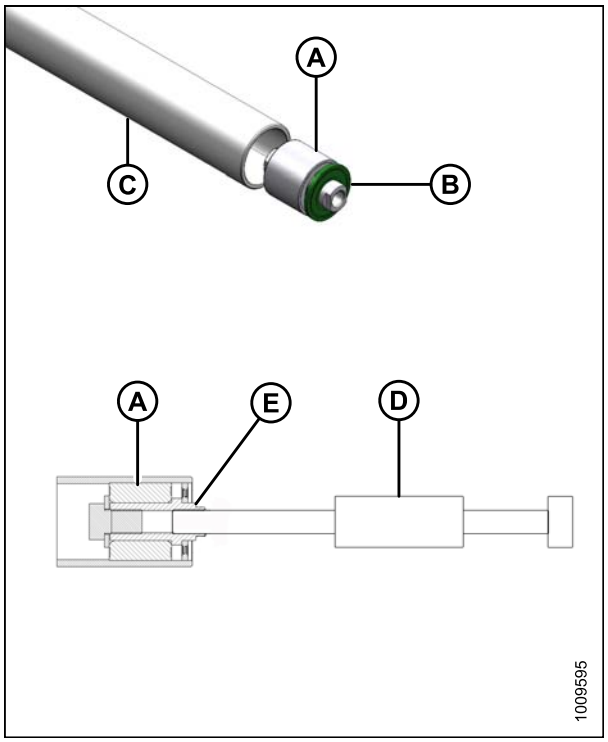


Figure 5.205: Idler Roller Bearing

4. Install the new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 14–15 mm (0.55–0.2 in.) (B) from the outside edge of the tube.
5. Add approximately eight cc or eight pumps of grease in front of the bearing assembly (A). Refer to *5.2.1 Recommended Fluids and Lubricants, page 314*.
6. Install a new seal (C) at the roller opening.
7. Tap the seal (C) into the roller opening with a suitably sized socket. Tap it until the seal is 3–4 mm (0.12–0.16 in.) (D) from the outside edge of the tube.

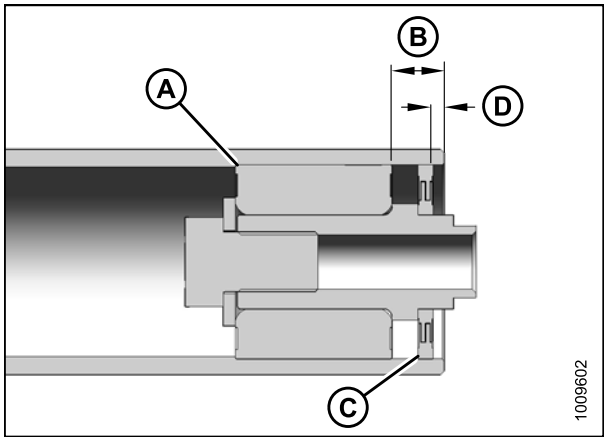


Figure 5.206: Idler Roller Bearing

Installing Header Draper Idler Roller

1. Position the stub shaft into the idler roller in the forward arm (B) on the deck.
2. Push on the roller to slightly deflect the forward arm so the stub shaft at the rear of the roller can be slipped into the rear arm (C).
3. Install bolts (A) with washers, and torque to 93 N·m (70 ft lbf).
4. Wrap the draper over the idler roller, close the draper, and set the tension. Refer to *5.12.2 Installing Header Drapers, page 410*.
5. Run the machine and verify the draper tracks correctly. Adjust the draper tracking if required. Refer to *5.12.4 Adjusting Header Draper Tracking, page 414*.

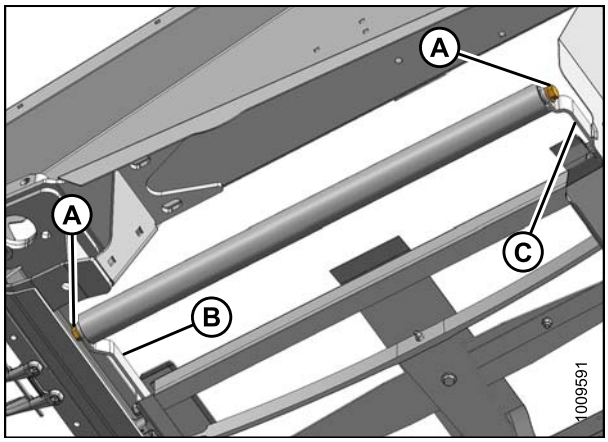


Figure 5.207: Idler Roller

Header Draper Deck Drive Roller

Removing Header Draper Drive Roller

DANGER

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

NOTE:
If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine, raise the header, and raise the reel.
2. Stop the engine, and remove the key from the ignition.
3. Loosen the draper by turning the adjuster bolt (A) counterclockwise.

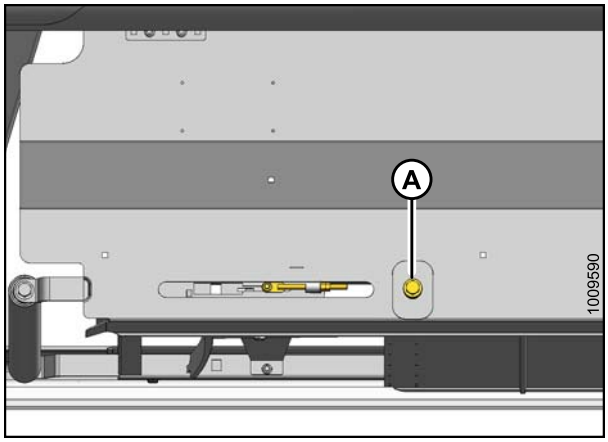


Figure 5.208: Tensioner

4. Remove the tube connectors (B), screws (A), and nuts from the draper joint to uncouple the draper.
5. Pull the draper off the drive roller.

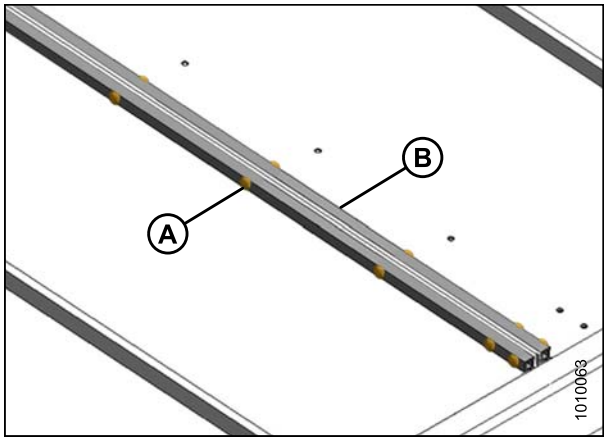


Figure 5.209: Draper Connector

6. Align the setscrews with the hole (A) in the guard. Remove the two setscrews holding the motor onto the drive roller.

   NOTE:
   The setscrews are 1/4 turn apart.
7. Remove the four bolts (B) securing the motor to the drive roller arm.

   NOTE:
   It may be necessary to remove the plastic shield (C) to gain access to the top bolt.

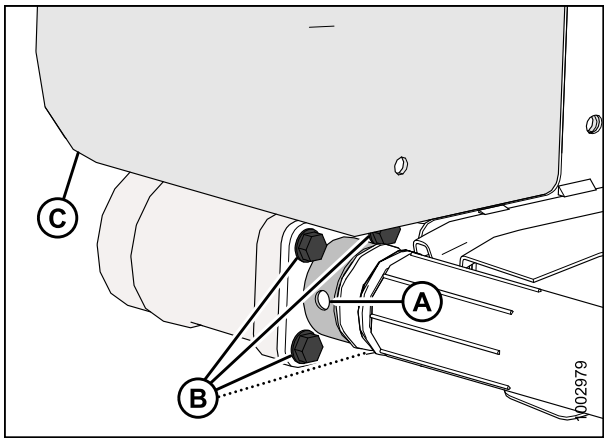


Figure 5.210: Drive Roller

8. Remove the bolt (A) securing the opposite end of the drive roller (B) to the support arm.
9. Remove the drive roller (B).

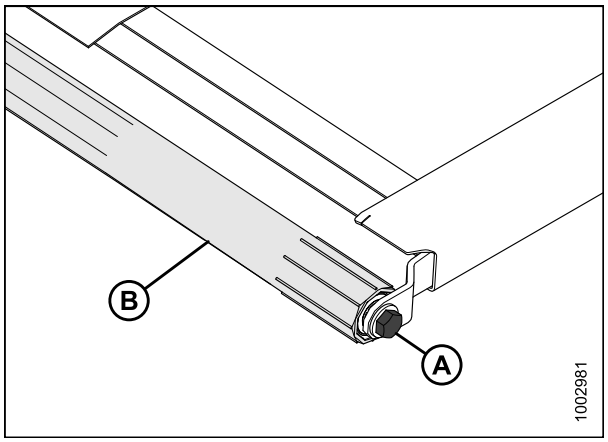


Figure 5.211: Drive Roller

Replacing Header Draper Drive Roller Bearing

1. Remove the draper idler roller assembly. Refer to *Removing Header Draper Drive Roller, page 421*.

2. Remove the bearing assembly (A) and seal (B) from the roller tube (C) as follows:
   a. Attach a slide hammer (D) to the threaded shaft (E) in the bearing assembly.
   b. Tap out the bearing assembly (A) and seal (B).
3. Clean the inside of the roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

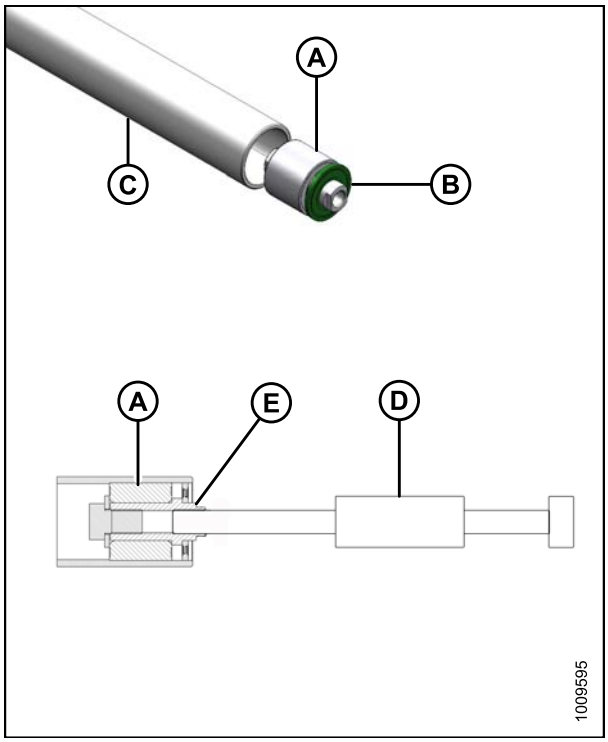


Figure 5.212: Idler Roller Bearing

4. Install the new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 14–15 mm (0.55–0.2 in.) (B) from the outside edge of the tube.
5. Add approximately eight cc or eight pumps of grease in front of the bearing assembly (A). Refer to *5.2.1 Recommended Fluids and Lubricants, page 314*.
6. Install a new seal (C) at the roller opening.
7. Tap the seal (C) into the roller opening with a suitably sized socket. Tap it until the seal is 3–4 mm (0.12–0.16 in.) (D) from the outside edge of the tube.

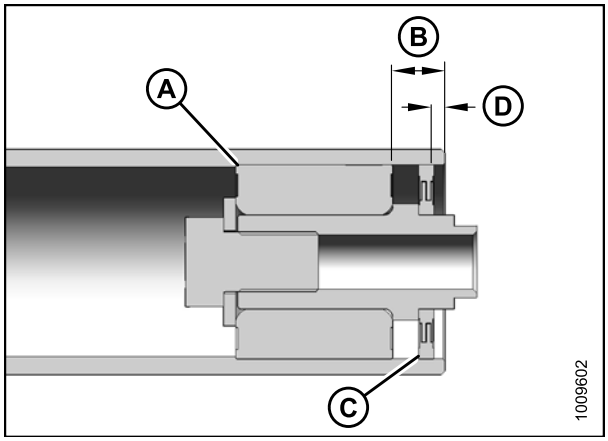


Figure 5.213: Idler Roller Bearing

Installing Header Draper Drive Roller

1. Position the drive roller (B) between the roller support arms.
2. Attach roller (B) to arm (C) at forward end of deck with bolt (A). Support other end of roller and torque bolt to 95 N m (70 lbf ft)
3. Grease the motor shaft and insert into the end of the drive roller (B).

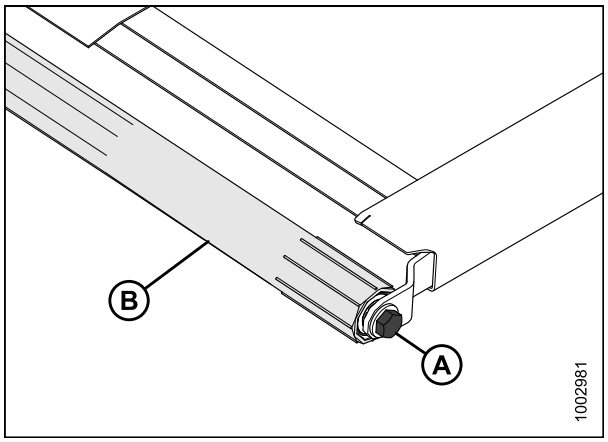


Figure 5.214: Drive Roller

4. Secure the motor to the roller support with four bolts (B). Torque to 27 N m (20 ft lbf).

   NOTE:
   Tighten any loosened bolts and reinstall the plastic shield (C) if previously removed.

5. Ensure the motor is all the way into the roller, and tighten the two setscrews (not shown) through the access hole (A).

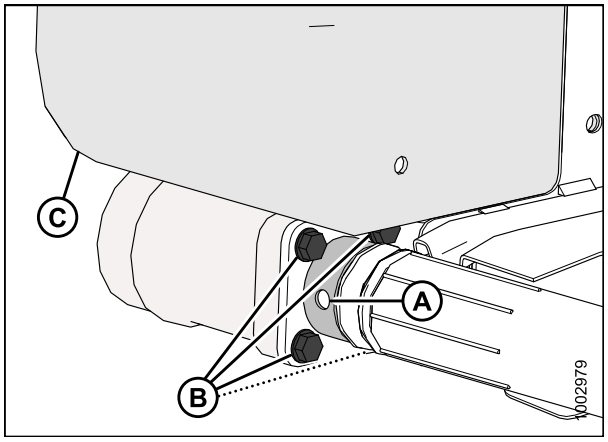


Figure 5.215: Drive Roller

6. Wrap the draper over the drive roller and attach the ends of the draper using the tube connectors (B), screws (A), and nuts.

   NOTE:
   The heads of the screws must face the center opening.

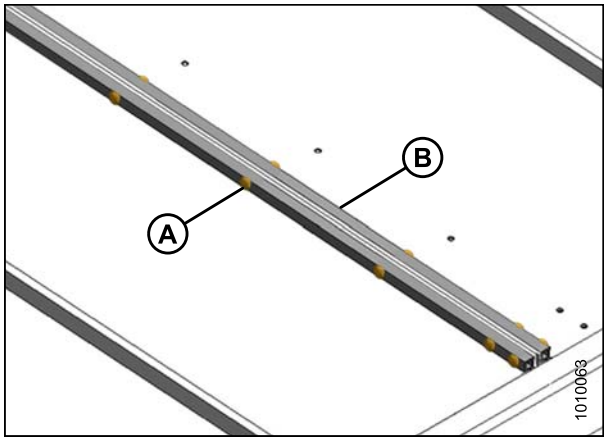


Figure 5.216: Draper Connector

7. Tension the draper. Locate adjuster bolt (A) and follow the directions on the decal for the proper draper tensioning or refer to *5.12.3 Adjusting Side Draper Tension, page 412*.
8. Disengage the reel and header safety props.
9. Start the engine and lower the header and reel.
10. Run the machine to verify the draper tracks correctly. Refer to *5.12.4 Adjusting Header Draper Tracking, page 414* if further adjustment is necessary.

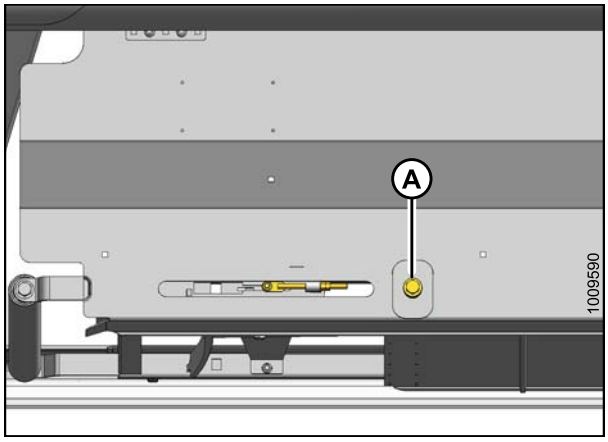


Figure 5.217: Draper Tensioner

5.12.7 Replacing Draper Deflectors

Removing Narrow Draper Deflectors

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to *Opening Endshield, page 33*.
5. Remove two Torx® head screws (A) and lock nuts.
6. Remove three carriage bolts (B) and lock nuts and remove the aft deflector (C).

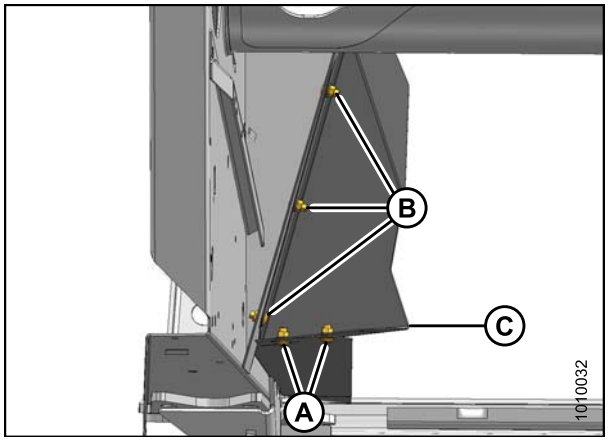


Figure 5.218: Aft Deflector

7. Remove four screws (A) and remove the deflector (B).
8. Repeat for the opposite end of the header.

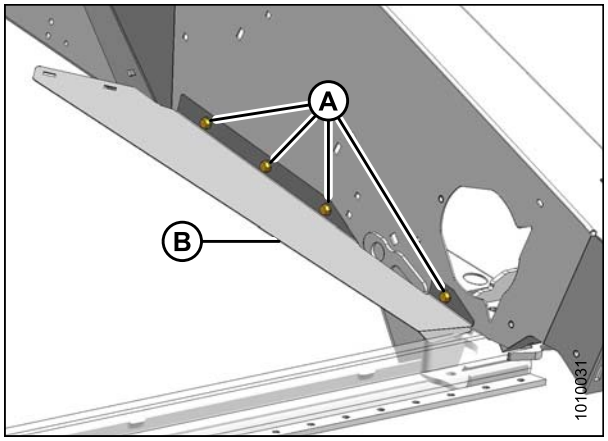


Figure 5.219: Forward Deflector

Installing Narrow Draper Deflectors

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to *Opening Endshield, page 33*.
5. Position the forward deflector (B) onto the endsheet and temporarily install forward and aft 3/8 in. x 5/8 in. self tapping screws (A).
6. Check the fit of the forward end of the deflector (B) on the cutterbar and ensure there is no gap between the deflector and cutterbar. Remove and bend the deflector as required to obtain the best fit.
7. Install two 3/8 in. x 5/8 in. self tapping screws (A) and tighten all four screws.

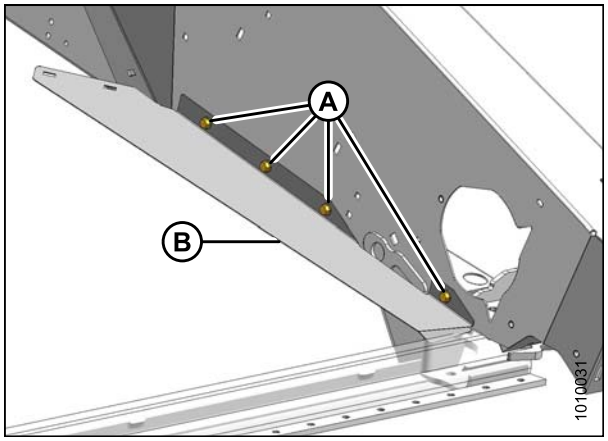


Figure 5.220: Forward Deflector

8. Position the aft deflector (C) as shown and install three 3/8 in. x 3/4 in. carriage bolts (B) and lock nuts.
9. Install two Torx® head screws (A) and lock nuts with the heads facing down.
10. Tighten all fasteners.
11. Repeat for the opposite end of the header.

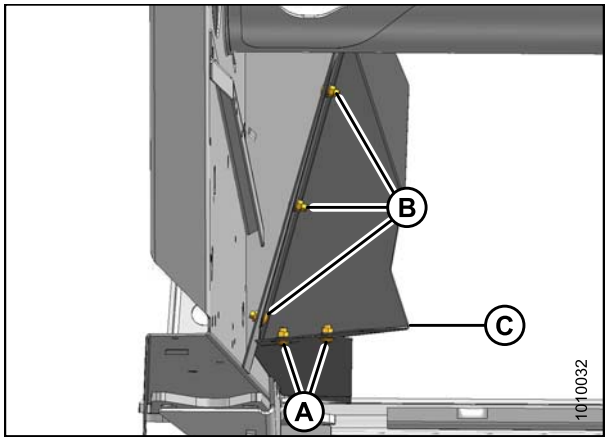


Figure 5.221: Aft Deflector

5.13 Reel

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 313*.

5.13.1 Reel Clearance to Cutterbar

The minimum clearance between reel fingers and cutterbar ensures that reel fingers do not contact cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operation or if there is evidence of contact during operation.

The finger to guard/cutterbar clearances with the reel fully lowered are shown in Table *5.2 Finger to Guard/Cutterbar Clearance, page 428*.

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) +/- 3 mm (1/8 in.) at Reel Ends and Flex Locations
All	20 mm (3/4 in.)

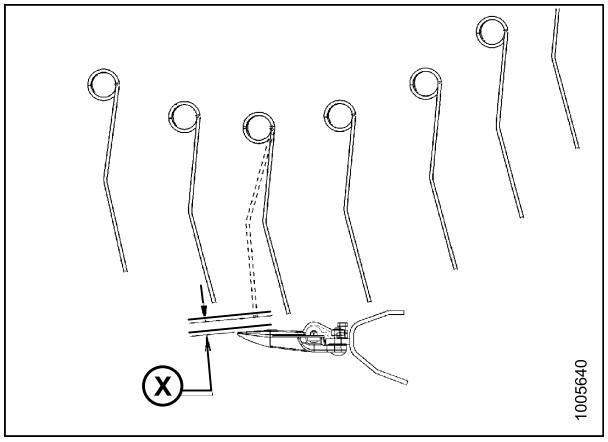


Figure 5.222: Finger Clearance

Measuring 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.

1. Park machine on level ground.

2. Adjust header to working height.
3. Move spring handles (A) down to (UNLOCK) position.

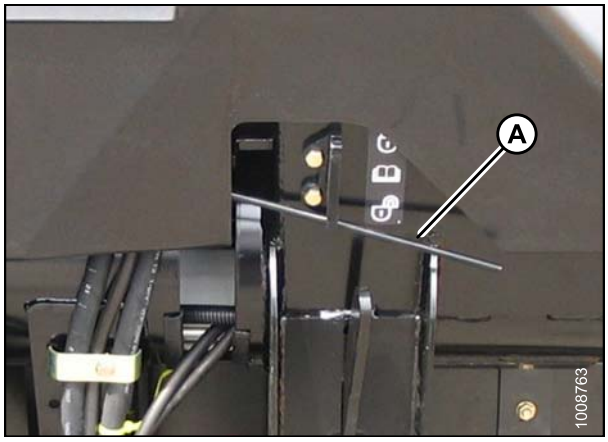


Figure 5.223: Wing Unlocked

4. Raise header and place two 150 mm (6 in.) blocks (A) under cutterbar, just inboard of wing flex points.
5. Lower header fully, allowing it to flex into full frown mode.

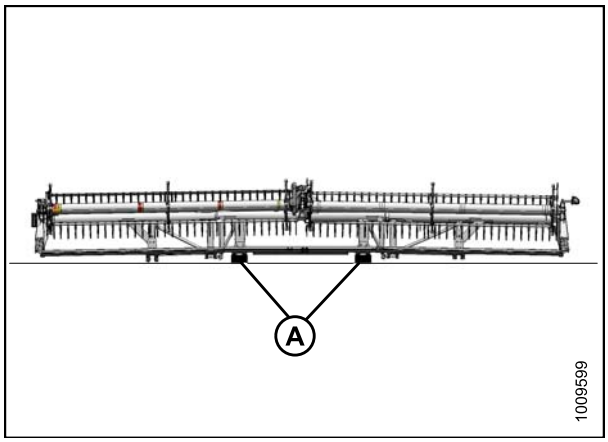


Figure 5.224: FlexDraper® Block Locations

6. Set fore-aft position to middle position (5) on fore-aft position decal (A).
7. Lower reel fully.
8. Shut down engine and remove key from ignition.

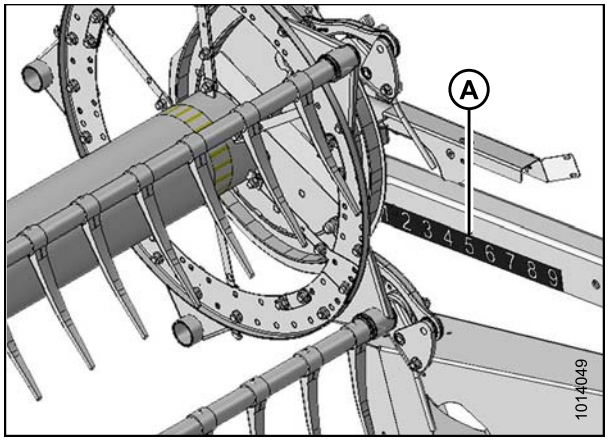


Figure 5.225: Fore-Aft Position

9. Measure clearance at ends (A) of each reel and at flex locations (B).

   NOTE:
   The reel is factory-set to provide more clearance at center of reel than at ends (frown) to compensate for reel flexing.

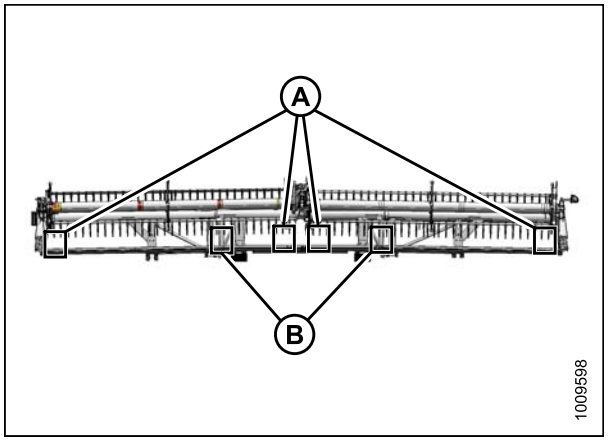


Figure 5.226: Measurement Locations

A - Clearance Points **B - Flex Points**

10. Check clearance between (A) and (B). Depending on reel fore-aft position, minimum clearance can result at guard tine, hold-down, or cutterbar.
11. Adjust reel if necessary. Refer to *Adjusting Reel Clearance, page 430*.

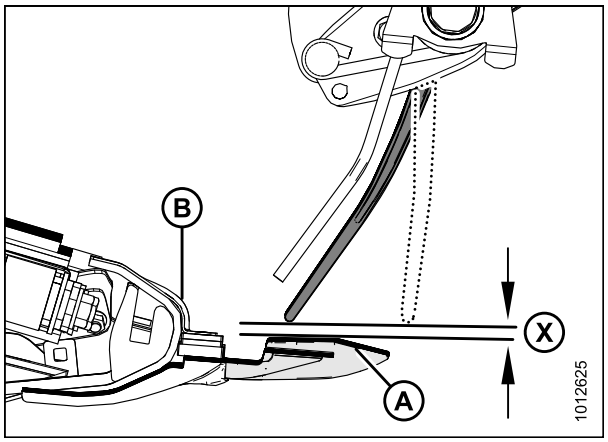


Figure 5.227: Reel Clearance

Adjusting Reel Clearance

Perform this procedure with reel at mid-point of fore-aft range and fully lowered.

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. Adjust outboard reel arm lift cylinders to set clearance 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.

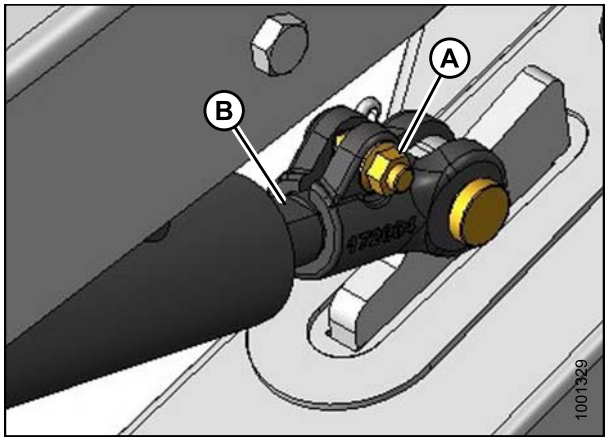


Figure 5.228: Reel Outboard Arm

2. Adjust center arm lift cylinder link (A) to set clearance at center of reel 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).
3. Move reel back to ensure steel end fingers do not contact deflector shields.
4. If contact is evident, adjust reel upward to maintain clearance at all reel fore/aft positions. Alternatively, trim steel end fingers to obtain proper clearance.
5. Periodically check for evidence of contact, and adjust clearance as required.

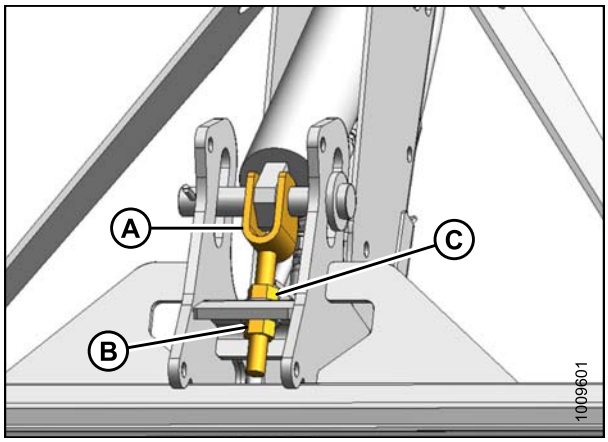


Figure 5.229: Double-Reel Center Arm

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

Adjust the reel frown by repositioning the reel tine tubes attached to the reel discs.

NOTE:
Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.

1. Position the reel over the cutterbar (between ‘4’ and ‘5’ on the fore-aft position decal) (A).
2. Record the measurement at each reel disc location for each reel tine tube.

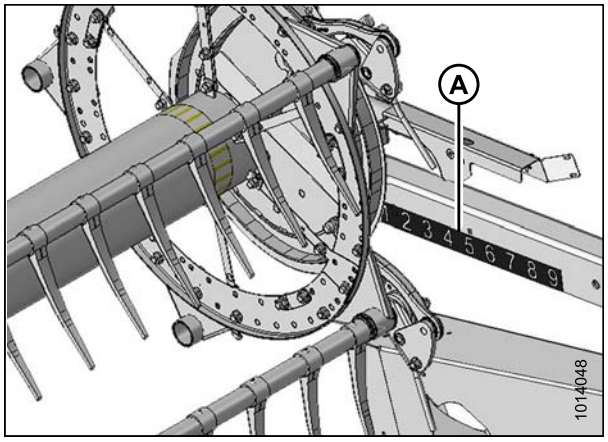


Figure 5.230: Fore-Aft Position Decal

3. Start with the reel disc closest to the center of the header and proceed outward towards the ends adjusting the header profile as follows:
   a. Remove bolts (A).
   b. Loosen the bolt (B) and adjust arm (C) until the desired measurement is obtained between the reel tine tube and cutterbar.

      NOTE:
      Allow the reel tine tubes to curve naturally and locate the hardware accordingly.

   c. Reinstall the bolts (A) in the aligned holes and tighten.

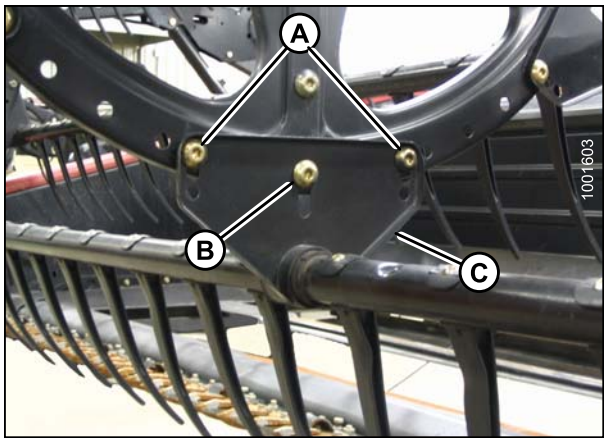


Figure 5.231: Reel Arm

5.13.3 Centering Reel

1. Start engine and raise header.
2. Stop engine and remove key from ignition.
3. Place two 150 mm (6 in.) blocks (B) at ends of cutterbar.
4. Disengage float locks and header lift cylinder locks.
5. Start combine and lower header fully—allowing header to flex into a full smile.
6. Stop engine and remove key from ignition.
7. Measure clearance (A) between reels and endsheets at both ends of header. The clearances will be same when reels are centered.

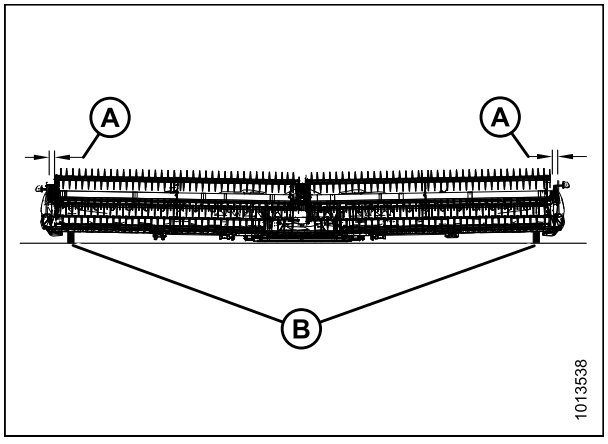


Figure 5.232: Header on Blocks

If adjustment is required:

8. Loosen bolt (A) on each brace (B).
9. Move forward end of reel center support arm (C) laterally as required to center both reels.
10. Tighten bolts (A) and torque to 359 N·m (265 ft·lbf).

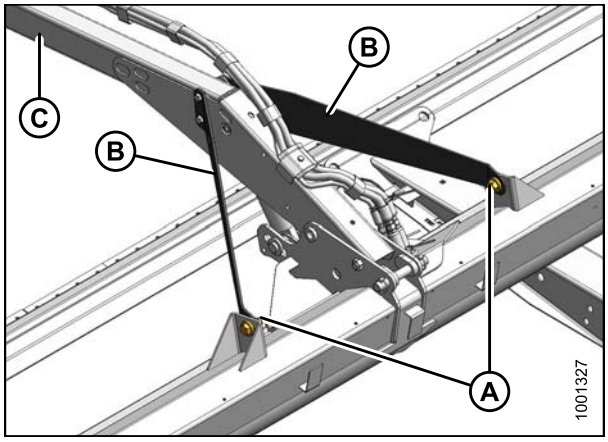


Figure 5.233: Reel Center Support Arm

5.13.4 Reel Tines

IMPORTANT:
Keep the reel tines in good condition and straighten or replace them as necessary.

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.

IMPORTANT:
Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header, raise the reel, and engage the reel safety props.
2. Shut down the engine and remove the key from the ignition.
3. Remove the tine tube bushings from the applicable tine tube at the center and left reel discs. Refer to *Removing Bushings from Five-, Six-, or Nine-Bat Reels, page 436*.
4. Attach reel arms (B) (temporarily) to the reel disc at the original attachment locations (A).
5. Cut the damaged tine so it can be removed from the tine tube.
6. Remove bolts from the existing tines and slide the tines over to replace the tine that was cut off in Step *4., page 433* (remove the reel arms [B] from the tine tubes as necessary).

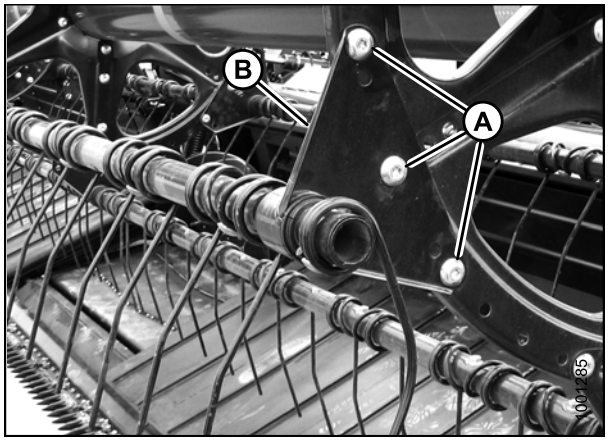


Figure 5.234: Reel Arm

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 the tine tube is supported at all times to prevent damage to the tube and other components.

1. Remove the applicable tine. Refer to *Removing Steel Tines, page 433*.
2. Slide the new tines and reel arm (A) onto the end of the tube.
3. Install the tine tube bushings. Refer to *5.13.5 Tine Tube Bushings, page 436*.
4. Attach the tines to the reel tine bar with bolts and nuts (B).

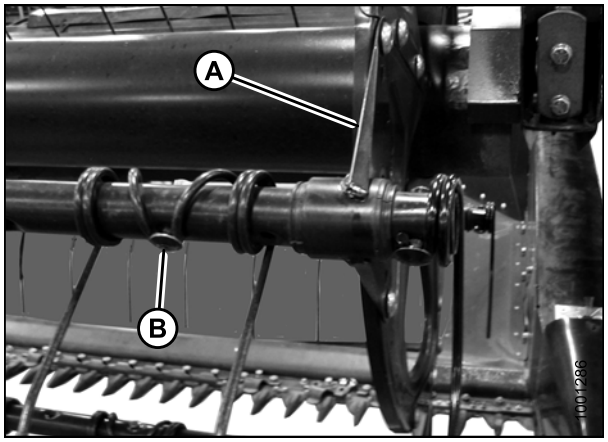


Figure 5.235: Reel Tine Tube

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) using a Torx® Plus 27 IP socket wrench.

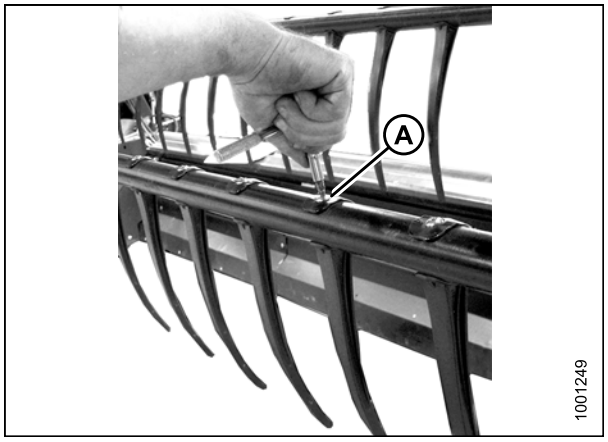


Figure 5.236: Removing Plastic Finger

2. Push the top of finger off the reel tine tube while slightly pulling on tine under the tube. Finger can then be removed.

Figure 5.237: Removing Plastic Finger

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 the finger on the rear of the finger tube and engage the lug at the bottom of the finger in the lower hole in the finger tube.
2. Lift the top flange gently and rotate the finger until the lug in the top of the finger engages the upper hole in the finger tube.

Figure 5.238: Installing Finger

IMPORTANT:
Do **NOT** apply force to the finger prior to tightening the mounting screw. Applying force without tightening the mounting screw will break the finger or shear the locating pins.

3. Install the screw (A) using a Torx® Plus 27 IP socket wrench and torque to 8.5–9.0 N·m (75–80 in·lbf).

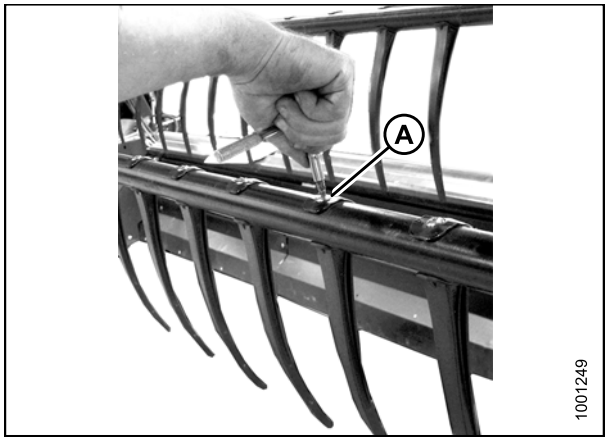


Figure 5.239: Installing Finger

5.13.5 Tine Tube Bushings

Removing Bushings from Five-, Six-, or Nine-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 the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header, raise the reel, and engage the reel safety props.
2. Shut down the engine, and remove the key from the ignition.

NOTE:
If replacing only the cam end bushing, refer to Step *8., page 437*.

Removing Center Disc and Tail-End Bushings

3. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

   NOTE:
   There are no endshields on the center disc.

4. Remove bolts (A) securing arm (B) to the disc.

   IMPORTANT:
   Note the hole locations in the arm and disc and ensure the bolts (A) are reinstalled at the original locations.

5. Release the bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

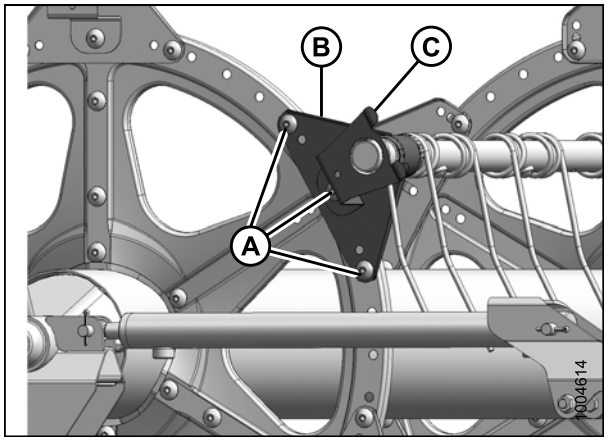


Figure 5.240: Tail End

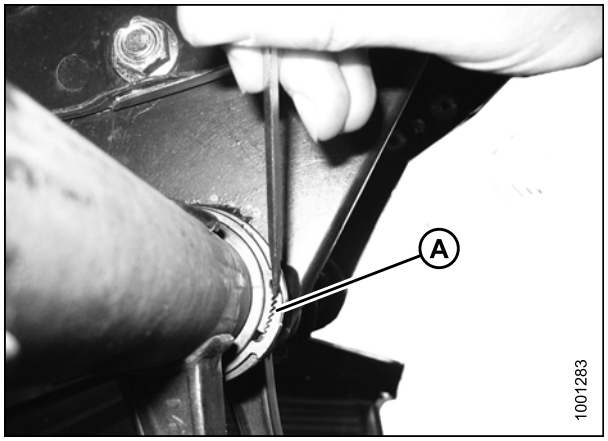


Figure 5.241: Bushing Clamp

6. Rotate the arm (A) until clear of the disc and slide the arm inboard off of bushing (B).
7. Remove the bushing halves (B). If required, remove the next tine or plastic finger so the arm can slide off the bushing. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 434*
   - *Removing Steel Tines, page 433*

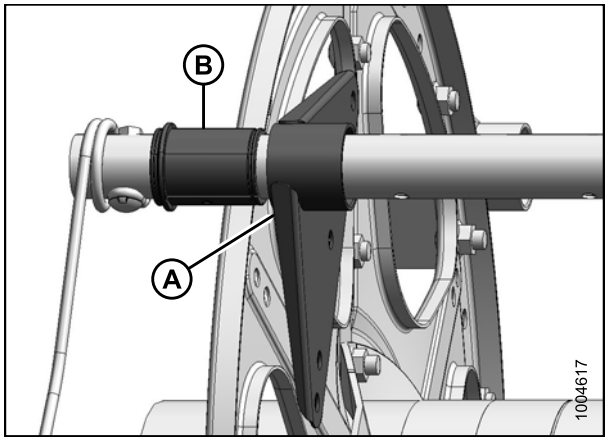


Figure 5.242: Bushing

Removing Cam End Bushings

8. Remove the endshields and endshield support (A) at the applicable tine tube location on the cam end.

   NOTE:
   Removing cam end bushings requires the tine tube be moved through the disc arms to expose the bushing.

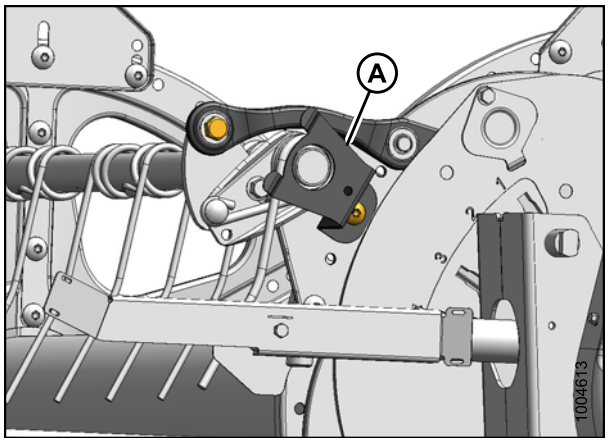


Figure 5.243: Cam End

9. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.
10. Remove the bolts (A) securing the arms (B) to the tail and center discs.

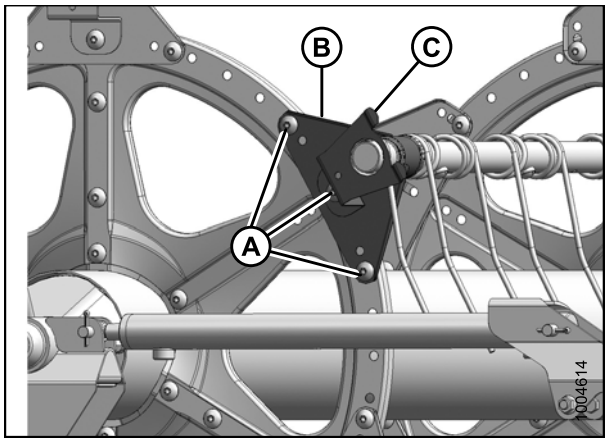


Figure 5.244: Tail End

11. Release the bushing clamps or disconnect the support channels from the tine tube support (if installed) depending on which tine tube is being moved. Three tine tubes (B) require channel disconnection and two tine tubes (C) require only bushing clamp removal.

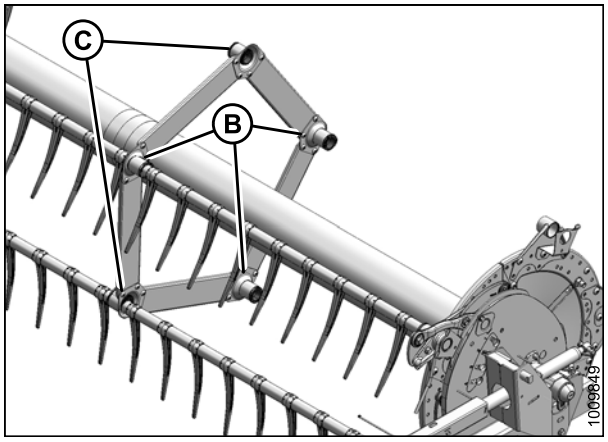


Figure 5.245: Tine Tube Supports

12. Remove bolt (A) from the cam linkage so the tine tube (B) is free to rotate.

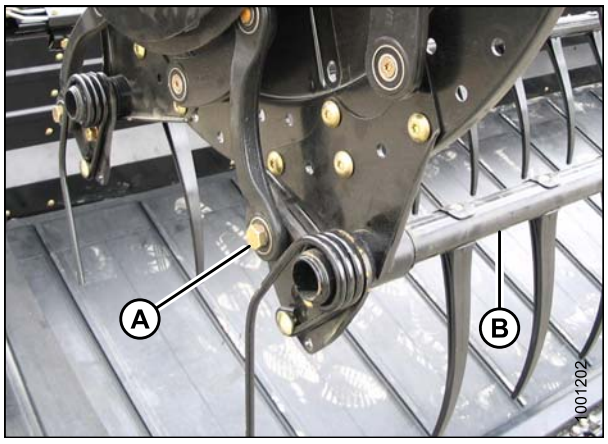


Figure 5.246: Cam End

13. Release the bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

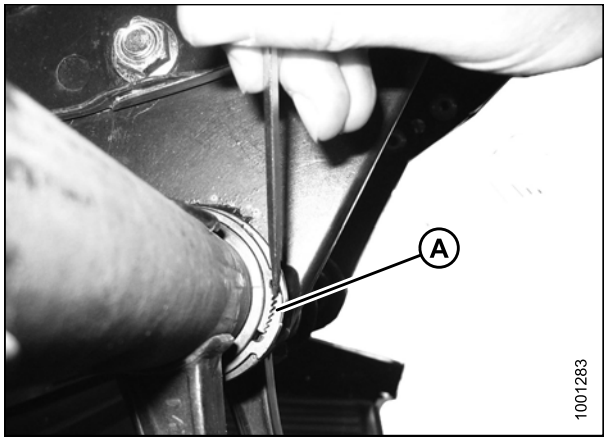


Figure 5.247: Bushing Clamp

14. Slide the tine tube (A) outboard to expose the bushing (B).
15. Remove the bushing halves (B). If required, remove the next tine or plastic finger so the arm can slide off the bushing. Refer to the following procedures if necessary:
    - *Removing Plastic Fingers, page 434*
    - *Removing Steel Tines, page 433*

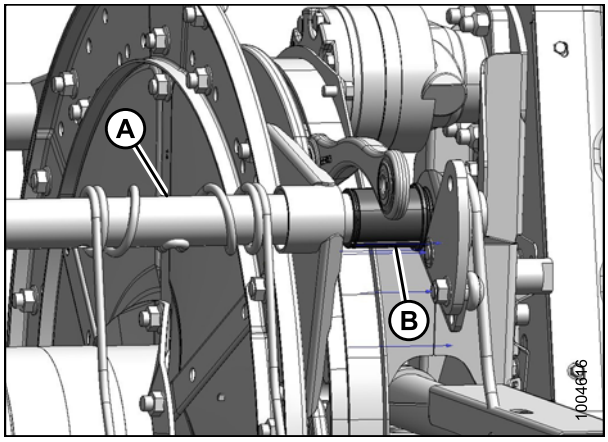


Figure 5.248: Cam End

Removing Tine Tube Support Bushings (If Installed)

16. Locate the support (A) that requires a new bushing.
17. Remove the four bolts (B) securing channels (C) to the support (A).
18. Remove screw (E) and remove the finger (D) if it is too close to the support to allow access to the bushing. Refer to *Removing Plastic Fingers, page 434*.

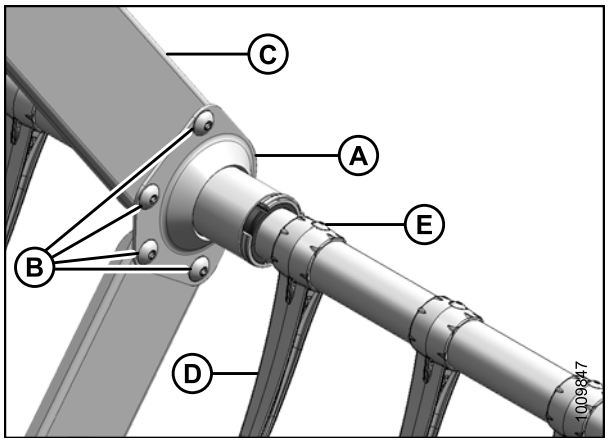


Figure 5.249: Tine Tube Support

19. Release the bushing clamps (A) using a small screwdriver to separate the serrations. Move the clamps off the bushings.

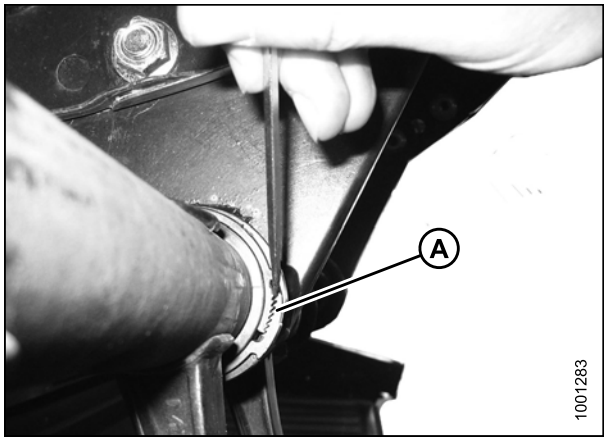


Figure 5.250: Bushing Clamp

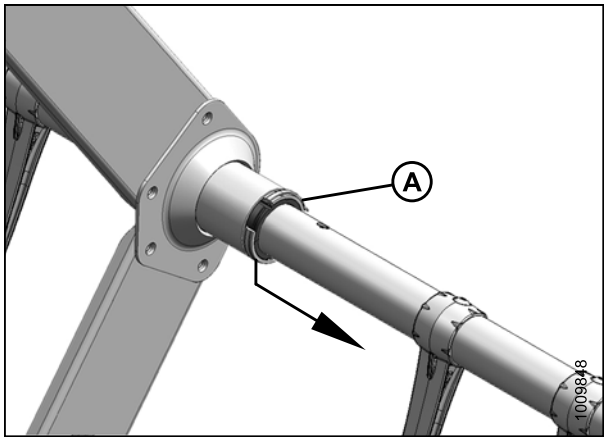


Figure 5.251: Bushing Clamp

20. Slide the support (A) off the bushing halves (B).

    NOTE:
    Two tine tubes have opposite supports (C). Rotate the supports until the flanges clear the channels before moving them off the bushing (B). Move the tine tube outwards slightly if necessary.

21. Remove the bushing halves (B).

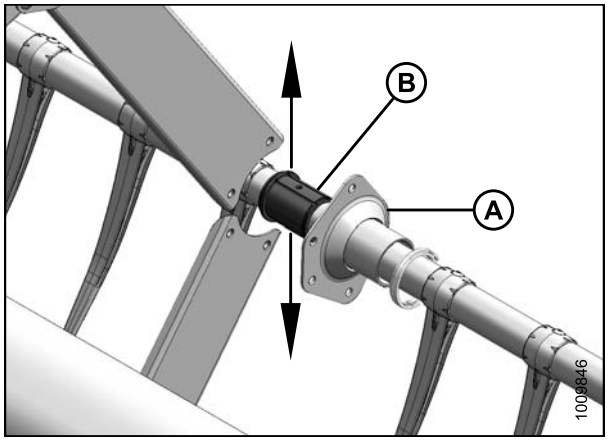


Figure 5.252: Support

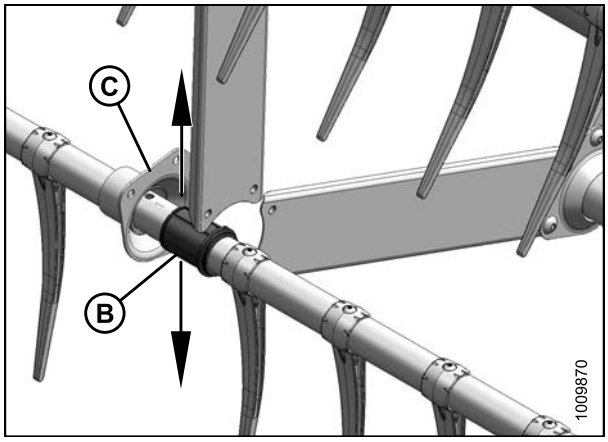


Figure 5.253: Opposite Support

Installing Bushings on Five-, Six-, or Nine-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:
Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure pliers in a vice and grind a notch (B) into the end of each arm to fit the clamp as shown.

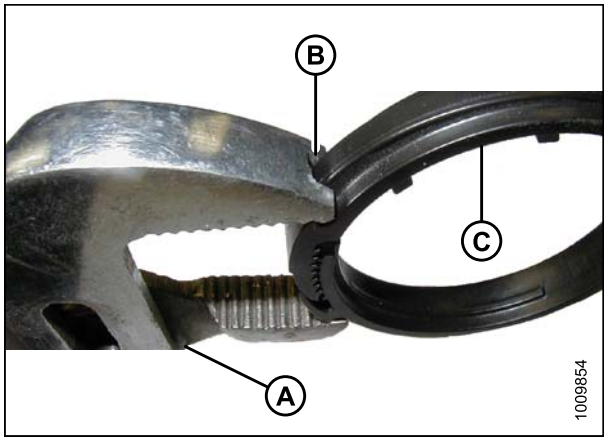


Figure 5.254: Modified Pliers

Installing Cam End Bushings

1. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
2. Slide the tine tube (A) towards the tail end of the reel to insert the bushing (B) into the reel arm. If the tine tube supports are installed, ensure the bushings at those locations slide into the support.
3. Reinstall the previously removed fingers or tines. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 434*
   - *Removing Steel Tines, page 433*
4. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
5. Position the clamp (A) on the bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

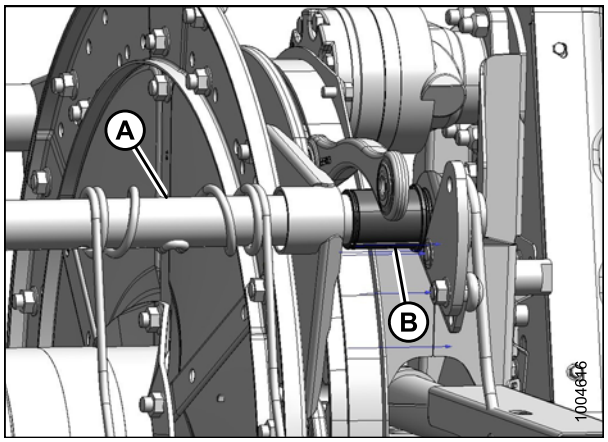


Figure 5.255: Cam End

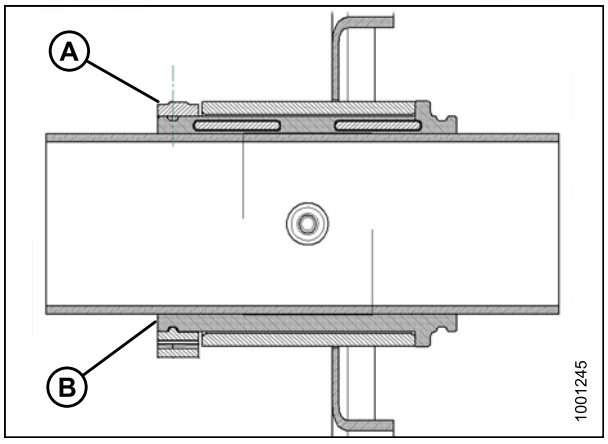


Figure 5.256: Bushing

6. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

   IMPORTANT:
   Over-tightening clamp may result in breakage.

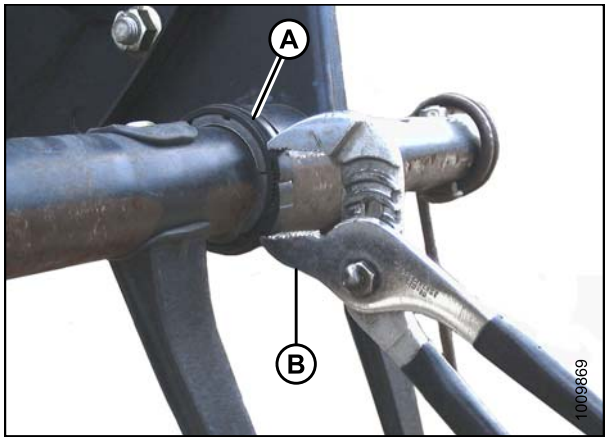


Figure 5.257: Installing Clamp

7. Line up the tine bar (B) with the cam arm and install bolt (A). Torque bolt to 165 N·m (120 ft·lbf).

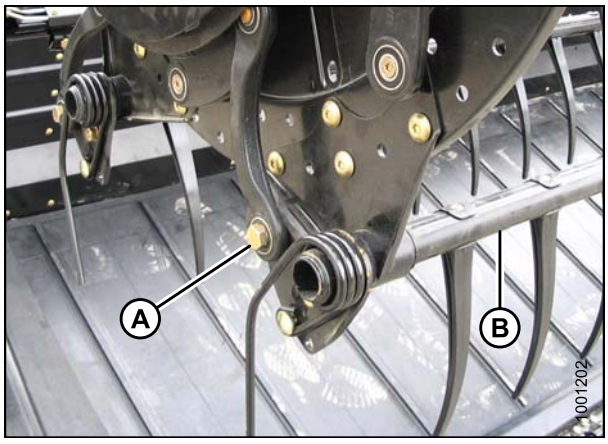


Figure 5.258: Cam End

8. Install the bolts (A) securing the arm (B) to the center disc.
9. Install the reel arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

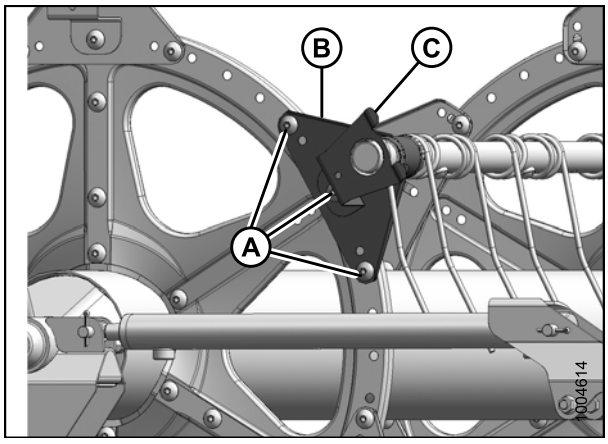


Figure 5.259: Tail End

10. Install the endshield support (A) at the applicable tine tube location at the cam end.
11. Reinstall the reel endshields. Refer to *5.13.6 Reel Endshields, page 447*.

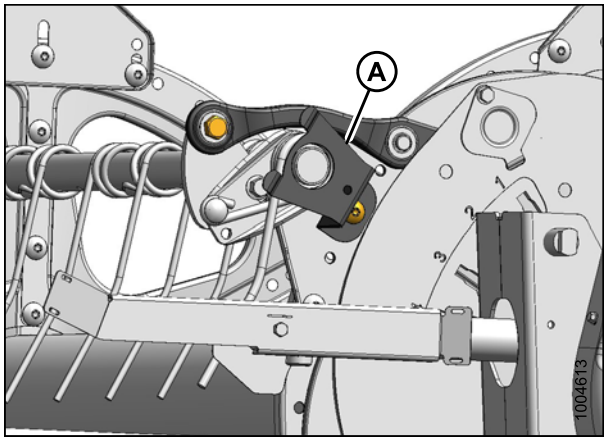


Figure 5.260: Cam End

Installing Center Disc and Tail End Bushings

12. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
13. Slide the reel arm (A) onto the bushing (B) and position against the disc at the original location.
14. Reinstall the previously removed fingers or tines. Refer to the following procedures as necessary:
    - *Removing Plastic Fingers, page 434*
    - *Removing Steel Tines, page 433*

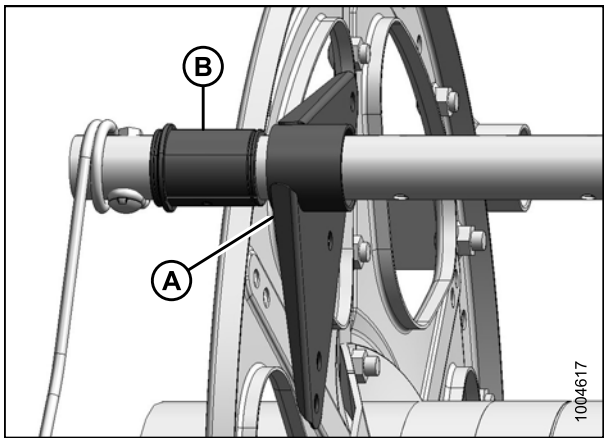


Figure 5.261: Tail End

15. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
16. Position the clamp (A) on the bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

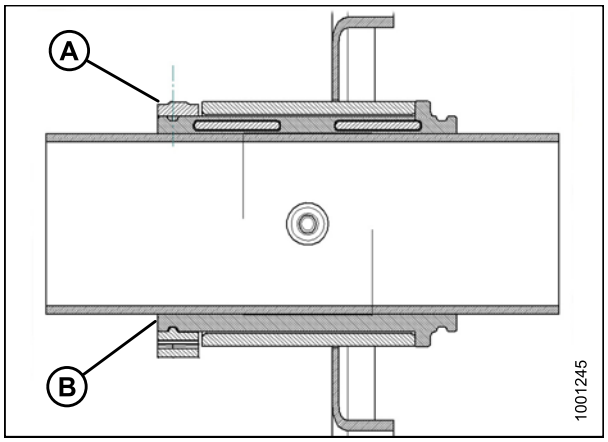


Figure 5.262: Bushing

17. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:
    Over-tightening clamp may result in breakage.

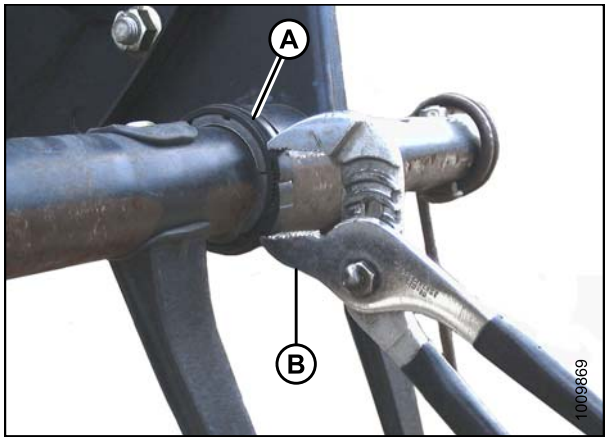


Figure 5.263: Installing Clamp

18. Install the bolts (A) securing the arm (B) to the center disc.
19. Install the reel arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

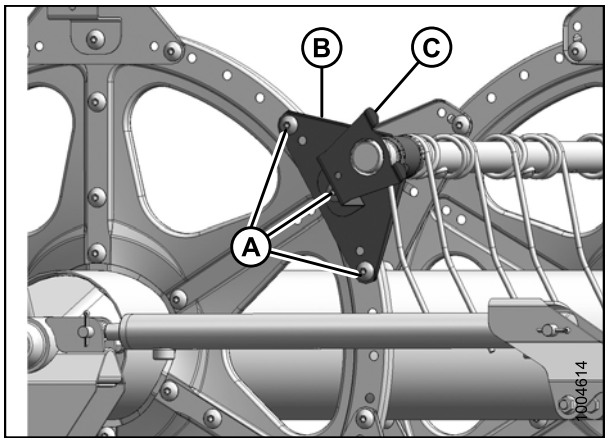


Figure 5.264: Tail End

Installing Tine Tube Support (If installed) Bushings

20. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
21. Slide the support (C) onto the bushing (B). For the opposite tine tube, rotate the support (C) or slightly move the tine tube until it clears the channels (D).

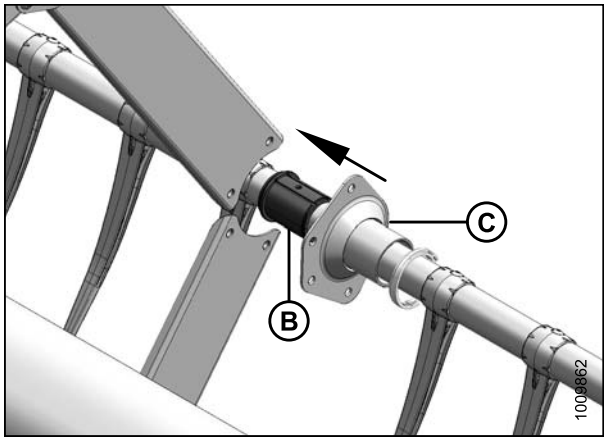


Figure 5.265: Tine Tube Support

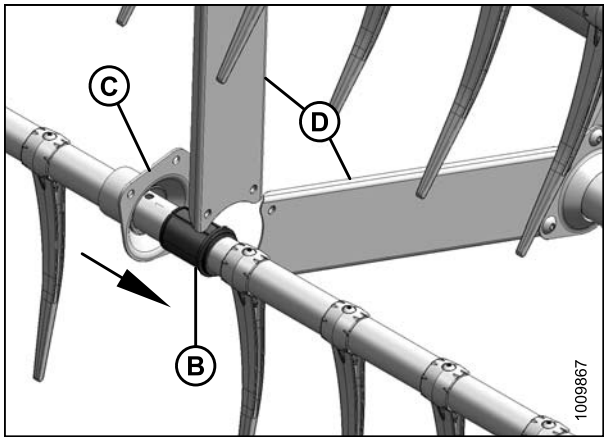


Figure 5.266: Opposite Support

22. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
23. Position the clamp (A) on the bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

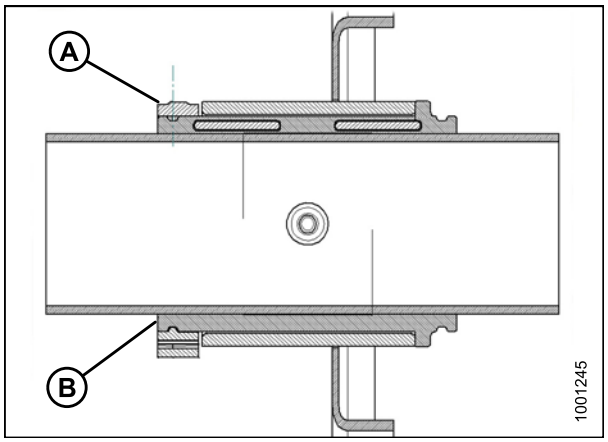


Figure 5.267: Bushing Clamp

24. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:
    Over-tightening clamp may result in breakage.

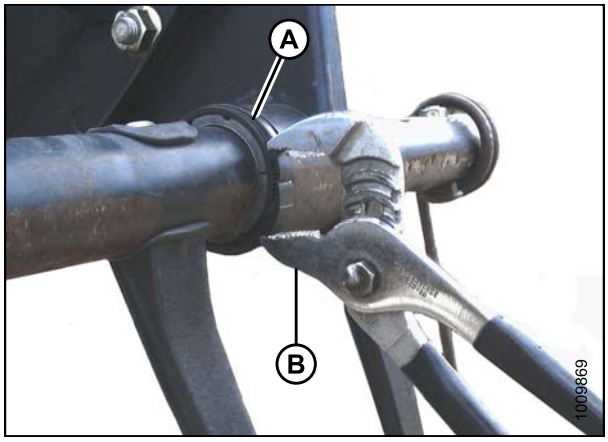


Figure 5.268: Installing Clamp

25. Reattach the channels (C) to the support (A) with screws (B) and nuts. Torque screws to 43 N·m (32 ft·lbf).
26. Reinstall any fingers (D) that were previously removed using screws (E). Refer to *Installing Plastic Fingers, page 435*.

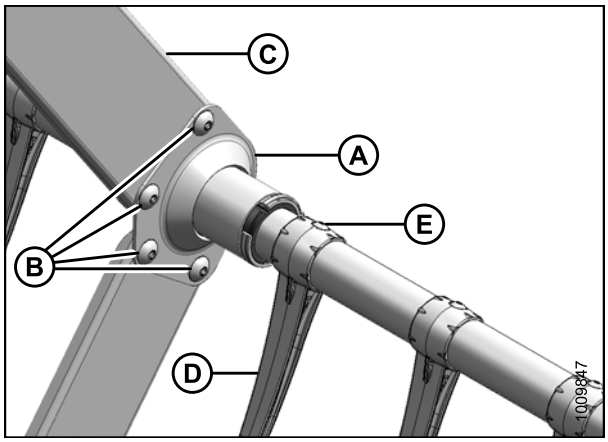


Figure 5.269: Tine Tube Support

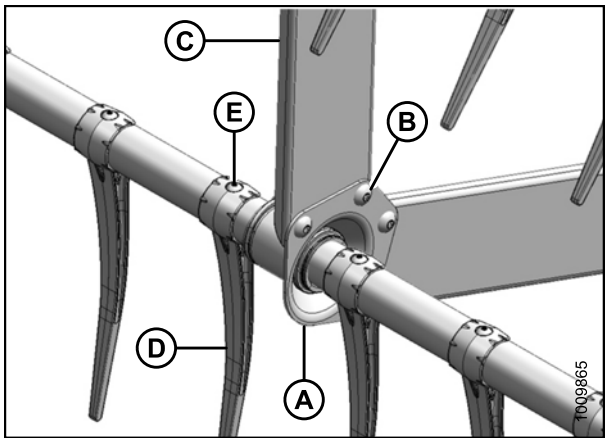


Figure 5.270: Opposite Support

5.13.6 Reel Endshields

Reel endshields and supports do not require regular maintenance, but they should be checked periodically for damage and loose or missing fasteners. Slightly dented or deformed endshields and supports are repairable, but it's necessary to replace severely damaged components.

You can attach reel endshields to either end of the reel.

Replacing Reel Endshields

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 the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until the reel endshield (A) requiring replacement is accessible.
3. Remove three bolts (B).

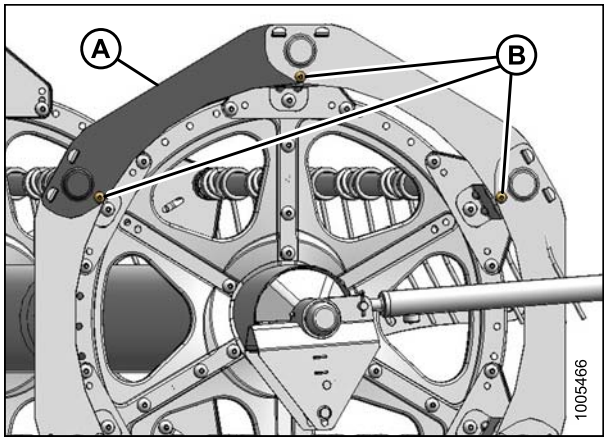


Figure 5.271: Reel Endshields

4. Lift end of reel endshield (A) off support (B).

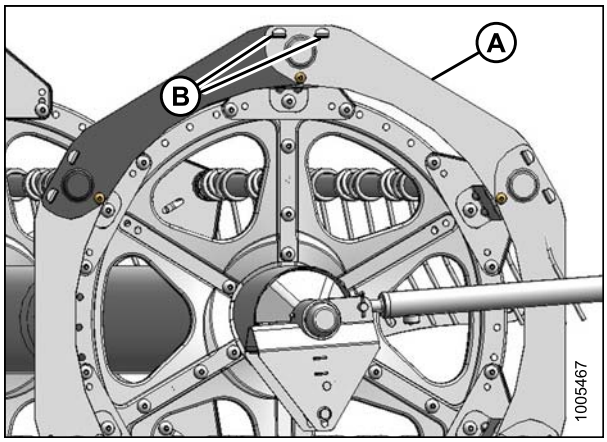


Figure 5.272: Reel Endshields

5. Remove the reel endshield from the supports.

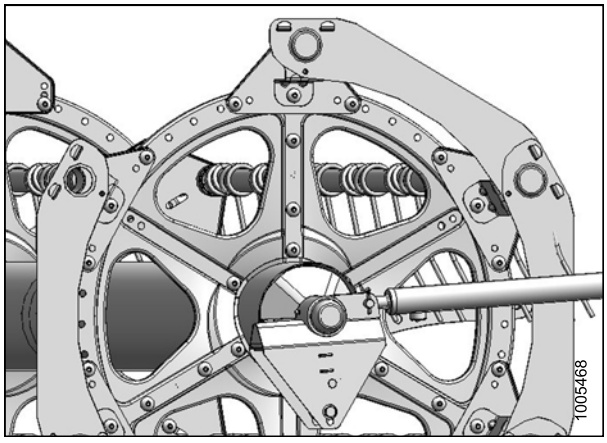


Figure 5.273: Reel Endshields

6. Remove the reel endshield (A) from support (B).
7. Install new reel endshield (C) onto support (B).
8. Reattach reel endshield (A) onto support (B) ensuring it is installed on top of the reel endshield (C).
9. Reinstall bolts (D).
10. Tighten all hardware.

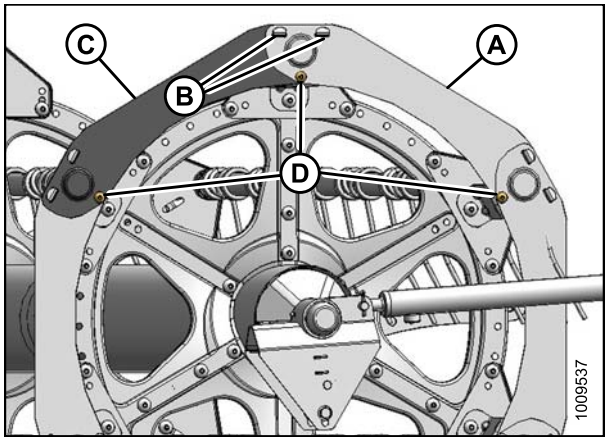


Figure 5.274: Reel Endshields

Replacing Reel Endshield Supports

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 the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until the reel endshield (A) requiring replacement is accessible.
3. Remove bolt (B) from support (A).
4. Remove bolts (C) from support (A) and two adjacent supports.

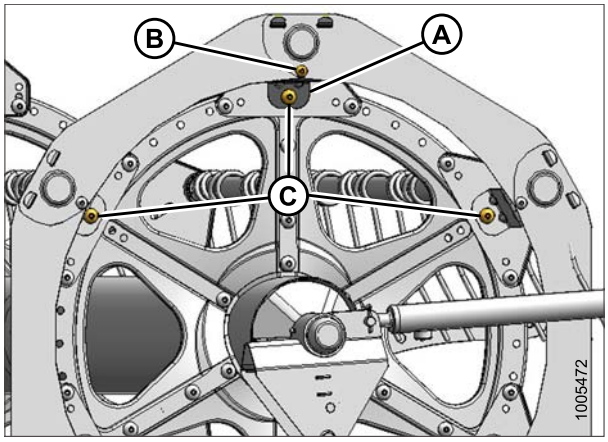


Figure 5.275: Reel Endshield Supports

5. Move the reel endshields (A) away from the tine tube and rotate the support (B) towards the reel to remove it.
6. Insert tabs of new support (B) into the slots in the reel endshields (A). Ensure the tabs engage both reel endshields.
7. Secure support (B) to the disc with bolt (C) and nut. Do not tighten.
8. Secure the reel endshields (A) to support (B) with bolt (C) and nut. Do not tighten.
9. Reattach the supports with bolts (C) and nuts.
10. Check the clearance between the tine tube and reel endshield support and adjust if necessary.
11. Torque nuts to 27 N·m (20 ft·lbf).

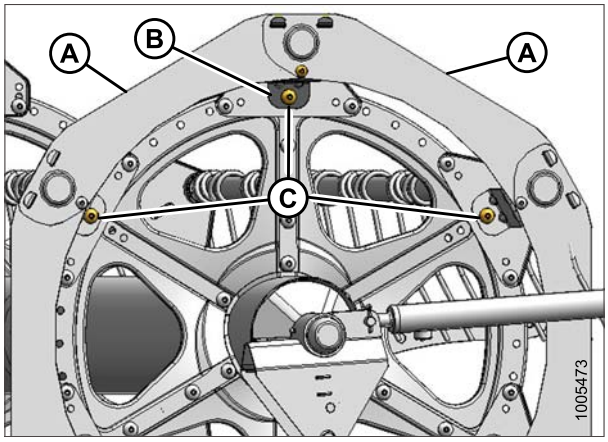


Figure 5.276: Reel Endshield Supports

5.14 Reel Drive

The reel is hydraulically driven through a chain case that is attached to the right end of the reel on a single-reel header, and between the reels on a double-reel header.

5.14.1 Replacing Reel Drive Cover

Removing Reel Drive Cover

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.

Single Reel Drive:

1. Stop the engine and remove the key from the ignition.
2. Remove four bolts (A) securing the cover (B) to the reel drive.

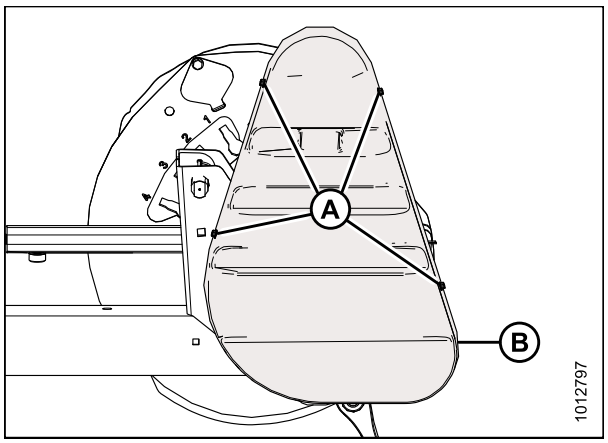


Figure 5.277: Drive Cover – Single Reel

Double Reel Drive:

3. Stop the engine and remove the key from the ignition.
4. Remove six bolts (A) securing the upper cover (B) to the reel drive and lower cover (C).

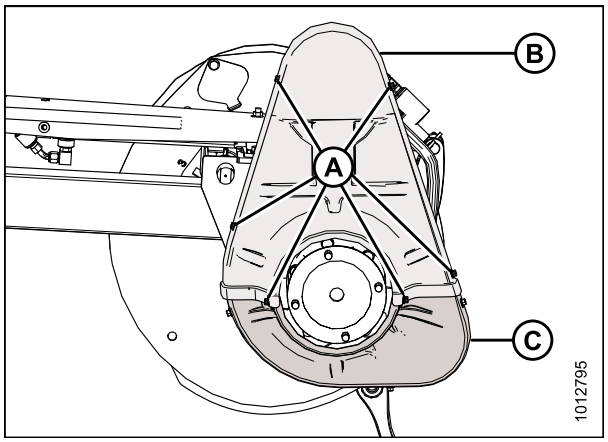


Figure 5.278: Drive Cover – Double Reel

5. Remove three bolts (A) and remove the lower cover (B) if necessary.

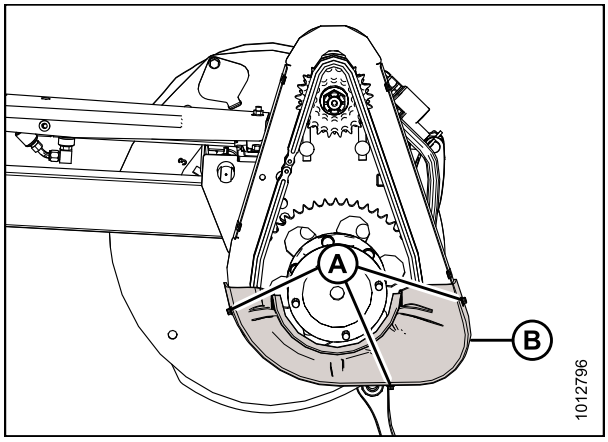


Figure 5.279: Drive Cover – Double Reel

Installing Reel Drive Cover

Single Reel Drive:

1. Position the drive cover (B) onto the reel drive and secure with four bolts (A).

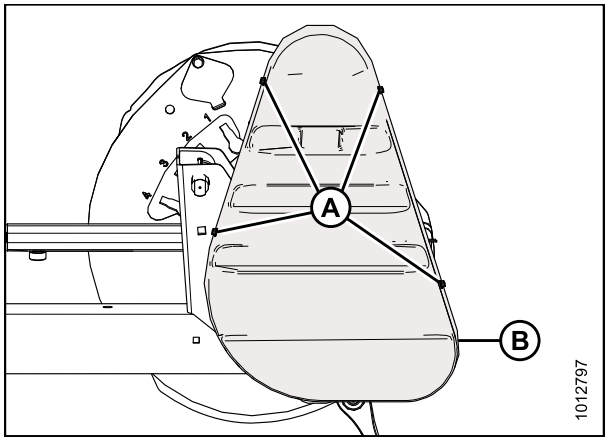


Figure 5.280: Drive Cover – Single Reel

Double Reel Drive:

2. Position the lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

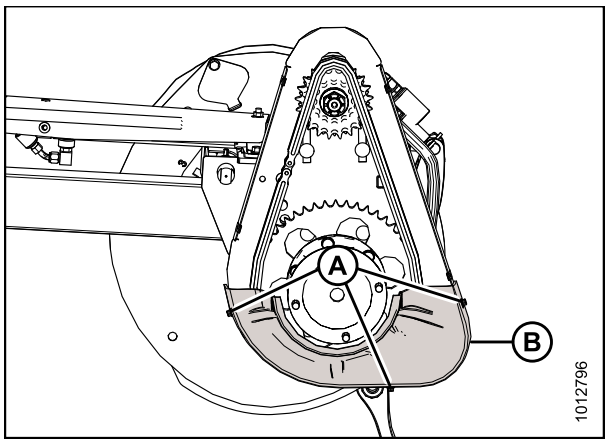


Figure 5.281: Drive Cover – Double Reel

3. Position the upper drive cover (B) onto the reel drive and lower cover (C) and secure with six bolts (A).

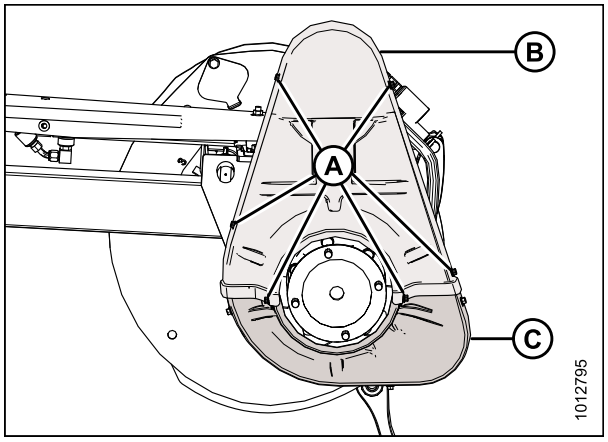


Figure 5.282: Drive Cover – Double Reel

5.14.2 Adjusting Reel Drive Chain Tension

Loosening Reel Drive Chain

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.
3. Loosen six nuts (A). Slide the motor (B) and motor mount (C) down towards the reel shaft.

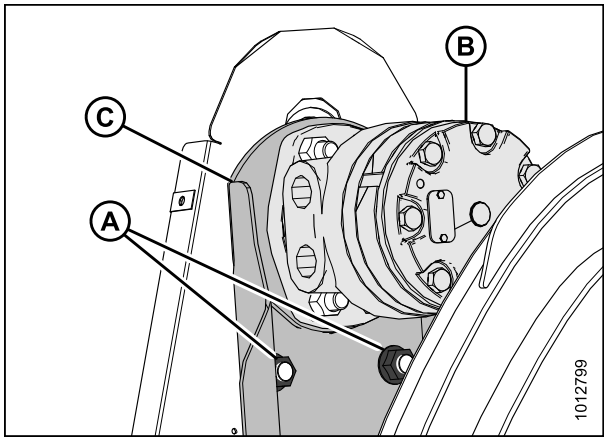


Figure 5.283: Single-Reel Drive Shown – Double-Reel Drive Similar

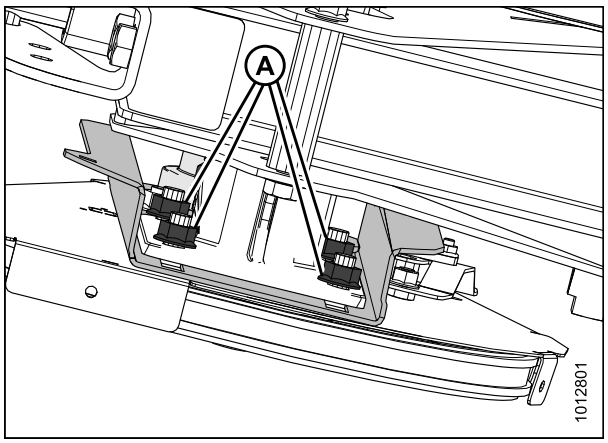


Figure 5.284: Single-Reel Drive – Viewed from Underside of Reel

Tightening Reel Drive Chain

1. Shut down the combine, and remove the key from the ignition.
2. Ensure the six bolts (A) securing the motor mount to the chain case are loose.

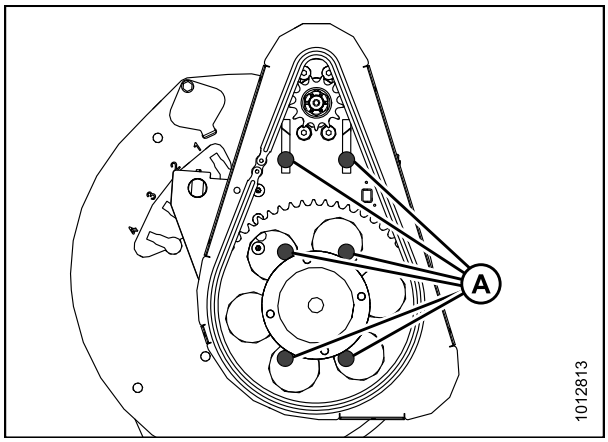


Figure 5.285: Single-Reel Drive Shown – Double Reel Similar

3. Slide the motor (A) and motor mount (B) upwards until the chain (C) is tight.

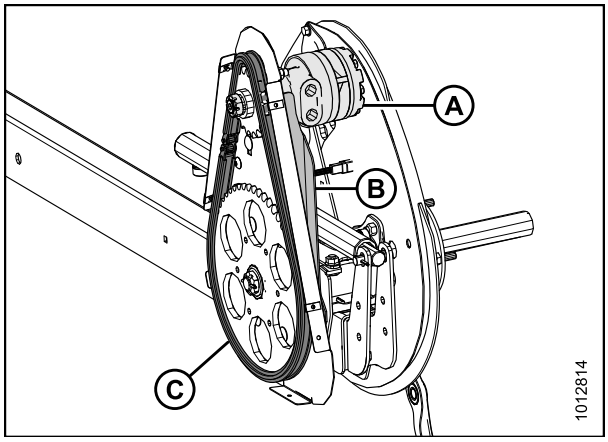


Figure 5.286: Single-Reel Drive Shown – Double Reel Similar

4. Ensure there is 3 mm (0.12 in.) of slack at the chain midspan. Adjust if necessary.
5. Tighten six nuts (A).
6. Torque nuts (A) to 73 N·m (54 ft·lbf).
7. Install the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

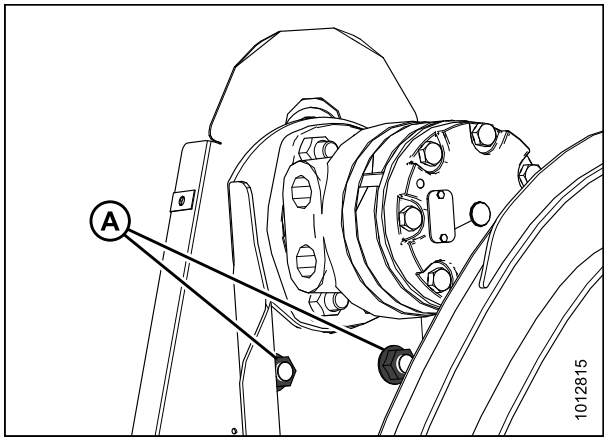


Figure 5.287: Single-Reel Drive Shown – Double Reel Similar

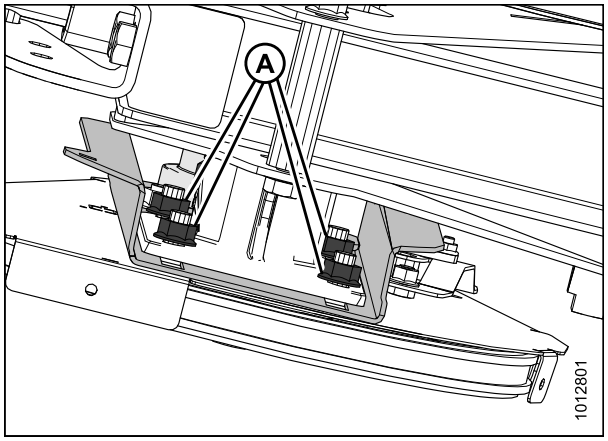


Figure 5.288: Single-Reel Drive – Viewed from Underside of Reel

5.14.3 Replacing Reel Drive Sprocket

For Case IH and New Holland combine models, configure the combine according to the reel sprocket size in order to optimize the auto reel to ground speed control. Refer to the combine service manual for more information.

Removing Reel Drive Sprocket

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 452*.

3. Remove the drive chain (A) from the drive sprocket (B).

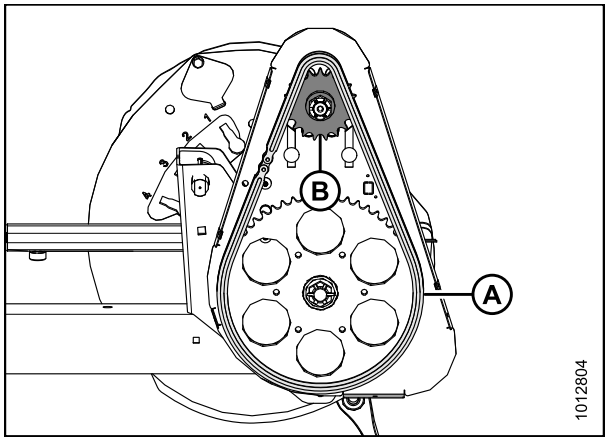


Figure 5.289: Reel Drive

4. Remove the cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
5. Remove the drive sprocket (D). Ensure the key remains in the shaft.

   IMPORTANT:
   To avoid damaging the motor, use a puller if the drive sprocket does not come off by hand. Do **NOT** use a pry bar and/or hammer to remove the drive sprocket (D).

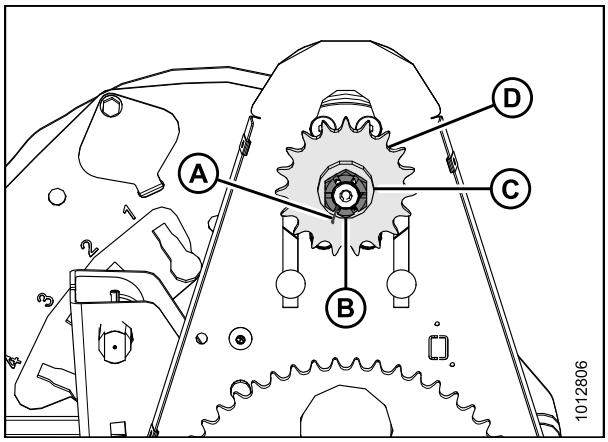


Figure 5.290: Reel Drive

Installing Reel Drive Sprocket

1. Align the keyway in sprocket (D) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure with flat washer (C) and slotted nut (B).
2. Torque slotted nut (B) to 54 N·m (40 ft·lbf).
3. Install cotter pin (A). If necessary, tighten the slotted nut (B) to the next slot to install the cotter pin.

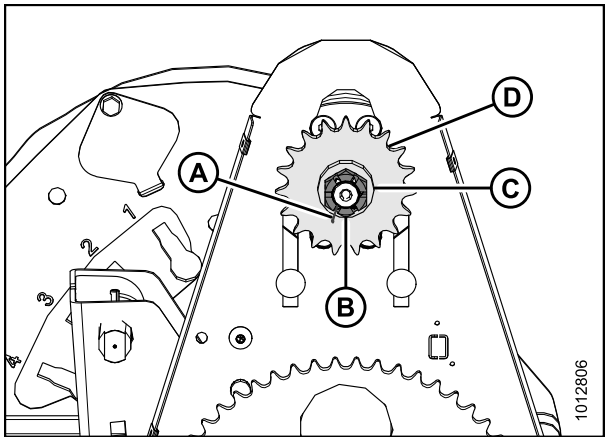


Figure 5.291: Reel Drive

4. Install the drive chain (A) onto the drive sprocket (B).

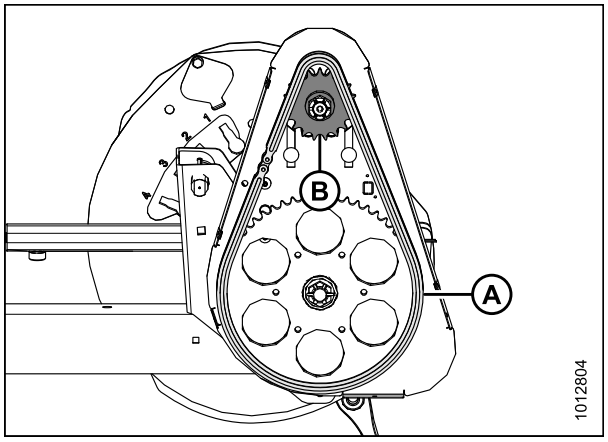


Figure 5.292: Reel Drive

5. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 453*.

5.14.4 Replacing Double-Reel U-Joint

The double-reel drive U-joint allows each reel to move independently from the other.

Lubricate the U-joint according to the specifications. Refer to *5.3.6 Lubrication and Servicing, page 320*.

Replace the U-joint if severely worn or damaged. Refer to *Removing Double-Reel U-Joint, page 456*.

Removing Double-Reel U-Joint

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) (or equivalent lifting device).

   IMPORTANT:
   Avoid damaging or denting the center tube by supporting the reel as close to the end disc as possible.

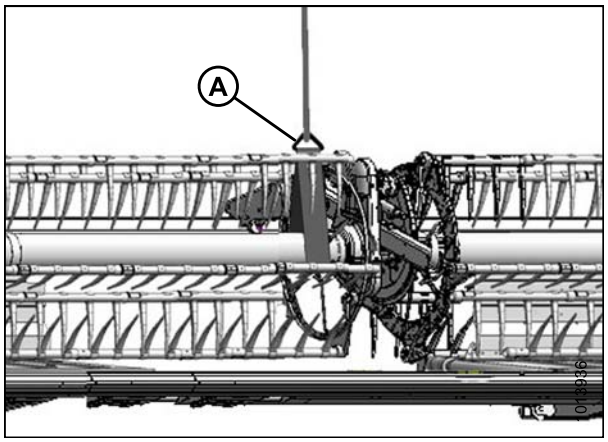


Figure 5.293: Supporting Reel

4. Remove the six bolts (A) attaching the U-joint flange (B) to the driven sprocket (C).
5. Remove the U-joint.

NOTE:
It may be necessary to move the right-hand reel sideways for the U-joint to clear the tube.

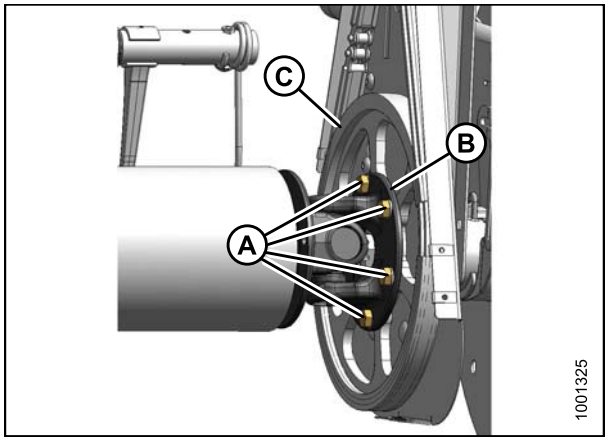


Figure 5.294: U-Joint

Installing Double-Reel U-Joint

NOTE:
It may be necessary to move the right-hand reel sideways for the U-joint to clear the reel tube.

1. Position the U-joint flange (B) onto the driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque the bolts.

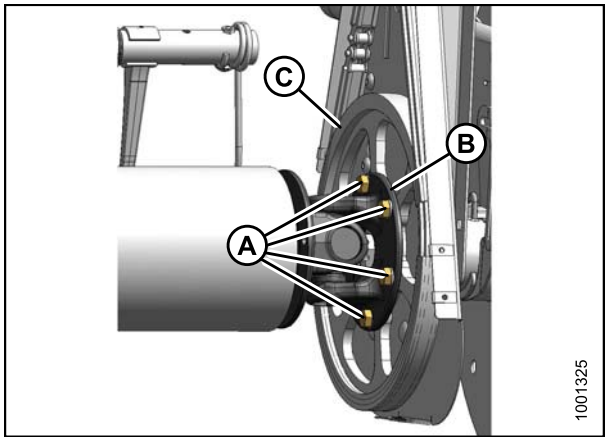


Figure 5.295: U-Joint

2. Position the right-hand reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
3. Rotate the reel until the holes in the end of the reel tube and U-joint flange (B) line up.
4. Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and secure with lock washers.
5. Torque to 102–115 N·m (75–85 ft·lbf).

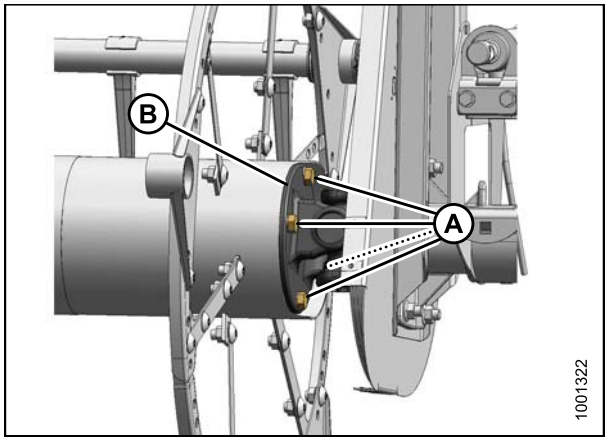


Figure 5.296: U-Joint

6. Remove the temporary reel support (A).

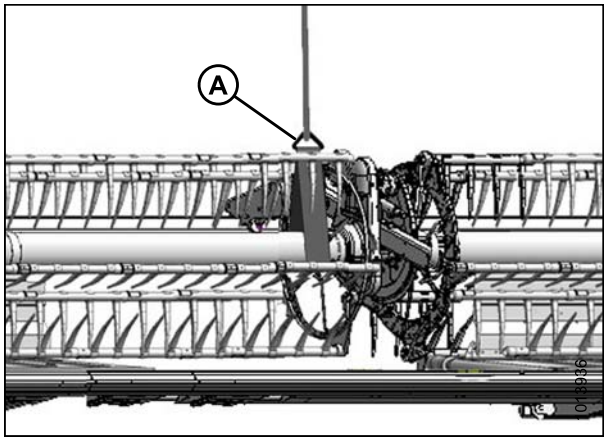


Figure 5.297: Supporting Reel

7. Install the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

5.14.5 Replacing Reel Drive Motor

The reel drive motor does not require regular maintenance or servicing. If problems occur with the motor, remove it and have it serviced at your MacDon Dealer.

Removing Reel Drive Motor

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 452*.
3. Remove the drive sprocket. Refer to *Removing Reel Drive Sprocket, page 454*.
4. Disconnect the hydraulic lines (A) at the motor (B). Cap or plug open ports and lines.

   NOTE:
   Mark the hydraulic lines (A) and their locations in the motor (B) to ensure correct reinstallation.

5. Remove four nuts and bolts (C) and remove the motor (A). Retrieve the spacer (not shown) from between the motor (B) and the motor mount (if installed).

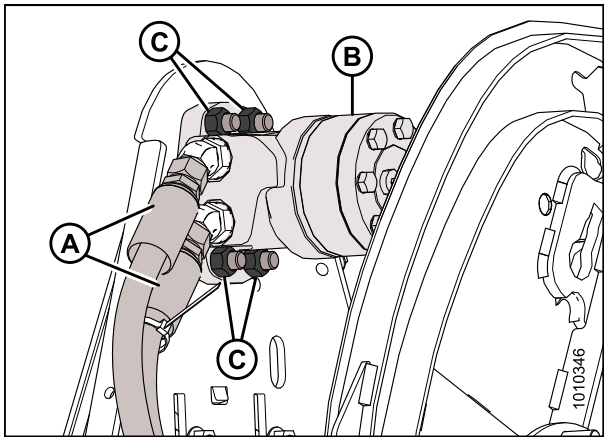


Figure 5.298: Reel Motor and Hoses

Installing Reel Drive Motor

1. Slide the motor mount (A) up or down so the motor mounting holes (B) are accessible through the openings in the chain case.

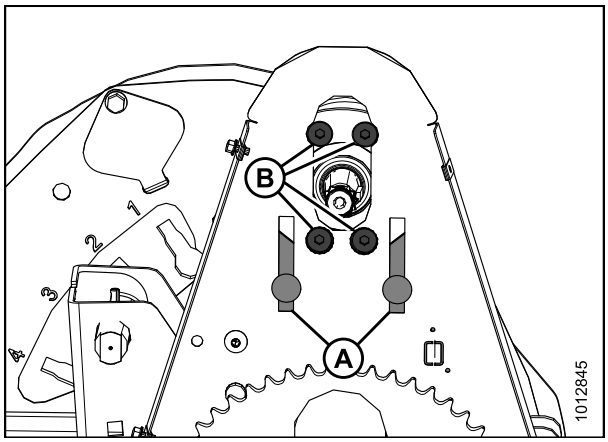


Figure 5.299: Reel Drive Motor Mounting Holes

2. Attach the motor (A) (and spacer if previously removed) to the motor mount (B) with four 1/2 in. x 1-3/4 in. countersunk bolts and nuts (C).
3. Torque nuts (C) to 73 N·m (54 ft·lbf).
4. If installing a new motor, install the hydraulic fittings (not shown) and torque to 110–120 N·m (81–89 ft·lbf).

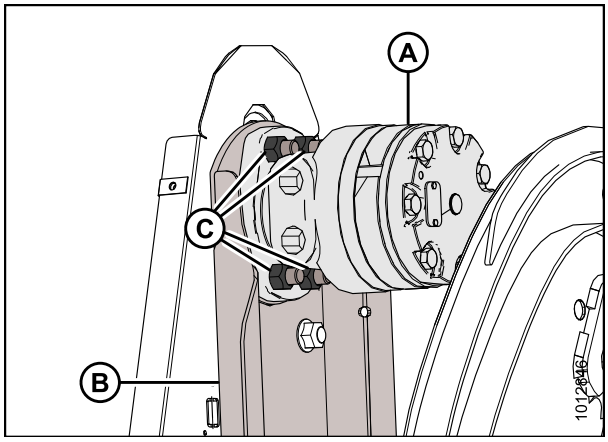


Figure 5.300: Reel Drive Motor

5. Remove the caps or plugs from the ports and lines and connect the hydraulic lines (A) to the hydraulic fittings (B) on the motor (C).

   NOTE:
   Ensure the hydraulic lines (A) are installed at their original locations.

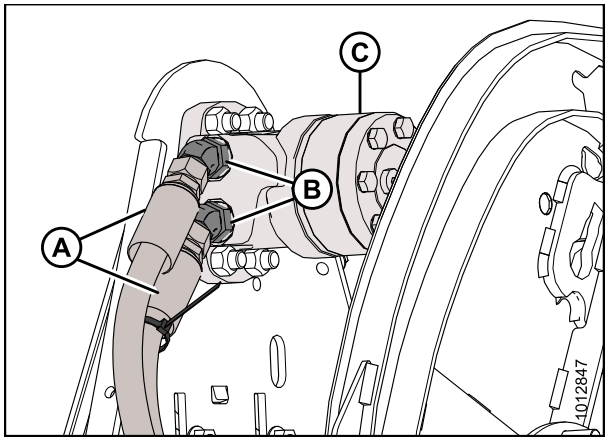


Figure 5.301: Reel Motor and Hoses

6. Install the drive sprocket. Refer to *Installing Reel Drive Sprocket, page 455*.
7. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 453*.

5.14.6 Replacing Drive Chain on Double Reel

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 452*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) (or equivalent lifting device).

   IMPORTANT:
   Avoid damaging or denting the center tube by supporting the reel as close to the end disc as possible.

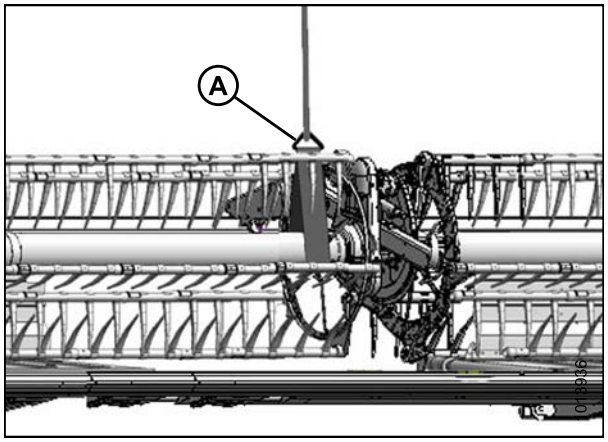


Figure 5.302: Supporting Reel

4. Remove the four bolts (A) securing the reel tube to the U-joint flange (B).

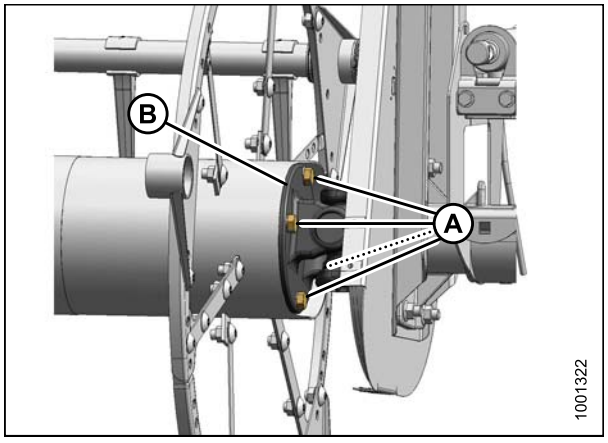


Figure 5.303: U-Joint

5. Move the right-hand reel sideways to separate the reel tube (A) from the U-joint (B).
6. Remove the drive chain (C).
7. Route the new chain (C) over the U-joint (B) and position onto the sprockets.

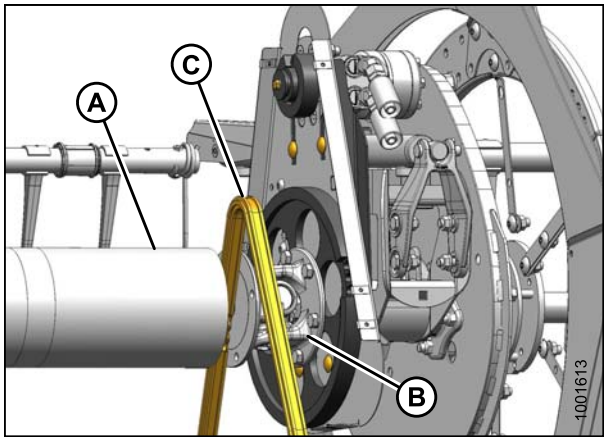


Figure 5.304: Replacing Chain

8. Position the right-hand reel tube (A) against the reel drive and engage the stub shaft into the U-joint pilot hole.
9. Rotate the reel until the holes in end of the reel tube and U-joint flange (B) line up.
10. Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and secure with lock washers.
11. Torque to 102–115 N·m (75–85 ft·lbf).

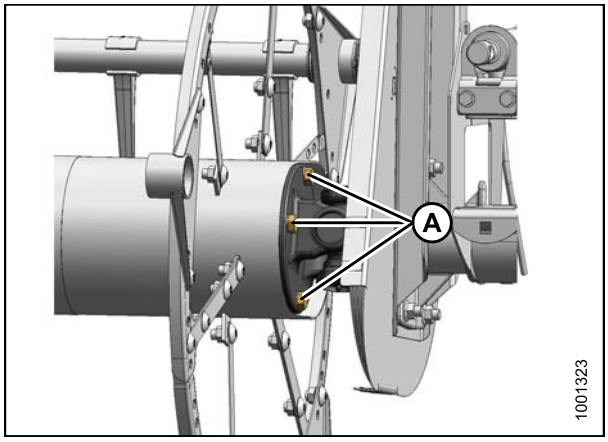


Figure 5.305: U-Joint

12. Remove the temporary reel support (A).

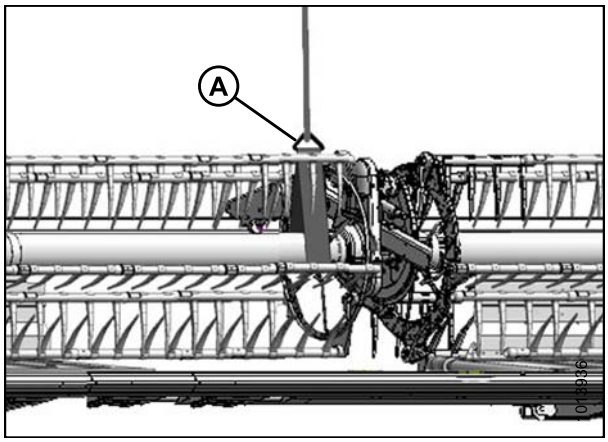


Figure 5.306: Supporting Reel

5.14.7 Replacing Drive Chain on Single Reel

1. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 452*.
2. Lift the chain (A) off the drive sprocket (B).
3. Lower the chain until free of the lower sprocket (C) and remove the chain from the drive.
4. Position the new chain (A) around the bottom teeth on the lower sprocket (C).
5. Lift the chain onto the drive sprocket (B) ensuring all the links are properly engaged in the teeth.
6. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 453*.

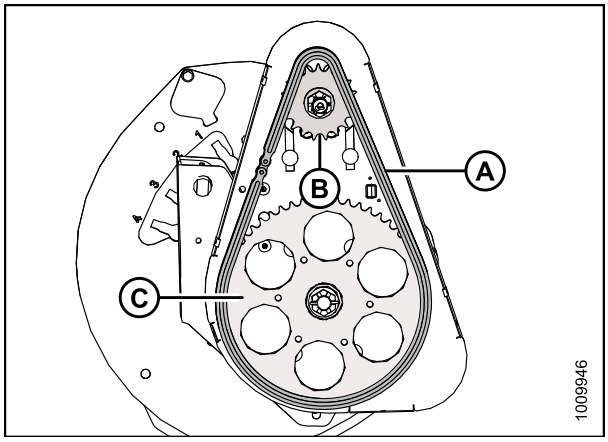


Figure 5.307: Reel Drive

5.14.8 Replacing Reel Speed Sensor

The reel speed sensor system is located inside the reel drive cover.

Replacing AGCO Sensor

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.
3. Disconnect the electrical connector (A).

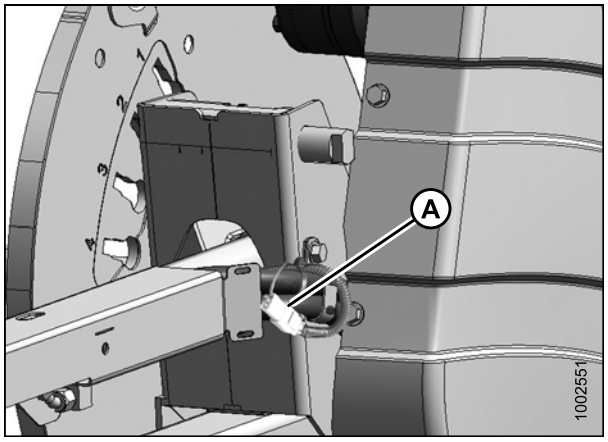


Figure 5.308: Electrical Harness

4. Cut the cable tie (A) securing the harness to the cover.
5. Remove two screws (B) and remove the sensor (C) and harness. Bend the cover (D) (if necessary) to remove the harness.
6. Feed the wire of the new sensor behind the cover (D) and through the chain case.
7. Locate the new sensor in support (E) and attach with two screws (B).
8. Adjust the gap between the sensor disc (F) and the sensor (C) to 0.5 mm (0.02 in.).

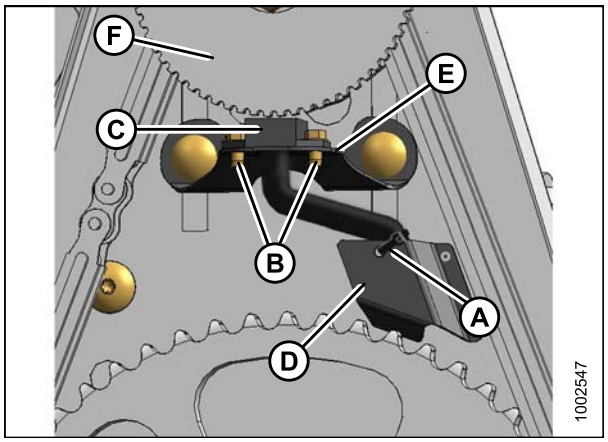


Figure 5.309: Speed Sensor

9. Connect the electrical harness (A).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

10. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

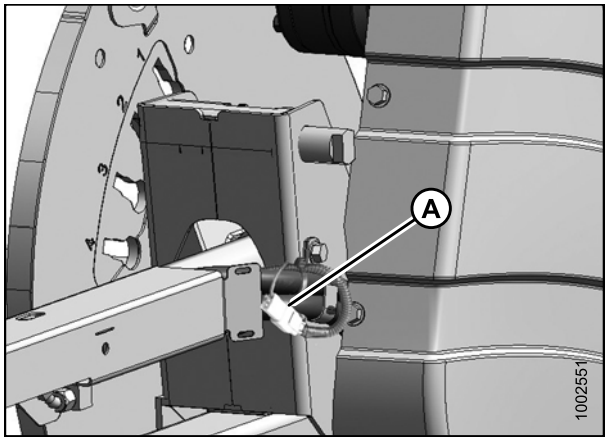


Figure 5.310: Electrical Harness

Replacing John Deere Sensor

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.
3. Disconnect the electrical connector (D).
4. Remove the top nut (C) and remove the sensor (B).
5. Remove the top nut from the new sensor and position the sensor into the support. Secure with top nut (C).
6. Adjust the gap between the sensor disc (A) and the sensor (B) to 3 mm (1/8 in.) using nut (C).
7. Connect to harness at (D).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

8. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

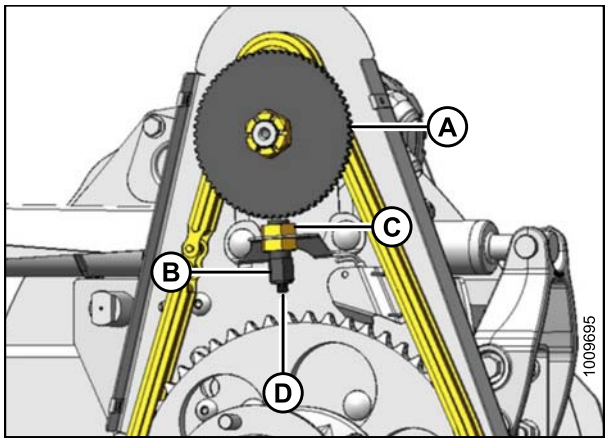


Figure 5.311: Speed Sensor

Replacing Lexion 400 Series Sensor

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.

3. Disconnect the electrical connector (C).
4. Remove the top nuts (D) and remove the sensor (B).
5. Remove the top nut from the new sensor and position the sensor into the support. Secure with top nut (D).
6. Adjust the gap between the sensor disc (A) and the sensor (B) to 3 mm (1/8 in.) using nuts (D).
7. Connect to harness at (C).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

8. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

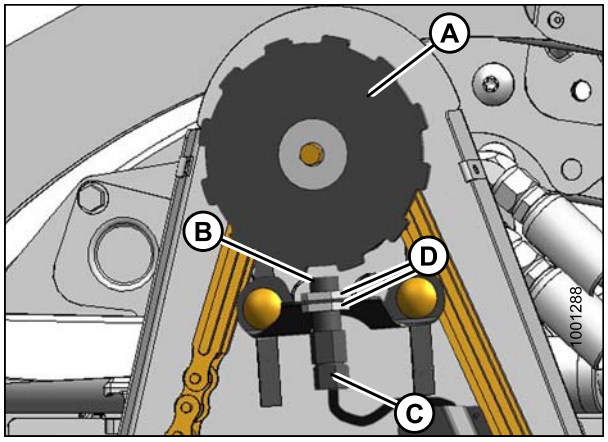


Figure 5.312: Speed Sensor

Replacing Lexion 500/700 Series Sensor

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 450*.
3. Disconnect the electrical connector (C).
4. Remove screw (D) and remove the sensor (B).
5. Position the new sensor into the support. Secure with screw (D).
6. Adjust the gap between the sensor disc (A) and the sensor (B) to 3 mm (1/8 in.) by bending support (E).
7. Connect to harness at (C).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

8. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 451*.

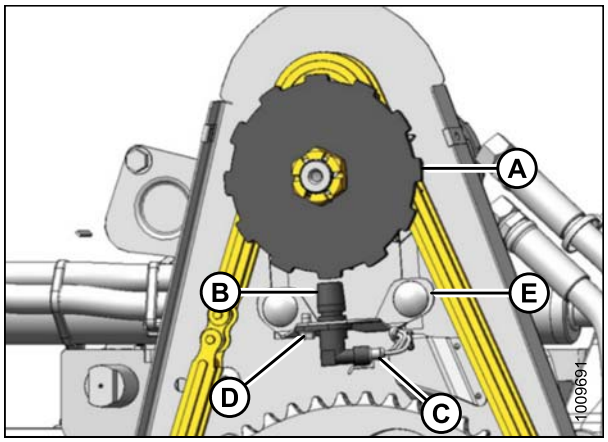


Figure 5.313: Speed Sensor

5.15 Transport System (Optional)

Refer to *6.4.3 Stabilizer/Slow Speed Transport Wheels, page 475* for more information.

5.15.1 Checking Wheel Bolt Torque

If a transport system is installed, adhere to the following procedure for torquing the wheel bolts:

1. Follow the bolt tightening sequence shown, and torque the wheel bolts to 110–120 N·m (80–90 ft·lbf).

   IMPORTANT:
   Whenever a wheel is removed and reinstalled, check the wheel bolt torque after one hour of operation and every 100 hours thereafter.

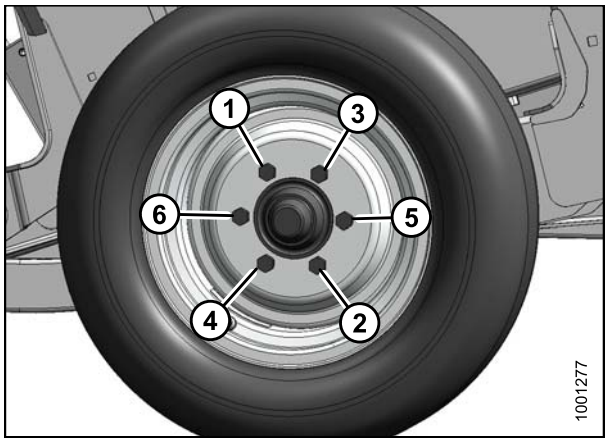


Figure 5.314: Bolt Tightening Sequence

5.15.2 Checking Axle Bolt Torque

If a transport system is installed, adhere to the following procedure for torquing the axle bolts:

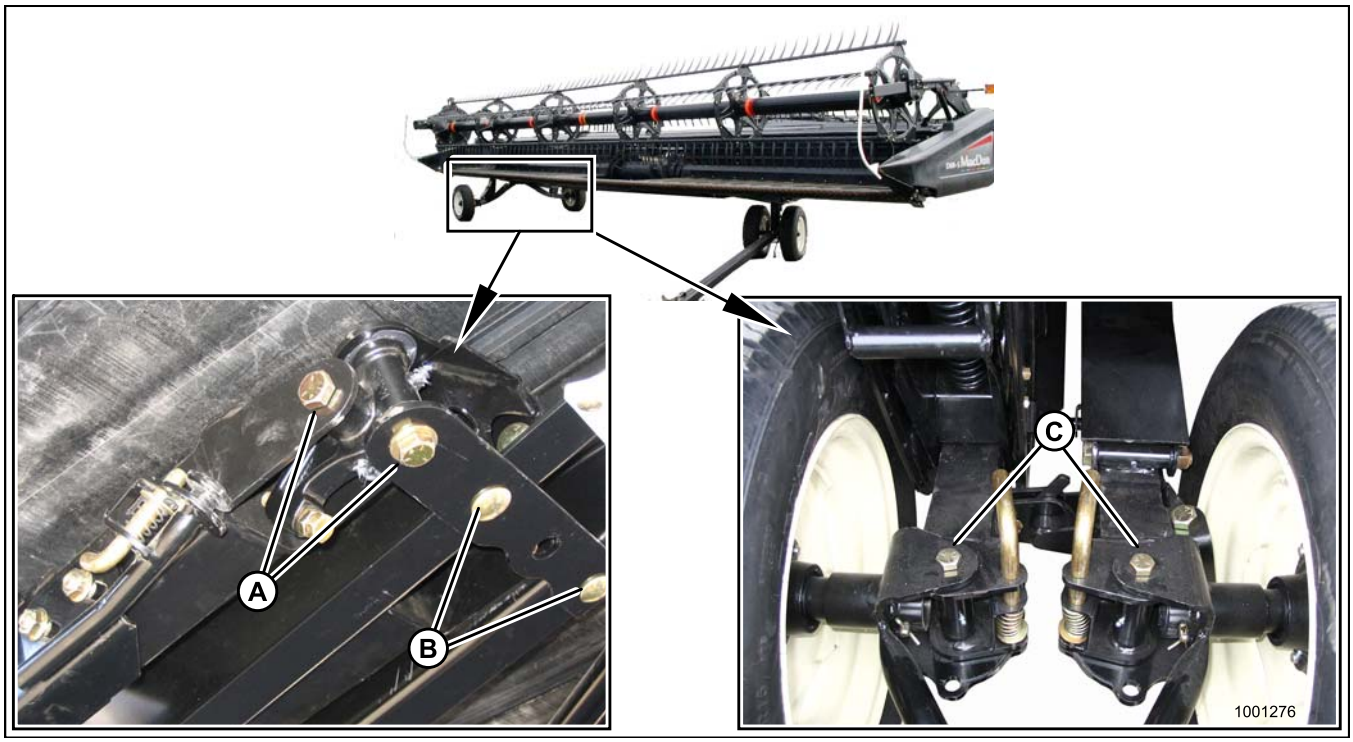


Figure 5.315: Axle Bolts

1. Check and tighten axle bolts **DAILY** until torque is maintained as follows:
   - (A): 244 N·m (180 ft·lbf)
   - (B): 203 N·m (150 ft·lbf)
   - (C): 244 N·m (180 ft·lbf)

5.15.3 Checking Tire Pressure

Check the tire inflation pressure and inflate according to the information provided in Table *5.3 Tire Pressure, page 467*.

Table 5.3 Tire Pressure

Size	Load Range	Pressure
ST205/75 R15	D	448 kPa (65 psi)
	E	552 kPa (80 psi)

WARNING

- **Service tires safely.**
- **A tire can explode during inflation which could cause serious injury or death.**
- **Do NOT stand over tire. Use a clip-on chuck and extension hose.**
- **Do NOT exceed maximum inflation pressure indicated on tire label or sidewall.**
- **Replace tires that have defects.**
- **Replace wheel rims that are cracked, worn, or severely rusted.**
- **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 correctly positioned on the rim or is overinflated, the tire bead can loosen on one side causing air to escape 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 the tire before removing the tire from the rim.**
- **Do NOT remove, install, or repair 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.**

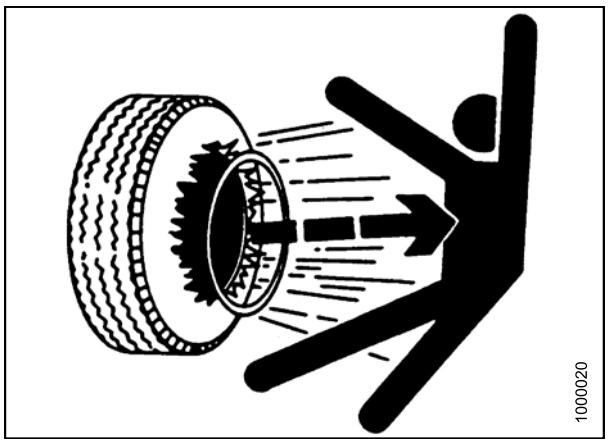


Figure 5.316: Inflation Warning

6 Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

6.1 Adapter

6.1.1 Hillside Extension Kit

The Hillside Extension kit allows CA25 Combine Adapters to operate on steep hillsides while maintaining oil supply to the suction side of pump.

MD #B6057

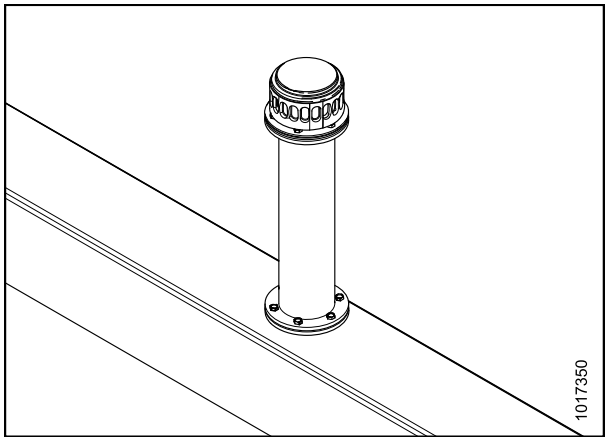


Figure 6.1: Hillside Extension Kit

6.2 Reel

6.2.1 Multi-Crop Rapid Reel Conversion Kit

For use on double-reel headers only, the multi-crop rapid reel conversion 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 crop disturbance. The kit enables the reel fore-aft cylinders to also be quickly relocated to the normal operating location.

MD #B5943

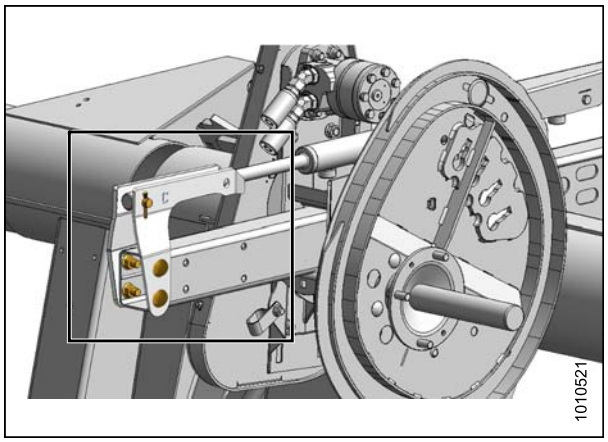


Figure 6.2: Center Arm – Left and Right Similar

6.2.2 Lodged Crop Reel Finger Kit

The steel fingers provided in the Lodged Crop Reel Finger kit attach to the ends of every other tine bar and help to clear material in heavy, hard-to-cut crops such as lodged rice.

Each kit contains three fingers for the cam end of the reel and three fingers for the tail end. Hardware and installation instructions are included in the kit.

MD #B4831

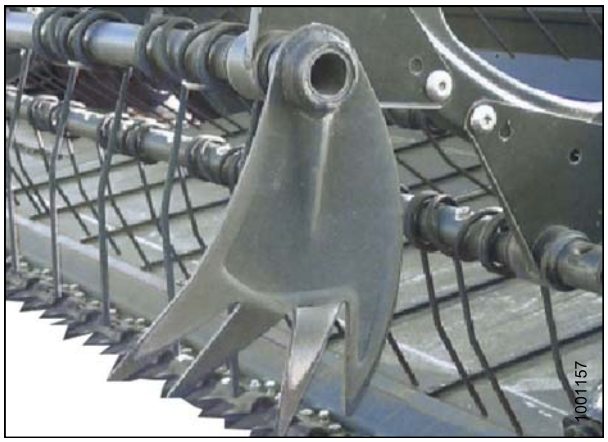


Figure 6.3: Lodged Crop Finger

6.2.3 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion from a six-bat reel to a nine-bat reel.

Order the following bundles according to your header size and type:

- 30 foot – Plastic Fingers MD #B5278[19]
- 30 foot – Steel Fingers MD #B5657
- 35 foot – Plastic Fingers MD #B5674

NOTE:
You must also order additional endshields when converting the reel.

19. Double-reel units only

6.2.4 Reel Endshield Kit

The steel shields provided in the Reel Endshield kit attach to the ends of the reels and help to clear material in heavy, hard-to-cut crops. They are standard equipment on all headers (except nine-bat reels). Hardware and installation instructions are included in the kit.

See your MacDon Dealer for more information.

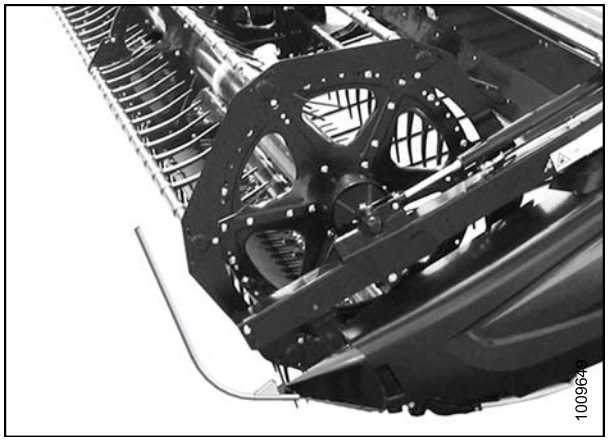


Figure 6.4: Reel Endshields

6.2.5 Tine Tube Reinforcing Kit

Tine tube reinforcing kits are available for five- and six-bat reels. They are designed to support high reel loads when cutting extremely heavy crops.

- Five-Bat Reels – MD #B5825
- Six-Bat Reels – MD #B5826

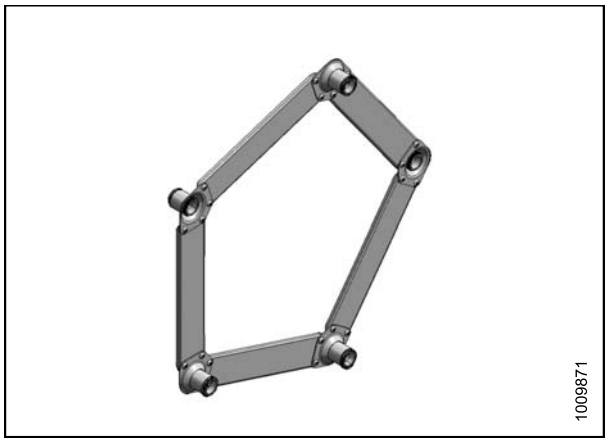


Figure 6.5: Five-Bat Reinforcing Kit Shown – Six-Bat Reinforcing Kit Similar

6.3 Cutterbar

6.3.1 Cutterbar Wearplate

Cutterbar wearplates are recommended for cutting on the ground when the soil is adhering to the steel.

Order one of the following bundles according to your header size:

- 30 foot – MD #B4839
- 35 foot – MD #B4840
- 40 foot – MD #B4841
- 45 foot – MD #B5114

Figure 6.6: Cutterbar Wearplates

6.3.2 Knifehead Shield

Knifehead shields attach to the endsheets and reduce the knifehead opening to prevent cut crop, particularly severely lodged crop, from accumulating over the knifehead and damaging the knife drive box and endsheet.

Order the following bundles according to your header size and guard type:

Regular Guards

- 30 foot and larger – MD #220101

Stub Guards

- 30 foot and larger – MD #220103

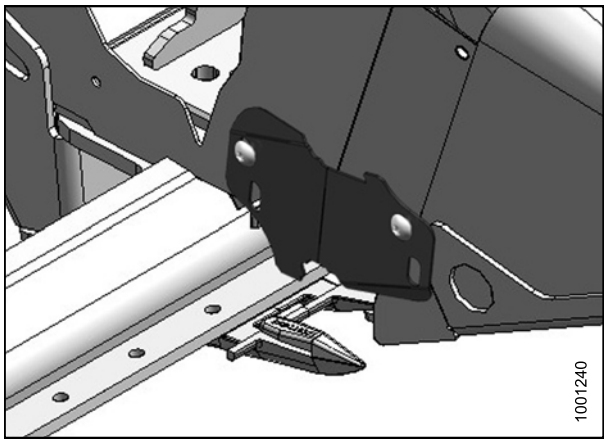


Figure 6.7: Knifehead Shield

6.3.3 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 one of the following bundles according to your header size:

- 30 foot – MD #B5012
- 35 foot – MD #B5013

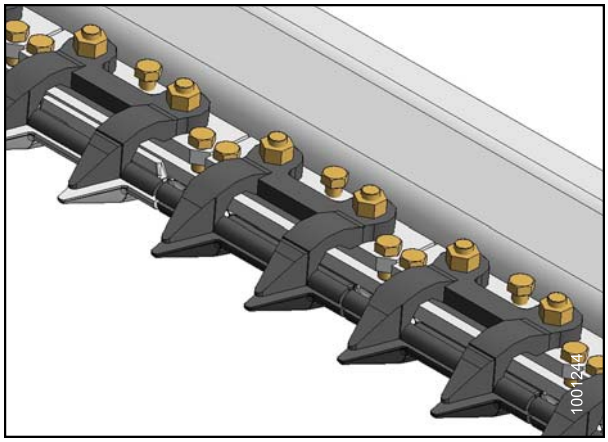


Figure 6.8: Stub Guards

6.3.4 Vertical Knife Mounts

The vertical knife mounts allow the installation of vertically oriented knives onto both ends of the header.

The vertical knives themselves are not sold by MacDon and must be purchased from a separate supplier

Installation and adjustment instructions are included in the bundle.

Order the following bundles according to left or right side:

- Left Side – MD #B5757
- Right Side – MD #B5758

NOTE:
If mounting onto multiple headers, you will also require the auxiliary vertical knife plumbing kit MD #B5406.

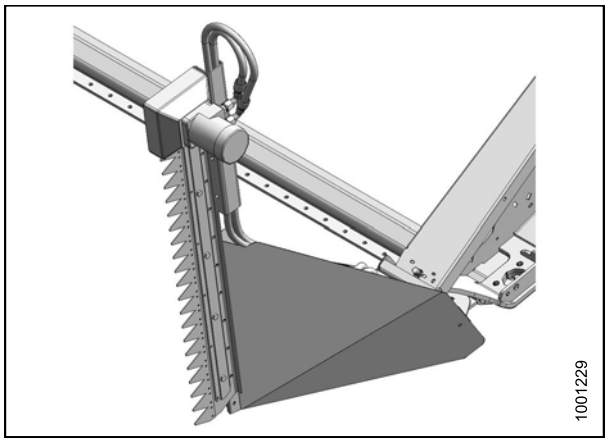


Figure 6.9: Vertical Knife Mount

6.4 Header

6.4.1 Divider Latch Kit

Divider latch kits attach to the endsheets. They allow for quick removal and storage of endsheet divider cones and, if required, reduce the transport width of the header. Installation instructions are included in the kit.

MD #B5607

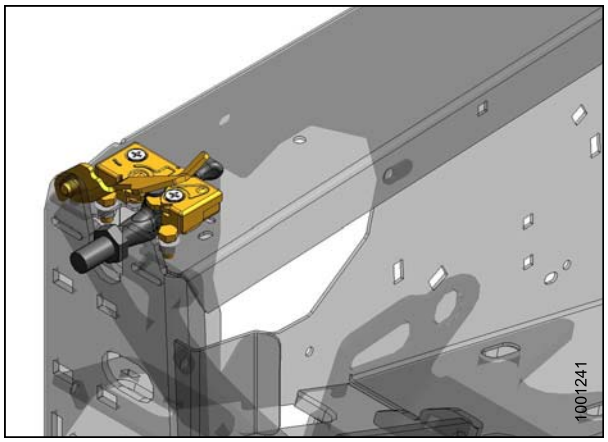


Figure 6.10: Divider Latch

6.4.2 Stabilizer Wheels

Stabilizer wheels help to stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. Installation and adjustment instructions are included in the kit.

This kit is available as an attachment for use with 30-, 35-, 40-, and 45-foot headers.

MD #C1986

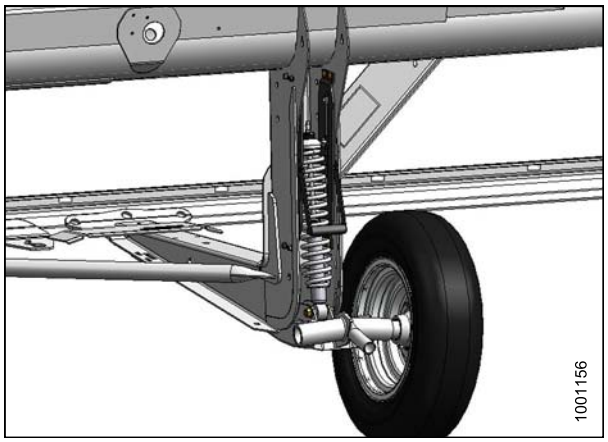


Figure 6.11: Stabilizer Wheel

6.4.3 Stabilizer/Slow Speed Transport Wheels

Stabilizer/slow speed transport wheels help to stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. This system is similar to the Stabilizer Wheel option. Refer to *6.4.2 Stabilizer Wheels, page 474*.

Stabilizer/slow speed transport wheels are used to convert the header into transport mode for slow-speed towing behind a properly configured combine (or agricultural tractor). A tow pole and installation instructions are included in the kit.

This option is available for use with 30-, 35-, 40-, and 45-foot headers.

MD #C1997

Figure 6.12: Stabilizer/Transport Wheels

6.5 Crop Delivery

6.5.1 CA25 Feed Auger Flighting

The CA25 Feed Auger Flighting Extension kit may improve feeding in certain crops such as rice or heavy green crop. It is not recommended in cereal crops. Installation instructions are provided in the kit.

MD #B4829

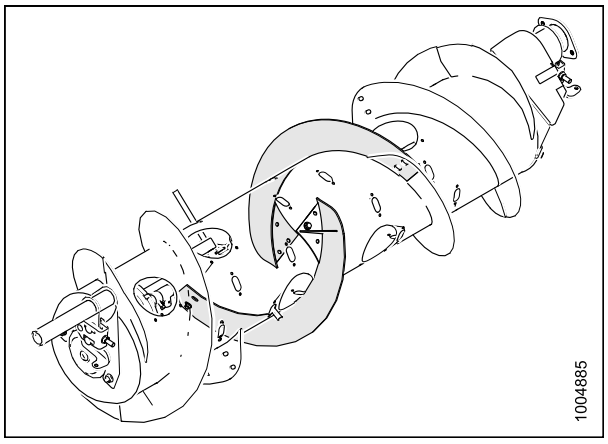


Figure 6.13: CA25 Feed Auger Flighting

6.5.2 European Adapter Seal Kit

The European Adapter Seal kit encloses the transition area between the feed draper and side draper near the front of the header. It also includes side rubber flaps to close off the areas between the adapter and header.

This kit is **NOT RECOMMENDED** for use if rocks are present.

Installation instructions are included in the kit.

MD #B5612

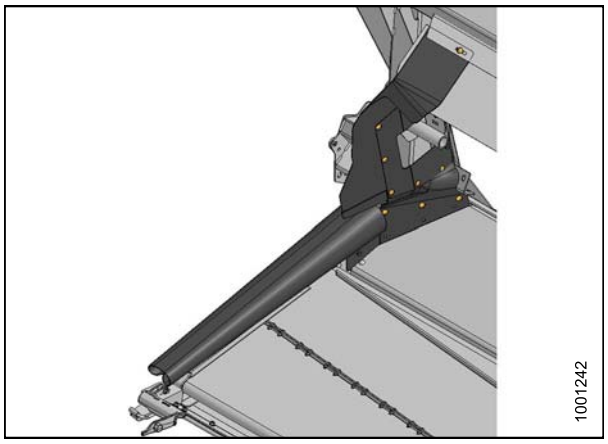


Figure 6.14: European Adapter Seal Kit

6.5.3 Draper Deflector (Narrow)

Narrow metal draper deflectors attach to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper while minimizing reel carryover in bushy crops.

Refer to your parts catalog for the necessary parts.

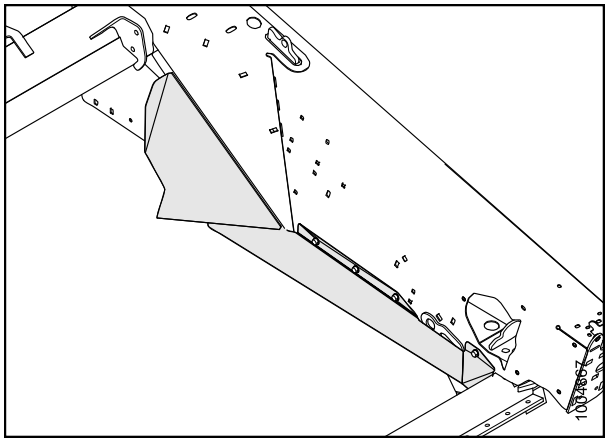


Figure 6.15: Draper Deflector (Narrow)

6.5.4 Draper Deflector (Wide)

Wide metal draper deflectors attach to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper.

Refer to your parts catalog for the necessary parts.

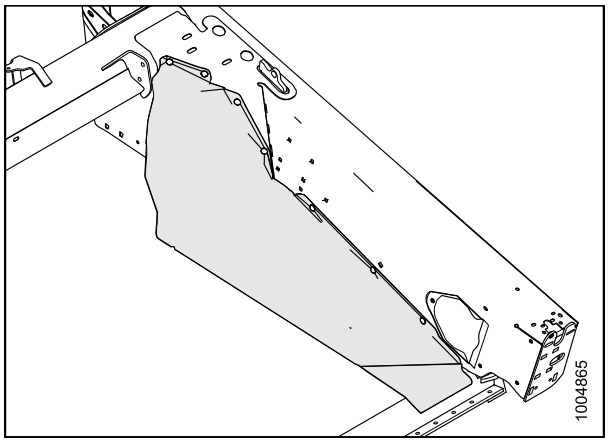


Figure 6.16: Draper Deflector (Wide)

6.5.5 Stripper Bars

Stripper bars improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

Choose from the following combine models to determine which stripper bar kit to order.

- 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

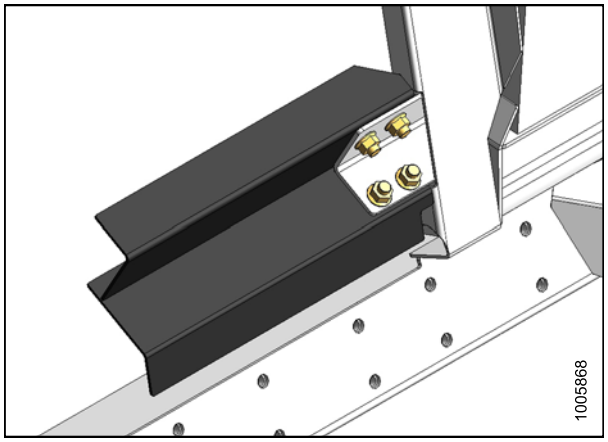


Figure 6.17: Stripper Bar

6.5.6 Rice Divider Rods

Rice divider rods attach to the left- and right-hand crop dividers and divide tall and tangled rice crops in a similar manner to standard crop divider rods performing in standing crops. Installation instructions are included in the kit.

MD #B5609

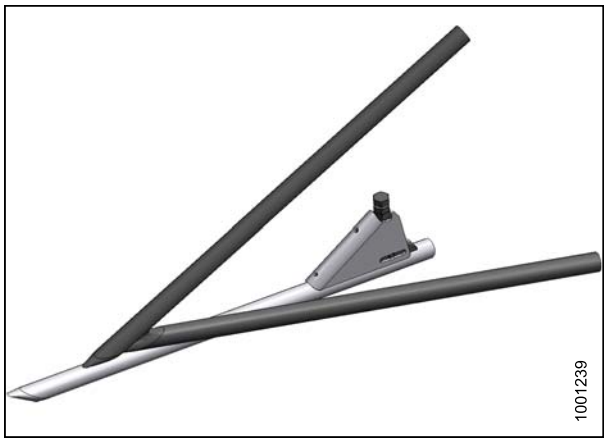


Figure 6.18: Rice Divider Rod

6.5.7 Upper Cross Auger (UCA)

The upper cross auger attaches in front of the backtube and improves crop feeding into the center of the header in heavy crop conditions. It is ideal for high-volume harvesting of forages, oats, canola, mustard and other tall, bushy, hard to feed crops.

Order from the following bundles according to your header size:

- 30 foot – MD #B4847
- 35 foot – MD #B4848
- 40 foot – MD #B4849
- 45 foot – MD #B4849

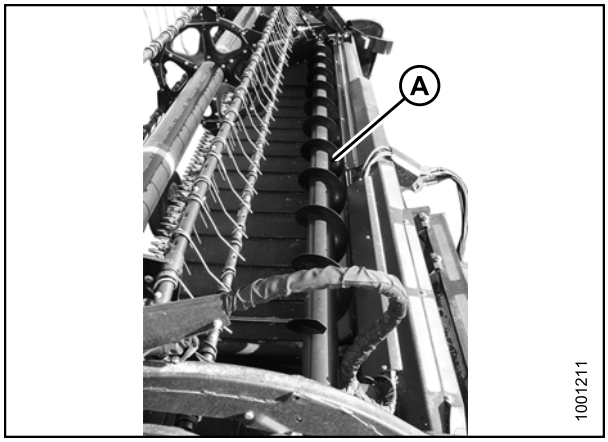


Figure 6.19: Upper Cross Auger

7 Troubleshooting

7.1 Crop Loss at Cutterbar

Symptom	Problem	Solution	Refer to
Does not pick up down crop	Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 51*
	Header angle too low	Increase header angle	*3.7.4 Header Angle, page 75*
	Reel too high	Lower reel	*3.7.9 Reel Height, page 82*
	Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 83*
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.7.5 Reel Speed, page 76* • *3.7.6 Ground Speed, page 77*
	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	*3.7.11 Reel Tine Pitch, page 92*
		Install lifter guards	See your MacDon Dealer
Heads shattering or breaking off	Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 76*
	Reel too low	Raise reel	*3.7.9 Reel Height, page 82*
	Ground speed too fast	Reduce ground speed	*3.7.6 Ground Speed, page 77*
	Crop too ripe	Operate at night when humidity is higher	—
Cut grain falling ahead of cutterbar	Ground speed too slow	Increase ground speed	*3.7.6 Ground Speed, page 77*
	Reel speed too slow	Increase reel speed	*3.7.5 Reel Speed, page 76*
	Reel too high	Lower reel	*3.7.9 Reel Height, page 82*
	Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 51*
	Reel too far forward	Move reel back on arms	*3.7.10 Reel Fore-Aft Position, page 83*
	Cutting at speeds over 10 km/h (6 mph) with high torque (10-tooth) reel drive sprocket	Replace with standard torque (19-tooth) reel drive sprocket	• *5.14.3 Replacing Reel Drive Sprocket, page 454* • See your MacDon Dealer
	Worn or broken knife components	Replace components	*5.8 Knife, page 369*

Symptom	Problem	Solution	Refer to
Strips of uncut material	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
	Broken knife sections	Replace broken sections	*5.8.1 Replacing Knife Section, page 369*
Excessive bouncing at normal field speed	Float set too light	Adjust header float	*3.7.2 Header Float, page 57*
Divider rod running down standing crop	Divider rods too long	Remove divider rod	*3.7.13 Crop Divider Rods, page 99*
Bushy or tangled crop flows over divider rod, builds up on endsheets	Divider rods providing insufficient separation	Install long divider rods	*3.7.13 Crop Divider Rods, page 99*
Crop not being cut at ends	Reel not frowning or not centered in header	Adjust reel frown or reel horizontal position	• *3.7.10 Reel Fore-Aft Position, page 83* • *5.13.2 Reel Frown, page 431*
	Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely, but still keep sections from lifting off guards	*Checking and Adjusting Knife Hold-Downs, page 379*
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.8 Knife, page 369*
	Header is not level	Level header	*3.9 Levelling the Header, page 237*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.7.10 Reel Fore-Aft Position, page 83* • *3.7.11 Reel Tine Pitch, page 92*
	Divider runs down thick crop at ends, preventing proper feeding due to material bridging the cutter guards	Replace three or four end guards with stub guards	• *5.8.7 Knife Guards, page 374* • *6.3.3 Stub Guard Conversion Kit, page 473* • See your MacDon Dealer
Material accumulating in gap between cut-out in endsheet and knifehead	Crop heads leaning away from knifehead hole in endsheet	Add knifehead shield(s), except in damp/sticky soils	*5.8.8 Knifehead Shield, page 385*

7.2 Cutting Action and Knife Components

Symptom	Problem	Solution	Refer to
Ragged or uneven cutting of crop	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 379*
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.9 Knife Drive, page 387*
	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	• *3.7.5 Reel Speed, page 76* • *3.7.6 Ground Speed, page 77*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	• *3.7.10 Reel Fore-Aft Position, page 83* • *3.7.11 Reel Tine Pitch, page 92*
	Cutterbar too high	Lower cutting height	*3.7.1 Cutting Height, page 51*
	Header angle too flat	Steepen header angle	*3.7.4 Header Angle, page 75*
	Bent knife causing binding of cutting parts	Straighten bent knife and align guards	*5.8.7 Knife Guards, page 374*
	Cutting edge of guards not close enough or parallel to knife sections	Align guards	
	Tangled/tough-to-cut crop	Install stub guards	• See your MacDon Dealer • *Checking and Adjusting Knife Hold-Downs, page 379* • *6.3.3 Stub Guard Conversion Kit, page 473*
	Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 83*
	Loose knife drive belt	Adjust drive belt tension	*5.9.2 Knife Drive Belts, page 394*

Symptom	Problem	Solution	Refer to
Knife plugging	Reel too high or too far forward	Lower reel or move reel rearward	• *3.7.9 Reel Height, page 82* • *3.7.10 Reel Fore-Aft Position, page 83*
	Ground speed to slow	Increase ground speed	*3.7.6 Ground Speed, page 77*
	Loose knife drive belt	Adjust drive belt tension	*5.9.2 Knife Drive Belts, page 394*
	Improper knife hold-down adjustment	Adjust hold-down	*Checking and Adjusting Knife Hold-Downs, page 379*
	Dull or broken knife section	Replace knife section	*5.8.1 Replacing Knife Section, page 369*
	Bent or broken guards	Align or replace guards	*5.8.7 Knife Guards, page 374*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.7.10 Reel Fore-Aft Position, page 83* • *3.7.11 Reel Tine Pitch, page 92*
	Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	• *5.13.1 Reel Clearance to Cutterbar, page 428* • *5.13.2 Reel Frown, page 431*
	Float too heavy	Adjust springs for lighter float	*3.7.2 Header Float, page 57*
	Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	*Cutting on the Ground, page 55*
		Install cut-out sections	*Installing Knifehead Shield, page 385*
		Flatten header angle	*3.7.4 Header Angle, page 75*
	Knife is not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual

Symptom	Problem	Solution	Refer to
Excessive header vibration	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 379*
	Knife not operating at recommended speed	Check engine speed of combine	Refer to combine operator's manual
	Excessive knife wear	Replace knife	• *5.8.2 Removing Knife, page 371* • *5.8.5 Installing Knife, page 372*
	Loose or worn knifehead pin or drive arm	Tighten or replace parts	*5.8.1 Replacing Knife Section, page 369*
Excessive vibration of adapter and header	Incorrect knife speed	Adjust knife speed	*3.7.8 Knife Speed, page 80*
	Driveline U-joints worn	Replace U-joints	See your MacDon Dealer
	Bent cutterbar	Straighten cutterbar	See your MacDon Dealer
Excessive breakage of knife sections or guards	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 379*
	Cutterbar operating too low in stony conditions	Raise cutterbar, using skid shoes	*Cutting on the Ground, page 55*
	Float is set too heavy	Adjust float springs for lighter float	*3.7.2 Header Float, page 57*
	Bent or broken guard	Straighten or replace guard	*5.8.7 Knife Guards, page 374*
	Header angle too steep	Flatten header angle	*3.7.4 Header Angle, page 75*
Knife back breakage	Bent or broken guard	Straighten or replace guard	*5.8.7 Knife Guards, page 374*
	Worn knifehead pin	Replace knifehead pin	• *5.8.3 Removing Knifehead Bearing, page 371* • *5.8.4 Installing Knifehead Bearing, page 372*
	Dull knife	Replace knife	• *5.8.2 Removing Knife, page 371* • *5.8.5 Installing Knife, page 372*

7.3 Reel Delivery

Symptom	Problem	Solution	Refer to
Reel not releasing material in normal standing crop	Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 76*
	Reel too low	Raise reel	*3.7.9 Reel Height, page 82*
	Reel tines too aggressive	Reduce cam setting	*3.7.11 Reel Tine Pitch, page 92*
	Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 83*
Reel not releasing material in lodged and standing crop (reel fully lowered)	Reel tines too aggressive for standing crop	Reduce cam setting (one or two)	*3.7.11 Reel Tine Pitch, page 92*
Wrapping on reel end	Reel tines too aggressive	Reduce cam setting	*3.7.11 Reel Tine Pitch, page 92*
	Reel too low	Raise reel	*3.7.9 Reel Height, page 82*
	Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 76*
	Crop conditions	Install optional endshields	See your MacDon Dealer
	Reel not centered in header	Center reel in header	*5.13.3 Centering Reel, page 432*
Reel releases crop too quickly	Reel tines not aggressive enough	Increase cam setting	*3.7.11 Reel Tine Pitch, page 92*
	Reel too far forward	Move reel back	*3.7.10 Reel Fore-Aft Position, page 83*
Reel will not lift	Reel lift couplers are incompatible or defective	Change quick coupler	—
Reel will not turn	Quick couplers not properly connected	Connect couplers	Refer to the combine operator's manual
	Reel drive chain disconnected	Connect chain	• *5.14.6 Replacing Drive Chain on Double Reel, page 460* • *5.14.7 Replacing Drive Chain on Single Reel, page 461*
Reel motion uneven under no load	Excessive slack in reel drive chain	Tighten chain	*5.14.2 Adjusting Reel Drive Chain Tension, page 452*

Symptom	Problem	Solution	Refer to
Reel motion is uneven or stalls In heavy crops	Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 76*
	Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	*3.7.11 Reel Tine Pitch, page 92*
	Reel too low	Raise reel	*3.7.9 Reel Height, page 82*
	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 **NOTE:** 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	*5.14.3 Replacing Reel Drive Sprocket, page 454*
Plastic fingers cut at tip	Insufficient reel to cutterbar clearance	Increase clearance	*5.13.1 Reel Clearance to Cutterbar, page 428*
Plastic fingers bent rearward at tip	Reel digging into ground with reel speed slower than ground speed	Raise header	*3.7.1 Cutting Height, page 51*
		Decrease header tilt	*3.7.4 Header Angle, page 75*
		Move reel aft	*3.7.10 Reel Fore-Aft Position, page 83*
Plastic fingers bent forward at tip (opposite of above)	Reel digging into ground with reel speed faster than ground speed	Raise header	*3.7.1 Cutting Height, page 51*
		Decrease header tilt	*3.7.4 Header Angle, page 75*
		Move reel aft	*3.7.10 Reel Fore-Aft Position, page 83*
Plastic fingers bent close to tine tube	Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Correct plugging/cutting issues	*3.10 Unplugging the Cutterbar, page 239*
		Stop reel before plugging becomes excessive	

7.4 Header and Drapers

Symptom	Problem	Solution	Refer to
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	*3.7.7 Draper Speed, page 78*
	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	*5.12.3 Adjusting Side Draper Tension, page 412*
	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	*5.12.6 Header Draper Roller Maintenance, page 418*
	Low hydraulic oil	Fill reservoir to full level	*5.4.2 Adding Oil to Hydraulic Reservoir, page 338*
	Incorrect relief setting at flow control valve	Adjust relief setting	See your MacDon Dealer
Draper stalling	Material not feeding evenly off knife	Lower reel	*3.7.9 Reel Height, page 82*
		Install stub guards	*6.3.3 Stub Guard Conversion Kit, page 473*
	Material accumulates inside or under front edge of draper	Adjust deck height	*5.12.5 Adjusting Deck Height, page 416*

Symptom	Problem	Solution	Refer to
Adapter auger back-feeds	Auger set too high	Check reversing mechanism inside auger	Refer to the combine operator's manual
		Lower auger	*5.7.1 Adjusting Auger to Pan Clearance, page 350*
	John Deere: Feeder chain running too slow	Run feeder chain at high speed	Refer to the combine operator's manual
	John Deere: Equipped with feeder chain with 4 pitches per bar	Replace with six pitch per bar feeder chain, or remove every other bar	
	Case: 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	
Hesitation in flow of bulky crop	Header angle too flat	Steepen header angle	*3.7.4 Header Angle, page 75*
	Material overload on drapers	Increase side draper speed	*3.7.7 Draper Speed, page 78*
		Install upper cross auger (UCA)	See your MacDon Dealer
		Add flighting extensions	*4.1.1 Using Flighting Extensions, page 259*
	Material accumulation at auger ends	Install stripper bars	*4.1.2 Using Stripper Bars, page 259*
	CASE: 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	*3.7.7 Draper Speed, page 78*
	Feeder house chain drum too low	Move drum to corn position	Refer to the combine operator's manual
Adapter auger wraps crop	Crop susceptible to wrapping (flax)	Add flighting extensions or stripper bars	• *4.1.2 Using Stripper Bars, page 259* • *4.1.1 Using Flighting Extensions, page 259*
	Auger speed too fast	Install slow down kit	See your MacDon Dealer
Adapter auger stalling	Auger drive chain disengaging the driven sprocket	Check drive chain tension	*5.7.2 Checking Auger Drive Chain Tension, page 351*
Combine feeder drum wraps crop	Crop susceptible to wrapping (flax)	Add stripper bars	*4.1.2 Using Stripper Bars, page 259*

Symptom	Problem	Solution	Refer to
Crop backs up or hesitates on feed draper	Feed draper stalling	Clean debris from poly pan	—
		Check feed draper tension	*5.12.4 Adjusting Header Draper Tracking, page 414*
		Replace roller bearing(s)	*Replacing Adapter Feed Draper Drive Roller Bearing, page 401*
		Check feed draper motor	—
	Heavy crop plugging between adapter auger and feed draper	Check auger clearance	*5.7.1 Adjusting Auger to Pan Clearance, page 350*
		Refer to Adapter auger back-feeds earlier in this table	—
	Excessive clearance from auger to drive roller	Lower auger	*5.7.1 Adjusting Auger to Pan Clearance, page 350*
	Auger speed too slow	Install auger speed-up kit	See your MacDon Dealer
Side drapers back-feed	Side drapers running too slow in heavy crop	Increase side draper speed	*3.7.7 Draper Speed, page 78*
Crop is thrown across opening and under opposite side draper	Side drapers running too fast in light crop	Reduce side draper speed	*3.7.7 Draper Speed, page 78*
	Excessive overlap of feeder draper	Center side draper drive rollers over feed draper side deflectors	See your MacDon Dealer
Crop feeding into feeder house at sides more than at center	Auger not delivering crop properly	Add flighting extensions	*4.1.1 Using Flighting Extensions, page 259*
		Add stripper bars	*4.1.2 Using Stripper Bars, page 259*
		Remove auger outer tines	*Removing Feed Auger Tines, page 361*
		Install auger speed-up kit	See your MacDon Dealer
Crop feeding into feeder house at center more than at sides	Auger not delivering crop properly	Add auger outer tines	*Removing Feed Auger Tines, page 361*
		Remove flighting extensions	*4.1.1 Using Flighting Extensions, page 259*
		Remove auger stripper bars	*4.1.2 Using Stripper Bars, page 259*
Crop getting stuffed in gap between cut-out in endsheet and knifehead	Crop heads leaning away from knifehead hole in endsheet	Add shields, except in damp/sticky soils	*5.8.8 Knifehead Shield, page 385*
Material accumulates inside or under front edge of draper	Deck height improperly adjusted	Adjust deck height	*5.12.5 Adjusting Deck Height, page 416*

Symptom	Problem	Solution	Refer to
Material wrapping at upper cross auger (UCA) beater bars	Crop conditions do not require beater bars	Remove beater bars	*3.12 Upper Cross Auger (UCA), page 241*
Material accumulating on end deflectors and releasing in bunches	End deflectors too wide	Trim deflector or replace with narrow deflector (MD #172381)	—
Cutterbar pushes dirt across entire length	Header height too low	Raise header height with float optimizer control	Refer to the combine operator's manual
	Float locked	Unlock float	*3.7.2 Header Float, page 57*
	Float set too heavy	Adjust float	
	Header angle too steep	Adjust header to optimum angle	*3.7.4 Header Angle, page 75*
Pushing dirt at combine adapter lower beam	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	*3.7.4 Header Angle, page 75*
	Float too light, header legs do not rest on stops	Adjust to heavier float	*3.7.2 Header Float, page 57*
Wing float assembly binding	Float locked out	Disengage adapter float lockout	*3.7.2 Header Float, page 57*
	Float set too heavy	Adjust adapter springs to lighter float	
Reel contacts endsheet, especially in smile condition	Reel not centered in header	Center reel in header	*5.13.3 Centering Reel, page 432*
	Loose reel arm brace	Center reel in header and tighten brace	
Reel fingers being cut at header hinge points in frown condition	Reel clearance inadequate	Adjust reel clearance to cutterbar	*Adjusting Reel Clearance, page 430*
		Adjust reel frown at finger tubes	*5.13.2 Reel Frown, page 431*
Longer stubble in middle than at ends, or cutterbar pushes dirt at ends	Too much weight on wings	Adjust wing balance	*Checking Wing Balance, page 66*
Longer stubble at ends than in middle, or cutterbar pushes dirt in middle	Too much weight at middle of header		
Wings will not frown without excessive down force	Wings set too light	Adjust wing balance	*Checking Wing Balance, page 66*

7.5 Cutting Edible Beans

Symptom	Problem	Solution	Refer to
Excessive losses at dividers	Divider rod running down crop and shattering pods	Remove divider rod	*3.7.13 Crop Divider Rods, page 99*
	Vines and plants build up on endsheet	Install divider rod	
Reel ends wrap with crop	Uncut crop interfering on reel ends	Add reel endshields	See your MacDon Dealer
Reel wraps with crop	Reel too low	Raise reel	*3.7.9 Reel Height, page 82*
Plants being stripped and complete or partial plants left behind	Header being carried off ground	Lower header to ground and run on skid shoes and/or cutterbar	*Cutting on the Ground, page 55*
	Float set too light—cutterbar not following ground	Set float for: • Dry ground: 50–70 kg (100–150 lb.) • Wet ground: 25–50 kg (50–100 lb.)	*3.7.2 Header Float, page 57*
	Reel too high	Fully retract reel cylinders	*3.7.9 Reel Height, page 82*
	Reel too high with cylinders fully retracted	Adjust reel height	*Adjusting Reel Clearance, page 430*
	Finger pitch too retarded	Adjust finger pitch	*3.7.11 Reel Tine Pitch, page 92*
	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	*3.7.10 Reel Fore-Aft Position, page 83*
	Header angle too shallow	Lengthen center-link; if cutting on ground, header angle can be increased by fully retracting lift cylinders	*3.7.4 Header Angle, page 75*
	Reel too slow	Adjust reel speed to be marginally faster than ground speed	*3.7.5 Reel Speed, page 76*
	Ground speed too high	Lower ground speed	*3.7.6 Ground Speed, page 77*
	Header skid shoes adjusted too low	Raise skid shoes to maximum up position	*Cutting on the Ground, page 55*

Symptom	Problem	Solution	Refer to
Plants being stripped and complete or partial plants left behind	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	• *5.8.1 Replacing Knife Section, page 369* • *5.8.2 Removing Knife, page 371* • *5.8.5 Installing Knife, page 372*
	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	*3.9 Levelling the Header, page 237*
	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
Plant vines pinched between top of draper and cutterbar	Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted	Manually remove debris from cutterbar cavity to prevent damage to drapers	—
Crop accumulating at guards and not moving rearward onto drapers	Reel finger pitch too retarded	Increase finger aggressiveness (cam position)	*3.7.11 Reel Tine Pitch, page 92*
	Reel too high relative to knife	Readjust reel minimum height with cylinders fully retracted	*Adjusting Reel Clearance, page 430*
	Reel too far forward of cutterbar	Reposition reel	*3.7.10 Reel Fore-Aft Position, page 83*

Symptom	Problem	Solution	Refer to
Cutterbar guards breaking	Float insufficient	Increase float	*3.7.2 Header Float, page 57*
	Excessive amount of rocks in field	Consider installing optional stub guards **Tip**: Experiment with a few guards on a section of cutterbar to compare the performance of the two different styles of guards	• *6.3.3 Stub Guard Conversion Kit, page 473* • See your MacDon Dealer
Reel shattering pods	Reel running too fast	Reduce reel speed	*3.7.5 Reel Speed, page 76*
	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)	*3.7.11 Reel Tine Pitch, page 92*
	Reel too far forward of cutterbar C-section	Reposition reel	
Cutterbar pushing too much trash and dirt	Header too heavy	Readjust float to make header lighter	*3.7.2 Header Float, page 57*
	Header angle too steep	Decrease header angle with lift cylinders	*3.7.4 Header Angle, page 75*
		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
Cutterbar pushing too much dirt in certain locations for length of field	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	

Symptom	Problem	Solution	Refer to
Cutterbar fills up with dirt	Excessive gap between top of front of draper and cutterbar	Adjust front deck hooks to obtain proper clearance between cutterbar and draper	*5.12.5 Adjusting Deck Height, page 416*
		Raise header fully at each end of field or as required and shift decks back and forth to help clean out cutterbar	—
Reel carries over odd plants in same location	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	*3.7.9 Reel Height, page 82*
		Adjust reel fore and aft location to move fingers out of the ground	*3.7.10 Reel Fore-Aft Position, page 83*
Reel carries over excessive amounts of plants or wads	Excessive accumulation of crop on drapers (up to height of reel center tube)	Increase draper speed	*3.7.7 Draper Speed, page 78*
	Finger pitch too retarded	Increase finger pitch	*3.7.11 Reel Tine Pitch, page 92*

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 torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade of bolt.
- Use 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 (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
1/4-20	11.9	13.2	*106	*117
5/16-18	24.6	27.1	*218	*241
3/8-16	44	48	32	36
7/16-14	70	77	52	57
1/2-13	106	118	79	87
9/16-12	153	170	114	126
5/8-11	212	234	157	173
3/4-10	380	420	281	311
7/8-9	606	669	449	496
1-8	825	912	611	676

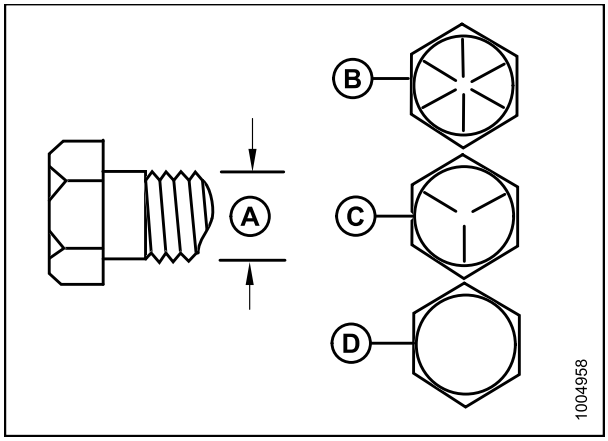


Figure 8.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 8.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
1/4-20	8.1	9	*72	*80
5/16-18	16.7	18.5	*149	*164
3/8-16	30	33	22	24
7/16-14	48	53	35	39
1/2-13	73	80	54	59
9/16-12	105	116	77	86
5/8-11	144	160	107	118
3/4-10	259	286	192	212
7/8-9	413	456	306	338
1-8	619	684	459	507

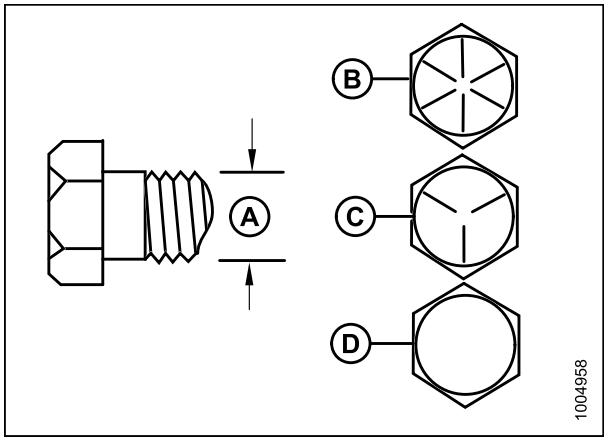


Figure 8.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 8.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	24	26	18	19
3/8-16	42	46	31	34
7/16-14	67	74	50	55
1/2-13	102	113	76	84
9/16-12	148	163	109	121
5/8-11	204	225	151	167
3/4-10	362	400	268	296
7/8-9	583	644	432	477
1-8	874	966	647	716

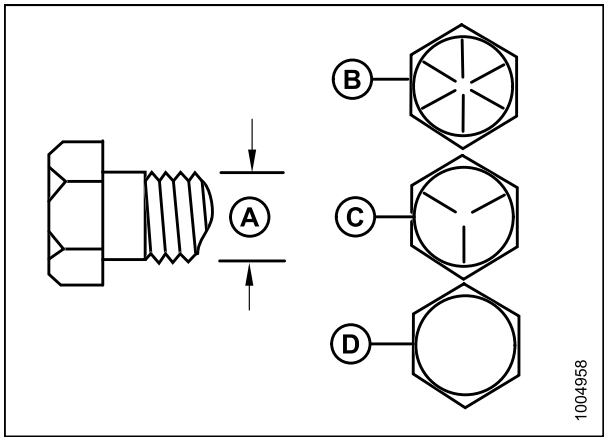


Figure 8.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 8.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	35	38	26	28
3/8-16	61	68	46	50
7/16-14	98	109	73	81
1/2-13	150	166	111	123
9/16-12	217	239	160	177
5/8-11	299	330	221	345
3/4-10	531	587	393	435
7/8-9	855	945	633	700
1-8	1165	1288	863	954

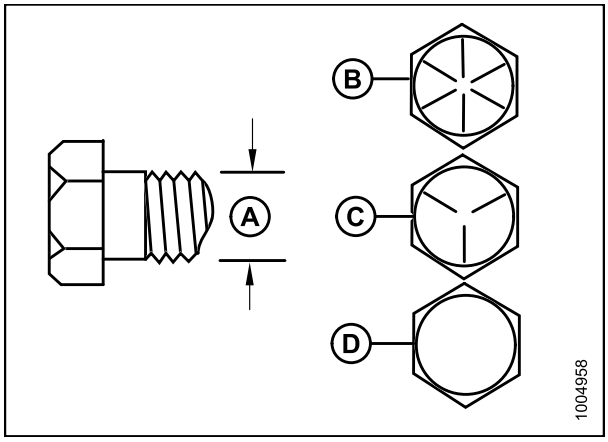


Figure 8.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **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 (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

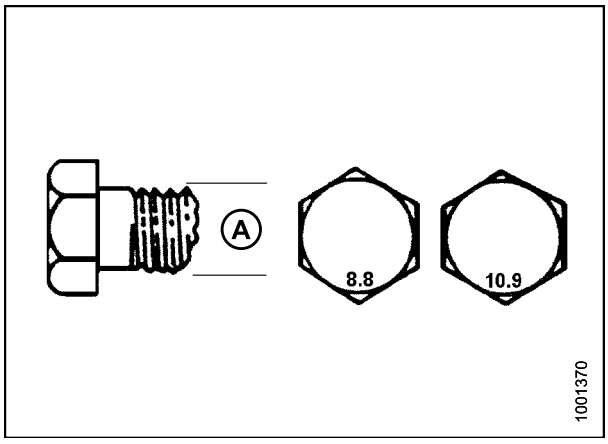


Figure 8.5: Bolt Grades

Table 8.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

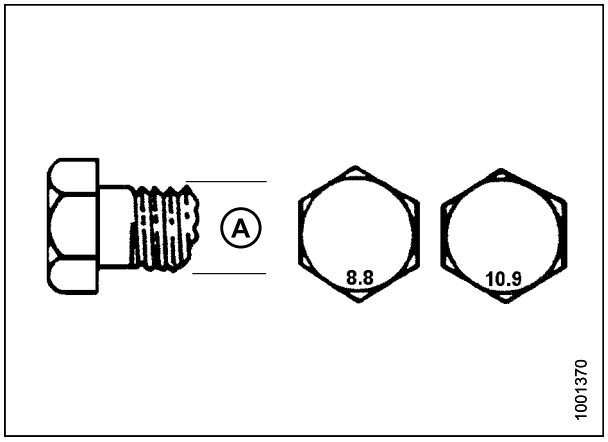


Figure 8.6: Bolt Grades

Table 8.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

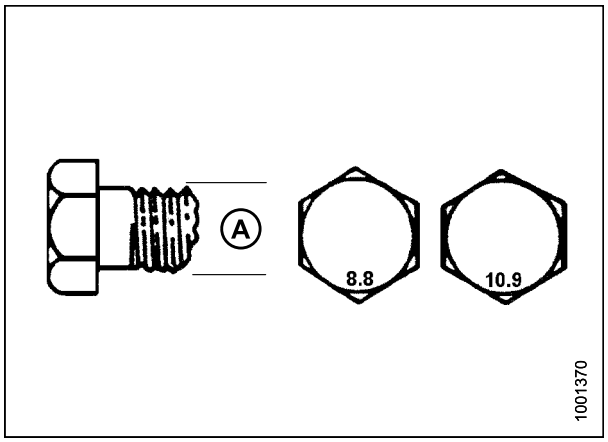


Figure 8.7: Bolt Grades

Table 8.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (N·m)		Torque (ft·lbf) (*in·lbf)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

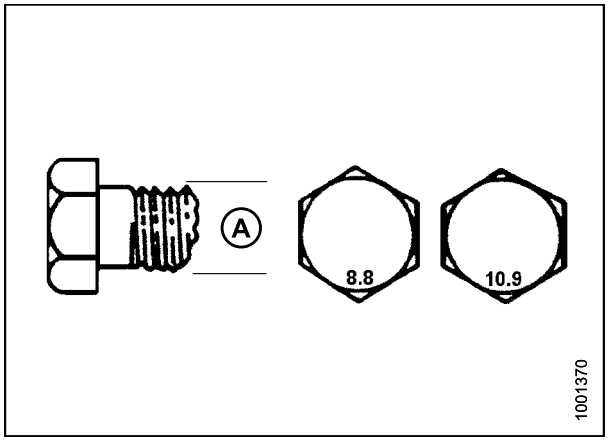


Figure 8.8: Bolt Grades

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)	
	N·m	ft·lbf	N·m	ft·lbf
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

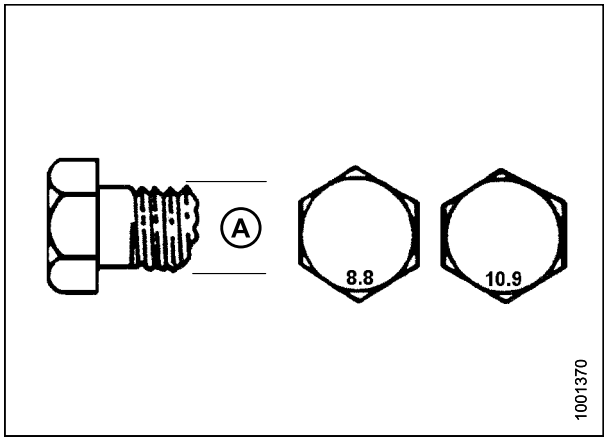


Figure 8.9: Bolt Grades

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 flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table *8.10 Flare-Type Hydraulic Tube Fittings, page 503*.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

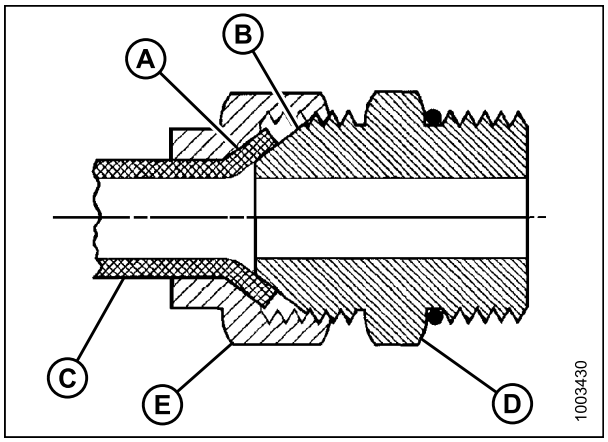


Figure 8.10: Hydraulic Fitting

Table 8.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[20]		Flats from Finger Tight (FFFT)	
		N·m	ft·lbf	Tube	Swivel Nut or Hose
-2	5/16–24	4–5	3–4	—	—
-3	3/8–24	7–8	5–6	—	—
-4	7/16–20	18–19	13–14	2-1/2	2
-5	1/2–20	19–21	14–15	2	2
-6	9/16–18	30–33	22–24	2	1-1/2
-8	3/4–16	57–63	42–46	2	1-1/2
-10	7/8–14	81–89	60–66	1-1/2	1-1/2
-12	1-1/16–12	113–124	83–91	1-1/2	1-1/4
-14	1-3/16–12	136–149	100–110	1-1/2	1-1/4
-16	1-5/16–12	160–176	118–130	1-1/2	1
-20	1-5/8–12	228–250	168–184	1	1
-24	1-7/8–12	264–291	195–215	1	1
-32	2-1/2–12	359–395	265–291	1	1
-40	3–12	—	—	1	1

20. 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 lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

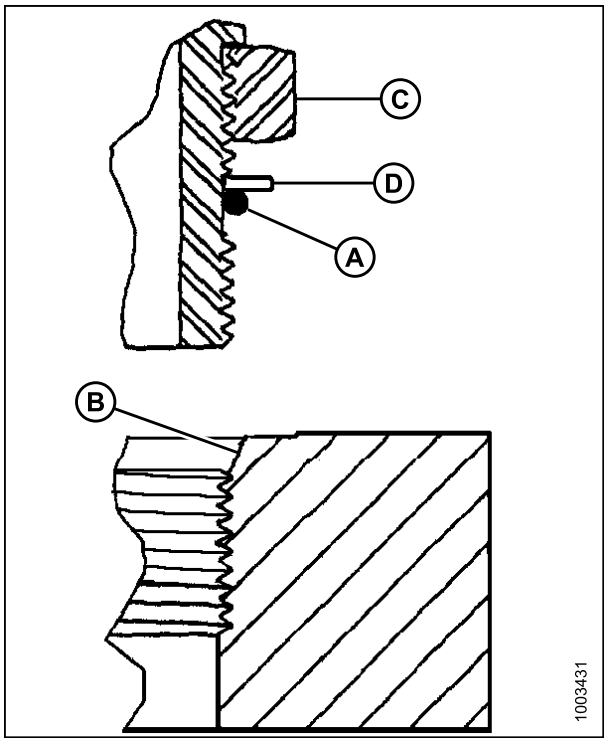


Figure 8.11: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact 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 other on lock nut (C).
8. Check final condition of fitting.

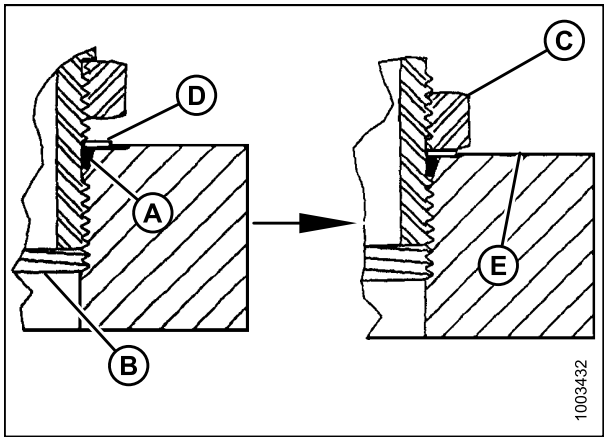


Figure 8.12: Hydraulic Fitting

Table 8.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value[21]	
		N·m	ft·lbf (*in·lbf)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1-1/16–12	120–132	88–97
-14	1-3/8–12	153–168	113–124
-16	1-5/16–12	176–193	130–142
-20	1-5/8–12	221–243	163–179
-24	1-7/8–12	270–298	199–220
-32	2-1/2–12	332–365	245–269

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

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 threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to values in Table *8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable), page 506*.
6. Check final condition of fitting.

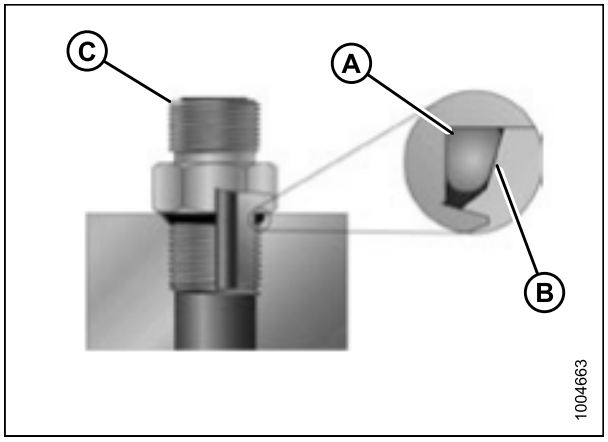


Figure 8.13: Hydraulic Fitting

Table 8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value[22]	
		N·m	ft·lbf (*in·lbf)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1-1/16–12	120–132	88–97
-14	1-3/8–12	153–168	113–124
-16	1-5/16–12	176–193	130–142
-20	1-5/8–12	221–243	163–179
-24	1-7/8–12	270–298	199–220
-32	2-1/2–12	332–365	245–269

22. 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 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 O-ring (B).
3. Align tube or hose assembly so that flat face of 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 values in Table *8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 508*.

   NOTE:
   If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

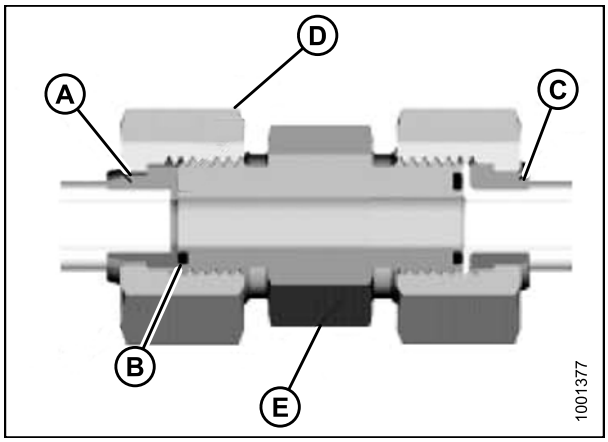


Figure 8.15: Hydraulic Fitting

Table 8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[23]	
			N·m	ft·lbf
-3	Note[24]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[24]	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1-3/16	3/4	115–127	85–94
-14	Note[24]	7/8	–	–
-16	1-7/16	1	150–165	111–122
-20	1-11/16	1-1/4	205–226	151–167
-24	1–2	1-1/2	315–347	232–256
-32	2-1/2	2	510–561	376–414

23. Torque values and angles shown are based on lubricated connection as in reassembly.
24. O-ring face seal type end not defined for this tube size.

8.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table *8.14 Hydraulic Fitting Pipe Thread, page 509*. Make sure that tube end of a shaped connector (typically 45º or 90º) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:
Over-torque failure of fittings may not be evident until fittings are disassembled.

Table 8.14 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended T.F.F.T	Recommended F.F.F.T
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
1 1/4–11 1/2	1.5–2.5	9–15
1 1/2–11 1/2	1.5–2.5	9–15
2–11 1/2	1.5–2.5	9–15

8.2 Conversion Chart

Table 8.15 Conversion Chart

Quantity	SI Units (Metric)		Factor	Inch-Pound Units	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectares	ha	x 0.4047 =	acres	acres
Flow	liters per minute	L/min	x 3.7854 =	US gallons per minute	gpm
Force	Newtons	N	x 4.4482 =	pounds force	lbf
Length	millimeters	mm	x 25.4 =	inch	in.
	meters	m	x 0.305 =	foot	ft.
Power	kilowatts	kW	x 0.7457 =	horsepower	hp
Pressure	kilopascals	kPa	x 6.8948 =	pounds per square inch	psi
	megapascals	MPa	x .00689 =		
	bar (Non-SI)	bar	÷ 14.5038 =		
Torque	Newton meters	N·m	x 1.3558 =	pound feet or foot pounds	ft·lbf
	Newton meters	N·m	x 0.1129 =	pound inches or inch pounds	in·lbf
Temperature	Celsius	˚C	(˚F-32) x 0.56 =	degrees Fahrenheit	˚F
Velocity	meters per minute	m/min	x 0.3048 =	feet per minute	ft/min
	meters per second	m/s	x 0.3048 =	feet per second	ft/s
	kilometers per hour	km/h	x 1.6063 =	miles per hour	mph
Volume	liters	L	x 3.7854 =	US gallons	US gal
	milliliters	ml	x 29.5735 =	ounces	oz.
	cubic centimeters	cm^3 or cc	x 16.3871 =	cubic inches	$in.^3$
Weight	kilograms	kg	x 0.4536 =	pounds	lb.

8.3 Unloading and Assembly

Refer to the instructions for your specific header 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 #147945
Export (anywhere other than North America)	FD75 FlexDraper® Header and CA25 Combine Adapter	MD #147946

Index

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

R

S

T

U

V

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