MacDon

R85
Rotary Disc 13-Foot Self-Propelled Windrower Header

Operator's Manual

169455 Rev. E

Original Instruction

The harvesting specialists worldwide.

Rotary Disc 13-Foot Self-Propelled Windrower Header

Published: December, 2013

Introduction

This instructional manual describes the operating and maintenance procedures for the MacDon Model R85 Rotary Disc 13-foot Self-Propelled Windrower Header.

Your new MacDon rotary header, when attached to a MacDon M-Series Self-Propelled Windrower is designed to cut, condition, and lay in windrows a wide variety of grasses and hay crops.

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 in this manual, your header will work well for many years.

A parts catalog is also supplied with your new header. If you require more detailed service information, a technical manual is available from your Dealer.

Use the Table of Contents and the Index to guide you to specific areas. Study the Table of Contents to familiarize yourself with how the material is organized. Keep this manual handy for frequent reference and to pass on to new Operators or Owners. Call your Dealer if you need assistance, information, or additional copies of this manual.

Store this operator's manual and the parts catalog in the manual storage case in the windrower cab.

Serial Number(s)

Record the serial number of the header in the space provided.

Header Serial No: _____

Serial Number Plate (A) is located on the top surface at the right hand end of the header.

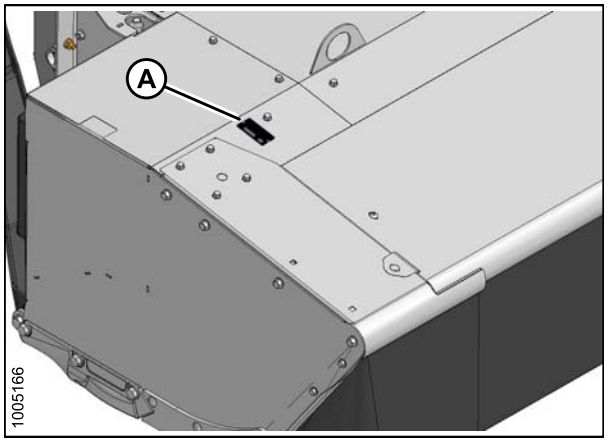

Figure 1

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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

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.

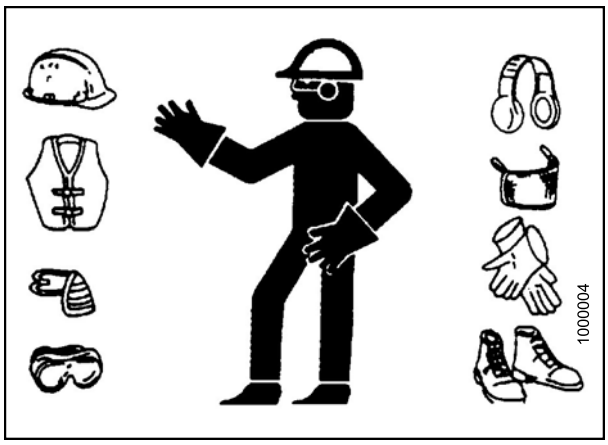

Figure 1.2

- 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.

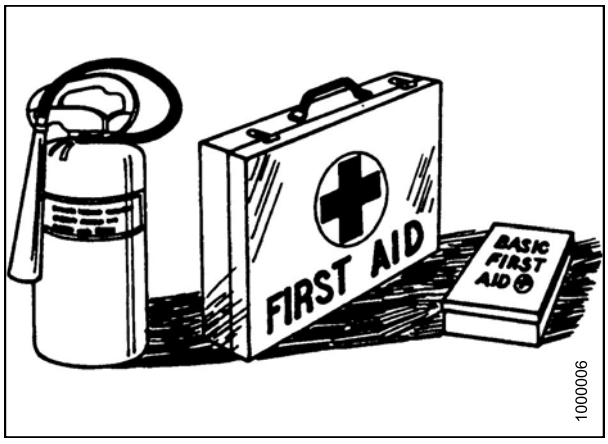

Figure 1.4

- 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.

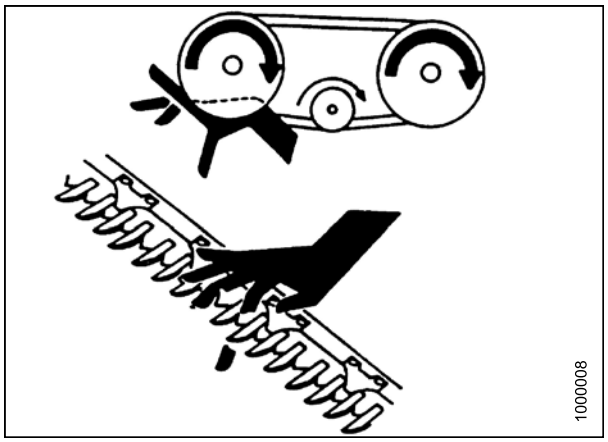

Figure 1.6

- 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

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

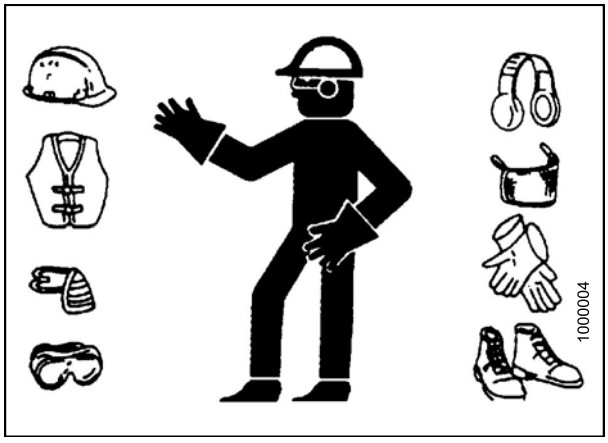

Figure 1.10: Safety Gear

1.5 Hydraulic Safety

- Always place all 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.

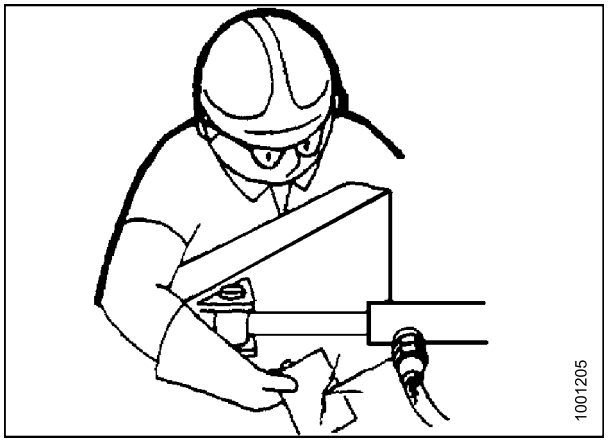

Figure 1.11: Checking Hydraulic Leaks

- 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.

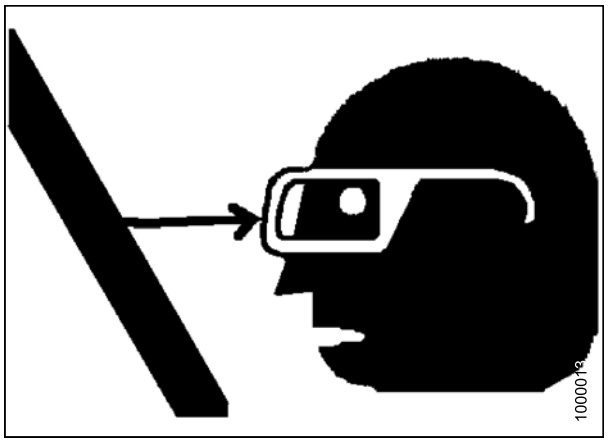

Figure 1.13: Wear Safety Glasses

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.

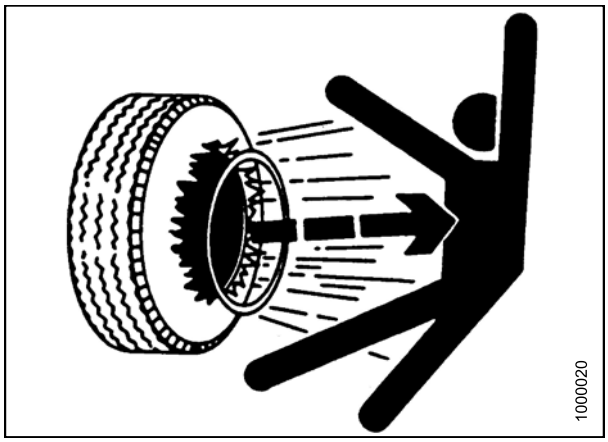

Figure 1.16: Over-Inflation of Tire

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.

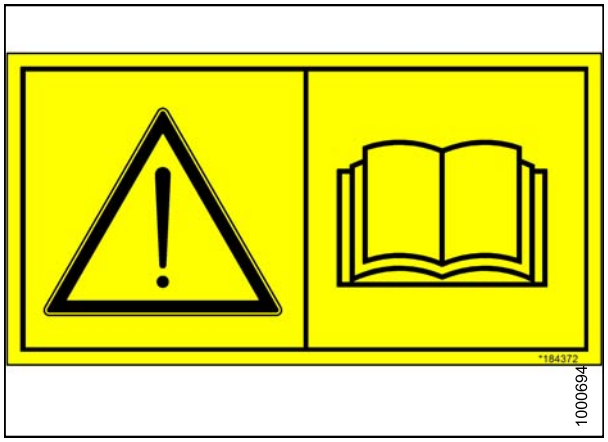

Figure 1.17: Read Operator's Manual before Operating

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.

1.8 Safety Decal Location

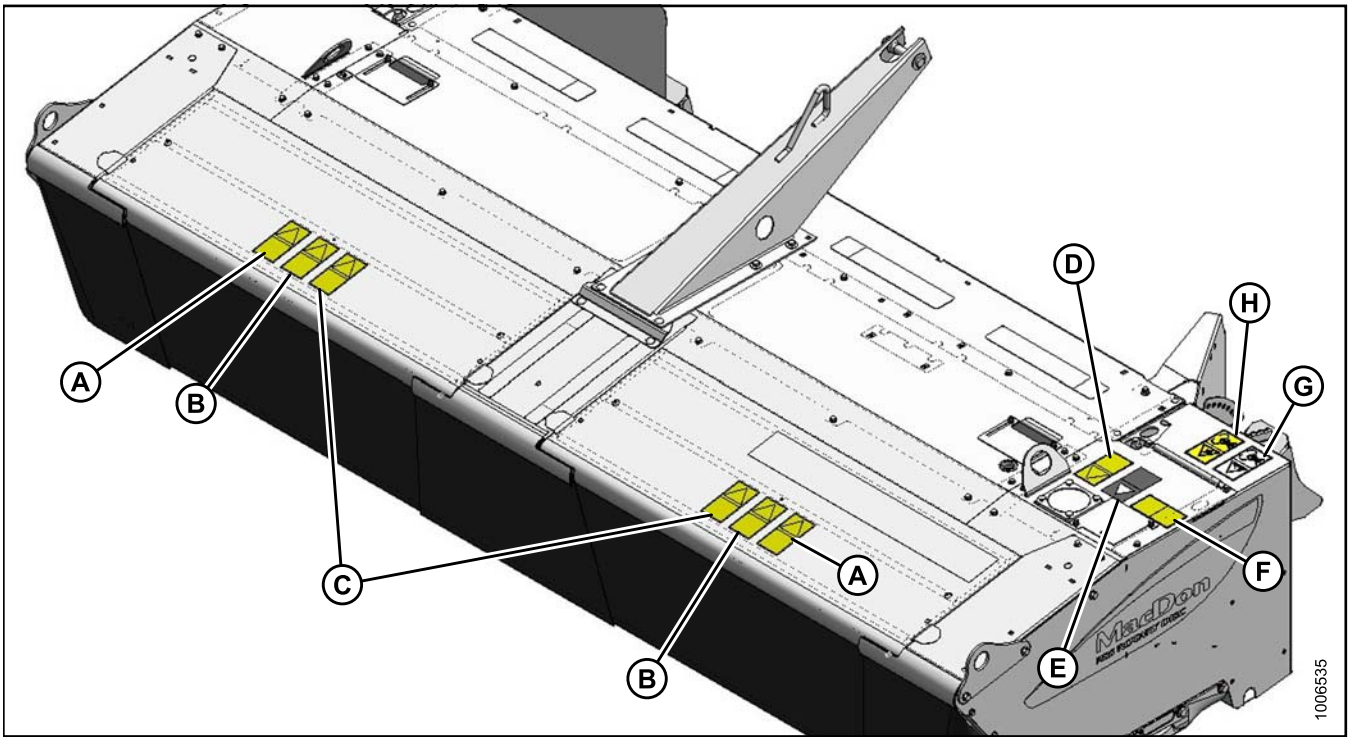

Figure 1.18

A - MD #194465 **B - MD #194463** **C - MD #194466** **D - MD #194464**
E - MD #113482 **F - MD #166466** **G - MD #184385** **H - MD #184371**

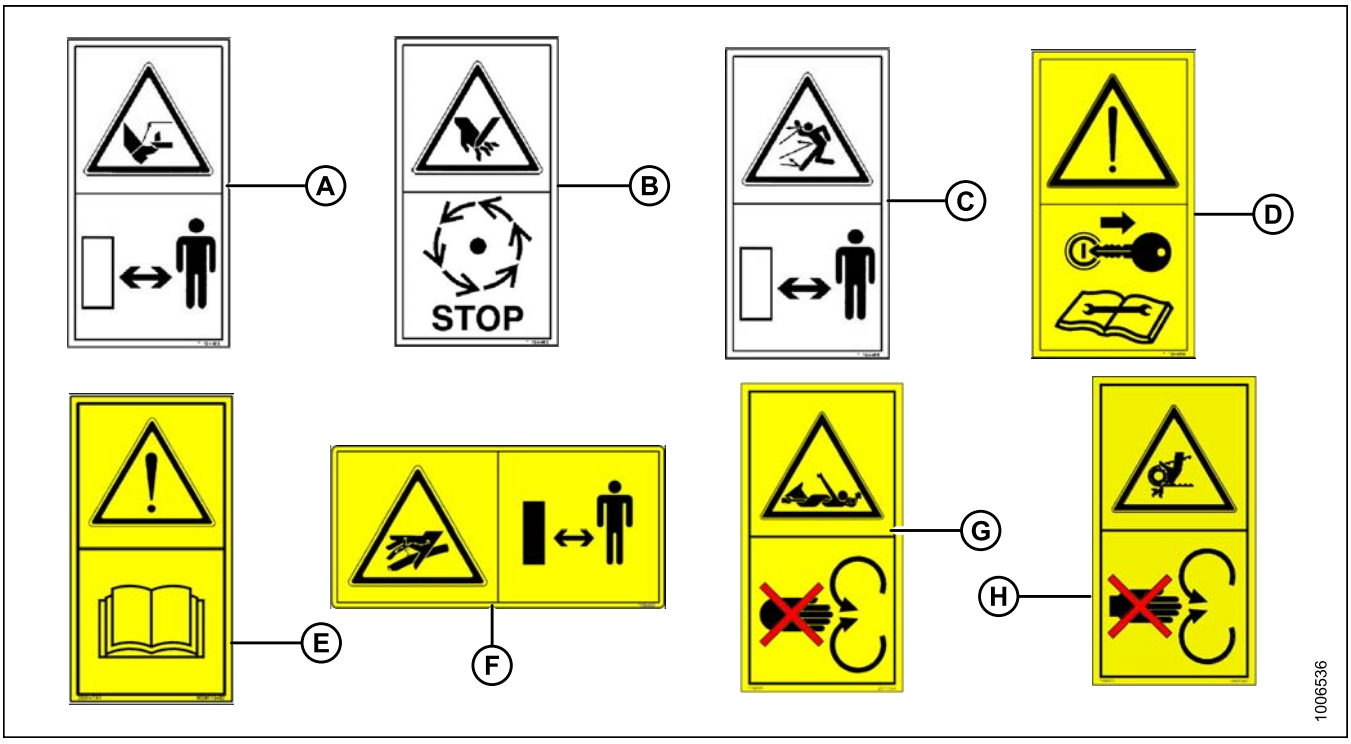

Figure 1.19

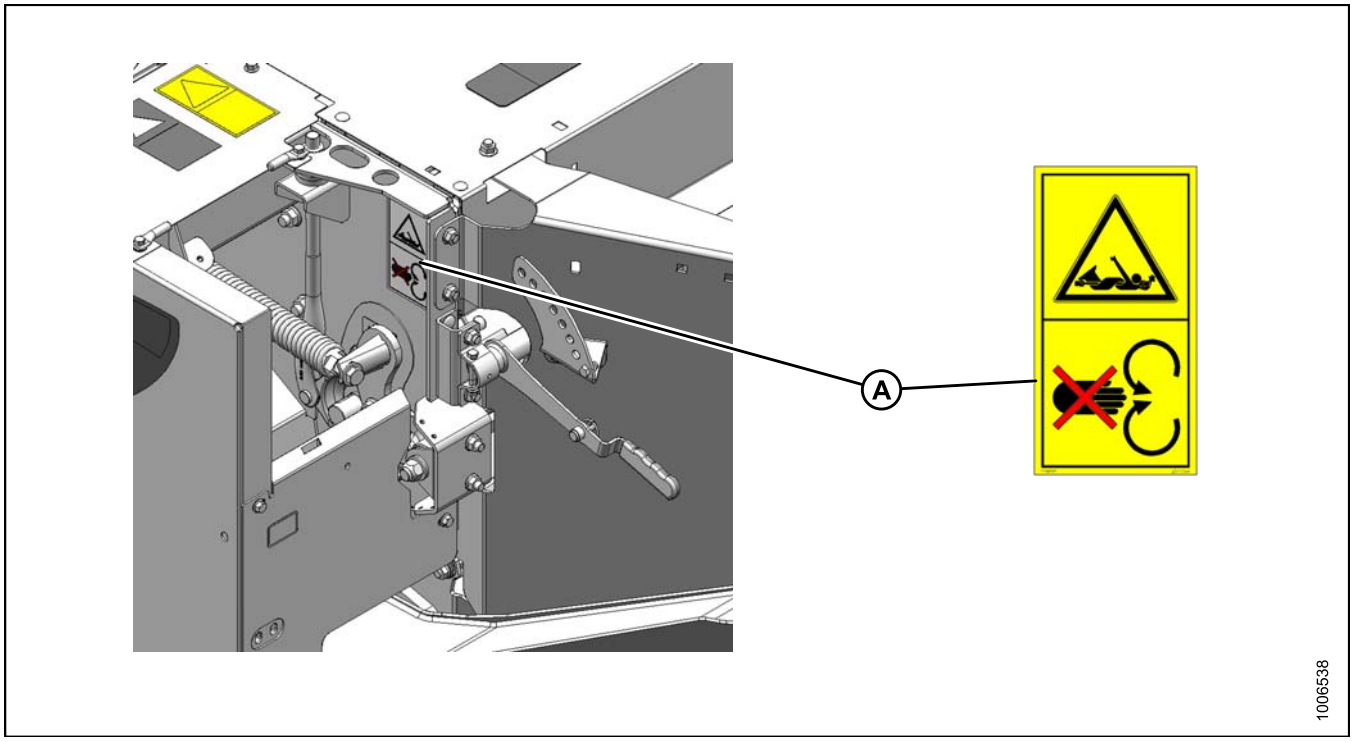

Figure 1.20

A - MD #184385

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 #113482

   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.
   - Shut down 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 1.21: MD #113482

2. 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 1.22: MD #166466

3. 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 1.23: MD #184422

4. MD #190546
   a. Slippery surface.
   b. **WARNING**
      Do not place foot.
      - Do not use this area as a step or platform.
      - Failure to comply could result in serious injury or death.

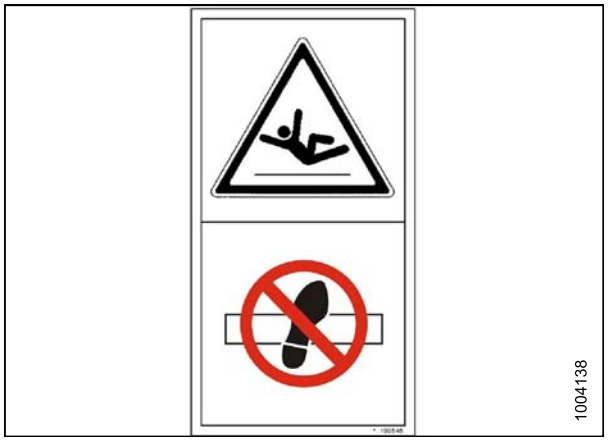

Figure 1.24: MD #190546

5. MD #194463

   a. Rotating blades.

   b. **WARNING**

   - Disengage PTO, shut off the engine, and remove the key before opening covers.
   - Listen and look for evidence of rotation before lifting cover.
   - Rotating cutters may continue to rotate after power is shut off.

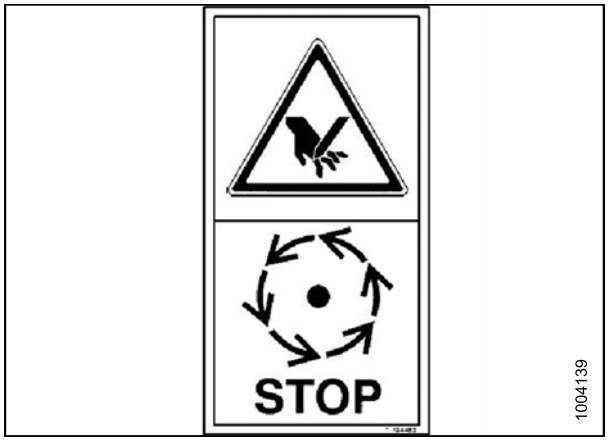

Figure 1.25: MD #194463

6. MD #194464

   a. Shut down for service.

   b. **WARNING**

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

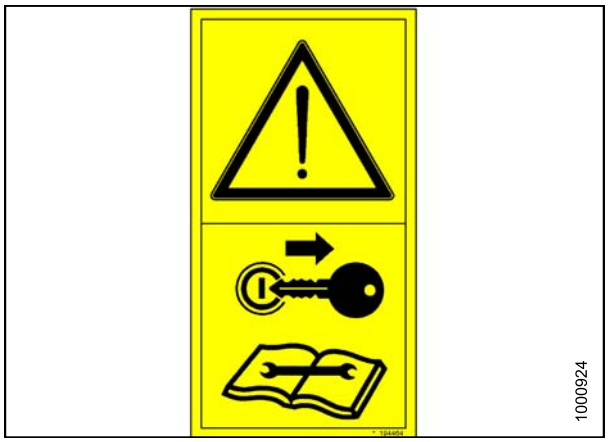

Figure 1.26: MD #194464

7. MD #194465

   a. Rotating cutters.

   b. **WARNING**
   Stand clear

   - Disengage PTO and shut off tractor.
   - Listen and look for evidence of rotation before lifting cover.
   - Rotating cutters may continue to rotate after power is shut off.
   - Failure to comply could result in serious injury or death.

Figure 1.27: MD #194465

8. MD #194466

   a. Rotating flails under hood.

   b. **WARNING**
   Stand clear

      - Crop materials exiting at high speed.
      - Stop machine, look, listen, and wait for all movement to stop before approaching.
      - Failure to comply could result in death or serious injury.

Figure 1.28: MD #194466

9. MD #194521

   a. Auger entanglement hazard.

   b. **CAUTION**

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

   c. General hazard pertaining to machine operation and servicing

   d. **CAUTION**

      - Read the operator's manual and follow safety instructions. If you do not have a manual, obtain one from your Dealer.
      - Do not allow untrained persons to operate the machine.
      - Review safety instructions with all Operators 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.

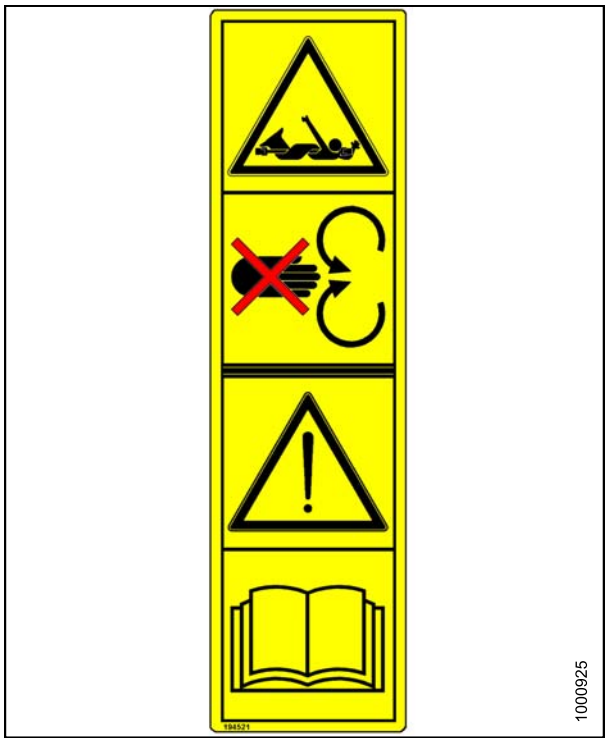

Figure 1.29: MD #194521

2 Definitions

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

Term	Definition
API	American Petroleum Institute.
APT	Articulating Power Turn.
ASTM	American Society of Testing and Materials.
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut.
CDM	Cab Display Module on a self-propelled windrower.
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type link between the header and the machine to which it is attached. It is used to change header angle.
CGVW	Combined Vehicle Gross Weight.
DWA	Double Windrow Attachment.
ECM	Engine Control Module.
Export header	Header configuration typical outside North America.
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose.
F.F.F.T	Flats from finger tight.
GSL	Ground speed lever.
GSS	Grass Seed Special.
GVW	Gross vehicle weight.
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible.
Header	A machine that cuts and lays crop into a windrow, and is attached to a self-propelled windrower.
hp	Horsepower
ISC	Intermediate Speed Control.
JIC	Joint Industrial Council: a standards body that developed the standard sizing and shape for original 37° flared fitting.
n/a	Not applicable
Nut	An internally threaded fastener that is designed to be paired with a bolt.
N-DETENT	The slot opposite the NEUTRAL position on operator's console
North American header	Header configuration typical in North America
NPT	National Pipe Thread: a style of fitting used for low pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit.
ORB	O-ring Boss: a style of fitting commonly used in port opening on manifolds, pumps and motors.
ORFS	O-ring Face Seal: a style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring Seal.

DEFINITIONS

Term	Definition
PTO	Power Take-Off.
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings).
SAE	Society Of Automotive Engineers.
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts.
Self-Propelled Windrower (SP)	Self-propelled machine consisting of a power unit with a header and/or conditioner.
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time.
spm	Strokes per minute
Tractor	Agricultural type tractor.
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg)
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb) or Newtons (N).
T.F.F.T.	Turns from finger tight.
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft·lbf) or Newton-meters (Nm).
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position.
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw.
UCA	Upper Cross Auger.
Washer	A thin cylinder with a hole or slot located in the center and is to be used as a spacer, load distribution element or a locking mechanism.
Windrower	Power unit of a self-propelled header.
WCM	Windrower Control Module.

3 Component Identification

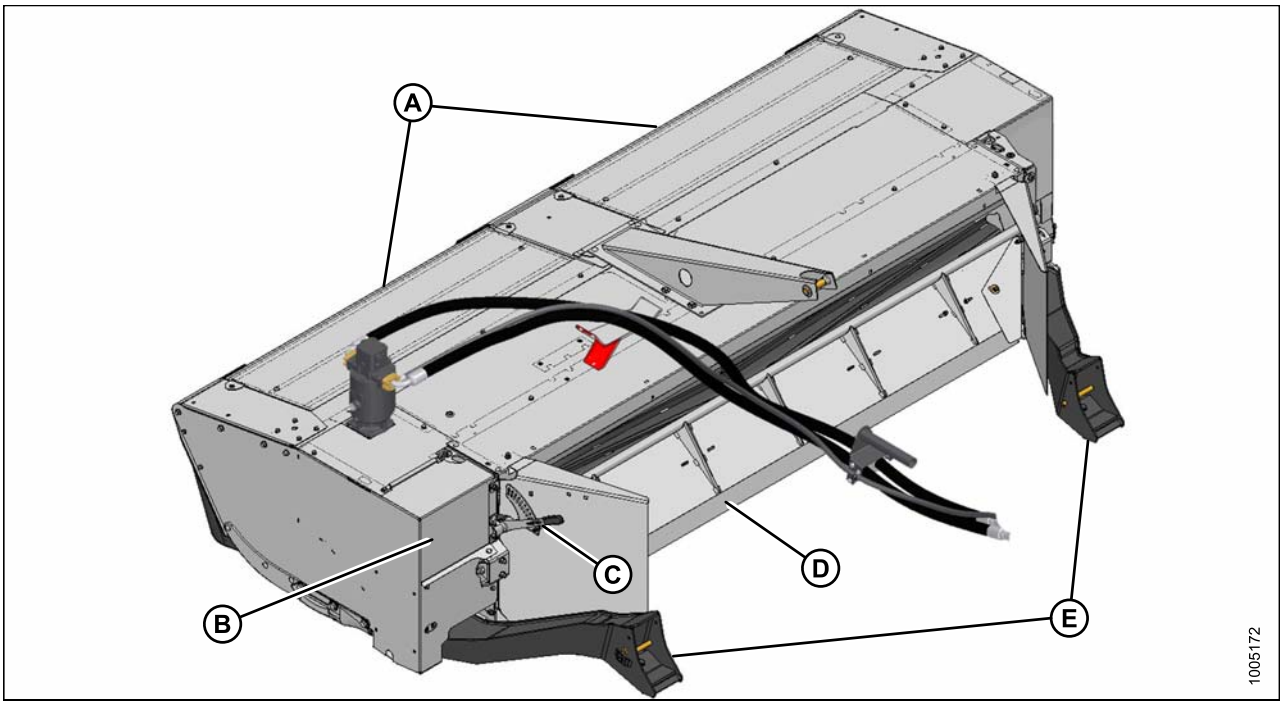

Figure 3.1

A - Doors **B - Driveshield** **C - Swath Baffle Control**
D - Swath Baffle **E - Header Boot**

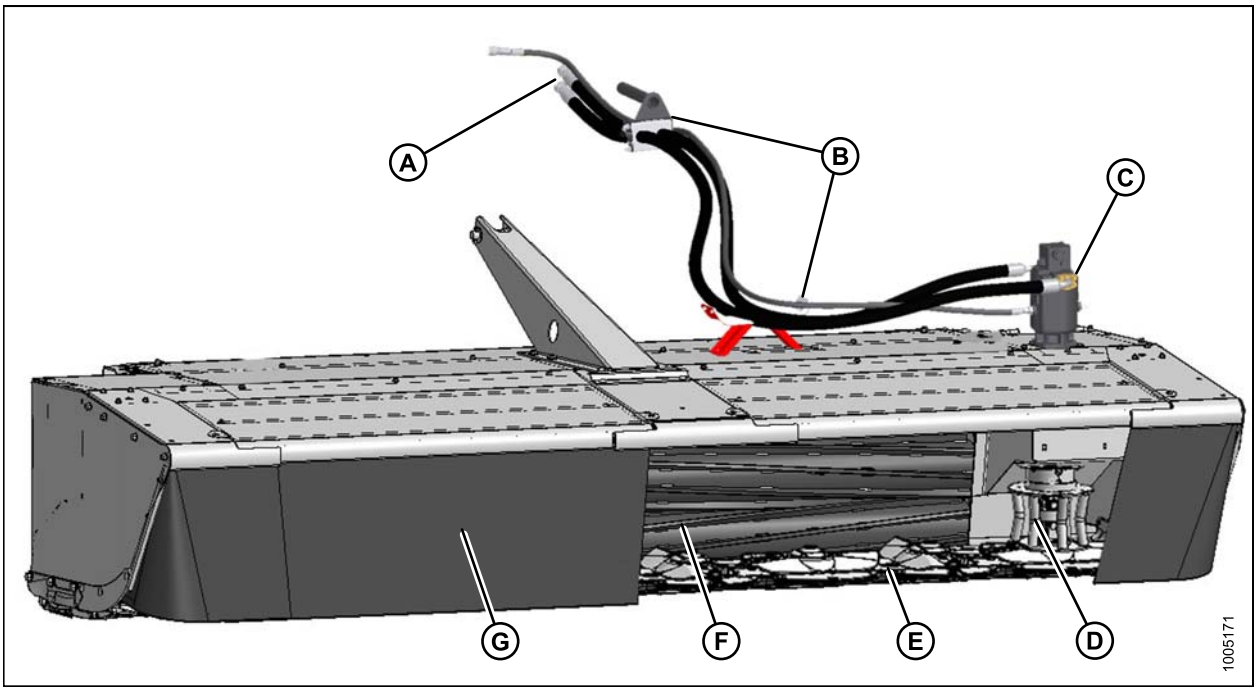

Figure 3.2

A - Hydraulic Hoses to SP Windrower **B - Hose Supports** **C - Drive Motor** **D - Rotary Deflector**
E - 8 Disc Cutterbar **F - Conditioner Rolls** **G - Front Curtains**

4 Specifications

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

Frame and Structure		
Width (transport)		13 ft-0 in. (3952 mm)
Weight (estimated)		3000 lb (1360 kg)
Compatible windrower		MacDon M150, M155, M200, M205 SP Windrowers
Lighting		None
Manual storage		Windrower cab
Cutterbar		
Quantity of cutting discs		8
Blades per disc		Two 11 degrees bevel down reversible
Disc speed		1800–2600 rpm
Blade tip speed range		131–189 mph (59.2–85.5 m/s)
Effective cutting width		12 ft-9.37 in. (3895 mm)
Cutting height		1–3 in. (25–75 mm)
Oil capacity (maximum)		3.37 quarts (US) (3.25 Liters)
Cutting angle range		0–8 degrees below horizontal
Skid shoes		Two adjustable
Geartrain protection		Shearable disc spindles (key)
Deflectors		2 cage type converging
Drives		
Type	M200 and M205	6.4 cu in. (106 cc) heavy duty hydraulic motor
	M150 and M155	4.6 cu in. (75 cc) heavy duty hydraulic motor
Max power developed	M205	231 hp (174 kW)
	M200	195 hp (146 kW)
	M155	148 hp (110 kW)
	M150	130 hp (97 kW)
Connections		Direct coupled (optional quick coupler connection)
Normal operating pressure		4000 psi (27.58 MPa)
Conditioner		
Drive		Bevel gearbox to belt driven enclosed timing gearbox and driveline
Roll type		Intermeshing steel bars
Roll diameter		9.0 in. (229 mm) / 7.0 in. (179 mm) OD Tube
Roll length		118 in. (3000 mm)
Roll speed		730–1040 rpm
Swath width		36–102 in. (915–2540 mm)

Frame and Structure	
Forming shields	Windrower mounted adjustable forming shield system
Ground speed	0–16 mph (25.7 km/h)

5 Operation

5.1 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.**
- **Ensure that the windrower is properly equipped to safely operate the header. This may include adding ballast according to windrower operator's manual requirements for attachments of this size and mass.**

5.2 Operational Safety

CAUTION

Follow these safety precautions:

- **Follow all safety and operational instructions given in your windrower operator's manuals. If you do not have an operator's manual, get one from your Dealer and read it thoroughly**
- **Never attempt to start the windrower's 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 or header**

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**
- **If cutting ditch banks, use extreme caution. If the header hits an obstruction, the front of the windrower will usually swerve toward the ditch**
- **When working on inclines, travel uphill or downhill when possible. Be sure to keep the windrower transmission in gear when travelling downhill**
- **Never attempt to get on or off a moving machine**
- **Do NOT get off the windrower while the header is in operation**
- **Stop the windrower engine and remove the 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**

CAUTION

Follow proper shut down procedure:

- **Engage the windrower brake**
- **Turn off the engine and remove the key**
- **Wait for all movement to stop**
- **Engage the header safety props before inspecting a raised machine**

CAUTION

- **Operate only in daylight or good artificial light**
- **Keep everyone several hundred feet away from your operation**
- **Ensure bystanders are never in line with the front or rear of the machine. Stones or other foreign objects can be ejected with force from either end**
- **Extreme care must be exercised to avoid injury from thrown objects. Do NOT, under any circumstances, operate the header when other people are in the vicinity. Stones and other objects can be thrown great distances by the rotating cutting blades**
- **The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep the cutterbar curtains down when operating the header. Replace the curtains if they become worn or damaged**

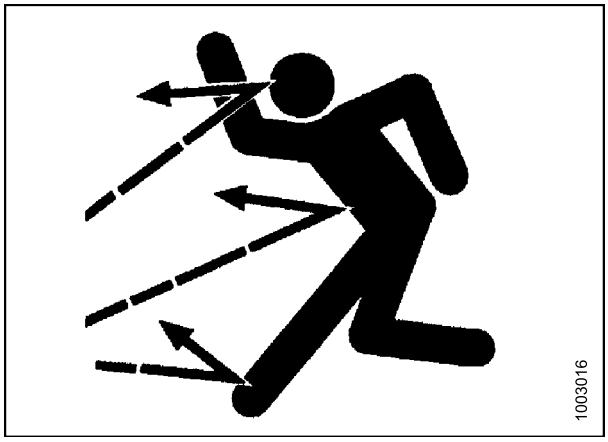

Figure 5.1

5.3 Header Safety Props

Safety props are located on both header lift cylinders on the windrower.

DANGER

To avoid bodily injury from fall of raised header, always engage safety props when working on or around raised header.

1. Start engine, and press HEADER UP (B) switch to raise header to maximum height.
2. If one end of the header does not raise fully, the lift cylinders require re-phasing. If re-phasing is needed, proceed as follows:
   a. Press and hold the HEADER UP (B) switch until both cylinders stop moving.
   b. Continue to hold the switch for 3–4 seconds.
   c. Cylinders are phased.

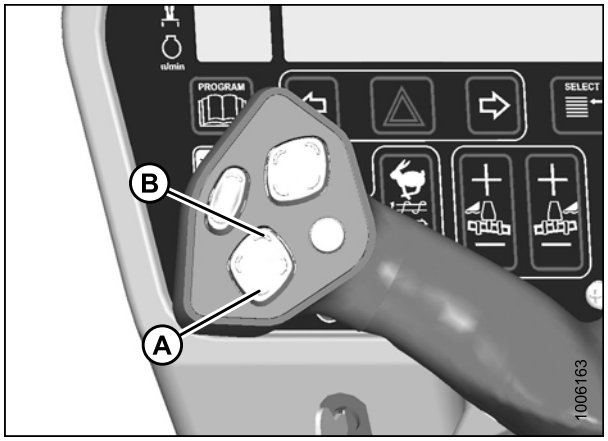

Figure 5.2

3. Pull lever (A), and rotate toward header to lower safety prop (B) onto cylinder. Repeat for opposite cylinder.

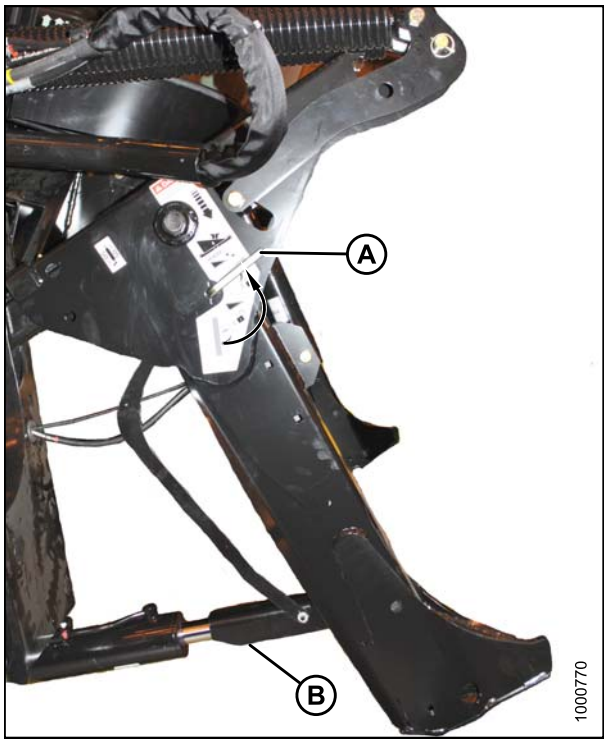

Figure 5.3

4. To disengage safety props, turn lever (A) away from header to raise safety prop until lever locks into vertical position. Repeat for opposite cylinder.

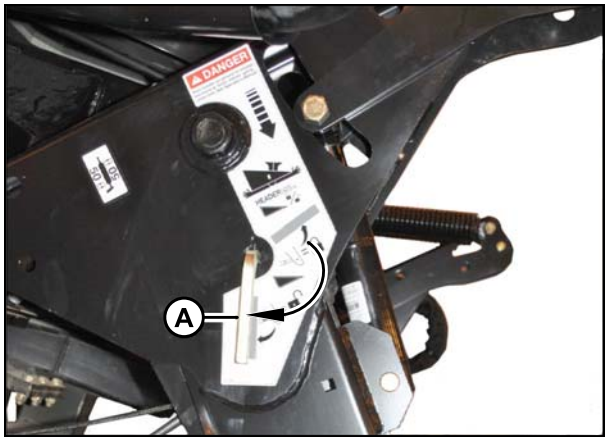

Figure 5.4

5. Start engine, choose a level area, and lower header to the ground. Stop engine and remove key.

5.4 Driveshields

The R85 13-foot self-propelled header comes in two configurations—one configured for use in North America and one configured for use outside of North America. The configuration is specified in the title when necessary.

WARNING

Do NOT operate the machine with the driveshields open. High speed rotating components may throw debris and could result in death or serious injury.

5.4.1 Opening the Driveshield: North American Headers

Follow these steps to open the driveshield (A) on North American headers:

1. Disengage rubber latch (B) from hook (C).
2. Lift driveshield (A) to the open position.

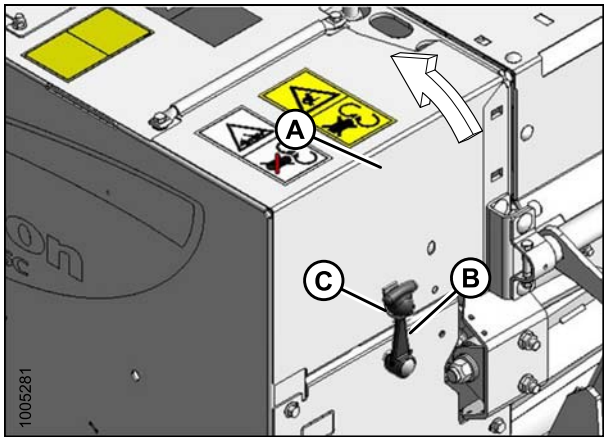

Figure 5.5

5.4.2 Closing the Driveshield: North American Headers

Follow these steps to close the driveshield on North American headers:

1. Lower driveshield (A) so that tabs at lower end of shield engage holes in lower panel.
2. Engage rubber latch (B) on hook (C).

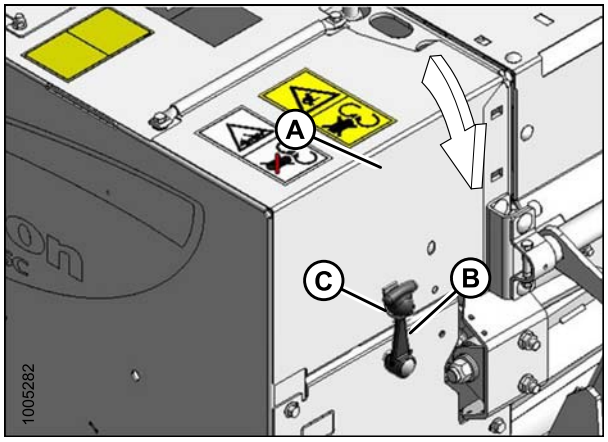

Figure 5.6

5.4.3 Opening the Driveshield: Export Headers

Follow these steps to open the driveshield on export headers:

1. Release rubber latch (A).
2. Insert a screwdriver (or equivalent) through hole (B) in driveshield and into the notch in latch (C) and disengage latch.
3. Open driveshield (D).

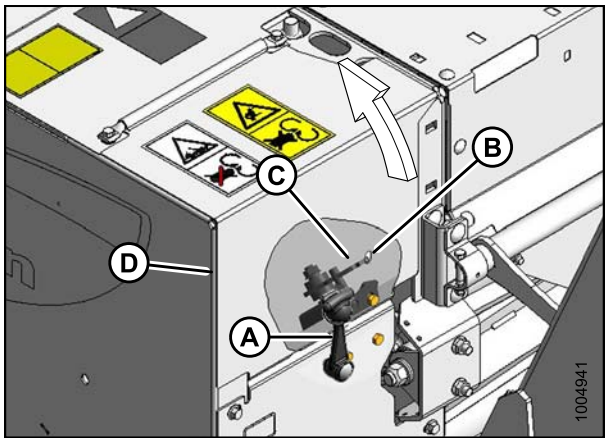

Figure 5.7

5.4.4 Closing the Driveshield: Export Headers

Follow these steps to close the driveshield on export headers:

1. Lower the shield (A) so that at lower end of driveshield engage holes in the lower panel and latch (B) reengages shield.
2. Engage rubber latch (C).

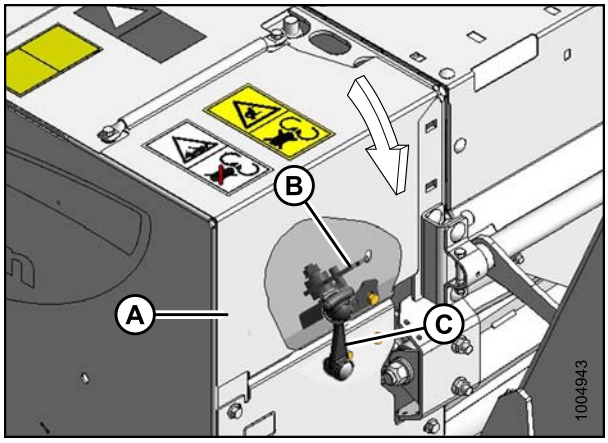

Figure 5.8

5.5 Cutterbar Doors

CAUTION

Do NOT operate the machine without all the cutterbar doors down, curtains installed and in good condition.

There are two doors to provide access to the cutterbar area.

Rubber curtains are attached to each door, at the front corners, and center fixed cover. Latches at the lower corners of each curtain keep the curtains together to minimize the risk of thrown objects.

The cutterbar curtains are very important to reduce the potential for thrown objects. Always keep these curtains down when operating the header.

Replace the curtains if they should become worn or damaged. Refer to your Dealer for replacement instructions.

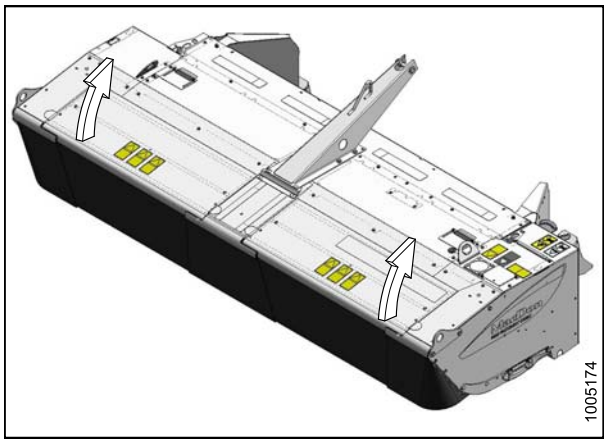

Figure 5.9

5.5.1 Opening the Cutterbar Doors: North American Header

Follow these steps to open the cutterbar doors on North American header:

1. Unhook the curtain latches (A).

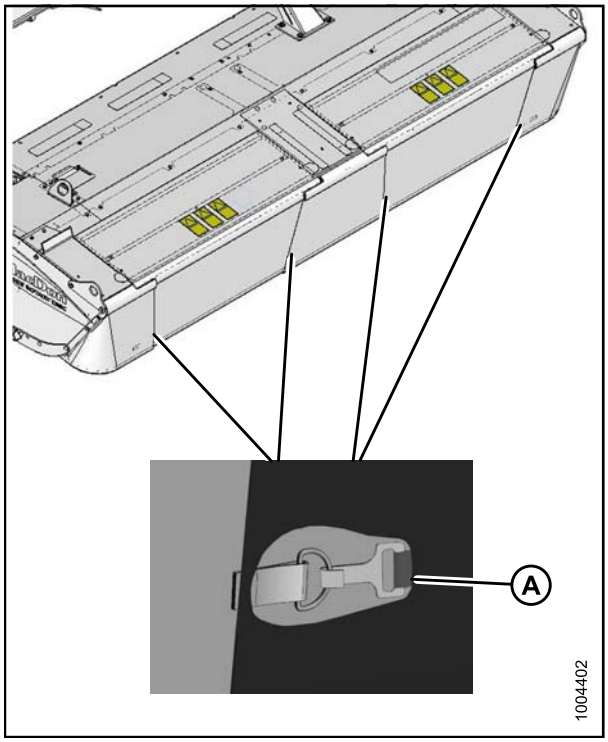

Figure 5.10

2. Lift front of door to the open position.

Figure 5.11

5.5.2 Closing the Cutterbar Doors: North American Header

Follow these steps to close the cutterbar doors on North American header:

CAUTION

To avoid injury, keep hands and fingers away from corners of doors when closing.

1. Pull at top and move to closed position.

Figure 5.12

2. Hook curtain latches (A).

   NOTE: Ensure that curtains hang properly and completely enclose cutterbar area.

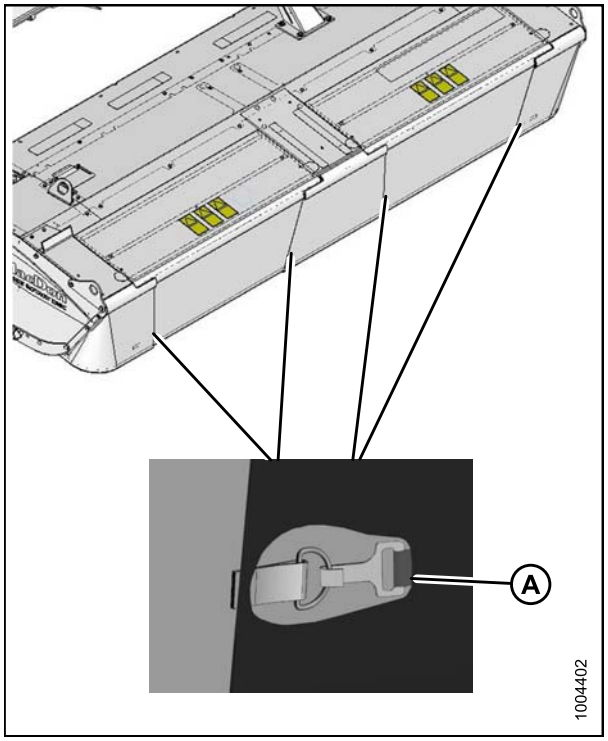

Figure 5.13

5.5.3 Opening the Cutterbar Doors: Export Header

Follow these steps to open the cutterbar doors on export header:

1. Unhook curtain latches (A).

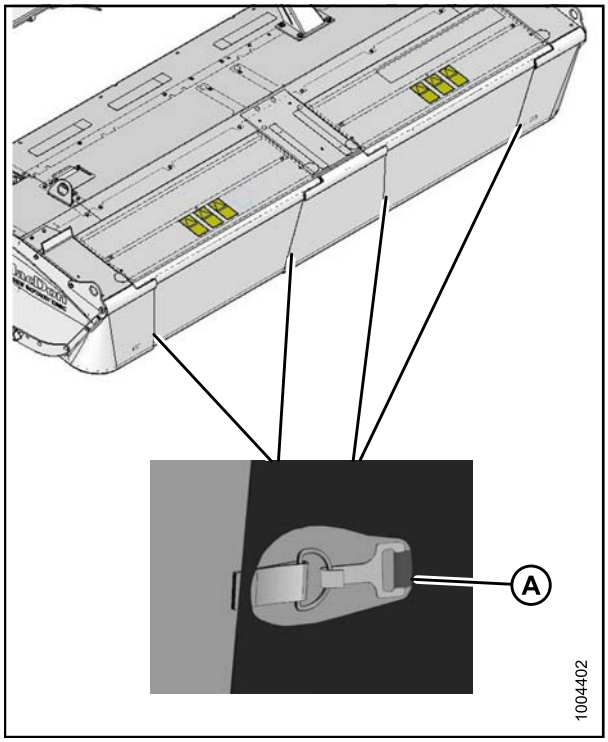

Figure 5.14

2. Insert a screwdriver (or equivalent) through hole (A) in door into notch in latch (B) and push latch to disengage.
3. Lift at front of door to open.

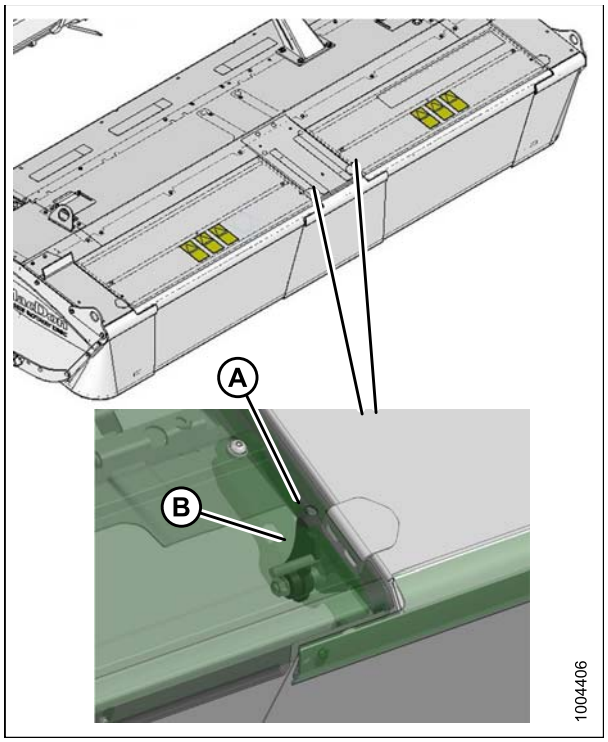

Figure 5.15

5.5.4 Closing the Cutterbar Doors: Export Header

To close the cutterbar doors on export header:

CAUTION

To avoid injury, keep hands and fingers away from corners of doors when closing.

1. Pull at top and move to closed position. Ensure latch (A) has engaged the door.

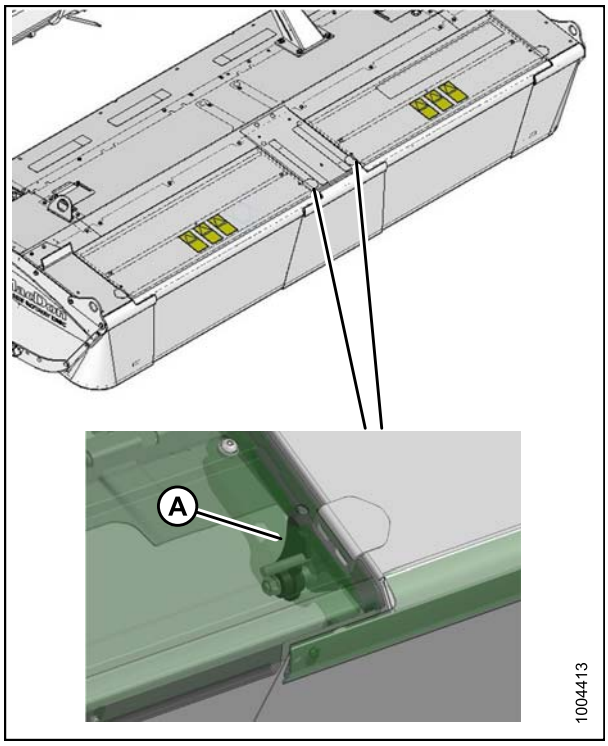

Figure 5.16

2. Hook curtain latches (A).

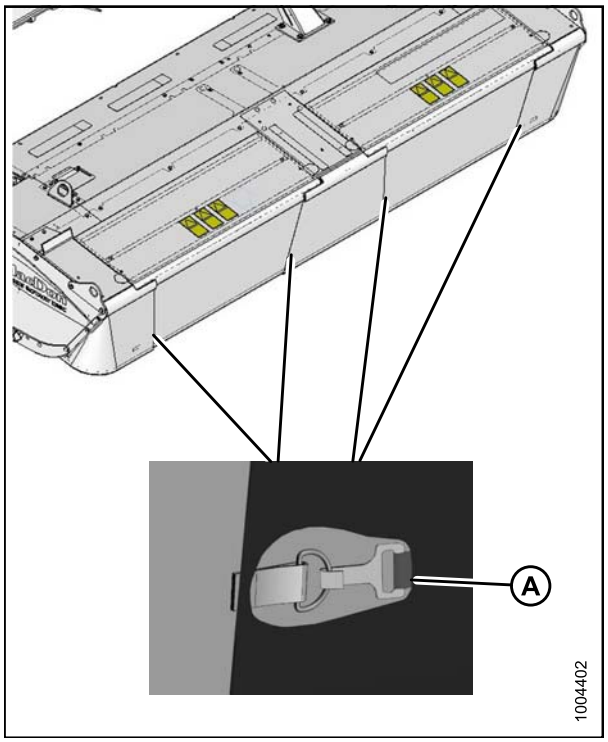

Figure 5.17

5.6 Daily Start-Up Check

CAUTION

- **Be sure windrower and header are properly attached, all controls are in NEUTRAL, and windrower brake is engaged.**
- **Clear the area of other persons, pets etc. Keep children away from machinery. Walk around the header to be sure no one is under, on or close to it.**
- **Wear close fitting clothing and protective shoes with slip resistant soles. As well, carry with you any protective clothing and personal safety devices that COULD be necessary through the day. Don't take chances.**
- **Remove foreign objects from the machine and surrounding area.**

You may need:

- a hard hat
- protective glasses or goggles
- heavy gloves
- a respirator or filter mask
- wet weather gear

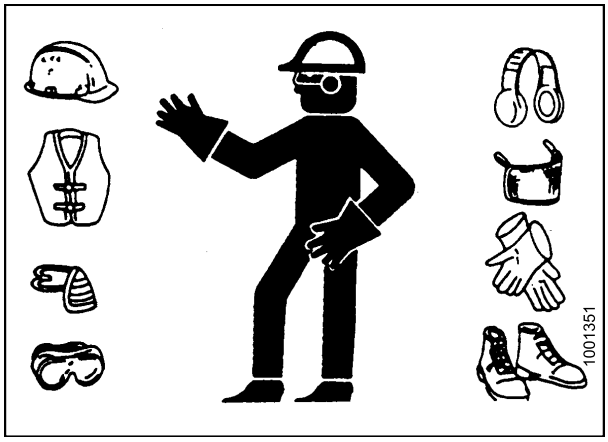

Figure 5.18

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

Figure 5.19

Do the following 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. See Section 7.8.1 Hydraulic Hoses and Lines, page 145.

2. Clean all lights and reflective surfaces on the machine. Check lights for proper operation.
3. Perform all daily maintenance refer to Section 7.5.1 Maintenance Schedule/Record, page 104.

5.7 Attaching the Header

5.7.1 Attaching the Forming Shield

To attach the forming shield to the windrower, follow these steps.

1. Remove the two clevis pins (A) from forming shield forward end.

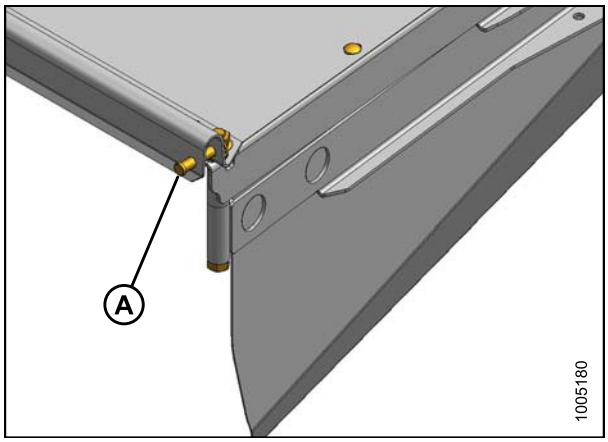

Figure 5.20

DANGER

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.

2. Stop engine and remove key.
3. Position the forming shield (A) under the windrower frame.

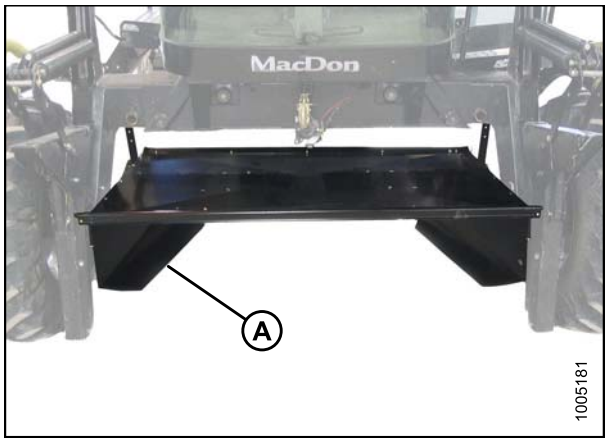

Figure 5.21

4. Position the forming shield onto spacers (B) on windrower legs. Secure with clevis pins (A) and lynch pin.

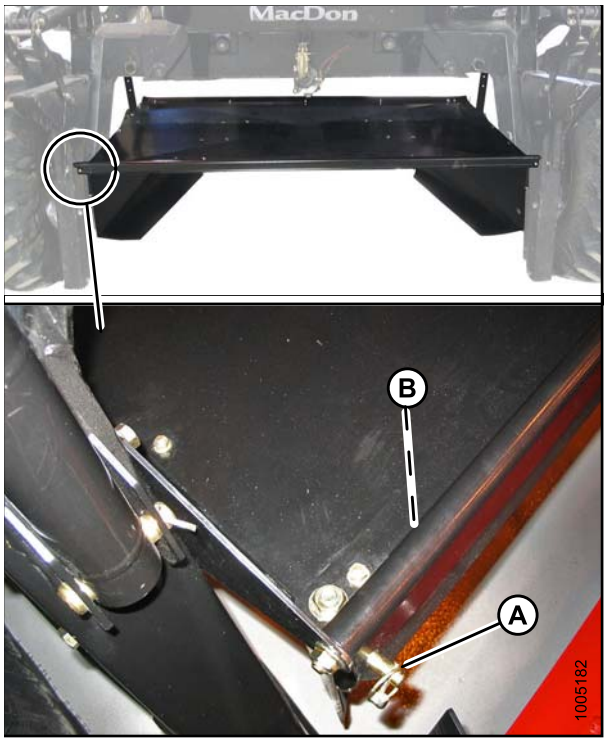

Figure 5.22

5. Lift the aft end of the forming shield and attach straps (B) to pins (A) on windrower frame. Install washer and hairpin to secure strap. Use the middle hole and adjust height to suit the crop.

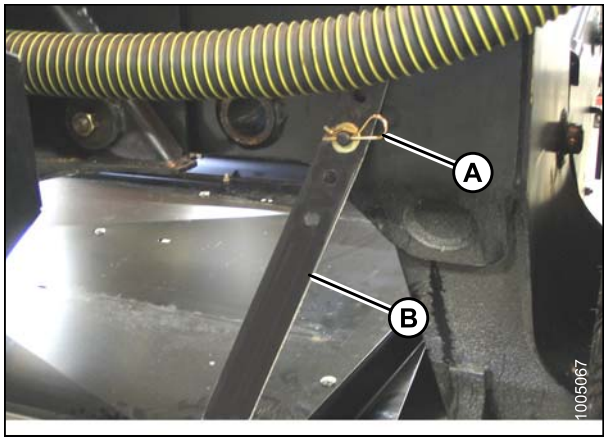

Figure 5.23

6. Set the forming shield side deflectors to the desired width by repositioning adjuster bars (A). Use the same hole location on both sides.
7. Adjust rear fluffer deflector (C) to middle position. Loosen handles (B) if required.

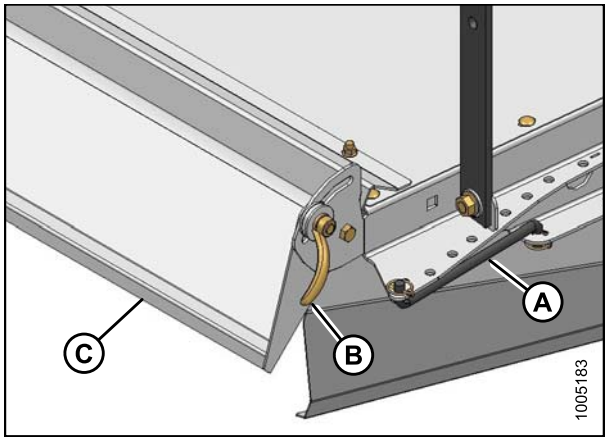

Figure 5.24

8. Attach the R85 header to the windrower. Refer to the MacDon self-propelled windrower operator's manual, and then return to this manual to complete the attachment.
9. Connect the hydraulics and electrical harness. See the following pages for instruction, specific to your windrower model.

5.7.2 Attaching the Header (M205 Windrowers)

The R85 13-foot header requires motor/hose kit MD #B5456 installed to enable operation on a M205 windrower.

If required, obtain the kit through your MacDon Dealer and install it in accordance with the instructions supplied with the kit.

DANGER

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.

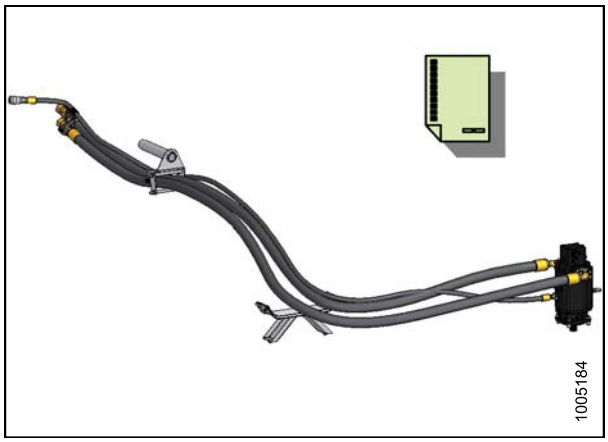

Figure 5.25: MD #B5456

To attach the header to an M205 windrower, follow these steps.

1. Move windrower left side (cab-forward) platform (A) to OPEN position.

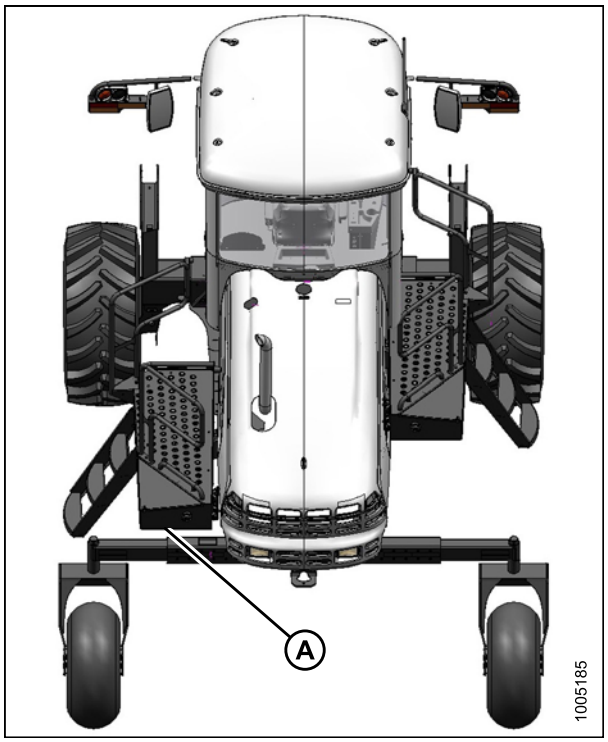

Figure 5.26

2. Route the hose bundle (A) from the header, under the windrower frame and insert pin (B) into hole in windrower frame.
3. Place hoses on support (C).
4. If optional couplers and lock are installed on hoses and lines, proceed as follows. Otherwise, proceed to step 12., Attaching the Header (M205 Windrowers), page 44.

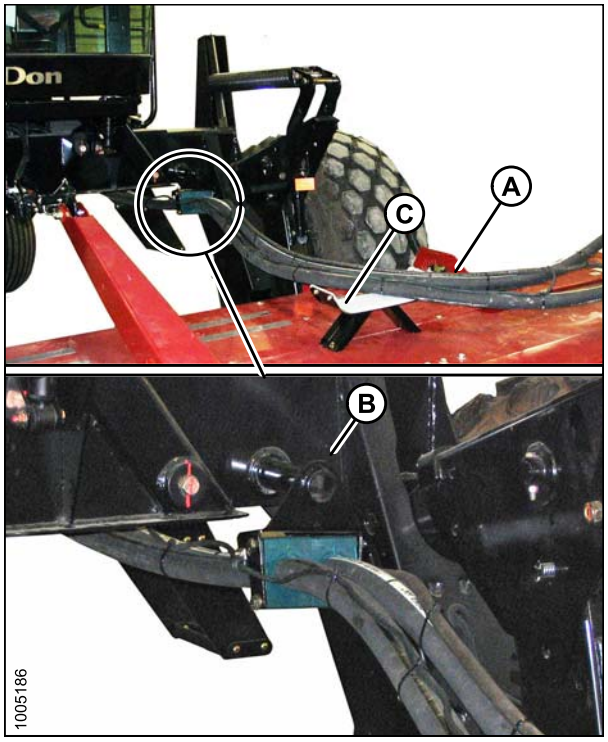

Figure 5.27

5. Remove coupler lock as follows:

   a. Remove lynch pin (A) and open up coupler lock (B).

   b. Remove lock from coupler.

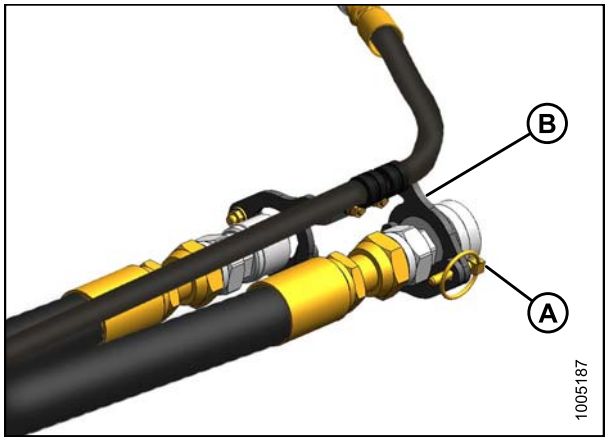

Figure 5.28

6. Position hose couplers against mating couplers on windrower and screw sleeves (A) onto mating receptacles. Use wrench to tighten couplers.

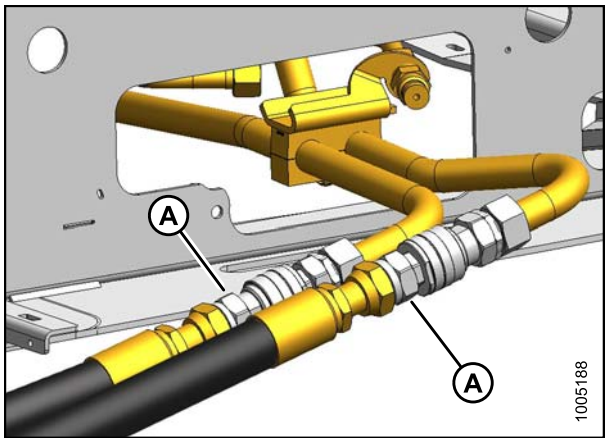

Figure 5.29

7. Locate lock onto couplers so that retainer (A) locates on fitting adjacent to the sleeve on each coupler. Retainer can be adjusted by loosening bolts (B). Tighten bolts after adjusting.

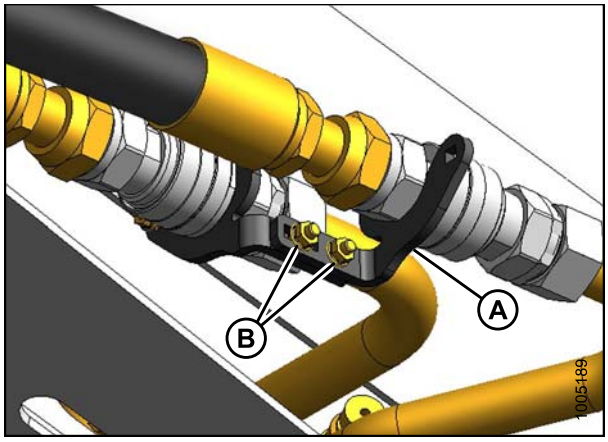

Figure 5.30

8. Lower holder (A) onto sleeves (B) so that flats locate on holder. Holder can be adjusted by loosening bolts (C). Tighten bolts after adjusting.

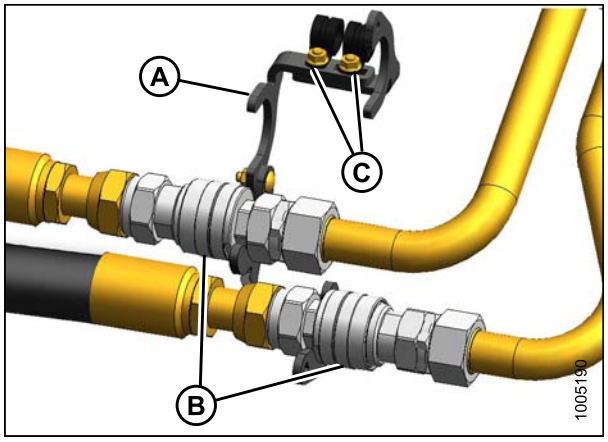

Figure 5.31

9. Insert lynch pin (A) to secure lock.
10. Attach case drain hose coupler at (B).
11. Proceed to step 14., Attaching the Header (M205 Windrowers), page 44.

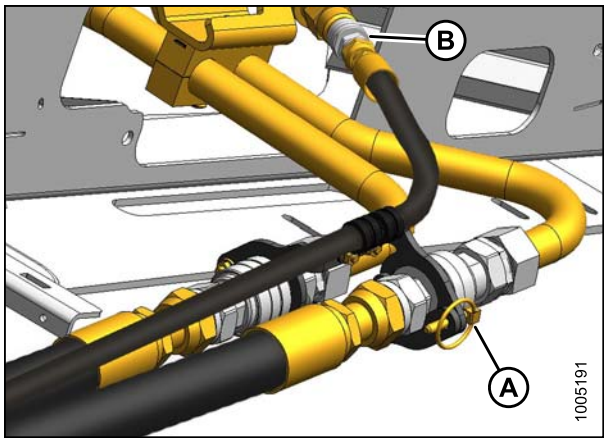

Figure 5.32

12. Connect large hoses to the lines at (A) and (B) as shown. Torque fittings to 135 lb-ft (183 N·m).
13. Attach case drain hose coupler at (C).
14. Connect electrical harness to connector (D) (located beside the forward valve block on the windrower).

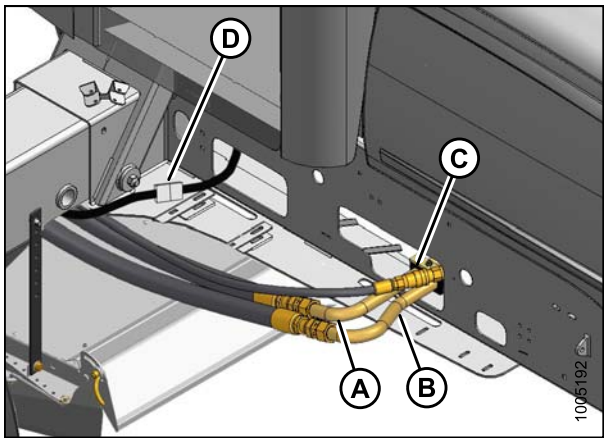

Figure 5.33

15. Move windrower platform (A) to CLOSED position.

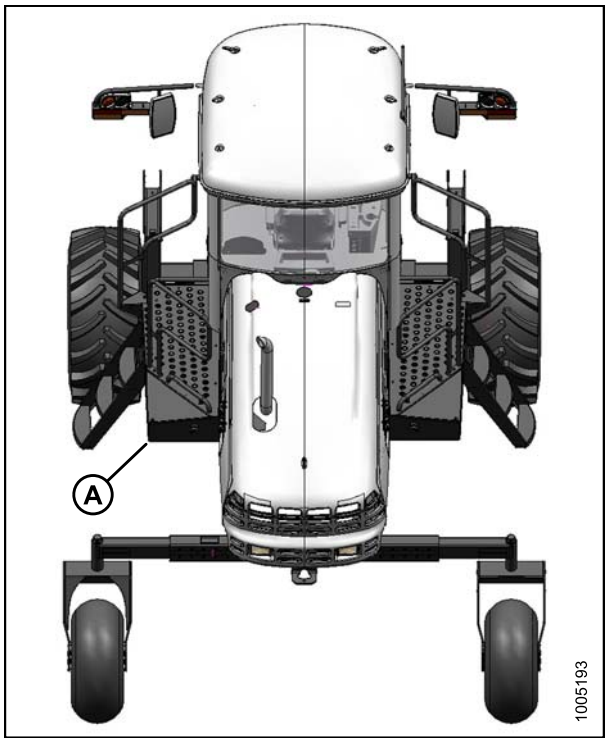

Figure 5.34

5.7.3 Attaching the Header (M200 Windrowers)

The 13-foot header requires kit MD #B5511 installed to enable operation on an M200 windrower.

If required, obtain the kit through your MacDon Dealer. Install kit in accordance with the supplied instructions.

Figure 5.35: MD #B5511

DANGER

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.

To attach the header to an M200 windrower, follow these steps.

1. Disengage and rotate lever (A) counterclockwise to FULLY UP position.
2. Remove cap (B) securing electrical connector to frame.

Figure 5.36

3. Move hose bundle (A) from windrower and rest the bundle on the header.

Figure 5.37

4. Check that hose support is positioned with lower bolt (A) in forward hole and support positioned as shown. Loosen both bolts and adjust as required.

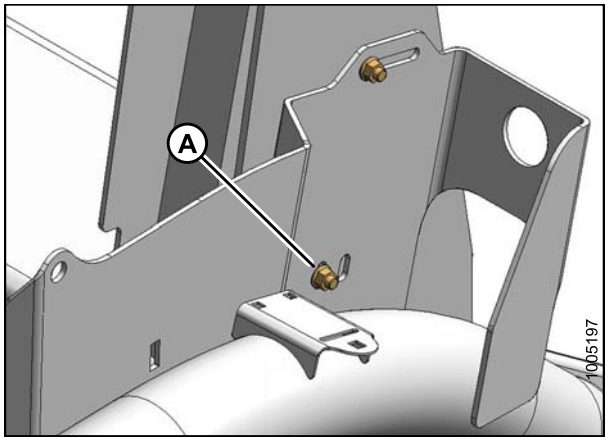

Figure 5.38

5. Route hose bundle (A) from windrower through support (B) on header.
6. Route header return and pressure hose bundle (C) through support (B) on header to the windrower.

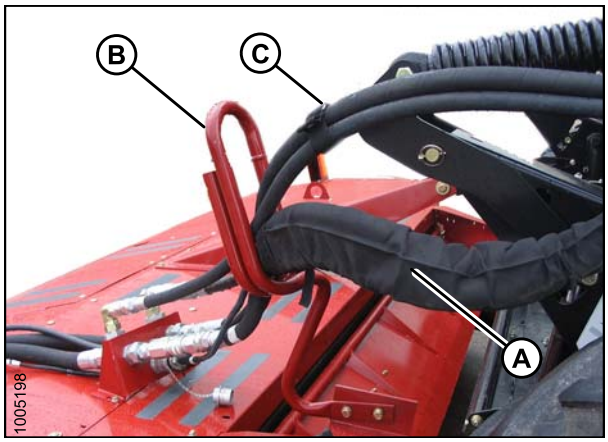

Figure 5.39

7. Secure hose bundles with three cinch straps (B).
8. Lower and lock lever (A).

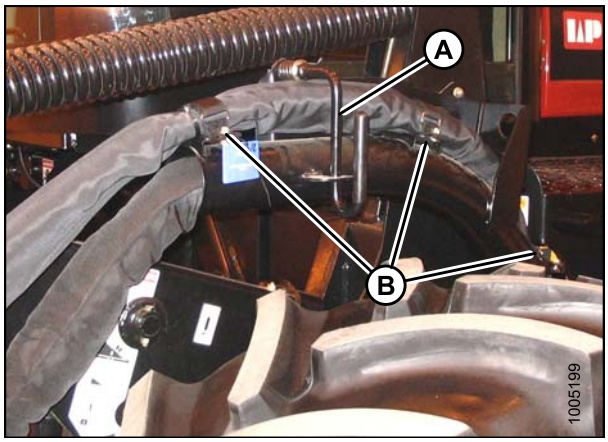

Figure 5.40

9. Move windrower left side (cab-forward) platform (A) to OPEN position to access valve blocks.

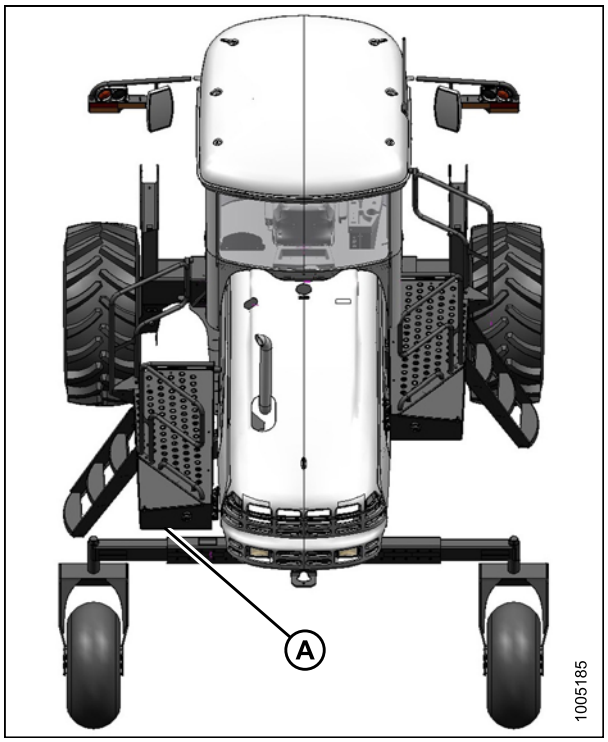

Figure 5.41

10. Connect the two hose bundle from header to the middle valve block (A) on windrower as shown.
11. Remove caps and plugs on hoses from windrower and lines on header.

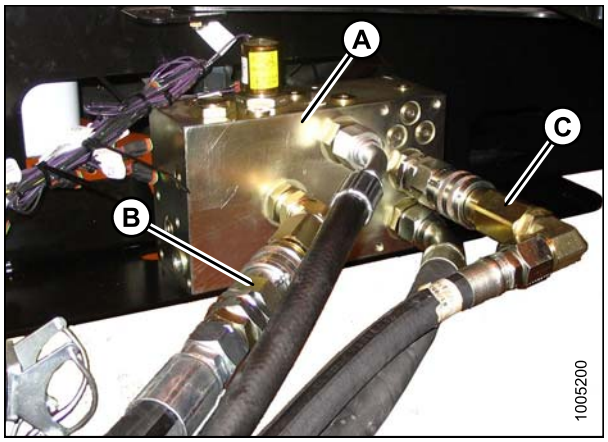

Figure 5.42

A - Middle Valve Block **B - Pressure**
C - Return

12. Connect the three hoses from windrower to the fittings on the header as shown.
13. Assemble electrical connector as shown.

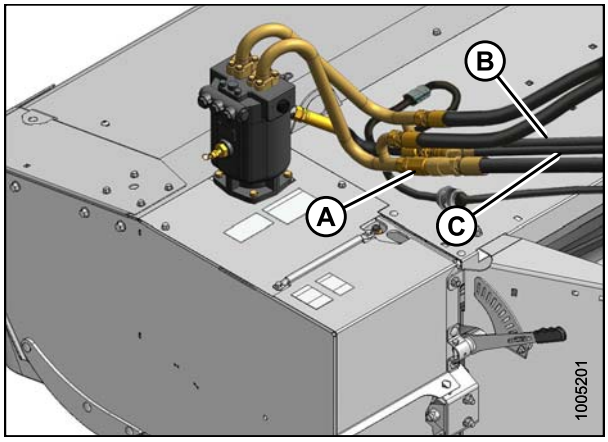

Figure 5.43

A - Return **B - Pressure**
C - Case Drain

14. Move platform (A) to the CLOSED position.

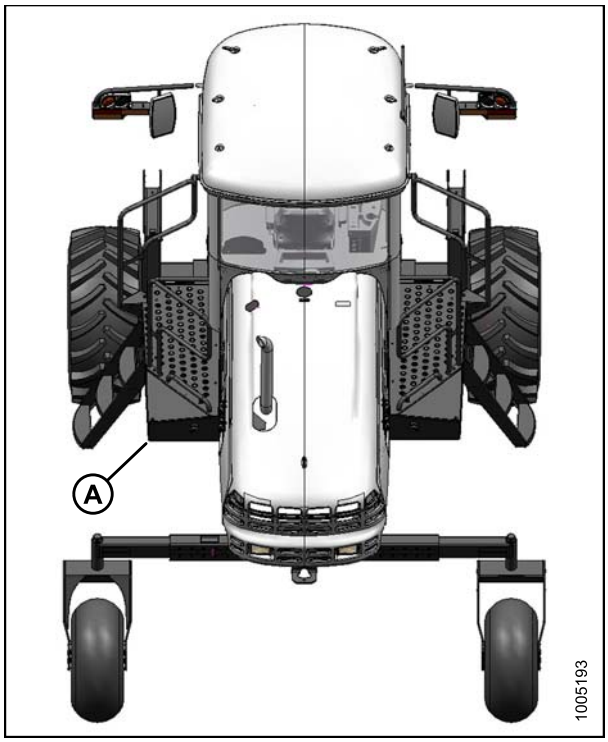

Figure 5.44

5.7.4 Attaching the Header (M150/M155 Windrowers)

The R85 13-foot header requires motor/hose kit MD #B5510 installed to enable operation on an M150 or M105 windrower.

If required, obtain the kit through your MacDon Dealer. Install kit in accordance with the supplied instructions.

Figure 5.45: MD #B5510

DANGER

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.

To attach the header to an M150 or M155 windrower, follow these steps.

1. Disengage and rotate lever (A) counterclockwise to FULLY UP position.
2. Remove cap (B) securing electrical connector to frame.

Figure 5.46

3. Move hose bundle (A) from windrower and rest the bundle on the header.

Figure 5.47

4. Check that hose support is positioned with lower bolt (A) in forward hole and support positioned as shown. Loosen both bolts and adjust as required.

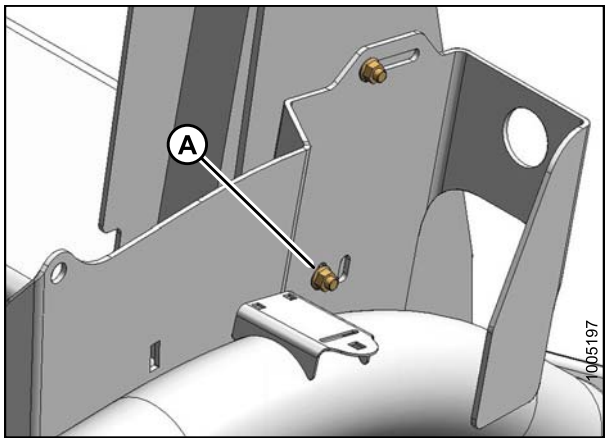

Figure 5.48

5. Route hose bundle (A) from windrower through support (C) on header.
6. Route header hose (B) through support (C) on header, to windrower.

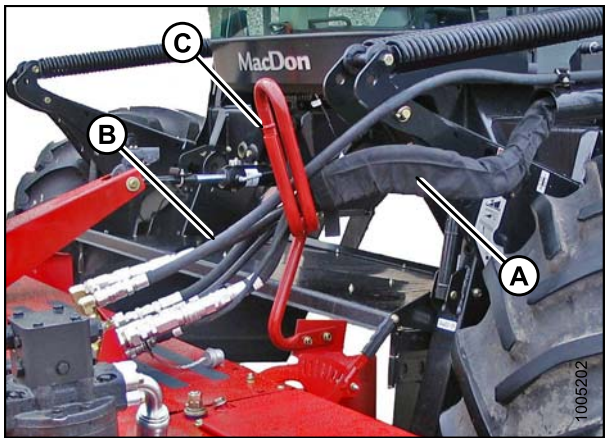

Figure 5.49

7. Move windrower left side (cab forward) platform (A) to OPEN position.

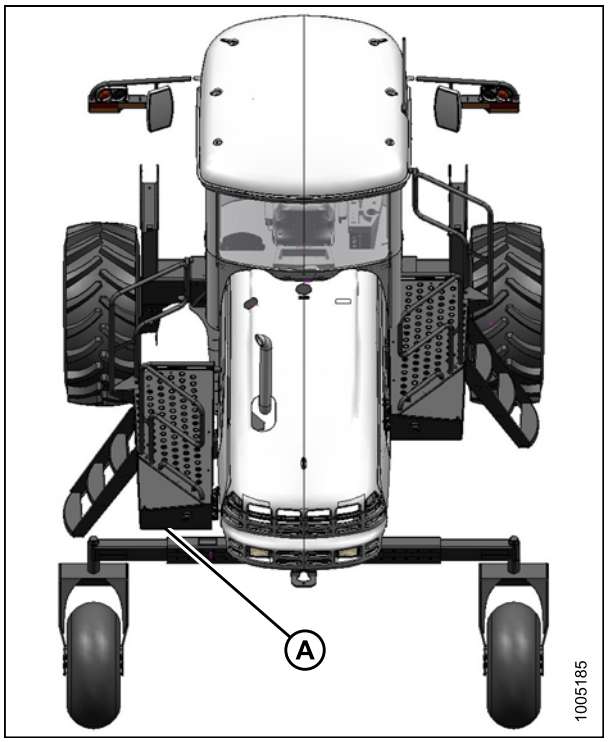

Figure 5.50

8. Connect single hose (B) from header to coupler (A) on middle valve block.
9. Remove caps and plugs on hoses from windrower and lines on header.
10. Connect the three hoses from windrower to the fittings on the header as shown.
11. Connect electrical harness from windrower to electrical connector on header.

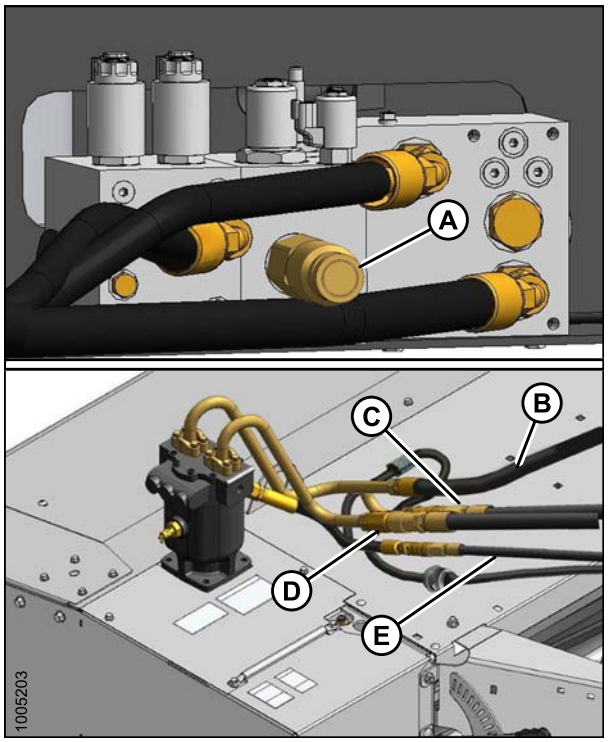

Figure 5.51

C - Pressure **D - Return**
E - Case Drain

12. Lower and lock lever (A). Secure hose (B) with three cinch straps (C).

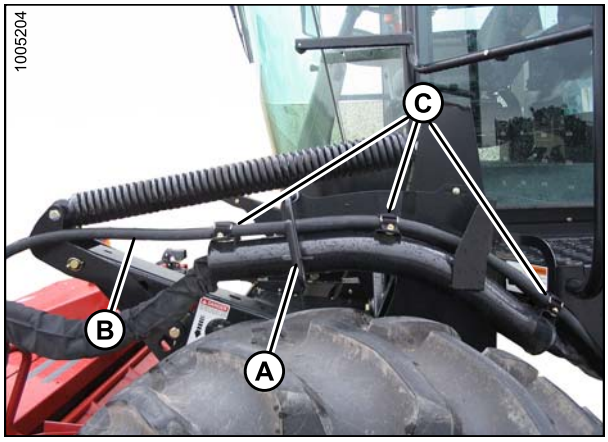

Figure 5.52

13. Move platform (A) to the CLOSED position.

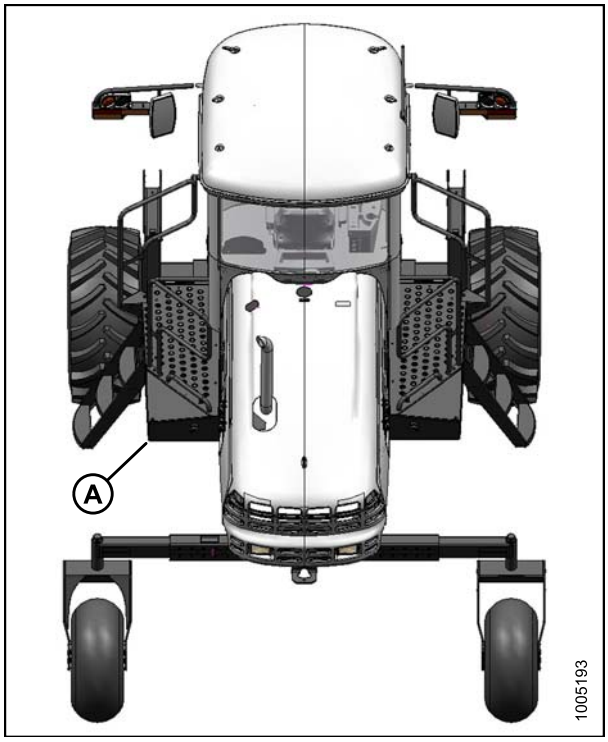

Figure 5.53

5.8 Detaching the Header

5.8.1 Detaching the Header (M205 Windrowers)

DANGER

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.

To detach the header from an M205 windrower, follow these steps:

1. Lower header to ground. If ground is soft, place blocks under header.
2. Stop engine and remove key.
3. Move left side (cab-forward) platform (A) to open position.

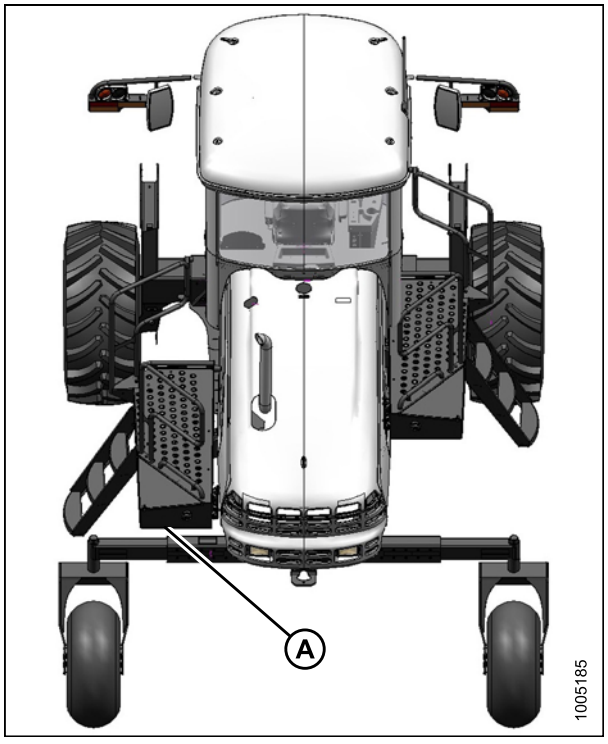

Figure 5.54

4. Disconnect electrical harness at connector (A).
5. If couplers and coupler lock are installed on lines, proceed as follows. Otherwise, proceed to step 13., Detaching the Header (M205 Windrowers), page 56.

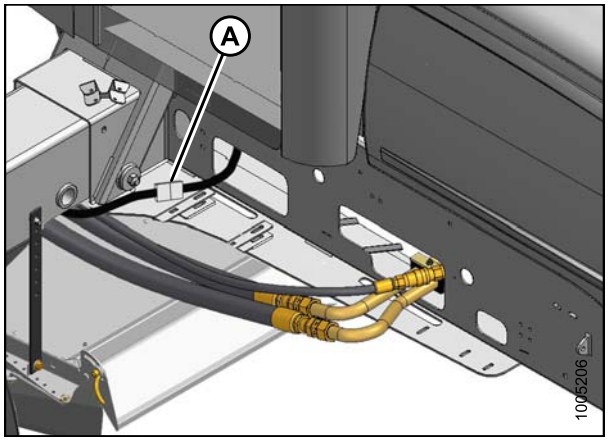

Figure 5.55

6. Disconnect 1/2 in. (12.7 mm) hose (B) from windrower coupler and remove lynch pin (A).

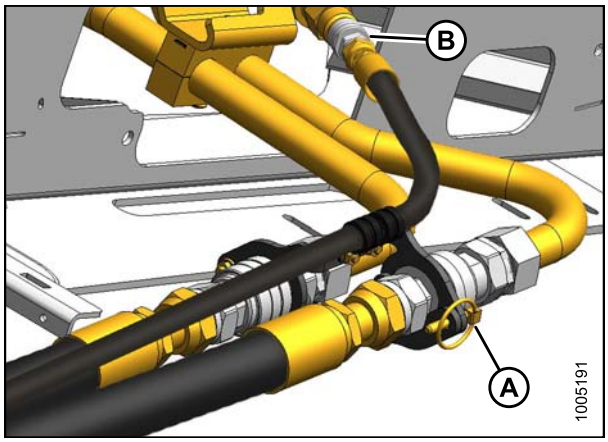

Figure 5.56

7. Open up coupler lock (A).
8. Remove lock from couplers (B).

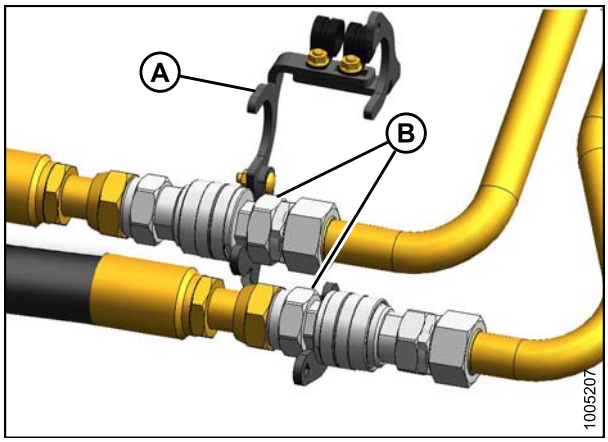

Figure 5.57

9. Unscrew sleeves (A) on couplers and separate couplers.
10. Install caps and plugs on open lines.

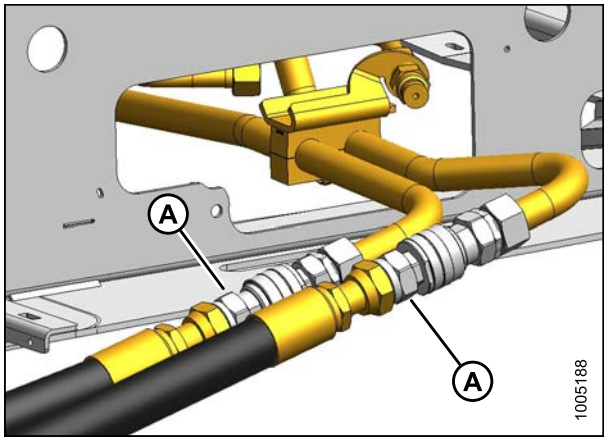

Figure 5.58

11. Attach coupler lock (B) to hoses and secure with lynch pin (A).
12. Proceed to step 14., Detaching the Header (M205 Windrowers), page 57.

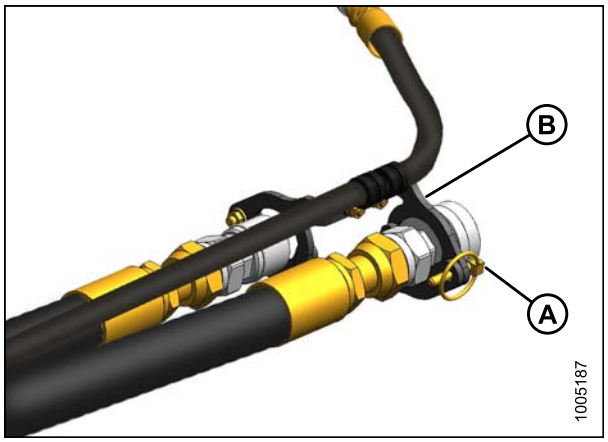

Figure 5.59

13. Disconnect hoses from lines (A), (B), and (C) on windrower. Install caps and plugs on open lines.

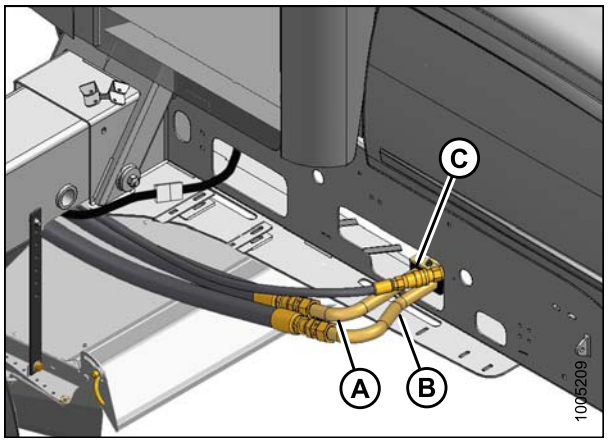

Figure 5.60

14. Remove hose support (A) from windrower frame.
15. Route hoses (B) and electrical harness onto header.

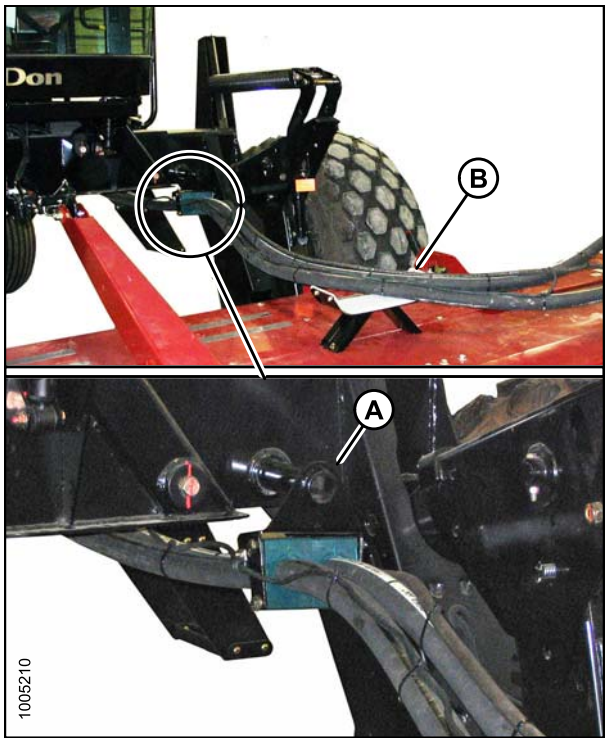

Figure 5.61

16. Move maintenance platform (A) to CLOSED position.
17. Detach the header from the windrower. Refer to the MacDon self-propelled windrower operator's manual.

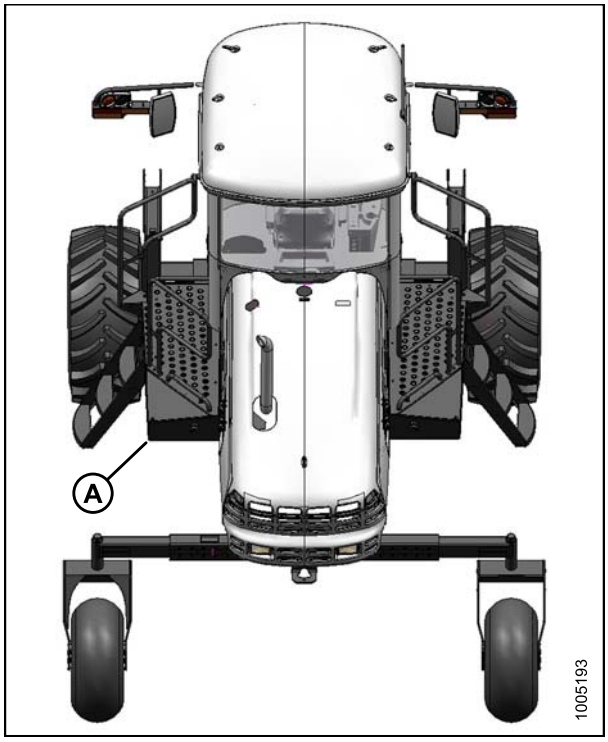

Figure 5.62

5.8.2 Detaching the Header (M200 Windrowers)

DANGER

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.

To detach a header from an M200 windrower, follow these steps:

1. Lower header to ground. If ground is soft, place blocks under header.
2. Stop engine and remove key.
3. Move left side (cab-forward) platform (A) to open position.

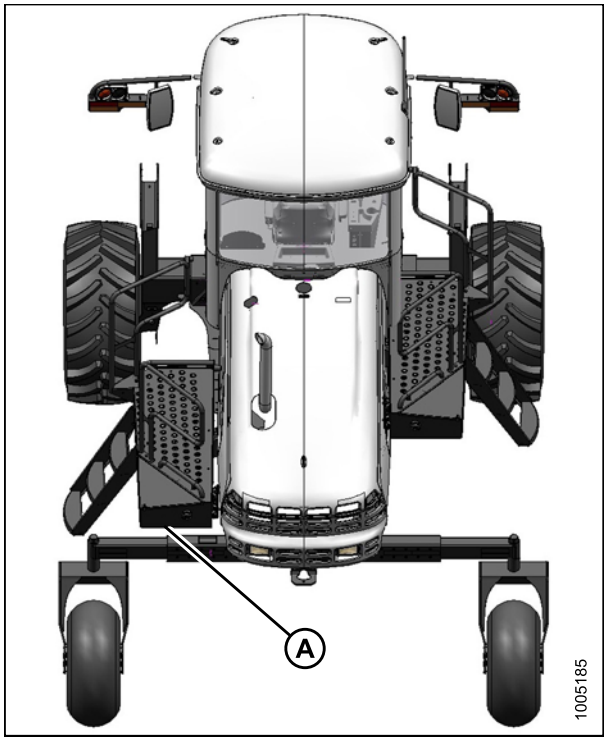

Figure 5.63

4. Disconnect pressure (B) and return (C) hoses from fittings on valve block (A).
5. Install plugs and caps on open windrower lines and header hoses.

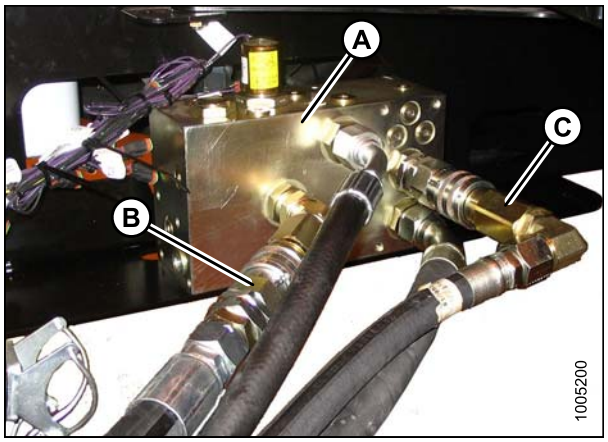

Figure 5.64

6. Raise and unlock lever (A) and undo cinch straps (B).
7. Move hose bundle to store on header.

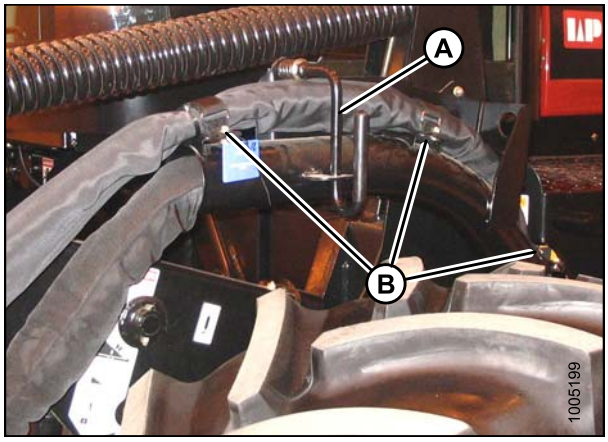

Figure 5.65

8. At the header, disconnect electrical connector by turning collar counterclockwise and pulling connector to disengage.
9. Disconnect drive couplers (A) and (B) and case drain coupler (C) on header.

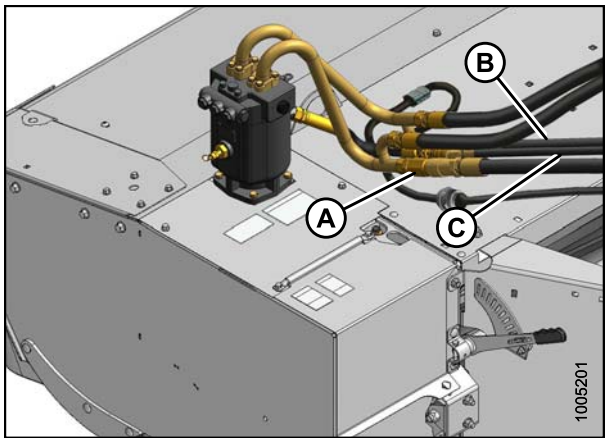

Figure 5.66

A - Return **B - Pressure**
C - Case Drain

10. Move hose bundle from header and locate on windrower left side (cab forward) with hoses in support (B).
11. Rotate lever (A) clockwise and push to engage bracket.
12. Locate electrical harness through support (B) and attach cap to electrical connector (C).

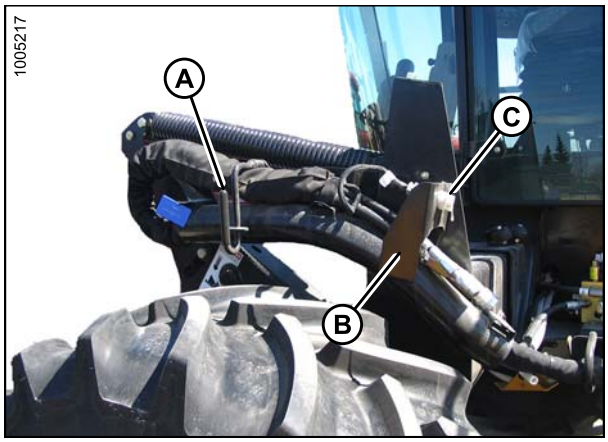

Figure 5.67

13. Move windrower platform (A) back to CLOSED position.
14. Detach header from windrower. Refer to the self-propelled windrower operator's manual.

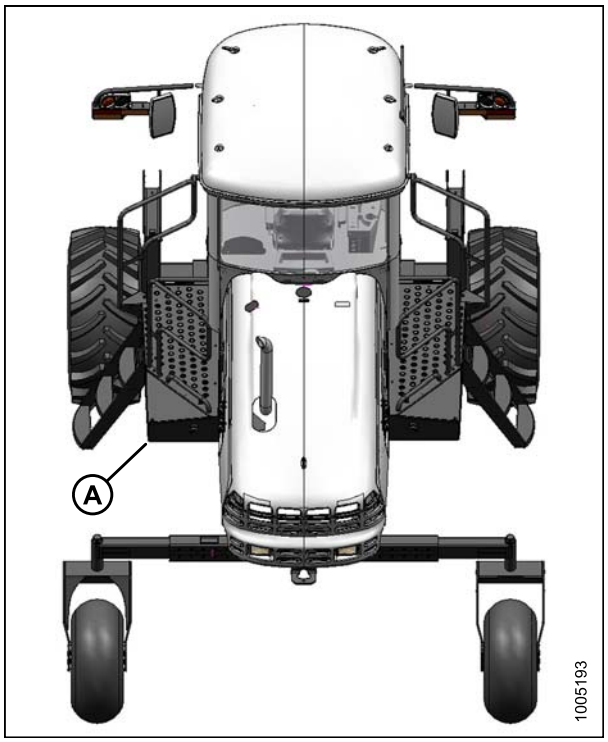

Figure 5.68

5.8.3 Detaching the Header (M150/M155 Windrowers)

DANGER

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.

To detach a header from an M150 or M155 windrower, follow these steps:

1. Lower header to ground. If ground is soft, place blocks under header.
2. Stop engine and remove key.

3. Move left side (cab-forward) platform (A) to open position.

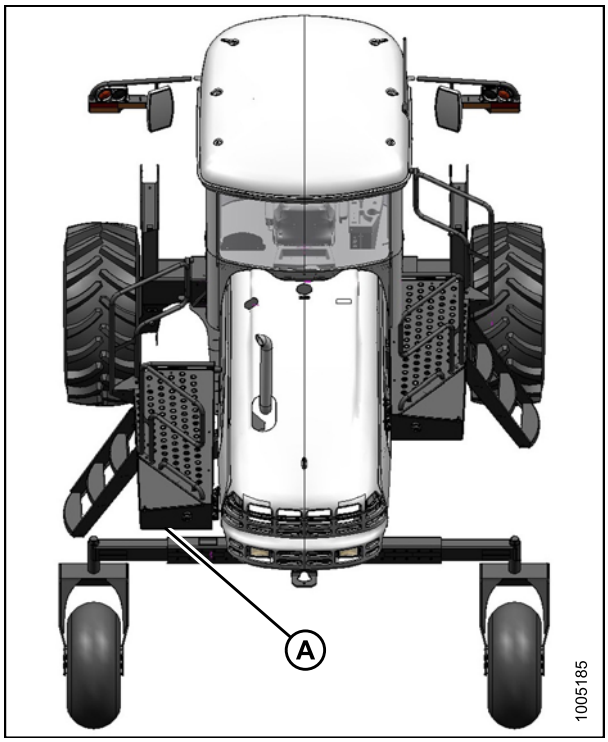

Figure 5.69

4. Disconnect the hydraulic coupler from windrower valve.

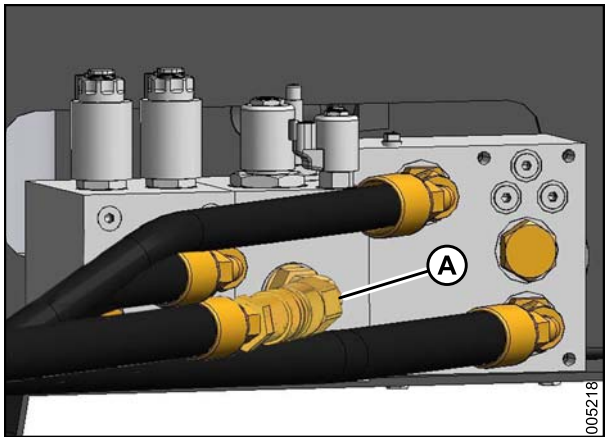

Figure 5.70

5. Raise lever (A) and undo cinch straps (C).
6. Move hose (B) to store on header.
7. Install caps on connectors and hose end (if equipped).

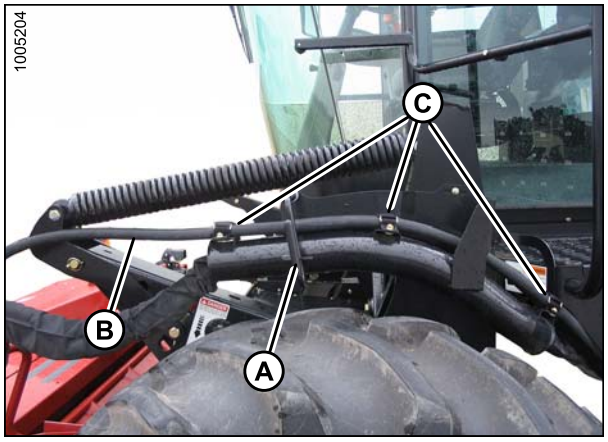

Figure 5.71

8. At the header, disconnect electrical connector by turning collar counterclockwise and pulling connector to disengage.
9. Disconnect drive couplers (A) and (B) and case drain coupler (C) on header.

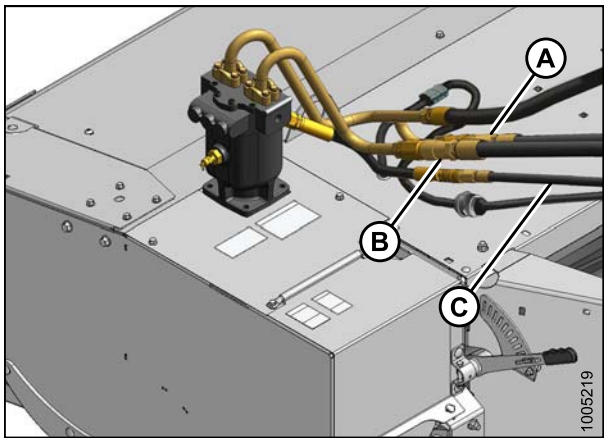

Figure 5.72

A - Pressure **B - Return**
C - Case Drain

10. Move hose bundle from header and locate on windrower left side (cab forward) with hoses in support (B).
11. Rotate lever (A) clockwise and push to engage bracket.
12. Locate electrical harness through support (B) and attach cap to electrical connector (C).

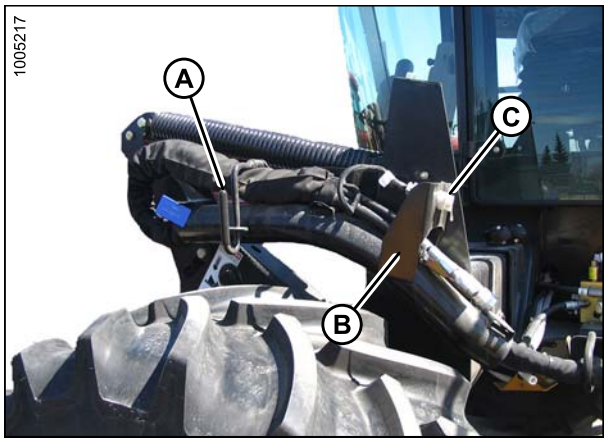

Figure 5.73

13. Move windrower platform (A) back to CLOSED position.
14. Detach header from windrower. Refer to the self-propelled windrower operator's manual.

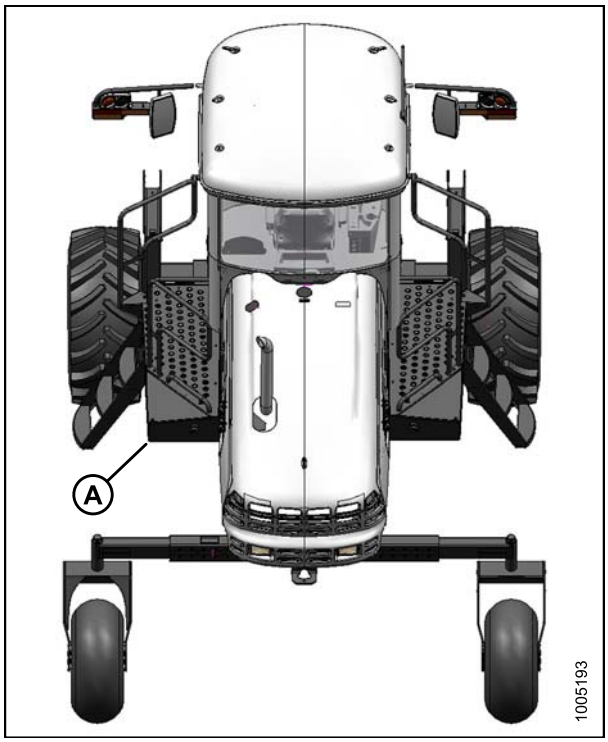

Figure 5.74

5.9 Break-In Period

After attaching the header to the windrower for the first time, operate the machine slowly for 5 minutes, watching and listening from the windrower seat for binding or interfering parts.

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

CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off windrower, engage parking brake, and remove key.

NOTE: Perform the items specified in Section 7.5.2 Break-In Inspections, page 106.

5.10 Shutting Down the Windrower

CAUTION

Before leaving the windrower seat for any reason:

- Park on level ground (if possible).
- Lower the header fully.
- Place ground speed control in N-DETENT.
- Stop engine and remove key from ignition.
- Wait for all movement to stop.

5.11 Transporting the Header

Refer to your MacDon self-propelled windrower operator’s manual for transporting headers when attached to the windrower.

6 Operating the Header

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

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

The variables listed below and detailed on the following pages will affect the performance of the header. You will quickly become familiar with adjusting the machine to give you the desired results. Most of the adjustments have been set at the factory, but if desired, the settings can be changed to suit crop conditions.

Variable	See Section
Header float	6.1 Header Float, page 67
Roll gap	6.2 Roll Gap, page 69
Roll tension	6.3 Roll Tension, page 72
Roll timing	6.4 Roll Timing, page 73
Forming shields	6.5 Forming Shields, page 75
Header angle	6.6 Header Angle, page 79
Cutting height	6.7 Cutting Height, page 80
Ground speed	6.9 Ground Speed, page 82
Double windowrowing	6.10 Double Windrowing, page 83

6.1 Header Float

Header float springs are normally set so 95–105 lbf (426–471 N) is required to lift either end of the header just off the ground.

In rough or stony conditions, it may be desirable to maintain a lighter setting to protect cutting components.

When float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing resulting in a ragged cut. Faster ground speeds may require additional ground pressure.

Set the float fine adjustment to mid-range with the windrower float adjustment system in the cab. Refer to your M-Series self-propelled windrower operator's manual.

6.1.1 Adjusting Header Float

DANGER

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.

Check the float by grasping the front corner of header and lifting. The force to lift should be 95–105 lbf (426–471 N), and should be approximately the same at both ends.

If it is necessary to adjust the float, perform the following steps:

1. Raise the header fully, shut down the engine, and remove the key.
2. Turn drawbolt (A):
   a. Clockwise to **INCREASE** float (makes header lighter).
   b. Counterclockwise to **DECREASE** float (makes header heavier).
3. Recheck the float.

Figure 6.1

6.2 Roll Gap

Steel "n" bar rolls "condition" the crop by crimping and crushing the stem in several places. This allows moisture release for quicker drying. The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap.

The factory roll gap setting of 1 in. (25.4 mm), measured at the conditioner rolls corresponds to the roll gap setting of 1-3/16 in. (30 mm), measured at the adjustment bolt.

Correct conditioning of alfalfa, clover, and other legumes is usually indicated when 90% of the stems show cracking, but no more than 5% of the leaves are damaged. Set enough roll gap to achieve this result.

NOTE: If the conditioner rolls are set too tight (close together), can result in over conditioning the crop material (excessive leaf damage), reduce machine capacity and use unnecessary horsepower. Monitor your disc speed. When crop loads increase and disc speed falls by more than 50 rpm, you should check conditioning action (on plant). Increased crop volume may result in increased conditioning (leaf loss). Consider increasing roll gap slightly. With optional load sensor on M205, a warning limit may be set to warn the Operator to slow down prior to a header stall or plug.

A larger gap may be desirable in thick stemmed cane-type crops; however, too large gap may cause feeding problems.

Grass type crops may require less gap for proper feeding and conditioning.

6.2.1 Checking Roll Gap

DANGER

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. Lower header fully.
2. Open the driveshield. See Section 5.4 Driveshields, page 28.
3. Loosen bolts (B) that secure conditioner shield (A).
4. Remove the conditioner shield (A) by sliding it up.

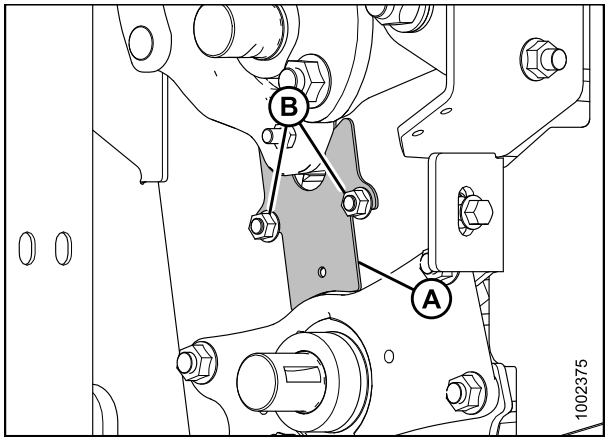

Figure 6.2

A - Conditioner Shield

5. Inspect roll gap at both ends of the rolls. Gap (B) should be 0.5 in. (12.7 mm).

IMPORTANT

Roll timing is critical when the roll gap is decreased because the bars may contact each other if the timing is wrong.

6. See Section 6.4 Roll Timing, page 73 for instructions on checking the timing.

   NOTE: Factory setting is 1/2 in. (12.7 mm). A gap of 5/8 in. (16 mm) is strongly recommended for heavier crop conditions.

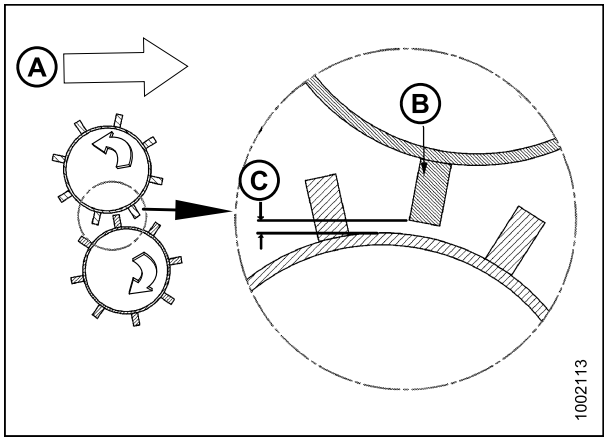

Figure 6.3: Conditioner Roll Gap (Roll Spacing Not to Scale)

A - Direction of Crop Flow **B - Center Roll Bars**
C - Roll Gap

7. Reinstall the conditioner shield (A). Secure with bolts (B).
8. Close the driveshield See Section 5.4 Driveshields, page 28.

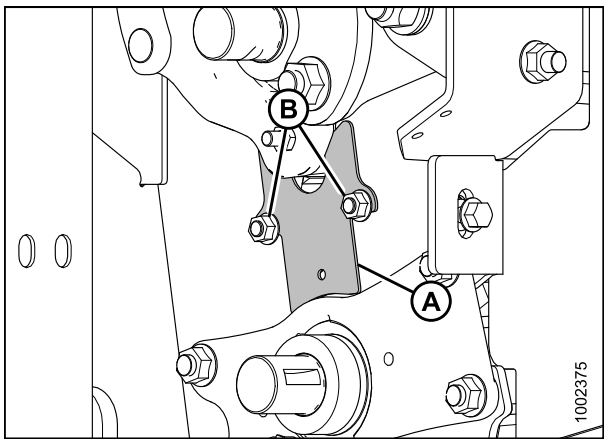

Figure 6.4: Install Shield

6.2.2 Adjusting the Roll Gap

DANGER

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. Lower header fully.
2. Stop the engine and the remove key.
3. Open the driveshield. See Section 5.4 Driveshields, page 28.

4. Loosen upper jam nut (A) on both sides of conditioner.
5. To increase roll gap (increase conditioning action), turn lower nut (B) clockwise.
6. To decrease roll gap (reduce conditioning action), turn lower nut (B) counterclockwise.
7. Measurement at (C) should be 0.75 in. (19 mm).
8. Once adjustment is complete, hold nut (A) and torque jam nut (B) to 75 ft-lbf (102 N·m).

   NOTE: When adjusting roll gap, be sure that the thread protruding at the adjustment is the same on both ends of the conditioner rolls. This will achieve consistent intermesh across the rolls.
9. Check roll gap, see Section 6.2.1 Checking Roll Gap, page 69.

IMPORTANT

Roll timing is critical when the roll gap is decreased because the bars may contact each other if the timing is wrong.

10. See Section 6.4 Roll Timing, page 73 for instructions on checking the timing.
11. Close the driveshield See Section 5.4 Driveshields, page 28.

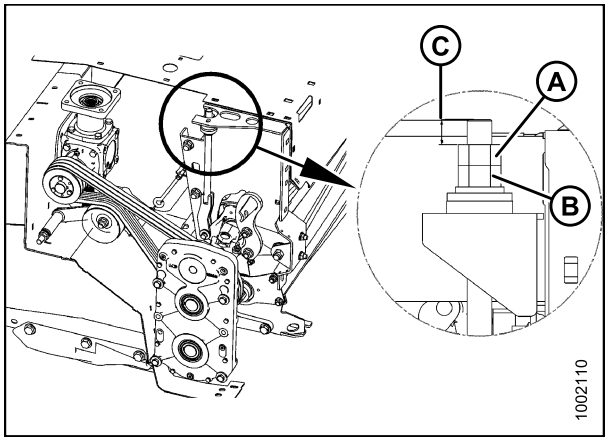

Figure 6.5: Roll Gap Adjustment Bolt

A - Upper Jam Nut **B - Lower Nut**
C - 0.78 in. (19 mm)

6.3 Roll Tension

The roll tension (the force holding the rolls together) is achieved with a spring type adjustable linkage that is preset to maximum at the factory.

Heavy crops or tough forage that tend to separate the rolls require the maximum roll tension to ensure that material is sufficiently crimped.

Light alfalfa and short grasses would require less roll tension to minimize over-conditioning.

6.3.1 Adjusting Roll Tension

DANGER

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.

To adjust the conditioner roll tension , follow these steps:

1. Lower the header fully.
2. Shut down the engine and remove the key.
3. Open the driveshield See Section 5.4 Driveshields, page 28.
4. To decrease the roll tension, turn the spring drawbolts counterclockwise to loosen the springs.
5. To increase the roll tension, loosen jam nut (A) and turn the spring drawbolt (B) clockwise to tighten the spring at each end of the roll. Spring is fully tensioned at the factory.

IMPORTANT

Turn each bolt equal amounts. Each turn of the bolt changes the roll tension by approximately 10 lbf (44.5 N).

6. Tighten jam nut (A) against casting after adjusting tension.
7. Close the driveshield. See Section 5.4 Driveshields, page 28.

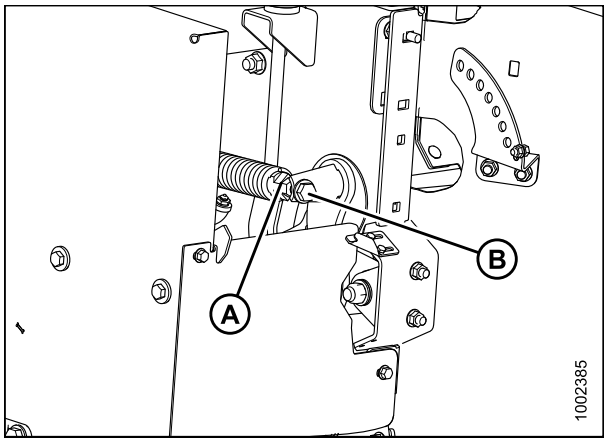

Figure 6.6: Spring Tension Dimension (LH Side)

A - Jam Nut **B - Spring Draw Bolt**

6.4 Roll Timing

For proper conditioning, the rolls must be properly timed with each steel bar on one roll centered between two bars of the other roll as shown. The factory setting should be suitable for most crop conditions.

IMPORTANT

Roll timing is critical when the roll gap is decreased because the bars may contact each other if the timing is wrong.

6.4.1 Checking Roll Timing

DANGER

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.

To adjust the conditioner roll timing, follow these steps:

1. Lower header fully.
2. Open the driveshield See Section 5.4 Driveshields, page 28.
3. Loosen nuts (B) and slide conditioner shield (A) up to remove.

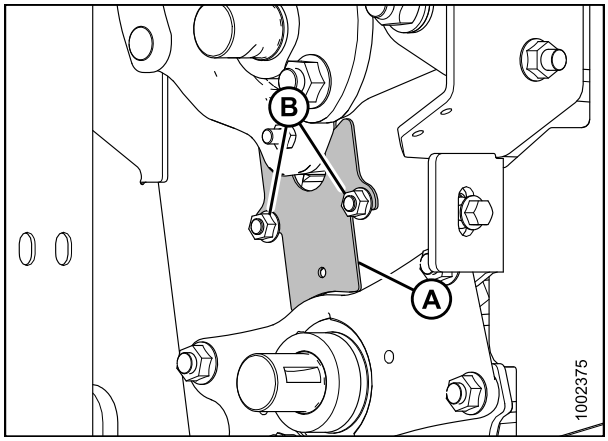

Figure 6.7: Remove Shield

A - Conditioner Shield **B - Nuts**

4. Measure the roll timing distance (B) at each end of the rolls. Each steel bar on one roll should be centered between two bars of the other roll so that (B) is approximately equal on both sides of the bar.

   NOTE: If adjustment is required, see Section 6.4.2 Adjusting the Roll Timing, page 74.

   NOTE: Roll spacing not to scale in illustration.

5. Close the driveshield. See Section 5.4 Driveshields, page 28.

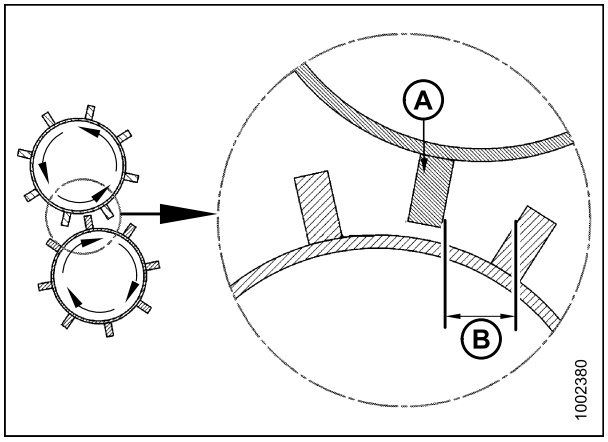

Figure 6.8: Conditioner Roll Timing

A - Center Roll Bars **B - Roll Timing Distance**

6.4.2 Adjusting the Roll Timing

Follow these steps to adjust the roll timing (if necessary):

1. Loosen four bolts (A) in slots of yoke plate (B) on upper roll universal shaft.
2. Manually rotate upper roll until it stops. Make a mark on yoke flange to align with the center of one of the bolt heads (A).
3. Manually rotate upper roll in opposite direction until it stops. Make a second mark on yoke flange to align with the bolt.
4. Determine the center between the two marks and mark a third line on the yoke flange.
5. Rotate the upper roll until the bolt lines-up with the third line.
6. Tighten bolts (A) to secure the position. Torque to 70 ft·lbf (95 N·m).

   NOTE: For additional conditioning action in lighter or tine stem crops, the distance between the conditioner roll bars can be adjusted (advanced timing).

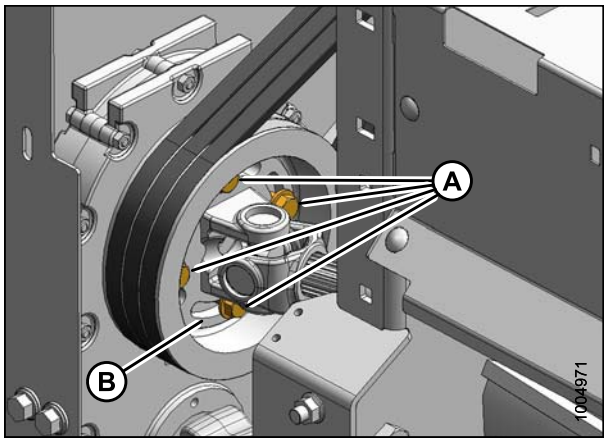

Figure 6.9

6.5 Forming Shields

WARNING

Keep hands and feet away from discharge opening. Keep everyone several hundred feet away from your operation. Never direct the discharge toward anyone. Stones or other foreign objects can be ejected with force.

The position of the forming shields controls the width and placement of the windrow. The decision on forming shield position should be based on the following factors:

- weather conditions (rain, sun, humidity, wind)
- type and yield of crop
- drying time available
- method of processing (green-feed, bales, silage)

A wider windrow will generally dry faster and more evenly resulting in less protein loss. Fast drying is especially important in areas where the weather allows only a few days to cut and bale. Refer to Section 6.13 Haying Tips, page 87 for more information.

A narrower windrow may be preferred for ease of pickup and when drying is not critical (for example, when cutting for silage or green-feed).

6.5.1 Adjusting the Side Deflectors

DANGER

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.

The position of the side deflectors control the width and placement of the windrow. To adjust the side deflectors, follow these steps:

1. Set forming shield side deflectors (A) to desired width by repositioning adjuster bars (B) in holes in forming shield cover. To ensure windrow placement is centered, adjust both side deflectors to the same position.

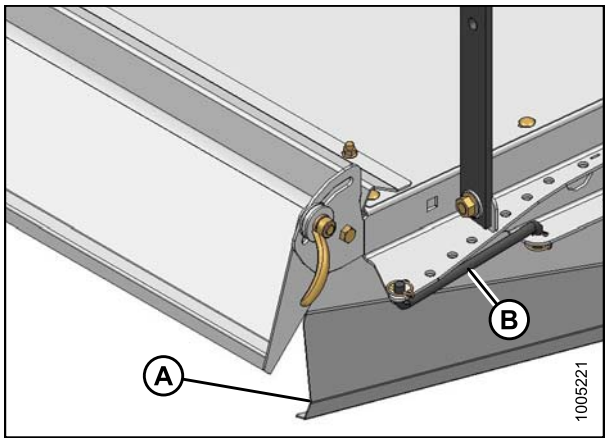

Figure 6.10

2. If side deflector attachment is too tight or too loose, tighten or loosen nut (A) as required.

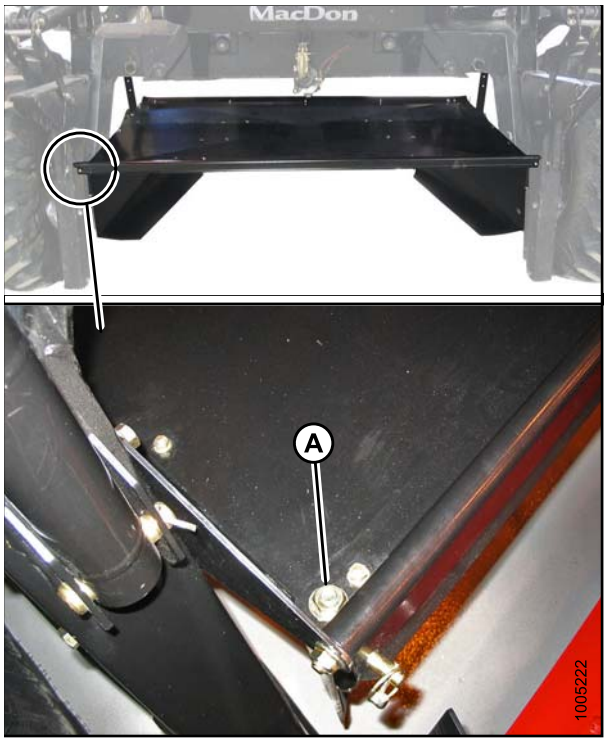

Figure 6.11

6.5.2 Adjusting the Rear Deflector (Fluffer Shield)

DANGER

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.

The fluffer shield or rear deflector slows the crop exiting the conditioner rolls, directs the flow downward, and fluffs the material.

Adjust the rear deflector as follows:

1. For more crop control in light material, lower the deflector (A) by pushing down on one side of the deflector and then on the other side.

   NOTE: Locking handles (B) are located at both ends of the deflector and may be loosened slightly.

2. For heavier crops, raise the deflector by pulling up on one side and then on the other side.

   NOTE: For even windrow formation, be sure the deflector (A) is not twisted.

3. Tighten handles (B) to secure deflector position.

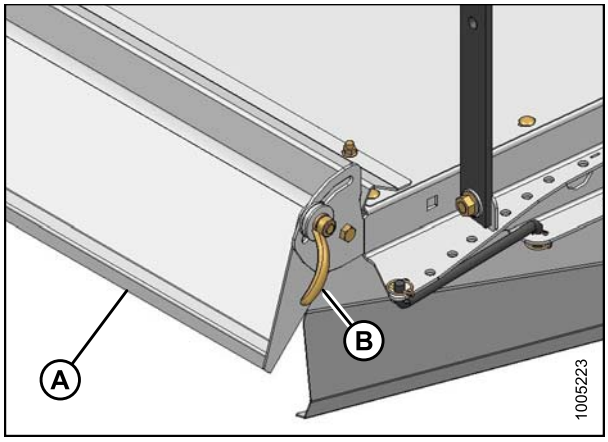

Figure 6.12

6.5.3 Adjusting the Swath Baffle

The swath baffle (A) determines the width and height of the windrow.

It is located immediately behind and above the conditioning rolls and can be positioned to:

- direct the crop flow into the forming shield for narrow and moderate width windrows.
- direct crop downward to form a wide swath.

To adjust the swath baffle, follow these steps:

DANGER

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. Remove lynch pin from pin (B) and remove pin from lever (C).
2. Move lever to middle hole in bracket and reinstall pin (B) through lever and bracket.
3. Secure with lynch pin.

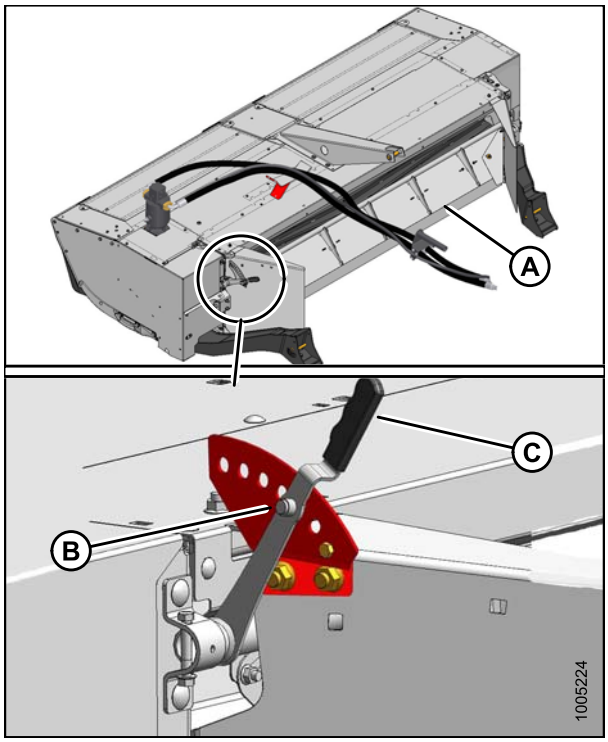

Figure 6.13

NOTE: Swath baffle position may need to be adjusted for proper pin engagement. Loosen bolts (A) and adjust bracket (B) and baffle as required. Tighten bolts (A).

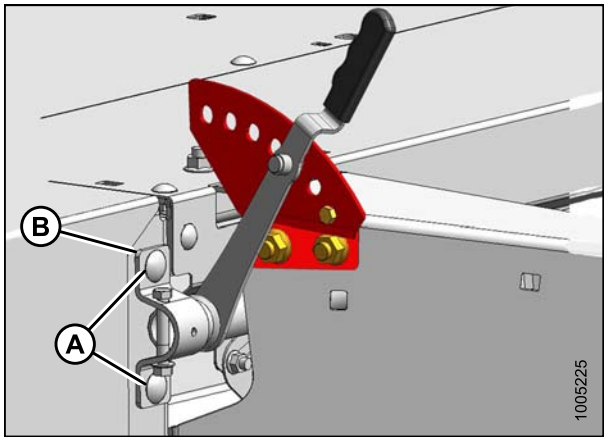

Figure 6.14

6.6 Header Angle

Header (or cutterbar) angle can be varied from 0–8° below horizontal.

Choose an angle that maximizes performance for your crop and field conditions.

A flatter angle provides better clearance in stony conditions while a steeper angle is required in down crops for better lifting action.

The header angle may be hydraulically adjusted from the windrower cab using the hydraulic cylinder (A)—if equipped—without shutting down the windrower.

Refer to your MacDon self-propelled windrower operator's manual.

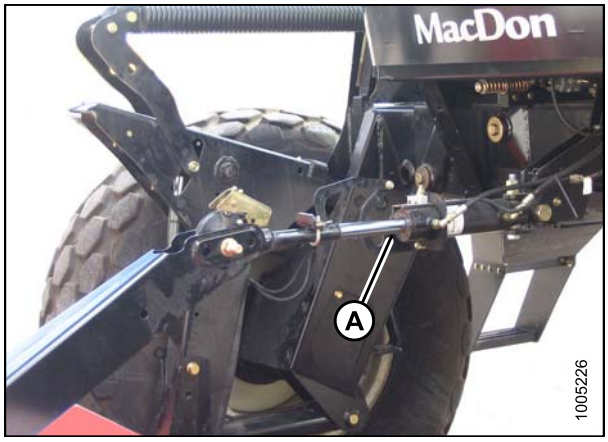

Figure 6.15

6.7 Cutting Height

Cutting height is determined by a combination of the angle of the cutterbar/header and the skid shoe settings.

Cutting height should be adjusted for optimum cutting performance without allowing excessive build-up of mud and soil inside the header that can lead to poor crop flow and increased wear on cutting components.

Choose an angle that maximizes performance for your crop and field conditions. Refer to Section 6.6 Header Angle, page 79.

Optional adjustable skid shoes are available to also provide different cutting heights. Refer to Section 9.1 Kits, page 153.

- Lowering the skid shoes or decreasing 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 header angle allows the crop to be cut lower.

To minimize damage to cutterbar components, scooping soil, or soil build-up at the cutterbar in damp conditions, header float should be set as light as possible without causing excessive bouncing.

When the float setting is light, it may be necessary to use a slower ground speed to avoid excessive bouncing and leaving a ragged cut.

6.7.1 Adjusting the Skid Shoe Height

DANGER

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

1. Raise header fully, stop engine, and remove key.
2. Engage header safety props.
3. Remove bolts (A).
4. Raise or lower skid shoe (B).
5. Reinstall bolts (A).
6. Repeat for skid shoe at opposite end of header.
7. Check header float as described in Section 6.1 Header Float, page 67.
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. Refer to Section 6.6 Header Angle, page 79.

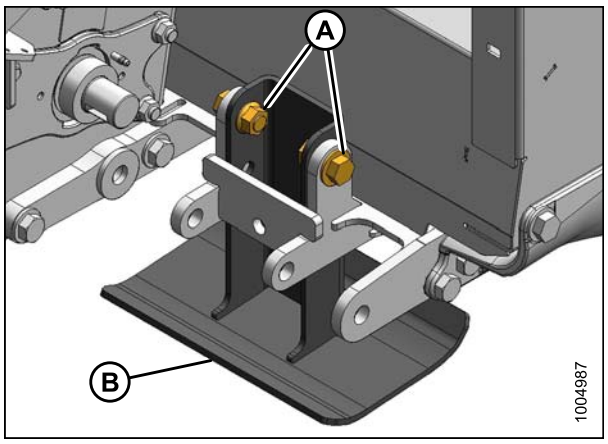

Figure 6.16

6.8 Disc Speed

The disc header can be used to cut a variety of crops.

For the best cutting results, a range of disc speeds is recommended for each type of crop and condition. See table below.

Crop	Condition	Disc rpm
Alfalfa	Heavy	2300–2500
	Light	1600–2000
Sudan, Sorghum, Haygrazer, Timothy	Tall and stemmy	2300–2500
Short grass	Dense	2500
	Thin	1800–2000

Disc speeds are set and adjusted from the cab using system controls, without shutting down the windrower.

Refer to your MacDon self-propelled windrower operator's manual.

6.9 Ground Speed

CAUTION

Reduce speed when turning, crossing slopes, or when travelling over rough ground.

Choose a ground speed that allows the cutterbar and conditioner to cut the crop smoothly and evenly. Try different combinations of header speed and ground speed to suit your specific crop.

Refer to your MacDon self-propelled windrower operator's manual for changing ground speed.

In tough cutting conditions, such as native grasses, the disc speed will need to be increased.

In light crops, the header speed can be reduced while maintaining ground speed.

NOTE: Operating the header at the minimum disc speed will extend the wear life of cutting components.

The chart below indicates the relationship between ground speed and area cut for a 13-foot header.

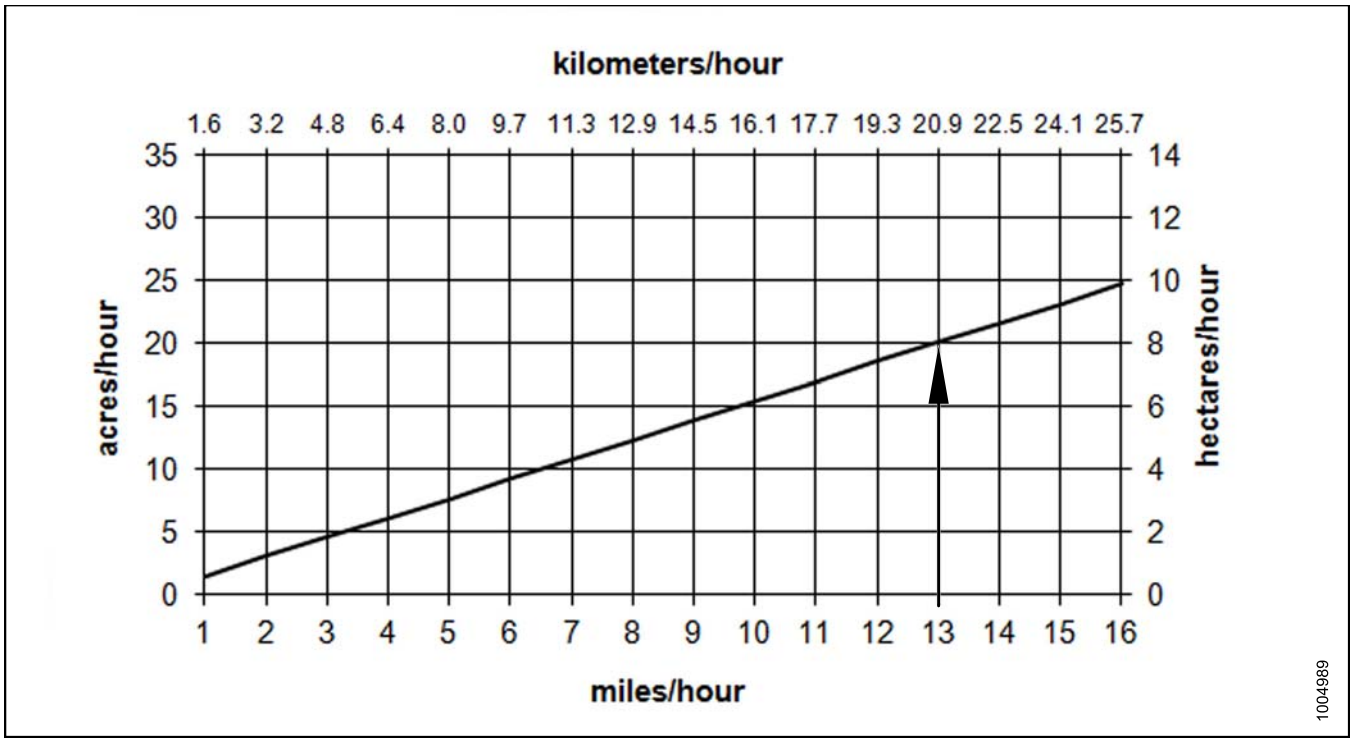

Figure 6.17: Ground Speed

Example: at a ground speed of 13 mph (21 km/h) a 13-foot header would cut approximately 20 acres (8 hectares) per hour.

6.10 Double Windrowing

If your windrower is equipped with the Double Windrow Attachment (DWA [A]), refer to the MacDon DWA Manual (MD #169216) for operating and maintenance instructions.

The manual is shipped with the DWA Kit.

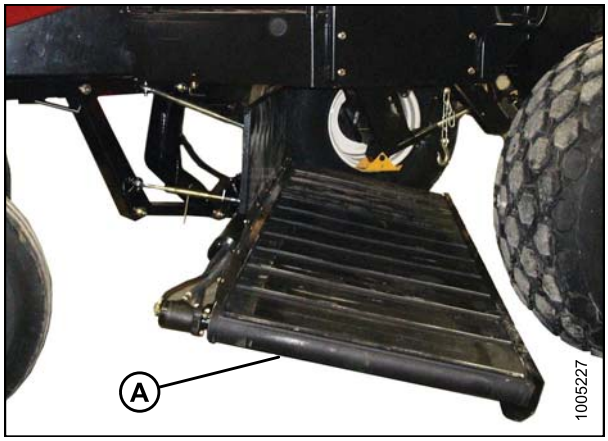

Figure 6.18

6.11 Tall Crop Dividers (option)

The tall crop dividers (one on each end of the header) assist in clean crop dividing and cutterbar entry in tall crops. Tall crop dividers are not adjustable, but can be removed easily.

6.11.1 Removing Tall Crop Divider

DANGER

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. Lower header to the ground, shut down windrower, and remove key.
2. Open cutterbar doors. Refer to Section 5.5 Cutterbar Doors, page 30.

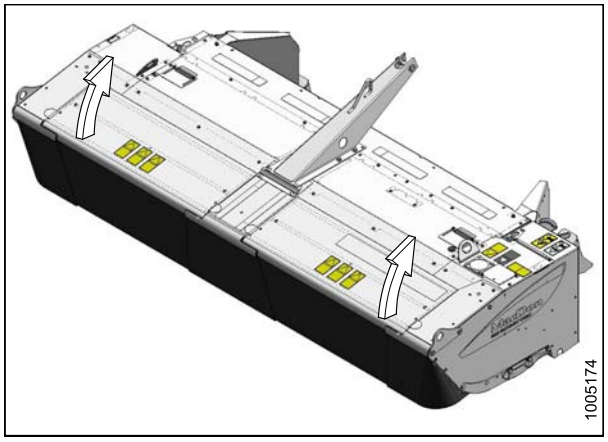

Figure 6.19

3. Remove the four bolts (A) and remove deflector (B).
4. Reinstall the four bolts (A).
5. Close cutterbar doors.

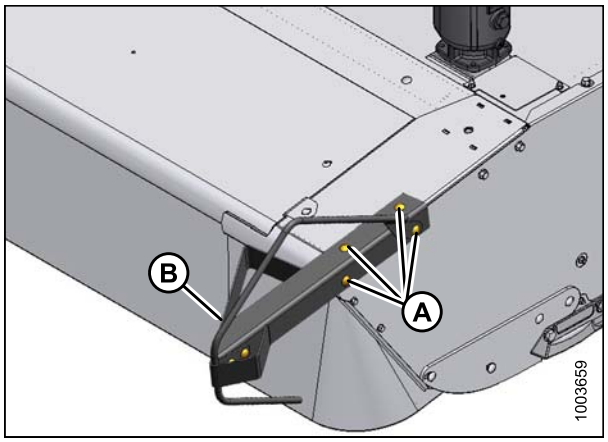

Figure 6.20

6.12 The Header Pan

The header pan is located behind the cutterbar and helps prevent material loss and wrapping in certain crops, such as grass seed, oats, and tall stalky crops.

In conditions where more soil and stones are being picked up by the cutterbar, it may be desirable to remove the pan to allow the debris to fall out before being fed into the conditioner.

6.12.1 Removing the Header Pan

DANGER

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.

To remove the header pan follow these steps:

1. Raise header fully, stop engine, and remove key.
2. Engage header safety props.
3. Open cutterbar doors. See section 5.5 Cutterbar Doors, page 30.
4. Raise cutterbar doors for access to the bolts securing pan to frame.

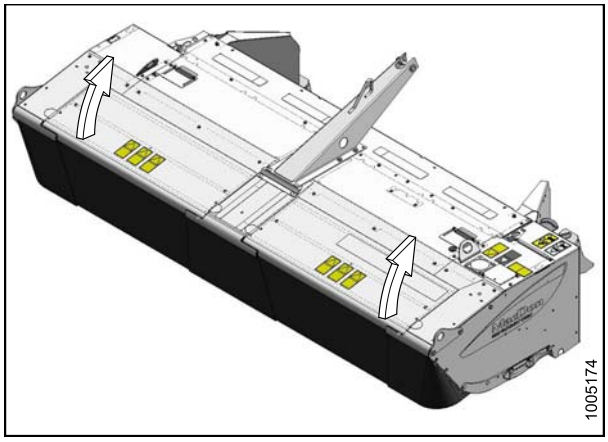

Figure 6.21

5. Remove six bolts (A) securing pan (B) to header and remove pan.

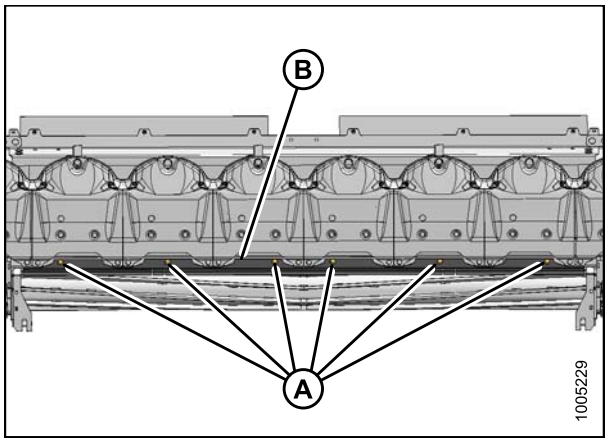

Figure 6.22

6.12.2 Installing the Header Pan

To install the header pan, follow these steps:

1. Locate pan (B) under header frame and hold in place.
2. Install six 1/2 in. x 1 carriage bolts (A) and flanged lock nuts. Tighten hardware.

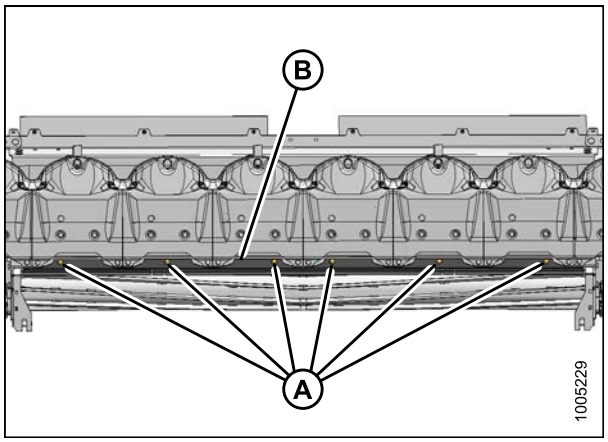

Figure 6.23

6.13 Haying Tips

6.13.1 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 harvested, the earlier the start for next growth.

Leaving the windrow as wide and thin as possible makes for the quickest curing.

Cured hay should be baled as soon as possible.

6.13.2 Topsoil Moisture

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

- 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.
- 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.
- Cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

6.13.3 Weather and Topography

- Cut as much hay as possible by midday 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 those 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.
- Cut hay perpendicular to the direction of the prevailing winds is also recommended.

6.13.4 Windrow Characteristics

Refer to Section 6 Operating the Header, page 67 for instructions on adjusting the header.

For best results, a windrow should have the following characteristics:

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

6.13.5 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.

6.13.6 Raking and Tedding

Raking or tedding speeds up drying, however the benefits must be weighed against the additional leaf losses which will 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 tedded at less than 25% moisture or excessive yield losses will result.

6.13.7 Using 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 compared.

6.14 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 ensuring they are properly inflated. Refer to your self-propelled 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 the self-propelled windrower operator's manual.

6.15 Unplugging the Header

Follow these steps to remove plugged material from the header:

DANGER

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

1. Stop forward movement of the windrower and disengage the header.
2. Raise the header fully, shut down the windrower engine, and remove the key.
3. Engage header safety props.

WARNING

Wear heavy gloves when working around cutterbar.

4. Open cutterbar doors. Refer to Section 5.5 Cutterbar Doors, page 30.
5. Clean off cutterbar or rolls by hand.

   NOTE: Header reversing feature is standard to M205 windrowers.

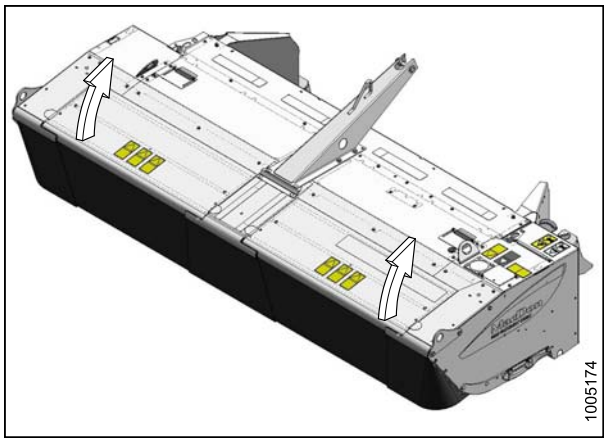

Figure 6.24

7 Maintenance and Servicing

The following instructions are provided to assist the Operator in servicing the header. Detailed maintenance and service information is available from your Dealer. A parts catalog is located in a plastic case at the right end of the header.

Log hours of operation and use the Maintenance Schedule/Record provided to keep a record of scheduled maintenance. Refer to Section 7.5.1 Maintenance Schedule/Record, page 104.

7.1 Preparation for Servicing

CAUTION

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

1. Fully lower the header.
2. Stop engine and remove key.
3. Engage park brake.
4. Wait for all moving parts to stop.

7.2 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.

7.2.1 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 7.1 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

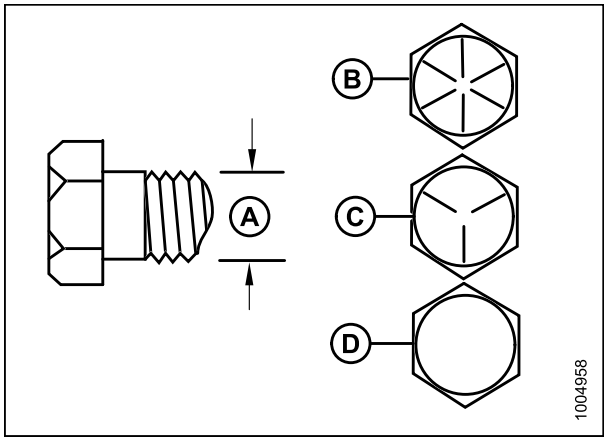

Figure 7.1

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 7.2 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 7.3 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

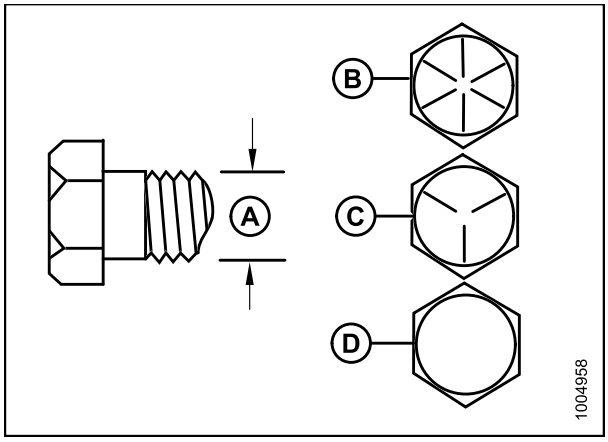

Figure 7.2

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 7.4 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

7.2.2 Metric Bolt Specifications

Table 7.5 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

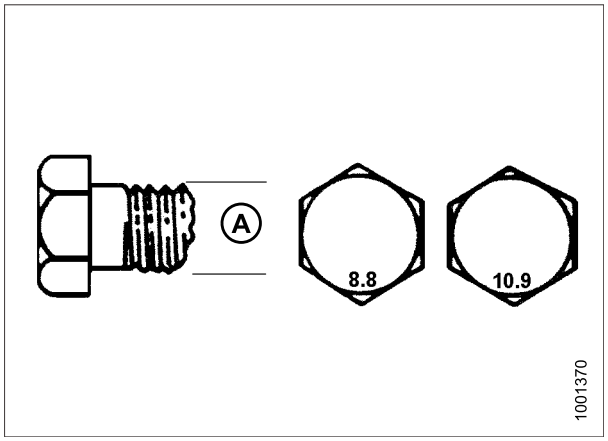

Figure 7.3

A - Nominal Size

Table 7.6 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 7.7 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

Table 7.8 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

7.2.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 7.9 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				

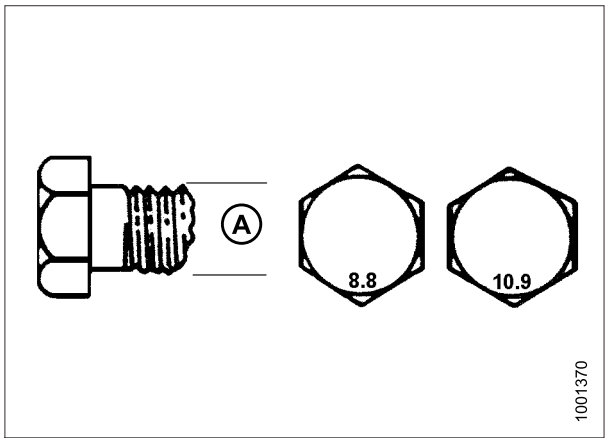

Figure 7.4

A - Nominal Size

7.2.4 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.

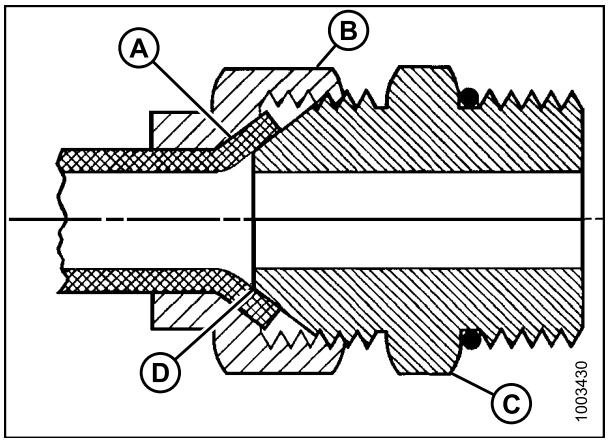

Figure 7.5

A - Flare **B - Nut**
C - Flareseat **D - Body**

Table 7.10 Flare-Type Hydraulic Tube Fittings

SAE No.	Tube Size O.D. (in.)	Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value[1]		Flats From Finger Tight (FFFT)	
				ft·lbf	N·m	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

7.2.5 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 table 7.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable), page 99, while holding body of fitting with a wrench.

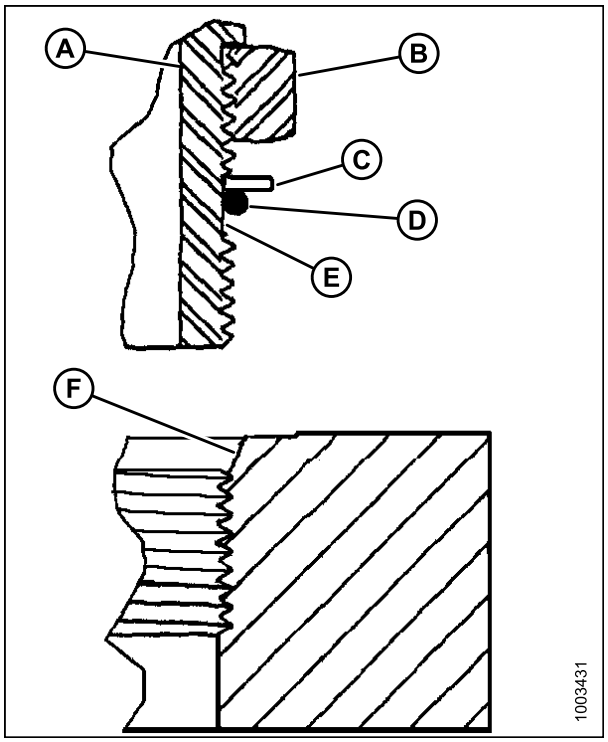

Figure 7.6

A - Fitting **B - Lock Nut** **C - Washer**
D - O-Ring **E - Groove** **F - Seat**

1. Torque values shown are based on lubricated connections as in reassembly.

Table 7.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE No.	Thread Size (in.)	Nut Size Across Flats (in.)	Torque Value[2]		Flats From Finger Tight (FFFT)[3]	
			ft·lbf	N·m	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

7.2.6 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 7.7

2. Torque values shown are based on lubricated connections as in reassembly.
3. Always default to the torque value for evaluation of adequate torque.

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 table 7.12 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 100.

   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.

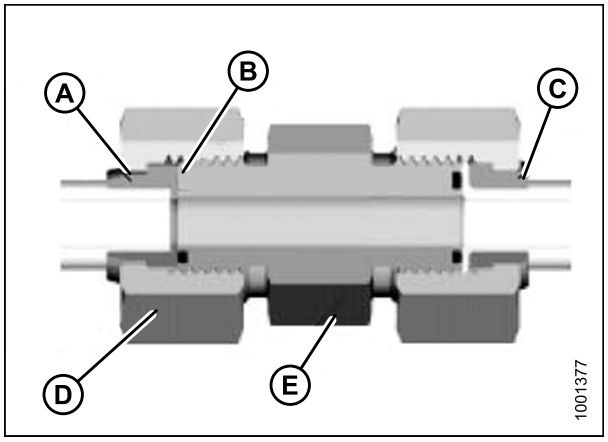

Figure 7.8

A - Brazed Sleeve
B - O-Ring
C - Two Piece Sleeve
D - Nut
E - Fitting Body

Table 7.12 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE No.	Thread Size (in.)	Tube O.D. (in.)	Torque Value[4]		Flats From Finger Tight (FFFT)[5]	
			ft·lbf	N·m	Tube Nuts	Swivel & Hose
3	[6]	3/16	–	–	–	–
4	9/16	1/4	11–12	14–16	1/4–1/2	1/2–3/4
5	[6]	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	–	–	–	–

4. Torque values and angles shown are based on lubricated connection, as in reassembly.
5. Always default to the torque value for evaluation of adequate torque.
6. O-ring face seal type end not defined for this tube size.

7.3 Conversion Chart

Quantity	Inch-Pound Units		Factor	SI Units (Metric)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	acres	acres	x 0.4047 =	hectares	ha
Flow	US gallons per minute	gpm	x 3.7854 =	liters per minute	L/min
Force	pounds force	lbf	x 4.4482 =	Newtons	N
Length	inch	in.	x 25.4 =	millimeters	mm
	foot	ft.	x 0.305 =	meters	m
Power	horsepower	hp	x 0.7457 =	kilowatts	kW
Pressure	pounds per square inch	psi	x 6.8948 =	kilopascals	kPa
			x .00689 =	megapascals	MPa
Torque	pound feet or foot pounds	lbf·ft or ft·lbf	x 1.3558 =	newton·meters	N·m
	pound inches or inch pounds	lbf·in. or in·lbf	x 0.1129 =	newton·meters	N·m
Temperature	degrees Fahrenheit	˚F	(˚F - 32) x 0.56 =	Celsius	˚C
Velocity	feet per minute	ft/min	x 0.3048 =	meters per minute	m/min
	feet per second	ft/s	x 0.3048 =	meters per second	m/s
	miles per hour	mph	x 1.6063 =	kilometers per hour	km/h
Volume	US gallons	US gal.	x 3.7854 =	liters	L
	ounces	oz.	x 29.5735 =	milliliters	ml
	cubic inches	$in.^3$	x 16.3871 =	cubic centimeters	cm^3 or cc
Weight	pounds	lb	x 0.4536 =	kilograms	kg

7.4 Recommended Fluids and Lubricants

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

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

Lubricant	Specification	Description	Use	Capacities
Grease	SAE Multi-Purpose	High Temperature Extreme Pressure (EP). Performance with 0–1% Max. Molybdenum Disulphide (NLGI Grade 2) Lithium Complex Base	As Required Unless Otherwise Specified.	—
		High Temperature Extreme Pressure (EP) Performance with 10% Max. Molybdenum Disulphide (NLGI Grade 2) Lithium Base	Driveline Slip-Joints	—
Gear Lubricant	Traxon LS 80W90[7]	High Thermal & Oxidation Stability. API Service Class GL-5.	Cutterbar	3.43 US quarts (3.25 l)
			Conditioner Gearbox	11.8 oz. (350 ml)
	Traxon E Synthetic 75W90[7]		Bevel Gearbox	13.6 oz. (400 ml)

7. Or equivalent.

7.5 Maintenance Requirements

In this manual, periodic maintenance requirements are 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 7.4 Recommended Fluids and Lubricants, page 102.

Log hours of operation and use Section 7.5.1 Maintenance Schedule/Record, page 104 to keep a record of scheduled maintenance.

Make copies of Section 7.5.1 Maintenance Schedule/Record, page 104 for this purpose.

Where a service interval is given with more than one timeframe, e.g., “100 hours or Annually”, service the machine at whichever interval is reached first.

IMPORTANT

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

CAUTION

Carefully follow safety messages given in Section 1 Safety, page 1.

7.5.1 Maintenance Schedule/Record

Action:	✓ - Check	♦ - Lubricate	▲ - Change

	Hour meter reading																				
	Service date																				
	Serviced by																				
First use		Refer to Section 7.5.2 Break-In Inspections, page 106.																			
100 hours or annually		Refer to Section 7.5.3 Preseason/Annual Service, page 106.																			
✓	Conditioner drive belt - see Inspecting the Conditioner Drive Belt, page 138.																				
✓	Bevel gearbox lube level - see 7.5.7 Lubrication and Servicing Intervals, page 109.																				
End of season		Refer to section 7.5.4 End-of-Season Service, page 107.																			
10 hours or daily		**NOTE: A record of daily maintenance is not normally required, but is at the Owner/Operator's discretion.**																			
✓	Hydraulic hoses and lines - see 7.8.1 Hydraulic Hoses and Lines, page 145.																				
✓	Cutter blades, deflectors, and discs - see 7.6.1 Inspecting the Cutterbar Discs, page 118.																				
25 hours																					
♦	Roll universal shafts- see 7.5.5 Lubrication and Servicing, page 107.																				
♦	Cutterbar driveline universals- see 7.5.5 Lubrication and Servicing, page 107.																				
50 HOURS																					
▲	Cutterbar lube first 50 and 150 hours - see 7.5.8 Lubricating the Cutterbar, page 113.																				
▲	Bevel gearbox lube level first 50 and 150 hours - see 7.5.7 Lubrication and Servicing Intervals, page 109.																				

♦	Drive belt tensioner - see 7.5.5 Lubrication and Servicing, page 107.																				
♦	Roll shaft bearings - see 7.5.5 Lubrication and Servicing, page 107.																				
250 hours																					
▲	Cutterbar lube - see 7.5.8 Lubricating the Cutterbar, page 113.																				
▲	Bevel gearbox lube - see Changing the Bevel Gearbox Lubricant, page 137.																				

NOTE: It is recommended that annual maintenance be done prior to start of operating season.

7.5.2 Break-In Inspections

Timing	Item	Refer to
At 5 hours	Check for loose hardware. Tighten to required torque.	Section 7.2 Torque Specifications, page 92.
	Check drive belt tension.	Inspecting the Conditioner Drive Belt, page 138.
At 25 hours	Check drive belt tension.	
At 50 hours	Check drivebelt tension.	
	Change cutterbar lubricant.	Section 7.5.8 Lubricating the Cutterbar, page 113. Use Only Specified Amount. Do NOT overfill.
	Change bevel gearbox lubricant.	Changing the Bevel Gearbox Lubricant, page 137.
At 150 hours	Change cutterbar lubricant.	Section 7.5.8 Lubricating the Cutterbar, page 113.
	Change bevel gearbox lubricant.	Changing the Bevel Gearbox Lubricant, page 137.

7.5.3 Preseason/Annual Service

CAUTION

- **Review the operator's manual to refresh your memory on safety and operating recommendations.**
- **Review all safety signs 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 the operating characteristics of the machine.**
- **Check the first aid kit and fire extinguisher. Know where they are and how to use them.**

Perform the following at the beginning of each operating season:

- Lubricate machine completely. Refer to Section 7.5.5 Lubrication and Servicing, page 107.
- Perform all annual maintenance. Refer to Section 7.5.1 Maintenance Schedule/Record, page 104.

7.5.4 End-of-Season Service

CAUTION

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

Do the following at the end of each operating season:

- Clean the header thoroughly.
- Store in a dry, protected place if possible. If stored outside, always cover the header with a waterproof canvas or other protective material.
- Raise header and engage header safety props.
- If possible, block up the header to take weight off tires.
- Repaint all worn or chipped painted surfaces to prevent rust.
- Loosen drive belt.
- 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 cutterbar components to prevent rust.
- Check for worn components and repair as necessary.
- Check for broken components and order replacements from your Dealer. Attention to these items right away will save time and effort at beginning of next season.
- Replace or tighten any missing or loose hardware. Refer to Section 7.2 Torque Specifications, page 92.
- Remove divider rods (if equipped) to reduce space required for inside storage.

7.5.5 Lubrication and Servicing

WARNING

To avoid personal injury, before servicing the header or opening drive covers, follow procedures in Section 7.1 Preparation for Servicing, page 91.

Log hours of operation and use the Maintenance Checklist provided to keep a record of scheduled maintenance. Refer to Section 7.5.1 Maintenance Schedule/Record, page 104.

Access to the drive systems requires opening the driveshield and cutterbar doors. Refer to Sections

- 5.4 Driveshields, page 28
- 5.5 Cutterbar Doors, page 30

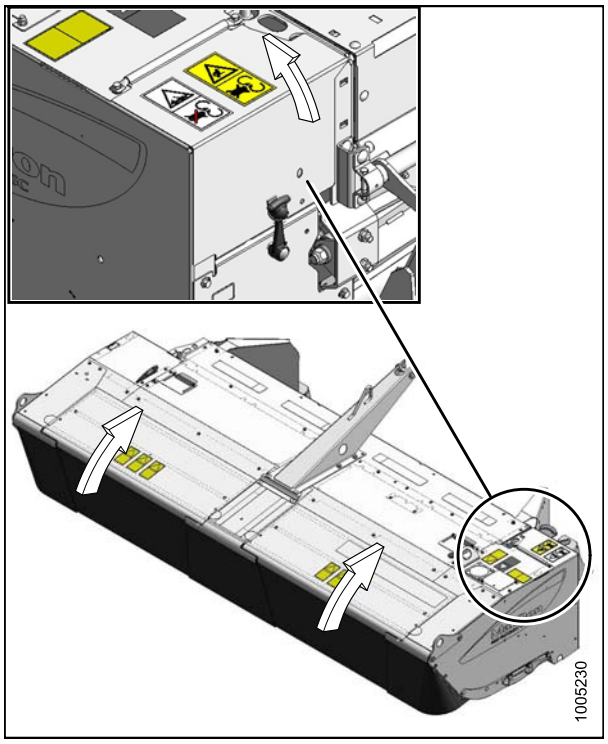

Figure 7.9

7.5.6 Greasing Procedure

DANGER

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.

The greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation.

Use the recommended lubricants specified in this manual. See Section 7.4 Recommended Fluids and Lubricants, page 102.

1. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting, except where noted.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. If fitting will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

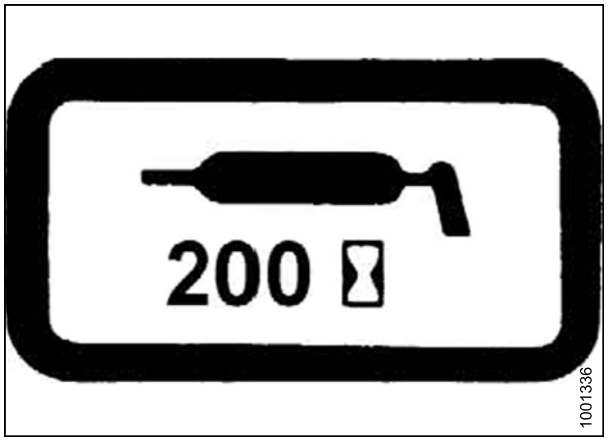

Figure 7.10

7.5.7 Lubrication and Servicing Intervals

To identify the various locations that require lubrication and servicing, refer to the following illustrations (organized by the frequency of service that is required).

Every 25 Hours

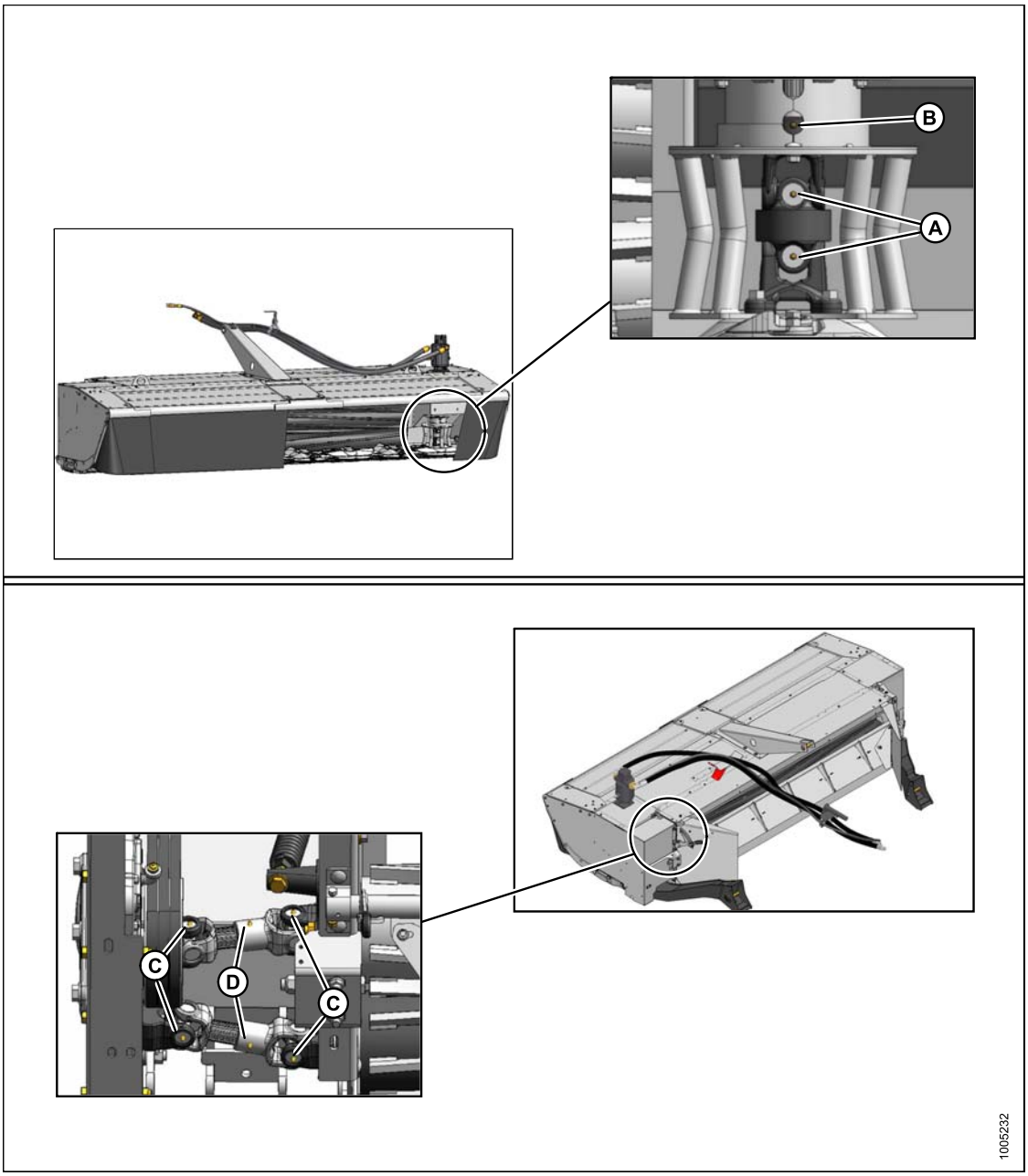

Figure 7.11

A - Cutterbar Driveline Universals (2 Places)
B - Driveshaft[8]
C - Conditioner Driveline Universals (4 Places)
D - Driveline Shaft[8]

NOTE: Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base except where noted.

8. 10% moly grease is recommended for driveline shaft slip joint only.

Every 50 Hours

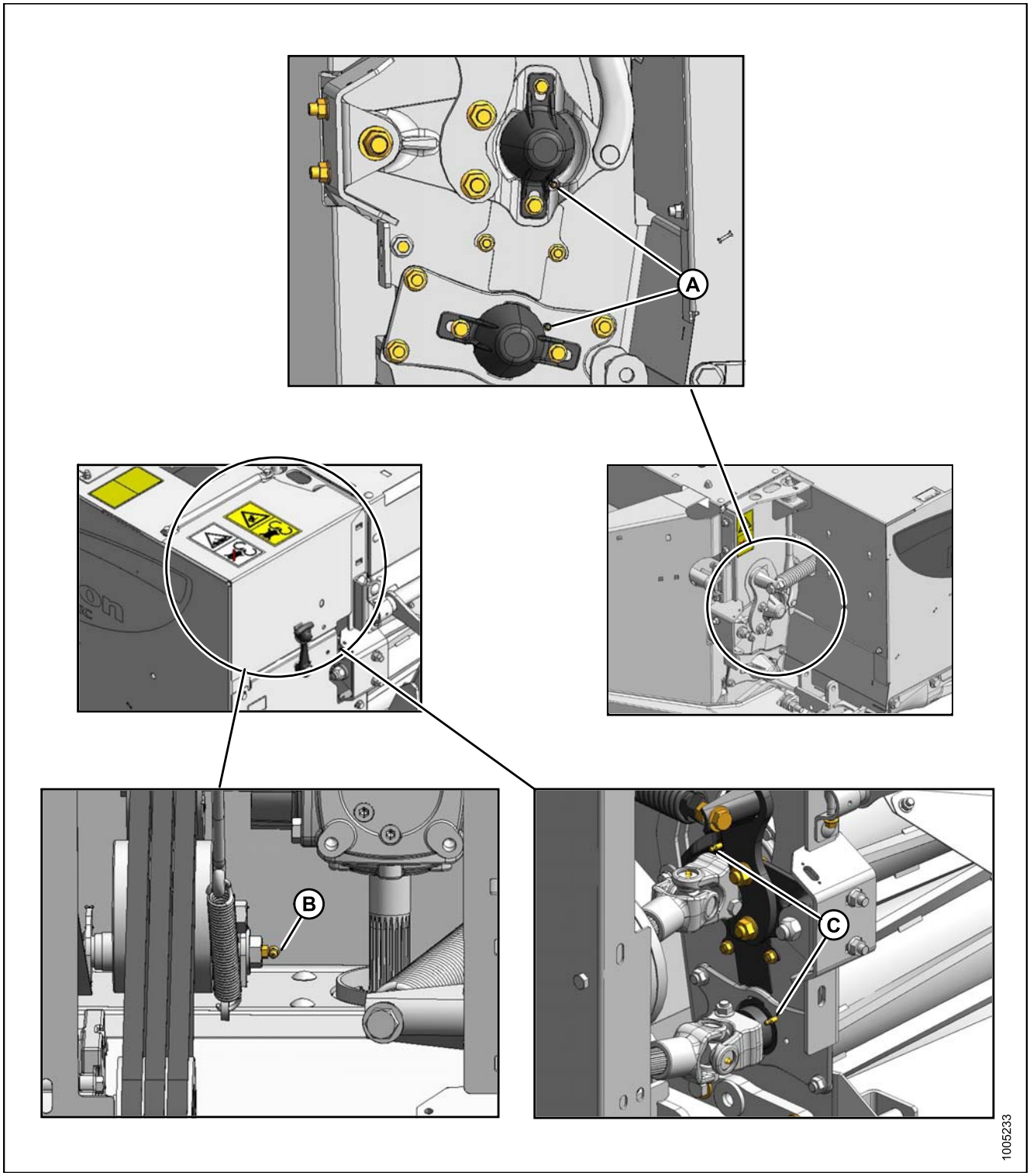

Figure 7.12

A - Roll Shaft Bearing (2 Places) **B - Belt Tensioner Pivot (1 Place)** **C - Roll Shaft Bearing (2 Places)**

NOTE: Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base except where noted.

Every 100 Hours or Annually

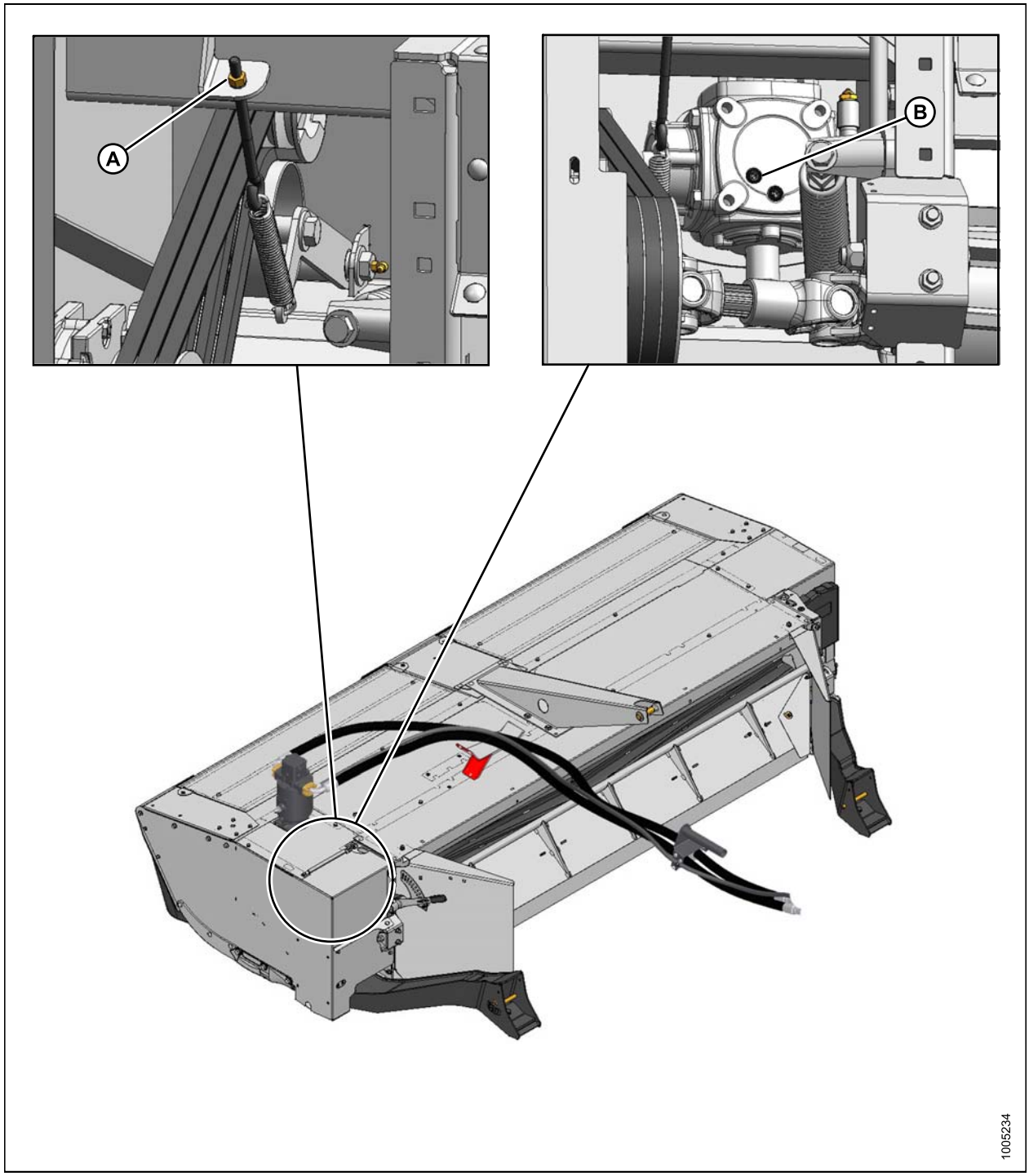

Figure 7.13

A - Gearbox Lubricant Level[9] (Check With Top Of Header Horizontal).
B - Conditioner Drive Belt Tension

NOTE: Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base except where noted.

9. Oil should run out slightly when check plug is removed.

Every 250 Hours

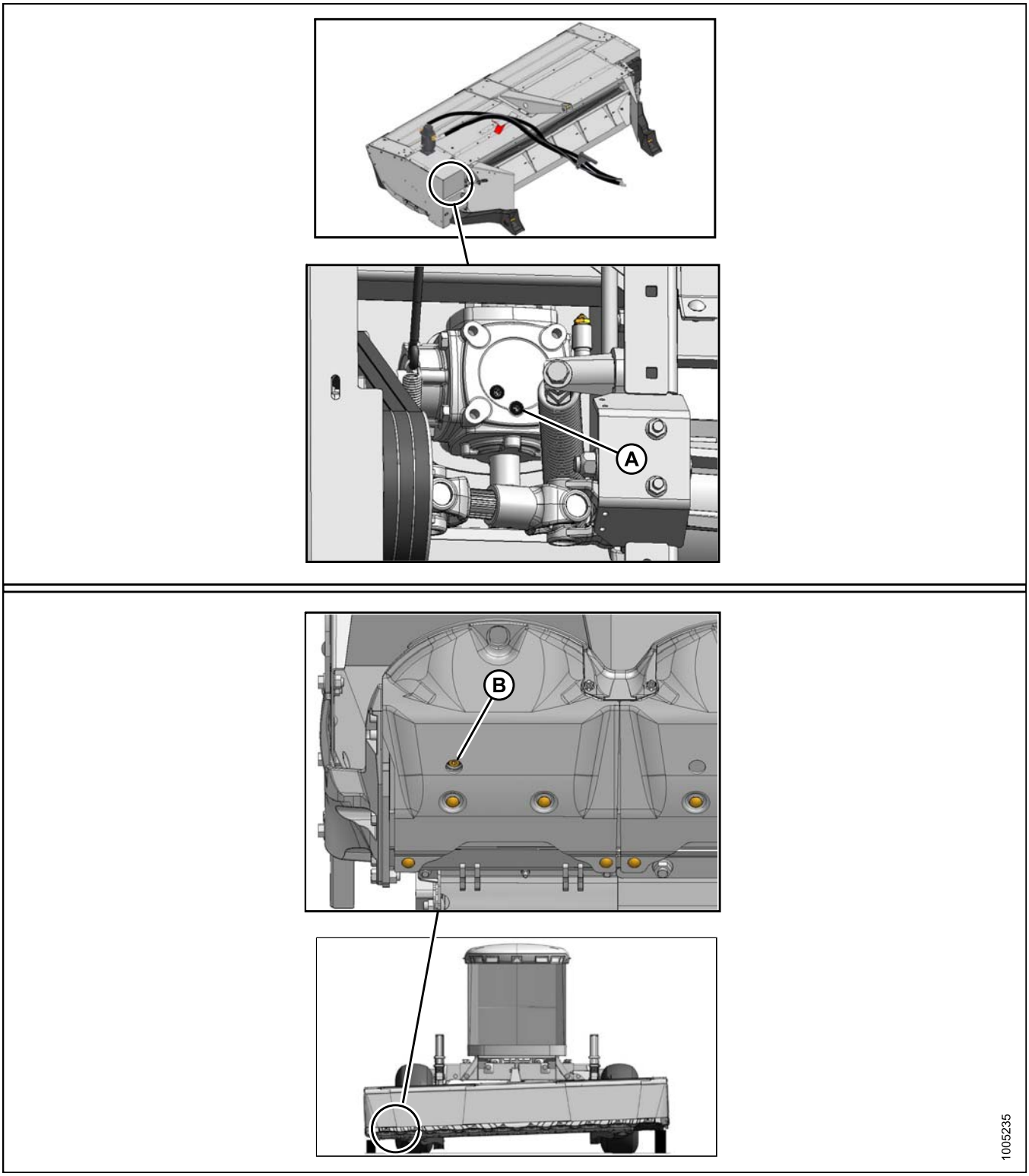

Figure 7.14

A - Change Bevel Gearbox Oil **B - Change Cutterbar Lube**

NOTE: Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI grade 2) lithium base except where noted.

7.5.8 Lubricating the Cutterbar

The lubricant level in the cutterbar **CANNOT** be checked. If in doubt as to the quantity of lubricant in the cutterbar, do **NOT** add lubricant. Drain the cutterbar and refill with new clean lubricant.

Draining the Cutterbar Lubricant

IMPORTANT

Drain the cutterbar when the lubricant is warm. If the lubricant is cold, idle the machine for about 10 minutes prior to draining.

DANGER

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.

CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

DANGER

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

1. Park the machine on level ground, raise header fully.
2. Stop the engine and remove the key.
3. Engage header safety props.
4. Place a block under each end of the header (A).

   NOTE: The block under the left end of the header should be higher than the right end.
5. Disengage header safety props.
6. Start windrower and lower header onto blocks.
7. Stop the engine and remove the key.
8. Open cutterbar doors (B). See Section 5.5 Cutterbar Doors, page 30.

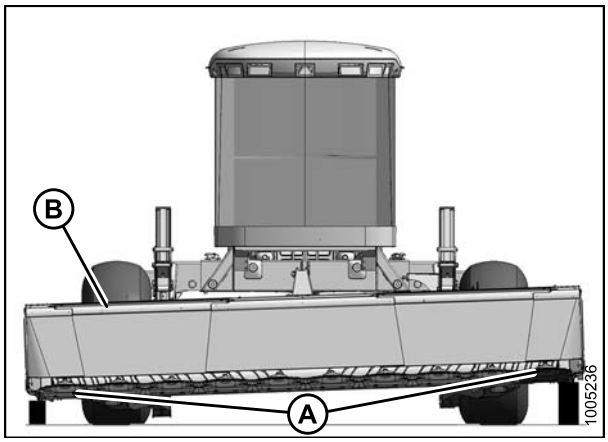

Figure 7.15

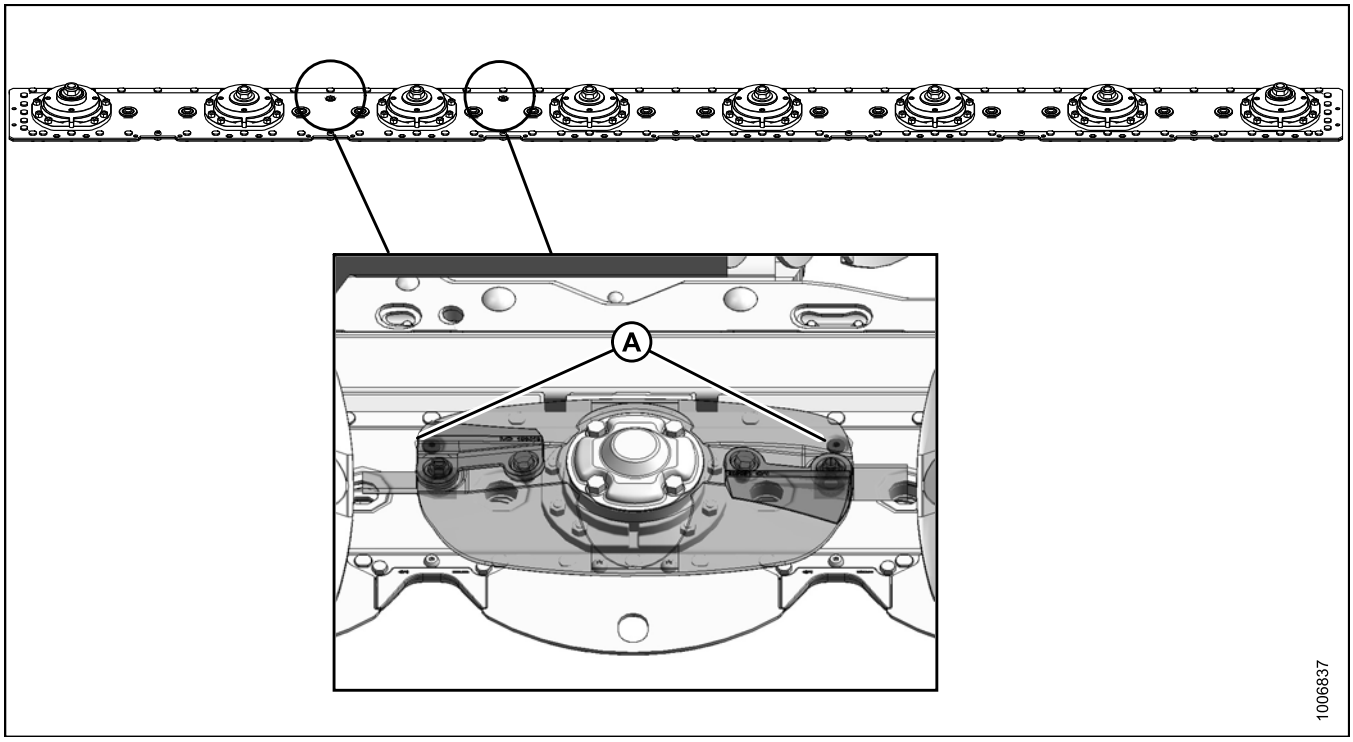

Figure 7.16: Cutterbar Filler Plug Locations

9. Locate one of the two filler plugs along the top of the cutterbar. Refer to Figure 7.16: Cutterbar Filler Plug Locations, page 114
10. Clean around either filler plug (A) and remove one plug with an 8 mm hex Allen L-key.

    NOTE: Rotate disc to expose filler plug if necessary.
11. Place a suitably sized container under the cutterbar drain hole (A).
12. Remove plug (A) with an 8 mm hex Allen L-key and allow sufficient time for lubricant to drain.

IMPORTANT

Do NOT flush the cutterbar.

13. Replace drain plug (A) and tighten.
14. Safely dispose of lubricant.
15. Add lubricant. See Filling the Cutterbar Lubricant, page 115.

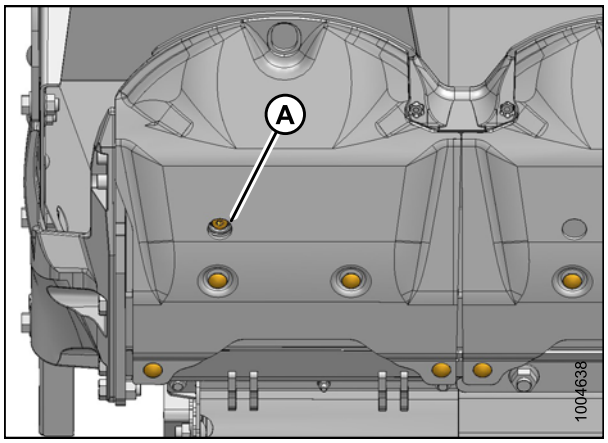

Figure 7.17

Filling the Cutterbar Lubricant

DANGER

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

CAUTION

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

1. Park the machine on level ground, raise header fully.
2. Stop the engine and remove the key.
3. Engage header safety props.
4. Move higher block to right end of header.

   NOTE: Having the fill end higher allows for quicker filling of cutterbar.

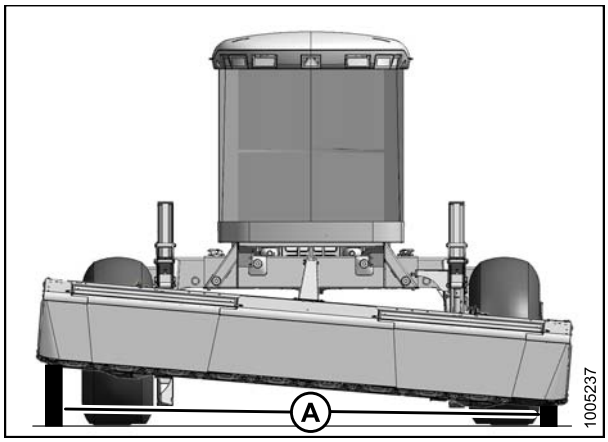

Figure 7.18

5. Disengage header safety props.
6. Start windrower and lower header onto blocks.
7. Stop the engine and remove the key.

DANGER

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.

8. Verify that drain plug (A) has been installed, before adding new lubricant.

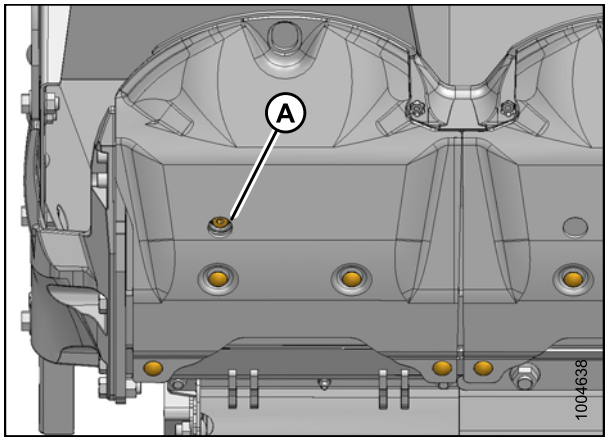

Figure 7.19

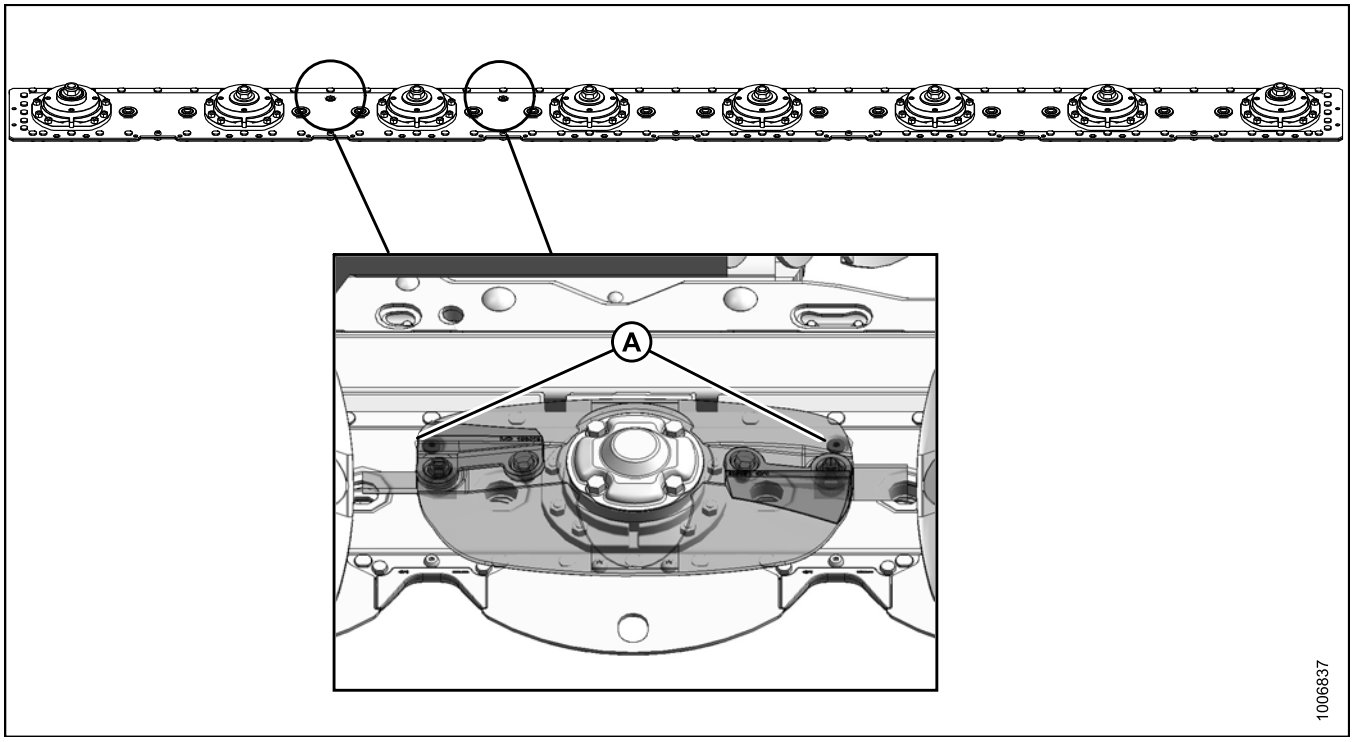

Figure 7.20: Cutterbar Filler Plug Locations

9. Locate one of the two filler plugs along the top of the cutterbar. Refer to Figure 7.20: Cutterbar Filler Plug Locations, page 116
10. Clean around either filler plug (A) and remove one plug with an 8 mm hex Allen L-key.

    NOTE: Rotate disc to expose filler plug if necessary.
11. Add lubricant to cutterbar through filler hole (A). See Section 7.4 Recommended Fluids and Lubricants, page 102.

IMPORTANT

DO NOT overfill the cutterbar. Overfilling can cause overheating and damage to or failure of the cutterbar will occur.

12. Install the filler plug that was removed.
13. Close cutterbar door(s). See Section 5.5 Cutterbar Doors, page 30.
14. Start engine and raise header off blocks.
15. Engage header safety props.
16. Remove blocks and lower header.
17. Stop engine and remove key from ignition.
18. Disengage header safety props.
19. Start engine and Lower the header fully.

7.5.9 Rock Guards

The machine is equipped with a rock guard at each cutting disc location. The rock guard prevents the cutterbar from digging into the ground and protects the disc from coming in contact with stones and other debris.

Inspecting the Rock Guards

DANGER

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.

DANGER

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

CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

Check rock guards periodically for severe damage or wear as follows:

1. Raise header fully, stop engine, and remove key.
2. Engage header safety props.
3. Inspect rock guards (A) for severe damage, wear, and distortion. The guards should be replaced if severely damaged or worn.
4. Check for loose or missing fasteners and tighten or replace fastener if missing.
5. Contact your MacDon Dealer for replacement procedures.

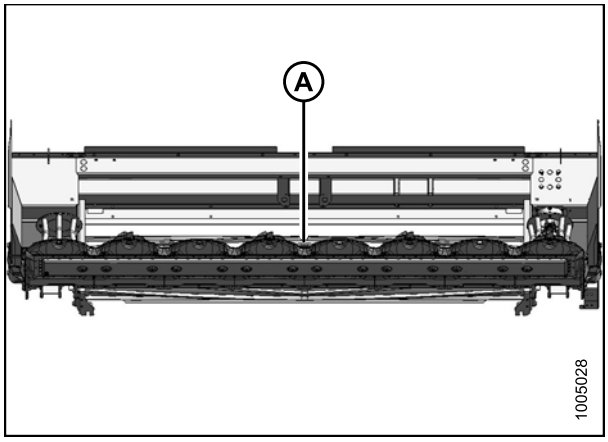

Figure 7.21

7.6 Cutterbar Disc Maintenance

Check daily that discs are not damaged by rocks or worn excessively from abrasive working conditions.

They are interchangeable and a disc can be moved to a spindle that rotates in the opposite direction, as long as it is in a usable condition and the blades are oriented to cut in the correct direction.

The discs are **NOT** repairable and must be replaced if severely damaged or worn.

IMPORTANT

If holes appear in a disc, replace the disc immediately. Do NOT attempt to repair the discs. Always use factory replacement parts.

7.6.1 Inspecting the Cutterbar Discs

Perform the following cutterbar disc inspection daily:

DANGER

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. Lower header to ground, shut off engine, and remove key.
2. Open cutterbar doors. Refer to Section 5.5 Cutterbar Doors, page 30.

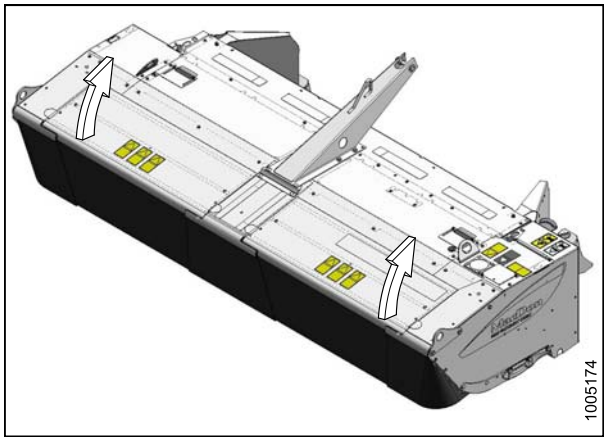

Figure 7.22

3. Check discs (A) for damage or loose fasteners.
4. Replace damaged discs. Refer to
   - Removing a Disc, page 119
   - Installing a Disc, page 120
5. Replace damaged fasteners. Tighten loose fasteners.
6. Close cutterbar doors.

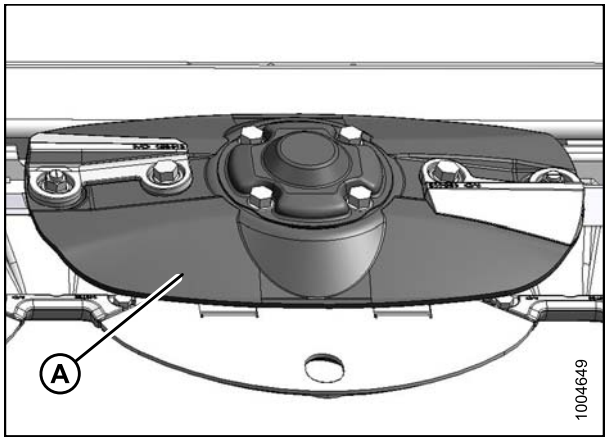

Figure 7.23

7.6.2 Disc

Removing a Disc

CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

1. Open cutterbar door(s). See Section 5.5 Cutterbar Doors, page 30.
2. Identify which disc needs to be replaced.
3. Place a block of wood between two discs to prevent disc rotation while loosening bolts.
4. If the disc has a deflector installed on it. Remove the rotary deflector. See Section
   - Removing the Driveline Deflector, page 130
   - Removing the Driven Deflector, page 129
5. Remove four bolts (A) on disc cover (B) and remove cover and disc (C).

   NOTE: If removing multiple discs, mark each discs to assist in reinstallation as the blades on each disc are direction-specific. See Section 7.6.3 Direction of Spindle Rotation, page 121.

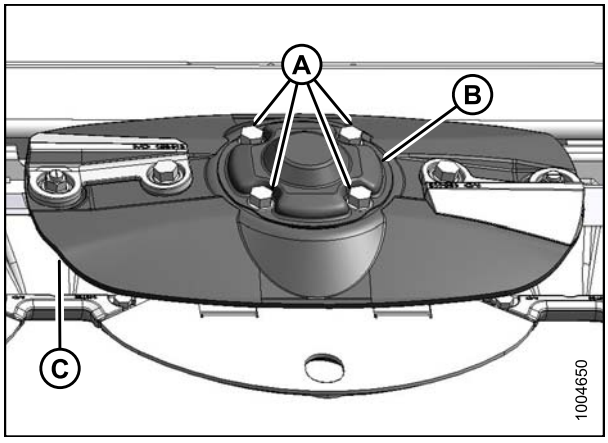

Figure 7.24

Installing a Disc

CAUTION

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

1. Position new disc on spindle ensuring it is 90° to the adjacent discs.

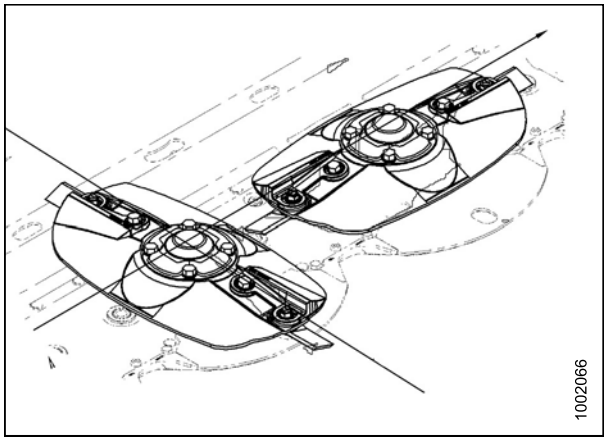

Figure 7.25

2. Install cover (B) and secure with four bolts (A). Tighten bolts.
3. Reinstall previously removed rotary deflector (if applicable). See Section
   - Installing the Driveline Deflector, page 131
   - Installing the Driven Deflector, page 130
4. Close cutterbar door(s). See Section 5.5 Cutterbar Doors, page 30.

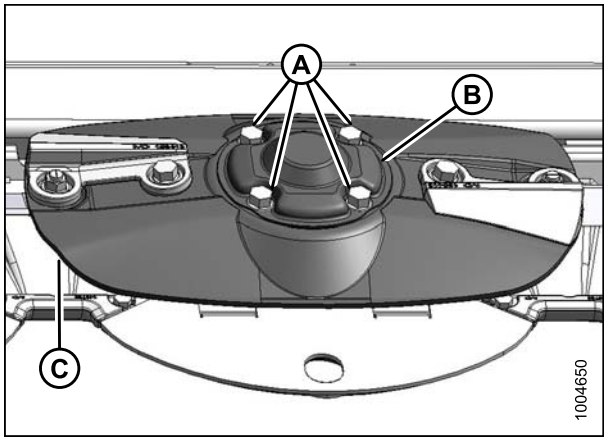

Figure 7.26

7.6.3 Direction of Spindle Rotation

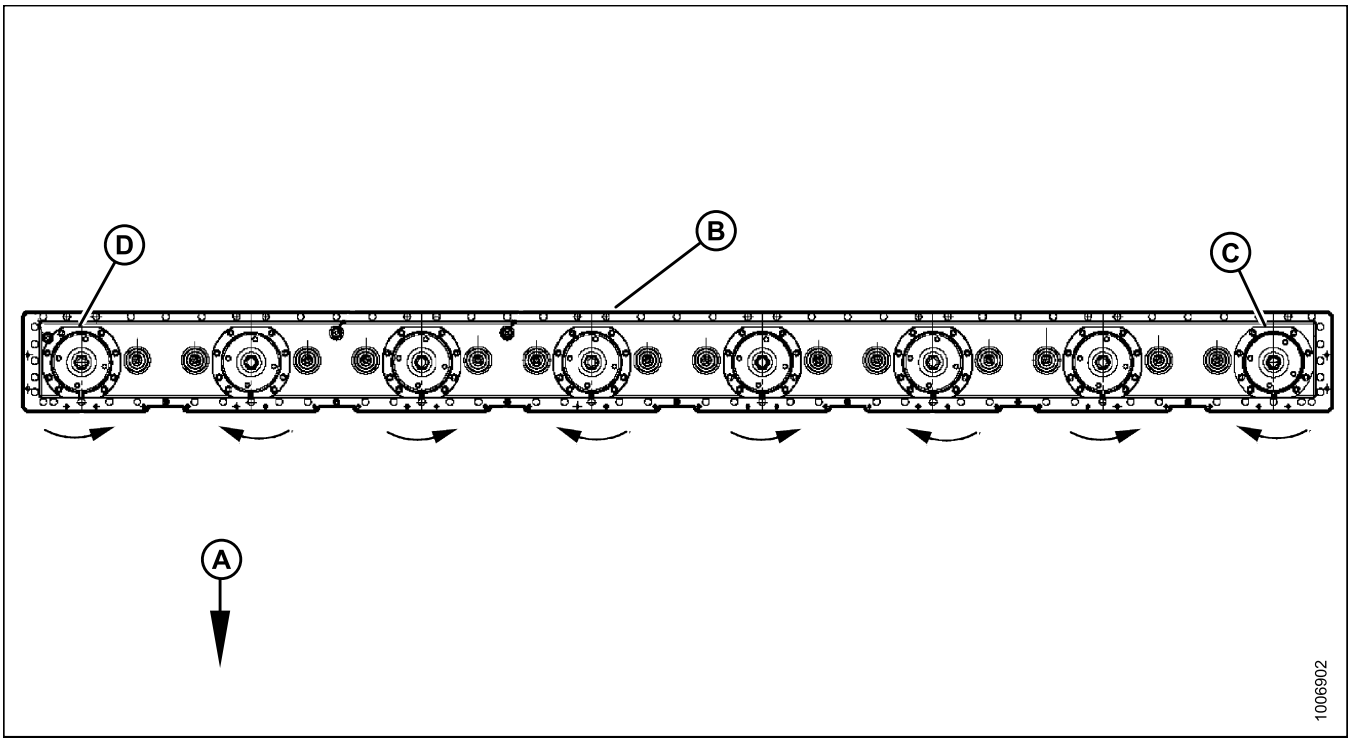

Figure 7.27

A - Front of Header **B - 13-Foot Cutterbar** **C - Disc 1**[10]
D - Disc 8[11]

7.6.4 Cutter Blades

Each disc has two cutter blades (A) attached to each end and are free to swivel horizontally on a specially designed shoulder bolt.

The blade, with two cutting edges, can be flipped over so that the blade does not need to be replaced as often.

The blades are NOT repairable and must be replaced if severely damaged or worn.

IMPORTANT

Always use factory replacement parts.

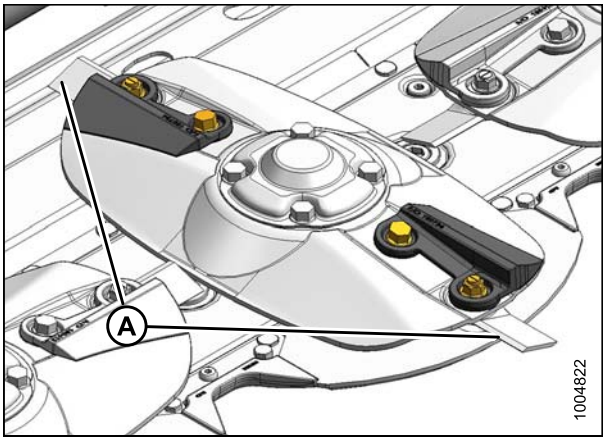

Figure 7.28

10. Driveline deflector installed here.
11. Driven deflector installed here.

Inspecting Cutter Blades

CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

CAUTION

Damaged blades may damage the cutterbar and result in poor cutting performance. Replace damaged blades at earliest possible opportunity.

DANGER

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.

- Check daily that the cutter blades are securely attached to the disc.
- Check blades for cracks, wear beyond safe operating limits (C), and distortion.
- If any of these problems occur, replace blades immediately.

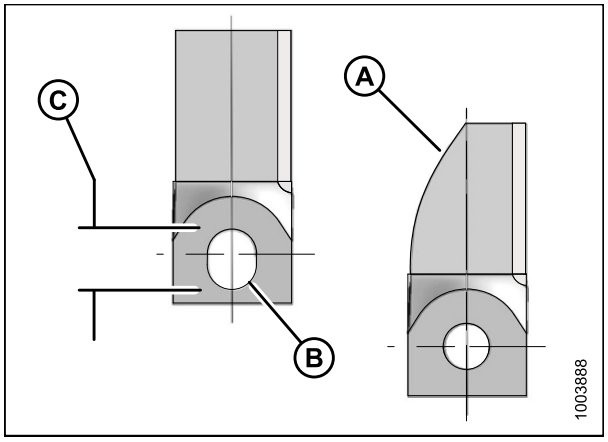

Figure 7.29

A - Blade Wear to Center Line
B - Elongated Hole
C - Maximum Distortion 0.81 in. (20.6 mm)

IMPORTANT

Blades should be replaced in pairs, otherwise the disc may be unbalanced and damage the cutterbar.

IMPORTANT

The cutter blades have cutting edges on both edges so that the blade can be turned over and reused. The twist in each blade determines if its cutting direction is clockwise or counterclockwise. If you are unsure which direction the spindle rotates, see Section 7.6.3 Direction of Spindle Rotation, page 121.

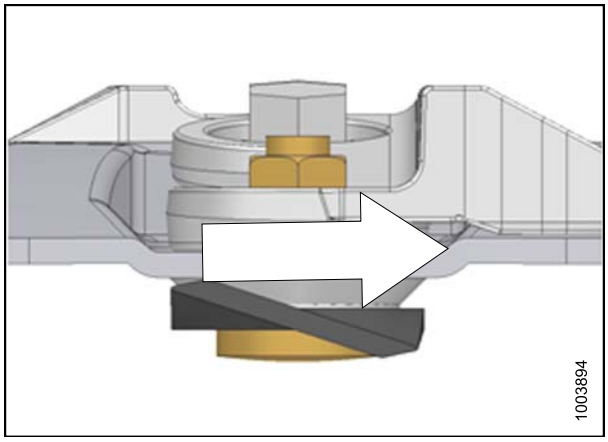

Figure 7.30: Counterclockwise Disc Rotation Direction

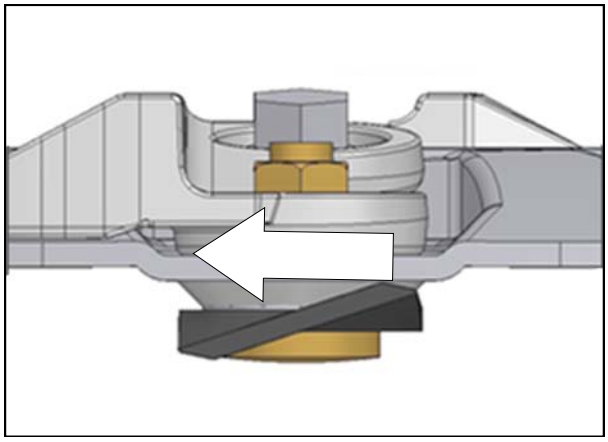

Figure 7.31: Clockwise Disc Rotation Direction

Replacing the Cutter Blades

Follow these steps to replace the cutter blades:

CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp, and can cause serious injury. Wear gloves when handling blades.

DANGER

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

1. Raise header fully.
2. Shut down the engine and remove the key.
3. Engage header safety props.
4. Open cutterbar door(s). See Section 5.5 Cutterbar Doors, page 30.
5. Rotate disc (A) so that blade (B) faces forward and lines up with hole (C) in rock guard.
6. Place a block of wood between two discs to prevent disc rotation while loosening blade bolts.
7. Clean debris from blade attachment area.

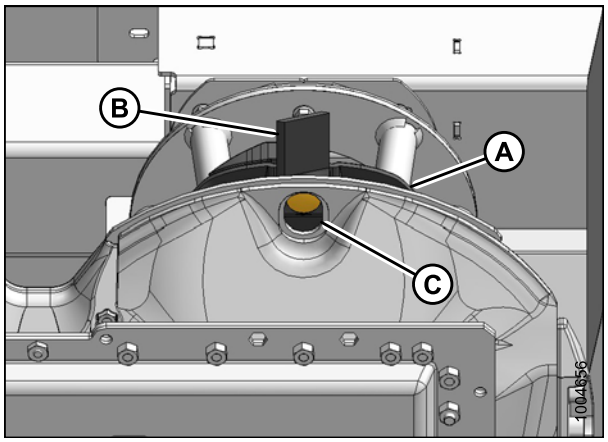

Figure 7.32

8. Remove nut (A).
9. Remove shoulder bolt (B) and blade (C).
10. Install new or reversed blade (C) with shoulder bolt (B) onto disc.

    NOTE: Ensure shoulder bolt is fully engaged into blade before tightening nut.

    NOTE: Ensure blade is installed correctly to suit rotation of disc. Refer to Figures

    - 7.30: Counterclockwise Disc Rotation Direction, page 123
    - 7.31: Clockwise Disc Rotation Direction, page 123

    If you are unsure which direction the spindle rotates, see Section 7.6.3 Direction of Spindle Rotation, page 121.
11. Install nut (A). Tighten nut to 100 ft·lbf (135 N·m).
12. Remove block of wood (if used).

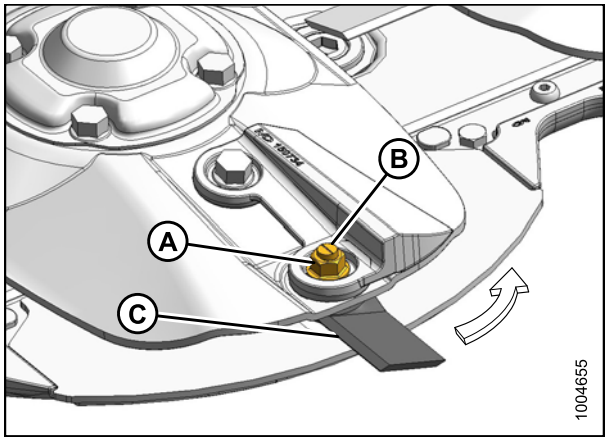

Figure 7.33

WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

13. Close cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.

Inspecting Cutterbar Hardware

Check blade attachment hardware each time blades are replaced. See Replacing the Cutter Blades, page 124 for replacement procedure.

Check bolts for wear or damage and replace bolt if:

- Bolt has been removed and installed five times.
- Head is worn flush with bearing surface of blade.
- Diameter of bolt neck is worn out of specification.
- Bolt is cracked.
- Bolt is visibly distorted.
- Evidence of interference with adjacent parts.

Check nuts for wear or damage and replace nut if:

- Worn height is less than half total height.
- Nut is cracked.
- Nut has been removed and installed five times.

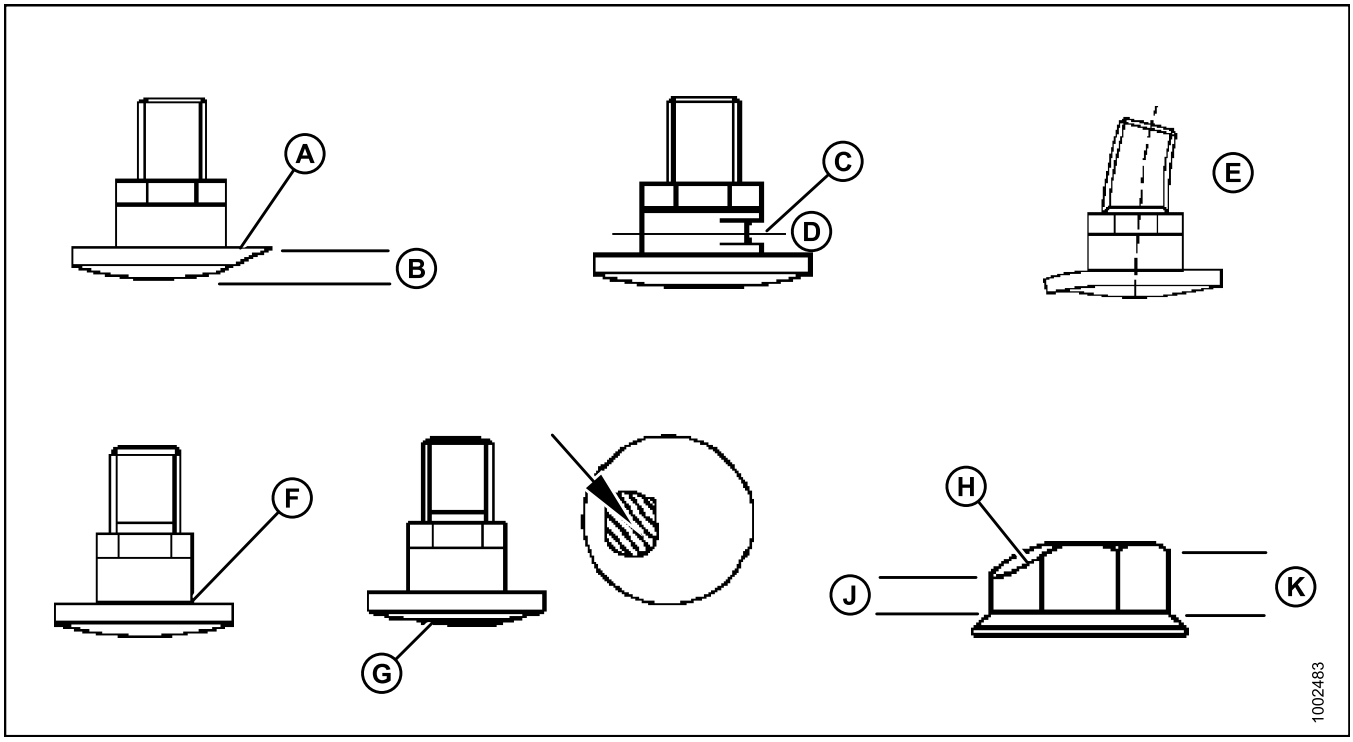

Figure 7.34

A - Bolt Head Worn
B - 0.0-0.16 in. (0.0-4 mm)
C - Bolt Neck Worn
D - 0.13 in. (3 mm)
E - Bolt Distorted
F - Bolt Neck Cracked
G - Bolt Interference
H - Nut Wear
J - 0.00-0.24 in. (0.0–6.0 mm)
K - 0.5-0.51 in. (12.8-13 mm)

7.6.5 Accelerators

Two accelerators (A) are mounted on each outboard disc. They are designed to quickly move the cut material off the disc and into the conditioner.

They are replaceable and should be periodically inspected for damage and loose or missing fasteners.

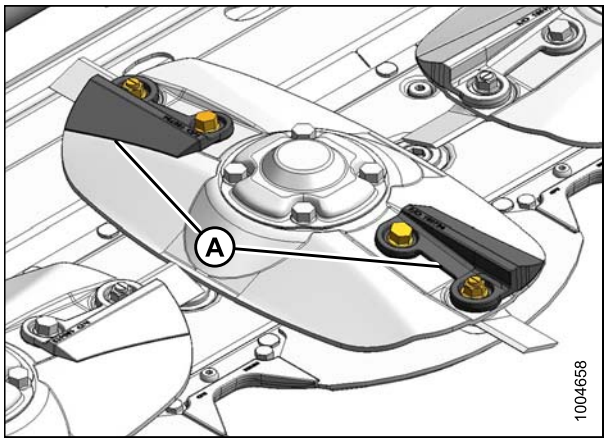

Figure 7.35

Inspecting Accelerators

Follow these steps to inspect accelerators:

DANGER

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. Raise header fully, stop engine, and remove key.
2. Engage header safety props.
3. Open cutterbar doors. Refer to Section 5.5 Cutterbar Doors, page 30.

CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

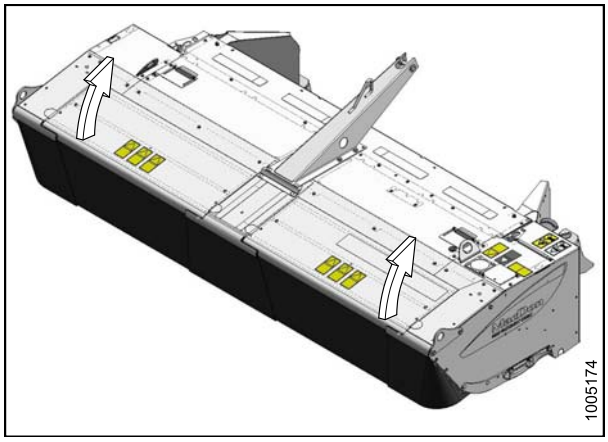

Figure 7.36

4. Inspect accelerators for damage and wear. They should be replaced if severely damaged or worn.
5. Check for loose or missing fasteners and tighten or replace fastener if missing.

Replacing Accelerators

Follow these steps to replace the accelerators:

1. Raise header fully, shut off engine, and remove key.
2. Engage header safety props.
3. Remove disc. See Removing a Disc, page 119.

4. Remove bolt and nut (A) and nut (B) and remove accelerator (C) from disc (D).

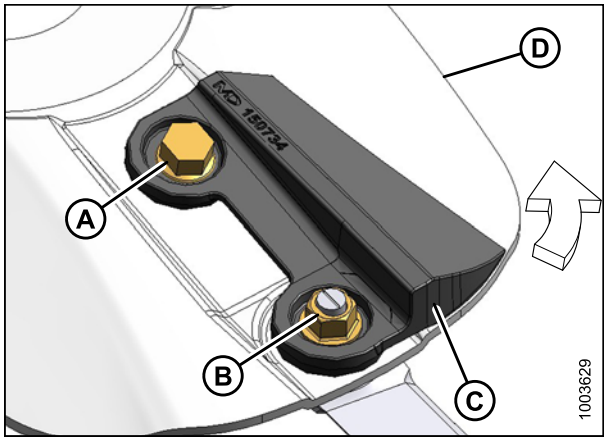

Figure 7.37

IMPORTANT

Do NOT remove cutter blade bolt unless it or the blade are being replaced. Repeat for other accelerator.

5. Locate new accelerator on disc onto existing cutter blade bolt. Install nut (B).

   NOTE: Accelerators are handed for clockwise or counterclockwise operation. Verify the direction of disc before installing accelerators.

6. Install hex bolt (A) and nut at inboard hole. Bolt head faces up.
7. Tighten both nuts to 100 ft·lbf (135 N·m).
8. Repeat for other accelerator.
9. Reinstall disc (D) on spindle. Refer to Installing a Disc, page 120.
10. Remove block of wood (if used).

WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

11. Close cutterbar doors.

7.6.6 Rotary Deflectors

The rotary cage deflectors are designed to deliver an even flow of cut material from the ends of the cutterbar into the conditioner roll.

Rotary deflectors should be checked daily for damage or wear.

Inspecting Rotary Deflectors

DANGER

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. Lower the header fully.
2. Shut down the engine and remove the key.
3. Open cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.
4. Check that deflectors (A) are not damaged or bent by rocks and for loose fasteners.
5. Replace deflectors (A) if they are severely damaged or worn. Do **NOT** repair. See Sections
   - Removing the Driven Deflector, page 129
   - Installing the Driven Deflector, page 130
   - Removing the Driveline Deflector, page 130
   - Installing the Driveline Deflector, page 131
6. Tighten loose fasteners.

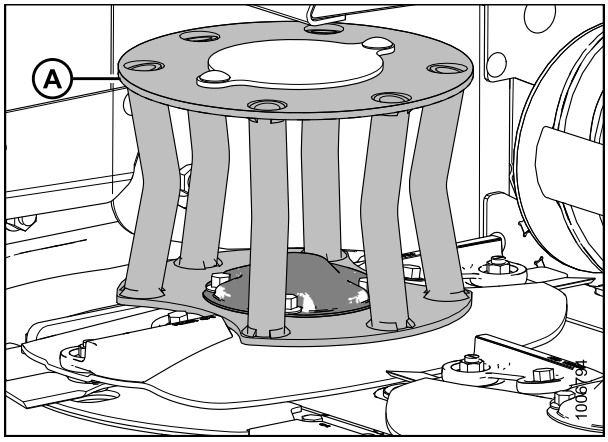

Figure 7.38

WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

7. Close the cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.

Removing the Driven Deflector

Follow these steps to replace the driven rotary deflector:

1. Lower the header fully.
2. Shut down the engine and remove the key.
3. Open cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.

4. Remove four bolts (A).
5. Remove cover (B) and deflector (C).

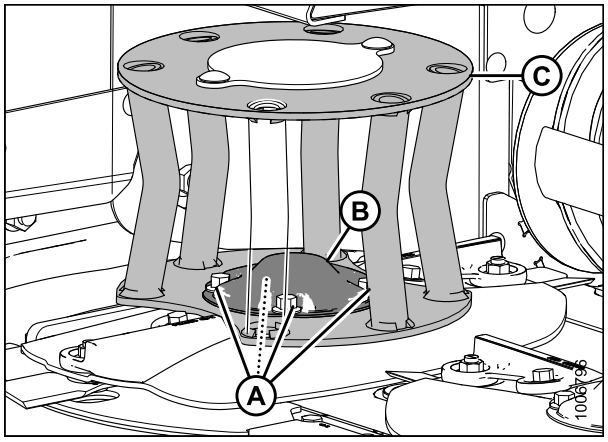

Figure 7.39

Installing the Driven Deflector

Follow these steps to replace the driven rotary deflector:

1. Position new deflector (C) on spindle so that it clears accelerators (D).
2. Install cover (B) and secure with four bolts (A).
3. Tighten bolts.
4. Remove block of wood (if used).

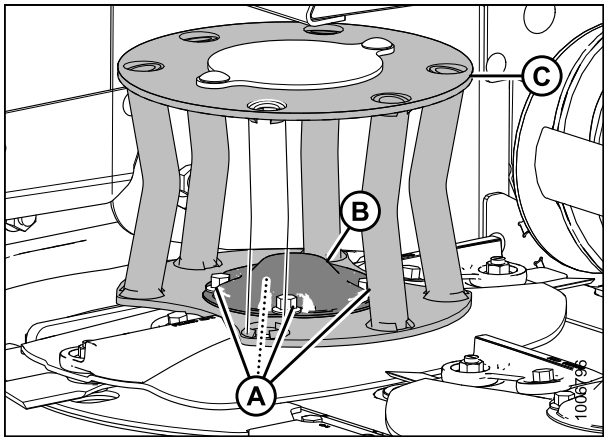

Figure 7.40

Removing the Driveline Deflector

Follow these steps to replace the driveline deflector:

1. Lower the header fully.
2. Shut down the engine and remove the key.
3. Open cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.

4. Locate the deflector (C) with the driveline in the center of it.
5. Remove the four bolts (A) that secure the driveline (B) and disc to the spindle.
6. Rotate the deflector (C) as required so that large opening in deflector faces you.
7. Remove the driveline (B) through the larger opening in the deflector.
8. Remove spacer plate (D).

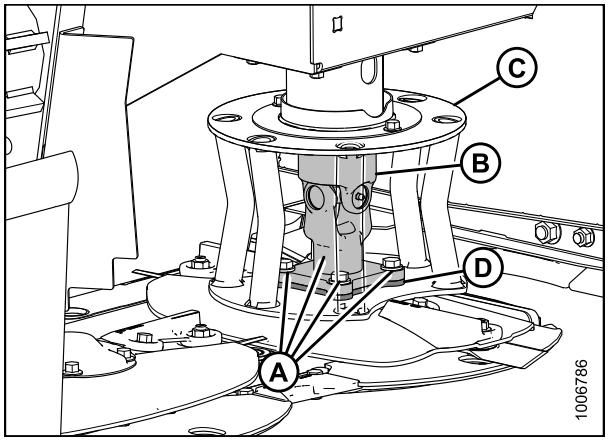

Figure 7.41

9. Loosen the four bolts (A) in the two plates (B) that hold the upper driveline shield (C) in place.
10. Move the plates (B) so that shield (C) can be lowered into deflector (D).
11. Remove the deflector (D).

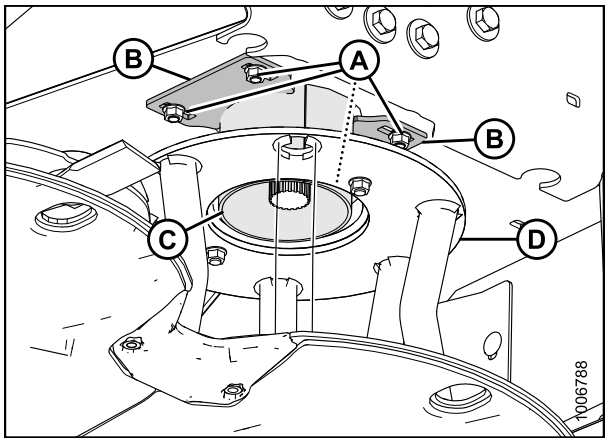

Figure 7.42

Installing the Driveline Deflector

Follow these steps to replace the driveline deflector:

1. Locate deflector (D) and upper driveline shield onto spindle.
2. Raise upper driveline shield (C) into position and slide plates (B) into slots in shield. Do not tighten bolts.

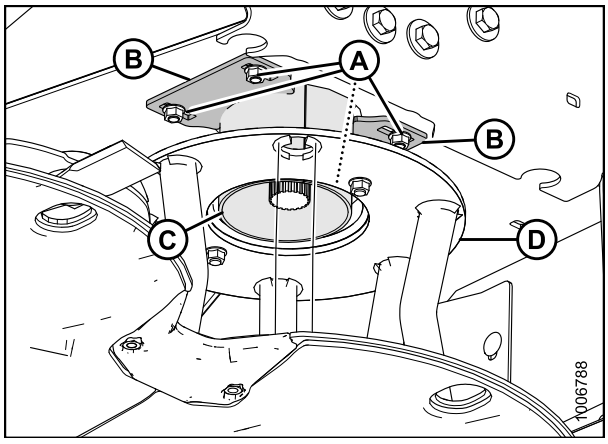

Figure 7.43

3. Insert spacer (D) onto disc.
4. Insert driveline (B) into deflector (C) and install onto shaft. Ensure that driveline (B) grease zerks will be accessible through large opening in deflector.
5. Align mounting holes in deflector (C), spindle, and driveline (B) and reinstall four bolts (A). Tighten bolts.
6. Adjust the upper driveline shield to achieve consistent gap around deflector shield (C).

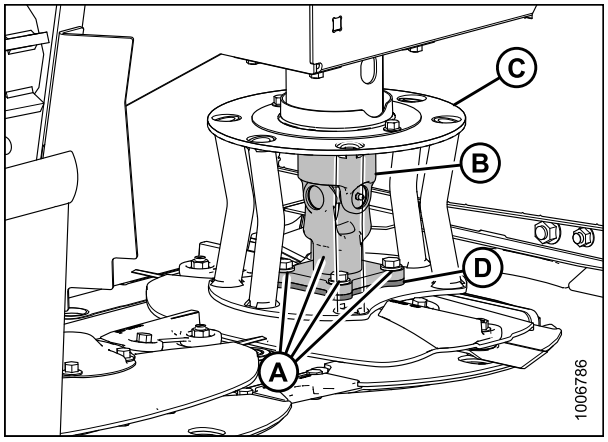

Figure 7.44

7. Tighten bolts (A) on shield plates (B).
8. Remove block of wood (if used).
9. Manually rotate discs to check for interference of adjacent parts.
10. Close cutterbar doors. See Section 5.5 Cutterbar Doors, page 30.

WARNING

Ensure cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

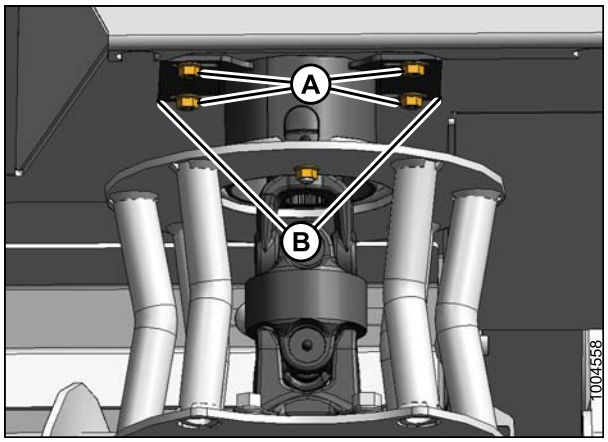

Figure 7.45

7.6.7 Disc Spindles

To prevent damaging the cutterbar and drive systems, each disc is attached to a spindle which incorporates a key that shears if the disc contacts a large stone, a stump, or other large object. In the event of a sheared key, the disc stops rotating, but remains attached to the spindle.

Replacing a Spindle Key

Follow these steps to replace a spindle key:

DANGER

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. Lower header to ground, shut off engine, and remove key.
2. Open cutterbar doors. Refer to Section 5.5 Cutterbar Doors, page 30.

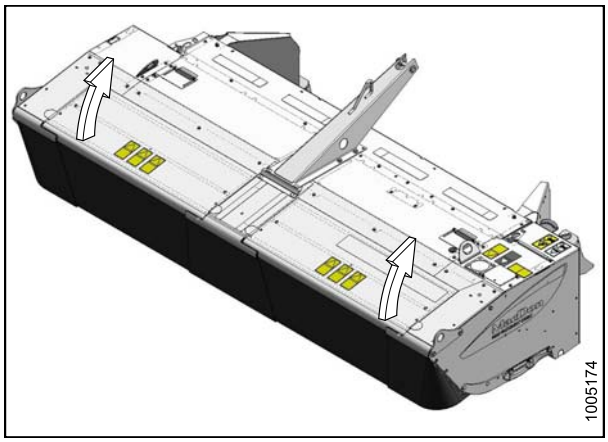

Figure 7.46

CAUTION

Cutter blades have two cutting edges. Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

3. Remove disc (A) from failed spindle. Refer to Section Removing a Disc, page 119.

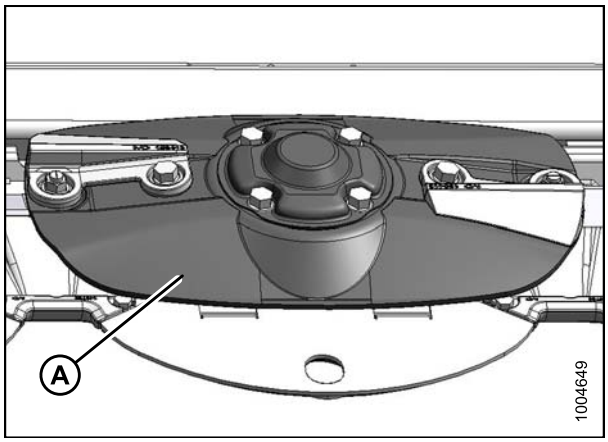

Figure 7.47

4. Using a 34 mm socket wrench, remove nut (A) and washer (B) from spindle.

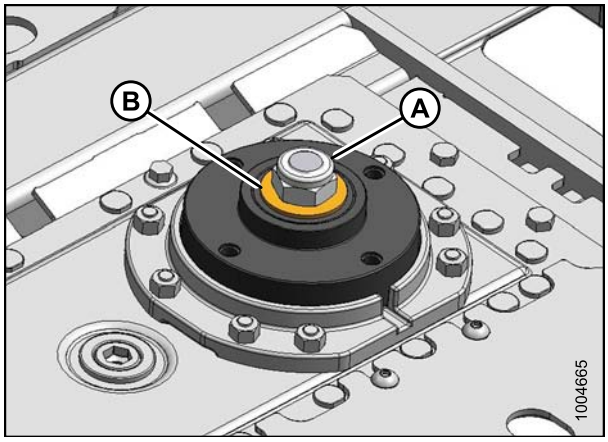

Figure 7.48

5. Install four M12 mm x 60 mm long bolts (A) into holes in plate (B).
6. Use bolts (A) as jacking screws to remove plate (B) from gear. Remove bolts from plate.

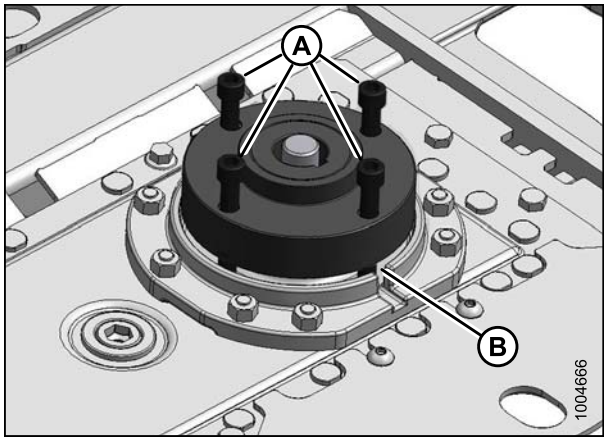

Figure 7.49

7. Pry out failed key (A) from gear (B) and plate.
8. Thoroughly clean metal debris from disassembled components and cutterbar.

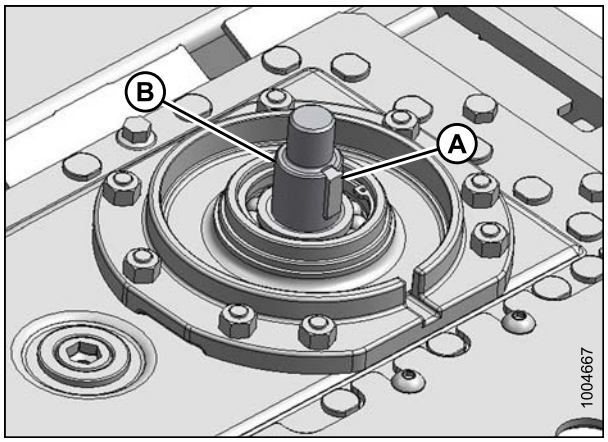

Figure 7.50

9. Inspect plate (C) and gear shaft (E) for damage. If seriously damaged, replace entire spindle assembly. Contact your MacDon Dealer.
10. Install new key (D) into gear (E) keyway as shown.
11. Align keyway in plate (C) with key in gear (E) and install plate (C) onto gear until sufficient threads are exposed to install washer (B) and nut (A).

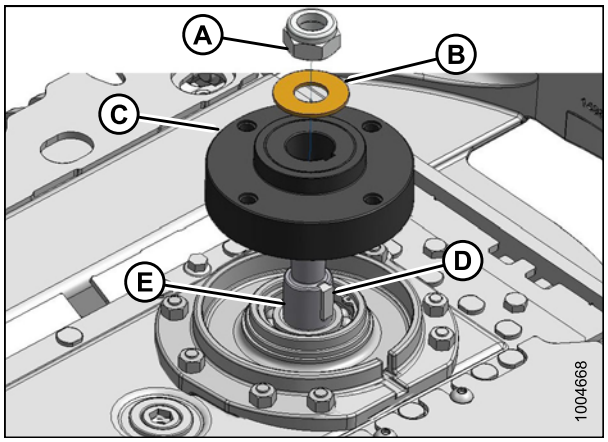

Figure 7.51

12. Tighten nut (A) until plate is in final position. Torque nut to 325 lbf·ft (440 (N·m).
13. Reinstall disc. Refer to Section Installing a Disc, page 120.

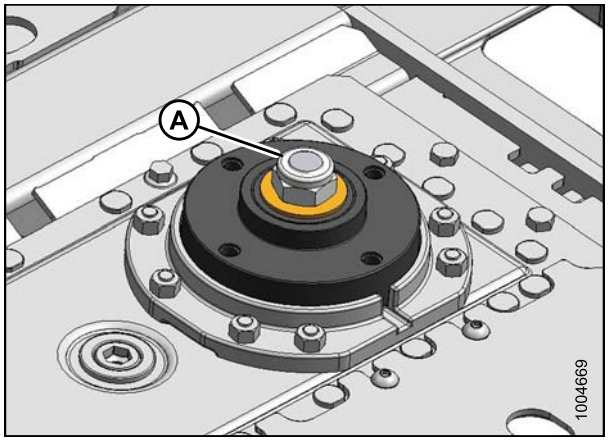

Figure 7.52

7.6.8 Cutterbar Doors

Inspecting Curtains

Replace the curtains if they should become worn or damaged. Contact your Dealer for replacement instructions.

Inspecting Door Latches: Export Header

The cutterbar door latches should operate smoothly and remain engaged when the doors are down. Tighten latch hardware if loose. If the rubber bushing is damaged or does not allow the latch to operate properly, the latch should be replaced.

Adjusting Latches

Follow these steps to adjust the door latches:

DANGER

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. Unlatch and lift curtain.
2. Loosen bolts (A) and move latch assembly to position as shown so that latch (B) engages pin.
3. Tighten bolts (A).
4. If necessary, loosen nut (C) and rotate latch (B) to position as shown.
5. Tighten nut (C).

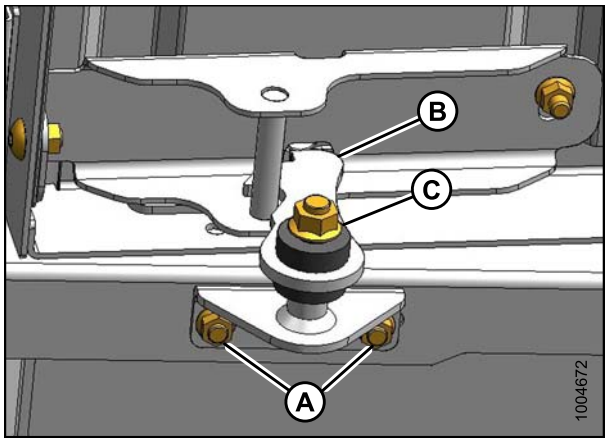

Figure 7.53

Replacing Latches

To replace cutterbar door latches, follow these steps:

1. Unlatch and lift curtain.
2. Remove bolts (A) and remove latch assembly from frame.
3. Locate new latch assembly on frame and reinstall bolts (A).
4. Adjust to position shown and tighten bolts (A).

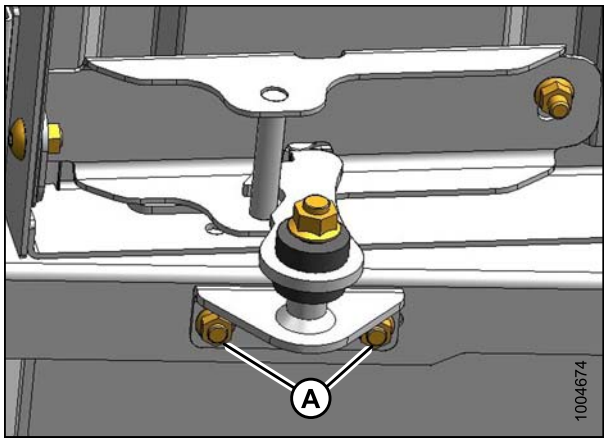

Figure 7.54

Replacing Latch Brackets

To replace the cutterbar door latch brackets, follow these steps:

1. Open cutterbar door.
2. Remove bolts (A), washers, and nuts, and remove latch bracket (B) from door.
3. Locate new latch bracket (B) on door and reinstall bolts (A), washers and nuts. Use three washers on aft bolt as spacers between bracket (B) and door.
4. Close door and check alignment with latch. Adjust as necessary and tighten bolts (A).

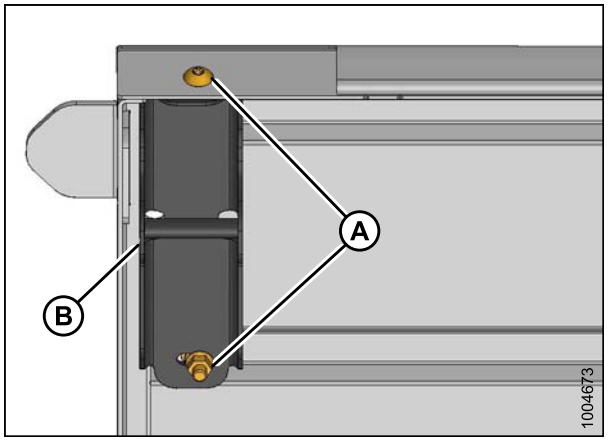

Figure 7.55

7.7 Drive Systems

7.7.1 Bevel Gearbox

The bevel gearbox (A), which transfers power from the hydraulic motor to the header drives, is located inside the drive compartment at the left end of the header.

If repairs are required, it should be removed and serviced at your Dealer. Contact your MacDon Dealer.

The only regular servicing required is maintaining the lubricant level and changing the lubricant according to the intervals specified in this manual. See Section 7.5.1 Maintenance Schedule/Record, page 104.

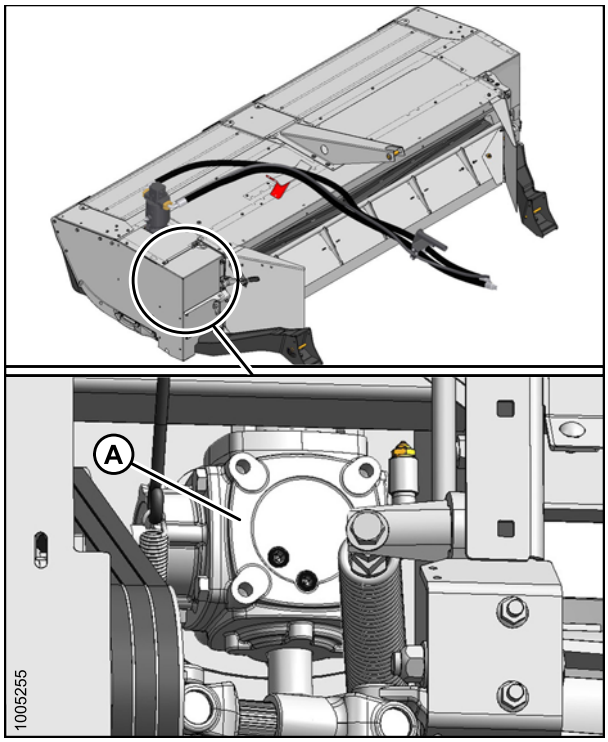

Figure 7.56

Changing the Bevel Gearbox Lubricant

Follow these steps to change the bevel gearbox lubricant:

DANGER

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. Drain the gearbox when the lubricant is warm. If the lubricant is cold, idle the machine for about 10 minutes prior to draining.
2. Raise header to full height and engage header safety props. Stop engine and remove key.

3. Open the driveshield. See section 5.4 Driveshields, page 28.

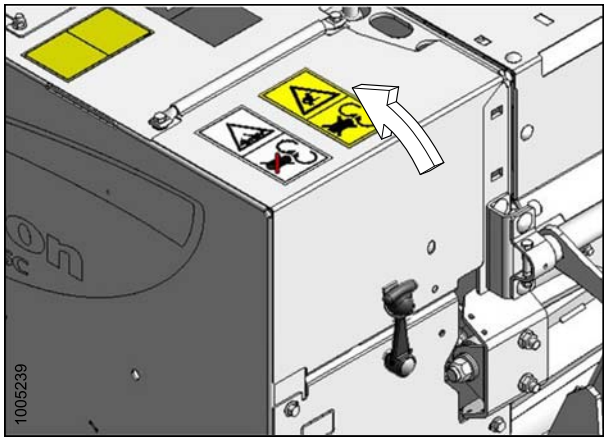

Figure 7.57

4. Place a suitable container under drain plug (A).
5. Remove plug (A).
6. Allow sufficient time for lubricant to drain.
7. Disengage header safety props, start engine, and lower header so that it is level. Stop engine and remove key.
8. Remove breather and bushing from filler elbow (B) and plug (C).
9. Add 13.5 oz. (400 ml) of Traxon E 75W90 gear lubricant to gearbox through elbow (B). Lubricant should slightly run out of port (C) when at the proper level.
10. Replace plug (C), bushing and breather (B), and tighten.
11. Properly dispose of used lubricant and clean up any spilled lubricant.
12. Close driveshield.

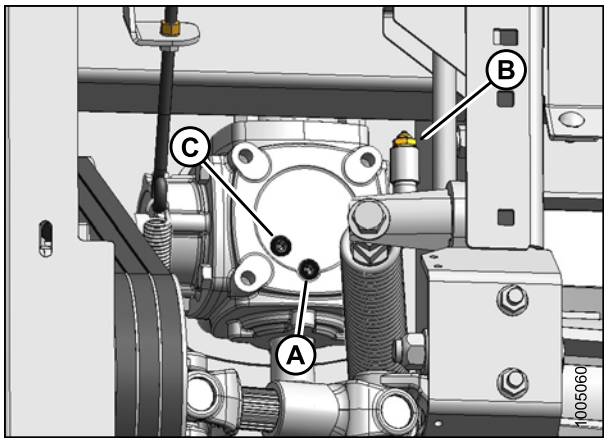

Figure 7.58

7.7.2 Conditioner Drive Belt

The conditioner drive belt is located inside the drive compartment at the left hand side of the header and is tensioned with a spring tensioner.

The tension is factory set, so should not require adjusting.

Inspecting the Conditioner Drive Belt

Check the belt tension and inspect for damage or wear every 100 hours or annually (preferably before the start of the cutting season).

DANGER

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. Lower header to ground, turn off engine, and remove key.
2. Open the driveshield. See Section 5.4 Driveshields, page 28.

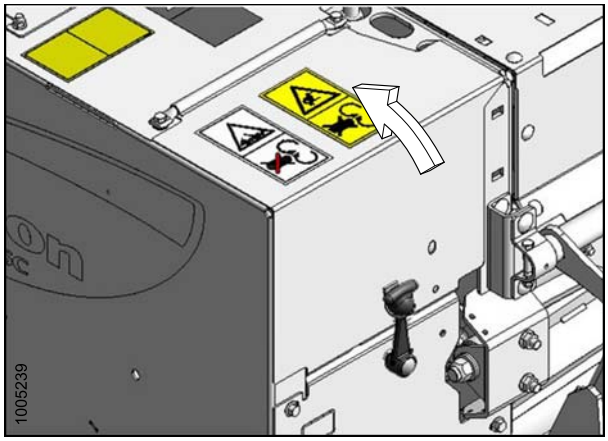

Figure 7.59

3. Check that adjuster nuts (A) and (B) are tight.

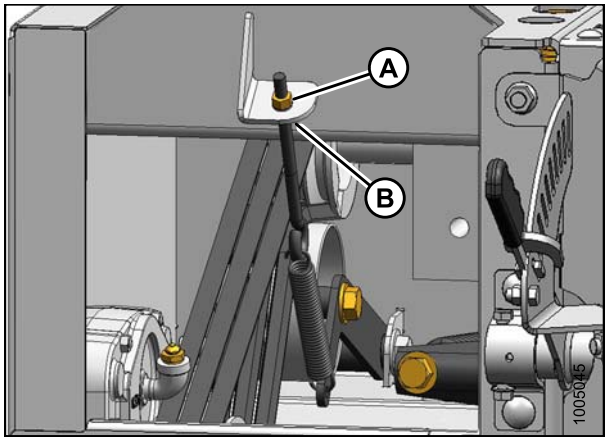

Figure 7.60

4. When properly tensioned, tensioner spring (A) should measure approximately 5-9/16 to 5-15/16 in. (141–151 mm) in length.

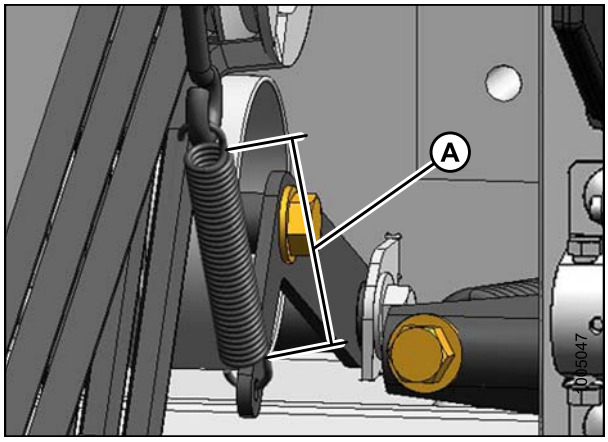

Figure 7.61

5. If necessary, adjust tension as follows:
   a. Loosen jam nut (B).
   b. Turn nut (A) clockwise to increase spring length (increase tension).
   c. Turn nut (A) counterclockwise to decrease spring length (decrease tension).
6. Tighten jam nut (B).
7. Close driveshield.

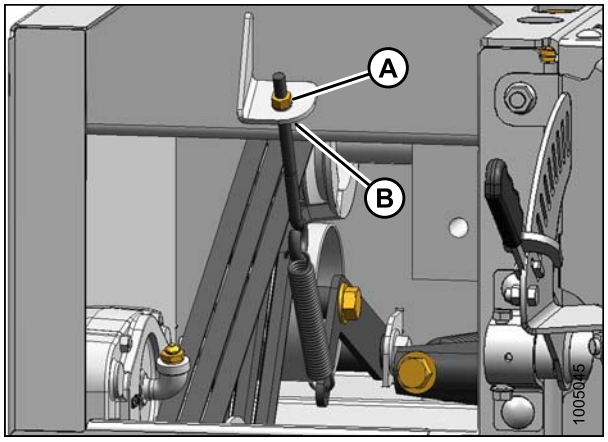

Figure 7.62

Replacing the Conditioner Drive Belt

Follow these steps to replace the conditioner drive belt:

DANGER

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. Lower header to ground, turn off engine, and remove key.
2. Open the driveshield (A). See section 5.4 Driveshields, page 28. The lower shield (B) can also be removed to ease access to drive compartment.

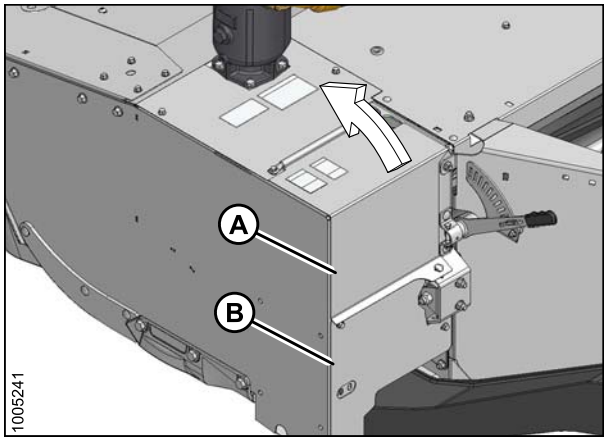

Figure 7.63

3. Release tension on conditioner drive belt (A). Refer to Inspecting the Conditioner Drive Belt, page 138.
4. Remove conditioner drive belt (A) from drive pulley (B). Tensioner (C) can be forced away from belt to ease removal.

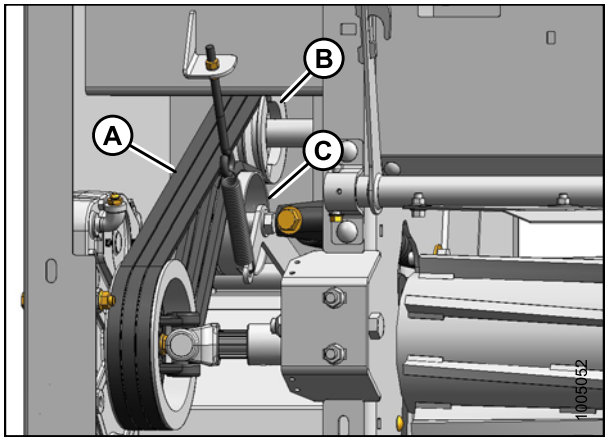

Figure 7.64

5. Remove the four bolts (A) and washers attaching upper driveline to driven pulley (B) and slide driveline away from pulley.
6. Remove drive belt (C) from driven pulley.

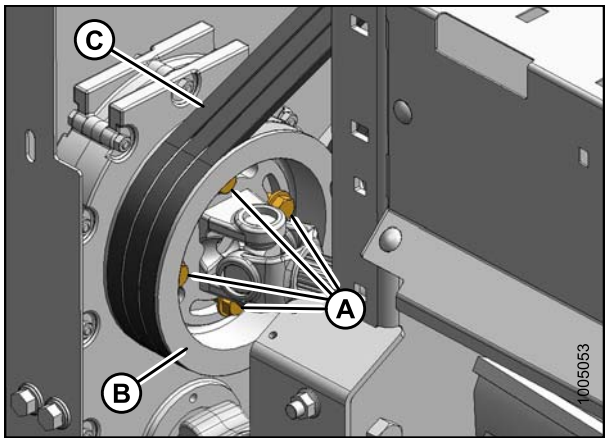

Figure 7.65

IMPORTANT

Change all three belts when replacing as they are a matched set.

7. Install new belt (A) onto driven pulley (B) first and then onto drive pulley (D) ensuring they are in the pulley grooves.
8. Tension belt (A). Refer to Inspecting the Conditioner Drive Belt, page 138.

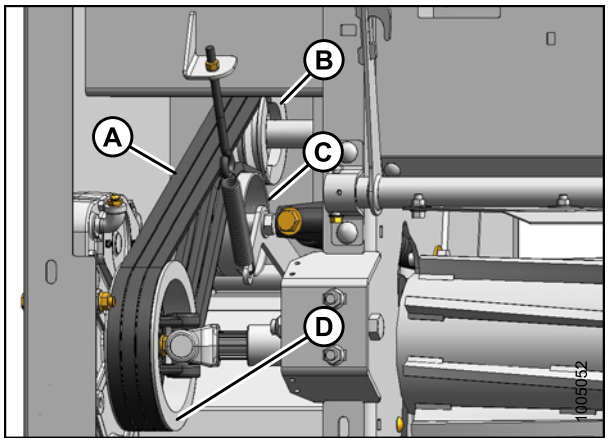

Figure 7.66

9. Reattach upper driveline to driven pulley (B) with bolts and washers (A). Check roll timing before fully tightening bolts. See section 6.4.1 Checking Roll Timing, page 73.
10. Torque bolts to 75 lbf·ft (102 N·m).
11. Reinstall lower driveshield.
12. Close driveshield.

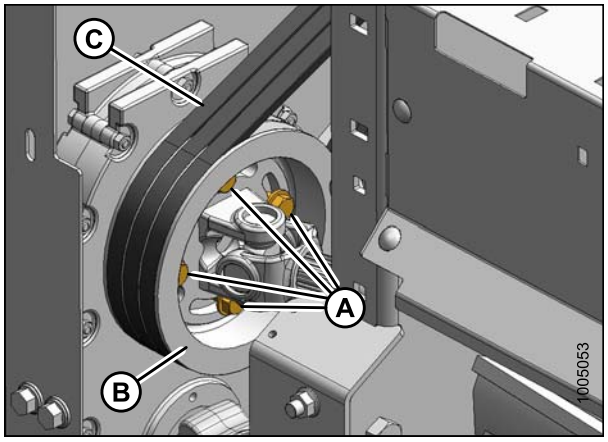

Figure 7.67

7.7.3 Conditioner Gearbox

The conditioner gearbox (A), which transfers power from the bevel gearbox to the conditioner rolls , is located inside the drive compartment at the left end of the header.

The gearbox does not require normal maintenance or servicing.

If repairs are required, the conditioner gearbox should be removed and serviced at your MacDon Dealer.

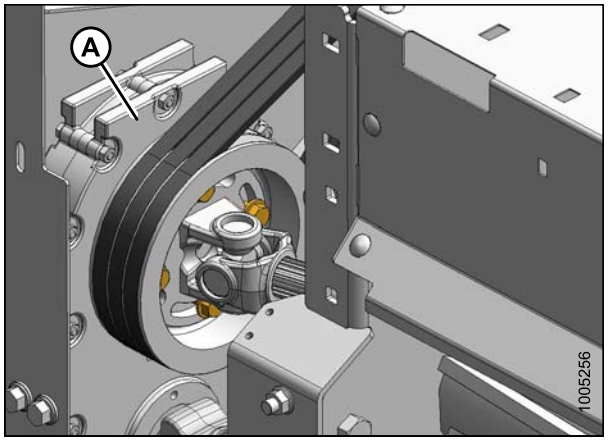

Figure 7.68

7.7.4 Gearbox Speed Sensor

The gearbox speed sensor monitors the rotational speed of the gearbox output shaft and sends a signal to the systems monitor in the operator's station that is displayed as disc speed.

The sensor does not require regular maintenance, and if it malfunctions or is damaged, it can be easily adjusted or replaced.

Adjusting the Gearbox Speed Sensor

To adjust the gearbox speed sensor, follow these steps:

DANGER

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. Lower header to ground, turn off engine, and remove key.
2. Loosen bolts (A) and slide cover (B) off opening.

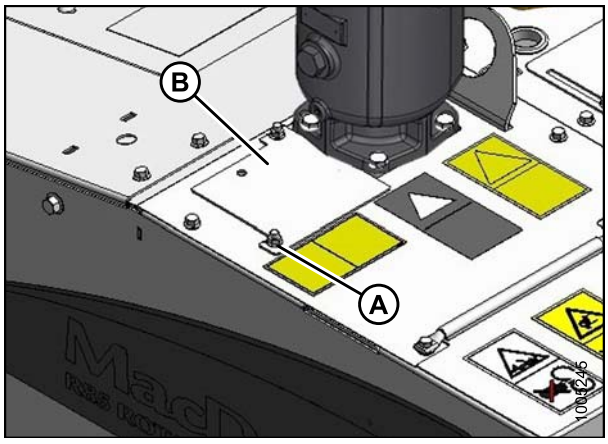

Figure 7.69

3. Check gap (E) between sensor (A) and pulley. If required, adjust gap by loosening bolts (B) and moving bracket (C) to achieve 0.08 in. (2 mm) 0.08–0.12 in. (2–3 mm) gap (E). When correct gap is achieved, tighten bolts (B).
4. Check position of sensor. If required, adjust position by loosening bolt (D) and moving sensor to align it with rim of pulley.

   NOTE: Top panel removed for clarity.

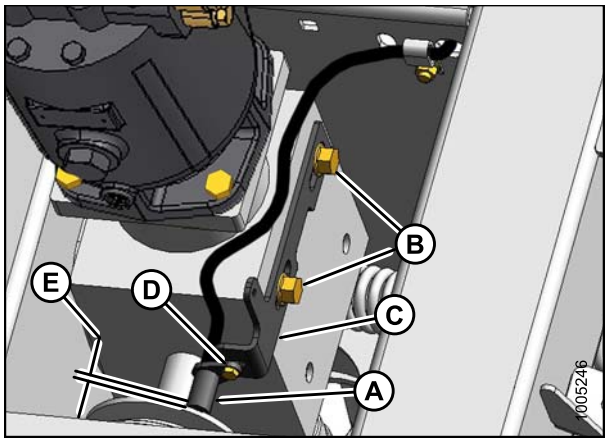

Figure 7.70

Replacing the Gearbox Speed Sensor

To replace the gearbox speed sensor, follow these steps:

1. Loosen bolts (A) and remove cover (B).

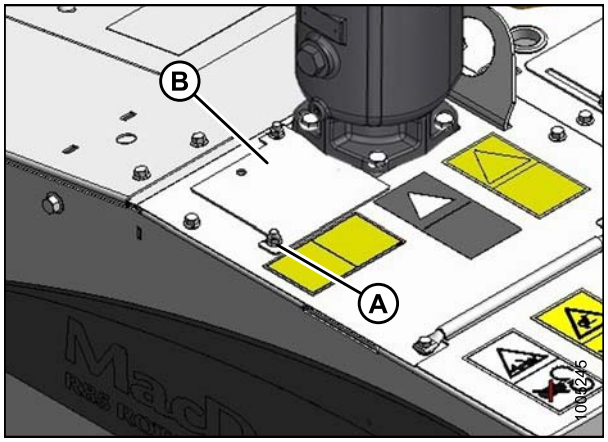

Figure 7.71

2. Disconnect the sensor wire from header wiring harness at connector (A).
3. Remove bolt through clip (B).
4. Pull harness through grommet and into drive compartment.
5. Remove nut and bolt (C) securing sensor (D) to bracket and remove sensor.
6. Install new sensor (D) onto bracket with bolt and nut (C). Ensure sensor is aligned with pulley rim.
7. Check that gap between sensor and pulley is 0.08 in. (2 mm). Adjust as required.
8. Route connector and harness through hole in frame and through grommet in cover.
9. Connect sensor wiring to existing connector (A).

   NOTE: Top panel removed for clarity.

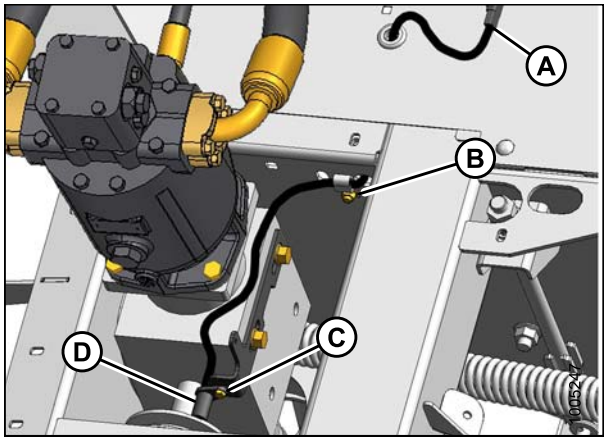

Figure 7.72

10. Reinstall cover (B) and secure with bolts (A).

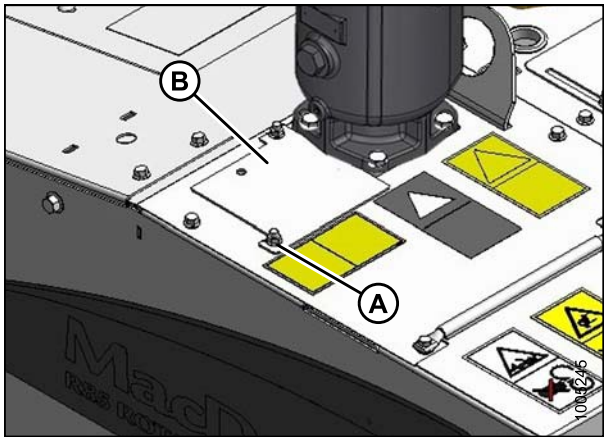

Figure 7.73

7.8 Hydraulics

Refer to your MacDon self-propelled windrower operator's manual for hydraulic system maintenance procedures for self-propelled windrowers.

7.8.1 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.**

Figure 7.74

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.

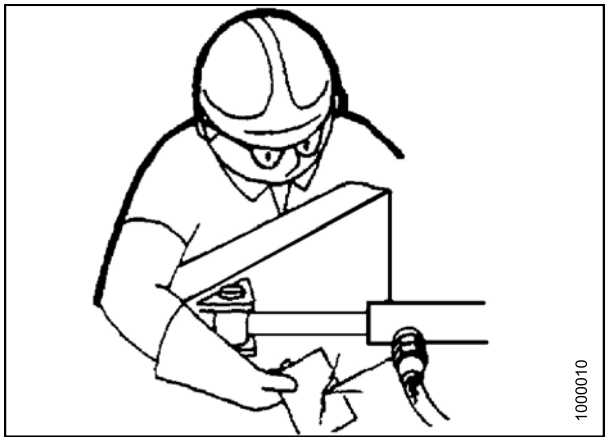

Figure 7.75

8 Troubleshooting

8.1 Mower Performance

Symptom	Problem	Solution	Section
Cutterbar plugging	Dull, bent, or badly worn blades	Replace blades.	Replacing the Cutter Blades, page 124
	Build-up of dirt between rock guards	Decrease header angle and increase flotation. In some conditions, it may be necessary to carry header slightly with header lift cylinders.	6.6 Header Angle, page 79 and 6.1 Header Float, page 67
	Conditioner drive belt slipping	Adjust conditioner drive belt tension.	Replacing the Conditioner Drive Belt, page 140
Ragged or uneven cutting of crop	Header angle too flat for guards to pick up down crop	Increase header angle.	6.6 Header Angle, page 79
	Downed crop	Adjust header angle to cut closer to ground.	
	Header flotation too light, causing bouncing	Adjust to heavier float setting.	6.1 Header Float, page 67
	Excessive ground speed	Reduce ground speed.	6.9 Ground Speed, page 82
Strips of uncut crop left on field	Bent cutter blades	Replace blades.	Replacing the Cutter Blades, page 124
	Build-up of dirt between rock guards	Decrease header angle and increase flotation.	6.6 Header Angle, page 79 and 6.1 Header Float, page 67
	Excessive header speed	Reduce header disc speed.	6.8 Disc Speed, page 81
	Foreign object on cutterbar	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	6.15 Unplugging the Header, page 90
	Disc not turning	Replace spindle key.	Replacing a Spindle Key, page 133
	Ground speed too slow	Increase ground speed.	6.9 Ground Speed, page 82

Symptom	Problem	Solution	Section
Conditioner rolls plugging	Ground speed too fast	Reduce ground speed.	6.9 Ground Speed, page 82
	Roll gap too large for proper feeding	Decrease roll gap.	6.2.2 Adjusting the Roll Gap, page 70
	Roll gap too small in thick-stemmed cane-type crops	Increase roll gap.	
	Swath baffle set too low	Raise swath baffle.	6.5.3 Adjusting the Swath Baffle, page 77
	Roll speed too low	Increase disc speed.	6.8 Disc Speed, page 81
	Foreign object between rolls	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	6.15 Unplugging the Header, page 90
	Cutting height too low	Decrease header angle to raise cutting height.	6.6 Header Angle, page 79
	Backing into windrow	Raise header before backing up.	—
	Rolls improperly timed	Adjust roll timing.	6.4.2 Adjusting the Roll Timing, page 74
Uneven formation and bunching of windrow	Rear deflector bypassing or dragging crop	Adjust rear deflector for proper crop control.	6.5.2 Adjusting the Rear Deflector (Fluffer Shield), page 77
	Forming shields improperly adjusted	Adjust forming shields.	6.5 Forming Shields, page 75
	Roll gap too large	Adjust roll gap.	6.2.2 Adjusting the Roll Gap, page 70
	Conditioner rolls running too slow	Maintain rated header speed.	See windrower operator's manual
Uneven windrow formation in light crop	Uneven feeding	Reduce header speed.	
Plugging behind end hourglass deflectors	Ground speed too slow	Increase ground speed.	6.9 Ground Speed, page 82
Not cutting short enough in down crop	Ground speed too fast	Reduce ground speed.	
	Broken, bent, or dull blades	Replace blades or turn blades over.	Replacing the Cutter Blades, page 124
	Cutting height too high	Adjust header angle steeper to lower cutting height if field conditions allow.	6.6 Header Angle, page 79

Symptom	Problem	Solution	Section
Material being pulled out by roots when cutting. Tall crop leaning into machine	Crop in conditioner rolls before crop is cut	Increase roll gap.	6.2.2 Adjusting the Roll Gap, page 70
Damaged leaves and broken stems	Insufficient roll gap		
	Roll timing off	Check roll timing and adjust if necessary.	6.4 Roll Timing, page 73 and 6.4.2 Adjusting the Roll Timing, page 74
Slow crop drying	Crop is bunched in windrow	Adjust forming shields/baffle.	6.5 Forming Shields, page 75
	Rolls not crimping crop sufficiently	Decrease roll gap.	6.2.2 Adjusting the Roll Gap, page 70
Excessive drying or bleaching of crop	Excessive crimping	Increase roll gap.	
	Crop is spread too wide in windrow	Adjust forming shields.	6.5 Forming Shields, page 75
Poorly formed or bunchy windrows	Forming shields not properly adjusted		
Cutting height varies from one side to the other	Float not properly balanced	Adjust header float.	6.1 Header Float, page 67

8.2 Mechanical

Symptom	Problem	Solution	Section
Excessive noises	Bent cutter blade	Replace blade	Replacing the Cutter Blades, page 124
	Conditioner roll timing off	Check roll timing and adjust if necessary	6.4.1 Checking Roll Timing, page 73 and 6.4 Roll Timing, page 73
	Bent cage deflector	Replace deflector	7.6.6 Rotary Deflectors, page 128
	Conditioner roll gap too small	Check gap and adjust if necessary	6.2.2 Adjusting the Roll Gap, page 70
Excessive vibration or noise in header	Mud deposits on conditioner rolls	Clean rolls	—
	Conditioner rolls contacting each other	Increase roll gap	6.2.2 Adjusting the Roll Gap, page 70
		Check roll timing.	6.4.1 Checking Roll Timing, page 73
Excessive heat in cutterbar	Too much lubricant in cutterbar	Drain lubricant and refill with specified amount	Draining the Cutterbar Lubricant, page 113
Frequent blade damage	Mud on cutterbar	Remove mud from cutterbar. Do NOT allow mud to dry on cutterbar.	—
	Spindle bearing failure	Replace spindle bearing	See MacDon Dealer.
	Material wrapped around spindle	Remove disc and remove material	Removing a Disc, page 119
	Cutting too low in rocky field conditions	Decrease header angle. Increase flotation	6.6 Header Angle, page 79 and 6.1.1 Adjusting Header Float, page 68
	Header float set too heavy	Increase flotation	6.1.1 Adjusting Header Float, page 68
	Ground speed too high in rocky field conditions. At high ground speed, header tends to dig rocks from ground instead of floating over them	Reduce ground speed	6.9 Ground Speed, page 82
	Blade incorrectly mounted	Check all blade mounting hardware and ensure blades are free to move	Inspecting Cutterbar Hardware, page 125

Symptom	Problem	Solution	Section
Excessive wear of cutting components	Header angle too steep	Reduce header angle	6.6 Header Angle, page 79
	Crop residue and dirt deposits on cutterbar	Clean cutterbar	—
	Mud on cutterbar	Remove mud from cutterbar. Do NOT allow mud to dry on cutterbar.	
Machine pulling to one side	Header dragging on one end and pulling to that side	Adjust header flotation on both ends	6.1.1 Adjusting Header Float, page 68
Breakage of conditioner drive belt	Belt not in proper groove in pulley	Move belt to proper groove	Replacing the Conditioner Drive Belt, page 140
	Foreign object between rolls	Disengage header and stop engine. When all moving parts are completely stopped, remove foreign object.	—
	Belt pulleys and idlers misaligned	Align pulleys and idler	See MacDon Dealer
Disc does not turn when engaging header	Mud on cutterbar	Remove mud from cutterbar. Do NOT allow mud to dry on cutterbar.	—
	Hoses not connected	Connect hoses	5.7 Attaching the Header, page 39
	Faulty drive belt	Check drive belt pulleys	Inspecting the Conditioner Drive Belt, page 138
	Poor electrical connection at pump solenoid	Check connection at windrower	See windrower operator's manual
Header slows when going uphill	Hydraulic oil level in windrower is low	Add oil to windrower reservoir	
Header runs while unloaded, but slows or stops when starting to cut	Defective hydraulic motor	Repair/replace hydraulic motor	See MacDon Dealer
	Defective hydraulic pump in windrower	Repair/replace pump	
	Defective relief valve in windrower	Repair/replace relief valve	
	Cold oil in hydraulic drive system	Reduce ground speed until oil reaches operating temperature	6.9 Ground Speed, page 82

9 Options and Attachments

9.1 Kits

The following kits are available through your MacDon Dealer. The dealer will require the B number for pricing and availability.

9.1.1 Cutterbar Repair Tool Kit

The cutterbar repair tool kit contains the necessary tools for replacement of the cutterbar idler gears.

MD #B4905

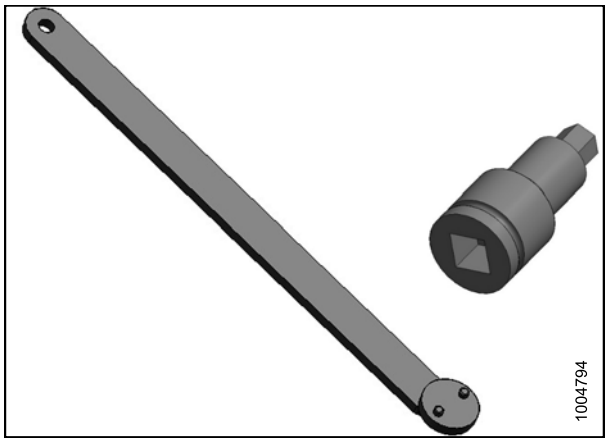

Figure 9.1: MD #B4905

9.1.2 Double Windrow Attachment (DWA)

Allows auger header windrower to lay a double windrow. The kit includes a draper deck, linkage assembly, hydraulics, and installation instructions.

MD #C1987 — This collector consists of:

- MD #46555 Deck
- MD #B5270 Linkage assembly
- MD #B5301 Hydraulic kit

9.1.3 Shoes

MD #B5457

Instruction Part Number: MD #169465

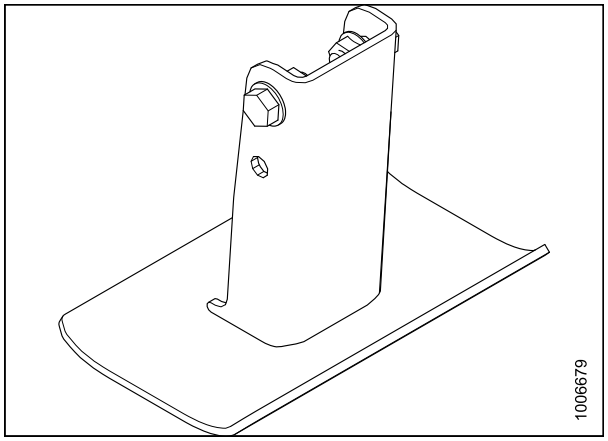

Figure 9.2

9.1.4 Tall Crop Divider Kit

The tall crop dividers attach to the ends of the header for clean crop dividing and reel entry in tall crops. The kit includes left and right dividers and attachment hardware.

MD #B5509

Instruction Part Number: MD #169485

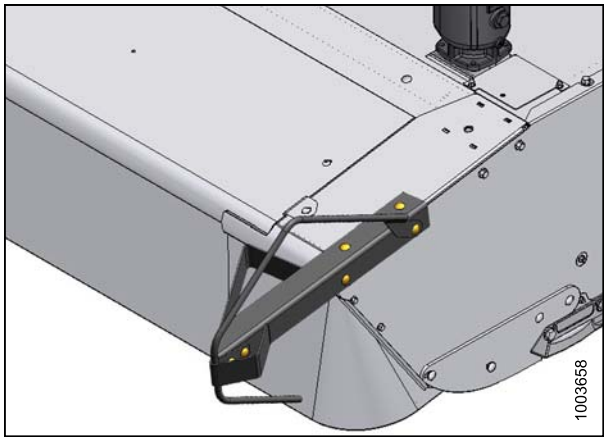

Figure 9.3: MD #B5509

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