FFT FLEX-FLOAT TECHNOLOGY®

MacDon

FD75
FlexDraper® Combine Header

Operator's Manual

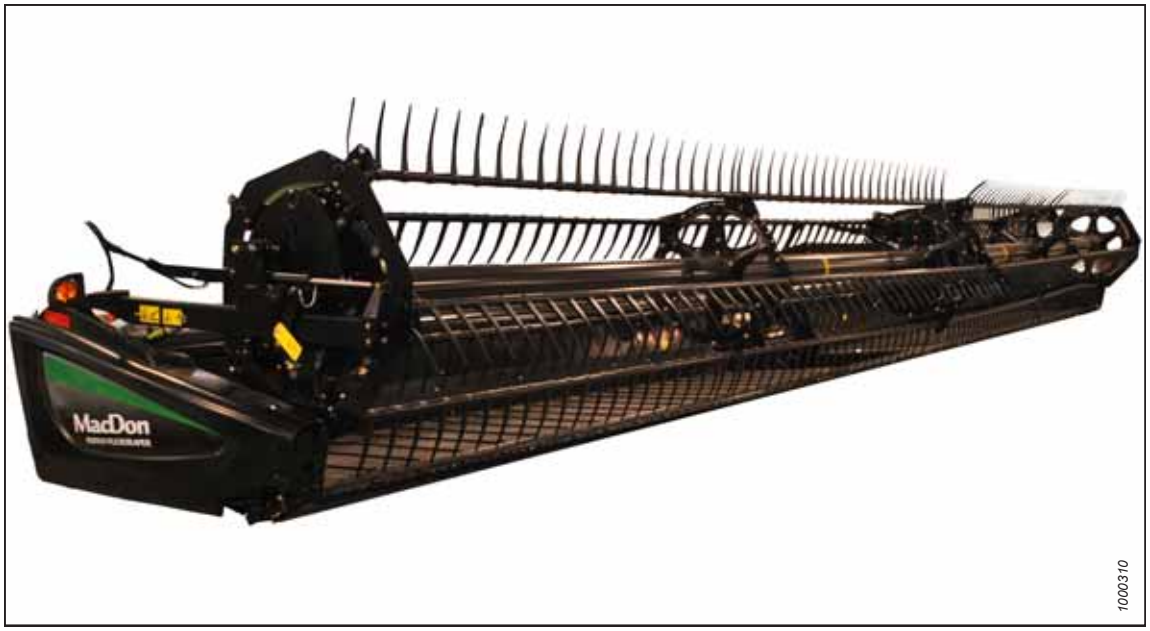
214323 Revision B

Original Instruction

Featuring MacDon FLEX-FLOAT Technology™

The Harvesting Specialists.

FD75 FlexDraper® Combine Header



Published: October 2022

Introduction

Your machine

This instructional manual contains information on the FD75 FlexDraper® Header 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.

Your warranty

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

Your manual

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.

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.

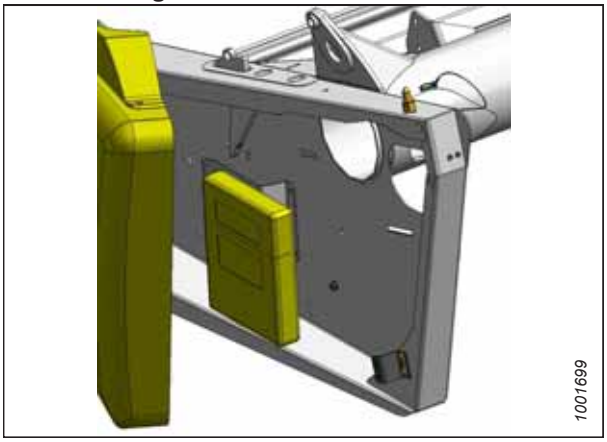
Keep this manual handy for frequent reference and to pass on to new Operators or Owners. A manual storage case is located inside the header left endshield.

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).

Manual Storage Location



This manual is also available in the following languages:

- French
- Portuguese
- Russian
- Spanish

Translated manuals can be downloaded from the Dealer Portal (*https://portal.macdon.com*).

The following conventions are used in this document:

- Right and left are determined from the operator's position. The front of the header is the side that faces the crop; the back of the header is the side that connects to the combine.
- Unless otherwise noted, use the standard torque values provided in Chapter *9 Reference, page 535* of this document.

Summary of Changes

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.

Section	Summary of Change	Internal Use Only
1.3 General Safety, page 3	Added "hoodies" to the list of dangling items that you should never wear when you are near equipment.	Product Support
Engaging Reel Safety Props, page 31	Added DANGER and Step *2, page 31*. Revised Step *3, page 31* and the associated illustration. Revised Step *4, page 31* to clarify which step to repeat.	Product Integrity
Disengaging Reel Safety Props, page 32	Added DANGER and Step *2, page 32*. Revised Step *4, page 32* to clarify which step to repeat.	Product Integrity
3.6.4 Reel Settings, page 50	Restructured the topic. It was previously in a procedure format, but it contained only conceptual information about the effects of various settings on reel performance.	Technical Publications
Adjusting Header Angle from Combine, page 78	Topic title "Adjusting Header Angle from Combine" was "Controlling Header Angle".	Technical Publications
Repositioning Fore-Aft Cylinders, page 92	Modified incorrect figure titles.	Technical Publications
3.11.1 Removing Beater Bars, page 111	Added NOTE: • Some newer upper cross augers do not have beater bars.	ECN 61273
3.11.2 Installing Beater Bars, page 112	Added NOTE: • Some newer upper cross augers do not have beater bars.	ECN 61273
Precautions for Towing a Header, page 114	Topic title "Precautions for Towing a Header" was "Towing a Header". Revised the following statement for clarity: • **NOW:** Turn corners at only very low speeds 8 km/h (5 mph) or less. Header stability is reduced while cornering. • **WAS:** Turn corners at only very low speeds 8 km/h ([5 mph] or less). Header stability is reduced while cornering because front wheel moves to the left.	Product Integrity Technical Publications
Storing the Tow-Bar, page 116	Added images and detail to this topic to improve the description of tow-bar assembly.	Production Engineering
	Adjusted content hierarchy: Chapter 4 was Section 3.8.	Technical Publications
4.1 Auto Header Height Control System Overview, page 129	Added new topic.	Technical Publications
4.7 Case IH 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240 Combines, page 151	Added auto header height control configuration topics for Case IH 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240 combines.	Technical Publications
5.3.1 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine, page 298	Reordered the contents of this topic to improve clarity.	Technical Publications
6.3.1 Maintenance Schedule/ Record, page 345	Added link holder hooks to the "10 hours or Daily" section of the maintenance schedule.	Product Support

Section	Summary of Change	Internal Use Only
—	Deleted the empty title topic “Lubricating Header Drive Gearbox” and promoted the procedures under it.	Technical Publications
6.4.4 Changing Oil Filter, page 369	Updated filter number MD #183620 to kit MD #320360.	ECN 61432
6.8 Cutterbar, page 399	Topic heading “Cutterbar” was “Knife”.	Technical Publications
Adjusting Hold-Down Clips at Double-Knife Center Pointed Guard, page 412	Updated the center guard illustration.	Technical Publications
6.10.2 Checking and Adjusting Feed Draper Tension, page 429	Added the word “Checking” to the title to reflect the procedure content.	Product Support
6.10.7 Checking Link Holder Hooks, page 439	Added topic.	Product Support
6.12.2 Installing Side Drapers, page 445	Added Step *1, page 445* to Step *5, page 445*. Step *6, page 445* was a NOTE.	Technical Publications
7.2.5 Short Brace Kit For Center Reel Arm, page 509	Added bundle information.	Technical Publications
7.3.4 Vertical Knife Mounts, page 512	• Replaced MD #B5757. with MD #B9048. • Replaced MD #B6572 with MD #B9051. • Updated Figure *7.10, page 512*. • Deleted NOTE about kit MD #5406 because the kit is discontinued.	ECN 62429 ECN 57334
7.5.2 CA25 Combine Adapter Feed Auger Flighting, page 515	Updated the bundle information: B6434 was B4829.	ECN 54793
7.5.5 Draper Clips, page 517	Added topic.	ECN 54224 ECN 58960
7.5.9 Upper Cross Auger, page 518	Updated all bundle numbers.	Engineering
9.3 Unloading and Assembly, page 546	Corrected part numbers of the unloading and assembly manuals.	Technical Publications

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 and left designations are determined from the operator's position, facing forward.

Draper Header

Header Model: _____

Serial Number: _____

Year: _____

The serial number plate (A) is located in the lower corner on the left endsheet.

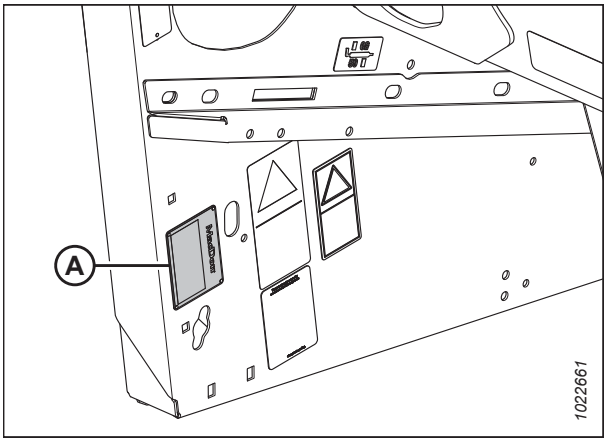


Figure 1: Header

Combine Adapter

Adapter Model: _____

Serial Number: _____

Year: _____

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

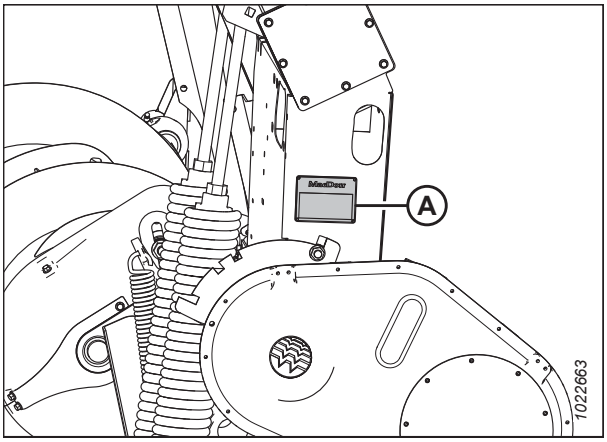


Figure 2: Adapter

Slow Speed Transport/Stabilizer Wheel Option

Serial Number: _____

Year: _____

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

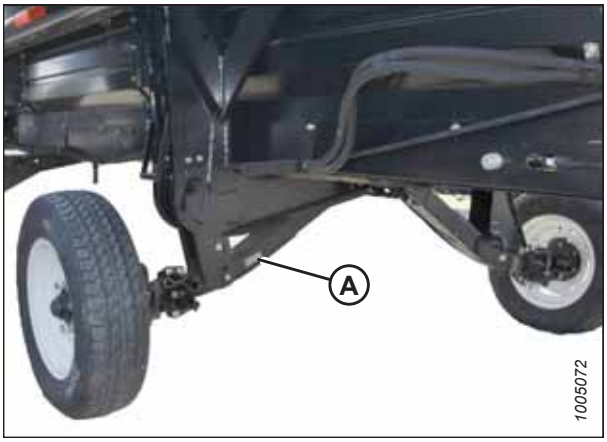


Figure 3: Transport/Stabilizer Option

Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

The 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. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:

DANGER

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

WARNING

Indicates a potentially hazardous situation that, if it is not prevented, could result in death or serious injury. It may also be used to alert you to unsafe practices.

CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

Indicates a situation that, if not prevented, could result in a malfunction or damage to the machine.

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

CAUTION

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

Wear all 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

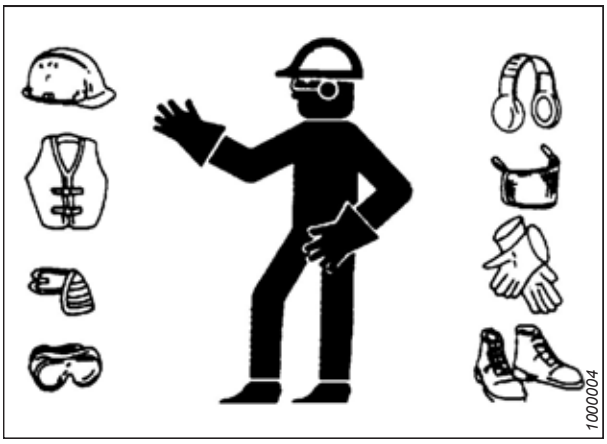


Figure 1.2: Safety Equipment

In addition, take the following precautions:

- Be aware that exposure to loud noises can cause hearing impairment. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

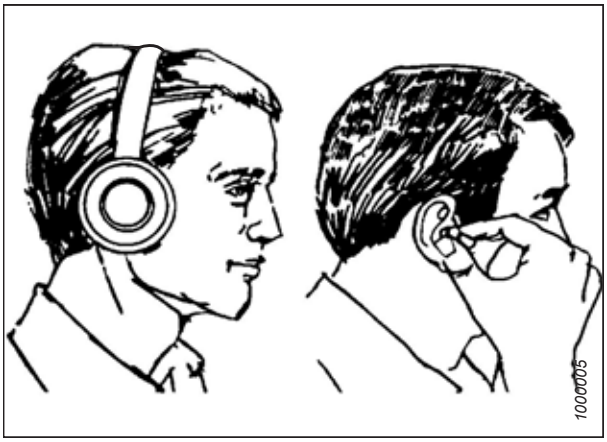


Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

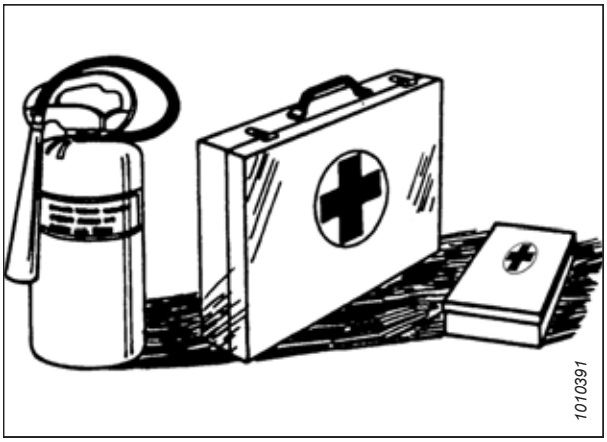


Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as hoodies, scarves or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct 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. Unauthorized modifications may impair the functionality and/or safety of the machine. It may also shorten the machine's service life.
- To avoid injury or death from the unexpected startup of the machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

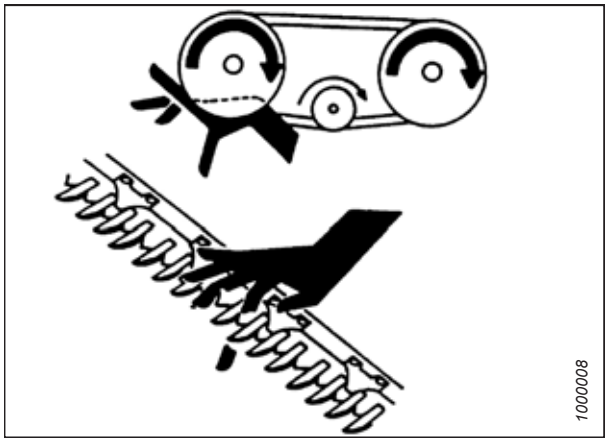


Figure 1.6: Safety around Equipment

- Keep the machine service area clean and dry. Wet and/or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Ensure that all electrical outlets and tools are properly grounded.
- Keep the work area well-lit.
- Keep machinery clean. Straw and chaff on a hot engine are fire hazards. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before they are stored.
- **NEVER** use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover any sharp or extending components to prevent injury from accidental contact.

Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

Maintaining your equipment safely requires that you follow the relevant safety procedures and wear the appropriate personal protective equipment for the task.

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operating or performing maintenance on the machine.
- Place all controls in Neutral, stop the engine, set the parking brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, or repairing the machine.
- Follow good shop practices:
  - Keep service areas clean and dry
  - Ensure that electrical outlets and tools are properly grounded
  - Keep the work area well lit

Figure 1.8: Wet Floors Present Safety Risks

- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Ensure that 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 the 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 another mechanically driven component by hand (for example, accessing a lubricant fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.

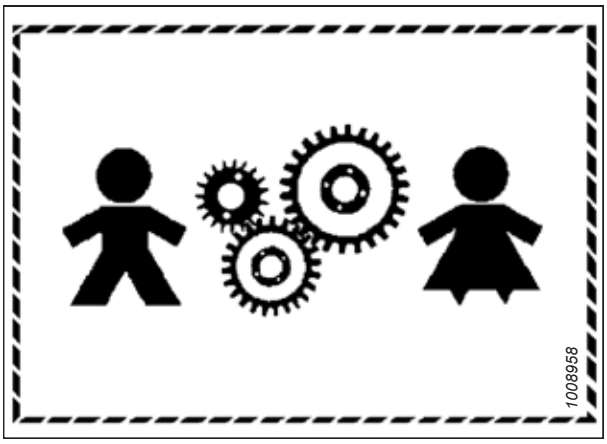


Figure 1.9: Equipment is NOT Safe for Children

- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.

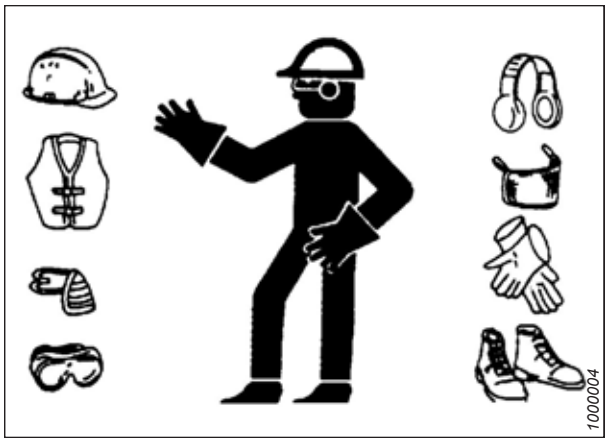


Figure 1.10: Personal Protective Equipment

1.5 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. The proper safety procedures must be followed when inspecting for hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in Neutral before leaving the operator's seat.
- Ensure that all the 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 hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs can fail suddenly and create hazardous conditions.

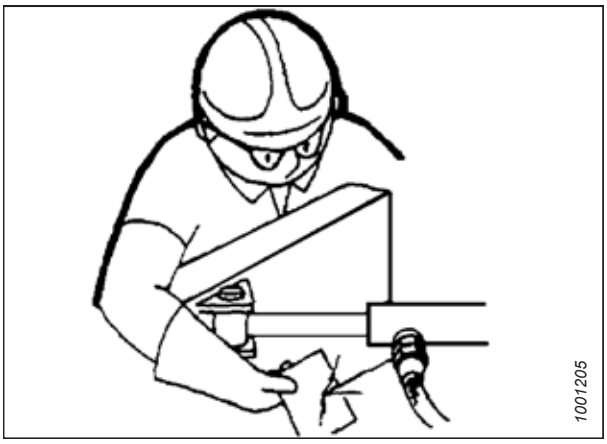


Figure 1.11: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic fluid leaks. Use a piece of cardboard as a backstop instead of your 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

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

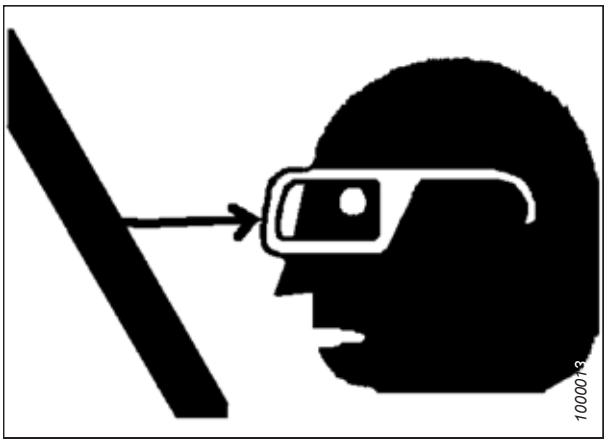


Figure 1.13: Safety around Equipment

1.6 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or illegible.
- If the original part on which a safety sign was installed is replaced, ensure that the repair part displays the current safety sign.
- Replacement safety signs are available from your MacDon Dealer.

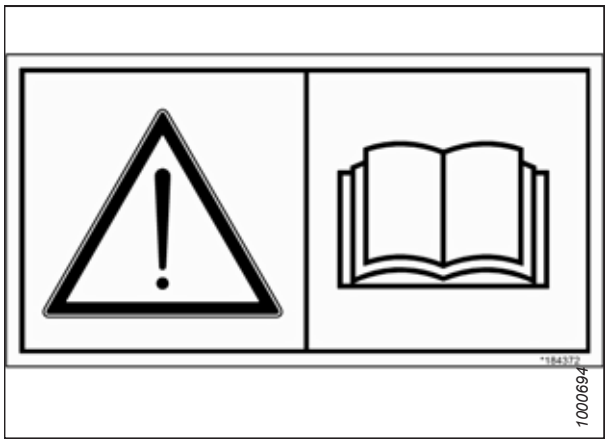


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

Worn or damaged safety decals will need to be removed and replaced.

1. Decide exactly where you are going to place the decal.
2. Clean and dry the installation area.
3. Remove the smaller portion of the split backing paper.
4. Place the decal in position and slowly peel back the remaining paper, smoothing the decal as it is applied.
5. Prick small air pockets with a pin and smooth them out.

1.7 Safety Decal Locations

Safety decals are installed in several locations on the header. Replace any missing or damaged decals on the machine with identical parts.

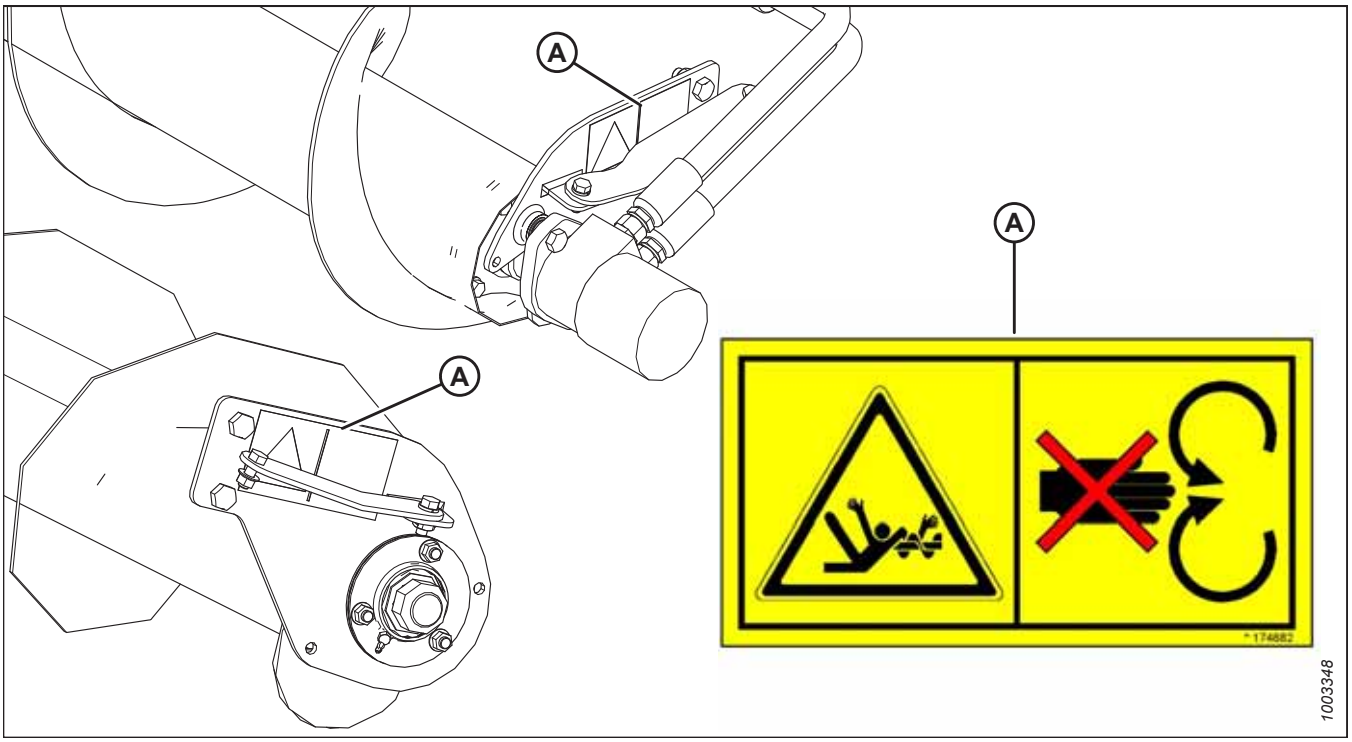


Figure 1.15: Upper Cross Auger

A - MD #174682

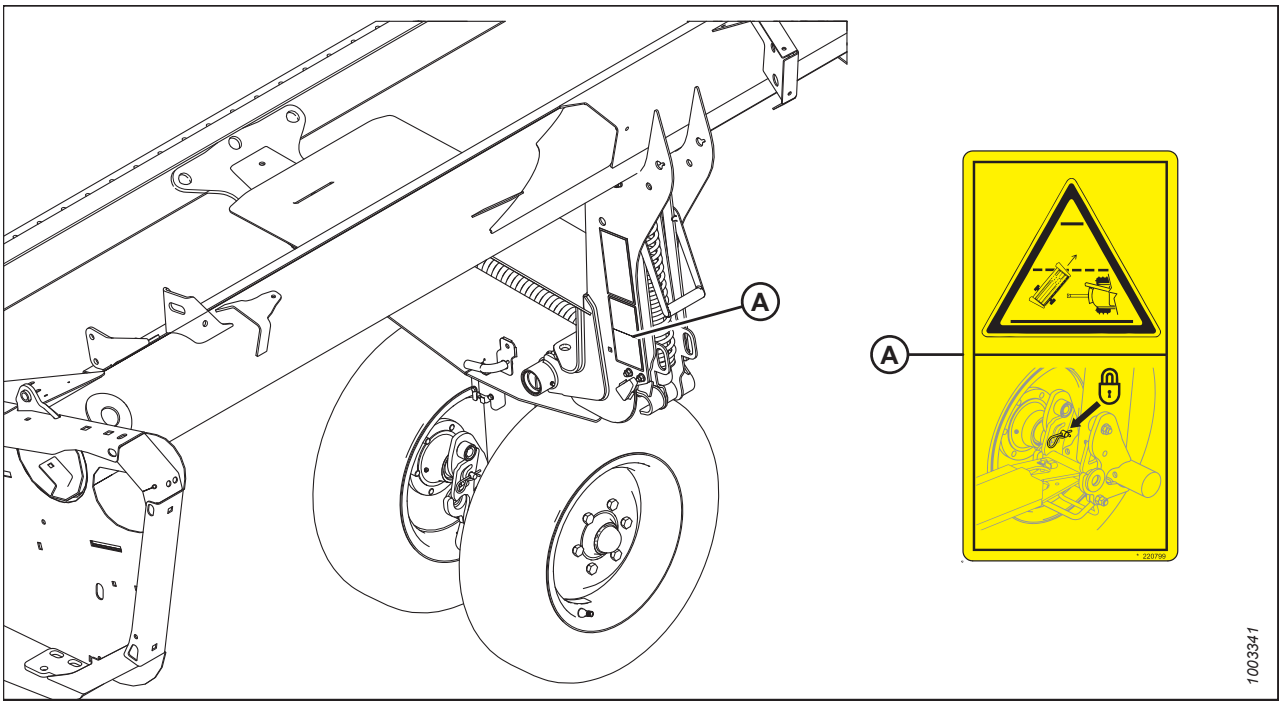


Figure 1.16: Slow Speed Transport

A - MD #220799

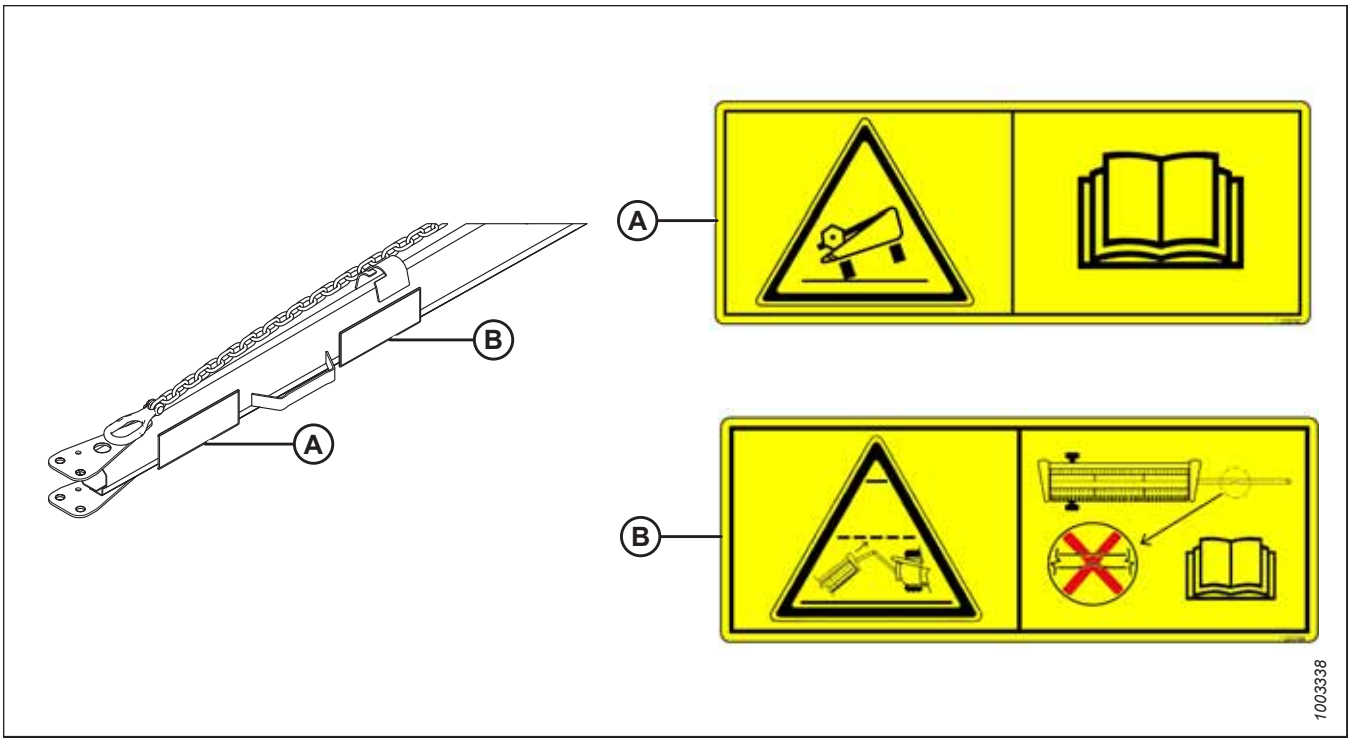


Figure 1.17: Slow Speed Transport Tow-Bar

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

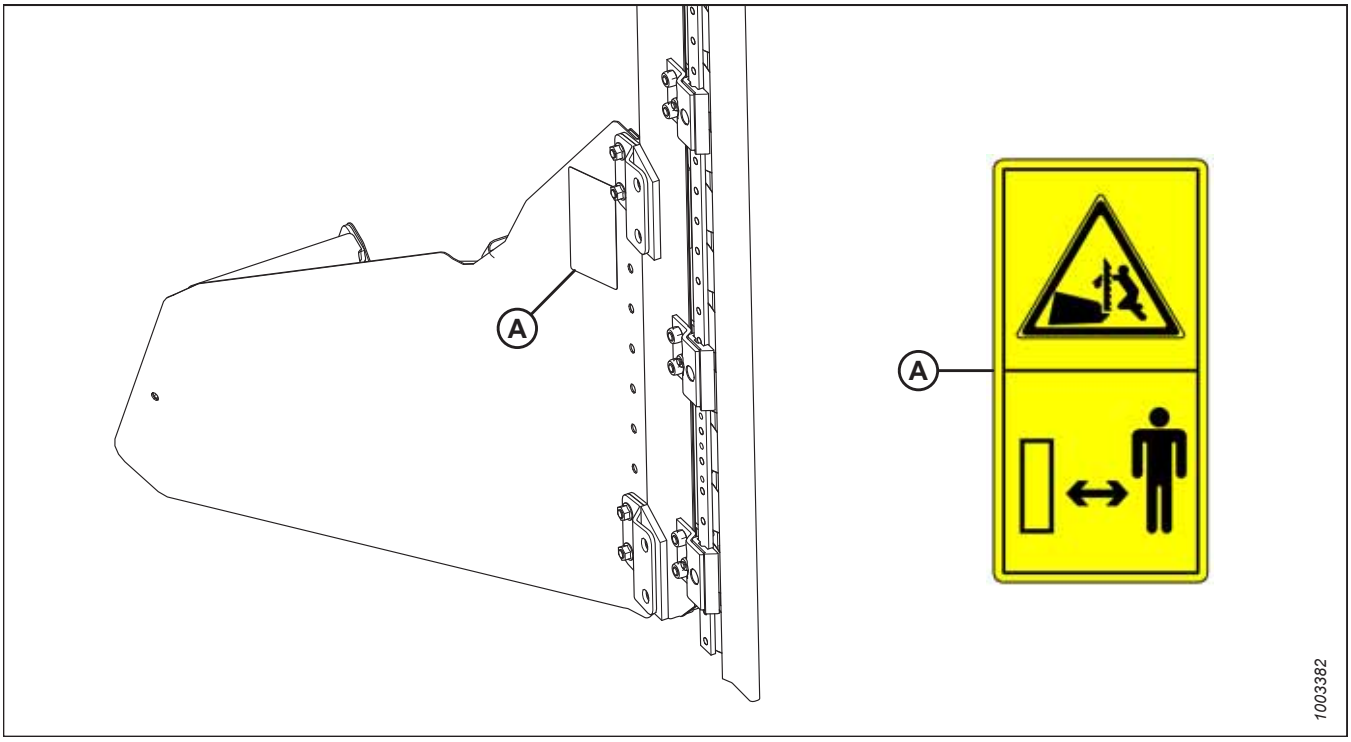


Figure 1.18: Vertical Knife

A - MD #174684

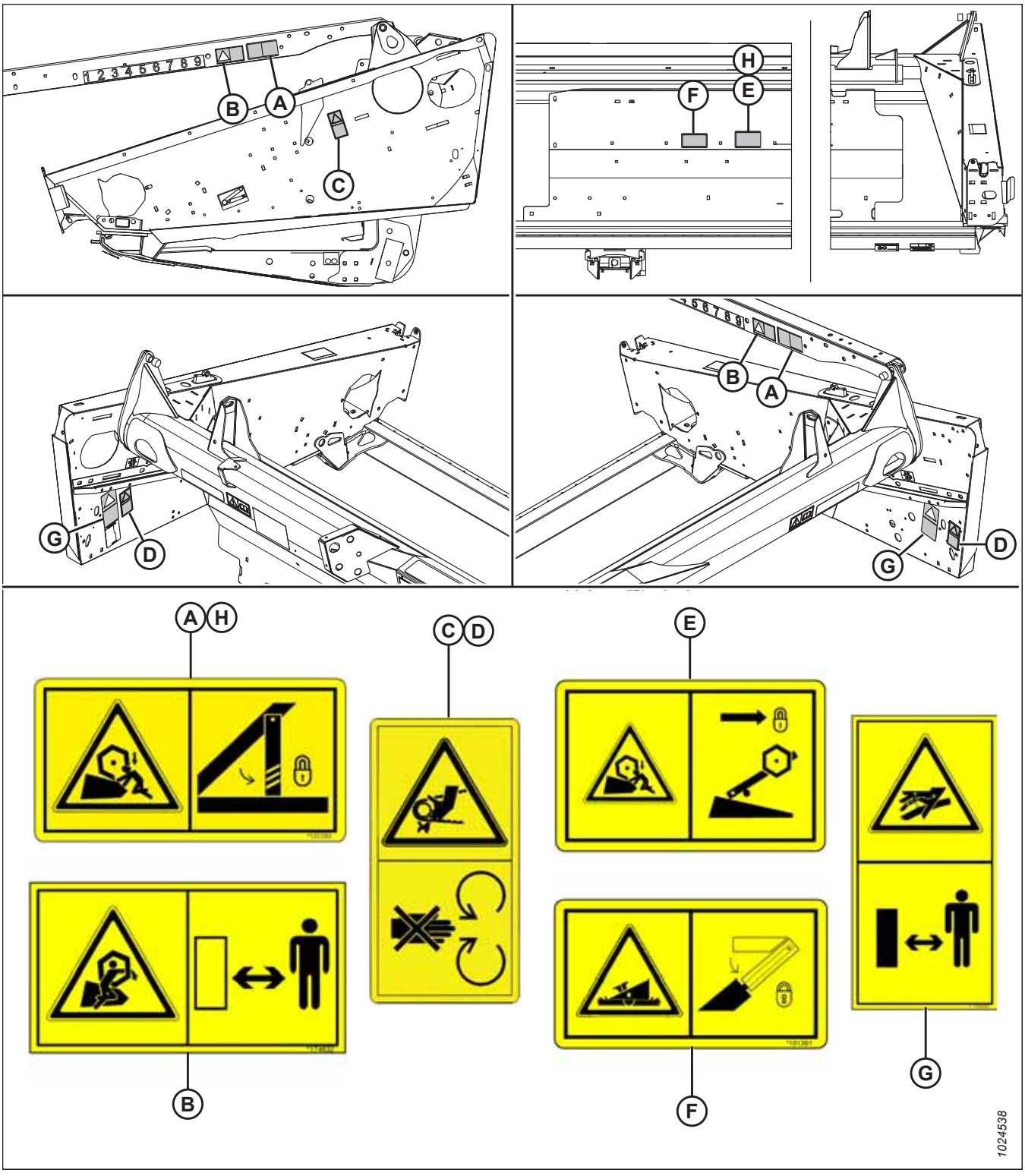


Figure 1.19: Endsheets, Reel Arms, Backsheet

A - MD #131393 (2 Places)
B - MD #174632 (2 Places)
C - MD #184422 (Single Knife – Left Side Only; Double Knife – Both Sides)
D - MD #184422 (Single Knife – Left Side Only; Double Knife – Both Sides)
E - MD #131392 (Double Reel 2 Places)
F - MD #131391 (2 Places)
G - MD #174436
H - MD #131393 (Single Reel – 2 Places)

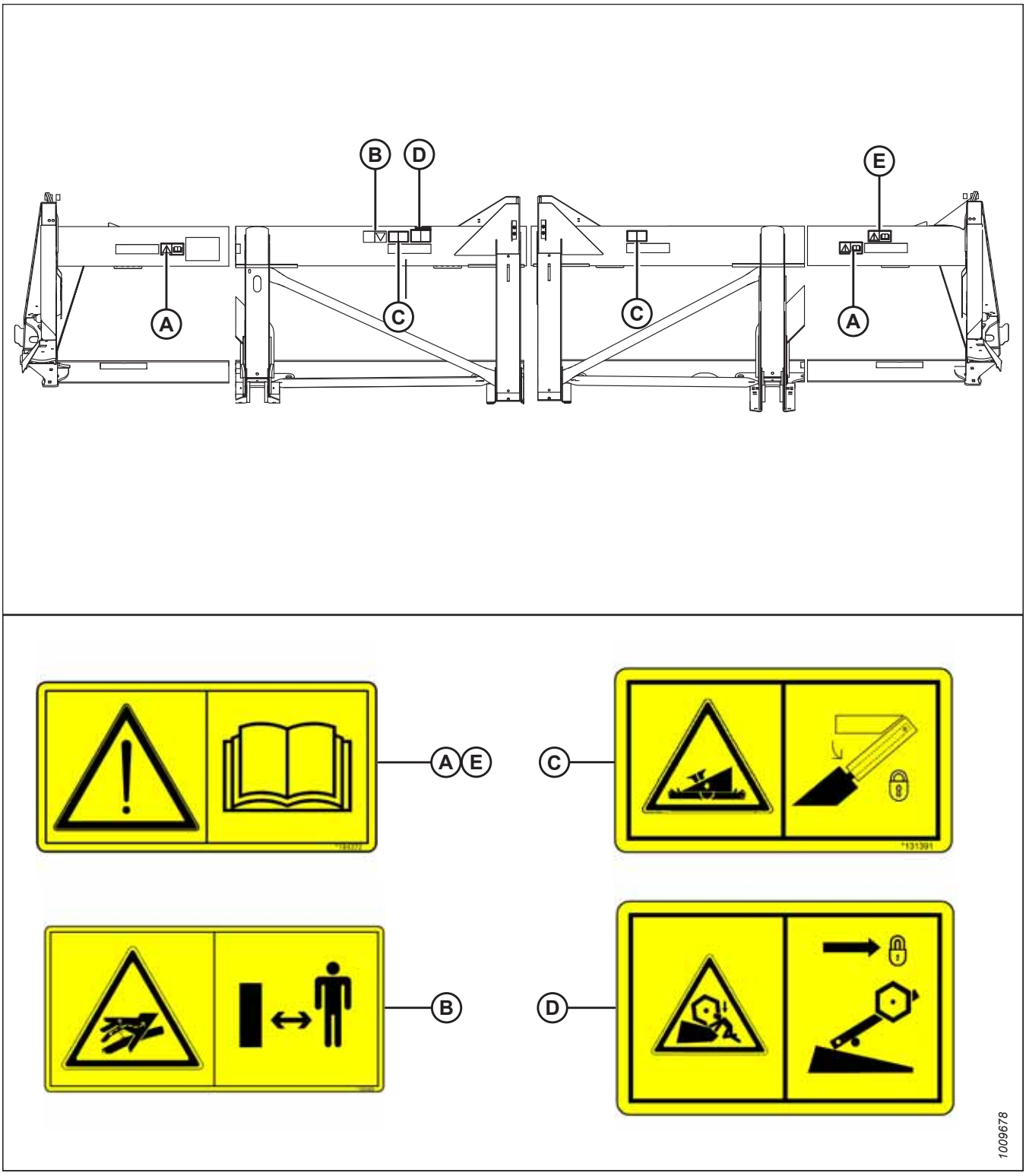


Figure 1.20: Backtube

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

1.8 Understanding Safety Signs

Safety sign decals use illustrations to convey important safety or equipment maintenance information.

MD #113482

General hazard pertaining to machine operation and servicing

DANGER

To prevent 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 the safety instructions with all Operators every year.
- Ensure that all the safety signs are installed and legible.
- Make certain everyone is clear of the machine before starting the engine and during operation.
- Keep riders off of the machine.
- Keep all the shields in place and stay clear of moving parts.
- Disengage the header drive, put the transmission in Neutral, and wait for all movement to stop before leaving the operator's position.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Engage the safety locks to prevent a raised unit from falling before servicing it in the raised position.
- Use the slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

Figure 1.21: MD #113482

MD #131391

Header crushing hazard

DANGER

To prevent injury or death from fall of a raised header:

- Fully raise the header, stop the engine, remove the key, and engage the safety props on the combine before going under header.
- Alternately, rest the header on the ground, stop the engine, and remove the key from the ignition.

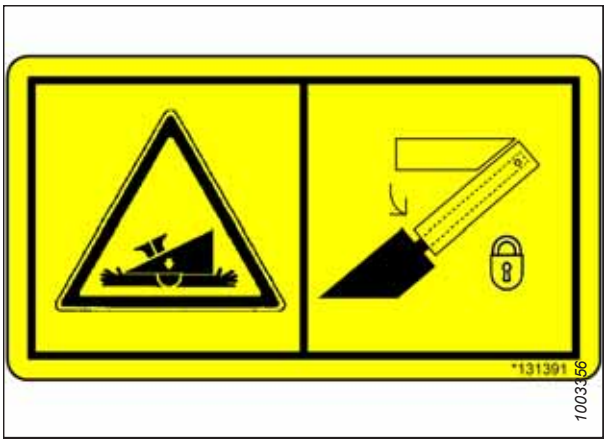


Figure 1.22: MD #131391

MD #131392

Reel crushing hazard

WARNING

To prevent injury from the fall of a raised reel: fully raise the reel, stop the engine, remove the key from the ignition, and engage the safety prop on each reel support arm before working on or under the reel.

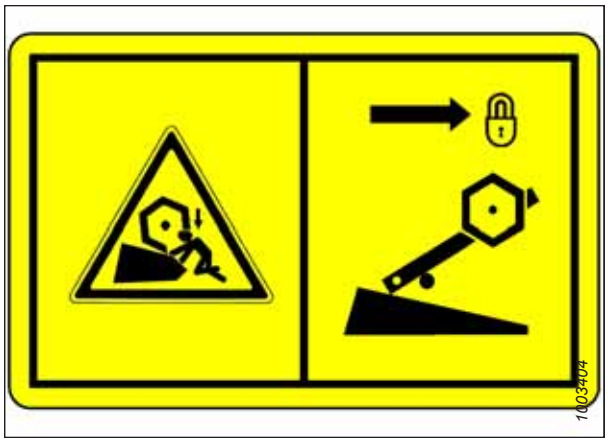


Figure 1.23: MD #131392

MD #335965

Reel crushing hazard

WARNING

To prevent injury from the fall of a raised reel: fully raise the reel, stop the engine, remove the key from the ignition, and engage the safety prop on each reel support arm before working on or under the reel.

Figure 1.24: MD #335965

MD #166466

High-pressure oil hazard

WARNING

High-pressure hydraulic fluid can penetrate human skin, which can cause serious injury such as gangrene, which can be fatal. To prevent this:

- Do **NOT** go near hydraulic fluid leaks.
- Do **NOT** use a finger or skin to check for hydraulic fluid leaks.
- Lower the load or relieve the pressure in the hydraulic system before loosening any hydraulic fittings.
- If you are injured, seek emergency medical help. **IMMEDIATE** surgery is required to remove hydraulic fluid which has penetrated the skin.

Figure 1.25: MD #166466

MD #174436

High-pressure oil hazard

WARNING

High-pressure hydraulic fluid can penetrate human skin, which can cause serious injury such as gangrene, which can be fatal. To prevent this:

- Do **NOT** go near hydraulic fluid leaks.
- Do **NOT** use a finger or skin to check for hydraulic fluid leaks.
- Lower the load or relieve the pressure in the hydraulic system before loosening any hydraulic fittings.
- If you are injured, seek emergency medical help. **IMMEDIATE** surgery is required to remove hydraulic fluid which has penetrated the skin.

Figure 1.26: MD #174436

MD #174632

Reel entanglement hazard

DANGER

To prevent injury from entanglement with the rotating reel:

- Stand clear of the header while the machine is running.

Figure 1.27: MD #174632

MD #174682

Auger entanglement hazard

DANGER

To prevent injury:

- Stop the engine and remove the key before servicing the auger.
- Do **NOT** reach into moving parts while the machine is running.

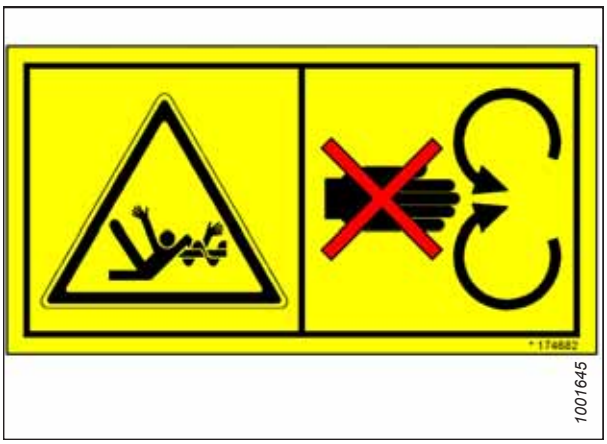


Figure 1.28: MD #174682

MD #174684

Knife cutting hazard

WARNING

To prevent injury from a sharp cutting knife:

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

Figure 1.29: MD #174684

MD #174684

Knife cutting hazard

WARNING

To prevent injury from a sharp cutting knife:

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

Figure 1.30: MD #174684

MD #184371

Hand entanglement hazard

WARNING

To prevent injury:

- Stop engine and remove key before opening shield.
- Do **NOT** operate without shields in place.

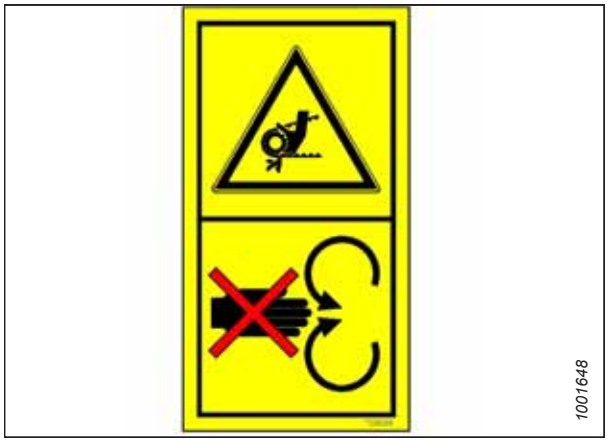


Figure 1.31: MD #184371

MD #184372

General hazard pertaining to machine operation and servicing

DANGER

To prevent injury or death from the improper or unsafe operation of the machine:

- 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 these safety instructions with all machine Operators every year.
- Ensure that all safety signs are installed and are legible.
- Make certain that bystanders are clear of the header before starting the engine and during operation of the header.
- Keep riders off of the machine.
- Keep all shields in place. Stay clear of moving parts.
- Disengage the header drive, put the transmission into Neutral, and wait for all movement to stop before leaving the operator's position.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a header in the raised position, engage the combine's cylinder safety props.
- Display a slow-moving vehicle emblem and activate the header's warning lights when operating the header on roadways (unless these actions are prohibited by law).

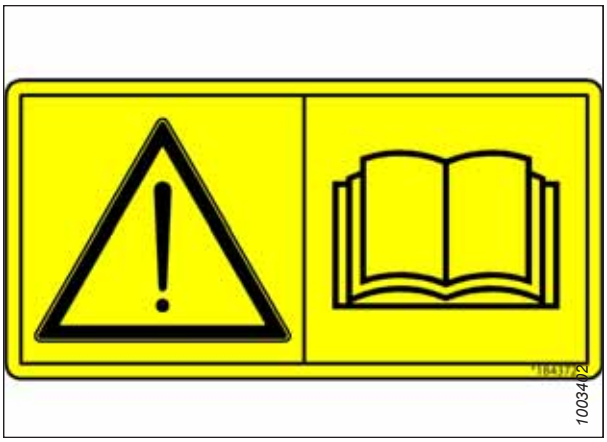


Figure 1.32: MD #184372

MD #184422

Hand and arm entanglement hazard

WARNING

To prevent injury:

- Stop the engine and remove the key before opening any shielding.
- Do **NOT** operate the header without the shields in place.

Figure 1.33: MD #184422

MD #190546

Slipping hazard

WARNING

To prevent injury or death:

- Do **NOT** use this area as a step or platform.

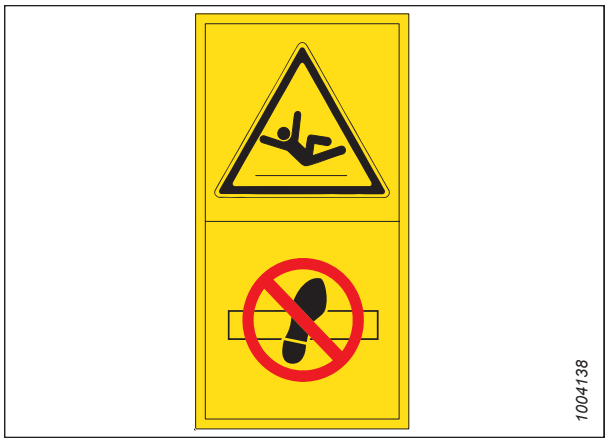


Figure 1.34: MD #190546

MD #193147

Loss of control hazard

DANGER

To prevent injury or death from loss of control:

- Ensure the tow-bar lock mechanism is locked.

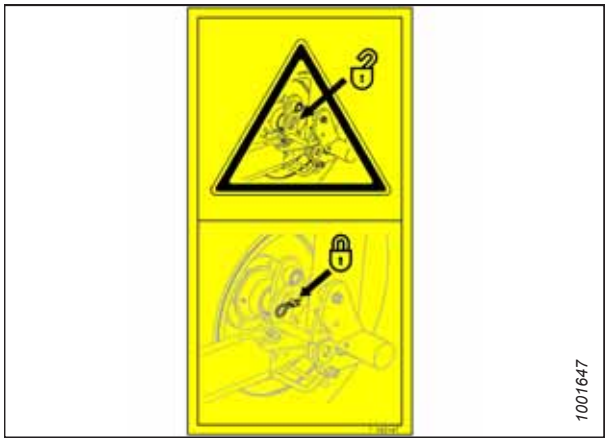


Figure 1.35: MD #193147

MD #194521

Auger entanglement hazard

DANGER

To prevent injury from entanglement with rotating auger:

- Stand clear of header while machine is running.
- Do **NOT** operate without shields in place.
- Stop engine and remove key before opening shield.

General hazard pertaining to machine operation and servicing.

DANGER

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

- 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 the ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

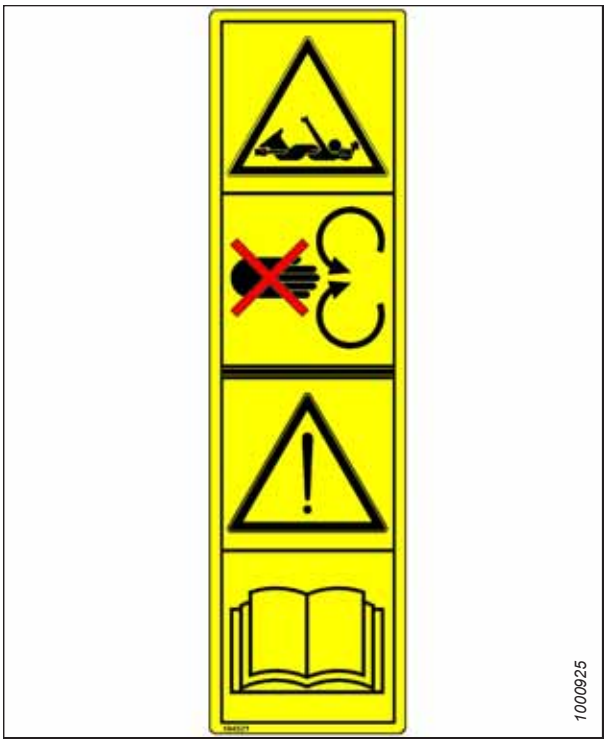


Figure 1.36: MD #194521

MD #220797

Header tipping hazard – transport mode

DANGER

To prevent serious injury or death from the header tipping over while in transport mode:

- Read the operator's manual for more information on potential tipping or rollover hazards that the header may be subject to while it is transport mode.

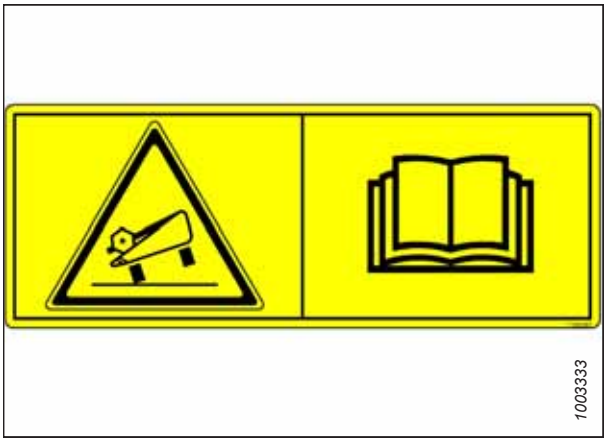


Figure 1.37: MD #220797

MD #220798

Loss of control hazard

DANGER

To prevent serious injury or death from loss of control:

- Do **NOT** tow the header with a damaged tow bar.
- Consult the operator's manual for more information.

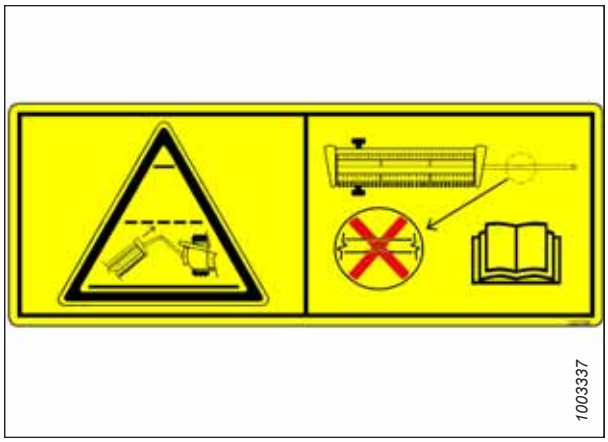


Figure 1.38: MD #220798

MD #220799

Loss of control hazard

WARNING

To prevent serious injury or death from loss of control:

- Ensure that the tow-bar lock mechanism is locked.

Figure 1.39: MD #220799

Chapter 2: Product Overview

The product overview provides the dimensions, details, and performance criteria for the various sizes and configurations.

2.1 Definitions

The following terms, abbreviations, and acronyms are used in this manual.

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener designed to be paired with a nut
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
DK	Double knife
DKD	Double-knife drive
Export header	The header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position in which the given sealing surfaces or components are making contact with each other and the fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
GVW	Gross vehicle weight
Hard joint	A joint made with 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 tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
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
North American header	The header configuration typical in North America
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
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings 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
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when inserted into a mating part
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket

Term	Definition
TFFT	Turns from finger tight
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism

2.2 Specifications

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

The following symbol and letters are used in Table *2.1, page 23* and Table *2.2, page 26*:

| 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)			
9.1 m (30 ft.) header		9144 mm (360 in.)	S
10.7 m (35 ft.) header		10668 mm (420 in.)	S
12.2 m (40 ft.) header		12192 mm (480 in.)	S
13.7 m (45 ft.) 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 (12.2 and 13.7 m (40 and 45 ft.) only , untimed): two hydraulic motors with V-belts to two heavy duty knife drive boxes.			O_F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute)[1]	9.1 m (30 ft.)	1200–1400 spm	S
Single-knife speed (strokes per minute)[1]	10.7 m (35 ft.)	1100–1300 spm	S
Single-knife speed (strokes per minute)[1]	12.2 m (40 ft.)	1050–1200 spm	S
Double-knife speed (strokes per minute)[1]	12.2 m (40 ft.)	1100–1400 spm	S
Double-knife speed (strokes per minute)[1]	13.7 m (45 ft.)	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 measured 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.

Table 2.1 Header Specifications (continued)

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	
Center tube diameter			203 mm (8 in.)	S
Finger tip radius		Factory-set	800 mm (31.5 in.)	S
Finger tip radius		Adjustment range	766–800 mm (30.18–31.5 in.)	S
Effective reel diameter			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
Header width	Transport position—reel fore-aft fully retracted (shortest center-link)	(A)[2],[3] (B)[2],[4]	2684 mm (106 in.) 2500 mm (98 in.)	—

2. Refer to Figure *2.1, page 25*
3. Long dividers removed
4. Long dividers installed

Figure 2.1: Header Width

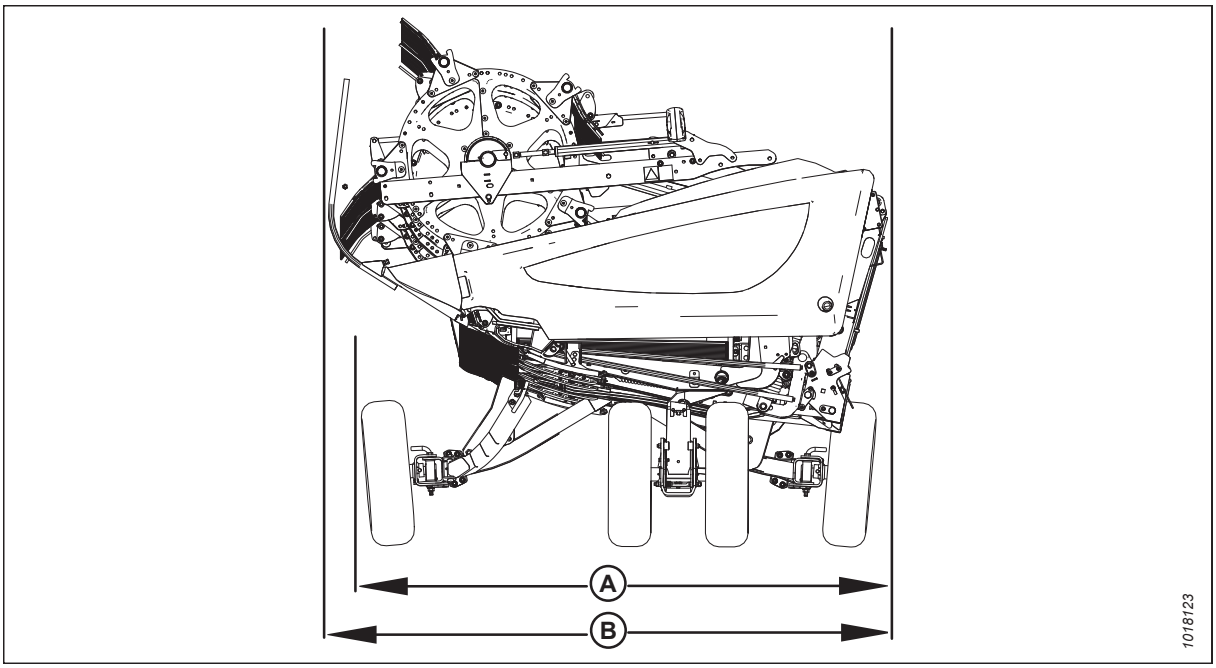


Table 2.2 Header Attachments

CA25 Combine Adapter				S
Feed draper		Width	2000 mm (78.7 in.)	S
Feed draper		Speed	107–122 m/min (350–400 fpm)	S
Feed auger		Width	1660 mm (65.3 in.)	S
Feed auger		Outside diameter	559 mm (22 in.)	S
Feed auger		Tube diameter	356 mm (14 in.)	S
Feed auger		Speed (varies with combine model)	150 rpm	S
Oil reservoir capacity			(60 liters) 16 US gallons	S
Oil type			15W40	—
Driveline overall length[5]	Case, New Holland	Maximum (extended)	1230 mm (48.4 in.)	O_F
Driveline overall length[5]	Case, New Holland	Minimum (compressed)	970 mm (38.2 in.)	O_F
Driveline overall length[5]	Challenger, Gleaner, John Deere, CLAAS, Massey Ferguson	Maximum (extended)	1262 mm (49.7 in.)	O_F
Driveline overall length[5]	Challenger, Gleaner, John Deere, CLAAS, Massey Ferguson	Minimum (compressed)	916 mm (36.1 in.)	O_F
Upper Cross Auger				O_D
Flighting (outside diameter [O.D])			305 mm (12 in.)	—
Tube diameter (O.D)		All header sizes except 7.6 m (25 ft.)	152 mm (6 in.)	—
Tube diameter (O.D)		7.6 m (25 ft.) headers	178 mm (7 in.)	—
Stabilizer Wheel / Slow Speed Transport				O_D
Wheels diameter			381 mm (15 in.)	—
Tires			P205/75 R-15	—

Weight[6]		
9.1 m (30 ft.) header		3060–3162 kg (6746–6971 lb.)
10.7 m (35 ft.) header		3251–3370 kg (7167–7430 lb.)
12.2 m (40 ft.) header	North America frame	3442–3533 kg (7589–7789 lb.)
12.2 m (40 ft.) header	Export frame	3549 kg (7824 lb.)
13.7 m (45 ft.) header	North America frame	3728 kg (8218 lb.)
13.7 m (45 ft.) header	Export frame	3744 kg (8253 lb.)

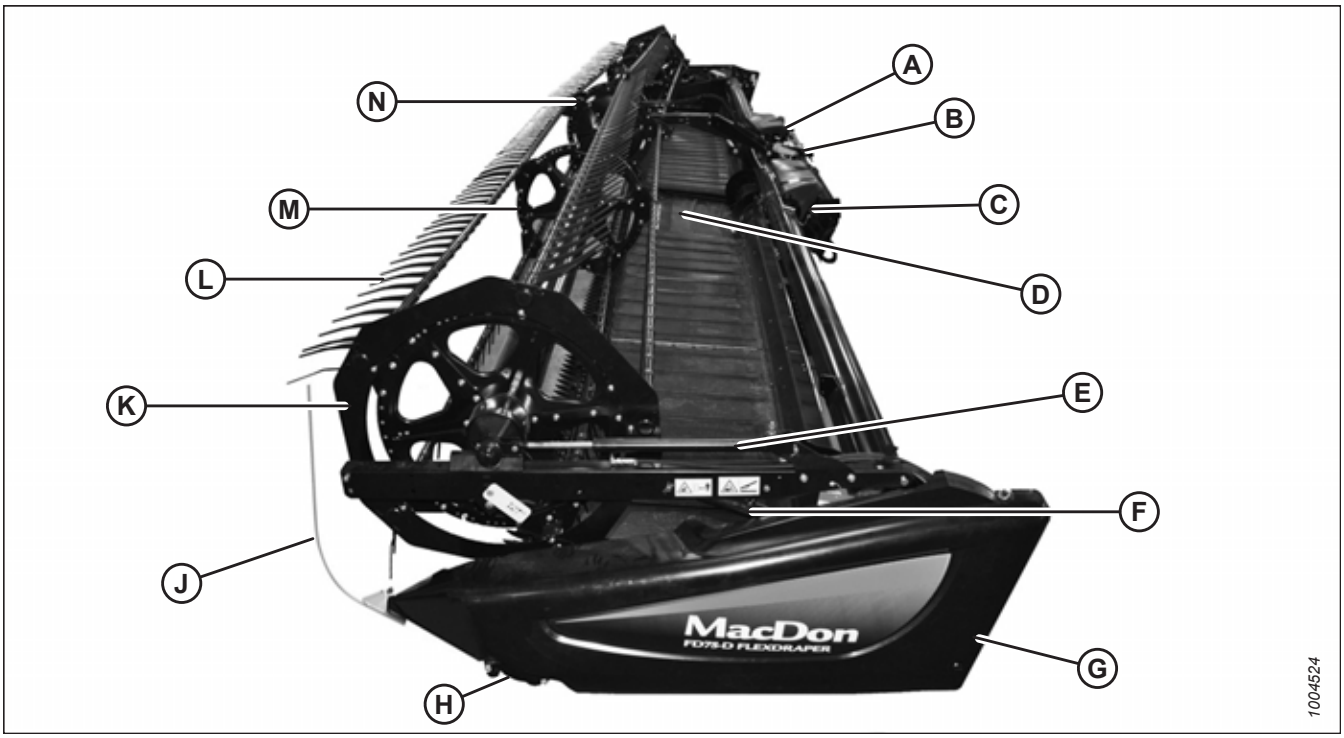
5. Subtract 265 mm (10-7/16 in.) for the length between the yoke pins.
6. Estimated weight range with base header only (variances are due to different package configurations).

2.3 Component Identification

This section will help you to identify common component names that are used throughout this manual.

2.3.1 FD75 FlexDraper®

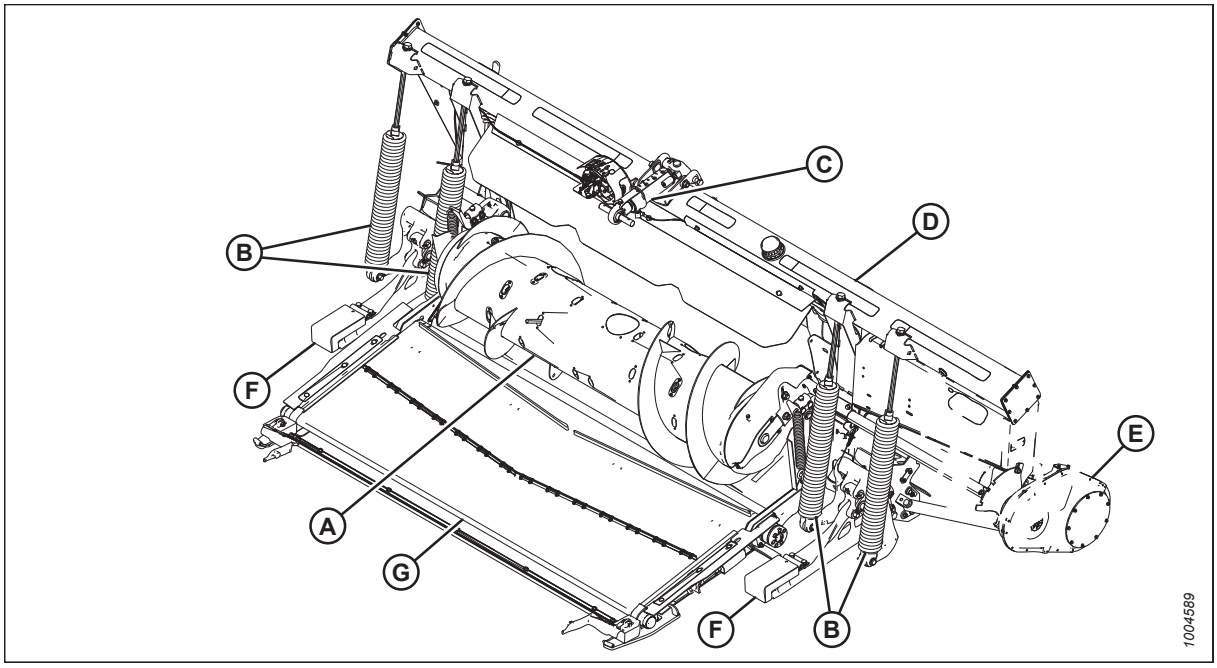
Figure 2.2: FD75 FlexDraper® Components



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

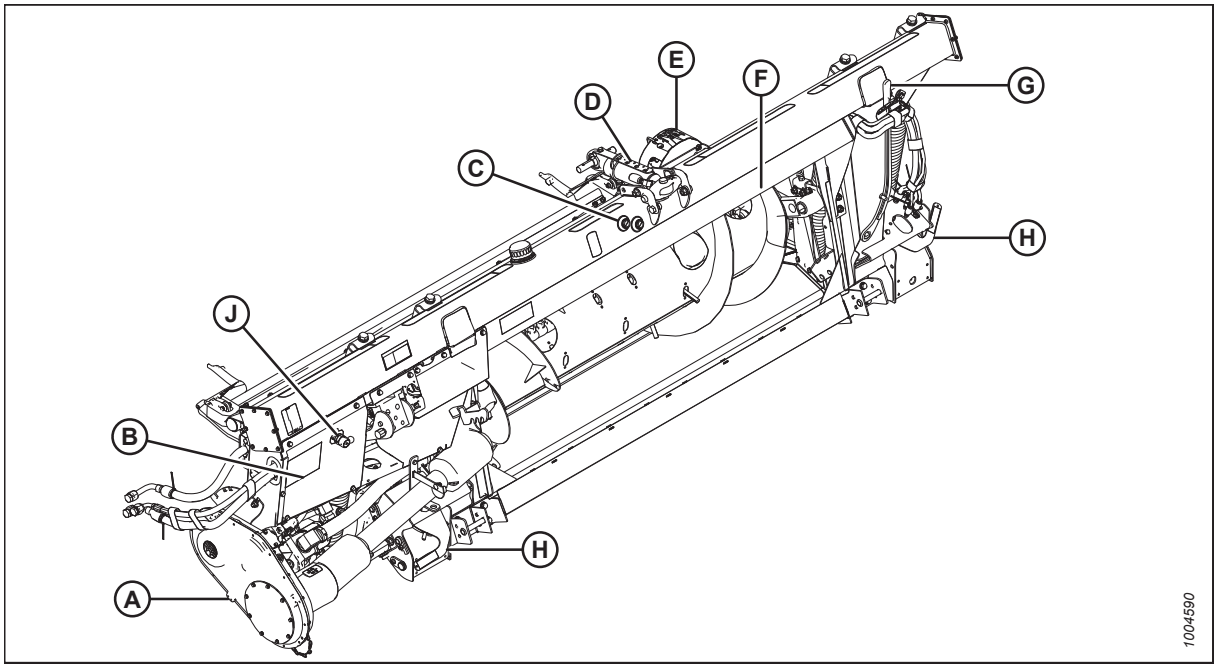
2.3.2 CA25 Combine Adapter

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

Chapter 3: Operation

Safely operating the machine requires familiarizing yourself with its capabilities.

3.1 Owner/Operator Responsibilities

Familiarize yourself with the responsibilities of operating this machine.

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

Follow all the safety and operational instructions given in this manual.

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.**

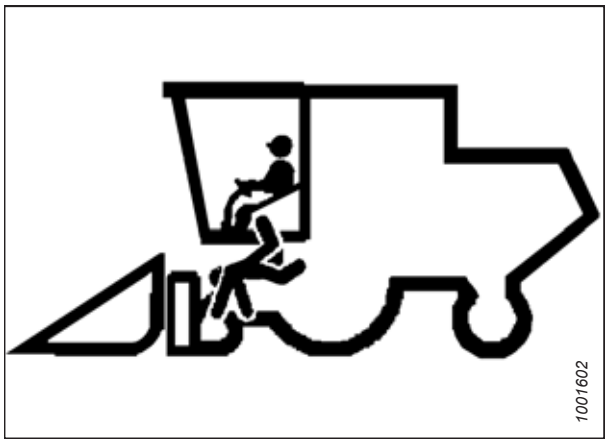


Figure 3.1: No Riders

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.**

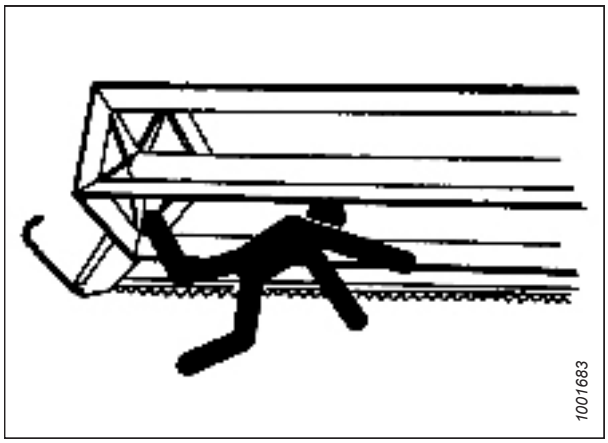


Figure 3.2: Bystander Hazard

- **Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. For instructions, refer to *3.4 Shutting down Header, page 41*.**
- **Operate only in daylight or good artificial light.**

3.2.1 Header Safety Props

Header safety props prevent the header lift cylinders from unexpectedly retracting and lowering the header.

DANGER

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

To learn more about operating the header safety props, refer to your combine operator's manual.

3.2.2 Reel Safety Props

The reel safety props are located on the reel arms. When engaged, the reel safety props prevent the reel from falling unexpectedly.

IMPORTANT:

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

Engaging Reel Safety Props

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

DANGER

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

WARNING

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

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

   NOTE:

   Keep pivot bolt (C) sufficiently tight so that the prop remains in the stored position when not in use, but can still be engaged using hand force.
4. Repeat Step *3, page 31* on the opposite side of the header.

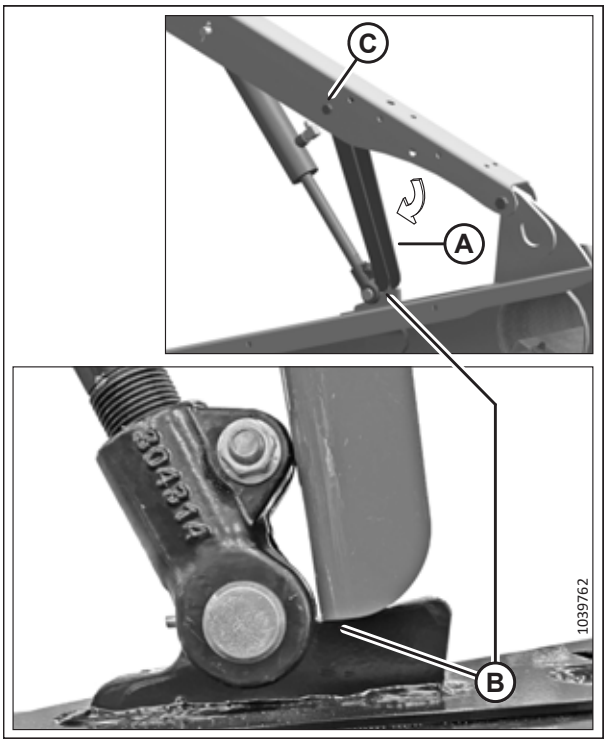


Figure 3.3: Reel Safety Prop – Left Arm Shown

5. **Double-reel header, center arm:** Use handle (A) to move the lock rod to inboard position (B), which engages pin (C) under the prop.

6. **Double-reel header, center arm:** Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pin.

   NOTE:

   The center arm only applies to double-reel headers.

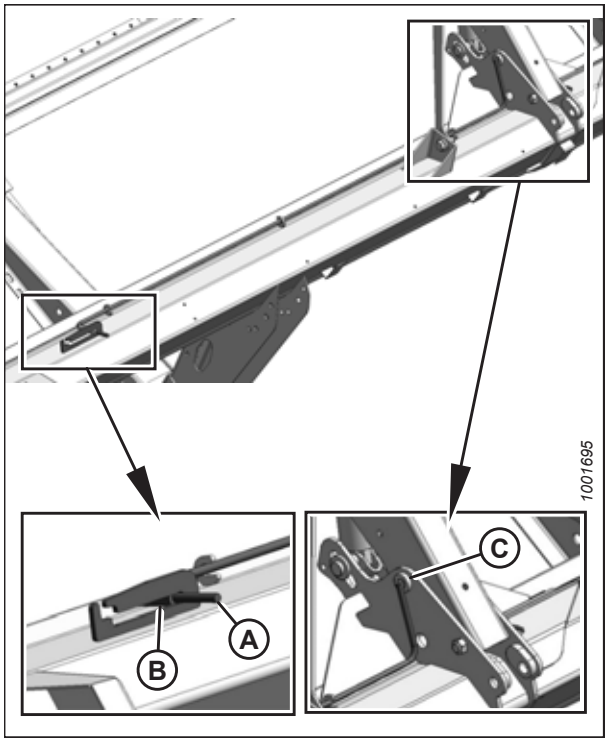


Figure 3.4: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

Disengage the reel safety props once you have completed working on or around a raised reel.

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 prop (A) inside the reel arm.
4. Repeat Step *3, page 32* on the opposite end of the reel.

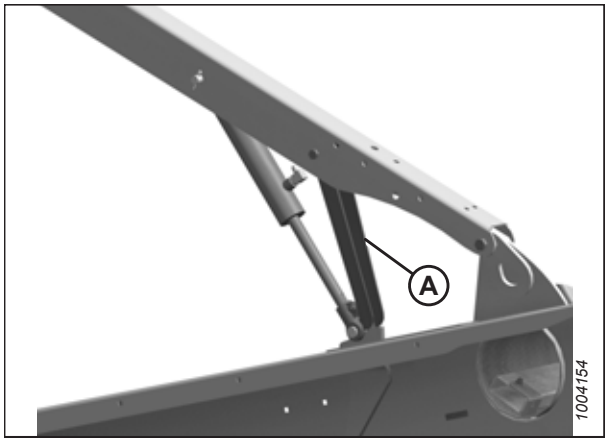


Figure 3.5: Reel Safety Prop – Left Arm Shown

5. **Double-reel headers, center reel arm:** Use handle (B) to move lock rod (A) to the outboard position.

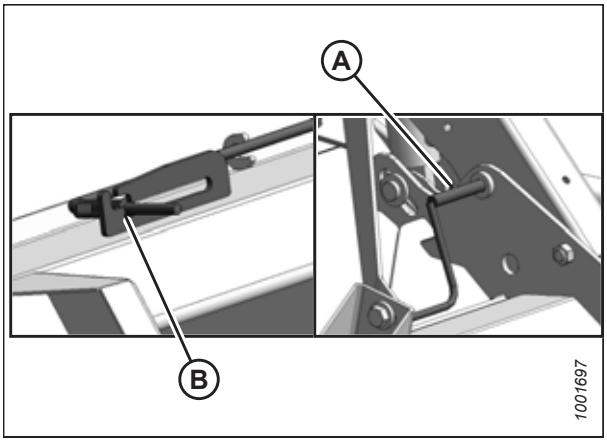


Figure 3.6: Reel Safety Prop – Center Arm

3.2.3 Endshields

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

Opening Endshield

The header endshields cover components. To access the components, you will need to open the endshield.

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

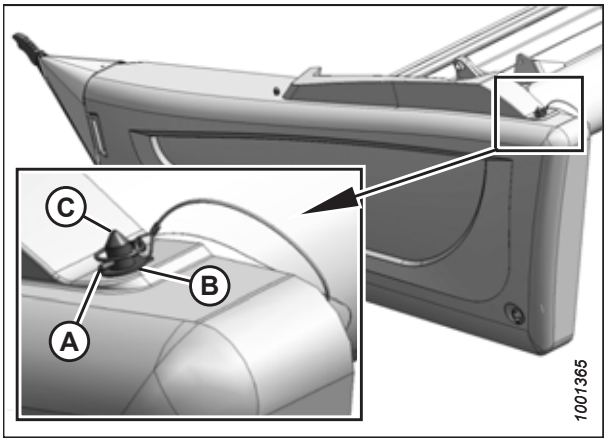


Figure 3.7: Left Endshield

2. Use tool (B) to unlock latch (A) at the lower rear corner of the endshield.
3. Lift the endshield at the aft end to clear the pin at the top rear of the endshield.
4. Swing the endshield out and away from the header while maintaining forward pressure to prevent the endshield from slipping out of tab (C) at the front of the endsheet.
5. To access the knife drive box, carefully disengage the front of endshield from the tab (C) at the front of the endsheet and swing the front of the endshield away from the header.

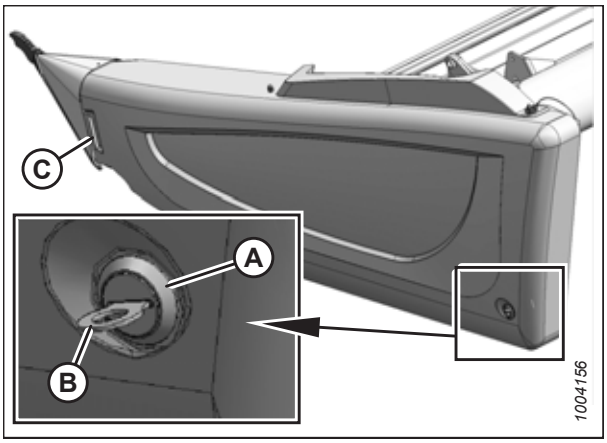


Figure 3.8: Left Endshield

IMPORTANT:

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

NOTE:

If complete access to endsheet area is required, remove the endshield. For instructions, refer to *Removing Endshield, page 35*.

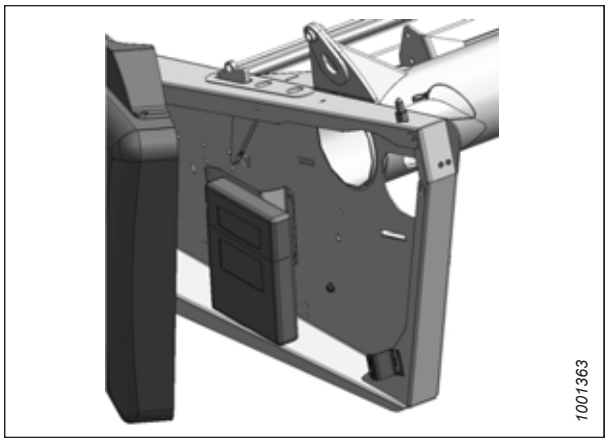


Figure 3.9: Left Endshield Open

Closing Endshield

The header endshields protect people from moving parts and protect components from damage and debris.

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

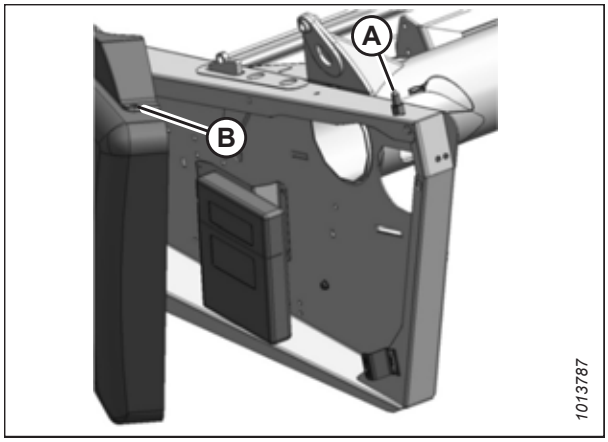


Figure 3.10: Left Endshield

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

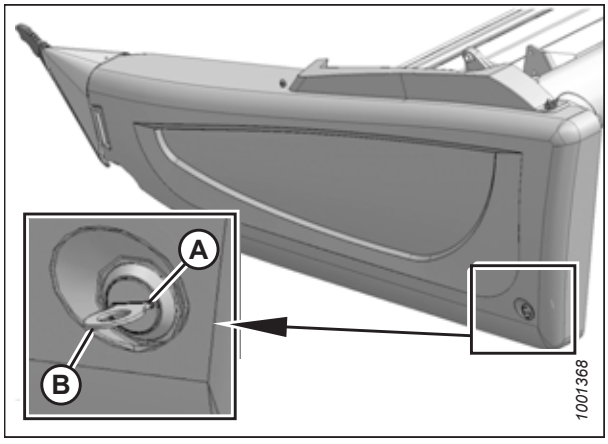


Figure 3.11: Left Endshield

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

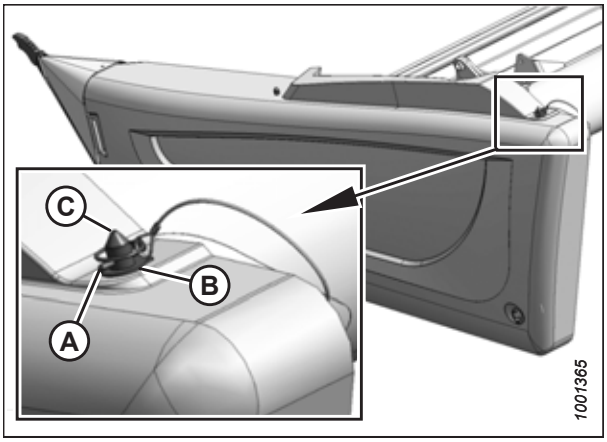


Figure 3.12: Left Endshield Pin

Removing Endshield

It may be necessary to remove the endshield to perform certain servicing tasks.

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

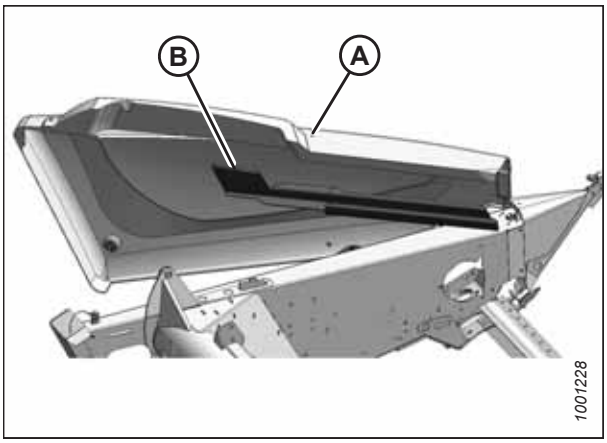


Figure 3.13: Left Endshield

Installing Endshield

If an endshield has been removed, it will need to be reinstalled before the header can be safely operated.

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

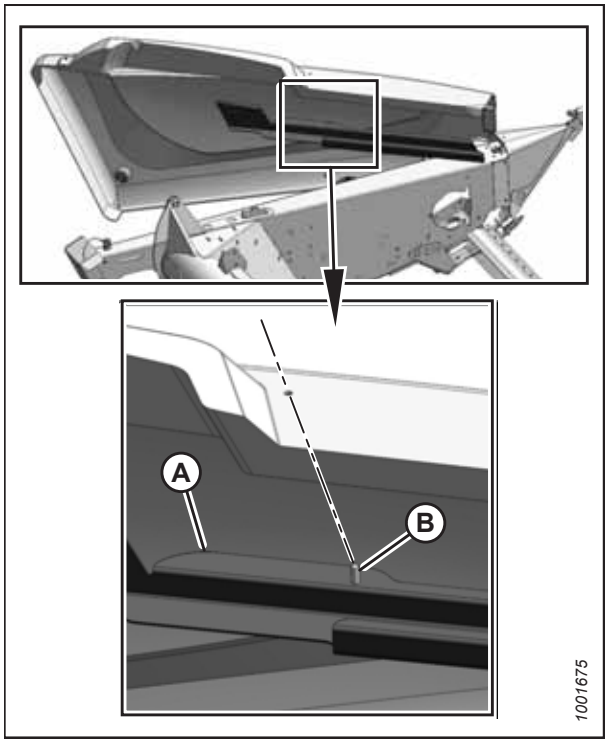


Figure 3.14: Left Endshield

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

   NOTE:

   Polyethylene endshields may expand or contract when subjected to large temperature changes. The top pin and the lower catch bracket positions can be adjusted to compensate for dimensional changes. For instructions, refer to *Adjusting Endshield, page 37*.

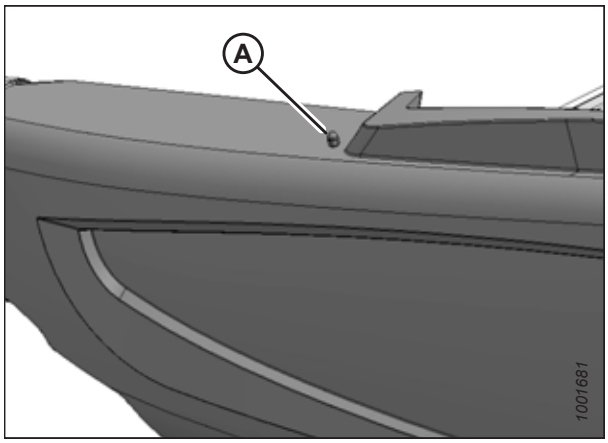


Figure 3.15: Left Endshield

Adjusting Endshield

Polyethylene endshields expand or contract when subjected to large temperature changes. The position of the top pin and the 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, page 37*.

Table 3.1 Effects of Ambient Temperature on Endshield Gap

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

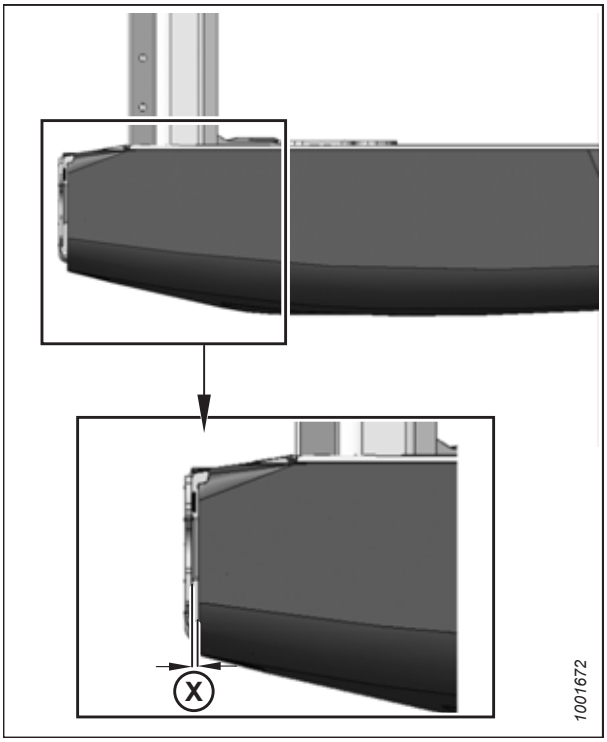


Figure 3.16: Left Endshield

If adjustments are required, proceed as follows:

2. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.
3. Loosen nut (A) on pin (B) from inside the endsheet.
4. Close the endshield and adjust its position to achieve gap (X) (shown in Figure *3.16, page 37*) 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 needed to reposition the endshield.
7. 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).
8. Tighten the bolts on catch (C).
9. Close the endshield. For instructions, refer to *Closing Endshield, page 34*.

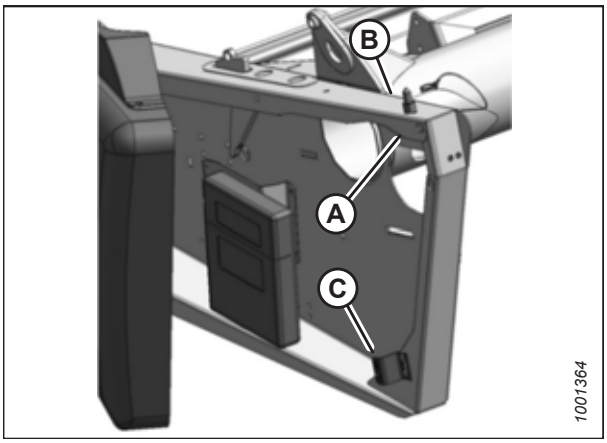


Figure 3.17: Left Endshield

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).

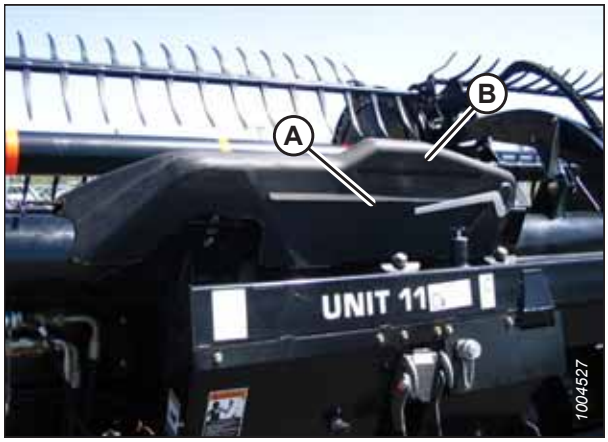


Figure 3.18: Linkage Cover

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

Figure 3.19: Linkage Cover

Installing Linkage Covers

1. Position the inboard end of cover (A) over the flex linkage and behind indicator bar (B).
2. Lower the cover until it fits securely against the header backtube.

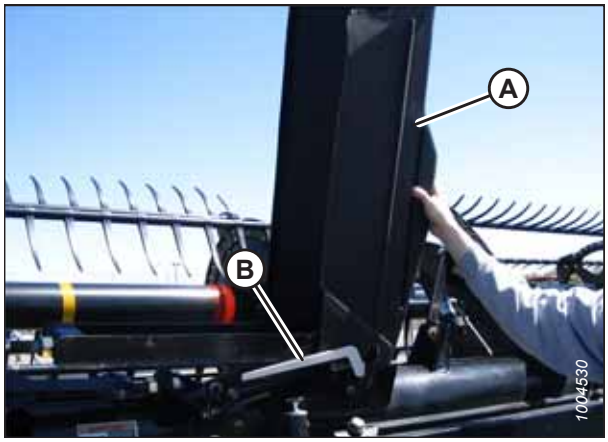


Figure 3.20: Linkage Cover

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

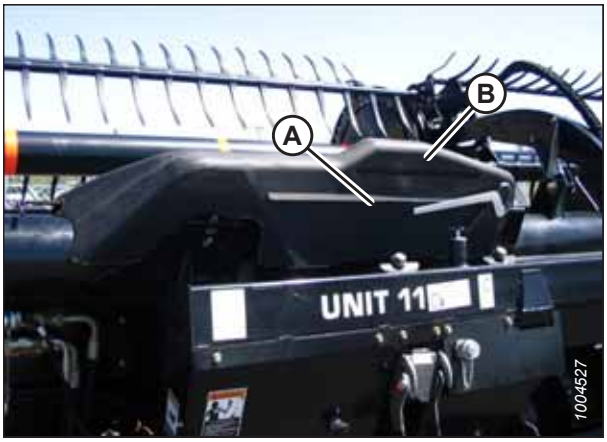


Figure 3.21: Linkage Cover

3.2.5 Daily Start-Up Check

Complete the following tasks each day before starting the machine.

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.**

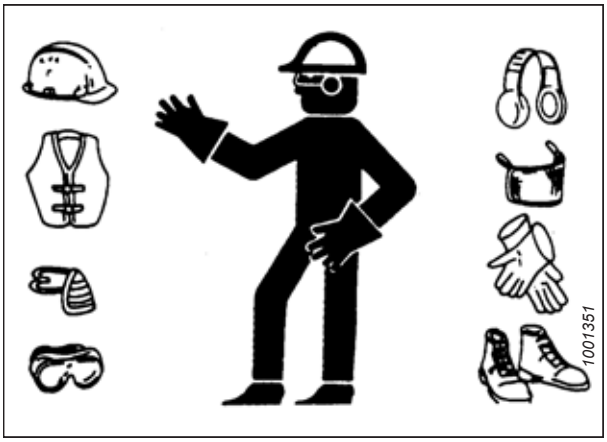


Figure 3.22: Safety Devices

- **Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortably loud noises.**

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. For instructions, refer to *6.3.5 Checking Hydraulic Hoses and Lines, page 348*.

2. Clean all lights and reflective surfaces on the machine.

3. Perform all daily maintenance. For instructions, refer to *6.3.1 Maintenance Schedule/Record, page 345*.

3.3 Break-in Period

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

CAUTION

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

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

1. Operate the machine with 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 *6.3.2 Break-in Inspection, page 347* and perform all the specified tasks.

3.4 Shutting down Header

To prevent injuries and equipment damage, always perform the procedures for shutting down the header.

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 leaving the operator's seat for any reason.

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

1. Disengage the header drive.
2. Park the combine on level ground whenever possible.
3. Lower the header fully.
4. Place all controls in NEUTRAL or PARK.
5. Lower and fully retract the reel.
6. Shut down the engine, and remove the key from the ignition.
7. Wait for all combine and header movement to stop before exiting the vehicle.

3.5 Cab Controls

The primary header functions are controlled inside the combine cab.

CAUTION

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

Refer to your combine operator's manual to identify the following in-cab controls:

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

3.6 Header Setup

The setup section provides information about adjustments, optional attachments, and optimizing the header for various conditions.

3.6.1 Header Attachments

Several attachments to optimize the performance of your FD75 FlexDraper® Header are available as options from your MacDon Dealer.

Refer to *7 Options and Attachments, page 507* for descriptions of available kits.

3.6.2 Header Settings

Table *3.2, 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.

For additional information about optimizing header performance, refer also to *3.6.4 Reel Settings, page 50*.

Table 3.2 FD75/CA25 Combine Header Recommended Settings

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[7]	Header Angle[8][9]	Reel Cam	Reel Speed % [10]	Reel Position	Skid Shoe Position[9]	Stabilizer Wheels[11]	Upper Cross Auger
Cereals	<102 (<4)	Light	Off	8	B – C	3	10–15	6 or 7	Up or middle	Storage	Not required
Cereals	<102 (<4)	Normal	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Not required
Cereals	<102 (<4)	Heavy	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Recom-mended
Cereals	<102 (<4)	Lodged	Off	7	B – C	3 or 4	5–10	4 or 5	Up or middle	Storage	Not required
Cereals	102–203 (4–8)	Light	Off	8	B – C	4	10–15	6 or 7	Middle or down	As required[9]	Not required
Cereals	102–203 (4–8)	Normal	On	7	A	2	10	6 or 7	Middle or down	As required[9]	Not required
Cereals	102–203 (4–8)	Heavy	On	7	A	2	10	6 or 7	Middle or down	As required[9]	Recom-mended
Cereals	102–203 (4–8)	Lodged	Off	7	D	3 or 4	5–10	4 or 5	Down	As required[9]	Not required
Cereals	203+ (8+)	Light	Off	8	A	4	10–15	6 or 7	Not applicable	As required[9]	Not required
Cereals	203+ (8+)	Normal	On	7	A	2	10	6 or 7	Not applicable	As required[9]	Not required
Cereals	203+ (8+)	Heavy	On	7	B – C	2	10	6 or 7	Not applicable	As required[9]	Not required
Cereals	203+ (8+)	Lodged	Off	7	B – C	3 or 4	5–10	4 or 5	Not applicable	As required[9]	Not required
Canola	102–203 (4–8)	Light	On	7	A	2	5–10	6 or 7	Down	As required[9]	Recom-mended

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

Table 3.2 FD75/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[12]	Header Angle[13][14]	Reel Cam	Reel Speed % [15]	Reel Position	Skid Shoe Position[14]	Stabilizer Wheels[16]	Upper Cross Auger
Canola	102–203 (4–8)	Normal	On	7	B – C	1	10	6 or 7	Middle or down	As required[14]	Recommended
Canola	102–203 (4–8)	Heavy	On	8	B – C	1	10	3 or 4	Down	As required[14]	Recommended
Canola	102–203 (4–8)	Lodged	On	7	D	2	5–10	3 or 4	Middle or down	As required[14]	Recommended
Canola	203+ (8+)	Light	On	7	A	2	5–10	6 or 7	Not applicable	As required[14]	Recommended
Canola	203+ (8+)	Normal	On	7	B – C	2	10	6 or 7	Not applicable	As required[14]	Recommended
Canola	203+ (8+)	Heavy	On	8	B – C	1 or 2	10	3 or 4	Not applicable	As required[14]	Recommended
Canola	203+ (8+)	Lodged	On	7	D	2 or 3	5–10	3 or 4	Not applicable	As required[14]	Recommended
California Rice	<102 (<4)	Light	Rice divider rod[17]	4	D	2	10–15	6 or 7	Up or middle	Storage	Not required
California Rice	<102 (<4)	Normal	Rice divider rod[17]	4	B – C	2	10	4 or 5	Up or middle	Storage	Not required
California Rice	<102 (<4)	Heavy	Rice divider rod[17]	4	B – C	2	10	4 or 5	Up or middle	Storage	Not required
California Rice	<102 (<4)	Lodged	Rice divider rod[17]	4	D	2	5–10	4 or 5	Up or middle	Storage	Not required

12. Setting on CA25 draper control.
13. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
14. Cutting height is controlled with a combination of skid shoe settings and header angle.
15. Percentage above ground speed.
16. Stabilizer wheels are used to minimize header bouncing and to limit side-to-side movement when cutting off the ground in rolling terrain.
17. Available from your MacDon Dealer. A rice divider rod is not required on both ends of the header.

Table 3.2 FD75/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[18]	Header Angle[1920]	Reel Cam	Reel Speed % [21]	Reel Position	Skid Shoe Position[20]	Stabilizer Wheels[22]	Upper Cross Auger
California Rice	102–203 (4–8)	Light	Rice divider rod[17]	4	D	3	10–15	6 or 7	Middle or down	As required[20]	Not required
California Rice	102–203 (4–8)	Normal	Rice divider rod[17]	4	B – C	3	10	6 or 7	Middle or down	As required[20]	Not required
California Rice	102–203 (4–8)	Heavy	Rice divider rod[17]	4	B – C	3	10	6 or 7	Middle or down	As required[20]	Not required
California Rice	102–203 (4–8)	Lodged	Rice divider rod[17]	4	D	4	5–10	6 or 7	Middle or down	As required[20]	Not required
California Rice	203+ (8+)	Light	Rice divider rod[17]	4	A	3	10–15	6 or 7	Not applicable	As required[20]	Not required
California Rice	203+ (8+)	Normal	Rice divider rod[17]	4	B – C	3	10	6 or 7	Not applicable	As required[20]	Not required
California Rice	203+ (8+)	Heavy	Rice divider rod[17]	4	B – C	3	10	6 or 7	Not applicable	As required[20]	Not required
California Rice	203+ (8+)	Lodged	Rice divider rod[17]	4	D	4	5–10	6 or 7	Not applicable	As required[20]	Not required
Delta Rice	51–152 (2–6)	Light	Off	6	D	2 or 3	10–15	6 or 7	Middle or down	As required[20]	Not required
Delta Rice	51–152 (2–6)	Normal	Off	6	B – C	2 or 3	10	6 or 7	Middle or down	As required[20]	Not required

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

Table 3.2 FD75/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[23]	Header Angle[24][25]	Reel Cam	Reel Speed % [26]	Reel Position	Skid Shoe Position[25]	Stabilizer Wheels[27]	Upper Cross Auger
Delta Rice	51–152 (2–6)	Heavy	Off	6	B – C	2 or 3	10	6 or 7	Middle or down	As required[25]	Not required
Delta Rice	51–152 (2–6)	Lodged	Off	6	D	3 or 4	5–10	4 or 5	Middle or down	As required[25]	Not required
Delta Rice	152+ (6+)	Light	Off	6	A	2 or 3	10–15	6 or 7	Not applicable	As required[25]	Not required
Delta Rice	152+ (6+)	Normal	Off	6	B – C	2 or 3	10	6 or 7	Not applicable	As required[25]	Not required
Delta Rice	152+ (6+)	Heavy	Off	6	B – C	2 or 3	10	6 or 7	Not applicable	As required[25]	Not required
Delta Rice	152+ (6+)	Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not applicable	As required[25]	Not required
Edible Beans	On ground	Light	On	8	D	2	5–10	6 or 7	Up or middle	Storage	Not required
Edible Beans	On ground	Normal	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Not required
Edible Beans	On ground	Heavy	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Not required
Edible Beans	On ground	Lodged	On	7	D	2	5–10	6 or 7	Up or middle	Storage	Not required
Flax	51–153 (2–6)	Light	On	8	B – C	2	5–10	6 or 7	Middle or down	As required[25]	Not required
Flax	51–153 (2–6)	Normal	On	7	A	2	10	6 or 7	Middle or down	As required[25]	Not required
Flax	51–153 (2–6)	Heavy	On	7	B – C	2	10	6 or 7	Middle or down	As required[25]	Not required

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

Table 3.2 FD75/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting[28]	Header Angle[2930]	Reel Cam	Reel Speed % [31]	Reel Position	Skid Shoe Position[30]	Stabilizer Wheels[32]	Upper Cross Auger
Flax	51–153 (2–6)	Lodged	On	7	D	2	5–10	6 or 7	Down	As required[30]	Not required
Peas	On ground	Light	On	7	B – C	2	5–10	6 or 7	Up or middle	Storage	Recom-mended
Peas	On ground	Normal	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Recom-mended
Peas	On ground	Heavy	On	7	B – C	2	10	4 or 5	Up or middle	Storage	Recom-mended
Peas	On ground	Lodged	On	7	D	2	5–10	4 or 5	Up or middle	Storage	Recom-mended
Lentils	On ground	Light	On	8	B – C	2	5–10	6 or 7	Up or middle	Storage	Not required
Lentils	On ground	Normal	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Not required
Lentils	On ground	Heavy	On	7	B – C	2	10	6 or 7	Up or middle	Storage	Not required
Lentils	On ground	Lodged	On	7	D	2	5–10	6 or 7	Up or middle	Storage	Not required

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

3.6.3 Optimizing Header for Straight Combining Canola

Ripe canola can be straight cut, but most varieties are susceptible to shelling and seed loss. The recommended settings and attachments to optimize FD75 FlexDraper® Headers for straight cutting canola are provided.

For recommended attachments, refer to ***7 Options and Attachments, page 507***

The optimization process includes the following modifications to the header:

- Installing a full-length upper cross auger kit
- Installing a European adapter seal kit
- Installing vertical knives
- Installing short center reel braces
- Changing to high-speed auger drive sprocket
- Adding auger fingers. Refer to Table*3.3, page 49*.

Table 3.3 Auger Finger Quantity

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

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 92*.
- Adjust the reel fore-aft position. Refer to *Adjusting Reel Fore-Aft Position, page 91*.
- Adjust the reel height so the fingers just engage the crop. Refer to *3.7.9 Reel Height, page 89*.
- Set the reel cam to position one. Refer to *Adjusting Reel Cam, page 99*.
- Set the reel speed equal to the ground speed and increase as required. Refer to *3.7.5 Reel Speed, page 85*.
- Decrease the feed auger spring tension. Refer to *Checking and Adjusting Feed Auger Springs, page 49*.
- Set the side draper speed to position 9 on CA25 control. Refer to *3.7.7 Draper Speed, page 87*.

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header lift cylinder safety props.

4. At the left back corner of the header, check the thread length protruding past nut (A). The length should be 15 mm (0.60 in.). If the protruding thread length is not correct, proceed to Step *5, page 50*.

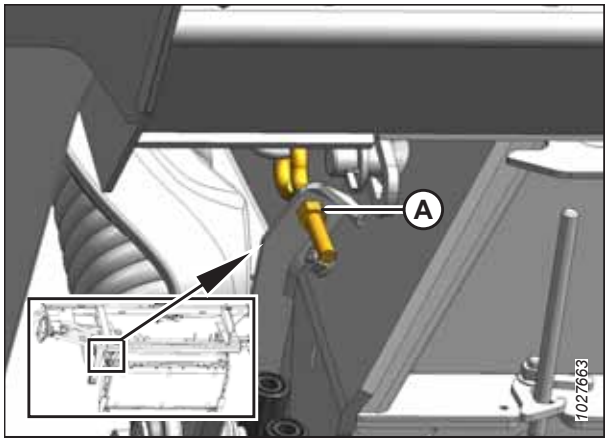


Figure 3.23: Spring Tensioner

5. Loosen upper jam nut (A) on the spring tensioner.
6. Turn lower nut (B) until thread (C) protrudes 15 mm (0.60 in.).
7. Tighten jam nut (A).
8. Repeat Step *4, page 50* to Step *7, page 50* on the opposite side.

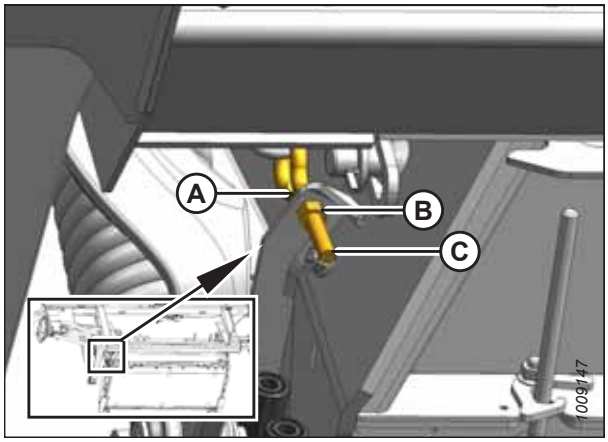


Figure 3.24: Spring Tensioner

3.6.4 Reel Settings

The adjustable reel settings and positions can optimize header performance in various crops.

Refer to for applicability of each finger pattern and reel position.

Table 3.4 Illustrated Reel Settings

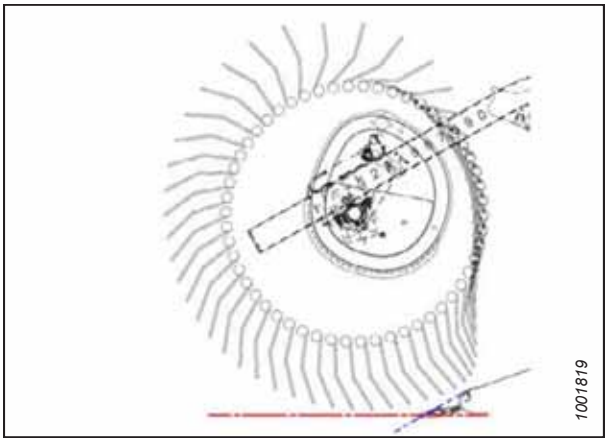
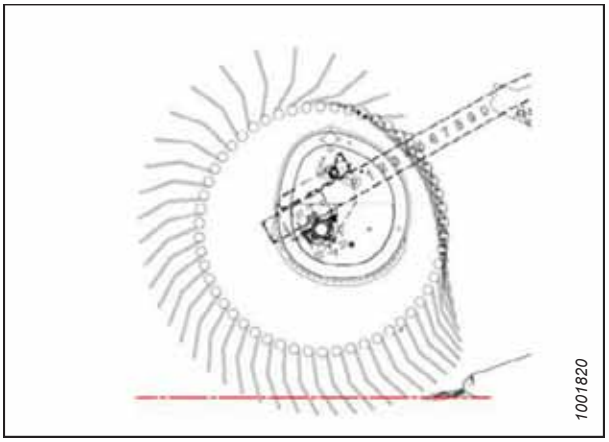
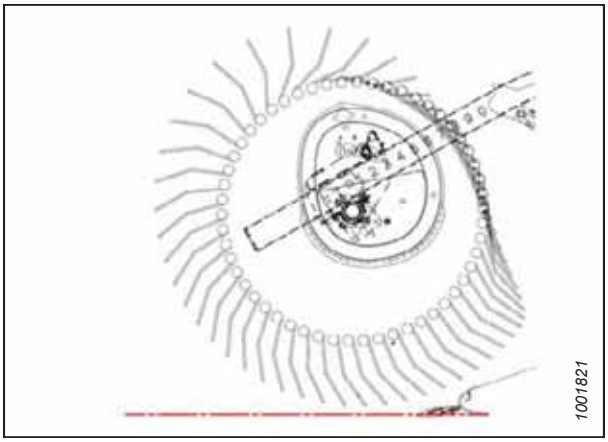
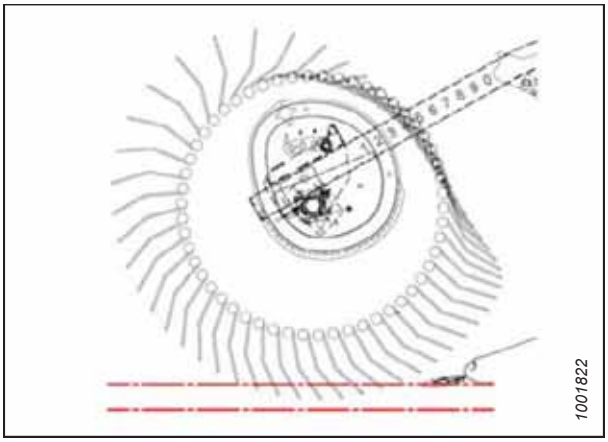
Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0)	6 or 7	
2 (20%)	6 or 7	

Table 3.4 Illustrated Reel Settings (continued)

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

The following points describe the expected results for certain reel position adjustments:

- To position the fingers closer to the ground, adjust the reel forward , while tilting the header back.

  NOTE:

  Fingers or tines will dig into the ground at extreme reel-forward positions, so adjust the skid shoes or the header angle to compensate.

- To prevent plugging on the cutterbar in the thinner crops, adjust the reel aft.
  - Increase the header angle to position the reel closer to the ground
  - Decrease the header angle to position the reel farther from the ground
- For maximum stubble height in the lodged crop, raise the header, increase the header angle, and position the reel fully forward.
- For the maximum crop carrying capacity (largest area of exposed draper between the reel and the header backsheet) position the reel in the farthest forward position.
- For the minimum crop carrying capacity (smallest area of exposed draper between the reel and the header backsheet) position the reel in the farthest aft position.

NOTE:

Due to the nature of the reel cam action, at higher cam settings the reel finger tip speed at the cutterbar is higher than the reel speed.

For more information, refer to Table *3.4, page 51*.

3.7 Header Operating Variables

Satisfactory header function requires making adjustments to suit various crops and conditions, reduce crop loss, and increases productivity.

The variables listed in Table *3.5, page 54* allow the operator to affect the header performance.

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 54*
Header float	*3.7.2 Header Float, page 60*
Header angle	*3.7.4 Header Angle, page 78*
Reel speed	*3.7.5 Reel Speed, page 85*
Ground speed	*3.7.6 Ground Speed, page 86*
Draper speed	*3.7.7 Draper Speed, page 87*
Knife speed	*3.7.8 Knife Speed, page 88*
Reel height	*3.7.9 Reel Height, page 89*
Reel fore-aft position	*3.7.10 Reel Fore-Aft Position, page 90*
Reel tine pitch	*3.7.11 Reel Tine Pitch, page 97*
Crop divider rods	*3.7.12 Crop Dividers, page 100*

3.7.1 Cutting Height

The 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 Ground

When cutting off the ground, height is controlled using a combination of the combine header height control and a stabilizer wheel system (or stabilizer/slow speed transport wheel system).

The stabilizer wheel system in both options 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.

The stabilizer wheel system (or stabilizer/slow speed transport wheel system) is available only for 9.1, 10.7, 12.2, and 13.7 m (30, 35, 40, and 45 ft.) headers.

If stabilizer wheels are installed, refer to *Adjusting Stabilizer Wheels, page 57* for instructions on changing wheel positions.

If stabilizer/slow speed transport wheels are installed, refer to *Adjusting Stabilizer/Slow Speed Transport Wheels, page 54* for instructions on changing wheel positions.

Adjusting Stabilizer/Slow Speed Transport Wheels

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

Refer to *3.6.2 Header Settings, page 43* for recommended use in specific crops and crop conditions.

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 leaving the operator's seat for any reason.

1. Raise the header so the stabilizer wheels are off the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Remove hairpin (A) from the latch on the right wheel assembly.
4. Disengage latch (B), lift the wheel out of the hook, and place the wheel on the ground as shown.

   NOTE:

   This reduces the weight of the assembly and makes adjusting the wheel position easier.
5. Lift the left wheel slightly to support the weight, and pull handle (C) upwards to release the lock.
6. Lift the left wheel to the desired height and engage the support channel in slot (D) in the upper support.
7. Push down on handle (C) to lock it.
8. Lift the right wheel back into field position and ensure latch (B) is engaged.
9. Secure the latch with hairpin (A).
10. Support the wheel weight by lifting it slightly with one hand, and pull up on handle (A) to release the lock.
11. Lift the wheels to the desired height, and engage the support channel into slot (B) in the upper support.
12. Push down on handle (A) to lock it.

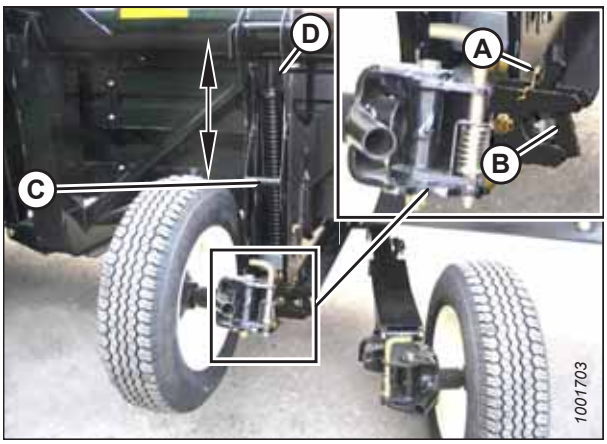


Figure 3.25: Right Wheel

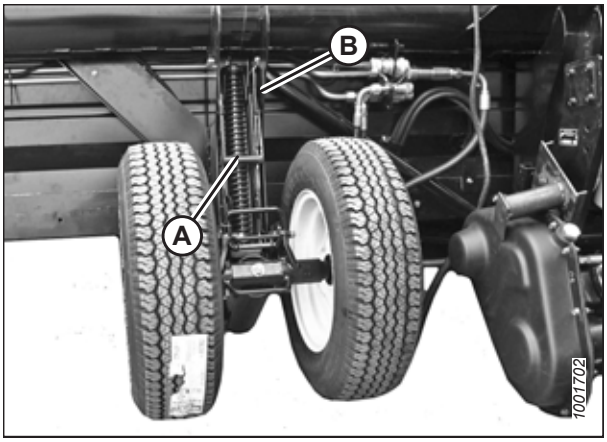


Figure 3.26: Left Wheel

13. Lower the header to the desired cutting height using the combine controls and then check load indicator (A).

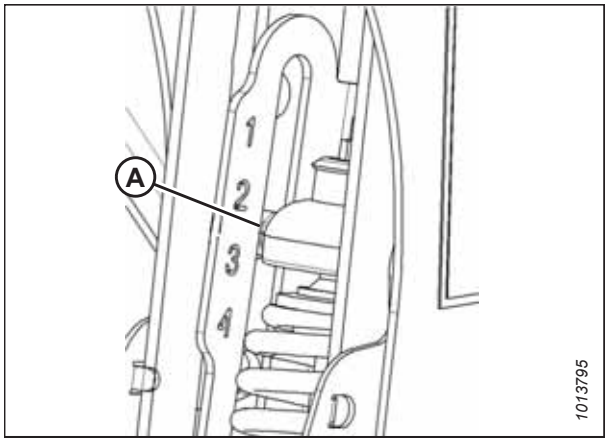


Figure 3.27: Load Indicator

IMPORTANT:

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

14. 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.

15. Use the combine's auto header height control (AHHC) to automatically maintain cutting height. Refer to *4.1 Auto Header Height Control System Overview, page 129* and your combine operator's manual for details.

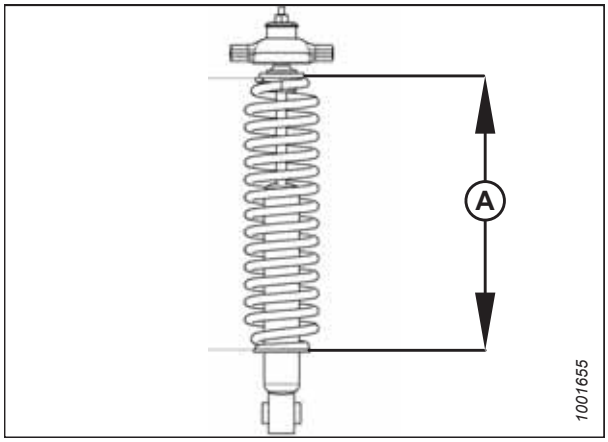


Figure 3.28: Spring Compression

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 springs and the amount carried by the stabilizer wheels.

DANGER

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

1. Raise the header until the stabilizer wheels no longer in contact with the ground.
2. Shut down the engine, and remove the key from the ignition.
3. To release the lock, use one hand to lift support (B) while pulling up on handle (A).
4. Lift the wheel using support (B) and engage the support channel into center slot (C) in the upper support.
5. Push down on handle (A) to lock the stabilizer wheel assembly in place.

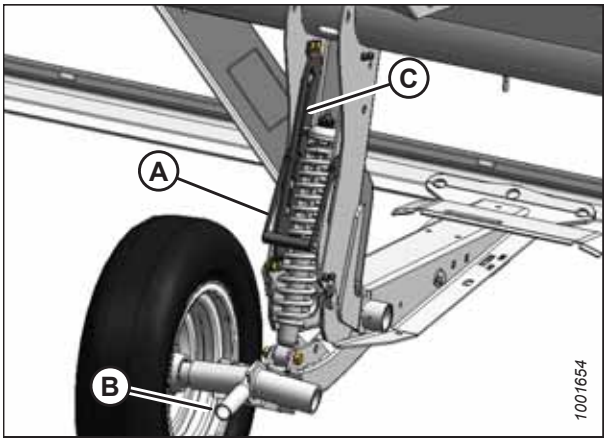


Figure 3.29: Stabilizer Wheel

6. Lower the header to the desired cutting height using the combine controls. Check load indicator (A).

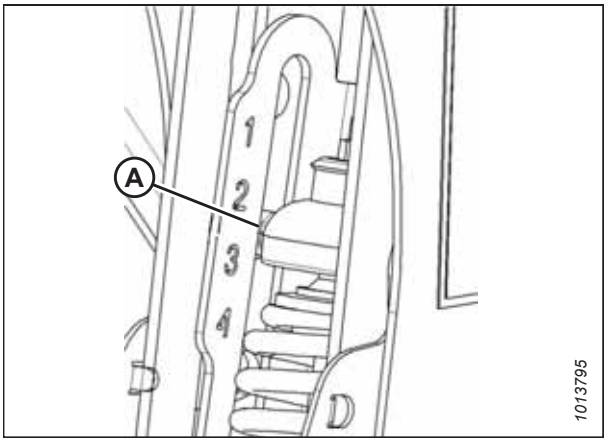


Figure 3.30: Load Indicator

7. Position the header at the desired working angle. If the header angle is not critical, set it to mid-position.

   IMPORTANT:

   Continuously operating the stabilizer wheel while the spring is highly compressed can result in permanent damage to the stabilizer wheel suspension system. The spring is considered to be highly compressed when the load indicator shows a reading greater than 4 or when compressed length (A) is less than 295 mm [11 5/8 in.]).

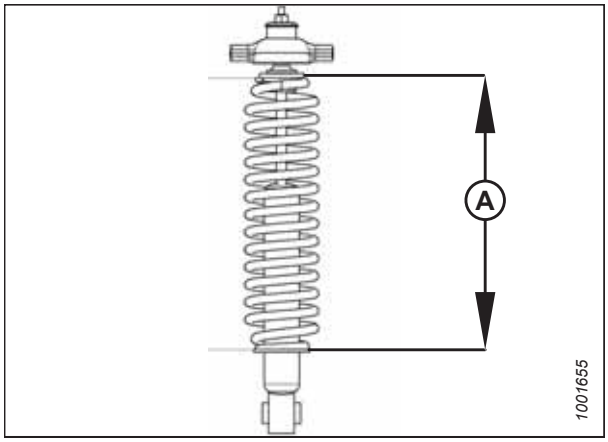


Figure 3.31: Spring Compression

Cutting on 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 determined by the skid shoes and the center-link—it is **NOT** determined 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 about the adjustments used to optimize cutting on the ground:

- *Adjusting Inner Skid Shoes, page 58*
- *Adjusting Outer Skid Shoes, page 59*
- *3.7.2 Header Float, page 60*
- *3.7.4 Header Angle, page 78*
- *3.6.2 Header Settings, page 43*

Adjusting Inner Skid Shoes

Skid shoes are used to determine stubble height when cutting on the ground.

DANGER

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.
4. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). For instructions, refer to the relevant topic:
   - *Adjusting Stabilizer Wheels, page 57*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 54*

5. Remove lynch pin (A).
6. Hold shoe (B) and remove pin (C) by disengaging it from the frame and pulling it away from the shoe.
7. Raise or lower skid shoe (B) to achieve the desired position; use the holes in support (D) as a guide.
8. Install pin (C), engage the pin in the frame, and secure it with lynch pin (A).
9. Repeat Step *5, page 59* to Step *8, page 59* for all inner skid shoes and ensure that all skid shoes are equally adjusted.
10. 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.
11. Check the header float. For instructions, refer to *3.7.2 Header Float, page 60*.

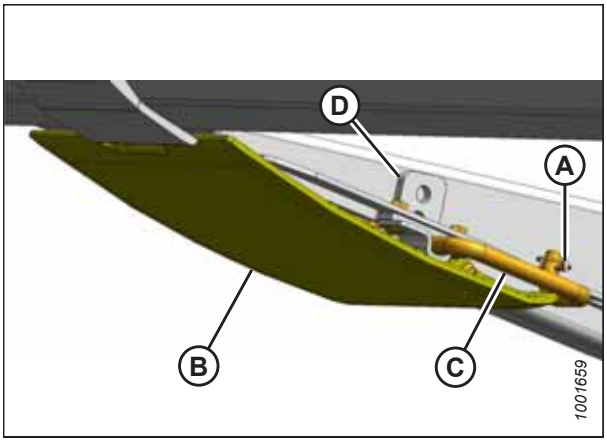


Figure 3.32: Inner Skid Shoe

Adjusting Outer Skid Shoes

Skid shoes affect stubble height when cutting on the ground.

DANGER

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.
4. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). For instructions, refer to the following:
   - *Adjusting Stabilizer Wheels, page 57*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 54*
5. Remove lynch pin (A) from pin (C) on skid shoe (B).
6. Hold shoe (B) and remove adjustment pin (C) by disengaging it from the frame and pulling it away from the shoe.
7. Raise or lower skid shoe (B) to achieve the desired position; use the holes in the support as a guide.
8. Reinstall pin (C), engage it in the frame, and secure it with lynch pin (A).
9. Ensure that all skid shoes are equally adjusted.
10. Check the header float. Refer to *3.7.2 Header Float, page 60*.

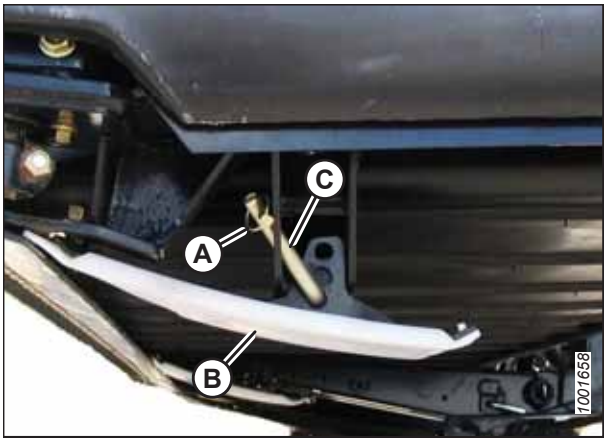


Figure 3.33: Outer Skid Shoe

3.7.2 Header Float

The header float system reduces the ground pressure at the cutterbar, allowing the header to follow the ground and respond to sudden elevation changes or obstacles.

The header float is indicated on float indicator (A). 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 conditions. For instructions, refer to *Checking and Adjusting Header Float, page 60*.

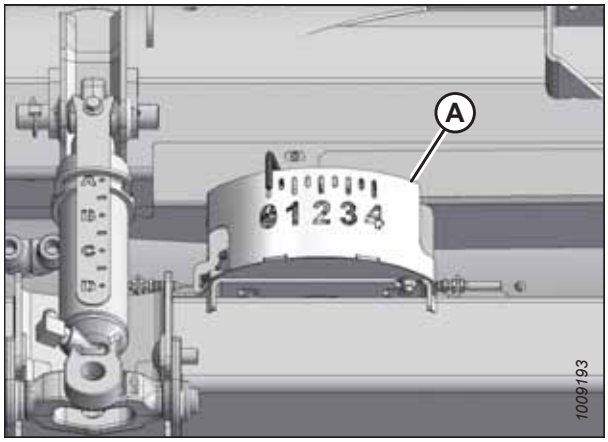


Figure 3.34: Float Indicator

Set the float for cutting on the ground as follows:

a. Ensure the header float locks are disengaged. For instructions refer to *Locking/Unlocking Header Float, page 66*.

b. Lower the feeder house using the combine header controls until float indicator (A) reaches the desired float value (cutterbar ground force). Set the float indicator to 2 initially and adjust as necessary.

Set the float for cutting off the ground as follows:

a. Set up the stabilizer wheels. Refer to *Cutting off Ground, page 54*.

b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

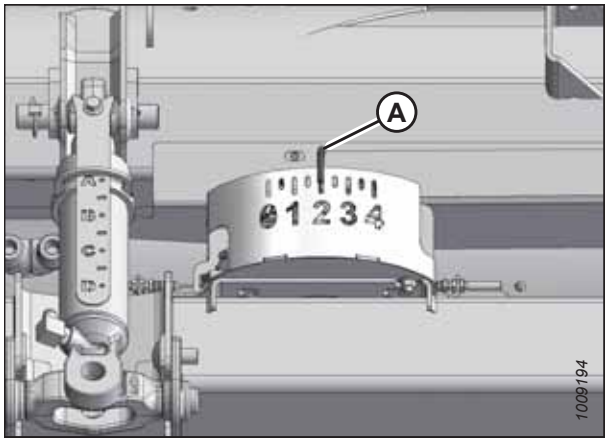


Figure 3.35: Cutting on the Ground

Checking and Adjusting Header Float

The header is equipped with a suspension system that floats the header over the ground to compensate for ridges, trenches, and other variations in ground contour. If the header float is not set properly, it may cause the cutterbar to push into the ground or leave uncut crop. This procedure describes how to check the header float and adjust it to the factory-recommended settings.

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 leaving the operator's seat for any reason.

Use the following guidelines when adjusting the float setting:

- Turn each adjustment bolt pair equally. Repeat the torque wrench reading procedure on both sides of the header.
- Set the header float as light as possible (without causing excessive bouncing) to prevent knife component breakage, soil scooping, and soil build-up at the cutterbar in wet conditions.

- To prevent the header from bouncing excessively while in operation with a light float setting, reduce the combine's ground speed.
- When cutting above the ground, use the stabilizer wheels in conjunction with the header float to minimize bouncing at the ends of the header. For instructions, refer to *Adjusting Stabilizer Wheels, page 57*.

NOTE:

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

1. Park the combine on a level surface, and lower the reel fully.
2. Extend or retract the reel as needed until the indicator position is between position 5 and 6 on indicator decal (A) located on the right reel arm.

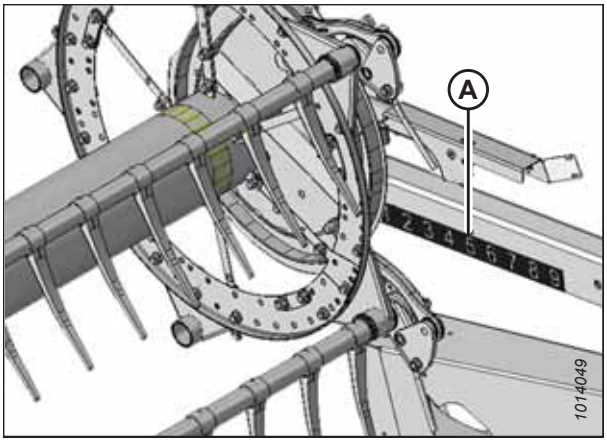


Figure 3.36: Fore-Aft Position

3. Position the center-link between B and C on indicator (A).
4. Raise or lower the header as needed until the cutterbar is 200–300 mm (8–12 in.) off the ground.
5. Shut down the engine, and remove the key from the ignition.

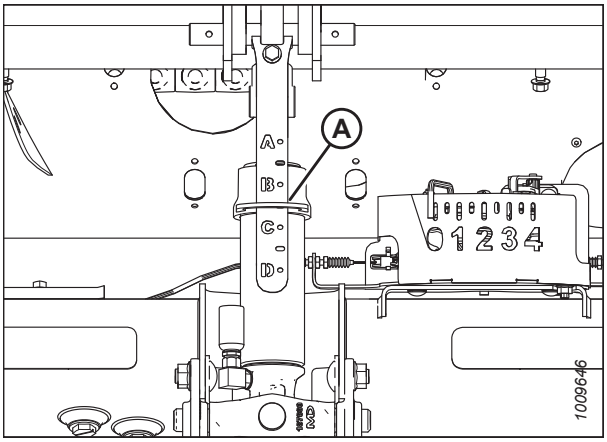


Figure 3.37: Center-Link

6. Place wing lock spring handles (A) in the upper (LOCK) position.

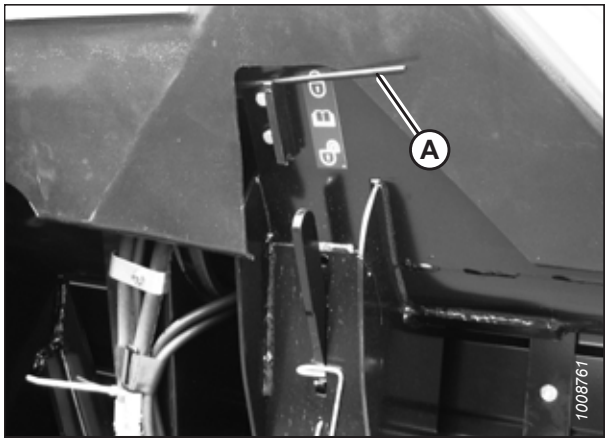


Figure 3.38: Wing Lock in Lock Position

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

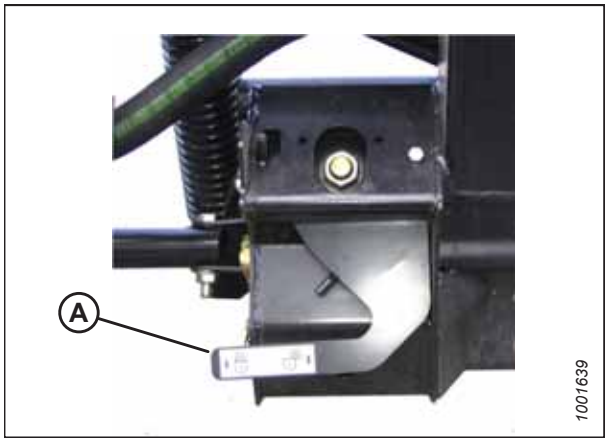


Figure 3.39: Header Float Lock in Unlock Position

8. Place the wheels on the stabilizer/slow speed transport (if equipped) in the storage position as follows:

   a. Lift the wheel slightly and pull up on handle (A) to release the lock.

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

   c. Push down on handle (A) to lock it in place.

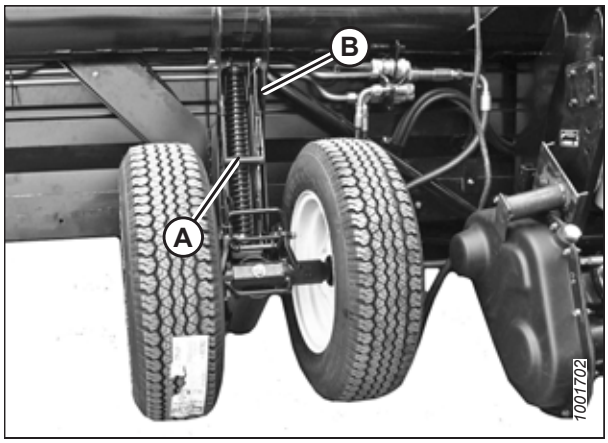


Figure 3.40: Left Wheel

9. Remove torque wrench (A) from its storage position on the right side adapter frame. Move the torque wrench slightly in direction shown to disengage the wrench from the hook.

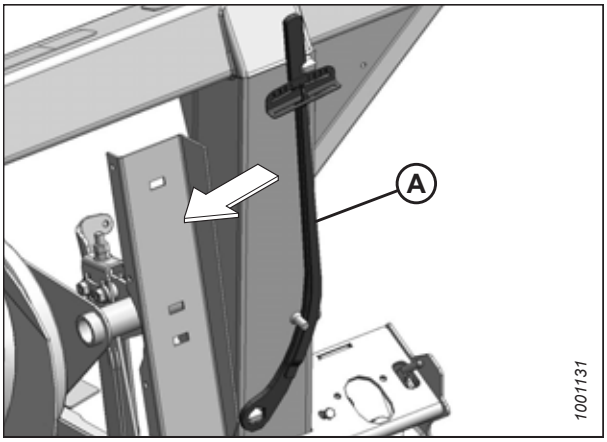


Figure 3.41: Torque Wrench

10. Place torque wrench (A) onto float lock (B). Note the position of the torque wrench for checking the left or right side of the adapter.

11. Push down on the wrench to rotate bell crank (C) forward.

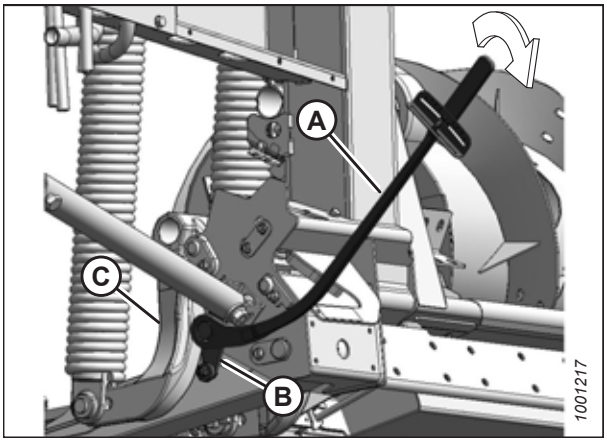


Figure 3.42: Left Side of Adapter

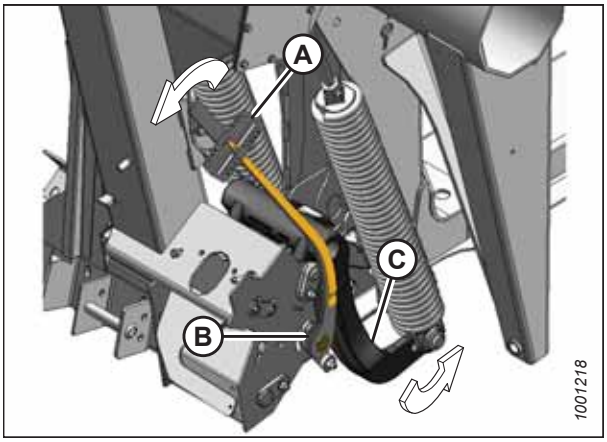


Figure 3.43: Right Side of Adapter

12. Push down on the wrench until indicator (A) reaches a maximum reading and then begins to decrease. Note the maximum reading and repeat at the opposite side.

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

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

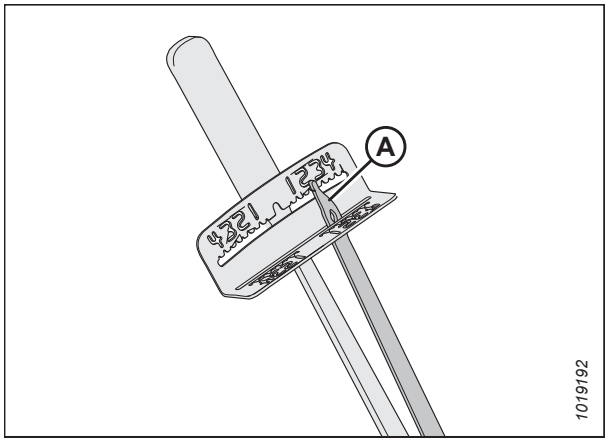


Figure 3.44: Indicator

Table 3.6 Float Settings

Header Size	Torque Settings	
	Cutting on Ground	Cutting off Ground
6.1, 7.6, 9.1 and 10.7 m (20, 25, 30, and 35 ft.)	1-1/2 to 2	2 to 2-1/2
12.2 and 13.7 m (40 and 45 ft.)	2 to 2-1/2	2-1/2 to 3

14. To increase the float (decrease the header weight), follow these steps:

    a. Loosen the jam nuts.

    b. Turn left adjustment bolts (A) and right adjustment bolts (B) clockwise.

    c. Tighten the jam nuts.

15. To decrease the float (increase header weight), follow these steps:

    a. Loosen the jam nuts.

    b. Turn left adjustment bolts (A) and right adjustment bolts (B) counterclockwise.

    c. Tighten jam nuts.

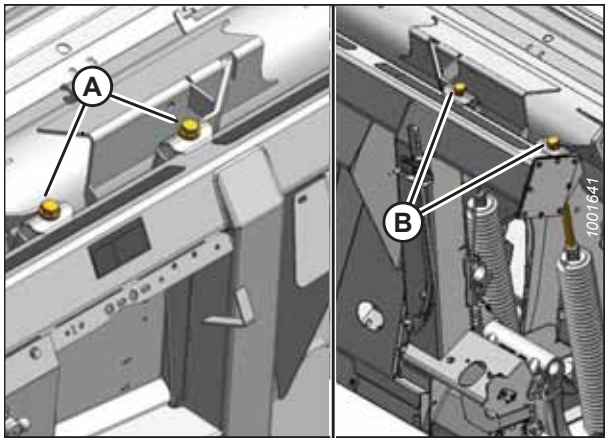


Figure 3.45: Float Adjustment

16. Use the following guidelines when adjusting the float:

    a. Adjust the float so the wrench readings are equal on both sides of the header.

    b. For 12.2 and 13.7 m (40 and 45 ft.) double-knife headers adjust the float so that the wrench readings are equal on both sides of the header, and then loosen both of the right spring bolts two turns.

    c. Turn each bolt pair equally. Refer to Step *3.7.1 Cutting Height, page 54*, and repeat the torque wrench reading procedure.

NOTE:

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

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

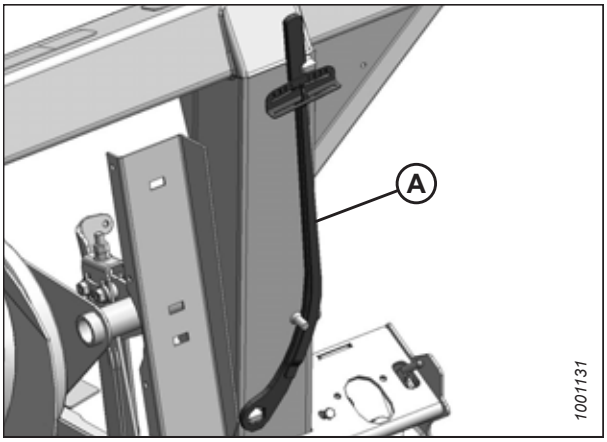


Figure 3.46: Torque Wrench

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.

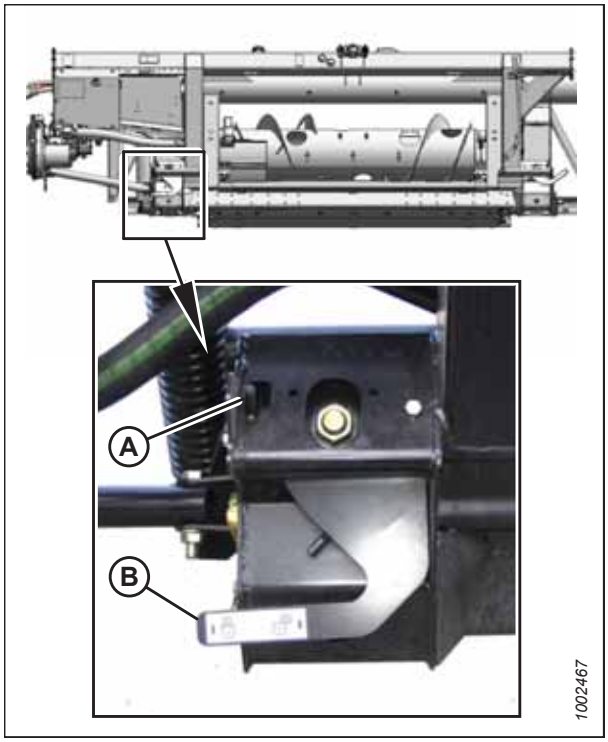


Figure 3.47: Float Lock

Locking/Unlocking Header Wings

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

Operating in Flex Mode

The three sections move independently to follow the ground contours.

Unlock the wings as follows:

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

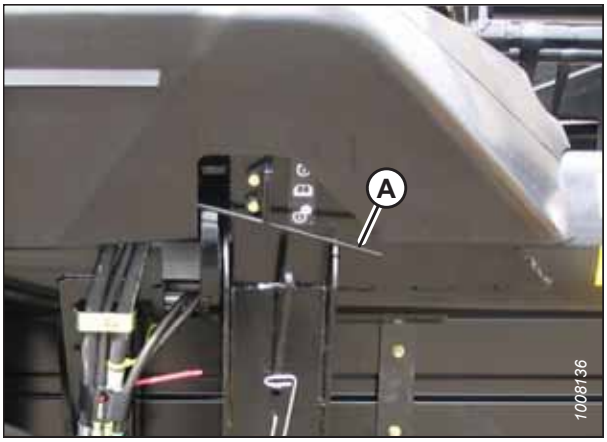


Figure 3.48: Wing Lock

NOTE:

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

3. Remove the linkage cover. Refer to *Removing Linkage Covers, page 38*.
4. Retrieve the supplied torque wrench (A) that is stored on the adapter frameon the right side.

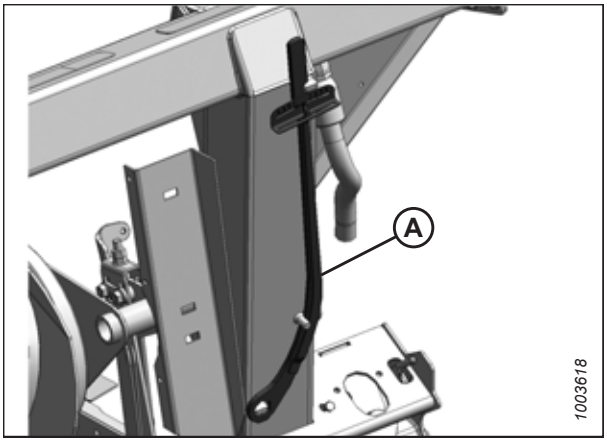


Figure 3.49: Torque Wrench

5. Place the torque wrench (A) on bolt (B) and use it to move the wing until the lock disengages.
6. Replace 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 68*.

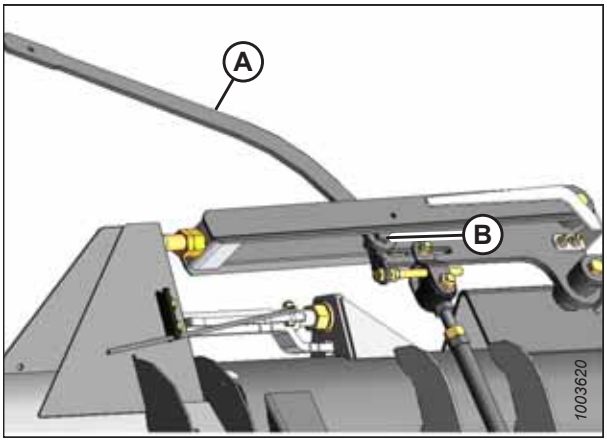


Figure 3.50: Torque Wrench on Wing Nut

Operating in Rigid Mode

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

Lock the wings as follows:

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

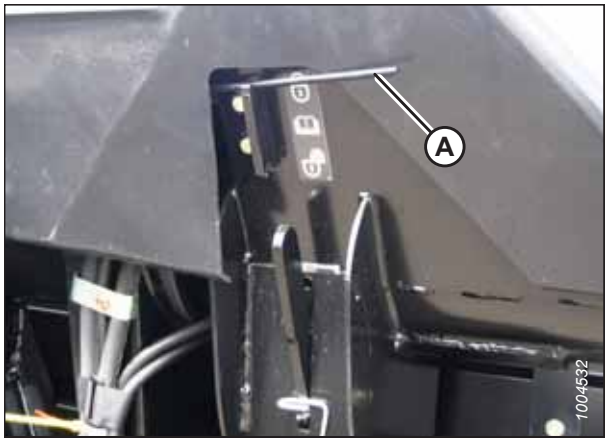


Figure 3.51: Wing Lock

NOTE:

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

3. Remove the linkage cover. Refer to *Removing Linkage Covers, page 38*.
4. Retrieve the supplied torque wrench (A) that is stored on the adapter frameon the right side.

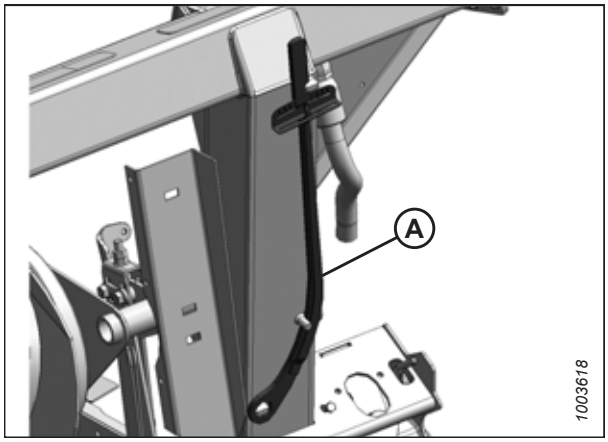


Figure 3.52: Torque Wrench

5. Place torque wrench (A) on bolt (B) and use it to move the wing until the lock engages.
6. Replace torque wrench (A) and reinstall the linkage cover.

NOTE:

The wings will not move relative to the header.

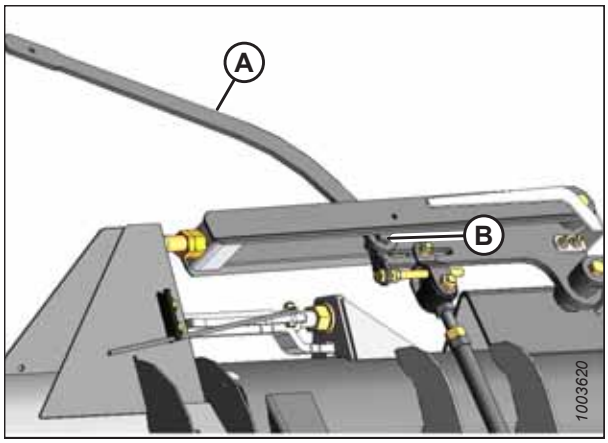


Figure 3.53: Header Wing

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 60*.

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 *6.1 Preparation for Servicing, page 343*.

Checking Wing Balance

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

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

If a wing has a tendency to be in smile (A) or frown (B) position, the wing balance may require adjusting.

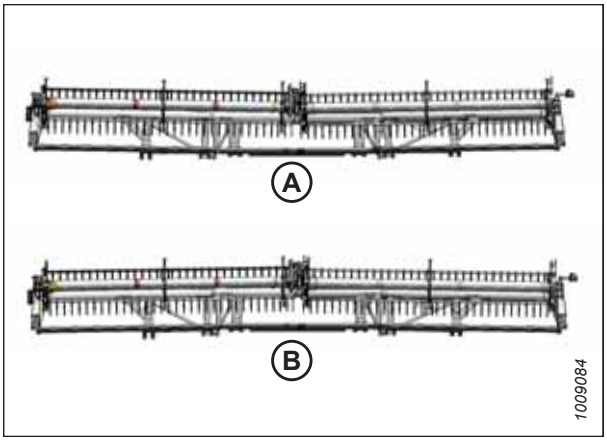


Figure 3.54: Wing Imbalance

Perform the following steps to verify if the wings are not balanced:

DANGER

Ensure that all bystanders have cleared the area.

1. Adjust the header center-link to approximately halfway between **B** and **C** on indicator (A).
2. Park the combine on level ground and raise the header until the cutterbar is 152–254 mm (6–10 in.) off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. If installed, move the stabilizer (or slow speed transport) wheels so that they are supported by the header. For instructions, refer to *3.7.1 Cutting Height, page 54*.

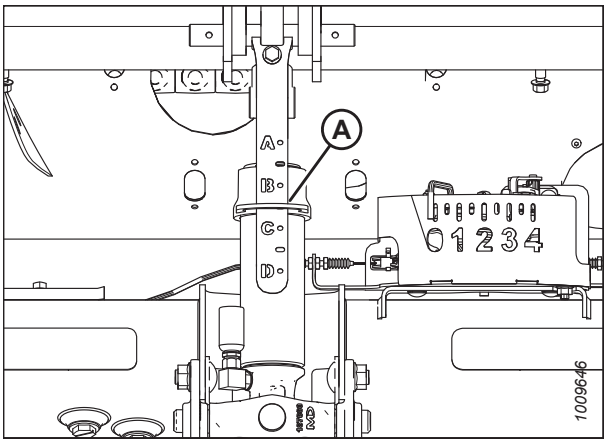


Figure 3.55: Center-Link

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

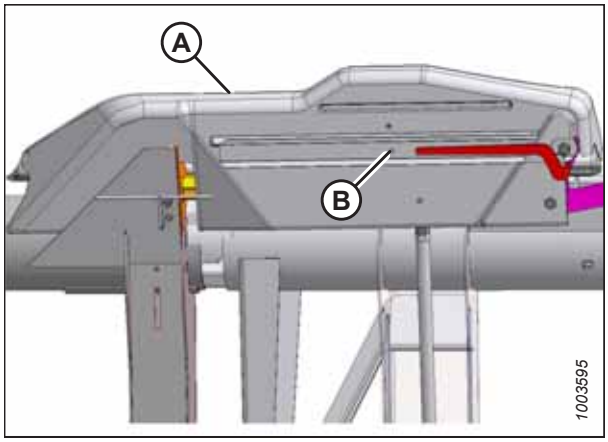


Figure 3.56: Linkage Cover

NOTE:

Refer to decal (A) inside each linkage cover.

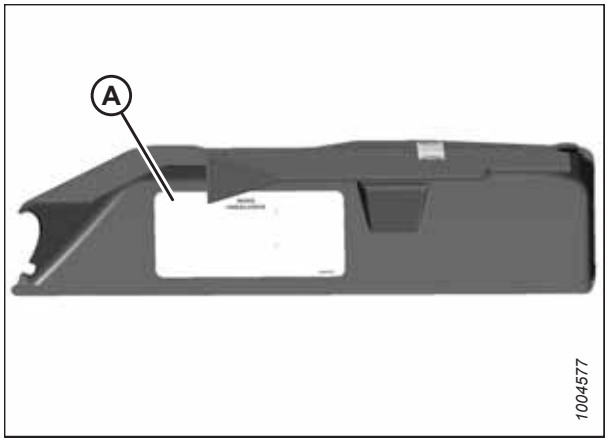


Figure 3.57: Linkage Cover

6. Retrieve wrench (A) from the right leg of the adapter.

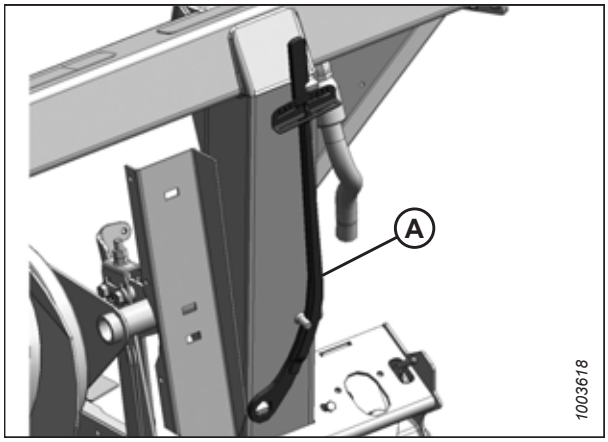


Figure 3.58: Torque Wrench

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

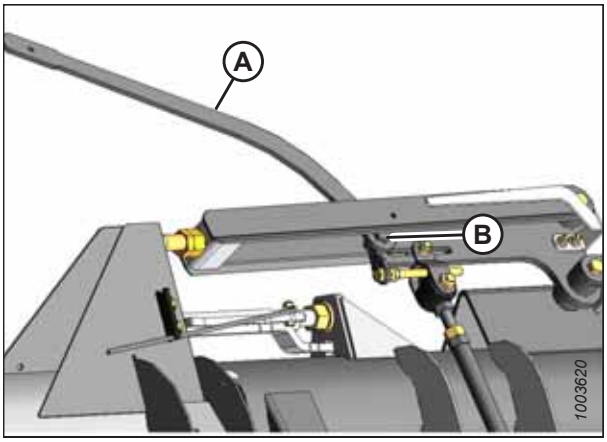


Figure 3.59: Balance Linkage

8. Position point (D) as follows:

   a. Use wrench (A) to move bell crank (B) so that the lower edge of bell crank is parallel to top-link (C).

   b. Check that pointer (D) is lined up with top-link (C). Bend the pointer, if necessary.

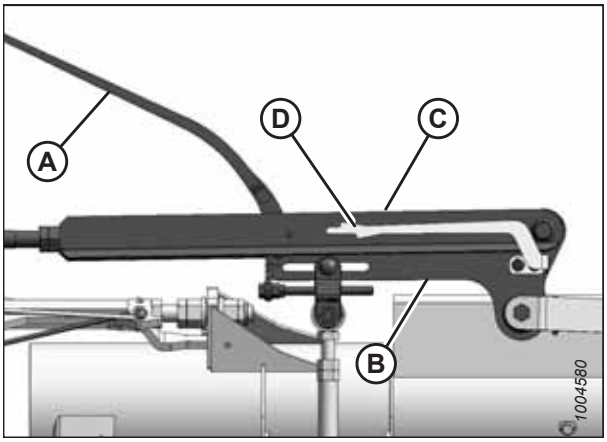


Figure 3.60: Balance Linkage

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

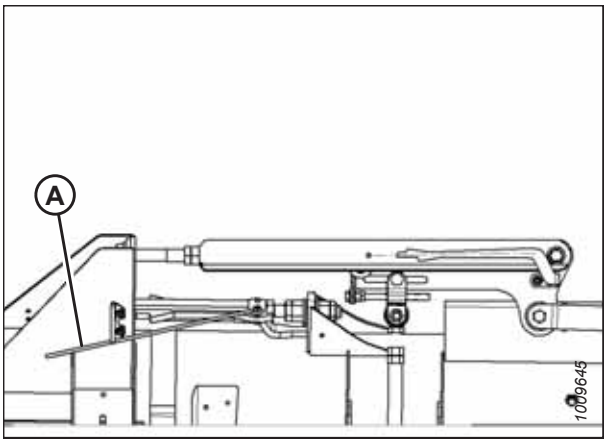


Figure 3.61: Wing Lock in UNLOCK Position

10. Move the wing upward with torque wrench (A) until the pointer lower alignment tab (C) lines up with upper edge of top-link (B).

11. Observe indicator reading (A) on the wrench and record it.

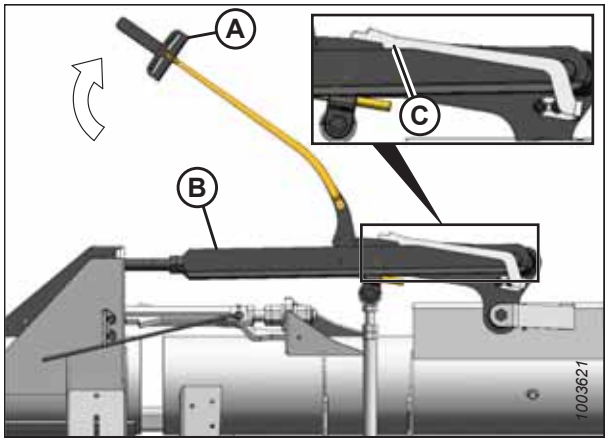


Figure 3.62: Balance Linkage

12. Move the wing downward with torque wrench (A) until pointer upper alignment tab (C) lines up with the lower edge of top-link (B). Record indicator reading (A) on the wrench.

    - If the difference between the readings is 0.5 or less, the wing is balanced and no further adjustment is necessary. 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. For instructions, refer to *Adjusting Wing Balance, page 74*.

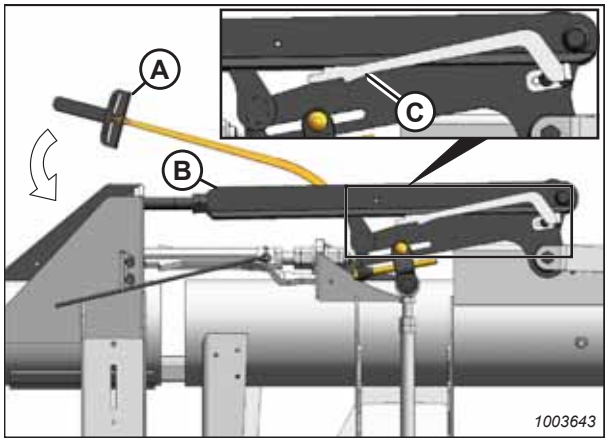


Figure 3.63: Balance Linkage

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

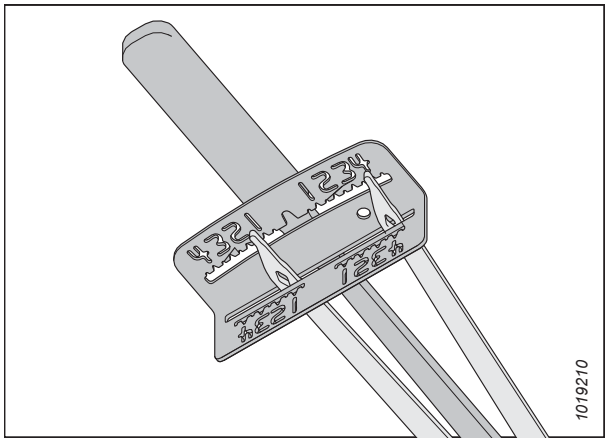


Figure 3.64: Wrench Indicator

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

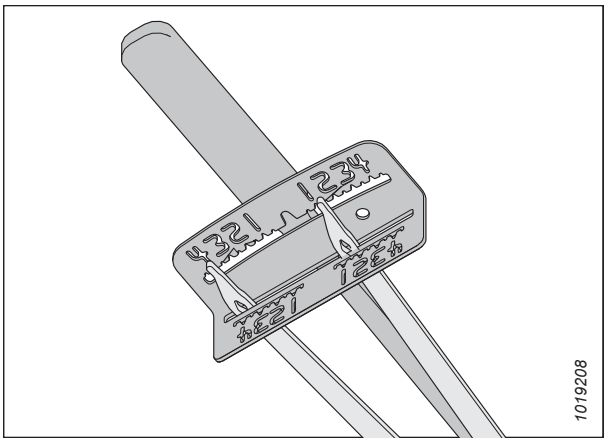


Figure 3.65: Wrench Indicator

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

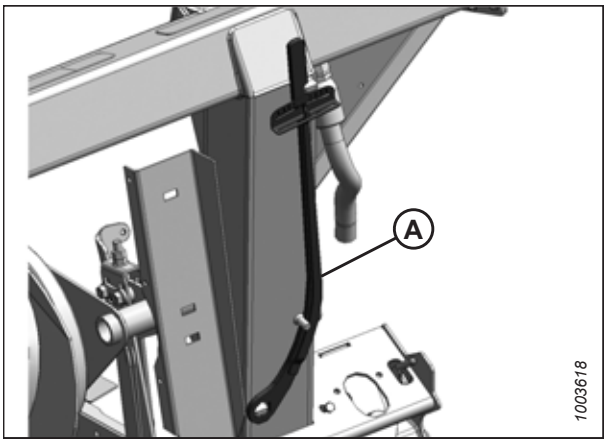


Figure 3.66: Torque Wrench

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

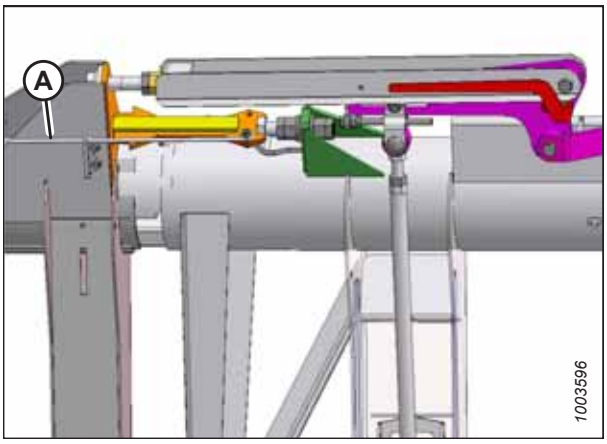


Figure 3.67: Wing Lock in Lock Position

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

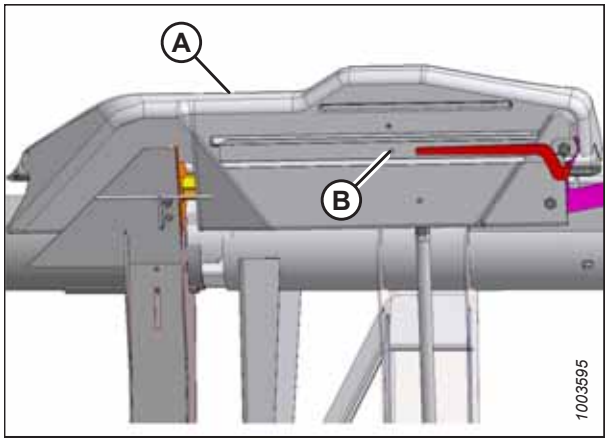


Figure 3.68: Linkage Cover

Adjusting Wing Balance

Wing balance ensures that the left and right wings require the same amount of pressure to follow the ground. The amount of ground force/pressure required to lift the wings, and the speed that wings return to the ground when the pressure is reduced should be equal/balanced.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

This procedure describes how to adjust the balance of each wing. Before proceeding, refer to *Checking Wing Balance, page 69*.

IMPORTANT:

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *Checking and Adjusting Header Float, page 60*. The float module must be sitting level before performing any adjustments.

NOTE:

This procedure is shown on the left side; perform the steps to both sides of the header.

1. Extend the header center-link to between B and C on indicator (A).
2. Park the combine on level ground, and raise the header until the cutterbar is 152–254 mm (6–10 in.) off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. If installed, move the stabilizer (or slow speed transport) wheels so that they are supported by the header. For instructions, refer to *3.7.1 Cutting Height, page 54*.

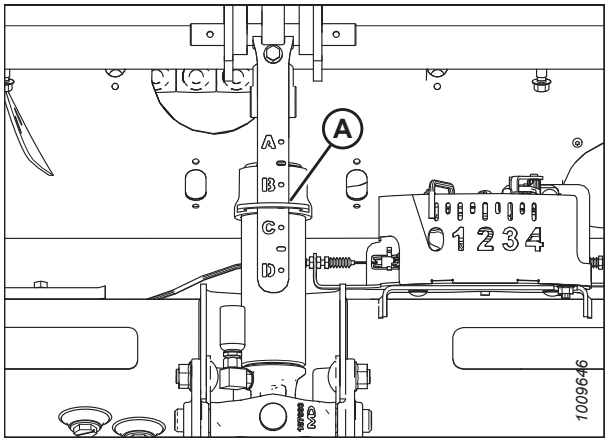


Figure 3.69: Center-Link

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

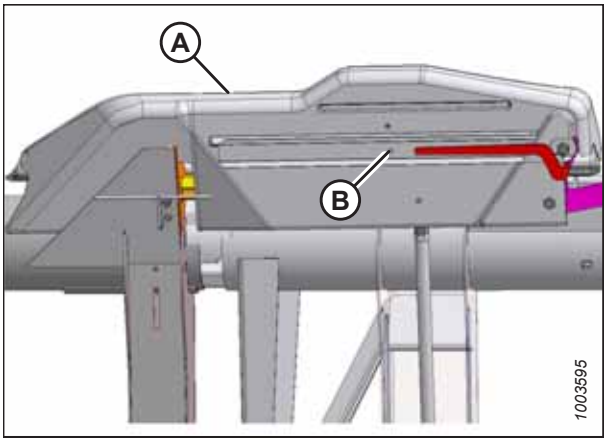


Figure 3.70: Linkage Cover

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

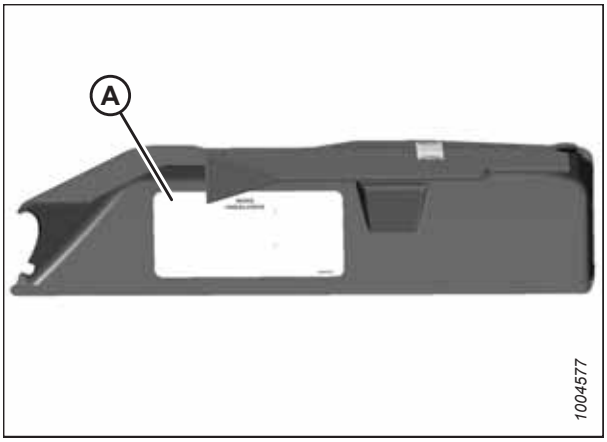


Figure 3.71: Linkage Cover

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

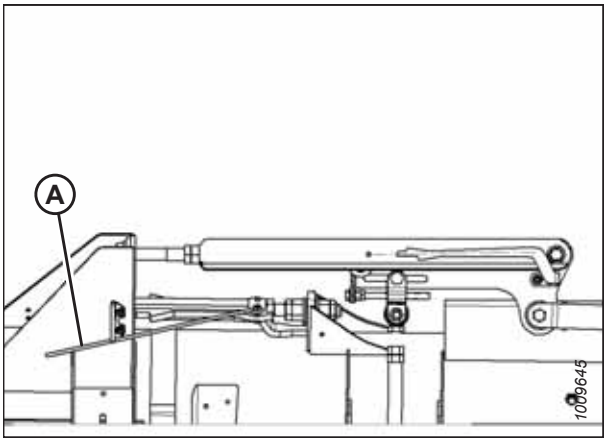


Figure 3.72: Wing Lock in UNLOCK Position

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

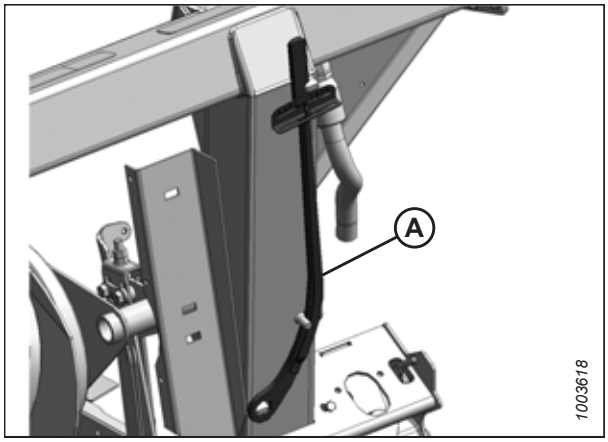


Figure 3.73: Torque Wrench

8. Place torque wrench (A) on bolt (B). Check that wing lock (C) is in the lower position.

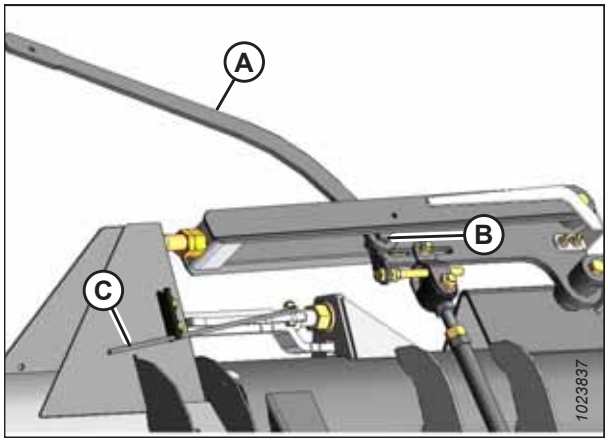


Figure 3.74: Balance Linkage

9. Loosen clevis bolt (A) for the wing requiring adjustment.

   IMPORTANT:

   Do **NOT** loosen any other hardware.

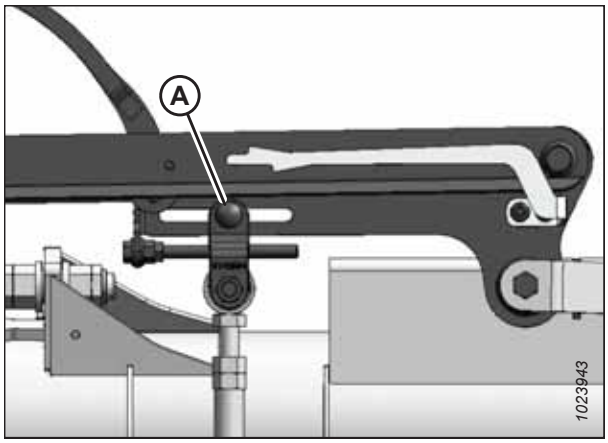


Figure 3.75: Balance Linkage

10. 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).
11. Adjust clevis (C) position if necessary until the indicator readings are within one increment.
12. Tighten clevis bolt (A).

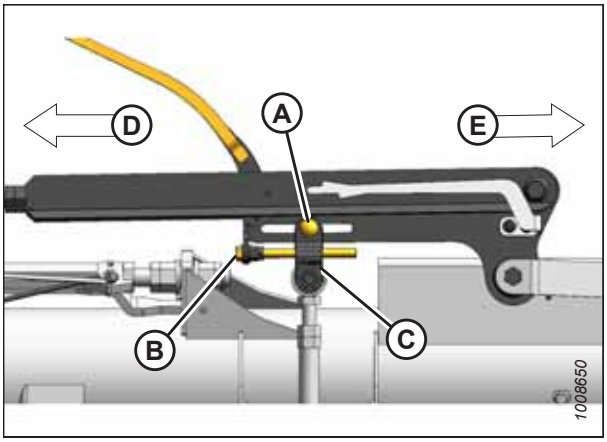


Figure 3.76: Balance Linkage

13. Move handle (A) to the upper (LOCK) position.
14. If the lock does not engage, move the wing up and down with the torque wrench until it locks. When locked, there will be some movement in the linkage.
15. If the cutterbar is not straight when wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.

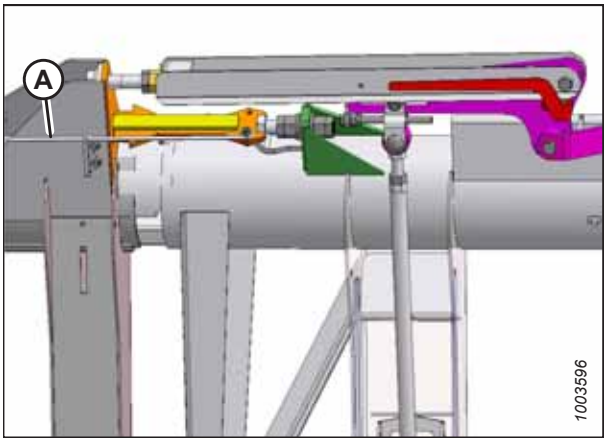


Figure 3.77: Wing Lock in Lock Position

16. Replace the torque wrench on the adapter framefloat module frame.
17. Reinstall linkage cover (A) and secure it with bolt (B).
18. Refer to *3.8 Levelling Header, page 107*. If the cutterbar is not straight when the wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.

NOTE:

Adjustment to the main float may be required to maintain good wing balance when operating in the field. Refer to Step *14, page 64*.. *Checking and Adjusting Header Float, page 60*. *Checking and Adjusting Header Float, page 60*.

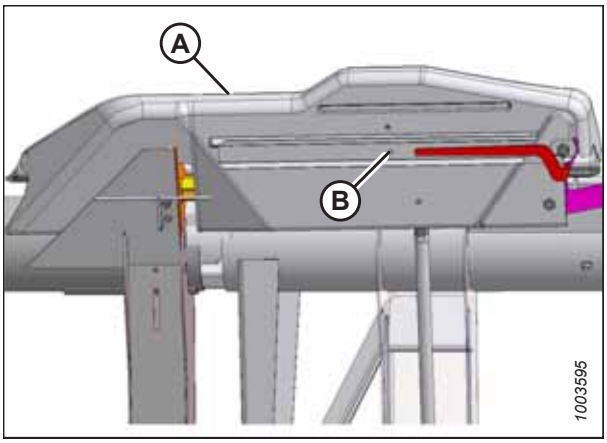


Figure 3.78: Linkage Cover

3.7.4 Header Angle

Header angle can be adjusted 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.

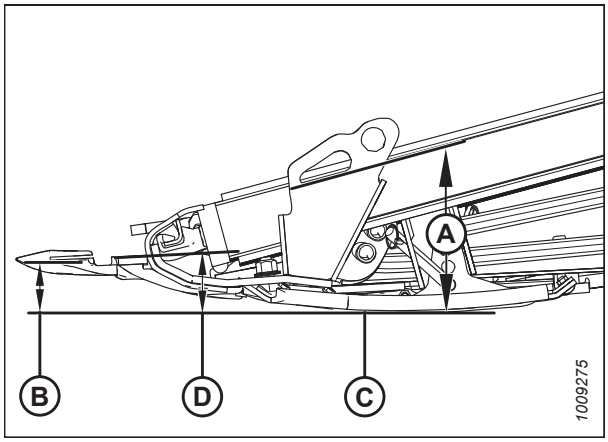


Figure 3.79: Header Angle

Adjusting Header Angle from Combine

The header angle is adjusted from the combine cab using a switch on the operator's control handle and an indicator on the center-link or on the monitor in the cab. The header angle is determined by the length of the center-link between the combine adapter and the header, or by the degree of feeder house tilt on certain combine models.

Case combines:

Case combines use control handle switches to adjust the center-link to change the header angle.

1. Press and hold SHIFT button (A) on the backside of the control handle and press switch (B) to tilt the header forward or press switch (C) to tilt the header back.

Figure 3.80: Case Combine Controls

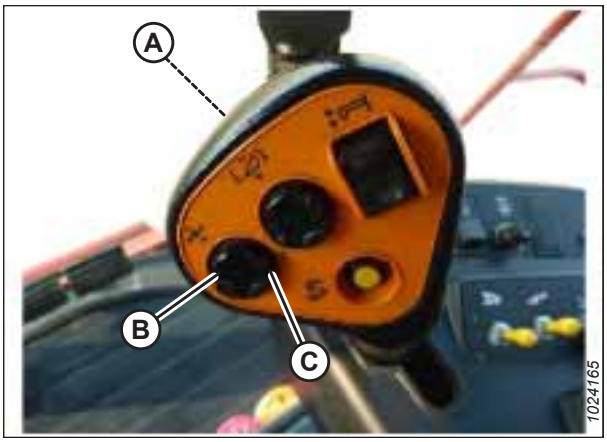


Figure 3.81: Case Combine Controls

Challenger, Gleaner, and Massey Ferguson combines:

Challenger, Gleaner, and Massey Ferguson combines use a combination of the reel fore-aft switches on the control handle and a Dealer-installed auxiliary rocker switch, which toggles between reel fore-aft and header tilt functionality. The location of the rocker switch varies with the combine model.

1. **Gleaner A only:** Open armrest cover (A) to expose a row of switches.
2. Press Dealer-installed rocker switch (B) to HEADER TILT position.

   NOTE:

   Gleaner A shown in the image, other Challenger® and Massey Ferguson® combine models have rocker switch on the console (not shown).

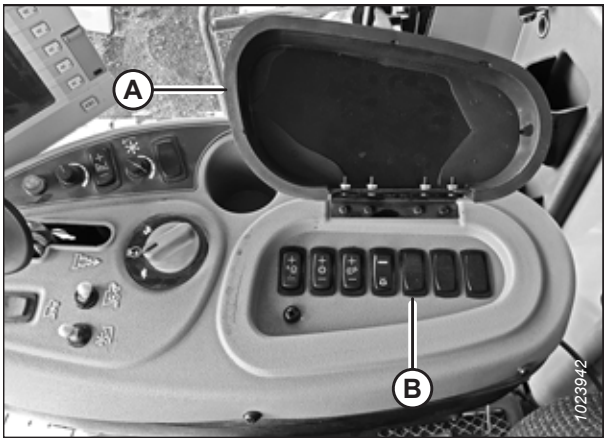


Figure 3.82: Gleaner A Console

3. To tilt the header forward (steeper angle), press button (A) on the control handle. To tilt the header back (shallower angle), press button (B) on the control handle.

Figure 3.83: Gleaner Controls

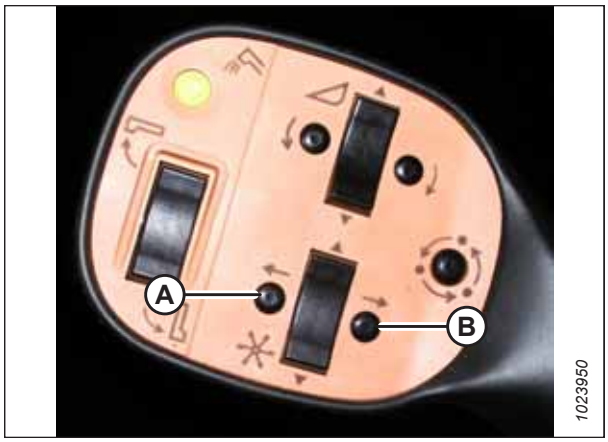


Figure 3.84: Gleaner Controls

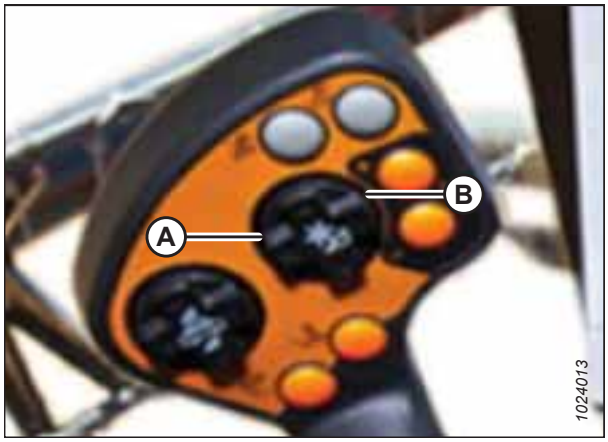


Figure 3.85: Challenger®/Massey Ferguson® Controls

CLAAS combines:

CLAAS (with Dealer-installed fore-aft / header tilt switch): Some CLAAS combines use a combination of the reel fore-aft switches on the control handle and a Dealer-installed auxiliary rocker switch which toggles between reel fore-aft and header tilt functionality.

1. Press reel fore-aft / header tilt switch (A) on console into HEADER TILT position.

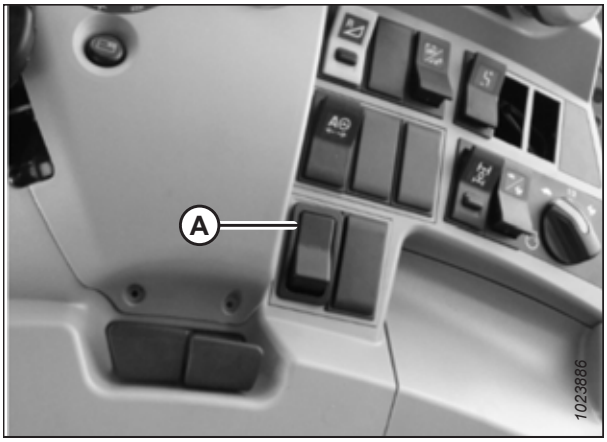


Figure 3.86: CLAAS 600 Console

Figure 3.87: CLAAS 500 Console

2. Press switch (A) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).

Figure 3.88: CLAAS 500 Control Handle

CLAAS (with factory-installed fore-aft / header tilt switch): Newer CLAAS combines use a combination of the reel fore-aft switches on the control handle and a factory-installed auxiliary rocker switch which toggles between reel fore-aft and header tilt functionality.

1. Press HOTKEY switch (A) on the operator's console to deck plate position (the header icon [B] with the arrows pointing to each other).

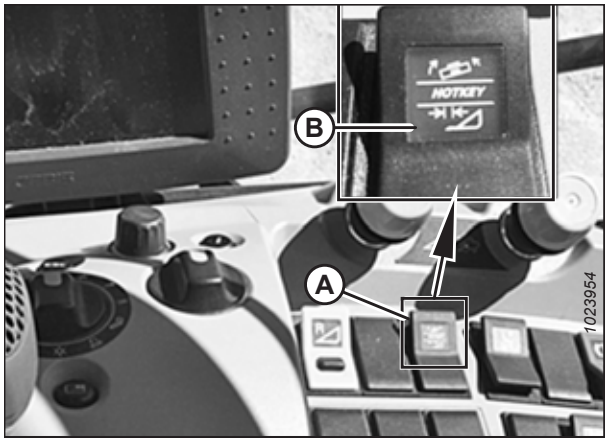


Figure 3.89: CLAAS 700 Console

2. Press and hold switch (A) on the rear of the control handle.
3. To tilt the header forward (steeper angle), press switch (C). To tilt the header back (shallower angle), press switch (B).

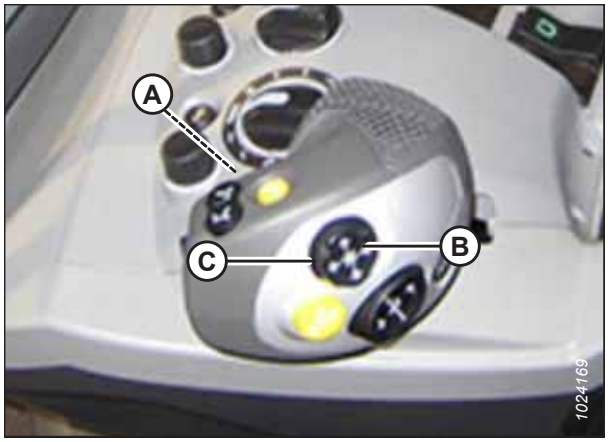


Figure 3.90: CLAAS 5000, 6000, 7000 or 8000 Control Handle

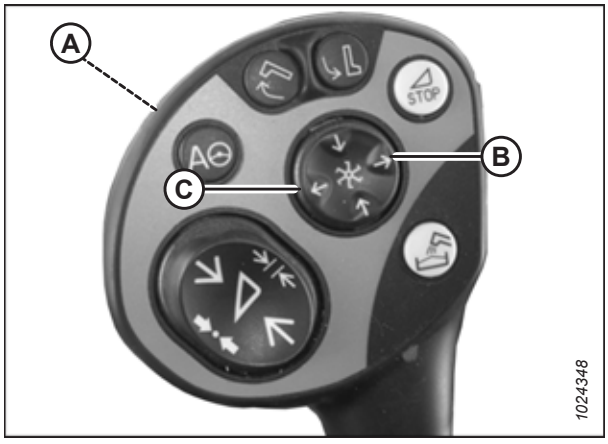


Figure 3.91: CLAAS 500, 600, or 700 Control Handle

John Deere combines:

John Deere S700: S700 Series combines can use a feeder house deckplate tilting system for feeder house fore-aft adjustment. Set the deckplate at a mid-point position, and use the MacDon fore-aft header tilt system.

IMPORTANT:

Damage to equipment may occur if both the deckplate and MacDon header tilt are adjusted to their maximum range.

1. To tilt the header forward (steeper angle), press switch (A). To tilt the header back (shallower angle), press switch (B).

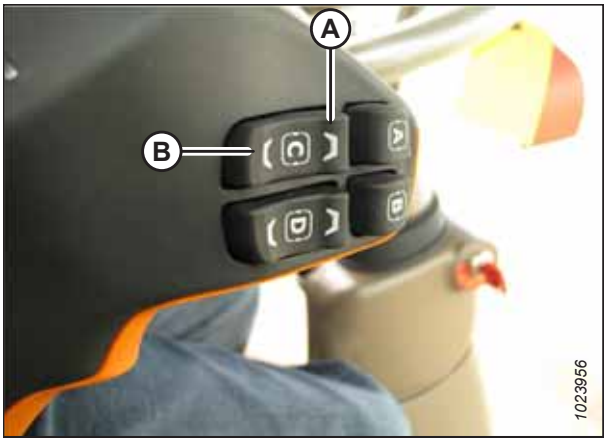


Figure 3.92: John Deere 700 Feeder House Fore-Aft Tilt Controls

John Deere (except S700 Series): Other John Deere combines use a combination of the reel fore-aft switches on the control handle and a Dealer-installed auxiliary rocker switch which toggles between reel fore-aft and header tilt functionality.

1. Press reel fore-aft / header tilt switch (A) on the console into HEADER TILT position.

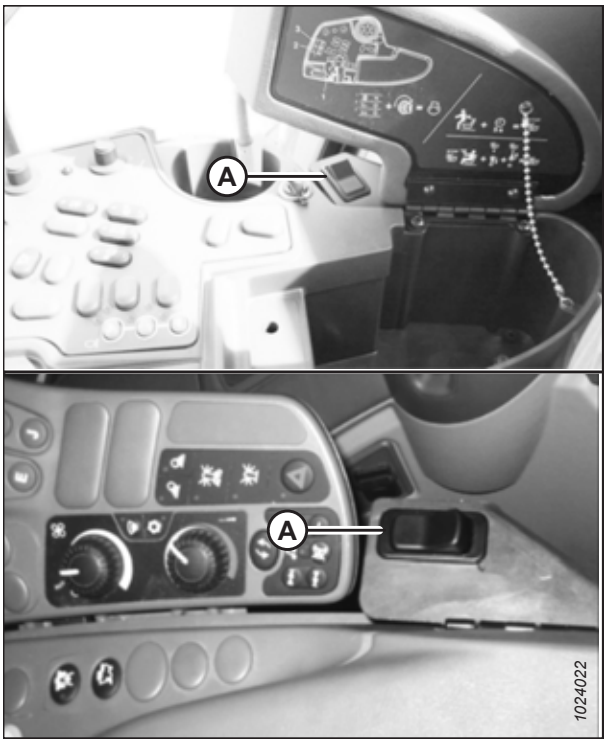


Figure 3.93: John Deere Consoles

2. To tilt the header forward (steeper angle), press switch (A). To tilt the header back (shallower angle), press switch (B).

Figure 3.94: John Deere Control Handle

New Holland combines:

New Holland combines use control handle switches to adjust the center-link to change the header angle.

1. Press and hold SHIFT button (A) on the backside of the control handle and press switch (B) to tilt the header forward (steeper angle) or switch (C) to tilt the header back (shallower angle).

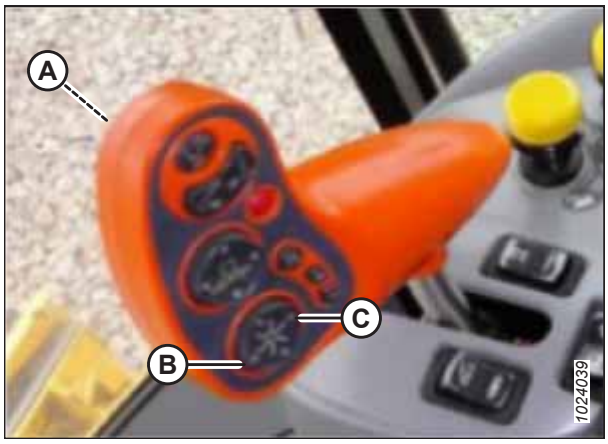


Figure 3.95: New Holland CR/CX Controls

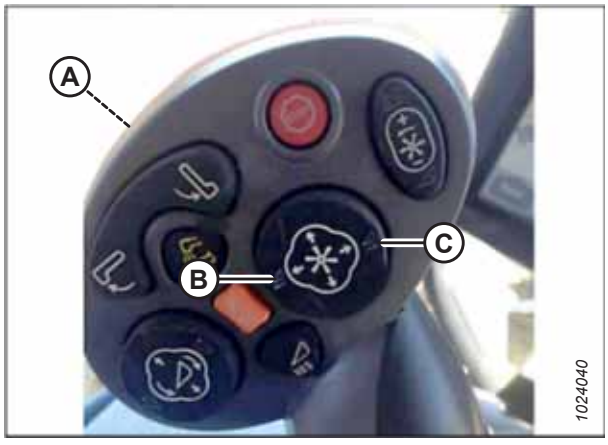


Figure 3.96: New Holland CR/CX Controls

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 beneficial in shatter-prone crops.

NOTE:

A conversion kit to change a six-bat reel to a nine-bat reel for 9.1 and 10.7 m (30 and 35 ft.) headers. Refer to *7.2.3 PR15 Tine Tube Reel Conversion Kit, page 508* for more information.

Refer to *3.6.2 Header Settings, page 43* for recommended reel speeds in specific crops and crop conditions.

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 reel drive sprocket that is suitable for most crops. Other sprockets are available that provide more torque to the reel in heavy cutting conditions, or higher reel speeds in light crops when operating at increased ground speeds. Refer to Table *3.7, page 85*, and contact your MacDon Dealer for ordering information.

Table 3.7 Optional Reel Drive Sprockets

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)	CLAAS 500, 700 Series, Challenger Axial Rotary	Combining down rice	12 tooth
20.68 MPa (3000 psi)	NH CR, CX, Case IH 7010, 8010, 7120, 8120, 88 Series	Combining down rice	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 *6.14.3 Replacing Reel Drive Sprocket, page 492*.

3.7.6 Ground Speed

Operating at the proper ground speed will result in cleanly cut crops and evenly distributed material into the combine.

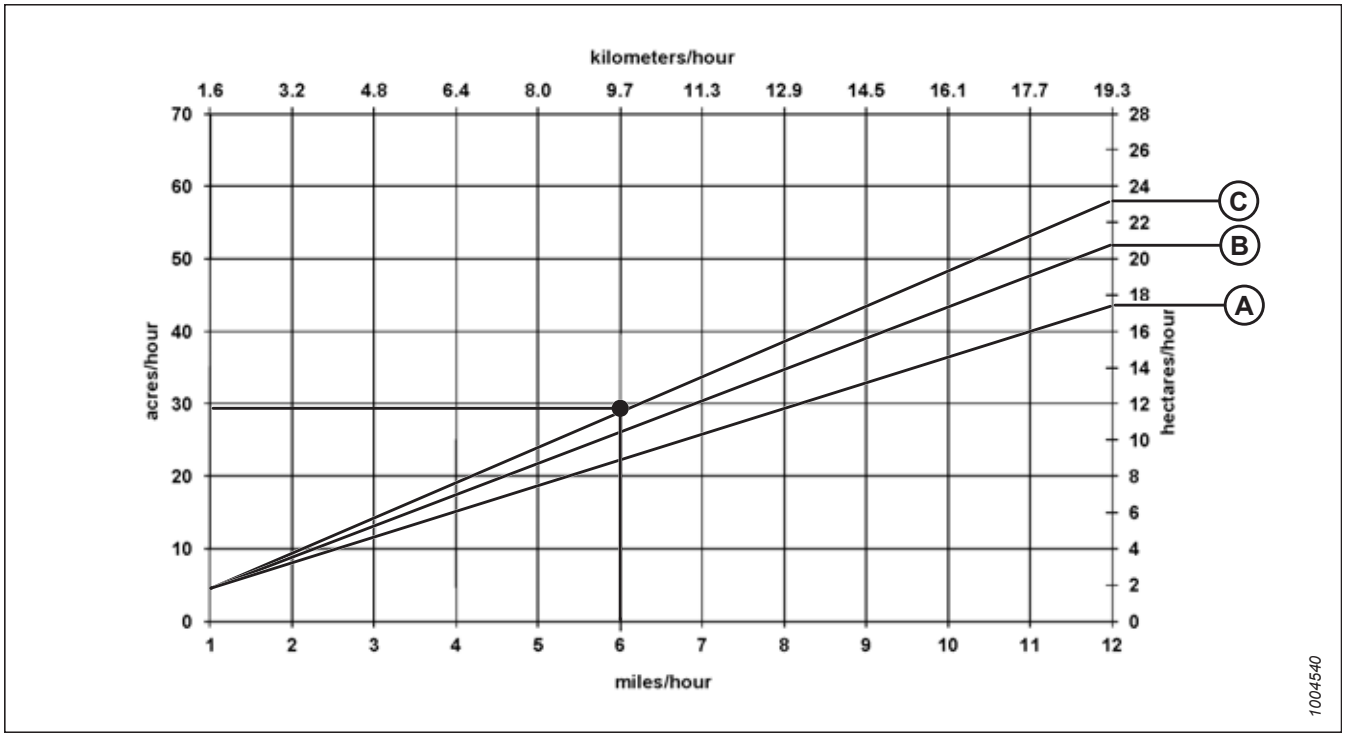
Reduce ground speed in difficult cutting conditions to reduce loads on cutting components and drives.

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 which causes uneven cutting and possible damage to cutting components. If ground speed is increased, draper and reel speeds should be increased to handle the extra material.

Figure *3.97, page 86* illustrates the relationship between ground speed and area cut for the various sized headers.

Figure 3.97: Ground Speed vs Acres



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

Example: A 12.2-m (40 ft.) 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 important for achieving a good flow of 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 Side Draper Speed, page 87*.

Adjusting Side Draper Speed

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

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.

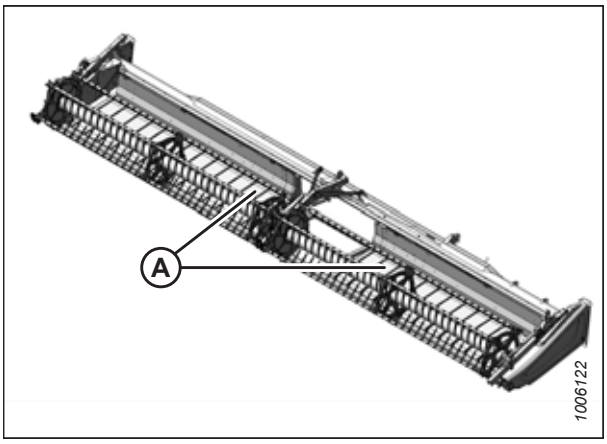


Figure 3.98: Side Drapers

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 43*
- *3.6.3 Optimizing Header for Straight Combining Canola, page 49*

NOTE:

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

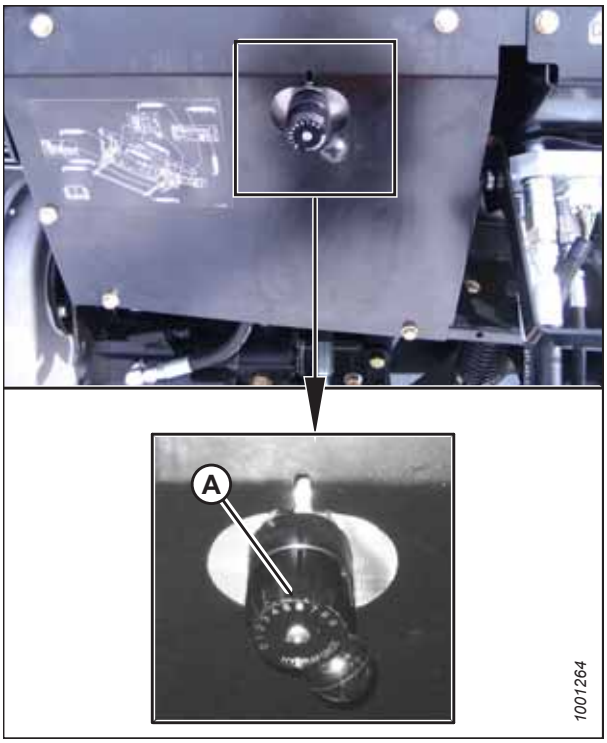


Figure 3.99: Flow Control Valve

Adjusting Feed Draper Speed

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

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.

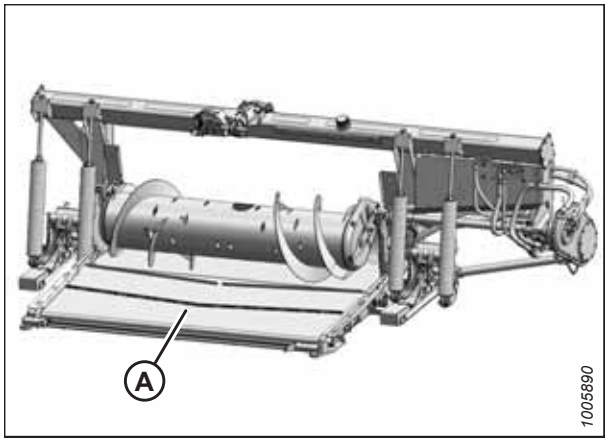


Figure 3.100: CA25 Combine Adapter

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 overspeeding and knife failure.

Table 3.8 Feeder House Speed

Combine	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS[33]	420
Gleaner®	625
John Deere	490
Massey Ferguson®	625
New Holland	580

IMPORTANT:

Ensure the knife speed is within the range of rpm values in Table *3.9, page 88*. Refer to *Checking Knife Speed, page 89*.

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 the low side of the range, you could experience knife stalling.

Table 3.9 FD75 Header Knife Speed

Header Size (m [ft.])	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
9.1 m (30 ft.)	600–700	—
10.7 m (35 ft.)	550–650	—
12.2 m (40 ft.)	525–600	550–700
13.7 m (45 ft.)	—	550–700

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

Checking Knife Speed

Compare the knife drive box pulley rpm measurement with the values listed in the knife speed chart in this manual.

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 leaving the operator's seat for any reason.

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

DANGER

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. Run adapter and header for 10 minutes to warm up oil to 38°C (100°F).

   NOTE:

   For combines with variable speed feeder houses, check the knife speed with the feeder house at the slowest speed. Refer to Table *3.8, page 88* for combine feeder house speed values.

5. Measure rpm of knife drive box pulley (A) with a hand-held tachometer.
6. Shut down the combine.
7. Compare pulley rpm measurement with the rpm values in the knife speed chart. For instructions, refer to *3.7.8 Knife Speed, page 88*.
8. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

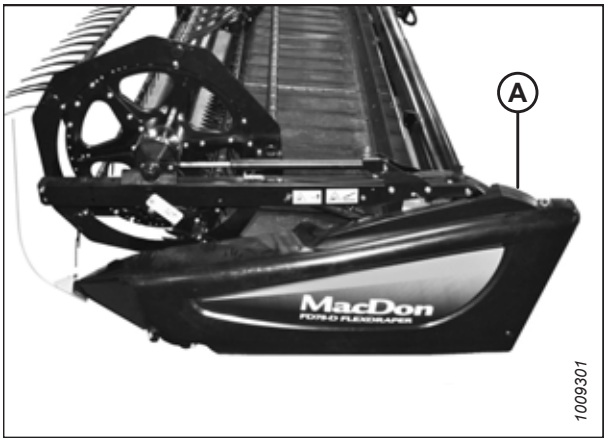


Figure 3.101: Left Endshield

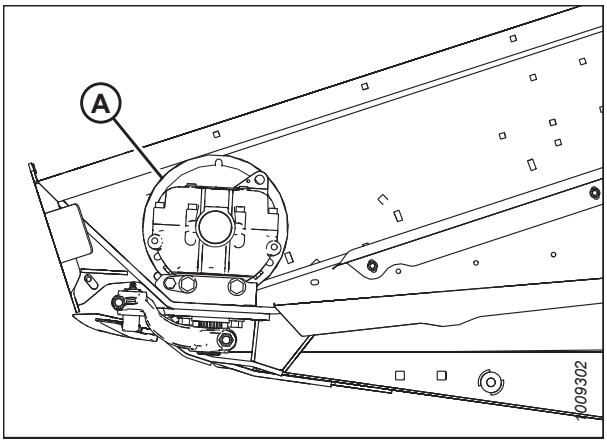


Figure 3.102: Knife Drive Pulley

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. For instructions, refer to *3.7.10 Reel Fore-Aft Position, page 90*.

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

Table 3.10 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 43* to determine recommended reel heights for specific crops and crop conditions.

IMPORTANT:

Maintain reel clearance to prevent fingers contacting the knife or the ground. For instructions, refer to *6.13.1 Reel Clearance to Cutterbar, page 464*.

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 can be adjusted forward or backward as required using the controls inside the cab.

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

For double-reel header instructions, refer to *Repositioning Fore-Aft Cylinders, page 92*.

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 95*.

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

For straight standing crop, center the reel over the cutterbar (4–5 on the 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 *Adjusting Header Angle from Combine, page 78* for adjustment instructions. Adjust reel position only if header angle adjustments are insufficient.

Refer to *3.6.2 Header Settings, page 43* for recommended reel positions in specific crops and crop conditions.

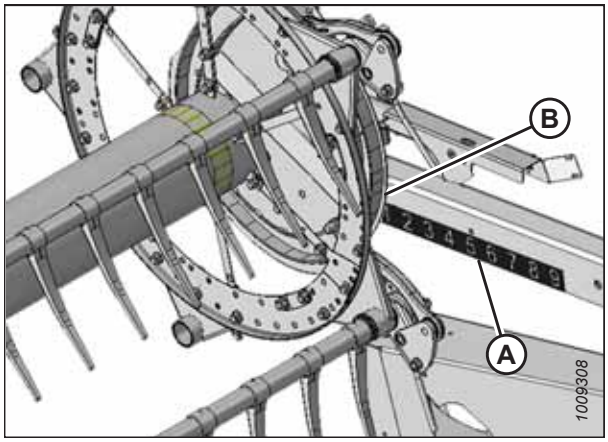


Figure 3.103: Fore-Aft Decal

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 97* for adjustment details.

Adjusting Reel Fore-Aft Position

The factory-set reel position suits normal conditions, but the fore-aft position can be adjusted as required using the controls inside the cab.

1. Select FORE-AFT mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position, using decal (A) as a reference.
3. Check the reel clearance to the cutterbar after making changes to the cam setting. Refer to the following for measurement and adjustment procedures:
   - *6.13.1 Reel Clearance to Cutterbar, page 464*
   - *6.13.2 Reel Frown, page 467*

   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.

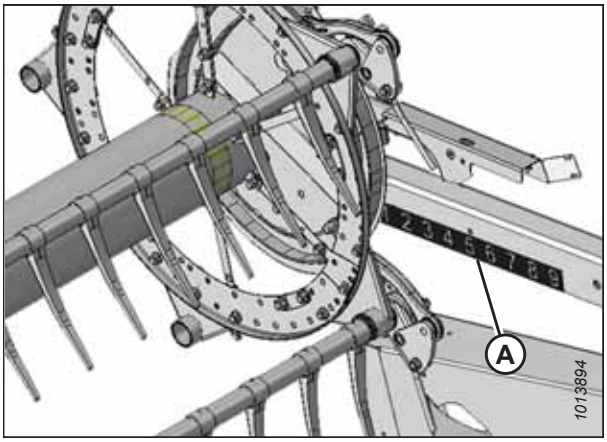


Figure 3.104: Fore-Aft Decal

Repositioning Fore-Aft Cylinders

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

DANGER

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

NOTE:

The Short Brace Kit for Center Reel Arm (MD #B5605) must be installed before the fore-aft cylinders can be repositioned.

If the Multi-Crop Rapid Reel Conversion option is installed, refer to *Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 95*.

Reposition the center arm cylinder as follows:

NOTE:

Reel components not shown in illustration for improved clarity.

NOTE:

To move a split reel into canola position, the Short Brace Kit for Center Reel Arm (B5605) is required.

1. Position reel fully aft with support arms horizontal.
2. Shut down the engine, and remove the key from the ignition.
3. Remove four bolts (A) securing cylinder bracket (B) to the reel arm.
4. Position reel until bracket (B) lines up with desired position holes (C):
   - Forward position, refer to Figure *3.105, page 92*
   - Rearward position, refer to Figure *3.106, page 92*
5. Reinstall four bolts (A) to secure bracket (B) to reel arm at new position.

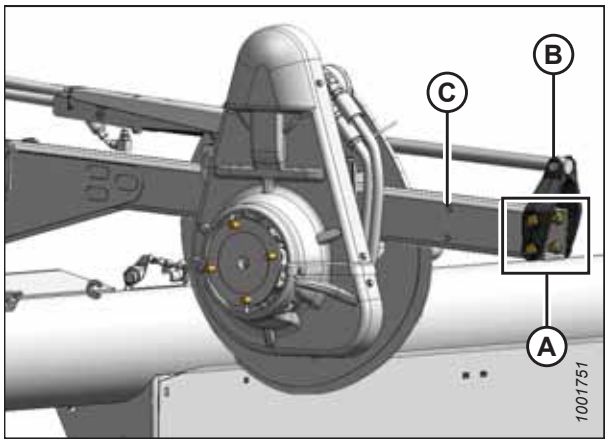


Figure 3.105: Forward Position

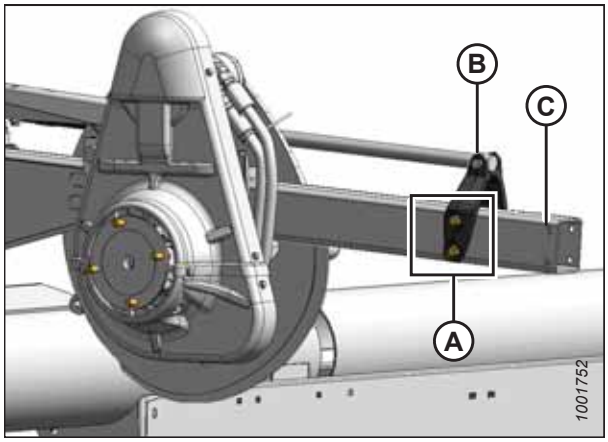


Figure 3.106: Rearward Position

Reposition right arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

6. Remove four bolts (A) securing cylinder bracket (B) to the reel arm.
7. Position reel until bracket (B) lines up with desired position holes (C):
   - Forward position, refer to Figure *3.107, page 93*
   - Rearward position, refer to Figure *3.108, page 93*
8. Reinstall the four bolts (A) to secure bracket to reel arm at new position.

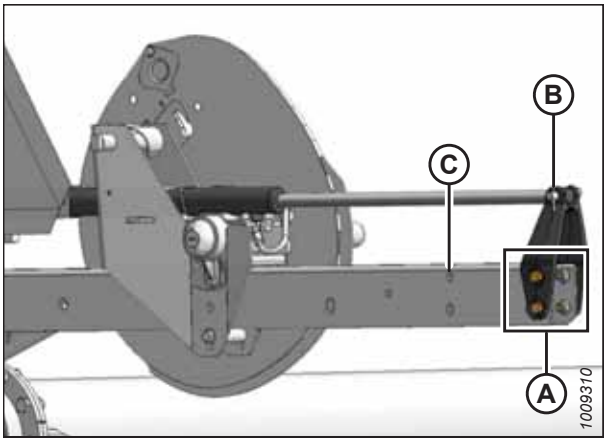


Figure 3.107: Forward Position

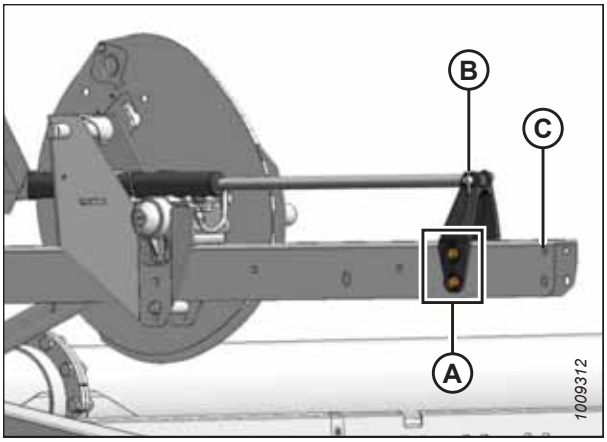


Figure 3.108: Rearward Position

Reposition the left reel arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

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

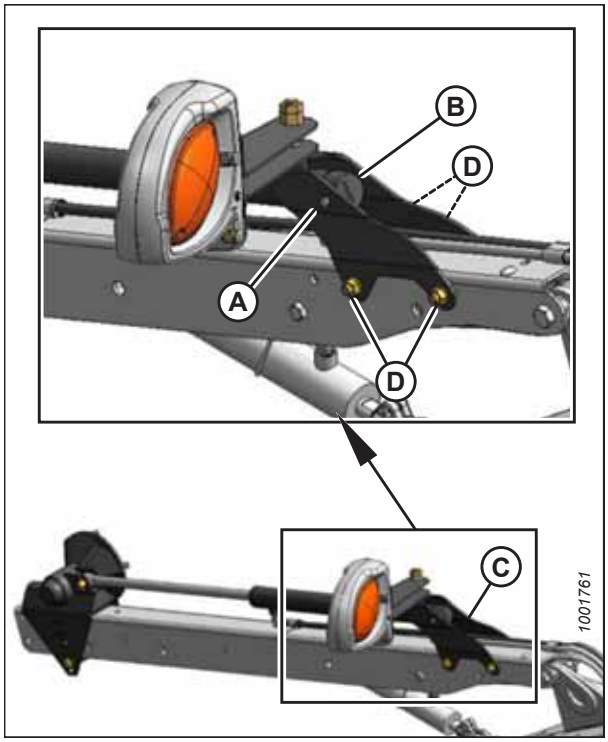


Figure 3.109: Forward Position

13. Reposition bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
14. Push the reel back and attach cylinder (B) to bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
15. Secure the light harness to bracket/light assembly (C) using a cable tie.
16. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
17. Adjust the reel tine pitch if necessary. Refer to *3.7.11 Reel Tine Pitch, page 97*.

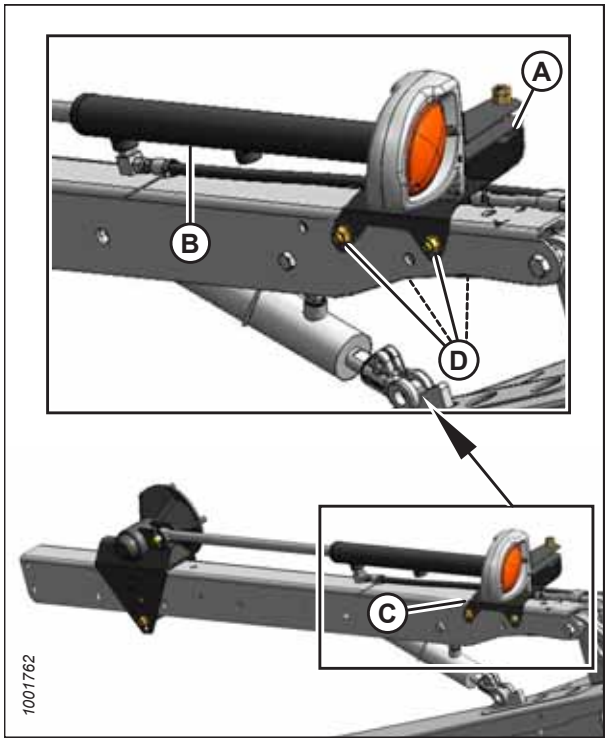


Figure 3.110: Rearward Position

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

The reel can be moved approximately 227 mm (9 in.) farther aft by repositioning the fore-aft cylinders on the reel arms.

DANGER

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

NOTE:

The Short Brace Kit for Center Reel Arm (MD #B5605) must be installed before the fore-aft cylinders can be repositioned.

To reposition the left reel arm cylinder:

NOTE:

The reel components are not shown in the illustrations in this procedure for the sake of clarity.

1. Position reel fully aft with support arms horizontal.
2. Shut down the engine, and remove the key from the ignition.
3. Remove ring (A) and clevis pin (B) from the inboard side of bracket (C). Retain the ring and the clevis pin.
4. Push the reel back until cylinder barrel (C) lines up with the aft holes in bracket (D).

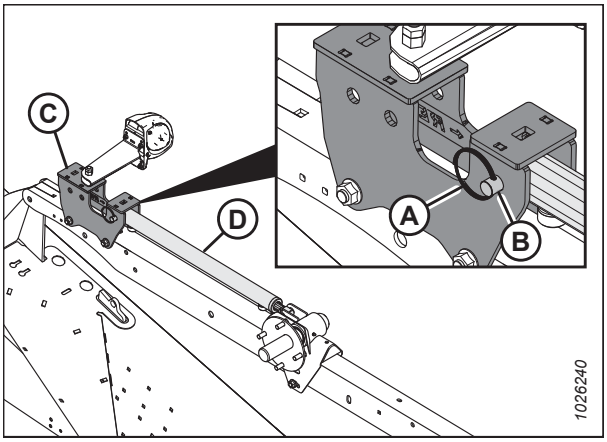


Figure 3.111: Left Reel Arm in Forward Position

5. Reinstall clevis pin (B) at the new position in bracket (C), and secure end of cylinder (D) with ring (A).

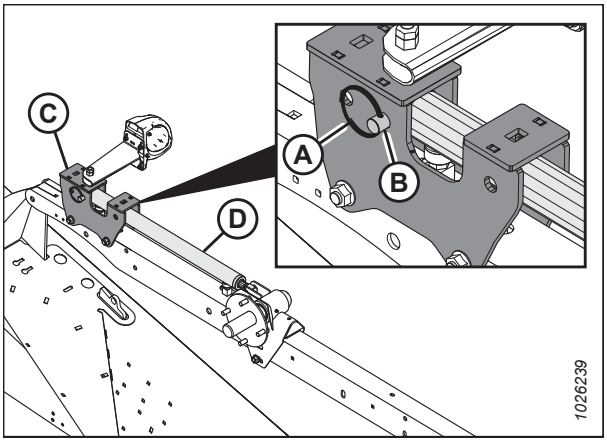


Figure 3.112: Left Reel Arm in Aft Position

To reposition the right reel arm cylinder:

6. Remove ring (A), clevis pin (B), and washers (C) from bracket (D). Retain the ring, clevis pin, and washers.

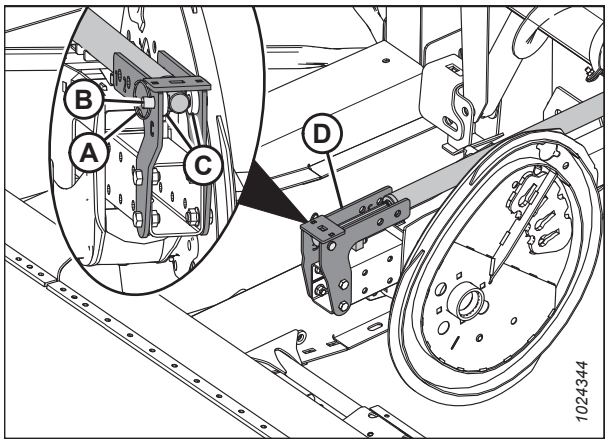


Figure 3.113: Forward Position – Center Arm

7. Push the reel back until the end of cylinder (E) lines up with the reel position 2 hole on bracket (D). Position washers (C) on both sides of the cylinder end inside the bracket.
8. Reinstall clevis pin (B) at the new position. Secure it with ring (A).

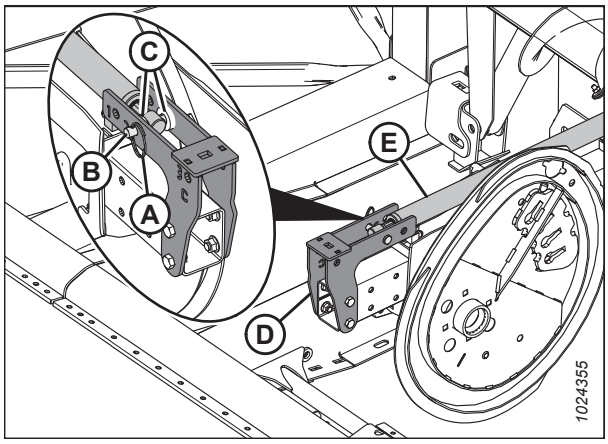


Figure 3.114: Center Reel Arm in Aft Position

To reposition the right reel arm cylinder:

9. Remove ring (A), clevis pin (B), and washers (C) from bracket (D). Retain the ring, clevis pin, and washers.
10. Push the reel back until the end of cylinder (E) lines up with reel position 2 hole on bracket (D).

    NOTE:

    The washers inside the center arm support bracket are not shown in the illustration.

11. Reinstall clevis pin (B) at the new position. Secure it with ring (A).

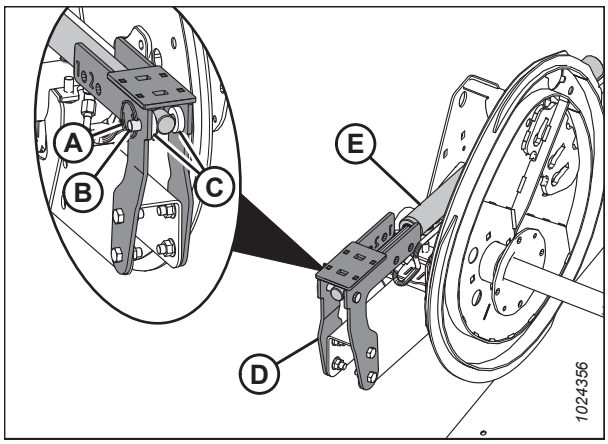


Figure 3.115: Right Reel Arm in Forward Position

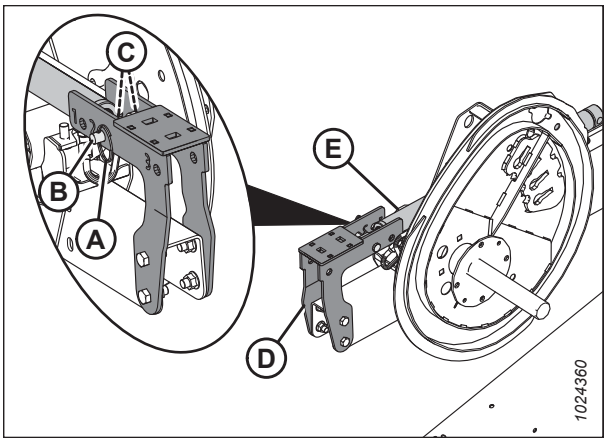


Figure 3.116: Right Reel Arm in Aft Position

3.7.11 Reel Tine Pitch

The 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, because the cam setting is mainly used to determine how the crop is delivered onto the drapers.

Finger positioning, 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. For instructions, refer to *3.6.2 Header Settings, page 43*.

Reel Cam Settings

The following outlines the function of each cam setting and provides setup guidelines for various crop conditions. The setting numbers are visible above the slots on the cam disc.

If adjustments are necessary, refer to *Adjusting Reel Cam, page 99*.

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.

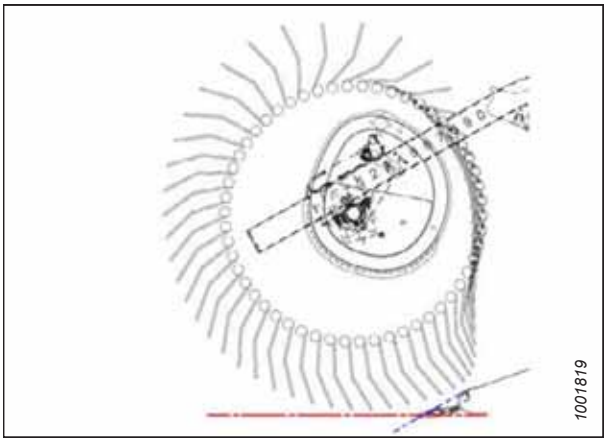


Figure 3.117: Finger Profile – Cam Position 1

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.

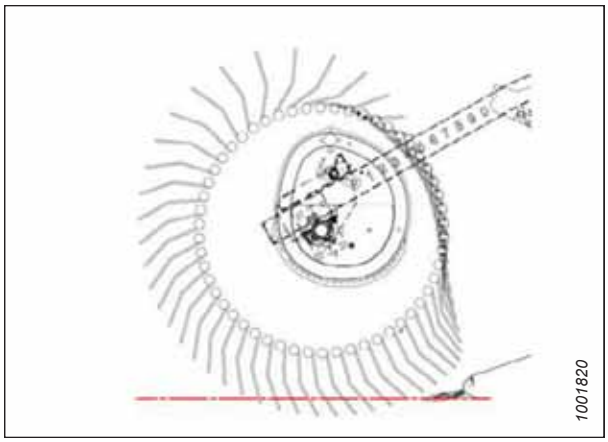


Figure 3.118: Finger Profile – Cam Position 2

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.

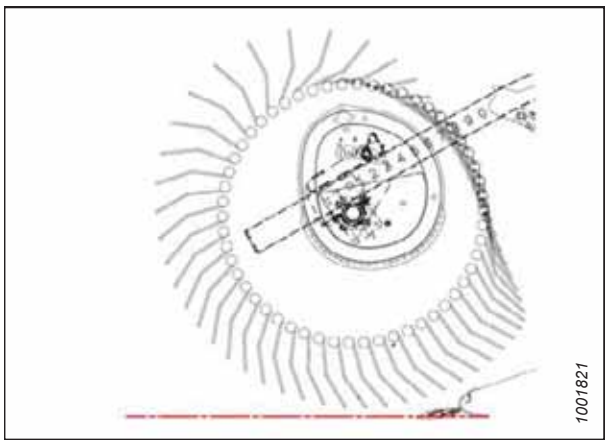


Figure 3.119: Finger Profile – Cam Position 3

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.

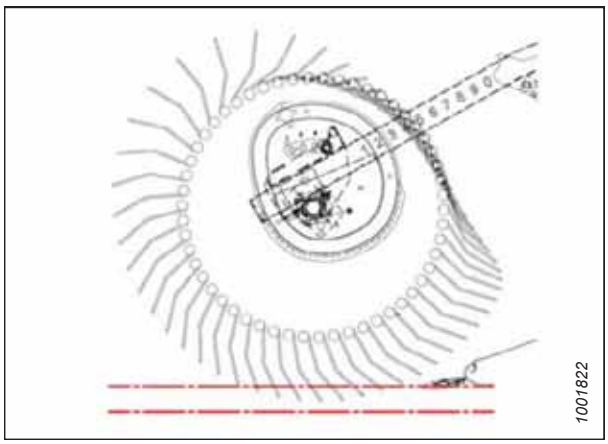


Figure 3.120: Finger Profile – Cam Position 4

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.

- This position 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.

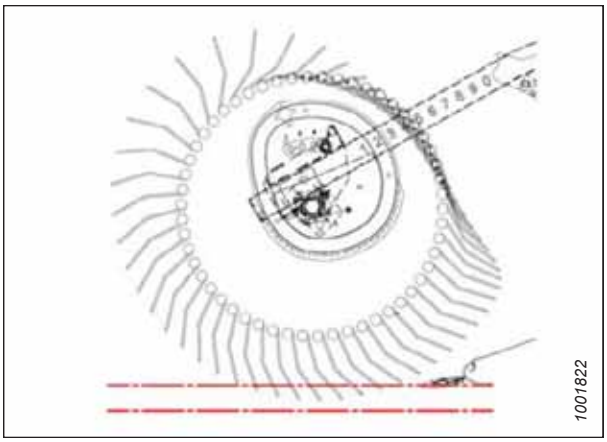


Figure 3.121: Finger Profile – Cam Position 4

IMPORTANT:

The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft position. For instructions, refer to *6.13.1 Reel Clearance to Cutterbar, page 464*.

Refer to *3.6.2 Header Settings, page 43* for recommended reel tine pitch in specific crops and crop conditions.

Adjusting Reel Cam

The reel is designed to pick up flattened and severely lodged crops. Adjustment may be required as crop conditions change.

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 leaving the operator's seat for any reason.

1. Lower the reel fully.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Turn latch pin (A) counterclockwise using a 3/4 in. wrench to release the cam disc.
5. Use the wrench on bolt (B) to rotate the cam disc and align 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).
6. Turn latch pin (A) clockwise to engage and lock the cam disc.
7. Repeat Steps *4, page 99* to *6, page 99* for the opposite reel.

   IMPORTANT:

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

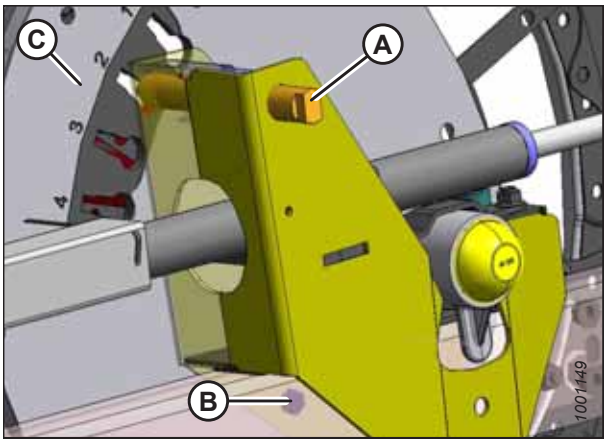


Figure 3.122: Cam Disc Positions

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.

Crop dividers are bolted to the header by default, but a latch option is also available.

Removing Crop Dividers with Latch Option from Header

To correctly remove crop dividers with the latch option, follow the recommended removal procedure provided here.

DANGER

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

1. Lower the reel.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to your combine operator's manual.
5. Open or remove the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.
6. Lift safety lever (A).
7. Hold onto crop divider (B), push lever (C) to open the latch, and lower the crop divider.

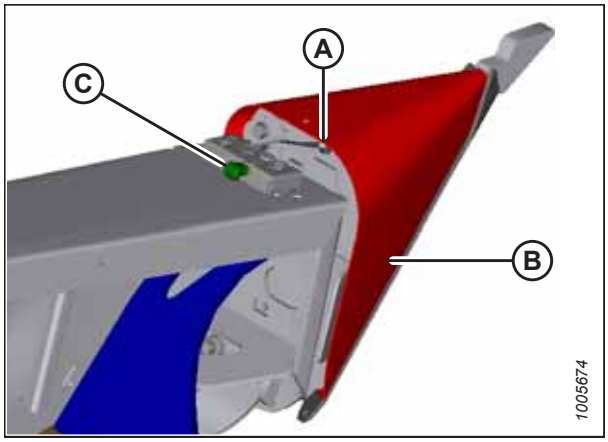


Figure 3.123: Crop Divider

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

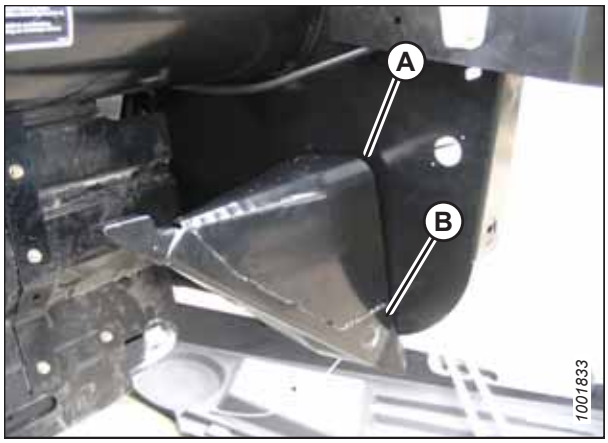


Figure 3.124: Stored Crop Divider

Removing Crop Dividers without Latch Option from Header

To correctly remove crop dividers without the latch option, follow the recommended removal procedure provided here.

DANGER

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

1. Lower the reel.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to your combine operator's manual.
5. Open or remove the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.
6. Remove bolt (A), lock washer, and flat washer.
7. Lower crop divider (B) and then lift the crop divider to remove it from the endsheet.
8. Close or install the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.

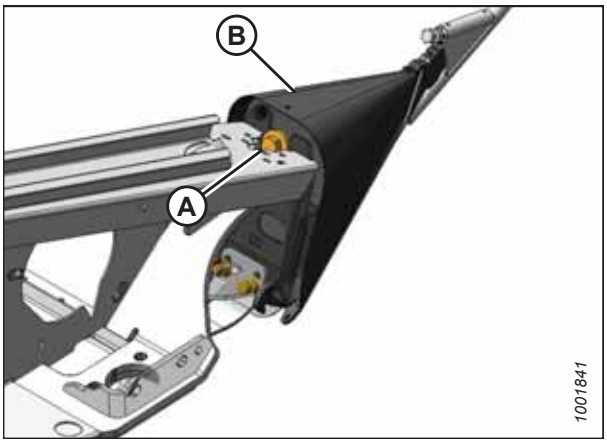


Figure 3.125: Crop Divider

Installing Crop Dividers with Latch Option onto Header

To correctly install crop dividers with the latch option, follow the recommended installation procedure provided here.

DANGER

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

1. Lower the reel fully.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the safety props. For instructions, refer to your combine operator's manual.
5. Open or remove the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.
6. Remove the crop divider from the storage location by lifting the crop divider to disengage lugs (A) at the lower end and then lowering it slightly to disengage pin (B) from the endsheet.

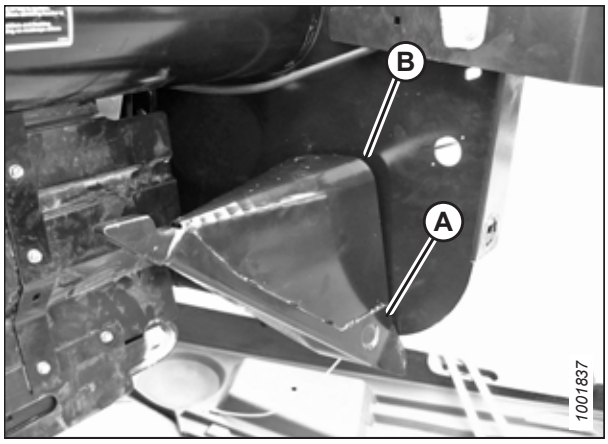


Figure 3.126: Stored Crop Divider

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

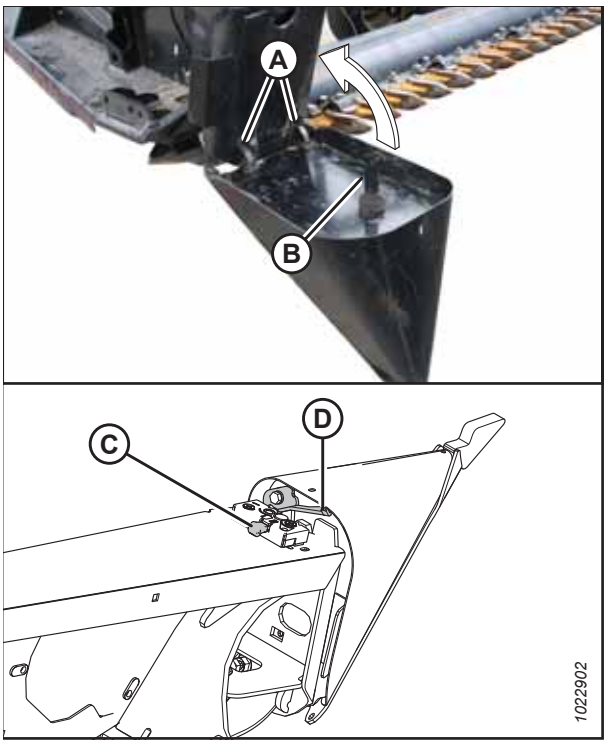


Figure 3.127: Crop Divider

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

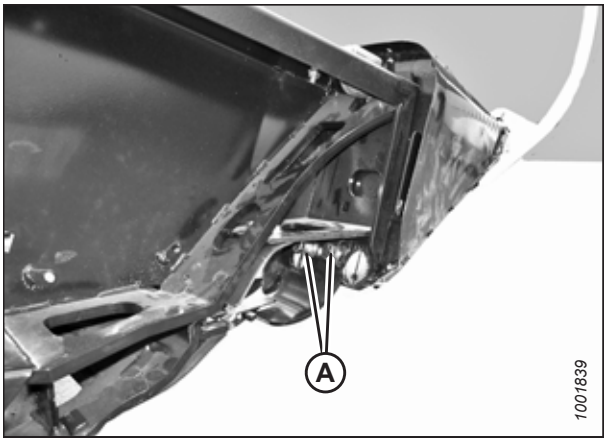


Figure 3.128: Crop Divider

Installing Crop Dividers without Latch Option onto Header

To correctly install crop dividers without the latch option, follow the recommended installation procedure provided here.

DANGER

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

1. Lower the reel.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.

4. Engage the header safety props. For instructions, refer to your combine operator's manual.

5. Open or remove the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.

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

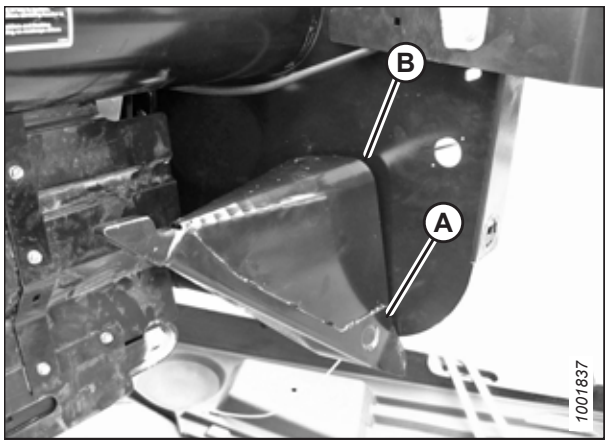


Figure 3.129: Stored Crop Divider

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

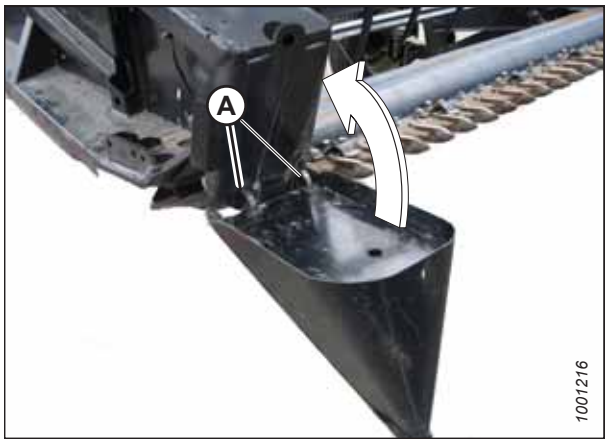


Figure 3.130: Crop Divider

8. Lift the forward end of the crop divider and install bolt (A) and special stepped washer (B) (step towards the divider). Tighten the bolt.

9. Pull at the tip of the crop divider and ensure there is no lateral movement. If necessary, adjust bolts (C) to tighten the crop divider and eliminate lateral movement.

10. Close or install the endshields. For instructions, refer to *3.2.3 Endshields, page 33*.

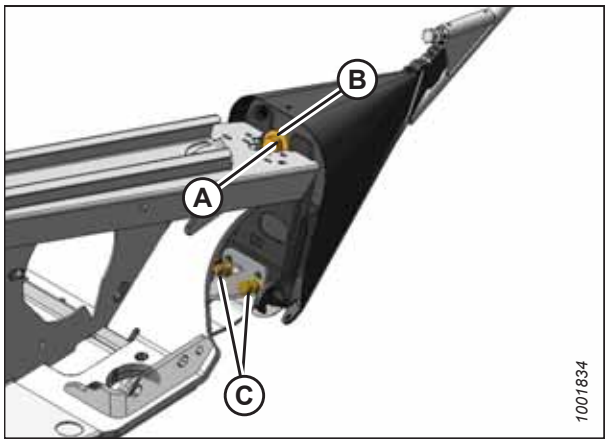


Figure 3.131: Crop Divider

3.7.13 Crop Divider Rods

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

Table 3.11 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

To remove the crop divider rods and place them in their storage position, perform the removal procedure provided here.

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

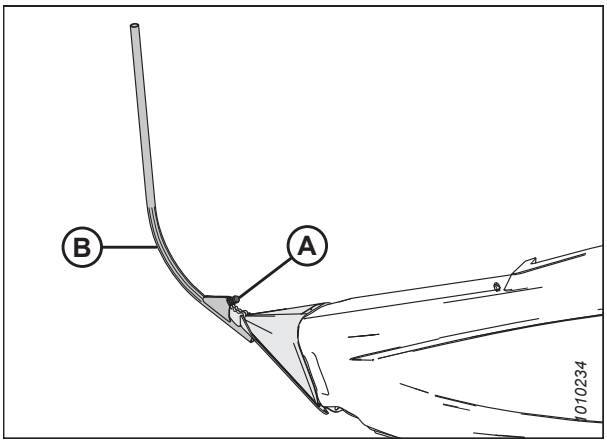


Figure 3.132: Crop Divider Rod

2. Store both crop divider rods (A) inboard on the right endsheet.

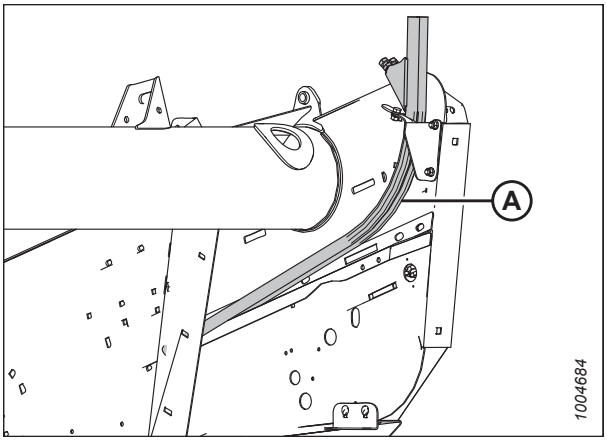


Figure 3.133: Right Endsheet

Installing Crop Divider Rods

1. Remove crop divider rods (A) from storage location on inboard of right endsheet.

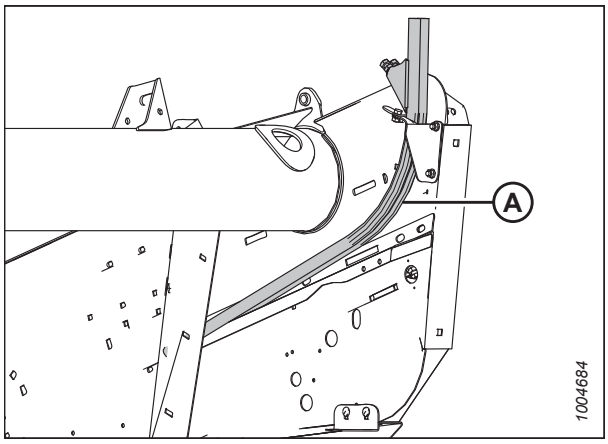


Figure 3.134: Right Endsheet

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.

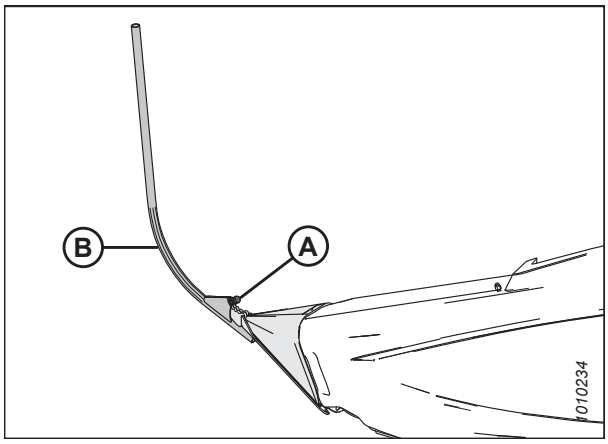


Figure 3.135: Divider Rod on Crop Divider

Rice Divider Rods

Rice divider rods attach to the left and right crop dividers.

Optional rice divider rods provide improved performance in tall and tangled rice crops. For instructions, refer to *7.5.7 Rice Divider Rods, page 518*.

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

Figure 3.136: Divider Rod for Rice

3.8 Levelling Header

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

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

- Ensure that the header knife drive compartments are empty.
- Check the combine tire pressures.
- Ensure that the combine feeder house is level. Refer to your combine operator's manual for instructions.
- Ensure 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.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on level ground.
3. Raise the header approximately 150 mm (6 in.) off the ground.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure that the header is against the down stops.
6. Check the wing balance and adjust it if necessary. For instructions, refer to *Checking Wing Balance, page 69*.
7. Move wing lock handle (A) to the lock position.

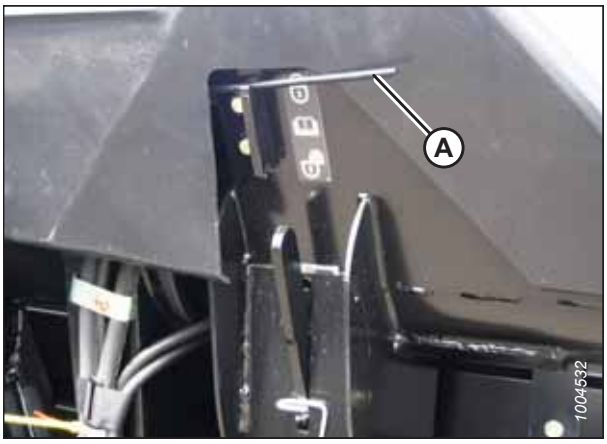


Figure 3.137: Wing Lock

8. Check the header float and adjust it if necessary. For instructions, refer to *Checking and Adjusting Header Float, page 60*.
9. 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 the opposite directions as follows:
   a. Turn the low-side nut clockwise to raise the header.
   b. Turn the high-side nut counterclockwise to lower the header.

   NOTE:

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

   NOTE:

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

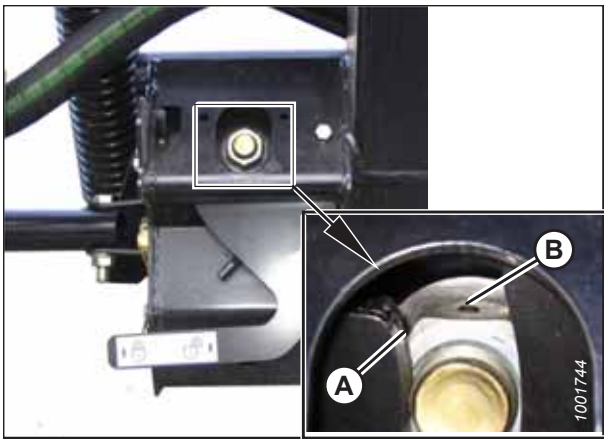


Figure 3.138: Float Lock

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 the header. For instructions, refer to *Checking and Adjusting Header Float, page 60*.

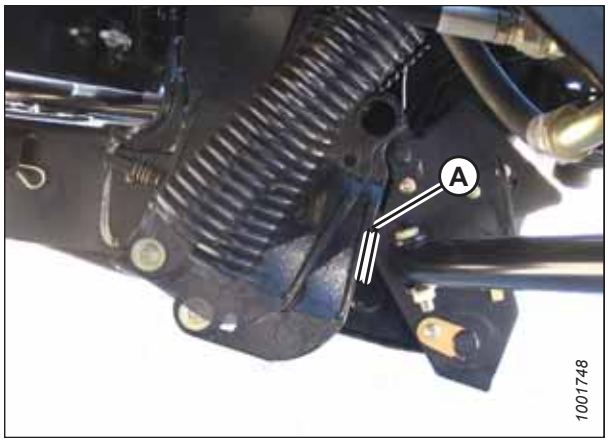


Figure 3.139: Bell Crank

3.9 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 prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the 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 *8 Troubleshooting, page 521*.

3.10 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.

3.11 Upper Cross Auger (Option)

The upper cross auger (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.

NOTE:

Newer UCA kits do not include or use beater bars.

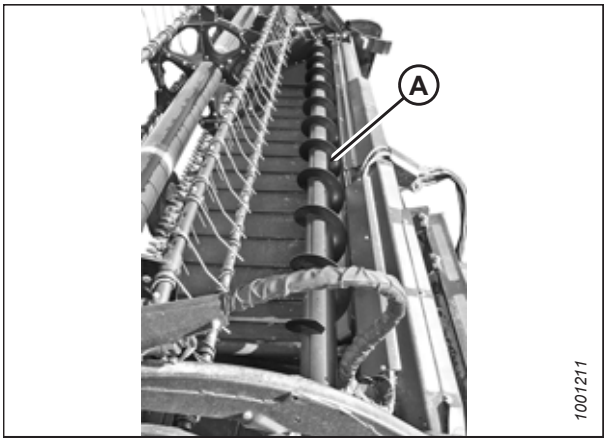


Figure 3.140: Upper Cross Auger

3.11.1 Removing Beater Bars

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

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.

NOTE:

Some newer upper cross augers do not have beater bars.

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

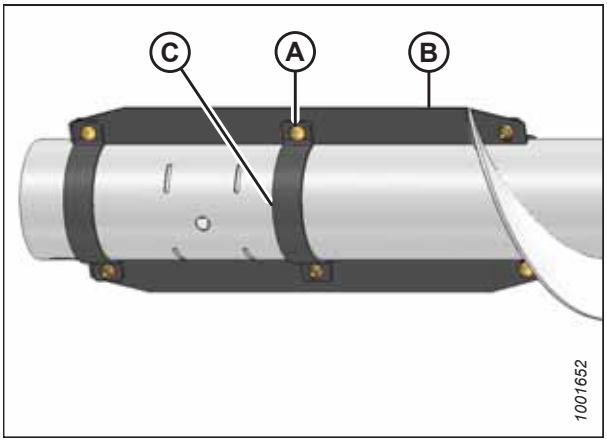


Figure 3.141: Beater Bars

3.11.2 Installing Beater Bars

Beater bars can improve the delivery of material through the header opening.

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.

NOTE:

Some newer upper cross augers do not have beater bars.

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

   NOTE:

   To reduce the chance of wrapping, offset the beater bars by 90°.
6. Tighten the bolts.

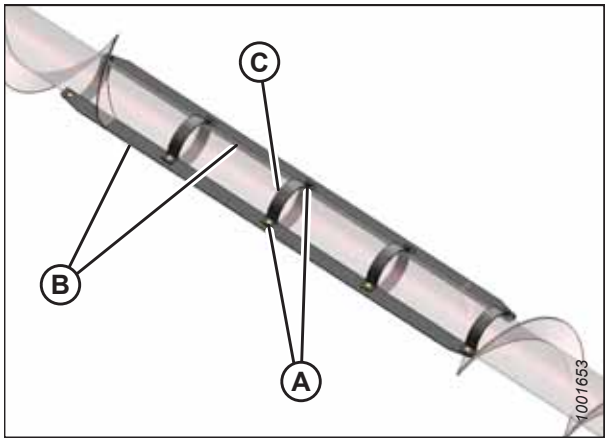


Figure 3.142: Beater Bars

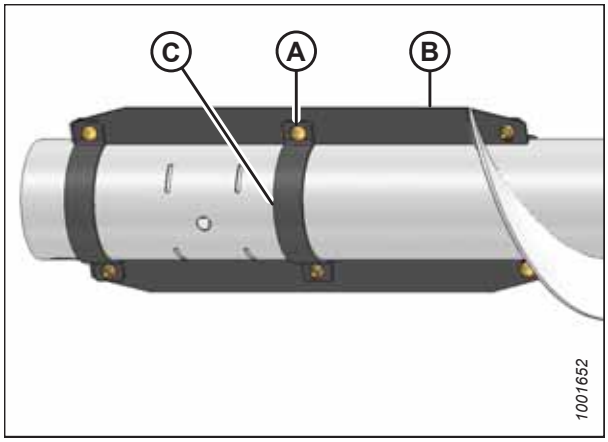


Figure 3.143: Beater Bars

3.12 Transporting Header

WARNING

Do NOT drive the 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.

3.12.1 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.**

3.12.2 Towing Header

Headers with the optional Slow Speed Transport can be towed behind a properly configured MacDon windrower, a properly configured combine, or an agricultural tractor.

Refer to the towing vehicle's operator's manual for instructions.

Attaching Header to Towing Vehicle

Review this list of cautions before attaching a header behind a MacDon windrower, a properly configured combine, or an agricultural tractor.

CAUTION

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

- **The weight of the towing vehicle must exceed the 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 the reel is fully lowered and back on the 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 the wheel supports, cutterbar support, and hitch.**
- **Check tire condition and pressure prior to transporting.**
- **Connect the hitch to the towing vehicle using a proper hitch pin with a spring locking pin or other suitable fastener.**
- **Attach the hitch safety chain to the towing vehicle. Adjust the safety chain length to provide only enough slack to permit turning.**
- **Connect the header seven-pole plug wiring harness to the mating receptacle on the towing vehicle. (The seven-pole receptacle is available from your MacDon Dealer Parts Department).**
- **Ensure the lights are functioning properly and clean the slow moving vehicle sign and other reflectors. Use flashing warning lights unless prohibited by law.**

Precautions for Towing a Header

Review this list of cautions before towing a header behind a MacDon windrower, a properly configured combine, or an agricultural tractor.

CAUTION

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

- **The weight of the towing vehicle must exceed the 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.**
- **Use flashing warning lights unless prohibited by law.**
- **Do NOT exceed 32 km/h (20 mph) when towing a header using the Slow Speed Transport option. Reduce speed to less than 8 km/h (5 mph) for corners and slippery or rough conditions.**
- **Do NOT accelerate when making or coming out of a turn.**
- **Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law.**

3.12.3 Converting from Transport to Field Position

The header needs to be converted back to field position if it was towed to a new location.

Removing Tow-Bar

The transport tow-bar can easily be disassembled and stored on the header.

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

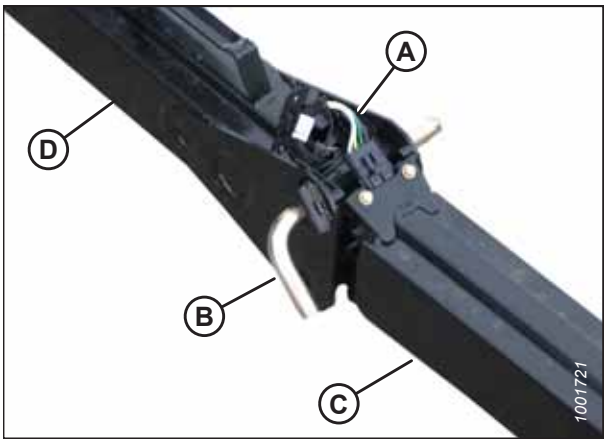


Figure 3.144: Tow-Bar Assembly

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

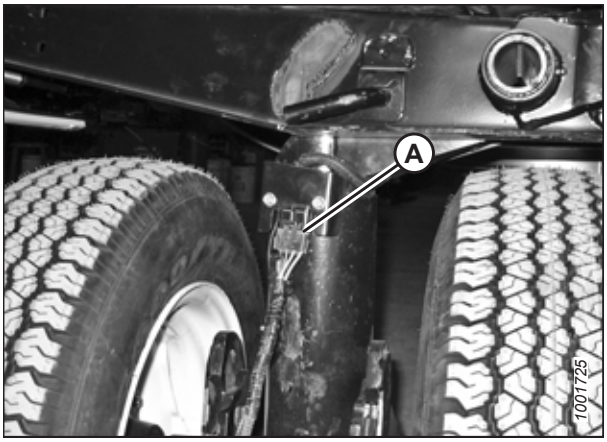


Figure 3.145: Wiring Connector

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

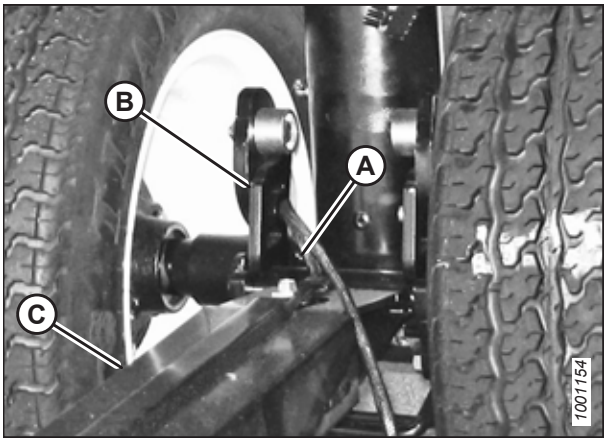


Figure 3.146: Tow-Bar Latch

Storing the Tow-Bar

The tow-bar consists of two sections: inner half (A) and outer half (B).

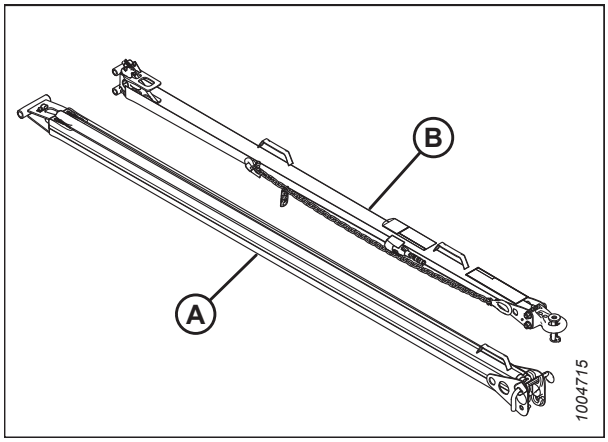


Figure 3.147: Tow-Bar Assembly

1. On the left side of the header's backtube, place the inner end of the outer half of the tow-bar into cradle (A).

   NOTE:

   The exact appearance of the tow-bar storage cradle varies according to the model of header.

2. Secure the clevis/pintle end of the tow-bar in support (B) on the endsheet using hitch pin (C). Secure the pin with a lynch pin.

3. Install rubber strap (D) on cradle (A).

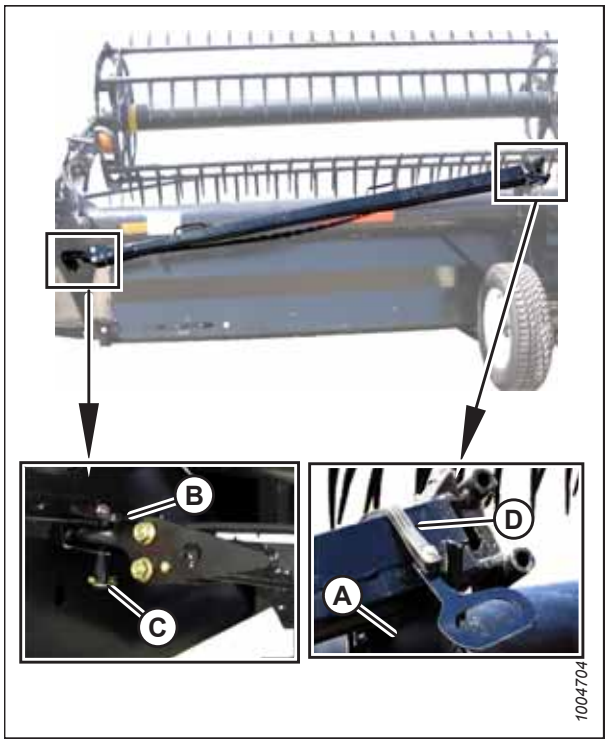


Figure 3.148: Tow-Bar Storage

4. On the right side of the header's backtube, place the inner end of the inner half of the tow-bar into cradle (A).

   NOTE:

   The exact appearance of the tow-bar storage cradle varies according to the model of header.

5. Secure the tube end of the tow-bar in support (B) on the endsheet using L-pin (C) from the tow-pole connection. Secure the L-pin with ring (E).

6. Install rubber strap (D) on cradle (A).

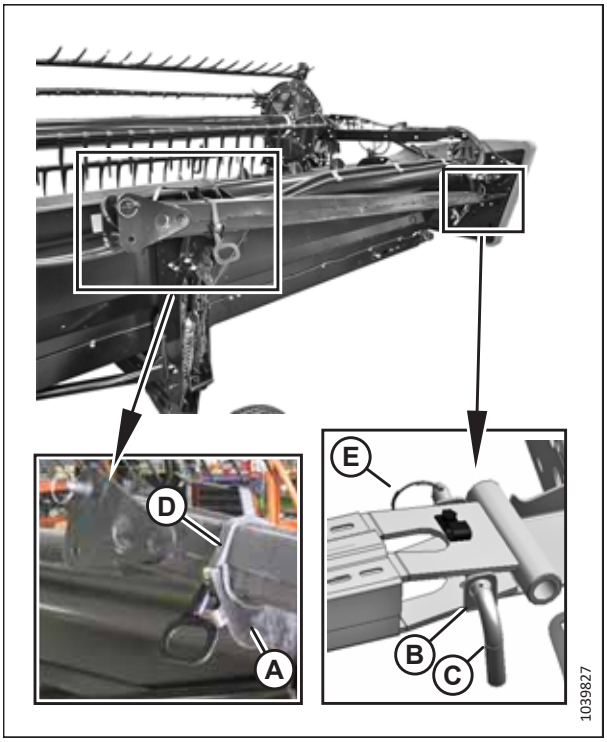


Figure 3.149: Tow-Bar Storage

7. Attach the header to the combine. Refer to *5 Header Attachment/Detachment, page 289*.

8. Place the transport wheels into field position. Refer to the following:
   - *Moving Front Wheels into Field Position, page 117*
   - *Moving Rear Wheels into Field Position, page 119*

Moving Front Wheels into Field Position

The front (left) wheels are located closest to the towing vehicle. To prepare for operation in the field, the wheel assembly must be rotated to face the cutterbar and lifted to the desired height.

DANGER

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

1. Raise the header fully.

2. Shut down the engine, and remove the key from the ignition.

3. Engage the header safety props.

4. Swivel front wheel assembly (A) so the wheels are aligned with the lower frame.
5. Remove pin (B) and pull the wheel assembly toward the rear of the header. Store the pin in hole (C) at the top of the leg.
6. Pull handle (D) upward to release and lower the linkage into the vertical support.

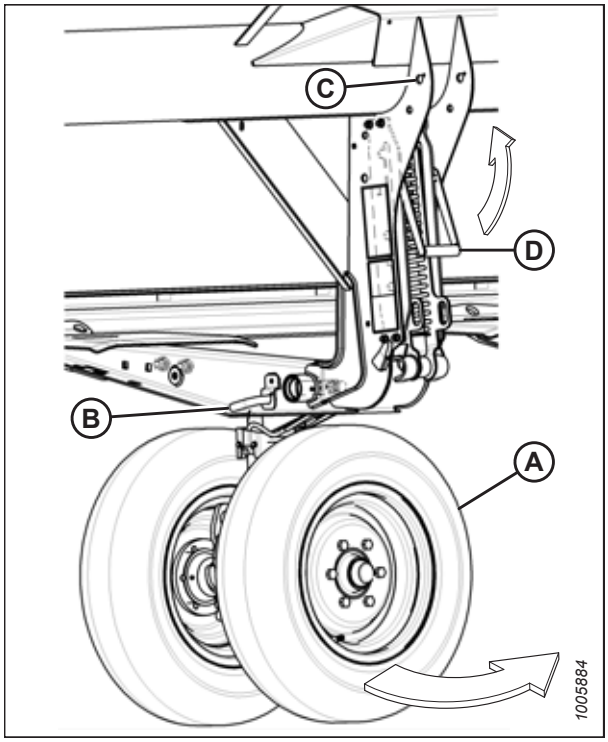


Figure 3.150: Front Wheels – Left

7. 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.
8. Install clevis pin (D) and secure to the center of the axle with the hairpin.

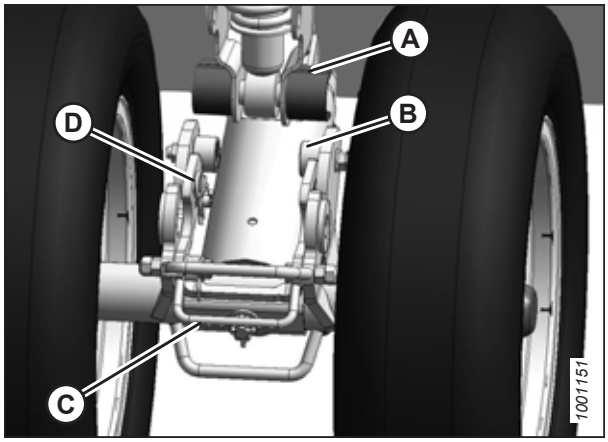


Figure 3.151: Front Wheels – Left

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

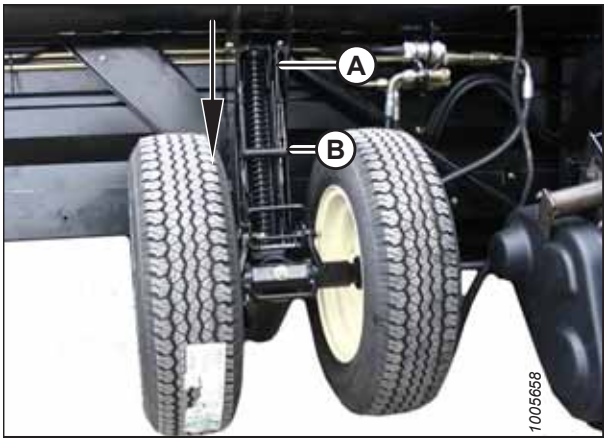


Figure 3.152: Front Wheels – Left

Moving Rear Wheels into Field Position

The rear (right) wheels are located farthest from the towing vehicle. To prepare for operation in the field, the rear wheel assembly must be rotated to face the cutterbar and lifted to the desired height.

1. Pull up pin (A) on the left rear wheel, swivel the wheel clockwise, and release the pin to lock the wheel.

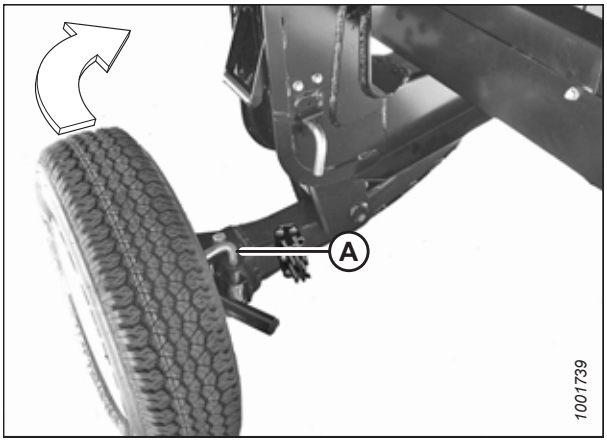


Figure 3.153: Rear Wheel – Right Side

2. Remove pin (A) and store at location (B).
3. Pull handle (C) upward to release the linkage.
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 the linkage.

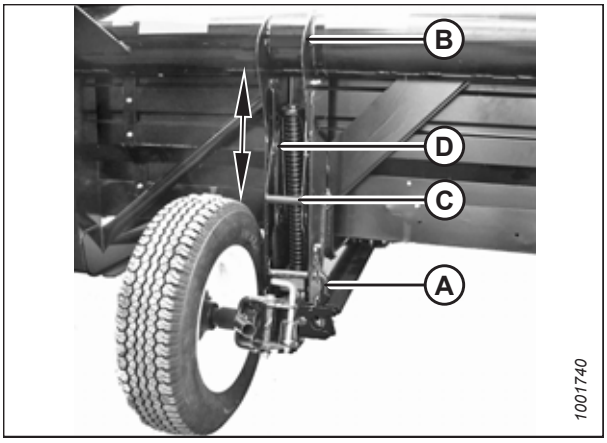


Figure 3.154: Rear Wheel – Right Side

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

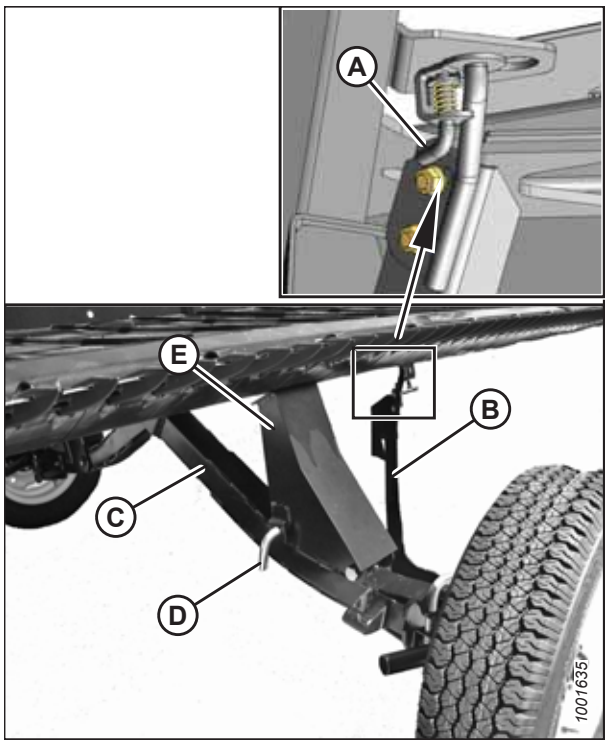


Figure 3.155: Right Rear Axle

9. Pull up pin (A) on the right wheel. Swivel the wheel counterclockwise to the position shown, and release pin (A) to lock the wheel in place.
10. Remove hairpin (B) from 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 it is installed with the open end facing the cutterbar.

    IMPORTANT:

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

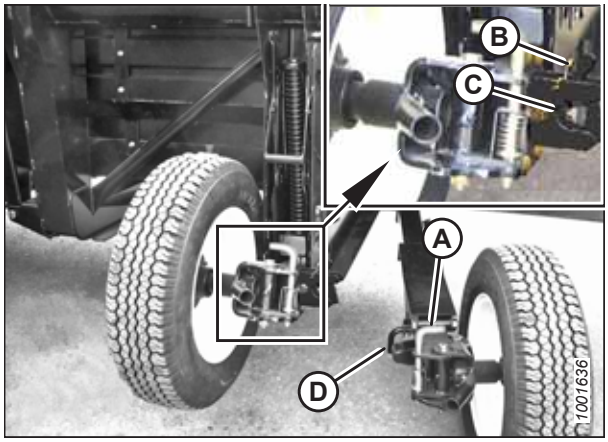


Figure 3.156: Rear Axles

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

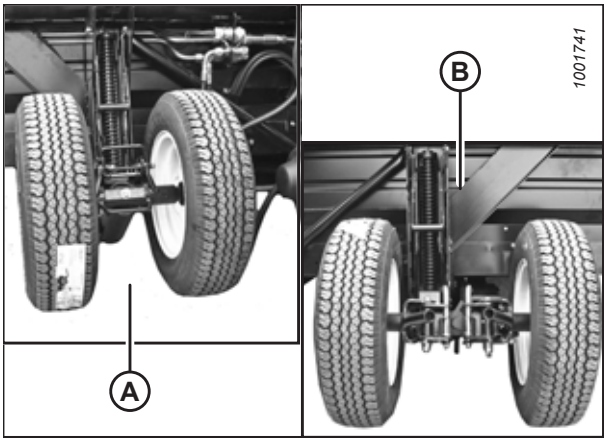


Figure 3.157: Field Position

3.12.4 Converting from Field to Transport Position

The header needs to be converted to the transport when being towed to a new location.

Moving Front Wheels into Transport Position

The front (left) wheels are located closest to the towing vehicle. To prepare for transport, the wheels must be lowered to the ground and rotated to face the direction of travel.

DANGER

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

CAUTION

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

1. Pull handle (B) upward to release and raise linkage (A) fully upward into the vertical support.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.

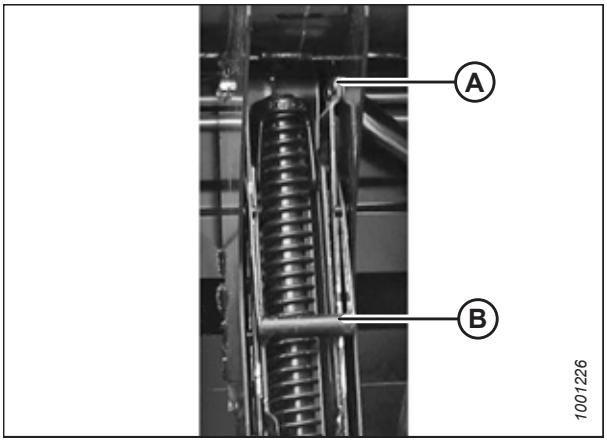


Figure 3.158: Raising Linkage

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

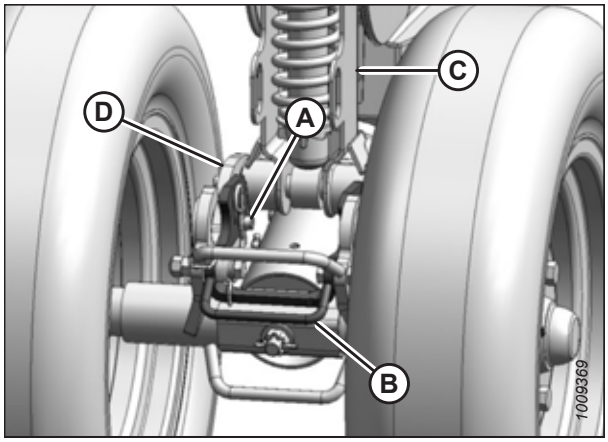


Figure 3.159: Left Front Wheels

8. Lower handle (B) to lock the linkage.

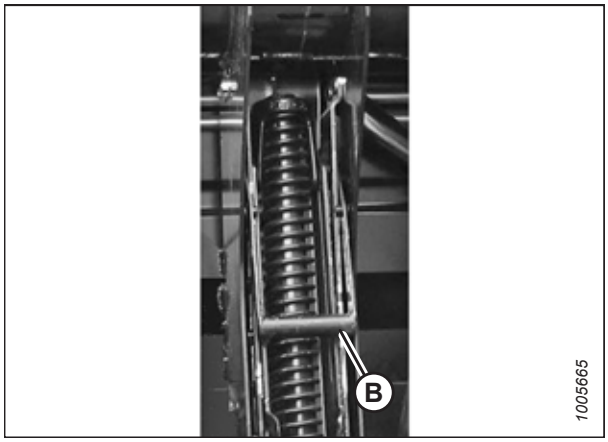


Figure 3.160: Locking Linkage

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

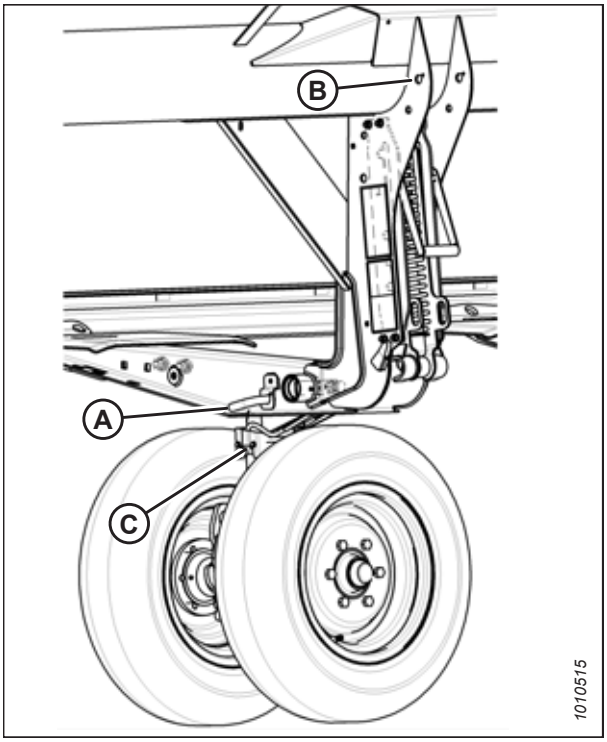


Figure 3.161: Left Front Wheels

Moving Rear Wheels into Transport Position

The rear (right) wheels are located farthest from the towing vehicle. To prepare the header for transport on the road, the rear wheel assembly must be rotated inline with the towing vehicle and lowered to the ground.

1. Remove hairpin (A) from latch (B).
2. Lift latch (B), disengage right axle (C), and lower the wheel to the ground.

CAUTION

Stand clear of the wheels and release the linkage carefully; the 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 (D) to lock the wheel linkage.

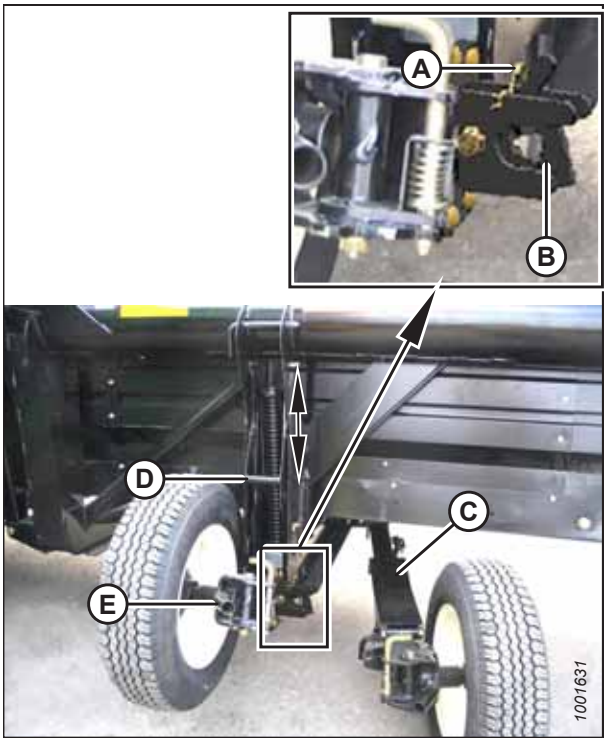


Figure 3.162: Separating Axles

6. Remove pin (A) and reinstall it at location (B). Turn the pin to lock the linkage.

7. Pull spring pin (D) upward, swivel left wheel (C) counterclockwise 90°, and the release the spring pin to lock the wheel in place.

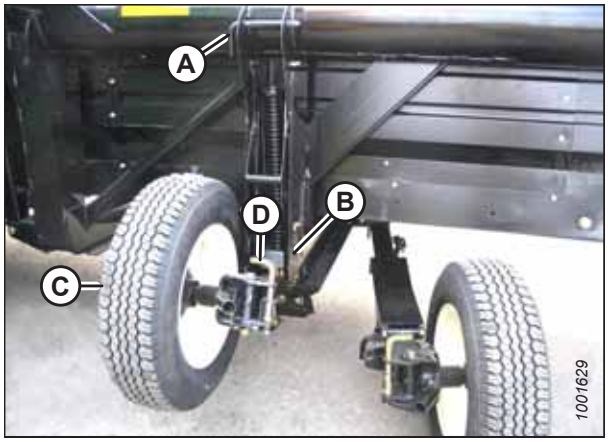


Figure 3.163: Wheel Position

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

Figure 3.164: Left Wheel in Transport Position

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

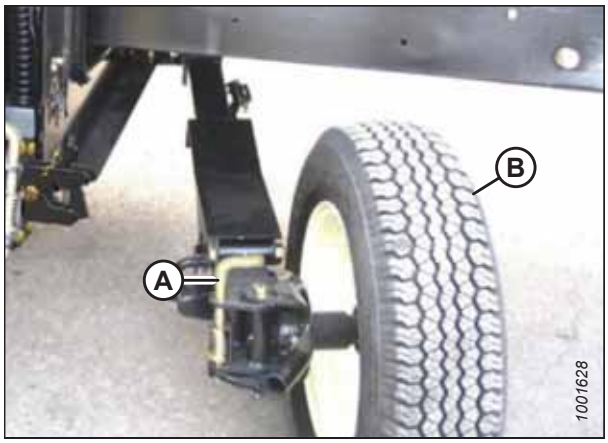


Figure 3.165: Right Rear Wheel

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

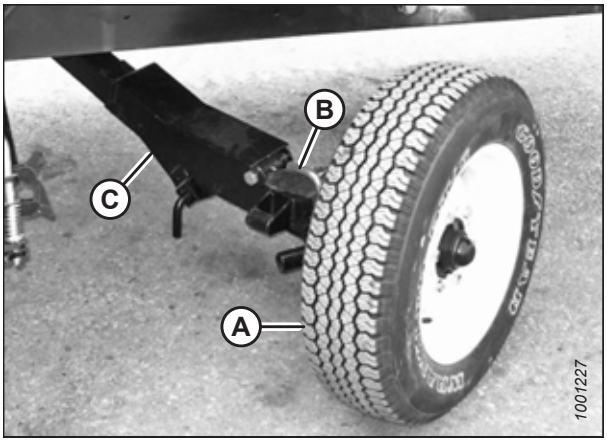


Figure 3.166: Right Rear Wheel

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

    IMPORTANT:

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

12. Swing brace (C) into the position shown and insert the brace into slot (D) behind the cutterbar. Position the brace so that pin (E) engages the hole in bracket (F). The right hand wheel is now in the transport position.

13. Disengage the header cylinder lift stops.

14. Detach the header's hydraulic and electrical connections from the combine. For instructions, refer to *5 Header Attachment/Detachment, page 289*.

15. Start the combine and lower the header to the ground.

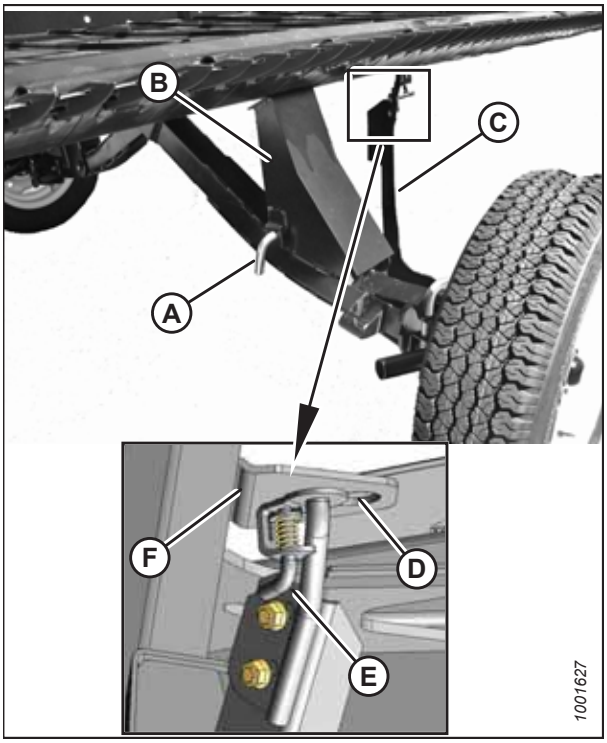


Figure 3.167: Right Rear Wheel Position

Attaching Tow-Bar

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

1. Unhook rubber strap (D) from cradle (A) on the right side of the header.
2. Remove clevis pin (C) and detach the tube end from support (B).
3. Replace 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.

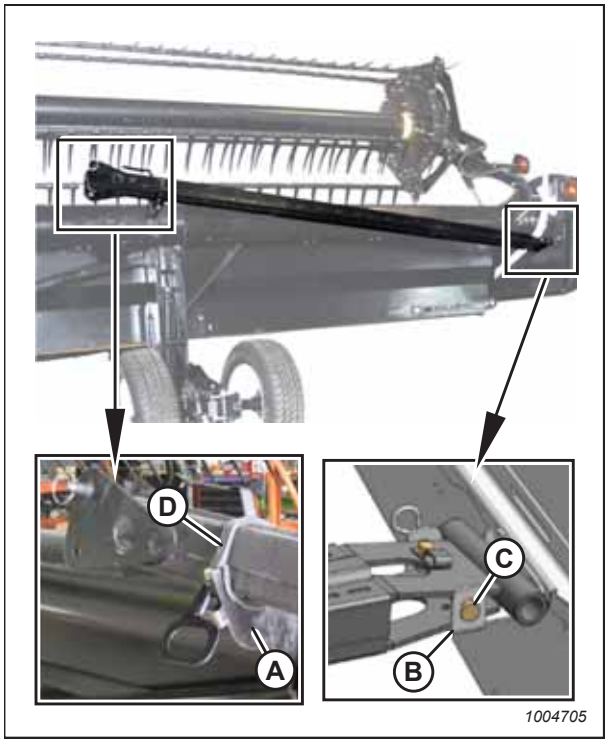


Figure 3.168: Tow-Bar Removal – Right Side

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

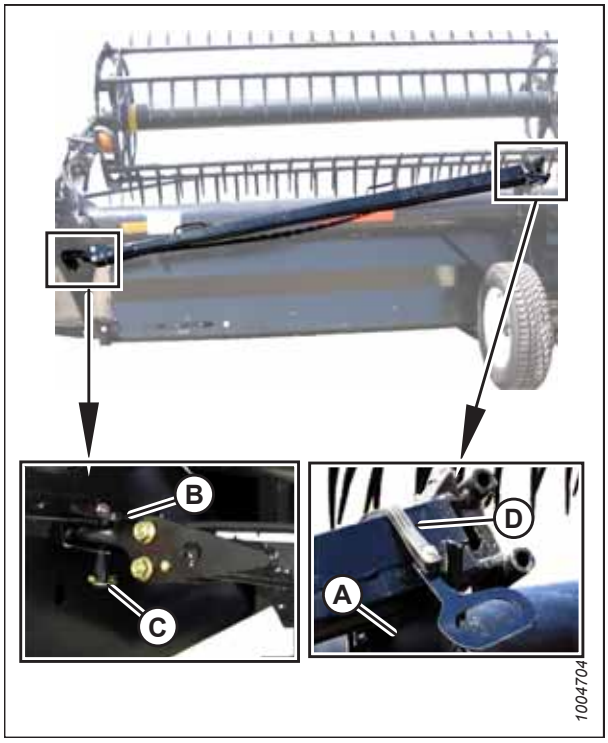


Figure 3.169: Tow-Bar Removal – Left Side

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

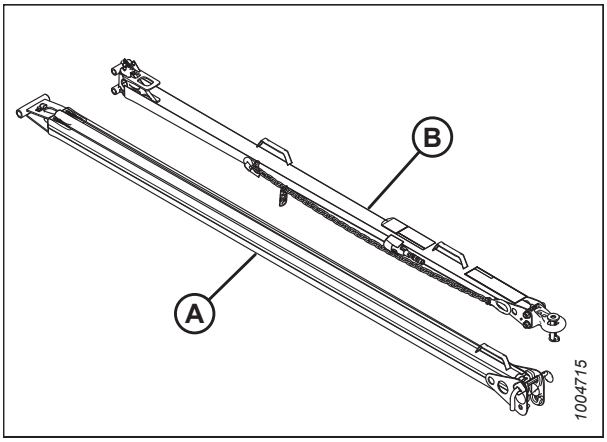


Figure 3.170: Tow-Bar Assembly

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

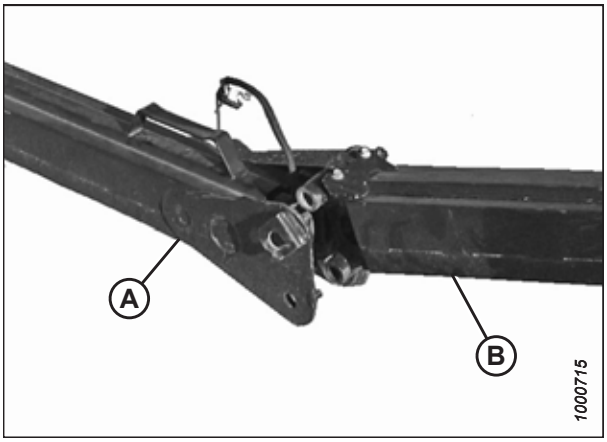


Figure 3.171: Tow-Bar Assembly

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

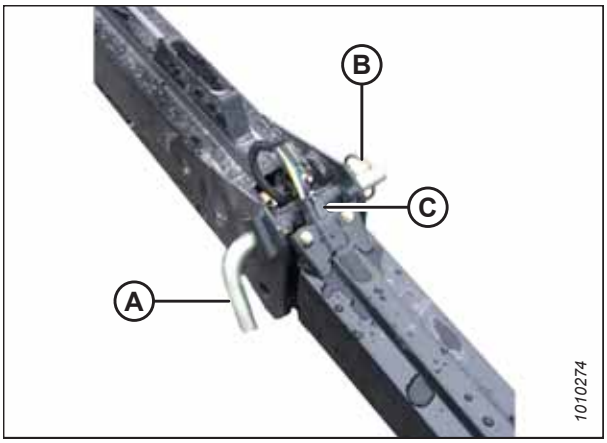


Figure 3.172: Tow-Bar Assembly

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

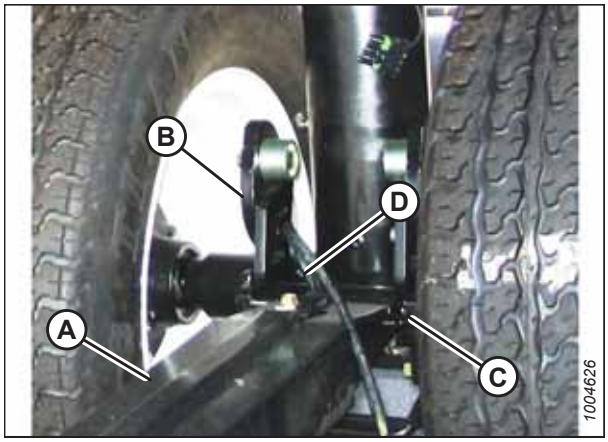


Figure 3.173: Attaching Tow-Bar

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

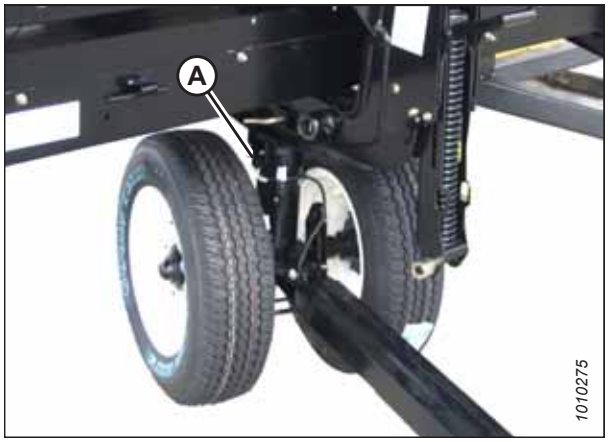


Figure 3.174: Harness Connection

Chapter 4: Auto Header Height Control

The auto header height control (AHHC) topics provide combine model-specific instructions for optimizing header performance.

4.1 Auto Header Height Control System Overview

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 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 the optimum float level as the header follows the contours of the ground.

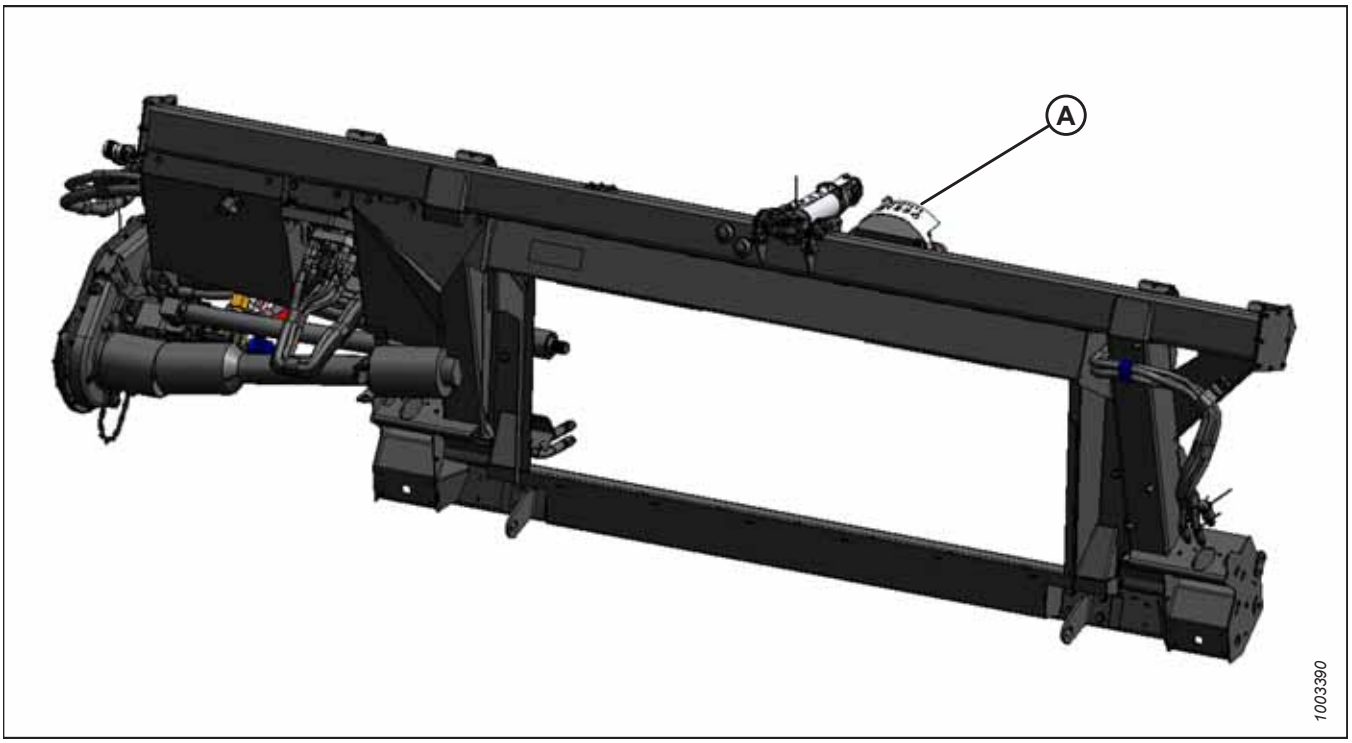


Figure 4.1: CA25 Combine Adapter

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

1. Ensure that the CA25 Combine Adapter is equipped to work with your combine. If necessary, install an appropriate combine completion package onto the CA25 Adapter. Completion packages include instructions for installing the AHHC system on the combine adapter.
2. Ensure that the AHHC sensor's output voltage range is appropriate for your combine. For more information, refer to *4.4 Sensor Output Voltage Range – Combine Requirements, page 134*.
3. Prepare the combine to use the AHHC feature (this step applies only to some combine models—refer to your combine's operator manual).
4. Calibrate the AHHC system to allow the combine to correctly interpret data from the height sensor on the combine adapter in accordance with the instructions in this manual, or with those in the header operator's manual.
5. Set up and use the AHHC system in accordance with the instructions in this manual and with those in the combine operator's manual.

Refer to the following instructions for your specific combine model:

4.2 Auto Header Height Control Sensor Operation

The sensors that send height signals to the combine are essentially large resistors that allow a position sensor arm to move and thereby send a position signal to the combine.

The position sensors supplied with the auto header height control system are 1000 ohm (1 k) industrial series variable resistors. Each sensor consists of a sealed unit with one three-pin connection point (A) and two mounting holes (B). A signal wire is connected internally to movable wiper (C), which sweeps across a high resistance filament band. An external arm is attached to movable wiper (C) and, as it moves, the wiper moves across the resistance filament to change the resistance at the signal wire, which changes the output voltage. The resistance across the power and ground pins should be approximately 100 ohms. Normal operating signal voltages are 0.5–4.5 VDC or 5–95% of available voltage.

- 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.
- A change in header height will cause the voltage signal to change.

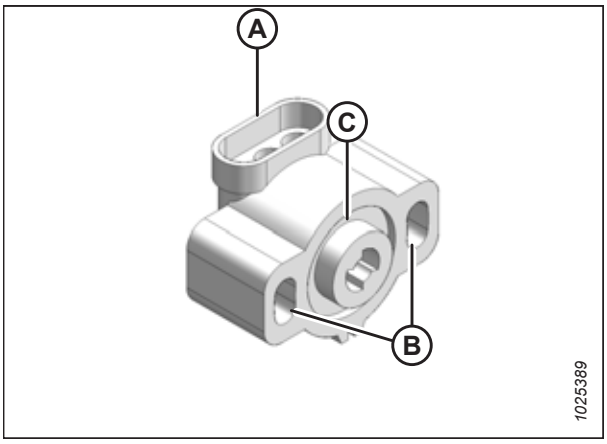


Figure 4.2: Variable Resistor Type Sensor

4.3 Replacing Auto Header Height Control Sensor

The auto header height control (AHHC) sensor/potentiometer sends a signal to combine allowing it to maintain a cutting height and optimize float as header follows ground contours.

To replace the AHHC sensor, follow these steps:

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

   IMPORTANT:

   Strictly follow the next steps to avoid damaging the new sensor.

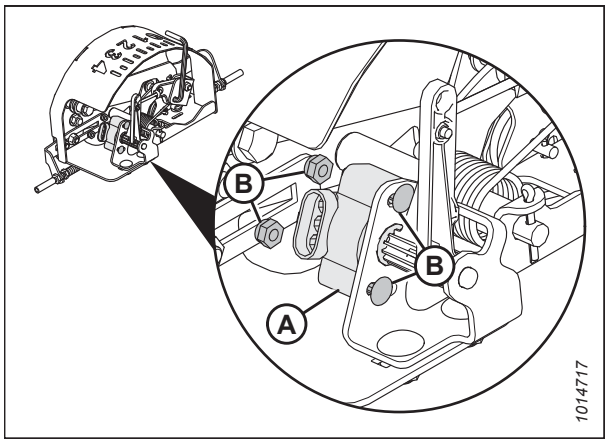


Figure 4.3: AHHC Sensor

3. Position sensor control arm (A) against stop (B).
4. Install 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 sensor (C) until the bolt holes align with the holes on the bracket.

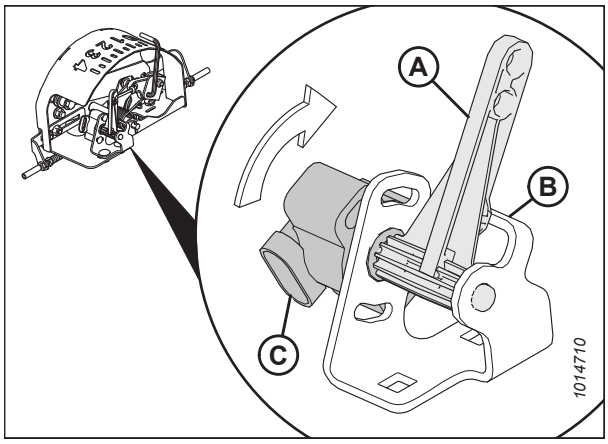


Figure 4.4: AHHC Sensor

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

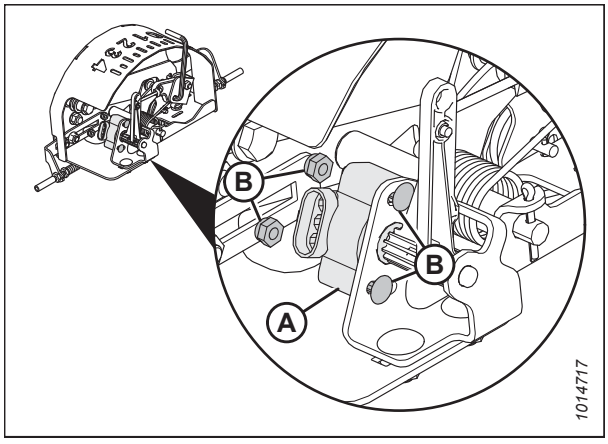


Figure 4.5: AHHC Sensor

7. Ensure linkage (A) operates freely (arrow indicates approximate range).
8. Reconnect the wiring harness to plug (B) on the sensor.
9. Check the voltage range of the new sensor, and adjust it if necessary. For instructions, refer to the following procedures:
   - *4.4.1 Manually Checking Voltage Range, page 135*
   - *4.4.2 Adjusting Voltage Limits, page 137*

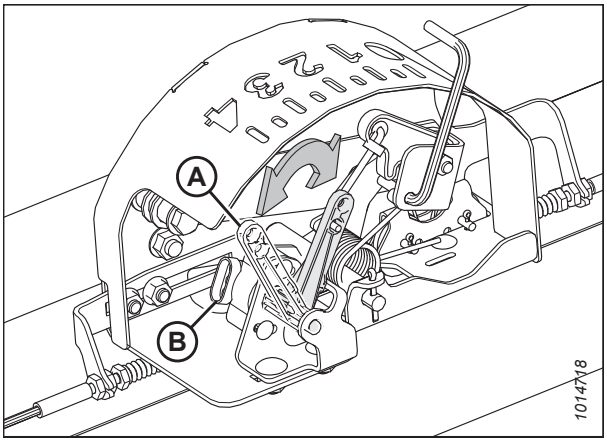


Figure 4.6: AHHC Sensor Range

4.4 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 4.1 Sensor Voltage Limits

Combine	Low Voltage Limit	High Voltage Limit	Minimum Voltage Range
Challenger®, Gleaner® A, Gleaner® S, Massey Ferguson®	0.7 V	4.3 V	2.5 V
Case IH 5088/6088/7088, 5130/6130/7130, 5140/6140/7140, 7010/8010, 7120/8120/9120, and 7230/8230/9230	0.7 V	4.3 V	2.5 V
Case IH 2300/2500	3.0 V	7.0 V	4.0 V
Gleaner® R and S Series	0.7 V	4.3 V	2.5 V
John Deere 50, 60, 70, S, and T Series	0.7 V	4.3 V	2.5 V
CLAAS 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	3.0 V	7.0 V	4.1–4.4 V

NOTE:

Some combine models do not support checking sensor output voltage from cab (early 23/2588 series, CLAAS 500/700 series). For these models, check output voltage manually. For instructions, refer to *4.4.1 Manually Checking Voltage Range, page 135*.

4.4.1 Manually Checking Voltage Range

The output voltage range of 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 Table of Contents to find the AHHC instructions for your combine model.

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. Ensure the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   IMPORTANT:

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

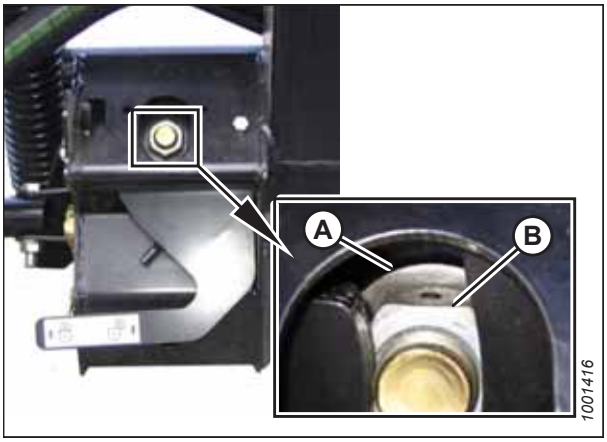


Figure 4.7: Float Lock

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

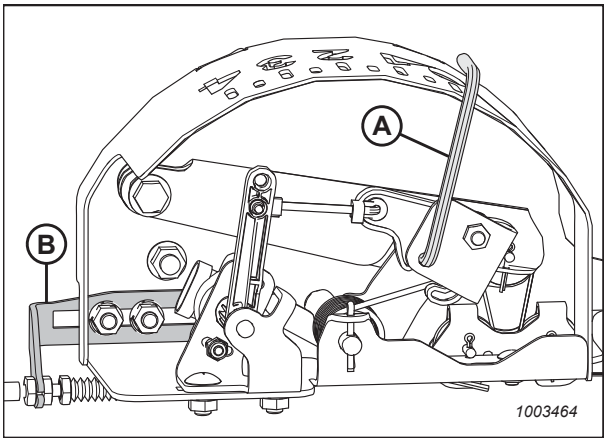


Figure 4.8: Float Indicator Box 5 Volt AHHC Sensor Assembly Shown

4. Using voltmeter (A), measure the voltage between 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. For instructions, refer to Table *4.1, page 134*.

   NOTE:

   The harness connector must be plugged into the sensor.

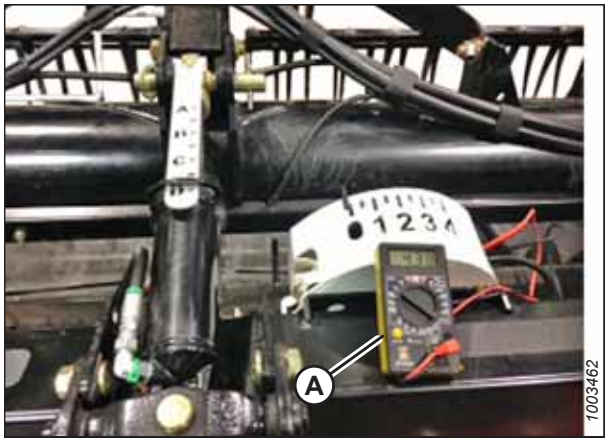


Figure 4.9: Measuring Voltage at Float Indicator Box

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

   NOTE:

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

6. Using voltmeter (A), measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator box. It should be at the low voltage limit for the combine. For instructions, refer to Table *4.1, page 134*.

   NOTE:

   The harness connector must be plugged into the sensor.

7. Adjust the voltage limits (refer to *4.4.2 Adjusting Voltage Limits, page 137*) if the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient. For sensor voltage limits, refer to Table *4.1, page 134*.

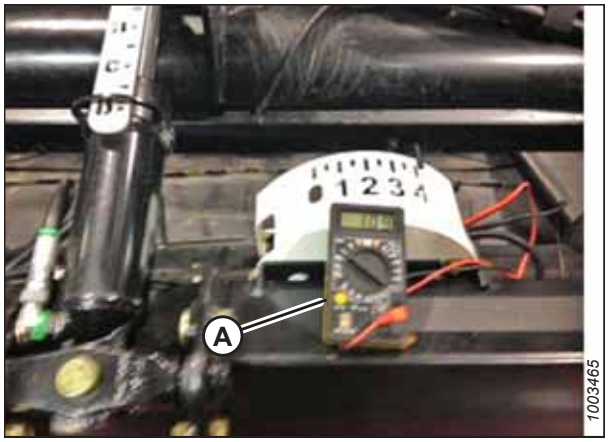


Figure 4.10: Measuring Voltage at Float Indicator Box

4.4.2 Adjusting Voltage Limits

Setting the voltage limits establishes the operating range of the auto header height control (AHHC) sensor with the combine, allowing the combine to react to the float system's feedback.

NOTE:

The auto header height control (AHHC) sensor assemblies used for CLAAS and some New Holland combines are slightly different from 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 the guard angle fully. The header angle indicator should be at **D**.
   b. Position the header 152–254 mm (6–10 in.) above the ground. The 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).

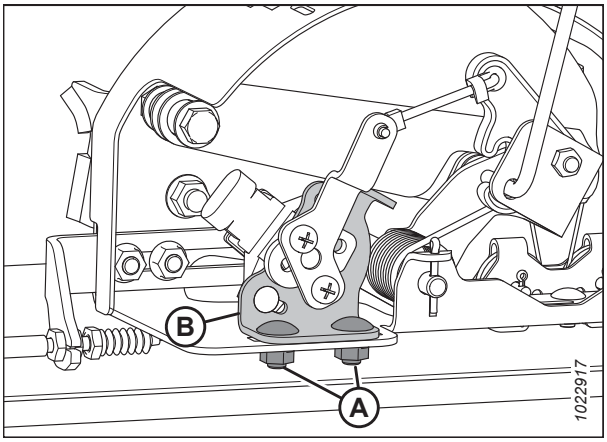


Figure 4.11: AHHC Sensor Assembly for Use with CLAAS Combines

2. Complete the following steps to adjust the low voltage limit:
   a. Extend the guard angle fully. The header angle indicator should be at **D**.
   b. Fully lower the 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, or counterclockwise to decrease it.
   e. Tighten sensor mounting bolts (A).

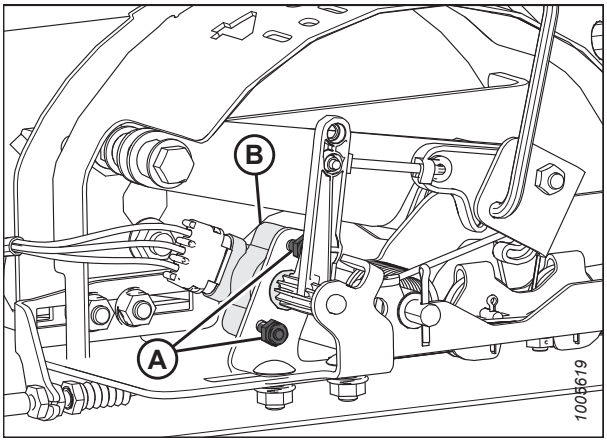


Figure 4.12: Most Common 5 Volt AHHC Sensor Assembly

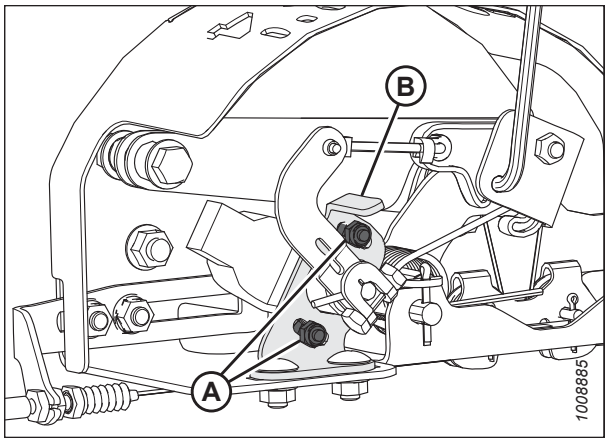


Figure 4.13: 10 Volt AHHC Sensor Assembly for Use with Some New Holland Combines

4.5 Case IH 2300/2500 and 5088/6088/7088 Combines

To make your header's auto header height control system compatible with these Case IH 2300/2500 and 5088/6088/7088 combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.5.1 Engaging 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 auto header height control (AHHC) will raise and lower the header to maintain this fixed distance from the ground.
3. Turn the feeder ON.
4. Push the HEADER LOWER switch.

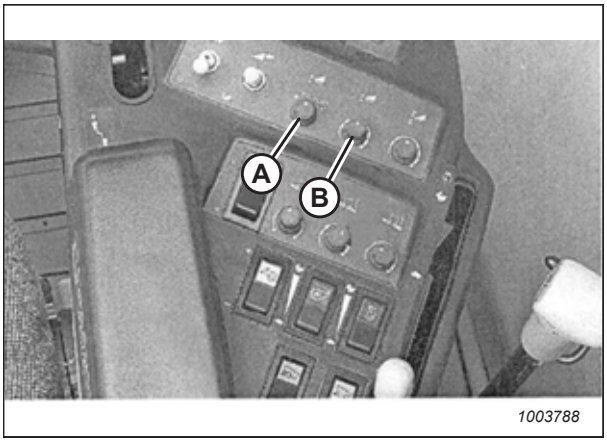


Figure 4.14: Combine Controls

5. Use HEADER RAISE rate control (A) and HEADER LOWER rate control (B) to adjust the rate that the header raises or lowers while maintaining the desired height over the ground contours.

Figure 4.15: Combine Controls

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

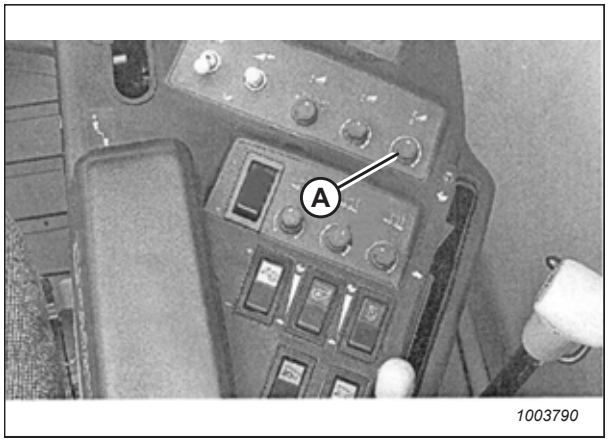


Figure 4.16: Combine Controls

4.5.2 Calibrating Auto Header Height Control – Case IH 2300/2500 and 5088/6088/7088

For best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link adjusted as long as possible. When the calibration is complete, adjust the center-link back to desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

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 float on the header and the adapter (refer to the operator's manual for instructions). Position the fore-aft and the center-link in midspan.

DANGER

Ensure that all bystanders have cleared the area.

2. Start the engine, but do **NOT** engage the separator or the feeder house.
3. Locate HEADER CONTROL switch (A) on the right console, and set it to HT (this is AHHC mode).

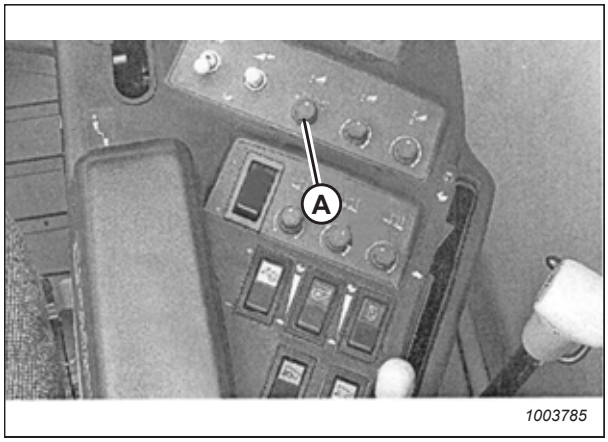


Figure 4.17: Right Console

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

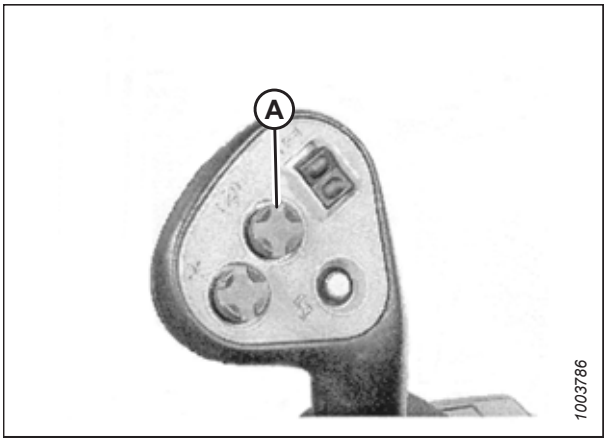


Figure 4.18: Joystick Lever (Case IH 2300/2500)

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 pointer is positioned at 0 (B) with the header suspended off the ground, then the ideal ground pressure will be achieved with the pointer positioned at 1 (A). Operating the header with heavier pressures can wear the cutterbar wearplate prematurely.

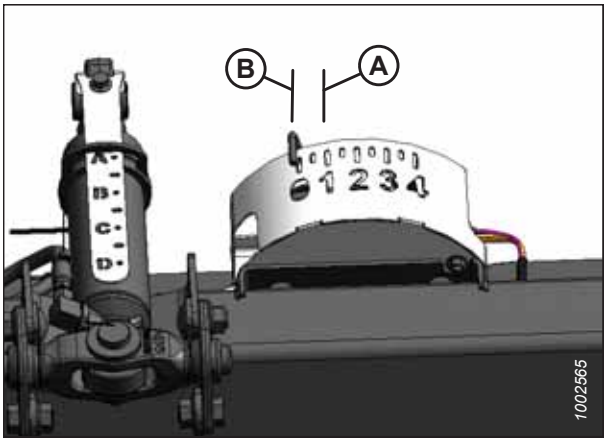


Figure 4.19: Float Indicator Box

4.5.3 Setting Sensitivity of 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 sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When sensitivity is set to minimum, large changes in 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 HEADER SETTINGS key (A) to display the HEADER SENSITIVITY CHANGE page.
2. Use UP (B) or DOWN (C) keys 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 HEADER SETTINGS key (A) to highlight the next changeable item.
4. Use ENTER key (D) to save the changes and return to the monitor page. If there are no changes, the screen will return to the monitor page after 5 seconds.

Figure 4.20: Combine Controls

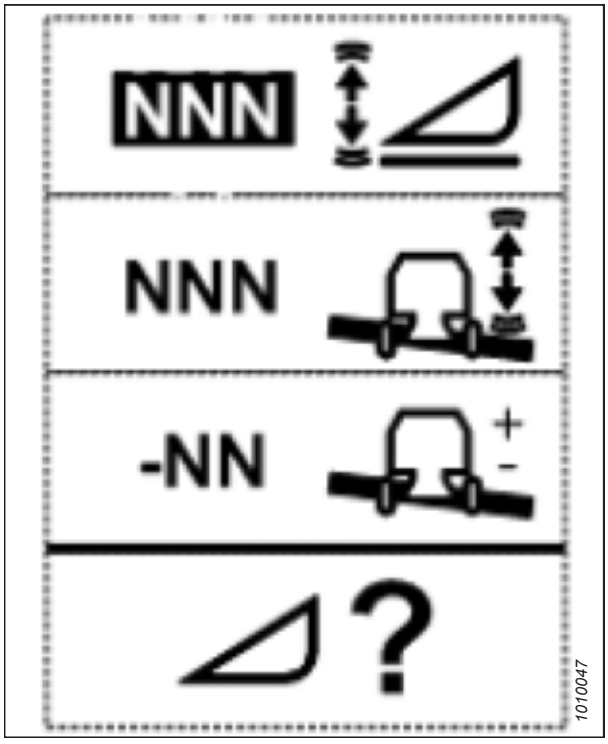


Figure 4.21: Height Sensitivity Change Page

4.6 Case IH 5130/6130/7130 and 5140/6140/7140 Midrange Combines

To make your header's auto header height control (AHHC) system compatible with Case IH 5, 6, and 7 (Midrange) series combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.6.1 Setting up the Header on the Combine Display – Case IH 5130/6130/7130; 5140/6140/7140

Set these initial configuration options on your Case IH 5, 6, and 7 (Midrange) series combine when setting up the auto header height control (AHHC) system.

1. On the main page of the combine display, select TOOLBOX (A).

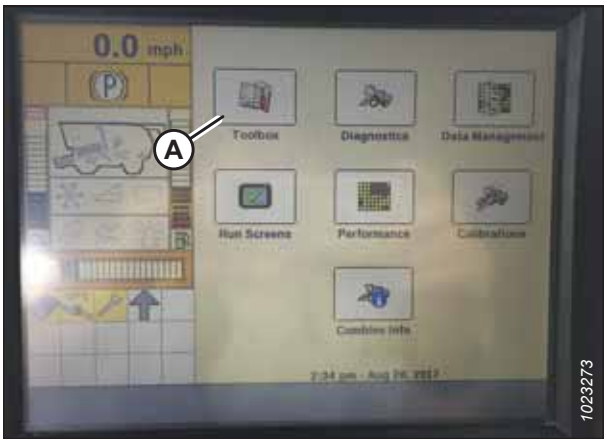


Figure 4.22: Case IH Combine Display

2. Select HEAD 1 tab (A). The HEADER SETUP page appears.
3. From CUTTING TYPE menu (B), select PLATFORM.

Figure 4.23: Case IH Combine Display

4. Select HEAD 2 tab (A). The HEADER SETUP 2 page appears.
5. From HEADER PRESSURE FLOAT menu (B), select NOT INSTALLED.
6. If you are operating a D65 Draper Header, select RIGID 2000 SERIES from DRAPER GRAIN HEADER STYLE menu (C).

   If you are operating an FD75 FlexDraper® Header, select FLEX 2000 SERIES from the DRAPER GRAIN HEADER STYLE menu (C).

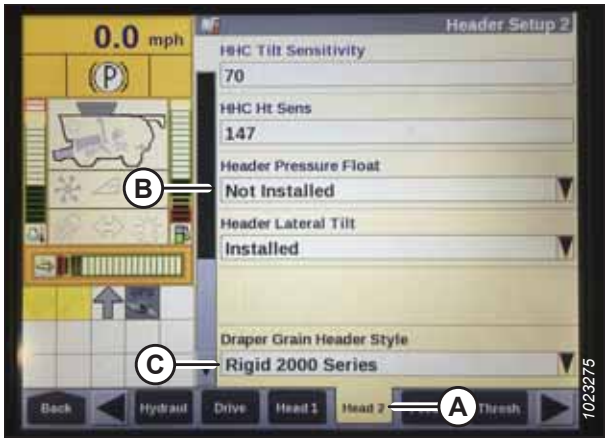


Figure 4.24: Case IH Combine Display

7. From REEL DRIVE TYPE menu (A), select:
   - 4 if you are using a 19-tooth drive sprocket
   - 5 if you are using a 14-tooth drive sprocket
   - 6 if you are using a 10-tooth drive sprocket

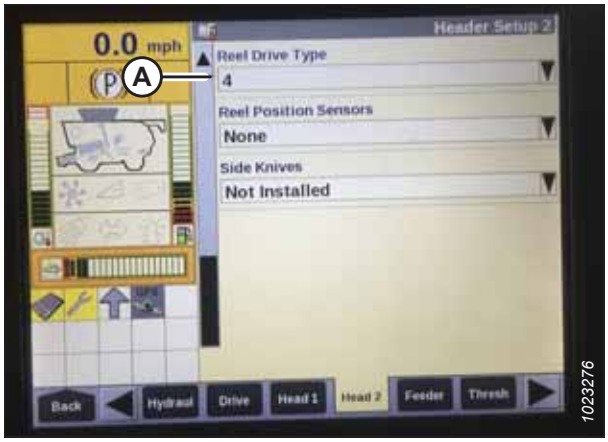


Figure 4.25: Case IH Combine Display

4.6.2 Checking Voltage Range from Combine Cab – Case IH 5130/6130/7130; 5140/6140/7140

To ensure that the auto header height control (AHHC) system on your header works correctly with your Case IH 5, 6, and 7 (Midrange) series combine, the output voltage from the header height control sensors must be verified.

NOTE:

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

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the voltage may go out of range during header operation. This will cause the AHHC system to malfunction.

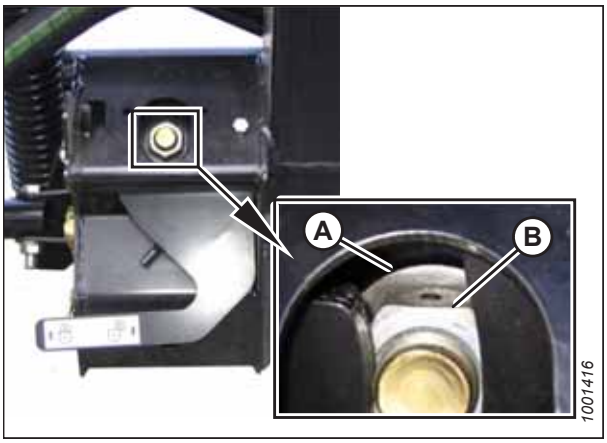


Figure 4.26: Float Lock

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

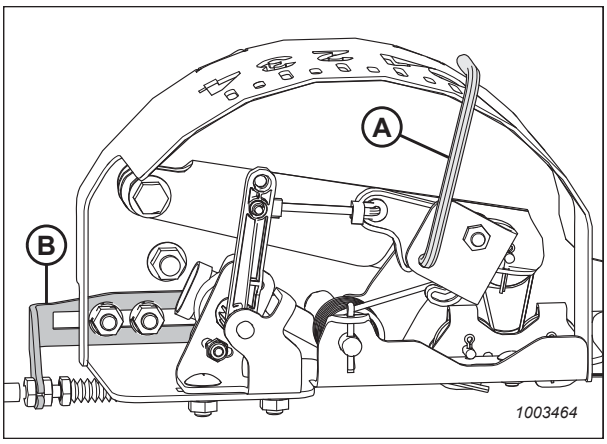


Figure 4.27: Float Indicator Box

5. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page opens.

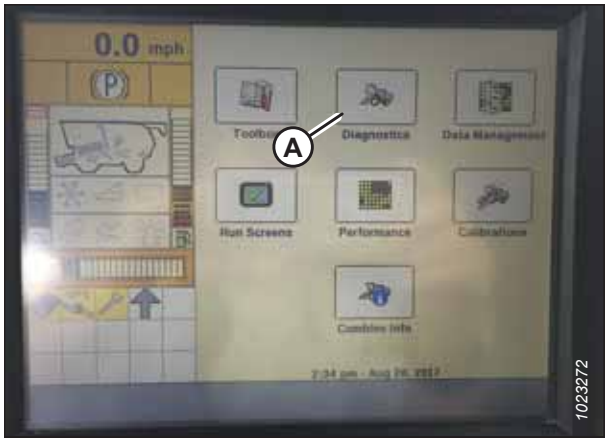


Figure 4.28: Case IH Combine Display

6. Select SETTINGS (A). The SETTINGS page opens.
7. From GROUP menu (B), select HEADER.

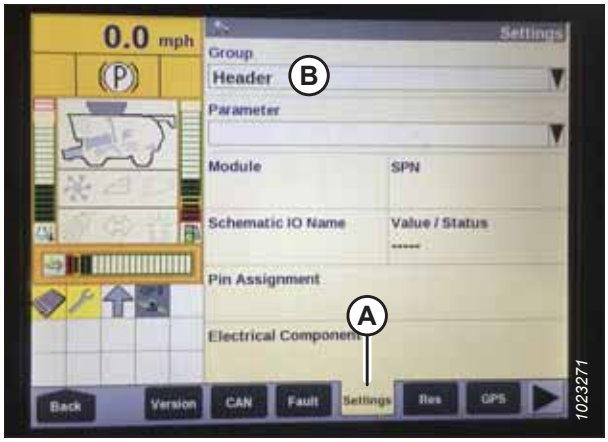


Figure 4.29: Case IH Combine Display

8. From the PARAMETER menu, select LEFT HEIGHT/TILT SENSOR (A).

Figure 4.30: Case IH Combine Display

9. The SETTINGS page updates to display the voltage in VALUE/STATUS field (A). Lower the feeder house fully, and then raise it 305 mm (12 in.) off the ground to view the full range of voltage readings.

10. Adjust the voltage limits (refer to *4.4.2 Adjusting Voltage Limits, page 137*) 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 *4.1, page 134*).

Figure 4.31: Case IH Combine Display

4.6.3 Calibrating Auto Header Height Control – Case IH 5130/6130/7130; 5140/6140/7140

The auto header height control (AHHC) sensor output must be calibrated for Case IH 5, 6, and 7 (Midrange) series combines, or the AHHC feature will not work properly.

For best performance from the auto header height control (AHHC), perform these procedures with center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

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 *4.7.5 Calibrating Auto Header Height Control – Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240 – Software Versions Above 28.00, page 159*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure that the center-link is set to **D**.

2. Ensure that all header and adapter electrical and hydraulic connections are complete.

3. Lower the combine feeder house all the way down.

4. Hold the DOWN button for 2 seconds.

5. Push the RAISE button and hold it until the feeder house travels all the way up. It will stop 61 cm (2 ft.) above the ground for 5 seconds, then it will resume rising. This is an indication that the calibration procedure has been successful.

Figure 4.32: Calibrating Auto Header Height

4.6.4 Setting Preset Cutting Height – Case IH 5130/6130/7130; 5140/6140/7140

Your Case IH 5, 6, or 7 (Midrange) series combine can have up to two auto header height control (AHHC) header height presets configured at one time.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Check to be sure all bystanders have cleared the area.

1. Engage the separator and the header.
2. Manually raise or lower the header to the desired cutting height.
3. Press 1 on button (A). A yellow light next to the button will light up.

Figure 4.33: Case Combine Console

4. Manually raise or lower the header to a second desired cutting height.
5. Press 2 on button (A). A yellow light next to the button will light up.

Figure 4.34: Case Combine Console

Up and down arrows should now appear in MANUAL HEIGHT box (A) on the RUN 1 page on the combine display. This indicates that the auto header height control (AHHC) is functioning.

Figure 4.35: Case Combine Display – Run 1 Page

6. To enable the presets, activate AHHC button (A) to place the header on the ground. To enable the first preset, tap the button once. To enable the second preset, tap the button twice.

   To lift the header to maximum working height, hold the SHIFT button on the back of the ground speed lever (GSL) while tapping AHHC button (A).

Figure 4.36: Case Combine Joystick

7. The maximum working height can be adjusted on the HEADER SETUP page on the combine display. Enter the desired height in MAXIMUM WORKING HEIGHT field (A).

Figure 4.37: Case Combine Display – Header Setup Page

8. If you need to change the position of one of the presets, you can fine-tune this setting with button (A) on the combine console.

Figure 4.38: Case Combine Console

NOTE:

In most cases, the ideal ground pressure is one number (on float indicator box) above the setting at which the header is suspended off the ground. For example, if the float indicator pointer is positioned at 0 (B) with the header suspended off the ground, then the ideal ground pressure will be achieved with the pointer positioned at 1 (A). Operating the header with heavier pressures can wear out the cutterbar wearplate quickly.

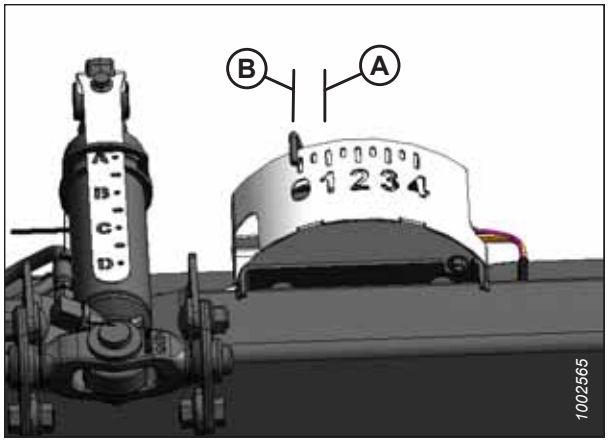


Figure 4.39: Float Indicator Box

4.7 Case IH 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240 Combines

To make your header's auto header height control (AHHC) system compatible with Case IH 7, 8, or 9 series combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.7.1 Checking Voltage Range from Combine Cab – Case 8010

To ensure that the auto header height control (AHHC) system on your header works correctly with your Case IH 8010 combine, the output voltage from the header height control sensors must be verified.

NOTE:

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

DANGER

Check to be sure all bystanders have cleared the area.

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

   NOTE:

   If the header is not on the down stops during this procedure, the voltage may go out of range during header operation. This will cause the AHHC system to malfunction.

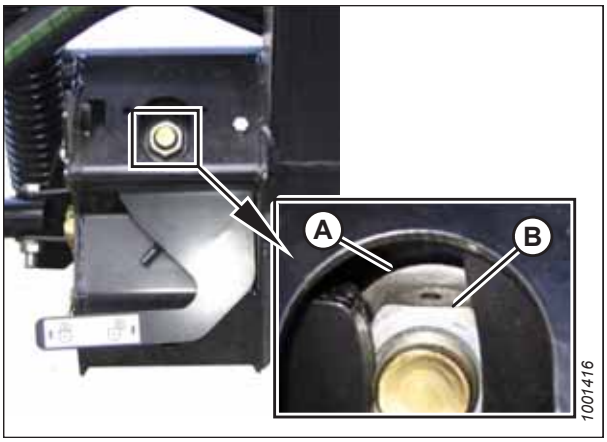


Figure 4.40: Float Lock

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

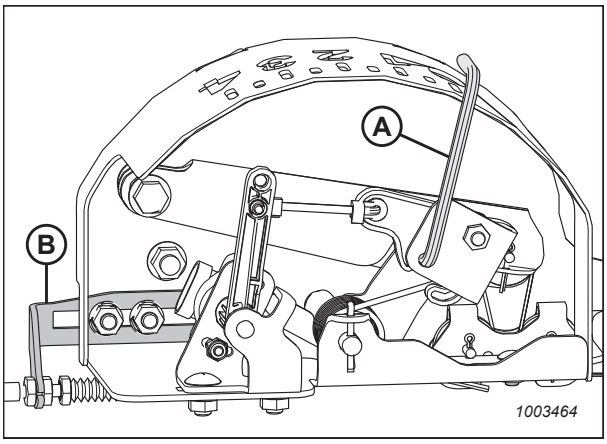


Figure 4.41: Float Indicator Box

5. Select DIAG (A) on the Universal display MAIN page. The DIAG page appears.

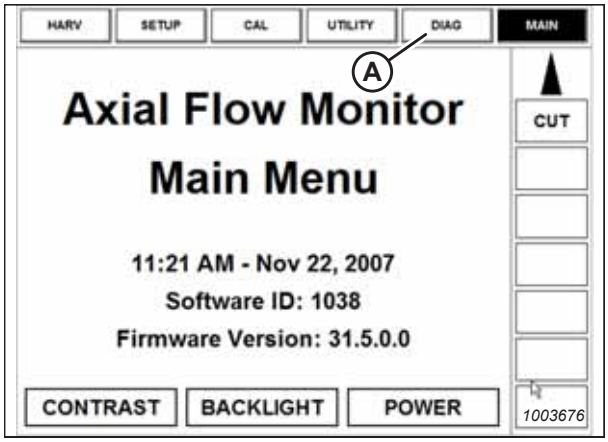


Figure 4.42: Case 8010 Combine Display

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

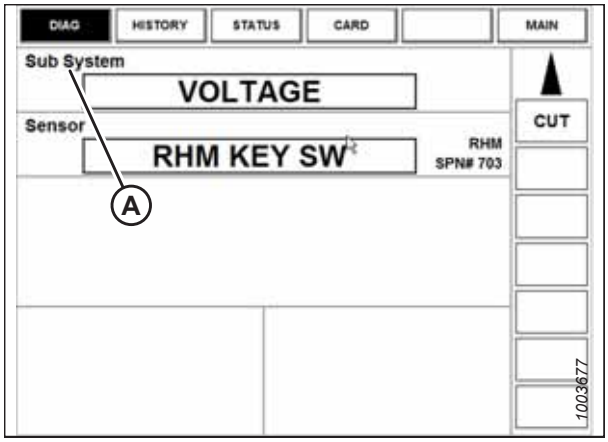


Figure 4.43: Case 8010 Combine Display

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

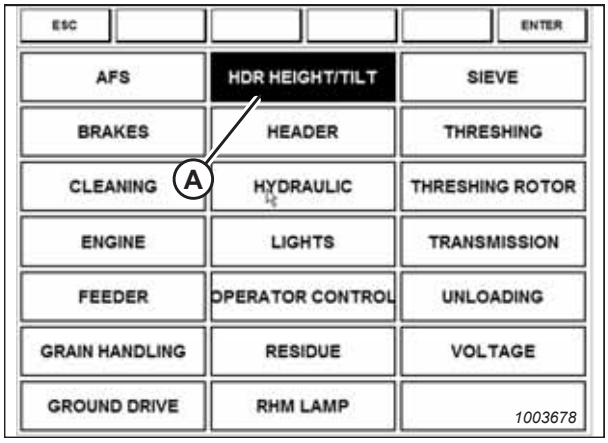


Figure 4.44: Case 8010 Combine Display

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

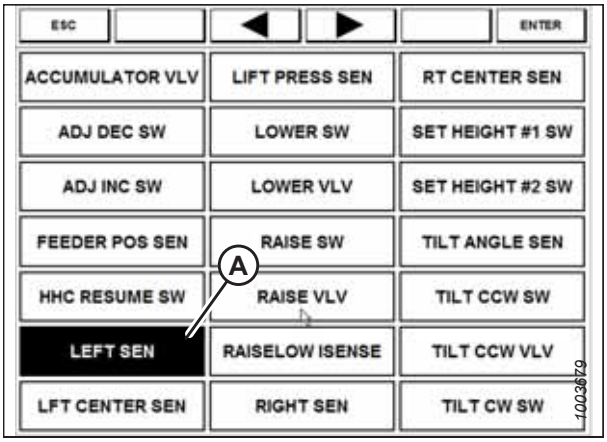


Figure 4.45: Case 8010 Combine Display

9. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, then adjust the voltage limits. Refer to *4.4.2 Adjusting Voltage Limits, page 137* and Table *4.1, page 134* for instructions.

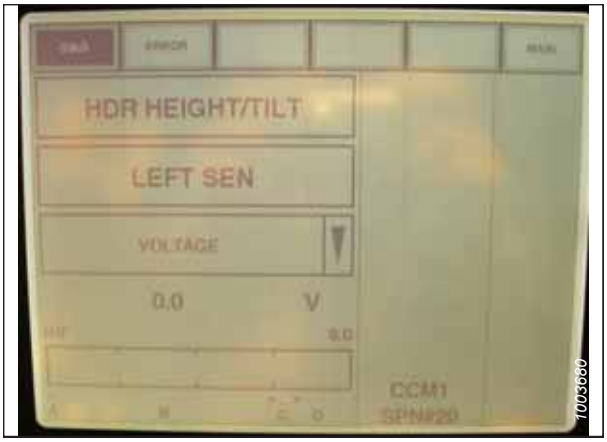


Figure 4.46: Case 8010 Combine Display

4.7.2 Setting Header Controls – Case IH 8010

The following procedure applies to Case IH 8010 combines without a shift button on the control handle.

REEL FORE-AFT switches (A) also control header fore-aft tilt if the header is equipped with the fore-aft tilt option. The switches can be configured to allow the Operator to swap between reel fore-aft and header fore-aft tilt.

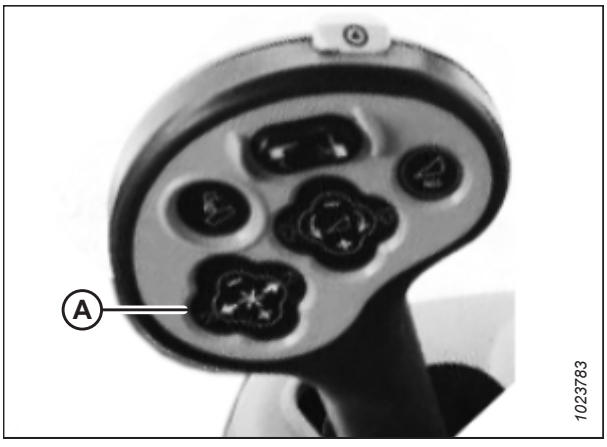


Figure 4.47: Case Combine Controls

1. To switch from reel fore-aft controls to header fore-aft tilt controls, go to the LAYOUT tab, select FORE/AFT CONTROL (A) from the legend, and place it on one of the operator-configurable screens (HARV1, HARV2, HARV3) or ADJUST under the RUN menu.

   NOTE:

   H F/A (B) is displayed on the status bar on the right of the screen when HEADER is selected with the FORE/AFT CONTROL.

2. If HEADER is selected with the FORE/AFT CONTROL, press the reel aft button on the control handle to tilt the header rearward, or press the reel fore button on the control handle to tilt the header forward.

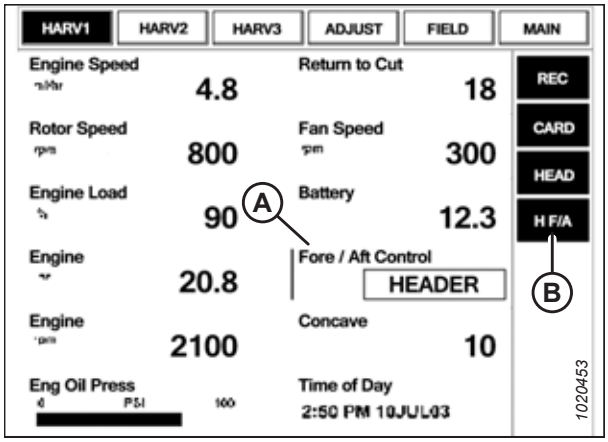


Figure 4.48: Case Combine Display

4.7.3 Checking Voltage Range from Combine Cab – Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240

To ensure that the auto header height control (AHHC) system on your header works correctly with your Case IH 7, 8, or 9 series combine, the output voltage from the header height control sensors must be verified.

NOTE:

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

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the voltage may go out of range during operation, causing the AHHC system to malfunction.

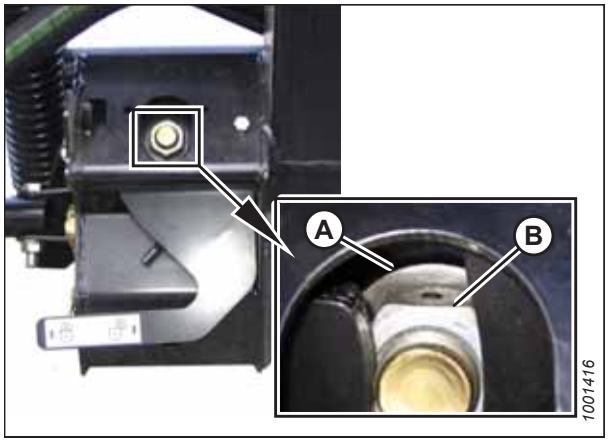


Figure 4.49: Float Lock

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

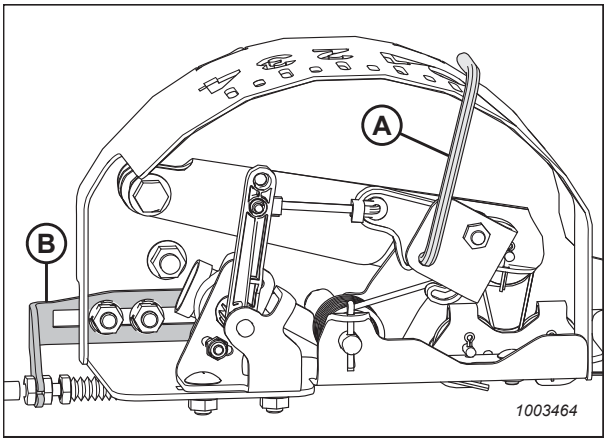


Figure 4.50: Float Indicator Box

5. Select DIAGNOSTICS (A) on the MAIN page. The DIAGNOSTICS page appears.
6. Select SETTINGS. The SETTINGS page appears.

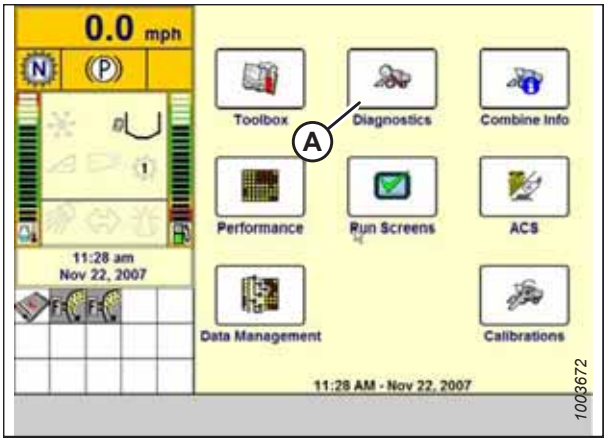


Figure 4.51: Case IH Combine Display

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

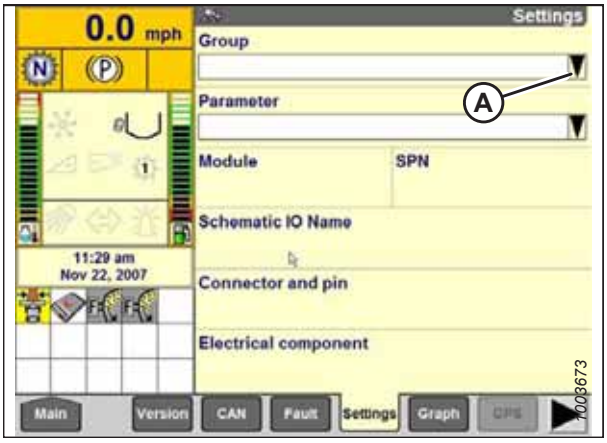


Figure 4.52: Case IH Combine Display

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

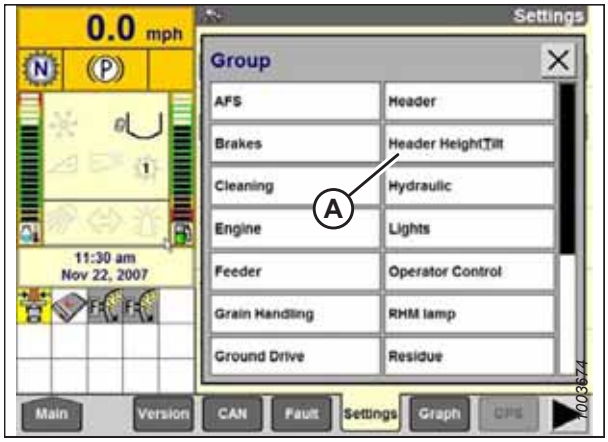


Figure 4.53: Case IH Combine Display

9. Select LEFT HEADER HEIGHT SEN (A) and then select GRAPH button (B). The exact voltage is displayed at the top of the page. Raise and lower the header to see the full range of voltage readings.

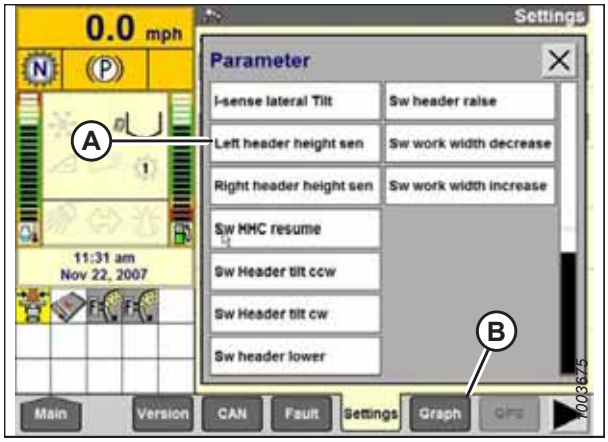


Figure 4.54: Case IH Combine Display

10. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, then adjust the voltage limits. For instructions, refer to *4.4.2 Adjusting Voltage Limits, page 137* and Table *4.1, page 134*.

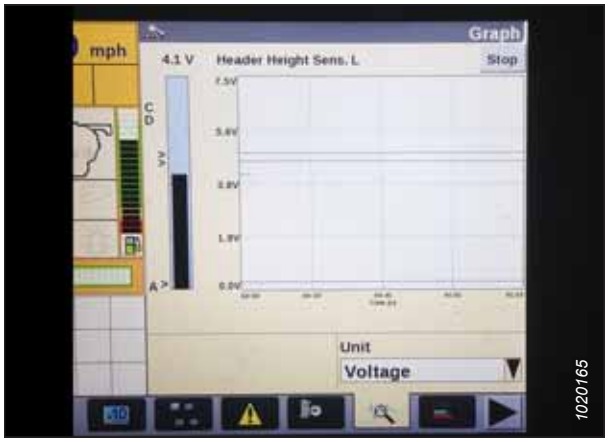


Figure 4.55: Case IH Combine Display

4.7.4 Calibrating Auto Header Height Control – Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240 – Software Versions Below 28.00

The auto header height control (AHHC) sensor output must be calibrated for Case IH 7, 8, or 9 series combines with software versions below 28.00, or the AHHC feature will not work properly.

For best performance from the auto header height control, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

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 *4.7.5 Calibrating Auto Header Height Control – Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240 – Software Versions Above 28.00, page 159*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

Figure 4.56: Case IH Combine Display

5. Set the AUTO REEL SPEED SLOPE setting.
6. Set the HEADER PRESSURE FLOAT setting to NO (A) if equipped, and ensure that the REEL DRIVE setting is set to HYDRAULIC (B).

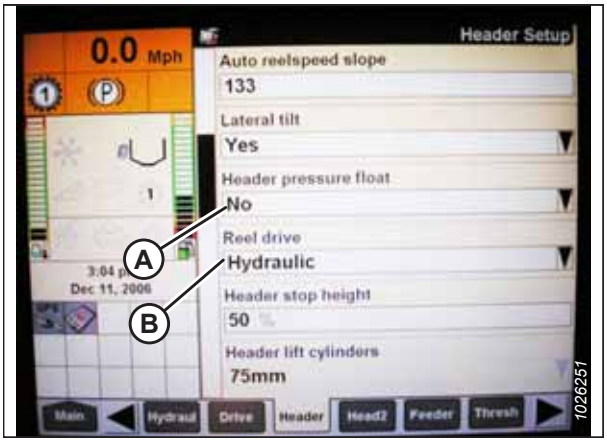


Figure 4.57: Case IH Combine Display

7. Select YES (A) from the REEL FORE-BACK list (if applicable).
8. Set HEIGHT SENSITIVITY (B) to the desired value. The recommended starting value is 180.

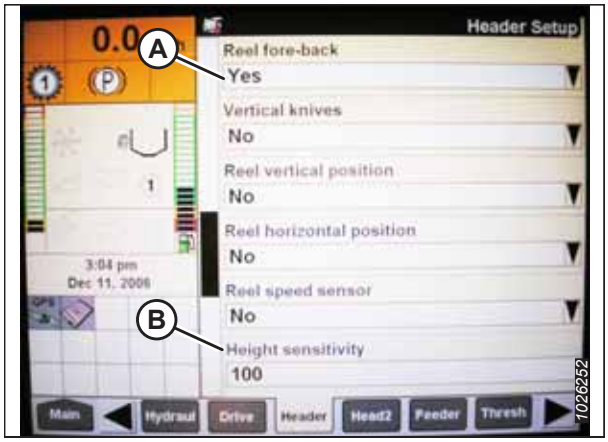


Figure 4.58: Case IH Combine Display

9. Select YES for FORE-AFT CONTROL (A) and HDR FORE-AFT TILT (B) (if applicable).

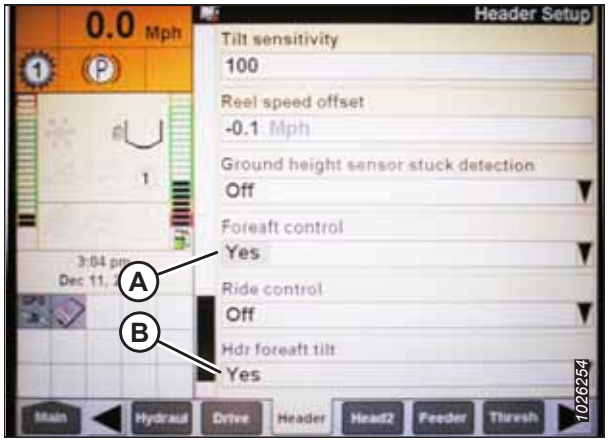


Figure 4.59: Case IH Combine Display

10. Select the HEAD2 tab at the bottom of the page.
11. Ensure that DRAPER (A) is selected from the HEADER TYPE list.

    NOTE:

    If the recognition resistor is plugged into the header harness, you will not be able to change the header type.

12. Set the cutting type to PLATFORM (B).
13. Set the appropriate HEADER WIDTH (C) and HEADER USAGE (D) values.

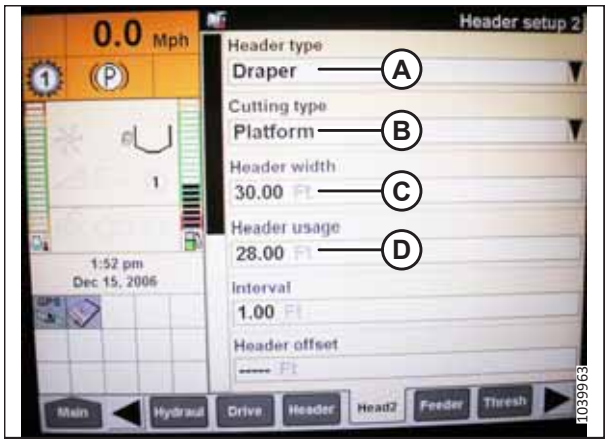


Figure 4.60: Case IH Combine Display

4.7.5 Calibrating Auto Header Height Control – Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240 – Software Versions Above 28.00

The auto header height control (AHHC) sensor output must be calibrated for Case IH 7, 8, or 9 series combines with software versions above 28.00, or the AHHC feature will not work properly.

For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure that the 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 HEAD 2 tab found at the bottom of the display.
4. Select 2000 (A).

Figure 4.61: 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 found at the bottom of the display.
6. Select ENABLE (A) in the HEADER SENSORS field.
7. Select NO (B) in the HEADER PRESSURE FLOAT field.

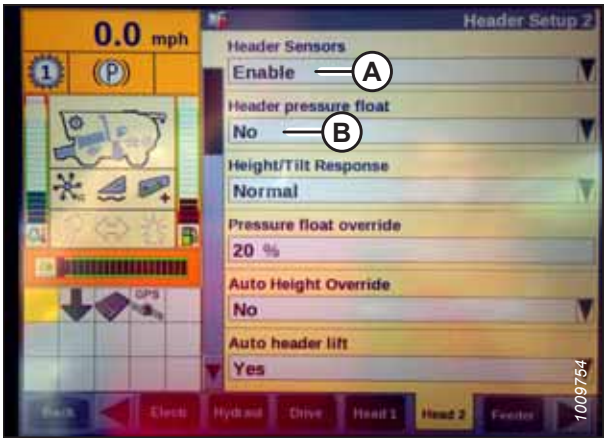


Figure 4.62: Case IH Combine Display

8. Engage the separator and the header and press preset 1 or preset 2.

9. Ensure that AUTO HEIGHT icon (A) appears on the display and can be seen at location (B) as shown. When the header is set for cutting on the ground, this step verifies that the combine is using the potentiometer on the header correctly to sense the ground pressure.

   NOTE:

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

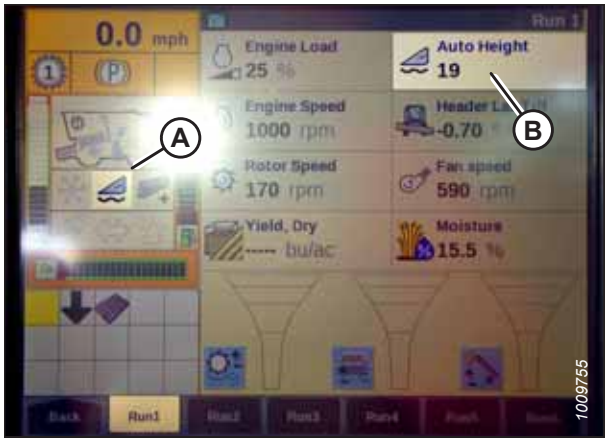


Figure 4.63: Case IH Combine Display

10. Select CALIBRATION on the combine display and press the right arrow navigation key to enter the information box.

11. Select HEADER (A) and press ENTER. The CALIBRATION dialog box opens.

    NOTE:

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

Figure 4.64: Case IH Combine Display

12. 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 in the procedure.

    NOTE:

    The calibration procedure will stop if the system sits idle for more than 3 minutes or if the ESC key is pressed during any step.

    NOTE:

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

Figure 4.65: Case IH Combine Display

13. When all the calibration steps have been completed, the message CALIBRATION SUCCESSFUL is displayed on the page. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

    NOTE:

    If the float was changed to a heavier setting to complete the ground calibration procedure, readjust the float after the calibration procedure is completed.

14. If the AHHC system still does not function properly, perform the combine's maximum stubble height calibration procedure.

4.7.6 Setting Preset Cutting Height – Case 7010/8010, 7120/8120/9120, 7230/8230/9230, 7240/8240/9240

Your Case IH 7, 8, or 9 series combine can have up to two auto header height control header height presets configured at one time.

NOTE:

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

DANGER

Check to be sure all bystanders have cleared the area.

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

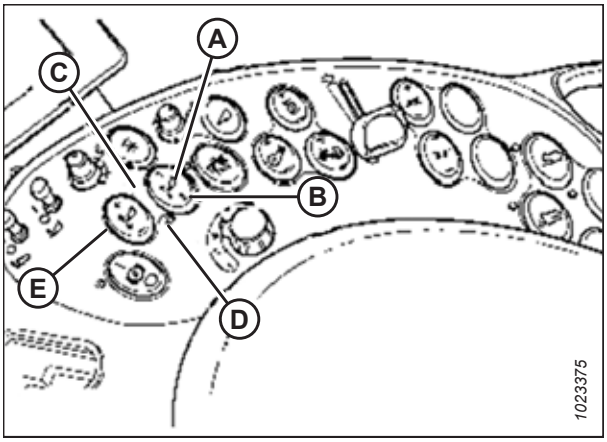


Figure 4.66: Case Combine Controls

A - Set #1 Switch
B - Set #2 Switch
C - Header Height Mode Light
D - Header Height Mode Light
E - Fine Adjust Switch

6. To swap between these header height presets, press HEADER RESUME (A).

7. To raise the header, press HEADER RESUME (A) twice. To lower the header, press HEADER RESUME (A).

NOTE:

You can adjust these set points by using FINE ADJUST switch (E) in Figure *4.66, page 161*.

NOTE:

Pressing the HEADER RAISE/LOWER switch will disengage AUTO HEIGHT mode. Press HEADER RESUME to re-engage that mode.

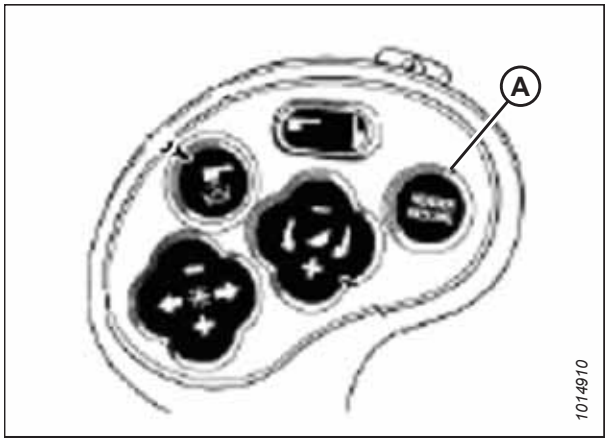


Figure 4.67: Case Combine Controls

NOTE:

In most cases, the ideal ground pressure is one number (on float indicator box) above the setting at which the header is suspended off the ground. For example, if the float indicator pointer is positioned at 0 (B) with the header suspended off the ground, then the ideal ground pressure will be achieved with the pointer positioned at 1 (A). Operating the header with heavier pressures can wear out the cutterbar wearplate quickly.

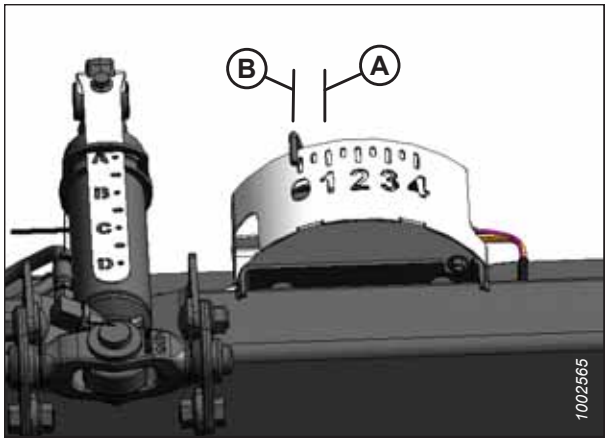


Figure 4.68: Float Indicator Box

4.8 Challenger® Combines

To make your header's auto header height control (AHHC) system compatible with Challenger® 6 Series combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.8.1 Checking Voltage Range from Combine Cab – Challenger® 6 and 7 Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your Challenger® 6 or 7 Series combine, the output voltage from the header height control sensors must be verified.

The header's height sensor output must be within a specific range for the AHHC system to work properly.

Check the range of the output voltage from the height sensors:

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

2. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If header is on the 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.

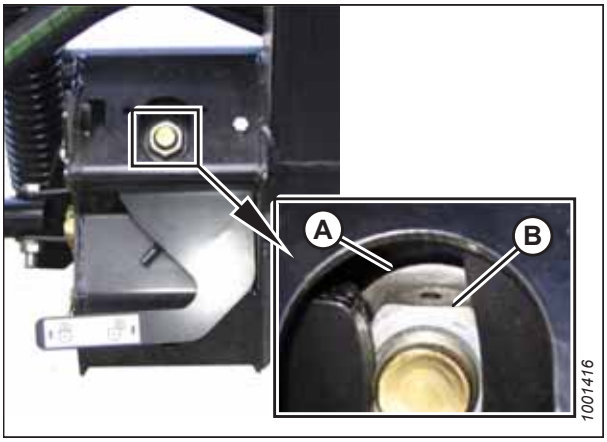


Figure 4.69: Float Lock

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

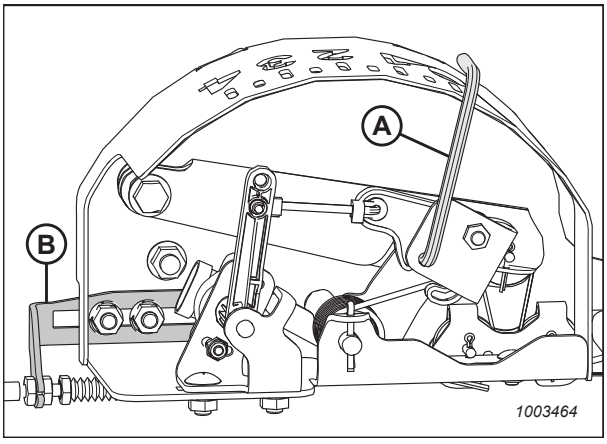


Figure 4.70: Float Indicator Box

4. Go to the FIELD page on the combine monitor and select the diagnostics icon. The MISCELLANEOUS page appears.

5. Select VMM DIAGNOSTIC button (A). The VMM DIAGNOSTIC page appears.

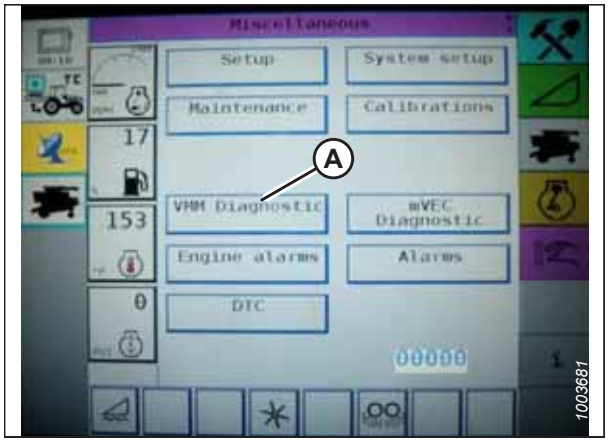


Figure 4.71: Challenger® Combine Display

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

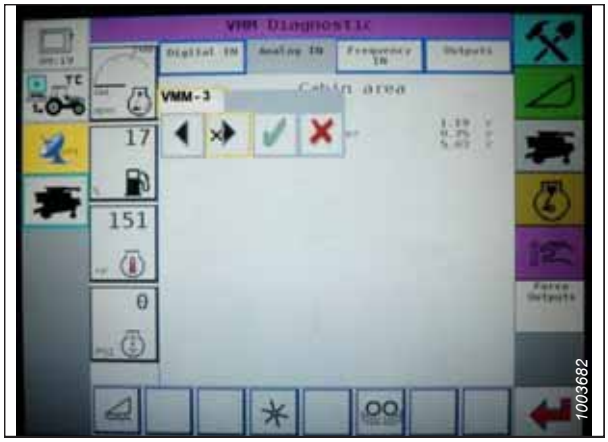


Figure 4.72: Challenger® Combine Display

7. Fully lower the combine feeder house (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 that the feeder house is fully lowered.

8. Record the height sensor voltage.

9. Raise the header so that the cutterbar is 150 mm (6 in.) off of the ground.

10. Record the height sensor voltage.

Figure 4.73: Challenger® Combine Display

11. Refer to Table *4.1, page 134* to compare the low and high height sensor voltages. If the height sensor voltages recorded previously are not within the low and high limits, or if the range between the low and high limits is insufficient, then adjust the voltage limits. Refer to *4.4.2 Adjusting Voltage Limits, page 137*) for instructions.

4.8.2 Engaging Auto Header Height Control – Challenger® 6 Series

Set these initial configuration options on your Challenger® 6 Series combine when setting up the auto header height control (AHHC) system.

NOTE:

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

The following system components are required for the auto header height control (AHHC) to work:

- The main module (PCB board) and header driver module (PCB board) mounted in the card box in the fuse panel module (FP)
- The multifunction control handle operator inputs
- The operator inputs mounted in the control console module (CC) panel

NOTE:

The electro-hydraulic header lift control valve is also an integral part of the system.

1. Using the header control switch, scroll through the header control options on the combine display 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 the sensitivity setting.

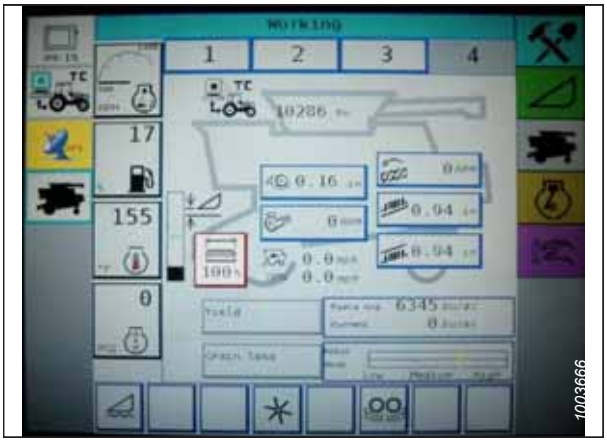


Figure 4.74: Challenger® Combine Display

4.8.3 Calibrating Auto Header Height Control – Challenger® 6 Series

The auto header height control (AHHC) sensor output must be calibrated for Challenger® 6 Series combines, or the AHHC feature will not work properly.

NOTE:

To ensure that the AHHC system performs consistently, complete the following procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle (for instructions, refer to *3.7.4 Header Angle, page 78*).

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure that the center-link is set to **D**.

2. On the FIELD page, select the DIAGNOSTICS icon. The MISCELLANEOUS page appears.

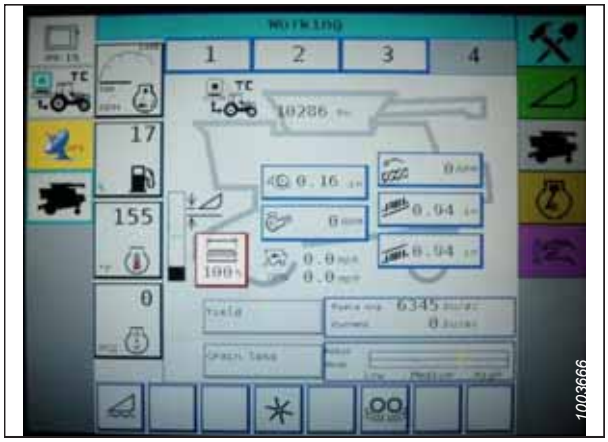


Figure 4.75: Challenger® Combine Display

3. Select CALIBRATIONS button (A). The CALIBRATIONS page appears.

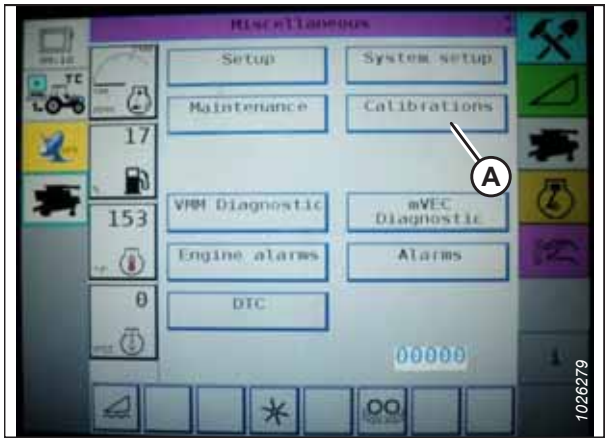


Figure 4.76: Challenger® Combine Display

4. Select HEADER button (A). The HEADER CALIBRATION page displays a warning.

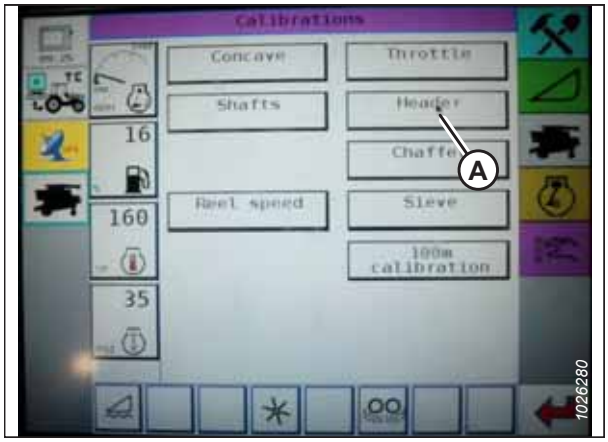


Figure 4.77: Challenger® Combine Display

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

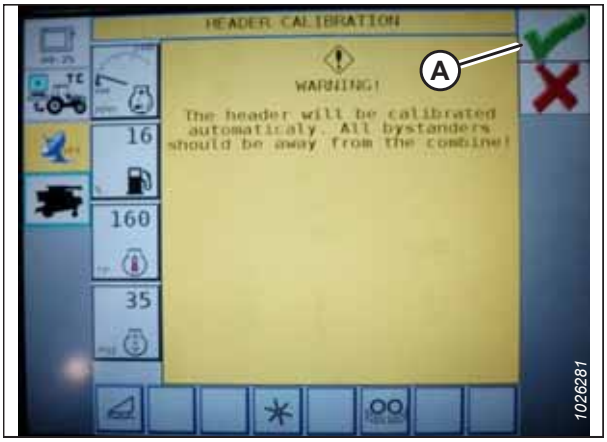


Figure 4.78: Challenger® Combine Display

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

   NOTE:

   The calibration procedure can be canceled at any time by pressing the cancel button in bottom right corner of page. While the header calibration procedure is running, it 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 the header tilt function 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 AHHC calibration.

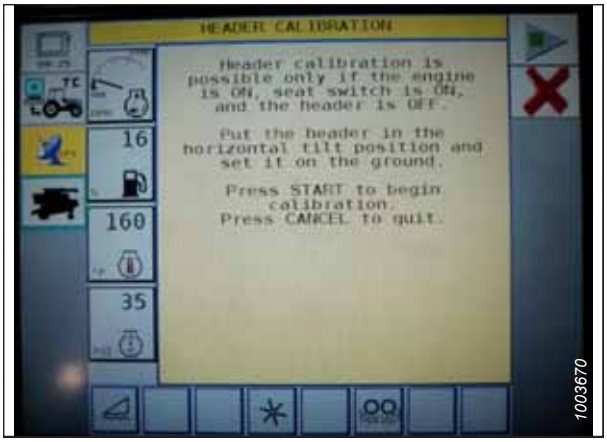


Figure 4.79: Challenger® Combine Display

4.8.4 Adjusting Header Height – Challenger® 6 Series

Once the auto header height control (AHHC) system is activated, press and release the HEADER LOWER button on the control handle. The AHHC will automatically lower the header to the preset height.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

The selected AHHC height is adjusted using HEIGHT ADJUSTMENT knob (A) on the control console. Turning the knob clockwise increases the selected height. Turning the knob counterclockwise decreases the selected height.

Figure 4.80: Height Adjustment Knob on Combine Control Console

4.8.5 Adjusting Header Raise/Lower Rate – Challenger® 6 Series

The speed at which the header rises or falls can be adjusted on a Challenger® 6 Series combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

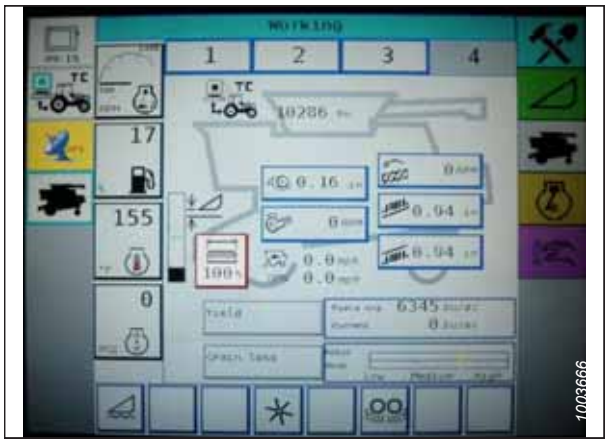


Figure 4.81: Challenger® Combine Display

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

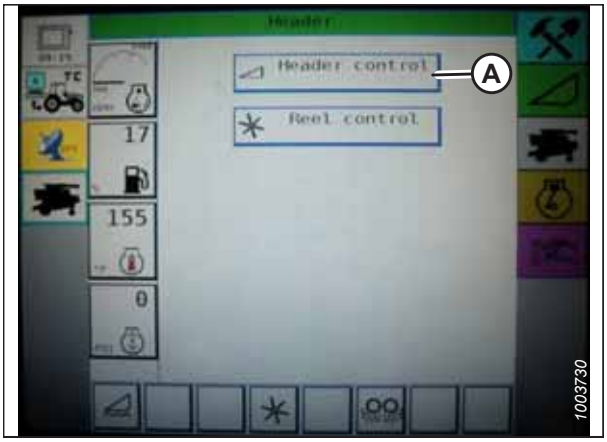


Figure 4.82: Challenger® Combine Display

3. Go to the TABLE SETTINGS tab.
4. Press up arrow (A) on MAX UP PWM to increase the percentage number and thereby increase the speed at which the header rises; press down arrow (B) on MAX UP PWM to decrease percentage number and thereby decrease the speed at which the header rises.

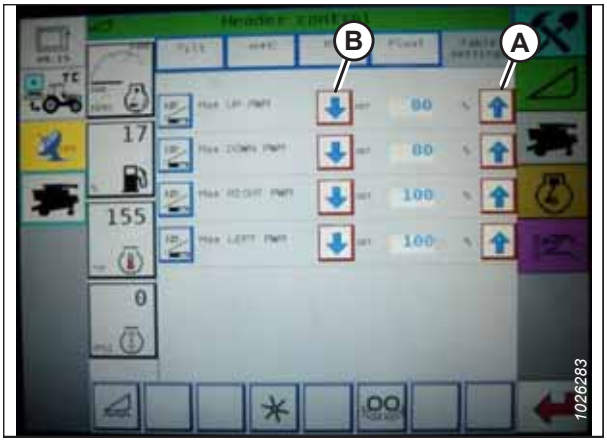


Figure 4.83: Challenger® Combine Display

5. Press up arrow (A) on the MAX DOWN PWM setting to increase the percentage number and thereby increase the speed at which the header falls. Press down arrow (B) on MAX DOWN PWM to decrease the percentage number and thereby decrease the speed at which the header falls.

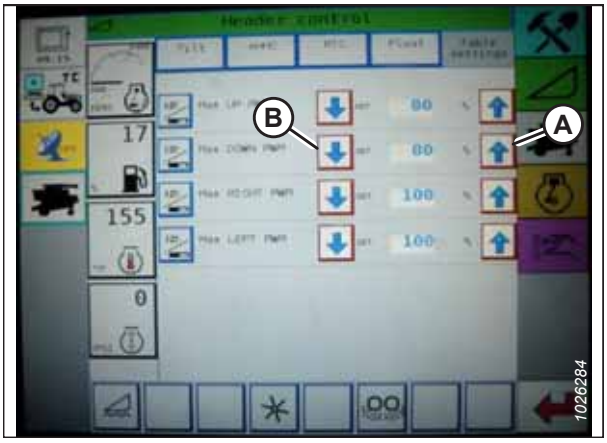


Figure 4.84: Challenger® Combine Display

4.8.6 Setting Sensitivity of 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 rise or fall. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to rise or fall.

NOTE:

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

1. Press the HEADER icon on the FIELD page. The HEADER page appears.
2. Press HEADER CONTROL button (A). The HEADER CONTROL page appears.

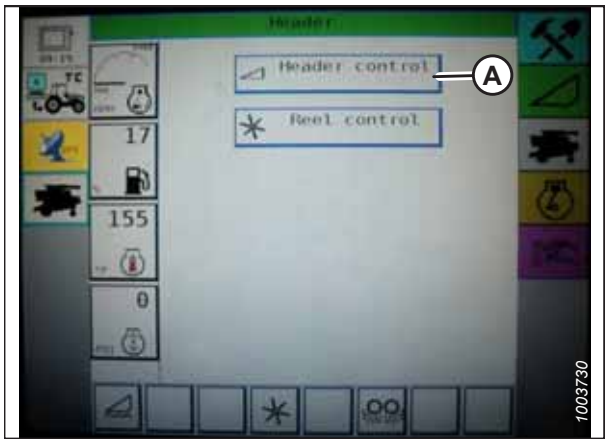


Figure 4.85: Challenger® Combine Display

3. Adjust the sensitivity to the MAXIMUM setting using on-screen up and down arrows (A).
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; the system's reaction will vary according to changing field surfaces and operating conditions.

   NOTE:

   A setting lower than the maximum will reduce the frequency of header height corrections and, thereby, component wear. Partially opening the accumulator valve will cushion the action of the header lift cylinders and reduce the occurrence of "header hunting" events, during which the combine continually tries to find a height setting without success.

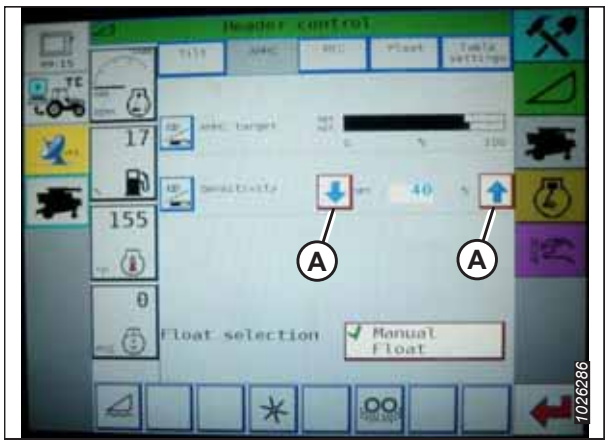


Figure 4.86: Challenger® Combine Display

4.9 CLAAS 500 Series Combines

To make your header's auto header height control (AHHC) system compatible with CLAAS 500 series combines, you must set the preset cutting heights and system sensitivity, and calibrate the AHHC system to ensure that it is working correctly.

4.9.1 Calibrating Auto Header Height Control – CLAAS 500 Series

The auto header height control (AHHC) sensor output must be calibrated for CLAAS 500 Series combines, or the AHHC feature will not work properly.

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

To ensure the best performance of the AHHC system, perform this procedure with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

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

1. Ensure that the center-link is set to **D**.
2. Use < key (A) or > key (B) to select AUTO HEADER and press OK key (C). The E5 page shows whether the automatic header height is ON or OFF.

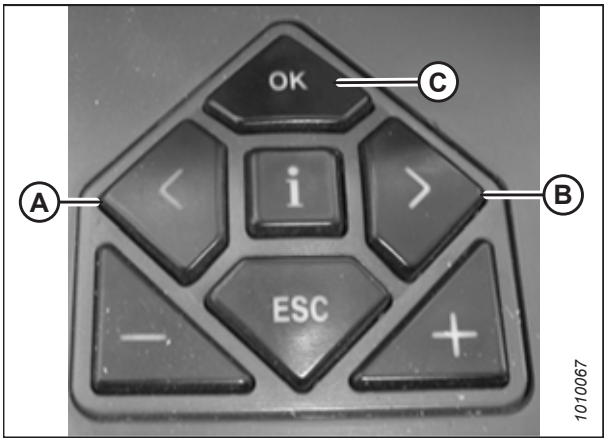


Figure 4.87: CLAAS Combine Controls

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

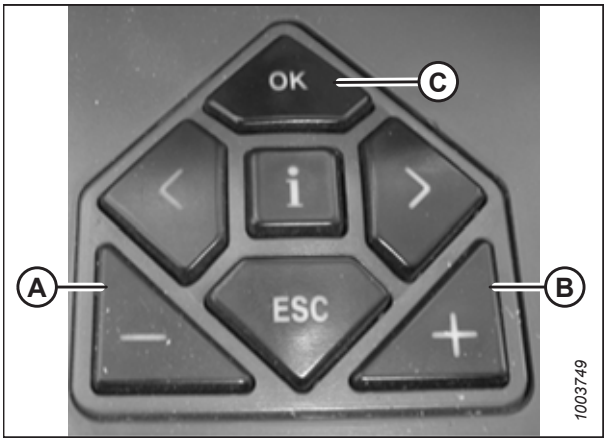


Figure 4.88: CLAAS Combine Controls

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

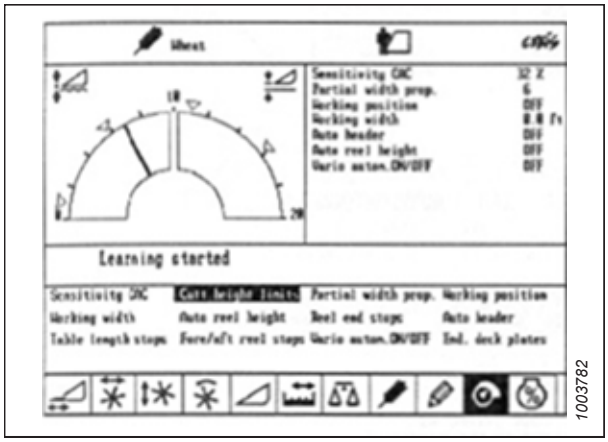


Figure 4.89: CLAAS Combine Display

7. Use < or > key to select SENSITIVITY CAC and press OK.

   NOTE:

   The AHHC system sensitivity setting affects how quickly the AHHC system changes the height of the header.

8. Use – key or + key to change the AHHC sensitivity and press the OK key.

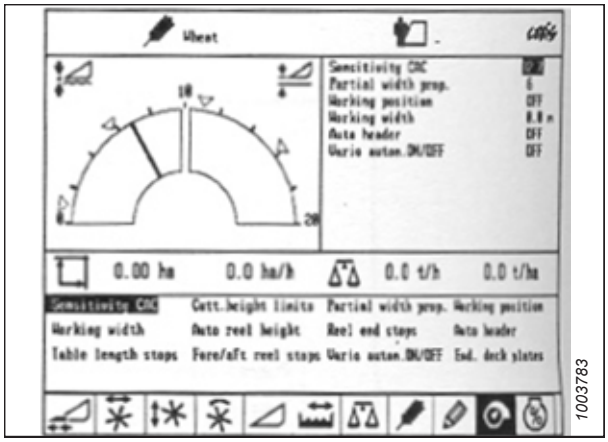


Figure 4.90: CLAAS Combine Display

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

   NOTE:

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

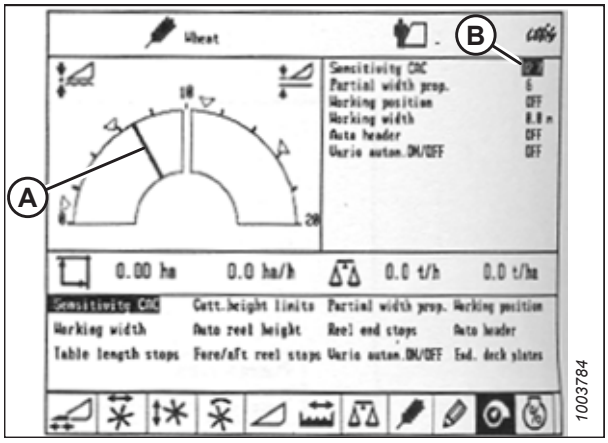


Figure 4.91: CLAAS Combine Display

4.9.2 Setting Cutting Height – CLAAS 500 Series

Cutting heights can be programmed into preset cutting height and auto contour systems on the CLAAS 500. Use the preset cutting height system for cutting heights above 150 mm (6 in.); use the auto contour system for cutting heights below 150 mm (6 in.).

4.9.3 Setting Preset Cutting Height – CLAAS 500 Series

You will need to configure both preset cutting heights on your CLAAS 500 series combine to use the auto header height control (AHHC) system with your header.

DANGER

Check to be sure all bystanders have cleared the area.

NOTE:

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

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 the auto header height control (AHHC) function. Button (B) is used only with the return-to-cut function.

Figure 4.92: Joystick Buttons

6. Use < key (C) or > key (D) to select the CUTTING HEIGHT page. Press OK key (E).
7. Use – key (A) or + key (B) to set the desired cutting height. An arrow indicates the selected cutting height on a scale.

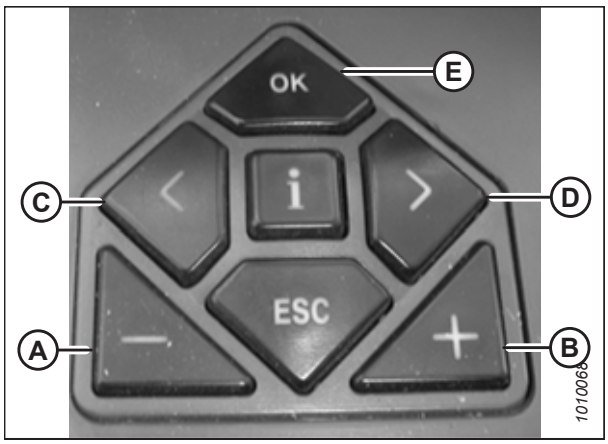


Figure 4.93: CLAAS Combine Controls

8. Briefly press button (A) or button (B) in order to select the header set point.
9. Repeat Step *7, page 174* to adjust the set point.

Figure 4.94: Joystick Buttons

4.9.4 Setting Cutting Height Manually – CLAAS 500 Series

Instead of being preset, the cutting height while using the auto header height control system (AHHC) on your CLAAS 500 combine can be set manually.

DANGER

Check to be sure all bystanders have cleared the area.

NOTE:

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

1. Use button (A) to raise the header or button (B) to lower the header to the desired cutting height.
2. Press and hold button (C) for 3 seconds to store the cutting height in the CLAAS Electronic on-Board Information System (CEBIS). An alert sounds 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. Briefly press button (C) to store the second set point in the CEBIS. An alert sounds when the new setting has been stored.

   NOTE:

   For above-ground cutting, repeat Step *1, page 175*, and use button (D) instead of button (C) while repeating Step *2, page 175*.

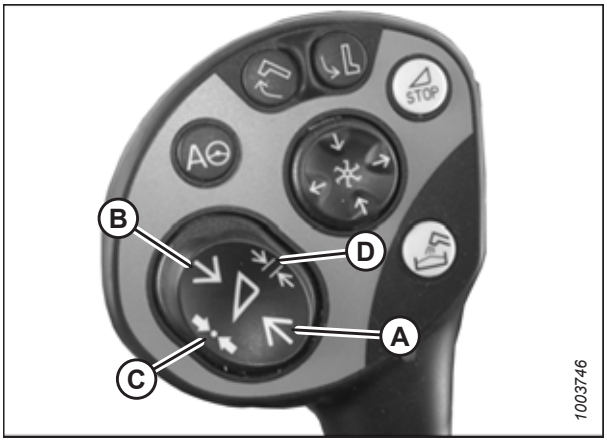


Figure 4.95: Joystick Buttons

4.9.5 Setting Sensitivity of Auto Header Height Control – CLAAS 500 Series

Setting the sensitivity of the auto header height control (AHHC) system on the CLAAS 500 combine affects how quickly the AHHC system changes the height of the header.

NOTE:

The upper and lower limits of the header height must be programmed into the CLAAS Electronic on-Board Information System (CEBIS) before adjusting the sensitivity of the AHHC system. The AHHC sensitivity can be set to a value ranging from 0–100%. When the sensitivity is set to 0%, signals from the sensing bands have no effect on the automatic cutting height adjustment. When the sensitivity is adjusted to 100%, signals from the sensing bands have the 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 the display since this document was published. Refer to the combine operator's manual for updated information.

1. Use < key (C) or > key (D) to select SENSITIVITY CAC. Press OK key (E).
2. Use – key (A) or + (B) key to change the reaction speed setting. Press OK key (E).

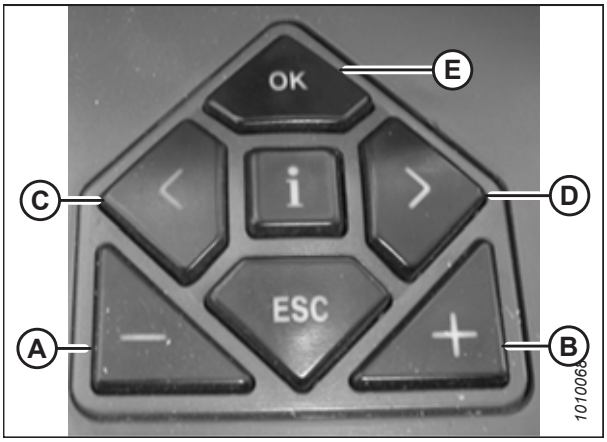


Figure 4.96: CLAAS Combine Controls

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

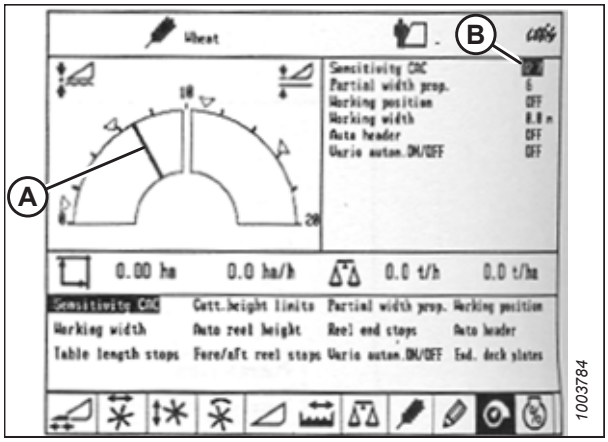


Figure 4.97: CLAAS Combine Display

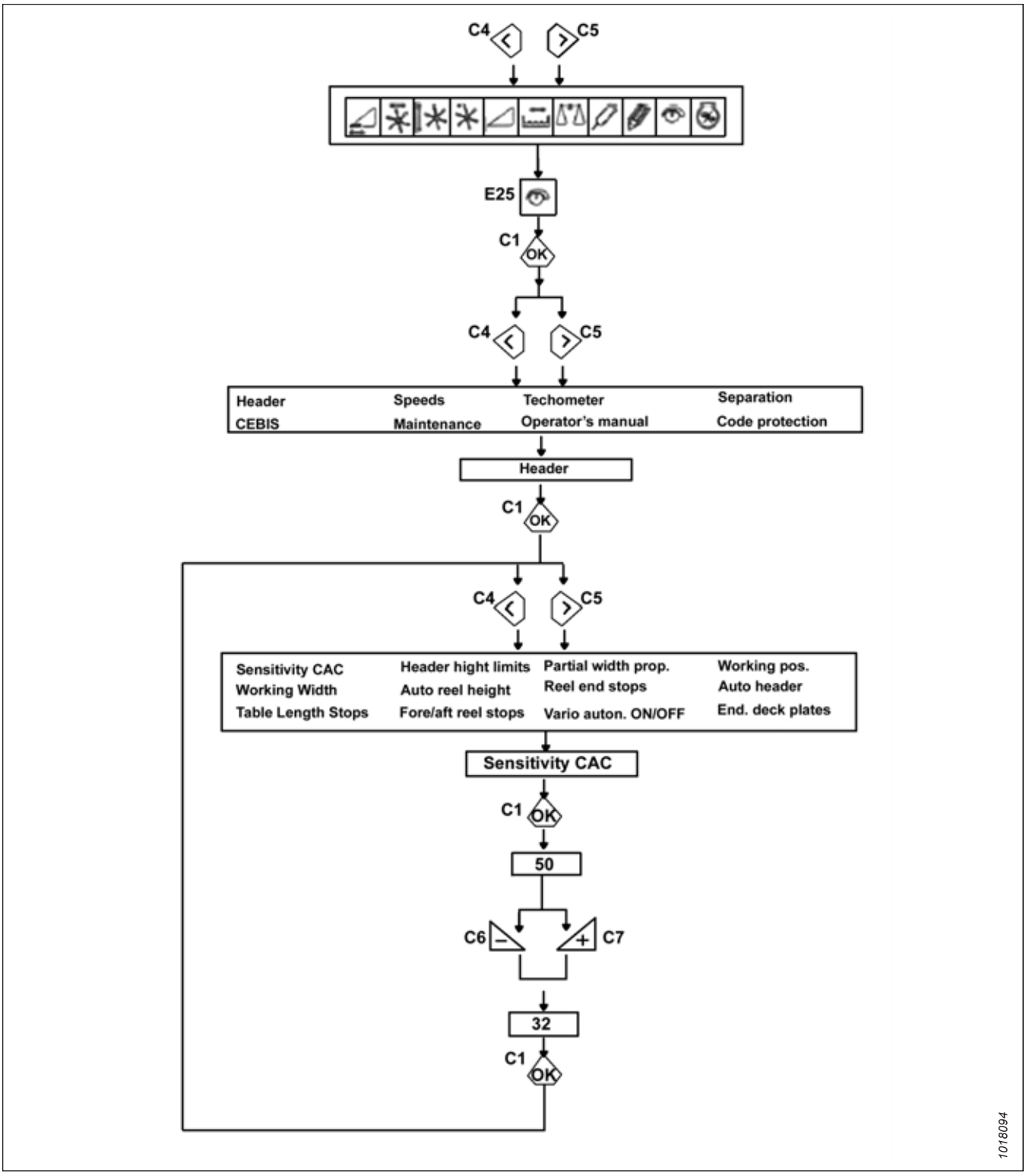


Figure 4.98: Flow Chart for Setting Sensitivity of Float Optimizer

4.9.6 Adjusting Auto Reel Speed – CLAAS 500 Series

The reel speed can be preset relative to ground speed on CLAAS 500 series combines when the auto header height control (AHHC) system is active.

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. The **E15** window will display the current acceleration or deceleration value of the reel in relation to the ground speed.

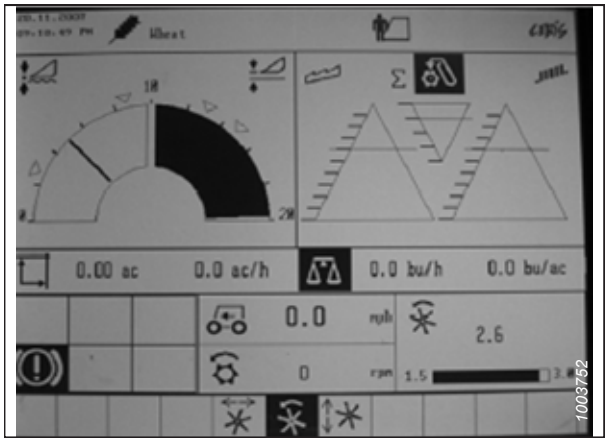


Figure 4.99: Combine Display

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

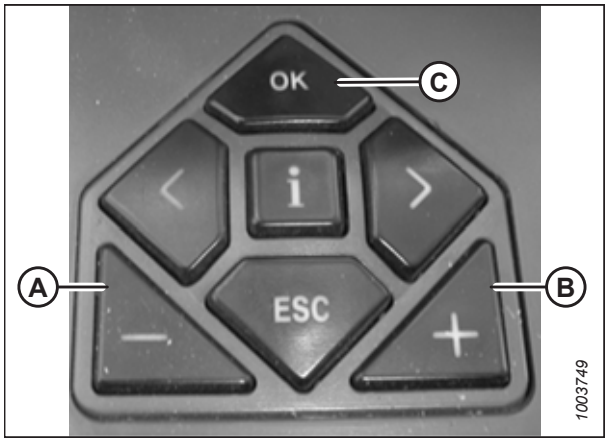


Figure 4.100: Combine Controls

4. If desired, manually adjust the reel speed by rotating the rotary switch to reel position (A). Use the – or + key to set the reel speed. The **E15** window displays the selected reel speed.

Figure 4.101: Combine Rotary Switch

5. Press and hold button (A) or button (B) for 3 seconds to store the setting in the CLAAS Electronic on-Board Information System (CEBIS). An alert sounds when the new setting has been stored.

   NOTE:

   Whenever button (A) or button (B) is pressed for 3 seconds, the current positions of the reel speed and cutting height are saved.

Figure 4.102: Joystick Buttons

6. Use the < or > key to select REEL WINDOW. The **E15** window displays the current advance or retard value of the reel in relation to the ground speed.

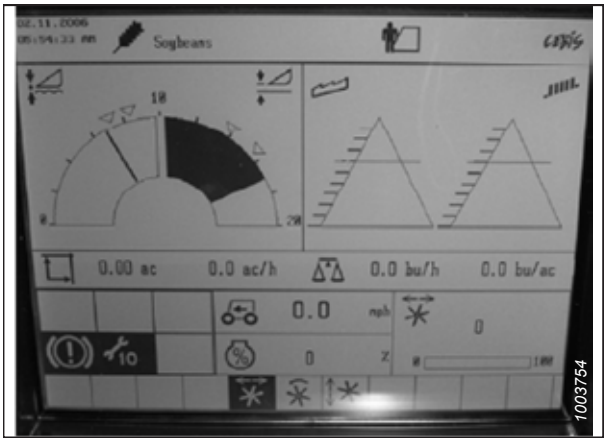


Figure 4.103: Combine Display

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

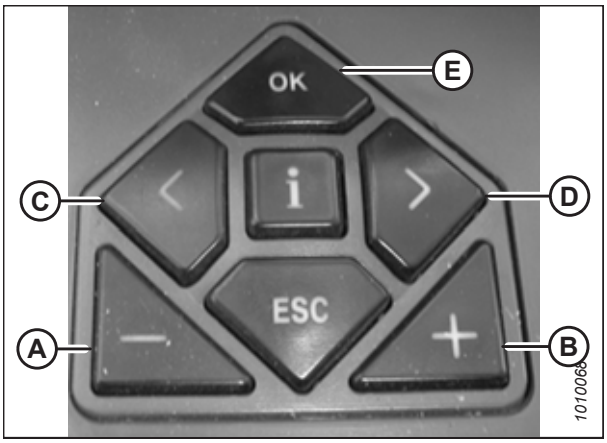


Figure 4.104: Combine Controls

NOTE:

The reel fore-aft position can also be set using the joystick.

9. Press and hold button (A) or button (B) for 3 seconds to store the setting in the CEBIS. An alert sounds when the new setting has been stored.

NOTE:

Whenever button (A) or button (B) is pressed for 3 seconds, the current positions for the reel speed and the cutting height are saved.

Figure 4.105: Joystick Buttons

4.10 CLAAS 600 and 700 Series Combines

To make your header's auto header height control (AHHC) system compatible with CLAAS 600 and 700 Series combines, you must set the preset cutting heights and system sensitivity, and calibrate the AHHC system to ensure that it is working correctly.

This section applies to CLAAS 600 and 700 Series combines. Refer to *4.9 CLAAS 500 Series Combines, page 171* for CLAAS 500 Series combines.

4.10.1 Calibrating Auto Header Height Control – CLAAS 600 and 700 Series

The auto header height control (AHHC) sensor output must be calibrated for CLAAS 600 and 700 Series combines, or the AHHC feature will not work properly.

DANGER

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

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

For the best performance of the auto header height control (AHHC), perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

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

1. Ensure that the center-link is set to **D**.
2. Shut down the engine, and remove the key from the ignition.
3. Unlock the header float.
4. To calibrate the AUTO CONTOUR feature, use control knob (A) to scroll left and right in the top row until AUTO CONTOUR icon (B) is highlighted. Press control knob (A) to select it.

Figure 4.106: CLAAS Combine Display, Console, and Joystick

5. 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. Highlighted HEADER icon (B) appears on the screen.

Figure 4.107: CLAAS Combine Display, Console, and Joystick

6. With icon **A** (A) highlighted, use control knob (B) to highlight the icon that resembles a header (C) with the up and down arrows, and press control knob (B) to select it.

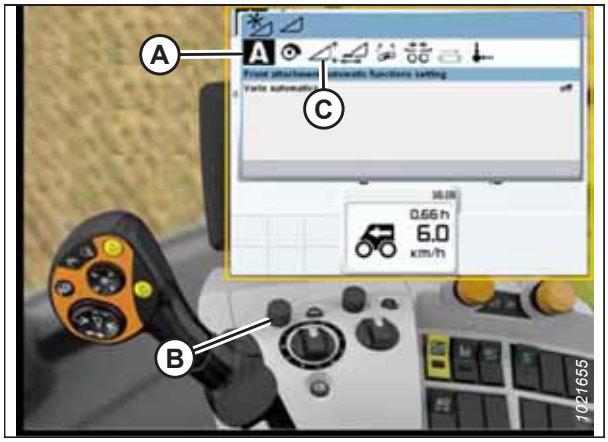


Figure 4.108: CLAAS Combine Display, Console, and Joystick

7. After pressing the control knob, icon **A** and screwdriver icon (B) will appear on the screen (as shown).
8. Use control knob (A) to highlight screwdriver icon (B).
9. Engage the combine separator and the feeder house.
10. Press control knob (A). A progress bar appears.

Figure 4.109: CLAAS Combine Display, Console, and Joystick

11. Fully raise the feeder house. Progress bar (A) advances to 25%.
12. Fully lower the feeder house until the header stops moving. The progress bar advances to 50%.
13. Fully raise the feeder house a second time. The progress bar advances to 75%.
14. Fully lower the feeder house until the header stops moving. The progress bar advances to 100%.

Figure 4.110: CLAAS Combine Display, Console, and Joystick

15. Once the calibration procedure is complete, progress bar (A) displays 100%.

    NOTE:

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

    NOTE:

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

Figure 4.111: CLAAS Combine Display, Console, and Joystick

4.10.2 Setting Cutting Height – CLAAS 600 and 700 Series

Up to two height settings can be programmed into the auto header height control (AHHC) system on CLAAS 600 and 700 Series combines.

DANGER

Check to be sure all bystanders have cleared the area.

NOTE:

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

1. Lower the header to the desired cutting height or ground pressure setting. The float indicator (the white module on top of the adapter) should be set to 1.5.

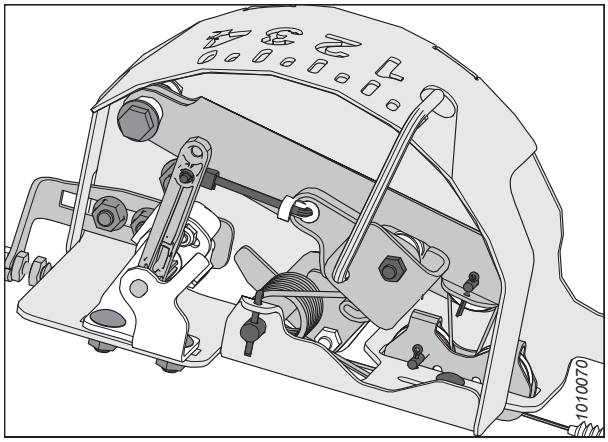


Figure 4.112: Float Indicator

2. Push and hold the left side of header raise/lower switch (A) until an alert sounds.

   NOTE:

   Two different cutting heights can be programmed.

Figure 4.113: CLAAS Combine Display, Console, and Joystick

4.10.3 Setting Sensitivity of Auto Header Height Control – CLAAS 600 and 700 Series

Setting the sensitivity of the auto header height control (AHHC) system on a CLAAS 600 or 700 Series combine affects how quickly the AHHC system changes the height of the header.

NOTE:

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

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

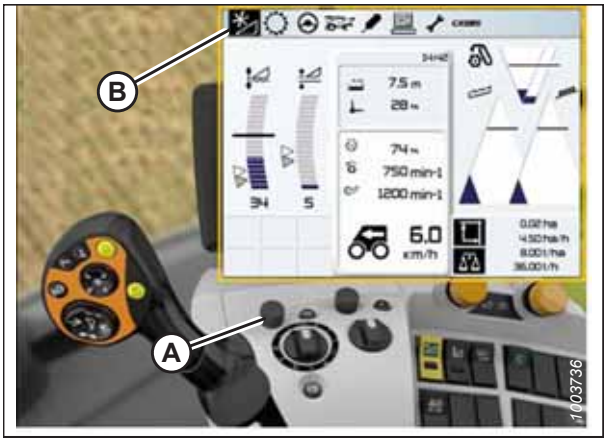


Figure 4.114: CLAAS Combine Display, Console, and Joystick

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

Figure 4.115: CLAAS Combine Display, Console, and Joystick

5. Select SENSITIVITY CAC icon (A).

   NOTE:

   To set the sensitivity, you will have to change CUTTING HEIGHT ADJUSTMENT (B) from its default value of 0. Settings from 1–50 provide a faster header height adjustment, whereas settings from -1 to -50 provide a slower header height adjustment. For best results, make the adjustments by increments of five.

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

Figure 4.116: CLAAS Combine Display, Console, and Joystick

4.10.4 Adjusting Auto Reel Speed – CLAAS 600 and 700 Series

Reel speed can be set manually or set to change automatically.

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.

Adjust auto reel speed as follows:

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

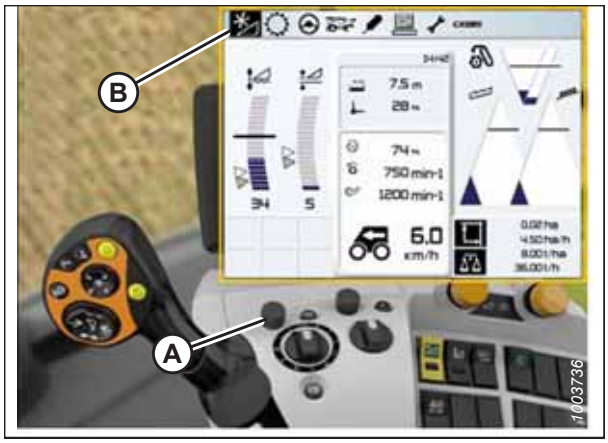


Figure 4.117: CLAAS Combine Display, Console, and Joystick

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 4.118: CLAAS 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 4.119: CLAAS Combine Display, Console, and Joystick

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

Figure 4.120: CLAAS Combine Display, Console, and Joystick

NOTE:

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

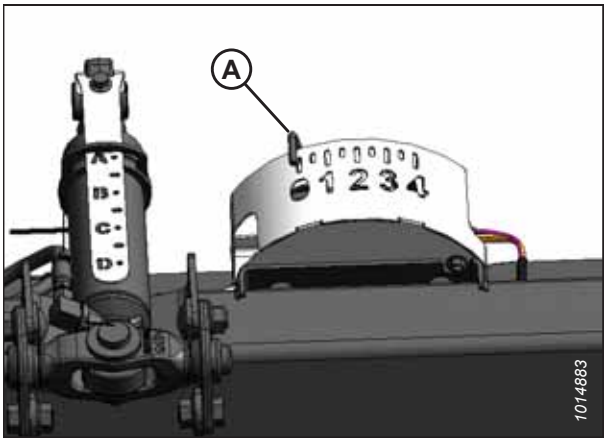


Figure 4.121: Float Indicator

4.11 Gleaner® R62/R72 Combines

To make your header's auto header height control system compatible with Gleaner® R62/R72 combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.11.1 System Requirements – Gleaner® R62/R72

NOTE:

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

The following system components are required in order for 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)
- Multifunction control handle operator inputs
- Operator inputs mounted in control console module (CC) panel

NOTE:

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

4.11.2 Calibrating Auto Header Height Control – Gleaner® R62/R72

For best performance of the auto header height control (AHHC), perform these procedures with center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

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

DANGER

Ensure that all bystanders have cleared the area.

To calibrate auto header height control, follow these steps:

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

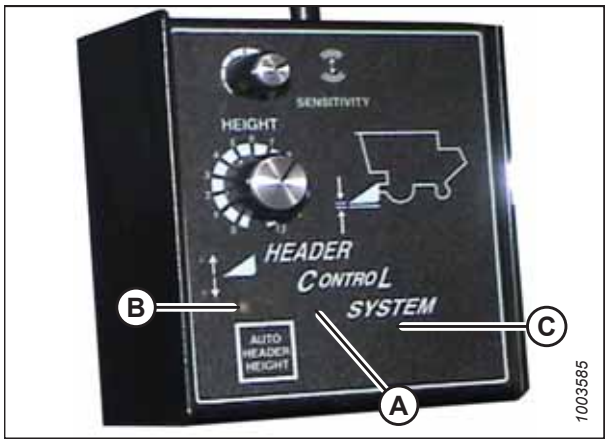


Figure 4.122: Combine Header Control System

4.11.3 Setting Sensitivity of Auto Header Height Control – Gleaner® R62/R72 Series

Setting the sensitivity of the auto header height control (AHHC) system on the combine affects how quickly the AHHC system changes the height of the header.

NOTE:

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

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

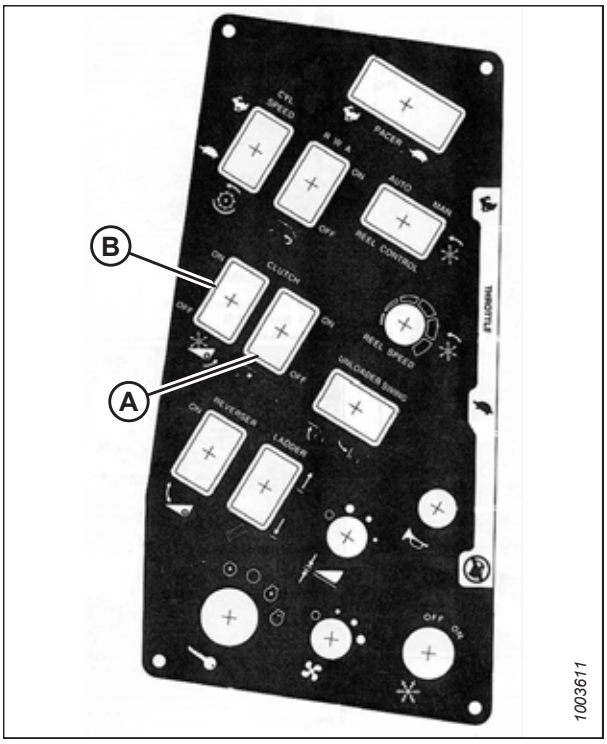


Figure 4.123: Combine Control Console

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

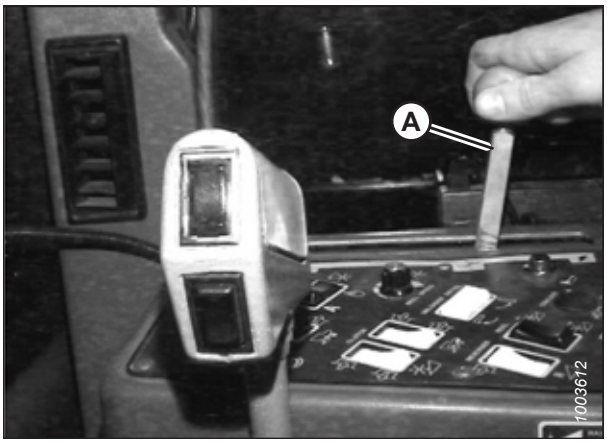


Figure 4.124: Throttle

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

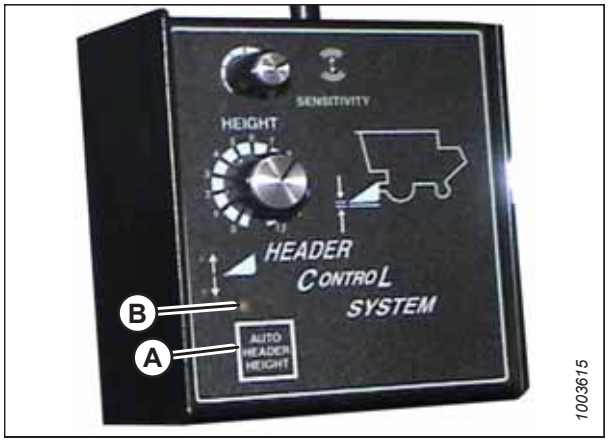


Figure 4.125: Combine Header Control System

4. Briefly press 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.

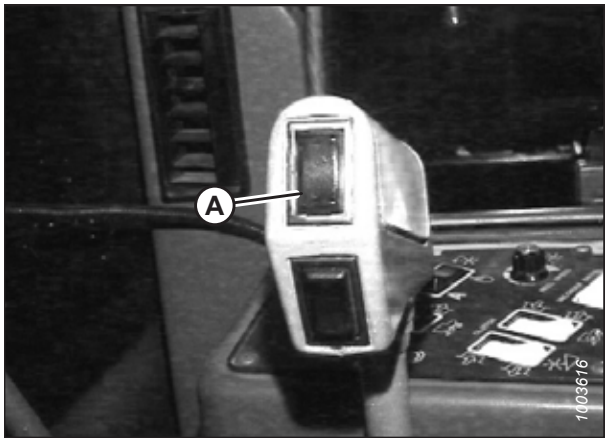


Figure 4.126: Header Down Button

5. Turn HEIGHT dial (A) to increase or decrease the ground pressure.

6. Turn SENSITIVITY dial (B) to control how quickly the AHHC reacts to varying ground conditions.

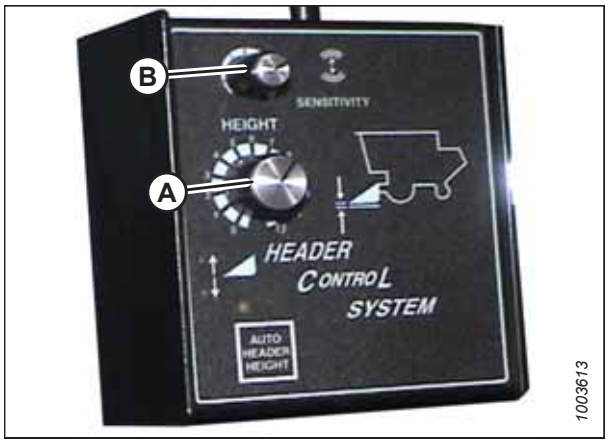


Figure 4.127: Combine Header Control System

NOTE:

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

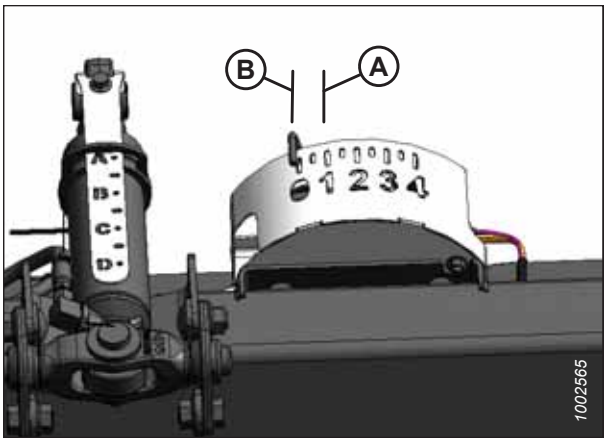


Figure 4.128: Float Indicator Box

4.12 Gleaner® R65/R66/R75/R76 and S Series Combines – Except S9 Series

To make your header's auto header height control (AHHC) system compatible with Gleaner® R65/R66/R75/R76 and non-S9 S Series combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, adjust the header height response rate and ground pressure settings, and calibrate the AHHC system to ensure that it is working correctly.

4.12.1 Checking Voltage Range from Combine Cab – Gleaner® R65/R66/R75/R76 and S Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your Gleaner® R65/R66/R75/R76 or non-S9 S Series combine, the output voltage from the header height control sensors must be verified.

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

NOTE:

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

NOTE:

Refer to *4.13 Gleaner® S9 Series Combines, page 202* for information specific to Gleaner® S9 Series combines.

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

   NOTE:

   If the header is not on the down stops during this procedure, the voltage may go out of range during operation and cause a malfunction in the auto header height control (AHHC) system.

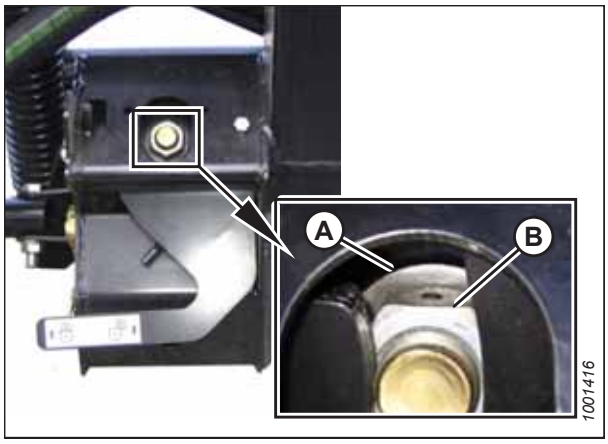


Figure 4.129: Float Lock

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

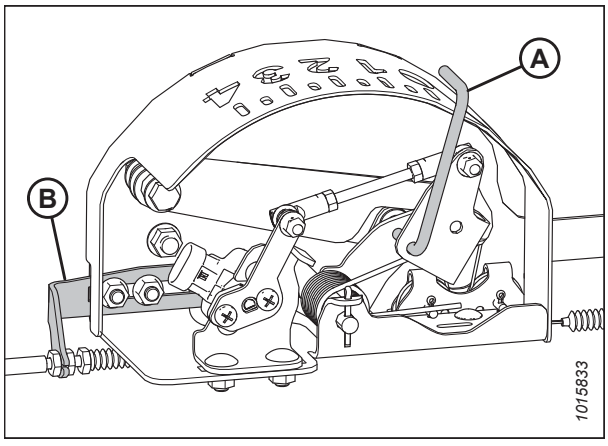


Figure 4.130: Float Indicator Box

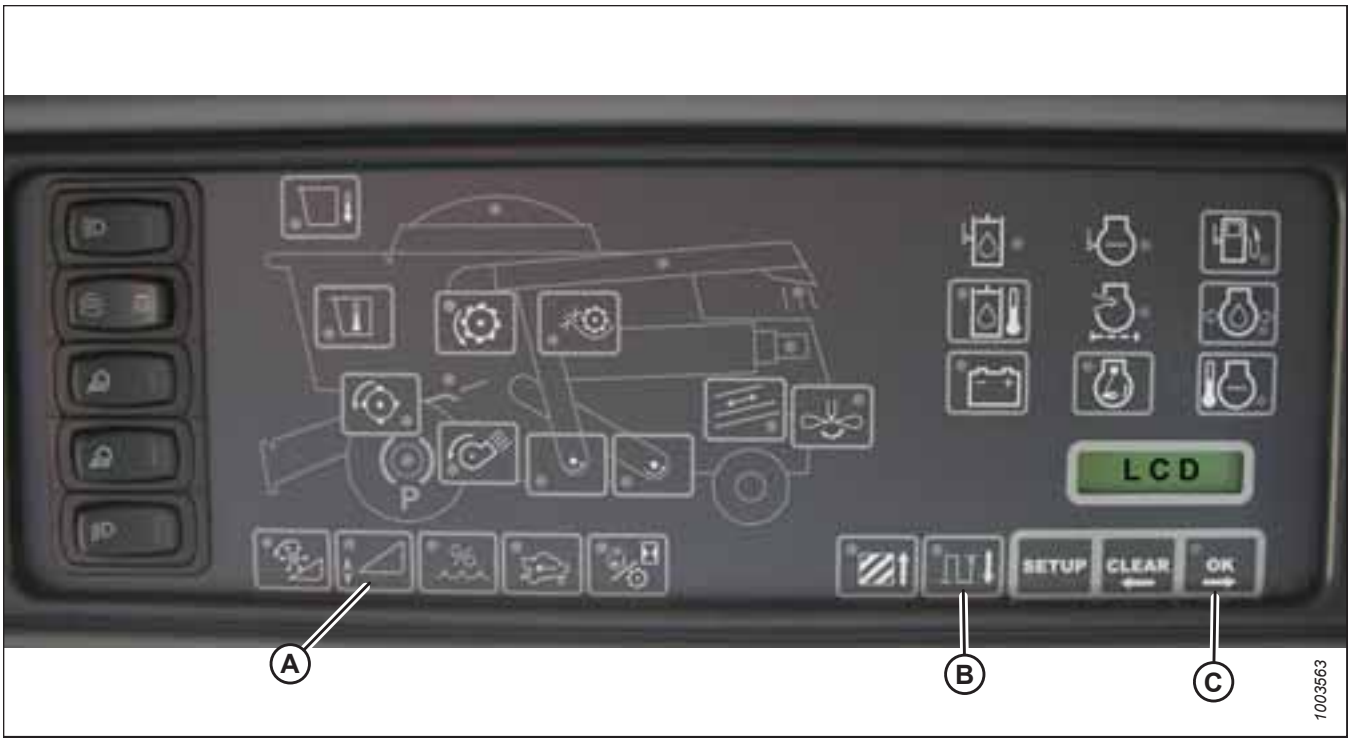


Figure 4.131: Combine Heads-Up Display

4. Ensure that the header float is unlocked.
5. Press and hold button (A) on the heads-up display for 3 seconds to enter diagnostic mode.
6. Scroll down using button (B) until LEFT is displayed on the LCD screen.
7. Press OK button (C). The number indicated on the LCD screen is the voltage reading from the AHHC sensor. Fully raise and then fully lower the header to see the full range of voltage readings.
8. 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 *4.1, page 134*), then adjust the voltage limits. Refer to *4.4.2 Adjusting Voltage Limits, page 137* for instructions.

4.12.2 Engaging Auto Header Height Control – Gleaner® R65/R66/R75/R76 and S Series

Set these initial configuration options on your Gleaner® R65/R66/R75/R76 or non-S9 S Series combine when setting up the auto header height control (AHHC) system.

NOTE:

Refer to *4.13 Gleaner® S9 Series Combines, page 202* for information specific to Gleaner® S9 Series combines.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. The following system components are required for the auto header height control (AHHC) to work:
   - The main module (PCB board) and header driver module (PCB board) mounted in the card box in the fuse panel module (FP)
   - The multifunction control handle operator inputs
   - The operator inputs mounted in the control console module (CC) panel

   NOTE:

   The electro-hydraulic header lift control valve is also an integral part of the system.

Figure 4.132: Combine Auto Header Height Controls

2. Press AUTO MODE button (A) until AHHC LED light (B) begins flashing. If the RTC light is flashing, press AUTO MODE button (A) again until the AHHC system is activated.

3. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid and the header should drop toward the ground. The AHHC is now engaged and the height and sensitivity settings can be adjusted.

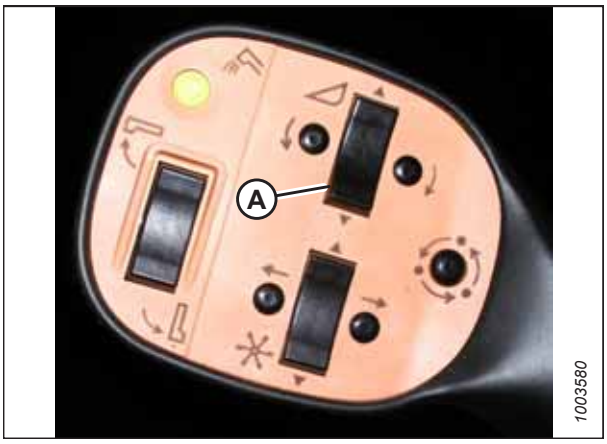


Figure 4.133: Control Handle

4.12.3 Calibrating Auto Header Height Control – Gleaner® R65/R66/R75/R76 and S Series

The auto header height control (AHHC) sensor output must be calibrated for Gleaner® R65/R66/R75/R76 and non-S9 S Series combines, or the AHHC feature will not work properly.

NOTE:

The calibration procedure should be performed on flat, level ground without the header clutches engaged. The header height and header tilt settings must **NOT** be in auto or standby mode. 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 AHHC system. Refer to the combine operator's manual for instructions.

To set up the AHHC system on Gleaner® S9 Series combines, refer to *4.13 Gleaner® S9 Series Combines, page 202*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

Figure 4.134: 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:

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

1. Ensure that the center-link is set to **D**.
2. Press AUTO MODE button (A) until AHHC light (B) is activated.
3. Press and hold CAL1 button (C) until 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 that the adapter has separated from the header.
5. Press CAL2 button (G) until lower header light (E) stops flashing. Release the button when raise header light (D) begins flashing.
6. Raise the header to its maximum height (ensure that the header is resting on the down-stop pads).
7. Press CAL2 button (G) until raise header light (D) turns off.

NOTE:

The following steps are applicable only to model year 2005 and newer combines with Smartrac feeder houses.

8. Wait for the HEADER TILT LEFT light (not shown) to start flashing and then tilt the header to its maximum left position.
9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing and release the button when the HEADER TILT RIGHT light (not shown) begins flashing.
10. Tilt the header to its maximum right position.
11. Press CAL2 button (G) until all of 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 the calibration procedure. Exiting will save all values to memory. All the lights on the console should stop flashing.

4.12.4 Turning Accumulator Off – Gleaner® R65/R66/R75/R76 and S Series

Activating the accumulator on a Gleaner® R65/R66/R75/R76 and non-S9 S Series combine will negatively affect the speed at which the AHHC system adjusts the height of the header. Turning the accumulator off will ensure good AHHC performance.

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

Figure 4.135: Combine Accumulator ON/OFF Switch

A - Accumulator Lever (Off Position)

4.12.5 Adjusting Header Raise/Lower Rate – Gleaner® R65/R66/R75/R76 and S Series

The speed at which the header rises or falls on a Gleaner® R65/R66/R75/R76 and non-S9 S Series combine can be adjusted by opening or closing the height restrictor valves.

NOTE:

Refer to *4.13 Gleaner® S9 Series Combines, page 202* for information specific to Gleaner® S9 Series combines.

NOTE:

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

The auto header height control (AHHC) system's stability is affected by the rate at which the hydraulic fluid flows through the hydraulic system. Ensure that header raise (A) and header lower (B) adjustable restrictors in the hydraulic valve block are adjusted so that it takes approximately 6 seconds to raise the header from ground level to its maximum height (with the hydraulic cylinders fully extended), and approximately 6 seconds to lower the header from its maximum height to ground level.

If there is too much header movement when the header is on ground (for example, if the AHHC system seems to be continually "hunting" for a height setting), then adjust the lowering rate so that the header takes 7 or 8 seconds to fall.

NOTE:

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

Figure 4.136: Header Raise and Lower Adjustable Restrictors

4.12.6 Adjusting Ground Pressure – Gleaner® R65/R66/R75/R76 and S Series

The ground pressure settings determine the height of the header when used with the auto header height control system (AHHC) on Gleaner® R65/R66/R75/R76 and non-S9 S Series combines.

NOTE:

For information specific to Gleaner® S9 Series combines, refer to *4.13 Gleaner® S9 Series Combines, page 202*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

Turn knob (B) counterclockwise to decrease the ground pressure setting and clockwise to increase the ground pressure setting.

Figure 4.137: Auto Header Height Control Console

NOTE:

In most cases, the ideal ground pressure is one number (on the float indicator box) above the value at which the header is suspended off the ground. For example, if the float indicator pointer is positioned at 0 (B) with the header suspended off the ground, then the ideal ground pressure will be achieved with the pointer positioned at 1 (A). Operating the header with higher pressures can wear out the cutterbar wearplate.

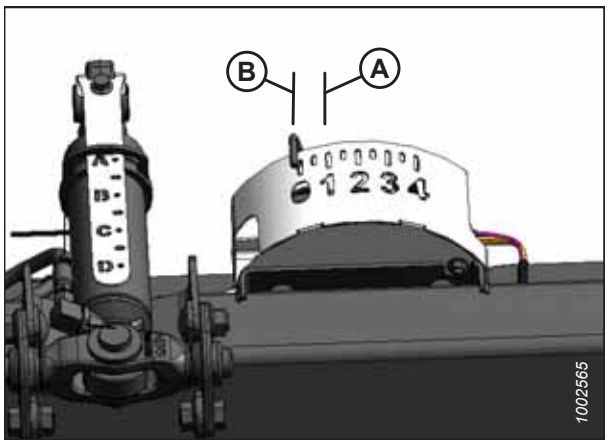


Figure 4.138: Float Indicator Box

4.12.7 Adjusting Sensitivity of Auto Header Height Control – Gleaner® R65/R66/R75/R76 and S Series

Setting the sensitivity of the auto header height control (AHHC) system on a Gleaner® R65/R66/R75/R76 and non-S9 S Series combine affects how quickly the AHHC system changes the height of the header.

NOTE:

For information specific to Gleaner® S9 Series combines, refer to *4.13 Gleaner® S9 Series Combines, page 202*.

NOTE:

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

Figure 4.139: Auto Header Height Control Console

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 SENSITIVITY ADJUSTMENT dial (A) is set to the maximum value (i.e. is 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 SENSITIVITY ADJUSTMENT dial (A) is set to the minimum value (i.e. is 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 changes the range of sensitivity. When connected to a draper header, the counterclockwise (i.e. the least sensitive) position allows for approximately 102 mm (4 in.) of vertical travel before the AHHC intervenes.

4.12.8 Troubleshooting Alarms and Diagnostic Faults – Gleaner® R65/R66/R75/R76 and S Series

Errors in the auto header height control (AHHC) system on Gleaner® R65/R66/R75/R76 and non-S9 S Series combines appear on a display on the combine's Electronic Instrument Panel (EIP).

NOTE:

Refer to *4.13 Gleaner® S9 Series Combines, page 202* for information specific to Gleaner® S9 Series combines.

NOTE:

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

Display type

Errors will appear on tachometer (A) as XX or XXX.

Figure 4.140: Tachometer

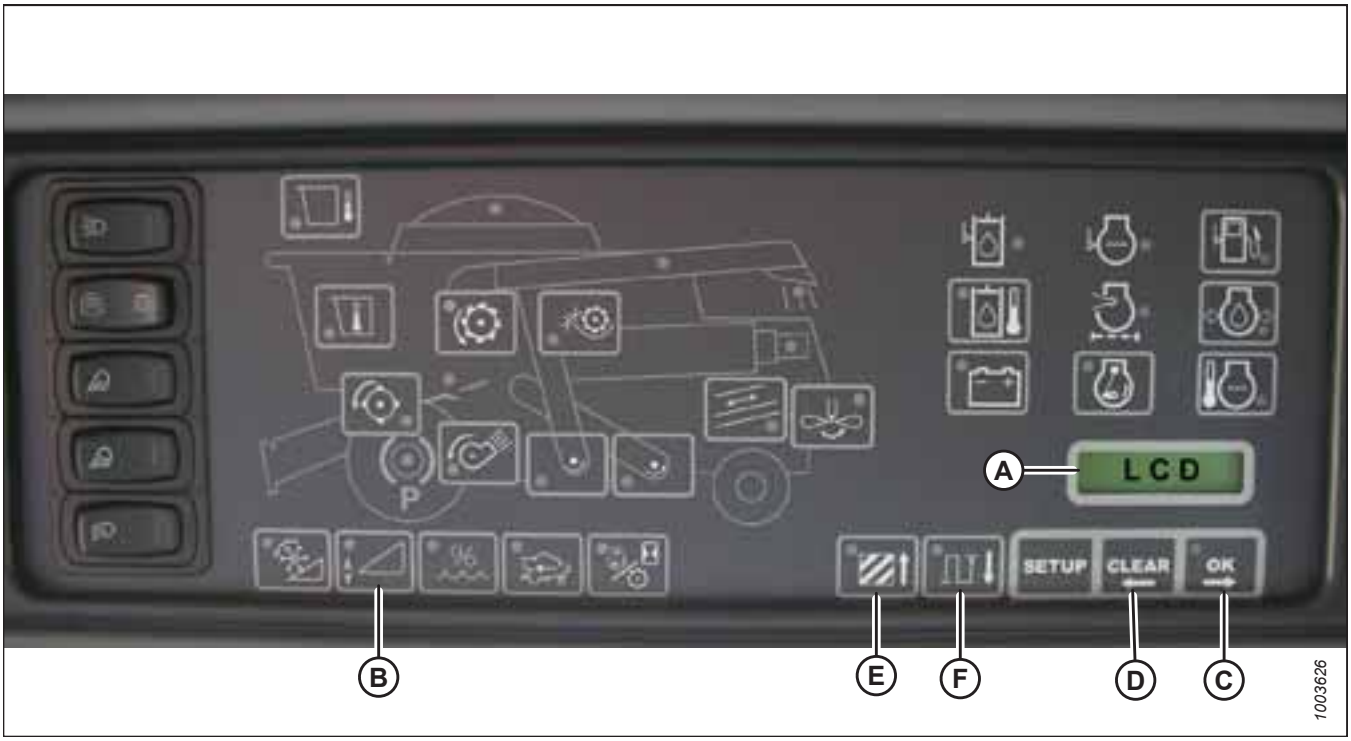


Figure 4.141: Combine Heads-Up Display

Errors will appear on LCD (A) as XXX cm or XX in.

Alarm conditions

If an error message is received from the fuse panel, an alarm will sound. The LCD on the electronic instrument panel (EIP) indicates a header system error as HDR CTRL followed by HGT ERR for height, and HDR CTRL followed by TILT ERR for tilt. The header height LED will flash yellow twice per second.

When this alarm occurs, a buzzer will also sound 5 times every 10 seconds.

When an alarm condition occurs, a green LED begins flashing; the LED will be green, yellow, or red. A message will also appear on the LCD which explains the nature of the alarm (for example: HYD TEMP, OPEN, SHRT).

Diagnostic fault failures

Pressing header height switch (B) for a minimum of 5 seconds will put the EIP in header diagnostic mode. LCD (A) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after 3 seconds, the header fault parameter labels will appear on the EIP's LCD.

NOTE:

The information which appears on the LCD is read-only.

Press OK (C) and CLEAR (D) buttons to scroll through the list of parameters. If there are no active fault codes, the EIP's LCD will display the message NO CODE.

When a parameter appears, its label is displayed for 3 seconds, after which its value is automatically displayed.

Pressing OK button (C) while the value is displayed will cause the EIP to advance to display the the next parameter's label.

When a parameter label appears and OK button (C) is pressed before 3 seconds have elapsed, the parameter's value will be displayed.

Press AREA (E) to cycle through the options. When the message LEFT appears on the LCD, press OK button (C), and the auto header height control (AHHC) voltage will appear on the display.

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

Press CLEAR button (D) to exit the header diagnostics menu.

For instructions, refer to *4.2 Auto Header Height Control Sensor Operation, page 131*.

4.13 Gleaner® S9 Series Combines

To make your header's auto header height control (AHHC) system compatible with Gleaner® S9 Series combines, you must set your combine's header configuration options for the particular model of header, configure the controls and reel speed settings, and calibrate the AHHC system to ensure that it is working correctly.

4.13.1 Setting up Header – Gleaner® S9 Series

The initial configuration options on a Gleaner® S9 Series combine will need to be configured when the auto header height control (AHHC) system is being set up.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

The AGCO Tyton terminal is used to set up and manage a MacDon header on a Gleaner® S9 combine. The terminal has a touch screen. Touch the terminal screen to select an item.

Figure 4.142: Gleaner® S9 Terminal Screen

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

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

Figure 4.143: Combine Icon on Home Page

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

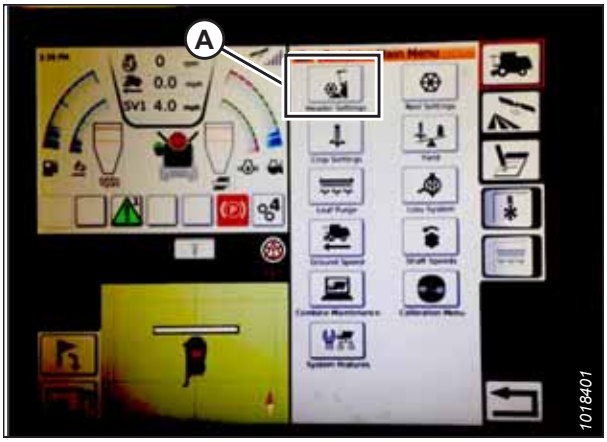


Figure 4.144: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A page showing the predefined header profiles appears.
   - If the MacDon header is already set up, it will appear on the list of headers. Touch MacDon header title (B) to highlight the selection in blue. Touch green check mark (E).
   - If only default header (D) is shown, touch ADD/ KEYBOARD button (C). Use the on-screen keyboard to enter the relevant MacDon header information. Ttouch one of the areas at the bottom of the page to return to the HEADER SETTINGS page.
     – Touching the green check mark causes the current settings to be saved.
     – Touching the garbage can icon removes the highlighted header profile from the list.
     – Touching the red X cancels any changes.

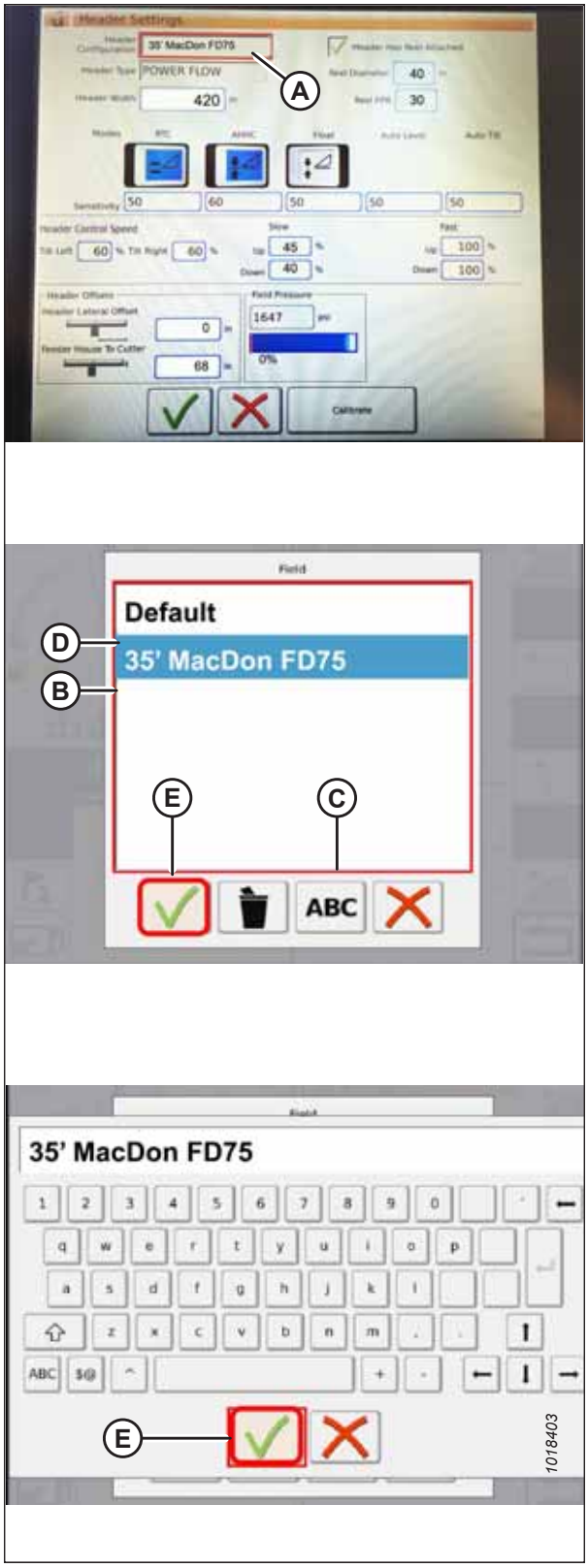


Figure 4.145: Header Configuration Menu on Header Settings Page

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

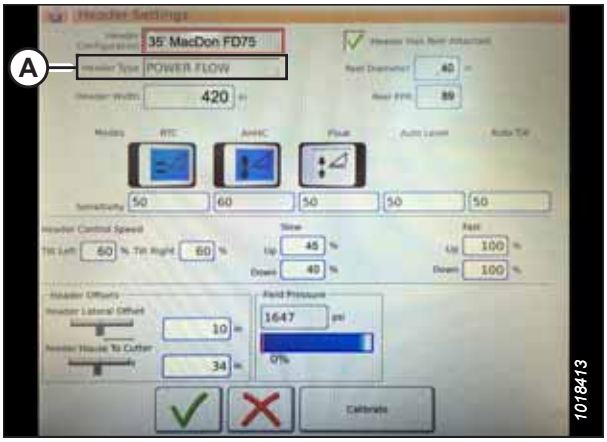


Figure 4.146: Header Settings

5. A list of predefined header types appears.
   - For MacDon Draper and FlexDraper® headers, touch POWER FLOW (A).
   - Touch green check mark (B).

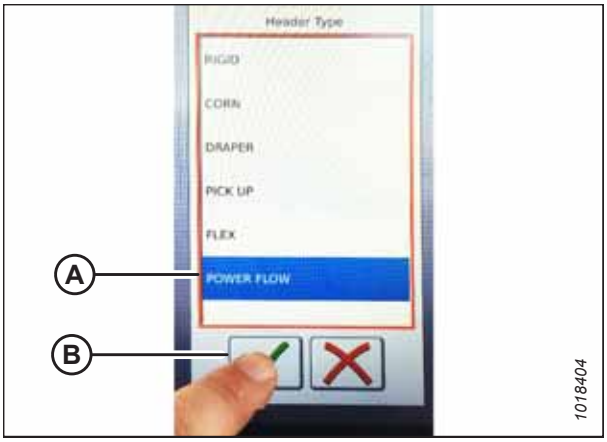


Figure 4.147: Header Type

6. Ensure that HEADER HAS REEL ATTACHED green check box (A) is checked.

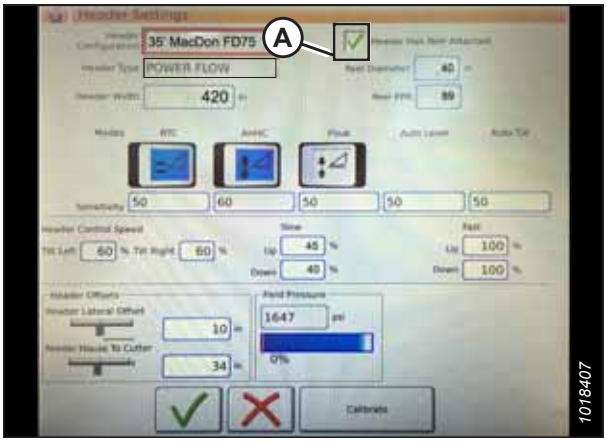


Figure 4.148: Header Settings

7. Touch REEL DIAMETER field (A). A numeric keypad will appear. Enter **40** for the MacDon reel diameter.

8. Touch REEL PPR (speed pulses per revolution) field (B) and enter **30**.

   NOTE:

   PPR is the number of teeth on the reel speed sprocket. AGCO-configured MacDon headers have 30 teeth on the sensor pick-up reel.

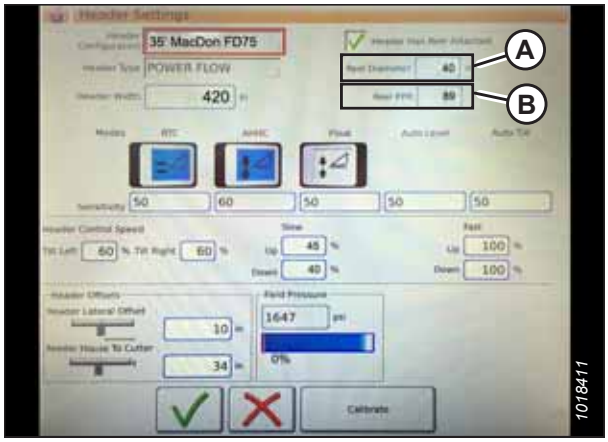


Figure 4.149: Header Settings

9. Touch green check mark (B) at the bottom of numeric keypad (A).

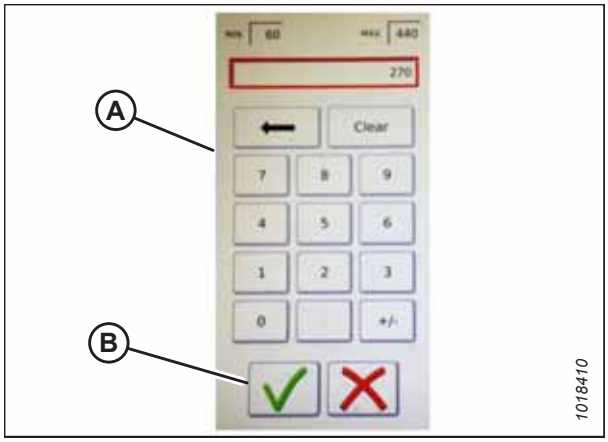


Figure 4.150: Numeric Keypad

10. Touch green check mark (A) at the bottom of the HEADER SETTINGS page.

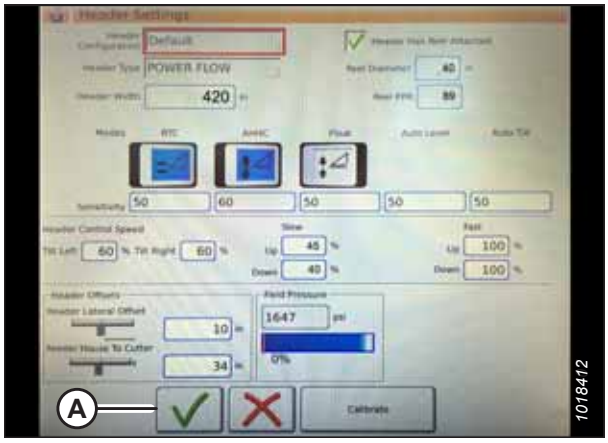


Figure 4.151: Header Settings Page

4.13.2 Setting up Reel Settings – Gleaner® S9 Series

The reel calibration wizard on Gleaner® S9 Series combines allows you to configure the header's reel speed settings with ease.

DANGER

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

Figure 4.152: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard appears. 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 is 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. Calibrate the reel speed in the REEL SETTINGS page by touching CALIBRATE button (A) at the top right of the page.

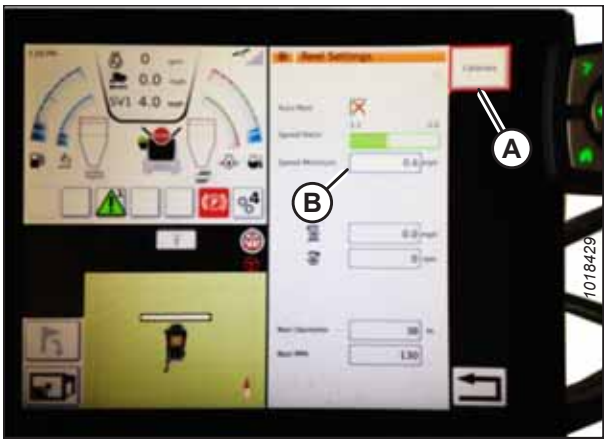


Figure 4.153: Reel Settings Calibration

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

DANGER

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

5. Make sure that all the conditions listed on CALIBRATION WIZARD warning page are met. Press the green check mark and start the reel calibration procedure.

   NOTE:

   Pressing the red **X** at any time will cancel the calibration procedure.

6. A message appears in the CALIBRATION WIZARD when the reel calibration procedure has begun. The reel will begin turning, slowly at first, and then faster and faster. A progress bar will appear. Wait for a message saying that the reel calibration procedure has completed successfully. Touch the green check mark to save the calibrated settings.

Figure 4.154: Calibration Wizard

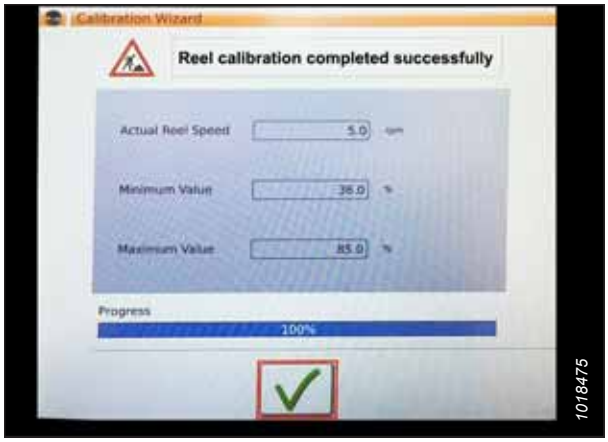


Figure 4.155: Calibration Progress

4.13.3 Setting up Automatic Header Controls – Gleaner® S9 Series

The auto header height control (AHHC) functions are configured on the Gleaner® S9 Series' HEADER SETTINGS page.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. **Automatic control functions:** there are toggle (OFF/ON) switches on the HEADER SETTINGS page for automatic height control functions. For MacDon headers, ensure that the following functions are enabled:

   - RTC (return to cut) (A)
   - AHHC (B)

   All other switches should be disabled (that is, not highlighted).

2. 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 a new value using the on-screen keyboard.

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

   NOTE:

   The recommended sensitivity settings for MacDon headers are:

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

3. **Header speed:** the header tilt and raise/lower speed can be adjusted in HEADER CONTROL SPEED area (A) of the HEADER SETTINGS page.

   - The tilt left and right function is a lateral tilt of the combine faceplate.
   - The header raise/lower function uses a two-detent button: the first detent is a slow raise/lower rate; the second detent is a fast raise/lower rate.

   NOTE:

   The recommended header control speed settings for MacDon headers are:

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

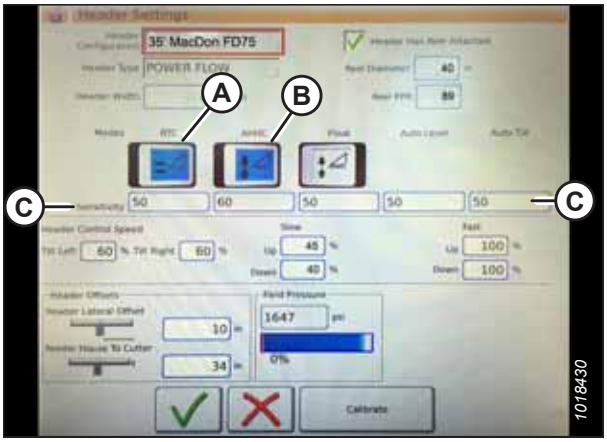


Figure 4.156: Automatic Controls and Sensitivity Settings

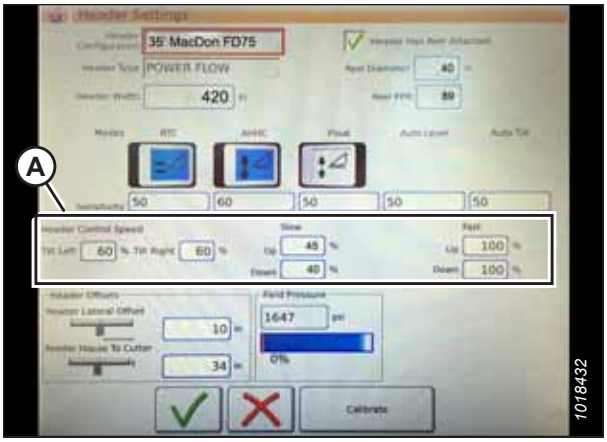


Figure 4.157: Header Speed Control Settings

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**: this is 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**: this is the distance from the machine interface to the cutterbar. This should be set to 68 for a MacDon header.

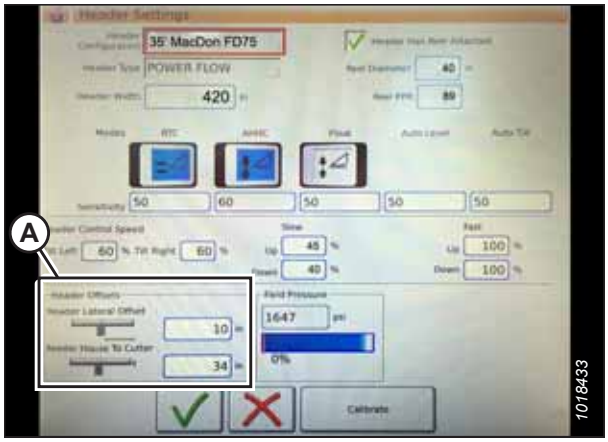


Figure 4.158: Header Offset Settings

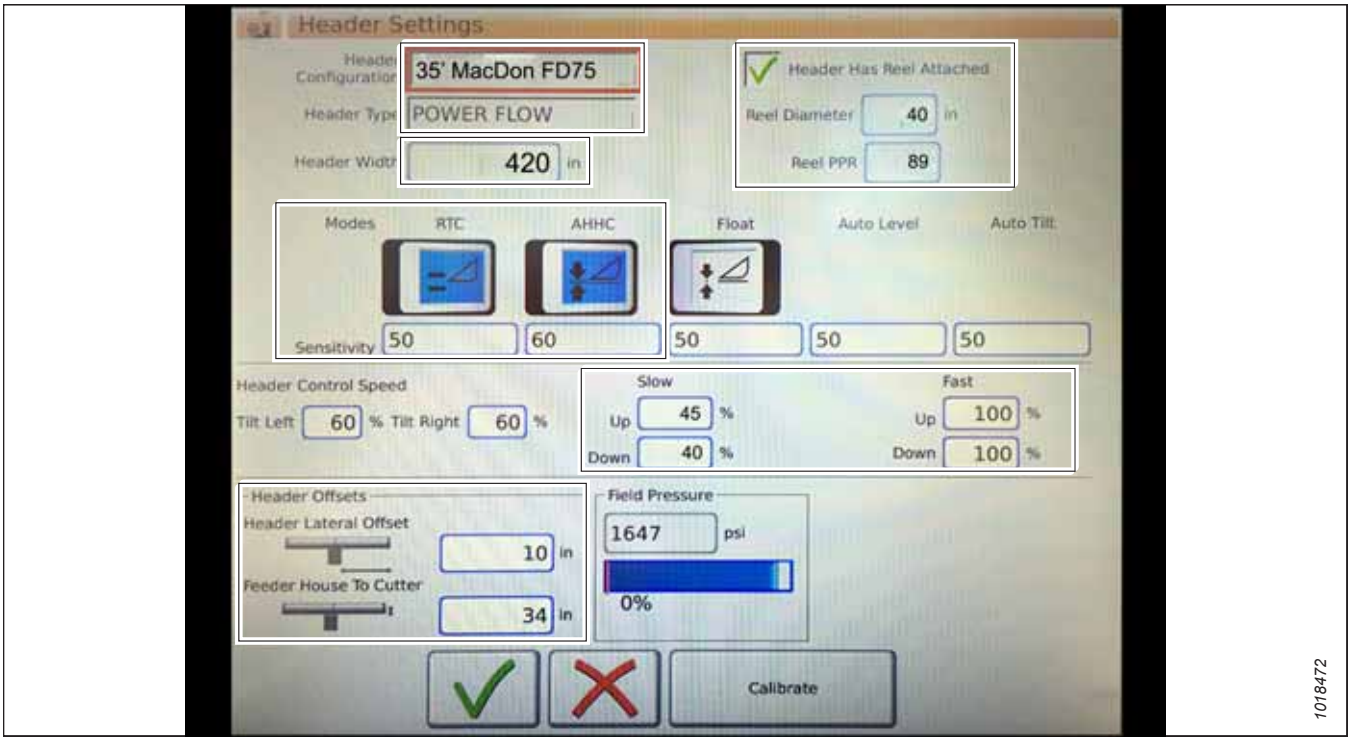


Figure 4.159: Header Settings Inputs for MacDon Headers

4.13.4 Calibrating Header – Gleaner® S9 Series

The auto header height control (AHHC) sensor output must be calibrated for Gleaner® S9 Series combines, or the AHHC feature will not work properly.

DANGER

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

NOTE:

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

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

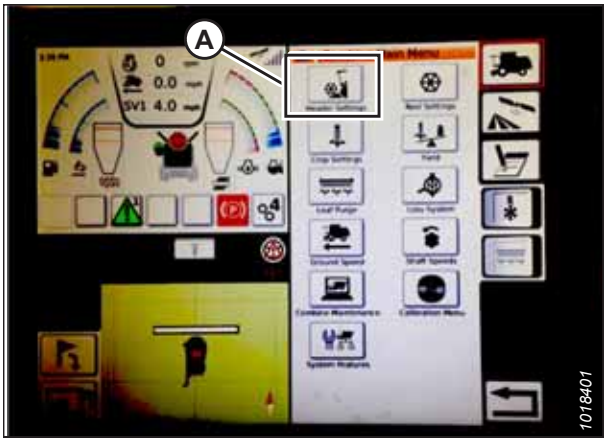


Figure 4.160: Combine Main Menu

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

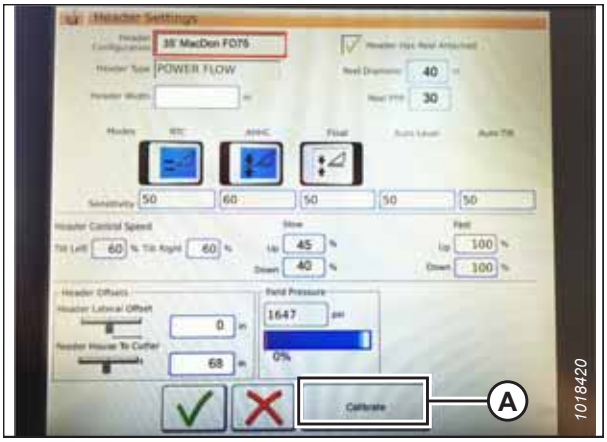


Figure 4.161: Calibration

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

- Left and right header sensor outputs (V)
- 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

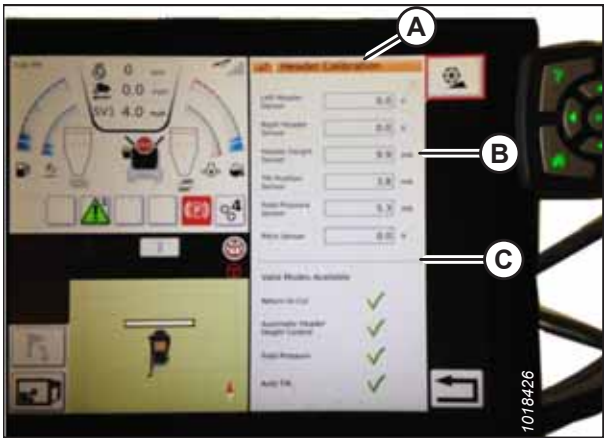


Figure 4.162: Header Calibration Page

DANGER

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

3. On the ground speed lever (GSL), press HEADER DOWN button (A). The sensor values on the HEADER CALIBRATION page will change as the header falls.

   NOTE:

   The header needs to be fully lowered and then fully raised. The sensor voltage range should be between 0.7 and 4.3 V. If the values do not fall within that range, the height sensors will need to be adjusted. For instructions, refer to *4.4.2 Adjusting Voltage Limits, page 137*

Figure 4.163: Header Down Switch

4. Touch CALIBRATE icon (A).

Figure 4.164: Header Calibration

5. The hazard message for the HEADER CALIBRATION procedure will appear. Do **NOT** touch the green check mark until all of the conditions listed on the page have been met.

6. Touch the green check mark to start the CALIBRATION WIZARD.

Figure 4.165: Header Calibration Warning

A progress bar will appear. The calibration wizard can be stopped at any time by touching the red X. The header moves automatically during this process.

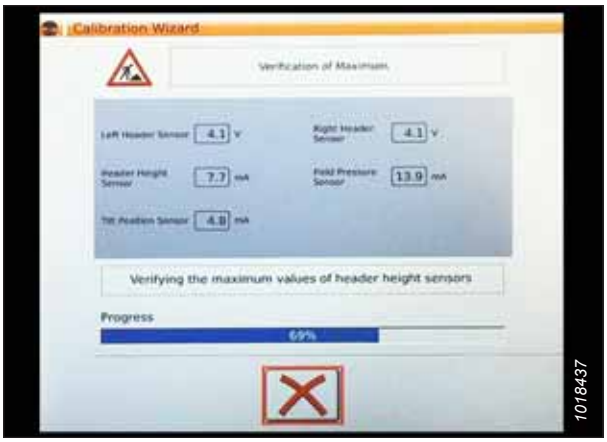


Figure 4.166: Calibration In Progress

7. When the calibration procedure is complete, a message summary information (A) page will appear. A green check mark on row (B) confirms that a particular function has been calibrated. Touch bottom green check mark (C) to save these settings.

Figure 4.167: Completed Calibration Page

NOTE:

On the COMBINE MAIN MENU page, touching CALIBRATION icon (A) opens a general CALIBRATION menu where settings such as header and reel calibration can be selected.

Figure 4.168: Direct Calibration Menu

4.13.5 Operating Header – Gleaner® S9 Series

Once the auto header height control (AHHC) system has been configured on your Gleaner® S9 Series combine, the AHHC system can be controlled from the combine cab.

NOTE:

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

These are the controls used to engage and adjust the auto header height control (AHHC) system.

Figure 4.169: Gleaner® S9

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

1. Engage the header.
2. Set the lateral tilt to MANUAL by moving switch (A) upward to the MAN position.
3. Engage the AHHC by moving switch (B) upward to the I position.

Figure 4.170: Header Control Cluster

4. Press AHHC control switch (A) on the ground speed lever (GSL) to engage the AHHC. The header will move to the last-saved setpoint.

Figure 4.171: AHHC on GSL

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

Figure 4.172: Header Control Cluster

4.13.6 Header In-Field Settings – Gleaner® S9 Series

Once the auto header height control (AHHC) system is working correctly with your Gleaner® S9 Series combine, you can fine-tune these AHHC settings to your liking.

NOTE:

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

1. To view the header group settings, touch HEADER icon (A).
2. The display area shows:
   - Left header height indicator (B), which shows the current position of the header.
   - Red line (C) on current header height position indicator (B), which shows the setpoint cut-off position.
   - Header symbol (D). Touch and then use the scroll wheel on the right of the Tyton terminal to adjust the setpoint cut-off position. As the scroll wheel is moved, the cut-off position will move.
   - Right indicator (E), which shows the set cutting height when AHHC is enabled. You can fine-tune the cutting height by using the header height setpoint control dial on the header control cluster. As this control is adjusted, the cut height indicator will change position.
   - Header working width (F).
   - Header pitch (G).
3. Touching a field on the display opens the on-screen keyboard so that the values can be adjusted. Enter a new value and touch the green check mark when you are finished.

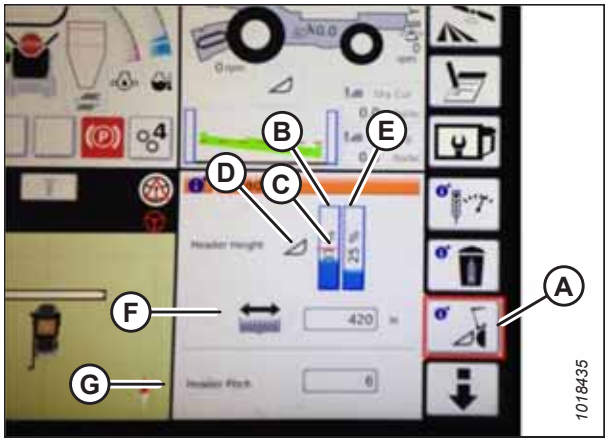


Figure 4.173: Header Groups

NOTE:

Scroll wheel (A) is on the right of the Tyton terminal.

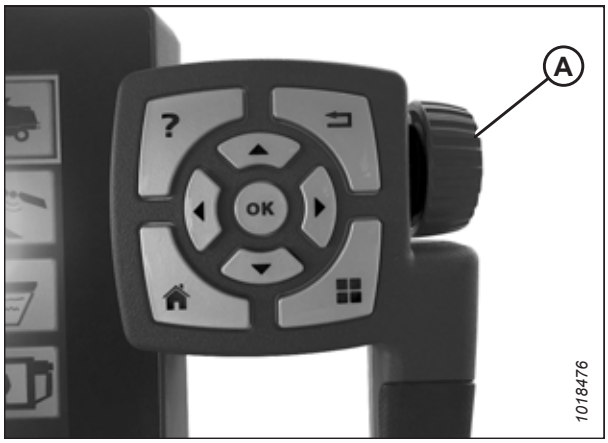


Figure 4.174: Scroll Wheel for Adjustments

NOTE:

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

Figure 4.175: Header Control Cluster

4.14 John Deere 50 Series Combines

To make your header's auto header height control system compatible with John Deere 50 Series combines, you must set your combine's header configuration options for the particular model of header, check the height sensor voltage range, and calibrate the AHHC system to ensure that it is working correctly.

4.14.1 Checking Voltage Range from Combine Cab

To ensure that the auto header height control (AHHC) system on your header works correctly with your John Deere 50 Series combine, the output voltage from the header height control sensors must be verified.

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

2. Ensure the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

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

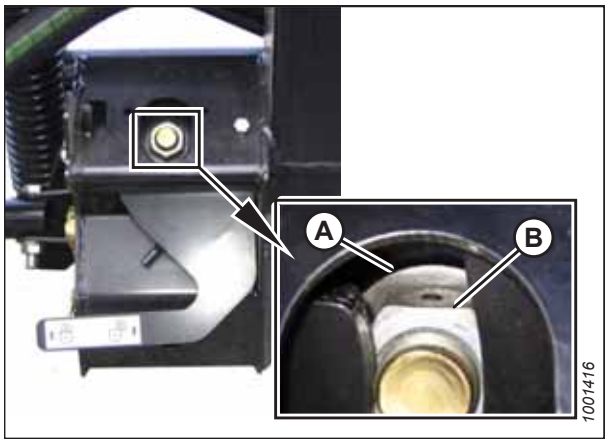


Figure 4.176: Float Lock

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

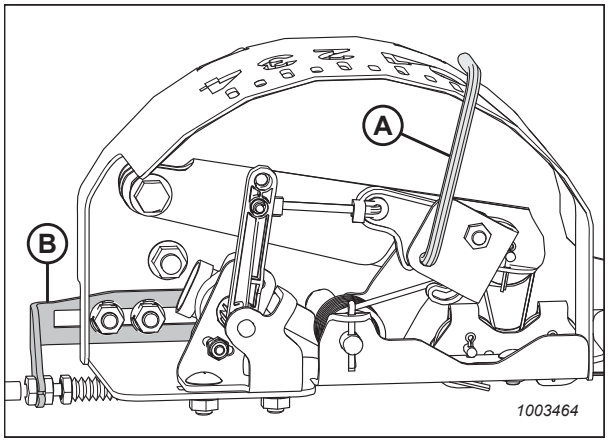


Figure 4.177: Float Indicator Box with Auto Header Height Sensor

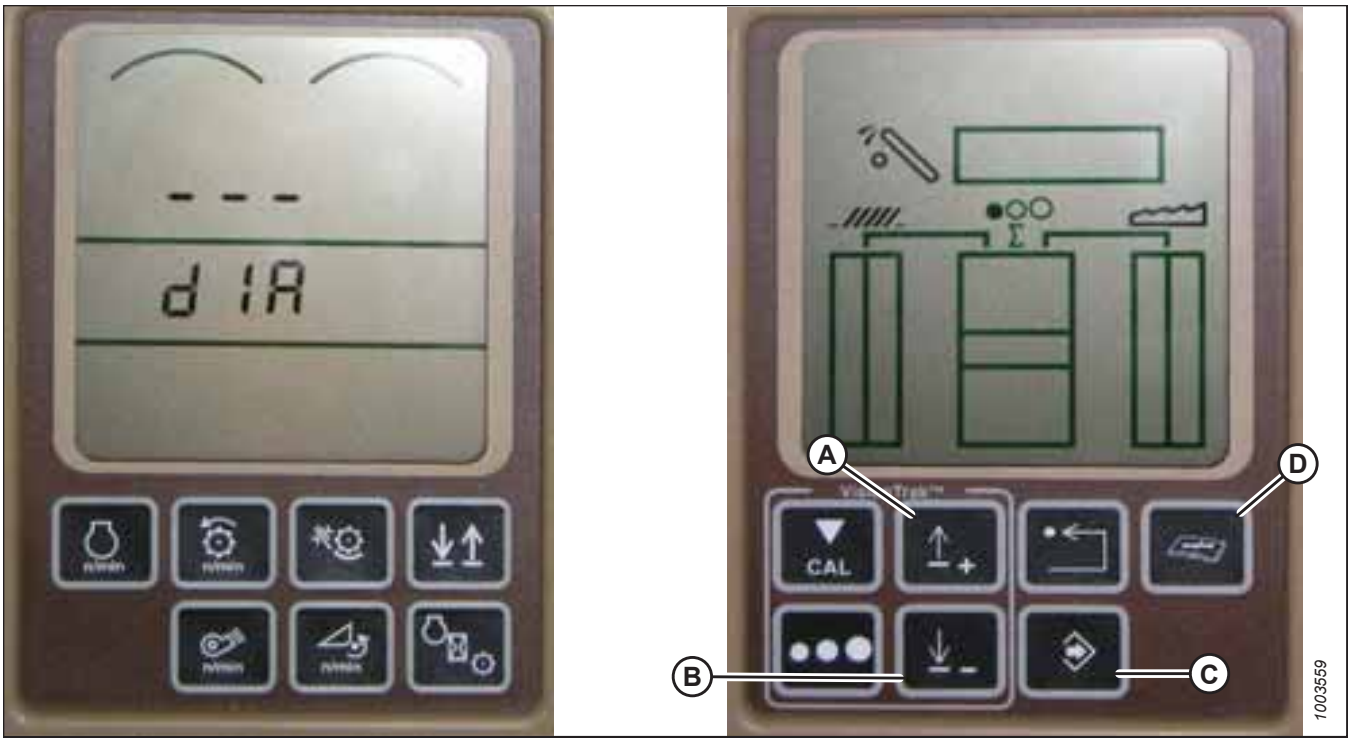


Figure 4.178: John Deere Combine Display

4. Press DIAGNOSTIC button (D) on monitor—**dIA** appears on monitor.
5. Press UP button (A) until **EO1** appears on monitor—this is the header adjustment.
6. Press ENTER button (C).
7. Press 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 the header float is unlocked.

DANGER

Ensure that all bystanders have cleared the area.

9. Start the engine, and fully lower the 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 **0.7 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 **4.3 V**.
13. If the sensor voltage is not within the low and high limits (**0.5–4.3 V**), or if the range between the low and high limits is less than **3.0 V**, you need to make adjustments according to *4.4.2 Adjusting Voltage Limits, page 137*.

4.14.2 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 the 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 the 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 the setup and calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *Adjusting Header Angle from Combine, page 78*.

1. Rest the header on the down stops, and unlock the adapter float.
2. Put wings in locked position.
3. Start the engine.
4. Press DIAGNOSTIC button (A) on the monitor—**dIA** appears on the monitor.

Figure 4.179: Combine Display

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

Figure 4.180: Combine Display

6. Press UP or DOWN buttons until **hdr** appears on the monitor.
7. Press ENTER button—**hdr H-dn** appears on the monitor.
8. Fully lower the feeder house to the ground.

   NOTE:

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

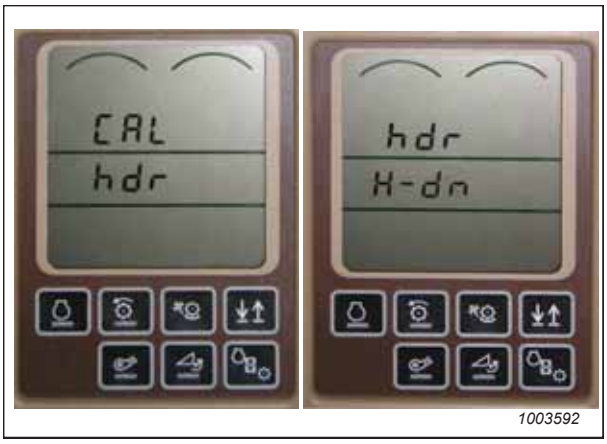


Figure 4.181: Combine Display

9. Press CAL button (A) to save the lower calibration of the header—**hdr H-UP** appears on the monitor.
10. Raise the header 0.9 m (3 ft.) off the ground, and press CAL (A) button—**EOC** appears on the monitor.
11. Press 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 *4.4.2 Adjusting Voltage Limits, page 137* to check and adjust the range.

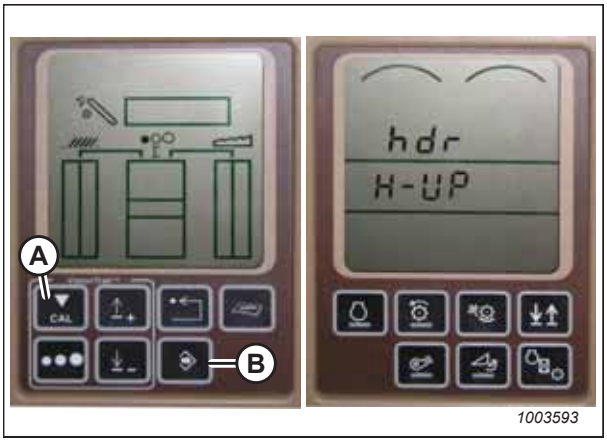


Figure 4.182: Combine Display

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

4.14.3 Setting Sensitivity of Auto Header Height Control

This is also known as dead band adjustment.

NOTE:

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

To increase the sensitivity of the auto header height feature, follow these steps:

1. Press DIAGNOSTIC button (A) on monitor. **dIA** appears on the monitor.
2. Press UP button (B) until **EO1** appears on the monitor, and press ENTER (D). This is the header adjustment.
3. Press 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. The 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 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 the changes.

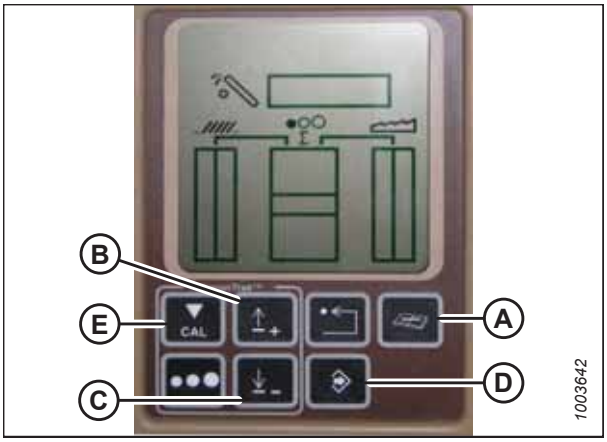


Figure 4.183: John Deere Combine Display

4.14.4 Adjusting Threshold for 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 combine controls or display since this document was published. Refer to combine operator's manual for updates.

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

   NOTE:

   The default setting is 100. The 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 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 the changes.

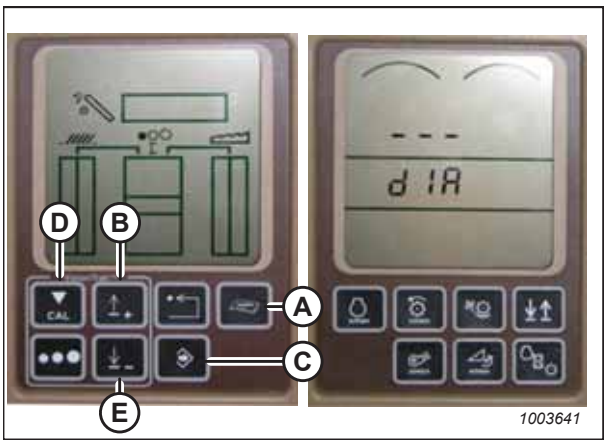


Figure 4.184: John Deere Combine Display

4.14.5 Operating Auto Header Height

To operate your auto header height, follow the steps in this procedure.

IMPORTANT:

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

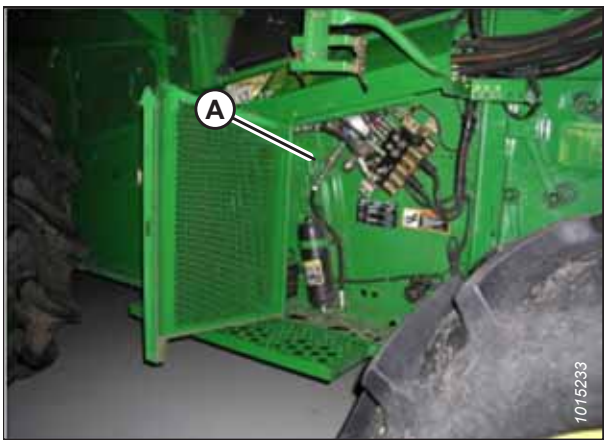


Figure 4.185: Accumulator Shut-off

1. Ensure HEADER HEIGHT RESUME and ACTIVE HEADER CONTROL functions are ON by pressing the buttons on the 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.
   - HEADER HEIGHT RESUME (B) is indicated with a header diagram with a curved arrow in front of it.

Figure 4.186: 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:

   To use the buttons, the combine must be running, AUTO HEADER HEIGHT SENSING must be ON, and the header switch and the feeder house must be engaged.

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

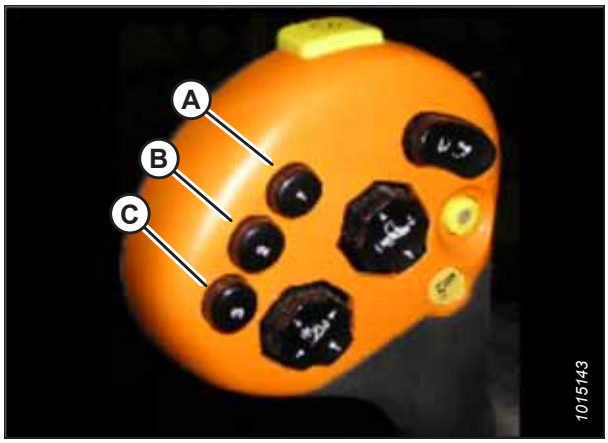


Figure 4.187: Hydrostatic Lever

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

   NOTE:

   The 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 4.188: Auto Header Control Dial

   NOTE:

   The ideal ground pressure, in most cases, is one number of separation on AHHC from having the header fully suspended off ground (B) to just resting on ground (A). Operating the header 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 the auto header height control. Each time the button is pushed, the header will return to that specific ground pressure.

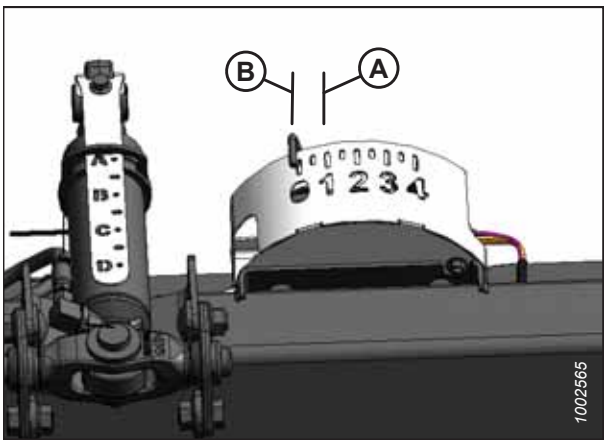


Figure 4.189: Float Indicator Box

4.15 John Deere 60 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere 60 Series combines, you must check the height sensor voltage range, adjust the header height response rate and drop settings, and calibrate the AHHC system to ensure that it is working correctly.

4.15.1 Checking Voltage Range from Combine Cab – John Deere 60 Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your John Deere 60 Series combine, the output voltage from the header height control sensors must be verified.

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the voltage may go out of range during operation, causing the AHHC system to malfunction.

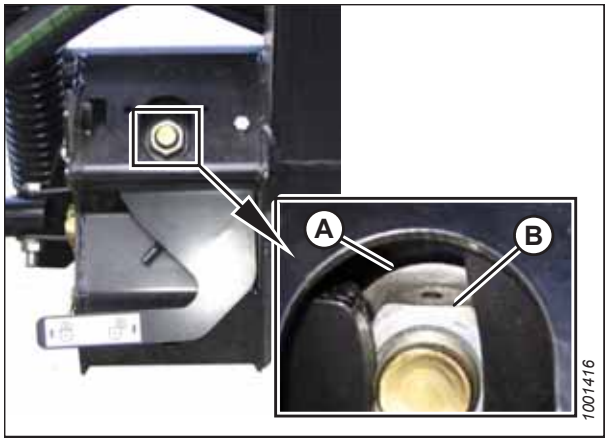


Figure 4.190: Float Lock

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

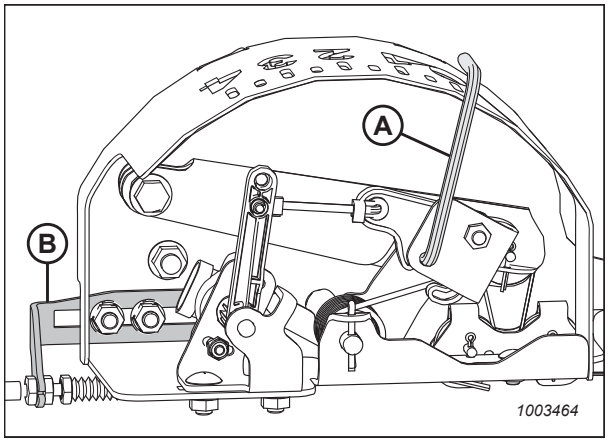


Figure 4.191: Float Indicator Box

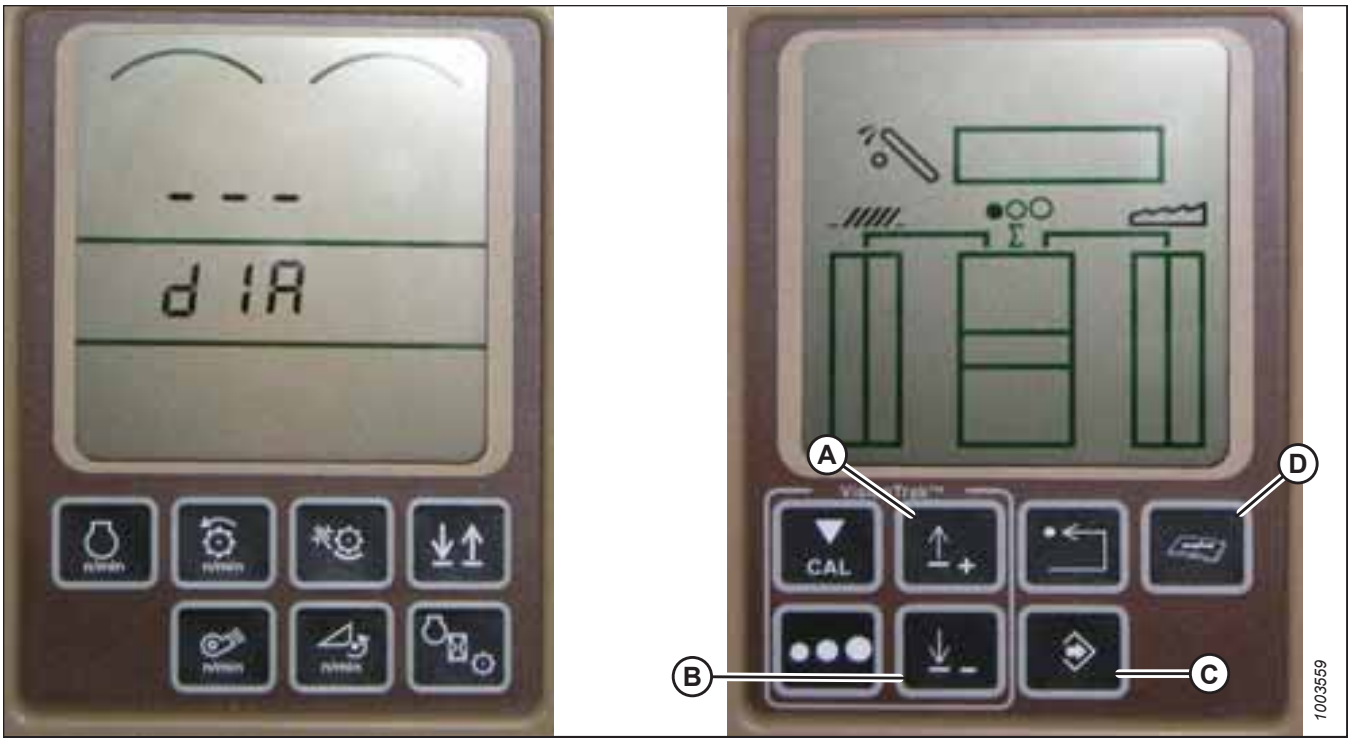


Figure 4.192: John Deere Combine Display

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

   NOTE:

   You may need to hold the HEADER DOWN switch for a few seconds to ensure that the feeder house is fully lowered.
10. Check the sensor reading on the monitor.
11. Raise the header so that it is just off the ground and recheck the sensor reading.
12. 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 *4.4.2 Adjusting Voltage Limits, page 137*.

4.15.2 Calibrating Auto Header Height Control – John Deere 60 Series

The auto header height control (AHHC) sensor output must be calibrated for John Deere 60 Series combines, or the AHHC feature will not work properly.

NOTE:

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

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

DANGER

Check to be sure all bystanders have cleared the area.

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

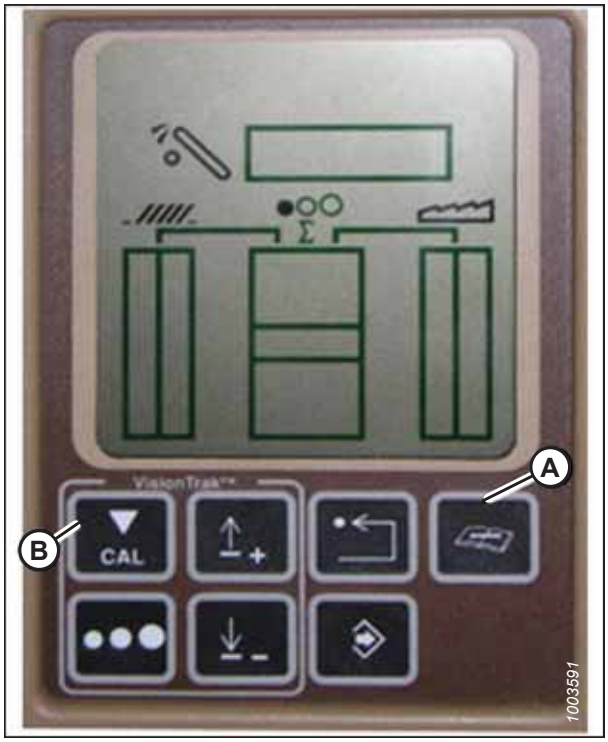


Figure 4.193: John Deere Combine Display

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.
9. Fully lower the feeder house to the ground.

   NOTE:

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

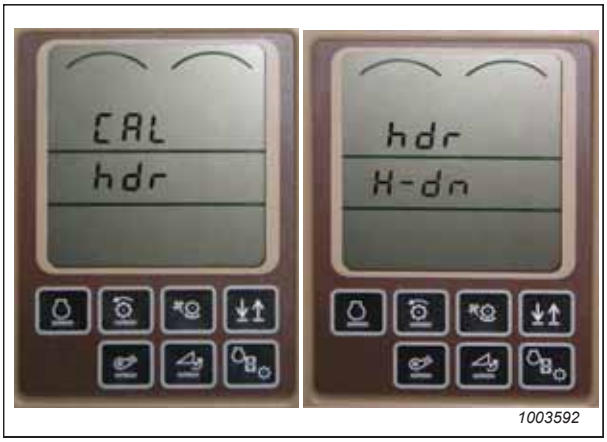


Figure 4.194: John Deere Combine Display

10. Press CAL button (A) to save the calibration of the header. HDR H-UP appears on the monitor.
11. Raise the header 1 m (3 ft.) off of the ground, and press CAL (A) button. EOC appears on the monitor.
12. Press ENTER button (B) to save the calibration of the header. The AHHC system is now calibrated.

    NOTE:

    If an error code appears during calibration, the height sensor output is out of the specified voltage range, and so the height sensors must be adjusted. For instructions, refer to *4.15.2 Calibrating Auto Header Height Control – John Deere 60 Series, page 228*.

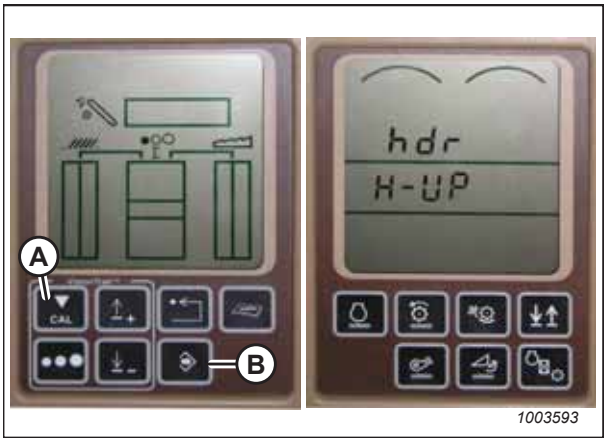


Figure 4.195: John Deere Combine Display

4.15.3 Turning Off Accumulator – John Deere 60 Series

Activating the accumulator on a John Deere 60 Series combine will negatively affect the speed at which the AHHC system adjusts the height of the header. Turning the accumulator off will ensure good AHHC performance.

NOTE:

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

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

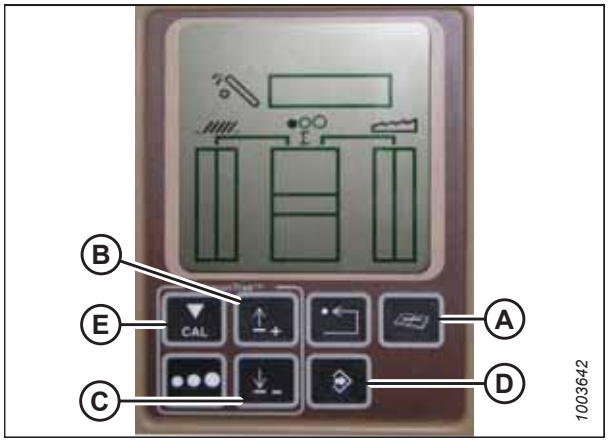


Figure 4.196: John Deere Combine Display

4.15.4 Setting Sensing Grain Header Height – John Deere 60 Series

Change the preset header height in the auto header height control (AHHC) system on your John Deere 60 Series combine after calibration is complete. 50 is the recommended header height value.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

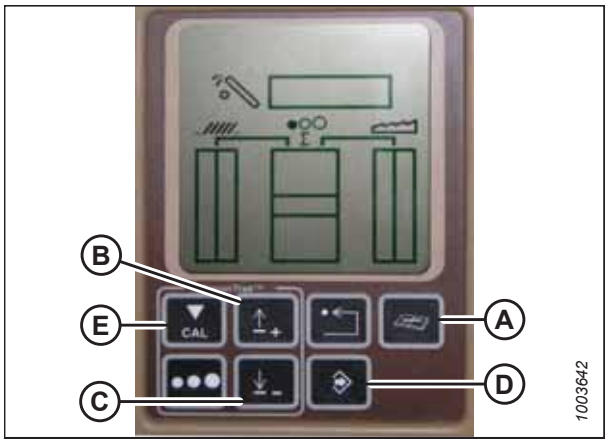


Figure 4.197: John Deere Combine Display

NOTE:

Do **NOT** use active header float function (A) in combination with the AHHC system; the two systems will counteract each other. 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 *4.198, page 231*.

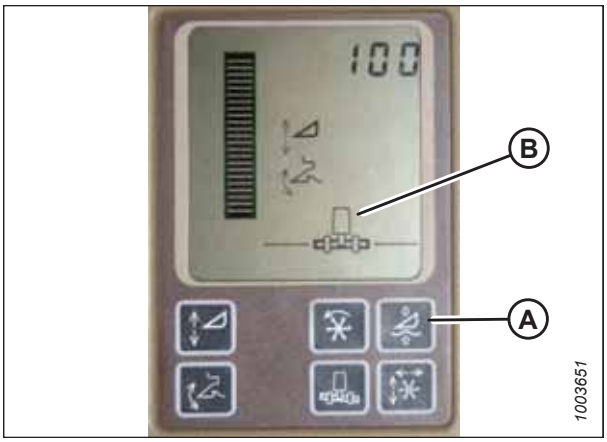


Figure 4.198: John Deere Combine Display

4.15.5 Setting Sensitivity of Auto Header Height Control – John Deere 60 Series

Setting the sensitivity (sometimes called “dead-band adjustment”) of the auto header height control (AHHC) system on a John Deere 60 Series combine affects how quickly the AHHC system changes the height of the header.

NOTE:

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

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

   NOTE:

   The lower the reading, the higher the sensitivity. The sensitivity should be set between 50 and 80.
4. Press ENTER (D) to select 112 as the sensitivity setting. Doing this will allow you to change first digit of the number string.
5. Press UP (B) or DOWN (C) until the desired value is displayed, then press CAL button (E). This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save these settings.

   NOTE:

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

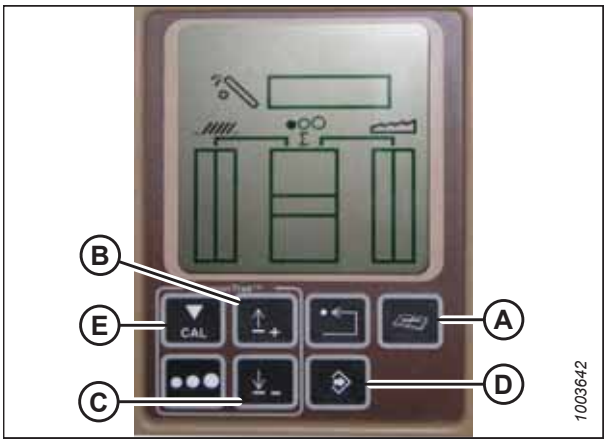


Figure 4.199: John Deere Combine Display

4.15.6 Adjusting Threshold for Drop Rate Valve – John Deere 60 Series

The speed at which the header rises or falls on a John Deere 60 Series combine can be adjusted from the combine cab.

NOTE:

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

1. Press DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on the monitor. Press ENTER (C). This is the header adjustment setting.
3. Press UP (B) or DOWN button (D) 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 sensitivity setting.

   NOTE:

   The default setting is 100. This value should be set between 60 and 85.
4. Press ENTER (C) to select 114 for the fast drop rate. This will allow you to change the first digit of the entry.
5. Press UP (A) or DOWN (B) until the desired value is displayed, then press CAL button (C). You can now edit the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save these settings.

   NOTE:

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

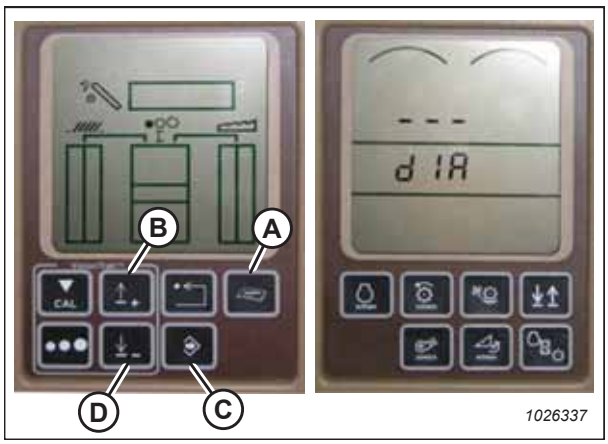


Figure 4.200: John Deere Combine Display

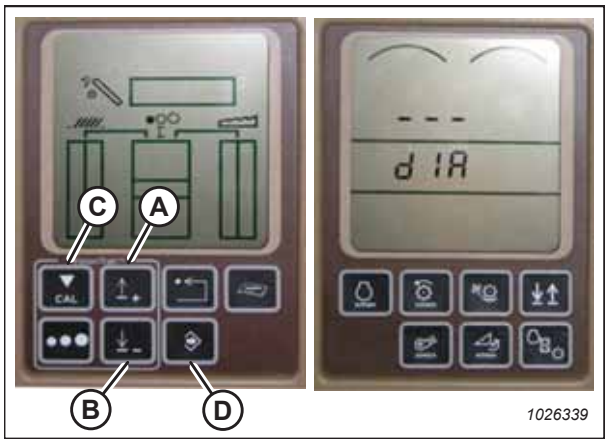


Figure 4.201: John Deere Combine Display

4.16 John Deere 70 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere 70 Series combines, you must check the height sensor voltage range, calibrate the feeder house speed, calibrate the AHHC system to ensure that it is working correctly, and adjust the header sensitivity.

4.16.1 Checking Voltage Range from Combine Cab – John Deere 70 Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your John Deere 70 Series combine, the output voltage from the header height control sensors must be verified.

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the height sensors' output voltage may go out of range during operation, causing the AHHC system to malfunction.

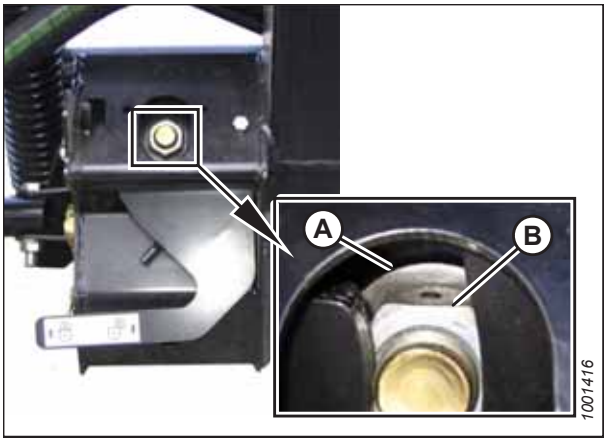


Figure 4.202: Float Lock

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

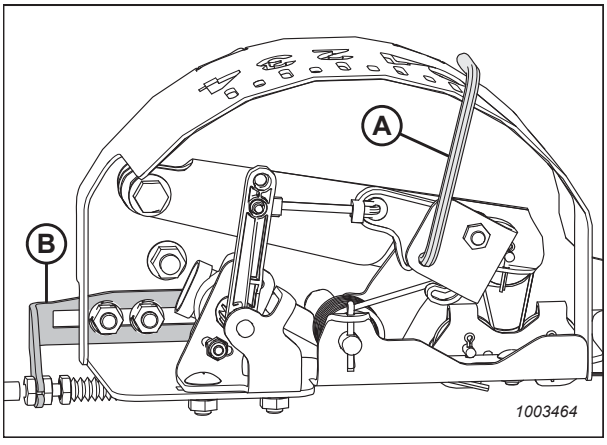


Figure 4.203: Float Indicator Box

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

Figure 4.204: John Deere Combine Display

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

Figure 4.205: John Deere Combine Display

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

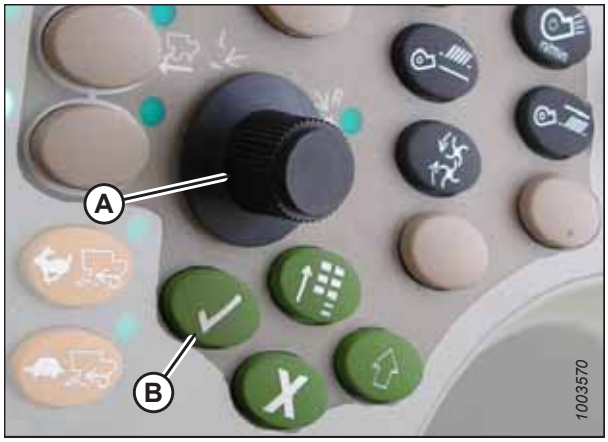


Figure 4.206: John Deere Combine Control Console

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

Figure 4.207: John Deere Combine Display

9. Use the scroll knob to highlight LC 1.001 VEHICLE (A). Press the check mark button to select it.

Figure 4.208: John Deere Combine Display

10. Use scroll knob to highlight 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.
11. Ensure that the header float is unlocked.
12. Start the combine and fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure that the feeder house is fully lowered.
13. Check the sensor reading on the monitor.
14. Raise the header so that it is just off ground and recheck the sensor reading.

Figure 4.209: John Deere Combine Display

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 *4.4.2 Adjusting Voltage Limits, page 137*.

4.16.2 Calibrating Feeder House Speed – John Deere 70 Series

The feeder house speed must be calibrated on your John Deere 70 Series combine before the auto header height control (AHHC) system can be calibrated.

Refer to the combine operator's manual for instructions on how to calibrate the feeder house speed.

4.16.3 Calibrating Auto Header Height Control – John Deere 70 Series

The auto header height control (AHHC) sensor output must be calibrated for John Deere 70 Series combines, or the AHHC feature will not work properly.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Check to be sure all bystanders have cleared the area.

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

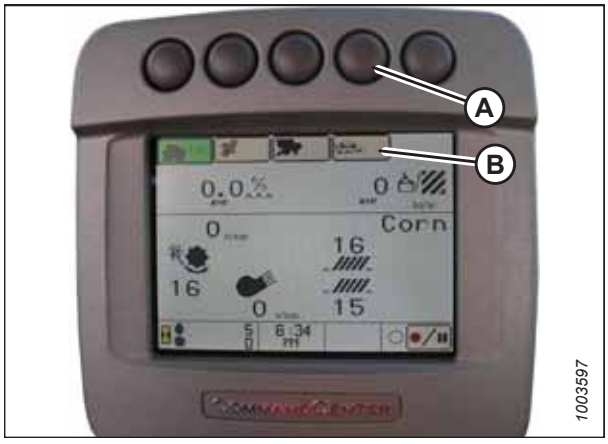


Figure 4.210: John Deere Combine Display

7. Use the scroll knob to scroll down to box (A) and select HEADER. Press the check mark button.

   NOTE:

   The knob and the button are shown in Figure *4.212, page 237*.

8. Scroll down to lower right icon (B). Press the check mark button to select it.

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

   NOTE:

   If an error code appears on the display, then the height sensors' output voltage is not in the correct working range. Refer to *4.16.1 Checking Voltage Range from Combine Cab – John Deere 70 Series, page 233* to check and adjust the range.

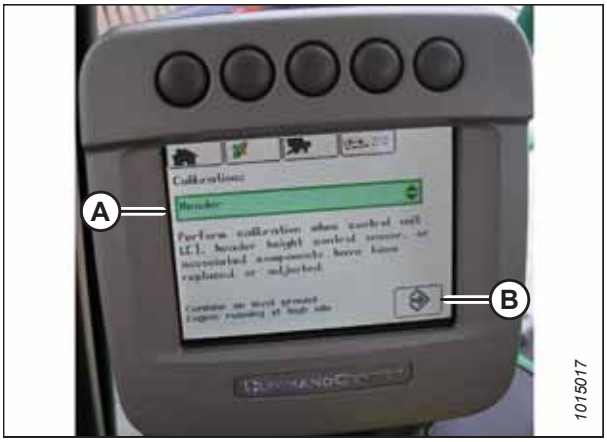


Figure 4.211: John Deere Combine Display

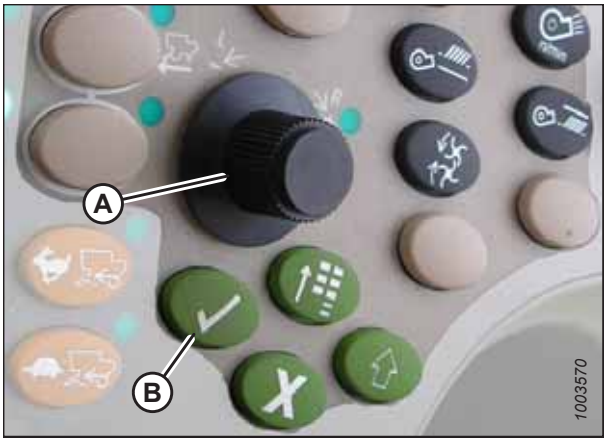


Figure 4.212: John Deere Combine Control Console

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

4.16.4 Setting Sensitivity of Auto Header Height Control – John Deere 70 Series

Setting the sensitivity (sometimes called "dead-band adjustment") of the auto header height control (AHHC) system on a John Deere 70 Series combine affects how quickly the AHHC system changes the height of the header.

NOTE:

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

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

   NOTE:

   The lower the sensitivity value displayed, the lower the sensitivity setting is. Higher sensitivity settings will change how quickly the AHHC system changes the height of the header.

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 check mark button (C) will also display the previous page.

   NOTE:

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

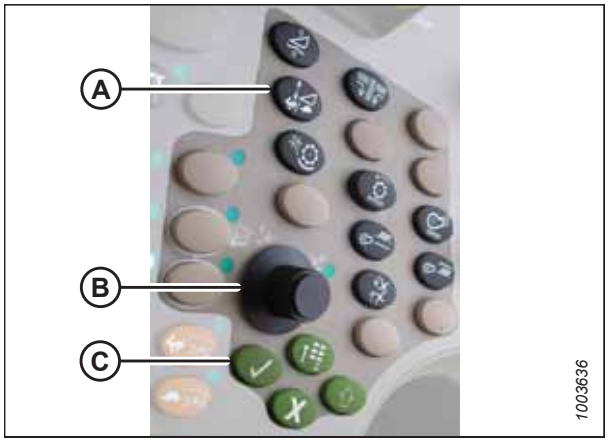


Figure 4.213: John Deere Combine Control Console

Figure 4.214: John Deere Combine Display

4.16.5 Adjusting Manual Header Raise/Lower Rate – John Deere 70 Series

The speed at which the header rises or falls on a John Deere 70 Series combine can be adjusted from the combine cab.

NOTE:

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

1. Press button (A). The current raise/lower rate setting will appear on the monitor.

   NOTE:

   Lower readings indicate a lower rate of header rise and fall; higher readings indicate a higher rate of header rise and fall.

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, you will be returned to the previous page. Pressing check mark button (C) will also return the monitor to the previous page.

   NOTE:

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

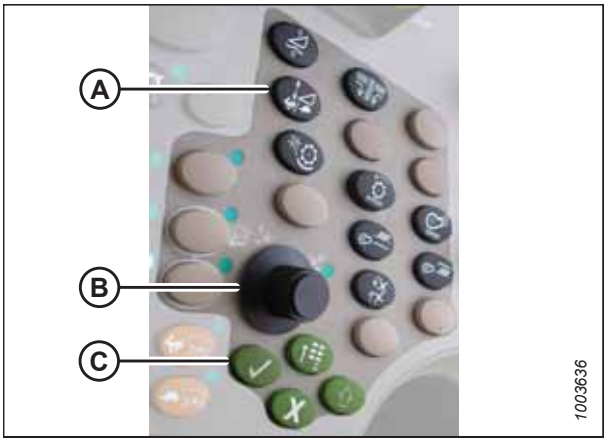


Figure 4.215: John Deere Combine Control Console

Figure 4.216: John Deere Combine Display

4.17 John Deere S and T Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere S and T Series combines, you must check the height sensor voltage range, calibrate the feeder house speed, calibrate the AHHC system to ensure that it is working correctly, and adjust the sensitivity and cutting height presets.

4.17.1 Checking Voltage Range from Combine Cab – John Deere S and T Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your John Deere S or T Series combine, the output voltage from the header height control sensors must be verified.

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the height sensors' output voltage may go out of range during operation, causing the AHHC system to malfunction.

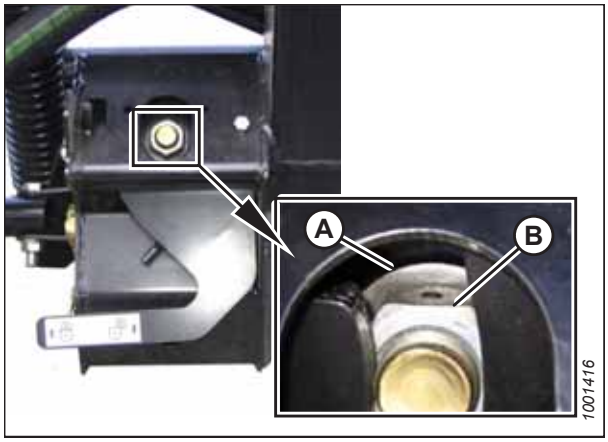


Figure 4.217: Float Lock

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

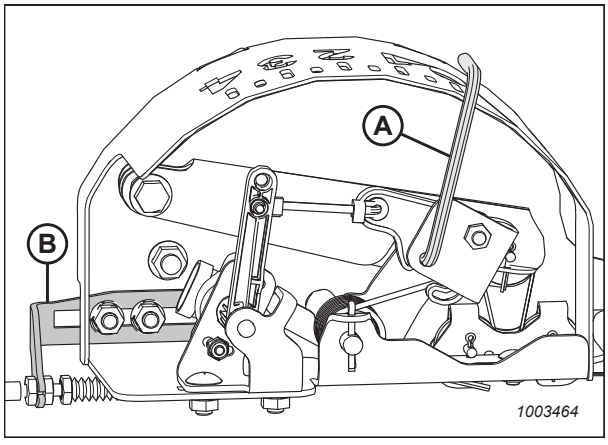


Figure 4.218: Float Indicator Box

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

Figure 4.219: John Deere Combine Display

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

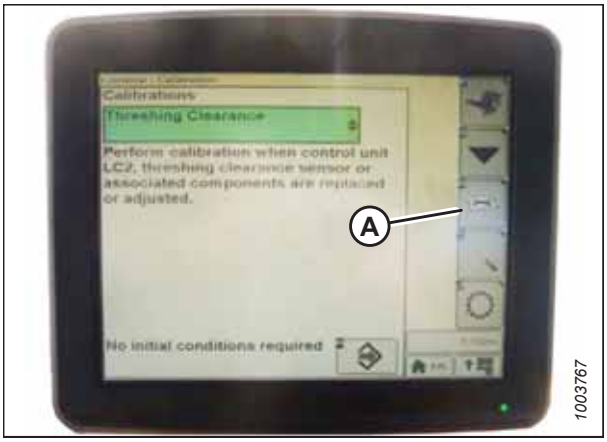


Figure 4.220: John Deere Combine Display

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

Figure 4.221: John Deere Combine Display

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

Figure 4.222: John Deere Combine Display

9. Press icon (A) until it reads Page 5 near the top of the page. The following sensor readings appear:
   - LEFT HEADER HEIGHT
   - CENTER HEADER HEIGHT
   - RIGHT HEADER HEIGHT

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

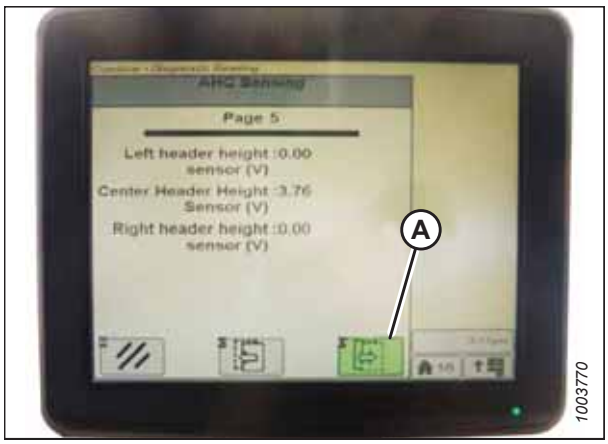


Figure 4.223: John Deere Combine Display

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

    NOTE:

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

12. Check the height 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 *4.4.2 Adjusting Voltage Limits, page 137*.

4.17.2 Calibrating Feeder House Fore-Aft Tilt Range – John Deere S and T Series

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

For best performance of auto header height control (AHHC), perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

The feeder house fore-aft tilt feature is controlled by buttons C (C) and D (D) on the back of the hydro handle.

Figure 4.224: John Deere Hydro Handle

NOTE:

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

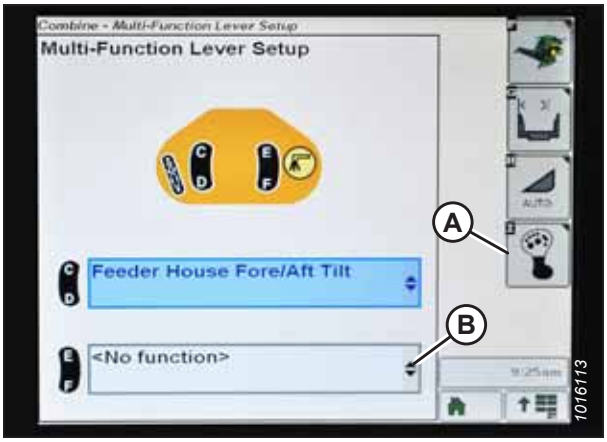


Figure 4.225: John Deere Combine Display

1. Ensure that the center-link is set to **D**.
2. Rest the header on the down stops and unlock the adapter float.
3. Place the wings in the locked position.
4. Press DIAGNOSTIC icon (A) on the main page of the combine display. The CALIBRATION page appears.

Figure 4.226: John Deere Combine Display

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

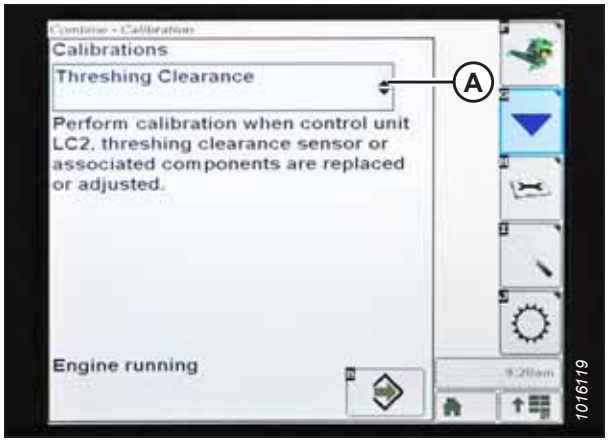


Figure 4.227: John Deere Combine Display

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

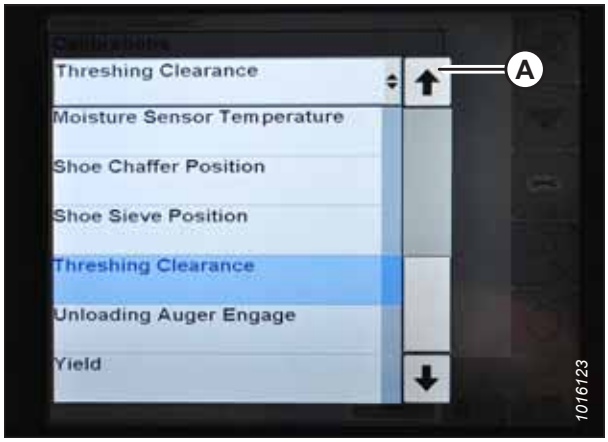


Figure 4.228: John Deere Combine Display

7. Press ENTER icon (A).

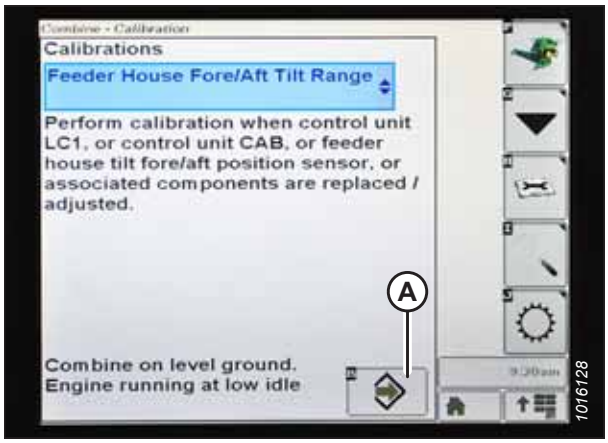


Figure 4.229: John Deere Combine Display

8. Follow the instructions that appear on the combine display.

   NOTE:

   If an error code appears during calibration, the output from the height sensor is out of the specified voltage range and will require adjustment. For instructions, refer to *4.17.1 Checking Voltage Range from Combine Cab – John Deere S and T Series, page 240*.

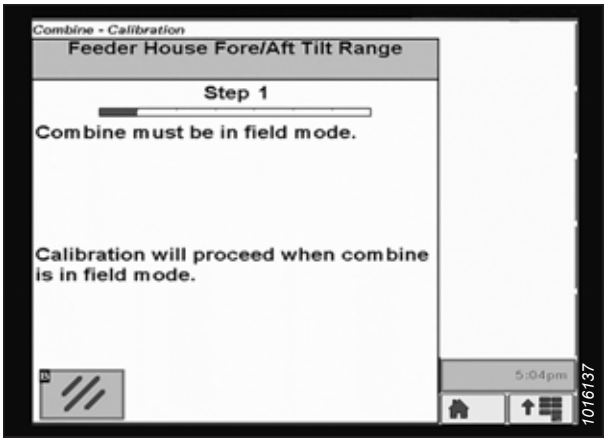


Figure 4.230: John Deere Combine Display

4.17.3 Calibrating Auto Header Height Control – John Deere S and T Series

The auto header height control (AHHC) sensor output must be calibrated for John Deere S and T Series combines, or the AHHC feature will not work properly.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

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

1. Ensure that the center-link is set to **D**.
2. Rest the header on the down stops and unlock the adapter float.
3. Place the wings in the locked position.
4. Press DIAGNOSTIC icon (A) on the main page of monitor. The CALIBRATION page appears.

Figure 4.231: John Deere Combine Display

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

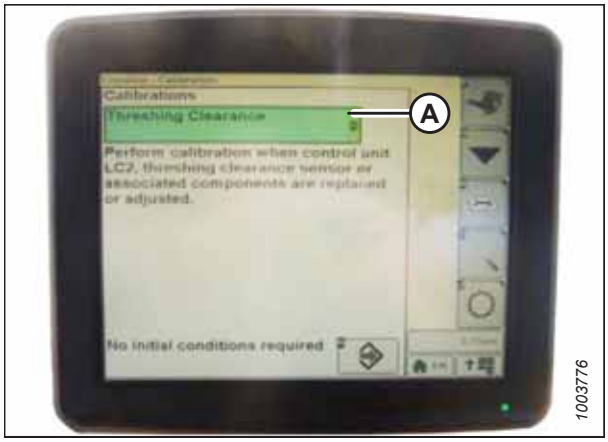


Figure 4.232: John Deere Combine Display

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

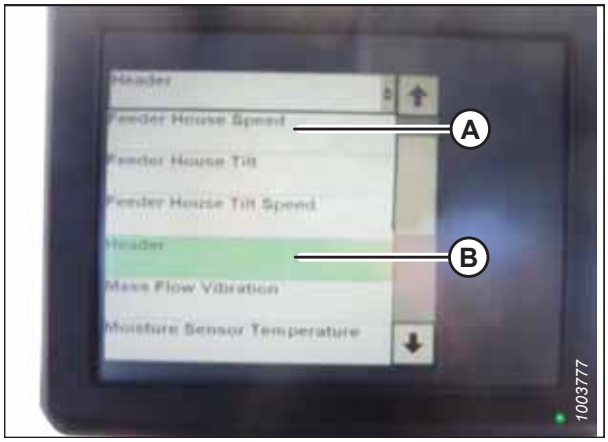


Figure 4.233: John Deere Combine Display

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

   NOTE:

   The feeder house speed calibration procedure must be done before the header calibration procedure.

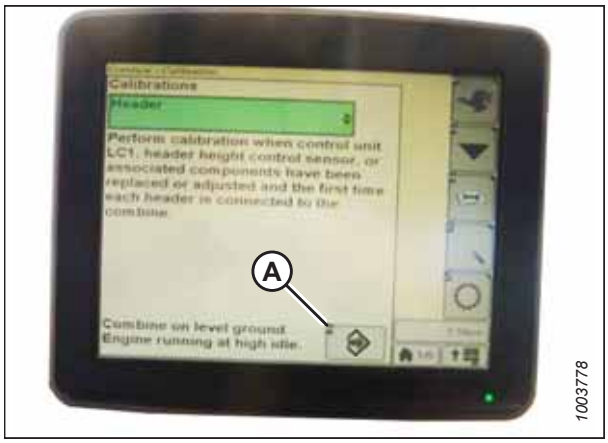


Figure 4.234: John Deere Combine Display

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

   NOTE:

   If an error code appears during calibration, the voltage output of the height sensor is out of the proper range. It will be necessary to adjust the height sensor. For instructions, refer to *4.4.2 Adjusting Voltage Limits, page 137*.

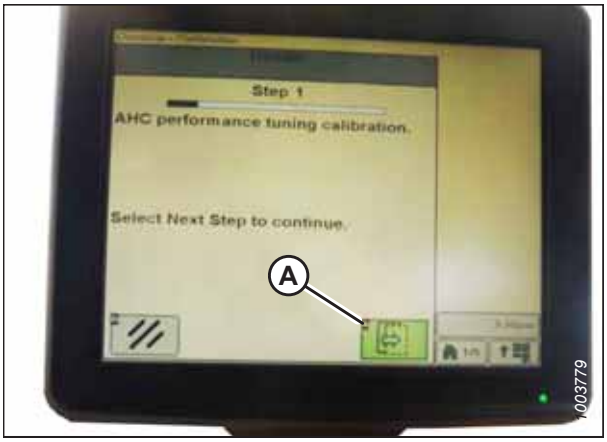


Figure 4.235: John Deere Combine Display

4.17.4 Setting Sensitivity of Auto Header Height Control – John Deere S and T Series

Setting the sensitivity (sometimes called “dead-band adjustment”) of the auto header height control (AHHC) system on a John Deere S or T Series combine affects how quickly the AHHC system changes the height of the header.

NOTE:

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

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

Figure 4.236: John Deere Combine Command Center

2. Press **–** or **+** icon (A) to adjust the sensitivity.

   NOTE:

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

Figure 4.237: John Deere Combine Display

4.17.5 Adjusting Manual Header Raise/Lower Rate – John Deere S and T Series

The speed at which the header rises or falls on a John Deere S or T Series combine can be adjusted from the combine cab.

NOTE:

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

1. Press button (A). The current manual raise/lower speed setting will appear on the monitor.

Figure 4.238: John Deere Combine Command Center

2. Press **–** or **+** icon (A) to adjust the manual raise/lower speed.

NOTE:

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

Figure 4.239: John Deere Combine Display

NOTE:

In most cases, the ideal ground pressure is one number (on the float indicator box) above the setting at which the header is suspended off the ground. For example, if float indicator pointer (A) is positioned at 0 and the header is suspended off ground at that setting, then the ideal ground pressure will be achieved with the pointer positioned at 1. Operating the header with heavier pressures can wear out the cutterbar wearplate prematurely.

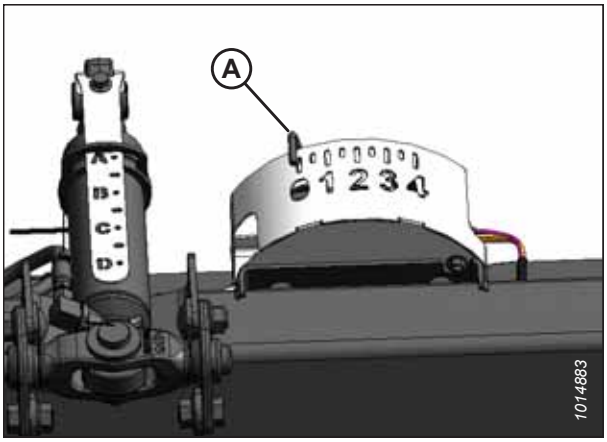


Figure 4.240: Float Indicator Box

4.17.6 Setting Preset Cutting Height – John Deere S and T Series

You will need to configure both preset header heights on your John Deere S or T Series combine to use the auto header height control (AHHC) system with your header.

NOTE:

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

1. Press 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 the reel speed, header width, and the height of the feeder house for acre counter engagement.

Figure 4.241: Combine Display

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

Figure 4.242: Combine Display

3. Select HEADER HEIGHT SENSING ENABLE (A), HEADER HEIGHT RESUME ENABLE (B), and REEL POSITION RESUME ENABLE (C) icons.

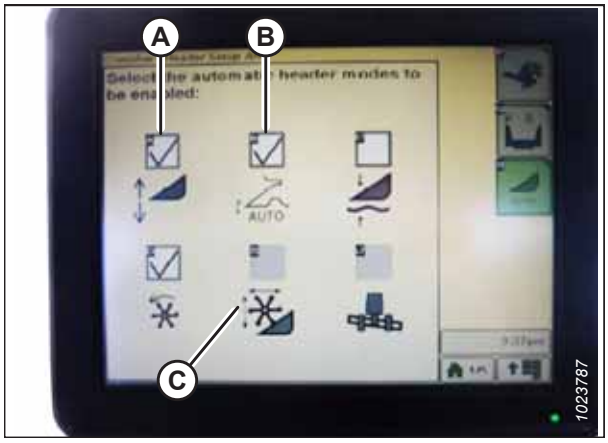


Figure 4.243: Combine Display

4. Turn on header engagement switch (A) and move the header to the desired preset position.

5. The header position can be fine-tuned with HEADER HEIGHT PRESSURE CONTROL DIAL (B).

Figure 4.244: Combine Control Console

6. Hold joystick button 2 (B) until the AHHC icon flashes on the monitor.

7. To store another preset, repeat Step *4, page 251* and Step *6, page 251* for button 3 (C).

8. Select an appropriate ground pressure setting:

   - Preset button 2 (B) on the joystick for a light ground pressure setting. Lighter settings are suitable for muddy or soft soil conditions.
   - Preset button 3 (C) for a heavy ground pressure setting. Heavier ground pressure settings are suitable for harder soil conditions, and allow for a faster ground speed.

Figure 4.245: Joystick Buttons

NOTE:

Preset button 1 (A) is reserved for the header lift function on headlands; it is not used for ground cutting.

NOTE:

In most cases, the ideal ground pressure is one number (on the float indicator box) above the setting at which the header is suspended off the ground. For example, if float indicator pointer (A) is positioned at 0 and the header is suspended off the ground at that setting, then the ideal ground pressure will be achieved with the pointer positioned at 1. Operating the header with heavier pressures can wear out the cutterbar wearplate prematurely.

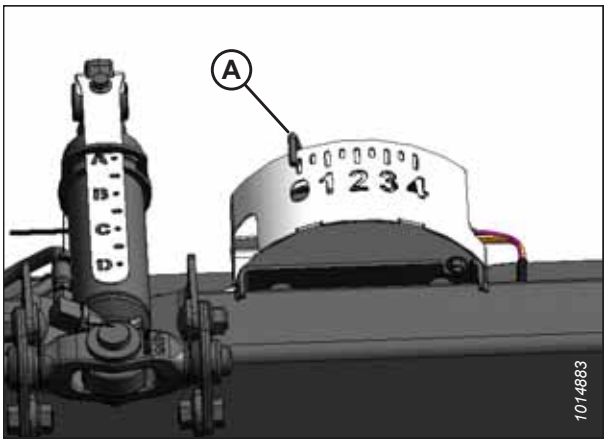


Figure 4.246: Float Indicator Box

NOTE:

When the AHHC is engaged, AHHC icon (A) appears on the monitor. Number (B) indicates which button was most recently pressed.

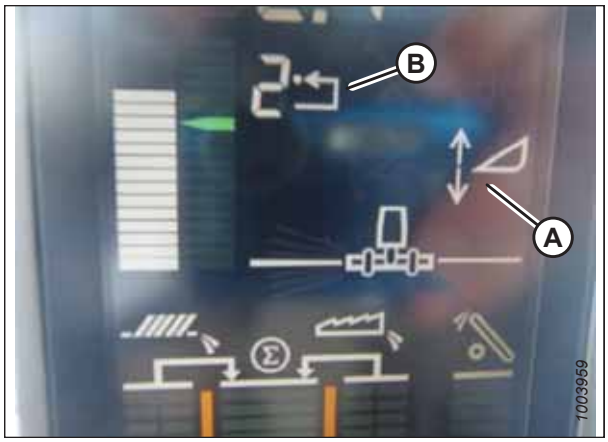


Figure 4.247: Combine Display

4.18 John Deere S7 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere S7 Series combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

4.18.1 Setting up Header – John Deere S7 Series

Set these initial configuration options on your combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. Press header button (A) on the panel below the display. The HEADER page opens.

Figure 4.248: John Deere S7 Display

2. Select HEADER TYPE field (A). The HEADER DETAILS dialog box opens.

Figure 4.249: John Deere S7 Display – Header Page

3. Verify correct header width is displayed under WIDTH.

4. To change header width, select field (A). The WIDTH dialog box opens.

Figure 4.250: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then press OK.

Figure 4.251: John Deere S7 Display – Setting Header Width

6. Press close button (A) in the top right corner to return to the HEADER page.

Figure 4.252: John Deere S7 Display – Header Details Dialog Box

7. Raise/lower speed (A), tilt speed (B), height sensitivity (C), and tilt sensitivity (D) can all be adjusted from this page. Select the option you would like to adjust. The following example shows the raise/lower speed adjustment.

Figure 4.253: John Deere S7 Display – Header Page

8. Use **+** and **–** buttons (A) to adjust the setting.

9. Press the close button in top right corner of the window to return to the HEADER page.

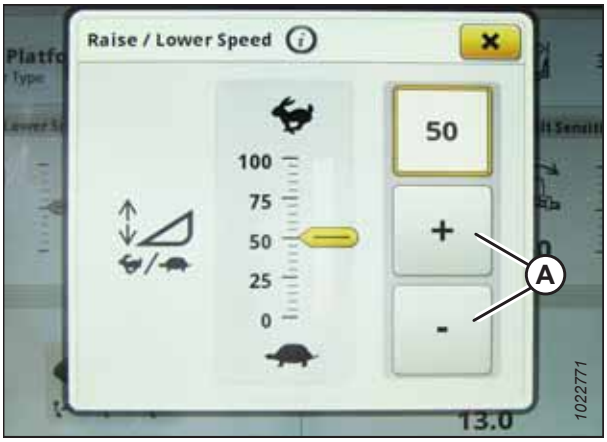


Figure 4.254: John Deere S7 Display – Raise/Lower Speed Adjustment

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

Figure 4.255: John Deere S7 Display – Header Page

11. If the header has not been calibrated yet, an error icon will appear on HEIGHT SENSING button (A). Select button (A) to view the error message.

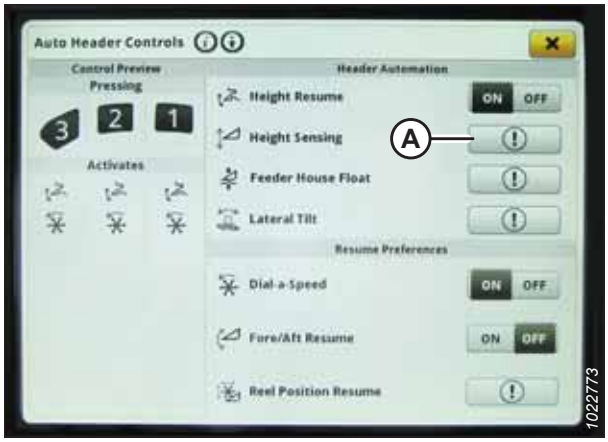


Figure 4.256: John Deere S7 Display – Auto Header Controls

12. Read the error message and then press OK.

13. Proceed to *4.18.2 Checking Voltage Range from Combine Cab – John Deere S7 Series, page 256*.

Figure 4.257: John Deere S7 Display – Height Sensing Error Message

4.18.2 Checking Voltage Range from Combine Cab – John Deere S7 Series

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

WARNING

Ensure that all bystanders have cleared the area.

1. Unlock the float.

2. Ensure the float lock linkage is on the down stops at both locations. When linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

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

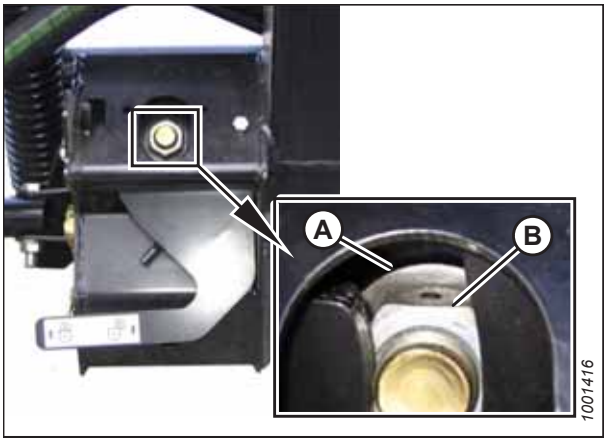


Figure 4.258: Float Lock

3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page.

Figure 4.259: John Deere S7 Display – Harvesting Page

4. On the MENU page, select SYSTEM tab (A). The MENU opens.

5. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

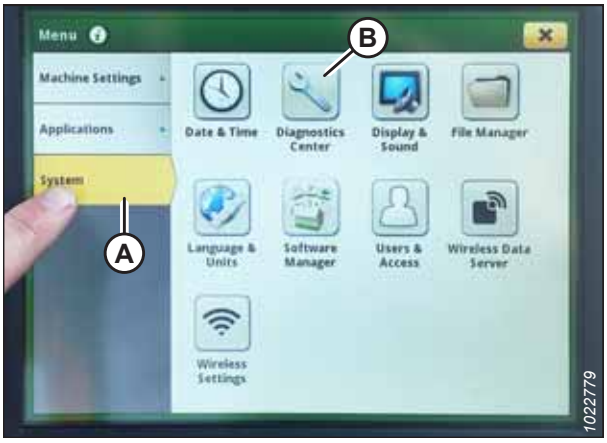


Figure 4.260: John Deere S7 Display – Menu

6. Select AHC - SENSING (A). The AHC - SENSING\DIAGNOSTICS page appears.

Figure 4.261: John Deere S7 Display – Diagnostics Center

7. Select SENSOR tab (A) to view the sensor voltages. Center header height sensor voltage (B) must be between 0.5 and 4.5 V, with at least 3 V of variation between 0 and 4 on the float indicator box.
8. If sensor voltage adjustment is required, refer to *4.4.2 Adjusting Voltage Limits, page 137*.

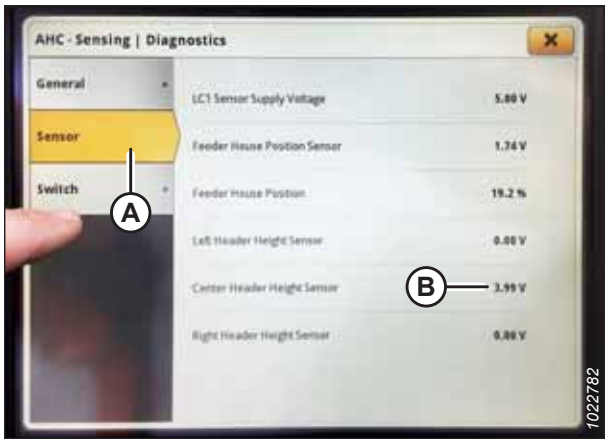


Figure 4.262: John Deere S7 Display – Checking Sensor Voltage

4.18.3 Calibrating Feeder House – John Deere S7 Series

Feeder house calibration must be done before header calibration.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *Adjusting Header Angle from Combine, page 78*.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the adapter float.

3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of page. The MENU opens.

Figure 4.263: John Deere S7 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).

5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

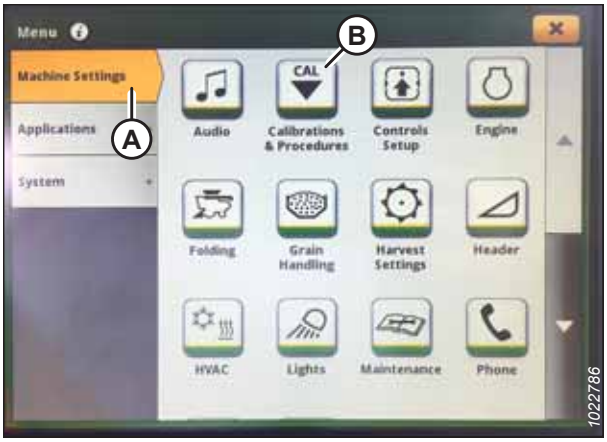


Figure 4.264: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).

7. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page appears.

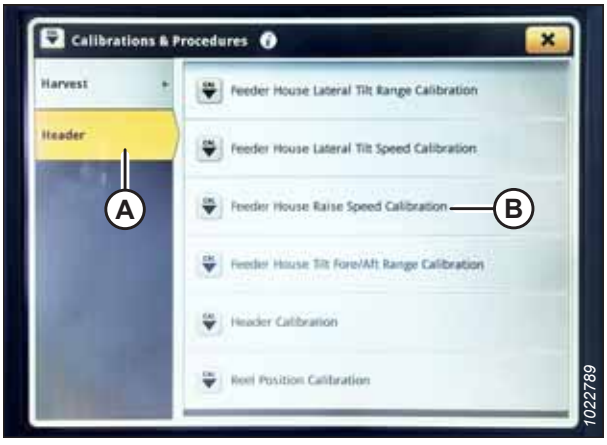


Figure 4.265: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at the bottom of the page. A calibration overview appears.

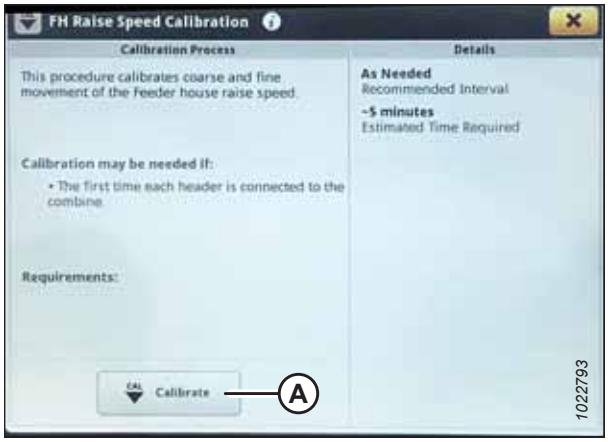


Figure 4.266: John Deere S7 Display – Feeder House Calibration

9. Read the calibration overview, and then press START.

Figure 4.267: John Deere S7 Display – Feeder House Calibration

10. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

Figure 4.268: John Deere S7 Display – Feeder House Calibration

11. When calibration is complete, select SAVE to confirm the calibration.

Figure 4.269: John Deere S7 Display – Feeder House Calibration

4.18.4 Calibrating Header – John Deere S7 Series

Before the auto header height control (AHHC) system can be used, it must be calibrated.

DANGER

Ensure that all bystanders have cleared the area.

Feeder house calibration must be done before header calibration. If feeder house has not yet been calibrated, refer to *4.18.3 Calibrating Feeder House – John Deere S7 Series, page 258*.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *Adjusting Header Angle from Combine, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

4. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 4.270: John Deere S7 Display – Harvesting Page

5. Select MACHINE SETTINGS tab (A).

6. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

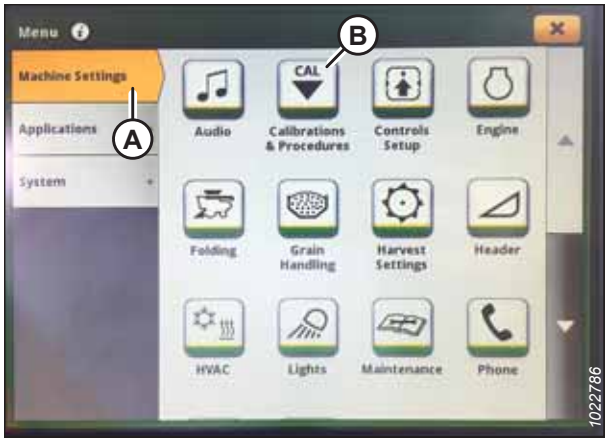


Figure 4.271: John Deere S7 Display – Machine Settings

7. Select HEADER tab (A).

8. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page appears.

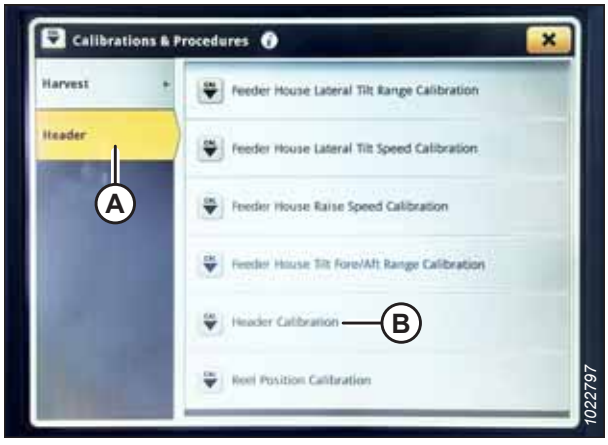


Figure 4.272: John Deere S7 Display – Calibrations and Procedures

9. Select CALIBRATE (A) at the bottom of the page. The calibration overview window opens.

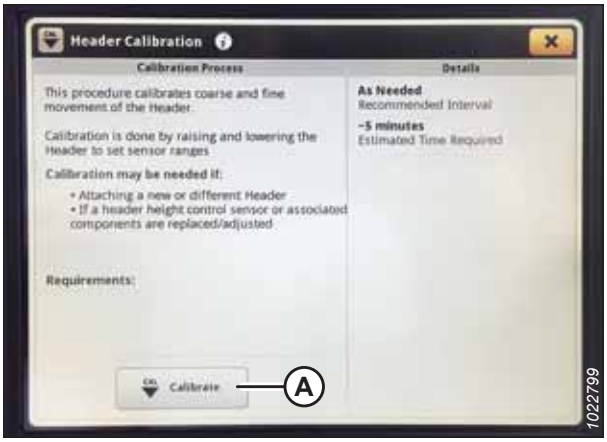


Figure 4.273: John Deere S7 Display – Header Calibration

10. Press button (A) on the console to set the engine to high idle.

Figure 4.274: John Deere S7 Console

11. Select START on the CALIBRATION OVERVIEW page.

12. 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 the calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *4.4.2 Adjusting Voltage Limits, page 137*.

Figure 4.275: John Deere S7 Display – Header Calibration

13. When the calibration is complete, select SAVE to confirm the calibration.

Figure 4.276: John Deere S7 Display – Header Calibration

4.19 New Holland Combines CR/CX Series – CR Series, Model Year 2014 and Earlier

To make your header's auto header height control (AHHC) system compatible with New Holland CX and CR series combines (CR models of model year 2014 and earlier), you must check the height sensor voltage range, engage and calibrate the AHHC system, and adjust the sensitivity, header rise and fall rates, and the cutting height presets.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *4.20 New Holland Combines – CR Series, Model Year 2015 and Later, page 274*.

4.19.1 Checking Voltage Range from Combine Cab – New Holland CX/CR Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your New Holland CX or CR Series combine, the output voltage from the header height control sensors must be verified.

NOTE:

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

DANGER

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. Ensure that the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   NOTE:

   If the header is not on the down stops during this procedure, the height sensors' output voltage may go out of range during operation, causing the AHHC system to malfunction.

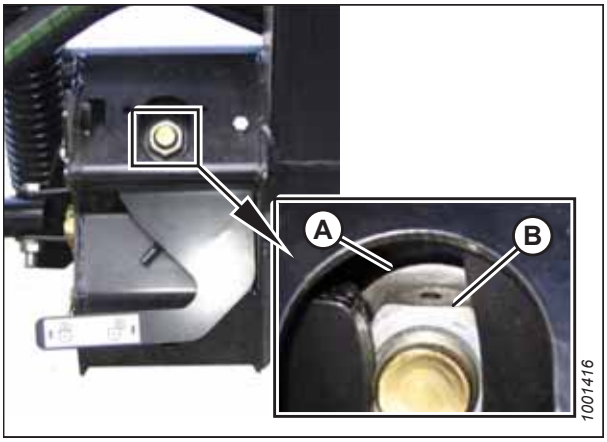


Figure 4.277: Float Lock

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

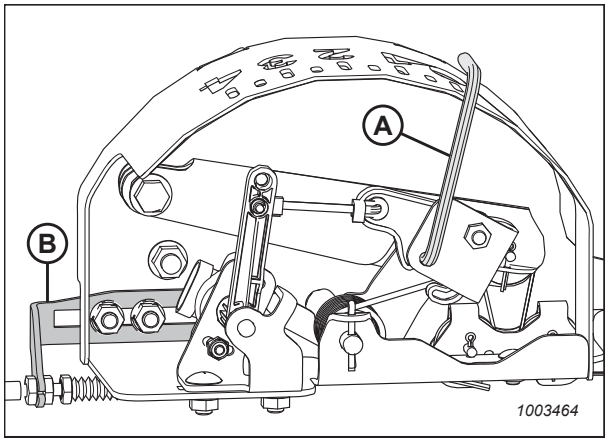


Figure 4.278: Float Indicator Box (5 Volt AHHC Sensor Assembly Shown)

5. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.
6. Select SETTINGS. The SETTINGS page appears.

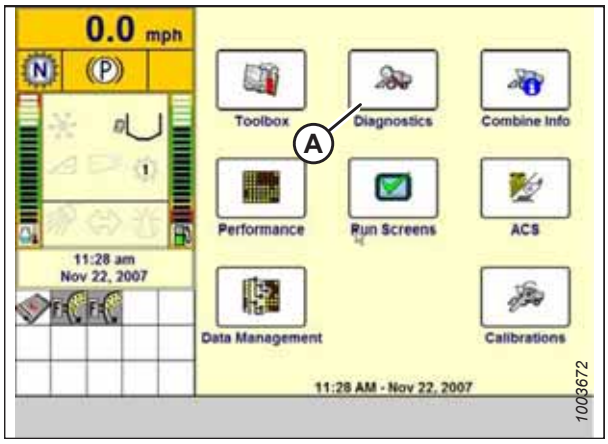


Figure 4.279: New Holland Combine Display

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

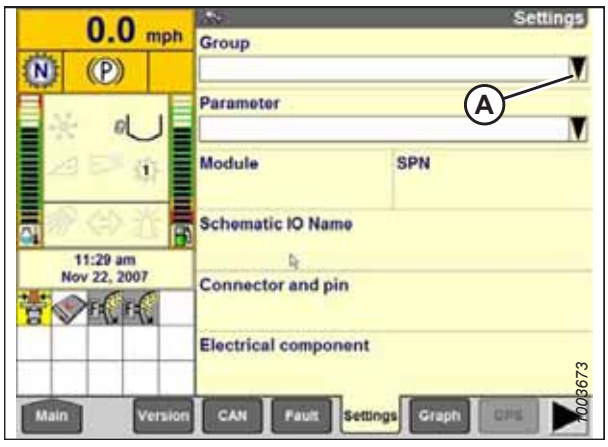


Figure 4.280: New Holland Combine Display

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

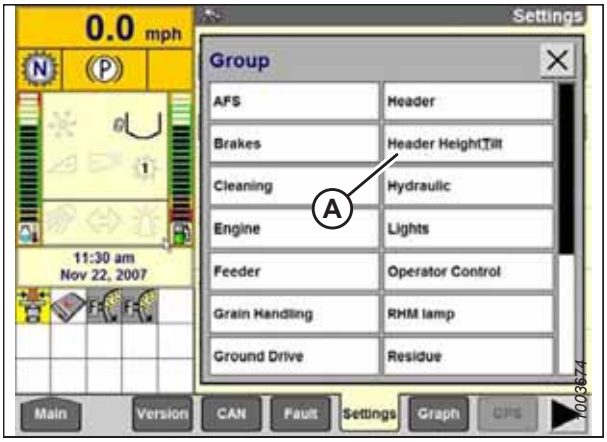


Figure 4.281: New Holland Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact height sensor output voltage is displayed at the top of page.
10. Raise and lower the header to see the full range of height sensor output voltage readings.
11. Adjust the voltage limits (refer to *4.4.2 Adjusting Voltage Limits, page 137*) if the sensor voltage is not within low and high limits or if the range between the low and high limits is insufficient (refer to Table *4.1, page 134*).

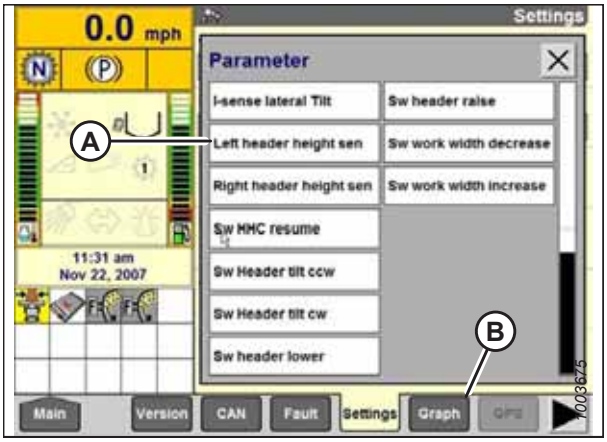


Figure 4.282: New Holland Combine Display

4.19.2 Engaging Auto Header Height Control – New Holland CR/CX Series

Set these initial configuration options on your New Holland CR or CX Series combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

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

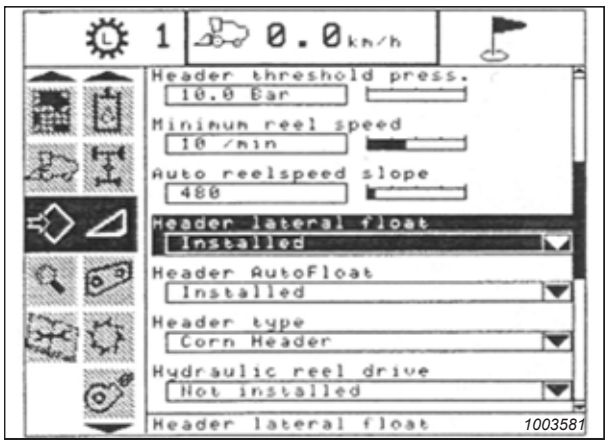


Figure 4.283: New Holland Combine Display

3. Select HEADER AUTOFLOAT and press ENTER.
4. Select INSTALLED.

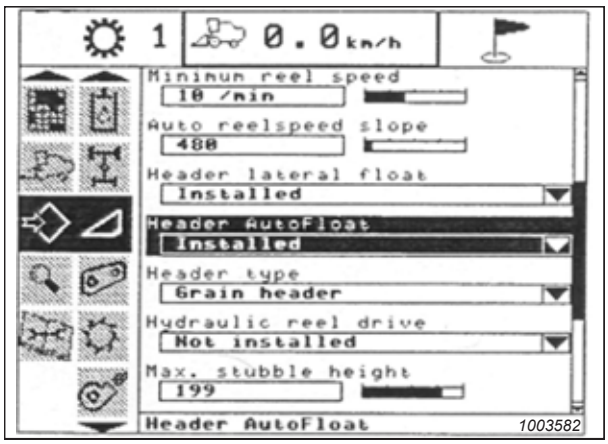


Figure 4.284: New Holland Combine Display

4.19.3 Calibrating Auto Header Height Control – New Holland CR/CX Series

The auto header height control (AHHC) sensor output must be calibrated for New Holland CR and CX Series combines, or the AHHC feature will not work properly.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Check to be sure all bystanders have cleared the area.

Ensure that the following conditions are met:

- The header is attached to the combine.
- The combine is on level ground and the header angle is set so that the header is parallel 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.
- The header is disengaged.
- The lateral float buttons are **NOT** pressed.
- The 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 appears.

   NOTE:

   The up and down navigation keys can be used to move between the options.

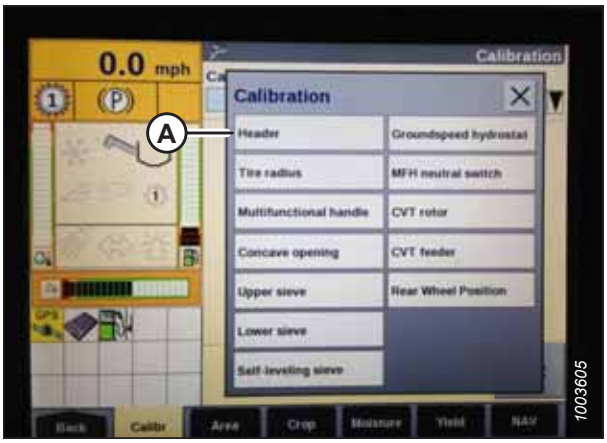


Figure 4.285: New Holland Combine Display

3. Follow the calibration steps in the order in which they appear in the dialog box. The display will be updated automatically to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will stop the calibration process.

   NOTE:

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

Figure 4.286: New Holland Combine Display

4. The message CALIBRATION SUCCESSFUL will appear on the page. Exit the CALIBRATION menu by pressing either the ENTER or the ESC key.
5. If the float was adjusted to a heavier setting to complete the calibration procedure, adjust it back to the recommended operating setting.
6. If the AHHC system still does not function properly, proceed to the maximum stubble height calibration: *Calibrating Maximum Stubble Height, page 270*.

Calibrating Maximum Stubble Height

The height at which the combine's harvested area counter stops or starts counting may need to be calibrated for the auto header height control (AHHC) system to work correctly.

Set the maximum stubble height to a value that will never be reached while cutting. The area counter will stop counting harvested area when the header is above the programmed height, and will begin counting when the header is below the programmed height.

IMPORTANT:

- If value is set too low, the harvested area may not be counted since the header can be raised above this threshold while the combine is harvesting.
- If value is set too high, the area counter may not stop counting even when the header is raised and the combine is no longer harvesting because the header height is still below the set height threshold.

DANGER

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.

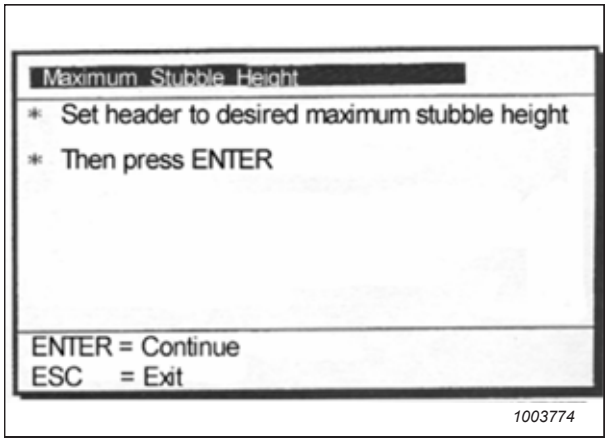


Figure 4.287: New Holland Calibration Dialog Box

2. Move the header to the correct position using the header up or down control switch on the multifunction handle.
3. Press ENTER to continue.
4. Press ENTER or ESC to close the calibration page.

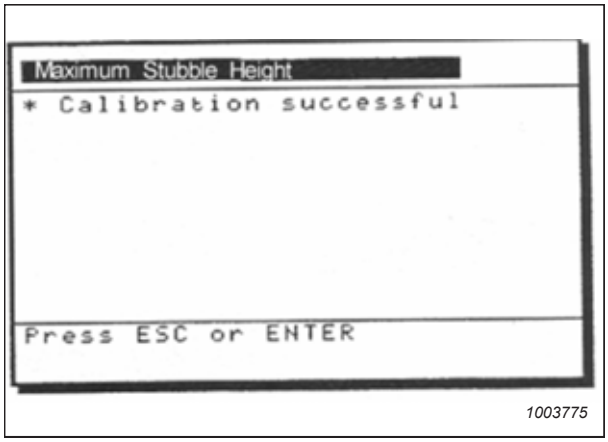


Figure 4.288: New Holland Calibration Dialog Box

4.19.4 Adjusting Header Raise Rate – New Holland CR/CX Series

The speed at which the header rises on a New Holland CR or CX Series combine can be adjusted from the combine cab.

NOTE:

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

1. Select HEADER RAISE RATE on the combine display.
2. Use the **+** or **–** buttons to change the value.
3. Press ENTER to save the new setting.

   NOTE:

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

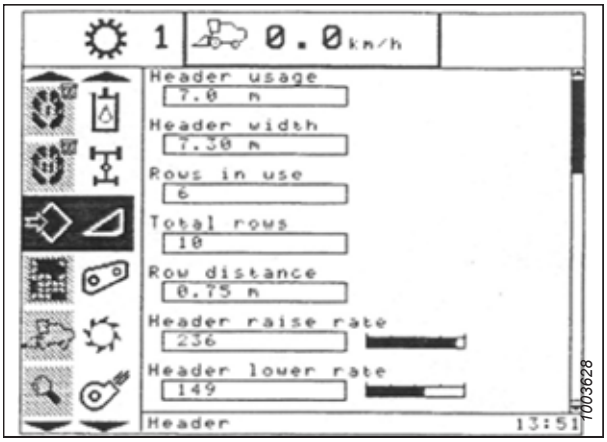


Figure 4.289: New Holland Combine Display

4.19.5 Setting Header Lower Rate – New Holland CR/CX Series

The speed at which the header falls on a New Holland CR or CX Series combine can be adjusted from the combine cab. The recommended header lower rate for these combines is 50.

NOTE:

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

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

   NOTE:

   The header lower rate can be changed from 2 to 247 in increments of 7. It is factory-set to 100.

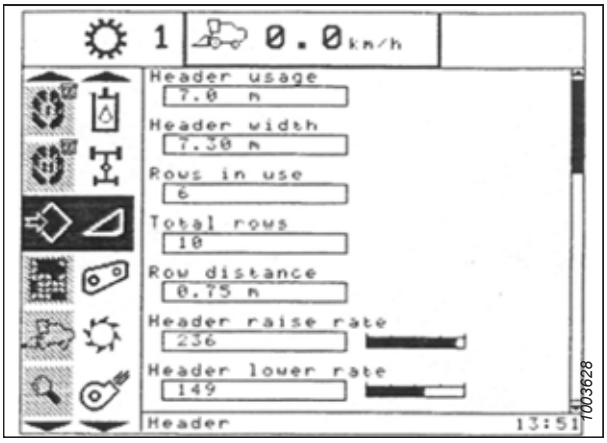


Figure 4.290: New Holland Combine Display

4.19.6 Setting Auto Header Height Control Sensitivity – New Holland CR/CX Series

Setting the sensitivity of the auto header height control (AHHC) system on a New Holland CR or CX Series combine affects how quickly the AHHC system changes the height of the header. The recommended value for these combines is 200.

NOTE:

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

DANGER

Check to be sure all bystanders have cleared the area.

1. Engage the threshing function and the 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 increments of 10. It is factory-set to 100.

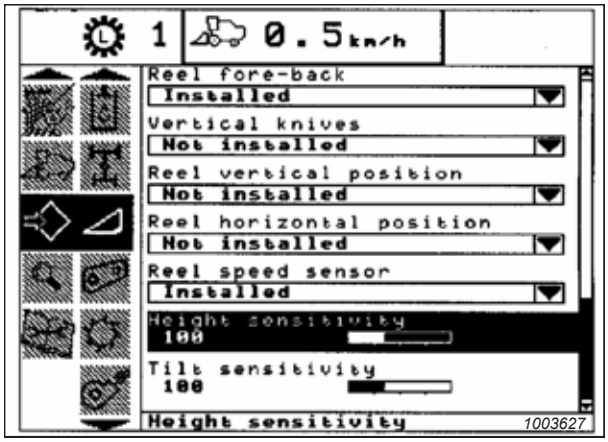


Figure 4.291: New Holland Combine Display

4.19.7 Setting Preset Cutting Height – New Holland CR/CX Series

You will need to configure both preset cutting heights on your New Holland CR or CX Series combine to use the auto header height control (AHHC) system with your header.

NOTE:

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

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

   NOTE:

   It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTO FLOAT MODE.

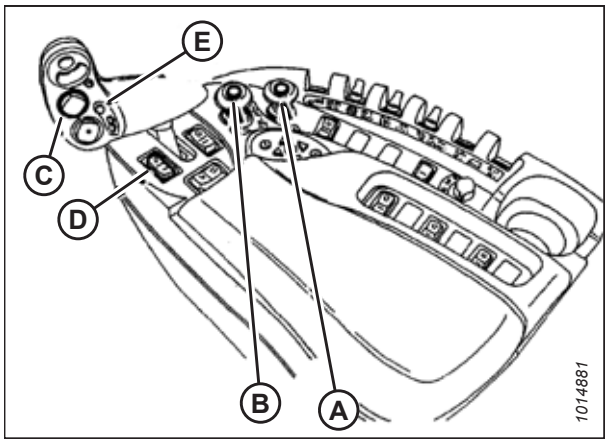


Figure 4.292: New Holland Combine Controls

5. To change one of the saved header height set points while the combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOAT rocker switch (A) (slow up/down) to raise or lower the header to the desired height. Press AUTOMATIC HEADER HEIGHT CONTROL button (B) for a minimum of 2 seconds to store the new height position. A beep will confirm the setting.

   NOTE:

   Do **NOT** press too hard on AUTOMATIC HEADER HEIGHT CONTROL button (B), or the float mode will be disengaged.

   NOTE:

   It is not necessary to press rocker switch (C) again after adjusting the header height.

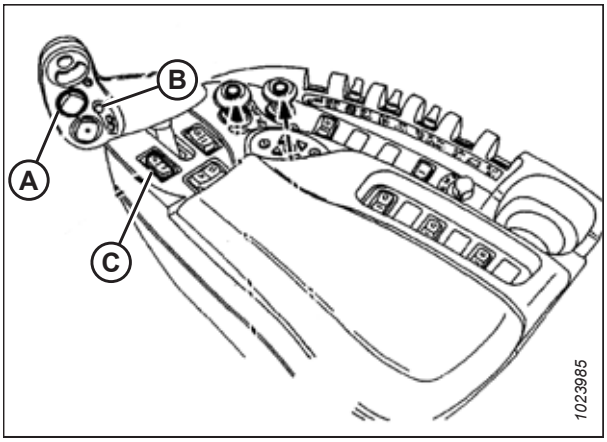


Figure 4.293: New Holland Combine Controls

NOTE:

In most cases, the ideal ground pressure is one number (on the float indicator box) above the setting at which the header is suspended off the ground. For example, if float indicator pointer (A) is positioned at 0 and the header is suspended off the ground at that setting, then the ideal ground pressure will be achieved with the pointer positioned at 1. Operating the header with heavier pressures can wear out the cutterbar wearplate prematurely.

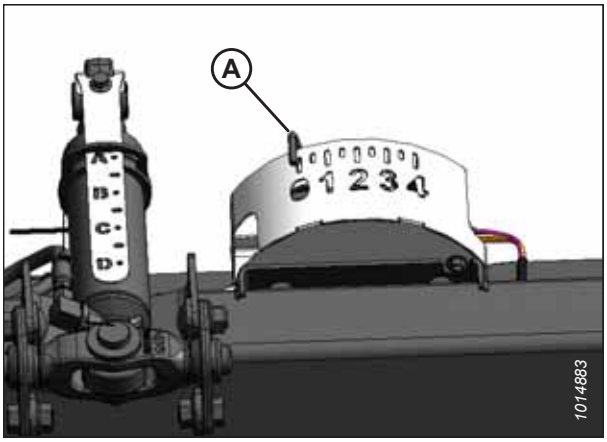


Figure 4.294: Float Indicator Box

4.20 New Holland Combines – CR Series, Model Year 2015 and Later

To make your header's auto header height control (AHHC) system compatible with New Holland CR Series combines of model year 2015 and later (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90), you must check the height sensor voltage range, engage and calibrate the AHHC system, and adjust the sensitivity, cutting height presets, and tilt functions.

4.20.1 Engaging Auto Header Height Control – New Holland CR Series

Set these initial configuration options on your New Holland CR Series combine (model year 2015 or later) when setting up the auto header height control (AHHC) system.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *Adjusting Header Angle from Combine, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure that the center-link is set to **D**.
2. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 4.295: New Holland Combine Display

NOTE:

On some older combine models, you may have to simultaneously press both UNLOAD (A) and RESUME (B) buttons on the hydro handle to access the TOOLBOX page.

Figure 4.296: New Holland Combine Controls

3. Select HEAD 1 (A). The HEADER SETUP 1 page appears.

4. Select CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

Figure 4.297: New Holland Combine Display

5. Select HEADER SUB TYPE drop-down arrow (A). The HEADER SUB TYPE dialog box appears.

Figure 4.298: New Holland Combine Display

6. Select 80/90 (A).

Figure 4.299: New Holland Combine Display

7. Select HEAD 2 (A). The HEADER SETUP 2 page appears.

Figure 4.300: New Holland Combine Display

8. Select the AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).

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

   NOTE:

   With the AUTO HEADER LIFT feature installed and the AHHC system engaged, the header will lift up automatically whenever you pull back on the hydro handle.

10. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) according to harvest conditions.

Figure 4.301: New Holland Combine Display

11. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) according to harvest conditions.

Figure 4.302: New Holland Combine Display

4.20.2 Checking Voltage Range from Combine Cab – New Holland CR Series

To ensure that the auto header height control (AHHC) system on your header works correctly with your New Holland CR Series combine (model year 2015 or later), the output voltage from the header height control sensors must be verified.

NOTE:

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

DANGER

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 the float lock linkage is on the down stops at both locations. When the linkage is on the down stops, washer (A) and nut (B) cannot be moved.

   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 the down stops during this procedure, the voltage may go out of range during operation, causing the AHHC system to malfunction.

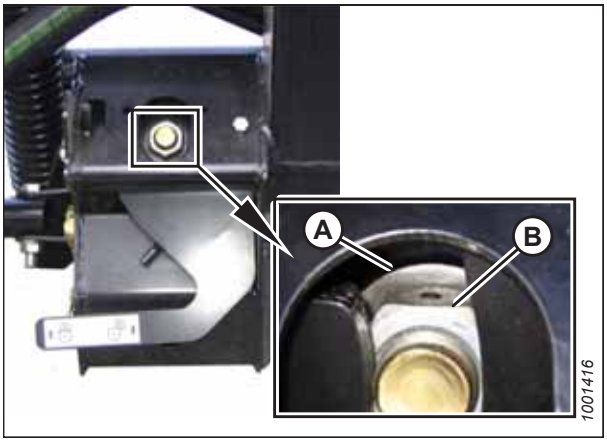


Figure 4.303: Float Lock

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

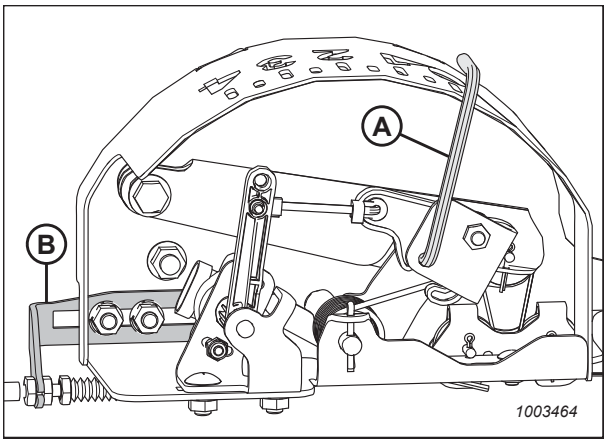


Figure 4.304: Float Indicator Box (5 Volt AHHC Sensor Assembly Shown)

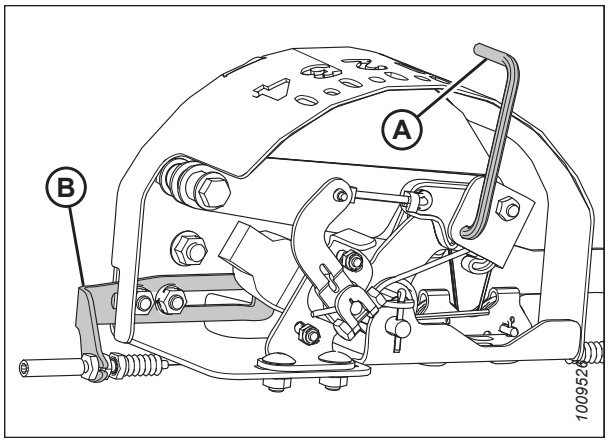


Figure 4.305: 10 Volt AHHC Sensor Assembly

5. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.

Figure 4.306: New Holland Combine Display

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

Figure 4.307: 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 4.308: New Holland Combine Display

9. Select GRAPH (A). Height sensor out 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 *4.4.2 Adjusting Voltage Limits, page 137*) 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 *4.1, page 134*).

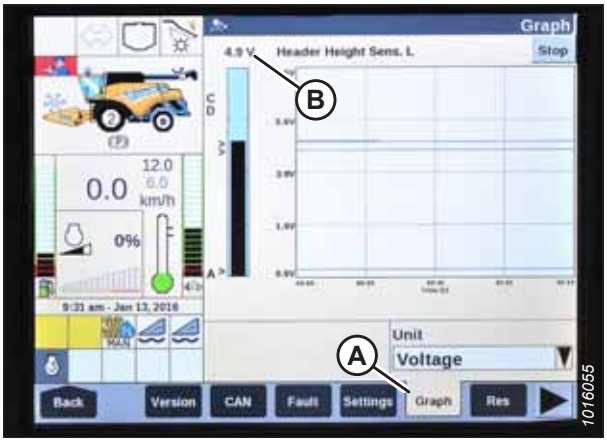


Figure 4.309: New Holland Combine Display

4.20.3 Setting up Reel Speed – New Holland CR Series

The reel diameter and reel displacement settings will need to be entered into the combine's computer before the reel can be operated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

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

1. Shut down the engine.
2. Turn the key to the run position.
3. Make sure the combine display software is updated to these versions or later:
   - Model year 2015–2018: UCM v38.10.0.0
   - Model year 2019: UCM v1.4.0.0

4. Ensure the center-link is set to **D**.
5. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 4.310: New Holland Combine Display

6. Access Dealer mode by simultaneously pressing UNLOAD (A) and RESUME (B) buttons on the control handle for approximately 10 seconds. The DEALER SETTING page should appear and is required to change the REEL DIAMETER and REEL DISPLACEMENT PER REVOLUTION settings.

Figure 4.311: New Holland Combine Controls

7. Select HEAD 2 (A). The HEADER SETUP 2 page appears.
8. Select REEL DIAMETER (B) and enter 102 cm (40.16 in).
9. Select REEL DISPLACEMENT PER REVOLUTION (C) and enter the appropriate value according to the reel drive configuration according to the following table.

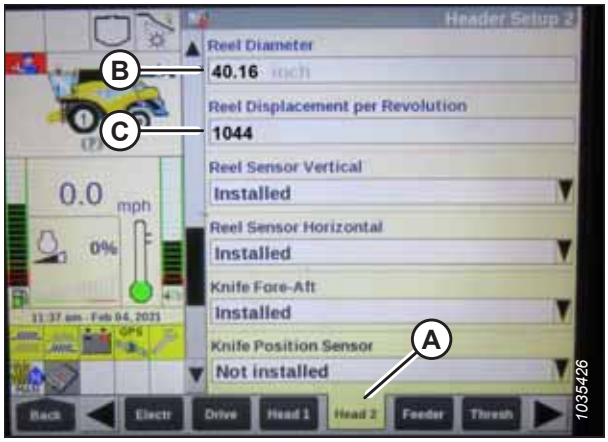


Figure 4.312: New Holland Combine Display

Table 4.2 Reel Displacement per Revolution Chart

Drive Sprocket Size (Number of Teeth)	Driven Sprocket Size (Number of Teeth)	Reel Displacement Per Revolution
19 (standard)	56	769
14 (high torque / low speed)[34]	56	1044

4.20.4 Calibrating Auto Header Height Control – New Holland CR Series

The auto header height control (AHHC) sensor output must be calibrated for New Holland CR Series combines (model year 2015 and later), or the AHHC feature will not work properly.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When the setup and calibration procedures are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.7.4 Header Angle, page 78*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for the most up-to-date information.

DANGER

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 Header Height Controller (HHC) module.
- The header/feeder is disengaged.
- The lateral float buttons are **NOT** pressed.
- The ESC key is **NOT** pressed.

34. Two speed kit with chain on inner sprockets.

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

Figure 4.313: New Holland Combine Display

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

Figure 4.314: New Holland Combine Display

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

Figure 4.315: New Holland Combine Display

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

   NOTE:

   Pressing the ESC key during programming or letting the system sit idle for more than 3 minutes will stop the calibration procedure.

   NOTE:

   Refer to the combine operator's manual for an explanation of error codes (should any occur).

Figure 4.316: New Holland Combine Display

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

   NOTE:

   If the float was adjusted to a heavier setting to complete ground the calibration procedure, remember to adjust it back to the recommended operating setting after the calibration procedure is completed.

Figure 4.317: New Holland Combine Display

4.20.5 Setting Auto Height – New Holland CR Series

You will need to configure both preset cutting heights on your New Holland CR Series combine (of model year 2015 or later [6.80, 6.90, 7.90, 8.90, 9.90, and 10.90]) to use the auto header height control (AHHC) system with your header.

The console has two buttons used for auto height presets. The toggle switch used on previous models for auto height presets is now configured as shown at right. MacDon headers require only buttons (A) and (B). Button (C) does not need to be configured.

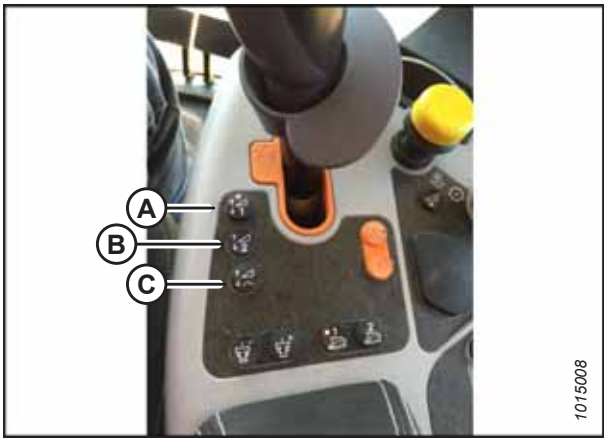


Figure 4.318: New Holland Combine Controls

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

Figure 4.319: 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) as shown.

4. Lower the header to the ground.
5. Select one of auto height set point buttons shown in Figure *4.318, page 283*.
   - Press SET 1 button for a light ground setting (1 on the float indicator box)
   - Press SET 2 button for a heavier ground setting (2 on the float indicator box)

Figure 4.320: New Holland Combine Display

4.20.6 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 main page. The TOOLBOX page appears.

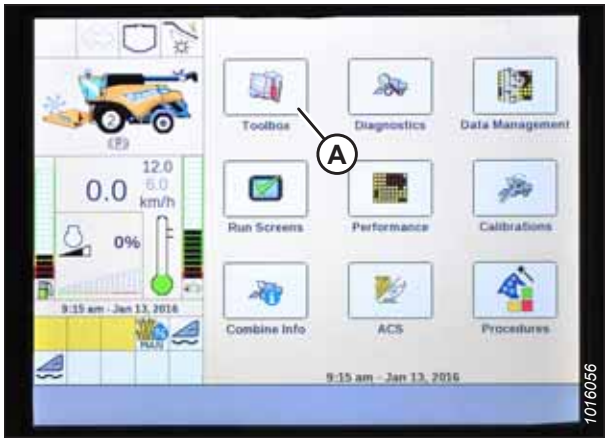


Figure 4.321: New Holland Combine Display

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

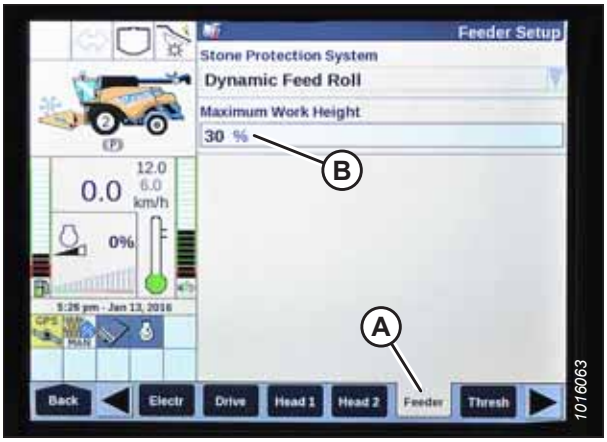


Figure 4.322: New Holland Combine Display

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

Figure 4.323: New Holland Combine Display

4.20.7 Configuring Reel Fore-Aft, Header Tilt, and Header Type – Some New Holland CR Series Models

The reel fore-aft, header tilt, and header type functions for the auto header height control (AHHC) system need only be configured on 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 the display since this document was published. Refer to the combine operator's manual for updated information.

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

Figure 4.324: New Holland Combine Controls

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

Figure 4.325: New Holland Combine Display

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

Figure 4.326: New Holland Combine Display

There are now two buttons for the ON GROUND presets. The toggle switch from previous CR models is configured as shown. MacDon headers require the use of buttons (A) and (B). Button (C) does not require configuration.

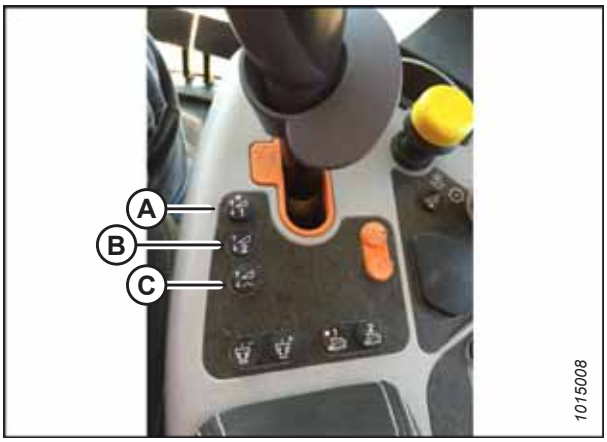


Figure 4.327: New Holland Combine Controls

Chapter 5: 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	*5.2 Case IH Combines, page 290*
Gleaner R and S Series, Challenger 660, 670, 680B, 540C, 560C, Massey Ferguson 9690, 9790, 9895, 9520, 9540, 9560	*5.3 Challenger®, Gleaner®, and Massey Ferguson® Combines, page 298*
John Deere 60, 70, S, and T Series	*5.4 John Deere Combines, page 306*
CLAAS 500, 700 (R Series)	*5.5 CLAAS Combines, page 313*
New Holland CR, CX	*5.6 New Holland Combines, page 321*

NOTE:

Ensure the applicable functions (auto header height control [AHHC], draper header option, hydraulic center-link option, hydraulic reel drive) are enabled on the combine. Failure to do so may result in improper header operation.

5.1 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 *8 Troubleshooting, page 521*.

5.1.1 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.

For instructions for installing and removing flighting extensions, refer to *6.7.7 Flighting Extensions, page 396*.

5.1.2 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 *6.11 Adapter Stripper Bars and Feed Deflectors, page 442*.

5.1.3 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.

5.2 Case IH Combines

5.2.1 Attaching Header to Case IH Combine

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 leaving the operator's seat for any reason.

1. On the combine, ensure lock handle (A) is positioned so hooks (B) can engage the adapter.

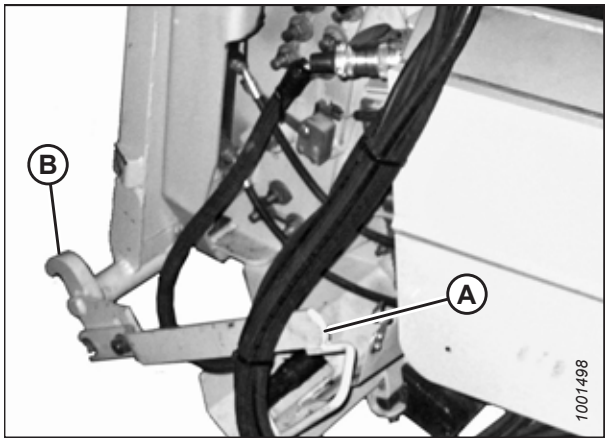


Figure 5.1: Feeder House Lock

DANGER

Ensure that all bystanders have cleared the area.

2. Start the engine and slowly drive the combine up to the header until feeder house saddle (A) is directly under adapter top cross member (B).
3. Raise the feeder house slightly to lift the header, ensuring that the feeder saddle is properly engaged in the adapter frame.
4. Shut down the engine, and remove the key from the ignition.

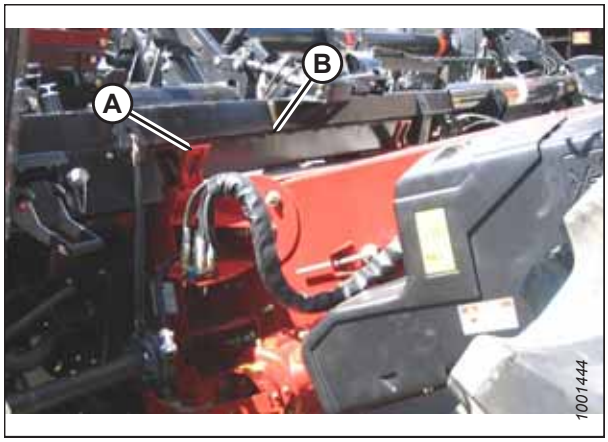


Figure 5.2: Combine and Adapter

5. On the left side of feeder house, lift lever (A) on the adapter and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
6. Push down on lever (A) so that 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 the lock. Retighten the bolts.

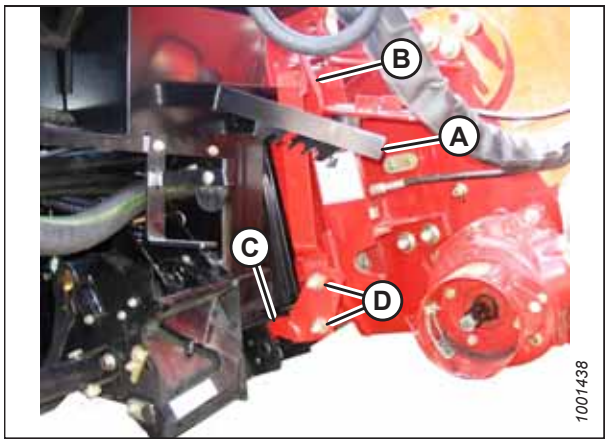


Figure 5.3: Combine and Adapter

8. Open receptacle cover (A) on the adapter.
9. Press lock button (B) and pull handle (C) to the fully open position.
10. Clean the receptacle mating surfaces.

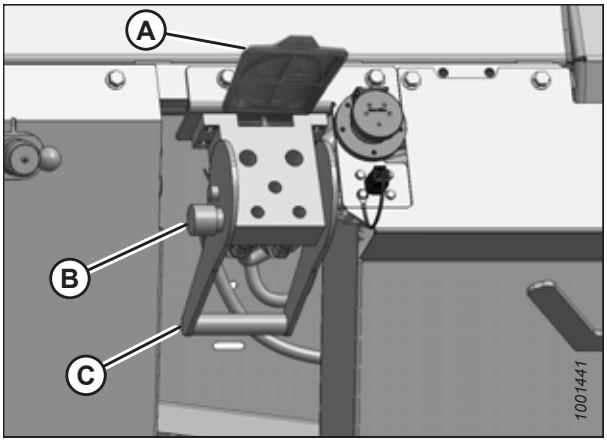


Figure 5.4: Adapter Receptacle

11. Remove hydraulic quick coupler (A) from the combine and clean the mating surfaces.

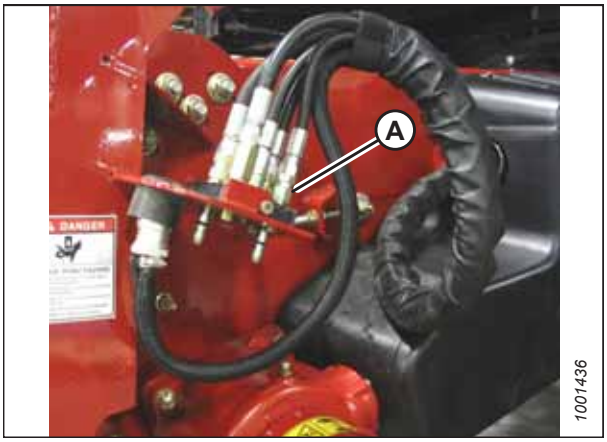


Figure 5.5: Combine Connectors

12. Position coupler onto adapter receptacle (A) and push handle (B) to engage the multicoupler pins into the receptacle.
13. Push handle (B) to the closed position until lock button (C) snaps out.

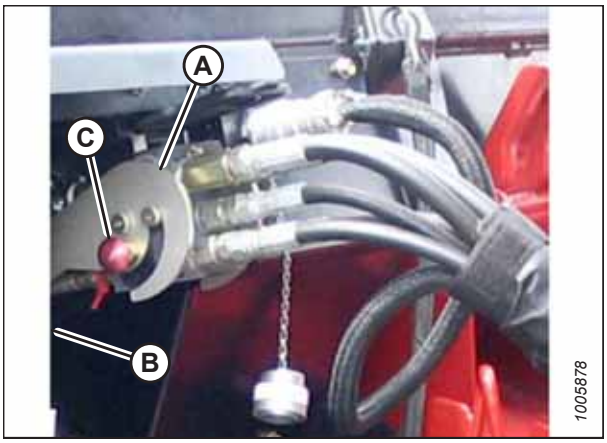


Figure 5.6: Hydraulic Connection

14. Remove the cover from electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

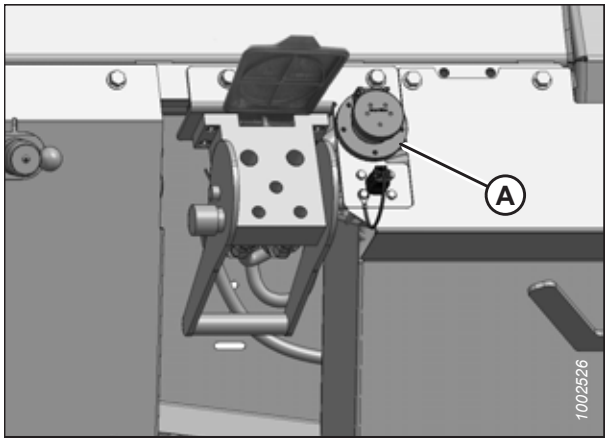


Figure 5.7: Electrical Receptacle

15. Remove electrical connector (A) from the storage cup on the combine, and route it to the adapter receptacle.

Figure 5.8: Combine Connectors

16. Align lugs on connector (A) with the slots in receptacle (B), push connector onto the receptacle, and turn the collar on the connector to lock it in place.

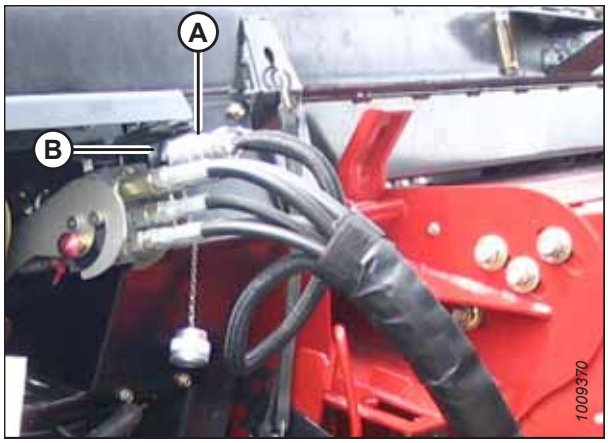


Figure 5.9: Electrical Connection

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

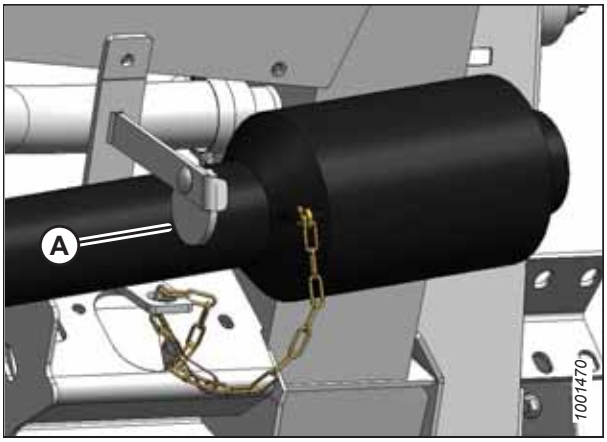


Figure 5.10: Driveline Storage Hook

18. Check that the splines on the driveline match the splines on the combine feeder house output shaft.

    NOTE:

    Model year 2017 and newer CNH combines have a 21-spline output shaft, older combines have a 6-spline output shaft. If the number of splines on the driveline does not match the number of splines on the combine feederhouse, contact your MacDon Dealer now.

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

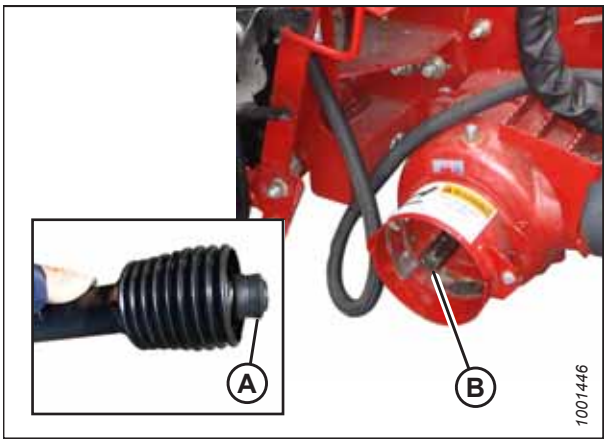


Figure 5.11: Combine Output Shaft

20. Disengage each adapter float lock by moving latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK position).

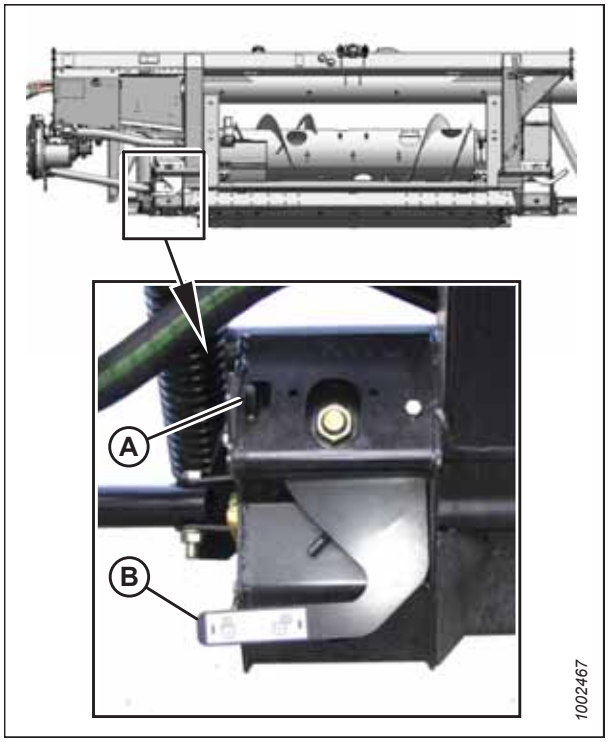


Figure 5.12: Float Lock in UNLOCK Position

5.2.2 Detaching Header from Case IH Combine

DANGER

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

1. Ensure that the combine is on level ground, and position the header slightly above the ground.
2. Shut down 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 54*.

   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 54*.
3. Engage both float locks by lifting each lock lever (A) upwards until they latch into the LOCK position.

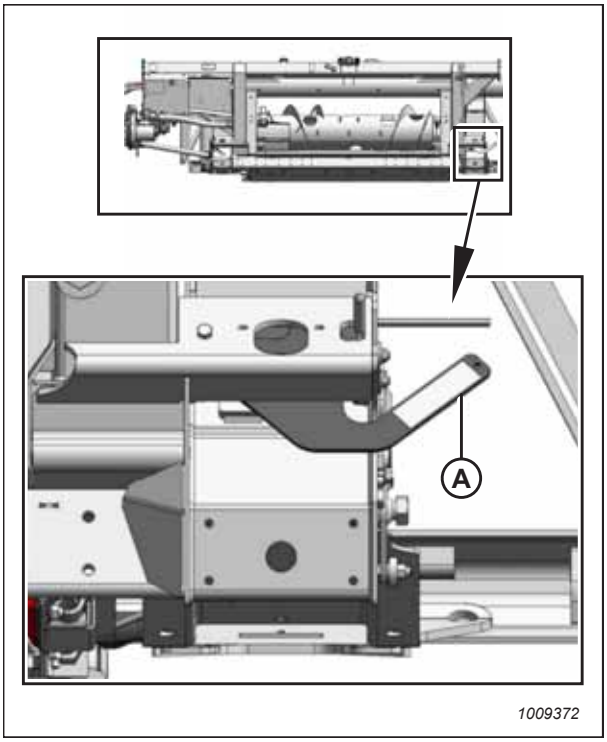


Figure 5.13: Float Locked

4. Disconnect driveline (A) from the combine.

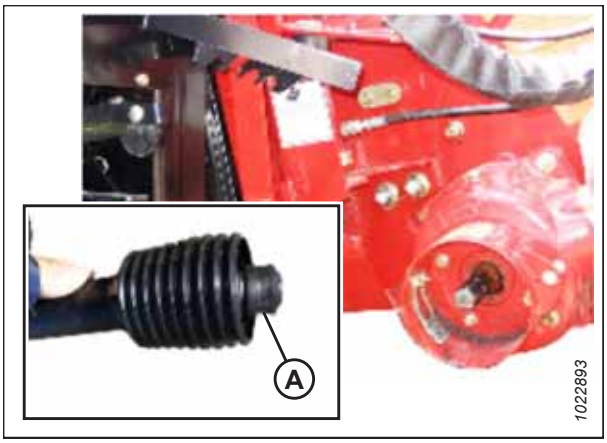


Figure 5.14: Driveline

5. Slide the driveline into hook (A) until disc (B) drops.

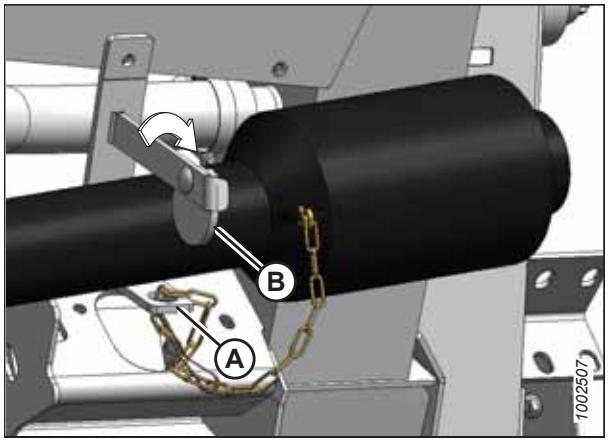


Figure 5.15: Driveline

6. Remove electrical connector (A) and replace cover (B).
7. Push in lock button (C) and pull handle (D) to release multicoupler (E).

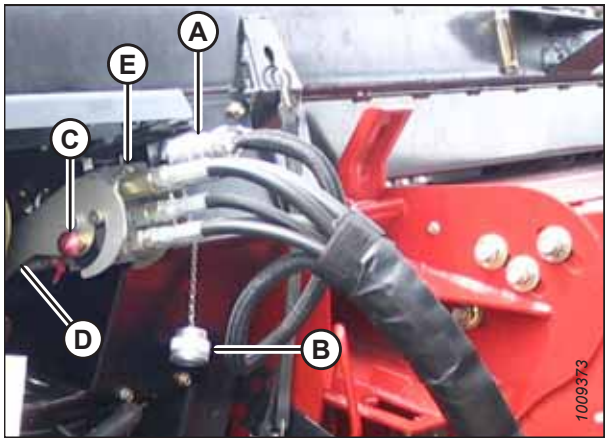


Figure 5.16: Multicoupler

8. Place multicoupler (A) onto storage plate (B) on the combine.
9. Place electrical connector (C) in storage cup (D).

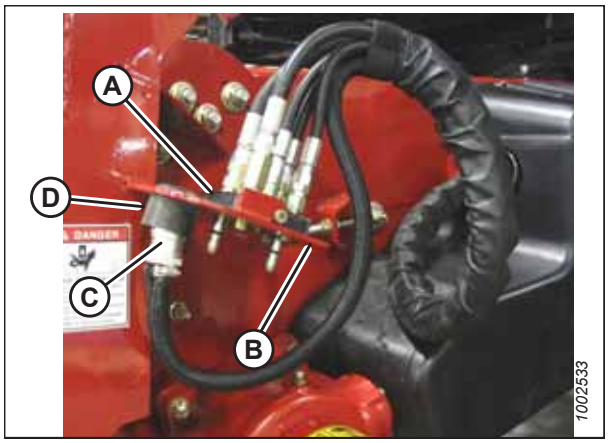


Figure 5.17: Multicoupler Storage

10. Push handle (A) on the adapter receptacle to the closed position until lock button (B) snaps out. Close cover (C).

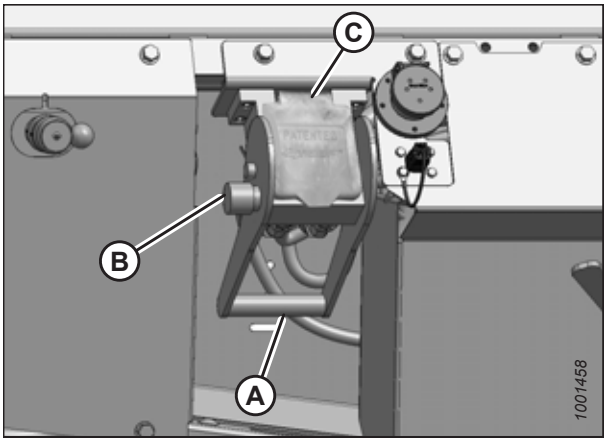


Figure 5.18: Adapter Receptacle

11. Lift lever (A) and pull and lower handle (B) to disengage feeder house/adapter lock (C).
12. Lower the feeder house from the combine cab until it disengages the adapter support.
13. Back the combine away slowly from the adapter.

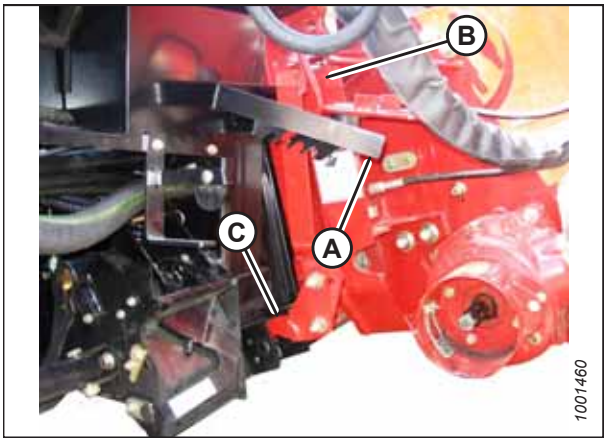


Figure 5.19: Feeder House Locks

5.3 Challenger®, Gleaner®, and Massey Ferguson® Combines

5.3.1 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine

NOTE:

The CA25 Combine Adapter is equipped with a multicoupler that connects to the combine. If the combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to the table below for a list of kits that are available through your combine Dealer.

Table 5.1 Multicoupler Kits

Combine	Kit Number
Challenger®	71530662
Gleaner® R/S Series	71414706
Massey Ferguson®	71411594

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 leaving the operator's seat for any reason.

1. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

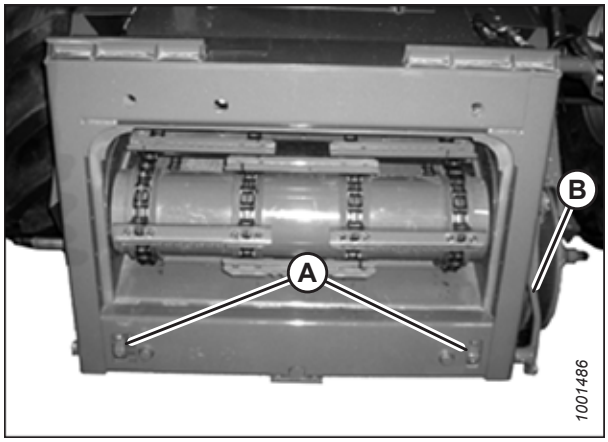


Figure 5.20: Combine Feeder House

DANGER

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

2. Start the engine.
3. Slowly approach the header until the feeder house is directly under adapter top cross member (A) and alignment pins (C) on the feeder house (shown in Figure *5.22, page 299*) are aligned with holes (B) in the adapter frame.

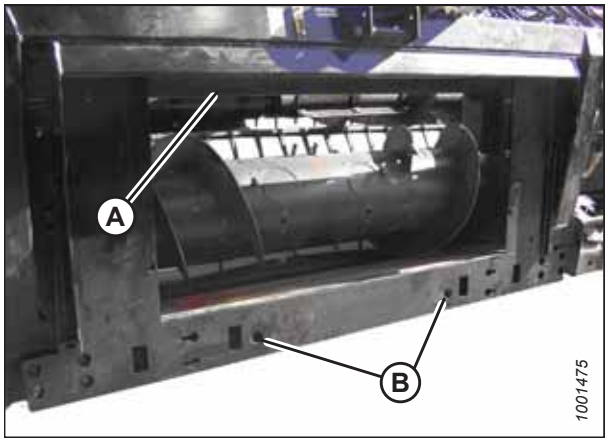


Figure 5.21: Adapter

NOTE:

The feeder house may not be exactly as shown.

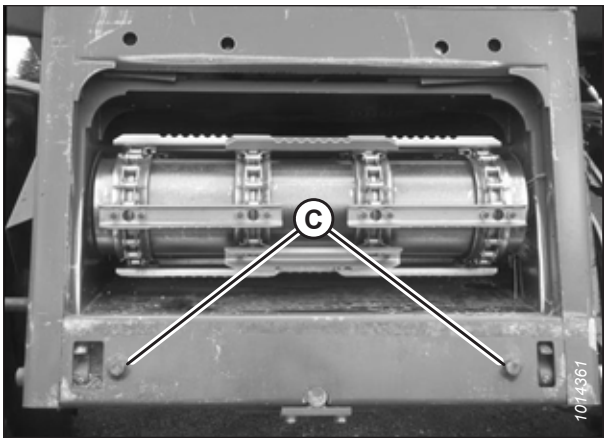


Figure 5.22: Alignment Pins on Feeder House

4. Raise the feeder house slightly to lift the header, ensuring feeder house saddle (A) is engaged in the adapter frame.
5. Shut down the engine, and remove the key from the ignition.

Figure 5.23: Feeder House and Adapter

6. Use lock handle (B) to engage lugs (A) with the adapter.

DANGER

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

7. Start the engine, and lower the header.
8. Shut down the engine, and remove the key from the ignition.

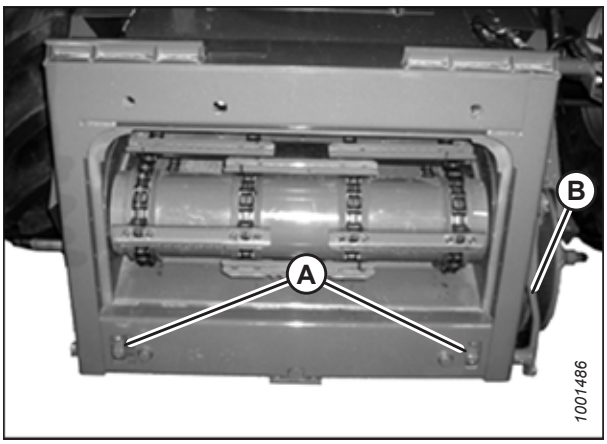


Figure 5.24: Combine Feeder House

9. Disengage each adapter float lock by moving latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK position).

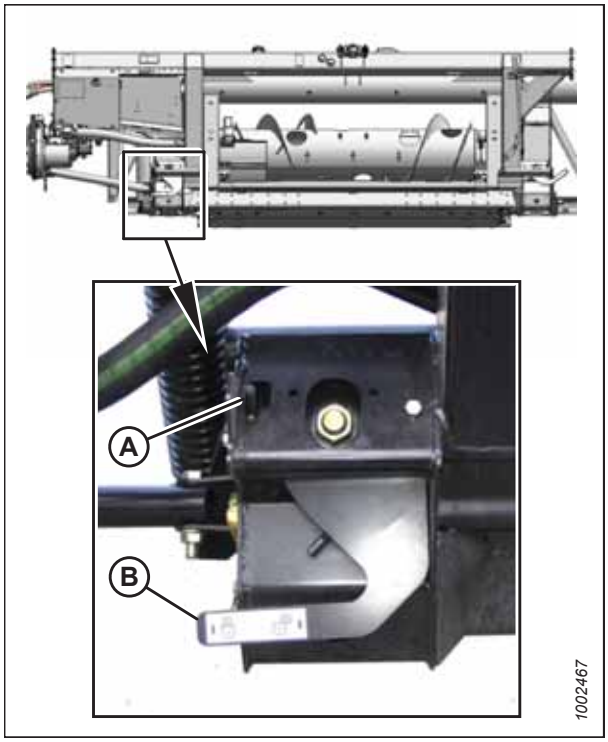


Figure 5.25: Float Lock in UNLOCK Position

10. Raise handle (A) to release multicoupler (B) from the adapter.

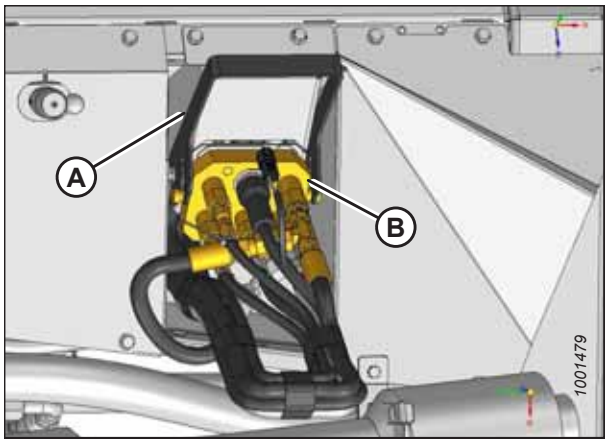


Figure 5.26: Adapter Multicoupler

11. Push handle (A) on the combine to the fully open position.
12. Clean the mating surfaces of multicoupler (B) and the receptacle.

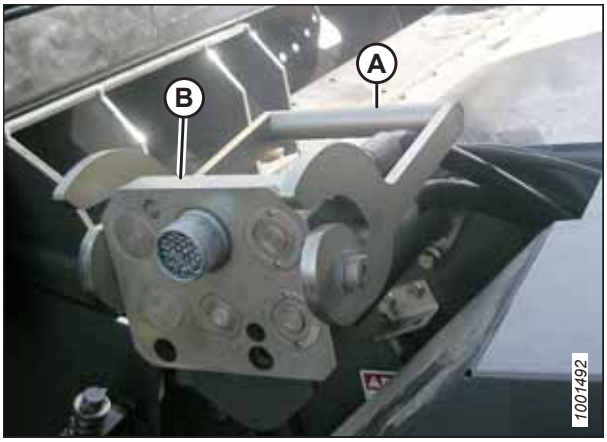


Figure 5.27: Combine Receptacle

13. Position multicoupler (A) onto the combine receptacle, and pull handle (B) to engage the multicoupler into the receptacle.
14. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).

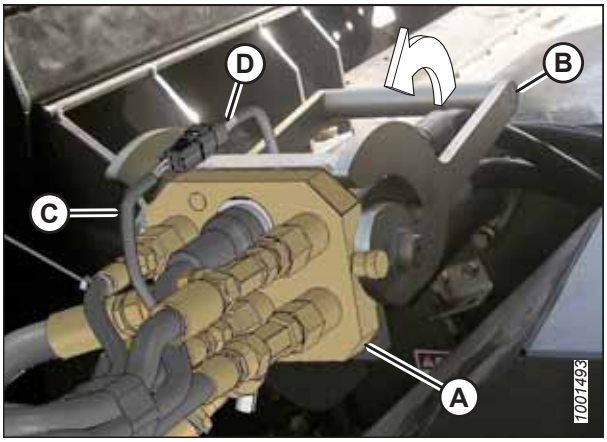


Figure 5.28: Multicoupler

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

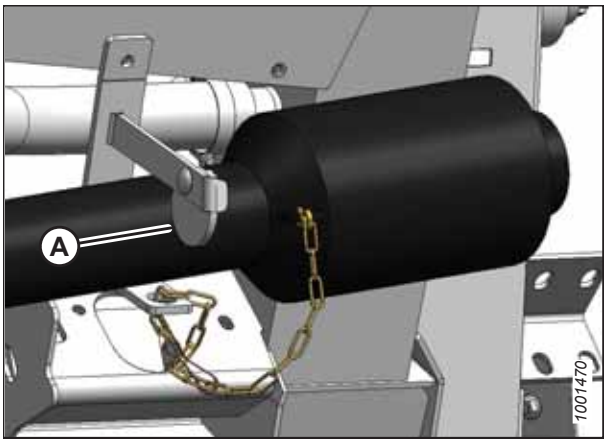


Figure 5.29: Driveline

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

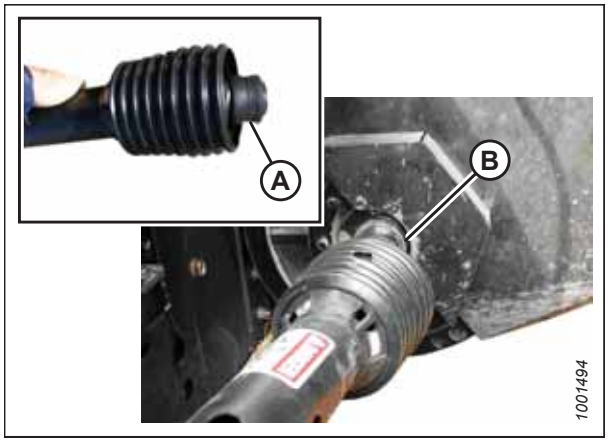


Figure 5.30: Driveline

5.3.2 Detaching Header from Challenger®, Gleaner®, or Massey Ferguson® Combine

DANGER

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

1. Ensure that the combine is on level ground, and position the header slightly above the ground.

2. Shut down the engine, and remove the key from the ignition.

   IMPORTANT:

   If the 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 54*.

   IMPORTANT:

   If the 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 54*.

3. Engage both float locks by lifting each lock lever (A) upwards until they latch into the LOCK position.

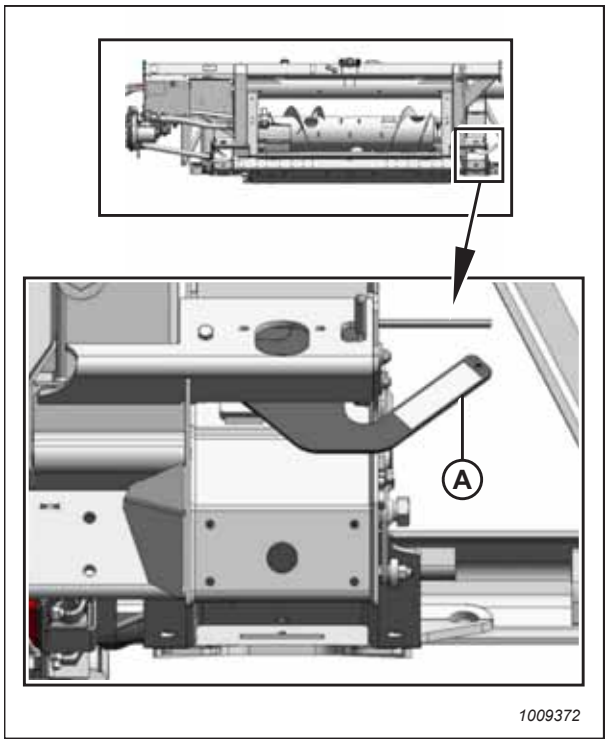


Figure 5.31: Float Locked

4. Disconnect the driveline from combine output shaft (A).

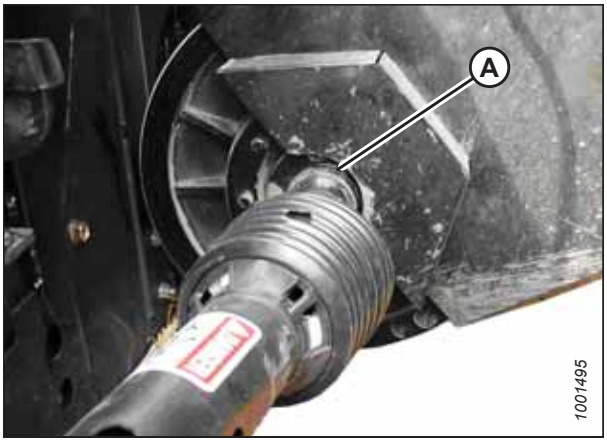


Figure 5.32: Driveline

5. Slide the driveline into hook (A) until disc (B) drops.

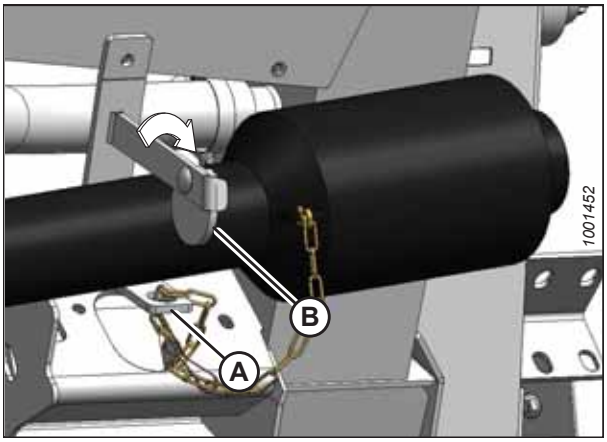


Figure 5.33: Driveline

6. Disconnect the harness from connector (A).
7. Move handle (B) on the combine multicoupler to the full open position to release multicoupler (C) from the combine.

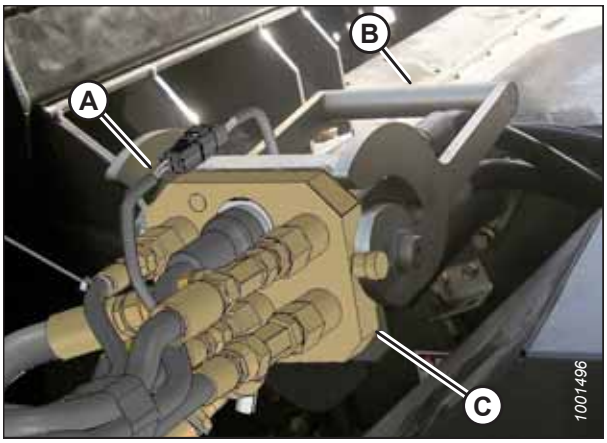


Figure 5.34: Multicoupler

8. Raise handle (A) on the adapter, and place the multicoupler (B) on the adapter receptacle.

9. Lower handle (A) to lock the multicoupler.

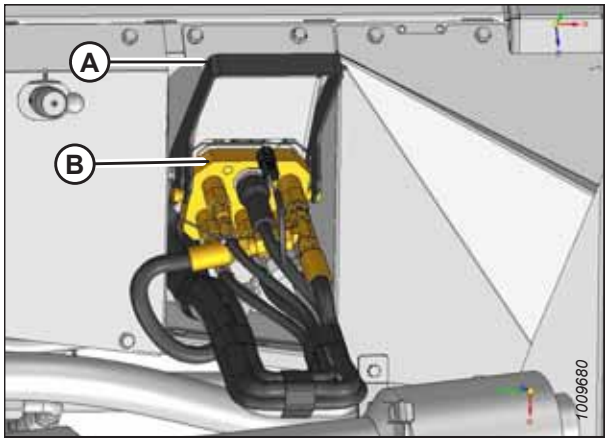


Figure 5.35: Adapter Multicoupler

10. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

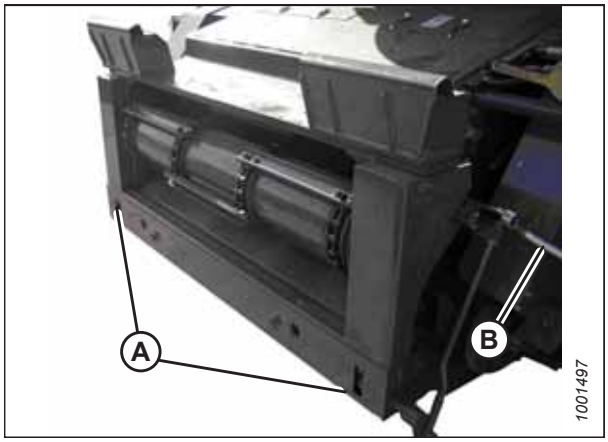


Figure 5.36: Challenger and Massey Ferguson

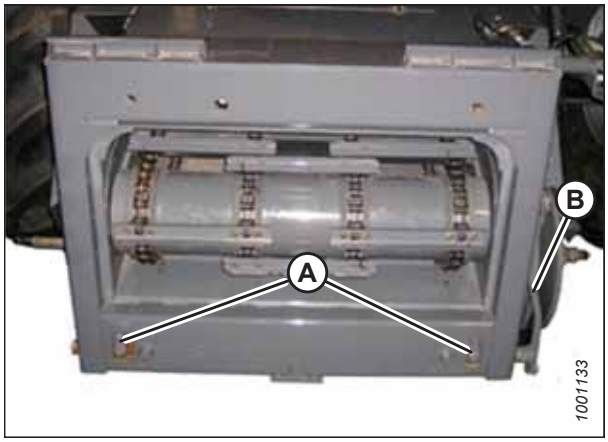


Figure 5.37: Gleaner R and S Series

11. Lower the feeder house until saddle (A) disengages and clears the adapter support.

12. Back the combine away slowly from the adapter.

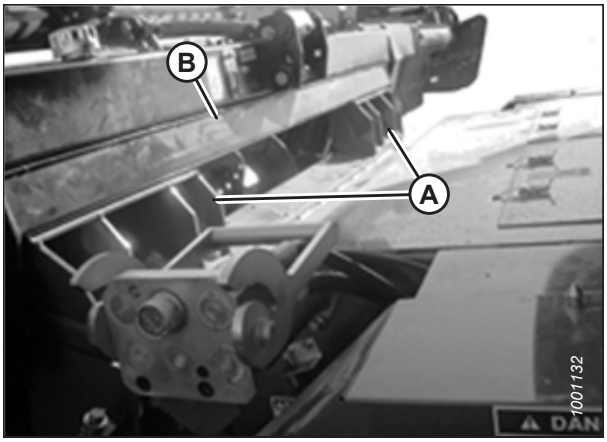


Figure 5.38: Adapter on Combine

5.4 John Deere Combines

5.4.1 Attaching Header to John Deere Combine

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 leaving the operator's seat for any reason.

1. Push handle (A) on the combine multicoupler receptacle towards feeder house to retract pins (B) at the bottom corners of the feeder house. Clean the receptacle.

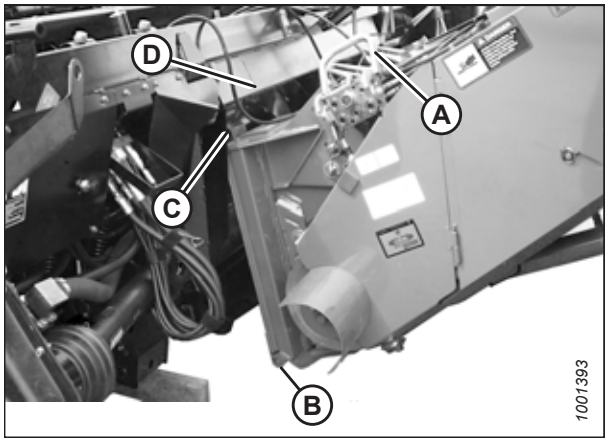


Figure 5.39: Combine and Adapter

DANGER

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 feeder house saddle (C) is directly under 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. Shut down the engine, and remove the key from the ignition.

5. Pull handle (A) on the adapter to release multicoupler (B) from the storage position. Remove the multicoupler, and push the handle back into the adapter.

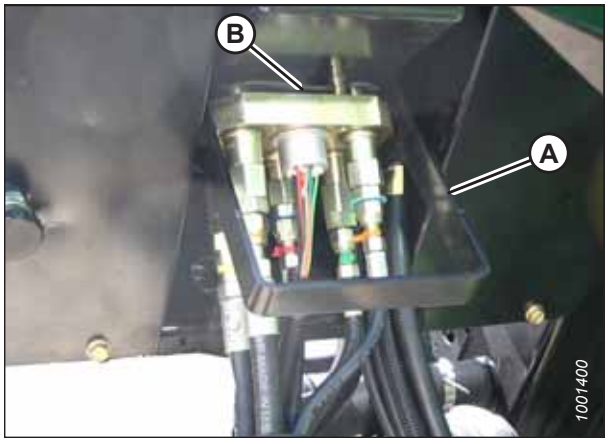


Figure 5.40: Multicoupler Storage

6. Place multicoupler (A) onto the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.
7. Pull handle (B) to the horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

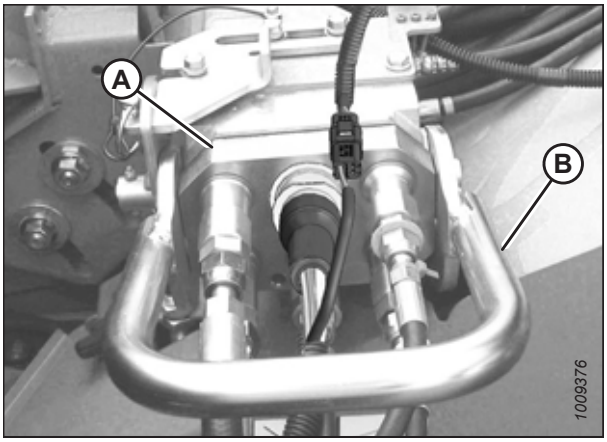


Figure 5.41: Multicoupler

8. Ensure that both feeder house pins (A) are fully engaged into the adapter brackets.

   NOTE:

   If pins (A) do not fully engage the adapter brackets, loosen bolts (B) and adjust the bracket as needed.

9. Tighten bolts (B).

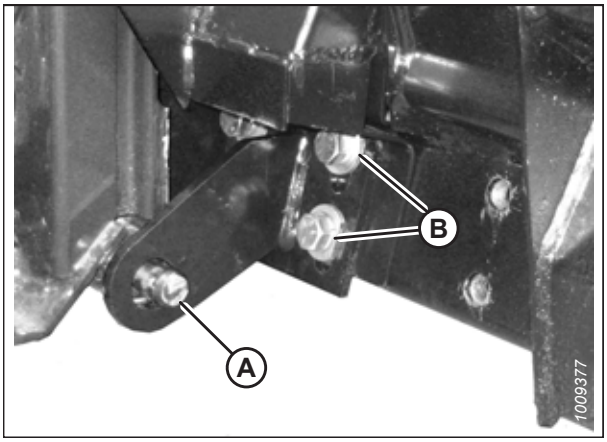


Figure 5.42: Feeder House Pin

10. Slide latch (A) to lock handle (B) and secure it with lynch pin (C).
11. Connect harness (D) to combine connector (E).

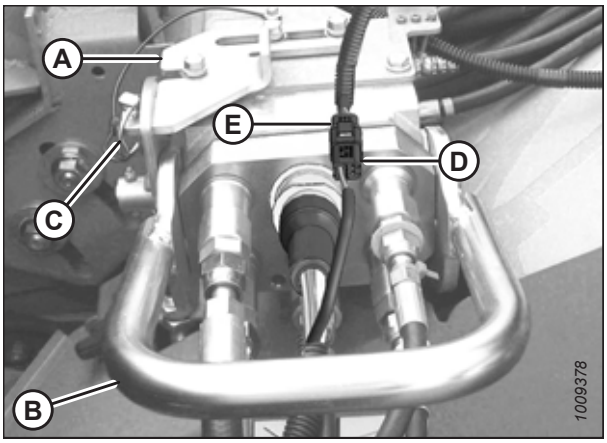


Figure 5.43: Multicoupler

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

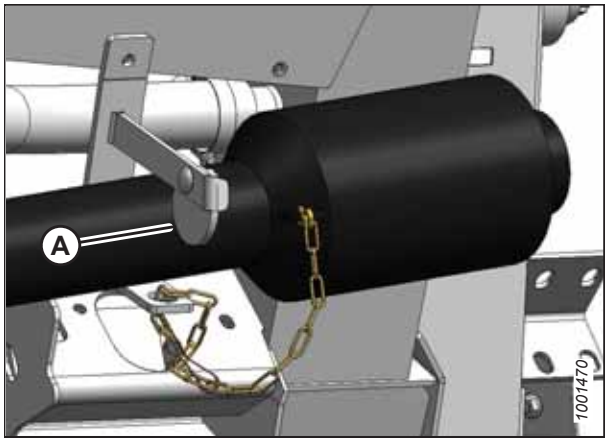


Figure 5.44: Driveline

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

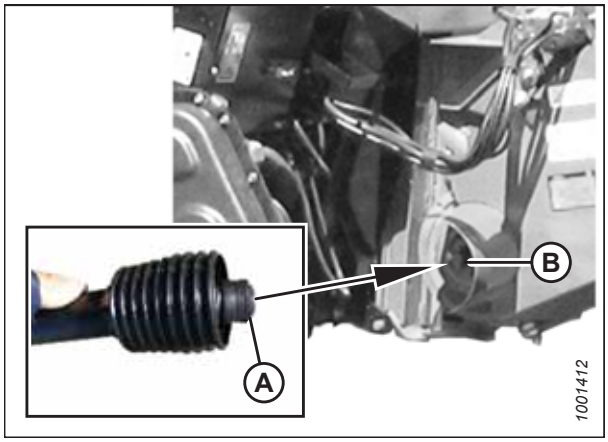


Figure 5.45: Driveline

14. Disengage each adapter float lock by moving latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK position).

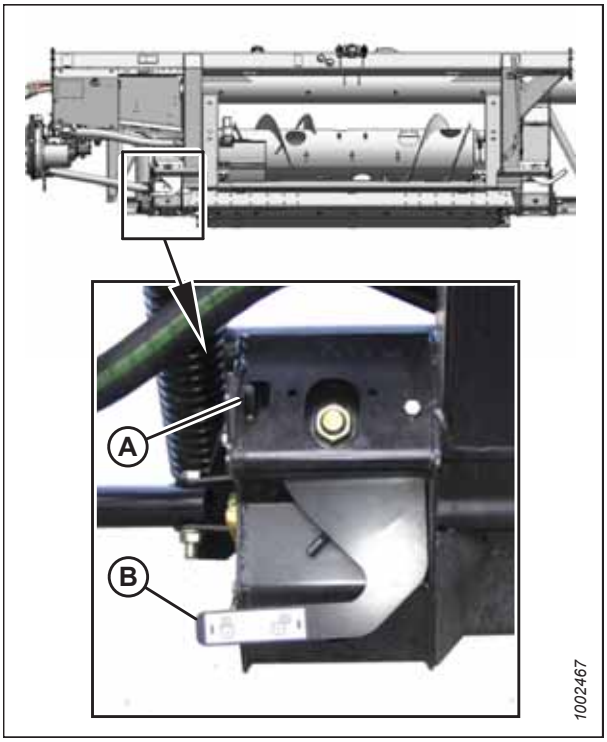


Figure 5.46: Float Lock in UNLOCK Position

5.4.2 Detaching Header from John Deere Combine

DANGER

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

1. Ensure that the combine is on level ground, 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 54*.

   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 54*.
3. Engage both float locks by lifting each lock lever (A) upwards until they latch into the LOCK position.

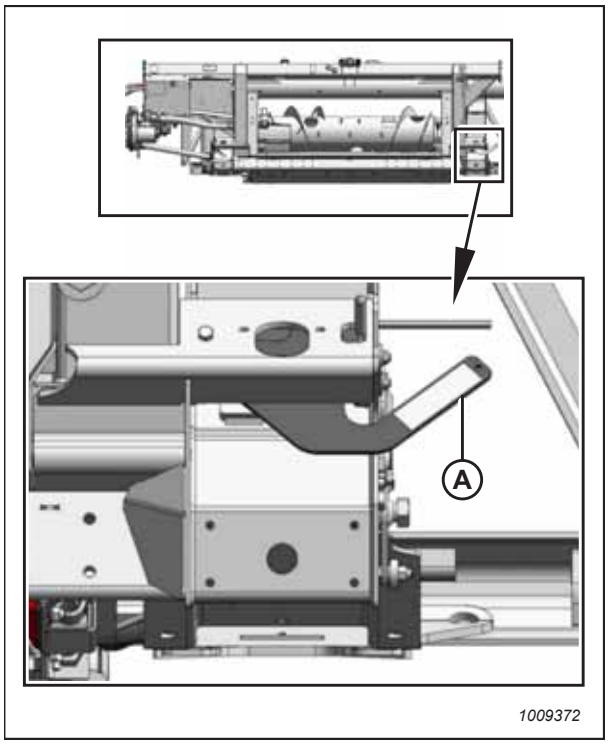


Figure 5.47: Float Locked

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

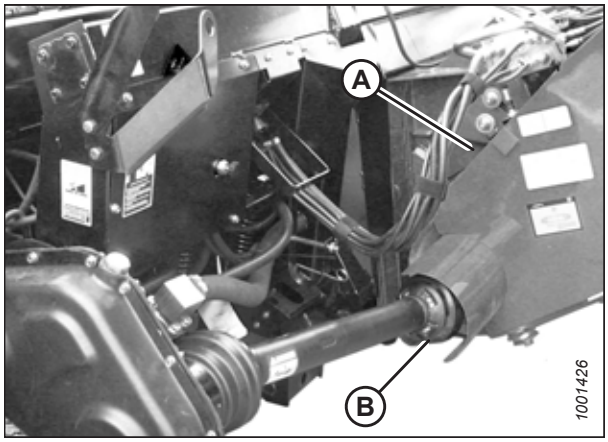


Figure 5.48: Driveline

5. Slide driveline into the hook (A) until disc (B) drops.

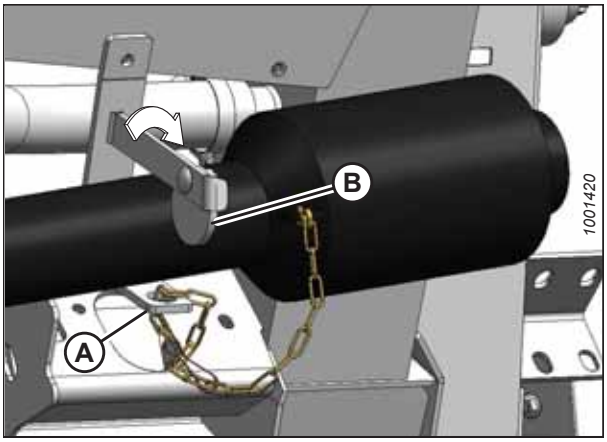


Figure 5.49: Driveline

6. Lift handle (A) on the adapter.

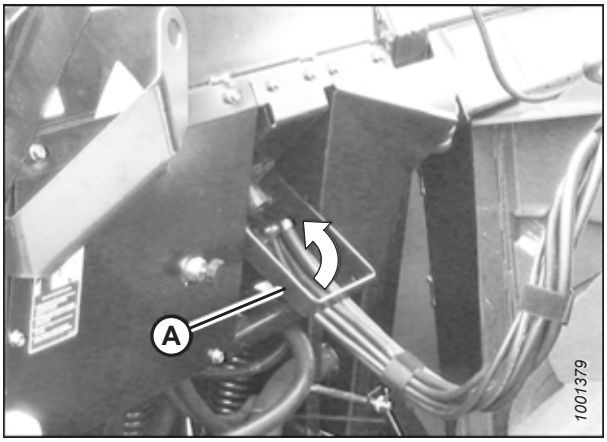


Figure 5.50: Multicoupler Storage

7. Disconnect harness (A) from the combine connector.
8. Remove lynch pin (B) and slide lock (C) to release handle (D).
9. Lift handle (D) to the vertical position to release multicoupler (E) from the combine.

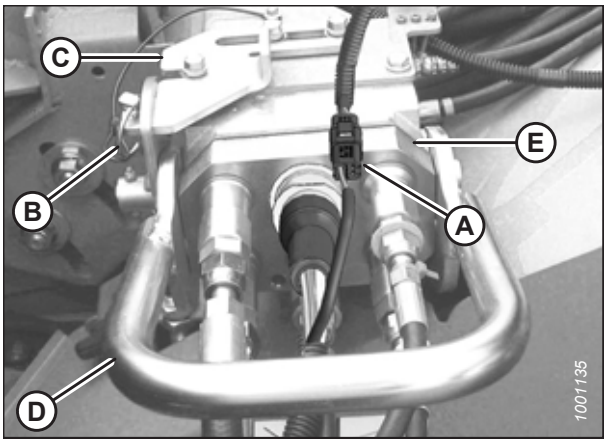


Figure 5.51: Multicoupler

10. Position multicoupler (A) on the adapter receptacle and lower handle (B) to lock the multicoupler.

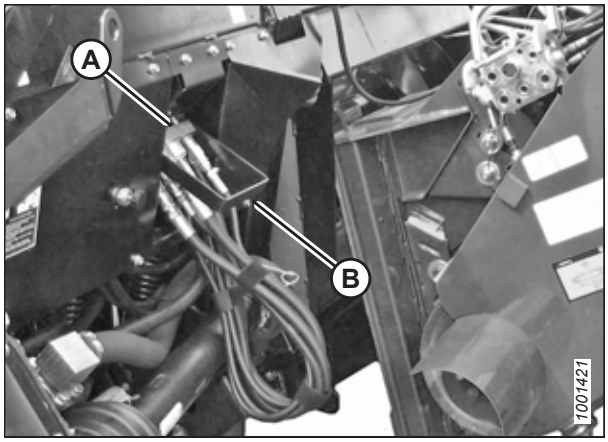


Figure 5.52: Multicoupler Storage

11. Push handle (A) on the combine towards the feeder house to disengage feeder house pin (B) from the adapter.

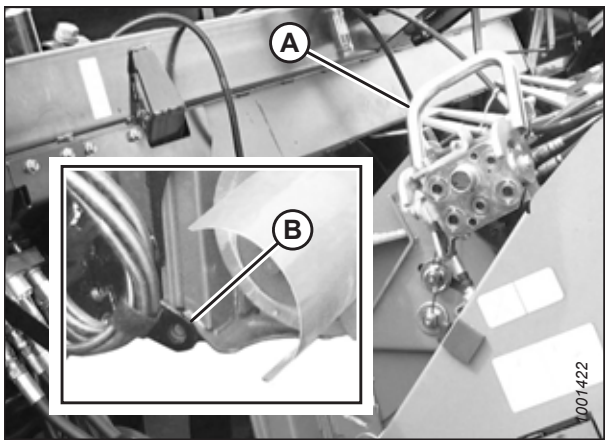


Figure 5.53: Feeder House Locks

12. Lower the feeder house until saddle (A) disengages and clears adapter support (B).
13. Back the combine away slowly from the adapter.

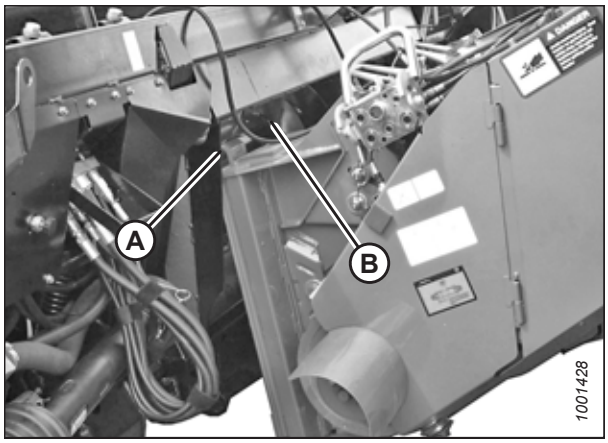


Figure 5.54: Header/Feeder House

5.5 CLAAS Combines

5.5.1 Attaching Header to CLAAS Combine

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 leaving the operator's seat for any reason.

1. Move handle (A) on the adapter into the raised position, and ensure pins (B) at the bottom corners of the adapter are retracted.

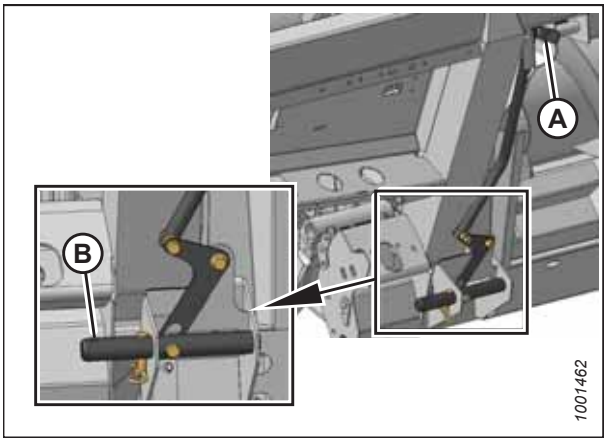


Figure 5.55: Pins Retracted

DANGER

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 feeder house saddle (A) is directly under 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. Shut down the engine, and remove the key from the ignition.

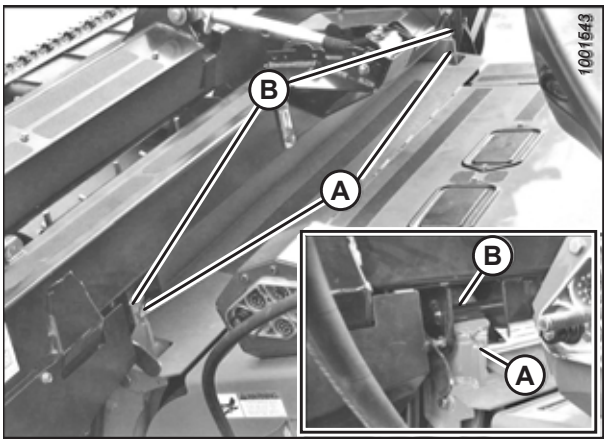


Figure 5.56: Header on Combine

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

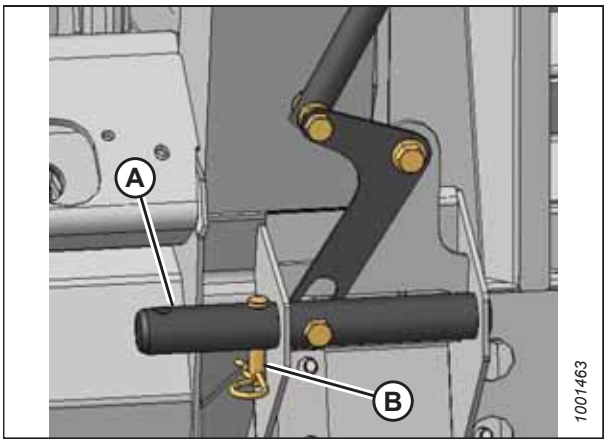


Figure 5.57: Adapter Pin

6. Lower handle (A) to engage adapter pin (B) into the feeder house. Reinsert locking pin (C) and secure the adapter pin.
7. Shut down the engine, and remove the key from the ignition.

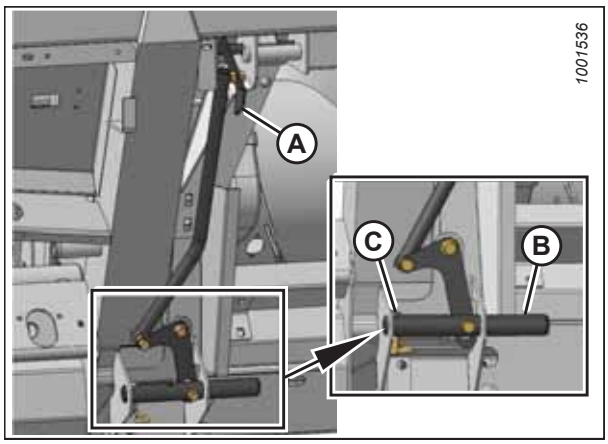


Figure 5.58: Engaging Pins

8. Unscrew knob (A) on combine coupler (B) to release the coupler from the combine receptacle.
9. Clean the coupler.

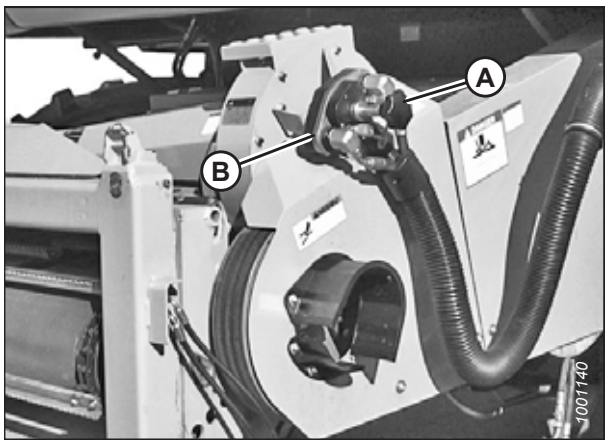


Figure 5.59: Combine Coupler

10. Place CA25 receptacle cover (A) onto the combine receptacle.

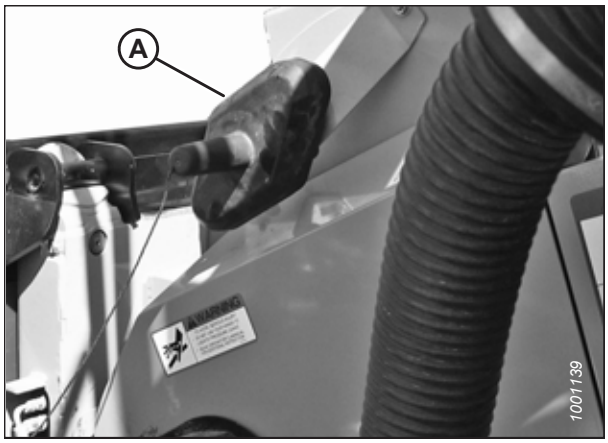


Figure 5.60: Receptacle Cover

11. Clean the mating surface of coupler (A), and position the coupler into receptacle (B).
12. Turn knob (C) to secure the coupler to the receptacle.
13. Connect the combine harness to reel fore-aft/header tilt selector receptacle (D).

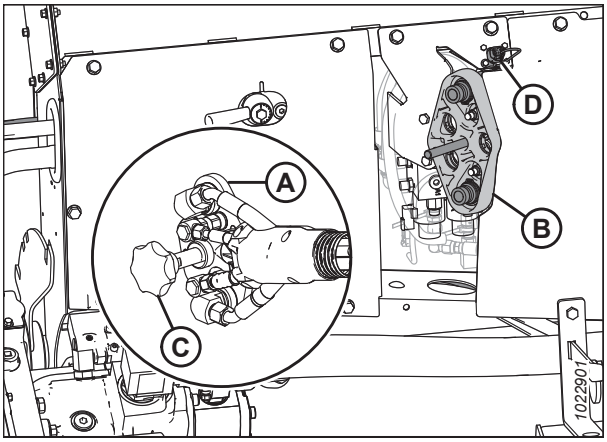


Figure 5.61: Coupler

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

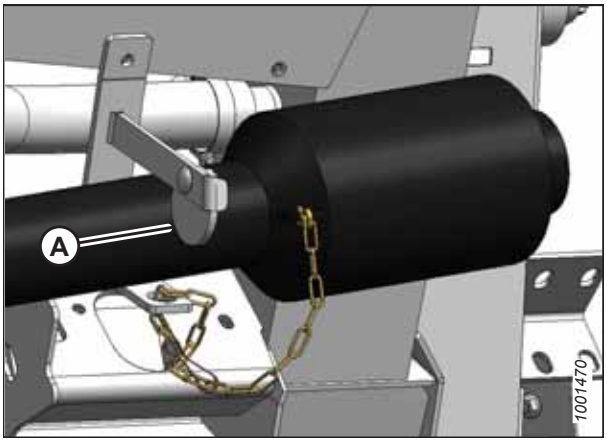


Figure 5.62: Driveline

15. Attach driveline (A) to the combine output shaft.

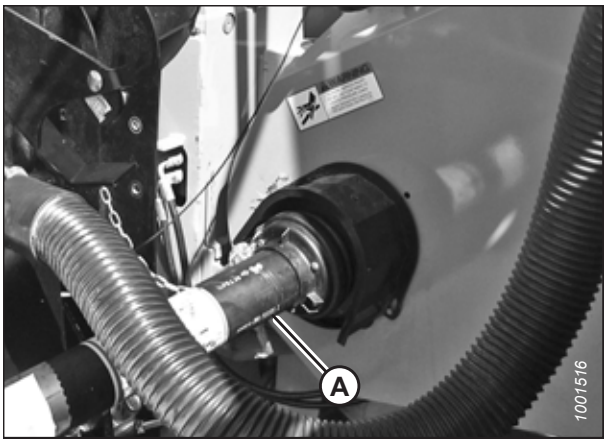


Figure 5.63: Driveline and Output Shaft

16. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK position).

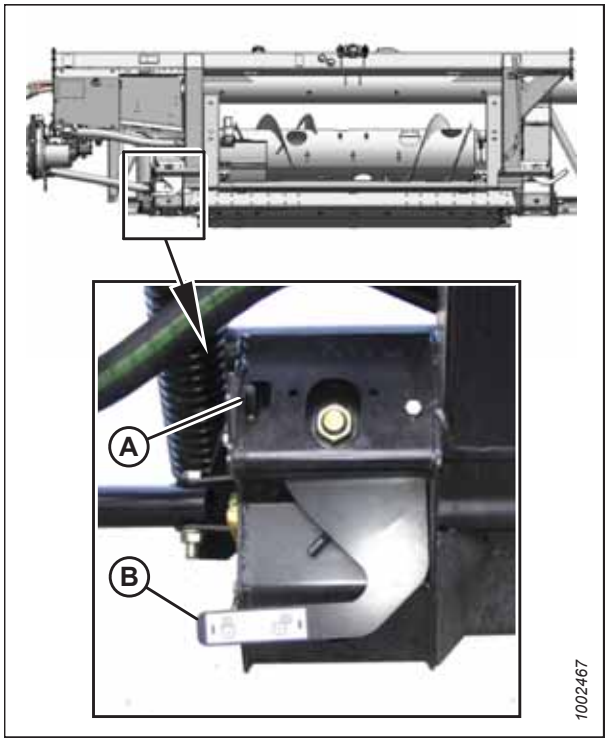


Figure 5.64: Float Lock in UNLOCK Position

5.5.2 Detaching Header from CLAAS Combine

DANGER

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

1. Ensure that the combine is on level ground, and position the header slightly above the ground.
2. Shut down the engine, and remove the key from the ignition.

   IMPORTANT:

   If the 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. For instructions, refer to *3.7.1 Cutting Height, page 54*.

   IMPORTANT:

   If the stabilizer wheels are installed, set the wheels to the storage or uppermost working position; otherwise, the header may tilt forward, making reattachment difficult. For instructions, refer to *3.7.1 Cutting Height, page 54*.
3. Engage both float locks by lifting each lock lever (A) upwards until they latch into the LOCK position.

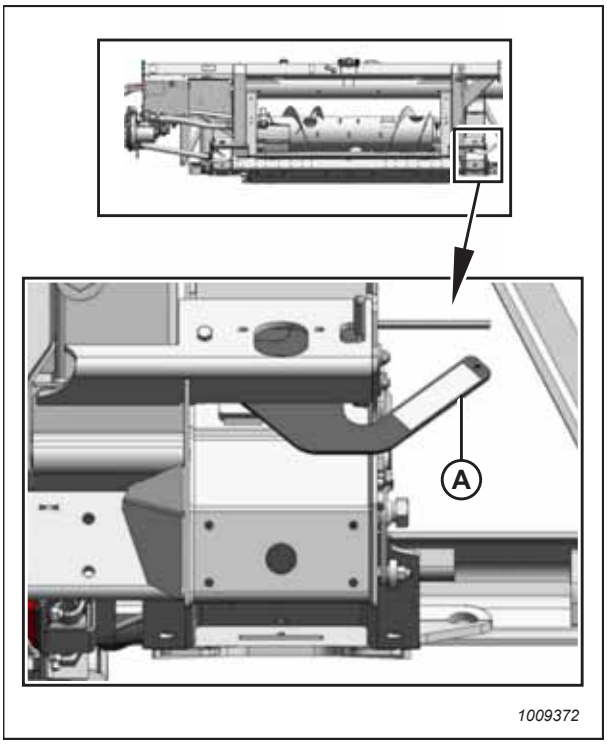


Figure 5.65: Float Locked

4. Disconnect driveline (A) from the combine.

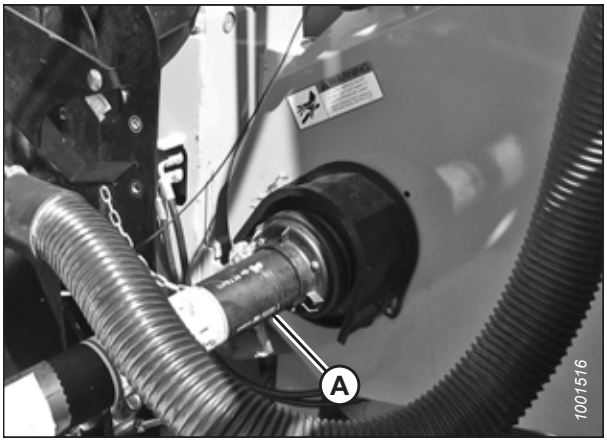


Figure 5.66: Driveline

5. Slide the driveline into hook (A) until disc (B) drops.

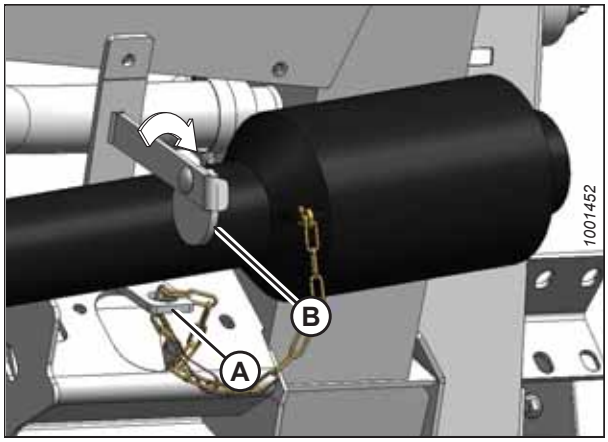


Figure 5.67: Driveline

6. Remove the electrical connector from adapter receptacle (A).
7. Unscrew knob (B) on coupler (C) to release the coupler from adapter receptacle (D).

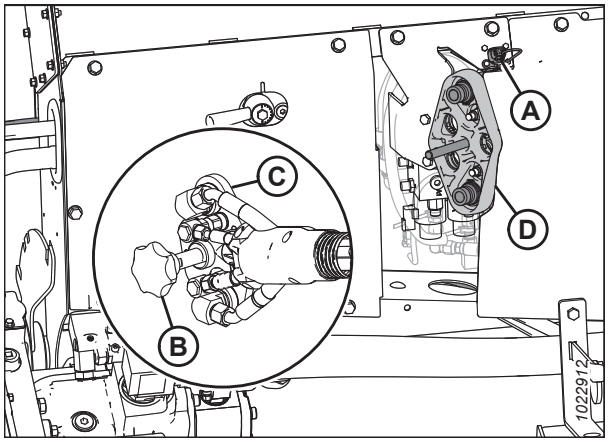


Figure 5.68: Coupler

8. Remove cover (A) from the combine receptacle.

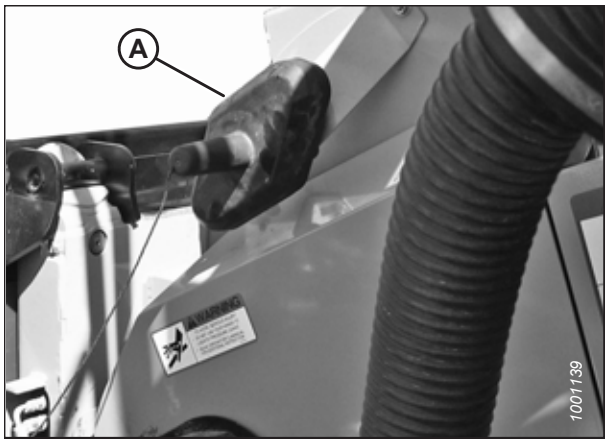


Figure 5.69: Cover

9. Place coupler (B) onto the combine receptacle, and turn knob (A) to secure the coupler to the receptacle.

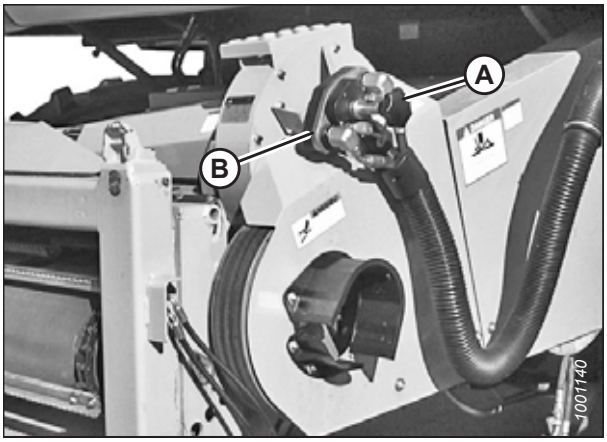


Figure 5.70: Combine Coupler

10. Place cover (A) on the adapter receptacle.

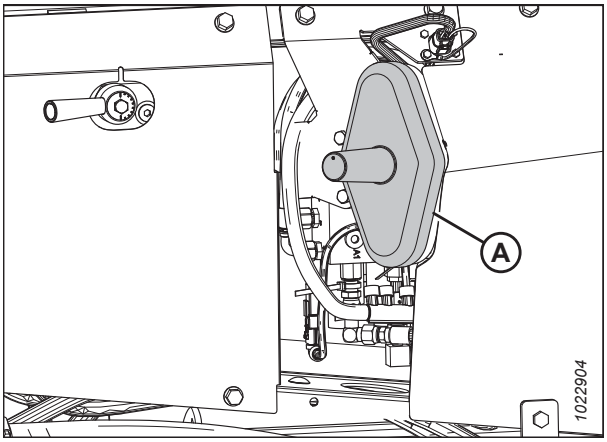


Figure 5.71: Adapter Receptacle Cover

11. Remove locking pin (C) from adapter pin (B).
12. Raise handle (A) to disengage adapter pin (B) from the feeder house.

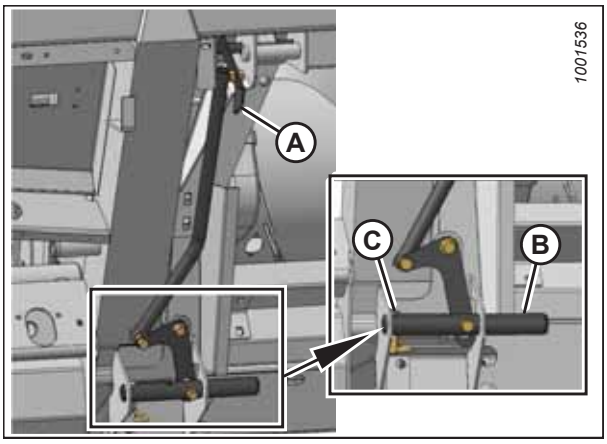


Figure 5.72: Feeder House Locks

13. Reinsert locking pin (C) to secure adapter pin (B).

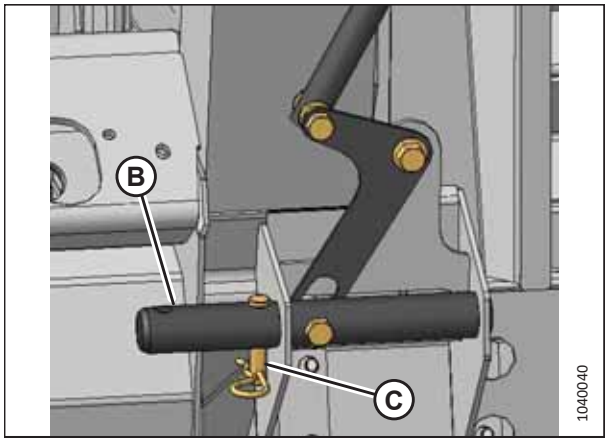


Figure 5.73: Adapter Pin

14. Lower the feeder house until feeder house posts (A) disengage from adapter (B).
15. Back the combine away slowly from the adapter.

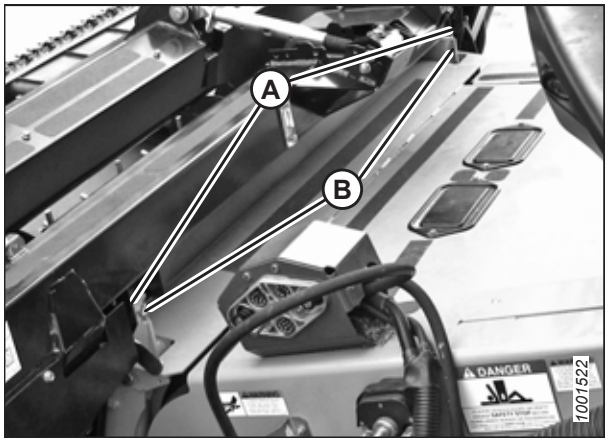


Figure 5.74: Header on Combine

5.6 New Holland Combines

5.6.1 Attaching Header to New Holland CR/CX Combine

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 leaving the operator's seat for any reason.

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

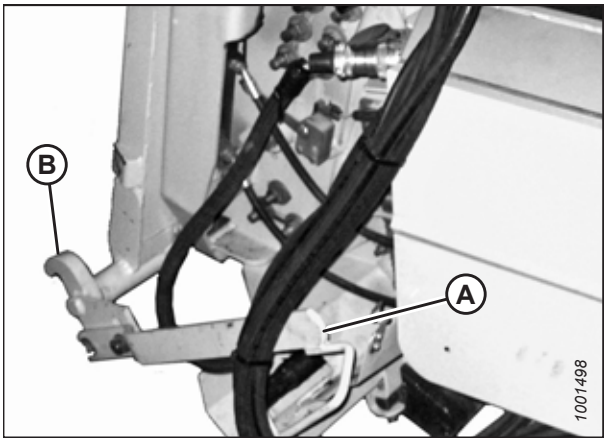


Figure 5.75: Feeder House Locks

DANGER

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 adapter until feeder house saddle (A) is directly under adapter top cross member (B) 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. Shut down the engine, and remove the key from the ignition.

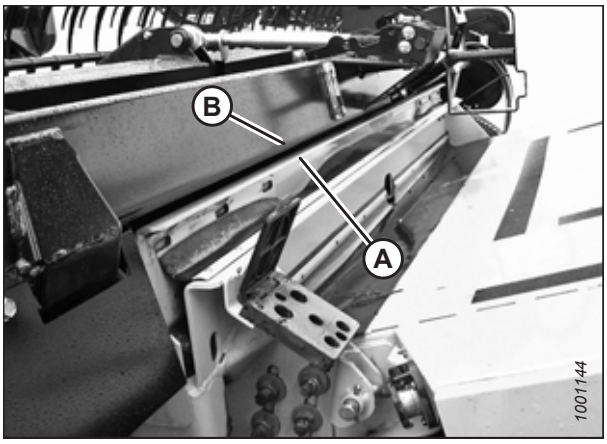


Figure 5.76: Header on Combine

5. Lift lever (A) on the adapter on the left side of feeder house, and push handle (B) on combine to engage locks (C) on both sides of the feeder house.
6. Push down on lever (A) so that the slot in the lever engages the handle and locks the handle in place.
7. If the lock does not fully engage the pin on the adapter, then loosen bolts (E) and adjust lock (C). Retighten the bolts.

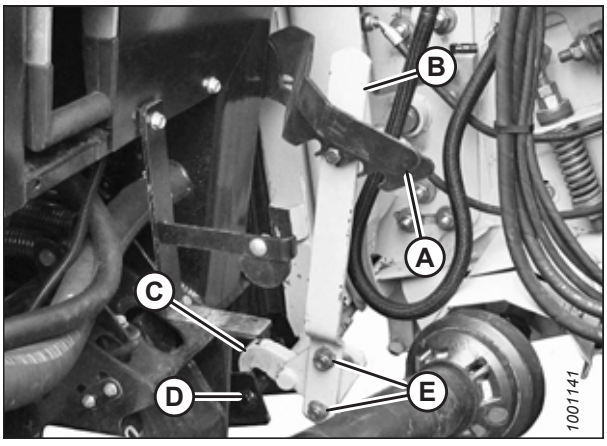


Figure 5.77: Feeder House Locks

8. Open receptacle cover (A) on the adapter.
9. Push in lock button (B) and pull handle (C) to the fully open position.
10. Clean the receptacle mating surfaces.

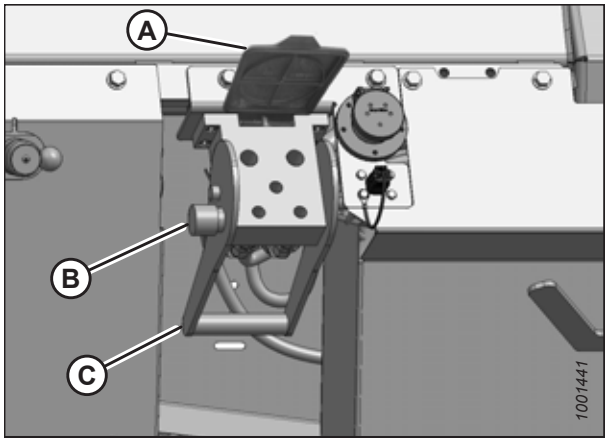


Figure 5.78: Adapter Receptacle

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

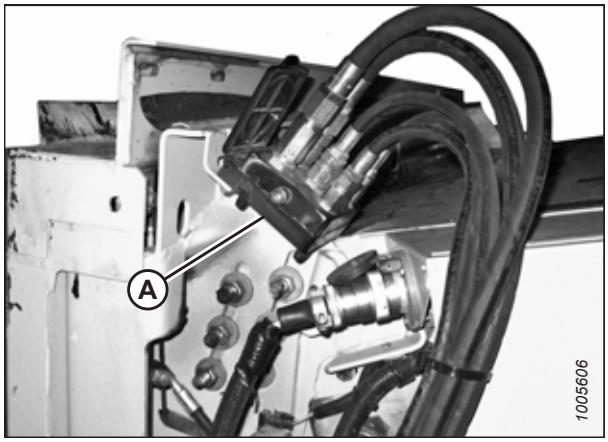


Figure 5.79: Combine Coupler

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

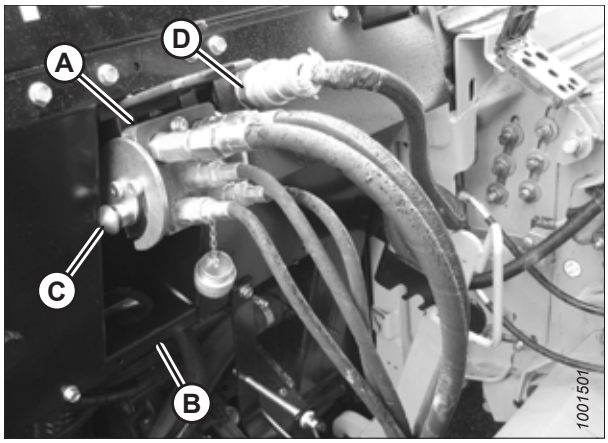


Figure 5.80: Connections

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

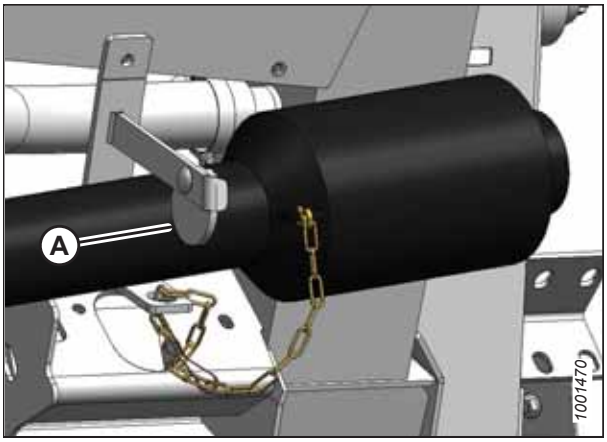


Figure 5.81: Driveline

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

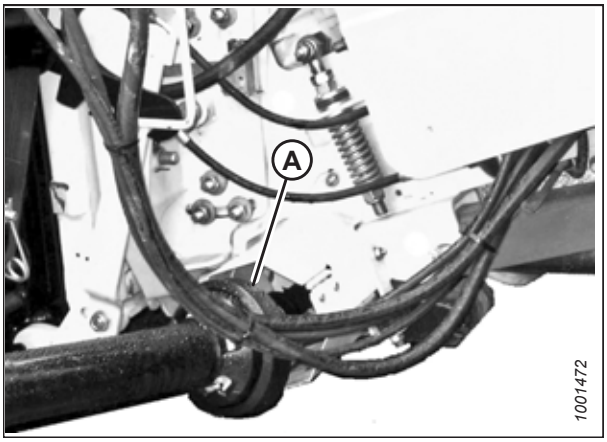


Figure 5.82: Driveline and Output Shaft

19. Disengage each adapter float lock by moving latch (A) away from the adapter and moving both header float lock levers (B) down (UNLOCK position).

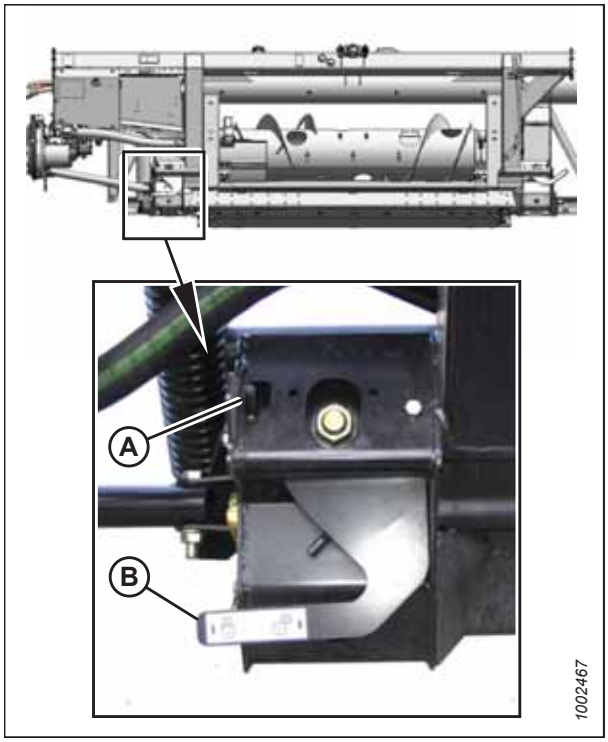


Figure 5.83: Float Lock in UNLOCK Position

5.6.2 Detaching Header from New Holland CR/CX Combine

DANGER

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

1. Ensure that the combine is on level ground, and position the header slightly above the ground.

2. Shut down the engine, and remove the key from the ignition.

   IMPORTANT:

   If the 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. For instructions, refer to *3.7.1 Cutting Height, page 54*.

   IMPORTANT:

   If the stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward, making reattachment difficult. For instructions, refer to *3.7.1 Cutting Height, page 54*.

3. Engage both float locks by lifting each lock lever (A) upwards until they latch into the LOCK position.

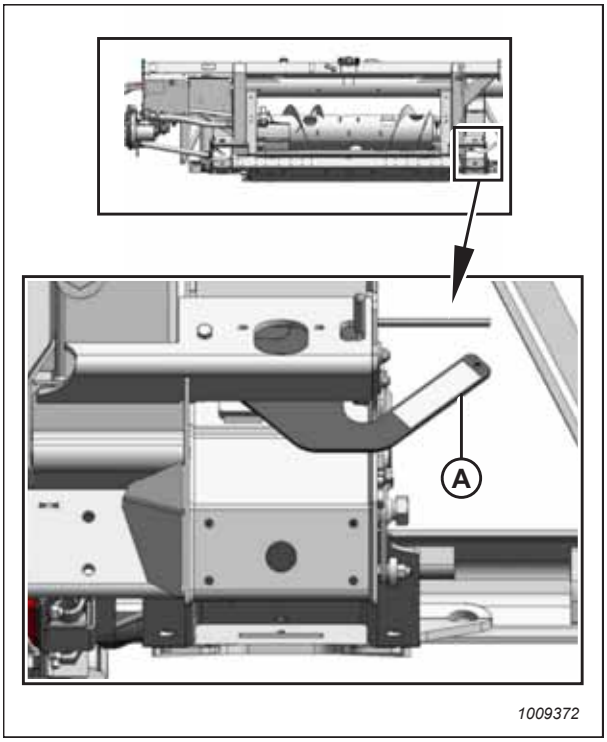


Figure 5.84: Float Locked

4. Disconnect driveline (A) from the combine.

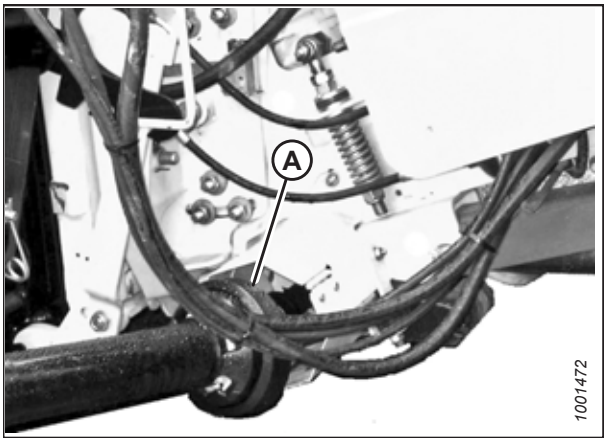


Figure 5.85: Driveline

5. Slide the driveline into hook (A) until disc (B) drops.

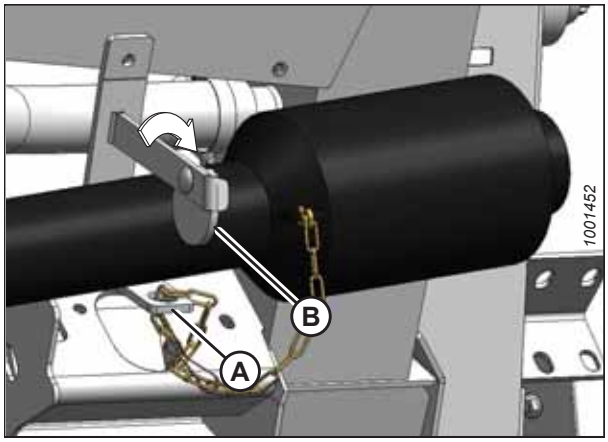


Figure 5.86: Driveline

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

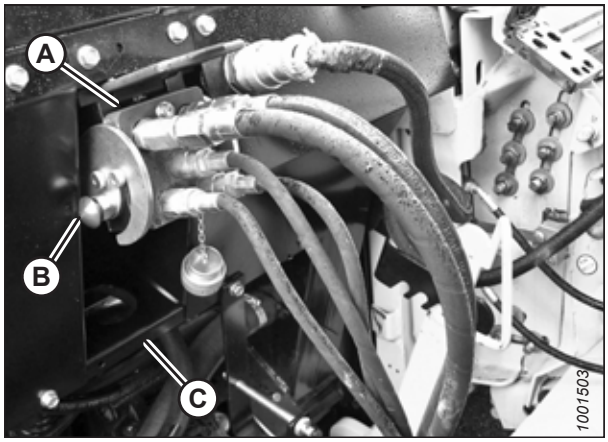


Figure 5.87: Adapter Connections

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

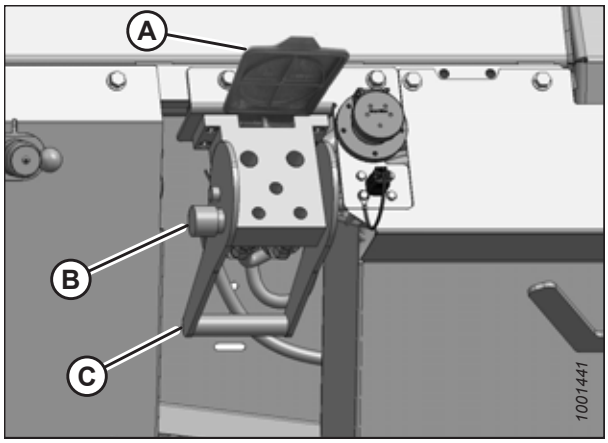


Figure 5.88: Adapter Receptacles

8. Position hydraulic quick coupler (A) onto storage plate (B) on the combine.

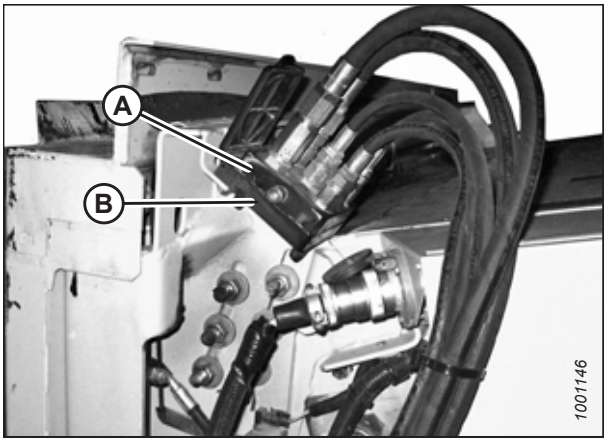


Figure 5.89: Combine Coupler

9. Remove electrical connector (A) from the adapter.

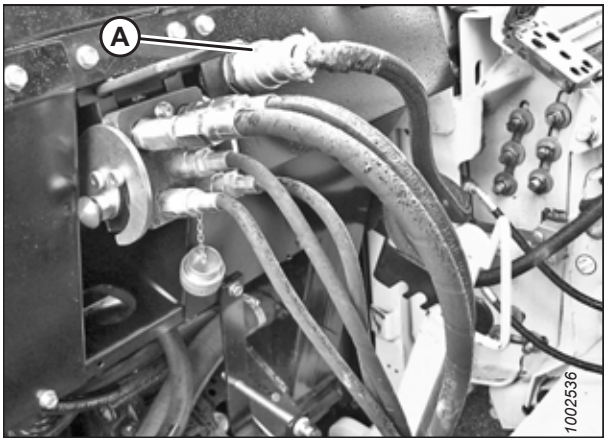


Figure 5.90: Adapter Connections

10. Connect the electrical connector to the combine at location (A).

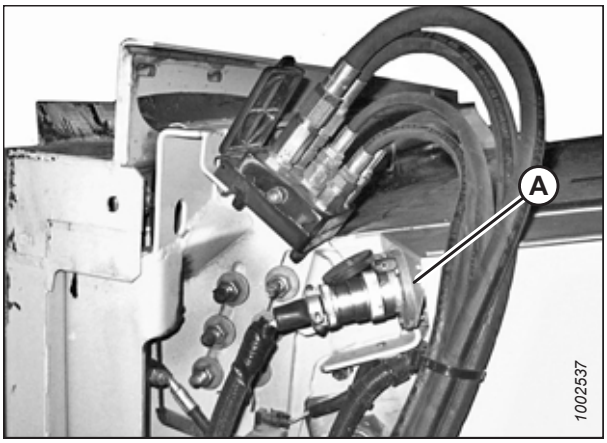


Figure 5.91: Combine Couplers

11. Replace cover (A) on the adapter receptacle.

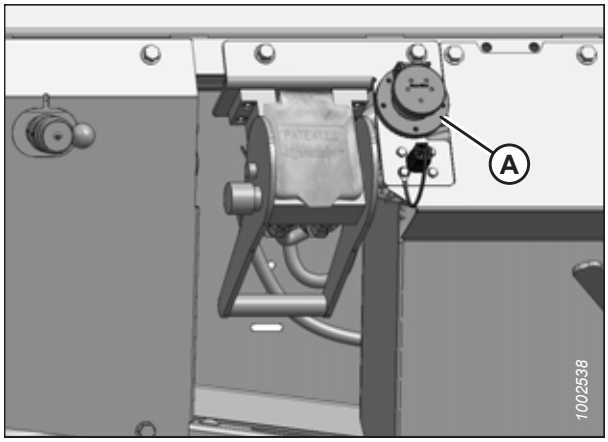


Figure 5.92: Adapter Receptacles

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

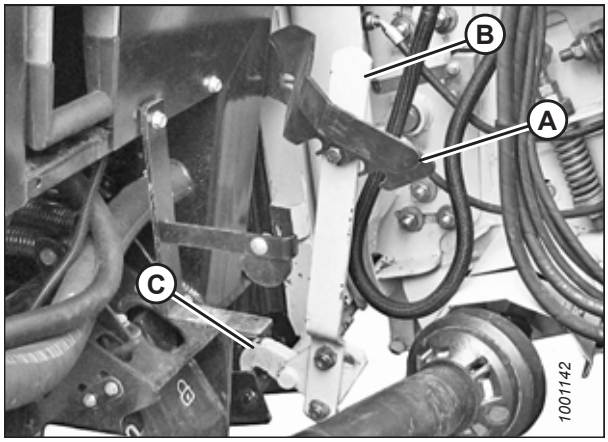


Figure 5.93: Feeder House Locks

13. Lower feeder house (A) until it (A) disengages from adapter support (B).
14. Back the combine slowly away from the header.

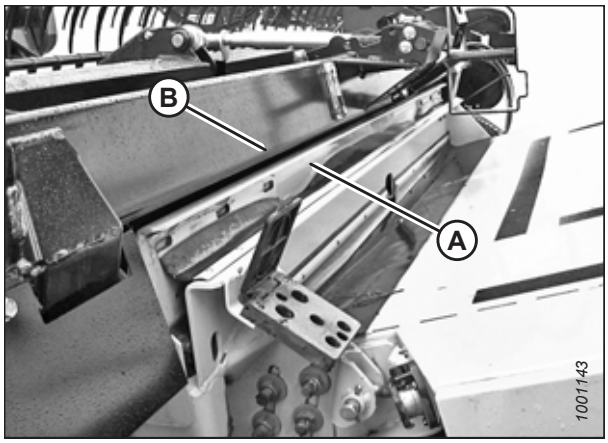


Figure 5.94: Header on Combine

5.6.3 CR Feed Deflectors

For New Holland combines only: Short feed 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 feed deflectors if necessary. Refer to *6.11.3 Replacing Feed Deflectors on New Holland CR Combines, page 442*.

Long feeder kits are provided for narrow feeder house combines and can be installed to replace the short feed deflectors.

Table 5.2 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

5.7 Attaching and Detaching Header from Adapter and Combine

Headers can be attached to the CA25 from either field or transport configurations.

The procedures in this manual require that the adapter remains attached to the combine. Attach or detach the adapter only if performing the following tasks:

- Changing headers
- Performing maintenance

5.7.1 Detaching Header from Adapter and Combine

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

WARNING

Keep your hands clear of the area between the guards and knife.

CAUTION

Wear heavy gloves when working around or handling knives.

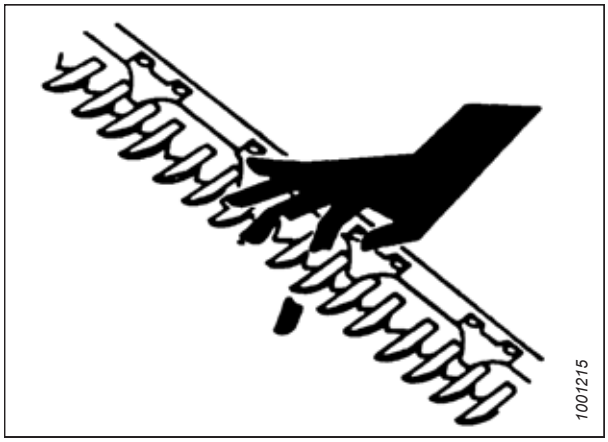


Figure 5.95: Cutterbar Hazard

1. Start the engine, and lower the header.
2. Increase the clearance under the adapter feed draper by tilting the header until cylinder (B) is fully extended and indicator (A) is at D.
3. Raise the reel to its full height.
4. Stop the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

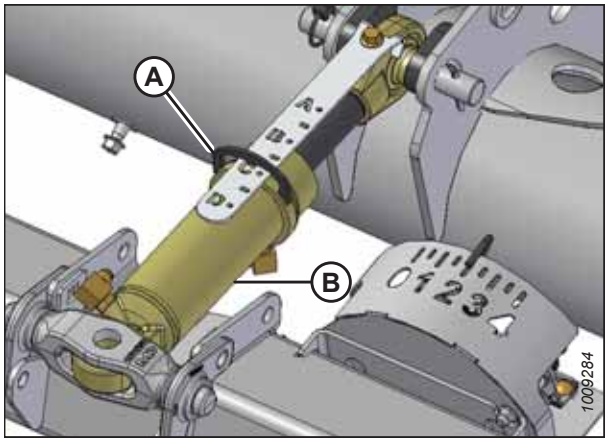


Figure 5.96: Center-Link

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.

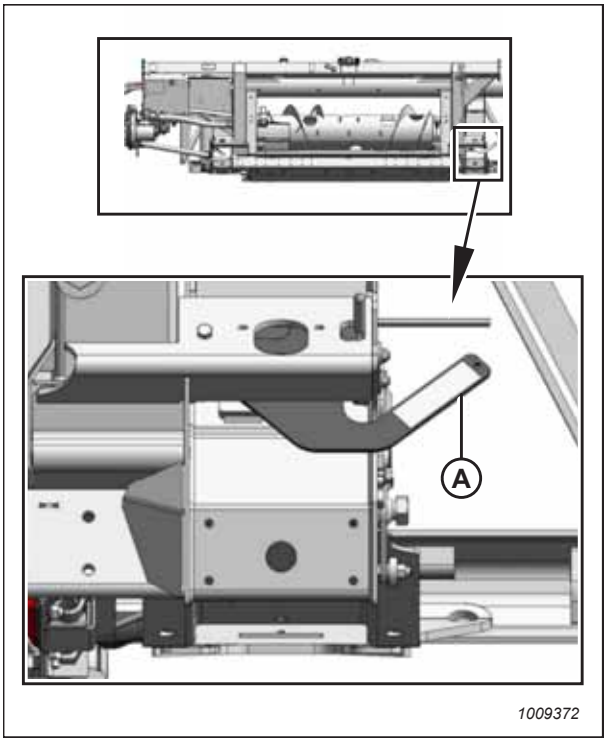


Figure 5.97: Float Locked

7. Remove two bolts (A) attaching filler (B) to the transition pan at the front corners.
8. Fold back filler (B) to access the latch.

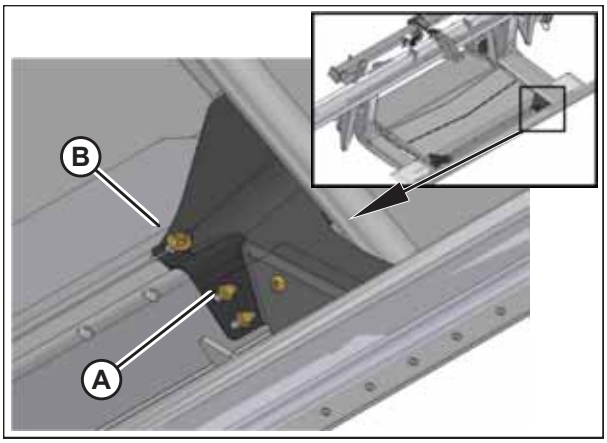


Figure 5.98: Fillers

9. Remove the 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 latch (A) up and back to lower the adapter deck and disengage transition pan tube (D).
12. Reinstall bolt (C).
13. Repeat steps for the opposite side of the feed draper deck.
14. Disengage the reel safety props.

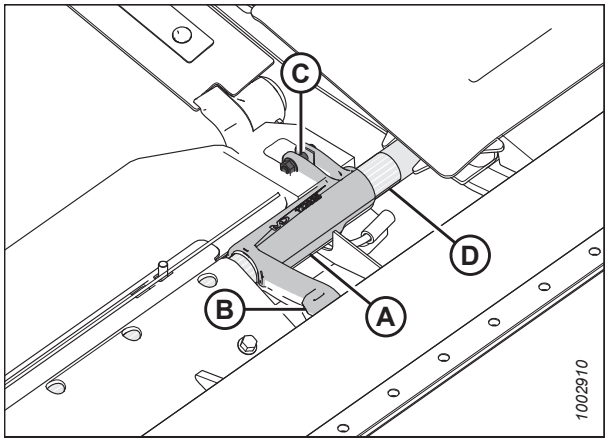


Figure 5.99: CA25 Latch

DANGER

Ensure that all bystanders have cleared the area.

15. Start the engine.
16. Lower the reel fully.
17. Raise the header fully.
18. Shut down the engine, and remove the key from the ignition.
19. Engage the combine lift safety props. For instructions, refer to the combine operator's manual.
20. Loosen nut and bolt (A), and disengage hook (B) from leg on both sides of the adapter.

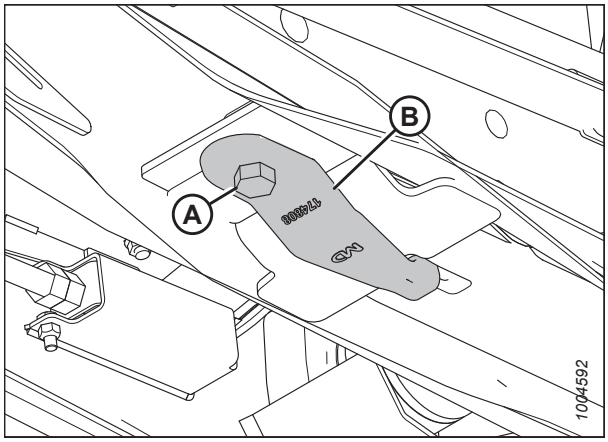


Figure 5.100: CA25 Underside

21. Rotate hook (B) 90° for storage, and retighten bolt (A) and nut.

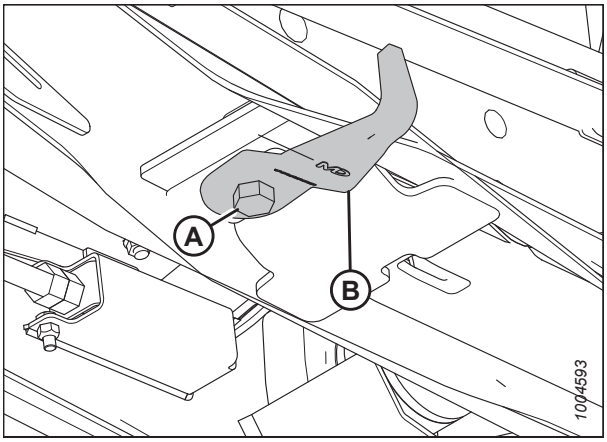


Figure 5.101: Adapter Underside

22. Place 150 mm (6 in.) block (A) under the header leg.
23. Disengage combine lift cylinder locks.

DANGER

Ensure that all bystanders have cleared the area.

24. Start the engine.
25. Lower the header until the header leg rests on the block or until the stabilizer wheels are on the ground.

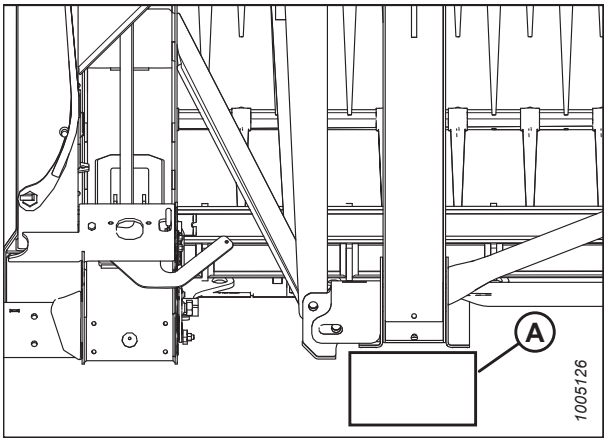


Figure 5.102: Header Leg on Block

26. Disconnect the hydraulic center-link as follows:
    a. Remove lynch pin and clevis pin (A), and lift center-link (B) clear of the bracket.
    b. Replace 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 the excess load on the center-link.

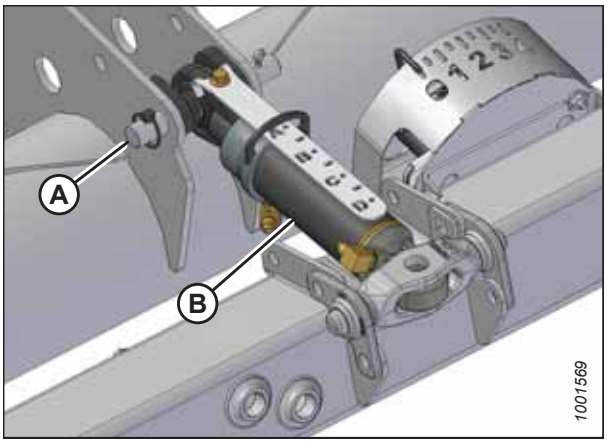


Figure 5.103: Hydraulic Center-Link

27. Disconnect knife and draper drive hydraulic hoses (A). Immediately cap the hoses to prevent oil loss.
28. Secure the hoses to the adapter frame.
29. Disconnect electrical connector (B) by turning the collar counterclockwise and pulling the connector to disengage.
30. Secure the hoses and electrical connector to the adapter.

    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.

31. Disconnect electrical connector (B).
32. Disconnect knife and draper drive hydraulic hoses (A) at the bracket. Cap the ends immediately.
33. Secure the hoses to the adapter frame.

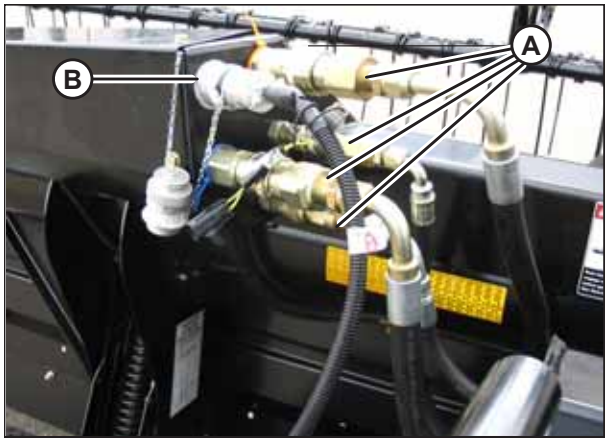


Figure 5.104: Header Connections

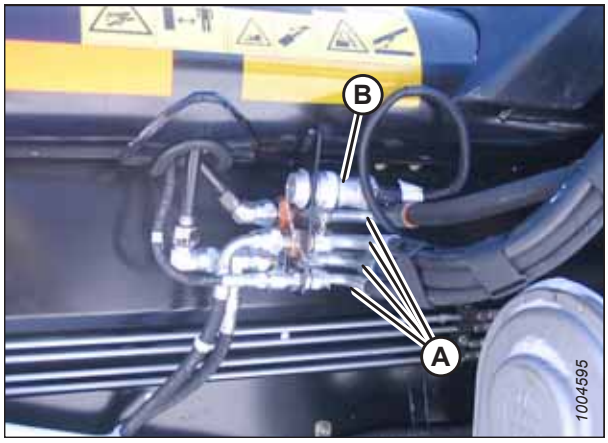


Figure 5.105: Header Connections

34. Disconnect the quick disconnects (if installed) as follows:
    a. Line up slot (A) in the collar with 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.

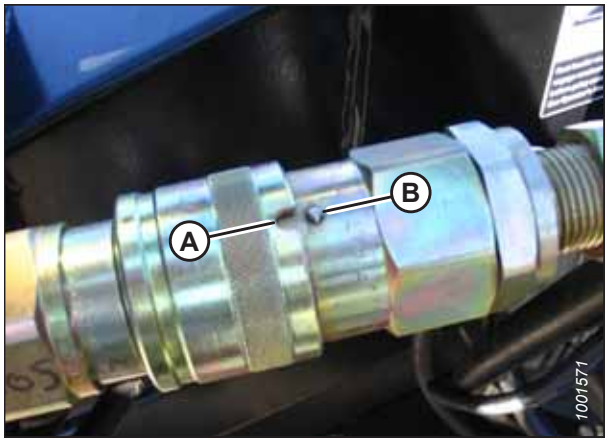


Figure 5.106: Quick Disconnect Coupling

35. Disconnect reel hydraulics (A). Immediately cap the hoses.

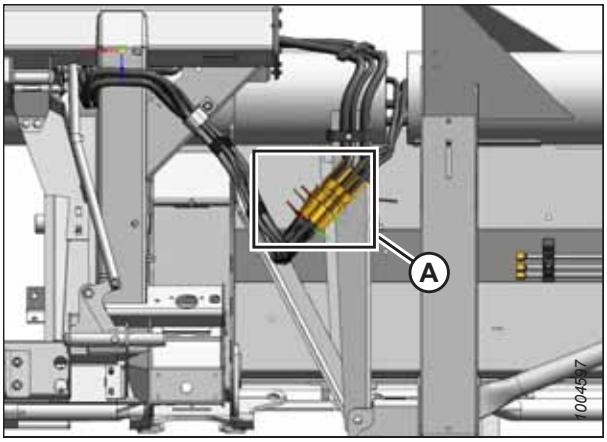


Figure 5.107: Reel Hydraulics

36. Secure the hoses and the electrical connector on the adapter to position (A) as shown.

37. Ensure the header is on the ground or is supported by the wheels in transport mode.

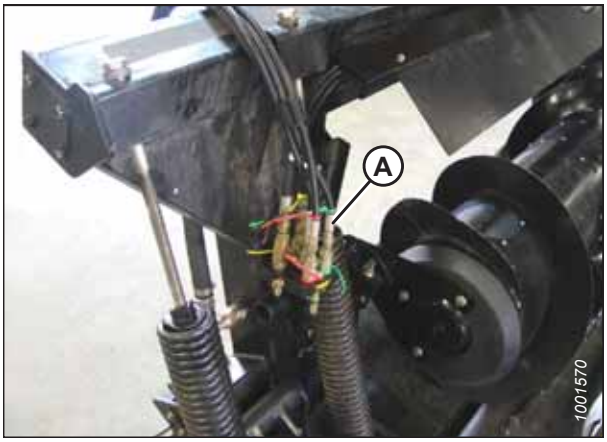


Figure 5.108: Hose Storage

DANGER

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

38. Start the engine, and slowly back the combine away from header.

39. Shut down the engine, and remove the key from the ignition.

5.7.2 Attaching Header to Adapter and Combine

The header can be attached to the adapter from either field or transport configuration.

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 leaving the operator's seat for any reason.

NOTE:

Stabilizer/Slow Speed Transport wheels can be used to support the header. For instructions, refer to *3.7.1 Cutting Height, page 54*.

1. Prop up hydraulic center-link (A) with a pin (or equivalent tool) at location (B) as shown in the illustration.

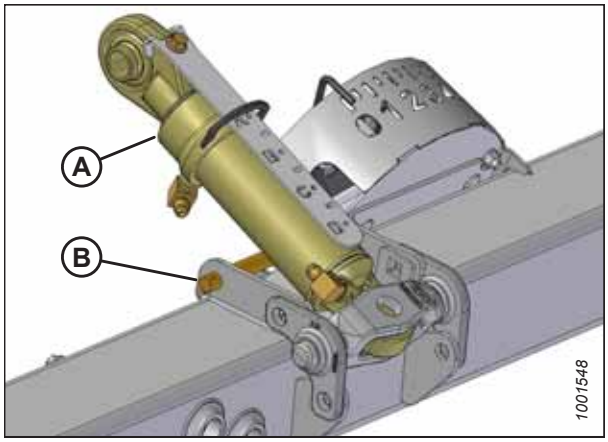


Figure 5.109: Center-Link

2. Ensure hooks (A) are in the storage position as shown. Do **NOT** interfere with the installation of the adapter arms into channel (B).

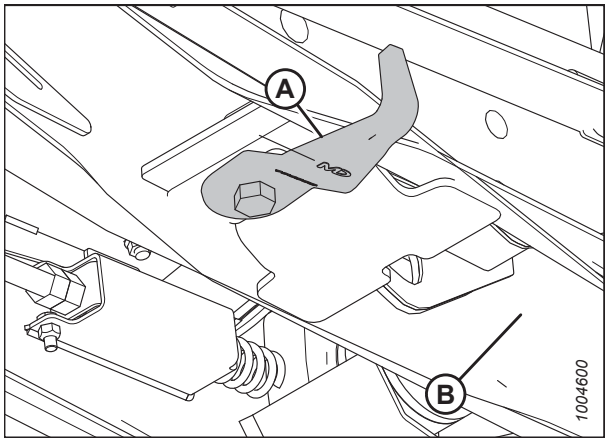


Figure 5.110: Header Underside

3. Rotate latches (A) towards the rear of the adapter.

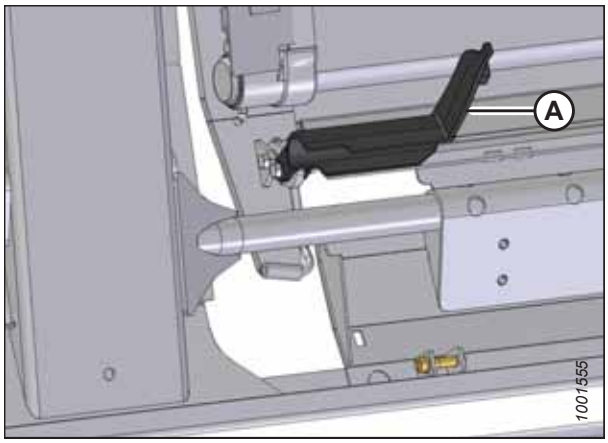


Figure 5.111: Latch

DANGER

Ensure that all bystanders have cleared the area.

4. Start the engine, and lower the combine feeder house so the adapter arms (A) are aligned with header legs (B).
5. Drive slowly forward while maintaining alignment between adapter arms (A) and the header legs (B).
6. Keep adapter arms (A) just under 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 damage to them.
7. Drive slowly forward until adapter arms (A) contact the stops in the legs (C).

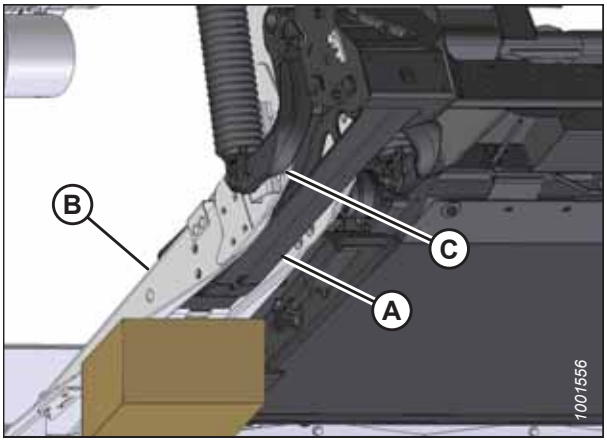


Figure 5.112: Adapter Underside

DANGER

Ensure that all bystanders have cleared the area.

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

    IMPORTANT:

    Keep the hydraulic hoses clear to prevent damage to them.
11. Continue forward until adapter arms (A) contact stops in balance channels (B).
12. Adjust the length of center-link (A) using the header angle hydraulics to align center-link eye (B) with the hole in the header bracket.
13. Shut down the engine, and remove the key from the ignition.

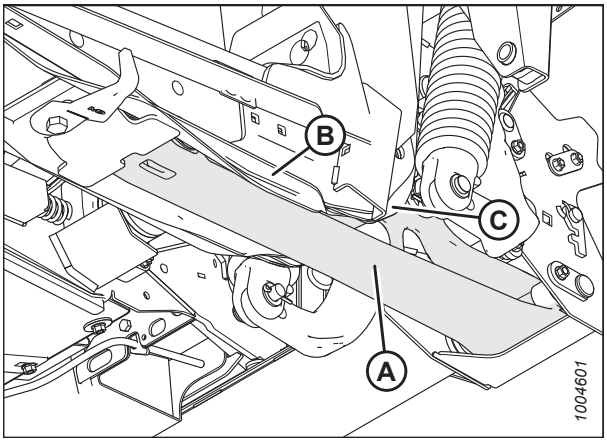


Figure 5.113: Adapter Underside

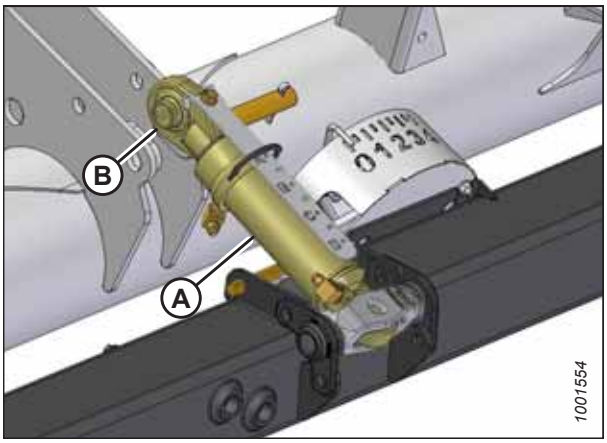


Figure 5.114: Center-Link

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

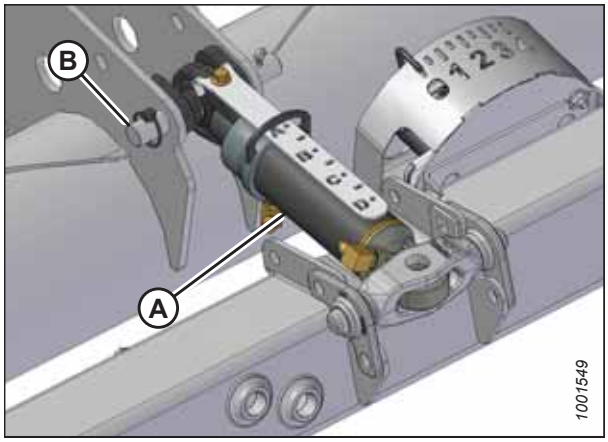


Figure 5.115: Center-Link

CAUTION

Always connect center-link before fully raising header.

15. Match the colored cable ties and connect reel hydraulics (A) at the right end of the adapter.

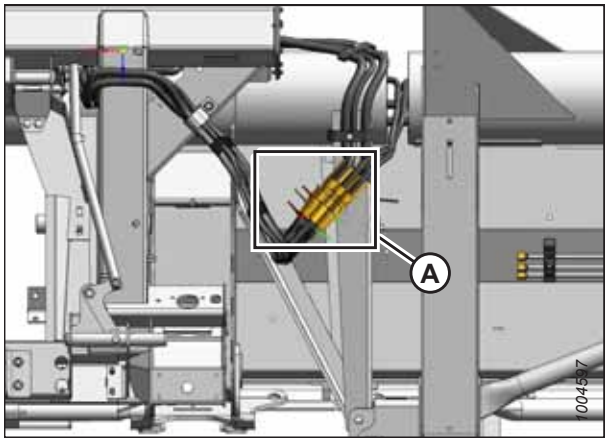


Figure 5.116: Reel Hydraulics

DANGER

Ensure that all bystanders have cleared the area.

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.
18. Shut down the engine, and remove the key from the ignition.
19. Engage the header safety props on the combine. For instructions, refer to the combine operator's manual.
20. Engage the adapter arm by loosening nut and bolt (A), and reposition hook (B) as shown. Tighten bolt and nut (A).
21. Remove the lift cylinder locks.

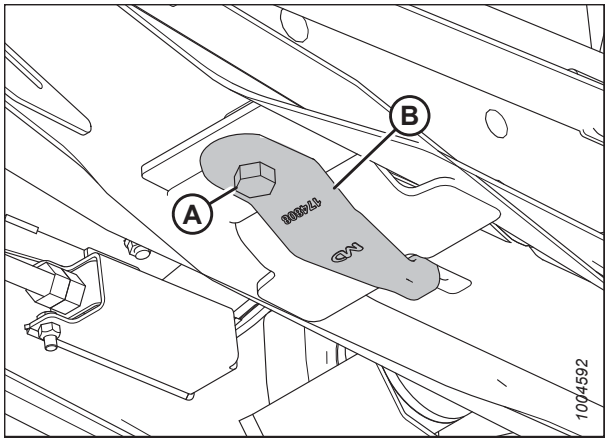


Figure 5.117: Adapter Underside

DANGER

Ensure that all bystanders have cleared the area.

22. Start the engine, and lower the header to the ground.
23. Adjust the header angle to the shallowest setting (shortest center-link).
24. Raise the reel to its full height.
25. Shut down the engine, and remove the key from the ignition.
26. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

WARNING

Keep your hands clear of the area between the guards and the knife.

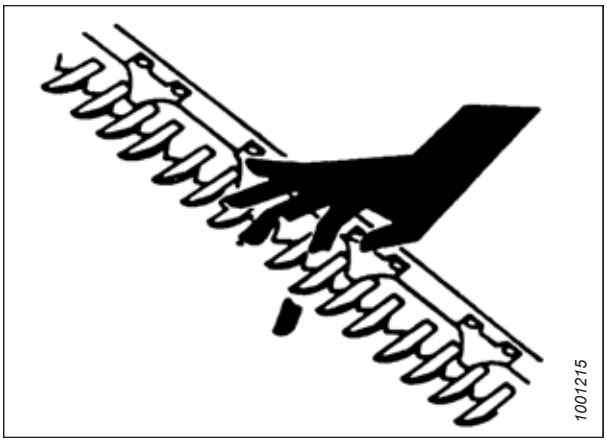


Figure 5.118: Cutterbar Hazard

27. Remove bolt (A) from both sides of the opening to allow the attachment of the adapter deck.
28. Rotate latch (B) forward and down to engage transition pan tube (C).

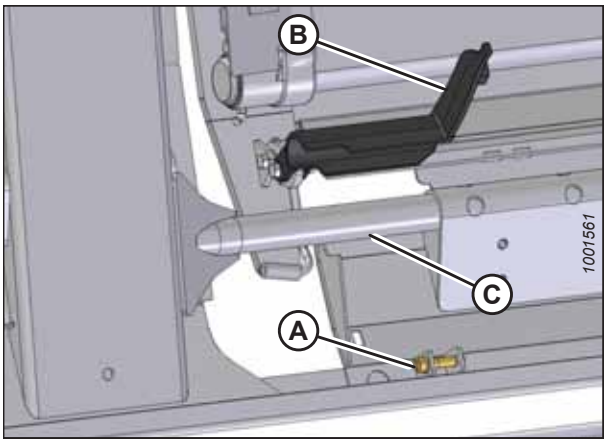


Figure 5.119: Adapter Latch

29. 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.
30. Repeat for the opposite side of the feed draper deck.

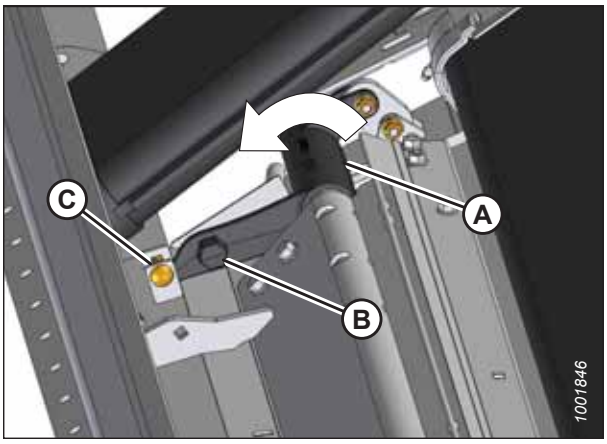


Figure 5.120: Adapter Latch

31. 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.

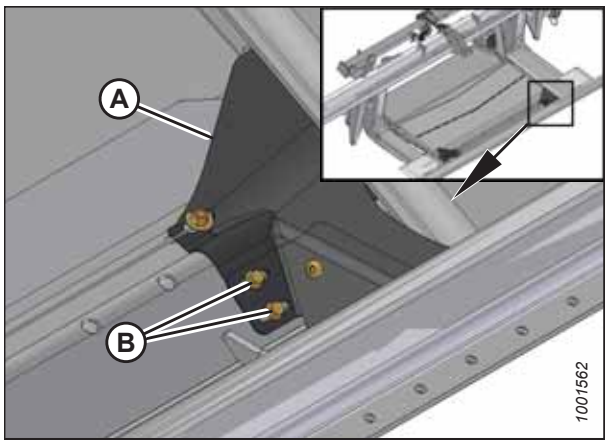


Figure 5.121: CA25 Fillers

32. Connect the knife and draper drive hydraulic hoses (B) at the bracket.
33. Attach electrical connector (B).

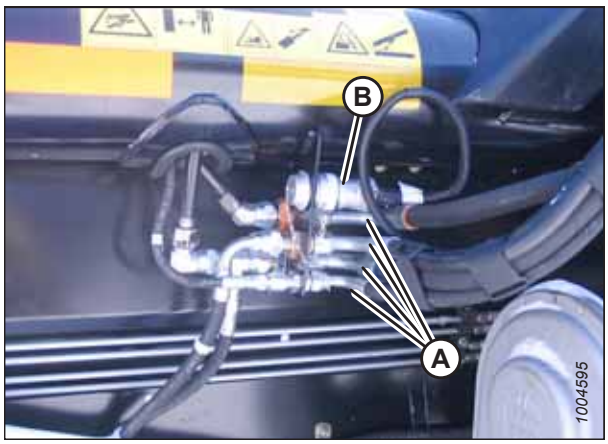


Figure 5.122: Header Connections

34. 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.

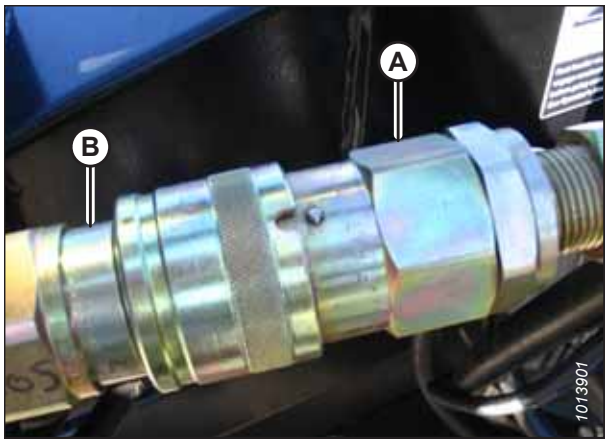


Figure 5.123: Quick Disconnect Coupling

35. Check the float and confirm the header is level. For instructions, refer to the following:
    - *Checking and Adjusting Header Float, page 60*
    - *3.8 Levelling Header, page 107*

DANGER

Ensure that all bystanders have cleared the area.

36. Start the engine, 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.
37. Check for leaks.

Chapter 6: Maintenance and Servicing

This chapter contains the information necessary to perform routine maintenance and occasional servicing tasks on your machine. The word “maintenance” refers to scheduled tasks that help your machine operate safely and effectively; “service” refers to tasks that must be performed when a part needs to be repaired or replaced. For advanced service procedures, contact your Dealer.

6.1 Preparing Machine for Servicing

Observe all safety precautions before beginning service on the machine.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator’s seat, and always engage the 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.

6.2 Maintenance Specifications

6.2.1 Installing a Sealed Bearing

This installation procedure applies to all typical sealed bearings.

1. Clean the shaft and apply a rust preventive coating.
2. Install flangette (A), bearing (B), second flangette (C), and lock collar (D).

   NOTE:

   The locking cam is on only one side of the bearing.
3. Install and tighten 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 set screw in the collar.
5. Loosen the flangette bolts on the mating bearing one turn and then retighten. This will allow the bearing to properly line up.

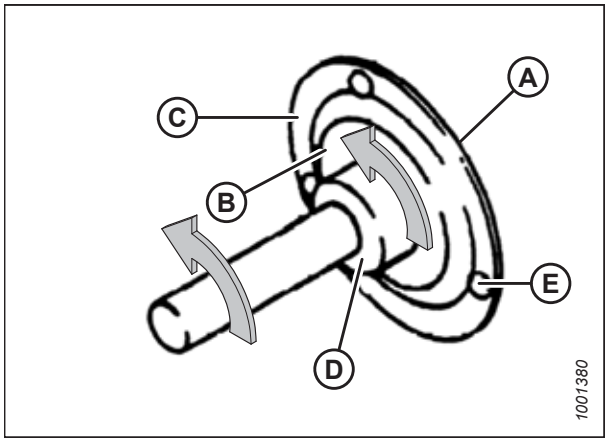


Figure 6.1: Sealed Bearing

6.3 Maintenance Requirements

Regular maintenance is the best insurance against early wear and untimely breakdowns.

Periodic maintenance requirements are organized according to service intervals.

When servicing the machine, refer to the appropriate section in this chapter and use only the fluids and lubricants specified in Recommended Fluids and Lubricants on the inside back cover.

Log hours of operation, use the maintenance record, and keep copies of your maintenance records (refer to *6.3.1 Maintenance Schedule/Record, page 345*).

CAUTION

Carefully follow safety messages. Refer to *6.1 Preparing Machine for Servicing, page 343* and *1 Safety, page 1*.

6.3.1 Maintenance Schedule/Record

Maintenance requirements are organized according to service intervals.

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:

Service the machine more often if operating under adverse conditions (severe dust, extra heavy loads, etc.).

Maintenance Record	Action:	✓ - Check							♦ - Lubricate							▲ - Change						
Hour Meter Reading																						
Date																						
Serviced by																						
First Use, refer to *6.3.2 Break-in Inspection, page 347*																						
End of Season, refer to *6.3.4 Maintaining the Header – End-of-Season, page 348*																						
10 Hours or Daily[35]																						
✓	Hydraulic hoses and lines[36]																					
✓	Auger drive chain tension																					
✓	Knife sections, guards, and hold-downs[36]																					
✓	Tire pressure[36]																					
✓	Link holder hooks[36] ; refer to *6.10.7 Checking Link Holder Hooks, page 439*																					
♦	Knife (except in sandy conditions)[36]																					
25 Hours																						
✓	Hydraulic oil level at reservoir[36]																					
♦	Knifehead(s)[36]																					
50 Hours																						
✓	Draper roller bearings																					

35. Whichever occurs first.
36. A record of daily maintenance is not required, but can be kept at the Owner's/Operator's discretion.

♦	Driveline and driveline universals																					
▲	Knife drive box oil - first 50 hours only																					
♦	All upper cross auger (UCA) grease points																					
100 Hours or Annually[35]																						
✓	Auger to pan and feed draper clearance																					
✓	Draper seal																					
✓	Gearbox lubricant level																					
✓	Reel drive chain tension																					
✓	Reel tine/cutterbar clearance																					
✓	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																					
Maintenance Record	**Action:**	**✓ - Check**							**♦ - Lubricate**							**▲ - Change**						
250 Hours or Annually[35]																						
✓	Draper seal																					
♦	Adapter auger pivots																					
♦	Reel drive U-joint																					
♦	Bell crank linkage																					
♦	Transport axle pivot bushings																					
▲	Hydraulic oil filter																					
500 Hours or Annually[35]																						
✓	Draper seal																					
♦	Reel shaft bearings																					
♦	Stabilizer/slow speed transport wheel bearings																					
✓	Gearbox chain tension																					
1000 Hours or 3 Years[35]																						
▲	Knife drive box lubricant																					
▲	Gearbox lubricant																					
▲	Hydraulic oil																					

6.3.2 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.	*6.4.1 Checking Oil Level in Hydraulic Reservoir, page 367*
5 Hours	Check for loose hardware and tighten to required torque.	*9.1 Torque Specifications, page 535*
5 Hours	Check knife drive belts tension (check periodically for first 50 hours).	*Tensioning Knife Drive Belts, page 426*
10 Hours	Check knife drive box mounting bolts.	*Checking Mounting Bolts, page 417*
10 Hours	Check auger drive chain tension.	*6.7.2 Checking Auger Drive Chain Tension, page 380*
50 Hours	Change adapter gearbox oil.	*Changing Oil in Header Drive Gearbox, page 365*
50 Hours	Change adapter hydraulic oil filter.	*6.4.4 Changing Oil Filter, page 369*
50 Hours	Change knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 423*
50 Hours	Check gearbox chain tension.	*6.6.5 Adjusting Tension on Gearbox Drive Chain, page 377*
50 Hours	Check deck height adjustment.	*6.12.5 Adjusting Deck Height, page 451*

6.3.3 Maintaining the Header – Preseason

Equipment should be inspected and serviced at the beginning of each operating season.

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. For instructions, refer to *Service Intervals, page 350*.
2. Adjust the tension on the drive belts. For instructions, refer to *Tensioning Knife Drive Belts, page 426*.
3. Perform all the annual maintenance. For instructions, refer to *6.3.1 Maintenance Schedule/Record, page 345*.

6.3.4 Maintaining the Header – End-of-Season

Ensure the header is ready for the next harvest by taking steps to prevent corrosion, reduce unnecessary wear, and replace worn components.

CAUTION

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

CAUTION

Cover the cutterbar and knife guards to prevent injury from accidental contact.

- Lower the reel completely. If the header is stored outside, tie the reel to the frame to prevent rotation caused by the wind.
- Lower the header onto blocks to keep the cutterbar off the ground.
- Clean the header thoroughly.
- Check for worn or broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
- Loosen the drive belts.
- Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
- Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
- Store the machine in a dry, protected place if possible. If storing outside, always cover with a waterproof canvas or other protective material.
- 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.
- Replace or tighten any missing or loose hardware. For instructions, refer to *9.1 Torque Specifications, page 535*.
- Repaint all worn or chipped painted surfaces to prevent rust.

6.3.5 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.**
- **Keep your hands and body away from pinholes and nozzles which can eject fluids under high pressure.**
- **Relieve pressure before disconnecting hydraulic lines, and tighten all connections before applying 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 6.2: Hydraulic Pressure Hazard

- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. The introduction of dust, dirt, water, or foreign material into a hydraulic system is the major cause of damage. Do **NOT** attempt to service hydraulic systems in the field.

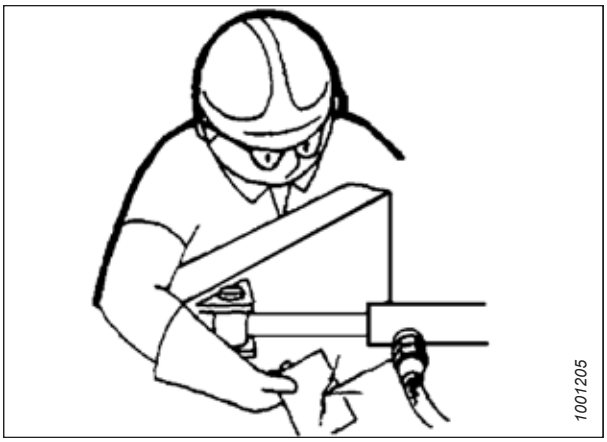


Figure 6.3: Testing for Hydraulic Leaks

6.3.6 Lubrication

Some header components need to be lubricated periodically.

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow the procedures in *6.1 Preparing Machine for Servicing, page 343*.

Refer to the inside back cover for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. For the maintenance schedule, refer to *6.3.1 Maintenance Schedule/Record, page 345*.

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.

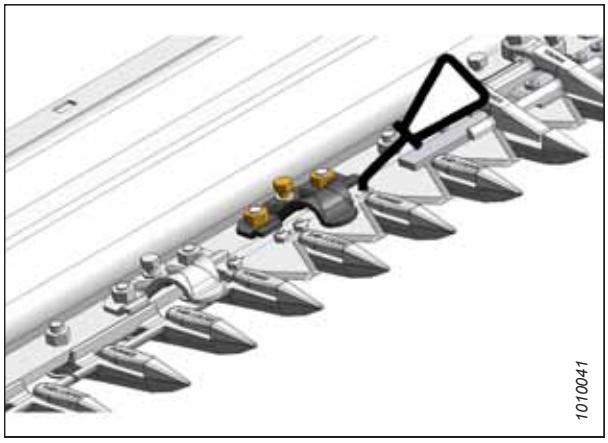


Figure 6.4: Every 10 Hours or Daily

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:

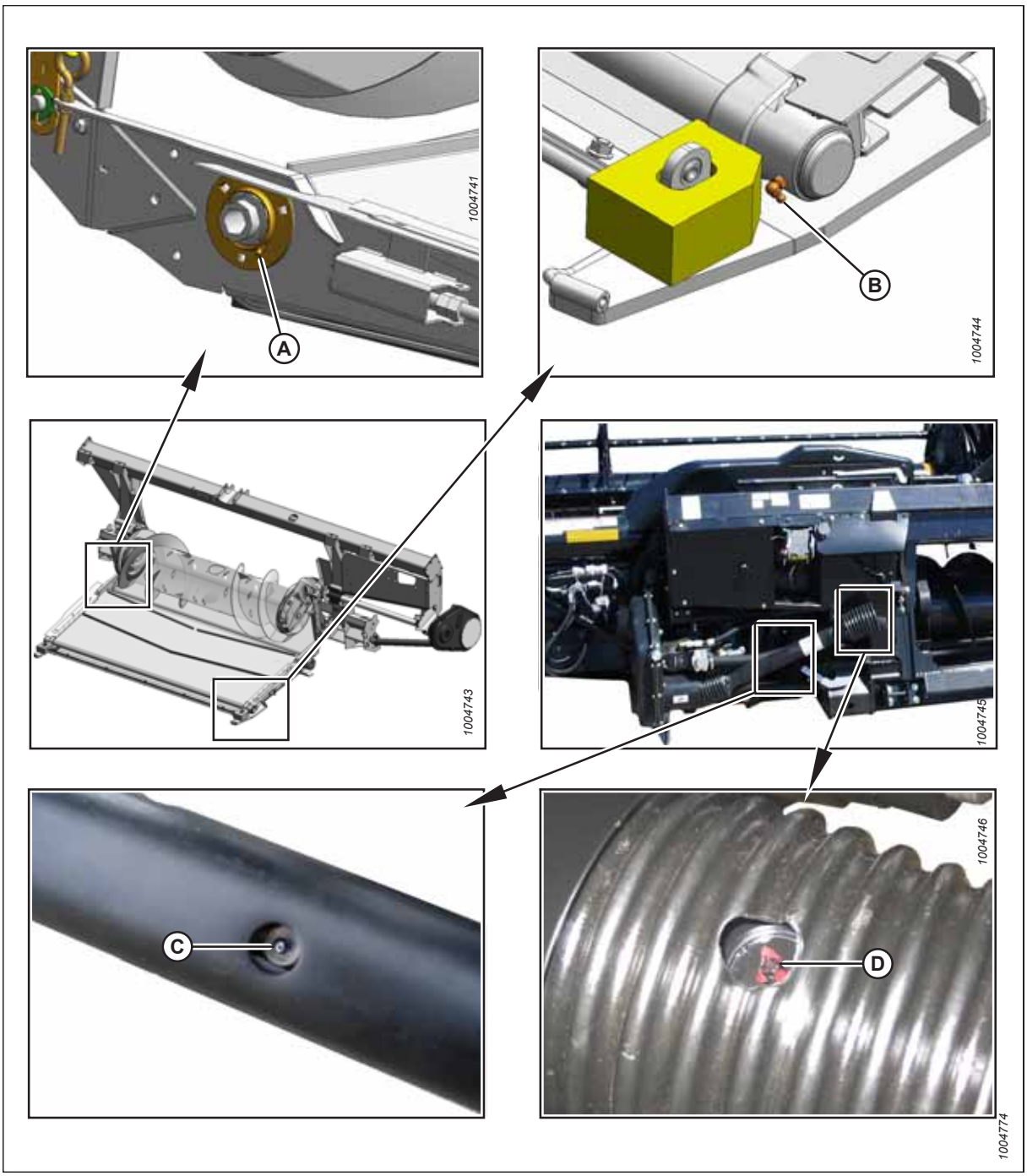
To prevent binding and/or excessive wear caused by knife pressure on the guards, do **NOT** overgrease the knifehead (A). Apply only one to two pumps using a mechanical grease gun (do **NOT** use an electric grease gun). If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead. Refer to *6.8.3 Removing Knifehead Bearing, page 401*.

Figure 6.5: 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 6.6: Every 50 Hours



A - Drive Roller Bearing | B - Idler Roller Bearing (Both Sides) | C - Driveline Slip Joint[37] | D - Driveline Universal (Two Places)

37. Use high temperature extreme pressure (EP2) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

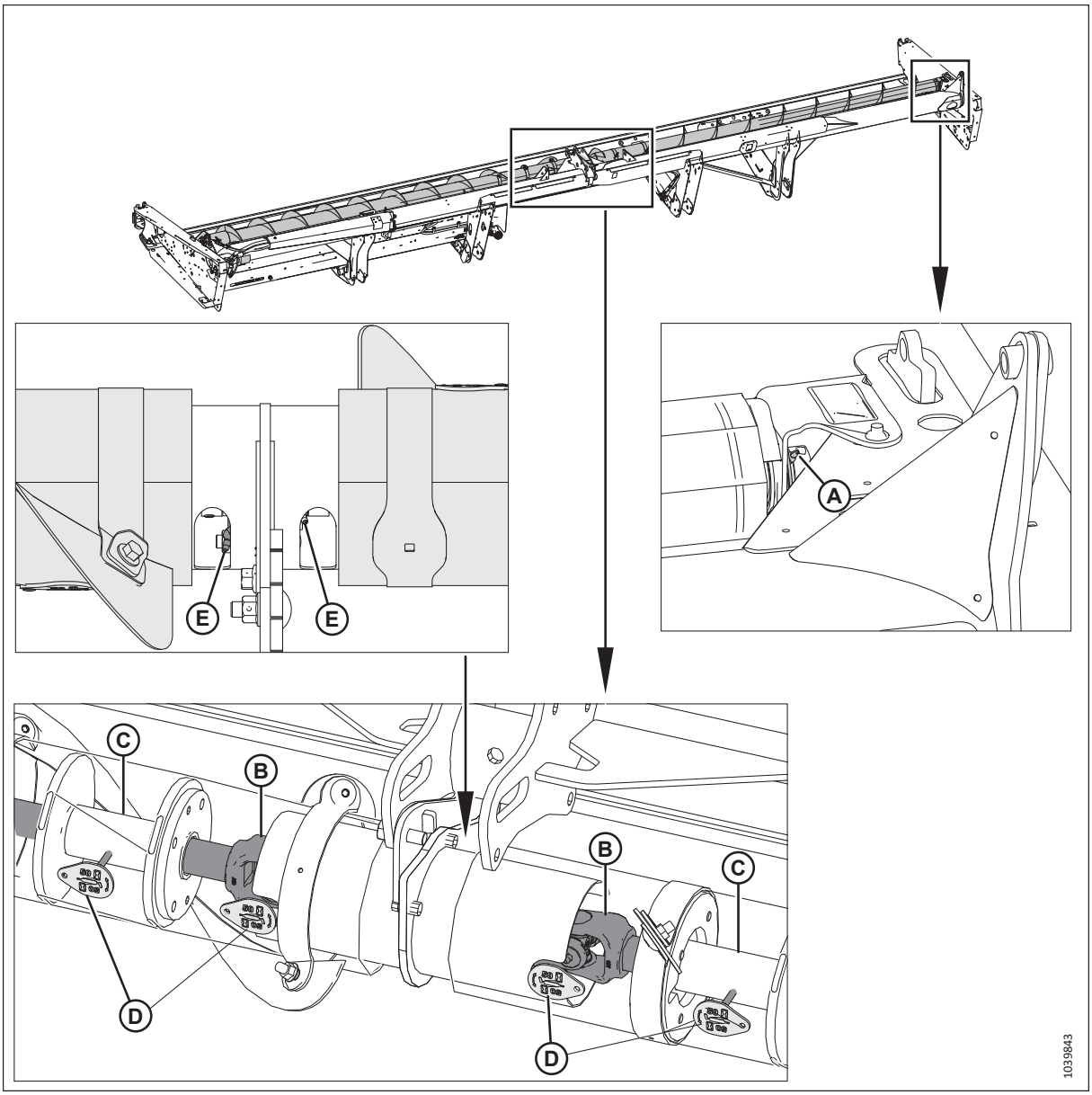


Figure 6.7: Every 50 Hours – Upper Cross Auger

A- Right End Bearing
B - Upper Cross Auger U-joints [Two places, accessible by opening cover (D)]
C - Upper Cross Auger Sliding Hubs [Two places, accessible by opening cover (D)]
E - Upper Cross Auger Center Bearings (Two Places)

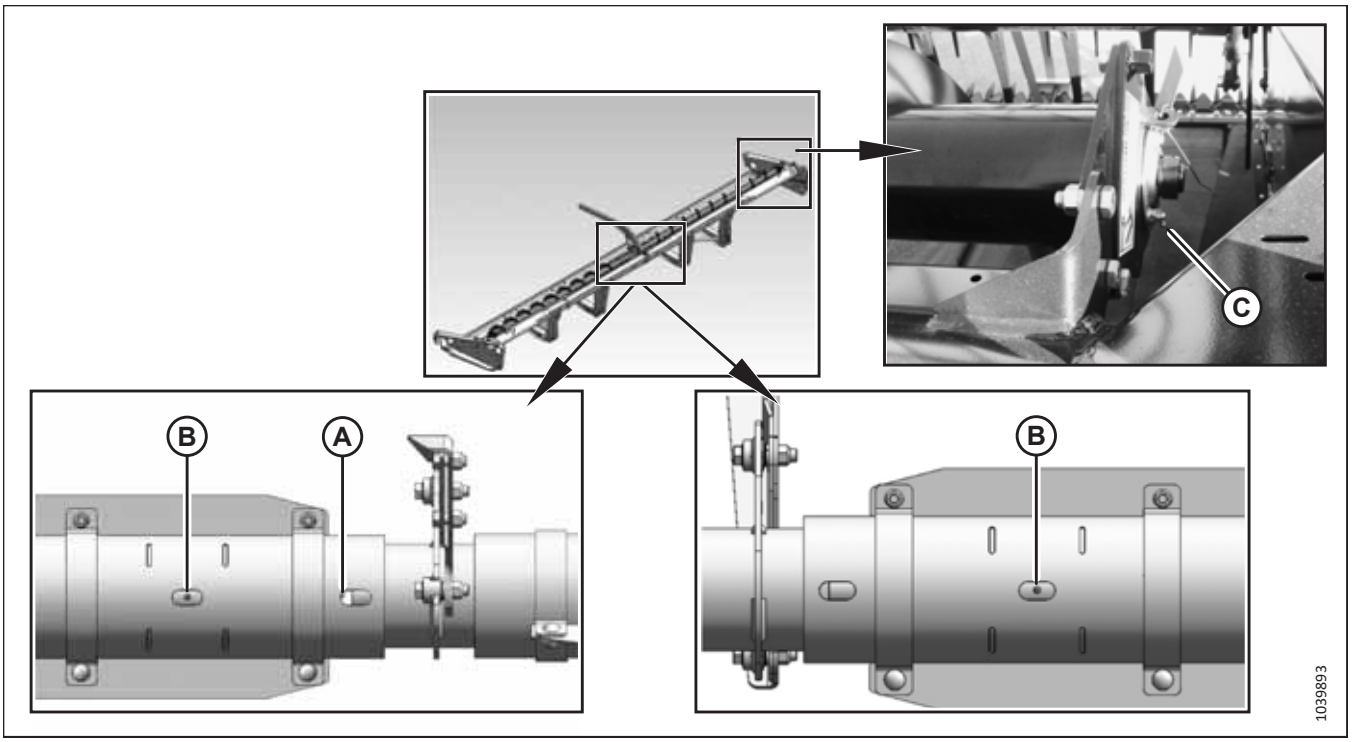


Figure 6.8: Every 50 Hours – Upper Cross Auger, Old Assembly

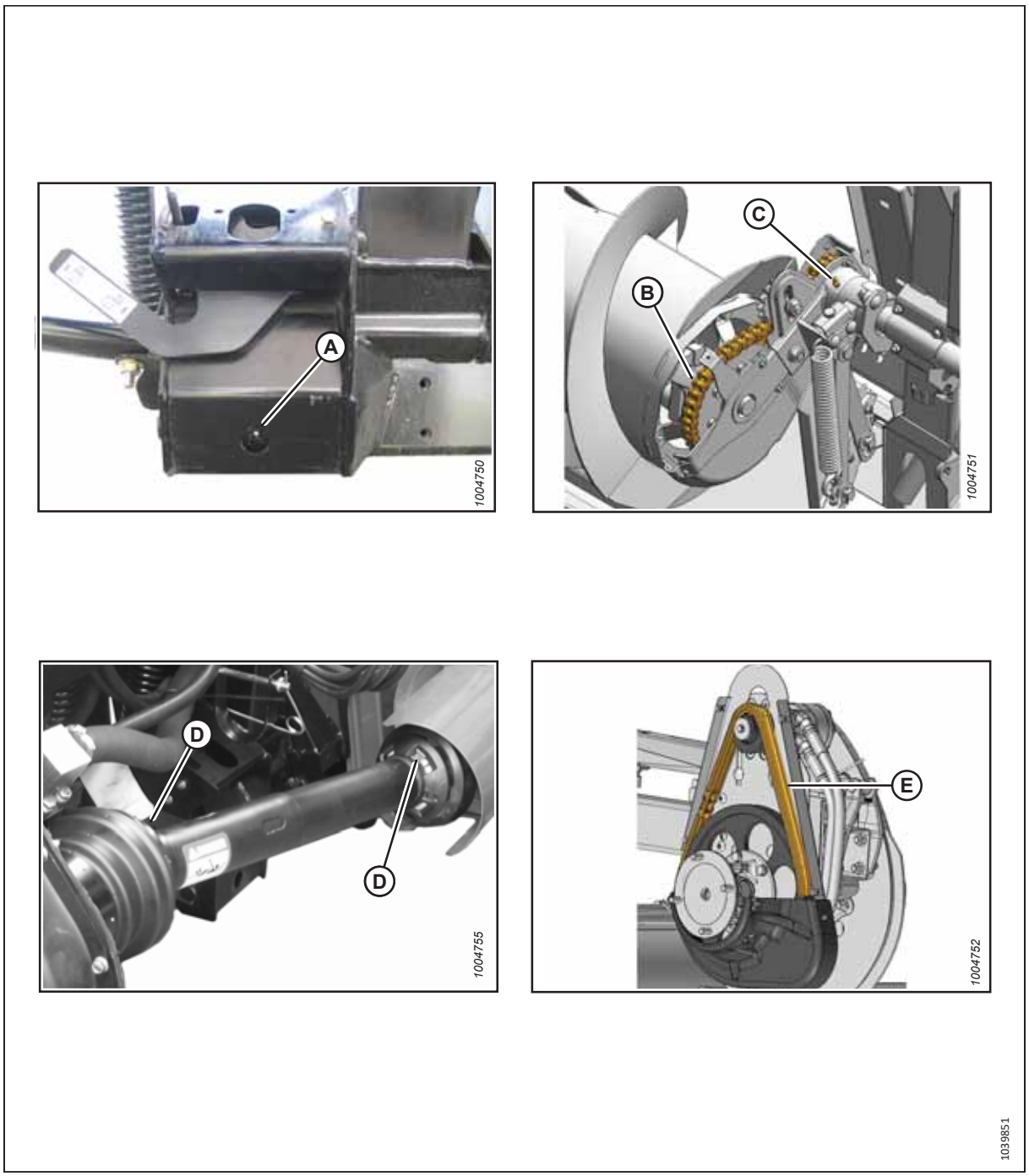
A - Upper Cross Auger U-joint[38]
B - Upper Cross Auger Bearing (2 Places)
C - Right End Bearing

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

Every 100 Hours

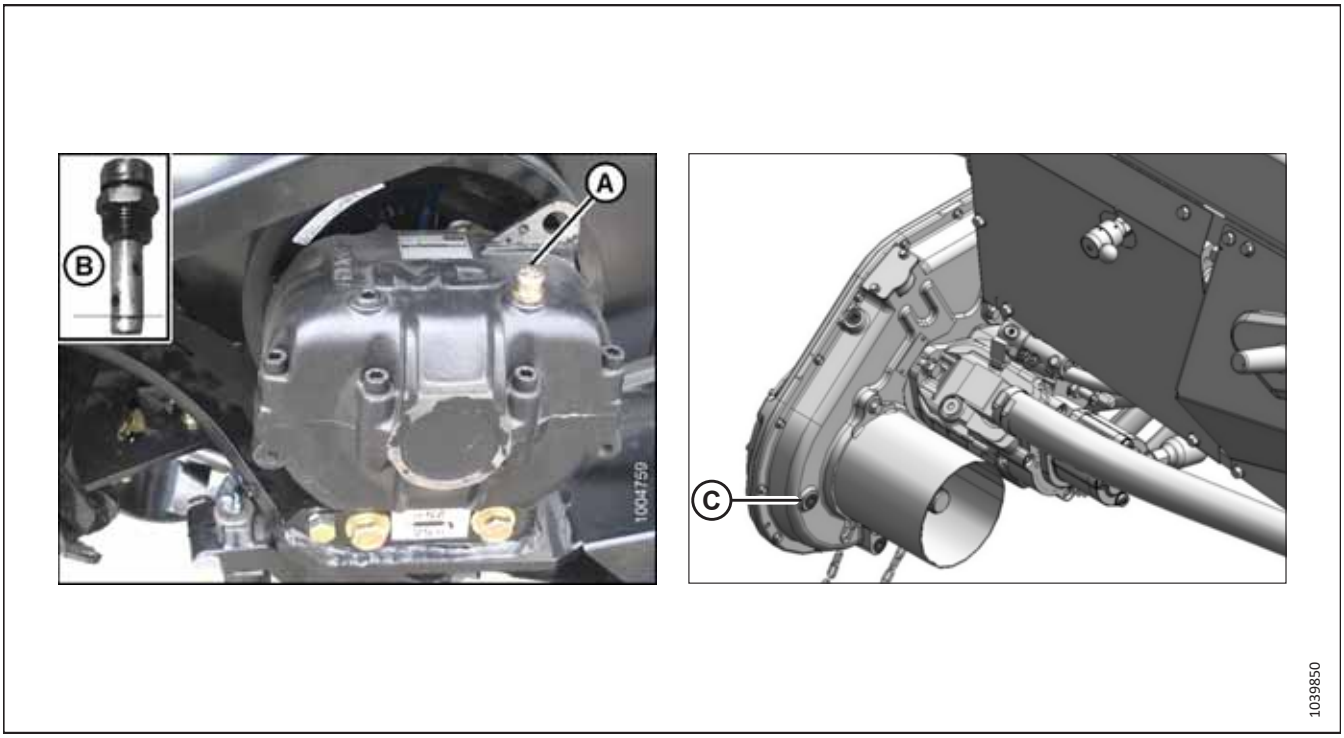
Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 6.9: Every 100 Hours



A - Float Pivot - Right and Left
B - Auger Drive Chain. Refer to *Lubricating Auger Drive Chain, page 363*
C - Auger Pivot - Right and Left
D- Driveline Guard - Two Places
E- Reel Drive Chain - One Place. Refer to *Lubricating Reel Drive Chain – Double Reel, page 361*

Figure 6.10: Every 100 Hours

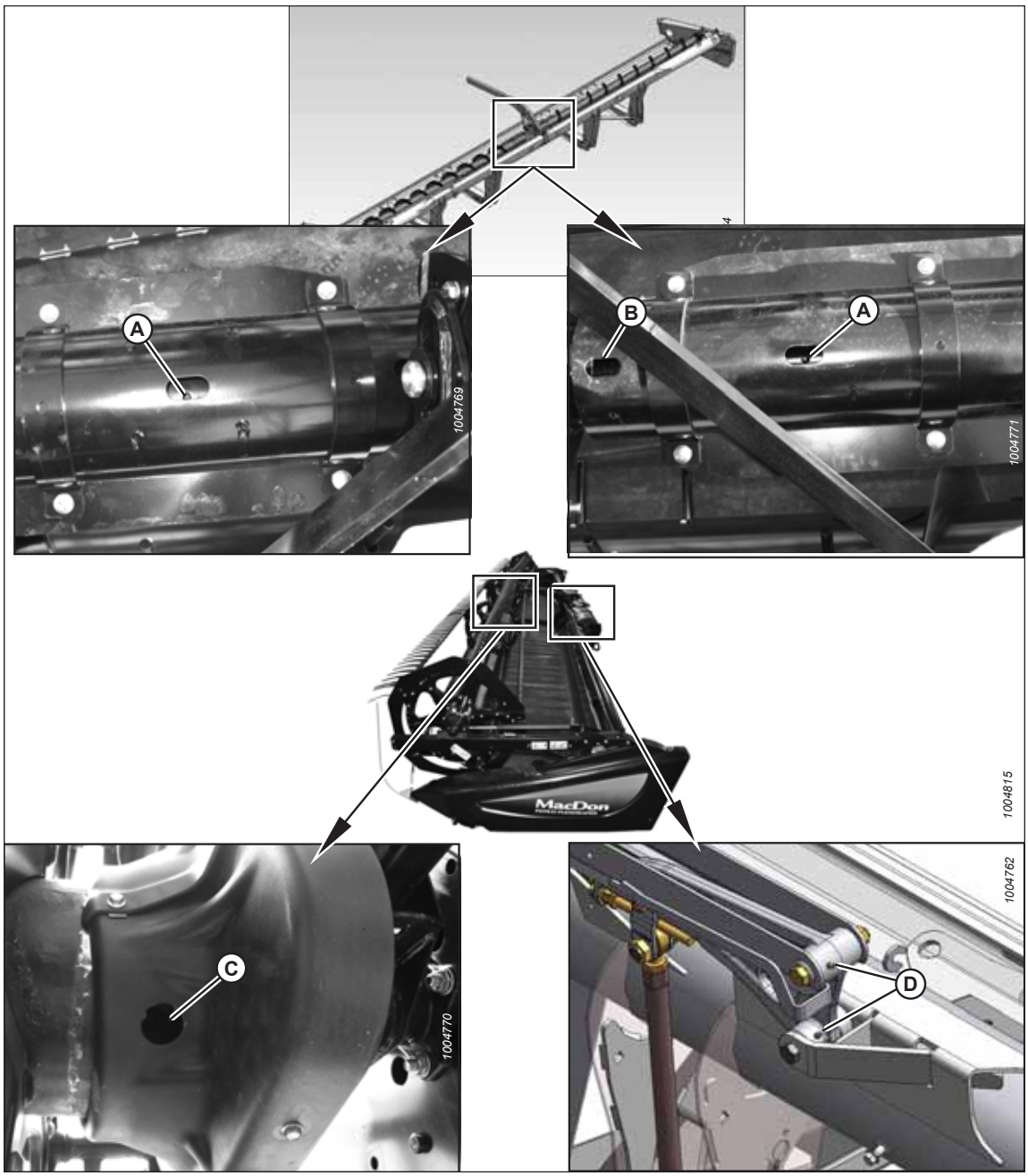


A - Knife Drive Box (Check Oil Level Between Lower Hole and End of Dipstick [B])
C - Main Drive Gearbox Oil Level. Refer to

Every 250 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

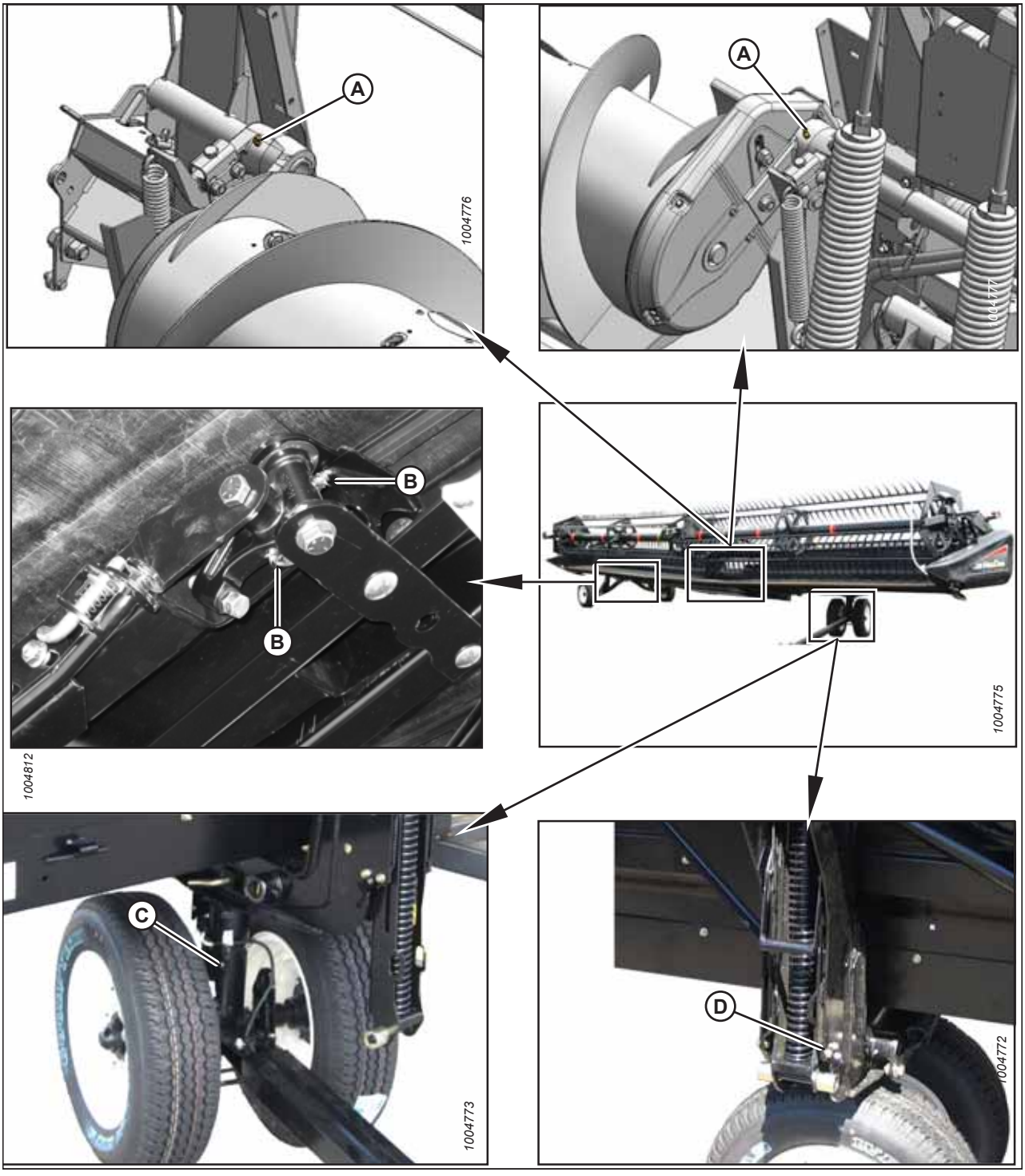
Figure 6.11: Every 250 Hours



A - Upper Cross Auger Drive Shafts (Two Places)
B - Upper Cross Auger U-Joint[39]
C - Reel U-joint (One Place)
D - Flex Linkage (Two Places) - Both Sides

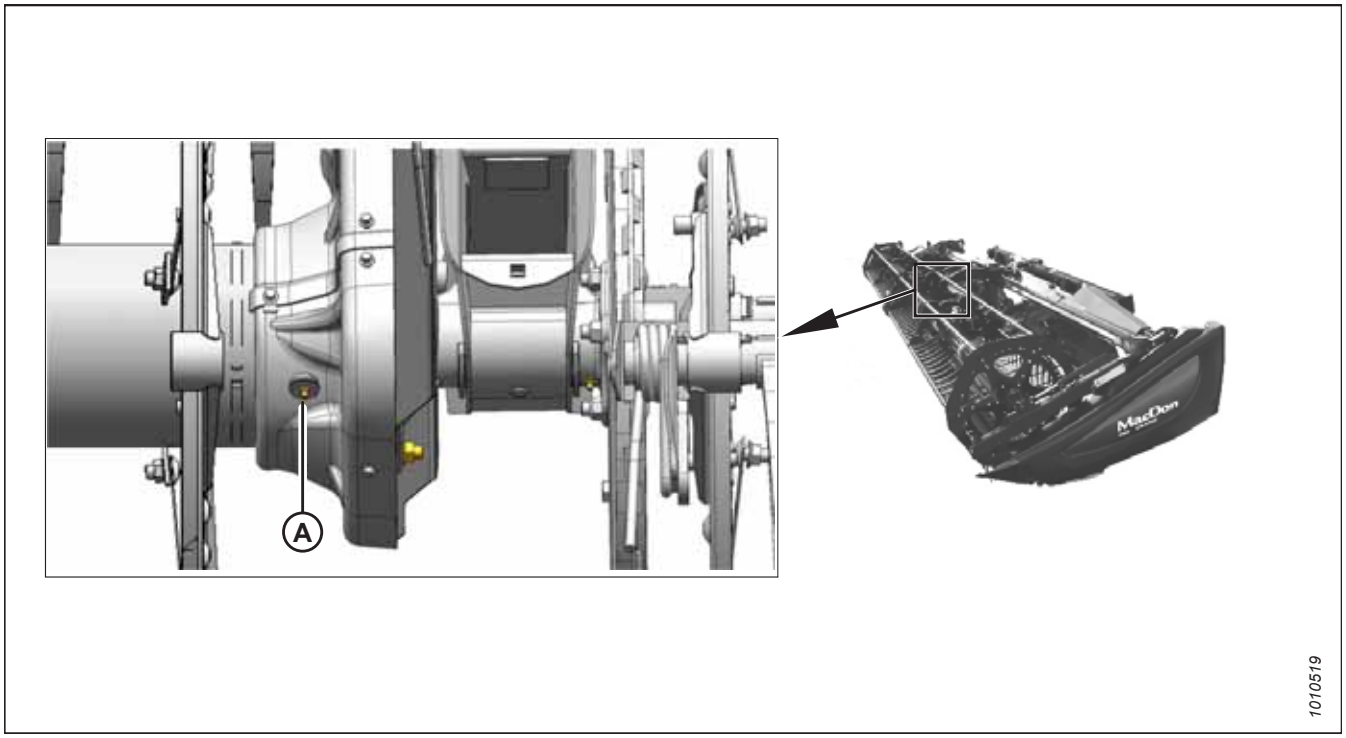
39. U-joint has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if U-joint stops taking grease. Overgreasing will damage U-joint. Six to eight pumps are sufficient at first grease (factory). Grease more often as the U-joint wears and it requires more than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

Figure 6.12: 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 6.13: Every 250 Hours



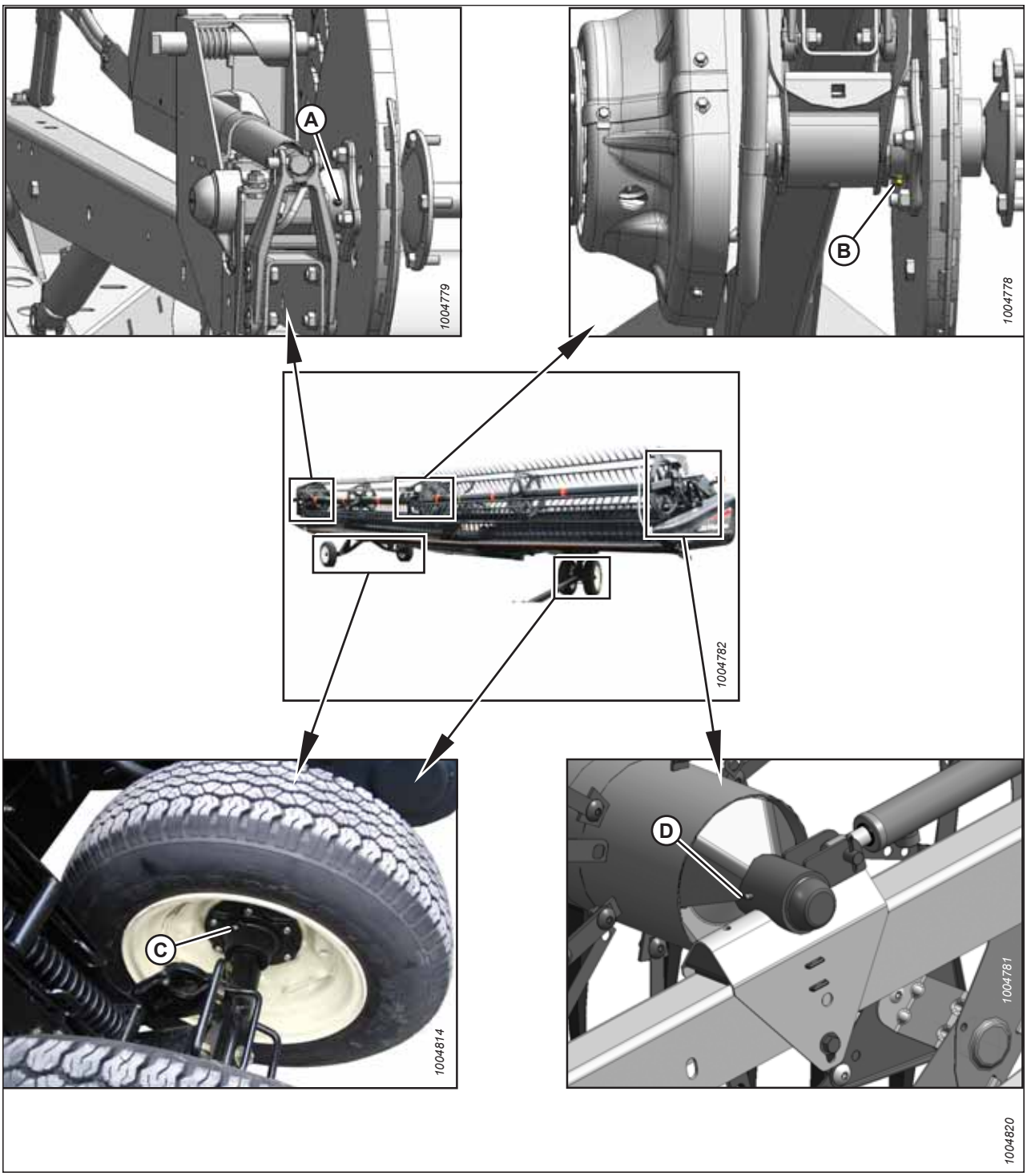
A - Double Reel U-Joint[40]

40. 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). Grease more often as the U-joint wears and requires more than six pumps.

Every 500 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 6.14: 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)

Lubricating the Header

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 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 leaving the operator's seat for any reason.

Refer to the inside back cover for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to *6.3.1 Maintenance Schedule/Record, page 345*.

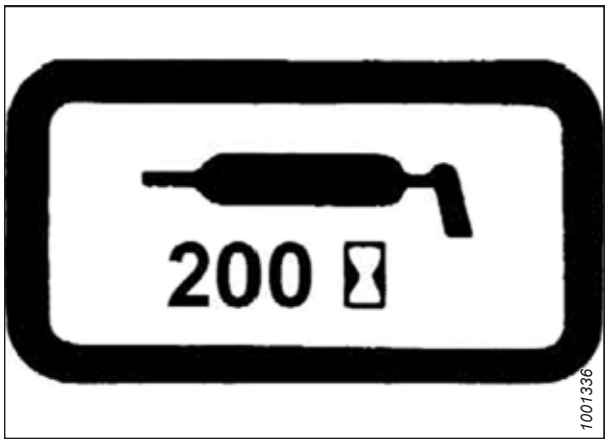


Figure 6.15: Greasing Interval Decal

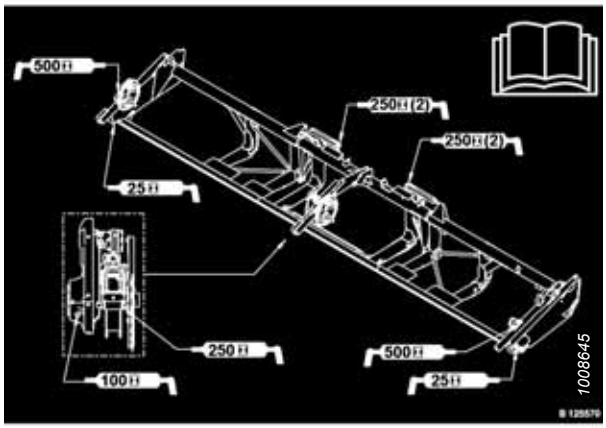


Figure 6.16: FD75 Master Grease Point Decal

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.

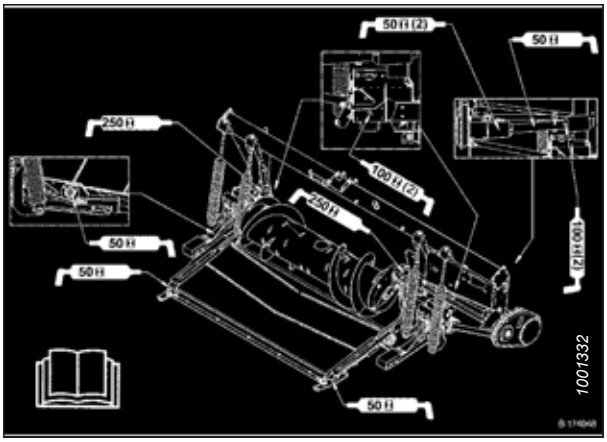


Figure 6.17: CA25 Adapter Master Grease Point Decal

Lubricating Reel Drive Chain – Double Reel

The reel drive chain should be lubricated every 100 hours.

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 leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove six bolts (A) securing upper cover (B) to the reel drive and lower cover (C).

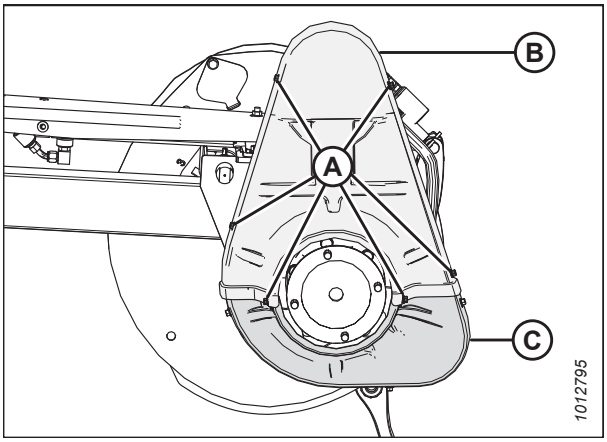


Figure 6.18: Drive Cover – Double Reel

3. If necessary, remove three bolts (A) and remove lower cover (B).

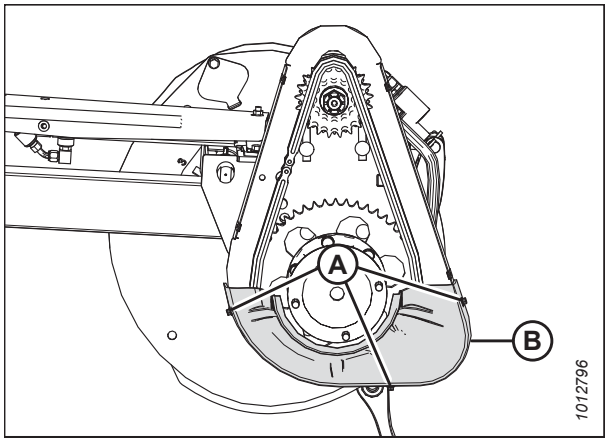


Figure 6.19: Drive Cover – Double Reel

4. Apply a liberal amount of grease to chain (A).

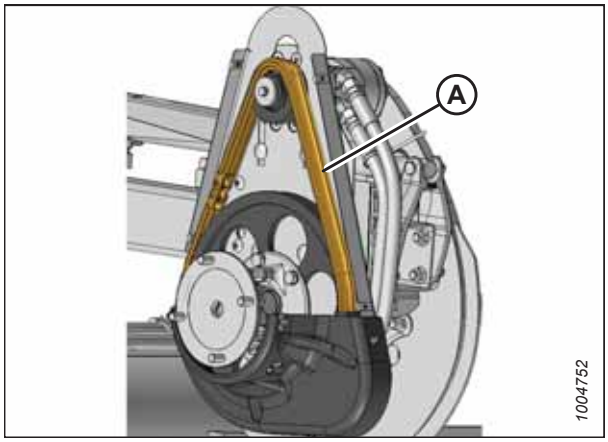


Figure 6.20: Drive Chain

5. Position lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

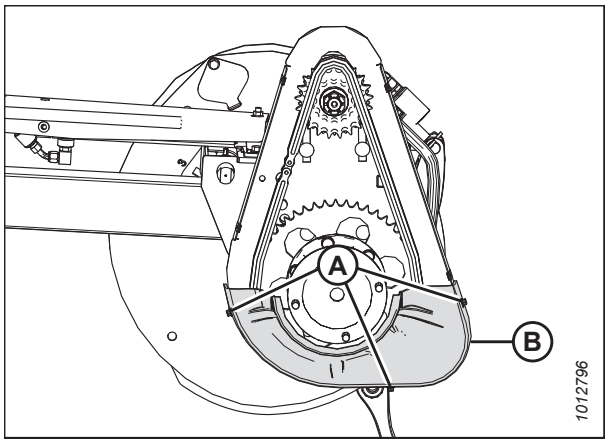


Figure 6.21: Drive Cover – Double Reel

6. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure with six bolts (A).

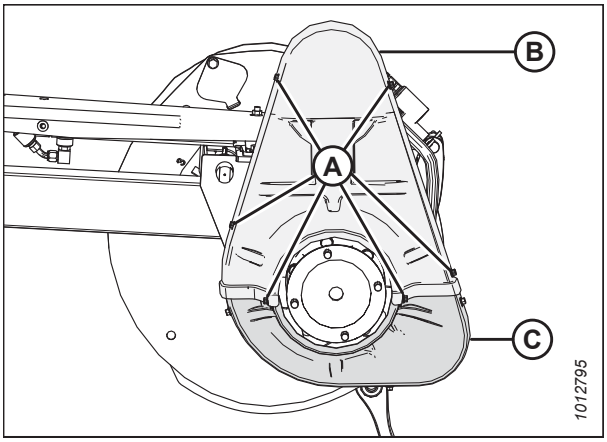


Figure 6.22: Drive Cover – Double Reel

Lubricating Auger Drive Chain

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 leaving the operator's seat for any reason.

Lubricate the auger drive chain every 100 hours. Lubrication can be done with the adapter attached to the combine, but it is easier with the adapter 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 six bolts (A) securing the upper half of cover (C).
2. Loosen two bolts (B) at the rear of the cover.
3. Rotate the upper half (C) forward to remove.

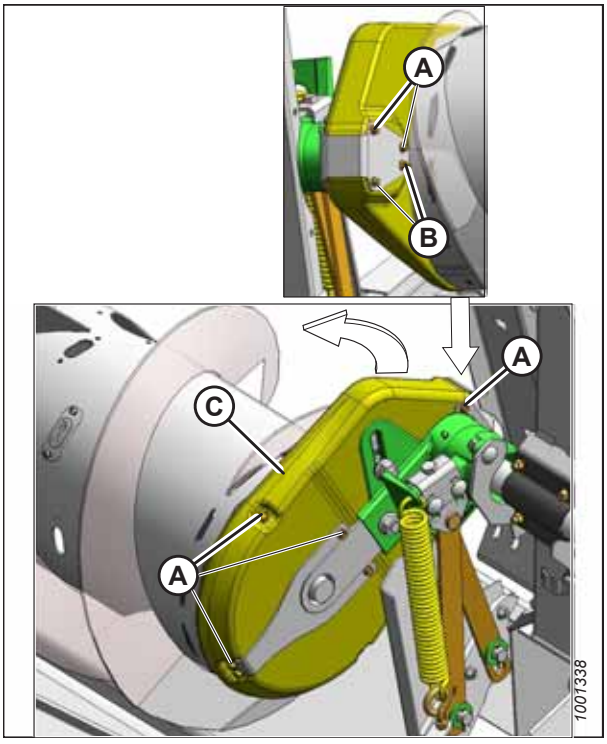


Figure 6.23: Auger Drive

4. Apply a liberal amount of grease to the chain (A), drive sprocket (B), and idler sprocket (C).

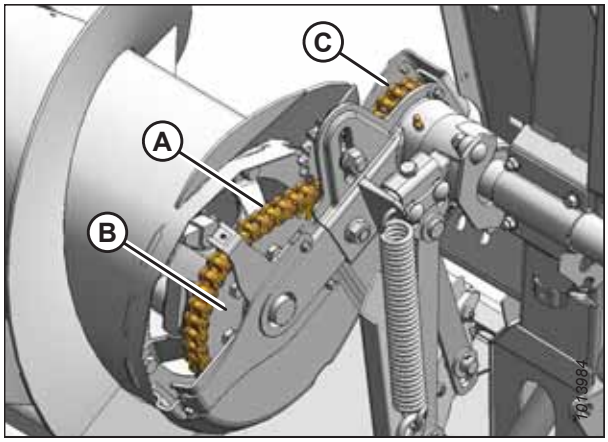


Figure 6.24: Auger Drive Chain

5. Reinstall cover (C) by positioning the inboard lip into the auger tube and then rotating the cover back until it engages with the rear support.
6. Reinstall and tighten bolts (A) and (B).

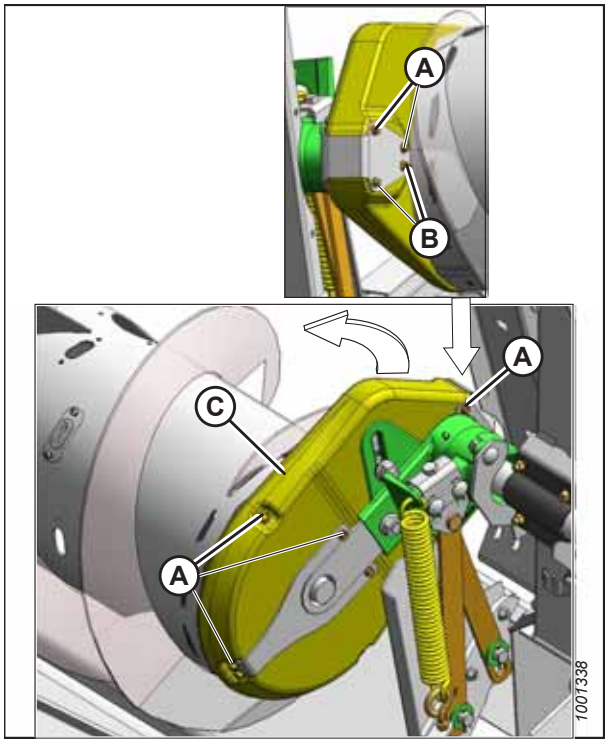


Figure 6.25: Auger Drive

Checking Oil Level in Header Drive Gearbox

Check header drive gearbox oil level every 100 hours.

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 leaving the operator's seat for any reason.

1. Lower the cutterbar to the ground and ensure the gearbox is in the working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) and ensure that the oil level is up to the bottom of the hole.
4. If the oil level is correct, replace oil level plug (A).
5. If the oil level is low, add oil. For instructions, refer to *Adding Oil to Header Drive Gearbox, page 365*.

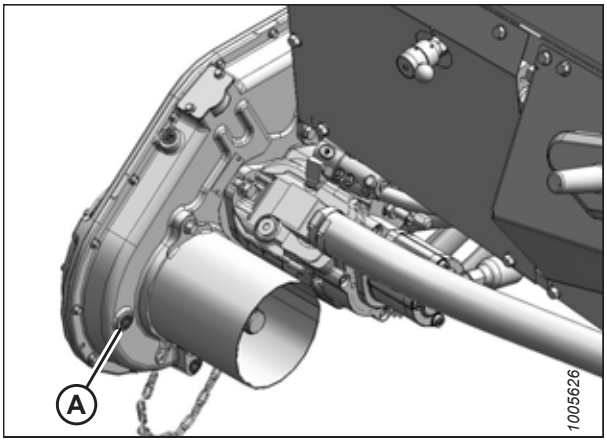


Figure 6.26: Header Drive Gearbox

Adding Oil to Header Drive Gearbox

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 leaving the 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 engine, and remove the key from the ignition.
3. Remove oil level plug (A) and filler plug (B).
4. Add SAE 85W-140 (API service class GL-5) oil into filler plug (B) until it runs out of oil level plug hole (A).
5. Replace oil level plug (A) and filler plug (B).

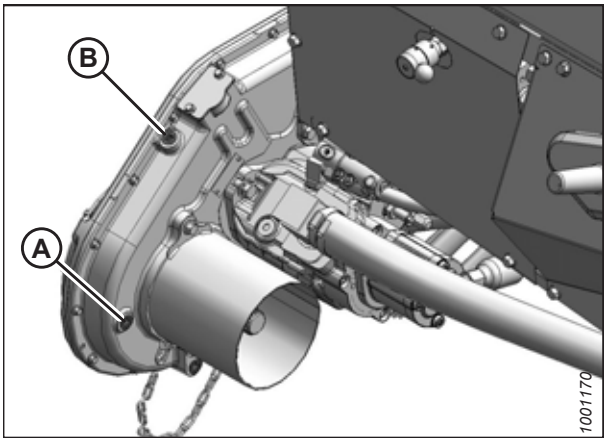


Figure 6.27: Header Drive Gearbox

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 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 leaving the operator's seat for any reason.

1. Raise or lower the header to position oil drain plug (A) at its lowest point.
2. Shut down the engine, and remove the key from the ignition.
3. Place a suitably sized container (approximately 4 liters [1 US gallon]) underneath the gearbox drain to collect the oil.
4. Remove oil drain plug (A) and filler plug (C), and allow the oil to drain.
5. Replace oil drain plug (A) and remove oil level plug (B).
6. Add SAE 85W-140 (API service class GL-5) oil into filler plug (C) until it runs out of oil level hole (B).

   NOTE:

   The header drive gearbox holds approximately 2.5 liters (5 US pints) of oil.

7. Replace oil level plug (B) and filler plug (C).

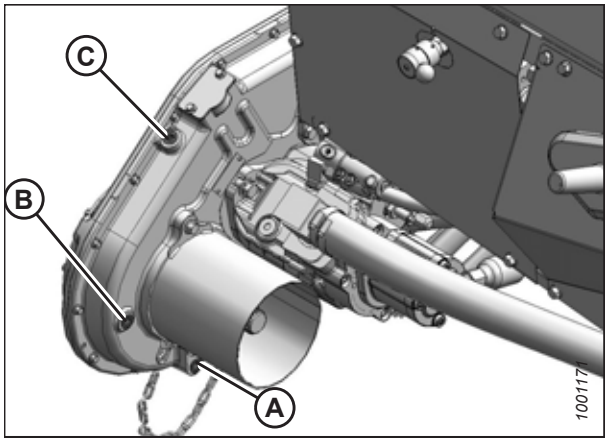


Figure 6.28: Header Drive Gearbox

6.4 Hydraulics

The CA25 Combine Adapter's hydraulic system drives the adapter feed draper, side drapers, and knife drives. The combine's hydraulic system drives the reel hydraulics.

The adapter frame acts as an oil reservoir. Refer to the inside back cover for oil requirements.

6.4.1 Checking Oil Level in Hydraulic Reservoir

Check hydraulic oil level in reservoir every 25 hours.

1. Check oil level using lower sight (A) and upper sight (B) with cutterbar just touching the ground.

   NOTE:

   Check level when oil is cold and with center-link retracted.

2. Ensure oil is at appropriate level for 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 oil level when ambient temperatures are above 35°C (95°F) to prevent overflow at breather when normal operating temperatures are reached.

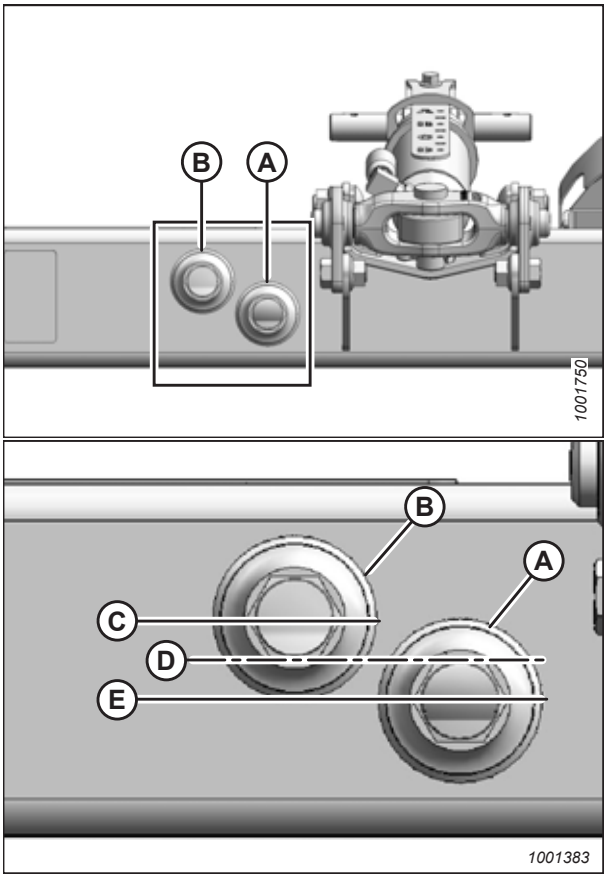


Figure 6.29: Oil Level Sight Glass

6.4.2 Adding Oil to Hydraulic Reservoir

Follow this procedure to top up the oil in the hydraulic reservoir. To change the hydraulic oil, refer to *6.4.3 Changing Oil in Hydraulic Reservoir, page 368*.

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 leaving the 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 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 the inside back cover for specifications.

   IMPORTANT:

   Warm oil will flow through the screen better than cold oil. Do **NOT** remove the screen.
5. Reinstall filler cap (A).

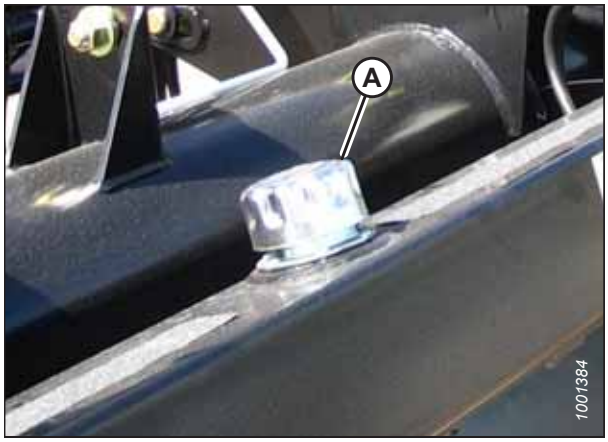


Figure 6.30: Oil Reservoir Filler Cap

6.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

DANGER

To 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 leaving the operator's seat for any reason.

1. Detach the header from the adapter. For instructions, refer to *5 Header Attachment/Detachment, page 289*.
2. Raise the feeder house and engage the lift cylinder safety props.
3. Place a suitably sized container (at least 30 liters [8 US gallons]) under each of two oil drain plugs (A) located at the base on each side of the frame.
4. Remove oil drain plugs (A) with a 1-1/2 in. hex socket and allow the oil to drain.
5. Replace oil drain plugs (A) when reservoir is empty.
6. Change the oil filter, if necessary. For instructions, refer to *6.4.4 Changing Oil Filter, page 369*.
7. Add approximately 60 liters (16 US gallons) of oil to the reservoir. For instructions, refer to *6.4.2 Adding Oil to Hydraulic Reservoir, page 367*.

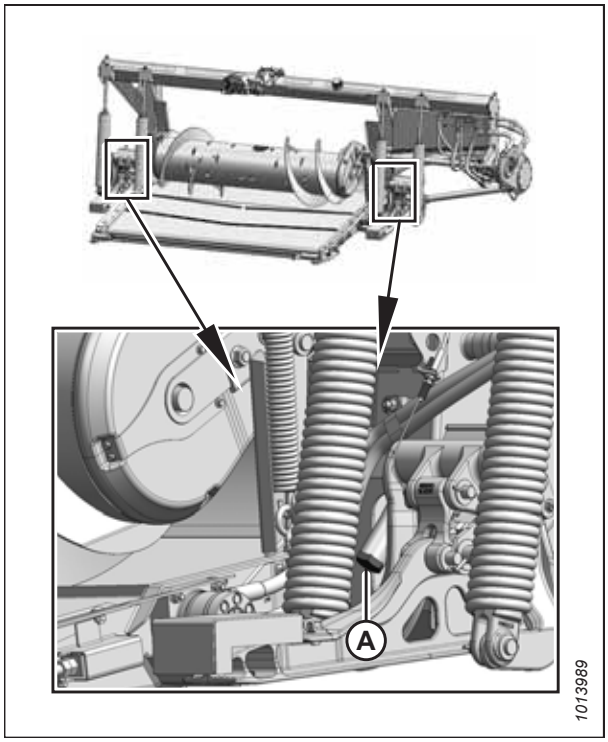


Figure 6.31: Reservoir Drain

6.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

Obtain filter kit MD #320360[41] The kit includes one filter element, one O-ring, and one square-cut gasket. The O-ring should be used ONLY on CA25 Combine Adapters with Bosch hydraulic manifolds. The square-cut gasket should be used for all other applications.

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 leaving the operator's seat for any reason.

1. Remove five screws (A) and cover (B).

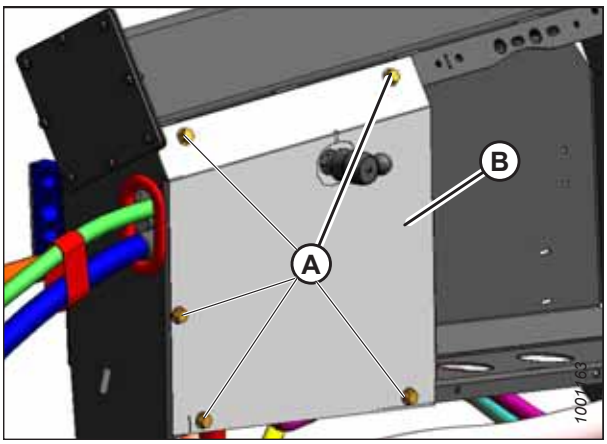


Figure 6.32: Adapter Hydraulics Cover

2. Clean around the mating surfaces of filter (B) and manifold (A).
3. Remove spin-off filter (B) and clean the exposed filter port in manifold (A).

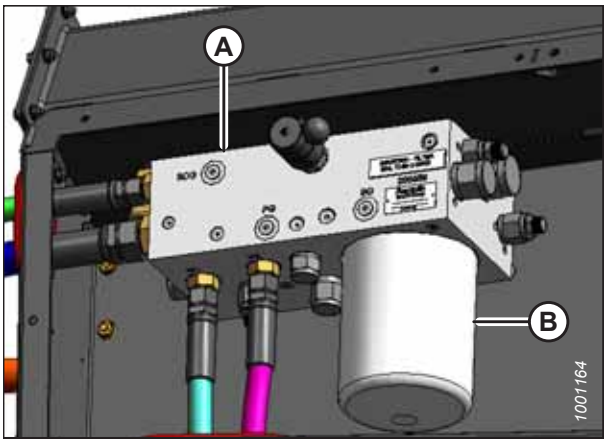


Figure 6.33: Hydraulic Manifold and Filter

41. Part number MD #202986 is printed on the filter, but service the filter using kit MD #320360. The kit includes installation instructions.

4. ***Parker manifold only:*** Two jam nuts (1 1/2-16 UN-2A) are needed to properly torque adapter fitting (A) (MD #245160) to the manifold. To install adapter fitting, follow these steps:

   a. Thread adapter fitting (A) (MD# 245160) into manifold (B).

   b. Thread one of the jam nuts approximately 13 mm (0.5 in.) onto the adapter fitting.

   c. Tighten the second jam nut against the first jam nut, and torque the jam nut to 81–88 Nm (60–65 lbf·ft).

   d. Remove the second jam nut, followed by the first jam nut. Do **NOT** remove the jam nuts simultaneously.

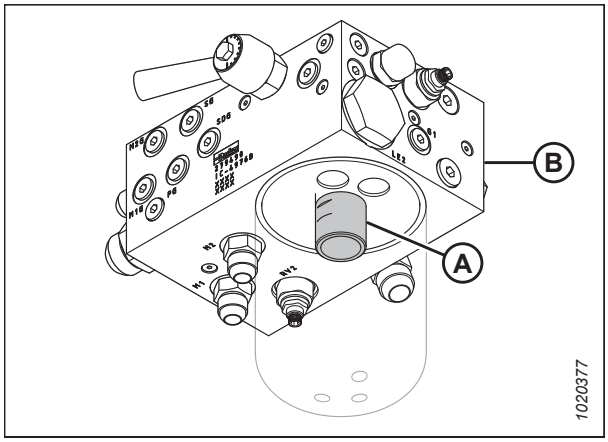


Figure 6.34: Parker Manifold

5. Install new filter (B) into manifold (A) until the seal 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.

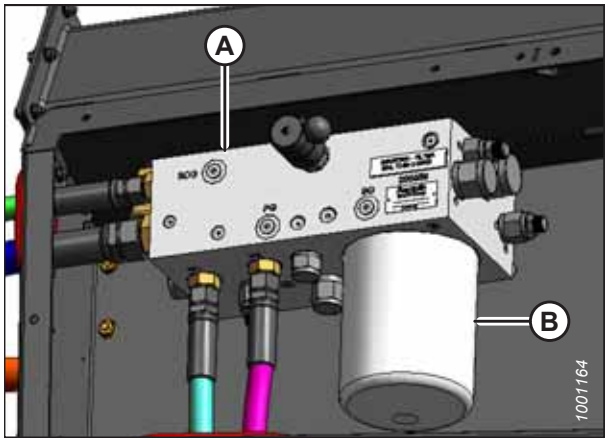


Figure 6.35: Adapter Hydraulics

6. Reinstall cover (B) with five screws (A).

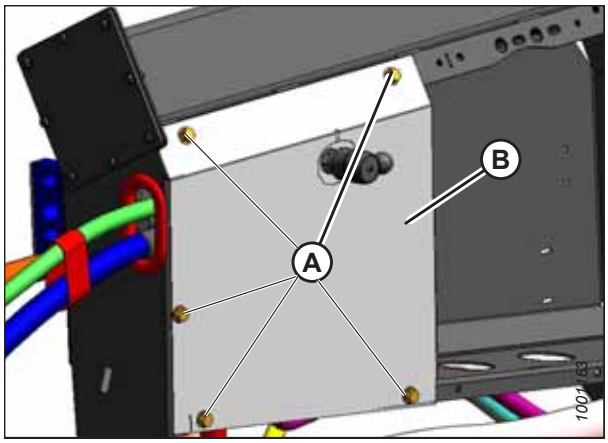


Figure 6.36: Adapter Hydraulics Cover

6.5 Electrical System

The electrical wires and connectors that connect the header lights should be secured to avoid damage.

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

6.5.1 Replacing Light Bulbs

If a light bulb on the header is burnt out or damaged, it will need to be replaced.

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. Shut down the engine, and remove the key from the ignition.
2. Use a Phillips screwdriver to remove screws (A) from the fixture and remove the plastic lens.
3. Remove two screws (A) from lens and remove lens.
4. Push and twist light bulb to remove from socket.
5. Install new bulb in socket ensuring that bulb base is properly engaged in socket.
   - Use Bulb Trade #1157 for red tail lights (Slow Speed Transport option).
   - Use Bulb Trade #1156 for amber lights
6. Reinstall lens with screws (A).

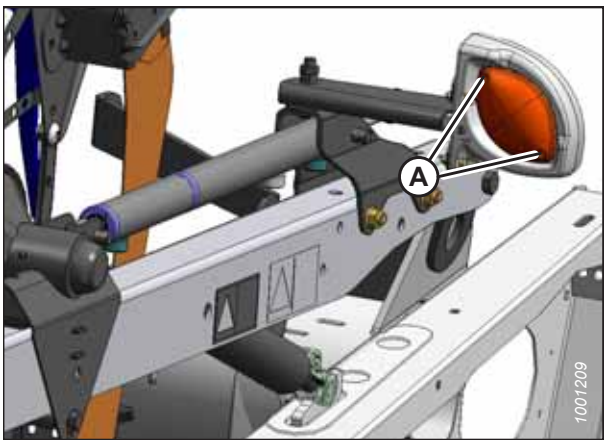


Figure 6.37: Left Transport Light

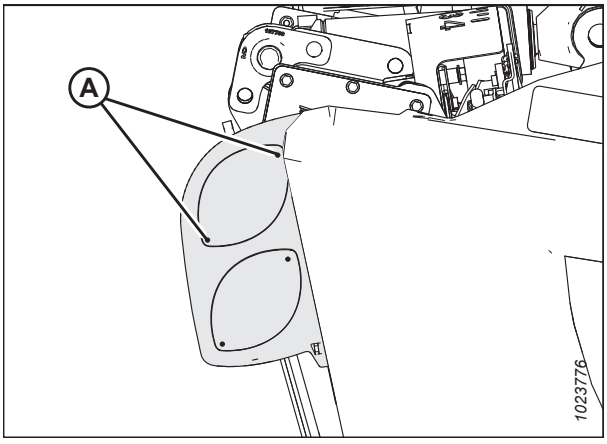


Figure 6.38: Optional Slow Speed Transport Red and Amber Lights

6.6 Header Drive

The header drive consists of a driveline from the combine to gearbox that drives the feed auger and a hydraulic pump. The pump provides hydraulic power to the drapers, knives, and optional equipment.

6.6.1 Removing Driveline

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 leaving the 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 two nuts (A) securing shield (B) to the gearbox.
3. Slide shield (B) over the driveline shield to expose the quick disconnect on the gearbox.

   NOTE:

   Do **NOT** disconnect tether (C), if equipped.
4. Pull the quick disconnect collar to release the driveline yoke, and pull the driveline off the shaft.
5. Slide shield (B) off the driveline.

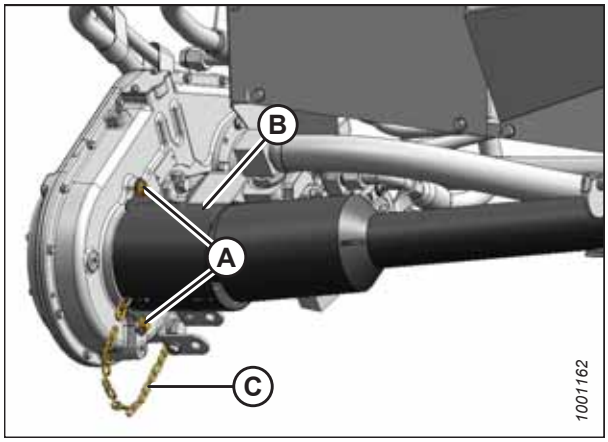


Figure 6.39: Adapter End of Driveline

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

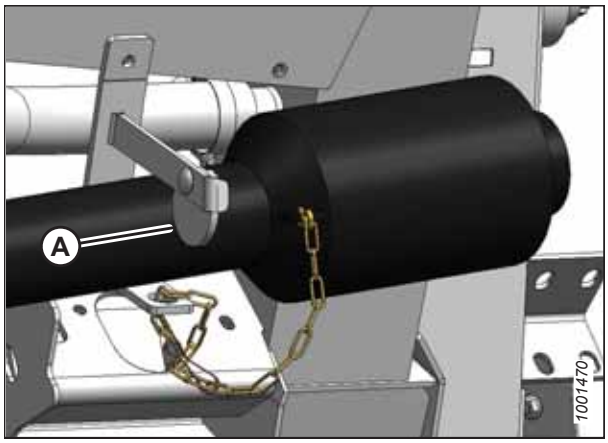


Figure 6.40: Combine End of Driveline

6.6.2 Installing Driveline

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 leaving the 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 hook (A) so disc (B) drops and secures the driveline.

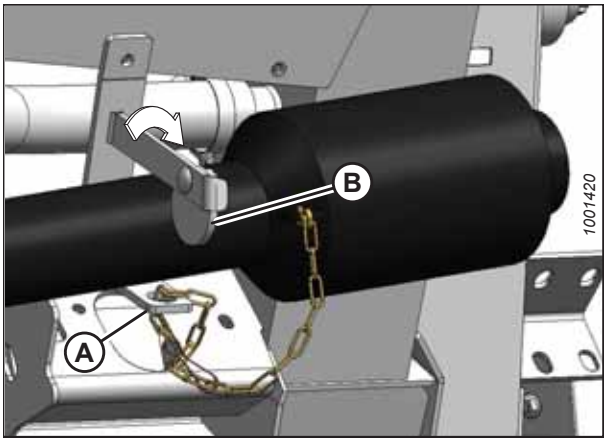


Figure 6.41: Combine End of Driveline

2. Slide 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 shield (B) on the gearbox and secure with nuts (A).
5. Connect the opposite end to the combine if necessary.

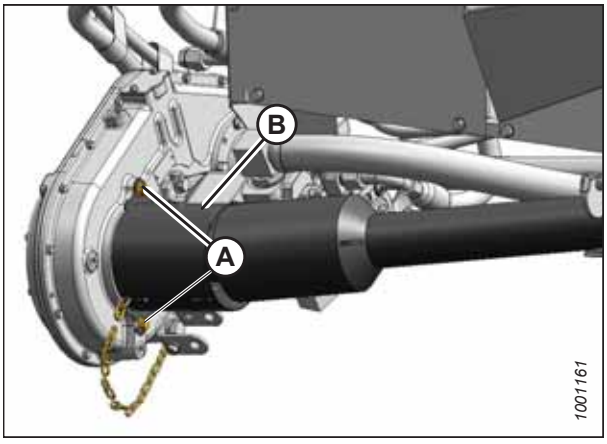


Figure 6.42: Adapter End of Driveline

6.6.3 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 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 leaving the 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 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. For instructions, refer to *5 Header Attachment/Detachment, page 289*.

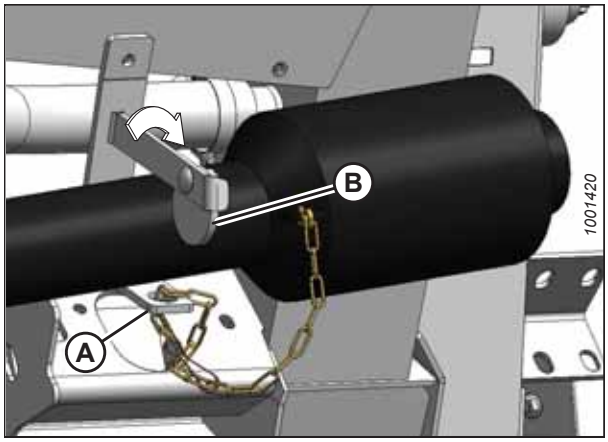


Figure 6.43: Combine End of Driveline

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

Figure 6.44: Separated Driveline

4. Use a slotted screwdriver to release grease zerk/lock (A).

Figure 6.45: Driveline Guard

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

6. Pull the guard off the driveline.

Figure 6.46: Driveline Guard

6.6.4 Installing Driveline Guard

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

Figure 6.47: Driveline Guard

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

Figure 6.48: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise and lock ring in guard.

Figure 6.49: Driveline Guard

4. Push grease zerk (A) back into the guard.

Figure 6.50: Driveline Guard

5. Assemble the driveline.

   NOTE:

   The splines are keyed to align the universals. Align weld (A) with missing spline (B) when assembling.

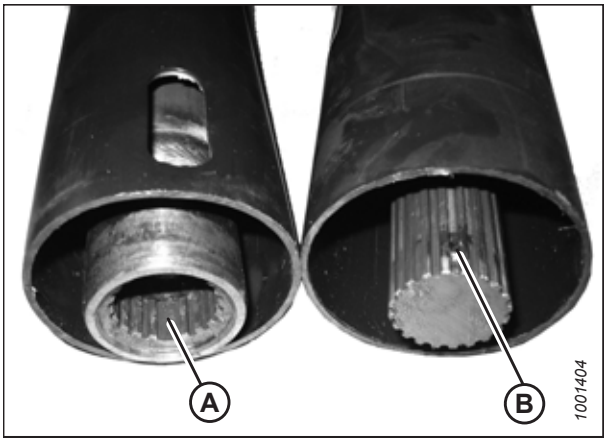


Figure 6.51: Driveline

6. Slide the driveline into hook (A) so disc (B) drops and secures the driveline (or connect to the combine).

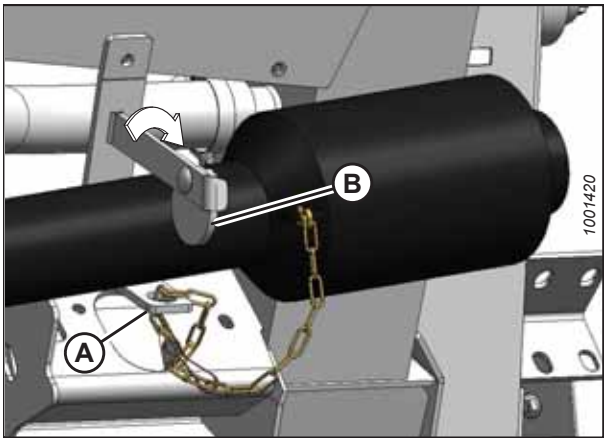


Figure 6.52: Combine End of Driveline

6.6.5 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 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 leaving the 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 chain adjusting cover (A). Ensure there is no damage to gasket (B).
4. Remove retainer plate (C).
5. Tighten bolt (D) to 6.8 Nm (60 lbf·in).
   - For CNH / John Deere gearbox (MD #187475): back off bolt (D) 1 2/3 turns after tensioning.
   - For CLAAS/AGCO gearbox (MD #187502): back off bolt (D) 1/2 turn after tensioning.
6. Reinstall retainer plate (C).
7. Reinstall chain adjusting cover (A) and gasket (B). Torque hardware to 9.5 Nm (84 lbf·in).

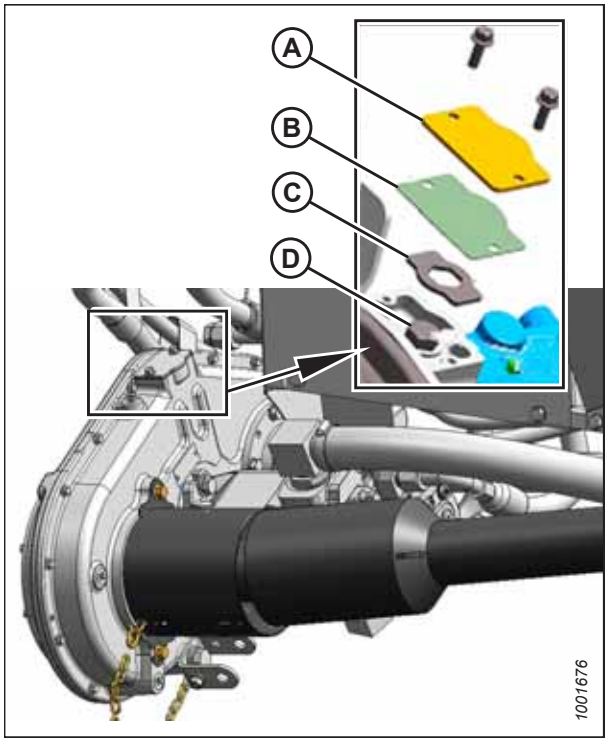


Figure 6.53: Chain Tensioner

6.7 Auger

The Combine Adapter auger feeds the cut crop from the draper decks into the combine feeder house.

6.7.1 Adjusting Auger to Pan Clearance

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 leaving the operator's seat for any reason.

IMPORTANT:

Maintain an appropriate distance between auger and auger pan. Too little clearance may cause tines or flighting to contact and damage feed draper or pan when operating header at certain angles. Look for evidence of contact when greasing adapter.

1. Extend center-link to steepest header angle (setting D), and position header 150–254 mm (6–10 in.) off the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Lock header wings. Refer to *Locking/Unlocking Header Wings, page 66*.

   NOTE:

   This applies only to the FlexDraper® Header.

4. Ensure the float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

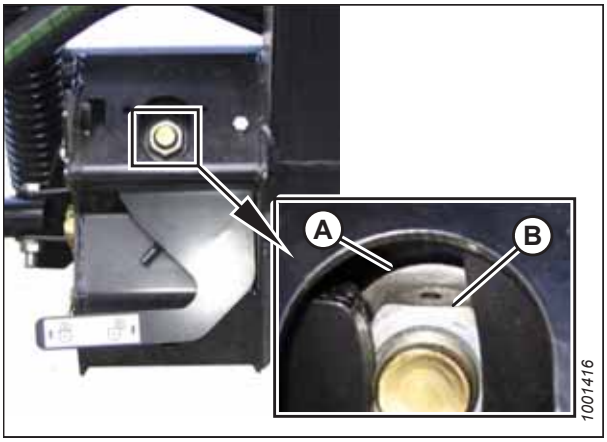


Figure 6.54: Float Lock

5. Ensure lower end of linkage bars (A) are against studs (B) at both ends of the auger.

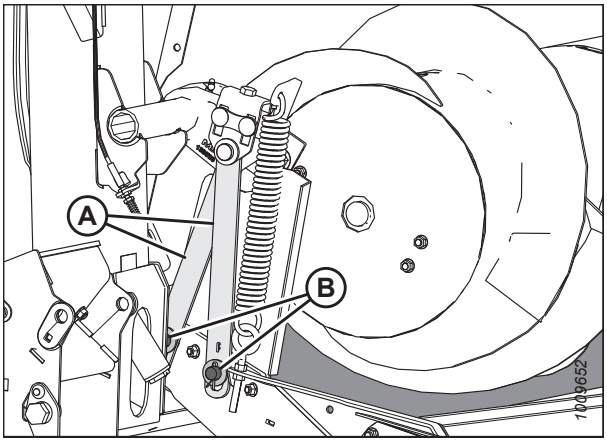


Figure 6.55: Linkage Bars

6. Loosen two nuts (B).
7. Use adjuster bolt (A) to set clearance (C) to 5–10 mm (3/16–3/8 in.). Turn adjuster bolt (A) clockwise to increase clearance and counterclockwise to decrease clearance.

   NOTE:

   The clearance increases 25–40 mm (1 – 1 1/2 in.) when center-link is fully retracted.
8. Repeat Steps *6, page 380* and *7, page 380* on opposite end of the auger.
9. Torque nuts (B) to 106–118 Nm (79–87 lbf·ft).

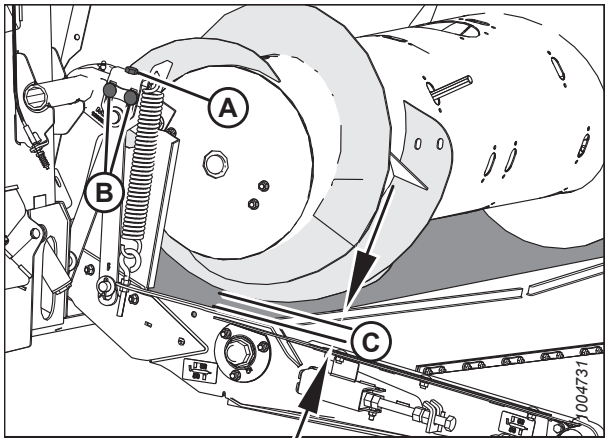


Figure 6.56: Auger Clearance

6.7.2 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 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 leaving the operator's seat for any reason.

1. Lower the header to the ground.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Inspect the auger drive chain through adjustment slot (A).

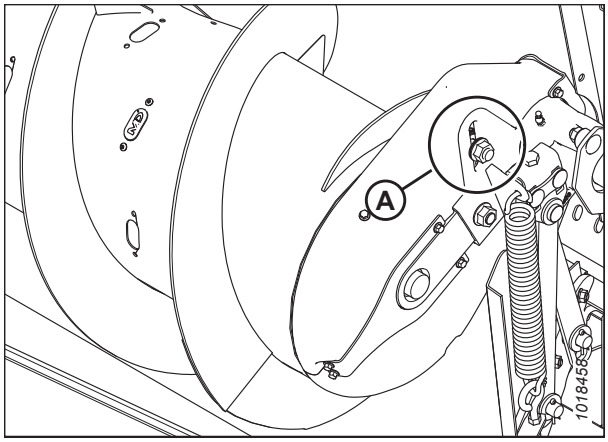


Figure 6.57: Auger Drive Chain Inspection Location

6. Verify that auger drive sprocket (A) is engaging chain (B) completely through adjustment slot (C).

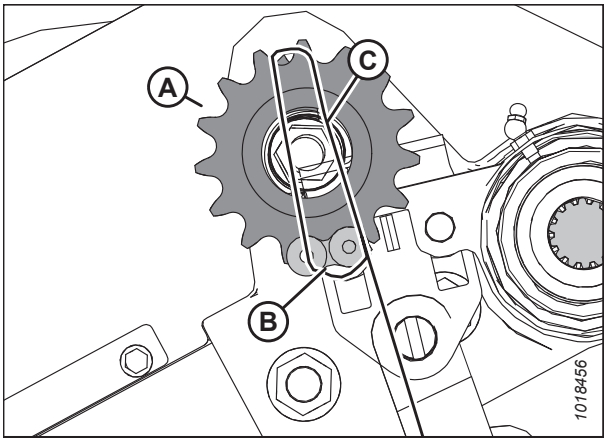


Figure 6.58: Auger Drive Sprocket (Correct)

NOTE:

If auger drive sprocket (A) is not properly engaged, you will need to adjust the chain tension. For instructions, refer to *6.7.3 Adjusting Auger Drive Chain Tension, page 382*.

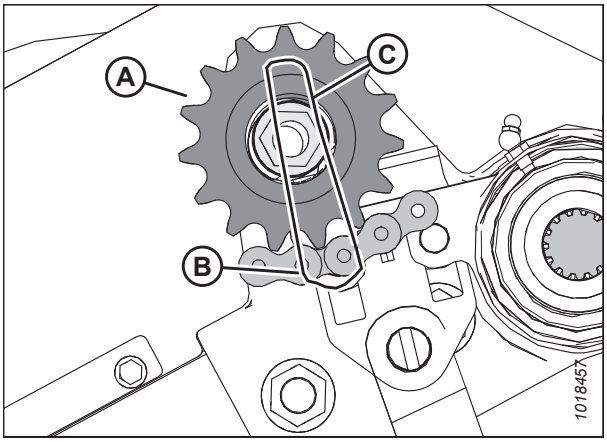


Figure 6.59: Auger Drive Sprocket (Incorrect)

7. Rotate auger (A) by hand, in the reverse direction, until it cannot turn anymore.
8. Mark line (B) across drum and bottom cover (C).

   NOTE:

   The line gets marked on the bottom cover because the top cover needs to be removed If chain tension adjustment is required.

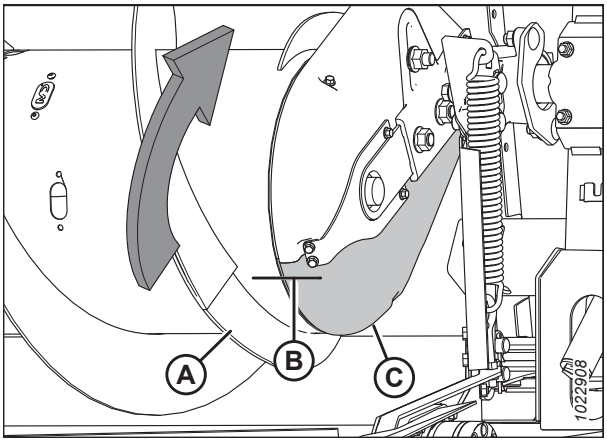


Figure 6.60: Auger Drive

9. Rotate auger (A) by hand, in forward direction, until it cannot turn anymore.

10. Measure the distance between two lines (B).

    For a new chain:
    - If difference (B) is 1–4 mm (0.04–0.16 in.), no adjustment is required.
    - If difference (B) is greater than 4 mm (0.16 in.), the auger drive chain tension needs adjusting. For instructions, refer to *6.7.3 Adjusting Auger Drive Chain Tension, page 382*.

    For a used chain:
    - If difference (B) is 3–8 mm (0.12–0.31 in.), no adjustment is required.
    - If difference (B) is greater than 8 mm (0.31 in.), the auger drive chain tension needs adjusting. For instructions, refer to *6.7.3 Adjusting Auger Drive Chain Tension, page 382*.

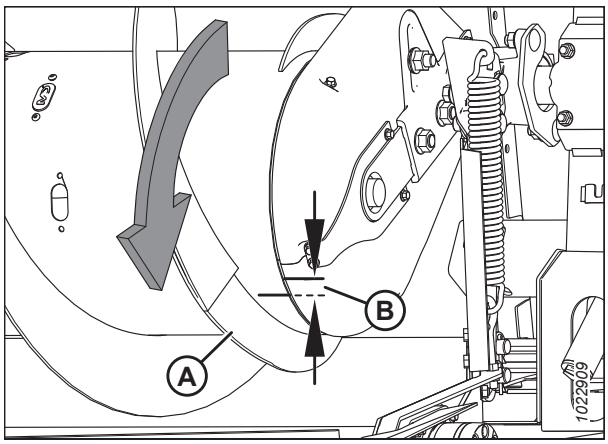


Figure 6.61: Auger Drive

6.7.3 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 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 leaving the operator's seat for any reason.

NOTE:

Check the auger tension before making any adjustments. For instructions, refer to *6.7.2 Checking Auger Drive Chain Tension, page 380*.

1. Detach the header from the combine. For instructions, refer to *5 Header Attachment/Detachment, page 289*.

2. Shut down the engine, and remove the key from the ignition.

3. Remove four bolts (A) securing the top cover to the left side of the auger chain case.
4. Remove bolts (B) on cover retainer plate (D).
5. Remove top cover (C).

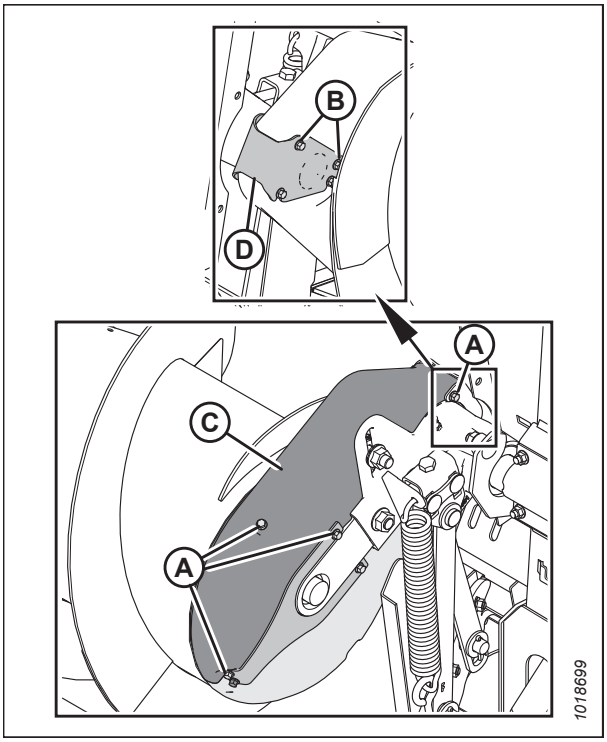


Figure 6.62: Auger Drive

6. Loosen bolt (C) securing idler sprocket (A).
7. Rotate the auger in reverse to take up the slack in lower strand of chain (B).
8. Push down idler sprocket (A) to eliminate the remaining slack in lower strands (B).
9. Rotate the auger back and forth to check the slack, and repeat Step *8, page 383* if necessary. A slight amount of slack is acceptable.

   NOTE:

   Do **NOT** use excessive force on idler to tighten chain.
10. Tighten idler bolt (C) and torque to 290 Nm (215 lbf·ft).

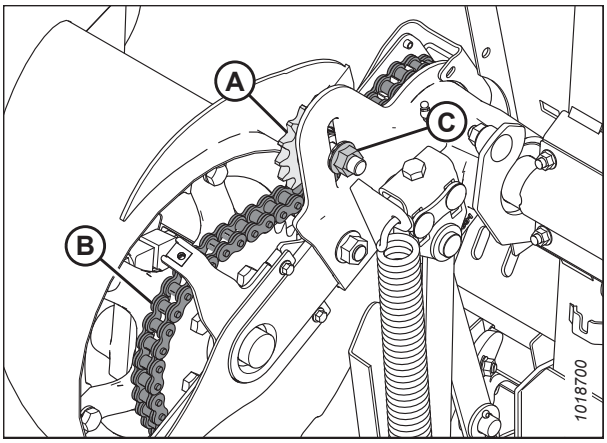


Figure 6.63: Auger Drive

11. Rotate 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.

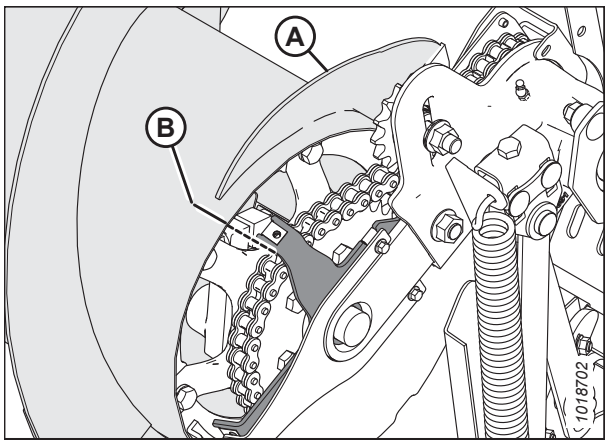


Figure 6.64: Auger Drive

13. Rotate auger (A) by hand, in forward direction, until it cannot turn anymore.
14. Measure the distance between 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 *6, page 383* to *10, page 383*.

    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 *6, page 383* to *10, page 383*.
15. Check the distance between the lines (B) again.

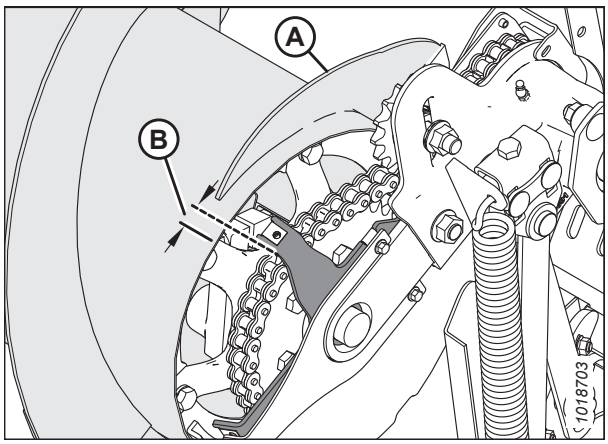


Figure 6.65: Auger Drive

16. Install top cover (C).
17. Install four bolts (A).
18. Install bolts (B) on cover retainer plate (D).

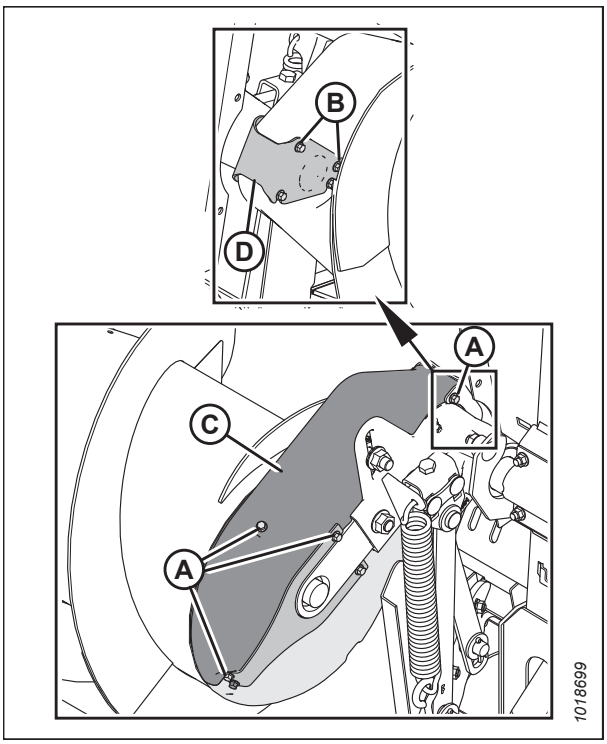


Figure 6.66: Auger Drive

6.7.4 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 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 leaving the operator's seat for any reason.

1. Detach the header from the combine. For instructions, refer to *5 Header Attachment/Detachment, page 289*.
2. Shut down the engine, and remove the key from the ignition.

3. Remove four bolts (A) securing the top cover to the left side of the auger chain case.
4. Loosen bolts (B) on cover retainer plate (F).
5. Remove top cover (C) complete with cover retainer plate (F).
6. Remove three bolts (D) securing the bottom cover.
7. Remove drive cover retainer (G).
8. Remove bottom cover (E).

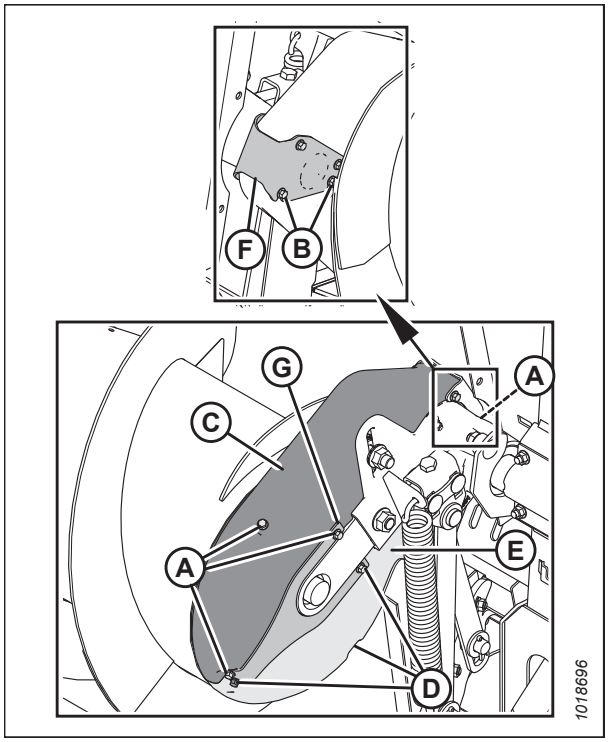


Figure 6.67: Auger Drive

9. Loosen idler sprocket bolt (A), and raise sprocket (B) to the highest position to release tension on the chain. Tighten bolt (A) to hold the sprocket.
10. Remove washer and screw (C) that secure the drive sprocket to the shaft.

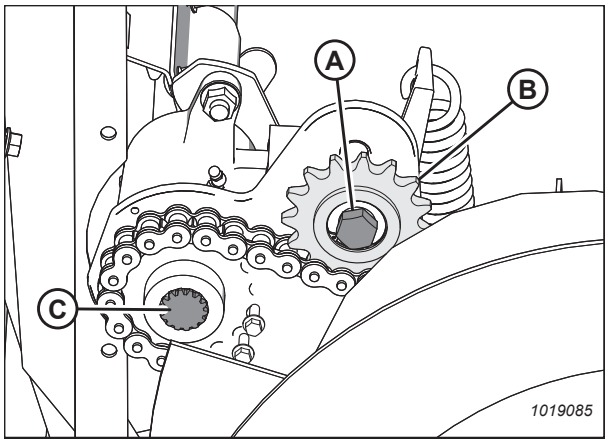


Figure 6.68: Auger Drive

11. Remove lower bolt (A) and loosen top bolt (B). Swing C-clamp (C) up, and then slide the drive assembly to the right to allow the drive sprocket to fall off the shaft.

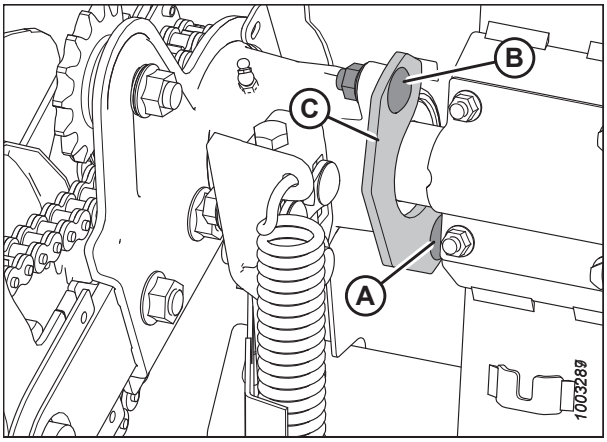


Figure 6.69: Auger Support

12. Use a pry bar (A) to slide the drum assembly to the right side of the adapter.

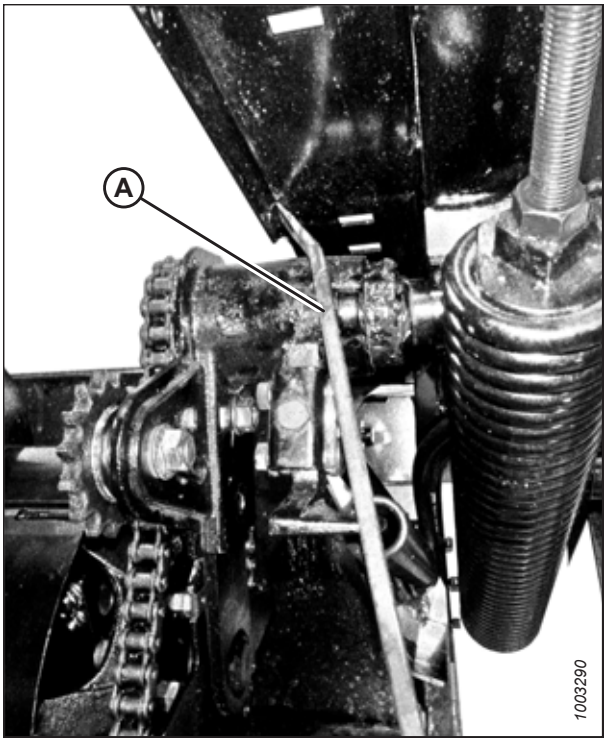


Figure 6.70: Auger Drive

NOTE:

Once the drum starts sliding to the right, the drive sprocket will fall off.

Figure 6.71: Auger Drive

13. 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.

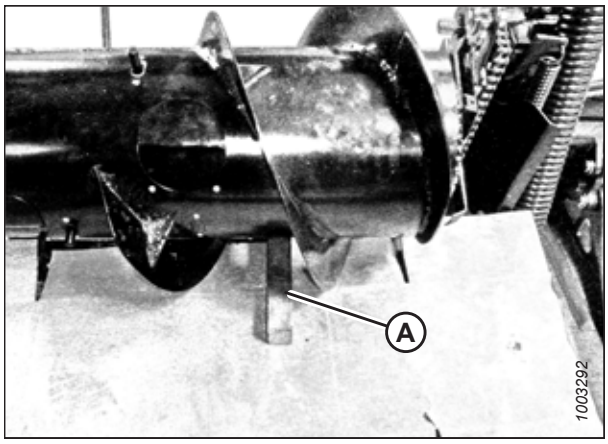


Figure 6.72: Auger

14. Remove 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.

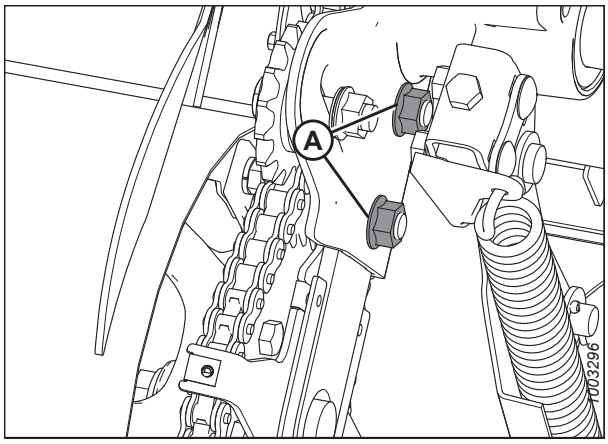


Figure 6.73: Auger Support

15. Slide left housing (A) back into position so endless chain (B) can be removed.

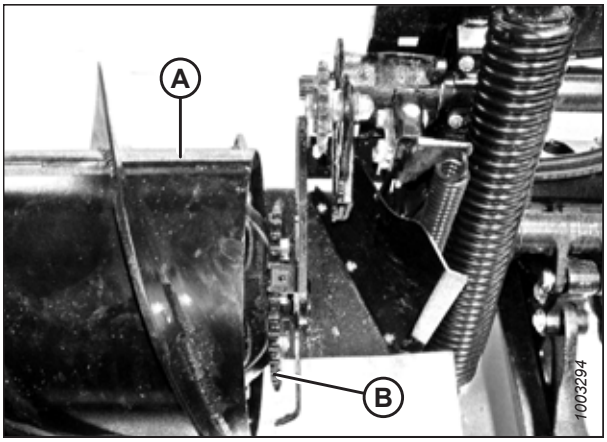


Figure 6.74: Auger Drive

6.7.5 Installing Auger Drive Chain

1. Place the drive chain over the sprocket on the left side of the adapter. Slide the left housing towards the drum and mount, leaving the driveshaft exposed 13 mm (1/2 in.). Bolt the assemblies 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.

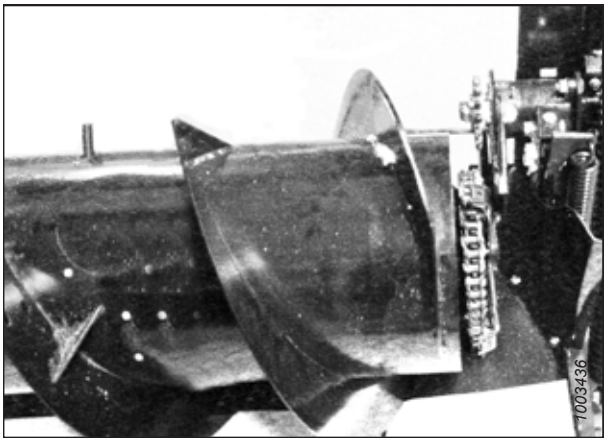


Figure 6.75: Auger Drive

4. Align the sprocket on the shaft, and put drive sprocket (A) into chain (B).

   NOTE:

   The shoulder of drive sprocket (A) faces the auger.

5. Slide the entire drum assembly back into place, and bolt C-clamp (C) over the housing.
6. Apply medium-strength threadlocker (Loctite® 242 or equivalent) to threads of the screw.

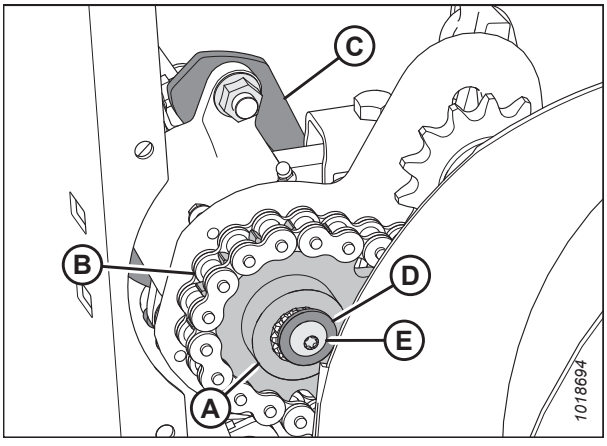


Figure 6.76: Auger Drive

7. Loosen nut (A) securing idler sprocket (B).
8. Rotate the auger in reverse to take up the slack in the lower strand of chain (C).
9. Push down 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 *9, page 390* if necessary. A slight amount of slack is acceptable.

    NOTE:

    Do **NOT** use excessive force on idler to tighten chain.
11. Tighten idler nut (A) and torque to 290 Nm (215 lbf·ft).
12. Rotate auger (A) by hand, in reverse, until it cannot turn anymore.
13. Mark line (B) on the drum that lines up with one of the cover supports.

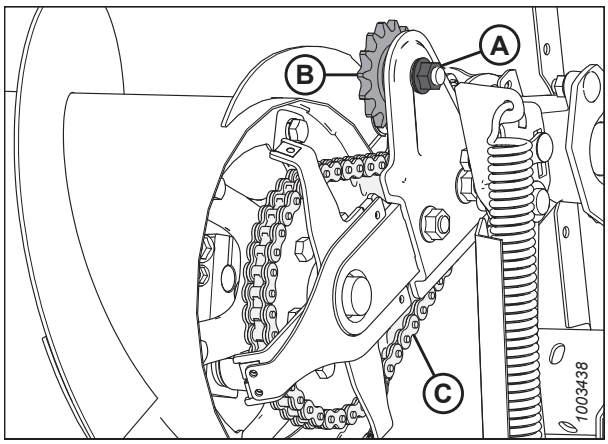


Figure 6.77: Auger Drive

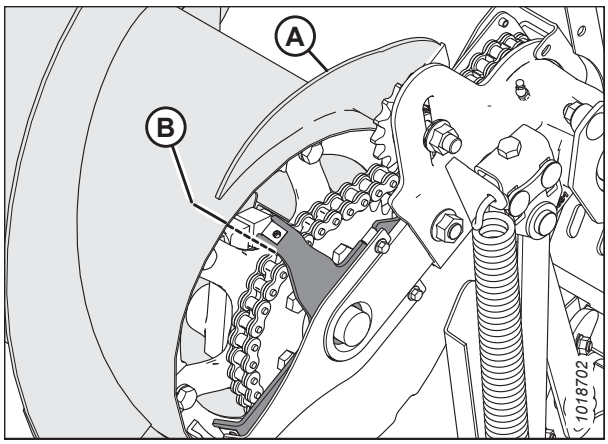


Figure 6.78: Auger Drive

14. Rotate auger (A) by hand, in forward direction, until it cannot turn anymore.
15. Measure the distance between two lines (B).

    For a new chain:
    - If difference (B) is 1–4 mm (0.04–0.16 in.), no more adjustment is required.
    - If difference (B) is greater than 4 mm (0.16 in.), repeat Steps *7, page 390* to *11, page 390*.

    For a used chain:
    - If difference (B) is 3–8 mm (0.12–0.31 in.), no more adjustment is required.
    - If difference (B) is greater than 8 mm (0.31 in.), repeat Steps *7, page 390* to *11, page 390*.
16. Check the distance between lines (B) again.
17. Coat chain with grease.

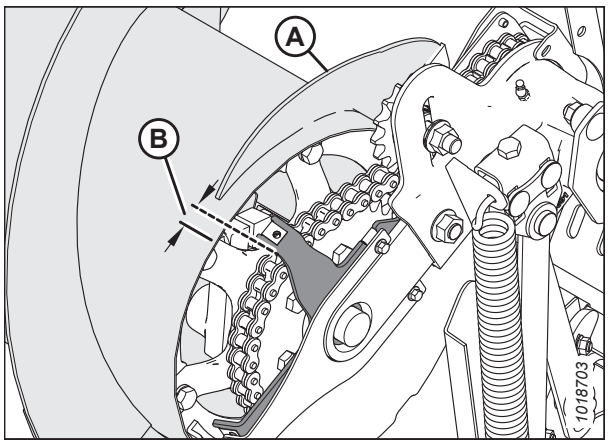


Figure 6.79: Auger Drive

18. Reinstall bottom cover (E) 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 top cover (C) and cover retainer plate (F).
21. Reinstall and tighten bolts (A) and (B).

    NOTE:

    The covers should be as close together as possible to prevent crop from entering the auger drive.

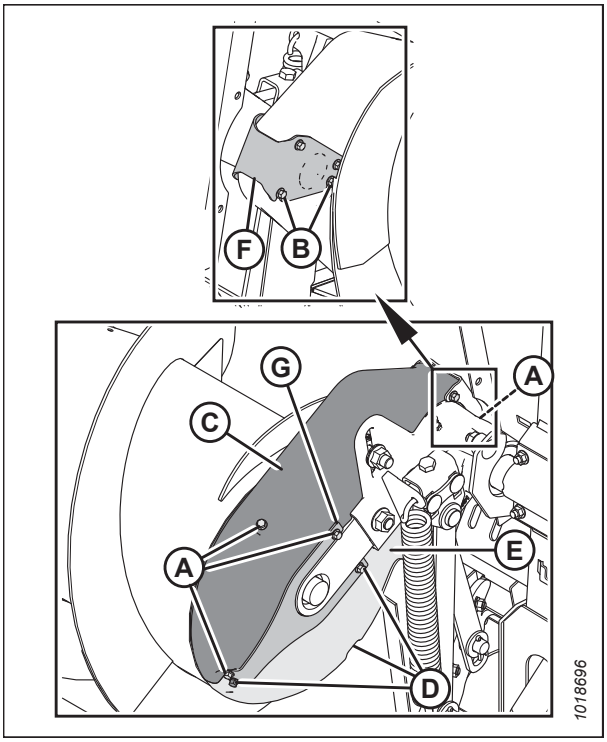


Figure 6.80: Auger Drive

6.7.6 Auger Tines

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

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

4. Remove screws (A) and remove the access cover (B) closest to the tine you are removing.

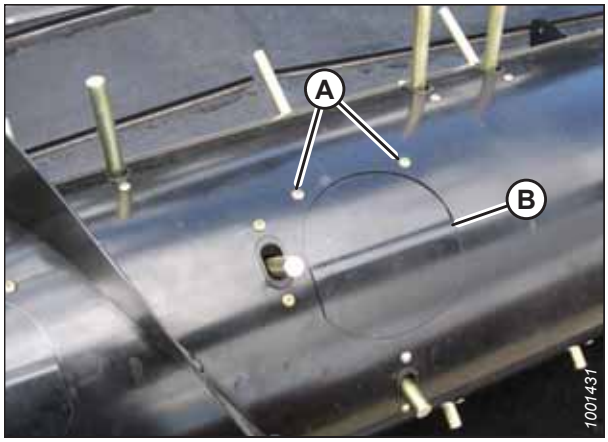


Figure 6.81: Auger

5. Remove hairpin (A), pull tine (B) out of bushing (C) from inside the auger, and remove the tine from the auger by pulling it out through plastic guide (D).

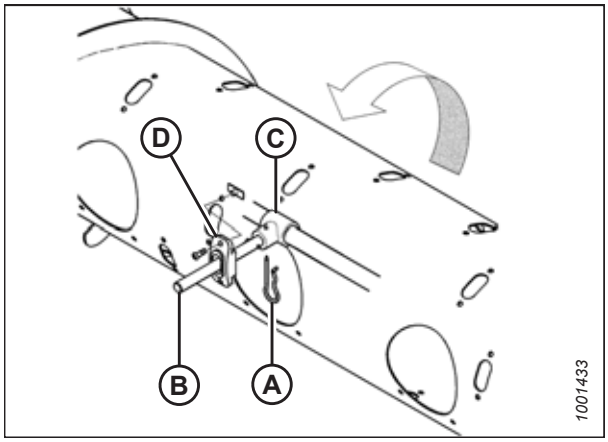


Figure 6.82: Auger

NOTE:

If replacing the #6 tine (A), it must be slipped off square drive tube (B). This particular tine cannot be removed for normal operation.

6. Proceed to Step *7, page 393* if not reinstalling the #6 tine (A); otherwise, refer to *Installing Feed Auger Tines, page 394*.

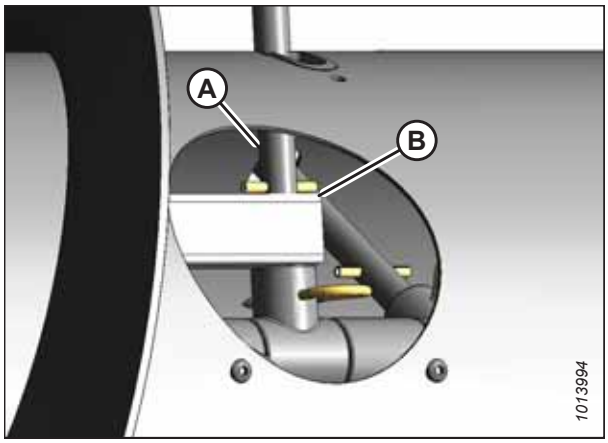


Figure 6.83: Inside Auger

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

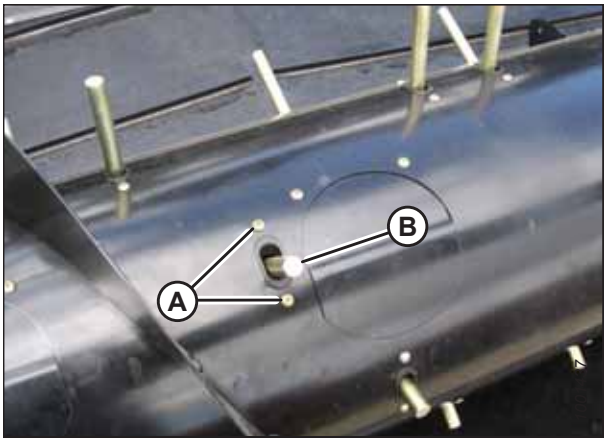


Figure 6.84: Auger

8. Position plug (A)[42] 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 Nm (75 lbf·in).

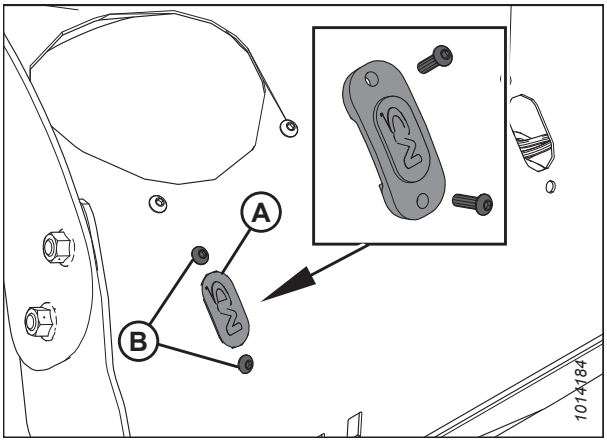


Figure 6.85: Plug

9. Reinstall access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf·in).

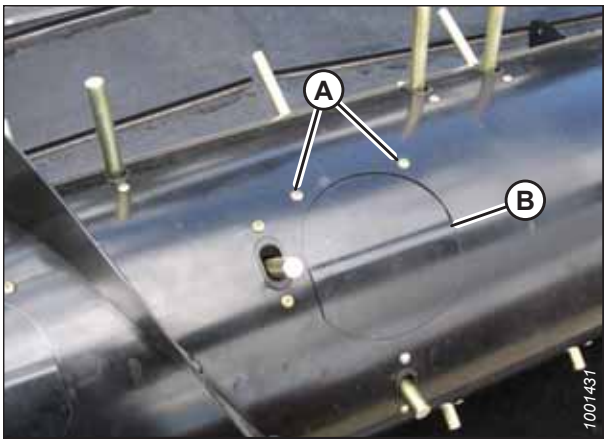


Figure 6.86: Auger

42. If more plugs are required order MD #187137.

Installing Feed Auger Tines

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the 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 access cover (B) (if not previously removed).

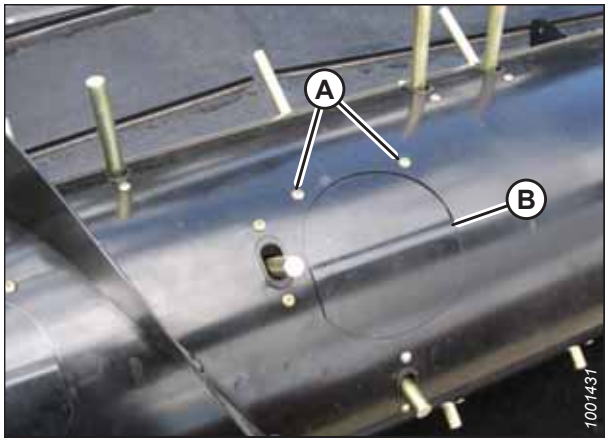


Figure 6.87: Auger

5. Insert tine (B) through plastic guide (D) from inside the auger.
6. Insert the tine into bushing (C) and secure with hairpin (A).

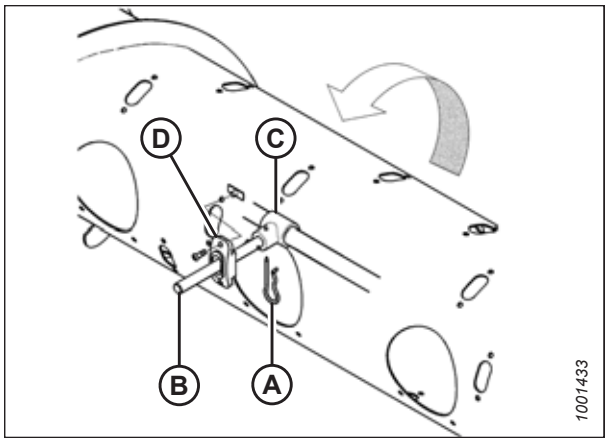


Figure 6.88: Tine

NOTE:

If installing the #6 tine (A), it must be inserted through square drive tube (B).

7. Secure the #6 tine (A) in bushing (C) with hairpin (D). Install the hairpin with the closed end leading with respect to auger forward rotation.

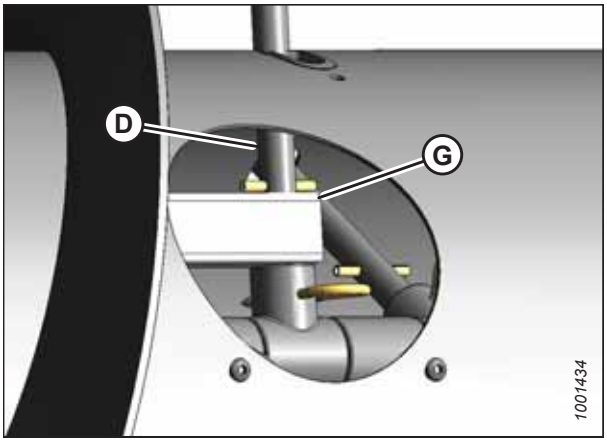


Figure 6.89: Tine

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

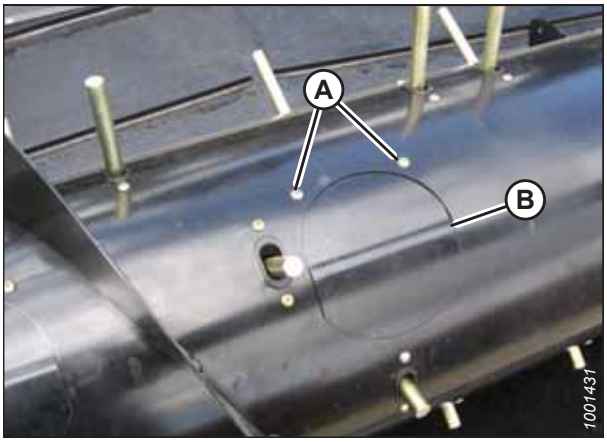


Figure 6.90: Auger

Replacing Feed Auger Tine Guides

1. Remove tine (B) and plastic guide (D). Refer to *Removing Feed Auger Tines, page 391*.

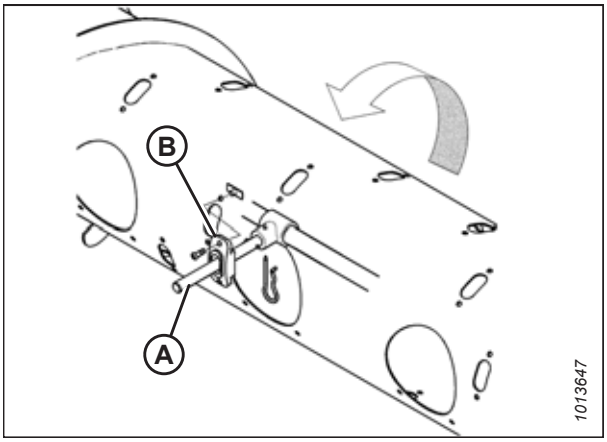


Figure 6.91: Auger

2. Position plastic guide (B) from inside the auger and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf·in).
3. Install the replacement tine. Refer to *Installing Feed Auger Tines, page 394*.

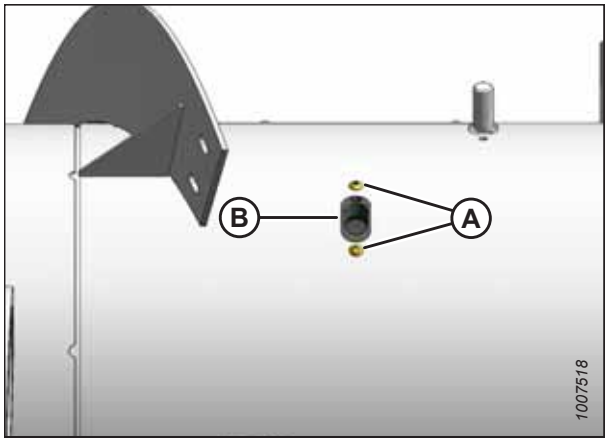


Figure 6.92: Auger

6.7.7 Flighting Extensions

Flighting extensions may allow better feeding of crop in green/wet straw conditions.

Removing Flighting Extensions

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

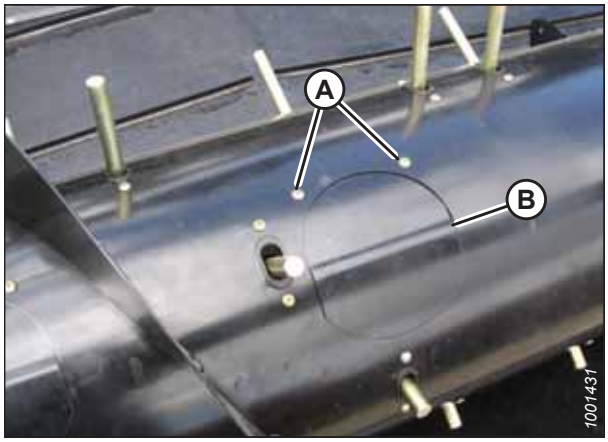


Figure 6.93: Auger

2. Remove five bolts (B), washers, and nuts securing flighting extension (C) to the auger.
3. Remove flighting extension (C).
4. Repeat for opposite flighting extension.

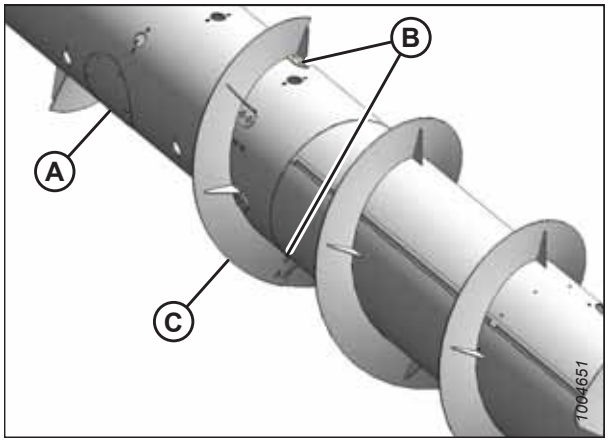


Figure 6.94: Auger Flighting Extensions

5. Reinstall access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf·in).

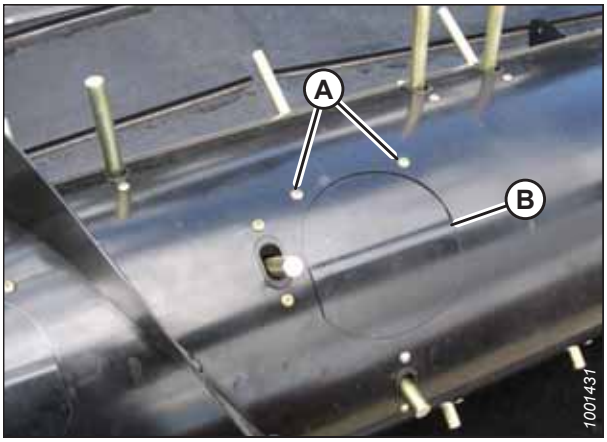


Figure 6.95: Auger

Installing Flighting Extensions

1. Place flighting extensions (A) on the outboard side of auger flighting (B). Tighten the hardware finger tight making sure the carriage bolt heads are on the inboard side (crop side) and nuts (C) are on the outboard side of the flighting.

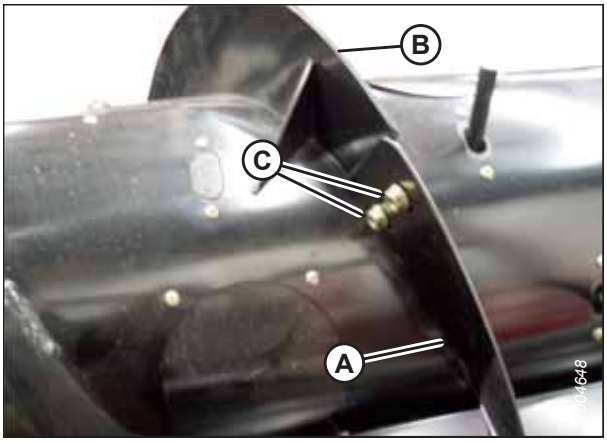


Figure 6.96: Flighting Extension

2. Stretch flighting extensions (A) to fit the auger tube. Use the slotted holes on flighting extension to achieve the best fit around the auger tube.

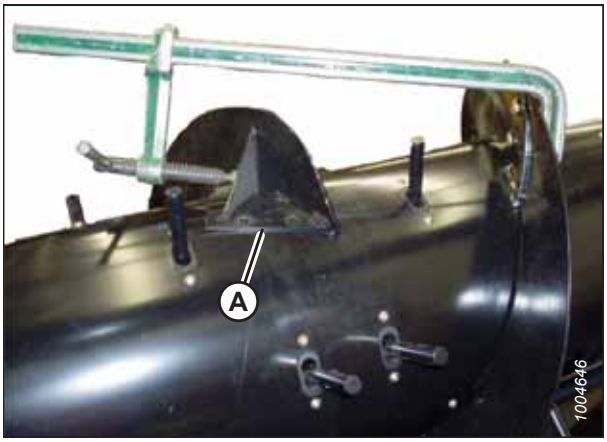


Figure 6.97: Flighting Extension

3. Mark hole locations (A) (three per extension), and drill 76 mm (3/8 in.) holes into the auger tube.

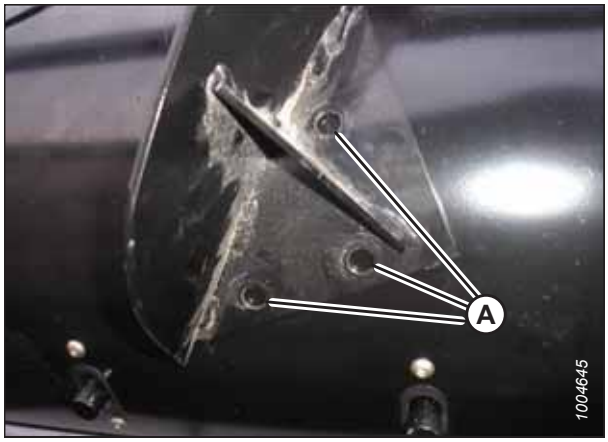


Figure 6.98: Flighting Extension

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 flighting extension to overlap the cover panel creating a gap between the flighting extension and the auger tube. Gaps over the cover panels or other locations may gather crop material, but this will generally not affect performance. Use silicone sealant to fill the gaps if necessary.

7. Reinstall access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf·in).

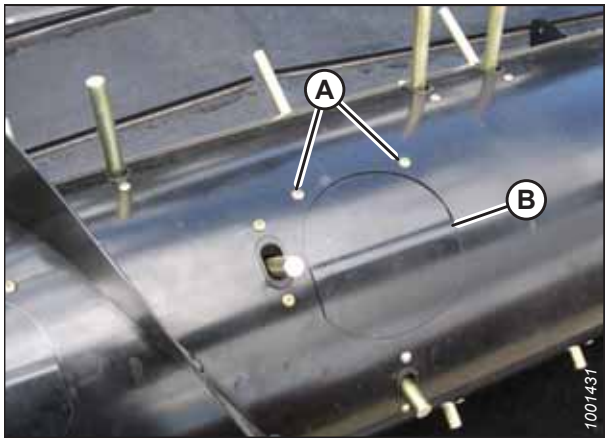


Figure 6.99: Auger

6.8 Cutterbar

The cutterbar is located on the front of the header. It supports the knife and guards which are used to cut the crop.

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 *6.1 Preparing Machine for Servicing, page 343*.

CAUTION

Wear heavy gloves when working around or handling knives.

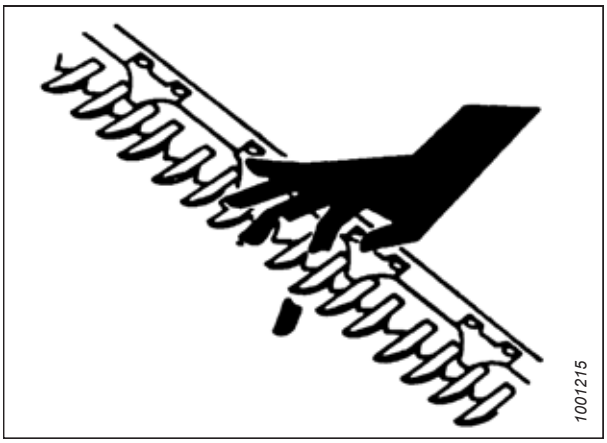


Figure 6.100: Cutterbar Hazard

6.8.1 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.

DANGER

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

WARNING

Wear heavy gloves when working around or handling knives.

NOTE:

Coarse serrated knife sections last longer than fine serrated sections in dirty or sandy conditions. Fine serrated knife sections perform better in fine-stemmed grasses and plants that contain more fibrous stems.

1. Shut down the engine, and remove the key from the ignition.
2. Stroke the knife as required to center knife section (A) between the guards.
3. Remove nuts (B).
4. Remove the bars and lift the knife section off the knife bar.
5. Remove splice bar (C) if the knife section is under the bar.
6. Clean any dirt off the knife back and position the new knife section onto the knife bar.

   IMPORTANT:

   Do **NOT** mix fine and coarse sections on the same knife.

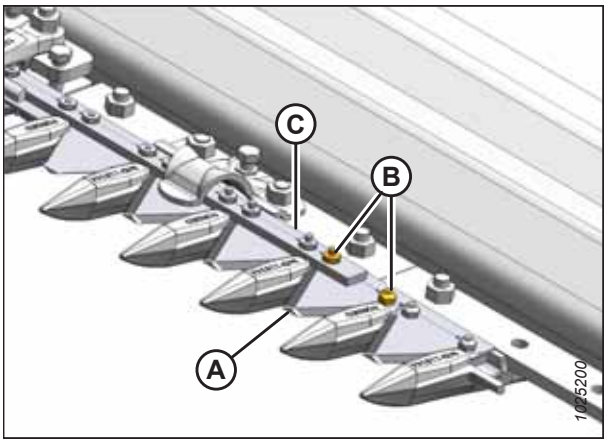


Figure 6.101: Knife Bar

7. Reposition bars (C) and/or (D) on knife (A) and install lock nuts (B).

   NOTE:

   If replacing screws, ensure they are fully inserted. Do **NOT** use nuts to draw screws into the knife bar.

8. Torque the nuts to 9.5 Nm (84 lbf·in).

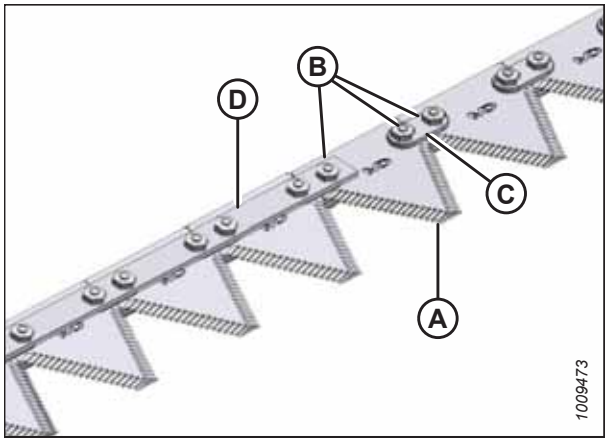


Figure 6.102: Knife Bar

6.8.2 Removing Knife

The cutterbar knife is designed to easily be replaced if worn or damaged. A spare knife can be stored in the header frame tube.

DANGER

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

WARNING

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.
4. Stroke the knife manually to its outer limit.
5. Clean the area around the knifehead.
6. Remove bolt (A).
7. Remove grease fitting (B) from the pin.
8. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
9. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
10. Push the knife assembly inboard until it is clear of the output arm.
11. Seal the knifehead bearing with plastic or tape unless it is being replaced.

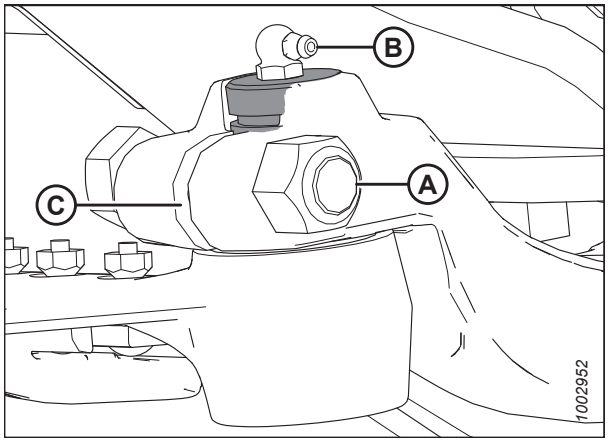


Figure 6.103: Knifehead

12. Wrap a chain around the knifehead and pull out the knife.

6.8.3 Removing Knifehead Bearing

The knifehead bearing, seals, and greasing interval protect the knifehead from the forces of the knife drive output arm. The seals and bearing require inspection and, when worn—replacement to prevent damage.

DANGER

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

WARNING

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

IMPORTANT:

Repeat this procedure for each knife.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the knife. For instructions, refer to *6.8.2 Removing Knife, page 400*.

   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 pin (A), and tap 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.

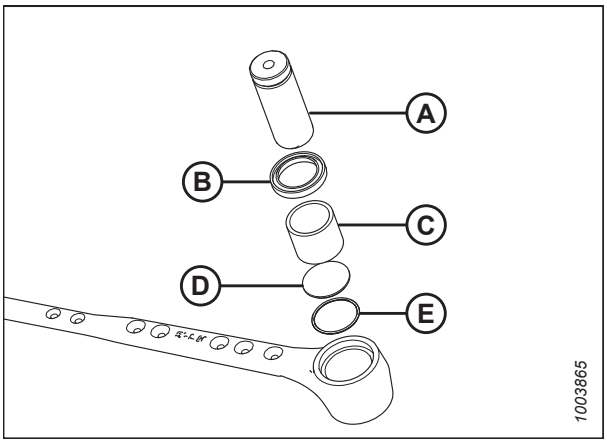


Figure 6.104: Knifehead Bearing Assembly

6.8.4 Installing Knifehead Bearing

The knifehead bearing, seals, and greasing interval protect the knifehead from the forces of the knife drive output arm. The seals and bearing require inspection and, when worn—replacement to prevent damage.

1. Place O-ring (E) and plug (D) into the knifehead.

   IMPORTANT:

   Install the bearing with the stamped end (the end with the identification markings) facing up.

   NOTE:

   It may be necessary to temporarily remove the grease fitting from the knifehead during installation of the knifehead pin. This will allow any trapped air to escape and the knifehead pin will seat correctly.

2. Use a flat-ended tool with the same approximate diameter as 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 the knifehead with the lip facing outwards.

   IMPORTANT:

   To prevent premature knifehead or knife drive box failure, ensure there's a tight fit between knifehead pin (A) and the needle bearing, and also between the knifehead pin and the output arm.

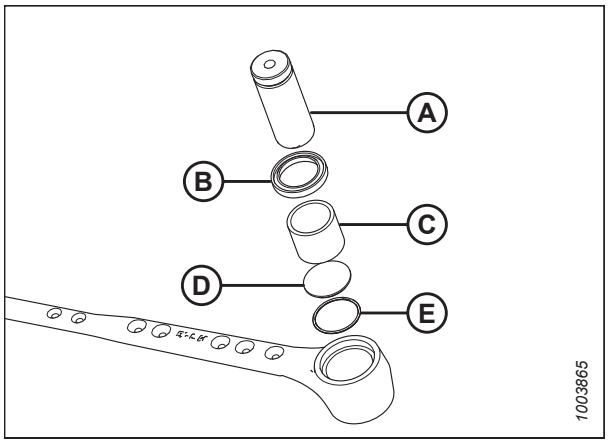


Figure 6.105: Knifehead Bearing Assembly

4. Install the knife. For instructions, refer to *6.8.5 Installing Knife, page 402*.

6.8.5 Installing Knife

The cutterbar knife is designed to easily be replaced if worn or damaged. A spare knife can be stored in the header frame tube.

DANGER

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

WARNING

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.
4. Slide the knife into place and align the knifehead with the output arm.
5. For ease of removing or installing the knifehead pin, remove the grease fitting from the pin.

6. Install knifehead pin (A) through the output arm and into the knifehead. Tap knifehead pin (A) down, and make sure the pin is seated at the bottom of the knifehead.

7. Set groove (B) in the knifehead pin 1.5 mm (1/16 in.) above output arm (C). Secure it with 5/8 in. x 3 in. hex head bolt and nut (D), and torque the hardware to 217 Nm (160 lbf ft).

8. Using a feeler gauge, check that the gap at location (E) is 0.25 mm (0.01 in.).

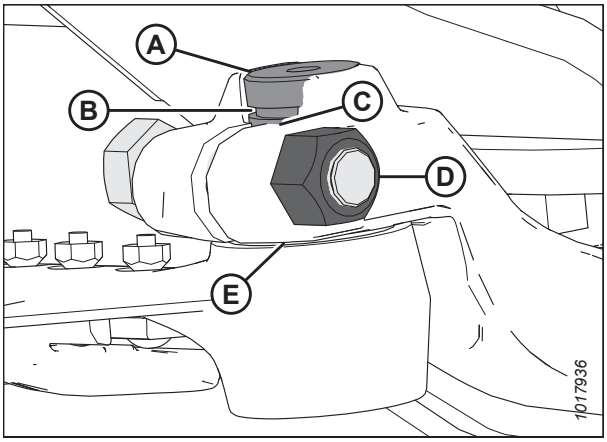


Figure 6.106: Knifehead

9. Install grease fitting (A) into the knifehead pin, and turn the grease fitting for easy access.

   IMPORTANT:

   Grease the knifehead just enough to start a slight downward movement. Overgreasing will lead to knife misalignment which causes the guards to overheat and the drive systems to overload.

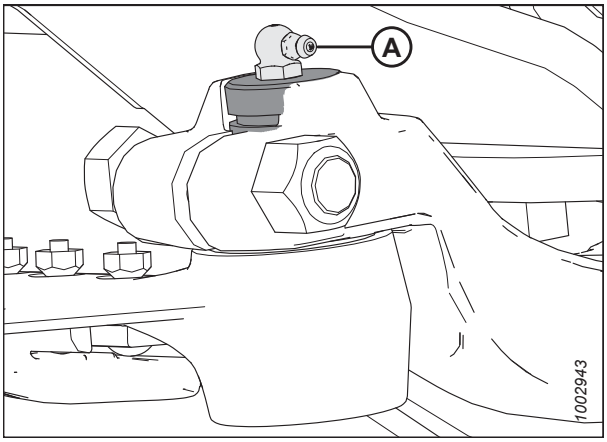


Figure 6.107: Knifehead

6.8.6 Spare Knife

A spare knife can be stored in the header frame tube at the left end of the header.

Ensure spare knife (A) is secured in place.

Figure 6.108: Spare Knife

6.8.7 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

Bent knife guards may be able to be straightened with the optional guard straightening tool.

DANGER

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

NOTE:

Use guard straightening tool (MD #140135) available from your MacDon Dealer.

1. Shut down the engine, and remove the key from the ignition.
2. Position the tool as shown, and pull up to adjust the guard tips upwards.

Figure 6.109: Upward Adjustment

3. Position the tool as shown, and push down to adjust the guard tips downwards.

   NOTE:

   If the crop is difficult to cut, install stub guards with top guards and adjuster plates. A kit is available from your MacDon Dealer. For information, refer to *7.3.3 Stub Guard Conversion Kit, page 512*.

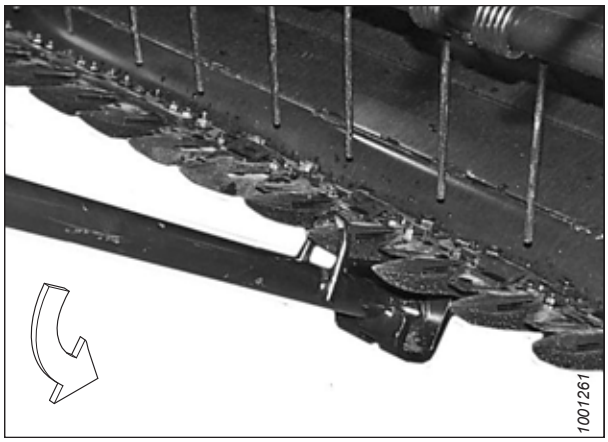


Figure 6.110: Downward Adjustment

Replacing Pointed Guards

To replaced pointed guards, perform the recommended replacement procedure provided here.

Replacing normal, drive side, and end guards

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. Shut down the engine, 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 guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove guard (A), hold-down (C) (if applicable), and plastic wearplate (if installed).

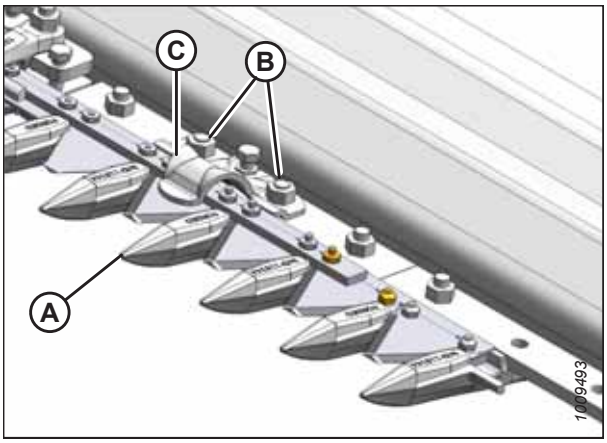


Figure 6.111: Pointed Guards

IMPORTANT:

At each end of the cutterbar, the first four guards (end guards [A] and drive side guards [B]) do **NOT** have ledger plates like standard guards (C). Ensure proper replacement guards are installed at these locations.

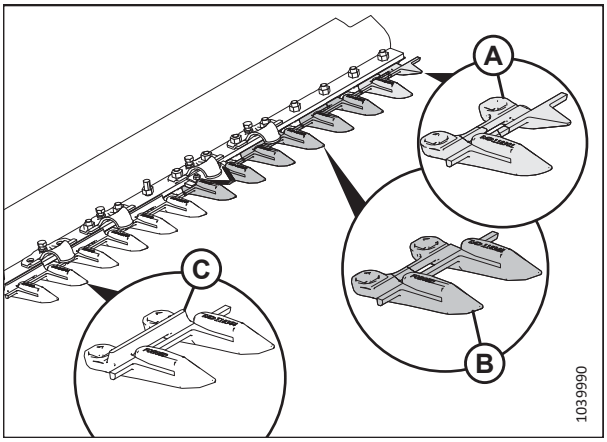


Figure 6.112: Pointed Guards – Left End of Cutterbar

A - Half Guard (End) **B - Drive Side** **C - Normal**

5. Position new guard (A), hold-down (C) (if applicable), and plastic wearplate (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. For instructions, refer to *Checking and Adjusting Knife Hold-Downs, page 410*.

   NOTE:

   The guard at the center of a double-knife header (where the two knives overlap) requires a different replacement procedure. For instructions, refer to Steps *8, page 406* through *12, page 407*.

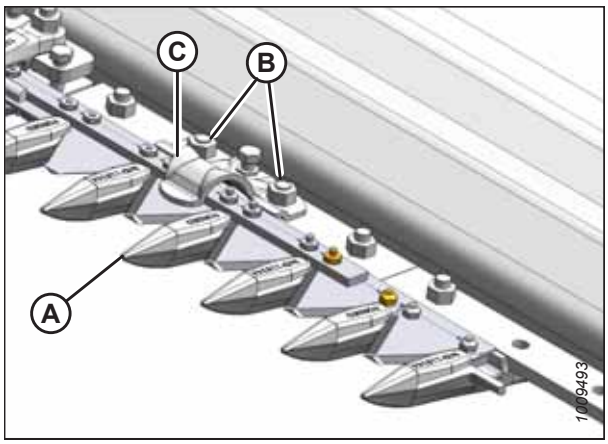


Figure 6.113: Pointed Guards

Replacing center guards

7. Shut down the engine, and remove the key from the ignition.

8. Remove two nuts (B) and bolts attaching guard (A) and hold-down (C) to the cutterbar.

9. Remove guard (A), plastic wearplate (if installed), hold-down (C), and adjuster bar (D).

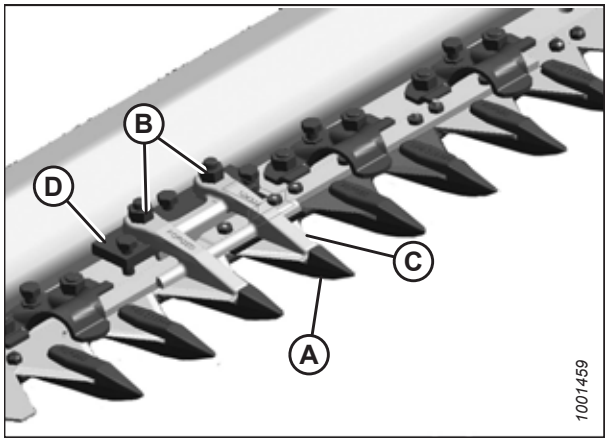


Figure 6.114: Center Guards

10. Position the plastic wearplate (if applicable), replacement center guard (A), adjuster bar, and hold-down (B) onto the cutterbar. Install bolts, but do **NOT** tighten.

    IMPORTANT:

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

    IMPORTANT:

    Hold-down (B) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.

11. Check and adjust the clearance between the hold-down and knife. For instructions, refer to *Checking and Adjusting Knife Hold-Downs, page 410*.

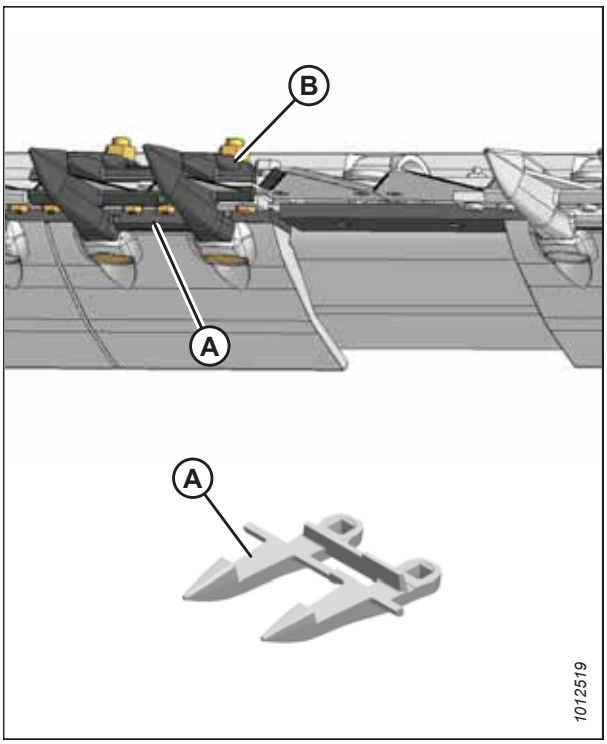


Figure 6.115: Center Guards

Replacing Stub Guards

Stub guards, complete with hold-downs and adjuster plates, are designed to cut tough crops and are factory-installed at the outer ends of specific headers.

Replacing normal, drive side, and end guards

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. Shut down the engine, 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 (A) and bolts attaching guard (B) and hold-down (C) to the cutterbar.
4. Remove guard (B), plastic wearplate (if installed), hold-down (C), and adjuster bar (D).

IMPORTANT:

Note the position of the miter on adjuster bar (D), and reinstall the adjuster bar in the same position. Miters should **NOT** be adjacent to each other.

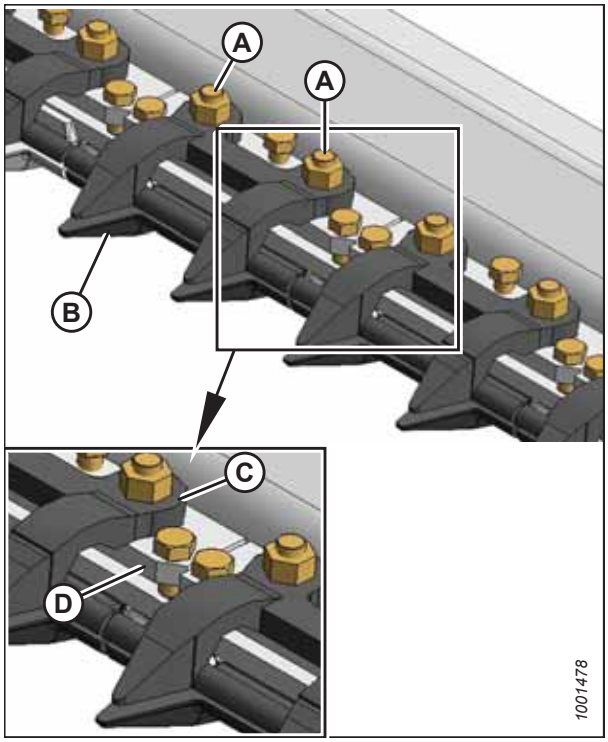


Figure 6.116: Stub Guards

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.

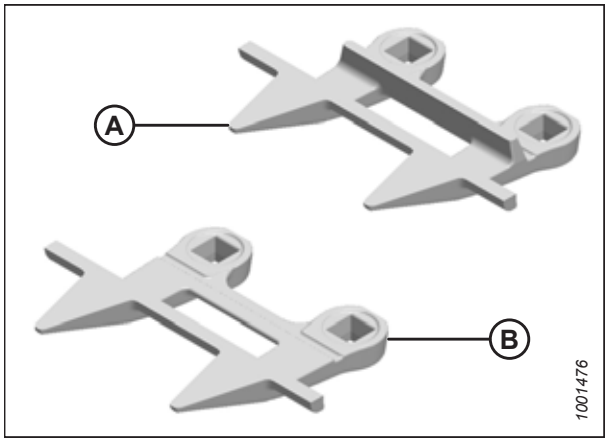


Figure 6.117: Stub Guards

A - Normal Guard **B - Drive Side Guard**

5. Position the plastic wearplate (if applicable), replacement guard (B), adjuster bar (D), hold-down (C), and install bolts and nuts (A). Do **NOT** tighten.

6. Check and adjust the clearance between the hold-downs and the knife. For instructions, refer to *Checking and Adjusting Knife Hold-Downs, page 410*.

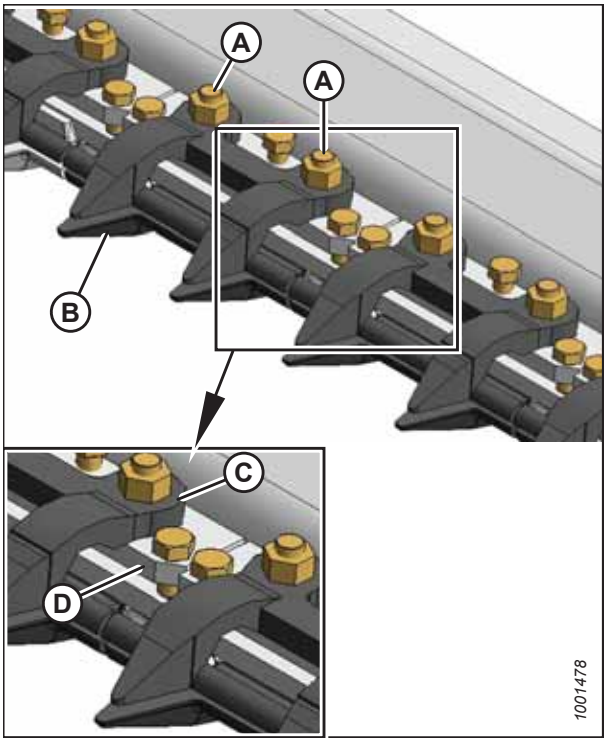


Figure 6.118: Stub Guards

Replacing center guards

NOTE:

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

7. Shut down the engine, and remove the key from the ignition.

8. Remove two nuts (A) and bolts attaching guard (B), hold-down (C), and adjuster bar (D) to the cutterbar.
9. Remove guard (B), plastic wearplate (if installed), hold-down (C), and adjuster bar (D).
10. Position the plastic wearplate (if applicable), replacement guard (B), adjuster bar (D), and hold-down (C) onto the cutterbar. Install bolts, but do **NOT** tighten.

    IMPORTANT:

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

    IMPORTANT:

    Hold-down (C) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.
11. Check and adjust the clearance between the hold-down and the knife. For instructions, refer to *Checking and Adjusting Knife Hold-Downs, page 410*.

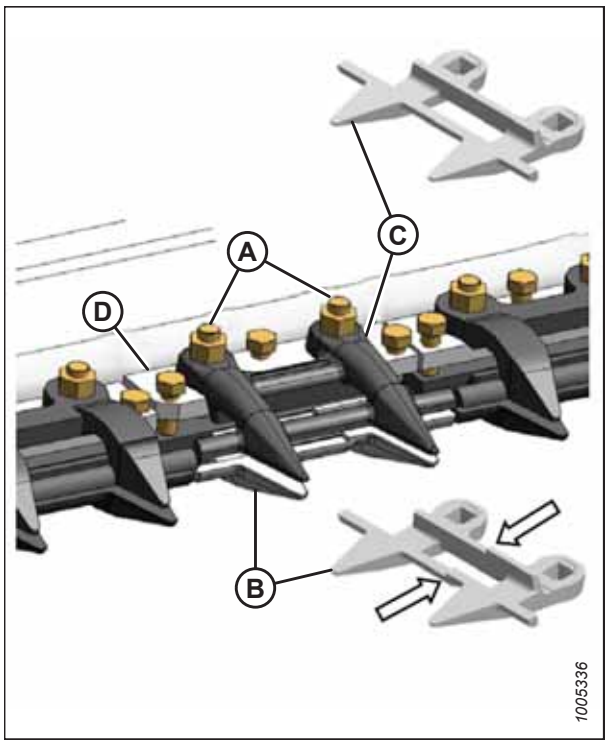


Figure 6.119: Center Guards

Checking and Adjusting Knife Hold-Downs

Follow the provided procedures to properly check and adjust the knife hold-downs.

NOTE:

Align guards prior to checking and adjusting hold-downs. For instructions, refer to *Adjusting Knife Guards, page 404*.

Perform daily inspections to ensure knife hold-downs are preventing knife sections from lifting off guards while permitting knife to slide without binding.

Proceed to *Checking Pointed Guard Hold-Downs, page 410*.

Checking Pointed Guard Hold-Downs

This procedure is applicable to headers with pointed guards.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

Measure the clearance between the hold-downs and knife sections as follows:

1. Shut down the engine, and remove the key from the ignition.
2. Check the guard alignment and adjust it as required. Refer to *Adjusting Knife Guards, page 404*.

3. Manually stroke the knife to align section (A) under hold-down (B).
4. At standard guard locations, push knife section (A) down against guard (C) and measure the clearance between hold-down (B) and knife section (A) with a feeler gauge. The clearance should be 0.1–0.6 mm (0.004–0.024 in.).
5. If necessary, refer to *Adjusting Pointed Guard Hold-Downs, page 411*.

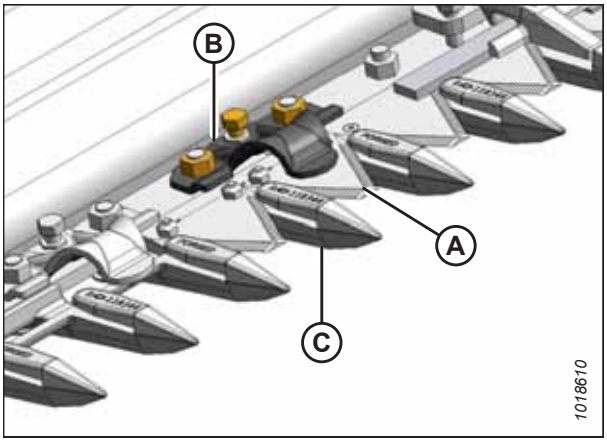


Figure 6.120: Normal Guard Hold-Down

Double knife

6. Manually stroke the knife to align sections (A) and (C) under center hold-down (B).
7. Measure between knife sections (A) and (C) with a feeler gauge. The clearances should be as follows:
   - At tip of hold-down: 0.1–0.4 mm (0.004–0.016 in.)
   - At rear of hold-down: 0.1–1.0 mm (0.004–0.040 in.)
8. If necessary, refer to *Adjusting Hold-Down Clips at Double-Knife Center Pointed Guard, page 412*.

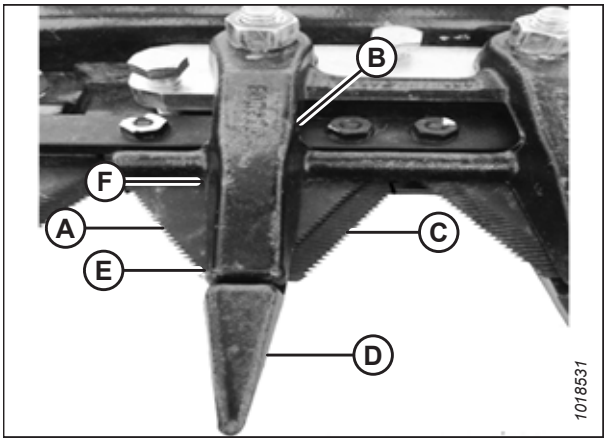


Figure 6.121: Double-Knife Center Guard Hold-Down

Adjusting Pointed Guard Hold-Downs

This procedure is applicable to formed sheet metal hold-downs. Do **NOT** use this procedure for the hold-down at the center guard position where knives overlap on double-knife headers.

For the center guard, refer to *Adjusting Hold-Down Clips at Double-Knife Center Pointed Guard, page 412*.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

1. Shut down the engine, and remove the key from the ignition.

2. Decrease the clearance by turning bolt (B) clockwise to lower the front of hold-down (A).
3. Increase the clearance by turning bolt (B) counterclockwise to raise the front of the hold-down.

   NOTE:

   For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), and then retighten the nuts.
4. Check the clearance again and adjust it as required.

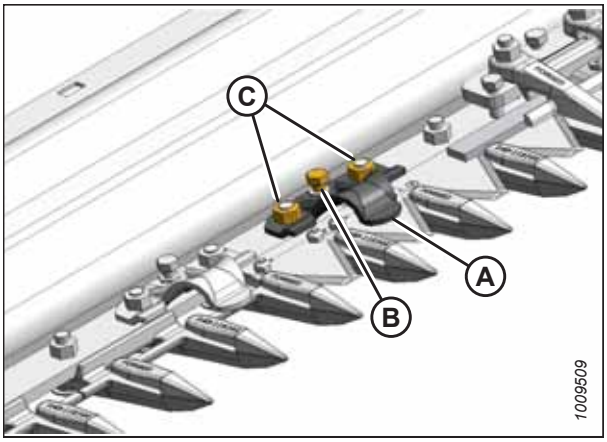


Figure 6.122: Cutterbar

WARNING

Check to be sure all bystanders have cleared the area.

5. 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 the guards—adjust clearance as necessary.

Adjusting Hold-Down Clips at Double-Knife Center Pointed Guard

Follow the provided procedure to properly adjust the hold-down clips at the double-knife center pointed guard.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Stroke the knives so that sections (A) are under hold-down (B) as shown in the Figure at right.
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 the clamp on the trash bar at location (F).
5. Turn bolts (D) until they contact the cutterbar, then tighten them **ONE** turn.
6. Remove the clamp.
7. Tighten nuts (C) and torque the nuts to 88 Nm (65 lbf·ft).
8. Check clearances. For instructions, refer to *Checking Pointed Guard Hold-Downs, page 410*.

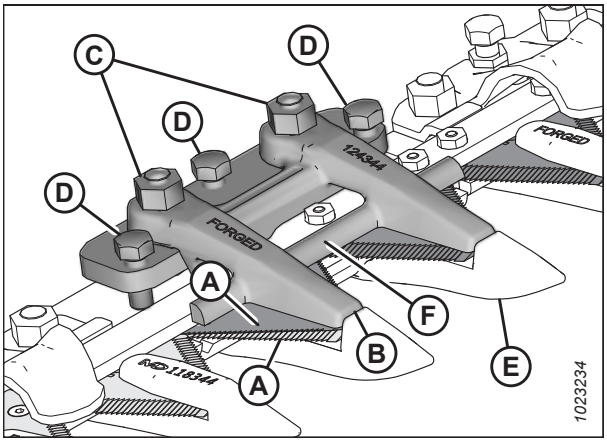


Figure 6.123: Center Guard

Checking Stub Guard Hold-Downs

This procedure is to measure clearance between hold-downs and knife sections on single- and double-knife headers with stub guards.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke knife to locate section under hold-down (A).
3. **Standard guard:** At standard guard locations, push knife section (B) down against guard (C) and measure clearance between hold-down clip (A) and knife section (B) with a feeler gauge. The clearance should be as follows:
   - **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 414*.

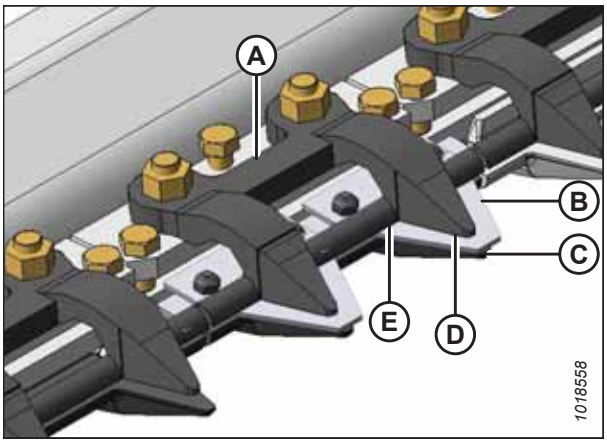


Figure 6.124: Short Knife Forged Hold-Down

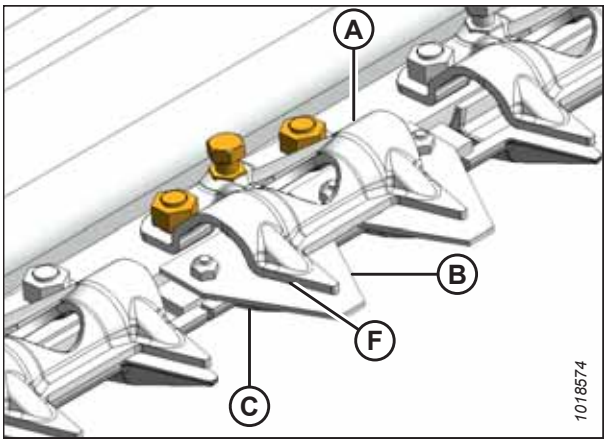


Figure 6.125: Short Knife Sheet Metal Hold-Down

5. **Double-knife center stub guard:** Manually stroke knife to locate sections under hold-down (B). Measure clearance between knife sections (A) and (C) with a feeler gauge. The clearance should be as follows:
   - **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.)
6. If necessary, refer to *Adjusting Stub Guard Hold-Downs, page 414*.

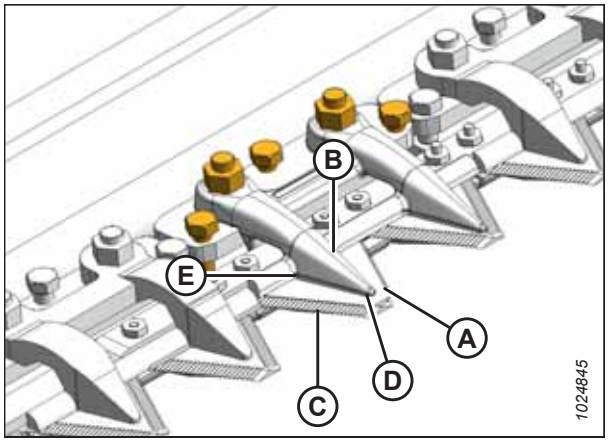


Figure 6.126: Double-Knife Center Short Knife Guard Hold-Down

Adjusting Stub Guard Hold-Downs

Follow the instructions outlined in this section to properly adjust the hold-downs.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

1. Shut down the engine, and remove the key from the ignition.

Forged hold-down

2. Manually stroke knife to center section(s) (A) under hold-down (B) as shown in the Figure at right.
3. Loosen nuts (C) and back off bolts (D) clear of cutterbar.
4. Position a C-clamp or equivalent on trash bar at location (F), and lightly clamp hold-down (B) to guard (E).
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (C) and torque to 45 Nm (35 lbf·ft).
8. Check that specified clearances are achieved. For instructions, refer to *Checking Stub Guard Hold-Downs, page 413*.

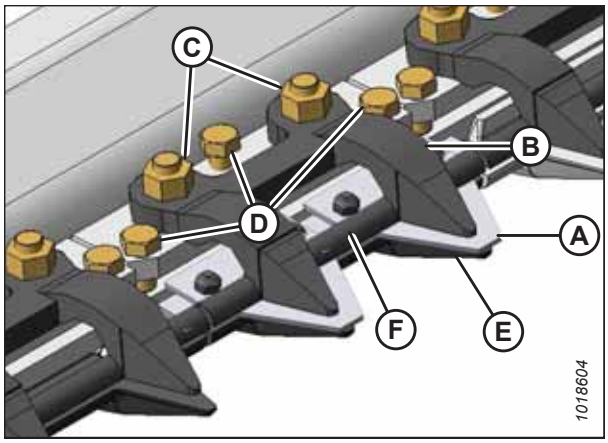


Figure 6.127: Normal Stub Guard Forged Hold-Down

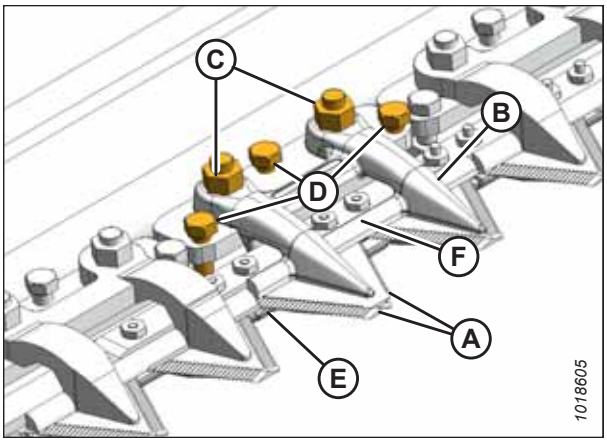


Figure 6.128: Double-Knife Center Stub Guard

Sheet metal hold-down

9. Stroke knife to center section (A) under hold-down (B) as shown in the Figure at right.
10. Decrease clearance by turning bolt (C) clockwise to lower front of hold-down. Clearance should be 0.1–0.6 mm (0.004–0.024 in.).
11. Increase clearance by turning bolt (C) counterclockwise to raise front of hold-down.

    NOTE:

    For larger adjustments, it may be necessary to loosen nuts (D), turn adjuster bolt (C), and then retighten nuts.
12. Torque nuts (D) to 88 Nm (65 lbf·ft) after all adjustments are complete and specified clearances are achieved. For instructions, refer to *Checking Stub Guard Hold-Downs, page 413*.

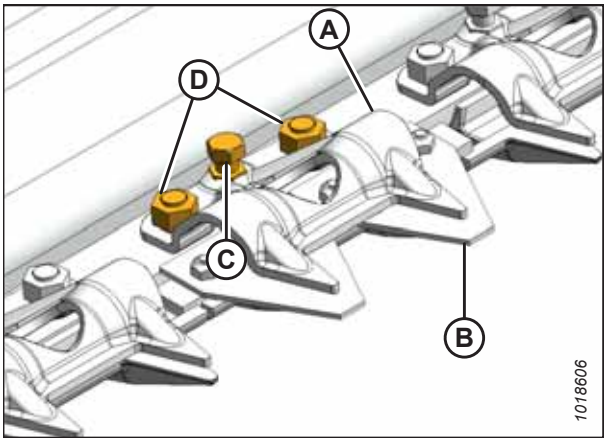


Figure 6.129: Stub Guard Sheet Metal Hold-Down

DANGER

Check to be sure all bystanders have cleared the area.

13. Complete hold-down adjustments, run header at low engine speed, and listen for noise caused by insufficient clearance.

    IMPORTANT:

    Insufficient hold-down clearance will result in overheating of knife and guards—readjust as necessary.

6.8.8 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cutout.

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.

The shields and mounting hardware are available from your MacDon Dealer.

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

WARNING

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

CAUTION

Wear heavy gloves when working around or handling knives.

1. Raise the reel fully.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Place knifehead shield (A) against the endsheet as shown. Align the shield so the cutout matches the profile of the knifehead and/or hold-downs.
6. Bend knifehead shield (A) along the slit to conform to the endsheet.
7. Align the mounting holes and secure with two 3/8 in. x 1/2 in. Torx® head bolts (B).
8. Tighten bolts (B) just enough to hold knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
9. Manually rotate the knife drive box pulley 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.
10. Tighten bolts (B).

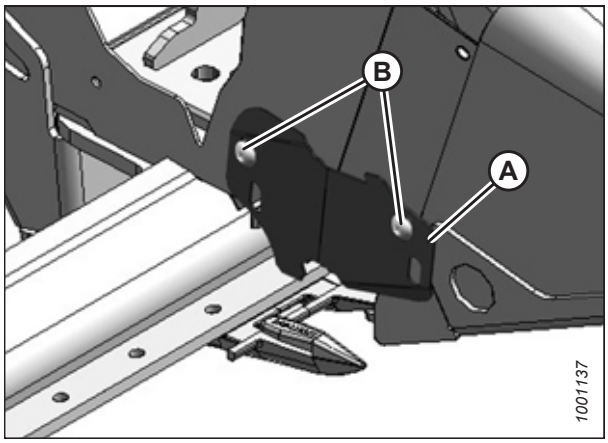


Figure 6.130: Knifehead Shield

6.9 Knife Drive

The knife drive system transforms pumped hydraulic pressure into a mechanical motion that strokes a series of serrated knife blades at the front of the header back and forth to cut a variety of crops.

6.9.1 Knife Drive Box

Knife drive boxes convert rotational motion into the reciprocating motion of the knife, and are belt driven by a hydraulic motor that is powered by the hydraulic pump on the adapter. There is one knife drive box on single-knife headers and two knife drive boxes on double-knife headers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *6.1 Preparing Machine for Servicing, page 343*.

Checking Mounting Bolts

Check the torque on the four knife drive box mounting bolts after the first 10 hours of operation and every 100 hours thereafter.

DANGER

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

1. Torque side bolts (A) first, then torque bottom bolts (B). Torque all bolts to 271 Nm (200 lbf·ft).

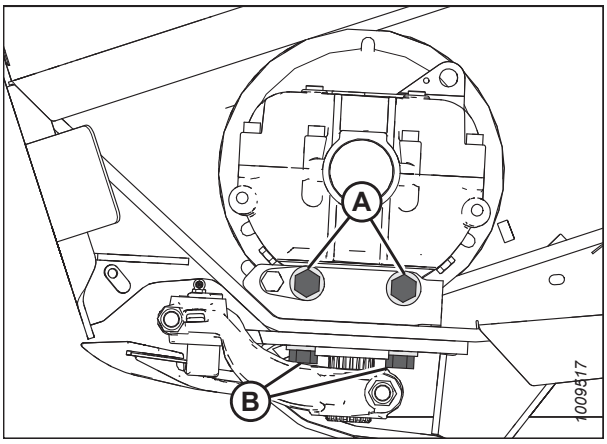


Figure 6.131: Knife Drive Box

Removing Knife Drive Box

The knife drive box(es) may need to be removed for repair at the Dealership. Follow the recommended removal procedure provided here.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.

3. Loosen two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

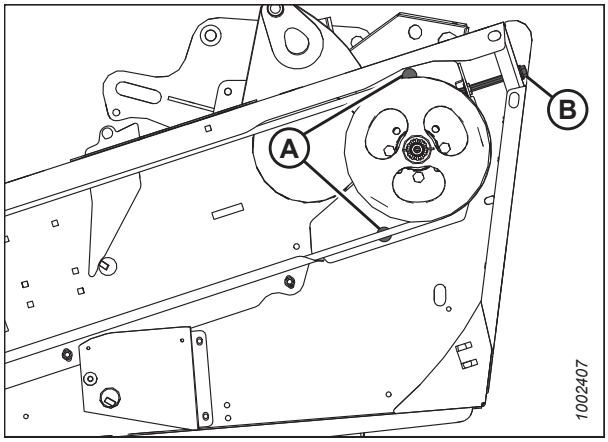


Figure 6.132: Single and Untimed Double-Knife Drive

5. Open access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

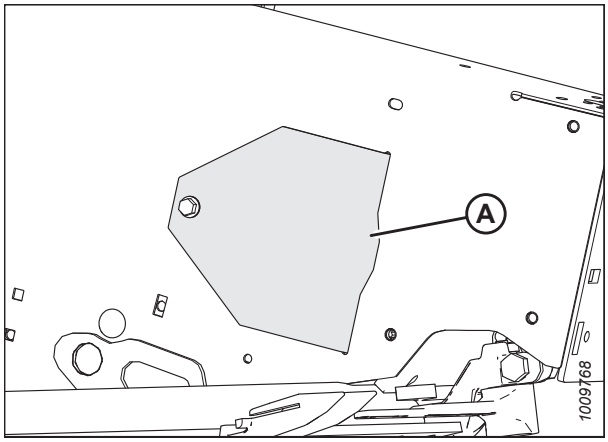


Figure 6.133: Access Cover

6. Remove belt (A) from drive pulley (B).
7. Slip belt (A) over and behind knife drive box pulley (C). Use the notch in the pulley to assist with the belt removal.
8. Stroke the knife manually to its outer limit.

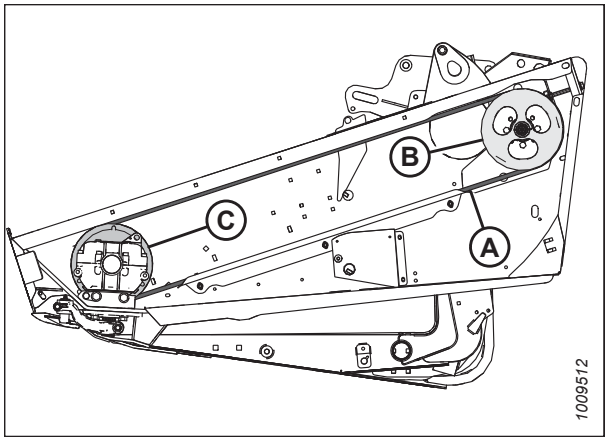


Figure 6.134: Knife Drive

9. Remove bolt (A).
10. Remove grease fitting (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.

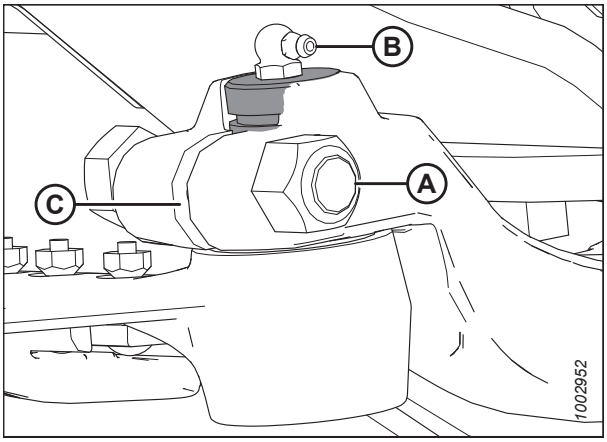


Figure 6.135: Knifehead

15. Remove bolt (A) that clamps knife drive arm (B) to the knife drive box output shaft.
16. Remove knife drive arm (B) from the knife drive box output shaft.
17. Remove four knife drive box mounting bolts (C) and (D).

    NOTE:

    Bolt (E) is factory set; do **NOT** remove it. It is used to secure the knife drive box in the proper fore-aft position.

CAUTION

The knife drive box and pulley weigh over 35 kg (65 lb.) Use care when removing or installing it. Lug (L) can be used for lifting.

18. Remove the knife drive box and place it on a bench for disassembly.

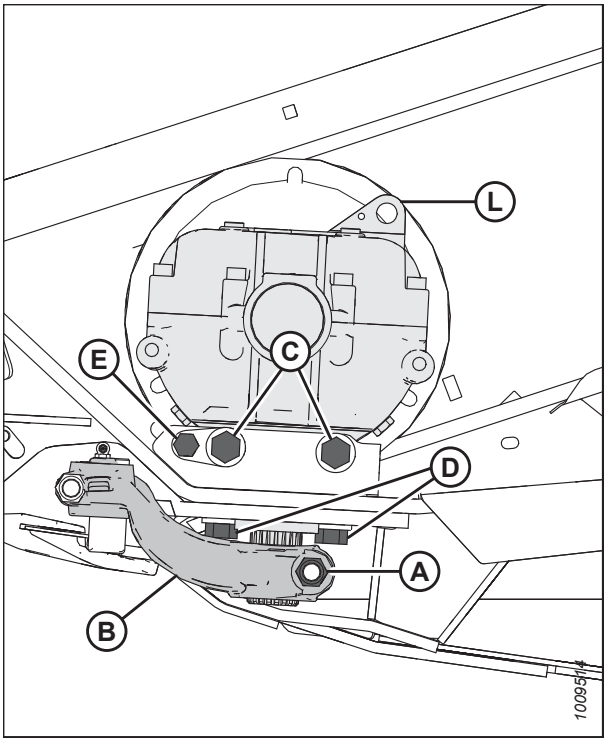


Figure 6.136: Knife Drive Box

Removing Knife Drive Box Pulley

To remove the knife drive box pulley, follow the recommended removal procedure provided here.

1. Loosen and remove knife drive box pulley clamping bolt (A) and nut (B).
2. Remove knife drive box pulley (C) using a three-jaw puller.

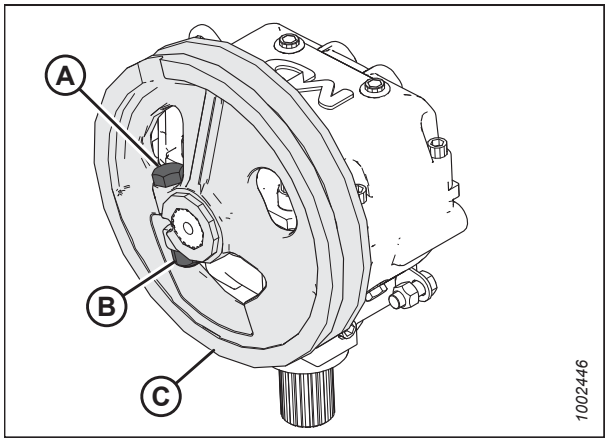


Figure 6.137: Knife Drive Box and Pulley

Installing Knife Drive Box Pulley

The knife drive box pulley is driven by the knife drive motor and the knife drive belt. To install the knife drive box pulley, follow the recommended installation procedure provided here.

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 medium-strength threadlocker (Loctite® 243 or equivalent) around the shaft as shown. Apply one band at the end of the spline and the second band at the approximate midpoint location.
3. Install pulley (B) so that it is 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.
5. Torque the lock nut to 217 Nm (160 lbf·ft).

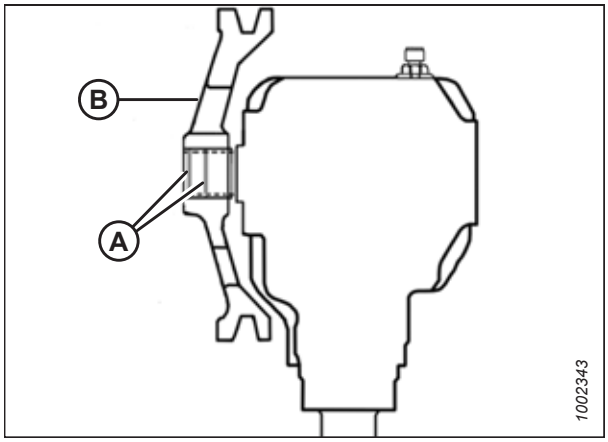


Figure 6.138: Knife Drive Box

Installing Knife Drive Box

NOTE:

If the pulley was removed from the knife drive box, refer to *Installing Knife Drive Box Pulley, page 420*. If the pulley was not removed, proceed to Step *1, page 421*.

CAUTION

The knife drive box and pulley weigh over 35 kg (65 lb.) Use care when removing or installing it. Lug (L) can be used for lifting.

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 knife drive box side bolts (A) slightly, then tighten bottom bolts (B) to ensure proper contact with the vertical and horizontal mounting surfaces.

   NOTE:

   Do **NOT** torque the bolts at this time.

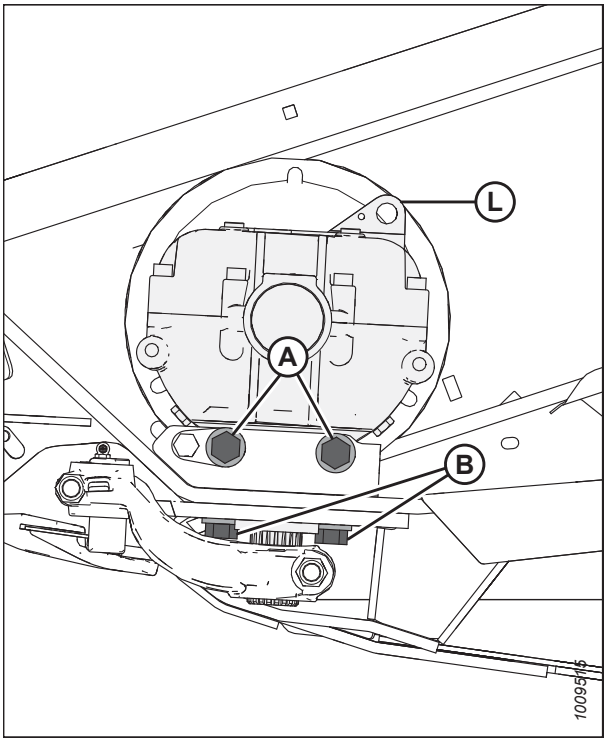


Figure 6.139: Knife Drive Box

4. Apply two bands (A) of medium-strength threadlocker (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 midpoint location.
5. Slide 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.

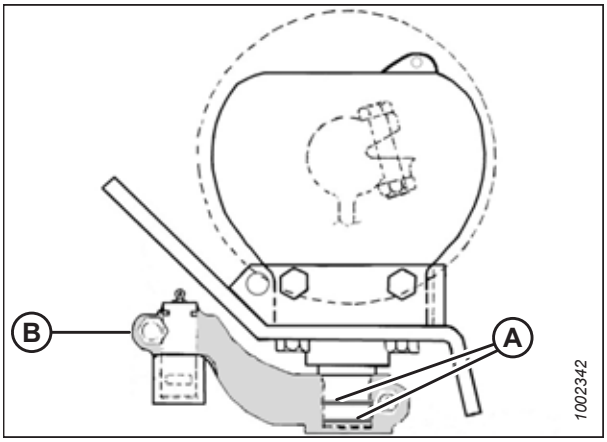


Figure 6.140: Knife Drive Box

6. Position output arm (A) to the farthest outboard position. Move output arm (A) up or down on the splined shaft until it is almost contacting knifehead (B) (exact clearance [C] is set during the knifehead pin installation).

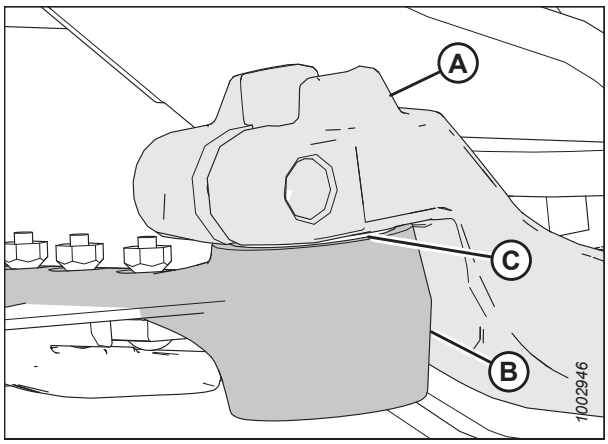


Figure 6.141: Knifehead

7. Torque output arm bolt (A) to 217 Nm (160 lbf·ft).
8. Slide the knife into place and align the knifehead with the output arm.
9. For ease of removing or installing the knifehead pin, remove the grease fitting from the pin.

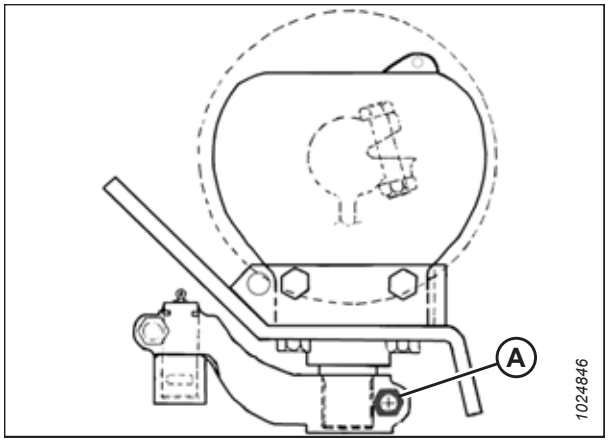


Figure 6.142: Knife Drive Box

10. Install knifehead pin (A) through the output arm and into the knifehead. Tap knifehead pin (A) down, and make sure the pin is seated at the bottom of the knifehead.
11. Using a feeler gauge, check that the gap at location (E) is 0.25 mm (0.01 in.).
12. Set groove (B) in the knifehead pin 1.5 mm (1/16 in.) above output arm (C). Secure it with 5/8 in. x 3 in. hex head bolt and nut (D), and torque the hardware to 217 Nm (160 lbf ft).

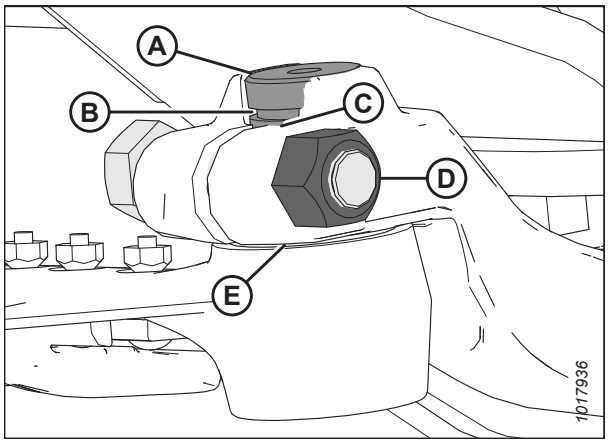


Figure 6.143: Knifehead

13. Install grease fitting (A) into the knifehead pin, and turn the grease fitting for easy access.

    IMPORTANT:

    Grease the knifehead just enough to start a slight downward movement. Overgreasing will lead to knife misalignment which causes the guards to overheat and the drive systems to overload.

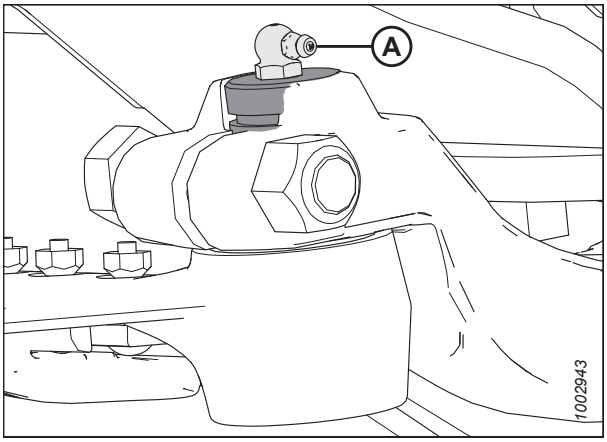


Figure 6.144: Knifehead

14. Tighten knife drive box side bolts (A) first, then tighten the bottom bolts (B).
15. Torque the bolts to 271 Nm (200 lbf·ft).
16. Move the output arm to the midstroke 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.

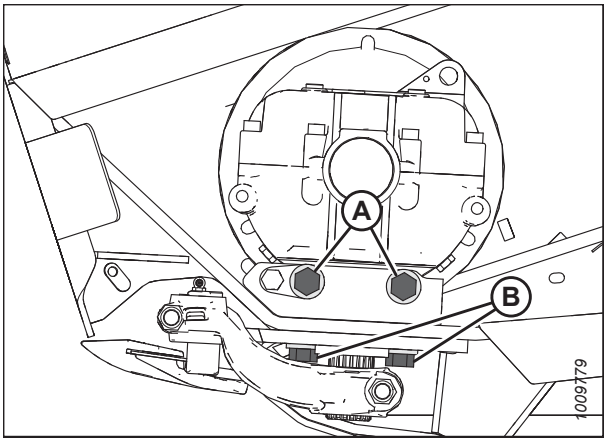


Figure 6.145: Knife Drive Box

17. Install and tension the knife drive belts. For instructions, refer to *Tensioning Knife Drive Belts, page 426*
18. Close the endshield. For instructions, refer to *Closing Endshield, page 34*.

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.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Raise the header to allow a suitably sized container to fit under the knife box drain and collect the oil.
2. Shut down the engine, and remove the key from the ignition.
3. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.

4. Remove breather/dipstick (A) and drain plug (B).
5. Allow the oil to drain.
6. Reinstall drain plug (B).
7. Add oil to the knife drive box. Refer to the inside back cover for specifications.
8. Reinstall breather/dipstick (A).
9. Close the endshield. For instructions, refer to *Closing Endshield, page 34*.

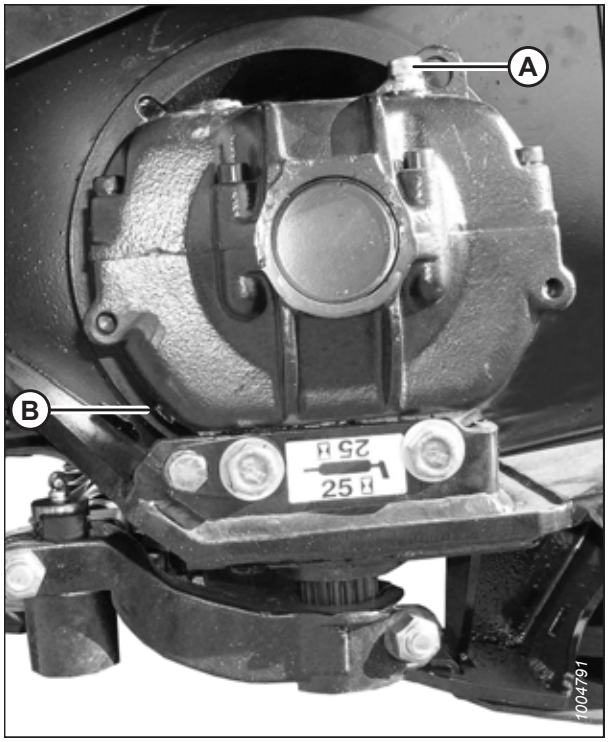


Figure 6.146: Knife Drive Box

6.9.2 Knife Drive Belts

The knife drive box is driven by a V-belt that is powered by a hydraulic motor on the header endsheets.

Untimed 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 Knife Drive Belts

The untimed knife drive belt removal procedure is the same for both sides of a double-knife header.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.

3. Loosen two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

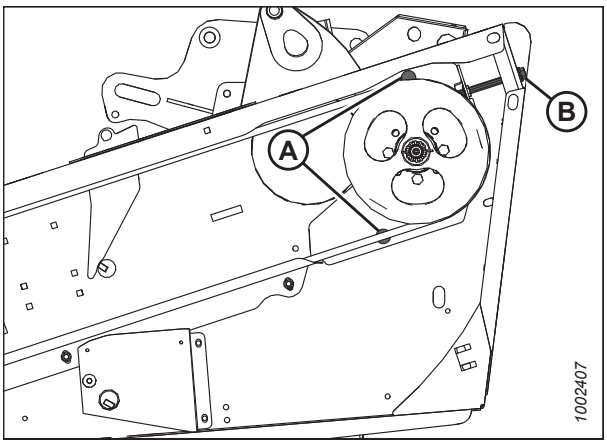


Figure 6.147: Single and Untimed Double-Knife Drive

5. Open access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

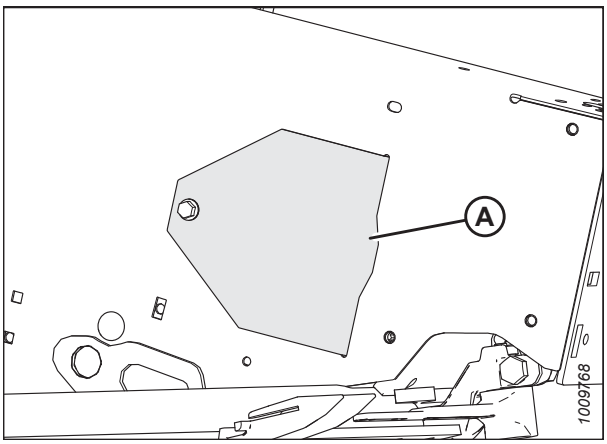


Figure 6.148: Access Cover

6. Remove belt (A) from drive pulley (B).
7. Slip belt (A) over and behind knife drive box pulley (C). Use the notch in the pulley to assist with the belt removal.

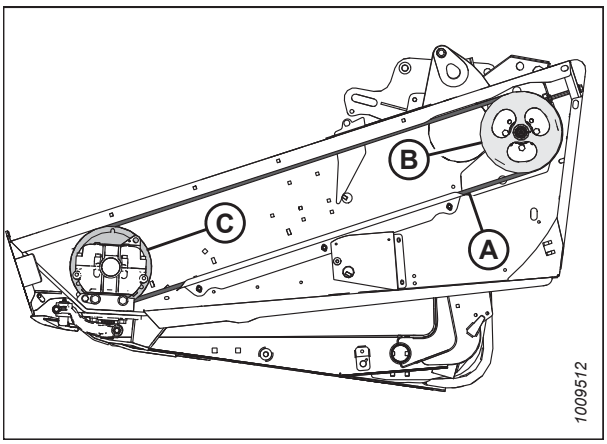


Figure 6.149: Knife Drive

Installing Knife Drive Belts

The procedure for installing untimed knife drive belts is the same for both sides of the header.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.
3. Route knife drive belt (A) around 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.

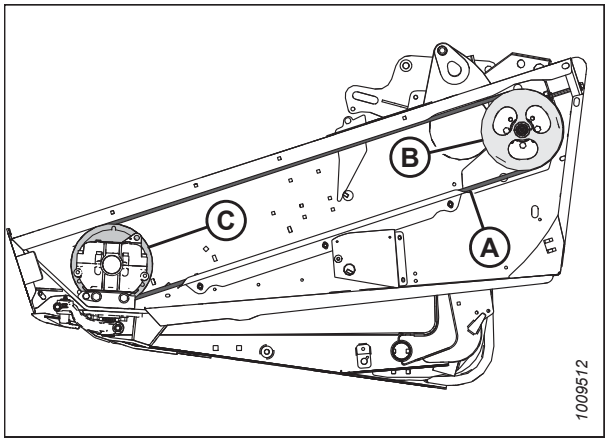


Figure 6.150: Knife Drive

4. Tension the knife drive belt. For instructions, refer to *Tensioning Knife Drive Belts, page 426*.
5. Install access cover (A) and secure it with a bolt.
6. Close the endshield. For instructions, refer to *Closing Endshield, page 34*.

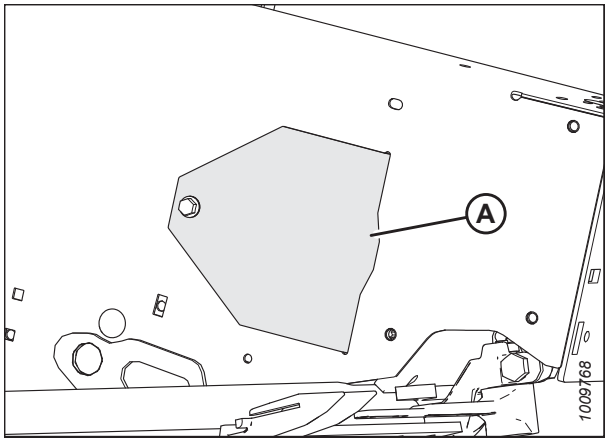


Figure 6.151: Access Cover

Tensioning Knife Drive Belts

DANGER

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

IMPORTANT:

To prolong belt and drive life, do **NOT** overtighten the belt.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.
3. Loosen two bolts (A) securing the motor assembly to the header endsheet.
4. Turn adjuster bolt (B) clockwise to move the drive motor until a force of 89 N (20 lbf) deflects belt (C) 20–25 mm (3/4–1 in.) at the midspan.
5. Tighten bolts (A) and the jam nut on bolt (B).

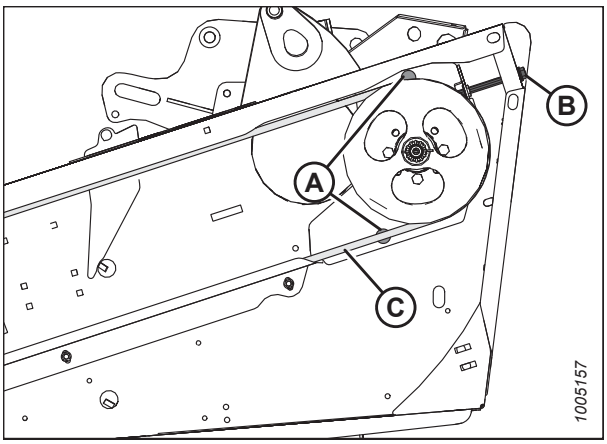


Figure 6.152: Untimed Knife Drive

6. Ensure the clearance between belt (A) and belt guide (B) is 1 mm (1/32 in.).
7. Loosen three bolts (C), and adjust the position of guide (B) as required.
8. Tighten three bolts (C).
9. Close the endshield. For instructions, refer to *Closing Endshield, page 34*.

   NOTE:

   Readjust the tension of a new belt after a short run-in period (about 5 hours).
10. Repeat the above steps for the opposite end on double-knife headers.

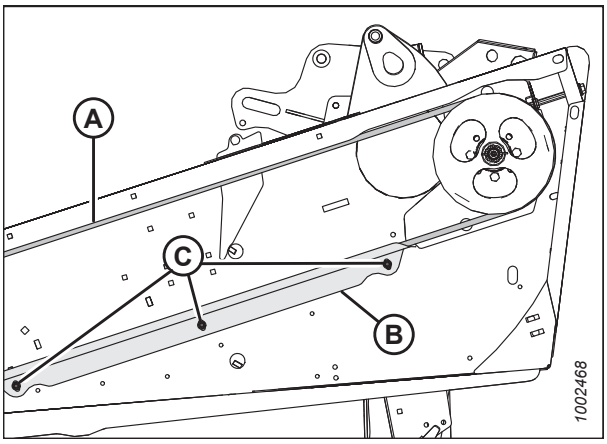


Figure 6.153: Untimed Knife Drive

6.10 Adapter Feed Draper

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *6.1 Preparing Machine for Servicing, page 343*.

6.10.1 Replacing Adapter Feed Draper

Replace draper if torn, cracked, or missing slats.

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to *5.7.1 Detaching Header from Adapter and Combine, page 330*.
2. Raise the feeder house to its full height.
3. Stop the engine, and the remove key from the ignition.
4. Engage the combine safety props. For instructions, refer to the combine operator's manual.
5. 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.
6. Disengage the header safety props and lower the feeder house and adapter onto blocks to keep the adapter slightly off the ground.

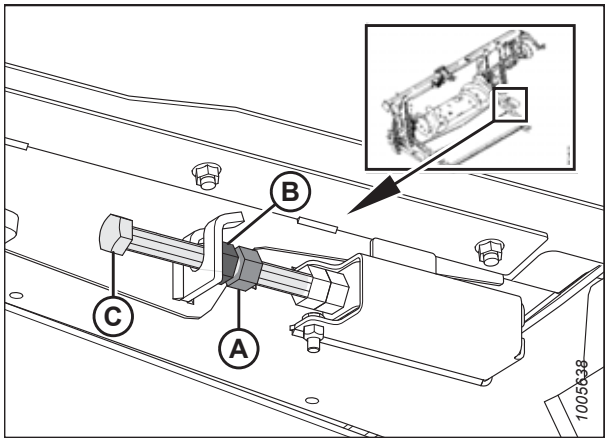


Figure 6.154: Tensioner

7. Remove screws (A) and nuts, and remove draper connector straps (B).
8. Pull the draper from the deck.

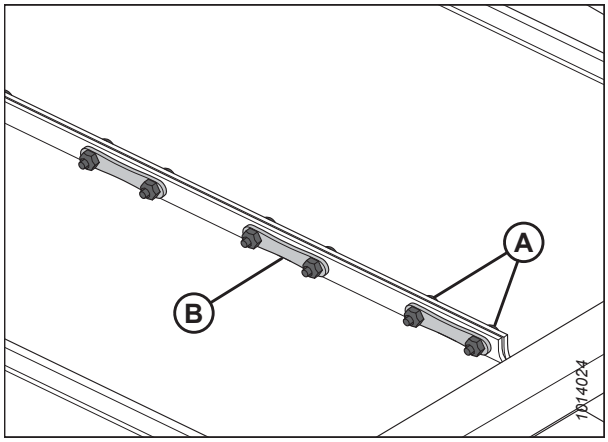


Figure 6.155: Draper Connector

9. Install new draper over drive roller (A) with the chevron cleat (B) pointing towards the front of the adapter. Ensure the draper guides fit in drive roller grooves (C).

10. Pull the draper along the bottom of the adapter deck and over draper supports (D).

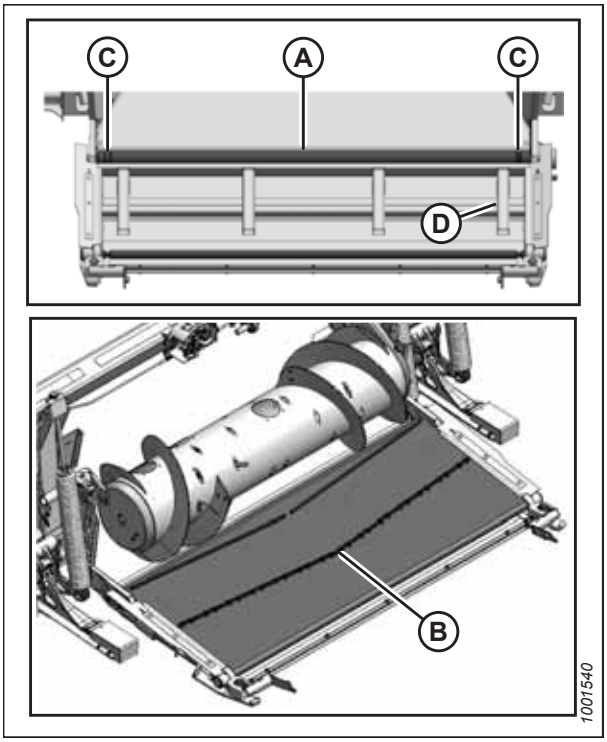


Figure 6.156: Adapter Feed Draper

11. Connect the draper joint with connector straps (B) and secure them with screws (A) and nuts. Ensure the screw heads face towards the rear of the deck, and tighten them only until the end of the screws are flush with the nuts.

12. Adjust the draper tension. For instructions, refer to *6.10.2 Checking and Adjusting Feed Draper Tension, page 429*.

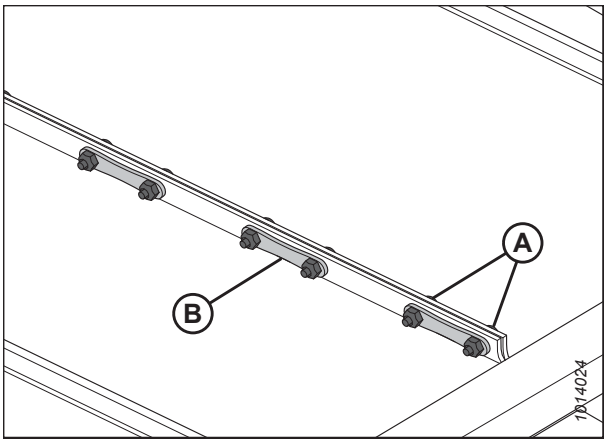


Figure 6.157: Draper Connector Straps

6.10.2 Checking and Adjusting Feed Draper Tension

The feed draper tension should be checked to determine if an adjustment is required.

DANGER

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

1. Raise the header to its full height.

2. Stop the engine, and remove the key from ignition.

3. Engage the header safety props. For instructions, refer to the combine operator's manual.

4. Ensure the draper guide (rubber track on underside of draper) is properly engaged in the drive roller groove and the idler roller is between guides.

   NOTE:

   The default position of spring retainer (A) is flush to the edge of spring box (B); however, the position of the spring retainer varies with draper tracking adjustment at the factory. Illustration shows transparent spring box to show spring retainer position.

5. Check the position of spring retainer (A). If feed draper tracks properly and spring retainers on both sides are positioned within the following dimensions, then no adjustment is necessary:

   - Loosened to 3 mm (1/8 in.) outside (C) front edge of spring box (B)
   - Tightened to 6 mm (1/4 in.) inside (D) front edge of the spring box (B)

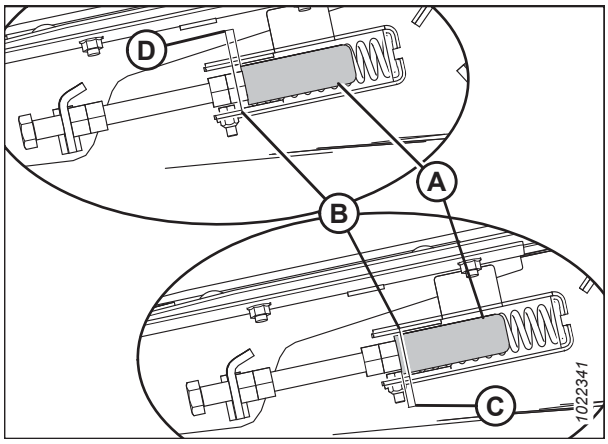


Figure 6.158: Feed Draper Tensioner (Spring Box Drawn Transparent)

6. If adjustment is necessary, proceed to Step *7, page 430*.

7. To adjust feed draper tension, 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:

   To avoid uneven draper tracking, adjust both sides equally.

8. Tension the draper until spring retainer (D) is within range described in Step *5, page 430*, and bolt (E) is free.

9. Tighten jam nut (A).

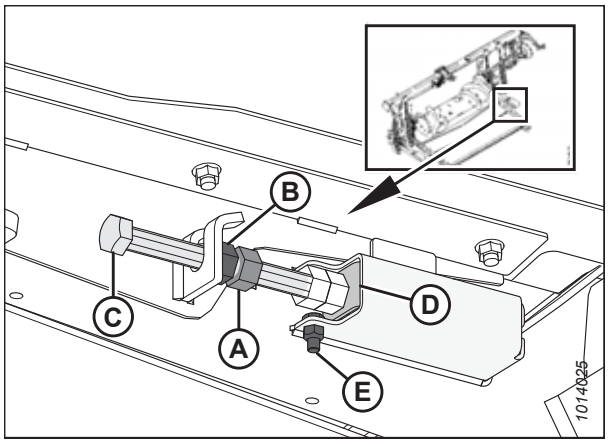


Figure 6.159: Tensioner

6.10.3 Adapter Drive Roller

Removing Adapter Feed Draper Drive Roller

DANGER

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

1. If attached to the combine, detach the header from the adapter. For instructions, refer to *5.7.1 Detaching Header from Adapter and Combine, page 330*.

2. Raise the feeder house to its full height.

3. Stop the engine, and the remove key from the ignition.

4. Engage the combine safety props. For instructions, refer to the combine operator's manual.

5. 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.

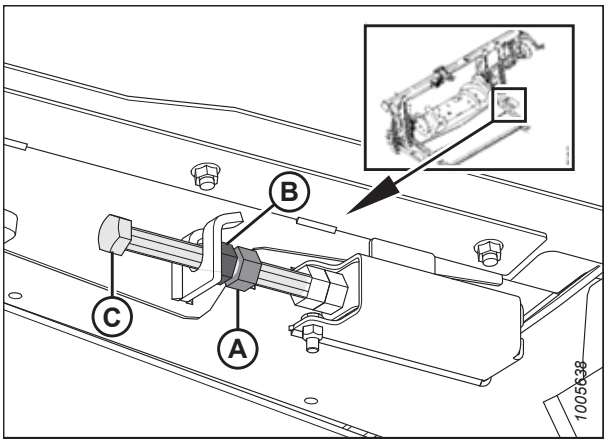


Figure 6.160: Tensioner

6. Remove screws (A) and nuts, and remove draper connector straps (B).

7. Open the feed draper.

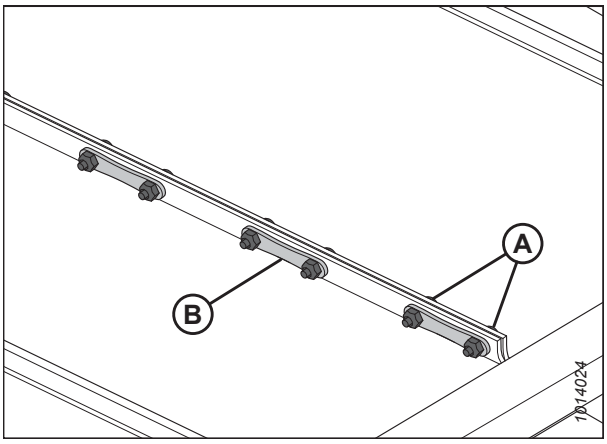


Figure 6.161: Draper Connector

8. Loosen the set screw and unlock bearing lock collar (A).

9. Remove three nuts and bolts (B).

10. Remove bearing flanges (C) and the bearing.

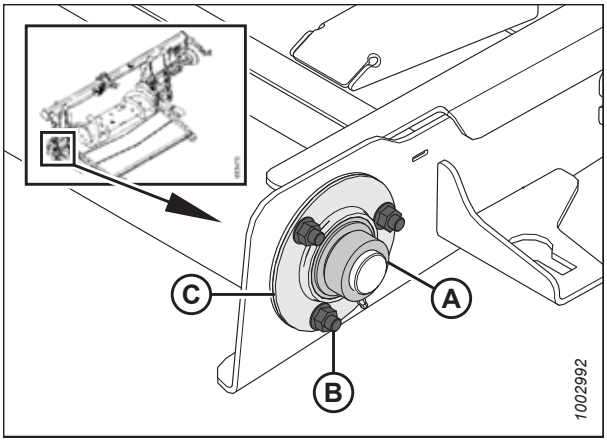


Figure 6.162: Bearing

11. Remove four bolts (A) securing hydraulic motor (B) to the frame. Slide the hydraulic motor away from drive roller (C).
12. Remove drive roller (C).

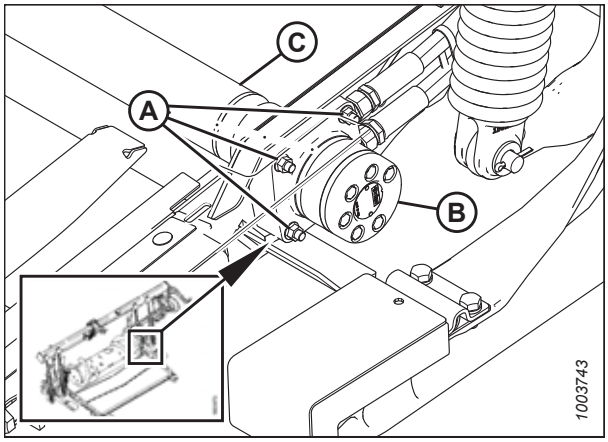


Figure 6.163: Hydraulic Motor

Installing Adapter Feed Draper Drive Roller

1. Apply grease to the spline.
2. Position drive roller (C) in the float module frame.
3. Slide hydraulic motor (B) into drive roller (C). Secure the motor to the feed deck with four bolts (A).

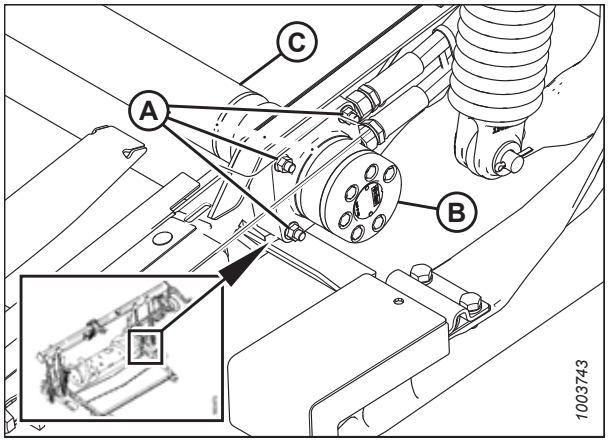


Figure 6.164: Motor

4. Install bearing flanges (C) and the bearing.
5. Install three bolts and nuts (B) to secure the bearing and flanges (C) to the feed deck.
6. Lock bearing collar (A) and tighten the set screw.
7. Install the feed deck draper. For instructions, refer to *6.10.1 Replacing Adapter Feed Draper, page 428*.
8. Tension the feed draper. For instructions, refer to *6.10.2 Checking and Adjusting Feed Draper Tension, page 429*.
9. Attach the header to the adapter. For instructions, refer to *5.7.2 Attaching Header to Adapter and Combine, page 335*.

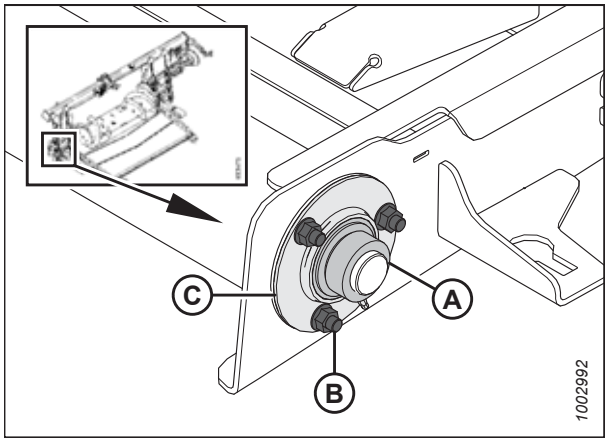


Figure 6.165: Bearing

Replacing Adapter Feed Draper Drive Roller Bearing

Removing Adapter Feed Draper Drive Roller Bearing

DANGER

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

1. If attached to the combine, detach the header from the adapter. For instructions, refer to *5.7.1 Detaching Header from Adapter and Combine, page 330*.
2. Raise the feeder house to its full height.
3. Stop the engine, and remove the key from the ignition.
4. Engage the combine safety props. For instructions, refer to the combine operator's manual.
5. 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.

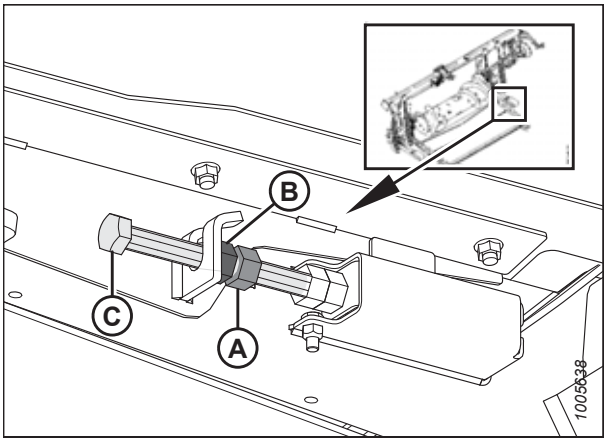


Figure 6.166: Tensioner

6. Loosen the set screw and unlock bearing lock collar (A).
7. Remove three nuts and bolts (B).
8. Remove bearing flanges (C) and the bearing.

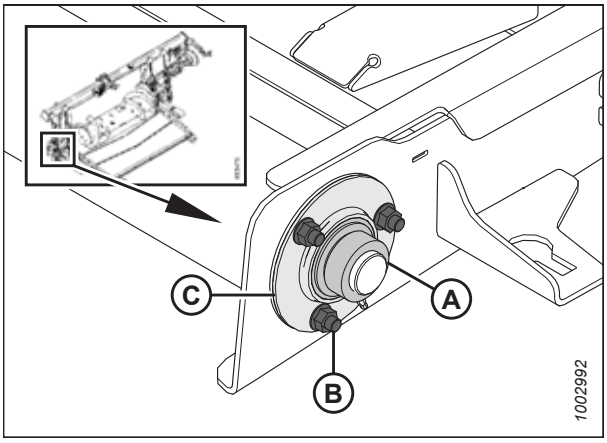


Figure 6.167: Bearing

Installing Adapter Feed Draper Drive Roller Bearing

1. Install bearing flanges (C) and the bearing.
2. Install three bolts and nuts (B) to secure the bearing and flanges (C) to the feed deck.
3. Lock bearing collar (A) and tighten the set screw.
4. Tension the feed draper. For instructions, refer to *6.10.2 Checking and Adjusting Feed Draper Tension, page 429*.
5. Attach the header to the adapter. For instructions, refer to *5.7.2 Attaching Header to Adapter and Combine, page 335*.

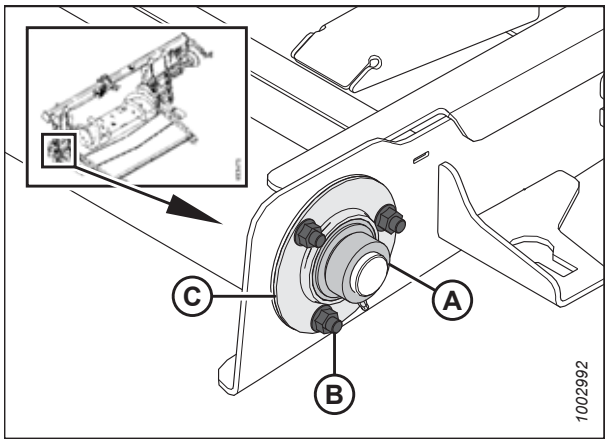


Figure 6.168: Bearing

6.10.4 Adapter Idler Roller

Removing Adapter Feed Draper Idler Roller

DANGER

Engage the header safety props and reel props before working under the header or reel.

1. Remove the header from the adapter, but leave the adapter attached to the combine. Refer to *5.7.1 Detaching Header from Adapter and Combine, page 330*.
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.

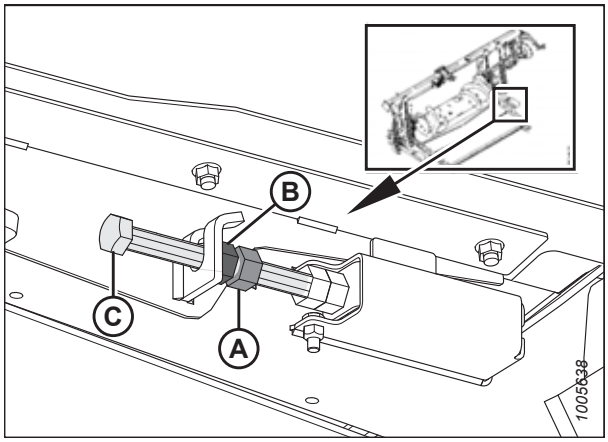


Figure 6.169: Tensioner

4. Remove screws (A) and nuts, and remove draper connector straps (B).
5. Open the feed draper.

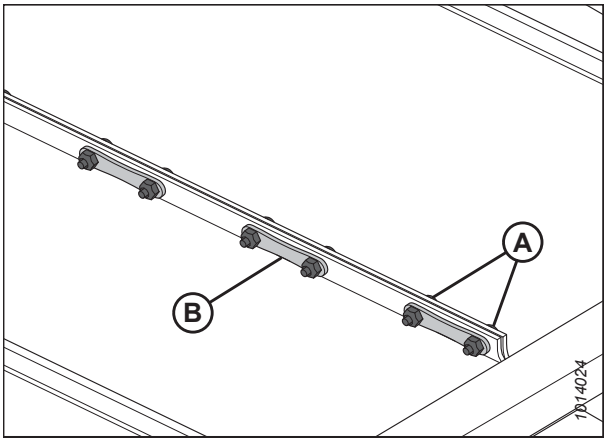


Figure 6.170: Draper Connector

6. Remove two bolts (A) and nuts (C) from both ends of the idler roller.
7. Remove idler roller assembly (B).

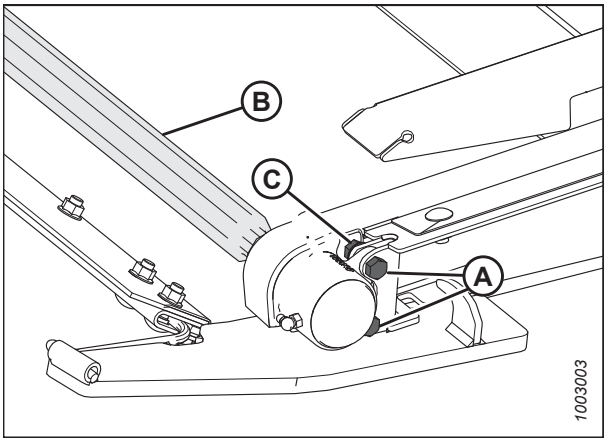


Figure 6.171: Idler Roller

Replacing Adapter Feed Draper Idler Roller Bearing

Follow the provided procedure to properly replace the idler roller bearing.

1. Remove dust cap (A) from the end of the idler roller.

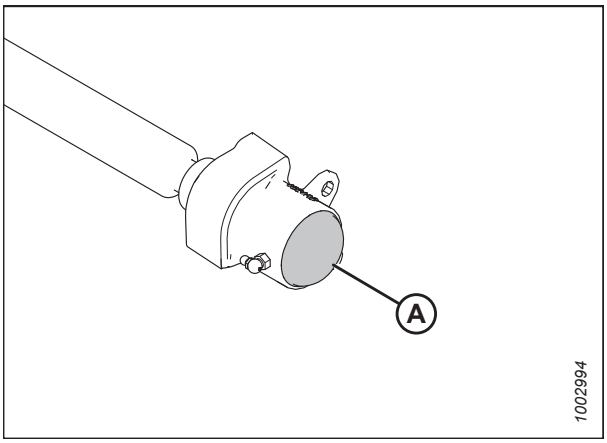


Figure 6.172: Idler Roller

2. Remove nut (A).
3. Use a hammer to tap bearing assembly (B) until it slides off the shaft.

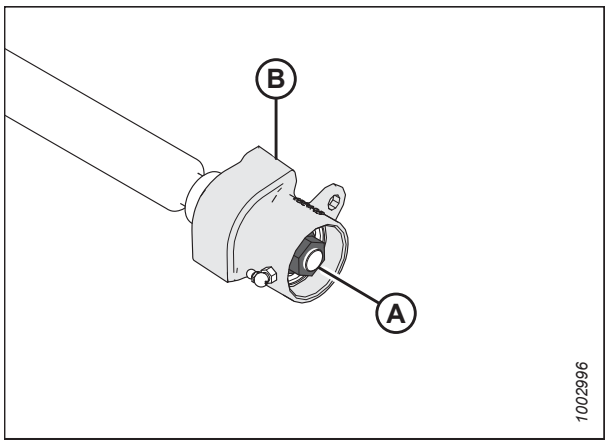


Figure 6.173: Idler Roller

4. Secure housing (D) and remove internal retaining ring (A), bearing (B), and two seals (C).
5. Install seals (C) into housing (D).

   NOTE:

   Ensure the flat side of each seal is facing inboard.

6. Brush the shaft with oil, and carefully rotate housing (D) with seals (C) onto the shaft by hand to prevent damaging the seals.
7. Install bearing (B).
8. Install retaining ring (A).

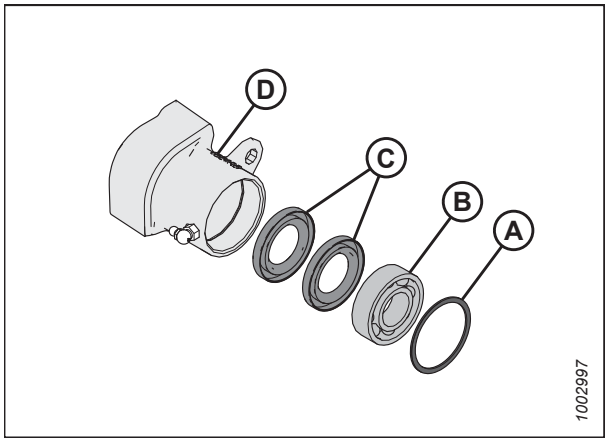


Figure 6.174: Bearing Assembly

9. Secure the bearing assembly to the shaft with nut (A), and torque the nut to 81–95 Nm (60–70 lbf·ft).
10. Install dust cap (B).
11. Pump grease into the bearing assembly.

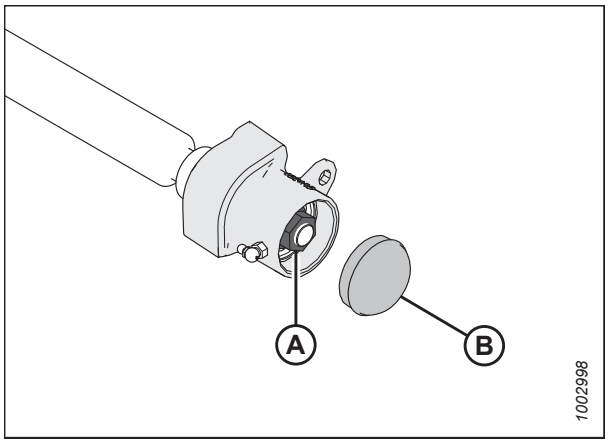


Figure 6.175: Idler Roller

Installing Adapter Feed Draper Idler Roller

1. Position idler roller assembly (B) in the feed deck.
2. Install two bolts (A) and nuts (C) at both ends of the idler roller.

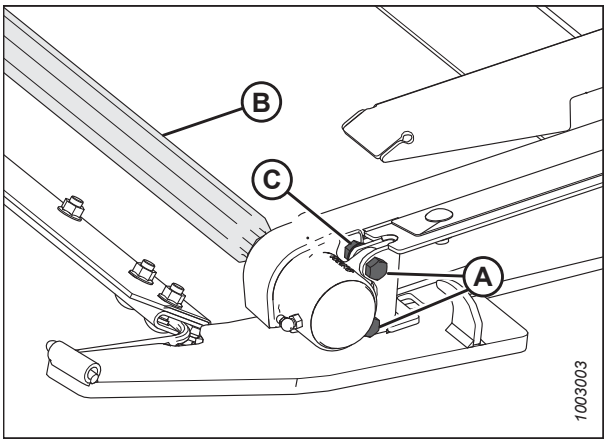


Figure 6.176: Idler Roller

3. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
4. Tension the feed draper. For instructions, refer to *6.10.2 Checking and Adjusting Feed Draper Tension, page 429*.
5. Attach the header to the adapter. For instructions, refer to *5.7.2 Attaching Header to Adapter and Combine, page 335*.

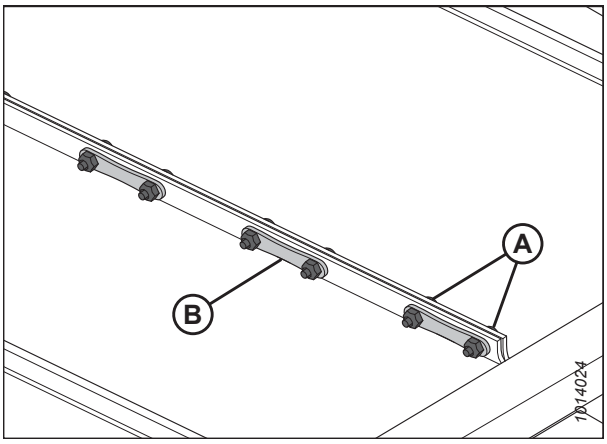


Figure 6.177: Draper Connector

6.10.5 Lowering Polyethylene Door – Adapter Feed Deck

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

1. Start the combine.
2. Raise the header fully, and engage the header lift cylinder locks.
3. Stop the engine, and remove the key from the ignition.
4. Engage the reel safety locks. For instructions, refer to *Engaging Reel Safety Props, page 31*.

5. Rotate latches (A) to unlock handles (B).
6. Hold pan (C) and rotate handles (B) downward to release pan.

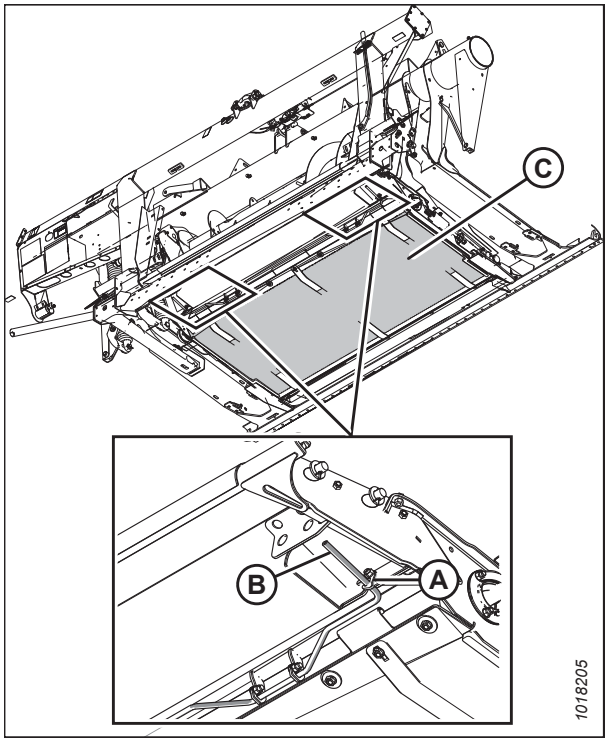


Figure 6.178: Feed Deck Polyethylene Door

7. Lower plastic pan (A) and check for debris that may have fallen under the adapter draper.

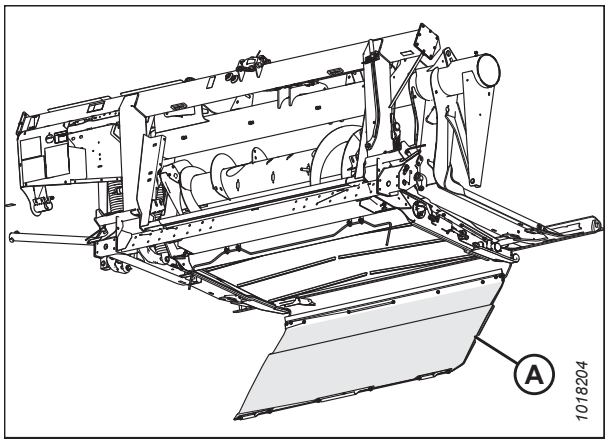


Figure 6.179: Feed Deck Polyethylene Door

6.10.6 Raising Polyethylene Door – Adapter Feed Deck

1. Raise plastic pan (A).
2. Attach hooks (B) to lock handle (C).

   IMPORTANT:
   Ensure all three hooks are secured.

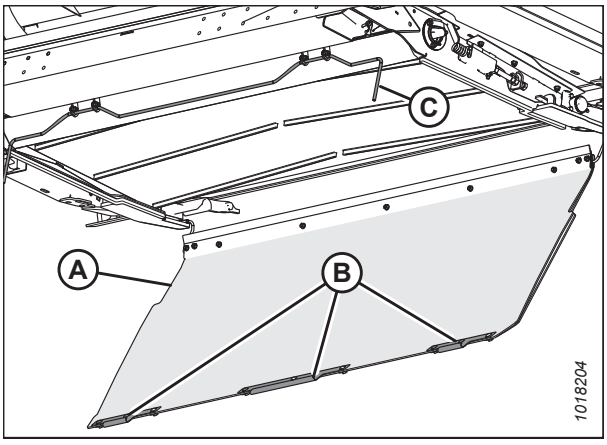


Figure 6.180: Feed Deck Polyethylene Door

3. Hold pan (C) and rotate handles (B) upward to secure pan.
4. Rotate latches (A) to lock handles (B).

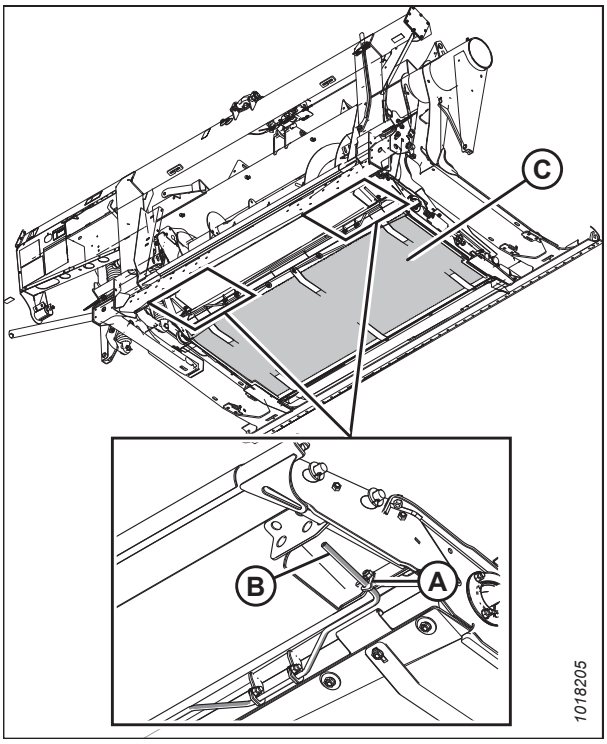


Figure 6.181: Feed Deck Polyethylene Door

6.10.7 Checking Link Holder Hooks

Check the left and right link holder hooks **DAILY** to ensure they are not cracked or broken.

DANGER

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.

3. Engage the header safety props. Refer to the combine operator's manual for instructions.

4. Before operation, ensure both link holder hooks (A) are engaged on the float module under the feed deck as shown.

   NOTE:

   Figure *6.182, page 440* shows the style of deck hook that is current at the time of this manual's publication. The appearance of older hooks varies slightly.

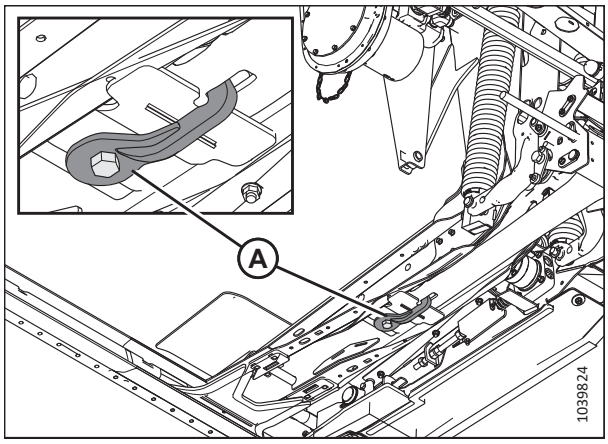


Figure 6.182: Feed Deck – View from Below

- Undamaged link holder hook (A)
- Damaged/broken link holder hook (B)
- Stretched link holder (not shown)

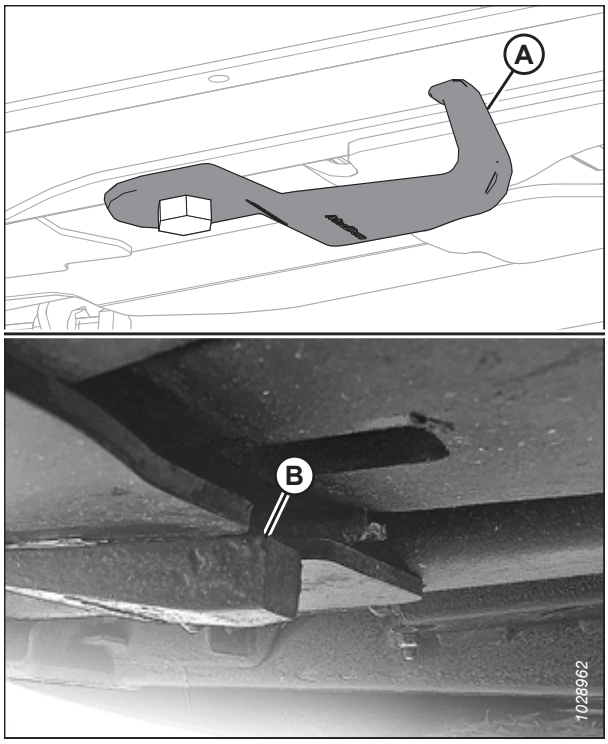


Figure 6.183: Link Holder Hooks

NOTE:

To move hook (A) to the storage position, loosen bolt (B) and rotate the hook 90°.

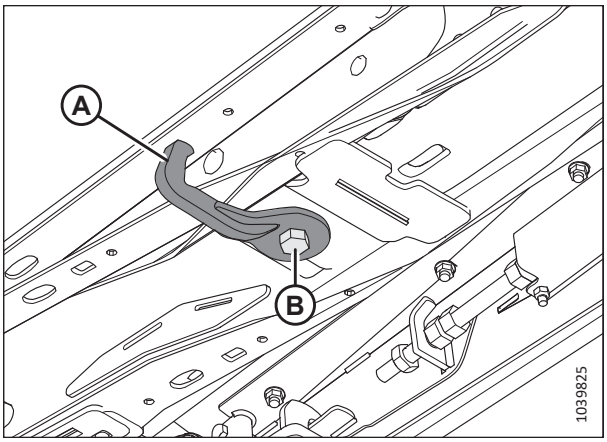


Figure 6.184: Link Holder Hook in Storage Position

6.11 Adapter Stripper Bars and Feed Deflectors

6.11.1 Removing Stripper Bars

1. Detach the header from the combine. Refer to *5 Header Attachment/Detachment, page 289*.
2. Remove the four bolts and nuts (A) securing stripper bar (B) to the adapter frame, and remove the stripper bar.
3. Repeat at the opposite side.

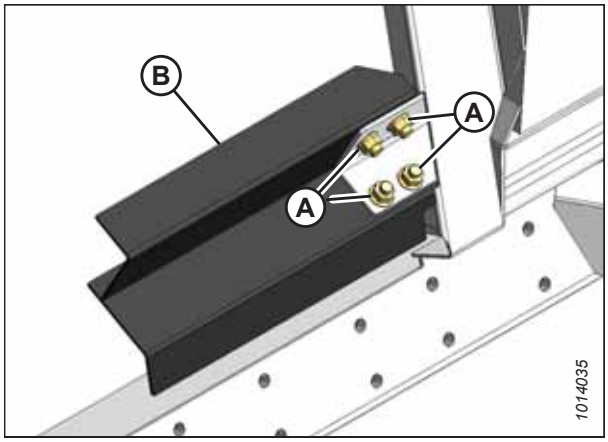


Figure 6.185: Stripper Bar

6.11.2 Installing Stripper Bars

1. Detach the header from the combine. Refer to *5 Header Attachment/Detachment, page 289*.
2. Position stripper bar (A) so that notch (B) is at the corner of the frame.
3. Secure 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.

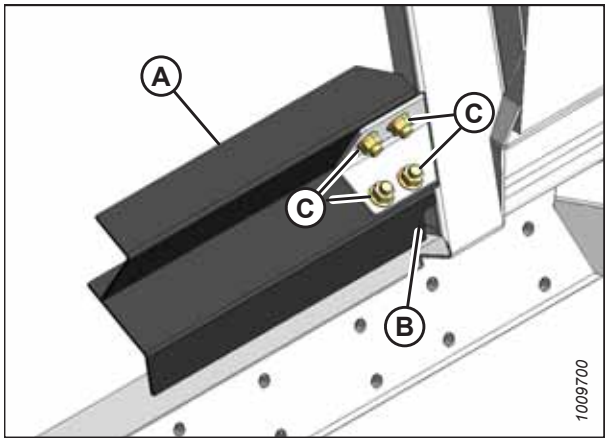


Figure 6.186: Stripper Bar

6.11.3 Replacing Feed Deflectors on New Holland CR Combines

1. Detach the header from the combine. Refer to *5 Header Attachment/Detachment, page 289*.

2. Measure gap (X) between existing feed deflector (A) and the forward edge of the pan.

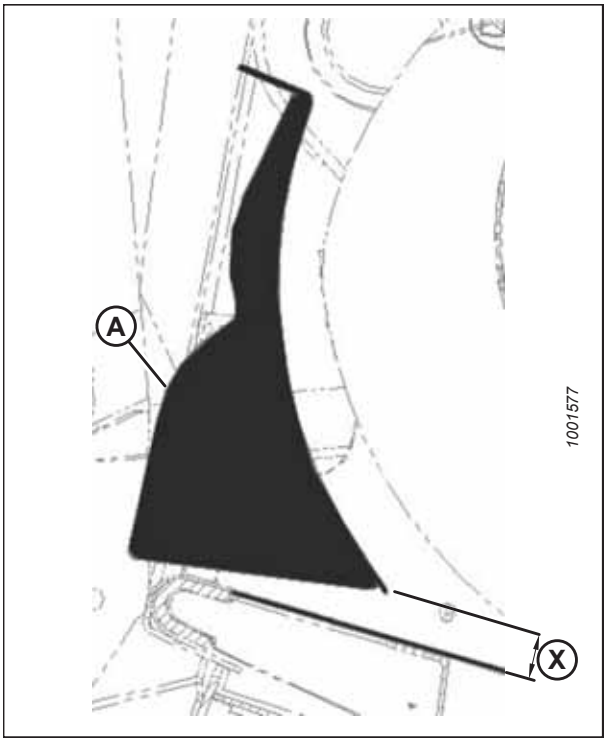


Figure 6.187: Feed Deflector – End View

3. Remove the two bolts and nuts (B) securing feed deflector (A) to the adapter frame, and remove the feed deflector.
4. Position 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 443*, 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 *5 Header Attachment/Detachment, page 289*.
7. Extend the center-link fully, and check the gap between feed deflector (A) and the pan. Maintain a 19–25 mm (3/4–1 in.) gap.

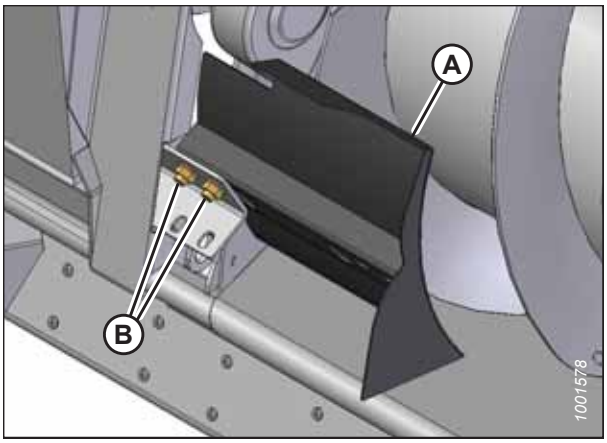


Figure 6.188: Feed Deflector

6.12 Side Drapers

Two side drapers (A) convey cut crop to the adapter's feed draper and auger. Replace the side drapers if they are torn, cracked, or missing slats.

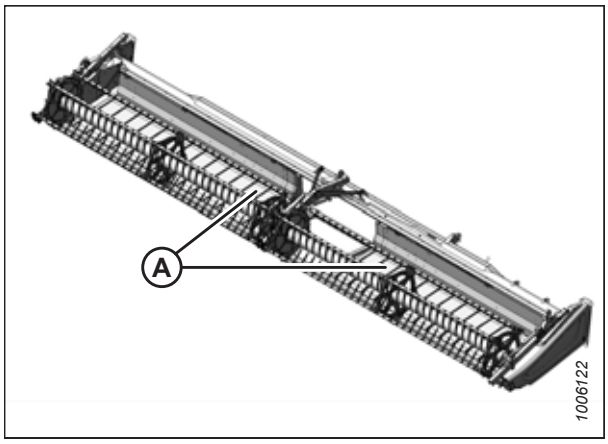


Figure 6.189: Side Drapers

6.12.1 Removing Side Drapers

Replace the drapers if they are torn, cracked, or missing slats.

DANGER

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

DANGER

Ensure that all bystanders have cleared the area.

WARNING

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

1. Start the engine.
2. Raise the reel fully.
3. Raise the header fully.
4. Move the draper until the draper joint is in the work area.

   NOTE:

   The decks on the header can also be shifted towards the center to provide an opening at the endsheets.
5. Shut down the engine, and remove the key from the ignition.
6. Engage the header safety props. Refer to the combine operator's manual for instructions.
7. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
8. Release the tension on the draper. For instructions, refer to *6.12.3 Adjusting Side Draper Tension, page 447*.

9. Remove screws (A) and tube connectors (B) at the draper joint.
10. Pull the draper from the deck.

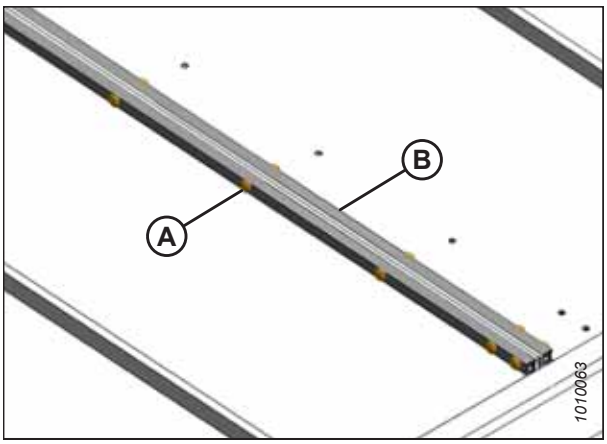


Figure 6.190: Draper Joint

6.12.2 Installing Side Drapers

Side drapers are used to bring cut crop to the center of the header. To ensure they are installed correctly, follow the recommended installation procedure provided here.

DANGER

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

WARNING

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

1. Raise the reel fully.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. Refer to the combine operator's manual for instructions.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
6. Check the deck height before installing the drapers. For instructions, refer to *6.12.5 Adjusting Deck Height, page 451*.

7. 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.
8. 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.
9. Feed in the draper until it can be wrapped around the drive roller.
10. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.

Figure 6.191: Installing Draper

11. Loosen mounting bolts (B) on rear deck deflector (A) (this may help with draper installation).

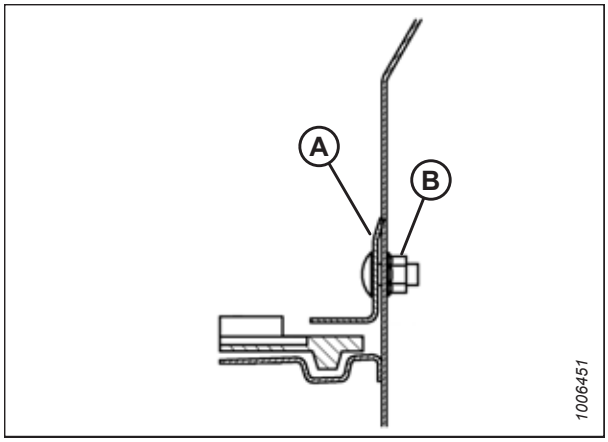


Figure 6.192: Draper Seal

12. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.
13. Adjust the draper tension. For instructions, refer to *6.12.3 Adjusting Side Draper Tension, page 447*.

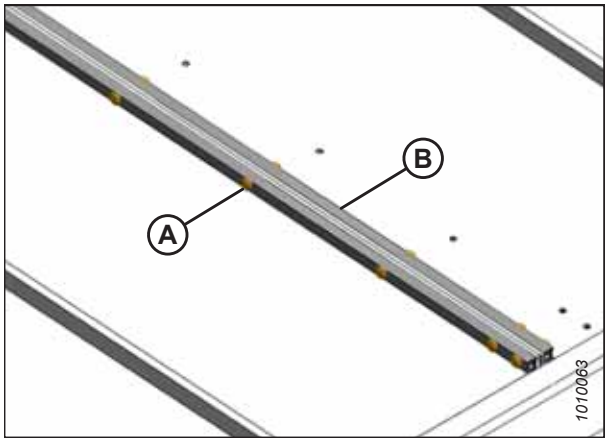


Figure 6.193: Draper Joint

14. 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 cutterbar (C) and draper (B).

15. Refer to *6.12.5 Adjusting Deck Height, page 451* to achieve the proper gap.

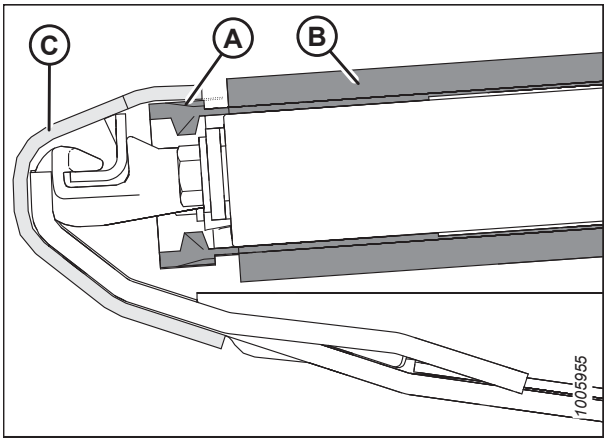


Figure 6.194: Draper Seal

6.12.3 Adjusting Side Draper Tension

The drapers are tensioned at the factory and should NOT require adjustment. If adjustment is required, draper tension should be just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

DANGER

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

1. Ensure white indicator bar (A) is at the halfway point in the window.

DANGER

Check to be sure all bystanders have cleared the area.

2. Start the engine.

3. Raise the header fully.

4. Shut down the engine, and remove the key from the ignition.

5. Engage the header safety props. Refer to the combine operator's manual for instructions.

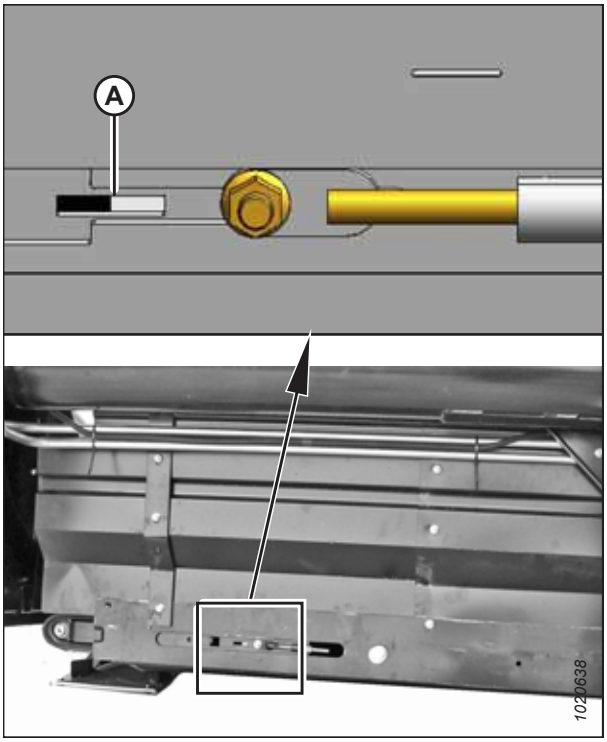


Figure 6.195: Left Adjuster Shown – Right Opposite

6. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in groove (A) on the drive roller.

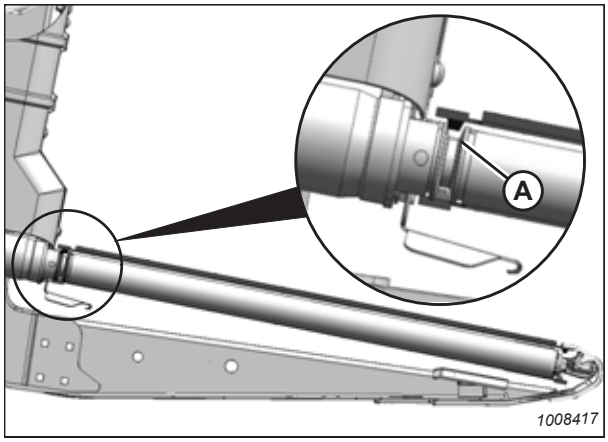


Figure 6.196: Drive Roller

7. Ensure idler roller (A) is between draper guides (B).

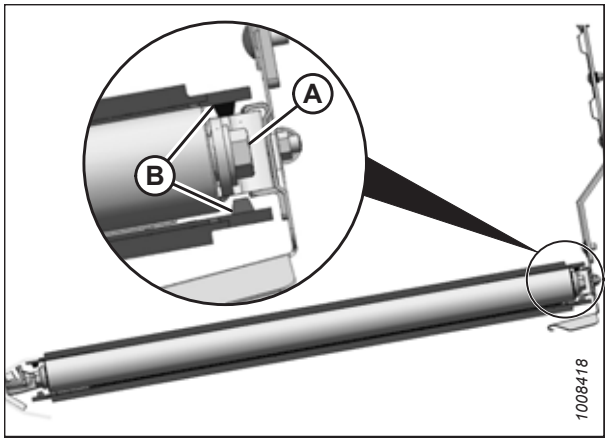


Figure 6.197: Idler Roller

IMPORTANT:

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

8. Turn adjuster bolt (A) counterclockwise to loosen the draper. White indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the draper is loosening. Loosen the draper until the white indicator bar is at the halfway point in the window.

9. Turn adjuster bolt (A) clockwise to tighten the draper. White indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten the draper until the white indicator bar is at the halfway point, on the right side of 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.

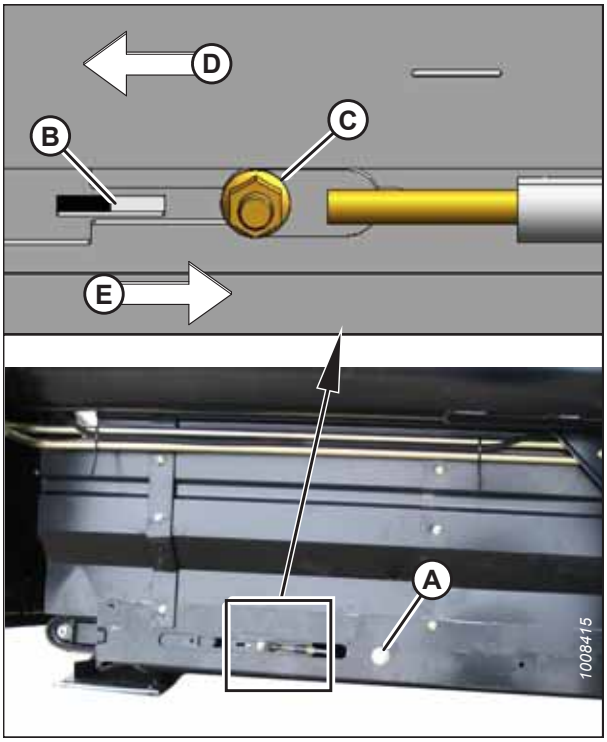


Figure 6.198: Draper Tensioner

6.12.4 Adjusting Side Draper Tracking

Side draper tracking is adjusted by aligning the drive and idler draper rollers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *6.1 Preparing Machine for Servicing, page 343*.

Each draper deck has fixed drive roller (A) and spring-loaded idler roller (B) that can be aligned using the adjuster rods so the draper tracks properly on the rollers.

Table 6.1 Side Draper Tracking

Tracking	Location	Adjustment	Method
Backward	Drive roller	Increase **(X)**	Tighten nut
Forward	Drive roller	Decrease **(X)**	Loosen nut
Backward	Idler roller	Increase **(Y)**	Tighten nut
Forward	Idler roller	Decrease **(Y)**	Loosen nut

1. Refer to Table *6.1, page 449* to determine which roller requires adjustment and which adjustments are necessary.

   NOTE:

   To change the distance **(X)**, adjust the back end of the roller using the adjuster mechanism at the inboard end of the deck.

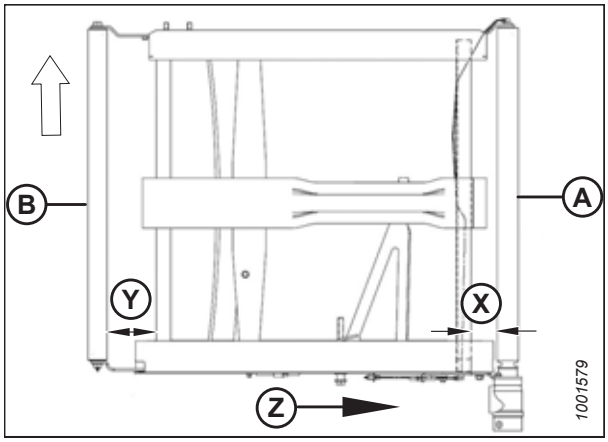


Figure 6.199: Draper Tracking Adjustments

A - Drive Roller
B - Idler Roller
X - Drive Roller Adjust
Y - Idler Roller Adjust
Z - Draper Rotation Direction

2. Adjust the drive roller distance **(X)** as follows:

   a. Loosen nuts (A) and jam nut (B).

   b. Turn adjuster nut (C).

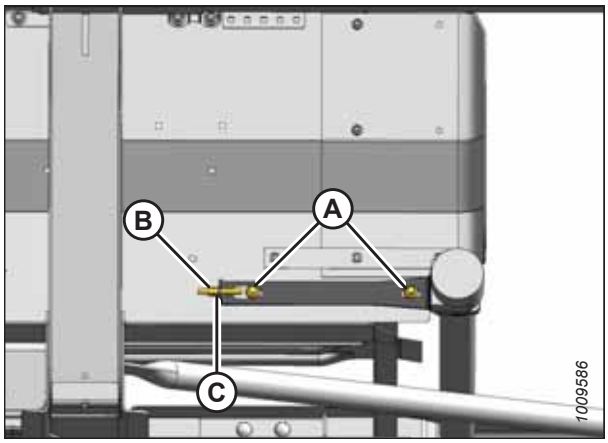


Figure 6.200: Left Drive Roller

3. Adjust the idler roller distance **(Y)** as follows:

   a. Loosen nut (A) and jam nut (B).

   b. Turn adjuster nut (C).

   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.

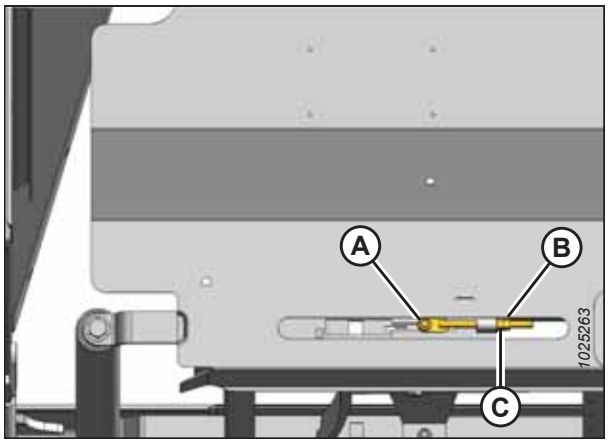


Figure 6.201: Left Idler Roller

6.12.5 Adjusting Deck Height

The draper seal is the gap between the draper and the cutterbar. It should be inspected before the draper is operated to prevent potential damage to the draper system.

DANGER

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

WARNING

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

IMPORTANT:

The draper seal is set to 0–3 mm (0–1/8 in.) at the factory to prevent material from entering into the side drapers and stalling them. Whenever you are installing new drapers, the draper seal **MUST** be set to at least 1 mm (1/16 in.). This is because new drapers are very tacky and can cause material to accumulate on the underside of the cutterbar, which can cause the draper to rub against the cutterbar and thereby cause the hydraulic pressure in the draper circuit to increase to dangerous levels. A gap of 1–3 mm (1/16–1/8 in.) is acceptable. Follow this procedure to check the gap; adjust the gap if necessary.

1. Lower the header onto blocks.
2. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that clearance (A) between draper (B) and cutterbar (C) is 1–3 mm (1/16–1/8 in.).

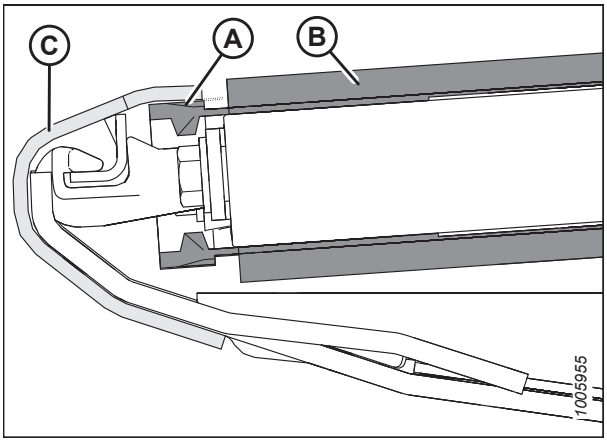


Figure 6.202: Draper Seal

5. Measure the clearance between the draper and the cutterbar at deck supports (A).

6. Reduce the tension on the draper. For instructions, refer to *6.12.3 Adjusting Side Draper Tension, page 447*.

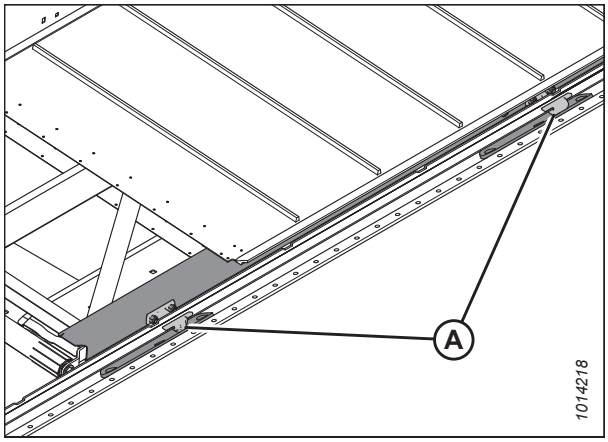


Figure 6.203: Draper Deck Supports

7. Lift the front edge of draper (A) past cutterbar (B) to expose the deck support.

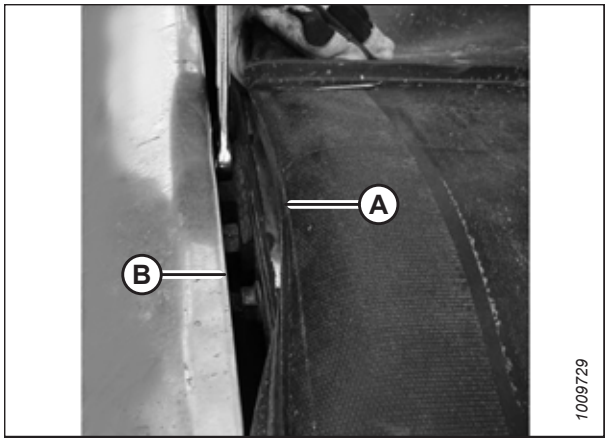


Figure 6.204: Deck Adjustment

8. Loosen two lock nuts (A) on deck support (B) by one half-turn **ONLY**.

   NOTE:

   The deck is shown with the draper removed in the illustration at right. The number of deck supports depends on the width of the header.

9. To lower the deck relative to the deck supports, tap deck (C) with a hammer. To raise the deck relative to the deck supports, tap deck support (B) using a hammer and punch.

10. Measure the thickness of the draper belt.

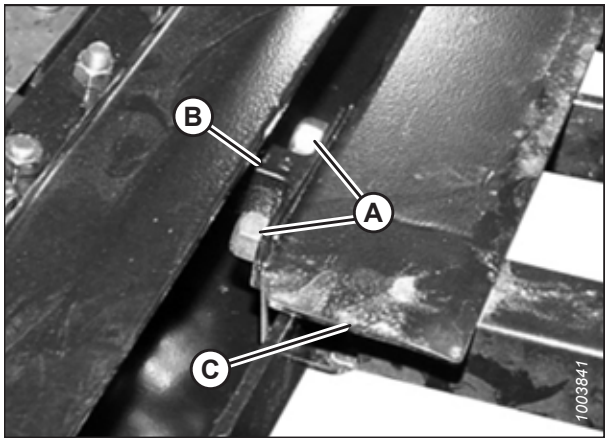


Figure 6.205: Deck Support

11. Locate a feeler gauge of the same thickness as the draper belt plus 1 mm (1/16 in.).
12. Slide feeler gauge along deck (A) under the cutterbar in order to properly set the gap.
13. To create a seal, adjust deck (A) so that clearance (B) between cutterbar (C) and the deck is the same thickness as the draper belt plus 1 mm (1/16 in.).

    NOTE:

    When checking the clearance at either roller, measure the gap beginning at the roller tube, **NOT** the deck.
14. Tighten deck support hardware (D).
15. Recheck gap (B) with a feeler gauge. For instructions, refer to Step *11, page 453*.
16. Repeat Step *8, page 452* to Step *15, page 453* for each draper deck support requiring adjustment.
17. Tension the draper. For instructions, refer to *6.12.3 Adjusting Side Draper Tension, page 447*.
18. If necessary, adjust backsheet deflector (A) by loosening nut (D) and moving the deflector until there is a 1–7 mm (1/16–1/4 in.) gap (indicated by callout [C]) between draper (B) and the deflector.

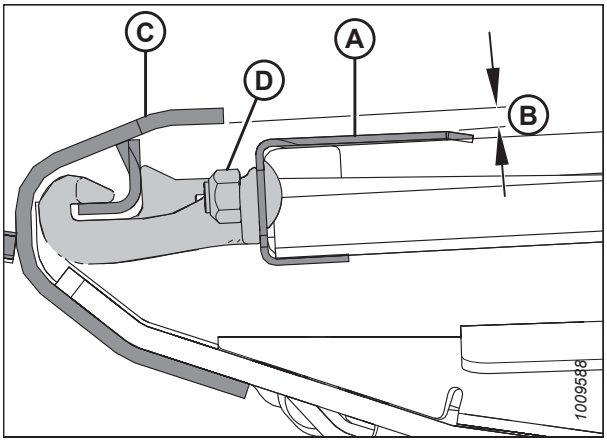


Figure 6.206: Deck Support

DANGER

Ensure that all bystanders have cleared the area.

19. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.
20. Lower the reel fully.
21. Shut down the engine, and remove the key from the ignition.

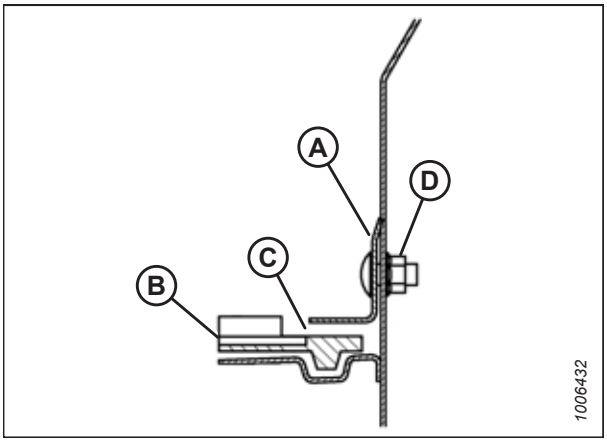


Figure 6.207: Backsheet Deflector

6.12.6 Side 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 Side Draper Roller Bearing

Check for damaged draper roller bearings using an infrared thermometer as follows:

1. Engage the header and run the drapers for approximately 3 minutes.
2. Check the temperature of the draper roller bearings at each of roller arms (A), (B), and (C) on each deck.

   NOTE:

   Ensure the temperature does **NOT** exceed 44°C (80°F) above the ambient temperature.

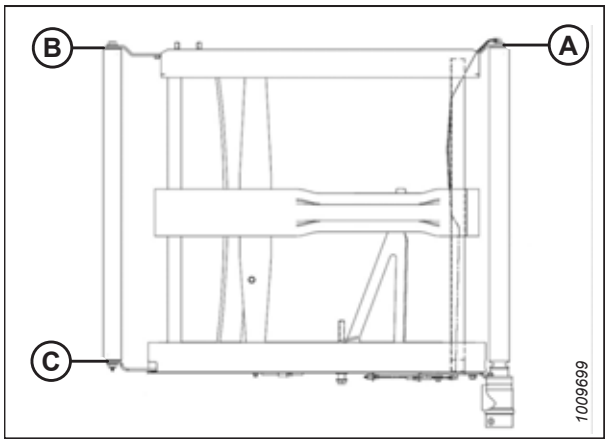


Figure 6.208: Roller Arms

Side Draper Idler Roller

Removing Side Draper Idler Roller

The feed draper idler roller needs to be removed when repairing or replacing it.

DANGER

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

WARNING

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

NOTE:

If the draper joint is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine.
2. Raise the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. Refer to the combine operator's manual for instructions.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

7. Loosen the draper by turning adjuster bolt (A) counterclockwise.

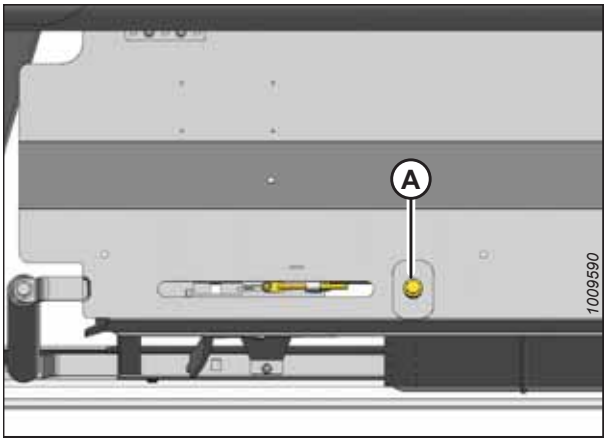


Figure 6.209: Tensioner

8. Remove screws (A), tube connectors (B), and nuts from the draper joint to uncouple the draper.
9. Pull the draper off the idler roller.

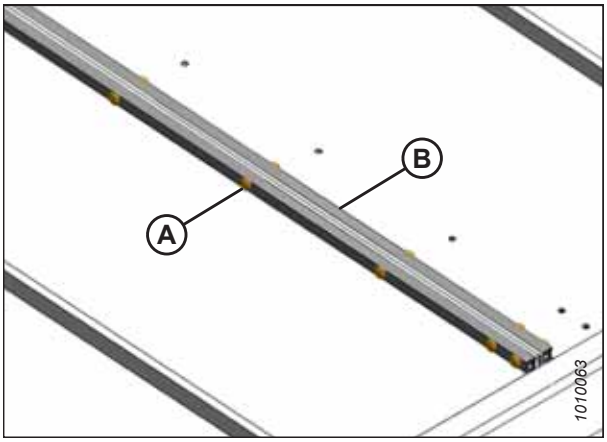


Figure 6.210: Draper Joint

10. Remove bolts (A) and washers at the ends of the idler roller.
11. Spread roller arms (B) and (C) and remove the idler roller.

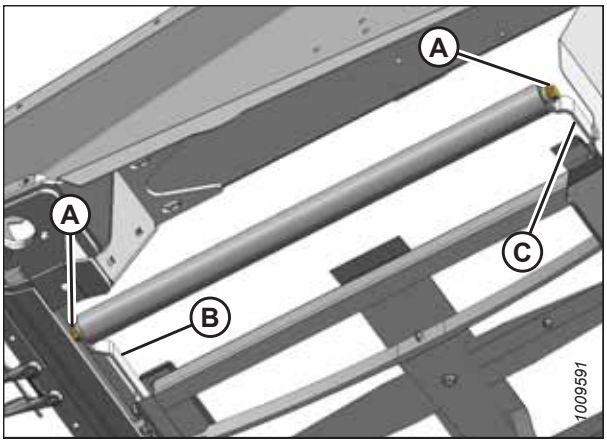


Figure 6.211: Idler Roller

Replacing Side Draper Idler Roller Bearing

The bearing helps the roller turn. The bearing needs to be removed when replacing it.

1. Remove the draper idler roller assembly. For instructions, refer to *Removing Side Draper Idler Roller, page 454*.

2. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
   a. Attach slide hammer (D) to threaded shaft (E) in the bearing assembly.
   b. Tap out bearing assembly (A) and seal (B).
3. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace it if necessary.

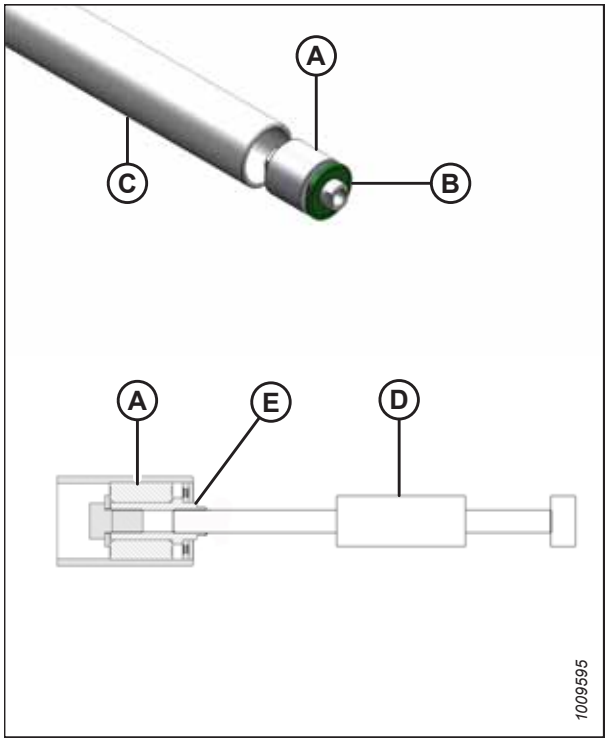


Figure 6.212: Idler Roller Bearing

4. Install 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 8 cc or two pumps of grease in front of bearing assembly (A). Refer to the inside back cover for specifications.
6. Install new seal (C) at the roller opening.
7. Tap seal (C) into the roller opening with a suitably sized socket until gap (D) between the seal and the outside edge of the tube is 3–4 mm (0.12–0.16 in.).

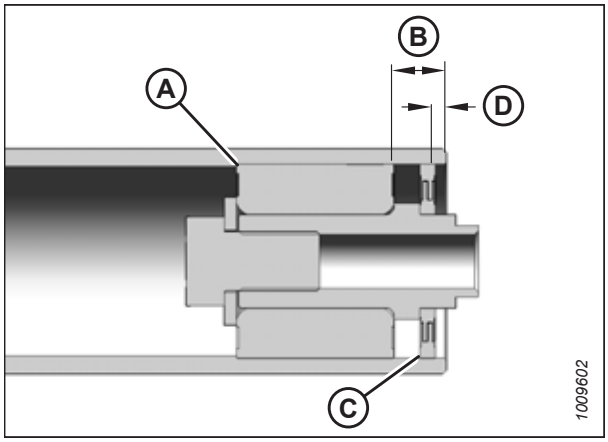


Figure 6.213: Idler Roller Bearing

Installing Side Draper Idler Roller

The roller needs to be installed after it has been repaired or replaced

1. Position the stub shaft into the idler roller in 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 rear arm (C).
3. Install bolts (A) with washers, and torque them to 93 Nm (70 lbf·ft).
4. Wrap the draper over the idler roller, close the draper, and set the tension. For instructions, refer to *6.12.2 Installing Side Drapers, page 445*.
5. Run the machine and verify the draper tracks correctly. Adjust the draper tracking if required. For instructions, refer to *6.12.4 Adjusting Side Draper Tracking, page 449*.

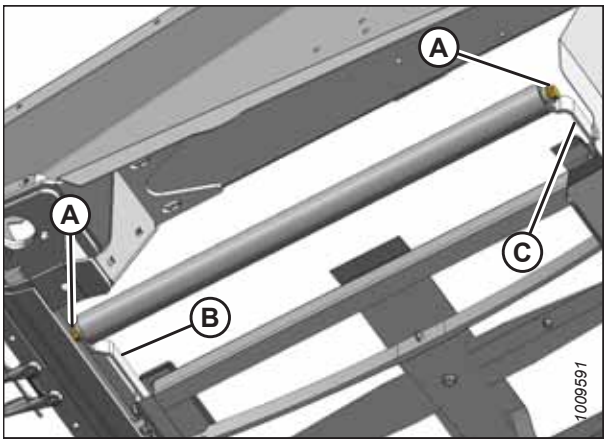


Figure 6.214: Idler Roller

Side Draper Deck Drive Roller

Removing Side Draper Drive Roller

The roller needs to be removed when repairing or replacing it.

DANGER

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

WARNING

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

NOTE:

If the draper joint is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Raise the reel fully.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Engage the header safety props. Refer to the combine operator's manual for instructions.

6. Loosen the draper by turning adjuster bolt (A) counterclockwise.

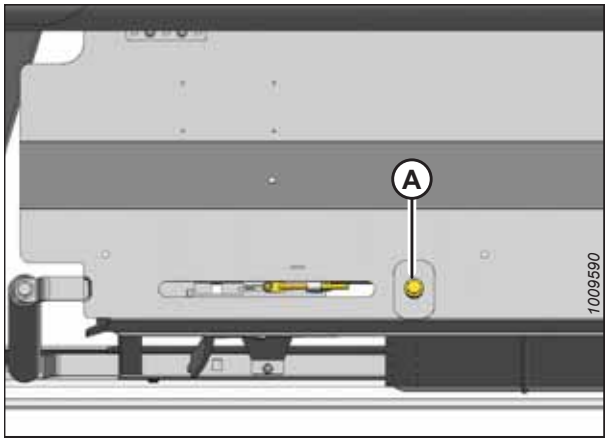


Figure 6.215: Tensioner

7. Remove connectors (B), screws (A), and nuts from the draper joint to uncouple the draper.
8. Pull the draper off the drive roller.

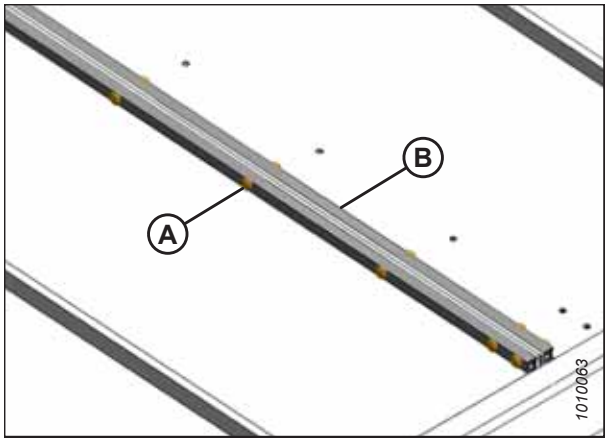


Figure 6.216: Draper Joint

9. Align the set screws with hole (A) in the guard. Remove the two set screws holding the motor onto the drive roller.

   NOTE:

   The set screws are 1/4 turn apart.

10. Remove four bolts (B) securing the motor to the drive roller arm.

    NOTE:

    It may be necessary to remove plastic shield (C) to gain access to the top bolt.

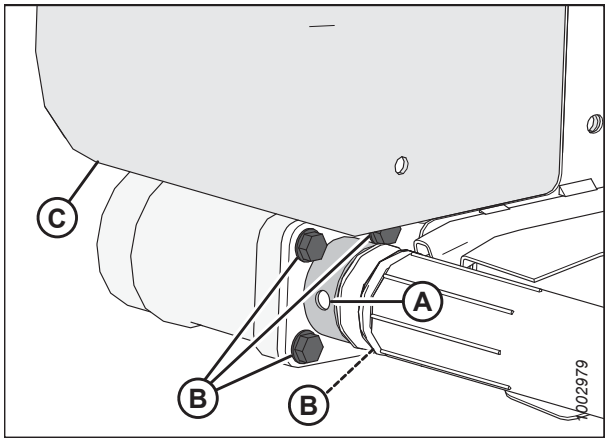


Figure 6.217: Drive Roller

11. Remove bolt (A) securing the opposite end of drive roller (B) to the support arm.
12. Remove drive roller (B).

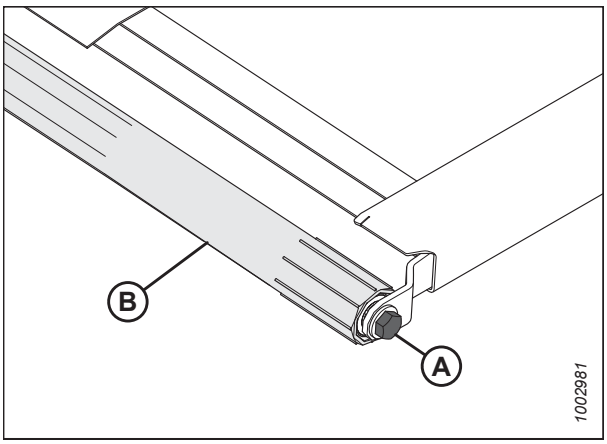


Figure 6.218: Drive Roller

Replacing Side Draper Drive Roller Bearing

You will need a slide hammer to remove and replace the bearing on a drive roller.

1. Remove the draper drive roller assembly. For instructions, refer to *Removing Side Draper Drive Roller, page 457*.
2. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
   a. Attach slide hammer (D) to threaded shaft (E) in the bearing assembly.
   b. Tap out bearing assembly (A) and seal (B).
3. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace it if necessary.

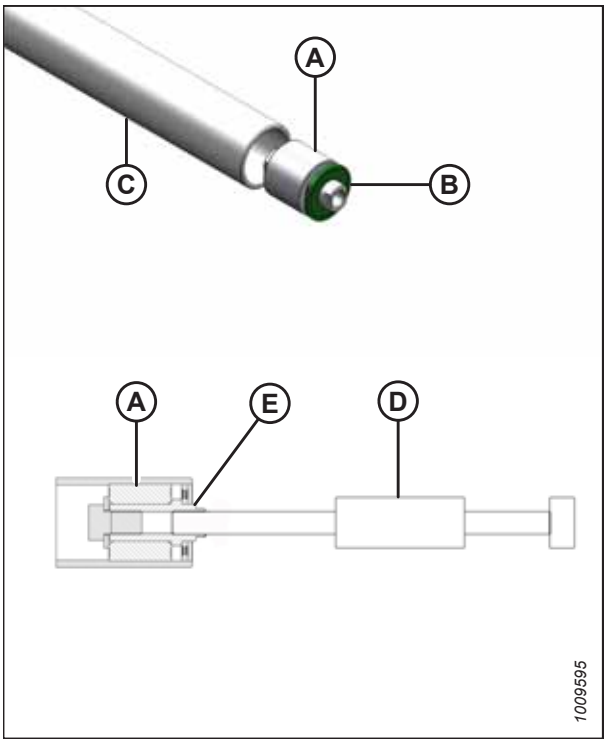


Figure 6.219: Drive Roller Bearing

4. Install 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 8 cc or two pumps of grease in front of bearing assembly (A). Refer to the inside back cover for specifications.
6. Install new seal (C) at the roller opening.
7. Tap seal (C) into the roller opening with a suitably sized socket until gap (D) between the seal and the outside edge of the tube is 3–4 mm (0.12–0.16 in.).

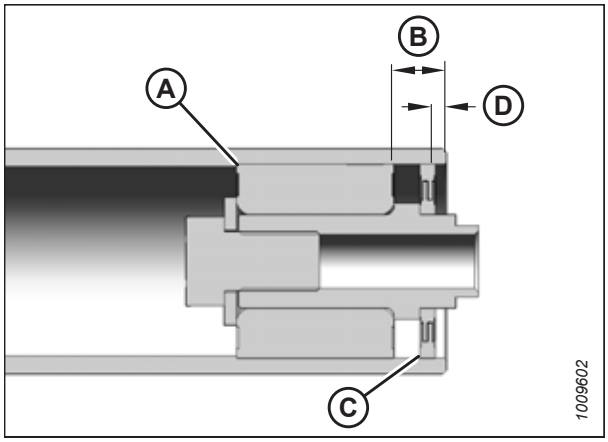


Figure 6.220: Drive Roller Bearing

Installing Side Draper Drive Roller

The draper deck has a roller on either end of the deck. One is the idler roller and one is the drive roller.

1. Position drive roller (B) between the roller support arms.
2. Attach roller (B) to the arm at the forward end of the deck with bolt (A). Support the other end of the roller and torque bolt (A) to 95 Nm (70 lbf·ft).
3. Grease the motor shaft and insert it into the end of drive roller (B).

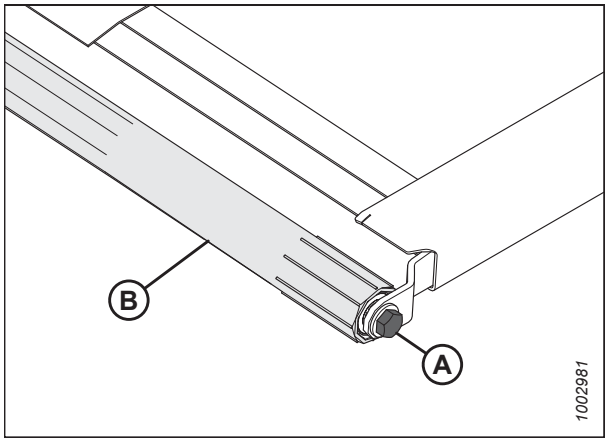


Figure 6.221: Drive Roller

4. Secure the motor to the roller support with four bolts (B).
5. Torque the bolts to 27 Nm (239 lbf·in).
6. Tighten any loosened bolts and reinstall plastic shield (C) if previously removed.
7. Ensure the motor is all the way into the roller, and tighten the two set screws (not shown) through access hole (A).

   NOTE:

   The set screws are 1/4 turn apart.

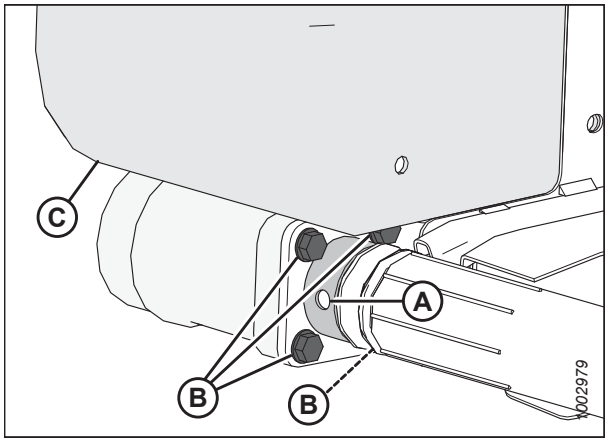


Figure 6.222: Drive Roller

8. Wrap the draper over the drive roller and attach the ends of the draper together using tube connectors (B), screws (A), and nuts.

   NOTE:

   The heads of the screws must face the center opening.

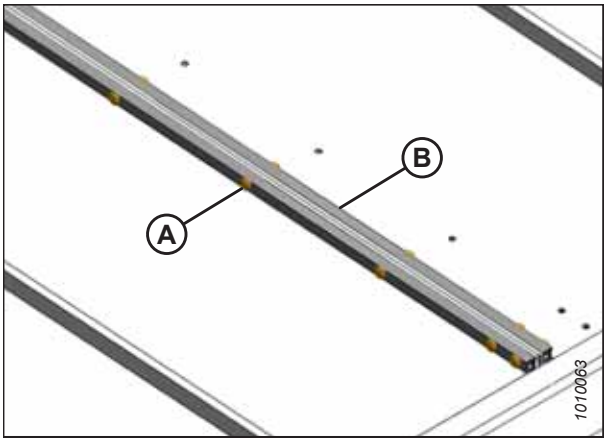


Figure 6.223: Draper Joint

9. Tension the draper. Locate adjuster bolt (A) and follow the directions on the decal for the proper draper tensioning or refer to *6.12.3 Adjusting Side Draper Tension, page 447*.

10. Disengage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

11. Disengage the header safety props. For instructions, refer to the combine operator's manual.

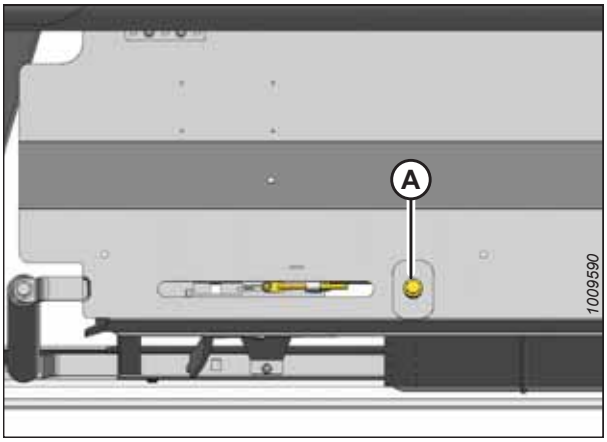


Figure 6.224: Draper Tensioner

DANGER

Ensure that all bystanders have cleared the area.

12. Start the engine, and lower the header and reel.

13. Run the machine to verify the draper tracks correctly. If adjustment is necessary, refer to *6.12.4 Adjusting Side Draper Tracking, page 449*.

6.12.7 Replacing Draper Deflectors

Removing Narrow Draper Deflectors

DANGER

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

WARNING

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

1. Raise the reel fully.

2. Lower the header fully.

3. Shut down the engine, and remove the key from the ignition.

4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

5. Move the decks manually to create work space at one end of the header.

6. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.
7. Remove two Torx® head screws (A) and lock nuts.
8. Remove three carriage bolts (B) and lock nuts, and remove aft deflector (C).

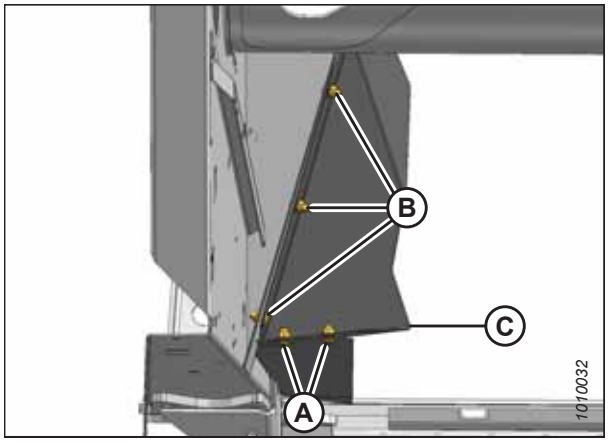


Figure 6.225: Aft Deflector

9. Remove four screws (A) and remove deflector (B).
10. Repeat this procedure for the opposite end of the header.

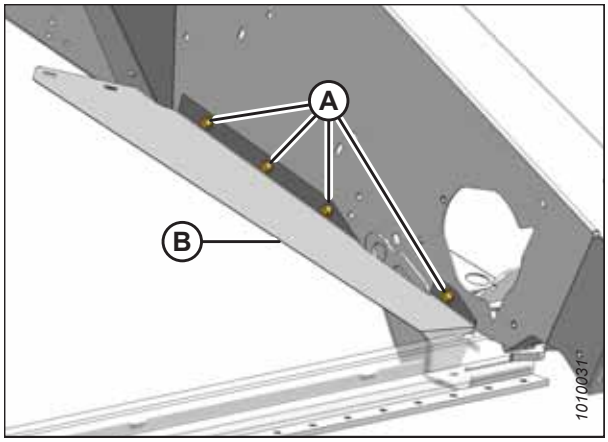


Figure 6.226: Forward Deflector

Installing Narrow Draper Deflectors

DANGER

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

WARNING

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

1. Raise the reel fully.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Move the decks manually to create work space at one end of the header.
6. Open the endshield. For instructions, refer to *Opening Endshield, page 33*.

7. Position forward deflector (B) onto the endsheet and temporarily install forward and aft 3/8 in. x 5/8 in. self-tapping screws (A).
8. Check the fit of the forward end of 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.
9. Install two 3/8 in. x 5/8 in. self-tapping screws (C), then tighten all four screws (A) and (C).

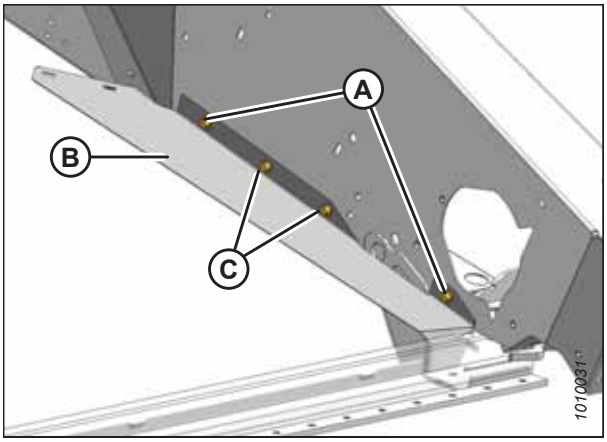


Figure 6.227: Forward Deflector

10. Position aft deflector (C) as shown and install three 3/8 in. x 3/4 in. carriage bolts (B) and lock nuts.
11. Install two Torx® head screws (A) and lock nuts with the heads facing down.
12. Tighten all fasteners.
13. Repeat this procedure for the opposite end of the header.

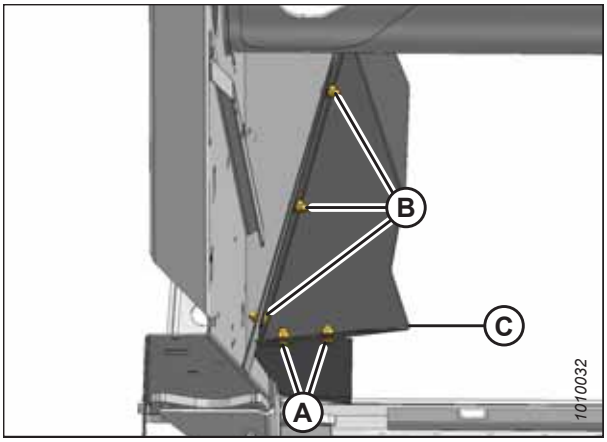


Figure 6.228: Aft Deflector

6.13 Reel

The reel features a uniquely shaped cam, which allows the fingers to get underneath lodged crop and pick it up before it is cut.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *6.1 Preparing Machine for Servicing, page 343*.

6.13.1 Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the 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 *6.2, page 464*.

IMPORTANT:

Measurements must be taken at **both ends of each reel and at cutterbar flex locations** with header in full frown mode.

Table 6.2 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.)

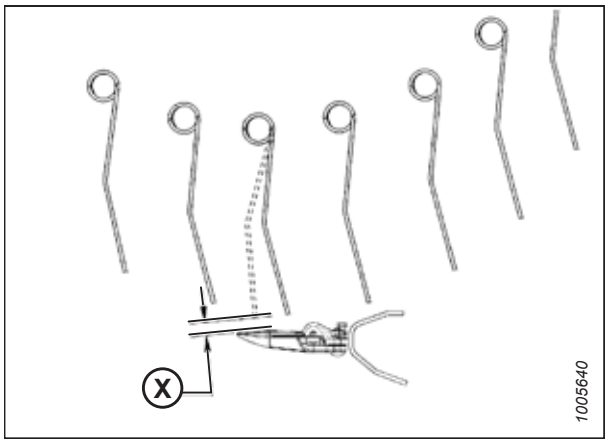


Figure 6.229: Finger Clearance

Measuring Reel Clearance

Make sure there is sufficient clearance between the reel and the cutterbar to prevent the knife from cutting the reel finger tips off during operation.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Park the machine on level ground.
2. Adjust header to working height.
3. Turn off the engine and remove the key.

4. Move spring handles (A) down to (UNLOCK) position.

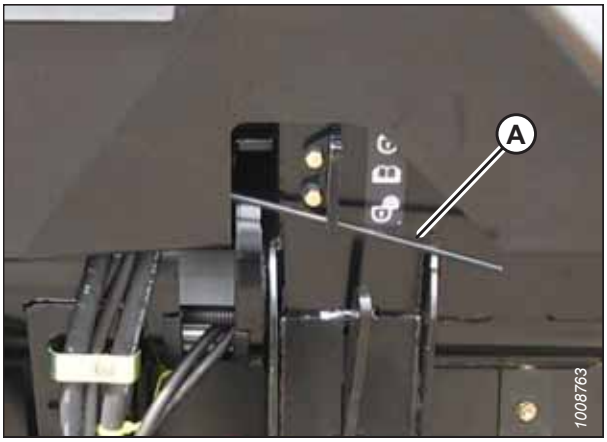


Figure 6.230: Wing Unlocked

DANGER

Ensure that all bystanders have cleared the area.

5. Start the combine.

6. Raise the header and place two 150 mm (6 in.) blocks (A) under the cutterbar, just inboard of the wing flex points.

7. Lower the header fully, allowing it to flex into full frown mode.

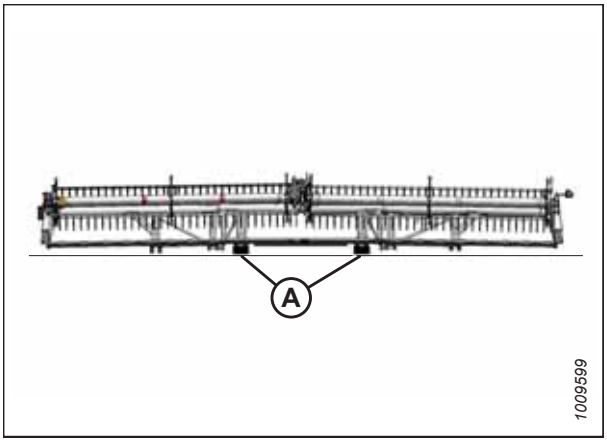


Figure 6.231: FlexDraper® Block Locations

8. Set the fore-aft position to middle position 5 on fore-aft position indicator decal (A).

9. Lower the reel fully.

10. Shut down the engine, and remove the key from the ignition.

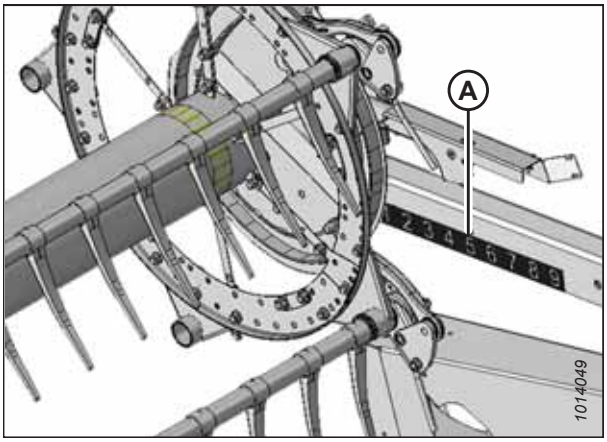


Figure 6.232: Fore-Aft Position

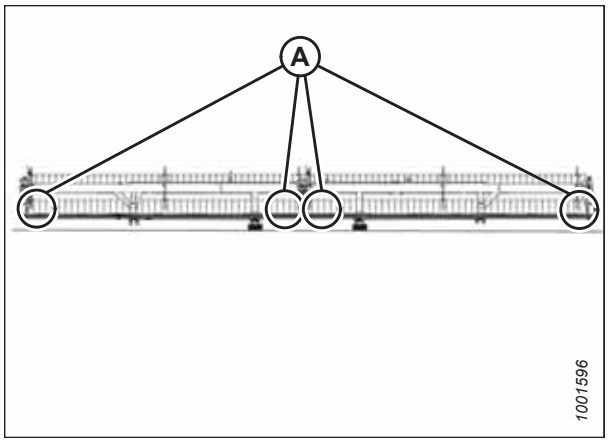


Figure 6.233: Double-Reel Header

11. 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.

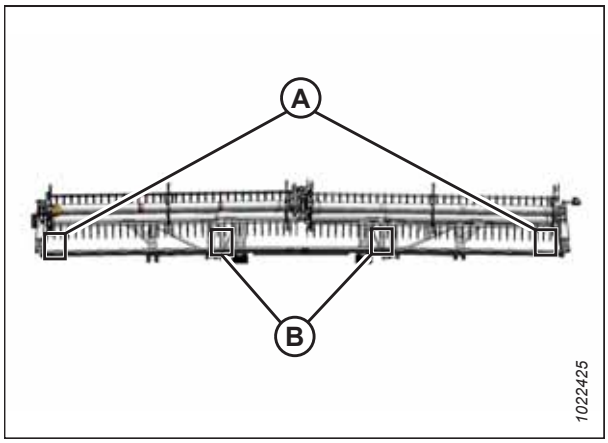


Figure 6.234: Measurement Locations

A - Clearance Points **B - Flex Points**

12. Check finger clearance (X) when positioned between locations (C) and (D). Depending on the reel fore-aft position, the minimum clearance can result at the guard tine, hold-down, or cutterbar. For finger clearance measurements, refer to Table *6.2, page 464*.

13. Adjust the reel if necessary. For instructions, refer to *Adjusting Reel Clearance, page 467*.

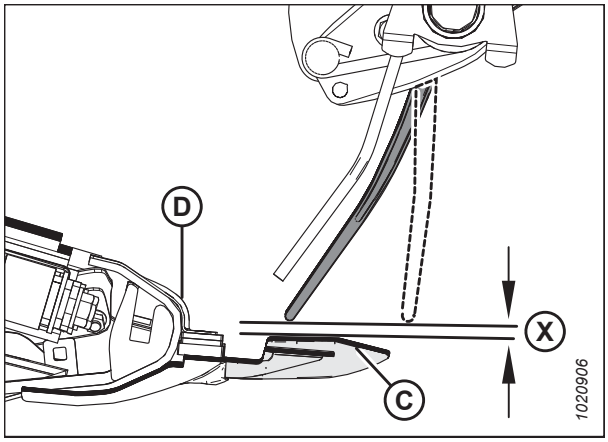


Figure 6.235: Reel Clearance

Adjusting Reel Clearance

Perform this procedure with the reel fully lowered and at the midpoint of the fore-aft range.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Shut down the engine and remove the key.
2. Adjust the outboard reel arm lift cylinders to set the clearance as follows:
   a. Loosen bolt (A).
   b. Turn cylinder rod (B) out of the clevis to raise the reel and increase the clearance to the cutterbar, or turn the cylinder rod into the clevis to lower the reel and decrease the clearance.
   c. Tighten bolt (A).
   d. Repeat these steps at the opposite side.

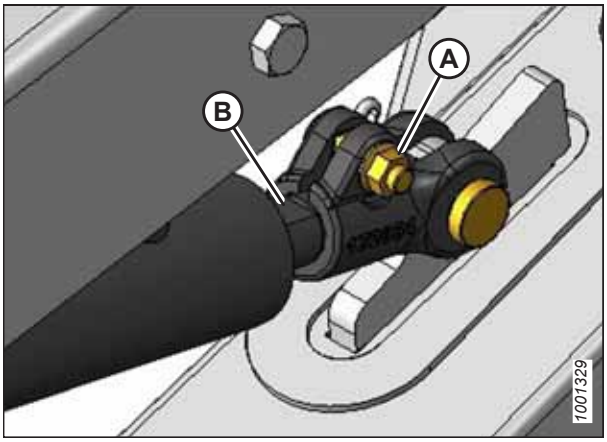


Figure 6.236: Reel Outboard Arm

3. Adjust center arm lift cylinder link (A) to set the clearance at the center of the reel and clearance at flex points as follows:

   NOTE:

   This adjustment is most easily performed from the underside of the arm.

   a. Loosen nut (B).
   b. Turn nut (C) counterclockwise to raise the reel and increase the clearance to the cutterbar, or clockwise to lower the reel and decrease the clearance.
   c. Tighten nut (B).

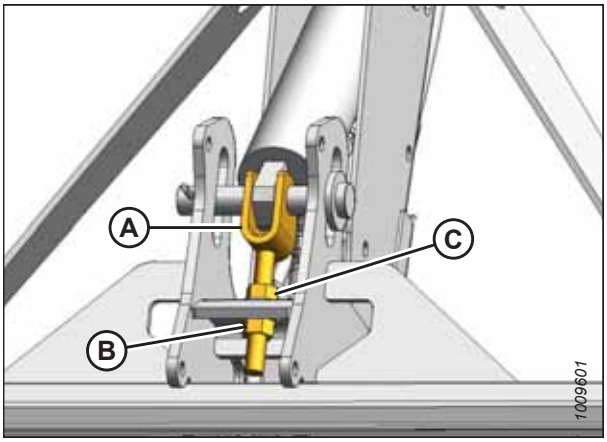


Figure 6.237: Center Arm

4. Move the reel back to ensure the steel end fingers do not contact the deflector shields.
5. If contact is evident, adjust the reel upward to maintain the clearance at all reel fore/aft positions. Alternatively, trim the steel end fingers to obtain the proper clearance.
6. Periodically check for evidence of contact, and adjust the clearance as required.

6.13.2 Reel Frown

The reel is factory-set in a frown shape (more clearance at the center of the reel than at the ends) 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 all the way down and over the cutterbar (between position 4 and 5 on fore-aft decal [A]).
2. Record the measurement at each reel disc location for each reel tine tube.

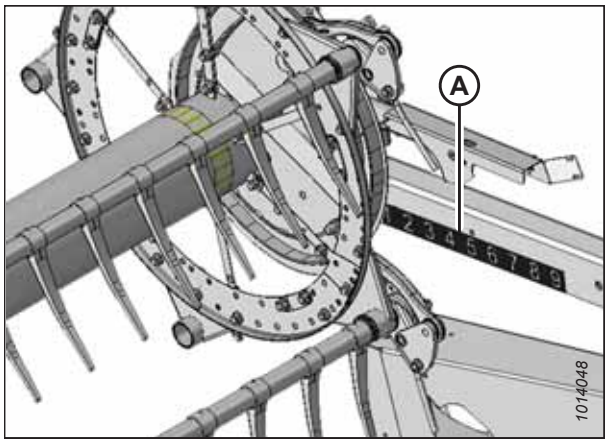


Figure 6.238: Fore-Aft Position Decal

3. Start with the reel disc closest to the center of the header and proceed outward toward the ends, adjusting the header profile as follows:
   a. Remove bolts (A).
   b. Loosen bolt (B) and adjust arm (C) until the desired measurement is obtained between the reel tine tube and the cutterbar.

      NOTE:

      Allow the reel tine tubes to curve naturally and position the hardware accordingly.

   c. Reinstall bolts (A) in the aligned holes and tighten them.

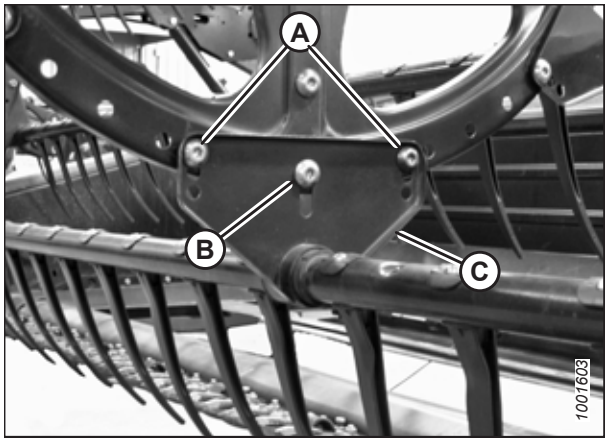


Figure 6.239: Center Reel Arm

6.13.3 Centering Reel

The reel needs to be centered on the header to avoid any contact with the endsheets.

DANGER

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

1. Start engine and raise header.
2. Shut down the engine, and remove the key from the ignition.
3. Place two 150 mm (6 in.) blocks (B) at ends of cutterbar.
4. Disengage float locks and header safety props.
5. Start combine and lower header fully—allowing header to flex into a full smile.
6. Shut down the engine, and remove the key from the ignition.
7. Measure clearance (A) between reels and endsheets at both ends of header. The clearances will be same when reels are centered.

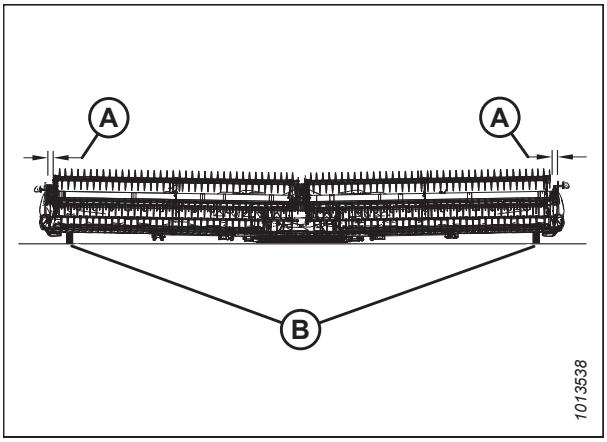


Figure 6.240: Header on Blocks

If adjustment is required:

8. Loosen bolt (A) on each brace (B).
9. Move the forward end of reel center support arm (C) laterally as required to center both reels.
10. Tighten bolts (A) and torque them to 359 Nm (265 lbf·ft).

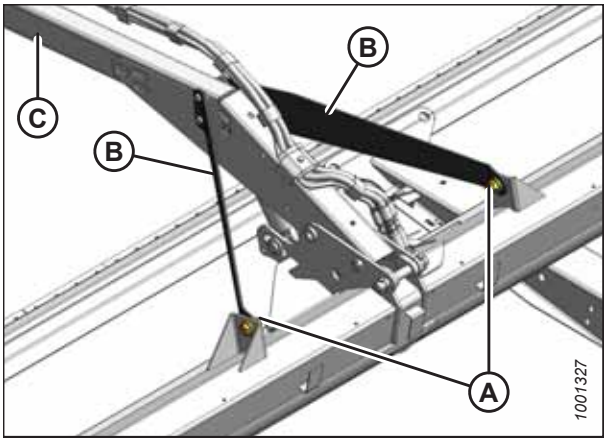


Figure 6.241: Reel Center Support Arm

6.13.4 Reel Tines

IMPORTANT:

Keep the reel tines in good condition and straighten or replace them as necessary.

Removing Steel Tines

Damaged steel fingers will need to be cut off of the reel tine tube.

DANGER

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

WARNING

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

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header fully.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Remove the tine tube bushings from the applicable tine tube at the center and left reel discs. For instructions, refer to *Removing Bushings from Five-, Six-, or Nine-Bat Reels, page 473*.
6. Attach reel arms (B) (temporarily) to the reel disc at the original attachment locations (A).
7. Cut the damaged tine so it can be removed from the tine tube.
8. Remove the bolts from the existing tines and slide the tines over to replace the tine that was cut off in Step *7, page 470* (remove reel arms [B] from the tine tubes as necessary).

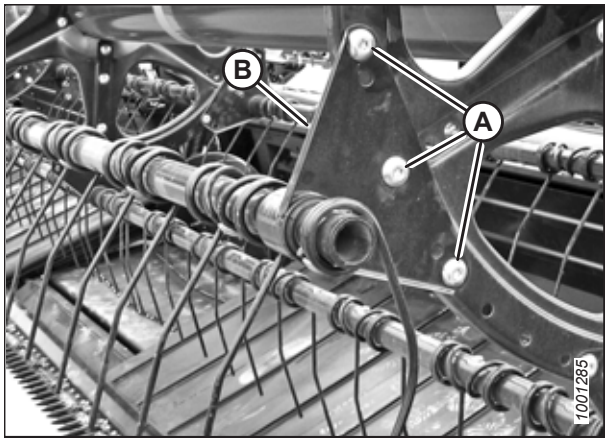


Figure 6.242: Reel Arm

Installing Steel Tines

Once the old steel tine has been removed, a new tine can be pushed onto the tine tube.

DANGER

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

WARNING

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

1. Lower the header fully.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.

4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

   IMPORTANT:

   Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

5. Slide the new tines and reel arm (A) onto the end of the tube.
6. Install the tine tube bushings. For instructions, refer to *Installing Bushings on Five-, Six-, or Nine-Bat Reels, page 479*.
7. Attach the tines to the reel tine tube with bolts and nuts (B).

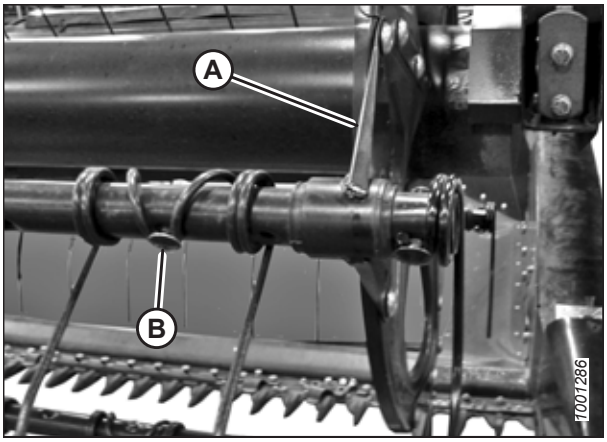


Figure 6.243: Reel Tine Tube

Removing Plastic Fingers

Plastic reel fingers are secured to the tine tube with a single Torx® screw.

DANGER

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

WARNING

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

1. Lower the header fully.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

5. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

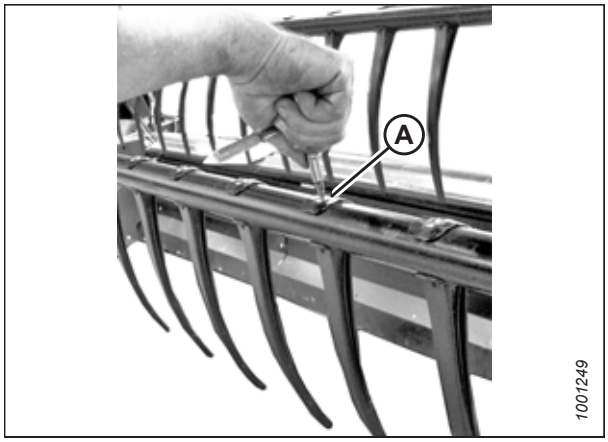


Figure 6.244: Removing Plastic Fingers

6. Push the top of the finger off the reel tine tube while slightly pulling on the tine under the tube. The finger can then be removed.

Figure 6.245: Removing Plastic Fingers

Installing Plastic Fingers

Once the old plastic reel finger has been removed, a new one can be installed.

DANGER

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

WARNING

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

1. Position the finger on the rear of the tine tube and engage the lug at the bottom of the finger in the lower hole in the tine 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 tine tube.

   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.

Figure 6.246: Installing Finger

3. Install screw (A) using a Torx® Plus 27 IP socket wrench and torque it to 8.5–9.0 Nm (75–80 lbf·in).

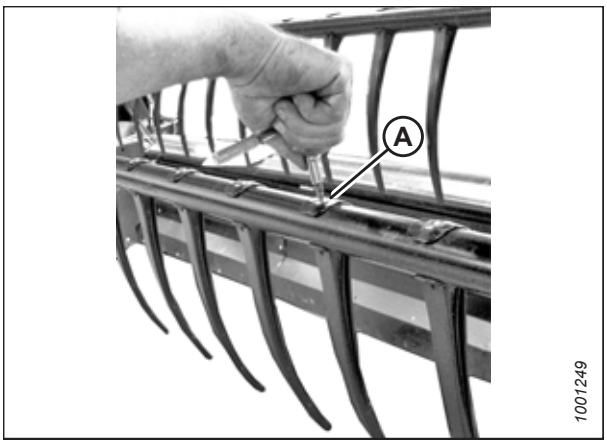


Figure 6.247: Installing Finger

6.13.5 Tine Tube Bushings

The reel tine tube rests in a tine tube bushing, which is secured to the reel disc. If a tine tube bushing is damaged or worn, it will need to be replaced.

Removing Bushings from Five-, Six-, or Nine-Bat Reels

The bushing clamps securing the tine tube to the bushing will need to be released so that the bushing halves can be removed.

DANGER

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

WARNING

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

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header fully.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety. For instructions, refer to *Engaging Reel Safety Props, page 31*.

NOTE:

If replacing only the cam end bushing, refer to Step *10, page 475*.

Removing center disc and tail-end bushings:

5. 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.

6. Remove bolts (A) securing arm (B) to the disc.

   IMPORTANT:

   Note the hole locations in the arm and disc, and ensure bolts (A) are reinstalled at the original locations.

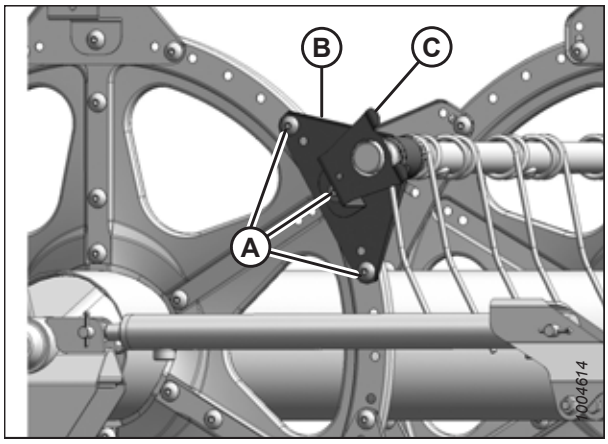


Figure 6.248: Tail End

7. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

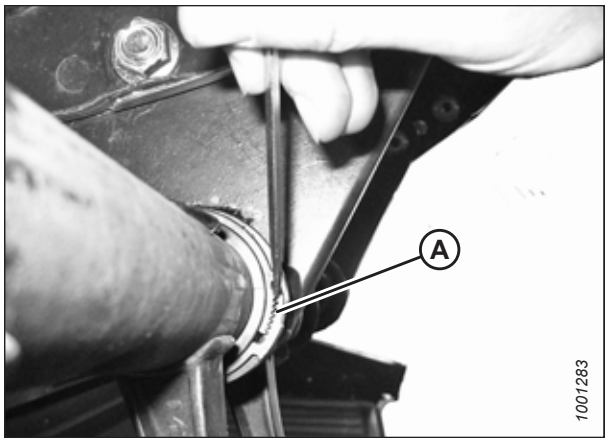


Figure 6.249: Bushing Clamp

8. Rotate arm (A) until it is clear of the disc and slide the arm inboard off of bushing (B).

9. Remove 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 471*
   - *Removing Steel Tines, page 469*

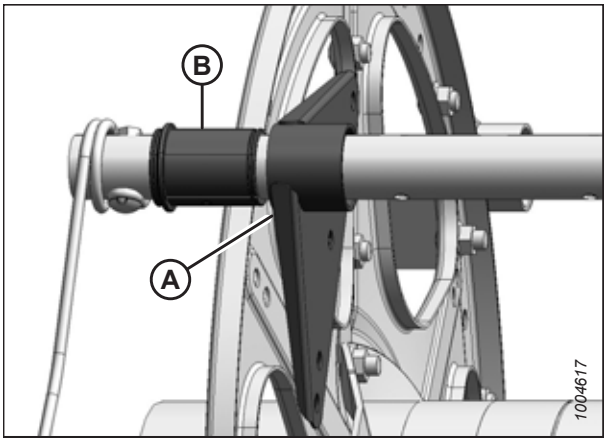


Figure 6.250: Bushing

Removing cam end bushings:

10. Remove the endshields and endshield support (A) at the applicable tine tube location on the cam end.

    NOTE:

    Removing the cam end bushings requires the tine tube be moved through the disc arms to expose the bushing.

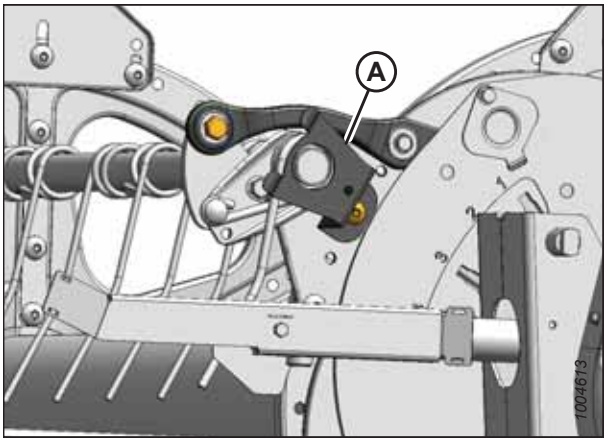


Figure 6.251: Cam End

11. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

12. Remove bolts (A) securing arms (B) to the tail and center discs.

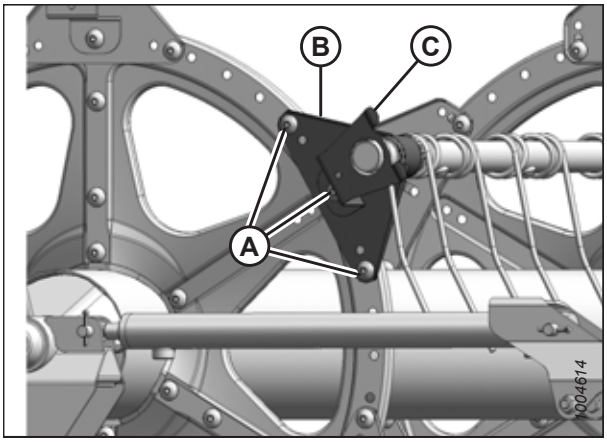


Figure 6.252: Tail End

13. 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 (A) require channel disconnection and two tine tubes (B) require only bushing clamp removal.

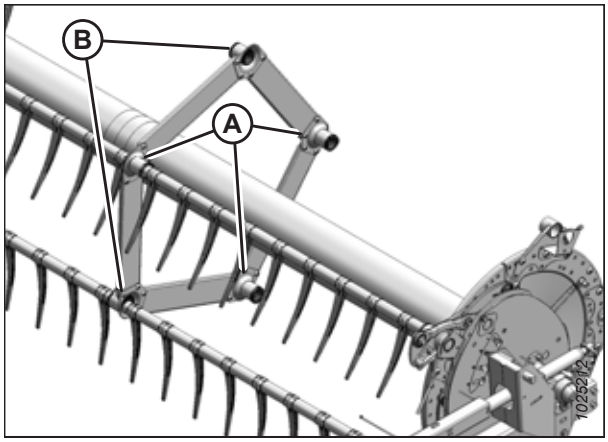


Figure 6.253: Tine Tube Supports

14. Remove bolt (A) from the cam linkage so tine tube (B) is free to rotate.

    NOTE:

    Be sure to not lose the shim, and mark the shim location for reassembly.

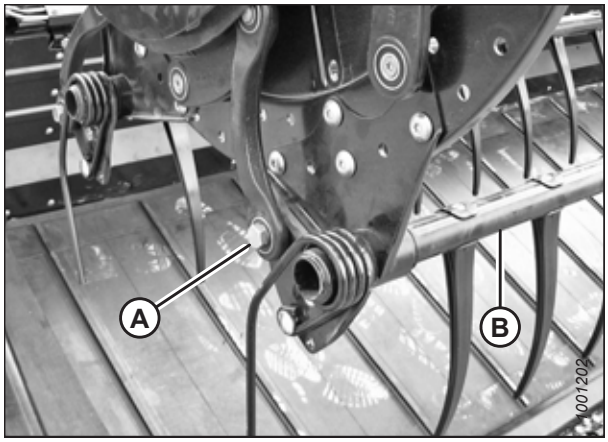


Figure 6.254: Cam End

15. Release bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

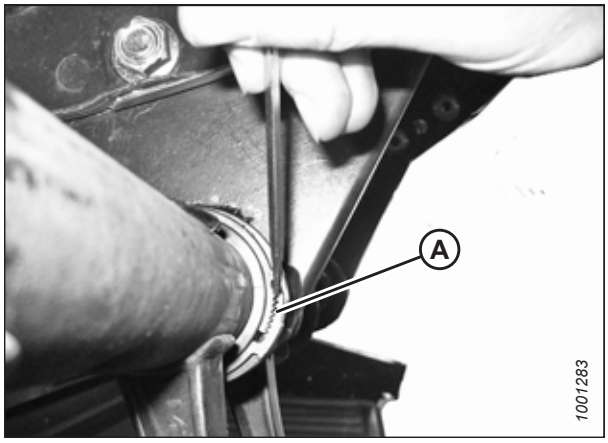


Figure 6.255: Bushing Clamp

16. Slide tine tube (A) outboard to expose bushing (B).

17. Remove 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 471*
    - *Removing Steel Tines, page 469*

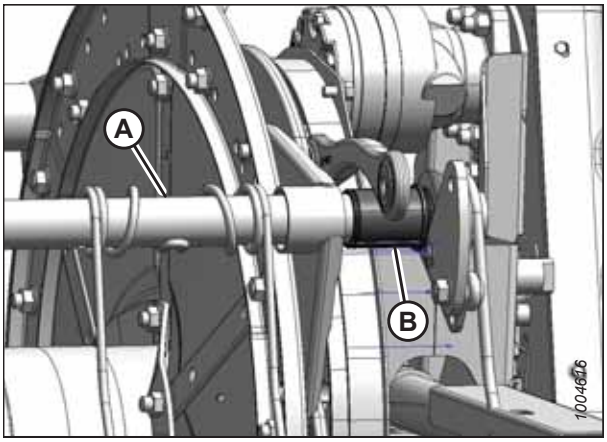


Figure 6.256: Cam End

Removing tine tube support bushings (if installed):

18. Locate support (A) that requires a new bushing.

19. Remove four bolts (B) securing channels (C) to support (A).

20. If finger (D) is too close to the support to allow access to the bushing, remove screw (E) and remove finger (D). For instructions, refer to *Removing Plastic Fingers, page 471*.

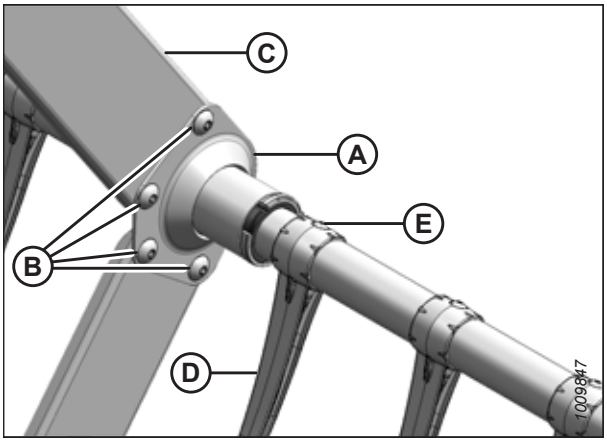


Figure 6.257: Tine Tube Support

21. Release bushing clamps (A) using a small screwdriver to separate the serrations.

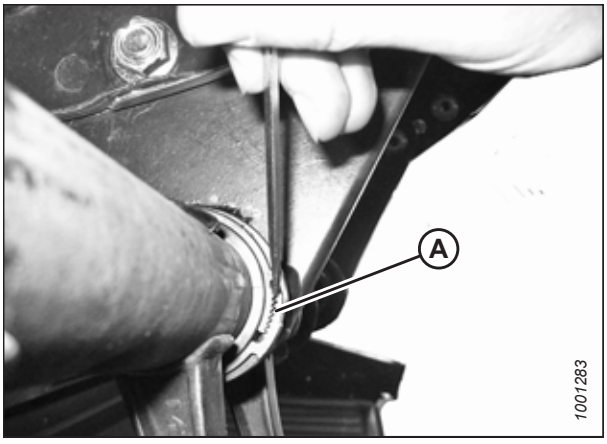


Figure 6.258: Bushing Clamp

22. Move clamps (A) off the bushings.

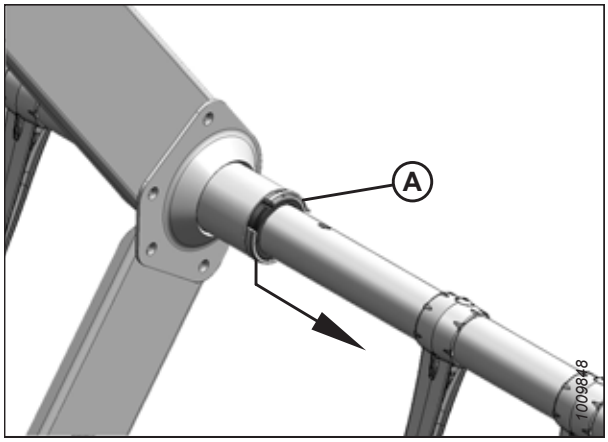


Figure 6.259: Bushing Clamp

23. Slide support (A) off bushing halves (B).

    NOTE:

    Two tine tubes have opposite-facing supports. Rotate the supports until the flanges clear the channels before moving them off bushing (B). Move the tine tube outward slightly if necessary.

24. Remove bushing halves (B).

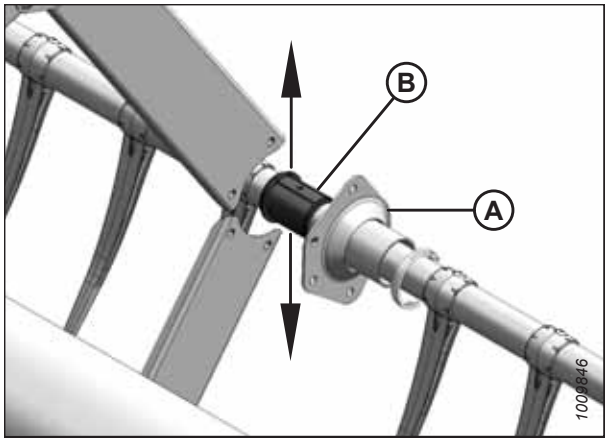


Figure 6.260: Support

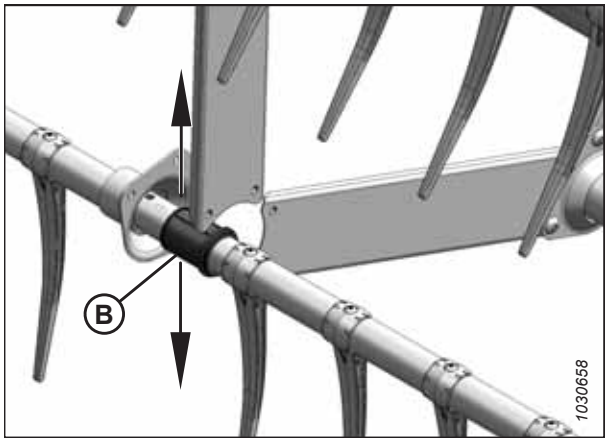


Figure 6.261: Opposite Support

Installing Bushings on Five-, Six-, or Nine-Bat Reels

Once the old tine tube bushing halves have been removed, the new ones can be installed.

DANGER

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

WARNING

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

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 the pliers in a vise and grind a notch (B) into the end of each arm to fit the clamp as shown.

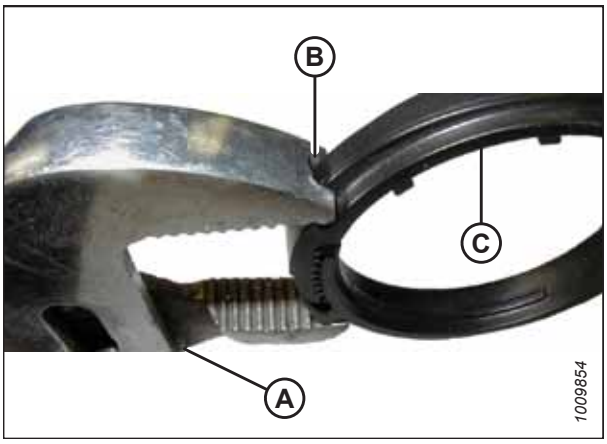


Figure 6.262: Modified Pliers

Installing cam end bushings:

1. Position 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 tine tube (A).
2. Slide tine tube (A) toward the tail end of the reel to insert bushing (B) into the reel arm.

   NOTE:

   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 471*
   - *Removing Steel Tines, page 469*

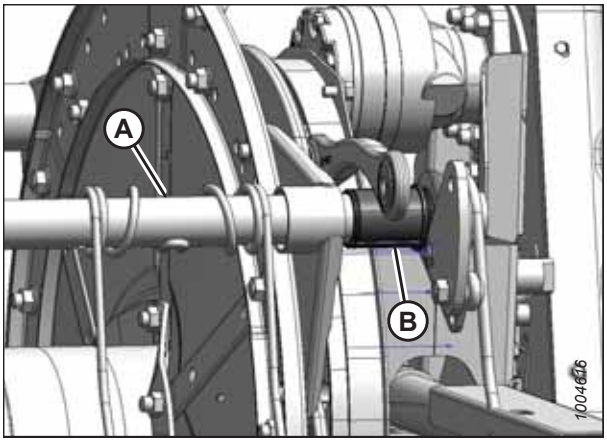


Figure 6.263: Cam End

4. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

5. Position clamp (A) on 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.

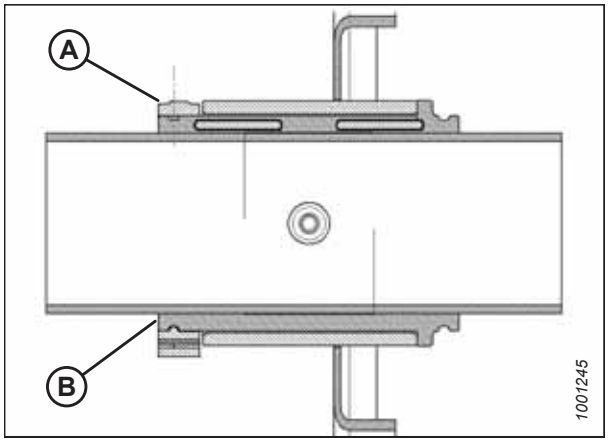


Figure 6.264: Bushing

6. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

   IMPORTANT:

   Overtightening the clamp might break the clamp.

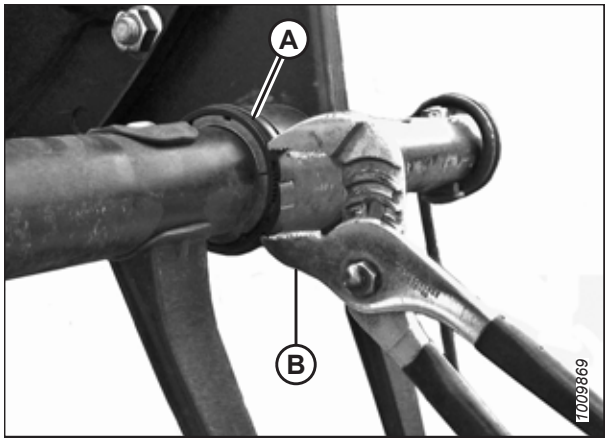


Figure 6.265: Clamp on Bushing

7. Line up tine tube (B) with the cam arm and install bolt (A). Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt, and torque the bolt to 165 Nm (120 lbf ft).

   NOTE:

   Make sure the shim is between the cam arm and the reel bat.

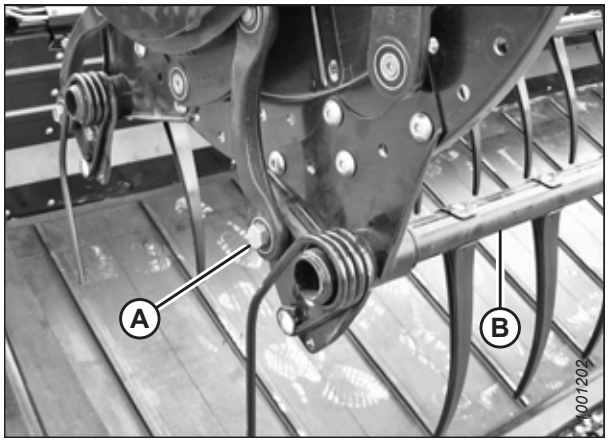


Figure 6.266: Cam End

8. Install bolts (A) securing arm (B) to the center disc.

9. Install reel arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location, and secure them with bolts (A).

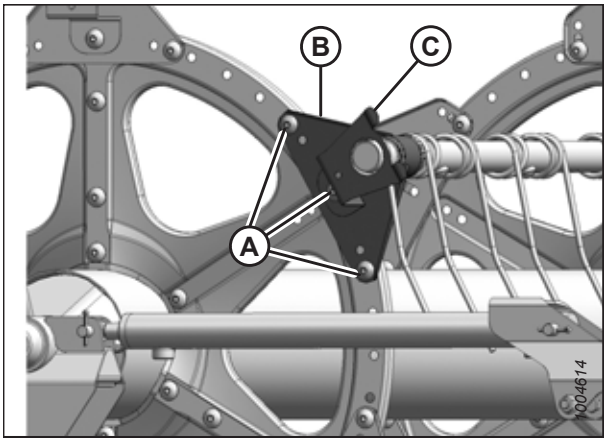


Figure 6.267: Tail End

10. Install endshield support (A) at the applicable tine tube location at the cam end.

11. Reinstall the reel endshields. For instructions, refer to *6.13.6 Reel Endshields, page 485*.

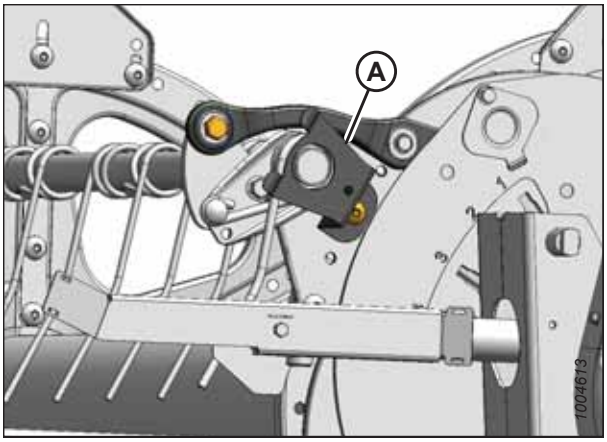


Figure 6.268: Cam End

Installing center disc and tail-end bushings:

12. Position 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 tine tube (A).

13. Slide the reel arm onto bushing (B) and position them against the disc at the original location.

14. Reinstall the previously removed fingers or tines. For instructions, refer to the following procedures as necessary:

    - *Removing Plastic Fingers, page 471*
    - *Removing Steel Tines, page 469*

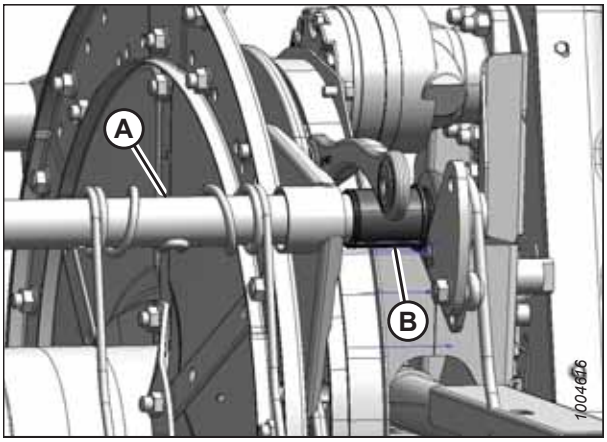


Figure 6.269: Cam End

15. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

16. Position clamp (A) on 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.

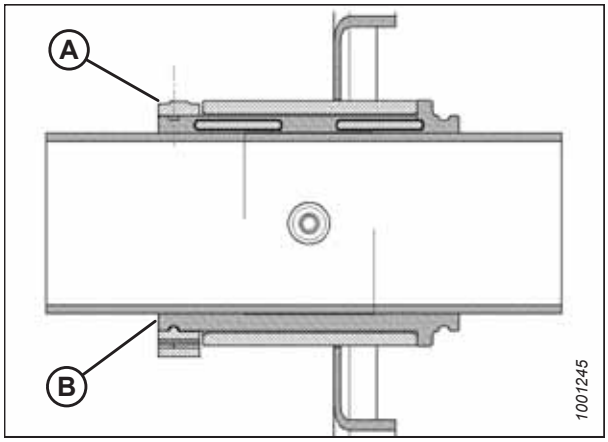


Figure 6.270: Bushing

17. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:

    Overtightening the clamp might break the clamp.

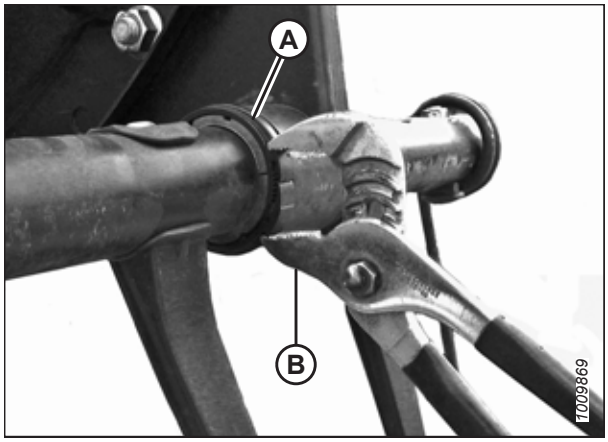


Figure 6.271: Clamp on Bushing

18. Install bolts (A) securing arm (B) to the center disc.

19. Install reel arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location, and secure them with bolts (A).

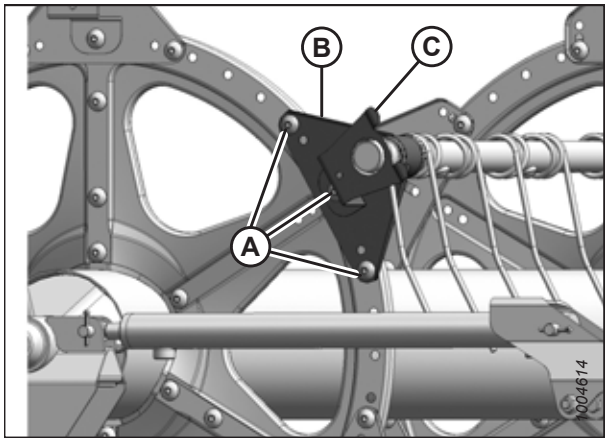


Figure 6.272: Tail End

Installing tine tube support (if installed) bushings:

20. Position 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 tine tube (A).

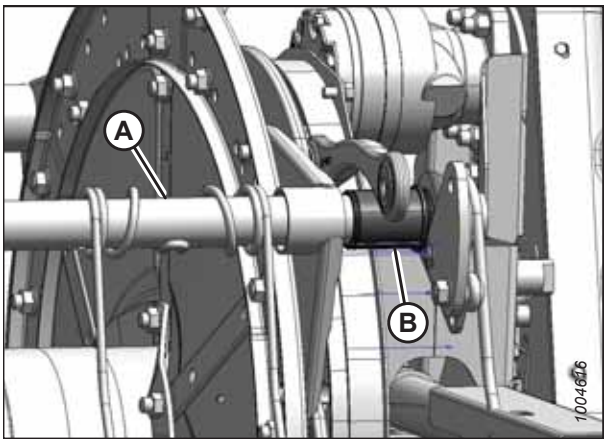


Figure 6.273: Cam End

21. Slide support (A) onto bushing (B).

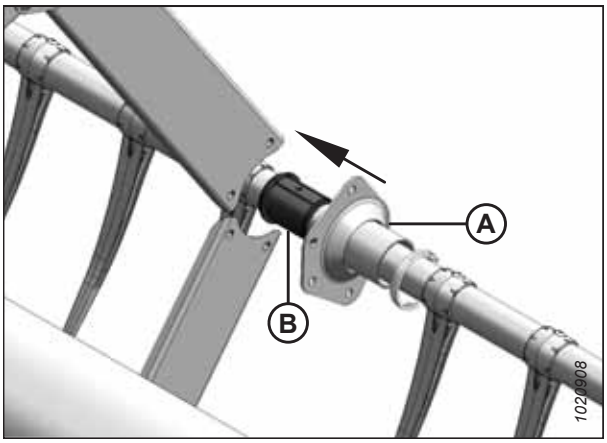


Figure 6.274: Support

22. For the opposite tine tube, rotate support (A) or slightly move the tine tube until it clears channels (C).

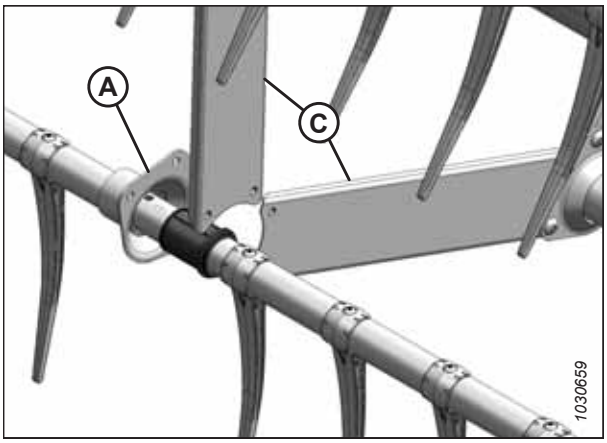


Figure 6.275: Opposite Support

23. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

24. Position clamp (A) on 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.

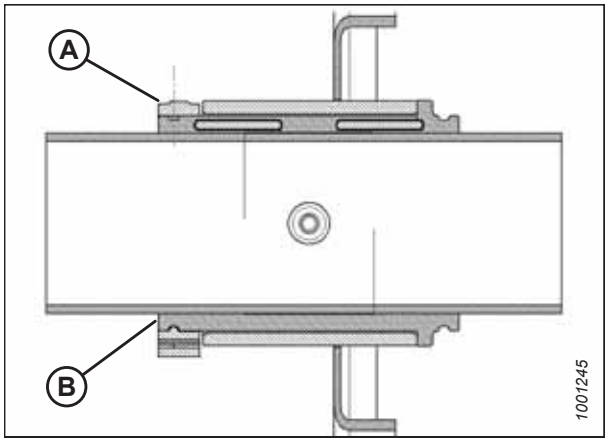


Figure 6.276: Bushing

25. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:

    Overtightening the clamp might break the clamp.

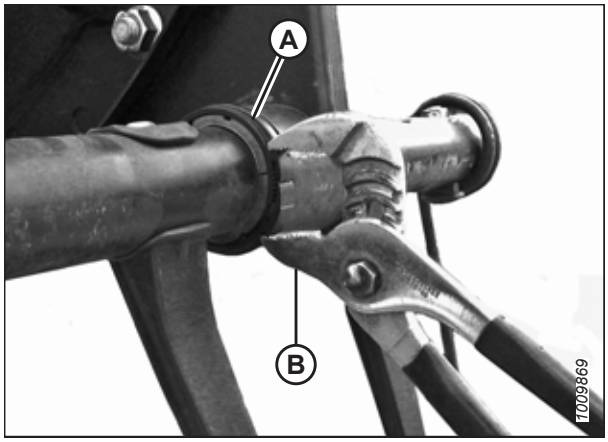


Figure 6.277: Clamp on Bushing

26. Reattach channels (C) to support (A) with screws (B) and nuts. Torque the screws to 43 Nm (32 lbf·ft).

27. Reinstall any fingers (D) that were previously removed using screws (E). For instructions, refer to *Installing Plastic Fingers, page 472*.

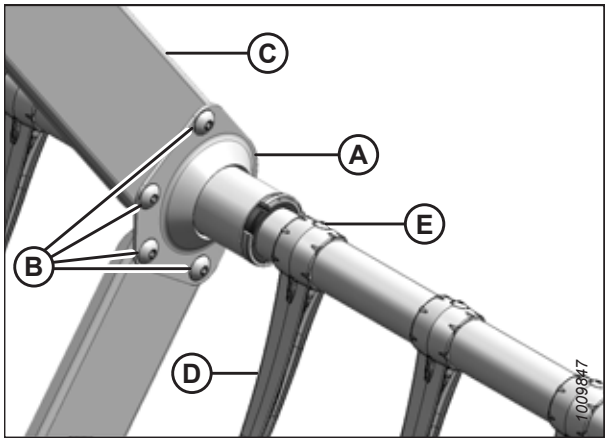


Figure 6.278: Tine Tube Support

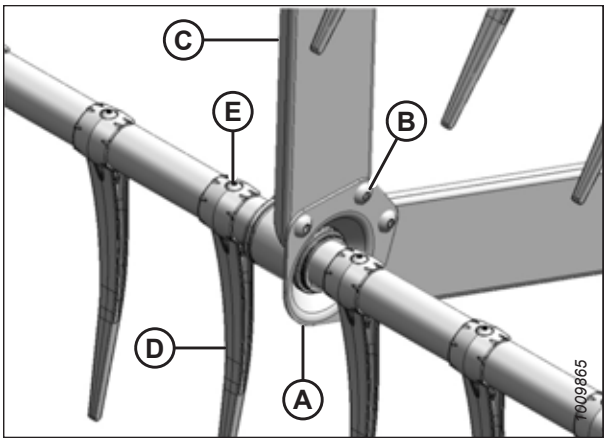


Figure 6.279: Opposite Support

6.13.6 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 severely damaged components must be replaced.

You can attach reel endshields to either end of the reel.

Replacing 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.

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 leaving the operator's seat for any reason.

1. Lower the header and reel.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the reel manually until reel endshield support (A) requiring replacement is accessible.
4. Remove three bolts (B).

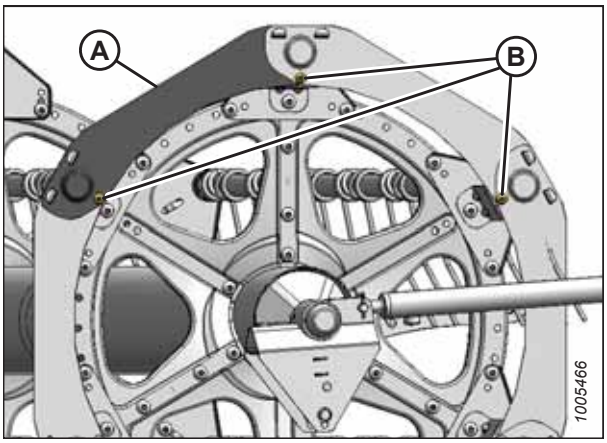


Figure 6.280: Reel Endshields

5. Lift the end of reel endshield (A) off support (B).

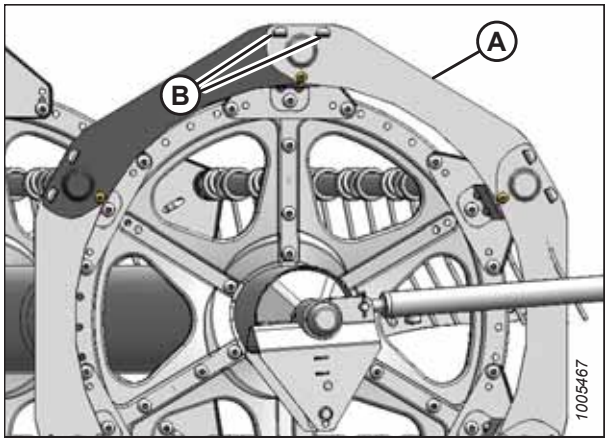


Figure 6.281: Reel Endshields

6. Remove the reel endshield from the supports.

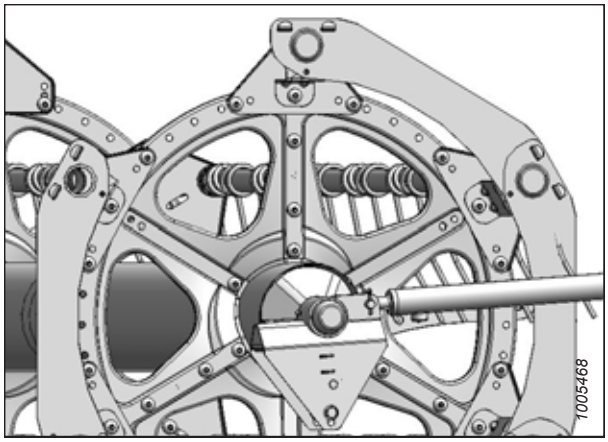


Figure 6.282: Reel Endshields

7. Remove reel endshield (A) from support (B).
8. Install new reel endshield (C) onto support (B).
9. Reattach reel endshield (A) onto support (B), ensuring it is installed on top of reel endshield (C).
10. Reinstall bolts (D).
11. Tighten all hardware.

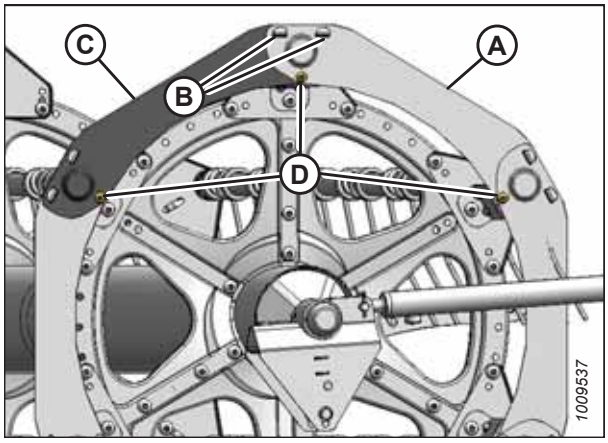


Figure 6.283: Reel Endshields

Replacing Reel Endshield Supports

The reel endshield supports need to be replaced if they are damaged.

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 leaving the operator's seat for any reason.

1. Lower the header and reel.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
4. Remove bolt (B) from support (A).
5. Remove bolts (C) from support (A) and two adjacent supports.

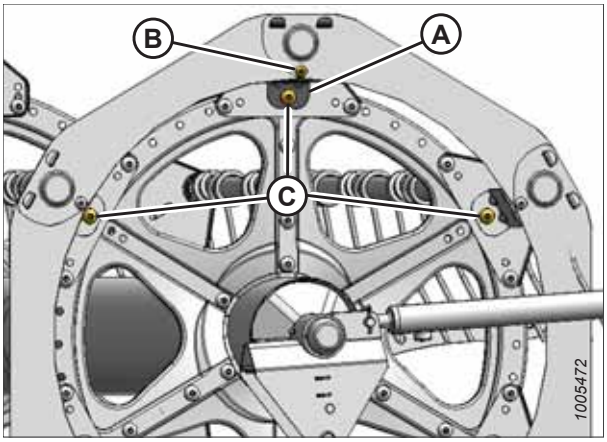


Figure 6.284: Reel Endshield Supports

6. Move reel endshields (A) away from the tine tube and rotate support (B) toward the reel to remove it.
7. Insert the tabs of new support (B) into the slots in reel endshields (A). Ensure the tabs engage both reel endshields.
8. Secure support (B) to the disc with bolt (C) and nut. Do **NOT** tighten.
9. Secure reel endshields (A) to support (B) with bolts (C) and nut. Do **NOT** tighten them.
10. Reattach the supports with bolts (C) and nuts.
11. Check the clearance between the tine tube and the reel endshield support, and adjust it if necessary.
12. Torque the nuts to 27 Nm (239 lbf·in).

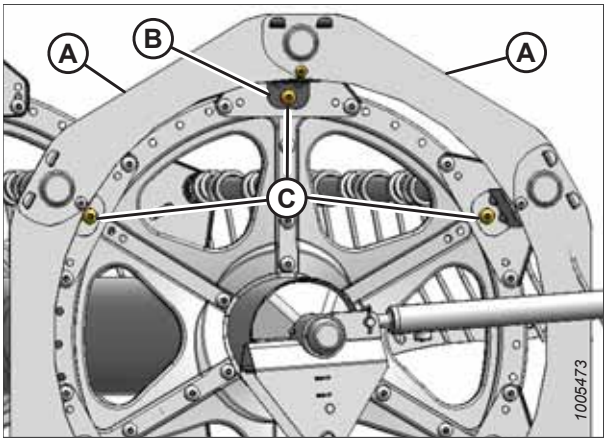


Figure 6.285: Reel Endshield Supports

6.14 Reel Drive

All 7.6 m (25 ft.) and smaller headers have single reels; 9.1–10.7 m (30–35 ft.) headers are available in single-reel and double-reel versions; all headers larger than 10.7 m (35 ft.) are only available in double-reel configurations. Single reels are driven from the right arm and double reels are driven from the center arm.

6.14.1 Replacing Reel Drive Cover

The reel drive cover protects the reel drive components from dirt and debris.

Removing Reel Drive Cover

The reel drive cover protects the reel drive components from dirt and debris.

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 leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

Double-Reel Drive

2. Remove six bolts (A) securing upper cover (B) to the reel drive and lower cover (C).

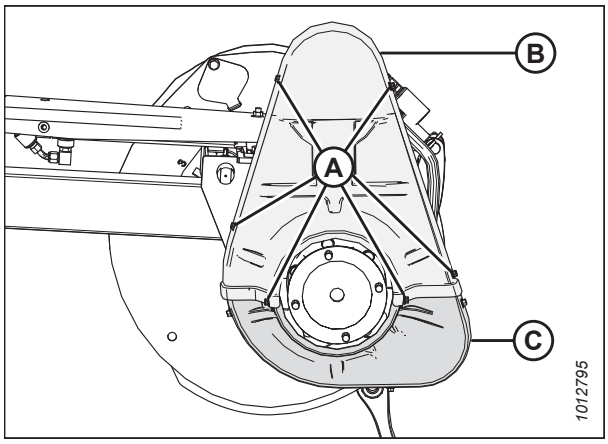


Figure 6.286: Drive Cover – Double Reel

3. If necessary, remove three bolts (A) and remove lower cover (B).

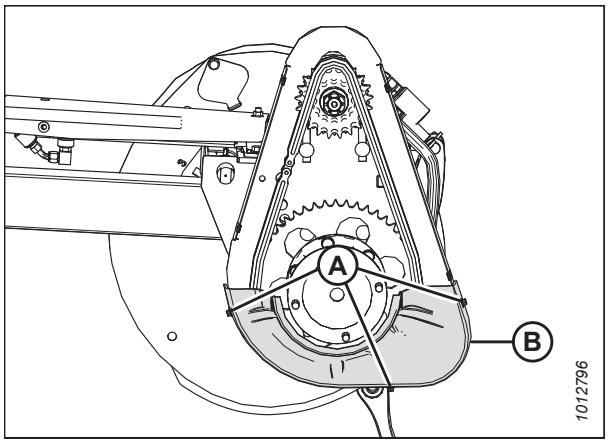


Figure 6.287: Drive Cover – Double Reel

Installing Reel Drive Cover

The reel drive cover protects the drive components from weather and debris.

1. Position lower drive cover (B) onto the reel drive (if previously removed) and secure it with three bolts (A).

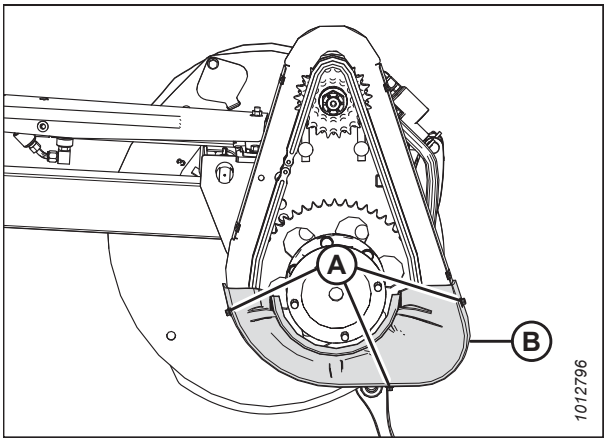


Figure 6.288: Drive Cover – Double Reel

2. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure it with six bolts (A).

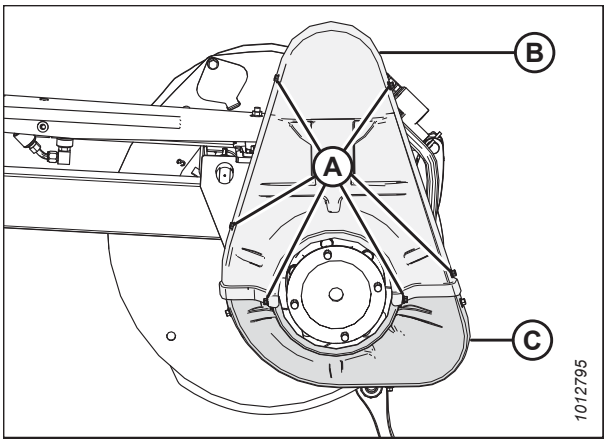


Figure 6.289: Drive Cover – Double Reel

6.14.2 Adjusting Reel Drive Chain Tension

The reel drive chain transfers power from the hydraulically driven reel motor to the sprockets that rotate the reels.

Loosening Reel Drive Chain

The tension on the reel drive chain can be loosened to allow access to reel drive components.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 488*.

3. Loosen six nuts (A). Slide motor (B) and motor mount (C) down toward the reel shaft.

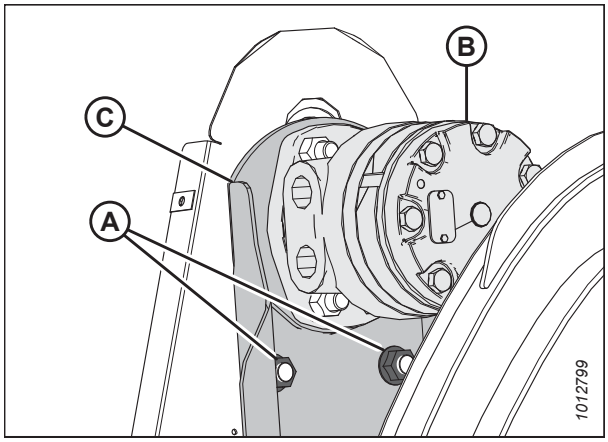


Figure 6.290: Single-Reel Drive Shown – Double-Reel Drive Similar

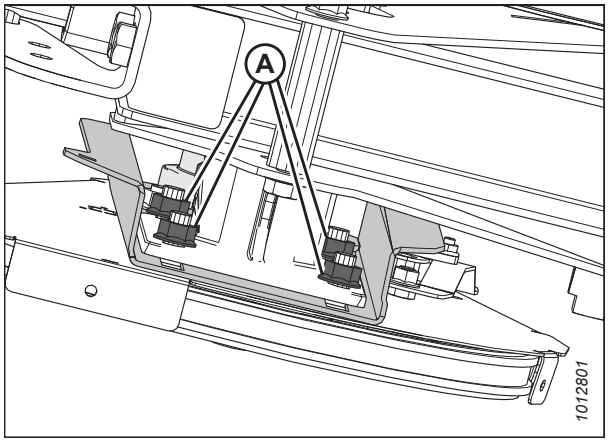


Figure 6.291: Single-Reel Drive – Viewed from Underside of Reel

Tightening Reel Drive Chain

A correctly tensioned drive chain ensures optimum power transfer while minimizing component wear.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Shut down the engine, and remove the key from the ignition.

2. Ensure six bolts (A) securing the motor mount to the chain case are loose.

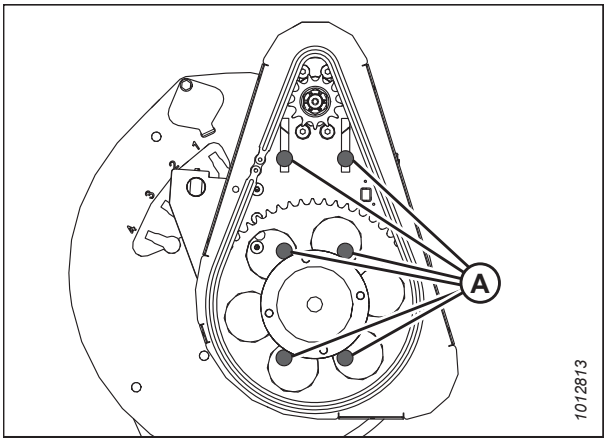


Figure 6.292: Single-Reel Drive Shown – Double Reel Similar

3. Slide motor (A) and motor mount (B) upward until chain (C) is tight.

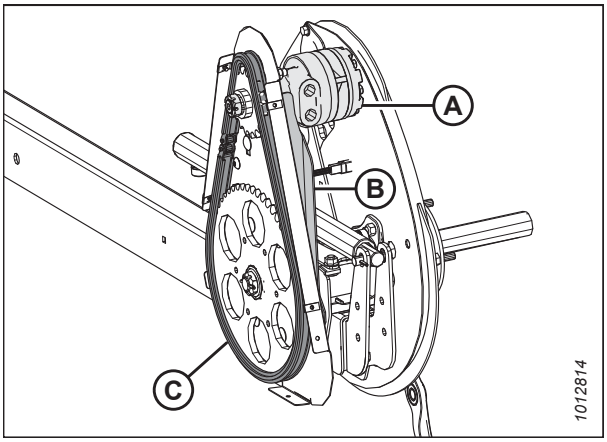


Figure 6.293: Single-Reel Drive Shown – Double Reel Similar

4. Ensure there is 3 mm (0.12 in.) of slack at the chain midspan. Adjust it if necessary.
5. Torque nuts (A) to 73 Nm (54 lbf·ft).
6. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 489*.

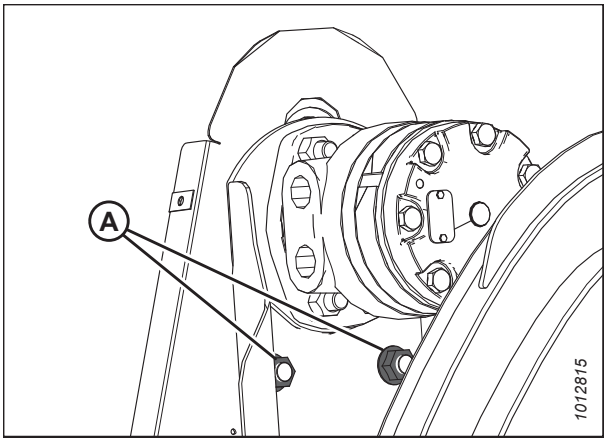


Figure 6.294: Single-Reel Drive Shown – Double Reel Similar

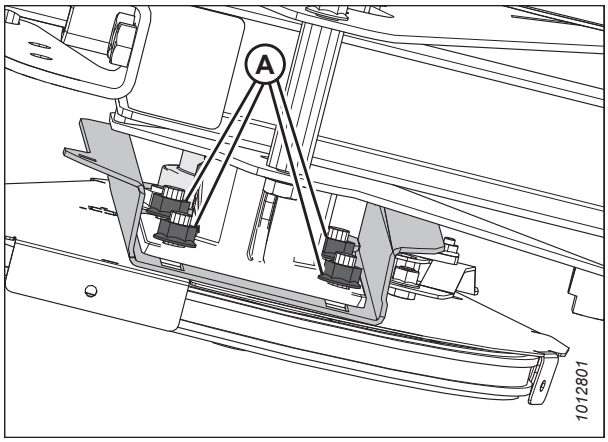


Figure 6.295: Single-Reel Drive – Viewed from Underside of Reel

6.14.3 Replacing Reel Drive Sprocket

The reel drive sprocket is attached to the reel drive motor.

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

The reel drive sprocket is attached to the reel drive motor.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Shut down the engine, and remove the key from the ignition.
2. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 489*.
3. Remove drive chain (A) from drive sprocket (B).

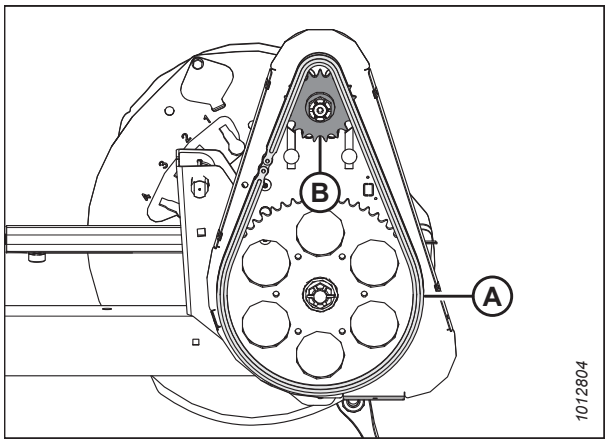


Figure 6.296: Reel Drive

4. Remove cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
5. Remove 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 drive sprocket (D).

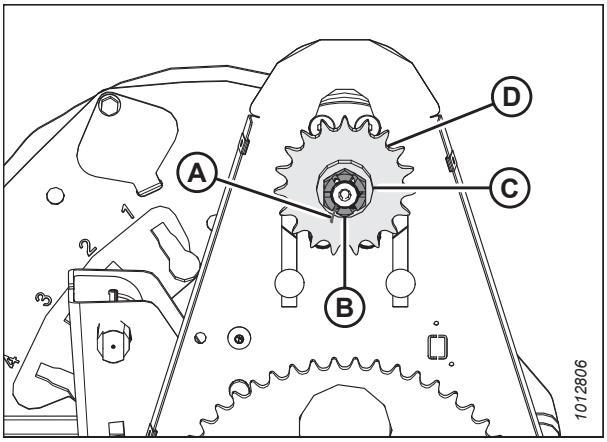


Figure 6.297: Reel Drive

Installing Reel Drive Sprocket

The reel drive sprocket is attached to the reel drive motor.

1. Align the keyway in sprocket (D) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure it with flat washer (C) and slotted nut (B).
2. Torque slotted nut (B) to 54 Nm (40 lbf·ft).
3. Install cotter pin (A). If necessary, tighten slotted nut (B) to the next slot to install the cotter pin.

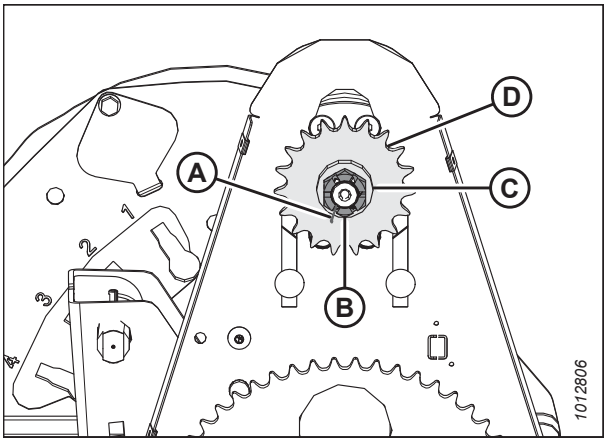


Figure 6.298: Reel Drive

4. Install drive chain (A) onto drive sprocket (B).
5. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 490*.

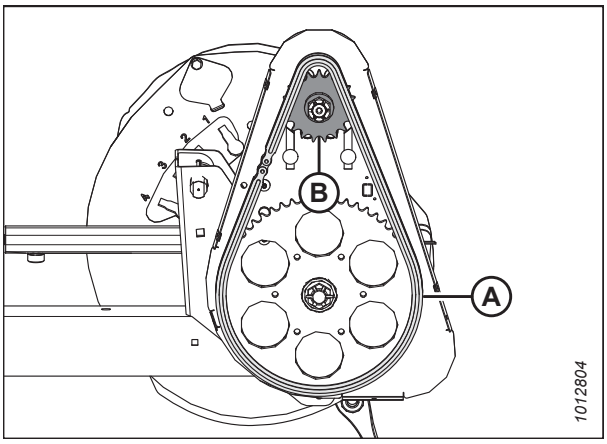


Figure 6.299: Reel Drive

6.14.4 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 specifications. For instructions, refer to *6.3.6 Lubrication, page 350*.

Replace the U-joint if it is severely worn or damaged. For instructions, refer to *Removing Double-Reel U-Joint, page 494*.

Removing Double-Reel U-Joint

If the double-reel U-joint is worn or damaged, it will need to be replaced.

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. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 488*.
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 cam end disc as possible.

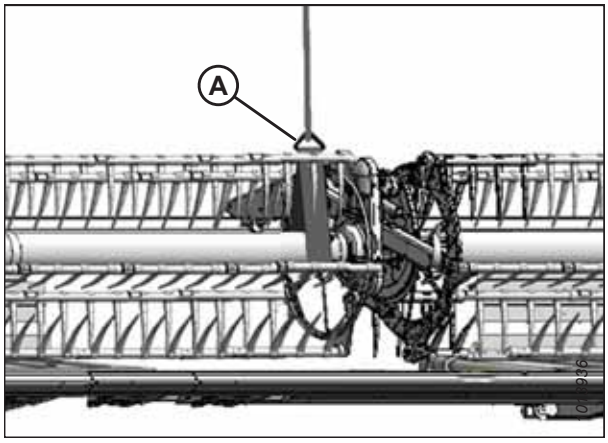


Figure 6.300: Supporting Reel

4. Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
5. Remove the U-joint.

   NOTE:

   It may be necessary to move the right reel sideways for the U-joint to clear the tube.

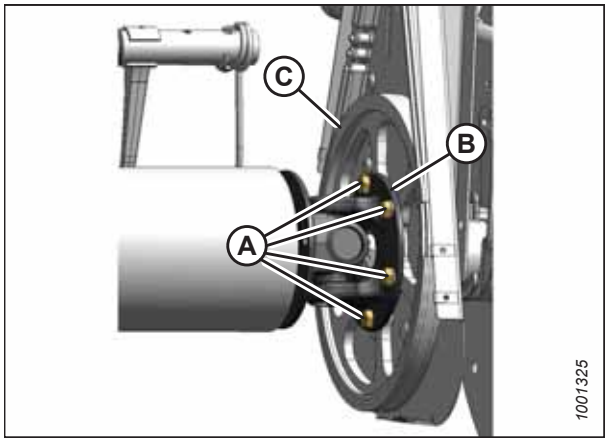


Figure 6.301: U-Joint

Installing Double-Reel U-Joint

Once the old U-joint has been removed, a new one can be installed.

NOTE:

It may be necessary to move the right reel sideways for the U-joint to clear the reel tube.

1. Position U-joint flange (B) onto driven sprocket (C) as shown. Install six bolts (A) and hand-tighten them.

   NOTE:

   Do **NOT** torque the bolts.

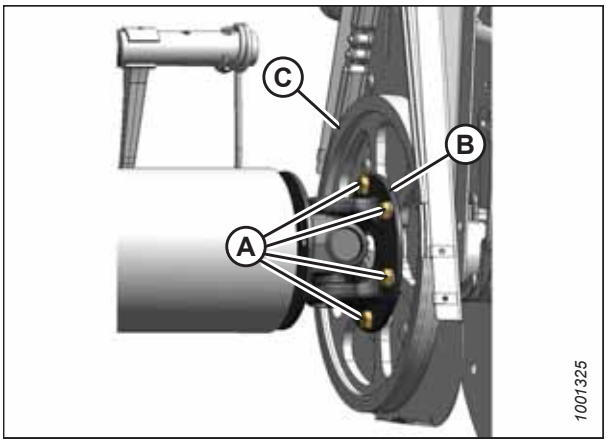


Figure 6.302: U-Joint

2. Position the right 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 medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure them with lock washers.
5. Torque the bolts to 102–115 Nm (75–85 lbf·ft).

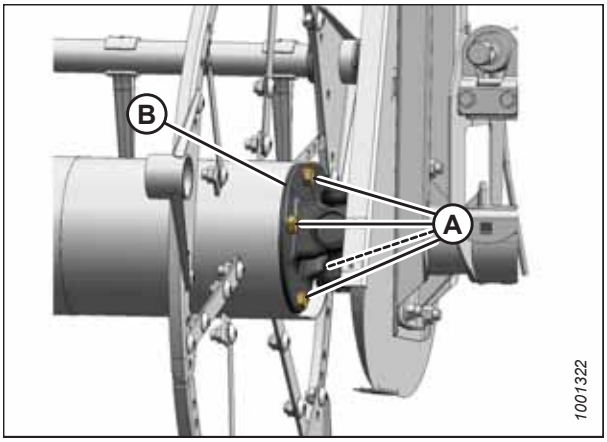


Figure 6.303: U-Joint

6. Remove temporary reel support (A).
7. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 489*.

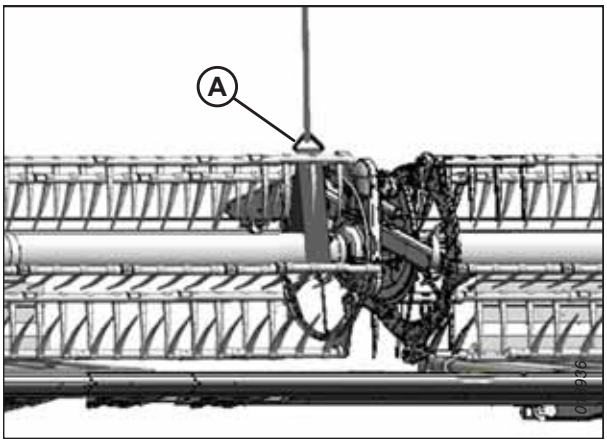


Figure 6.304: Supporting Reel

6.14.5 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

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.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

1. Shut down the engine, and remove the key from the ignition.
2. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 489*.
3. Remove the drive sprocket. For instructions, refer to *Removing Reel Drive Sprocket, page 492*.
4. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.

   NOTE:

   Mark hydraulic lines (A) and their locations in motor (B) to ensure correct reinstallation.
5. Remove four nuts and bolts (C) and remove motor (B). Retrieve the spacer (not shown) from between motor (B) and the motor mount (if installed).

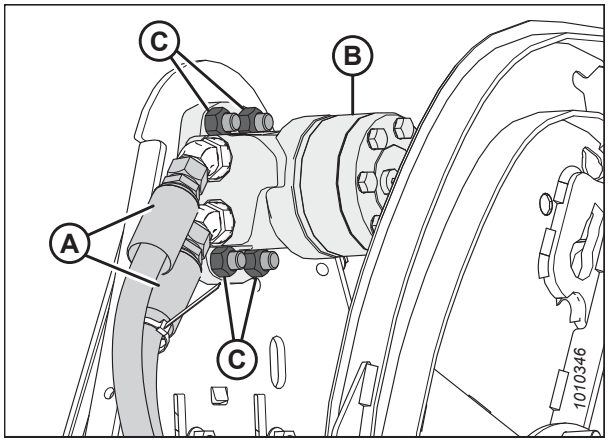


Figure 6.305: Reel Motor and Hoses

Installing 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.

1. Slide motor mount (A) up or down so motor mounting holes (B) are accessible through the openings in the chain case.

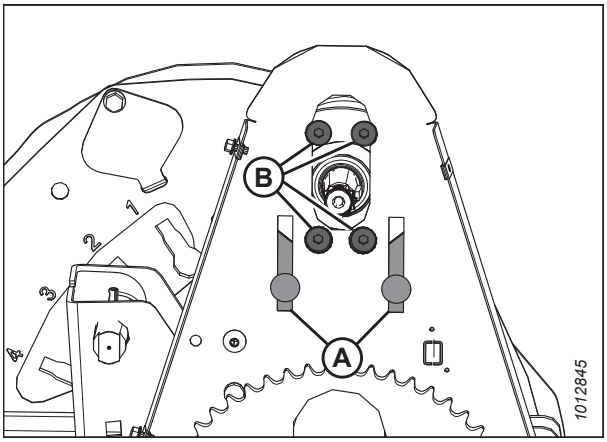


Figure 6.306: Reel Drive Motor Mounting Holes

2. Attach motor (A) (and spacer if previously removed) to motor mount (B) with four 1/2 in. x 1 3/4 in. countersunk bolts and nuts (C).
3. Torque nuts (C) to 73 Nm (54 lbf·ft).
4. If installing a new motor, install the hydraulic fittings (not shown) and torque them to 110–120 Nm (81–89 lbf·ft).

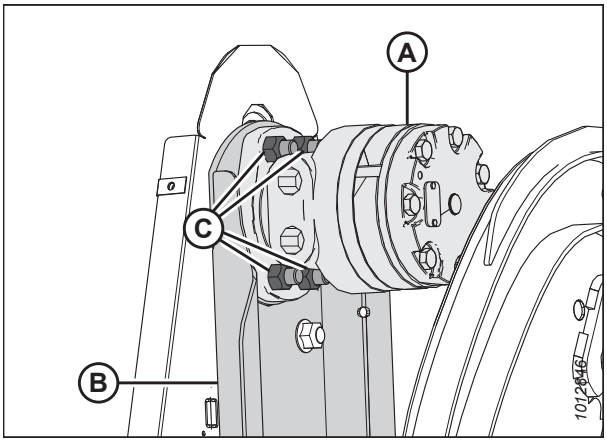


Figure 6.307: Reel Drive Motor

5. Remove the caps or plugs from the ports and lines, and connect hydraulic lines (A) to hydraulic fittings (B) on motor (C).

   NOTE:

   Ensure hydraulic lines (A) are installed at their original locations.

6. Install the drive sprocket. For instructions, refer to *Installing Reel Drive Sprocket, page 493*.
7. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 490*.

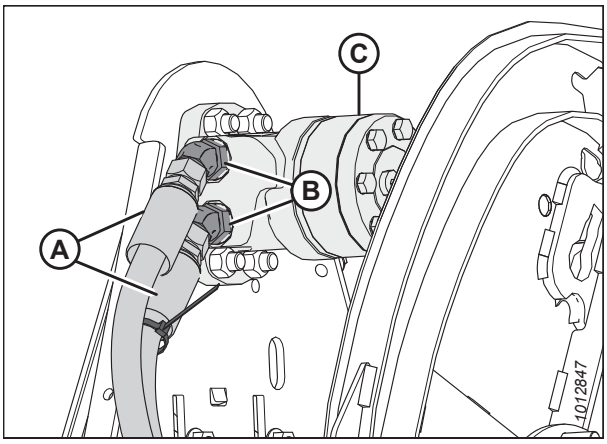


Figure 6.308: Reel Motor and Hoses

6.14.6 Replacing Drive Chain on Double Reel

The drive chain allows the hydraulic reel drive motor to turn the reel. It can be replaced if damaged or worn.

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 leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 489*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) (or equivalent lifting device).

   IMPORTANT:

   Support the reel as close to the end disc as possible to avoid damaging or denting the center tube.

4. Remove four bolts (A) securing the reel tube to U-joint flange (B).

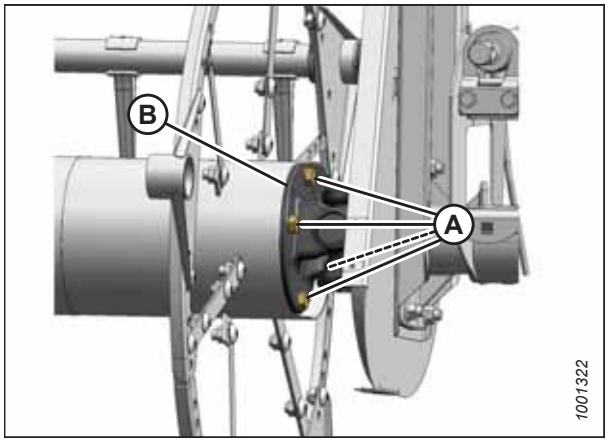


Figure 6.309: U-Joint

5. Move the right reel sideways to separate reel tube (A) from U-joint (B).
6. Remove drive chain (C).
7. Route new chain (C) over U-joint (B) and position it onto the sprockets.

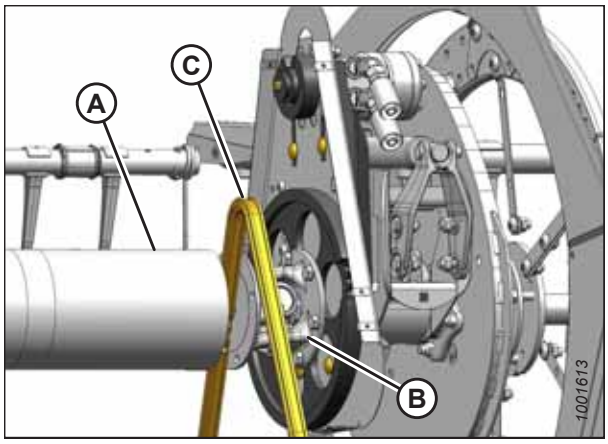


Figure 6.310: Replacing Chain

8. Position right 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 line up.
10. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure it with lock washers.
11. Torque the bolts to 102–115 Nm (75–85 lbf·ft).

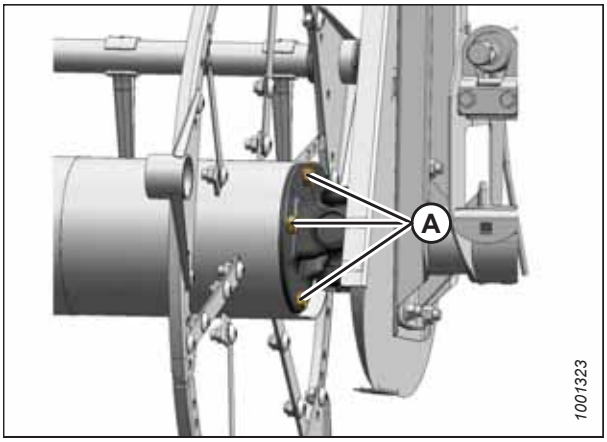


Figure 6.311: U-Joint

12. Remove temporary reel support (A).

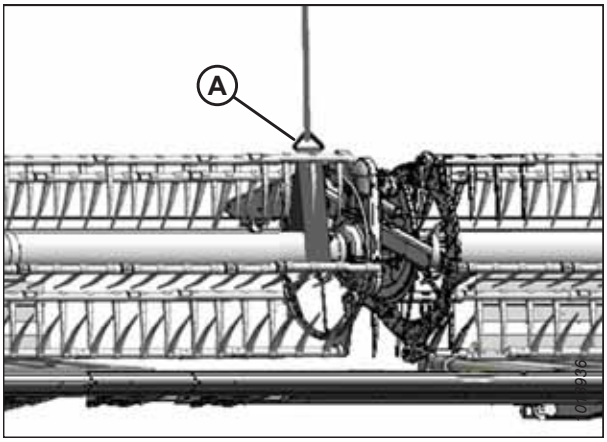


Figure 6.312: Supporting Reel

6.14.7 Replacing Reel Speed Sensor

The reel speed sensor system is located inside the reel drive cover.

Replacing AGCO Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 488*.

3. Disconnect electrical connector (A).

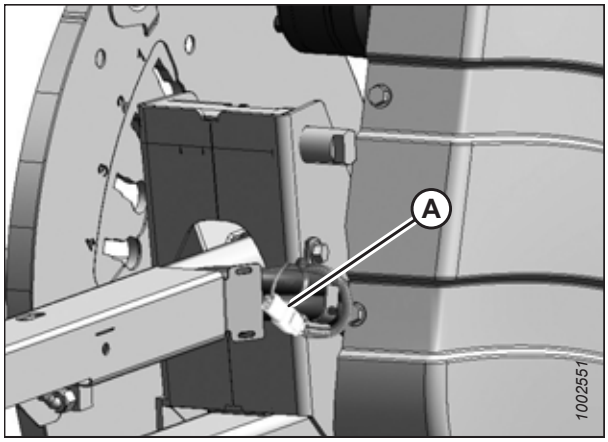


Figure 6.313: Electrical Harness

4. Cut cable tie (A) securing the harness to the cover.
5. Remove two screws (B) and remove sensor (C) and harness. Bend cover (D) (if necessary) to remove the harness.
6. Feed the wire of the new sensor behind 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 sensor disc (F) and sensor (C) to 0.5 mm (0.02 in.).

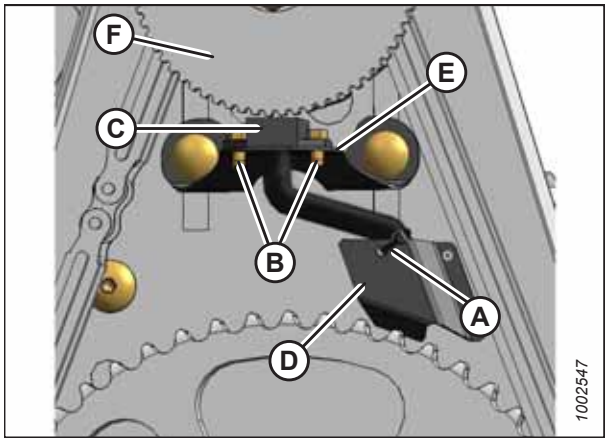


Figure 6.314: Speed Sensor

9. Connect 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 489*.

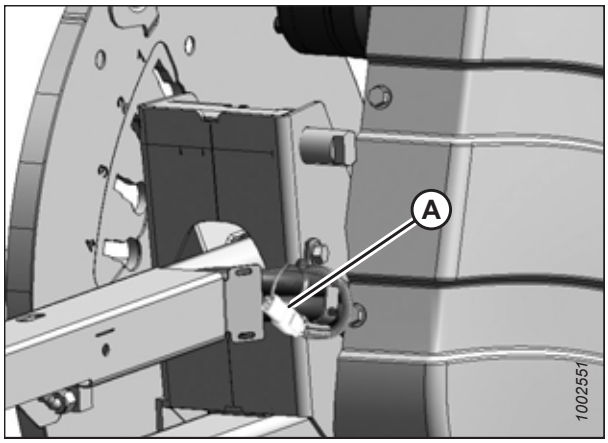


Figure 6.315: Electrical Harness

Replacing John Deere Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 488*.
3. Disconnect electrical connector (D).
4. Remove top nut (C) and remove 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 sensor disc (A) and sensor (B) to 3 mm (1/8 in.) using nut (C).
7. Connect to harness at location (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 489*.

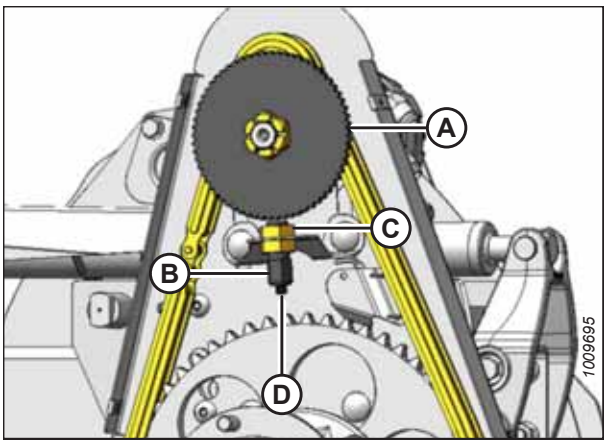


Figure 6.316: Speed Sensor

Replacing CLAAS 400 Series Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 488*.
3. Disconnect electrical connector (C).
4. Remove top nuts (D) and remove 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 sensor disc (A) and sensor (B) to 3 mm (1/8 in.) using nuts (D).
7. Connect to harness at location (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 489*.

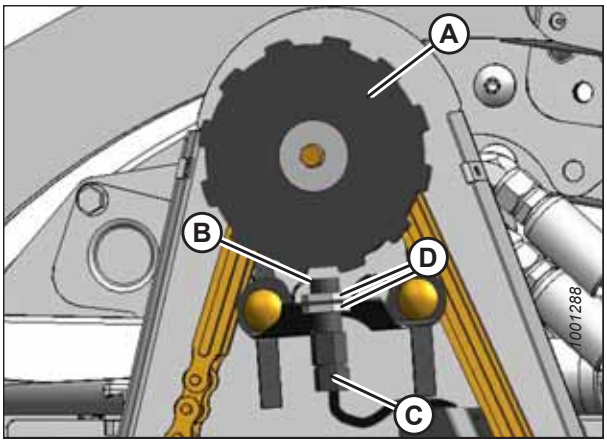


Figure 6.317: Speed Sensor

Replacing CLAAS 500/700 Series Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 488*.
3. Disconnect electrical connector (C).
4. Remove screw (D) and remove sensor (B).
5. Position the new sensor into the support. Secure with screw (D).
6. Adjust the gap between sensor disc (A) and sensor (B) to 3 mm (1/8 in.) by bending support (E).
7. Connect to harness at location (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 489*.

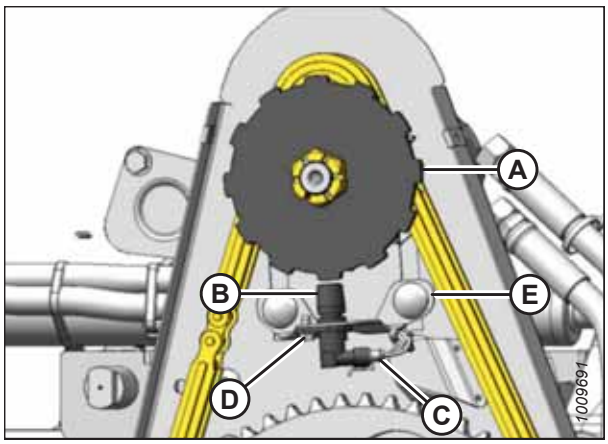


Figure 6.318: Speed Sensor

6.15 Transport System

The transport system is an optional feature that requires frequent checks and maintenance to ensure reliable operation.

Refer to *7.4.3 Stabilizer / Slow Speed Transport Wheels, page 514* for more information.

6.15.1 Checking Wheel Bolt Torque

The transport wheel bolt torque should be checked after one operating hour following the installation of the wheels, and every 100 operating hours thereafter.

1. Torque wheel bolts to 120 Nm (90 lbf·ft) using the sequence shown at right.

   IMPORTANT:

   Whenever a wheel is removed and reinstalled, check the wheel bolt torque after one hour of operation and every 100 hours thereafter.

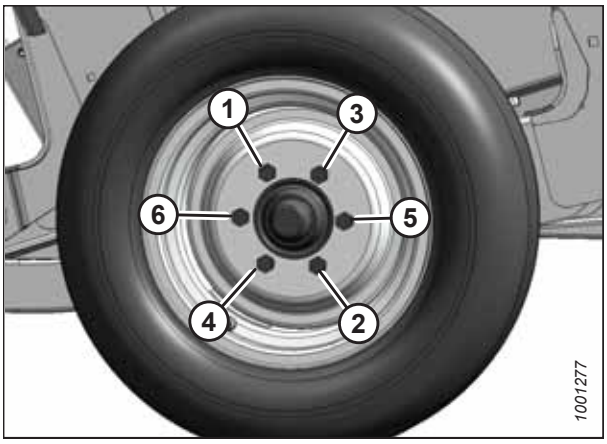


Figure 6.319: Bolt Tightening Sequence

6.15.2 Checking Axle Bolt Torque

The hardware that secures the optional transport system components to the header must be checked daily to ensure safe operation.

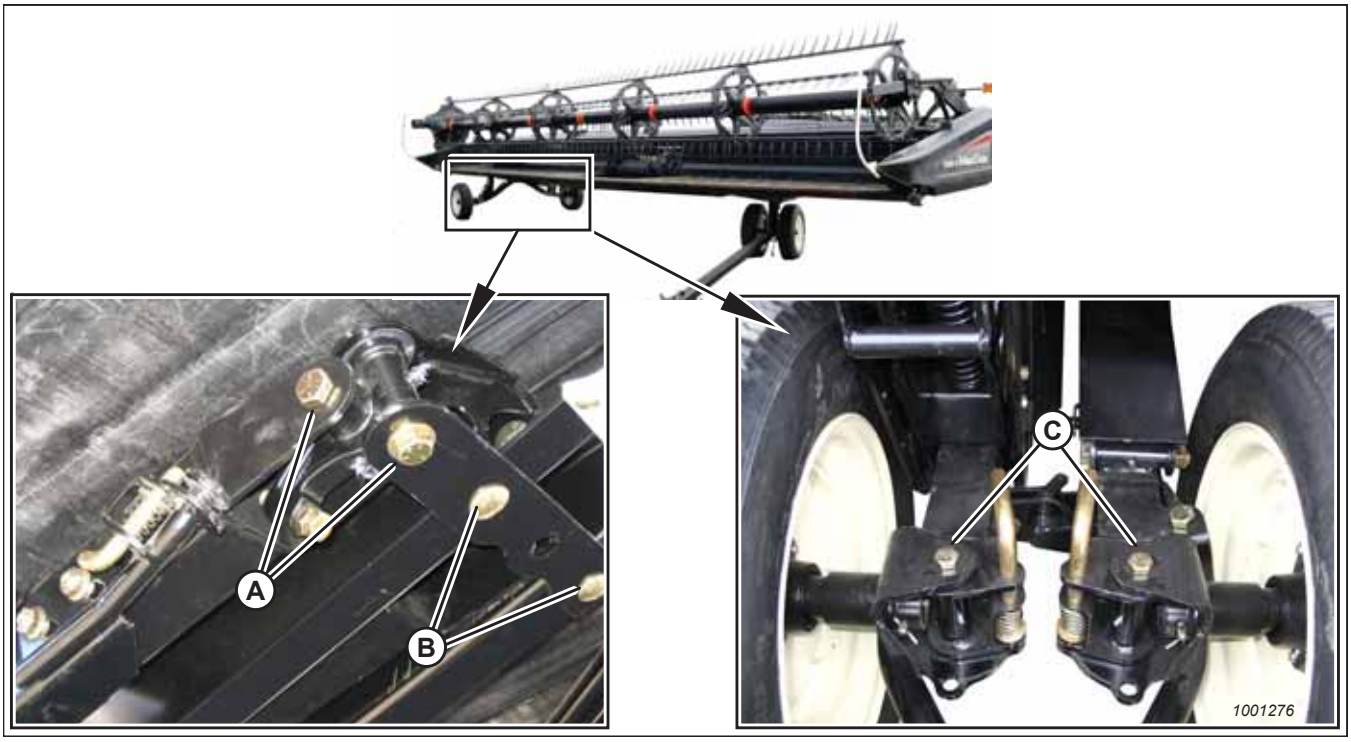


Figure 6.320: Axle Bolts

1. Check and tighten axle bolts **DAILY** until the torque is maintained as follows:
    - (A): 244 Nm (180 lbf·ft)
    - (B): 203 Nm (150 lbf·ft)
    - (C): 244 Nm (180 lbf·ft)

6.15.3 Checking Tire Pressure

Proper tire pressure ensures tires perform properly and wear evenly.

WARNING

- **Service tires safely.**
- **A tire can explode during inflation which could cause serious injury or death.**
- **Do NOT stand over the tire. Use a clip-on chuck and extension hose.**
- **Do NOT exceed the maximum inflation pressure indicated on the 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 it 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.**

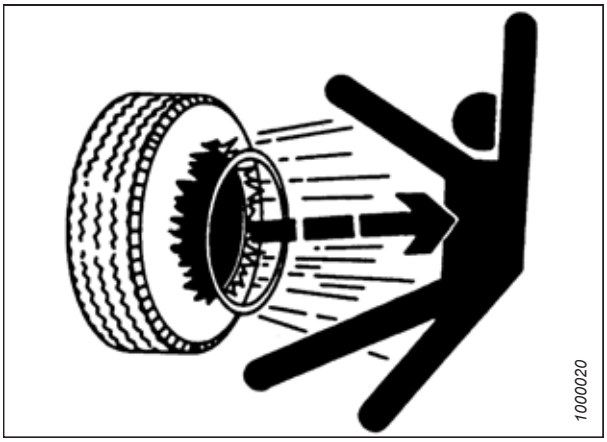


Figure 6.321: Inflation Warning

1. Check the tire inflation pressure and inflate it according to the information provided in Table *6.3, page 505*.
2. Make sure the tire is correctly seated on the rim before inflating. If the tire is not correctly positioned on the rim, take the tire to a qualified tire repair shop.
3. If inflation is required, use a clip-on chuck and an extension hose to inflate the tire to the desired pressure.

   IMPORTANT:

   Do **NOT** exceed the maximum inflation pressure indicated on the tire label or sidewall.

Table 6.3 Tire Pressure for ST205/75 R15 Tires

Load Range	Pressure
D	448 kPa (65 psi)
E	552 kPa (80 psi)

Chapter 7: Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

7.1 Adapter

7.1.1 Hillside Extension Kit

The Hillside Extension kit allows overfilling the hydraulic reservoir on CA25 Combine Adapters.

This allows operation on steep hillsides while maintaining oil supply to the suction side of pump.

Installation instructions are included in the kit.

MD #B6057

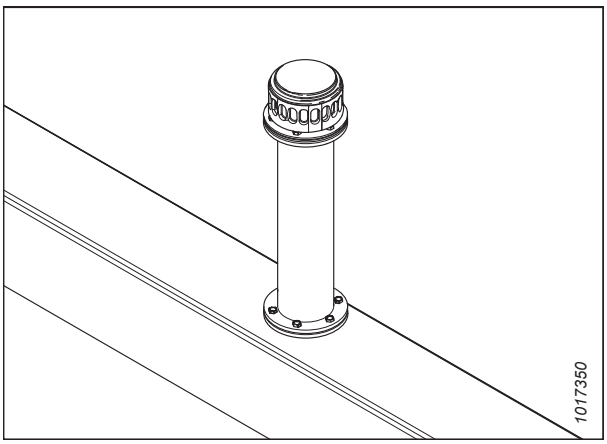


Figure 7.1: Hillside Extension Kit

7.2 Reel

7.2.1 Multi-Crop Rapid Reel Conversion Kit

For use on the 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 an aft location that minimizes crop disturbance. The kit also enables the reel fore-aft cylinders to be quickly relocated to the normal operating location.

Installation instructions are included in the kit.

MD #B6590

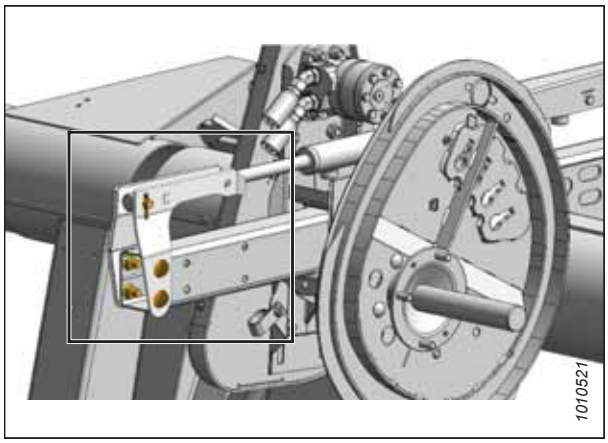


Figure 7.2: Center Arm – Left and Right Similar

7.2.2 Lodged Crop Reel Finger Kit

The steel fingers provided in the Lodged Crop Reel Finger kit attach to the ends of every other tine tube 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 7.3: Lodged Crop Finger

7.2.3 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion from a six-bat reel to a nine-bat reel.

Installation instructions are included in the kit.

Order the following bundles according to your header size and type:

- 9.1 m (30 ft.) – Plastic Fingers MD #B5278
- 9.1 m (30 ft.) – Steel Fingers MD #B5657
- 10.7 m (35 ft.) – Plastic Fingers MD #B5674

NOTE:

You must also order additional endshields when converting the reel.

7.2.4 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.

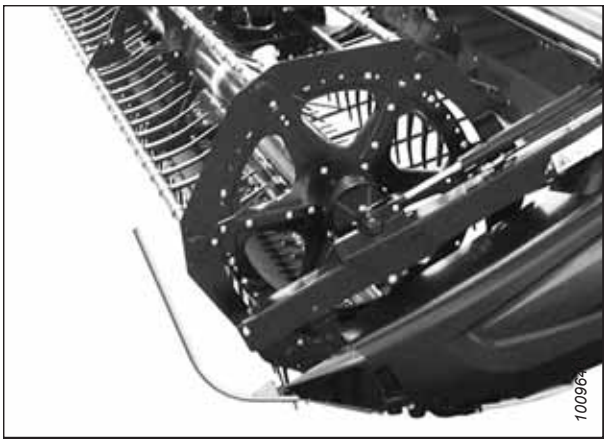


Figure 7.4: Reel Endshields

7.2.5 Short Brace Kit For Center Reel Arm

The Short Brace kit for Center Reel Arm consists of a set of shorter braces and necessary hardware for the center reel support arm. This kit allows you to move the reel farther back for applications such as straight cutting canola and cutting shatter prone crops.

Installation and adjustment instructions are included.

MD #B5605

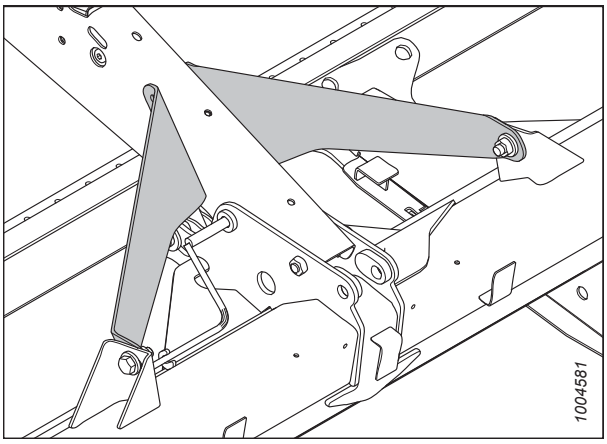


Figure 7.5: Short Brace kit (MD #B5605)

7.2.6 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.

Installation instructions are included in the kit.

- Five-Bat Reels – MD #B5825
- Six-Bat Reels – MD #B5826

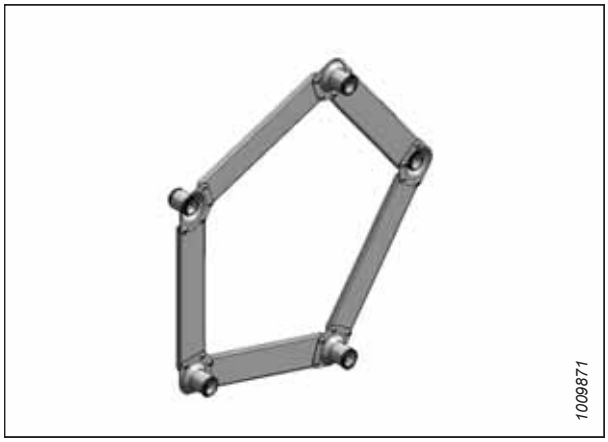


Figure 7.6: Five-Bat Reinforcing Kit Shown – Six-Bat Reinforcing Kit Similar

7.3 Cutterbar

7.3.1 Cutterbar Wearplate

Cutterbar wearplates are recommended for cutting on the ground when the soil is adhering to the steel.

Installation instructions are included in the kit.

Order one of the following bundles according to your header size:

- 9.1 m (30 ft.) – MD #B4839
- 10.7 m (35 ft.) – MD #B4840
- 12.2 m (40 ft.) – MD #B4841
- 13.7 m (45 ft.) – MD #B5114

Figure 7.7: Cutterbar Wearplates

7.3.2 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.

Installation instructions are included in the kit.

Order the following bundles according to your header size and guard type:

Regular Guards
- 9.1 m (30 ft.) and larger – MD #220101

Stub Guards
- 9.1 m (30 ft.) and larger – MD #220103

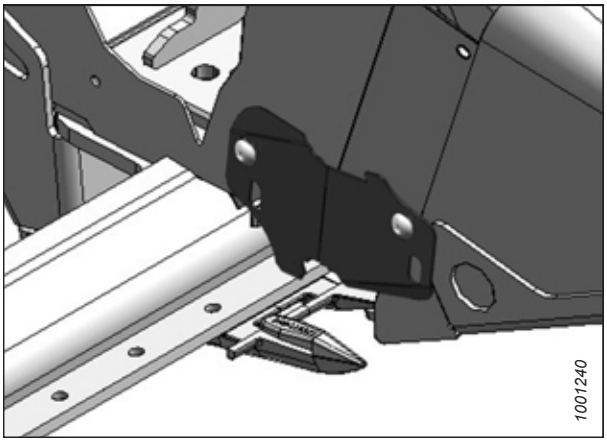


Figure 7.8: Knifehead Shield

7.3.3 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:

- 9.1 m (30 ft.) – MD #B5012
- 10.7 m (35 ft.) – MD #B5013

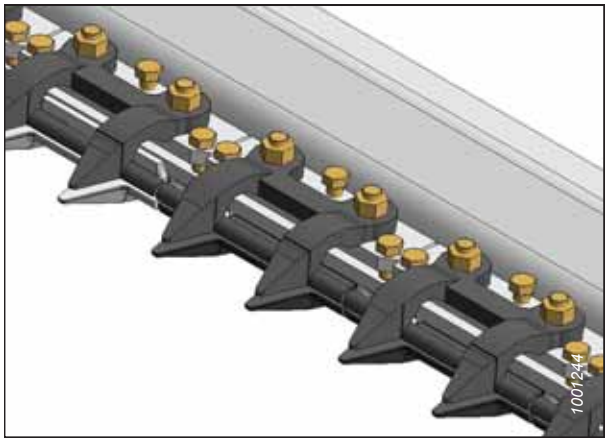


Figure 7.9: Stub Guards

7.3.4 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 #B9048
- Right side: MD #B9051

NOTE:

The Left Vertical Knife Mount kit can only be installed if installing both sides.

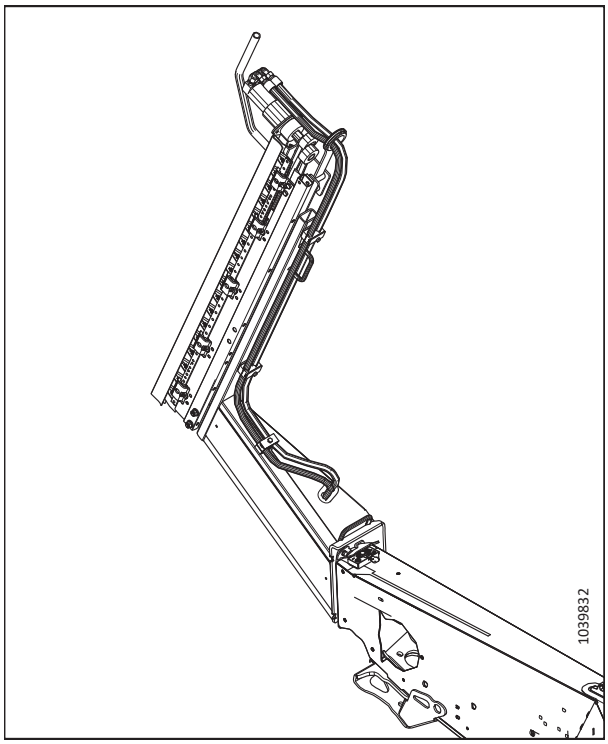


Figure 7.10: Vertical Knife Mount

7.4 Header

7.4.1 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

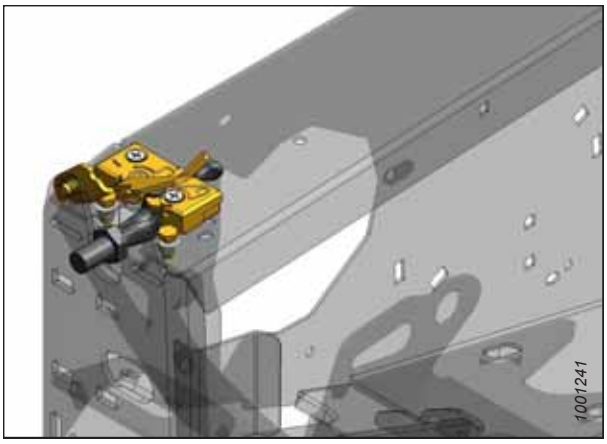


Figure 7.11: Divider Latch

7.4.2 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 9.1, 10.7, 12.2, and 13.7 m (30, 35, 40, and 45 ft.) headers.

MD #C1986

Second Stabilizer Wheel kit:

The Second Stabilizer Wheel kit is available to upgrade the header to two stabilizer wheels. Each kit consists of one wheel assembly; two kits are required to upgrade both sides of the header.

Installation instructions are included with the kit.

MD #B6179

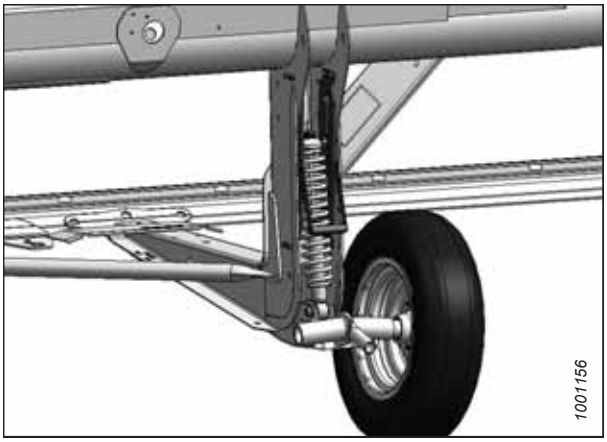


Figure 7.12: Stabilizer Wheel

7.4.3 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. For more information about that option, refer to *7.4.2 Stabilizer Wheels, page 513*.

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
9.1, 10.7, 12.2, and 13.7 m (30, 35, 40, and 45 ft.) headers.

MD #C1997

Figure 7.13: Stabilizer/Transport Wheels

7.5 Crop Delivery

7.5.1 Auger Dent Repair Kit

This kit allows Operators to repair dents close to the finger/guide area that the feed auger may have sustained during regular use.

Attachment hardware and installation instructions are included in the kit.

MD #237563

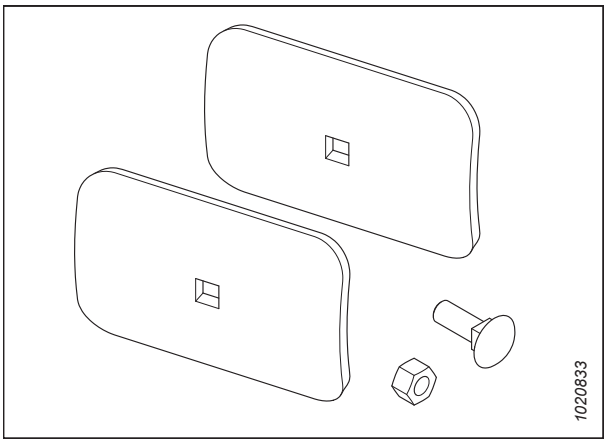


Figure 7.14: Auger Dent Repair Kit

7.5.2 CA25 Combine Adapter Feed Auger Flighting

The adapter 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 #B6434

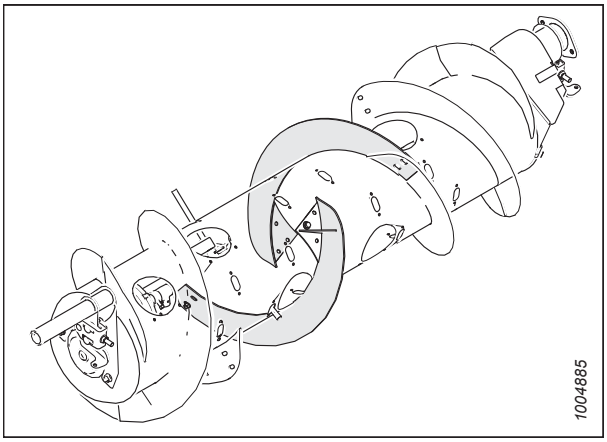


Figure 7.15: Adapter Feed Auger Flighting

7.5.3 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.

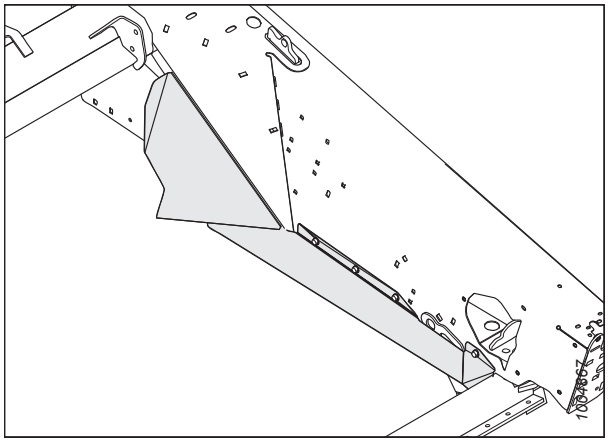


Figure 7.16: Draper Deflector (Narrow)

7.5.4 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.

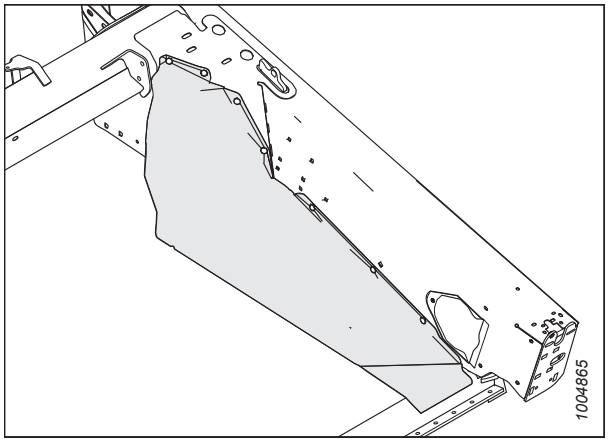


Figure 7.17: Draper Deflector (Wide)

7.5.5 Draper Clips

Draper clips offer additional wear protection for the draper cleats. They may prove useful in situations where conditions are dry or consistently hot.

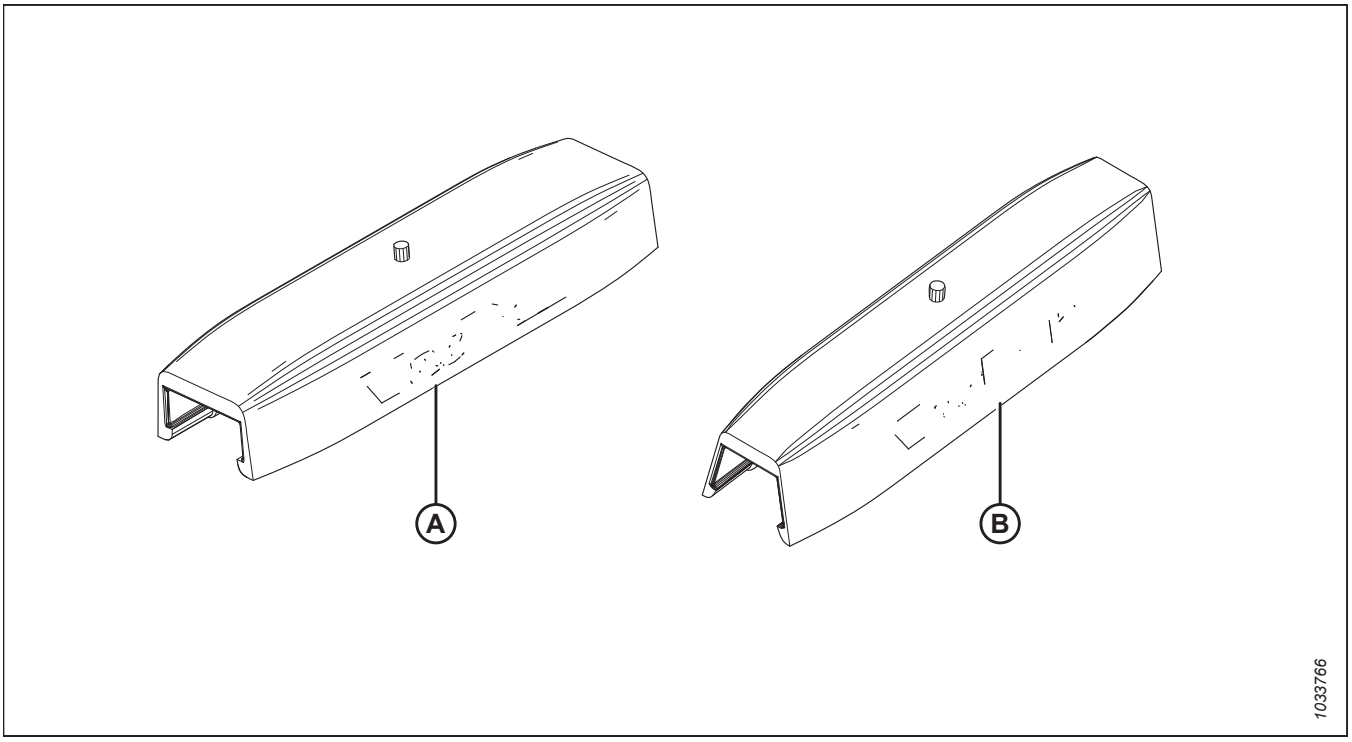


Figure 7.18: Draper Clips

Installation instructions are included with the kit.

- MD #294859 for square cleats (A) (for drapers MD #172195, MD #172196, MD #172197, MD #172198)
- MD #294858 for tapered cleats (B) (for drapers MD #220635, MD #220636, MD #220637, MD #220638, MD #220639, MD #220640)

7.5.6 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

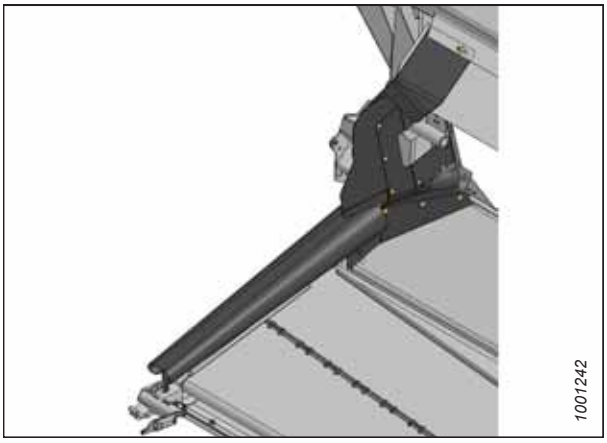


Figure 7.19: European Adapter Seal Kit

7.5.7 Rice Divider Rods

Rice divider rods attach to the left and right 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 7.20: Rice Divider Rod

7.5.8 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.

- CLAAS (Narrow Body) – MD #B4830
- CLAAS (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

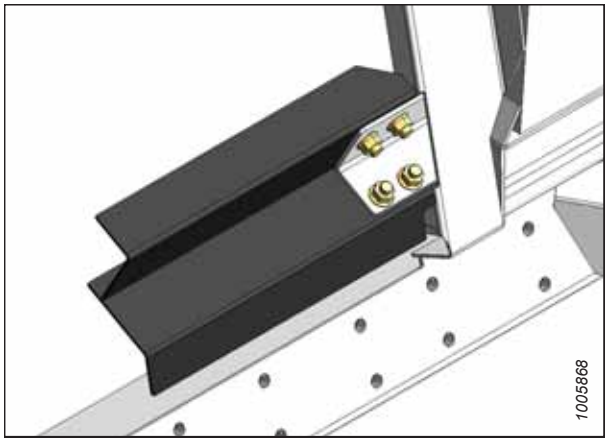


Figure 7.21: Stripper Bar

7.5.9 Upper Cross Auger

The upper cross auger (UCA) 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.

NOTE:

Newer UCA kits do not include or use beater bars.

Installation instructions are included with the kit.

Order from the following bundles according to your header size:

- 9.1 m (30 ft.) – MD #B9045
- 10.7 m (35 ft.) – MD #B9046
- 12.2 m (40 ft.) – MD #B9047
- 13.7 m (45 ft.) – MD #B9050

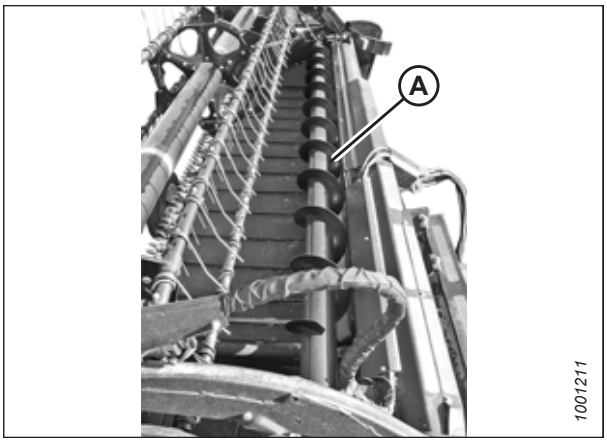


Figure 7.22: Upper Cross Auger

Chapter 8: Troubleshooting

Refer to the following topics to diagnose and correct various issues that may arise while operating the header.

8.1 Crop Loss at Cutterbar

Use the following tables to determine the cause of crop loss at the cutterbar and the recommended solution.

Problem	Solution	Refer to
Symptom: Does Not Pick Up Down Crop		
Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 54*
Header angle too low	Increase header angle	*3.7.4 Header Angle, page 78*
Reel too high	Lower reel	*3.7.9 Reel Height, page 89*
Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 90*
Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.7.5 Reel Speed, page 85* • *3.7.6 Ground Speed, page 86*
Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	*3.7.11 Reel Tine Pitch, page 97*
Reel fingers not lifting crop sufficiently	Install lifter guards	See your MacDon Dealer
Symptom: Heads Shattering or Breaking Off		
Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 85*
Reel too low	Raise reel	*3.7.9 Reel Height, page 89*
Ground speed too fast	Reduce ground speed	*3.7.6 Ground Speed, page 86*
Crop too ripe	Operate at night when humidity is higher	—
Symptom: Cut Grain Falling Ahead of Cutterbar		
Ground speed too slow	Increase ground speed	*3.7.6 Ground Speed, page 86*
Reel speed too slow	Increase reel speed	*3.7.5 Reel Speed, page 85*
Reel too high	Lower reel	*3.7.9 Reel Height, page 89*
Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 54*
Reel too far forward	Move reel back	*3.7.10 Reel Fore-Aft Position, page 90*
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	• *6.14.3 Replacing Reel Drive Sprocket, page 492* • See your MacDon Dealer
Worn or broken knife components	Replace knife components	*6.8 Cutterbar, page 399*
Symptom: Strips of Uncut Material		
Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
Broken knife sections	Replace broken sections	*6.8.1 Replacing Knife Section, page 399*
Symptom: Excessive Bouncing at Normal Field Speed		
Float set too light	Adjust header float	*3.7.2 Header Float, page 60*
Symptom: Divider Rod Running Down Standing Crop		
Divider rods too long	Remove divider rods	*3.7.13 Crop Divider Rods, page 105*
Symptom: Bushy or Tangled Crop Flows over Divider Rod, Builds Up on Endsheets		

Problem	Solution	Refer to
Divider rods providing insufficient separation	Install long divider rods	*3.7.13 Crop Divider Rods, page 105*
Symptom: 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 90* • *6.13.2 Reel Frown, page 467*
Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely, but still keeps sections from lifting off guards	*Checking and Adjusting Knife Hold-Downs, page 410*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*6.8 Cutterbar, page 399*
Header is not level	Level header	*3.8 Levelling Header, page 107*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position / finger pitch	• *3.7.10 Reel Fore-Aft Position, page 90* • *3.7.11 Reel Tine Pitch, page 97*
Divider runs down thick crop at ends, preventing proper feeding due to material bridging the knife guards	Replace three or four end guards with stub guards	• *6.8.7 Knife Guards, page 404* • *7.3.3 Stub Guard Conversion Kit, page 512* • See your MacDon Dealer
Symptom: Material Accumulating in Gap between Cutout in Endsheet and Knifehead		
Crop heads leaning away from knifehead opening in endsheet	Add knifehead shield(s), except in damp/sticky soils	*6.8.8 Knifehead Shield, page 415*

8.2 Cutting Action and Knife Components

Problem	Solution	Refer to
Symptom: Ragged or uneven cutting of crop		
Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 410*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*6.9 Knife Drive, page 417*
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 85* • *3.7.6 Ground Speed, page 86*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	• *3.7.10 Reel Fore-Aft Position, page 90* • *3.7.11 Reel Tine Pitch, page 97*
Cutterbar too high	Lower cutting height	*3.7.1 Cutting Height, page 54*
Header angle too flat	Steepen header angle	*3.7.4 Header Angle, page 78*
Bent knife causing binding of cutting parts	Straighten bent knife and align guards	*6.8.7 Knife Guards, page 404*
Cutting edge of guards not close enough or parallel to knife sections	Align guards	*6.8.7 Knife Guards, page 404*
Tangled/tough-to-cut crop	Install stub guards	• See your MacDon Dealer • *Checking and Adjusting Knife Hold-Downs, page 410* • *7.3.3 Stub Guard Conversion Kit, page 512*
Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 90*
Loose knife drive belt	Adjust drive belt tension	*6.9.2 Knife Drive Belts, page 424*
Symptom: Knife plugging		
Reel too high or too far forward	Lower reel or move reel rearward	• *3.7.9 Reel Height, page 89* • *3.7.10 Reel Fore-Aft Position, page 90*
Ground speed to slow	Increase ground speed	*3.7.6 Ground Speed, page 86*
Loose knife drive belt	Adjust drive belt tension	*6.9.2 Knife Drive Belts, page 424*
Improper knife hold-down adjustment	Adjust hold-down	*Checking and Adjusting Knife Hold-Downs, page 410*
Dull or broken knife section	Replace knife section	*6.8.1 Replacing Knife Section, page 399*
Bent or broken guards	Align or replace guards	*6.8.7 Knife Guards, page 404*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.7.10 Reel Fore-Aft Position, page 90* • *3.7.11 Reel Tine Pitch, page 97*

Problem	Solution	Refer to
Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	• *6.13.1 Reel Clearance to Cutterbar, page 464* • *6.13.2 Reel Frown, page 467*
Float too heavy	Adjust springs for lighter float	*3.7.2 Header Float, page 60*
Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	*Cutting on Ground, page 58*
Mud or dirt build-up on cutterbar	Install cutout sections	*Installing Knifehead Shield, page 416*
Mud or dirt build-up on cutterbar	Flatten header angle	*3.7.4 Header Angle, page 78*
Knife is not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual
Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 410*
Knife not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual
Excessive knife wear	Replace knife	• *6.8.2 Removing Knife, page 400* • *6.8.5 Installing Knife, page 402*
Loose or worn knifehead pin or drive arm	Tighten or replace parts	*6.8.1 Replacing Knife Section, page 399*
Symptom: Excessive vibration of adapter and header		
Incorrect knife speed	Adjust knife speed	*3.7.8 Knife Speed, page 88*
Driveline U-joints worn	Replace U-joints	See your MacDon Dealer
Bent cutterbar	Straighten cutterbar	See your MacDon Dealer

Symptom: Excessive breakage of knife sections or guards		
Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking and Adjusting Knife Hold-Downs, page 410*
Cutterbar operating too low in stony conditions	Raise cutterbar with skid shoes	*Cutting on Ground, page 58*
Float set too heavy	Adjust float springs for lighter float	*3.7.2 Header Float, page 60*
Bent or broken guard	Straighten or replace guard	*6.8.7 Knife Guards, page 404*
Header angle too steep	Flatten header angle	*3.7.4 Header Angle, page 78*
Symptom: Knife back breakage		
Bent or broken guard	Straighten or replace guard	*6.8.7 Knife Guards, page 404*
Worn knifehead pin	Replace knifehead pin	• *6.8.3 Removing Knifehead Bearing, page 401* • *6.8.4 Installing Knifehead Bearing, page 402*
Dull knife	Replace knife	• *6.8.2 Removing Knife, page 400* • *6.8.5 Installing Knife, page 402*

8.3 Reel Delivery

Problem	Solution	Refer to
Symptom: Reel not releasing material in normal standing crop		
Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 85*
Reel too low	Raise reel	*3.7.9 Reel Height, page 89*
Reel tines too aggressive	Reduce cam setting	*3.7.11 Reel Tine Pitch, page 97*
Reel too far back	Move reel forward	*3.7.10 Reel Fore-Aft Position, page 90*
Symptom: 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 97*
Symptom: Wrapping on reel end		
Reel tines too aggressive	Reduce cam setting	*3.7.11 Reel Tine Pitch, page 97*
Reel too low	Raise reel	*3.7.9 Reel Height, page 89*
Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 85*
Crop conditions	Install optional endshields	See your MacDon Dealer
Reel not centered in header	Center reel in header	*6.13.3 Centering Reel, page 468*
Symptom: Reel releases crop too quickly		
Reel tines not aggressive enough	Increase cam setting	*3.7.11 Reel Tine Pitch, page 97*
Reel too far forward	Move reel back	*3.7.10 Reel Fore-Aft Position, page 90*
Symptom: Reel will not lift		
Reel lift couplers are incompatible or defective	Change quick coupler	—
Symptom: Reel will not turn		
Quick couplers not properly connected	Connect couplers	Refer to the combine operator's manual
Reel drive chain disconnected	Connect chain	• *6.14.6 Replacing Drive Chain on Double Reel, page 498*
Symptom: Reel motion uneven under no load		
Excessive slack in reel drive chain	Tighten chain	*6.14.2 Adjusting Reel Drive Chain Tension, page 489*
Symptom: Reel motion is uneven or stalls In heavy crops		
Reel speed too fast	Reduce reel speed	*3.7.5 Reel Speed, page 85*
Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	*3.7.11 Reel Tine Pitch, page 97*
Reel too low	Raise reel	*3.7.9 Reel Height, page 89*
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:** Some combines have more than one reservoir.	Fill to proper level	Refer to the combine operator's manual
Relief valve malfunction	Replace relief valve	Refer to the combine operator's manual

Problem	Solution	Refer to
Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace with high torque (10-tooth or 14-tooth) reel drive sprocket	*6.14.3 Replacing Reel Drive Sprocket, page 492*
Symptom: Plastic fingers cut at tip		
Insufficient reel to cutterbar clearance	Increase clearance	*6.13.1 Reel Clearance to Cutterbar, page 464*
Symptom: 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 54*
Reel digging into ground with reel speed slower than ground speed	Decrease header tilt	*3.7.4 Header Angle, page 78*
Reel digging into ground with reel speed slower than ground speed	Move reel aft	*3.7.10 Reel Fore-Aft Position, page 90*
Symptom: 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 54*
Reel digging into ground with reel speed faster than ground speed	Decrease header tilt	*3.7.4 Header Angle, page 78*
Reel digging into ground with reel speed faster than ground speed	Move reel aft	*3.7.10 Reel Fore-Aft Position, page 90*
Symptom: 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	*3.9 Unplugging the Cutterbar, page 109*
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Stop reel before plugging becomes excessive	*3.9 Unplugging the Cutterbar, page 109*

8.4 Header and Drapers

Problem	Solution	Refer to
Symptom: Insufficient Header Lift		
Low relief pressure	Increase relief pressure	Refer to the combine operator's manual
Symptom: Insufficient Side Draper Speed		
Speed control set too low	Increase control setting	*3.7.7 Draper Speed, page 87*
Relief pressure too low	Increase relief pressure to recommended setting	See your MacDon Dealer
Worn out gear pump	Replace pump	See your MacDon Dealer
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	Refer to the combine operator's manual
Symptom: Draper Will Not Move		
Drapers are loose	Tighten drapers	
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	*6.12.6 Side Draper Roller Maintenance, page 454*
Low hydraulic oil	Fill reservoir to full level	*6.4.2 Adding Oil to Hydraulic Reservoir, page 367*
Incorrect relief setting at flow control valve	Adjust relief setting	See your MacDon Dealer
Symptom: Draper Stalling		
Material not feeding evenly off knife	Lower reel	*3.7.9 Reel Height, page 89*
Material not feeding evenly off knife	Install stub guards	*7.3.3 Stub Guard Conversion Kit, page 512*
Material accumulates inside or under front edge of draper	Adjust deck height	*6.12.5 Adjusting Deck Height, page 451*
Symptom: Adapter Auger Back-Feeds		
Auger set too high	Check reversing mechanism inside auger	Refer to the combine operator's manual
Auger set too high	Lower auger	*6.7.1 Adjusting Auger to Pan Clearance, page 379*
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	Refer to the combine operator's manual
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	Refer to the combine operator's manual
Symptom: Hesitation in Flow of Bulky Crop		
Header angle too flat	Steepen header angle	*3.7.4 Header Angle, page 78*
Material overload on drapers	Increase side draper speed	*3.7.7 Draper Speed, page 87*

Problem	Solution	Refer to
Material overload on drapers	Install upper cross auger (UCA)	See your MacDon Dealer
Material overload on drapers	Add flighting extensions	*5.1.1 Using Flighting Extensions, page 289*
Material accumulation at auger ends	Install stripper bars	*5.1.2 Using Stripper Bars, page 289*
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 87*
Feeder house chain drum too low	Move drum to corn position	Refer to the combine operator's manual
Symptom: Adapter Auger Wraps Crop		
Crop susceptible to wrapping (flax)	Add flighting extensions or stripper bars	• *5.1.2 Using Stripper Bars, page 289* • *5.1.1 Using Flighting Extensions, page 289*
Auger speed too fast	Install slow down kit	See your MacDon Dealer
Symptom: Adapter Auger Stalling		
Auger drive chain disengaging the driven sprocket	Check drive chain tension	*6.7.2 Checking Auger Drive Chain Tension, page 380*
Symptom: Combine Feeder Drum Wraps Crop		
Crop susceptible to wrapping (flax)	Add stripper bars	*5.1.2 Using Stripper Bars, page 289*
Symptom: Crop Backs Up or Hesitates on Feed Draper		
Feed draper stalling	Clean debris from poly pan	—
Feed draper stalling	Check feed draper tension	*6.12.4 Adjusting Side Draper Tracking, page 449*
Feed draper stalling	Replace roller bearing(s)	*Replacing Adapter Feed Draper Drive Roller Bearing, page 433*
Feed draper stalling	Check feed draper motor	—
Heavy crop plugging between adapter auger and feed draper	Check auger clearance	*6.7.1 Adjusting Auger to Pan Clearance, page 379*
Heavy crop plugging between adapter auger and feed draper	Refer to Adapter auger back-feeds earlier in this table	—
Excessive clearance from auger to drive roller	Lower auger	*6.7.1 Adjusting Auger to Pan Clearance, page 379*
Auger speed too slow	Install auger speed-up kit	See your MacDon Dealer
Side drapers running too slow in heavy crop	Increase side draper speed	*3.7.7 Draper Speed, page 87*
Symptom: Crop is Thrown Across Opening and under Opposite Draper		
Side drapers running too fast in light crop	Reduce side draper speed	*3.7.7 Draper Speed, page 87*
Excessive overlap of feeder draper	Center side draper drive rollers over feed draper side deflectors	See your MacDon Dealer
Symptom: Crop Feeding into Feeder House at Sides More Than at Center		
Auger not delivering crop properly	Add flighting extensions	*5.1.1 Using Flighting Extensions, page 289*
Auger not delivering crop properly	Add stripper bars	*5.1.2 Using Stripper Bars, page 289*

Problem	Solution	Refer to
Auger not delivering crop properly	Remove auger outer tines	*Removing Feed Auger Tines, page 391*
Auger not delivering crop properly	Install auger speed-up kit	See your MacDon Dealer
Symptom: 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 391*
Auger not delivering crop properly	Remove flighting extensions	*5.1.1 Using Flighting Extensions, page 289*
Auger not delivering crop properly	Remove auger stripper bars	*5.1.2 Using Stripper Bars, page 289*
Symptom: Crop Jamming into Gap Between Cutout in Endsheet and Knifehead		
Crop heads leaning away from knifehead hole in endsheet	Add shields, except in damp/sticky soils	*6.8.8 Knifehead Shield, page 415*
Symptom: Material Accumulates Inside or Under Front Edge of Draper		
Deck height improperly adjusted	Adjust deck height	*6.12.5 Adjusting Deck Height, page 451*
Symptom: Material Accumulating on End Deflectors and Releasing in Bunches		
End deflectors too wide	Trim deflector or replace with narrow deflector (MD #172381)	—
Symptom: Cutterbar Pushing Soil 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 60*
Float set too heavy	Adjust float	
Header angle too steep	Adjust header to optimum angle	*3.7.4 Header Angle, page 78*
Symptom: Combine Adapter Lower Beam Pushing Soil		
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 78*
Float too light, header legs do not rest on stops	Adjust to heavier float	*3.7.2 Header Float, page 60*
Symptom: Reel Fingers Being Cut at Header Hinge Locations in Frown Mode		
Reel clearance inadequate	Adjust reel clearance to cutterbar	*Adjusting Reel Clearance, page 467*
Reel clearance inadequate	Adjust reel frown at finger tubes	*6.13.2 Reel Frown, page 467*
Symptom: Longer Stubble in Center Than at Ends, or Ends of Cutterbar Pushing Soil at Ends		
Too much weight on wings	Adjust wing balance	*Checking Wing Balance, page 69*
Symptom: Longer Stubble at Ends Than at Center, or Cutterbar Pushing Soil at Center		
Too much weight at middle of header	Adjust wing balance	*Checking Wing Balance, page 69*
Symptom: Wings Will Not Frown Without Excessive Down Force		
Wings set too light	Adjust wing balance	*Checking Wing Balance, page 69*

8.5 Cutting Edible Beans

Problem	Solution	Refer to
Symptom: Excessive losses at dividers		
Divider rod running down crop and shattering pods	Remove divider rod	*3.7.13 Crop Divider Rods, page 105*
Vines and plants build up on endsheet	Install divider rod	*3.7.13 Crop Divider Rods, page 105*
Symptom: Reel ends wrap with crop		
Uncut crop interfering on reel ends	Add reel endshields	See your MacDon Dealer
Symptom: Reel wraps with crop		
Reel too low	Raise reel	*3.7.9 Reel Height, page 89*
Symptom: 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 Ground, page 58*
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 60*
Reel too high	Fully retract reel cylinders	*3.7.9 Reel Height, page 89*
Reel too high with cylinders fully retracted	Adjust reel height	*Adjusting Reel Clearance, page 467*
Reel finger pitch not aggressive enough	Adjust finger pitch	*3.7.11 Reel Tine Pitch, page 97*
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 90*
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 78*
Reel too slow	Adjust reel speed to be marginally faster than ground speed	*3.7.5 Reel Speed, page 85*
Ground speed too high	Lower ground speed	*3.7.6 Ground Speed, page 86*
Header skid shoes adjusted too low	Raise skid shoes to maximum up position	*Cutting on Ground, page 58*
Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install cutterbar wear plate on bottom of cutterbar and skid shoes	See your MacDon Dealer
Worn/damaged knife sections	Replace sections or complete knife	• *6.8.1 Replacing Knife Section, page 399* • *6.8.2 Removing Knife, page 400* • *6.8.5 Installing Knife, page 402*
Dirt packs on bottom of cutterbar with wear plate and raises cutterbar off the ground	Ground too wet; allow soil to dry	—
Dirt packs on bottom of cutterbar with wear plate and raises cutterbar off the ground	Manually clean the bottom of cutterbar when accumulation gets unacceptable	—

Problem	Solution	Refer to
Plastic wear plate for cutterbar has been installed over top of steel wear plates	Remove steel cutterbar wear plate when installing the wear plate for cutterbar	—
Header is not level	Level header	*3.8 Levelling Header, page 107*
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
Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted	Manually remove debris from cutterbar cavity to prevent damage to drapers	—
Symptom: Crop accumulating at guards and not moving rearward onto drapers		
Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.7.11 Reel Tine Pitch, page 97*
Reel too high relative to knife	Readjust reel minimum height with cylinders fully retracted	*Adjusting Reel Clearance, page 467*
Reel too far forward of cutterbar	Reposition reel	*3.7.10 Reel Fore-Aft Position, page 90*

Symptom: Cutterbar guards breaking		
Float insufficient	Increase float	*3.7.2 Header Float, page 60*
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	• *7.3.3 Stub Guard Conversion Kit, page 512* • See your MacDon Dealer
Symptom: Reel shattering pods		
Reel running too fast	Reduce reel speed	*3.7.5 Reel Speed, page 85*
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 97*
Reel too far forward of cutterbar C-section	Reposition reel	*3.7.11 Reel Tine Pitch, page 97*
Header too heavy	Readjust float to make header lighter	*3.7.2 Header Float, page 60*
Symptom: Cutterbar pushing too much trash and dirt		
Header angle too steep	Decrease header angle with lift cylinders	*3.7.4 Header Angle, page 78*
Header angle too steep	Shorten the center-link	*3.7.4 Header Angle, page 78*
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
Symptom: 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: 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	*6.12.5 Adjusting Deck Height, page 451*
Excessive gap between top of front of draper and cutterbar	Raise header fully at each end of field or as required and shift decks back and forth to help clean out cutterbar	—
Symptom: 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 89*
Dirt accumulation on end of fingers do not let plants slide off fingers over drapers	Adjust reel fore and aft location to move fingers out of the ground	*3.7.10 Reel Fore-Aft Position, page 90*

Symptom: 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 87*
Reel finger pitch not aggressive enough	Increase finger pitch	*3.7.11 Reel Tine Pitch, page 97*

Chapter 9: Reference

This chapter provides quick access to frequently needed information or numbers (for example, units of measurement or torque values).

9.1 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

9.1.1 SAE Bolt Torque Specifications

The torque values provided in the following SAE bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** grease or oil bolts or cap screws unless directed to do so in this manual.

Table 9.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

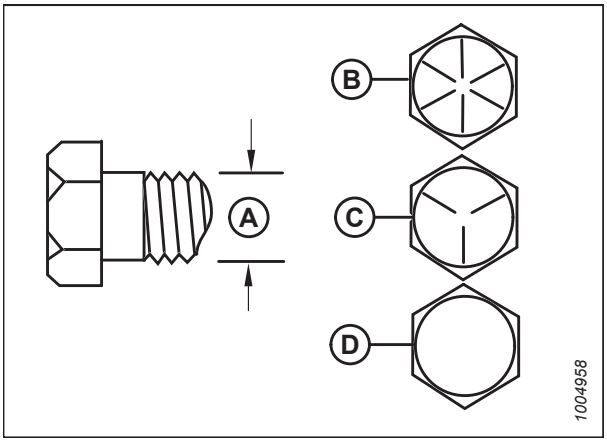


Figure 9.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 9.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

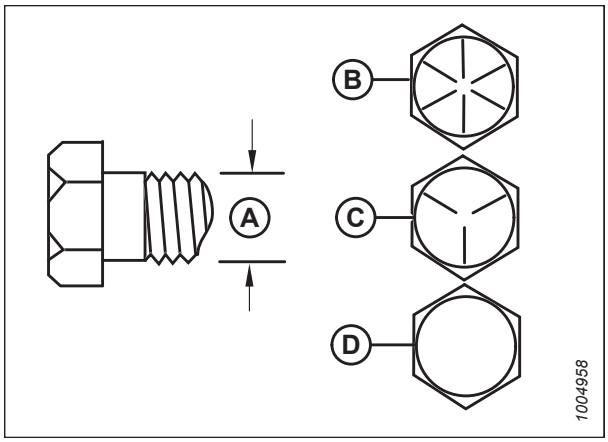


Figure 9.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 9.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

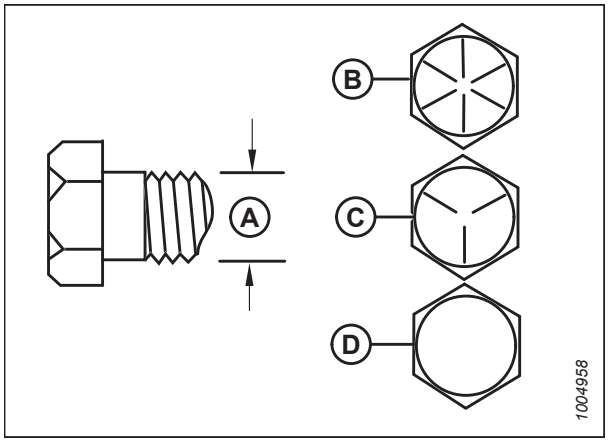


Figure 9.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 9.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

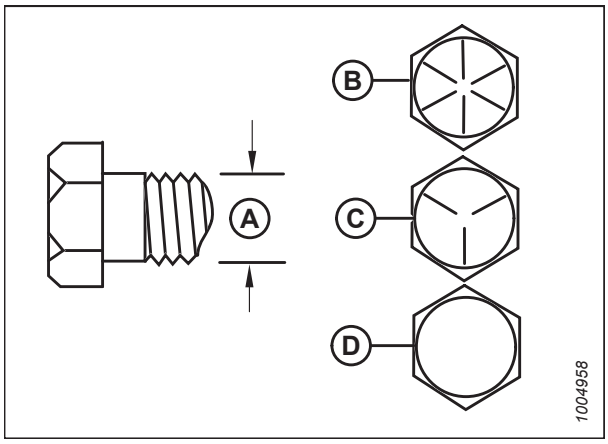


Figure 9.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

9.1.2 Metric Bolt Specifications

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 9.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

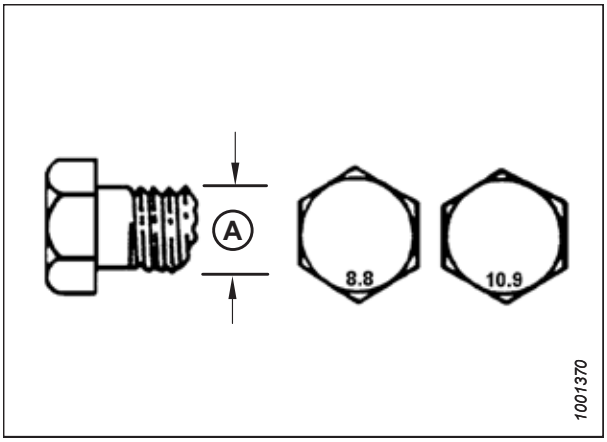


Figure 9.5: Bolt Grades

Table 9.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

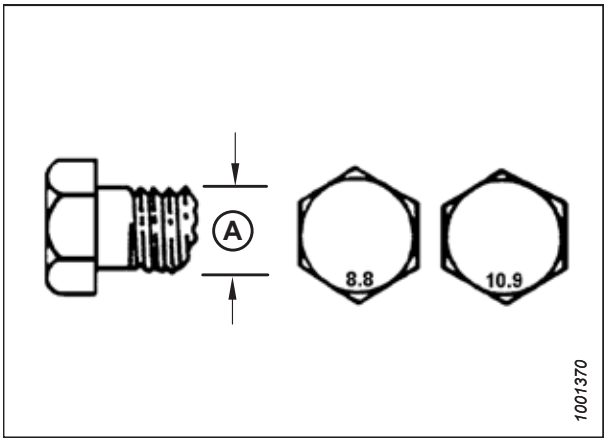


Figure 9.6: Bolt Grades

Table 9.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

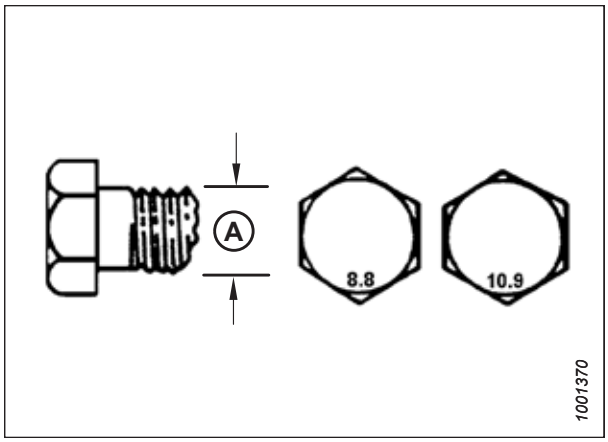


Figure 9.7: Bolt Grades

Table 9.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	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

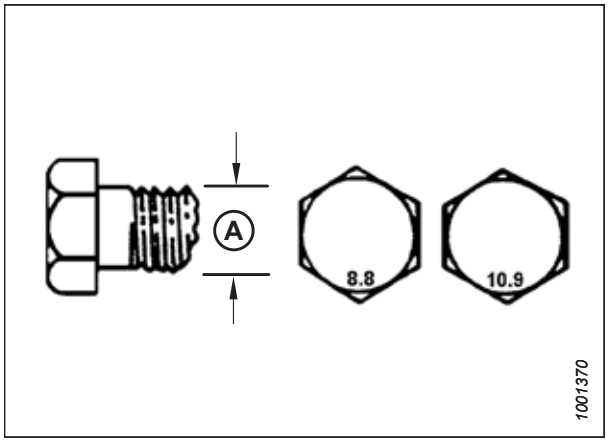


Figure 9.8: Bolt Grades

9.1.3 Metric Bolt Specifications – Cast Aluminum

Specifications are provided for the appropriate final torque values for various sizes of metric bolts in cast aluminum.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 9.9 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf·ft	Nm	lbf·ft
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	–	–	–	–

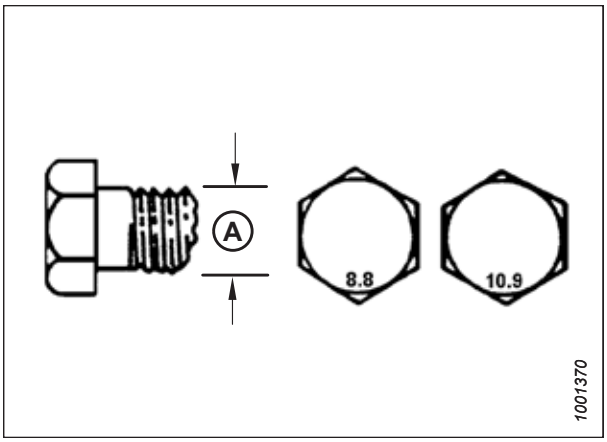


Figure 9.9: Bolt Grades

9.1.4 Flare-Type Hydraulic Fittings

The standard torque values are provided for flare-type hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto the fitting without lubrication until contact is made between the flared surfaces.
3. Torque fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table *9.10, page 539*.
4. Secure fitting (D) with two wrenches. Place one wrench on fitting body (D), and tighten nut (E) with the other wrench to the torque value shown in Table *9.10, page 539*.
5. Verify the final condition of connection.

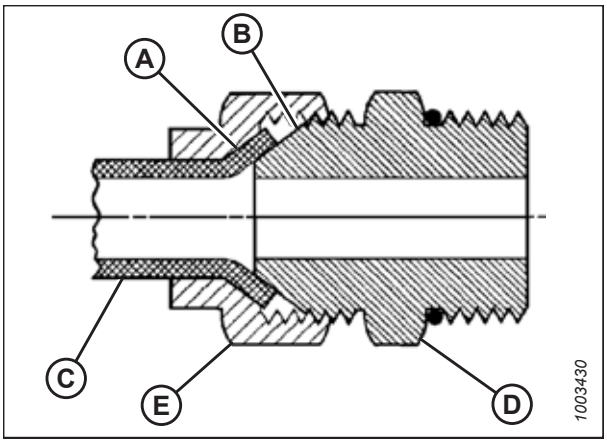


Figure 9.10: Hydraulic Fitting

Table 9.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[43]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	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

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

Table 9.10 Flare-Type Hydraulic Tube Fittings (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[44]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-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

9.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or 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. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
4. Apply hydraulic system oil to O-ring (A).

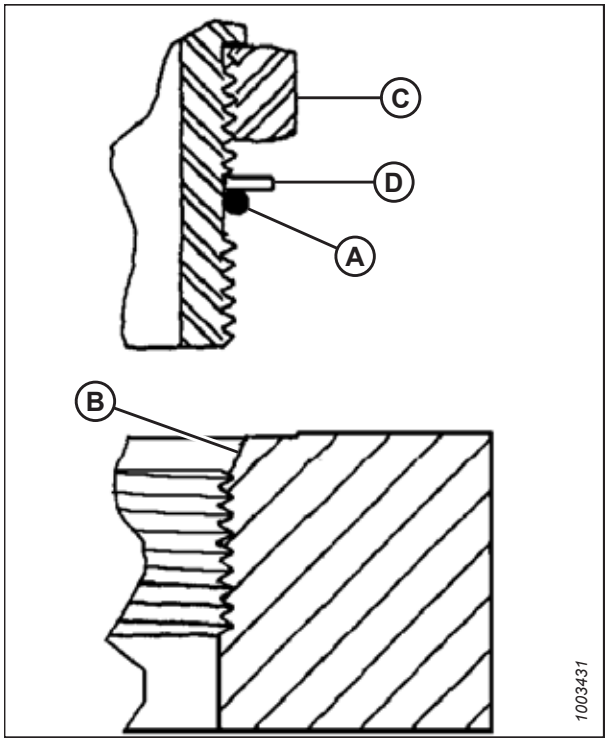


Figure 9.11: Hydraulic Fitting

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

5. Install fitting (B) into the port until backup washer (D) and O-ring (A) contact part face (E).
6. Position the angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten it to the torque value indicated in the table. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Verify the final condition of the fitting.

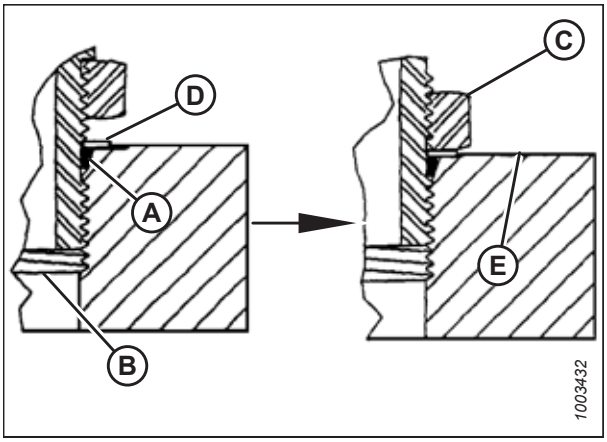


Figure 9.12: Hydraulic Fitting

Table 9.11 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[45]	
		Nm	lbf·ft (*lbf·in)
-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

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

9.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values for non-adjustable hydraulic fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table *9.12, page 542*.
6. Verify the final condition of the fitting.

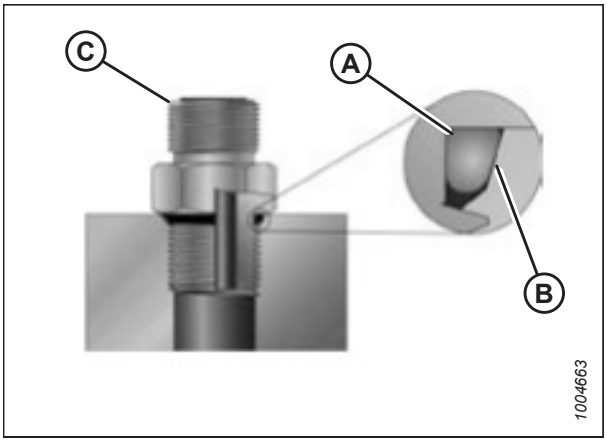


Figure 9.13: Hydraulic Fitting

Table 9.12 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[46]	
		Nm	lbf·ft (*lbf·in)
-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

9.1.7 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Torque values are shown in the Table *9.13, page 543*.

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

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 9.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table *9.13, page 543*.

   NOTE:

   If applicable, hold the hex flange on fitting body (E) to prevent the rotation of the fitting body and the hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

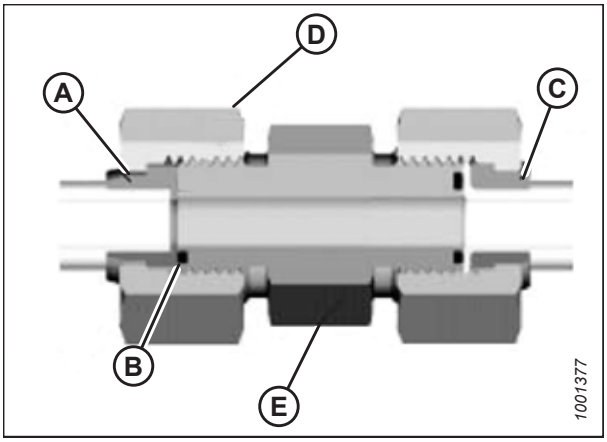


Figure 9.15: Hydraulic Fitting

Table 9.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[47]	
			Nm	lbf·ft
-3	Note[48]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[48]	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[48]	7/8	–	–
-16	1 7/16	1	150–165	111–122

47. Torque values and angles shown are based on lubricated connection as in reassembly.
48. O-ring face seal type end not defined for this tube size.

Table 9.13 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[49]	
			Nm	lbf·ft
-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

9.1.8 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.
4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *9.14, page 544*. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with an appropriate cleaner.
6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

   NOTE:

   The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

Table 9.14 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
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

49. Torque values and angles shown are based on lubricated connection as in reassembly.

9.2 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 9.15 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
Length	meter	m	x 3.2808 =	foot	ft.
Power	kilowatt	kW	x 1.341 =	horsepower	hp
Pressure	kilopascal	kPa	x 0.145 =	pounds per square inch	psi
Pressure	megapascal	MPa	x 145.038 =	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	x 14.5038 =	pounds per square inch	psi
Torque	Newton meter	Nm	x 0.7376 =	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	x 8.8507 =	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	(°C x 1.8) + 32 =	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	x 3.2808 =	feet per minute	ft/min
Velocity	meters per second	m/s	x 3.2808 =	feet per second	ft/s
Velocity	kilometers per hour	km/h	x 0.6214 =	miles per hour	mph
Volume	liter	L	x 0.2642 =	US gallon	US gal
Volume	milliliter	mL	x 0.0338 =	ounce	oz.
Volume	cubic centimeter	cm^3 or cc	x 0.061 =	cubic inch	$in.^3$
Weight	kilogram	kg	x 2.2046 =	pound	lb.

9.3 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 #214325
Export (anywhere other than North America)	FD75 FlexDraper® Header and CA25 Combine Adapter	MD #214568

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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	—
Grease	SAE multi-purpose	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)
Gear Lubricant	SAE 85W-140	API service class GL-5	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)

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