

# **R216**

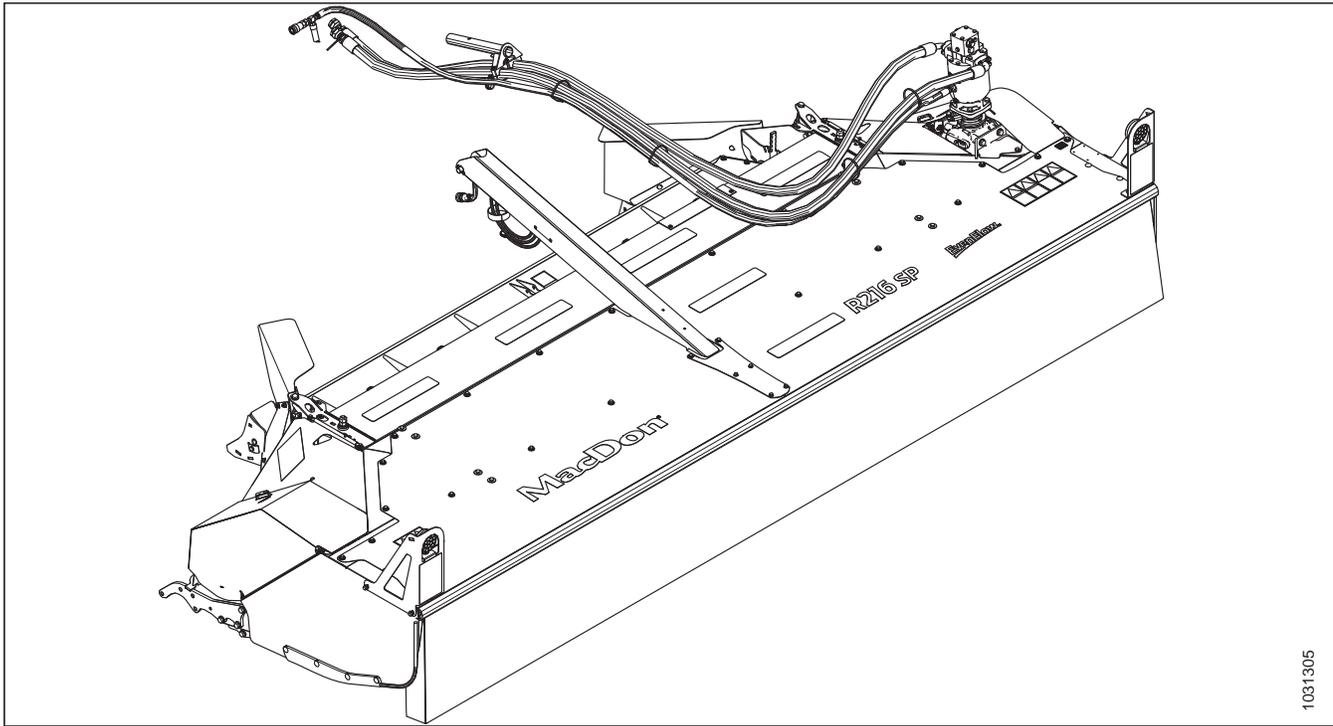
## **Rotary Disc Header**

Cutterbar Kit (MD #338109) Installation Instructions

215339 Revision A

Original Instruction

## R216 Rotary Disc Header



1081305

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## Introduction

The Cutterbar kit (MD #338109) is used to replace the cutterbar on a MacDon R216 Rotary Disc Header. This document explains how to install the kit. A list of parts included in the kit is provided in Chapter 2 *Parts List, page 5*.

### ***Installation time***

Installation of this kit will take approximately 6 hours.

### ***Conventions***

The following conventions are used in this document:

- Right and left are determined from the operator's position. The front of the rotary disc header is the side that faces the crop.
- Unless otherwise noted, use the standard torque values provided in the rotary disc header operator's manual and technical manual.

### **NOTE:**

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

### **NOTE:**

This document is currently available in English only.

## Summary of Changes

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

Section	Summary of Change	Internal Use Only
OVERALL	Cutterbar kit MD #307756 superseded by MD #338109. Kit instruction MD #214859 replaced by MD #215339.	ECN 60170
<i>3.1 Opening Cutterbar Curtain, page 7</i>	Changed image to better show engagement of header safety prop and be consistent with operator's and technical manuals. Updated illustration from 1030015 to 1029808 to show change.	Tech Pubs
<i>3.2 Removing Left Driveline, page 9</i>	Updated Step 1 to remove four M10 hex flange head bolts instead of two. Updated illustration from 1028233 to 1033148 to show change.	Engineering
<i>3.3 Removing Right Driveline, page 11</i>	Updated Step 1 to remove four M10 hex flange head bolts instead of two. Updated illustration from 1028513 to 1033149 to show change.	Engineering
<i>3.6 Installing Cutterbar, page 15</i>	Added information with the differences to model year 2019 and 2020. Removed illustration 1031508 and replaced with illustrations 1032908, 1032904, and 1032905 to clarify.	Tech Pubs
<i>3.7 Installing Left Driveline, page 20</i>	Updated Step 7 to install four M10 hex flange head bolts instead of two. Updated illustration from 1028233 to 1033148 to show change.	Engineering
<i>3.8 Installing Right Driveline, page 22</i>	Updated Step 7 to install four M10 hex flange head bolts instead of two. Updated illustration from 1028513 to 1033149 to show change.	Engineering
<i>3.9 Closing Cutterbar Curtain, page 24</i>	Changed image to better show disengagement of header safety prop and be consistent with operator's and technical manuals. Updated illustration from 1030015 to 1029799 to show change.	Tech Pubs

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# Chapter 1: Safety

## 1.1 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:

### **DANGER**

Indicates an imminently hazardous situation that, if 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.

#### **IMPORTANT:**

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

#### **NOTE:**

Provides additional information or advice.

## 1.2 General Safety

Protect yourself when assembling, operating, and servicing machinery.

### CAUTION

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

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

In addition, take the following precautions:

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



Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

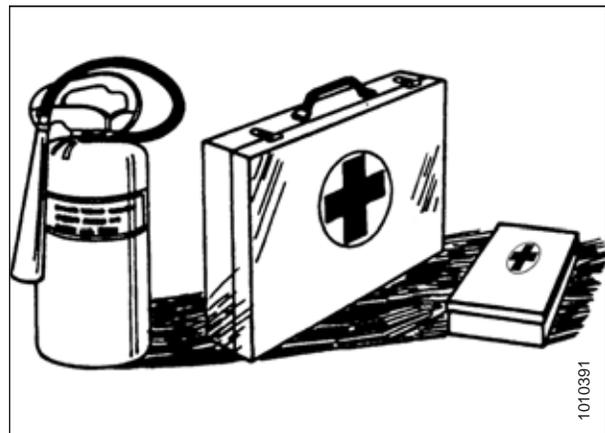


Figure 1.3: Safety Equipment

## SAFETY

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



Figure 1.4: Safety around Equipment

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

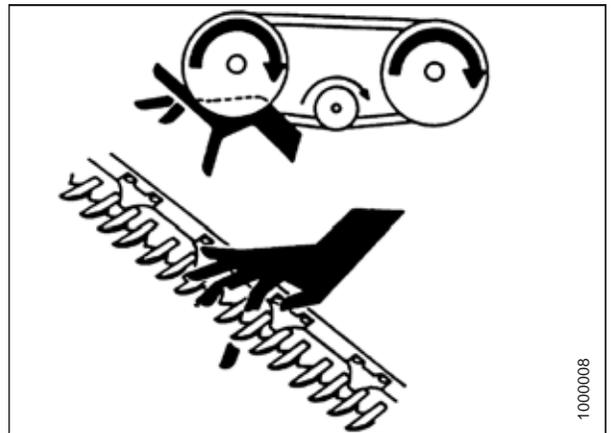


Figure 1.5: Safety around Equipment

- Keep service area clean and dry. Wet and/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 fire hazards. 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 1.6: Safety around Equipment



## Chapter 2: Parts List

The following parts are included in this kit:

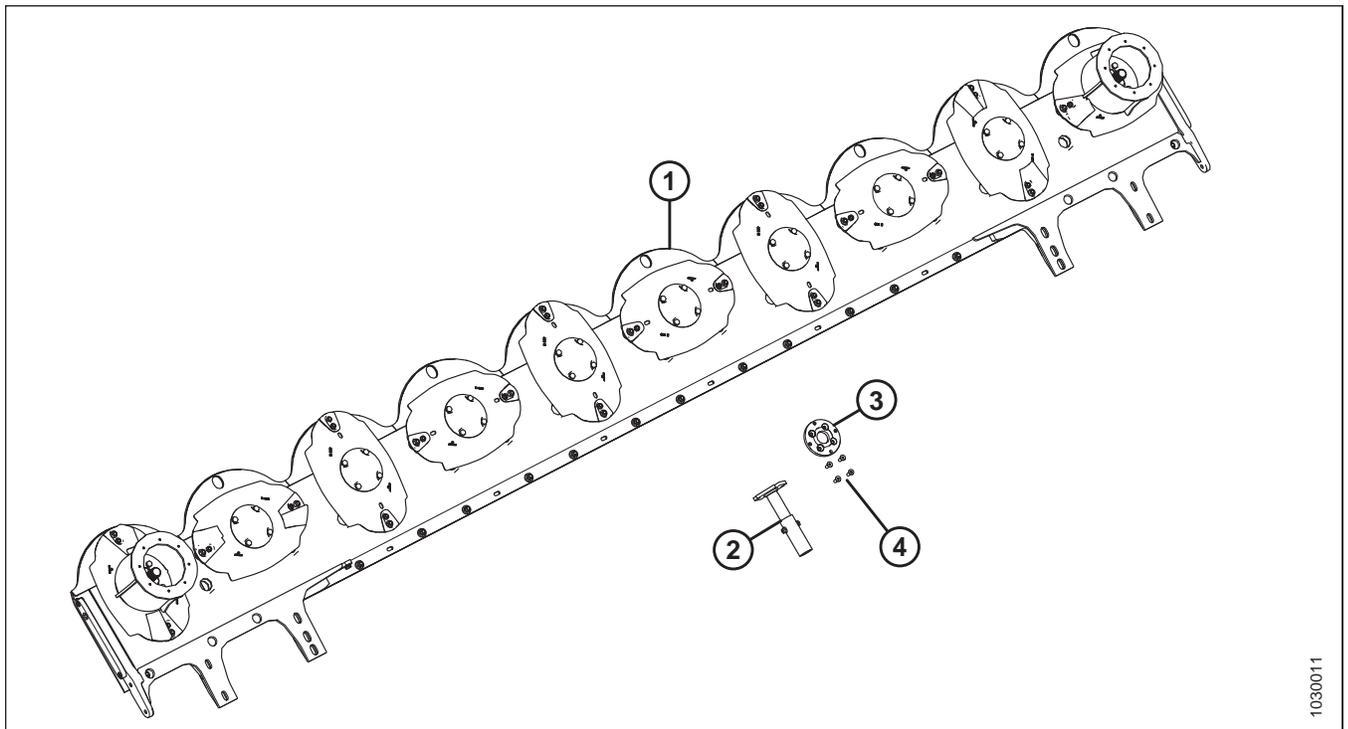


Figure 2.1: Parts Included in the Cutterbar kit

Ref	Part Number	Description	Quantity
1	NSS <sup>1</sup>	CUTTERBAR – 10 DISC 4 STREAM	1
2	325683	TOOL ASSEMBLY – DRIVE ALIGNMENT	1
3	307302	ADAPTER – DRIVE RH ALIGNMENT	1
4	281605	BOLT – ACCELERATOR	4

1. Not sold separately.



## Chapter 3: Installation Instructions

To install the Cutterbar kit (MD #338109), follow these steps and procedures in the order given.

### 3.1 Opening Cutterbar Curtain

#### DANGER

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

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage header safety prop (A). For instructions, refer to the header operator's manual or technical manual.

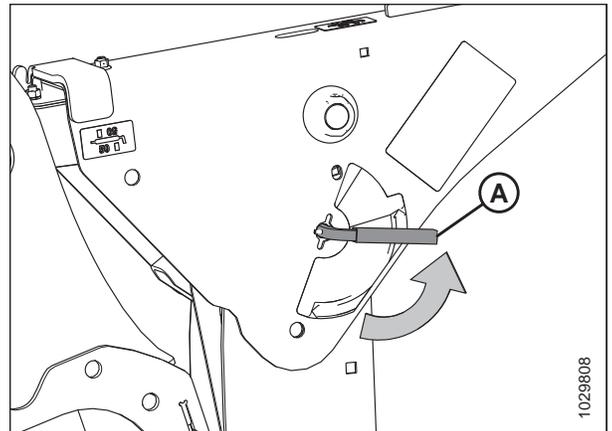


Figure 3.1: Header Safety Prop

4. Push curtain (A) inward and up.

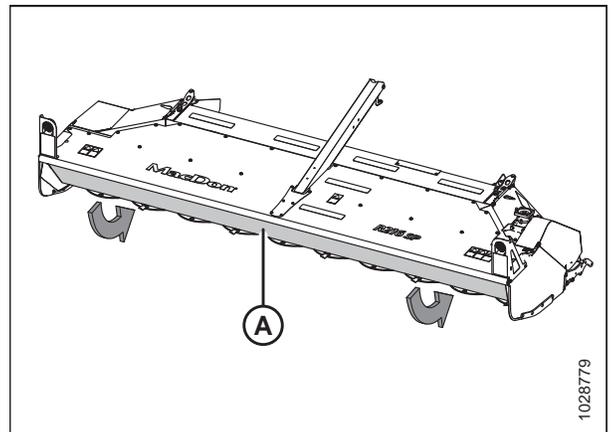


Figure 3.2: Cutterbar Curtain

## INSTALLATION INSTRUCTIONS

5. Secure curtain in place at locations (A) using three clips provided.

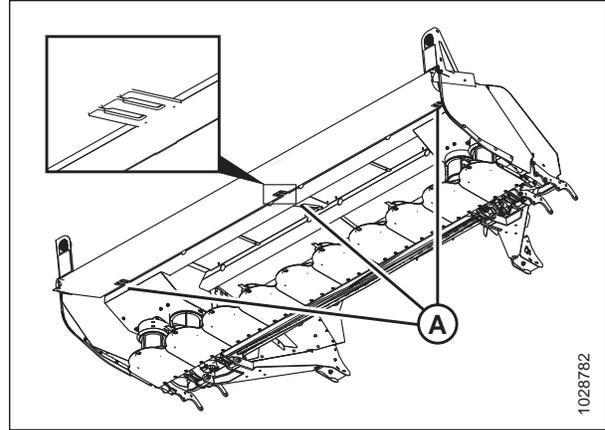


Figure 3.3: Cutterbar Curtain — View from Below

**NOTE:**

Cutterbar curtain (A) is held in place between the tines of retaining clips (B).

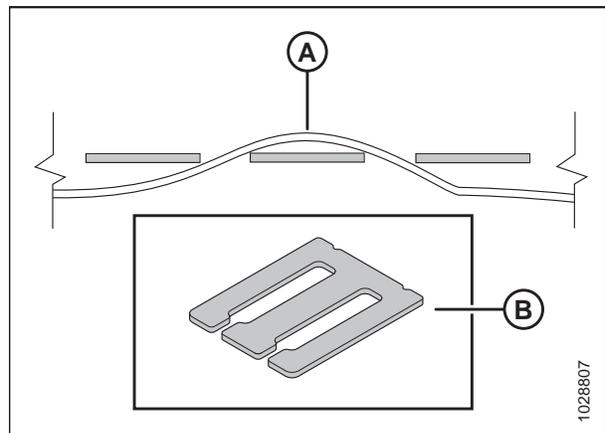


Figure 3.4: Cutterbar Curtain and Retaining Clips

### 3.2 Removing Left Driveline

#### WARNING

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

1. Remove four M10 hex flange head bolts (A) and loosen two M10 hex flange head bolts (B). Remove driveline shield (C).

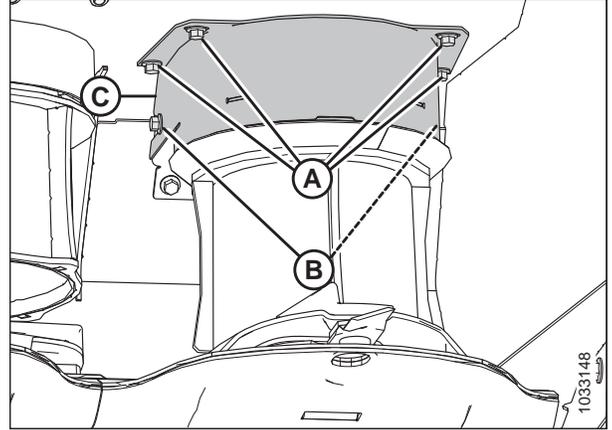


Figure 3.5: Driveline Shield

2. Remove eight M8 hex flange head bolts (A) and two drum shields (B).

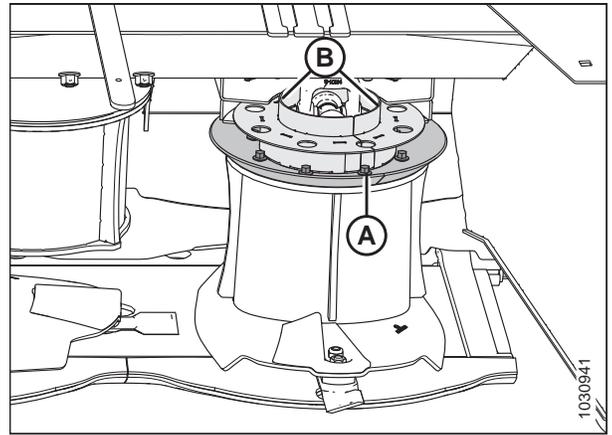


Figure 3.6: Driveline Shields

3. Remove two M10 hex flange head bolts (A) and remove driveline shield (B).

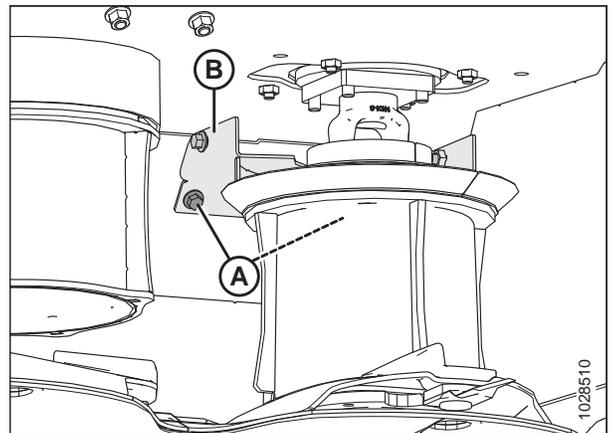


Figure 3.7: Driveline Shield

## INSTALLATION INSTRUCTIONS

4. Remove four M12 hex flange head bolts (A) securing driveline assembly (B) to hub drive (C).

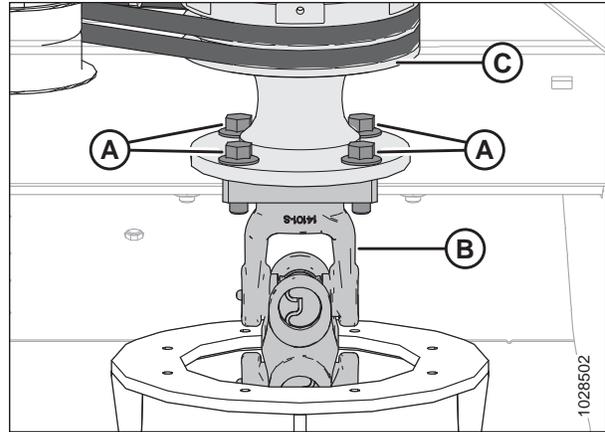


Figure 3.8: Driveline

5. Slide driveline (A) downwards, tilt it to the side, and pull the driveline up and out of the drum.

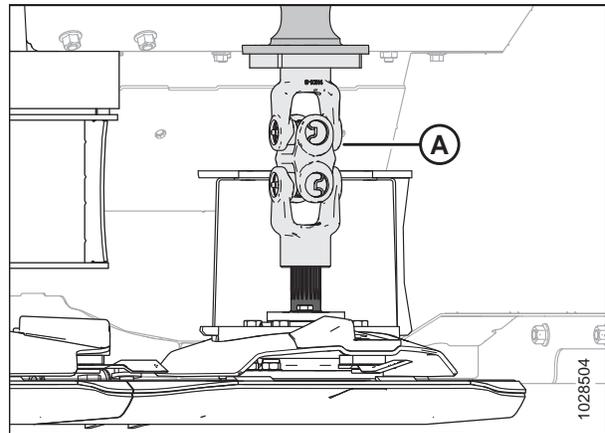


Figure 3.9: Drum and Tube Shield – Cutaway View

### 3.3 Removing Right Driveline

#### WARNING

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

1. Remove four M10 hex flange head bolts (A) and loosen two M10 hex flange head bolts (B). Remove driveline shield (C).

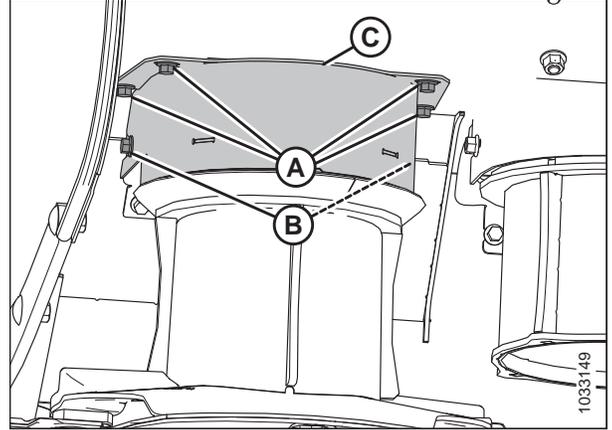


Figure 3.10: Driveline Shield

2. Remove eight M8 hex flange head bolts (A) and two drum shields (B).

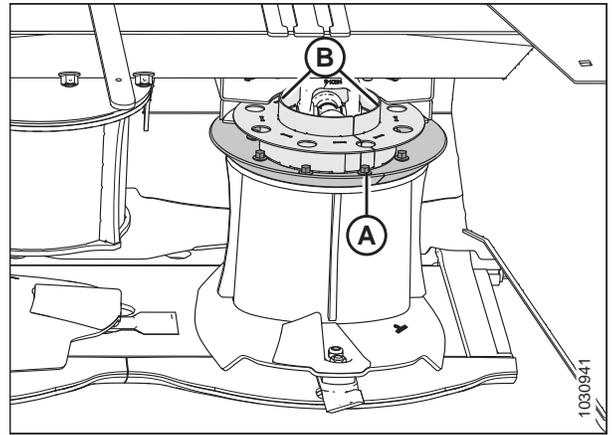


Figure 3.11: Driveline Shields

3. Remove two M10 hex flange head bolts (A) and remove driveline shield (B).

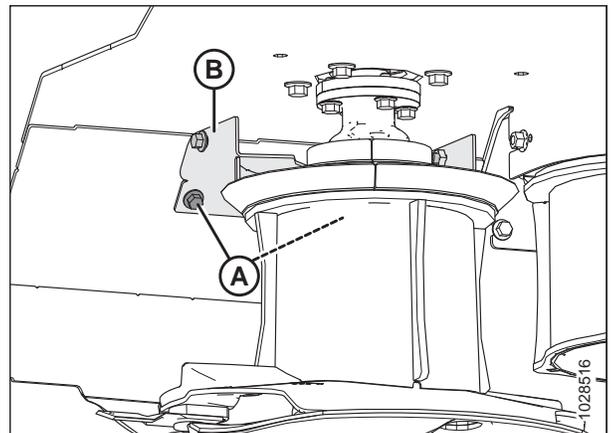


Figure 3.12: Driveline Shield

## INSTALLATION INSTRUCTIONS

4. Remove four M10 hex flange head bolts (A) securing driveline assembly (B) to hub drive (C).

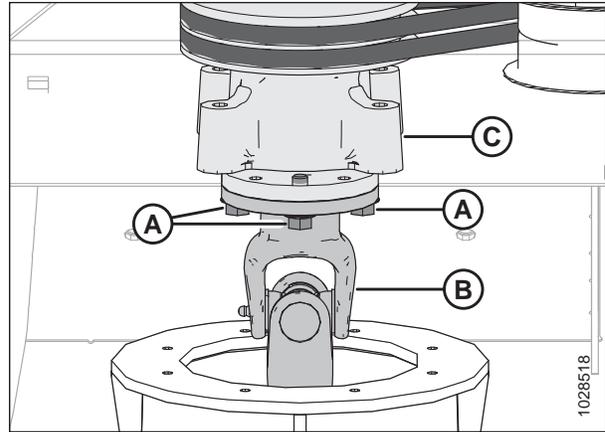


Figure 3.13: Driveline

5. Slide driveline (A) downwards, tilt it to the side, and pull the driveline up and out of the drum.

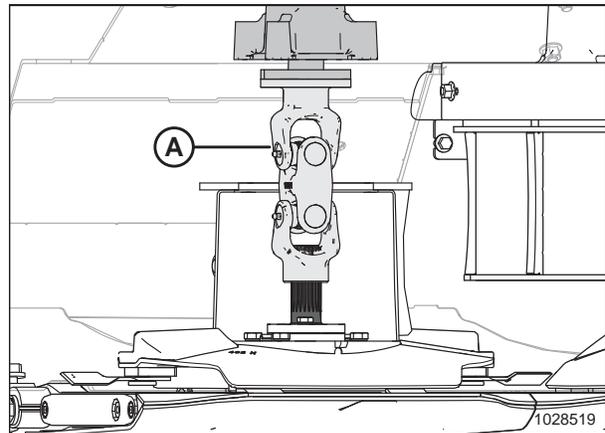


Figure 3.14: Drum and Tube Shield – Cutaway View

### 3.4 Removing Cutterbar

#### WARNING

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

#### CAUTION

The cutterbar weighs approximately 560 kg (1300 lb.). Use a suitable lifting device to support and move the cutterbar into place.

1. Support the header with a forklift underneath the frame beams. Set cutterbar on stands.
2. With the header supported, remove hardware (H) and (J) that secure the endplate to the cutterbar.
3. With the cutterbar on a stand, remove bolts (C), (D), (E), (F), and (G) that secure the cutterbar to the frame at locations (A) and (B).
4. Repeat Steps 1, page 13 to 3, page 13 at the opposite end of the cutterbar.
5. Slowly lift the header away from the cutterbar.

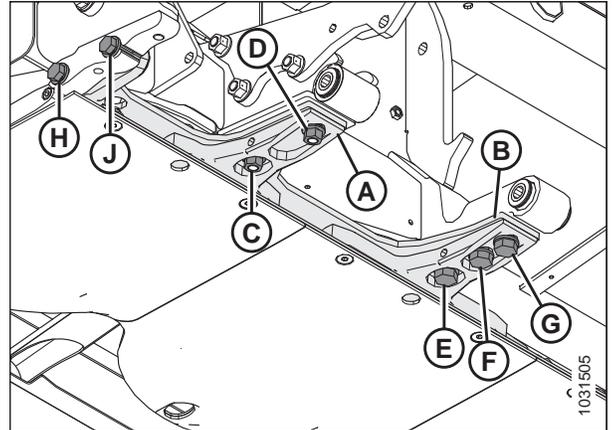


Figure 3.15: Cutterbar Bolts – Bottom View

### 3.5 Checking and Adding Lubricant in Cutterbar

The new cutterbar comes from the factory pre-filled with lubricant. Before installing the cutterbar, check to make sure the lubricant level is correct, and add if needed.

**⚠ WARNING**

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

1. Use a spirit (bubble) level (A) to ensure the cutterbar is level in both directions. Adjust the cutterbar accordingly.

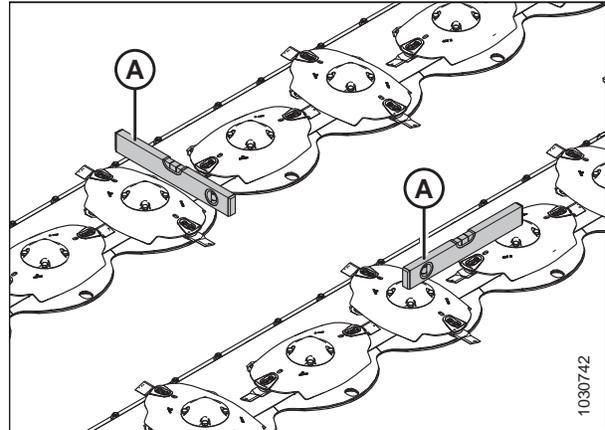


Figure 3.16: Spirit Level on Cutterbar

2. Clean the area around plug (A). Place a 5 liter (5.2 US qts) capacity container under plug.
3. Use a 17 mm socket to remove plug (A) and gasket (B) from cutterbar. Oil level must be up to the inspection plug hole.
4. If the lubricant is too low, tilt the cutterbar forward and add more lubricant through the level hole. For lubricant specification, refer to the header operator's manual or technical manual.

**IMPORTANT:**

Do **NOT** overfill the cutterbar. Overfilling can cause overheating, damage, or cutterbar component failure.

5. Return the cutterbar to level position and recheck lubricant level. If necessary, repeat previous step.
6. Reinstall gasket (B) and plug (A), and torque to 30 Nm (22 lbf-ft).

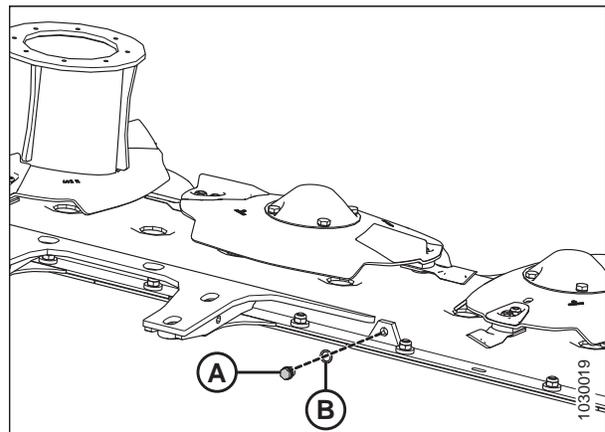


Figure 3.17: Cutterbar Oil Inspection Plug

### 3.6 Installing Cutterbar

#### WARNING

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

#### CAUTION

The cutterbar weighs approximately 560 kg (1300 lb.). Use a suitable lifting device to support and move the cutterbar into place.

#### IMPORTANT:

Vertical drive alignment is crucial for proper cutterbar operation. Always use the drive alignment tool (MD #325683) when installing a cutterbar.

- Using a forklift, lift the header and position it on the cutterbar so the mounting holes in the frame line up with the holes in the cutterbar at outboard support (A) and inboard support (B).

#### IMPORTANT:

Support the header with the forklift until the cutterbar is secured to the header.

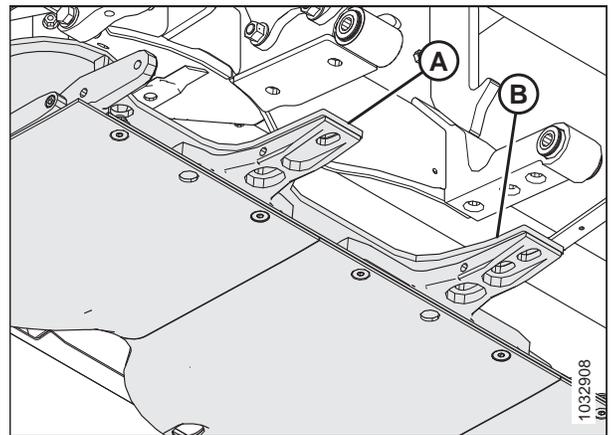


Figure 3.18: Cutterbar – Bottom View, Left End Shown

- If replacing a model year 2019 cutterbar with model year 2020 cutterbar, order and install three M20 x 2.5 x 70 hex head bolts (MD #252854) at locations (C), (D), and (E) on inboard support (A) to replace hardware removed from cutterbar. Snug the bolts, but do **NOT** tighten at this time.

If installing cutterbar components on a model year 2020 header, install three M20 x 2.5 x 70 bolts at locations (C), (D), and (E) on inboard support (A). Use one washer under each bolt heads. Snug the bolts, but do **NOT** tighten them at this time.

#### NOTE:

If reusing hardware, clean bolt and nut threads of any threadlocker residue.

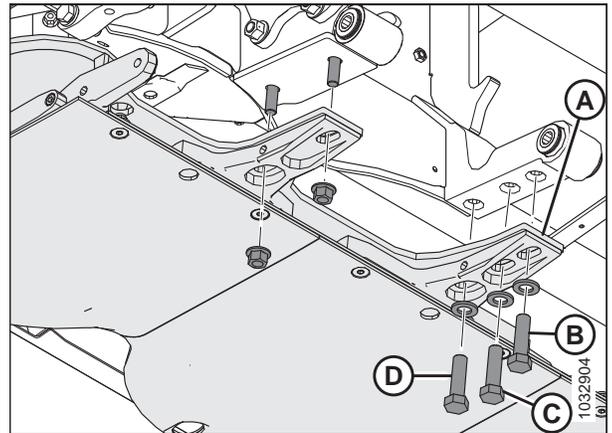


Figure 3.19: Cutterbar – Bottom View, Left End Shown, Inboard Support

## INSTALLATION INSTRUCTIONS

3. If replacing a model year 2019 cutterbar with model year 2020 cutterbar, order and install two M16 x 2 x 55 hex head bolts (MD #136717) at locations (B) on outboard support (A) to replace hardware removed from cutterbar. Snug the bolts, but do **NOT** tighten at this time.

If installing cutterbar components on a model year 2020 header, install two M16 x 2 x 55 hex head bolts at locations (B) on inboard support (A). Use one washer under the bolt heads. Snug the bolts, but do **NOT** tighten them at this time.

### NOTE:

If reusing hardware, clean bolt and nut threads of any threadlocker residue.

4. Repeat Steps 1, page 15 to 3, page 16 on opposite side of the header.
5. Remove bolt, washer, and nut (A) from the drive alignment tool (MD #325683), and slide the bottom tube up.

### NOTE:

The bolt, washer, and nut are provided for storage reasons only. They are not needed for drive alignment.

6. On the left side of the cutterbar, slide drive alignment tool (A) over the cutterbar driveshaft.

### NOTE:

Drive alignment tool may need to be rotated to clear the hub to be able to insert it inside the drum.

7. Attach drive alignment tool to left drive hub (B) with four M12 bolts, and tighten until snug.

### IMPORTANT:

If the alignment tool is not secured to the gearbox using all four bolts, the drive hub will be misaligned.

8. Use a pry bar to move the left side of the cutterbar fore or aft until the alignment tool's bottom tube slides freely over the cutterbar driveshaft.
9. Remove bolts securing alignment tool (A) to drive hub (B). Lift the lower tube and remove the tool.

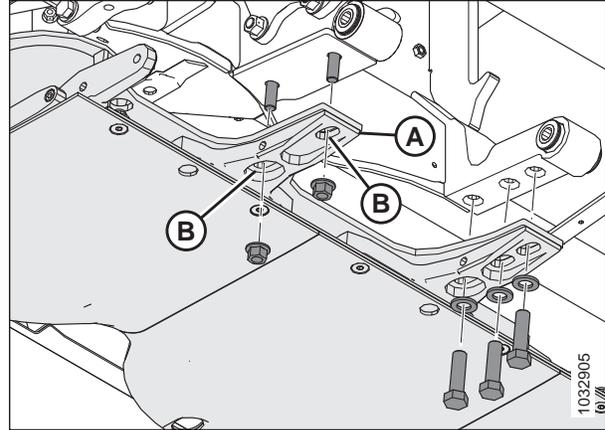


Figure 3.20: Cutterbar – Bottom View, Left End Shown, Outboard Support

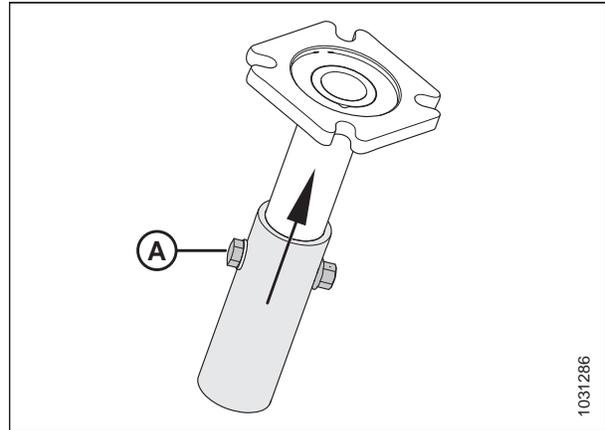


Figure 3.21: Drive Alignment Tool (MD #325683)

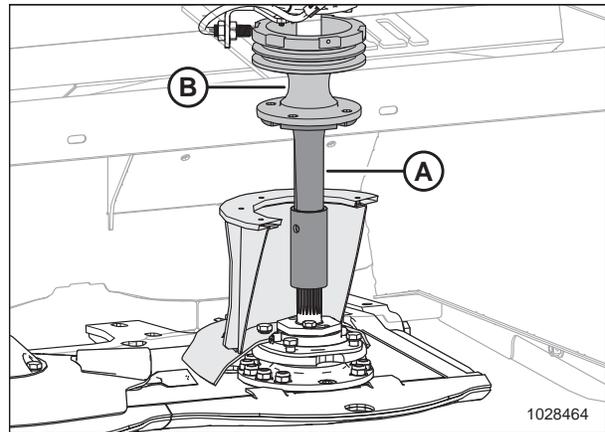


Figure 3.22: Alignment Tool on Left Driven Drum

## INSTALLATION INSTRUCTIONS

10. On the right side of the cutterbar, slide drive alignment tool (A) over spindle shaft (B) on the cutterbar.

**NOTE:**

Tool may need to be rotated to clear the hub to insert it inside the drum.

11. Attach right drive alignment adapter (C) (MD #307302) to right drive hub using bolts (D) (MD #281605).

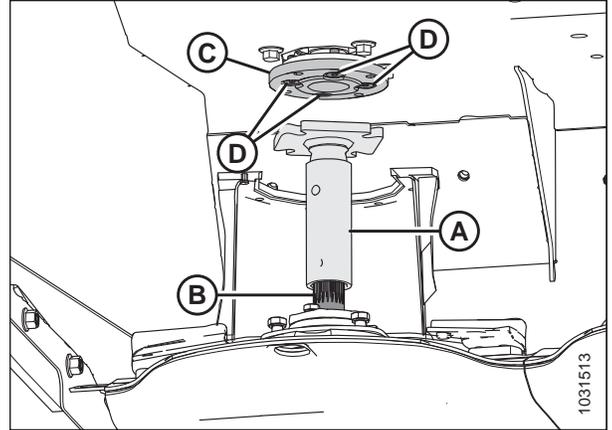


Figure 3.23: Alignment Tool on Right Driven Drum

12. Attach drive alignment tool (A) to right drive alignment adapter (B) using four M12 bolts, and tighten until snug.

**IMPORTANT:**

If the alignment tool is not secured to the right drive assembly using all four bolts, the drive hub will be misaligned.

13. Use a pry bar to move the right side of the cutterbar fore or aft until the alignment tool's bottom tube slides freely over the cutterbar driveshaft.
14. Repeat Steps 6, page 16 to 13, page 17, and check that the tube on the drive alignment tool can still slide up and down freely on the left and right cutterbar driveshafts. If there is binding, loosen the cutterbar mounting bolts and recheck the cutterbar alignment.

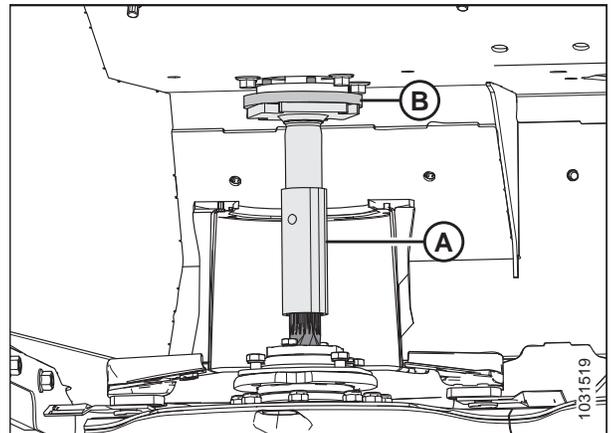


Figure 3.24: Alignment Tool on Right Driven Drum

15. On inboard support (B), apply high-strength threadlocker (Loctite® 262 or equivalent) to bolt (E) and torque bolt to 725 Nm (535 lbf-ft).

**NOTE:**

Use a paint pen or grease pencil to mark all bolts with a slash once they have been torqued.

16. Repeat Step 15, page 17 for bolt (F) and bolt (G).

17. On outboard support (A), torque bolt (C) to 170 Nm (125 lbf-ft).

**NOTE:**

Use a paint pen or grease pencil to mark all bolts with a slash once they have been torqued.

18. Repeat Step 17, page 17 for bolt (D).
19. Repeat Steps 15, page 17 to 18, page 17 on the opposite side of the cutterbar.

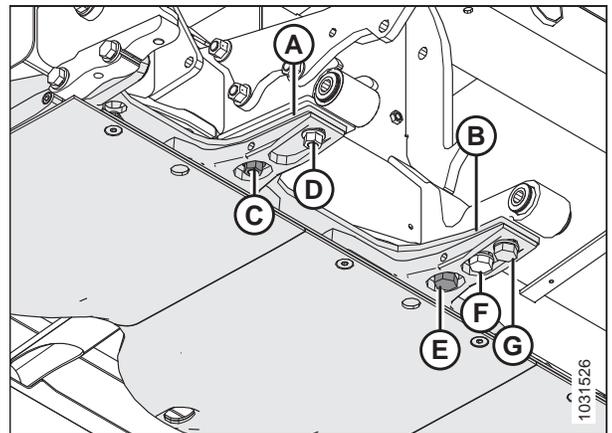
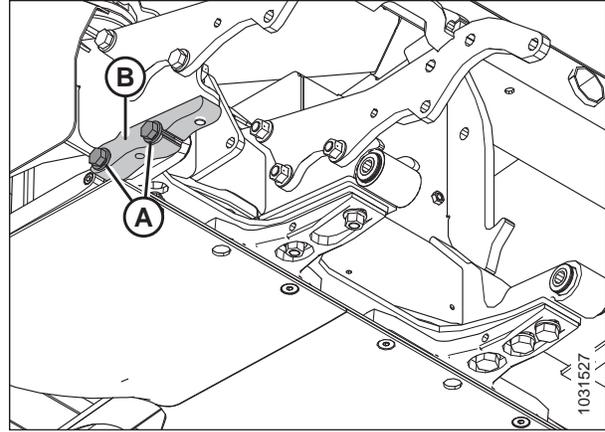


Figure 3.25: Cutterbar Bolts – Bottom View, Left End Shown, Right End is Opposite

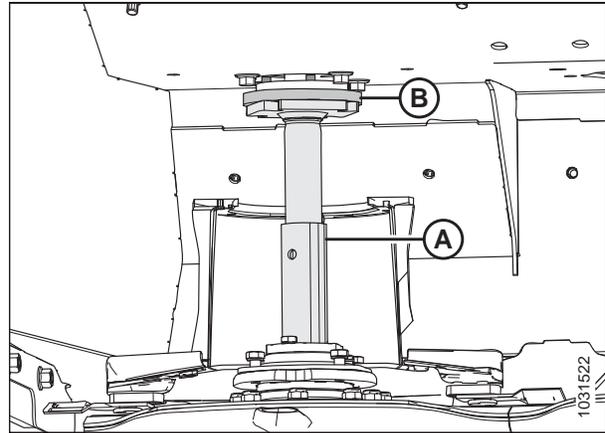
## INSTALLATION INSTRUCTIONS

20. Apply high-strength threadlocker (Loctite® 262 or equivalent) to two M16 bolts with two washers (A), and install the hardware into the end of the cutterbar through the slots on endplate (B). Torque bolts to 249 Nm (184 lbf-ft). Repeat at the opposite side of the cutterbar.



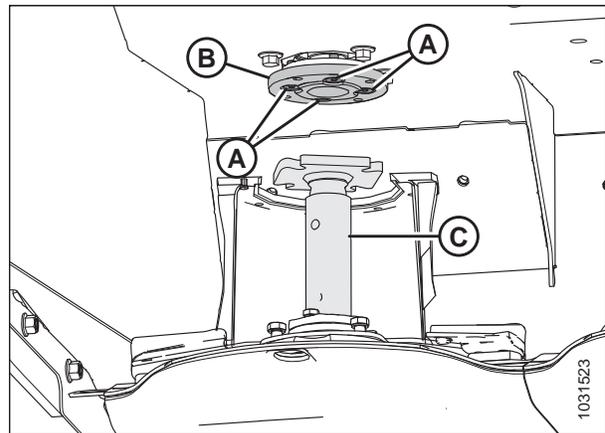
**Figure 3.26: Cutterbar Endplate – Bottom View, Left End Shown, Right End is Opposite**

21. Remove the four M12 bolts securing drive alignment tool (A) to drive alignment adapter (B).



**Figure 3.27: Alignment Tool on Right Driven Drum, Left Driven Drum is Opposite**

22. Remove four bolts (A) and drive alignment adapter (B).
23. Remove drive alignment tool (C).



**Figure 3.28: Alignment Tool on Right Driven Drum, Left Driven Drum is Opposite**

## INSTALLATION INSTRUCTIONS

24. Install bolt, washer, and nut (A) onto the drive alignment tool for storage.

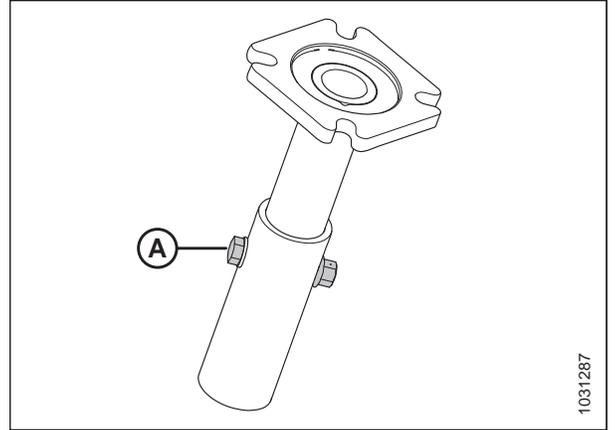


Figure 3.29: Drive Alignment Tool (MD #325683)

### 3.7 Installing Left Driveline

#### WARNING

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

1. Apply anti-seize compound on splined shaft (A).
2. Insert driveline (B) at an angle and guide it past hub drive (C) and drum (D).
3. Insert splined spindle end (A) into the splined bore of driveline (B).

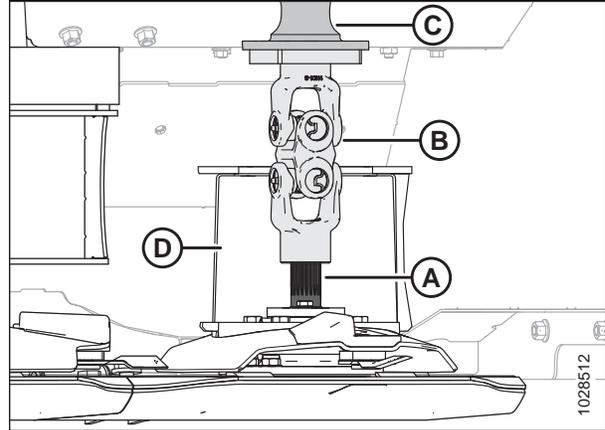


Figure 3.30: Drum and Tube Shield – Cutaway View

4. Place a bead of high-strength threadlocker (Loctite® 262 or equivalent) around the threads of four M12 hex flange head bolts (A). Use the bolts to secure driveline assembly (B) to hub drive (C). Torque bolts to 100 Nm (74 lbf-ft).

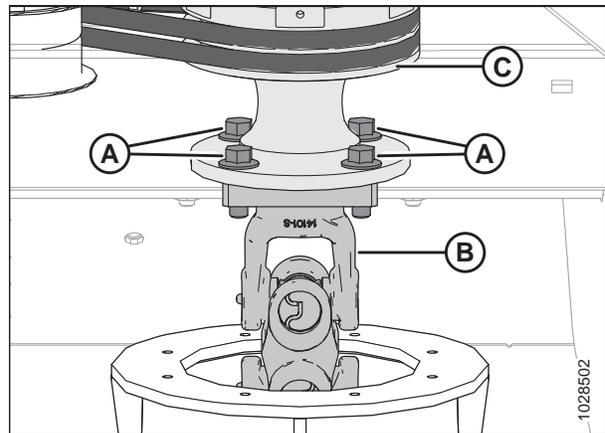


Figure 3.31: Driveline

5. Position driveline shield (B) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of two M10 hex flange head bolts (A). Use bolts (A) to secure driveline shield (B) in place.

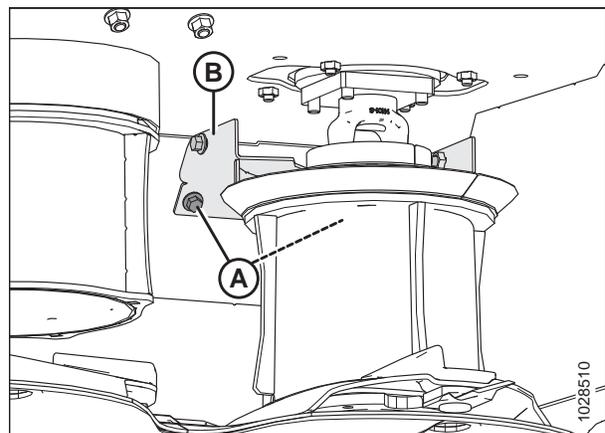


Figure 3.32: Driveline Shield

## INSTALLATION INSTRUCTIONS

- Position two drum shields (B) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of eight M8 hex flange head bolts (A). Use the bolts to secure the drum shields in place. Torque hardware to 27 Nm (20 lbf·ft).

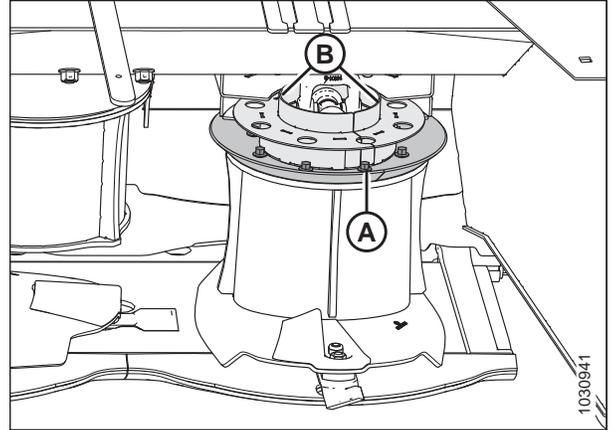


Figure 3.33: Driveline Shields

- Position driveline shield (C) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A) and two M10 hex flange head bolts (B). Use bolts (A) and (B) to secure driveline shield (C) in place.
- Tighten all hardware on driveline shields.



### WARNING

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

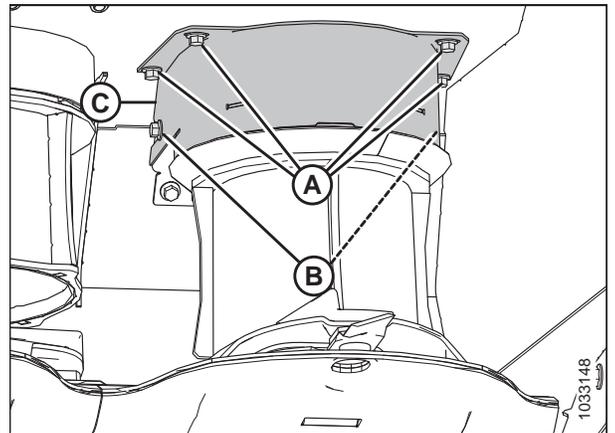


Figure 3.34: Driveline Shield

### 3.8 Installing Right Driveline

#### WARNING

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

1. Apply anti-seize compound on splined shaft (A).
2. Insert driveline (B) at an angle and guide it past hub drive (C) and drum (D).
3. Insert splined spindle end (A) into the splined bore of driveline (B).

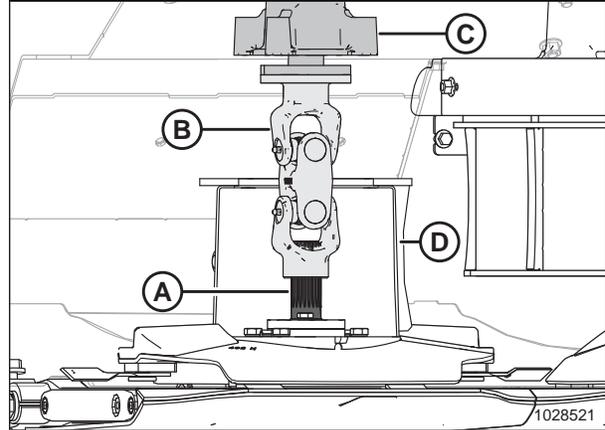


Figure 3.35: Drum and Tube Shield – Cutaway View

4. Place a bead of high-strength threadlocker (Loctite® 262 or equivalent) around the threads of four M10 hex flange head bolts (A). Use the bolts to secure driveline assembly (B) to hub drive (C). Torque the bolts to 57.5 Nm (42 lbf-ft).

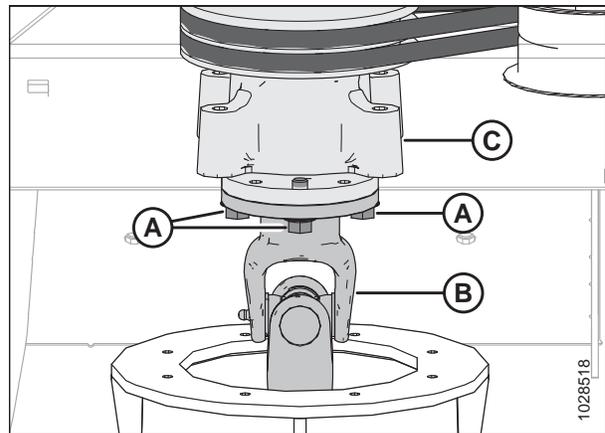


Figure 3.36: Driveline

5. Position driveline shield (B) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of two M10 hex flange head bolts (A). Use M10 hex flange head bolts (A) to secure driveline shield (B) in place.

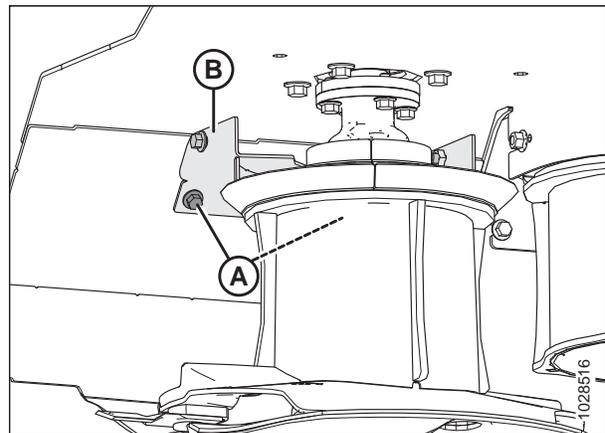


Figure 3.37: Driveline Shield

## INSTALLATION INSTRUCTIONS

- Position two drum shields (B) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of eight M8 hex flange head bolts (A). Use the bolts to secure the drum shields in place. Torque hardware to 27 Nm (20 lbf·ft).

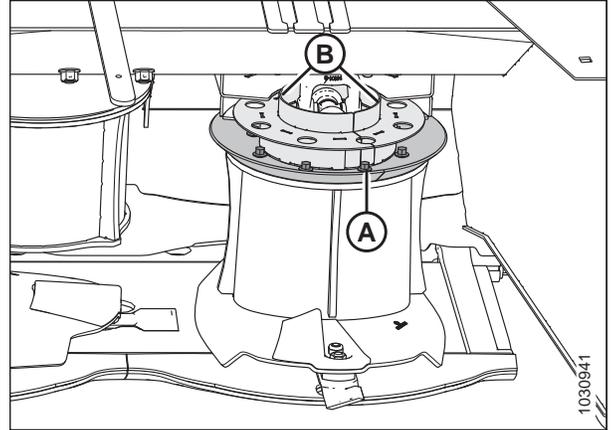


Figure 3.38: Driveline Shields

- Position driveline shield (C) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A) and two M10 hex flange head bolts (B). Use bolts (A) and (B) to secure driveline shield (C) in place.
- Tighten all hardware on driveline shields.



### WARNING

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

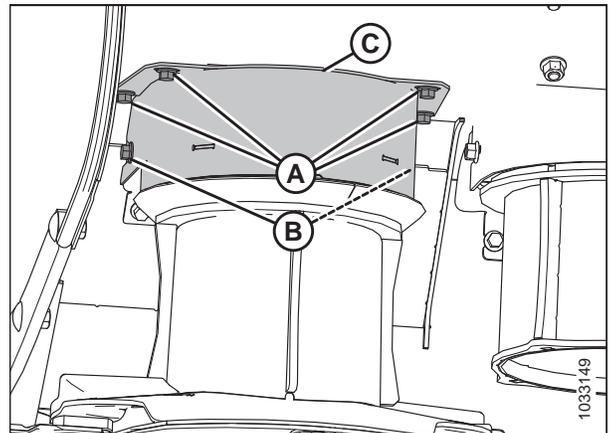


Figure 3.39: Driveline Shield

### 3.9 Closing Cutterbar Curtain

**⚠ CAUTION**

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

1. Pull curtain outward from retaining clips and lower curtain.

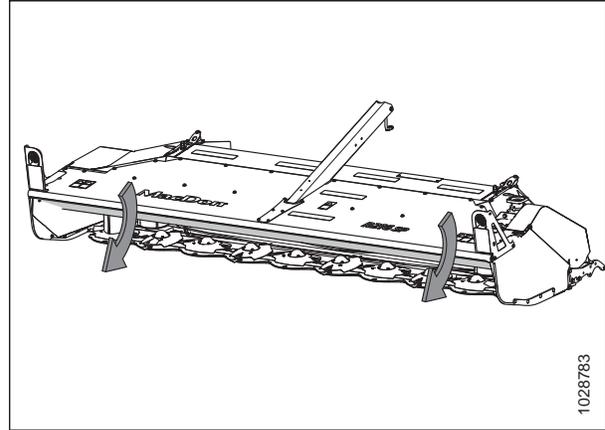


Figure 3.40: Cutterbar Curtain

2. Disengage header safety props (A). For instructions, refer to header operator's manual or technical manual.

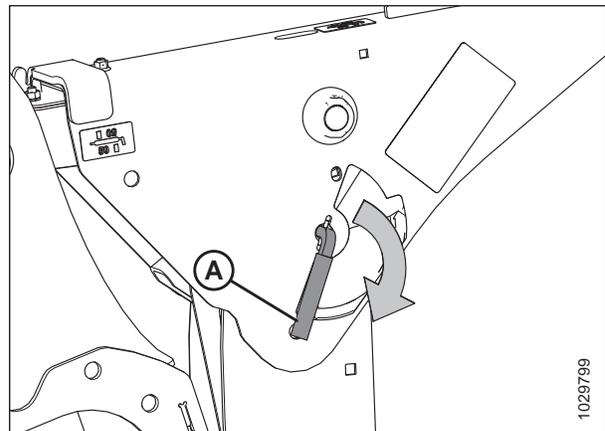


Figure 3.41: Header Safety Prop



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