

D65

Draper Header for Combines

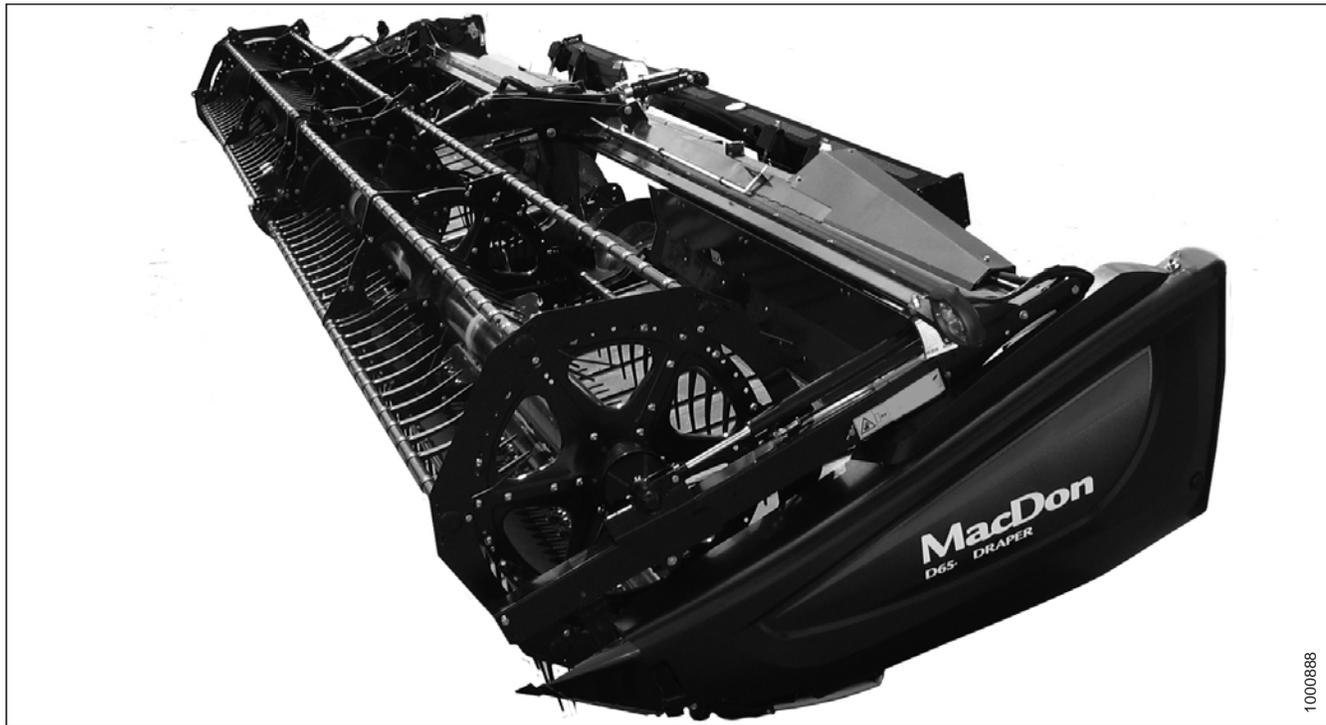
Operator's Manual

214319 Revision A

2018 Model Year

Original Instruction

D65 Draper Header for Combines



1000888

Published: Novemeber 2017

Introduction

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

The D65 Draper Header is specially designed as a straight cut header and is equipped to work well in all straight cut conditions—whether cutting on or above the ground.

Carefully read all the material provided before attempting to use the machine.

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

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

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

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

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

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

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

NOTE:

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

This manual is also available in the following languages:

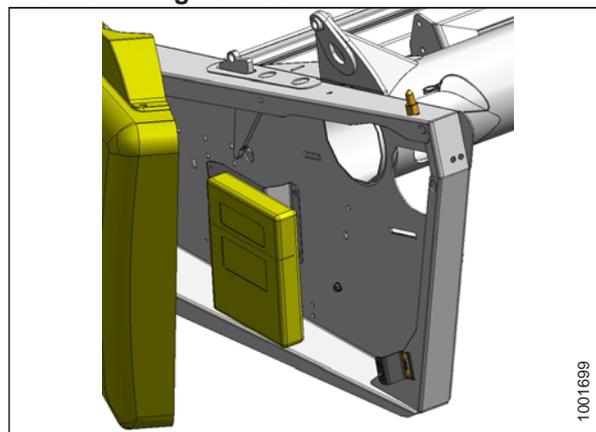
- Russian

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

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.

Manual Storage Location



- Unless otherwise noted, use the standard torque values provided in Chapter 8 *Reference, page 469* of this document.

List of Revisions

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

Summary of Change	Refer To
Added conventions used in this document.	<i>Introduction, page i</i>
Updated illustrations of header and adapter serial plate locations.	<i>Model and Serial Number, page v</i>
Updated header endsheet safety decal locations.	<i>1.8 Safety Decal Locations, page 9</i>
Added checking thread length to determine if adjustment is required.	<i>Checking and Adjusting Feed Auger Springs, page 50</i>
Added locations of reel fore-aft / header tilt toggle switch for each combine manufacturer.	<i>Controlling Header Angle, page 66</i>
Added topic.	<i>Setting Header Controls (Case 8010), page 119</i>
Added mid-range Case Combines.	<i>3.8.3 Case IH 5130/6130/7130 and 5140/6140/7140 Midrange Combines, page 109</i>
Added image of voltage limits on combine display.	<i>Checking Voltage Range from Combine Cab (Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240), page 120</i>
Added header setup and calibration instructions for use with John Deere S7 Series combines.	<i>3.8.9 John Deere S7 Series Combines, page 161</i>
Added Check Auger Drive Chain Tension and Check Deck Height Adjustment.	<i>5.3.2 Break-In Inspection, page 276</i>
Corrected upper cross auger grease point descriptions.	<i>Every 250 Hours, page 283</i>
<ul style="list-style-type: none"> • Updated service kit part number. • Added instructions for replacing adapter fitting MD #245160. 	<i>5.4.4 Changing Oil Filter, page 297</i>
Updated replacing light bulbs.	<i>5.5.1 Replacing Light Bulbs, page 299</i>
Updated illustrations to show line marked on bottom cover.	<i>5.7.2 Checking Auger Drive Chain Tension, page 308</i>
Revised topic—No adjustment is required if spring retainers are within +6 to -3 of flush and feed draper is tracking properly.	<i>5.10.2 Adjusting Adapter Feed Draper Tension, page 366</i>
Added Second Stabilizer Wheel kit (B6179).	<i>6.4.2 Stabilizer Wheels, page 445</i>
Added Auger Dent Repair kit to Options and Attachments.	<i>6.5.7 Auger Dent Repair Kit, page 449</i>

Summary of Change	Refer To
Updated U&A part numbers.	<i>8.3 Unloading and Assembly, page 481</i>
Removed single reel content.	
Changed “Lexion” to “CLAAS” throughout.	
Moved Recommended Fluids and Lubricants to inside back cover.	

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

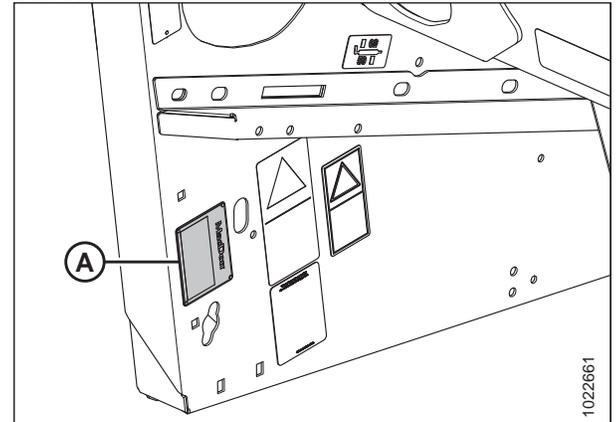
Header Model: _____

Serial Number: _____

Year: _____

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

Header



Combine Adapter

Adapter Model: _____

Serial Number: _____

Year: _____

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

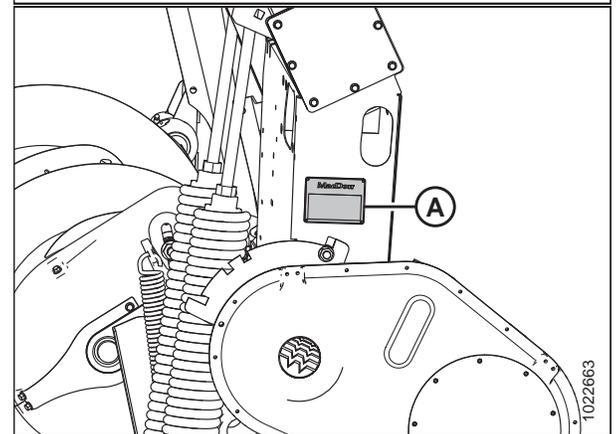


Figure 1. Adapter

Slow Speed Transport/Stabilizer Wheel Option

Serial Number: _____

Year: _____

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

Transport/Stabilizer Option

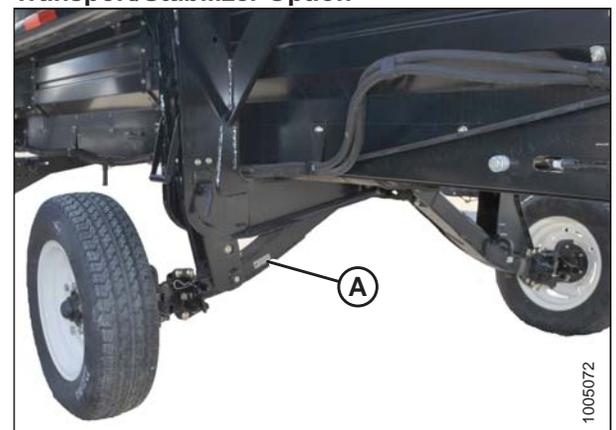


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1 Safety

1.1 Safety Alert Symbols

This safety alert symbol indicates important safety messages in this manual and on safety signs on the 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. Signal words are selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

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

1.3 General Safety

CAUTION

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

Protect yourself.

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

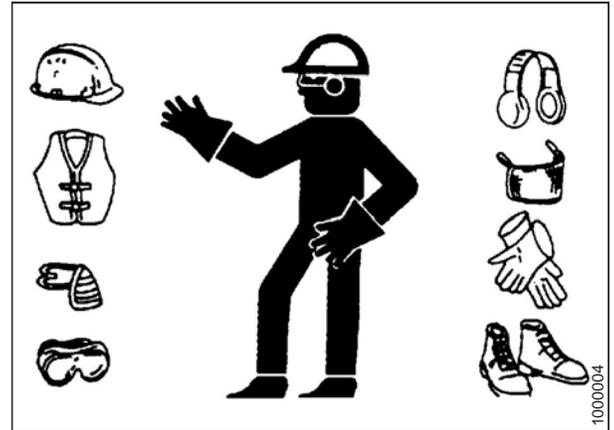


Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

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

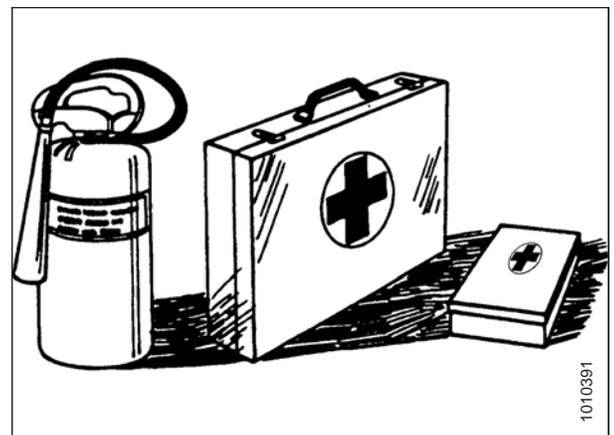


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while engine is running.
- Do **NOT** modify machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten machine's life.
- To avoid bodily injury or death from unexpected startup of machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

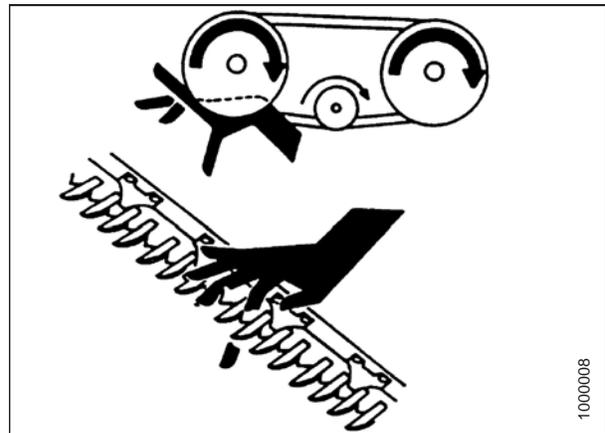


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining machine:

- Review operator’s manual and all safety items before operation and/or maintenance of machine.
- Place all controls in Neutral, stop the engine, set the park brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices:
 - Keep service areas clean and dry
 - Be sure electrical outlets and tools are properly grounded
 - Keep work area well lit
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting machine.
- Make sure all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to hydraulic systems.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear area of bystanders, especially children, when carrying out any maintenance, repairs, or adjustments.
- Install transport lock or place safety stands under frame before working under machine.
- If more than one person is servicing machine at same time, be aware that rotating a driveline or other mechanically-driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.
- Wear protective gear when working on machine.
- Wear heavy gloves when working on knife components.



Figure 1.8: Safety around Equipment

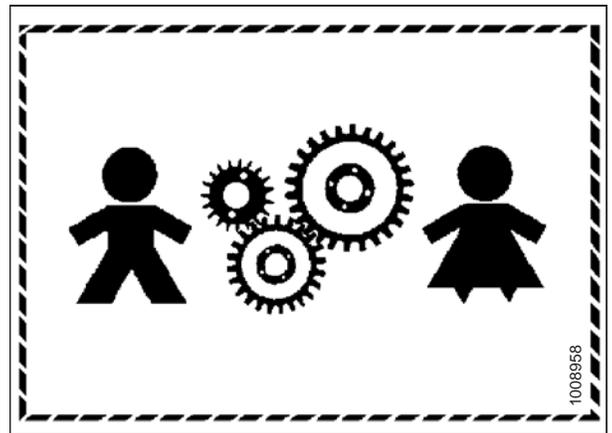


Figure 1.9: Equipment NOT Safe for Children

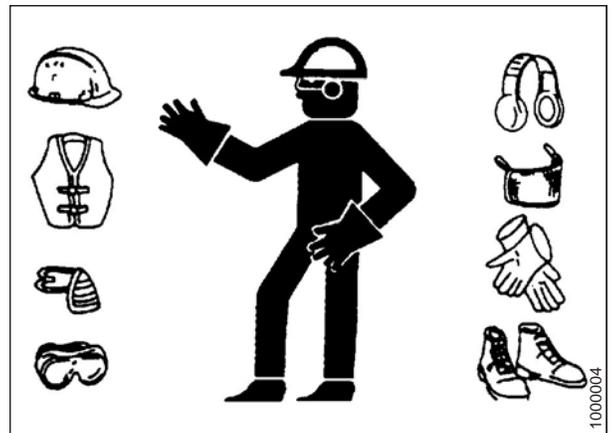


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all components in 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 will fail suddenly and create hazardous and unsafe conditions.

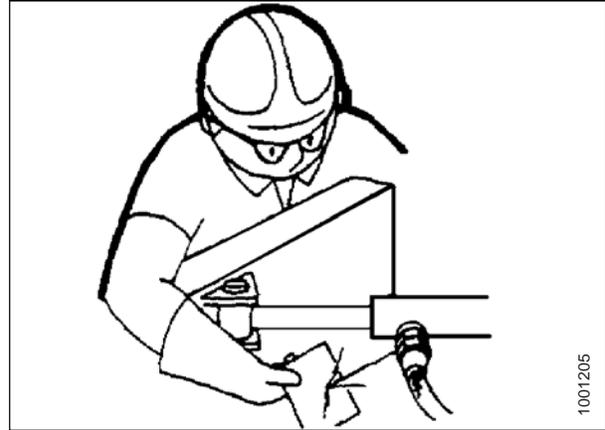


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

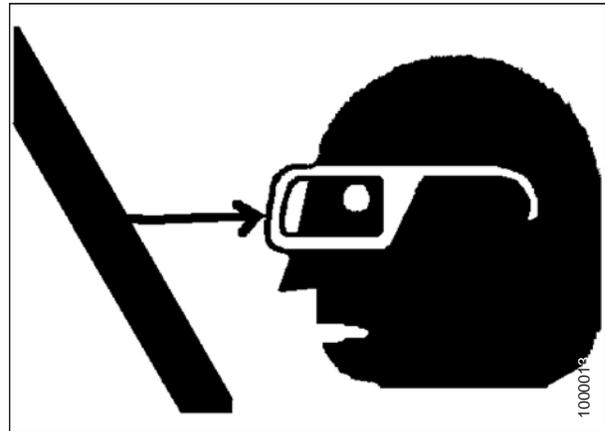


Figure 1.13: Safety around Equipment

1.6 Tire Safety

WARNING

- Service tires safely.
- A tire can explode during inflation which could cause serious injury or death.
- Follow proper procedures when mounting a tire on a wheel or rim. Failure to do so can produce an explosion that may result in serious injury or death.

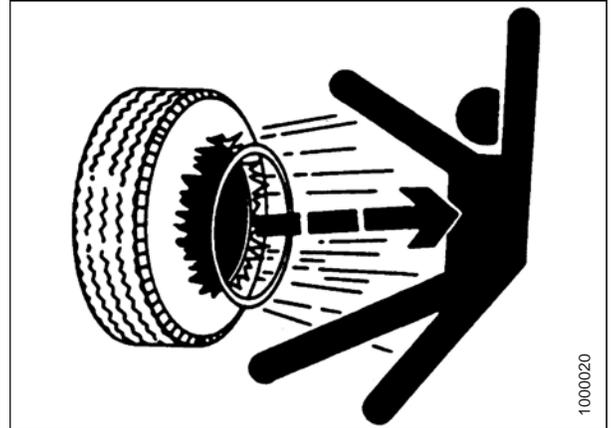


Figure 1.14: Overinflated Tire

WARNING

- Do NOT stand over tire. Use a clip-on chuck and extension hose.
- Do NOT exceed maximum inflation pressure indicated on tire label.
- 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 tire is correctly seated before inflating to operating pressure.
- If tire is not correctly positioned on rim or is overinflated, 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 tire in any direction endangering anyone in area.
- Make sure all air is removed from tire before removing tire from rim.
- Do NOT remove, install, or repair a tire on a rim unless you have proper equipment and experience to perform job.
- Take tire and rim to a qualified tire repair shop.

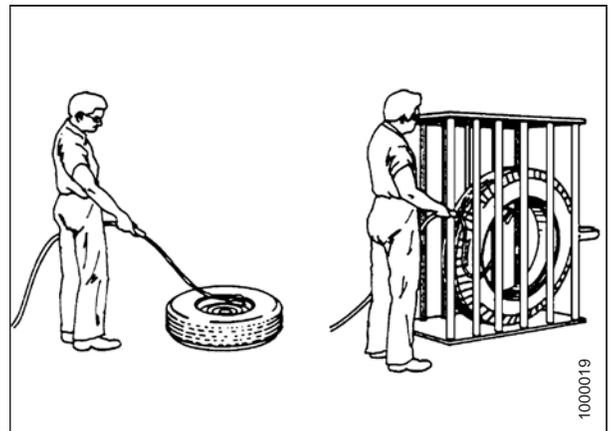


Figure 1.15: Safely Inflating Tire

SAFETY

1.7 Safety Signs

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

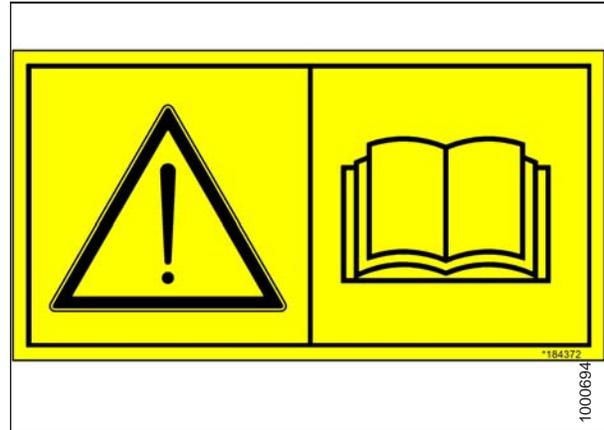


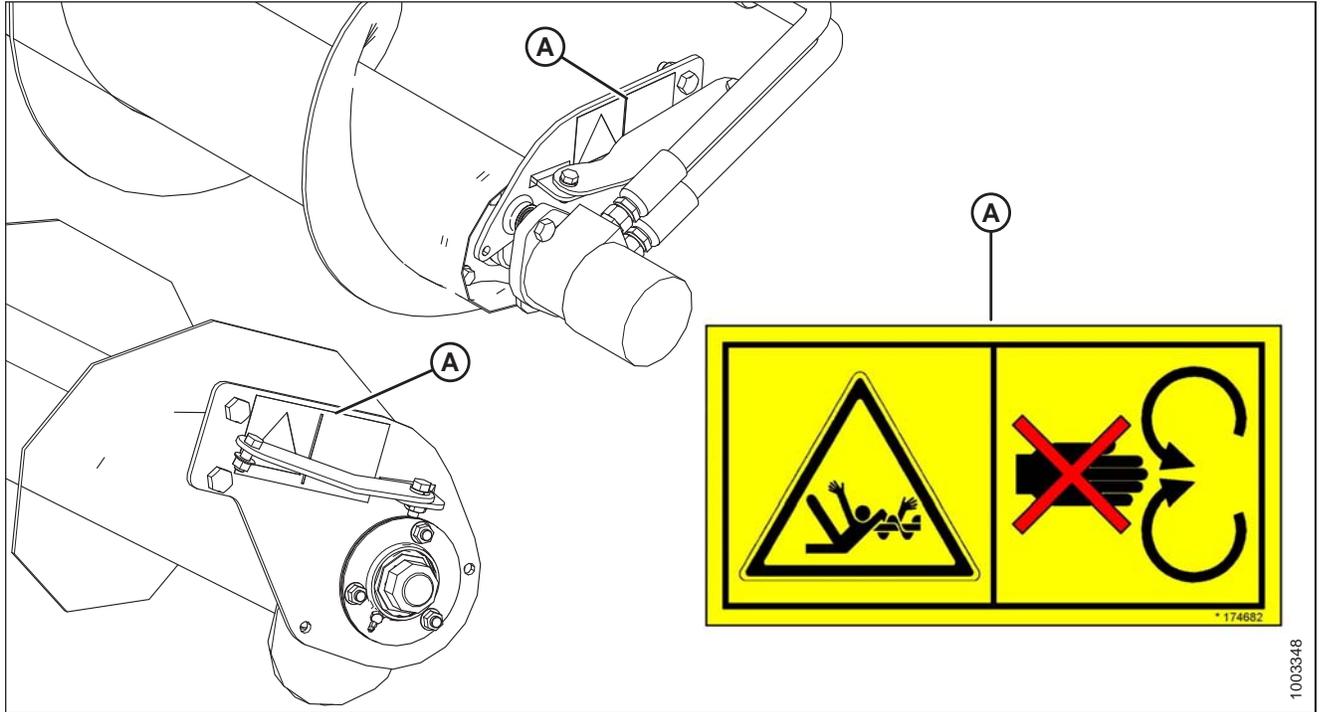
Figure 1.16: Operator's Manual Decal

1.7.1 Installing Safety Decals

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

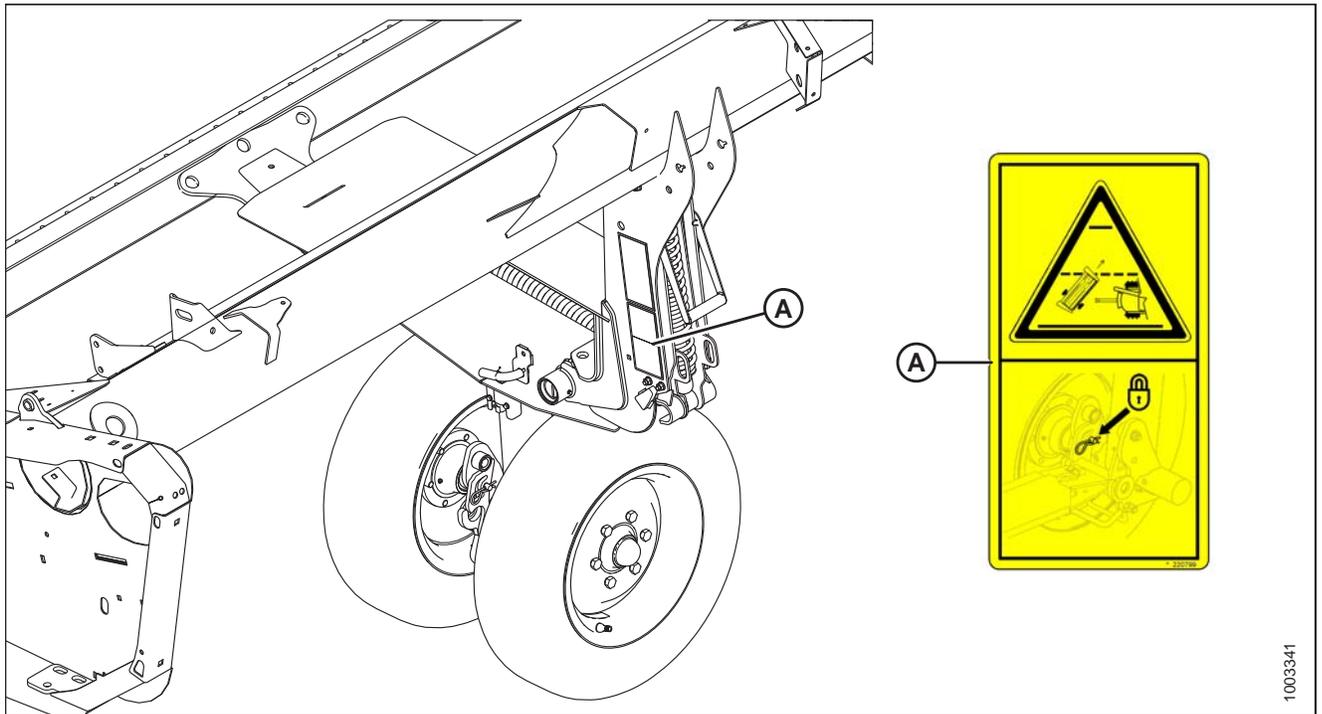
1.8 Safety Decal Locations

Figure 1.17: Upper Cross Auger



A - MD #174682

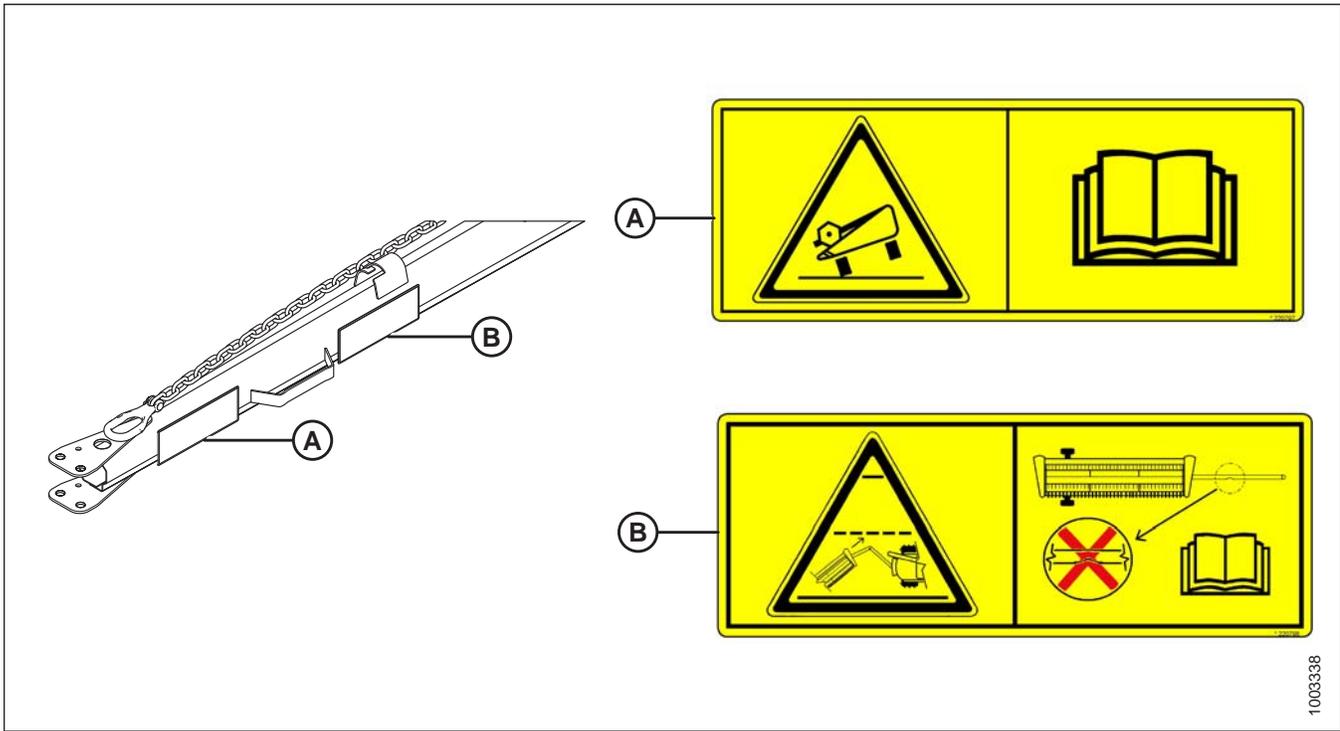
Figure 1.18: Slow Speed Transport



A - MD #220799

SAFETY

Figure 1.19: Slow Speed Transport Tow-Bar

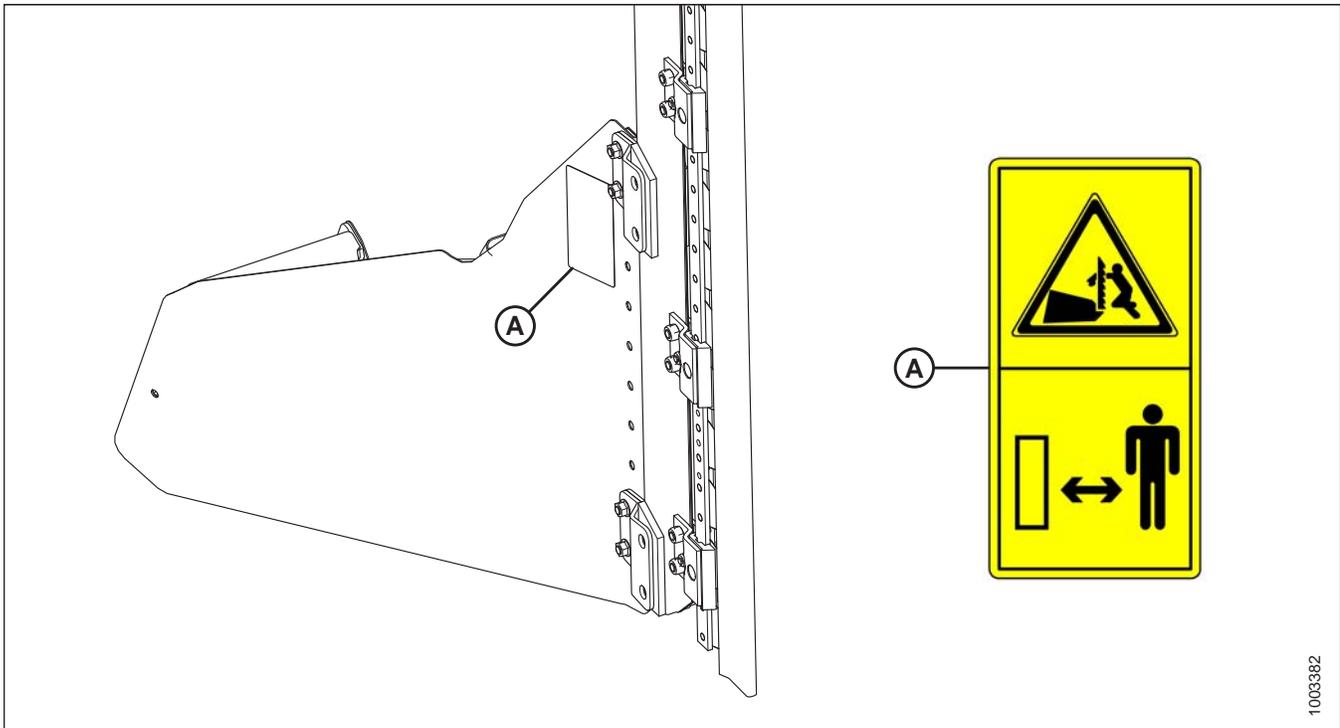


1003338

A - MD #220797

B - MD #220798

Figure 1.20: Vertical Knife

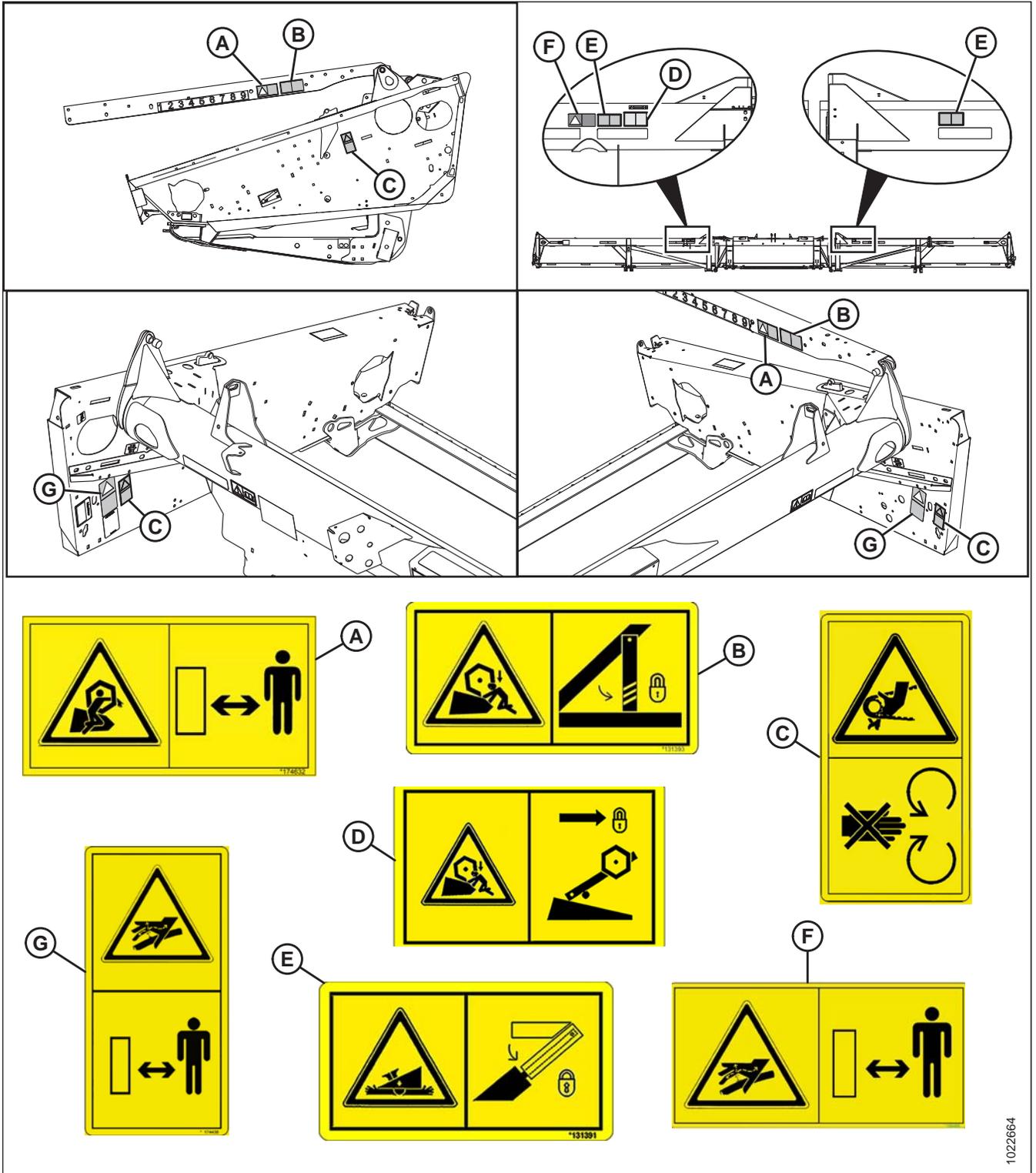


1003382

A - MD #174684

SAFETY

Figure 1.21: Endsheets, Reel Arms, and Backsheet



A - MD #174632
 D - MD #131392 (Double Reel Only)
 G - MD #174436

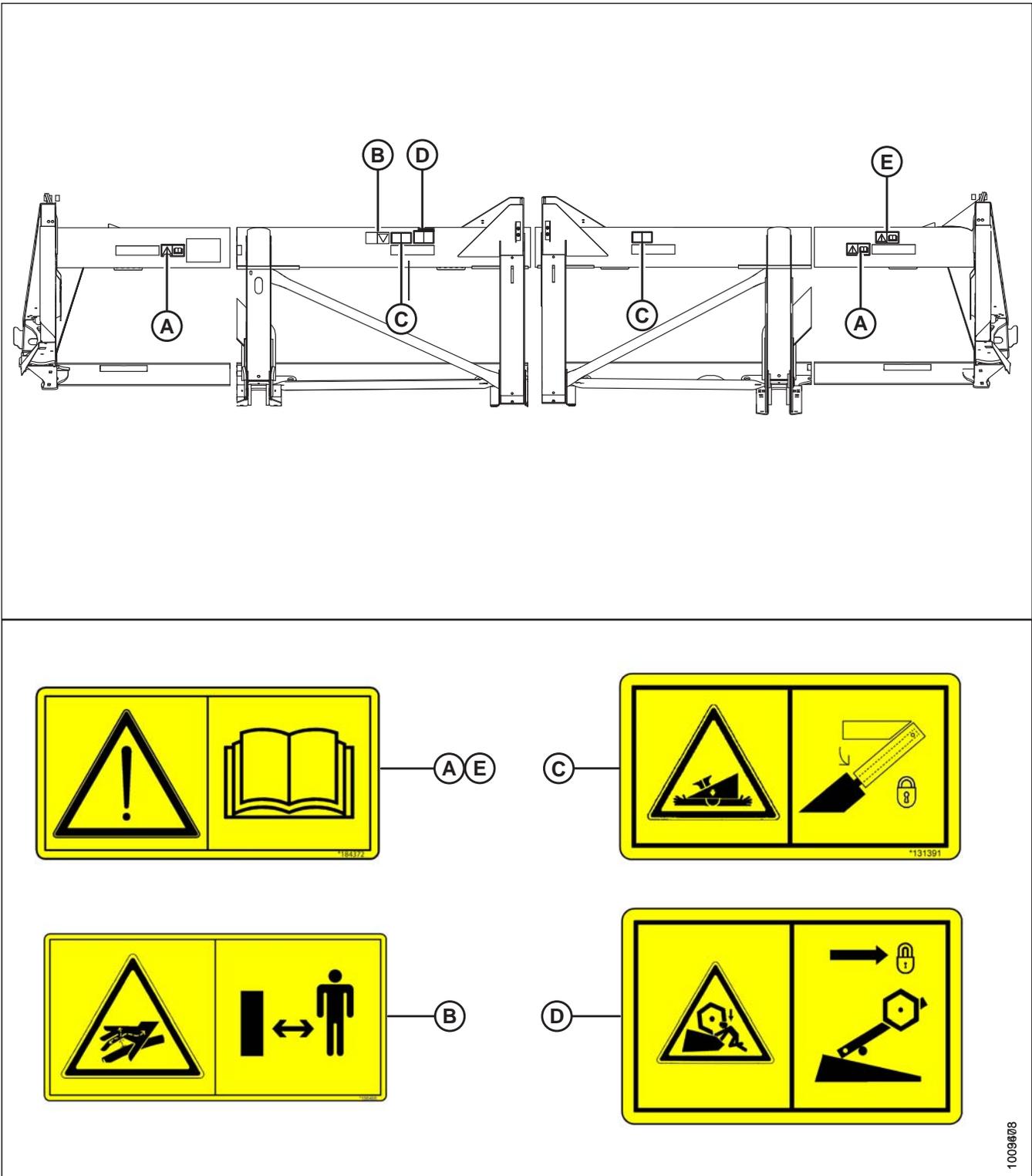
B - MD #131393
 E - MD #131391

C - MD #184422
 F - MD #166466

1022664

SAFETY

Figure 1.22: Backtube



A - MD #184372
D - MD #131392

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

C - MD #131391

1.9 Understanding Safety Signs

MD #113482

General hazard pertaining to machine operation and servicing

CAUTION

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

- Read the operator's manual and follow all safety instructions.
- 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 before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage safety props to prevent lowering of header or reel before servicing in the raised position.
- Use slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

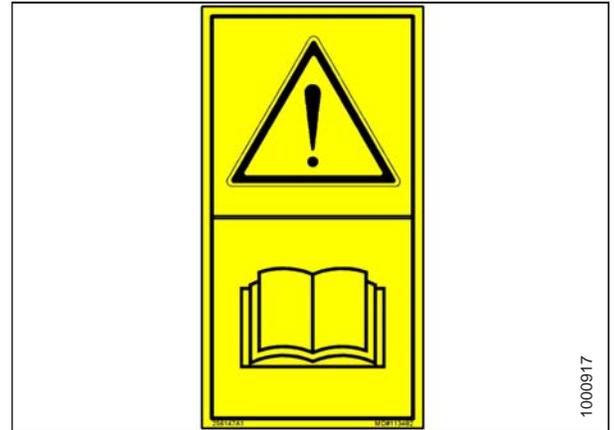


Figure 1.23: MD #113482

MD #131391

Crushing hazard

DANGER

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

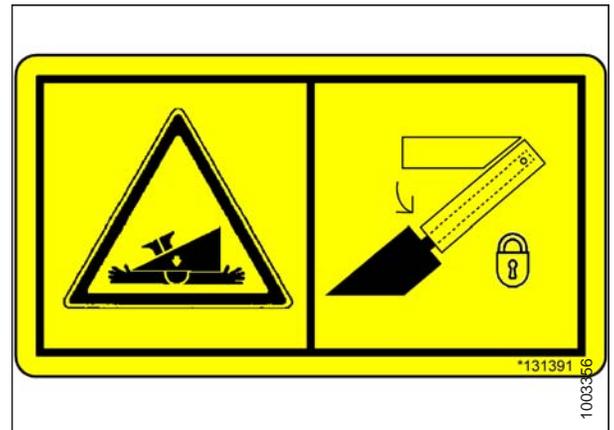


Figure 1.24: MD #131391

SAFETY

MD #131392

Crushing hazard

WARNING

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

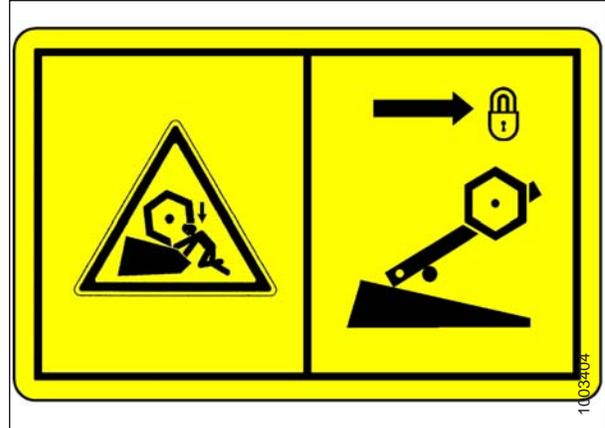


Figure 1.25: MD #131392

MD #131393

Reel hazard

WARNING

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



Figure 1.26: MD #131393

MD #166466

High pressure oil hazard

WARNING

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



Figure 1.27: MD #166466

SAFETY

MD #174432

Reel hazard

WARNING

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



Figure 1.28: MD #174432

MD #174434

Header hazard

DANGER

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

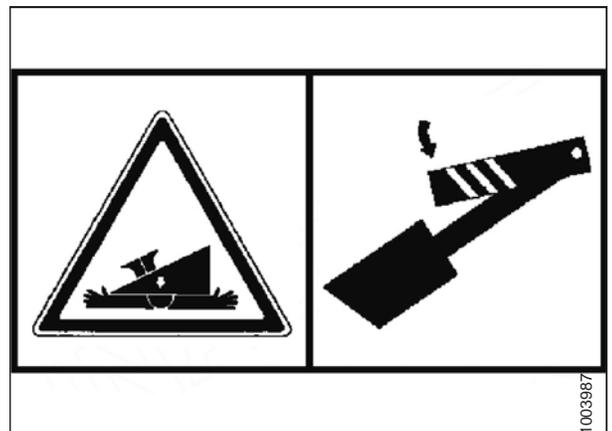


Figure 1.29: MD #174434

MD #174436

High pressure oil hazard

WARNING

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



Figure 1.30: MD #174436

SAFETY

MD #174632

Reel entanglement hazard

CAUTION

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

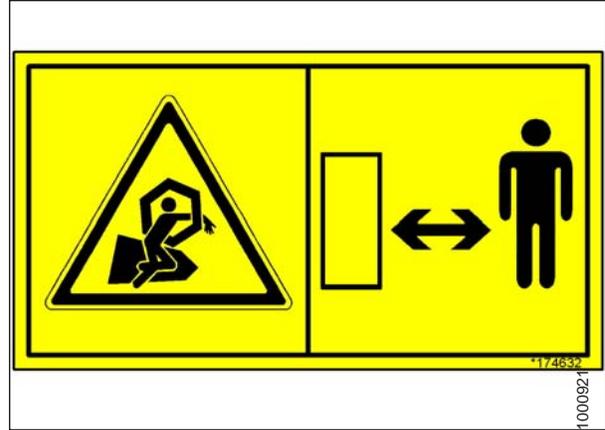


Figure 1.31: MD #174632

MD #174682

Auger entanglement hazard

CAUTION

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

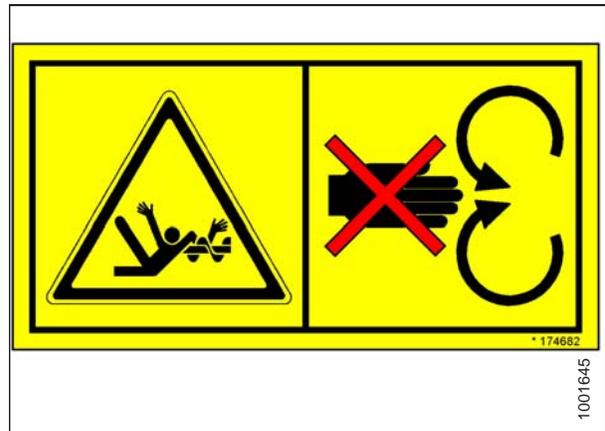


Figure 1.32: MD #174682

MD #174684

Sharp component hazard

CAUTION

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



Figure 1.33: MD #174684

SAFETY

MD #184372

General hazard pertaining to machine operation and servicing

CAUTION

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

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

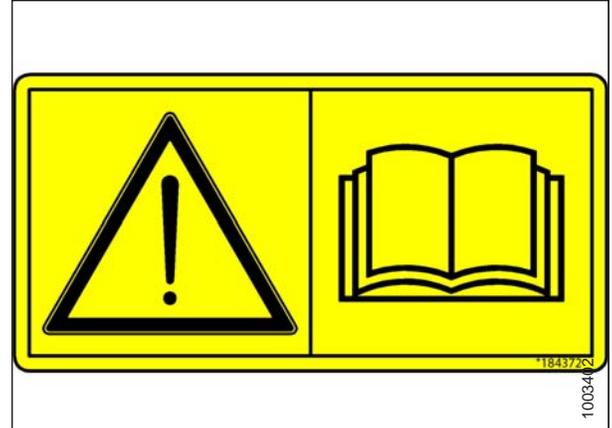


Figure 1.34: MD #184372

MD #184422

Keep shields in place hazard

WARNING

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



Figure 1.35: MD #184422

SAFETY

MD #193147

Transport/roading hazard

WARNING

- Ensure tow-bar lock mechanism is locked.



Figure 1.36: MD #193147

MD #220797

Tipping hazard in transport mode

WARNING

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

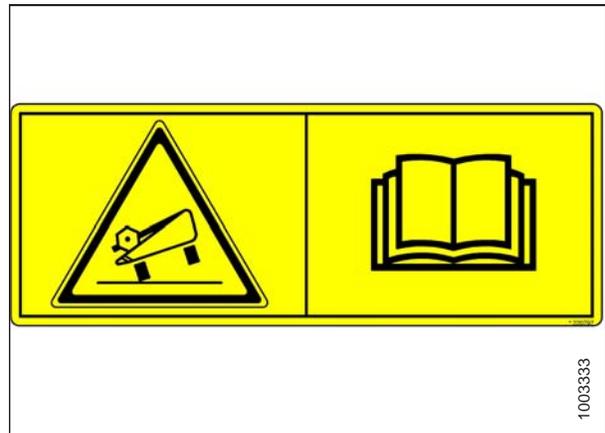


Figure 1.37: MD #220797

MD #220798

Loss of control hazard in transport

CAUTION

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

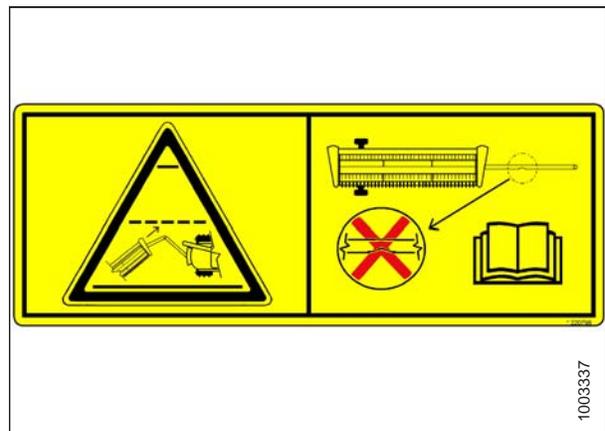


Figure 1.38: MD #220798

SAFETY

MD #220799

Transport/roading hazard

WARNING

- Ensure tow-bar lock mechanism is locked.



Figure 1.39: MD #220799

2 Product Overview

2.1 Definitions

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

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between header and machine used to change header angle
CGVW	Combined gross vehicle weight
D Series header	MacDon D50, D60, and D65 rigid draper headers
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
FFFT	Flats from finger tight
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 head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
hp	Horsepower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
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 that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port opening on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part

PRODUCT OVERVIEW

Term	Definition
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf-ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism

PRODUCT OVERVIEW

2.2 Specifications

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

Table 2.1 Header Specifications

Cutterbar			
Effective cutting width (distance between crop divider points)			
20-foot header		6096 mm (240 in.)	S
25-foot header		7620 mm (300 in.)	S
30-foot header		9144 mm (360 in.)	S
35-foot header		10,668 mm (420 in.)	S
40-foot header		12,192 mm (480 in.)	S
45-foot header		13,716 mm (540 in.)	S
Cutterbar lift range		Varies with combine model	—
Knife			
Single-knife drive (all sizes): one hydraulic motor with V-belt to one heavy duty MD knife drive box			O _F
Double-knife drive 20–35 foot (timed): one hydraulic motor with two cogged belts to two heavy duty MD knife drive boxes			O _F
Double-knife drive 40- and 45-foot (non-timed): two hydraulic motors with banded-belts to two heavy duty MD knife drive boxes			O _F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute) ¹	25-foot header	1200–1450 spm	S
Single-knife speed (strokes per minute) ¹	30-foot header	1200–1400 spm	S
Single-knife speed (strokes per minute) ¹	35-foot header	1100–1300 spm	S
Single-knife speed (strokes per minute) ¹	40-foot header	1050–1200 spm	S
Double-knife speed ¹	20- and 25-foot headers	1400–1700 spm	S
Double-knife speed ¹	30- and 35-foot headers	1200–1500 spm	S
Double-knife speed ¹	40- and 45-foot headers	1100–1400 spm	S
Knife Sections			
Over-serrated / solid / bolted / 9 serrations per inch			O _F
Over-serrated / solid / bolted / 14 serrations per inch			O _F
Knife overlap at center (double-knife headers)		3 mm (0.12 in.)	S

1. Under normal cutting conditions, set knife speed at the knife drive pulley between 600 and 640 rpm (1200 and 1280 spm). If set to low side of range, knife stalling could occur.

PRODUCT OVERVIEW

Table 2.1 Header Specifications (continued)

Guards and Hold-Downs			
Guard: pointed / forged / double heat treated (DHT) Hold-down: sheet metal / adjustment bolt			O _F
Guard: pointed / forged / case hardened (CH) Hold-down: sheet metal / adjustment bolt			O _F
Guard: stub / forged bottom / forged top / adjustment plate			O _F
Guard: stub / forged bottom / sheet metal top / adjustment bolt			O _F
Guard: four point / no-choke design (two long points with tangs / two short points without tangs)			O _F
Guard Angle (Cutterbar on Ground)			
Center-link retracted	20- and 25-foot headers	7.0 Degrees	S
Center-link retracted	30–45-foot headers	2.0 Degrees	S
Center-link extended	20- and 25-foot headers	12.4 Degrees	S
Center-link extended	30–45-foot headers	7.4 Degrees	S
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 (73.61 in.)	S
PR15 Pick-Up Reel S			
Quantity of tine tubes		5, 6, or 9	—
Center tube diameter: all reel sizes except 35-foot single reel		203 mm (8 in.)	—
35-foot single reel only		254 mm (10 in.)	—
Fingertip radius	Factory assembled	800 mm (31.5 in.)	—
	Adjustment range	766–800 mm (30.2–31.5 in.)	—
Effective reel diameter (via cam profile)		1650 mm (65 in.)	—
Finger length		290 mm (11 in.)	—
Finger spacing (staggered on alternate bats)		150 mm (6 in.)	—
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S
Frame and Structure			
	Field mode	Cut width + 384 mm (15.1 in.)	S

PRODUCT OVERVIEW

Table 2.1 Header Specifications (continued)

Header width	Transport mode—reel fore-aft fully retracted, shortest center-link	(B) ^{2, 3}	2684 mm (106 in.)	—
Header width	Transport mode—reel fore-aft fully retracted, shortest center-link	(A) ^{2, 4}	2500 mm (98 in.)	—

Figure 2.1: Header Width

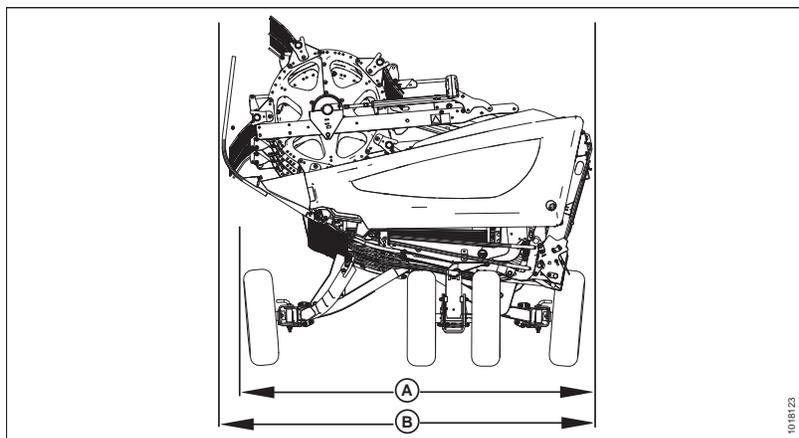


Table 2.2 Header Attachments

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 litres) 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

2. Refer to Figure 2.1, page 25
3. Long dividers installed
4. Long dividers removed
5. Subtract 265 mm (10-7/16 in.) for length between yoke pins.

PRODUCT OVERVIEW

Table 2.2 Header Attachments (continued)

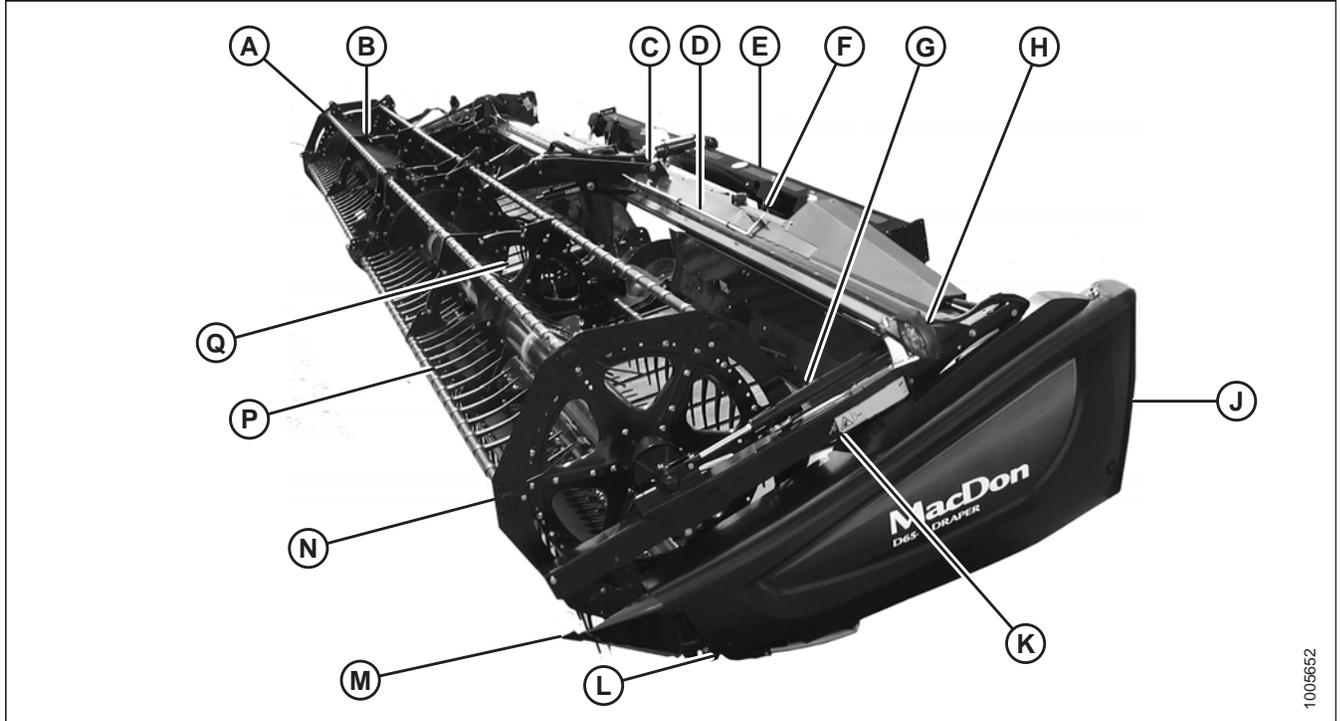
Driveline overall length ⁵	Challenger, Gleaner, John Deere, CLAAS, Massey Ferguson	Maximum (extended)	1262 mm (49.7 in.)	O _F
Driveline overall length ⁵	Challenger, Gleaner, John Deere, CLAAS, Massey Ferguson	Minimum (compressed)	916 mm (36.1 in.)	O _F
Upper Cross Auger				O _D
Flighting (outside diameter [O.D])			305 mm (12 in.)	—
Tube diameter (O.D)	All size except 7.6 m (25 ft.)		152 mm (6 in.)	—
Tube diameter (O.D)	7.6 m (25 ft.)		178 mm (7 in.)	—
Stabilizer Wheel / Slow Speed Transport				O _D
Wheels			381 mm (15 in.)	—
Tires			P205/75 R-15	—

Weight		
Estimated weight range with base header only (variances are due to different package configurations)		
6.1-meter (20-foot) header		1430–1633 kg (3146–3600 lb.)
7.6-meter (25-foot) header		1605–1753 kg (3547–3872 lb.)
9.1-meter (30-foot) header		1981–2178 kg (4370–4812 lb.)
10.7-meter (35-foot)		2181–2480 kg (4808–5337 lb.)
12.2-meter (40-foot)	North America frame	2352–2593 kg (5197–5704 lb.)
12.2-meter (40-foot)	Export frame	2461 kg (5437 lb.)
45-foot header	Export frame	2711 kg (5990 lb.)
45-foot header	North America frame	2711 kg (5990 lb.)

2.3 Component Identification

2.3.1 D65 Combine Header

Figure 2.2: D65 Draper Header – Double Reel Shown



A - Pick-Up Reel
 D - Center Reel Arm Prop Handle
 G - Reel Fore-Aft Cylinder
 K - Reel Lift Cylinder
 N - Reel Endshields

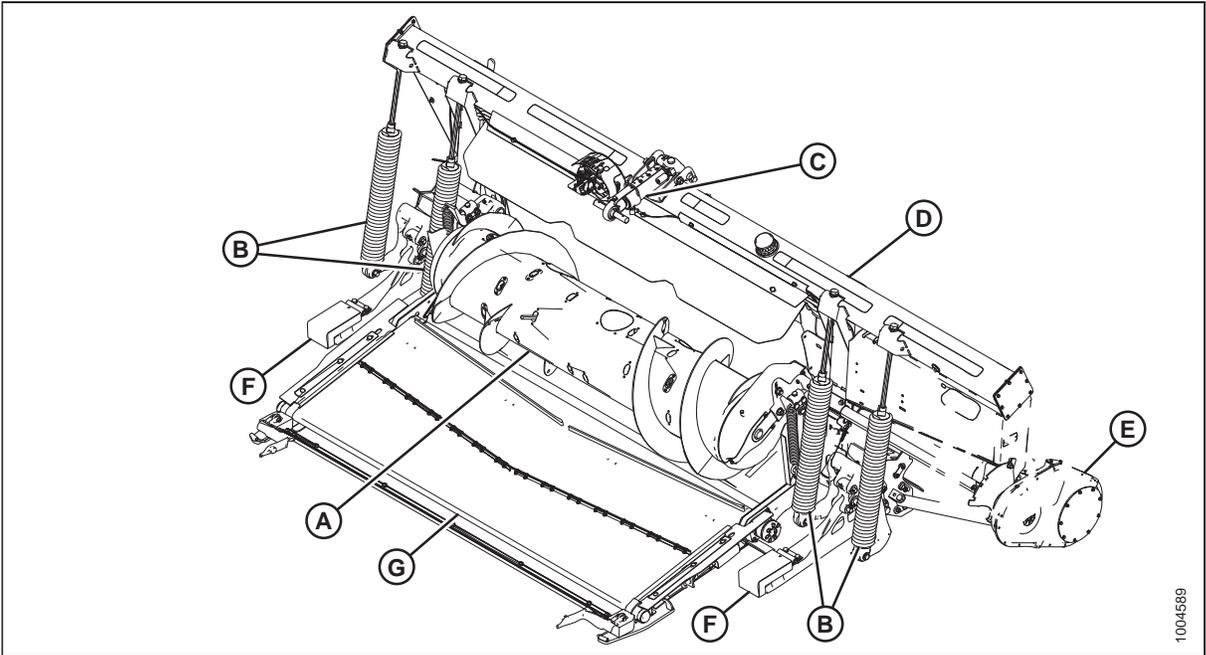
B - Reel Drive And Cam
 E - CA25 Combine Adapter
 H - Transport Light
 L - Knife Drive Box (Behind Endshield)
 P - Reel Fingers

C - Center-Link
 F - Hydraulic Connections
 J - Endshield
 M - Divider Cone
 Q - Transition Pan

PRODUCT OVERVIEW

2.3.2 CA25 Combine Adapter

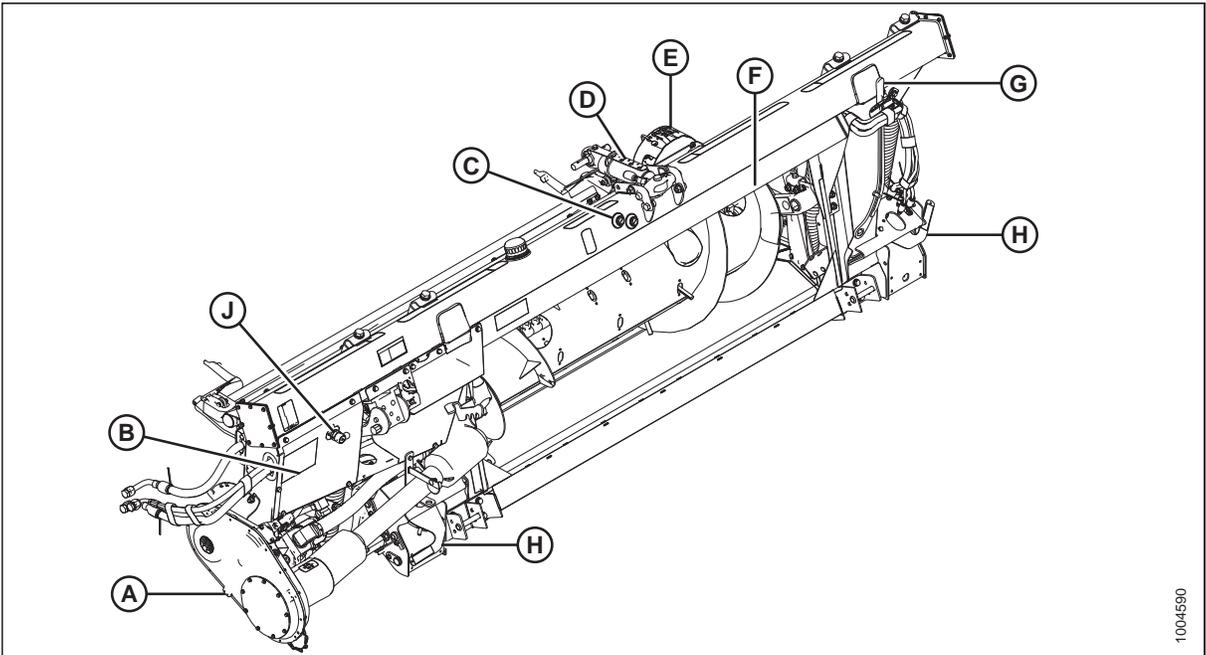
Figure 2.3: Header Side of CA25 Combine Adapter



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

1004589

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

1004590

3 Operation

3.1 Owner/Operator Responsibilities

CAUTION

- It is your responsibility to read and understand this manual completely before operating the header. Contact your MacDon Dealer if an instruction is not clear to you.
- Follow all safety messages in the manual and on safety decals on the machine.
- Remember that YOU are the key to safety. Good safety practices protect you and the people around you.
- Before allowing anyone to operate the header, for however short a time or distance, make sure they have been instructed in its safe and proper use.
- Review the manual and all safety related items with all Operators annually.
- Be alert for other Operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.
- Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety of the machine and also may reduce the length of service you receive from your machine.
- The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.

3.2 Operational Safety

CAUTION

Adhere to the following safety precautions:

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

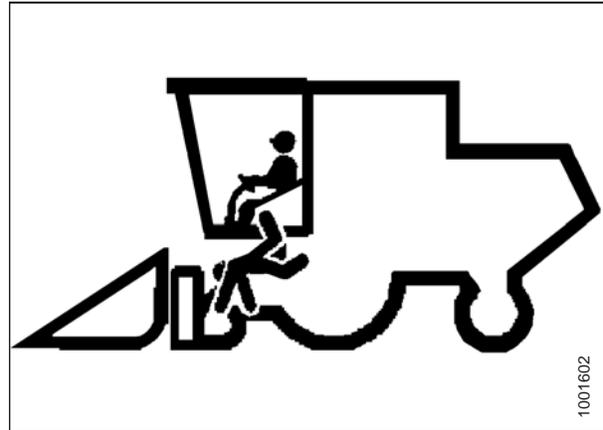


Figure 3.1: No Riders

CAUTION

- Never start or move the machine until you are sure all bystanders have cleared the area.
- Avoid travelling over loose fill, rocks, ditches, or holes.
- Drive slowly through gates and doorways.
- When working on inclines, travel uphill or downhill whenever possible. Be sure to keep transmission in gear when travelling downhill.
- Never attempt to get on or off a moving machine.
- Do NOT leave operator's station while the engine is running.

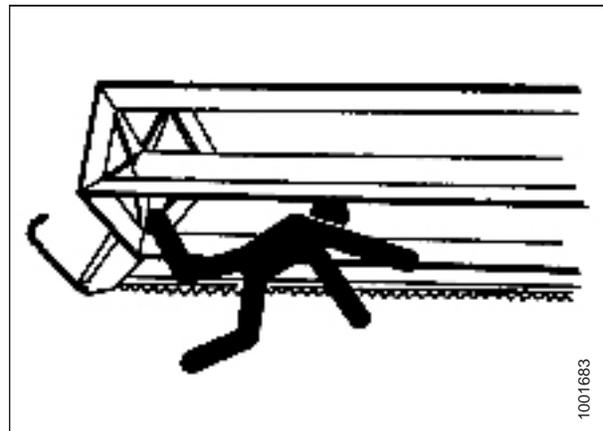


Figure 3.2: Bystander Hazard

- To avoid bodily injury or death from unexpected startup of a machine, always stop the engine and remove the key before adjusting or removing plugged material from the machine.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. Refer to [3.4 Shutting down the Machine, page 40](#).
- Operate only in daylight or good artificial light.

3.2.1 Header Safety Props

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

DANGER

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

3.2.2 Reel Safety Props

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

WARNING

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

IMPORTANT:

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

Engaging Reel Safety Props

1. Raise reel to maximum height.
2. Move reel safety props (A) to engaged position (as shown).

NOTE:

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

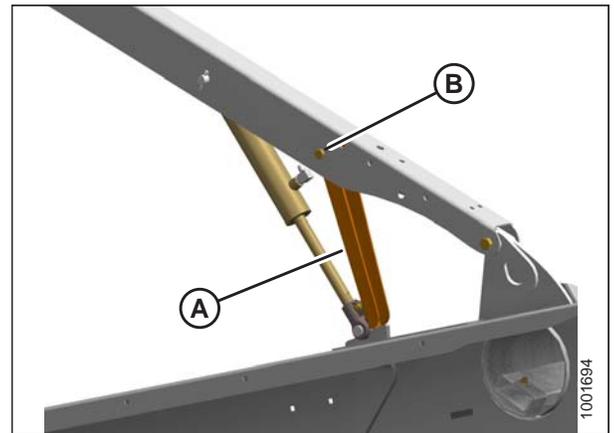


Figure 3.3: Reel Safety Prop – Left Side Outer Arm

OPERATION

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

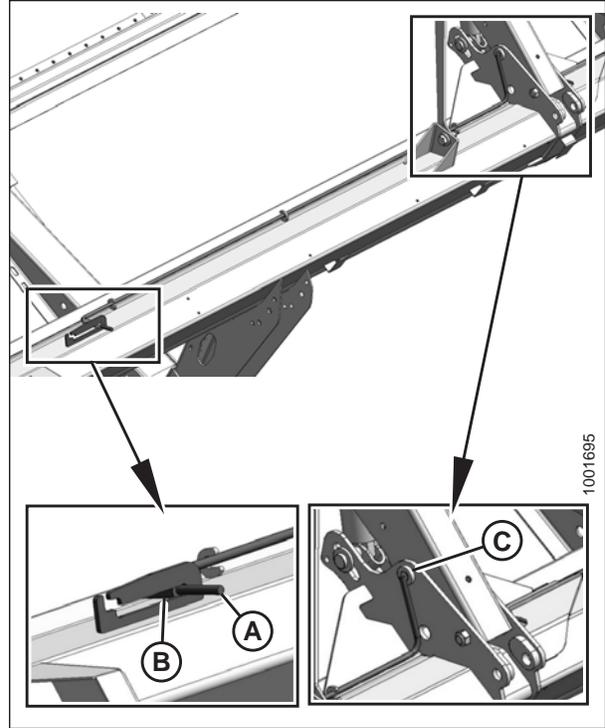


Figure 3.4: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

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

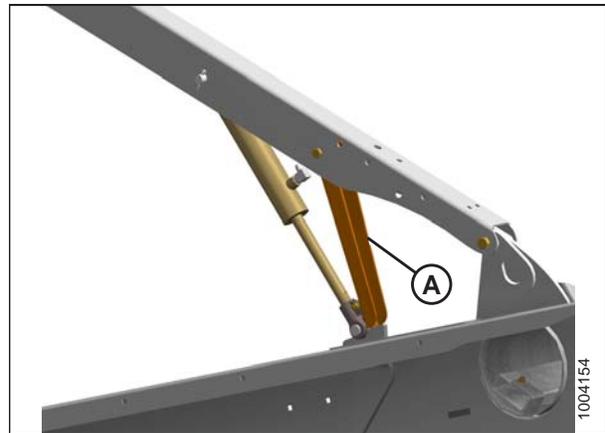


Figure 3.5: Reel Safety Prop – Left Side Outer Arm

OPERATION

3. Use the handle (B) on double-reel headers to move the lock rod (A) to the outboard position.

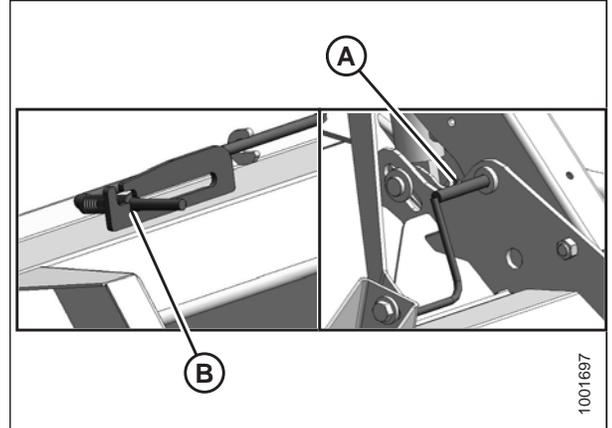


Figure 3.6: Reel Safety Prop – Center Arm

3.2.3 Endshields

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

Opening Endshield

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

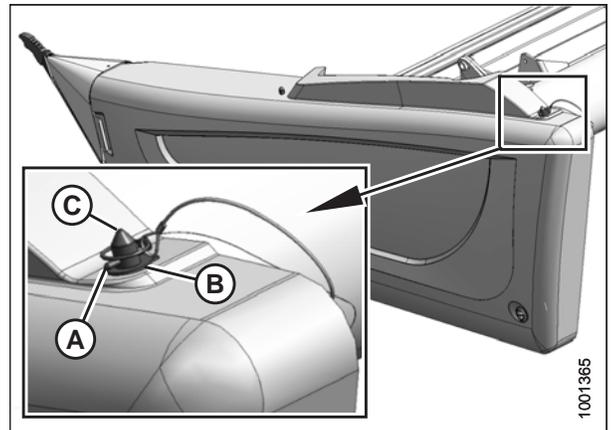


Figure 3.7: Left Endshield

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

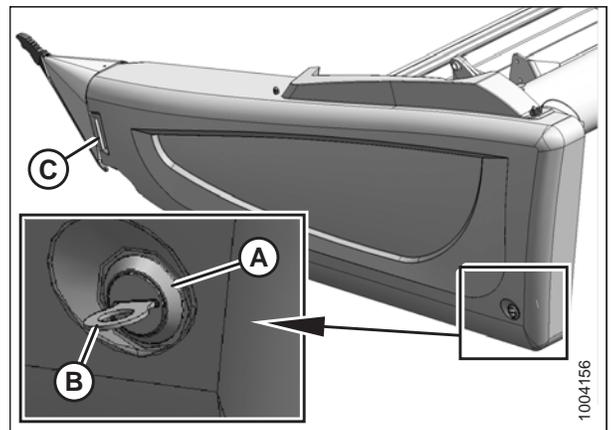


Figure 3.8: Left Endshield

OPERATION

IMPORTANT:

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

NOTE:

To access the knife drive box, carefully disengage front of endshield from tab at front of endsheet and swing front of endshield away from header.

NOTE:

If complete access to endsheet area is required, remove endshield. Refer to [Removing Endshield, page 35](#).

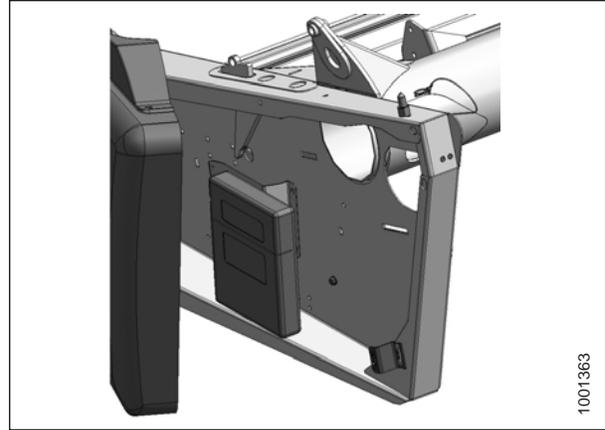


Figure 3.9: Left Endshield Open

Closing Endshield

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

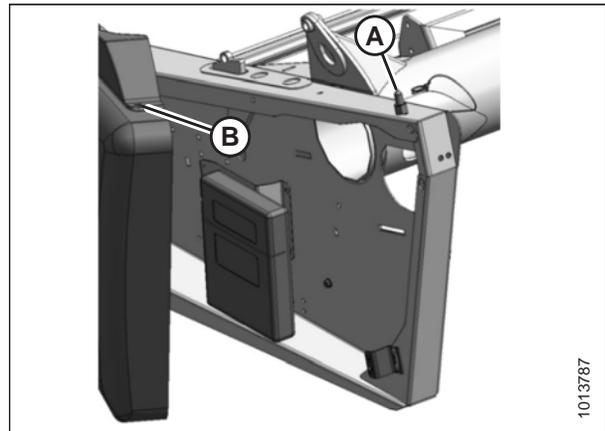


Figure 3.10: Left Endshield

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

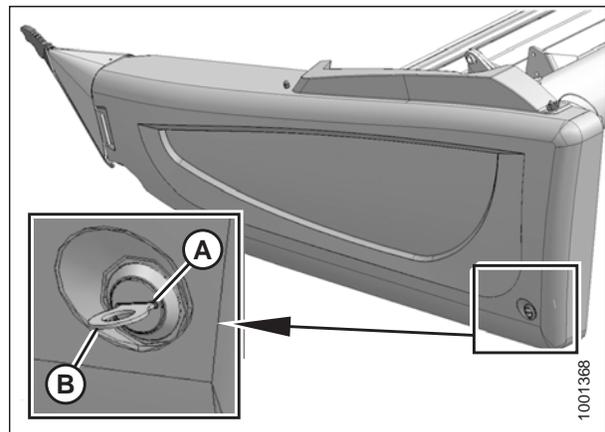


Figure 3.11: Left Endshield

OPERATION

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

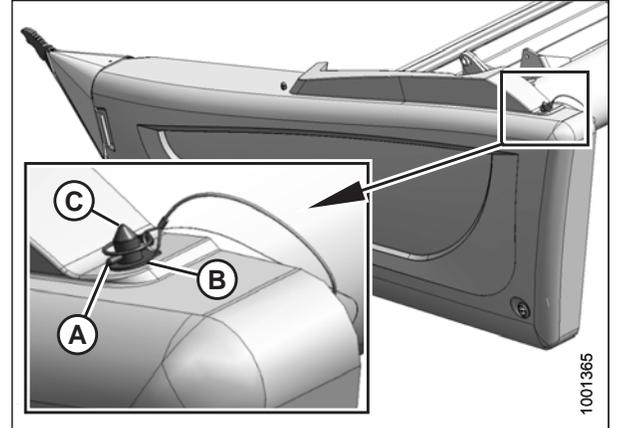


Figure 3.12: Left Endshield Pin

Removing Endshield

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

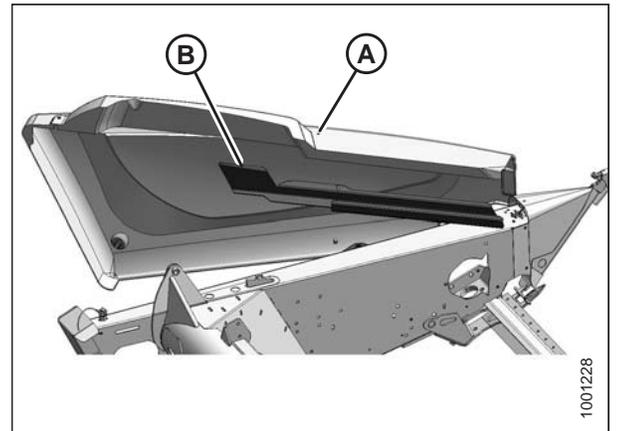


Figure 3.13: Left Endshield

OPERATION

Installing Endshield

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

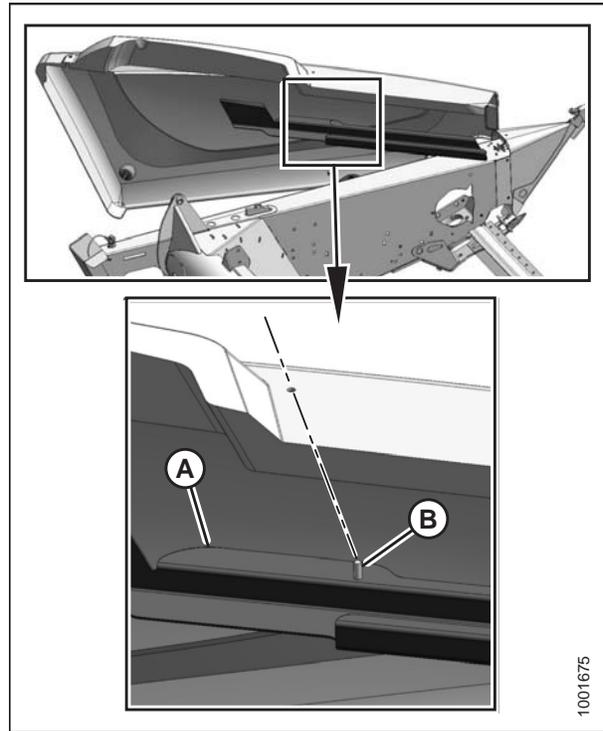


Figure 3.14: Left Endshield

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

NOTE:

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

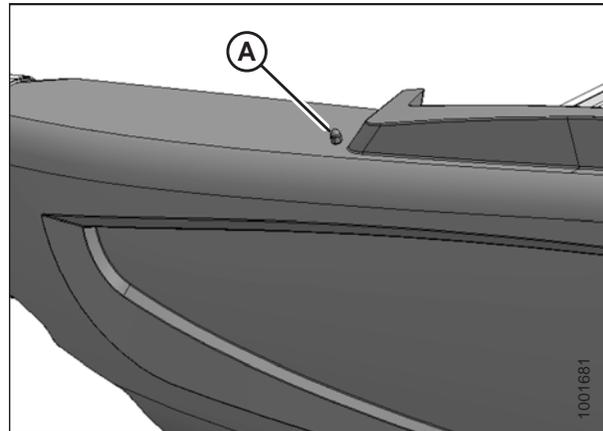


Figure 3.15: Left Endshield

OPERATION

Adjusting Endshield

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

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

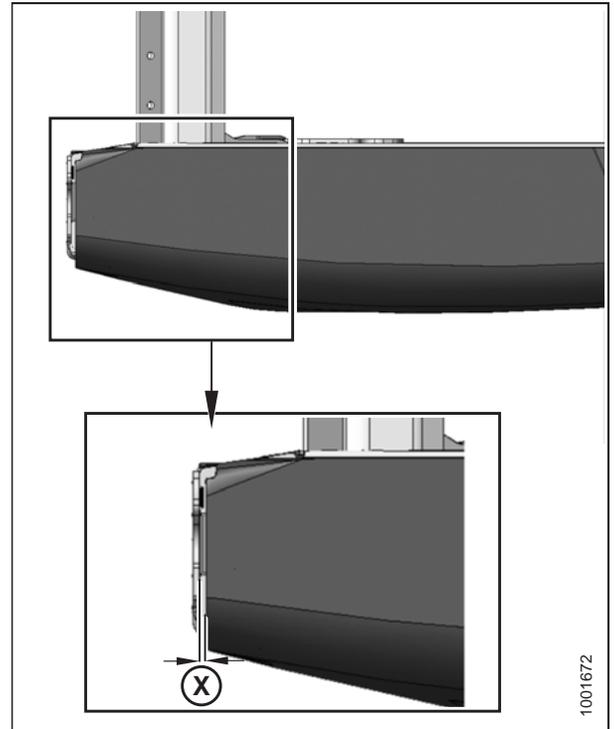


Figure 3.16: Left Endshield

Table 3.1 Gap (X) Chart

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

If adjustments are required, proceed as follows:

OPERATION

2. Open the endshield. Refer to *Opening Endshield, page 33*.
3. Loosen nut (A) on pin (B) from inside the endsheet using a 19 mm (3/4 in.) socket.
4. Close the endshield and adjust its position to achieve the gap (X) (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 required to reposition the endshield. Ensure there is a snug fit between the top of the endshield and the header frame and that the endshield is fully engaged on pin (B).
7. Tighten the bolts on catch (C).
8. Close the endshield. Refer to *Closing Endshield, page 34*.

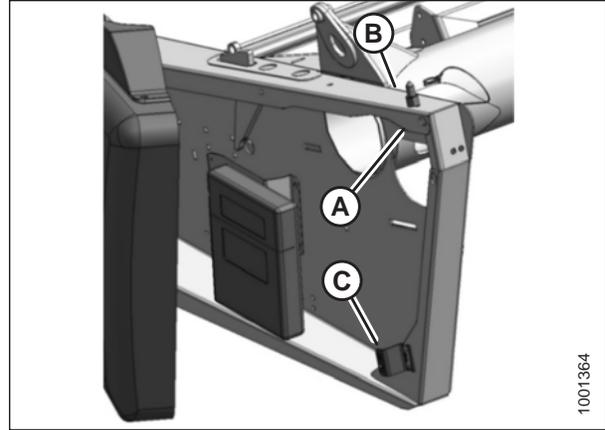


Figure 3.17: Left Endshield

3.2.4 Daily Start-Up Check

CAUTION

- Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.
- Wear close-fitting clothing and protective shoes with slip-resistant soles.
- Remove foreign objects from the machine and surrounding area.
- Carry with you any protective clothing and personal safety devices that could be necessary through the day. Do NOT take chances. You may need a hard hat, protective glasses or goggles, heavy gloves, a respirator or filter mask, or wet weather gear.
- Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortably loud noises.

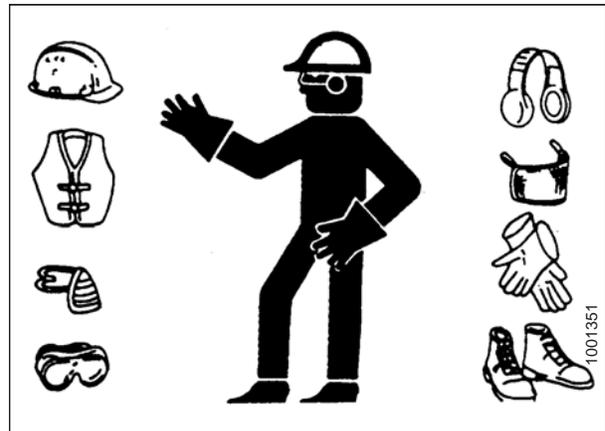


Figure 3.18: Safety Devices

Complete the following tasks each day before start-up:

1. Check the machine for leaks and any parts that are missing, broken, or not working correctly.

NOTE:

Use proper procedure when searching for pressurized fluid leaks. Refer to *5.3.5 Checking Hydraulic Hoses and Lines, page 278*.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 274*.

3.3 Break-In Period

CAUTION

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

NOTE:

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

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

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

NOTE:

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

2. Refer to [5.3.2 Break-In Inspection, page 276](#) and perform all the specified tasks.

3.4 Shutting down the Machine

DANGER

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

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

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

3.5 Cab Controls

CAUTION

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

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

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

3.6 Header Setup

3.6.1 Header Attachments

Several attachments to improve the performance of your D65 Draper Header are available as options that can be installed by your MacDon Dealer. Refer to [6 Options and Attachments, page 439](#) for descriptions of available items.

3.6.2 Header Settings

Table [3.2, page 43](#) provides a guideline for setting up the D65 Draper Header; however, the suggested settings can be changed to suit various crops and conditions not covered in the table.

Refer also to [3.6.4 Reel Settings, page 51](#).

Table 3.2 D65/CA25 Combine Header Recommended Settings

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

6. Setting on CA25 draper control.

7. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.

8. Cutting height is controlled with a combination of skid shoes and header angle.

9. Percentage above ground speed.

10. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.

OPERATION

Table 3.2 D65/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting ¹¹	Header Angle ^{12,13}	Reel Cam	Reel Speed % ¹⁴	Reel Position	Skid Shoe Position ¹³	Stabilizer Wheels ¹⁵	Upper Cross Auger
Canola	102-203 (4-8)	Light	On	7	A	2	5-10	6 or 7	Down	As required ¹³	Recommended
Canola	102-203 (4-8)	Normal	On	7	B-C	1	10	6 or 7	Middle or down	As required ¹³	Recommended
Canola	102-203 (4-8)	Heavy	On	8	B-C	1	10	3 or 4	Down	As required ¹³	Recommended
Canola	102-203 (4-8)	Lodged	On	7	D	2	5-10	3 or 4	Middle or down	As required ¹³	Recommended
Canola	203+ (8+)	Light	On	7	A	2	5-10	6 or 7	Not applicable	As required ¹³	Recommended
Canola	203+ (8+)	Normal	On	7	B-C	2	10	6 or 7	Not applicable	As required ¹³	Recommended
Canola	203+ (8+)	Heavy	On	8	B-C	1 or 2	10	3 or 4	Not applicable	As required ¹³	Recommended
Canola	203+ (8+)	Lodged	On	7	D	2 or 3	5-10	3 or 4	Not applicable	As required ¹³	Recommended
California Rice	<102 (<4)	Light	Rice divider rod ¹⁶	4	D	2	10-15	6 or 7	Up or middle	Storage	Not required
California Rice	<102 (<4)	Normal	Rice divider rod ¹⁶	4	B-C	2	10	4 or 5	Up or middle	Storage	Not required

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

OPERATION

Table 3.2 D65/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting ¹⁷	Header Angle ^{18,19}	Reel Cam	Reel Speed % ²⁰	Reel Position	Skid Shoe Position ¹⁹	Stabilizer Wheels ²¹	Upper Cross Auger
California Rice	<102 (<4)	Heavy	Rice divider rod ¹⁶	4	B – C	2	10	4 or 5	Up or middle	Storage	Not required
California Rice	<102 (<4)	Lodged	Rice divider rod ¹⁶	4	D	2	5–10	4 or 5	Up or middle	Storage	Not required
California Rice	102–203 (4–8)	Light	Rice divider rod ¹⁶	4	D	3	10–15	6 or 7	Middle or down	As required ¹⁹	Not required
California Rice	102–203 (4–8)	Normal	Rice divider rod ¹⁶	4	B – C	3	10	6 or 7	Middle or down	As required ¹⁹	Not required
California Rice	102–203 (4–8)	Heavy	Rice divider rod ¹⁶	4	B – C	3	10	6 or 7	Middle or down	As required ¹⁹	Not required
California Rice	102–203 (4–8)	Lodged	Rice divider rod ¹⁶	4	D	4	5–10	6 or 7	Middle or down	As required ¹⁹	Not required
California Rice	203+ (8+)	Light	Rice divider rod ¹⁶	4	A	3	10–15	6 or 7	Not applicable	As required ¹⁹	Not required
California Rice	203+ (8+)	Normal	Rice divider rod ¹⁶	4	B – C	3	10	6 or 7	Not applicable	As required ¹⁹	Not required
California Rice	203+ (8+)	Heavy	Rice divider rod ¹⁶	4	B – C	3	10	6 or 7	Not applicable	As required ¹⁹	Not required

17. Setting on CA25 draper control.

18. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.

19. Cutting height is controlled with a combination of skid shoes and header angle.

20. Percentage above ground speed.

21. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.

OPERATION

Table 3.2 D65/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting ²²	Header Angle ^{23,24}	Reel Cam	Reel Speed % ²⁵	Reel Position	Skid Shoe Position ²⁴	Stabilizer Wheels ²⁶	Upper Cross Auger
California Rice	203+ (8+)	Lodged	Rice divider rod ¹⁶	4	D	4	5–10	6 or 7	Not applicable	As required ²⁴	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 ²⁴	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 ²⁴	Not required
Delta Rice	51–152 (2–6)	Heavy	Off	6	B–C	2 or 3	10	6 or 7	Middle or down	As required ²⁴	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 ²⁴	Not required
Delta Rice	152+ (6+)	Light	Off	6	A	2 or 3	10–15	6 or 7	Not applicable	As required ²⁴	Not required
Delta Rice	152+ (6+)	Normal	Off	6	B–C	2 or 3	10	6 or 7	Not applicable	As required ²⁴	Not required
Delta Rice	152+ (6+)	Heavy	Off	6	B–C	2 or 3	10	6 or 7	Not applicable	As required ²⁴	Not required
Delta Rice	152+ (6+)	Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not applicable	As required ²⁴	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

22. Setting on CA25 draper control.

23. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.

24. Cutting height is controlled with a combination of skid shoes and header angle.

25. Percentage above ground speed.

26. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.

OPERATION

Table 3.2 D65/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting ²⁷	Header Angle ^{28,29}	Reel Cam	Reel Speed % ³⁰	Reel Position	Skid Shoe Position ²⁹	Stabilizer Wheels ³¹	Upper Cross Auger
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 ²⁹	Not required
Flax	51-153 (2-6)	Normal	On	7	A	2	10	6 or 7	Middle or down	As required ²⁹	Not required
Flax	51-153 (2-6)	Heavy	On	7	B-C	2	10	6 or 7	Middle or down	As required ²⁹	Not required
Flax	51-153 (2-6)	Lodged	On	7	D	2	5-10	6 or 7	Down	As required ²⁹	Not required
Peas	On ground	Light	On	7	B-C	2	5-10	6 or 7	Up or middle	Storage	Recommended
Peas	On ground	Normal	On	7	B-C	2	10	6 or 7	Up or middle	Storage	Recommended
Peas	On ground	Heavy	On	7	B-C	2	10	4 or 5	Up or middle	Storage	Recommended
Peas	On ground	Lodged	On	7	D	2	5-10	4 or 5	Up or middle	Storage	Recommended
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

27. Setting on CA25 draper control.

28. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.

29. Cutting height is controlled with a combination of skid shoes and header angle.

30. Percentage above ground speed.

31. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.

Table 3.2 D65/CA25 Combine Header Recommended Settings (continued)

Crop Type	Stubble Height mm (in.)	Crop Condition	Divider Rods	Draper Speed Setting ³²	Header Angle ^{33,34}	Reel Cam	Reel Speed % ³⁵	Reel Position	Skid Shoe Position ³⁴	Stabilizer Wheels ³⁶	Upper Cross Auger
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

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

3.6.3 Optimizing Header for Straight Combining Canola

Ripe canola can be straight combined, but most varieties are very susceptible to shelling and subsequent seed loss. This section provides recommended attachments and settings to optimize D65 Draper Headers for straight combining canola.

Recommended attachments, refer to

The optimization process includes the following modifications to the header:

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

Table 3.3 Auger Finger Quantity

Combine Feeder House Opening	Quantity Installed at Factory	Optimal Finger Quantity for Canola
	2013 and Newer	
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

NOTE:

Each bundle includes installation instructions and the necessary hardware. Refer to [6 Options and Attachments, page 439](#).

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 on Double Reel, page 84](#) or [Repositioning Fore-Aft Cylinders on Single Reel, page 82](#).
- Adjust the reel fore-aft position. Refer to [Adjusting Reel Fore-Aft Position, page 81](#).
- Adjust the reel height so the fingers just engage the crop. Refer to [3.7.8 Reel Height, page 80](#).
- Set the reel cam to position one. Refer to [Adjusting Reel Cam, page 92](#).
- Set the reel speed equal to the ground speed and increase as required. Refer to [3.7.4 Reel Speed, page 74](#).
- Decrease the feed auger spring tension. Refer to [Checking and Adjusting Feed Auger Springs, page 50](#).
- Set the side draper speed to position nine on CA25 control. Refer to [3.7.6 Draper Speed, page 76](#).

OPERATION

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

1. Raise header to full height.
2. Shut down the combine, and remove the key from the ignition.
3. Engage header lift cylinder safety props.
4. Check the thread length protruding past the nut (B). Length should be 15 mm (0.60 in.).

If adjustment is required, follow these steps:

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

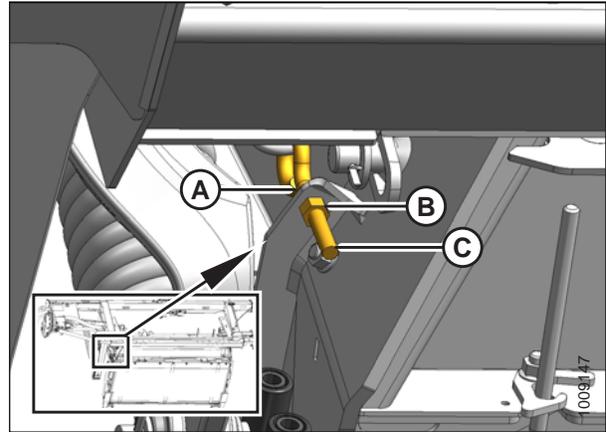


Figure 3.19: Spring Tensioner

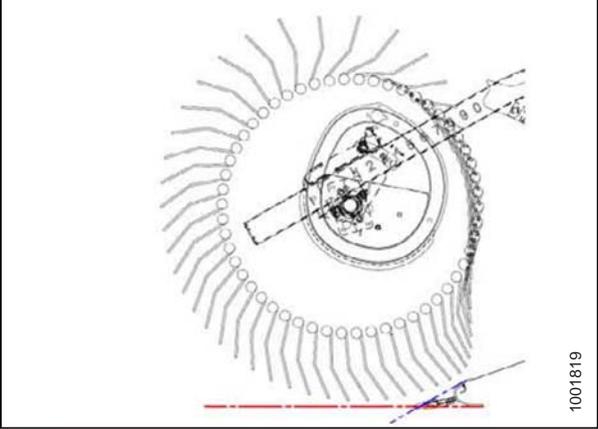
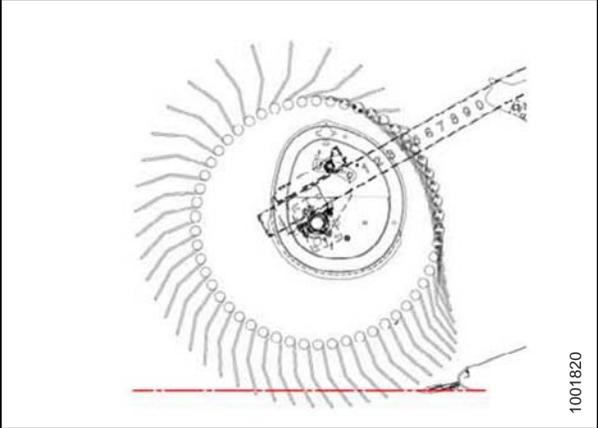
OPERATION

3.6.4 Reel Settings

NOTE:

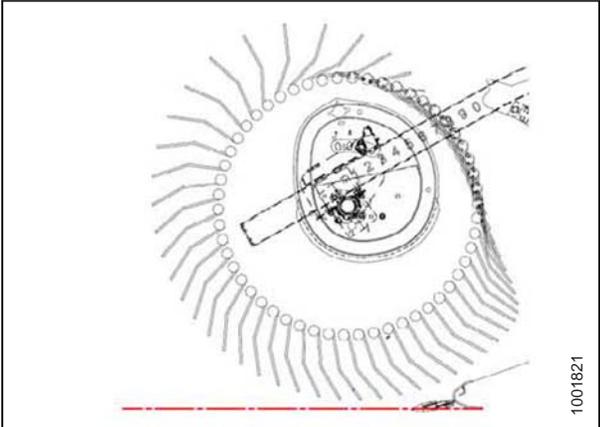
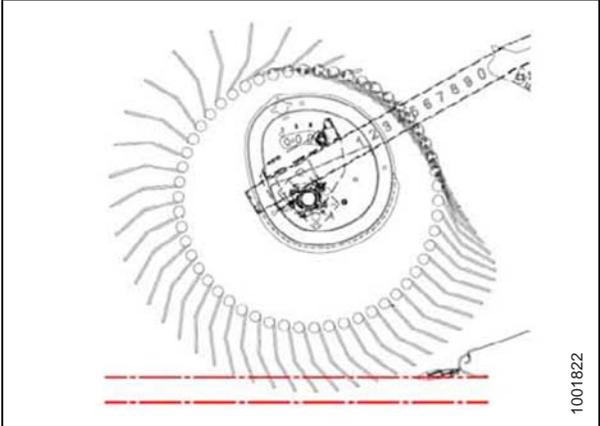
The Recommended Reel Settings chart is also applicable for steel reel tines.

Table 3.4 D65 Recommended Reel Settings

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0)	6 or 7	
2 (20%)	3 or 4	

OPERATION

Table 3.4 D65 Recommended Reel Settings (continued)

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
3 (30%)	6 or 7	
4 (35%)	2 or 3	

NOTE:

- Adjust the reel forward to position the fingers closer to the ground, while tilting the header back. Fingers/tines will dig into the ground at extreme reel-forward positions, so adjust skid shoes or header angle to compensate.
- Adjust the reel aft in thinner crops to prevent plugging on the cutterbar.
- Increase the header angle to position the reel closer to the ground, or decrease angle to position the reel farther from the ground.
- Raise header, increase header angle, and position reel fully forward in lodged crop for maximum stubble height.
- Minimum crop carrying capacity (minimum area of exposed draper between the reel and the header backsheets) occurs with the reel in the farthest aft position.
- Maximum crop carrying capacity (maximum area of exposed draper between the reel and the header backsheets) occurs with the reel in the farthest forward position.
- The finger tip speed at the cutterbar is higher than the reel speed at higher cam settings due to the nature of the cam action. Refer to Table 3.4, page 51.

3.7 Header Operating Variables

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

Correct operation reduces crop loss and increases productivity. Proper adjustments and timely maintenance will increase the length of service you receive from your machine.

The variables listed in Table 3.5, page 53 (and detailed on the following pages) will 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 53
Header float	3.7.2 Header Float, page 59
Header angle	3.7.3 Header Angle, page 65
Reel speed	3.7.4 Reel Speed, page 74
Ground speed	3.7.5 Ground Speed, page 75
Draper speed	3.7.6 Draper Speed, page 76
Knife speed	3.7.7 Knife Speed, page 78
Reel height	3.7.8 Reel Height, page 80
Reel fore-aft position	3.7.9 Reel Fore-Aft Position, page 80
Reel tine pitch	3.7.10 Reel Tine Pitch, page 89
Crop divider rods	3.7.11 Crop Dividers, page 92

3.7.1 Cutting Height

The D65 Draper Header is capable of cutting the crop to a desired stubble height or cutting as close as possible to the ground. Cutting height will vary depending on the type of crop, crop conditions, etc.

Cutting off the Ground

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

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

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 56](#) to change the wheel position.

If stabilizer/slow speed transport wheels are installed, refer to [Adjusting Stabilizer/Slow Speed Transport Wheels, page 54](#) to change the wheel position.

OPERATION

Adjusting Stabilizer/Slow Speed Transport Wheels

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

Refer to *3.6.2 Header Settings, page 42* for recommended use in specific crops and crop conditions.

DANGER

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

1. Raise the header so the stabilizer wheels are off the ground. Shut down engine and remove key.
2. Check that the float is working properly. Refer to *Checking and Adjusting Header Float, page 60*.
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 wheel on the ground as shown. (This reduces weight of assembly and makes adjusting the wheel position easier.)
5. Lift the left wheel slightly to support 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.
8. Lift the right wheel back into the field position and ensure latch (B) is engaged.
9. Secure the latch with hairpin (A).
10. Support the wheel weight by lifting 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.

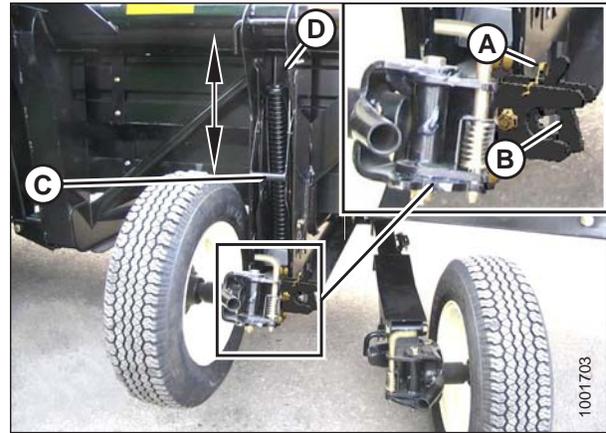


Figure 3.20: Right Wheel

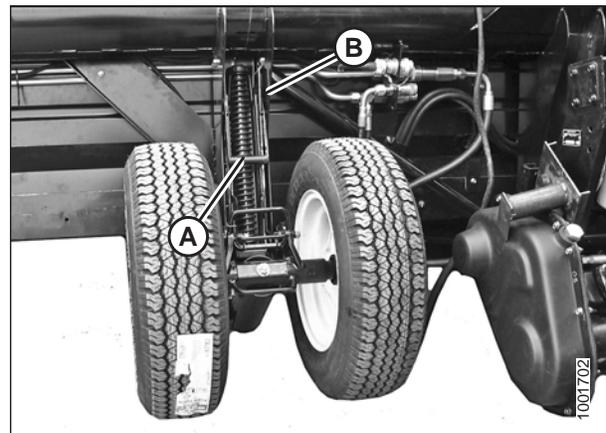


Figure 3.21: Left Wheel

OPERATION

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

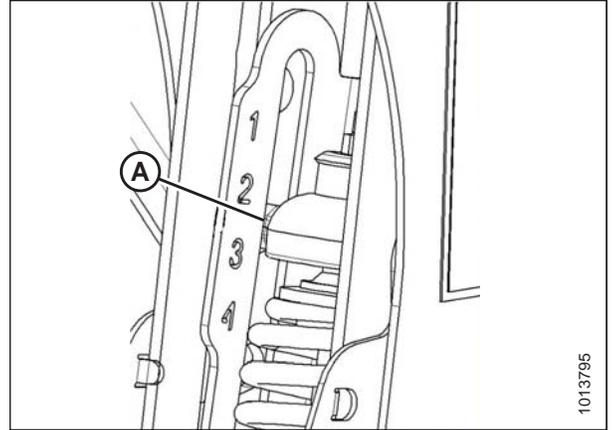


Figure 3.22: Load Indicator

IMPORTANT:

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

- 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.
- Use the combine's auto header height control (AHHC) to automatically maintain cutting height. Refer to [3.8 Auto Header Height Control \(AHHC\)](#), page 100 and your combine operator's manual for details.

NOTE:

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

NOTE:

Header angle adjustments or AHHC ground pressure control may be used for adjusting cutting height while in motion.

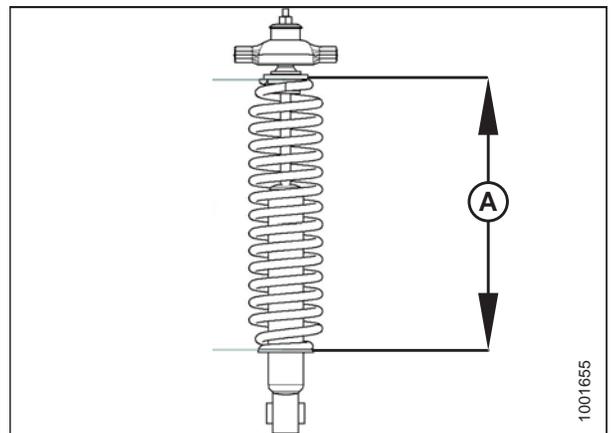


Figure 3.23: Spring Compression

OPERATION

Adjusting Stabilizer Wheels

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

DANGER

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

CAUTION

Handle may be under tension—especially when the wheels are on the ground. Raise the header until the wheels are off the ground before making adjustments.

1. Raise the header until the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Support the wheel weight by lifting slightly with one hand on handle (B), and pull up on handle (A) to release the lock.
3. Lift the wheel using handle (B), and engage the support channel into center slot (C) in the upper support.
4. Push handle (A) down to lock.

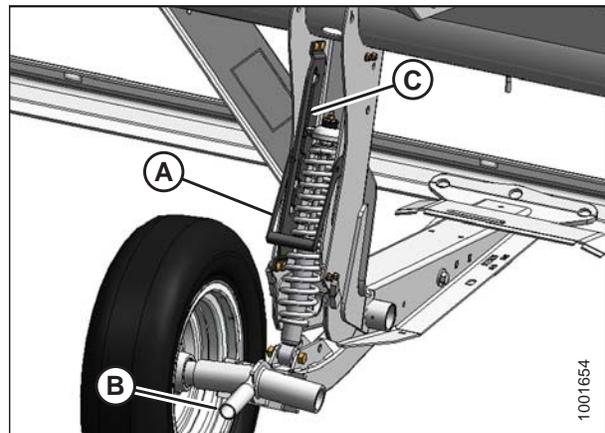


Figure 3.24: Stabilizer Wheel

5. Lower the header to the desired cutting height and check load indicator (A).

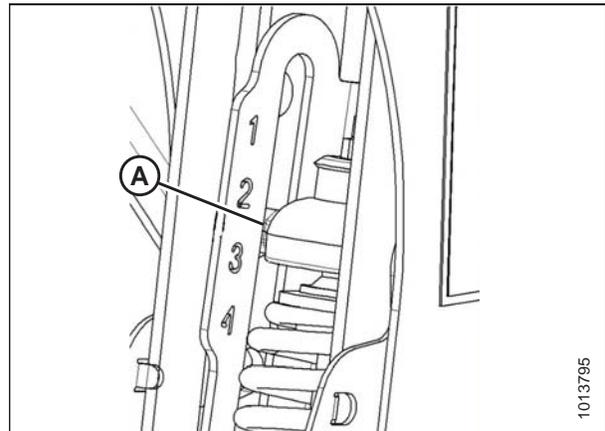


Figure 3.25: Load Indicator

OPERATION

IMPORTANT:

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

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

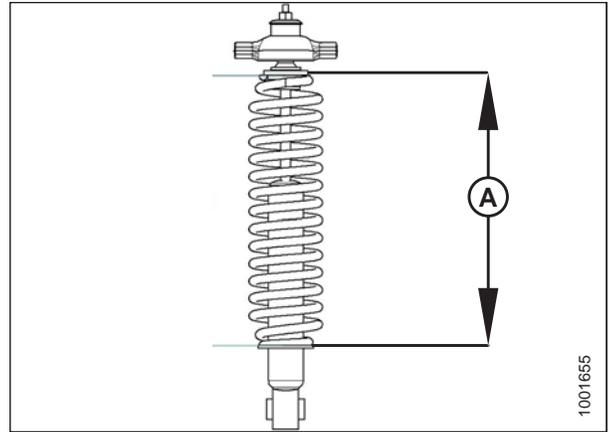


Figure 3.26: Spring Compression

Cutting on the Ground

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

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

Refer to the following for additional information:

- [Adjusting Inner Skid Shoes, page 58](#)
- [Adjusting Outer Skid Shoes, page 58](#)
- [3.7.2 Header Float, page 59](#)
- [3.7.3 Header Angle, page 65](#)

OPERATION

Adjusting Inner Skid Shoes

DANGER

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

1. Raise header to full height, engage safety props, shut off engine, and remove key.
2. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
 - [Adjusting Stabilizer Wheels, page 56](#)
 - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 54](#)
3. Remove lynch pin (A) from each skid shoe.
4. Hold shoe (B) and remove pin (C) by disengaging from the frame and pulling away from the shoe.
5. Raise or lower skid shoe (B) to achieve the desired position using the holes in support (D) as a guide.
6. Install pin (C), engage in frame, and secure with lynch pin (A).
7. Check that all skid shoes are equally adjusted.
8. Adjust the header angle to the desired working position using the machine's header angle controls. If the header angle is not critical, set it to the mid-position.
9. Check the header float. Refer to [3.7.2 Header Float, page 59](#).

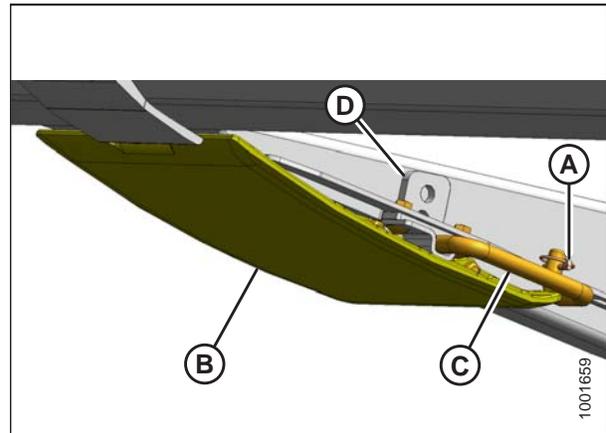


Figure 3.27: Inner Skid Shoe

Adjusting Outer Skid Shoes

DANGER

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

1. Raise the header to its full height, engage the safety props, shut off the engine, and remove the key from the ignition.
2. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
 - [Adjusting Stabilizer Wheels, page 56](#)
 - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 54](#)

OPERATION

3. Remove lynch pin (A) from each skid shoe (B).
4. Hold shoe (B) and remove adjustment pin (C) by disengaging from the frame and pulling away from the shoe.
5. Raise or lower skid shoe (B) to achieve the desired position using the holes in the support as a guide.
6. Reinstall pin (C), engage in frame, and secure with lynch pin (A).
7. Check that all skid shoes are equally adjusted.
8. Check the header float. Refer to [3.7.2 Header Float](#), page 59.

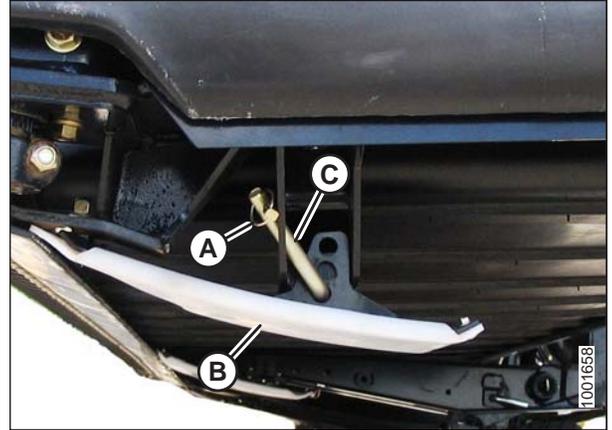


Figure 3.28: Outer Skid Shoe

3.7.2 Header Float

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

Header float is indicated on the CA25 float indicator (A). The values 0 to 4 represent the force of the cutterbar on the ground with 0 being the minimum and 4 being the maximum.

The maximum force is determined by the tension on the adapter's adjustable float springs. The tension is factory-set, but it can be changed to suit field and crop conditions. Refer to [Checking and Adjusting Header Float](#), page 60.

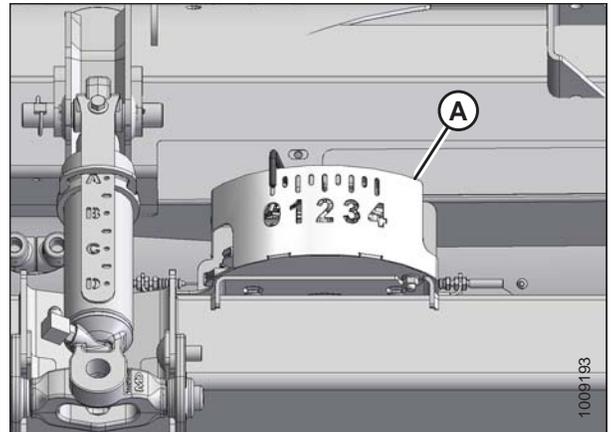


Figure 3.29: Float Indicator

Set the float for cutting on the ground as follows:

- a. Ensure the header float locks are disengaged. Refer to [Locking/Unlocking Header Float](#), page 65.
- b. Lower 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 the Ground](#), page 53.
- b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

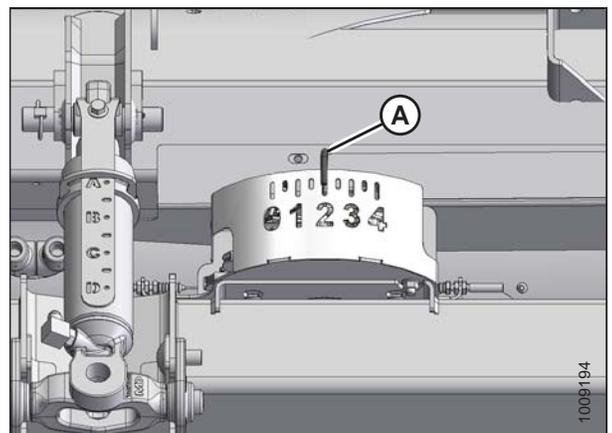


Figure 3.30: Cutting on the Ground

OPERATION

Checking and Adjusting Header Float

DANGER

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

NOTE:

Ensure all header options are installed before adjusting float.

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

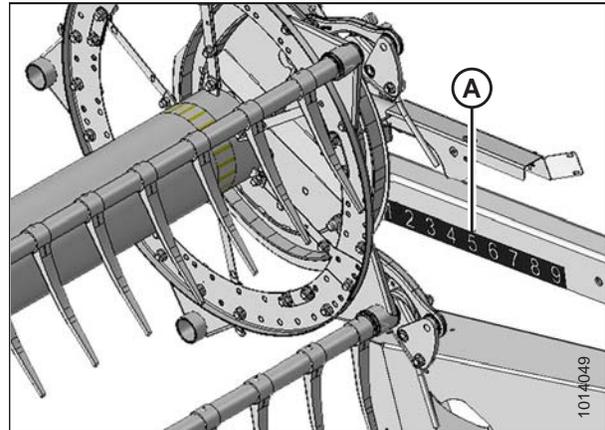


Figure 3.31: Fore-Aft Position

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

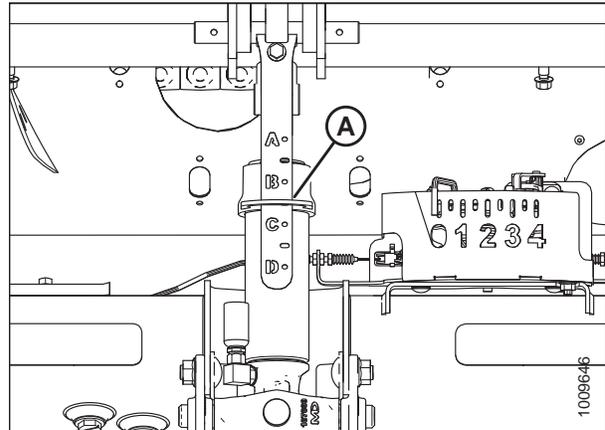


Figure 3.32: Center-Link

OPERATION

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

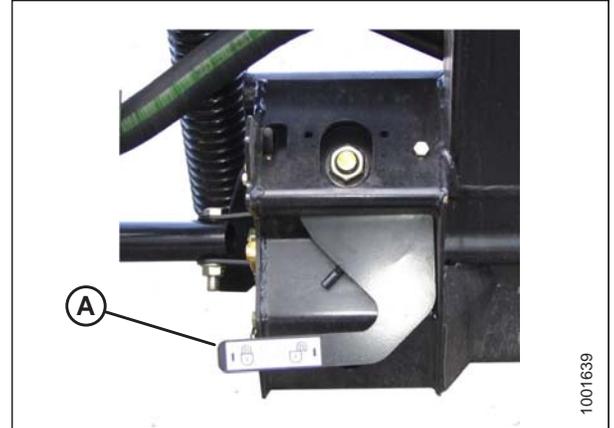


Figure 3.33: Header Float Lock in Unlock Position

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

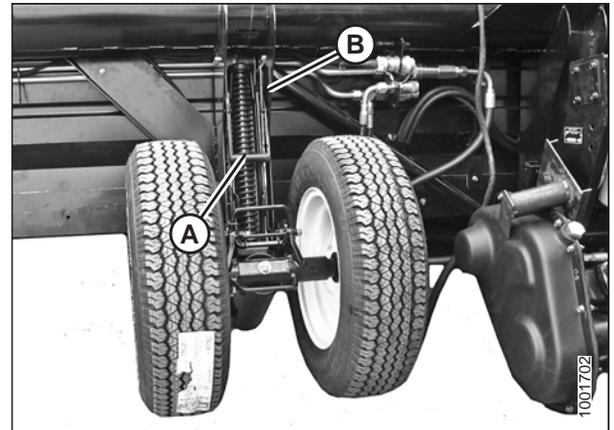


Figure 3.34: Left Wheel

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

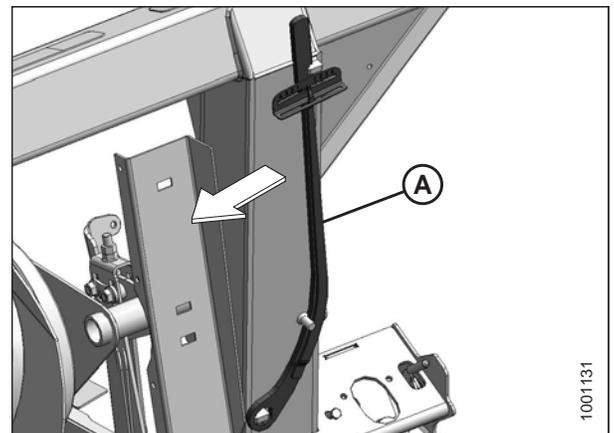


Figure 3.35: Torque Wrench

OPERATION

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

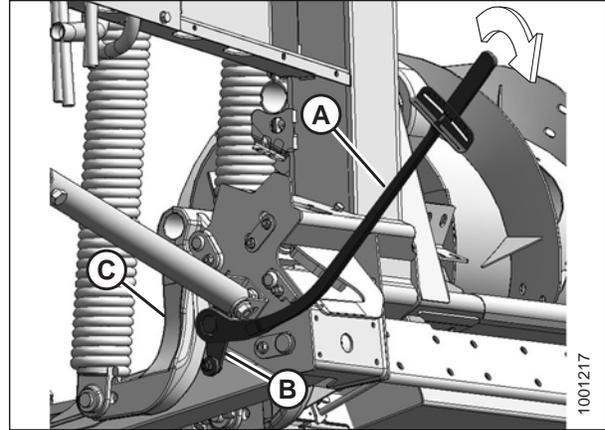


Figure 3.36: Left Side of Adapter

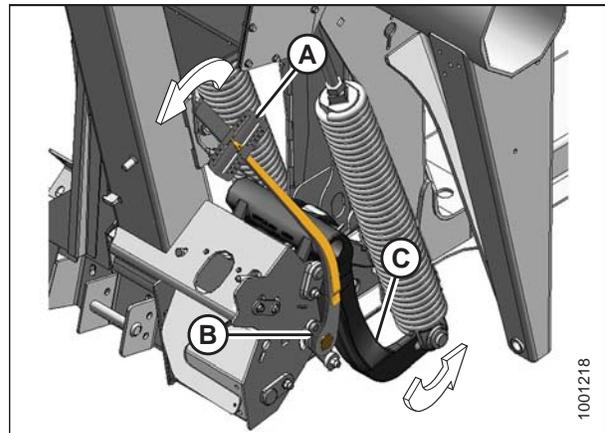


Figure 3.37: Right Side of Adapter

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

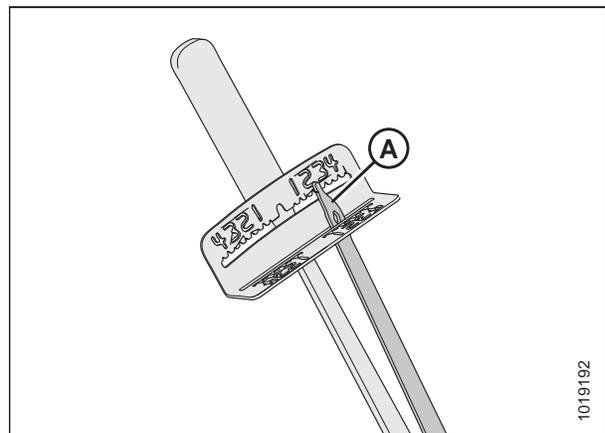


Figure 3.38: Indicator

OPERATION

Table 3.6 Float Settings

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

13. To increase float (decrease header weight)
 - a. Loosen jam nuts.
 - b. Turn left adjustment bolts (A) and right adjustment bolts (B) clockwise.
 - c. Tighten jam nuts.
14. To decrease float (increase header weight)
 - a. Loosen jam nuts.
 - b. Turn left adjustment bolts (A) and right adjustment bolts (B) counterclockwise.
 - c. Tighten jam nuts.

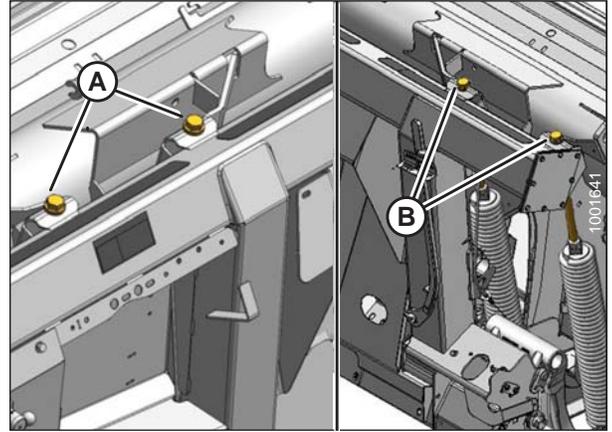


Figure 3.39: Float Adjustment

15. Use following guidelines when adjusting float:
 - Adjust float so wrench readings are equal on both sides of the header.
 - Turn each bolt pair equally. Refer to [Step 11, page 62](#), and repeat torque wrench reading procedure.
 - Set header float as light as possible without causing excessive bouncing to prevent knife component breakage, soil scooping, or soil build-up at cutterbar in wet conditions.
 - Use a slower ground speed with a light float setting, if necessary, to avoid excessive bouncing and leaving a ragged cut.
 - Use stabilizer wheels in conjunction with header float to minimize bouncing at header ends and to control cut height when cutting off ground. Refer to [3.7.1 Cutting Height, page 53](#).

NOTE:

If 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.

OPERATION

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

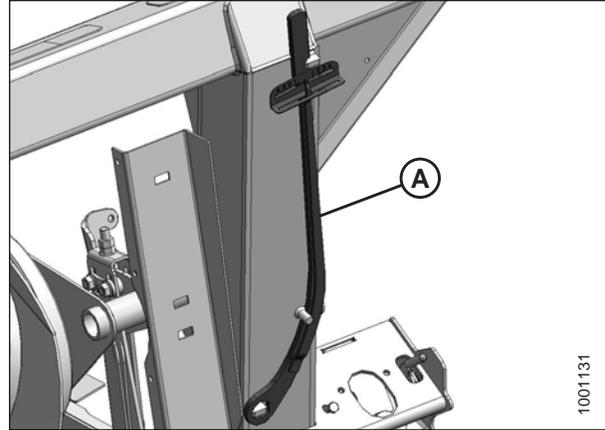


Figure 3.40: Torque Wrench

1001131

OPERATION

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.

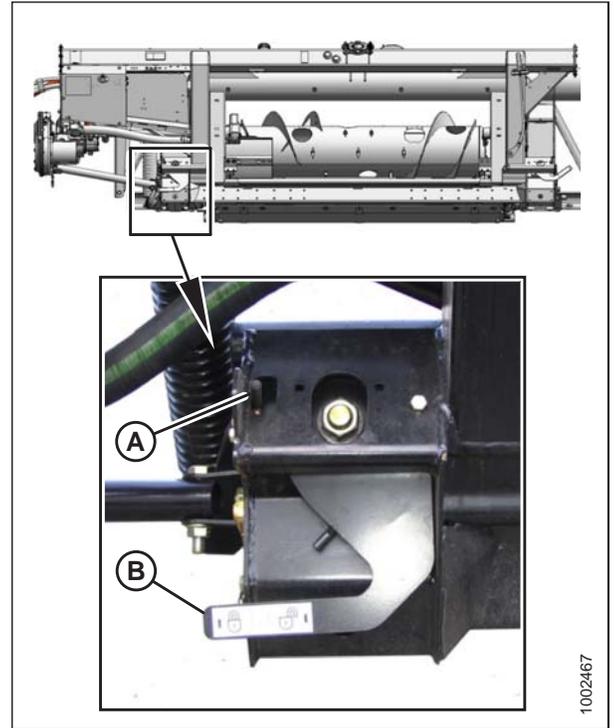


Figure 3.41: Float Lock

3.7.3 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.

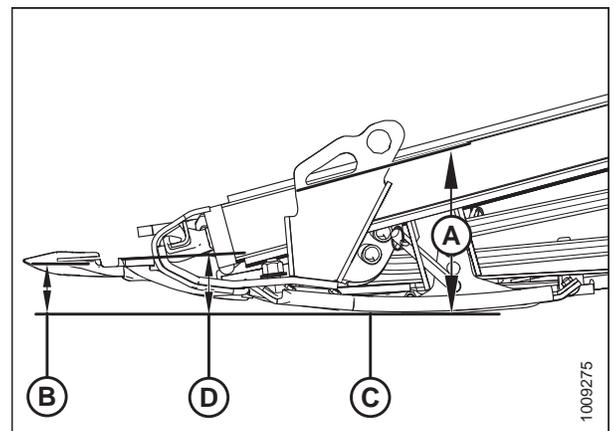


Figure 3.42: Header Angle

OPERATION

Controlling Header Angle

The header/guard angle is controlled from the combine cab with a switch on the operator's control handle and an indicator on the center-link or on the monitor in the cab. The header/guard angle is determined by the length of the center-link between the combine adapter and the header, or by tilting the feederhouse on selected combines.

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

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



Figure 3.43: Case Controls

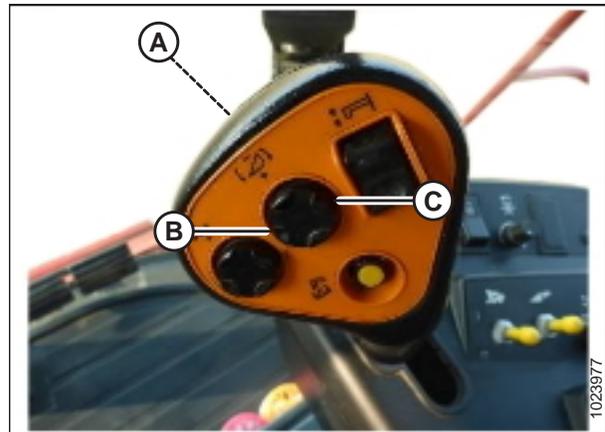


Figure 3.44: Case Controls

OPERATION

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

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

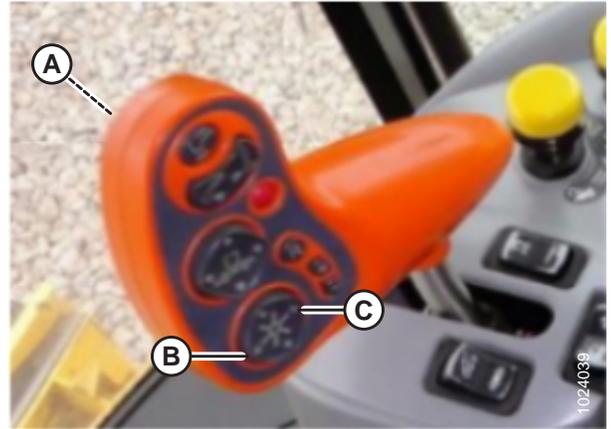


Figure 3.45: NH CR/CX Controls

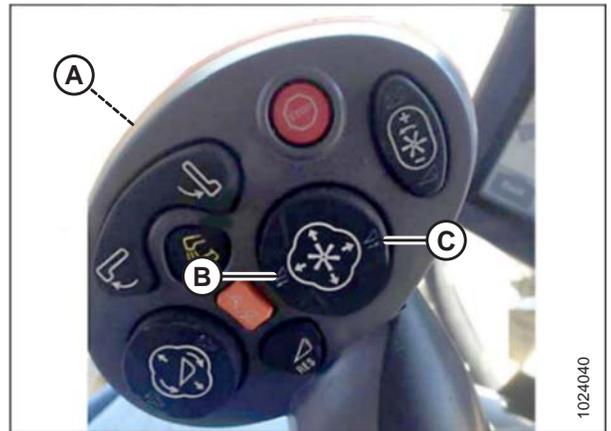


Figure 3.46: NH CR/CX Controls

AGCO: AGCO models 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 combine model.

4. **Gleaner A only:** Open armrest cover (A) (Gleaner A only) to expose row of switches, and press dealer installed rocker switch (B) to header tilt position.

NOTE:

Gleaner A shown. Other AGCO models have rocker switch on the console (not shown).

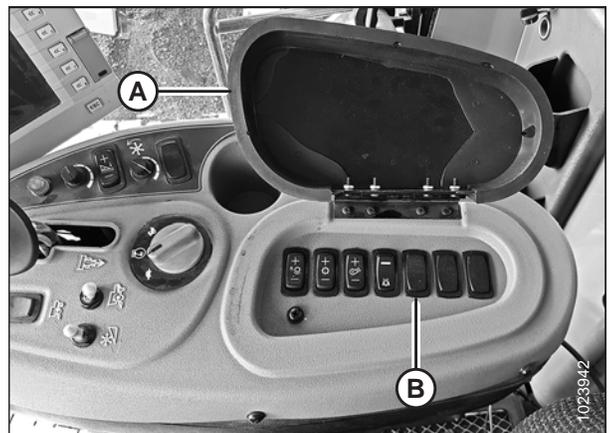


Figure 3.47: Gleaner A Console

OPERATION

5. Press button (A) on control handle to tilt header forward (steeper angle) or button (B) to tilt header back (shallower angle).



Figure 3.48: Gleaner Controls

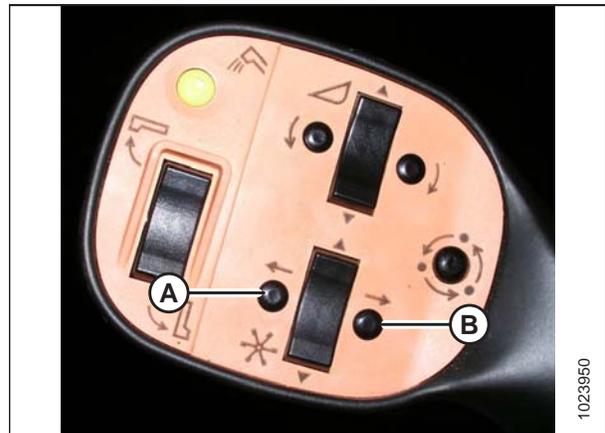


Figure 3.49: Gleaner Controls



Figure 3.50: Challenger/Massey Controls

OPERATION

CLAAS (with Dealer installed fore-aft/header tilt switch): 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

6. Press reel fore-aft / header tilt switch (A) on console into “vario” position.

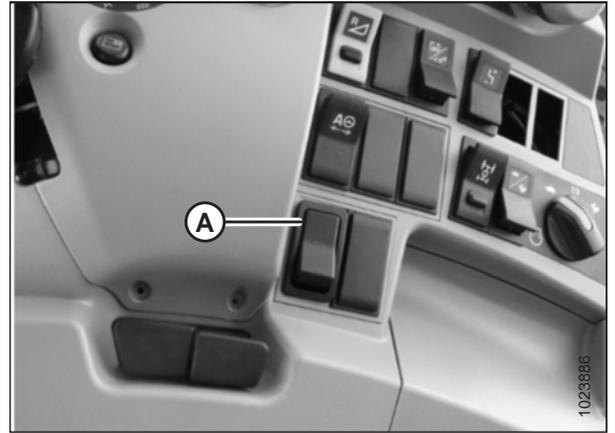


Figure 3.51: CLAAS 600 Console



Figure 3.52: CLAAS 500 Console

OPERATION

7. Press and hold switch (A) on rear of control handle.
8. Press switch (C) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).



Figure 3.53: CLAAS 500 Control Handle

CLAAS (with factory installed fore-aft/header tilt switch): 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

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

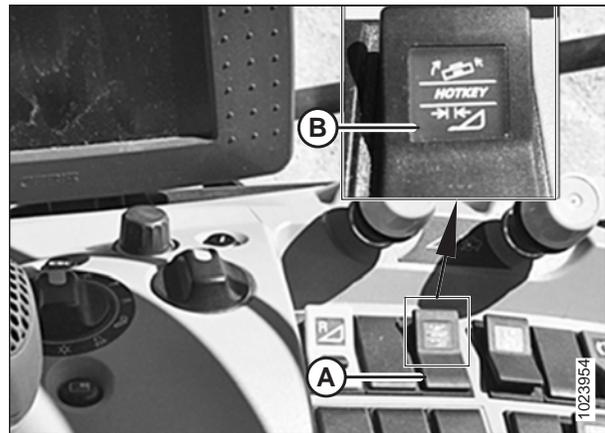


Figure 3.54: CLAAS 700 Console

OPERATION

10. Press and hold switch (A) on rear of control handle.
11. Press switch (C) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).

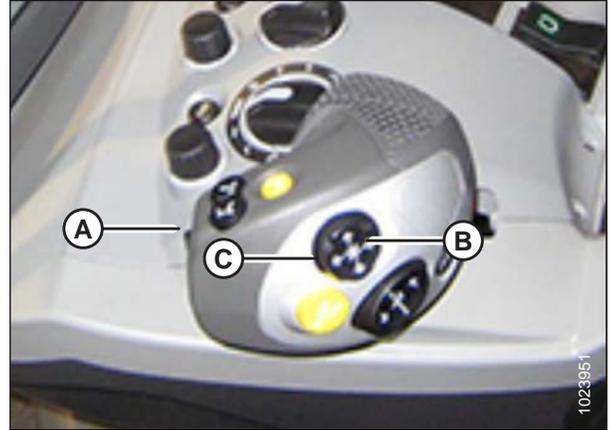


Figure 3.55: CLAAS 600/700 Control Handle

John Deere S700: S700 Series combines use a feederhouse deckplate tilting system for header fore-aft adjustment and do not require a separate switch to activate MacDon header tilt.

12. Press switch (A) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).
13. **John Deere (except S700):** 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



Figure 3.56: John Deere 700 Control

OPERATION

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

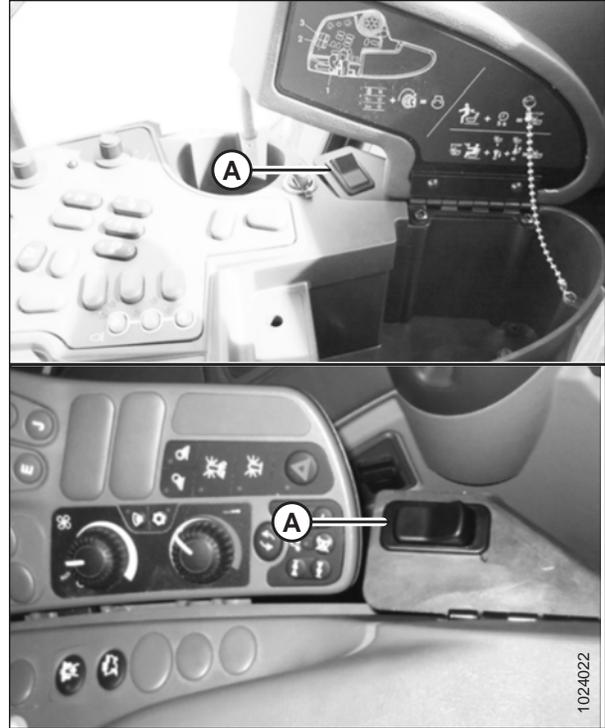


Figure 3.57: John Deere Consoles

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



Figure 3.58: John Deere Control

OPERATION

Versatile: Versatile 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

16. Press ON switch (A) on console to place controls in Header Tilt mode.
17. Press button (B) on control handle to tilt header forward (steeper angle) or button (C) to tilt header back (shallower angle).



Figure 3.59: Versatile

OPERATION

3.7.4 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:

Nine-bat reels are available on 4.6, 6.1, and 7.6 m (15, 20, and 25 ft.) headers from the factory. A conversion kit to change from a six-bat reel to a nine-bat reel is available for these headers.

Refer to [3.6.2 Header Settings, page 42](#) for recommended reel speeds in specific crops and crop conditions.

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

Optional Reel Drive Sprockets

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

The header is factory-equipped with a 19-tooth 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 74](#), 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 [5.14.3 Replacing Reel Drive Sprocket, page 426](#).

OPERATION

3.7.5 Ground Speed

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

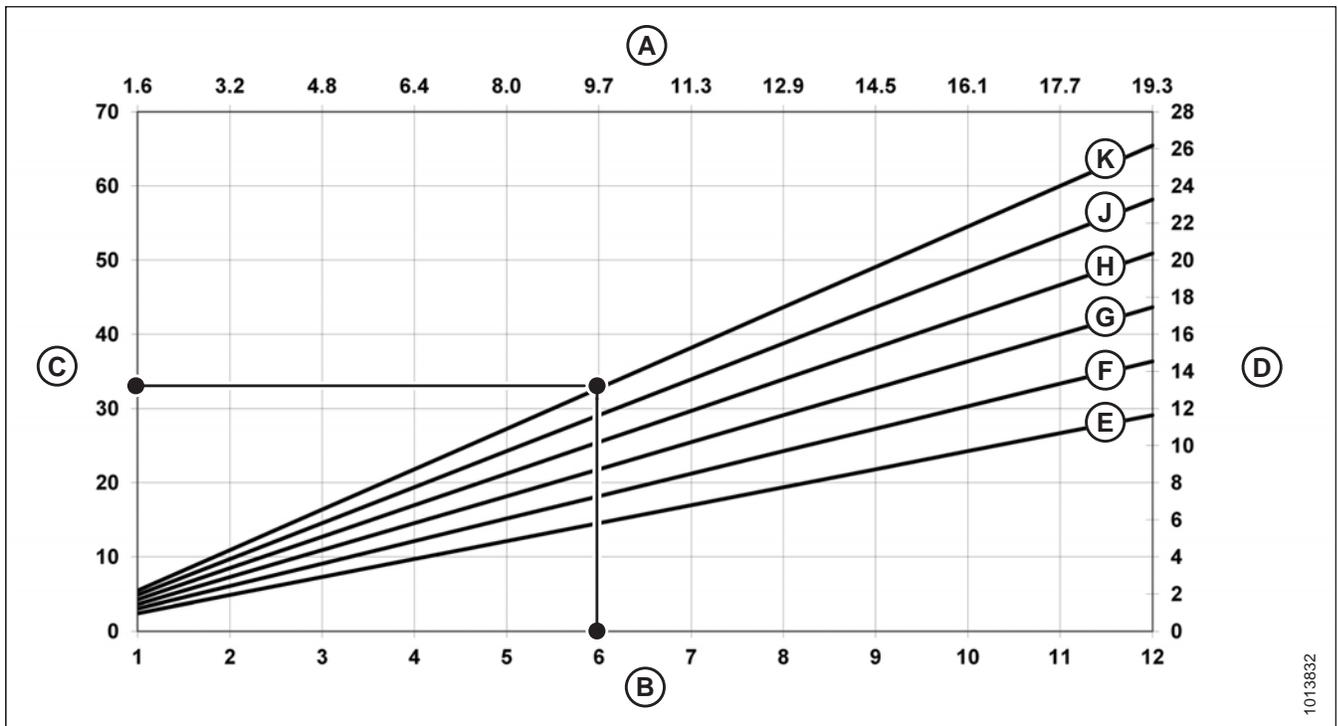
Reduce ground speed in difficult cutting conditions to reduce loads on cutting components and drives.

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 3.60, page 75 illustrates the relationship between ground speed and area cut for the various sized headers.

Figure 3.60: Ground Speed vs Acres



A - Kilometers/Hour
E - 20 Foot
J - 40 Foot

B - Miles/Hour
F - 25 Foot
K - 45 Foot

C - Acres/Hour
G - 30 Foot

D - Hectares/Hour
H - 35 Foot

Example: A 13.7-meter (45-foot) header operating at a ground speed of 9.7 km/h (6 mph) would produce a cut area of approximately 13.4 hectares (33 acres) in one hour.

OPERATION

3.7.6 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 76](#).

Adjusting Side Draper Speed

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

The side drapers (A) are driven by hydraulic motors 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.

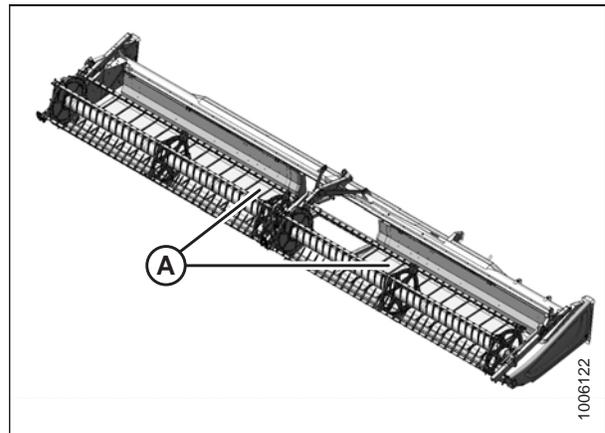


Figure 3.61: Side Drapers

OPERATION

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

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

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

- [3.6.2 Header Settings, page 42](#)
- [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.

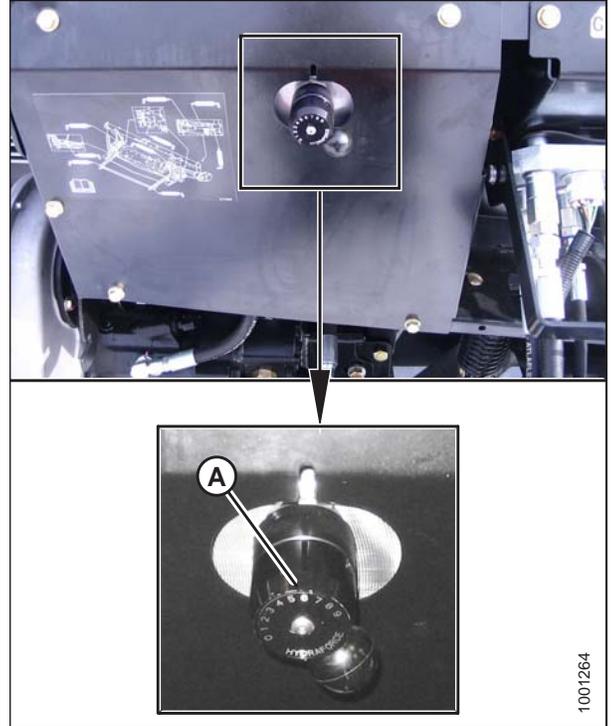


Figure 3.62: Flow Control Valve

Adjusting Feed Draper Speed

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

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

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

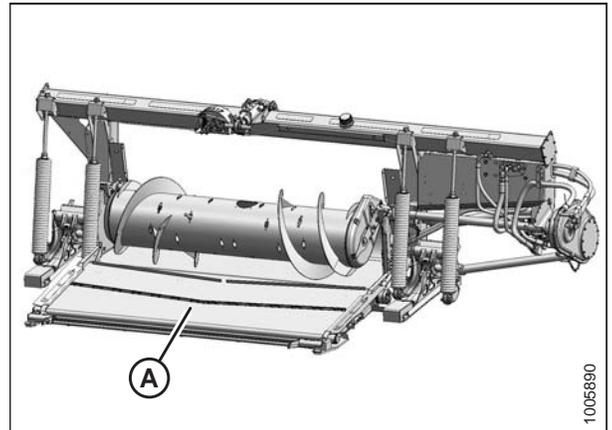


Figure 3.63: CA25 Combine Adapter

OPERATION

3.7.7 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 ³⁷	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 78. Refer to *Checking Knife Speed*, page 79.

IMPORTANT:

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

Table 3.9 D65 Header Knife Speed

Header Size (m [ft.])	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
7.6 (25)	600–725	700–850
9.1 (30)	600–700	600–750
10.6 (35)	550–650	600–750
12.2 (40)	525–600	550–700
13.7 (45)	—	550–700

37. 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

⚠ DANGER

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

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

⚠ WARNING

Check to be sure all bystanders have cleared the area.

3. Start the combine engine, engage the header drive, and run the combine at operating rpm.
4. Run adapter and header for 10 minutes to warm up oil to 38°C (100°F).

NOTE:

Combines with variable speed feeder houses should check knife speed with feeder house at slowest speed. Refer to Table 3.8, page 78 for combine feeder house speed values.

6. Measure the rpm of the knife drive box pulley (A) with a hand-held tachometer.
7. Shut down the combine.
8. Compare pulley rpm measurement with the rpm values in the knife speed chart. Refer to 3.7.7 Knife Speed, page 78.
9. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.



Figure 3.64: Left Endshield

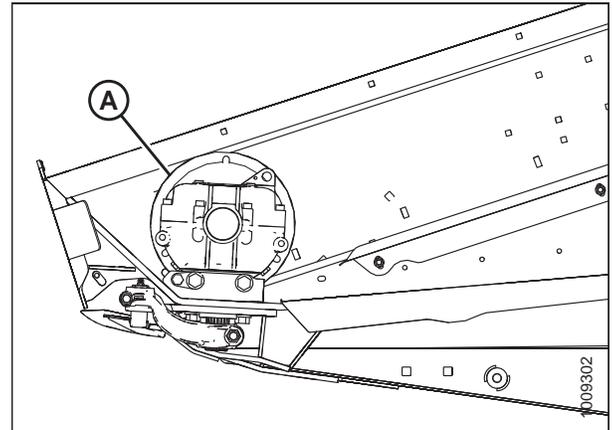


Figure 3.65: Knife Drive Pulley

3.7.8 Reel Height

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

Set the reel height to carry material past the knife and onto the drapers with minimal disturbance and damage to the cut crop. Refer to [3.7.9 Reel Fore-Aft Position, page 80](#).

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 42](#) to determine recommended reel heights for specific crops and crop conditions.

IMPORTANT:

Maintain reel clearance to prevent fingers contacting the knife or the ground. Refer to [5.13.1 Reel Clearance to Cutterbar, page 397](#).

3.7.9 Reel Fore-Aft Position

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

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

For double-reel headers, refer to [Repositioning Fore-Aft Cylinders on Double Reel, page 84](#).

For single-reel headers, refer to [Repositioning Fore-Aft Cylinders on Single Reel, page 82](#).

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 87](#).

OPERATION

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

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

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

IMPORTANT:

Adjust to a steeper header angle if experiencing difficulty picking up flattened crop. Refer to [Controlling Header Angle, page 66](#) for adjustment instructions. Adjust reel position only if header angle adjustments are not satisfactory.

Refer to [3.6.2 Header Settings, page 42](#) for recommended reel positions in specific crops and crop conditions.

NOTE:

In crops that are difficult to pick up such as rice, or severely lodged crops that require full forward positioning of the reel, set the reel tine pitch to provide proper placement of the crop onto the drapers. Refer to [3.7.10 Reel Tine Pitch, page 89](#) for adjustment details.

Adjusting Reel Fore-Aft Position

1. Select FORE-AFT mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position while using decal (A) as a reference.
3. Check the reel clearance to cutterbar after making changes to the cam setting. Refer to the following for measurement and adjustment procedures:
 - [5.13.1 Reel Clearance to Cutterbar, page 397](#)
 - [5.13.2 Reel Frown, page 400](#)

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.

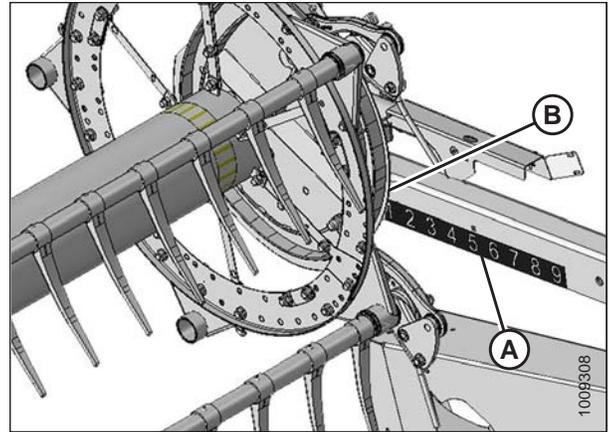


Figure 3.66: Fore-Aft Decal

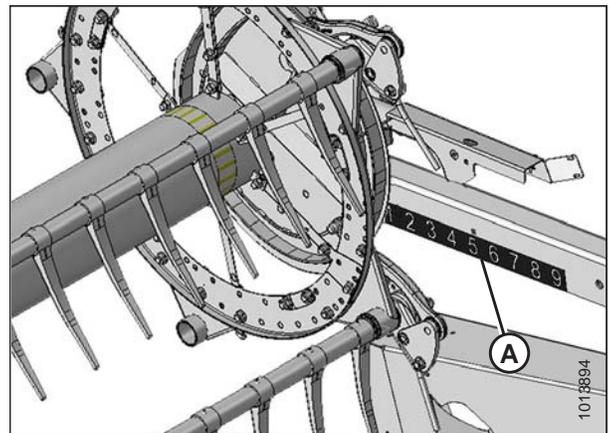


Figure 3.67: Fore-Aft Decal

OPERATION

Repositioning Fore-Aft Cylinders on Single Reel

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

Reposition the right reel arm cylinder as follows:

NOTE:

Reel components not shown in illustration for improved clarity.

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

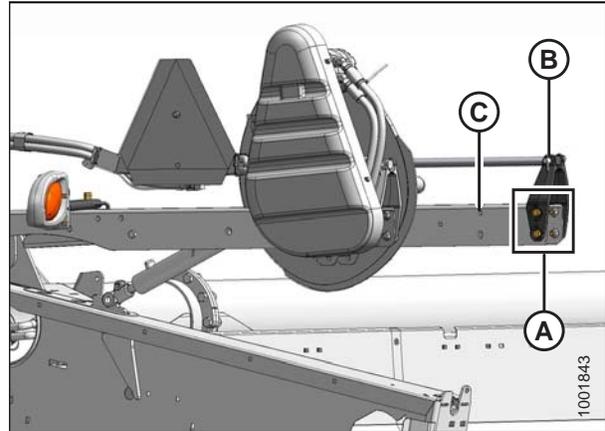


Figure 3.68: Right Arm Cylinder – Forward Position

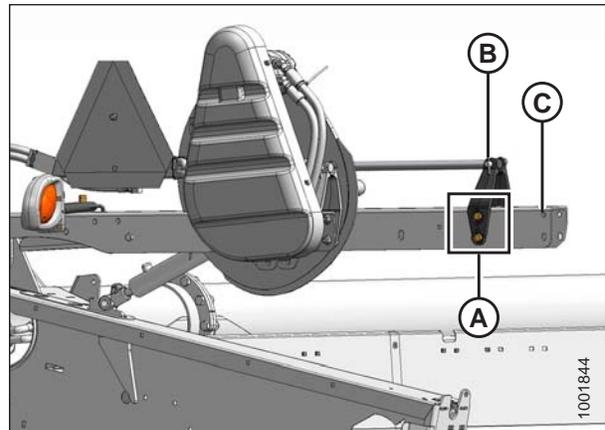


Figure 3.69: Right Arm Cylinder – Rearward Position

OPERATION

Reposition the left reel arm cylinder as follows:

NOTE:

Reel components not shown in illustration for improved clarity.

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

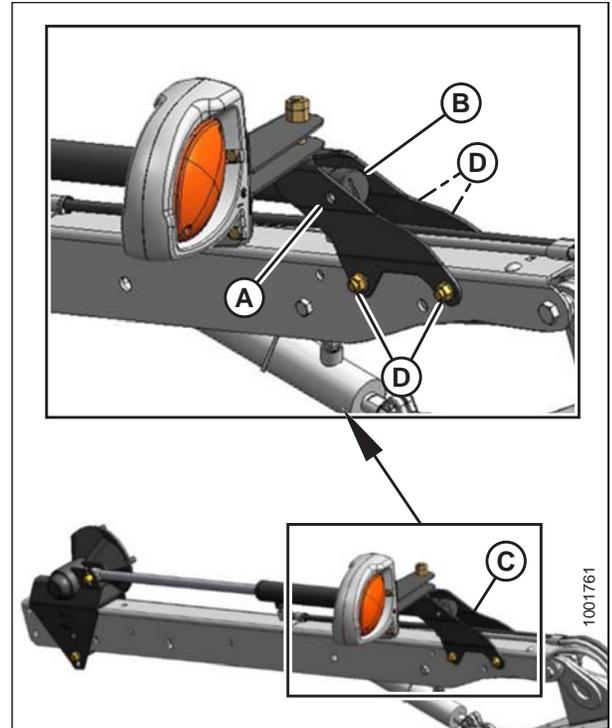


Figure 3.70: Forward Position

10. Reposition the bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
11. Push the reel back and attach cylinder (B) to the bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
12. Secure the light harness to the bracket/light assembly (C) using a cable tie.
13. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
14. Adjust the reel tine pitch if necessary. Refer to [3.7.10 Reel Tine Pitch, page 89](#).

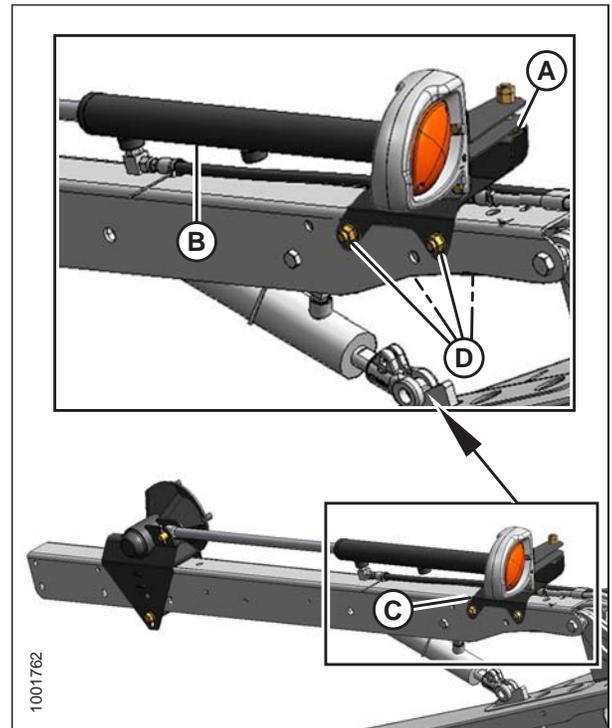


Figure 3.71: Rearward Position

OPERATION

Repositioning Fore-Aft Cylinders on Double Reel

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. If the Multi-Crop Rapid Reel Conversion option is installed, refer to [Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 87](#).

DANGER

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

Reposition the center arm cylinder as follows:

NOTE:

Reel components not shown in illustration for improved clarity.

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. Stop engine and remove key.
3. Remove four bolts (A) securing cylinder bracket (B) to reel arm.
4. Position reel until bracket (B) lines up with desired position holes (C):
 - Forward position, refer to Figure 3.72, page 84
 - Rearward position, refer to Figure 3.73, page 84
5. Reinstall four bolts (A) to secure bracket (B) to reel arm at new position.

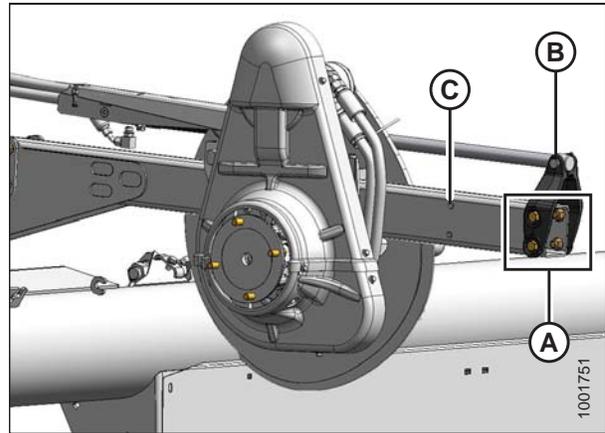


Figure 3.72: Forward Position

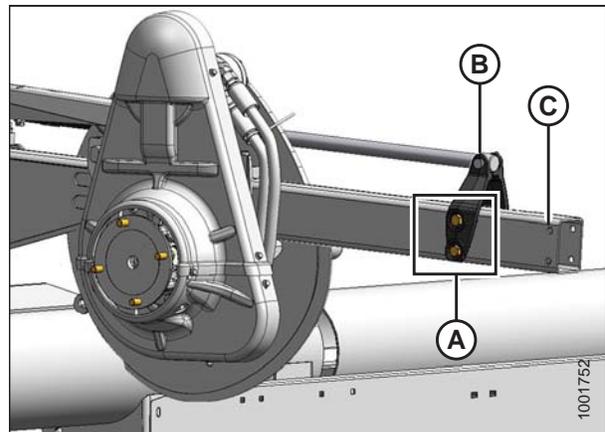


Figure 3.73: Rearward Position

OPERATION

Reposition right arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

1. Remove four bolts (A) securing cylinder bracket (B) to the reel arm.
2. Position reel until bracket (B) lines up with desired position holes (C):
 - Forward position, refer to Figure 3.74, page 85
 - Rearward position, refer to Figure 3.75, page 85
3. Reinstall the four bolts (A) to secure bracket to reel arm at new position.

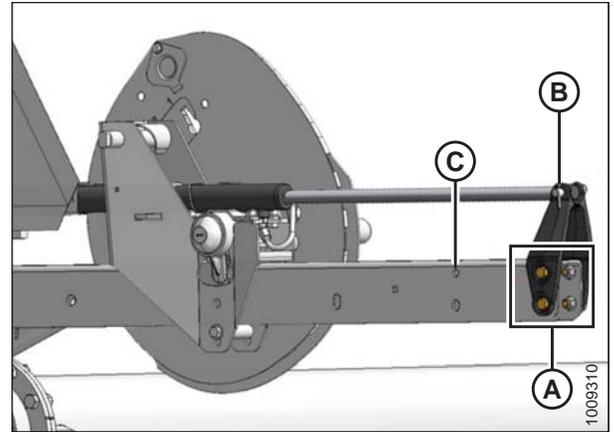


Figure 3.74: Forward Position

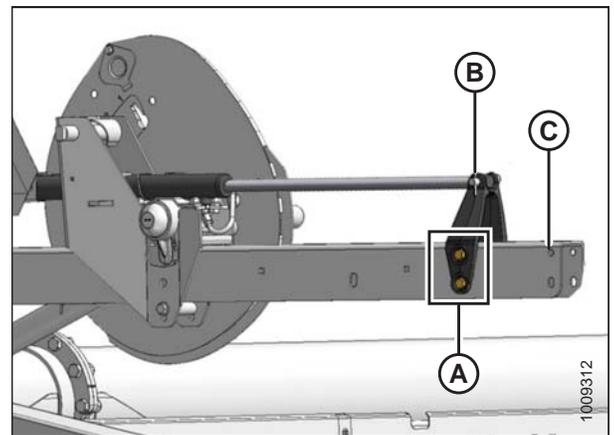


Figure 3.75: Rearward Position

OPERATION

Reposition the left reel arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

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

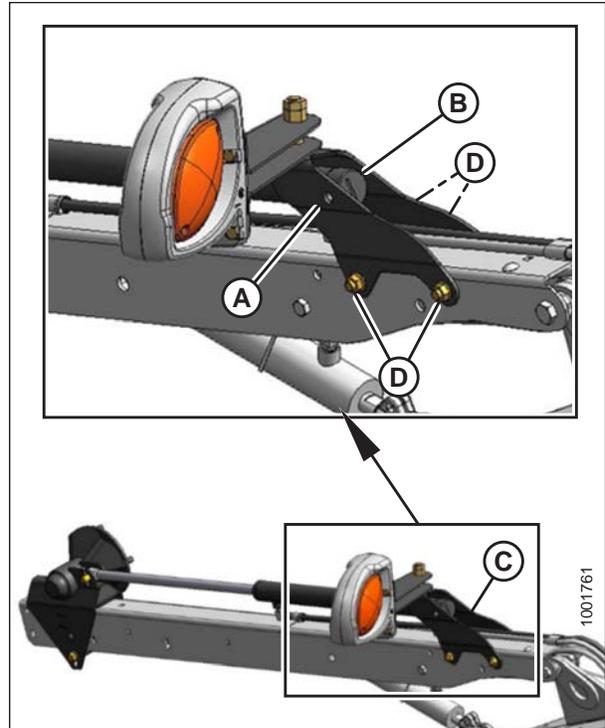


Figure 3.76: Forward Position

5. Reposition bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
6. Push the reel back and attach cylinder (B) to bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
7. Secure the light harness to bracket/light assembly (C) using a cable tie.
8. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
9. Adjust the reel tine pitch if necessary. Refer to [3.7.10 Reel Tine Pitch, page 89](#).

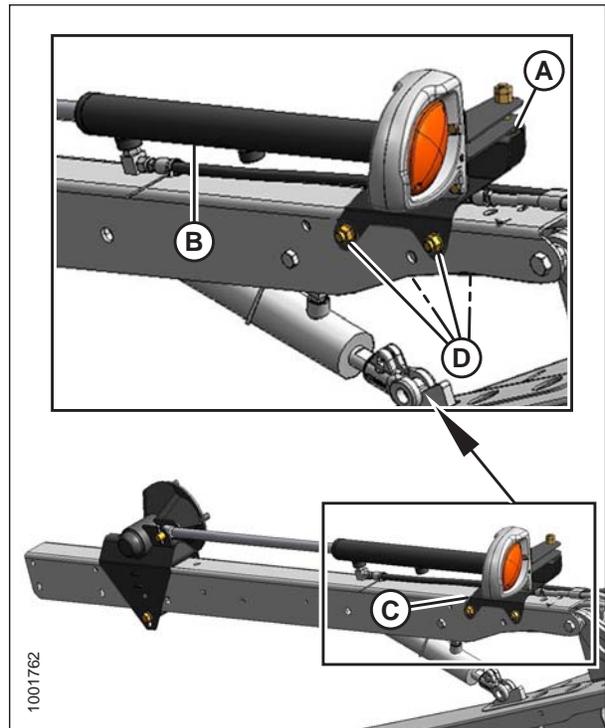


Figure 3.77: Rearward Position

OPERATION

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. The Multi-Crop Conversion option is applicable to double-reel headers only.

⚠ DANGER

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

Reposition the left arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

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

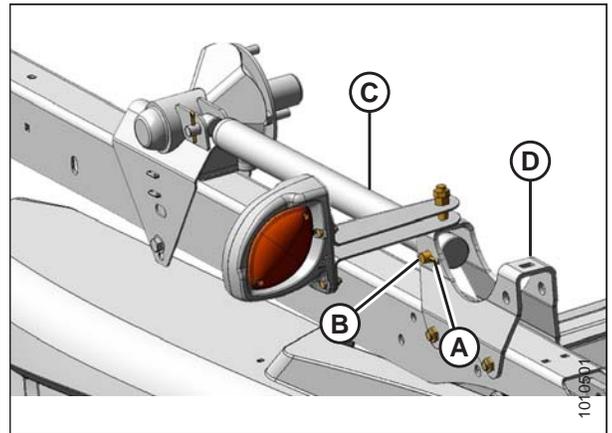


Figure 3.78: Forward Position – Left Arm

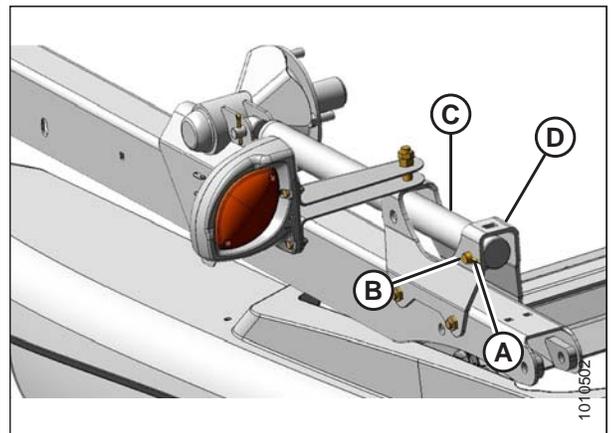


Figure 3.79: Aft Position – Left Arm

OPERATION

Reposition the center arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

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

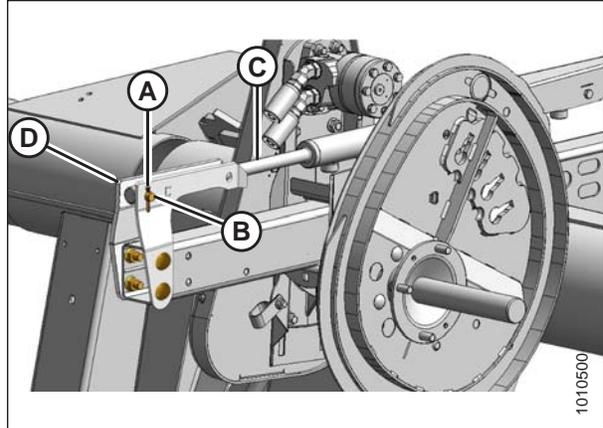


Figure 3.80: Forward Position – Center Arm

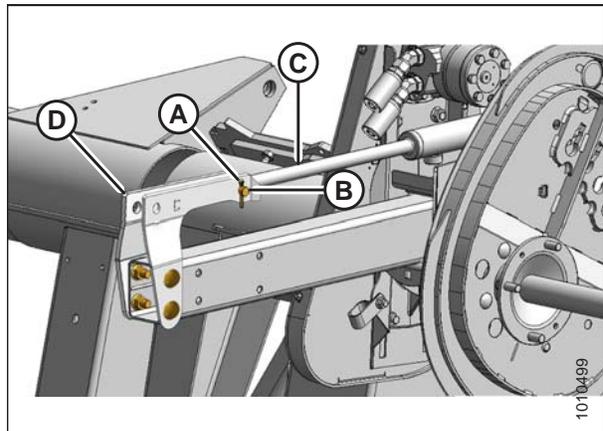


Figure 3.81: Aft Position – Center Arm

Reposition the right arm cylinder as follows:

NOTE:

Reel components not shown in illustration for clarity.

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

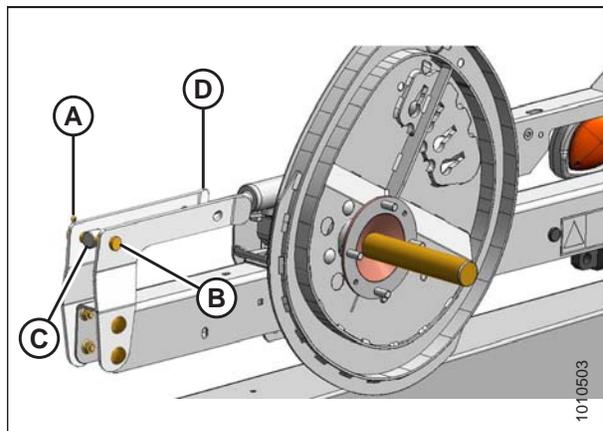


Figure 3.82: Forward Position – Right Arm

OPERATION

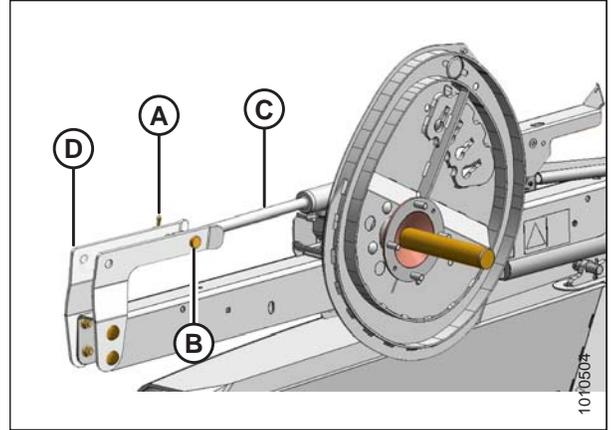


Figure 3.83: Aft Position – Right Arm

3.7.10 Reel Tine Pitch

The pick-up reel is designed to pick up flattened and severely lodged crops. It is not always necessary to increase the tine pitch (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. Refer to [3.6.2 Header Settings, page 42](#).

Reel Cam Settings

The following outlines the function of each cam setting and provides set-up guidelines for various crop conditions. The setting numbers are visible above the slots on the cam disc. Refer to [Adjusting Reel Cam, page 92](#) if adjustments are necessary.

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

- This setting will release crop close to the cutterbar and works best if the cutterbar is on the ground.
- Some crops will not be delivered past the cutterbar when the cutterbar is raised off the ground and the reel is pushed forward; therefore, set the initial reel speed approximately equal to the ground speed.

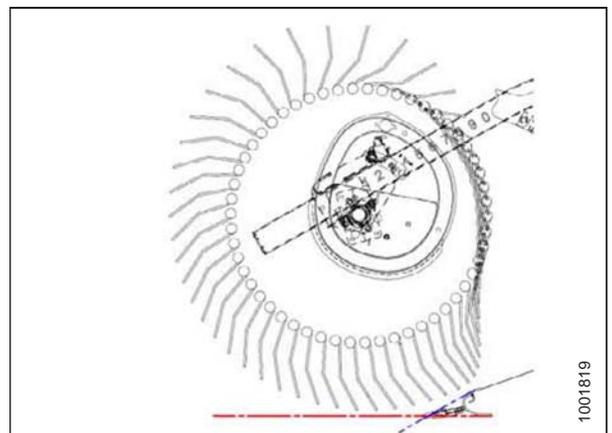


Figure 3.84: Finger Profile – Cam Position 1

OPERATION

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.

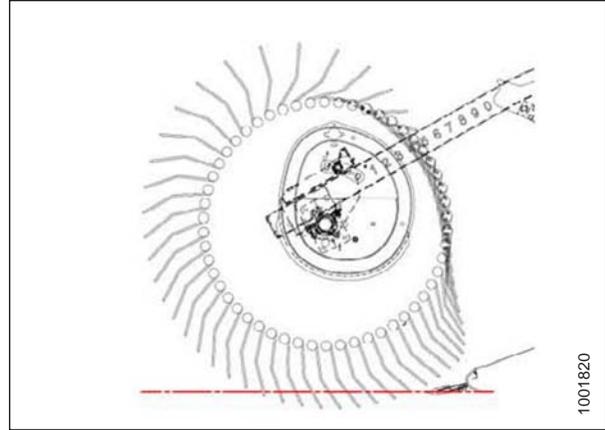


Figure 3.85: Finger Profile – Cam Position 2

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.

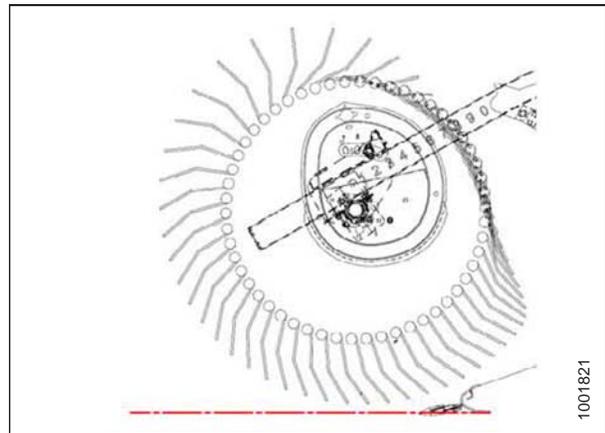


Figure 3.86: Finger Profile – Cam Position 3

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.

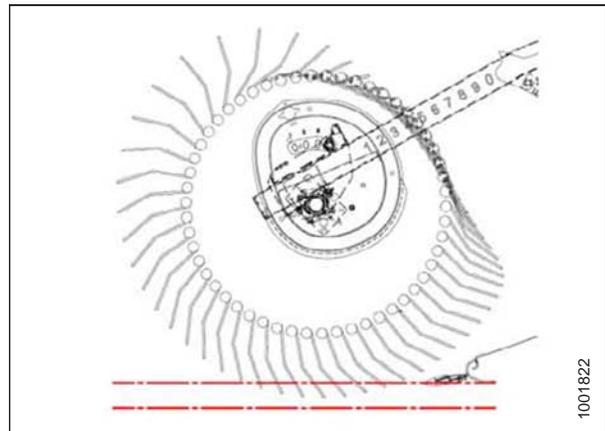


Figure 3.87: Finger Profile – Cam Position 4

OPERATION

Cam Position 4, Header Angle At Maximum, and Reel Fully Forward provides the maximum amount of reel reach below the cutterbar to pick up lodged crops.

- 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.

IMPORTANT:

The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft position. Refer to [5.13.1 Reel Clearance to Cutterbar, page 397](#).

Refer to [3.6.2 Header Settings, page 42](#) for recommended reel tine pitch in specific crops and crop conditions.

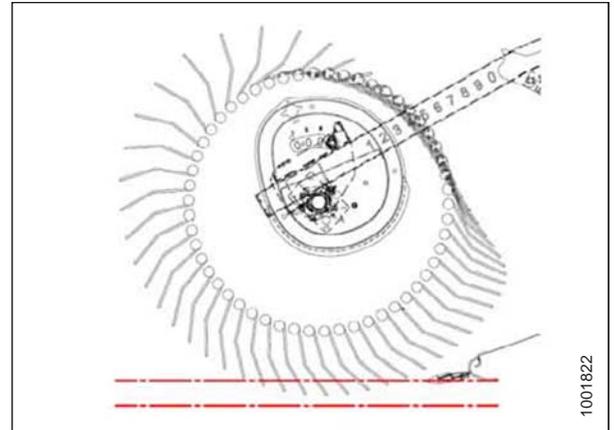


Figure 3.88: Finger Profile – Cam Position 4

Adjusting Reel Cam

DANGER

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

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

NOTE:

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

3. Turn latch pin (A) clockwise to engage and lock the cam disc.
4. Repeat Steps 1, page 92 to 3, page 92 for the opposite reel.

IMPORTANT:

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

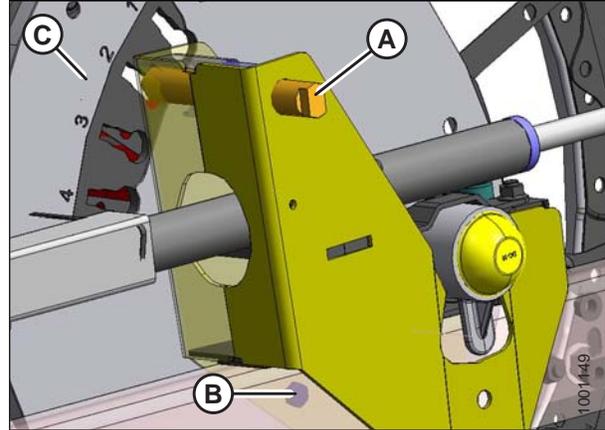


Figure 3.89: Cam Disc Positions

3.7.11 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

DANGER

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

1. Lower reel, raise header, stop engine, remove key, and engage header safety props. For instructions, refer to your combine operator's manual.
2. Open or remove endshields. Refer to [3.2.3 Endshields, page 33](#).

OPERATION

3. Lift safety lever (A).
4. Hold onto crop divider (B), push lever (C) to open latch, and lower crop divider.

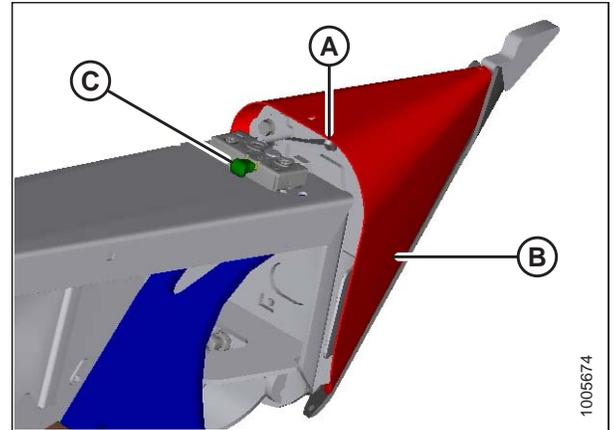


Figure 3.90: Crop Divider

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

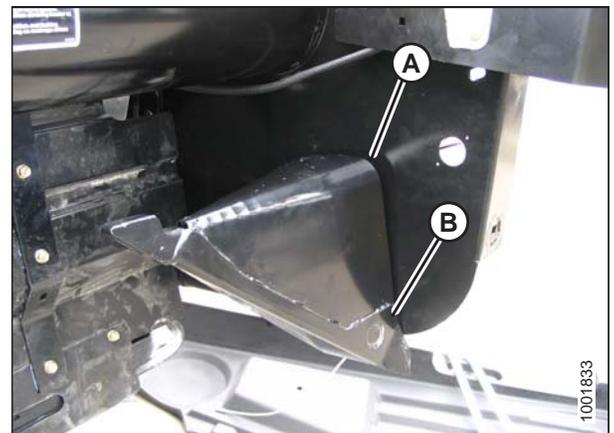


Figure 3.91: Stored Crop Divider

OPERATION

Removing Crop Dividers without Latch Option from Header

DANGER

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

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

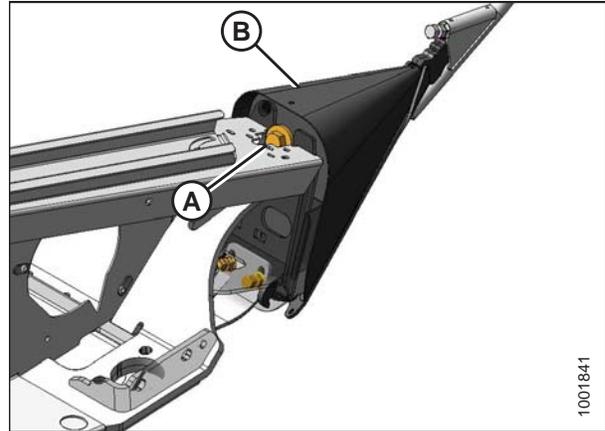


Figure 3.92: Crop Divider

OPERATION

Installing Crop Dividers with Latch Option onto Header

DANGER

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

1. Lower reel, raise header, stop engine, remove key, and engage safety props. For instructions, refer to your combine operator's manual.
2. Open or remove endshields. For instructions, refer to [3.2.3 Endshields, page 33](#).
3. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

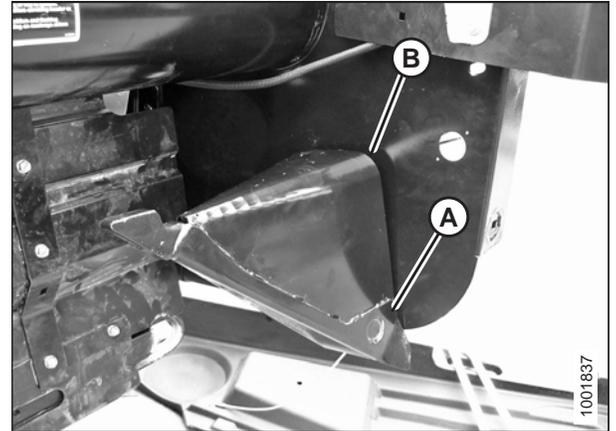


Figure 3.93: Stored Crop Divider

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

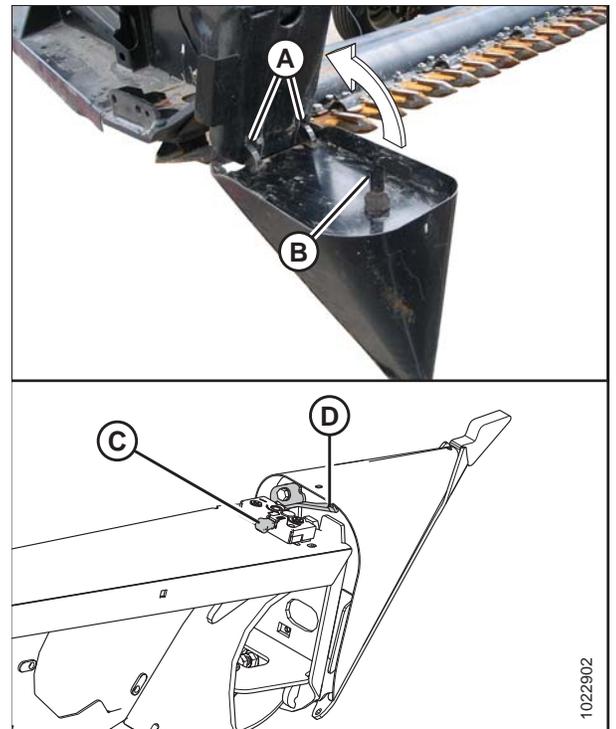


Figure 3.94: Crop Divider

OPERATION

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

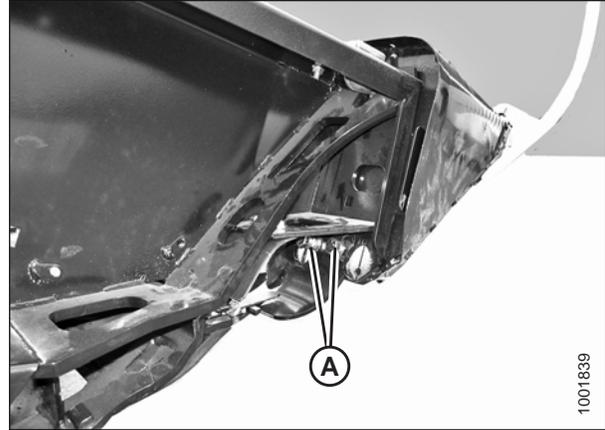


Figure 3.95: Crop Divider

Installing Crop Dividers without Latch Option onto Header

⚠ DANGER

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

1. Lower reel, raise header, stop engine, remove key, and engage safety props. For instructions, refer to your combine operator's manual.
2. Open or remove endshields. Refer to [3.2.3 Endshields, page 33](#).
3. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

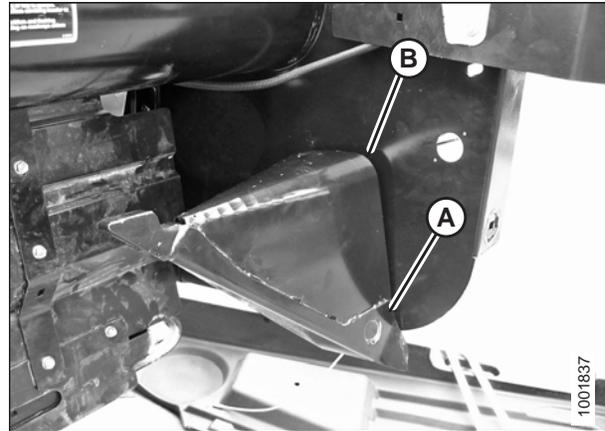


Figure 3.96: Stored Crop Divider

OPERATION

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

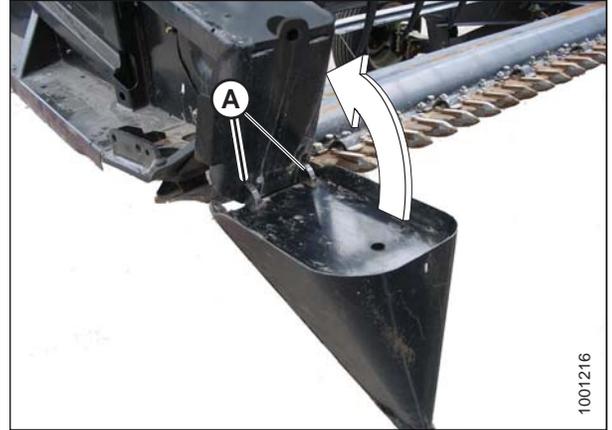


Figure 3.97: Crop Divider

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

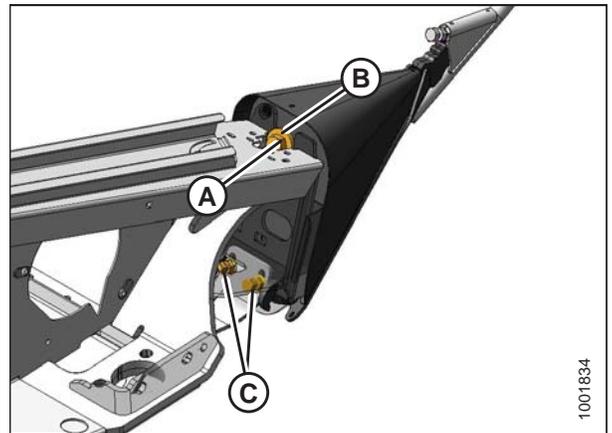


Figure 3.98: Crop Divider

3.7.12 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, but 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

OPERATION

Removing Crop Divider Rods

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

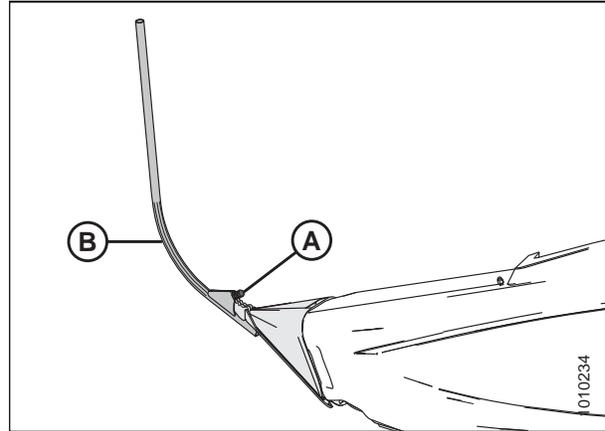


Figure 3.99: Crop Divider Rod

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

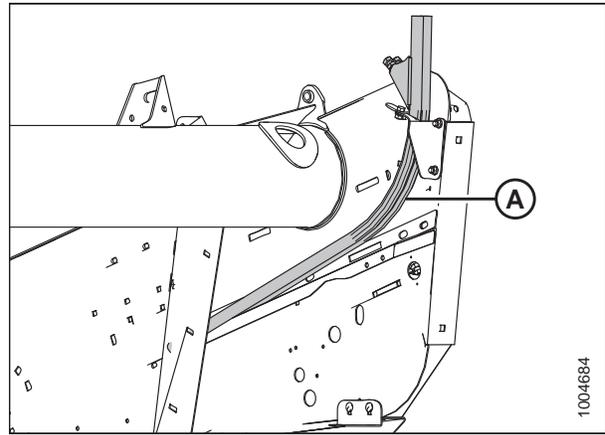


Figure 3.100: Right Endsheets

Installing Crop Divider Rods

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

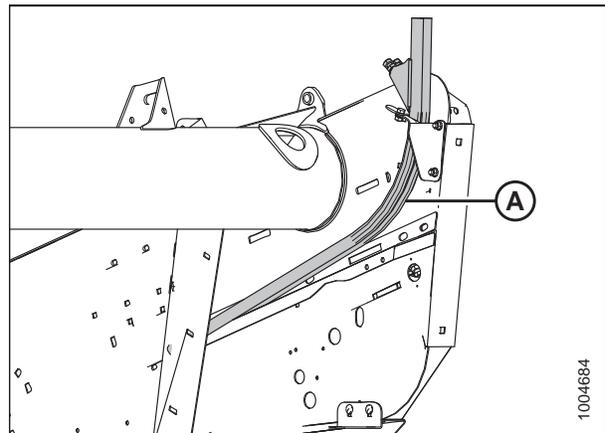


Figure 3.101: Right Endsheets

OPERATION

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.

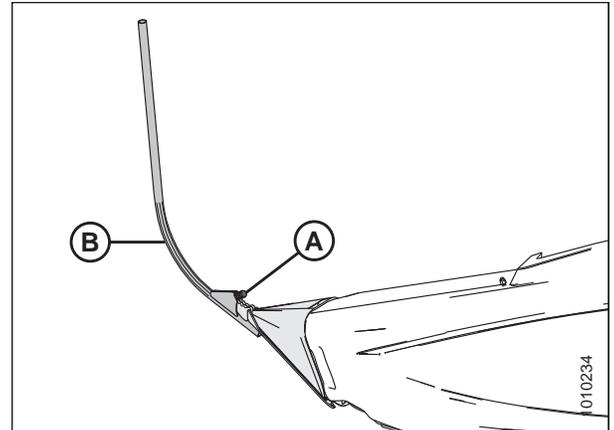


Figure 3.102: Divider Rod on Crop Divider

Rice Divider Rods

Optional rice divider rods provide improved performance in tall and tangled rice crops. Refer to [6.5.6 Rice Divider Rods, page 449](#).

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

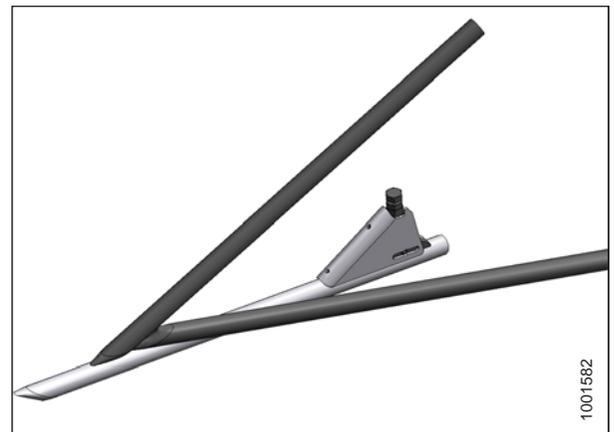


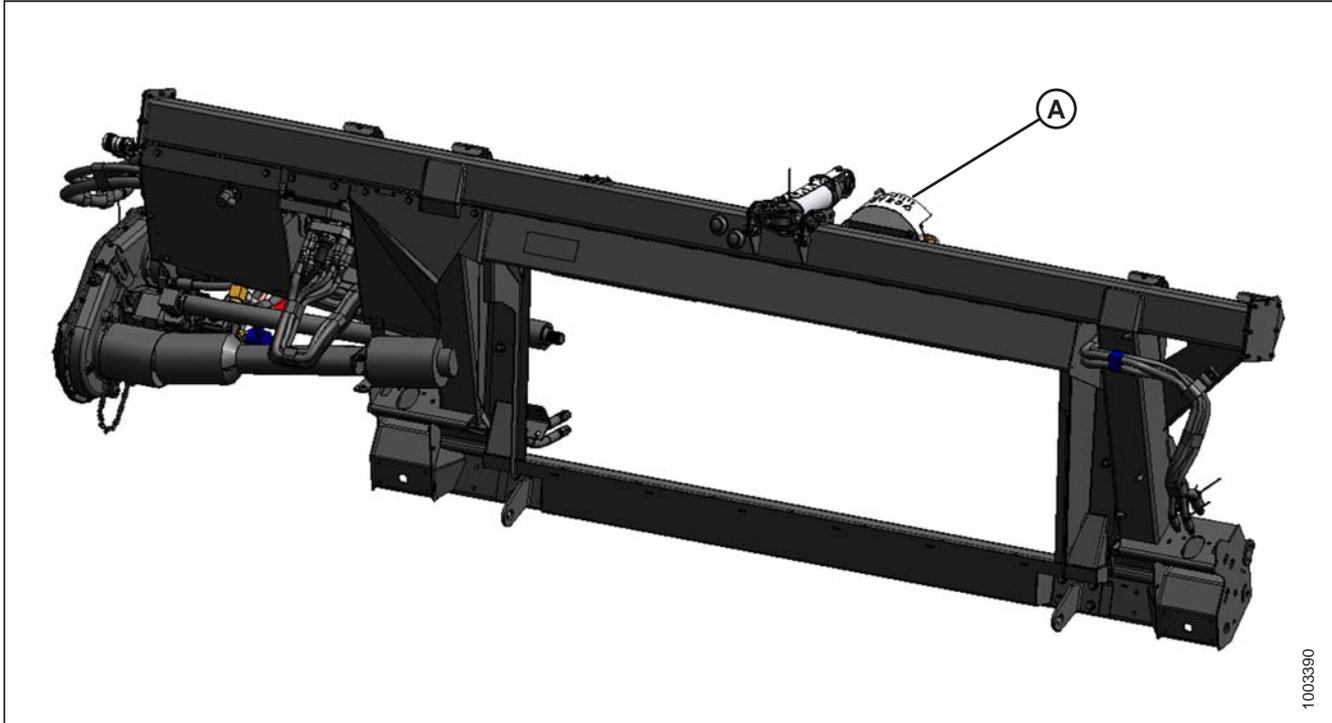
Figure 3.103: Divider Rod for Rice

3.8 Auto Header Height Control (AHHC)

MacDon's auto header height control (AHHC) feature works in conjunction with the AHHC option available on certain combine models.

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

Figure 3.104: CA25 Combine Adapter



1003390

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

1. Ensure that AHHC sensor's output voltage range is appropriate for combine. For more information, refer to [3.8.1 Sensor Output Voltage Range – Combine Requirements, page 101](#).
2. Prepare combine to use AHHC feature (applies only to some combine models—refer to instructions for your combine).
3. Calibrate AHHC system so that combine can correctly interpret data from height sensor on combine adapter (refer to instructions for your combine).

NOTE:

Once calibration is complete, you are ready to use AHHC feature in field. Individual combine settings can improve AHHC performance (refer to your combine instruction manual).

NOTE:

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

OPERATION

Refer to the following instructions for your specific combine model:

- [3.8.2 Case IH 2300/2500 and 5088/6088/7088 Combines, page 105](#)
- [3.8.3 Case IH 5130/6130/7130 and 5140/6140/7140 Midrange Combines, page 109](#)
- [3.8.4 Case IH 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240 Combines, page 116](#)
- [3.8.5 John Deere 50 Series Combines, page 128](#)
- [3.8.6 John Deere 60 Series Combines, page 136](#)
- [3.8.7 John Deere 70 Series Combines, page 142](#)
- [3.8.8 John Deere S and T Series Combines, page 149](#)
- [3.8.9 John Deere S7 Series Combines, page 161](#)
- [3.8.10 New Holland Combines CX/CR Series \(CR Series – Model Year 2014 and Earlier\), page 172](#)
- [3.8.11 New Holland Combines \(CR Series – Model Year 2015 and Later\), page 182](#)

3.8.1 Sensor Output Voltage Range – Combine Requirements

The auto header height control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly.

Table 3.12 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
<p>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. Refer to Manually Checking Voltage Range, page 102.</p>			

OPERATION

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

IMPORTANT:

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

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

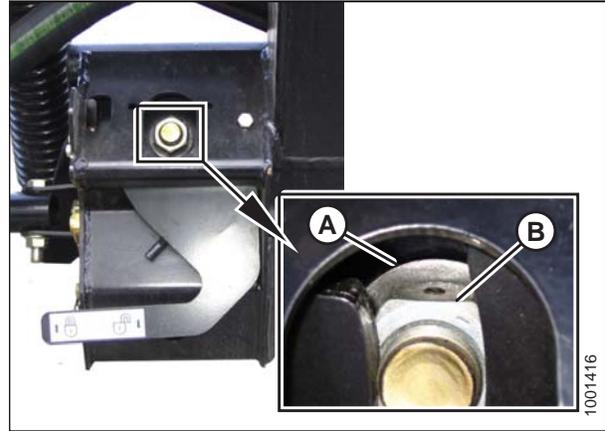


Figure 3.105: Float Lock

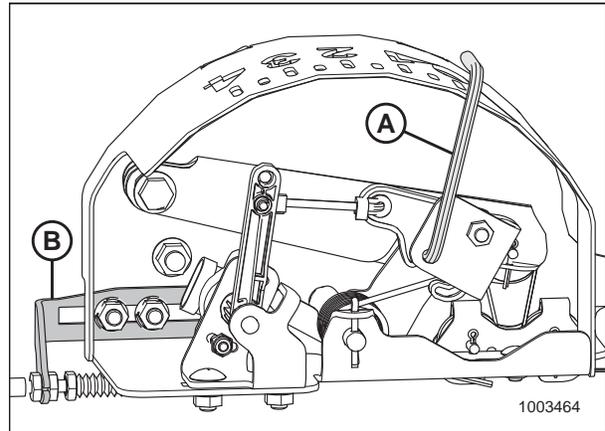


Figure 3.106: Float Indicator Box5 Volt AHHC Sensor Assembly Shown

OPERATION

4. Use a voltmeter (A) to measure voltage between ground (Pin 2) and signal (Pin 3) wires at AHHC sensor in float indicator box. Ensure it is at the high voltage limit for the combine. Refer to Table 3.12, page 101.

NOTE:

The harness connector must be plugged into the sensor.

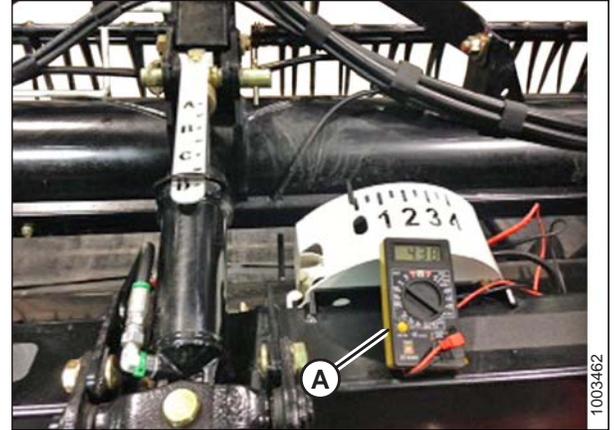


Figure 3.107: Measuring Voltage at Float Indicator Box

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

NOTE:

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

6. Use a voltmeter (A) to measure voltage between ground and signal wires at AHHC sensor in float indicator box. It should be at low voltage limit for combine. Refer to Table 3.12, page 101.

NOTE:

The harness connector must be plugged into sensor.

7. Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits, or if range between low and high limits is insufficient. For sensor voltage limits, refer to Table 3.12, page 101.

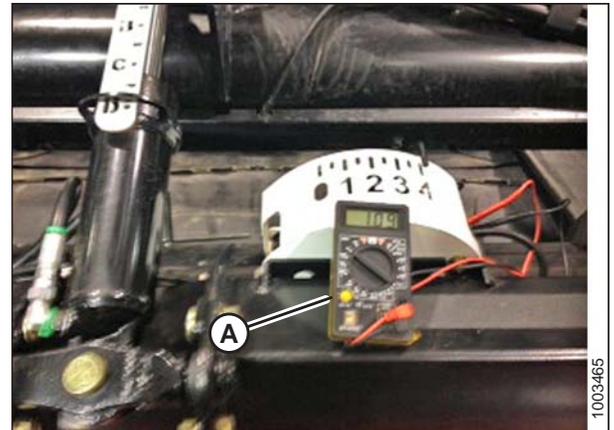


Figure 3.108: Measuring Voltage at Float Indicator Box

OPERATION

Adjusting Voltage Limits

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 high voltage limit:
 - a. Extend guard angle fully; header angle indicator should be at **D**.
 - b. Position header 152–254 mm (6–10 in.) above ground; float indicator should be at 0.
 - c. Loosen sensor mounting bolts (A).
 - d. Slide sensor support (B) to right to increase high voltage limit or to left to decrease it.
 - e. Tighten sensor mounting bolts (A).

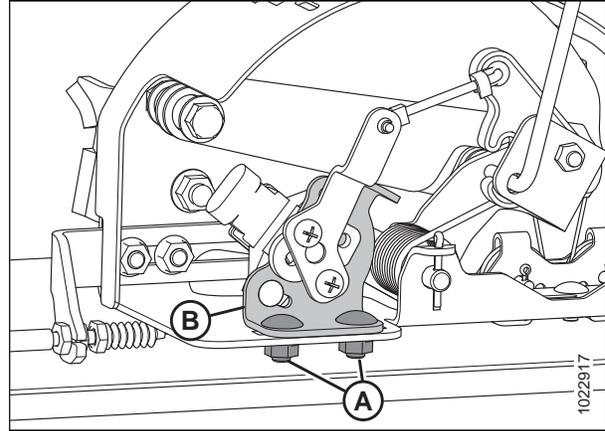


Figure 3.109: AHHC Sensor Assembly for Use with CLAAS Combines

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

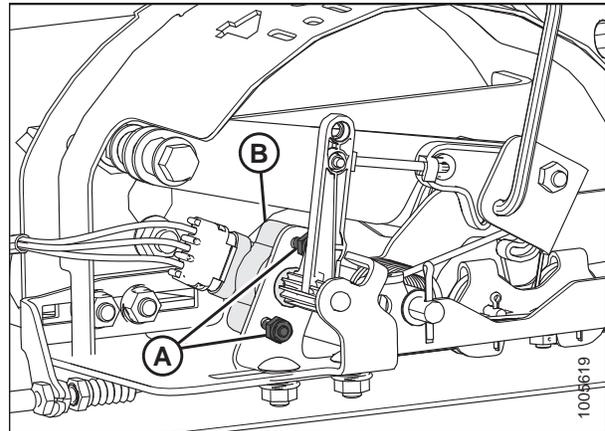


Figure 3.110: Most Common 5 Volt AHHC Sensor Assembly

OPERATION

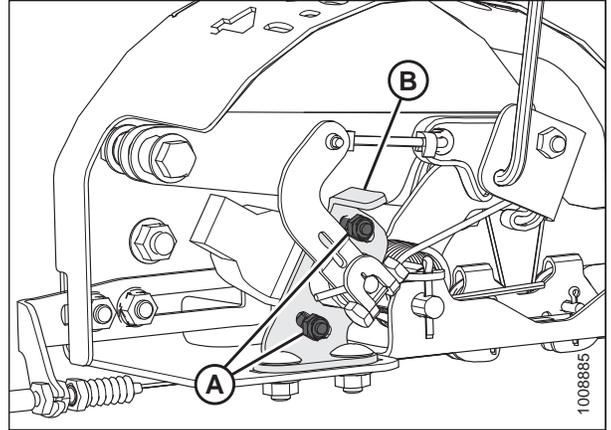


Figure 3.111: 10 Volt AHHC Sensor Assembly for Use with Some New Holland Combines

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

Engaging Auto Header Height Control (Case IH 2300)

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

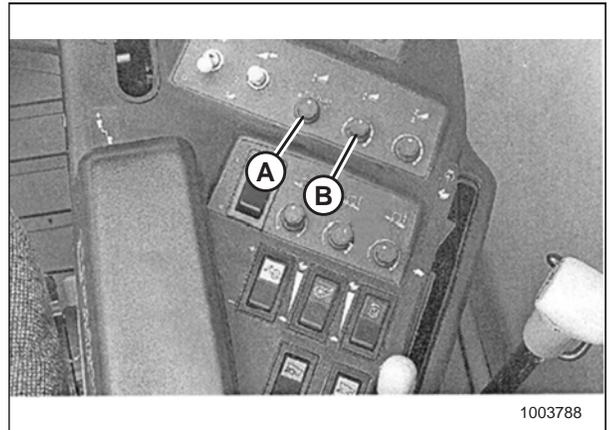


Figure 3.112: Combine Controls

OPERATION

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 desired height over ground contours.



Figure 3.113: Combine Controls

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

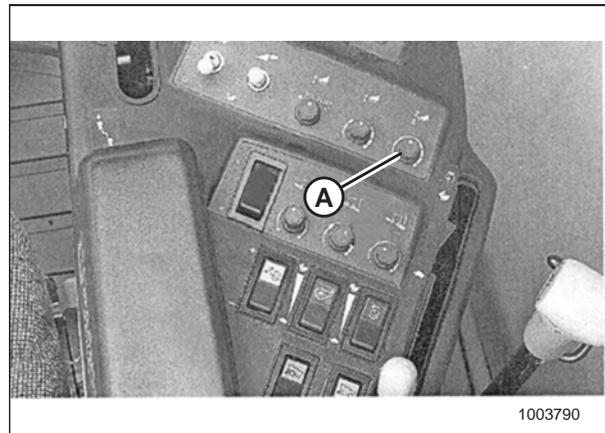


Figure 3.114: Combine Controls

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

For best performance of auto header height control (AHHC) system, perform ground calibration with center-link adjusted as long as possible. When calibration is complete, adjust center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 65](#).

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 calibrate the AHHC system, follow these steps:

OPERATION

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

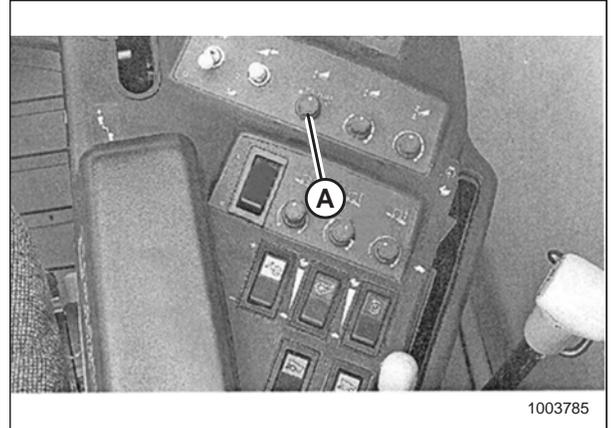


Figure 3.115: Right Console

4. Press header lower switch (A) on joystick lever until adapter and header are fully lowered. You may need to hold switch for several seconds.
5. Press header raise switch (A) on joystick lever. The header should stop at about halfway point. Continue holding header raise switch, and header will rise until feeder house reaches its upper limit. The AHHC system is now calibrated.

NOTE:

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

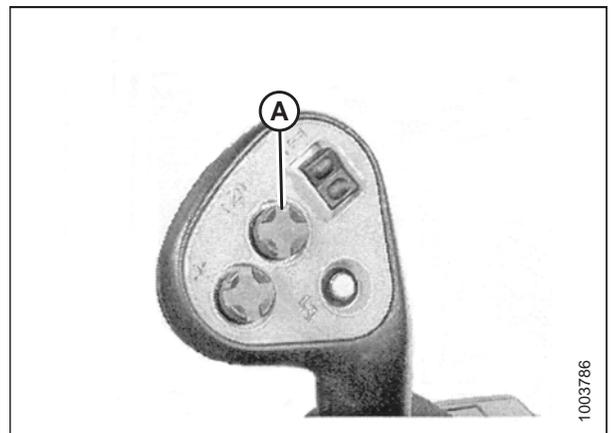


Figure 3.116: Joystick Lever (Case IH 2300/2500)

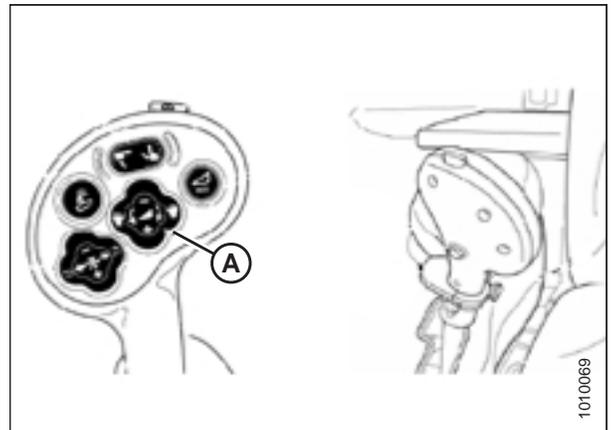


Figure 3.117: Joystick Lever (Case IH 5088/6088/7088)

OPERATION

NOTE:

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

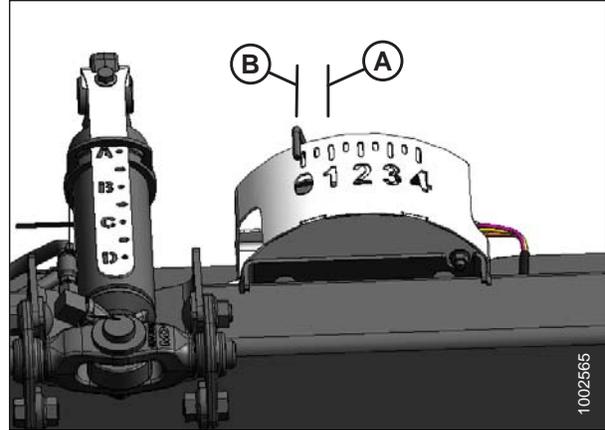


Figure 3.118: Float Indicator Box

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 auto header height control (AHHC) reacts and raises or lowers feeder house. When sensitivity is set to maximum, only small changes in ground height are needed to cause feeder house to raise or lower. When sensitivity is set to minimum, large changes in ground height are needed to cause feeder house to raise or lower.

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. Use HEADER SETTINGS key (A) to display HEADER SENSITIVITY CHANGE page.
2. Use UP (B) or DOWN (C) keys to adjust 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 CANCEL key to return to original settings.

3. Use HEADER SETTINGS key (A) to highlight next changeable item.
4. Use ENTER key (D) to save changes and return to monitor page. If there are no changes, screen will return to monitor page after 5 seconds.



Figure 3.119: Combine Controls

OPERATION

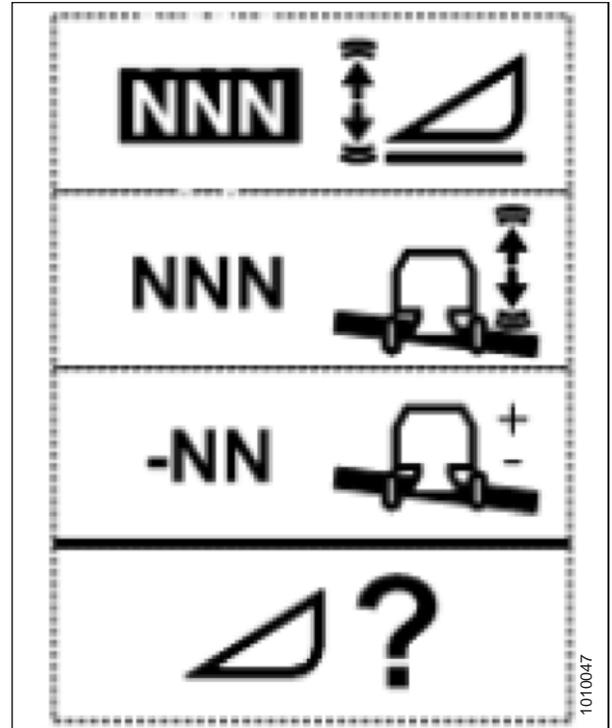


Figure 3.120: Height Sensitivity Change Page

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

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

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

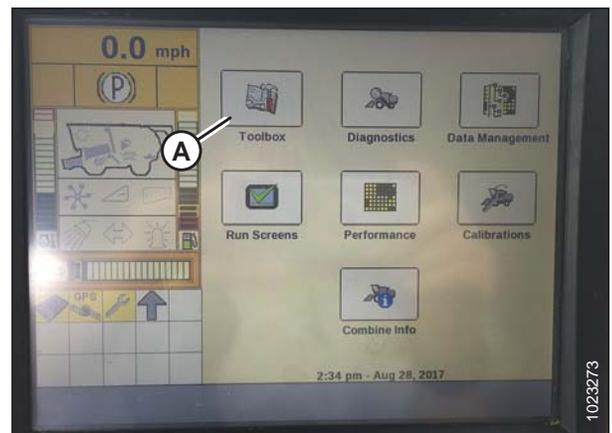


Figure 3.121: Case IH Combine Display

OPERATION

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



Figure 3.122: Case IH Combine Display

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

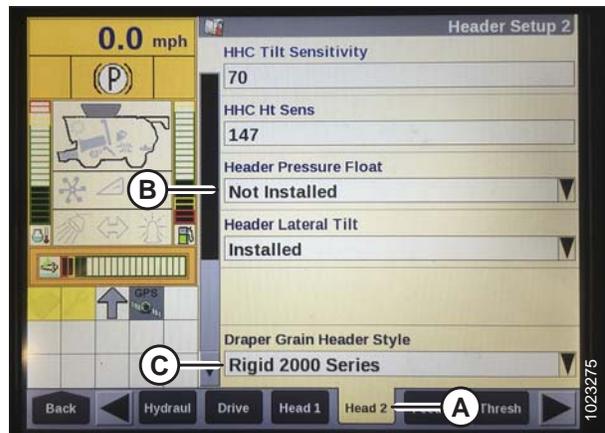


Figure 3.123: Case IH Combine Display

7. From the 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

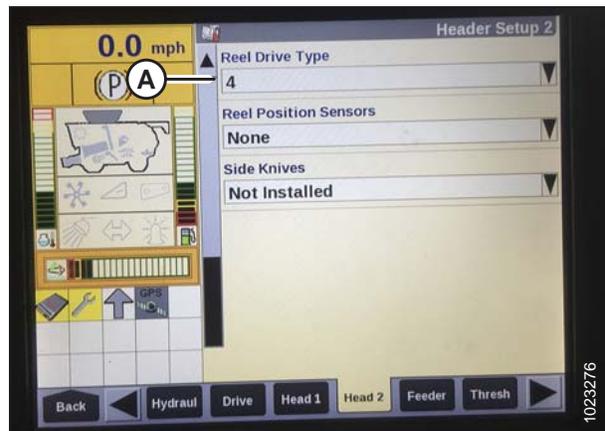


Figure 3.124: Case IH Combine Display

OPERATION

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

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

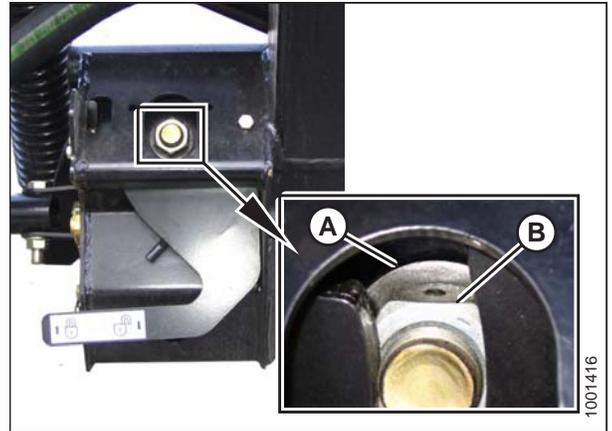


Figure 3.125: Float Lock

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

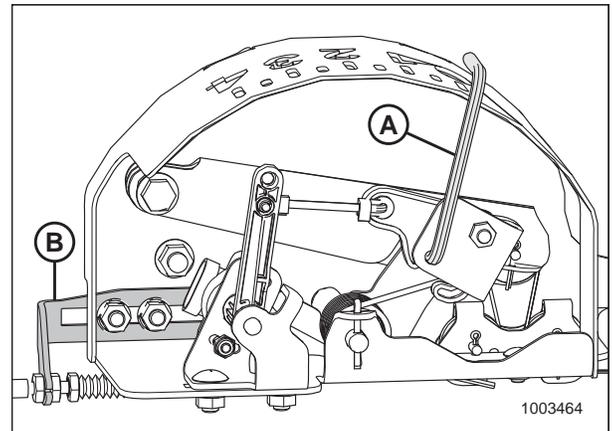


Figure 3.126: Float Indicator Box

OPERATION

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

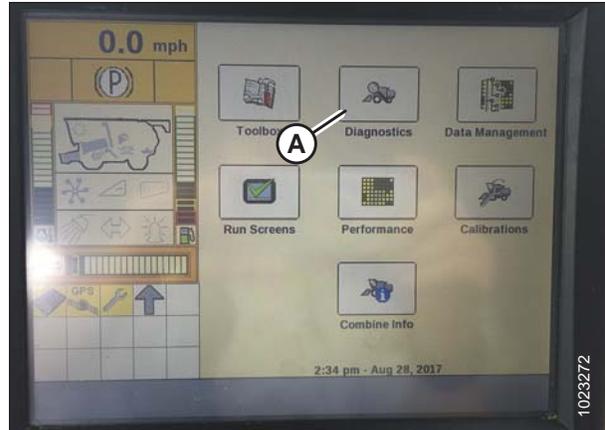


Figure 3.127: Case IH Combine Display

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

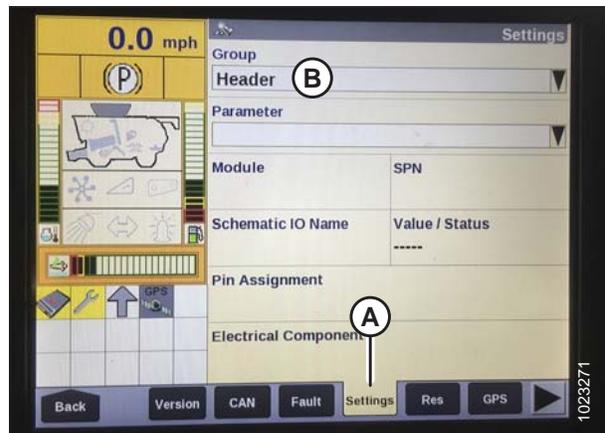


Figure 3.128: Case IH Combine Display

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

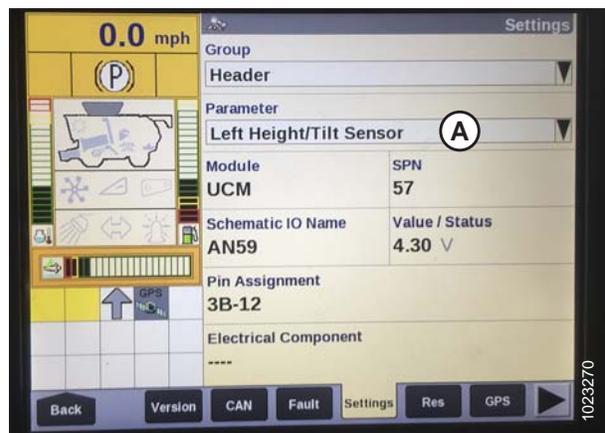


Figure 3.129: Case IH Combine Display

OPERATION

- The SETTINGS page updates to display the voltage in the 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.
- Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to [Table 3.12, page 101](#)).



Figure 3.130: Case IH Combine Display

Calibrating Auto Header Height Control (Case IH 5130/6130/7130, 5140/6140/7140)

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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to [Calibrating Auto Header Height Control \(Case Combines with Version 28.00 or Higher Software\), page 124](#).

NOTE:

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

- Ensure center-link is set to **D**.
- Ensure all header and adapter electrical and hydraulic connections are made.
- Lower the combine feeder house all the way down (the feeder house will stop moving).
- Hold the DOWN button for 2 seconds.
- Push the RAISE button and hold it until the feeder house travels all the way up. It will stop 61 cm (2 feet) above ground for 5 seconds, then it will resume lift. This is an indication that calibration is successful.

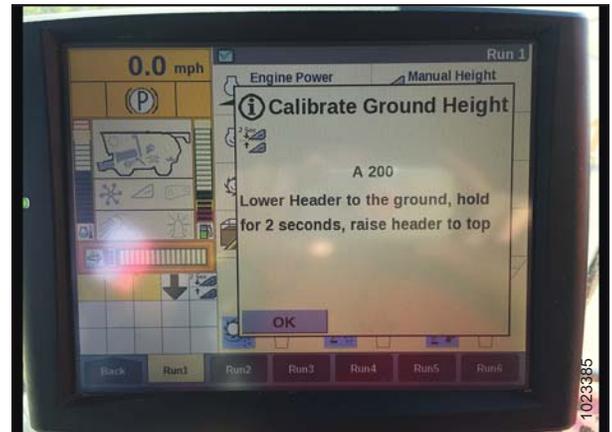


Figure 3.131: Calibrate Auto Header Height

OPERATION

Setting Preset Cutting Height (Case 5130/6130/7130, 5140/6140/7140)

To set preset cutting height, follow these steps:

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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



Figure 3.132: Case Combine Console

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



Figure 3.133: Case Combine Console

OPERATION

Up and down arrows should now appear in the 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 3.134: Case Combine Display – Run 1 Page

- 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 3.135: Case Combine Joystick

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



Figure 3.136: Case Combine Display – Header Setup Page

OPERATION

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



Figure 3.137: Case Combine Console

NOTE:

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

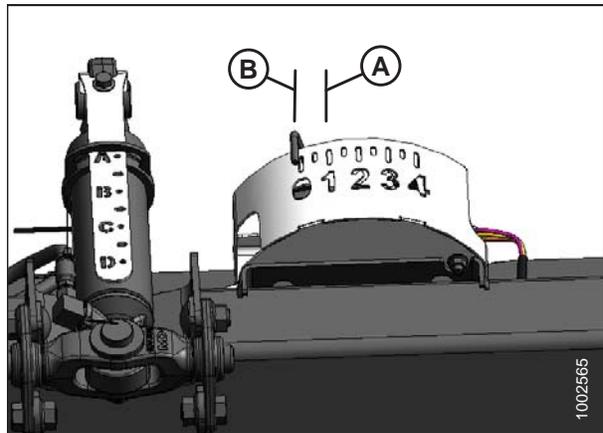


Figure 3.138: Float Indicator Box

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

Checking Voltage Range from Combine Cab (Case 8010)

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

- Position header 150 mm (6 in.) above ground, and unlock CA25 float.

OPERATION

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

NOTE:

If header is on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHHC) system.

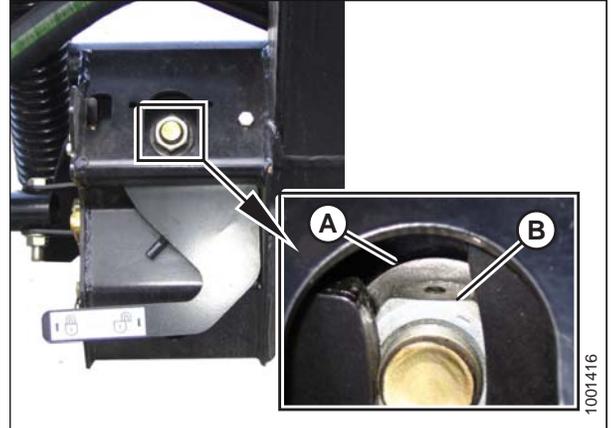


Figure 3.139: Float Lock

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

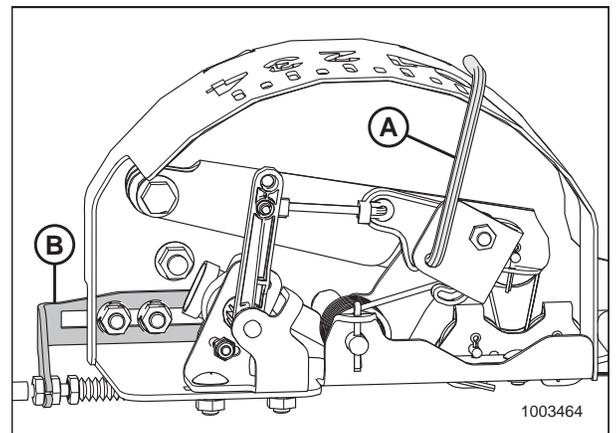


Figure 3.140: Float Indicator Box

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

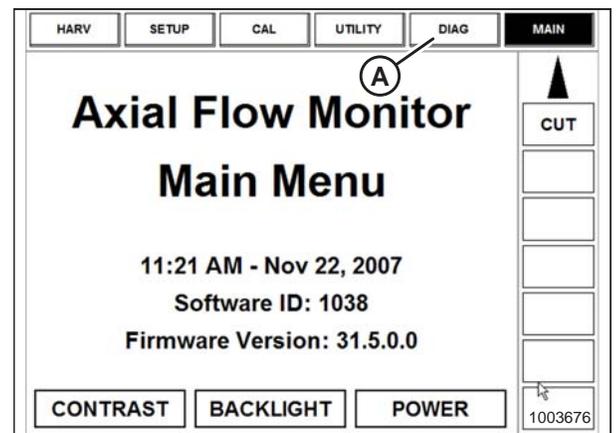


Figure 3.141: Case 8010 Combine Display

OPERATION

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

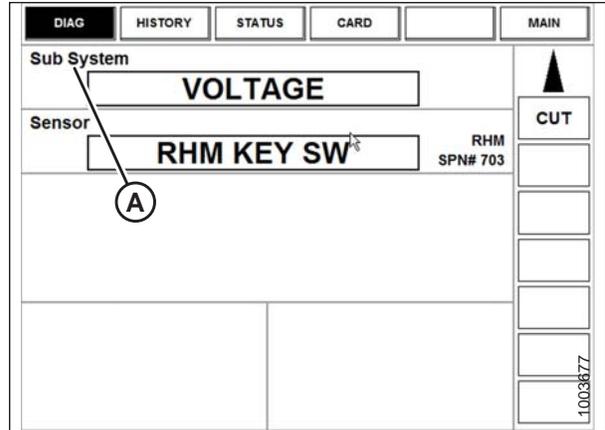


Figure 3.142: Case 8010 Combine Display

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

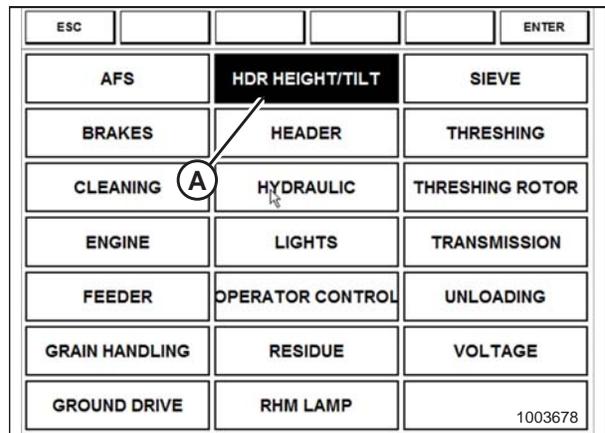


Figure 3.143: Case 8010 Combine Display

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

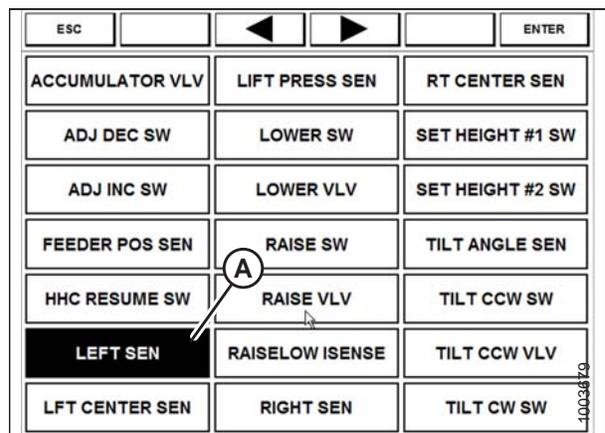


Figure 3.144: Case 8010 Combine Display

OPERATION

- Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits, or if range between low and high limits is insufficient (refer to [Table 3.12, page 101](#)).



Figure 3.145: Case 8010 Combine Display

Setting Header Controls (Case 8010)

The following procedure applies to Case 8010 combines without a shift button on the GSL.

The reel fore/aft switches (A) also control header fore/aft tilt if 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. Proceed as follows:

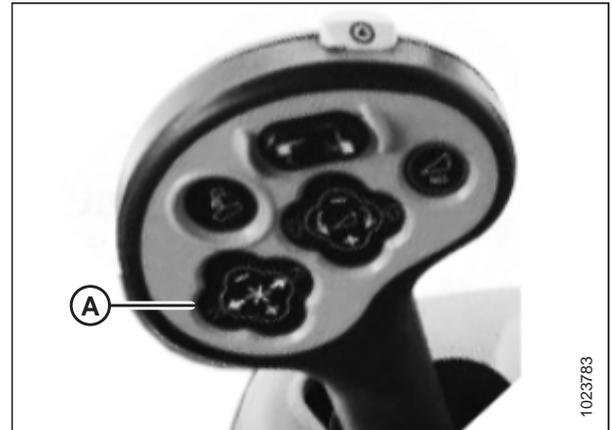


Figure 3.146: Case Combine Controls

- To be able to swap between reel fore/aft controls and 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.

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

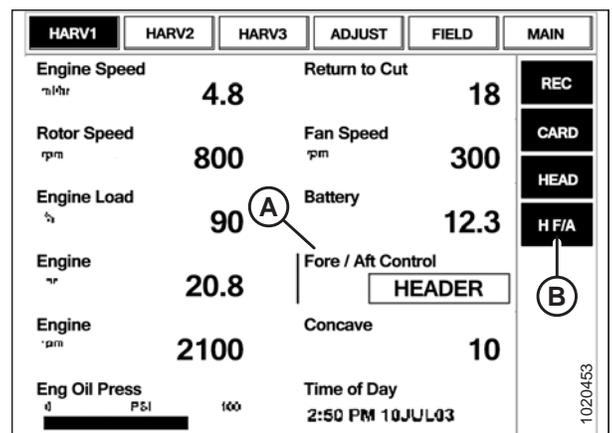


Figure 3.147: Case Combine Display

OPERATION

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

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

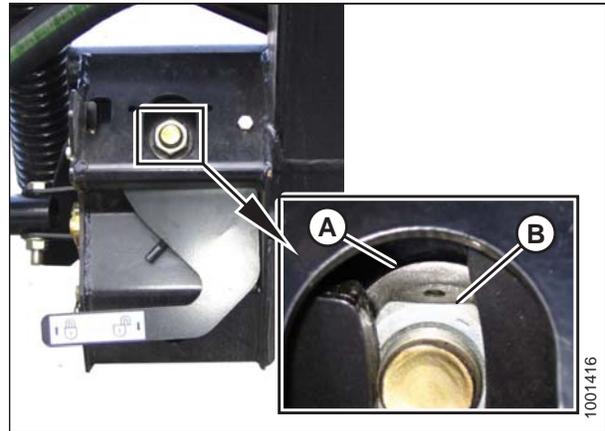


Figure 3.148: Float Lock

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

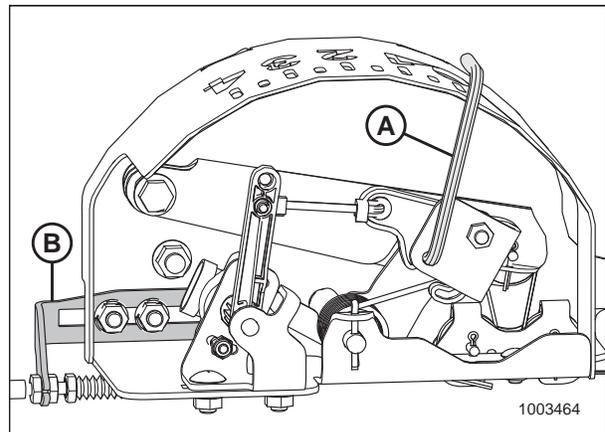


Figure 3.149: Float Indicator Box

OPERATION

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

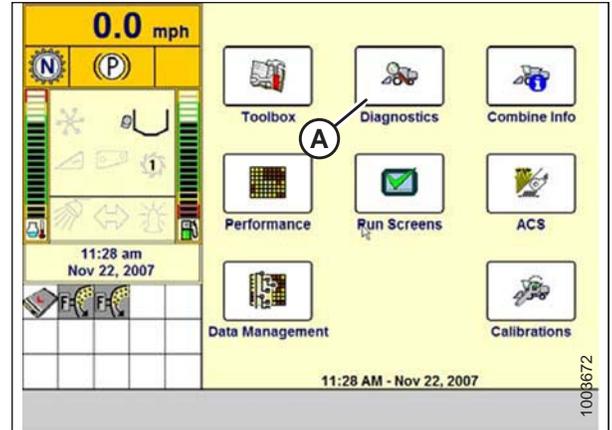


Figure 3.150: Case IH Combine Display

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

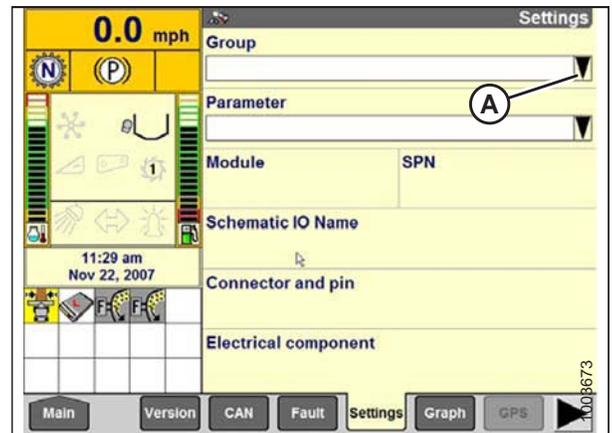


Figure 3.151: Case IH Combine Display

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

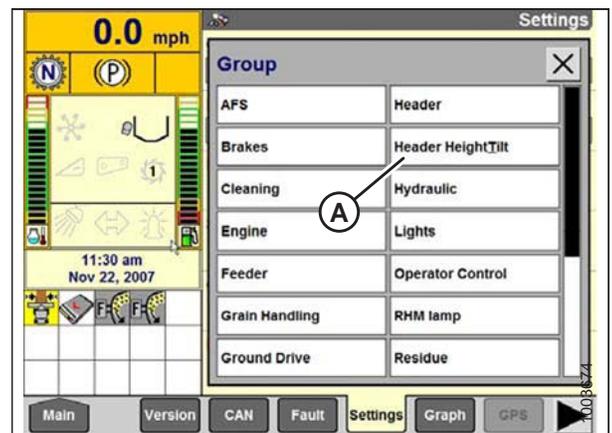


Figure 3.152: Case IH Combine Display

OPERATION

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

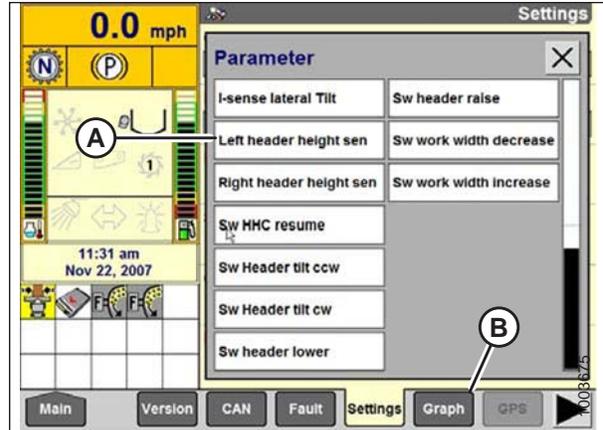


Figure 3.153: Case IH Combine Display

10. Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to [Table 3.12, page 101](#)).

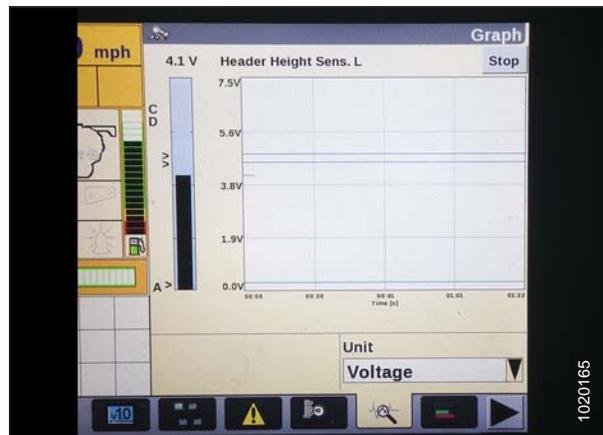


Figure 3.154: Case IH Combine Display

Calibrating Auto Header Height Control (Case IH 7010/8010; 7120/8120/9120; 7230/8230/9230; 7240/8240/9240)

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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to [Calibrating Auto Header Height Control \(Case Combines with Version 28.00 or Higher Software\), page 124](#).

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 center-link is set to **D**.
2. Ensure all header and adapter electrical and hydraulic connections are made.
3. Select TOOLBOX on MAIN page, and then select HEADER.

OPERATION

4. Set appropriate HEADER STYLE.



Figure 3.155: Case IH Combine Display

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

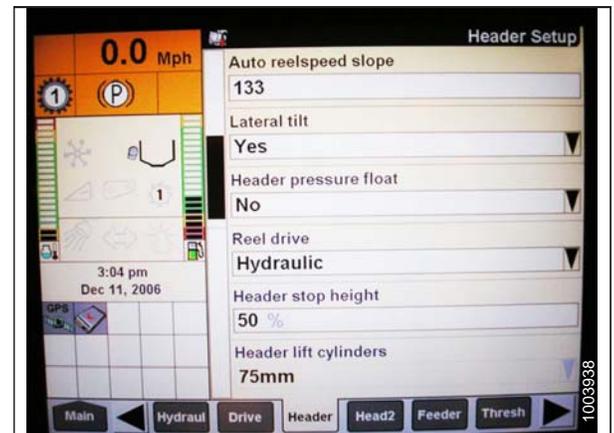


Figure 3.156: Case IH Combine Display

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

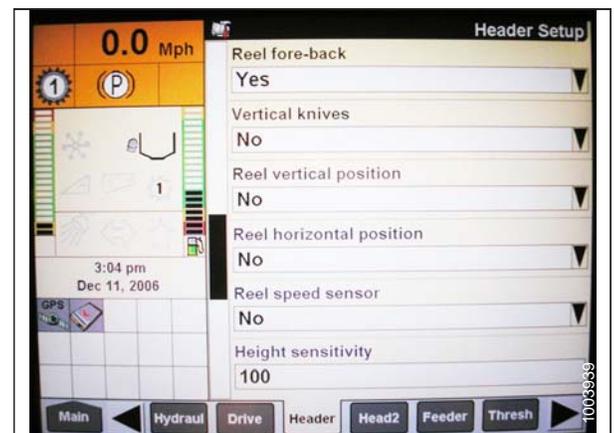


Figure 3.157: Case IH Combine Display

OPERATION

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

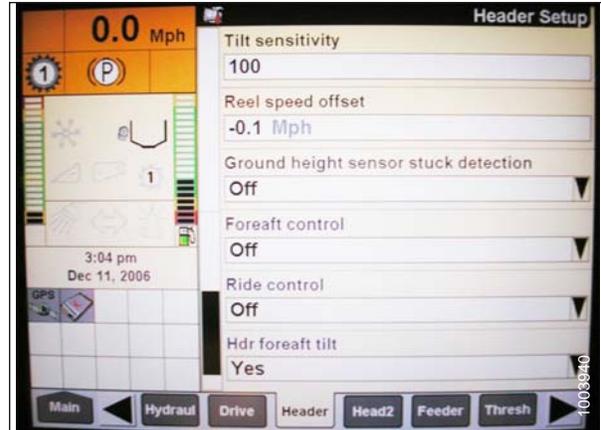


Figure 3.158: Case IH Combine Display

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

NOTE:

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

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

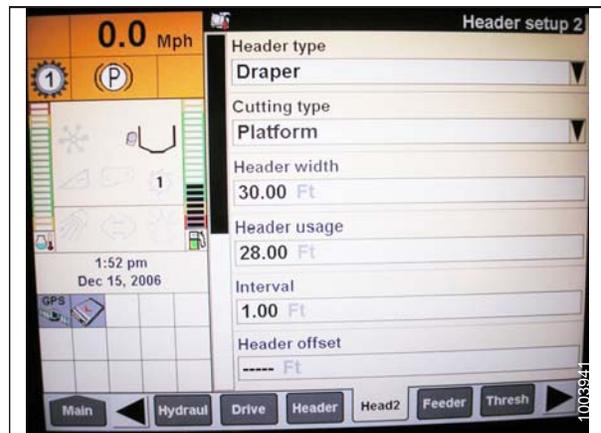


Figure 3.159: Case IH Combine Display

Calibrating Auto Header Height Control (Case Combines with Version 28.00 or Higher Software)

For best performance of the auto header height control (AHC), perform these procedures with center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to [3.7.3 Header Angle, page 65](#).

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 center-link is set to **D**.

OPERATION

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

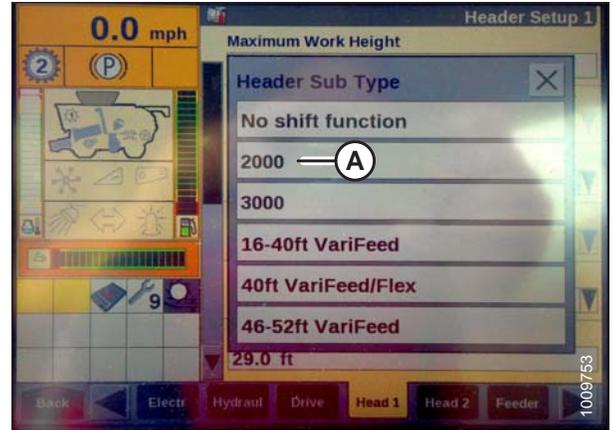


Figure 3.160: Case IH Combine Display

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

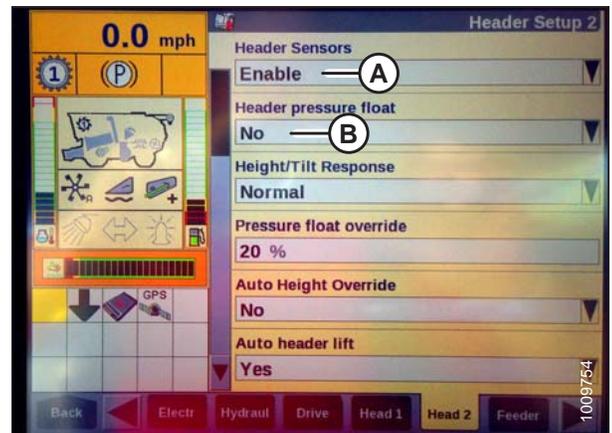


Figure 3.161: Case IH Combine Display

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

NOTE:

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



Figure 3.162: Case IH Combine Display

OPERATION

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

NOTE:

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

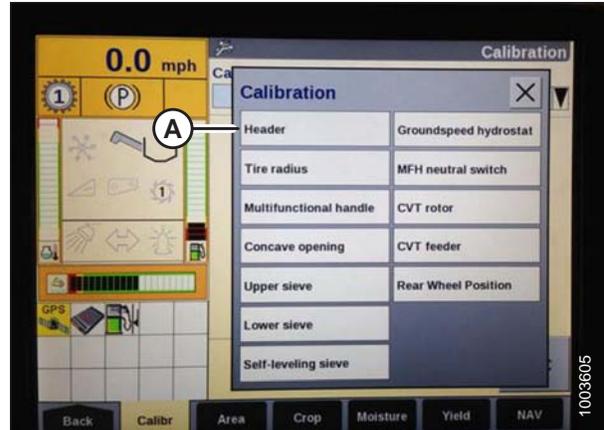


Figure 3.163: Case IH Combine Display

11. Follow calibration steps in order in which they appear in dialog box. As you proceed through calibration process, display will automatically update to show next step.

NOTE:

Pressing ESC key during any of steps or letting system sit idle for more than 3 minutes will cause calibration procedure to stop.

NOTE:

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



Figure 3.164: Case IH Combine Display

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

NOTE:

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

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

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

To set preset cutting height, follow these steps:

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

OPERATION

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

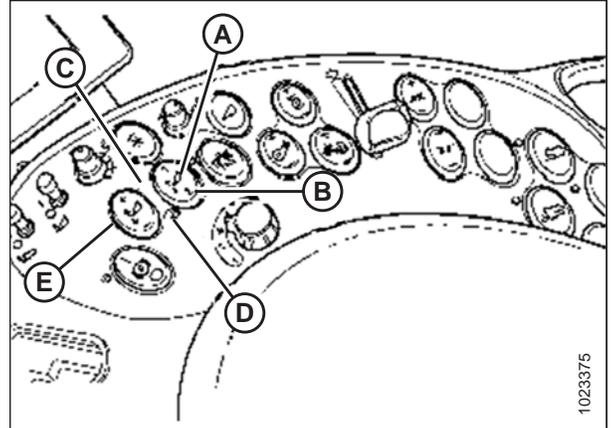


Figure 3.165: Case Combine Controls

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

NOTE:

You can fine adjust these set points by using FINE ADJUST switch ([E] in figure 3.165, page 127).

NOTE:

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



Figure 3.166: Case Combine Controls

NOTE:

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

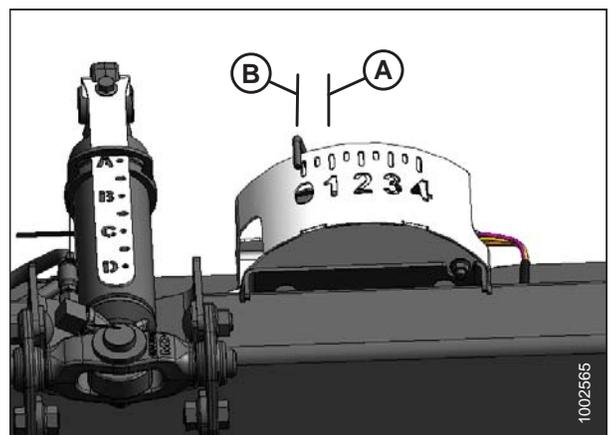


Figure 3.167: Float Indicator Box

OPERATION

3.8.5 John Deere 50 Series Combines

Checking Voltage Range from Combine Cab

Before checking voltage range, follow these steps:

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

NOTE:

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

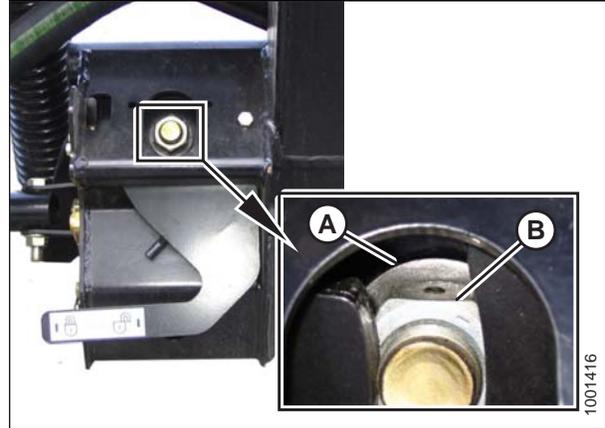


Figure 3.168: Float Lock

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

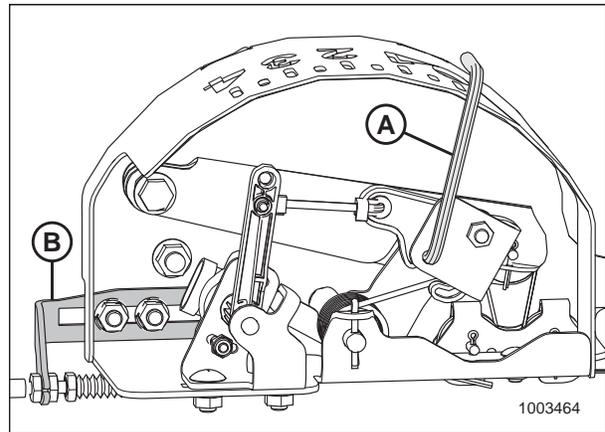
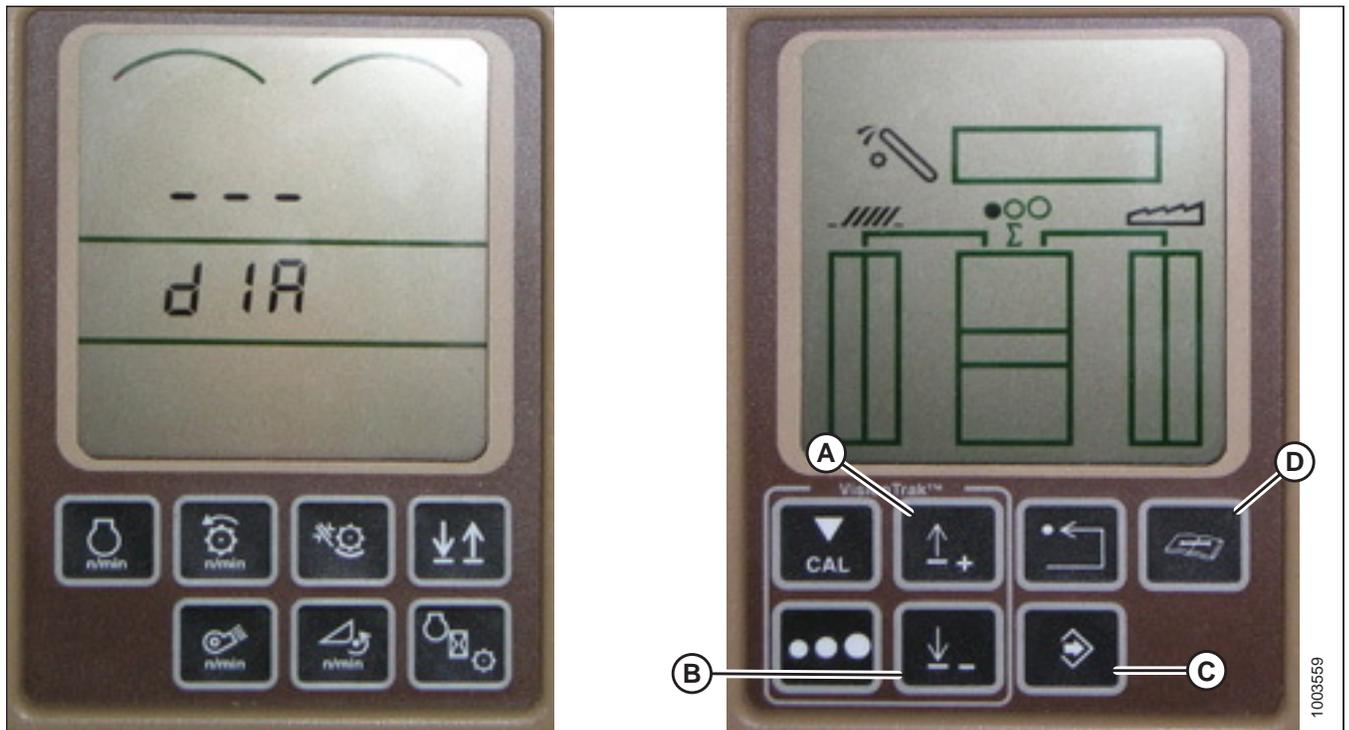


Figure 3.169: Float Indicator Box with Auto Header Height Sensor

OPERATION

Figure 3.170: John Deere Combine Display



4. Press DIAGNOSTIC button (D) on monitor—**d1A** appears on monitor.
 5. Press UP button (A) until **EO1** appears on monitor—this is header adjustment.
 6. Press ENTER button (C).
 7. Press UP (A) or DOWN button (B) until **24** is displayed on top portion of monitor—this is voltage reading for sensor.
 8. Ensure header float is unlocked.
 9. Start combine, and fully lower feeder house to ground. The adapter should be completely separated from header.
- NOTE:**
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.
10. Check sensor reading on monitor. It should be at or above **0.7 V**.
 11. Raise header so it is just off ground, and recheck sensor reading.
 12. Raise header so it is just off ground and check sensor reading again. It should be below **4.3 V**.
 13. If sensor voltage is not within low and high limits (**0.5–4.3 V**), or if range between low and high limits is less than **3.0 V**, you need to make adjustments according to [Adjusting Voltage Limits, page 104](#).

OPERATION

Calibrating Auto Header Height

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

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

NOTE:

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

1. Rest header on down stops, and unlock adapter float.
2. Start combine.
3. Press DIAGNOSTIC button (A) on monitor—**dIA** appears on monitor.

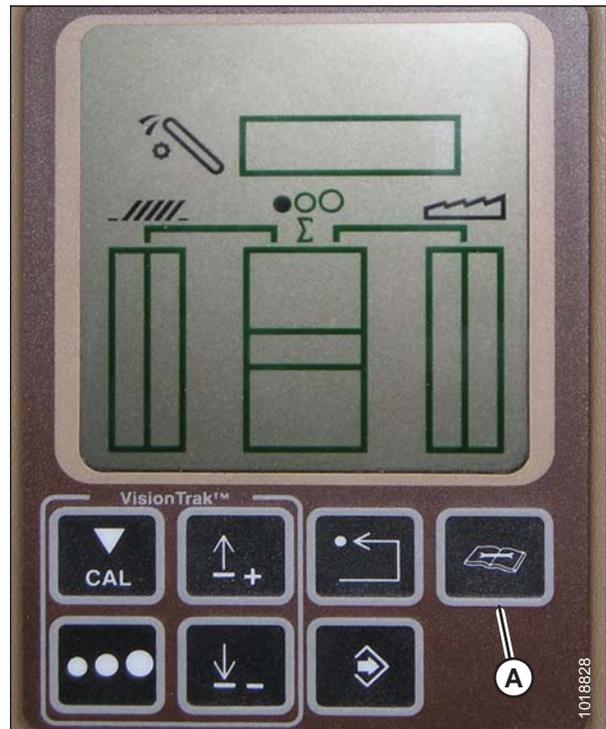


Figure 3.171: Combine Display

OPERATION

4. Press CAL button (A)—**dIA-CAL** appears on the monitor.



Figure 3.172: Combine Display

5. Press UP or DOWN buttons until **hdr** appears on the monitor.
6. Press ENTER button—**hdr H-dn** appears on the monitor.
7. Fully lower feeder house to ground.

NOTE:

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

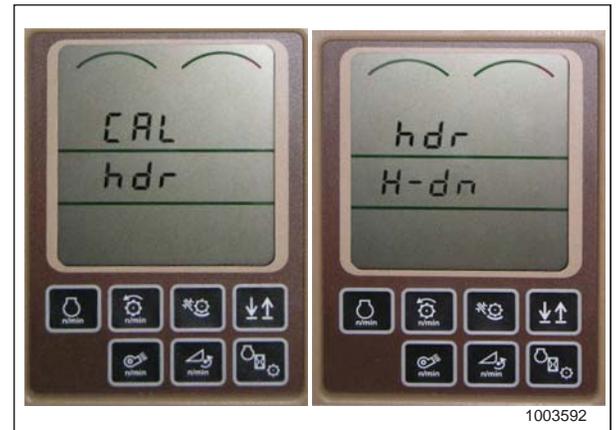


Figure 3.173: Combine Display

OPERATION

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

NOTE:

If an error code appears on screen, sensor is not in correct working range. Refer to [Adjusting Voltage Limits, page 104](#) to check and adjust range.

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

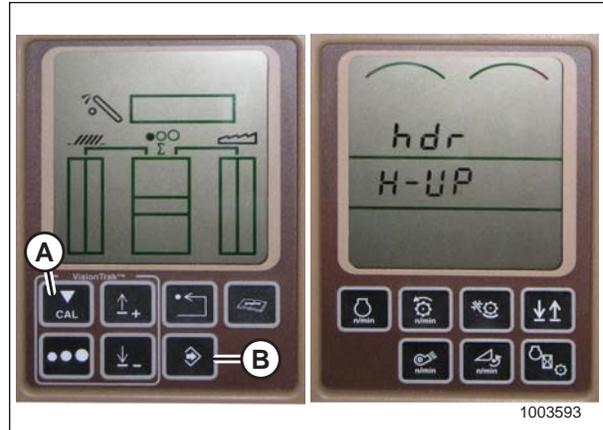


Figure 3.174: Combine Display

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 sensitivity of auto header height, follow these steps:

- Press DIAGNOSTIC button (A) on monitor. **dIA** appears on the monitor.
- Press UP button (B) until **EO1** appears on monitor, and press ENTER (D). This is header adjustment.
- Press UP (B) or DOWN (C) button until **112** is displayed on monitor. This is your sensitivity setting.

NOTE:

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

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

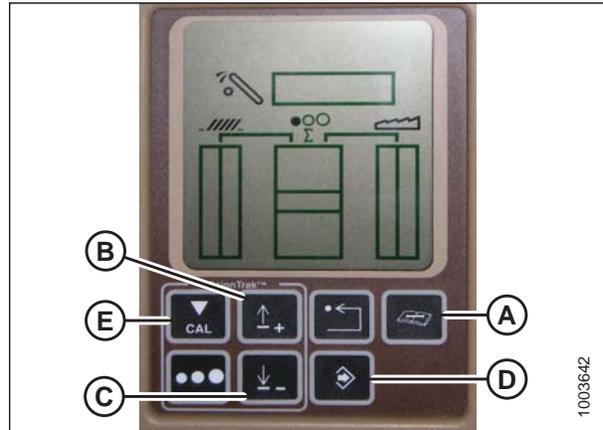


Figure 3.175: John Deere Combine Display

OPERATION

Adjusting Threshold for Drop Rate Valve

This procedure explains how to adjust point at which restrictor valve opens allowing full flow to 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 monitor. dIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor and press ENTER (C). This is header adjustment.
3. Press UP (B) or DOWN (E) button until 114 is displayed on top portion of monitor. This is setting that adjusts when fast drop rate starts with respect to dead band.

NOTE:

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

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

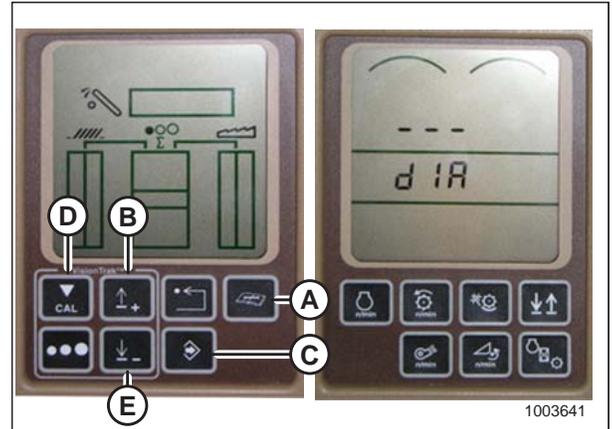


Figure 3.176: John Deere Combine Display

Operating Auto Header Height

To operate your auto header height, follow these steps:

IMPORTANT:

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



Figure 3.177: Accumulator Shut-off

OPERATION

1. Ensure HEADER HEIGHT RESUME and ACTIVE HEADER CONTROL functions are ON by pressing buttons on top monitor. Icons will appear on monitor with same picture that is displayed on 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 3.178: 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 header to a certain height, but will not automatically compensate for ground variation.

NOTE:

To use buttons, combine must be running, AUTO HEADER HEIGHT SENSING must be ON, and header switch and 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.

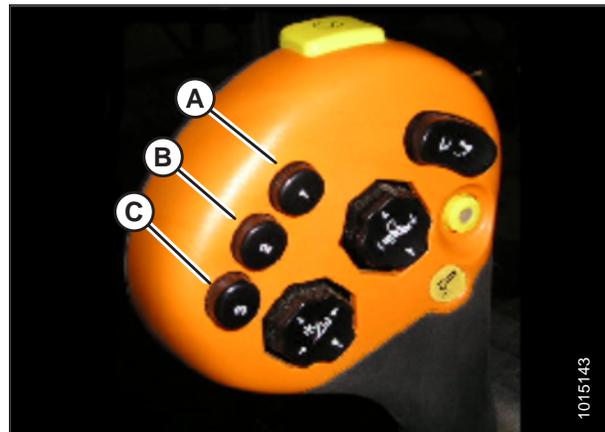


Figure 3.179: Hydrostatic Lever

OPERATION

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

NOTE:

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



Figure 3.180: Auto Header Control Dial

NOTE:

The ideal ground pressure, in most cases, is one number of separation on AHHC from having header fully suspended off ground (B) to just resting on ground (A). Operating with heavier pressures can wear cutterbar wearplate prematurely.

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

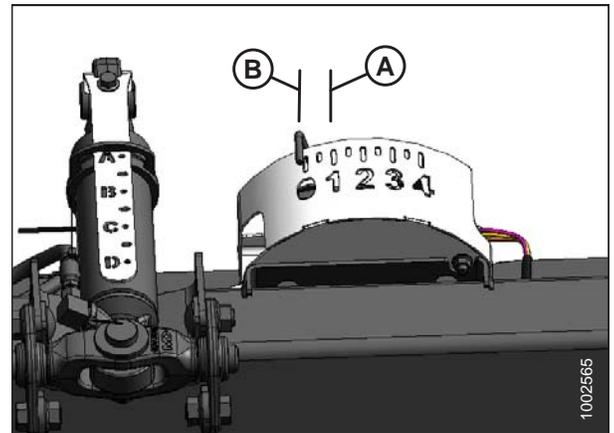


Figure 3.181: Float Indicator Box

3.8.6 John Deere 60 Series Combines

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

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

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere 60 Series	0.7 V	4.3 V	3.0 V

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHC) system.

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

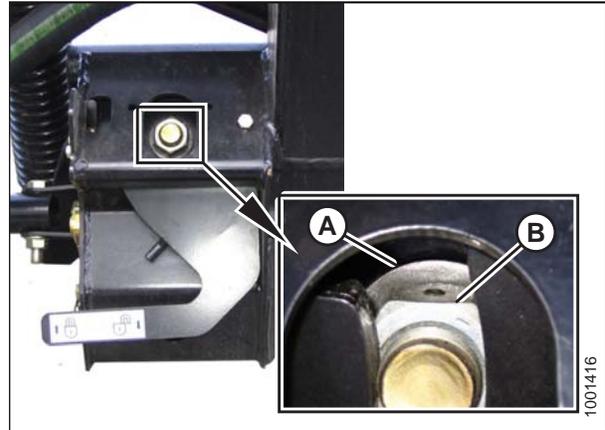


Figure 3.182: Float Lock

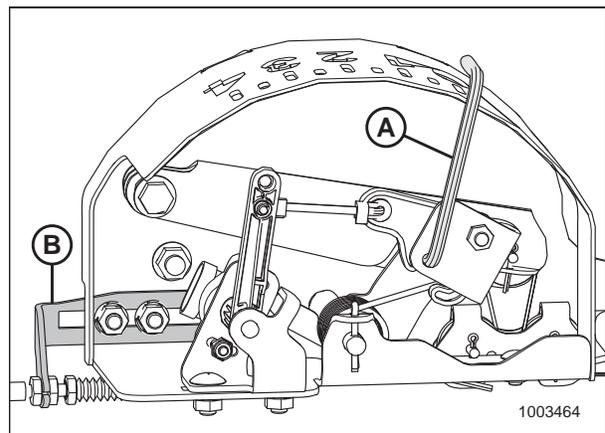
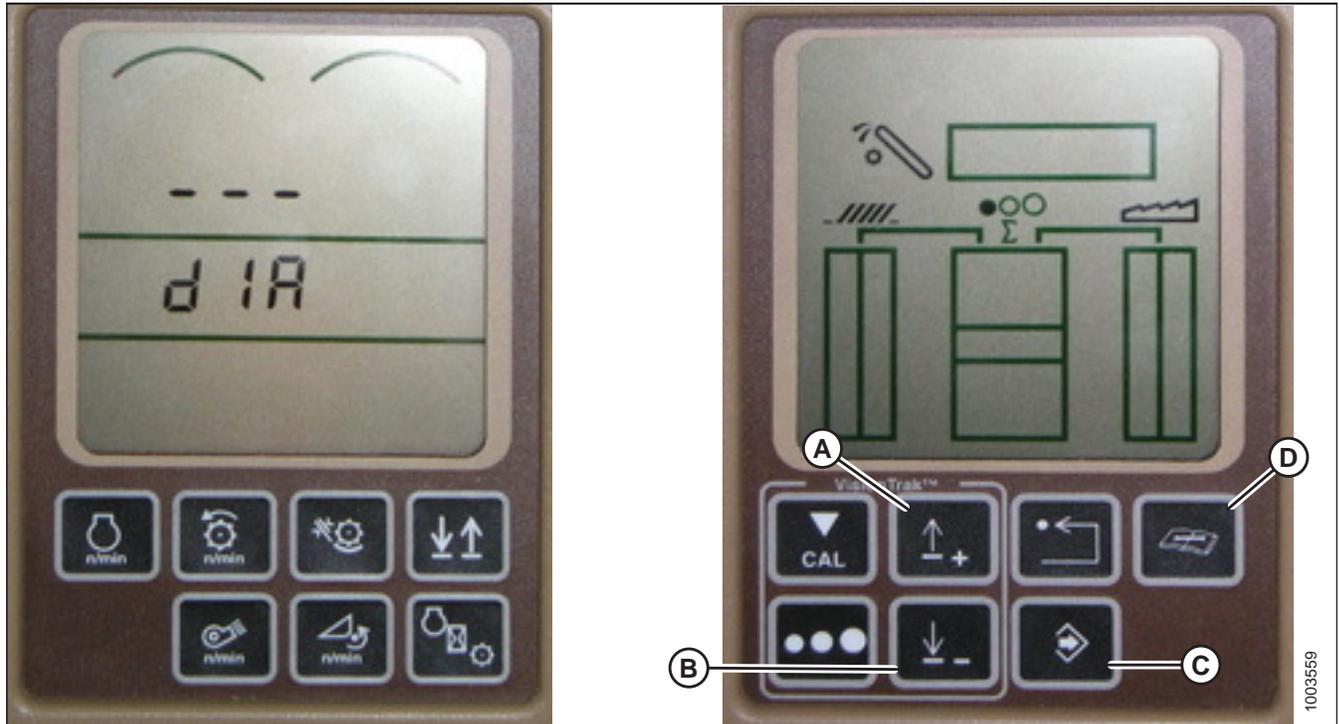


Figure 3.183: Float Indicator Box

OPERATION

Figure 3.184: 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 header adjustment.
6. Press ENTER button (C).
7. Press UP (A) or DOWN button (B) until 24 is displayed on top portion of monitor—this is voltage reading for sensor.

8. Ensure header float is unlocked.
9. Start combine, and fully lower feeder house to ground.

NOTE:

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

10. Check sensor reading on monitor.
11. Raise header so it is just off ground, and recheck sensor reading.
12. If sensor voltage is not within low and high limits or if range between low and high limits is insufficient, refer to [Adjusting Voltage Limits, page 104](#).

OPERATION

Calibrating Auto Header Height Control (John Deere 60 Series)

For best performance of 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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

1. Ensure center-link is set to **D**.
2. Rest header on down stops, and unlock adapter float.
3. Start combine.
4. Press DIAGNOSTIC button (A) on monitor. DIA appears on monitor.
5. Press CAL button (B). DIA-CAL appears on monitor.

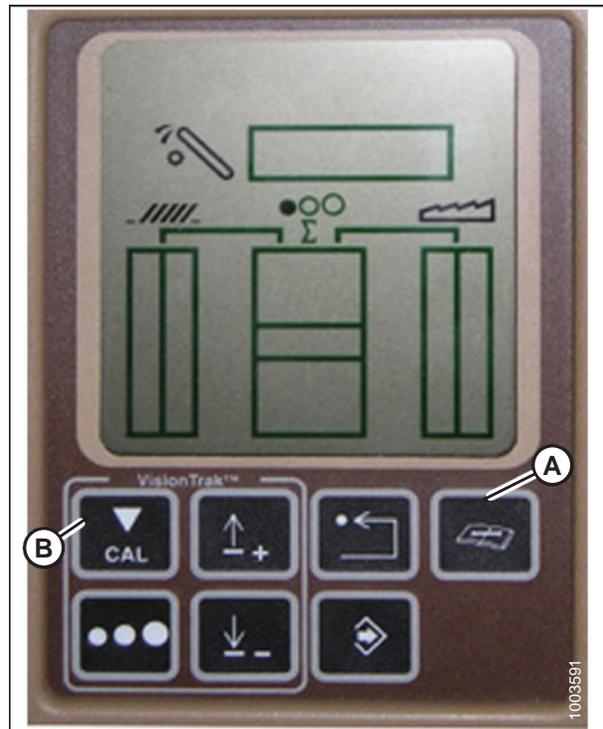


Figure 3.185: John Deere Combine Display

OPERATION

6. Press UP or DOWN buttons until HDR appears on monitor.
7. Press ENTER button. HDR H-DN appears on monitor.
8. Fully lower feeder house to ground.

NOTE:

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

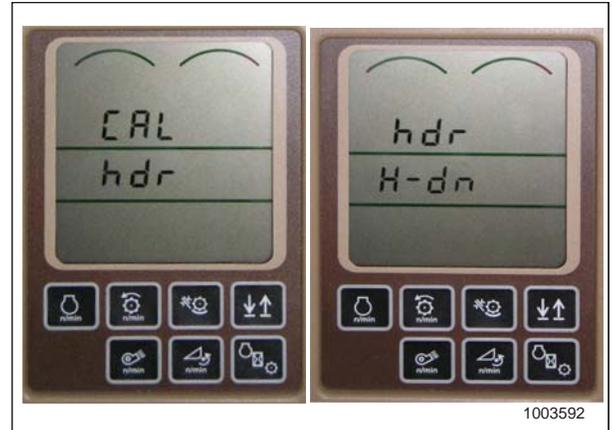


Figure 3.186: John Deere Combine Display

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

NOTE:

If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to *Calibrating Auto Header Height Control (John Deere 60 Series)*, page 138.

NOTE:

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

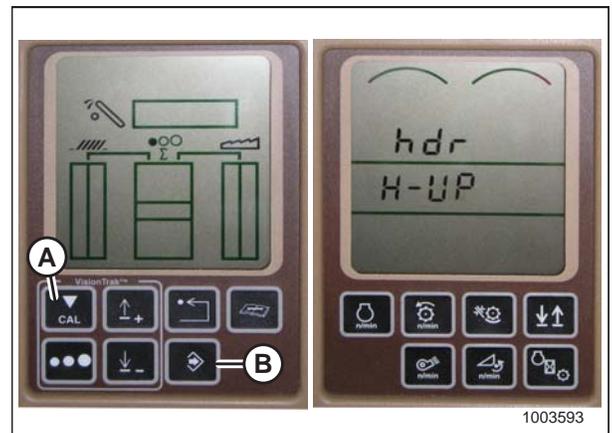


Figure 3.187: John Deere Combine Display

OPERATION

Turning Accumulator Off (John Deere 60 Series)

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

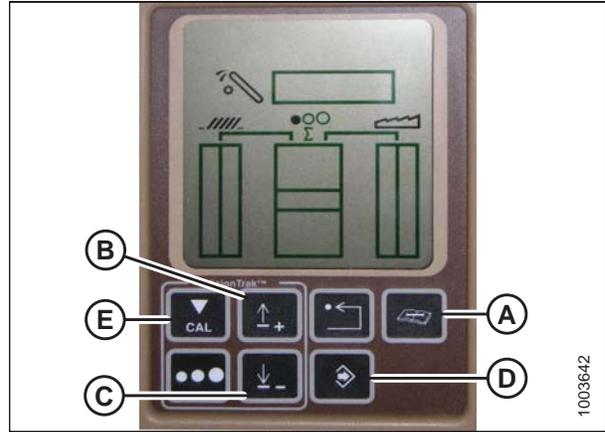


Figure 3.188: John Deere Combine Display

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

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 set sensing grain header height, follow these steps:

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

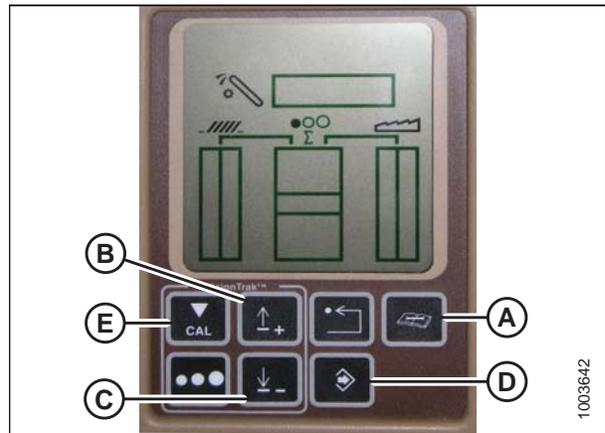


Figure 3.189: John Deere Combine Display

OPERATION

NOTE:

Do **NOT** use active header float function (A) in combination with MacDon auto header height control (AHHC)—the two systems will counteract one another. The header symbol (B) on display should **NOT** have a wavy line under it and should appear exactly as shown on Active Header Control Display in Figure 3.190, page 141.

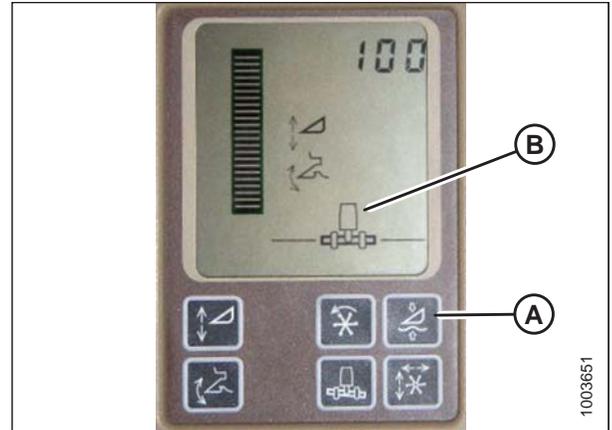


Figure 3.190: John Deere Combine Display

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

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.

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

NOTE:

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

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

NOTE:

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

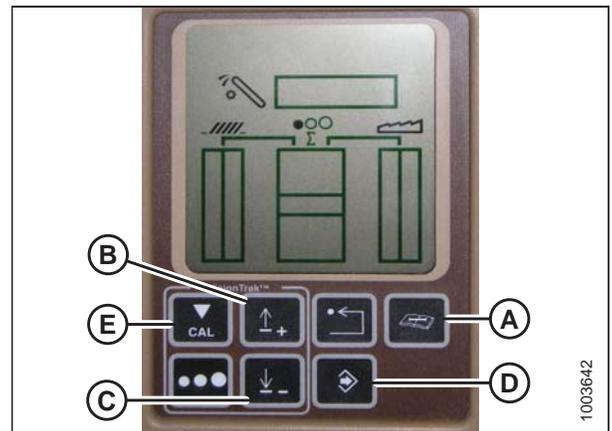


Figure 3.191: John Deere Combine Display

OPERATION

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

This procedure explains how to adjust point at which restrictor valve opens allowing full flow to 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 monitor. DIA appears on the monitor.
2. Press UP button (B) until EO1 appears on monitor and press ENTER (C). This is header adjustment.
3. Press UP (B) or DOWN button (E) until 114 is displayed on top portion of monitor. This is setting that adjusts when fast drop rate starts with respect to dead band.

NOTE:

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

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

NOTE:

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

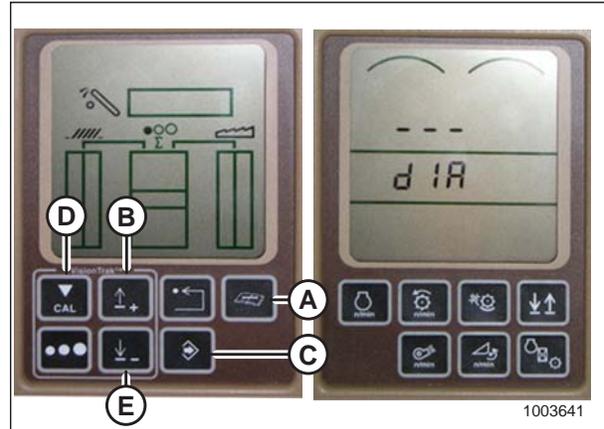


Figure 3.192: John Deere Combine Display

3.8.7 John Deere 70 Series Combines

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

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

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere 70 Series	0.7 V	4.3 V	3.0 V

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

OPERATION

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

NOTE:

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

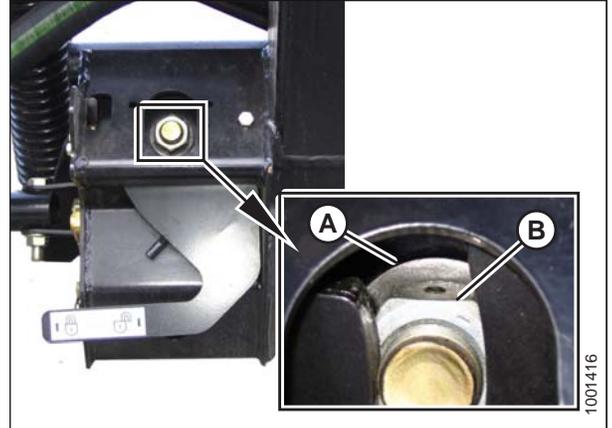


Figure 3.193: Float Lock

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

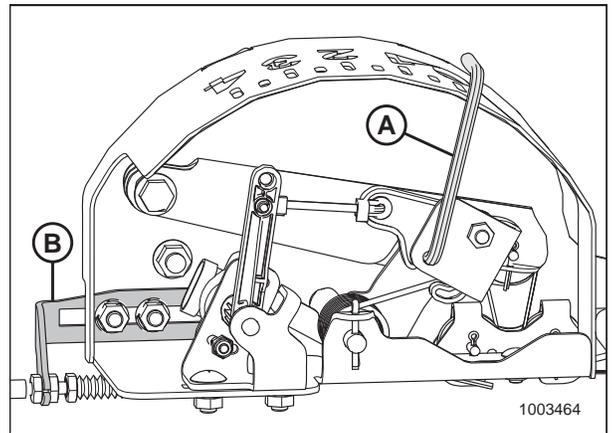


Figure 3.194: Float Indicator Box

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



Figure 3.195: John Deere Combine Display

OPERATION

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



Figure 3.196: John Deere Combine Display

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

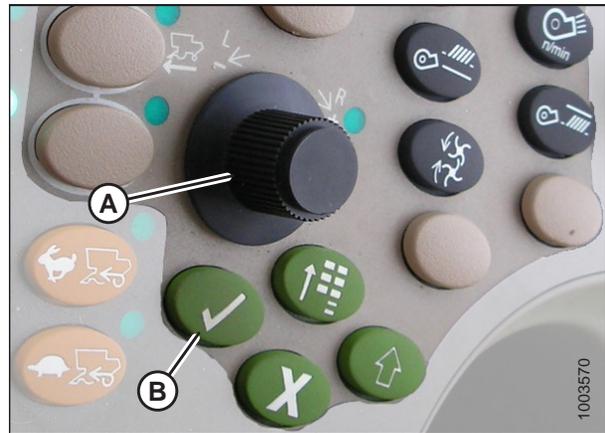


Figure 3.197: John Deere Combine Control Console

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



Figure 3.198: John Deere Combine Display

OPERATION

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



Figure 3.199: John Deere Combine Display

- Use scroll knob to highlight down arrow (A) and press check mark button to scroll through list until 029 DATA (B) is displayed and voltage reading (C) appears on combine display.

- Ensure header float is unlocked.

- Start combine and fully lower feeder house to the ground.

NOTE:

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

- Check sensor reading on monitor.

- Raise header so it is just off ground and recheck sensor reading.

- If sensor voltage is not within low and high limits or if range between low and high limits is insufficient, refer to [Adjusting Voltage Limits, page 104](#).

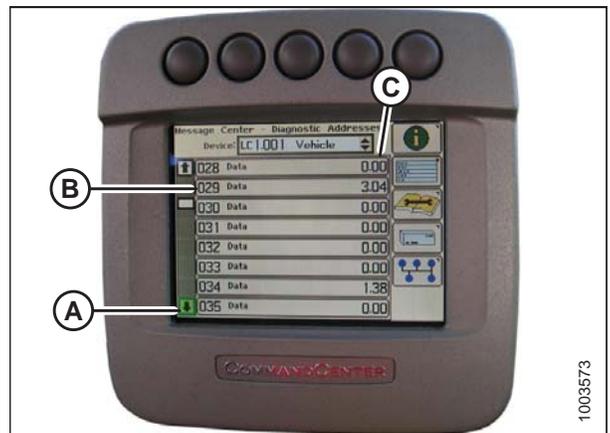


Figure 3.200: John Deere Combine Display

Calibrating Feeder House Speed (John Deere 70 Series)

The feeder house speed must be calibrated before you calibrate auto header height control (AHHC) system. Refer to combine operator's manual for instructions.

Calibrating Auto Header Height Control (John Deere 70 Series)

For best performance of 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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

OPERATION

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



Figure 3.201: John Deere Combine Display

6. Select HEADER in box (A) by scrolling down to box using scroll knob, and then pressing check mark button (knob and button are shown in the figure below).
7. Scroll down to lower right icon that resembles an arrow in a diamond (B) and press check mark button to select it.



Figure 3.202: John Deere Combine Display

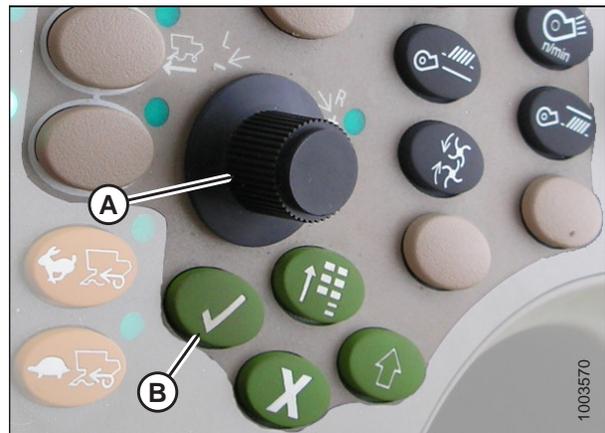


Figure 3.203: John Deere Combine Control Console

A - Scroll Knob

B - Check Mark Button

OPERATION

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

NOTE:

If an error code appears on page, sensor is not in correct working range. Refer to [Checking Voltage Range from Combine Cab \(John Deere 70 Series\)](#), page 142 to check and adjust range.

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

NOTE:

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

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

NOTE:

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

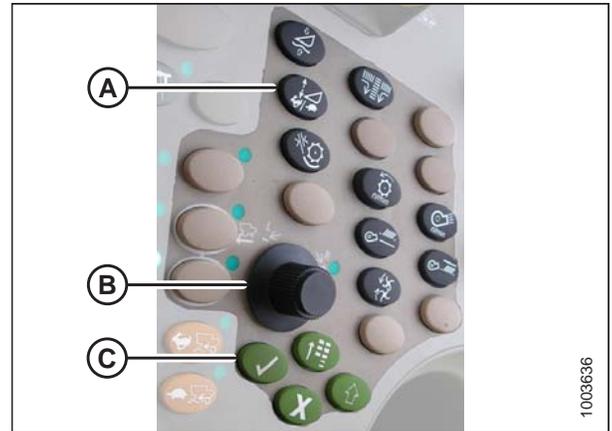


Figure 3.204: John Deere Combine Control Console

NOTE:

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



Figure 3.205: John Deere Combine Display

OPERATION

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

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

NOTE:

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

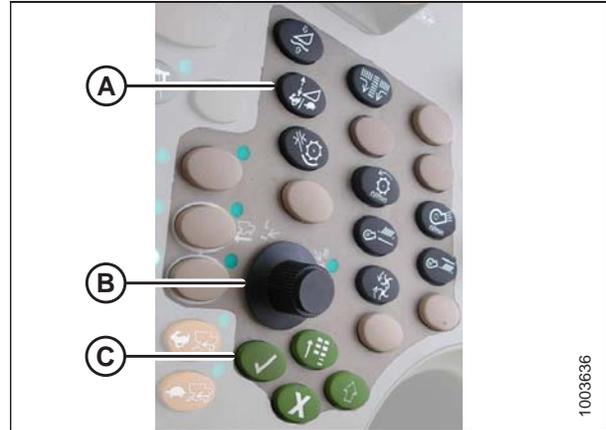


Figure 3.206: John Deere Combine Control Console

NOTE:

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



Figure 3.207: John Deere Combine Display

3.8.8 John Deere S and T Series Combines

Checking Voltage Range from Combine Cab (John Deere S and T Series)

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

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere S and T Series	0.7 V	4.3 V	3.0 V

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHC) system.

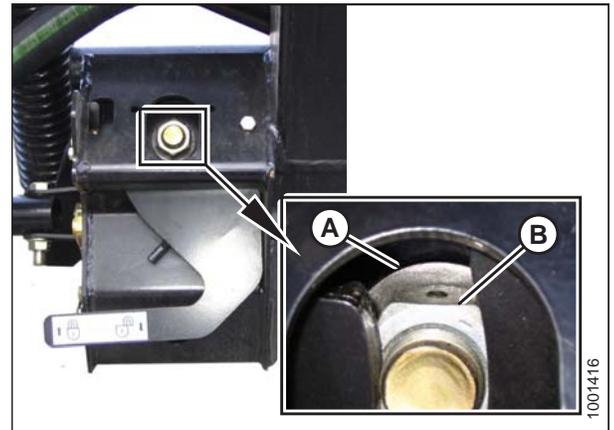


Figure 3.208: Float Lock

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

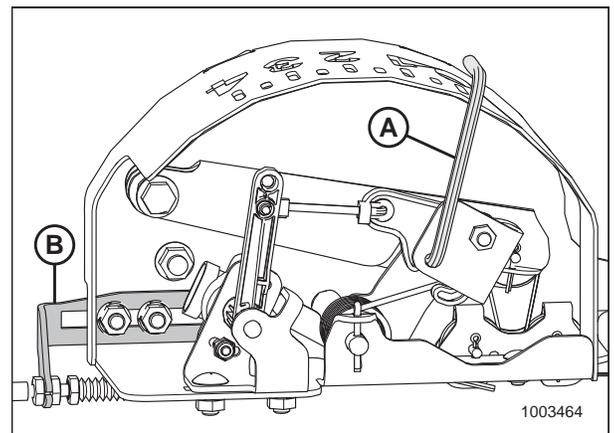


Figure 3.209: Float Indicator Box

OPERATION

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

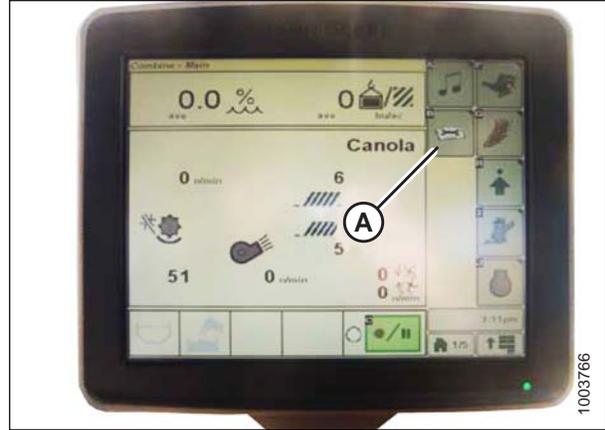


Figure 3.210: John Deere Combine Display

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

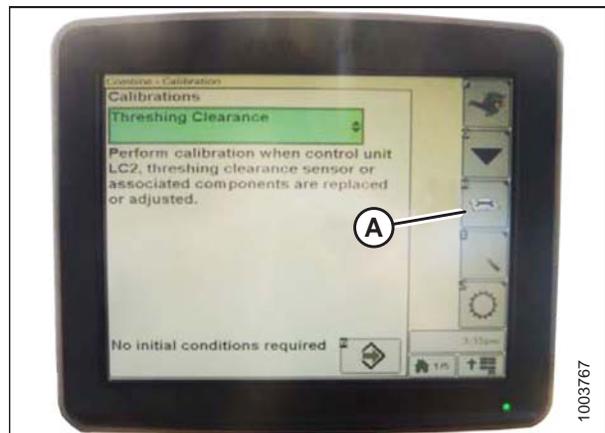


Figure 3.211: John Deere Combine Display

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

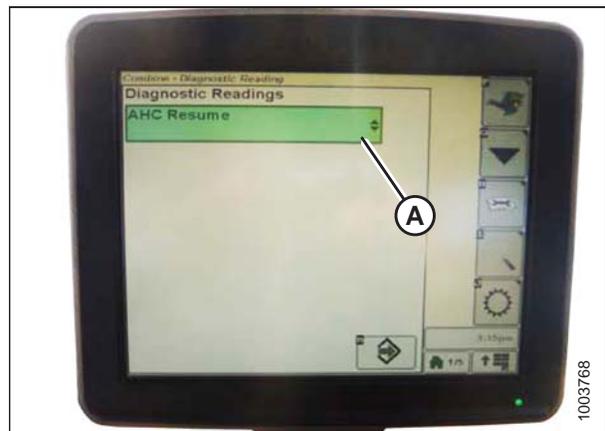


Figure 3.212: John Deere Combine Display

OPERATION

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



Figure 3.213: John Deere Combine Display

9. Press icon (A) until it reads Page 5 near top of the page and following sensor readings appear:
 - LEFT HEADER HEIGHT
 - CENTER HEADER HEIGHT
 - RIGHT HEADER HEIGHT

A reading is displayed for only 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 3.214: John Deere Combine Display

10. Ensure header float is unlocked.
11. Start combine and fully lower feeder house to the ground.
NOTE:
You may need to hold HEADER DOWN switch for a few seconds to ensure feeder house is fully lowered.
12. Check sensor reading on monitor.
13. If sensor voltage is not within low and high limits or if range between low and high limits is insufficient, refer to [Adjusting Voltage Limits, page 104](#).

Calibrating Feeder House Fore/Aft Tilt Range (John Deere S and T Series)

For best performance of 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. Refer to [3.7.3 Header Angle, page 65](#).

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

NOTE:

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

OPERATION

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



Figure 3.215: John Deere Hydro Handle

NOTE:

The feeder house fore/aft tilt controls can be changed 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 combine display.

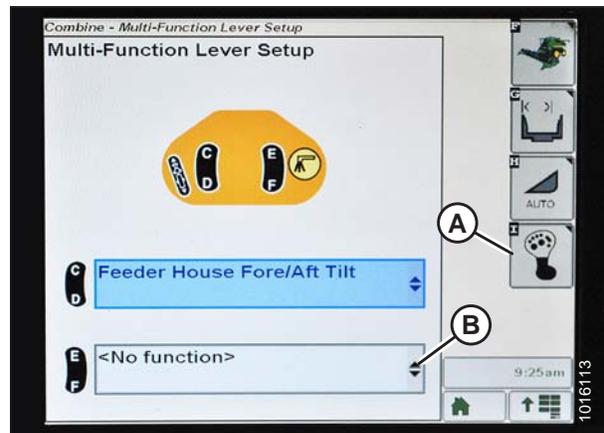


Figure 3.216: John Deere Combine Display

To calibrate feeder house fore/aft tilt range, follow these steps:

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

OPERATION

4. Press DIAGNOSTIC icon (A) on main page of combine display. The CALIBRATION page displays.

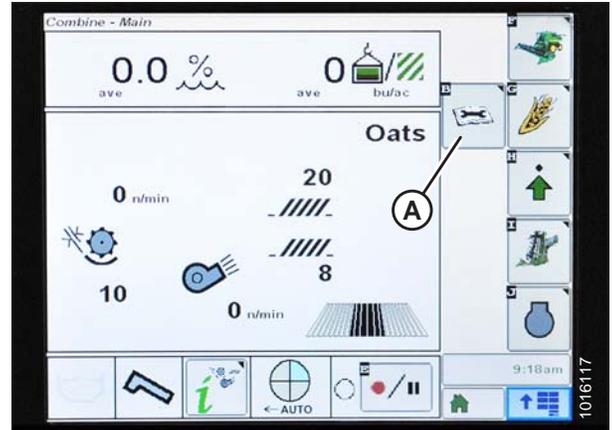


Figure 3.217: John Deere Combine Display

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

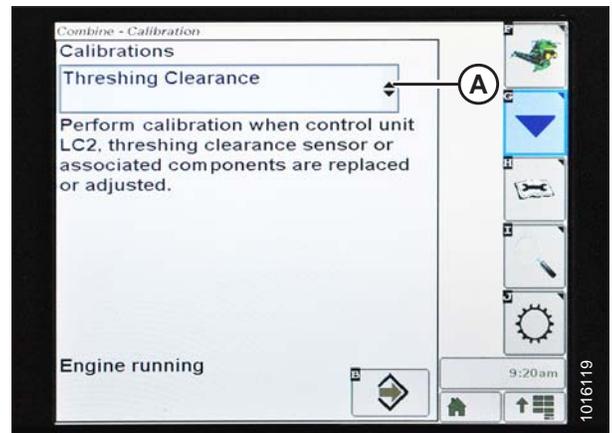


Figure 3.218: John Deere Combine Display

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

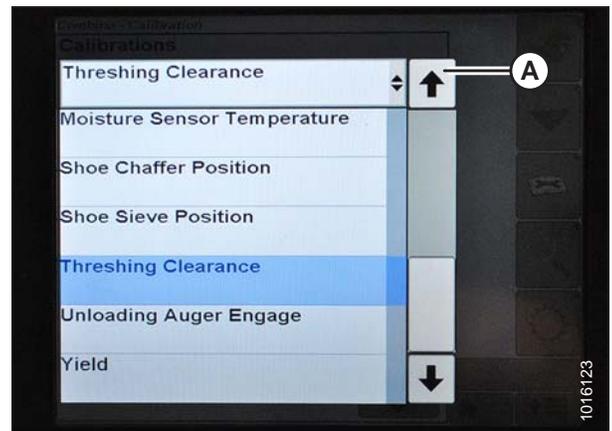


Figure 3.219: John Deere Combine Display

OPERATION

7. Press ENTER icon (A).

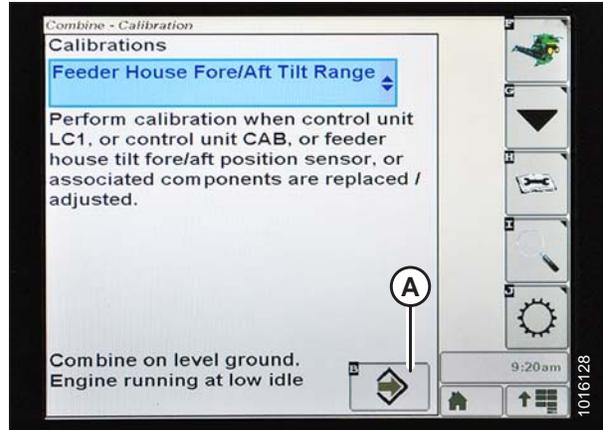


Figure 3.220: John Deere Combine Display

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

NOTE:

If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to [Checking Voltage Range from Combine Cab \(John Deere S and T Series\)](#), page 149.

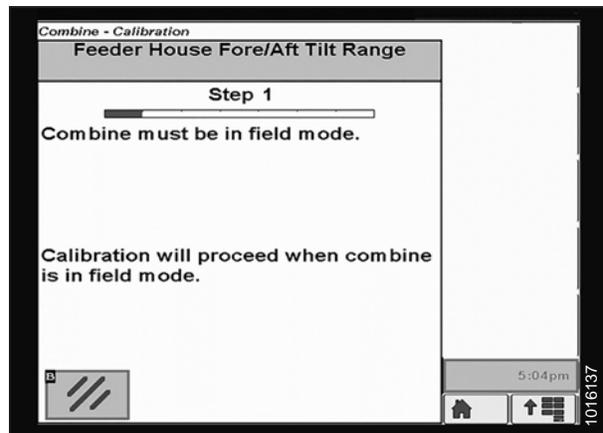


Figure 3.221: John Deere Combine Display

Calibrating Auto Header Height Control (John Deere S and T Series)

For best performance of 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. Refer to [3.7.3 Header Angle](#), page 65.

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 center-link is set to **D**.
2. Rest header on down stops and unlock adapter float.

OPERATION

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



Figure 3.222: John Deere Combine Display

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

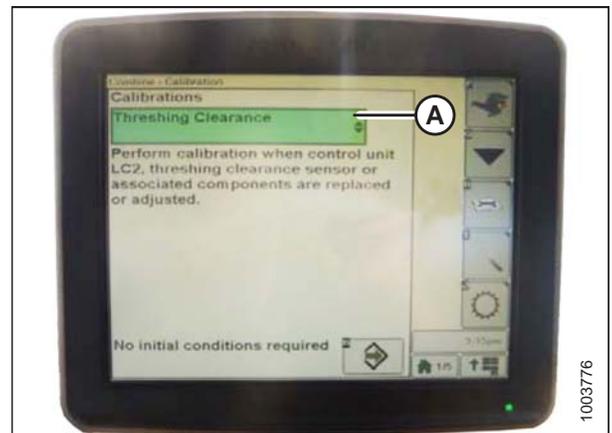


Figure 3.223: John Deere Combine Display

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

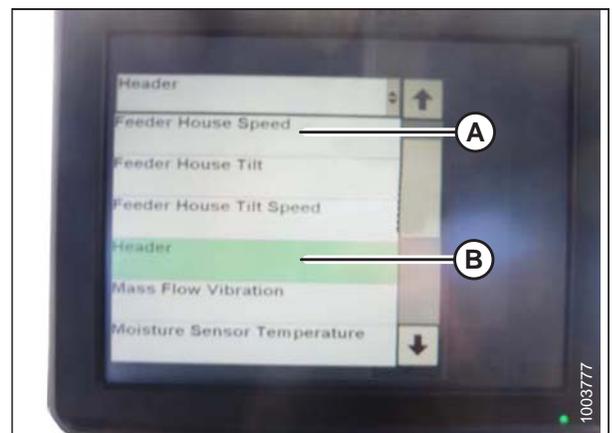


Figure 3.224: John Deere Combine Display

OPERATION

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

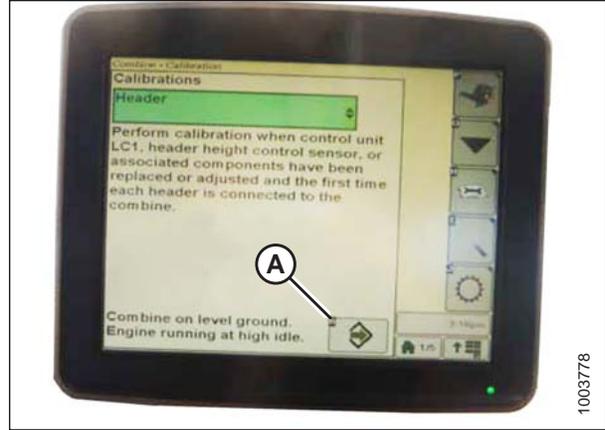


Figure 3.225: John Deere Combine Display

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

NOTE:

If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. Refer to [Adjusting Voltage Limits, page 104](#).

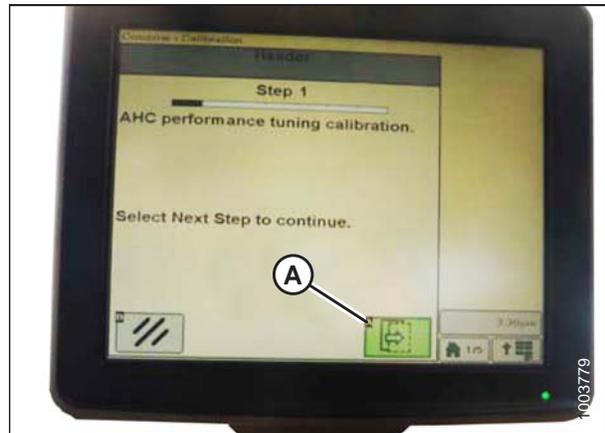


Figure 3.226: John Deere Combine Display

Setting Sensitivity of Auto Header Height Control (John Deere S and T Series)

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



Figure 3.227: John Deere Combine Command Center

OPERATION

2. Press – or + icon (A) to adjust rates.

NOTE:

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



Figure 3.228: John Deere Combine Display

Adjusting Manual Header Raise/Lower Rate (John Deere S and T Series)

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.

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



Figure 3.229: John Deere Combine Command Center

OPERATION

2. Press – or + icon (A) to adjust rates.

NOTE:

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

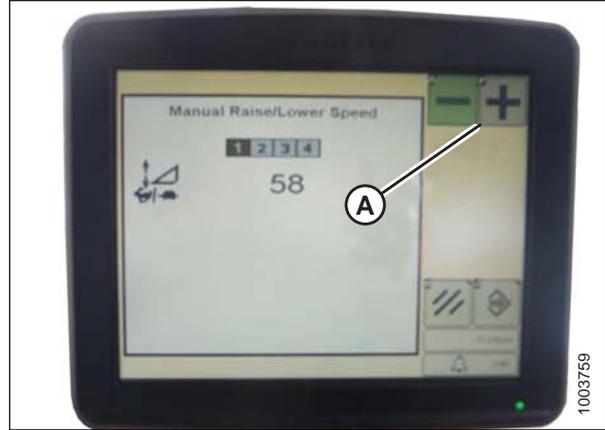


Figure 3.230: John Deere Combine Display

NOTE:

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

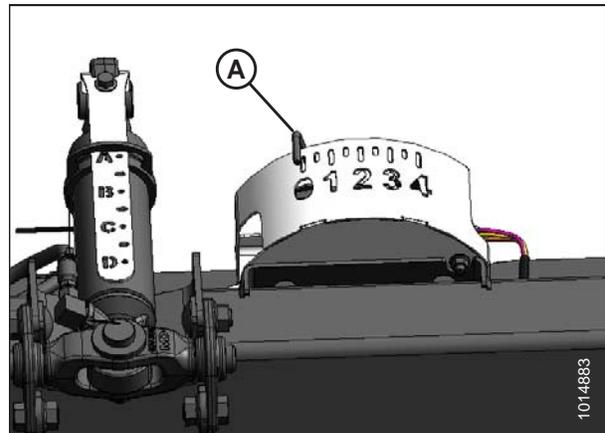


Figure 3.231: Float Indicator Box

Setting Preset Cutting Height (John Deere S and T Series)

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



Figure 3.232: Combine Display

OPERATION

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



Figure 3.233: Combine Display

3. Select icons for auto height sensing (A) and return to cut (B).

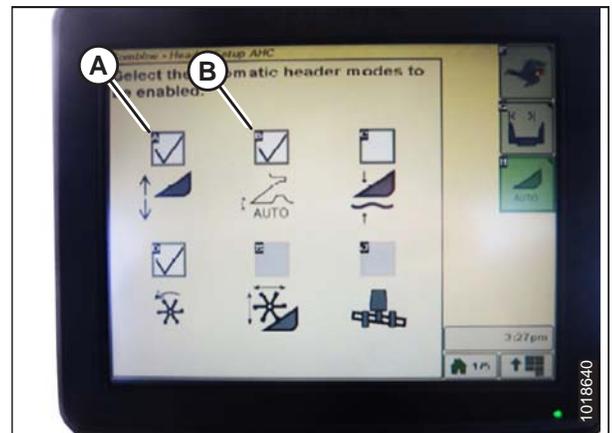


Figure 3.234: Combine Display

4. Turn on header engagement switch (A) and move header to desired preset position.
5. Position can be fine-tuned with knob (B).



Figure 3.235: Combine Control Console

OPERATION

6. Hold joystick button 2 (A) until the AHHC icon flashes on monitor.
7. To store another preset, repeat Steps 4, [page 159](#) and 6, [page 160](#) for button 3 (B).



Figure 3.236: Joystick Buttons

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

NOTE:

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



Figure 3.237: Joystick Buttons

NOTE:

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

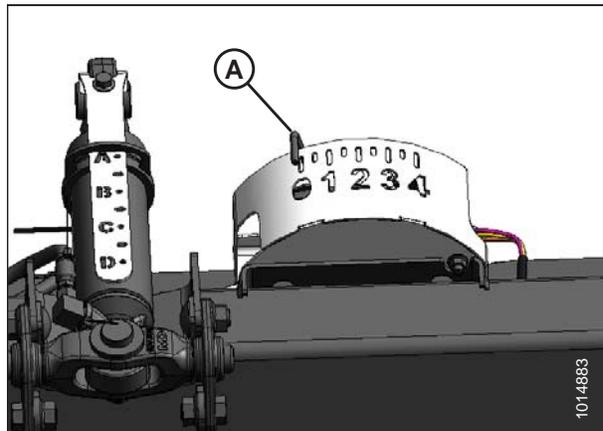


Figure 3.238: Float Indicator Box

OPERATION

NOTE:

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

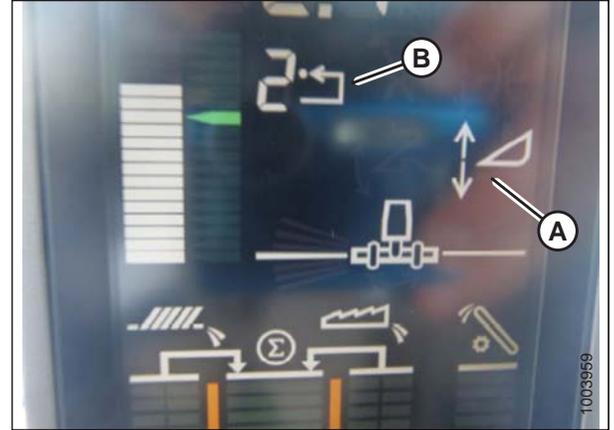


Figure 3.239: Combine Display

3.8.9 John Deere S7 Series Combines

This section applies to John Deere S7 Series combines only.

Setting up Header (John Deere S7 Series)

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 the header button (A) on the panel below the display. The HEADER page opens.



Figure 3.240: John Deere S7 Display

OPERATION

2. Select the HEADER TYPE field (A). The HEADER DETAILS window opens.

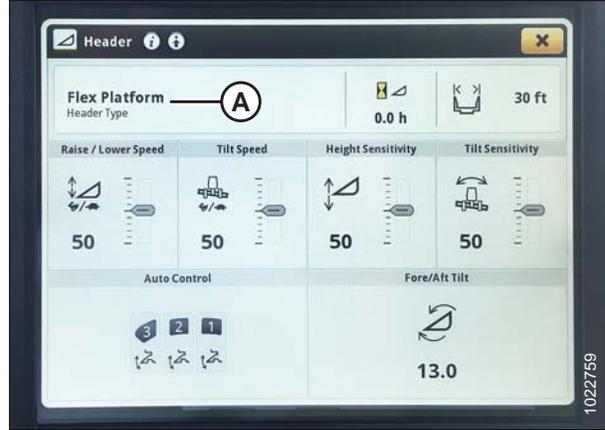


Figure 3.241: John Deere S7 Display – Header Page

3. Verify correct header width is displayed under WIDTH.
4. To change header width, select field (A). The WIDTH window opens.



Figure 3.242: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then press OK.



Figure 3.243: John Deere S7 Display – Setting Header Width

OPERATION

6. Press window close button (A) in top right corner of the window to return to the HEADER page.



Figure 3.244: John Deere S7 Display – Header Details Window

7. The raise/lower speed, tilt speed, height sensitivity, and tilt sensitivity can all be adjusted from this page. Select the option (A) you would like to adjust. This example shows the raise/lower speed adjustment.

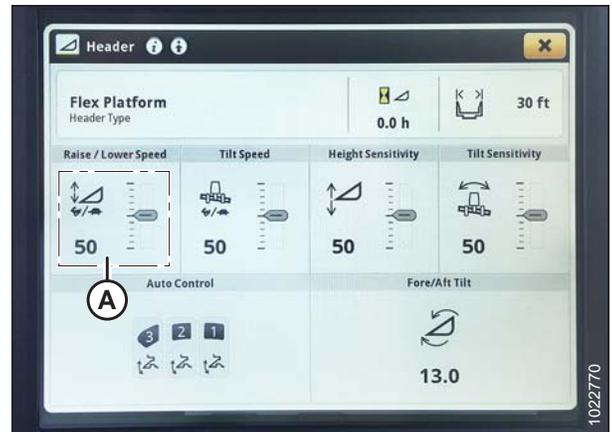


Figure 3.245: John Deere S7 Display – Header Page

8. Use the + and – buttons (A) to adjust the setting.
9. Press window close button in top right corner of the window to return to the HEADER page.

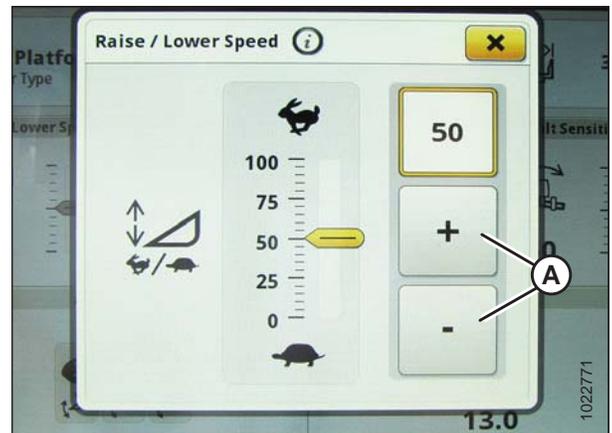


Figure 3.246: John Deere S7 Display – Raise/Lower Speed Adjustment

OPERATION

10. Select the AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

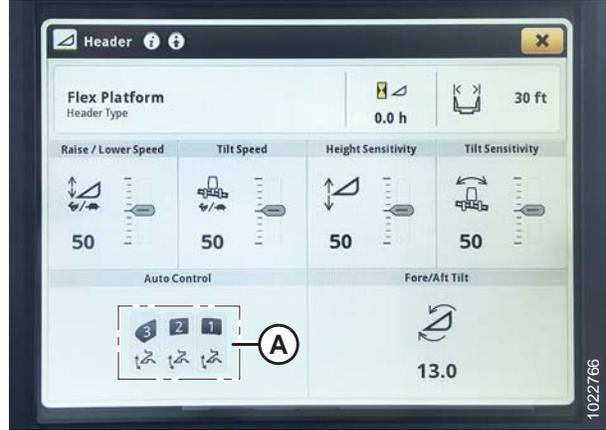


Figure 3.247: John Deere S7 Display – Header Page

11. If the header has not been calibrated yet, an error icon will appear on the HEIGHT SENSING button (A). Select button (A) to view error message.

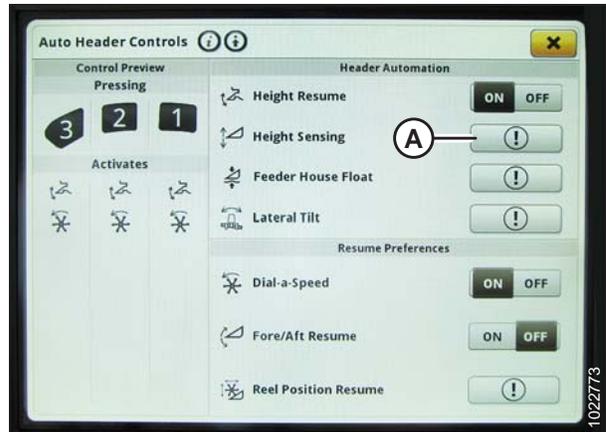


Figure 3.248: John Deere S7 Display – Auto Header Controls

12. Read error message and then press OK.
13. Proceed to *Checking Voltage Range from the Combine Cab (John Deere S7 Series)*, page 165.

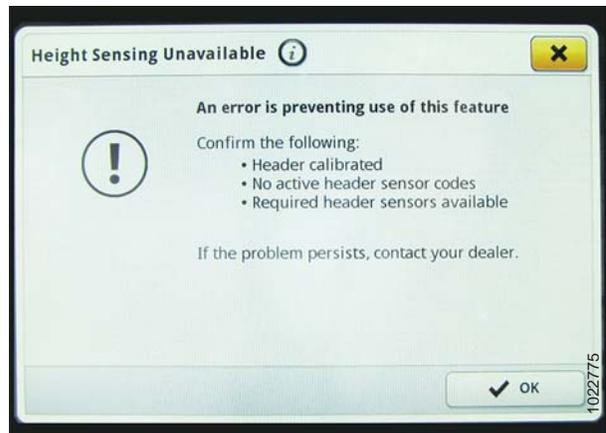


Figure 3.249: John Deere S7 Display – Height Sensing Error Message

OPERATION

Checking Voltage Range from the Combine Cab (John Deere S7 Series)

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

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere S7 Series	0.5 V	4.5 V	3.0 V

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHC) system.

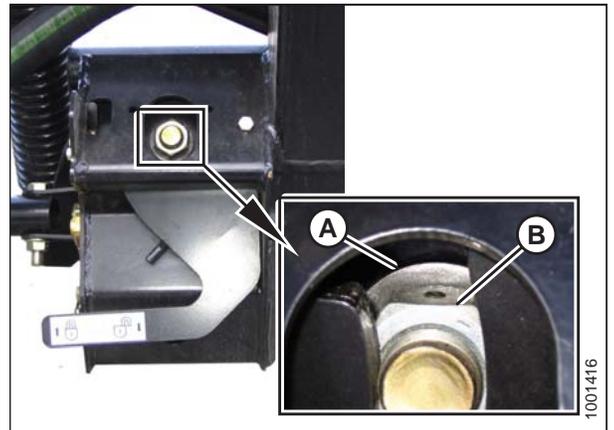


Figure 3.250: Float Lock

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

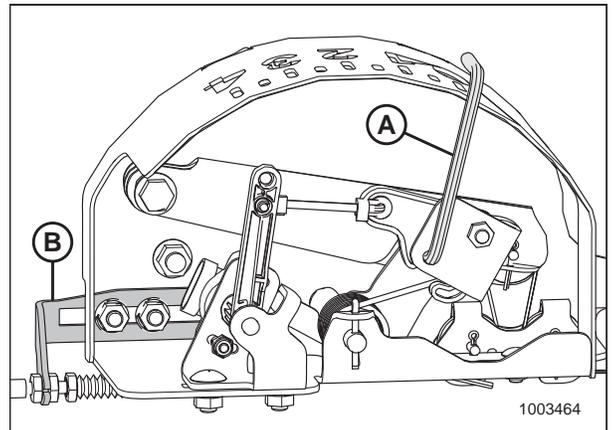


Figure 3.251: Float Indicator Box

OPERATION

- On the HARVESTING page, select MENU icon (A) in the bottom right corner of the screen.



Figure 3.252: John Deere S7 Display – Harvesting Page

- On the MENU page, select the SYSTEM tab (A). The MENU opens.
- Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

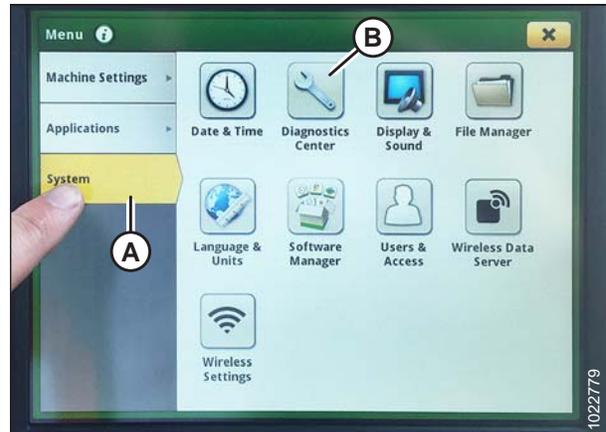


Figure 3.253: John Deere S7 Display – Menu

- Select AHC - SENSING (A). The AHC - SENSING \DIAGNOSTICS page displays.

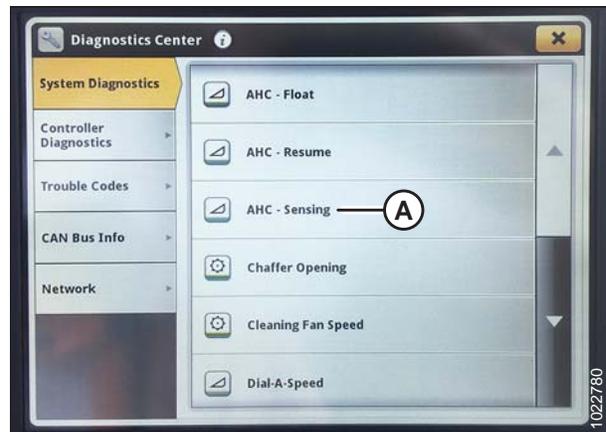


Figure 3.254: John Deere S7 Display – Diagnostics Center

OPERATION

8. Select SENSOR tab (A) to view sensor voltages. The 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.
9. If sensor voltage adjustment is required, refer to [Adjusting Voltage Limits, page 104](#).

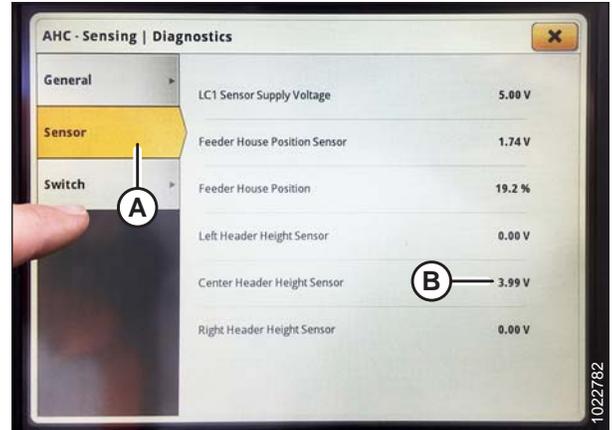


Figure 3.255: John Deere S7 Display – Checking Sensor Voltage

Calibrating Feeder House (John Deere S7 Series)

Feeder house calibration must be done before header calibration.

For best performance of auto header height control (AHC), 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 [3.7.3 Header Angle, page 65](#).

NOTE:

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

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock adapter float.
3. On the HARVESTING page, select the MENU icon (A) in the bottom right corner of screen. The MENU opens.



Figure 3.256: John Deere S7 Display – Harvesting Page

OPERATION

4. Select the MACHINE SETTINGS tab (A).
5. Select the CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

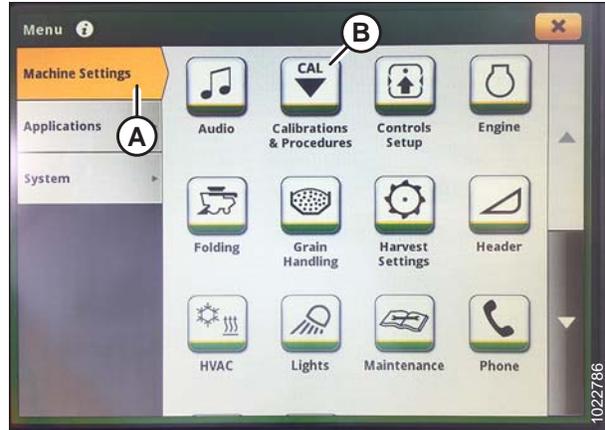


Figure 3.257: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).
7. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page displays.

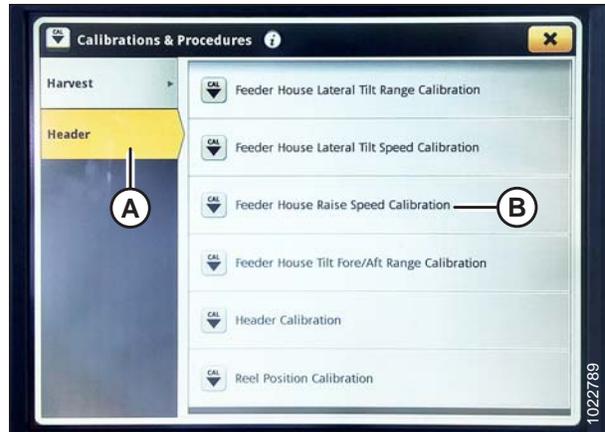


Figure 3.258: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at the bottom of the page. A calibration overview displays.

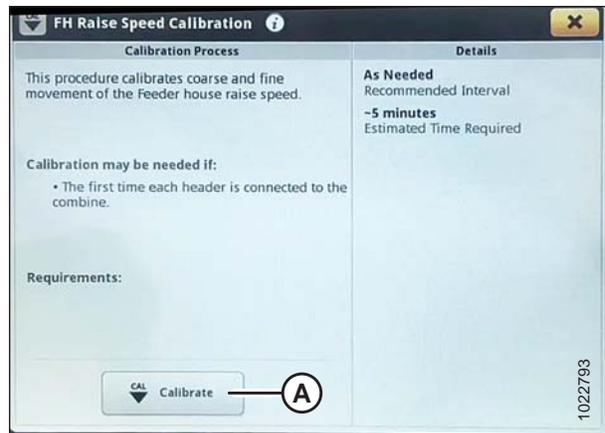


Figure 3.259: John Deere S7 Display – Feeder House Calibration

OPERATION

9. Read the calibration overview, and then press START.



Figure 3.260: John Deere S7 Display – Feeder House Calibration

10. Follow the instructions on the screen. As you proceed through the calibration process, the display will automatically update to show next step.

NOTE:

If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. Refer to [Adjusting Voltage Limits, page 104](#).



Figure 3.261: John Deere S7 Display – Feeder House Calibration

11. When calibration is complete, select SAVE to confirm calibration.



Figure 3.262: John Deere S7 Display – Feeder House Calibration

OPERATION

Calibrating Header (John Deere S7 Series)

Feeder house calibration must be done before header calibration. If feeder house has not yet been calibrated, refer to [Calibrating Feeder House \(John Deere S7 Series\)](#), page 167.

For best performance of 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 [3.7.3 Header Angle](#), page 65.

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 center-link is set to **D**.
2. Rest header on down stops and unlock adapter float.
3. On the HARVESTING page, select the MENU icon (A) in the bottom right corner of screen. The MENU opens.



Figure 3.263: John Deere S7 Display – Harvesting Page

4. Select the MACHINE SETTINGS tab (A),
5. Select the CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

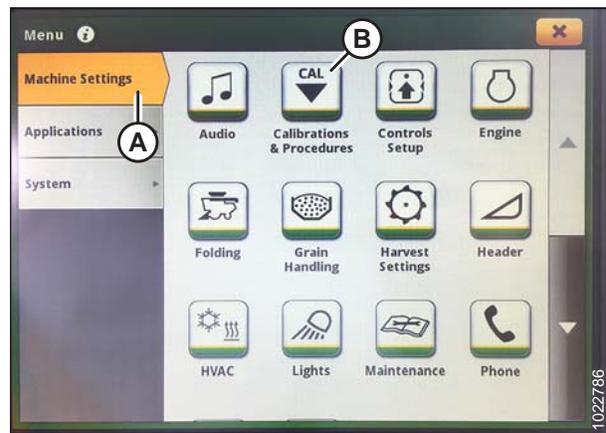


Figure 3.264: John Deere S7 Display – Machine Settings

OPERATION

6. Select HEADER tab (A).
7. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page displays.

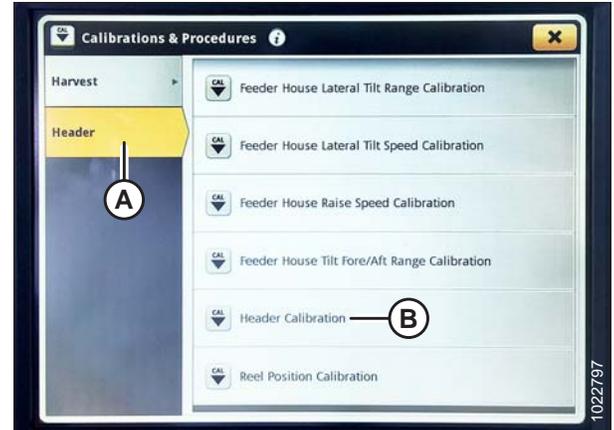


Figure 3.265: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at bottom of page. The calibration overview window opens.

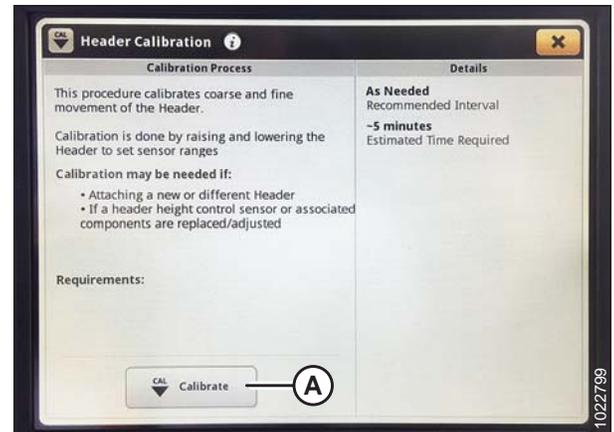


Figure 3.266: John Deere S7 Display – Header Calibration

9. Press button (A) on console to set engine to high idle.



Figure 3.267: John Deere S7 Console

OPERATION

10. Select START on calibration overview page.
11. Follow instructions that appear on combine display. As you proceed through calibration process, display will automatically update to show next step.

NOTE:

If an error code appears during calibration, sensor is out of voltage range and will require adjustment. Refer to [Adjusting Voltage Limits, page 104](#).



Figure 3.268: John Deere S7 Display – Header Calibration

12. When calibration is complete, select SAVE to confirm calibration.

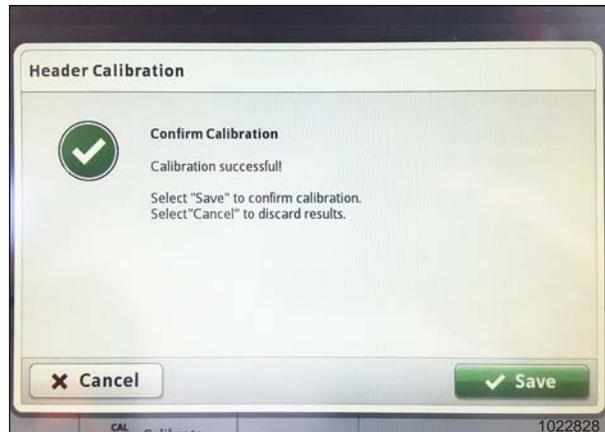


Figure 3.269: John Deere S7 Display – Header Calibration

3.8.10 New Holland Combines CX/CR Series (CR Series – Model Year 2014 and Earlier)

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to [3.8.11 New Holland Combines \(CR Series – Model Year 2015 and Later\), page 182](#).

Checking Voltage Range from Combine Cab (New Holland)

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

OPERATION

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

NOTE:

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

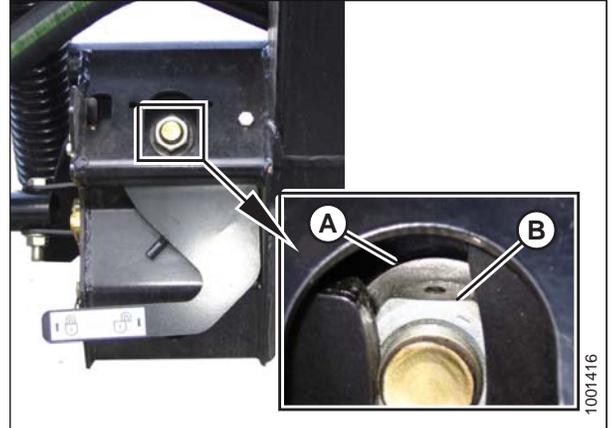


Figure 3.270: Float Lock

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

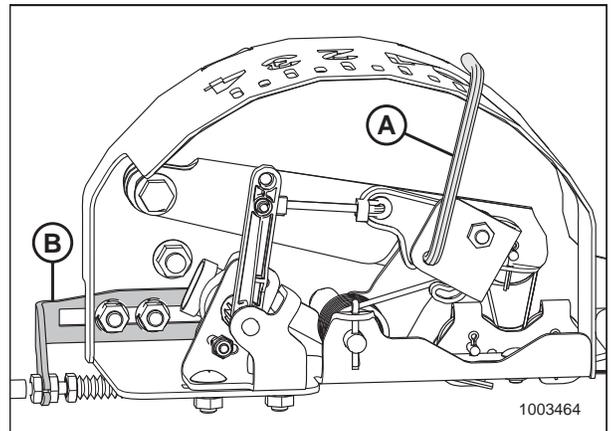


Figure 3.271: Float Indicator Box (5-Volt AHHC Sensor Assembly Shown)

5. Select DIAGNOSTICS (A) on main page. The DIAGNOSTICS page displays.
6. Select SETTINGS. The SETTINGS page displays.

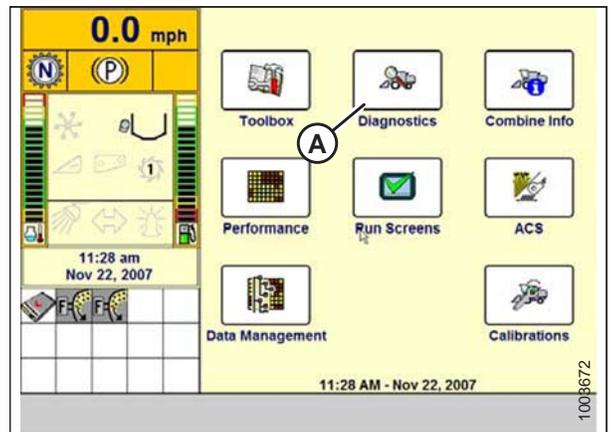


Figure 3.272: New Holland Combine Display

OPERATION

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

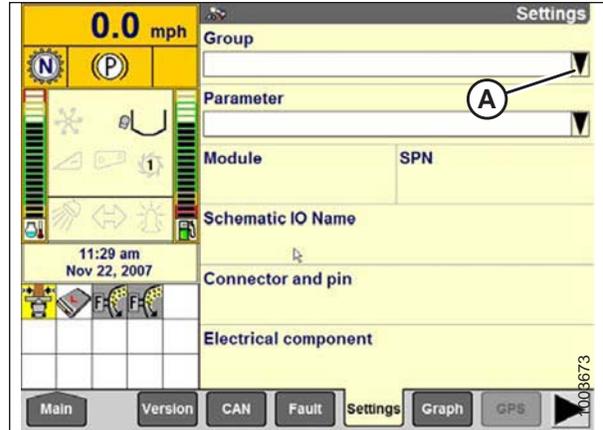


Figure 3.273: New Holland Combine Display

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

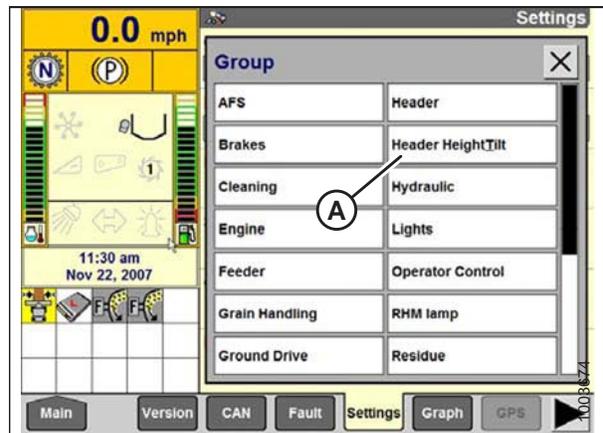


Figure 3.274: New Holland Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of page.
10. Raise and lower header to see full range of voltage readings.
11. Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to [Table 3.12, page 101](#)).

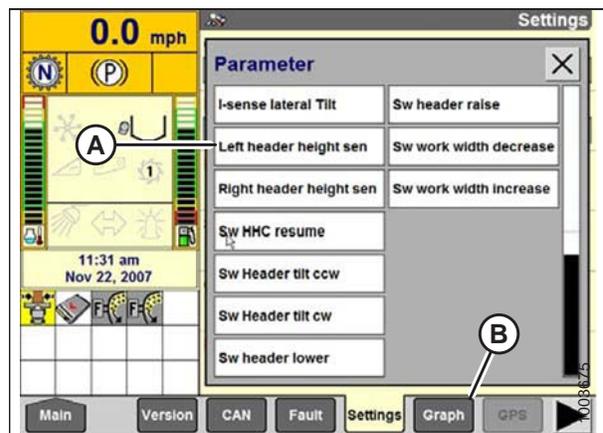


Figure 3.275: New Holland Combine Display

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

NOTE:

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

OPERATION

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

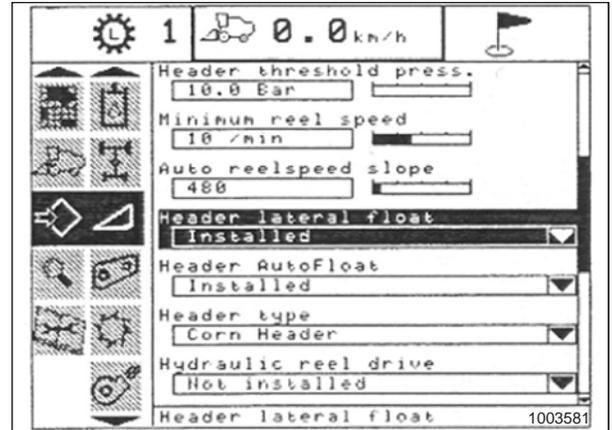


Figure 3.276: New Holland Combine Display

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

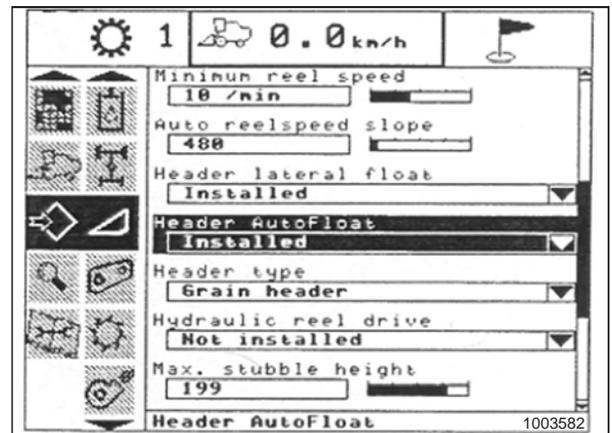


Figure 3.277: New Holland Combine Display

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

For best performance of 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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

Check following conditions before starting header calibration procedure:

- The header is attached to combine.
- The combine is on level ground, with header level to ground.
- The header is on down stops, and center-link is set to **D**.
- The engine is running.
- The combine is not moving.

OPERATION

- No faults have been received from Header Height Controller (HHC) module.
- Header/feeder is disengaged.
- Lateral float buttons are **NOT** pressed.
- ESC key is **NOT** pressed.

To calibrate the AHHC, follow these steps:

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

NOTE:

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

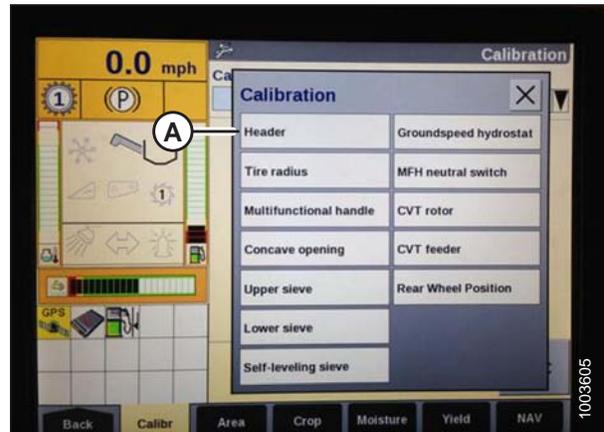


Figure 3.278: New Holland Combine Display

3. Follow calibration steps in order in which they appear in dialog box. As you proceed through calibration process, display will automatically update to show next step.

NOTE:

Pressing ESC key during any of steps or letting system sit idle for more than 3 minutes will cause calibration procedure to stop.

NOTE:

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



Figure 3.279: New Holland Combine Display

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

NOTE:

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

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

OPERATION

Calibrating Maximum Stubble Height

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

Select height of header that corresponds to description above.

IMPORTANT:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

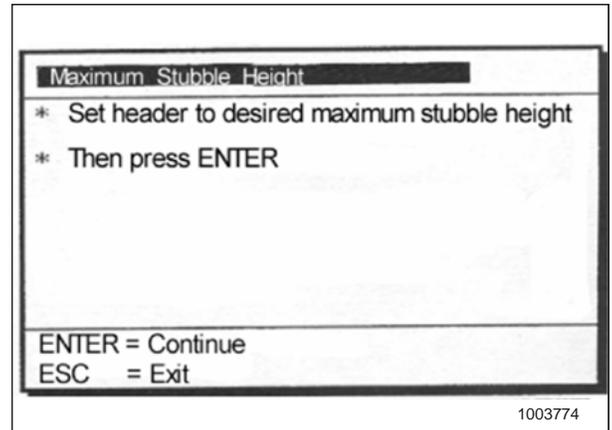


Figure 3.280: New Holland Calibration Dialog Box

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

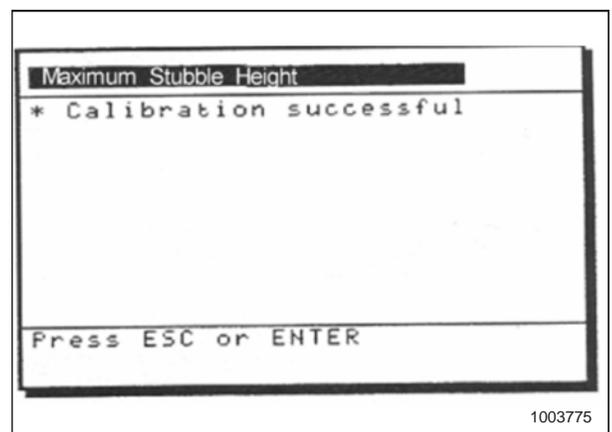


Figure 3.281: New Holland Calibration Dialog Box

OPERATION

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

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

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.

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

NOTE:

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

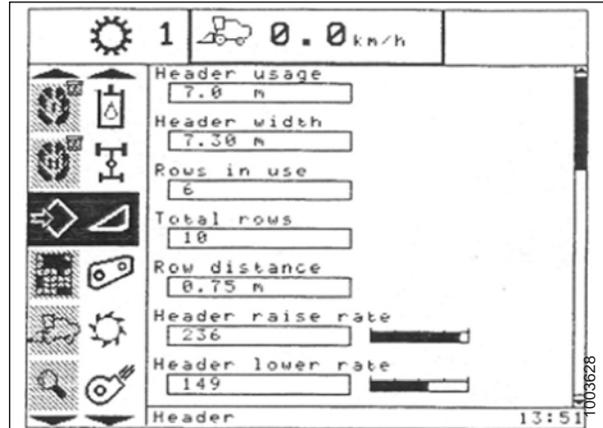


Figure 3.282: New Holland Combine Display

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

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

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.

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

NOTE:

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

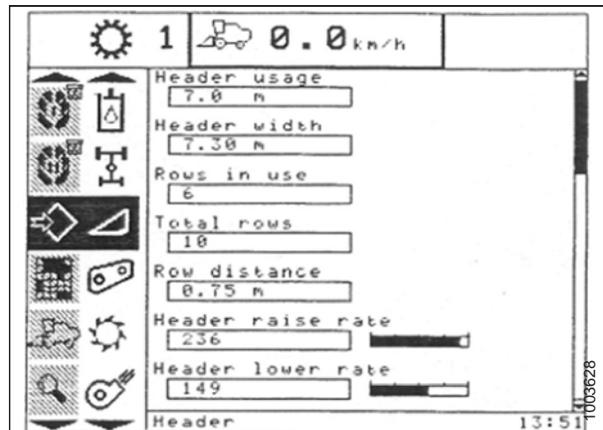


Figure 3.283: New Holland Combine Display

OPERATION

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

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

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

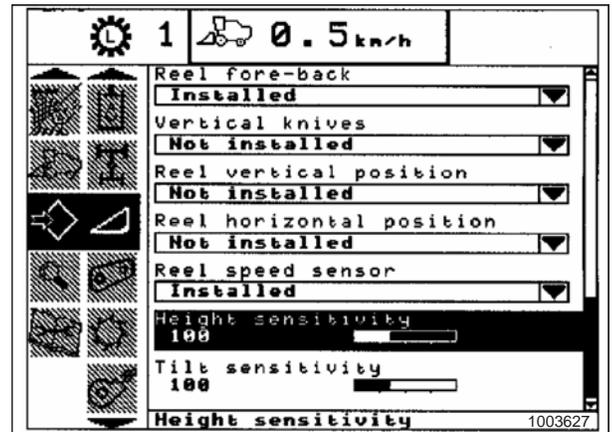


Figure 3.284: New Holland Combine Display

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

To set preset cutting height, follow these steps:

NOTE:

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

1. Engage threshing mechanism and feeder with switches (A) and (B).
2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTO FLOAT MODE.
3. Lower header to 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 height position. A beep will confirm setting.

NOTE:

It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTO FLOAT MODE.

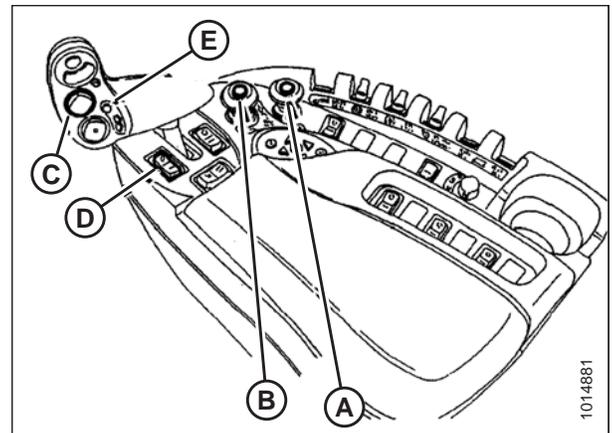


Figure 3.285: New Holland Combine Controls

OPERATION

- To change one of memorized header height set points while combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOAT rocker switch (A) (slow up/down) to raise or lower header to desired value. Press AUTOMATIC HEADER HEIGHT CONTROL button (B) for a minimum of 2 seconds to store new height position. A beep will confirm setting.

NOTE:

Do **NOT** press too hard on AUTOMATIC HEADER HEIGHT CONTROL button (B), or float mode will be disengaged.

NOTE:

It is not necessary to press rocker switch (C) again after adjusting.

NOTE:

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

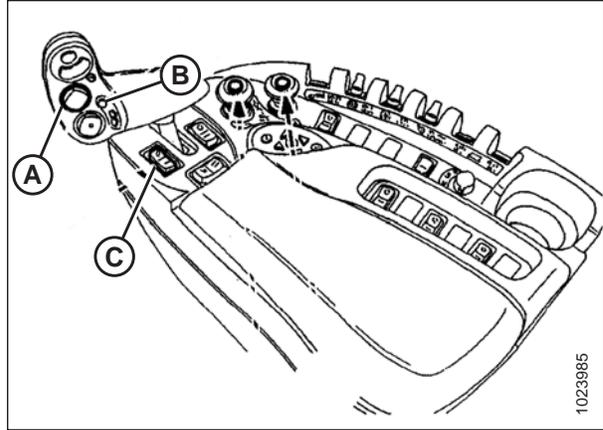


Figure 3.286: New Holland Combine Controls

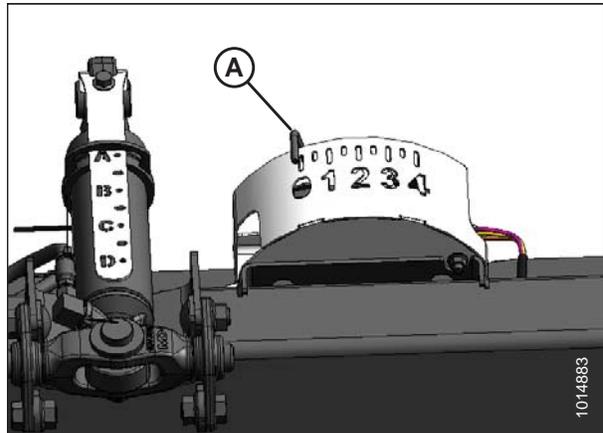


Figure 3.287: Float Indicator Box

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

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

NOTE:

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

OPERATION

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



Figure 3.288: New Holland Combine Controls

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



Figure 3.289: New Holland Combine Display

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



Figure 3.290: New Holland Combine Display

OPERATION

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



Figure 3.291: New Holland Combine Controls

3.8.11 New Holland Combines (CR Series – Model Year 2015 and Later)

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other New Holland combine models, refer to [3.8.10 New Holland Combines CX/CR Series \(CR Series – Model Year 2014 and Earlier\)](#), page 172.

Engaging Auto Header Height Control (New Holland CR Series)

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

For best performance of 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.

NOTE:

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

1. Ensure center-link is set to **D**.
2. Select TOOLBOX (A) on main page. The TOOLBOX page displays.

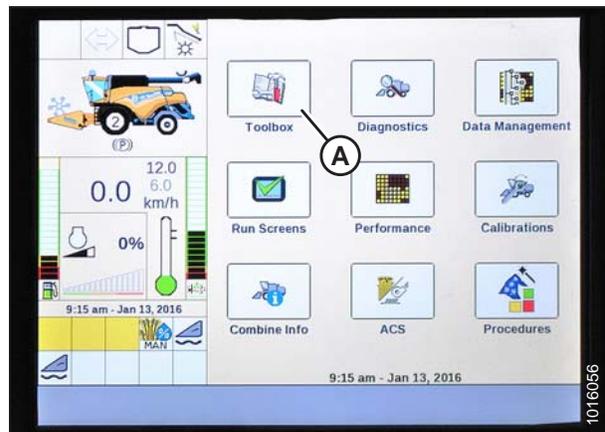


Figure 3.292: New Holland Combine Display

OPERATION

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



Figure 3.293: New Holland Combine Controls

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

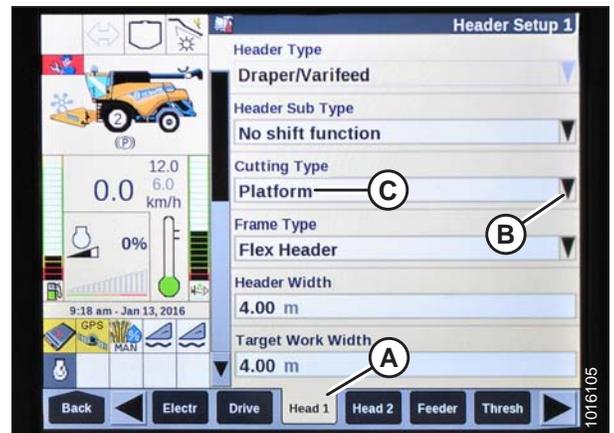


Figure 3.294: New Holland Combine Display

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



Figure 3.295: New Holland Combine Display

OPERATION

7. Select 80/90 (A).



Figure 3.296: New Holland Combine Display

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



Figure 3.297: New Holland Combine Display

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

NOTE:

With AUTO HEADER LIFT installed and AHHC engaged, header will lift up automatically when you pull back on hydro handle.

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



Figure 3.298: New Holland Combine Display

OPERATION

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

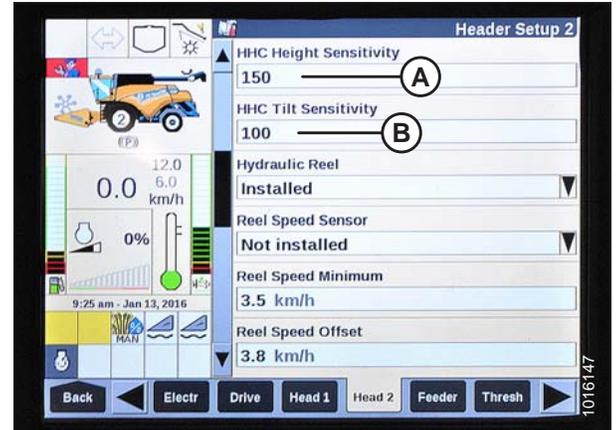


Figure 3.299: New Holland Combine Display

OPERATION

Checking Voltage Range from Combine Cab (New Holland CR Series)

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

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

NOTE:

If header is not on down stops, float is too light. Readjust float if necessary.

NOTE:

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

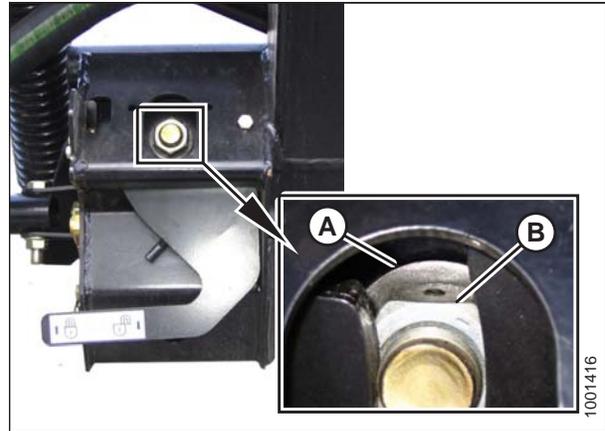


Figure 3.300: Float Lock

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

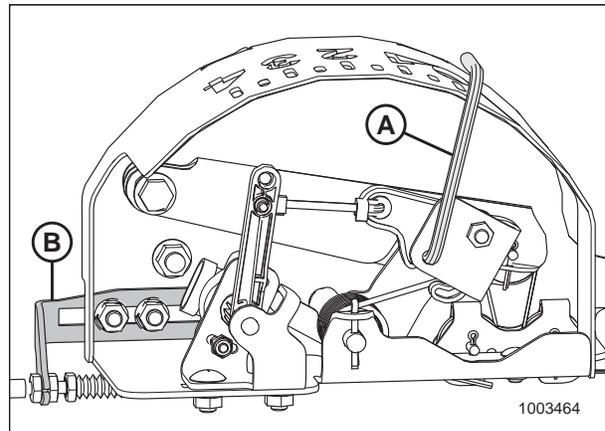


Figure 3.301: Float Indicator Box (5 Volt AHHC Sensor Assembly Shown)

OPERATION

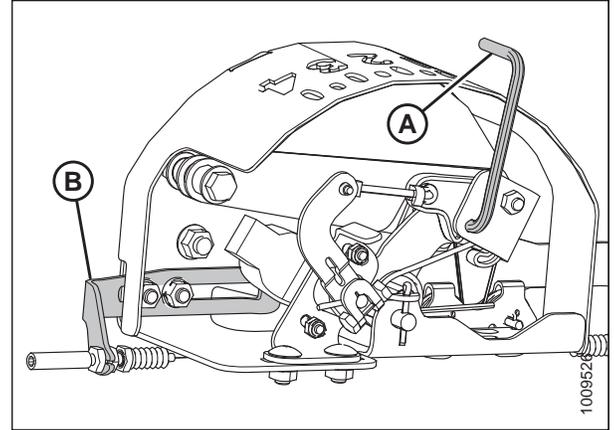


Figure 3.302: 10 Volt AHHC Sensor Assembly

5. Select DIAGNOSTICS (A) on main page. The DIAGNOSTICS page displays.

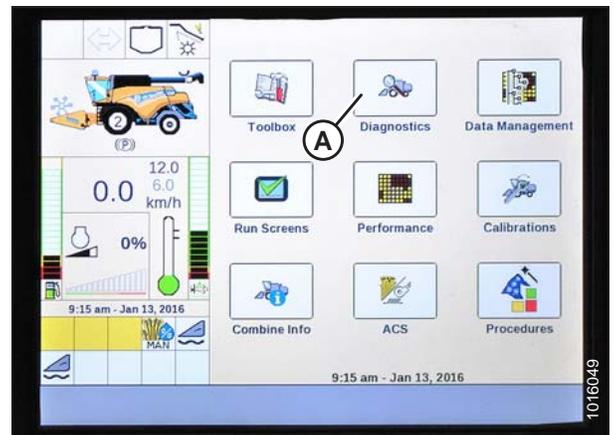


Figure 3.303: New Holland Combine Display

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

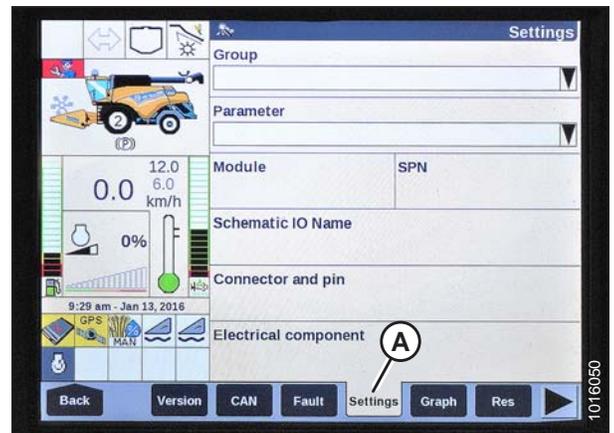


Figure 3.304: New Holland Combine Display

OPERATION

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



Figure 3.305: New Holland Combine Display

9. Select GRAPH (A). The exact voltage (B) is displayed at top of page.
10. Raise and lower header to see full range of voltage readings.
11. Adjust voltage limits (refer to [Adjusting Voltage Limits, page 104](#)) if sensor voltage is not within low and high limits or if range between low and high limits is insufficient (refer to [Table 3.12, page 101](#)).

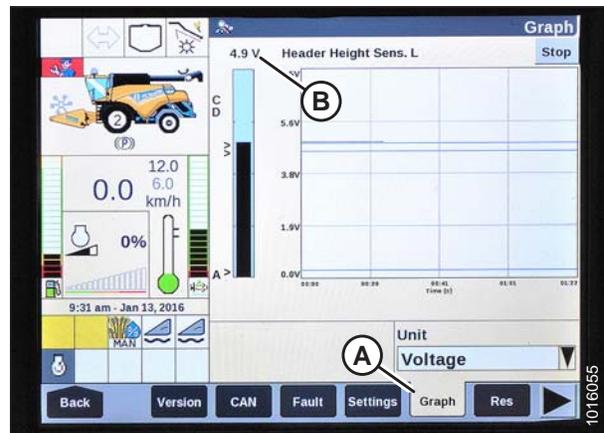


Figure 3.306: New Holland Combine Display

Calibrating Auto Header Height Control (New Holland CR Series)

For best performance of 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. Refer to [3.7.3 Header Angle, page 65](#).

NOTE:

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

CAUTION

Check to be sure all bystanders have cleared the area.

Check following conditions before starting header calibration procedure:

- The header is attached to combine.
- The combine is on level ground, with header level to ground.
- The header is on down stops, and center-link is set to **D**.
- The engine is running.
- The combine is not moving.

OPERATION

- No faults have been received from Header Height Controller (HHC) module.
- Header/feeder is disengaged.
- Lateral float buttons are **NOT** pressed.
- ESC key is **NOT** pressed.

To calibrate AHHC, follow these steps:

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

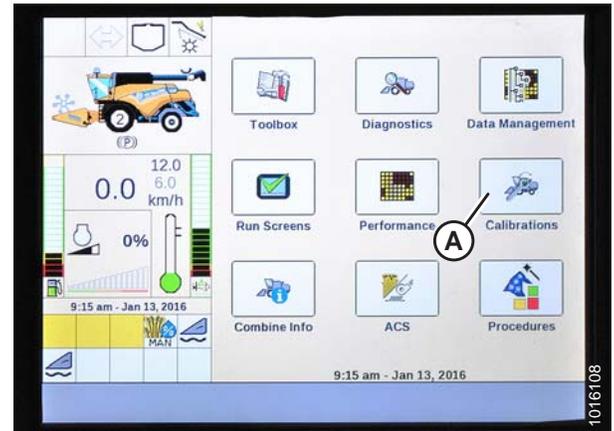


Figure 3.307: New Holland Combine Display

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

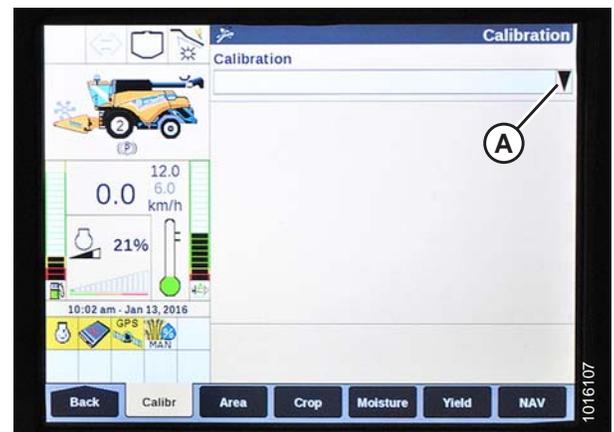


Figure 3.308: New Holland Combine Display

OPERATION

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



Figure 3.309: New Holland Combine Display

4. Follow calibration steps in order in which they appear on screen. As you proceed through calibration process, display will automatically update to show next step.

NOTE:

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

NOTE:

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



Figure 3.310: New Holland Combine Display

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

NOTE:

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



Figure 3.311: New Holland Combine Display

OPERATION

Setting Auto Height (New Holland CR Series)

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

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

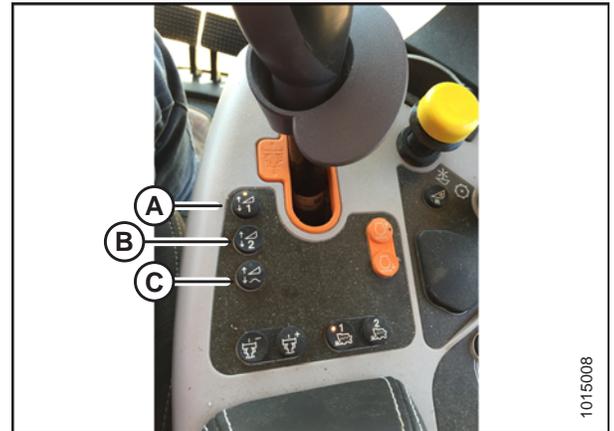


Figure 3.312: New Holland Combine Controls

To set auto height, follow these steps:

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

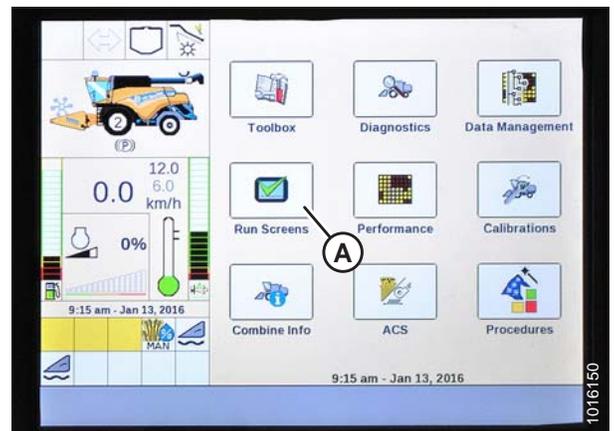


Figure 3.313: New Holland Combine Display

OPERATION

3. Select RUN tab that shows MANUAL HEIGHT.

NOTE:

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

4. Lower header to ground.
5. Select one of auto height set point buttons shown in Figure 3.312, page 191.
 - Press SET 1 button for a light ground setting (1 on float indicator box)
 - Press SET 2 button for a heavier ground setting (2 on float indicator box)



Figure 3.314: New Holland Combine Display

Setting Maximum Work Height (New Holland CR Series)

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

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

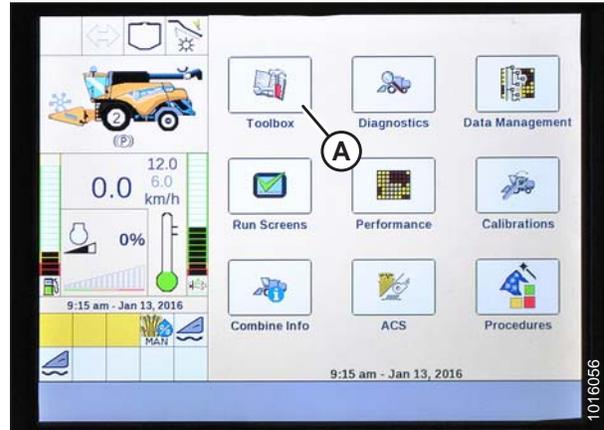


Figure 3.315: New Holland Combine Display

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

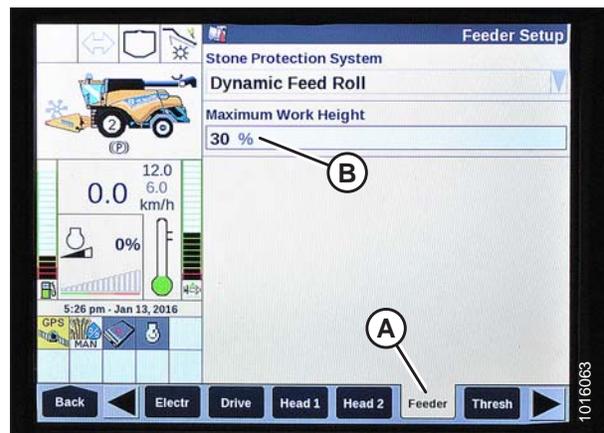


Figure 3.316: New Holland Combine Display

OPERATION

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



Figure 3.317: New Holland Combine Display

3.8.12 Replacing Auto Header Height Control (AHHC) 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 AHHC sensor, follow these steps:

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

IMPORTANT:

To avoid damaging new sensor, install sensor as follows:

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

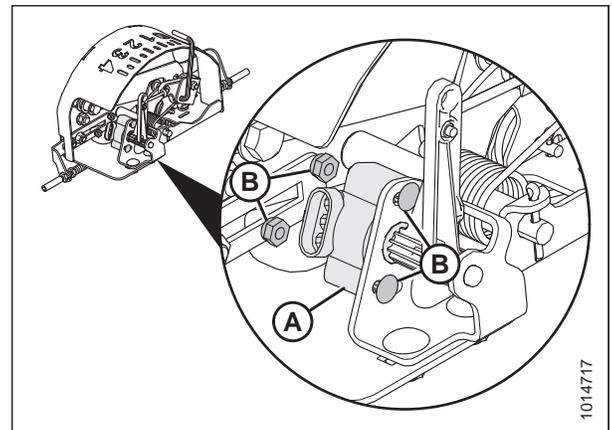


Figure 3.318: AHHC Sensor

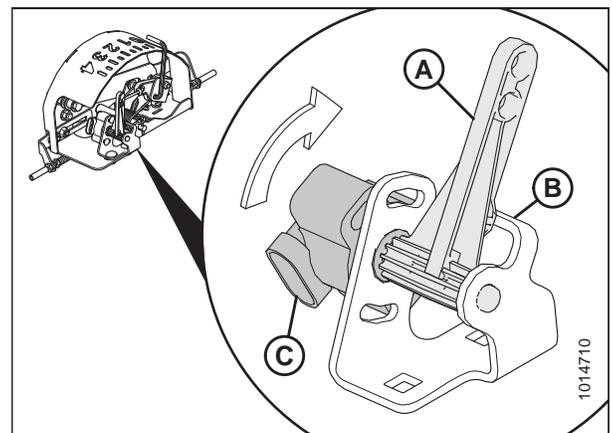


Figure 3.319: AHHC Sensor

OPERATION

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

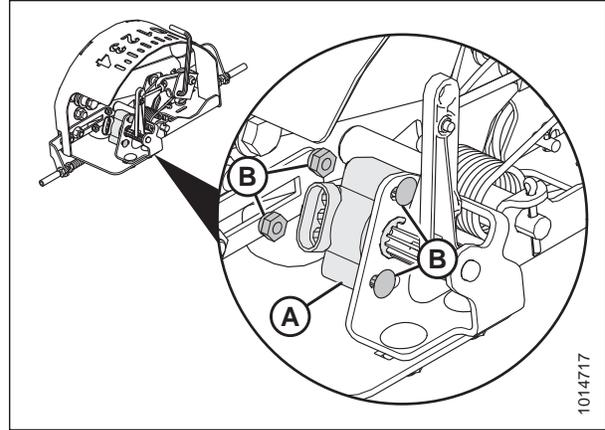


Figure 3.320: AHC Sensor

- Ensure linkage (A) operates freely (arrow indicates approximate range).
- Reconnect wiring harness to plug (B) on sensor.
- Check voltage range of new sensor, and adjust if necessary. Refer to the following procedures:
 - [Manually Checking Voltage Range, page 102](#)
 - [Adjusting Voltage Limits, page 104](#)

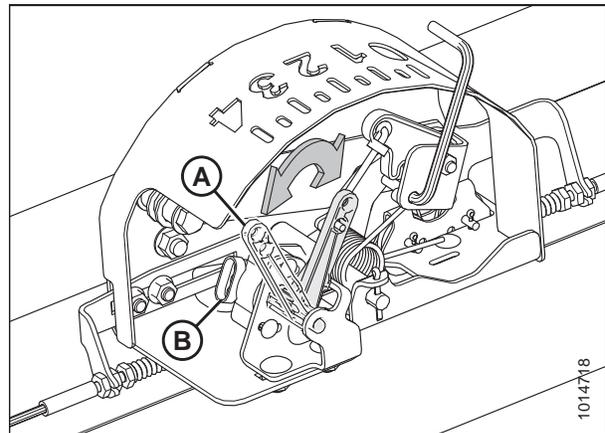


Figure 3.321: AHC Sensor Range

3.8.13 Sensor Operation

The position sensors supplied with auto header height control (AHC) system are 1000 ohm (1 k) industrial series sensors containing sealed connectors. Normal operating signal voltages for sensors fall between 10% (0.5VDC) and 90% (4.5VDC).

- A sensor operating with a signal voltage **below 5%** is considered to be shorted.
- A sensor with a signal voltage **above 95%** is considered to be open.

An increase in sensor voltage correlates to an increase in header height.

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

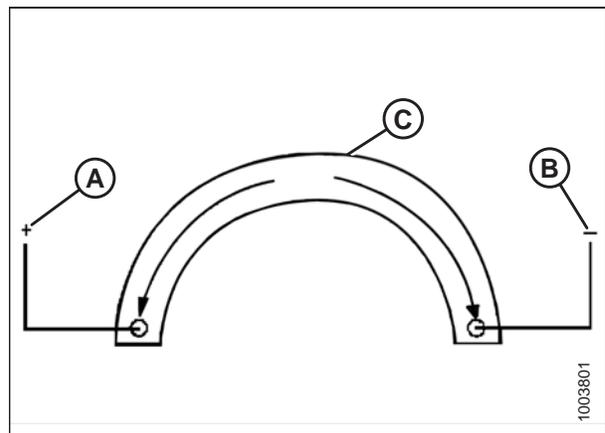


Figure 3.322: Power, Ground, and Signal Wires

OPERATION

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

The resistance measured across signal and ground wires should increase uniformly from a low 80–100 ohms (.08–0.1 k) to a high 800–1200 ohms (0.8–1.2 k). To observe this, connect an ohm meter across the signal and power wires and rotate the sensor shaft. When an input voltage is applied to the high resistance filament band through the power wire (A), output (or measured) voltage in the signal wire (C) is changed by variable resistance.

NOTE:

Ground and power wires may differ depending on combine.

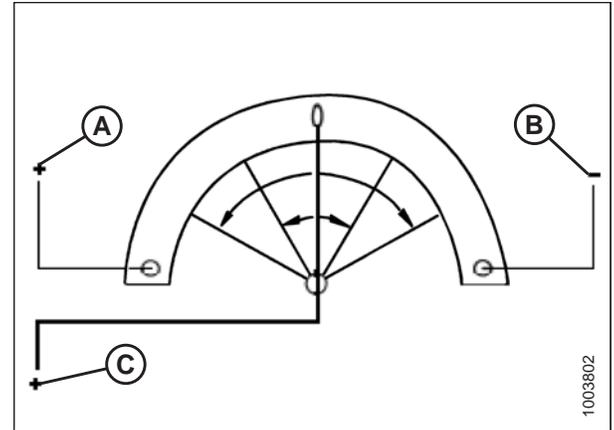


Figure 3.323: Power, Ground, and Signal Wires

3.9 Levelling the Header

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

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

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

NOTE:

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

1. Park combine on level ground.
2. Set header approximately 150 mm (6 in.) off ground, shut down combine, and remove key from ignition.
3. Check that header is against down stops.
4. Check header float and adjust if required. Refer to *Checking and Adjusting Header Float, page 60*.
5. Adjust header levelness by making small adjustments (1/4–1/2 turn) to nut (A) on each float lock. Adjust each side equally but in opposite directions as follows:

NOTE:

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

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

NOTE:

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

NOTE:

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

NOTE:

Check the float after levelling header. Refer to *Checking and Adjusting Header Float, page 60*.

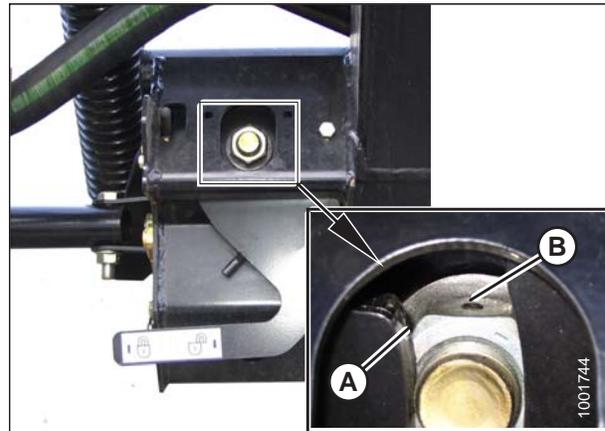


Figure 3.324: Float Lock

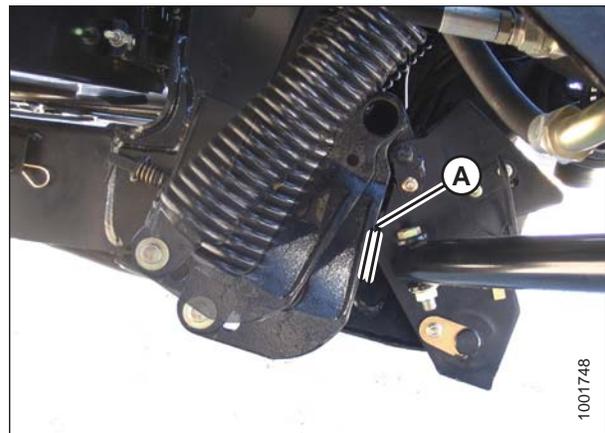


Figure 3.325: Bell Crank

3.10 Unplugging the Cutterbar

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

 **CAUTION**

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

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

 **DANGER**

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

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

 **CAUTION**

Wear heavy gloves when working around or handling knives.

6. Clean off the cutterbar by hand.

NOTE:

If cutterbar plugging persists, refer to [7 Troubleshooting, page 451](#).

3.11 Unplugging the Adapter

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

3.12 Upper Cross Auger (UCA)

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

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

IMPORTANT:

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

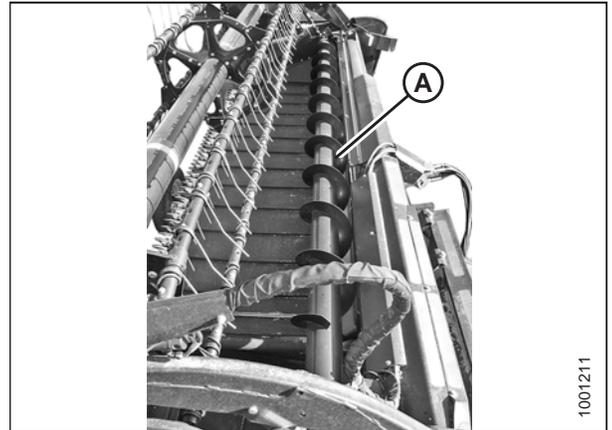


Figure 3.326: Upper Cross Auger

3.12.1 Removing Beater Bars

DANGER

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

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

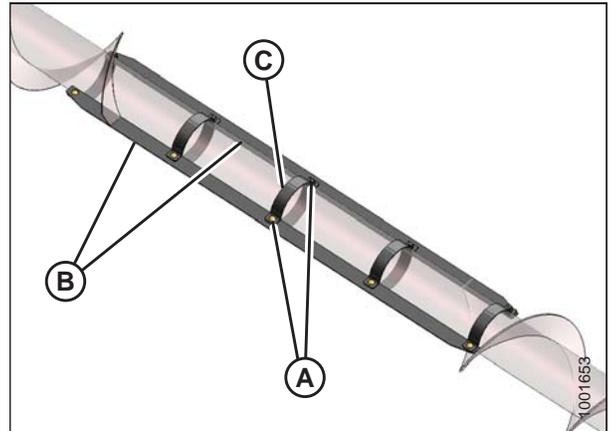


Figure 3.327: Single-Reel Headers

OPERATION

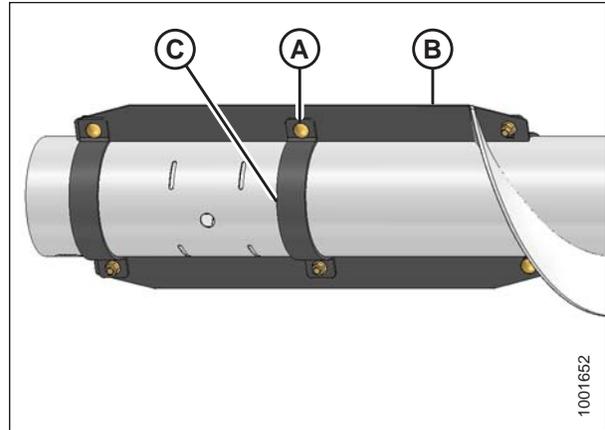


Figure 3.328: Beater Bars

3.12.2 Installing Beater Bars

WARNING

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

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

NOTE:

To reduce the chance of wrapping, offset the beater bars by 90 degrees.

5. Tighten bolts.

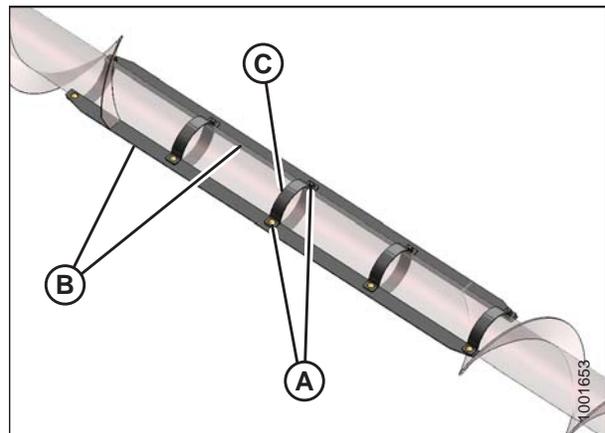


Figure 3.329: Single-Reel Headers

OPERATION

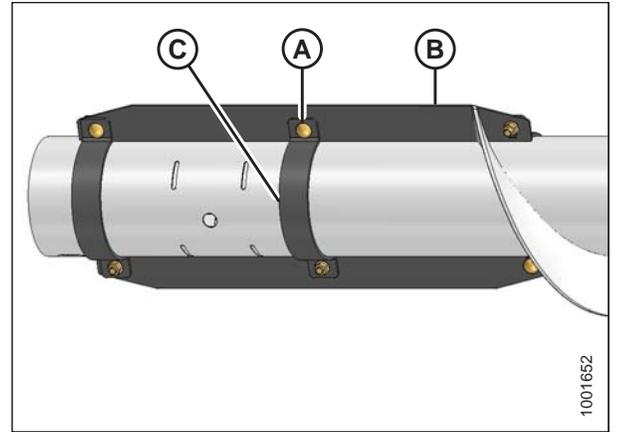


Figure 3.330: Beater Bars

3.13 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.

3.13.1 Transporting Header on Combine

CAUTION

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

3.13.2 Towing

Headers with the Slow Speed Transport/Stabilizer Wheel option can be towed behind a properly configured combine or an agricultural tractor. Refer to the towing vehicles operator's manual for instructions.

OPERATION

Attaching Header to Towing Vehicle

CAUTION

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

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

Towing the Header

CAUTION

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

- Do NOT exceed 32 km/h (20 mph). Reduce transport speed to less than 8 km/h (5 mph) for corners and slippery or rough conditions.
- Turn corners at only very low speeds 8 km/h ([5 mph] or less). Header stability is reduced while cornering because front wheel moves to the left.
- Do NOT accelerate when making or coming out of a turn.
- Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law.

OPERATION

3.13.3 Converting from Transport to Field Position

Removing Tow-Bar

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

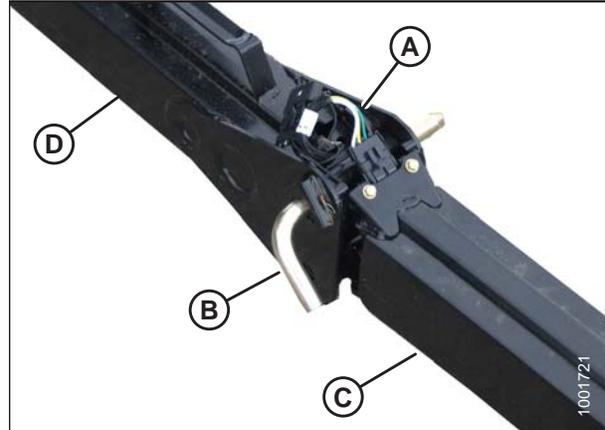


Figure 3.331: Tow-Bar Assembly

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



Figure 3.332: 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).

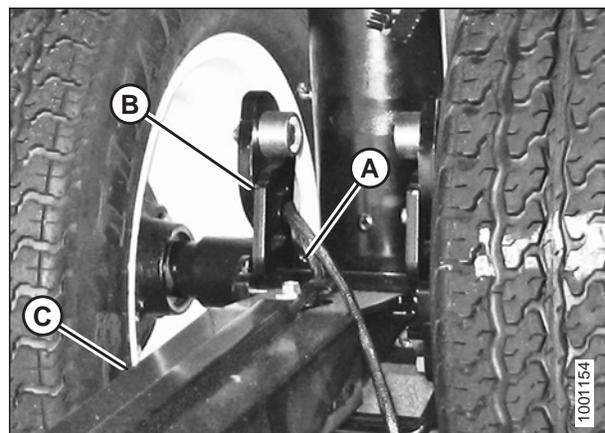


Figure 3.333: Tow-Bar Latch

OPERATION

Storing the Tow-Bar

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

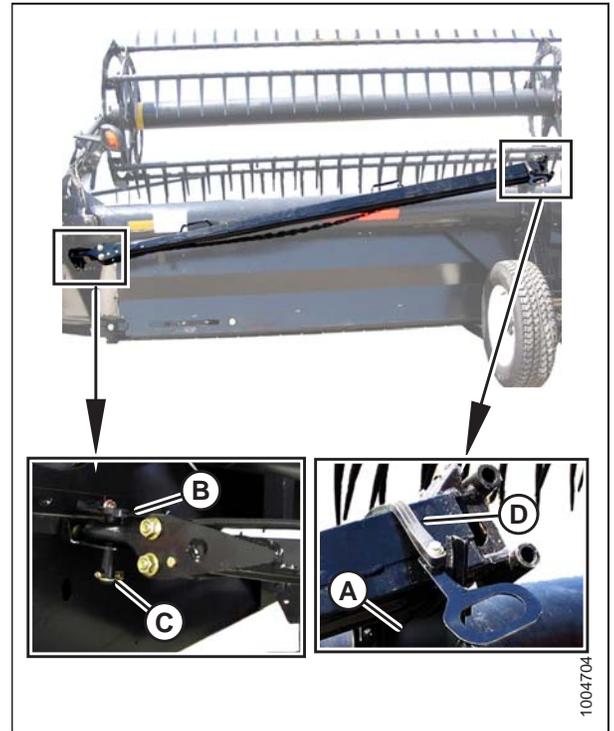


Figure 3.334: Tow-Bar Storage

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

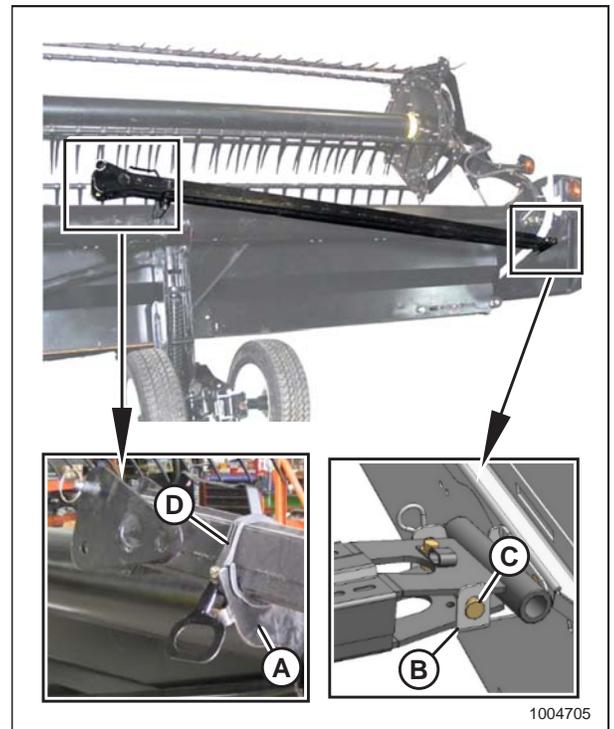


Figure 3.335: Tow-Bar Storage

OPERATION

7. Attach the header to the combine. Refer to *4 Header Attachment/Detachment, page 219*.
8. Place the transport wheels into field position. Refer to the following:
 - *Moving Front (Left) Wheels into Field Position, page 206*
 - *Moving Rear (Right) Wheels into Field Position, page 207*

Moving Front (Left) Wheels into Field Position

DANGER

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

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

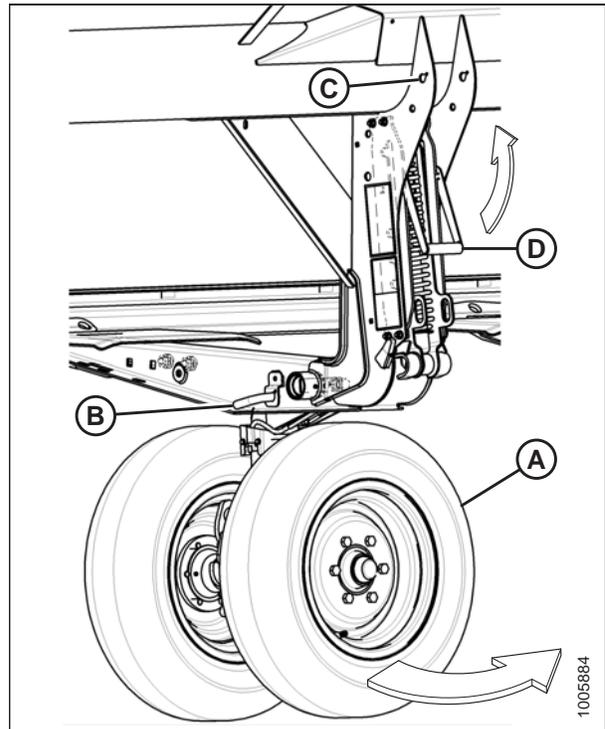


Figure 3.336: Front (Left) Wheels

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

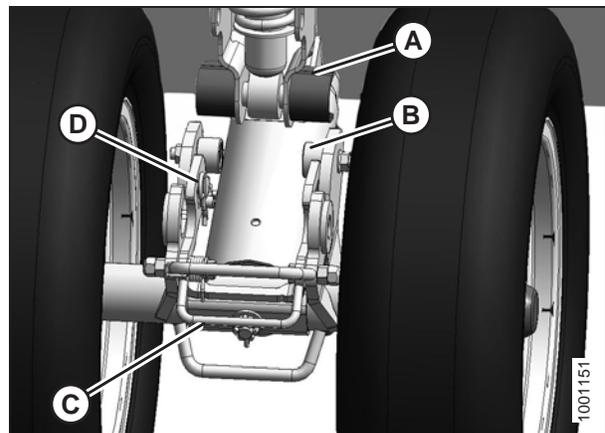


Figure 3.337: Front (Left) Wheels

OPERATION

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



Figure 3.338: Front (Left) Wheels

Moving Rear (Right) Wheels into Field Position

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



Figure 3.339: Rear Wheel – Left Side

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

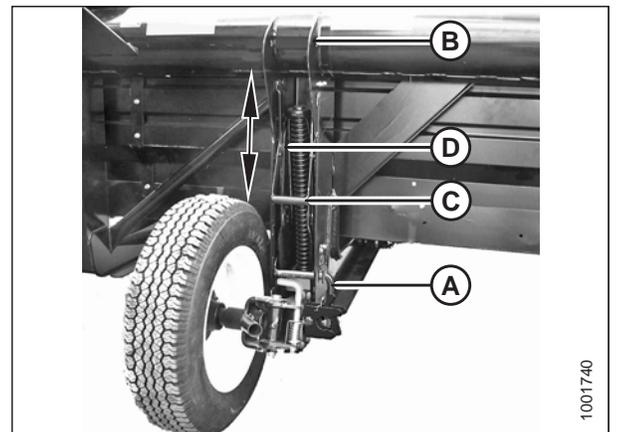


Figure 3.340: Rear Wheel – Left Side

OPERATION

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 axle, and reinsert pin into support.
8. Swing the axle (C) clockwise towards the rear of the header.

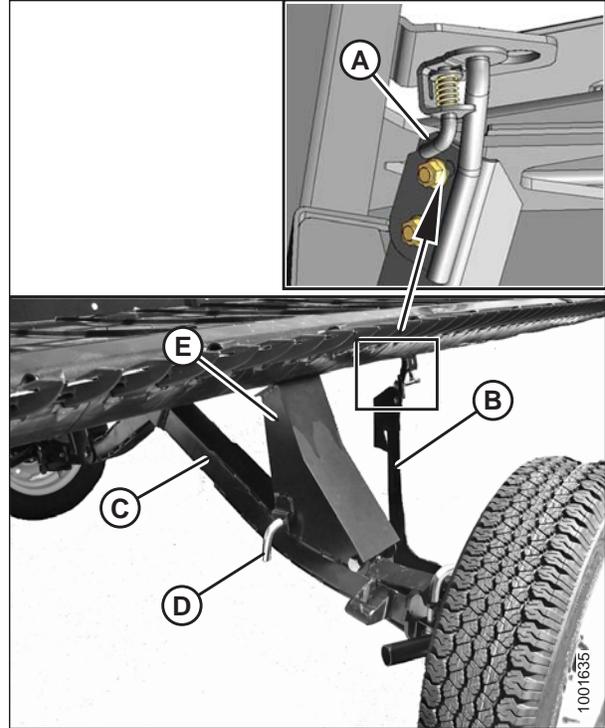


Figure 3.341: Right Rear Axle

9. Pull pin (A) on right wheel, swivel the wheel counterclockwise to position shown, and lock with pin (A).
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 installed with the open end facing the cutterbar.

IMPORTANT:

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

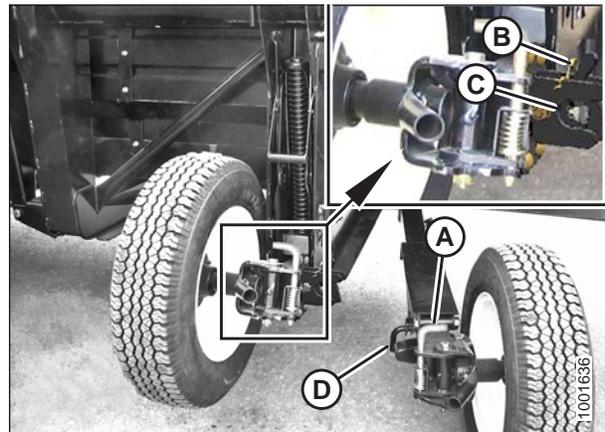


Figure 3.342: Rear Axles

OPERATION

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

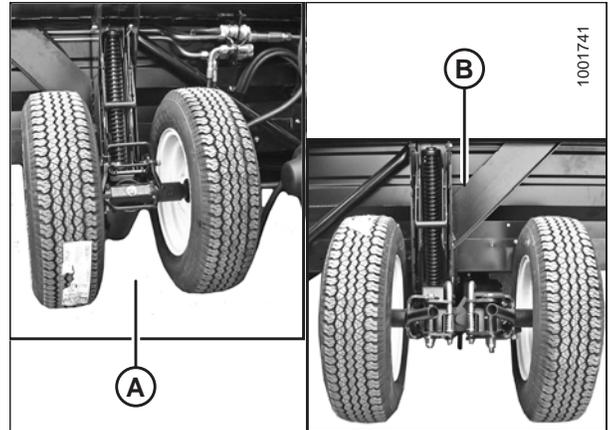


Figure 3.343: Field Position

3.13.4 Converting from Field to Transport Position

Moving Front (Left) Wheels into Transport Position

DANGER

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

CAUTION

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

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

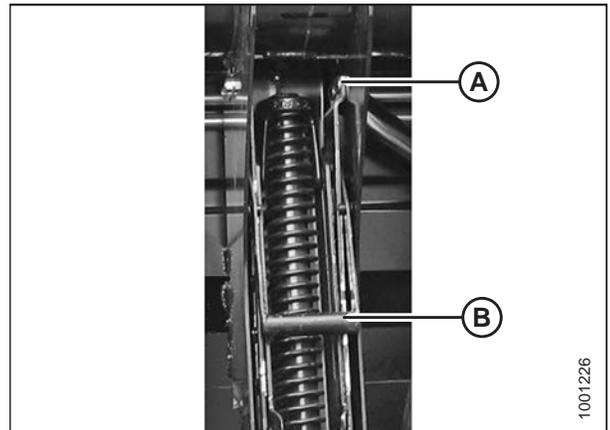


Figure 3.344: Raising Linkage

OPERATION

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

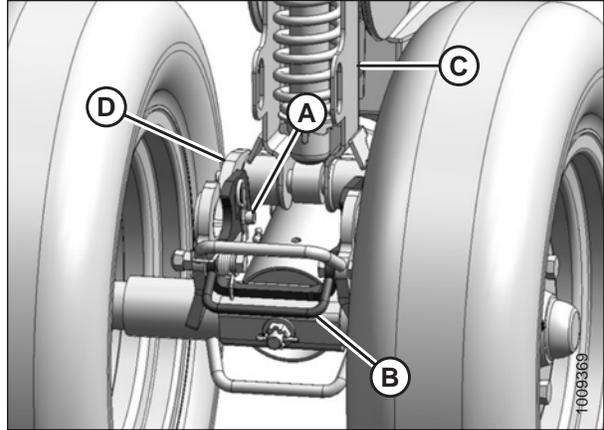


Figure 3.345: Left Front Wheels

6. Lower handle (B) to lock.

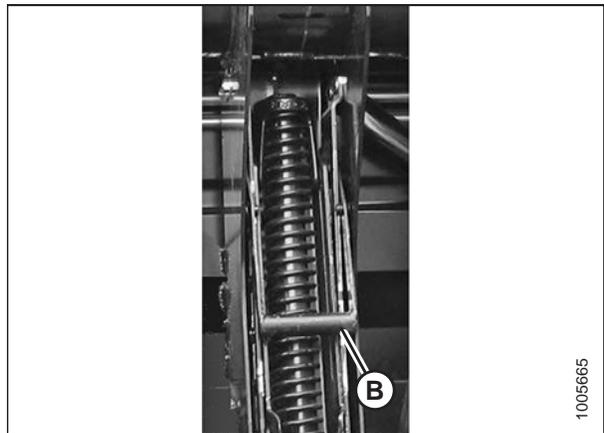


Figure 3.346: Locking Linkage

OPERATION

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

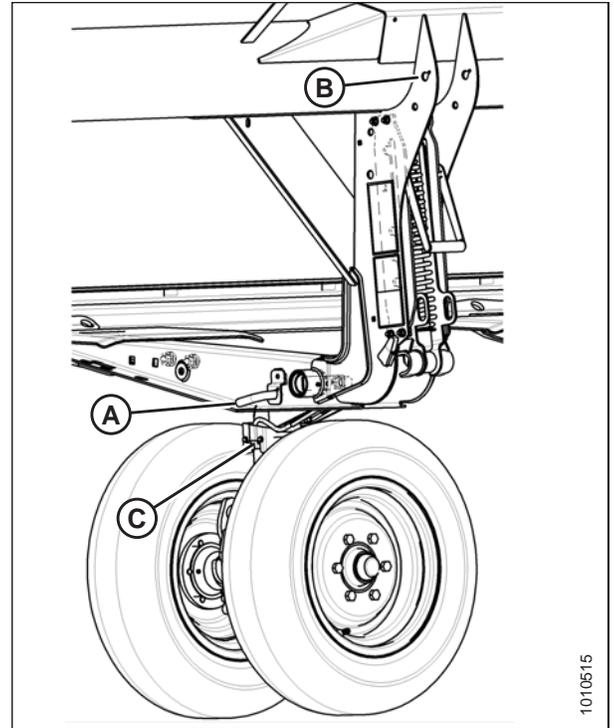


Figure 3.347: Left Front Wheels

Moving Rear (Right) Wheels into Transport Position

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

CAUTION

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

3. Pull handle (D) carefully to release the spring and lower the wheel to the ground.
4. Lift the wheel and linkage with handle (E) and position the linkage in the bottom slot.
5. Lower the handle (C) to lock.

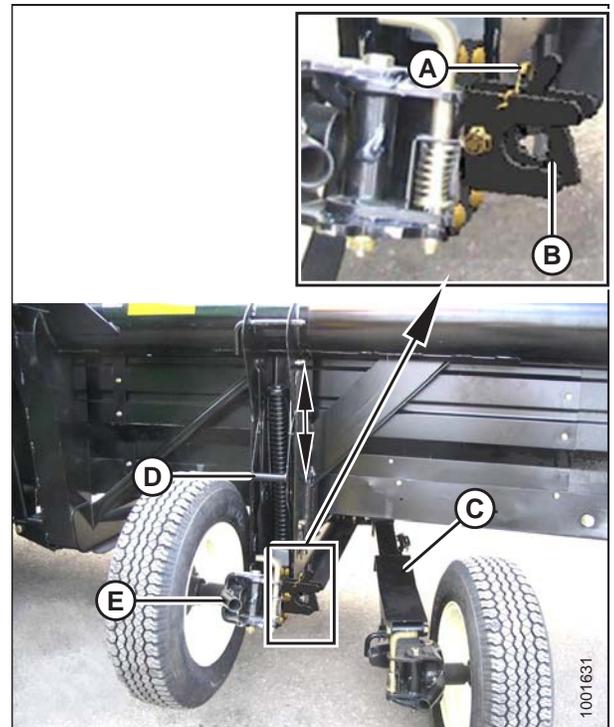


Figure 3.348: Separating Axles

OPERATION

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



Figure 3.349: Wheel Position

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



Figure 3.350: Left Wheel in Transport Position

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

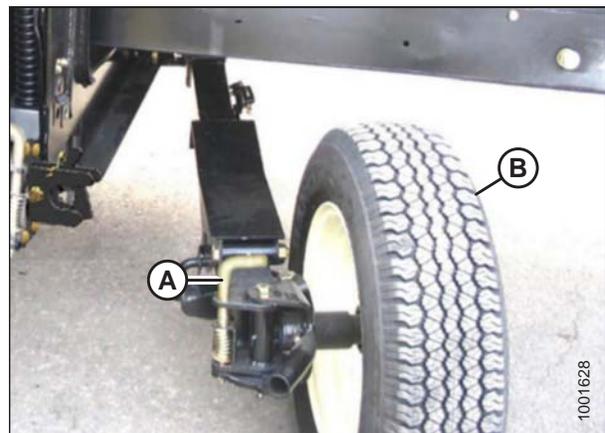


Figure 3.351: Right Rear Wheel

OPERATION

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

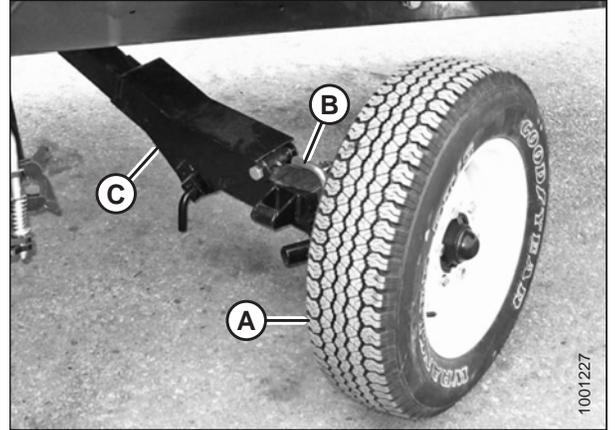


Figure 3.352: Right Rear Wheel

11. Remove pin (A), raise support (B) to the position shown, and reinsert 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 transport position.
 13. Disengage the header cylinder lift stops.
 14. Detach the header's hydraulic and electrical connections from the combine. Refer to [4 Header Attachment/Detachment, page 219](#).
 15. Start the combine and lower the header to the ground.

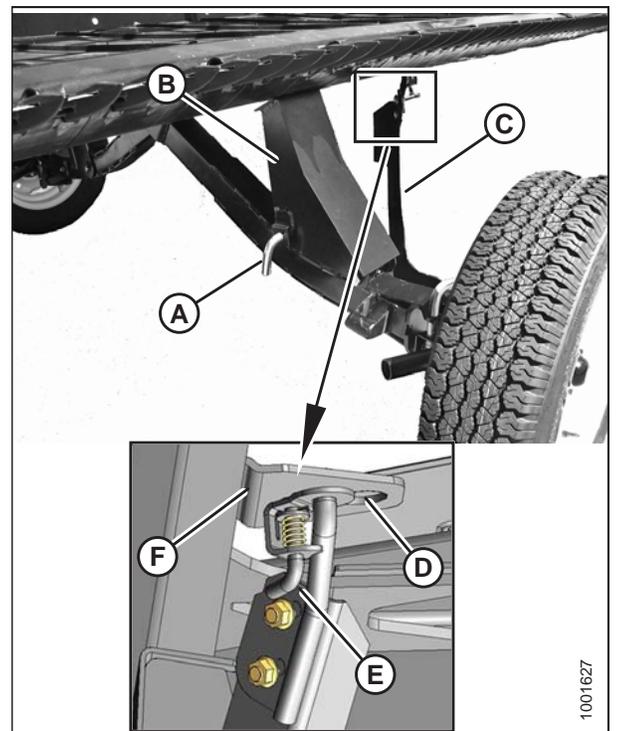


Figure 3.353: Right Rear Wheel Position

OPERATION

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.

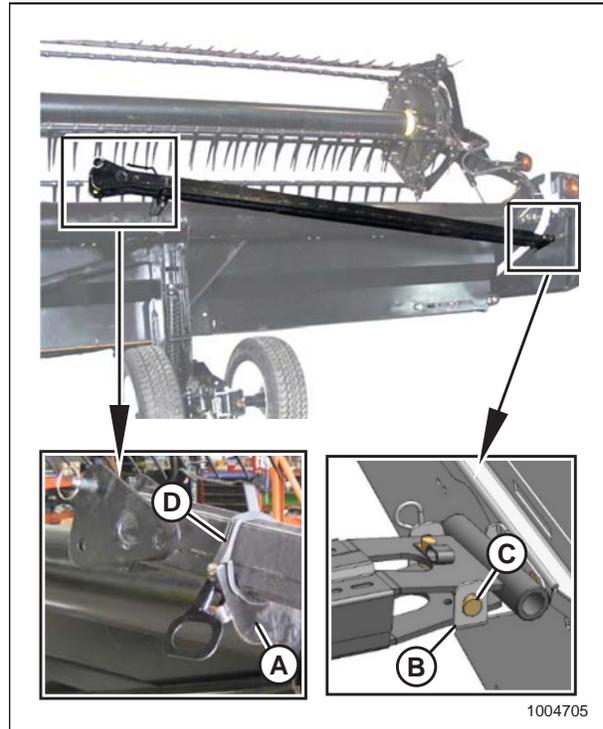


Figure 3.354: Tow-Bar Removal – Right Side

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).

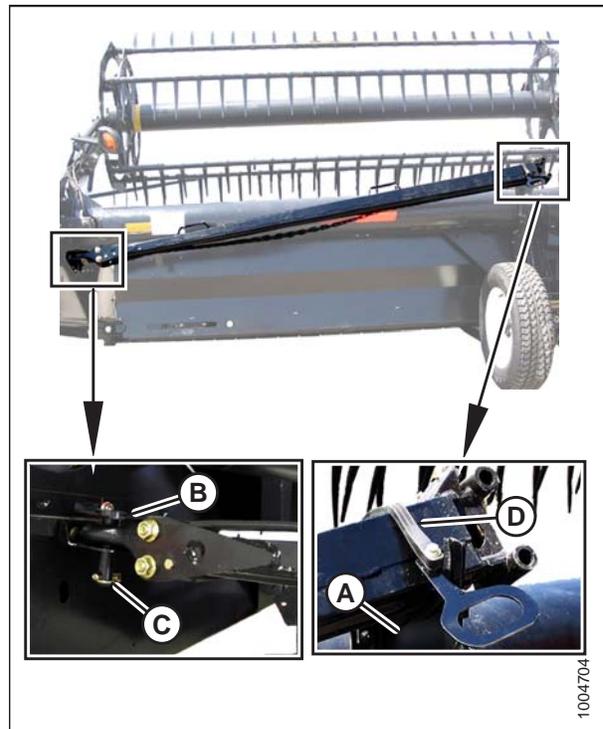


Figure 3.355: Tow-Bar Removal – Left Side

OPERATION

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

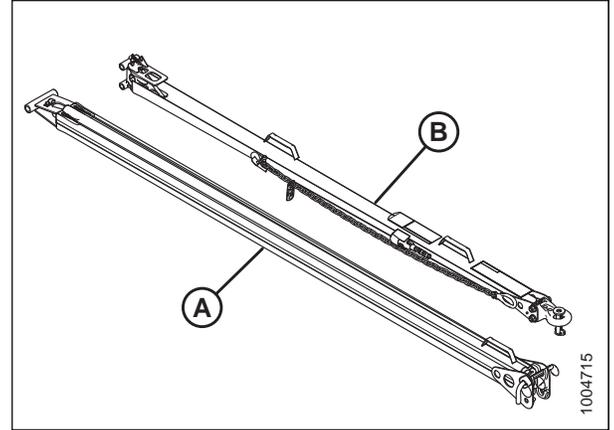


Figure 3.356: Tow-Bar Assembly

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

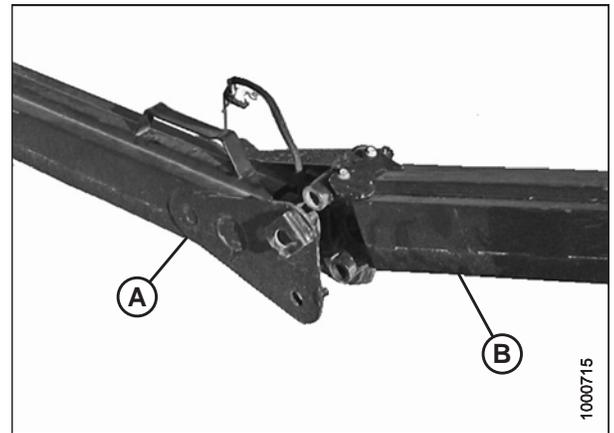


Figure 3.357: Tow-Bar Assembly

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).

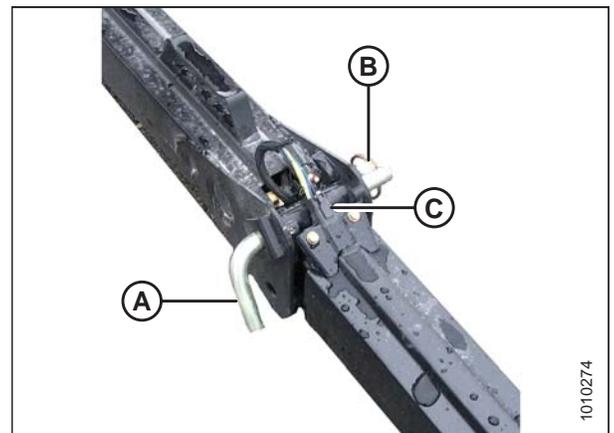


Figure 3.358: Tow-Bar Assembly

OPERATION

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.

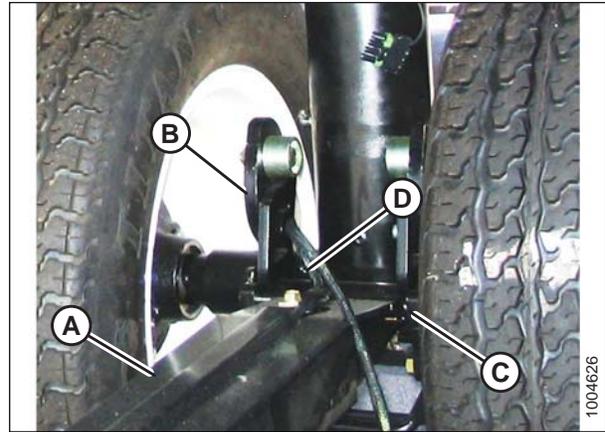


Figure 3.359: Attaching Tow-Bar

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



Figure 3.360: Harness Connection

3.14 Storing the Header

Perform the following procedures at the end of each operating season:

 **CAUTION**

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

 **CAUTION**

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

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

NOTE:

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

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.
10. Check for broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
11. Replace or tighten any missing or loose hardware. Refer to [8.2 Torque Specifications, page 470](#).

4 Header Attachment/Detachment

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

Combine	Refer to
Case IH 7010, 8010, 7120, 8120, 9120, 5088, 6088, 7088, 5130, 6130, 7130, 7230, 8230, 9230	4.2 Case IH Combines, page 220
Gleaner R and S Series, Challenger 660, 670, 680B, 540C, 560C, Massey Ferguson 9690, 9790, 9895, 9520, 9540, 9560	4.3 Challenger, Gleaner, and Massey Ferguson Combines, page 228
John Deere 60, 70, S, and T Series	4.4 John Deere Combines, page 236
CLAAS 500, 700 (R Series)	4.5 CLAAS Combines, page 243
New Holland CR, CX	4.6 New Holland Combines, page 251

NOTE:

Ensure the applicable functions (e.g., auto header height control [AHHC], draper header option, hydraulic center-link option, hydraulic reel drive) are enabled on the combine and the combine computer. Failure to do so may result in improper header operation.

4.1 Adapter Setup

The following sections outline the recommended adapter setup guidelines for your specific combine model and crop type; however, the recommendations cannot cover all conditions.

If feeding problems develop with the adapter, refer to [7 Troubleshooting, page 451](#).

4.1.1 Using Flighting Extensions

The flighting extension kit may improve feeding in certain crops such as rice or heavy green crop, but it is not recommended in cereal crops. For instructions for installing and removing flighting extensions, refer to [5.7.7 Flighting Extensions, page 324](#)

4.1.2 Using Stripper Bars

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

For servicing information, refer to [5.11 Adapter Stripper Bars and Feed Deflectors, page 377](#).

4.1.3 Adjusting Auger Speed

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

The auger speed is determined by the combine input shaft and is matched to each specific combine model; therefore, no adjustment is necessary. However, optional 20-, 22-, and 26-tooth drive sprockets are available to change the adapter feed auger speed and optimize performance. See your MacDon Dealer.

4.2 Case IH Combines

4.2.1 Attaching Header to Case IH Combine

DANGER

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

1. On combine, ensure lock handle (A) is positioned so hooks (B) can engage the adapter.

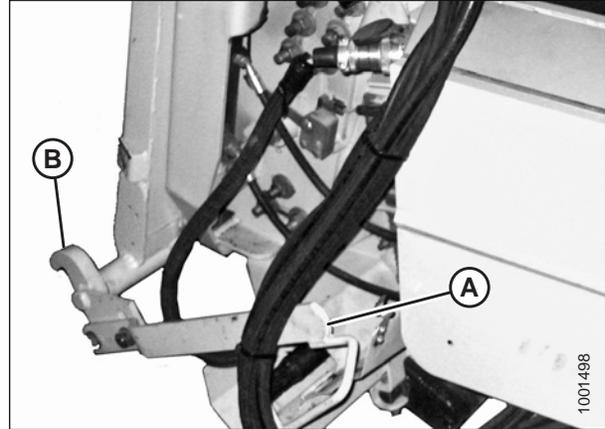


Figure 4.1: Feeder House Lock

CAUTION

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

2. Start engine and slowly drive combine up to header until feeder house saddle (A) is directly under adapter top cross member (B).
3. Raise feeder house slightly to lift header, ensuring feeder saddle is properly engaged in the adapter frame.
4. Stop engine and remove key from ignition.

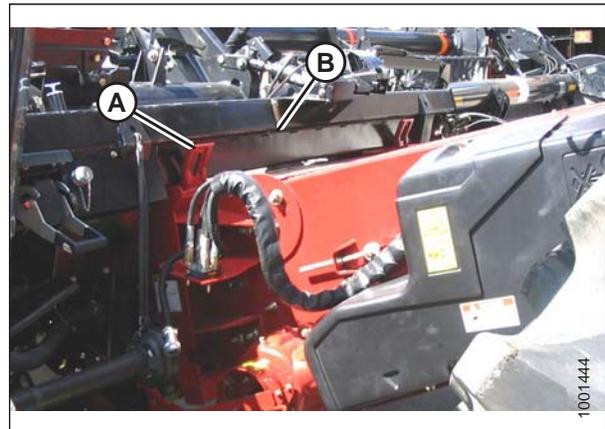


Figure 4.2: Combine and Adapter

HEADER ATTACHMENT/DETACHMENT

5. On left of feeder house, lift lever (A) on the adapter and push handle (B) on combine to engage locks (C) on both sides of feeder house.
6. Push down on lever (A) so slot in lever engages handle and locks handle in place.
7. If lock (C) does not fully engage pin on the adapter, loosen bolts (D) and adjust lock. Retighten bolts.

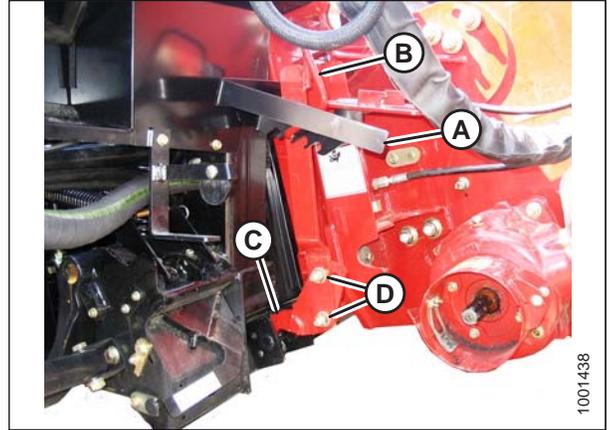


Figure 4.3: Combine and Adapter

8. Open receptacle cover (A) on the adapter.
9. Press lock button (B) and pull handle (C) to fully open position.
10. Clean receptacle mating surfaces.

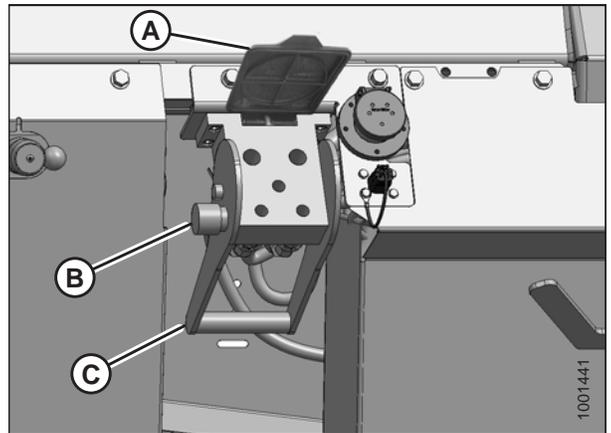


Figure 4.4: Adapter Receptacle

11. Remove hydraulic quick coupler (A) from combine and clean mating surfaces.



Figure 4.5: Combine Connectors

HEADER ATTACHMENT/DETACHMENT

12. Position coupler onto adapter receptacle (A) and push handle (B) (not shown) to engage multicoupler pins into receptacle.
13. Push handle (B) to closed position until lock button (C) snaps out.

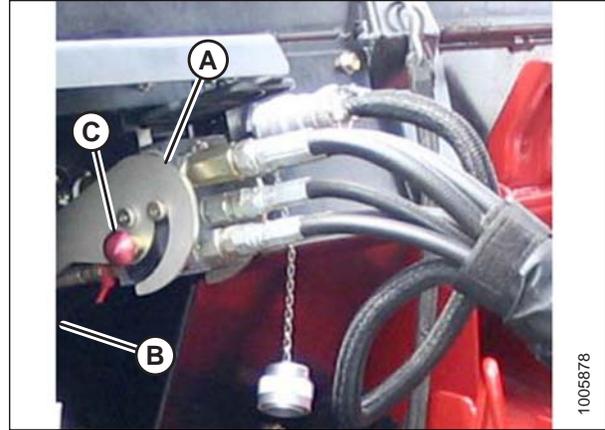


Figure 4.6: Hydraulic Connection

14. Remove cover from electrical receptacle (A). Ensure receptacle is clean and has no signs of damage.

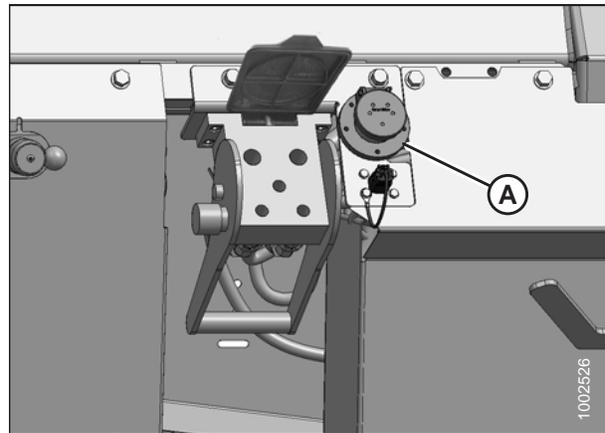


Figure 4.7: Electrical Receptacle

15. Remove electrical connector (A) from storage cup on combine, and route it to the adapter receptacle.



Figure 4.8: Combine Connectors

HEADER ATTACHMENT/DETACHMENT

- Align lugs on connector (A) with slots in receptacle (B), push connector onto receptacle, and turn collar on connector to lock it in place.

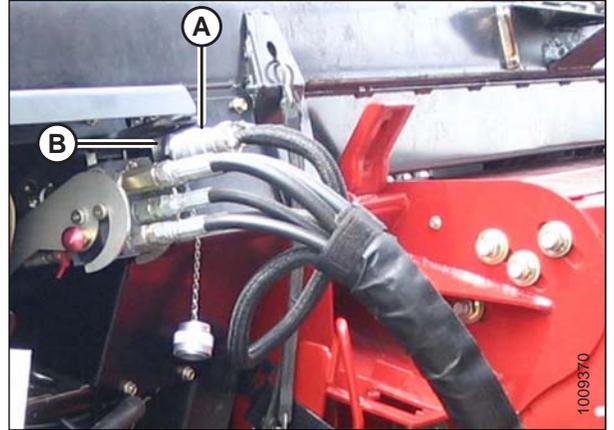


Figure 4.9: Electrical Connection

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

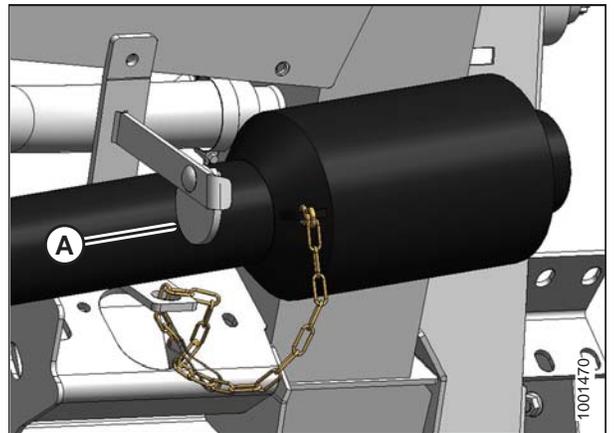


Figure 4.10: Driveline Storage Hook

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

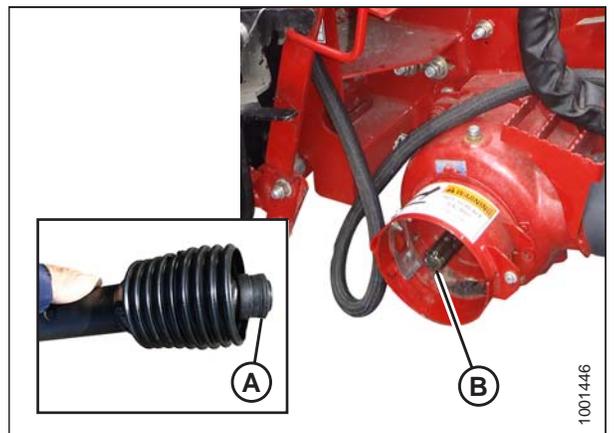


Figure 4.11: Combine Output Shaft

HEADER ATTACHMENT/DETACHMENT

19. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

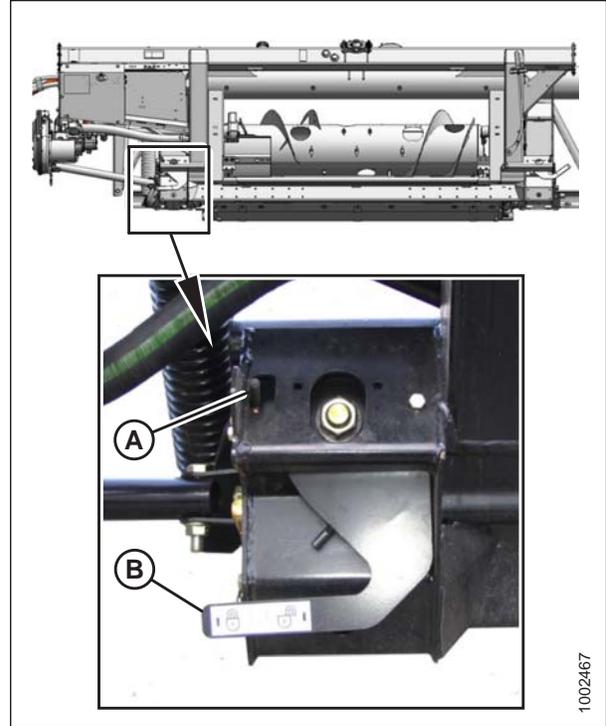


Figure 4.12: Float Lock in UNLOCK Position

4.2.2 Detaching Header from Case IH Combine

DANGER

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

HEADER ATTACHMENT/DETACHMENT

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

IMPORTANT:

If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to [3.7.1 Cutting Height, page 53](#).

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 53](#).

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

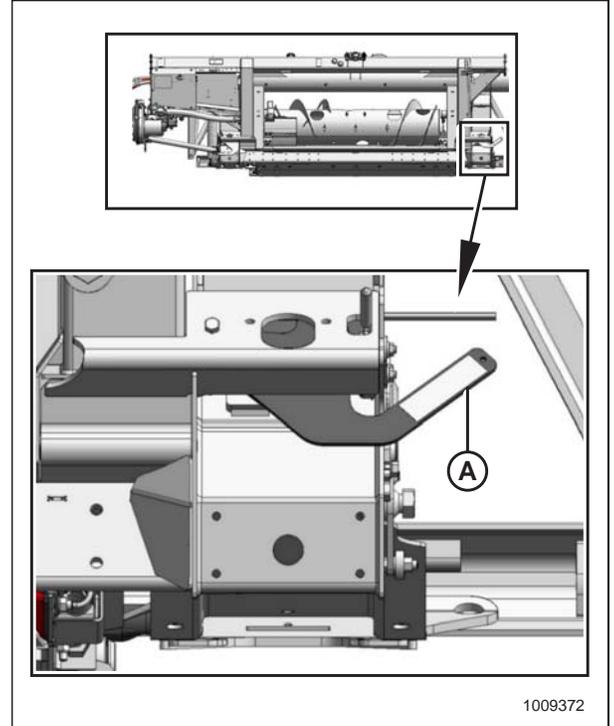


Figure 4.13: Float Locked

4. Disconnect the driveline (A) from the combine.

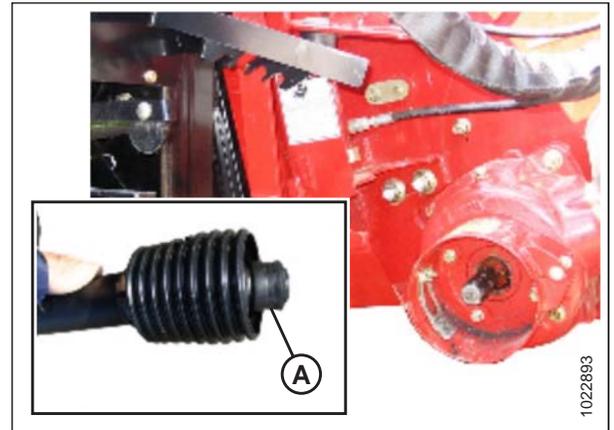


Figure 4.14: Driveline

HEADER ATTACHMENT/DETACHMENT

- Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

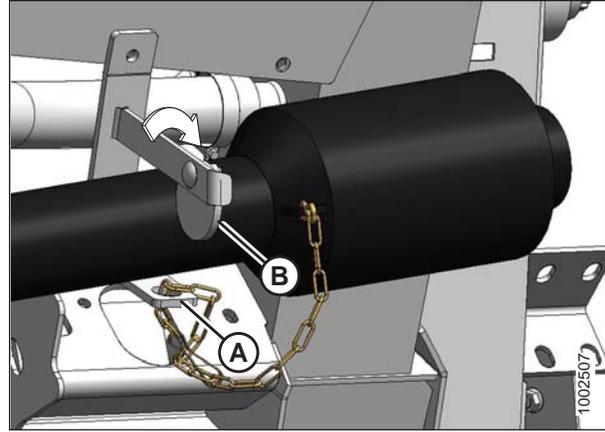


Figure 4.15: Driveline

- Remove the electrical connector (A) and replace the cover (B).
- Push in the lock button (C) and pull the handle (D) to release the multicoupler (E).

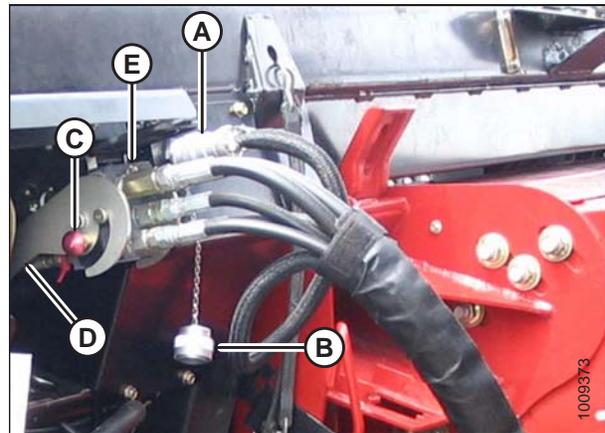


Figure 4.16: Multicoupler

- Position the multicoupler (A) onto the storage plate (B) on the combine.
- Place the electrical connector (C) in the storage cup (D).

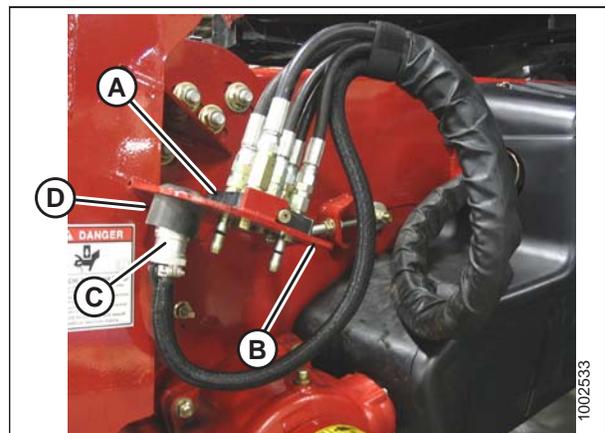


Figure 4.17: Multicoupler Storage

HEADER ATTACHMENT/DETACHMENT

10. Push the handle (A) on the adapter receptacle to the closed position until the lock button (B) snaps out. Close the cover (C).

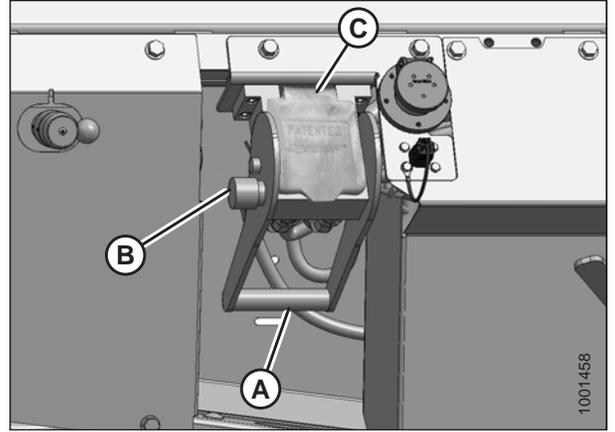


Figure 4.18: Adapter Receptacle

11. Lift the lever (A) and pull and lower the handle (B) to disengage the feeder house/adapter lock (C).
12. Lower the feeder house until it disengages the adapter support.
13. Back the combine away slowly from the adapter.

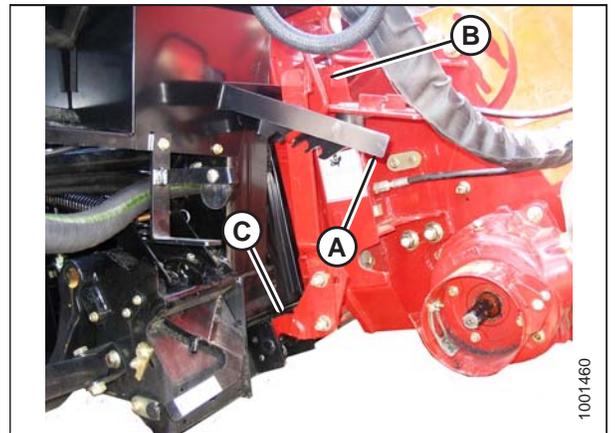


Figure 4.19: Feeder House Locks

4.3 Challenger, Gleaner, and Massey Ferguson Combines

4.3.1 Attaching Header to Challenger, Gleaner, or Massey Ferguson Combine

DANGER

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

1. Use lock handle (B) to retract lugs (A) at base of feeder house.

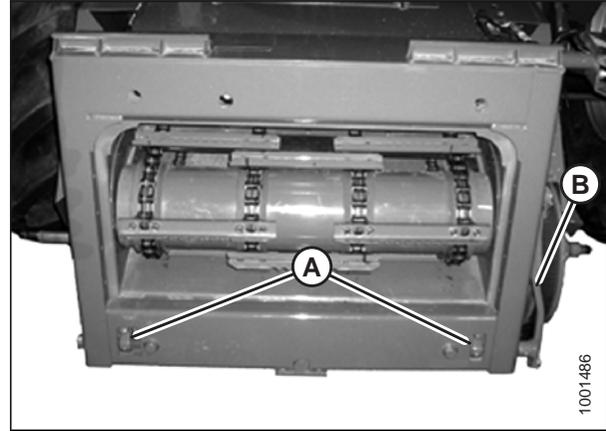


Figure 4.20: Combine Feeder House

CAUTION

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

2. Start engine and slowly approach header until feeder house is directly under adapter top cross member (A) and alignment pins (C) on feeder house (shown in Figure 4.22, page 229) are aligned with holes (B) in the adapter frame.

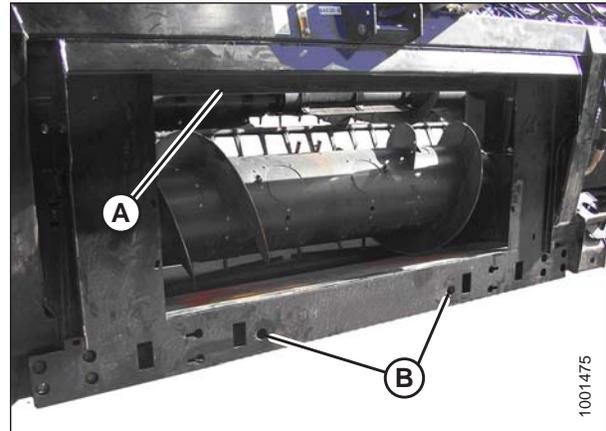


Figure 4.21: Adapter

HEADER ATTACHMENT/DETACHMENT

NOTE:

Feeder house may not be exactly as shown.

3. Raise feeder house slightly to lift header, ensuring feeder house saddle (A) is properly engaged in the adapter frame.
4. Stop engine and remove key from ignition.

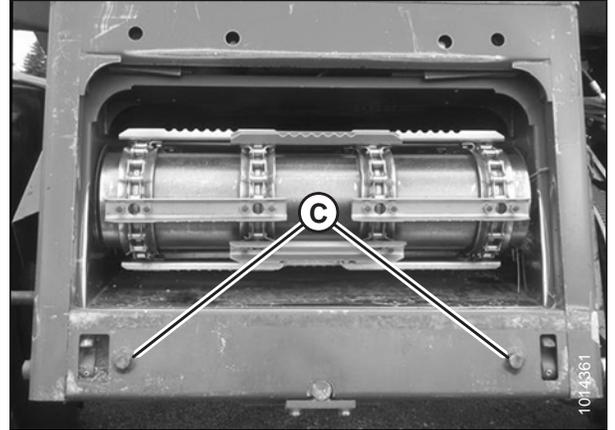


Figure 4.22: Alignment Pins on Feeder House

5. Use lock handle (B) to engage lugs (A) with the adapter.

CAUTION

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

6. Start engine and lower header.
7. Stop engine and remove key from ignition.

NOTE:

The CA25 Combine Adapter is equipped with a multicoupler that connects to the combine. If combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table 4.1, page 230 for a list of kits and installation instructions that are available through your combine Dealer.



Figure 4.23: Feeder House and Adapter

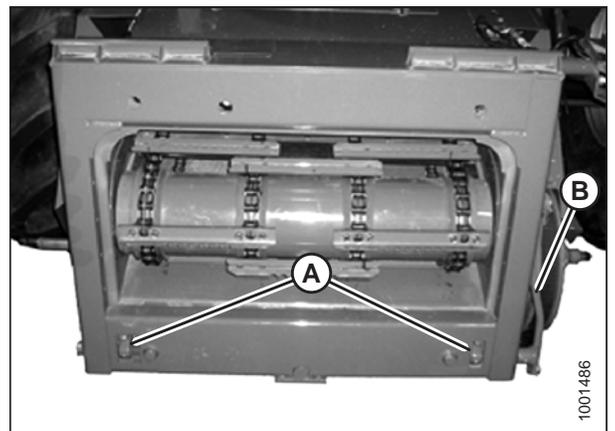


Figure 4.24: Combine Feeder House

HEADER ATTACHMENT/DETACHMENT

Table 4.1 Multicoupler Kits

Combine	Kit Number
Challenger	71530662
Gleaner R/S Series	71414706
Massey Ferguson	71411594

8. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

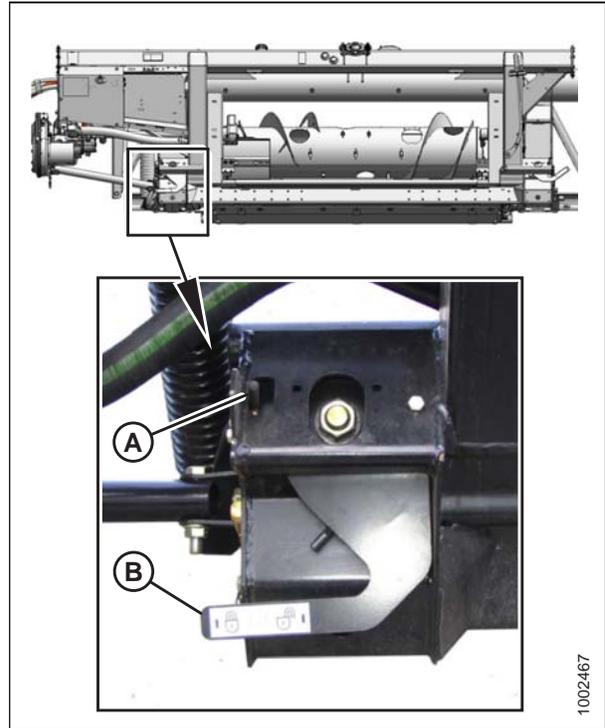


Figure 4.25: Float Lock in UNLOCK Position

9. Raise handle (A) to release multicoupler (B) from the adapter.

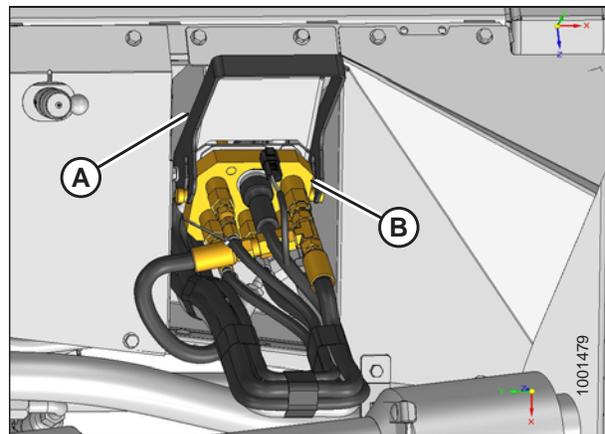


Figure 4.26: Adapter Multicoupler

HEADER ATTACHMENT/DETACHMENT

10. Push handle (A) on combine to fully open position.
11. Clean mating surfaces of multicoupler (B) and receptacle if necessary.

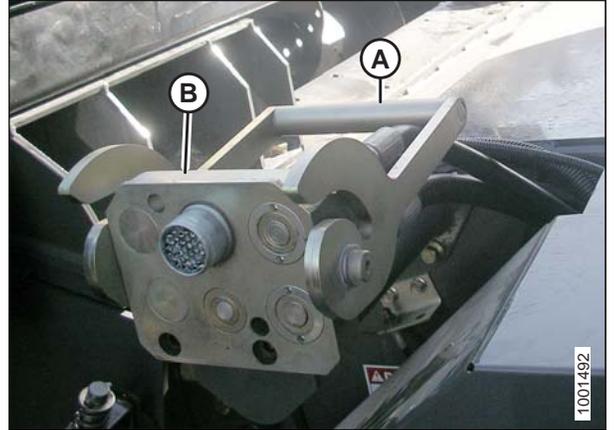


Figure 4.27: Combine Receptacle

12. Position multicoupler (A) onto combine receptacle, and pull handle (B) to fully engage multicoupler into receptacle.
13. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).

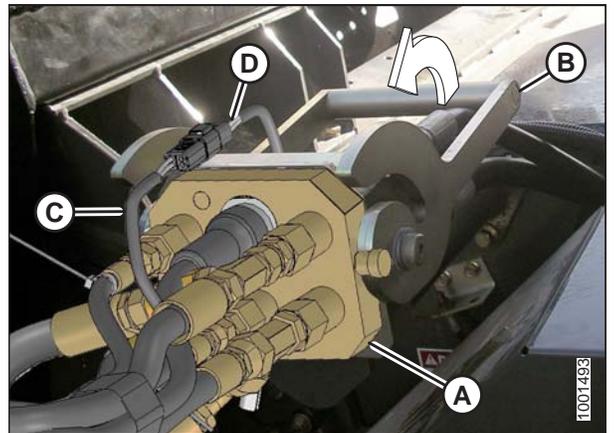


Figure 4.28: Multicoupler

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

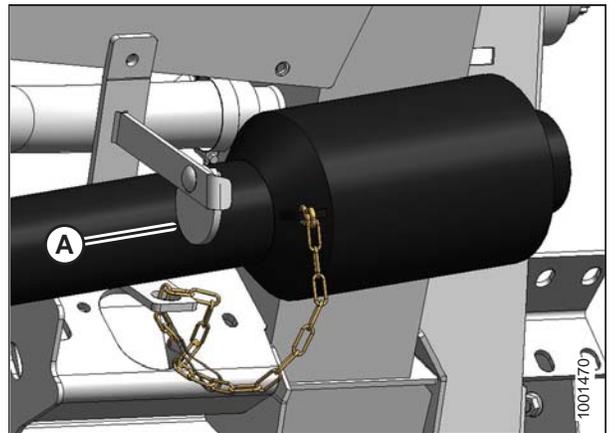


Figure 4.29: Driveline

HEADER ATTACHMENT/DETACHMENT

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

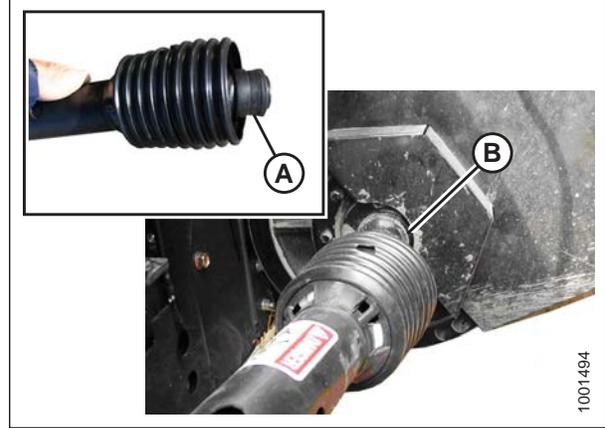


Figure 4.30: Driveline

4.3.2 Detaching Header from Challenger, Gleaner, or Massey Ferguson Combine

DANGER

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

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

IMPORTANT:

If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to [3.7.1 Cutting Height, page 53](#).

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 53](#).

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

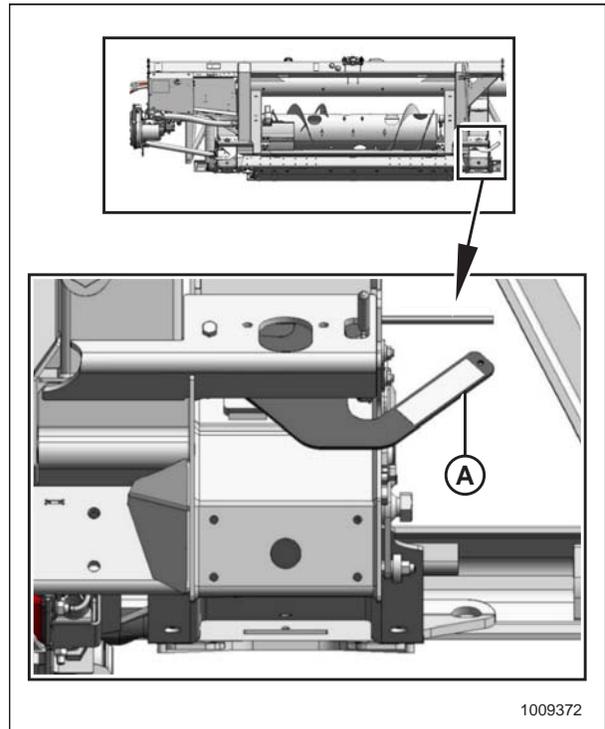


Figure 4.31: Float Locked

HEADER ATTACHMENT/DETACHMENT

4. Disconnect the driveline from the combine output shaft (A).



Figure 4.32: Driveline

5. Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

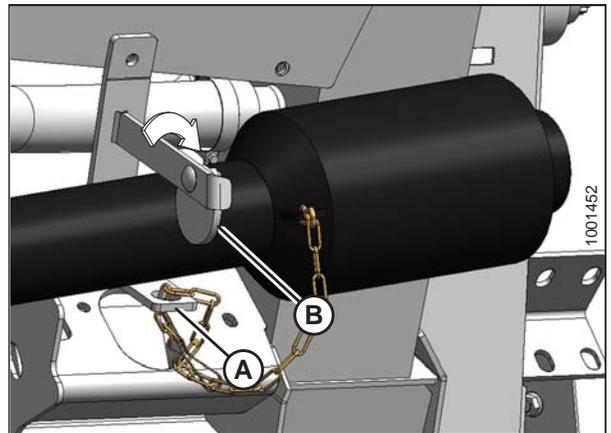


Figure 4.33: Driveline

6. Disconnect the harness at the connector (A).
7. Move the handle (B) on the combine multicoupler to the full open position to release the multicoupler (C) from the combine.

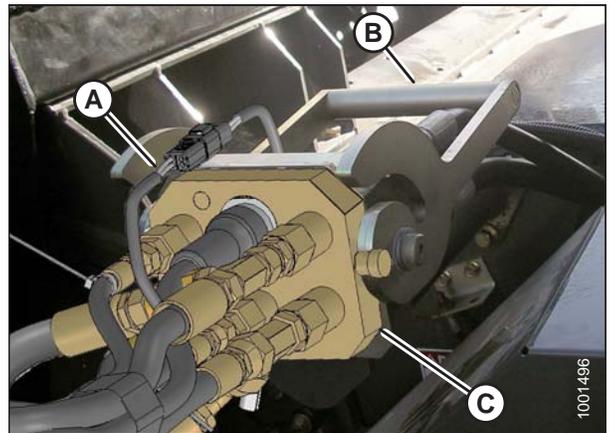


Figure 4.34: Multicoupler

HEADER ATTACHMENT/DETACHMENT

8. Raise the handle (A) on the adapter, and place the multicoupler (B) on the adapter receptacle.
9. Lower the handle (A) to lock the multicoupler.

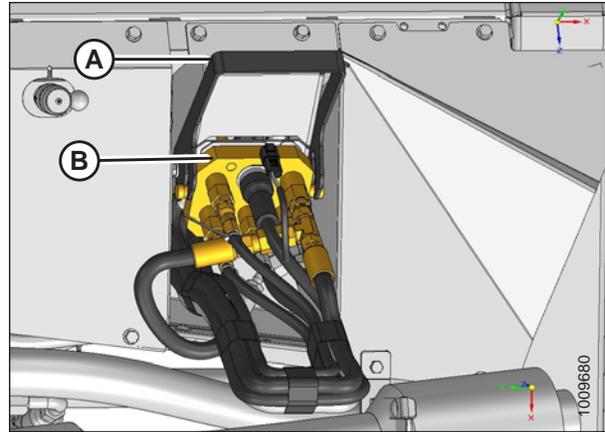


Figure 4.35: Adapter Multicoupler

10. Use the lock handle (B) to retract the lugs (A) at the base of the feeder house.

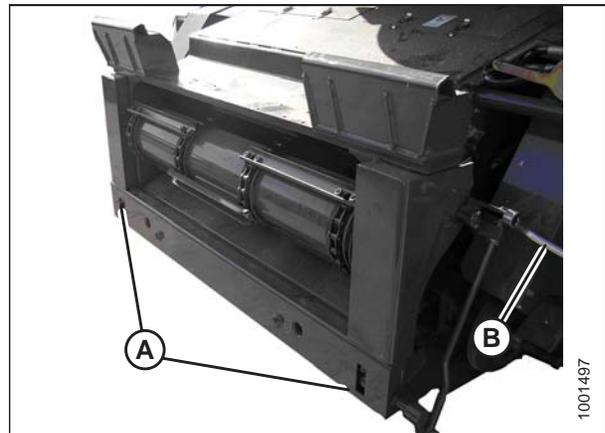


Figure 4.36: Challenger and Massey Ferguson

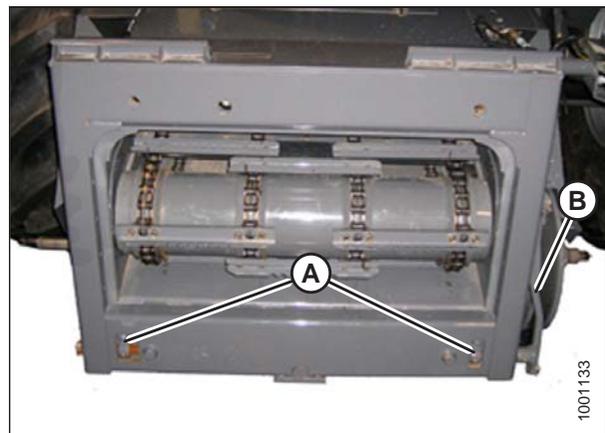


Figure 4.37: Gleaner R and S Series

HEADER ATTACHMENT/DETACHMENT

11. Lower the feeder house until the saddle (A) disengages and clears the adapter support.
12. Back the combine away slowly from the adapter.

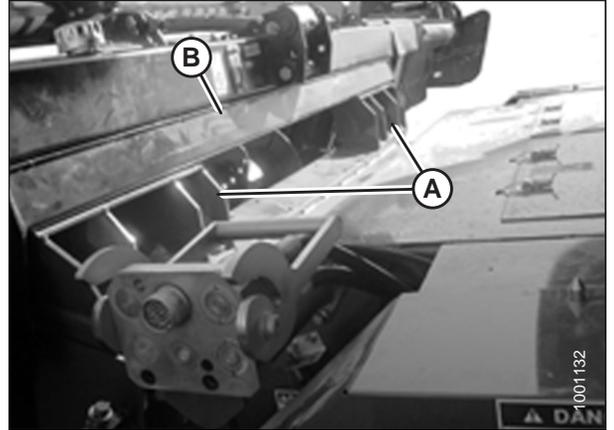


Figure 4.38: Adapter on Combine

4.4 John Deere Combines

4.4.1 Attaching Header to John Deere Combine

DANGER

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

1. Push handle (A) on combine multicoupler receptacle towards feeder house to retract pins (B) at bottom corners of feeder house. Clean the receptacle.

CAUTION

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

2. Start engine and slowly drive combine up to header until feeder house saddle (C) is directly under adapter top cross member (D).
3. Raise feeder house slightly to lift header, ensuring feeder house saddle is properly engaged in the adapter frame.
4. Stop engine and remove key from ignition.
5. Pull handle (A) on the adapter to release multicoupler (B) from storage position. Remove multicoupler, and push handle back into the adapter to store.

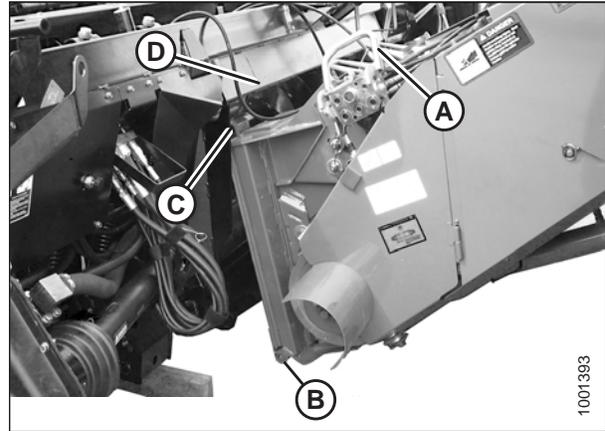


Figure 4.39: Combine and Adapter

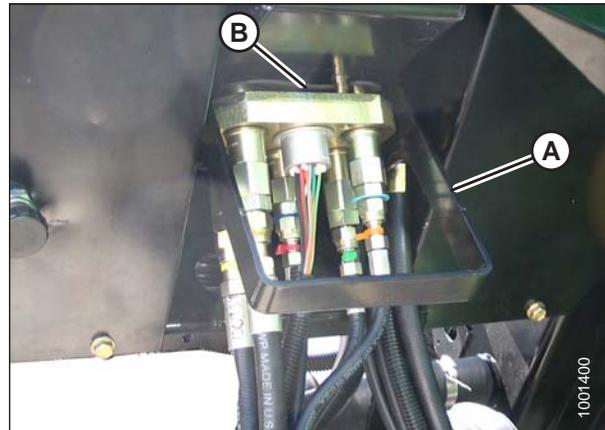


Figure 4.40: Multicoupler Storage

HEADER ATTACHMENT/DETACHMENT

6. Position multicoupler (A) onto receptacle, and pull handle (B) to engage lugs on multicoupler into the handle.
7. Pull handle (B) to a horizontal position and ensure multicoupler (A) is fully engaged into receptacle.

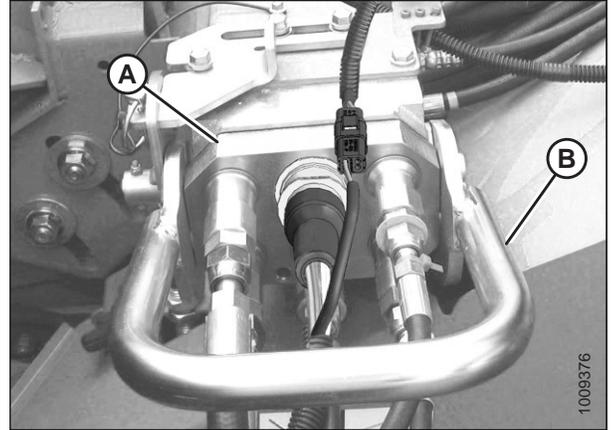


Figure 4.41: Multicoupler

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 bracket as required.

9. Tighten bolts (B).

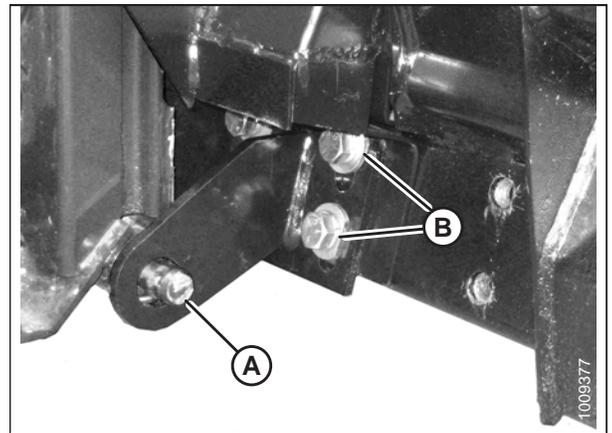


Figure 4.42: Feeder House Pin

10. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).
11. Connect harness (D) to combine connector (E).

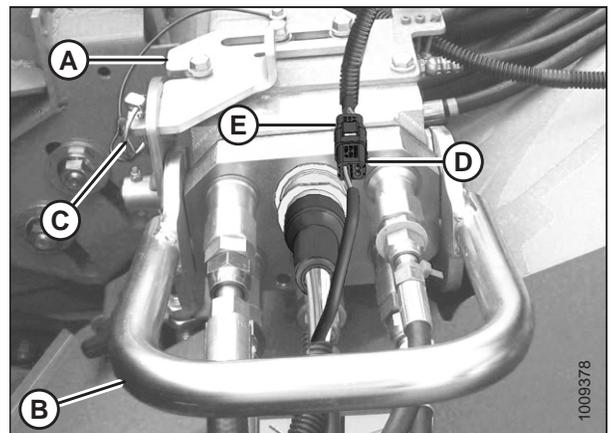


Figure 4.43: Multicoupler

HEADER ATTACHMENT/DETACHMENT

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

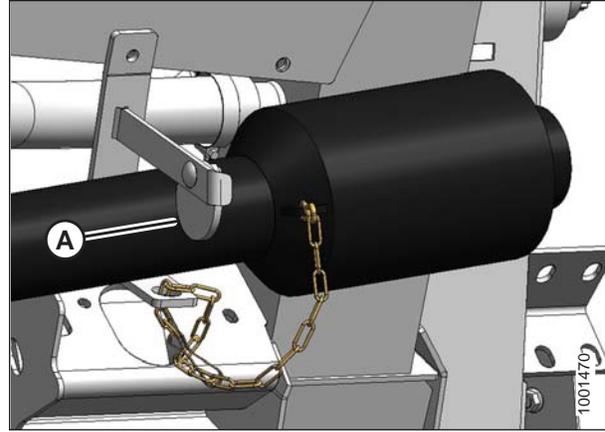


Figure 4.44: Driveline

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

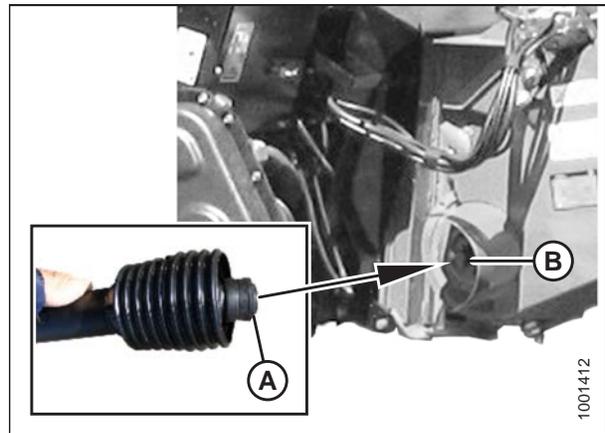


Figure 4.45: Driveline

HEADER ATTACHMENT/DETACHMENT

14. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

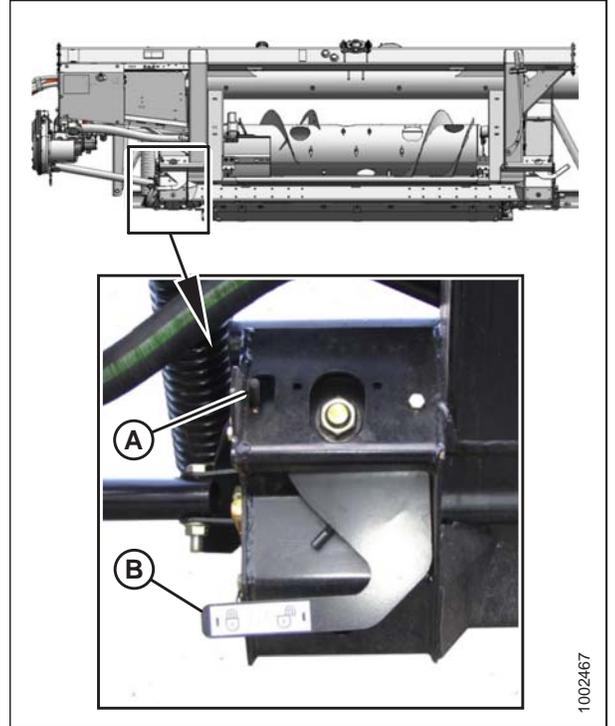


Figure 4.46: Float Lock in UNLOCK Position

4.4.2 Detaching Header from John Deere Combine

DANGER

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

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

IMPORTANT:

If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to [3.7.1 Cutting Height, page 53](#).

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 53](#).

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

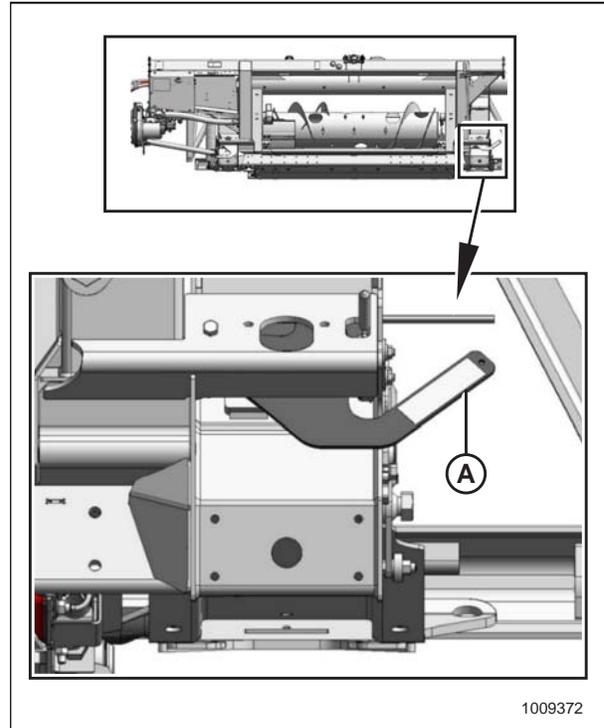


Figure 4.47: Float Locked

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

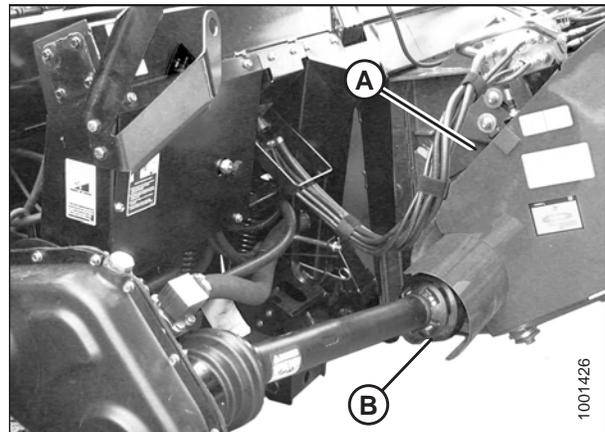


Figure 4.48: Driveline

HEADER ATTACHMENT/DETACHMENT

- Slide the driveline into the hook (A) until the disc (B) drops securing the driveline in place.

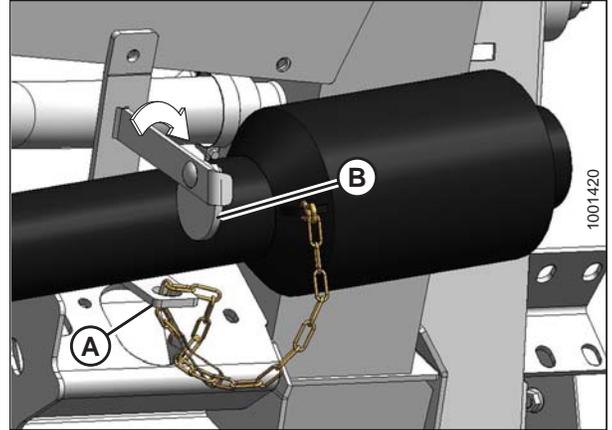


Figure 4.49: Driveline

- Lift the handle (A) on the adapter.

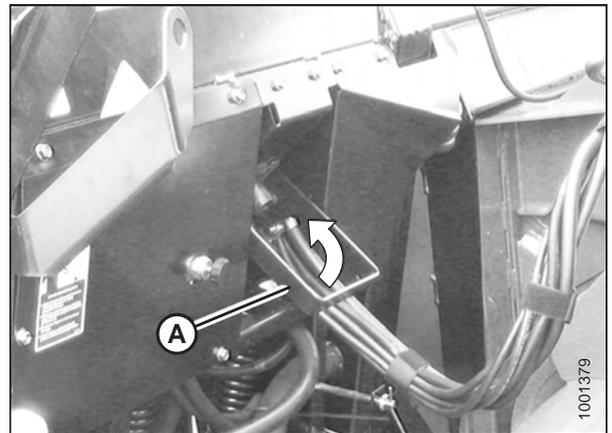


Figure 4.50: Multicoupler Storage

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

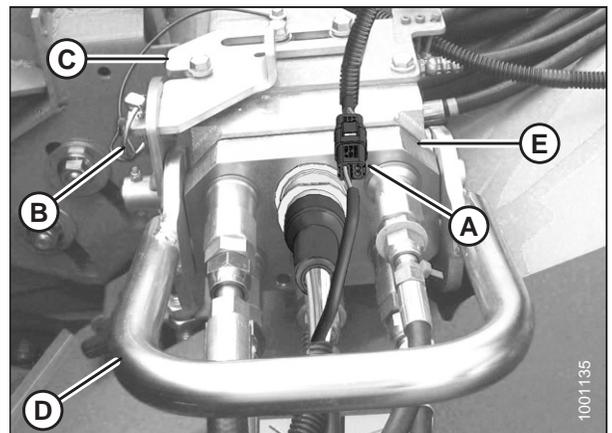


Figure 4.51: Multicoupler

HEADER ATTACHMENT/DETACHMENT

10. Position the multicoupler (A) on the adapter receptacle and lower the handle (B) to lock the multicoupler.

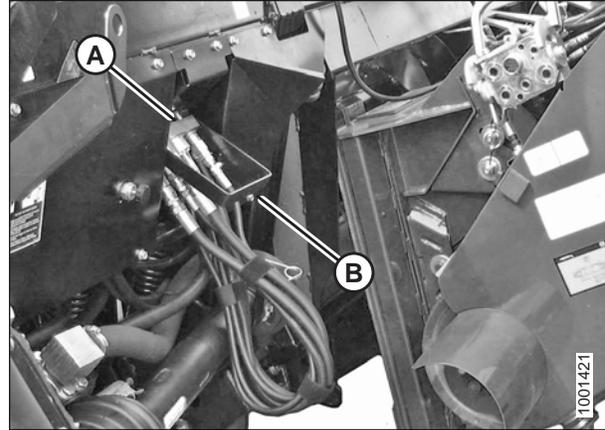


Figure 4.52: Multicoupler Storage

11. Push the handle (A) on the combine towards the feeder house to disengage the feeder house pin (B) from the adapter.

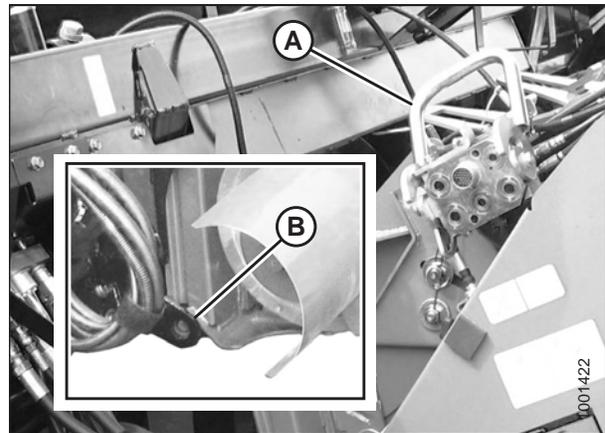


Figure 4.53: Feeder House Locks

12. Lower the feeder house until the saddle (A) disengages and clears the adapter support (B).
13. Back the combine away slowly from the adapter.

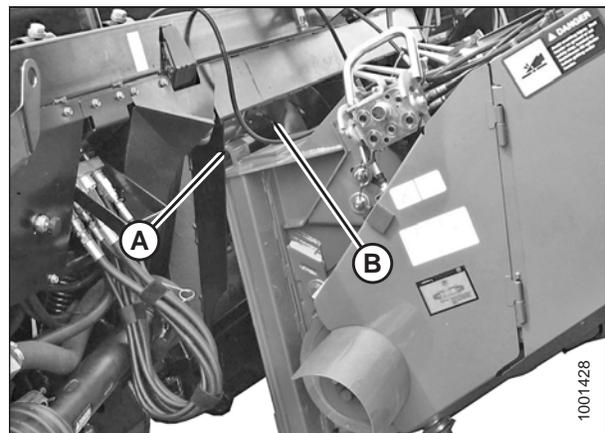


Figure 4.54: Header/Feeder House

4.5 CLAAS Combines

4.5.1 Attaching Header to CLAAS Combine

DANGER

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

1. Move handle (A) on the CA25 Combine Adapter into raised position, and ensure pins (B) at bottom corners of the adapter are retracted.

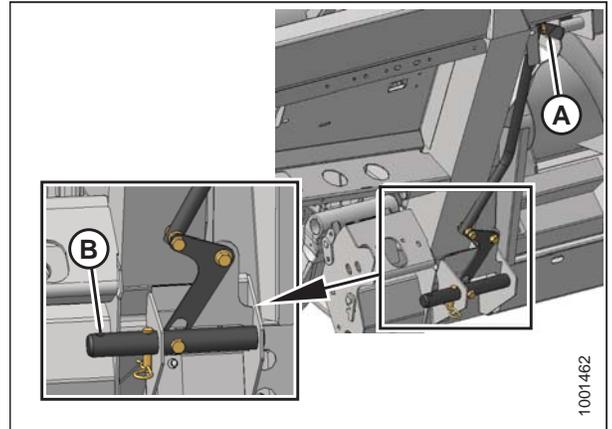


Figure 4.55: Pins Retracted

CAUTION

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

2. Start engine and slowly drive combine up to header until feeder house saddle (A) is directly under adapter top cross member (B).
3. Raise feeder house slightly to lift header, ensuring feeder saddle is properly engaged in the adapter frame.
4. Stop engine and remove key from ignition.

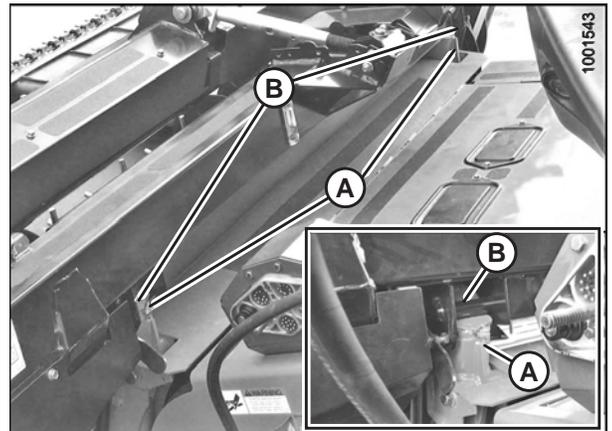


Figure 4.56: Header on Combine

HEADER ATTACHMENT/DETACHMENT

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

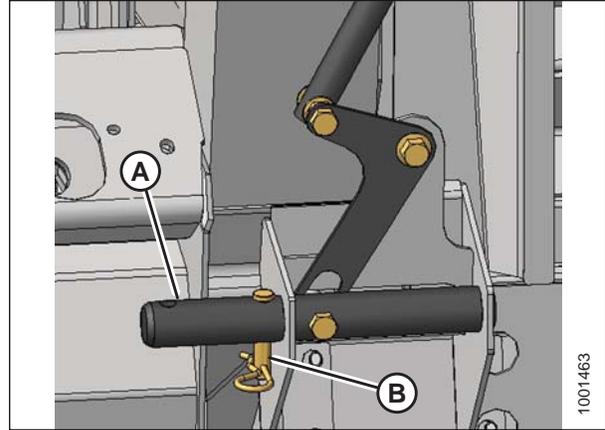


Figure 4.57: Adapter Pin

6. Lower handle (A) to engage pins (B) into feeder house. Reinsert locking pin (C) and secure with the hairpin.
7. Stop engine and remove key from ignition.

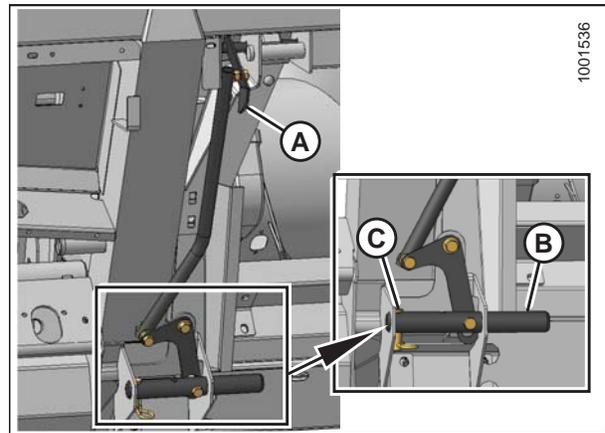


Figure 4.58: Engaging Pins

8. Unscrew knob (A) on combine coupler (B) to release coupler from combine receptacle and clean coupler.

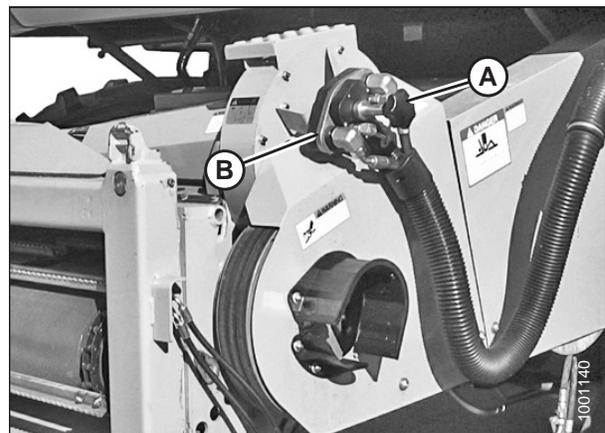


Figure 4.59: Combine Coupler

HEADER ATTACHMENT/DETACHMENT

9. Place CA25 receptacle cover (A) onto combine receptacle.

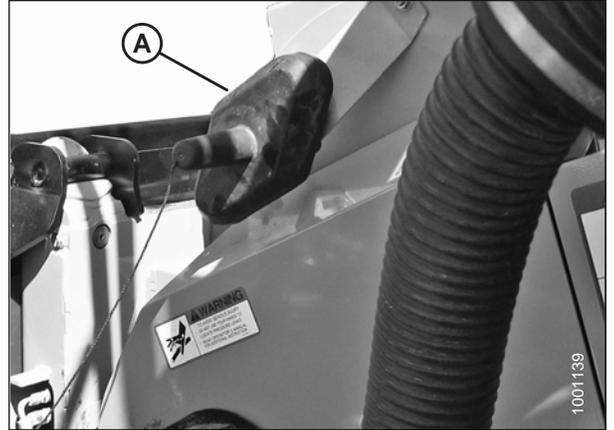


Figure 4.60: Receptacle Cover

10. Clean mating surface of coupler (A) and position onto CA25 receptacle (B).
11. Turn knob (C) to secure coupler to receptacle.
12. Connect combine harness to reel fore-aft/header tilt selector receptacle (D).

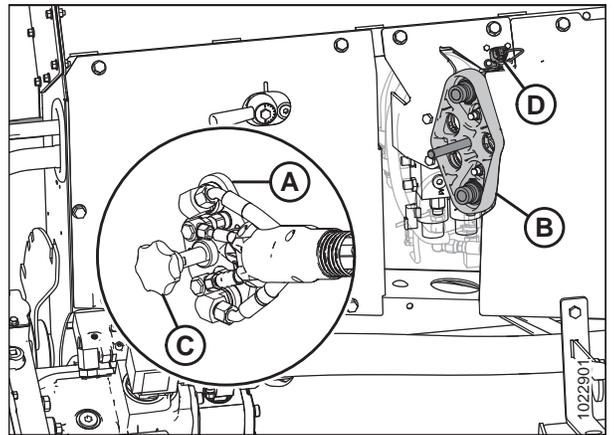


Figure 4.61: Coupler

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

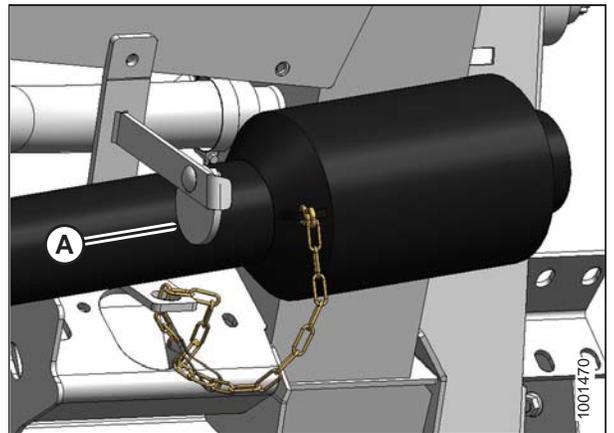


Figure 4.62: Driveline

HEADER ATTACHMENT/DETACHMENT

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

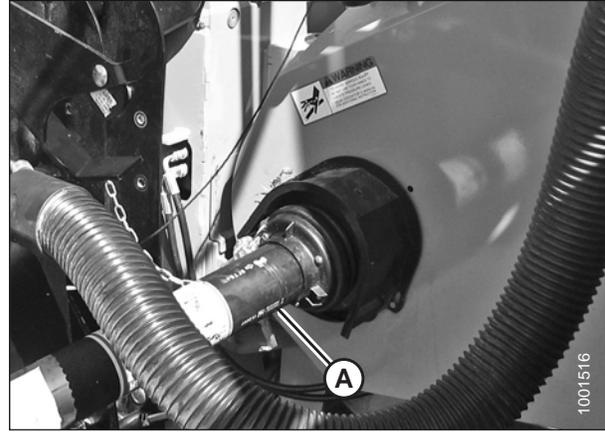


Figure 4.63: Driveline and Output Shaft

15. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

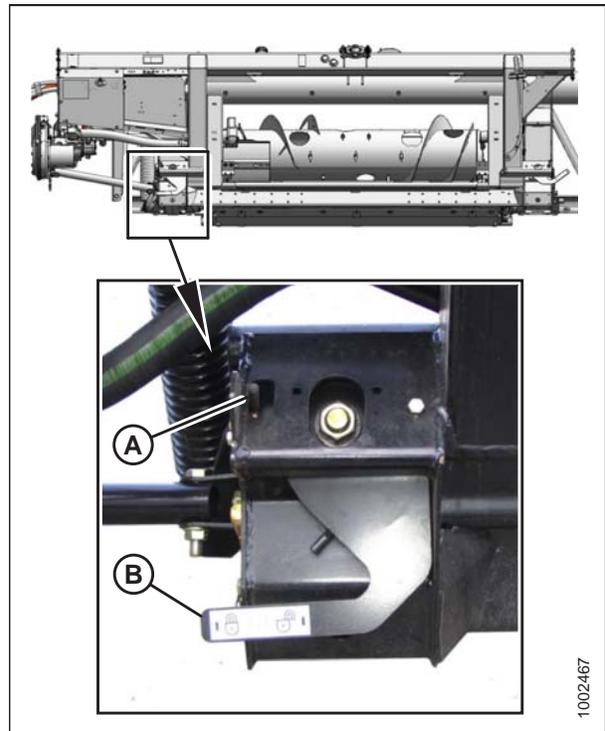


Figure 4.64: Float Lock in UNLOCK Position

4.5.2 Detaching Header from CLAAS Combine

DANGER

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

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

IMPORTANT:

If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to [3.7.1 Cutting Height, page 53](#).

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 53](#).

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

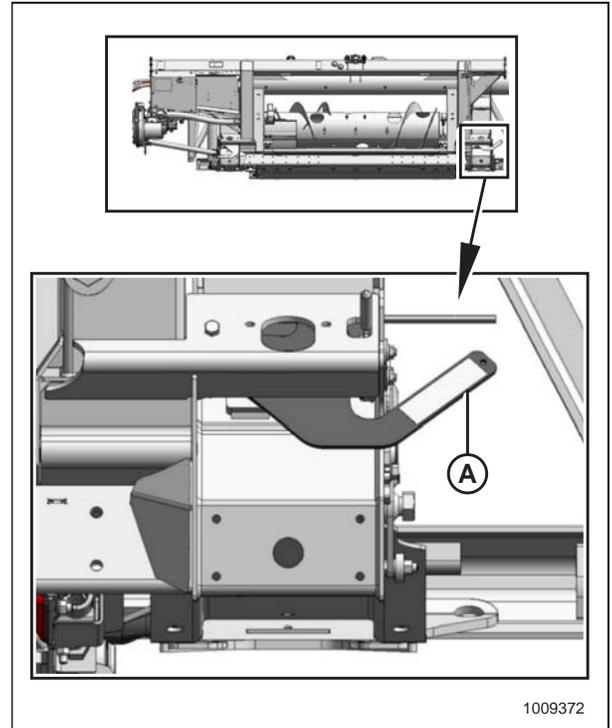


Figure 4.65: Float Locked

4. Disconnect driveline (A) from the combine.

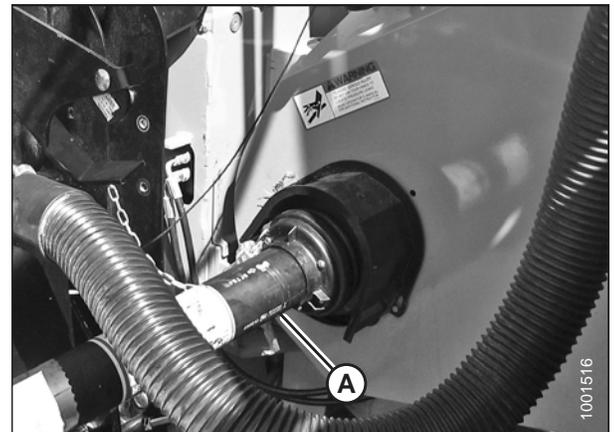


Figure 4.66: Driveline

HEADER ATTACHMENT/DETACHMENT

- Slide the driveline into hook (A) until disc (B) drops securing the driveline in place.

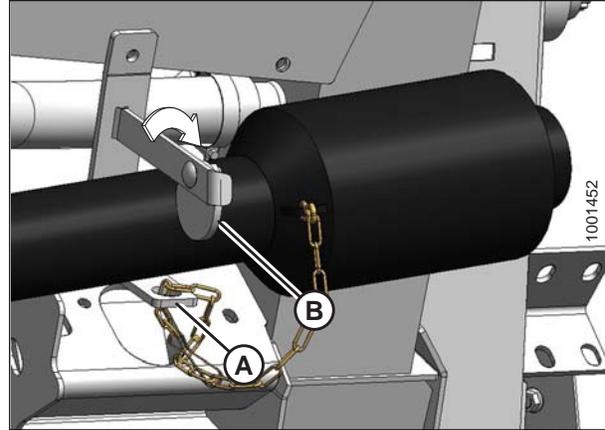


Figure 4.67: Driveline

- Remove electrical connector from adapter receptacle (A).
- Unscrew knob (B) on coupler (C) to release the coupler from adapter receptacle (D).

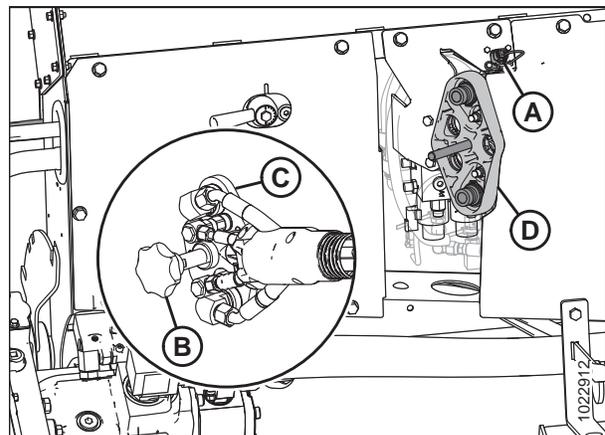


Figure 4.68: Coupler

- Remove cover (A) from the combine receptacle.

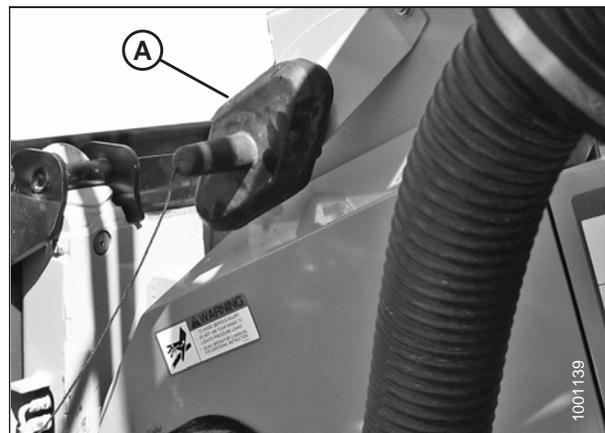


Figure 4.69: Cover

HEADER ATTACHMENT/DETACHMENT

9. Position coupler (B) onto the combine receptacle, and turn knob (A) to secure the coupler to the receptacle.

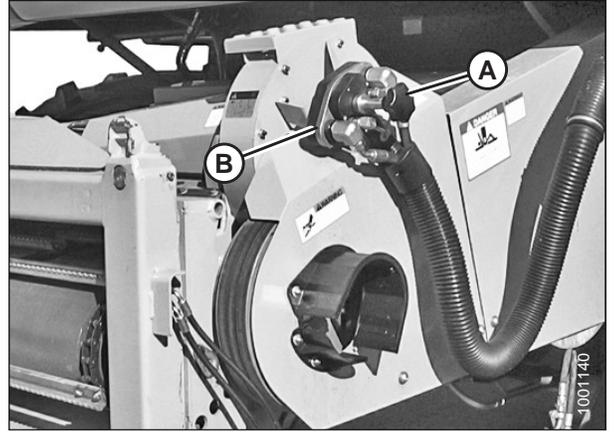


Figure 4.70: Combine Coupler

10. Place cover (A) on the adapter receptacle.

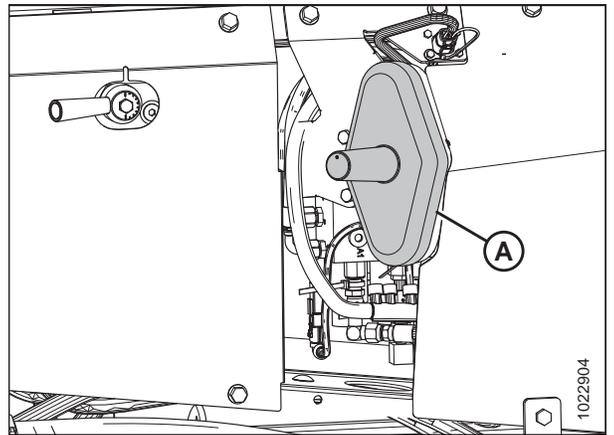


Figure 4.71: Adapter Receptacle Cover

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

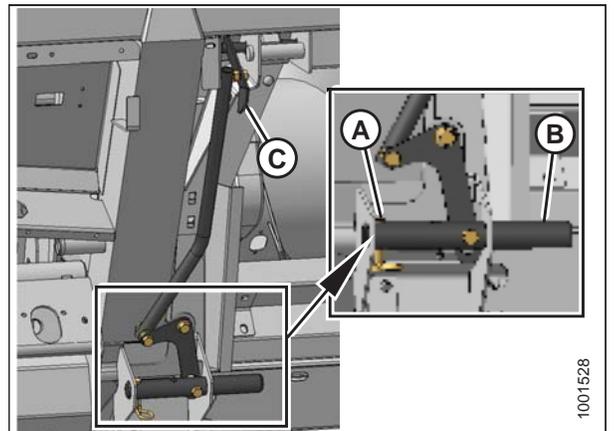


Figure 4.72: Feeder House Locks

HEADER ATTACHMENT/DETACHMENT

14. Lower the feeder house until the feeder house posts (A) disengage from adapter (B).
15. Back the combine away slowly from the adapter.

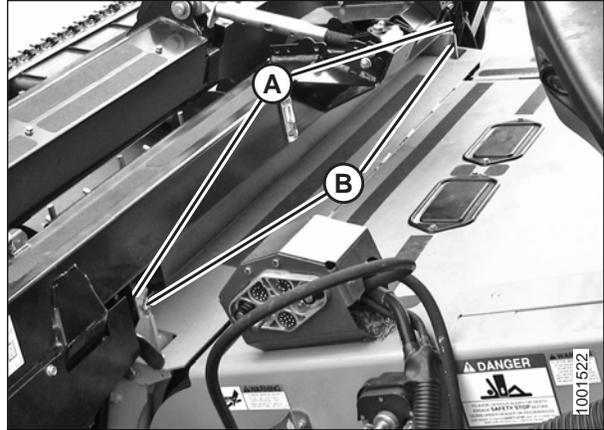


Figure 4.73: Header on Combine

4.6 New Holland Combines

4.6.1 Attaching Header to New Holland CR/CX Combine

DANGER

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

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

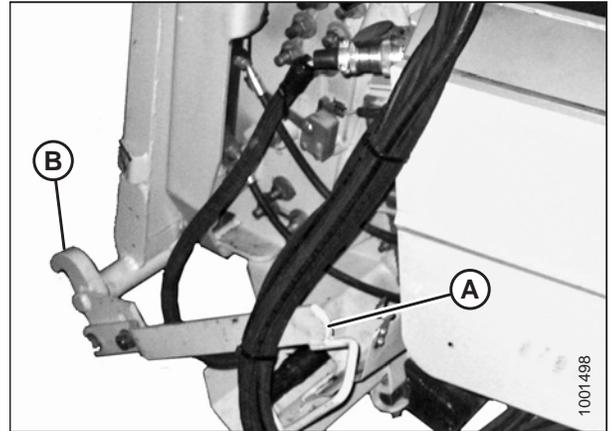


Figure 4.74: Feeder House Locks

CAUTION

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

2. Start engine and slowly drive combine up to the adapter until feeder house saddle (A) is directly under adapter top cross member (B) top cross member (B).
3. Raise feeder house slightly to lift header ensuring feeder saddle is properly engaged in the adapter frame.
4. Stop engine and remove key from ignition.

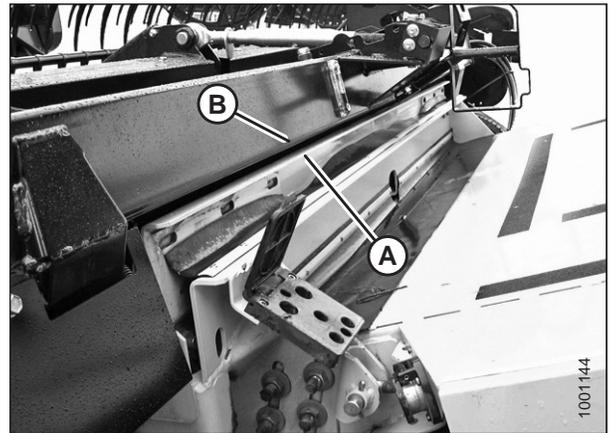


Figure 4.75: Header on Combine

HEADER ATTACHMENT/DETACHMENT

5. Lift lever (A) on the adapter on left side of feeder house, and push handle (B) on combine to engage locks (C) on both sides of feeder house.
6. Push down on lever (A) so slot in lever engages handle and locks handle in place.
7. Loosen bolts (E) and adjust lock (C) if lock does not fully engage pin on the adapter when lever (A) and handle (B) are engaged. Retighten bolts.

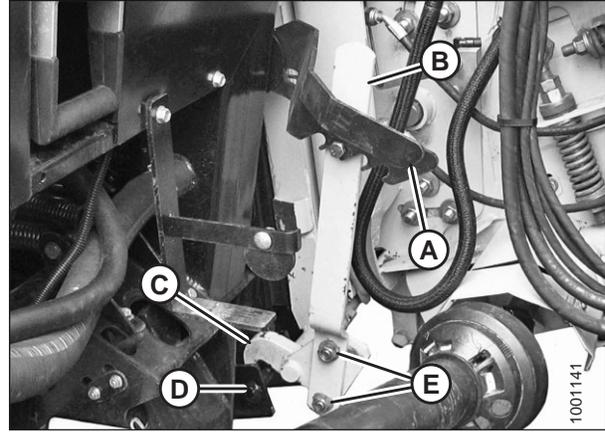


Figure 4.76: Feeder House Locks

8. Open receptacle cover (A) on the adapter.
9. Push in lock button (B) and pull handle (C) to full open position.
10. Clean receptacle mating surfaces.

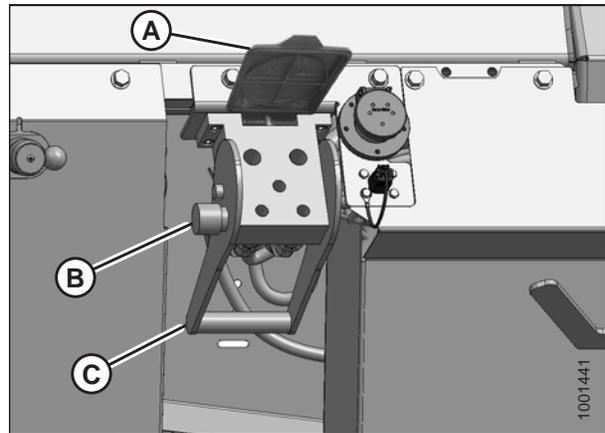


Figure 4.77: Adapter Receptacle

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

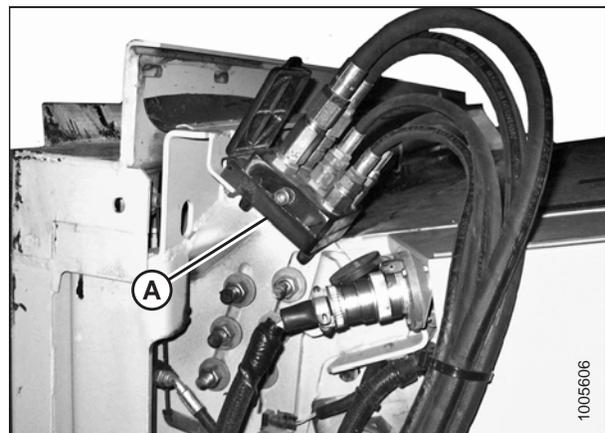


Figure 4.78: Combine Coupler

HEADER ATTACHMENT/DETACHMENT

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

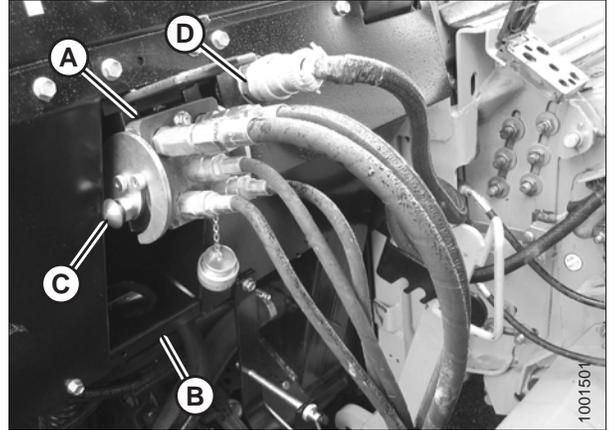


Figure 4.79: Connections

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

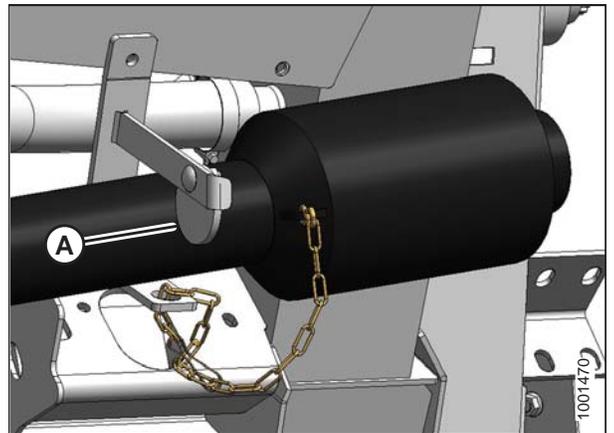


Figure 4.80: Driveline

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

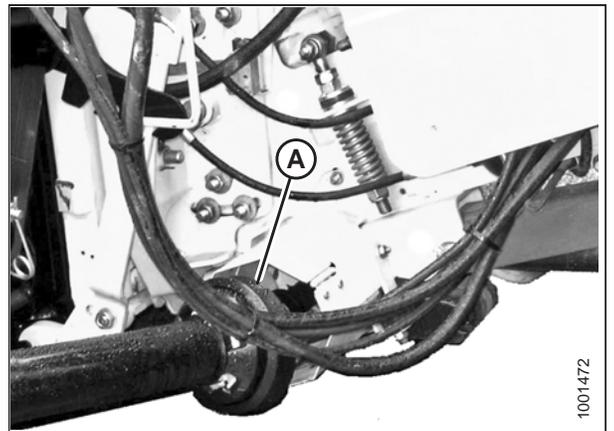


Figure 4.81: Driveline and Output Shaft

HEADER ATTACHMENT/DETACHMENT

19. Disengage each adapter float lock by moving latch (A) away from adapter and moving both header float lock levers (B) down (UNLOCK).

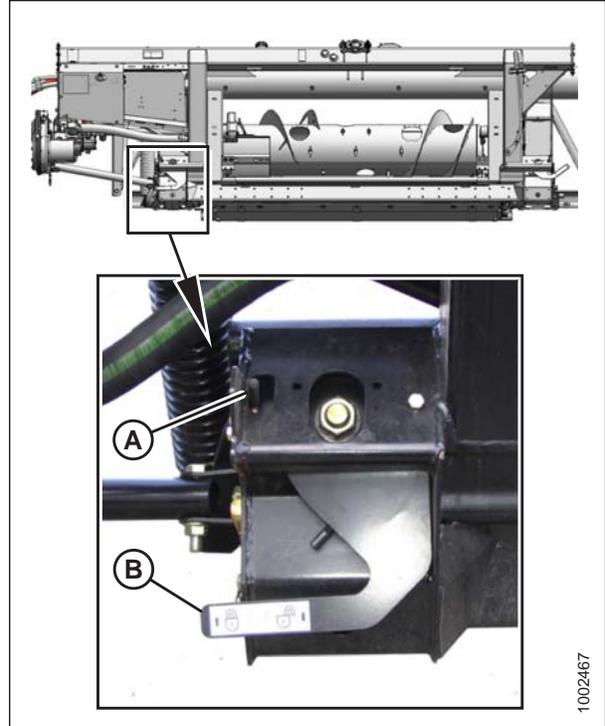


Figure 4.82: Float Lock in UNLOCK Position

4.6.2 Detaching Header from New Holland CR/CX Combine

DANGER

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

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

IMPORTANT:

If slow speed transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise, the header may tilt forward making reattachment difficult. Refer to [3.7.1 Cutting Height, page 53](#).

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 53](#).

3. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

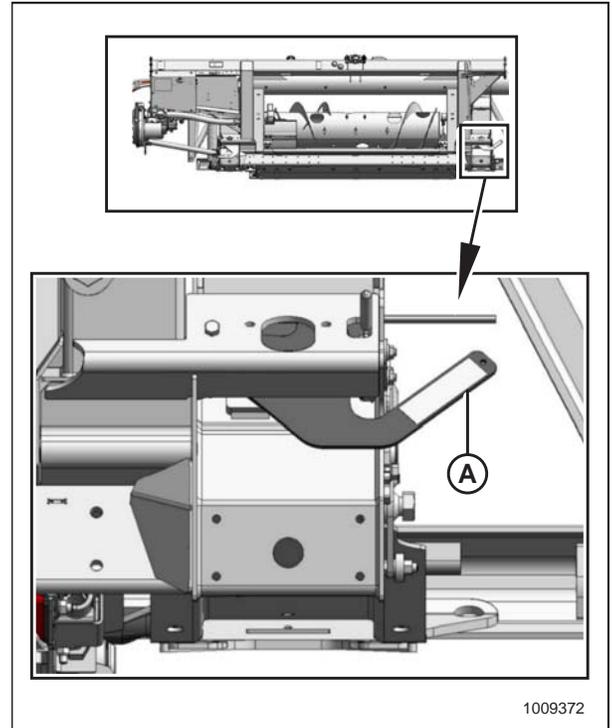


Figure 4.83: Float Locked

4. Disconnect driveline (A) from the combine.

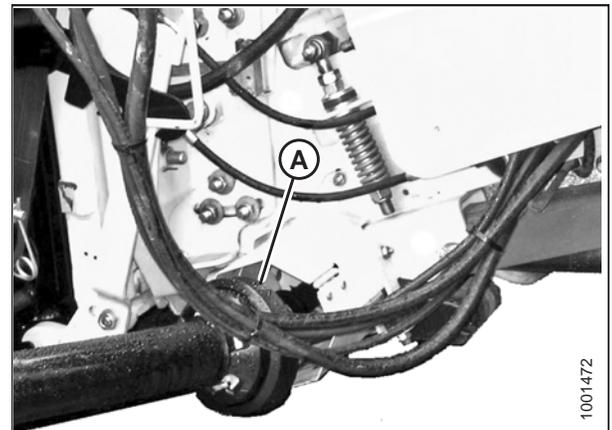


Figure 4.84: Driveline

HEADER ATTACHMENT/DETACHMENT

- Slide the driveline into hook (A) until disc (B) drops securing the driveline in place.

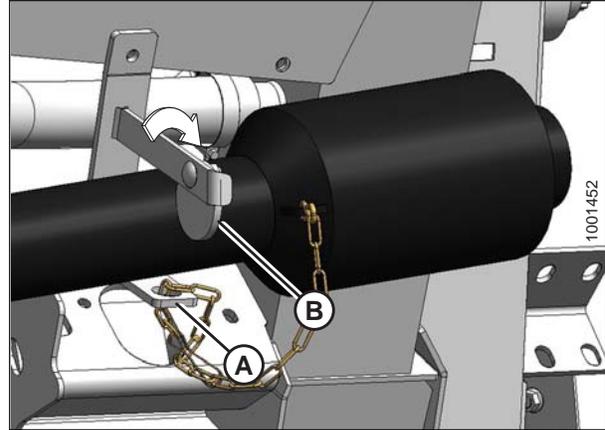


Figure 4.85: Driveline

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

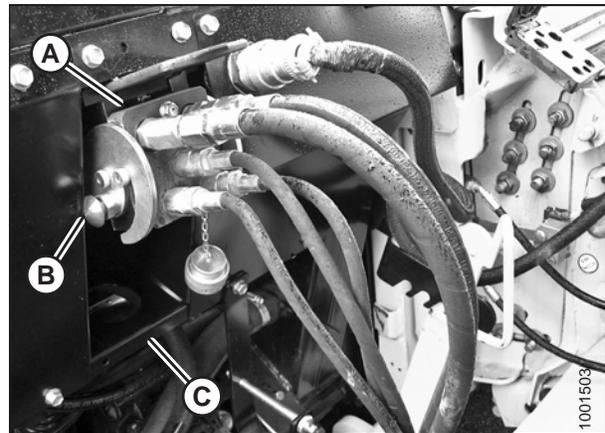


Figure 4.86: Adapter Connections

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

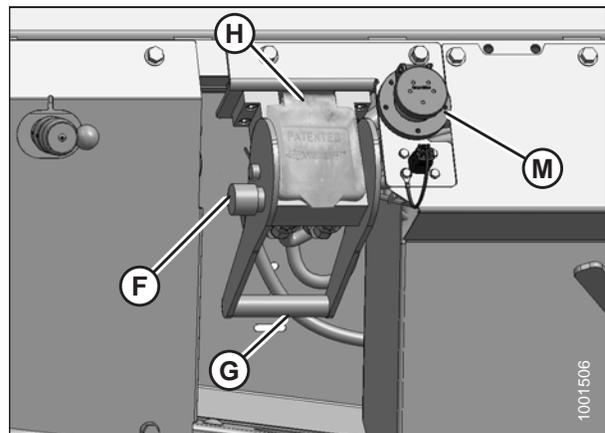


Figure 4.87: Adapter Receptacles

HEADER ATTACHMENT/DETACHMENT

8. Position hydraulic quick coupler (A) onto storage plate (B) on the combine.

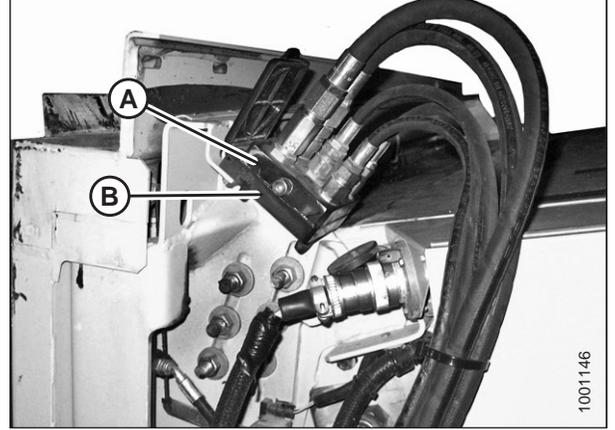


Figure 4.88: Combine Coupler

9. Remove electrical connector (A) from the adapter.

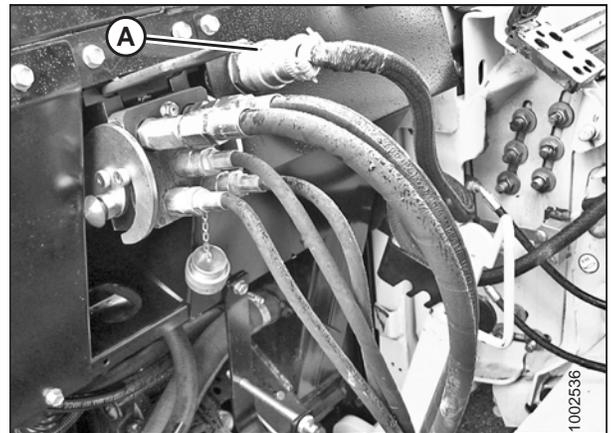


Figure 4.89: Adapter Connections

10. Connect the electrical connector to the combine at location (A).

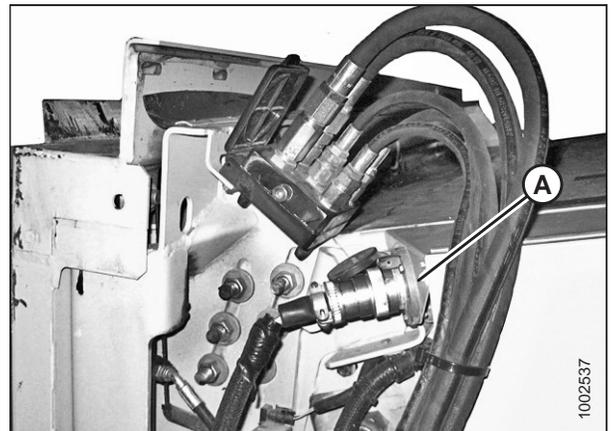


Figure 4.90: Combine Couplers

HEADER ATTACHMENT/DETACHMENT

11. Replace cover (A) on the adapter receptacle.

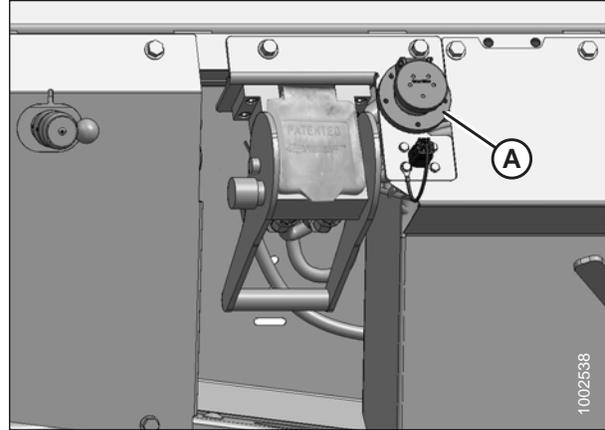


Figure 4.91: Adapter Receptacles

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

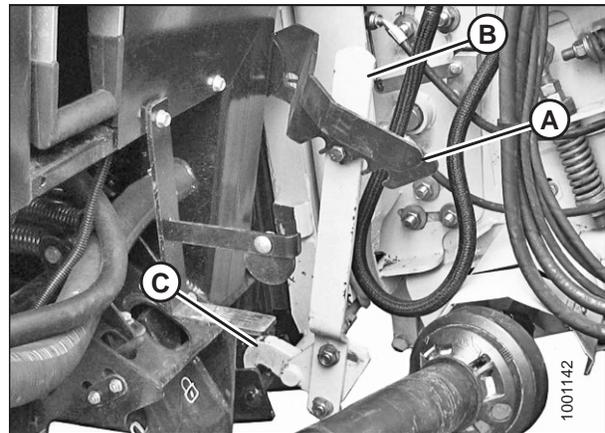


Figure 4.92: Feeder House Locks

13. Lower feeder house (A) until it (A) disengages from adapter support (B).
14. Back the combine slowly away from the header.

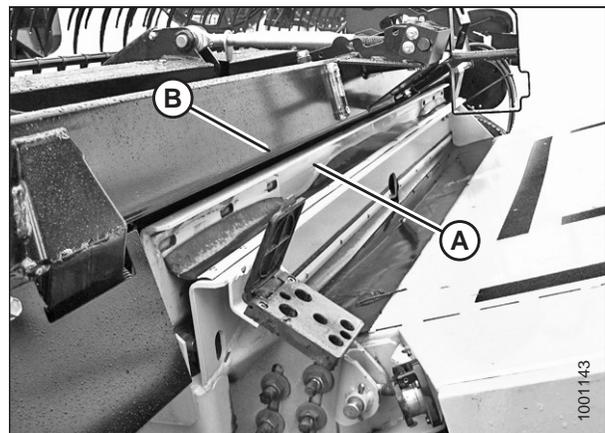


Figure 4.93: Header on Combine

4.6.3 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 [5.11.3 Replacing Feed Deflectors on New Holland CR Combines, page 377](#).

Long feeder kits are provided for narrow feeder house combines and can be installed to replace the short feed deflectors.

Table 4.2 CR Feeder Kits

Combine Model	Feeder House Size	Feeder Kit Size	Part Number
CR970, CR9070, CR9080, CR9090	Wide	Short: 200 mm (7-7/8 in.)	MD #B5405
CR960, CR9060, CR940, CR9040	Narrow	Long: 325 mm (12-13/16 in.)	MD #B5404

4.7 Attaching and Detaching Header from Adapter and Combine

Attaching/detaching procedures are the same for all makes and models of combines. Headers can be attached to the CA25 from either field or transport configurations.

The procedures in this manual require that the adapter remains attached to the combine. Attach/detach the adapter only if performing the following tasks:

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

4.7.1 Attaching Header to Adapter and Combine

The header can be attached to the adapter from either field or transport configuration.

DANGER

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

NOTE:

Stabilizer/Slow Speed Transport wheels can be used to support the header. Refer to [3.7.1 Cutting Height, page 53](#).

1. Prop up the hydraulic center-link (A) with a pin (or equivalent tool) at location (B) as shown.

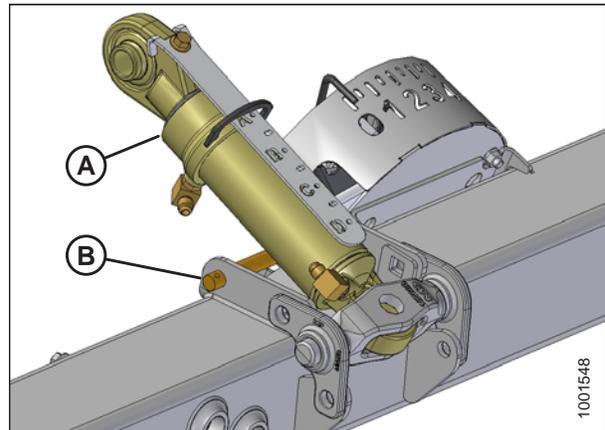


Figure 4.94: Center-Link

HEADER ATTACHMENT/DETACHMENT

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

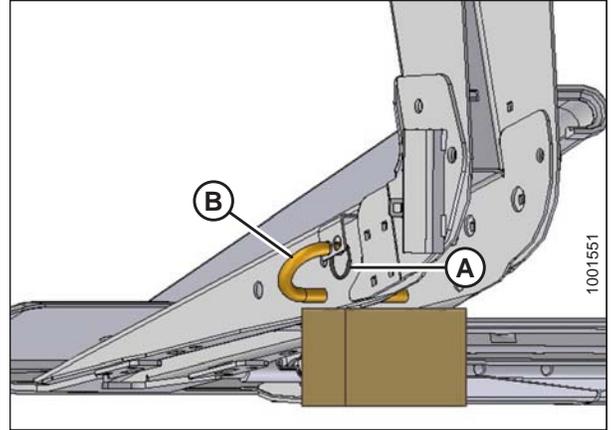


Figure 4.95: Block under Leg

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

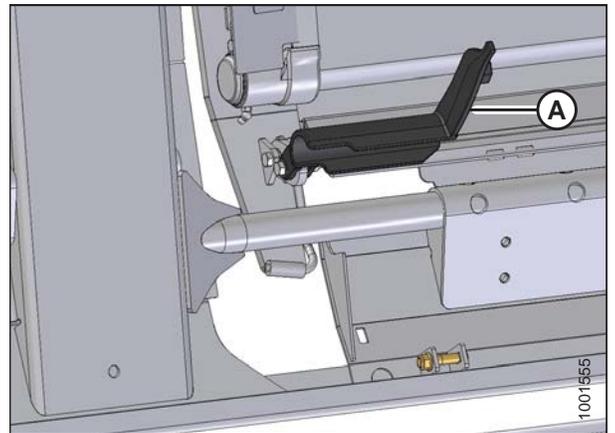


Figure 4.96: Latch

CAUTION

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

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

IMPORTANT:

Keep the hydraulic hoses clear to prevent damaging them while driving into the header.

7. Drive slowly forward until adapter arms (A) contact the stops in the legs (C).

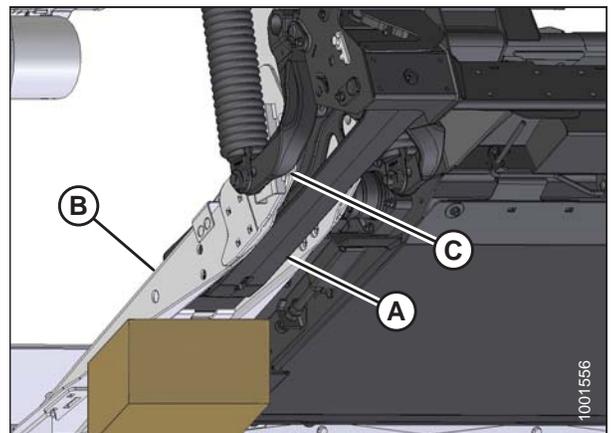


Figure 4.97: Adapter Underside

HEADER ATTACHMENT/DETACHMENT

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

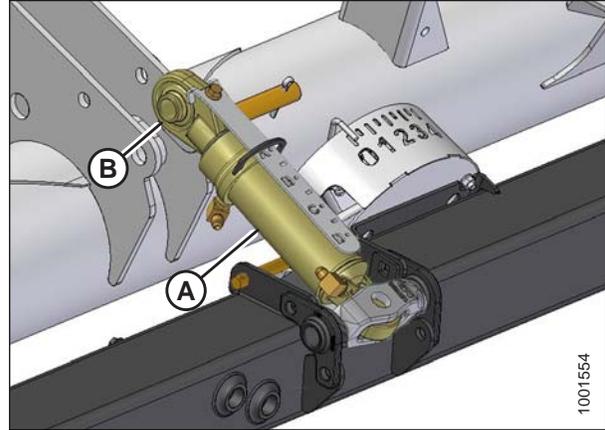


Figure 4.98: Center-Link

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

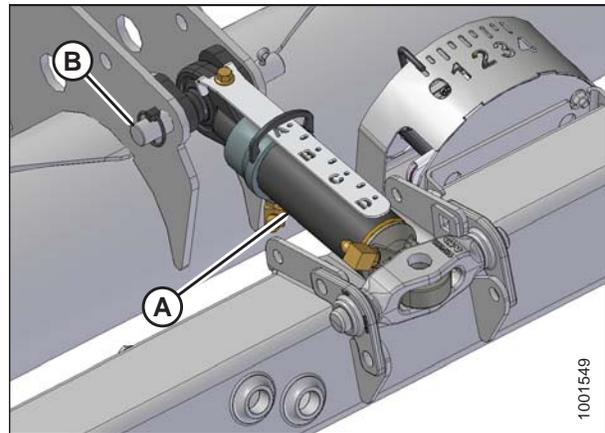


Figure 4.99: Center-Link

CAUTION

Always connect center-link before fully raising header.

11. Match the colored cable ties and connect the reel hydraulics (A) at the right end of the adapter.

CAUTION

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

12. Start the engine and slowly raise the adapter while making sure the adapter legs engage the header legs.
13. Raise the header to its full height, stop the engine, and remove the key from the ignition.
14. Engage the header safety props on the combine.

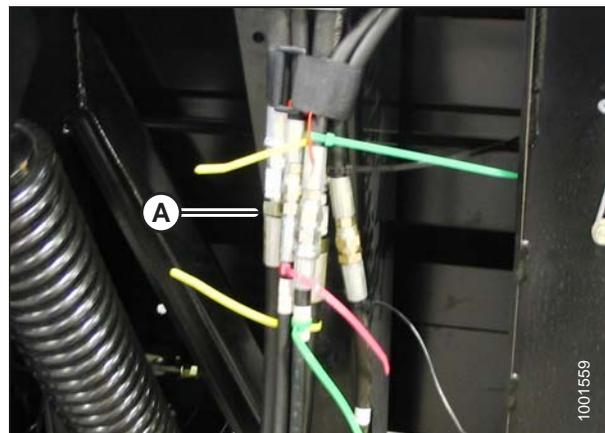


Figure 4.100: Reel Hydraulics

HEADER ATTACHMENT/DETACHMENT

15. Replace the pin (B) in the header legs and secure with ring (A).
16. Remove the lift cylinder locks, start the engine, and lower the header to the ground. Adjust the header angle to the shallowest setting (shortest center-link).
17. Raise the reel to its full height.
18. Shut down the engine and remove the key from the ignition.
19. Engage the reel safety props.

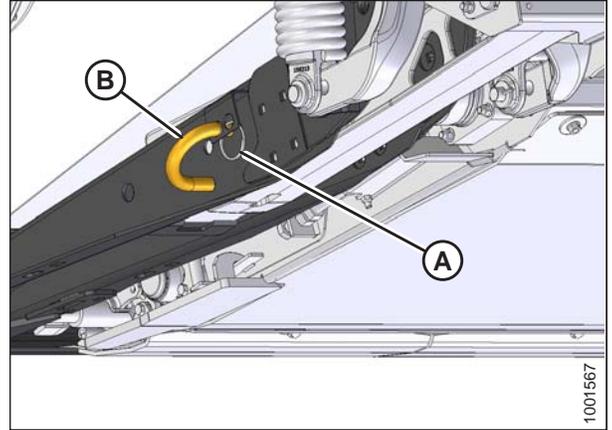


Figure 4.101: Header Leg

WARNING

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

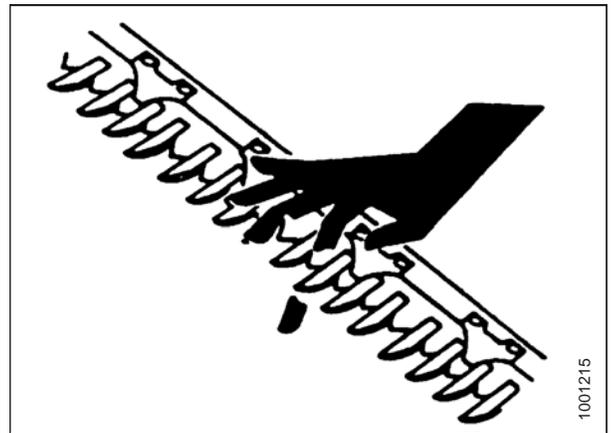


Figure 4.102: Cutterbar Hazard

20. Remove bolt (A) from both sides of the opening to allow the attachment of the adapter deck.
21. Rotate the latch (B) forward and down to engage the transition pan tube (C).

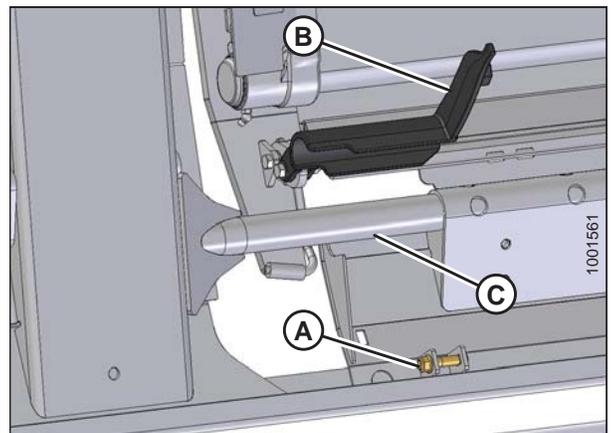


Figure 4.103: Adapter Latch

HEADER ATTACHMENT/DETACHMENT

22. 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.
23. Repeat for the opposite side of the feed draper deck.

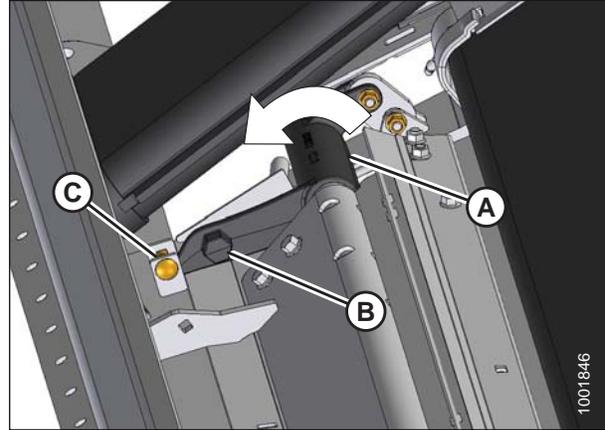


Figure 4.104: Adapter Latch

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

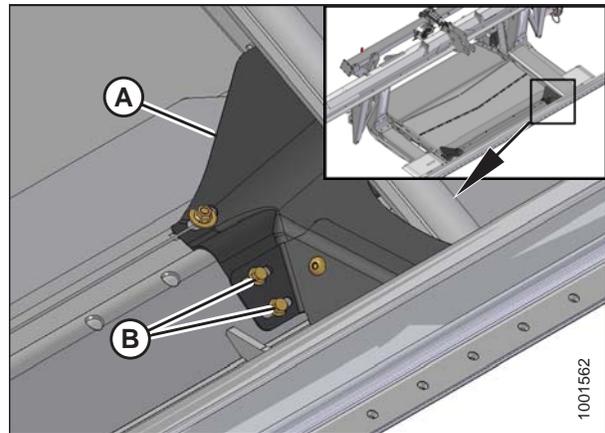


Figure 4.105: CA25 Fillers

25. Match the colored cable ties, and connect the knife and draper drive hydraulics (A).
26. Attach the electrical connector (B) as follows:
 - a. Remove the cover on the receptacle. Ensure it is clean and damage free.
 - b. Align the lugs on the connector with the slots in the receptacle, push the connector onto the receptacle, and turn the collar on the connector to lock it in place.
 - c. Attach the cover to the mating cover on the combine wiring harness.

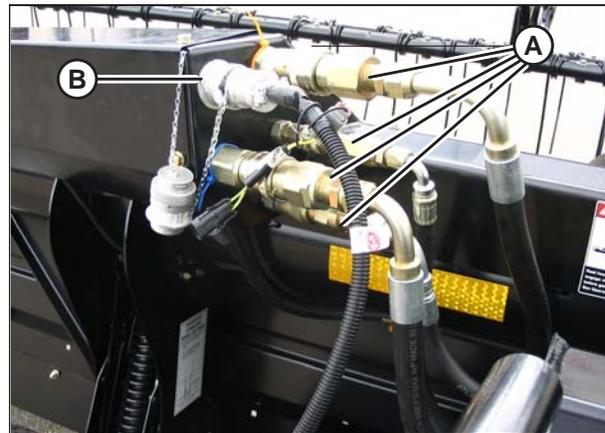


Figure 4.106: Header Connections

HEADER ATTACHMENT/DETACHMENT

27. Connect the quick disconnects (if installed) as follows:

- a. Remove the covers (if installed) from the receptacles and hose ends.
- b. Check the connectors and clean if necessary.
- c. Push the hose connector (A) onto the mating receptacle (B) until the collar on the mating receptacle snaps into the lock position.

NOTE:

Ensure the hoses are clear of the driveline and adjacent structure.

NOTE:

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

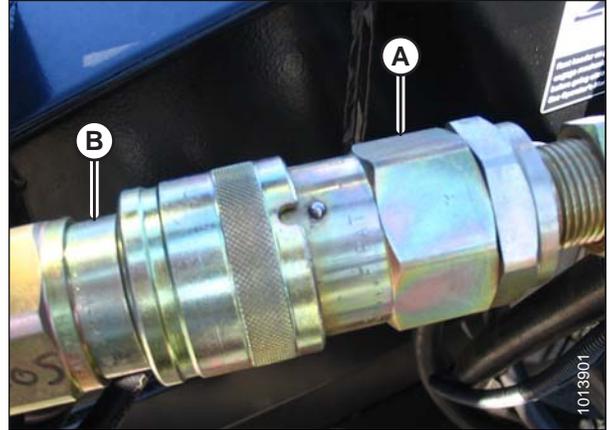


Figure 4.107: Quick Disconnect Coupling

28. Check the float and confirm the header is level. Refer to the following:

- [Checking and Adjusting Header Float, page 60](#)
- [3.9 Levelling the Header, page 196](#)



CAUTION

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

29. Start the combine and perform the following inspections:

- Raise and lower the reel to ensure the hoses are properly connected.
- Run the header to ensure the hoses are properly connected.

30. Check for leaks.

4.7.2 Detaching Header from Adapter and Combine



DANGER

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



WARNING

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



CAUTION

Wear heavy gloves when working around or handling knives.

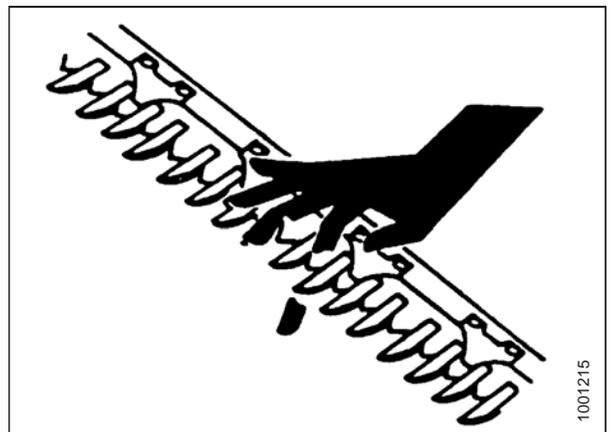


Figure 4.108: Cutterbar Hazard

HEADER ATTACHMENT/DETACHMENT

1. Start the engine and the lower header.
2. Increase clearance under the adapter feed draper by tilting the header until the cylinder (B) is fully extended and the indicator (A) is at D.
3. Raise the reel to its full height.
4. Stop the engine and the remove key from the ignition.
5. Engage the reel safety props.

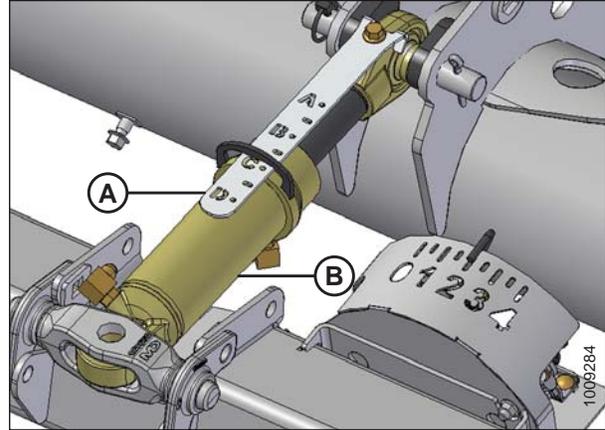


Figure 4.109: Center-Link

6. Engage both float locks by lifting each lock lever (A) upwards until it latches into the lock position.

NOTE:

Stabilizer/Slow Speed Transport wheels can be used to support the header.

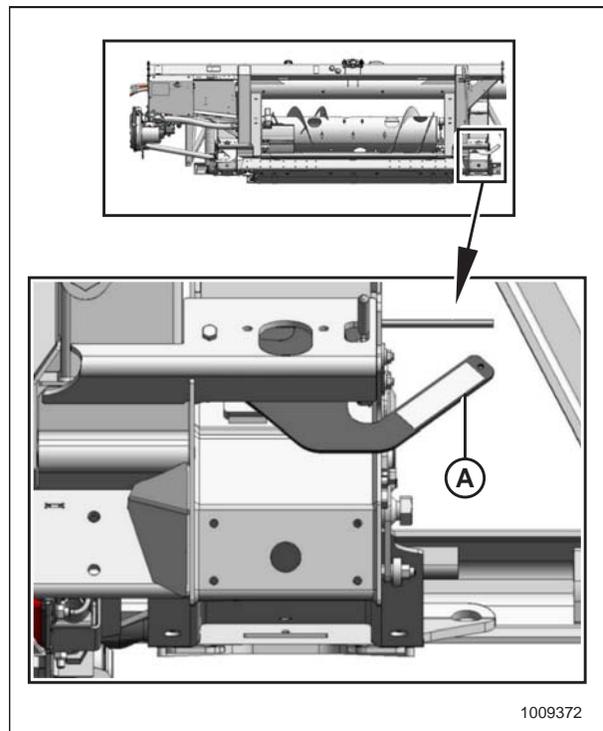


Figure 4.110: Float Locked

HEADER ATTACHMENT/DETACHMENT

7. Remove the two hex head bolts (A) attaching filler (B) to the transition pan at the front corners.
8. Fold back filler (B) to access the latch.

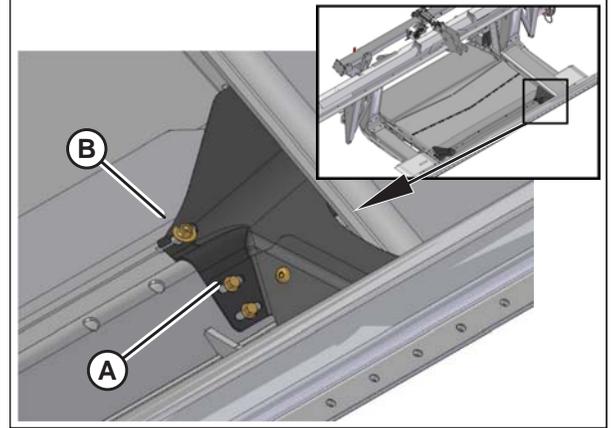


Figure 4.111: Fillers

9. Remove the 9/16 in. nut from bolt (C).
10. Use a 24 mm (15/16 in.) wrench on hex bolt (B) to rotate latch (A) downwards and slightly raise the feed deck to access and remove bolt (C).
11. Rotate the latch (A) up and back to lower the adapter deck and disengage the transition pan tube (D).
12. Reinstall bolt (C).
13. Repeat for opposite side of the feed draper deck.

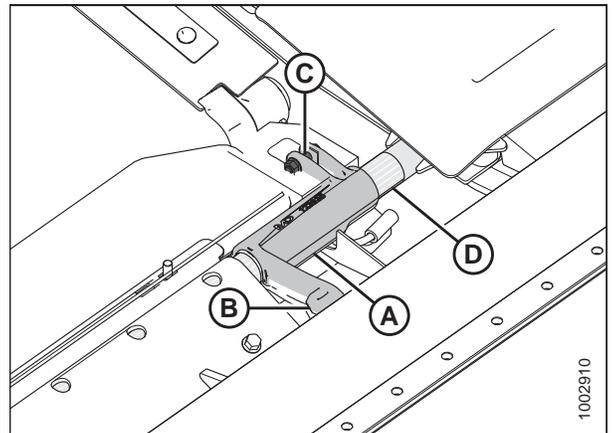


Figure 4.112: CA25 Latch

CAUTION

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

14. Disengage the reel safety props, start the engine, lower the reel, and fully raise the header.
15. Stop the engine, remove the key from the ignition, and engage the combine lift safety props.
16. Remove the ring (A) from the pin (B), and remove the pins from the header legs at the delivery opening.

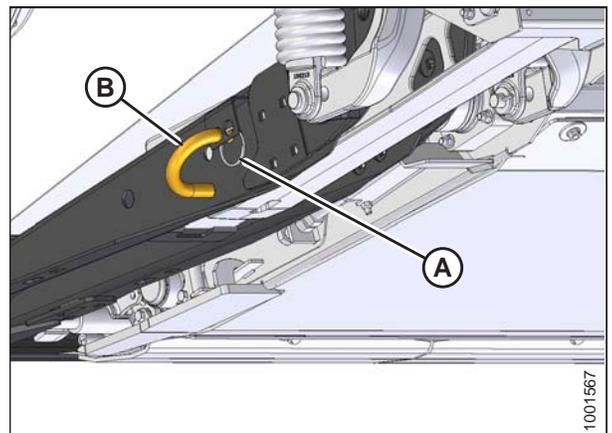


Figure 4.113: Header Leg

HEADER ATTACHMENT/DETACHMENT

17. Place a 150 mm (6 in.) block under the jack stand (A) to assist with center-link disconnection.
18. Disengage the combine lift cylinder locks, start the engine, and lower the header until the jack stand rests on the block or until the stabilizer wheels are on the ground.

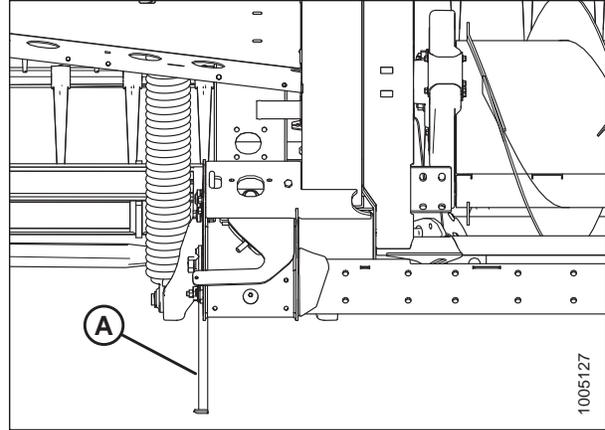


Figure 4.114: Stand

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

NOTE:

It may be necessary to raise or lower the feeder house to adjust the length of the center-link and relieve excess load on the center-link.

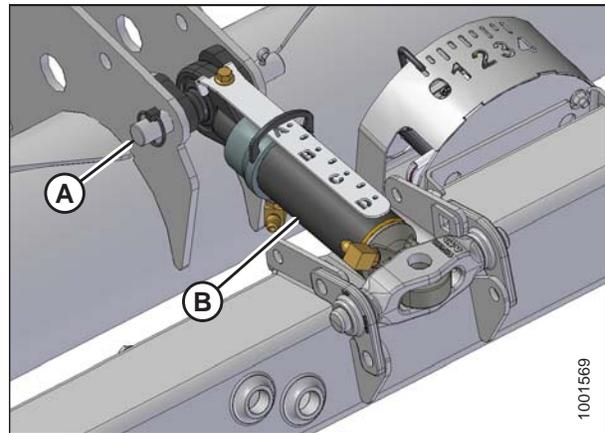


Figure 4.115: Hydraulic Center-Link

20. Disconnect knife and draper drive hydraulic hoses (A). Immediately cap hoses to prevent oil loss.
21. Store and secure the hoses on the adapter frame.
22. Disconnect electrical connector (B) by turning the collar counterclockwise and pulling the connector to disengage.
23. Store and secure the hoses and electrical connector on 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.

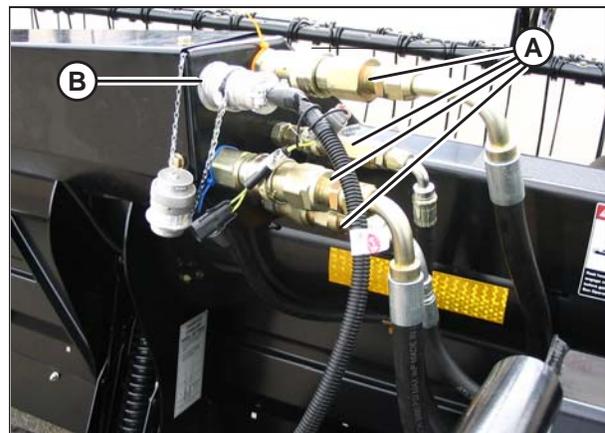


Figure 4.116: Header Connections

HEADER ATTACHMENT/DETACHMENT

24. 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 (if equipped).



Figure 4.117: Quick Disconnect Coupling

25. Disconnect reel hydraulics (A). Immediately cap hoses to prevent oil loss.

NOTE:

If the optional multicoupler is installed for the reel hydraulics, press the button on the side, raise the handle on the adapter, and remove the coupler.

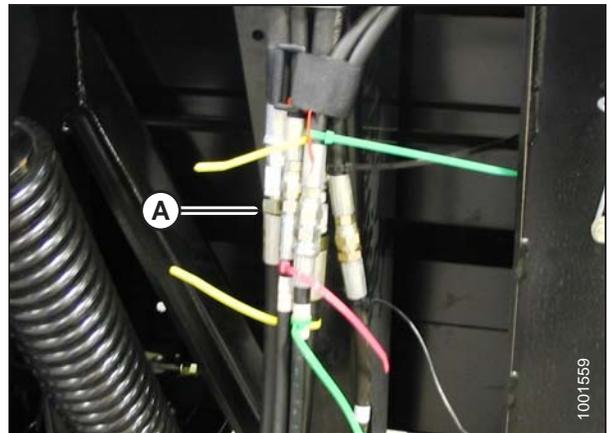


Figure 4.118: Reel Hydraulics

26. Store and secure the hoses and electrical connector on the adapter at position (A) as shown.
27. Ensure the header is on the ground or is supported by the wheels in transport mode.

⚠ CAUTION

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

28. Start the engine and slowly back the combine away from header.
29. Stop the engine and remove the key from the ignition.

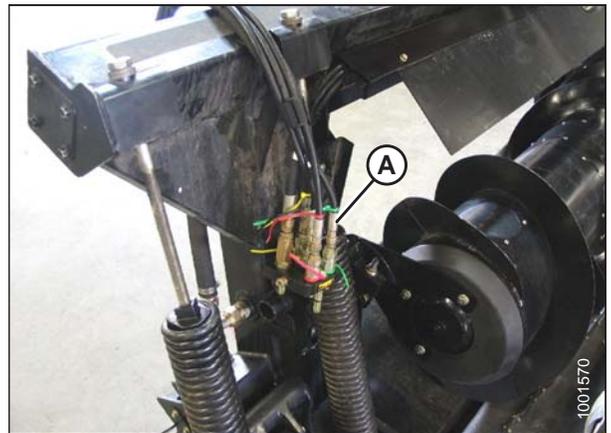


Figure 4.119: Hose Storage

HEADER ATTACHMENT/DETACHMENT

30. Replace pins (B) in the header legs and secure with rings (A).

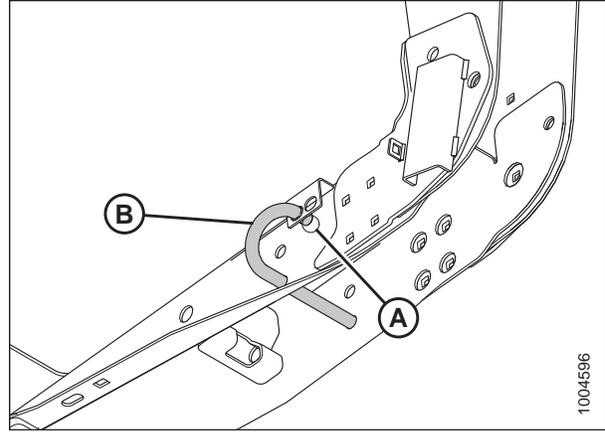


Figure 4.120: Header Leg

5 Maintenance and Servicing

The following instructions provide information about routine header service. Detailed maintenance and service information is contained in the technical service manual available from your MacDon Dealer. A parts catalog is provided in the plastic manual case inside the left endshield.

Log hours of operation and use the maintenance record provided (refer to [5.3.1 Maintenance Schedule/Record, page 274](#)) to keep track of your scheduled maintenance.

5.1 Preparing Machine for Servicing

DANGER

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

CAUTION

To avoid personal injury, follow all the safety precautions listed before servicing header or opening drive covers.

1. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
2. Stop the engine and remove the key from the ignition.
3. Engage the park brake.
4. Wait for all moving parts to stop.

5.2 Maintenance Specifications

5.2.1 Recommended Fluids and Lubricants

Ensure your machine operates at top efficiency by using clean fluids and lubricants only.

- Use clean containers to handle all fluids and lubricants.
- Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. Molybdenum Disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
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)

5.2.2 Installing a Sealed Bearing

1. Clean the shaft and apply a rust preventive coating.
2. Install the flange (A), bearing (B), second flange (C), and lock the collar (D).

NOTE:

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

3. Install and tighten the flange bolts (E).
4. Position the shaft correctly, and lock the lock collar with a punch. Lock the collar in the same direction the shaft rotates, and tighten the setscrew in the collar.
5. Loosen the flange bolts on the mating bearing one turn and then retighten. This will allow the bearing to properly line up.

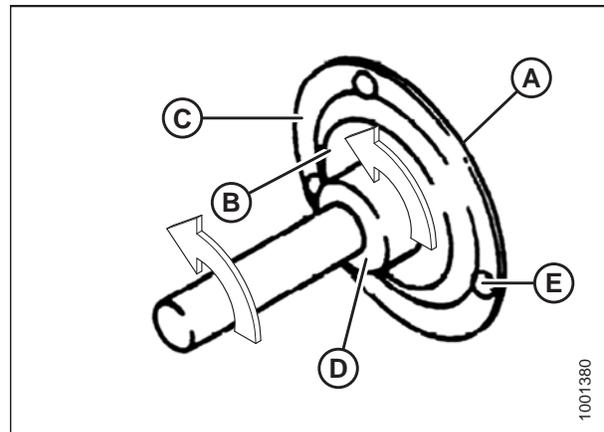


Figure 5.1: Sealed Bearing

5.3 Maintenance Requirements

Periodic maintenance requirements are organized according to service intervals.

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following the maintenance schedule will increase your machine's life.

When servicing the machine, refer to the appropriate section in this 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 [5.3.1 Maintenance Schedule/Record, page 274](#)).

If a service interval specifies more than one timeframe, e.g., "100 hours or annually", service the machine at whichever interval is reached first.

IMPORTANT:

Recommended intervals are for average conditions. Service the machine more often if operating under adverse conditions (severe dust, extra heavy loads, etc.).



CAUTION

Carefully follow safety messages. Refer to [5.1 Preparing Machine for Servicing, page 271](#) and [1 Safety, page 1](#).

MAINTENANCE AND SERVICING

Maintenance Record	Action:	✓ - Check					◆ - Lubricate					▲ - Change				
✓ Knife drive belt tension																
✓ Wheel bolt torque																
✓ Knife drive box lubricant level																
✓ Knife drive box mounting bolts																
◆ Auger drive chain																
◆ Float pivots																
◆ Float spring tensioners																
◆ Reel drive chain																
◆ Upper cross auger right bearing																
250 Hours or Annually³⁸																
✓ Draper seal																
◆ Adapter auger pivots																
◆ Upper cross auger center support and U-joint																
◆ Reel drive U-joint																
◆ Transport axle pivot bushings																
▲ Hydraulic oil filter																
500 Hours or Annually³⁸																
✓ Draper seal																
◆ Reel shaft bearings																
◆ Stabilizer/slow speed transport wheel bearings																
✓ Gearbox chain tension																
1000 Hours or 3 Years³⁸																
▲ Knife drive box lubricant																
▲ Gearbox lubricant																
▲ Hydraulic oil																

MAINTENANCE AND SERVICING

5.3.2 Break-In Inspection

Break-in inspections involve checking belts, fluids, and performing general machine inspections for loose hardware or other areas of concern. Break-in inspections ensure that all components can operate for an extended period without requiring service or replacement.

Inspection Interval	Item	Refer to
5 Minutes	Check hydraulic oil level in reservoir.	5.4.1 Checking Oil Level in Hydraulic Reservoir, page 295
5 Hours	Check for loose hardware and tighten to required torque.	8.2 Torque Specifications, page 470
5 Hours	Check knife drive belts tension (check periodically for first 50 hours).	Tensioning Non-Timed Knife Drive Belts, page 352
10 Hours	Check knife drive box mounting bolts.	Checking Mounting Bolts, page 343
10 Hours	Check auger drive chain tension.	5.7.2 Checking Auger Drive Chain Tension, page 308
50 Hours	Change adapter gearbox oil.	Changing Oil in Header Drive Gearbox, page 294
50 Hours	Change adapter hydraulic oil filter.	5.4.4 Changing Oil Filter, page 297
50 Hours	Change knife drive box lubricant.	Changing Oil in Knife Drive Box, page 350
50 Hours	Check gearbox chain tension.	5.6.5 Adjusting Tension on Gearbox Drive Chain, page 306
50 Hours	Check deck height adjustment.	5.12.5 Adjusting Deck Height, page 385

5.3.3 Preseason/Annual Service

Perform the following procedures at the beginning of each operating season:

CAUTION

- Review this manual to refresh your memory on the safety and operating recommendations.
 - Review all the safety decals and other decals on the header and note the hazard areas.
 - Be sure all the shields and guards are properly installed and secured. Never alter or remove safety equipment.
 - Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.
 - Check the first aid kit and fire extinguisher. Know where they are and how to use them.
1. Lubricate the machine completely. Refer to [Service Intervals, page 279](#).
 2. Adjust the tension on the drive belts depending on your equipment. Refer to [Tensioning Non-Timed Knife Drive Belts, page 352](#) or [Tensioning Timed Knife Drive Belts, page 357](#).

MAINTENANCE AND SERVICING

3. Perform all the annual maintenance. Refer to [5.3.1 Maintenance Schedule/Record, page 274](#).

5.3.4 End-of-Season Service

Perform the following procedures at the end of each operating season:

CAUTION

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

CAUTION

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

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

NOTE:

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

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly leaving excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.
10. Check for broken components and order replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
11. Replace or tighten any missing or loose hardware. Refer to [5.2 Maintenance Specifications, page 272](#).

5.3.5 Checking Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

⚠ WARNING

- Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure.
- If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.



Figure 5.2: Hydraulic Pressure Hazard

- Use a piece of cardboard or paper to search for leaks.

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. Allowing dust, dirt, water, or foreign material to enter the system is the major cause of hydraulic system damage. Do NOT attempt to service hydraulic systems in the field. Precision fits require a perfectly clean connection during overhaul.

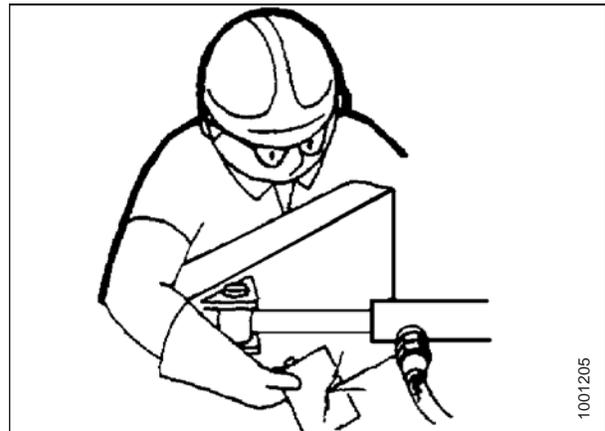


Figure 5.3: Testing for Hydraulic Leaks

5.3.6 Lubrication and Servicing

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in [5.1 Preparing Machine for Servicing, page 271](#).

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 [5.3.1 Maintenance Schedule/Record, page 274](#).

Service Intervals

Every 10 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knife: Lubricate the knife every 10 hours or daily, except in sandy conditions.

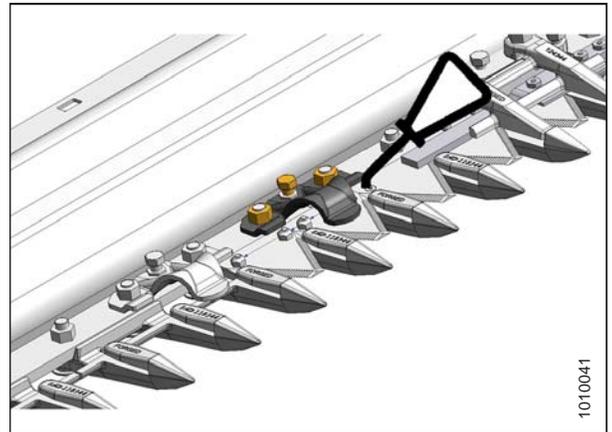


Figure 5.4: Every 10 Hours or Daily

Every 25 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knifehead: Lubricate the knifehead every 25 hours. Check for signs of excessive heating on the first few guards after greasing. If required, relieve the pressure by pressing the check-ball in the grease fitting.

IMPORTANT:

To prevent binding and/or excessive wear caused by knife pressure on the guards, do **NOT** 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 [5.8.3 Removing Knifehead Bearing, page 329](#).



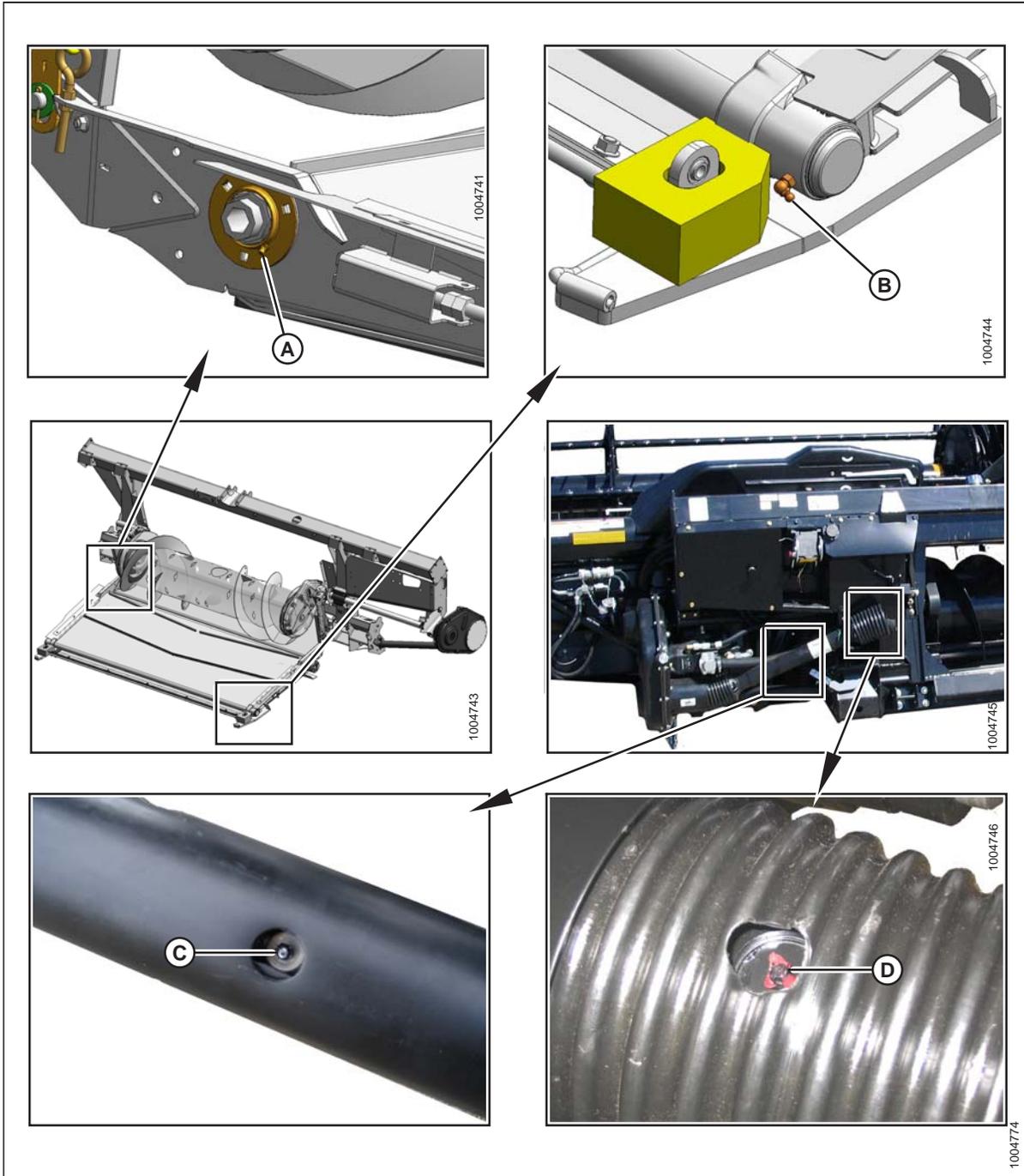
Figure 5.5: Every 25 Hours

MAINTENANCE AND SERVICING

Every 50 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.6: Every 50 Hours



A - Drive Roller Bearing

B - Idler Roller Bearing (Both Sides)

C - Driveline Slip Joint⁴⁰

D - Driveline Universal (Two Places)

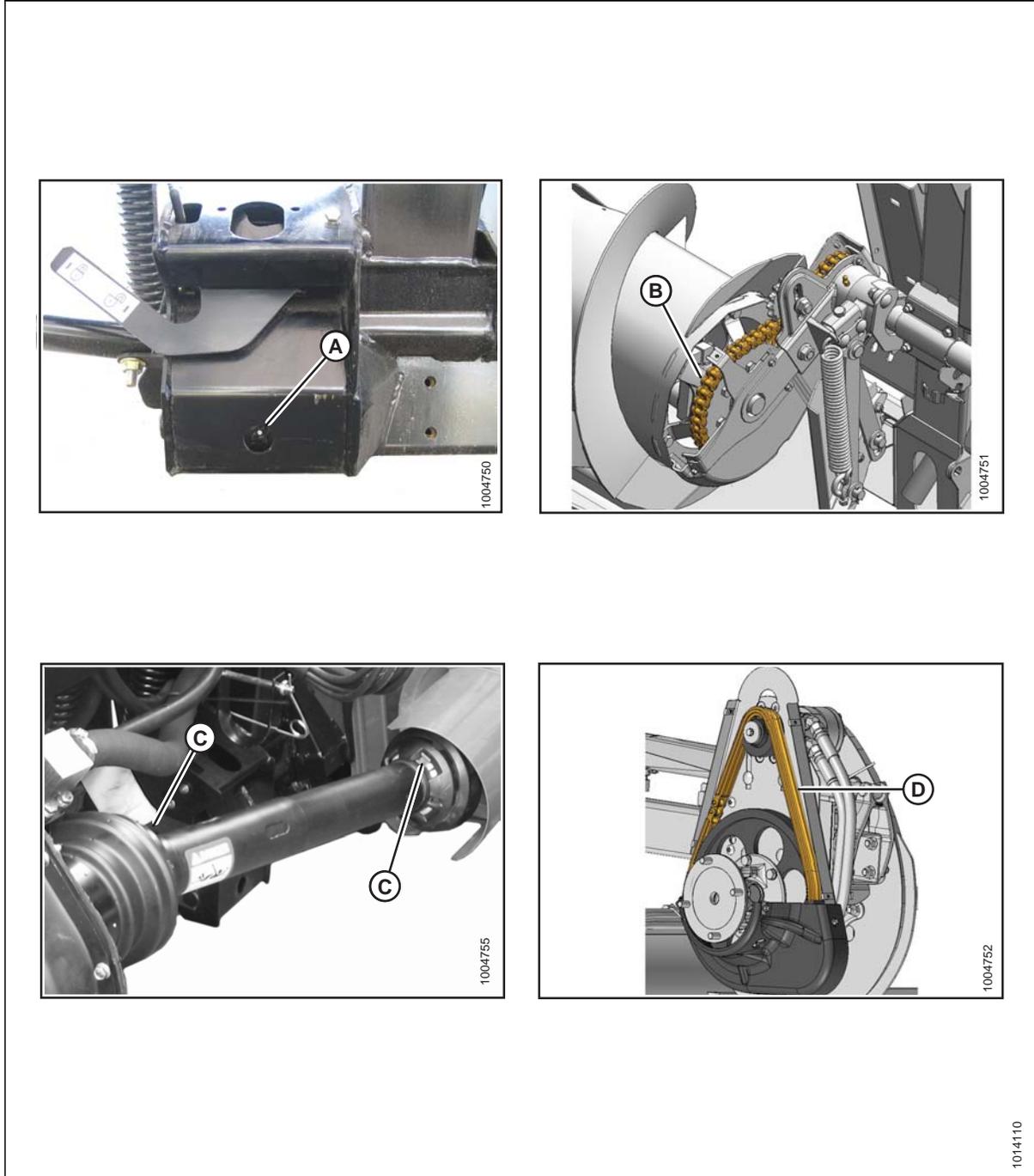
40. Use high temperature extreme pressure (EP2) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

MAINTENANCE AND SERVICING

Every 100 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.7: Every 100 Hours



A - Float Pivot - Right and Left

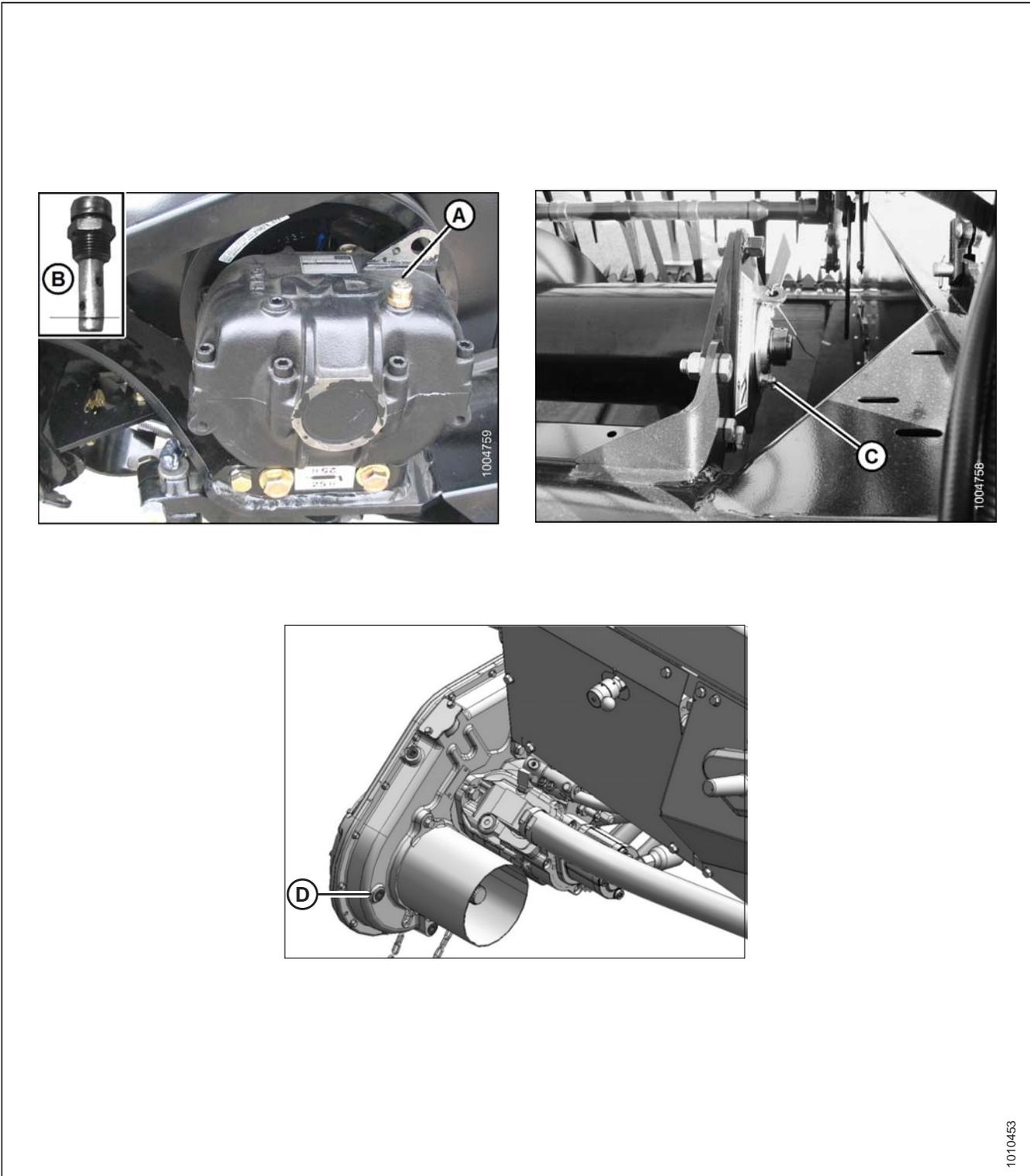
B - Auger Drive Chain. Refer to [Lubricating Auger Drive Chain, page 291](#)

C - Driveline Guard - Two Places

D - Reel Drive Chain - One Place. Refer to [Lubricating Reel Drive Chain – Single Reel, page 288](#) or [Lubricating Reel Drive Chain – Double Reel, page 289](#)

MAINTENANCE AND SERVICING

Figure 5.8: Every 100 Hours



A - Knife Drive Box (Check Oil Level Between Lower Hole and End of Dipstick [B])

C - Upper Cross Auger Bearing - One Place

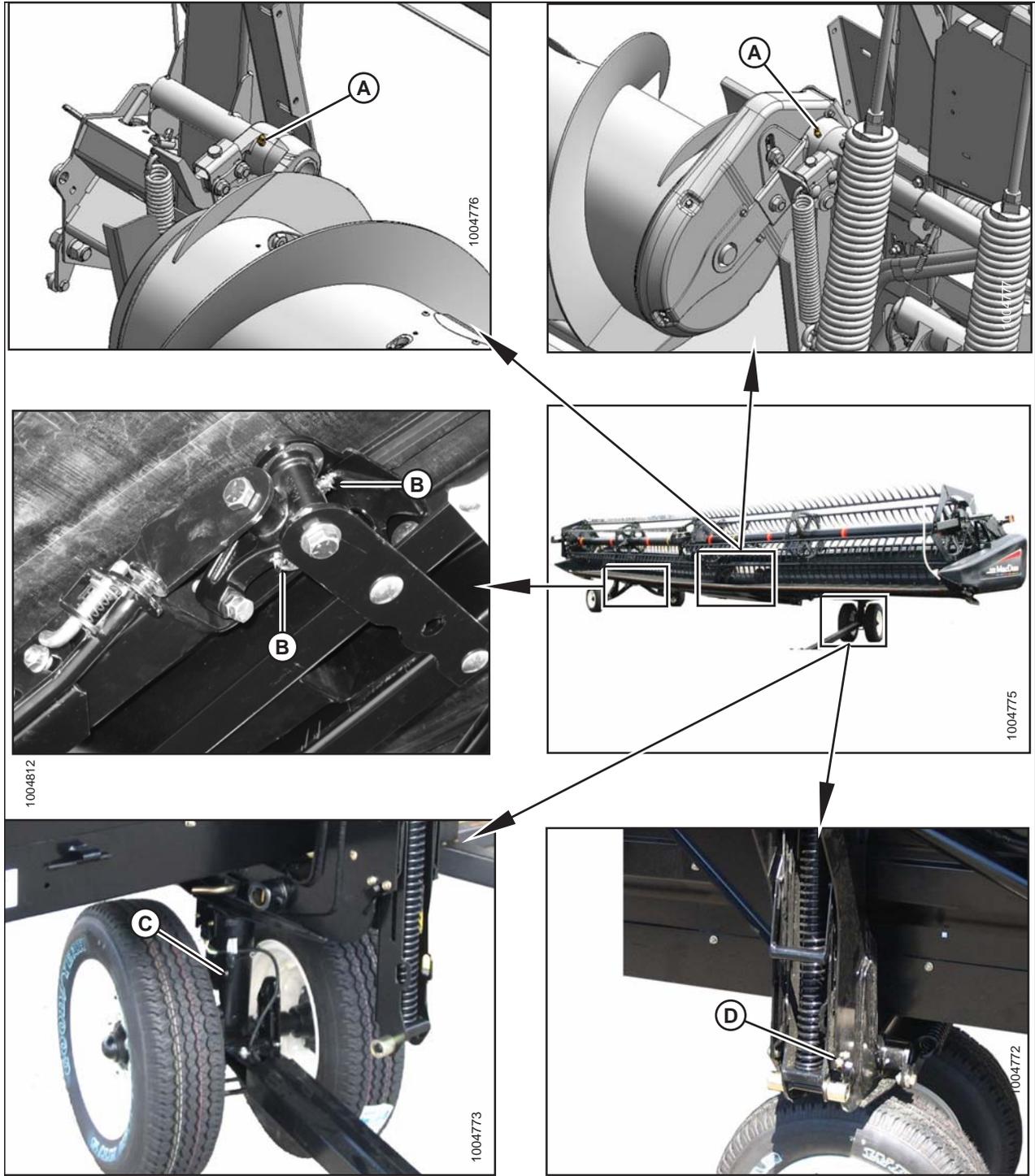
D - Main Drive Gearbox Oil Level. Refer to [Lubricating Header Drive Gearbox, page 293](#)

MAINTENANCE AND SERVICING

Every 250 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.9: Every 250 Hours

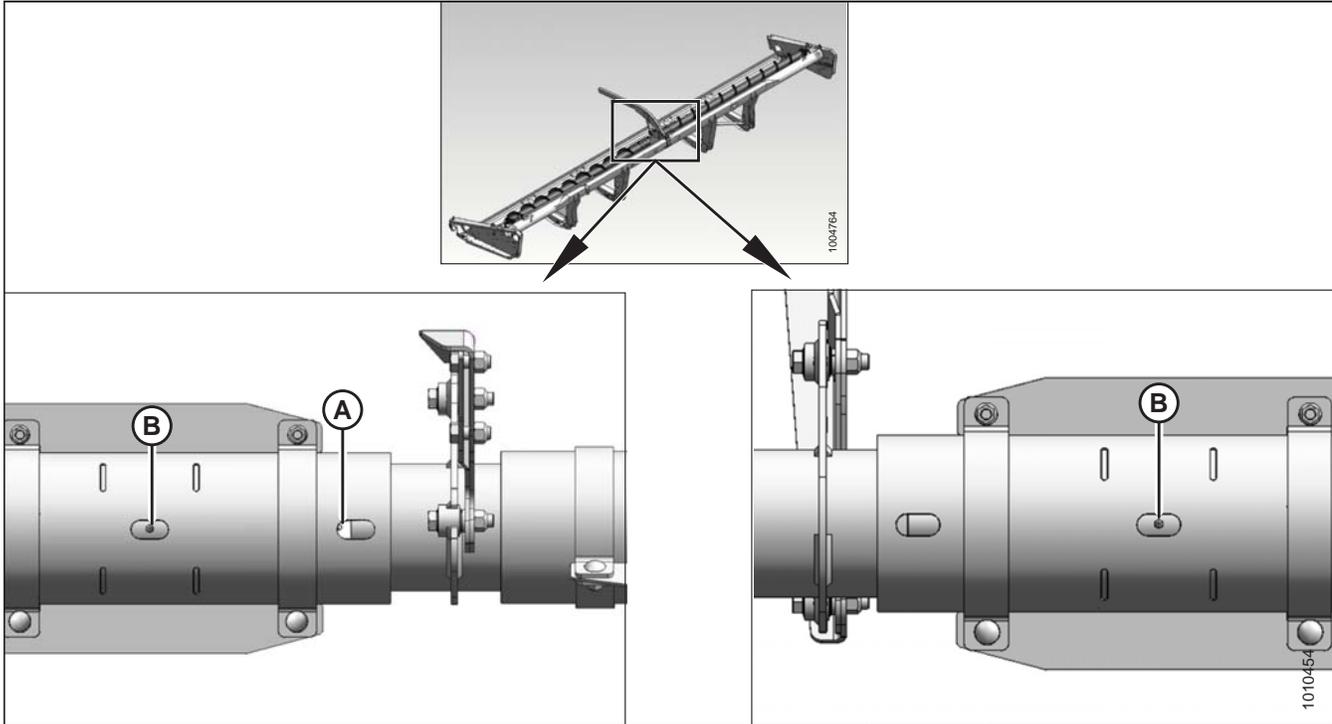


A - Auger Pivots
C - Front Wheel Pivot (One Place)

B - Rear Axle Pivots
D - Frame/Wheel Pivot (One Place) - Both Sides

MAINTENANCE AND SERVICING

Figure 5.10: Every 250 Hours



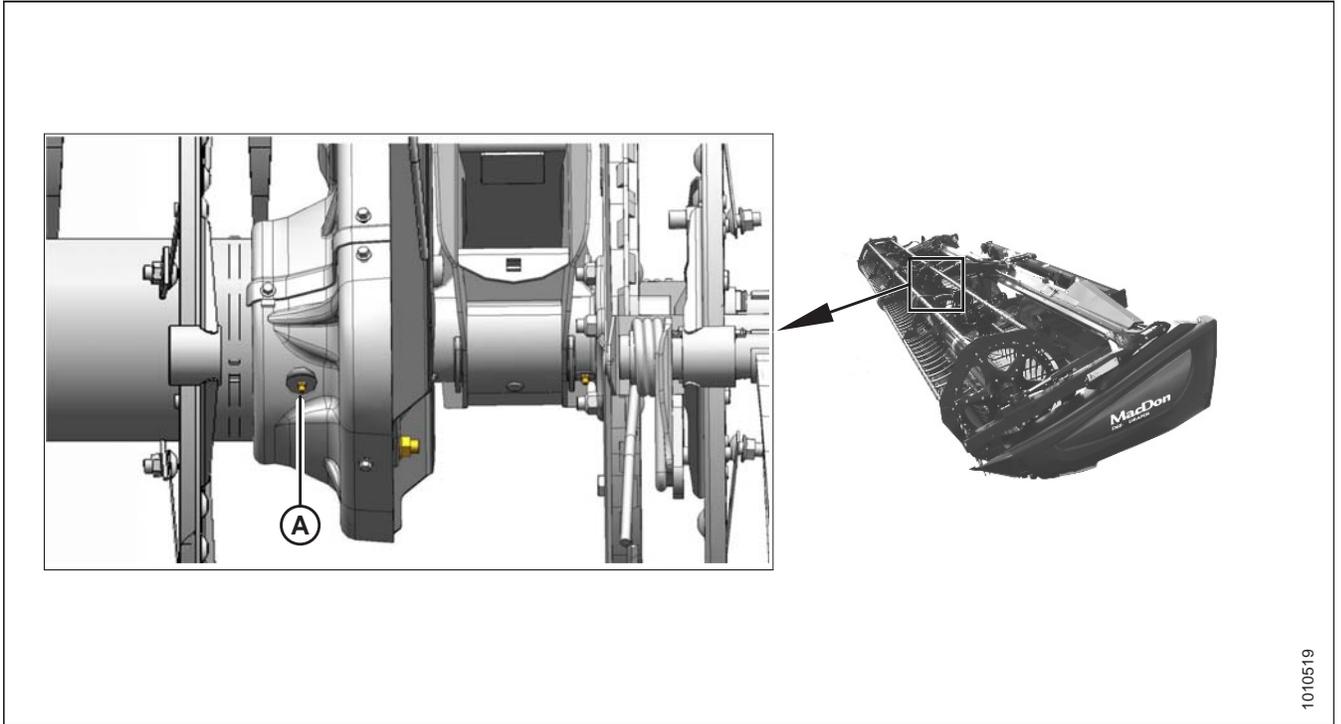
A - Upper Cross Auger U-joint⁴¹

B - Upper Cross Auger Bearing (Two Places)⁴²

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

42. Use high temperature extreme pressure (EP2) performance with 1.5–5.0% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.11: Every 250 Hours



A - Double Reel U-Joint⁴³

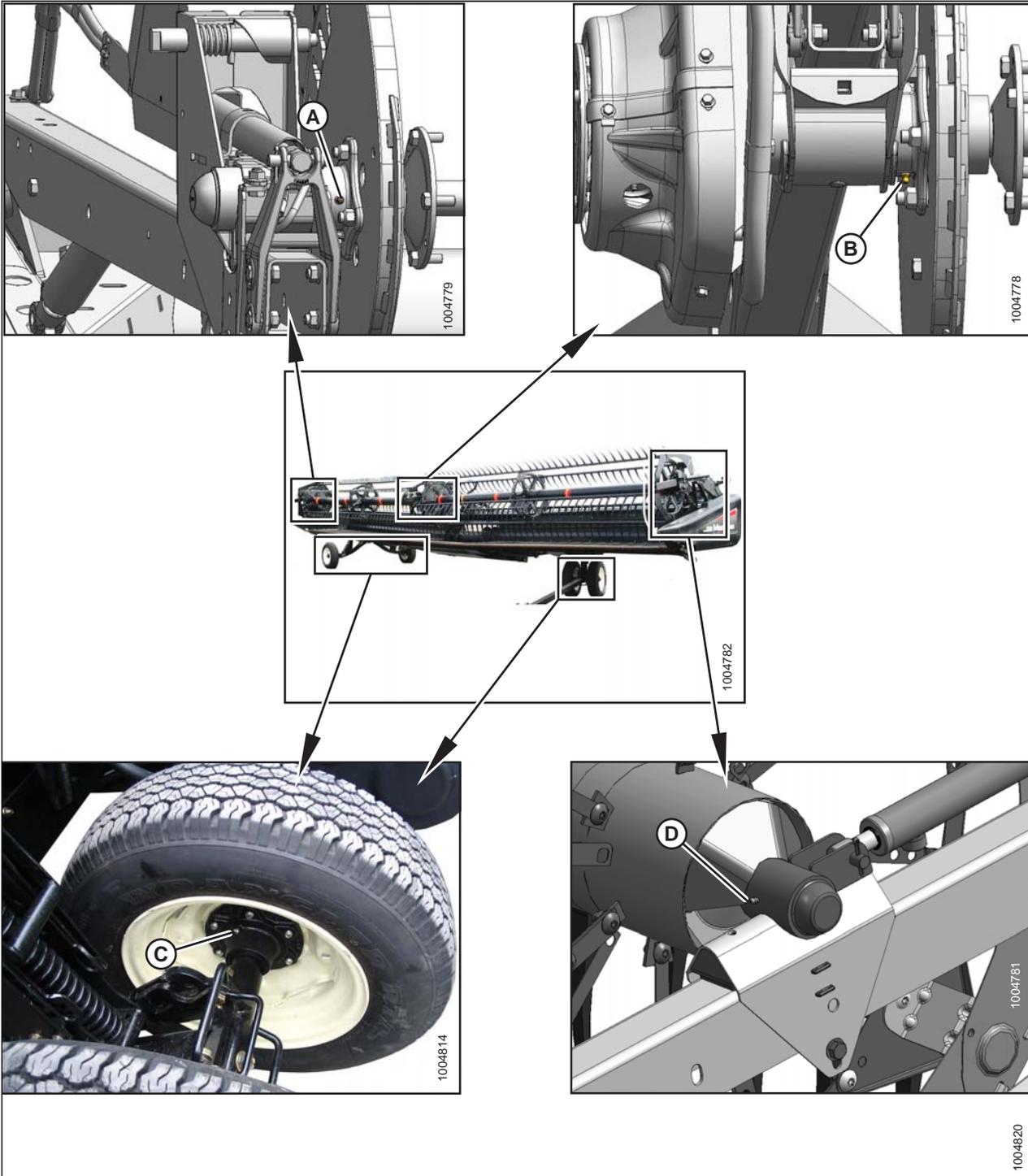
Every 500 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

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

MAINTENANCE AND SERVICING

Figure 5.12: Every 500 Hours



A - Reel Right Bearing (One Place)
C - Wheel Bearings (Four Places)

B - Reel Center Bearing (One Place)
D - Reel Left Bearing (One Place)

MAINTENANCE AND SERVICING

Greasing Procedure

Greasing points are marked on machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals are provided on header and adapter back frame.

DANGER

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

Refer to 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 [5.3.1 Maintenance Schedule/Record, page 274](#).

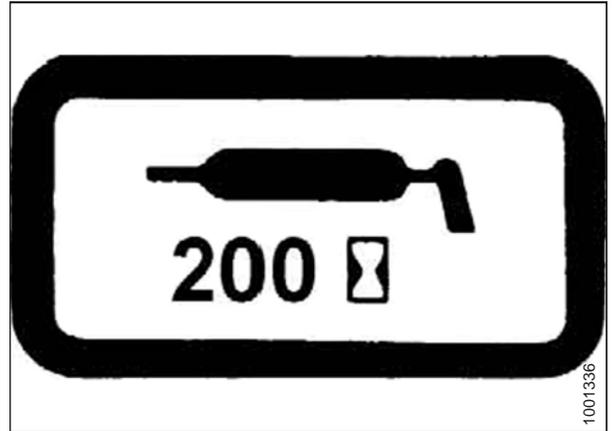


Figure 5.13: Greasing Interval Decal

1. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting (except where noted).
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Also clean lubricant passageway. Replace fitting if necessary.
6. Use high temperature, extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

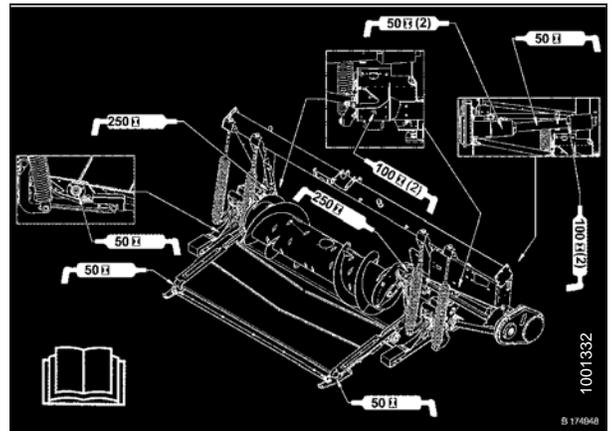


Figure 5.14: CA25 Adapter Master Grease Point Decal

MAINTENANCE AND SERVICING

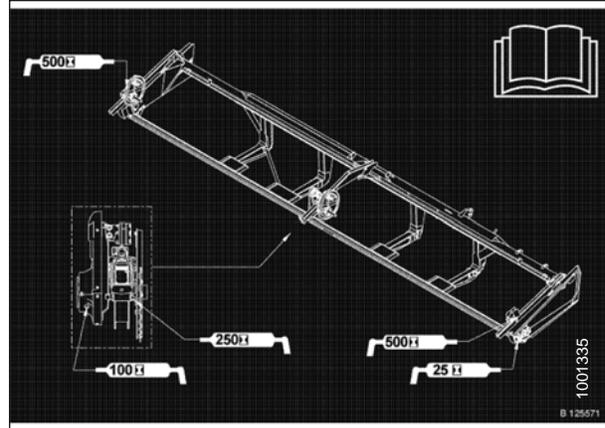


Figure 5.15: Single-Knife Header Master Grease Point Decal

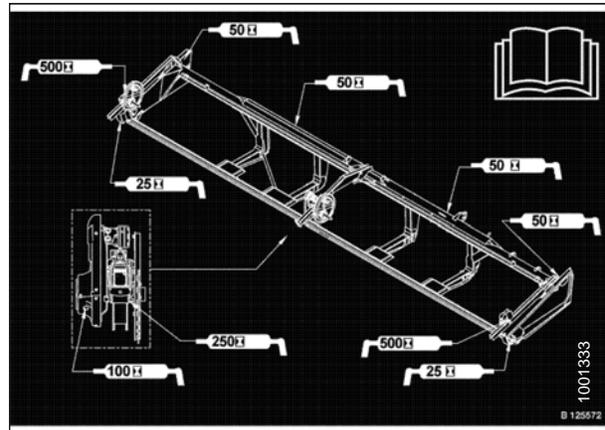


Figure 5.16: Double-Knife Header Master Grease Point Decal

Lubricating Reel Drive Chain – Single Reel

⚠ DANGER

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

MAINTENANCE AND SERVICING

1. Stop the engine and remove the key from the ignition.
2. Remove four bolts (A) securing the cover (B) to the reel drive.

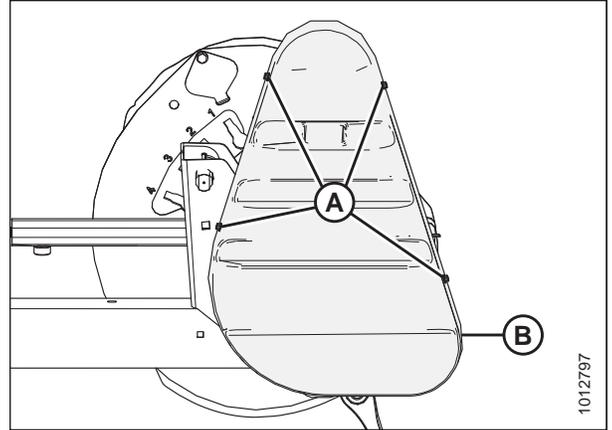


Figure 5.17: Drive Cover – Single Reel

3. Apply a liberal amount of grease to the chain (A).

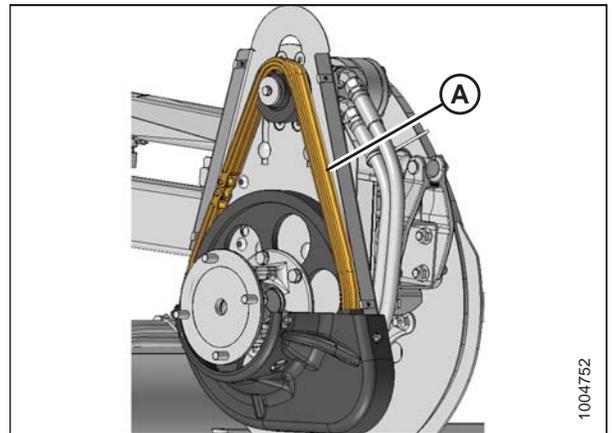


Figure 5.18: Drive Chain

4. Position the drive cover (B) onto the reel drive and secure with four bolts (A).

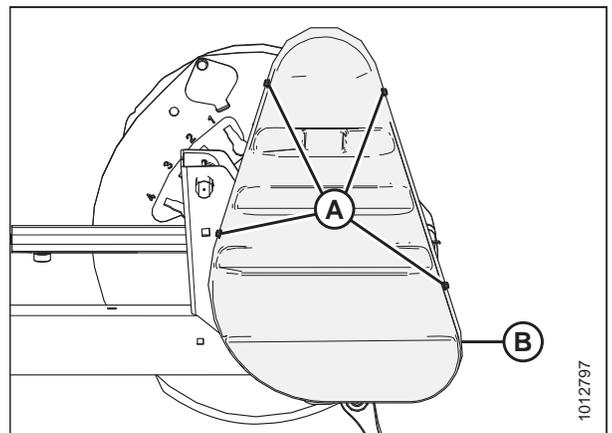


Figure 5.19: Drive Cover – Single Reel

Lubricating Reel Drive Chain – Double Reel

DANGER

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

MAINTENANCE AND SERVICING

1. Stop 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).

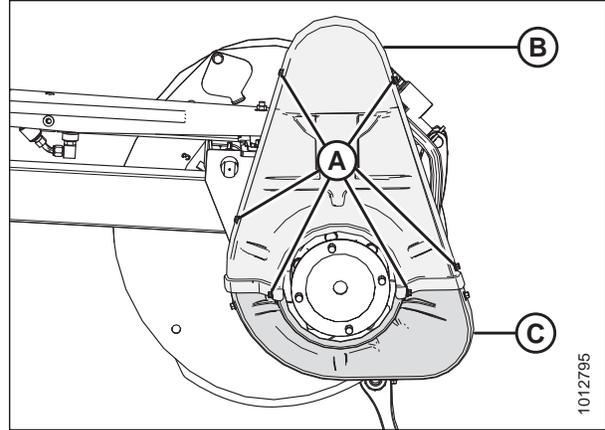


Figure 5.20: Drive Cover – Double Reel

3. Remove three bolts (A) and remove lower cover (B) if necessary.

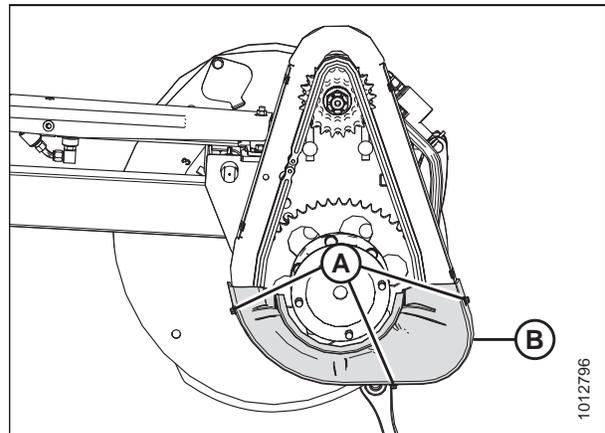


Figure 5.21: Drive Cover – Double Reel

4. Apply a liberal amount of grease to the chain (A).

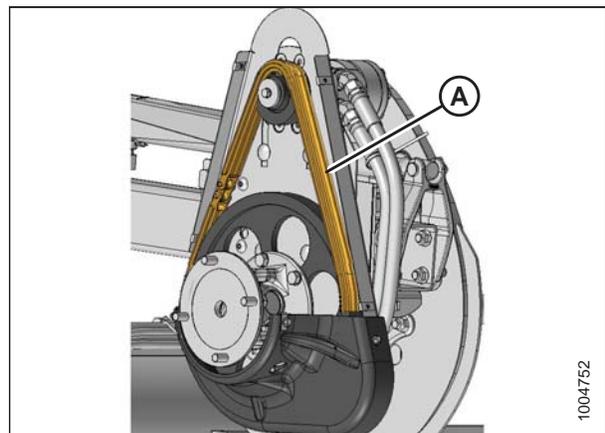


Figure 5.22: Drive Chain

MAINTENANCE AND SERVICING

5. Position lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

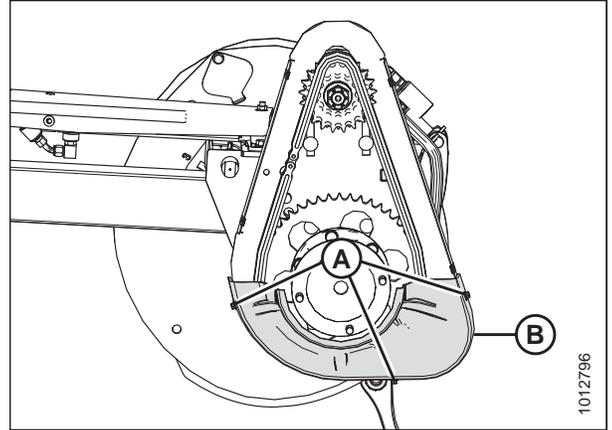


Figure 5.23: Drive Cover – Double Reel

6. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure with six bolts (A).

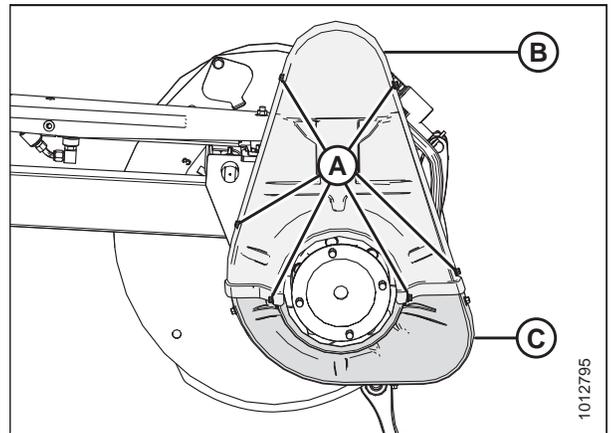


Figure 5.24: Drive Cover – Double Reel

Lubricating Auger Drive Chain

DANGER

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

Lubricate the auger drive chain every 100 hours. Lubrication can be done with the 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.

MAINTENANCE AND SERVICING

1. Remove the 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) forwards to remove.

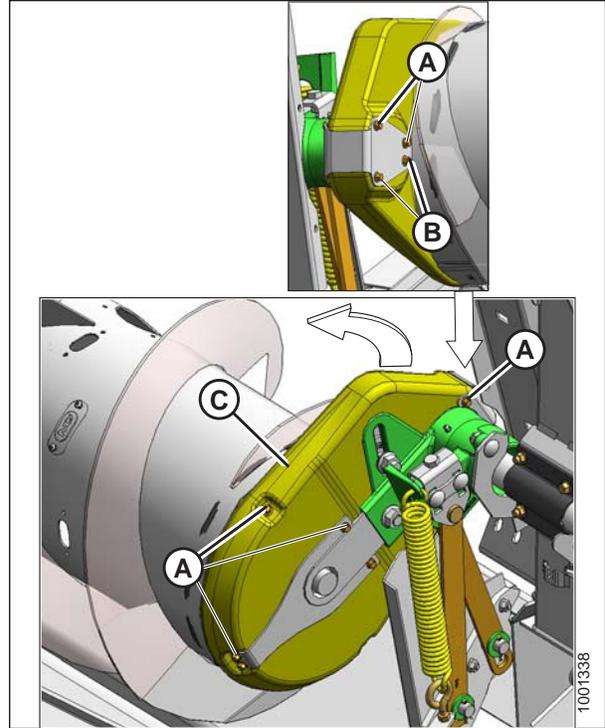


Figure 5.25: Auger Drive

4. Apply a liberal amount of grease to the chain (A), drive sprocket (B), and idler sprocket (C).

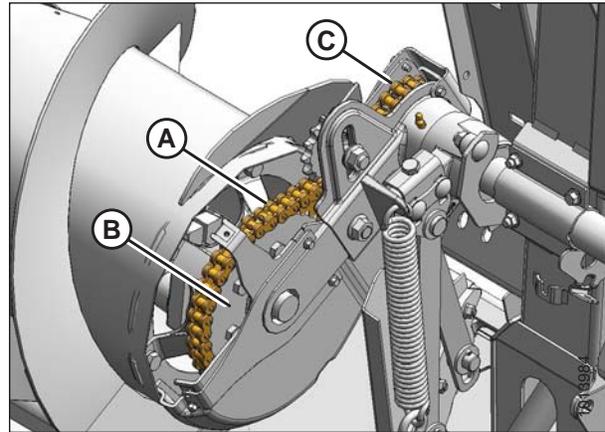


Figure 5.26: Auger Drive Chain

MAINTENANCE AND SERVICING

5. Reinstall the cover (C) by positioning the inboard lip into the auger tube and rotating back to engage the rear support.
6. Replace and tighten bolts (A) and (B).

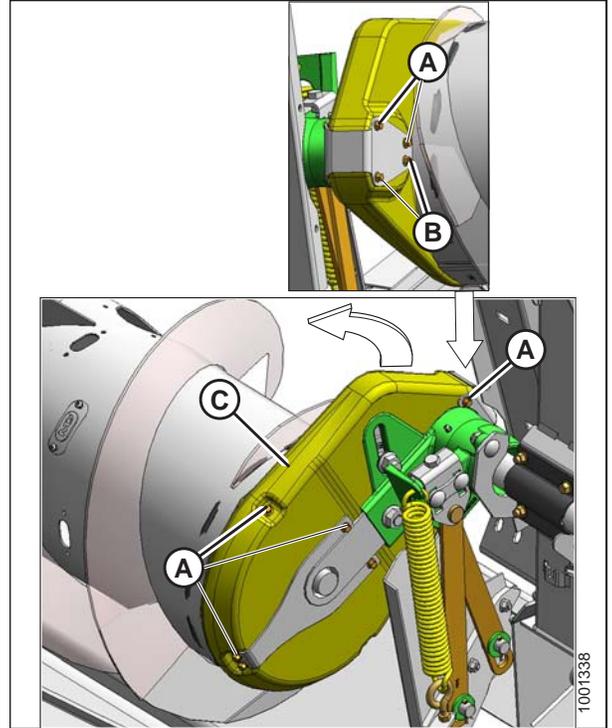


Figure 5.27: Auger Drive

Lubricating Header Drive Gearbox

Checking Oil Level in Header Drive Gearbox

Check header drive gearbox oil level every 100 hours.

DANGER

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

1. Lower cutterbar to ground and ensure gearbox is in working position.
2. Shut down combine and remove key from ignition.
3. Remove oil level plug (A) and check that oil level is up to bottom of hole.
4. If no oil is required, replace oil level plug (A).
5. Add oil if required. Refer to [Adding Oil to Header Drive Gearbox](#), page 294.

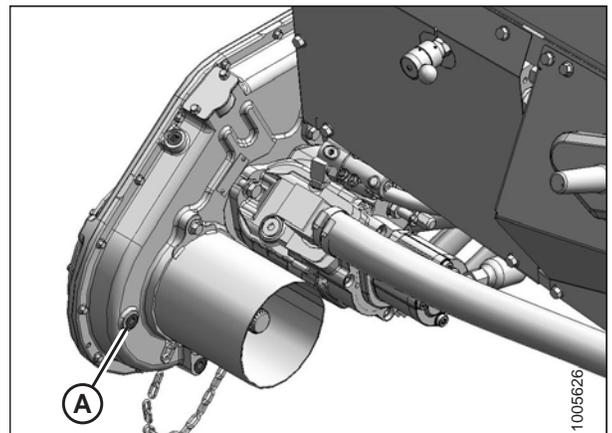


Figure 5.28: Header Drive Gearbox

Adding Oil to Header Drive Gearbox

⚠ DANGER

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

1. Lower the cutterbar to the ground, and ensure the gearbox is in working position.
2. Shut down the combine, and remove the key from the ignition.
3. Remove the oil level plug (A) and the filler plug (B).
4. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (B) until it runs out of the oil level plug hole (A).
5. Replace the oil level plug (A) and the filler plug (B).

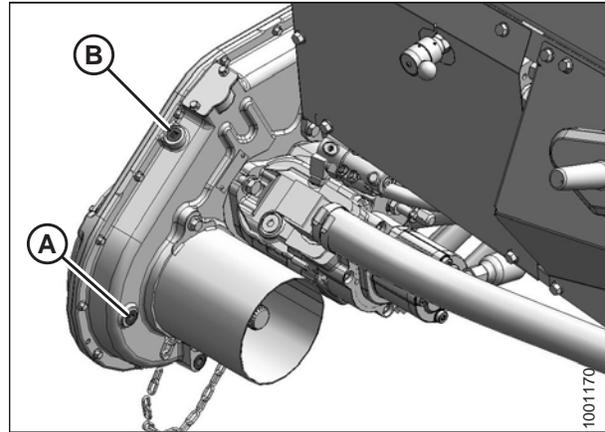


Figure 5.29: Header Drive Gearbox

Changing Oil in Header Drive Gearbox

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

⚠ DANGER

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

1. Raise or lower the header to position the oil drain plug (A) at its lowest point.
2. Shut down the combine, and remove the key from the ignition.
3. Place a suitably sized container (approximately 4 liters [1 US gallon]) underneath the gearbox drain to collect the oil.
4. Remove the oil drain plug (A) and the filler plug (C), and allow the oil to drain.
5. Replace the oil drain plug (A) and remove the oil level plug (B).
6. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (C) until it runs out of the oil level hole (B).

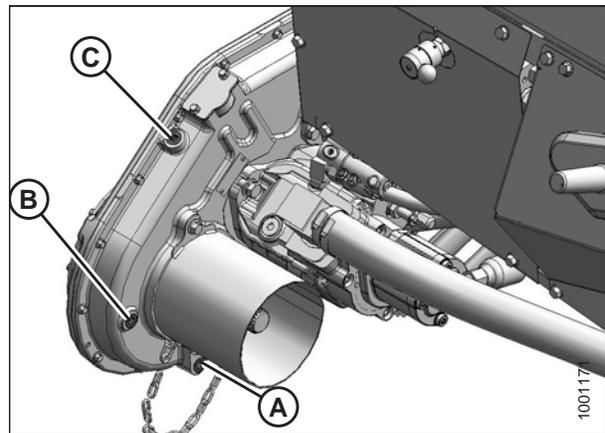


Figure 5.30: Header Drive Gearbox

NOTE:

The header drive gearbox holds approximately 2.5 liters (5 US pints) of oil.

7. Replace the oil level plug (B) and the filler plug (C).

5.4 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.

5.4.1 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** : Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
 - **Normal terrain** : Maintain level so lower sight (A) is full, and upper sight (B) is empty.
 - **Level ground** : 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.

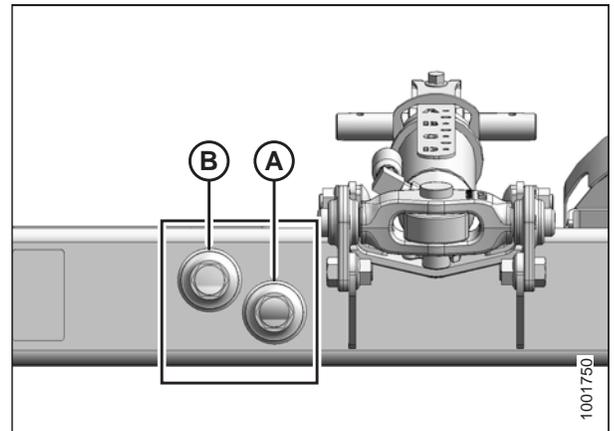


Figure 5.31: Oil Level Sight Glass

5.4.2 Adding Oil to Hydraulic Reservoir

Follow this procedure to top up the oil in the hydraulic reservoir. To change the hydraulic oil, refer to [5.4.3 Changing Oil in Hydraulic Reservoir, page 296](#).



DANGER

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Clean any dirt or debris from the filler cap (A).
3. Loosen and remove the filler cap (A) by turning it counterclockwise.
4. Add warm oil (approximately 21°C [70°F]) and fill to the required level. Refer to 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 the filler cap (A).

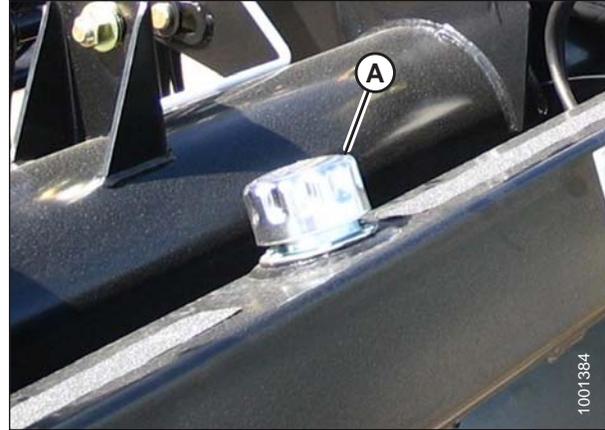


Figure 5.32: Oil Reservoir Filler Cap

5.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

DANGER

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

1. Detach the header from the adapter. Refer to [4 Header Attachment/Detachment, page 219](#).
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 the two oil drain plugs (A) located at the base on each side of the frame.
4. Remove the oil drain plugs (A) with a 1-1/2 in. hex socket and allow the oil to drain.
5. Replace the oil drain plugs (A) when reservoir is empty.
6. Change the oil filter if required. Refer to [5.4.4 Changing Oil Filter, page 297](#).
7. Add approximately 60 liters (16 US gallons) of oil to the reservoir. Refer to [5.4.2 Adding Oil to Hydraulic Reservoir, page 295](#).

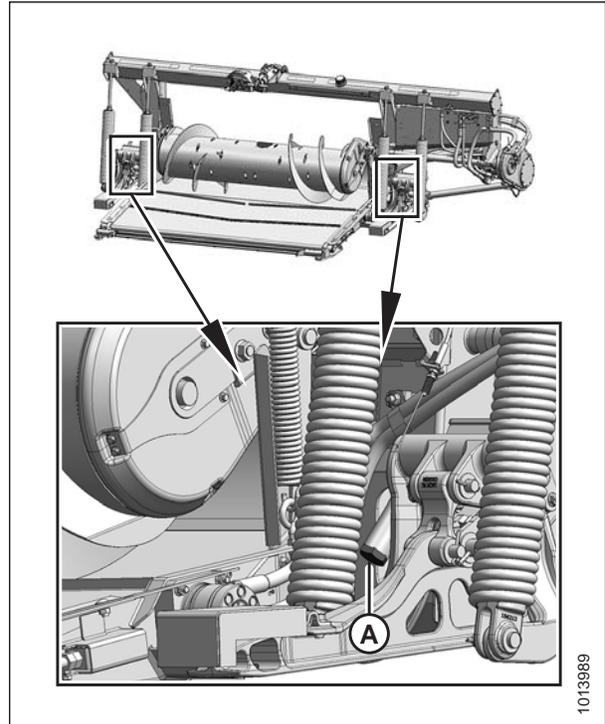


Figure 5.33: Reservoir Drain

5.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

Obtain Filter Service kit (MD #183620). The kit includes one filter element, one O-ring, and one square-cut gasket. The O-ring should be used ONLY with Bosch hydraulic manifolds. The square-cut gasket should be used for all other applications.

DANGER

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

1. Remove five screws (A) and remove cover (B).

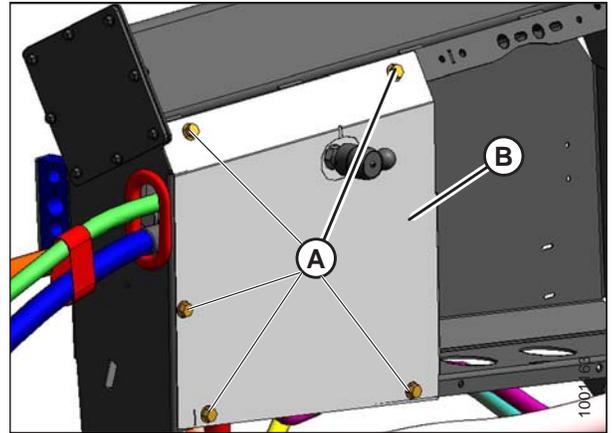


Figure 5.34: Adapter Hydraulics Cover

2. Clean around the mating surfaces of the filter (B) and manifold (A).
3. Remove the spin-off filter (B) and clean the exposed filter port in the manifold (A).

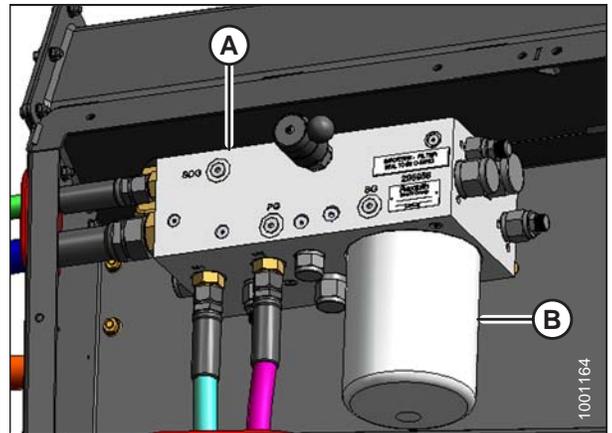


Figure 5.35: Hydraulic Manifold and Filter

MAINTENANCE AND SERVICING

4. **Parker manifold only:** If adapter fitting (A) (MD #245160) requires replacement, two nuts (1 1/2-16 UN-2A) are needed to properly torque fitting to manifold. To install adapter fitting, follow these steps:
 1. Thread new adapter fitting (A) (MD #245160) into manifold (B).
 2. Thread one nut approximately 13 mm (0.5 in.) onto adapter fitting.
 3. Jam second nut against first, and torque to 81–88 Nm (60–65 lbf·ft). Remove both nuts.

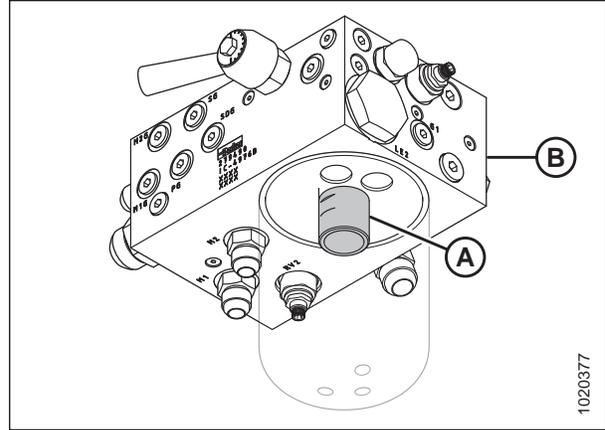


Figure 5.36: Parker Manifold

5. Turn the 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.

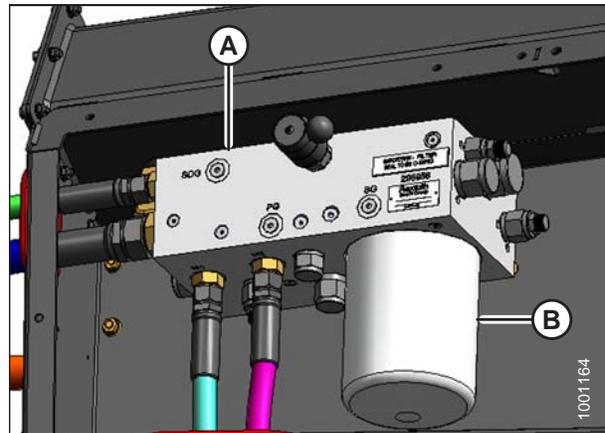


Figure 5.37: Adapter Hydraulics

6. Reinstall cover (B) with five screws (A).

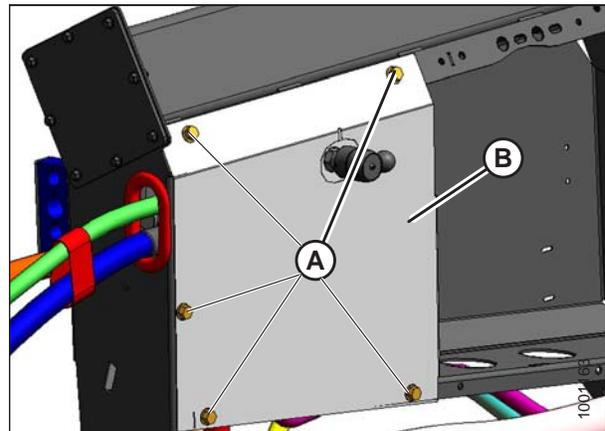


Figure 5.38: Adapter Hydraulics Cover

5.5 Electrical System

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

Keep lights clean and replace defective bulbs.

5.5.1 Replacing Light Bulbs

1. Use a Phillips screwdriver to remove screws (A) from the fixture and remove the plastic lens.
2. Remove two screws (A) from lens and remove lens.
3. Push and twist light bulb to remove from socket.
4. 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
5. Reinstall lens with screws (A).

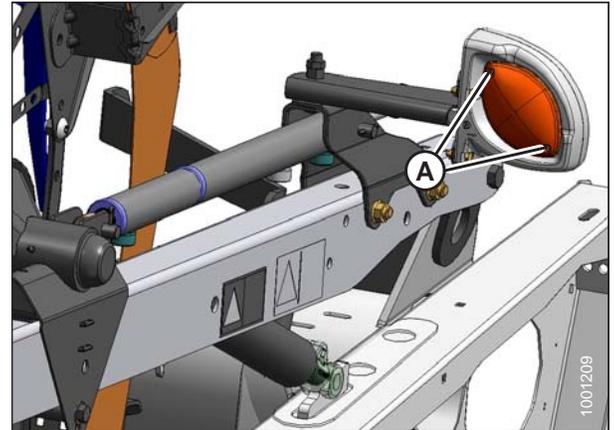


Figure 5.39: Header Clearance Light

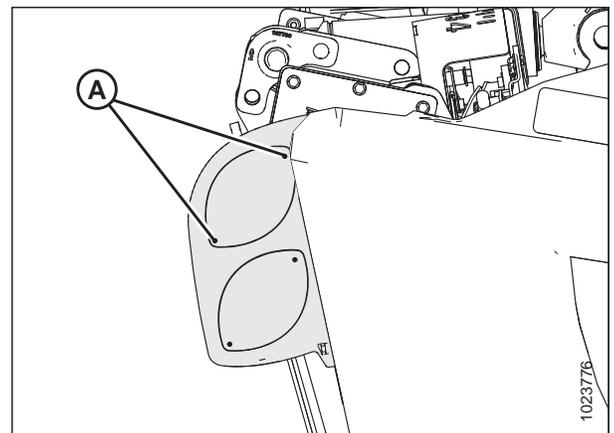


Figure 5.40: Optional Slow Speed Transport Red and Amber Lights

5.6 Header Drive

The header drive consists of a driveline from the combine to the Combine Adapter gearbox that drives the feed auger and a hydraulic pump. The pump provides hydraulic power to the drapers, knives, and optional equipment.

5.6.1 Removing Driveline

DANGER

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

NOTE:

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

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

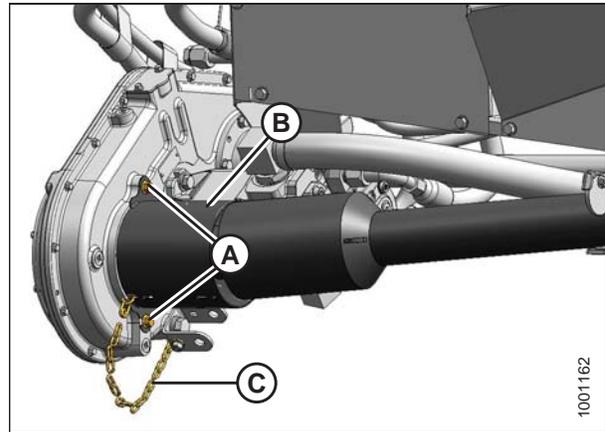


Figure 5.41: Adapter End of Driveline

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

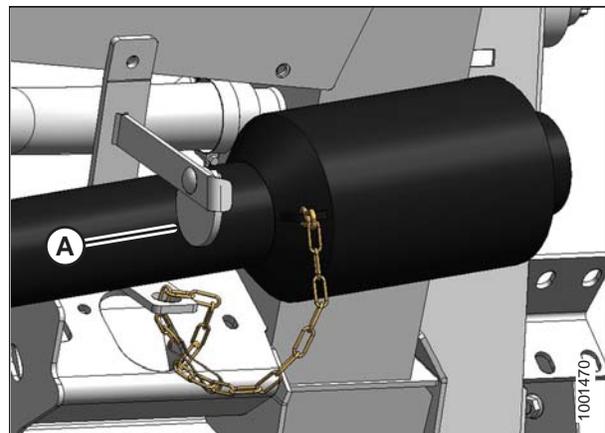


Figure 5.42: Combine End of Driveline

5.6.2 Installing Driveline

DANGER

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

IMPORTANT:

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

IMPORTANT:

Ensure the driveline length corresponds with the length specifications for your specific equipment. Refer to [2.2 Specifications, page 23](#).

1. Slide the driveline into the hook (A) so the disc (B) drops and secures the driveline.

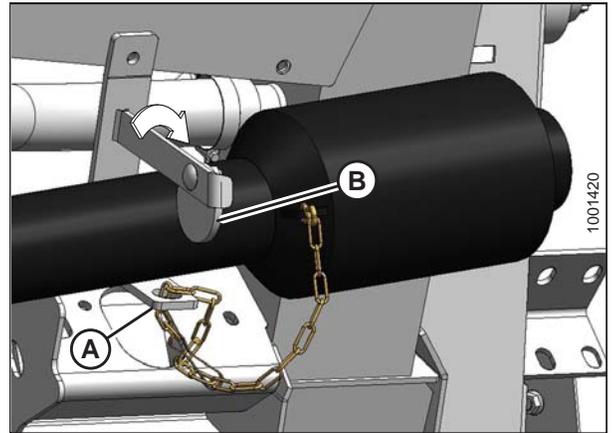


Figure 5.43: Combine End of Driveline

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

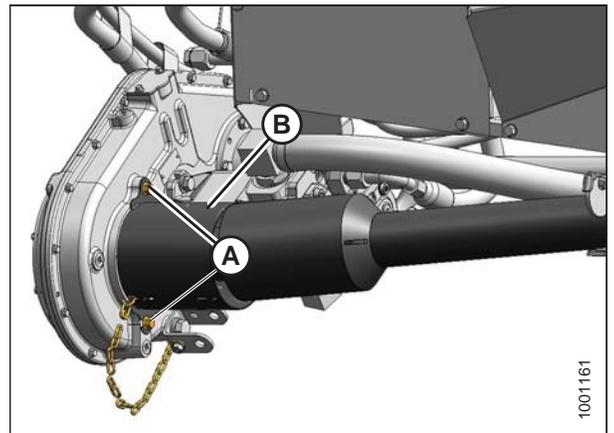


Figure 5.44: Adapter End of Driveline

5.6.3 Removing Driveline Guard

The main driveline guard must remain attached to the driveline during operation, but it can be removed for maintenance purposes.

DANGER

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

NOTE:

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

1. Shut down the combine, and remove the key from the ignition.
2. If the driveline is in the storage position, rotate disc (B) on the adapter driveline storage hook (A), and remove the driveline from the hook. If the driveline is attached to the combine, remove the driveline from the combine by pulling the quick disconnect collar to release the driveline yoke at the combine shaft. Refer to [4 Header Attachment/Detachment, page 219](#).

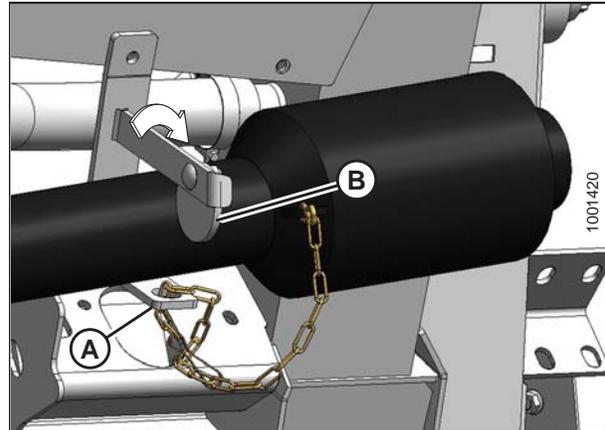


Figure 5.45: Combine End of Driveline

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



Figure 5.46: Separated Driveline

MAINTENANCE AND SERVICING

4. Use a slotted screwdriver to release grease zerk/lock (A).



Figure 5.47: Driveline Guard

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

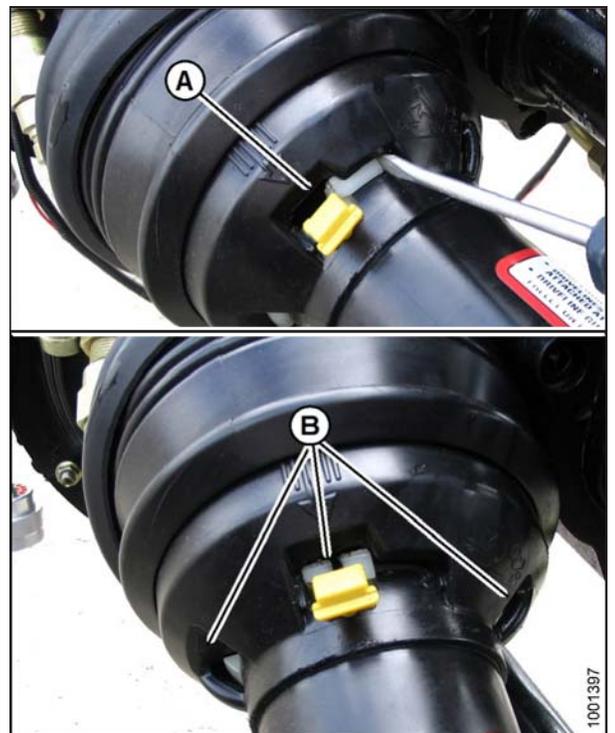


Figure 5.48: Driveline Guard

5.6.4 Installing Driveline Guard

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



Figure 5.49: Driveline Guard

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

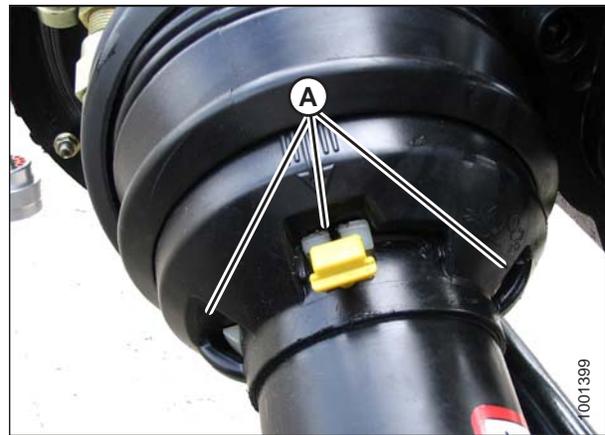


Figure 5.50: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise and lock ring in guard.

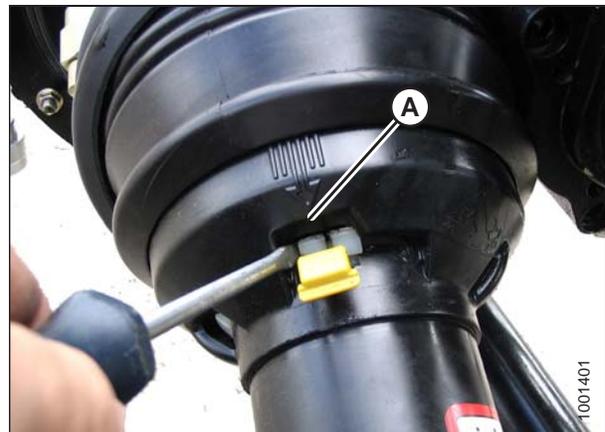


Figure 5.51: Driveline Guard

MAINTENANCE AND SERVICING

4. Push the grease zerk (A) back into the guard.



Figure 5.52: Driveline Guard

5. Assemble the driveline.

NOTE:

The splines are keyed to align the universals. Align weld (A) with the missing spline (B) when assembling.

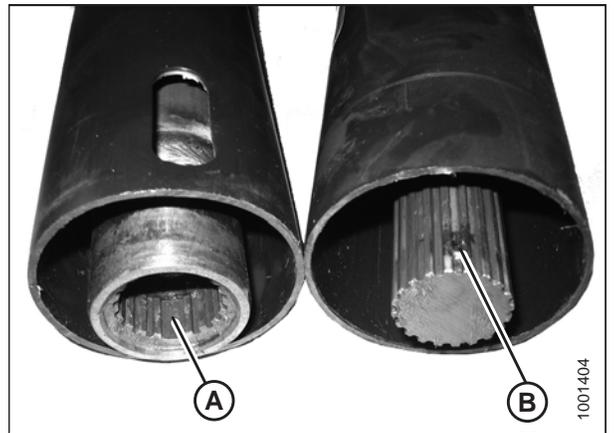


Figure 5.53: Driveline

6. Slide the driveline into the hook (A) so the disc (B) drops and secures the driveline (or connect to the combine).

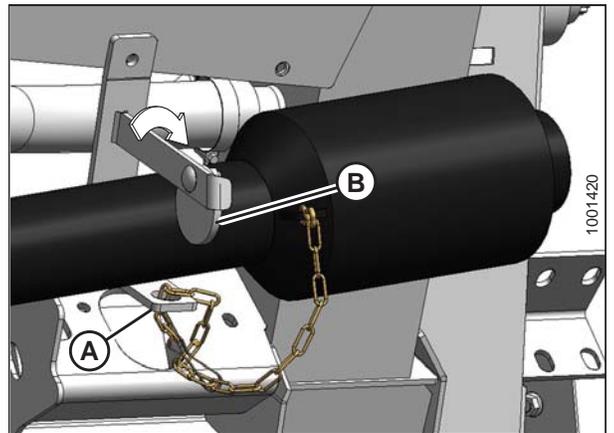


Figure 5.54: Combine End of Driveline

5.6.5 Adjusting Tension on Gearbox Drive Chain

The gearbox drive chain tension is factory-set, but tension adjustments are required every 500 hours or annually (whichever comes first). The gearbox drive chain, located inside the gearbox, requires no other regular maintenance.

⚠ DANGER

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

1. Lower the header.
2. Stop the engine, and remove the key from the ignition.
3. Remove two bolts and 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).

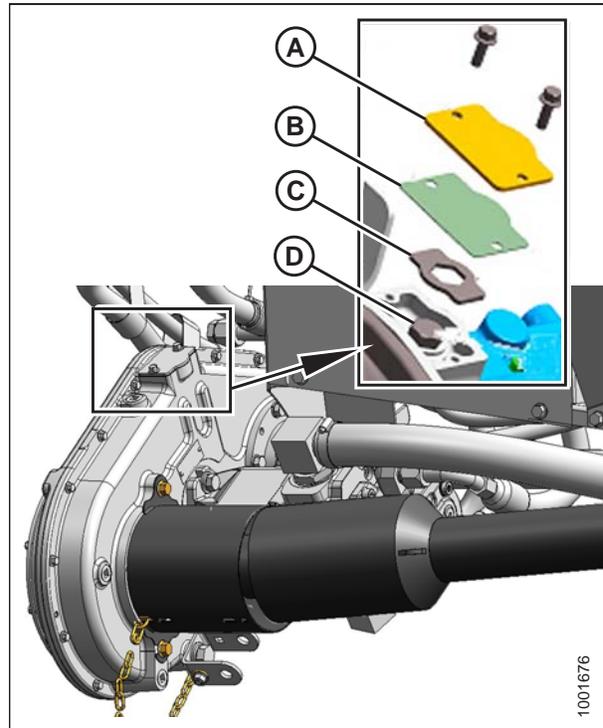


Figure 5.55: Chain Tensioner

5.7 Auger

The Combine Adapter auger feeds the cut crop from the draper decks into the combine feeder house.

5.7.1 Adjusting Auger to Pan Clearance

DANGER

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

IMPORTANT:

Maintain an appropriate distance between 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 combine and remove key from ignition.
3. Ensure float lock linkage is on down stops (washer [A] and nut [B] cannot be moved) at both locations.

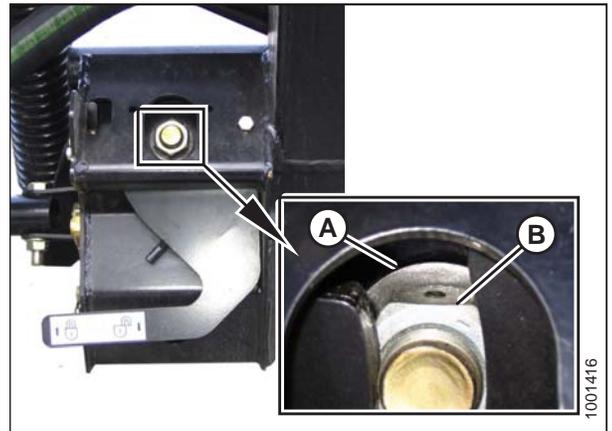


Figure 5.56: Float Lock

4. Ensure lower end of linkage bars (A) are against studs (B) at both ends of auger.

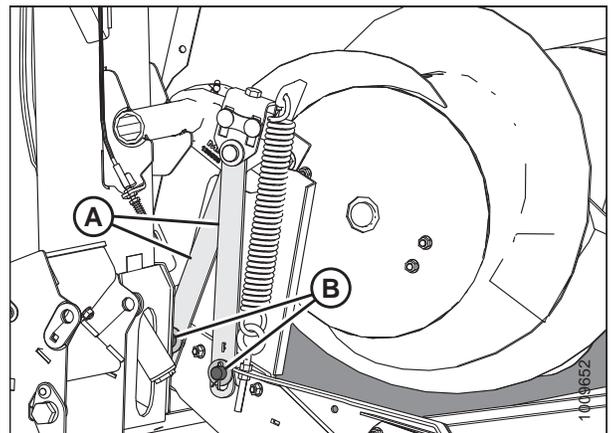


Figure 5.57: Linkage Bars

MAINTENANCE AND SERVICING

5. Loosen two nuts (B).
6. 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.

7. Repeat Steps 5, [page 308](#) and 6, [page 308](#) on opposite end of auger.
8. Tighten nuts (B) on both ends of feed auger. Torque nuts to 106–118 Nm (79–87 lbf·ft).

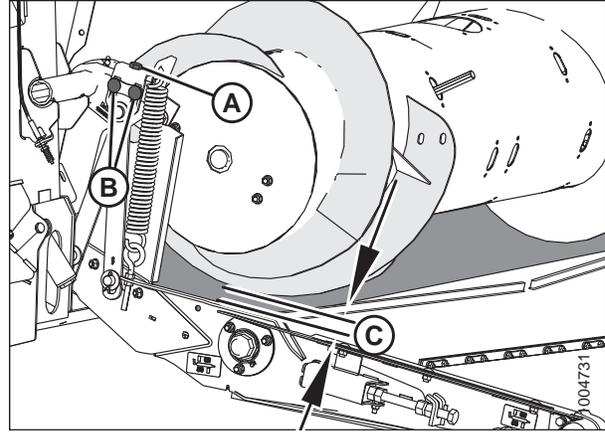


Figure 5.58: Auger Clearance

5.7.2 Checking Auger Drive Chain Tension

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

DANGER

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

1. Lower the header to the ground.
2. Raise the reel and engage the reel safety props. Refer to [Engaging Reel Safety Props, page 31](#).
3. Shut down the combine, and remove the key from the ignition.
4. Inspect the auger drive chain through the adjustment slot (A).

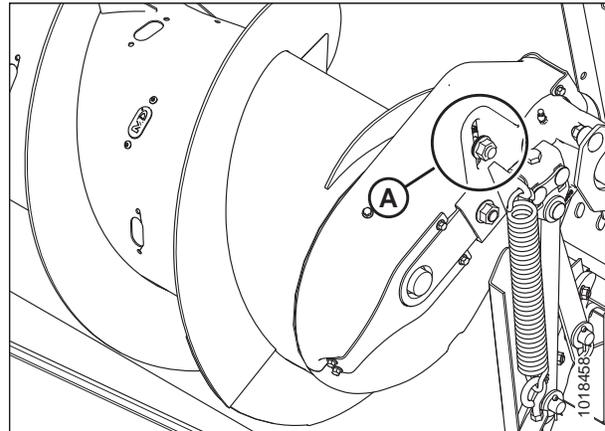


Figure 5.59: Auger Drive Chain Inspection Location

MAINTENANCE AND SERVICING

5. Verify that the auger drive sprocket (A) is engaging the chain (B) completely through the adjustment slot (C).

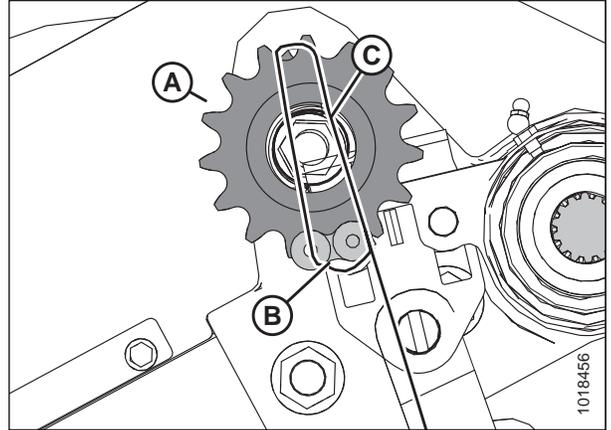


Figure 5.60: Auger Drive Sprocket (Correct)

NOTE:

If the auger drive sprocket (A) is not properly engaged, you will need to adjust the chain tension. Refer to [5.7.3 Adjusting Auger Drive Chain Tension, page 310](#).

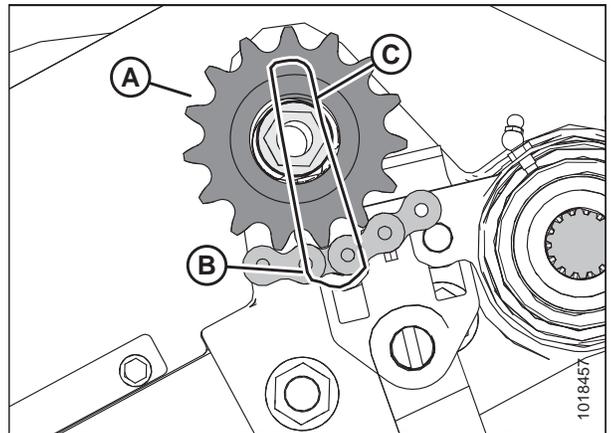


Figure 5.61: Auger Drive Sprocket (Incorrect)

6. Rotate the auger (A) by hand, in the reverse direction, until it cannot turn anymore.
7. Mark a line (B) across the drum and 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.

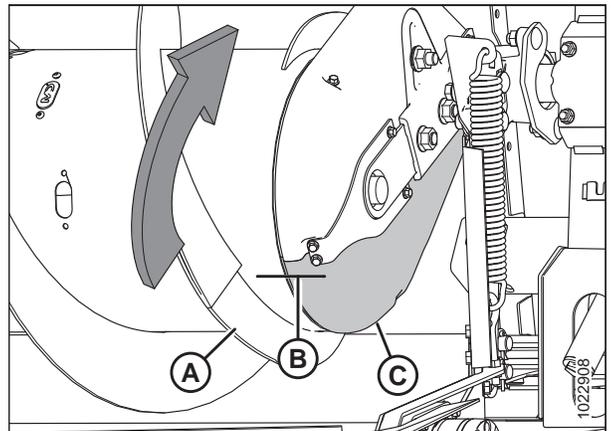


Figure 5.62: Auger Drive

MAINTENANCE AND SERVICING

8. Rotate the auger (A) by hand, in forward direction, until it cannot turn anymore.
9. Measure the distance between the two lines (B).

For a new chain:

- If the difference (B) is 1–4 mm (0.04–0.16 in.), no adjustment is required.
- If the difference (B) is greater than 4 mm (0.16 in.), the auger drive chain tension needs adjusting. Refer to [5.7.3 Adjusting Auger Drive Chain Tension, page 310](#).

For a used chain:

- If the difference (B) is 3–8 mm (0.12–0.31 in.), no adjustment is required.
- If the difference (B) is greater than 8 mm (0.31 in.), the auger drive chain tension needs adjusting. Refer to [5.7.3 Adjusting Auger Drive Chain Tension, page 310](#).

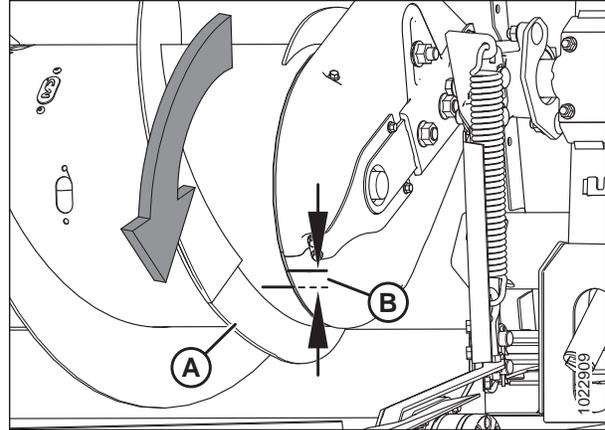


Figure 5.63: Auger Drive

5.7.3 Adjusting Auger Drive Chain Tension

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

DANGER

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

NOTE:

Check the auger tension before making any adjustments. Refer to [5.7.2 Checking Auger Drive Chain Tension, page 308](#).

1. Detach the header from the combine. Refer to [4 Header Attachment/Detachment, page 219](#).
2. Shut down the combine, and remove the key from the ignition.

MAINTENANCE AND SERVICING

3. Remove the four bolts (A) securing the top cover to the left side of the auger chain case.
4. Remove bolts (B) on the cover retainer plate (D).
5. Remove top cover (C).

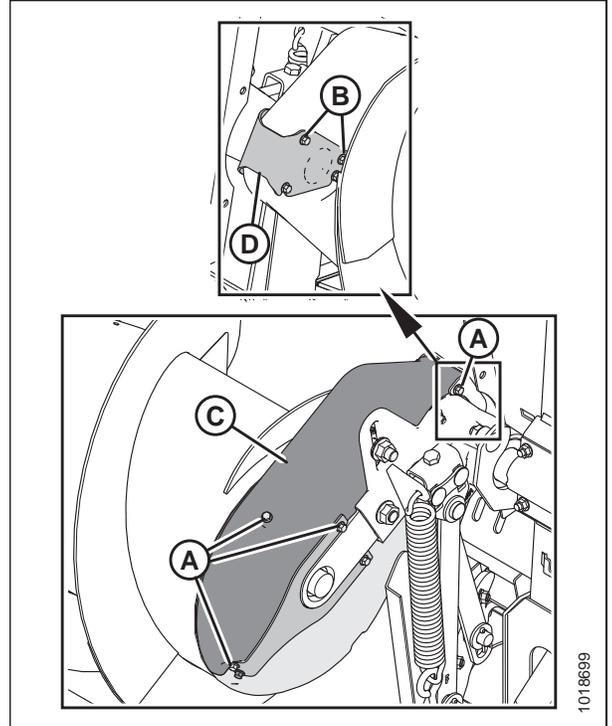


Figure 5.64: Auger Drive

6. Loosen bolt (C) securing idler sprocket (A).
7. Rotate the auger in reverse to take up the slack in the lower strand of chain (B).
8. Push down idler sprocket (A) to eliminate the remaining slack in the lower strands (B).
9. Rotate the auger back and forth to check the slack, and repeat Step 8, [page 311](#) 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).

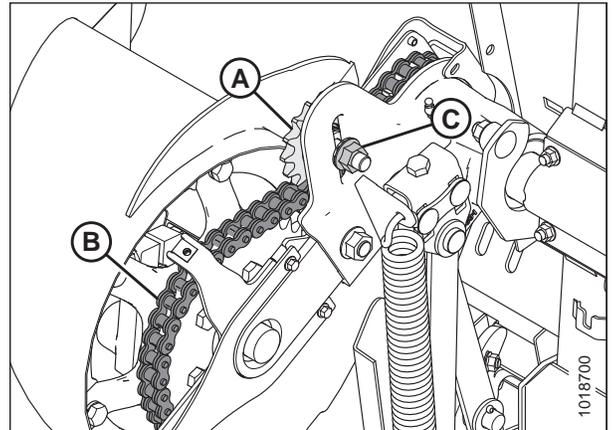


Figure 5.65: Auger Drive

MAINTENANCE AND SERVICING

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.

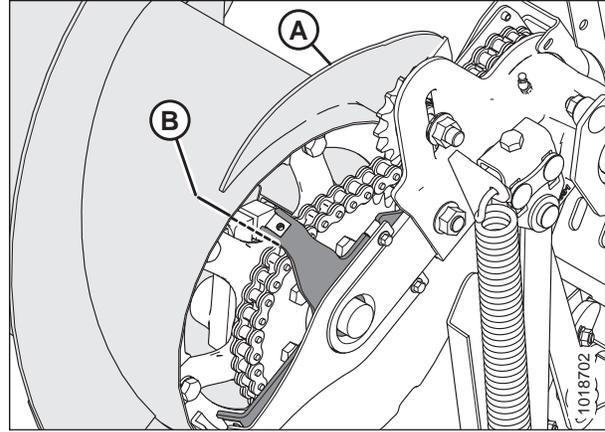


Figure 5.66: Auger Drive

13. Rotate auger (A) by hand, in forward direction, until it cannot turn anymore.
14. Measure the distance (B) between the two lines.

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 311 to 10, page 311.

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 311 to 10, page 311.

15. Check the distance between the two lines (B) again.

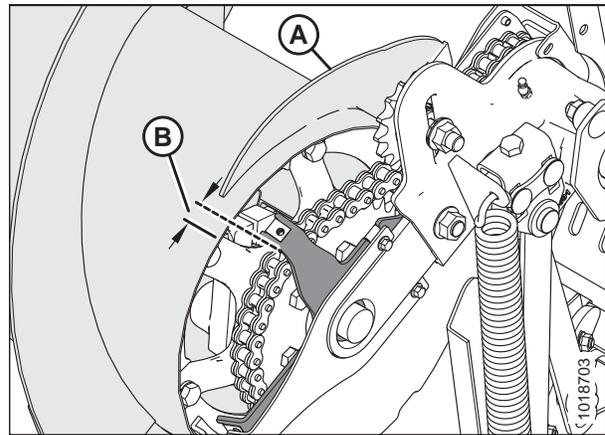


Figure 5.67: Auger Drive

MAINTENANCE AND SERVICING

16. Install top cover (C).
17. Install four bolts (A).
18. Install bolts (B) on cover retainer plate (D).

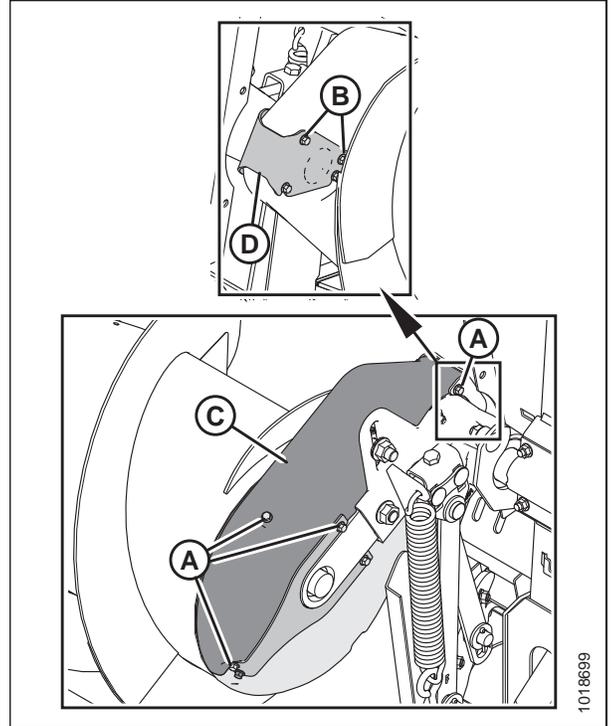


Figure 5.68: Auger Drive

5.7.4 Removing Auger Drive Chain

The chain tensioner can take up slack for only a single pitch. Replace the chain when the chain has worn or stretched beyond the limits of the tensioner.

DANGER

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

1. Detach the header from the combine. For instructions, refer to [4 Header Attachment/Detachment, page 219](#).
2. Shut down the combine, and remove the key from the ignition.

MAINTENANCE AND SERVICING

3. Remove the 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).

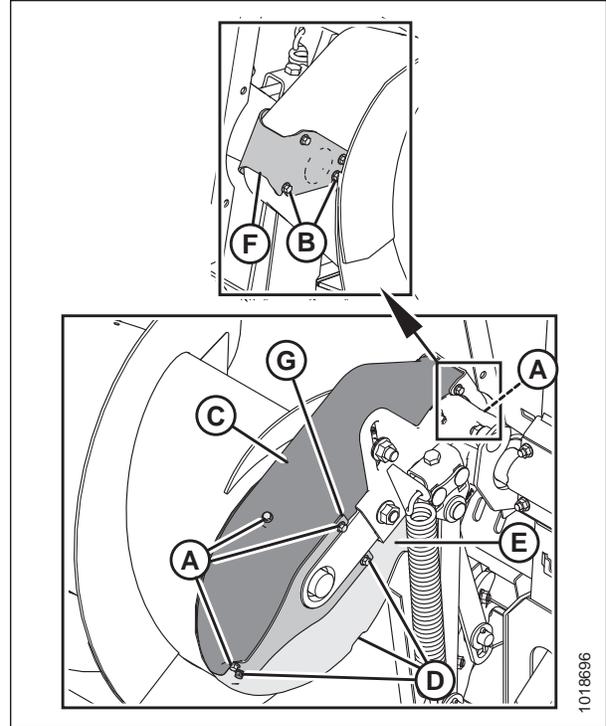


Figure 5.69: Auger Drive

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 sprocket.
10. Remove washer and screw (C) that secure the drive sprocket to the shaft.

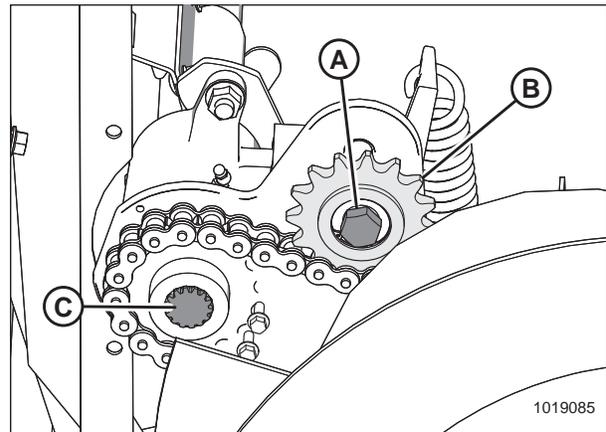


Figure 5.70: Auger Drive

MAINTENANCE AND SERVICING

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.

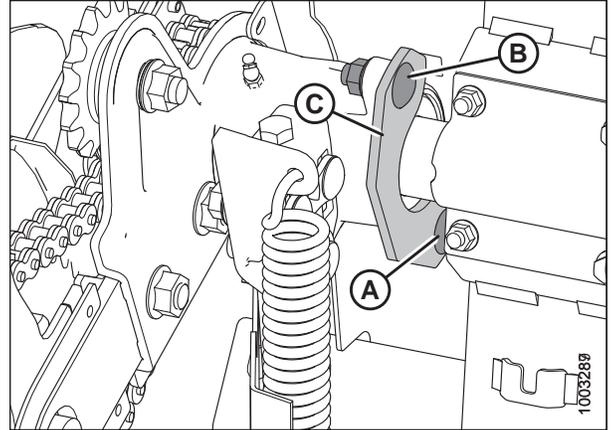


Figure 5.71: Auger Support

12. Use a pry bar (A) to slide the drum assembly to the right side of the adapter.

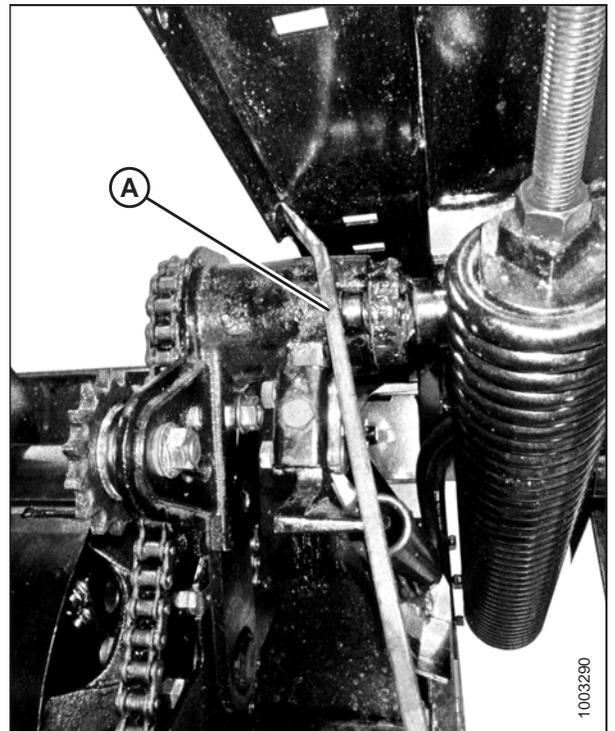


Figure 5.72: Auger Drive

MAINTENANCE AND SERVICING

NOTE:

Once the drum starts sliding to the right, the drive sprocket will fall off.

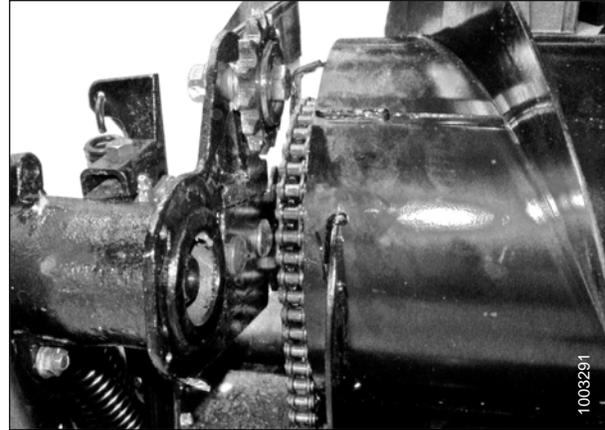


Figure 5.73: Auger Drive

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.

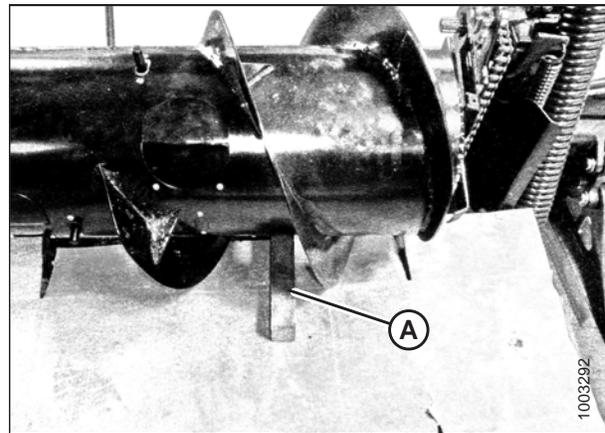


Figure 5.74: Auger

14. Remove the two bolts and nuts (A), and separate the drive housing from the auger mount bracket.

NOTE:

You may need to lift or support the drum to remove the bolts.

NOTE:

The bolts on the left side housing are longer than the bolts on the right side housing.

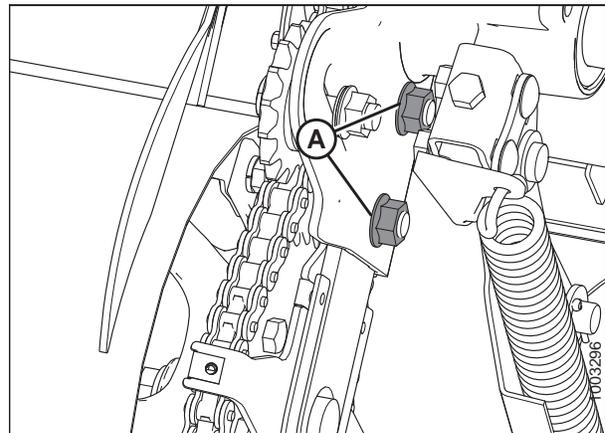


Figure 5.75: Auger Support

- Slide left housing (A) back into position so endless chain (B) can be removed.

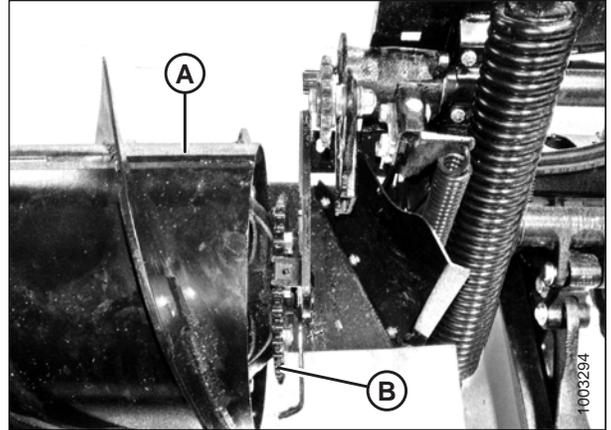


Figure 5.76: Auger Drive

5.7.5 Installing Auger Drive Chain

- 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.

- Remove the block if used.
- Rotate the drum in forward and reverse a couple of times to ensure the drum has been correctly rebuilt before connecting the chain to the drive assembly.

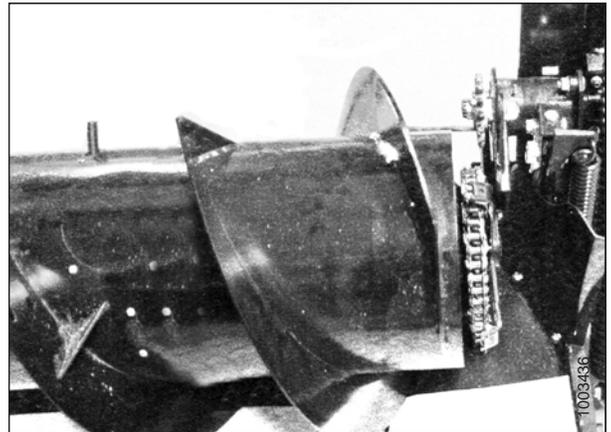


Figure 5.77: Auger Drive

- Align the sprocket on the shaft, and put drive sprocket (A) into chain (B).

NOTE:

The shoulder of drive sprocket (A) faces the auger.

- Slide the entire drum assembly back into place, and bolt C-clamp (C) over the housing.
- Apply Loctite® 242 to threads of the screw. Install screw (E) and washer (D).

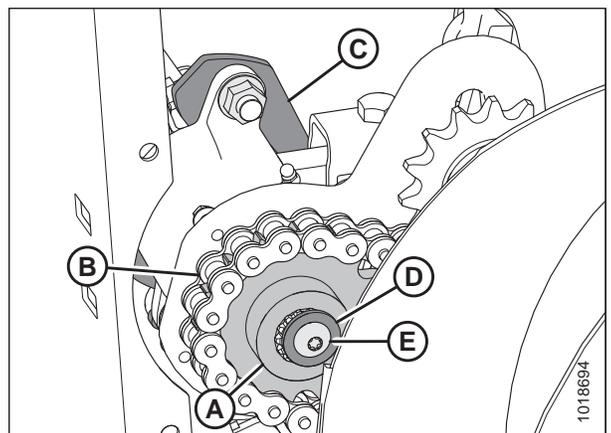


Figure 5.78: Auger Drive

MAINTENANCE AND SERVICING

- Loosen nut (A) securing idler sprocket (B).
- Rotate the auger in reverse to take up the slack in the lower strand of chain (C).
- Push down idler sprocket (B) to eliminate the remaining slack in the lower strands (C).
- Rotate the auger back and forth to check the slack, and repeat Step 9, page 318 if necessary. A slight amount of slack is acceptable.

NOTE:

Do **NOT** use excessive force on idler to tighten chain.

- Tighten idler nut (A) and torque to 290 Nm (215 lbf-ft).
- Rotate auger (A) by hand, in reverse, until it cannot turn anymore.
- Mark a line (B) on the drum that lines up with one of the cover supports.

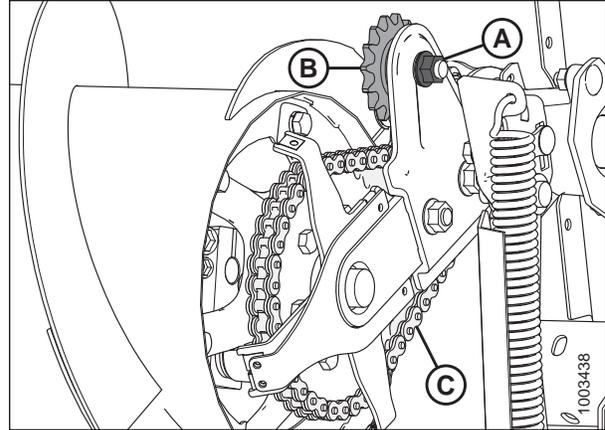


Figure 5.79: Auger Drive

- Rotate auger (A) by hand, in forward direction, until it cannot turn anymore.
- Measure the distance between the two lines (B).

For a new chain:

- If the difference (B) is 1–4 mm (0.04–0.16 in.), no more adjustment is required.
- If the difference (B) is greater than 4 mm (0.16 in.), repeat Steps 7, page 318 to 11, page 318.

For a used chain:

- If the difference (B) is 3–8 mm (0.12–0.31 in.), no more adjustment is required.
- If the difference (B) is greater than 8 mm (0.31 in.), repeat Steps 7, page 318 to 11, page 318.

- Check the distance between the two lines (B) again.
- Coat chain with grease.

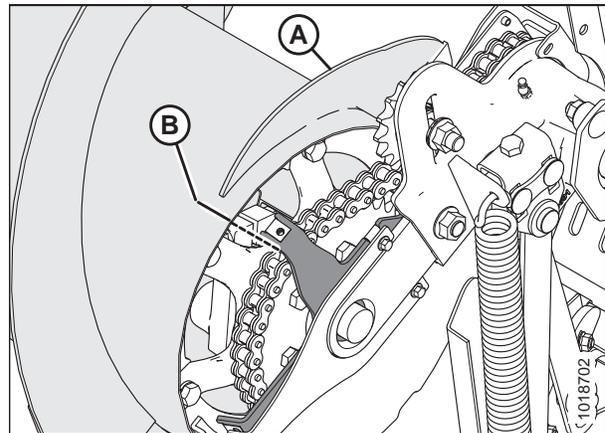


Figure 5.80: Auger Drive

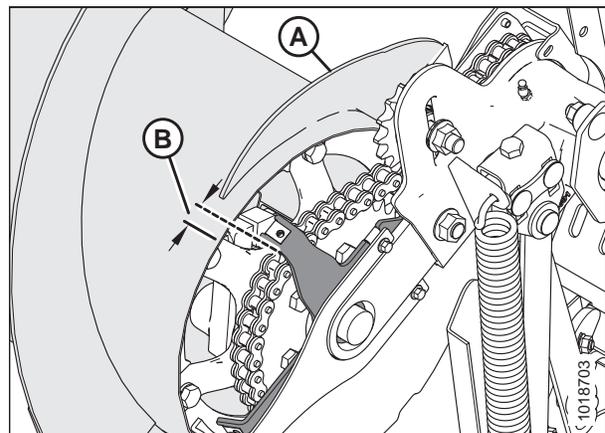


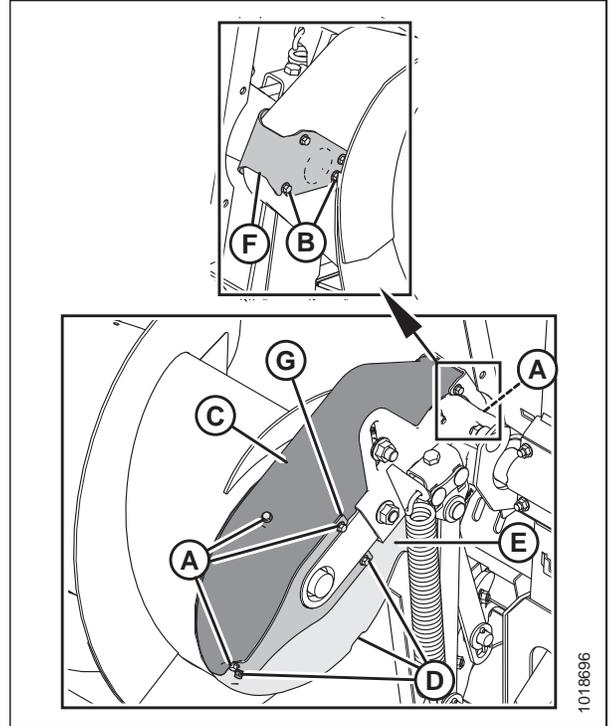
Figure 5.81: Auger Drive

MAINTENANCE AND SERVICING

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. Replace and tighten bolts (A) and (B).

NOTE:

The covers should be as close together as possible to prevent crop from entering the auger drive.



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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.

MAINTENANCE AND SERVICING

4. Remove screws (A) and remove the access cover (B) closest to the tine you are removing.

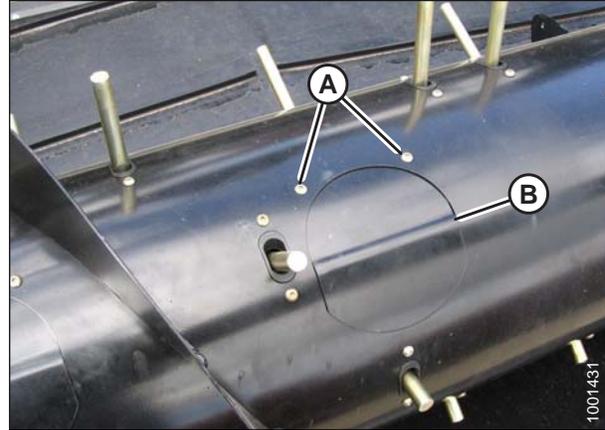


Figure 5.83: Auger

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).

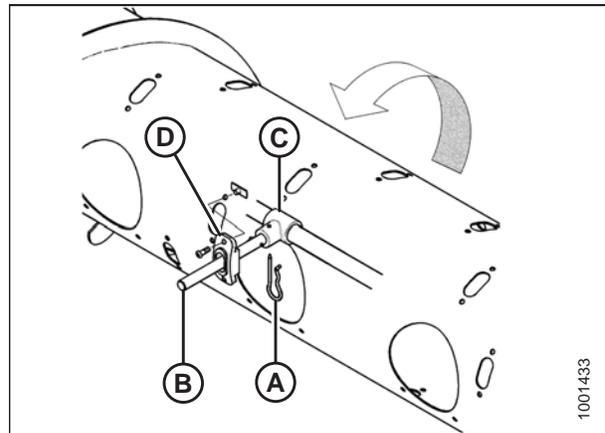


Figure 5.84: Auger

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 321](#) if not reinstalling the #6 tine (A); otherwise, refer to [Installing Feed Auger Tines, page 322](#).

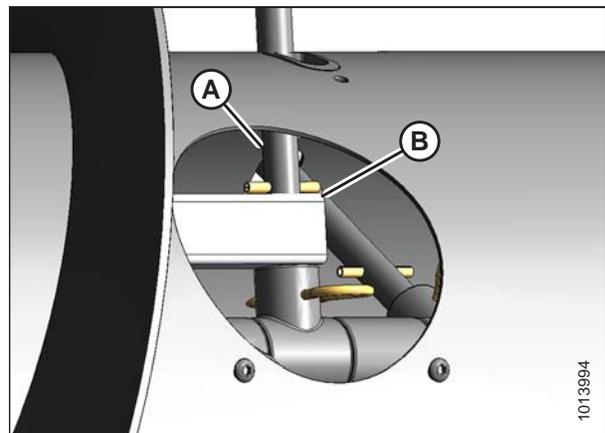


Figure 5.85: Inside Auger

MAINTENANCE AND SERVICING

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

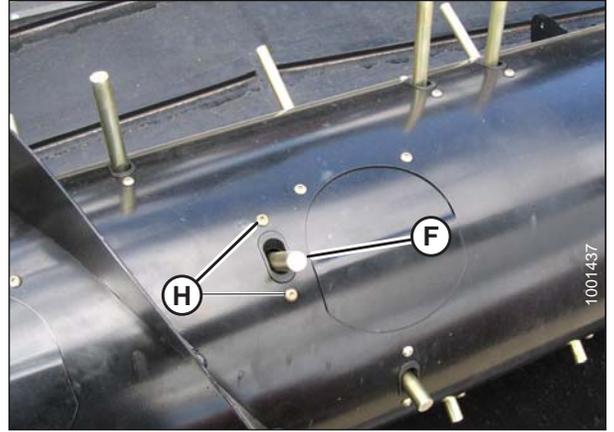


Figure 5.86: Auger

8. Position plug (A)⁴⁴ 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).

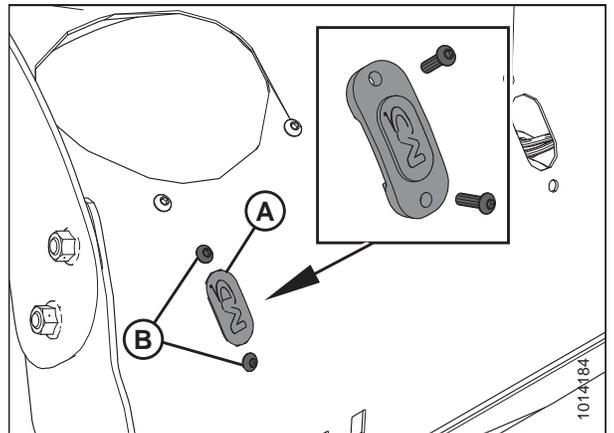


Figure 5.87: Plug

9. Replace the access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf-in).

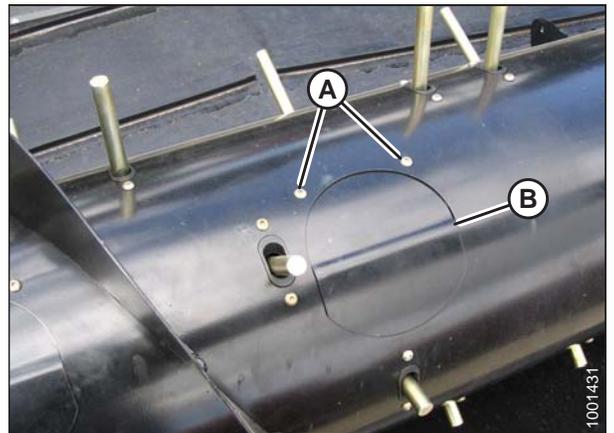


Figure 5.88: Auger

44. If more plugs are required order MD #187137

MAINTENANCE AND SERVICING

Installing Feed Auger Tines

DANGER

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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.
4. Remove screws (A) and remove access cover (B) (if not previously removed).

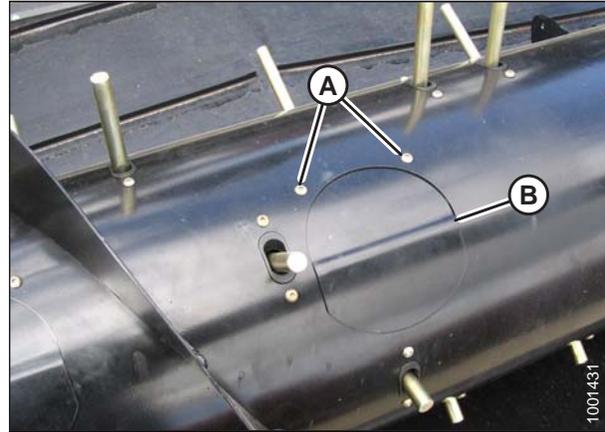


Figure 5.89: Auger

5. Insert tine (B) through plastic guide (D) from inside the auger.
6. Insert the tine into bushing (C) and secure with hairpin (A).

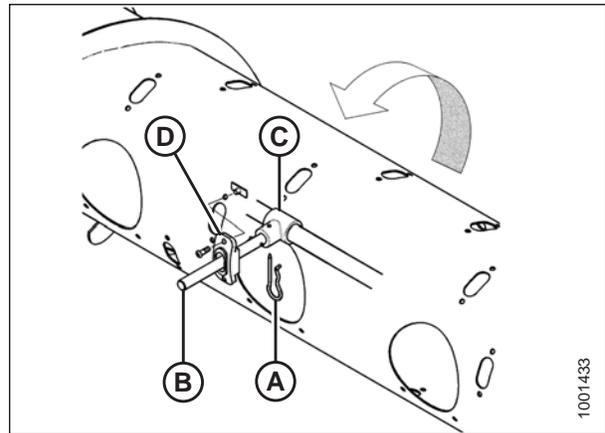


Figure 5.90: Tine

MAINTENANCE AND SERVICING

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.

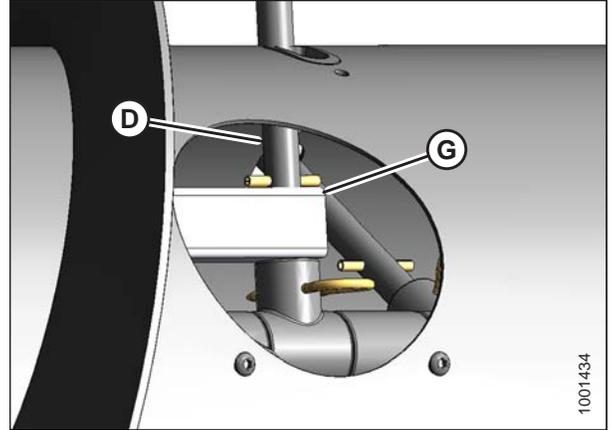


Figure 5.91: Tine

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

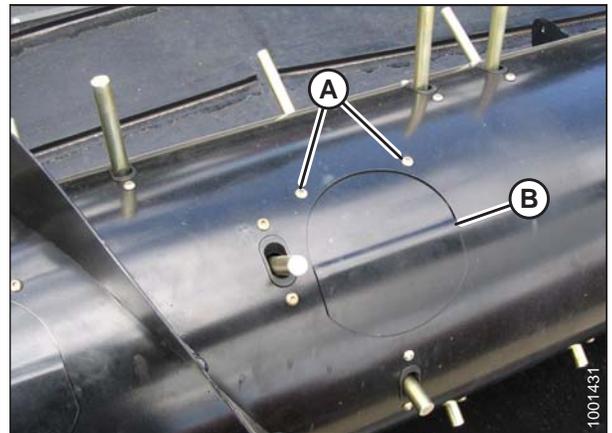


Figure 5.92: Auger

Replacing Feed Auger Tine Guides

1. Remove tine (B) and plastic guide (D). Refer to [Removing Feed Auger Tines, page 319](#).

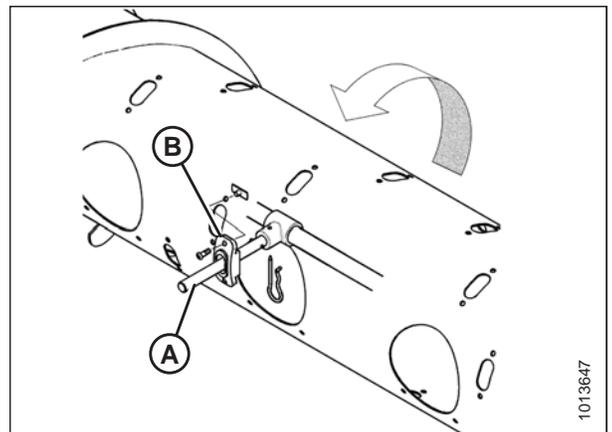


Figure 5.93: Auger

MAINTENANCE AND SERVICING

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 322.

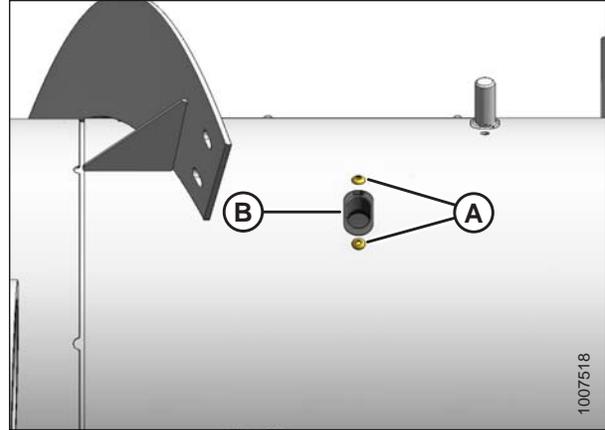


Figure 5.94: Auger

5.7.7 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).

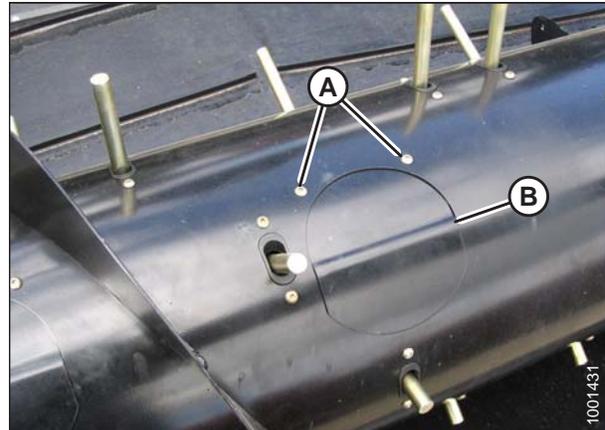


Figure 5.95: Auger

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.

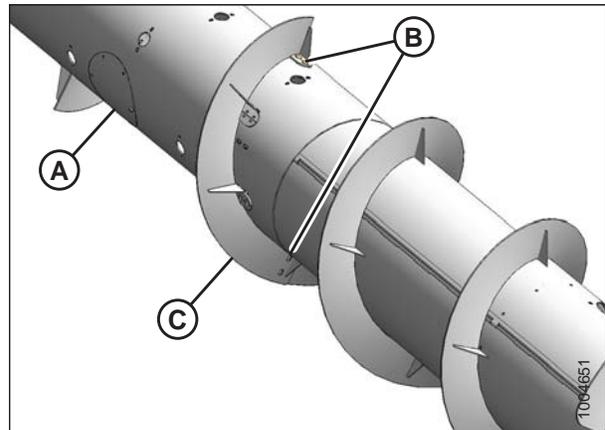


Figure 5.96: Auger Flighting Extensions

MAINTENANCE AND SERVICING

5. Replace access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf-in).

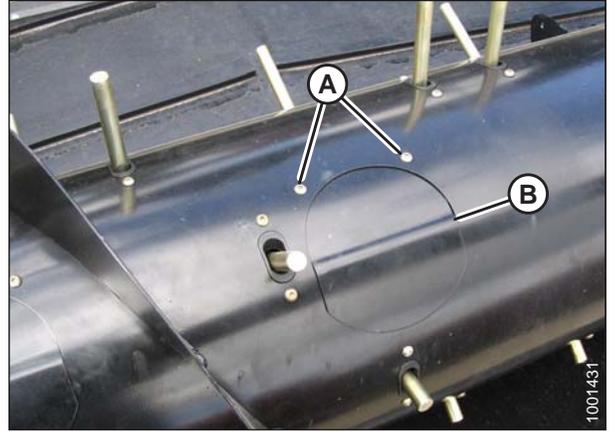


Figure 5.97: Auger

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.

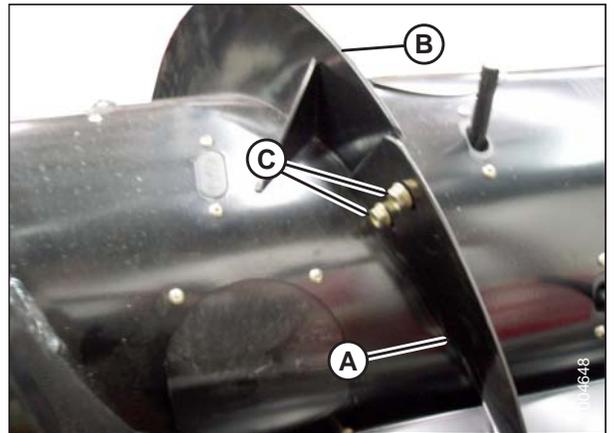


Figure 5.98: Flighting Extension

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.

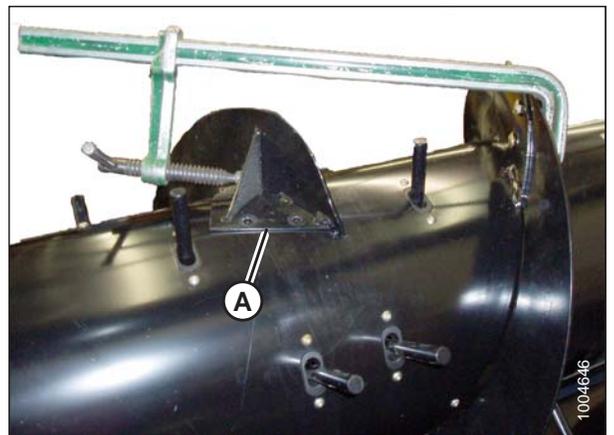


Figure 5.99: Flighting Extension

MAINTENANCE AND SERVICING

3. Mark hole locations (A) (three per extension), and drill 76 mm (3/8 in.) holes into the auger tube.

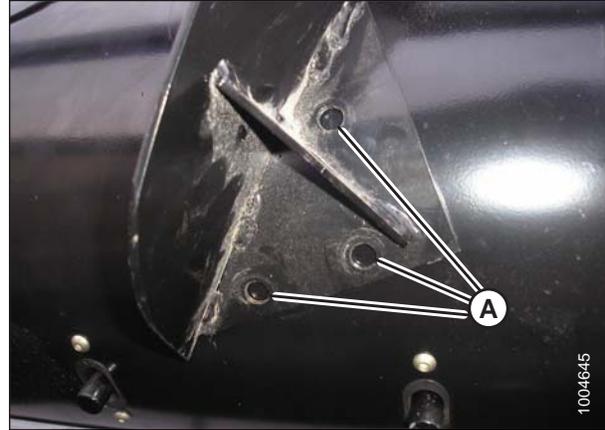


Figure 5.100: Flighting Extension

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. Replace access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 8.5 Nm (75 lbf-in).

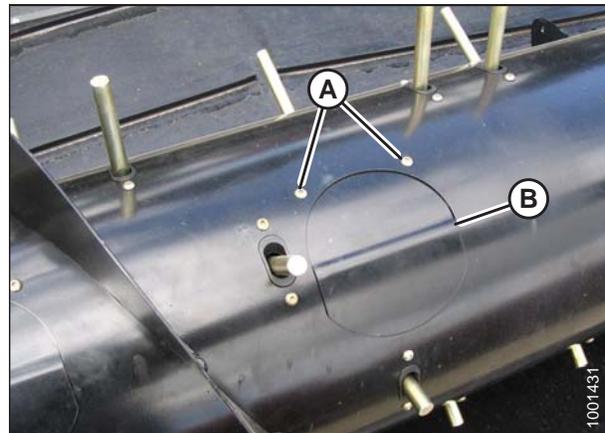


Figure 5.101: Auger

5.8 Knife

WARNING

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

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparing Machine for Servicing, page 271](#).

CAUTION

Wear heavy gloves when working around or handling knives.

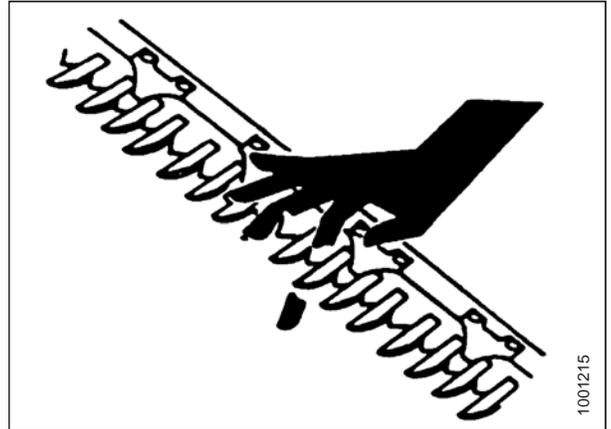


Figure 5.102: Cutterbar Hazard

5.8.1 Replacing Knife Section

Inspect the knife sections daily and ensure they are firmly bolted to the knife back and are not worn or damaged (worn or damaged sections leave behind uncut plants). Worn or damaged sections can be replaced without removing the knife from the cutterbar.

NOTE:

Coarse serrated sections last longer than fine serrated sections in dirty or sandy conditions. Fine serrated sections perform better in fine stemmed grasses and plants that contain more fibrous stems.

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife as required to center the knife section (A) between the guards.
3. Remove nuts (B).
4. Remove bars and lift the knife section off the knife bar.
5. Remove the splice bar (D) if knife section is under the bar.
6. Clean any dirt off the knife back and position the new knife section onto the knife.

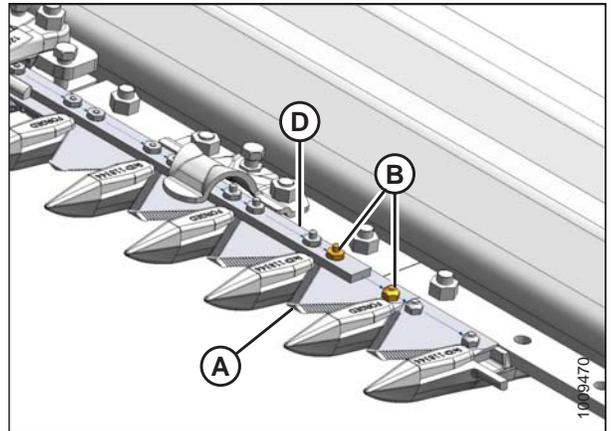


Figure 5.103: Knife Bar

IMPORTANT:

Do **NOT** mix fine and coarse sections on the same knife.

MAINTENANCE AND SERVICING

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 nuts to 9.5 Nm (7 lbf-ft).

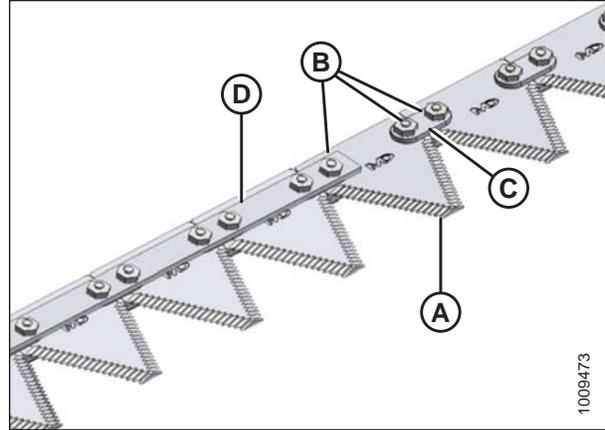


Figure 5.104: Knife Bar

5.8.2 Removing Knife

WARNING

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

WARNING

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

1. Stop engine and remove the key from ignition.
2. Stroke the knife manually to its outer limit.
3. Clean the area around the knifehead.
4. Remove bolt (A).
5. Remove grease zerk (B) from the pin.
6. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
7. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
8. Push the knife assembly inboard until it is clear of the output arm.
9. Seal the knifehead bearing with plastic or tape unless it is being replaced.
10. Wrap a chain around the knifehead and pull out the knife.

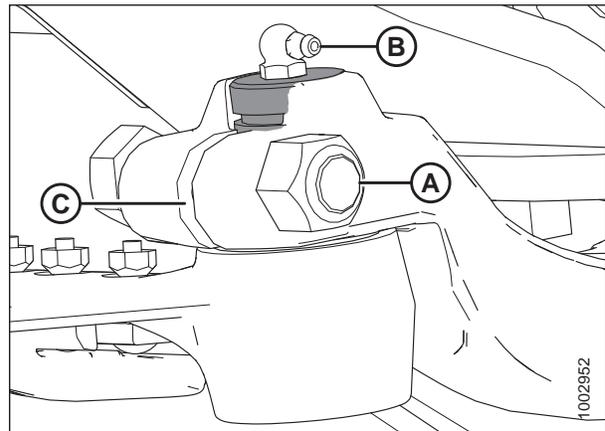


Figure 5.105: Knifehead

5.8.3 Removing Knifehead Bearing

⚠ WARNING

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

⚠ WARNING

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

IMPORTANT:

Repeat this procedure for each knife.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the knife. Refer to [5.8.2 Removing Knife, page 328](#).

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). 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.

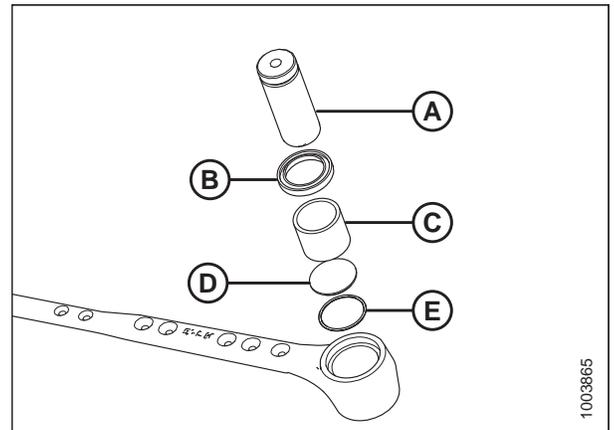


Figure 5.106: Knifehead Bearing Assembly

5.8.4 Installing Knifehead Bearing

1. Place O-ring (E) and plug (D) into knifehead.

IMPORTANT:

Install the bearing with the stamped end (the end with the identification markings) facing up.

2. Use a flat-ended tool 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 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.

4. Install the knife. Refer to [5.8.5 Installing Knife, page 330](#).

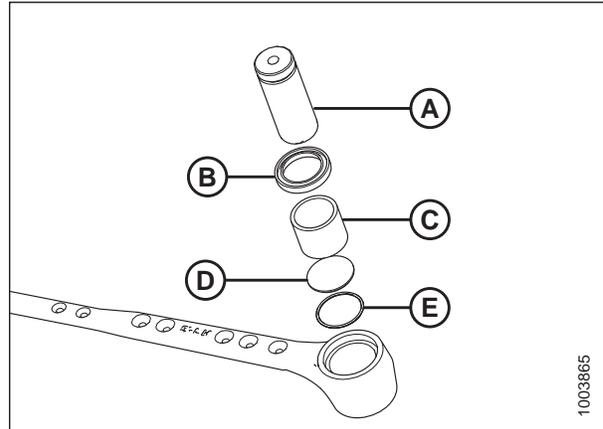


Figure 5.107: Knifehead Bearing Assembly

5.8.5 Installing Knife

! WARNING

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

! WARNING

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

1. Stop engine and remove the key from ignition.
2. Slide the knife into place and align the knifehead with the output arm.
3. For ease of removing or installing knifehead pin, remove grease zerk from pin.
4. Install knifehead pin (A) through the output arm and into the knifehead. Tap knifehead pin (A) down, make sure the pin is seated at the bottom of the knifehead.
5. Set groove (B) in the knifehead pin 1.5 mm (1/16 in.) above output arm (C). Secure with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 217 Nm (160 lbf·ft).
6. Using a feeler gauge, check that the gap at location (E) is 0.25 mm (0.01 in.).

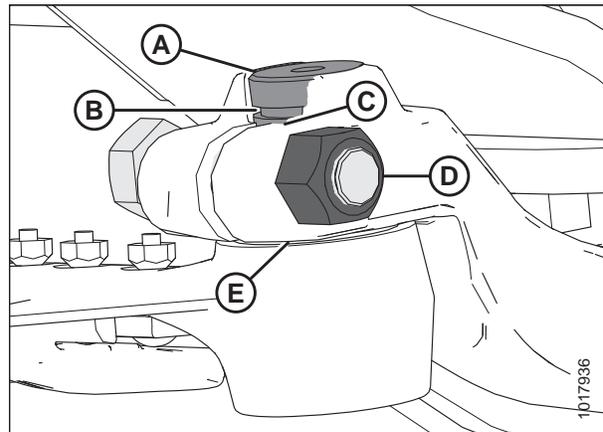


Figure 5.108: Knifehead

MAINTENANCE AND SERVICING

7. Install grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

IMPORTANT:

Grease knifehead just enough to start a slight downward movement. Overgreasing will lead to knife misalignment which causes guards to overheat and drive systems to overload.

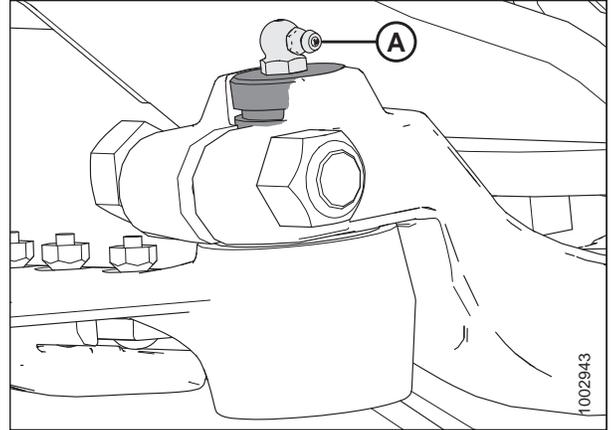


Figure 5.109: Knifehead

5.8.6 Spare Knife

A spare knife can be stored in header frame tube (A) at the left end. Ensure the spare knife is secured in place.

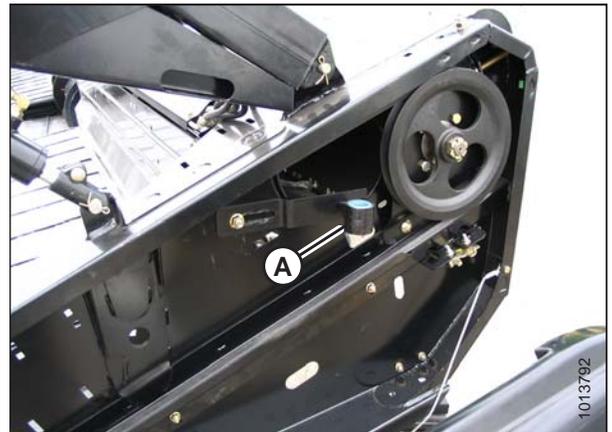


Figure 5.110: Spare Knife

5.8.7 Knife Guards

Perform **DAILY** inspections to ensure the knife guards are aligned and the knife sections are contacting the shear surfaces of the knife guards.

Adjusting Knife Guards

DANGER

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

NOTE:

Use guard straightening tool (MD #140135) available from your MacDon Dealer.

MAINTENANCE AND SERVICING

1. Stop engine and remove the key from ignition.
2. Position the tool as shown, and pull up to adjust the guard tips upwards.



Figure 5.111: Upward Adjustment

3. Position the tool as shown, and push down to adjust the guard tips downwards.

NOTE:

If crop is difficult to cut, install stub guards with top guards and adjuster plates. A kit is available from your MacDon Dealer. Refer to [6.3.3 Stub Guard Conversion Kit](#), page 444.

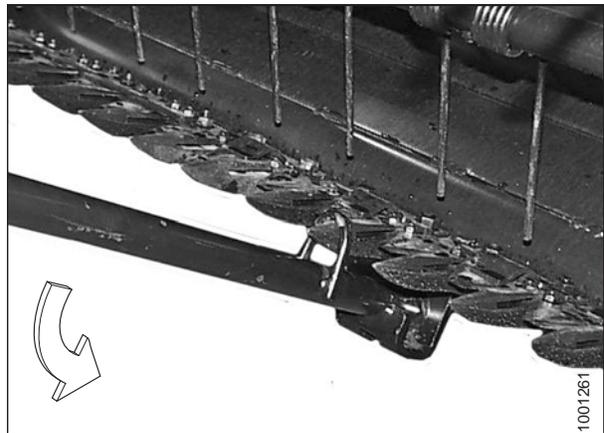


Figure 5.112: Downward Adjustment

Replacing Pointed Guards

Normal, drive side, and end guard replacement

WARNING

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove two nuts (B) and bolts attaching guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove guard (A), hold-down (C), and plastic wearplate (if installed).

IMPORTANT:

The first four outboard guards (B) on the drive sides of the header do not have ledger plates. Ensure proper replacement guards are installed at these locations.

6. Position the new guard (A), hold-down (C), and plastic wearplate (if applicable) onto the cutterbar. Secure with two nuts (B) and bolts, but do **NOT** tighten.
7. Check and adjust the clearance between the hold-downs and the knife. Refer to [Checking and Adjusting Knife Hold-Downs](#), page 337.

NOTE:

The guard at the center of a double-knife header (where the two knives overlap) requires a different replacement procedure. Refer to Steps 8, page 334 through 12, page 334.

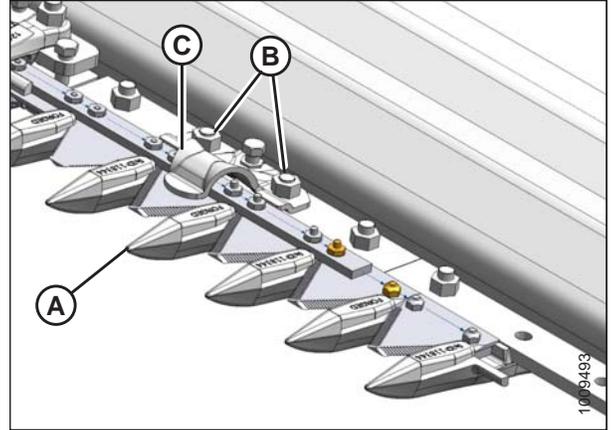


Figure 5.113: Pointed Guards

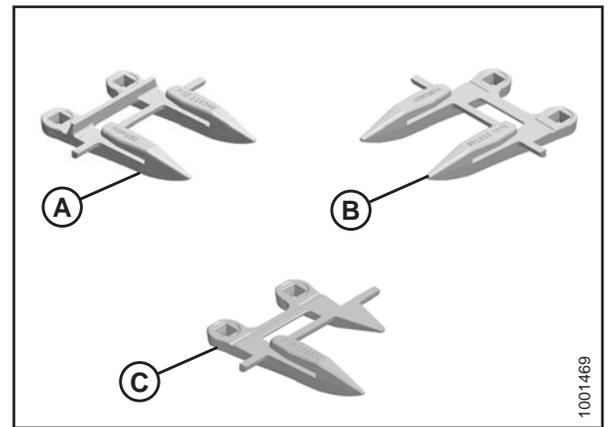


Figure 5.114: Pointed Guards

A - Normal

B - Drive Side

C - Half Guard (End)

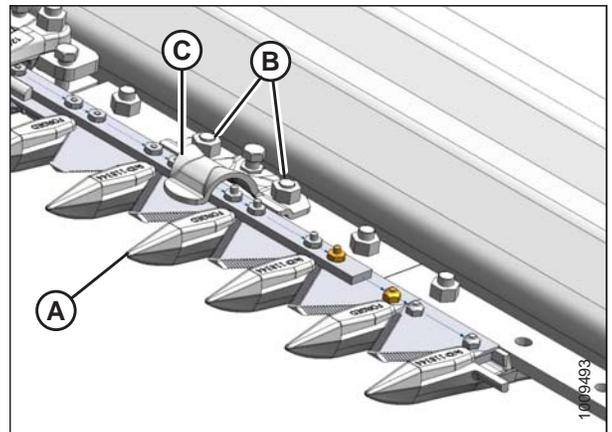


Figure 5.115: Pointed Guards

Center guard replacement

⚠ WARNING

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the two nuts (B) and bolts attaching the guard (A) and hold-down (C) to the cutterbar.
3. Remove guard (A), plastic wearplate (if installed), hold-down (C), and adjuster bar (D).
4. 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 the center guard (A) (right of the cutterbar split) has offset cutting surfaces.

NOTE:

Hold-down (B) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.

5. Check and adjust the clearance between the hold-down and knife. Refer to *Checking and Adjusting Knife Hold-Downs*, page 337.

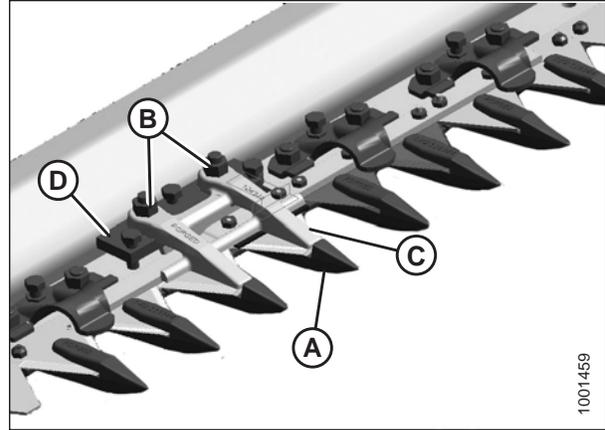


Figure 5.116: Center Guards

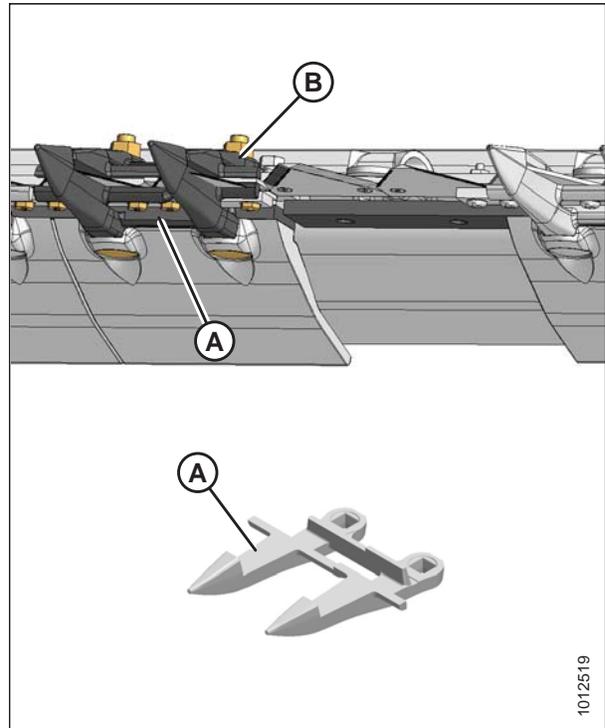


Figure 5.117: Center Guards

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..

Normal, drive side, and end guard replacement:

⚠ WARNING

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove the two nuts (A) and bolts attaching the guard (B) and 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 the adjuster bar (D), and reinstall the adjuster bar in the same position. Mitres should not be adjacent to each other.

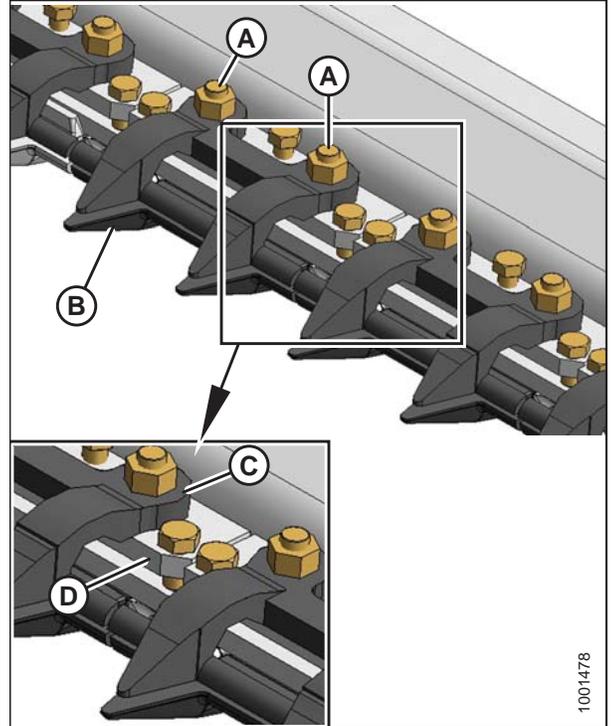


Figure 5.118: Stub Guards

IMPORTANT:

The first four outboard guards (B) on the drive sides of the header do not have ledger plates. Ensure the proper replacement guards are installed at these locations.

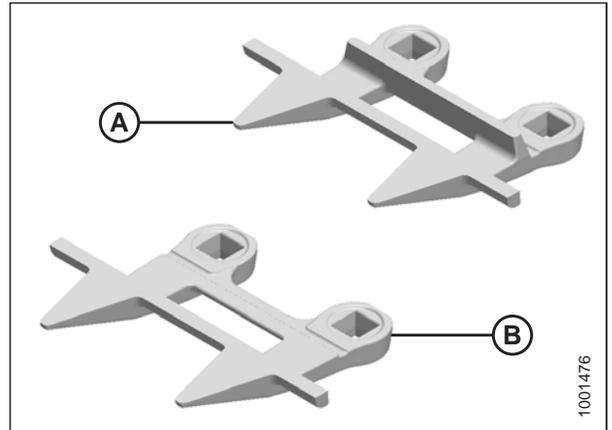


Figure 5.119: Stub Guards

A - Normal Guard

B - Drive Side Guard

MAINTENANCE AND SERVICING

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. Refer to *Checking and Adjusting Knife Hold-Downs*, page 337.

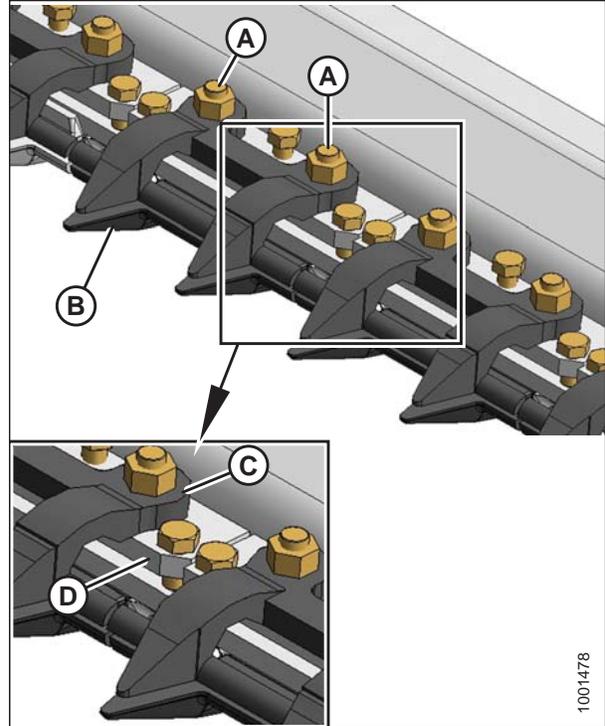


Figure 5.120: Stub Guards

Center guard replacement:

NOTE:

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

⚠ WARNING

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

MAINTENANCE AND SERVICING

7. Shut down the combine, and remove the key from the ignition.
8. Remove the two nuts (A) and bolts attaching the 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.

NOTE:

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. Refer to [Checking and Adjusting Knife Hold-Downs](#), page 337.

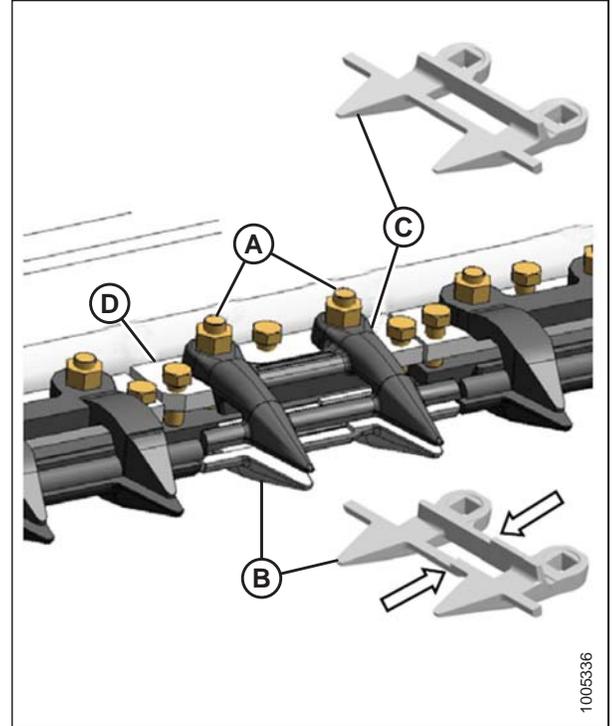


Figure 5.121: Center Guards

Checking and Adjusting Knife Hold-Downs

NOTE:

Align guards prior to checking and adjusting hold-downs. Refer to [Adjusting Knife Guards](#), page 331.

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 the applicable topic:

- [Checking Pointed Guard Hold-Downs](#), page 337
- [Checking Stub Guard Hold-Downs](#), page 339

Checking Pointed Guard Hold-Downs

This procedure is applicable to headers with pointed guards.

Adjusting Pointed Guard Hold-Downs

This procedure is applicable to formed sheet metal hold-downs. Do **NOT** use this procedure for hold-down at center guard position where knives overlap on double-knife headers. For center guard, refer to [Adjusting Hold-Down at Double-Knife Center Pointed Guard](#), page 338.

WARNING

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Decrease clearance by turning bolt (B) clockwise to lower front of hold-down (A).
3. Increase clearance by turning bolt (B) counterclockwise to raise front of hold-down.

NOTE:

For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), and then retighten nuts.

4. Check clearance again and adjust as required.

WARNING

Check to be sure all bystanders have cleared the area.

5. Complete hold-down adjustments, run header at low engine speed, and listen for noise caused by insufficient clearance.

NOTE:

Insufficient hold-down clearance will result in overheating of knife and guards—adjust as necessary.

Adjusting Hold-Down at Double-Knife Center Pointed Guard

WARNING

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

1. Shut down combine, and remove key from ignition.
2. Manually stroke knives so that sections (A) are under hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) until they don't contact cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (C) and torque to 45 Nm (35 lbf-ft).
8. Check clearances. Refer to [Checking Pointed Guard Hold-Downs](#), page 337.

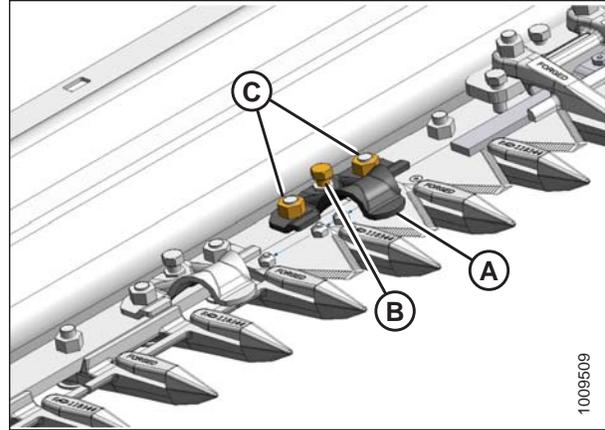


Figure 5.122: Cutterbar

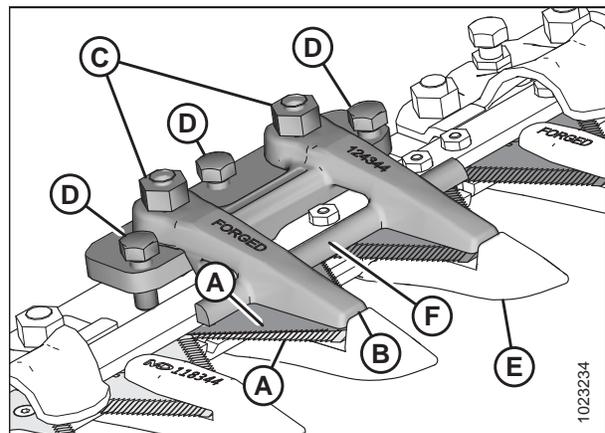


Figure 5.123: Center Guard

Checking Stub Guard Hold-Downs

This procedure is applicable to single- and double-knife headers with stub guards.

WARNING

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

Measure clearance between hold-downs and knife sections as follows:

1. Shut down the combine, 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 (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 340.

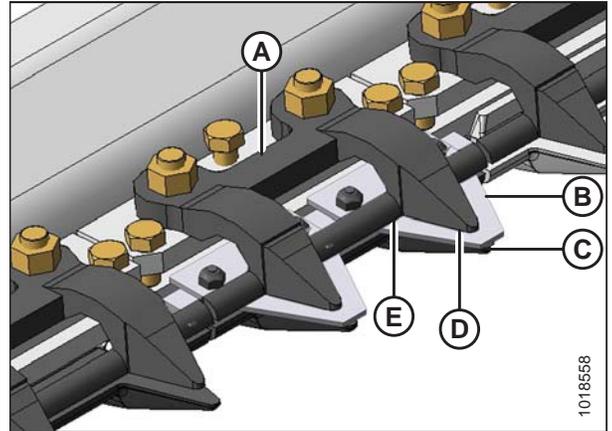


Figure 5.124: Standard Stub Forged Hold-Down

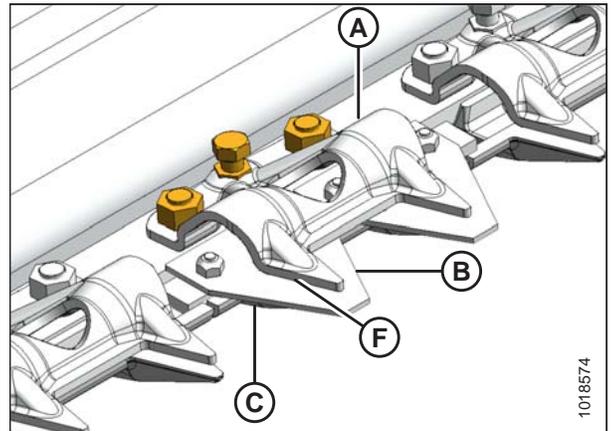


Figure 5.125: Standard Stub Sheet Metal Hold-Down

MAINTENANCE AND SERVICING

5. **Double-knife center stub guard:** Manually stroke knife to locate sections under hold-down (B).
6. Measure clearance between knife sections (A) and (C) with a feeler gauge. The clearance should be as follows:
 - **At hold-down tip (E):** 0.1–0.4 mm (0.004–0.016 in.)
 - **At rear of hold-down (F):** 0.1–1.0 mm (0.004–0.040 in.)
7. If necessary, refer to *Adjusting Stub Guard Hold-Downs*, page 340.

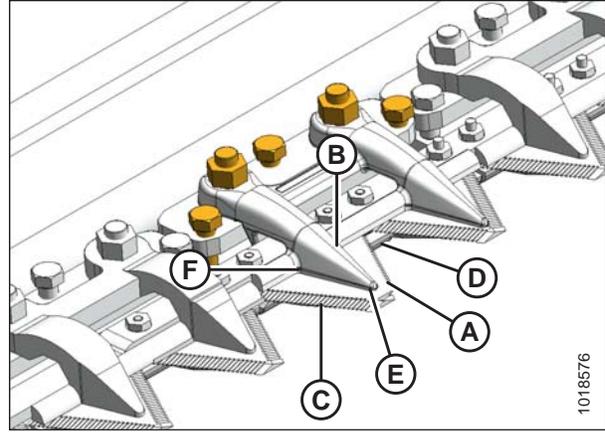


Figure 5.126: Double-Knife Center Stub Guard Hold-Down

Adjusting Stub Guard Hold-Downs

WARNING

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

1. Shut down the combine, 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.
3. Loosen nuts (C) and back off bolts (D) clear of cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash-bar at location (F).
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (B) and torque to 45 Nm (35 lbf·ft).
8. Check that specified clearances are achieved. Refer to *Checking Stub Guard Hold-Downs*, page 339.

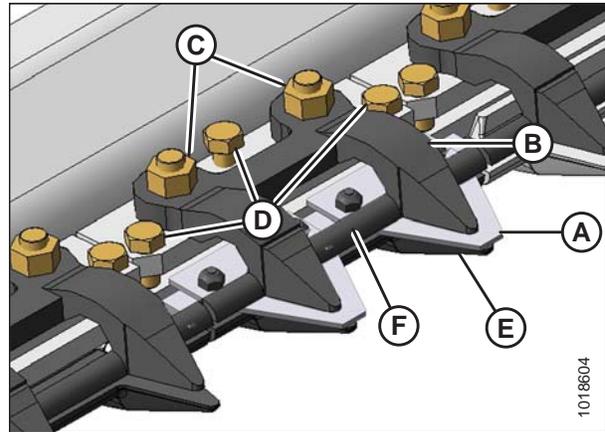


Figure 5.127: Normal Stub Guard Forged Hold-Down

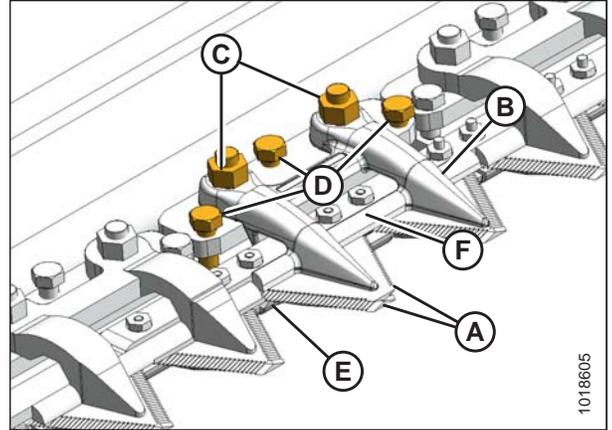


Figure 5.128: Double-Knife Center Stub Guard

Sheet metal hold-down:

9. Manually stroke knife to center section (A) under hold-down (B) as shown.
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 72 Nm (53 lbf·ft) after all adjustments are complete and specified clearances are achieved.

Refer to *Checking Stub Guard Hold-Downs*, page 339.

⚠ WARNING

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.

NOTE:

Insufficient hold-down clearance will result in overheating of knife and guards—readjust as necessary.

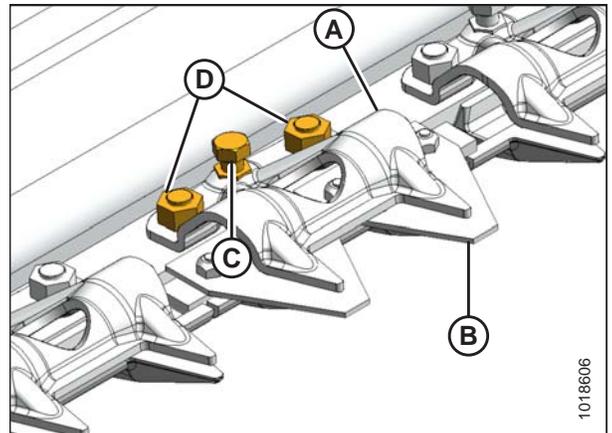


Figure 5.129: Stub Guard Sheet Metal Hold-Down

5.8.8 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cut-out.

The shields and mounting hardware are available from your MacDon Dealer.

IMPORTANT:

Remove the shields when cutting with the cutterbar on the ground in muddy conditions. Mud may pack into the cavity behind the shield which could result in knife drive box failure.

Installing Knifehead Shield

The knifehead shield is supplied in flattened form, but it can be bent to suit installation on pointed or stub guard cutterbars. Knifehead shields differ slightly depending on header size and guard configuration, so ensure you are using the proper knifehead shield for your header. Refer to your parts catalog for proper replacement parts.

⚠ DANGER

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

⚠ CAUTION

Wear heavy gloves when working around or handling knives.

1. Raise the reel to its full height, lower the header to the ground, shut down the engine, and remove the key from the ignition.
2. Engage the reel arm locks.
3. Place knifehead shield (A) against the endsheet as shown. Align the shield so the cutout matches the profile of the knifehead and/or hold-downs.
4. Bend knifehead shield (A) along the slit to conform to the endsheet.
5. Align the mounting holes and secure with two 3/8 in. x 1/2 in. Torx® head bolts (B).
6. Tighten bolts (B) just enough to hold knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
7. 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.
8. Tighten bolts (B).

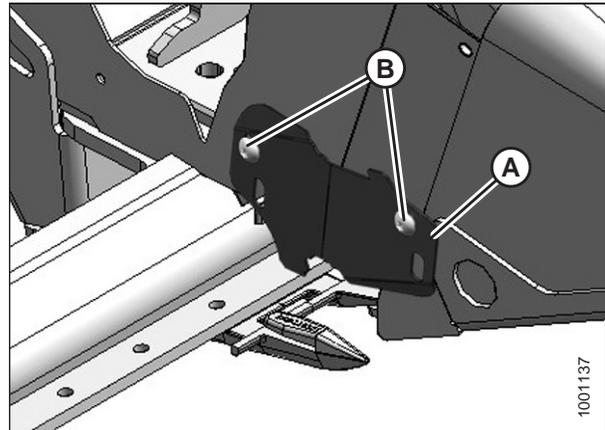


Figure 5.130: Knifehead Shield

5.9 Knife Drive

5.9.1 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-reel headers and two knife drive boxes on double-reel headers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparing Machine for Servicing, page 271](#).

Checking Mounting Bolts

Check the torque on the four knife drive box mounting bolts and after the first 10 hours operation and every 100 hours thereafter.

DANGER

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

1. Torque the side bolts (A) first, then torque the bottom bolts (B). Torque all bolts to 271 Nm (200 lbf·ft). When tightening, start with the side mounting bolts.

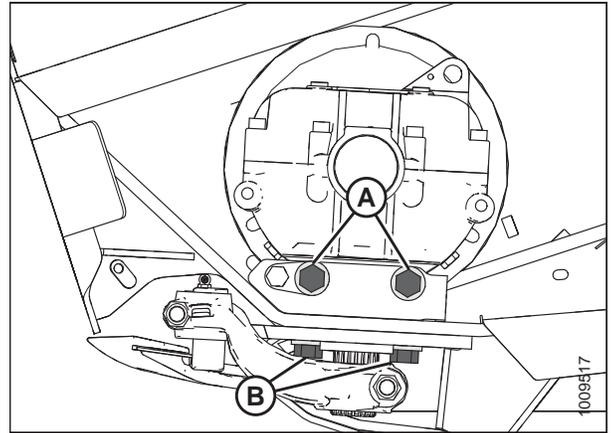


Figure 5.131: Knife Drive Box

Removing Knife Drive Box

DANGER

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

Timed double-knife headers:

NOTE:

The procedure is the same for both ends of a timed double-knife header. Images shown are for the left end—the right end is opposite.

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshield*, page 33.
3. Loosen the two nuts (A) on the belt idler bracket to relieve the belt tension.
4. Loosen the nut (B) on the idler pulley and slide the idler down to loosen the belt.
5. Proceed to Step 10, page 344.

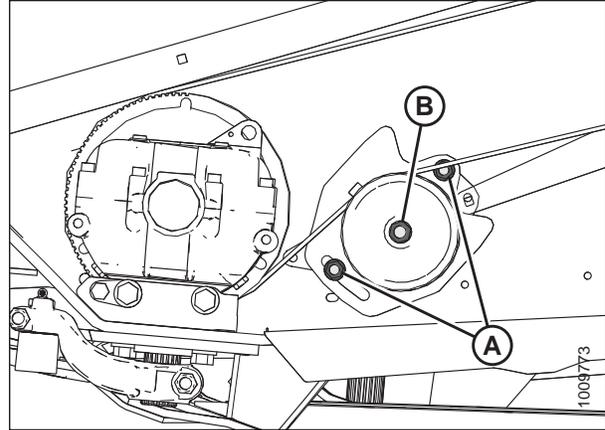


Figure 5.132: Timed Double-Knife Drive

Single and non-timed double-knife headers:

6. Shut down the combine, and remove the key from the ignition.
7. Open the endshield.
8. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
9. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

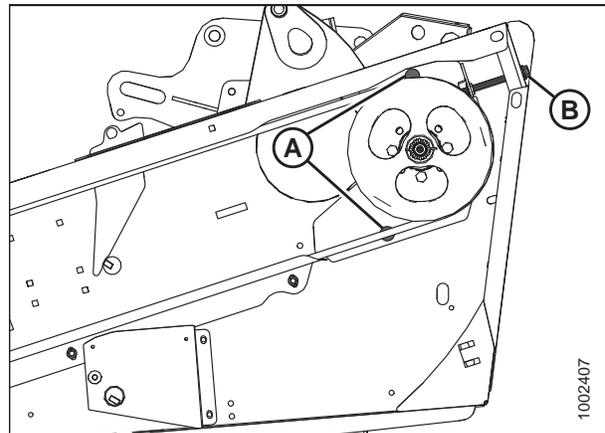


Figure 5.133: Single and Non-timed Double-Knife Drive

10. Open access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

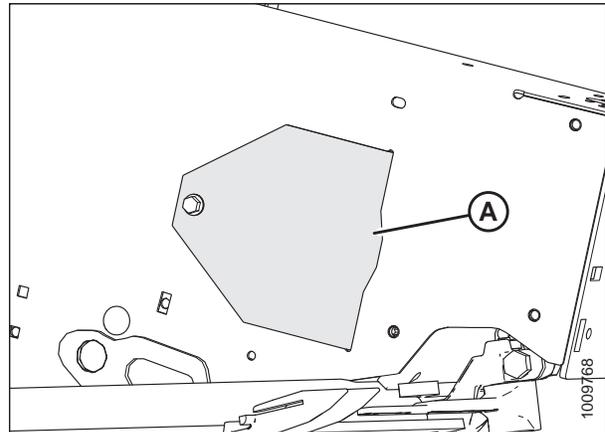


Figure 5.134: Access Cover

MAINTENANCE AND SERVICING

11. Remove belt (A) from drive pulley (B).
12. Slip belt (A) over and behind knife drive box pulley (C).
Use the notch in the pulley to assist with belt removal.

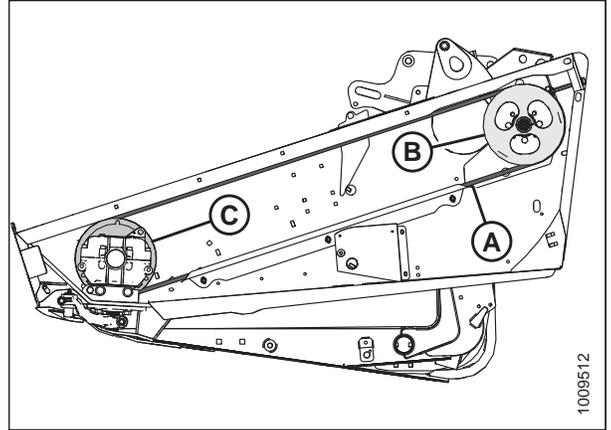


Figure 5.135: Knife Drive

13. Stroke the knife manually to its outer limit.
14. Remove bolt (A).
15. Remove grease zerk (B) from the pin.
16. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
17. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
18. Push the knife assembly inboard until it is clear of the output arm.
19. Seal the knifehead bearing with plastic or tape unless it is being replaced.

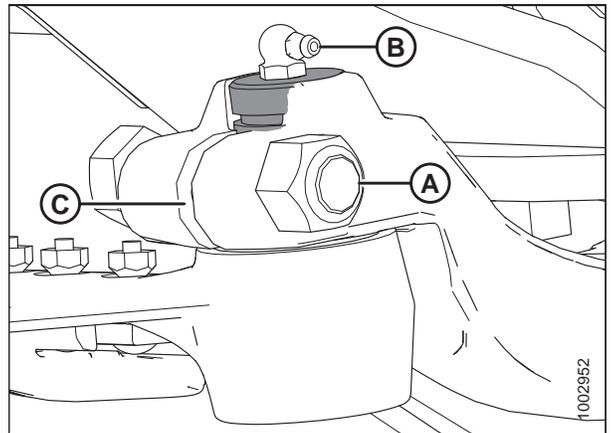


Figure 5.136: Knifehead

MAINTENANCE AND SERVICING

20. Remove bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
21. Remove knife drive arm (B) from the knife drive box output shaft.
22. Remove the four knife drive box mounting bolts (C) and (D).

NOTE:

Bolt (E) is factory set; do NOT remove. It is used to secure the knife drive box in the proper fore-aft position.

CAUTION

Extension may shift when supports are removed. Use care when removing fasteners and supports.

23. Remove the knife drive box and place it on a bench for disassembly.
24. Repeat procedure for the opposite end of the header.

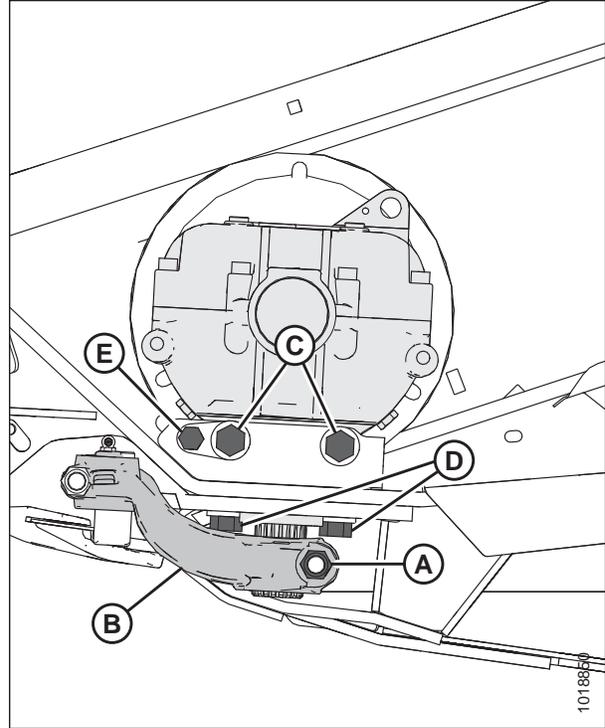


Figure 5.137: Knife Drive Box

Removing Knife Drive Box Pulley

1. Loosen and remove the knife drive box pulley clamping bolt (A) and nut (B).
2. Remove knife drive box pulley (C) using a three-jaw puller.

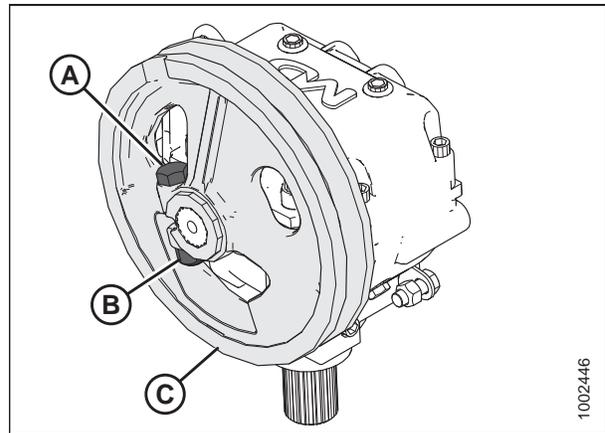


Figure 5.138: Knife Drive Box and Pulley

MAINTENANCE AND SERVICING

Installing Knife Drive Box Pulley

1. Ensure the splines and bores in the pulley and drive arm are free of paint, oil, and solvents.
2. Apply two bands (A) of Loctite® #243 adhesive (or equivalent) around the shaft as shown. Apply one band at the end of the spline and the second band at the approximate midpoint location.
3. Install pulley (B) until flush with the end of the shaft.
4. Secure the pulley with 5/8 in. x 3 in. hex head bolt with distorted thread NC lock nut and torque to 217 Nm (160 lbf-ft).

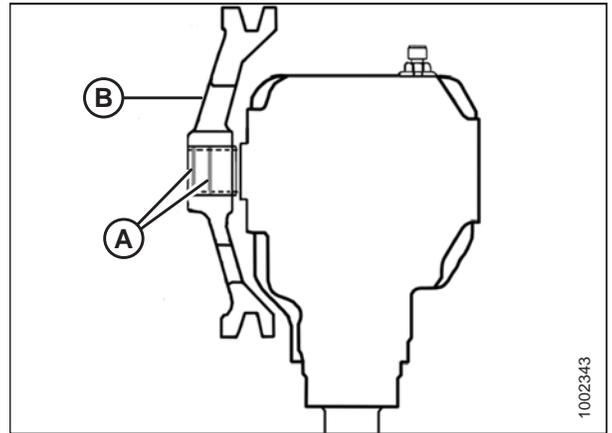


Figure 5.139: Knife Drive Box

Installing Knife Drive Box

The procedure for installing knife drive boxes is the same for single- and double-knife headers.

NOTE:

If the pulley was removed from the knife drive box, refer to [Installing Knife Drive Box Pulley, page 347](#). If the pulley was not removed, proceed to Step 1, [page 347](#).

CAUTION

Extension may shift when supports are removed. Use care when removing fasteners and supports.

1. Position the knife drive box onto the header mount and install the belt onto the pulley.
2. Secure the knife drive box to the frame using two 5/8 in. x 1-3/4 in. grade 8 hex head bolts (A) on the side and two 5/8 in. x 2-1/4 in. grade 8 hex head bolts (B) on the bottom.
3. Tighten knife drive box side bolts (A) slightly, then tighten bottom bolts (B) to ensure proper contact with the vertical and horizontal mounting surfaces. Do **NOT** torque the bolts at this time.

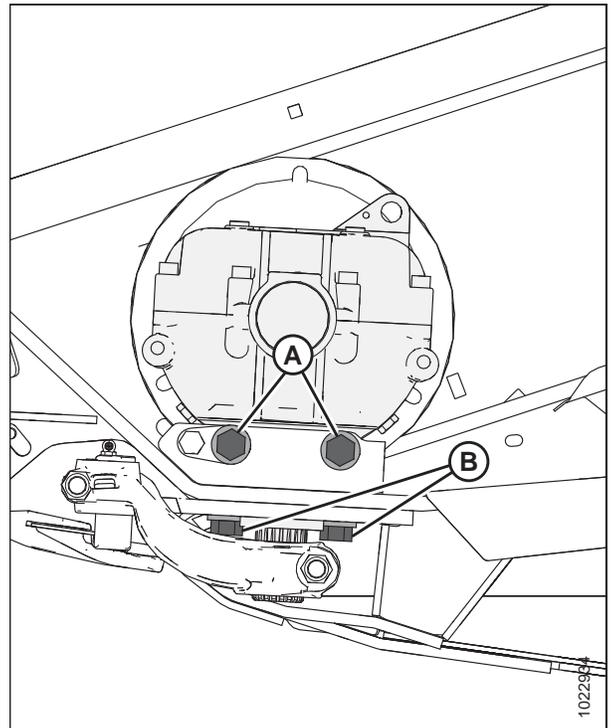


Figure 5.140: Knife Drive Box

MAINTENANCE AND SERVICING

4. Apply two bands (A) of Loctite® #243 (or equivalent) to the output shaft as shown. Apply one band at the end of the output shaft and the second band at the approximate 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.

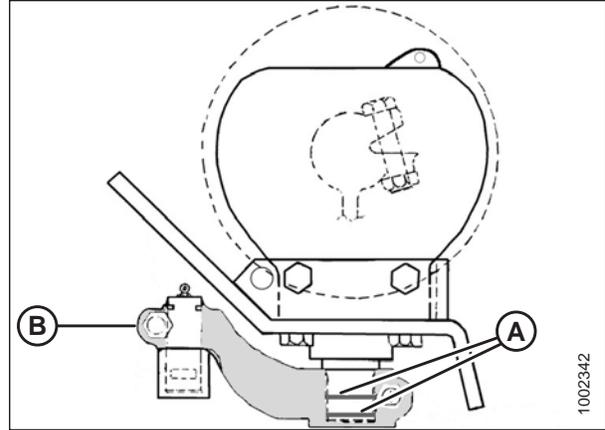


Figure 5.141: Knife Drive Box

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).

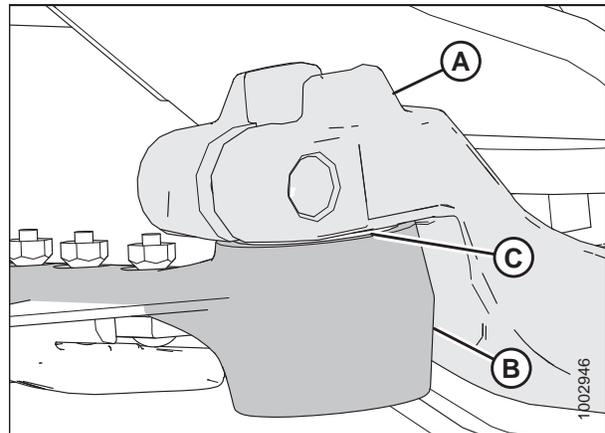


Figure 5.142: Knifehead

7. Torque output arm bolt (B) to 217 Nm (160 lbf·ft).

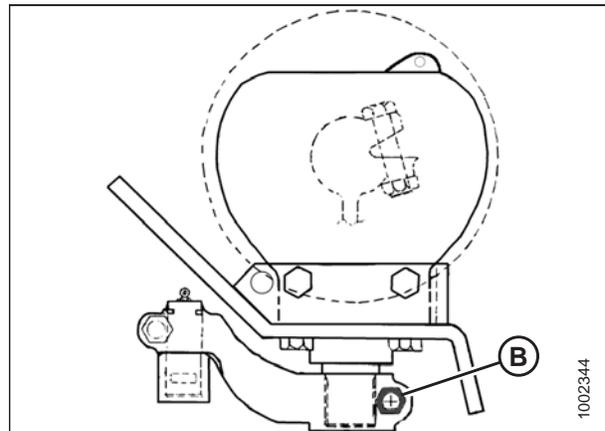


Figure 5.143: Knife Drive Box

MAINTENANCE AND SERVICING

8. Slide the knife into place and align the knifehead with the output arm.
9. For ease of removing or installing knifehead pin, remove grease zerk from pin.
10. Install knifehead pin (A) through the output arm and into the knifehead. Tap knifehead pin (A) down, 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 with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 217 Nm (160 lbf-ft).
13. Install grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

IMPORTANT:

Grease knifehead just enough to start a slight downward movement. Overgreasing will lead to knife misalignment which causes guards to overheat and drive systems to overload.

14. Tighten knife drive box side bolts (A) first, then tighten the bottom bolts (B). Torque to 271 Nm (200 lbf-ft).
15. 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.
16. Install and tension the knife drive belts. Refer to the following topics depending on your header:
 - For non-timed belts, refer to [Tensioning Non-Timed Knife Drive Belts, page 352](#)
 - For timed belts, refer to [Tensioning Timed Knife Drive Belts, page 357](#)
 - For timed double-knife headers, also check the knife timing. Refer to [Adjusting Double-Knife Timing, page 358](#)
17. Close the endshield. Refer to [Closing Endshield, page 34](#).

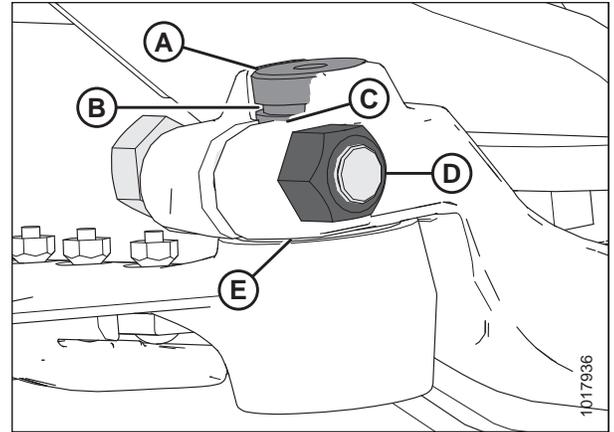


Figure 5.144: Knifehead

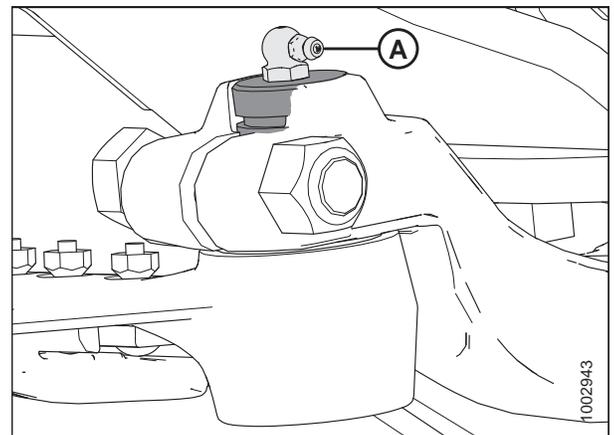


Figure 5.145: Knifehead

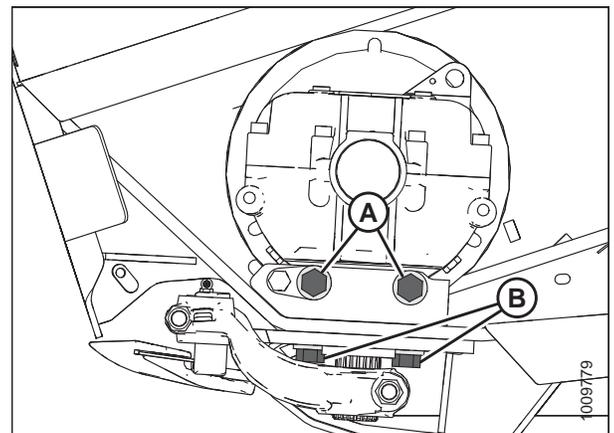


Figure 5.146: Knife Drive Box

MAINTENANCE AND SERVICING

Changing Oil in Knife Drive Box

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

1. Shut down the combine, and remove the key from the ignition.
2. Raise the header to allow a suitably sized container to fit under the knife box drain and collect the oil.
3. Open the endshield. Refer to *Opening Endshield*, page 33.
4. Remove 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. Close the endshield. Refer to *Closing Endshield*, page 34.

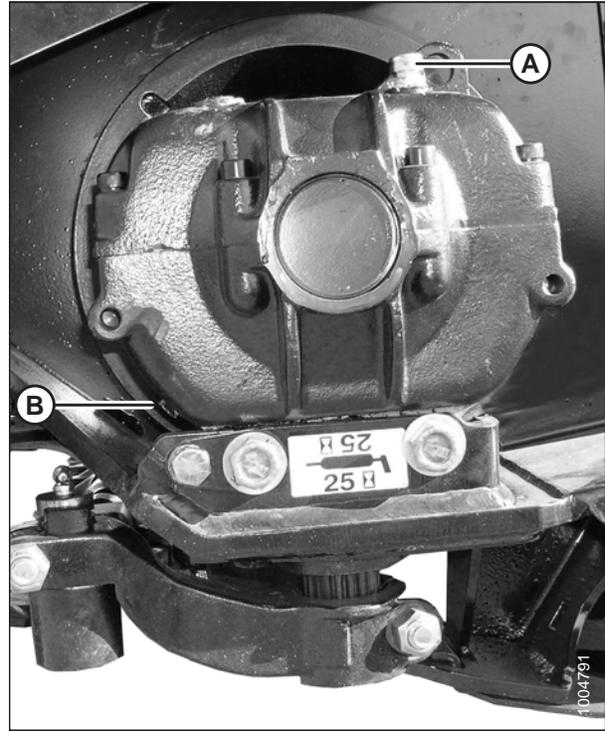


Figure 5.147: Knife Drive Box

5.9.2 Knife Drive Belts

Non-Timed Knife Drive Belts

The knife drive box is driven by a V-belt that is powered by a hydraulic motor on the header endsheets.

Removing Non-Timed Knife Drive Belts

The non-timed knife drive belt removal procedure is the same for both sides of a double-knife header.

⚠ DANGER

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

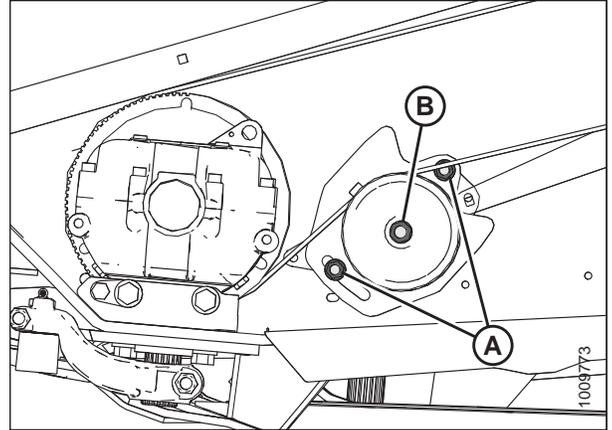


Figure 5.148: Timed Double-Knife Drive

5. Open access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

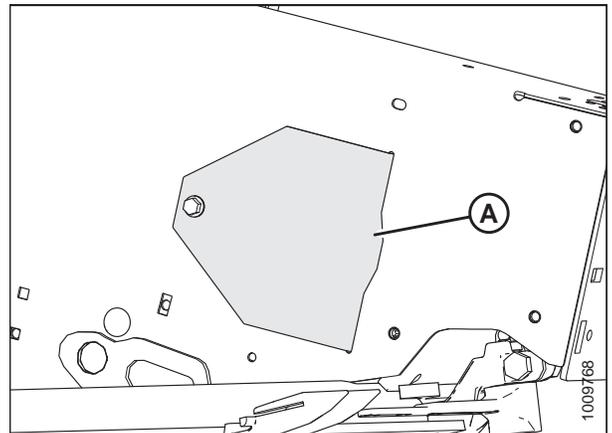


Figure 5.149: Access Cover

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 belt removal.

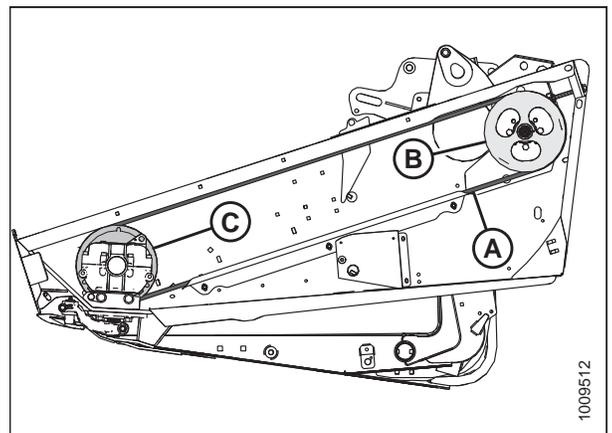


Figure 5.150: Knife Drive

MAINTENANCE AND SERVICING

Installing Non-Timed Knife Drive Belts

The procedure for installing non-timed knife drive belts is the same for both sides of the header.

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. 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.

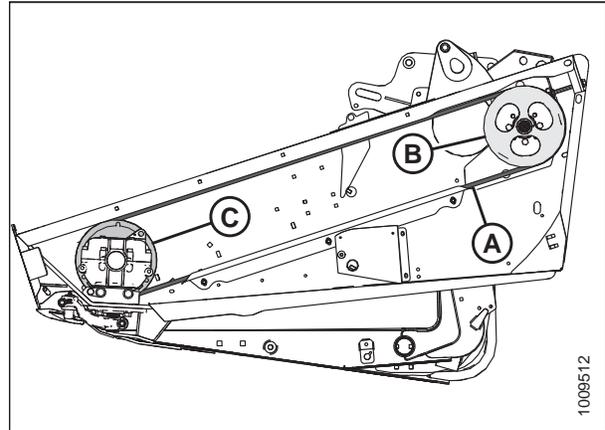


Figure 5.151: Knife Drive

3. Tension the knife drive belt. Refer to *Tensioning Non-Timed Knife Drive Belts*, page 352.
4. Install access cover (A) and secure with bolt.
5. Close the endshield.

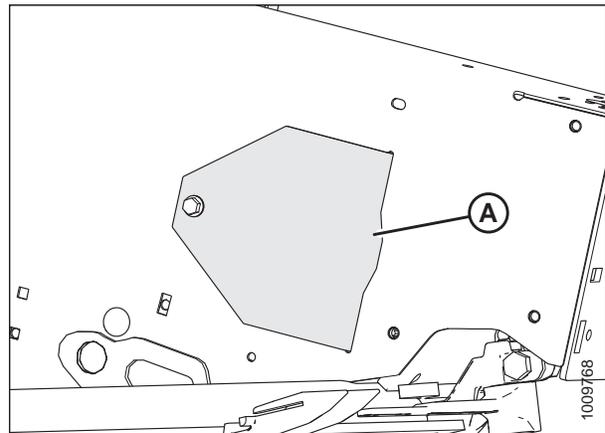


Figure 5.152: Access Cover

Tensioning Non-Timed Knife Drive Belts

The procedure for tensioning non-timed knife drive belts is the same for single- and double-knife headers.

DANGER

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

IMPORTANT:

To prolong belt and drive life, do **NOT** overtighten the belt.

MAINTENANCE AND SERVICING

1. Shut down machine, and remove key from the ignition.
2. Open the endshield.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Turn adjuster bolt (B) clockwise to move drive motor until a force of 89 N (20 lbf) deflects belt (C) 20–25 mm (3/4–1 in.) at midspan.

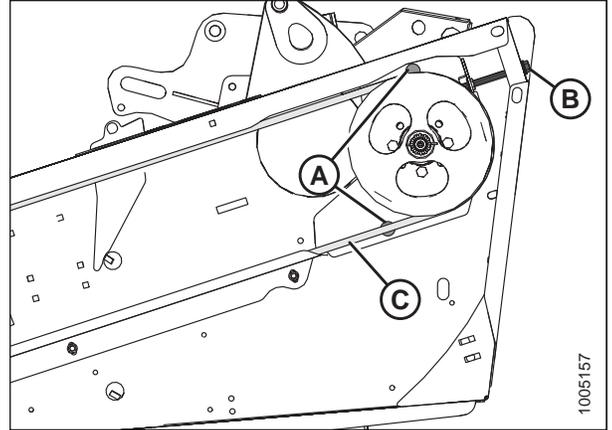


Figure 5.153: Non-Timed Knife Drive

5. Ensure clearance between belt (A) and belt guide (B) is 1 mm (1/32 in.).
6. Loosen three bolts (C), and adjust position of guide (B) as required.
7. Tighten three bolts (C).
8. Close endshield. Refer to [Closing Endshield, page 34](#).

NOTE:

Readjust tension of a new belt after a short run-in period (about five hours).

9. Repeat above steps for opposite end on double-knife headers.

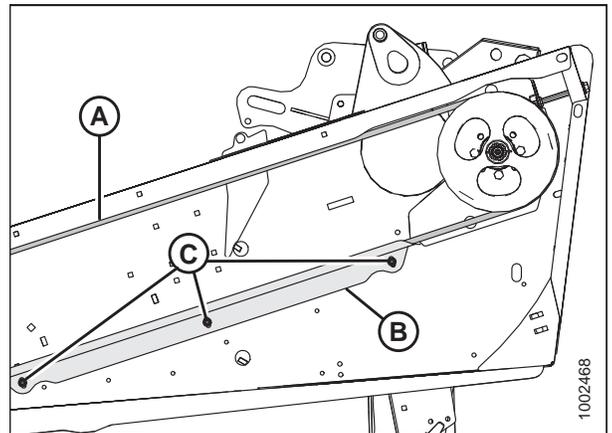


Figure 5.154: Non-Timed Knife Drive

Timed Double-Knife Drive Belts

This section applies to 10.7-meter (35-foot) and smaller double-knife D65 Draper Headers with timed drives.

Removing Timed Drive V-Belts

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to [Opening Endshield, page 33](#).
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Turn the adjuster bolt (B) counterclockwise to loosen and remove the two V-belts (C).

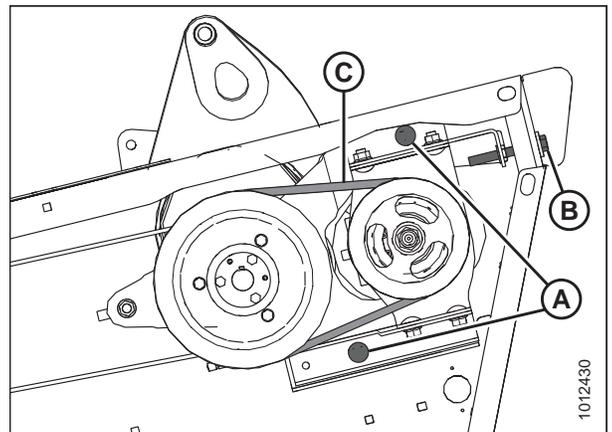


Figure 5.155: Knife Drive V-Belts

MAINTENANCE AND SERVICING

Installing Timed Drive V-Belts

NOTE:

Install new V-belts in matching pairs.

1. Shut down the combine, and remove the key from the ignition.
2. Install the V-belts (C) onto the pulleys.

NOTE:

Ensure the drive motor is fully forward, do **NOT** pry the belts over the pulley.

3. Turn the adjuster bolt (B) clockwise to tighten the V-belts. A properly tensioned V-belt should deflect 4 mm (5/32 in.) when 52–77 N (12–17 lbf) is applied at the midspan.

IMPORTANT:

To prolong the life of V-belts and drives, do **NOT** overtighten the V-belts.

4. Tighten the two bolts (A) on the endsheet.
5. Close the endshield. Refer to [Closing Endshield, page 34](#).
6. Check the tension of the new V-belts after a short run-in period (about five hours).

Removing Timed Knife Drive Belt

The timed knife drive belt removal procedure is the same for both sides of the header.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to [Opening Endshield, page 33](#).
3. Loosen two nuts (A) on the belt idler bracket to relieve the belt tension.
4. Loosen nut (B) on the idler pulley and slide the idler downwards to loosen the belt.

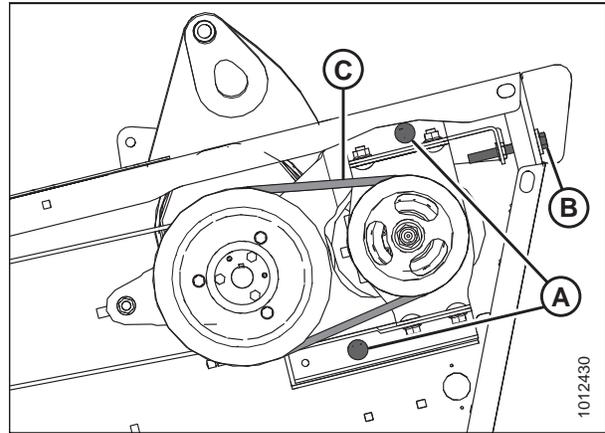


Figure 5.156: Knife Drive V-Belts

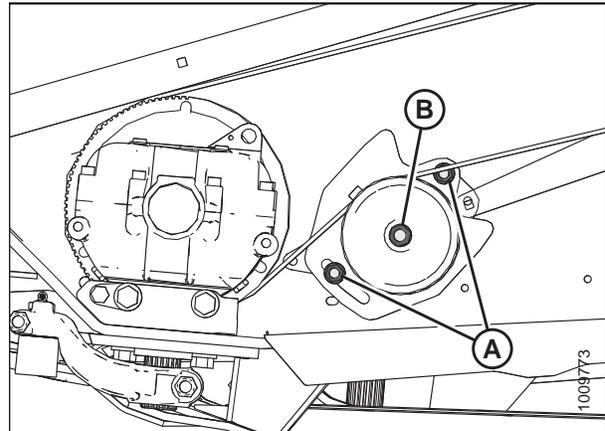


Figure 5.157: Knife Drive

MAINTENANCE AND SERVICING

NOTE:

The following two steps apply only to the left side drive.

- Loosen two bolts (A) on the endsheet.
 - Turn the adjuster bolt (B) counterclockwise to loosen and remove the two V-belts (C).
-
- Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.
 - Remove the knife drive belt.

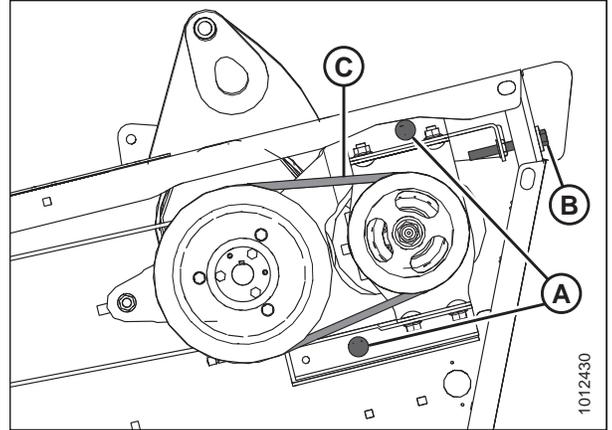


Figure 5.158: Knife Drive V-Belts

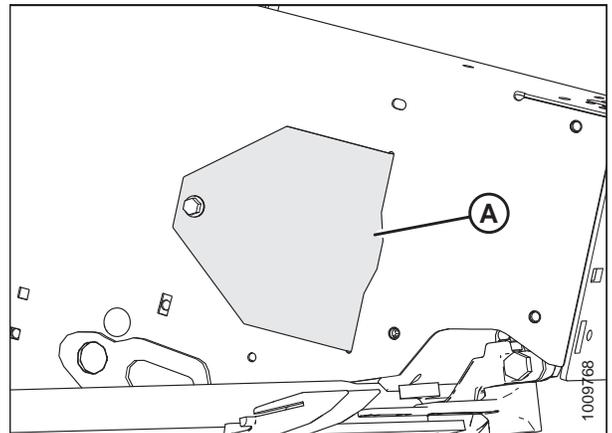


Figure 5.159: Access Cover

Installing Timed Knife Drive Belts

The procedure for installing timed knife drive belts is the same for both sides of the header.

If the belt is out of alignment, refer to [Checking Knife Drive Belt Tracking, page 361](#).

- Shut down the combine, and remove the key from the ignition.
- Route the knife drive belt (A) around the pulley (B) and the knife drive box pulley (C).

NOTE:

Ensure the drive motor is fully forward, do **NOT** pry the belt over the pulley.

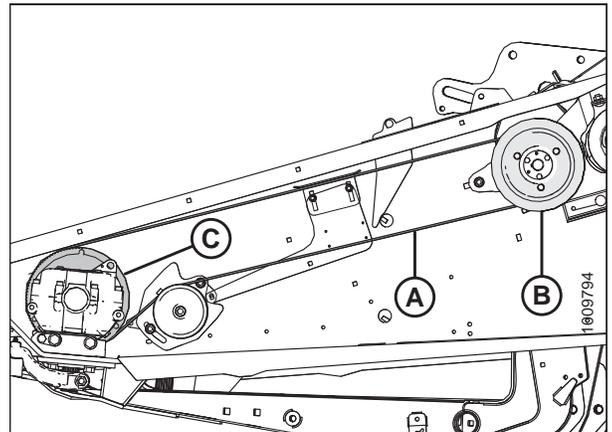


Figure 5.160: Left Side Shown – Right Side Similar

MAINTENANCE AND SERVICING

3. Install V-belt (C) onto the pulleys.
4. Turn the adjuster bolt (B) clockwise to tighten the V-belts. A properly tensioned V-belt should deflect 4 mm (5/32 in.) when 52–77 N (12–17 lbf) is applied at the midspan.

IMPORTANT:

To prolong the life of V-belts and drives, do **NOT** overtighten the V-belts.

5. Tighten the two bolts (A) on the endsheet.

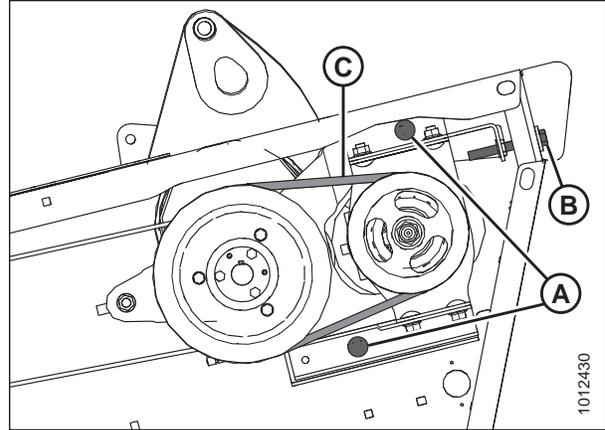


Figure 5.161: Knife Drive V-Belts

6. Ensure the knives are timed before tightening the belt. Refer to [Adjusting Double-Knife Timing, page 358](#).
7. Slide the idler pulley (A) into the slot on the support bracket (B) to take-up the slack in the timing belt.

NOTE:

Ensure the lower nut (C) is as high as possible in the support bracket (B) slot.

8. Tighten nut (D) to 212–234 Nm (157–173 lbf-ft).

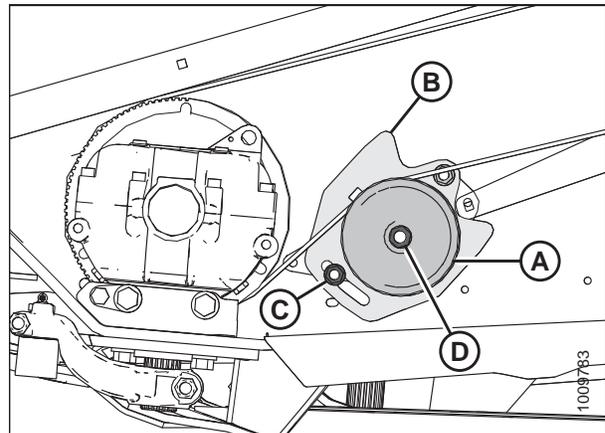


Figure 5.162: Knife Drive

9. Tension the knife drive belt. Refer to [Tensioning Timed Knife Drive Belts, page 357](#)
10. Install access cover (A) and secure with bolt.
11. Close the endshield.

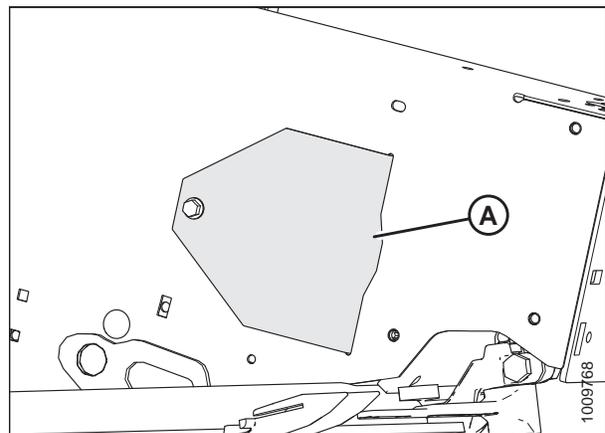


Figure 5.163: Access Cover

MAINTENANCE AND SERVICING

Tensioning Timed Knife Drive Belts

The procedure for tensioning timed knife drive belts is the same for both sides of the header. The illustrations shown are for the left side—the right side is opposite.

IMPORTANT:

To prolong belt and drive life, do **NOT** overtighten belt.

IMPORTANT:

Do **NOT** use adjuster bolt at drive pulley to adjust timing belt tension.

1. Shut down combine, and remove key from the ignition.
2. Open endshield. Refer to *Opening Endshield*, page 33.
3. Loosen two nuts (A) on knife drive belt idler bracket.

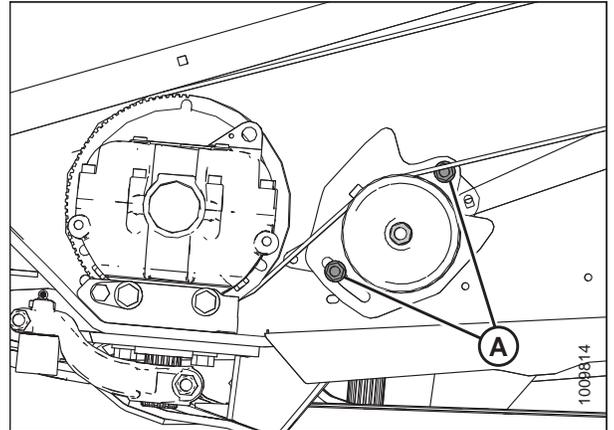


Figure 5.164: Left Side Knife Drive

4. Position pry bar (A) under idler bracket (C), and push bracket upwards until a force of 27 N (6 lbf) deflects belt 13 mm (1/2 in.) at midpoint of upper span.

NOTE:

Protect paint by placing a piece of wood (B) under pry bar (A).

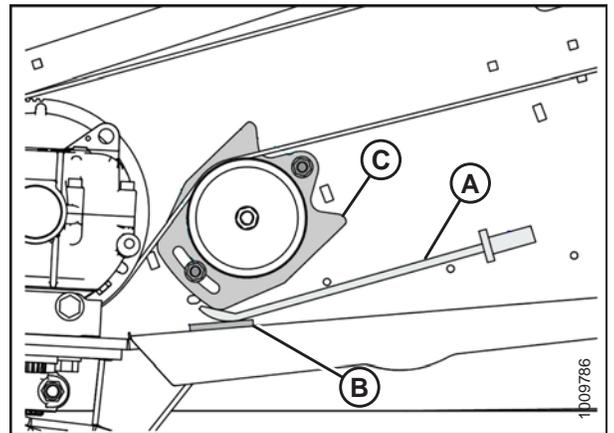


Figure 5.165: Left Side Knife Drive

MAINTENANCE AND SERVICING

5. After achieving proper belt tension, tighten nuts (C) to 73–80 Nm (54–59 lbf-ft).
6. Remove pry bar (A) and wood (B).

NOTE:

Readjust tension of a new belt after a short run-in period (about five hours).

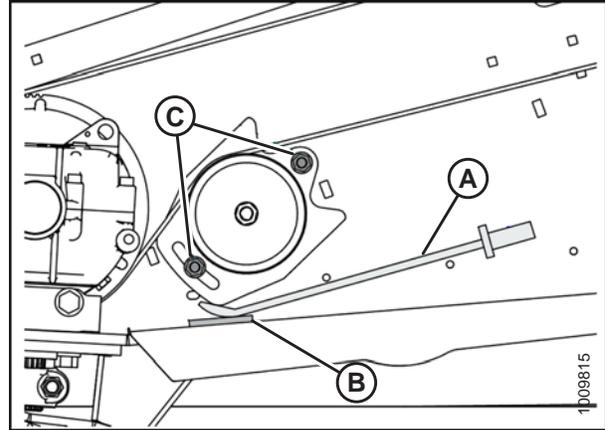


Figure 5.166: Left Side Knife Drive

7. Ensure clearance (A) between belt (B) and guide (C) is 0.5–1.5 mm (1/32–1/16 in.).
8. Loosen bolts (D) and adjust guide if necessary. Tighten bolts.
9. Repeat procedure for opposite side of header.
10. Close endshield. Refer to [Closing Endshield, page 34](#).

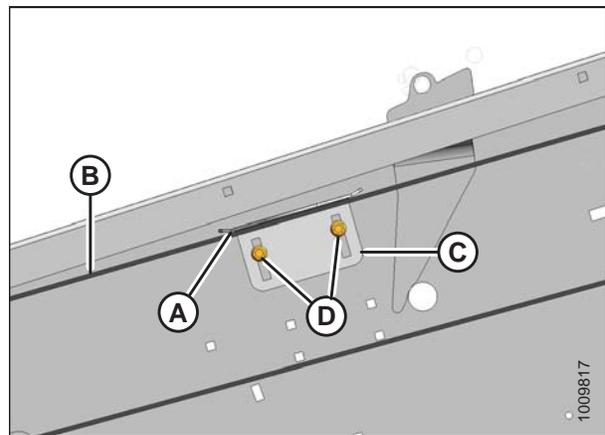


Figure 5.167: Left Side Belt Guide

Adjusting Double-Knife Timing

Timed double-knife drive headers (10.7 m [35 ft.] and smaller) require the knives to be properly timed to move in opposite directions.

1. Shut down the combine, and remove the key from the ignition.
2. Open both endshields. Refer to [Opening Endshield, page 33](#).
3. Remove the right knife drive belt. Refer to [Removing Timed Knife Drive Belt, page 354](#).

MAINTENANCE AND SERVICING

4. Rotate the left knife drive box driven pulley clockwise until the left knife (A) is at the center of the inboard stroke (B) (moving towards the center of the header).

NOTE:

The center stroke is when the knife sections (C) are centered between the guard points.

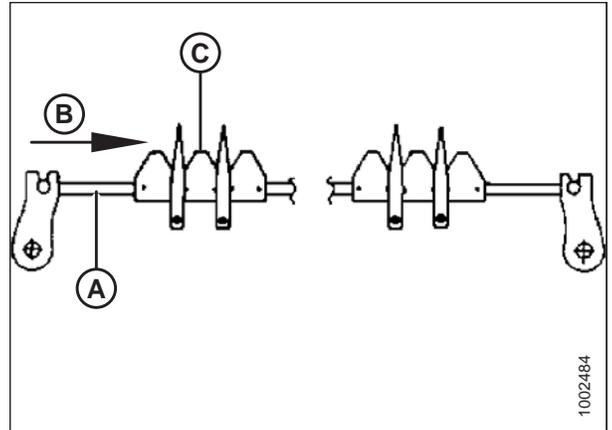


Figure 5.168: Adjusting Timing – Left Side

5. Rotate the right knife drive box pulley counterclockwise until the right knife (A) is at the center of the inboard stroke (B) (moving towards the center of the header).

NOTE:

The center stroke is when the knife sections (C) are centered between the guard points.

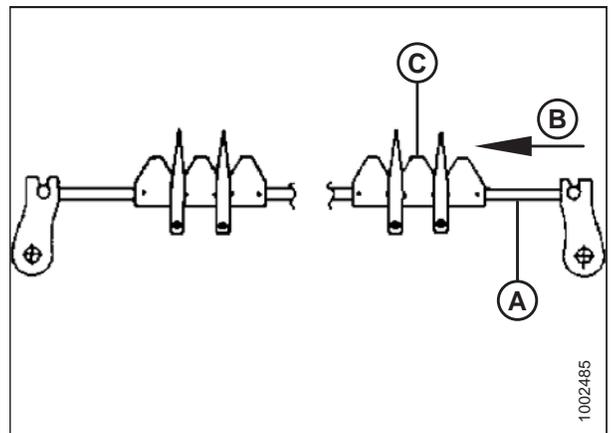


Figure 5.169: Adjusting Timing – Right Side

6. Install the right knife drive belt (A).

NOTE:

Ensure the knife drive box driver and driven pulleys do **NOT** rotate during belt installation.

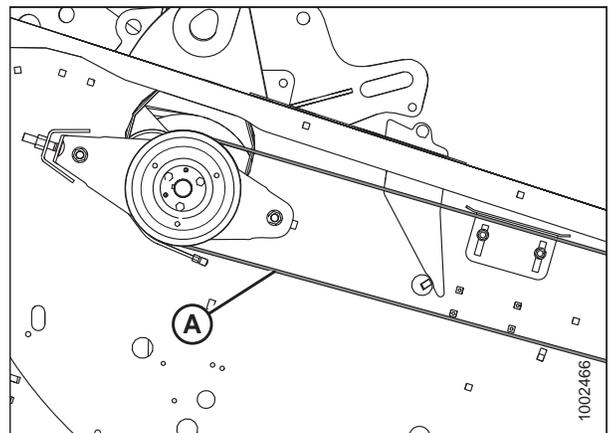


Figure 5.170: Right Knife Drive

MAINTENANCE AND SERVICING

7. Rotate the idler pulley bracket (A) downwards, and slide the idler pulley up by hand to remove most of the belt slack. Tighten the nut (B).

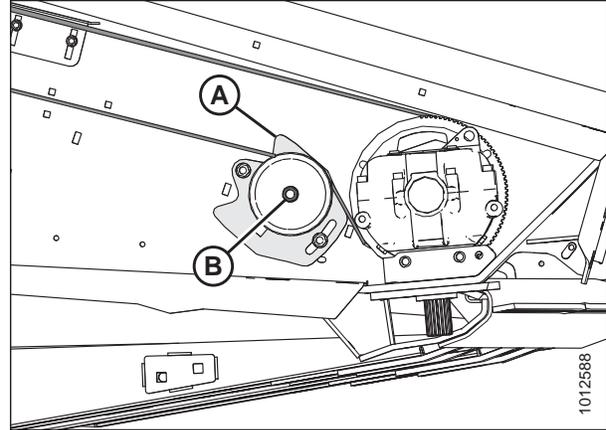


Figure 5.171: Right Knife Drive

8. Position the pry bar (A) under the idler bracket (C), and push the bracket upwards until a force of 27 N (6 lbf) deflects the belt 13 mm (1/2 in.) at the midpoint of the upper span.

NOTE:

Protect the paint by placing a piece of wood (B) under the pry bar (A).

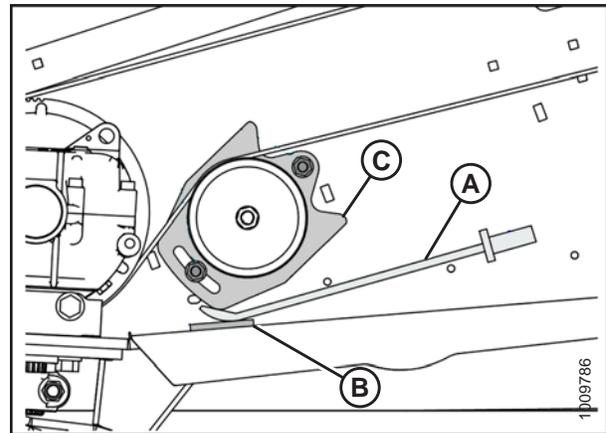


Figure 5.172: Left Shown – Right Opposite

9. After achieving the proper belt tension, tighten nuts (C) to 73–80 Nm (54–59 lbf-ft).
10. Ensure the timing belts are properly seated in the grooves on both driver and driven pulleys.
11. Rotate the drive slowly by hand and observe where the knives overlap at the center of the header to check for the correct knife timing.

IMPORTANT:

The knives must begin moving at the exact same time and must move in opposite directions.

12. Adjust the knife timing, if necessary, by loosening the right side drive belt (B) just enough to reposition it to the next cog(s) and proceed as follows:
 - a. If the right knife leads the left knife, rotate the right side driven pulley (A) clockwise.
 - b. If the right knife lags the left knife, rotate the right side driven pulley (A) counterclockwise.

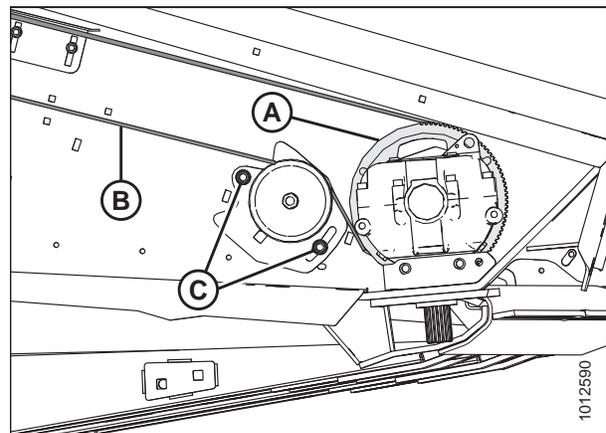


Figure 5.173: Right Knife Drive

MAINTENANCE AND SERVICING

13. Ensure the drive pulleys don't rotate, and tension the right side drive belts (refer to Step 7, page 360 to Step 9, page 360).

IMPORTANT:

Do **NOT** use the adjuster bolt at the drive pulley to adjust the timing belt tension.

14. Recheck the timing (refer to Step 11, page 360) and readjust if necessary (refer to Step 12, page 360).
15. Close both endshields. Refer to *Closing Endshield*, page 34.

Checking Knife Drive Belt Tracking

The following procedure is applicable to the left side knife drive and the right side knife drive on timed drive headers.

IMPORTANT:

A belt that is not tracking properly is subject to premature failure. Ensure the pulleys are aligned and parallel. Follow the belt tensioning procedures in this manual to avoid misalignment.

The cogged timing belt should be centered on the knife drive box pulley and at least 2 mm (0.08 in.) from either edge when the header is running. The belt should avoid continual contact with the drive pulley flanges. Occasional contact is acceptable. A gap should be visible between the belt and the pulley flanges.

1. Open the endshields.

CAUTION

Exercise extreme care when operating the header with the endshields open.

2. Operate the header and observe how the belt is tracking on both the drive pulley and the knife drive box pulley on both sides of the header. Shut down the combine and remove key from ignition before making any adjustments.
3. If the belt is tracking toward the inboard side of the drive pulley, the likely cause is a toe-out problem (belt tends to move toward the low tension side of the pulley [inboard]). Refer to *Adjusting Drive Belt Tracking (Drive Pulley)*, page 362.
4. If the belt is tracking toward the outboard side of the drive pulley, the likely cause is a toe-in problem (belt tends to move toward the low tension side of the pulley [outboard]). Refer to *Adjusting Drive Belt Tracking (Drive Pulley)*, page 362.

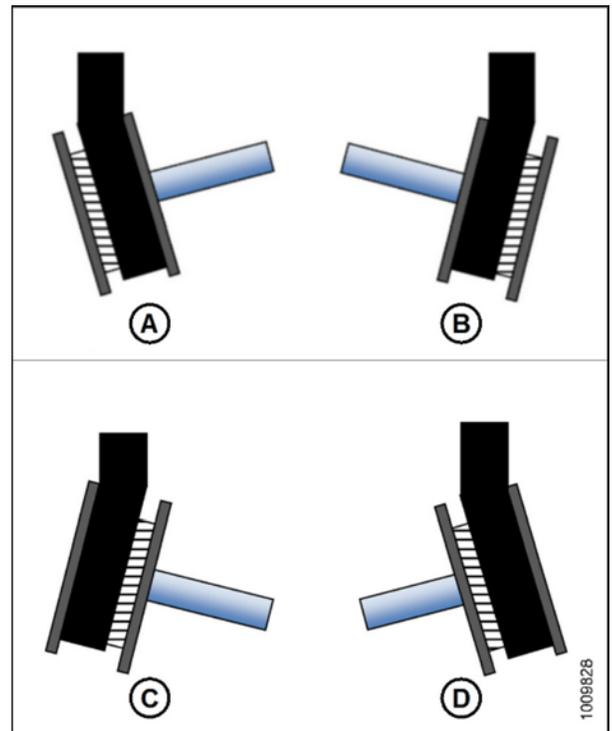


Figure 5.174: Knife Drive Pulley

A - Toe-Out: Left Side
C - Toe-In: Left Side

B - Toe-Out: Right Side
D - Toe-In: Right Side

MAINTENANCE AND SERVICING

5. If the belt (A) is tracking to one side of the knife drive box pulley (B), the likely cause is an out of position idler pulley (C). Refer to [Adjusting Drive Belt Tracking \(Knife Drive Box Pulley\)](#), page 363.

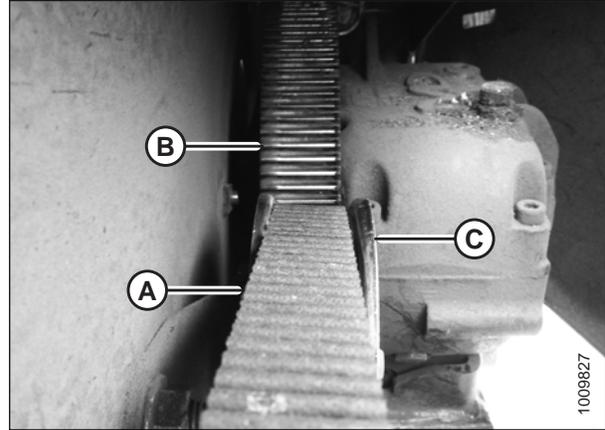


Figure 5.175: Knife Drive Belt

Adjusting Drive Belt Tracking (Drive Pulley)

The following procedure is applicable to the left side knife drive and the right side knife drive on timed drive headers.

Before adjusting the drive belt tracking, verify the pulley that needs to be adjusted. Refer to [Checking Knife Drive Belt Tracking](#), page 361.

IMPORTANT:

A belt that is not tracking properly is subject to premature failure. Ensure the pulleys are aligned and parallel. Follow the belt tensioning procedures in this manual to avoid misalignment.

The cogged timing belt should be centered on the knife drive box pulley and at least 2 mm (0.08 in.) from either edge when the header is running. The belt should also avoid constant contact with the flanges on the drive pulley but occasional contact is acceptable. A gap should be visible between the belt and the pulley flanges.

CAUTION

Exercise extreme care when operating the header with the endshields open.

1. Open the endshields.
2. Loosen nut (A) on support assembly (B).
3. Slide the support (B) rearward in slot (C) to correct toe-out condition, or forward to correct toe-in condition.
4. Tighten nut (A).
5. Operate the header and check the tracking. Refer to [Checking Knife Drive Belt Tracking](#), page 361. Adjust the support assembly as required.
6. If the belt tracking problem continues, proceed to Step 7, page 363.

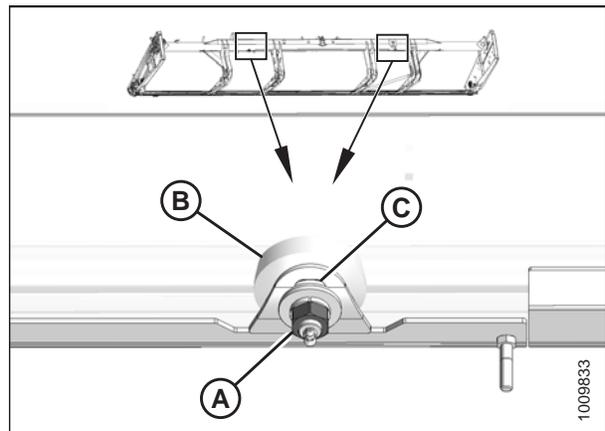


Figure 5.176: Cross-Shaft Support

MAINTENANCE AND SERVICING

7. Loosen nut (A) on idler and nuts (B) on idler bracket.
8. Loosen nuts (C) at drive pulley location.
9. Turn adjuster bolt (D) clockwise to correct a toe-in problem, which will allow the belt to track inboard.
10. Turn adjuster bolt (D) counterclockwise to correct a toe-out problem, which will allow the belt to track outboard.
11. Tighten nuts (C) at drive pulley location.
12. Tension the belt. Refer to *Tensioning Timed Knife Drive Belts*, page 357.
13. Operate the header and check the tracking. Refer to *Checking Knife Drive Belt Tracking*, page 361. Adjust the drive pulley if required as per the above steps.

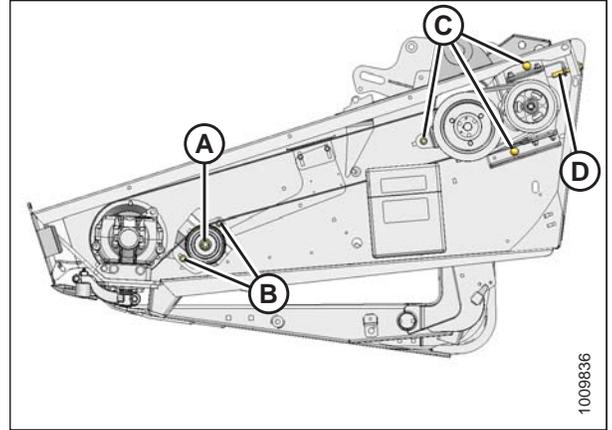


Figure 5.177: Knife Drive – Left Side

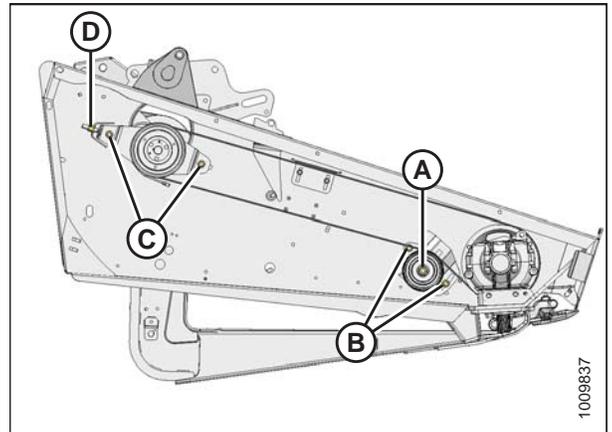


Figure 5.178: Knife Drive – Right Side

Adjusting Drive Belt Tracking (Knife Drive Box Pulley)

The following procedure is applicable to the left side knife drive and the right side knife drive on timed drive headers.

Before adjusting the drive belt tracking, verify the pulley that needs to be adjusted. Refer to *Checking Knife Drive Belt Tracking*, page 361.

IMPORTANT:

A belt that is not tracking properly is subject to premature failure. Ensure the pulleys are aligned and parallel. Follow the belt tensioning procedures in this manual to avoid misalignment.

The cogged timing belt should be centered on the knife drive box pulley and at least 2 mm (0.08 in.) from either edge when the header is running. The belt should also avoid constant contact with the flanges on the drive pulley but occasional contact is acceptable. A gap should be visible between the belt and the pulley flanges.

1. Open the endshields.



CAUTION

Exercise extreme care when operating the header with the endshields open.

MAINTENANCE AND SERVICING

2. Loosen nuts (A) and (B) and move bracket and idler until belt is loose.

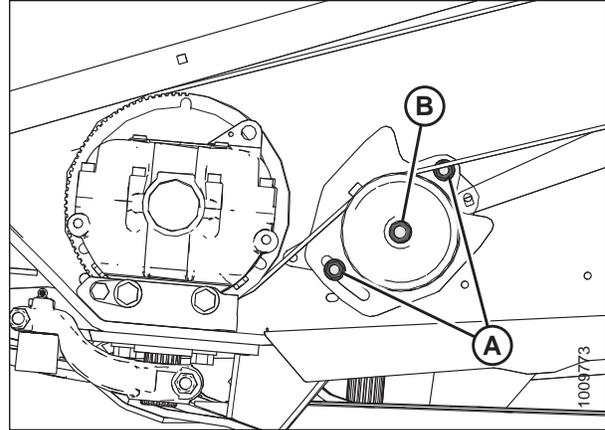


Figure 5.179: Knife Drive

3. Remove nut (B) securing idler to bracket, and remove lock washer, idler pulley, and flat washer.
4. Install the idler pulley (C), ensuring it lines up with the knife drive box pulley, using flat washer(s) (D) as required.
5. Reinstall lock washer (E) and nut (B).
6. Tension the belt. Refer to *Tensioning Timed Knife Drive Belts*, page 357.
7. Operate the header and check the tracking. Refer to *Checking Knife Drive Belt Tracking*, page 361.

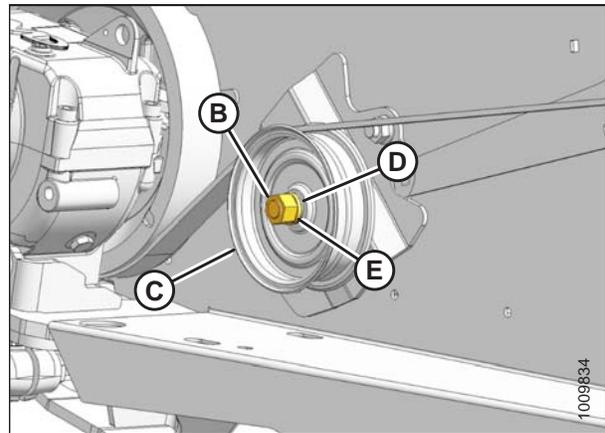


Figure 5.180: Knife Drive

5.10 Adapter Feed Draper

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparing Machine for Servicing, page 271](#).

5.10.1 Replacing Adapter Feed Draper

Replace draper if torn, cracked, or missing slats.

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to [4.7.2 Detaching Header from Adapter and Combine, page 265](#).
2. Raise the feeder house to its full height, stop the engine, and the remove key from the ignition.
3. Engage the combine safety props.
4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.
5. Disengage the header safety props and lower the feeder house and adapter onto blocks to keep the adapter slightly off the ground.

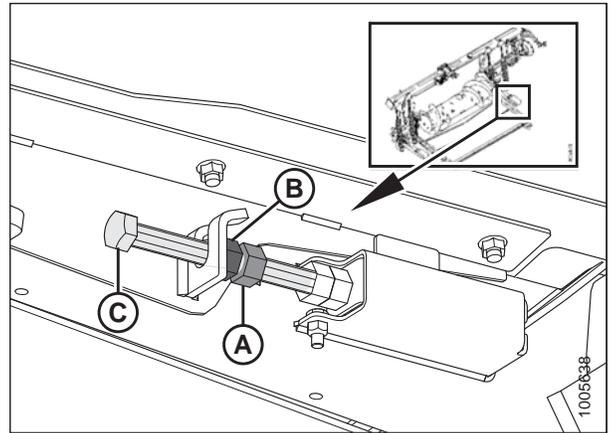


Figure 5.181: Tensioner

6. Remove screws (A) and nuts, and remove the draper connector straps (B).
7. Pull the draper from the deck.

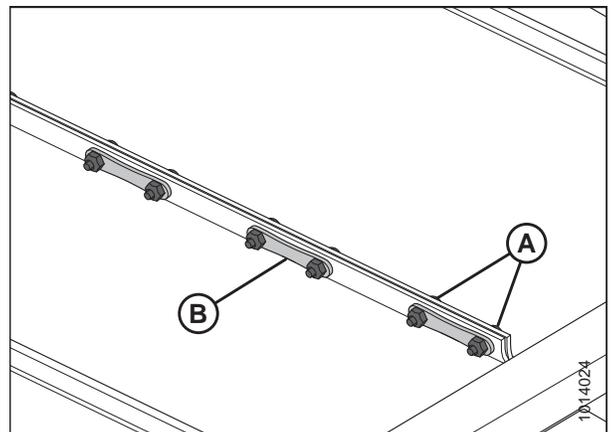


Figure 5.182: Draper Connector

MAINTENANCE AND SERVICING

8. Install the new draper over drive roller (A) with the chevron cleat (B) pointing towards the front of the adapter. Make sure the draper guides fit in drive roller grooves (C).
9. Pull the draper along the bottom of the adapter deck and over draper supports (D).

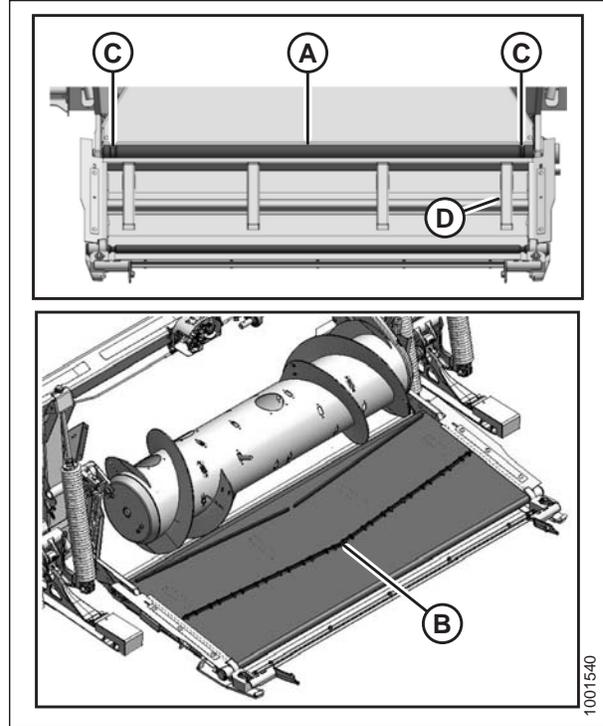


Figure 5.183: Adapter Feed Draper

10. Connect the draper joint with connector straps (B) and secure with screws (A) and nuts. Ensure the screw heads face towards the rear of the deck, and tighten only until the end of the screws are flush with the nuts.
11. Adjust the draper tension. Refer to [5.10.2 Adjusting Adapter Feed Draper Tension](#), page 366.

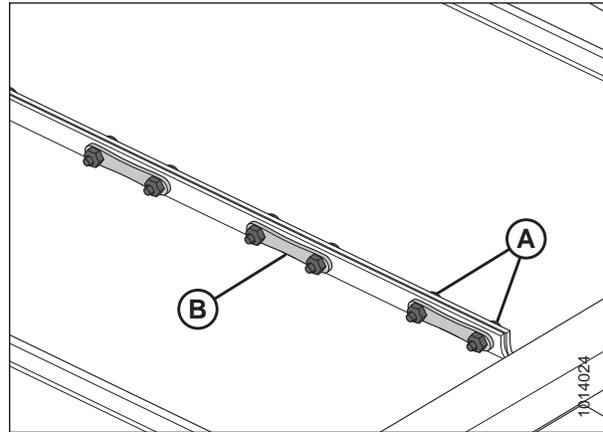


Figure 5.184: Draper Connector Straps

5.10.2 Adjusting Adapter Feed Draper Tension

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.

MAINTENANCE AND SERVICING

3. Ensure the draper guide (rubber track on the underside of the draper) is properly engaged in the groove of the drive roller and the idler roller is between the guides.

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.

4. Check the position of spring retainer (A). If feed draper tracks properly and spring retainers on both sides are positioned within the following dimensions, than no adjustment is necessary:
 - Loosened to 3 mm (1/8 in.) outside (C) the front edge of spring box (B)
 - Tightened to 6 mm (1/4 in.) inside (D) the front edge of the spring box (B)

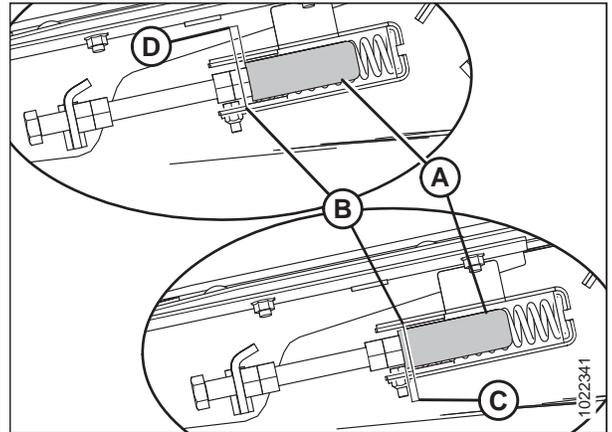


Figure 5.185: Feed Draper Tensioner (Spring Box Drawn Transparent)

5. If adjustment is necessary, proceed to Step 6, page 367.
6. 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.

7. Tension the draper until the spring retainer (D) is within range described in Step 4, page 367, and bolt (E) is free.
8. Tighten jam nut (A).

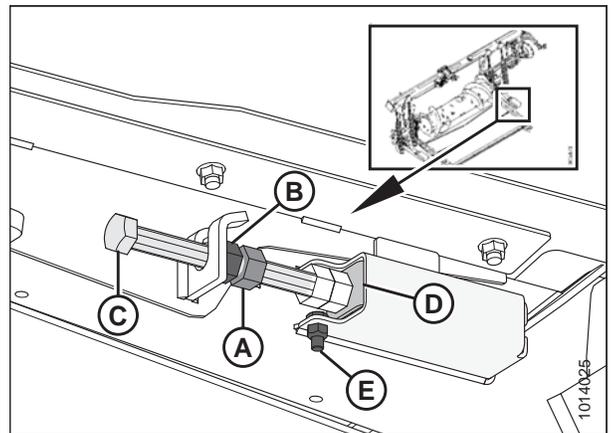


Figure 5.186: Tensioner

5.10.3 Adapter Drive Roller

Removing Adapter Feed Draper Drive Roller

DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to [4.7.2 Detaching Header from Adapter and Combine, page 265](#).
2. Raise the feeder house to its full height, stop the engine, and the remove key from the ignition.
3. Engage the combine safety props.

MAINTENANCE AND SERVICING

- Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

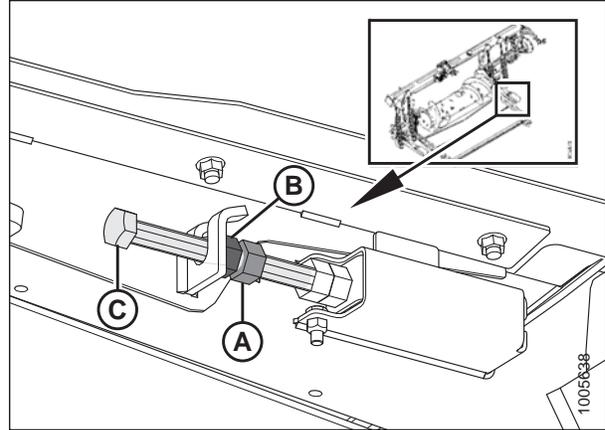


Figure 5.187: Tensioner

- Remove screws (A) and nuts, and remove the draper connector straps (B).
- Open the feed draper.

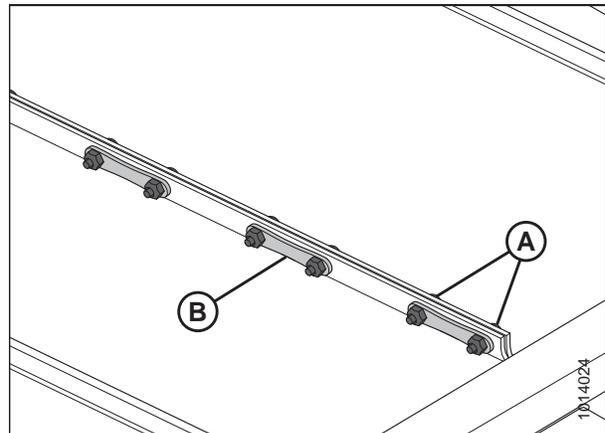


Figure 5.188: Draper Connector

- Loosen the setscrew and unlock bearing lock collar (A).
- Remove three bolts (B).
- Remove bearing flanges (C) and the bearing.

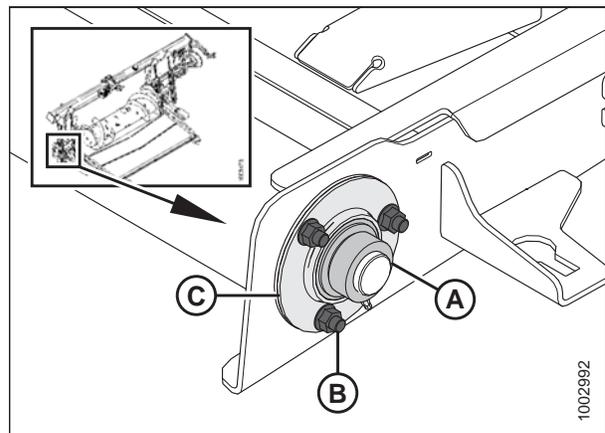


Figure 5.189: Bearing

MAINTENANCE AND SERVICING

10. Remove the four bolts (A) securing hydraulic motor (B) to the frame. Slide the hydraulic motor away from drive roller (C).
11. Remove drive roller (C).

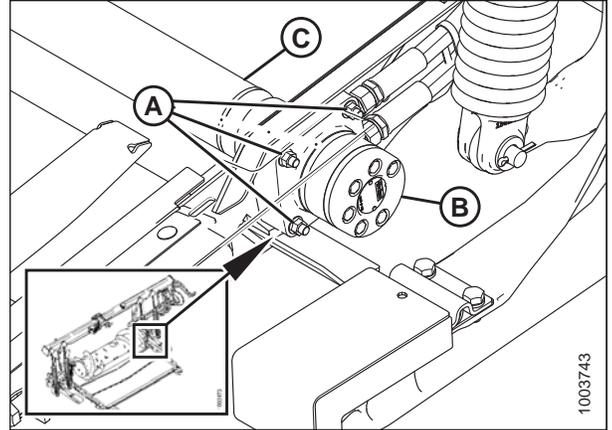


Figure 5.190: Hydraulic Motor

Installing Adapter Feed Draper Drive Roller

1. Apply grease to the spline.
2. Position drive roller (C) in the adapter frame.
3. Slide hydraulic motor (B) into drive roller (C). Secure the motor to the feed deck with four bolts (A).

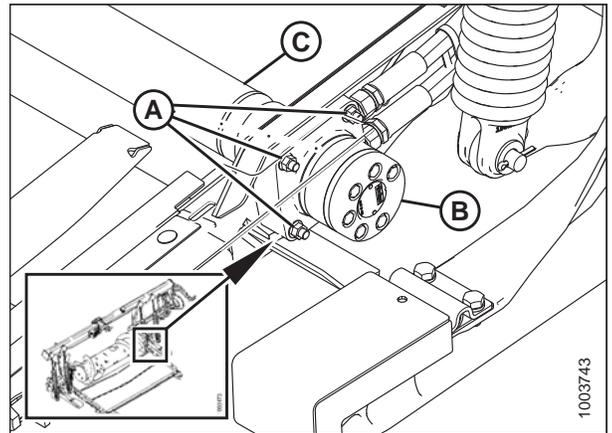


Figure 5.191: Motor

4. Install bearing flanges (C) and the bearing.
5. Install three bolts (B) to secure the bearing and flanges (C) to the feed deck.
6. Lock bearing collar (A) and tighten the setscrew.
7. Install the feed deck draper. Refer to [5.10.1 Replacing Adapter Feed Draper, page 365](#).
8. Tension the feed draper. Refer to [5.10.2 Adjusting Adapter Feed Draper Tension, page 366](#).
9. Attach the header to the adapter. Refer to [4.7.1 Attaching Header to Adapter and Combine, page 260](#).

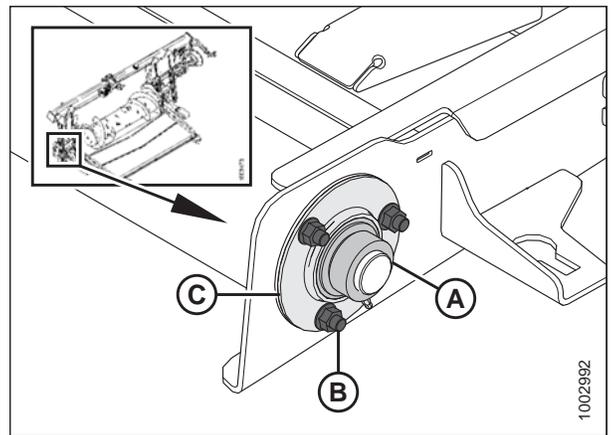


Figure 5.192: Bearing

Replacing Adapter Feed Draper Drive Roller Bearing

Removing Adapter Feed Draper Drive Roller Bearing

⚠ DANGER

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

1. If attached to the combine, detach the header from the adapter. Refer to *4.7.2 Detaching Header from Adapter and Combine, page 265*.
2. Raise the feeder house to its full height, stop the engine, and the remove key from the ignition.
3. Engage the combine safety props.
4. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

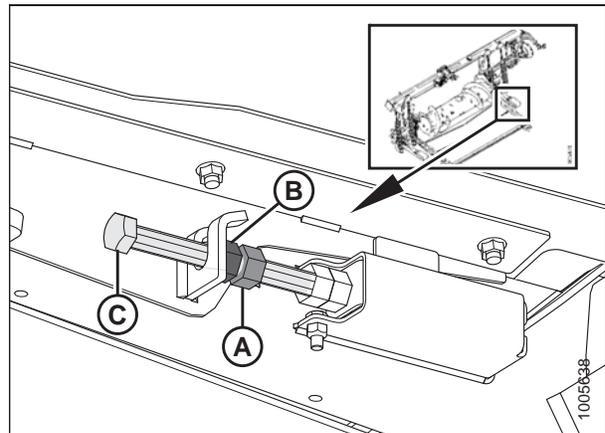


Figure 5.193: Tensioner

5. Loosen the setscrew and unlock bearing lock collar (A).
6. Remove three bolts (B).
7. Remove bearing flanges (C) and the bearing.

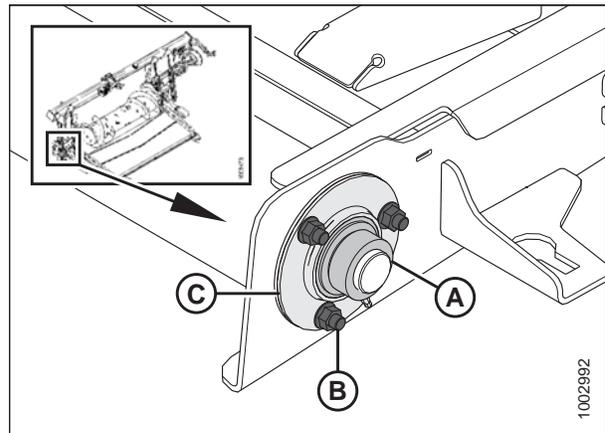


Figure 5.194: Bearing

MAINTENANCE AND SERVICING

Installing Adapter Feed Draper Drive Roller Bearing

1. Install bearing flanges (C) and the bearing.
2. Install three bolts (B) to secure the bearing and flanges (C) to the feed deck.
3. Lock bearing collar (A) and tighten the setscrew.
4. Tension the feed draper. Refer to [5.10.2 Adjusting Adapter Feed Draper Tension](#), page 366.
5. Attach the header to the adapter. Refer to [4.7.1 Attaching Header to Adapter and Combine](#), page 260.

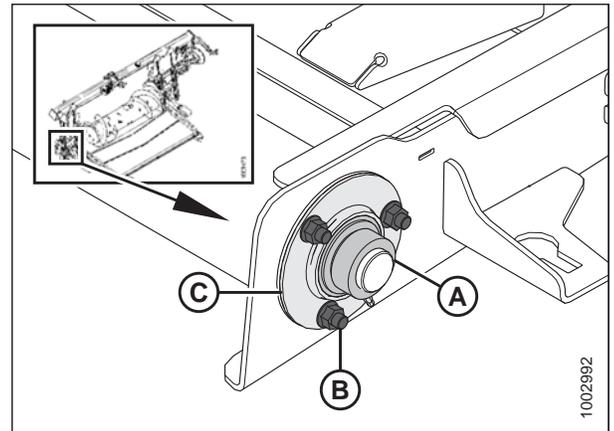


Figure 5.195: Bearing

5.10.4 Adapter Idler Roller

Removing Adapter Feed Draper Idler Roller

1. Remove the header from the adapter, but leave the adapter attached to the combine. Refer to [4.7.2 Detaching Header from Adapter and Combine](#), page 265.
2. Engage the feeder house safety props.
3. Loosen jam nut (A) and hold nut (B) with a wrench while turning bolt (C) counterclockwise to release the draper tension. Repeat at the opposite side.

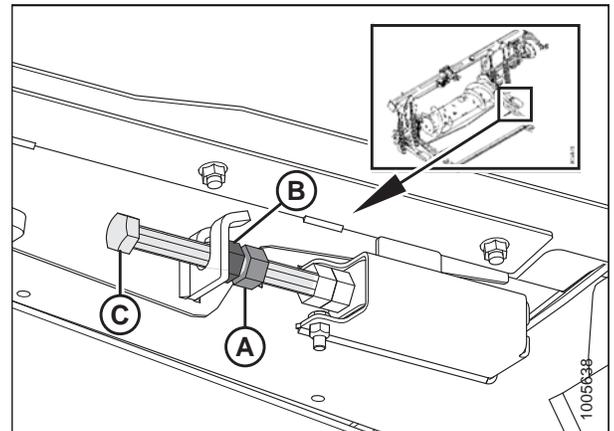


Figure 5.196: Tensioner

MAINTENANCE AND SERVICING

4. Remove screws (A) and nuts, and remove the draper connector straps (B).
5. Open the feed draper.

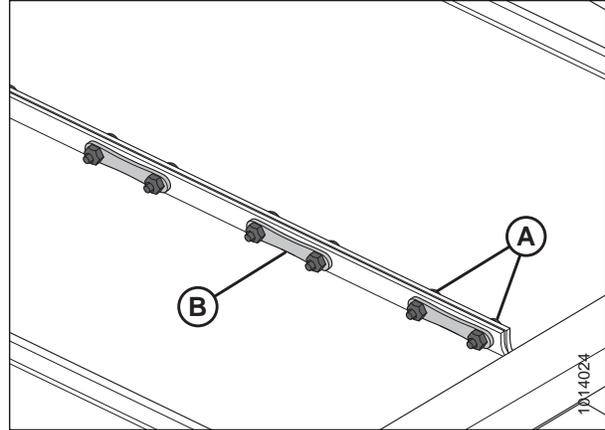


Figure 5.197: Draper Connector

6. Remove two bolts (A) and nuts (C) from both ends of the idler roller.
7. Remove idler roller assembly (B).

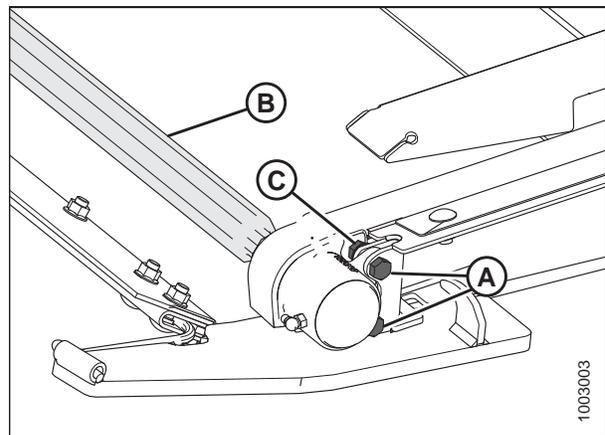


Figure 5.198: Idler Roller

Replacing Adapter Feed Draper Idler Roller Bearing

1. Remove dust cap (A).

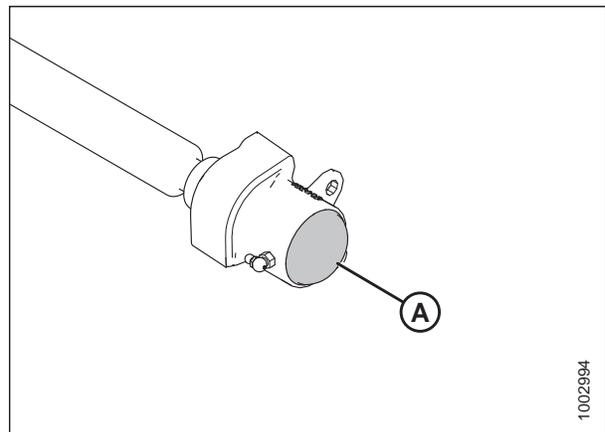


Figure 5.199: Idler Roller

MAINTENANCE AND SERVICING

2. Remove nut (A).
3. Use a hammer to tap bearing assembly (B) until it slides off the shaft.

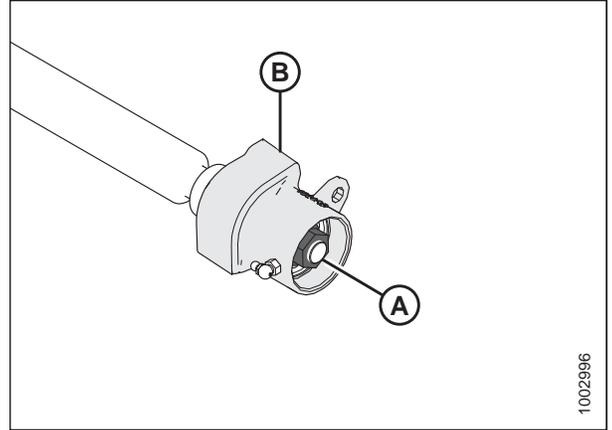


Figure 5.200: Idler Roller

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 the seal is facing inboard.

6. Brush the shaft with oil, and carefully rotate the housing (D) with seals (C) onto the shaft by hand to prevent damaging the seals.
7. Install bearing (B).
8. Install retaining ring (A).

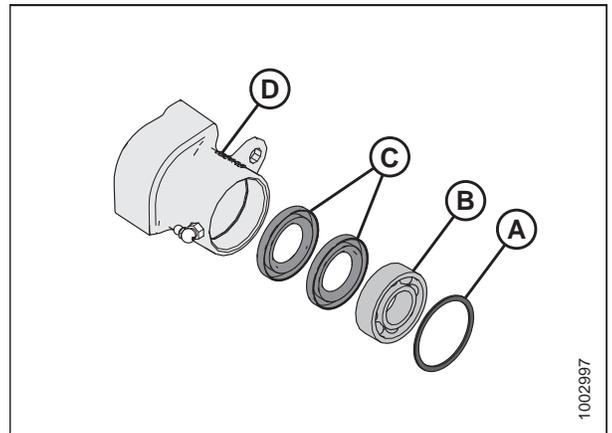


Figure 5.201: Bearing Assembly

9. Secure the bearing assembly to the shaft with nut (A) and torque to 81–95 Nm (60–70 lbf-ft).
10. Install dust cap (B).
11. Pump grease into the bearing assembly.

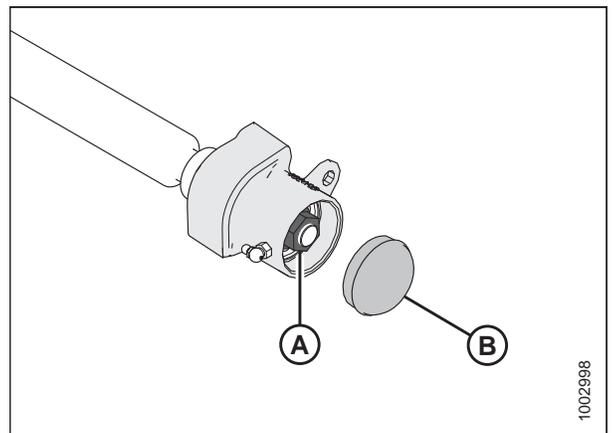


Figure 5.202: Idler Roller

MAINTENANCE AND SERVICING

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.

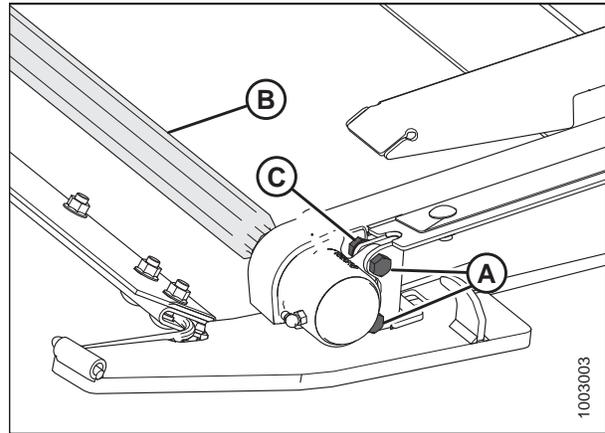


Figure 5.203: Idler Roller

3. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
4. Tension the feed draper. Refer to [5.10.2 Adjusting Adapter Feed Draper Tension](#), page 366.
5. Attach the header to the adapter. Refer to [4.7.1 Attaching Header to Adapter and Combine](#), page 260.

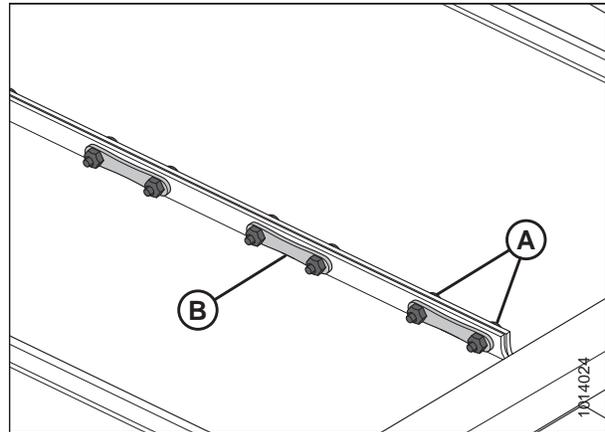


Figure 5.204: Draper Connector

5.10.5 Lowering Polyethylene Door – Adapter Feed Deck

DANGER

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

1. Start combine, raise header fully, and engage header lift cylinder locks.
2. Stop engine and remove key.

MAINTENANCE AND SERVICING

3. Rotate latches (A) to unlock handles (B).
4. Hold pan (C) and rotate handles (B) downward to release pan.

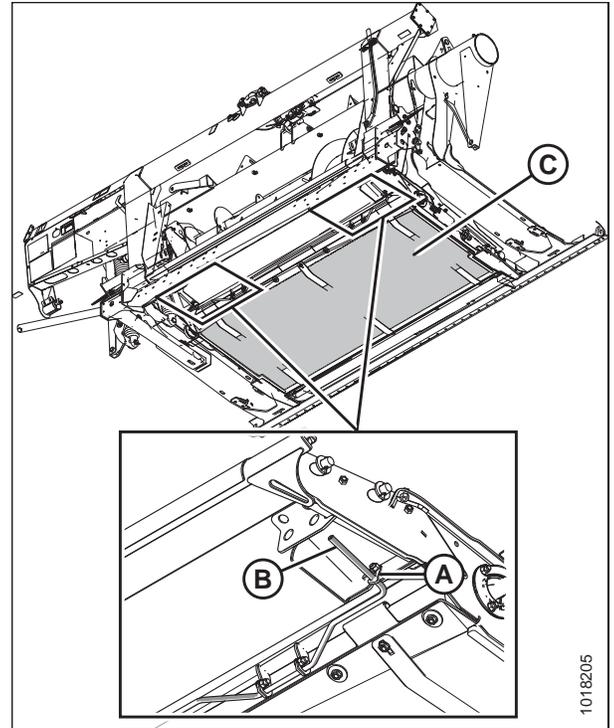


Figure 5.205: Feed Deck Polyethylene Door

5. Lower plastic pan (A) and check for debris that may have fallen under the adapter draper.

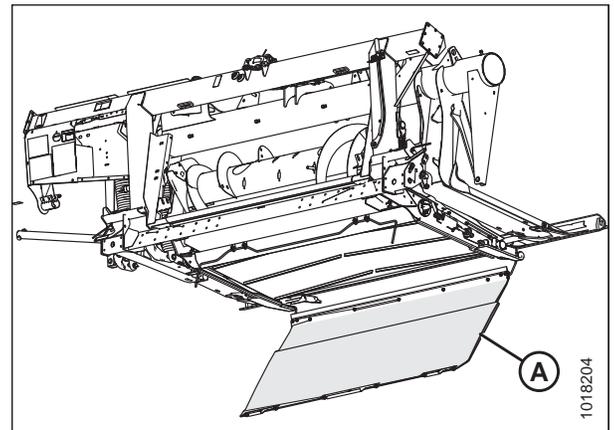


Figure 5.206: Feed Deck Polyethylene Door

5.10.6 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.

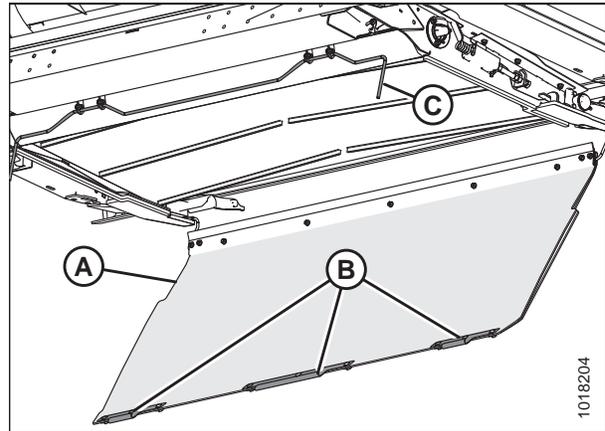


Figure 5.207: Feed Deck Polyethylene Door

3. Hold pan (C) and rotate handles (B) upward to secure pan.
4. Rotate latches (A) to unlock handles (B).

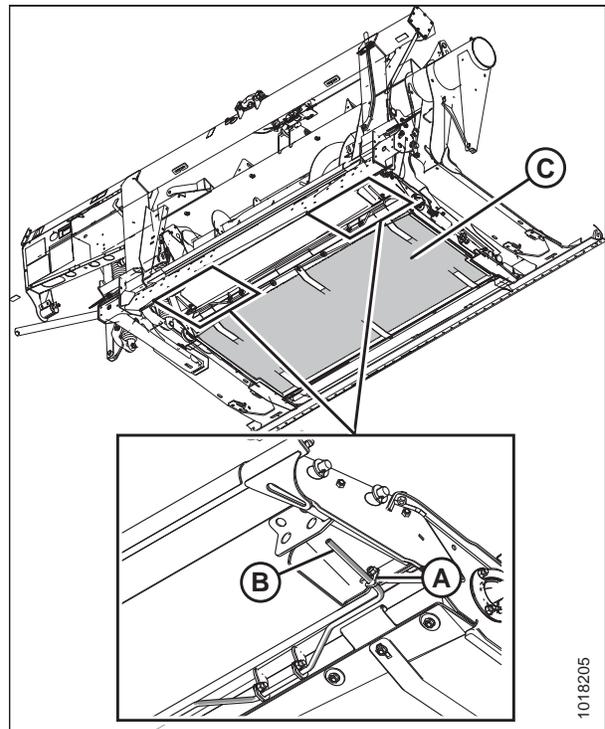


Figure 5.208: Feed Deck Polyethylene Door

5.11 Adapter Stripper Bars and Feed Deflectors

5.11.1 Removing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 219*.
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.

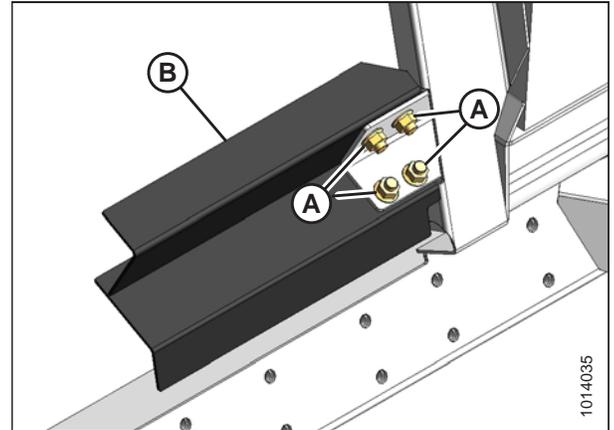


Figure 5.209: Stripper Bar

5.11.2 Installing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 219*.
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.

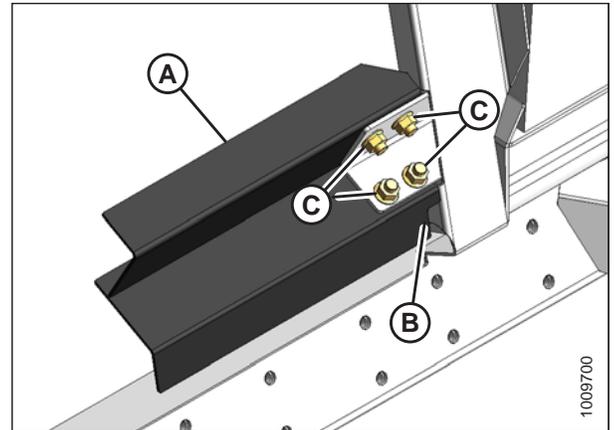


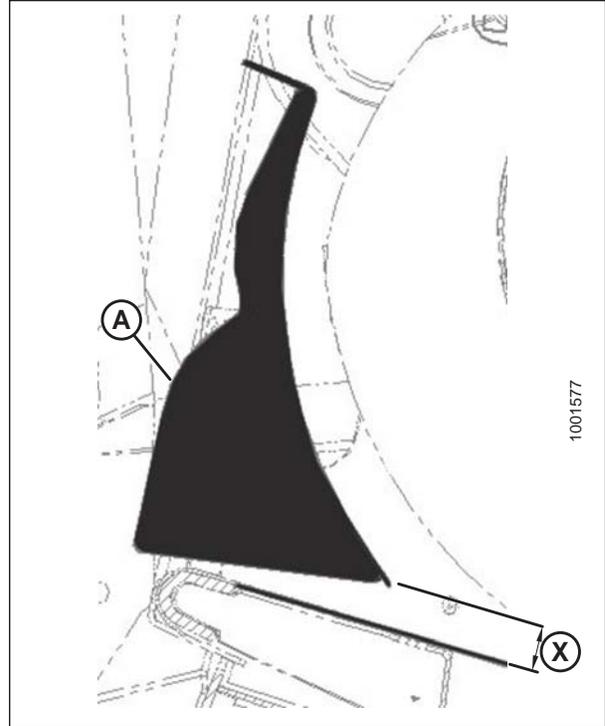
Figure 5.210: Stripper Bar

5.11.3 Replacing Feed Deflectors on New Holland CR Combines

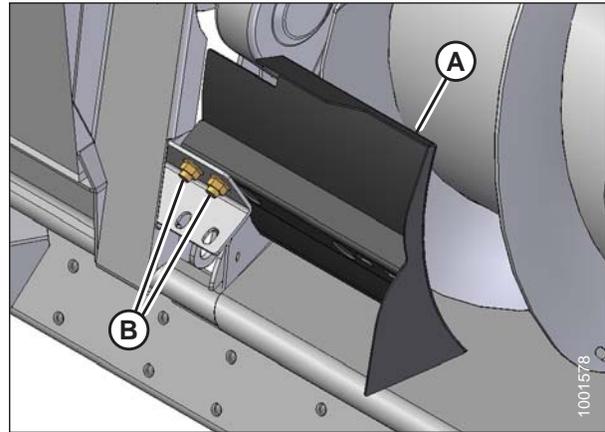
1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 219*.

MAINTENANCE AND SERVICING

2. Measure gap (B) between existing feed deflector (A) and the forward edge of the pan.



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 378](#), between the feed deflector and the forward edge of the pan.
5. Repeat for the opposite deflector.
6. Attach the header to the combine. Refer to [4 Header Attachment/Detachment, page 219](#).
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.



5.12 Side Drapers

Two side drapers convey cut crop to the adapter's feed draper and auger. Replace side drapers if torn, cracked, or missing slats.

5.12.1 Removing Side Drapers

DANGER

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

1. Raise the reel and engage the reel safety props.
2. Raise the header and engage the safety props.
3. Move the draper until the draper joint is in the work area.

NOTE:

The deck can also be shifted towards the center to provide an opening at the endsheet.

4. Stop the engine and remove the key from the ignition.
5. Release the tension on the draper. Refer to [5.12.3 Adjusting Side Draper Tension, page 381](#).
6. Remove screws (A) and tube connectors (B) at the draper joint.
7. Pull the draper from deck.

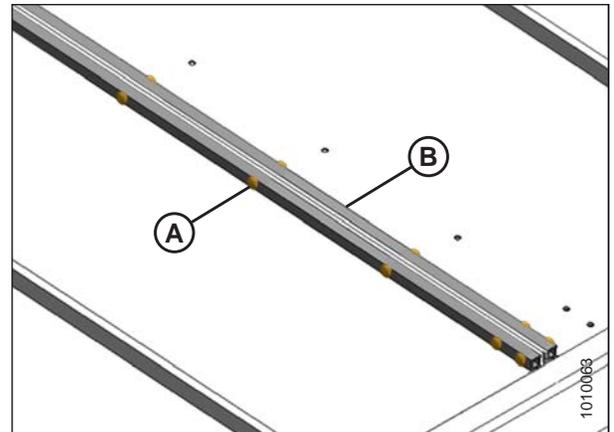


Figure 5.213: Draper Connector

5.12.2 Installing Side Drapers

WARNING

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

NOTE:

Check the deck height before installing the drapers. Refer to [5.12.5 Adjusting Deck Height, page 385](#).

MAINTENANCE AND SERVICING

1. Apply talc, baby powder, or talc/graphite lubricant mix to the draper surface that forms the seal with the cutterbar and to the underside of the draper guides.
2. Insert the draper into the deck at the outboard end under the rollers. Pull the draper into the deck while feeding it at the end.
3. Feed in the draper until it can be wrapped around the drive roller.
4. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.



Figure 5.214: Installing Draper

5. Loosen mounting bolts (B) on rear deck deflector (A) (this may help with draper installation).

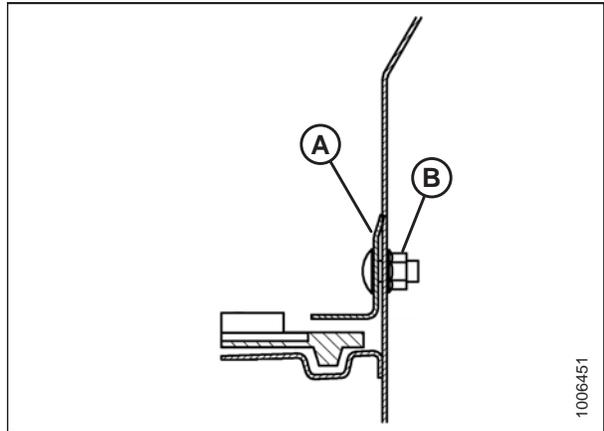


Figure 5.215: Draper Seal

6. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.
7. Adjust the draper tension. Refer to [5.12.3 Adjusting Side Draper Tension](#), page 381.

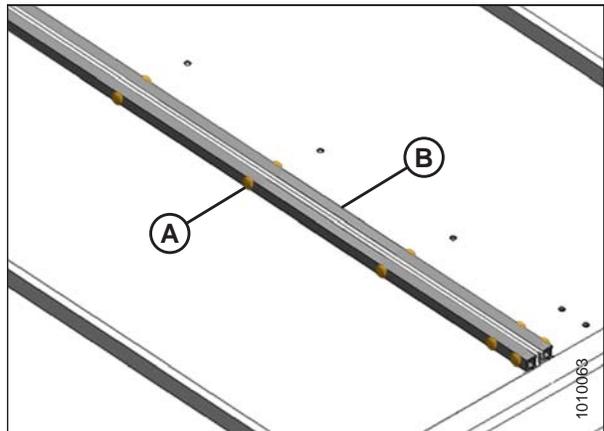


Figure 5.216: Draper Connector

MAINTENANCE AND SERVICING

8. Check the draper seal between the drapers and the cutterbar. Ensure there is a 1–2 mm (0.04–0.08 in.) gap (A) between cutterbar (C) and draper (B).
9. Refer to [5.12.5 Adjusting Deck Height](#), page 385 to achieve the proper gap.

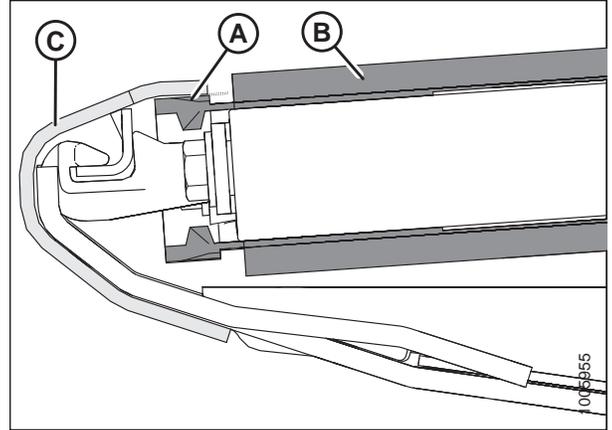


Figure 5.217: Draper Seal

5.12.3 Adjusting Side Draper Tension

WARNING

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

NOTE:

The drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure the white indicator bar (A) is at the halfway point in the window.

WARNING

Check to be sure all bystanders have cleared the area.

2. Start the engine and raise the header.
3. Stop the engine, remove the key from the ignition, and engage the header safety props.

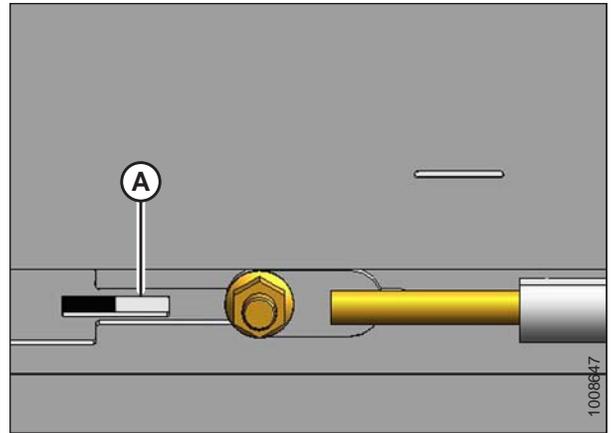


Figure 5.218: Left Adjuster Shown – Right Opposite

MAINTENANCE AND SERVICING

4. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove (A) on the drive roller.

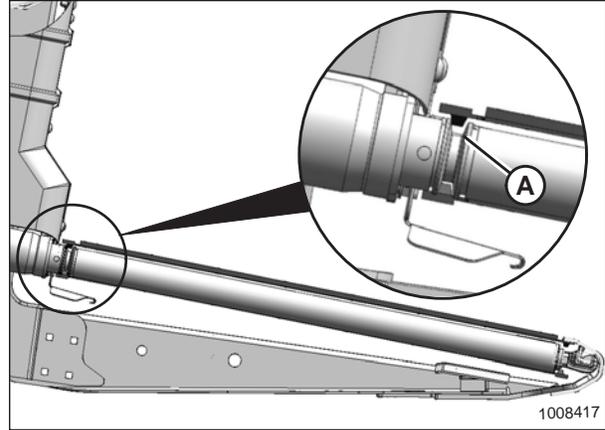


Figure 5.219: Drive Roller

5. Ensure the idler roller (A) is between the draper guides (B).

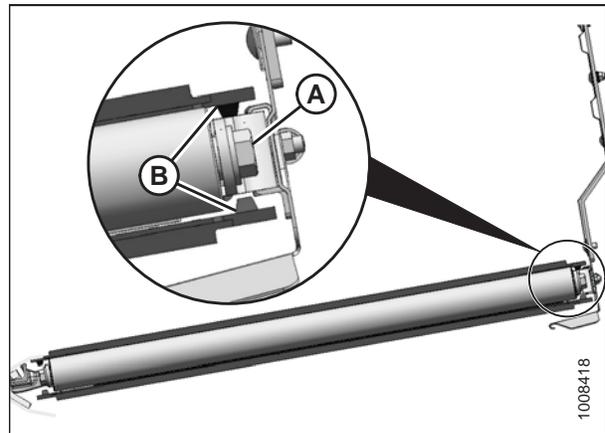


Figure 5.220: Idler Roller

MAINTENANCE AND SERVICING

IMPORTANT:

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn the adjuster bolt (A) counterclockwise to loosen. The white indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the draper is loosening. Loosen until the white indicator bar is at the halfway point in the window.
7. Turn the adjuster bolt (A) clockwise to tighten. The white indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten until the white indicator bar is at the halfway point in the window.

IMPORTANT:

- To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tension set so the white bar is not visible.
- To prevent scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

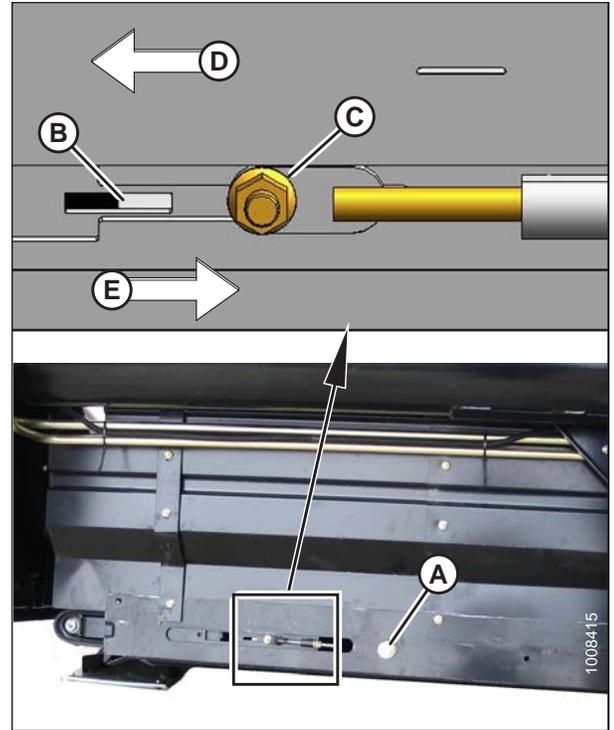


Figure 5.221: Draper Tensioner

5.12.4 Adjusting Side Draper Tracking

⚠ CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparing Machine for Servicing, page 271](#).

Each draper deck has a fixed drive roller (A) and a spring-loaded idler roller (B) that can be aligned using the adjuster rods so the draper tracks properly on the rollers.

Table 5.1 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

MAINTENANCE AND SERVICING

1. Refer to Table 5.1, page 383 to determine which roller requires adjustment and which adjustments are necessary.

NOTE:

To change (X), adjust the back end of the roller using the adjuster mechanism at the inboard end of the deck.

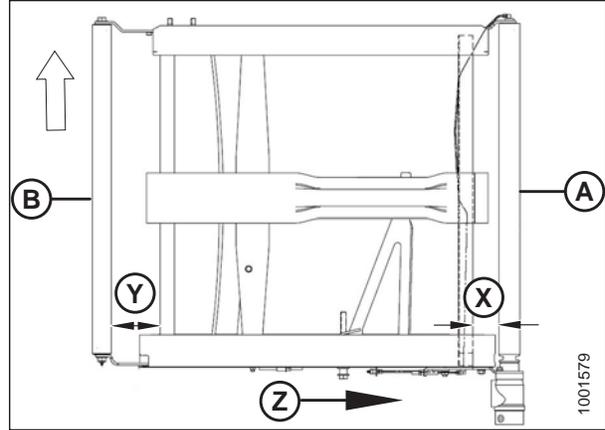


Figure 5.222: Draper Tracking Adjustments

A - Drive Roller B - Idler Roller
 X - Drive Roller Adjust Y - Idler Roller Adjust
 Z - Draper Rotation Direction

2. Adjust the drive roller at (X) as follows:
 - a. Loosen nuts (A) and jam nut (B).
 - b. Turn the adjuster nut (C).

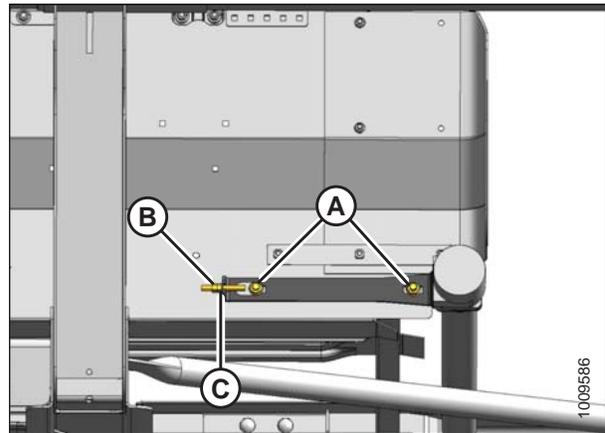


Figure 5.223: Left Side Drive Roller

3. Adjust the idler roller (Y) as follows:
 - a. Loosen nut (F) and jam nut (G).
 - b. Turn the adjuster nut (H).

NOTE:

If the draper does not track at the idler roller end after the idler roller adjustment, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

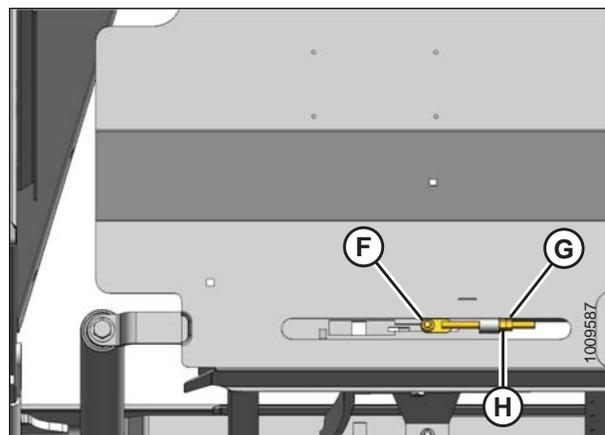


Figure 5.224: Left Side Idler Roller

5.12.5 Adjusting Deck Height

DANGER

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

IMPORTANT:

New factory installed drapers are pressure and heat checked at the factory. The gap between draper and cutterbar is set to 0–3 mm (0–1/8 in.). This is to prevent material from entering into the side drapers and stalling them. You may need to decrease the deck clearance to 0–1 mm (1/16 in.).

1. Shut down the combine, and remove key from ignition.
2. Check that clearance (A) between draper (B) and cutterbar (C) is 0–3 mm (0–1/8 in.).

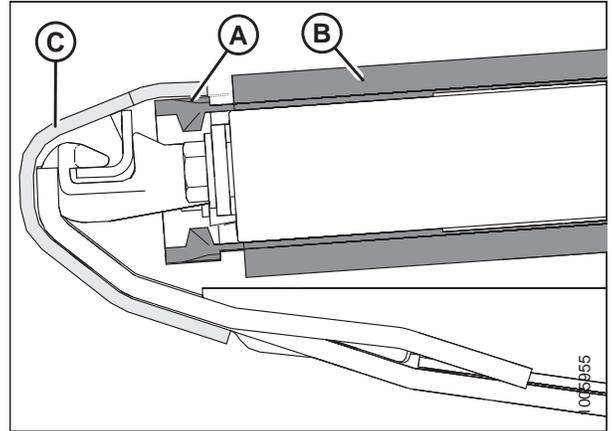


Figure 5.225: Draper Seal

3. Take measurement at deck supports (A) with the header in working position. Refer to Step 2, [page 385](#).
4. Loosen the draper tension. Refer to [5.12.3 Adjusting Side Draper Tension, page 381](#).

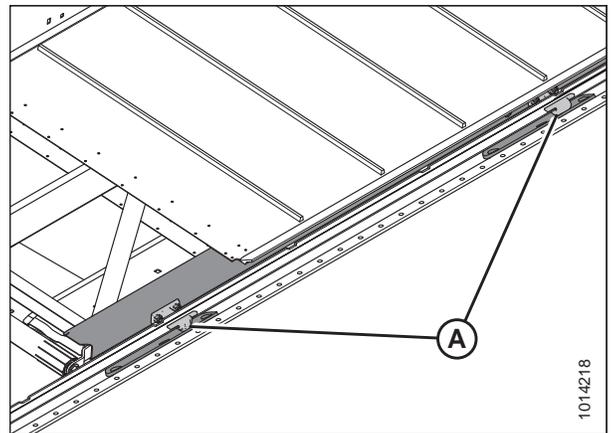


Figure 5.226: Draper Deck Supports

MAINTENANCE AND SERVICING

5. Lift the front edge of the draper (A) past cutterbar (B) to expose the deck support.
6. Measure and note the thickness of the draper belt.

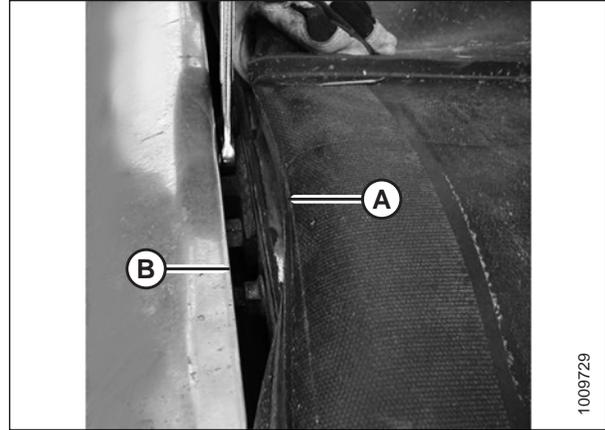


Figure 5.227: Deck Adjustment

7. Loosen the two lock nuts (A) on deck support (B) **one half-turn only**.

NOTE:

The number of deck supports (B) is determined by the header size: four on single-reel headers, and eight on double-reel headers.

8. Tap deck (C) to lower the deck relative to the deck supports. Tap deck support (B) using a punch to raise the deck relative to the deck supports.

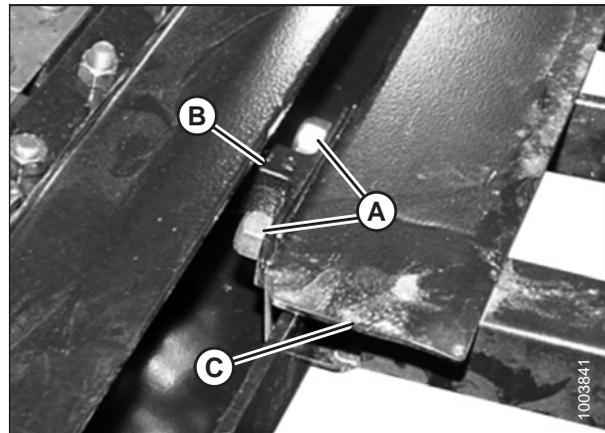


Figure 5.228: Deck Support

9. To create a seal, adjust deck (A) so that clearance (B) between cutterbar (C) and deck is 1 mm (1/16 in.) plus the draper thickness as measured in Step 6, [page 386](#).
10. Tighten deck support hardware (D).
11. Recheck gap (B). Refer to Step 9, [page 386](#).
12. Tension the draper. Refer to [5.12.3 Adjusting Side Draper Tension, page 381](#).

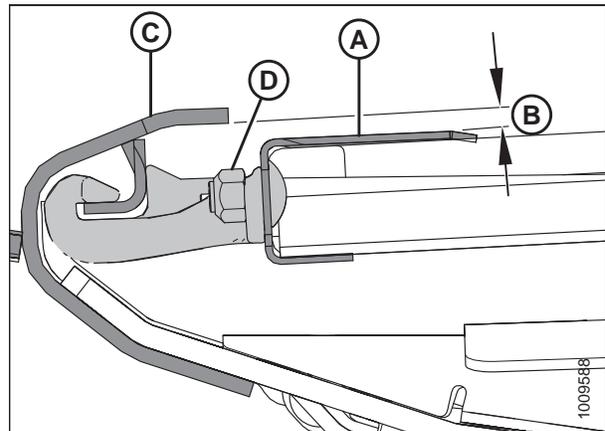


Figure 5.229: Deck Support

MAINTENANCE AND SERVICING

- Adjust the backsheet deflector (A) (if required) by loosening nut (D) and moving the deflector until there is a 1–7 mm (1/32–5/16 in.) gap (C) between draper (B) and the deflector.

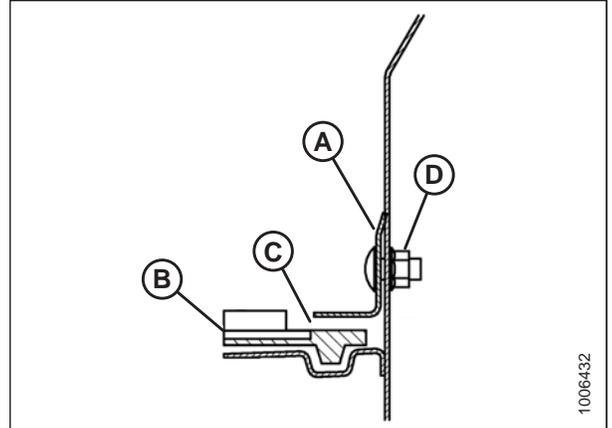


Figure 5.230: Backsheet Deflector

5.12.6 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 bad draper roller bearings using an infrared thermometer as follows:

- Engage the header and run the drapers for approximately 3 minutes.
- Check the temperature of the draper roller bearings at each of the roller arms (A), (B), and (C) on each deck. Ensure the temperature does not exceed 44°C (80°F) above the ambient temperature.

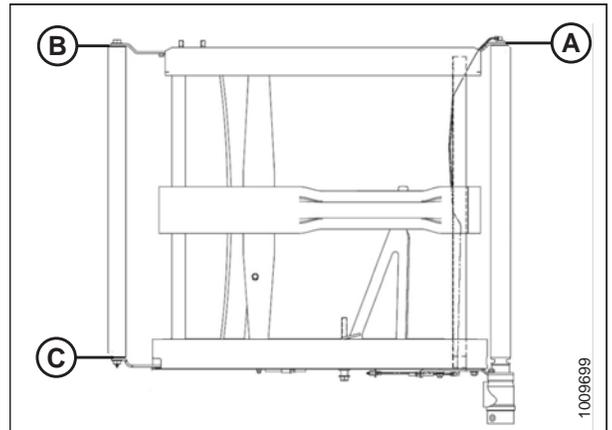


Figure 5.231: Roller Arms

Side Draper Idler Roller

Removing Side Draper Idler Roller

DANGER

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

NOTE:

If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

MAINTENANCE AND SERVICING

1. Start the engine, raise the header, and raise the reel.
2. Stop the engine, and remove the key from the ignition.
3. Engage the reel safety props, and engage the header safety props.
4. Loosen the draper by turning adjuster bolt (A) counterclockwise.

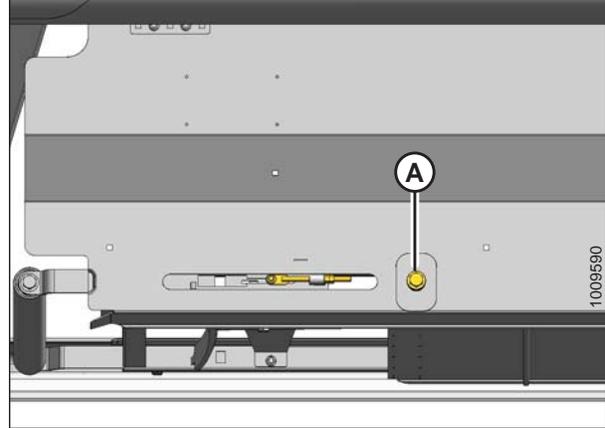


Figure 5.232: Tensioner

5. Remove the screws (A), tube connectors (B), and nuts from the draper joint to uncouple the draper.
6. Pull the draper off the idler roller.

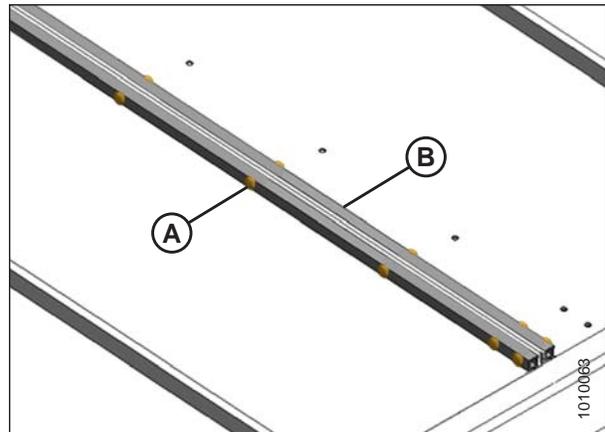


Figure 5.233: Draper Connector

7. Remove the bolts (A) and washer at the ends of the idler roller.
8. Spread the roller arms (B) and (C) and remove the idler roller.

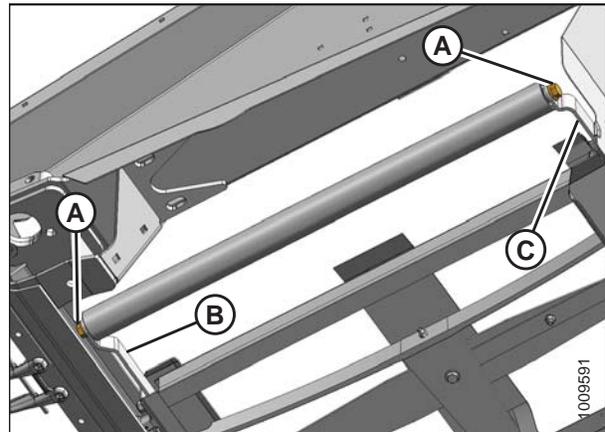


Figure 5.234: Idler Roller

MAINTENANCE AND SERVICING

Replacing Side Draper Idler Roller Bearing

1. Remove the draper idler roller assembly. Refer to *Removing Side Draper Idler Roller*, page 387.
2. Remove bearing assembly (A) and seal (B) from the roller tube (C) as follows:
 - a. Attach a 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 if necessary.

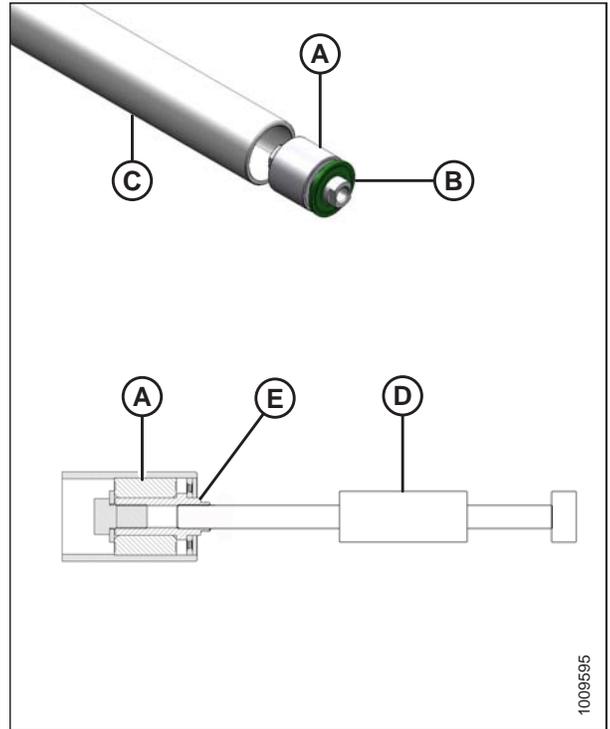


Figure 5.235: Idler Roller Bearing

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 eight cc or two pumps of grease in front of bearing assembly (A). Refer to the inside back cover for specifications.
6. Install a new seal (C) at the roller opening.
7. Tap seal (C) into the roller opening with a suitably sized socket until the gap (D) between the seal and the outside edge of the tube is 3–4 mm (0.12–0.16 in.).

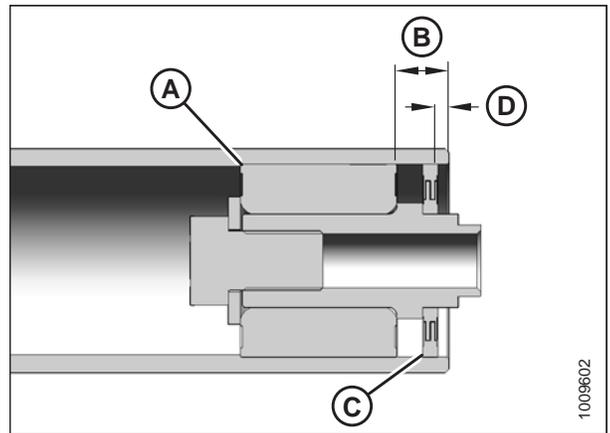


Figure 5.236: Idler Roller Bearing

MAINTENANCE AND SERVICING

Installing Side Draper Idler Roller

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 to 93 Nm (70 lbf·ft).
4. Wrap the draper over the idler roller, close the draper, and set the tension. Refer to [5.12.2 Installing Side Drapers](#), page 379.
5. Run the machine and verify the draper tracks correctly. Adjust the draper tracking if required. Refer to [5.12.4 Adjusting Side Draper Tracking](#), page 383.

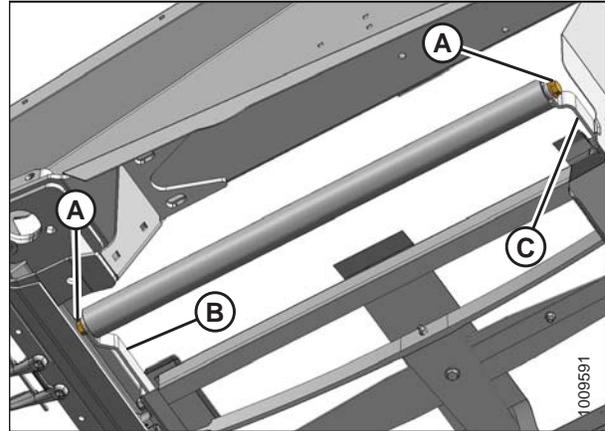


Figure 5.237: Idler Roller

Side Draper Deck Drive Roller

Removing Side Draper Drive Roller

DANGER

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

NOTE:

If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine, raise the header, and raise the reel.
2. Engage the header and reel safety props.
3. Stop the engine, and remove the key from the ignition.
4. Loosen the draper by turning the adjuster bolt (A) counterclockwise.

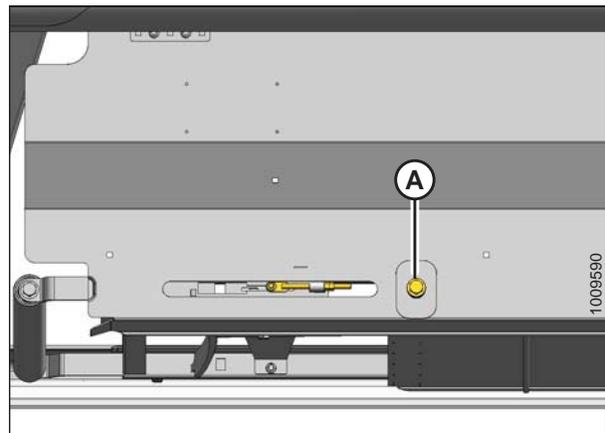


Figure 5.238: Tensioner

MAINTENANCE AND SERVICING

5. Remove the connectors (B), screws (A), and nuts from the draper joint to uncouple the draper.
6. Pull the draper off the drive roller.

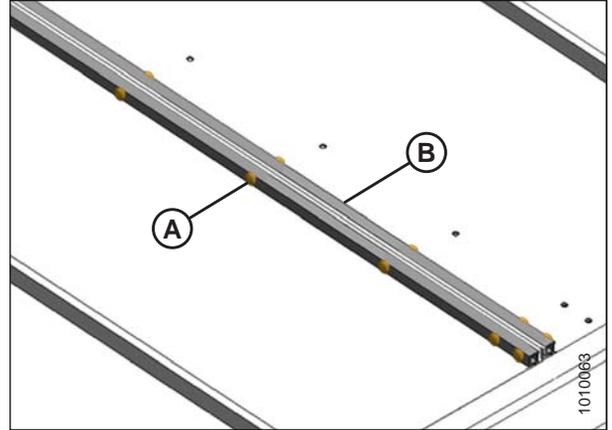


Figure 5.239: Draper Connector

7. Align the setscrews with hole (A) in the guard. Remove the two setscrews holding the motor onto the drive roller.

NOTE:

The setscrews are 1/4 turn apart.

8. Remove the 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.

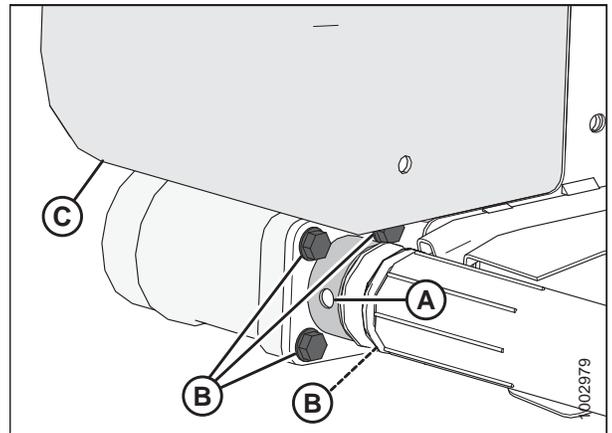


Figure 5.240: Drive Roller

9. Remove bolt (A) securing the opposite end of drive roller (B) to the support arm.
10. Remove drive roller (B).

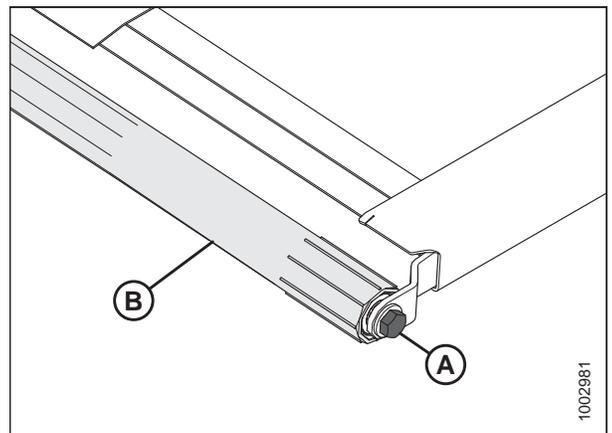


Figure 5.241: Drive Roller

MAINTENANCE AND SERVICING

Replacing Side Draper Drive Roller Bearing

1. Remove the draper idler roller assembly. Refer to [Removing Side Draper Drive Roller](#), page 390.
2. Remove bearing assembly (A) and seal (B) from the roller tube (C) as follows:
 - a. Attach a 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 if necessary.

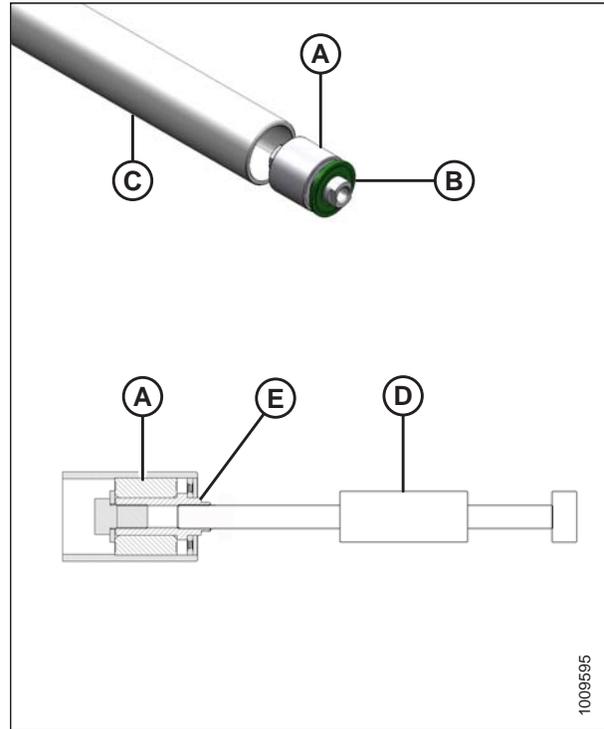


Figure 5.242: Idler Roller Bearing

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 eight cc or two pumps of grease in front of bearing assembly (A). Refer to the inside back cover for specifications.
6. Install a new seal (C) at the roller opening.
7. Tap seal (C) into the roller opening with a suitably sized socket until the gap (D) between the seal and the outside edge of the tube is 3–4 mm (0.12–0.16 in.).

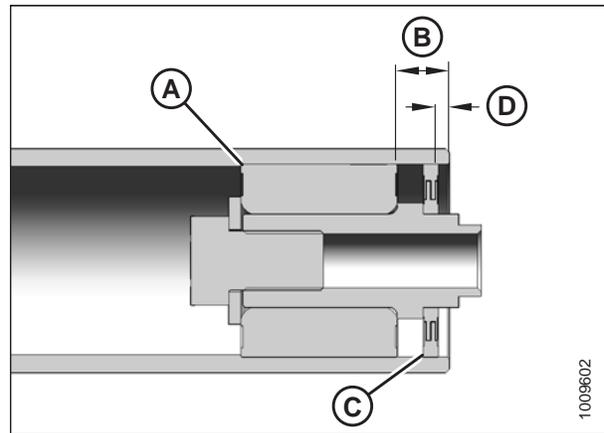


Figure 5.243: Idler Roller Bearing

MAINTENANCE AND SERVICING

Installing Side Draper Drive Roller

1. Position drive roller (B) between the roller support arms.
2. Attach roller (B) to arm at forward end of deck with bolt (A). Support other end of roller and torque bolt to 95 Nm (70 lbf·ft).
3. Grease the motor shaft and insert into the end of drive roller (B).

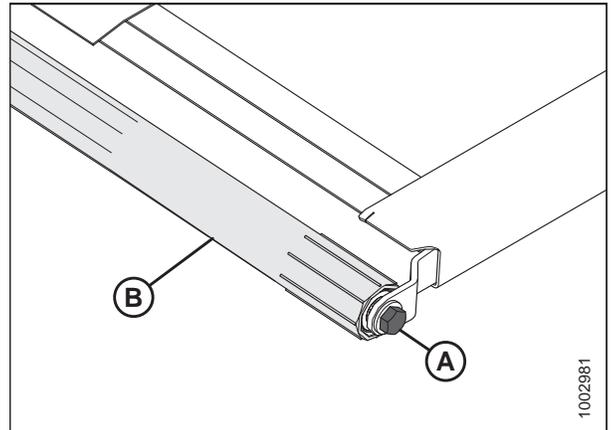


Figure 5.244: Drive Roller

4. Secure the motor to the roller support with four bolts (B). Torque to 27 Nm (20 lbf·ft).

NOTE:

Tighten any loosened bolts and reinstall plastic shield (C) if previously removed.

5. Ensure the motor is all the way into the roller, and tighten the two setscrews (not shown) through access hole (A).

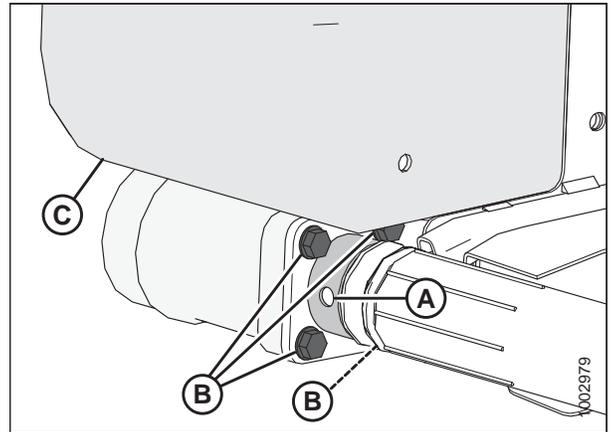


Figure 5.245: Drive Roller

6. Wrap the draper over the drive roller and attach the ends of the draper using tube connectors (B), screws (A), and nuts.

NOTE:

The heads of the screws must face the center opening.

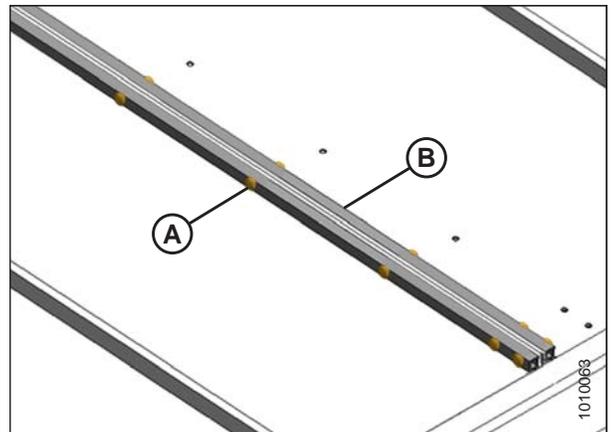


Figure 5.246: Draper Connector

MAINTENANCE AND SERVICING

7. Tension the draper. Locate adjuster bolt (A) and follow the directions on the decal for the proper draper tensioning or refer to [5.12.3 Adjusting Side Draper Tension, page 381](#).
8. Disengage the reel and header safety props.
9. Start the engine and lower the header and reel.
10. Run the machine to verify the draper tracks correctly. If adjustment is necessary, refer to [5.12.4 Adjusting Side Draper Tracking, page 383](#).

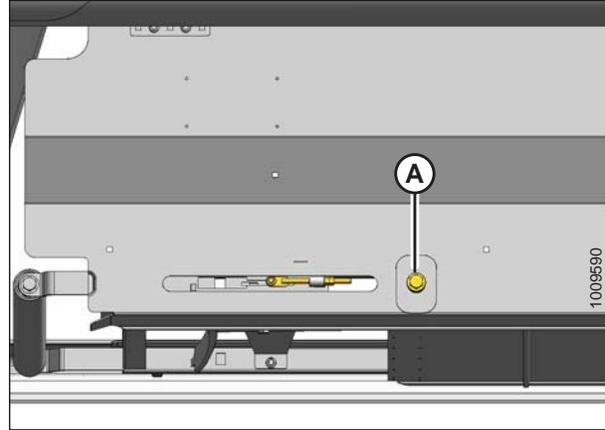


Figure 5.247: Draper Tensioner

5.12.7 Replacing Draper Deflectors

Removing Narrow Draper Deflectors

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to [Opening Endshield, page 33](#).
5. Remove two Torx® head screws (A) and lock nuts.
6. Remove three carriage bolts (B) and lock nuts and remove aft deflector (C).

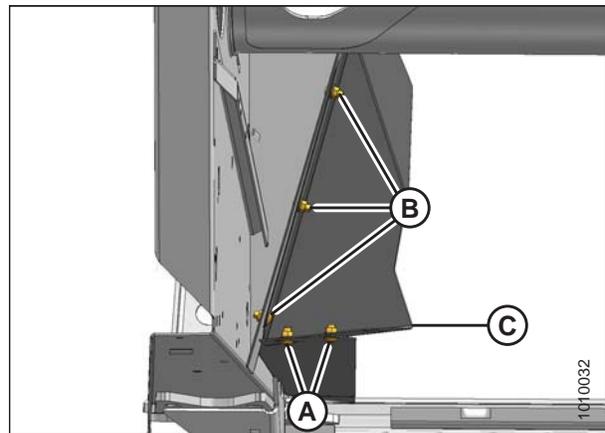


Figure 5.248: Aft Deflector

MAINTENANCE AND SERVICING

7. Remove four screws (A) and remove deflector (B).
8. Repeat for the opposite end of the header.

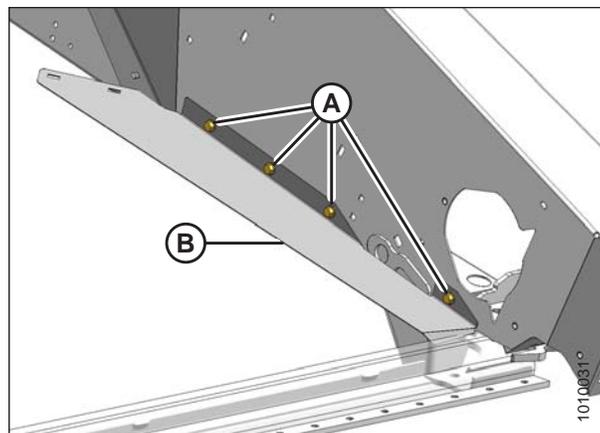


Figure 5.249: Forward Deflector

Installing Narrow Draper Deflectors

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to [Opening Endshield, page 33](#).
5. Position forward deflector (B) onto the endsheet and temporarily install forward and aft 3/8 in. x 5/8 in. self tapping screws (A).
6. Check the fit of the forward end of deflector (B) on the cutterbar and ensure there is no gap between the deflector and cutterbar. Remove and bend the deflector as required to obtain the best fit.
7. Install two 3/8 in. x 5/8 in. self-tapping screws (A) and tighten all four screws.

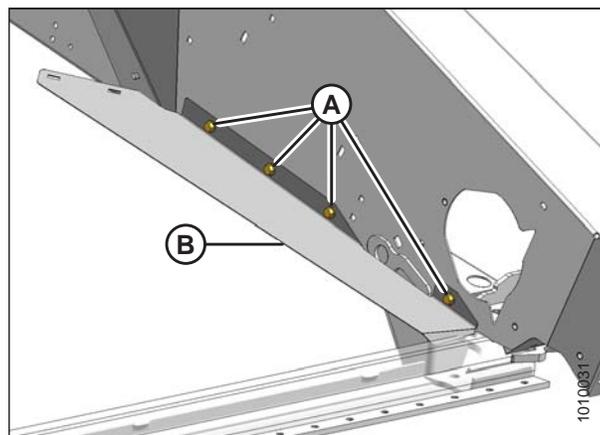


Figure 5.250: Forward Deflector

MAINTENANCE AND SERVICING

8. Position aft deflector (C) as shown and install three 3/8 in. x 3/4 in. carriage bolts (B) and lock nuts.
9. Install two Torx® head screws (A) and lock nuts with the heads facing down.
10. Tighten all fasteners.
11. Repeat for the opposite end of the header.

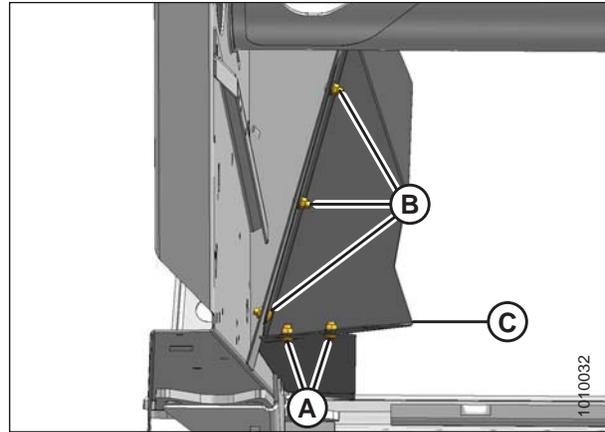


Figure 5.251: Aft Deflector

5.13 Reel

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to [5.1 Preparing Machine for Servicing, page 271](#).

5.13.1 Reel Clearance to Cutterbar

The minimum clearance between reel fingers and cutterbar ensures that reel fingers do not contact cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operation or if there is evidence of contact during operation.

The finger to guard/cutterbar clearances with reel fully lowered are shown in [Table 5.2, page 397](#).

Table 5.2 Finger to Guard/Cutterbar Clearance

Header Width	(X) +/- 3 mm (1/8 in.) at Reel Ends	
	Single Reel	Double Reel
6.1 m (20 ft.)	20 mm (3/4 in.)	—
7.6 m (25 ft.)	25 mm (1 in.)	—
9.1 m (30 ft.)	45 mm (1-3/4 in.)	20 mm (3/4 in.)
10.7 m (35 ft.)	60 mm (2-3/8 in.)	20 mm (3/4 in.)
12.2 and 13.7 m (40 and 45 ft.)	—	20 mm (3/4 in.)

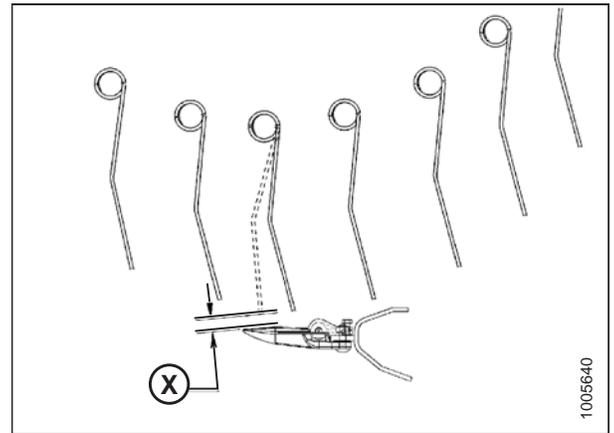


Figure 5.252: Finger Clearance

MAINTENANCE AND SERVICING

Measuring Reel Clearance

⚠ DANGER

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

1. Park machine on level ground.
2. Set fore-aft position to middle position 5 on fore-aft position indicator decal (A).
3. Lower reel fully.
4. Shut down engine and remove key from ignition.

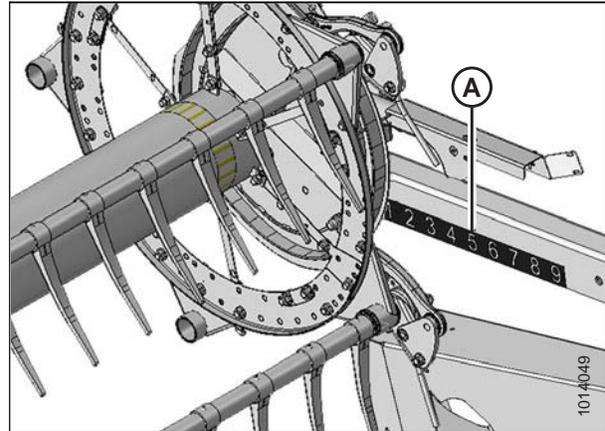


Figure 5.253: Fore-Aft Position

MAINTENANCE AND SERVICING

5. Measure clearance at ends of each reel at locations (A).

NOTE:

The reel is factory-set to provide more clearance at center of reel than at ends to compensate for reel flexing.

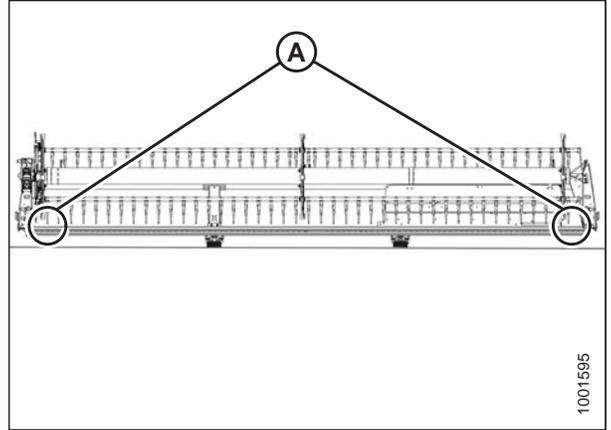


Figure 5.254: Single Reel Header

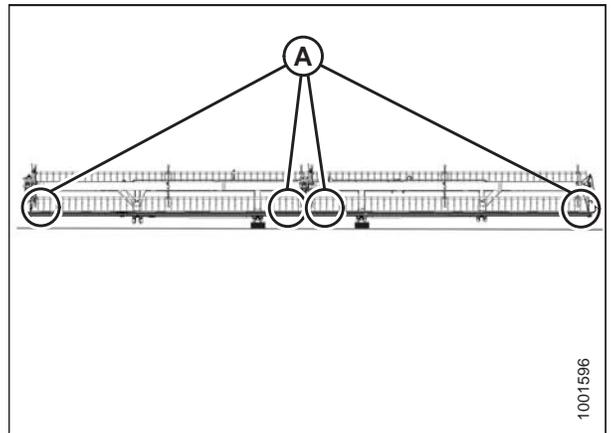


Figure 5.255: Double Reel Header

6. Check clearance (X) between (B) and (C). Depending on reel fore-aft position, minimum clearance can result at guard tine, hold-down, or cutterbar.
7. Adjust reel if necessary. Refer to [Adjusting Reel Clearance](#), page 400.

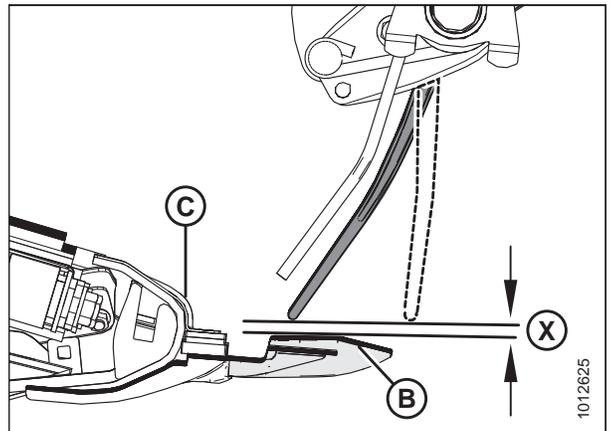


Figure 5.256: Reel Clearance

Adjusting Reel Clearance

Perform this procedure with reel at mid-point of fore-aft range and fully lowered.

⚠ DANGER

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

1. Adjust outboard reel arm lift cylinders to set clearance as follows:
 - a. Loosen bolt (A).
 - b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
 - c. Tighten bolt (A).
 - d. Repeat at opposite side.

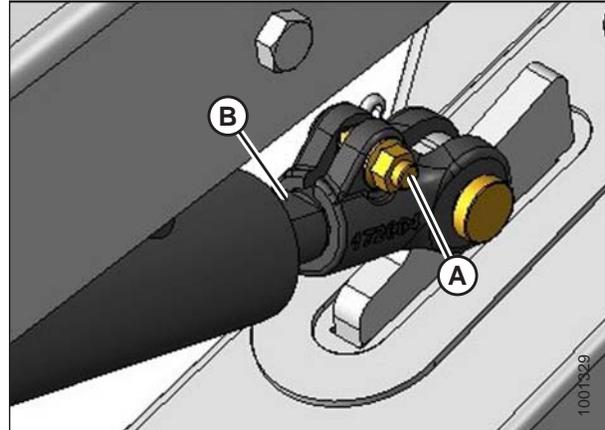


Figure 5.257: Reel Outboard Arm

2. **Double Reel:** Adjust center arm lift cylinder link (A) to set clearance at center of reel as follows:

NOTE:

This adjustment is most easily performed from underside of arm.

- a. Loosen nut (B).
- b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
- c. Tighten nut (B).

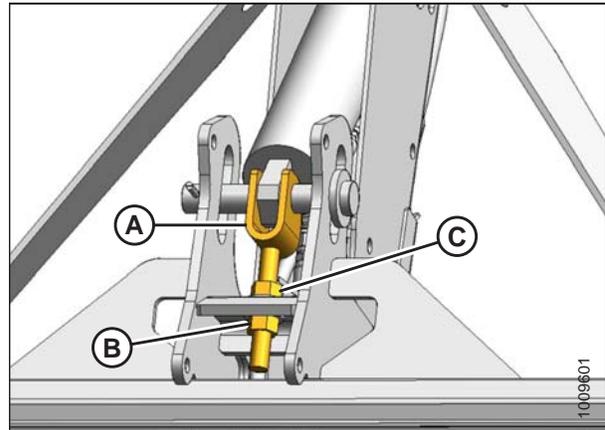


Figure 5.258: Double Reel Center Arm

3. Move reel back to ensure steel end fingers do not contact deflector shields.
4. If contact is evident, adjust reel upward to maintain clearance at all reel fore/aft positions. Alternatively, trim steel end fingers to obtain proper clearance.
5. Periodically check for evidence of contact, and adjust clearance as required.

5.13.2 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 header flexing.

MAINTENANCE AND SERVICING

Adjusting Reel Frown

Adjust the reel frown by repositioning the reel tine tubes attached to the reel discs.

NOTE:

Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.

1. Position the reel over the cutterbar (between position 4 and 5 on the fore-aft decal [A]).
2. Record the measurement at each reel disc location for each reel tine tube.

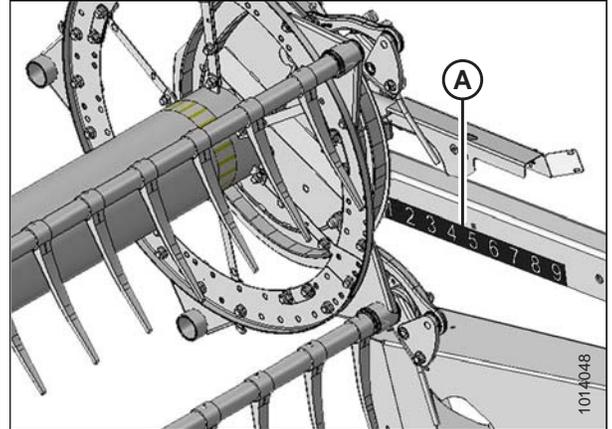


Figure 5.259: Fore-Aft Position Decal

3. Start with the reel disc closest to the center of the header and proceed outward towards the ends adjusting the header profile as follows:
 - a. Remove bolts (A).
 - b. Loosen bolt (B) and adjust arm (C) until the desired measurement is obtained between the reel tine tube and cutterbar.

NOTE:

Allow the reel tine tubes to curve naturally and position the hardware accordingly.

- c. Reinstall the bolts (A) in the aligned holes and tighten.

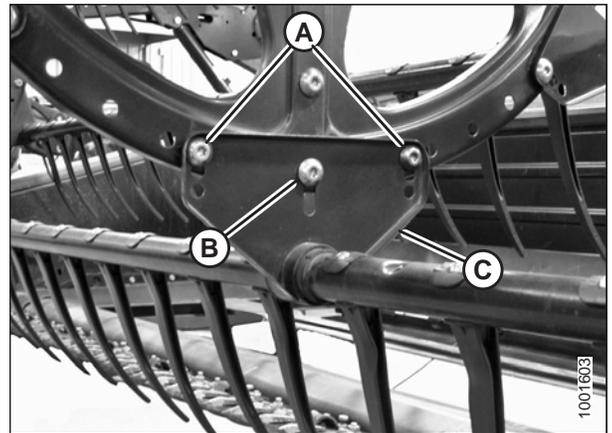


Figure 5.260: Reel Arm

5.13.3 Centering Reel

The reel should be centered between the header endsheets. To center the reel, refer to the procedure that applies to your reel type:

- [Centering Double Reel, page 401](#)
- [Centering Single Reel, page 403](#)

Centering Double Reel

DANGER

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

MAINTENANCE AND SERVICING

1. Start engine and set cutterbar height at approximately 150 mm (6 in.) above the ground.
2. Stop engine and remove key from ignition.
3. Measure clearances (A) at locations (B) between reels and endsheets at both ends of header. The clearances will be the same if reel is centered.

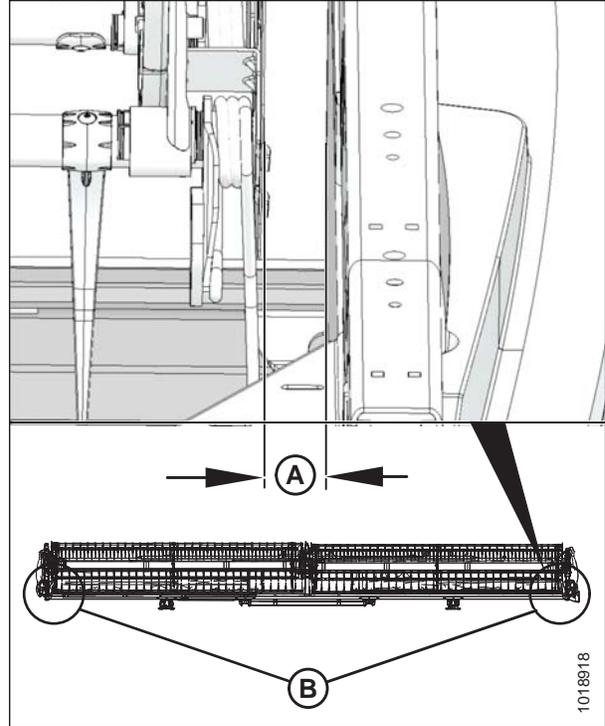


Figure 5.261: Double-Reel Measurement Locations

If adjustment is required:

4. Loosen bolt (A) on each brace (B).
5. Move forward end of reel center support arm (C) laterally as required to center both reels.
6. Tighten bolts (A) and torque to 359 Nm (265 lbf-ft).

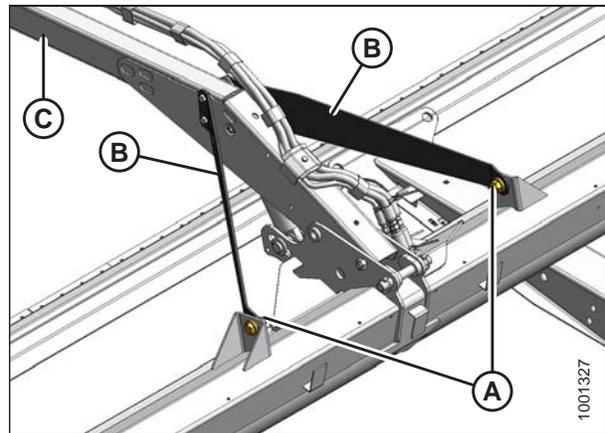


Figure 5.262: Reel Center Support Arm

MAINTENANCE AND SERVICING

Centering Single Reel

1. Start engine and set cutterbar height at approximately 150 mm (6 in.) above the ground.
2. Lower reel and adjust fore-aft position to 5 on reel arm decal.
3. Stop engine and remove key from ignition.
4. Measure clearance (A) at locations (B) between reel and endsheet at both ends of header. The clearances should be same if reel is centered.

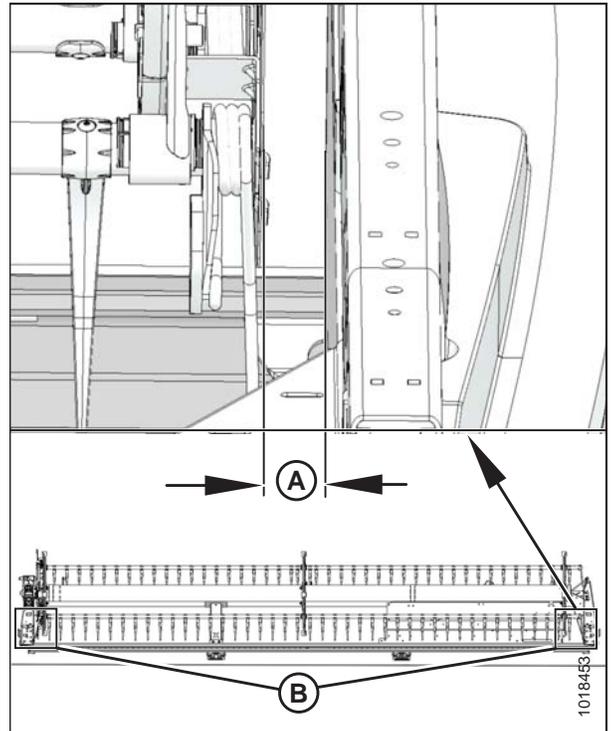


Figure 5.263: Centering the Reel

5. Loosen bolt (A) on brace (B) at both ends of the reel.
6. Move forward end of reel support arm (C) laterally as required to center reel.
7. Tighten bolts (A) and torque to 359 Nm (265 lbf·ft).

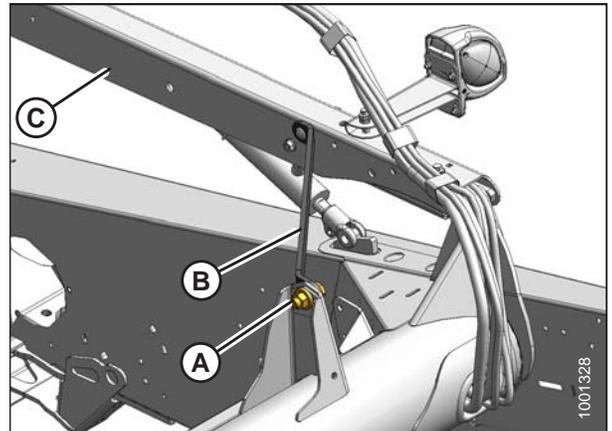


Figure 5.264: Reel Support Arm

5.13.4 Reel Tines

IMPORTANT:

Keep the reel tines in good condition and straighten or replace them as necessary.

Removing Steel Tines

⚠ DANGER

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

⚠ WARNING

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

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header, raise the reel, and engage the reel safety props.
2. Shut down the engine and remove the key from the ignition.
3. Remove the tine tube bushings from the applicable tine tube at the center and left reel discs. Refer to [Removing Bushings from Five-, Six-, or Nine-Bat Reels, page 407](#).
4. Attach reel arms (B) (temporarily) to the reel disc at the original attachment locations (A).
5. Cut the damaged tine so it can be removed from the tine tube.
6. Remove bolts from the existing tines and slide the tines over to replace the tine that was cut off in Step 5, [page 404](#) (remove reel arms [B] from the tine tubes as necessary).

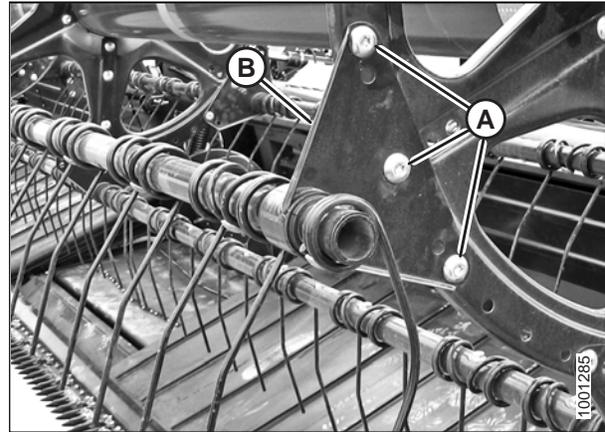


Figure 5.265: Reel Arm

Installing Steel Tines

⚠ DANGER

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

⚠ WARNING

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

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

MAINTENANCE AND SERVICING

1. Remove the applicable tine. Refer to *Removing Steel Tines*, page 404.
2. Slide the new tines and reel arm (A) onto the end of the tube.
3. Install the tine tube bushings. Refer to *Installing Bushings on Five-, Six-, or Nine-Bat Reels*, page 412.
4. Attach the tines to the reel tine bar with bolts and nuts (B).

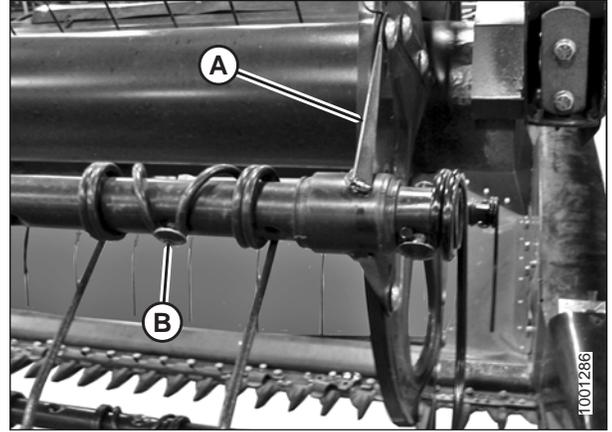


Figure 5.266: Reel Tine Tube

Removing Plastic Fingers

DANGER

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

WARNING

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

1. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

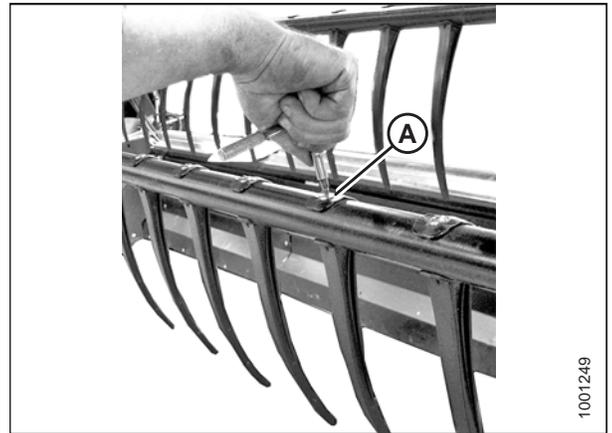


Figure 5.267: Plastic Fingers

MAINTENANCE AND SERVICING

2. Push the top of finger off the reel tine tube while slightly pulling on tine under the tube. Finger can then be removed.



Figure 5.268: Plastic Fingers

Installing Plastic Fingers

⚠ DANGER

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

⚠ WARNING

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

1. Position the finger on the rear of the finger tube and engage the lug at the bottom of the finger in the lower hole in the finger tube.
2. Lift the top flange gently and rotate the finger until the lug in the top of the finger engages the upper hole in the finger tube.



Figure 5.269: Installing Finger

MAINTENANCE AND SERVICING

IMPORTANT:

Do **NOT** apply force to the finger prior to tightening the mounting screw. Applying force without tightening the mounting screw will break the finger or shear the locating pins.

3. Install screw (A) using a Torx® Plus 27 IP socket wrench and torque to 8.5–9.0 Nm (75–80 lbf·in).

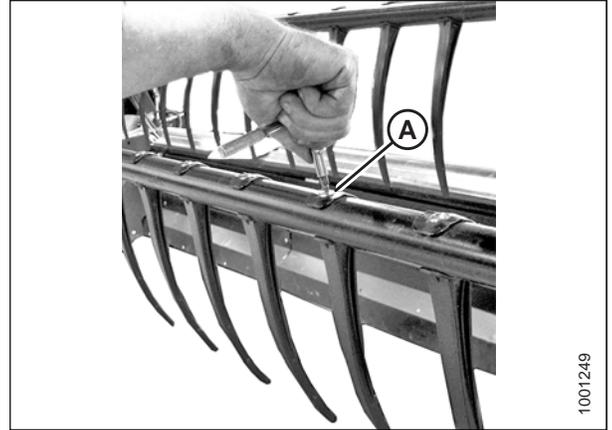


Figure 5.270: Installing Finger

5.13.5 Tine Tube Bushings

Removing Bushings from Five-, Six-, or Nine-Bat Reels

DANGER

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

WARNING

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

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header, raise the reel, and engage the reel safety props.
2. Shut down the engine, and remove the key from the ignition.

NOTE:

If replacing only the cam end bushing, refer to Step [8, page 409](#).

MAINTENANCE AND SERVICING

Removing center disc and tail-end bushings:

3. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

NOTE:

There are no endshields on the center disc.

4. Remove bolts (A) securing arm (B) to the disc.

IMPORTANT:

Note the hole locations in the arm and disc and ensure the bolts (A) are reinstalled at the original locations.

5. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

6. Rotate arm (A) until clear of the disc and slide the arm inboard off of bushing (B).

7. 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 405](#)
- [Removing Steel Tines, page 404](#)

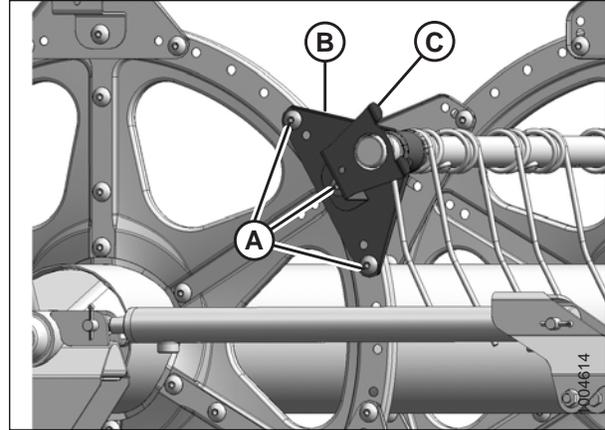


Figure 5.271: Tail End

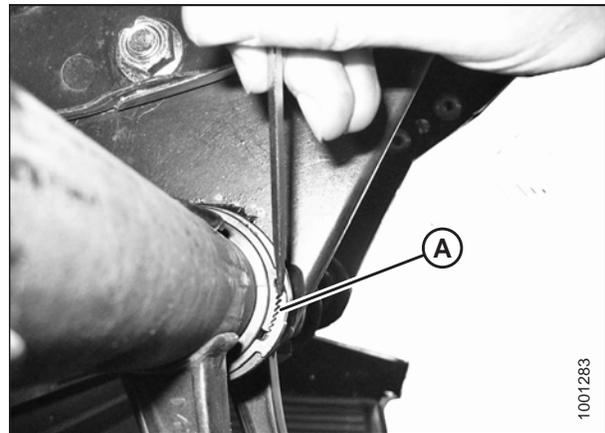


Figure 5.272: Bushing Clamp

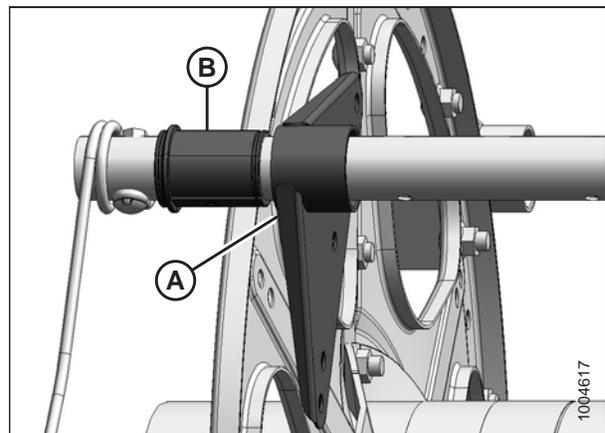


Figure 5.273: Bushing

MAINTENANCE AND SERVICING

Removing cam end bushings:

8. Remove the endshields and endshield support (A) at the applicable tine tube location on the cam end.

NOTE:

Removing cam end bushings requires the tine tube be moved through the disc arms to expose the bushing.

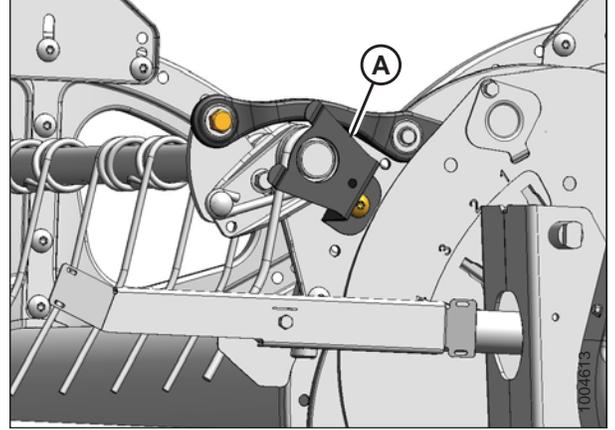


Figure 5.274: Cam End

9. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.
10. Remove bolts (A) securing arms (B) to the tail and center discs.

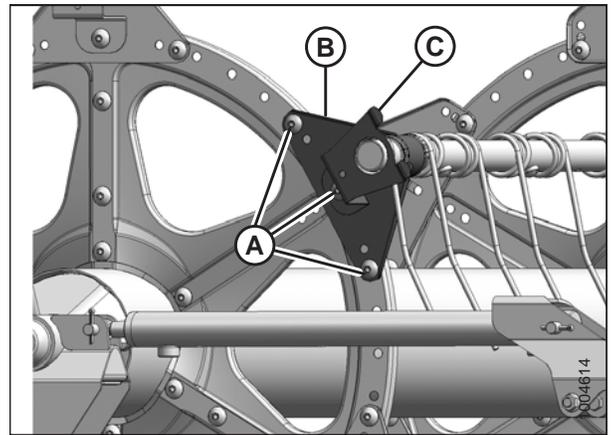


Figure 5.275: Tail End

11. Release the bushing clamps or disconnect the support channels from the tine tube support (if installed) depending on which tine tube is being moved. Three tine tubes (B) require channel disconnection and two tine tubes (C) require only bushing clamp removal.

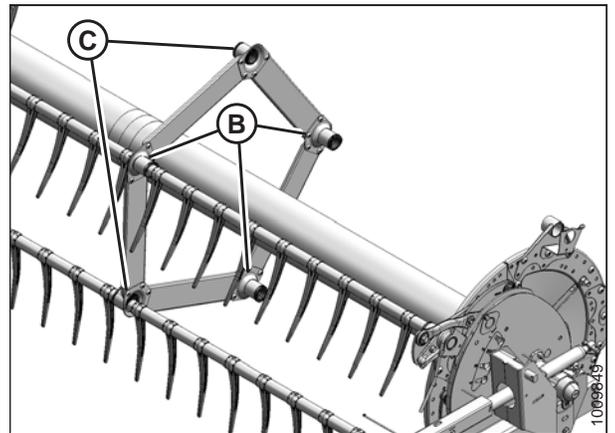


Figure 5.276: Tine Tube Supports

MAINTENANCE AND SERVICING

12. Remove bolt (A) from the cam linkage so the tine tube (B) is free to rotate.

NOTE:

Be sure to not lose shim, and mark shim location for reassembly.

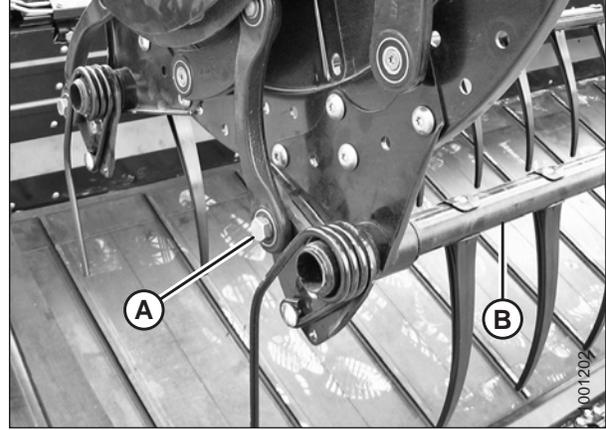


Figure 5.277: Cam End

13. Release bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

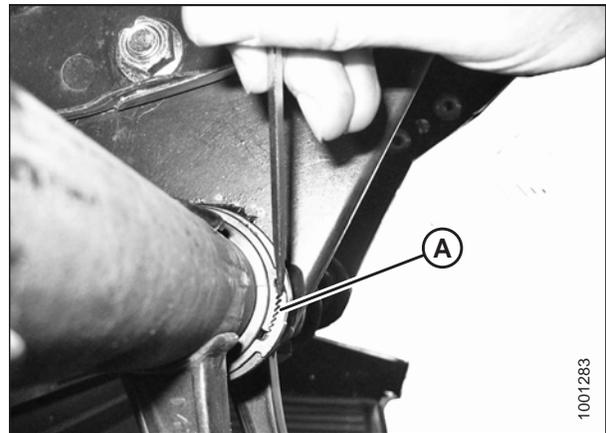


Figure 5.278: Bushing Clamp

14. Slide tine tube (A) outboard to expose the bushing (B).
15. 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 405](#)
- [Removing Steel Tines, page 404](#)

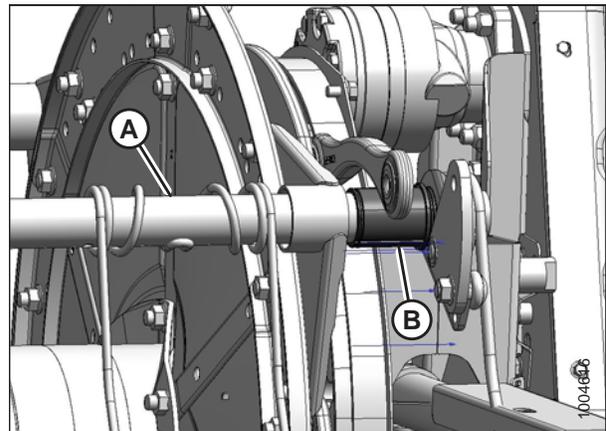


Figure 5.279: Cam End

MAINTENANCE AND SERVICING

Removing tine tube support bushings (if installed):

16. Locate support (A) that requires a new bushing.
17. Remove the four bolts (B) securing channels (C) to support (A).
18. If finger (D) is too close to the support to allow access to the bushing, remove screw (E) and remove finger (D). Refer to *Removing Plastic Fingers*, page 405.

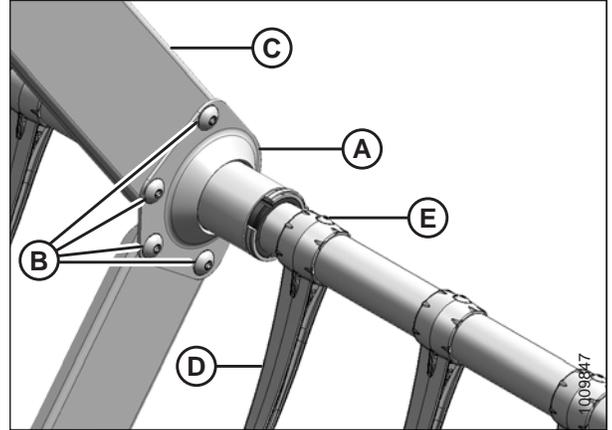


Figure 5.280: Tine Tube Support

19. Release bushing clamps (A) using a small screwdriver to separate the serrations. Move the clamps off the bushings.

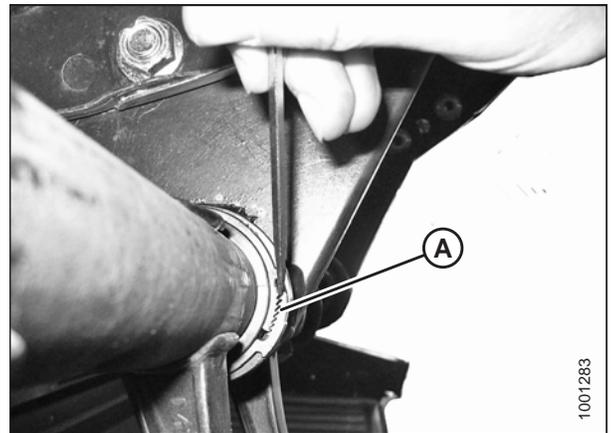


Figure 5.281: Bushing Clamp

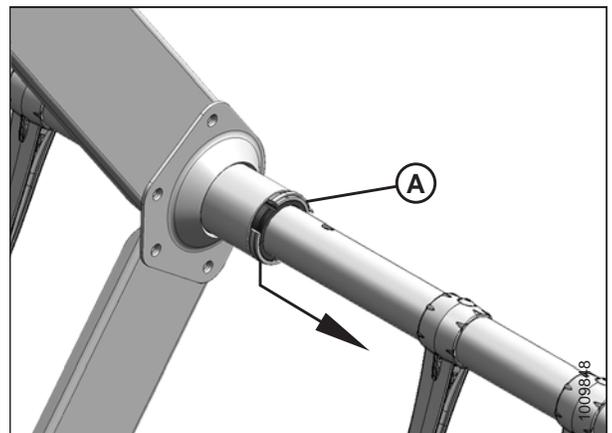


Figure 5.282: Bushing Clamp

MAINTENANCE AND SERVICING

20. Slide support (A) off bushing halves (B).

NOTE:

Two tine tubes have opposite supports (C). Rotate the supports until the flanges clear the channels before moving them off bushing (B). Move the tine tube outwards slightly if necessary.

21. Remove bushing halves (B).

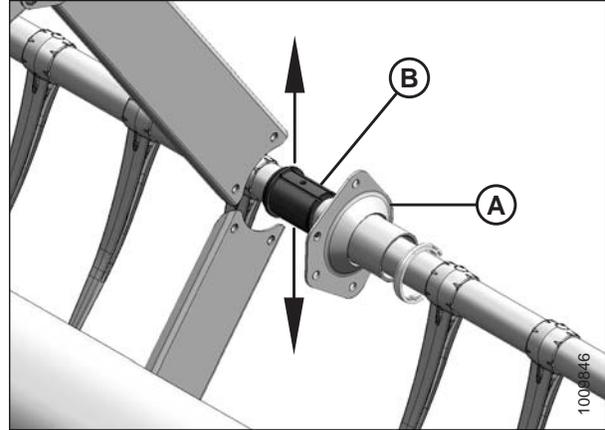


Figure 5.283: Support

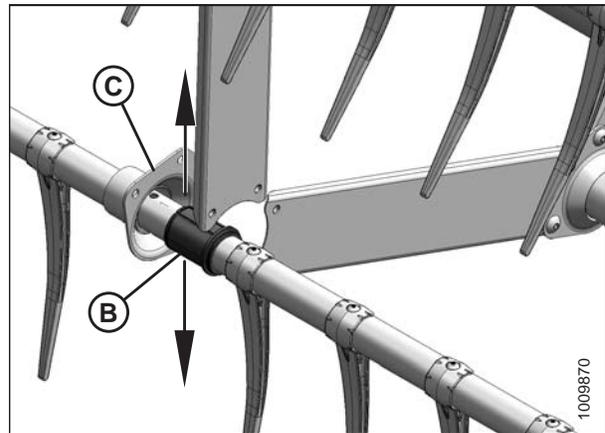


Figure 5.284: Opposite Support

Installing Bushings on Five-, Six-, or Nine-Bat Reels

⚠ DANGER

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

⚠ WARNING

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

IMPORTANT:

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

MAINTENANCE AND SERVICING

NOTE:

Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure pliers in a vice and grind a notch (B) into the end of each arm to fit the clamp as shown.

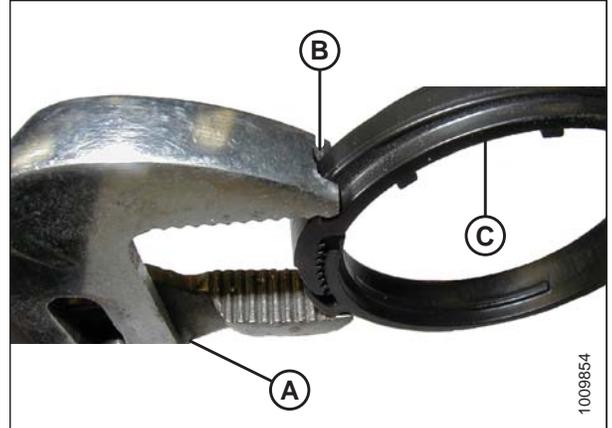


Figure 5.285: Modified Pliers

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 the tine tube (A).
2. Slide tine tube (A) towards 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 405](#)
 - [Removing Steel Tines, page 404](#)
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.

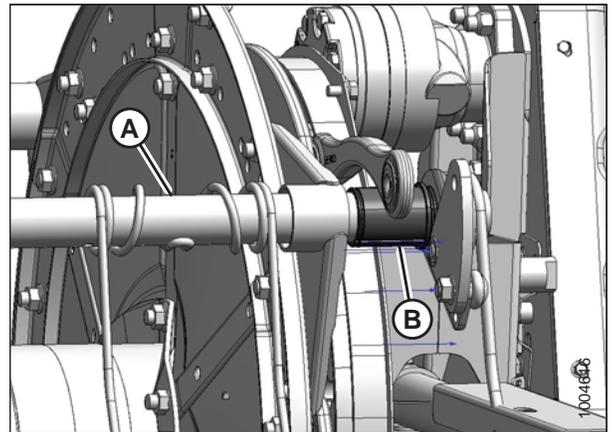


Figure 5.286: Cam End

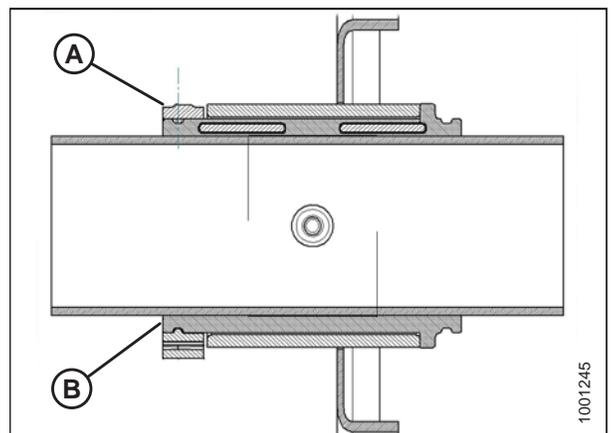


Figure 5.287: Bushing

MAINTENANCE AND SERVICING

6. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

IMPORTANT:

Overtightening clamp may result in breakage.

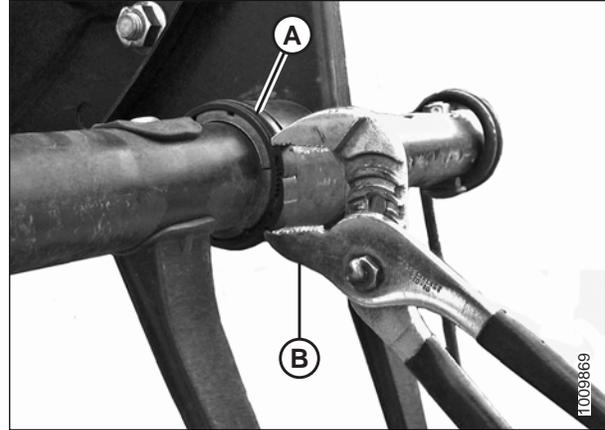


Figure 5.288: Clamp on Bushing

7. Line up tine bar (B) with the cam arm and install bolt (A). Apply Loctite® to bolt, and torque to 165 Nm (120 lbf·ft).

NOTE:

Make sure shim is between cam arm and reel bat.

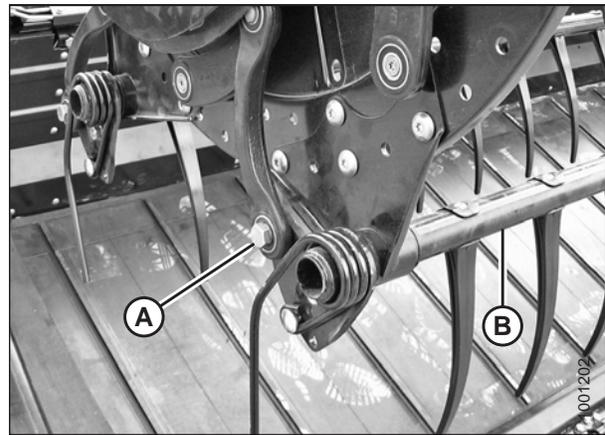


Figure 5.289: Cam End

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 with bolts (A).

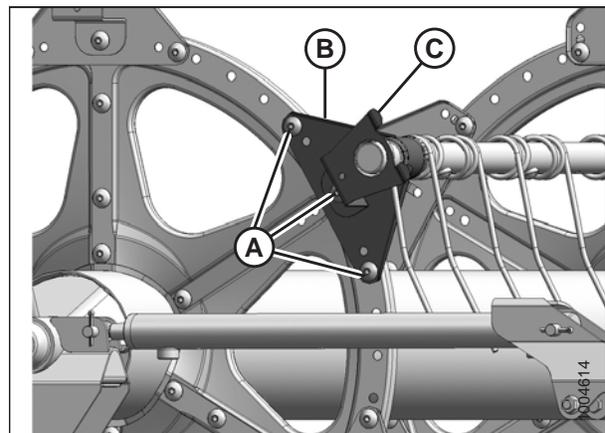


Figure 5.290: Tail End

MAINTENANCE AND SERVICING

10. Install endshield support (A) at the applicable tine tube location at the cam end.
11. Reinstall the reel endshields. Refer to [5.13.6 Reel Endshields](#), page 419.

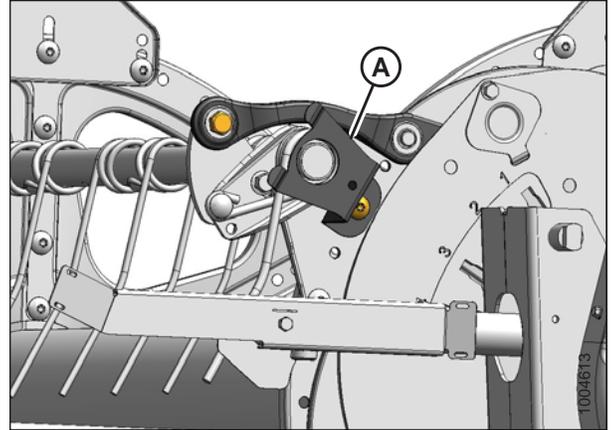


Figure 5.291: Cam End

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 the tine tube (A).
13. Slide the reel arm (A) onto the bushing (B) and position against the disc at the original location.
14. Reinstall the previously removed fingers or tines. Refer to the following procedures as necessary:
 -
 -

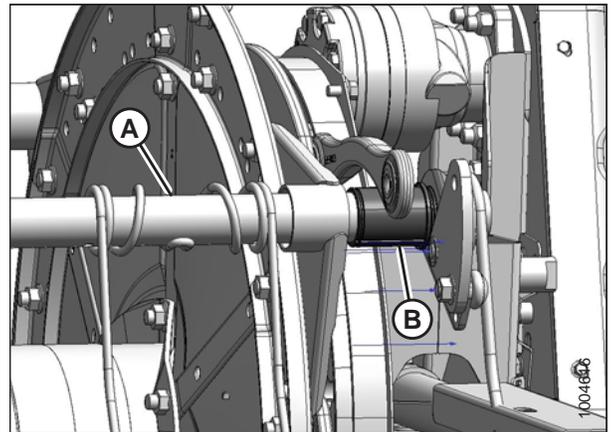


Figure 5.292: Cam End

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.

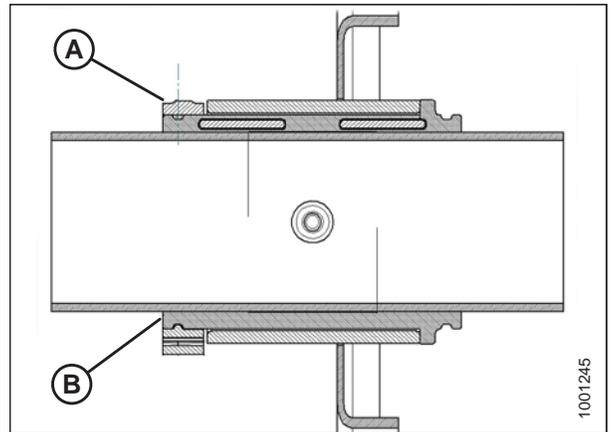


Figure 5.293: Bushing

MAINTENANCE AND SERVICING

17. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

IMPORTANT:

Overtightening clamp may result in breakage.

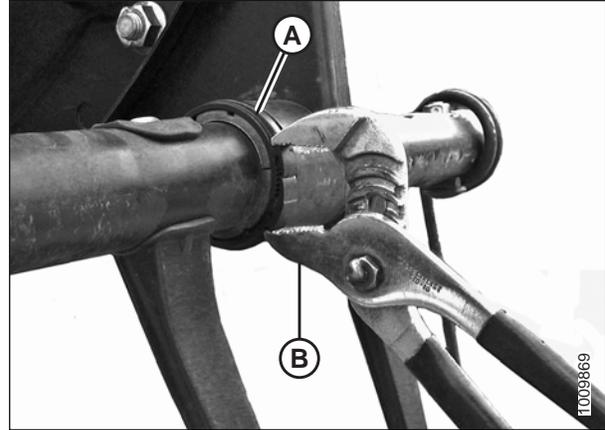


Figure 5.294: Clamp on Bushing

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 with bolts (A).

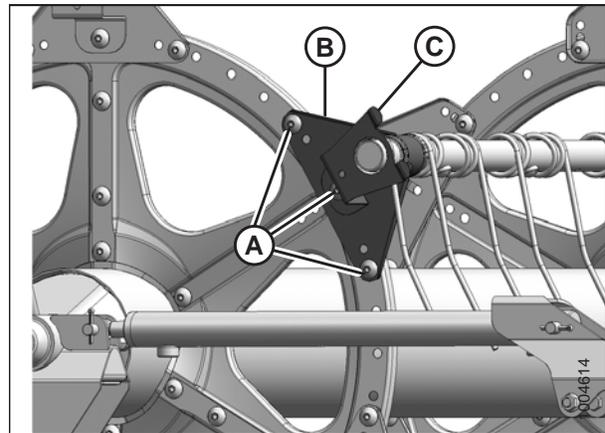


Figure 5.295: Tail End

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 the tine tube (A).

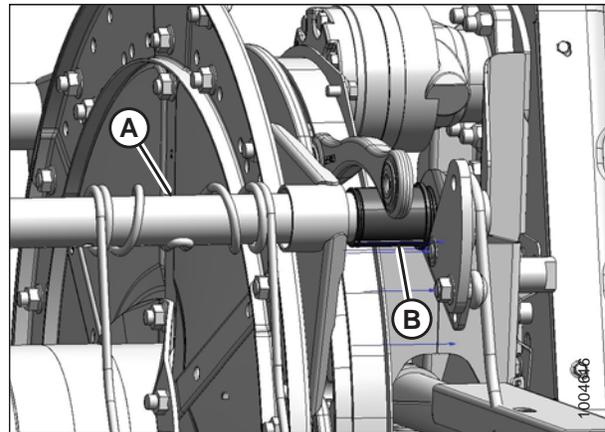


Figure 5.296: Cam End

MAINTENANCE AND SERVICING

- Slide support (A) onto bushing (B). For the opposite tine tube, rotate support (A) or slightly move the tine tube until it clears channels (C).

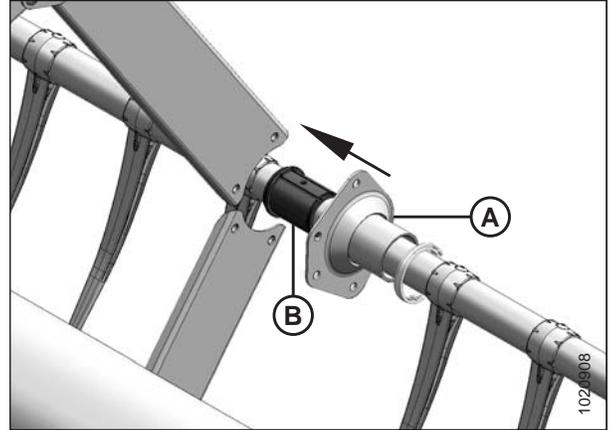


Figure 5.297: Support

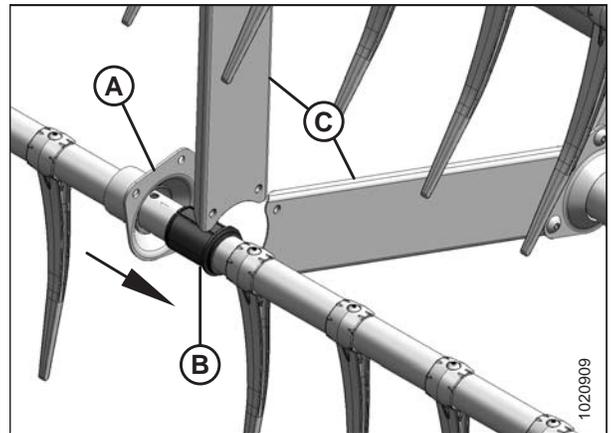


Figure 5.298: Opposite Support

- Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
- 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.

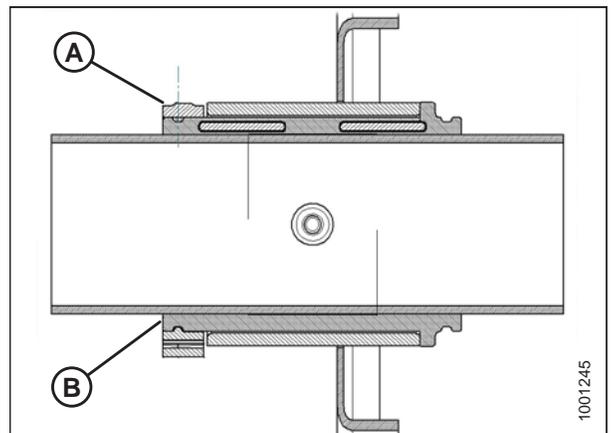


Figure 5.299: Bushing

MAINTENANCE AND SERVICING

24. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

IMPORTANT:

Overtightening clamp may result in breakage.

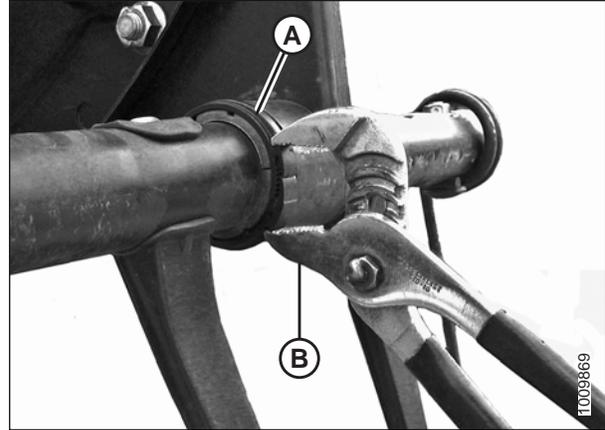


Figure 5.300: Clamp on Bushing

25. Reattach channels (C) to support (A) with screws (B) and nuts. Torque screws to 43 Nm (32 lbf-ft).
26. Reinstall any fingers (D) that were previously removed using screws (E). Refer to *Installing Plastic Fingers*, page 406.

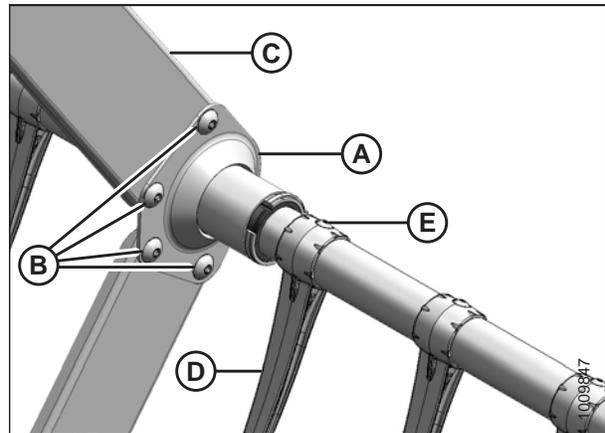


Figure 5.301: Tine Tube Support

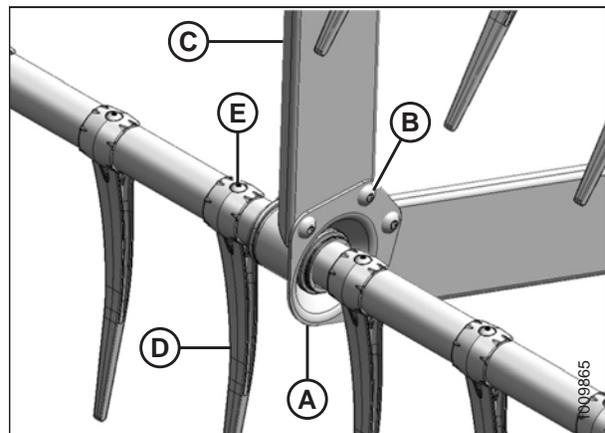


Figure 5.302: Opposite Support

5.13.6 Reel Endshields

Reel endshields and supports do not require regular maintenance, but they should be checked periodically for damage and loose or missing fasteners. Slightly dented or deformed endshields and supports are repairable, but it's necessary to replace severely damaged components.

You can attach reel endshields to either end of the reel.

Replacing Reel Endshields

DANGER

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

1. Lower the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
3. Remove three bolts (B).

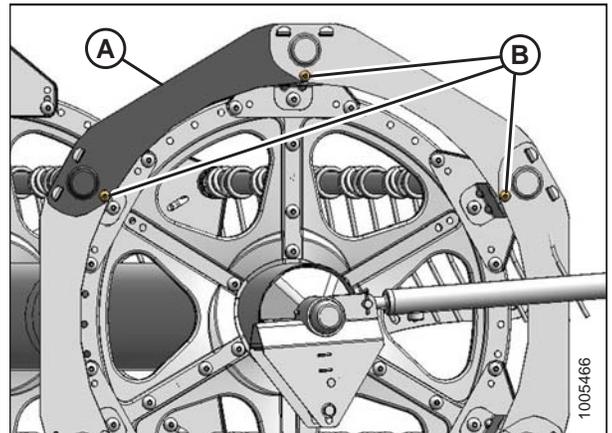


Figure 5.303: Reel Endshields

4. Lift end of reel endshield (A) off support (B).

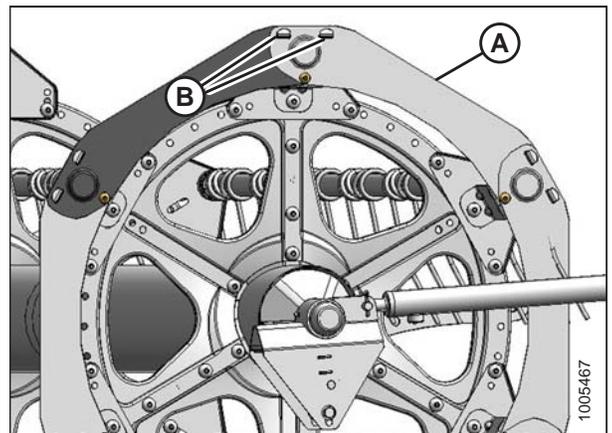


Figure 5.304: Reel Endshields

MAINTENANCE AND SERVICING

5. Remove the reel endshield from the supports.

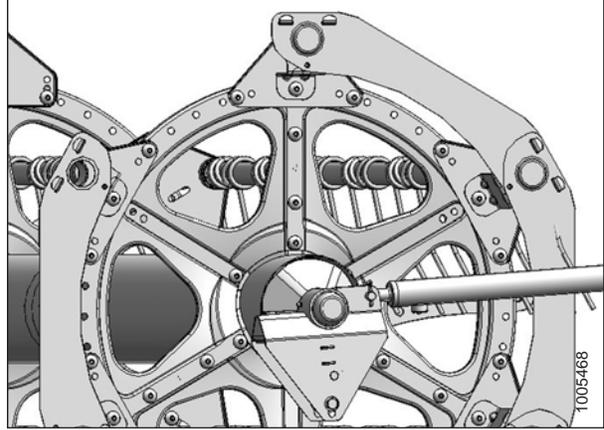


Figure 5.305: Reel Endshields

6. Remove reel endshield (A) from support (B).
7. Install new reel endshield (C) onto support (B).
8. Reattach reel endshield (A) onto support (B) ensuring it is installed on top of the reel endshield (C).
9. Reinstall bolts (D).
10. Tighten all hardware.

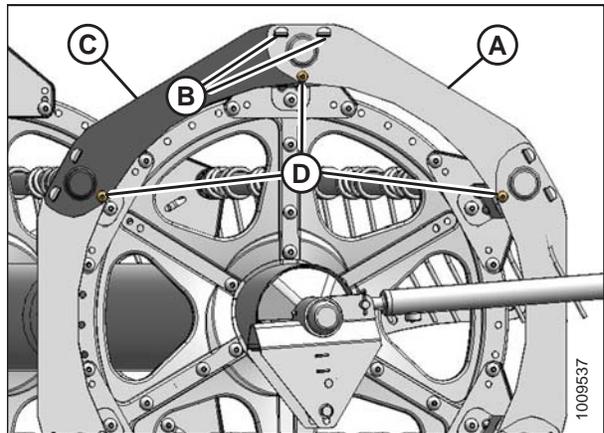


Figure 5.306: Reel Endshields

Replacing Reel Endshield Supports

DANGER

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

MAINTENANCE AND SERVICING

1. Lower the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
3. Remove bolt (B) from support (A).
4. Remove bolts (C) from support (A) and two adjacent supports.

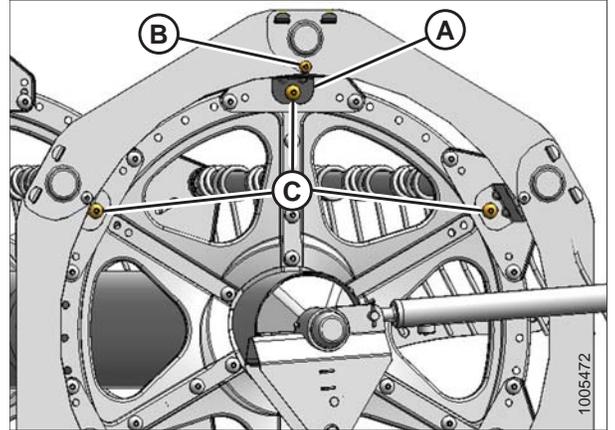


Figure 5.307: Reel Endshield Supports

5. Move reel endshields (A) away from the tine tube and rotate support (B) towards the reel to remove it.
6. Insert tabs of new support (B) into the slots in reel endshields (A). Ensure the tabs engage both reel endshields.
7. Secure support (B) to the disc with bolt (C) and nut. Do not tighten.
8. Secure reel endshields (A) to support (B) with bolt (C) and nut. Do not tighten.
9. Reattach the supports with bolts (C) and nuts.
10. Check the clearance between the tine tube and reel endshield support and adjust if necessary.
11. Torque nuts to 27 Nm (20 lbf·ft).

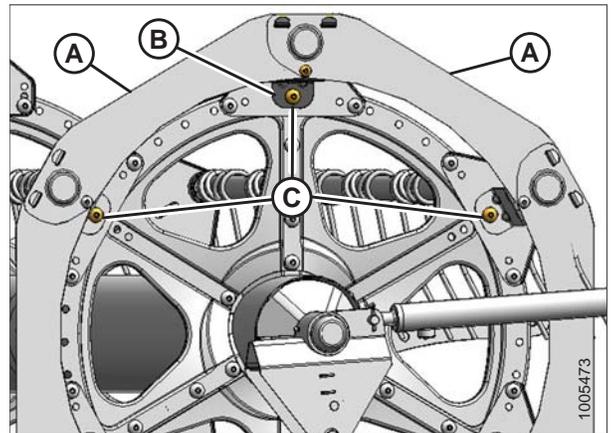


Figure 5.308: Reel Endshield Supports

5.14 PR15 Pick-Up Reel

5.14.1 Replacing Reel Drive Cover

Removing Reel Drive Cover

⚠ DANGER

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

Single-reel drive:

1. Stop the engine and remove the key from the ignition.
2. Remove four bolts (A) securing the cover (B) to the reel drive.

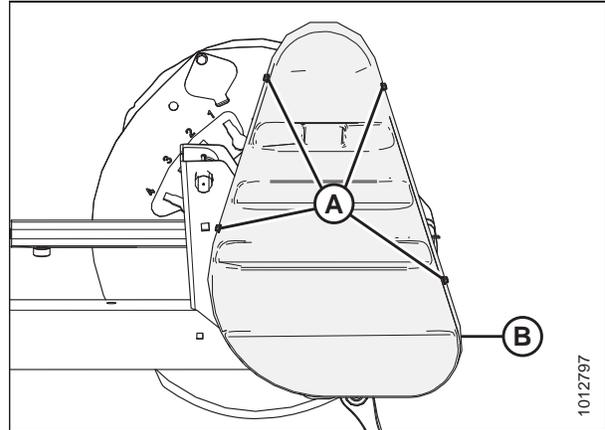


Figure 5.309: Drive Cover – Single Reel

Double-reel drive:

3. Stop the engine and remove the key from the ignition.
4. Remove six bolts (A) securing upper cover (B) to the reel drive and lower cover (C).

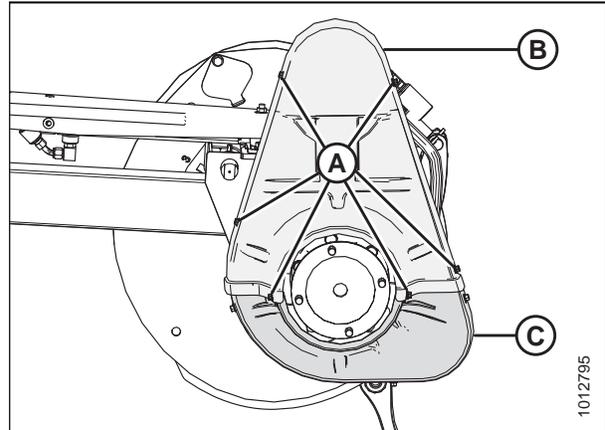


Figure 5.310: Drive Cover – Double Reel

MAINTENANCE AND SERVICING

5. Remove three bolts (A) and remove lower cover (B) if necessary.

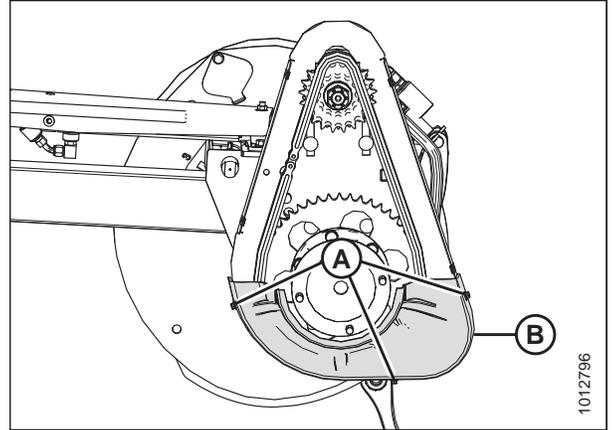


Figure 5.311: Drive Cover – Double Reel

Installing Reel Drive Cover

Single-reel drive:

1. Position the drive cover (B) onto the reel drive and secure with four bolts (A).

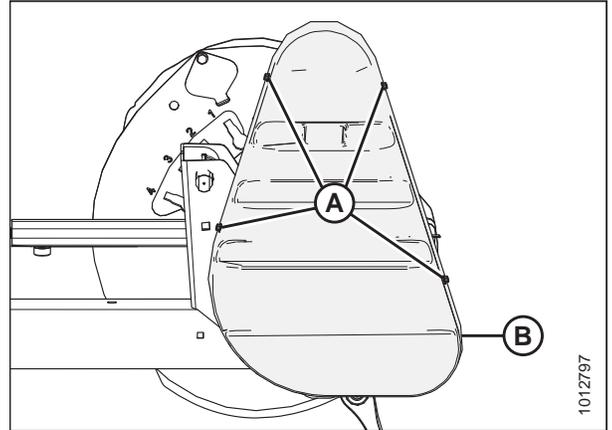


Figure 5.312: Drive Cover – Single Reel

Double-reel drive:

2. Position lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

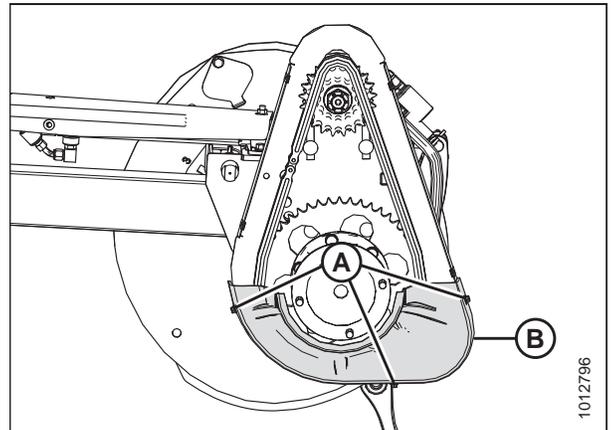


Figure 5.313: Drive Cover – Double Reel

MAINTENANCE AND SERVICING

3. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure with six bolts (A).

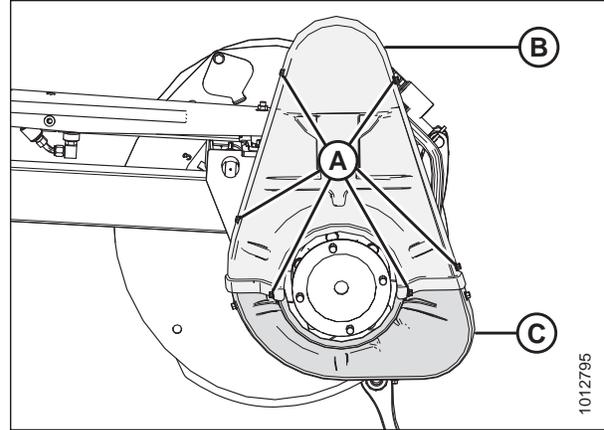


Figure 5.314: Drive Cover – Double Reel

5.14.2 Adjusting Reel Drive Chain Tension

Loosening Reel Drive Chain

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to [Removing Reel Drive Cover, page 422](#).
3. Loosen six nuts (A). Slide motor (B) and motor mount (C) down towards the reel shaft.

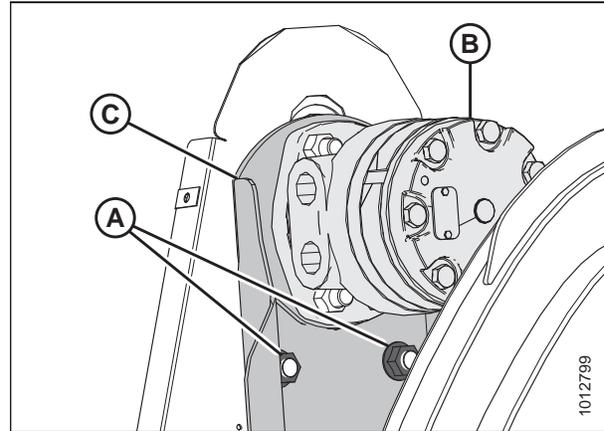
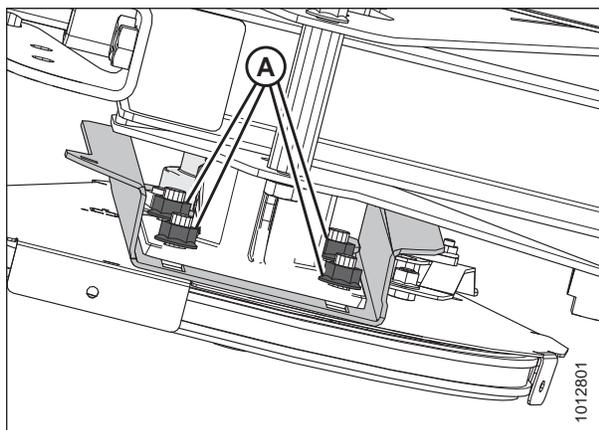


Figure 5.315: Single-Reel Drive Shown – Double-Reel Drive Similar

Figure 5.316: Single-Reel Drive – Viewed from Underside of Reel



Tightening Reel Drive Chain

⚠ DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Ensure the six bolts (A) securing the motor mount to the chain case are loose.

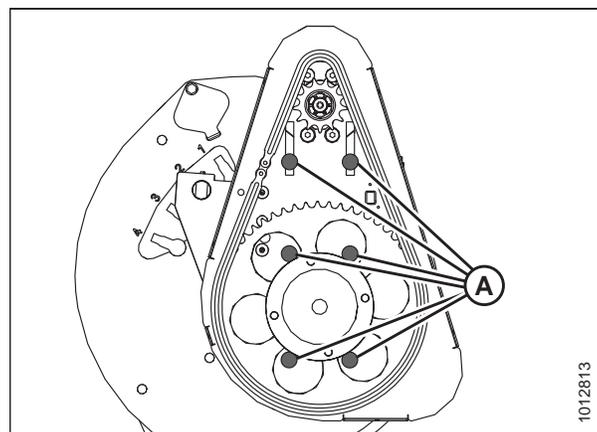


Figure 5.317: Single-Reel Drive Shown – Double Reel Similar

MAINTENANCE AND SERVICING

- Slide motor (A) and motor mount (B) upwards until chain (C) is tight.

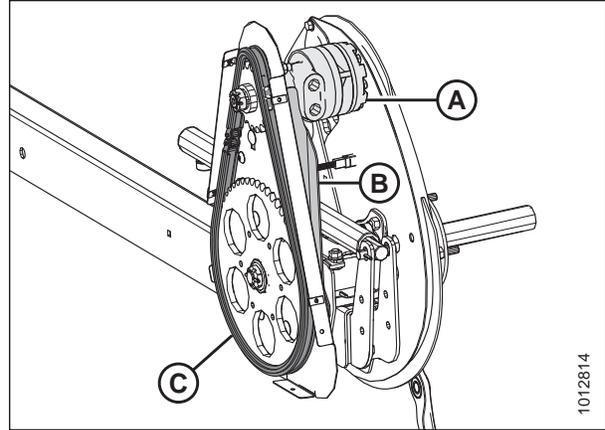


Figure 5.318: Single-Reel Drive Shown – Double Reel Similar

- Ensure there is 3 mm (0.12 in.) of slack at the chain midspan. Adjust if necessary.
- Tighten six nuts (A).
- Torque nuts (A) to 73 Nm (54 lbf-ft).
- Install the drive cover. Refer to [Installing Reel Drive Cover](#), page 423.

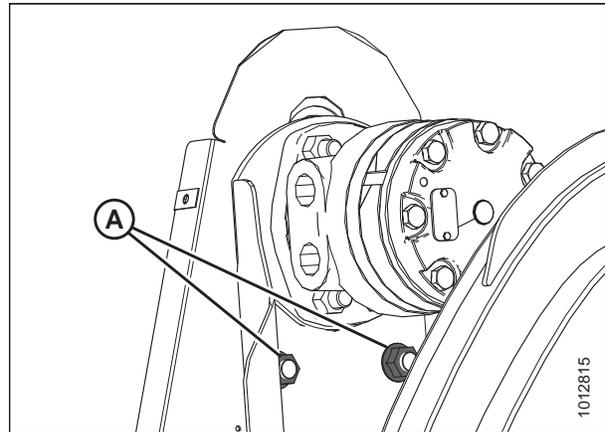
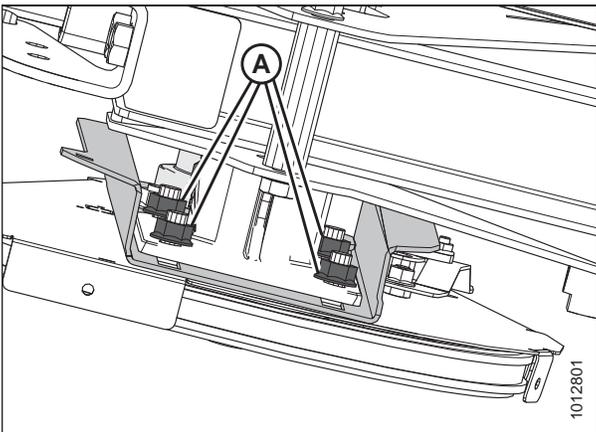


Figure 5.319: Single-Reel Drive Shown – Double Reel Similar

Figure 5.320: Single-Reel Drive – Viewed from Underside of Reel



5.14.3 Replacing Reel Drive Sprocket

For Case IH and New Holland combine models, configure the combine according to the reel sprocket size in order to optimize the auto reel to ground speed control. Refer to the combine service manual for more information.

MAINTENANCE AND SERVICING

Removing Reel Drive Sprocket

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to [Loosening Reel Drive Chain, page 424](#).
3. Remove drive chain (A) from drive sprocket (B).

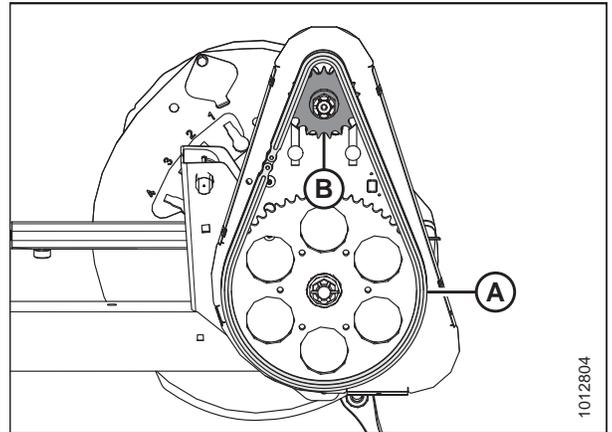


Figure 5.321: Reel Drive

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).

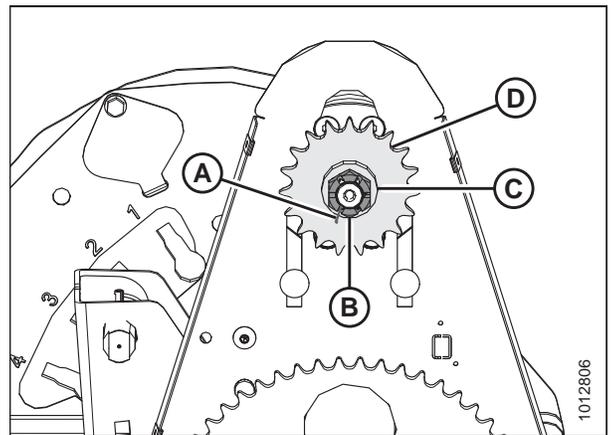


Figure 5.322: Reel Drive

MAINTENANCE AND SERVICING

Installing Reel Drive Sprocket

1. Align the keyway in sprocket (D) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure with flat washer (C) and slotted nut (B).
2. Torque slotted nut (B) to 54 Nm (40 lbf·ft).
3. Install cotter pin (A). If necessary, tighten slotted nut (B) to the next slot to install the cotter pin.

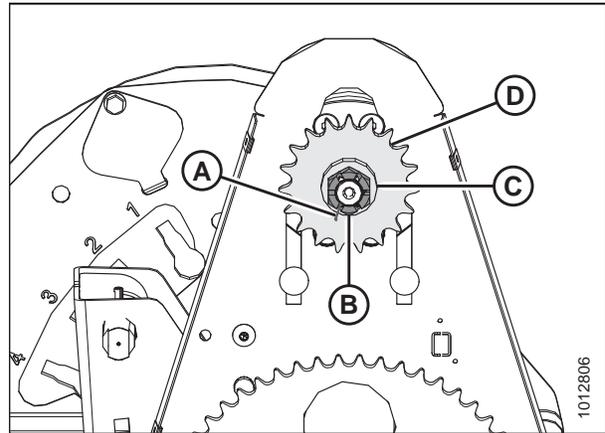


Figure 5.323: Reel Drive

4. Install drive chain (A) onto drive sprocket (B).
5. Tighten the drive chain. Refer to [Tightening Reel Drive Chain](#), page 425.

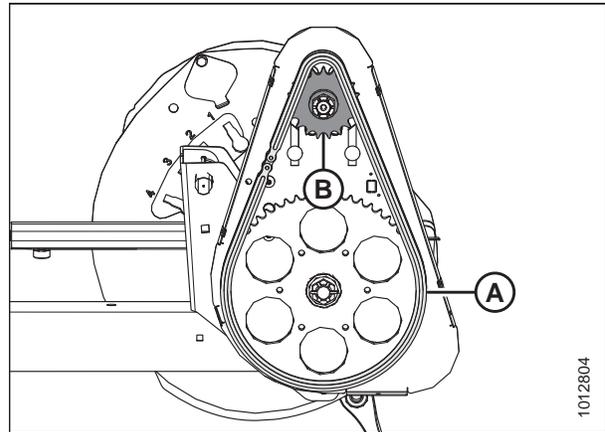


Figure 5.324: Reel Drive

5.14.4 Replacing Double-Reel U-Joint

The double-reel drive U-joint allows each reel to move independently from the other.

Lubricate the U-joint according to specifications. Refer to [5.3.6 Lubrication and Servicing](#), page 279.

Replace the U-joint if severely worn or damaged. Refer to [Removing Double-Reel U-Joint](#), page 428.

Removing Double-Reel U-Joint

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to [Removing Reel Drive Cover](#), page 422.

MAINTENANCE AND SERVICING

- 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.

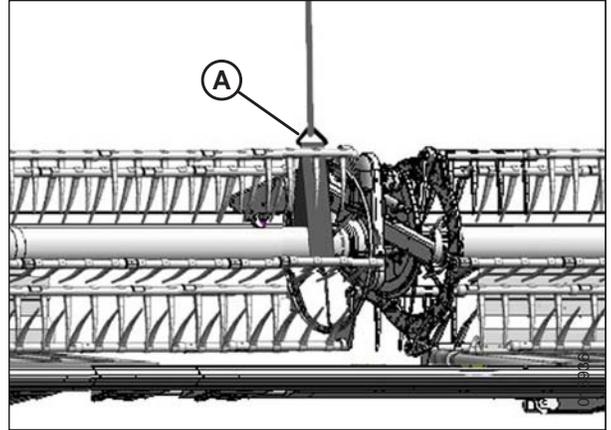


Figure 5.325: Supporting Reel

- Remove the six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
- Remove the U-joint.

NOTE:

It may be necessary to move the right reel sideways for the U-joint to clear the tube.

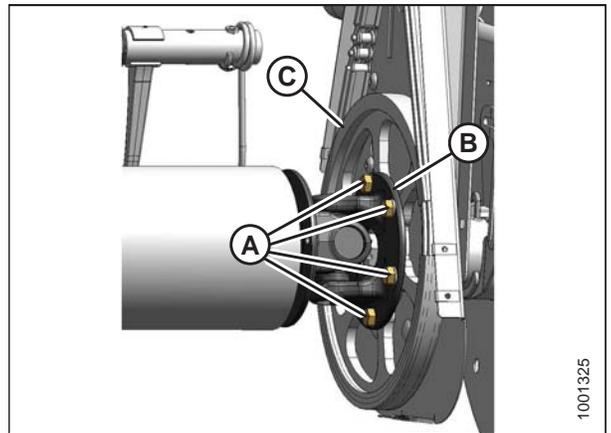


Figure 5.326: U-Joint

Installing Double-Reel U-Joint

NOTE:

It may be necessary to move the right reel sideways for the U-joint to clear the reel tube.

- Position U-joint flange (B) onto the driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque the bolts.

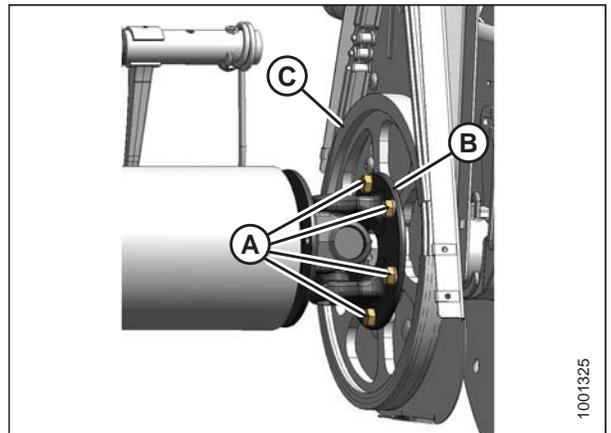


Figure 5.327: U-Joint

MAINTENANCE AND SERVICING

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 Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and secure with lock washers.
5. Torque to 102–115 Nm (75–85 lbf-ft).

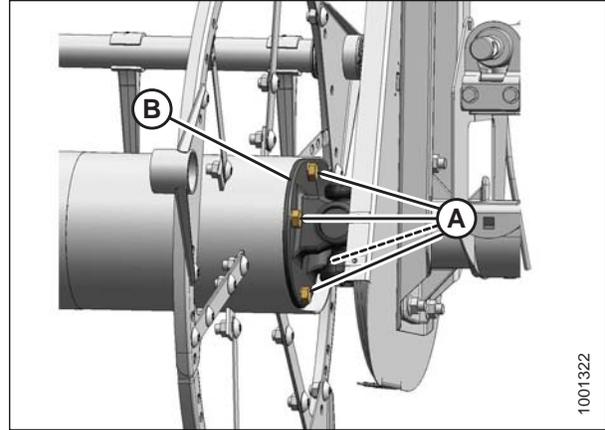


Figure 5.328: U-Joint

6. Remove temporary reel support (A).
7. Install the drive cover. Refer to [Installing Reel Drive Cover, page 423](#).

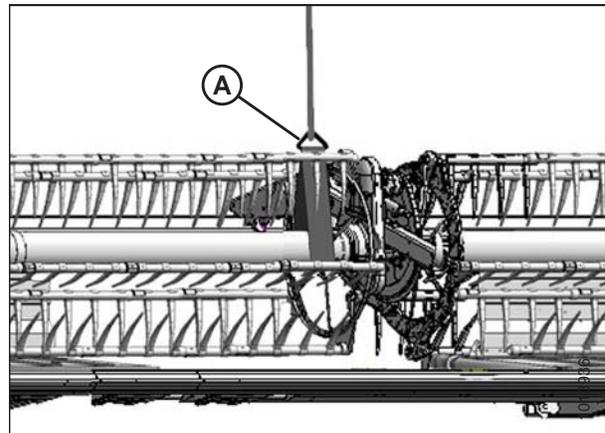


Figure 5.329: Supporting Reel

5.14.5 Replacing Reel Drive Motor

The reel drive motor does not require regular maintenance or servicing. If problems occur with the motor, remove it and have it serviced at your MacDon Dealer.

Removing Reel Drive Motor

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to [Loosening Reel Drive Chain, page 424](#).
3. Remove the drive sprocket. Refer to [Removing Reel Drive Sprocket, page 427](#).

MAINTENANCE AND SERVICING

4. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.

NOTE:

Mark the hydraulic lines (A) and their locations in motor (B) to ensure correct reinstallation.

5. Remove four nuts and bolts (C) and remove motor (A). Retrieve the spacer (not shown) from between motor (B) and the motor mount (if installed).

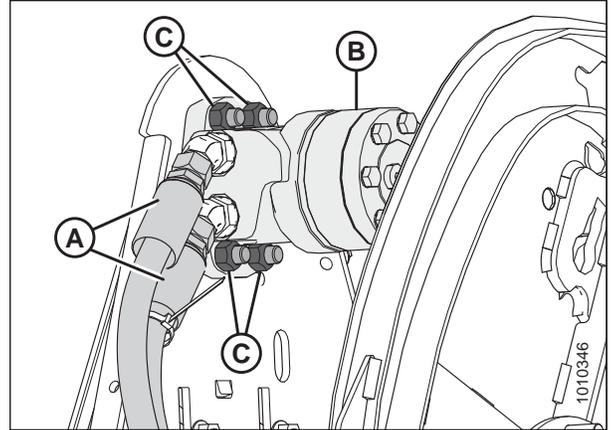


Figure 5.330: Reel Motor and Hoses

Installing Reel Drive Motor

1. Slide motor mount (A) up or down so motor mounting holes (B) are accessible through the openings in the chain case.

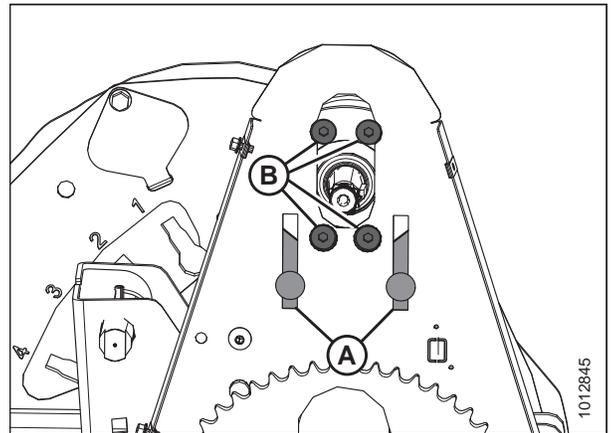


Figure 5.331: Reel Drive Motor Mounting Holes

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 to 110–120 Nm (81–89 lbf·ft).

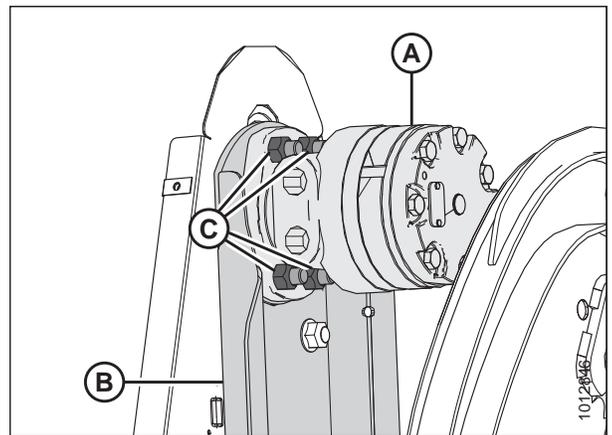


Figure 5.332: Reel Drive Motor

MAINTENANCE AND SERVICING

- 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.

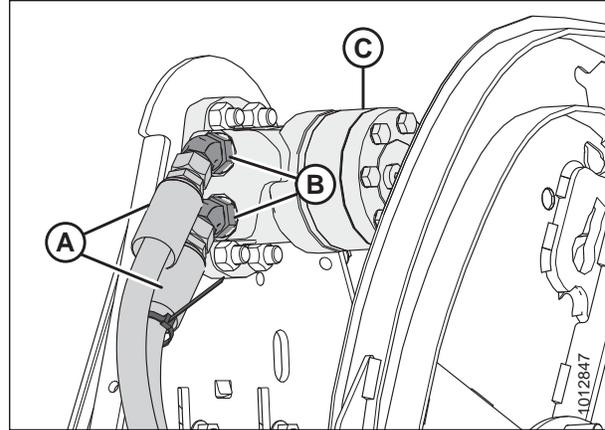


Figure 5.333: Reel Motor and Hoses

- Install the drive sprocket. Refer to *Installing Reel Drive Sprocket, page 428*.
- Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 425*.

5.14.6 Replacing Drive Chain on Double Reel

5.14.7 Replacing Drive Chain on Single Reel

- Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 424*.
- Lift the chain (A) off the drive sprocket (B).
- Lower the chain until free of the lower sprocket (C) and remove the chain from the drive.
- Position the new chain (A) around the bottom teeth on the lower sprocket (C).
- Lift the chain onto the drive sprocket (B) ensuring all the links are properly engaged in the teeth.
- Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 425*.

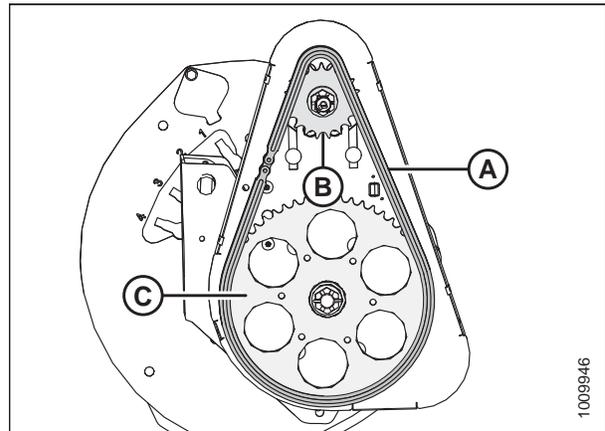


Figure 5.334: Reel Drive

5.14.8 Replacing Reel Speed Sensor

The reel speed sensor system is located inside the reel drive cover.

Replacing AGCO Sensor

⚠ DANGER

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

MAINTENANCE AND SERVICING

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 422*.
3. Disconnect electrical connector (A).

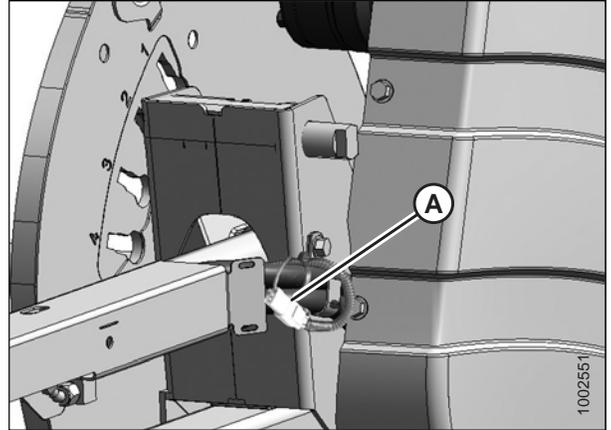


Figure 5.335: Electrical Harness

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.).

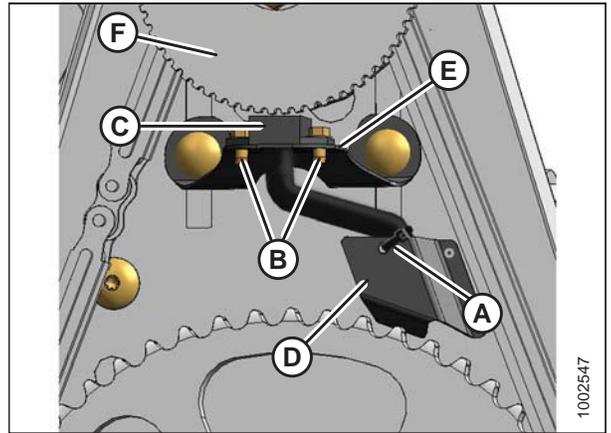


Figure 5.336: Speed Sensor

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 423*.

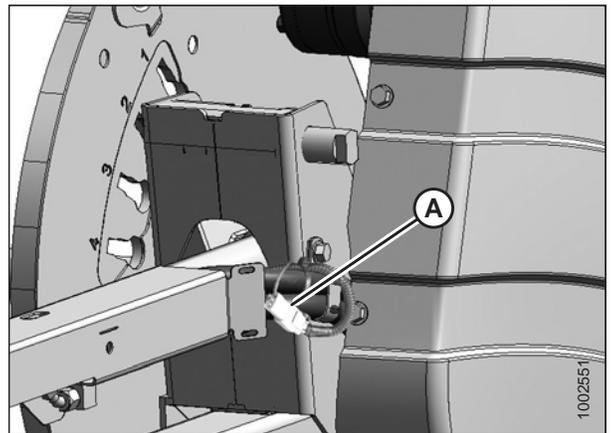


Figure 5.337: Electrical Harness

Replacing John Deere Sensor

⚠ DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 422*.
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 423*.

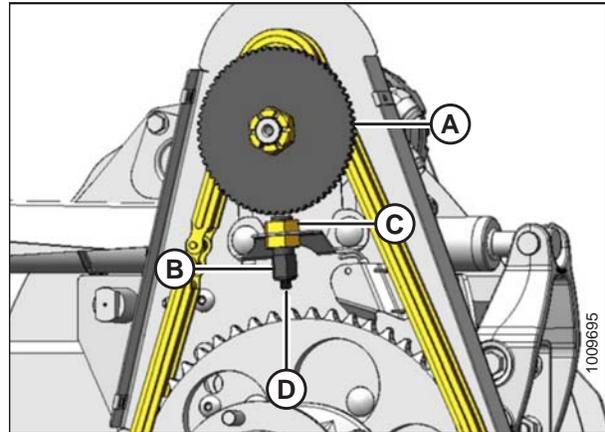


Figure 5.338: Speed Sensor

Replacing CLAAS 400 Series Sensor

⚠ DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 422*.
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 423*.

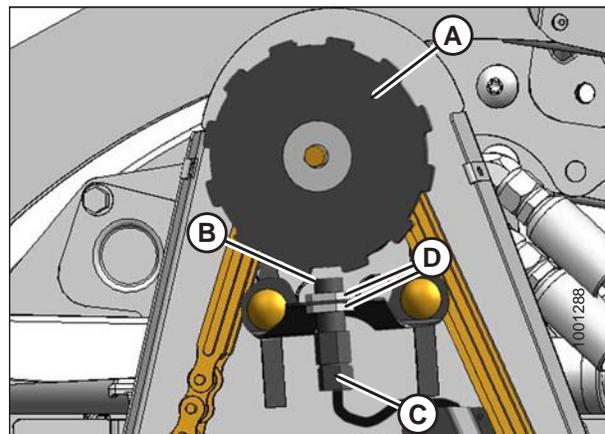


Figure 5.339: Speed Sensor

Replacing CLAAS 500/700 Series Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to [Removing Reel Drive Cover, page 422](#).
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 423](#).

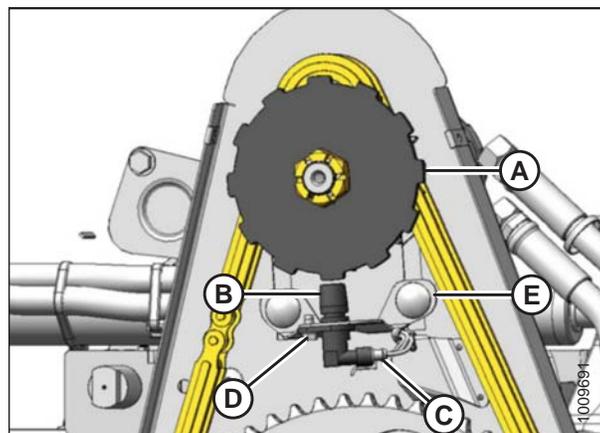


Figure 5.340: Speed Sensor

5.15 Transport System (Optional)

Refer to *6.4.3 Stabilizer / Slow Speed Transport Wheels, page 446* for more information.

5.15.1 Checking Wheel Bolt Torque

If a transport system is installed, follow these steps to torque the wheel bolts:

1. Torque wheel bolts to 120 Nm (90 lbf-ft) using sequence shown.

IMPORTANT:

Whenever a wheel is removed and reinstalled, check the wheel bolt torque after one hour of operation and every 100 hours thereafter.

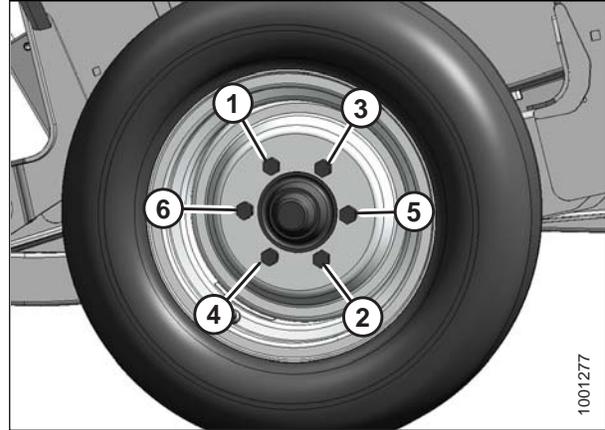
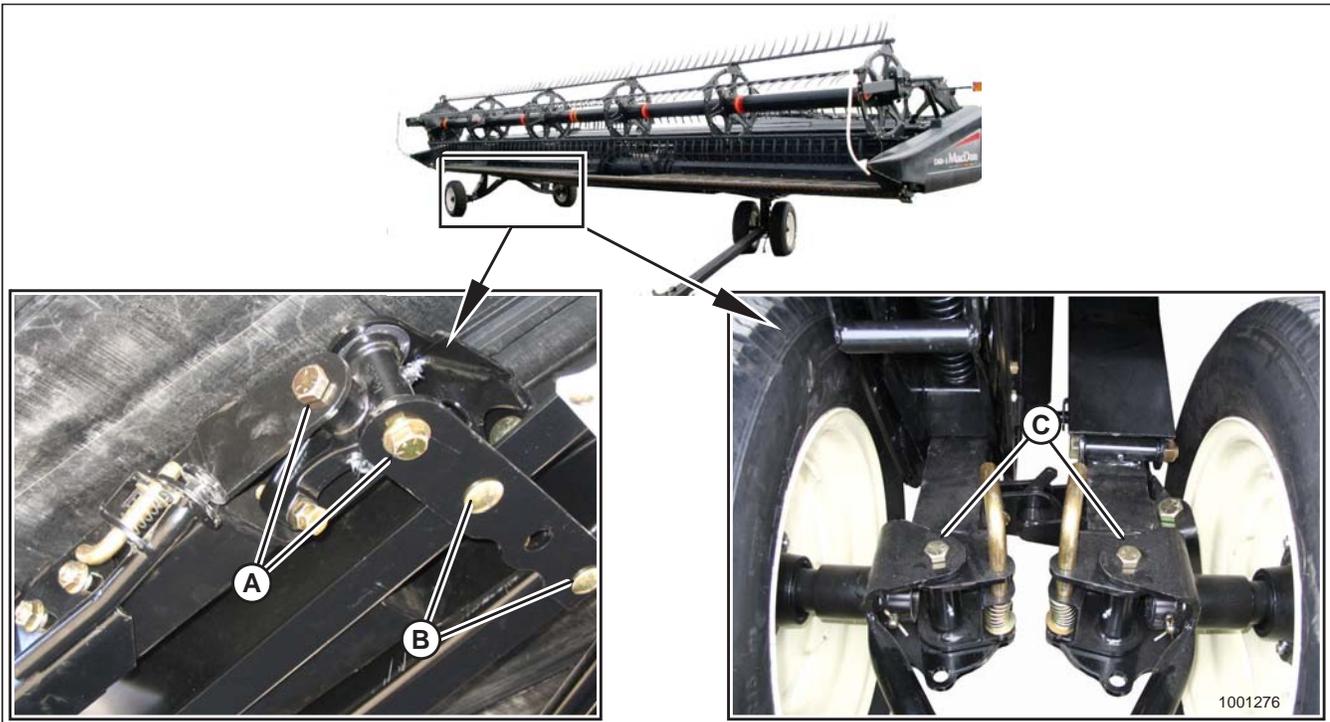


Figure 5.341: Bolt Tightening Sequence

5.15.2 Checking Axle Bolt Torque

If a transport system is installed, torque axle bolts as follows:

Figure 5.342: Axle Bolts



MAINTENANCE AND SERVICING

1. Check and tighten axle bolts **DAILY** until torque is maintained as follows:
 - (A): 244 Nm (180 lbf-ft)
 - (B): 203 Nm (150 lbf-ft)
 - (C): 244 Nm (180 lbf-ft)

5.15.3 Checking Tire Pressure

Check the tire inflation pressure and inflate according to the information provided in Table 5.3, page 437.

Table 5.3 Tire Pressure

Size	Load Range	Pressure
ST205/75 R15	D	448 kPa (65 psi)
	E	552 kPa (80 psi)

WARNING

- Service tires safely.
- A tire can explode during inflation which could cause serious injury or death.
- Do NOT stand over tire. Use a clip-on chuck and extension hose.
- Do NOT exceed maximum inflation pressure indicated on tire label or sidewall.
- Replace tires that have defects.
- Replace wheel rims that are cracked, worn, or severely rusted.
- Never weld a wheel rim.
- Never use force on an inflated or partially inflated tire.
- Make sure the tire is correctly seated before inflating to operating pressure.
- If the tire is not correctly positioned on the rim or is overinflated, the tire bead can loosen on one side causing air to escape at high speed and with great force. An air leak of this nature can thrust the tire in any direction endangering anyone in the area.
- Make sure all the air is removed from the tire before removing the tire from the rim.
- Do NOT remove, install, or repair a tire on a rim unless you have the proper equipment and experience to perform the job.
- Take the tire and rim to a qualified tire repair shop.

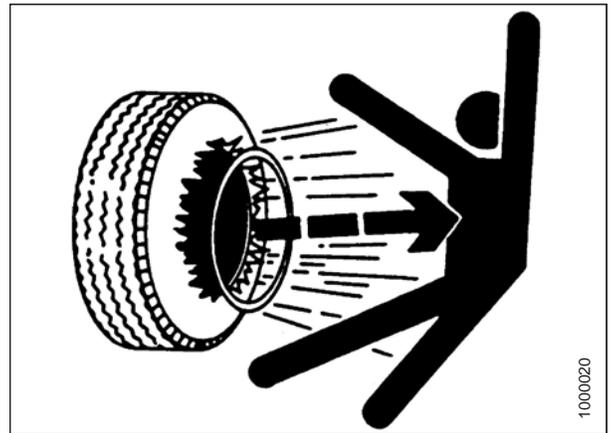


Figure 5.343: Inflation Warning

6 Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

6.1 Adapter

6.1.1 Hillside Extension Kit

The Hillside Extension kit allows CA25 Combine Adapters to operate on steep hillsides while maintaining oil supply to the suction side of pump.

Installation instructions are included in the kit.

MD #B6057

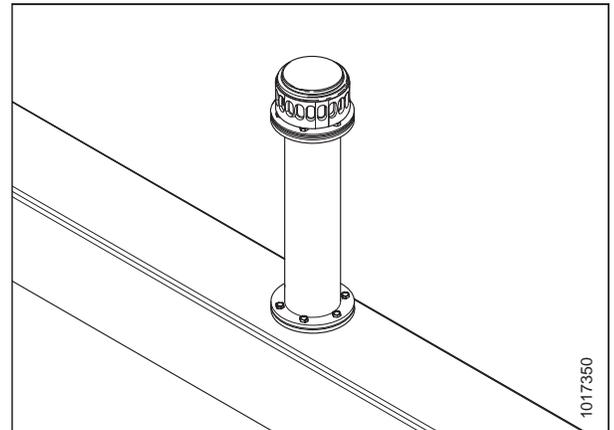


Figure 6.1: Hillside Extension Kit

6.2 Reel

6.2.1 Multi-Crop Rapid Reel Conversion Kit

For use on double-reel headers only, the Multi-Crop Rapid Reel Conversion Kit decreases the time required to change the fore-aft cylinder position on the reel support arm from the normal operating location to 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 #B5943

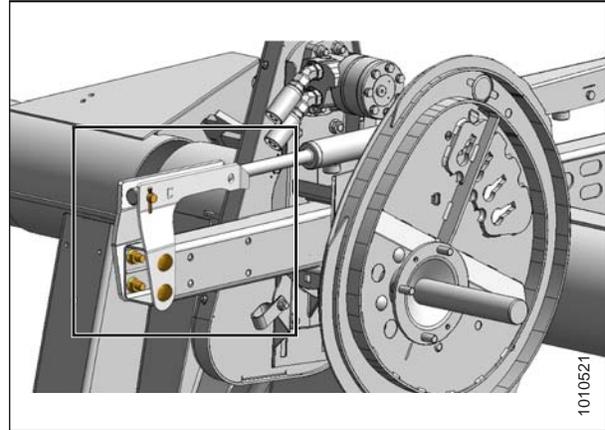


Figure 6.2: Center Arm – Left and Right Similar

6.2.2 Lodged Crop Reel Finger Kit

The steel fingers provided in the Lodged Crop Reel Finger kit attach to the ends of every other tine bar and help to clear material in heavy, hard-to-cut crops such as lodged rice.

Each kit contains three fingers for the cam end of the reel and three fingers for the tail end. Hardware and installation instructions are included in the kit.

MD #B4831

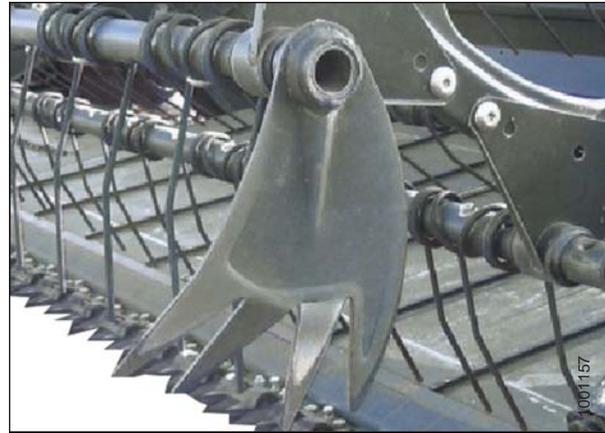


Figure 6.3: Lodged Crop Finger

6.2.3 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion from a six-bat reel to a nine-bat reel.

Installation instructions are included in the kit.

Order the following bundles according to your header size and type:

- 7.6 meter (25 foot) – Plastic Fingers MD #B5277
- 9.1 meter (30 foot) – Plastic Fingers MD #B5278⁴⁵
- 9.1 meter (30 foot) – Steel Fingers MD #B5657⁴⁵

⁴⁵. Double-reel units only

OPTIONS AND ATTACHMENTS

- 10.7 meter (35 foot) – Plastic Fingers MD #B5674

NOTE:

You must also order additional endshields when converting the reel.

6.2.4 Reel Endshield Kit

The steel shields provided in the Reel Endshield kit attach to the ends of the reels and help to clear material in heavy, hard-to-cut crops. They are standard equipment on all headers (except nine-bat reels). Hardware and installation instructions are included in the kit.

See your MacDon Dealer for more information.

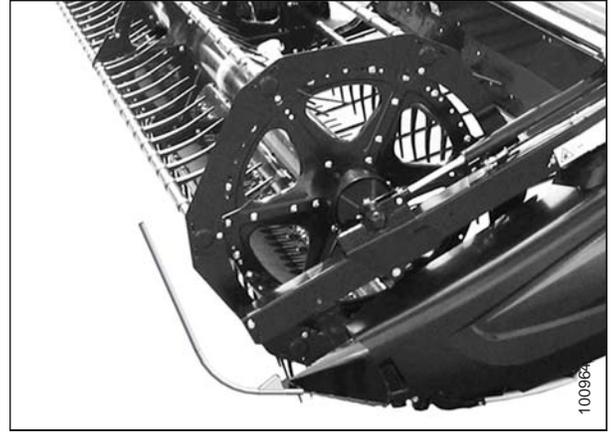


Figure 6.4: Reel Endshields

6.2.5 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

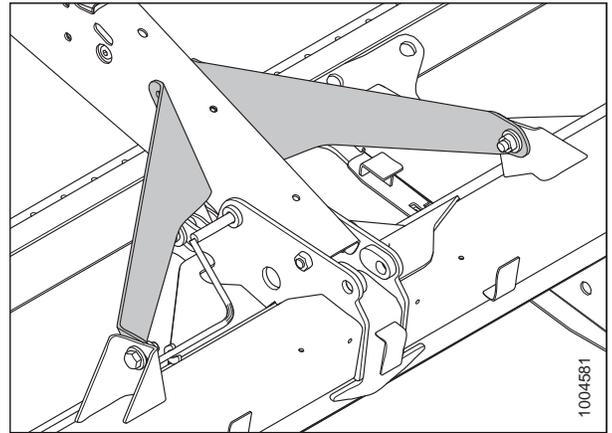


Figure 6.5: Short Brace kit (MD #B5605)

6.2.6 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

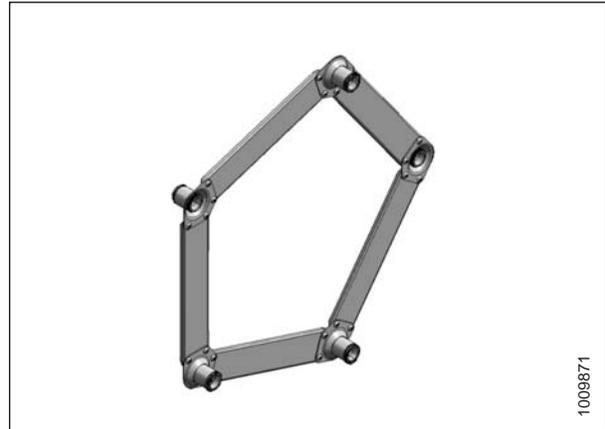


Figure 6.6: Five-Bat Reinforcing Kit Shown – Six-Bat Reinforcing Kit Similar

6.3 Cutterbar

6.3.1 Cutterbar Wearplate

Cutterbar wearplates are recommended for cutting on the ground when the soil is adhering to the steel.

Installation instructions are included in the kit.

Order one of the following bundles according to your header size:

- 6.1 meter (20 foot) – MD #B4865
- 7.6 meter (25 foot) – MD #B4838
- 9.1 meter (30 foot) – MD #B4839
- 10.7 meter (35 foot) – MD #B4840
- 12.2 meter (40 foot) – MD #B4841
- 13.7 meter (45 foot) – MD #B5114



Figure 6.7: Cutterbar Wearplates

6.3.2 Knifehead Shield

Knifehead shields attach to the endsheets and reduce the knifehead opening to prevent cut crop (particularly severely lodged crop) from accumulating over the knifehead and damaging the knife drive box and endsheet.

Installation instructions are included in the kit.

Order the following bundles according to your header size and guard type:

Regular Guards

- 7.6 meter (25 foot) and smaller – MD #220100
- 9.1 meter (30 foot) and larger – MD #220101

Stub Guards

- 7.6 meter (25 foot) and smaller – MD #220102
- 9.1 meter (30 foot) and larger – MD #220103

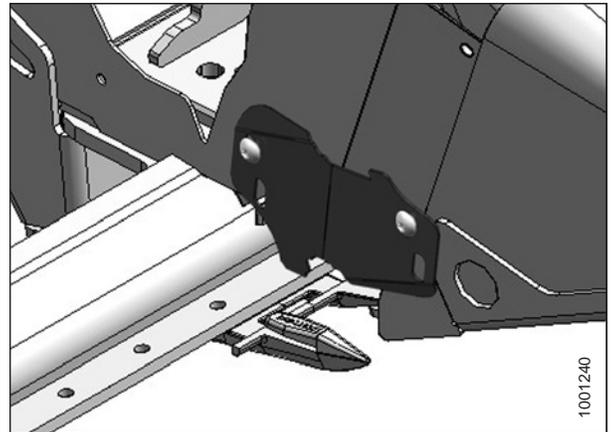


Figure 6.8: Knifehead Shield

6.3.3 Stub Guard Conversion Kit

Stub guards, complete with top guides and adjuster shoes, are designed to cut tough crops.

Installation and adjustment instructions are included in the kit.

Order one of the following bundles according to your header size:

- 6.1 meter (20 foot) – MD #B5010
- 7.6 meter (25 foot) – MD #B5011
- 9.1 meter (30 foot) – MD #B5012
- 10.7 meter (35 foot) – MD #B5013

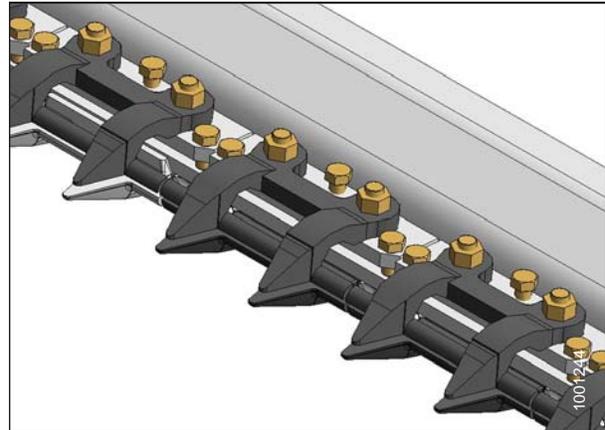


Figure 6.9: Stub Guards

6.3.4 Vertical Knife Mounts

The vertical knife mounts allow the installation of vertically oriented knives onto both ends of the header.

The vertical knives themselves are not sold by MacDon and must be purchased from a separate supplier.

Installation and adjustment instructions are included in the bundle.

Order the following bundles according to left or right side:

- Left Side – MD #B5757
- Right Side – MD #B6572

NOTE:

The Left Vertical Knife Mount kit can only be installed if installing both sides.

NOTE:

If mounting onto multiple headers, you will also require the auxiliary vertical knife plumbing kit MD #B5406.

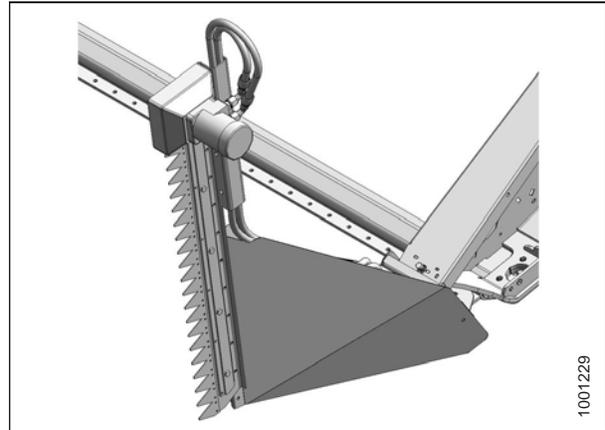


Figure 6.10: Vertical Knife Mount

6.4 Header

6.4.1 Divider Latch Kit

Divider latch kits attach to the endsheets. They allow for quick removal and storage of endsheet divider cones and, if required, reduce the transport width of the header. Installation instructions are included in the kit.

MD #B5607

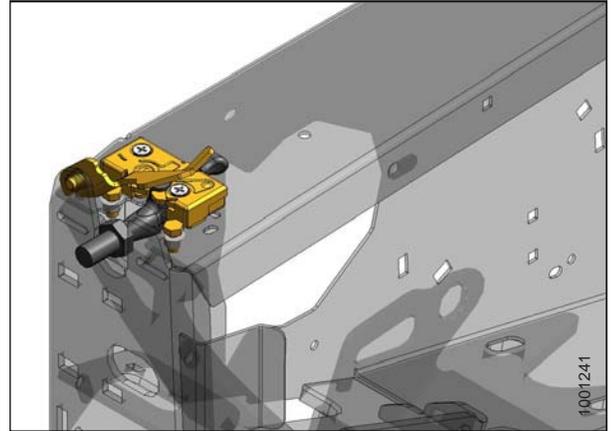


Figure 6.11: Divider Latch

6.4.2 Stabilizer Wheels

Stabilizer wheels help to stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. Installation and adjustment instructions are included in the kit.

This kit is available as an attachment for use with 9.1-, 10.7-, 12.2-, and 13.7-meter (30-, 35-, 40-, and 45-foot) 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

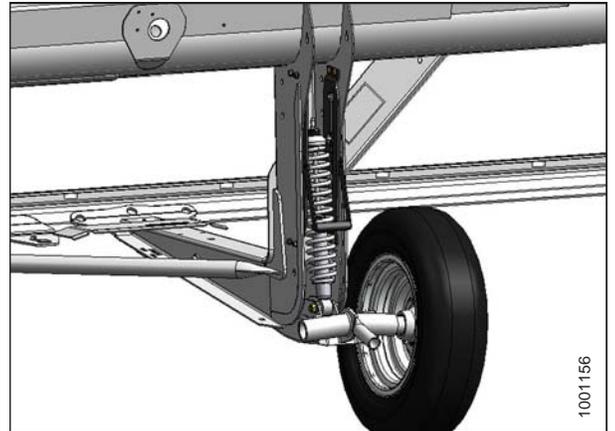


Figure 6.12: Stabilizer Wheel

6.4.3 Stabilizer / Slow Speed Transport Wheels

Stabilizer/slow speed transport wheels help to stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. This system is similar to the Stabilizer Wheel option. Refer to [6.4.2 Stabilizer Wheels, page 445](#).

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 6.13: Stabilizer/Transport Wheels

6.5 Crop Delivery

6.5.1 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 #B4829

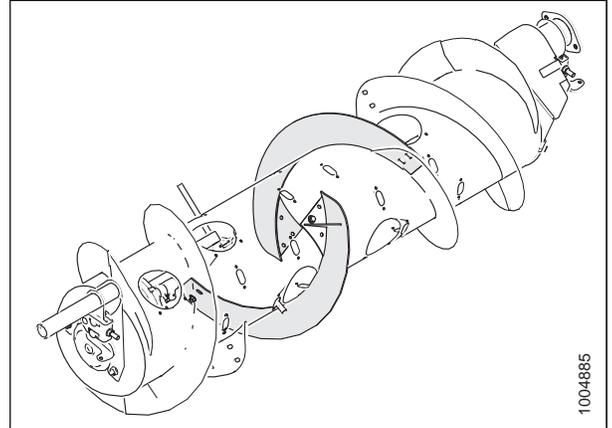


Figure 6.14: Adapter Feed Auger Flighting

6.5.2 European Adapter Seal Kit

The European Adapter Seal kit encloses the transition area between the feed draper and side draper near the front of the header. It also includes side rubber flaps to close off the areas between the adapter and header.

This kit is **NOT RECOMMENDED** for use if rocks are present.

Installation instructions are included in the kit.

MD #B5612

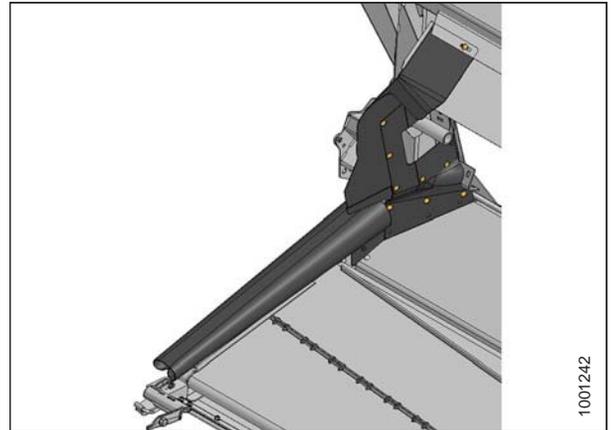


Figure 6.15: European Adapter Seal Kit

6.5.3 Draper Deflector (Narrow)

Narrow metal draper deflectors attach to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper while minimizing reel carryover in bushy crops.

Refer to your parts catalog for the necessary parts.

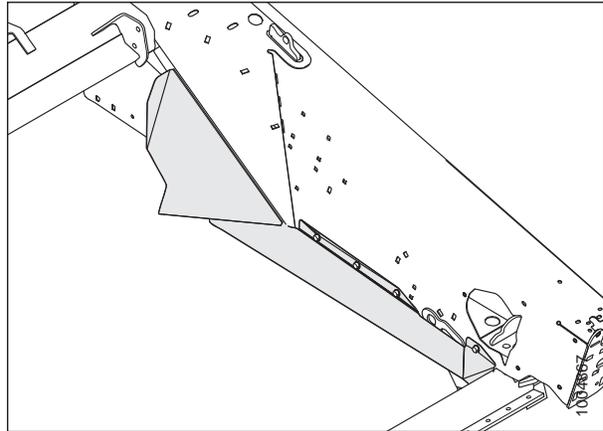


Figure 6.16: Draper Deflector (Narrow)

6.5.4 Draper Deflector (Wide)

Wide metal draper deflectors attach to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper.

Refer to your parts catalog for the necessary parts.

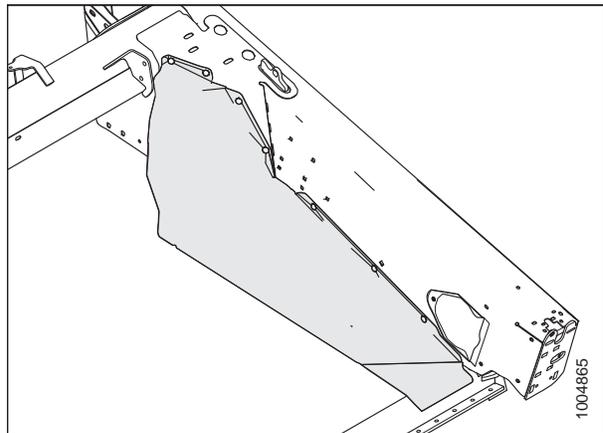


Figure 6.17: Draper Deflector (Wide)

6.5.5 Stripper Bars

Stripper bars improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

Choose from the following combine models to determine which stripper bar kit to order.

- 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

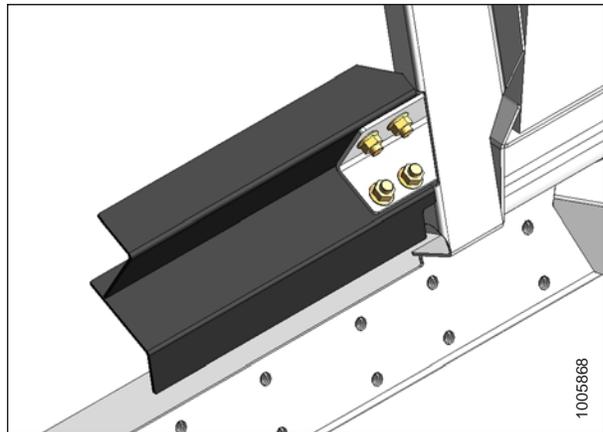


Figure 6.18: Stripper Bar

OPTIONS AND ATTACHMENTS

- NH CR 940/960/9040/9060 – MD #B4923

6.5.6 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

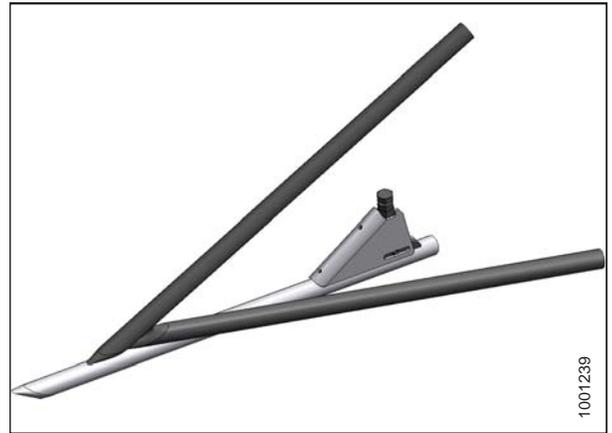


Figure 6.19: Rice Divider Rod

6.5.7 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

Instruction MD #147606

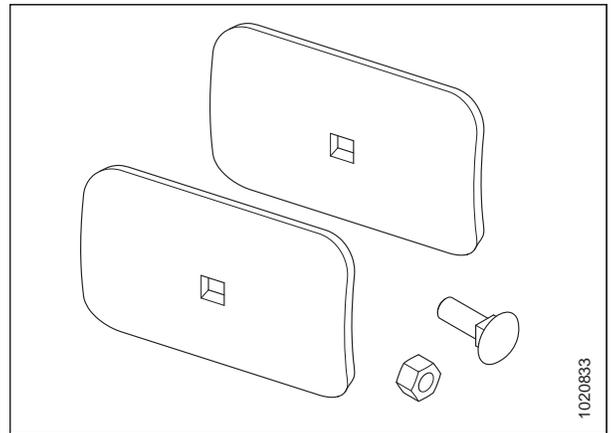


Figure 6.20: Auger Dent Repair Kit

6.5.8 Upper Cross Auger (UCA)

The upper cross auger attaches in front of the backtube and improves crop feeding into the center of the header in heavy crop conditions. It is ideal for high-volume harvesting of forages, oats, canola, mustard and other tall, bushy, hard to feed crops.

Installation instructions are included with the kit.

Order from the following bundles according to your header size:

- 7.6 meter (25 foot) – MD #B4846
- 9.1 meter (30 foot) – MD #B4847
- 10.7 meter (35 foot) – MD #B4848
- 12.2 meter (40 foot) – MD #B4849
- 13.7 meter (45 foot) – MD #B4849

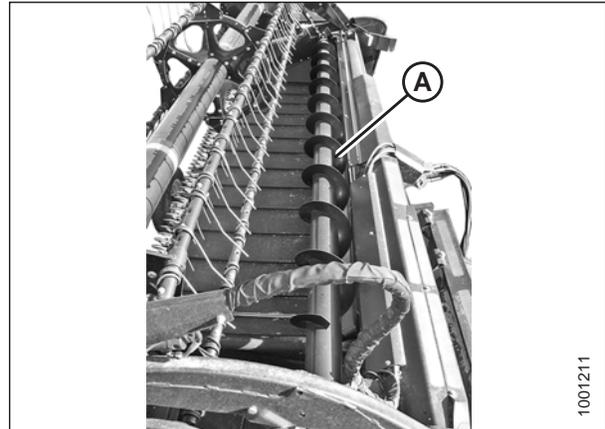


Figure 6.21: Upper Cross Auger

7 Troubleshooting

7.1 Crop Loss at Cutterbar

Symptom	Problem	Solution	Refer to
Does not pick up down crop	Cutterbar too high	Lower cutterbar	3.7.1 Cutting Height, page 53
Does not pick up down crop	Header angle too low	Increase header angle	3.7.3 Header Angle, page 65
Does not pick up down crop	Reel too high	Lower reel	3.7.8 Reel Height, page 80
Does not pick up down crop	Reel too far back	Move reel forward	3.7.9 Reel Fore-Aft Position, page 80
Does not pick up down crop	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<ul style="list-style-type: none"> 3.7.4 Reel Speed, page 74 3.7.5 Ground Speed, page 75
Does not pick up down crop	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	3.7.10 Reel Tine Pitch, page 89
Does not pick up down crop	Reel fingers not lifting crop sufficiently	Install lifter guards	See your MacDon Dealer
Heads shattering or breaking off	Reel speed too fast	Reduce reel speed	3.7.4 Reel Speed, page 74
Heads shattering or breaking off	Reel too low	Raise reel	3.7.8 Reel Height, page 80
Heads shattering or breaking off	Ground speed too fast	Reduce ground speed	3.7.5 Ground Speed, page 75
Heads shattering or breaking off	Crop too ripe	Operate at night when humidity is higher	—
Cut grain falling ahead of cutterbar	Ground speed too slow	Increase ground speed	3.7.5 Ground Speed, page 75
Cut grain falling ahead of cutterbar	Reel speed too slow	Increase reel speed	3.7.4 Reel Speed, page 74
Cut grain falling ahead of cutterbar	Reel too high	Lower reel	3.7.8 Reel Height, page 80
Cut grain falling ahead of cutterbar	Cutterbar too high	Lower cutterbar	3.7.1 Cutting Height, page 53
Cut grain falling ahead of cutterbar	Reel too far forward	Move reel back on arms	3.7.9 Reel Fore-Aft Position, page 80

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Cut grain falling ahead of cutterbar	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	<ul style="list-style-type: none"> • 5.14.3 Replacing Reel Drive Sprocket, page 426 • See your MacDon Dealer
Cut grain falling ahead of cutterbar	Worn or broken knife components	Replace components	5.8 Knife, page 327
Strips of uncut material	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
Strips of uncut material	Broken knife sections	Replace broken sections	5.8.1 Replacing Knife Section, page 327
Excessive bouncing at normal field speed	Float set too light	Adjust header float	3.7.2 Header Float, page 59
Divider rod running down standing crop	Divider rods too long	Remove divider rod	3.7.12 Crop Divider Rods, page 97
Bushy or tangled crop flows over divider rod, builds up on endsheets	Divider rods providing insufficient separation	Install long divider rods	3.7.12 Crop Divider Rods, page 97
Crop not being cut at ends	Reel not frowning or not centered in header	Adjust reel frown or reel horizontal position	<ul style="list-style-type: none"> • 3.7.9 Reel Fore-Aft Position, page 80 • 5.13.2 Reel Frown, page 400
Crop not being cut at ends	Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely, but still keep sections from lifting off guards	
Crop not being cut at ends	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	5.8 Knife, page 327
Crop not being cut at ends	Header is not level	Level header	3.9 Levelling the Header, page 196
Crop not being cut at ends	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	<ul style="list-style-type: none"> • 3.7.9 Reel Fore-Aft Position, page 80 • 3.7.10 Reel Tine Pitch, page 89

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Crop not being cut at ends	Divider runs down thick crop at ends, preventing proper feeding due to material bridging the cutter guards	Replace three or four end guards with stub guards	<ul style="list-style-type: none"> • 5.8.7 Knife Guards, page 331 • 6.3.3 Stub Guard Conversion Kit, page 444 • See your MacDon Dealer
Material accumulating in gap between cut-out in endsheet and knifehead	Crop heads leaning away from knifehead hole in endsheet	Add knifehead shield(s), except in damp/sticky soils	5.8.8 Knifehead Shield, page 342

TROUBLESHOOTING

7.2 Cutting Action and Knife Components

Symptom	Problem	Solution	Refer to
Ragged or uneven cutting of crop	Knife hold-downs not adjusted properly	Adjust hold-downs	<i>Checking and Adjusting Knife Hold-Downs, page 337</i>
Ragged or uneven cutting of crop	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	<i>5.9 Knife Drive, page 343</i>
Ragged or uneven cutting of crop	Knife is not operating at recommended speed	Check engine speed of combine	Refer to the combine operator's manual
Ragged or uneven cutting of crop	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	<ul style="list-style-type: none"> • <i>3.7.4 Reel Speed, page 74</i> • <i>3.7.5 Ground Speed, page 75</i>
Ragged or uneven cutting of crop	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	<ul style="list-style-type: none"> • <i>3.7.9 Reel Fore-Aft Position, page 80</i> • <i>3.7.10 Reel Tine Pitch, page 89</i>
Ragged or uneven cutting of crop	Cutterbar too high	Lower cutting height	<i>3.7.1 Cutting Height, page 53</i>
Ragged or uneven cutting of crop	Header angle too flat	Steepen header angle	<i>3.7.3 Header Angle, page 65</i>
Ragged or uneven cutting of crop	Bent knife causing binding of cutting parts	Straighten bent knife and align guards	<i>5.8.7 Knife Guards, page 331</i>
Ragged or uneven cutting of crop	Cutting edge of guards not close enough or parallel to knife sections	Align guards	<i>5.8.7 Knife Guards, page 331</i>
Ragged or uneven cutting of crop	Tangled/tough-to-cut crop	Install stub guards	<ul style="list-style-type: none"> • See your MacDon Dealer • <i>5.8.7 Knife Guards, page 331</i> • <i>Checking and Adjusting Knife Hold-Downs, page 337</i> • <i>6.3.3 Stub Guard Conversion Kit, page 444</i>
Ragged or uneven cutting of crop	Reel too far back	Move reel forward	<i>3.7.9 Reel Fore-Aft Position, page 80</i>
Ragged or uneven cutting of crop	Loose knife drive belt	Adjust drive belt tension	<i>5.9.2 Knife Drive Belts, page 350</i>

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Knife plugging	Reel too high or too far forward	Lower reel or move reel rearward	<ul style="list-style-type: none"> • 3.7.8 Reel Height, page 80 • 3.7.9 Reel Fore-Aft Position, page 80
Knife plugging	Ground speed too slow	Increase ground speed	3.7.5 Ground Speed, page 75
Knife plugging	Loose knife drive belt	Adjust drive belt tension	5.9.2 Knife Drive Belts, page 350
Knife plugging	Improper knife hold-down adjustment	Adjust hold-down	Checking and Adjusting Knife Hold-Downs, page 337
Knife plugging	Dull or broken knife section	Replace knife section	5.8.1 Replacing Knife Section, page 327
Knife plugging	Bent or broken guards	Align or replace guards	5.8.7 Knife Guards, page 331
Knife plugging	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	<ul style="list-style-type: none"> • 3.7.9 Reel Fore-Aft Position, page 80 • 3.7.10 Reel Tine Pitch, page 89
Knife plugging	Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	<ul style="list-style-type: none"> • 5.13.1 Reel Clearance to Cutterbar, page 397 • 5.13.2 Reel Frown, page 400
Knife plugging	Float too heavy	Adjust springs for lighter float	3.7.2 Header Float, page 59
Knife plugging	Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	Cutting on the Ground, page 57
Knife plugging	Mud or dirt build-up on cutterbar	Install cut-out sections	Installing Knifehead Shield, page 342
Knife plugging	Mud or dirt build-up on cutterbar	Flatten header angle	3.7.3 Header Angle, page 65
Knife plugging	Knife is not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual
Excessive header vibration	Knife on double-knife drive not timed ⁴⁶	Adjust knife timing ⁴⁶	Adjusting Double-Knife Timing, page 358
Excessive header vibration	Knife hold-downs not adjusted properly	Adjust hold-downs	Checking and Adjusting Knife Hold-Downs, page 337
Excessive header vibration	Knife not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual

46. Applies to timed double-knife drive headers only.

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Excessive header vibration	Excessive knife wear	Replace knife	<ul style="list-style-type: none"> • 5.8.2 Removing Knife, page 328 • 5.8.5 Installing Knife, page 330
Excessive header vibration	Loose or worn knifehead pin or drive arm	Tighten or replace parts	5.8.1 Replacing Knife Section, page 327
Excessive vibration of adapter and header	Incorrect knife speed	Adjust knife speed	3.7.7 Knife Speed, page 78
Excessive vibration of adapter and header	Driveline U-joints worn	Replace U-joints	See your MacDon Dealer
Excessive vibration of adapter and header	Bent cutterbar	Straighten cutterbar	See your MacDon Dealer
Excessive breakage of knife sections or guards	Knife hold-downs not adjusted properly	Adjust hold-downs	Checking and Adjusting Knife Hold-Downs, page 337
Excessive breakage of knife sections or guards	Cutterbar operating too low in stony conditions	Raise cutterbar, using skid shoes	Cutting on the Ground, page 57
Excessive breakage of knife sections or guards	Float is set too heavy	Adjust float springs for lighter float	3.7.2 Header Float, page 59
Excessive breakage of knife sections or guards	Bent or broken guard	Straighten or replace guard	5.8.7 Knife Guards, page 331
Excessive breakage of knife sections or guards	Header angle too steep	Flatten header angle	3.7.3 Header Angle, page 65
Knife back breakage	Bent or broken guard	Straighten or replace guard	5.8.7 Knife Guards, page 331
Knife back breakage	Worn knifehead pin	Replace knifehead pin	<ul style="list-style-type: none"> • 5.8.3 Removing Knifehead Bearing, page 329 • 5.8.4 Installing Knifehead Bearing, page 330
Knife back breakage	Dull knife	Replace knife	<ul style="list-style-type: none"> • 5.8.2 Removing Knife, page 328 • 5.8.5 Installing Knife, page 330

TROUBLESHOOTING

7.3 Reel Delivery

Symptom	Problem	Solution	Refer to
Reel not releasing material in normal standing crop	Reel speed too fast	Reduce reel speed	3.7.4 Reel Speed, page 74
Reel not releasing material in normal standing crop	Reel too low	Raise reel	3.7.8 Reel Height, page 80
Reel not releasing material in normal standing crop	Reel tines too aggressive	Reduce cam setting	3.7.10 Reel Tine Pitch, page 89
Reel not releasing material in normal standing crop	Reel too far back	Move reel forward	3.7.9 Reel Fore-Aft Position, page 80
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)	3.7.10 Reel Tine Pitch, page 89
Wrapping on reel end	Reel tines too aggressive	Reduce cam setting	3.7.10 Reel Tine Pitch, page 89
Wrapping on reel end	Reel too low	Raise reel	3.7.8 Reel Height, page 80
Wrapping on reel end	Reel speed too fast	Reduce reel speed	3.7.4 Reel Speed, page 74
Wrapping on reel end	Crop conditions	Install optional endshields	See your MacDon Dealer
Wrapping on reel end	Reel not centered in header	Center reel in header	5.13.3 Centering Reel, page 401
Reel releases crop too quickly	Reel tines not aggressive enough	Increase cam setting	3.7.10 Reel Tine Pitch, page 89
Reel releases crop too quickly	Reel too far forward	Move reel back	3.7.9 Reel Fore-Aft Position, page 80
Reel will not lift	Reel lift couplers are incompatible or defective	Change quick coupler	—
Reel will not turn	Quick couplers not properly connected	Connect couplers	Refer to the combine operator's manual
Reel will not turn	Reel drive chain disconnected	Connect chain	<ul style="list-style-type: none"> • 5.14.6 Replacing Drive Chain on Double Reel, page 432 • 5.14.7 Replacing Drive Chain on Single Reel, page 432

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Reel motion uneven under no load	Excessive slack in reel drive chain	Tighten chain	5.14.2 Adjusting Reel Drive Chain Tension, page 424
Reel motion is uneven or stalls In heavy crops	Reel speed too fast	Reduce reel speed	3.7.4 Reel Speed, page 74
Reel motion is uneven or stalls In heavy crops	Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	3.7.10 Reel Tine Pitch, page 89
Reel motion is uneven or stalls In heavy crops	Reel too low	Raise reel	3.7.8 Reel Height, page 80
Reel motion is uneven or stalls In heavy crops	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
Reel motion is uneven or stalls In heavy crops	Low oil reservoir level on combine NOTE: Sometimes there is more than one reservoir	Fill to proper level	Refer to the combine operator's manual
Reel motion is uneven or stalls In heavy crops	Relief valve malfunction	Replace relief valve	Refer to the combine operator's manual
Reel motion is uneven or stalls In heavy crops	Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace with high torque (10-tooth or 14-tooth) reel drive sprocket	5.14.3 Replacing Reel Drive Sprocket, page 426
Plastic fingers cut at tip	Insufficient reel to cutterbar clearance	Increase clearance	5.13.1 Reel Clearance to Cutterbar, page 397
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 53
Plastic fingers bent rearward at tip	Reel digging into ground with reel speed slower than ground speed	Decrease header tilt	3.7.3 Header Angle, page 65
Plastic fingers bent rearward at tip	Reel digging into ground with reel speed slower than ground speed	Move reel aft	3.7.9 Reel Fore-Aft Position, page 80
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 53
Plastic fingers bent forward at tip (opposite of above)	Reel digging into ground with reel speed faster than ground speed	Decrease header tilt	3.7.3 Header Angle, page 65
Plastic fingers bent forward at tip (opposite of above)	Reel digging into ground with reel speed faster than ground speed	Move reel aft	3.7.9 Reel Fore-Aft Position, page 80

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
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	<i>3.10 Unplugging the Cutterbar, page 197</i>
Plastic fingers bent close to tine tube	Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Stop reel before plugging becomes excessive	<i>3.10 Unplugging the Cutterbar, page 197</i>

TROUBLESHOOTING

7.4 Header and Drapers

Symptom	Problem	Solution	Refer to
Insufficient header lift	Low relief pressure	Increase relief pressure	Refer to the combine operator's manual
Insufficient side draper speed	Speed control set too low	Increase control setting	3.7.6 Draper Speed, page 76
Insufficient side draper speed	Relief pressure too low	Increase relief pressure to recommended setting	See your MacDon Dealer
Insufficient side draper speed	Worn out gear pump	Replace pump	See your MacDon Dealer
Insufficient side draper speed	Combine header drive too slow	Adjust to correct speed for combine model	Refer to the combine operator's manual
Insufficient side draper speed	Pressure compensator (V7) set too low	Adjust to increase setting	Refer to the combine operator's manual
Draper will not drive	Drapers are loose	Tighten drapers	
Draper will not drive	Drive or idler roller wrapped with material	Loosen draper and clean rollers	
Draper will not drive	Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	
Draper will not drive	Roller bearing seized	Replace roller bearing	5.12.6 Side Draper Roller Maintenance, page 387
Draper will not drive	Low hydraulic oil	Fill reservoir to full level	5.4.2 Adding Oil to Hydraulic Reservoir, page 295
Draper will not drive	Incorrect relief setting at flow control valve	Adjust relief setting	See your MacDon Dealer
Draper stalling	Material not feeding evenly off knife	Lower reel	3.7.8 Reel Height, page 80
Draper stalling	Material not feeding evenly off knife	Install stub guards	6.3.3 Stub Guard Conversion Kit, page 444
Draper stalling	Material accumulates inside or under front edge of draper	Adjust deck height	5.12.5 Adjusting Deck Height, page 385
Adapter auger back-feeds	Auger set too high	Check reversing mechanism inside auger	Refer to the combine operator's manual
Adapter auger back-feeds	Auger set too high	Lower auger	5.7.1 Adjusting Auger to Pan Clearance, page 307
Adapter auger back-feeds	John Deere: Feeder chain running too slow	Run feeder chain at high speed	Refer to the combine operator's manual

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Adapter auger back-feeds	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
Adapter auger back-feeds	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
Hesitation in flow of bulky crop	Header angle too flat	Steepen header angle	3.7.3 Header Angle, page 65
Hesitation in flow of bulky crop	Material overload on drapers	Increase side draper speed	3.7.6 Draper Speed, page 76
Hesitation in flow of bulky crop	Material overload on drapers	Install upper cross auger (UCA)	See your MacDon Dealer
Hesitation in flow of bulky crop	Material overload on drapers	Add flighting extensions	4.1.1 Using Flighting Extensions, page 219
Hesitation in flow of bulky crop	Material accumulation at auger ends	Install stripper bars	4.1.2 Using Stripper Bars, page 219
Hesitation in flow of bulky crop	CASE: Stone retarder blocks interfering with crop flow	Adjust blocks to minimum height	Refer to the combine operator's manual
Hesitation in flow of bulky crop	Side drapers running too fast, piling material in center of feeder draper	Reduce header side draper speed	3.7.6 Draper Speed, page 76
Hesitation in flow of bulky crop	Feeder house chain drum too low	Move drum to corn position	Refer to the combine operator's manual
Adapter auger wraps crop	Crop susceptible to wrapping (flax)	Add flighting extensions or stripper bars	<ul style="list-style-type: none"> • 4.1.2 Using Stripper Bars, page 219 • 4.1.1 Using Flighting Extensions, page 219
Adapter auger wraps crop	Auger speed too fast	Install slow down kit	See your MacDon Dealer
Adapter auger stalling	Auger drive chain disengaging the driven sprocket	Check drive chain tension	5.7.2 Checking Auger Drive Chain Tension, page 308
Combine feeder drum wraps crop	Crop susceptible to wrapping (flax)	Add stripper bars	4.1.2 Using Stripper Bars, page 219
Crop backs up or hesitates on feed draper	Feed draper stalling	Clean debris from poly pan	—
Crop backs up or hesitates on feed draper	Feed draper stalling	Check feed draper tension	5.12.4 Adjusting Side Draper Tracking, page 383
Crop backs up or hesitates on feed draper	Feed draper stalling	Replace roller bearing(s)	Replacing Adapter Feed Draper Drive Roller Bearing, page 370

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Crop backs up or hesitates on feed draper	Feed draper stalling	Check feed draper motor	—
Crop backs up or hesitates on feed draper	Heavy crop plugging between adapter auger and feed draper	Check auger clearance	5.7.1 Adjusting Auger to Pan Clearance, page 307
Crop backs up or hesitates on feed draper	Heavy crop plugging between adapter auger and feed draper	Refer to Adapter auger back-feeds earlier in this table	—
Crop backs up or hesitates on feed draper	Excessive clearance from auger to drive roller	Lower auger	5.7.1 Adjusting Auger to Pan Clearance, page 307
Crop backs up or hesitates on feed draper	Auger speed too slow	Install auger speed-up kit	See your MacDon Dealer
Side drapers back-feed	Side drapers running too slow in heavy crop	Increase side draper speed	3.7.6 Draper Speed, page 76
Crop is thrown across opening and under opposite side draper	Side drapers running too fast in light crop	Reduce side draper speed	3.7.6 Draper Speed, page 76
Crop is thrown across opening and under opposite side draper	Excessive overlap of feeder draper	Center side draper drive rollers over feed draper side deflectors	See your MacDon Dealer
Crop feeding into feeder house at sides more than at center	Auger not delivering crop properly	Add flighting extensions	4.1.1 Using Flighting Extensions, page 219
Crop feeding into feeder house at sides more than at center	Auger not delivering crop properly	Add stripper bars	4.1.2 Using Stripper Bars, page 219
Crop feeding into feeder house at sides more than at center	Auger not delivering crop properly	Remove auger outer tines	Removing Feed Auger Tines, page 319
Crop feeding into feeder house at sides more than at center	Auger not delivering crop properly	Install auger speed-up kit	See your MacDon Dealer
Crop feeding into feeder house at center more than at sides	Auger not delivering crop properly	Add auger outer tines	Removing Feed Auger Tines, page 319
Crop feeding into feeder house at center more than at sides	Auger not delivering crop properly	Remove flighting extensions	4.1.1 Using Flighting Extensions, page 219
Crop feeding into feeder house at center more than at sides	Auger not delivering crop properly	Remove auger stripper bars	4.1.2 Using Stripper Bars, page 219
Crop getting stuffed in gap between cut-out in endsheet and knifehead	Crop heads leaning away from knifehead hole in endsheet	Add shields, except in damp/sticky soils	5.8.8 Knifehead Shield, page 342

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Material accumulates inside or under front edge of draper	Deck height improperly adjusted	Adjust deck height	5.12.5 Adjusting Deck Height, page 385
Material wrapping at upper cross auger (UCA) beater bars	Crop conditions do not require beater bars	Remove beater bars	3.12 Upper Cross Auger (UCA), page 199
Material accumulating on end deflectors and releasing in bunches	End deflectors too wide	Trim deflector or replace with narrow deflector (MD #172381)	—
Cutterbar pushes dirt across entire length	Header height too low	Raise header height with float optimizer control	Refer to the combine operator's manual
Cutterbar pushes dirt across entire length	Float locked	Unlock float	3.7.2 Header Float, page 59
Cutterbar pushes dirt across entire length	Float set too heavy	Adjust float	
Cutterbar pushes dirt across entire length	Header angle too steep	Adjust header to optimum angle	3.7.3 Header Angle, page 65
Pushing dirt at combine adapter lower beam	Combine face plate incorrectly installed	Remove adapter and check combine faceplate	Refer to the combine operator's manual
Pushing dirt at combine adapter lower beam	Header angle too flat	Increase header angle	3.7.3 Header Angle, page 65
Pushing dirt at combine adapter lower beam	Float too light, header legs do not rest on stops	Adjust to heavier float	3.7.2 Header Float, page 59
Wing float assembly binding	Float locked out	Disengage adapter float lockout	3.7.2 Header Float, page 59
Wing float assembly binding	Float set too heavy	Adjust adapter springs to lighter float	
Reel contacts endsheet, especially in smile condition	Reel not centered in header	Center reel in header	5.13.3 Centering Reel, page 401
Reel contacts endsheet, especially in smile condition	Loose reel arm brace	Center reel in header and tighten brace	5.13.3 Centering Reel, page 401

TROUBLESHOOTING

7.5 Cutting Edible Beans

Symptom	Problem	Solution	Refer to
Excessive losses at dividers	Divider rod running down crop and shattering pods	Remove divider rod	3.7.12 Crop Divider Rods, page 97
Excessive losses at dividers	Vines and plants build up on endsheet	Install divider rod	3.7.12 Crop Divider Rods, page 97
Reel ends wrap with crop	Uncut crop interfering on reel ends	Add reel endshields	See your MacDon Dealer
Reel wraps with crop	Reel too low	Raise reel	3.7.8 Reel Height, page 80
Plants being stripped and complete or partial plants left behind	Header being carried off ground	Lower header to ground and run on skid shoes and/or cutterbar	Cutting on the Ground, page 57
Plants being stripped and complete or partial plants left behind	Float set too light—cutterbar not following ground	Set float for: <ul style="list-style-type: none"> • Dry ground: 50–70 kg (100–150 lb.) • Wet ground: 25–50 kg (50–100 lb.) 	3.7.2 Header Float, page 59
Plants being stripped and complete or partial plants left behind	Reel too high	Fully retract reel cylinders	3.7.8 Reel Height, page 80
Plants being stripped and complete or partial plants left behind	Reel too high with cylinders fully retracted	Adjust reel height	Adjusting Reel Clearance, page 400
Plants being stripped and complete or partial plants left behind	Finger pitch too retarded	Adjust finger pitch	3.7.10 Reel Tine Pitch, page 89
Plants being stripped and complete or partial plants left behind	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	3.7.9 Reel Fore-Aft Position, page 80
Plants being stripped and complete or partial plants left behind	Header angle too shallow	Lengthen center-link; if cutting on ground, header angle can be increased by fully retracting lift cylinders	3.7.3 Header Angle, page 65
Plants being stripped and complete or partial plants left behind	Reel too slow	Adjust reel speed to be marginally faster than ground speed	3.7.4 Reel Speed, page 74
Plants being stripped and complete or partial plants left behind	Ground speed too high	Lower ground speed	3.7.5 Ground Speed, page 75
Plants being stripped and complete or partial plants left behind	Header skid shoes adjusted too low	Raise skid shoes to maximum up position	Cutting on the Ground, page 57

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Plants being stripped and complete or partial plants left behind	Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install cutterbar wear plate on bottom of cutterbar and skid shoes	See your MacDon Dealer
Plants being stripped and complete or partial plants left behind	Worn/damaged knife sections	Replace sections or complete knife	<ul style="list-style-type: none"> • 5.8.1 Replacing Knife Section, page 327 • 5.8.2 Removing Knife, page 328 • 5.8.5 Installing Knife, page 330
Plants being stripped and complete or partial plants left behind	Dirt packs on bottom of cutterbar with wear plate and raises cutterbar off the ground	Ground too wet; allow soil to dry	—
Plants being stripped and complete or partial plants left behind	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	—
Plants being stripped and complete or partial plants left behind	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	—
Plants being stripped and complete or partial plants left behind	Header is not level	Level header	3.9 Levelling the Header, page 196
Plants being stripped and complete or partial plants left behind	Parts of vines get caught in pointed guard tip (occurs more in row-cropped beans that are hilled from cultivating)	Install stub guard kit	See your MacDon Dealer
Plant vines pinched between top of draper and cutterbar	Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted	Manually remove debris from cutterbar cavity to prevent damage to drapers	—
Crop accumulating at guards and not moving rearward onto drapers	Reel finger pitch too retarded	Increase finger aggressiveness (cam position)	3.7.10 Reel Tine Pitch, page 89
Crop accumulating at guards and not moving rearward onto drapers	Reel too high relative to knife	Readjust reel minimum height with cylinders fully retracted	Adjusting Reel Clearance, page 400
Crop accumulating at guards and not moving rearward onto drapers	Reel too far forward of cutterbar	Reposition reel	3.7.9 Reel Fore-Aft Position, page 80
Cutterbar guards breaking	Float insufficient	Increase float	3.7.2 Header Float, page 59

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
Cutterbar guards breaking	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	<ul style="list-style-type: none"> • 6.3.3 Stub Guard Conversion Kit, page 444 • See your MacDon Dealer
Reel shattering pods	Reel running too fast	Reduce reel speed	3.7.4 Reel Speed, page 74
Reel shattering pods	Bean pods are too dry	Cut at night with heavy dew once pods have softened	—
Reel shattering pods	Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	3.7.10 Reel Tine Pitch, page 89
Reel shattering pods	Reel too far forward of cutterbar C-section	Reposition reel	3.7.10 Reel Tine Pitch, page 89
Cutterbar pushing too much trash and dirt	Header too heavy	Readjust float to make header lighter	3.7.2 Header Float, page 59
Cutterbar pushing too much trash and dirt	Header angle too steep	Decrease header angle with lift cylinders	3.7.3 Header Angle, page 65
Cutterbar pushing too much trash and dirt	Header angle too steep	Shorten the center-link	3.7.3 Header Angle, page 65
Cutterbar pushing too much trash and dirt	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
Cutterbar pushing too much trash and dirt	Improper support for header	Install center skid shoes on header	See your MacDon Dealer
Cutterbar pushing too much dirt in certain locations for length of field	Tire tracks or row crop ridges caused by seeding or spraying operations	Cut at angle to ridges, or crop rows to allow knife and guards to clean out better	—
Cutterbar pushing too much dirt in certain locations for length of field	Rolling land along length of field due to cultivating	Cut at 90° to undulations, provided knife floats across without digging in	—
Cutterbar fills up with dirt	Excessive gap between top of front of draper and cutterbar	Adjust front deck hooks to obtain proper clearance between cutterbar and draper	5.12.5 Adjusting Deck Height, page 385
Cutterbar fills up with dirt	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	—

TROUBLESHOOTING

Symptom	Problem	Solution	Refer to
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)	—
Reel carries over odd plants in same location	Dirt accumulation on end of fingers do not let plants slide off fingers over drapers	Raise reel	<i>3.7.8 Reel Height, page 80</i>
Reel carries over odd plants in same location	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	<i>3.7.9 Reel Fore-Aft Position, page 80</i>
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	<i>3.7.6 Draper Speed, page 76</i>
Reel carries over excessive amounts of plants or wads	Finger pitch too retarded	Increase finger pitch	<i>3.7.10 Reel Tine Pitch, page 89</i>

8 Reference

8.1 Conversion Chart

Table 8.1 Conversion Chart

Quantity	SI Units (Metric)		Factor	Standard Units	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	$\times 2.4710 =$	acre	acres
Flow	liters per minute	L/min	$\times 0.2642 =$	US gallons per minute	gpm
Force	Newton	N	$\times 0.2248 =$	pound force	lbf
Length	millimeter	mm	$\times 0.0394 =$	inch	in.
Length	meter	m	$\times 3.2808 =$	foot	ft.
Power	kilowatt	kW	$\times 1.341 =$	horsepower	hp
Pressure	kilopascal	kPa	$\times 0.145 =$	pounds per square inch	psi
Pressure	megapascal	MPa	$\times 145.038 =$	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	$\times 14.5038 =$	pounds per square inch	psi
Torque	Newton meter	Nm	$\times 0.7376 =$	pound feet or foot pounds	lbf-ft
Torque	Newton meter	Nm	$\times 8.8507 =$	pound inches or inch pounds	lbf-in
Temperature	degrees Celsius	°C	$(^{\circ}\text{C} \times 1.8) + 32 =$	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	$\times 3.2808 =$	feet per minute	ft/min
Velocity	meters per second	m/s	$\times 3.2808 =$	feet per second	ft/s
Velocity	kilometers per hour	km/h	$\times 0.6214 =$	miles per hour	mph
Volume	liter	L	$\times 0.2642 =$	US gallon	US gal
Volume	milliliter	ml	$\times 0.0338 =$	ounce	oz.
Volume	cubic centimeter	cm ³ or cc	$\times 0.061 =$	cubic inch	in. ³
Weight	kilogram	kg	$\times 2.2046 =$	pound	lb.

8.2 Torque Specifications

The following tables provide correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade of bolt.
- Use torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by $f=0.65$.

Self-tapping screws

Standard torque is to be used (not to be used on critical or structurally important joints).

8.2.1 SAE Bolt Torque Specifications

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

Table 8.2 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

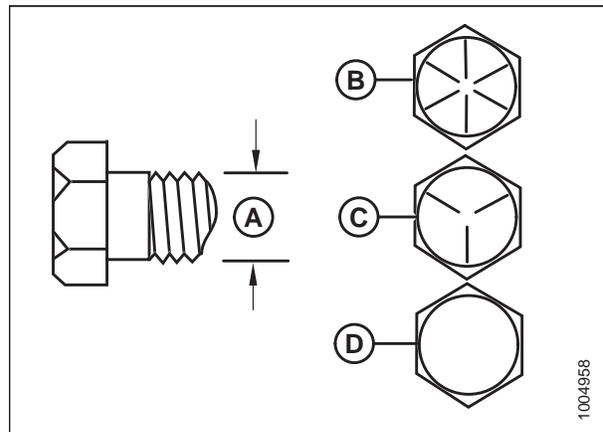


Figure 8.1: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

Table 8.3 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

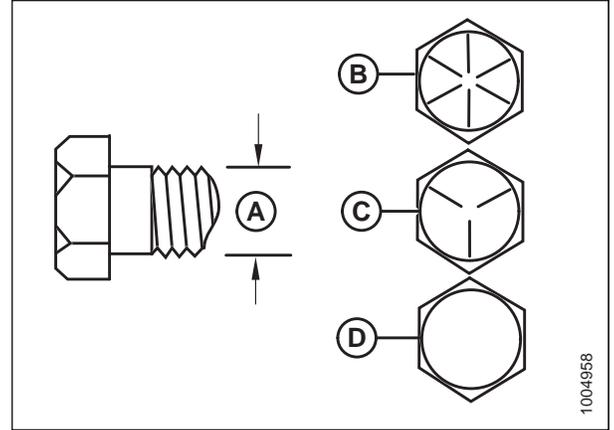


Figure 8.2: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

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Table 8.4 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

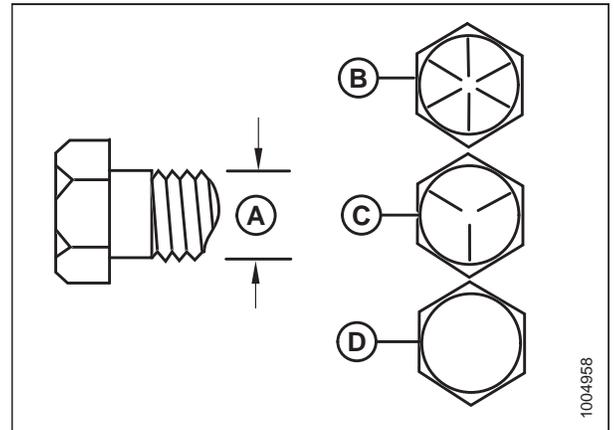


Figure 8.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

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REFERENCE

Table 8.5 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

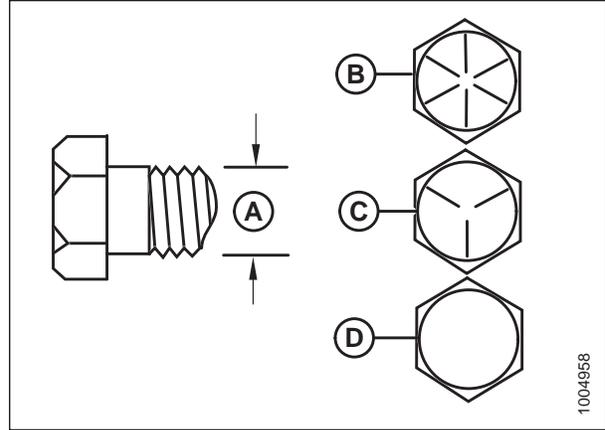


Figure 8.4: Bolt Grades

A - Nominal Size
 B - SAE-8
 C - SAE-5
 D - SAE-2

8.2.2 Metric Bolt Specifications

Table 8.6 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

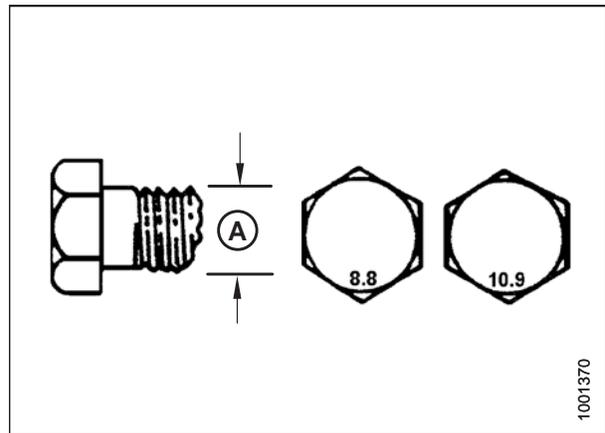


Figure 8.5: Bolt Grades

REFERENCE

Table 8.7 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

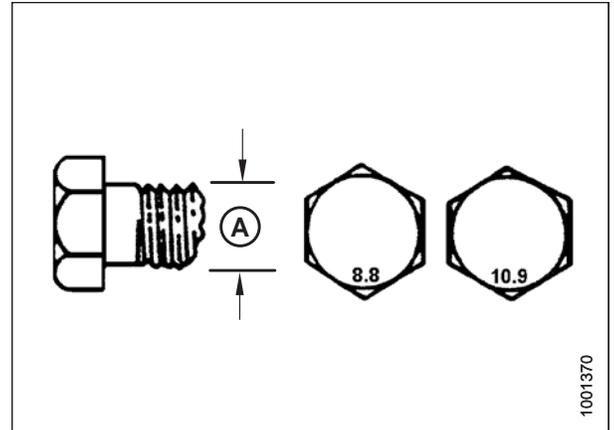


Figure 8.6: Bolt Grades

Table 8.8 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

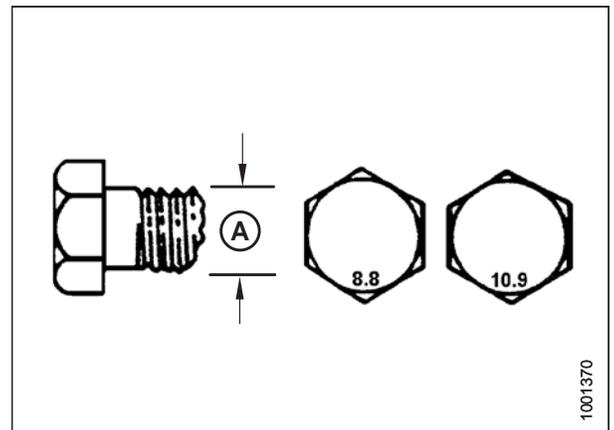


Figure 8.7: Bolt Grades

REFERENCE

Table 8.9 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

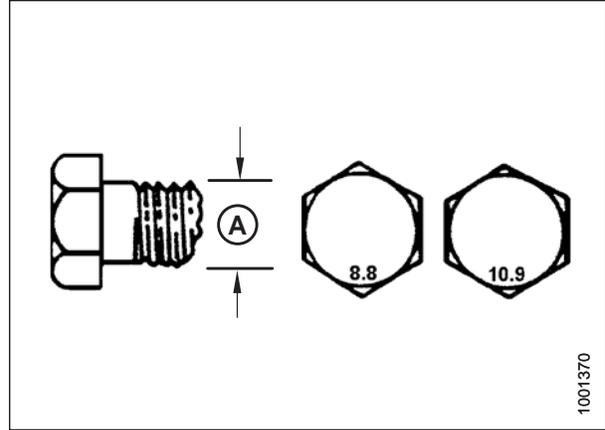


Figure 8.8: Bolt Grades

8.2.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.10 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	–	–	–	–

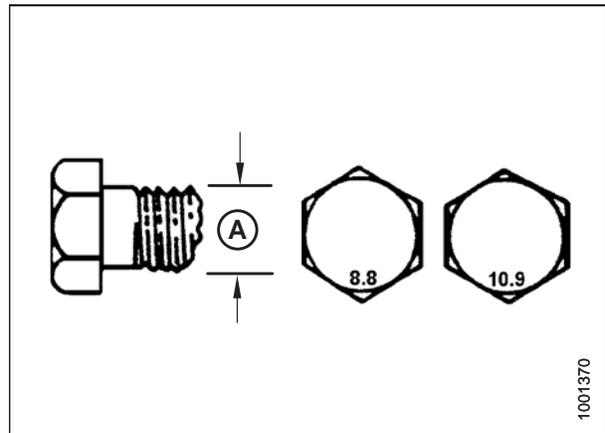


Figure 8.9: Bolt Grades

8.2.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table 8.11, page 475.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

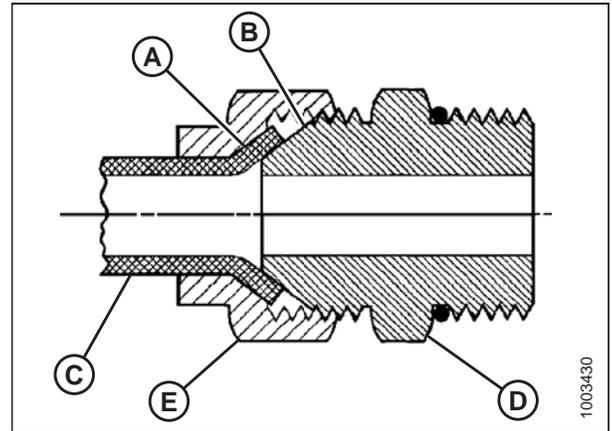


Figure 8.10: Hydraulic Fitting

Table 8.11 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value ⁴⁷		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
-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

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

REFERENCE

8.2.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

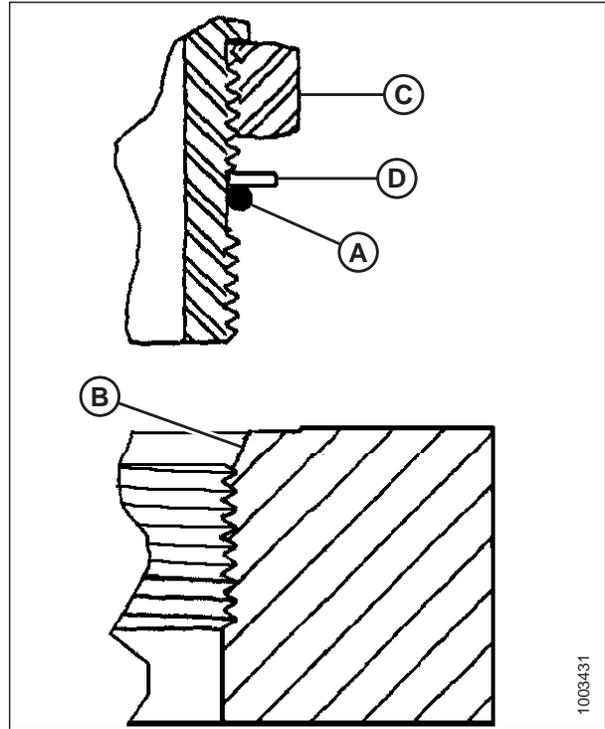


Figure 8.11: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).
8. Check final condition of fitting.

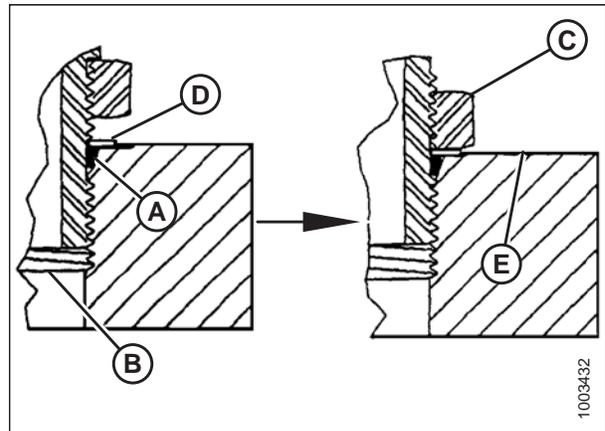


Figure 8.12: Hydraulic Fitting

REFERENCE

Table 8.12 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value ⁴⁸	
		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

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

REFERENCE

8.2.6 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 8.13, page 478.
6. Check final condition of fitting.

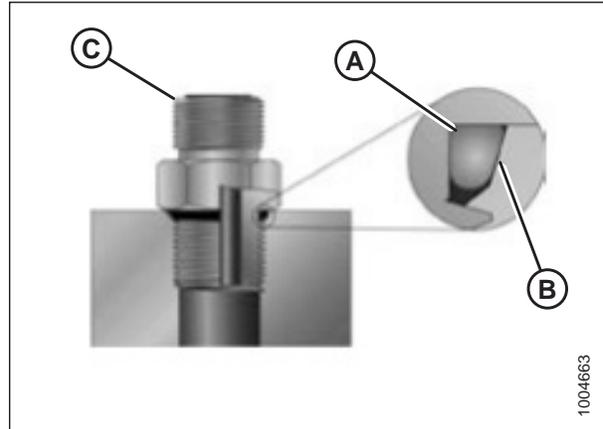


Figure 8.13: Hydraulic Fitting

Table 8.13 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value ⁴⁹	
		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

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

REFERENCE

8.2.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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



Figure 8.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 8.14, page 479.

NOTE:

If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).

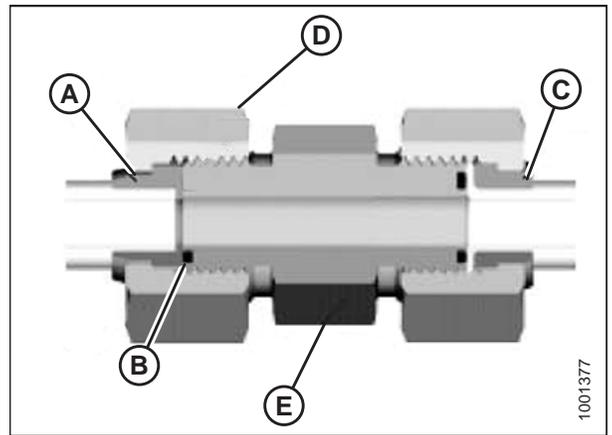


Figure 8.15: Hydraulic Fitting

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

Table 8.14 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁵⁰	
			Nm	lbf-ft
-3	Note ⁵¹	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ⁵¹	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

50. Torque values and angles shown are based on lubricated connection as in reassembly.

51. O-ring face seal type end not defined for this tube size.

REFERENCE

Table 8.14 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁵²	
			Nm	lbf-ft
-14	Note ⁵¹	7/8	–	–
-16	1-7/16	1	150–165	111–122
-20	1-11/16	1-1/4	205–226	151–167
-24	1–2	1-1/2	315–347	232–256
-32	2-1/2	2	510–561	376–414

8.2.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The Turns From Finger Tight (T.F.F.T.) values are shown in Table 8.15, page 480. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

Overtorque failure of fittings may not be evident until fittings are disassembled.

Table 8.15 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended T.F.F.T.	Recommended F.F.F.T.
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
1 1/4–11 1/2	1.5–2.5	9–15
1 1/2–11 1/2	1.5–2.5	9–15
2–11 1/2	1.5–2.5	9–15

52. Torque values and angles shown are based on lubricated connection as in reassembly.

REFERENCE

8.3 Unloading and Assembly

Refer to the instructions for your specific header for unloading, assembly, and setup procedures that are included with your shipment. The instruction part numbers are shown in the following table:

Shipping Destination	Header Description	MacDon Instruction Part Number
North America	D65 Draper Header and CA25 Combine Adapter	MD #214320
Export (anywhere other than North America)	D65 Draper Header and CA25 Combine Adapter	MD #214321

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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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