

D65 Draper Header for Self-Propelled Windrowers

**IMPORTANT: PAGE 35 HAS BEEN
UPDATED SINCE THIS MANUAL WAS
PUBLISHED.**

Operator's Manual

169594 Rev. C

Original Instruction

D65 Draper Header for Windrowers



1003985

Published: September, 2013

Declaration of Conformity



EC Declaration of Conformity

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

The person named below declares that:

Machine type: *SP Draper Header*
Model: *Series D65*
Serial Number(s): *As Per Shipping Document*

fulfills all relevant provisions and essential requirements of the following directives:

Directive	Number	Certification Method
Machinery Directive	2006/42/EC	Self-Certification

Name and address of the person in the European Community authorized to compile the technical construction file:

Johannes Molitor
Schwarzwald Strasse 67
66482 Zweibrucken / Germany
HRB 31002, Amtsgericht Zweibrucken

Place of Declaration: Winnipeg, Manitoba, Canada **Name:** Ibrahim Saleh
Date of Declaration: 13 May 2013 **Title:** Director, Product Integrity

Introduction

This instructional manual contains information on the D65 Draper Header. It is designed to serve a dual function in your grain, hay, and specialty crop harvesting operation. Teamed with your self-propelled windrower power unit and optional hay conditioner, D65 Draper Headers will cut and lay crop into uniform, fluffy windrows.

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 UNLOAD, ASSEMBLE, OR USE THE MACHINE.

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

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

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

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

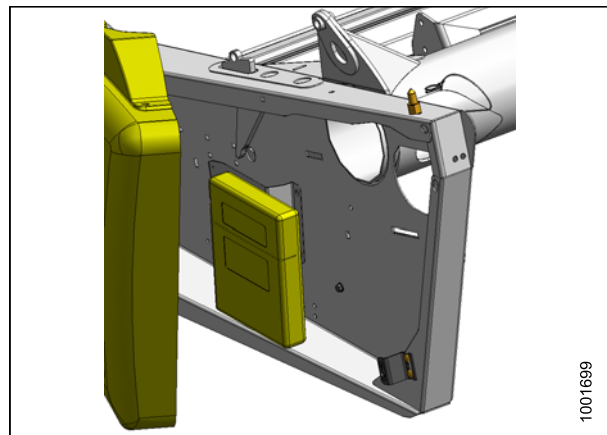


Figure 1: Manual storage location

Model and Serial Number

Record the model number, serial number, and model year of the header and Slow Speed Transport/Stabilizer Wheel option (if installed) on the lines below.

NOTE: Right Hand (RH) and Left Hand (LH) designations are determined from the Operator's position, facing forward.

Draper Header

Header Model: _____

Serial Number: _____

Year: _____

In shipping configuration, the serial number plate is located beside the knife drive motor on the left hand endsheet.

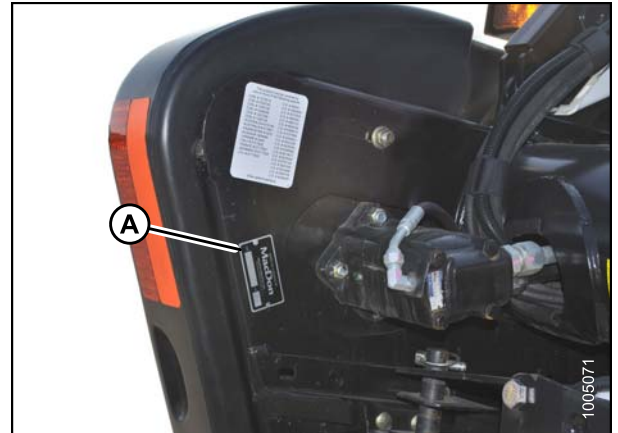


Figure 2: Header serial number location

Slow Speed Transport/Stabilizer Wheel Option

Serial Number: _____

Year: _____

The serial number plate is located on the right hand axle assembly.

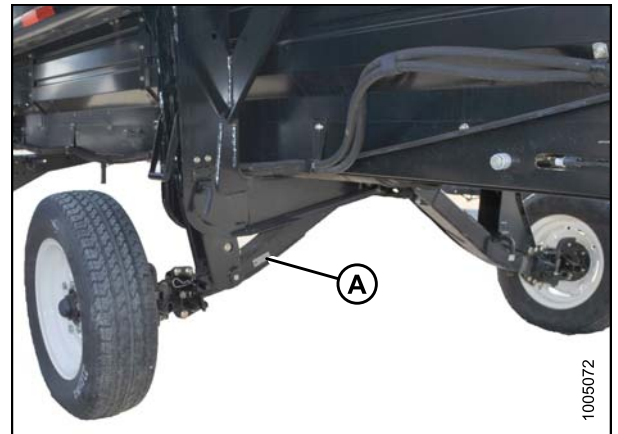


Figure 3: Slow Speed Transport/Stabilizer Wheel Option serial number location

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1 Safety

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Read operator's manual before operating

SAFETY

1.2 Signal Words

Three signal words, DANGER, WARNING, and CAUTION, are used to alert you to hazardous situations. The appropriate signal word for each situation has been selected using the following guidelines:



DANGER

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



WARNING

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



CAUTION

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

1.3 General Safety

CAUTION

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

Protect yourself

- When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that **COULD** be necessary for the job at hand. Don't take chances.

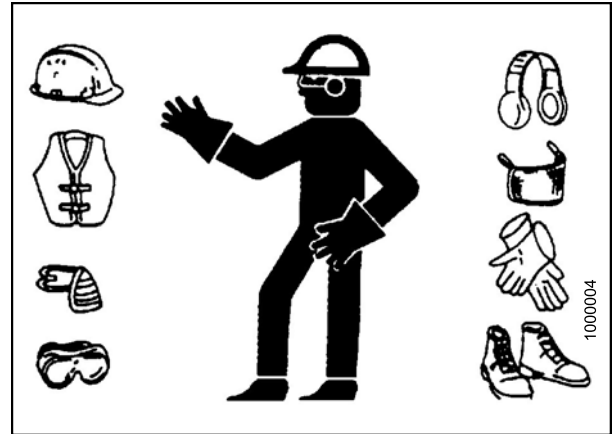


Figure 1.2

- You may need:
 - A hard hat
 - Protective footwear with slip resistant soles
 - Protective glasses or goggles
 - Heavy gloves
 - Wet weather gear
 - A respirator or filter mask

- Hearing protection

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



Figure 1.3

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

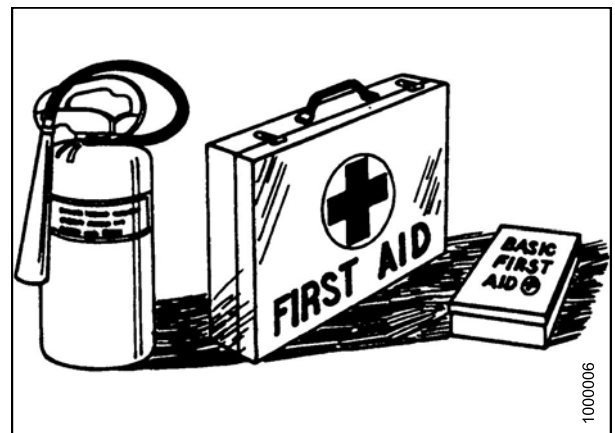


Figure 1.4

SAFETY

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



Figure 1.5

- Keep hands, feet, clothing, and hair away from moving parts. Never attempt to clear obstructions, or objects, from a machine while the engine is running.
- Do **NOT** modify the machine. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- Stop engine and remove key from ignition before leaving operator's seat for any reason. A child or even a pet could engage an idling machine

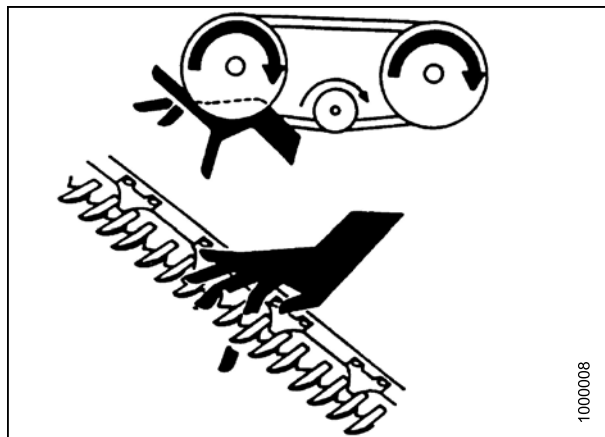


Figure 1.6

- Keep the area used for servicing machinery clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Keep work area well lit.
- Keep machinery clean. Straw and chaff, on a hot engine, are a fire hazard. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before storage.
- 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

1.4 Maintenance Safety

To ensure your safety while maintaining the machine

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



Figure 1.8: Slip on Puddle



Figure 1.9: Keep Away

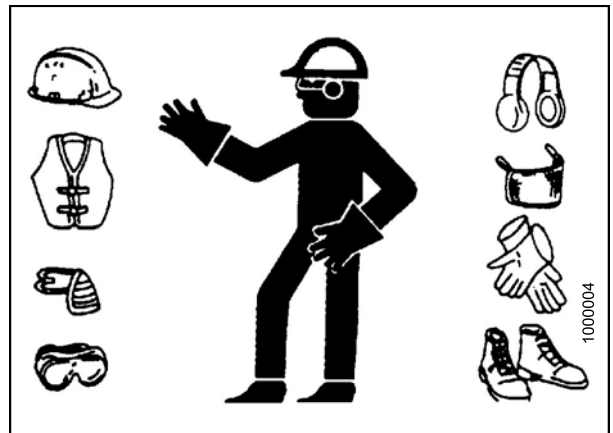


Figure 1.10: Safety Gear

SAFETY

1.5 Hydraulic Safety

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

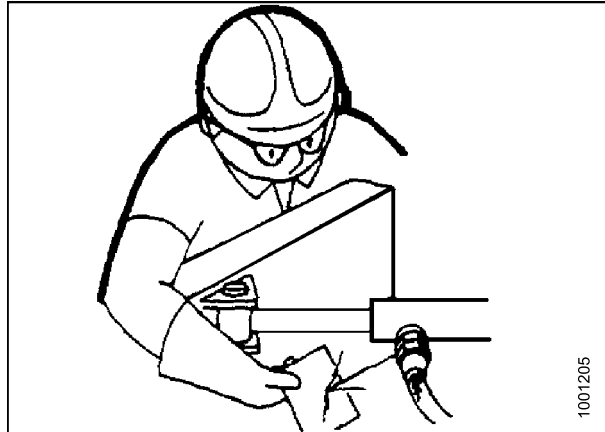


Figure 1.11: Checking hydraulic leaks

- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. 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

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

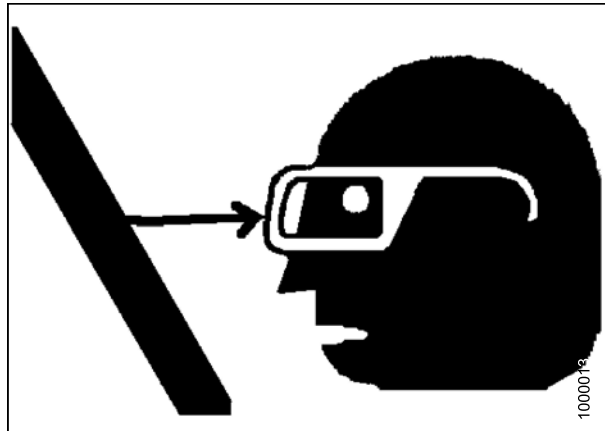


Figure 1.13: Wear safety glasses

SAFETY

1.6 Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion that may result in serious injury or death.



Figure 1.14: Lower all safety stops

- Do **NOT** attempt to mount a tire unless you have the proper training and equipment.

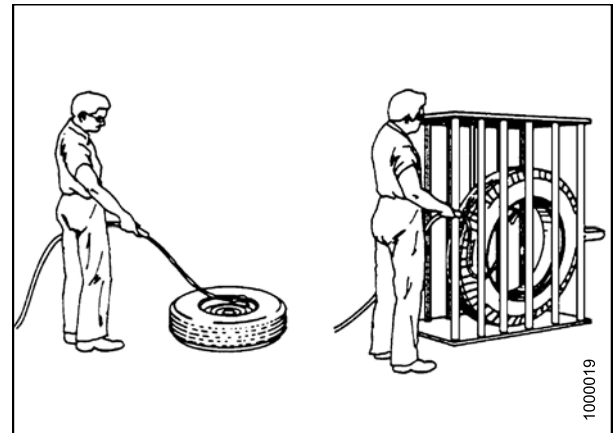


Figure 1.15: Safely filling a tire with air

- Have a qualified tire dealer or repair service perform required tire maintenance.

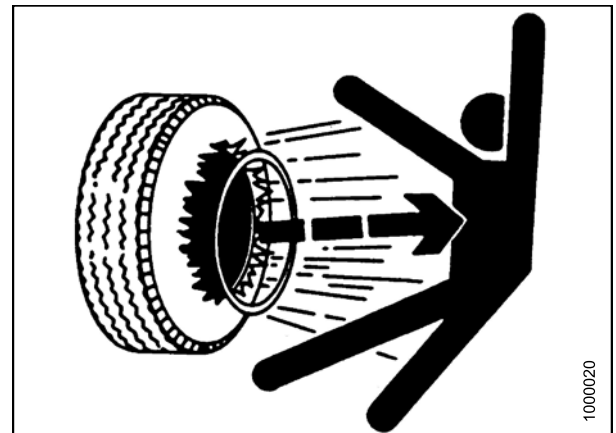


Figure 1.16: Over-inflation of tire

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 the repair part also bears the current safety sign.
- Safety signs are available from your Dealer Parts Department.

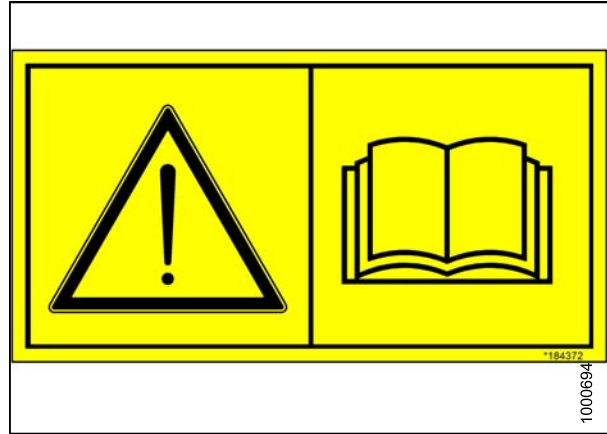


Figure 1.17: Read operator's manual before operating

1.7.1 Installing Safety Decals

To install a safety decal, follow these steps:

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

SAFETY

1.8 Safety Decal Locations

1.8.1 Upper Cross Auger (UCA)

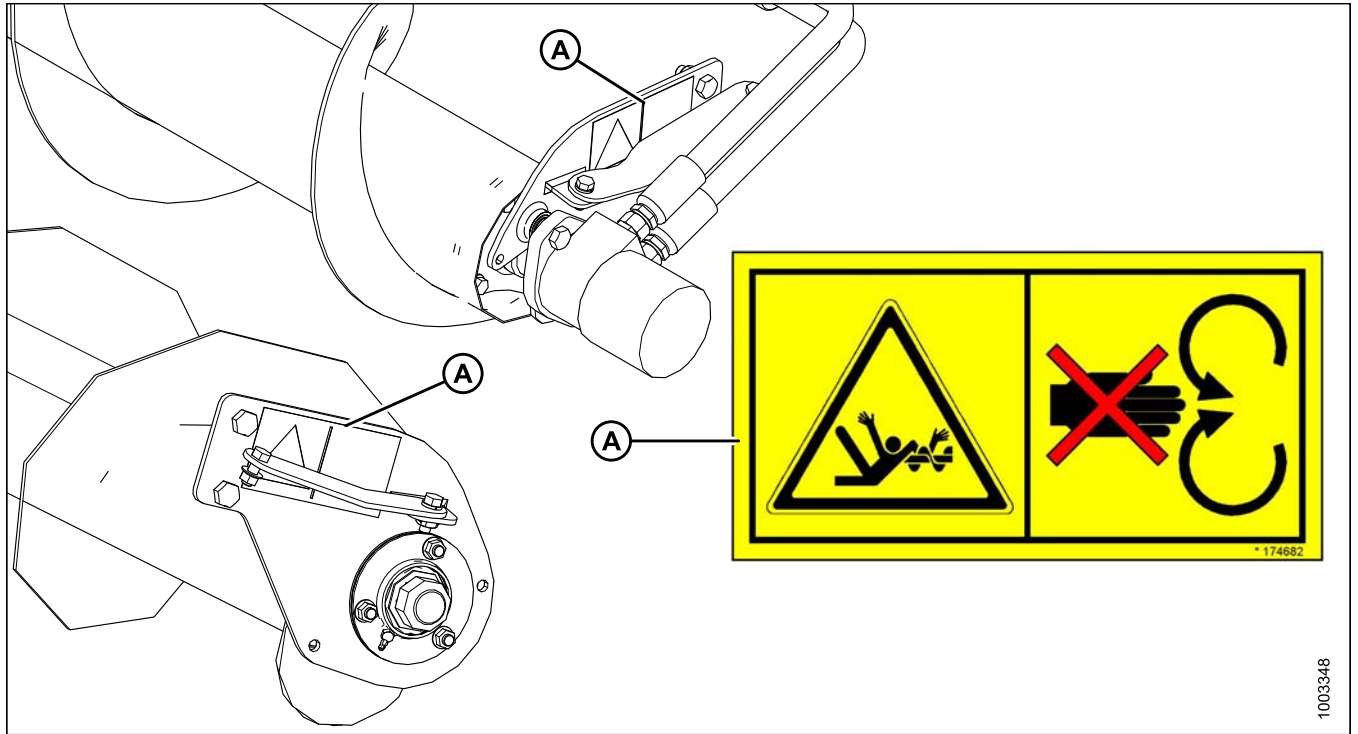


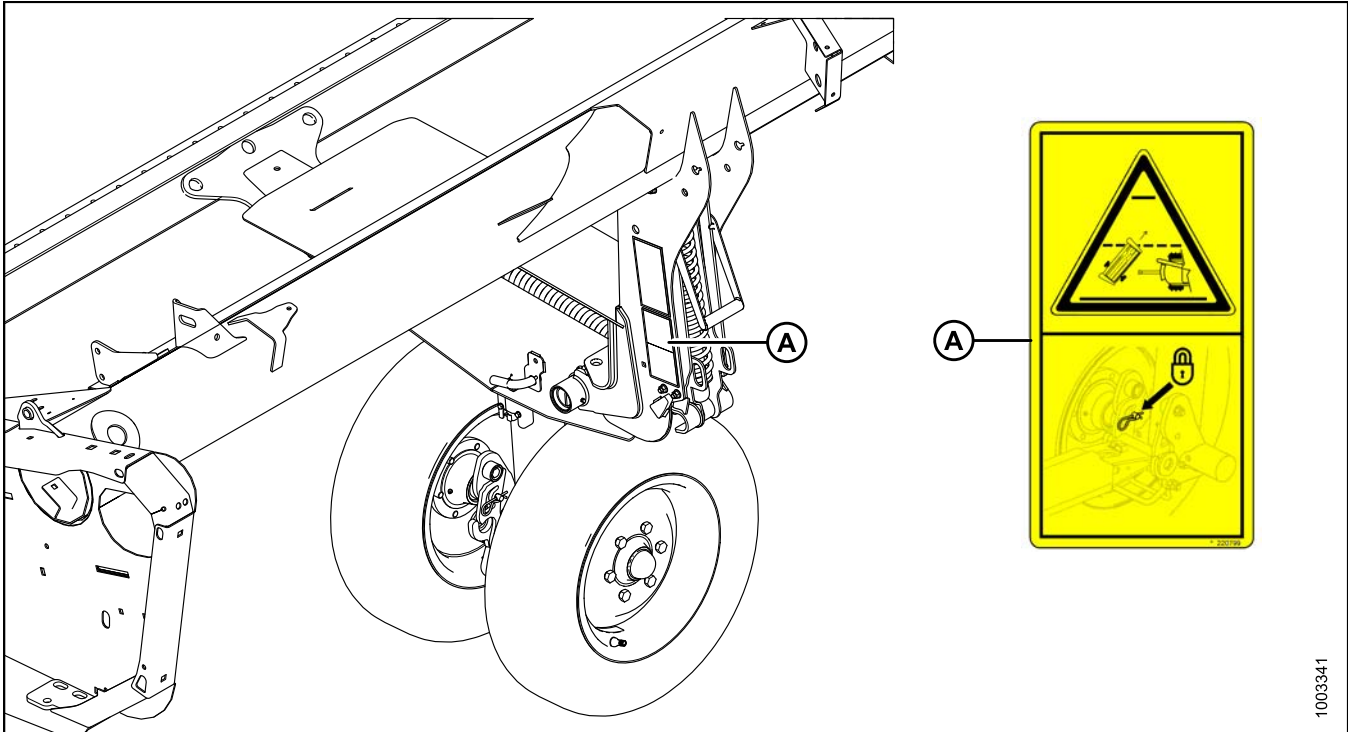
Figure 1.18: Safety sign locations

A - Auger bracket MD #174682

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SAFETY

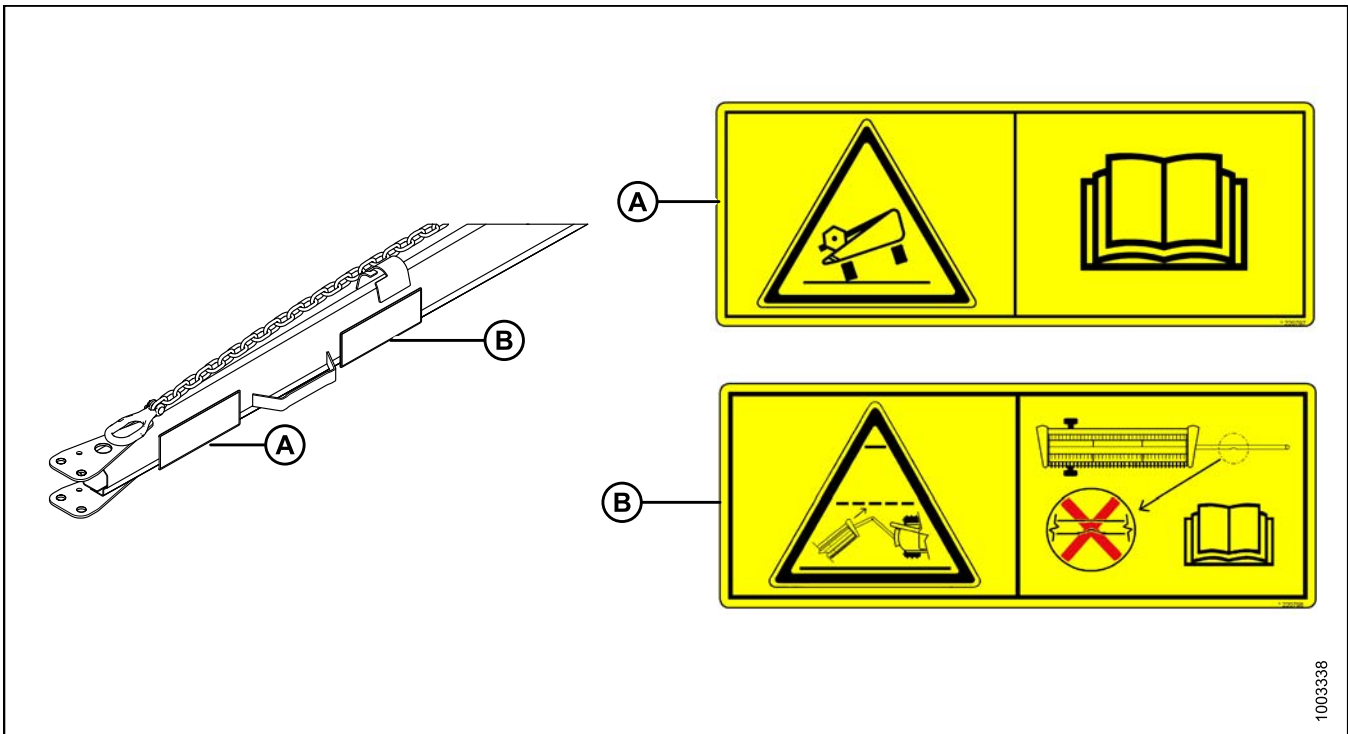
1.8.2 Slow Speed Transport



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Figure 1.19: Safety sign locations (Header)

A - Front transport leg MD #220799



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Figure 1.20: Safety sign locations (Hitch)

A - MD #220797

B - MD #220798

SAFETY

1.8.3 Vertical Knife

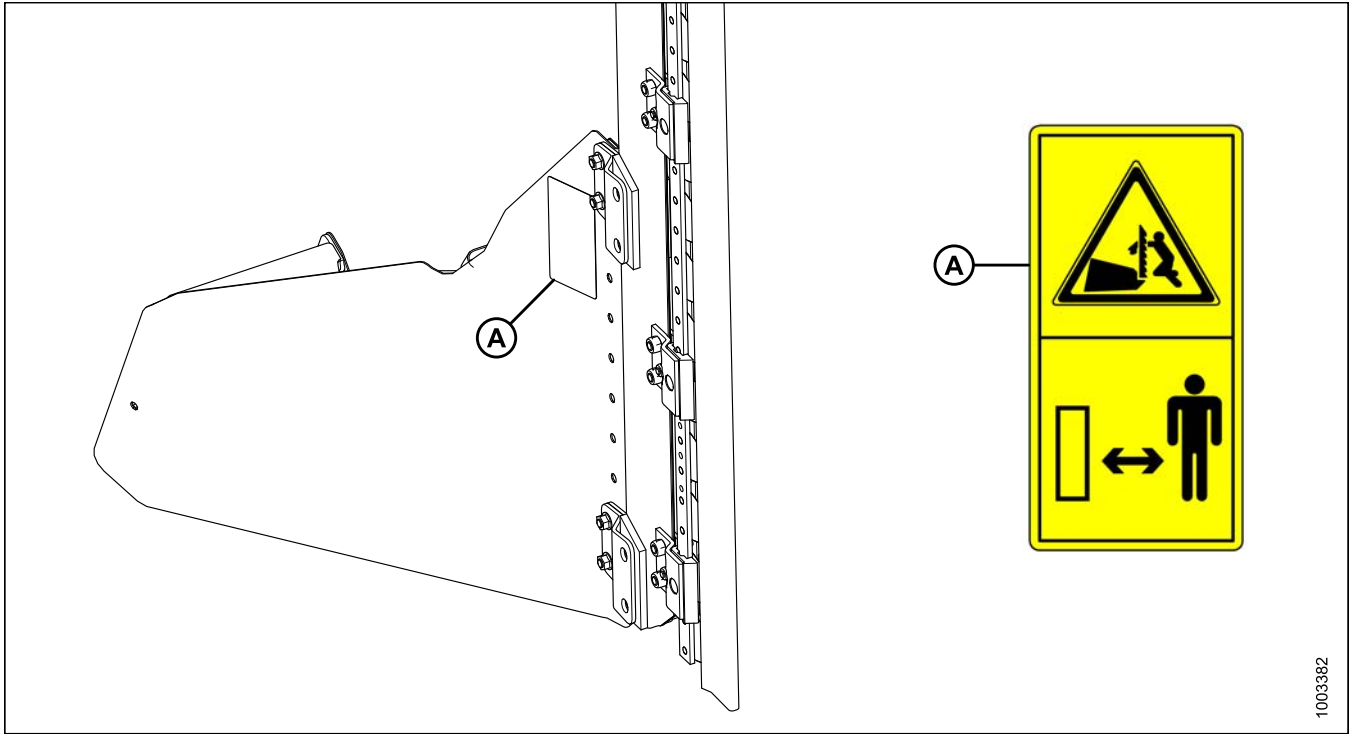
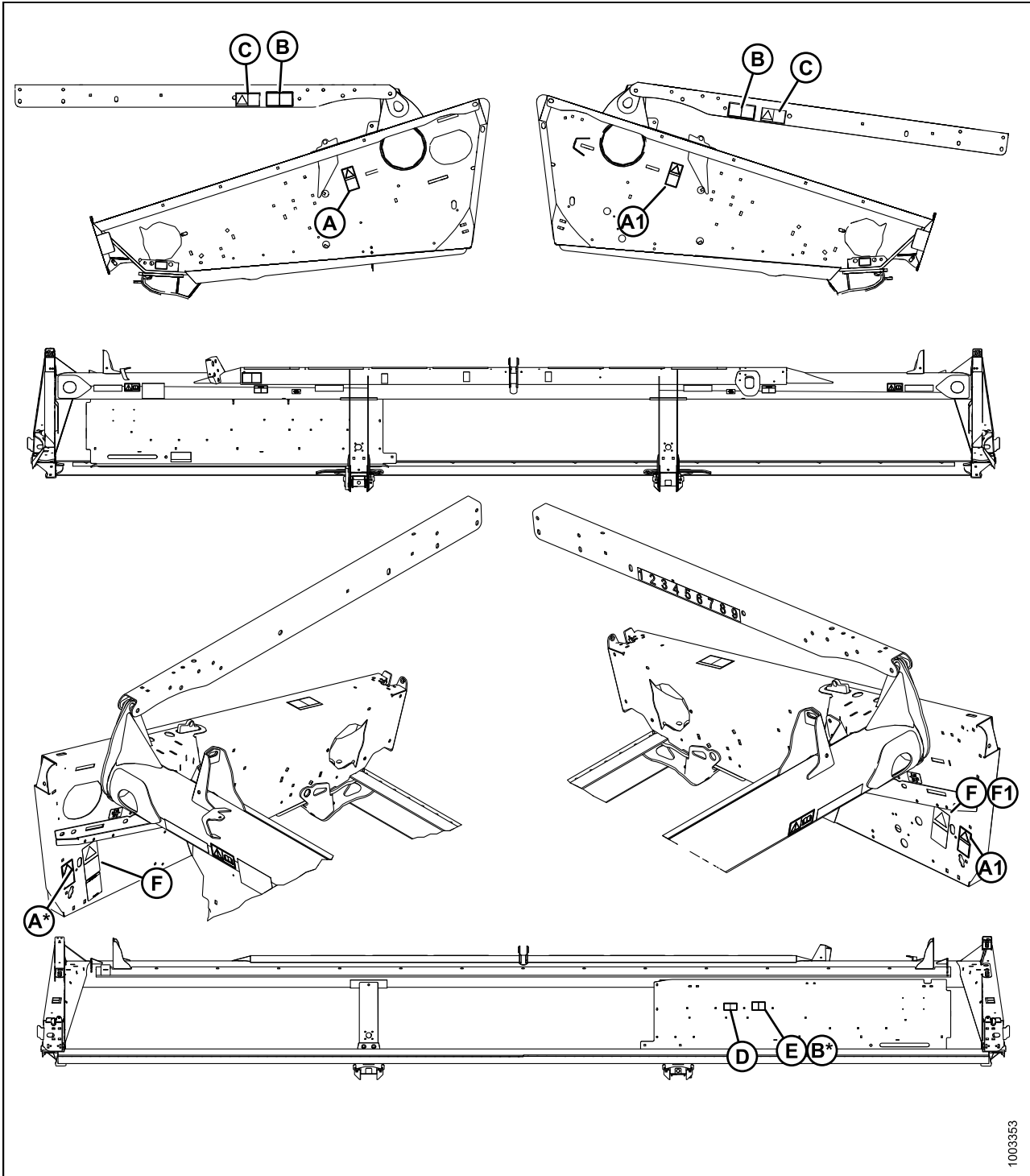


Figure 1.21: Safety sign locations

A - MD #174684

SAFETY

1.8.4 All Headers



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Figure 1.22: All headers

A - MD #184422¹ (A1 - double knife [DK])
 D - MD #131391

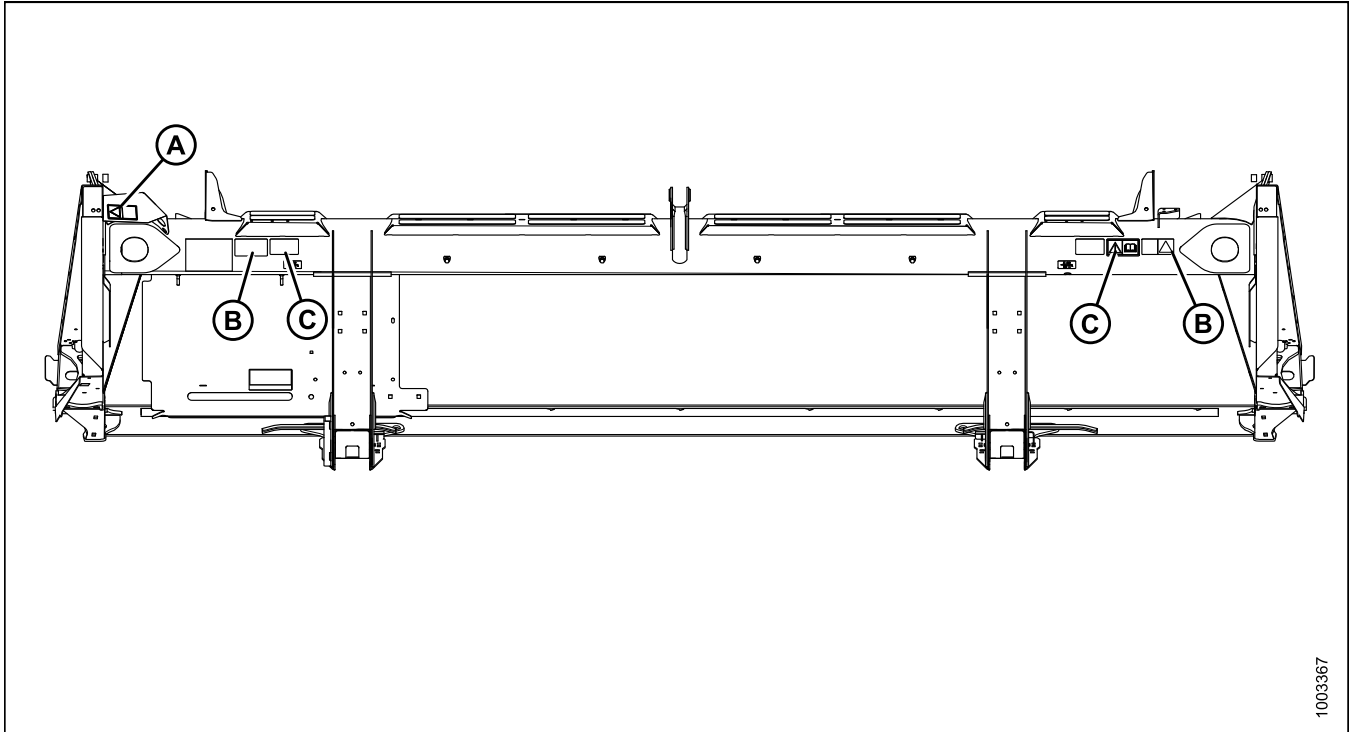
B - MD #131393²
 E - MD #131392

C - MD #174632
 F - MD #174436 (F1 - DK)

1. A*- not used at this location for 15 ft.
2. B*- Used on single knife (SK)

SAFETY

15 Foot



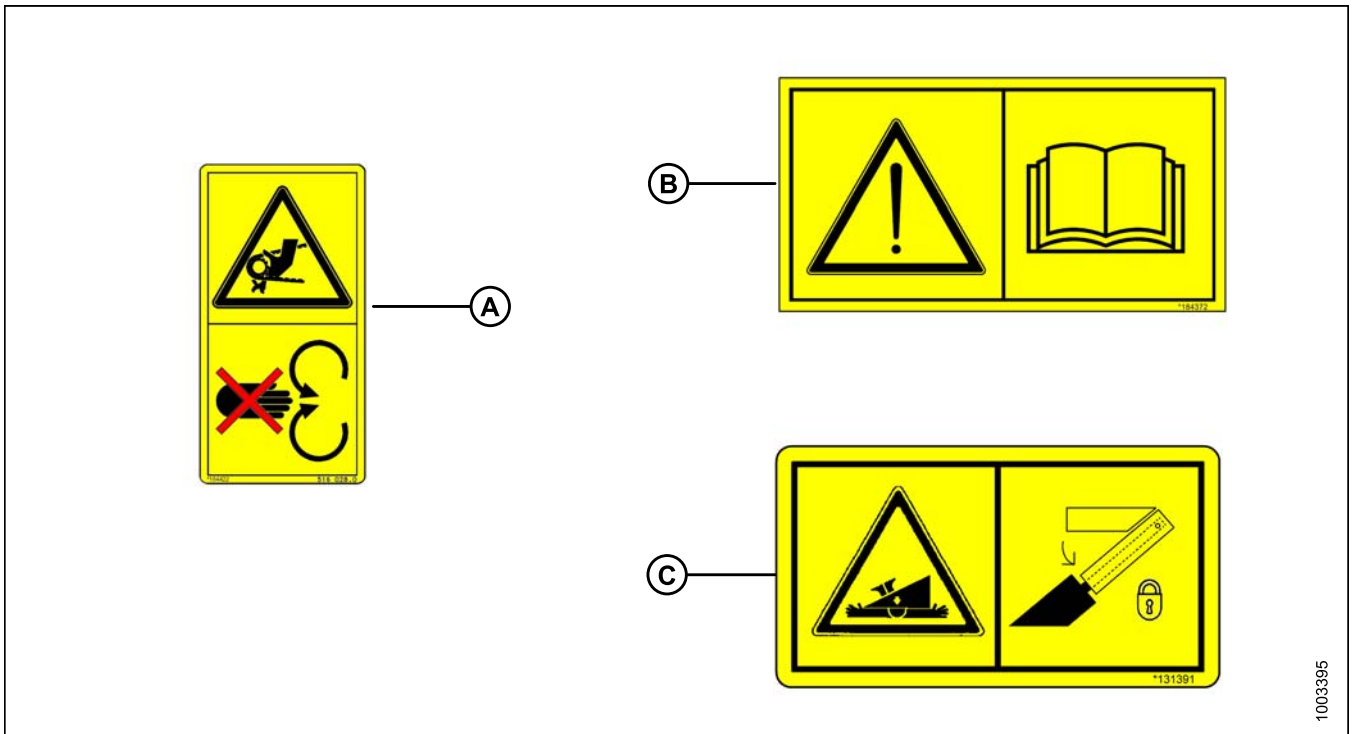
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Figure 1.23

A - MD #184422

B - MD #184372

C - MD #131391

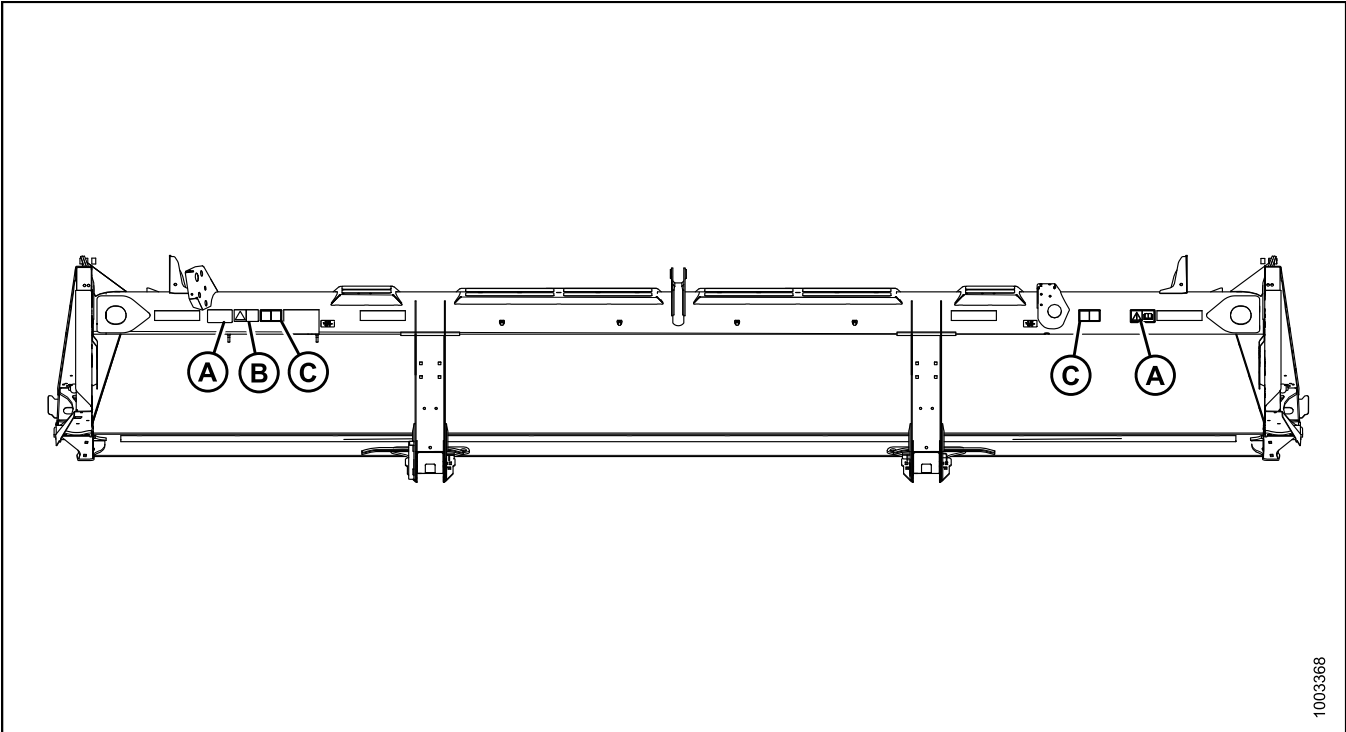


1003395

Figure 1.24

SAFETY

20 Foot



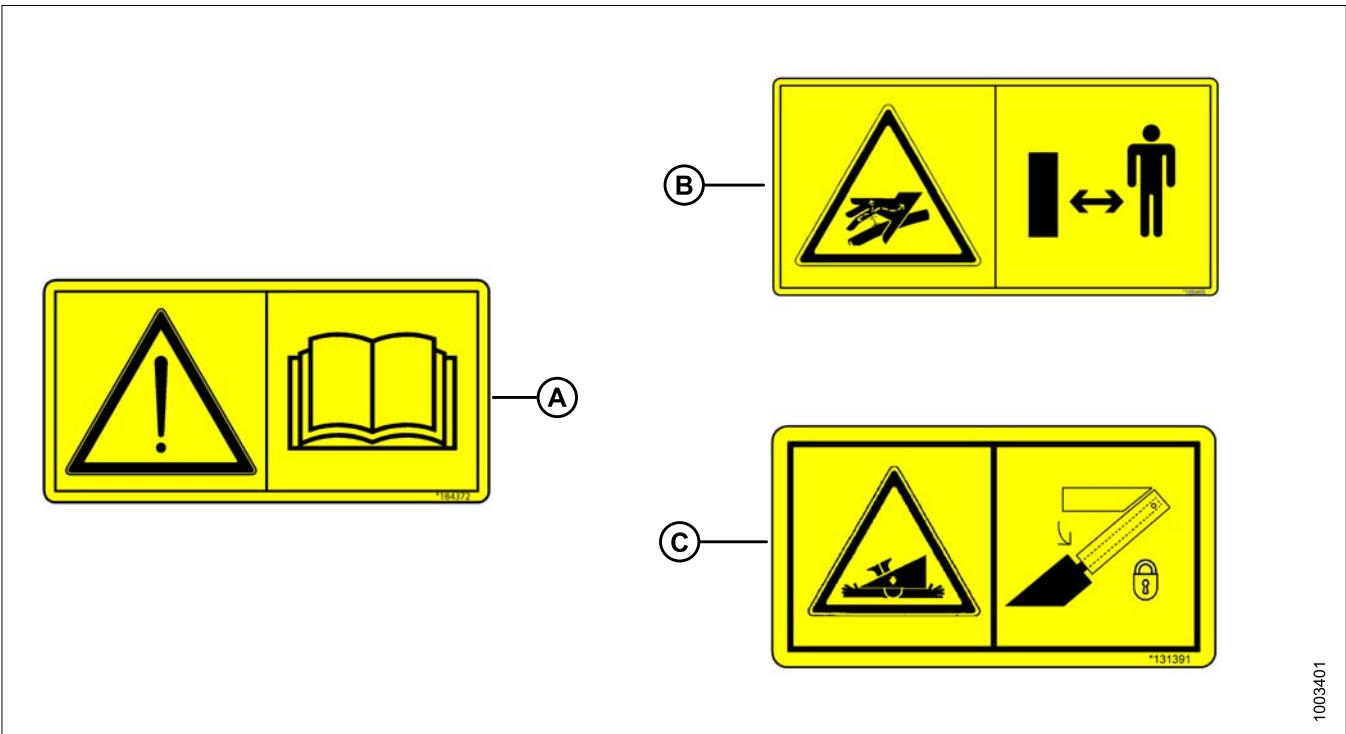
1003368

Figure 1.25

A - MD #184372

B - MD #166466

C - MD #131391

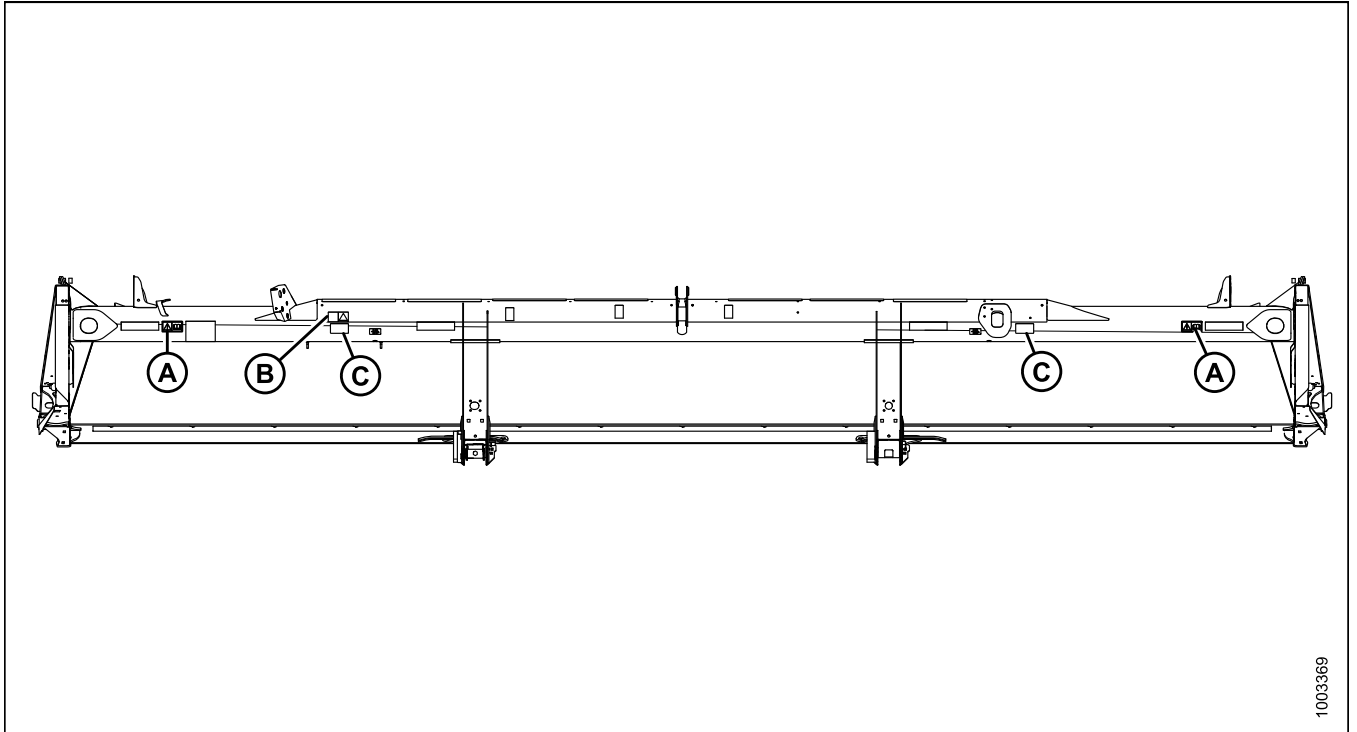


1003401

Figure 1.26

SAFETY

25 Foot



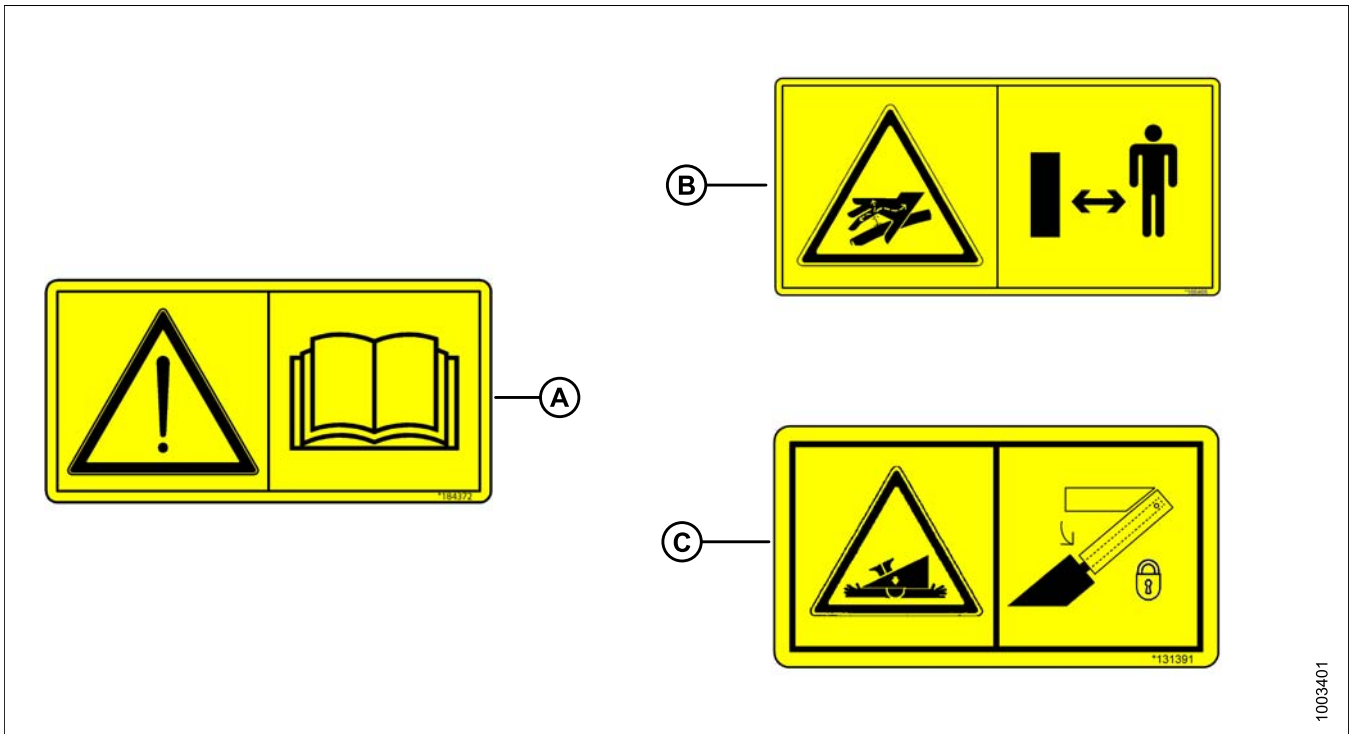
1003369

Figure 1.27

A - MD #184372

B - MD #166466

C - MD #131391

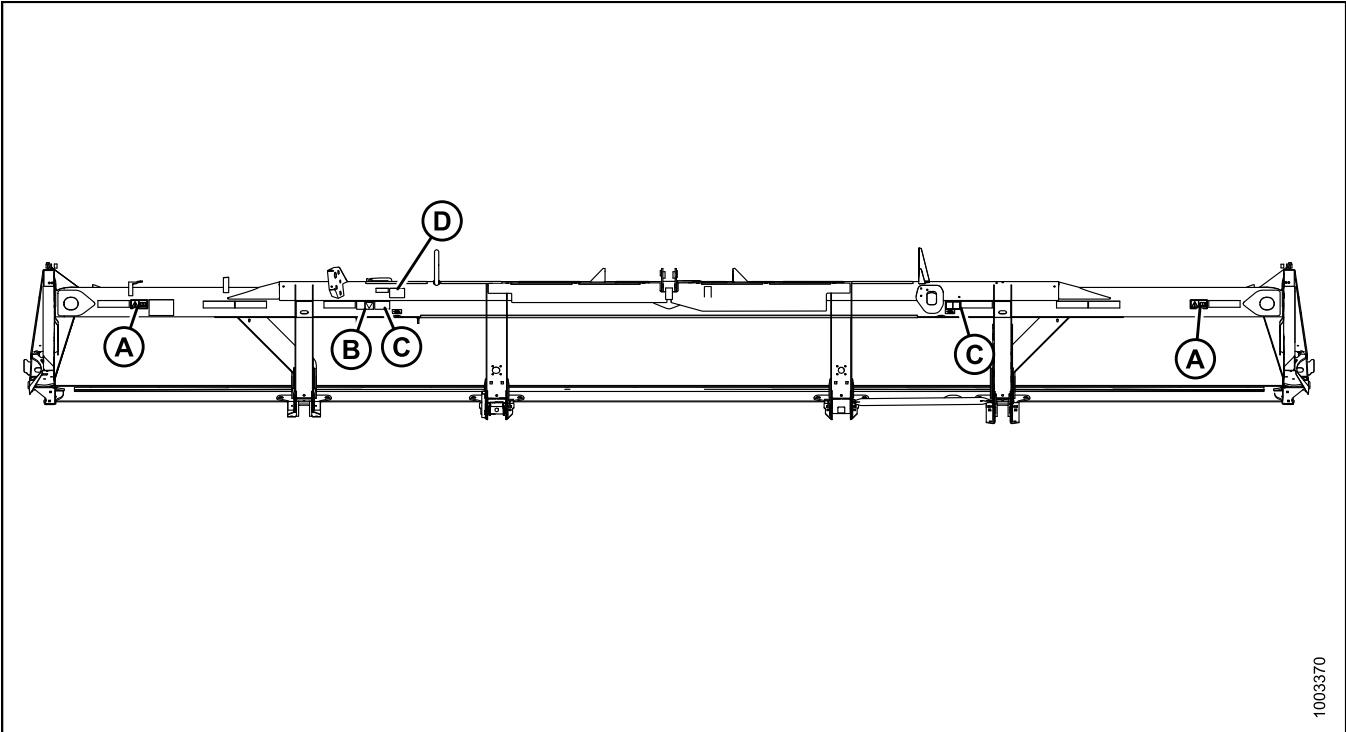


1003401

Figure 1.28

SAFETY

30 Foot



1003370

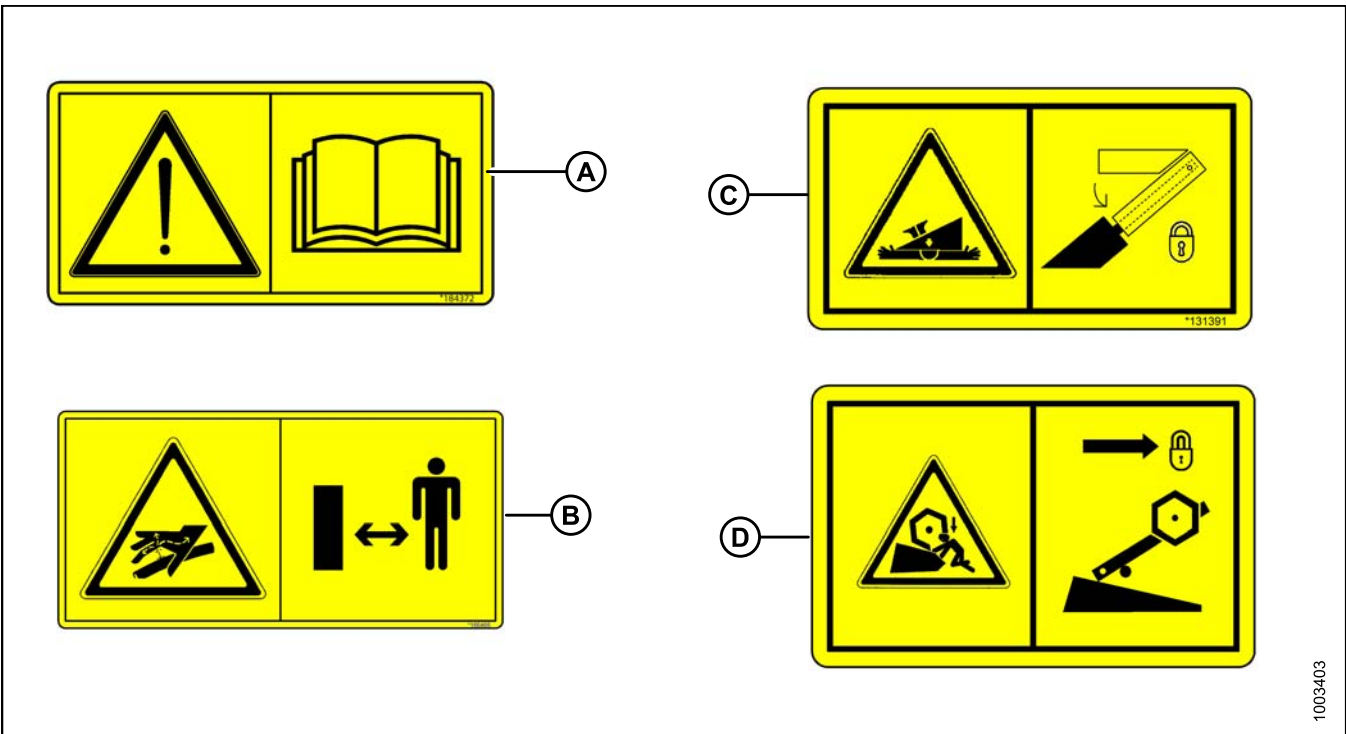
Figure 1.29

A - MD #184372

B - MD #131391

C - MD #166466

D - MD #131392 (DR only)

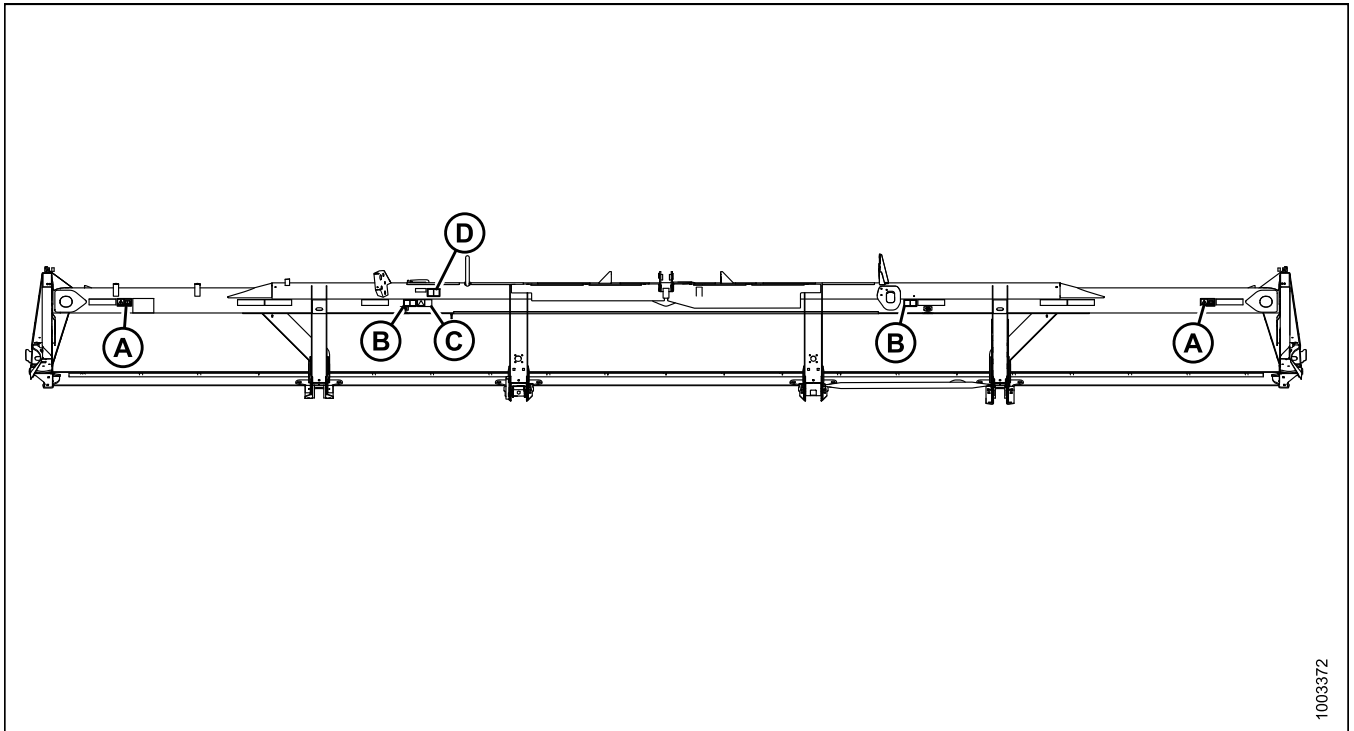


1003403

Figure 1.30

SAFETY

35 Foot



1003372

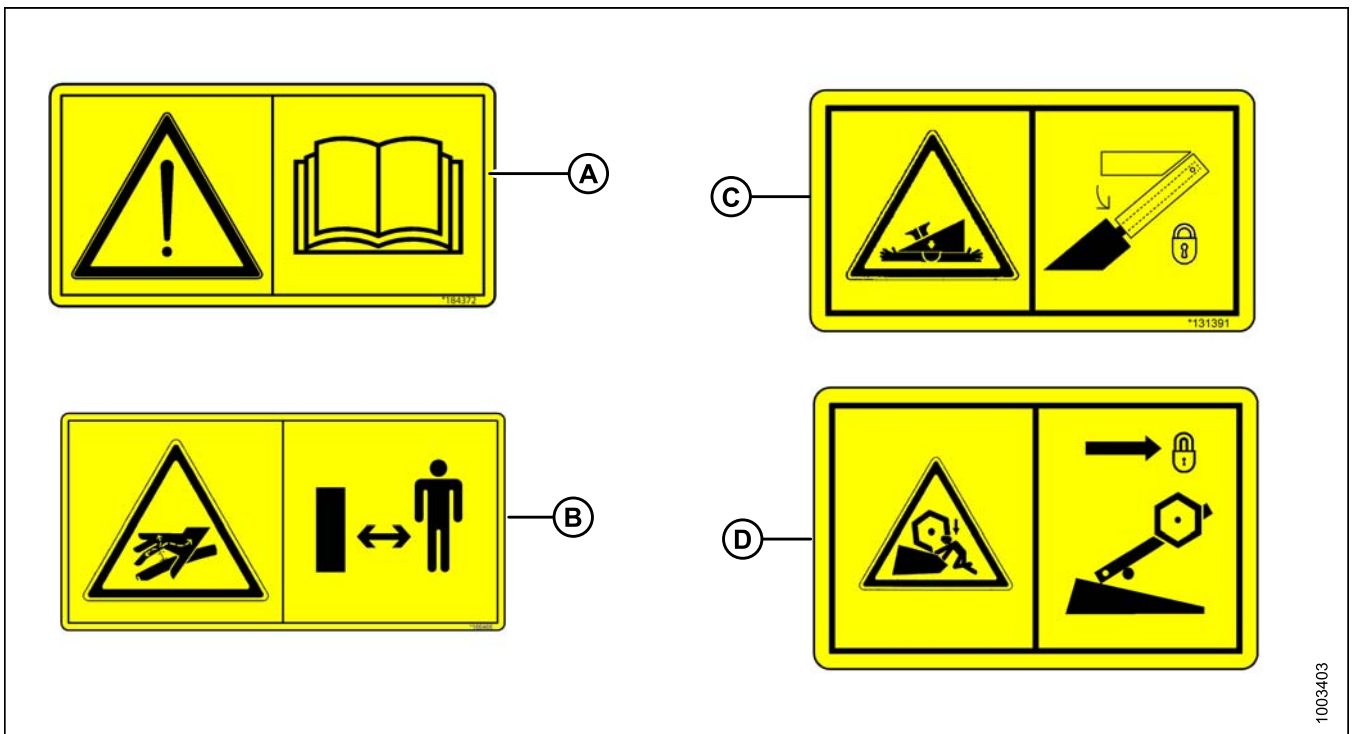
Figure 1.31

A - MD #184372

B - MD #131391

C - MD #166466

D - MD #131392 (DR only)

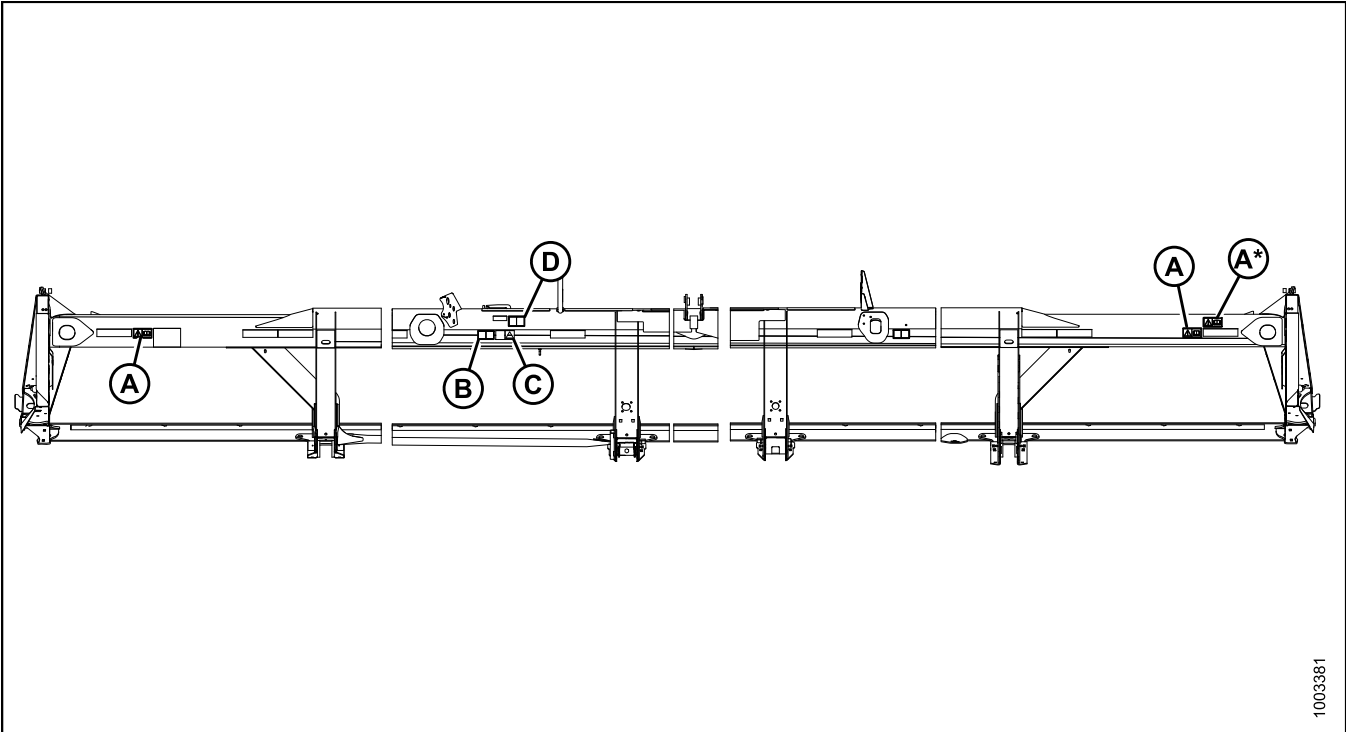


1003403

Figure 1.32

SAFETY

40 Foot



1003381

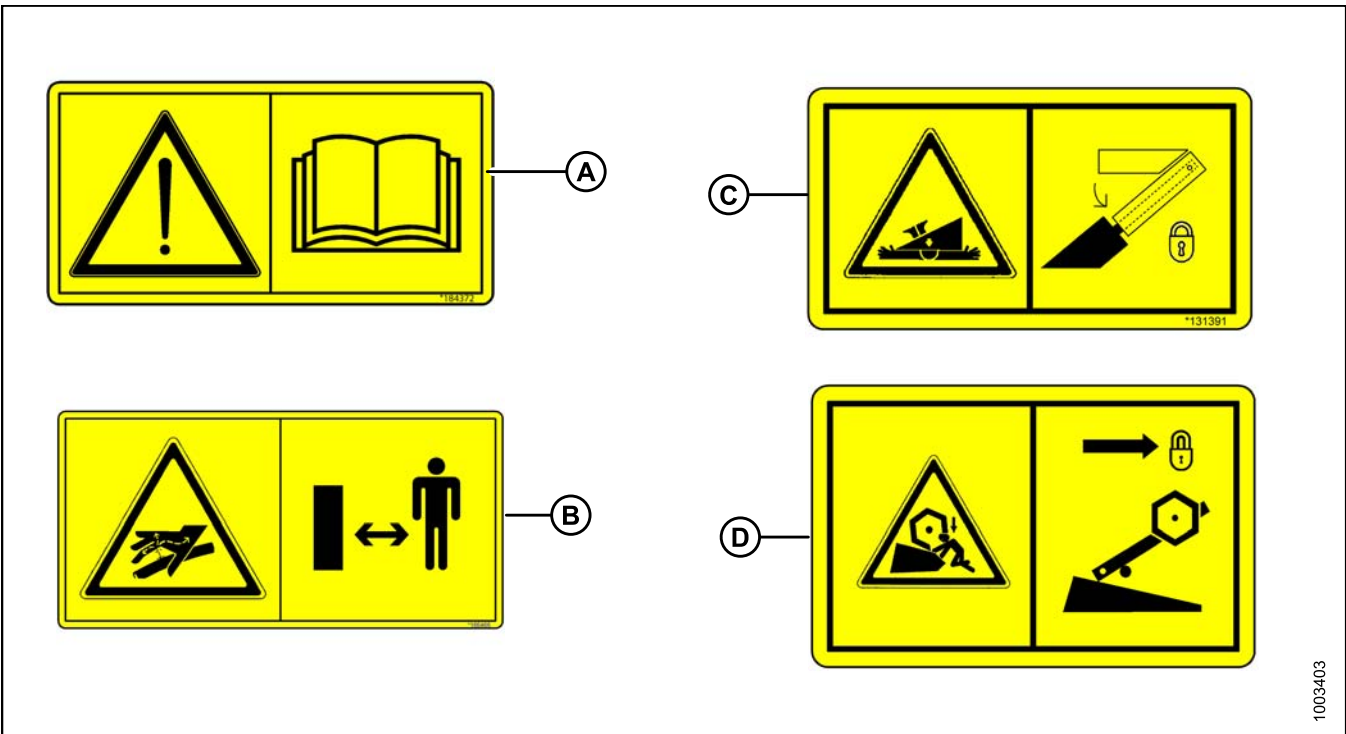
Figure 1.33

A - MD #184372 (A* - Split Frame Location)

B - MD #131391

C - MD #166466

D - MD #131392



1003403

Figure 1.34

SAFETY

1.9 Interpreting Safety Signs

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

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

1. MD #131391

a. Crushing hazard

b. **Danger**

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

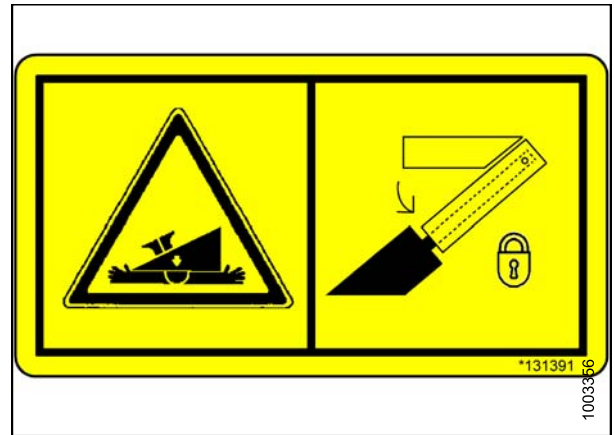


Figure 1.35: MD #131391

2. MD #131392

a. Crushing hazard

b. **WARNING**

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

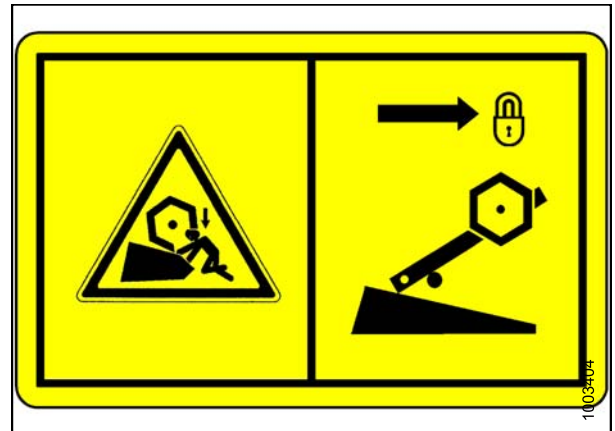


Figure 1.36: MD #131392

SAFETY

3. MD #131393

a. Reel hazard

b. **WARNING**

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



Figure 1.37: MD #131393

SAFETY

4. MD #166466

a. High pressure oil hazard

b. **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 1.38: MD #166466

5. MD #174436

a. High pressure oil hazard

b. **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 1.39: MD #174436

SAFETY

6. MD #174632

a. Reel entanglement hazard

b. **CAUTION**

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

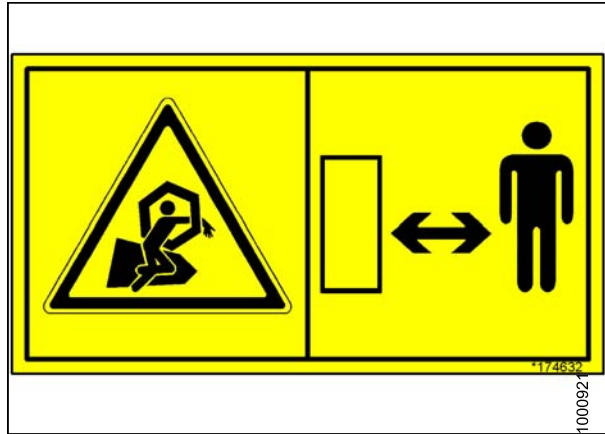


Figure 1.40: MD #174632

7. MD #174682

a. Auger entanglement hazard

b. **CAUTION**

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

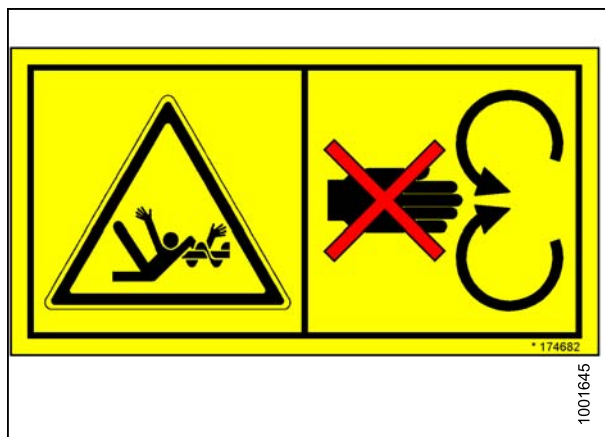


Figure 1.41: MD #174682

8. MD #174684

a. Sharp component hazard

b. **CAUTION**

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



Figure 1.42: MD #174684

SAFETY

9. MD #184372

a. General hazard pertaining to machine operation and servicing

b. **CAUTION**

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

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

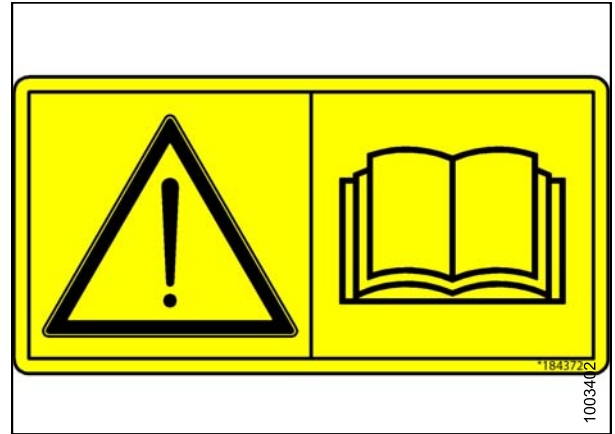


Figure 1.43: MD #184372

SAFETY

10. MD #184422

- a. Keep shields in place hazard
- b. **WARNING**
 - To avoid injury, stop engine before opening power drive system shield.
 - Keep all shields in place.



Figure 1.44: MD #184422

11. MD #220797

- a. Tipping hazard in transport mode
- b. **WARNING**
 - Read the operator's manual for more information on potential tipping or roll-over of header while transporting.

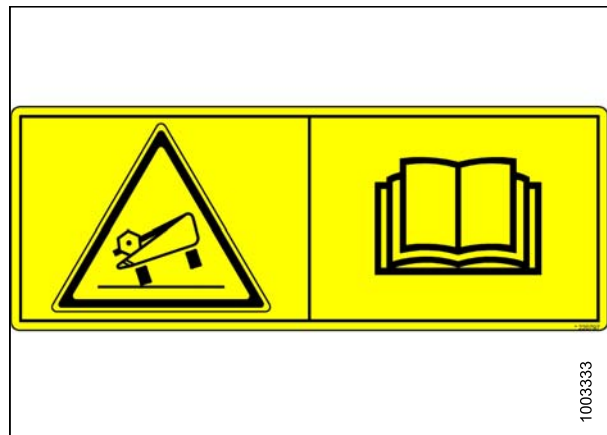


Figure 1.45: MD #220797

SAFETY

12. MD #220798

a. Loss of control hazard in transport

b. **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.

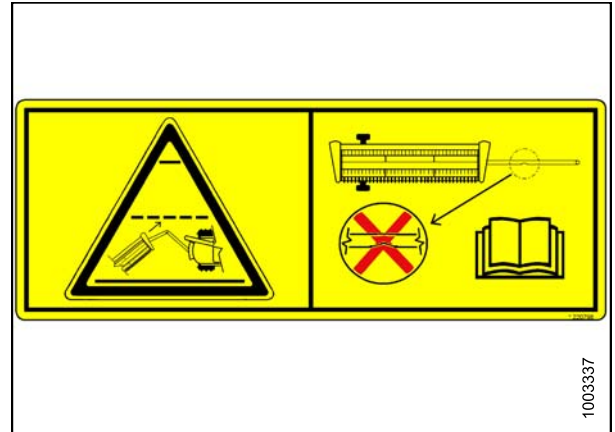


Figure 1.46: MD #220798

13. MD #220799

a. Transport/roading hazard

b. **WARNING**

- Ensure tow-bar lock mechanism is locked.



Figure 1.47: MD #220799

2 Reference

2.1 Definitions

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Cab-forward	Windrower operation with the Operator and cab facing in the direction of travel
CDM	Cab Display Module
Center-link	A hydraulic cylinder or turnbuckle-type link between the header and the windrower
DDD	Double draper drive
DK	Double knife
DKD	Double knife drive
DR	Double reel
DWA	Double windrow attachment
Engine-forward	Windrower operation with the Operator and engine facing in the direction of travel
Header	A machine that cuts and lays crop into a windrow and is attached to a self-propelled windrower or combine
hp	Horsepower
ISC	Integrated speed control
n/a	Not applicable
N-DETENT	The slot opposite the NEUTRAL position on operator's console
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
SK	Single knife
SKD	Single knife drive
spm	Strokes per minute
SR	Single reel
Tractor	Agricultural tractor
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg)
UCA	Upper cross auger
Windrower	Windrower with header attached
Windrower tractor	Windrower power unit only (no header attached)

REFERENCE

2.2 Component Identification

2.2.1 D65 Windrower Header

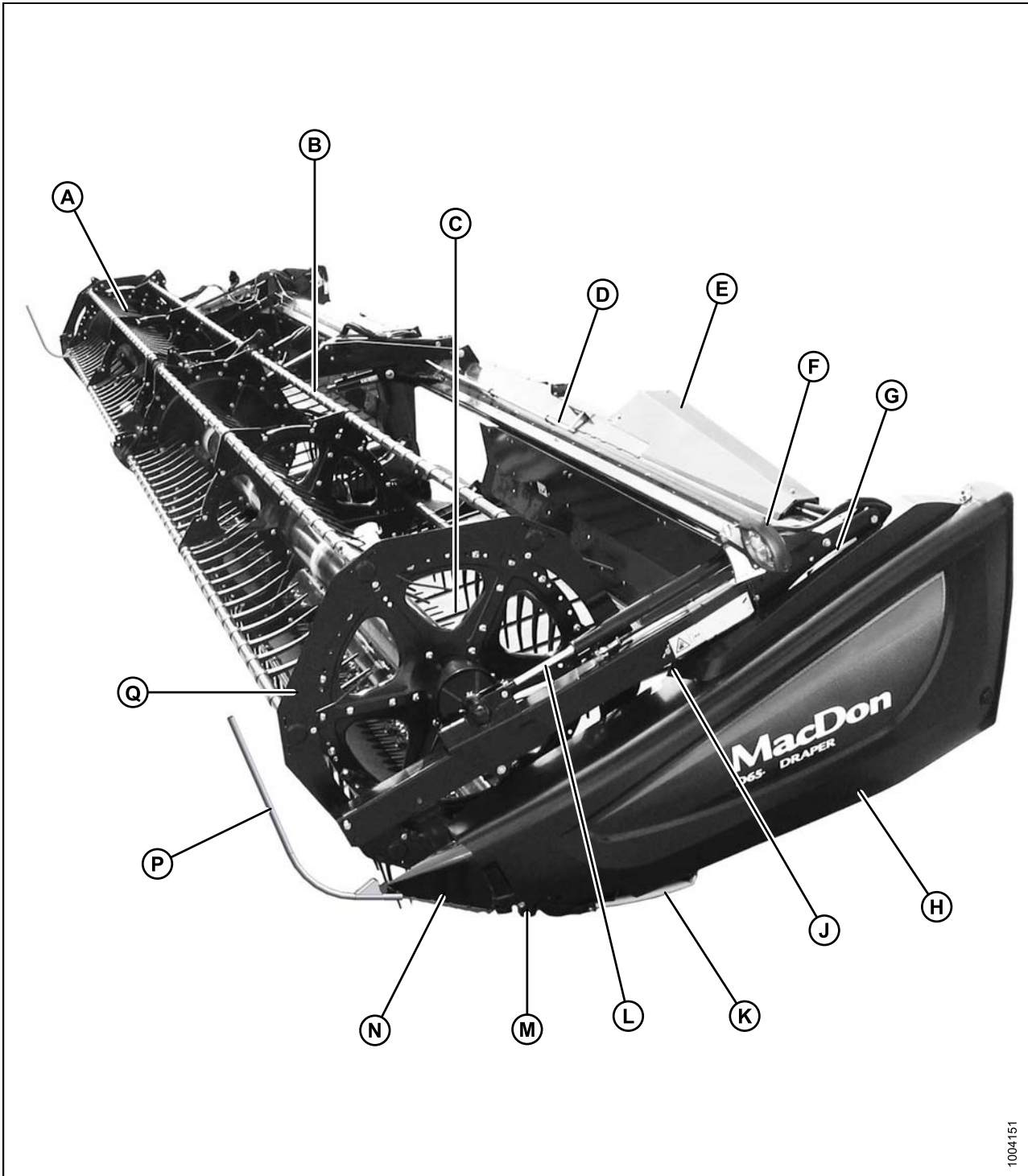


Figure 2.1: D65 Windrower Header Components

- | | | |
|---------------------------------|----------------------------|------------------------|
| A - Reel cam | B - Pick-up reel tines | C - Drapers |
| D - Center reel arm prop handle | E - Hydraulic connections | F - Transport light |
| G - Reel safety prop | H - Endshield | J - Reel lift cylinder |
| K - Skid shoe | L - Reel fore-aft cylinder | M - Knife drive box |
| N - Crop divider | P - Crop divider rod | Q - Reel endshield |

3 Specifications

Engineering Specifications Engineering Product Sheet Only, information provided by Product Design Manager.

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

		D65
CUTTERBAR		
Effective cutting width (distance between crop divider points)		
15 ft. header	15.00 ft. (180 in. [4572 mm])	S
20 ft. header	20.00 ft. (240 in. [6096 mm])	S
25 ft. header	25.00 ft. (300 in. [7620 mm])	S
30 ft. header	30.00 ft. (360 in. [9144 mm])	S
35 ft. header	35.00 ft. (420 in. [10668 mm])	S
40 ft. header	40.00 ft. (480 in. [12192 mm])	S
Single knife drive: hydraulic motor to V-belt to enclosed heavy duty (MD) knife drive box		O _F
Double knife drive 35 ft. and smaller sizes: hydraulic motor to 2 cogged-belts to enclosed heavy duty (MD) knife drive boxes		O _F
Double knife drive 40 ft.: 2 hydraulic motors to banded-belts, untimed to enclosed heavy duty (MD) knife drive boxes		O _F
Knife Stroke	3 in. (76 mm)	S
Knife Speed (strokes per minute)		
Single Knife header on SP Windrower	Min – Max strokes/min.	
20 and 25 ft.	1200–1400	S
30 ft.	1200–1400	S
35 ft.	1100–1300	S
40 ft.	1050–1200	S
Double Knife header on SP Windrower		
15 ft.	1500–1900	S
20 and 25 ft.	1400–1700	S
30 ft.	1200–1600	S
35 ft.	1200–1400	S
40 ft.	1100–1400	S
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

SPECIFICATIONS

			D65
Guard: Stub / Forged bottom / Forged top / adjustment plate			O _F
Guard: Stub / Forged bottom / Sheet Metal top / adjustment bolt			O _F
Guard: 4 Point / no-choke design (2 long points with tangs / 2 short points without tangs)			O _F
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		S
Cutterbar Lift Range (measured at guard tip)			
SP Windrower Header (Center-Link Fully Retracted)	49.8 in. (1265 mm)		S
Guard Angle (cutterbar on ground)			
Windrower (M Series Tractor) / Center-Link Retracted	15–25 ft.	7.5 Degrees	S
Windrower (M Series Tractor) / Center-Link Retracted	30–40 ft.	2.5 Degrees	S
Windrower (M Series Tractor) / Center-Link Extended	15–25 ft.	17.0 Degrees	S
Windrower (M Series Tractor) / Center-Link Extended	30–40 ft.	12.0 Degrees	S
CONVEYOR (Draper) and DECKS			
Draper Width	41.6 in. (1057 mm)		S
Draper Drive	Hydraulic		S
SP (M Series Tractor)	0–742 fpm (225 m/min.)		S
Delivery Opening Width (Center Delivery) / variable by shifting decks			
15 ft. (on SP Windrower)	60.61–69.7 in. (1540 mm–1770 mm)		S
20, 25, 30, 35, 40 ft. (on SP Windrower)	67.1–76.7 in. (1720 mm–1950 mm)		S
Delivery Opening Height (under frame tube at 8 in. cutting height) - SP Windrower ONLY			S
Center-Link Fully Retracted	37.6 in. (955 mm)		
Center-Link Fully Extended	43.5 in. (1105 mm)		
REEL			
Pick-Up Reel PR15			S
Quantity of Tine Tubes	5, 6, or 9		
Center tube diameter: all reel sizes except 35 ft. single span	8 in. (203 mm)		
35 ft. single span (ONLY)	10 in. (254 mm)		
Finger Tip Radius (adjustment range / factory assembled)	30.2–31.5 in. (766 mm–800 mm) / 31.5 in. (800 mm)		
Effective Reel Diameter (via “shaped” cam action)	65 in. (1650 mm)		
Finger Length	11 in. (290 mm)		
Finger Spacing (staggered on alternate bats)	6.0 in. (150 mm)		

SPECIFICATIONS

		D65
Reel Drive	Hydraulic	S
Reel Speed		S
SP Windrower (auto-adjust from cab using ground speed index)	0–85 rpm	S
export configured		
FRAME and STRUCTURE		
Header Width (Field Position)	cut width + 15.1 in. (384 mm)	S
Header Width (Transport Position) - reel fore-aft fully retracted		
Header Only (SP Configuration without external attachments)	(A) ³ (Long Dividers Installed) 104 in. (2636 mm)	-
	(B) ³ (Long Dividers Removed) 97 in. (2452 mm)	-
With HC10 Hay Conditioner installed	(A) ³ (Long Dividers Installed) 112 in. (2834 mm)	-
	(B) ³ (Long Dividers Removed) 104 in. (2650 mm)	-

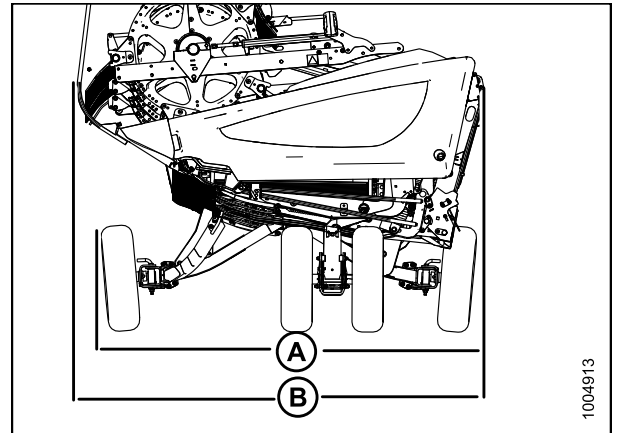


Figure 3.1: Header width

3. See figure [3.1: Header width](#), page 31

SPECIFICATIONS

		D65
ATTACHMENTS		
HC10 Hay Conditioner		O _D
Roll Length	72 in. (1830 mm)	
Outside Roll Diameter (O.D.)	9.13 in. (232 mm)	
Roll Tube Diameter(O.D.)	6.61 in. (168 mm)	
Roll Speed	847–915 rpm	
Upper Cross Auger		O _D
Outside (Flighting) Diameter (O.D.)	12 in. (305 mm)	
Tube Diameter (O.D.): All sizes except 25 ft.	6 in. (152 mm)	
Tube Diameter 25 ft. (O.D.)	7 in. (178 mm)	
Stabilizer Wheel / Slow Speed Transport		O _D
Wheels	15 in.	
Tires	P205/75 R-15	

4 Operation

4.1 Owner/Operator Responsibilities



CAUTION

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

OPERATION

4.2 Operational Safety

CAUTION

Follow these safety precautions:

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

CAUTION

- Never start or move the machine until you are sure all bystanders have cleared the area.
- Avoid travelling over loose fill, rocks, ditches, or holes.
- Drive slowly through gates and doorways.
- When working on inclines, travel uphill or downhill when possible. Be sure to keep transmission in gear when travelling downhill.
- Never attempt to get on or off a moving machine.
- Do NOT leave Operator's station while the engine is running.
- Stop engine and remove key before adjusting or removing plugged material from the machine. A child or even a pet could engage the drive.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. Refer to [Section 4.4 Shutdown Procedure, page 44](#).
- Operate only in daylight or good artificial light.

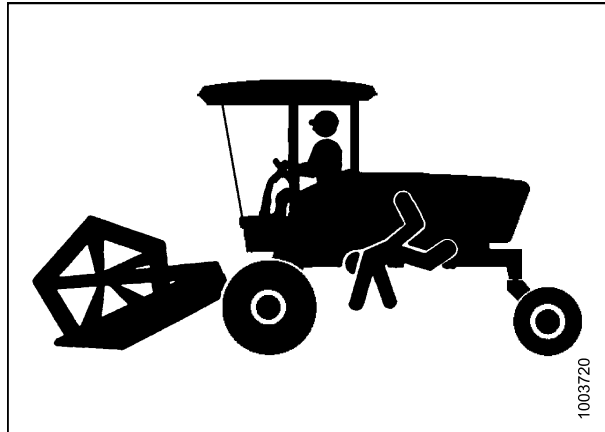


Figure 4.1

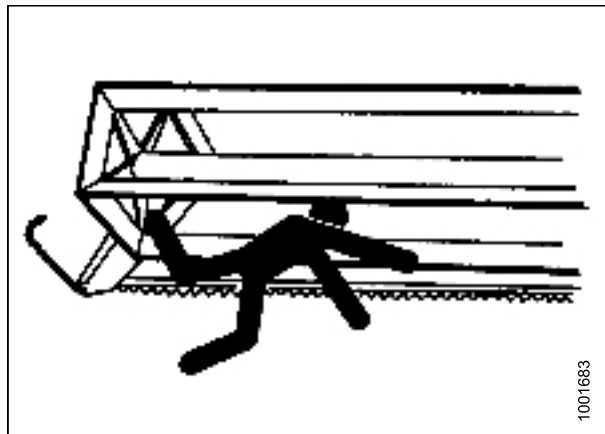


Figure 4.2

4.2.1 Header Safety Props

The header safety props are located beneath the combine feeder house. When props are engaged, they do not allow the feeder house and anything that attached to it to lower to the ground.

OPERATION

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. See your windrower operator's manual for instructions for use and storage of header safety props.

4.2.2 Reel Safety Props

WARNING

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

Reel safety props are located at the reel support arms.

IMPORTANT

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

Engaging Reel Safety Props

DANGER

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

WARNING

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

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

NOTE:

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

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

THE CONTENT ON THIS PAGE HAS CHANGED SINCE THIS MANUAL (169594 REVISION C) WAS PUBLISHED.

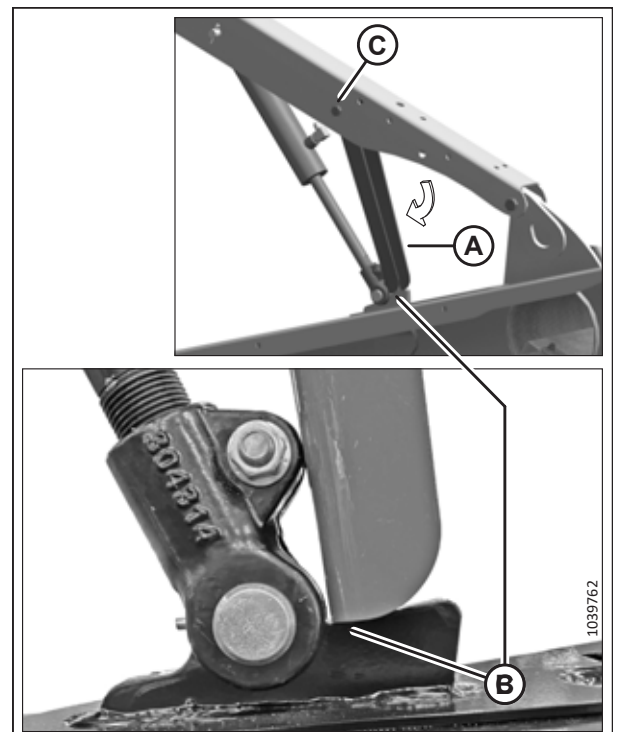


Figure 4.3

OPERATION

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

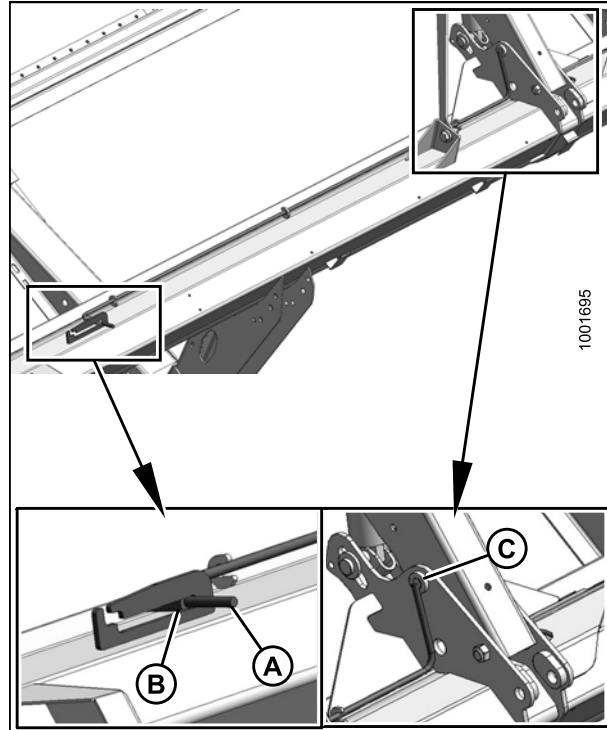


Figure 4.4

A - Handle
C - Pin

B - Inboard position

Disengaging Reel Safety Props

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

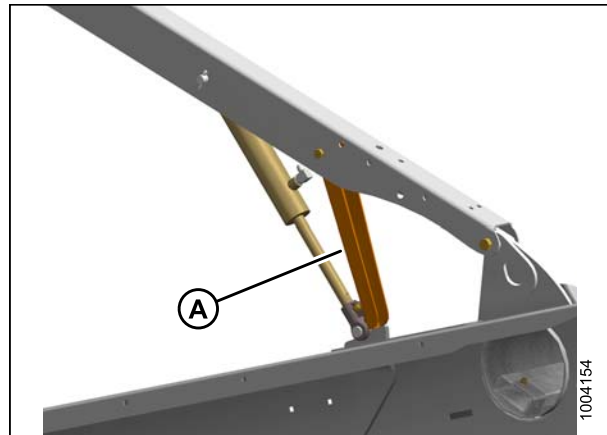


Figure 4.5: Push props inside reel arms

OPERATION

3. For double reel headers, move lock (A) to outboard position.

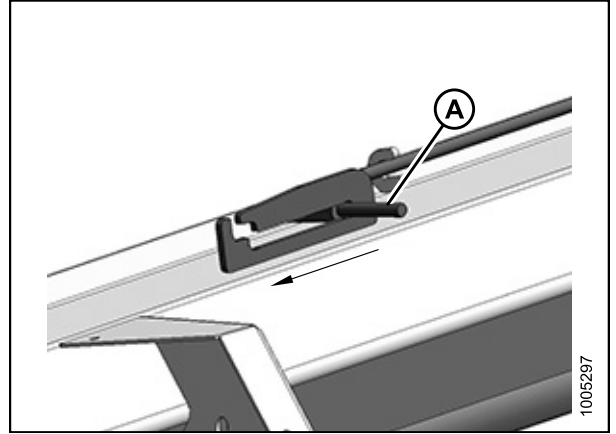


Figure 4.6

4.2.3 Endshields

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

Opening Endshields

To open an endshield, follow these steps.

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

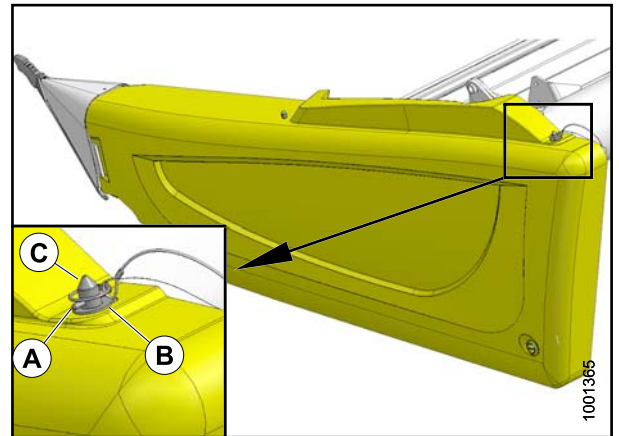


Figure 4.7

OPERATION

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

IMPORTANT

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

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

NOTE: If complete access to the endsheet area is required, the shield can be removed. See [Removing Endshields](#), page 39.

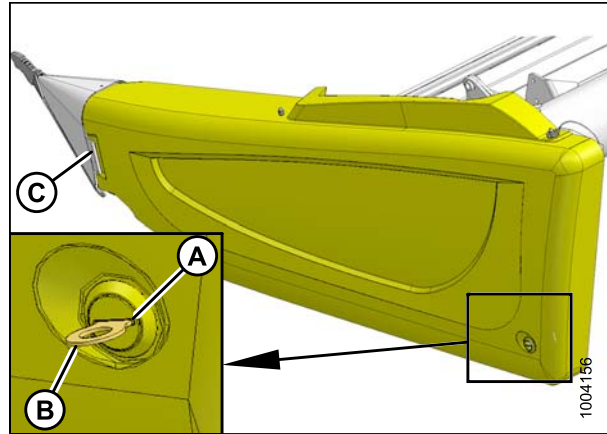


Figure 4.8

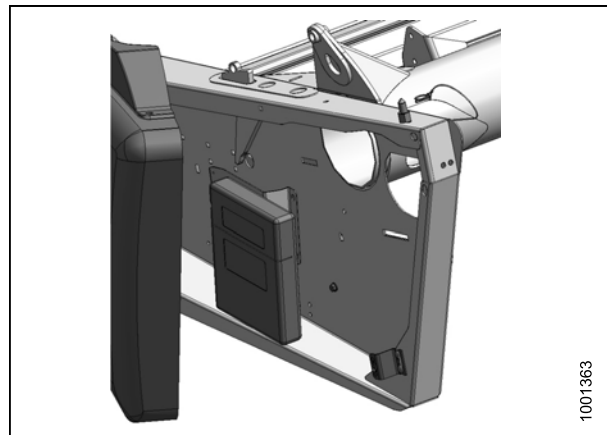


Figure 4.9

Closing Endshields

To close an endshield, follow these steps.

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

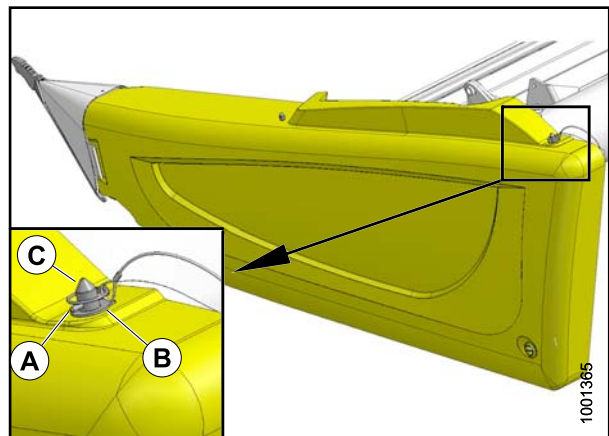


Figure 4.10

OPERATION

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

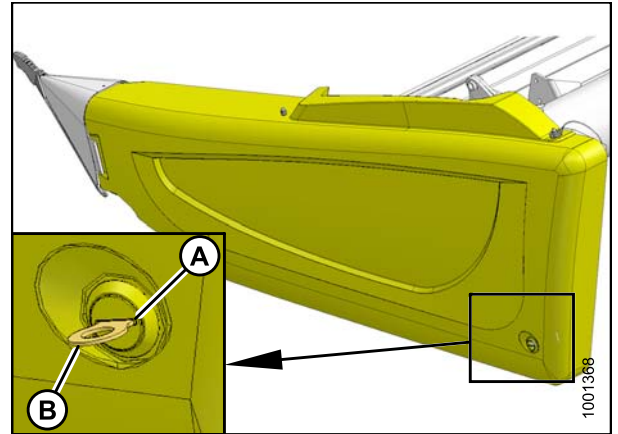


Figure 4.11

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

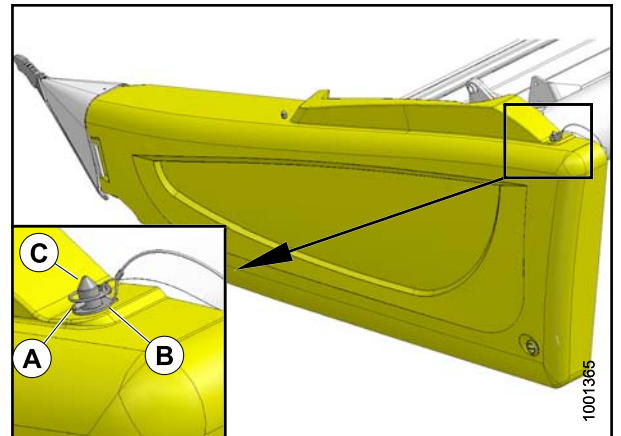


Figure 4.12

Removing Endshields

To remove an endshield, follow these steps:

1. Open endshield. See [Opening Endshields, page 37](#).
2. Remove acorn nut (A) that secures the endshield to support (B).
3. Lift endshield off support (B).

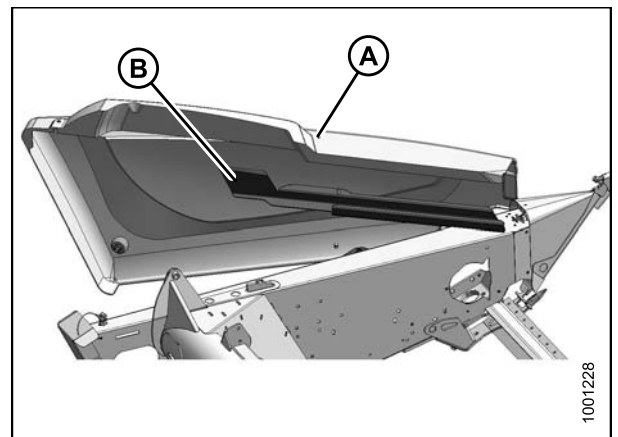


Figure 4.13

OPERATION

Installing Endshields

To install an endshield, follow these steps.

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

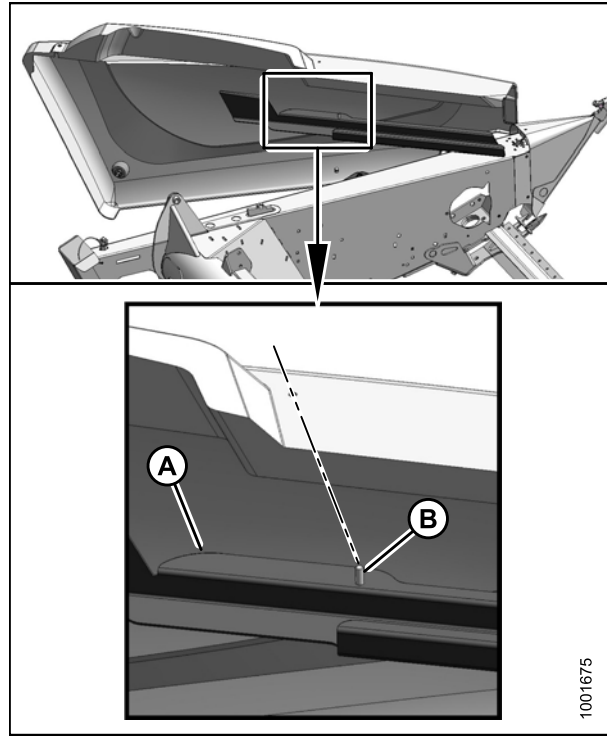


Figure 4.14

2. Secure endshield to the support with acorn nut (A).
3. Close endshield. See [Closing Endshields, page 38](#).

NOTE: Plastic endshields are subject to expansion, or contraction depending on large temperature variations. Top pin and lower latch bracket positions can be adjusted to compensate for dimensional changes. See [Adjusting Endshields, page 41](#).

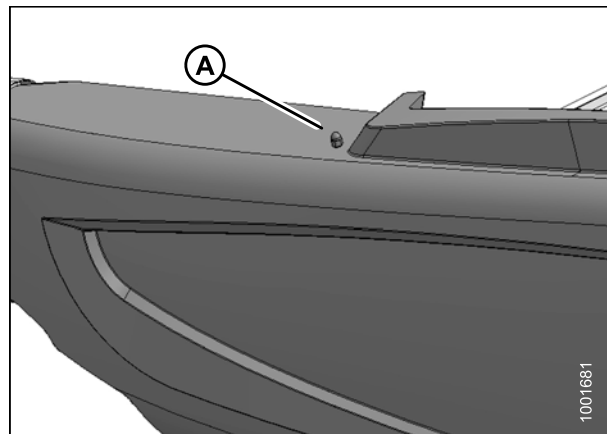


Figure 4.15

OPERATION

Adjusting Endshields

To adjust an endshield, follow these steps.

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

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

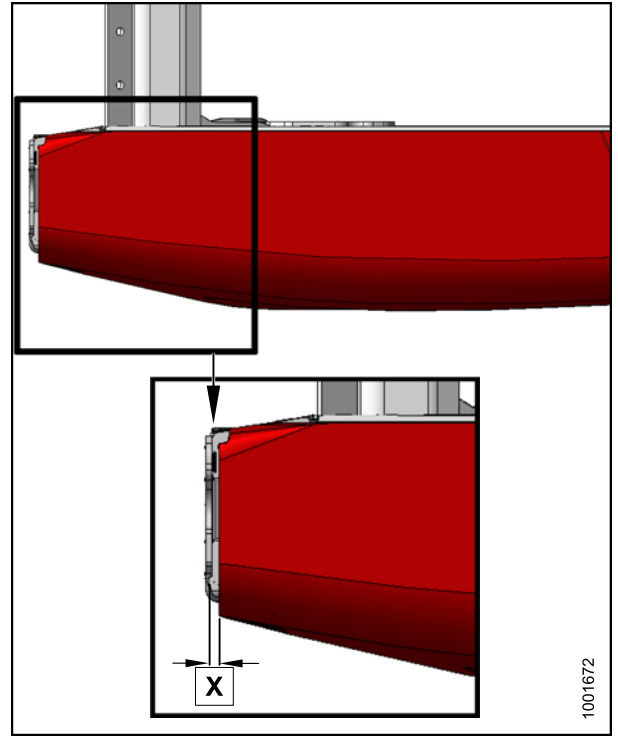


Figure 4.16

If adjustments are required, proceed as follows:

2. Open endshield. See [Opening Endshields, page 37](#).
3. From inside endsheet, loosen nut (A) on pin (B) with a 3/4 in. socket.
4. Close endshield and adjust position to achieve the gap 'X' between the front end of shield and header frame.
5. Open endshield and tighten nut (A).
6. To achieve a snug fit between top of shield and header frame and to ensure that endshield is fully engaged on pin (B), loosen bolts on catch (C) and adjust catch as required to reposition shield.
7. Tighten bolts on catch (C).
8. Close endshield. See [Closing Endshields, page 38](#).

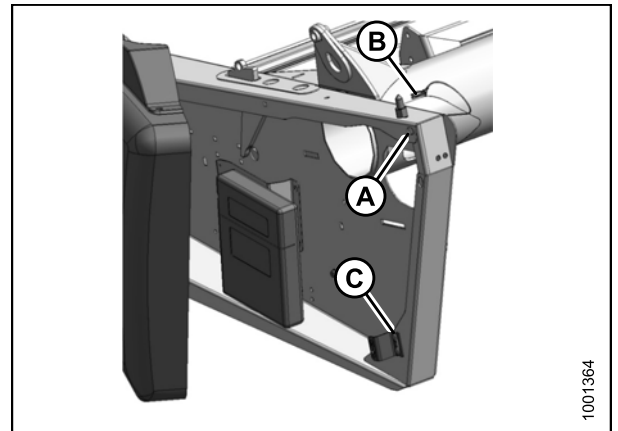


Figure 4.17

OPERATION

4.2.4 Daily Start-Up Check

CAUTION

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

Complete the following tasks each day before start-up:

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

NOTE: Use proper procedure when searching for pressurized fluid leaks. Refer to Section [Hydraulics](#).

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to Section [6.4.1 Maintenance Schedule/Record, page 125](#).

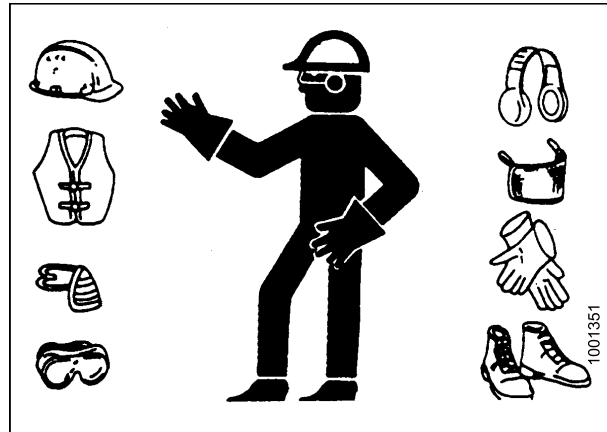


Figure 4.18: Use protective clothing and personal safety devices

OPERATION

4.3 Break-in Period

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

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

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

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

2. Perform the items specified. Refer to section [6.4.2 Break-In Inspections, page 127](#).



CAUTION

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

OPERATION

4.4 Shutdown Procedure



CAUTION

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

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

4.5 Cab Controls



CAUTION

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

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

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

OPERATION

4.6 Header Setup

4.6.1 Header Settings

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

Table 4.1 Recommended Header Settings

Crop type	Stubble height	Crop condition	Divider rods	Header angle ⁴	Knife speed ⁵	Reel tine pitch ⁶	Reel speed ⁷	Reel position ⁸	Skid shoe position ⁹	Stabilizer wheels	Upper cross augers	Float ¹⁰
Cereals	0 in. (ground level)	Light	On	Shallow	High	2	10%–15%	6 or 7	1 or 2	Storage	Not Required	70 lbs
		Normal			Medium		10%					
		Heavy		Middle	3	5%–10%	4 or 5					
		Lodged										
	4–8 in. (102–203 mm)	Light	On	Shallow	High	2	10%–15%	2 or 3	Variable	Not Required	70 lbs	
		Normal			Medium		10%	Variable				
		Heavy		Variable	3	5%–10%	4 or 5					
		Lodged										
	10+ in. (254+ mm)	Light	On	Middle	High	2	10%–15%	6 or 7	Not Applicable	Variable	Not Required	150 lbs
		Normal			Medium		10%					
		Heavy		Variable	3	5%–10%	4 or 5					
		Lodged										

4. Keep guard angle as shallow as possible. Center-link position depends on skid shoe and stabilizer wheel position. Set guard angle and skid shoe position to maximize amount of poly on the ground while maintaining desired cutting height. See Section [4.7.3 Header Angle, page 56](#).
5. Minimum knife drive pulley rpm. Applicable only to single knife drive headers. See Section [4.7.7 Knife Speed, page 59](#).
6. See Section [4.7.10 Reel Tine Pitch, page 66](#)
7. Percentage above ground speed. See Section [4.7.4 Reel Speed, page 57](#).
8. See Section [4.7.9 Reel Fore-Aft Position, page 60](#).
9. Cutting height is controlled with a combination of skid shoes, stabilizer wheels and header angle. By supporting header with skid shoes or stabilizer wheels, the windrower floats header over obstacles and ground contours. See Section [4.7.1 Cutting Height, page 50](#).
10. See windrower operator’s manual.

OPERATION

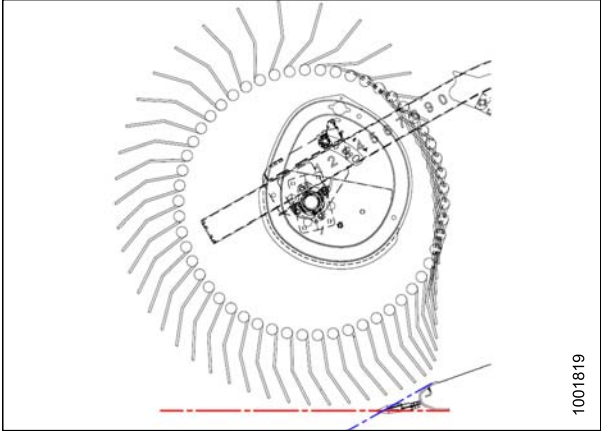
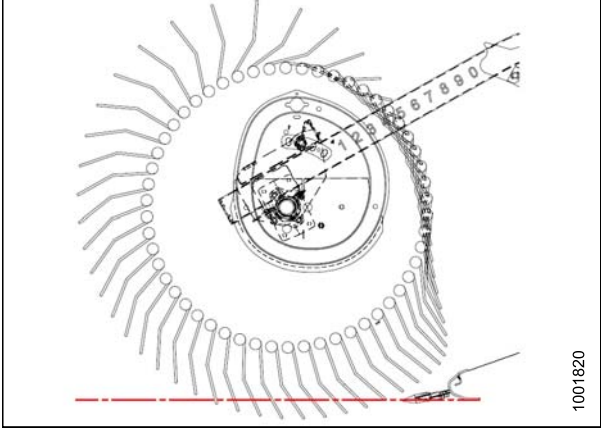
Crop type	Stubble height	Crop condition	Divider rods	Header angle ⁴	Knife speed ⁵	Reel tine pitch ⁶	Reel speed ⁷	Reel position ⁸	Skid shoe position ⁹	Stabilizer wheels	Upper cross augers	Float ¹⁰
Canola	4–8 in. (102–203 mm)	Light	On	Steep	Medium	2	5%–10%	6 or 7	Variable	Variable	Not Required	70–100 lbs
		Normal			Low	1	10%		2 or 3		Recommended	
		Heavy				2	5%–10%	3 or 4	2 or 3			
		Lodged										
	10+ in. (254+ mm)	Light	On	Steep	Medium	3	5%–10%	6 or 7	Not Applicable	Variable	Not Required	150 lbs
		Normal			Low	2	10%				3 or 4	
		Heavy				3	5%–10%					
		Lodged										
Flax	2–6 in. (51–153 mm)	Light	On	Variable	High	2	5%–10%	6 or 7	2 or 3	Variable	Not Required	70–100 lbs
		Normal					10%					
		Heavy										
		Lodged										
Edible beans	0 in. (ground level)	Light	Off	Steep	Medium	2	5%–10%	3 or 4	1 or 2	Storage	Not Required	100 lbs
		Normal										
		Heavy				3						
		Lodged										
Grass	0 in. (ground level)	Light	On	Variable	High	2	10%	6 or 7	1 or 2	Storage	Not Required	70–100 lbs
		Normal										
		Heavy					10%–15%					
		Lodged										
Alfalfa	0 in. (ground level)	Light	On	Variable	High	3	10%	6 or 7	1 or 2	Storage	Not Required	70–100 lbs
		Normal				2						
		Heavy					3					
		Lodged										

4.6.2 Reel Settings

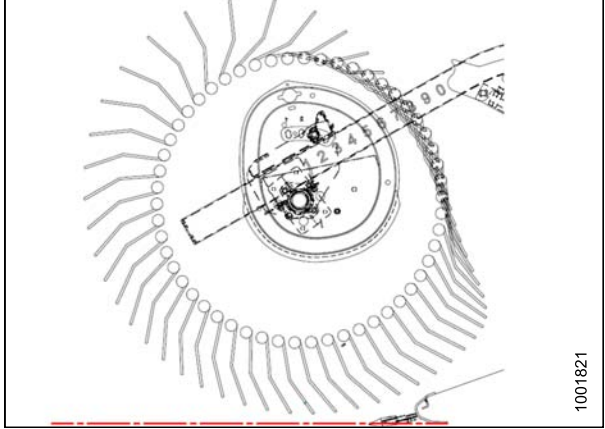
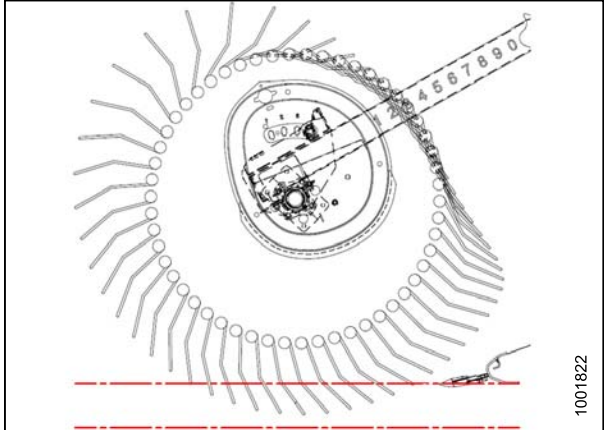
The following chart illustrates the profile of the reel at each cam or finger pitch setting as well as the reel position relative to the ground at different positions on the reel arm. Refer to the chart in the previous section for applicability of each finger pattern and reel position.

OPERATION

Table 4.2 D65 Reel Settings Chart

Cam setting number (finger speed gain)	Reel position number	Reel finger pattern
1 (0)	6 or 7	
2 (20%)	3 or 4	

OPERATION

Cam setting number (finger speed gain)	Reel position number	Reel finger pattern
3 (30%)	6 or 7	
4 (35%)	2 or 3	

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

OPERATION

4.7 Header Operating Variables

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

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

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

Variable	Section
Cutting height	4.7.1 Cutting Height, page 50
Header float	4.7.2 Header Float, page 56
Header angle	4.7.3 Header Angle, page 56
Reel speed	4.7.4 Reel Speed, page 57
Ground speed	4.7.5 Ground Speed, page 58
Draper speed	4.7.6 Draper Speed, page 59
Knife speed	4.7.7 Knife Speed, page 59
Reel height	4.7.8 Reel Height, page 59
Reel fore-aft position	4.7.9 Reel Fore-Aft Position, page 60
Reel tine pitch	4.7.10 Reel Tine Pitch, page 66
Crop divider rods	4.7.12 Crop Divider Rods, page 73

4.7.1 Cutting Height

The header is designed to allow an Operator to cut the crop above the ground for a desired stubble height, or to cut the crop at ground level with the header on the ground. Cutting height will vary, depending on type of crop, crop condition, etc.

Cutting Off The Ground

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

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

The stabilizer wheel system or a stabilizer/slow speed transport wheel system are only available on 30, 35, and 40 ft. headers.

OPERATION

Adjusting Stabilizer/Slow Speed Transport Wheels

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

1. Raise the header so that the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Check that the float is working properly. See your windrower operator's manual for instructions.
3. On the RH wheel assembly, remove hairpin (A) from latch.
4. Disengage latch (B) and lift right wheel out of hook and place on ground as shown. This reduces weight of assembly and makes adjusting wheel position easier.
5. Support left wheel weight by lifting slightly with one hand. Pull up on handle (C) to release lock.
6. Lift left wheel to desired height and engage support channel into slot (D) in upper support.
7. Push down on handle (C) to lock.
8. Lift right hand wheel back into Field position and ensure latch (B) is engaged.
9. Secure latch with hairpin (A).
10. On the LH wheel assembly, support wheel weight by lifting slightly with one hand. Pull up on handle (A) to release lock.
11. Lift wheels to desired height and engage support channel into slot (B) in upper support.
12. Push down on handle (A) to lock.

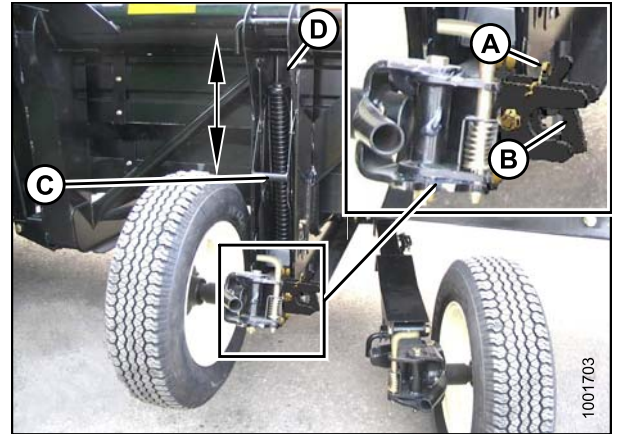


Figure 4.19: RH wheel

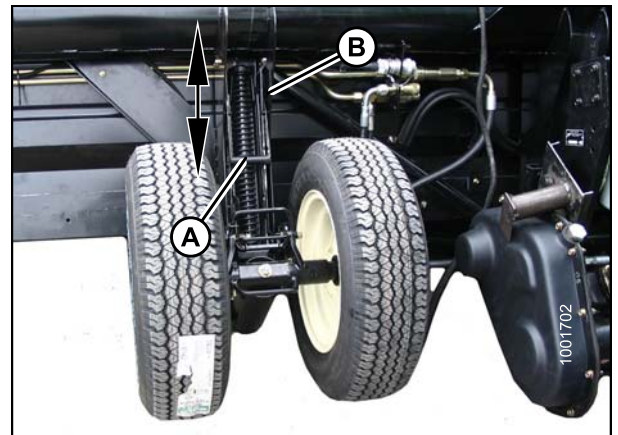


Figure 4.20: LH wheel

OPERATION

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

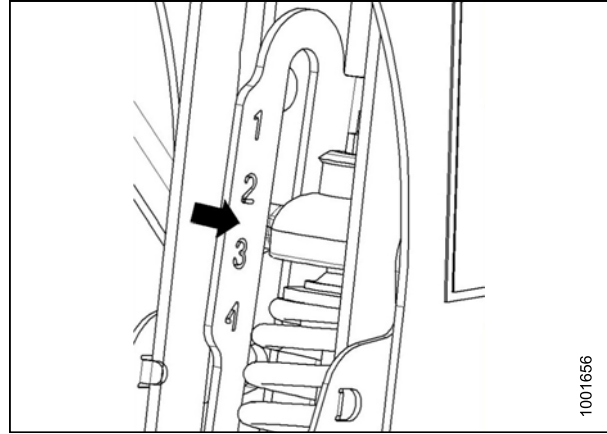


Figure 4.21: Load indicator between 2 and 3

IMPORTANT

Continuous operation with excessive spring compression (i.e., load Indicator reading greater than '4' or shorter than 11.6 in. [295 mm]) can result in damage to suspension system.

14. Adjust header angle to desired working angle with the machine's header angle controls. If angle is **NOT** critical, set it to mid-position.
15. Use the windrower Cab Display Module (CDM) controls to automatically maintain cutting height. Refer to your windrower operator's manual for details.

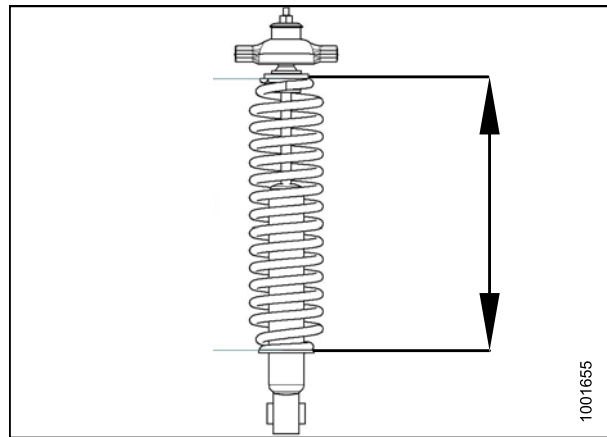


Figure 4.22: Spring compression

Adjusting the Stabilizer Wheels

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

1. Raise the header so that the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Check that the float is working properly. See your windrower operator's manual for instructions.

OPERATION

CAUTION

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

3. Support wheel weight by lifting slightly with one hand on handle (B). Pull up on handle (A) to release lock.
4. Lift wheel with handle (B) and engage support channel into center slot (C) in upper support.
5. Push down on handle (A) to lock.
6. Lower header to desired cutting height using combine controls and check load indicator. As an example the image shows that the wheels are set to a range between '2' and '3' on load indicator.

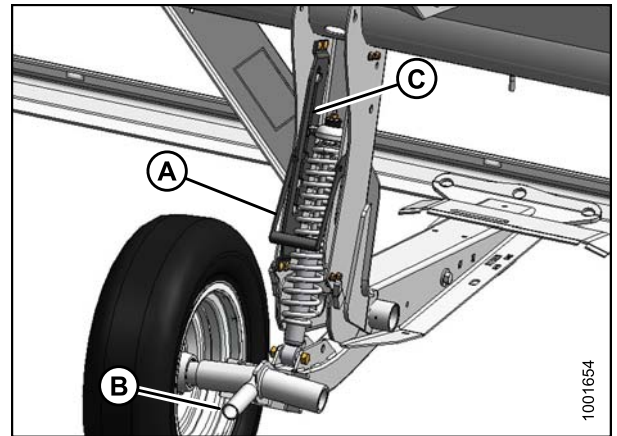


Figure 4.23: LH shown

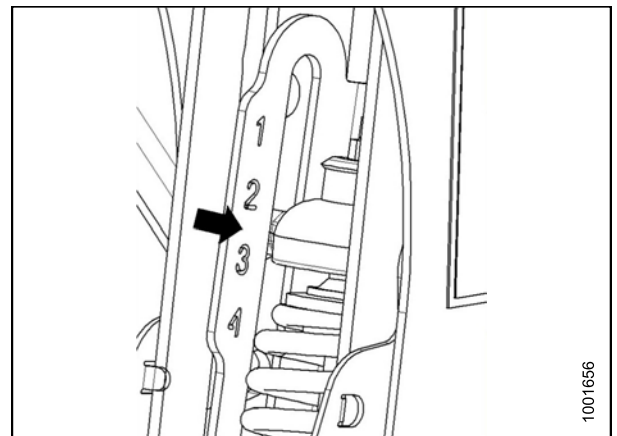


Figure 4.24: Load indicator between 2 and 3

IMPORTANT

Continuous operation with excessive spring compression (i.e., load Indicator reading greater than '4' or shorter than 11.6 in. [295 mm]) can result in damage to suspension system.

7. Adjust header angle to desired working angle with the machine's header angle controls. If angle is **NOT** critical, set it to mid-position.
8. Use the windrower Cab Display Module (CDM) controls to automatically maintain cutting height. Refer to your windrower operator's manual for details.

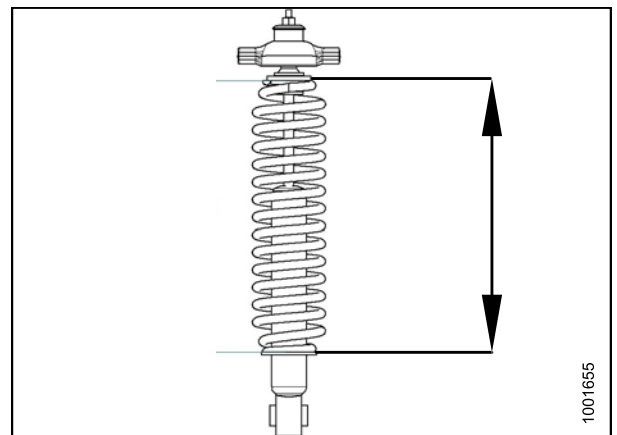


Figure 4.25: Spring compression

OPERATION

Cutting On the Ground

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

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

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

Raising the skid shoes and increasing the header angle allows the crop to be cut closer to the ground.

Refer to Section [4.6.1 Header Settings, page 46](#) for recommended skid shoe positions in specific crops and crop conditions.

Adjusting Inner Skid Shoe

1. Fully raise the stabilizer wheels or slow speed transport wheels if installed. Refer to
 - [Adjusting the Stabilizer Wheels, page 52](#), or
 - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 51](#) for procedure.

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. See your windrower operator's manual for instructions for use and storage of header safety props.

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

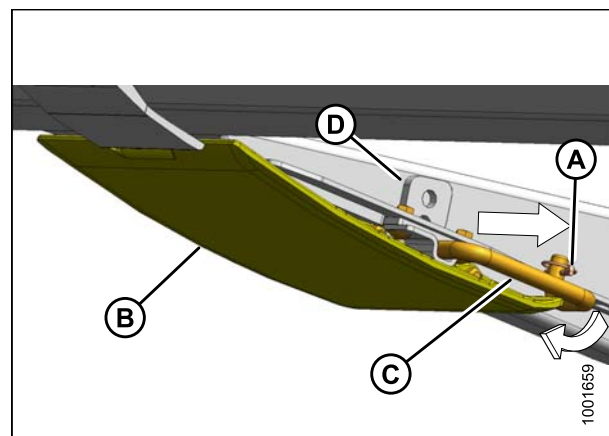


Figure 4.26: Inner skid shoes

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

OPERATION

6. Reinsert pin (B), engage in frame, and secure with lynch pin (A).
7. Check that all of the skid shoes are adjusted to the same position.
8. Adjust header angle to desired working position using the machine's header angle controls. If angle is not critical, set it to mid-position.
9. Check header float as described in your windrower operator's manual.

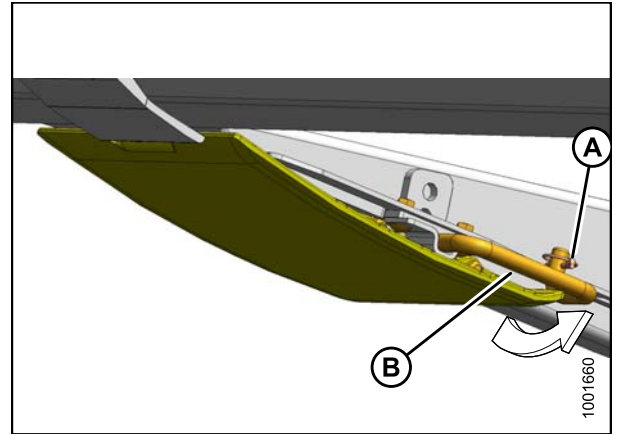


Figure 4.27

Adjusting Outer Skid Shoe

1. Fully raise the stabilizer wheels or slow speed transport wheels if installed. Refer to
 - [Adjusting the Stabilizer Wheels, page 52](#) or
 - [Adjusting Stabilizer/Slow Speed Transport Wheels, page 51](#) for procedure.



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. See your windrower operator's manual for instructions for use and storage of header safety props.

2. Fully raise header, engage safety props, shut off engine, and remove key.

OPERATION

3. Remove lynch pin (A) at each skid shoe (B).
4. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
5. Raise or lower skid shoe to desired position using holes in support as a guide.
6. Reinstall pin (C), engage in frame, and secure with lynch pin (A).
7. Check that skid shoes are adjusted to the same position.
8. Check header float as described in your windrower operator's manual.

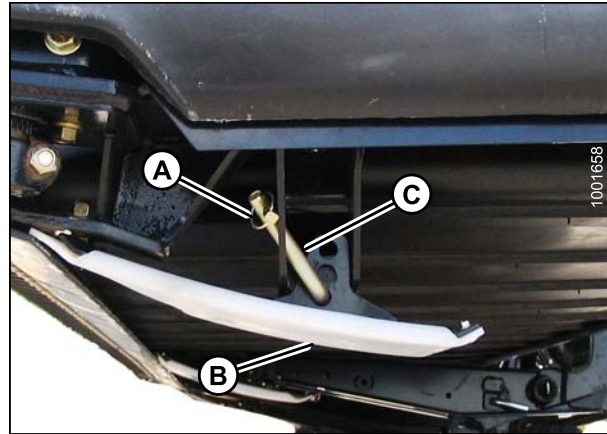


Figure 4.28: Outer skid shoes

A - Lynch pin
C - Pin

B - Skid shoe

4.7.2 Header Float

Float is what allows the header to be light enough to follow the ground and be responsive enough to raise or lower depending on the obstacle.

For instructions on checking and adjusting float, see your windrower operator's manual.

4.7.3 Header Angle

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

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

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

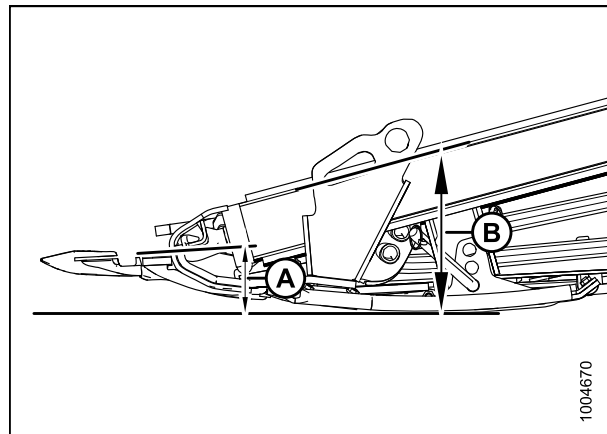


Figure 4.29: Shortest center-link

OPERATION

Flatter header angles are recommended for normal crop conditions and for stony ground because they minimize knife section breakage and reduce soil scooping or build-up at the cutterbar in wet conditions.

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

Refer to Section 4.6.1 [Header Settings](#), page 46 for recommended header angle in specific crops and crop conditions.

Header angle also affects the type of windrow that is laid. Refer to Section 4.10 [Windrow Types](#), page 79.

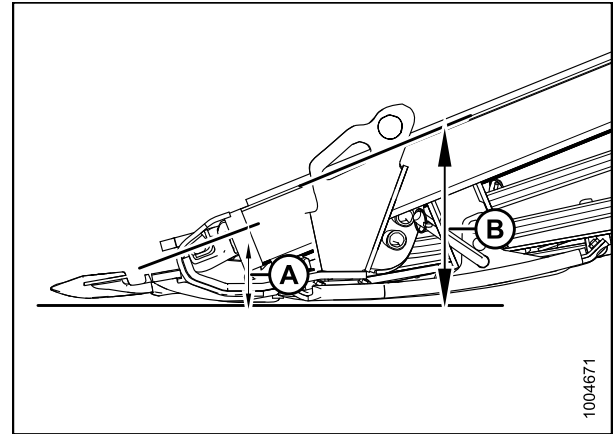


Figure 4.30: Longest center-link

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

Table 4.3 D65 Header Angle

Header size	Guard angle
15–25 ft.	7.5°–17°
30–40 ft.	2.5°–12°

Angle Adjustment

Header angle is varied by adjusting the length of the top center-link (mechanical or hydraulic) between the windrower and the header.

Refer to your windrower operator's manual for adjustment details.

4.7.4 Reel Speed

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

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

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

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

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

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

NOTE: 9-bat reels are available on D65 15, 20, 25 ft. from the factory. If you have a D65 15, 20, 25, 30, or 35 ft. double reel header. You can purchase conversion kits to upgrade a 6-bat reel to the 9-bat reel.

OPERATION

Refer to Section 4.6.1 Header Settings, page 46 for recommended reel speeds in specific crops and crop conditions.

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

Optional Reel Drive Sprockets

For installation details, refer to Section 6.8.5 Reel Drive Sprocket, page 211.

4.7.5 Ground Speed

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

Refer to Section 4.10 Windrow Types, page 79 for effects of ground speed on windrow formation.

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

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

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

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

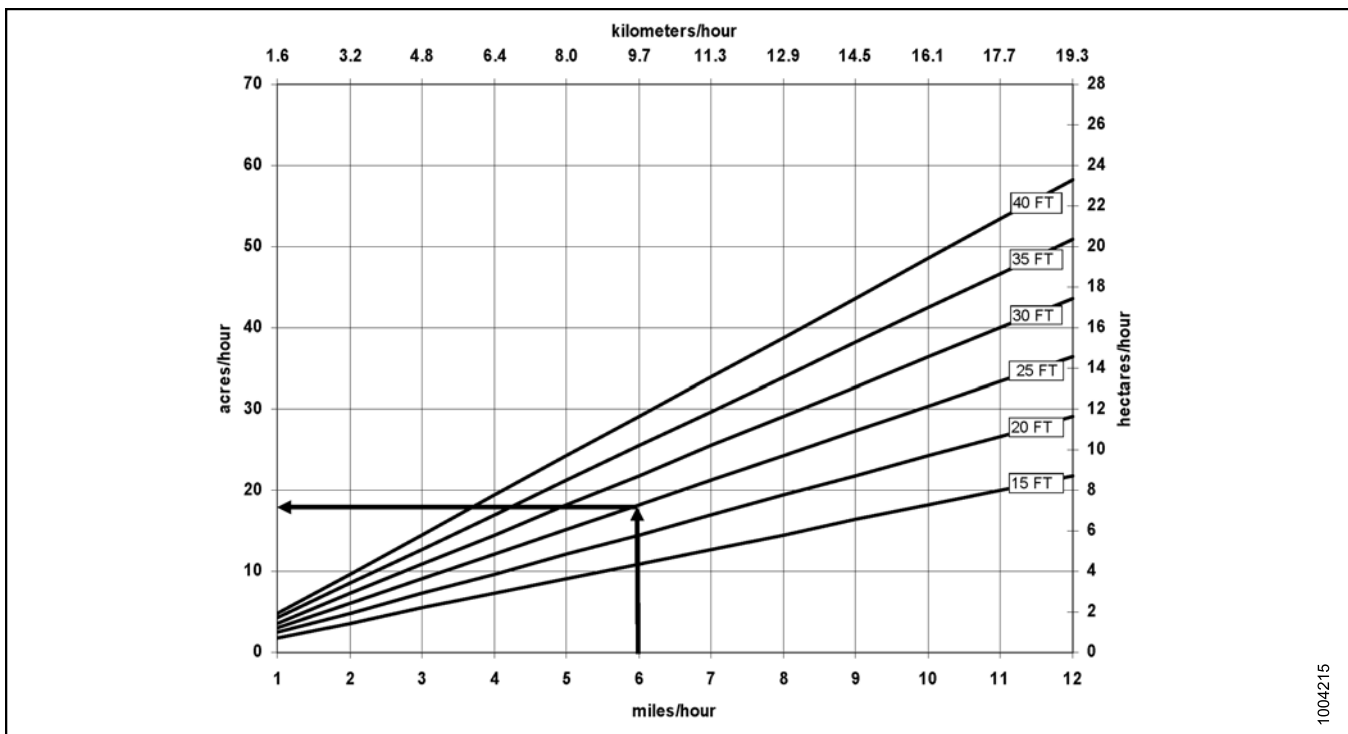


Figure 4.31: D65 ground speed

Example shown above: At a ground speed of 6 miles per hour (9.7 km/h) with a 25 ft. header, the area cut in one hour would be approximately 18 acres (7.3 hectares).

OPERATION

4.7.6 Draper Speed

The draper speed is controlled with the windrower Cab Display Module (CDM). Refer to your windrower operator's manual for instructions.

Adjust the draper speed to achieve good feeding of crop for a good windrow. Excessive draper speed will reduce draper life.

4.7.7 Knife Speed

The header knife drive is driven by the windrower hydraulic pump and is controlled with the windrower Cab Display Module (CDM). The default speed is 1200 strokes per minute (spm). Refer to your windrower operator's manual.

Table 4.4 Knife Speed Guidelines

Header size (ft.)	Recommended knife speed range (spm)	
	Single knife	Double knife
15 ft.	—	1500–1900
20, 25 ft.	1200–1400	1400–1700
30 ft.	1200–1400	1200–1600
35 ft.	1100–1300	1200–1400
40 ft.	1050–1200	1100–1400

4.7.8 Reel Height

Depending on crop height, adjust reel height to carry material past the knife onto the drapers. Operate windrower hydraulics as required. Refer to section [4.7.9 Reel Fore-Aft Position, page 60](#).

Indications that reel may be too low are as follows:

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

Refer to Section [4.6.1 Header Settings, page 46](#) for recommended reel height in specific crops and crop conditions.

IMPORTANT

Maintain adequate clearance to prevent fingers contacting the knife or the ground. Refer to Section [6.8.1 Reel Clearance to Cutterbar, page 196](#).

OPERATION

4.7.9 Reel Fore-Aft Position

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

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

Refer to Section [4.6.1 Header Settings, page 46](#) for recommended reel positions in specific crops and crop conditions.

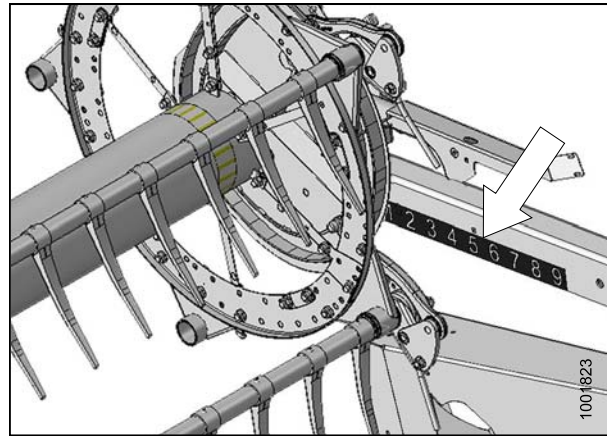


Figure 4.32: Decal

Adjusting Reel Fore-Aft Position

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

1. Select FORE-AFT mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position, again using the gauge as a reference.
3. Check reel clearance to cutterbar after making changes to cam setting. Refer to
 - Section [6.8.1 Reel Clearance to Cutterbar, page 196](#) and
 - Section [6.8.2 Reel Frown, page 199](#) for measurements and adjustment procedures.

IMPORTANT

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

Repositioning Fore-Aft Cylinder on Single Reel

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



WARNING

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

OPERATION

Reposition right arm cylinder as follows:

NOTE: Reel components are not shown for clarity.

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

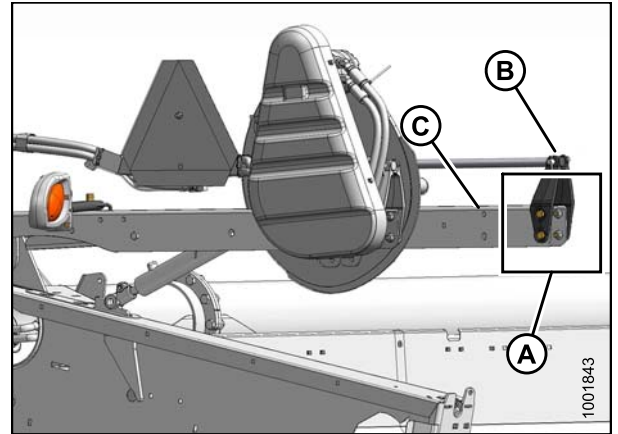


Figure 4.33: Right arm cylinder - Forward position

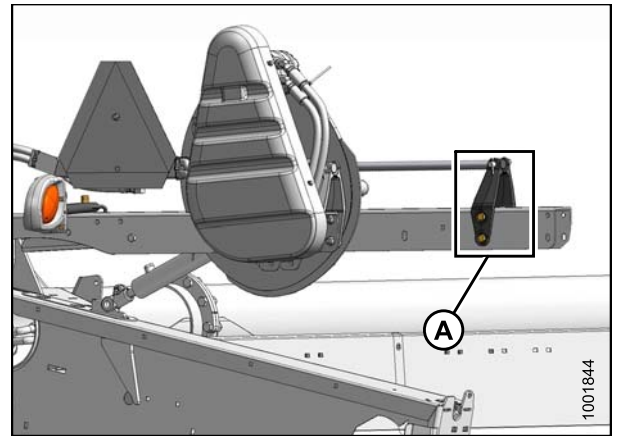


Figure 4.34: Right arm cylinder - Rearward position

OPERATION

Reposition left arm cylinder as follows:

NOTE: Reel components are not shown for clarity.

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

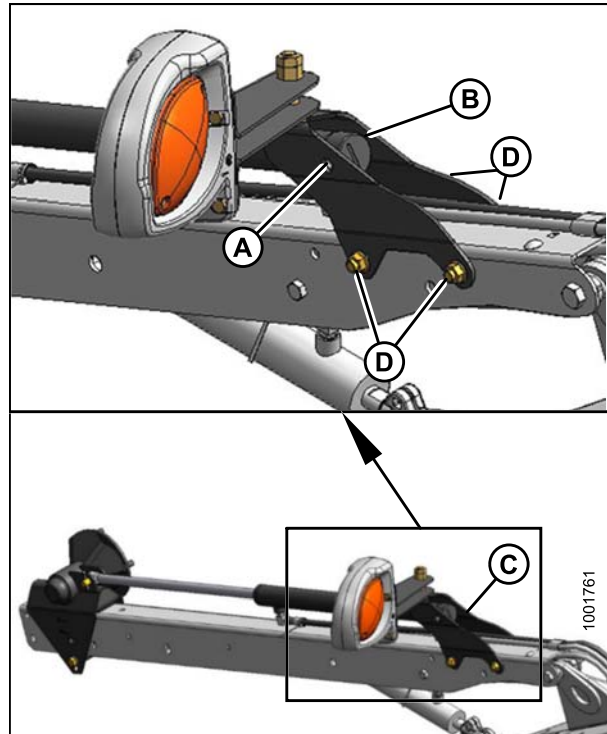


Figure 4.35: Forward position

A - Pin
B - Cylinder
C - Bracket/Light assembly
D - Bolts

10. Reposition bracket/light assembly (C) on reel arm as shown and reinstall the four bolts (D) to secure bracket to reel arm. Tighten bolts.
11. Push reel back and reinstall cylinder (B) to bracket with pin (A). Secure pin with cotter pin.
12. Secure light harness to bracket with plastic tie wrap.
13. Check reel clearance to backsheet, upper cross auger (if installed) and reel braces.
14. Adjust reel tine pitch (if required). Refer to
 - Section [4.7.10 Reel Tine Pitch](#), page 66 or
 - Section [6.8.1 Reel Clearance to Cutterbar](#), page 196for adjustment procedures.

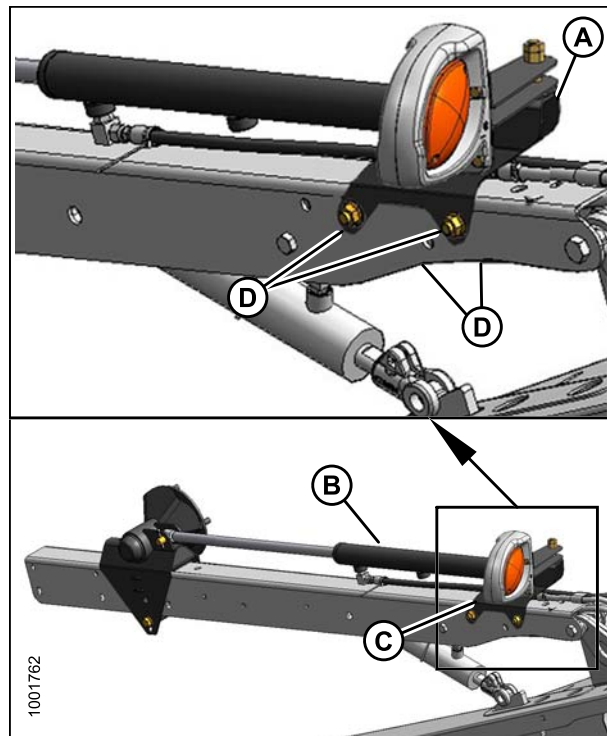


Figure 4.36: Rearward position

A - Pin
B - Bracket
C - Bracket/Light assembly
D - Bolts

OPERATION

Repositioning Fore-Aft Cylinder on Double Reel

The reel can be moved approximately 9 in (227 mm) further aft by repositioning the cylinders on the reel arms. This may be desirable when straight-combining canola. To reposition the cylinders on a double reel, follow these steps.



WARNING

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

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

Reposition center arm cylinder as follows:

NOTE: Reel components are not shown for clarity.

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

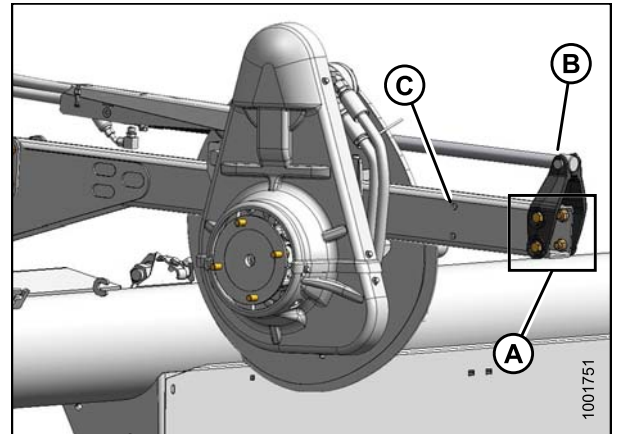


Figure 4.37: Center arm cylinder- Forward position

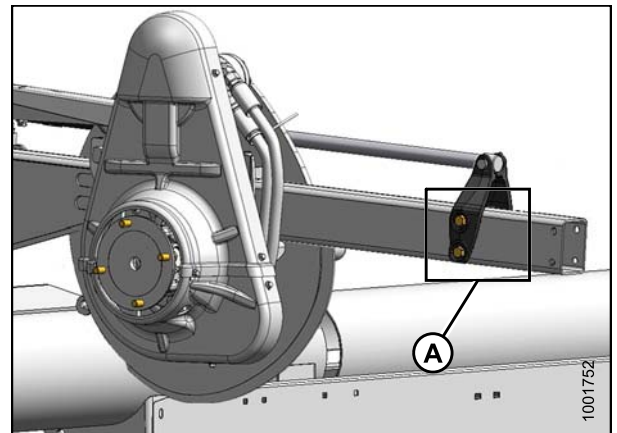


Figure 4.38: Center arm cylinder - Rearward position

OPERATION

Reposition right arm cylinder as follows:

NOTE: Reel components are not shown for clarity.

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

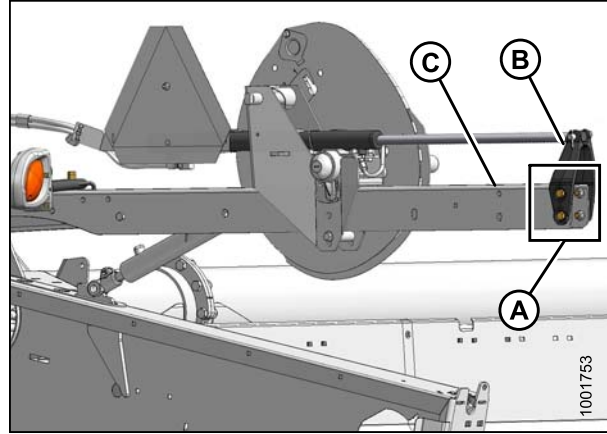


Figure 4.39: Right arm cylinder - Forward position

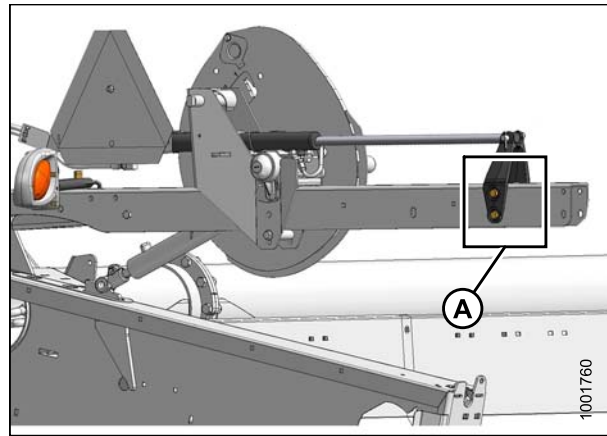


Figure 4.40: Center arm cylinder - Rearward position

OPERATION

Reposition left arm cylinder as follows:

NOTE: Reel components are not shown for clarity.

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

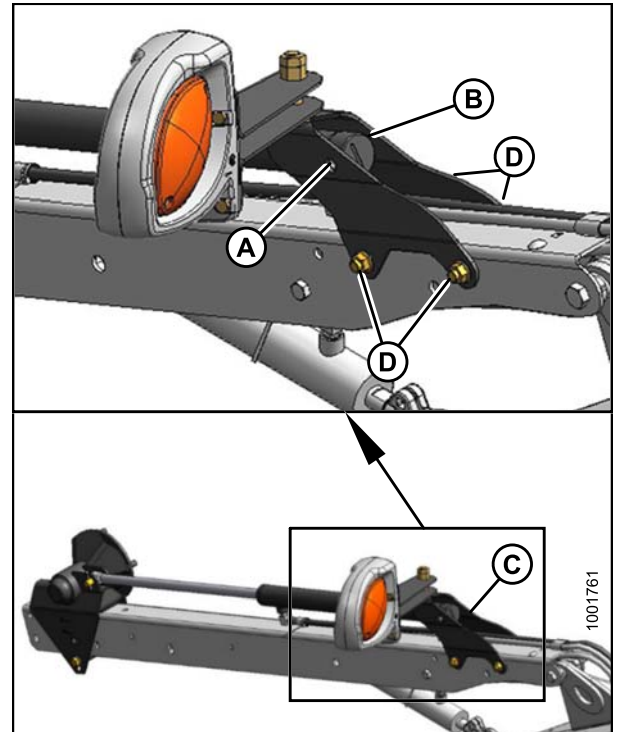


Figure 4.41: Forward position

A - Pin
B - Cylinder
C - Bracket/Light assembly
D - Bolts

13. Reposition bracket/light assembly (C) on reel arm as shown and reinstall the four bolts (D) to secure bracket to reel arm. Tighten bolts.
14. Push reel back and reinstall cylinder (B) to bracket with pin (A). Secure pin with cotter pin.
15. Secure light harness to bracket with plastic tie wrap.
16. Check reel clearance to backsheet, upper cross auger (if installed) and reel braces.
17. Adjust reel tine pitch (if required). Refer to
 - Section [4.7.10 Reel Tine Pitch](#), page 66 or
 - Section [6.8.1 Reel Clearance to Cutterbar](#), page 196for adjustment procedures.

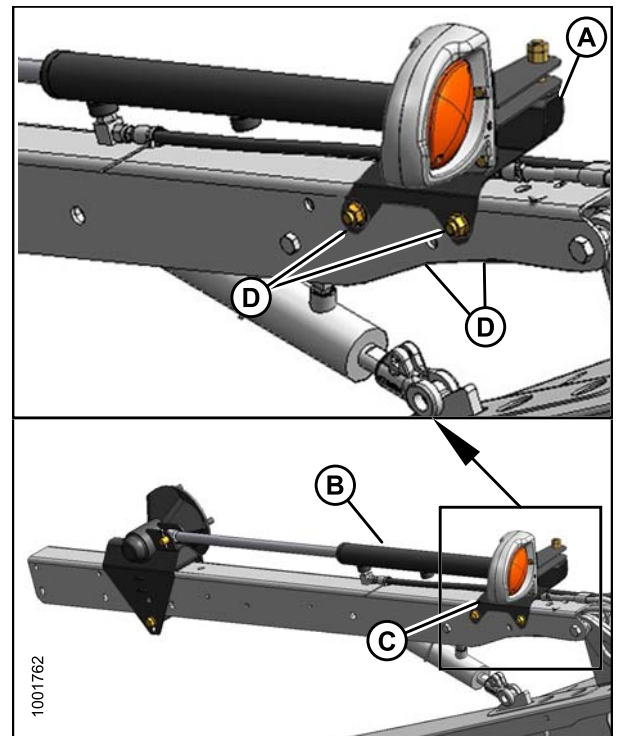


Figure 4.42: Rearward position

A - Pin
B - Bracket
C - Bracket/Light assembly
D - Bolts

OPERATION

4.7.10 Reel Tine Pitch

IMPORTANT

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

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

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

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

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

Pickup Reel Settings

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

The setting numbers are visible above the slots on the cam disc. Refer to section [Adjusting Reel Cam, page 68](#).

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

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

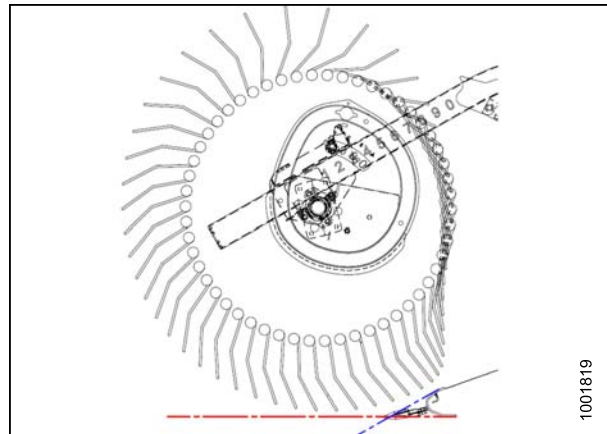


Figure 4.43

OPERATION

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

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

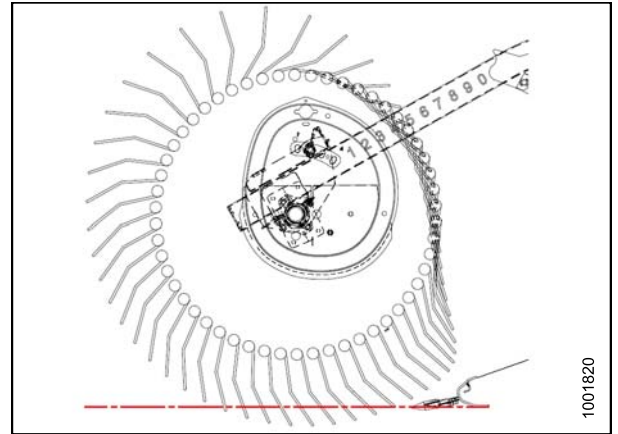


Figure 4.44

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

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

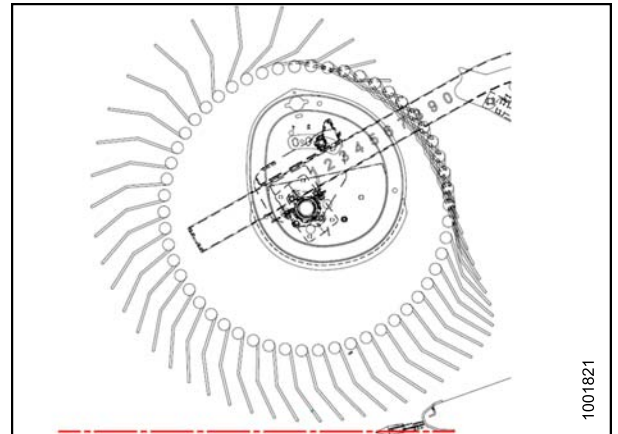


Figure 4.45

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

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

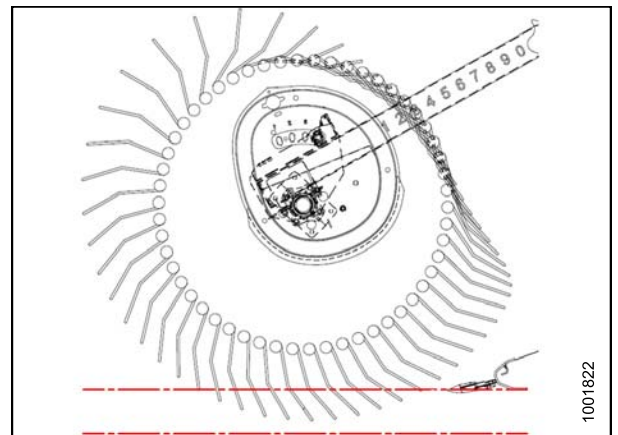


Figure 4.46

OPERATION

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

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

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

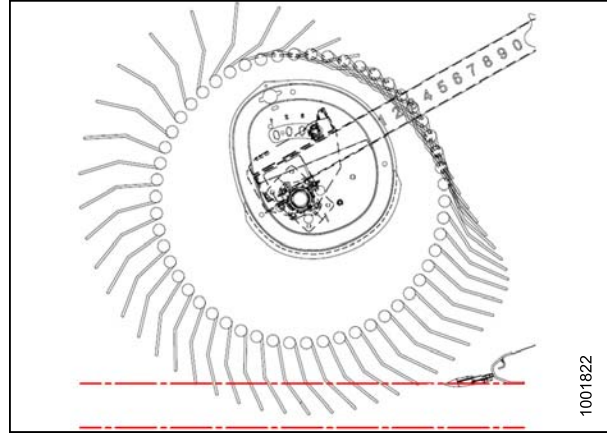


Figure 4.47

IMPORTANT

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

Refer to Section [6.8.1 Reel Clearance to Cutterbar](#), page 196.

Refer to Section [4.6.1 Header Settings](#), page 46 for recommended reel tine pitch in specific crops and crop conditions.

Adjusting Reel Cam

WARNING

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

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

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

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

IMPORTANT

Secure cam position before operating machine.

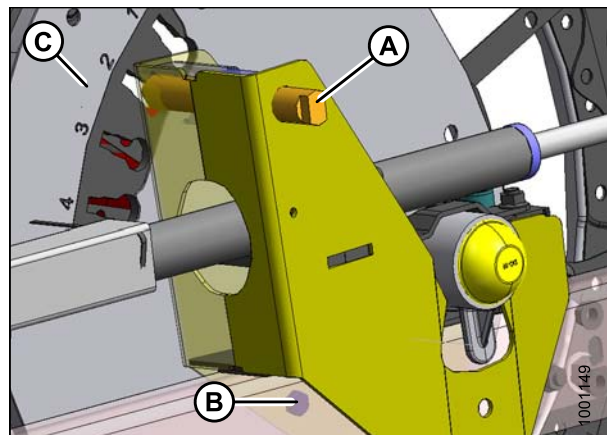


Figure 4.48

A - Cam latch pin

B - Bolt

C - Cam disc

OPERATION

4.7.11 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.

Removing Crop Dividers from Header with Latch Option

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

DANGER

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

1. Raise header, stop engine, remove key, and engage header safety props. For instructions, refer to your windrower operator's manual.
2. Open/remove header endshields. See Section [4.2.3 Endshields, page 37](#).
3. Lift safety lever (A).
4. Hold onto divider (B), push lever (C) to open latch and lower divider.

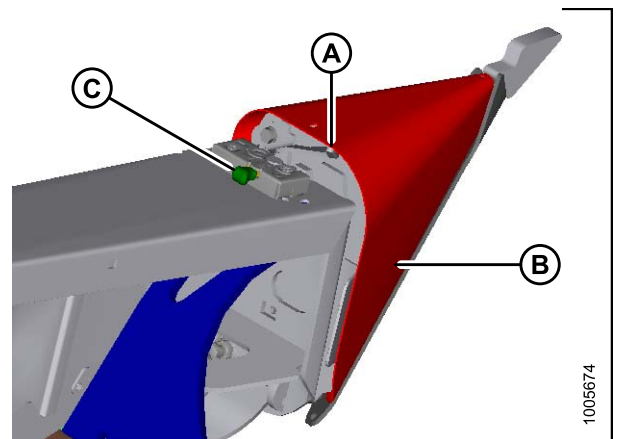


Figure 4.49

5. Lift divider off endsheet and store as follows:
 - a. Locate pin (A) on divider in hole in endsheet at location shown.
 - b. Lift divider and locate lugs (B) on divider into bracket on endsheet. Ensure lugs engage bracket.
6. Close/replace header endshields. See Section [4.2.3 Endshields, page 37](#).

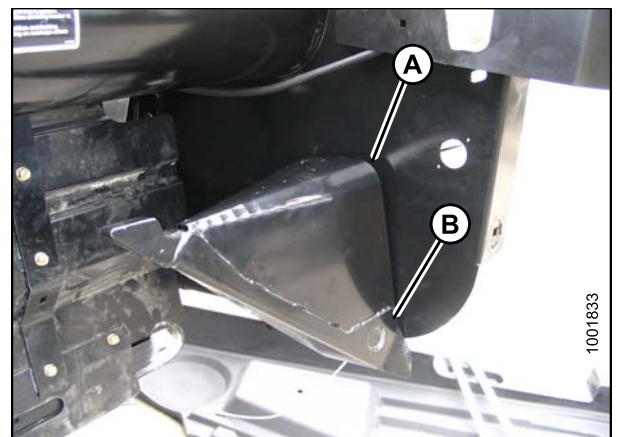


Figure 4.50

OPERATION

Removing Crop Dividers from Header without Latch Option

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

DANGER

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

1. Raise header, stop engine, remove key, and engage safety props. For instructions, see your windrower operator's manual.
2. Open/remove header endshield. Refer to Section [4.2.3 Endshields, page 37](#).
3. Remove bolt (A), lock washer and flat washer.
4. Lower divider (B) and lift off endsheet.
5. Close/replace header endshield. See Section [4.2.3 Endshields, page 37](#).

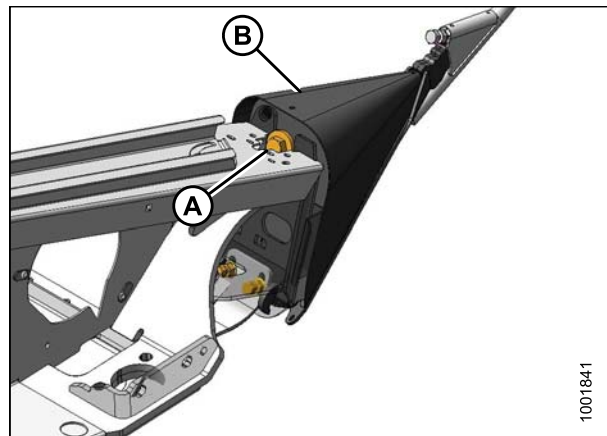


Figure 4.51

Installing Crop Dividers on Header with Latch Option

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

DANGER

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

1. Raise header, stop engine, remove key, and engage safety props. For instructions, see the windrower operator's manual.
2. Open header endshield.

OPERATION

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

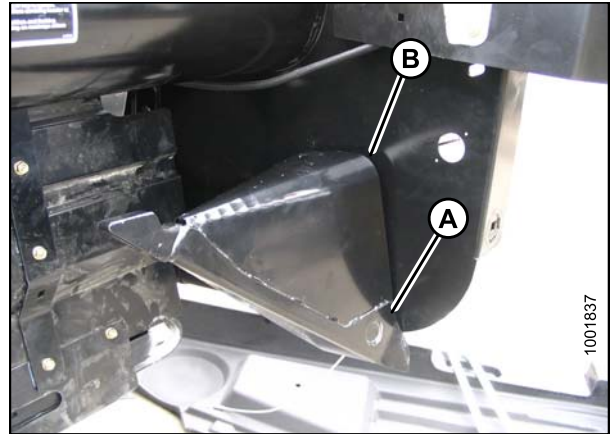


Figure 4.52

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

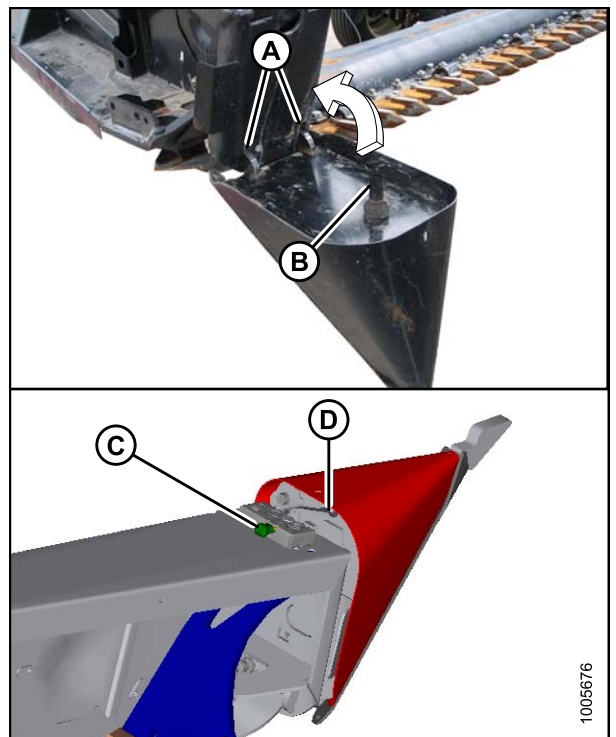


Figure 4.53

A - Lugs
C - Latch

B - Pin
D - Safety lever

OPERATION

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



Figure 4.54

Installing Crop Dividers on Header without Latch Option

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

DANGER

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

1. Raise header, stop engine, remove key, and engage safety props. For instructions, see the windrower operator's manual.
2. Open endshield. See Section [4.2.3 Endshields, page 37](#).
3. Remove crop divider from storage.
4. Position crop divider as shown by locating lugs (A) in holes in endsheet.

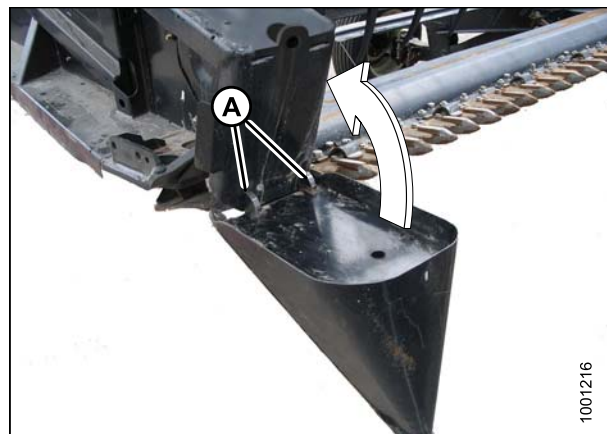


Figure 4.55

OPERATION

5. Lift forward end of divider and install bolt (A) and special stepped washer (B) (step towards divider). Tighten bolt.
6. Check that divider does **NOT** move laterally. Adjust bolts (C) as required to tighten divider and remove lateral play when pulling at divider tip.
7. Close endshield. See Section [4.2.3 Endshields, page 37](#).

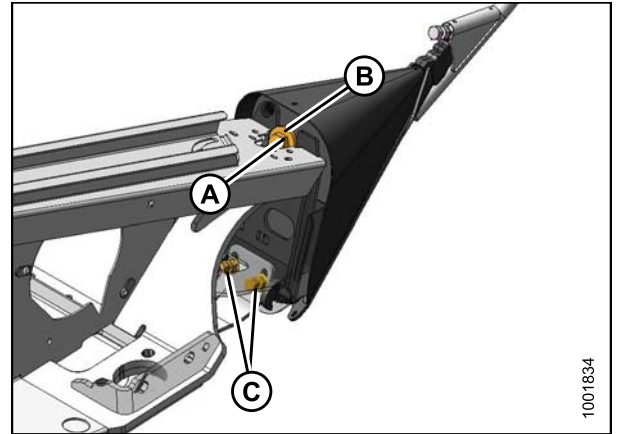


Figure 4.56

4.7.12 Crop Divider Rods

Crop divider rods are used with the crop dividers. The removable divider rods are suitable when crop is down, but can be removed when in standing crops as the crop dividers alone function better.

Table 4.5 Recommend Use of The Crop Divider Rods

With divider rods	Without divider rods
Alfalfa	Edible Beans
Canola	Milo
Flax	Rice
Grass Seed	Soybeans
Lentils	Standing Cereal
Lodged Cereal	
Peas	
Soybeans	
Sudan Grass	
Winter Forage	

OPERATION

Removing Crop Divider Rods

To remove divider rods, follow these steps:

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

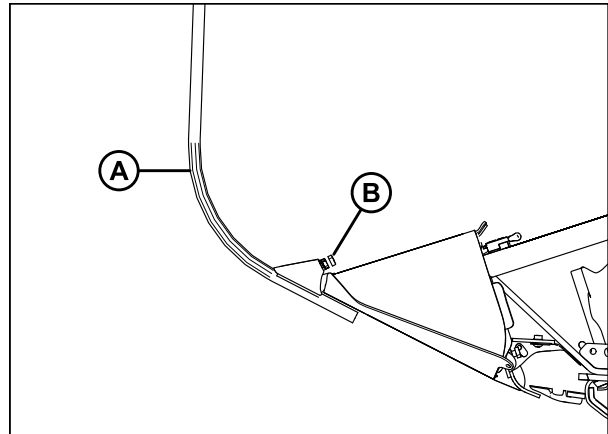


Figure 4.57

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

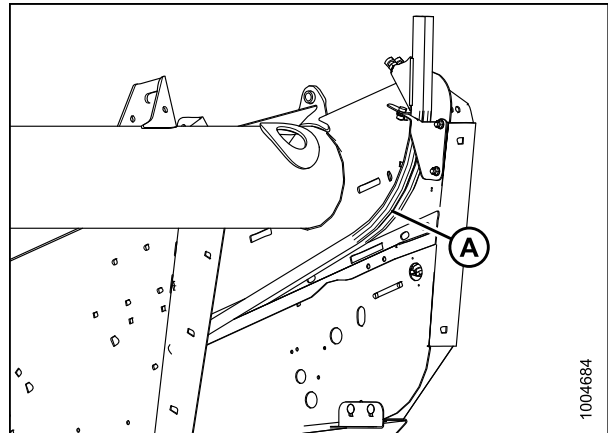


Figure 4.58

Rice Dividers

Optional special rice dividers can be installed and used when required. See Section [8.1.18 Rice Divider Rods](#), page 259.

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

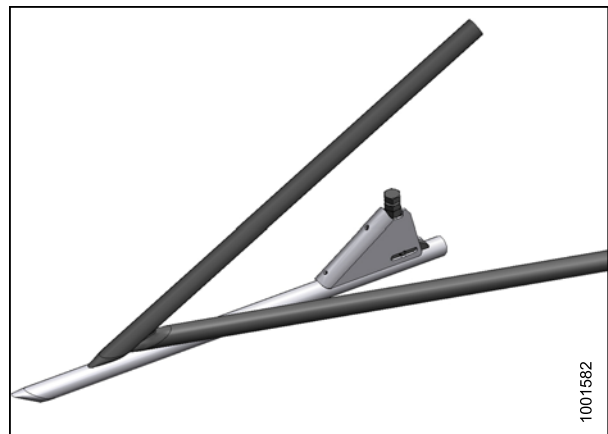


Figure 4.59

OPERATION

4.8 Delivery Opening

The width and location of the delivery opening affects the width and configuration of the windrow.

The decision to widen or narrow the center delivery opening, or to double windrow, should be based on the following factors:

- Windrower pick-up capability
- Type and yield of crop
- Weather conditions (rain, humidity, wind)
- Drying time available

Refer to Section [4.10 Windrow Types](#), page 79 for the strengths and weaknesses of the various windrow configurations with respect to these factors.

Also see Section [4.9 Double Windrowing](#), page 77.

4.8.1 Adjusting Delivery Opening on Header with Manual Deck Shift

Both decks can be positioned to vary the delivery opening from 60.61–69.7 in. (1540–1770 mm) for the 15 ft. header and from 67.1–76.7 in. (1720–1950 mm) for 20 to 40 ft. models.

1. Loosen bolts (A) on both decks.
2. Slide decks desired amount. Retighten bolts (A).

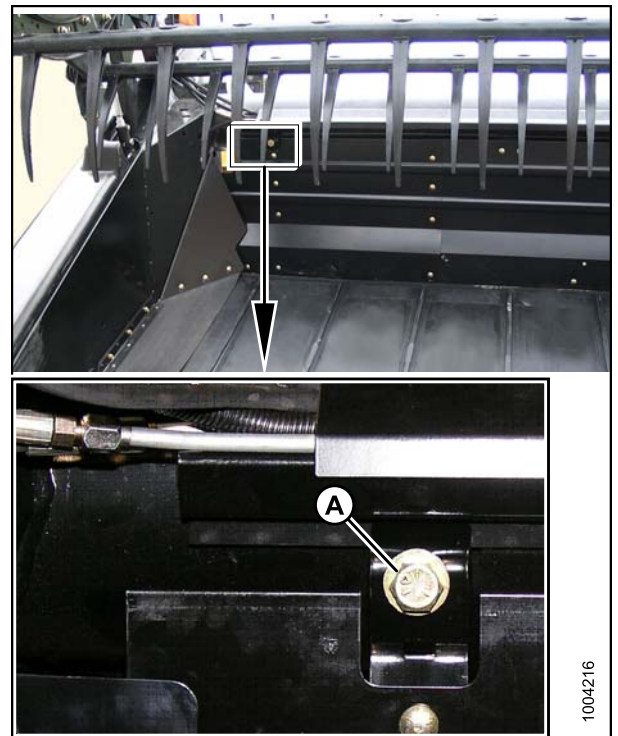


Figure 4.60

OPERATION

4.8.2 Adjusting Delivery Opening on Header with Hydraulic Deck Shift

The delivery opening can be changed by moving the inboard deck shift stops.

1. Remove bolts (A).
2. Slide stop (B) outboard to decrease the maximum opening size, or inboard to increase the maximum opening.



CAUTION

Adjust the outboard stops to prevent the decks from contacting each other.

3. Reinstall bolts (A) and tighten.

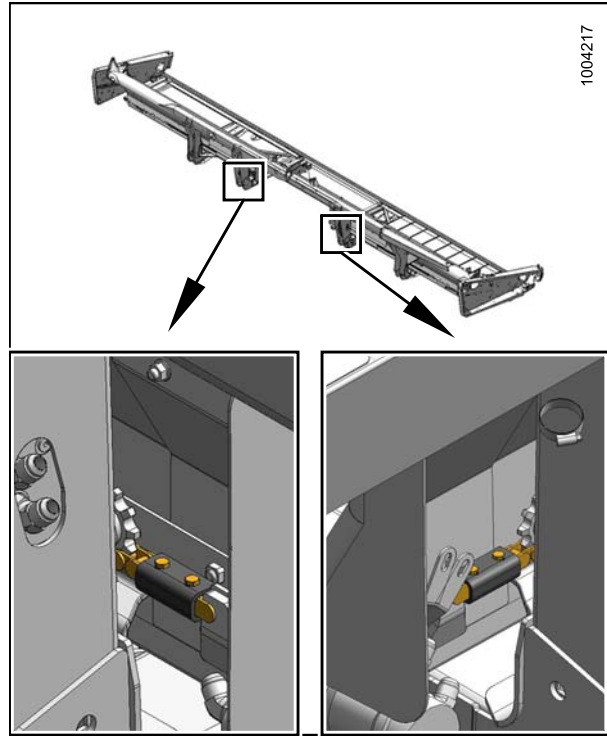


Figure 4.61

OPERATION

4.9 Double Windrowing

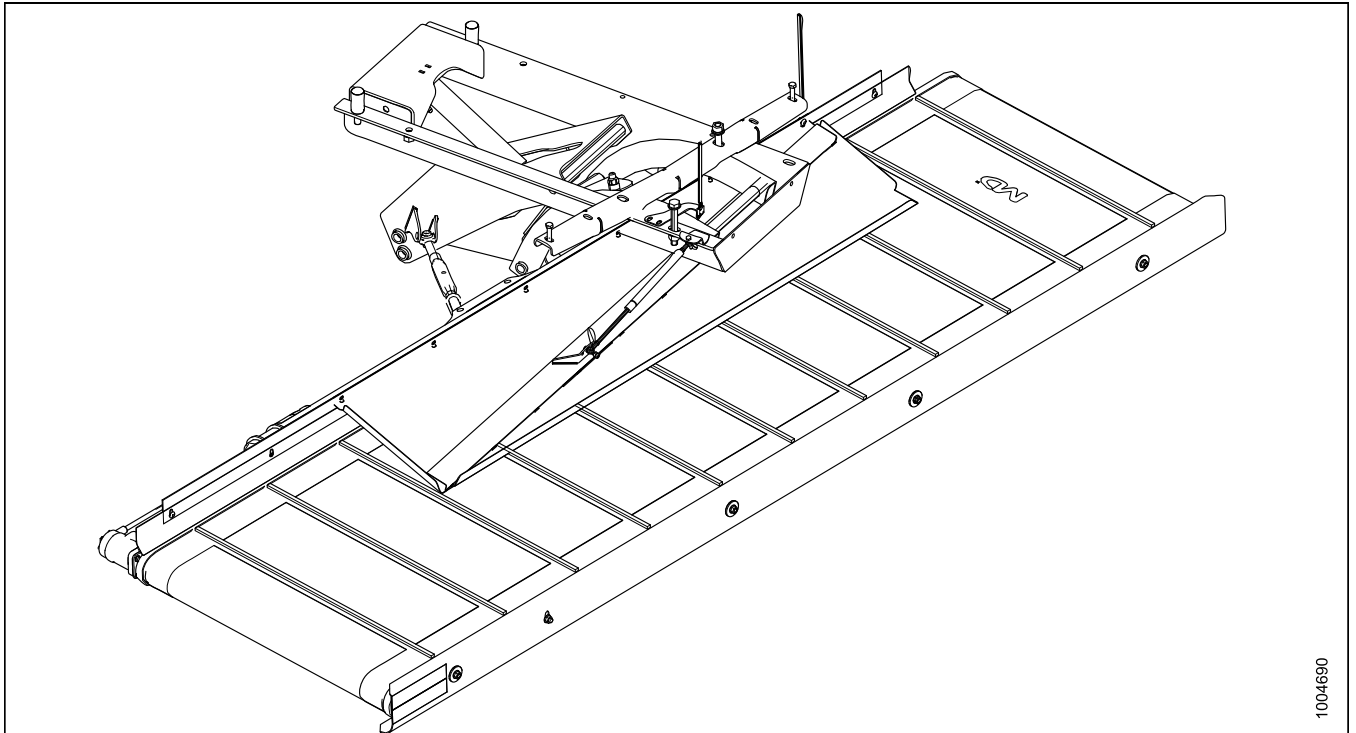


Figure 4.62: DWA attachment

The 25 to 40 ft. D65 Draper Header can lay double windrows by shifting the decks for delivery to either the right or left side of the header when equipped with hydraulic deck shift.

This feature allows cutting one round delivering to the right end (A), then shifting to left end delivery (B) and laying the second windrow beside the first.

NOTE: The end delivery opening size (67 in. [1710 mm]) is designed to give minimal clearance between the first windrow laid and the standing crop. The center delivery opening size from the factory is 74 in. (1870 mm), with an adjustable range of 61–78 in (1540–1970 mm).

NOTE: If end delivering with a 30 ft. header equipped with transport, crop can interfere with the outboard wheel. To rectify the problem, remove the outboard wheel.

Larger capacity windrowers or forage harvesters can then pick up twice as much material in a single pass, saving time and fuel.

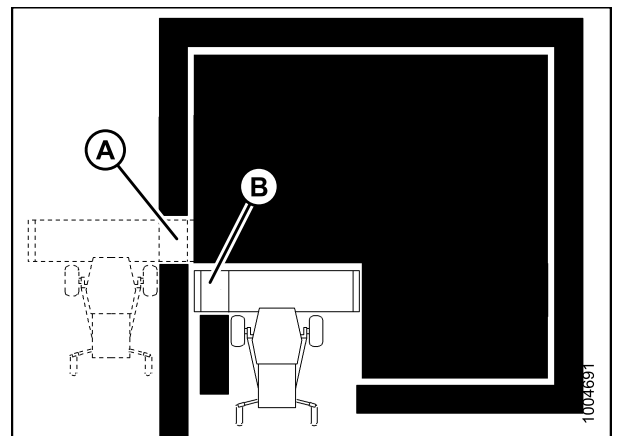


Figure 4.63

OPERATION

4.9.1 Shifting Deck Hydraulically

The hydraulic deck shift feature allows the Operator to select center, left, or right delivery from the windrower cab. It is only available on the 25, 30, 35, and 40 ft. headers.

Refer to your windrower operator's manual for identification and operation of the deck shift control.

4.9.2 Shifting Deck Manually

To manually shift the deck, follow these steps:

Both decks can be moved manually to deliver the crop from the center or right/left end on 25 to 40 ft. headers.

CAUTION

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

1. Loosen bolt (A) on the right deck.
2. Slide deck to close off the center opening. Retighten bolt (A).

3. Reverse the draper drive motor hoses (A) on the moved deck so that the draper turns the same direction as the existing deck.

NOTE: Loosen clamp on plastic sleeve at drive motor so that hoses (A) can be reversed. Retighten clamp.

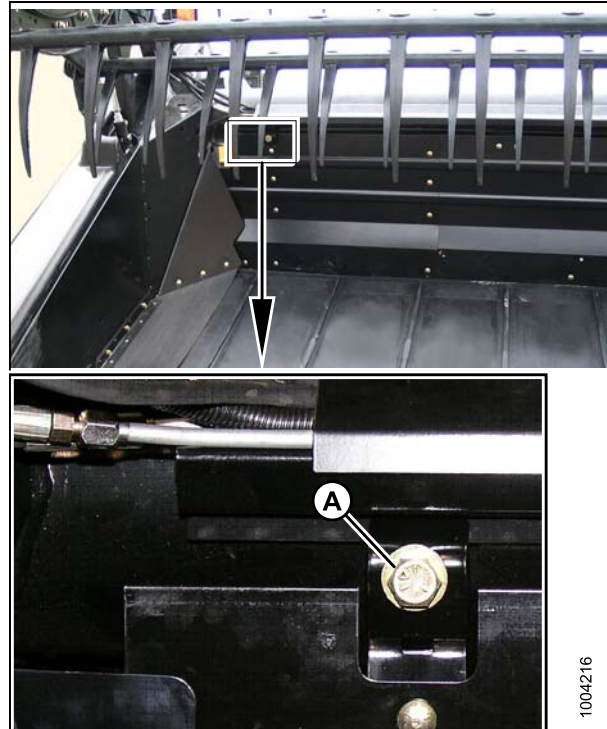


Figure 4.64: RH deck shown

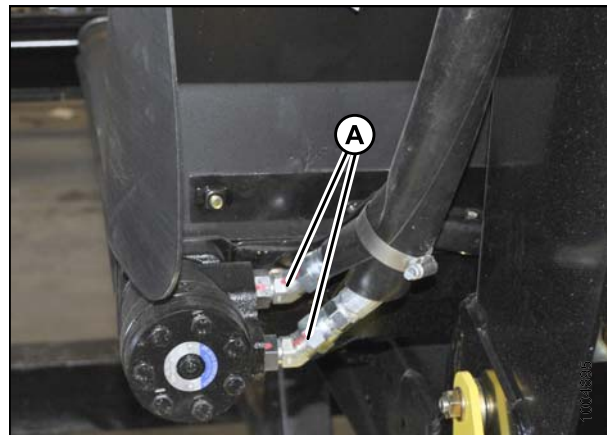


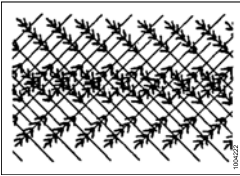
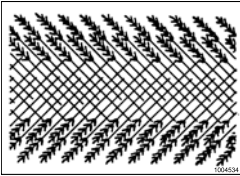
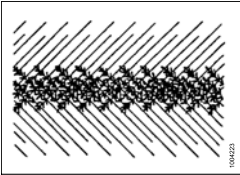
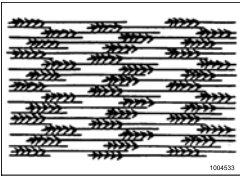
Figure 4.65: RH deck motor

OPERATION

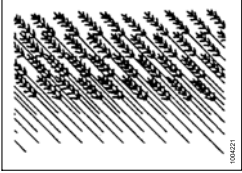
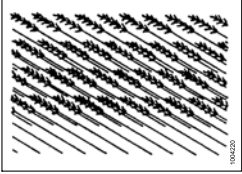
4.10 Windrow Types

There are three basic criteria by which the quality of a windrow is measured:

- **Weight Distribution:** Heads and stalks distributed evenly across full width of windrow
- **Good Curing:** A loose, open windrow for better drying
- **Good Weatherability:** A well-formed windrow that supports heads off the ground and holds together in extreme weather conditions

Windrow type	Description	Weight distribution	Curing	Weatherability	Machine setting guidelines
<p>Herringbone</p> 	<p>The most desirable form of windrow, stalks are crossed and interwoven. Heads are distributed across full width of windrow. This windrow can be formed by center delivery only.</p>	Good	Good	Excellent	<ul style="list-style-type: none"> • Reel and ground speed approximately equal • Medium draper speed • Center delivery
<p>Fantail</p> 	<p>The stalk tips are crossed in the center and the heads are in line along outside edges. This windrow can be formed by center delivery only.</p>	Fair	Fair	Fair	<ul style="list-style-type: none"> • Low draper speed • Low header angle • Center delivery
<p>Dovetail</p> 	<p>The stalk tips are lined along outside edges of windrow and heads are crossed in center. This windrow can be formed by center delivery only.</p>	Poor	Fair	Poor	<ul style="list-style-type: none"> • High draper speed • High header angle • Center delivery
<p>Parallel</p> 	<p>The stalks are parallel to windrow and heads evenly distributed across width of windrow. This windrow can be formed by center delivery or end delivery.</p>	Good	Good	Good	<ul style="list-style-type: none"> • Medium draper speed • Medium header angle • Center or end delivery

OPERATION

Windrow type	Description	Weight distribution	Curing	Weatherability	Machine setting guidelines
<p>45° Diagonal</p> 	<p>The stalks are lined along one edge and heads are along opposite edge, 45° to windrow perpendicular. This windrow can be formed by end deliver or by center delivery if the crop is leaning to one side.</p>	<p>Poor</p>	<p>Fair</p>	<p>Poor</p>	<ul style="list-style-type: none"> • Low reel speed • Less aggressive tine pitch • End delivery or center delivery if crop is leaning
<p>75° Diagonal</p> 	<p>The stalks are closer to parallel than the 45° windrow. Stalk tips are lined along one edge with heads opposite, 75° to windrow perpendicular. This windrow can be formed by end delivery or by center delivery if the crop is leaning to one side.</p>	<p>Fair</p>	<p>Good</p>	<p>Fair</p>	<ul style="list-style-type: none"> • Low reel speed • Less aggressive tine pitch • End delivery or center delivery if crop is leaning

OPERATION

4.11 Haying Tips

The following information may be useful when using the D65 Draper Header in hay crops.

4.11.1 Curing

A quick cure will maintain top quality because

- 5% of the protein is lost for each day hay lies on the ground.
- The sooner the cut hay is off, the earlier the start for new growth.

Leaving the windrow as wide and thin as possible makes for the quickest curing. The cured hay should be baled as soon as possible.

4.11.2 Topsoil Moisture

On wet soil, the general rule of wide and thin does **NOT** apply. A narrower windrow will dry faster than hay left flat on wet ground.

when the ground is wetter than the hay, moisture from the soil is absorbed by the hay above it. Determine topsoil moisture level before cutting. Use a moisture tester or estimate level using the table below.

Level	% Moisture	Condition
Wet	Over 45%	Soil is muddy
Damp	25–45%	Shows footprints
Dry	Under 25%	Surface is dusty

If ground is wet due to irrigation, wait until soil moisture drops below 45%.

If ground is wet due to frequent rains, cut when weather allows and let the forage lie on wet ground until it dries to the moisture level of the ground. The cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

4.11.3 Weather and Topography

Cut as much hay as possible by mid day when drying conditions are best.

Fields sloping south get up to 100% more exposure to the sun's heat than do north sloping fields. If hay is baled and chopped, consider baling the south facing fields and chopping fields facing north.

When relative humidity is high, the evaporation rate is low and hay dries slower.

If there is no wind, saturated air becomes trapped around the windrow. Raking or tedding will expose the hay to fresher, less saturated air.

Cutting hay perpendicular to the direction of the prevailing winds is also recommended.

4.11.4 Windrow Configuration

It is recommended that a windrow with the following characteristics be produced. Refer to Section [4.7 Header Operating Variables, page 50](#) for instructions on adjusting the header.

OPERATION

Configuration	Advantage
High and fluffy	Movement of air through the windrow is more important to the curing process than is direct sunlight.
Consistent formation, not bunchy	Permits an even flow of material into the baler, chopper, etc. and allows for more even drying.
Even distribution of material across windrow	Results in even and consistent bales to minimize handling and stacking problems.
Properly conditioned	Prevents excessive leaf damage.

4.11.5 Driving on Windrow

Driving on previously cut windrows can lengthen drying time by a full day in hay that will not be raked. If practical, set forming shields for a narrower windrow that can be straddled.

NOTE: Driving on the windrow in high yielding crops may be unavoidable if a full width windrow is necessary.

4.11.6 Raking and Tedding

Raking or tedding speeds up drying, however, benefits must be evaluated against additional leaf losses which will be the result.

There is little or no advantage to raking or tedding if the ground beneath the windrow is dry. Large windrows on damp or wet ground should be turned over when they reach 40–50% moisture.

Hay should not be raked or teded at less than 25% moisture, or excessive yield losses will result.

4.11.7 Chemical Drying Agents

Hay drying agents work by removing wax from legume surfaces, enabling water to escape and evaporate faster. However, treated hay lying on wet ground will also absorb ground moisture faster. Before deciding to use a drying agent, costs and benefits relative to your area should be carefully evaluated.

OPERATION

4.12 Levelling the Header

Windrower linkages are factory-set to provide the proper level for the header and should not normally require adjustment. The float springs are **NOT** used to level the header.

If the header is not level, check the tire pressures on the windrower to ensure that the tires are properly inflated. For instructions, see the windrower operator's manual.

If the header is still not level, then adjustment to the windrower linkages is required. Refer to the appropriate section in your windrower operator's manual.

OPERATION

4.13 Unplugging Cutterbar

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

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



CAUTION

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

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



WARNING

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

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



CAUTION

Wear heavy gloves when working around or handling knives.

6. Clean off cutterbar by hand.

NOTE: If cutterbar plugging persists, see [Section 7 Troubleshooting, page 239](#).

OPERATION

4.14 Upper Cross Auger (UCA)

The UCA helps deliver very bulky crops across the header onto the windrow.

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



Figure 4.66: Upper cross auger

4.14.1 Removing Beater Bars

To remove beater bars, follow these steps.



WARNING

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

1. Lower header to ground, shut down engine, and remove key.

OPERATION

2. Remove bolts (A) securing bars (B) and clamps (C) to auger tubes, and remove bars and clamps.

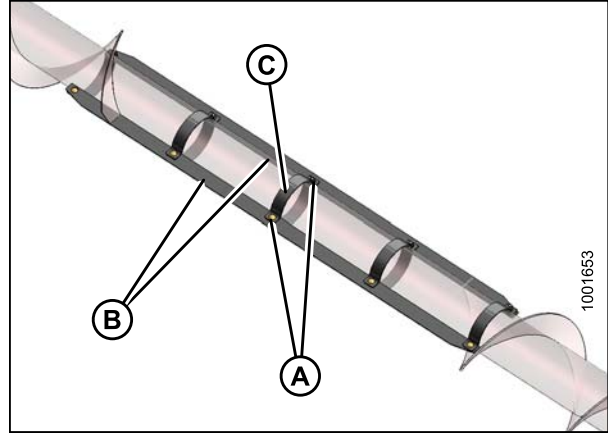


Figure 4.67: Single-reel headers

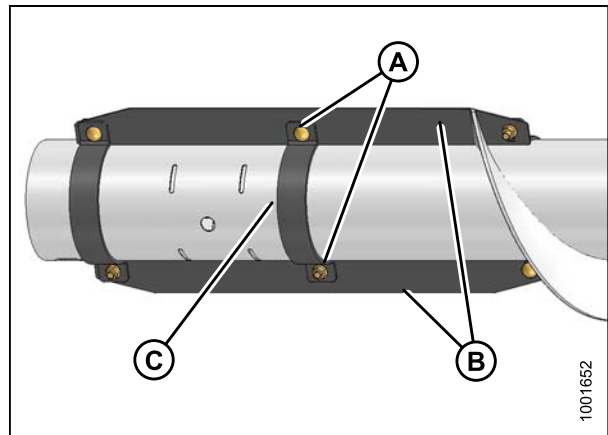


Figure 4.68: Double-reel headers

OPERATION

4.14.2 Installing Beater Bars

To install beater bars, follow these steps.

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

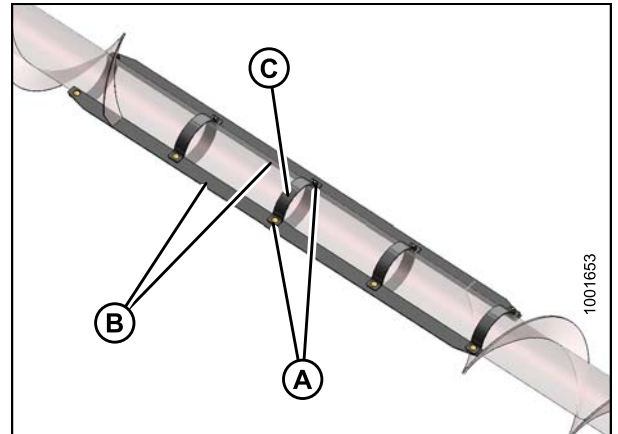


Figure 4.69: Single-reel headers

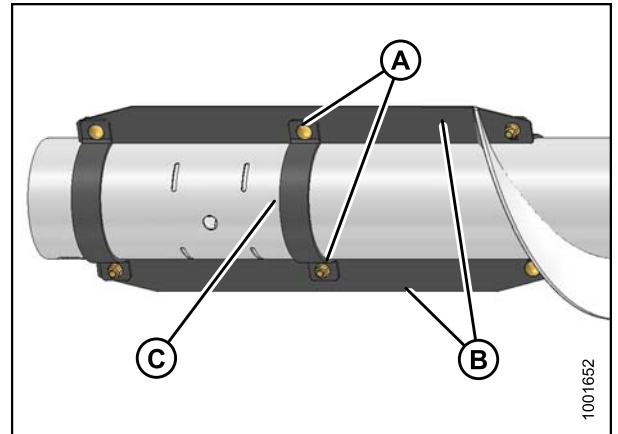


Figure 4.70: Double-reel headers

OPERATION

4.15 Transporting Header



WARNING

Do NOT drive windrower 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.

4.15.1 Transporting Header on Windrower



CAUTION

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

4.15.2 Towing

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

OPERATION

Attaching Header to Towing Vehicle



CAUTION

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

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

Towing the Header



CAUTION

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

- Do NOT exceed 25 mph (40 km/h). Reduce transport speed to less than 5 mph (8 km/h) for corners and slippery or rough conditions.
- Turn corners only at very low speeds (5 mph [8km/h]) or less). While cornering, header stability is reduced as front wheel moves to the left.
- Do NOT accelerate when making or coming out of a turn.
- Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law.

OPERATION

4.15.3 Converting from Transport to Field Position

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

Removing Tow-Bar

Remove tow-bar as follows:

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

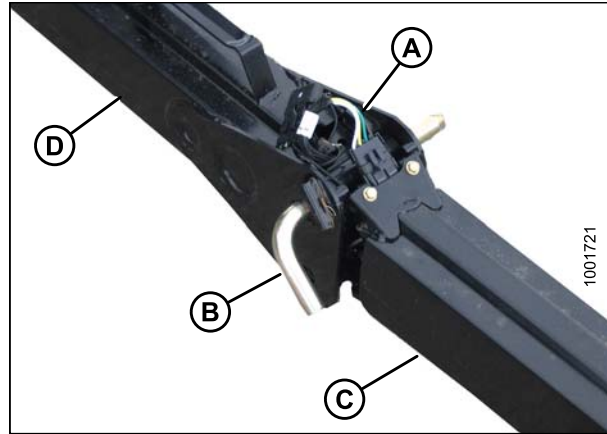


Figure 4.71

A - Wiring connector
C - Outer section

B - Pin
D - Inner section

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



Figure 4.72: Wiring connector

OPERATION

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

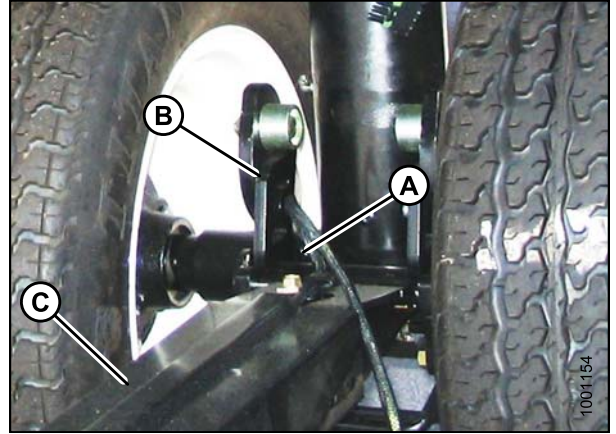


Figure 4.73

A - Clevis pin
C - Tow-bar

B - Latch

Storing Tow-Bar

Store tow-bar as follows:

1. On the LH side of the header, place the inner end of the outer half of the tow-bar in cradle (A) on header backtube.
2. For clevis or pintle end of tow-bar, secure in support (B) on endsheet with hitch pin (C). Secure with lynch pin.
3. Install rubber strap (D) on cradle (A).

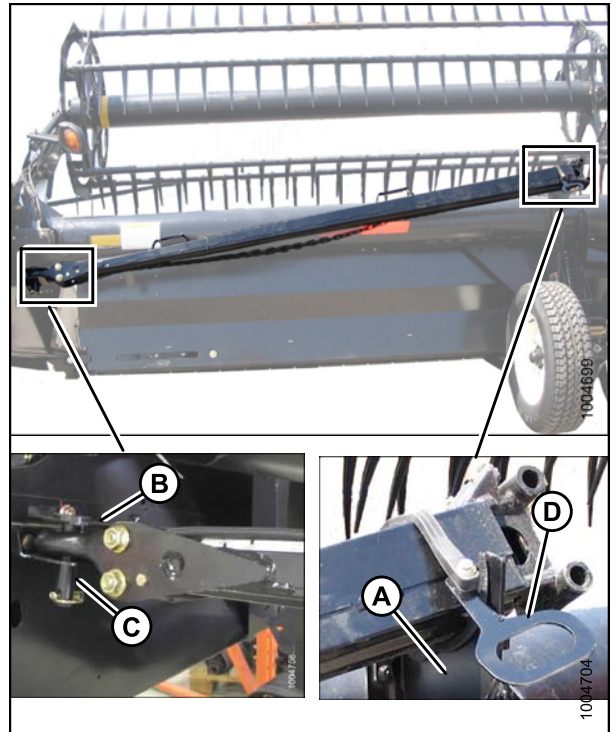


Figure 4.74

A - Cradle
C - Hitch pin

B - Support
D - Rubber strap

OPERATION

4. On the **RH side of the 25 ft. and 35–40 ft. header**, do the following:
 - a. Place the inner end of the inner half of the tow-bar in cradle (A) on header backtube.
 - b. Secure tube end in support (B) with clevis pin (C). Secure with hairpin.
 - c. Install rubber strap (D) on cradle (A).

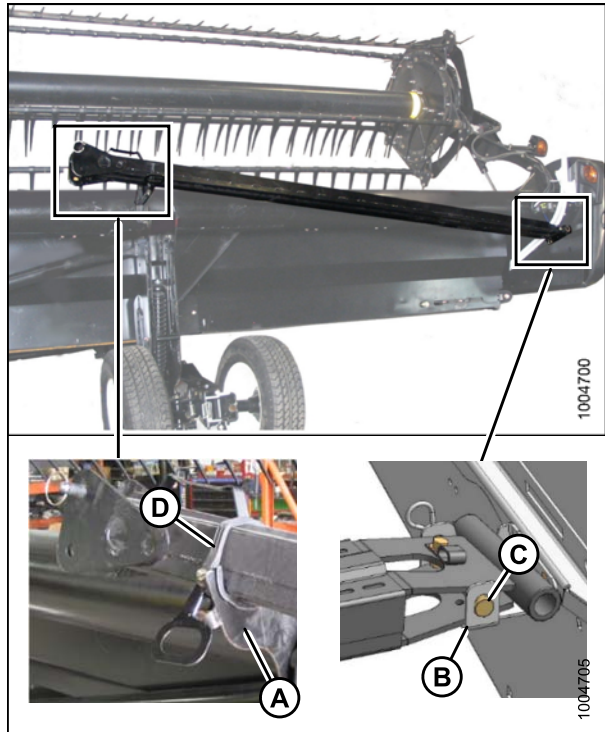


Figure 4.75: 25 ft. and 35–40 ft. header

A - Cradle
C - Clevis pin

B - Support
D - Rubber strap

5. On the **RH side of the 30 ft. header**, do the following:
 - a. Place the inner end of the inner half of the tow-bar in cradle (A) on header backtube.
 - b. Secure tube end in support (B) with pin (C).
 - c. Install rubber strap on cradle (A).

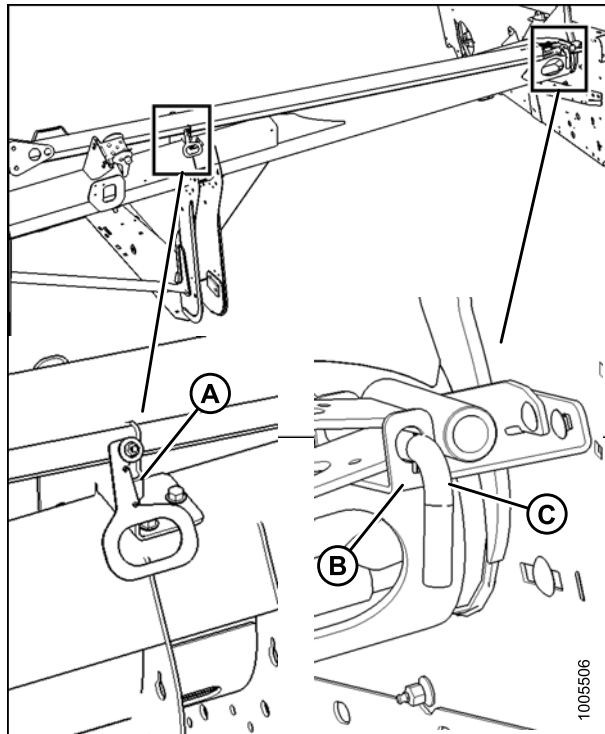


Figure 4.76: 30 ft. header

A - Cradle
C - Pin

B - Support

OPERATION

6. Attach header to windrower. Refer to windrower operator's manual for instructions.

IMPORTANT

Carrying the tow-bar on the header will affect the main header float. Refer to Section 4.7.2 Header Float, page 56 for adjustment procedures.

7. Put front and rear transport wheels into Field position. Refer to
 - [Moving Front \(Left\) Wheels into Field Position, page 93](#) and
 - [Moving Rear \(Right\) Wheels into Field Position, page 95.](#)

Moving Front (Left) Wheels into Field Position

To move the front (left) transport wheels into field position, follow these steps.



DANGER

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

1. Raise header fully. Engage header safety props.

OPERATION

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

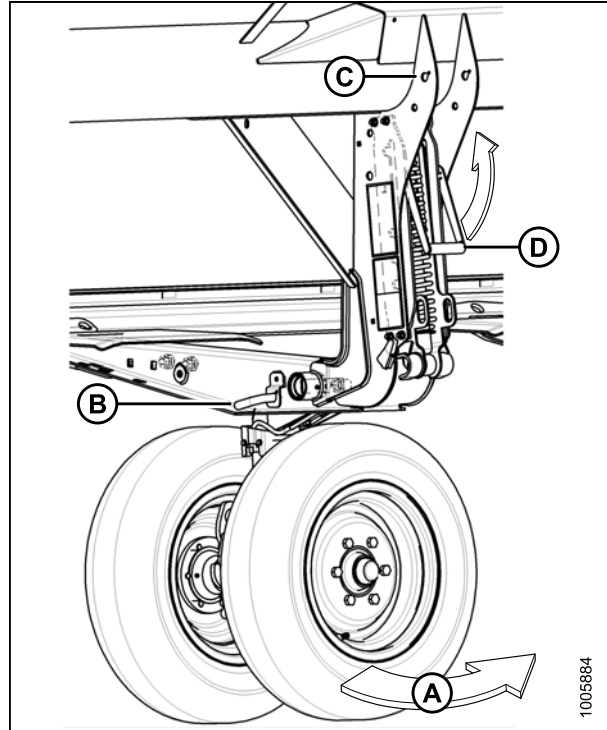


Figure 4.77

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

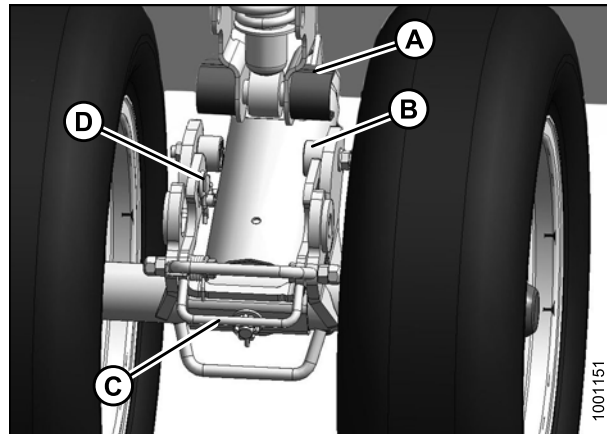


Figure 4.78

A - Hook
C - Latch

B - Lug
D - Clevis pin

OPERATION

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

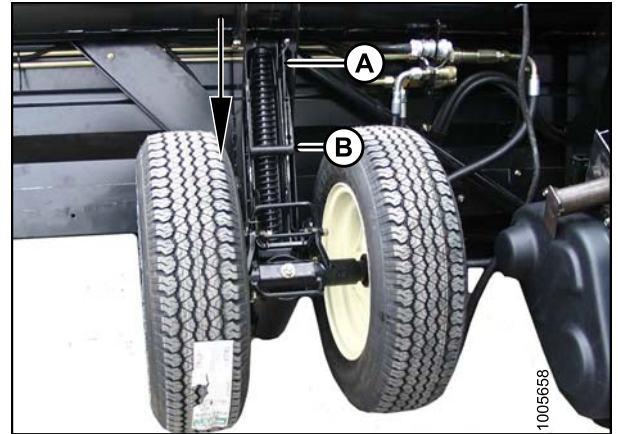


Figure 4.79

Moving Rear (Right) Wheels into Field Position

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

1. Pull pin (A) on the left hand wheel behind the header. Swivel wheel clockwise and lock with pin (A).
2. Remove pin at (A). Store pin at (B).
3. Pull handle (C) up to release.
4. Lift wheel to desired height and engage support channel into slot (D) in vertical support.
5. Push down on handle (C) to lock.

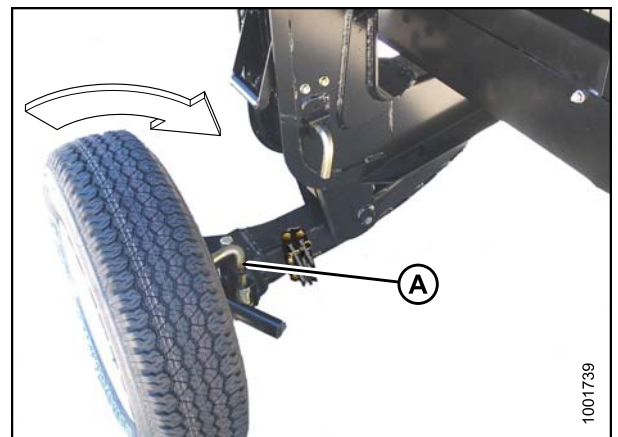


Figure 4.80

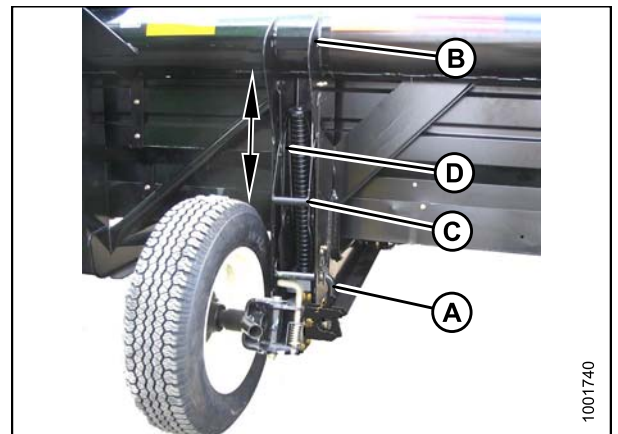


Figure 4.81

A - Pin
C - Handle

B - Pin storage location
D - Slot

OPERATION

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

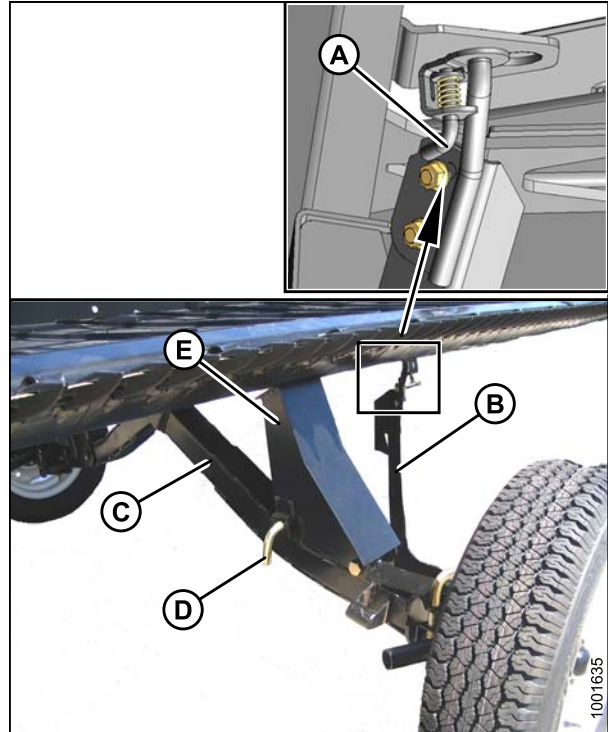


Figure 4.82

A - Pin
D - Pin

B - Brace
E- Support

C - Axle

OPERATION

- Pull pin (A) at right wheel, swivel wheel counterclockwise to position shown and lock with pin (A).
- Remove hairpin (B) from latch (C).
- Lift wheel, lift latch (C), and engage lug (D) onto left axle. Ensure latch closes.
- Secure latch with hairpin (B), with open end of pin facing rear of combine.

NOTE: Installing hairpin with the open end facing the cutterbar will cause it to be dislodged by crop during operation.

IMPORTANT

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

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

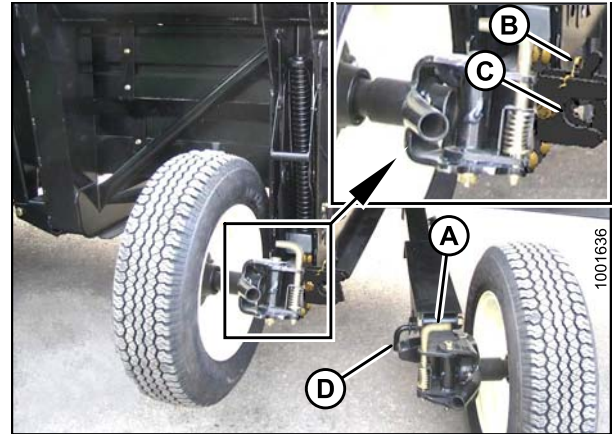


Figure 4.83: RH side

A - Pin
C - Latch

B - Hairpin
D - Lug

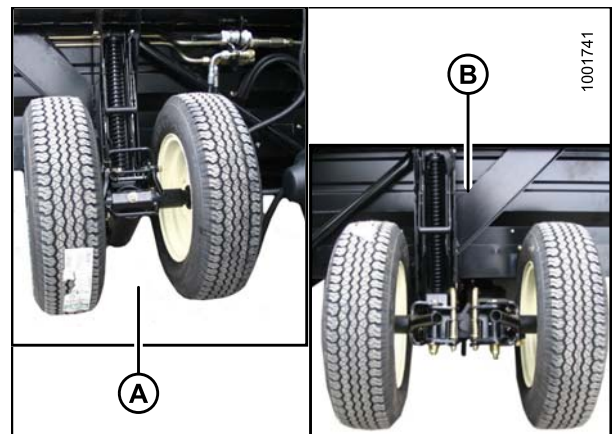


Figure 4.84: Field position - (A) shows left side; (B) shows right side

4.15.4 Converting from Field to Transport Position

To convert the header from field to transport position, follow these steps.



DANGER

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

Moving Left (Front) Wheels into Transport Position

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

OPERATION

CAUTION

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

1. Pull handle (A) up to release and raise the linkage fully upward in the vertical support.
2. Raise header fully. Engage header safety props.

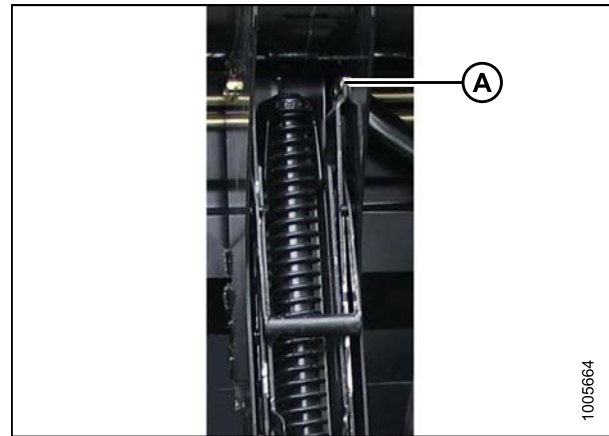


Figure 4.85

3. Remove hair pin and clevis pin (A).
4. Pull latch handle (B), once disengaged raise linkage and latch (C) from lug (D) to lower wheels.

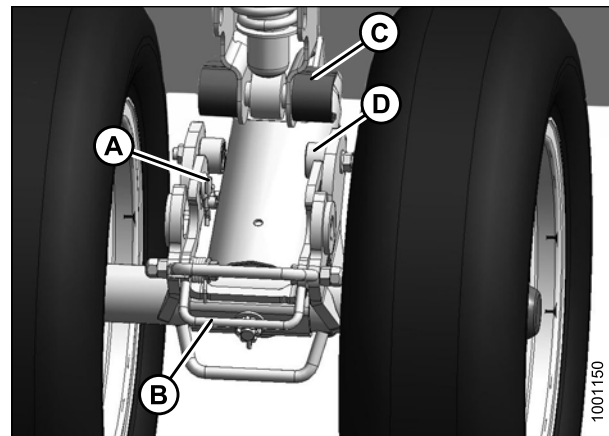


Figure 4.86

5. Lower handle (B) to lock.

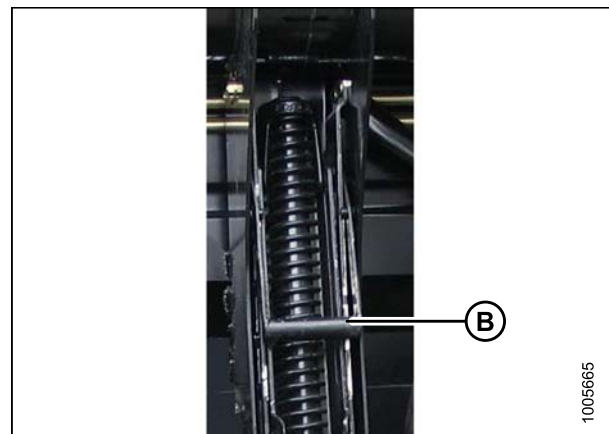


Figure 4.87

OPERATION

6. Remove pin from storage at top of leg.
7. Move and swivel wheels clockwise so that lug (A) is turned towards the end of the header.



Figure 4.88

8. Insert pin (A) and turn pin to lock.



Figure 4.89

9. Place tow-bar (A) onto axle, and push against latch (B) until tow-bar pins drop into hooks (C).
10. Check that latch (B) has engaged tow-bar.
11. Install clevis pin (D), and secure with hairpin.

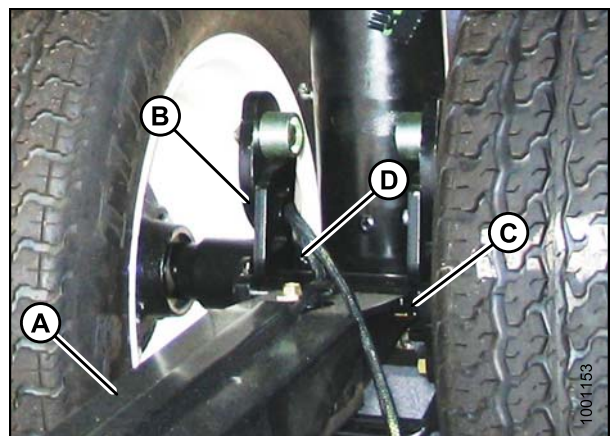


Figure 4.90: Field to Transport - LH side

OPERATION

12. Connect plug (A) for lights.



Figure 4.91: Field to Transport - LH side

Moving Right (Rear) Wheels into Transport Position

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

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



CAUTION

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

3. Carefully pull handle (C) to release the spring and let the wheel drop to the ground.
4. Lift wheel and linkage with handle (D) and position linkage in second slot from bottom.
5. Lower handle (C) to lock.
6. Remove pin (A) and install at (B) to secure linkage. Turn pin (A) to lock.
7. To position the left wheel (C), pull pin (D), swivel wheel counterclockwise, and re-lock with pin (D).

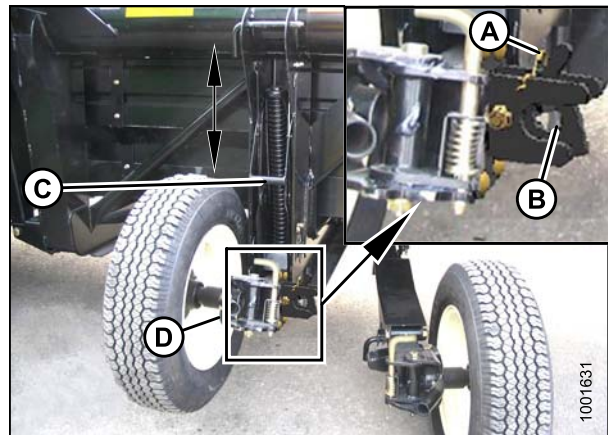


Figure 4.92

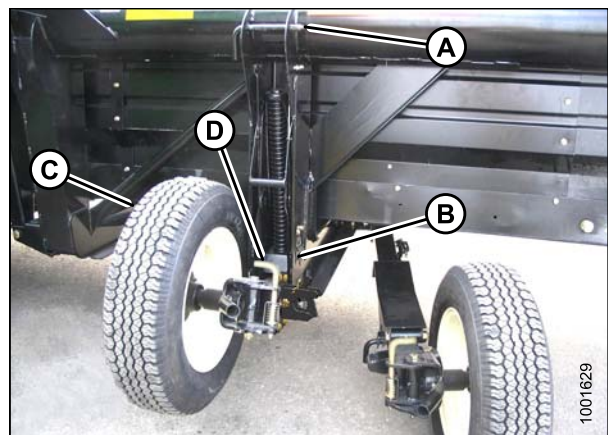


Figure 4.93

A - Pin
C - Left wheel

B - Pin installation location
D - Pin

OPERATION

- Left wheel is now in Transport position as shown.



Figure 4.94

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



Figure 4.95

- Swivel the right axle (A) to front of header.

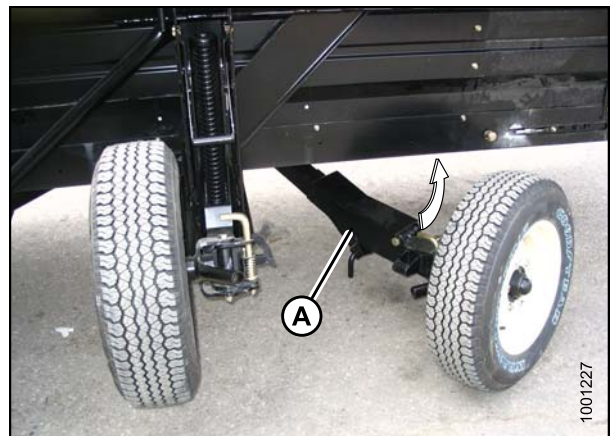


Figure 4.96

OPERATION

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

IMPORTANT

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

12. Swing brace (C) into position as shown and insert brace into slot (D) behind cutterbar. Position brace so that pin (A) engages hole in bracket (F). Right hand wheel is now in Transport position.
13. Disengage the header cylinder lift stops.
14. Detach the header from the windrower. See the windrower operator's manual for procedure.
15. Detach the header's hydraulic and electrical connections from the windrower. See [Section 5 Header Attachment/Detachment, page 105](#).
16. Start windrower and lower header to the ground.

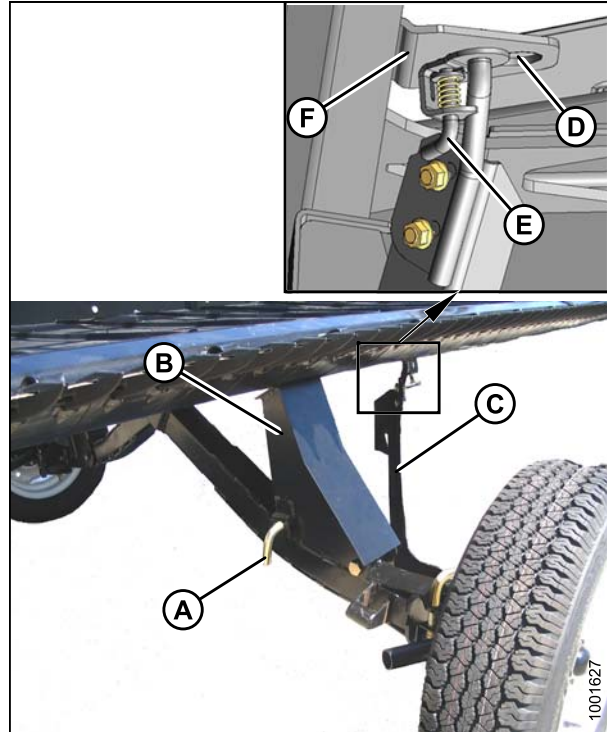


Figure 4.97

OPERATION

4.16 Storage

The following should be done at the end of each operating season:



CAUTION

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



CAUTION

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

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

NOTE: If machine is stored outside, remove drapers and store in a dark, dry place. If drapers are not removed, store header with cutterbar lowered so water/snow will not accumulate on drapers. This accumulation of weight puts excessive stress on drapers and header.

3. Lower header onto blocks to keep cutterbar off the ground.
4. Lower reel completely. If stored outside, tie reel to frame to prevent rotation caused by wind.
5. Re-paint all worn or chipped painted surfaces to prevent rust.
6. Loosen drive belts.
7. Lubricate header thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components. Oil knife components to prevent rust.
8. Check for worn or broken components, and repair or order replacements from your MacDon Dealer. Attention to these items right away will save time and effort at beginning of next season.
9. Replace or tighten any missing or loose hardware.

5 Header Attachment/Detachment

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

5.1 Attaching Header to Windrower

Refer to your windrower operator's manual for procedures to mechanically attach the header to the self-propelled windrower.

Refer to the following procedures for electrical and hydraulic connections.

Header drive hydraulic hoses and electrical harness are located on the left cab-forward side of the tractor. The reel drive and control hoses are located on the right cab-forward side.

To attach the header to a windrower, follow these steps:

1. Before connecting header drive hydraulics (A) and electrical harness (B) to header, check connectors and clean if required.
2. Disengage and rotate lever (A) counterclockwise to fully up position.
3. Remove cap (B) securing electrical connector to frame.
4. Move hose bundle (C) from windrower around hose support on header.

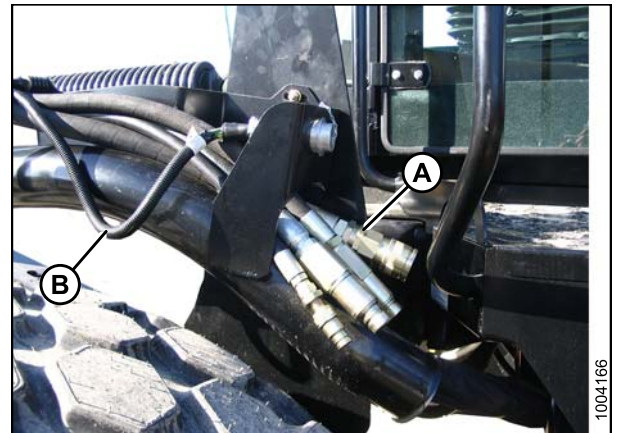


Figure 5.1

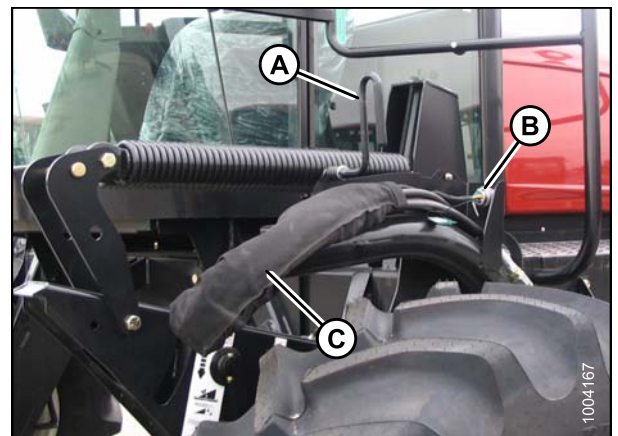


Figure 5.2

HEADER ATTACHMENT/DETACHMENT

5. Push hose connectors onto mating receptacle until collar on receptacle snaps into lock position.
6. Remove cover on electrical receptacle (A).
7. Push electrical connector onto receptacle and turn collar on connector to lock it in.
8. Attach cover to mating cover on tractor wiring.

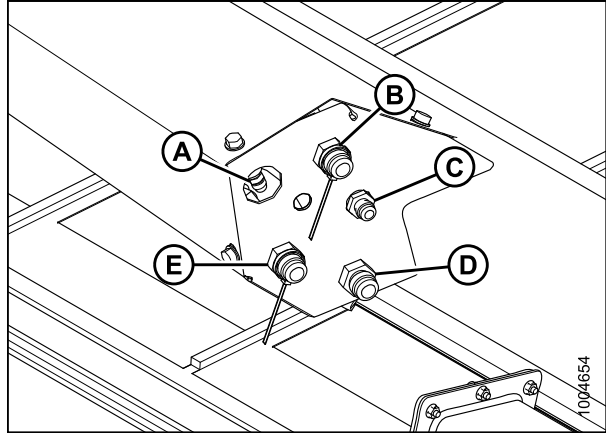


Figure 5.3

A - Electrical connector B - Knife drive
C - Case drain (Double Knife) D - Draper drive
E - Return

9. Lower lever (A) and engage in down position.



Figure 5.4

10. Before connecting reel hydraulics, check connectors and clean if required.

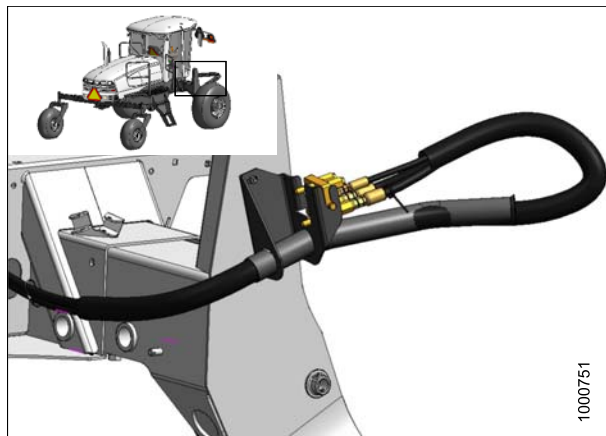


Figure 5.5

HEADER ATTACHMENT/DETACHMENT

11. Open cover on header receptacle (A).
12. Push in lock button (B) and pull handle (C) to half open position.

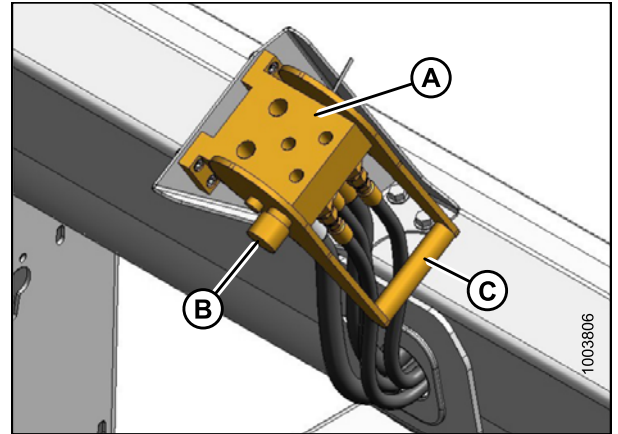


Figure 5.6

13. Remove hose bundle with multi-coupler (C) from windrower, locate onto header receptacle and push handle (B) to engage pins on connector.
14. Push handle away from hoses until lock button (A) snaps out.
15. Raise and lower header and reel a few times to allow trapped air to pass back to the reservoir.

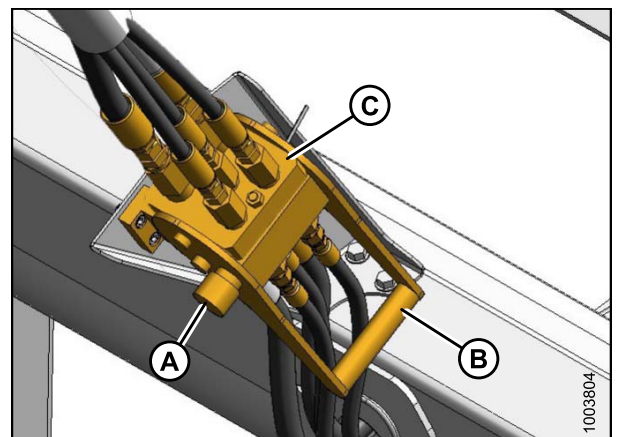


Figure 5.7

HEADER ATTACHMENT/DETACHMENT

5.2 Detaching Header from Windrower

To detach the header from the windrower, follow these steps:

1. Fully lower the reel.
2. To disconnect the reel hydraulics, push in lock button (A) and pull handle (B) to disengage multi-coupler (C) from header receptacle.
3. Route hose bundle back onto windrower and store multi-coupler (C) on hose support.

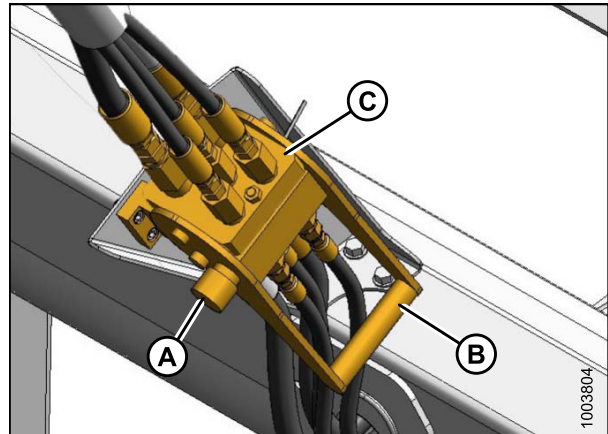


Figure 5.8: Disconnect reel hydraulics

4. Close cover on header receptacle (A).

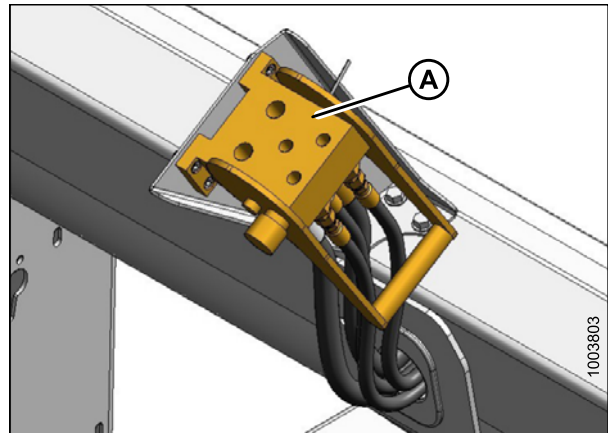


Figure 5.9: Close cover

5. To disconnect header drive hydraulics, disengage and rotate lever (A) counterclockwise to fully up position.
6. Disconnect electrical connector from header.

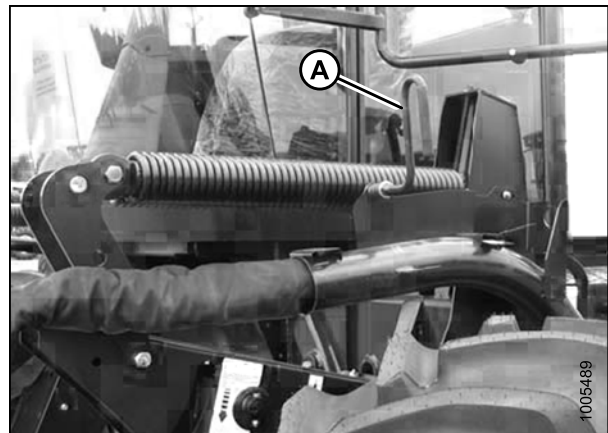


Figure 5.10: Disconnect header drive hydraulics

HEADER ATTACHMENT/DETACHMENT

7. To disconnect hoses from header, line up slot (A) in collar with pin (B) on connector.
8. Push collar toward pin and pull connector to disengage.
9. Install caps on connectors and hose ends (if equipped).

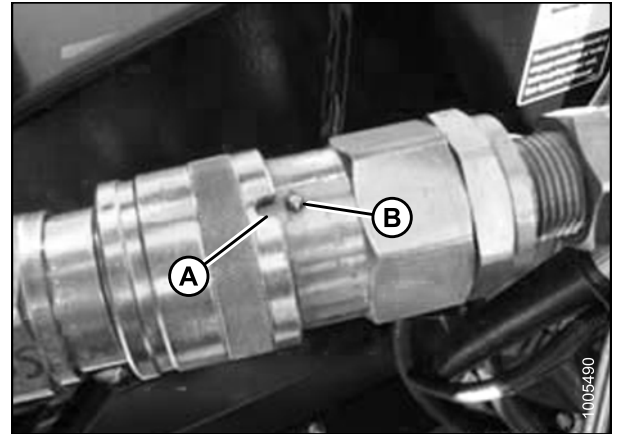


Figure 5.11: Disconnect hoses

10. Route hose bundle (A) back onto hose support on windrower.
11. Rotate lever (B) and lock in down position.
12. Install cap (C) on electrical connector.
13. Detach header from windrower. Refer to the windrower operator's manual.

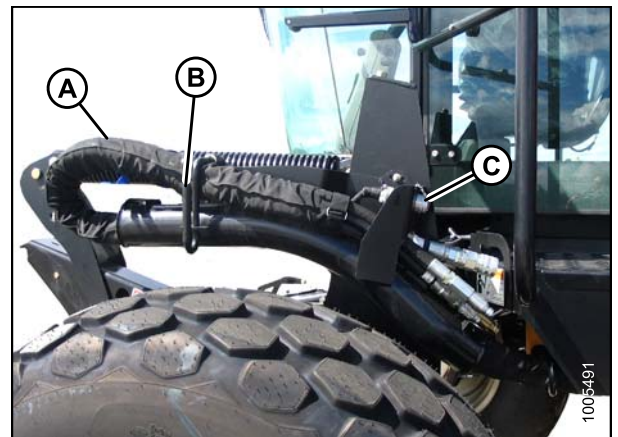


Figure 5.12

6 Maintenance and Servicing

6.1 Preparation for Servicing

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

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



CAUTION

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

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

MAINTENANCE AND SERVICING

6.2 Recommended Safety Procedures

Follow these general safety procedures:

- Park on a level surface whenever possible. Block wheels securely if combine is parked on an incline. Follow all recommendations in your windrower operator's manual.
- Wear close-fitting clothing, and cover long hair. Never wear dangling items such as scarves or bracelets.
- Wear protective shoes with slip-resistant soles, a hard hat, protective glasses or goggles, and heavy gloves.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or other mechanically driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and knife) to move. Stay clear of driven components at all times.
- Be prepared if an accident should occur. Know where the first aid kit and fire extinguishers are located and how to use them.
- Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Use adequate light for the job at hand.
- Replace all shields removed or opened for service.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.
- Keep the machine clean. Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

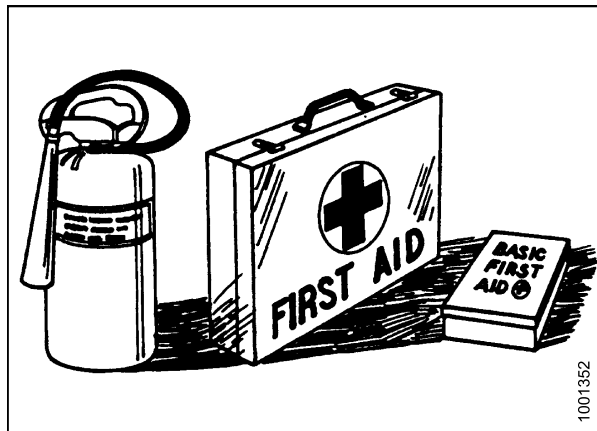


Figure 6.1: Know location of fire extinguisher and first aid kit



Figure 6.2: Wet or oily floors are slippery

MAINTENANCE AND SERVICING

6.3 Maintenance Specifications

6.3.1 Conversion Chart

Quantity	Inch-Pound units		Factor	SI units (metric)	
	Unit name	Abbreviation		Unit name	Abbreviation
Area	acres	acres	$\times 0.4047 =$	hectares	ha
Flow	US gallons per minute	gpm	$\times 3.7854 =$	liters per minute	L/min
Force	pounds force	lbf	$\times 4.4482 =$	Newtons	N
Length	inch	in.	$\times 25.4 =$	millimeters	mm
	foot	ft.	$\times 0.305 =$	meters	m
Power	horsepower	hp	$\times 0.7457 =$	kilowatts	kW
Pressure	pounds per square inch	psi	$\times 6.8948 =$	kilopascals	kPa
			$\times .00689 =$	megapascals	MPa
			$\div 14.5038 =$	bar (non-SI)	bar
Torque	pound feet or foot pounds	ft-lbf	$\times 1.3558 =$	newton meters	N-m
	pound inches or inch pounds	in-lbf	$\times 0.1129 =$	newton meters	N-m
Temperature	degrees fahrenheit	$^{\circ}\text{F}$	$(^{\circ}\text{F}-32) \times 0.56 =$	Celsius	$^{\circ}\text{C}$
Velocity	feet per minute	ft/min	$\times 0.3048 =$	meters per minute	m/min
	feet per second	ft/s	$\times 0.3048 =$	meters per second	m/s
	miles per hour	mph	$\times 1.6063 =$	kilometres per hour	km/h
Volume	US gallons	US gal	$\times 3.7854 =$	liters	L
	ounces	oz.	$\times 29.5735 =$	milliliters	ml
	cubic inches	in. ³	$\times 16.3871 =$	cubic centimetres	cm ³ or cc
Weight	pounds	lbs	$\times 0.4536 =$	kilograms	kg

6.3.2 Recommended Fluids and Lubricants

Your machine can operate at top efficiency only if clean lubricants are used.

- Use clean containers to handle all lubricants.
- Store in an area protected from dust, moisture, and other contaminants.

MAINTENANCE AND SERVICING

Lubricant	Specification	Description	Use	Capacities
Grease	SAE Multi-Purpose	High Temperature Extreme Pressure (EP2) Performance With 1% Max. Molybdenum Disulphide (NLGI Grade 2) Lithium Base	As Required Unless Otherwise Specified.	—
Gear Lubricant	SAE 85W-140	API Service Class GL-5	Knife Drive Box	2.3 quarts (2.2 liters)
			Main Drive Gearbox	5 pints (2.5 liters)

6.3.3 Torque Specifications

The following tables give correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to the torques specified in chart (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade bolt.
- Check tightness of bolts periodically, using the tables below as a guide.
- Torque categories for bolts and cap screws are identified by their head markings.

SAE Bolt Torque Specifications

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

Table 6.1 SAE Grade 5 Bolt and Grade 5 Free Spinning

Nominal size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
1/4-20	*106	*117	11.9	13.2
5/16-18	*218	*241	24.6	27.1
3/8-16	32	36	44	48
7/16-14	52	57	70	77
1/2-13	79	87	106	118
9/16-12	114	126	153	170
5/8-11	157	173	212	234
3/4-10	281	311	380	420
7/8-9	449	496	606	669
1-8	611	676	825	912

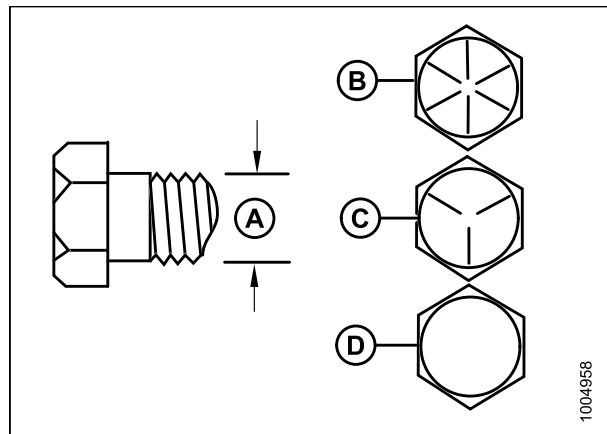


Figure 6.3

A - Nominal size
C - SAE-5

B - SAE-8
D - SAE-2

MAINTENANCE AND SERVICING

Table 6.2 SAE Grade 5 Bolt and Grade 5 Distorted Thread Nut

Nominal size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*72	*80	8.1	9
5/16-18	*149	*164	16.7	18.5
3/8-16	22	24	30	33
7/16-14	35	39	48	53
1/2-13	54	59	73	80
9/16-12	77	86	105	116
5/8-11	107	118	144	160
3/4-10	192	212	259	286
7/8-9	306	338	413	456
1-8	459	507	619	684

Table 6.3 SAE Grade 8 Bolt and Grade 8 Distorted Thread Nut

Nominal size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	18	19	24	26
3/8-16	31	34	42	46
7/16-14	50	55	67	74
1/2-13	76	84	102	113
9/16-12	109	121	148	163
5/8-11	151	167	204	225
3/4-10	268	296	362	400
7/8-9	432	477	583	644
1-8	647	716	874	966

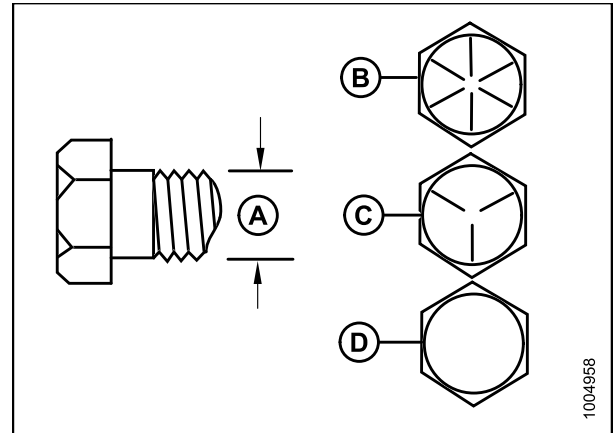


Figure 6.4

A - Nominal size
C - SAE-5

B - SAE-8
D - SAE-2

MAINTENANCE AND SERVICING

Table 6.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal size (A)	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
1/4-20	*150	*165	16.8	18.6
5/16-18	26	28	35	38
3/8-16	46	50	61	68
7/16-14	73	81	98	109
1/2-13	111	123	150	166
9/16-12	160	177	217	239
5/8-11	221	345	299	330
3/4-10	393	435	531	587
7/8-9	633	700	855	945
1-8	863	954	1165	1288

Metric Bolt Specifications

Table 6.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal size	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
3-0.5	*13	*14	1.4	1.6
3.5-0.6	*20	*22	2.2	2.5
4-0.7	*29	*32	3.3	3.7
5-0.8	*59	*66	6.7	7.4
6-1.0	*101	*112	11.4	12.6
8-1.25	20	23	28	30
10-1.5	40	45	55	60
12-1.75	70	78	95	105
14-2.0	113	124	152	168
16-2.0	175	193	236	261
20-2.5	341	377	460	509
24-3.0	589	651	796	879

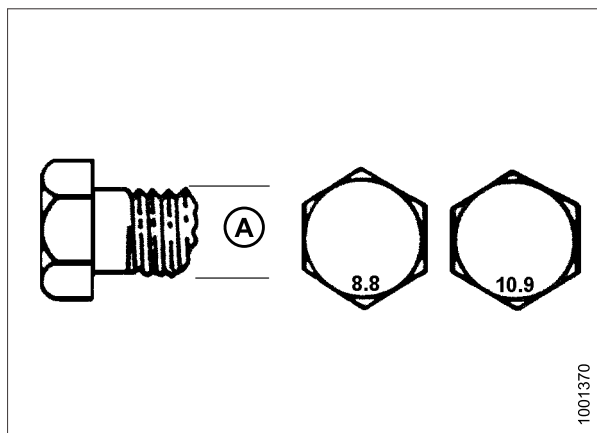


Figure 6.5
A - Nominal size

MAINTENANCE AND SERVICING

Table 6.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal size	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
3-0.5	*9	*10	1	1.1
3.5-0.6	*14	*15	1.5	1.7
4-0.7	*20	*22	2.3	2.5
5-0.8	*40	*45	4.5	5
6-1.0	*69	*76	7.7	8.6
8-1.25	*167	*185	18.8	20.8
10-1.5	28	30	37	41
12-1.75	48	53	65	72
14-2.0	77	85	104	115
16-2.0	119	132	161	178
20-2.5	233	257	314	347
24-3.0	402	444	543	600

Table 6.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal size	Torque (ft-lbf) (*in-lbf)		Torque (N-m)	
	Min.	Max.	Min.	Max.
3-0.5	*18	*19	1.8	2
3.5-0.6	*27	*30	2.8	3.1
4-0.7	*41	*45	4.2	4.6
5-0.8	*82	*91	8.4	9.3
6-1.0	*140	*154	14.3	15.8
8-1.25	28	31	38	42
10-1.5	56	62	75	83
12-1.75	97	108	132	145
14-2.0	156	172	210	232
16-2.0	242	267	326	360
20-2.5	472	521	637	704
24-3.0	815	901	1101	1217

MAINTENANCE AND SERVICING

Table 6.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal size	Torque (ft-lbf)(*in-lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*12	*13	1.3	1.5
3.5-0.6	*19	*21	2.1	2.3
4-0.7	*28	*31	3.1	3.4
5-0.8	*56	*62	6.3	7
6-1.0	*95	*105	10.7	11.8
8-1.25	19	21	26	29
10-1.5	38	42	51	57
12-1.75	66	73	90	99
14-2.0	106	117	143	158
16-2.0	165	182	222	246
20-2.5	322	356	434	480
24-3.0	556	614	750	829

MAINTENANCE AND SERVICING

Metric Bolt Specifications Bolting into Cast Aluminum

Table 6.9 Metric Bolt Bolting into Cast Aluminum

Nominal size	Bolt torque			
	8.8 (cast aluminum)		10.9 (cast aluminum)	
	ft-lbf	N-m	ft-lbf	N-m
M3			1	
M4			2.6	4
M5			5.5	8
M6	6	9	9	12
M8	14	20	20	28
M10	28	40	40	55
M12	52	70	73	100
M14				
M16				

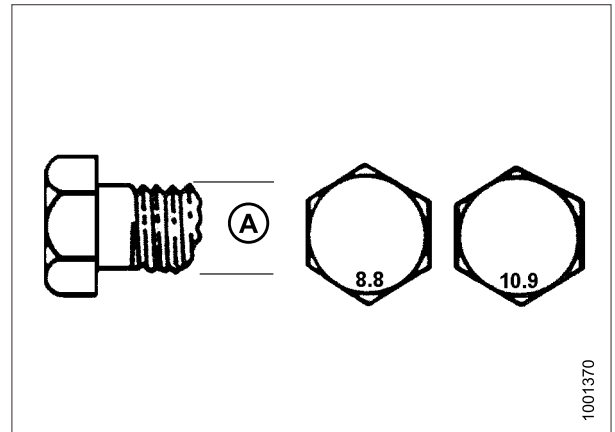


Figure 6.6

A - Nominal size

Flare Type Hydraulic Fittings

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

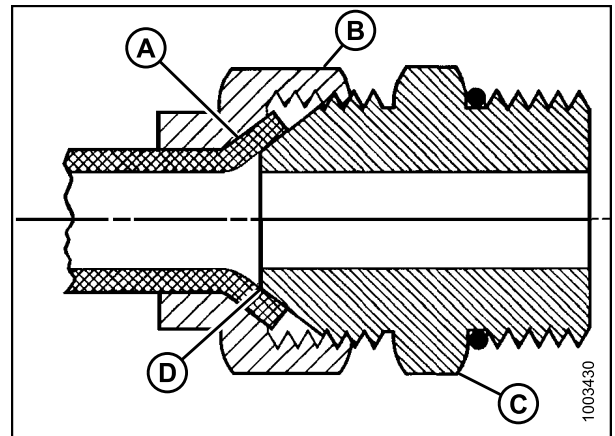


Figure 6.7

A - Flare

B - Nut

C - Flareseat

D - Body

MAINTENANCE AND SERVICING

Table 6.10 Flare-type Hydraulic Tube Fittings

SAE NO.	Tube size O.D. (in.)	Threadsize (in.)	Nutsize across flats (in.)	Torque value ¹¹		Flats from finger tight (FFFT)	
				ft-lbf	Nm	Flats	Turns
3	3/16	3/8	7/16	6	8	1	1/6
4	1/4	7/16	9/16	9	12	1	1/6
5	5/16	1/2	5/8	12	16	1	1/6
6	3/8	9/16	11/16	18	24	1	1/6
8	1/2	3/4	7/8	34	46	1	1/6
10	5/8	7/8	1	46	62	1	1/6
12	3/4	1-1/16	1-1/4	75	102	3/4	1/8
14	7/8	1-3/8	1-3/8	90	122	3/4	1/8
16	1	1-5/16	1-1/2	105	142	3/4	1/8

O-Ring Boss (ORB) Hydraulic Fittings

1. Inspect O-ring and seat for dirt or obvious defects.
2. On angle fittings, back off the lock nut until washer (A) bottoms out at top of groove (B) in fitting.
3. Hand-tighten fitting until back up washer (A) or washer face (if straight fitting) bottoms on part face (C) and O-ring is seated.
4. Position angle fittings by unscrewing **NO MORE THAN** one turn.
5. Tighten straight fittings to torque shown.
6. Tighten angle fittings to torque shown in the following table, while holding body of fitting with a wrench.

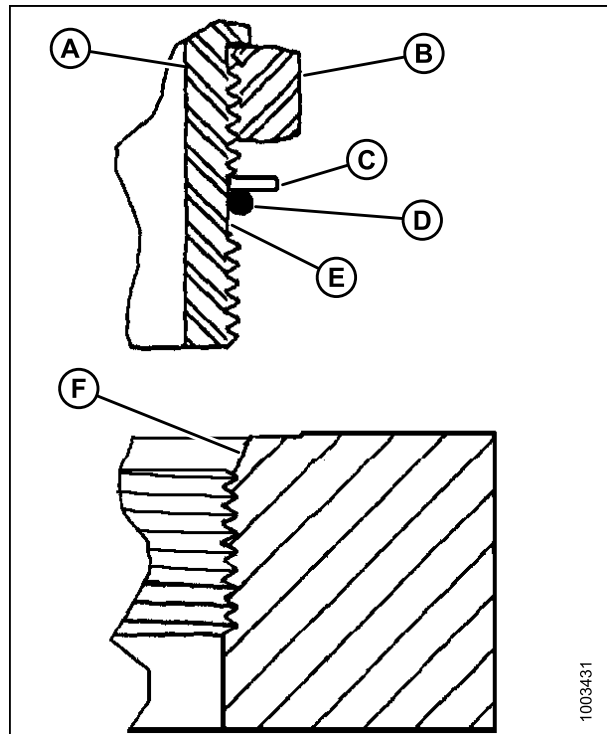


Figure 6.8

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

¹¹ Torque values shown are based on lubricated connections as in re-assembly.

MAINTENANCE AND SERVICING

Table 6.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE NO.	Thread size (in.)	Nut size across flats (in.)	Torque value ¹²		Flats from finger tight (FFFT) ¹³	
			ft-lbf	Nm	Flats	Turns
3	3/8	1/2	6	8	2	1/3
4	7/16	9/16	9	12	2	1/3
5	1/2	5/8	12	16	2	1/3
6	9/16	11/16	18	24	2	1/3
8	3/4	7/8	34	46	2	1/3
10	7/8	1	46	62	1-1/2	1/4
12	1-1/16	1-1/4	75	102	1	1/6
16	1-5/16	1-1/2	105	142	3/4	1/8
20	1-5/8	1-7/8	140	190	3/4	1/8
24	1-7/8	2-1/8	160	217	1/2	1/12

O-Ring Face Seal (ORFS) Hydraulic Fittings

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



Figure 6.9

12. Torque values shown are based on lubricated connections as in re-assembly.

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

MAINTENANCE AND SERVICING

2. Apply hydraulic system oil to the O-ring.
3. Align the tube or hose assembly. Ensure that flat face of the mating flange comes in full contact with O-ring.
4. Thread tube or hose nut until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fitting further to a given torque value in the table shown in the opposite column.

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

6. When assembling unions or two hoses together, three wrenches will be required.
7. Check the final condition of the fitting.

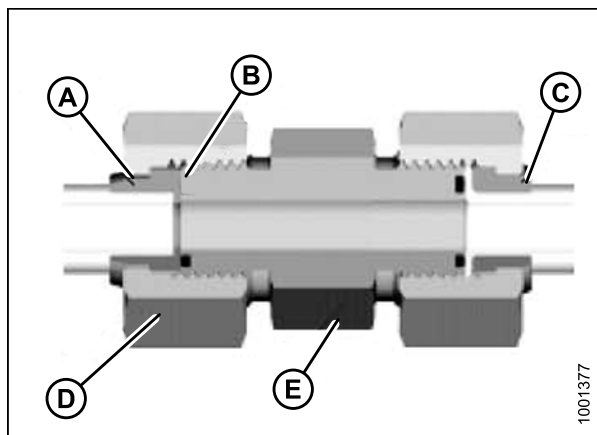


Figure 6.10

A - Brazed sleeve
 B - O-ring
 C - Two piece sleeve
 D - Nut
 E - Fitting body

Table 6.12 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE NO.	Thread size (in.)	Tube O.D. (in.)	Torque value ¹⁴		Flats from finger tight (FFFT) ¹⁵	
			ft-lbf	Nm	Tube Nuts	Swivel & Hose
3	¹⁶	3/16	–	–	–	–
4	9/16	1/4	11-12	14-16	1/4-1/2	1/2-3/4
5	¹⁶	5/16	–	–	–	–
6	11/16	3/8	18-20	24-27	1/4-1/2	1/2-3/4
8	13/16	1/2	32-35	43-47		
10	1	5/8	45-51	60-68		
12	1-3/16	3/4	67-71	90-95		1/3-1/2
14	1-3/16	7/8	67-71	90-95		
16	1-7/16	1	93-100	125-135		
20	1-11/16	1-1/4	126-141	170-190		
24	2	1-1/2	148-167	200-225	–	–
32	2-1/2	2	–	–	–	–

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

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

16. O-ring face seal type end not defined for this tube size.

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6.3.4 Installing a Roller Chain

To install a roller chain, follow these steps.

CAUTION

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

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

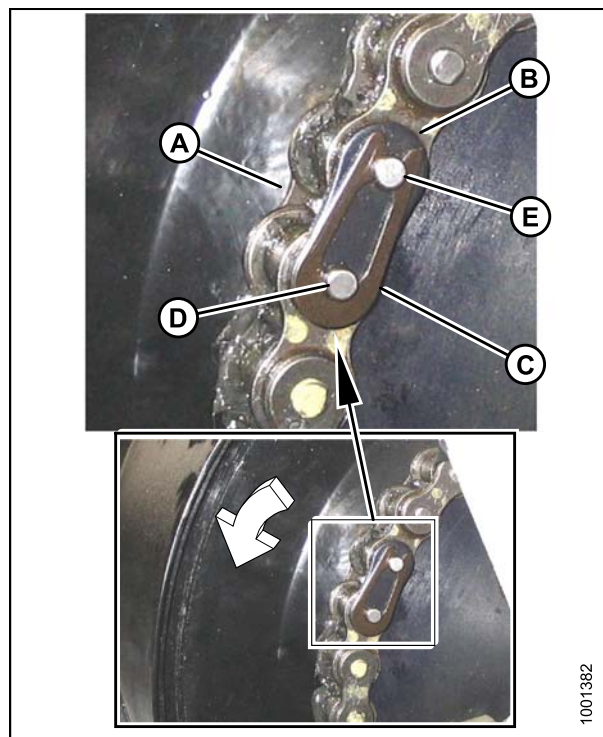


Figure 6.11: Arrow shows direction of rotation

A - Pin connector
B - Connector
C - Spring clip
D - Front pin
E - Aft pin

MAINTENANCE AND SERVICING

6.3.5 Installing a Sealed Bearing

To install a sealed bearing, follow these steps.

1. Clean shaft and coat with rust preventative.
2. Install flangette (A), bearing (B), second flangette (C), and lock collar (D).

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

3. Install (but do **NOT** tighten) flangette bolts (E).
4. When the shaft is correctly located, lock the lock collar with a punch. The collar should be locked in the same direction the shaft rotates. Tighten the setscrew in the collar.
5. Tighten flangette bolts.
6. Loosen flangette bolts on mating bearing one turn and retighten. This will allow the bearing to line up.

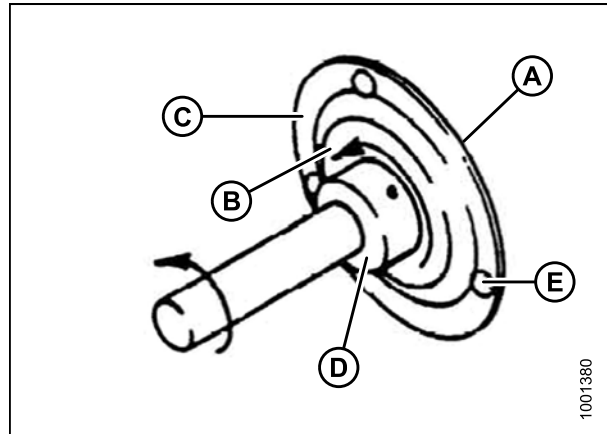


Figure 6.12

A - Flangette
B - Bearing
C - Flangette
D - Lock collar
E - Flangette bolt

MAINTENANCE AND SERVICING

6.4 Maintenance Requirements

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

For detailed instructions, refer to the specific headings in this section. Use the fluids and lubricants specified in section [6.3.2 Recommended Fluids and Lubricants, page 113](#).

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

Service Intervals: The recommended service intervals are in hours of operation. Where a service interval is given in more than one time frame, e.g., “100 hours or Annually”, service the machine at whichever interval is reached first.

IMPORTANT

Recommended intervals are for average conditions. Service the machine more often if operated under adverse conditions (severe dust, extra heavy loads, etc.).



CAUTION

Carefully follow safety messages given under Section [6.1 Preparation for Servicing, page 111](#) and section [6.2 Recommended Safety Procedures, page 112](#).

6.4.1 Maintenance Schedule/Record

Copy this page to continue record.

Maintenance Record	Action:	✓ - Check	☼ - Lubricate	▲ - Change
Hour Meter Reading				
Date				
Serviced By				
FIRST USE, Refer to Section 6.4.2 Break-In Inspections, page 127				
END OF SEASON, Refer to Section 6.4.4 End of Season Service, page 128				
10 HOURS OR DAILY¹⁷				
✓ Hydraulic Hoses and Lines ¹⁸				
✓ Knife Sections, Guards, and Hold-Downs ¹⁸				
✓ Tire Pressure ¹⁸				
☼ Knife (except in sandy conditions) ¹⁸				
25 HOURS				

17. Whichever occurs first.

18. A record of daily maintenance is not normally required but is at the Owner's/Operator's discretion.

MAINTENANCE AND SERVICING

Maintenance Record	Action:	✓ - Check	⬇ - Lubricate	▲ - Change																
Hydraulic Oil Level at Reservoir ¹⁸																				
Knifehead(s) ¹⁸																				
50 HOURS																				
✳ Draper Roller Bearings																				
⬇ Driveline and Driveline Universals																				
▲ Knife Drive Box Oil - First 50 Hours Only																				
100 HOURS OR ANNUALLY¹⁷																				
✓ Auger to Pan and Feed Draper Clearance																				
✓ Draper Seal																				
✓ Gearbox Lubricant Level																				
✓ Reel Drive Chain Tension																				
✓ Reel Tine/Cutterbar Clearance																				
✓ Knife Drive Belt Tension																				
✓ Wheel Bolt Torque																				
✓ Knife Drive Box Lubricant Level																				
✓ Knife Drive Box Mounting Bolts																				
⬇ Auger Drive Chain																				
⬇ Float Pivots																				
⬇ Float Spring Tensioners																				
⬇ Reel Drive Chain																				
⬇ Upper Cross Auger RH Bearing																				
250 HOURS OR ANNUALLY¹⁷																				
✓ Draper Seal																				
⬇ Adapter Auger Pivots																				
⬇ Upper Cross Auger Center Support																				
⬇ Reel Drive U-joint																				
⬇ Bell crank Linkage																				
⬇ Transport Axle Pivot Bushings																				

MAINTENANCE AND SERVICING

Maintenance Record	Action:	✓ - Check	☼ - Lubricate	▲ - Change
▲ Hydraulic Oil Filter				
500 HOURS OR ANNUALLY¹⁷				
✓ Draper Seal				
☼ Reel Shaft Bearings				
☼ Stabilizer/Slow Speed Transport Wheel Bearings				
✓ Gearbox Chain Tension				
1000 HOURS OR 3 YEARS¹⁷				
▲ Knife Drive Box Lubricant				
▲ Gearbox Lubricant				
1500 HOURS OR 3 YEARS¹⁷				
▲ Hydraulic Oil				

6.4.2 Break-In Inspections

A break-in inspection has the operator check over belts, fluids, and a general machine inspection looking for loose hardware or other areas of concern. The break-in inspection ensures that motors, pumps, belts, etc are operated in such a way that gives them the ability to operate for an extended period without requiring service or replacement.

Timing	Item	Refer To
At 5 hours	Check for loose hardware. Tighten to required torque.	Section 6.3.3 Torque Specifications, page 114
	Check knife drive belts tension. Periodically check for first 50 hours.	Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151
At 10 hours	Check knife drive box mounting bolts.	Mounting Bolts, page 169
At 50 hours	Change knife drive box lubricant.	Changing Oil in Knife Drive Box, page 179

6.4.3 Preseason/Annual Service

Perform the following the beginning of each operating season



CAUTION

- Review this manual to refresh your memory on safety and operating recommendations.
- Review all safety decals and other decals on the header and note hazard areas.
- Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.
- Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.
- Check the first aid kit and fire extinguisher. Know where they are and how to use them.

MAINTENANCE AND SERVICING

1. Adjust tension on drive belts.
For single knife, refer to
 - [Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151.](#)For double knife, refer to .
 - [Tensioning Knife Drive Belt \(Timed\) \(DK\) \(Left Hand\), page 154](#) or
 - [Tensioning Knife Drive Belt \(Timed\) \(DK\) \(Right Hand\), page 162](#)
2. Perform all annual maintenance. See Section [6.4.1 Maintenance Schedule/Record, page 125.](#)

6.4.4 End of Season Service

Do the following at the end of each operating season.



CAUTION

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



CAUTION

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

1. Clean the header thoroughly.
2. Store the machine in a dry, protected place if possible. If stored outside, always cover with a waterproof canvas or other protective material.
3. If machine is stored outside, remove drapers and store in a dark, dry place.
NOTE: If drapers are not removed, store header with cutterbar lowered so water/snow will not accumulate on drapers. This accumulation of weight puts excessive stress on drapers and header.
4. Lower header onto blocks to keep cutterbar off the ground.
5. Lower reel completely. If stored outside, tie reel to frame to prevent rotation caused by wind.
6. Repaint all worn or chipped painted surfaces to prevent rust.
7. Loosen drive belts.
8. Lubricate the header thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components. Oil knife components to prevent rust.
9. Check for worn or broken components and repair or order replacement from your MacDon Dealer. Attention to these items right away will save time and effort at beginning of next season.
10. Replace or tighten any missing or loose hardware. Refer to Section [6.3 Maintenance Specifications, page 113.](#)

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6.4.5 Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

WARNING

- Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pin holes and nozzles which eject fluids under high pressure.
- If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.
- Use a piece of cardboard or paper to search for leaks.

IMPORTANT

Keep hydraulic coupler tips and connectors clean. Dust, dirt, water, and foreign material are the major causes of hydraulic system damage. Do NOT attempt to service hydraulic system in the field. Precision fits require WHITE ROOM CARE during overhaul.



Figure 6.13

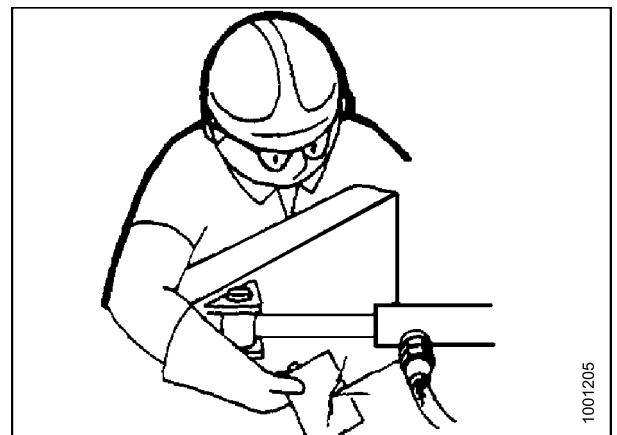


Figure 6.14

6.4.6 Lubrication and Servicing

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in [Section 6.1 Preparation for Servicing, page 111](#).

Refer to [Section 6.3.2 Recommended Fluids and Lubricants, page 113](#) for recommended greases.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to [Section 6.4.1 Maintenance Schedule/Record, page 125](#).

MAINTENANCE AND SERVICING

Service Intervals

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

Refer to Section [6.3.2 Recommended Fluids and Lubricants](#), page 113 for specifications.

Every 10 Hours or Daily



Figure 6.15: Except in sandy conditions

Every 25 Hours

NOTE: To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** over grease the knifehead (A). If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead.

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

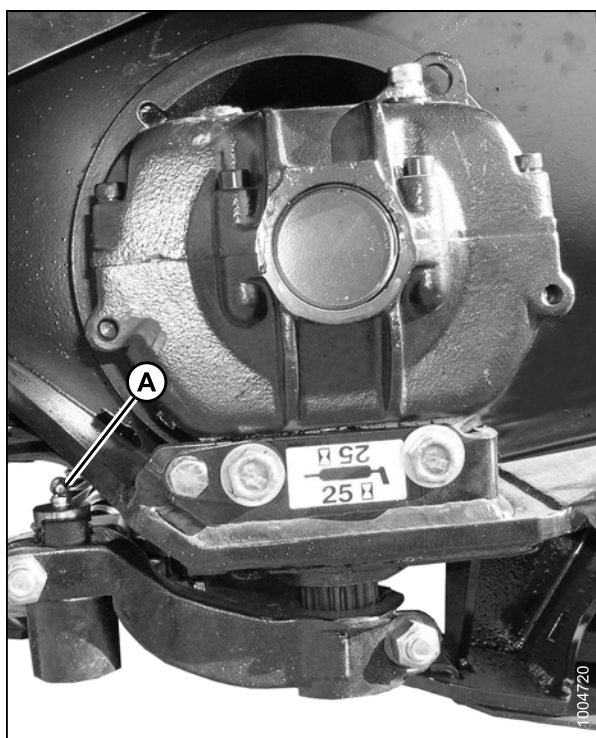


Figure 6.16: Knifehead (single knife — 1 plc)
(double knife — 2 plcs)

MAINTENANCE AND SERVICING

Every 100 Hours

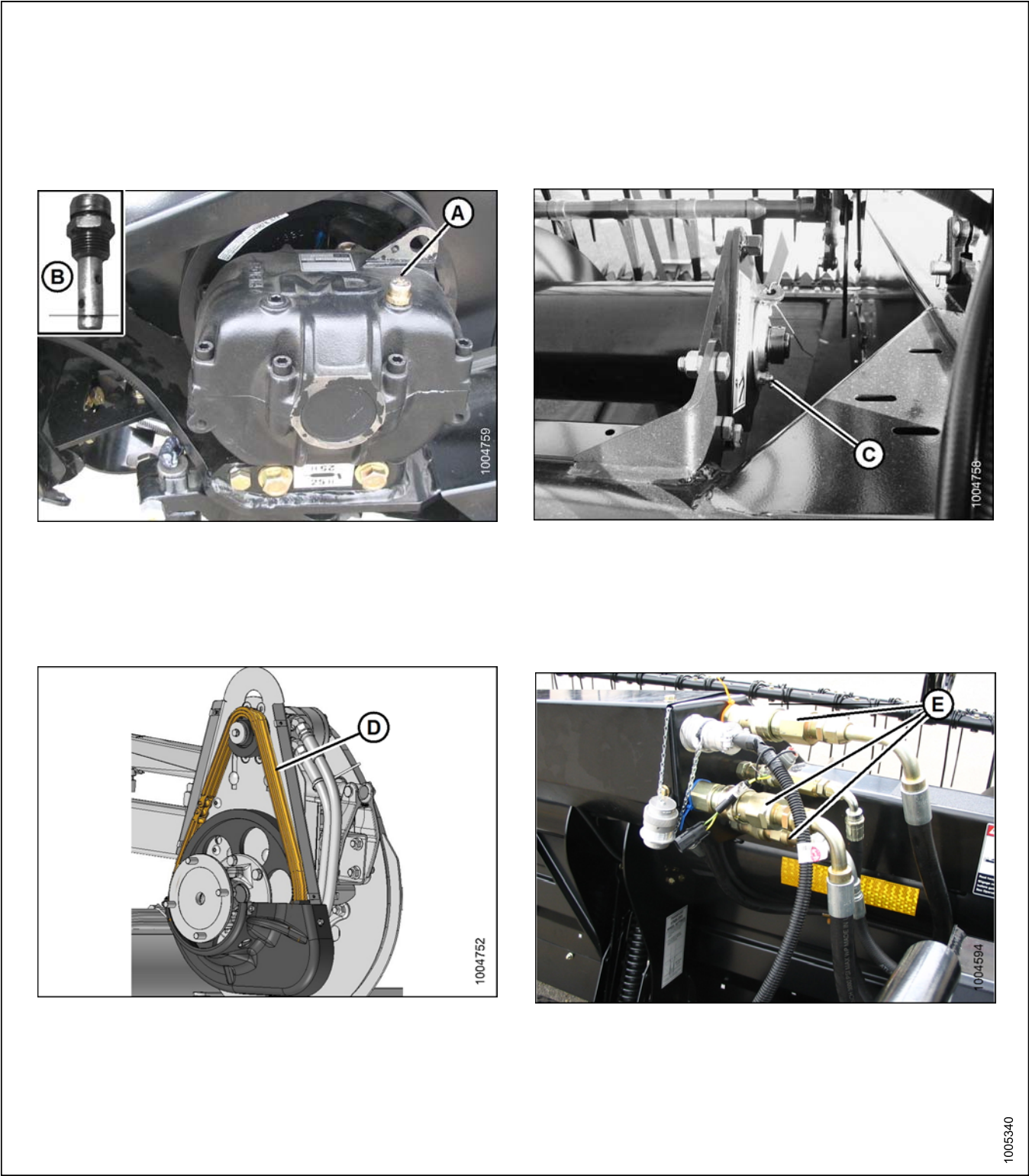


Figure 6.17

A - Knife drive box (check oil level with top of knife drive box horizontal
C - Upper Cross Auger (UCA) bearing (1 plc)
E - Lubricate with WD40® (or equivalent)

B - Between lower hole and end of dipstick
D - Reel drive chain (1 plc) (DR shown - SR similar)

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Every 250 Hours

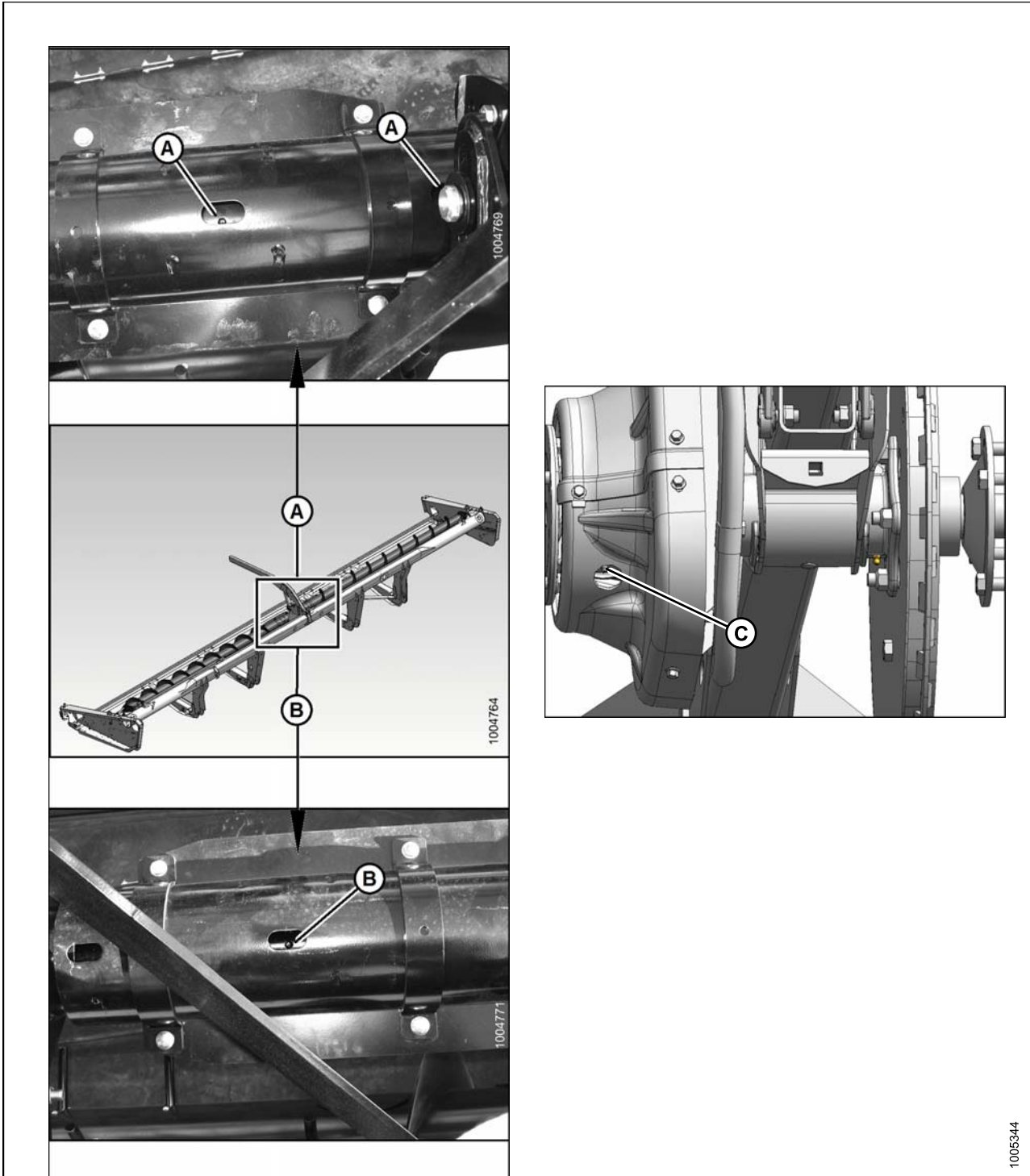


Figure 6.18

A - Upper Cross Auger (UCA) U-joint¹⁹ and bearing

B - UCA bearing

C - Reel U-joint (1 plc) — double reel

19. 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. 6–8 pumps is sufficient at first grease (factory). Decrease grease interval as u-joint wears and requires more than 6 pumps.

MAINTENANCE AND SERVICING

Every 250 Hours (cont'd)



Figure 6.19

A - Frame/wheel pivot (1 plc) both sides

B - Left side — wheel pivot (1 plc)

C - Right side — wheel axle (2 plcs)

MAINTENANCE AND SERVICING

Every 500 Hours

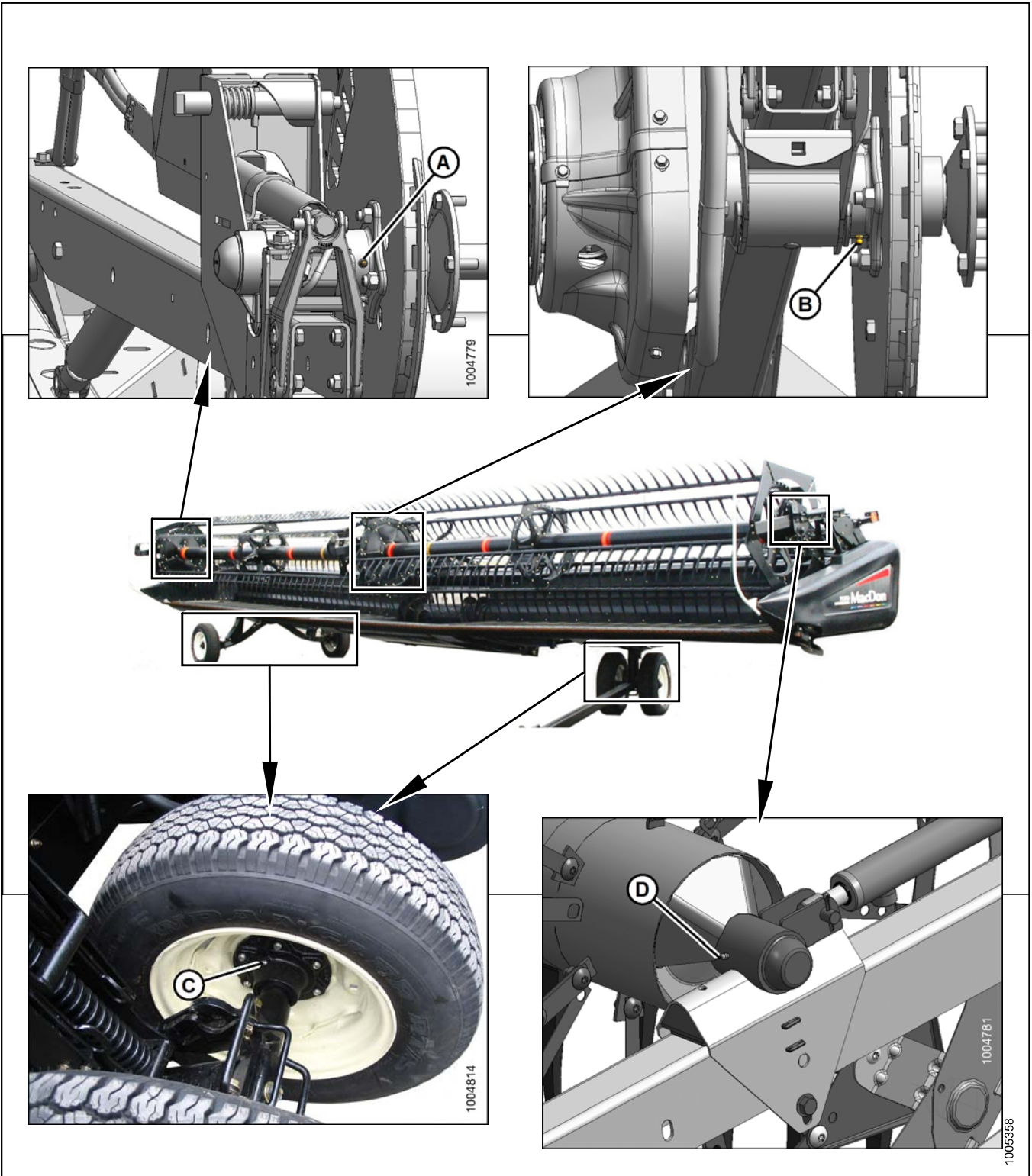


Figure 6.20

A - Reel shaft bearing (1 plc)
C - Wheel bearings (4 plcs)

B - Reel center bearing (1 plc)
D - Reel shaft LH bearing (1 plc)

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Greasing Procedure

Greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals as shown below are provided on the header.

Use the recommended lubricants specified in this manual. See Section [6.3.2 Recommended Fluids and Lubricants](#), page 113.



CAUTION

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

1. To avoid injecting dirt and grit, wipe grease fitting with a clean cloth before greasing.
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. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

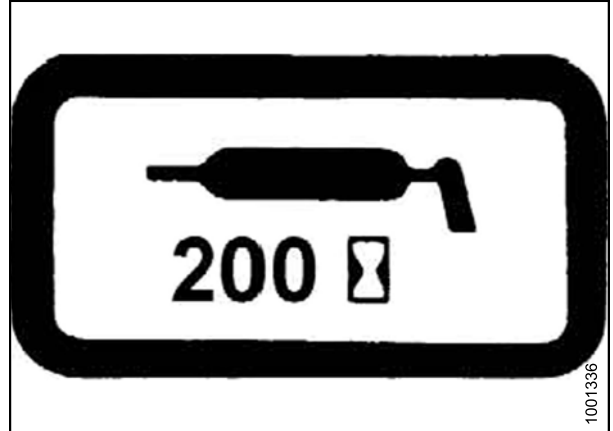


Figure 6.21

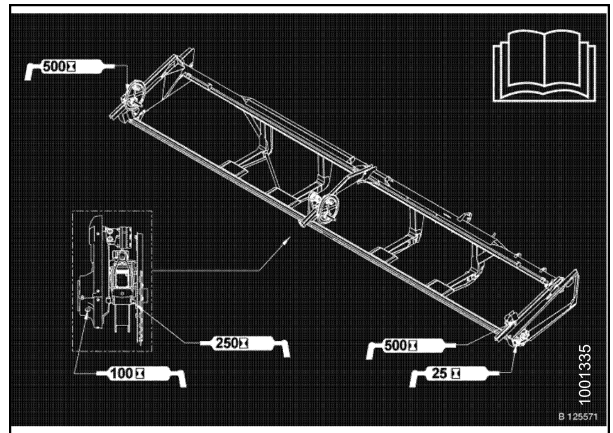


Figure 6.22: Single-knife header

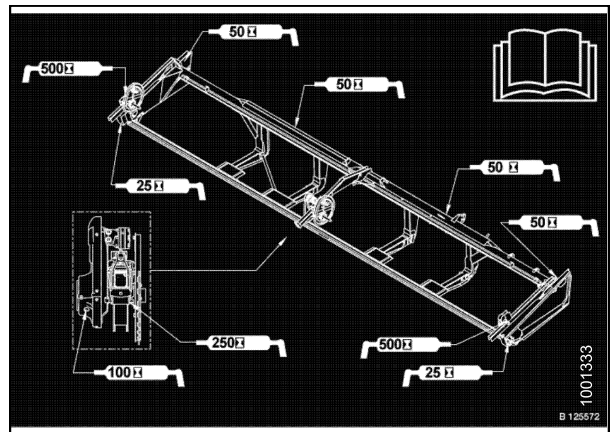


Figure 6.23: Double-knife header

MAINTENANCE AND SERVICING

6.5 Electrical

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

Keep lights clean and replace defective bulbs.

6.5.1 Replacing Light Bulbs

To replace a light bulb, follow these steps:

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

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

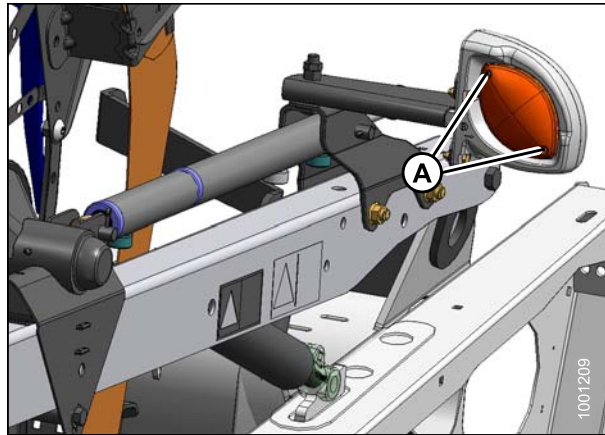


Figure 6.24

6.6 Knife and Knife Drive



CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 6.1 Preparation for Servicing, page 111.



WARNING

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



CAUTION

Wear heavy gloves when working around or handling knives.

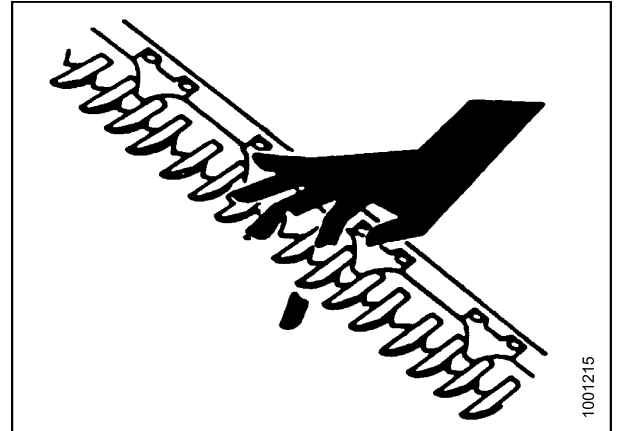


Figure 6.25

6.6.1 Replacing Knife Section

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

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

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

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

To replace a knife section, follow these steps:

1. Stroke knife as required to center it between guard tangs.
2. Remove lock nuts (A).
3. Remove bars (B) and lift knife section off the knife bar.
4. Clean any dirt off of knife back and position new knife section on knife.

IMPORTANT

Do NOT mix fine or coarse knife sections on same knife.

5. Reposition bars (B) and install lock nuts (A).

NOTE: If replacing a screw, make sure to fully insert it. Do not use the nut to draw the screw into the knife bar.

6. Torque nuts to 7 ft·lbf (9.5 N·m).

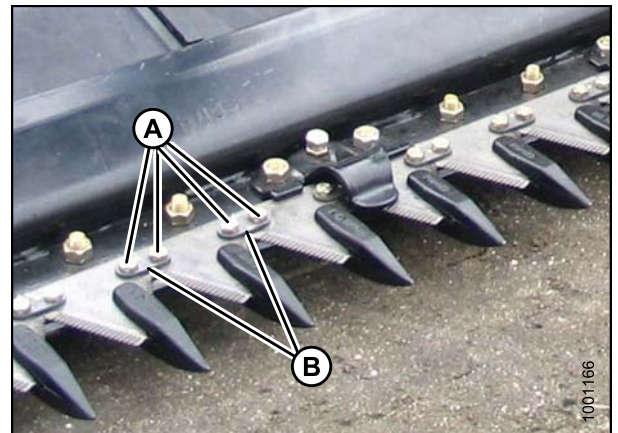


Figure 6.26

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6.6.2 Removing Knife

WARNING

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

1. Clean area around the knifehead. Stroke knife to its outer limit and remove bolt (A).
2. Remove the grease zerk (B) from the pin.
3. Use a screwdriver or a chisel in slot (C) to spread clamp apart to remove knifehead pin.

NOTE: Groove in pin may be used to pry up on pin.

4. Push the knife assembly inboard until it is clear of the output arm.
5. Seal bearing in knifehead with plastic or tape.
6. Wrap a chain around knifehead and pull knife out.

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

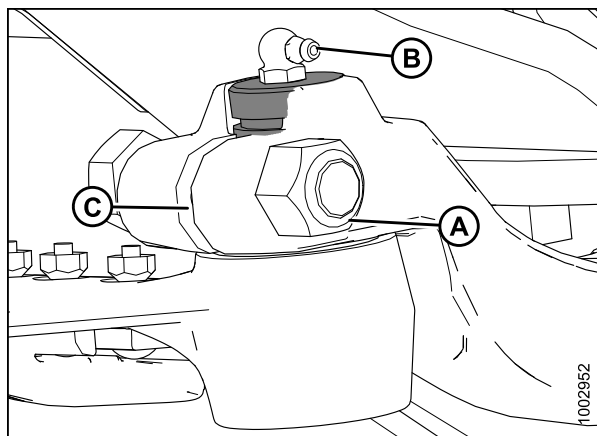


Figure 6.27

6.6.3 Removing Knifehead Bearing

Procedure to remove knifehead bearing.

1. Clean area around the knifehead. Stroke knife to its outer limit and remove bolt (A).
2. Remove the grease zerk (B) from the pin.
3. Use a screwdriver or a chisel in slot (C) to spread clamp apart to remove knifehead pin.

NOTE: Groove in pin may be used to pry up on pin.

4. Push the knife assembly inboard until it is clear of the output arm.
5. Seal bearing in knifehead with plastic or tape.

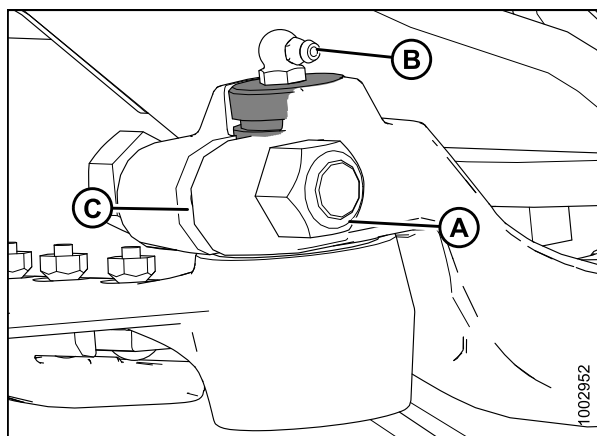


Figure 6.28

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- Using a flat-ended tool with approximately the same diameter as pin (A). From the underside of the knifehead, tap the seal (B), bearing (C), plug (D), and O-ring (E) from the knifehead.

NOTE: Seal (B) can be replaced without removing the bearing. When changing seal, check pin and needle bearing for wear. Replace if necessary.

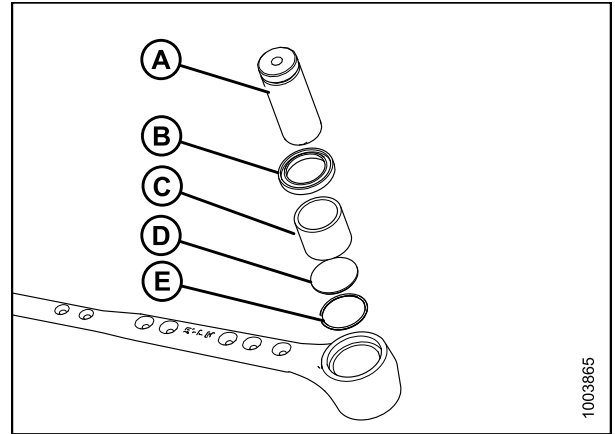


Figure 6.29: Remove seal, bearing, Plug, and O-ring

A - Flat-ended tool B - Seal C - Bearing
D - Plug E - O-ring

6.6.4 Installing Knifehead Bearing

To install the knifehead bearing, follow these steps:

- Place O-ring (E) and plug (D) in knifehead.

IMPORTANT

Install the bearing with the stamped end (the end with identification markings) facing up.

- Using a flat-ended tool (A) with approximately the same diameter as the bearing (C), push the bearing into the knifehead until the top of the bearing is flush with the step in knifehead.
- Install seal (B) into the knifehead with the lip facing outwards.

IMPORTANT

To avoid premature knifehead or knife drive box failure, be sure there is no looseness in the fit of the knifehead pin and the needle bearing, and the fit of the knifehead pin and output arm.

- Install knife. See Section [6.6.5 Installing Knife](#), page 140.

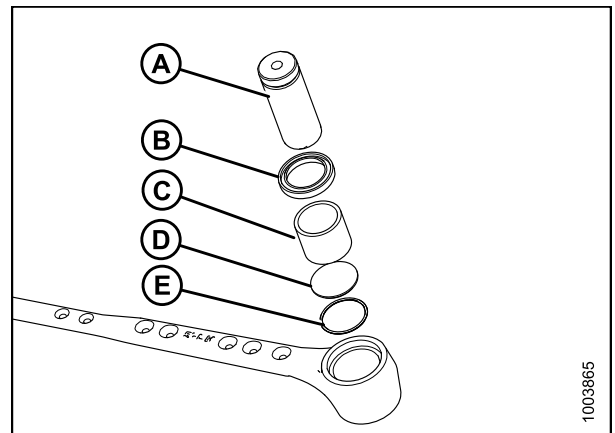


Figure 6.30

A - Flat-ended tool B - Seal C - Bearing
D - Plug E - O-ring

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6.6.5 Installing Knife

WARNING

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

To install a knife, follow these steps:

1. Slide knife into place and align knifehead with the output arm.

NOTE: For ease of removing or installing knifehead pin, remove grease zerk from pin.

2. Install knifehead pin (A) through the output arm and into the knifehead bearing cup.
3. Align groove (B) in knifehead pin 0.06 in. (1.5 mm) above (C). Install 5/8 in. X 3 in. hex head bolt (D) and torque to 160 ft-lbf (217 N-m).
4. Install grease zerk (A) into the knifehead pin, turn the grease zerk for easy access.

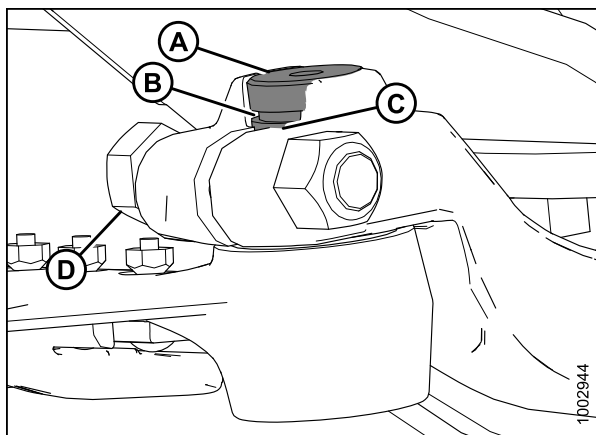


Figure 6.31

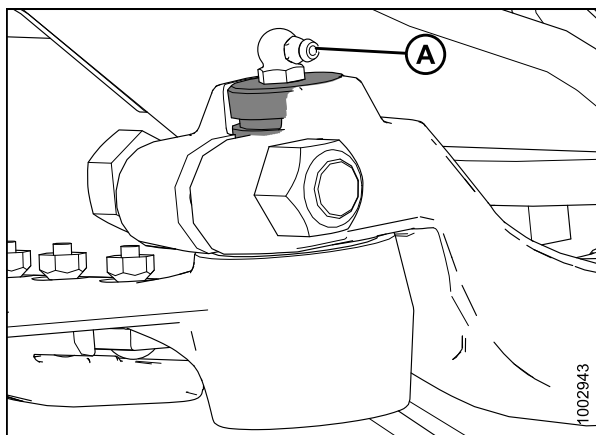


Figure 6.32

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6.6.6 Spare Knife

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

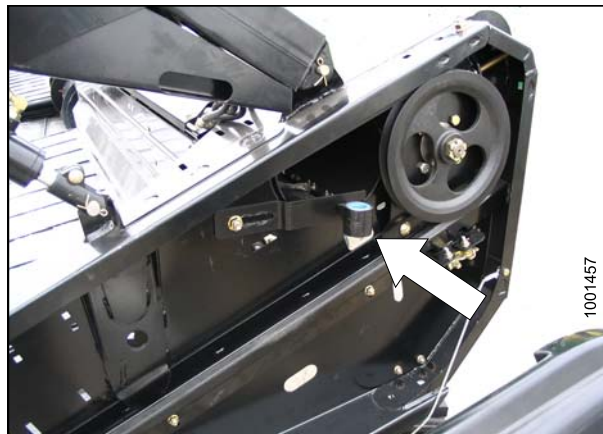


Figure 6.33

6.6.7 Knife Guards

Check **DAILY** that guards are aligned to obtain proper shear cut between knife section and guard. Knife sections should contact shear surface of each guard.

Adjusting Knife Guards

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

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



Figure 6.34: Upward adjustment

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

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

3. If material is tough to cut, install stub guards with top guard and adjuster plate. A kit is available from your MacDon Dealer. Refer to [Section 8.1.21 Stub Guard Conversion Kit, page 261](#).



Figure 6.35: Downward adjustment

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Replacing Pointed Guards on a Single-Knife Header

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



WARNING

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

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

IMPORTANT

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

5. Install hold-down and secure with nuts. Tighten nuts to 50 ft-lbf (68 N-m).
6. Check and adjust clearance between hold-down and knife. Refer to section [Knife Hold-Downs](#), page 147.

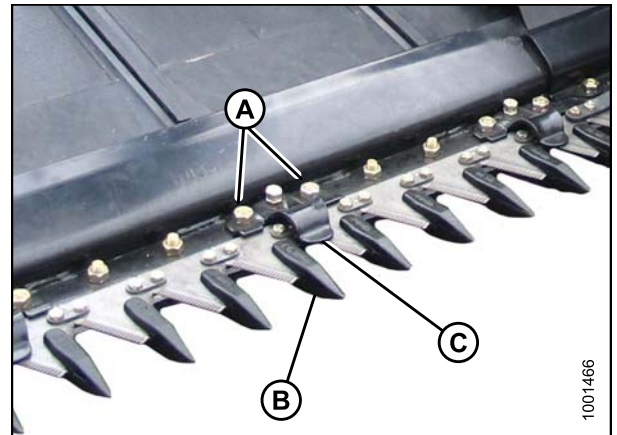


Figure 6.36

A - Nuts
C - Hold-down

B - Knife guard

1001466

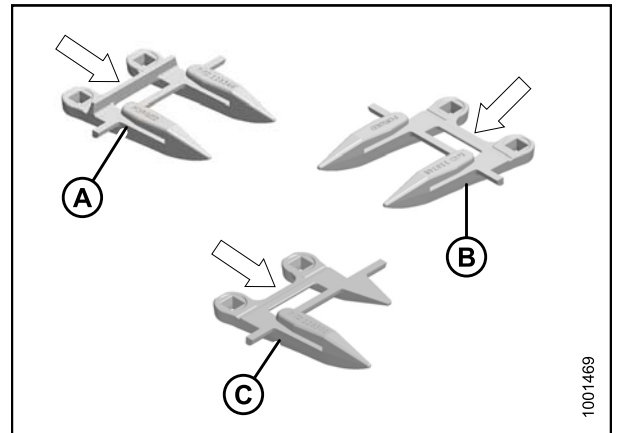


Figure 6.37: Check and adjust clearance

A - Normal
C - Half Guard (End)

B - Drive side

1001469

MAINTENANCE AND SERVICING

Replacing Pointed Guards on a Double-Knife Header



WARNING

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

Refer to [Replacing Pointed Guards on a Single-Knife Header](#), page 143 for typical guard replacement.

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

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

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

IMPORTANT

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

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

4. Check and adjust clearance between hold-down and knife. Refer to [Knife Hold-Downs](#), page 147.

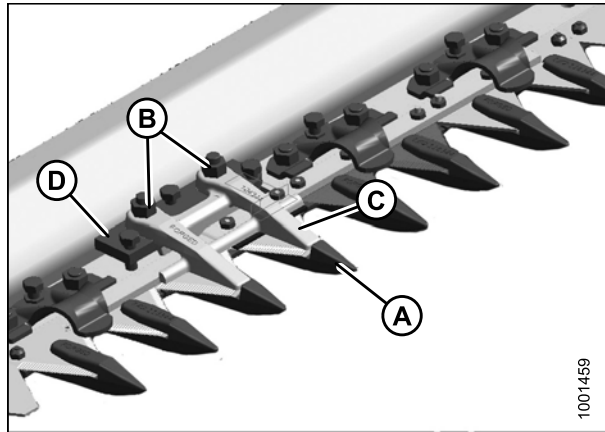


Figure 6.38

A - Knife guard
C - Top guide

B - Nuts
D - Adjuster bar

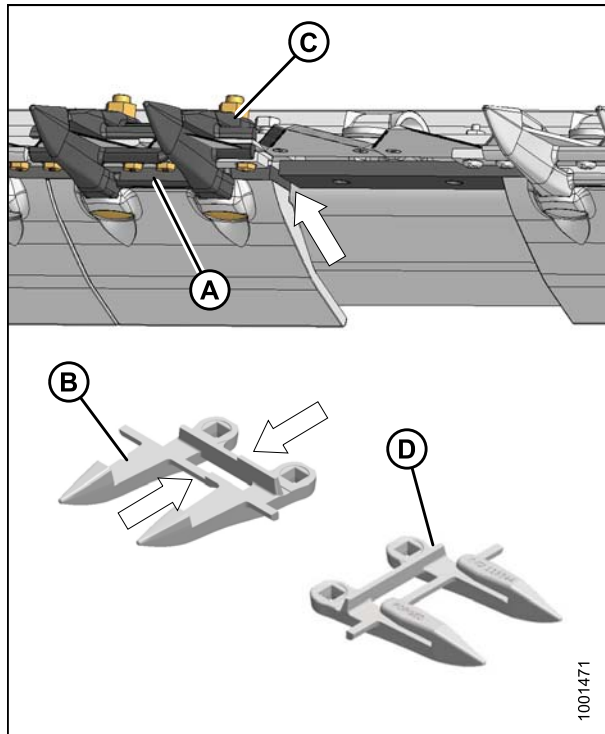


Figure 6.39

A - Knife guard
C - Top guide

B - Center guard
D - Normal guard

MAINTENANCE AND SERVICING

Replacing Stub Guards on a Single-Knife Header



WARNING

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

Stub guards, complete with top guides and adjuster plates, are designed to cut tough crops. Only 15, 20, 25, 30, and 35 ft. headers can be equipped with stub guards.

To replace stub guards, follow these steps:

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

IMPORTANT

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

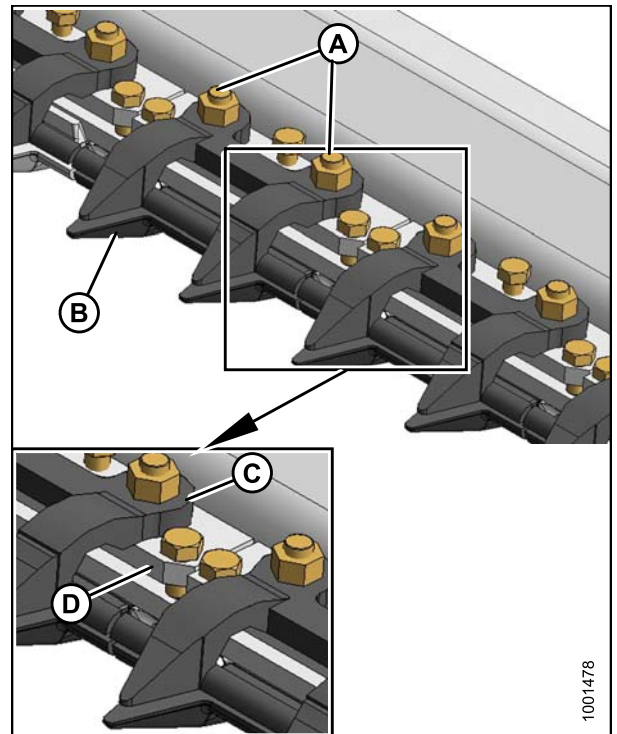


Figure 6.40

A - Nuts
C - Top guide

B - Stub guard
D - Adjuster bar

IMPORTANT

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

4. Check and adjust clearance between top guide and knife. Refer to [Knife Hold-Downs, page 147](#).

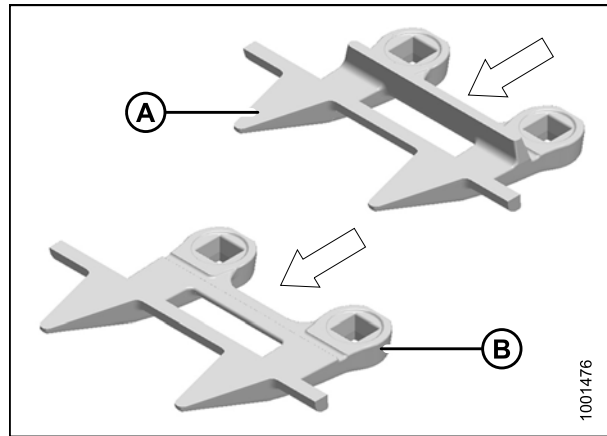


Figure 6.41: Check clearance

A - Normal guard

B - Drive side guard

Replacing Stub Guards on a Double-Knife Header

Refer to [Replacing Stub Guards on a Single-Knife Header, page 145](#) for typical guard replacement.

The guard at the center of the Double Knife header, where the two knives overlap, requires a slightly different replacement procedure.

To replace the center guard or center top guide, follow these steps:

MAINTENANCE AND SERVICING

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

IMPORTANT

Ensure center guard (B) has offset cutting surfaces.

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

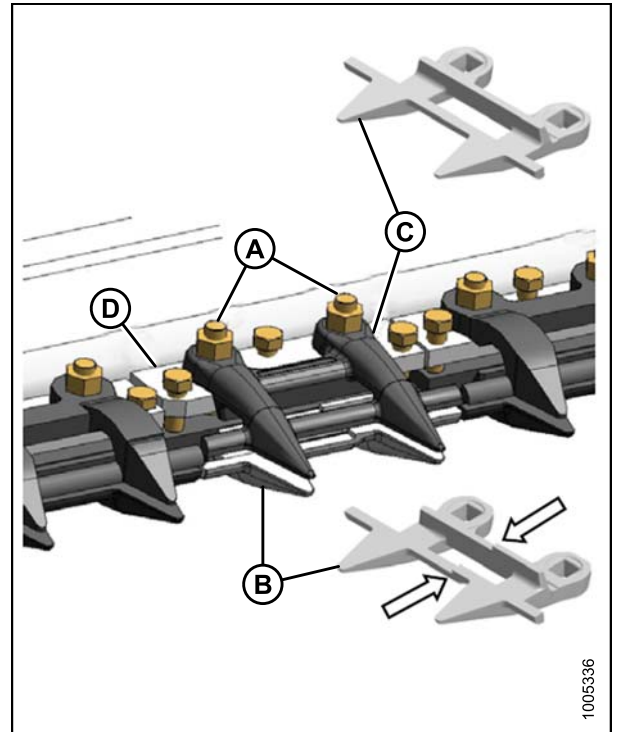


Figure 6.42

A - Nuts
C - Normal top guide

B - Center guard
D - Adjuster bar

4. Check and adjust clearance between hold-down and knife. Refer to [Knife Hold-Downs, page 147](#).

Knife Hold-Downs

Check daily that knife hold-downs are set to prevent knife sections from lifting off guards, but still permit knife to slide without binding. If you have pointed guards, see [Adjusting Hold-Downs on Headers with Pointed Guards, page 148](#). If you have stub guards, see [Adjusting Hold-Downs on Headers with Stub Guards, page 149](#).

NOTE: Guards should be aligned prior to adjusting hold-downs. See [Adjusting Knife Guards, page 141](#).

MAINTENANCE AND SERVICING

Adjusting Hold-Downs on Headers with Pointed Guards

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

1. To adjust the clearance between hold-down and knife for typical pointed guards, turn the adjuster bolts (A). Using a feeler gauge, clearance from hold-down to knife section (C) should be 0.004–0.024 in. (0.1–0.6 mm).

NOTE: For larger adjustments, it may be necessary to loosen nuts (B), turn adjuster bolt (A), then retighten nuts (B).

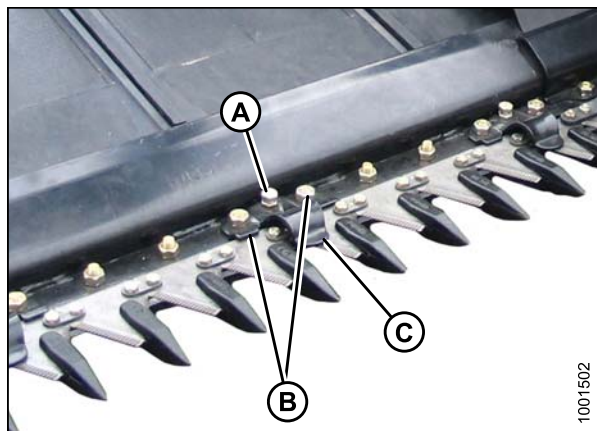


Figure 6.43

A - Adjuster bolts
B - Nuts
C - Clearance: 0.004–0.024 in. (0.1–0.6 mm)

2. To adjust clearance between hold-down and knife for center guards, torque nuts (A) to 35 ft·lbf (46 N·m).
3. Turn the adjuster bolts (B) as required. Using a feeler gauge, clearance from hold-down to knife section should be:
 - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (C)
 - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (D)
4. Torque nuts (A) to 53 ft·lbf (72 N·m).
5. After adjusting all hold-downs, run header at a low engine speed and listen for noise due to insufficient clearance. Insufficient clearance will also result in overheating of the knife and guards. Readjust as necessary.

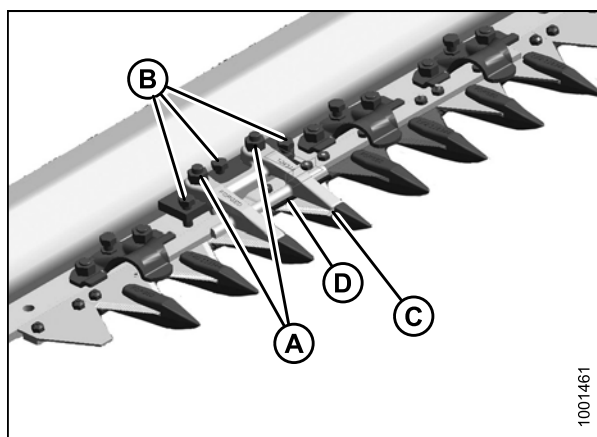


Figure 6.44

A - Nuts
B - Adjuster bolts
C - Guide tip
D - Rear of guide

MAINTENANCE AND SERVICING

Adjusting Hold-Downs on Headers with Stub Guards

To adjust the clearance between the hold-down and knife for all stub guards, follow these steps:

1. Torque nuts (A) to 35 ft-lbf (46 N·m).
2. Turn the adjuster bolts (B) as required. Using a feeler gauge, clearance from hold-down to knife section should be:
 - 0.004–0.016 in. (0.1–0.4 mm) at guide tip (C)
 - 0.004–0.040 in. (0.1–1.0 mm) at rear of guide (D)
3. Torque nuts (A) to 53 ft-lbf (72 N·m).
4. After adjusting all hold-downs, run header at a low engine speed and listen for noise due to insufficient clearance. Insufficient clearance will also result in overheating of knife and guards. Re-adjust as necessary.

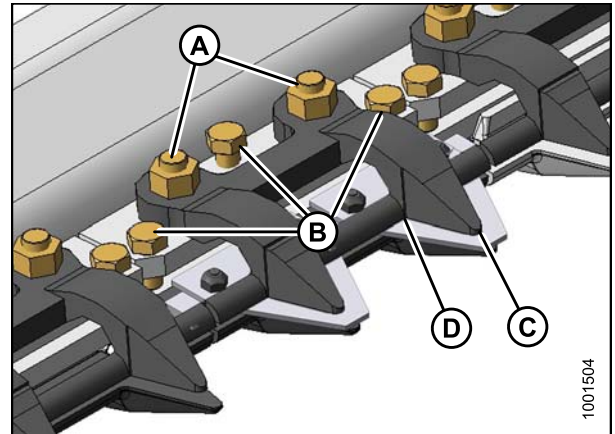


Figure 6.45

A - Nuts

B - Adjuster bolts

C - Clearance at guide tip

D - Clearance at rear of guide

6.6.8 Knife Drive Belt

Single Knife and Double Knife Untimed

Removing Knife Drive Belt On Single Knife Headers And Double Knife Headers With Non-Timed Drives

This procedure covers how to remove the knife drive belt on single knife headers and double knife headers with non-timed drives.

NOTE: Procedure is the same for right-hand side of the non-timed double knife header.

1. Open endshield. See [Opening Endshields, page 37](#).
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Loosen the tension on the belt by turning the tensioning bolt (B) counterclockwise. This will loosen the belt attached to the knife drive box.

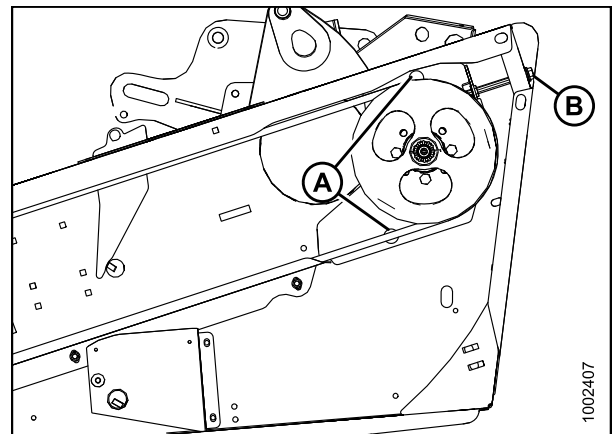


Figure 6.46

MAINTENANCE AND SERVICING

4. Once the belt is loose, open the access panel (A) inside the draper opening, just behind cutterbar.
5. Remove the knife drive belt.

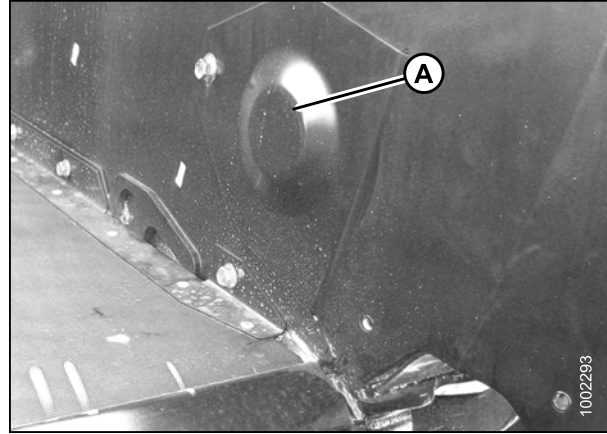


Figure 6.47

Installing Knife Drive Belt On Single Knife Headers And Double Knife Headers with Non-Timed Drives

This procedure explains how to install the knife drive belt on single knife headers and double knife headers with non-timed drives.

NOTE: Procedure is the same for right-hand side of the untimed double knife header.

1. Route knife drive belt (A) around knife drive box pulley and knife drive pulley.

NOTE: When installing new belt, never pry belt over pulley. Be sure drive motor is fully forward, then tension belt.

2. Tension knife drive belt, see [Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151](#).

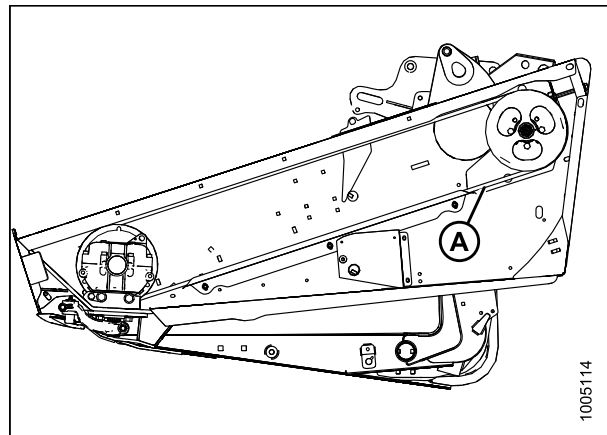


Figure 6.48

3. Once the belt is installed, reinstall the access panel (A) and secure it with a bolt.
4. Close endshield. See [Closing Endshields, page 38](#).

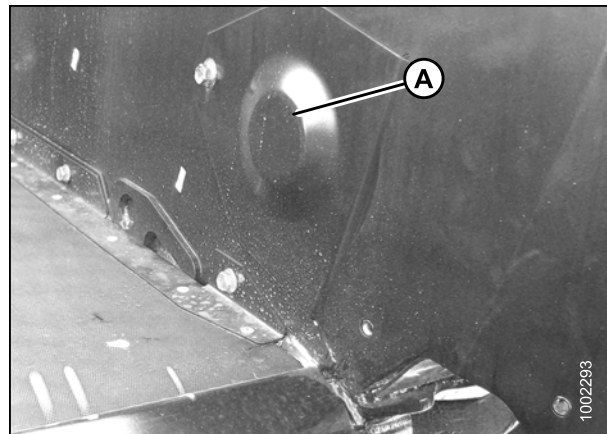


Figure 6.49

MAINTENANCE AND SERVICING

Tensioning Single and Double Knife Headers With Non-Timed Drive

This procedure applies to single knife headers and to double knife headers with non-timed drives.

IMPORTANT

To prolong belt and drive life, do not overtighten belt.

1. Open endshield. See [Opening Endshields, page 37](#).
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Turn adjuster bolt (B) clockwise to move the drive motor until a force of 20 ft-lbf (80 N-m) deflects belt (C) 3/4 in. (18 mm) at mid-span.
4. Check clearance between belt (A) and belt guide (B). It should be 0.04 in. (1 mm).
5. Loosen three bolts (C) and adjust position of guide (B) as required.
6. Tighten bolts (C).
7. Close endshield. See [Closing Endshields, page 38](#).
8. Re-adjust tension of a new belt after a short run-in period (about 5 hours).

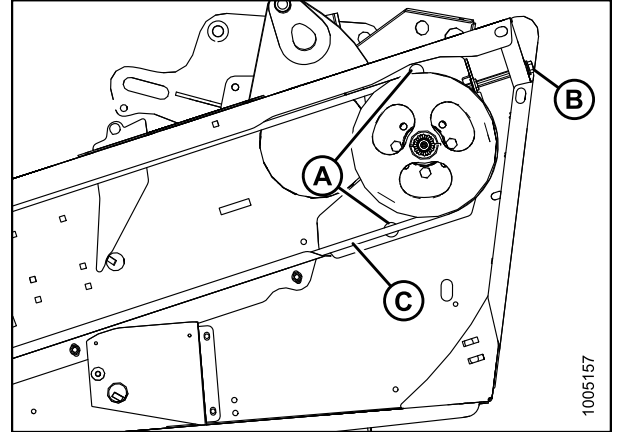


Figure 6.50

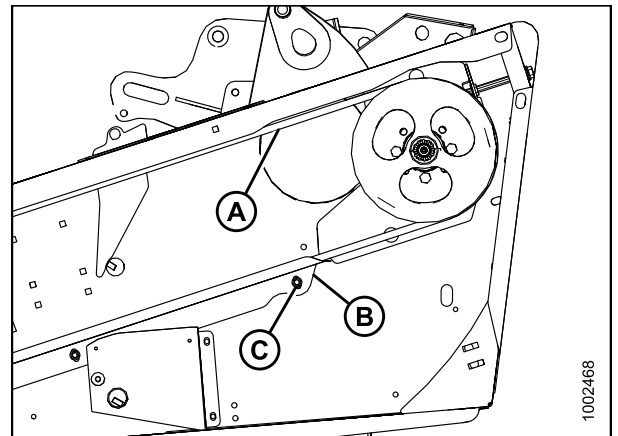


Figure 6.51

Double Knife Timed

This section applies to 35 ft. and smaller double knife model D65 Draper Headers with timed drives.

MAINTENANCE AND SERVICING

Removing Knife Drive Belt (Timed) (DK) (Left Hand)

1. Open LH endshield. See [Opening Endshields](#), page 37.
2. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
3. Loosen nut (B) on idler pulley and slide idler down to loosen belt.

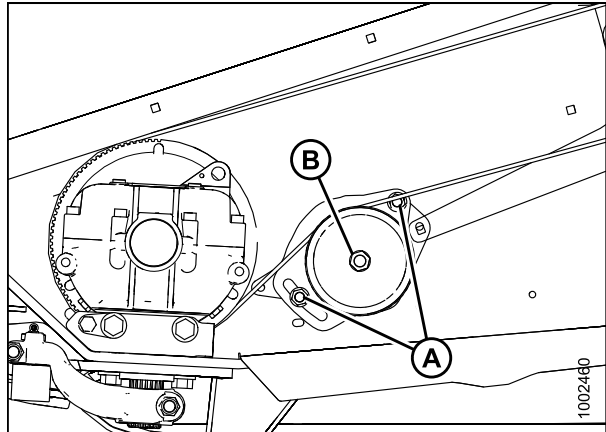


Figure 6.52

4. Loosen two bolts (A) on endsheet.
5. Turn adjuster bolt (B) to loosen the two V-belts (C) and remove them.

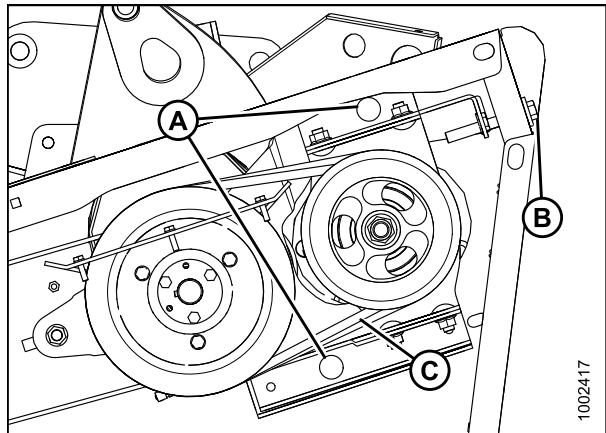


Figure 6.53

6. Open the access panel (A) inside the draper opening, just behind cutterbar. This will give you access to the knife drive pulley.
7. Remove the knife drive belt.

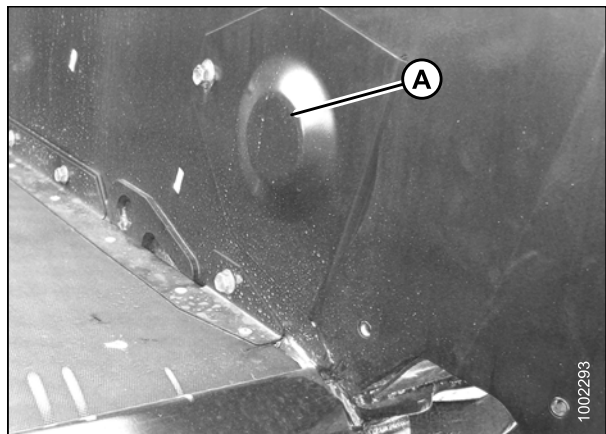


Figure 6.54

MAINTENANCE AND SERVICING

Installing Knife Drive Belt (Timed) (DK) (Left Hand)

If there are problems with belt alignment. See [Aligning Knife Drive Belt Pulley \(DK\) \(Left Hand\)](#), page 155.

1. Route knife drive belt around knife drive box pulley and knife drive pulley.

NOTE: When installing new belt, never pry belt over pulley. Be sure drive motor is fully forward, then tension belt.

2. Once the belt is installed, reinstall the access panel (A) and secure it with a bolt.

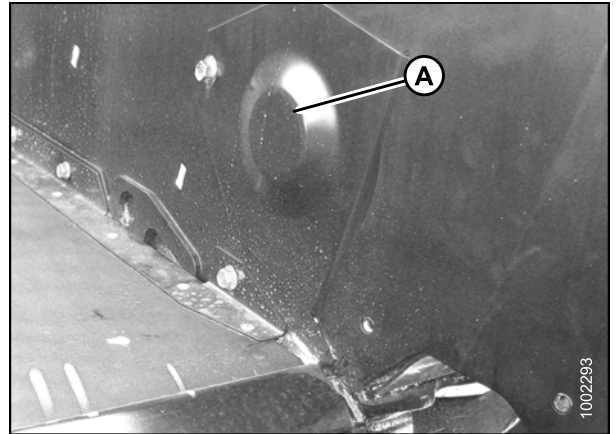


Figure 6.55

3. Install the two V-belts (C) and turn adjuster bolt (B) to tension them. Tension is checked at mid span of the belts. The belts should deflect 0.12 in. (3 mm) with 12 ft-lbf (53 N-m) of force.

4. Tighten the two bolts (A) on endsheet.

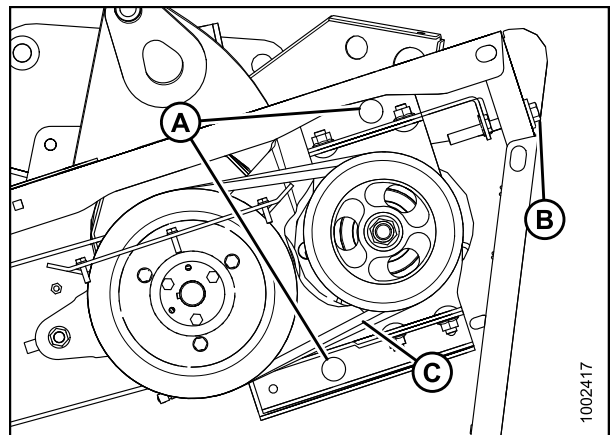


Figure 6.56

MAINTENANCE AND SERVICING

5. Rotate the idler pulley bracket (A) down. Loosen nut (B) and slide the idler pulley up by hand to remove most of the belt slack. Tighten nut (B).

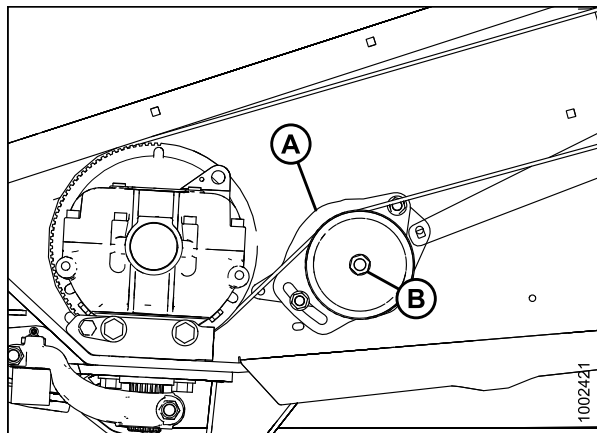


Figure 6.57

6. Rotate the bracket up using a long punch in slot (B) behind the pulley to obtain the proper belt tension. Tension is checked at mid span of the belt and should deflect 0.51 in. (13 mm) at 6 ft·lbf (24 N·m).
7. Tighten bolts (A) that secure the idler bracket to the end frame.

NOTE: Re-adjust tension of a new belt after a short run-in period, (about 5 hours).

8. Close endshield. See [Closing Endshields, page 38](#).

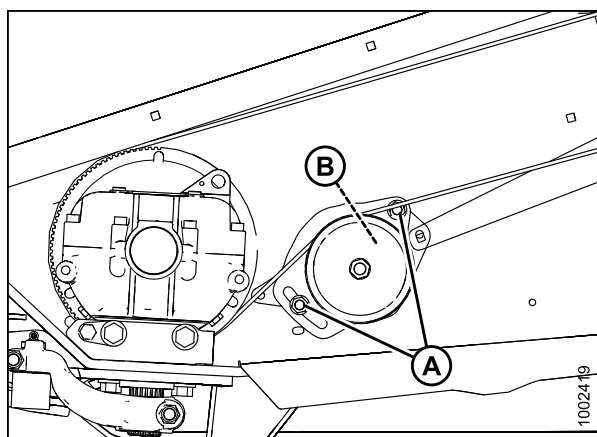


Figure 6.58

Tensioning Knife Drive Belt (Timed) (DK) (Left Hand)

IMPORTANT

To prolong belt and drive life, do NOT over-tighten belt.

1. Open endshield. See [Opening Endshields, page 37](#).
2. Loosen two nuts (A) on knife drive belt idler bracket.

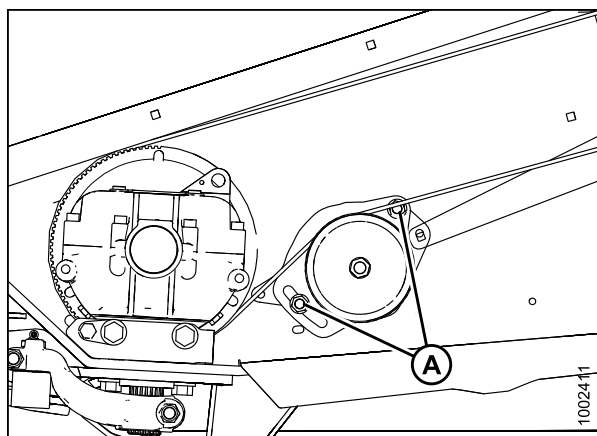


Figure 6.59

MAINTENANCE AND SERVICING

3. Insert a long punch (or equivalent) into hole (B) in idler bracket and pry downward until a force of 6 ft·lbf (27 N·m) deflects timing belt 1/2 in. (13 mm) at mid-span.
4. Tighten nuts (A) on idler mounting bracket.

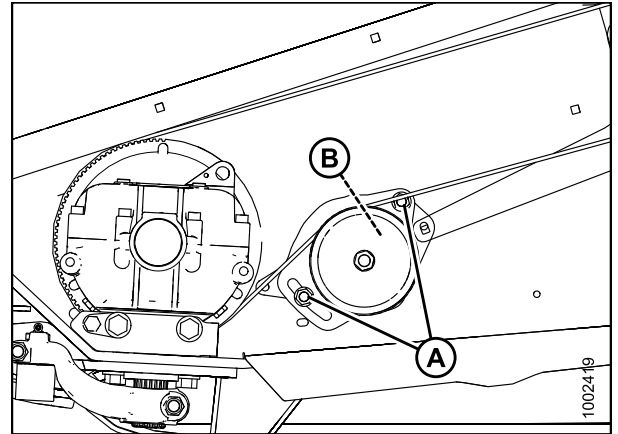


Figure 6.60

5. Loosen bolts (B) and adjust guide (A). The measurement should be 0.02–0.04 in. (0.5–1.0 mm).
6. Re-adjust tension of a new belt after a short run-in period (about 5 hours).

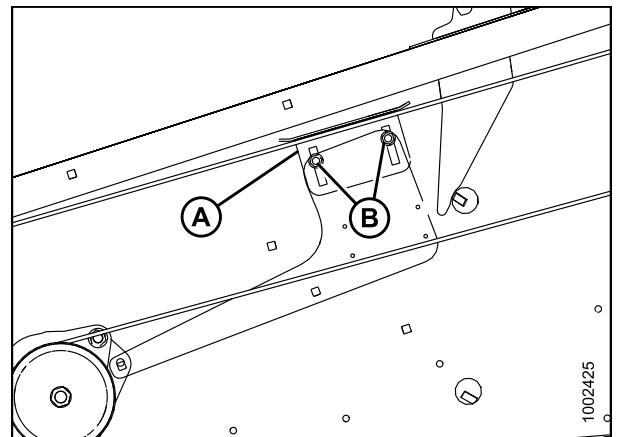


Figure 6.61

Aligning Knife Drive Belt Pulley (DK) (Left Hand)

1. Locate the grease zerk (A) on the bottom of the backtube that greases the cross shaft tube. There is one per side. Check the location of the bolt in slot. The LH bolt should be near the center of the slot and the RH bolt should be near the front of the slot. If not, loosen the nut and adjust them accordingly. Torque the nuts to 230–250 ft·lbf (312–339 N·m). If they are not in the correct place, adjust accordingly.

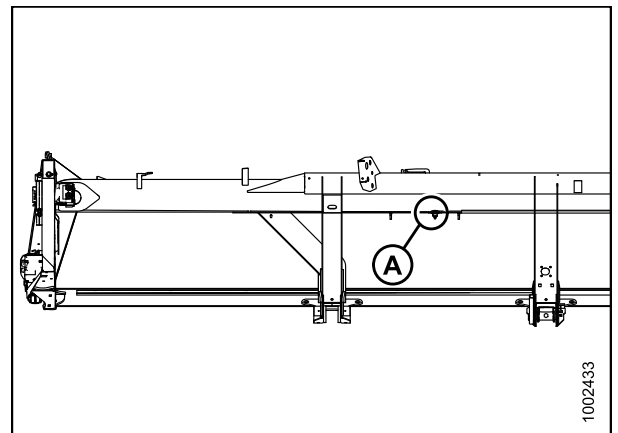


Figure 6.62: View from behind header

MAINTENANCE AND SERVICING

2. Open endshield. See [Opening Endshields](#), page 37.
3. Release tension on the cogged drive belt by loosening nuts (A) to loosen the idler pulley.

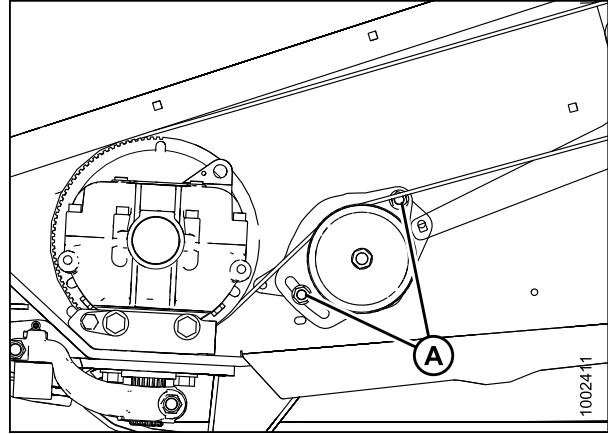


Figure 6.63

4. Check the 'toe in' the knife drive pulley. Use a straight edge (A) across the face of the double pulley bolted to the knife drive pulley. Measure from the straight edge to the end panel in two places (B, C). Measurements 'B' and 'C' should be taken 39.4 in. (1000 mm) apart (D). Dimension at point 'C' should be 0.16 in. (4 mm) less than point 'B'. If not, then you will need to adjust the pulley.

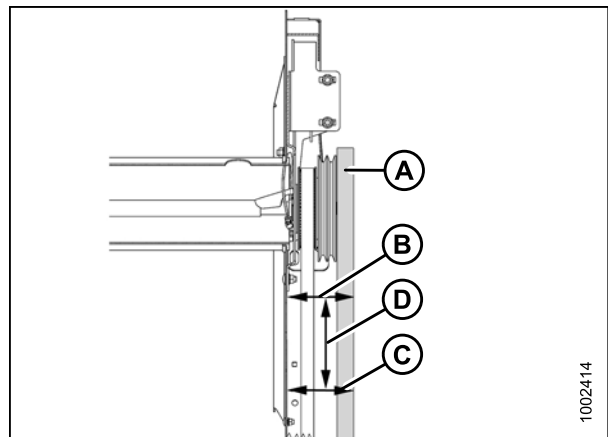


Figure 6.64

5. Loosen bolts (A) and adjust bolt (B) to move the knife drive pulley.

NOTE: Adjusting bolt (B) affects the fore-aft position of the drive pulley. Moving it forward will change the toe in, rearward will change the toe-out dimension of the pulley.

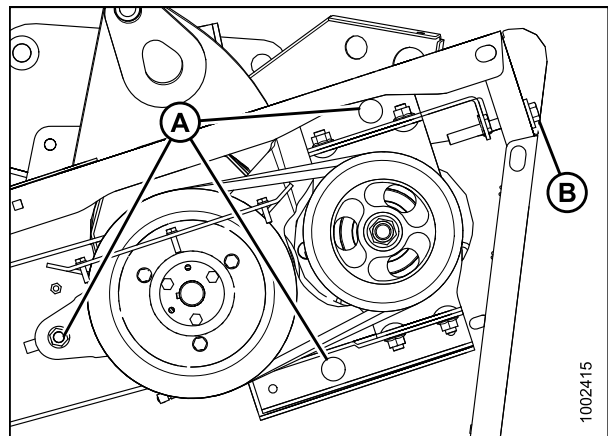


Figure 6.65

MAINTENANCE AND SERVICING

NOTE: The following is important to belt alignment. Follow instructions carefully.

- This adjustment will toe in the knife drive pulley. This will allow the pulley to be aligned after the belts are tensioned. Use a straight edge (A) across the face of the double pulley bolted to the knife drive pulley. Measure from the straight edge to the end panel in two places (B, C). Measurements 'B' and 'C' should be taken 39.4 in. (1000 mm) apart (D). Dimension at point 'C' should be 0.16 in. (4 mm) less than point 'B'.

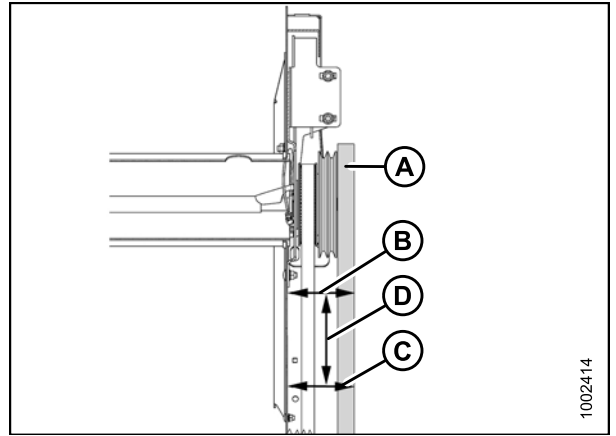


Figure 6.66

- If more adjustment is required, adjust bolt (A). Check pulley alignment again.

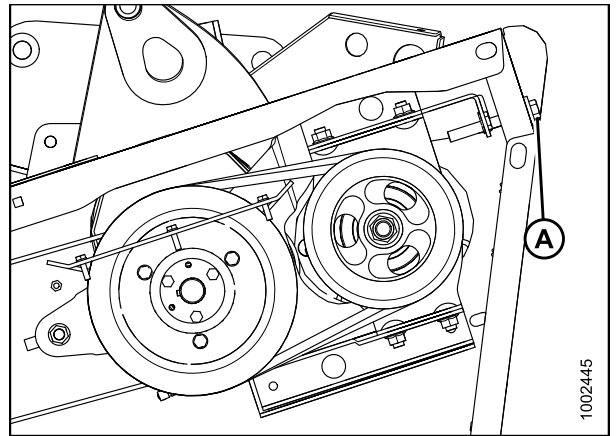


Figure 6.67

- Tighten nut (A) to retain the pulley setting.

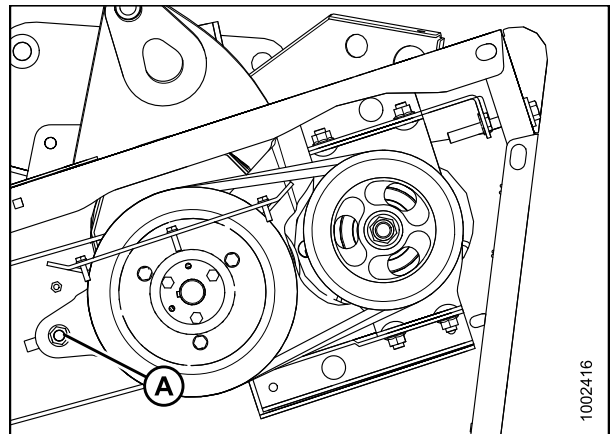


Figure 6.68

MAINTENANCE AND SERVICING

9. Tighten bolt (B) to tension double V-belts (C). Tension is checked at mid span of the belts. The belts should deflect 0.12 in. (3 mm) with 12 ft·lbf (53 N·m) of force.
10. Tighten bolts (A) to lock in the double V-belt setting.

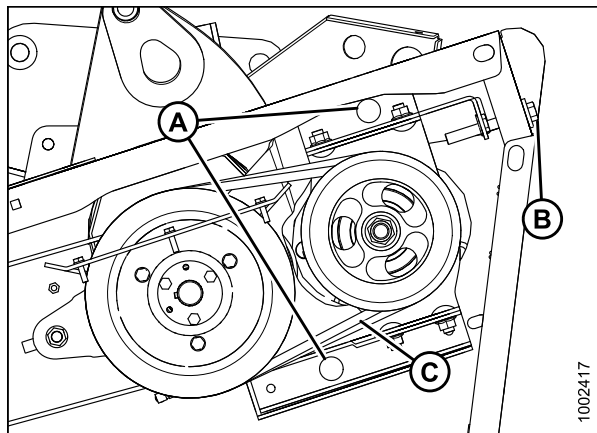


Figure 6.69

11. Rotate the bracket up using a long punch in slot (B) behind the pulley to obtain the proper belt tension. Tension is checked at mid span of the belt and should deflect 0.51 in. (13 mm) at 6 ft·lbf (24 N·m).
12. Tighten bolts (A), that secure the idler bracket to the end frame.

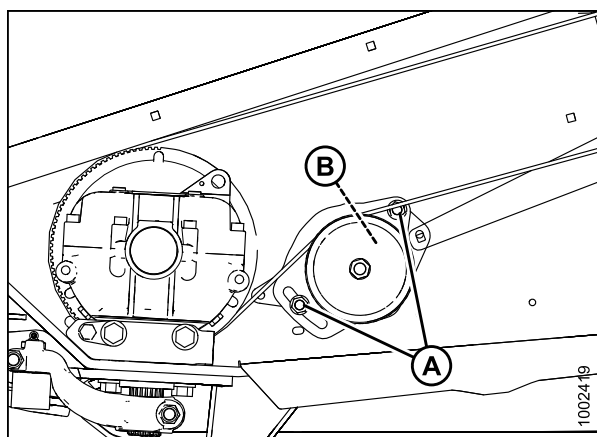


Figure 6.70

13. Check idler pulley alignment. Place a 12 in. (300 mm) straight edge on the idler pulley horizontally and vertically (B). Measure from the straight edge to the frame. Pulley should be parallel to the frame in both directions within 0.08 in. (2 mm). If pulley adjustment is required, use a deep socket and extension on nut (A) and adjust accordingly.

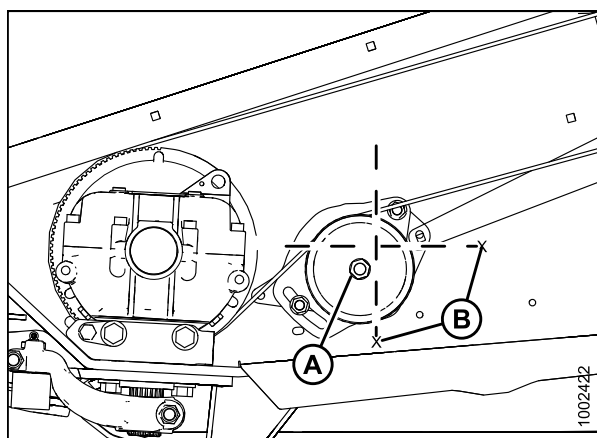


Figure 6.71

MAINTENANCE AND SERVICING

14. After the double V-belts and timing belts are tensioned, recheck drive pulley alignment with a straight edge. Dimension at point 'C' should be 0.16 in. (4 mm) less than point 'B'. If not go back to step 6., [Aligning Knife Drive Belt Pulley \(DK\) \(Left Hand\)](#), page 157 and readjust the fore-aft position of the drive pulley.

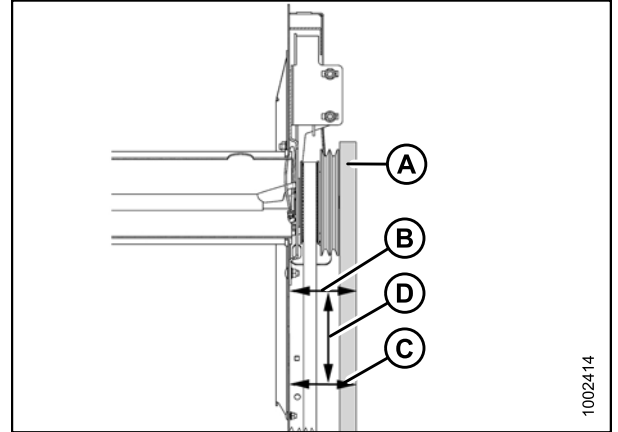


Figure 6.72

15. Loosen bolts (B) and adjust belt guide bracket (A). It should be set so there is 0.02–0.06 in. (0.5–1.5 mm) between the belt and the guide.

NOTE: If you have removed the belt, ensure the knives are timed. See [Double Knife Timed](#), page 151.

16. Close endshield. See [Closing Endshields](#), page 38.
17. Run up the header and ensure belt is tracking correctly.

NOTE: Belt should run completely on knife drive box sprocket and should not tend to ride up on flanges of driving sprocket or idler pulley. If it does not, then more adjustment on the idler pulley or the driving pulley may be needed.

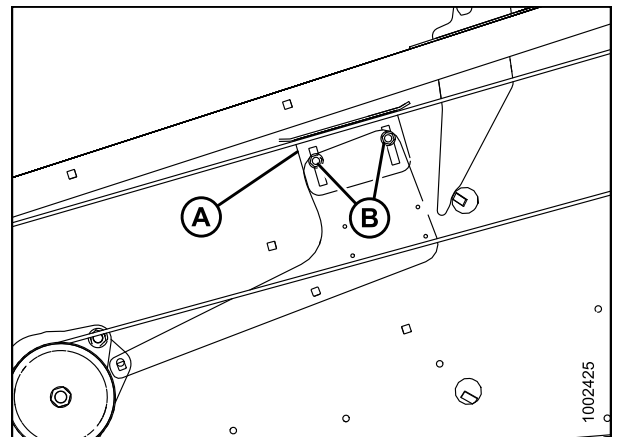


Figure 6.73

Removing Knife Drive Belt (Timed) (Double Knife) (Right Hand)

1. Remove RH endshield, see Section [4.2.3 Endshields](#), page 37 for instructions.
2. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
3. Loosen nut (B) on idler pulley and slide idler down to loosen belt.

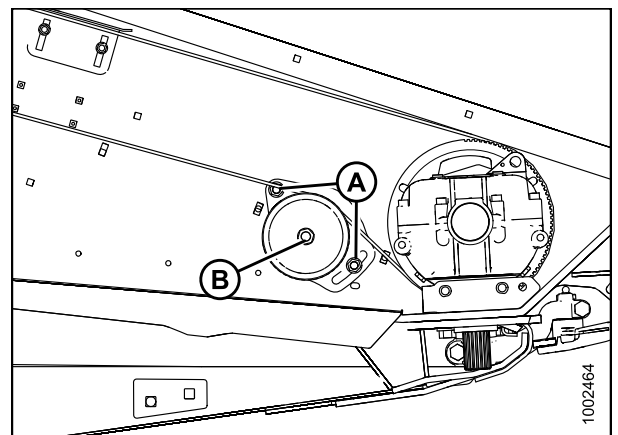


Figure 6.74

MAINTENANCE AND SERVICING

4. Open the access panel (A) inside the draper opening, just behind cutterbar. This will give you access to the knife drive pulley.

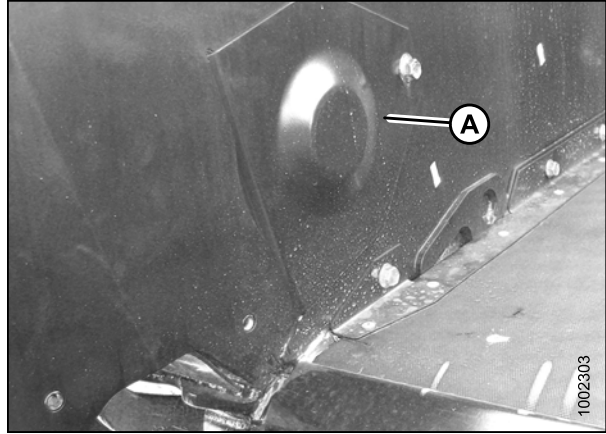


Figure 6.75

5. Remove the knife drive belt (A).

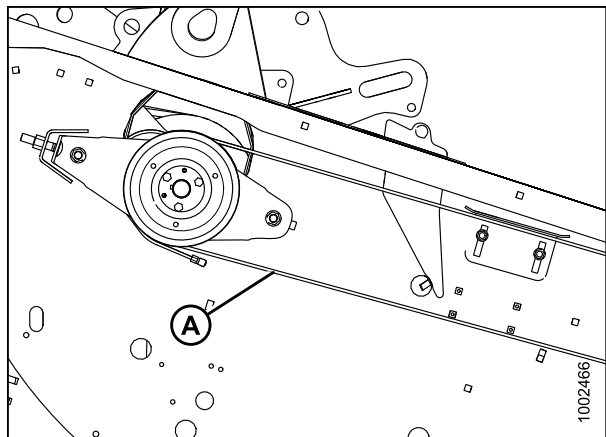


Figure 6.76

MAINTENANCE AND SERVICING

Installing Knife Drive Belt (Timed) (DK) (RH)

If there are problems with belt alignment. See [Aligning Knife Drive Belt Pulley \(DK\) \(Right Hand\)](#), page 163.

1. Route knife drive belt around knife drive box pulley and knife drive pulley.

NOTE: When installing new belt, never pry belt over pulley. Be sure drive motor is fully forward, then tension belt.

2. Once the belt is installed, reinstall the access panel (A) and secure it with a bolt.

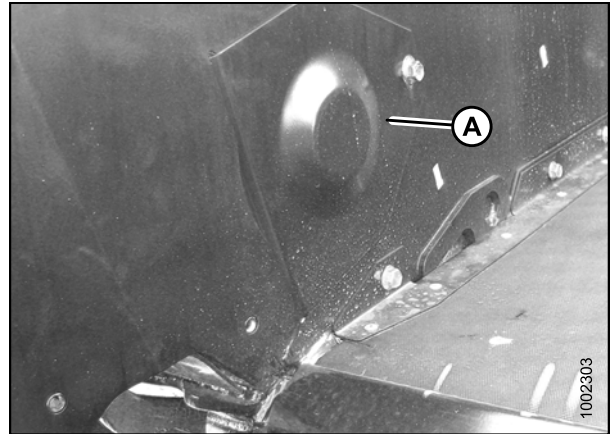


Figure 6.77

3. Rotate the idler pulley bracket (A) down. Loosen nut (B) and slide the idler pulley up by hand to remove most of the belt slack. Tighten nut (B).

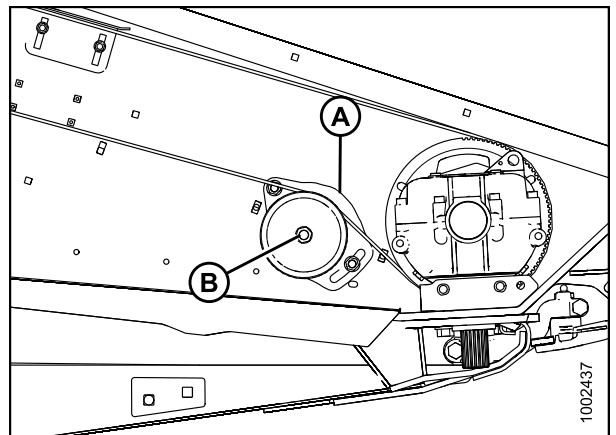


Figure 6.78

MAINTENANCE AND SERVICING

4. Rotate the bracket up using a long punch in slot (B) behind the pulley to obtain the proper belt tension. Tension is checked at mid span of the belt and should deflect 0.51 in. (13 mm) at 6 ft-lbf (24 N·m).
5. Tighten bolts (A) that secure the idler bracket to the end frame.
6. Close endshield. See [Closing Endshields, page 38](#).

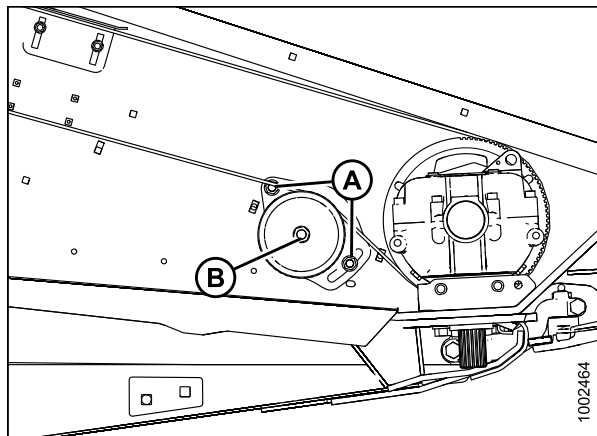


Figure 6.79

Tensioning Knife Drive Belt (Timed) (DK) (Right Hand)

IMPORTANT

To prolong belt and drive life, do not over-tighten belt.

To adjust the tension of the RH timing belt, follow these steps.

1. Open endshield. See [Opening Endshields, page 37](#).
2. Loosen two nuts (A) on knife drive belt idler bracket.
3. Insert a long punch (or equivalent) into hole (B), behind the pulley in idler bracket and pry downward until a force of 6 ft-lbf (27 N·m) deflects timing belt 1/2 in. (13 mm) at mid-span.
4. Tighten nuts (A) on idler mounting bracket.

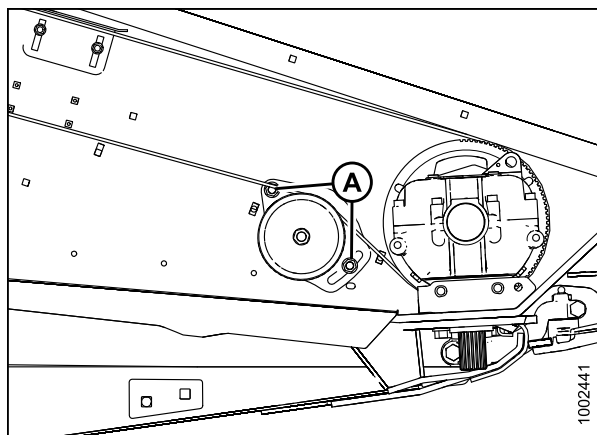


Figure 6.80

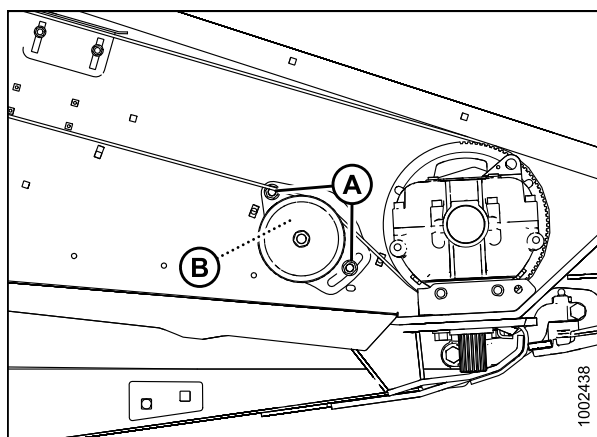


Figure 6.81

MAINTENANCE AND SERVICING

5. Loosen bolts (B) and adjust guide (A). The measurement should be 0.02–0.04 in. (0.5–1.0 mm).
6. Re-adjust tension of a new belt after a short run-in period (about 5 hours).

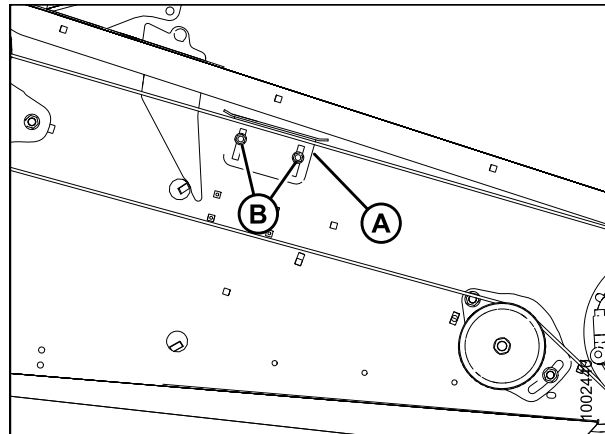


Figure 6.82

Aligning Knife Drive Belt Pulley (DK) (Right Hand)

1. Locate the grease zerk (A) on the bottom of the backtube, that greases the cross shaft tube. There is one per side. Check the location of the bolt in the slot. The RH bolt should be near the front of the slot and the LH bolt should be near the center of the slot. Torque the nuts to 230–250 ft·lbf (312–339 N·m). If they are not in the correct place, adjust accordingly.

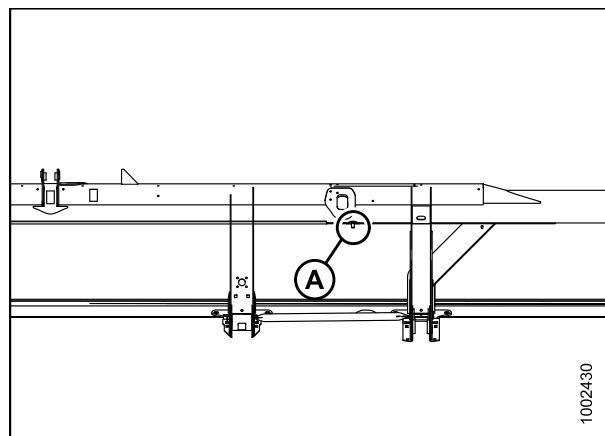


Figure 6.83: View from behind header

2. Open endshield. See [Opening Endshields](#), page 37.
3. Release tension on the cogged drive belt by loosening nuts (A) to loosen the idler pulley.

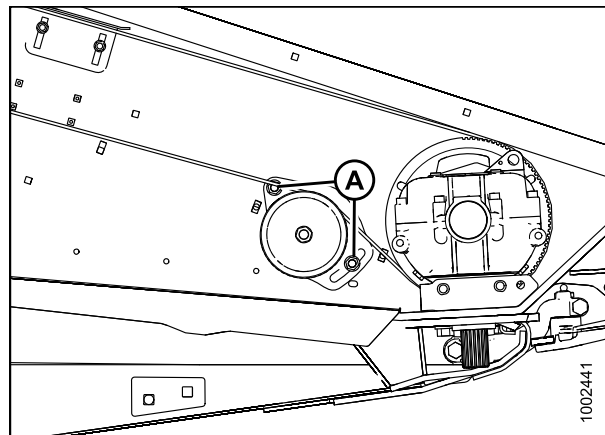


Figure 6.84

MAINTENANCE AND SERVICING

4. Check the 'toe in' the knife drive pulley. Use a straight edge (A) across the face of the double pulley bolted to the knife drive pulley. Measure from the straight edge to the end panel in two places (B, C). Measurements 'B' and 'C' should be taken 39.4 in. (1000 mm) apart (D). Dimension at point 'C' should be 0.16 in. (4 mm) less than point 'B'. If not, then you will need to adjust the pulley.

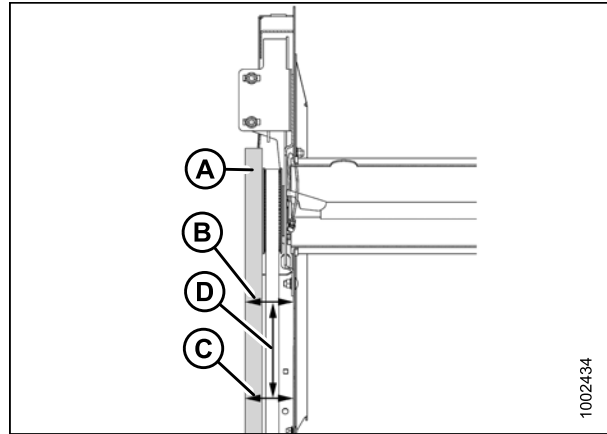


Figure 6.85

5. Loosen bolts (A) and adjust bolt (B) to move the knife drive pulley.

NOTE: Adjusting bolt (B) affects the fore-aft position of the drive pulley. Moving it forward will change the 'toe in', rearward will change the 'toe-out' dimension of the pulley.

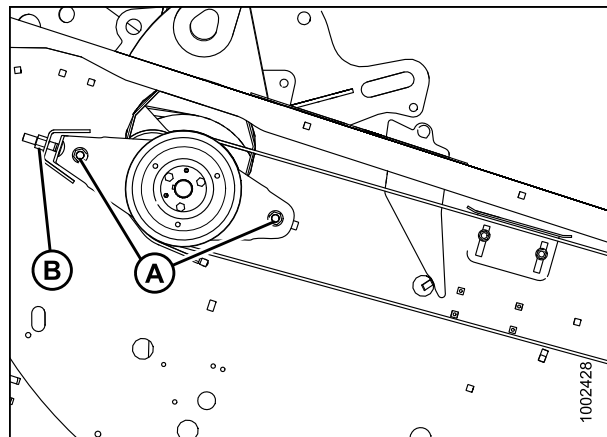


Figure 6.86

NOTE: The following is important to belt alignment. Follow instructions carefully.

6. This adjustment will 'toe in' the knife drive pulley. This will allow the pulley to be aligned after the belts are tensioned. Use a straight edge (A) across the face of the knife drive pulley.

Measure the difference between point 'B' and 'C'. Point 'C' should be 0.12 in. (3 mm) greater than point 'B'. (Dimension is measured from straight edge to end panel). Measurements 'B' and 'C' should be taken 39.4 in. (1000 mm) apart (D).

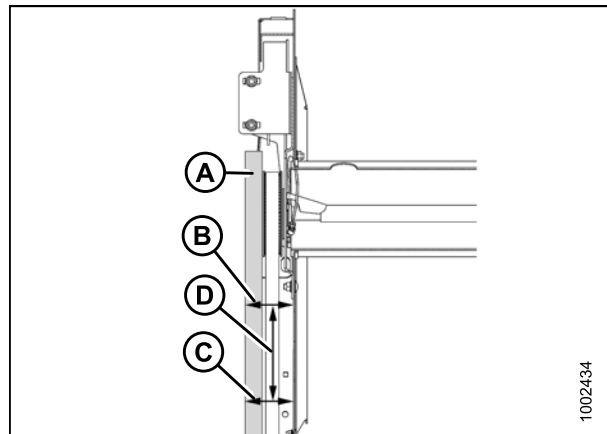


Figure 6.87

MAINTENANCE AND SERVICING

7. If more adjustment is required, adjust bolt (A). Check pulley alignment again.

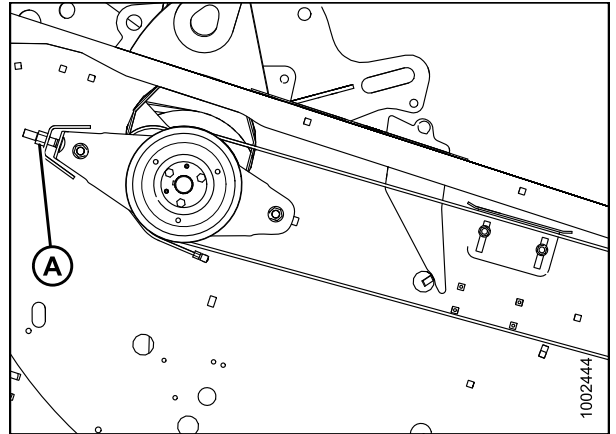


Figure 6.88

8. Tighten nuts (A) to retain the pulley setting.

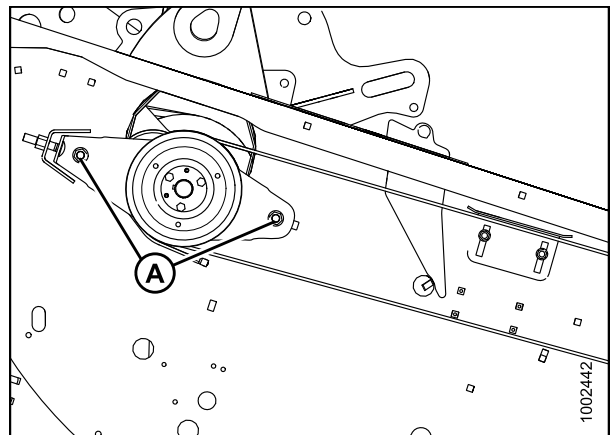


Figure 6.89

9. Rotate the bracket up using a long punch in slot (B) behind the pulley to obtain the proper belt tension. Tension is checked at mid span of the belt and should deflect 0.51 in. (13 mm) at 6 ft·lbf (24 N·m).
10. Tighten bolts (A) that secure the idler bracket to the end frame.

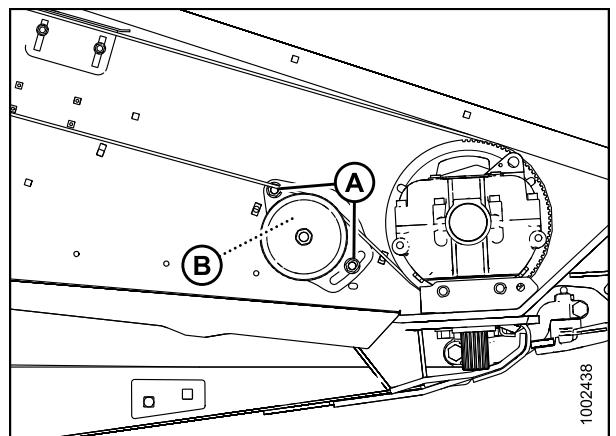


Figure 6.90

MAINTENANCE AND SERVICING

11. Check idler pulley alignment. Place a 12 in. (300 mm) straight edge on the idler pulley horizontally and vertically (B). Measure from the straight edge to the frame. Pulley should be parallel to the frame in both directions within 0.08 in. (2 mm). If pulley adjustment is required, use a deep socket and extension on nut (A) and adjust accordingly.

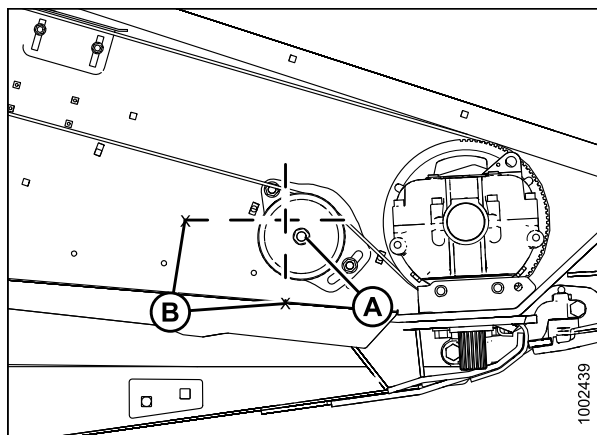


Figure 6.91

12. Recheck pulley alignment with a straight edge. Dimension at point 'C' should be 0.16 in. (4 mm) less than point 'B'. If not, go back to step 5., [Aligning Knife Drive Belt Pulley \(DK\) \(Right Hand\)](#), page 164 and readjust the fore-aft position of the drive pulley.

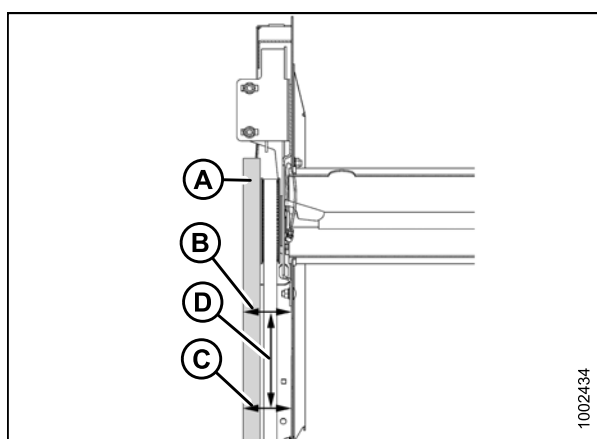


Figure 6.92

13. Loosen bolts (B) and adjust belt guide bracket (A). It should be set so there is 0.02–0.06 in. (0.5–1.5 mm) between the belt and the guide.

NOTE: If you have removed the belt, ensure the knives are timed. See [Double Knife Timed](#), page 151.

14. Close endshield. See [Closing Endshields](#), page 38.
15. Run up the header and ensure belt is tracking correctly.

NOTE: Belt should run completely on knife drive box sprocket and should not tend to ride up on flanges of driving sprocket or idler pulley. If it does not, then adjusting the idler pulley or the driving pulley may be needed.

16. Readjust tension of a new belt after a short run-in period (about 5 hours).

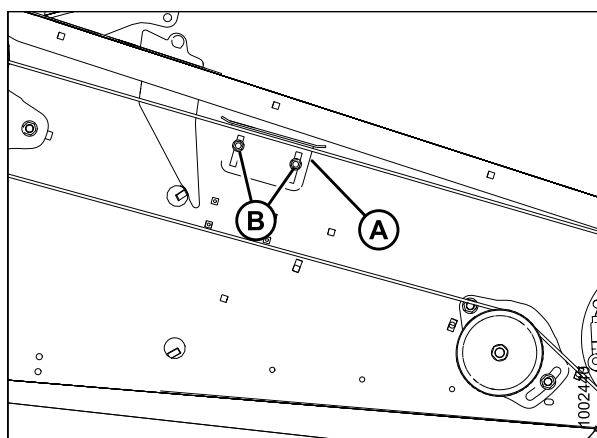


Figure 6.93

MAINTENANCE AND SERVICING

Adjusting Double Knife Timing

Double knife D65 Draper Headers, 40 ft. and smaller, require that knives are properly timed to move in opposite directions.

1. Open both endshields. See [Opening Endshields](#), page 37.
2. Remove the belt on the right hand side. See [Removing Knife Drive Belt \(Timed\) \(Double Knife\) \(Right Hand\)](#), page 159.
3. Rotate the left knife drive box driven pulley clockwise until the left knife (A) is at the center of the inboard stroke (moving towards center of header).

NOTE: Center stroke is when the knife sections are centered between guard points (B).

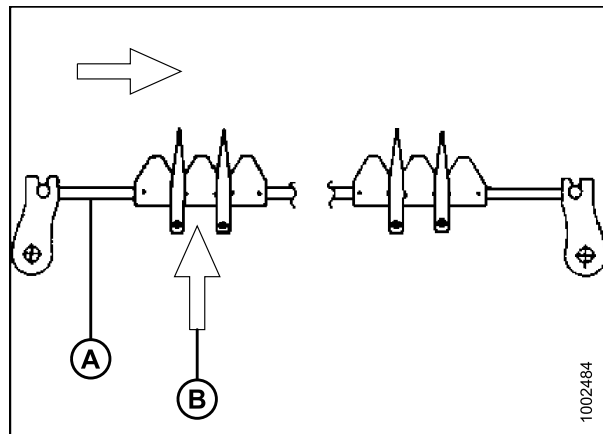


Figure 6.94

4. Rotate the right knife drive box pulley counterclockwise until the right knife (A) is at the center of the inboard stroke.

NOTE: Center stroke is when the knife sections are centered between guard points (B).

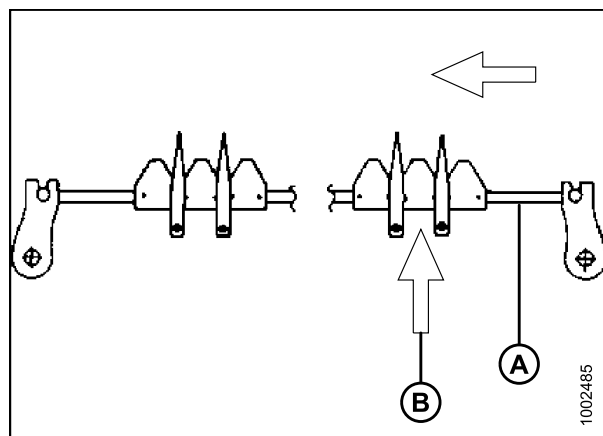


Figure 6.95

MAINTENANCE AND SERVICING

5. Install right-hand belt (A).

IMPORTANT

To maintain timing, knife drive box driver and driven pulleys must NOT rotate as the belt is tightened.

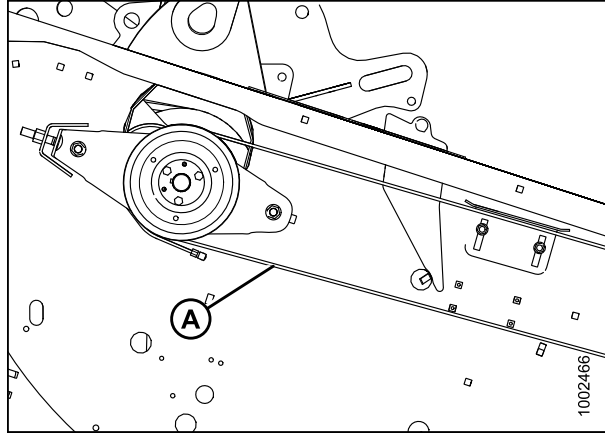


Figure 6.96

6. Rotate the idler pulley bracket (A) down. Loosen nut (B) and slide the idler pulley up by hand to remove most of the belt slack. Tighten nut (B).

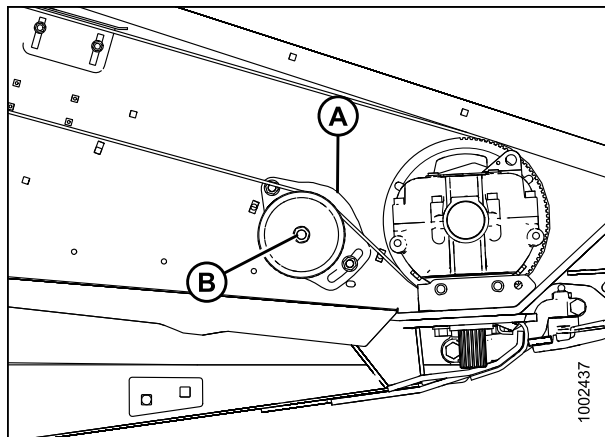


Figure 6.97

7. Rotate the bracket up using a long punch in slot (B) behind the pulley to obtain the proper belt tension. Tension is checked at mid span of the belt and should deflect 0.51 in. (13 mm) at 6 ft-lbf (24 N·m).
8. Tighten bolts (A) that secure the idler bracket to the end frame.
9. Check that the timing belts are properly seated in the grooves on both driver and driven pulleys.
10. Check for correct knife timing by rotating the drive slowly by hand and observe knives where they overlap at the centre of the header.

NOTE: If right knife 'leads' left knife, loosen right hand knife drive belt and rotate RIGHT SIDE driven pulley clockwise. If right knife 'lags' left knife, loosen right-hand knife drive belt and rotate RIGHT SIDE driven pulley counterclockwise.

11. Close both endshields. See [Closing Endshields, page 38](#).

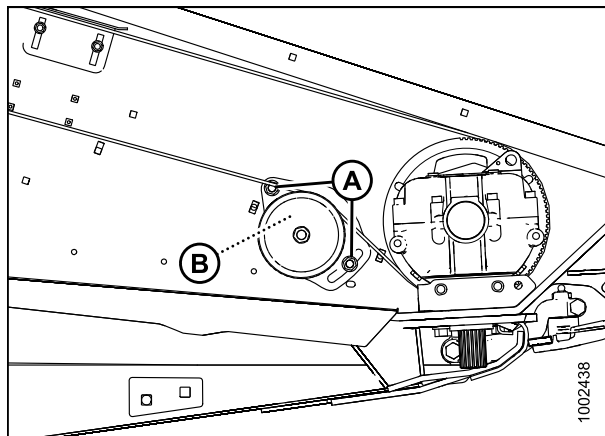


Figure 6.98

MAINTENANCE AND SERVICING

6.6.9 Knife Drive Box

The knife drive box drives the knife. It is belt driven. The knife drive box converts rotational motion into oscillating motion to drive the knife.



CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in [Section 6.1 Preparation for Servicing, page 111](#).

Mounting Bolts

Check the four knife drive box mounting bolts (A1, A2) torque after the first 10 hours operation and every 100 hours thereafter.

1. Tighten knife drive box side bolts (A1) first, then the bottom bolts (A2). Torque to 200 ft-lbf (271 N m).

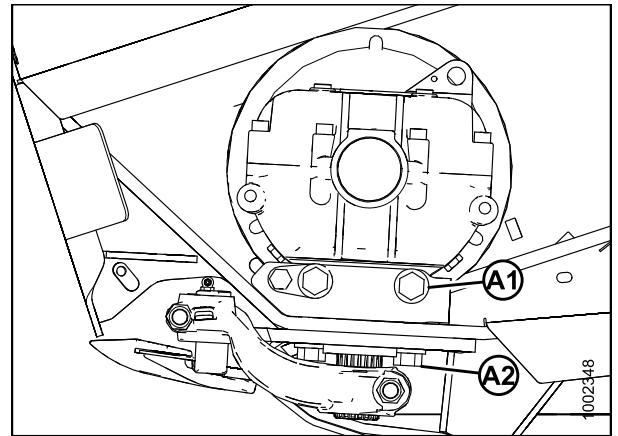


Figure 6.99: Check mounting bolts

Removing Knife Drive Box

Single and Untimed Double Knife

This procedure applies to single and untimed double knife drive box.

NOTE: Procedure is the same for right-hand side of the untimed double knife header.

1. Open endshield. See [Opening Endshields, page 37](#).
2. Loosen the two bolts (A) that secure the motor assembly to header endsheet.
3. Loosen the tension on the belt by turning the tensioning bolt (B) counterclockwise.

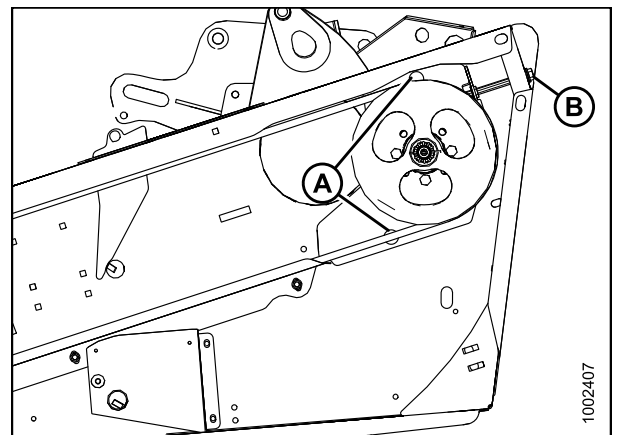


Figure 6.100

MAINTENANCE AND SERVICING

4. Open the access panel (A) inside the draper opening, just behind cutterbar.
5. Remove the knife drive belt.

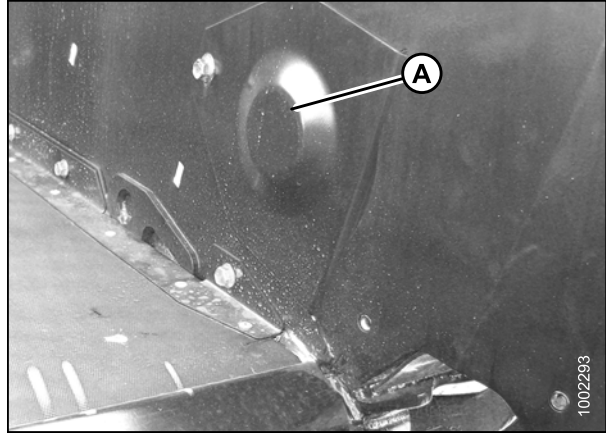


Figure 6.101

6. Clean area around the knifehead. Stroke knife to its outer limit and remove bolt (A).
7. Remove the grease zerk (B) from the pin.
8. Use a screwdriver or a chisel in slot (C) to spread clamp apart to remove knifehead pin.

NOTE: Groove in pin may be used to pry up on pin.

9. Push the knife assembly inboard until it is clear of the output arm.
10. Seal bearing in knifehead with plastic or tape.

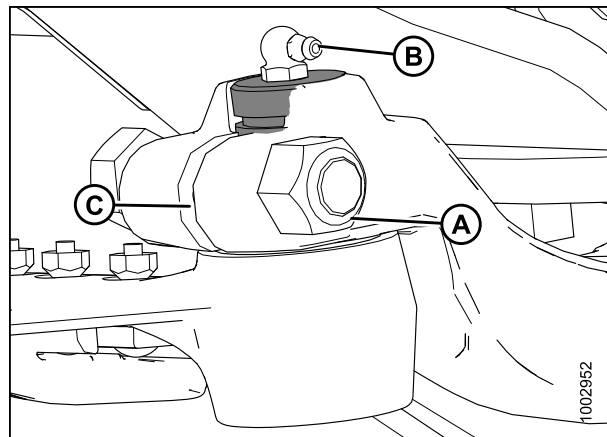


Figure 6.102

MAINTENANCE AND SERVICING

11. Remove bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
12. Remove the knife drive arm from the knife drive box output shaft.
13. Remove the four knife drive box mounting bolts (B, D).

NOTE: Do **NOT** remove bolt (C), this is factory set. It is used to position the knife drive box in the proper fore-aft position.

14. Remove knife drive box with pulley and place on a bench for disassembly.

CAUTION

Knife drive box with pulley weighs over 65 lbs (35 kg). Use care when removing or installing. Lug (L) can be used for lifting. If speed sensor is installed at this location you will need to remove it before using it for lifting.

15. For double knife headers, repeat procedure on RH side.

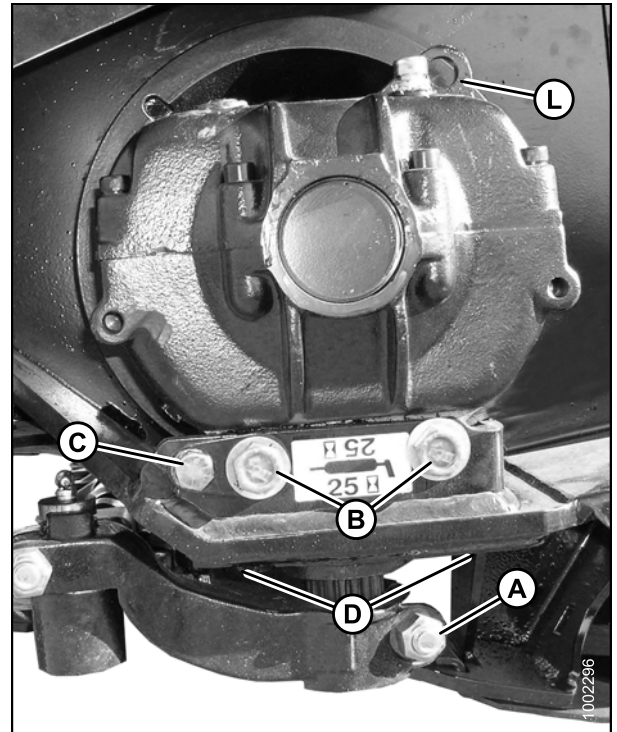


Figure 6.103

Double Knife Timed

Removing (LH) Knife Drive Box

1. Open LH endshield. See [Opening Endshields, page 37](#).
2. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
3. Loosen nut (B) on idler pulley and slide idler down to loosen belt.

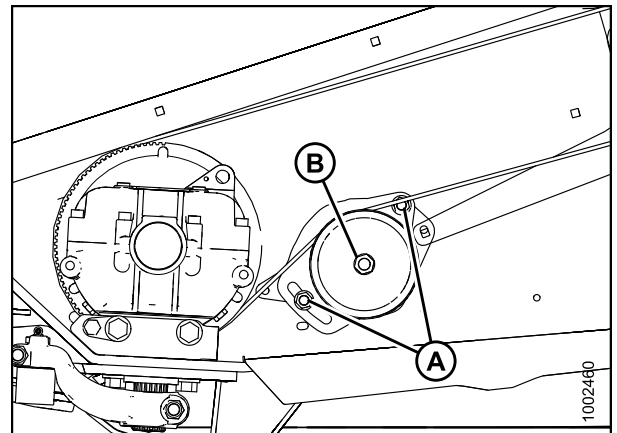


Figure 6.104

MAINTENANCE AND SERVICING

4. Open the access panel (A) inside the draper opening, just behind cutterbar.
5. Remove the knife drive belt.

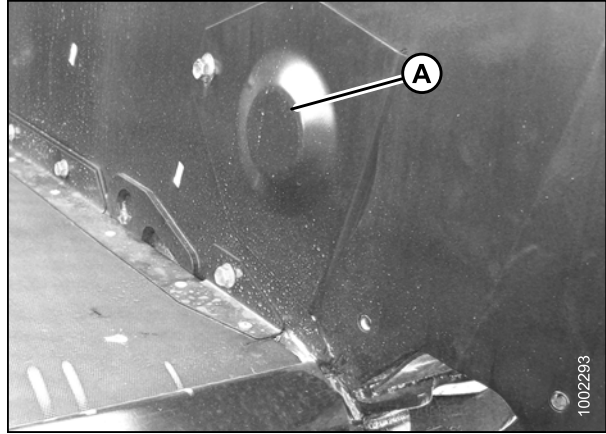


Figure 6.105

6. Clean area around the knifehead. Stroke knife to its outer limit and remove bolt (A).
7. Remove the grease zerk (B) from the pin.
8. Use a screwdriver or a chisel in slot (C) to spread clamp apart to remove knifehead pin.

NOTE: Groove in pin may be used to pry up on pin.

9. Push the knife assembly inboard until it is clear of the output arm.
10. Seal bearing in knifehead with plastic or tape.

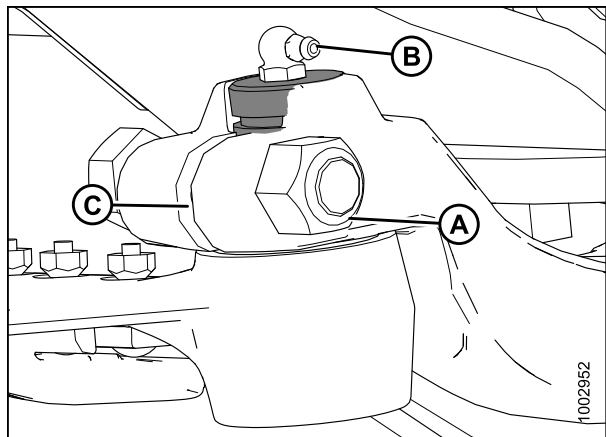


Figure 6.106

MAINTENANCE AND SERVICING

11. Remove bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
12. Remove the knife drive arm from the knife drive box output shaft.
13. Remove the four knife drive box mounting bolts (B, D).

NOTE: Do **NOT** remove bolt (C), this is factory set. It is used to position the knife drive box in the proper fore-aft position.

14. Remove knife drive box with pulley and place on a bench for disassembly.



CAUTION

Knife drive box with pulley weighs over 65 lbs (35 kg). Use care when removing or installing. Lug (L) can be used for lifting. If speed sensor is installed at this location you will need to remove it before using it for lifting.

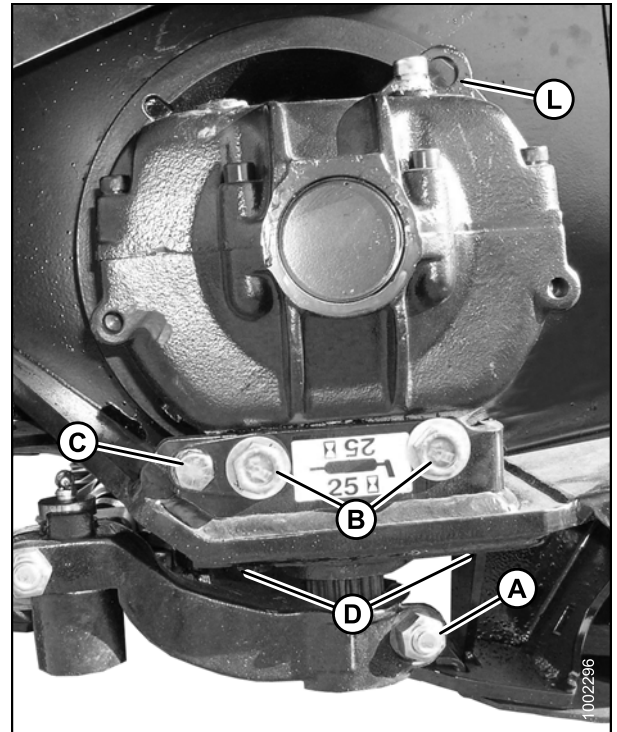


Figure 6.107

Removing (RH) Knife Drive Box

15. Open RH endshield. See [Opening Endshields, page 37](#).
16. Loosen two nuts (A) on belt idler bracket to relieve tension on belt.
17. Loosen nut (B) on idler pulley and slide idler down to loosen belt.

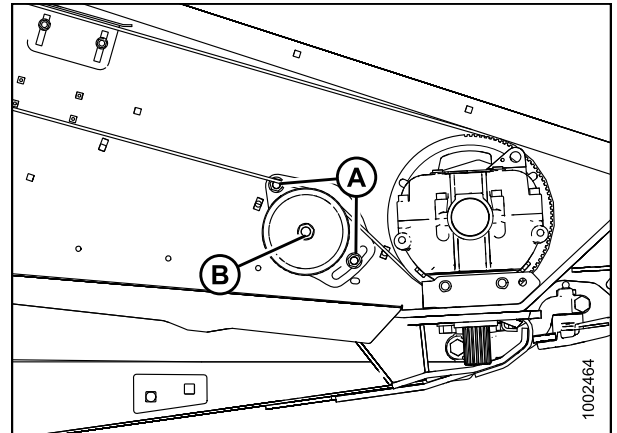


Figure 6.108

MAINTENANCE AND SERVICING

18. Open the access panel (A) inside the draper opening, just behind cutterbar.
19. Remove the knife drive belt.

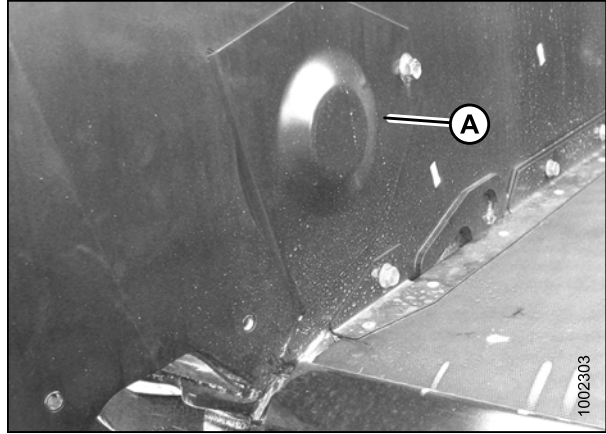


Figure 6.109

20. Clean area around the knifehead. Stroke knife to its outer limit and remove bolt (A).
21. Remove the grease zerk (B) from the pin.
22. Use a screwdriver or a chisel in slot (C) to spread clamp apart to remove knifehead pin.

NOTE: Groove in pin may be used to pry up on pin.

23. Push the knife assembly inboard until it is clear of the output arm.
24. Seal bearing in knifehead with plastic or tape.

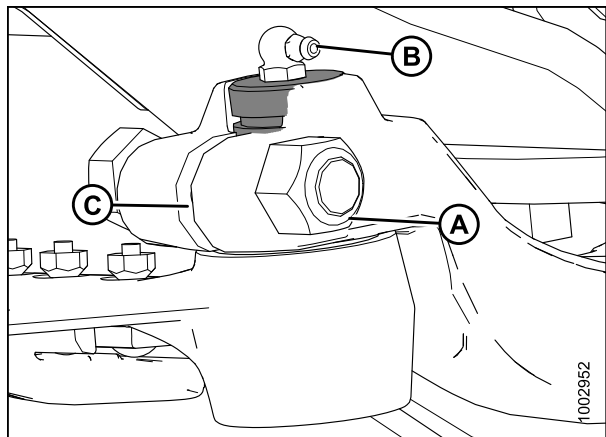


Figure 6.110

MAINTENANCE AND SERVICING

25. Remove bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
26. Remove the knife drive arm from the knife drive box output shaft.
27. Remove the four knife drive box mounting bolts (B, D).

NOTE: Do **NOT** remove bolt (C), this is factory set. It is used to position the knife drive box in the proper fore-aft position.

28. Remove knife drive box with pulley and place on a bench for disassembly.



CAUTION

Knife drive box with pulley weighs over 65 lbs (35 kg). Use care when removing or installing. Lug (L) can be used for lifting. If speed sensor is installed at this location you will need to remove it before using it for lifting.

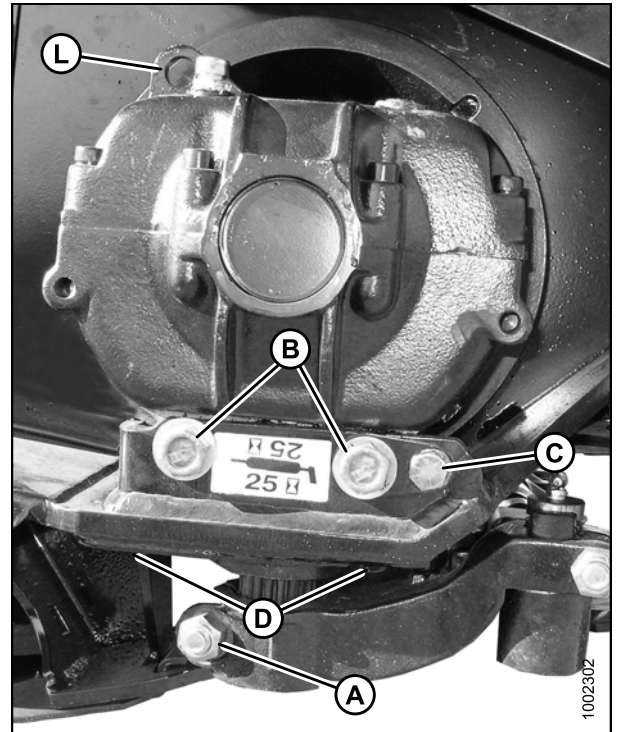


Figure 6.111

Removing Knife Drive Box Pulley

To remove knife drive box pulley, follow these steps:

1. Loosen and remove the knife drive box pulley clamping bolt (A) and nut (B) and remove knife drive box pulley (C).
2. Remove pulley using a three-jaw puller.

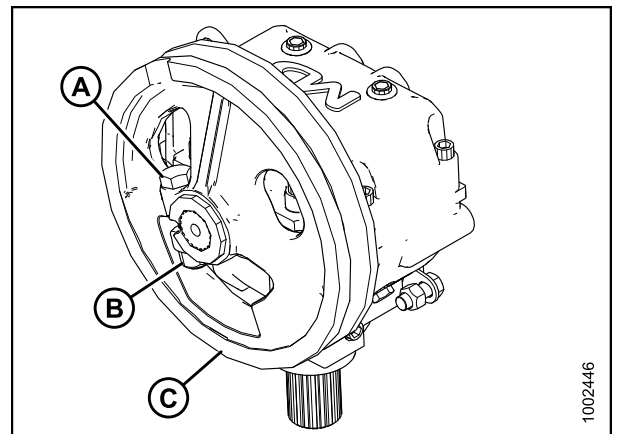


Figure 6.112

MAINTENANCE AND SERVICING

Installing Knife Drive Box Pulley

To install the knife drive box pulley, follow these steps:

1. Ensure splines and bores in pulley or drive arm are free of paint oil and solvents.
2. Apply Loctite® #243 adhesive (or equivalent) to spline. Apply in two bands (A) around shaft as shown, with one band at end of spline and one band approximately mid-way.
3. Install pulley (B) until flush with end of shaft.
4. Secure pulley with 5/8 in. X 3 in. hex head bolt with distorted thread NC lock nut and torque to 160 ft-lbf (217 N·m).

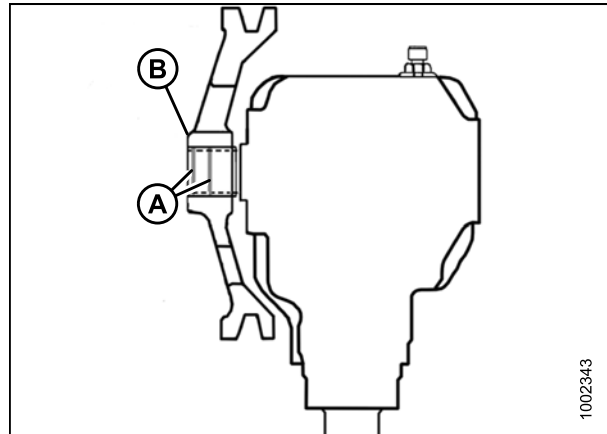


Figure 6.113: Pulley shown is for single knife

Installing Knife Drive Box

This procedure can be used for single and double knife headers.

NOTE: Before installing the knife drive box onto the header, install the pulley onto the knife drive box.

CAUTION

Knife drive box with pulley weighs over 65 lbs (35 kg). Use care when removing or installing. Lug (L) can be used for lifting. If speed sensor is installed at this location you will need to remove it before using it for lifting.

1. Place knife drive box into position on header mount, placing belt around pulley.
2. Install two 5/8 in. X 1.75 in. grade 8 hex head bolts (A) on the side and two 5/8 in. X 2.25 in. (B) on the bottom to mount knife drive box to frame.
3. Tighten knife drive box side bolts (A) first, then the bottom bolts (B), to ensure proper contact with vertical and horizontal mounting surfaces. Do **NOT** torque bolts at this time.

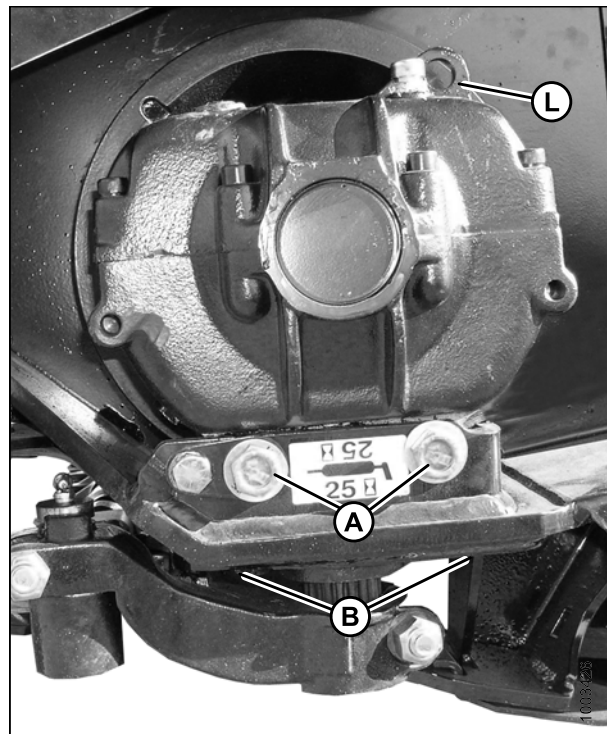


Figure 6.114

MAINTENANCE AND SERVICING

4. Apply Loctite® #243 to the output shaft in two bands as shown at (A).
5. Slide output arm (B) onto output shaft. Rotate pulley to ensure drive arm just clears frame on inboard stroke to ensure proper placement on splines.

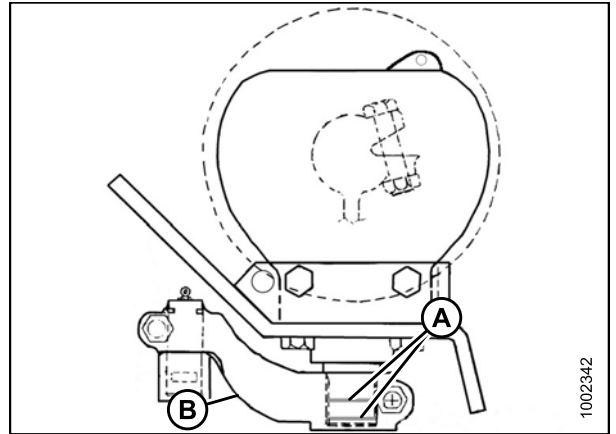


Figure 6.115

6. Position output arm (A) to farthest outboard position. Move output arm (A) up or down on splined shaft until it almost contacts knifehead (B). Spacing at (C) should be 0.010 in. (0.254 mm).

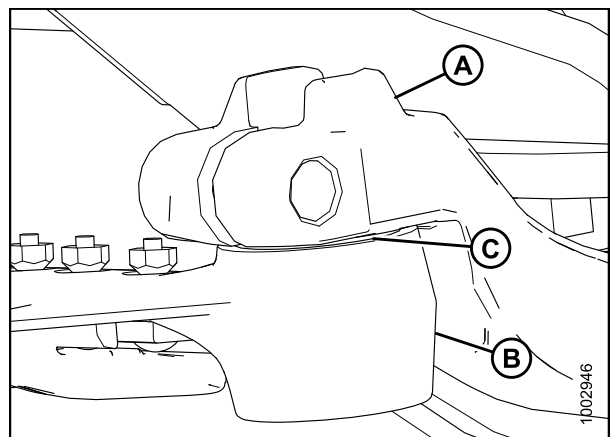


Figure 6.116

7. Torque output arm bolt (B) to 160 ft-lbf (217 N·m) to secure arm to knife drive output shaft.

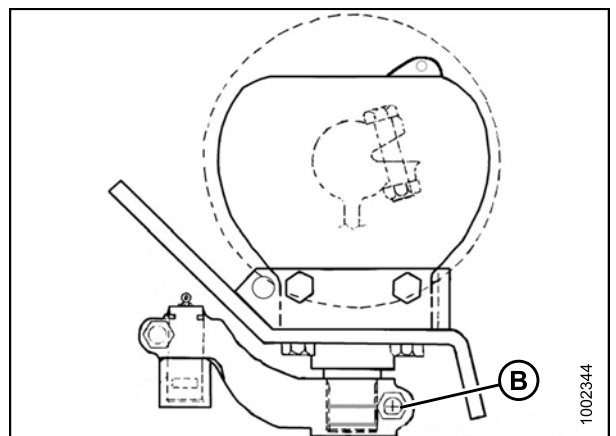


Figure 6.117

MAINTENANCE AND SERVICING

NOTE: For ease of removing or installing knifehead pin, remove grease zerk from pin.

8. Install knifehead pin (A) through the output arm and into the knifehead bearing cup.
9. Align groove (B) in knifehead pin 0.06 in. (1.5 mm) above (C). Install 5/8 in. X 3 in. hex head bolt (D) and torque to 160 ft-lbf (217 N·m).

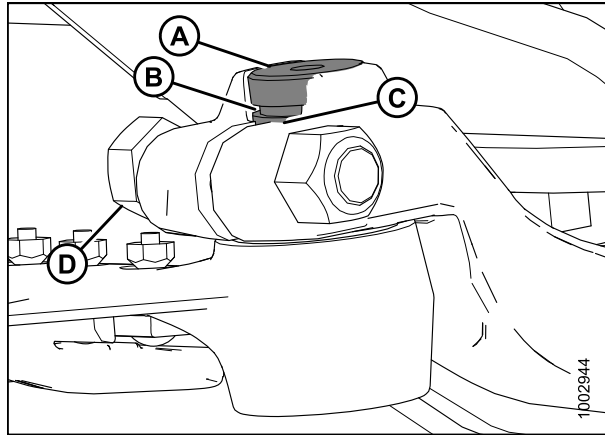


Figure 6.118

10. Install grease zerk (A) into the knifehead pin, turn the grease zerk for easy access.

IMPORTANT

Grease knifehead just enough to start a slight downward movement of knifehead. Over greasing will cause knife to heat at guards and cause undue loading.

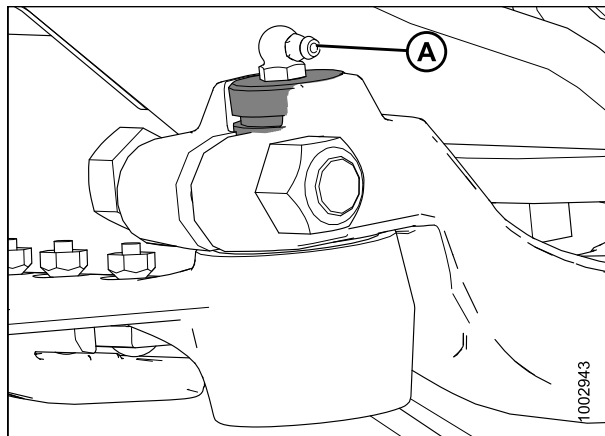


Figure 6.119

11. Align the knife drive box pulley with drive pulley. If adjustment is required, contact your MacDon Dealer.
12. Tighten knife drive box side bolts (A1) first, then the bottom bolts (A2). Torque to 200 ft-lbf (271 N·m).
13. Stroke the output arm to mid stroke, check and ensure there is no contact between the front of the guard and the knife back. If adjustment is required, contact your MacDon Dealer.
14. Install the knife drive belts onto the pulleys. For single and double knife headers, see [Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151](#) for tensioning instructions. For double knife headers that are timed, you will also be required to check the knife timing, see [Double Knife Timed, page 151](#) for timing instructions.
15. Close endshield. See [Closing Endshields, page 38](#).

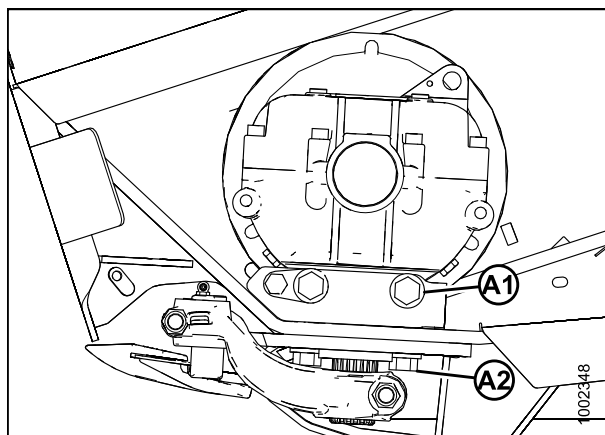


Figure 6.120

MAINTENANCE AND SERVICING

Changing Oil in Knife Drive Box

Change knife drive box lubricant after the first 50 hours of operation and every 1,000 hours (or 3 years) thereafter.

To change the oil in the knife drive box, follow these steps:

1. Raise header to allow a suitable container to be placed under the knife box drain to collect oil.
2. Open endshield(s). See [Opening Endshields, page 37](#).
3. Remove breather/dipstick (A) and drain plug (B).
4. Allow oil to drain.
5. Reinstall drain plug (B).
6. Add oil to knife drive box. See Section [6.3.2 Recommended Fluids and Lubricants, page 113](#) for quantity.
7. Close endshield(s). See [Closing Endshields, page 38](#).

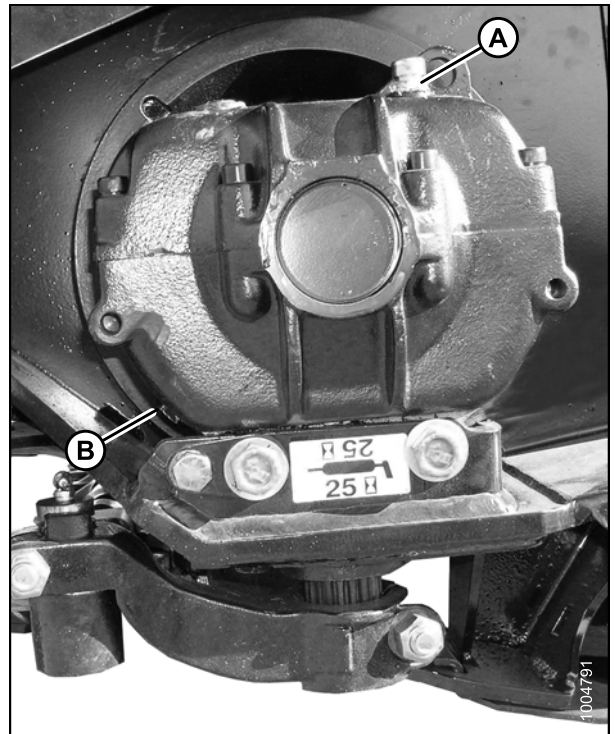


Figure 6.121

6.6.10 Knifehead Shield

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

It is recommended that the shield(s) be installed when harvesting severely lodged crop or any crop condition where plugging occurs at the knifehead cutout.

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

IMPORTANT

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

MAINTENANCE AND SERVICING

Installing Knifehead Shield

The knifehead shield is supplied in flattened form and can be bent to suit installation on pointed or stub guard cutterbars and on double-knife headers. Shields are slightly different depending on header size and guard configuration. Ensure proper shield is used. See header parts catalog for proper replacement parts.

DANGER

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

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

WARNING

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

2. Engage reel arm locks.

CAUTION

Wear heavy gloves when working around or handling knives.

3. Place knifehead shield (A) against endsheet as shown. Orient the shield so that cutout matches profile of knifehead and/or hold-downs.
4. Bend shield along slit to conform to endsheet.
5. Align mounting holes and then install two 3/8 in. x 1/2 Torx® head bolts (B).
6. Snug up bolts just enough so that shield can be adjusted as close as possible to the knifehead.
7. Manually rotate knife drive box pulley to move knife and check for areas of contact between the knifehead and shield.
8. If required, adjust shield to avoid interference with the knife.
9. Tighten bolts.

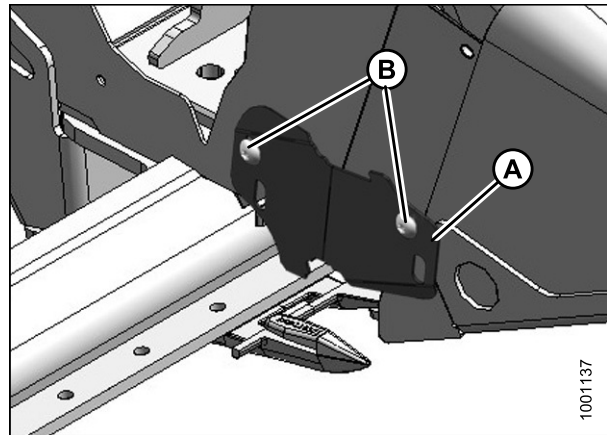


Figure 6.122

MAINTENANCE AND SERVICING

6.7 Header Drapers

The draper should be replaced or repaired if it is torn, missing slats, or cracked.

6.7.1 Removing Side Draper

To remove a side draper, follow these steps.

WARNING

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

1. Raise reel and engage reel safety props.
2. Raise header and engage safety props.
3. Stand in draper opening and move draper until draper joint is in work area.

NOTE: Deck can also be shifted towards center to provide opening at endsheet.

4. Release tension on the draper. Refer to Section [6.7.3 Adjusting Side Draper Tension](#), page 182.
5. Remove nuts (A) and tube connectors (B) at draper joint.
6. Pull draper from deck.

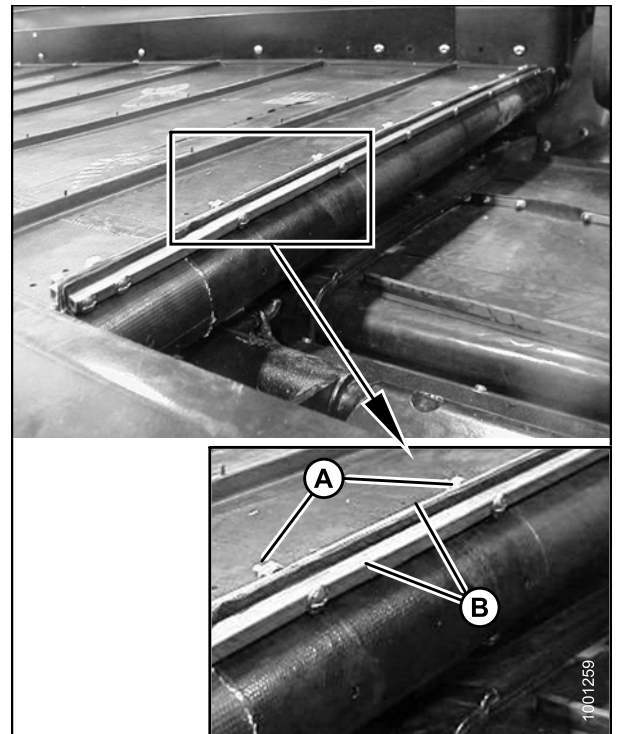


Figure 6.123

MAINTENANCE AND SERVICING

6.7.2 Installing Side Draper

To install a header draper, follow these steps:

WARNING

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

1. Insert draper into deck at outboard end, under the rollers. Pull draper into deck while feeding it at the end.
2. Feed in the draper until it can be wrapped around the drive roller.
3. Similarly, insert the other end into the deck over the rollers. Pull draper fully into the deck.
4. Attach ends of draper with tube connectors (B).
5. Install screws (A) with heads facing the center opening.
6. Adjust tension. Refer to Section [6.7.3 Adjusting Side Draper Tension](#), page 182.



Figure 6.124

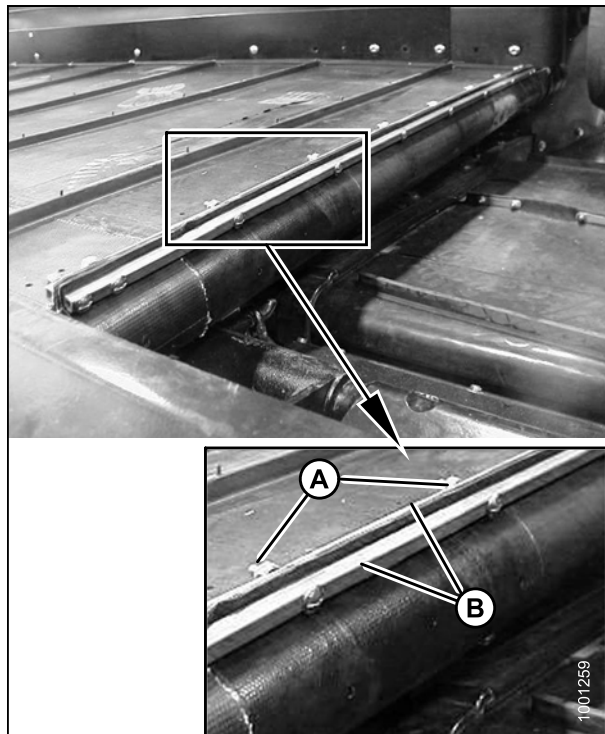


Figure 6.125

6.7.3 Adjusting Side Draper Tension

To adjust the header draper tension, follow these steps:

1. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller and that idler roller is between the guides.

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2. To tighten, turn bolt (A) clockwise. The white indicator bar (B) will move inboard, indicating that draper is tightening. Tighten until bar is about halfway in window.
3. To loosen, turn bolt (A) counterclockwise. The white indicator bar (B) will move outboard, indicating that draper is loosening. Loosen until bar is about halfway in window.

IMPORTANT

To avoid premature failure of draper, draper rollers and/or tightener components, do NOT operate with tension set so that white bar is not visible. Also, to prevent draper from scooping dirt, ensure draper is tight enough that it does not sag below point where cutterbar contacts the ground.

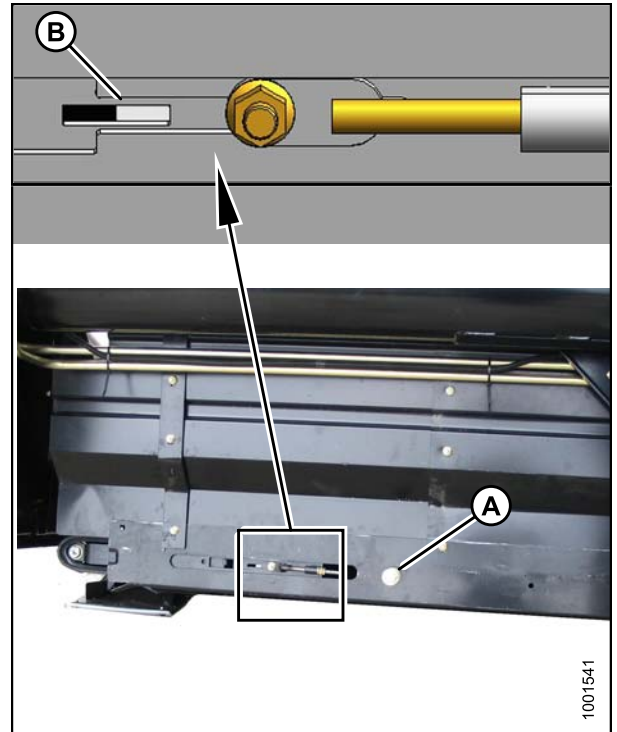


Figure 6.126

6.7.4 Removing Endless Draper

To replace an endless draper, follow these steps:



DANGER

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

1. Raise reel and engage reel props.
2. Raise header and install safety props.

MAINTENANCE AND SERVICING

- Turn bolt (A) counterclockwise to fully loosen draper. White indicator bar (B) will move outboard in direction of arrow to indicate that draper is loosening.

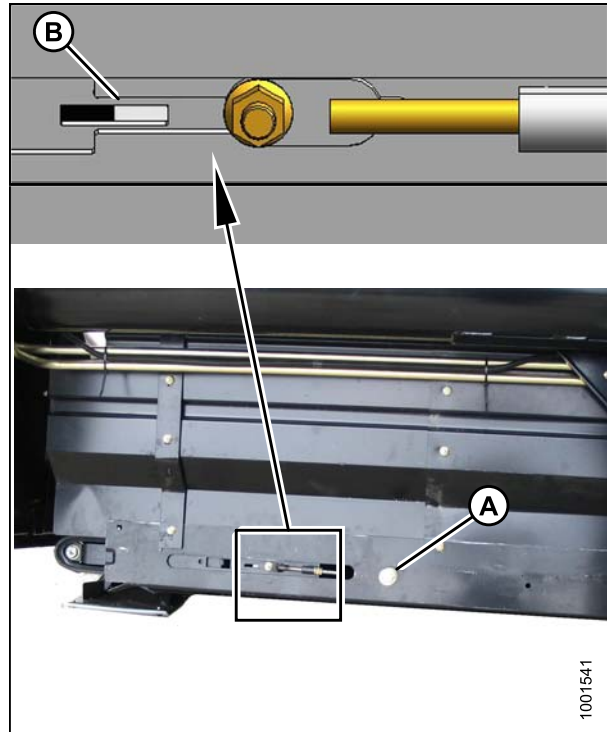


Figure 6.127

- Push draper away from cutterbar (as shown) to expose deck support (A).

NOTE: There are two or three supports, depending on header size.

- Remove two center nuts (B) at each support.
- Move deck away from cutterbar to disengage deck supports.

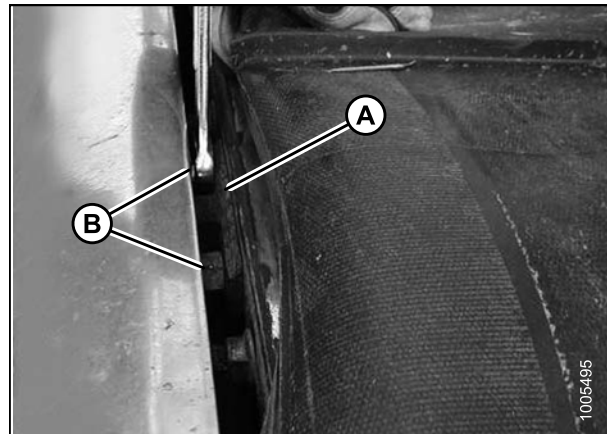


Figure 6.128

MAINTENANCE AND SERVICING

7. Insert a pry bar (A) in hole in deck located at approximately the deck mid-point, and lift deck clear of cutterbar.

NOTE: Pry bar should be of sufficient length to accommodate width of draper.

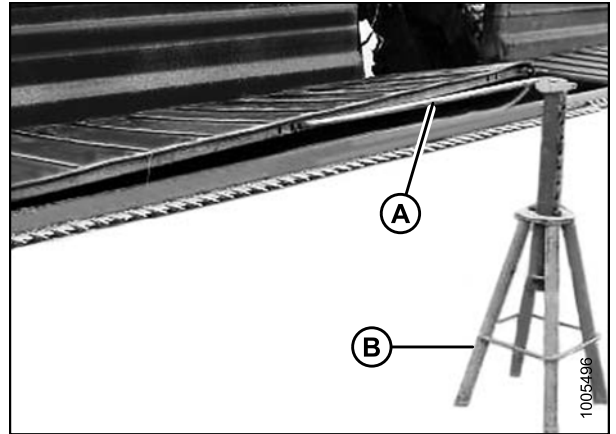


Figure 6.129

A - Pry bar

B - Stand

8. Support pry bar (A) on a stand (B) of suitable height.
9. Pull draper off deck onto pry bar.
10. Remove stand, draper, and pry bar.

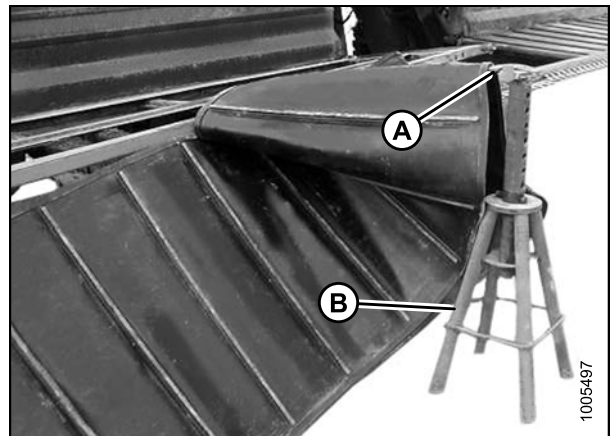


Figure 6.130

MAINTENANCE AND SERVICING

6.7.5 Installing Endless Draper

To install an endless draper, follow these steps:

DANGER

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

1. Insert a pry bar (A) through draper and locate bar in hole in deck located at approximately the deck mid-point.

NOTE: Pry bar should be sufficient length to accommodate width of draper.

2. Lift deck clear of cutterbar and support bar on a stand (B) of suitable height.
3. Slide draper onto deck.

4. Lift deck, remove stand (B), and lower deck into position. Remove pry bar (A).

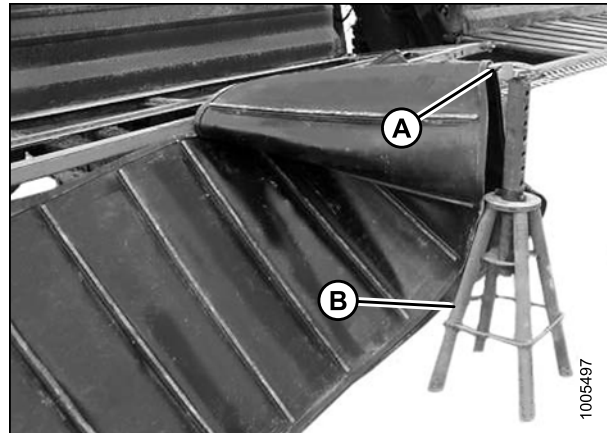


Figure 6.131

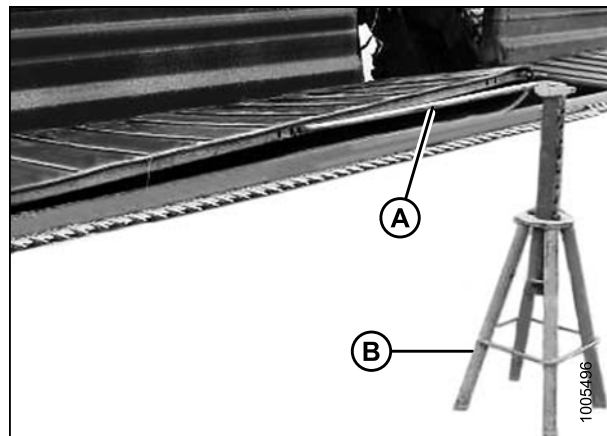


Figure 6.132

MAINTENANCE AND SERVICING

5. Line-up deck supports (A) with bolts in deck.
6. Move deck towards cutterbar to engage deck supports.
7. Install nuts (B) and tighten.
8. Adjust draper tension. Refer to Section [6.7.3 Adjusting Side Draper Tension](#), page 182

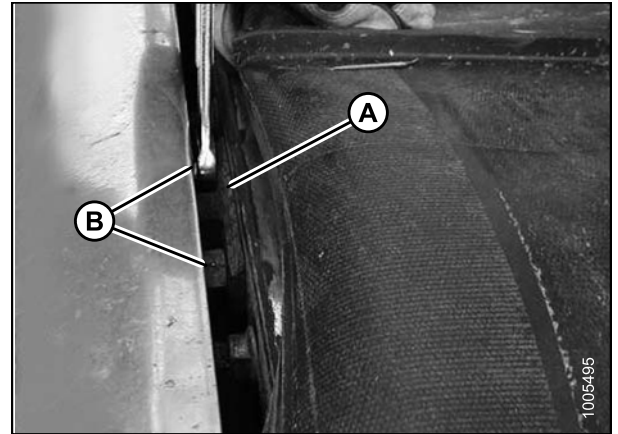


Figure 6.133

6.7.6 Adjusting Header Draper Tracking

Each draper deck has one fixed roller and one spring-loaded roller. The spring-loaded roller is located at the same end of the deck as the draper tensioner. Both rollers can be aligned by adjuster rods so that the draper tracks properly on the rollers.



CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section [6.1 Preparation for Servicing](#), page 111.

If the draper is tracking incorrectly, make the following adjustments to the rollers:

Table 6.13 Header Draper Tracking

Tracking	At location	Adjustment	Method
Backward	Drive Roller	Increase 'X'	Tighten nut (C)
Forward		Decrease 'X'	Loosen nut (C)
Backward	Idler Roller	Increase 'Y'	Tighten nut (C)
Forward		Decrease 'Y'	Loosen nut (C)

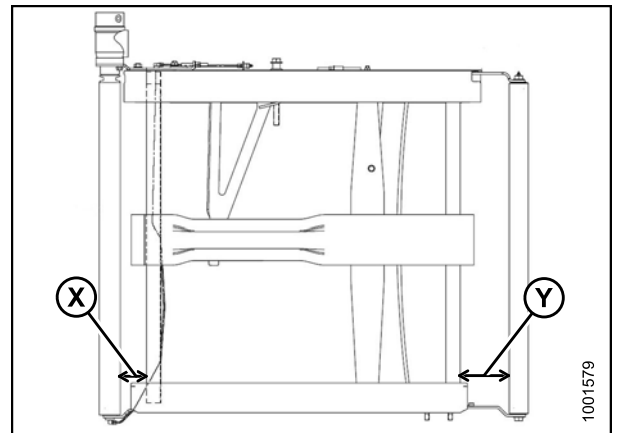


Figure 6.134: Adjustment location

MAINTENANCE AND SERVICING

1. Adjust the **drive** roller 'X' (shown in Figure 6.134: [Adjustment location, page 187](#)) by loosening nuts (A), jam nut (B) on adjuster rod and turning the adjusting nut (C).

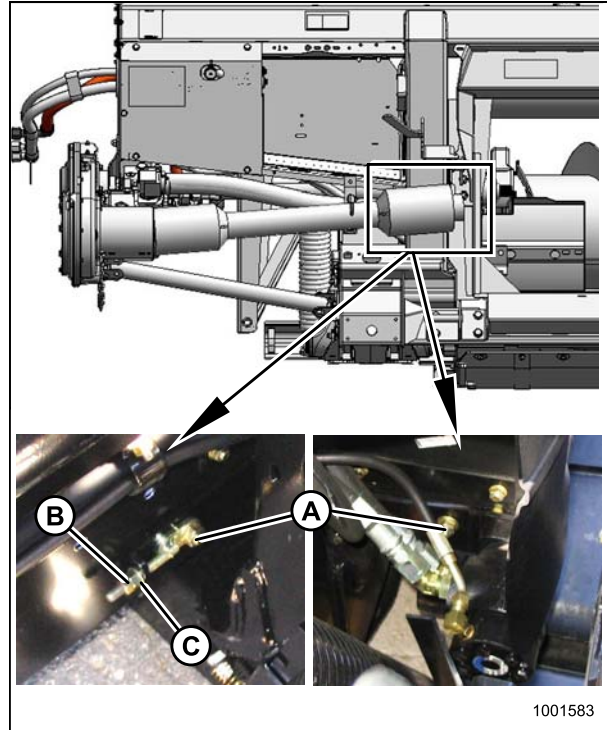


Figure 6.135: Adjust LH drive roller 'X'

A - Nuts B - Jam nut C - Adjusting nut

2. Adjust the **idler** roller 'Y' (shown in Figure 6.134: [Adjustment location, page 187](#)) by loosening nut (A), jam nut (B) on adjuster rod and turning adjusting nut (C).
3. If the draper will **NOT** track at the idler roller end, the drive roller is likely not square to the deck. Adjust the drive roller and then readjust the idler.

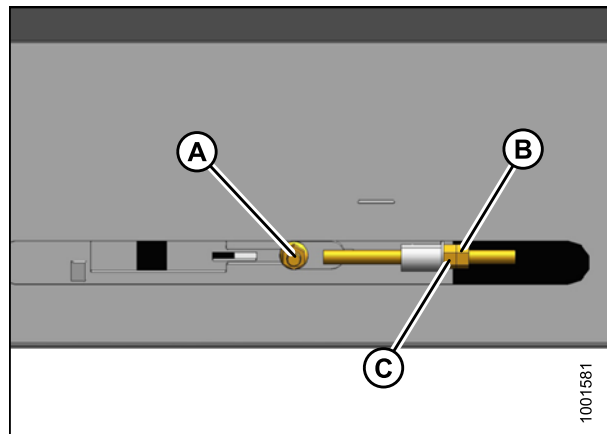


Figure 6.136: Adjust LH idler roller 'Y'

A - Nut B - Jam nut C - Adjusting nut

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6.7.7 Adjusting Deck Height

To prevent material from entering drapers and cutterbar, maintain deck height so that draper runs just below cutterbar with maximum 1/32 in. (1 mm) gap, or with draper deflected down slightly (up to 1/16 in. [1.5 mm]) to create a seal.

NOTE: Measurement is at supports with header in working position and decks slid fully ahead.



WARNING

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



DANGER

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

To adjust deck height, follow these steps:

1. Loosen tension on draper. See Section 6.7.3 [Adjusting Side Draper Tension](#), page 182.
2. Lift draper up at front edge past cutterbar.
3. Loosen two lock nuts (A). **ONE HALF TURN ONLY** on deck support (B).

NOTE: The size of the header will determine how many supports there are. single reel 15–30 ft. = 4, double reel: 30–40 ft. = 8

4. Tap deck (C) to lower deck relative to supports to achieve setting recommended above. Tap support (B) using a punch to raise deck relative to support.

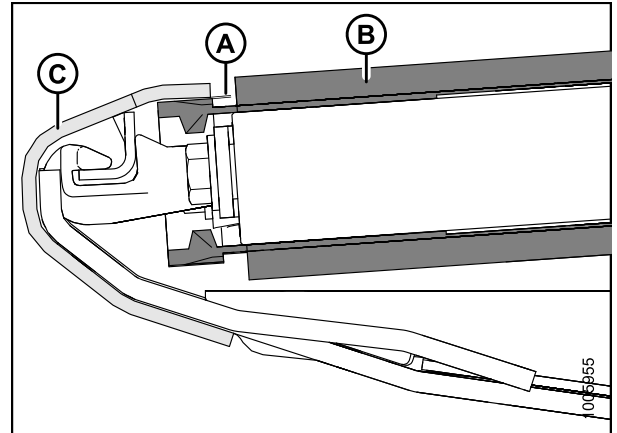


Figure 6.137: Draper removed for clarity

Dimension A - maximum 1/32 in. (1 mm) gap or with draper deflected down slightly up to 1/16 in. (1.5 mm) to create a seal.

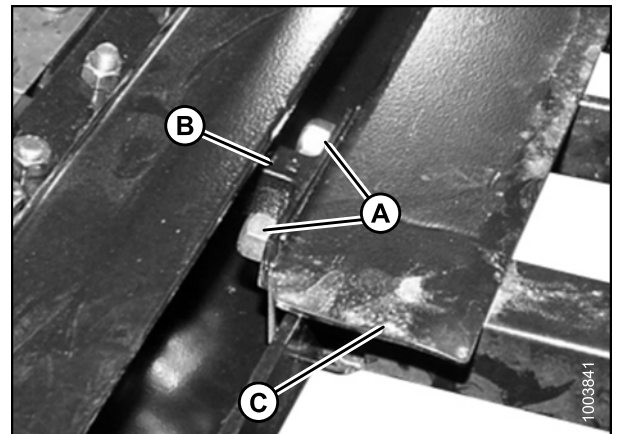


Figure 6.138: Draper removed for clarity

A - Lock nuts

B - Deck support

C - Deck

MAINTENANCE AND SERVICING

5. Tighten deck support hardware (B).
6. Check dimension (A) again it should be set to 5/16–3/8 in. (8–9 mm).
7. Tension draper. See Section 6.7.3 [Adjusting Side Draper Tension](#), page 182.

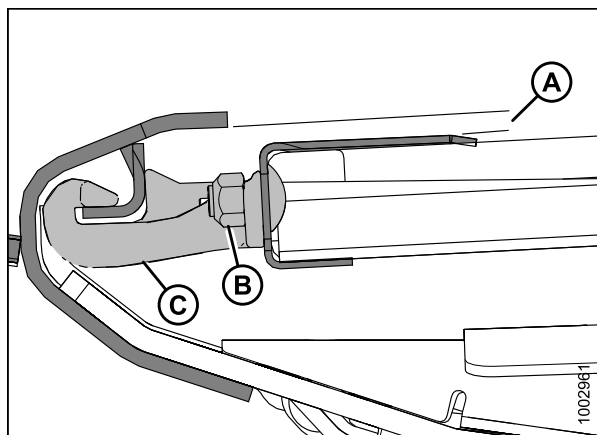


Figure 6.139: Draper removed for clarity

Dimension: A - 5/16-3/8 in. (8-9 mm)

B - Lock nut

C - Deck support

6.7.8 Draper Roller Maintenance

The draper rollers have non-greaseable bearings. The external seal should be checked every 200 hours (and more frequently in sandy conditions) to obtain the maximum bearing life.

Side Draper Deck Idler Roller

Removing Side Draper Deck Idler Roller

1. Shut OFF header. Raise the reel until the safety props can be engaged, then raise the header until the combine safety prop can be engaged

NOTE: If draper connector is not visible on the header, engage the header until the connector on the side you are working is visible.

2. On the back of the draper deck on both end of the header, there is a bolt for tensioning the draper. Locate bolt (A) on the side you will be changing, turn bolt counterclockwise to loosen draper. Once bolt is loose, push the roller assembly inboard, this will ensure the draper is loose.
3. Uncouple the connector slat that joins the draper together.

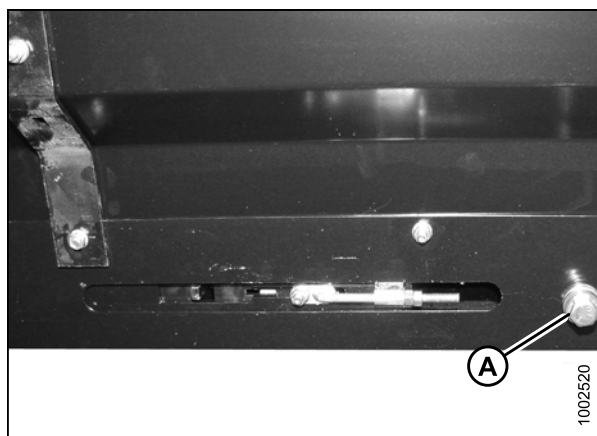


Figure 6.140

MAINTENANCE AND SERVICING

- Slide idler roller assembly (A) out of the draper deck (B) channels.

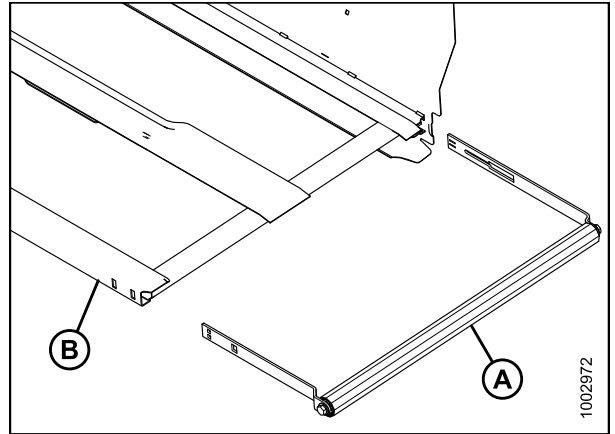


Figure 6.141

- Remove the two end bolts (A) that hold the roller to the idler arms.
- Remove the seal (B).
- Use a slide hammer to remove bearing (C) from the roller.

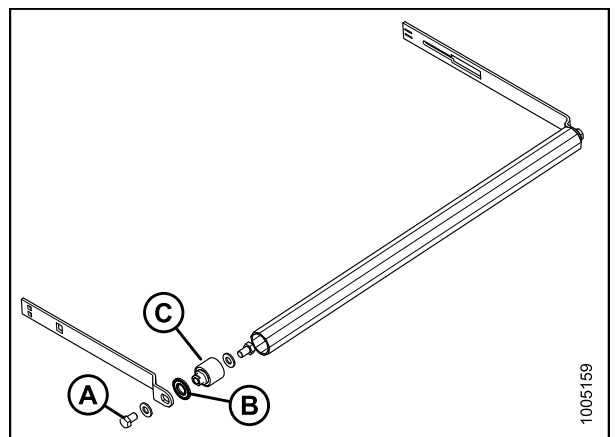


Figure 6.142

Installing Side Draper Deck Idler Roller

- Install the idler roller (A) into the channels on the feed deck (B).
- Connect the ends of the draper together with the connector slat.

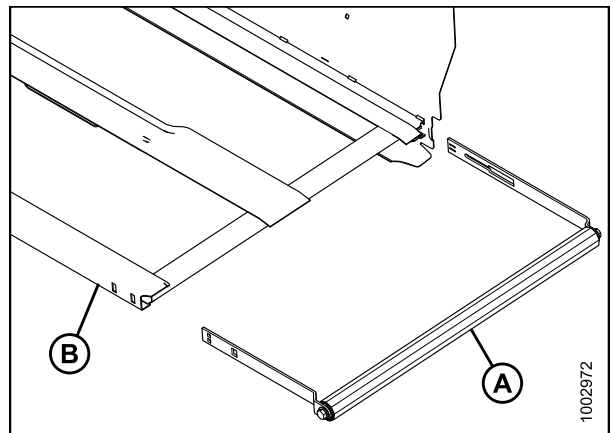


Figure 6.143

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3. Tension the draper, locate bolt (A) and follow the directions on the decal for proper draper tensioning.
4. Disengage the reel safety props and header safety props. Lower header to the ground and verify that the draper tracks correctly.

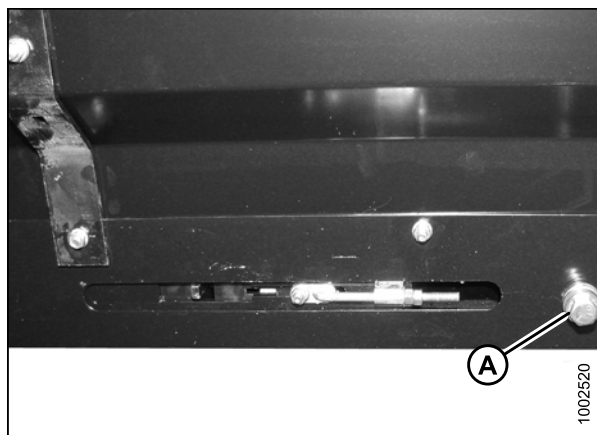


Figure 6.144

Side Draper Deck Drive Roller

Removing Side Draper Deck Drive Roller



Engage header safety props and reel props before working under header or reel.

1. Shut OFF header. Raise the reel until the safety props can be engaged, then raise the header until the combine safety props can be engaged.
2. On deck shift headers, position deck so drive roller is easily accessible.

NOTE: If draper connector is not visible on the header, engage the header until the connector on the side you are working is visible.

3. On the back of the deck assembly outboard end, there is a bolt for tensioning the draper, locate the bolt (A) on the side you will be changing and loosen the draper.
4. Uncouple the connector slat that joins the draper together.

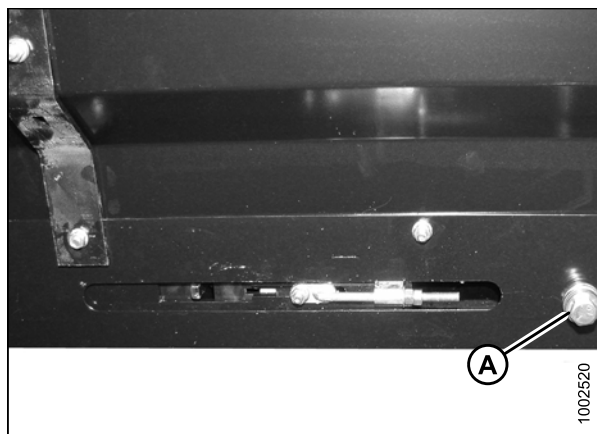


Figure 6.145

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5. Line up the setscrews with the hole (A) in the guard. Remove the two setscrews that hold the motor onto the drive roller.

NOTE: The setscrews are a 1/4 turn apart.

6. Remove the four bolts (B) that hold motor to the drive roller arm.

NOTE: You may need to remove the plastic shield to gain access to the top bolt.

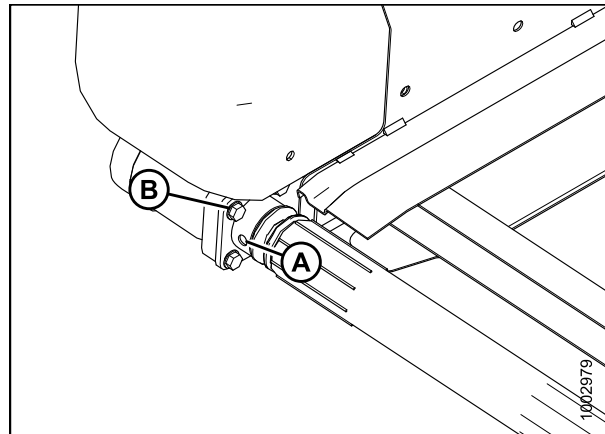


Figure 6.146

7. Remove bolt (A) that secures the other end of the drive roller (B) to the support arm.

8. Remove the drive roller (B).

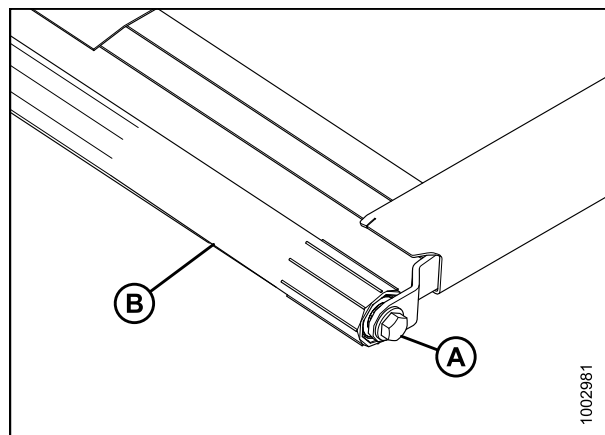


Figure 6.147

Installing Side Draper Deck Drive Roller

NOTE: Motor with two bolts shown during installation, may have four bolts.

1. Install the drive roller (B) between the roller support arms. Install bolt (A) that holds the drive roller to the arm closest to the cutterbar. Torque bolt to 70 ft-lbf (95 N-m).
2. Grease motor shaft and insert into the end of the drive roller.

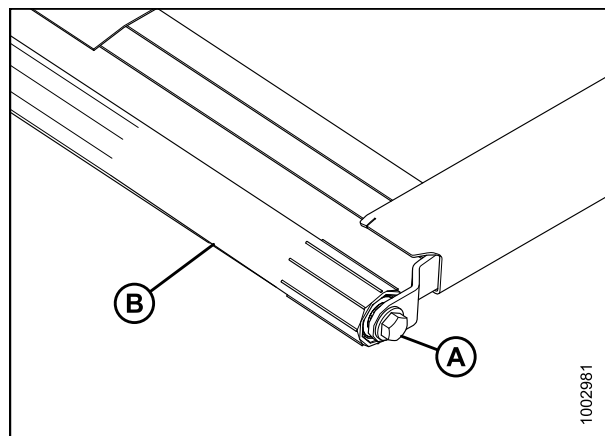


Figure 6.148

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- Secure motor to the roller support using four bolts (A). Torque to 20 ft-lbf (27 N·m).

NOTE: Tighten any loosened bolt and reinstall plastic shield, if removed.

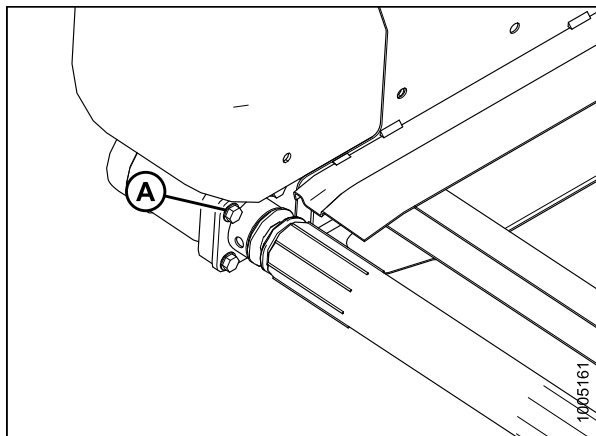


Figure 6.149

- Connect the ends of the draper together with the connector slat.
- Tension the draper, locate bolt (A), and follow the directions on the decal for proper draper tensioning.
- Disengage the reel and header safety props. Lower header to the ground and verify that the draper tracks correctly. If adjustment is required, see [Section 6.7.6 Adjusting Header Draper Tracking, page 187](#).

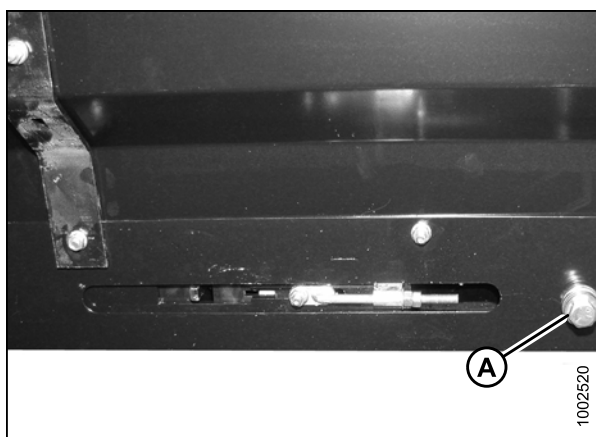


Figure 6.150

6.7.9 Draper Deflectors

D65 single knife headers are equipped with steel deflectors that are attached to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper.

In some cases, material hesitates on the deflectors and will not flow onto the draper. Replace the existing deflector with a narrower one, or rework the existing deflector.

Replacing Draper Deflectors

To replace a draper deflector, follow these steps:

- Raise reel fully and lower header to ground.
- Stop engine, remove key, and engage reel safety props.

MAINTENANCE AND SERVICING

3. Remove three carriage bolts (A) securing the aft end of existing deflector (B) to frame behind backsheet.

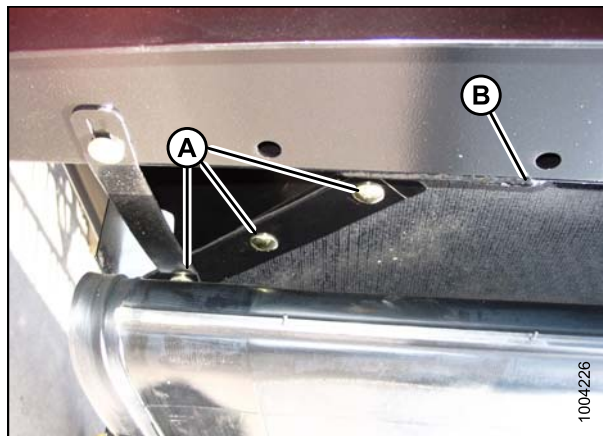


Figure 6.151: Remove carriage bolts

4. Drill out seven pop-rivets (A) along endsheet and remove deflector.

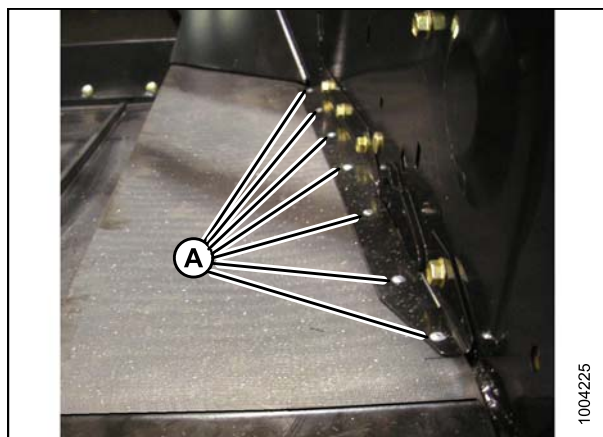


Figure 6.152: Remove deflector

5. Locate new deflector (MD #172381) (A) onto endsheet bracket and attach with seven pop-rivets (MD #18768) (B).
6. Reinstall three carriage bolts at aft end of deflector.

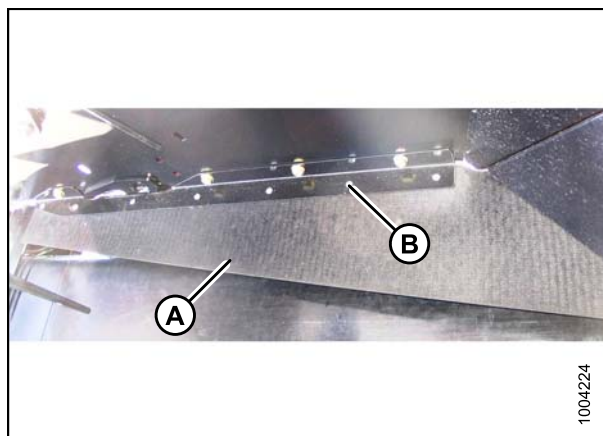


Figure 6.153: Install new deflector

MAINTENANCE AND SERVICING

6.8 Reel and Reel Drive

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, follow procedures in Section 6.1 Preparation for Servicing, page 111.

6.8.1 Reel Clearance to Cutterbar

The finger to guard/cutterbar clearances with reel fully lowered varies with header width and are as follows:

Header Width (Feet)	'X' +/- 0.12 in. (3 mm) at Reel Ends	
	Single Reel	Double Reel
15 ft.	3/4 in. (20 mm)	- - -
20 ft.		
25 ft.	1 in. (25 mm)	3/4 in. (20 mm)
30 ft.	1-3/4 in. (45 mm)	
35 ft.	2-3/8 in. (60 mm)	
40 ft.	- - -	

NOTE: The reel has been adjusted at the factory to provide more clearance at the center of the reel than at the ends ('frown') to compensate for reel flexing.

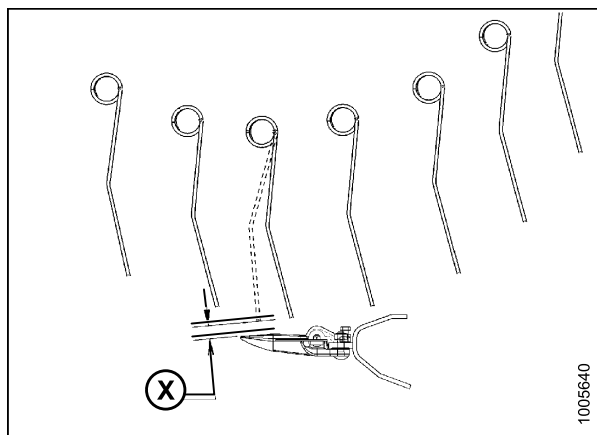


Figure 6.154

Measuring Reel Clearance

To measure the finger-to-guard/cutterbar clearance, follow these steps:

DANGER

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

1. Park header on level ground.

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2. Raise header, engage header safety props, and lower header onto stops or onto blocks (A) as shown.
3. Lower the reel fully.

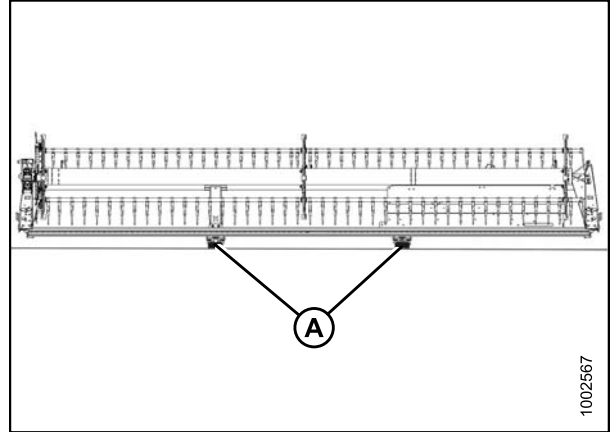


Figure 6.155: Block locations for single reel header

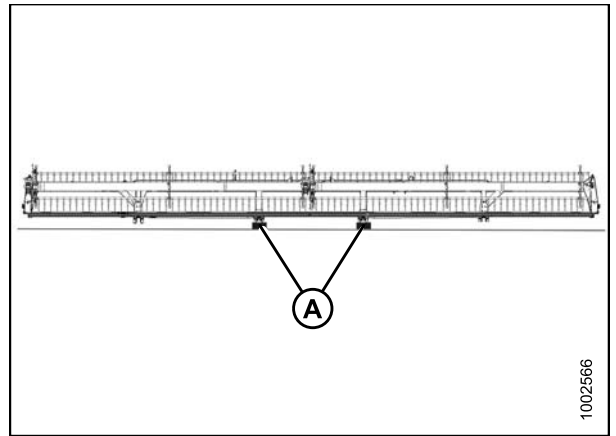


Figure 6.156: Block locations for double reel header

4. Adjust fore-aft reel position so that back end of cam disc is approximately between '4' and '5' on the arm decal.
5. Fully lower the reel.
6. Shut down engine. Remove key from ignition.

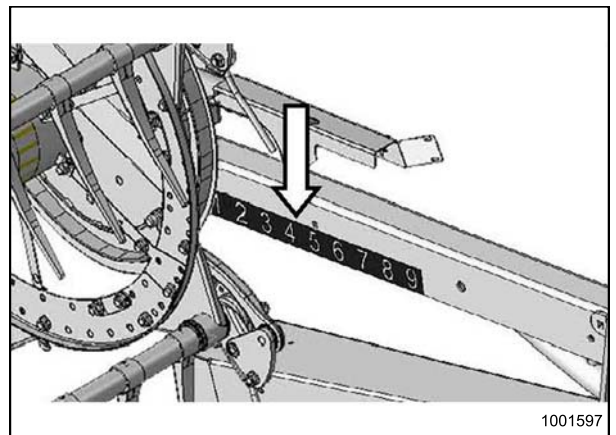


Figure 6.157: Arm decal

MAINTENANCE AND SERVICING

- On **SINGLE REEL** header, measure clearance in two places (A), at the end of each reel.

NOTE: The reel has been adjusted at the factory to provide more clearance at the center of the reel than at the ends ('frown') to compensate for reel flexing.

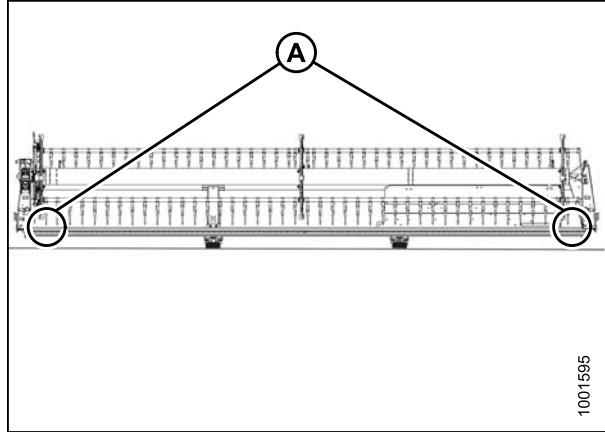


Figure 6.158: Single reel measurement locations

- On **DOUBLE REEL** header, measure clearance in four places (A), at the end of each reel.

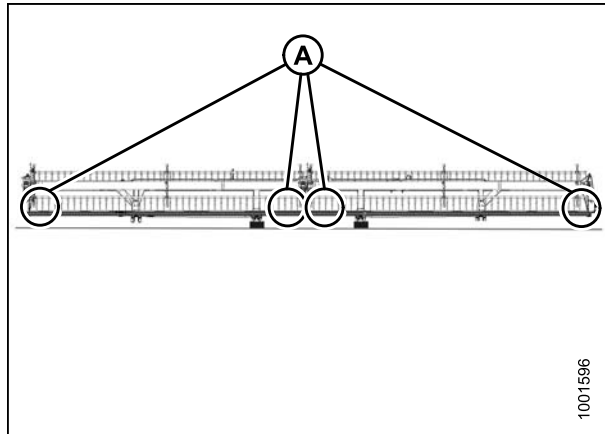


Figure 6.159: Double reel measurement locations

- Check all possible points of contact between points 'Y' and 'Z'. Depending on reel fore-aft position, minimum clearance can occur at guard tine, hold-down, or cutterbar.
- Refer to [Adjusting Reel Clearance, page 199](#) for adjustment procedure.

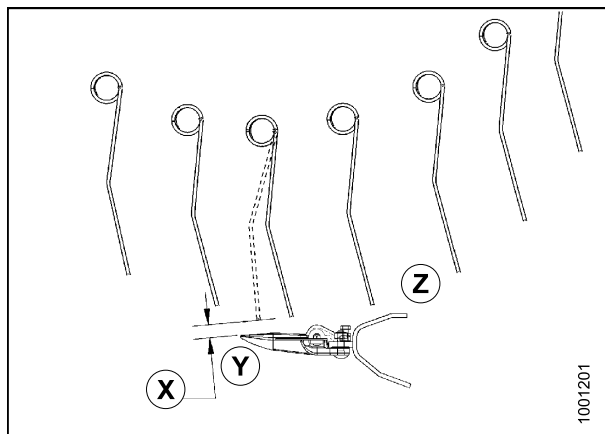


Figure 6.160

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Adjusting Reel Clearance

To adjust reel clearance, follow these steps.

DANGER

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

1. Raise header, engage header safety props, and lower header onto stops.
2. Lower reel fully.
3. Adjust outside arms to change clearance at ends of cutterbar as follows:
 - a. Loosen bolt (A).
 - b. Turn cylinder rod (B) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to decrease clearance/lower reel.
 - c. Tighten bolt (A).
 - d. Repeat at opposite side.
4. **DOUBLE REEL ONLY:** Adjust center arm to change clearance at center of cutterbar as follows:
 - a. Loosen nut (A).
 - b. Turn nut (B) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to decrease clearance/lower reel.
 - c. Tighten nut (A).

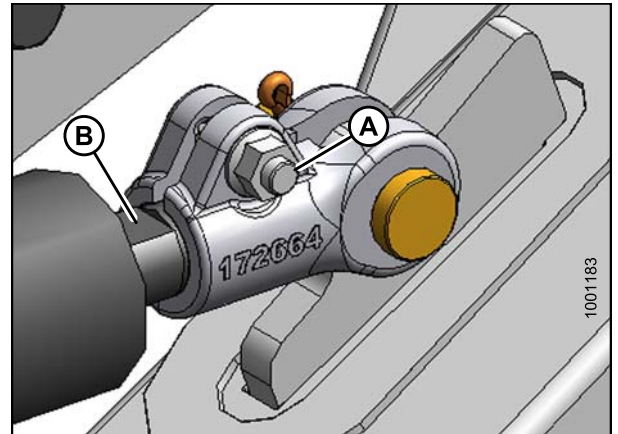


Figure 6.161

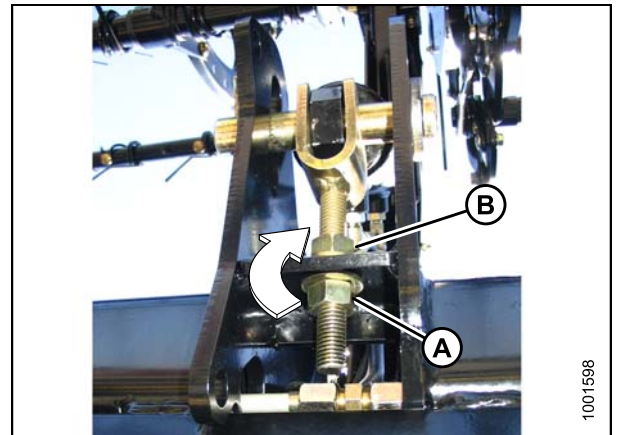


Figure 6.162: For double reel only - looking up at arm underside

6.8.2 Reel Frown

The reel has been adjusted at the factory to provide more clearance at the center of the reel than at the ends ('frown') to compensate for reel flexing.

The frown is adjusted by repositioning the hardware connecting reel finger tube arms to reel discs. The frown adjustment compensates for reel flexing.

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Adjusting Reel Frown

To adjust the reel frown, follow these steps:

IMPORTANT

The frown profile should be measured prior to reel disassembly for servicing so that the profile can be maintained after reassembly.

1. Position the reel over the cutterbar (between '4' and '5' on the gauge). This position provides adequate clearance at all reel fore-aft positions.
2. Record a measurement at each reel disc location for each reel tube.

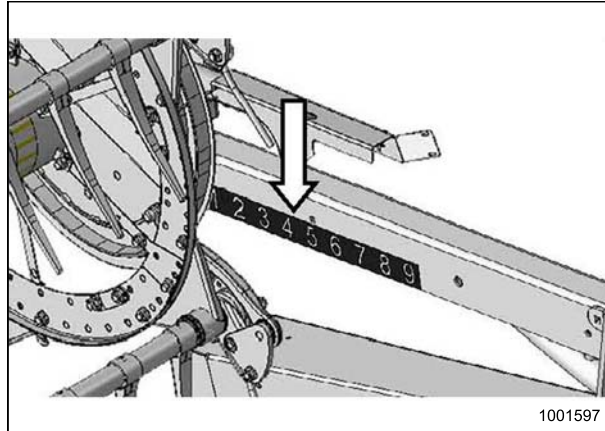


Figure 6.163: Arm decal

3. Adjust the profile as follows: Start with the reel disc set closest to center of header and proceed to the ends.
 - a. Remove bolts (A).
 - b. Loosen bolt (B) and adjust arm (C) until desired measurement is obtained between reel tube and cutterbar.

NOTE: Allow the reel tubes to find a natural curve and position the hardware appropriately.

- c. Reinstall bolts (A) in aligned holes and tighten.

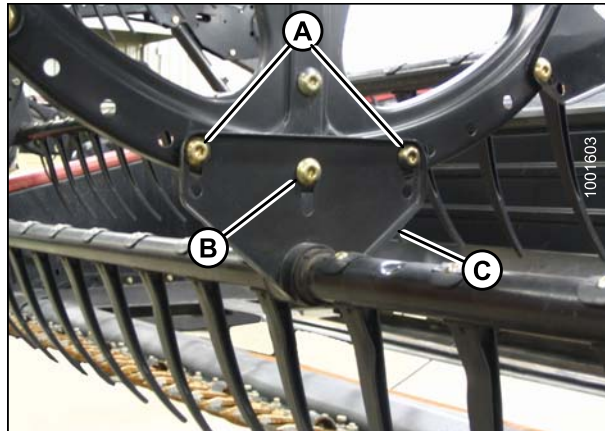


Figure 6.164

MAINTENANCE AND SERVICING

6.8.3 Reel Centering

The reel(s) should be centered between the endsheets.

Centering Double Reels

To center the reels, follow these steps:

1. Loosen bolt (A) on each brace (B).
2. Move forward end of reel center support arm (C) laterally as required to center both reels.
3. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

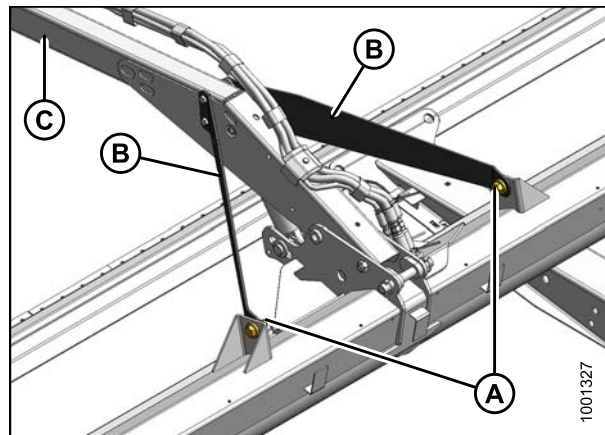


Figure 6.165: Double reel header

A - Bolts
B - Brace
C - Reel center support arm

Centering Single Reel

To center the reel, follow these steps:

1. Loosen bolt (A) on brace (B) at both ends of reel.
2. Move forward end of reel support arm (C) laterally as required to center reel.
3. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

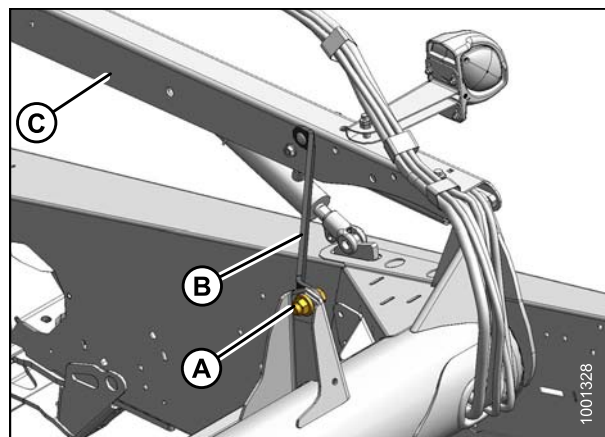


Figure 6.166: Single reel header

A - Bolt
B - Brace
C - Reel support arm

MAINTENANCE AND SERVICING

6.8.4 Reel Drive Chain

Adjusting Chain Tension

To adjust the chain tension on a high torque single and double reel header follow these steps:

1. Lower header and reel, shut down windrower, and remove key from ignition.
2. Remove the reel drive cover (A) as follows:
 - a. For **SINGLE REEL DRIVE**, remove the four bolts (B) that secure the cover (A) to the reel drive.

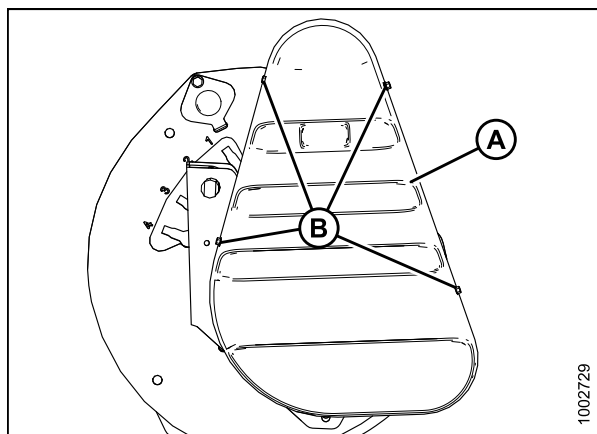


Figure 6.167: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, remove the six bolts (B) that secure the upper cover (A) and the three bolts (D) that secure the lower cover (C) to the reel drive.

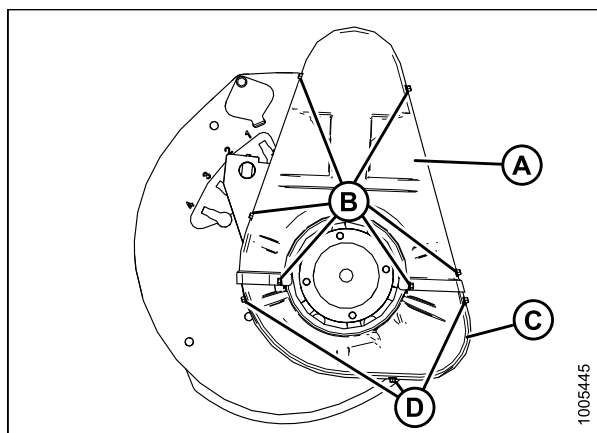


Figure 6.168: Double reel drive cover

3. Check tension on chain (A). It should be such that hand-force deflects the chain 1/8 in. (3 mm) at mid-span.

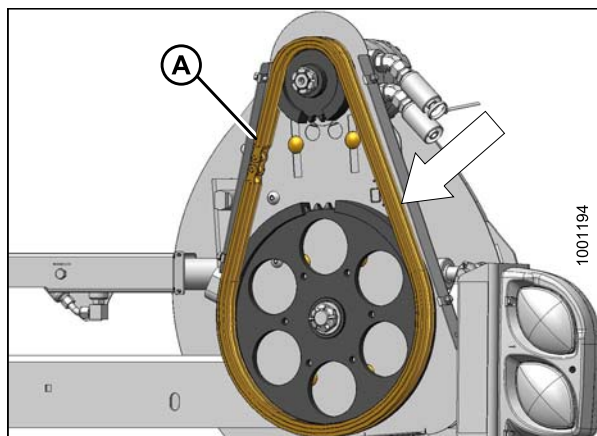


Figure 6.169

MAINTENANCE AND SERVICING

- 4. To adjust tension, loosen six nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

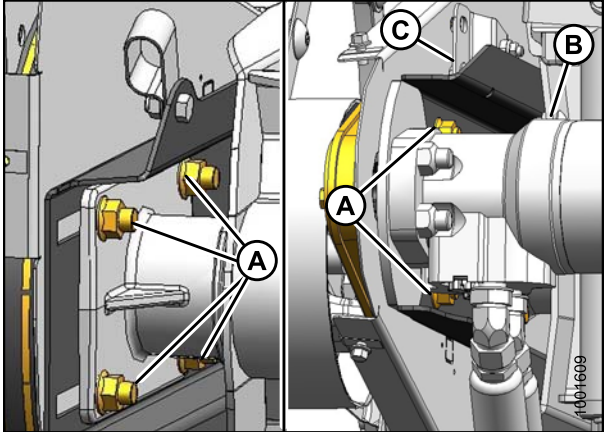


Figure 6.170

- 5. When right tension is achieved, tighten nuts (A) to 75 ft·lbf (102 N·m) on motor mount.

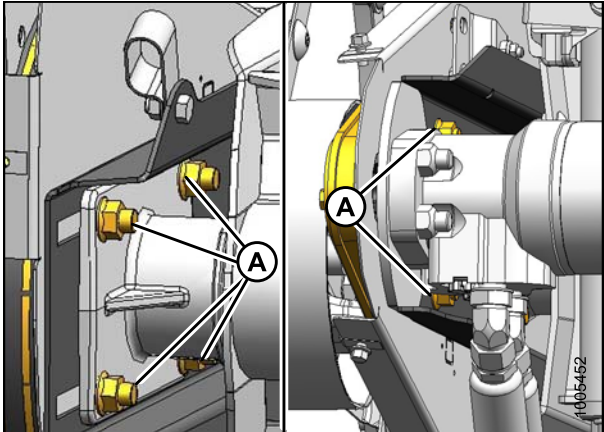


Figure 6.171

MAINTENANCE AND SERVICING

6. Install reel drive cover (A) as follows:
 - a. For **SINGLE REEL DRIVE**, position reel drive cover (A) to the reel drive and secure with four bolts (B).

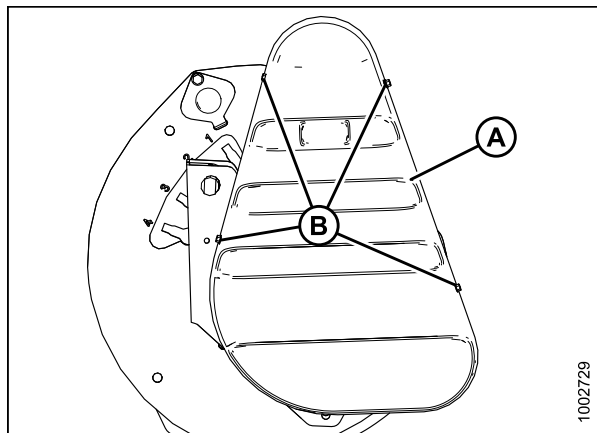


Figure 6.172: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, position the lower cover (C) first (if removed) and secure with three bolts (D). Install upper cover (A) using the six bolts (B).

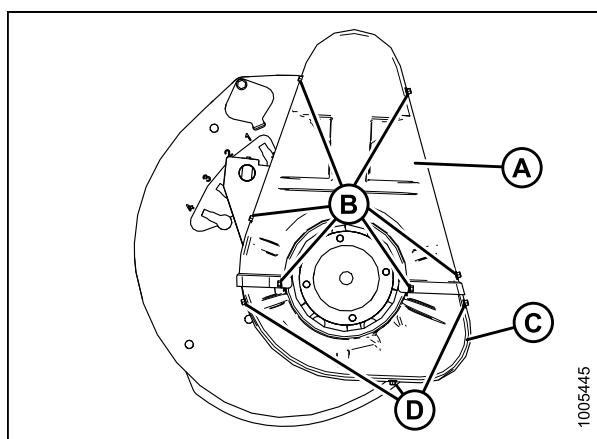


Figure 6.173: Double reel drive cover

Removing Chain from Single Reel Drive

To remove a chain from a high torque single reel drive, follow these steps:

1. Lower header and reel, shut down windrower, and remove key from ignition.
2. Remove four screws (A) and remove reel drive cover (B).

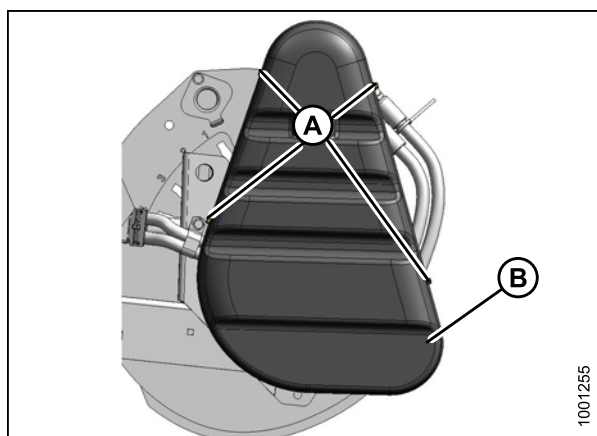


Figure 6.174

MAINTENANCE AND SERVICING

- Loosen nuts (A). Slide motor (B) and motor mount (C) down towards reel shaft.

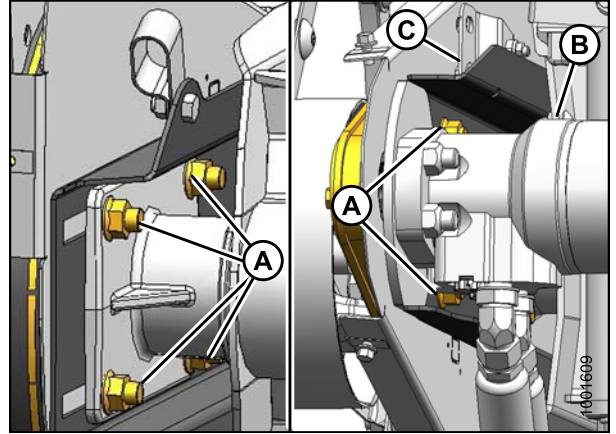


Figure 6.175

A - Nuts B - Reel drive motor C - Motor mount

- Remove chain (A).

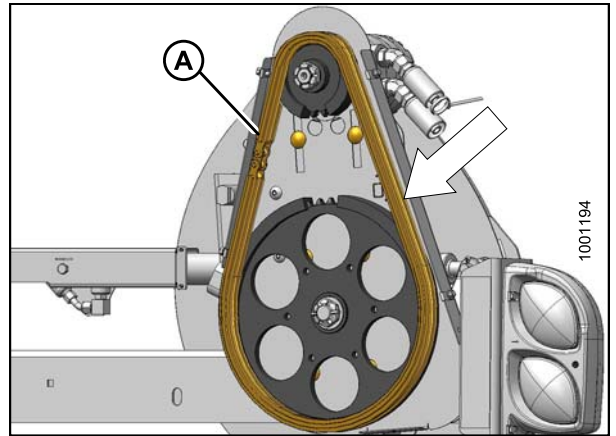


Figure 6.176

Installing Chain on a Single Reel Drive

To install a chain on a high torque single reel drive follow these steps:

- Position new chain (A) around sprockets.

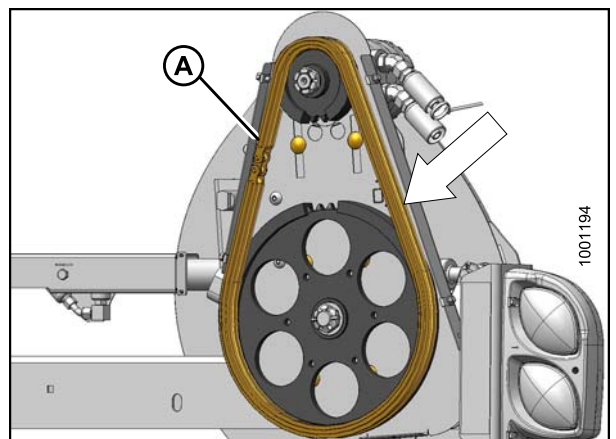


Figure 6.177

MAINTENANCE AND SERVICING

- Slide motor (B) and motor mount (C) upward until tension on chain is such that hand-force deflects the chain 1/8 in. (3 mm) at mid-span.
- Tighten nuts (A) and recheck tension.

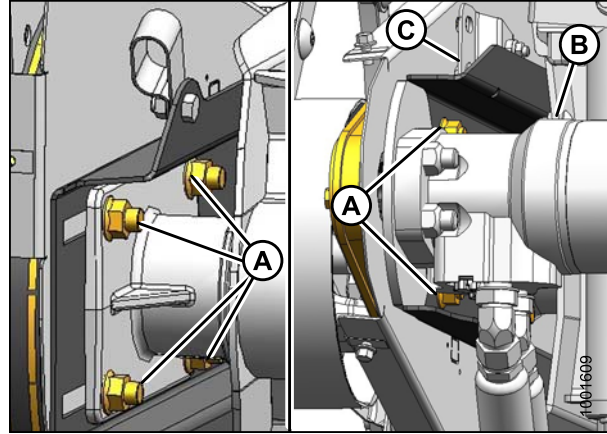


Figure 6.178

A - Nuts

B - Reel drive motor

C - Motor mount

- Install reel drive cover (B) and secure with four screws (A).

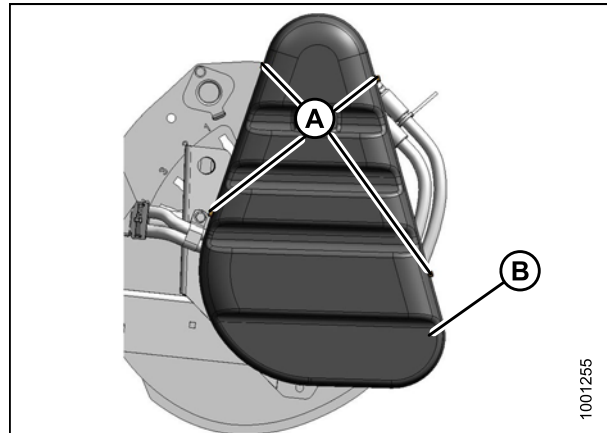


Figure 6.179

Replacing Chain on Double Reel Drive

The drive chain on a high torque double reel drive can be replaced using two methods, [Disconnecting the Reel Drive Method, page 207](#) and [Breaking the Chain Method, page 210](#). Both procedures are acceptable, but disconnecting the reel drive method is preferred because the chain integrity is not affected.

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Disconnecting the Reel Drive Method

1. Lower header and reel, shut down windrower, and remove key from ignition.
2. Remove six screws (A) and then remove upper reel drive cover (B).

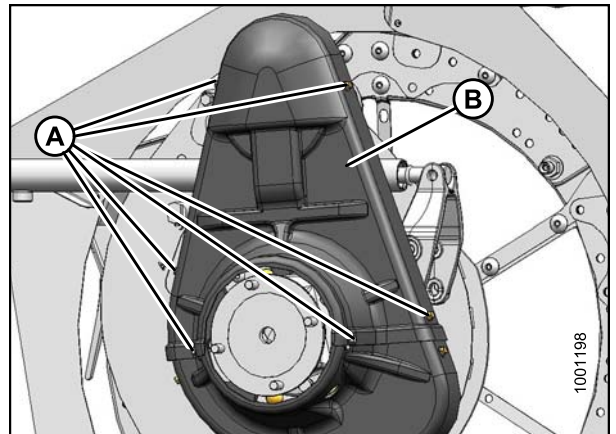


Figure 6.180

3. Remove three screws (A) and remove lower cover (B).
4. Release tension on chain (C). See [Adjusting Chain Tension on Double Reel Drive](#).

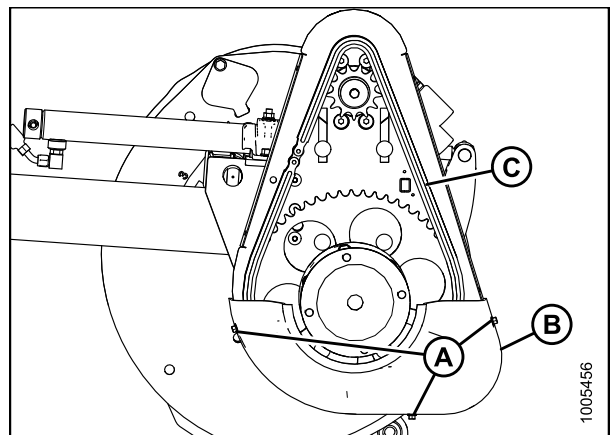


Figure 6.181

5. Support inboard end of right reel with a front end loader and nylon slings (or equivalent setup).

NOTE: To avoid damaging or denting center tube, support reel as close as possible to the end disc.



Figure 6.182

MAINTENANCE AND SERVICING

- Remove four bolts (A) attaching reel tube to U-joint (B).

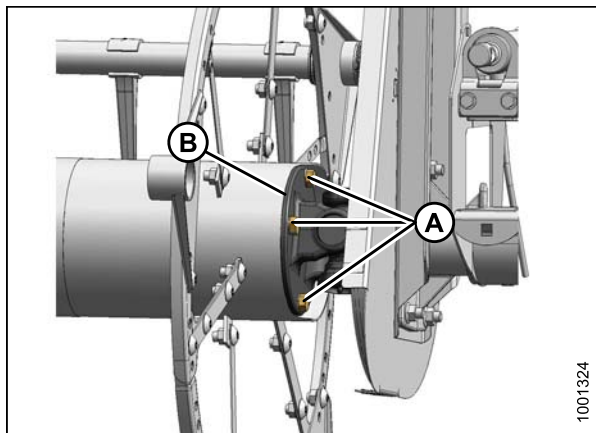


Figure 6.183

- Move right-hand reel sideways to separate the reel tube (A) and U-joint (B).
- Remove the chain (C).
- Route new chain (C) over U-joint (B) and locate on sprockets.

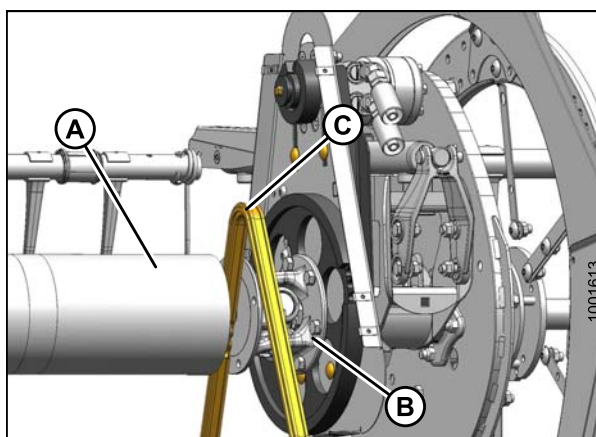


Figure 6.184

A - Reel tube

B - U-joint

C - Drive chain

- Position right-hand reel tube (A) against reel drive and engage stub shaft into U-joint (B) pilot hole.
- Rotate reel until holes in end of reel tube and U-joint line up.
- Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and install with lock washers.
- Torque to 75–85 ft-lbf (102–115 N·m).

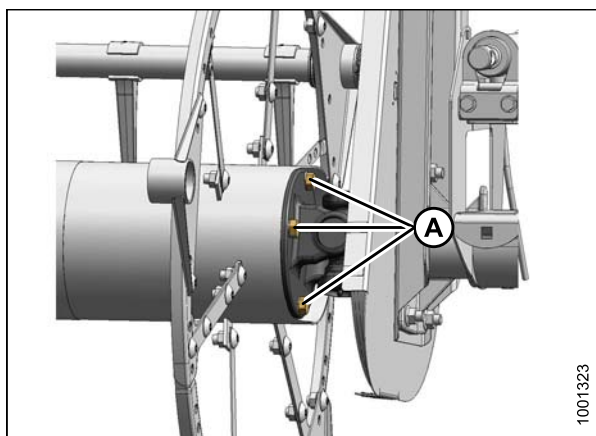


Figure 6.185

MAINTENANCE AND SERVICING

14. Remove temporary reel support.



Figure 6.186

15. Adjust the chain tension (C). Tension on chain should be such that hand-force deflects the chain 1/8 in. (3 mm) at midspan.

16. Install lower cover (B) and secure with three screws (A).

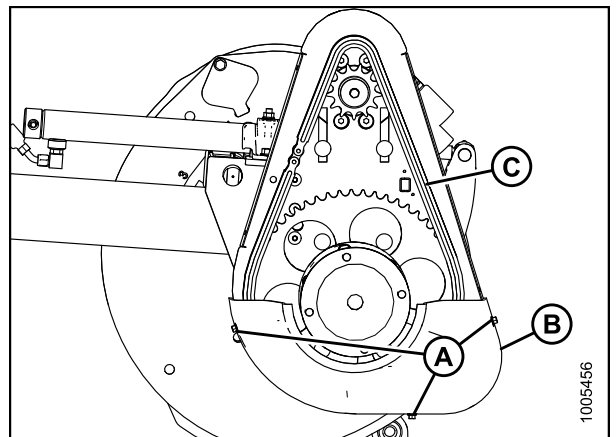


Figure 6.187

17. Install upper reel drive cover (B) and secure with six screws (A).

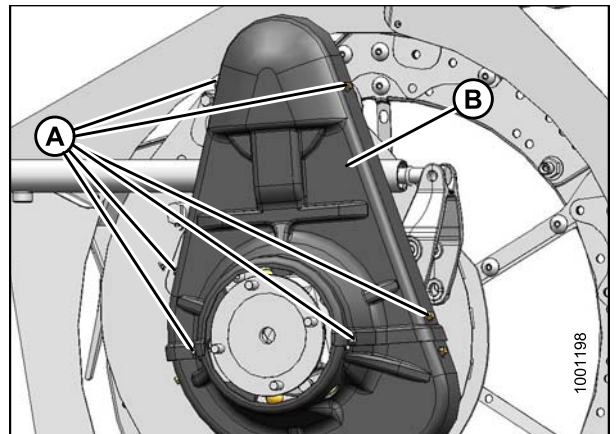


Figure 6.188

MAINTENANCE AND SERVICING

Breaking the Chain Method

1. Lower header and reel, shut down windrower, and remove key from ignition.
2. Remove six screws (A) and then remove upper reel drive cover (B).

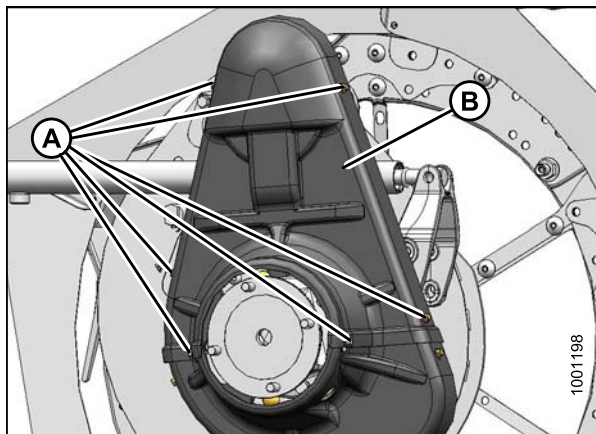


Figure 6.189

3. Remove three screws (A) and remove lower cover (B).
4. Release tension on chain (C). See section [Adjusting Chain Tension on Double Reel Drive](#).
5. Grind off head of a link rivet on chain (C), punch out the rivet, and remove chain.
6. Grind off the head from one of the link rivets on the new chain and punch out rivet to separate the chain.
7. Locate ends of chain on sprocket.

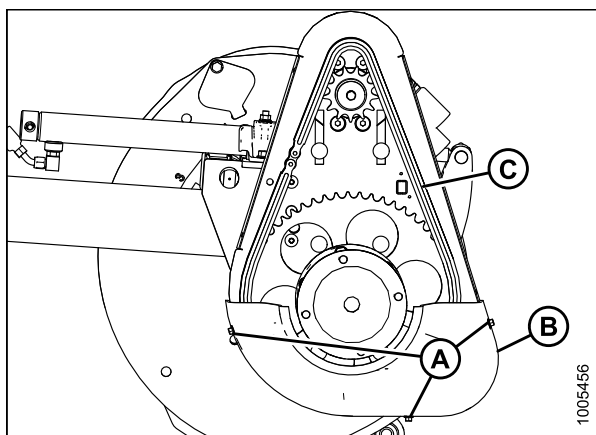


Figure 6.190

8. Install pin connector (A) (not available as a MacDon part) into chain, preferably from sprocket backside.
9. Install connector (B) onto pins.
10. Install spring clip (C) onto front pin (D) with closed end of clip in direction of sprocket rotation.
11. Locate one leg of clip in groove of aft pin (E).
12. Press other leg of spring clip over face of aft pin (E) until it slips into groove. Do **NOT** press clip lengthwise from closed end.
13. Ensure clip is seated in grooves of pins.

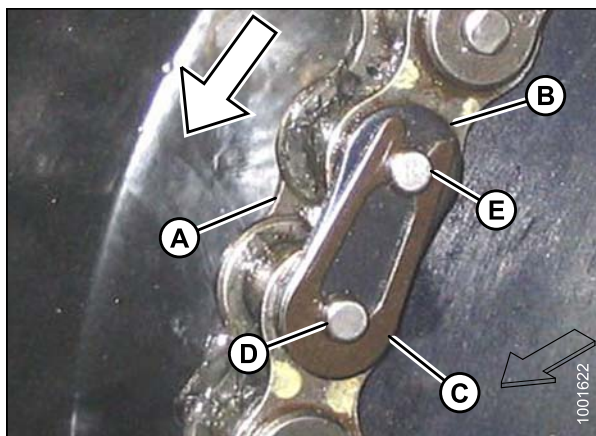


Figure 6.191

MAINTENANCE AND SERVICING

14. Adjust the chain tension. Tension on chain should be such that hand-force deflects the chain 1/8 in. (3 mm) at midspan.
15. Install lower cover (B) and secure with three screws (A).

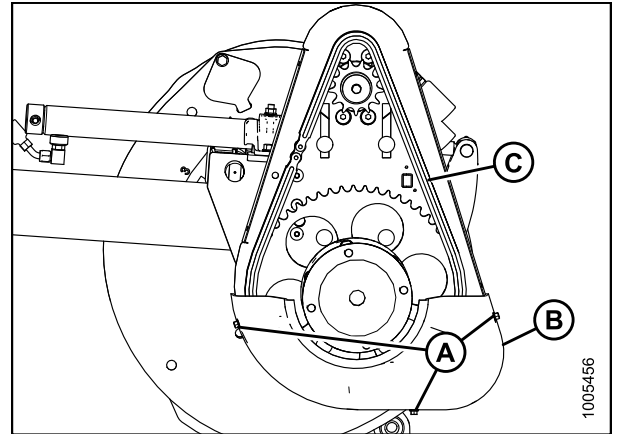


Figure 6.192

16. Install upper reel drive cover (B) and secure with six screws (A).

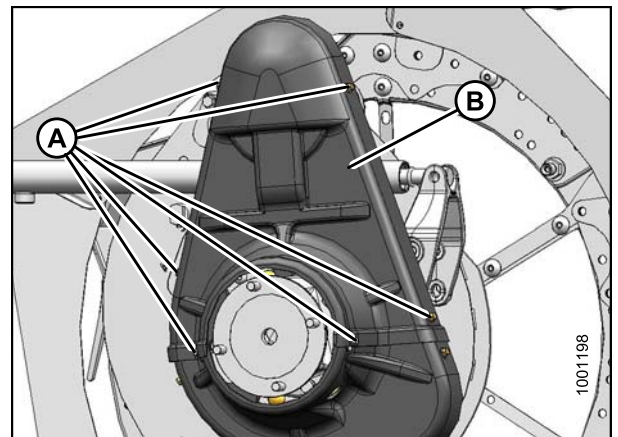


Figure 6.193

6.8.5 Reel Drive Sprocket

Replacing Reel Drive Sprocket

To replace a high torque reel drive sprocket on a single and double reel header, follow these steps:

MAINTENANCE AND SERVICING

1. Lower header and reel, shut down windrower, and remove key from ignition.

NOTE: For **DOUBLE REEL DRIVE**, this procedure is written with the reel removed from the header and either sitting on the ground or on stands.

2. Remove the reel drive cover (A) as follows:
 - a. For **SINGLE REEL DRIVE**, remove the four bolts (B) that secure the cover (A) to the reel drive.

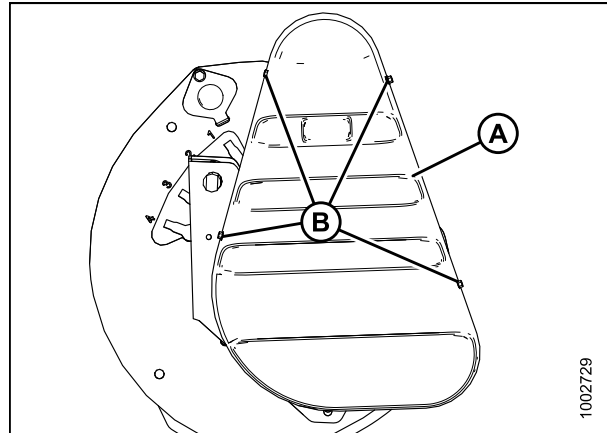


Figure 6.194: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

NOTE: The lower cover (C) may also be removed by taking off the three bolts (D).

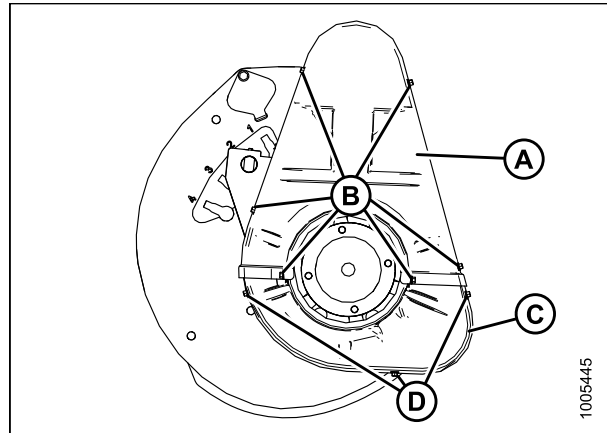


Figure 6.195: Double reel drive cover

3. Loosen the six bolts (A) and slide down the hydraulic motor assembly.
4. Remove the drive chain (B).

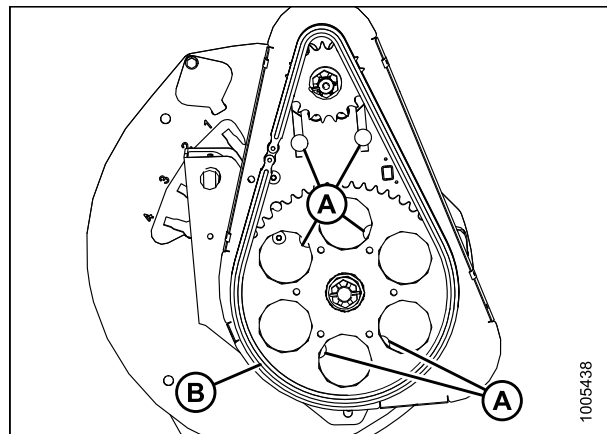


Figure 6.196

MAINTENANCE AND SERVICING

5. Remove the cotter pin (A), slotted nut, and flat washer (B) from the motor shaft.
6. Remove the drive sprocket (C). Ensure not to lose the key in the shaft.

IMPORTANT

Do NOT use pry bar and/or hammer to remove drive sprocket (C). This will damage the motor. Use a puller if drive sprocket does not come off by hand.

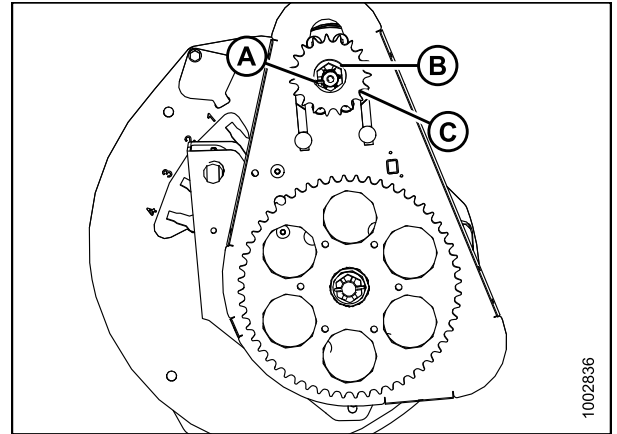


Figure 6.197

7. Install the new drive sprocket (C), flat washer (B), slotted nut, and cotter pin (A) onto the motor shaft.

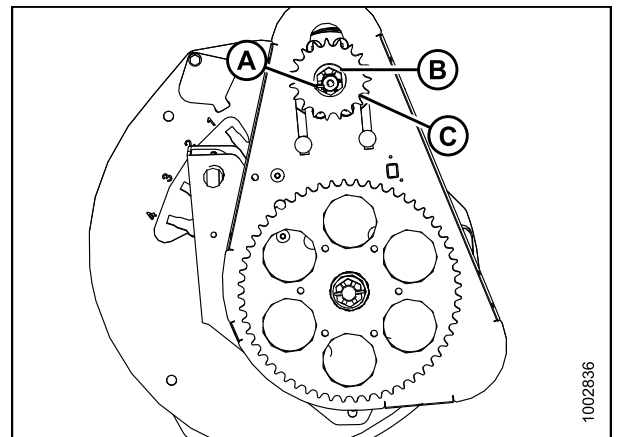


Figure 6.198

8. Install the chain (D).
9. Push up reel drive plate (B) until there is no tension on the chain. Tighten the six bolts (C).

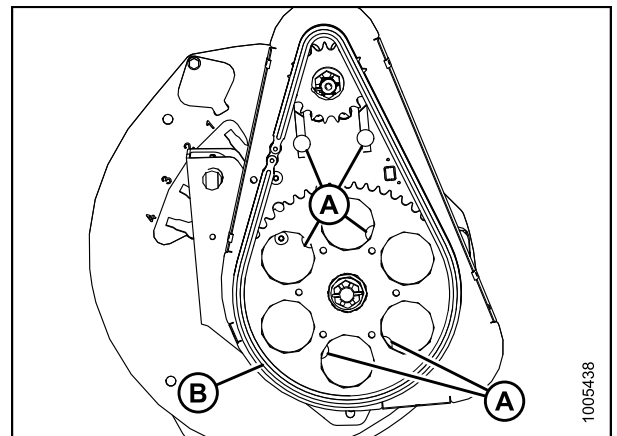


Figure 6.199

MAINTENANCE AND SERVICING

10. Install reel drive cover (A) as follows:

- a. For **SINGLE REEL DRIVE**, position reel drive cover (A) to the reel drive and secure with four bolts (B).

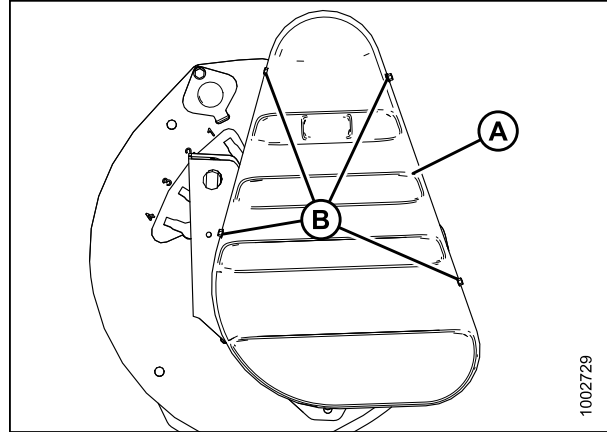


Figure 6.200: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, position the lower cover (C) first (if removed) and secure with three bolts (D). Install upper cover (A) using the six bolts (B).

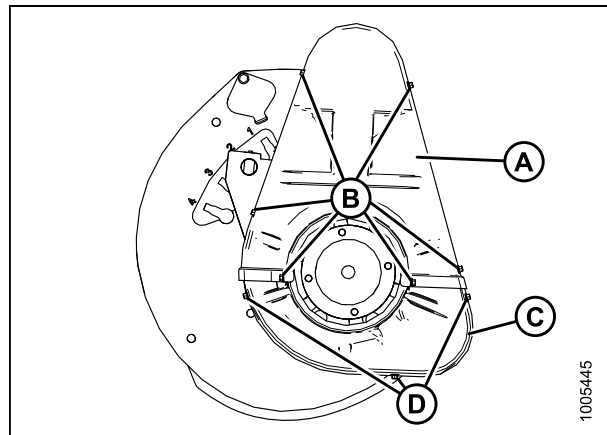


Figure 6.201: Double reel drive cover

6.8.6 Reel Drive U-Joint

The reel drive U-joint allows movement between the two reels. This allows either reel to move independently.

Lubricate the U-joint in accordance with the requirements. Refer to section [6.4.6 Lubrication and Servicing](#), page 129. U-joint should be replaced if severely worn or damaged. See section [Removing U-Joint](#), page 215.

MAINTENANCE AND SERVICING

Removing U-Joint

To remove the U-joint, follow these steps.

1. Lower header and reel, shut down windrower, and remove key from ignition.
2. Remove six screws (A) and then remove upper reel drive cover (B).

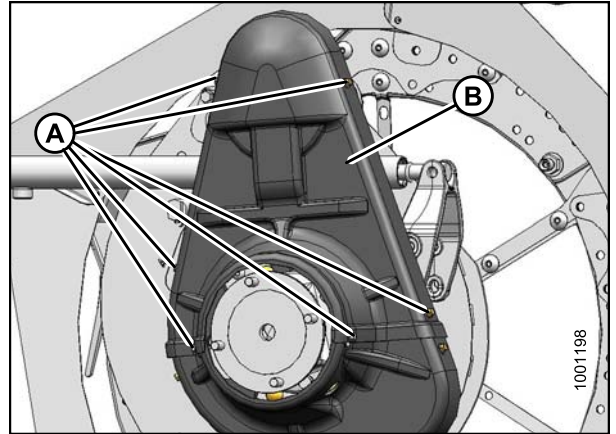


Figure 6.202: Remove upper reel drive cover

3. Remove three screws (A) and then remove lower cover (B).

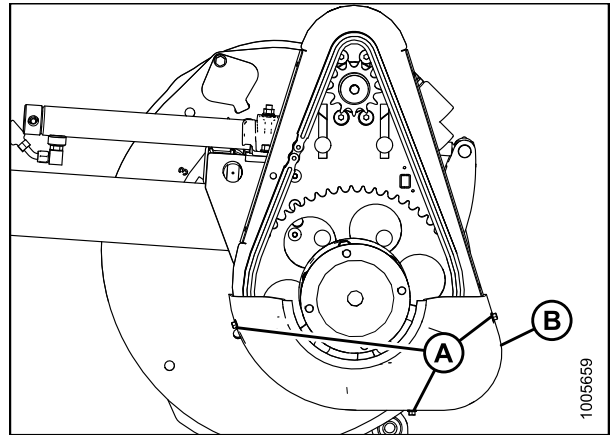


Figure 6.203: Remove lower reel drive cover

4. Support inboard end of right reel with a front end loader and nylon slings (or equivalent setup).

IMPORTANT

To avoid damaging or denting center tube, support reel as close as possible to the end disc.

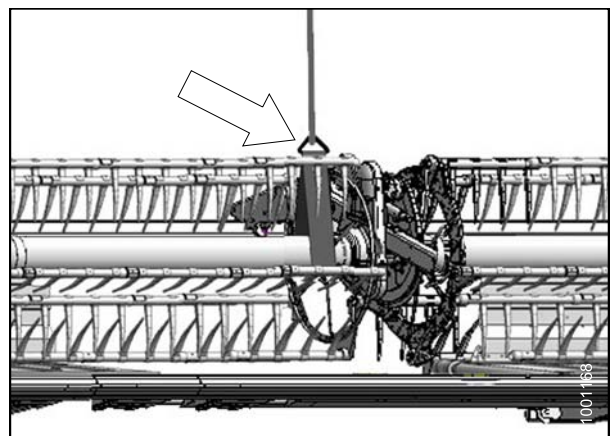


Figure 6.204

MAINTENANCE AND SERVICING

- Remove four bolts (A) attaching reel tube to U-joint flange (B) and move reel sideways to disengage stub shaft from U-joint.

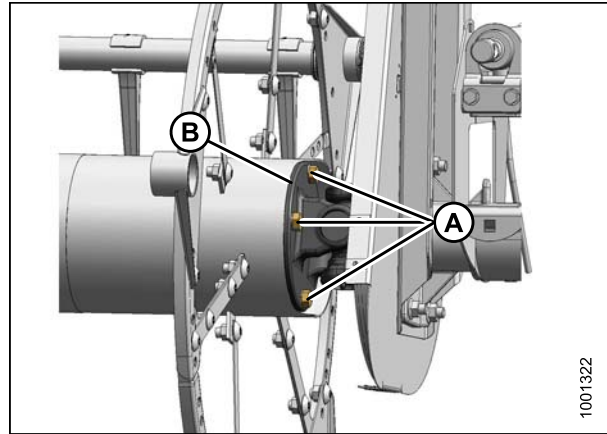


Figure 6.205

- Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
- Remove U-joint.

NOTE: Right hand reel may need to be moved sideways for U-joint to clear reel tube.

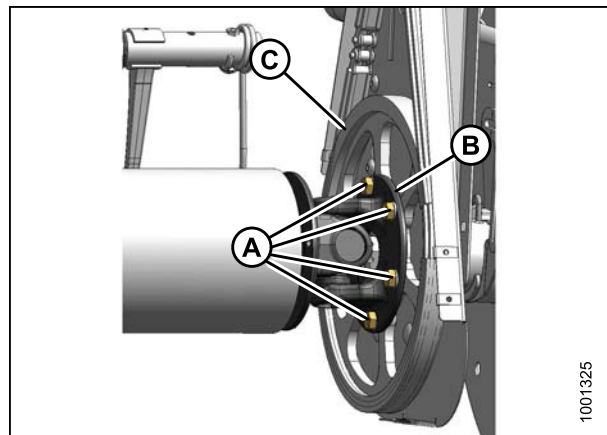


Figure 6.206

Installing U-Joint

To install the U-joint, follow these steps.

NOTE: Right hand reel may need to be moved sideways for U-joint to clear reel tube.

- Position U-joint flange (B) onto driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque at this time.

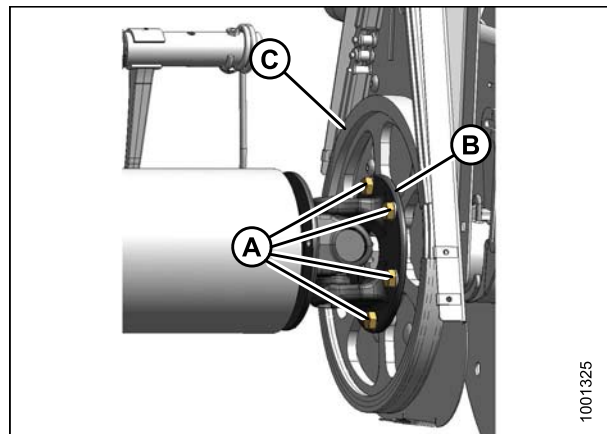


Figure 6.207

MAINTENANCE AND SERVICING

2. Position right-hand reel tube against reel drive and engage stub shaft into U-joint pilot hole.
3. Rotate reel until holes in end of reel tube and U-joint flange (B) line up.
4. Install four bolts (A) and torque to 70–80 ft·lbf (95–108 N·m).

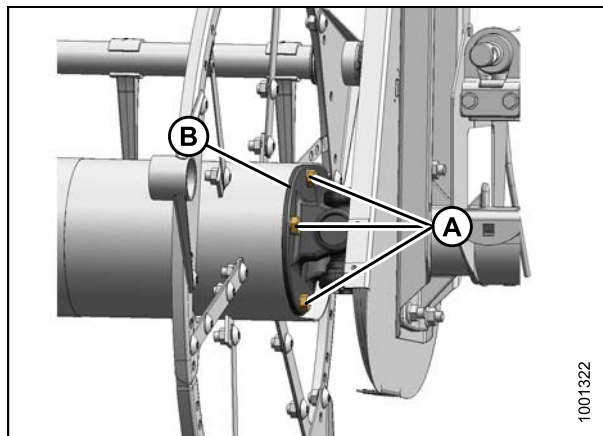


Figure 6.208

5. Remove temporary reel support.

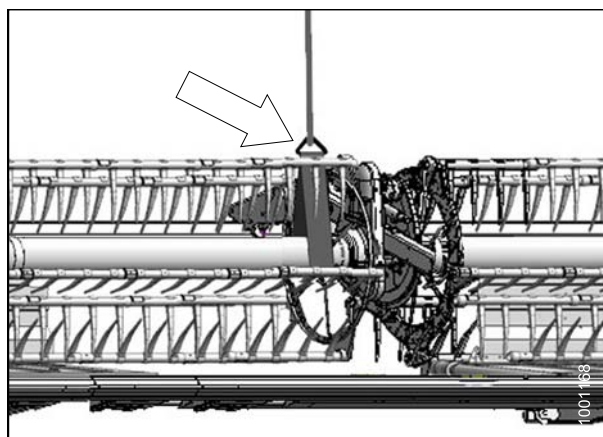


Figure 6.209

6. Install lower cover (B) and secure it with three screws (A).

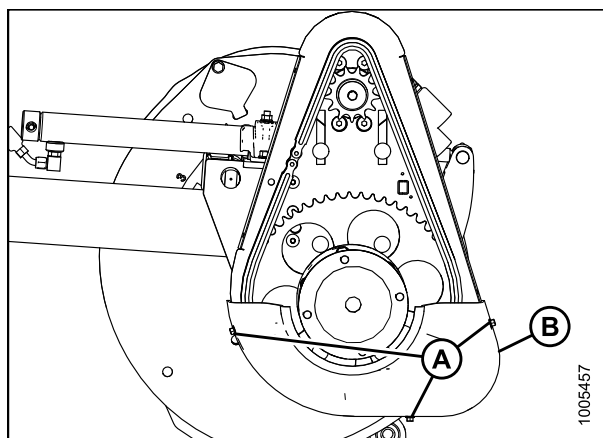


Figure 6.210: Remove lower reel drive cover

MAINTENANCE AND SERVICING

7. Install upper reel drive cover (B) and secure it with six screws (A).

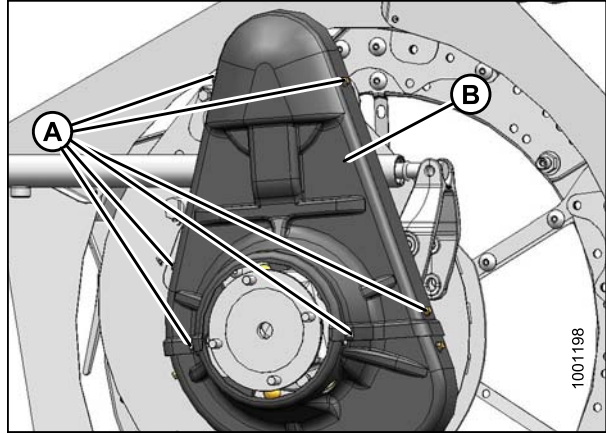


Figure 6.211: Remove upper reel drive cover

MAINTENANCE AND SERVICING

6.8.7 Reel Drive Motor

The reel drive motor does not require regular maintenance or servicing. If problems develop with the motor, it should be removed and serviced at your MacDon Dealer.

Removing Reel Drive Motor

To replace a reel drive motor on a single and double reel header, follow these steps:

1. Lower header and reel, shut down windrower, and remove key from ignition.

NOTE: For **DOUBLE REEL DRIVE**, this procedure is written with the reel removed from the header and either sitting on the ground or on stands.

2. Remove the reel drive cover (A) as follows:
 - a. For **SINGLE REEL DRIVE**, remove the four bolts (B) that secure the cover (A) to the reel drive.

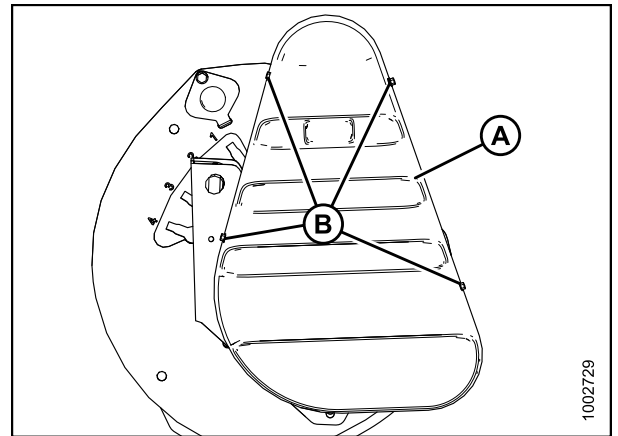


Figure 6.212: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, remove the six bolts (B) that secure the upper cover (A) to the reel drive and to the lower cover (C).

NOTE: The lower cover (C) may also be removed by taking off the three bolts (D).

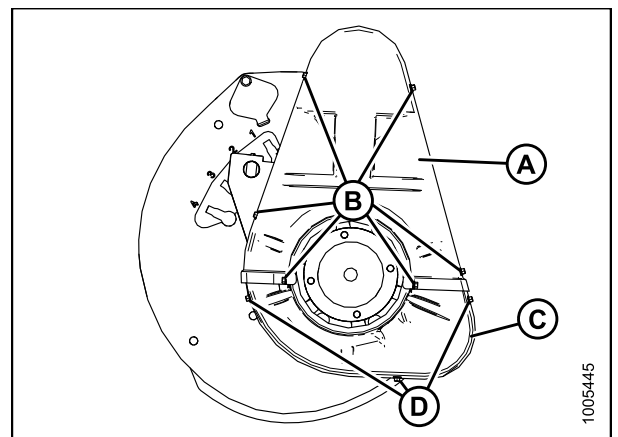


Figure 6.213: Double reel drive cover

MAINTENANCE AND SERVICING

3. Loosen the six bolts (A) and slide down the hydraulic motor assembly.
4. Remove the drive chain (B).

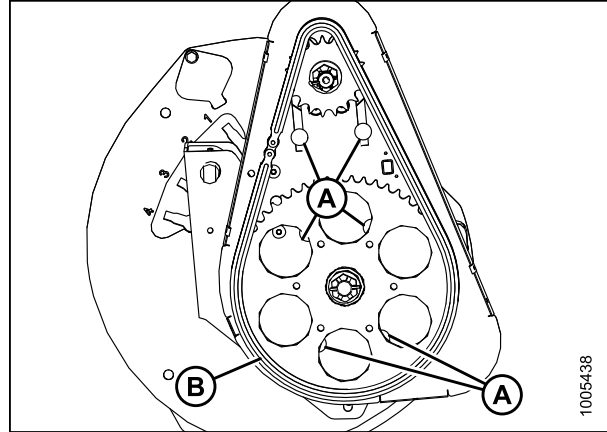


Figure 6.214

5. Remove the cotter pin (A), slotted nut, and flat washer (B) from the motor shaft.
6. Remove the drive sprocket (C). Ensure not to lose the key in the shaft.

IMPORTANT

Do NOT use pry bar and/or hammer to remove drive sprocket (C). This will damage the motor. Use a puller if drive sprocket does not come off by hand.

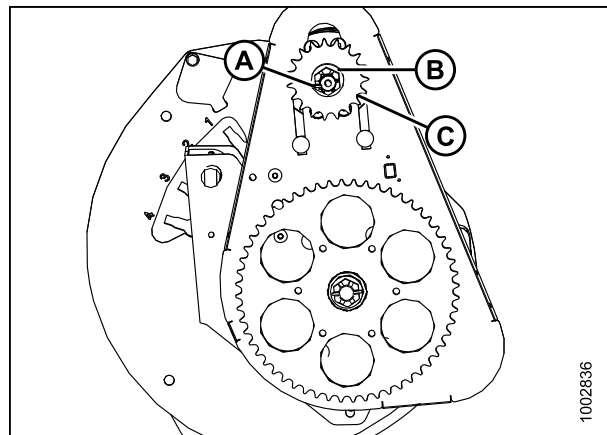


Figure 6.215

7. Remove the bolts (A) and the hydraulic motor from the reel drive plate (B).

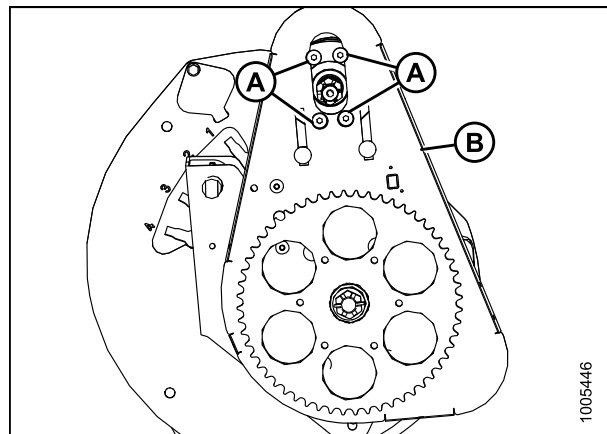


Figure 6.216

MAINTENANCE AND SERVICING

Installing Reel Drive Motor

1. Line up the hydraulic motor's four mounting holes (A) with the four holes on the reel drive plate (B) and install the four bolts.

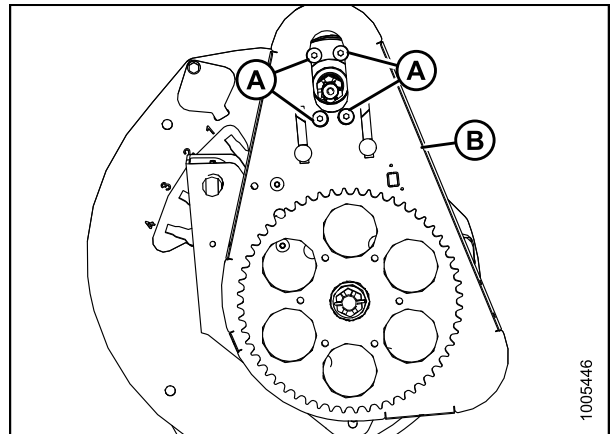


Figure 6.217

2. Install the drive sprocket (C), flat washer (B), slotted nut, and cotter pin (A) onto the motor shaft.

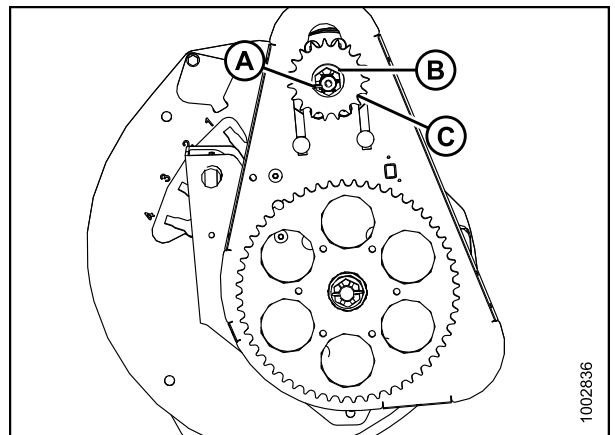


Figure 6.218

3. Install the chain (B). Push up reel drive plate until there is tension on the chain. Tighten the six bolts (A).

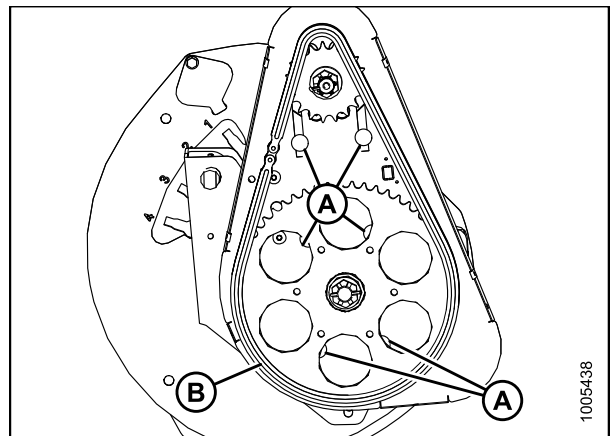


Figure 6.219

MAINTENANCE AND SERVICING

4. Install reel drive cover (A) as follows:
 - a. For **SINGLE REEL DRIVE**, position reel drive cover (A) to the reel drive and secure with four bolts (B).

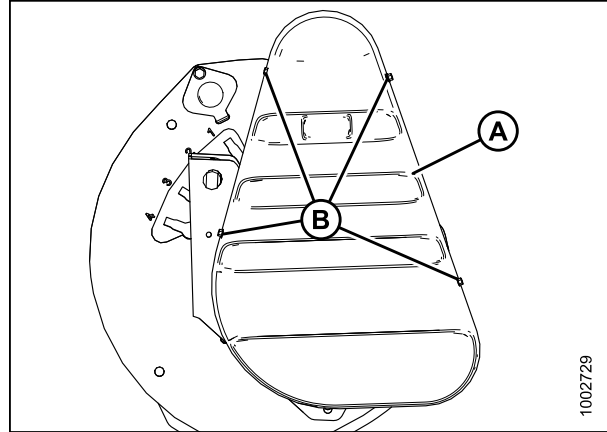


Figure 6.220: Single reel drive cover

- b. For **DOUBLE REEL DRIVE**, position the lower cover (C) first (if removed) and secure with three bolts (D). Install upper cover (A) using the six bolts (B).

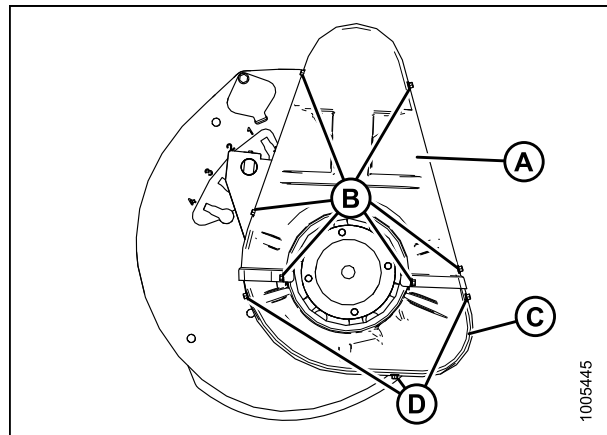


Figure 6.221: Double reel drive cover

6.8.8 Reel Tines

IMPORTANT

Keep reel tines in good condition. Straighten or replace as required.

MAINTENANCE AND SERVICING

Removing Steel Tines

WARNING

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

1. Lower header and raise reel. Engage reel safety props.
2. Shut down engine and remove key from ignition.
3. Remove tine tube bushings from the applicable tine tube at center and left discs. Refer to [Removing Bushings from 5, 6 or 9 Bat Reels, page 225](#).
4. Temporarily attach reel arms (B) to reel disc, using original attachment locations (A).
5. Cut damaged tine(s) so that it can be removed from tube.
6. Remove bolts on existing tines and slide tines over to replace tine that was cut off in previous step. Remove reel arms (B) from tube as required.

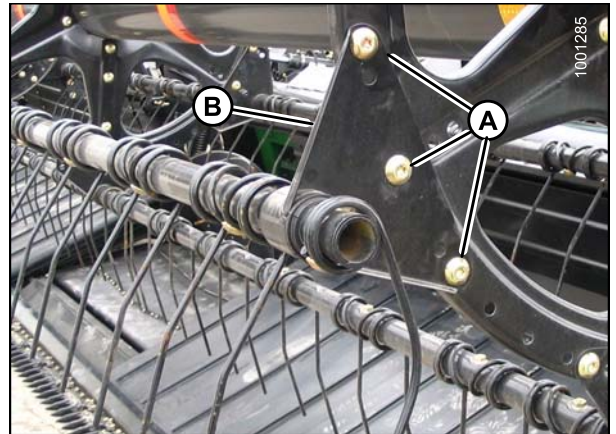


Figure 6.222

Installing Steel Tines

WARNING

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

IMPORTANT

Ensure tine tube is supported at all times to prevent damage to the tube or other components

1. Slide new tines and reel arm (A) onto end of tube.
2. Install tine tube bushings. Refer to Section [6.8.9 Tine Tube Bushings, page 225](#).
3. Attach tines to tine bar with bolts and nuts (B).

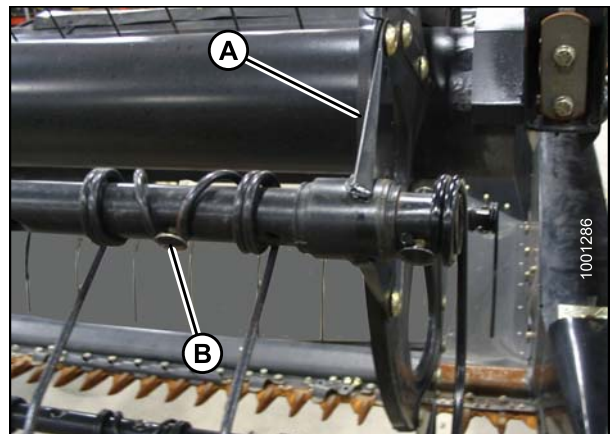


Figure 6.223

MAINTENANCE AND SERVICING

Removing Plastic Fingers

WARNING

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

1. Remove screw (A) with a Torx® Plus 27 IP socket wrench.
2. Push finger top clip back toward reel tube and remove from finger tube.

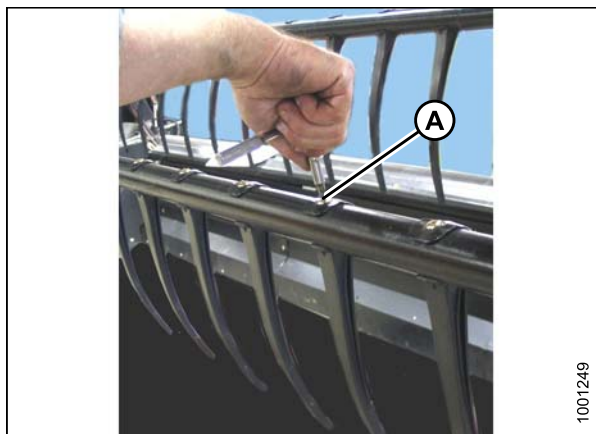


Figure 6.224

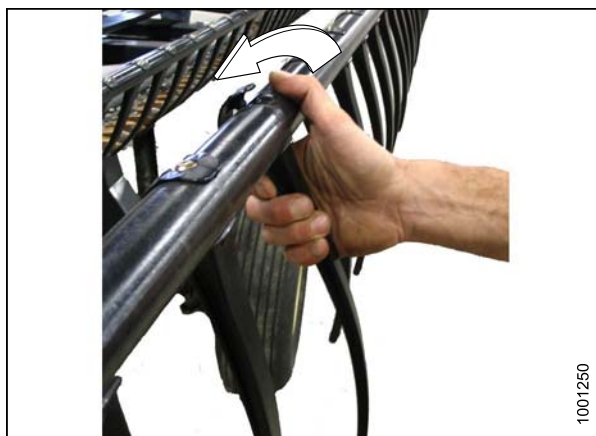


Figure 6.225

Installing Plastic Fingers

WARNING

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

1. Position finger on rear of finger tube and engage lug at bottom of finger in lower hole in finger tube.
2. Gently lift top flange and rotate finger until lug in top flange engages upper hole in finger tube.

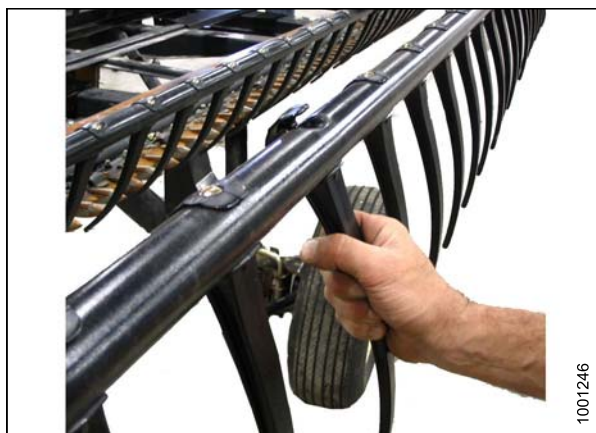


Figure 6.226

IMPORTANT

Do NOT apply force to finger prior to tightening mounting screw. Applying force to finger without screw tightened will break finger or shear off locating pins.

3. Install screw (A) and torque to 75–80 in-lbf (8.5–9.0 N-m) with a Torx®-Plus 27 IP socket wrench.

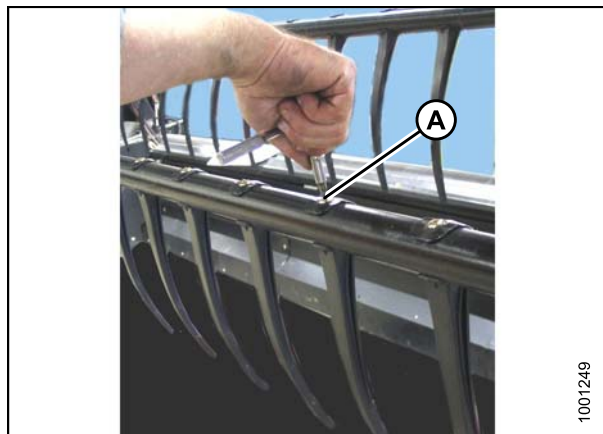


Figure 6.227

6.8.9 Tine Tube Bushings

Removing Bushings from 5, 6 or 9 Bat Reels

NOTE: If only replacing the cam end bushing, proceed to step 6., [Removing Bushings from 5, 6 or 9 Bat Reels, page 227.](#)

Center disc and tail end bushings



WARNING

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

1. Lower header, raise reel fully, and engage reel safety props.

IMPORTANT

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

2. Remove reel endshields and endshield support (C) from the tail end of the reel at applicable tine tube location.

NOTE: There are no endshields on the center disks.

3. Remove bolts (A) securing arm (B) to disc.

IMPORTANT

Note the hole locations in arm and disc and ensure bolts are reinstalled at original locations.

4. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull clamp off tine tube.

5. Rotate arm (A) clear of disc and slide arm inboard off bushing and remove bushing halves (B). If required remove the next tine or plastic finger, so that the arm can slide off the bushing. Refer to section

- [Removing Plastic Fingers, page 224](#) or
- [Removing Steel Tines, page 223.](#)

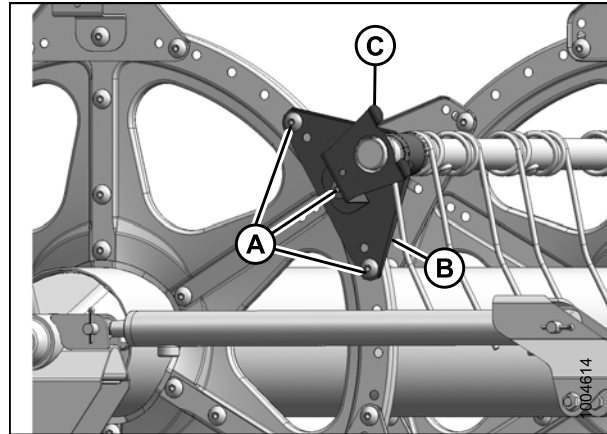


Figure 6.228

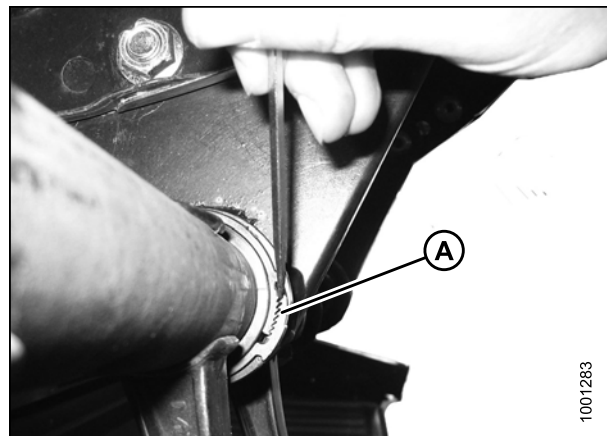


Figure 6.229

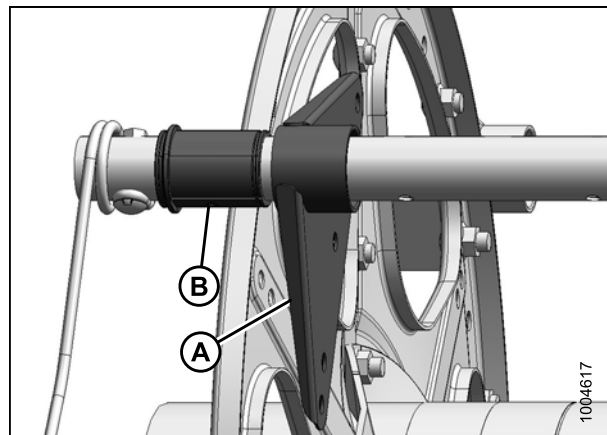


Figure 6.230

MAINTENANCE AND SERVICING

Cam end bushings

6. On the cam end, remove endshields and endshield support (A) at applicable tine tube location on the cam end.

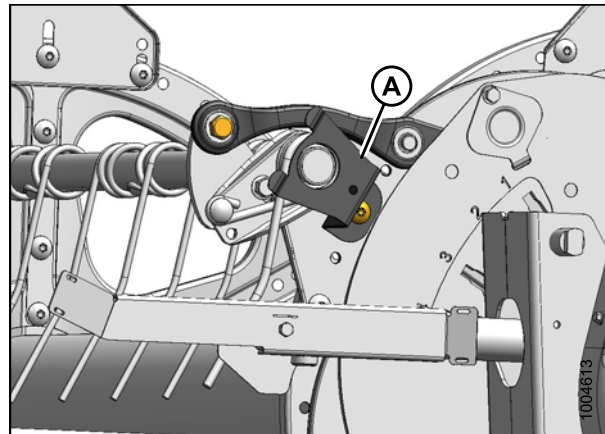


Figure 6.231

7. On the tail end, remove reel endshields and endshield support (C) from the tail end of the reel at applicable tine tube location.

NOTE: There are no endshields on the center disks.

8. On the tail and center discs, remove bolts (A) securing arm (B) to disc.

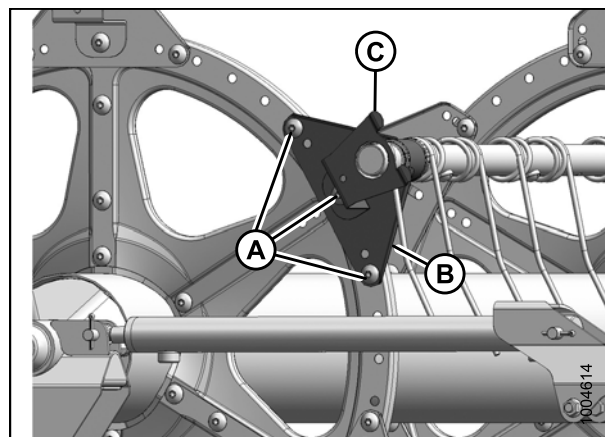


Figure 6.232

9. Remove bolt (A) at on cam linkage so that tine tube (B) is free to rotate.

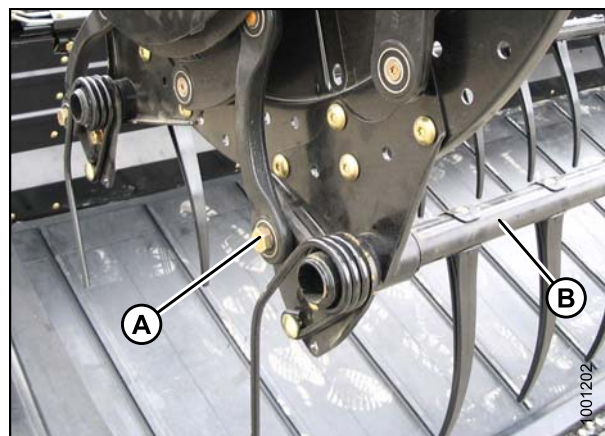


Figure 6.233

MAINTENANCE AND SERVICING

10. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull clamp off tine tube.

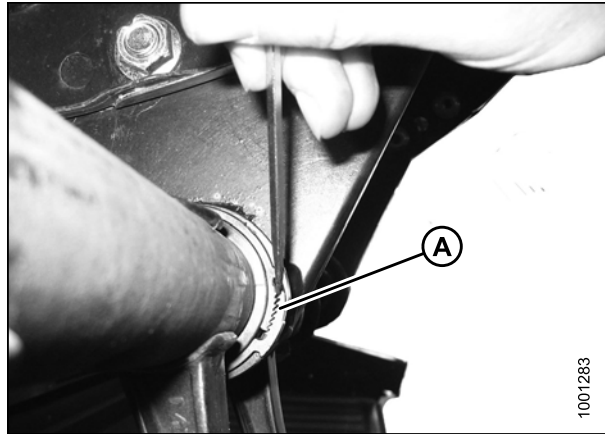


Figure 6.234

11. Slide tine tube (A) outboard to expose the bushing. Remove the bushing halves (B). If required remove the next tine or plastic finger, so that the arm can slide off the bushing. Refer to

- [Removing Plastic Fingers, page 224](#) or
- [Removing Steel Tines, page 223](#).

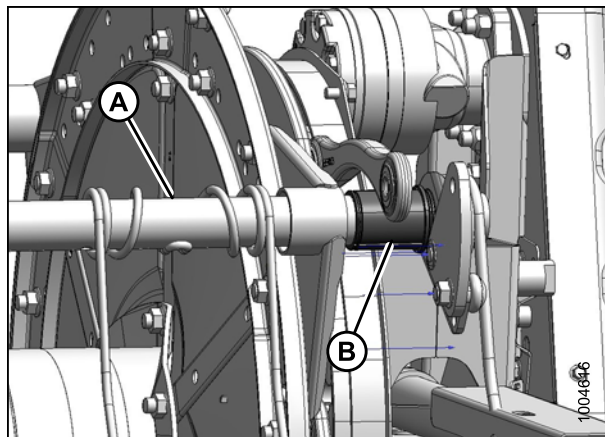


Figure 6.235

MAINTENANCE AND SERVICING

Installing Bushings on 5, 6, or 9 Bat Reels



WARNING

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

IMPORTANT

Ensure tine tube is supported at all times to prevent damage to the tube or other components.

NOTE: If you are installing all new bushings, work thru steps 1., [Installing Bushings on 5, 6, or 9 Bat Reels, page 229](#) to 7., [Installing Bushings on 5, 6, or 9 Bat Reels, page 230](#). Then proceed to step 11., [Installing Bushings on 5, 6, or 9 Bat Reels, page 231](#).

Cam end bushings

1. Position bushing halves (B) on tine tube so that lug in each bushing half is positioned in hole in tine tube.
2. Slide tine tube (A) inboard to cover the bushing (B). If any fingers were removed reinstall them at this time. Refer to
 - [Installing Steel Tines, page 223](#) or
 - [Installing Plastic Fingers, page 224](#)
3. Install bushing clamps (A) by spreading clamp (A) and slip over tine tube adjacent to flangeless end of bushing.
4. Position clamp on bushings (B) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.

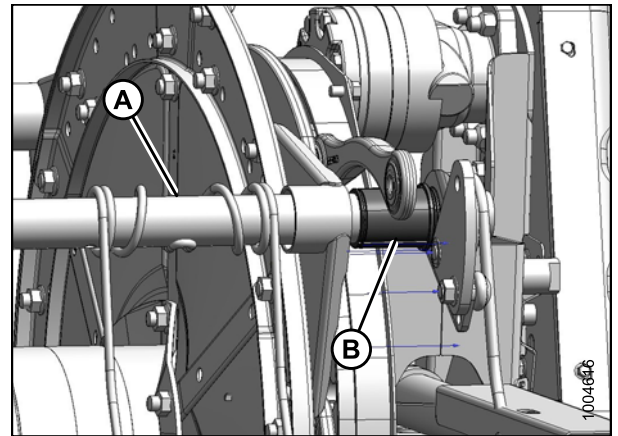


Figure 6.236

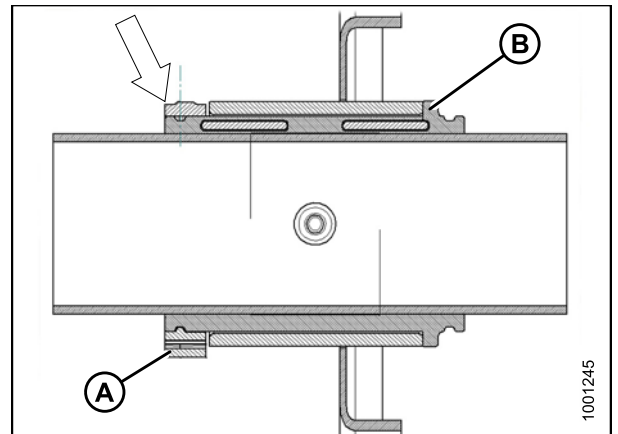


Figure 6.237

A - Bushing clamp

B - Bushing

MAINTENANCE AND SERVICING

5. Tighten clamp (A) with modified channel lock pliers (B) so that finger pressure will **NOT** move clamp.

NOTE: To modify channel lock pliers – secure in a vice and grind out center of arms to accommodate clamps (as shown in image).

IMPORTANT

Over-tightening clamp may result in breakage.

- 6.

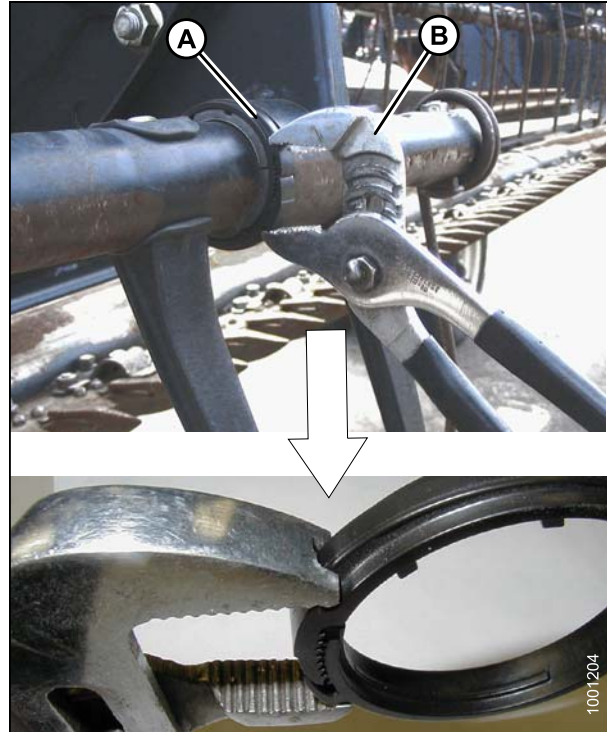


Figure 6.238

A - Bushing clamp

B - Channel lock pliers

7. Line up tine bar (B) with cam arm and install bolt (A). Torque bolt to 120 ft·lbf (165 N·m).

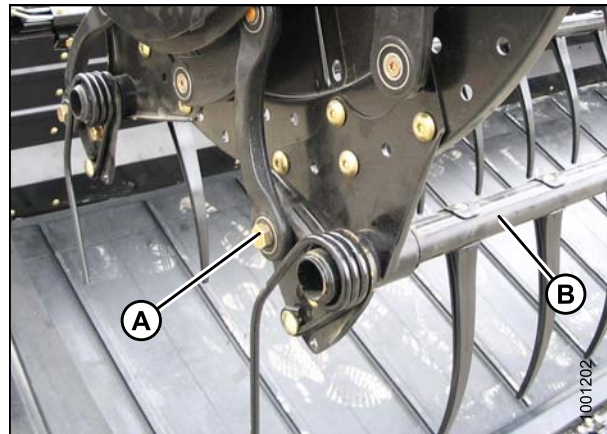


Figure 6.239

MAINTENANCE AND SERVICING

- On the tail and center discs, install the bolts (A) securing arm (B) to disc.
- On the tail end, install reel endshields and endshield support (C) from the tail end of the reel at applicable tine tube location.

NOTE: There are no endshields on the center disks.

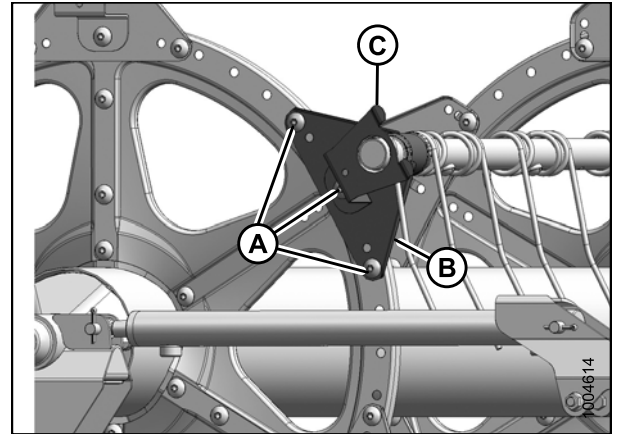


Figure 6.240

- On the cam end, install endshields and endshield support (A) at applicable tine tube location on the cam end.

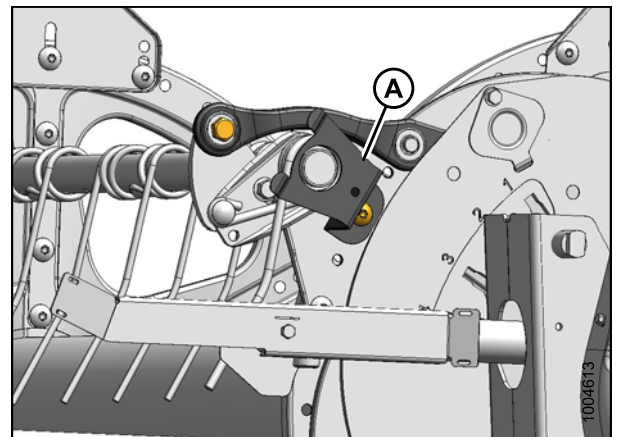


Figure 6.241

Center disc and tail end bushings

- Position bushing halves (B) on tine tube so that lug in each bushing half is positioned in hole in tine tube.
- Slide reel arm (A) onto bushing (B) and position against disc at original location.
- Install bolts (A) in original holes and tighten.
- Reinstall any fingers or tines that were removed. Refer to:
 - [Installing Steel Tines, page 223](#) or
 - [Installing Plastic Fingers, page 224](#)

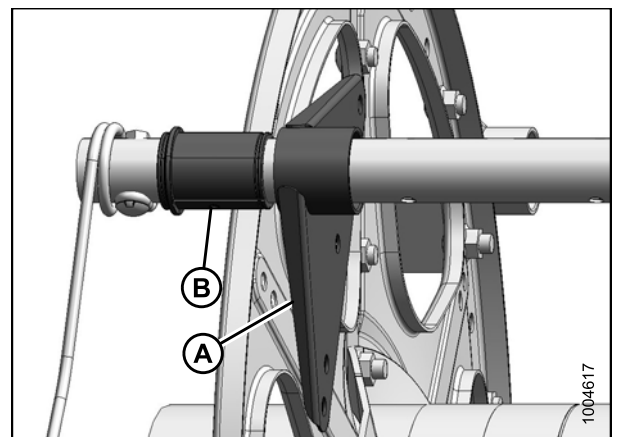


Figure 6.242

MAINTENANCE AND SERVICING

15. Install bushing clamps (A) by spreading clamp (A) and slip over the tube adjacent to flangeless end of bushing.
16. Position clamp on bushings (B) so that edges of clamp and bushing are flush when clamp fits into groove on bushing and lock tabs are engaged.

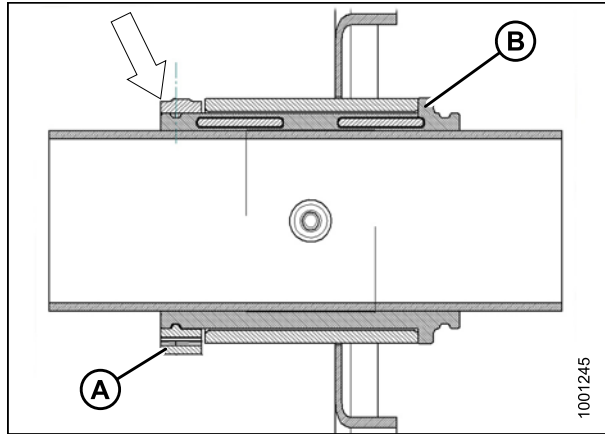


Figure 6.243

A - Bushing clamp

B - Bushing

17. Tighten clamp (A) with modified channel lock pliers (B) so that finger pressure will **NOT** move clamp.

IMPORTANT

Over-tightening clamp may result in breakage.

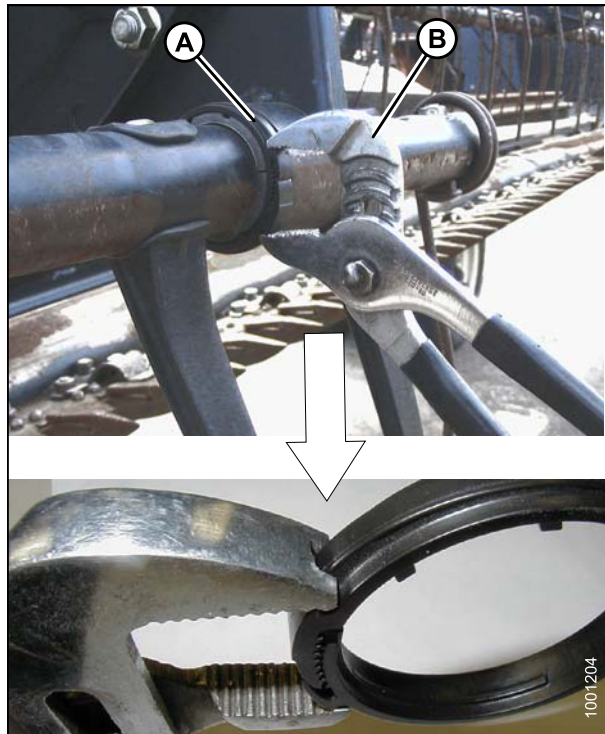


Figure 6.244

A - Bushing clamp

B - Channel lock pliers

MAINTENANCE AND SERVICING

18. On the tail and center discs, install the bolts (A) securing arm (B) to disc.
19. On the tail end, install reel endshields and endshield support (C) from the tail end of the reel at applicable tine tube location.

NOTE: There are no endshields on the center disks.

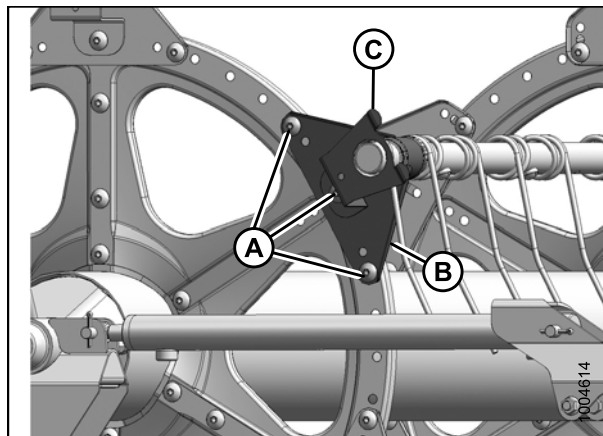


Figure 6.245

6.8.10 Reel Endshields

The reel endshields and supports do not require regular maintenance but should periodically be checked for damage and loose or missing fasteners. Endshields or supports that are slightly dented or deformed may be repaired. Severely damaged components should be replaced.

Replacing Endshield

1. Lower header and reel, and shutdown engine. Remove key from ignition.
2. Manually rotate reel for access to endshield (A) to be replaced.
3. Remove three bolts (B).

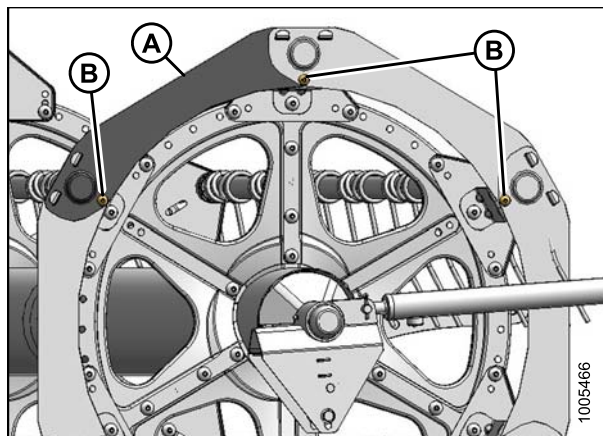


Figure 6.246

MAINTENANCE AND SERVICING

4. Lift end of endshield (A) off support (B).

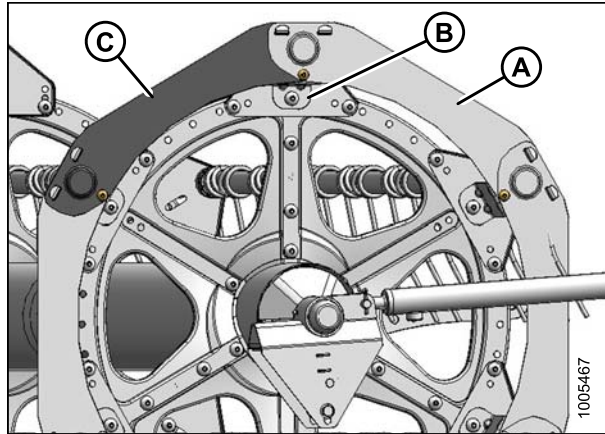


Figure 6.247

5. Lift endshield off supports.

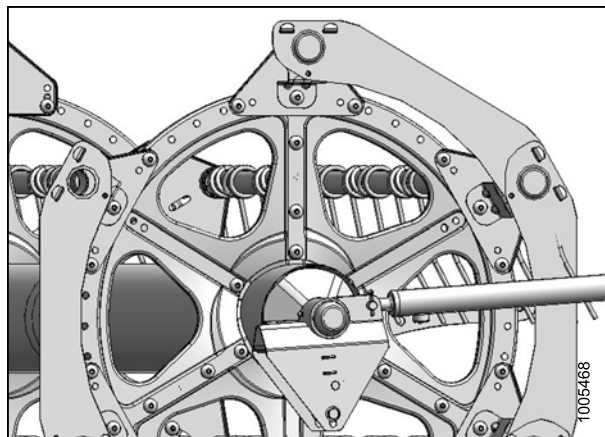


Figure 6.248

6. Move endshield (A) away from support (B) and place new endshield (C) onto supports.
7. Re-attach end of endshield (A) to support (B).
8. Reinstall bolts (D).
9. Tighten all hardware.

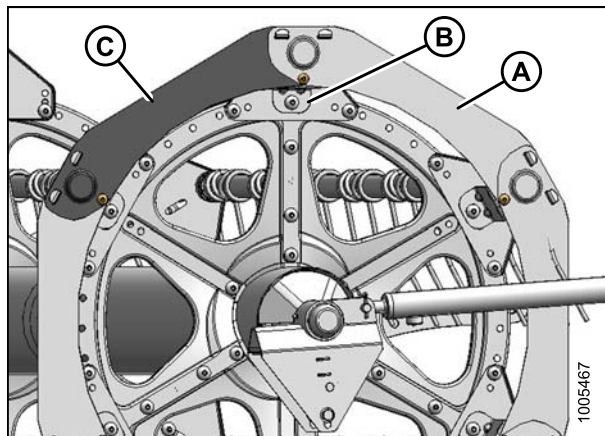


Figure 6.249

Replacing Support

1. Lower header and reel, and shutdown engine.
Remove key from ignition.

MAINTENANCE AND SERVICING

2. Manually rotate reel for access to endshield support (A) to be replaced.
3. Remove bolt (B) from support (A).
4. Remove bolts (C) from support (A) and two adjacent supports.

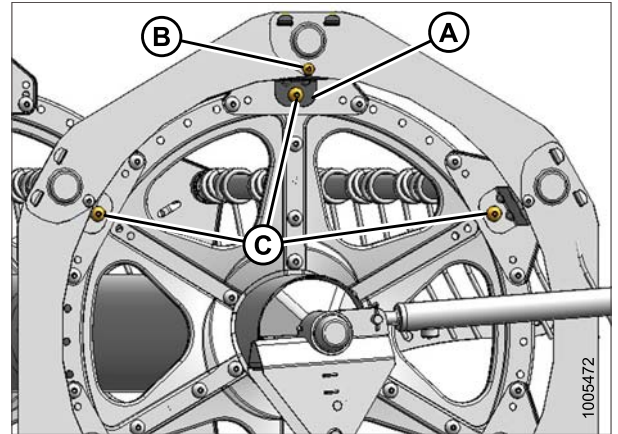


Figure 6.250

5. Move endshields (A) away from tine tube and rotate support (B) towards reel to remove it.
6. Insert tabs of new support (B) into slots in endshields and rotate into endshields. Ensure tabs engage both endshields.
7. Secure support (B) to disc with bolt (C) and nut. Do not tighten.
8. Secure endshields (A) to support (B) with bolt (C) and nut. Do not tighten.
9. Re-attach supports with bolts (C) and nuts.
10. Check clearance between tine tube and endshield support, and adjust if necessary.
11. Torque nuts to 20 ft·lbf (27 N·m).

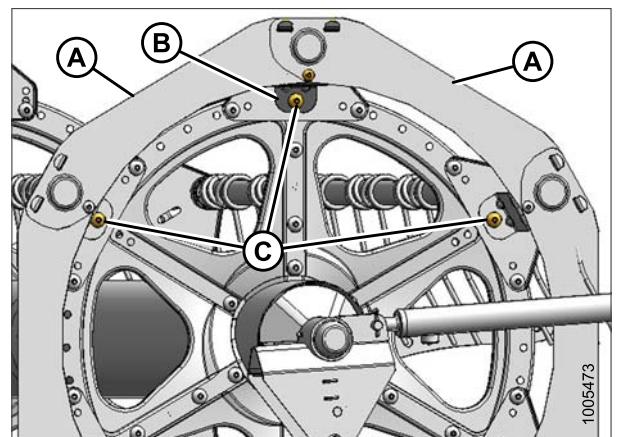


Figure 6.251

6.8.11 Transport System (Optional)

See Section [8.1.20 Stabilizer/Slow Speed Transport Wheels](#), page 260 for more information.

Torquing Transport System Wheel Bolts

If a Transport System is installed, follow procedure for torquing the wheel bolts.

IMPORTANT

Whenever a wheel is removed and reinstalled, check torque after one hour of operation. Maintain 80–90 ft·lbf (110–120 N·m) torque.

IMPORTANT

Follow proper bolt tightening sequence shown below.

MAINTENANCE AND SERVICING

Check and tighten wheel bolts after the first hour of operation and every 100 hours thereafter. Maintain 80–90 ft·lbf (110–120 N·m) torque.

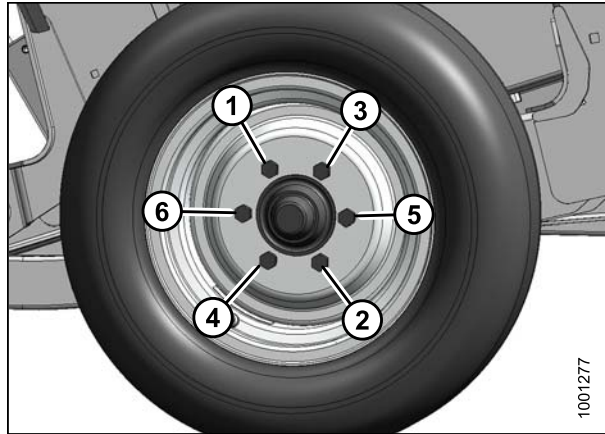


Figure 6.252: Bolt tightening sequence

Axle Bolts

If a Transport System is installed, follow procedure for torquing the axle bolts.

MAINTENANCE AND SERVICING

Check and tighten axle bolts **DAILY** until torque is maintained as follows:

- (A): 180 ft-lbf (244 N·m)
- (B): 150 ft-lbf (203 N·m)
- (C): 180 ft-lbf (244 N·m)

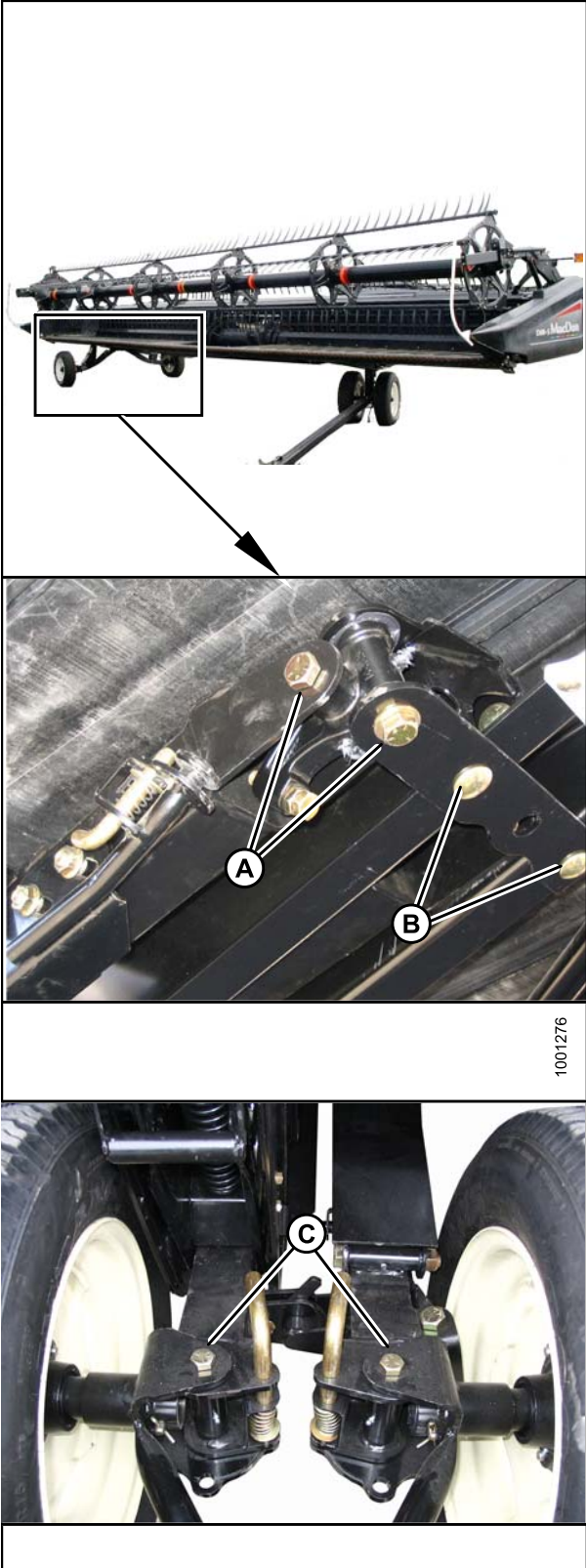


Figure 6.253

MAINTENANCE AND SERVICING

Tire Inflation

Check tire pressure daily. Maintain pressures recommended in following table:

Size	Load range	Pressure
ST205/75 R15	D	65 psi (448 kPa)
	E	80 psi (552 kPa)

WARNING

- Service tires safely.
- A tire can explode during inflation and cause serious injury or death.
- Do NOT stand over tire. Use a clip-on chuck and extension hose.
- Never increase air pressure beyond pressure specified on tire sidewall to seat the bead on the rim.
- Replace the tire if it has a defect.
- Replace a wheel rim, which has cracks, wear or severe rust.
- Never weld a wheel rim.
- Never use force on an inflated or partially inflated tire.
- Make sure the tire is correctly seated before inflating to operating pressure.
- If the tire is not in correct position on the rim, or is too full of air, the tire bead can loosen on one side, causing air to leak at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.
- Make sure all the air is removed from a tire before removing the tire from a rim.
- Do NOT remove, install or make repairs to a tire on a rim unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop.

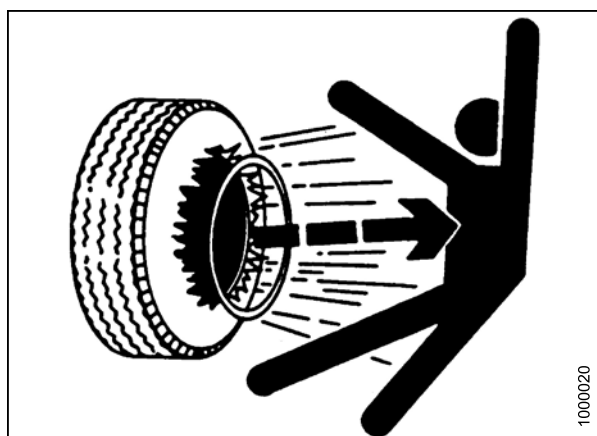


Figure 6.254

7 Troubleshooting

7.1 Crop Loss at Cutterbar

Symptom	Problem	Solution	Section
Does not pick up down crop	Cutterbar too high	Lower cutterbar	4.7.1 Cutting Height, page 50
	Header angle too flat	Steepen header height	4.7.3 Header Angle, page 56
	Reel too high	Lower reel	4.7.8 Reel Height, page 59
	Reel too far back	Move reel forward	4.7.9 Reel Fore-Aft Position, page 60
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	4.7.4 Reel Speed, page 57 and 4.7.5 Ground Speed, page 58
	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	4.7.10 Reel Tine Pitch, page 66
Install lifter guards		See your MacDon Dealer	
Heads shattering or breaking off	Reel speed too fast	Reduce reel speed	4.7.4 Reel Speed, page 57
	Reel too low	Raise reel	4.7.8 Reel Height, page 59
	Ground speed too fast	Reduce ground speed	4.7.5 Ground Speed, page 58
	Crop too ripe	Operate at night when humidity is higher	—
Cut grain falling ahead of cutterbar	Ground speed too slow	Increase ground speed	4.7.5 Ground Speed, page 58
	Reel speed too slow	Increase reel speed	4.7.4 Reel Speed, page 57
	Reel too high	Lower reel	4.7.8 Reel Height, page 59
	Cutterbar too high	Lower cutterbar	4.7.1 Cutting Height, page 50
	Reel too far forward	Move reel back on arms	4.7.9 Reel Fore-Aft Position, page 60
	Cutting at speeds over 6 mph (10 km/h) with high torque (10-tooth) reel drive sprocket	Replace with standard torque (19-tooth) reel drive sprocket	6.8.5 Reel Drive Sprocket, page 211
	Worn or broken knife components	Replace components	6.6 Knife and Knife Drive, page 137
Strips of uncut material	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
	Broken knife sections	Replace broken sections	6.6.1 Replacing Knife Section, page 137
Excessive bouncing at normal field speed	Float set too light	Adjust header float	4.7.2 Header Float, page 56

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Divider rod running down standing crop	Divider rods too long	Remove divider rod	4.7.12 Crop Divider Rods, page 73
Bushy or tangled crop flows over divider rod, builds up on endsheets	Divider rods providing insufficient separation	Install long divider rods	4.7.12 Crop Divider Rods, page 73
Crop not being cut at ends	Reel not frowning or not centered in header	Adjust reel frown or reel horizontal position	4.7.9 Reel Fore-Aft Position, page 60 and 6.8.2 Reel Frown, page 199
	Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely, but still keep sections from lifting off guards	Knife Hold-Downs, page 147
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	6.6 Knife and Knife Drive, page 137
	Header is not level	Level header	4.12 Levelling the Header, page 83
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	4.7.9 Reel Fore-Aft Position, page 60 and 4.7.10 Reel Tine Pitch, page 66
	Divider runs down thick crop at ends, preventing proper feeding due to material bridging the cutter guards	Replace 3 or 4 end guards with stub guards	See your MacDon Dealer, 6.6.7 Knife Guards, page 141 , Knife Hold-Downs, page 147 , and 8.1.21 Stub Guard Conversion Kit, page 261
Crop Getting Stuffed In Gap Between Cut-out in Endsheets and Knifehead	Crop heads leaning away from knifehead hole in endsheet	Add knifehead shield(s), except in damp/sticky soils	8.1.12 Knifehead Shield, page 257

TROUBLESHOOTING

7.2 Cutting Action and Knife Components

Symptom	Problem	Solution	Section
Ragged or uneven cutting of crop	Knife hold-downs not adjusted properly.	Adjust hold-downs.	Knife Hold-Downs, page 147
	Knife sections or guards are worn or broken.	Replace all worn and broken cutting parts.	6.6 Knife and Knife Drive, page 137
	Knife is not operating at recommended speed.	Check engine speed of windrower.	Refer to your windrower's operator's manual
	Ground speed too fast for reel speed.	Reduce ground speed or increase reel speed.	4.7.5 Ground Speed, page 58 and 4.7.4 Reel Speed, page 57
	Reel fingers not lifting crop properly ahead of knife.	Adjust reel position / finger pitch.	4.7.9 Reel Fore-Aft Position, page 60 , and 4.7.10 Reel Tine Pitch, page 66
	Cutterbar too high.	Lower cutting height.	4.7.1 Cutting Height, page 50
	Header angle too flat.	Steepen header angle.	4.7.3 Header Angle, page 56
	Bent knife, causing binding of cutting parts.	Straighten a bent knife. Align guards.	6.6.7 Knife Guards, page 141
	Cutting edge of guards not close enough, or parallel to knife sections.	Align guards.	
	Tangled / tough to cut crop.	Install stub guards.	6.6.7 Knife Guards, page 141 , 8.1.21 Stub Guard Conversion Kit, page 261 , and see your MacDon Dealer
	Reel too far back.	Move reel forward.	4.7.9 Reel Fore-Aft Position, page 60
Loose knife drive belt.	Adjust drive belt tension.	Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151 and Tensioning Knife Drive Belt (Timed) (DK) (Left Hand), page 154 or Tensioning Knife Drive Belt (Timed) (DK) (Right Hand), page 162	

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Knife plugging	Reel too high or too far forward.	Lower reel or move reel rearward.	4.7.8 Reel Height, page 59 and 4.7.9 Reel Fore-Aft Position, page 60
	Ground speed too slow.	Increase ground speed.	4.7.5 Ground Speed, page 58
	Loose knife drive belt.	Adjust drive belt tension.	Tensioning Single and Double Knife Headers With Non-Timed Drive, page 151 and Tensioning Knife Drive Belt (Timed) (DK) (Left Hand), page 154 or Tensioning Knife Drive Belt (Timed) (DK) (Right Hand), page 162
	Improper knife hold-down adjustment.	Adjust hold-down.	Knife Hold-Downs, page 147
	Dull or broken knife sections.	Replace knife section.	6.6.1 Replacing Knife Section, page 137
	Bent or broken guards.	Align or replace guards.	6.6.7 Knife Guards, page 141
	Reel fingers not lifting crop properly ahead of knife.	Adjust reel position / finger pitch.	4.7.9 Reel Fore-Aft Position, page 60 and 4.7.10 Reel Tine Pitch, page 66
	Steel pick-up fingers contacting knife.	Increase reel clearance to cutterbar, or adjust 'frown'.	6.8.1 Reel Clearance to Cutterbar, page 196 and 6.8.2 Reel Frown, page 199
	Float too heavy.	Adjust springs for lighter float.	4.7.2 Header Float, page 56
	Mud or dirt build-up on cutterbar.	Raise cutterbar by lowering skid shoes.	Cutting On the Ground, page 54
		Install cut-out sections.	See your MacDon Dealer
		Flatten header angle.	4.7.3 Header Angle, page 56
	Knife is not operating at recommended speed.	Check engine speed of windrower.	Refer to your windrower's operator's manual

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Excessive header vibration	Knife hold-downs not adjusted properly.	Adjust hold-downs.	Knife Hold-Downs, page 147
	Knives on double-knife drive not timed.	Adjust knife timing.	Adjusting Double Knife Timing, page 167
	Knife not operating at recommended speed.	Check engine speed of windrower.	Refer to your windrower's operator's manual
	Excessive knife wear.	Replace knife.	6.6.2 Removing Knife, page 138 and 6.6.5 Installing Knife, page 140
	Loose or worn knifehead pin or drive arm.	Tighten or replace parts.	6.6.3 Removing Knifehead Bearing, page 138 , and 6.6.9 Knife Drive Box, page 169
	Bent cutterbar.	Straighten cutterbar.	See your MacDon Dealer
Knife back breakage	Bent or broken guard.	Straighten or replace.	6.6.7 Knife Guards, page 141
	Worn knifehead pin.	Replace.	6.6.3 Removing Knifehead Bearing, page 138
	Dull knife.	Replace.	6.6.2 Removing Knife, page 138 and 6.6.5 Installing Knife, page 140
Excessive breakage of knife sections or guards.	Knife hold-downs not adjusted properly.	Adjust hold-downs.	Knife Hold-Downs, page 147
	Cutterbar operating too low in stony conditions.	Raise cutterbar, using skid shoes.	Cutting On the Ground, page 54
	Float is set too heavy.	Adjust for lighter float.	4.7.2 Header Float, page 56
	Bent or broken guard.	Straighten or replace.	6.6.7 Knife Guards, page 141
	Header angle too steep.	Flatten header angle.	4.7.3 Header Angle, page 56

TROUBLESHOOTING

7.3 Reel Delivery

Symptom	Problem	Solution	Section
Reel not releasing material in normal standing crop	Reel speed too fast.	Reduce reel speed.	4.7.4 Reel Speed, page 57
	Reel too low.	Raise reel.	4.7.8 Reel Height, page 59
	Reel tines too aggressive.	Reduce cam setting.	4.7.10 Reel Tine Pitch, page 66
	Reel too far back.	Move reel forward.	4.7.9 Reel Fore-Aft Position, page 60
Reel not releasing material in lodged and standing crop (reel fully lowered)	Reel tines too aggressive for standing crop.	Reduce cam setting (1 or 2).	4.7.10 Reel Tine Pitch, page 66
Wrapping on reel end	Reel tines too aggressive.	Reduce cam setting.	4.7.10 Reel Tine Pitch, page 66
	Reel too low.	Raise reel.	4.7.8 Reel Height, page 59
	Reel speed too fast.	Reduce reel speed.	4.7.4 Reel Speed, page 57
	Crop conditions.	Install optional endshields.	See your MacDon Dealer
	Reel not centered in header.	Center reel in header.	6.8.3 Reel Centering, page 201
Reel releases crop too quickly	Reel tines not aggressive enough.	Increase cam setting.	4.7.10 Reel Tine Pitch, page 66
	Reel too far forward.	Move reel back.	4.7.9 Reel Fore-Aft Position, page 60
Reel will not lift	Reel lift couplers are incompatible or defective.	Change quick coupler.	—
Reel will not turn	Control set at 0.	Activate reel speed control.	4.7.4 Reel Speed, page 57
	Quick couplers not properly connected.	Connect couplers.	5.1 Attaching Header to Windrower, page 105
	Reel drive chain disconnected.	Connect chain.	6.8.4 Reel Drive Chain, page 202
Reel motion uneven under no load	Excessive slack in reel drive chain.	Tighten chain.	6.8.4 Reel Drive Chain, page 202

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Reel motion is uneven or stalls in heavy crops	Reel speed too fast.	Reduce reel speed.	4.7.4 Reel Speed, page 57
	Reel fingers not aggressive enough.	Move to a more aggressive finger pitch notch.	4.7.10 Reel Tine Pitch, page 66
	Reel too low.	Raise reel.	4.7.8 Reel Height, page 59
	Relief valve on windrower has low relief pressure setting.	Increase relief pressure to manufacturer's recommendations.	Refer to your windrower's operator's manual
	Low oil reservoir level on windrower. NOTE: Sometimes more than one reservoir.	Fill to proper level.	
	Relief valve malfunction.	Replace relief valve.	
Cutting tough crops with standard torque (19-tooth) reel drive sprocket.	Replace with high torque (10-tooth) or 14-tooth reel drive sprocket.	6.8.5 Reel Drive Sprocket, page 211	
Plastic fingers cut at tip	Insufficient reel to cutterbar clearance.	Increase clearance.	6.8.1 Reel Clearance to Cutterbar, page 196
Plastic fingers bent rearward at tip	Reel digging into ground with reel speed slower than ground speed.	Raise header.	4.7.1 Cutting Height, page 50
		Decrease header tilt.	4.7.3 Header Angle, page 56
		Move reel aft.	4.7.9 Reel Fore-Aft Position, page 60
Plastic fingers bent forward at tip (opposite of above)	Reel digging into ground with reel speed faster than ground speed.	Raise header.	4.7.1 Cutting Height, page 50
		Decrease header tilt.	4.7.3 Header Angle, page 56
		Move reel aft.	4.7.9 Reel Fore-Aft Position, page 60
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.	4.13 Unplugging Cutterbar, page 84
		Stop reel before plugging becomes excessive.	—

TROUBLESHOOTING

7.4 Header and Drapers

Symptom	Problem	Solution	Section
Header lift insufficient.	Low relief pressure.	Increase relief pressure.	See your MacDon Dealer
Insufficient draper speed.	Speed control set too low.	Increase control setting.	4.7.6 Draper Speed, page 59
	Relief pressure too low.	Increase relief pressure to recommended setting.	See your MacDon Dealer
	Windrower header drive too slow.	Adjust to correct speed for windrower model.	Refer to your windrower's operator's manual
	Worn out gear pump.	Replace pump.	—
	Pressure compensator (V7) set too low.	Adjust to increase setting.	Refer to your windrower's operator's manual
Draper will not move.	Drapers are loose.	Tighten drapers.	6.7.3 Adjusting Side Draper Tension, page 182
	Drive or idler roller wrapped with material.	Loosen draper and clean rollers.	
	Slat or connector bar jammed by frame or material.	Loosen draper and clear obstruction.	
	Roller bearing seized.	Replace.	See your MacDon Dealer
	Low hydraulic oil.	Fill windrower reservoir to full level.	See your MacDon Dealer
	Incorrect relief setting at flow control valve.	Adjust relief setting.	See your MacDon Dealer
Draper stalling.	Material not feeding evenly off knife.	Lower reel.	4.7.8 Reel Height, page 59
		Install stub guards.	See your MacDon Dealer, 6.6.7 Knife Guards, page 141 , and 8.1.21 Stub Guard Conversion Kit, page 261
Hesitation in flow of bulky crop.	Header angle too flat.	Steepen header angle.	4.7.3 Header Angle, page 56
	Material overload on drapers.	Increase side draper speed.	4.7.6 Draper Speed, page 59
		Install upper cross auger.	8.1.23 Upper Cross Auger (UCA), page 261
Add flighting extensions.	See your MacDon Dealer		
Drapers back-feed.	Drapers running too slow in heavy crop.	Increase draper speed.	4.7.6 Draper Speed, page 59
Crop is thrown across opening and under opposite side draper.	Drapers running too fast in light crop.	Reduce draper speed.	

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Material accumulates inside or under front edge of draper.	Deck height improperly adjusted.	Adjust deck height.	6.7.7 Adjusting Deck Height, page 189 Adjusting Deck Height
Material wrapping at upper cross auger beater bars.	Crop conditions do not require beater bars.	Remove beater bars.	4.14.1 Removing Beater Bars, page 85
Material accumulating on end deflectors and releasing in bunches.	End deflectors too wide.	For headers with manual deck shift only, trim deflector or replace with narrow deflector (MD #172381).	4.13 Unplugging Cutterbar, page 84

TROUBLESHOOTING

7.5 Cutting Edible Beans

Symptom	Problem	Solution	Section
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 54
	Float set too light—rides on high spots and does not get back down soon enough.	Set float for:	4.7.2 Header Float, page 56
		- Dry ground: 100–150 lbf	
		- Wet ground: 50–100 lbf	
	Reel being operated too high.	Fully retract reel cylinders.	4.7.8 Reel Height, page 59
	Reel too high with cylinders fully retracted.	Adjust reel height.	4.7.8 Reel Height, page 59
	Finger pitch not aggressive enough.	Adjust finger pitch.	4.7.10 Reel Tine Pitch, page 66
	Reel too far back on reel support arms.	Move reel forward until the fingertips skim the soil surface with header on the ground and the center-link properly adjusted.	4.7.9 Reel Fore-Aft Position, page 60
	Header angle too shallow.	Lengthen center-link.	4.7.3 Header Angle, page 56
		If cutting on ground, header angle can be increased by fully retracting lift cylinders.	
	Reel too slow.	Adjust reel speed to be marginally faster than ground speed.	4.7.4 Reel Speed, page 57
	Ground speed too fast.	Lower ground speed.	4.7.5 Ground Speed, page 58
	Header skid shoes adjusted too low.	Raise skid shoes to highest setting.	Cutting On the Ground, page 54
Dirt packs on bottom of cutterbar and raises cutterbar off the ground.	Install plastic wear strips on bottom of cutterbar and skid shoes.	See your MacDon Dealer	
Dirt packing on bottom of cutterbar with poly wear strips on cutterbar and raises cutterbar off the ground.	Ground too wet. Allow soil to dry.	—	
	Manually clean the bottom of cutterbar when accumulation gets unacceptable.		

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Plants being stripped and complete or partial plants left behind (cont'd)	Plastic wear strip for cutterbar has been installed over top of steel wear plates.	Remove steel cutterbar wear plates when installing the plastic wear strips for cutterbar.	—
	Header not level.	Level header.	4.12 Levelling the Header, page 83
	Worn/damaged knife sections.	Replace sections or complete knife.	6.6 Knife and Knife Drive, page 137
	Parts of vines get caught in pointed guard tip. (Occurs more in row-cropped beans that are hilled from cultivating.)	Install stub guard kit.	8.1.21 Stub Guard Conversion Kit, page 261
Excessive losses at dividers	Divider rod running down crop and shattering pods.	Remove divider rod.	4.7.12 Crop Divider Rods, page 73
	Vines and plants build up on endsheet.	Install divider rod.	
Plant vines pinched between top of draper and cutterbar	Cutterbar has filled up with trash with draper to cutterbar gap properly adjusted.	Raise header fully at each end of field, or as required and shift decks back and forth to help clean out cutterbar.	—
	Shifting of decks with header raised does not clean out cutterbar debris.	Manually remove debris from cutterbar cavity to prevent damage to drapers.	
Crop accumulating at guards and not moving rearward onto drapers	Reel finger pitch not aggressive enough.	Increase finger aggressiveness (cam position).	4.7.10 Reel Tine Pitch, page 66
	Reel too high relative to knife.	Re-adjust reel minimum height with cylinders fully retracted.	Adjusting Reel Clearance, page 199
	Reel too far forward of cutterbar C-section.	Re-position reel.	4.7.9 Reel Fore-Aft Position, page 60
Reel too far forward of cutterbar C-section.			
Reel shattering pods	Reel turning too fast.	Reduce reel speed.	4.7.4 Reel Speed, page 57
	Bean pods are too dry.	Cut at night with heavy dew once pods have softened.	—
	Reel finger pitch not aggressive enough.	Increase finger aggressiveness (cam position).	4.7.10 Reel Tine Pitch, page 66

TROUBLESHOOTING

Symptom	Problem	Solution	Section
Cutterbar guards breaking	Float insufficient.	Increase float.	4.7.2 Header Float, page 56
	Excessive amount of rocks in field.	Consider installing optional stub guards.	6.6.7 Knife Guards, page 141 , and 8.1.21 Stub Guard Conversion Kit, page 261
Tip: Experiment with a few guards on a section of cutterbar to compare the performance of the two different styles of guards.			
Cutterbar pushing too much trash and dirt	Header too heavy.	Re-adjust float to make header lighter.	4.7.2 Header Float, page 56
	Header angle too steep.	Decrease header angle with lift cylinders.	4.7.3 Header Angle, page 56
		Shorten the center-link.	
	Regular guards push dirt and plug up with trash or plug up with trash and then push dirt.	Install stub guard kit.	8.1.21 Stub Guard Conversion Kit, page 261
Improper support for header.	Install center skid shoes on header.	Cutting On the Ground, page 54	
Cutterbar fills up with dirt	Excessive gap between top of front of draper and cutterbar.	Adjust front deck supports to obtain proper clearance between cutterbar and draper.	6.7.7 Adjusting Deck Height, page 189
		Raise header fully at each end of field or as required and shift decks back and forth to help clean out cutterbar.	—
Reel carries over odd plants in same location	Reel fingers (steel) bent and hook plants out of the crop flow on drapers.	Straighten fingers (steel).	
	Dirt accumulation on end of fingers do not let plants slide off fingers over drapers.	Raise reel.	4.7.8 Reel Height, page 59
		Adjust reel fore and aft location to move fingers out of the ground.	4.7.9 Reel Fore-Aft Position, page 60
Cutterbar pushing too much dirt in certain locations for length of field	Tire tracks or row crop ridges caused by seeding or spraying operations.	Cut at angle to ridges or crop rows to allow knife and guards to clean out better.	—
	Rolling land along length of field due to cultivating.	Cut at 90° to undulations, provided knife floats across without digging in.	

TROUBLESHOOTING

Symptom	Problem	Solution	Section
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.	4.7.6 Draper Speed, page 59
	Finger pitch too retarded.	Increase finger pitch.	4.7.10 Reel Tine Pitch, page 66
Reel wraps up with crop	Reel too low.	Raise reel.	4.7.8 Reel Height, page 59
Reel ends wrap up with crop	Uncut crop interfering on reel ends.	Add reel endshields.	Refer to your header's parts catalog

TROUBLESHOOTING

7.6 Windrow Formation

Symptom	Problem	Solution	Section
Heads on ground (flowered out)	Draper speed too slow.	Increase draper speed.	4.7.6 Draper Speed, page 59
	Draper angle too flat.	Increase header angle.	4.7.3 Header Angle, page 56
	Ground speed too slow.	Increase ground speed.	4.7.5 Ground Speed, page 58
	Crop too ripe.	Cut material before too mature.	—
Hollow in center	Draper speed too slow.	Increase draper speed.	4.7.6 Draper Speed, page 59
	Delivery opening too wide.	Decrease delivery opening width.	4.8 Delivery Opening, page 75
Heads in center (too much herringbone)	Draper speed too fast or draper angle too steep.	Reduce draper speed and/or decrease draper angle.	4.7.6 Draper Speed, page 59
			4.7.3 Header Angle, page 56
	Ground speed too fast.	Reduce ground speed.	4.7.5 Ground Speed, page 58
	Crop too green.	Allow to mature.	—
All heads to one side	Crop leaning to one side and reel too slow.	Increase reel speed to	4.7.4 Reel Speed, page 57
		re-orient crop parallel to draper slats and/or increase finger pitch aggressiveness.	4.7.10 Reel Tine Pitch, page 66
Uneven windrow (any crop condition)	Ground speed too fast for drapers, causing heads to fan out and causing crop to come off draper in bunches.	Reduce ground speed or increase draper speed.	4.7.5 Ground Speed, page 58
			4.7.6 Draper Speed, page 59
	Reel too low.	Raise reel.	4.7.8 Reel Height, page 59
	Reel too fast.	Reduce reel speed.	4.7.4 Reel Speed, page 57

8 Options and Attachments

8.1 Options and Attachments

The following options and attachments are available for use with your header. Most come with installation instructions. See your MacDon Dealer for availability and ordering information.

8.1.1 Cutterbar Plastic Wear Strips

Available as an attachment, they are recommended for cutting on the ground where soil adheres to steel.

Bundles by header size:

- 15 ft. – MD #B4864
- 20 ft. – MD #B4865
- 25 ft. – MD #B4838
- 30 ft. – MD #B4839
- 35 ft. – MD #B4840
- 40 ft. – MD #B4841
- 45 ft. – MD #B5114



Figure 8.1: Bundle number depends on size of header

8.1.2 Divider Latches

The latches attach to the endsheets. They allow for quick removal of endsheet divider cones to accommodate storage and if required, to reduce the transport width of the header. Installation instructions are included with the kit.

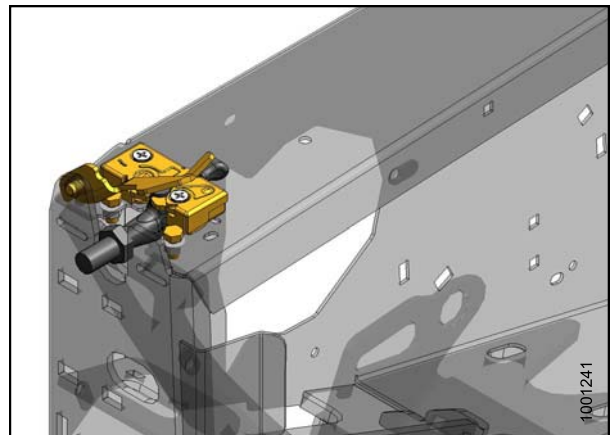


Figure 8.2: MD #B5607

OPTIONS AND ATTACHMENTS

8.1.3 Double Draper Drive (DDD) Kit

This option minimizes draper slipping in heavy forage crops when using the side delivery feature, by having four draper rollers powered instead of the normal two.

Installation instructions are included with the kit.

Available for 30 to 40 ft. headers.

MD #B5653²⁰

8.1.4 Double Windrow Attachment (DWA)

The DWA²¹ feature lets you lay up to 48 ft. (14.6 m) of crop in a single windrow. This is ideal for today's large forage harvesters and can translate into significant time and fuel savings for producers who employ this feature. When mounting to D65 double knife headers an HC10 Conditioner²² is required.

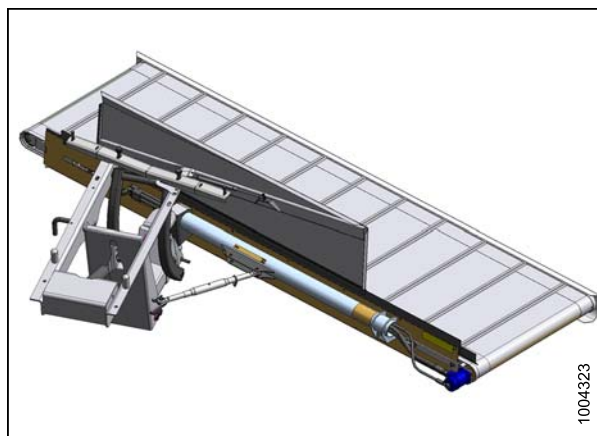


Figure 8.3: MD #C1987

8.1.5 Draper Deflector (Narrow)

Narrow metal deflectors attach to the inboard side of the endsheets, prevent material from falling through the gap between the endsheet and draper.

See D65 Draper Header Parts Catalog for required parts.

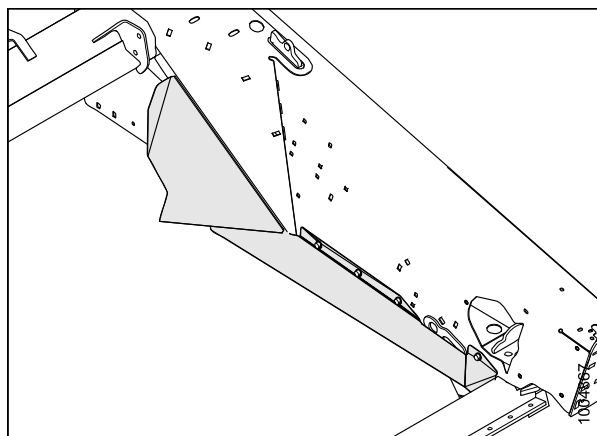


Figure 8.4: Parts are ordered individually.

20. MD #B5606 is required to install both Upper Cross Auger (UCA) and DDD on an SP Windrower.

21. This option is not compatible with the M105 SP Windrower.

22. This option is not for use with the M205 or M105 SP Windrower.

OPTIONS AND ATTACHMENTS

8.1.6 Draper Deflector (Wide)

Wide metal deflectors attach to the inboard side of the endsheets, prevent material from falling through the gap between the endsheet and draper.

See D65 Draper Header Parts Catalog for required parts.

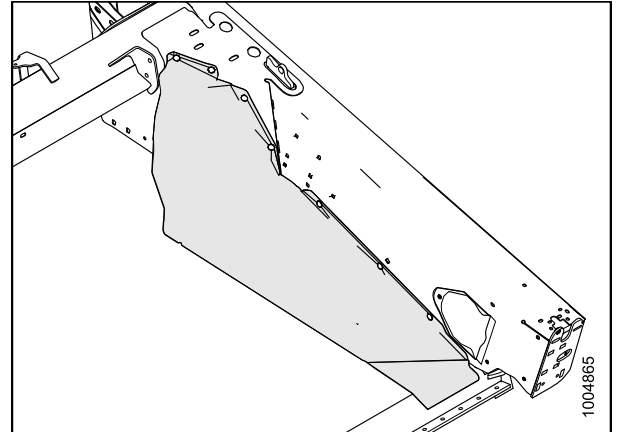


Figure 8.5: Parts are ordered individually.

8.1.7 Draper Extension Kit

This kit increases the length of each deck up to 10 in. (250 mm) into the header opening which decreases the swath width when cutting light/thin crops.

It includes roller support extensions, a draper repair kit and necessary hardware. Installation instructions are also included.

MD #B5407²³

8.1.8 Draper Header Supports (Boots for M Series)

The boots allow you to pick up a D65 Draper Header with an M Series Windrower.

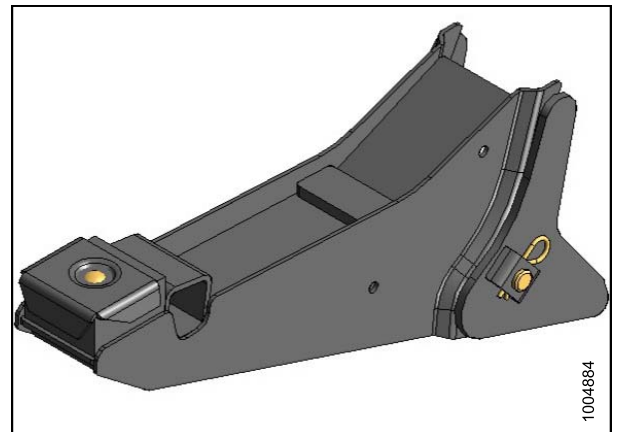


Figure 8.6: MD #B5427

23. Not for use with Double Draper Drive (DDD).

OPTIONS AND ATTACHMENTS

8.1.9 End Swath Deflector Rods (End Delivery)

Available as an attachment, the rods are used for double swathing – end delivery only, but can be kept on for center delivery.

Rods prevent crop coming off drapers from getting thrown up to standing crop under wide deflector (see Section 8.1.6 [Draper Deflector \(Wide\)](#), page 255). The divider would not have any room to run back between end delivered swath and standing crop when shifting drapers – draper slides between rods and wide draper deflector.

Installation and adjustment instructions are included with the kit.

Order bundles:

- LH - MD #B5088
- RH - MD #B5089

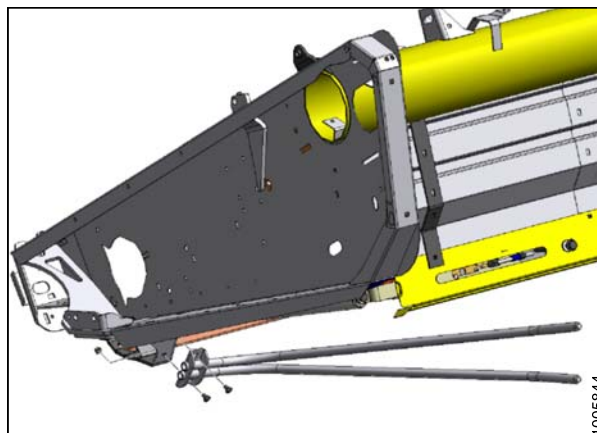


Figure 8.7: Order bundles accordingly

8.1.10 HC10 Hay Conditioner

The hay conditioner will lay uniform, fluffy windrows. Conditioning or crimping the cut hay allows moisture release for quicker drying and earlier processing.

Installation instructions, operating instructions, and parts list are included.

NOTE: Not for use on M205 Windrower.

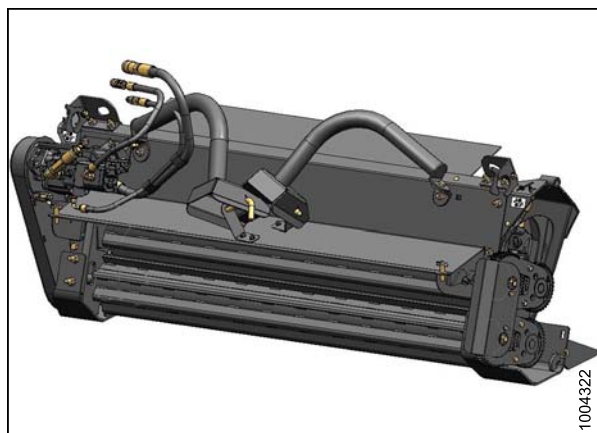


Figure 8.8: MD #C1982

8.1.11 Hydraulic Deck Shift Package

This system allows shifting of the decks from the operator's console when double-swathing.

Installation and adjustment instructions are included with the kit.

Available on 25, 30, 35, and 40 ft. headers.

MD #B5664

OPTIONS AND ATTACHMENTS

8.1.12 Knifehead Shield

The shields attach to the endsheets and reduce the knifehead opening to prevent cut crop, particularly severely lodged crop, from accumulating over the knifehead, which could damage the knife drive box and the endsheet.

Order kit according to header size and guard type.

Regular Guards

- 25 ft. and smaller – MD #220100
- 30 ft. and larger – MD #220101

Stub Guards

- 25 ft. and smaller – MD #220102
- 30 ft. and larger – MD #220103

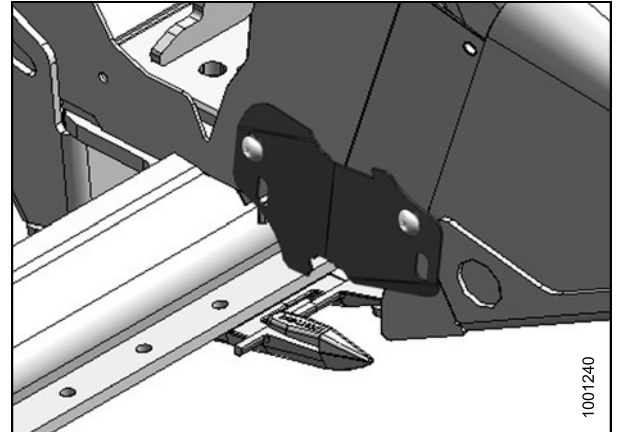


Figure 8.9: Order kit according to header size and guard type.

8.1.13 Lodged Crop Reel Finger Kit

The steel fingers attach to ends of every other tine bar and help in clearing material in heavy, hard-to-cut crops such as lodged rice.

Two kits are required for modifying each bar of a 6-bat reel. Installation and adjustment instructions are included with the kit.



Figure 8.10: MD #B4831

8.1.14 Outboard Skid Shoes with Poly

This kit is useful when cutting low to the ground. It acts as a touch-down point when operating on rough or undulating ground. The skid shoes are adjustable without the use of tools.

NOTE: 30 ft. headers require only one set of outboard skid shoes while 35 ft. and larger headers require two sets.

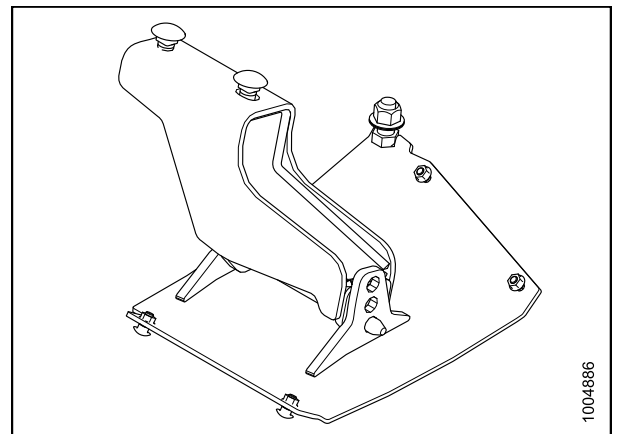


Figure 8.11: MD #B4963

OPTIONS AND ATTACHMENTS

8.1.15 Compression Molded Skid Shoes

Inner skid shoes are recommended for cutting on the ground.

Reduces wear on the cutterbar and may enhance the in-field performance of the header in some harvesting conditions. Inner skid shoes are standard on D Series draper headers.

NOTE: The skid shoes are adjustable without the use of tools.

NOTE: 35 ft. and larger headers require two sets.

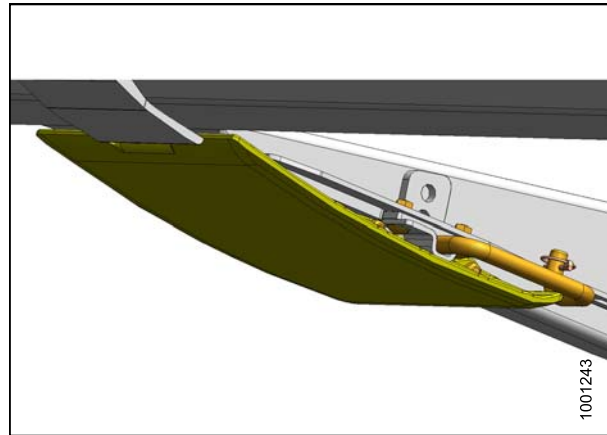


Figure 8.12: B #5615

8.1.16 Reel Endshield Kit

The steel shields attach to ends of the reel and help in clearing material in heavy, hard-to-cut crops. Installation and adjustment instructions are included with the kit.



Figure 8.13

OPTIONS AND ATTACHMENTS

8.1.17 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion of a 6-bat reel to a 9-bat reel.

Bundles by header size

- 15 ft. – Steel Fingers MD #B5654
- 20 ft. – Steel Fingers MD #B5655
- 25 ft. – Plastic Fingers MD #B5277
- 30 ft. – Plastic Fingers MD #B5278²⁴
- 30 ft. – Steel Fingers MD #B5657²⁴
- 35 ft. – Plastic Fingers MD #B5674

NOTE: Must order additional endshields when converting reel.

8.1.18 Rice Divider Rods

The rice divider rods attach to the left hand and right hand endsheet cones and perform the same function in tall and tangled rice crops as standard equipment crop dividers. Installation instructions are included with the kit.

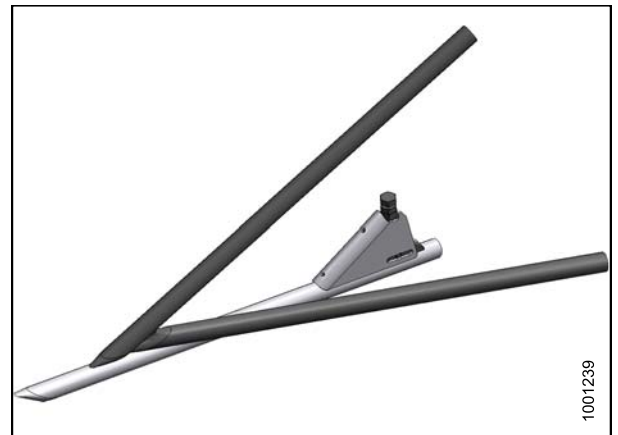


Figure 8.14: MD #B5609

24. Double reel units only

OPTIONS AND ATTACHMENTS

8.1.19 Stabilizer Wheels

The stabilizer wheels help stabilize the header in field conditions that would otherwise cause the header to bounce and result in uneven cutting height. Installation and adjustment instructions are included with the kit.

Available as an attachment for use with 30, 35, and 40 ft. headers.

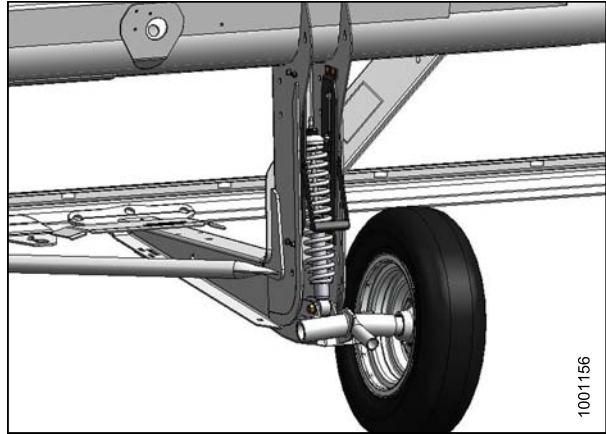


Figure 8.15: MD #C1986

8.1.20 Stabilizer/Slow Speed Transport Wheels

Spring loaded wheels help cushion and guide the ends of larger draper headers, plus enables transportation at road speed less than 25 mph (40 km/h) for 30 ft. (9.1 m) and larger headers.

The stabilizer/transport kit will allow you to transport your draper header from farm-to-field and then quickly switch to field stabilizer wheel position by one person. The transport package is a simple self-supporting unit with very little hitch weight for simpler hitching. The transport tow pole is a two piece unit that requires no tools to assemble/disassemble and stores on the backtube of the header during harvesting operation. The stabilizer wheel application is ideal for cutting off the ground, by stabilizing the header in undulating ground conditions.

For use on 30, 35, and 40 ft. headers.



Figure 8.16: MD #C1997

OPTIONS AND ATTACHMENTS

8.1.21 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 Kit according to header length.

- 15 ft. - MD #B5009
- 20 ft. - MD #B5010
- 25 ft. - MD #B5011
- 30 ft. - MD #B5012
- 35 ft. - MD #B50134848



Figure 8.17: Order according to header length

8.1.22 Swath Forming Rods (Center Delivery)

The rods form the windrow such that the heads are in the center and thus are protected from shatter. The rods are mainly used for grass seed cutting applications.

Installation and adjustment instructions are included with the kit.

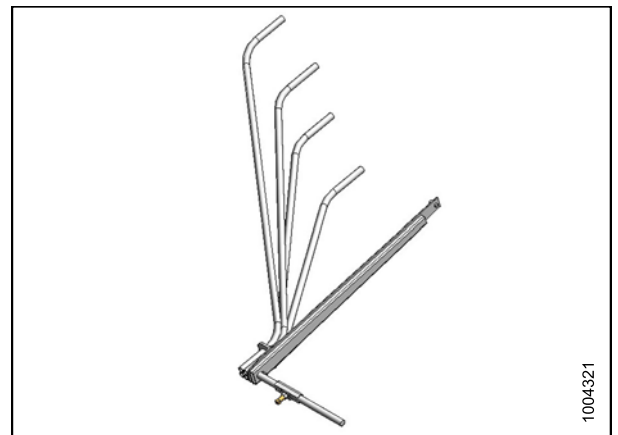


Figure 8.18: MD #B4803

8.1.23 Upper Cross Auger (UCA)

Attaches in front of the backtube, the UCA improves feeding of crop to the center of the header in heavy crop conditions. Ideal for high volume harvesting of forages, oats, canola, mustard and other tall, bushy, hard to feed crops.

Order bundle according to header length.

- 15 ft. - MD #B4844
- 25 ft. - MD #B4846
- 30 ft. - MD #B4847
- 35 ft. - MD #B4848
- 40 ft. - MD #B4849



Figure 8.19: Order according to header length

OPTIONS AND ATTACHMENTS

8.1.24 Vertical Knife Mounts

The vertical knife²⁵ mounts allow installation of vertically oriented knives onto both ends of the header.

Installation and adjustment instructions are included with the bundle.

Order Bundles

- LH - MD #B5757
- RH - MD #B5758

NOTE: If mounting on multiple headers, you will also require the auxiliary vertical knife plumbing kit MD #B5406.

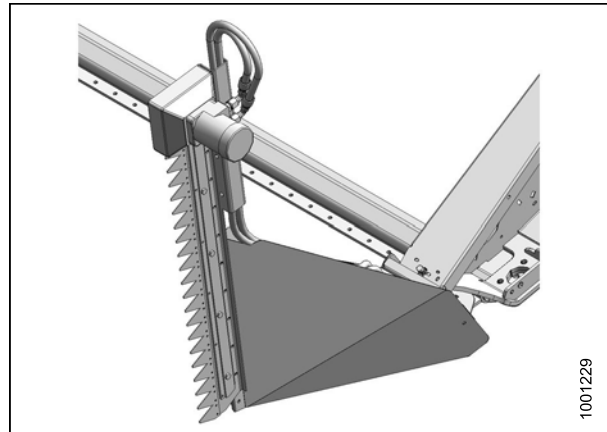


Figure 8.20: Order bundles

25. Must be purchased from a separate supplier.

9 Unloading and Assembly

Refer to the header specific instructions for unloading, assembly, and setup procedures that are included with your shipment. The instruction part numbers are shown in the table below:

Shipping destination	Header description	MacDon instruction part number
North America	D65 Draper Header for Self-Propelled Windrowers	MD #169603
Export (that is, anywhere except North America)	D65 Draper Header for Self-Propelled Windrowers	MD #169605

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