

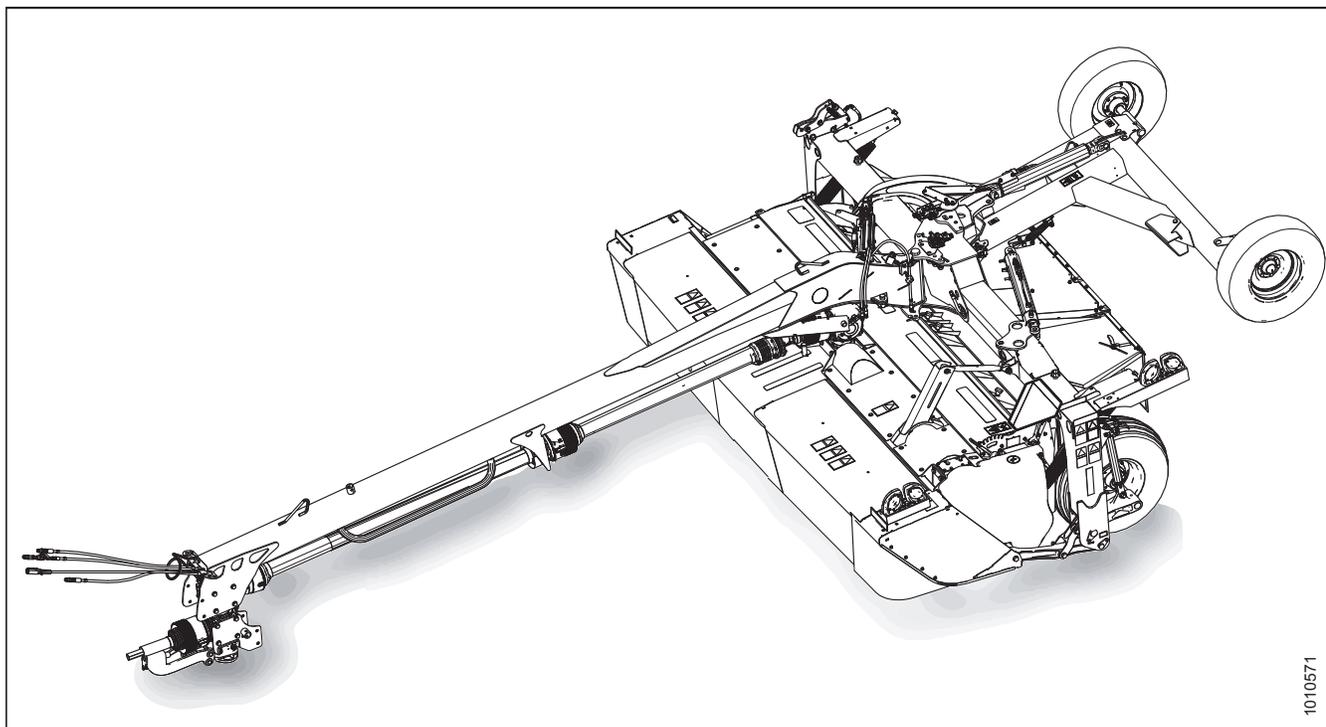
# **R116 (Model Years 2015–2017) Rotary Disc Pull-Type**

Small Drum Kit (MD #259140) Installation Instructions

214913 Revision B

Original Instruction

R116 Rotary Disc Pull-Type



1010571

Published April 2019

## Introduction

The Small Drum kit (MD #259140) can be installed on a MacDon R116 Rotary Disc Pull-Type (model years 2015–2017) to improve cutting performance in certain conditions. The kit contains two drums and associated parts to replace the factory-installed inner drums on the pull-type.

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 time for this kit is approximately 2.5 hours.

### ***Conventions***

The following conventions are used in this document:

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

## List of Revisions

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

| Summary of Change   | Location   |
|---|--|
| Removed reference to R113 Rotary Disc Pull-Type. Kit MD #259140 only applies to R116 Rotary Disc Pull-Type (model years 2015–2017).   | Throughout.  |
| Corrected captions.   | Throughout.  |
| Revised description of NOTE.  | <i>1.1 Signal Words, page 1</i>  |
| Added a WARNING to the procedures for opening cutterbar doors.  | <ul style="list-style-type: none"> <li>• <i>3.1 Opening Cutterbar Doors – North America, page 9</i></li> <li>• <i>3.2 Opening Cutterbar Doors – Export Latches, page 10</i></li> </ul> |
| Added a step to the procedures for opening cutterbar doors.   | <ul style="list-style-type: none"> <li>• <i>Step 2, page 9</i></li> <li>• <i>Step 2, page 10</i></li> </ul>  |
| Added a DANGER and CAUTION to the procedure for removing discblades.  | <i>3.3 Removing Discblades and Attachment Hardware, page 12</i>  |
| Added two steps to the procedure for removing discblades.   | <ul style="list-style-type: none"> <li>• <i>Step 1, page 12</i></li> <li>• <i>Step 2, page 12</i></li> </ul>   |
| Added an IMPORTANT to the procedures for removing and installing discblades.  | <ul style="list-style-type: none"> <li>• <i>Step 5, page 12</i></li> <li>• <i>Step 3, page 22</i></li> </ul>   |
| Regarding the four bolts that secure the driveline assembly to the hub drive: <ul style="list-style-type: none"> <li>• Corrected the type of threadlocker required. The bolts require Loctite® 243 or equivalent, <b>NOT</b> Loctite® 242 or equivalent.</li> <li>• Changed the torque value from 95 Nm (70 lbf-ft) to 102 Nm (75 lbf-ft).</li> </ul> | <ul style="list-style-type: none"> <li>• <i>Step 9, page 19</i></li> <li>• <i>Step 10, page 19</i></li> </ul>  |
| Regarding the eight bolts used to secure the drum shields: <ul style="list-style-type: none"> <li>• Changed the torque value from 29 Nm (21 lbf-ft) to 27 Nm (20 lbf-ft)</li> </ul>   | <i>Step 12, page 19</i>  |
| Added a CAUTION to the procedure after the kit installation.  | <i>4 After Installation, page 25</i>   |

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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

### CAUTION

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

Protect yourself.

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



Figure 1.1: 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 safest way. **NEVER** ignore warning signs of fatigue.

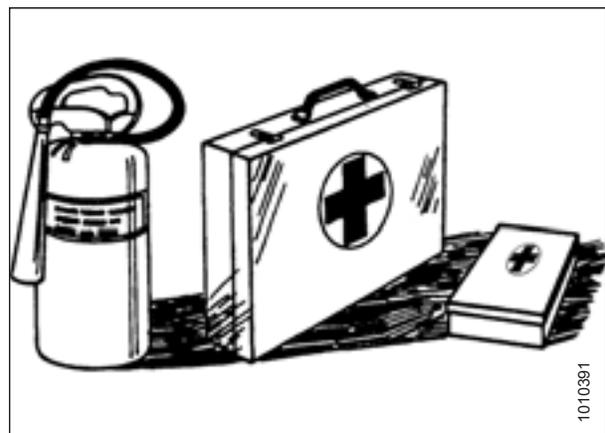


Figure 1.3: Safety Equipment

## 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 engine is running.
- Do **NOT** modify machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten machine's life.
- To avoid injury or death from unexpected startup of machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

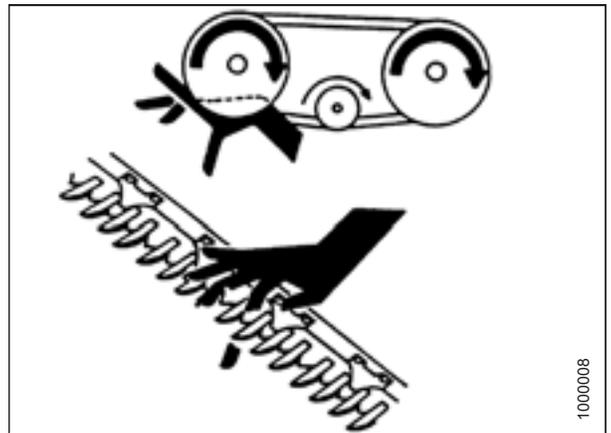


Figure 1.5: Safety around Equipment

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



Figure 1.6: Safety around Equipment

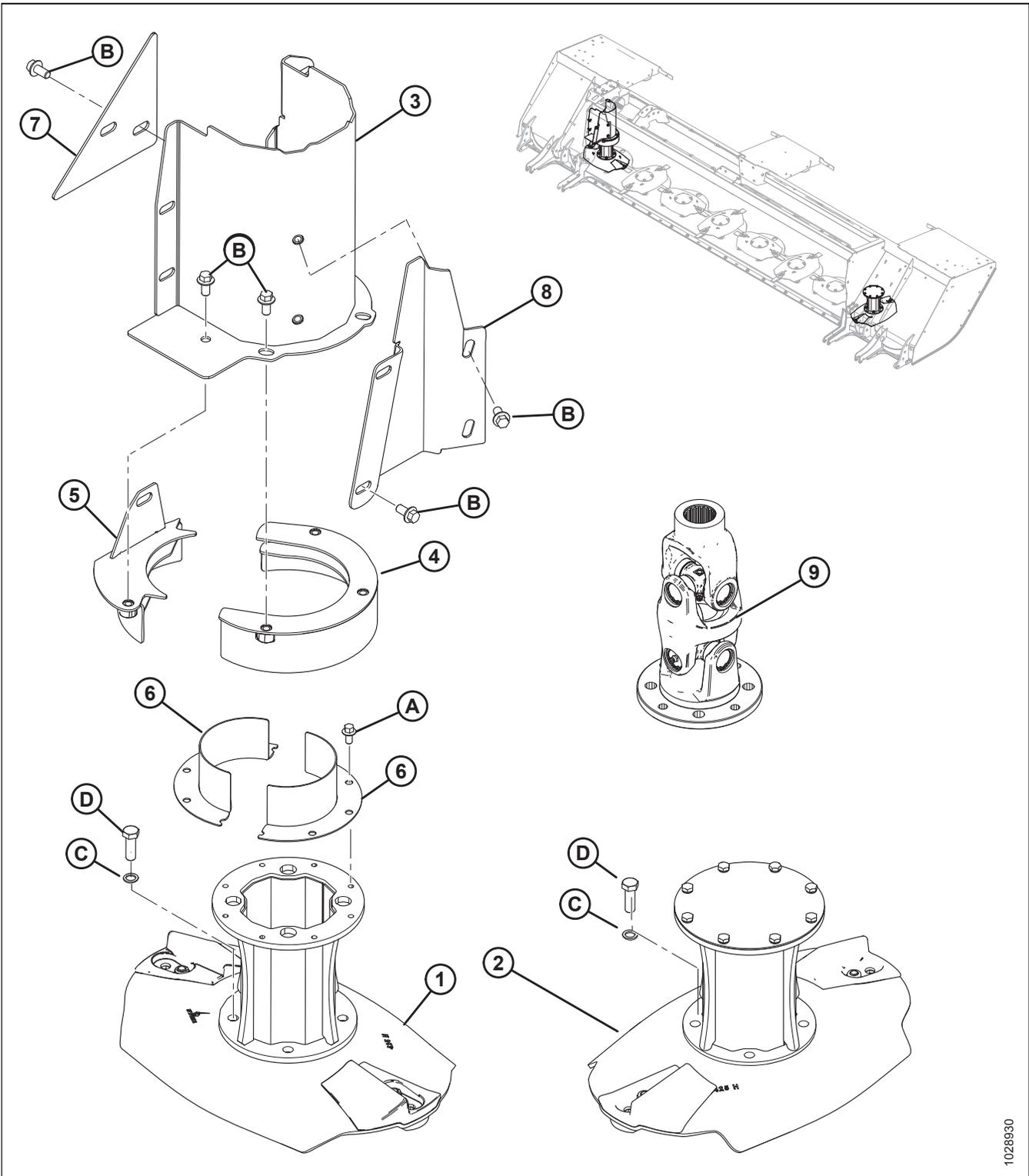


## Chapter 2: Parts List

The following parts are included in this kit:

PARTS LIST

Figure 2.1: Parts Included in Small Drum Kit



1028930

**PARTS LIST**

| <b>Ref</b> | <b>Part Number</b> | <b>Description</b>                           | <b>Quantity</b> |
|------------|--------------------|--|-----------------|
| 1          | 257085             | ASSEMBLY – CW DRUM, 425 MM DRIVE             | 1               |
| 2          | 257086             | ASSEMBLY – CCW DRUM, 425 MM                  | 1               |
| 3          | 281981             | SHIELD – VERTICAL                            | 2               |
| 4          | 281489             | DRUM – TOP                                   | 1               |
| 5          | 281493             | PLATE – BACK                                 | 1               |
| 6          | 281497             | SHIELD – DRUM                                | 2               |
| 7          | 281500             | PLATE – COVER                                | 1               |
| 8          | 281501             | PLATE – SHIELD                               | 1               |
| 9          | 259139             | ASSEMBLY – DRIVELINE                         | 1               |
|            |                    |  |                 |
| A          | 136485             | BOLT – HEX FLG HD TFL M8 X 1.25 X 16 8.8 A3L | 8               |
| B          | 152655             | BOLT – HEX FLG HD M10 X 1.5 X 20 8.8 A3L     | 13              |
| C          | 246952             | WASHER – M12 LOCKING DISC                    | 8               |
| D          | 281697             | BOLT – M12 DISC COVER                        | 8               |



## Chapter 3: Installation Instructions

To install the Small Drum kit (MD #259140), follow these procedures in order:

### 3.1 Opening Cutterbar Doors – North America

If the pull-type was sold outside of North America, it will have export latches. Refer to [3.2 Opening Cutterbar Doors – Export Latches, page 10](#).

#### **WARNING**

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

1. Center the pull-type beneath the hitch, if both doors need to be opened.
2. Shut down the engine, and remove the key from the ignition.
3. Lift up on door (A) at the front to open.

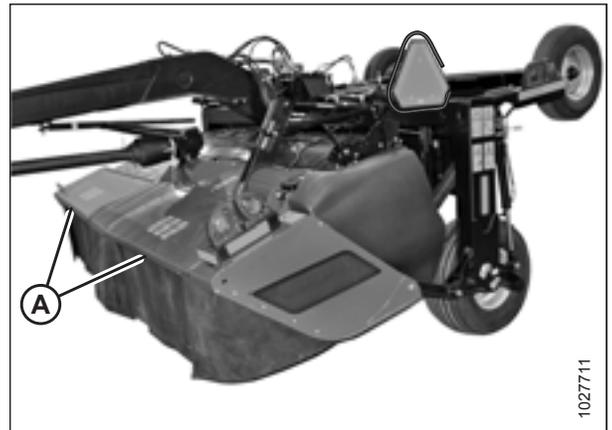


Figure 3.1: Cutterbar Doors and Curtains – Pull-Type

## 3.2 Opening Cutterbar Doors – Export Latches

Pull-types sold outside North America require a tool-operated latch on the cutterbar doors. Follow these steps to open cutterbar doors with export latches:

### WARNING

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

1. Center the pull-type beneath the hitch, if both doors need to be opened.
2. Shut down the engine, and remove the key from the ignition.
3. Locate latch access holes (A) for each door.

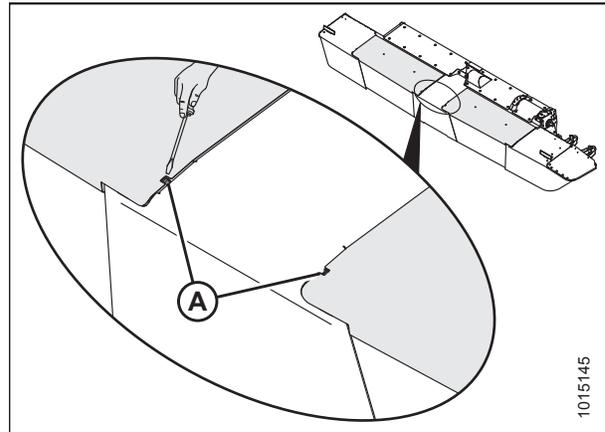


Figure 3.2: Cutterbar Door Latch Access Hole – Export Only

4. Use a rod or screwdriver to press down on latch (A) and release the cutterbar door.

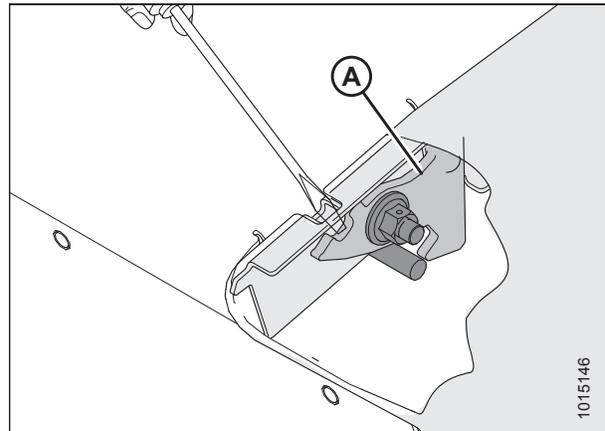


Figure 3.3: Cutterbar Door Latch – Cutaway View

## INSTALLATION INSTRUCTIONS

5. Lift up on door (A) while pressing down on the latch.

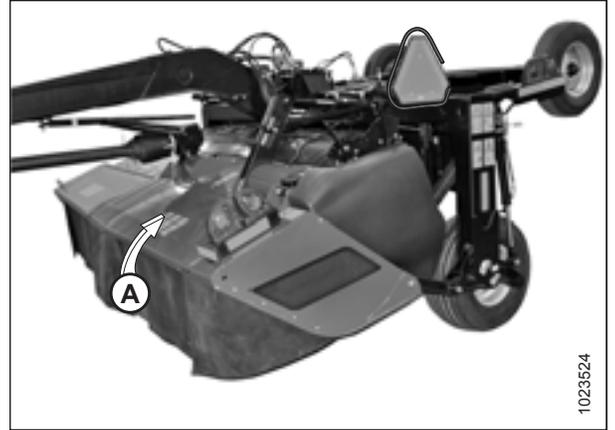


Figure 3.4: Cutterbar Doors and Curtains – Pull-Type

### 3.3 Removing Discblades and Attachment Hardware

The kit includes two new disc/drum assemblies, but no discblades or attachment hardware. You will need to remove the discblades and hardware from the discs under the two inboard rotary deflectors, and install them on the new discs. To remove the discblades and hardware, follow these steps:

**⚠ DANGER**

To avoid bodily injury or death from unexpected startup or fall of a raised machine, stop engine, remove key, and engage lift cylinder lock-out valves before going under machine for any reason.

**⚠ WARNING**

Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.

**⚠ CAUTION**

Check to be sure all bystanders have cleared the area.

1. Raise the pull-type fully, shut off engine, and remove key.
2. Engage lift cylinder lock-out valves. Refer to the pull-type operator's manual or technical manual for instructions.
3. Rotate disc (A) so blade (B) faces forward and lines up with hole (C) in rock guard.
4. Place a pin (or equivalent) in the front hole of the rock guard to prevent disc rotation while loosening blade bolts.

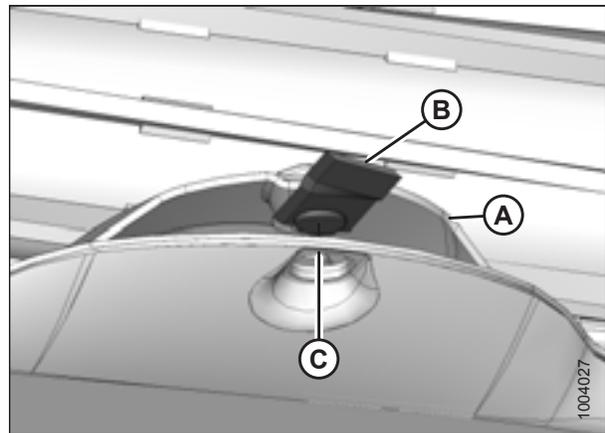


Figure 3.5: Disclade Aligned with Hole in Rock Guard

5. Remove nut (A), shoulder bolt (B), and blade (C). Retain for installation on one of the new cutterbar discs.

**IMPORTANT:**

Nuts are one-time use only. When flipping or changing a blade, replace using a **NEW** nut only.

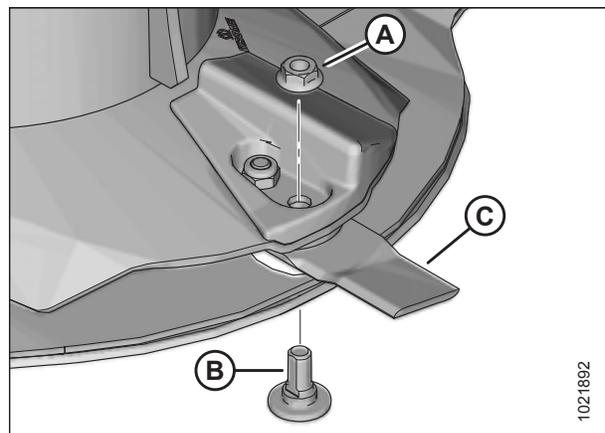


Figure 3.6: Disclade Hardware

### 3.4 Removing Right Inboard Drum and Disc

To remove the inboard drum on the right side of the cutterbar, follow these steps:

**⚠ WARNING**

Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.

**NOTE:**

Arrows in the following illustrations point to the front of the machine.

1. Place a wooden block between two cutterbar discs to prevent disc rotation while loosening blade bolts.
2. Remove eight M8 bolts (A) and washers securing the cover (B) to the non-driven drum, and remove cover.

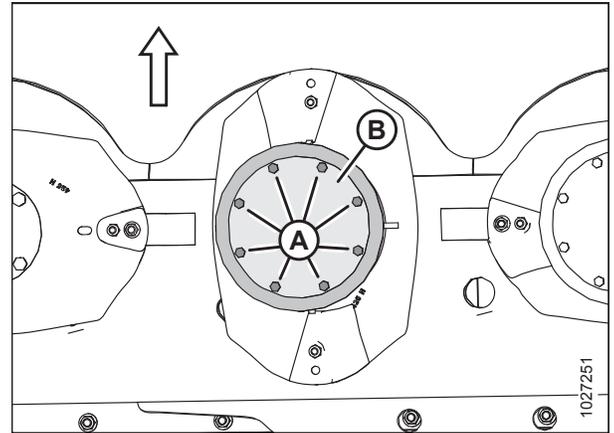


Figure 3.7: Cover of Inboard Right Drum – View from Above

3. Remove four M12 bolts (A) inside the drum using a 305 mm (12 in.) extension and 18 mm socket.
4. Remove wooden block.
5. Remove drum (B) and disc (C) assembly.
6. Discard all parts removed.

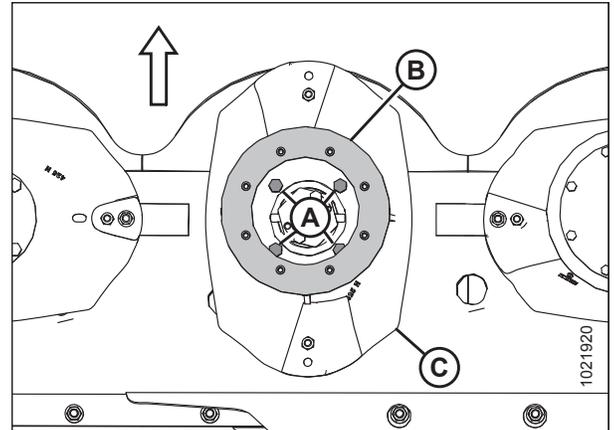


Figure 3.8: Inboard Right Drum with Cover Removed – View from Above

### 3.5 Installing New Right Drum Assembly

To install the new counterclockwise drum assembly (MD #257086) provided in the kit, follow these steps:

**⚠ WARNING**

**Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.**

**NOTE:**

Unless otherwise specified, all parts are provided in the kit.

1. Ensure spacer (A) is on spindle.

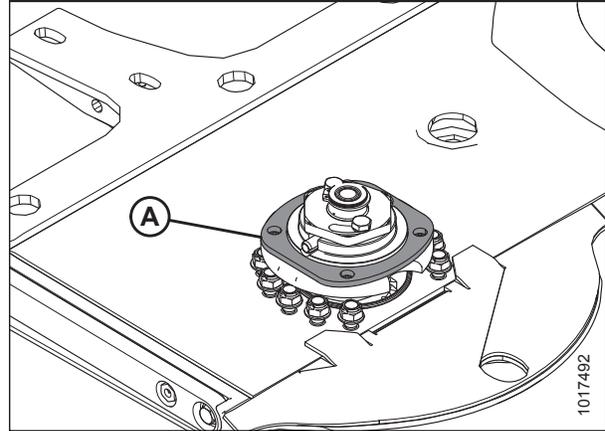


Figure 3.9: Non-Driven Spindle

2. Position new counterclockwise drum assembly (B) onto the spindle as shown. The disc must be positioned at a 90-degree angle relative to neighboring discs.
3. Use an 18 mm deep socket to install four M12 bolts (A) (MD #281697) and washers (MD #246952), securing drum assembly (B) to the spindle.
4. Torque to 85 Nm (63 lbf-ft).

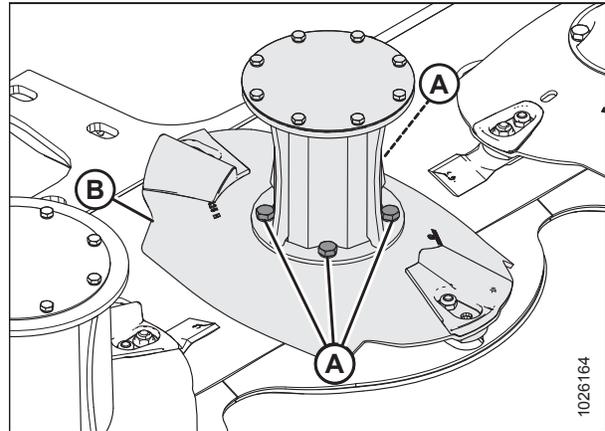


Figure 3.10: Counterclockwise Drum Assembly Installed

### 3.6 Removing Left Inboard Drum, Disc, and Driveline

To remove the inboard drum on the left side of the cutterbar and the associated cutterbar disc and driveline, follow these steps:

**⚠ WARNING**

**Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.**

1. Remove four M10 hex flange head bolts (A) and remove vertical driveshield (B).

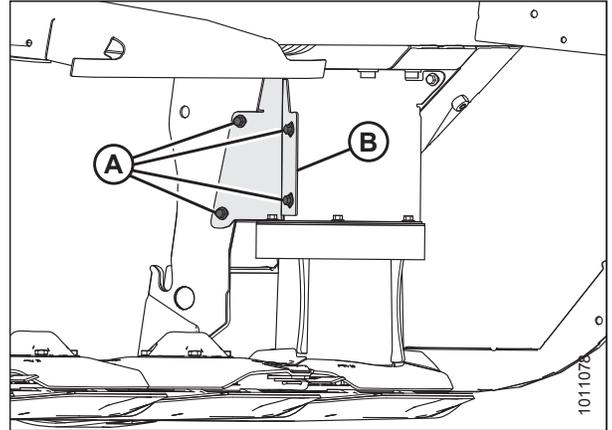


Figure 3.11: Vertical Drive Shield

2. Remove two M10 hex flange head bolts (A) and remove cover plate (B).

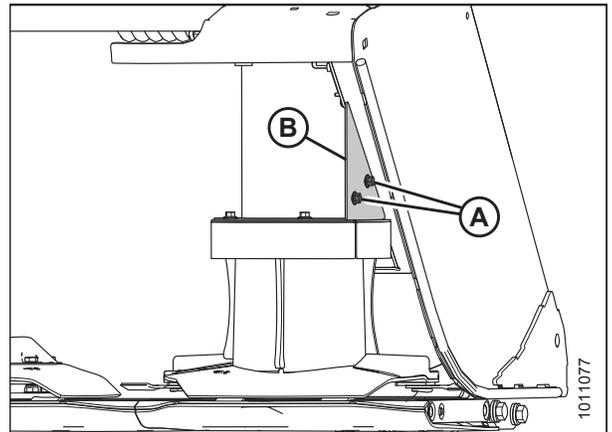


Figure 3.12: Cover Plate

3. Remove four M10 hex flange head bolts (A), and remove top plate (B) and drum top (C).

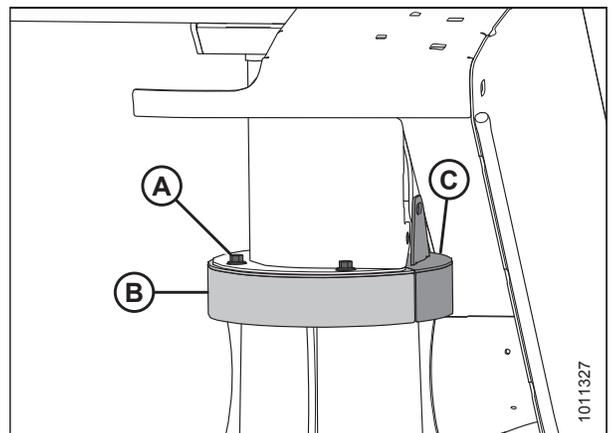


Figure 3.13: Top Plate and Drum Top

## INSTALLATION INSTRUCTIONS

4. Remove one 20 mm M10 hex flange head bolt (A), two 16 mm M10 hex flange head bolts (B), and vertical shield (C).

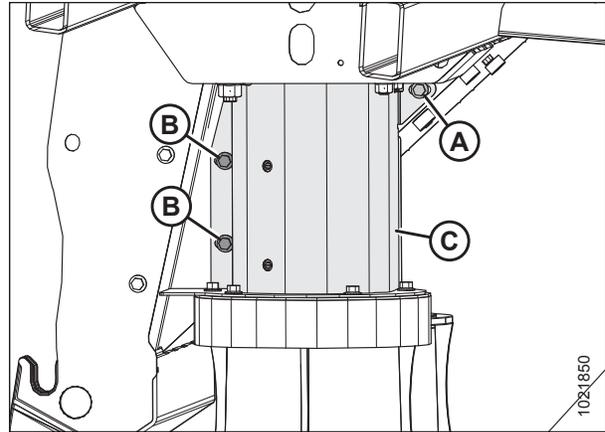


Figure 3.14: Vertical Shield

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

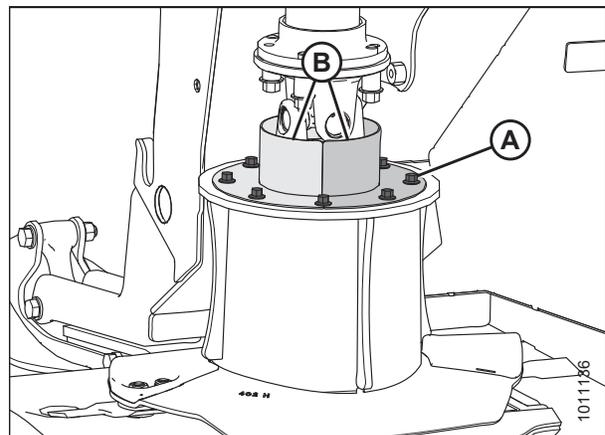


Figure 3.15: Drum Shields

6. Remove four M12 hex flange head bolts (A) and spacers securing driveline assembly (B) to hub drive (C). Retain for reassembly.

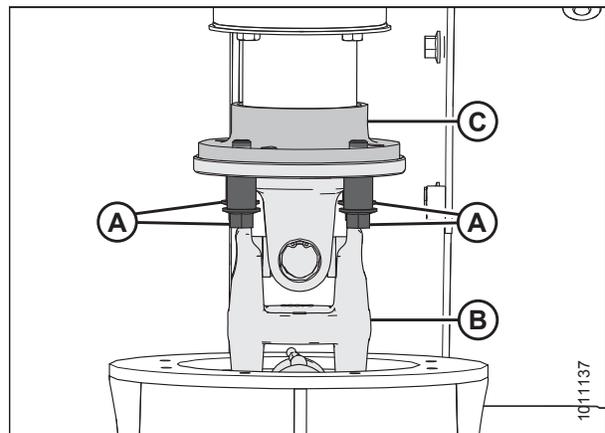


Figure 3.16: Driven Drum

## INSTALLATION INSTRUCTIONS

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

**NOTE:**

For clarity, illustration shows a cutaway view of drum and tube shield.

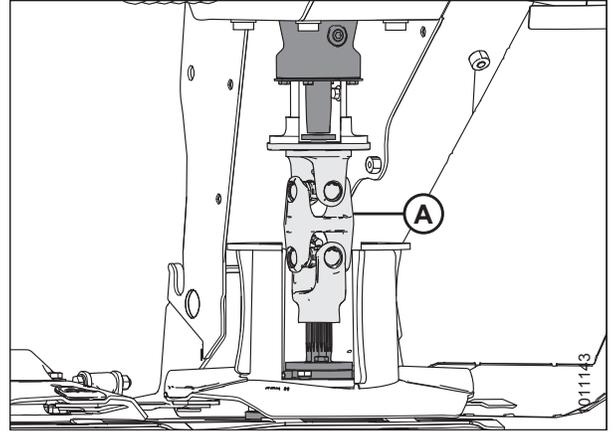


Figure 3.17: Driveline

- Inside the drum, use a 305 mm (12 in.) extension and 18 mm deep socket to remove four M12 bolts (A) and washers holding the drum disc in place.
- Remove and discard drum disc assembly.

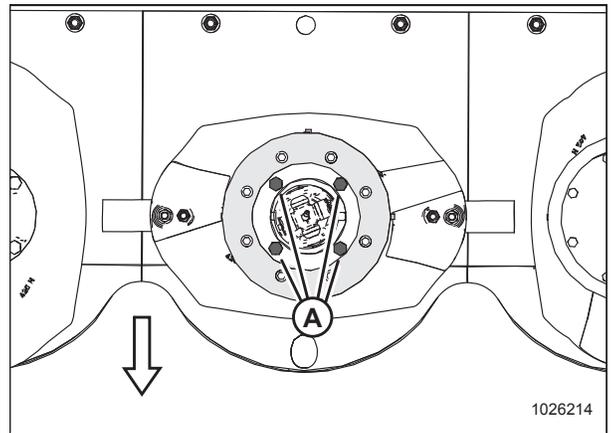


Figure 3.18: Driven Drum - R116

### 3.7 Installing New Left Drum Assembly, Shields, and Driveline

To install the new clockwise drum assembly, shields, and driveline provided in the kit, follow these steps:

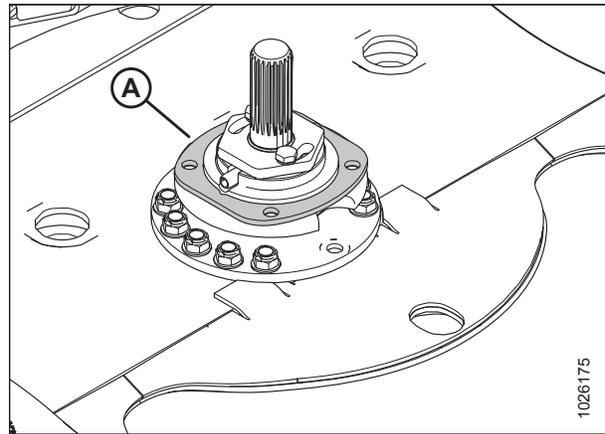
**⚠ WARNING**

**Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.**

**NOTE:**

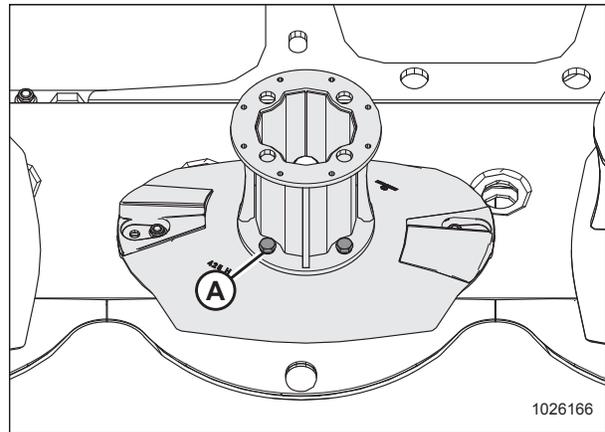
Unless otherwise stated, all parts are provided in the kit.

1. Remove the remaining parts from the kit.
2. Ensure spacer (A) is on spindle.



**Figure 3.19: Clockwise Spindle**

3. Position the new clockwise drum assembly (MD #257085) over the exposed spindle. The disc must be positioned at a 90-degree angle relative to neighboring discs.
4. Use an 18 mm deep socket to install four M12 bolts (A) (MD #281697) and washers (MD #246952), securing the drum assembly to the spindle.
5. Torque to 85 Nm (63 lbf-ft).



**Figure 3.20: New Clockwise Drum Assembly Positioned on Spindle**

## INSTALLATION INSTRUCTIONS

- Lubricate spindle splines (A). For specifications, refer to the pull-type technical manual.

**NOTE:**

For clarity, illustration shows cutaway view of drum and tube shield.

- Insert driveline (B) (MD #259139) at an angle and guide it past hub drive (C) and drum (D).

**NOTE:**

Driveline (B) is considered maintenance-free (lubed for life), but if desired, you can grease the driveline U-joints before installing.

- Insert splined spindle end (A) into splined bore of driveline (B).
- Place a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and install four M12 hex flange head bolts (A) and spacers to secure driveline assembly (B) to hub drive (C). The bolts and spacers were retained from the removal procedure.
- Torque bolts to 102 Nm (75 lbf-ft).

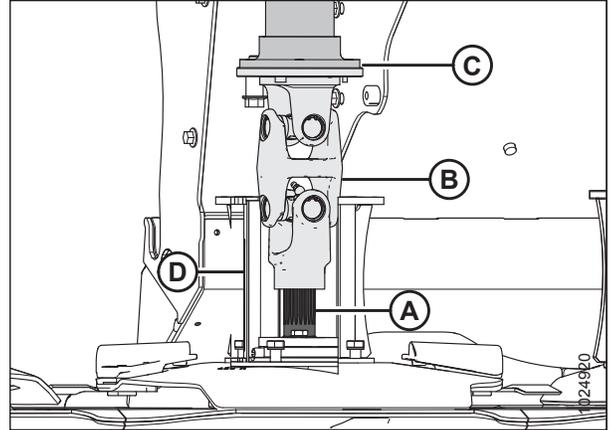


Figure 3.21: Driveline

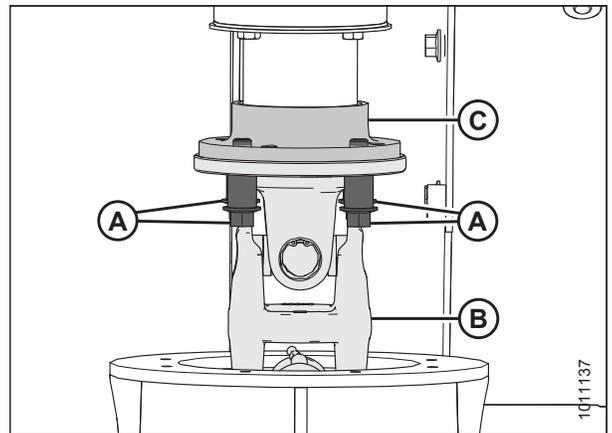


Figure 3.22: Driveline Installed

- Position two drum shields (B) (MD #281497) on top of the clockwise drum assembly as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and use eight M8 hex flange head bolts (A) (MD #136485) to secure the drum shields in place.
- Torque to 27 Nm (20 lbf-ft).

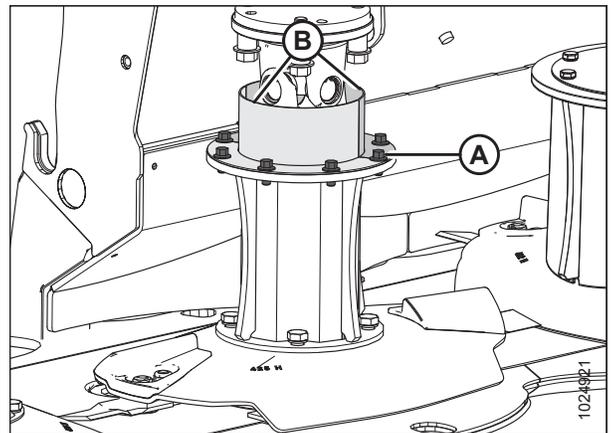


Figure 3.23: Drum Shields Installed

## INSTALLATION INSTRUCTIONS

13. Position vertical shield (A) (MD #281981) on top of the drum shields, covering the driveline, as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and then use three 20 mm M10 hex flange head bolts (B) and (C) (MD #152655) and to secure the vertical shield in place.
14. Torque to 61 Nm (45 lbf-ft).

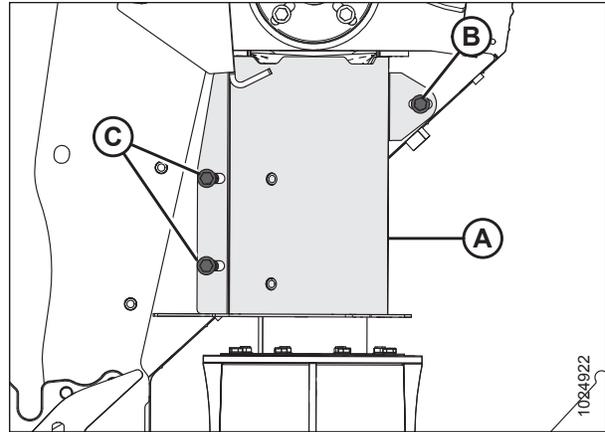


Figure 3.24: Vertical Shield Installed

15. Position drum top (B) (MD #281489) and back plate (C) (MD #281493) onto the drum as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and then use four M10 hex flange head bolts (A) (MD #152655) to secure the drum top and back plate in place.
16. Torque to 61 Nm (45 lbf-ft).

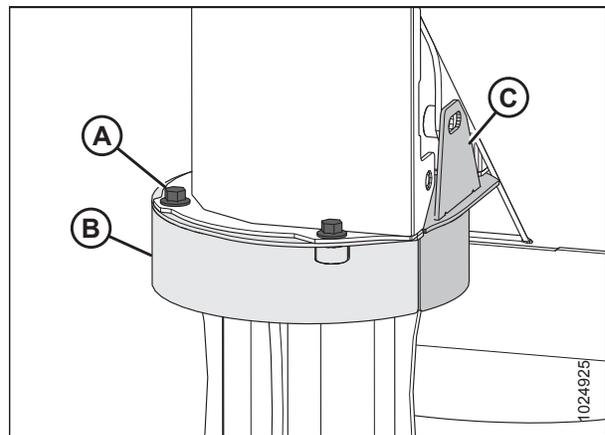


Figure 3.25: Drum Top and Back Plate Installed

## INSTALLATION INSTRUCTIONS

17. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and then install top M10 hex flange head bolt (B) (MD #152655) through cover plate (A) (MD #281500) and back plate (C).
18. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and then install lower M10 hex flange head bolt (D) (MD #152655) through cover plate (A) and vertical shield (E).
19. Torque bolts (B) and (D) to 61 Nm (45 lbf-ft).

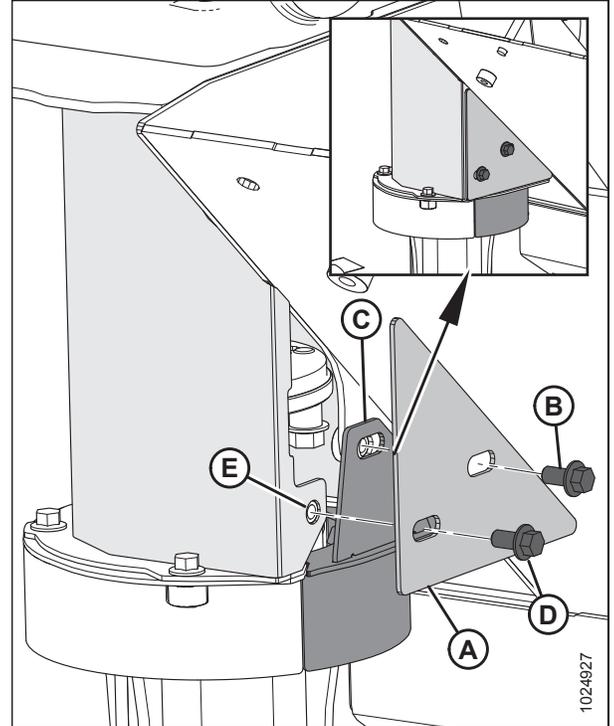


Figure 3.26: Installing Cover Plate

20. Position plate shield (B) (MD #281501) as shown at right. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around threads, and then use four M10 hex flange head bolts (A) (MD #152655) to secure the plate shield in place.
21. Torque to 61 Nm (45 lbf-ft).

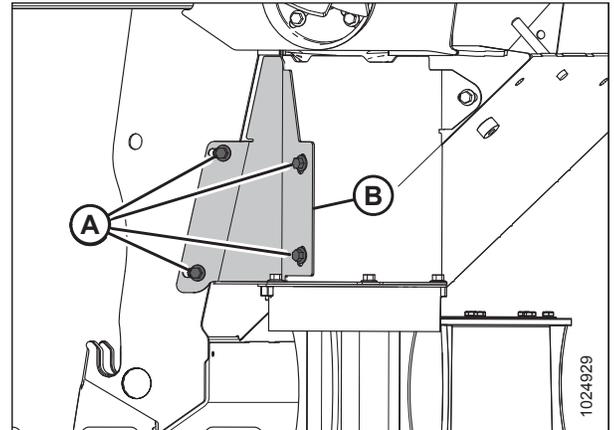


Figure 3.27: Plate Shield Installed

### 3.8 Installing Discblades on New Discs

Install the discblades retained from *3.3 Removing Discblades and Attachment Hardware, page 12* on the new discs. Follow these steps:

**! WARNING**

**Wear heavy gloves when working around or handling knives. Blades are sharp and can cause serious injury.**

1. Place a pin (or equivalent) in the front hole of the rock guard to prevent disc rotation while tightening blade bolts.
2. Install blade (A) with shoulder bolt (B) onto disc (C). Blade and bolt are retained from *3.3 Removing Discblades and Attachment Hardware, page 12*.
3. Install nut (D) and torque to 125 Nm (92 lbf-ft).

**IMPORTANT:**

Nuts are one-time use only. When flipping or changing a blade, replace using a **NEW** nut only.

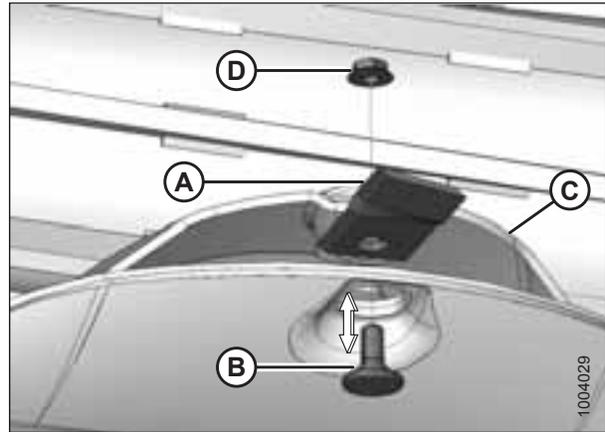


Figure 3.28: Discblade

**! WARNING**

**Ensure 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.**

### 3.9 Closing Cutterbar Doors

**⚠ CAUTION**

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

1. Pull down on door (A) from the top to close.
2. Ensure that curtains hang properly and completely enclose the cutterbar area.

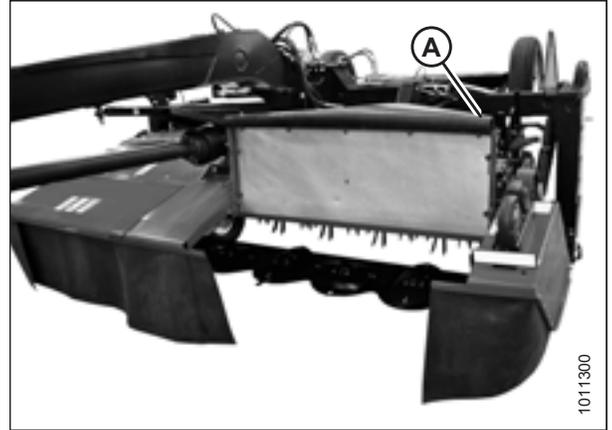


Figure 3.29: Cutterbar Doors and Curtains – Pull-Type



## Chapter 4: After Installation

After installing the new drums and discs, follow these steps:



### **WARNING**

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



### **CAUTION**

**Check to be sure all bystanders have cleared the area.**

1. With the shields closed and the curtains buckled, run the pull-type at idle. From the cab, listen for any signs of contact.
2. Shut down the engine, and remove the key from the ignition.
3. Inspect the new drums for any wear that would indicate contact.





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