

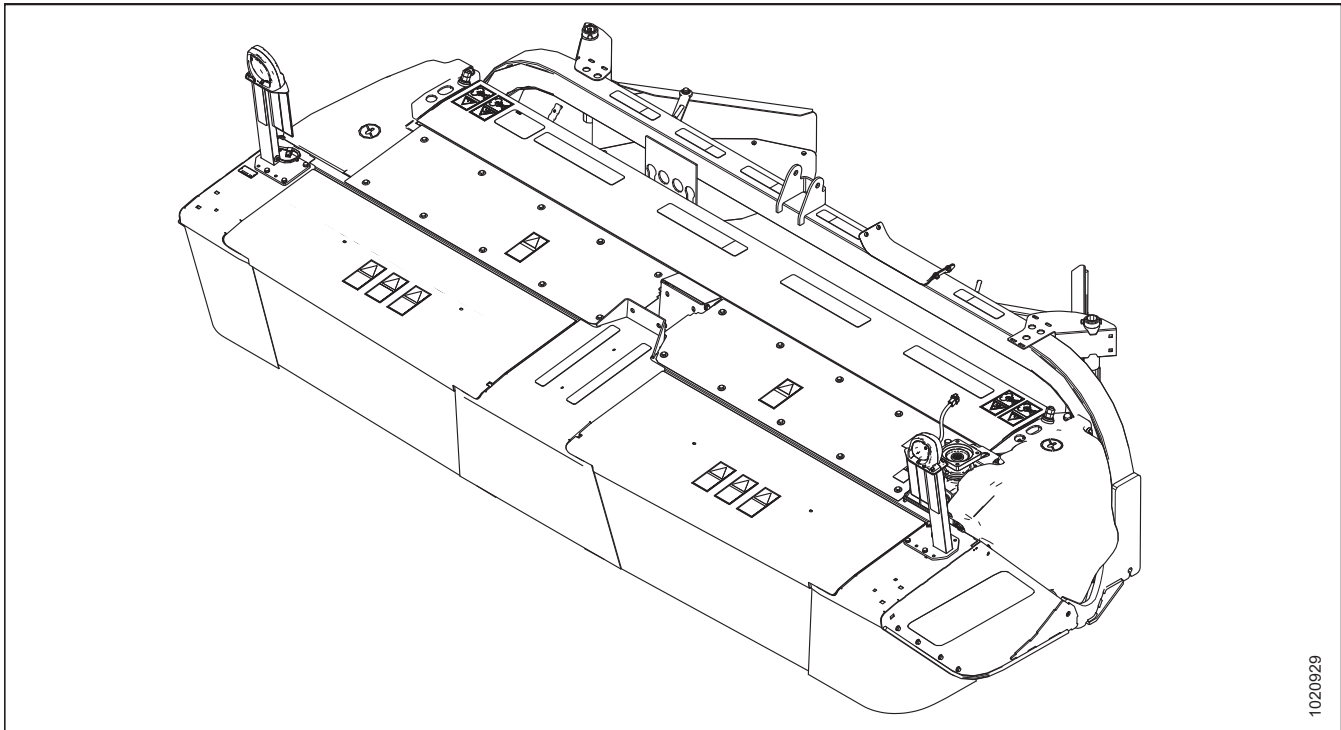
R1 Series Rotary Disc Header

Gearbox Kit (MD #257187) Installation Instructions

214494 Revision C

Original Instruction

R113 Rotary Disc Header



1020929

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Introduction

The Gearbox kit (MD #257187) is used to replace a damaged or faulty header drive gearbox (90-degree gearbox) on a MacDon R1 Series Rotary Disc Header. The kit includes the gearbox and a drive alignment tool.

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 4 hours.

Conventions

The following conventions are used in this document:

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

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.

Section	Summary of Change	Internal Use Only
<ul style="list-style-type: none"> • Front Cover • <i>Introduction, page i</i> • <i>3 Installation Instructions, page 7</i> 	Kit number MD #257173 replaced with MD #257187.	ECN 58773
<i>2 Parts List, page 5</i>	Updated parts illustration. Drive alignment tool MD #307769 replaced with MD #325683.	ECN 58773
<ul style="list-style-type: none"> • <i>3.6 Installing Header Drive Gearbox – R113 SP and Pre-2018 R116 SP, page 22</i> • <i>3.7 Installing Header Drive Gearbox – R116 SP, 2018 and Later, page 30</i> 	Updated drive alignment tool image.	ECN 58773

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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 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
- 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.

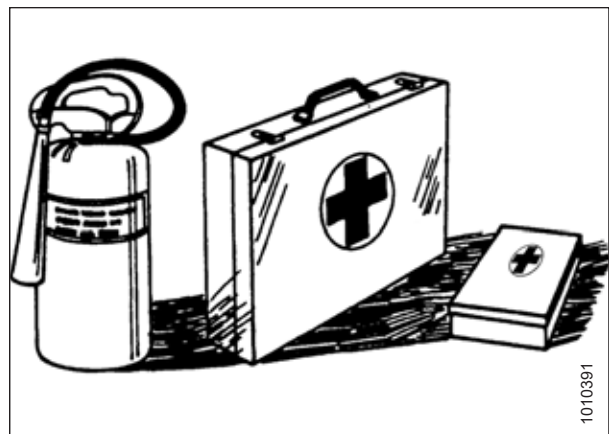


Figure 1.3: Safety Equipment

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 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.

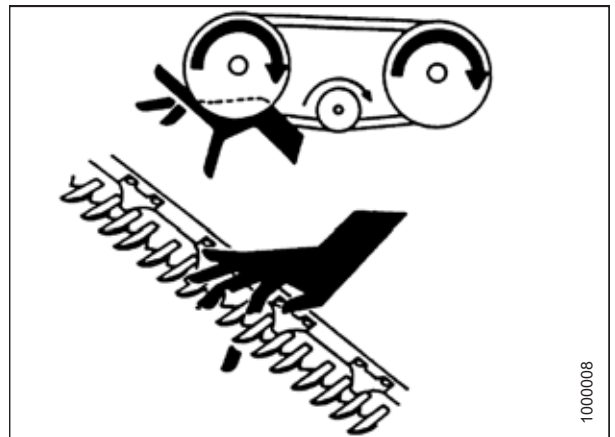


Figure 1.5: Safety around Equipment

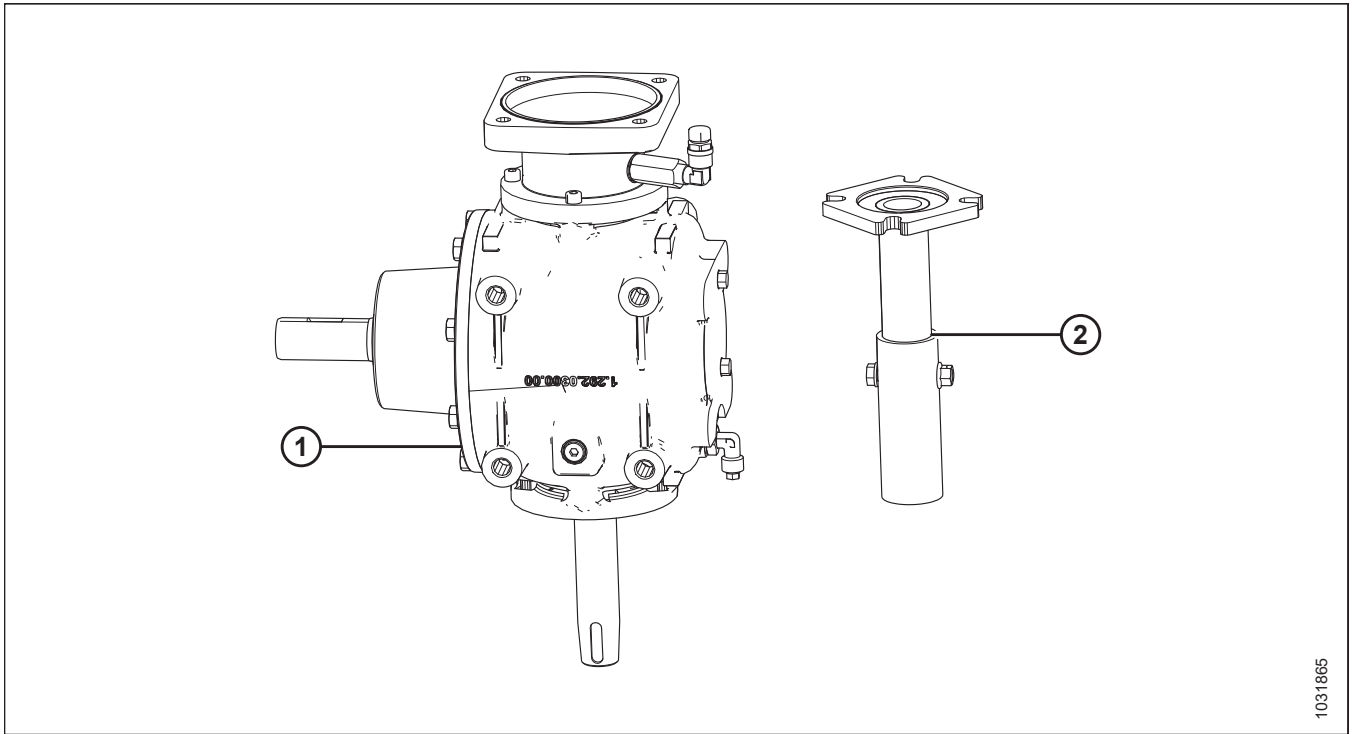
- Keep service area clean and dry. Wet and/or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Keep work area well lit.
- Keep machinery clean. Straw and chaff on a hot engine are fire hazards. 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:



1031865

Ref	Part Number	Description	Quantity
1	NSS ¹	GEARBOX – DRIVE, 90 DEGREE	1
2	325683	TOOL ASSEMBLY – DRIVE ALIGNMENT	1

1. Not sold separately.

Chapter 3: Installation Instructions

To install the Gearbox kit (MD #257187), follow these steps and procedures in order.

3.1 Removing Header Drive Motor

WARNING

To avoid bodily 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.

1. If the machine is connected to a windrower, lower the header to the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Disconnect case drain hose (A) from motor (B).
4. Disconnect the pressure and return hoses at fittings (C).

IMPORTANT:

To protect the motor from contamination and prevent spillage of excess fluid, install caps and plugs on open fittings and hoses.

5. Remove four bolts (D).
6. Use a sling and a lifting device to remove the motor.

NOTE:

The motor weighs approximately 20 kg (44 lb.).

7. Cover gearbox opening (A) with a rag or plastic.

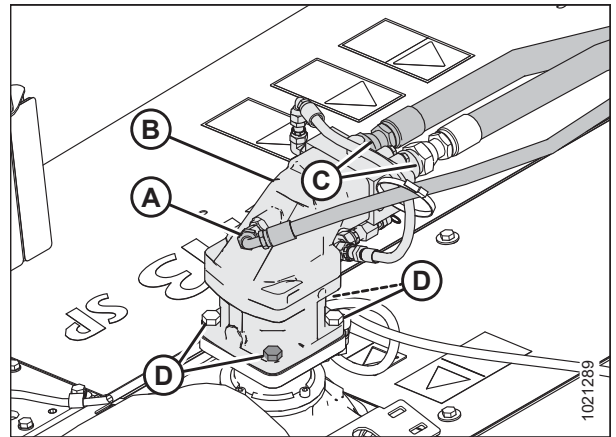


Figure 3.1: Hydraulic Motor

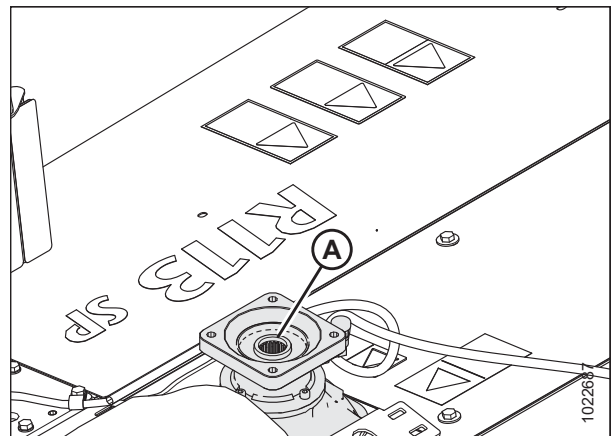


Figure 3.2: Hydraulic Motor Removed

3.2 Removing Left Driveshield

Remove left driveshield (A) as follows:

⚠ CAUTION

Do NOT operate the machine without the driveshields in place and secured.

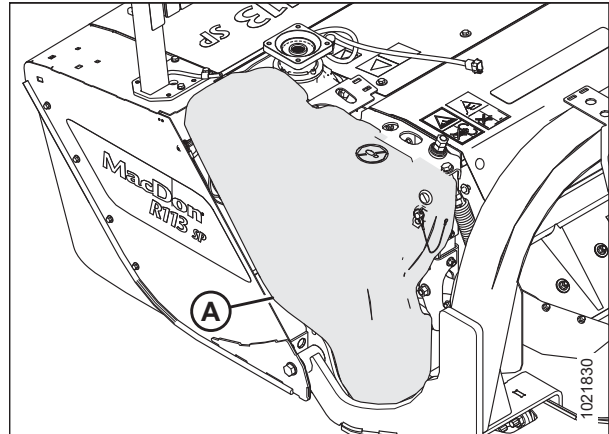


Figure 3.3: Left Driveshield

1. Lower the header, shut off the engine, and remove the key from the ignition.
2. Remove lynch pin (A) and tool (B) from pin (C).

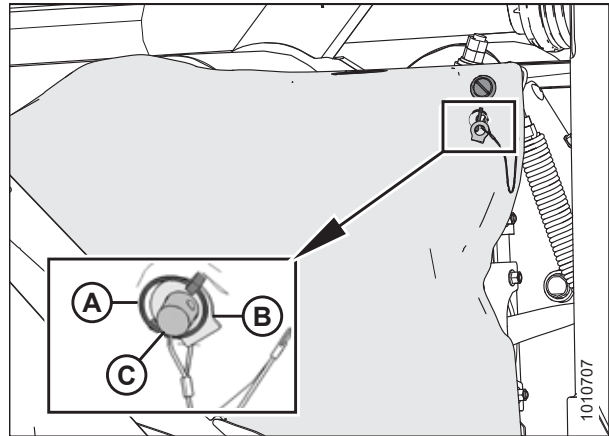


Figure 3.4: Tool to Unlock Driveshield

3. Insert the flat end of tool (A) into latch (B) and turn it counterclockwise to unlock.

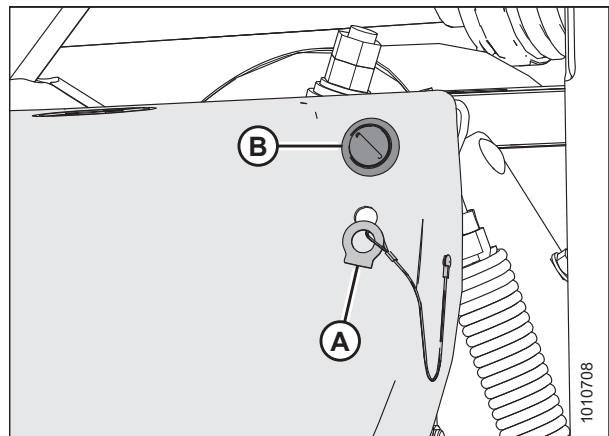


Figure 3.5: Tool to Unlock Driveshield and Latch

INSTALLATION INSTRUCTIONS

4. Pull the top of driveshield (A) away from the header and lift off the pins at the base of the shield to remove.

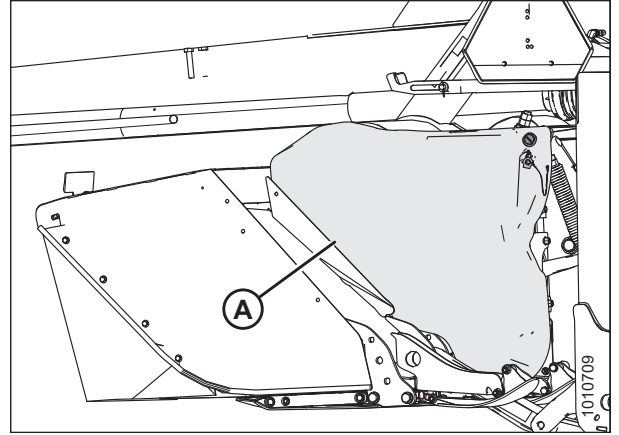


Figure 3.6: Driveshield

3.3 Removing Conditioner Drive Belt

On the left side of the header, remove the conditioner drive belt as follows:

1. Disconnect wire harness (A) from speed sensor (B).

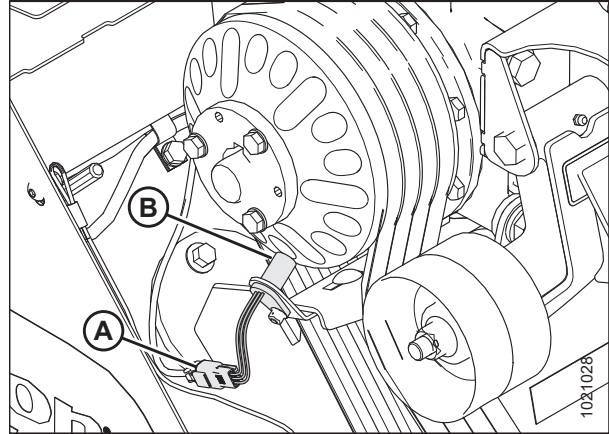


Figure 3.7: Speed Sensor Assembly – Model Year 2017

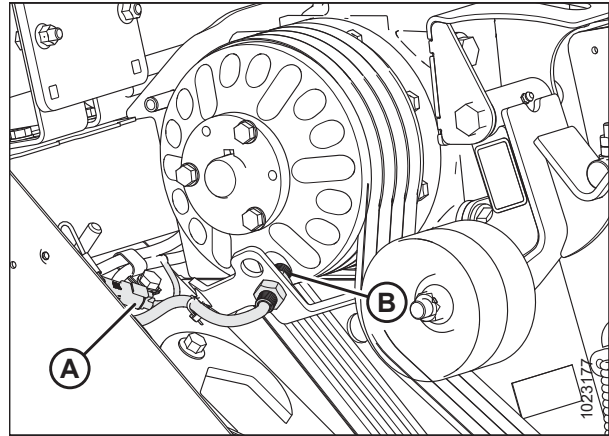


Figure 3.8: Speed Sensor Assembly – Model Year 2018 and Later

2. Turn jam nut (A) counterclockwise to unlock the tension adjustment.
3. Turn jam nut (A) and adjuster nut (B) counterclockwise to fully collapse tensioner spring (C), and release the tension from conditioner drive belt (D).
4. Remove drive belt (D).

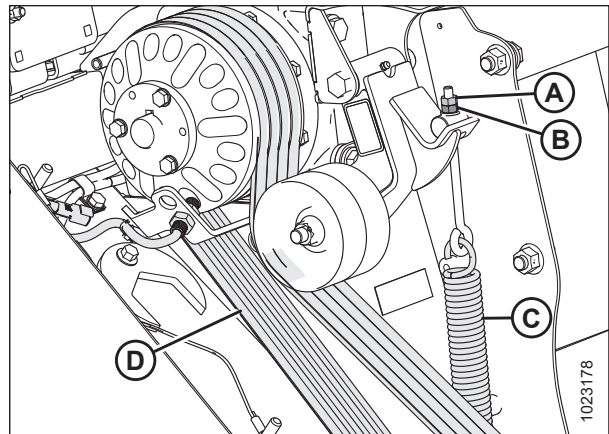


Figure 3.9: Conditioner Drive

3.4 Removing Header Drive Gearbox – R113 SP and Pre-2018 R116 SP

NOTE:

This procedure applies to headers with a large driven drum. If the factory-installed large driven drum (A) has been replaced with a small drum (B) (R116 SP), refer to [3.5 Removing Header Drive Gearbox – R116 SP, 2018 and Later, page 17](#).

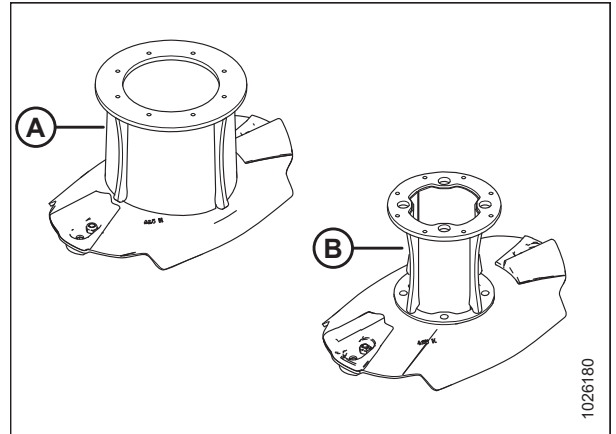


Figure 3.10: Large and Small Drums

1. Lift cutterbar doors (A) at front of the header to open.

NOTE:

If the header was sold outside of North America, you will need to locate the latch access hole for each door, insert a screwdriver, and press down on the latch to release the doors. For more information, refer to the header operator's manual or technical manual.

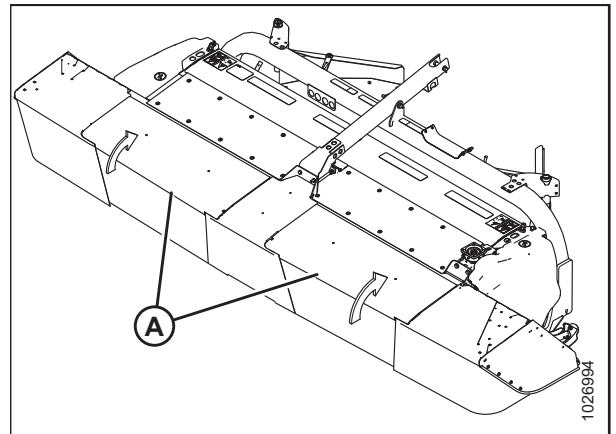


Figure 3.11: Cutterbar Doors – Header

INSTALLATION INSTRUCTIONS

2. Remove bolt and nut (A) that secure the speed sensor and bracket (D) to the header.

NOTE:

The speed sensor's electrical connector was disconnected from header harness while removing the conditioner drive belt.

3. Remove three bolts (B) and washers from the conditioner drive belt pulley.
4. Remove tapered lock hub (C).

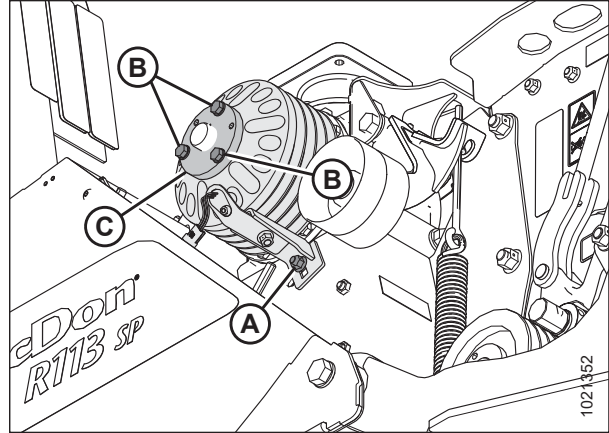


Figure 3.12: Conditioner Belt Pulley – Model Year 2017 and Prior

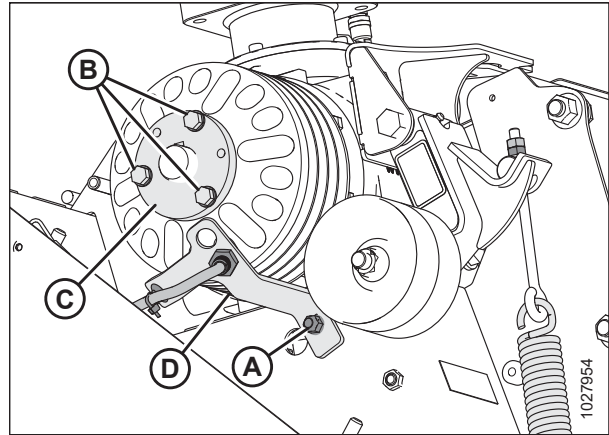


Figure 3.13: Conditioner Belt Pulley – Model Year 2018 and Later

5. Remove and retain shaft key (B) then remove pulley (A).

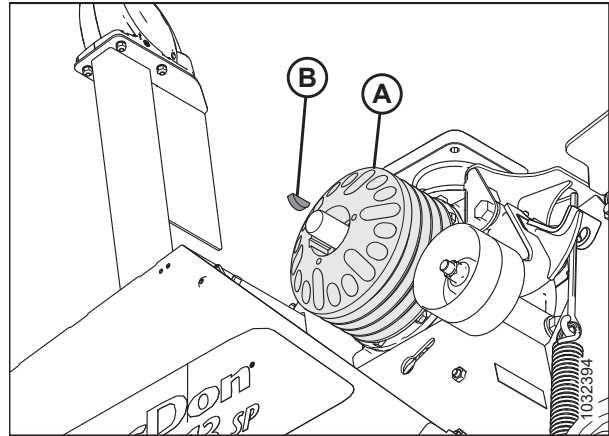


Figure 3.14: Conditioner Belt Pulley

INSTALLATION INSTRUCTIONS

6. Below the gearbox, remove four M10 hex flange head bolts (A) and remove vertical drive shield (B).

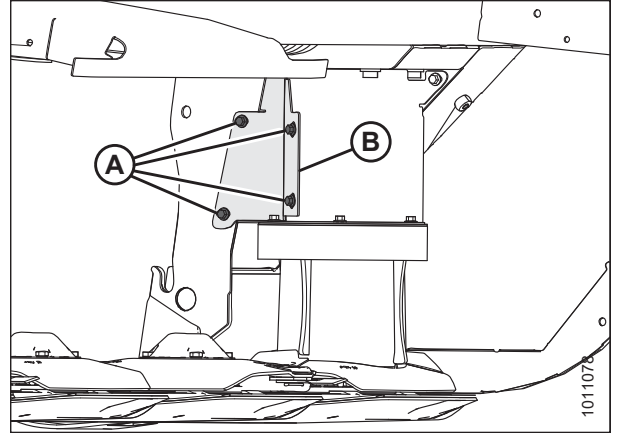


Figure 3.15: Driven Drum

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

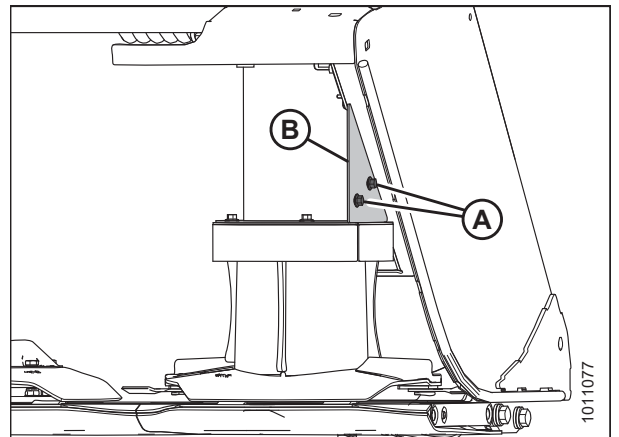


Figure 3.16: Cover Plate

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

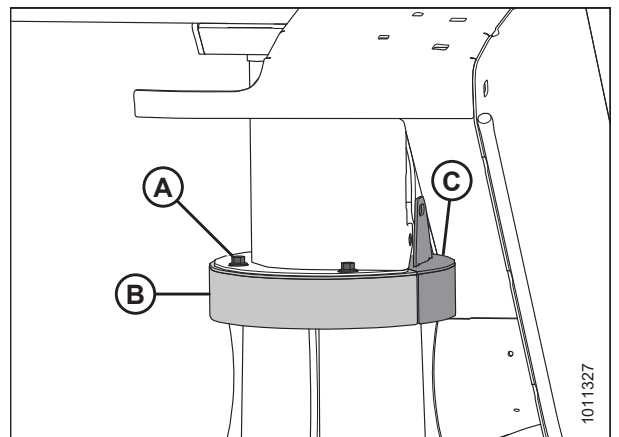


Figure 3.17: Top Plate and Drum Top

INSTALLATION INSTRUCTIONS

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

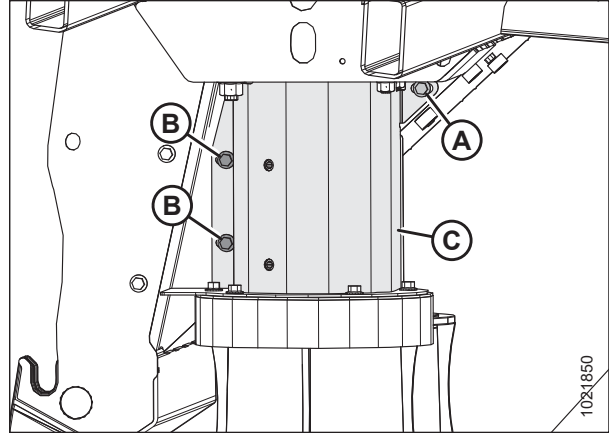


Figure 3.18: Vertical Shield

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

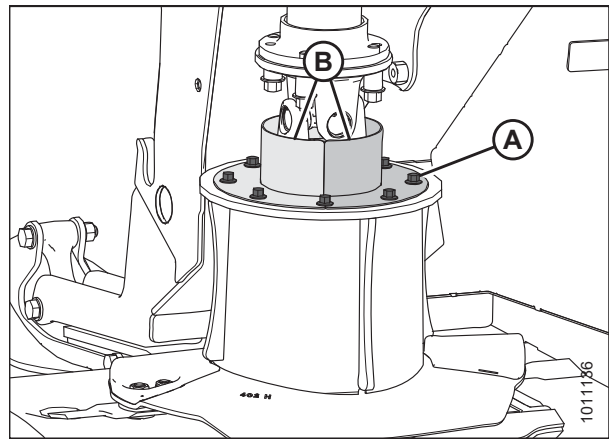


Figure 3.19: Drum Shields

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

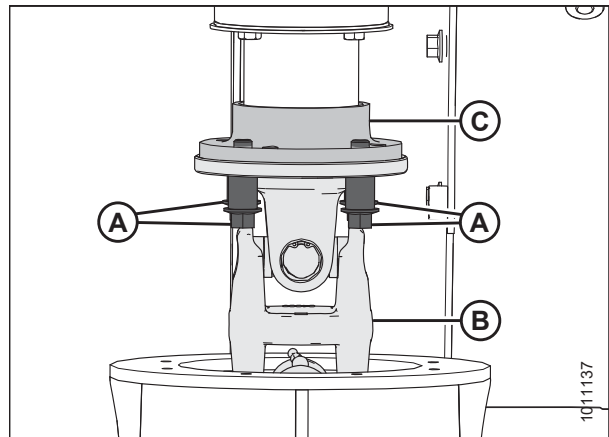


Figure 3.20: Hub Drive and Driveline Assembly

INSTALLATION INSTRUCTIONS

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

NOTE:

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

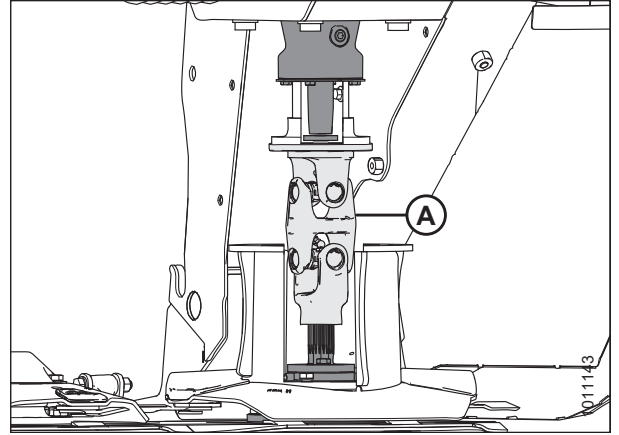


Figure 3.21: Driveline

- Remove M14 hex head bolt (A) with washer (B), and then partially reinstall bolt (A) (do not make contact with pulley).

NOTE:

Replacing the bolt will prevent thread damage in the bolt hole while using a gear puller in the next step.

- Using a gear puller, remove hub (C) from the gearbox vertical shaft. Retain shaft key (D) for reassembly.
- Remove four bolts (F) and shield (E).

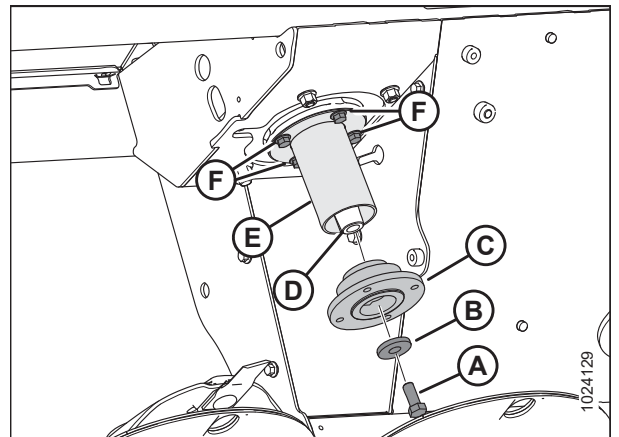


Figure 3.22: Gearbox Vertical Shaft

- Remove the adjustment nut and lock nut (A) to detach the tensioner spring from belt tension pulley assembly (B).

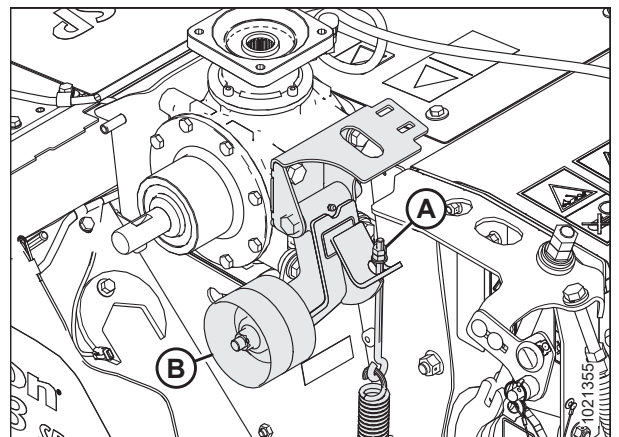


Figure 3.23: Tension Pulley Assembly

INSTALLATION INSTRUCTIONS

17. Remove four M16 hex head bolts and washers (A) from the front of the gearbox mount.

IMPORTANT:

The gearbox weighs approximately 40 kg (88 lb.). Use a sling and a lifting device to support the gearbox before loosening bolts and lifting the gearbox away from the header.

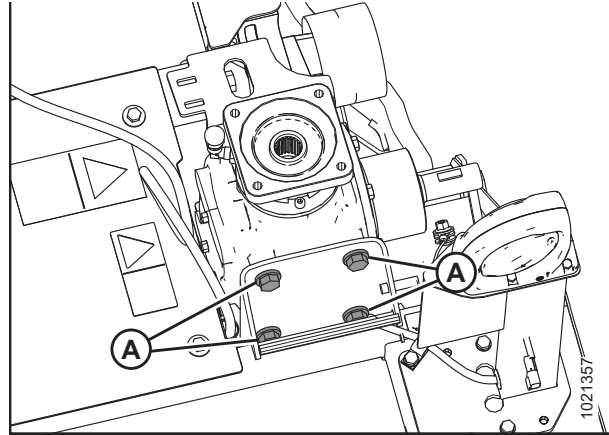


Figure 3.24: Header Drive Gearbox

18. From below the gearbox, remove nuts and washers (A). The gearbox can now be lifted out of the header.

NOTE:

Some parts have been removed from the illustration for clarity.

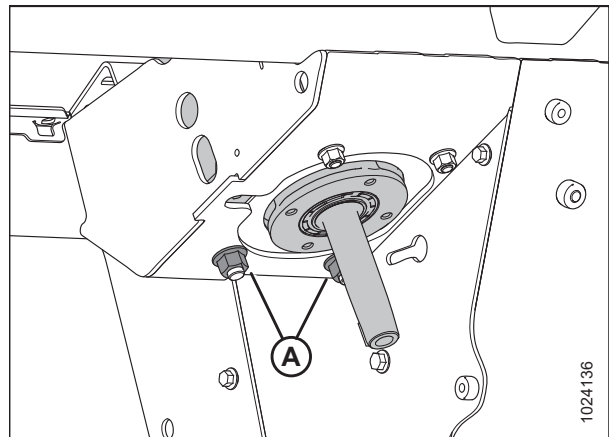


Figure 3.25: Gearbox Hardware

19. Remove bolts and washers (A) from the top mounting holes of gearbox (B), and remove conditioner belt tensioner assembly (C).
20. Remove bolts and washers (D) from the lower mounting holes to remove bracket (E) and shim (F). Retain parts for reassembly.

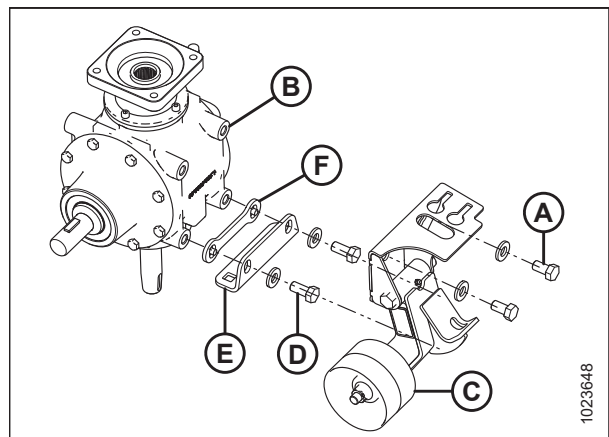


Figure 3.26: Gearbox Mounting Bolts

3.5 Removing Header Drive Gearbox – R116 SP, 2018 and Later

⚠ 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. Lift cutterbar doors (A) at front of the header to open. For instructions, refer to the header operator's manual.

NOTE:

If the header was sold outside of North America, you will need to locate the latch access hole for each door, insert a screwdriver, and press down on the latch to release the doors. For more information, refer to the header operator's manual.

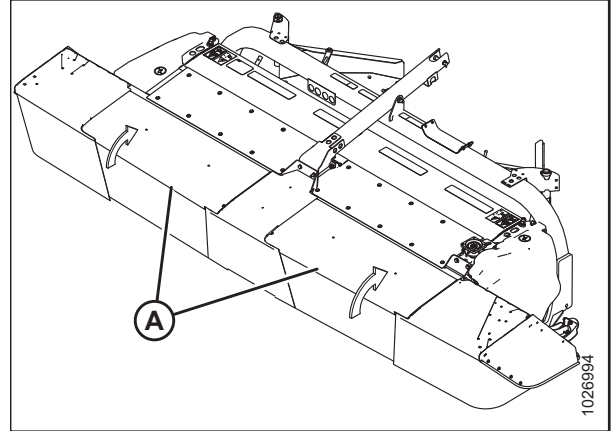


Figure 3.27: Cutterbar Doors – Header

2. Remove bolt and nut (A) that secure the speed sensor and bracket (D) to the header.

NOTE:

The speed sensor's electrical connector was disconnected from the header harness while removing the conditioner drive belt.

3. Remove three bolts (B) and washers from the conditioner drive belt pulley.
4. Remove tapered lock hub (C).

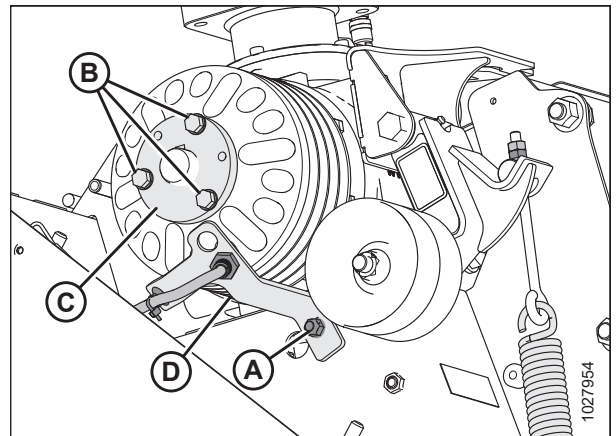


Figure 3.28: Conditioner Belt Pulley

5. Remove and retain shaft key (B) then remove pulley (A).

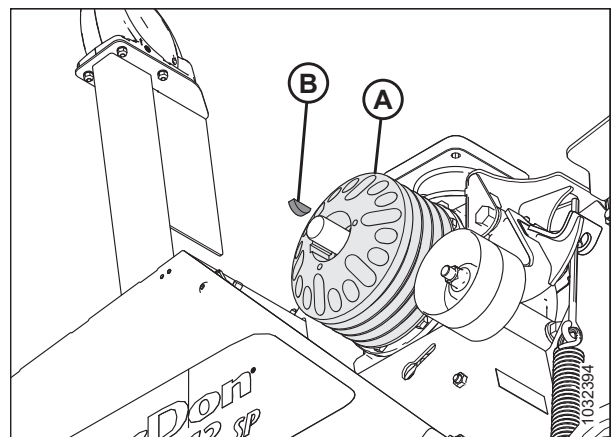


Figure 3.29: Conditioner Belt Pulley

INSTALLATION INSTRUCTIONS

6. Below the gearbox, remove four M10 hex flange head bolts (A) and vertical drive shield (B).

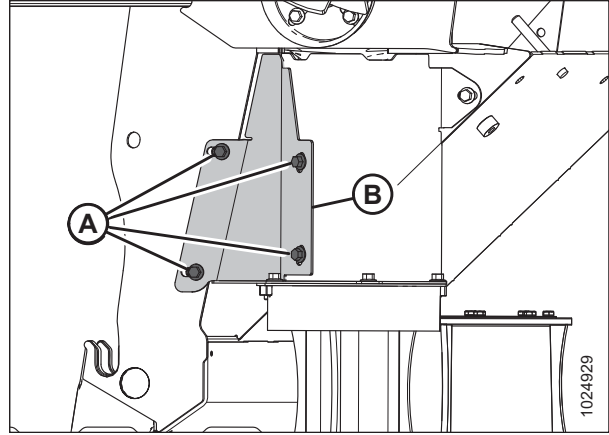


Figure 3.30: Vertical Drive Shield

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

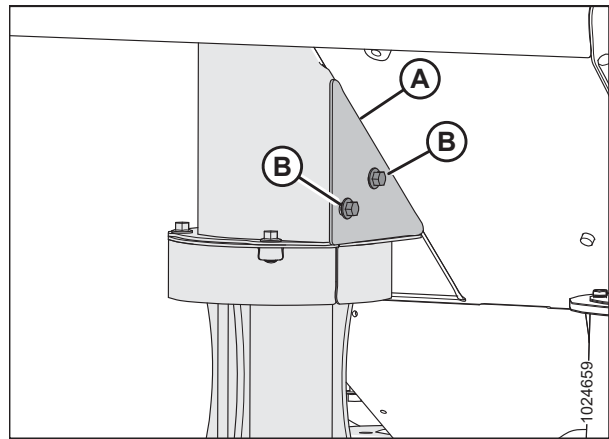


Figure 3.31: Driveline Shield

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

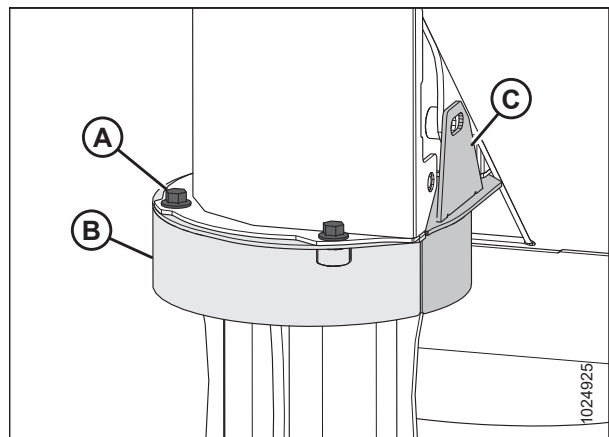


Figure 3.32: Driveline Shield

INSTALLATION INSTRUCTIONS

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

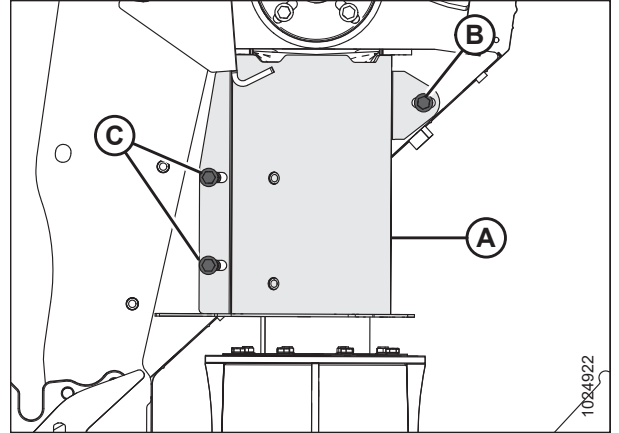


Figure 3.33: Driveline Shield

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

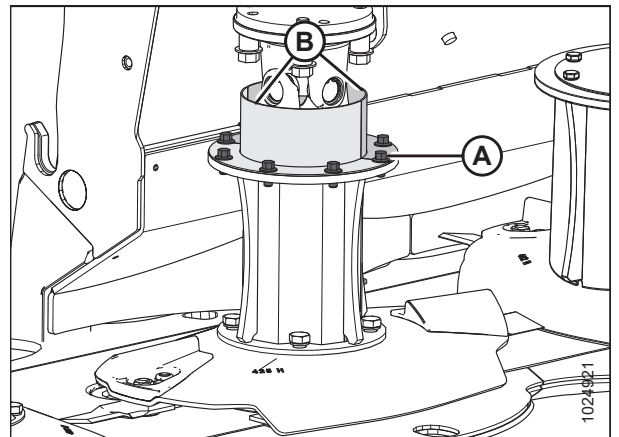


Figure 3.34: Driveline Shield

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

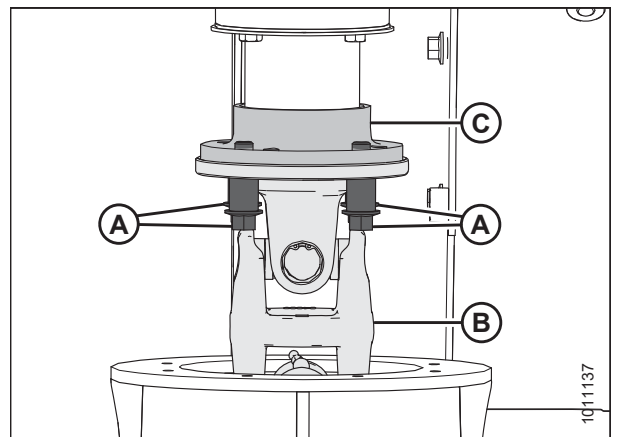


Figure 3.35: Driveline

INSTALLATION INSTRUCTIONS

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

NOTE:

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

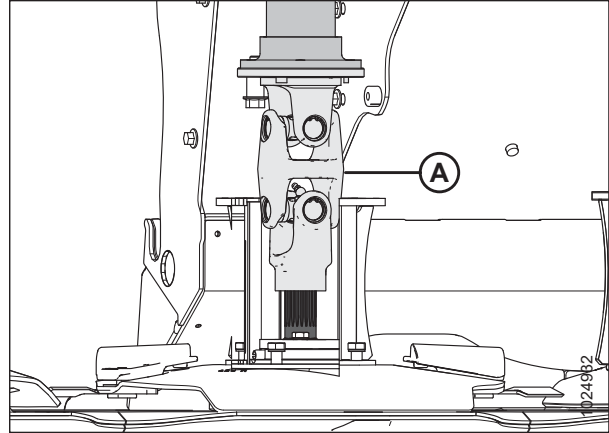


Figure 3.36: Driveline

- Remove M14 hex head bolt (A) with washer (B), and then partially reinstall bolt (A) (do not make contact with pulley).

NOTE:

Replacing the bolt will prevent thread damage in the bolt hole while using a gear puller in the next step.

- Using a gear puller, remove hub (C) from the gearbox vertical shaft. Retain shaft key (D) for reassembly.
- Remove four bolts (F) and shield (E).

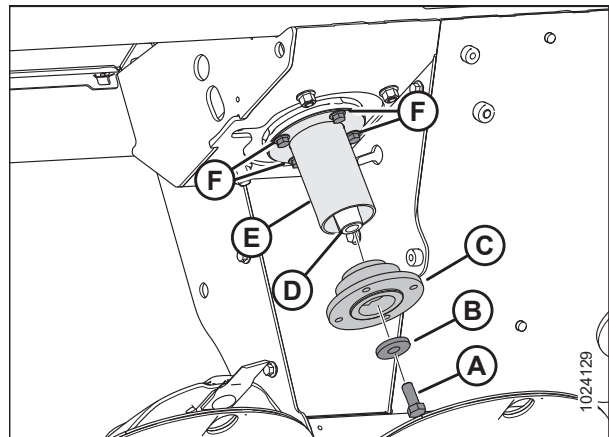


Figure 3.37: Gearbox Vertical Shaft

- Remove the adjustment nut and lock nut (A) to detach the tensioner spring from belt tension pulley assembly (B).

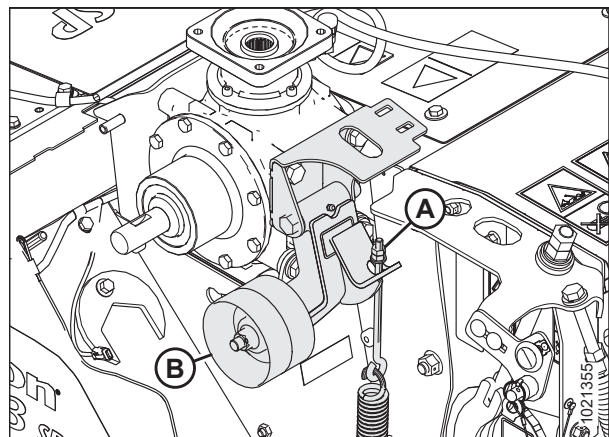


Figure 3.38: Tension Pulley Assembly

INSTALLATION INSTRUCTIONS

17. Remove four M16 hex head bolts and washers (A) from the front of the gearbox mount.

IMPORTANT:

The gearbox weighs approximately 40 kg (88 lb.). Use a sling and a lifting device to support the gearbox before loosening bolts and lifting the gearbox away from the header.

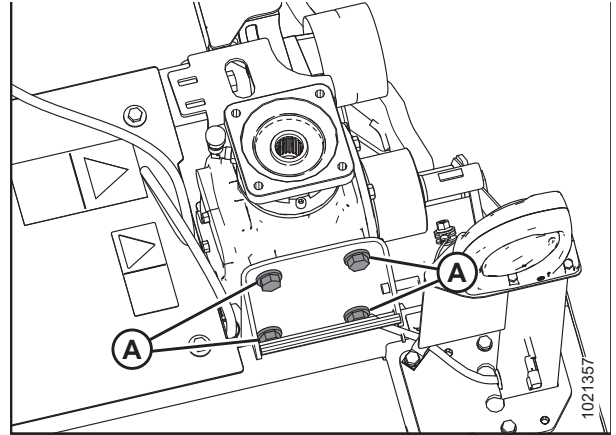


Figure 3.39: Header Drive Gearbox

18. From below the gearbox, remove nuts and washers (A). The gearbox can now be lifted out of the header.

NOTE:

Some parts have been removed from the illustration for clarity.

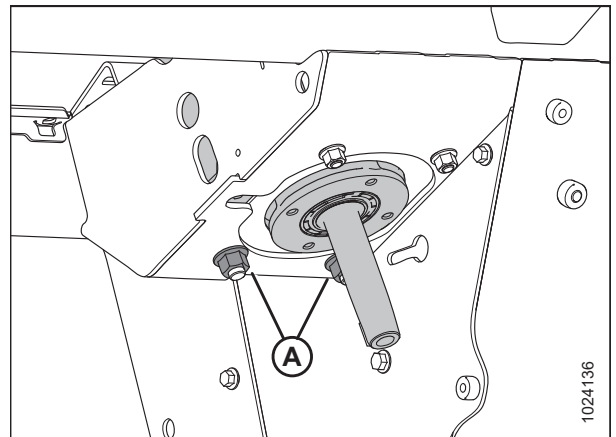


Figure 3.40: Gearbox Hardware

19. Remove bolts and washers (A) from the top mounting holes of gearbox (B), and remove conditioner belt tensioner assembly (C).
20. Remove bolts and washers (D) from the lower mounting holes to remove bracket (E) and shim (F). Retain parts for reassembly.

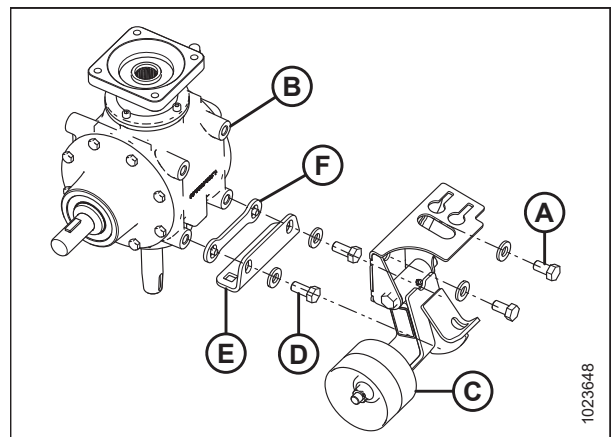


Figure 3.41: Gearbox Mounting Bolts

3.6 Installing Header Drive Gearbox – R113 SP and Pre-2018 R116 SP

NOTE:

If the R116 SP factory-installed large driven drums have been replaced with small drums, refer to [3.7 Installing Header Drive Gearbox – R116 SP, 2018 and Later, page 30](#).

IMPORTANT:

The Gearbox weighs approximately 40 kg (88 lb.). Use a sling and a lifting device to lift gearbox onto the header.

1. Install shim (F) and bracket (E) onto gearbox (B), and secure with bolts (D) and washers. Apply high-strength threadlocker (Loctite® 262 or equivalent) to the bolts and torque to 271 Nm (200 lbf-ft).
2. Install conditioner belt tensioner assembly (C) onto the gearbox with bolts (A) and washers. Apply high-strength threadlocker (Loctite® 262 or equivalent) to the bolts and torque to 271 Nm (200 lbf-ft).

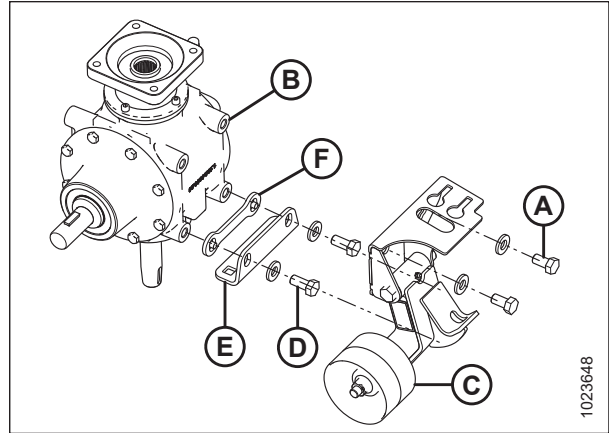


Figure 3.42: Header Drive Gearbox

3. Using a sling and a lifting device, lower the gearbox onto the header.
4. Install four M16 hex head bolts and washers (A). Bolts should be snug but still allow for positioning of the gearbox.

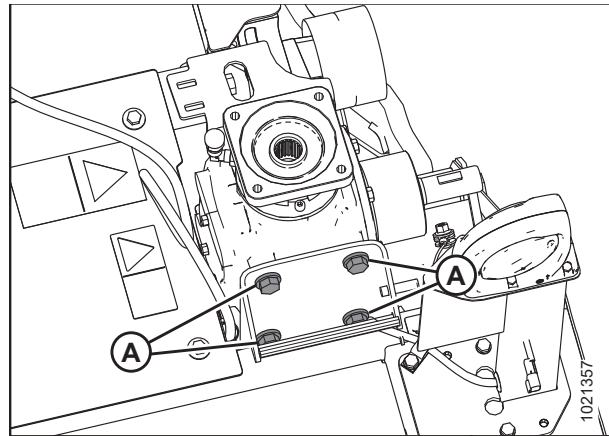


Figure 3.43: Header Drive Gearbox

5. Install two M16 hex head bolts with nuts and washers (A). Bolts should be snug but still allow for positioning of the gearbox.

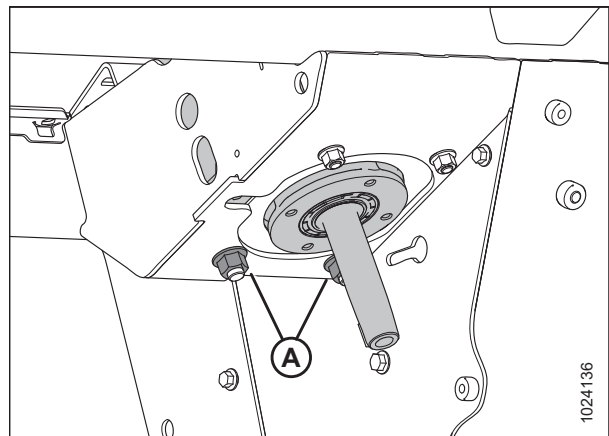


Figure 3.44: Header Drive Gearbox

INSTALLATION INSTRUCTIONS

6. Install shield (E) with four bolts (F). Apply medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 52 Nm (38 lbf-ft).
7. Insert shaft key (D) and install hub (C) on the tapered shaft. Tap with a dead-blow hammer or mallet. Ensure the key remains in the keyway.
8. Secure hub (C) in place with M14 hex head bolt (A) and washer (B). Apply medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 122 Nm (90 lbf-ft).

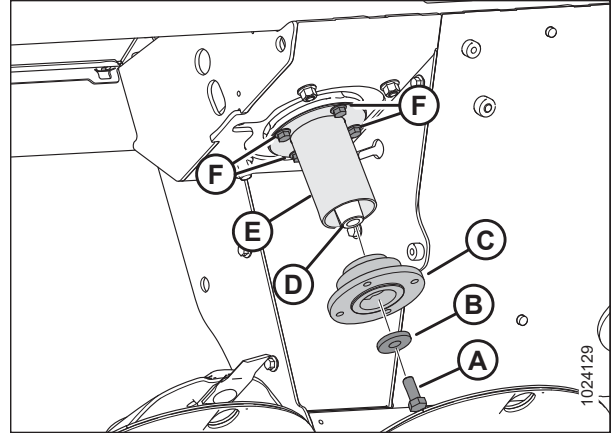


Figure 3.45: Gearbox Vertical Shaft

9. 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.

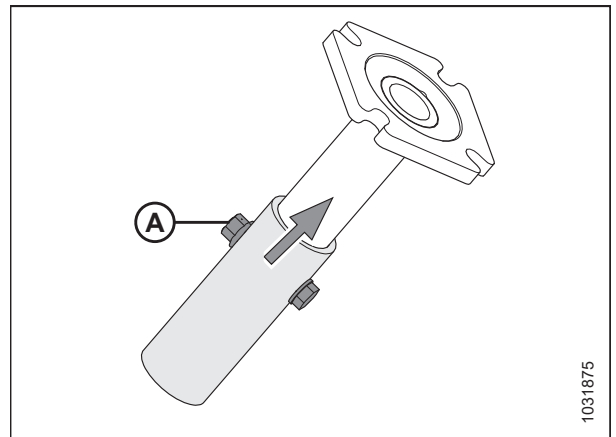


Figure 3.46: Drive Alignment Tool (MD #325683)

10. Attach drive alignment tool (A) to the gearbox drive hub (B), and tighten. Slide the bottom tube down over the cutterbar driveshaft.

IMPORTANT:

Vertical drive alignment is crucial for proper cutterbar operation. Always use the drive alignment tool (MD #307769) when installing the header drive gearbox.

IMPORTANT:

Tighten all four alignment tool bolts with a wrench (hand tight is **NOT** sufficient). If the alignment tool is not secured to the gearbox using all four bolts, the drive hub will be misaligned.

11. Adjust the position of the gearbox so that the bottom tube of the alignment tool slides freely over the cutterbar driveshaft.
12. Tighten all gearbox mounting bolts and recheck shaft alignment. For instructions, refer to Steps 4, page 22 and 5, page 22.

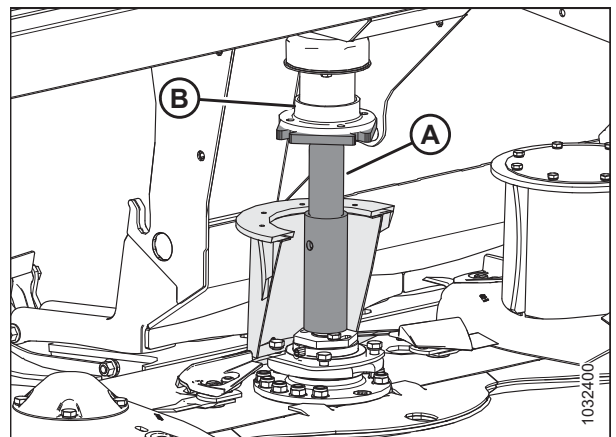


Figure 3.47: Alignment Tool on Gearbox

INSTALLATION INSTRUCTIONS

- When shaft alignment is complete, apply high-strength threadlocker (Loctite® 262 or equivalent) to bolts (A) one-by-one, and torque to 271 Nm (200 lbf-ft).

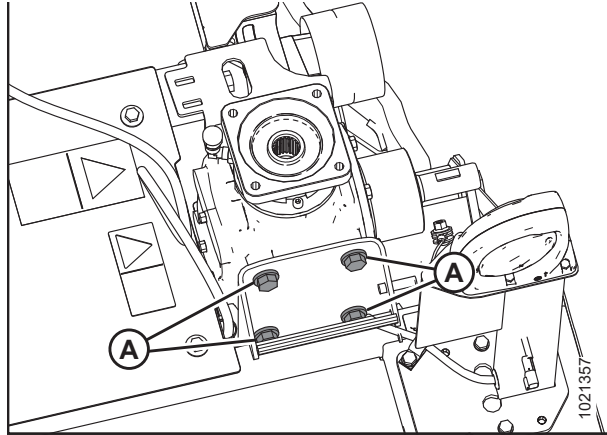


Figure 3.48: Header Drive Gearbox

- Torque nuts (A) to 234 Nm (173 lbf-ft).

NOTE:

Some parts have been removed from the illustration for clarity.

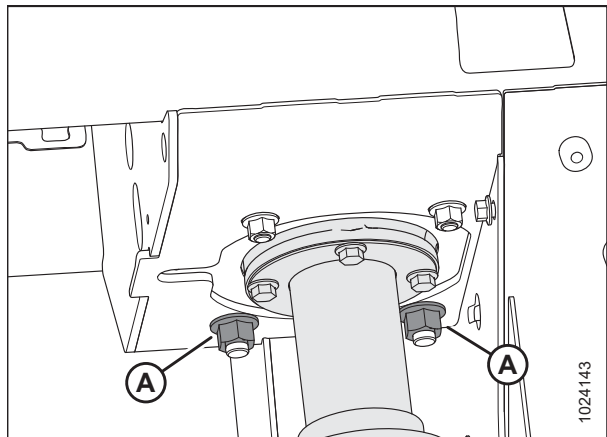


Figure 3.49: Gearbox Install

- Remove the bolts securing alignment tool (A) to drive hub (B). Lift the lower tube and remove the tool.

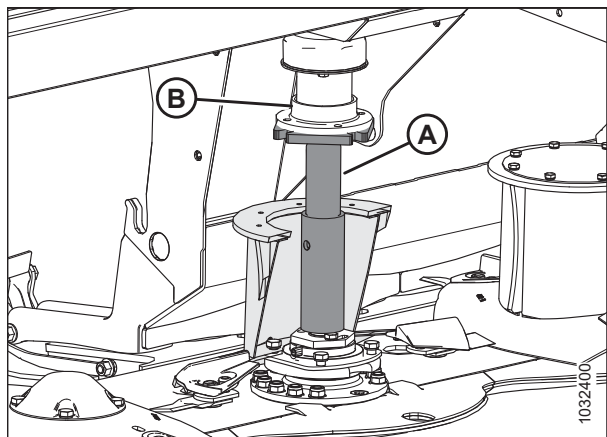


Figure 3.50: Alignment Tool on Gearbox

INSTALLATION INSTRUCTIONS

16. Lubricate spindle splines (A). For lubricant specifications, refer to the header technical manual.

NOTE:

The driveline U-joints were greased at the factory and are considered to be lubricated for life. No further lubrication is required.

NOTE:

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

17. Insert driveline (B) at an angle and guide it past hub drive (C) and drum (D).
18. Insert splined spindle end (A) into the splined bore on driveline (B).
19. Place a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M12 hex flange head bolts (A). Use the bolts and spacers to secure driveline assembly (B) to hub drive (C). Torque bolts to 102 Nm (75 lbf-ft).

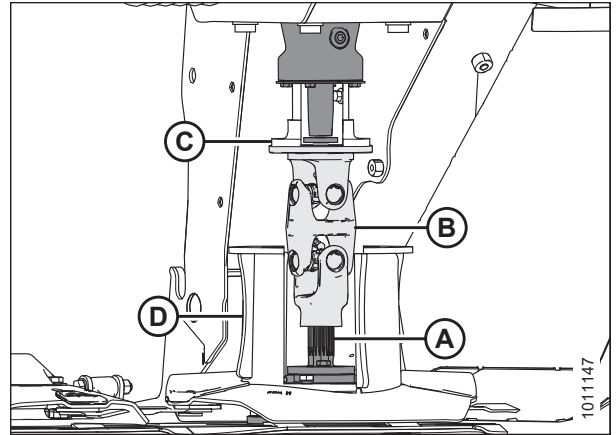


Figure 3.51: Driveline

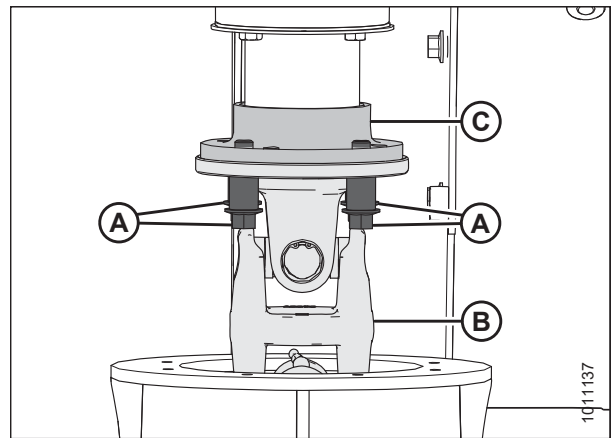


Figure 3.52: Driveline

20. 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 to 27 Nm (20 lbf-ft).

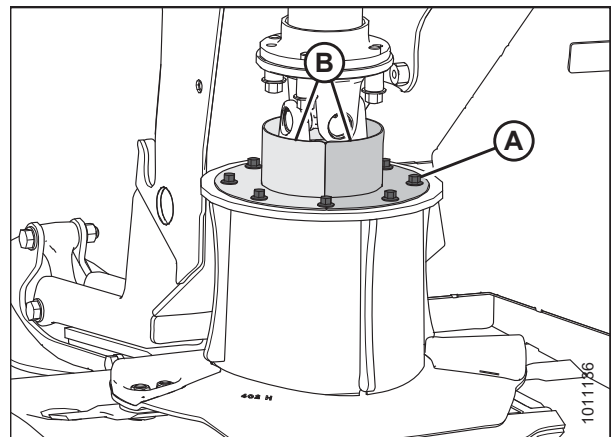


Figure 3.53: Driveline Shield

INSTALLATION INSTRUCTIONS

21. Position vertical shield (A) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of one M10 x 20 mm hex flange head bolt (B) and two M10 x 16 mm hex flange head bolts (C). Use bolts (B) and (C) to secure the vertical shield in place. Torque to 61 Nm (45 lbf·ft).

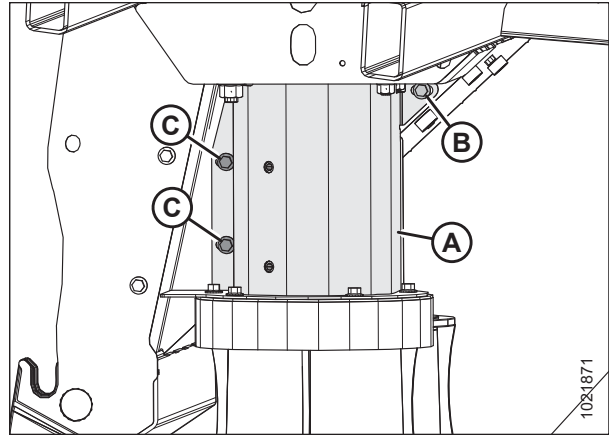


Figure 3.54: Driveline Shield

22. Position top plate (B) and drum top (C) onto the drum as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A). Use the bolts to secure the top plate and drum top in place. Torque hardware to 61 Nm (45 lbf·ft).

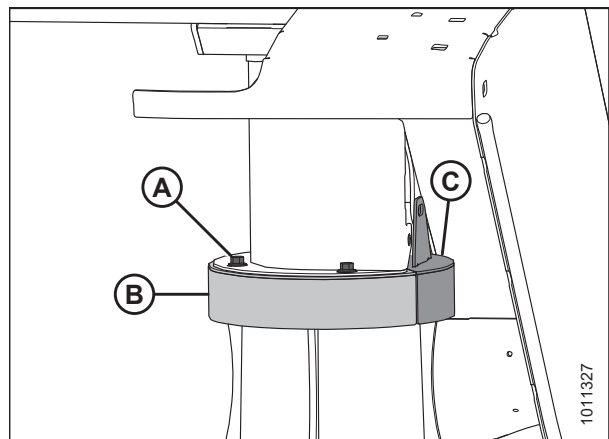


Figure 3.55: Driveline Shield

INSTALLATION INSTRUCTIONS

23. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of M10 hex flange head bolt (B). Install bolt (B) through cover plate (A) and top plate (C). Torque hardware to 61 Nm (45 lbf·ft).
24. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of M10 hex flange head bolt (D). Install bolt (D) through cover plate (A) and vertical shield (E). Torque hardware to 61 Nm (45 lbf·ft).
25. Tighten bolts (B) and (D).

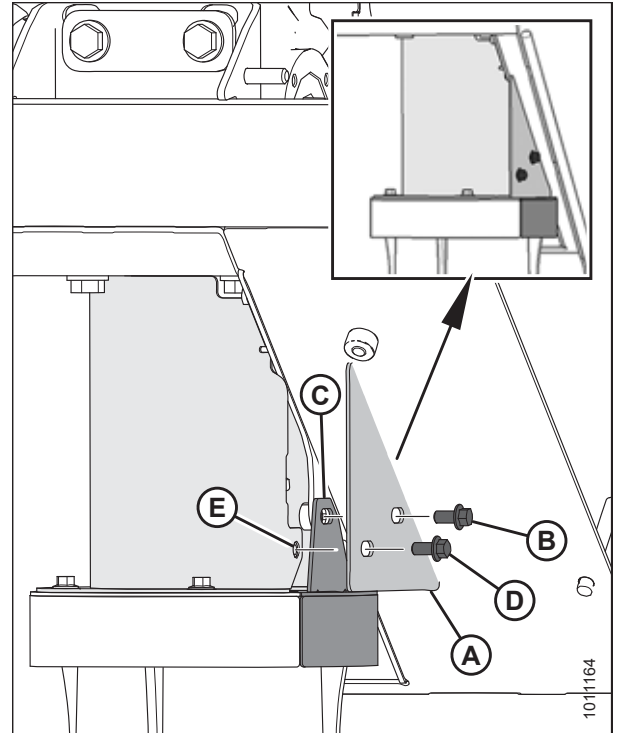


Figure 3.56: Driveline Shield

26. Position vertical driveshield (B) as shown at right. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A). Use bolts (A) to secure the vertical driveshield in place. Torque to 61 Nm (45 lbf·ft).

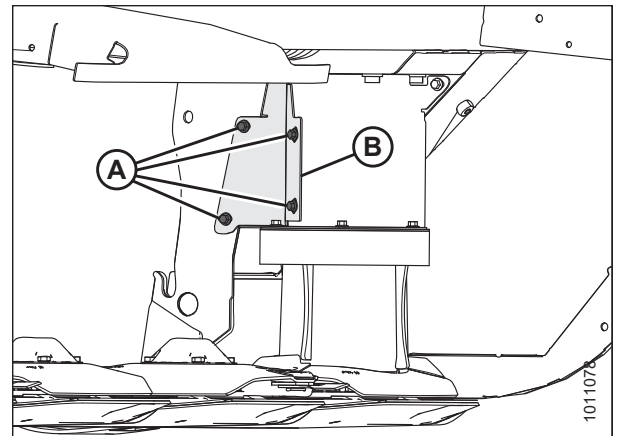


Figure 3.57: Driveline Shield

INSTALLATION INSTRUCTIONS

27. Reattach spring (A) to belt tension pulley assembly (B) with straight pin (C), washer, adjustment nut, and lock nut (D).

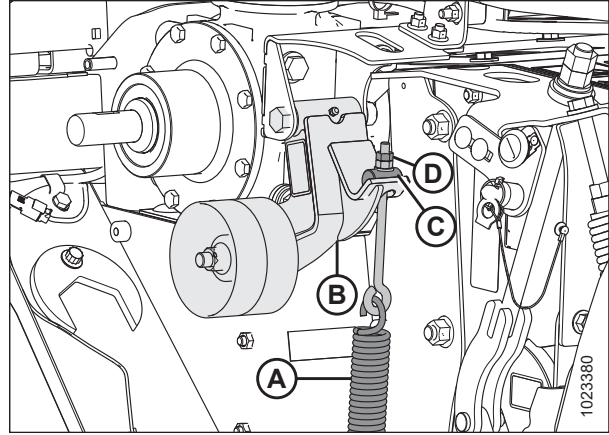


Figure 3.58: Tension Pulley Assembly

28. Install pulley (A) on gearbox shaft. Install tapered lock hub (B) onto the shaft with shaft key (C).

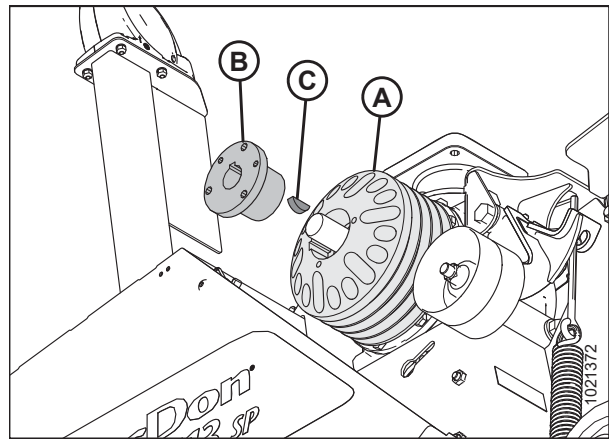


Figure 3.59: Conditioner Belt Pulley

29. Align pulley (A) with pulley (B). The pulleys should be aligned within 6 mm (1/4 in.) of each other.

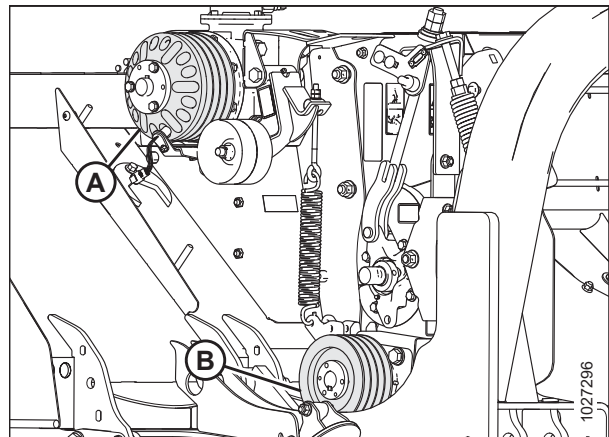


Figure 3.60: Conditioner Belt Pulley Alignment

INSTALLATION INSTRUCTIONS

30. Install taper lock hub (C) with three bolts (B).
31. **Model year 2017:** Attach speed sensor bracket (D) with bolt and nut (A) so that the sensor is parallel with the face of the pulley. There are two possible bracket positions. Ensure the bracket is positioned correctly for the windrower being used:
 - Install the bracket in the upper position (with bolt and nut [A] at the bottom of the slot) if the header will be used with an M155 or M155E4 Self-Propelled Windrower.
 - Install the bracket in the lower position (with bolt and nut [A] at the top of the slot, as shown in the illustration at right) if the header will be used with an M1 Series Windrower.
32. **Model year 2017:** If necessary, adjust bracket (D) to achieve a 2–3 mm (5/64–1/8 in.) gap between the speed sensor and the pulley. Torque nuts to 57 Nm (42 lbf·ft).
33. **Model year 2018 and later:** Attach speed sensor bracket (D) with bolt and nut (A) so that sensor is parallel with the face of the pulley. If necessary, adjust the bracket to achieve a 2–3 mm (5/64–1/8 in.) gap between the speed sensor and the pulley. Torque nuts to 57 Nm (42 lbf·ft).
34. **Model year 2018 and later:** There are two round holes in the speed sensor bracket that fit the sensor. Ensure the sensor is plugged into the correct hole for the windrower being used.
 - Use the top hole if the header will be used with an M155 or M155E4 Self-Propelled Windrower.
 - Use the bottom hole if the header will be used with an M1 Series Windrower.

NOTE:

The speed sensor in the illustration at right is configured for an M1170 Windrower.

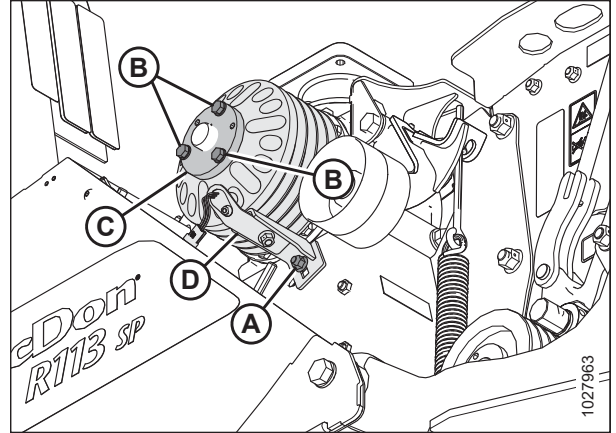


Figure 3.61: Conditioner Belt Pulley – Model Year 2017

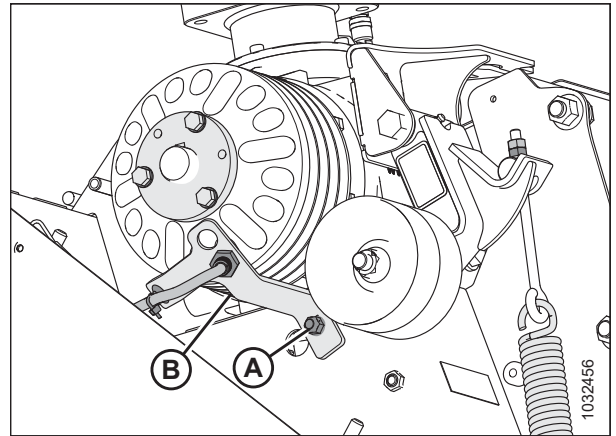


Figure 3.62: Conditioner Belt Pulley – Model Year 2018 and Later

3.7 Installing Header Drive Gearbox – R116 SP, 2018 and Later

IMPORTANT:

The gearbox weighs approximately 40 kg (88 lb.). Use a sling and a lifting device to lift the gearbox onto the header.

1. Install shim (F) and bracket (E) onto gearbox (B), and secure with bolts (D) and washers. Apply high-strength threadlocker (Loctite® 262 or equivalent) to the bolts and torque to 271 Nm (200 lbf-ft).
2. Install conditioner belt tensioner assembly (C) onto the gearbox with bolts (A) and washers. Apply high-strength threadlocker (Loctite® 262 or equivalent) to the bolts and torque to 271 Nm (200 lbf-ft).

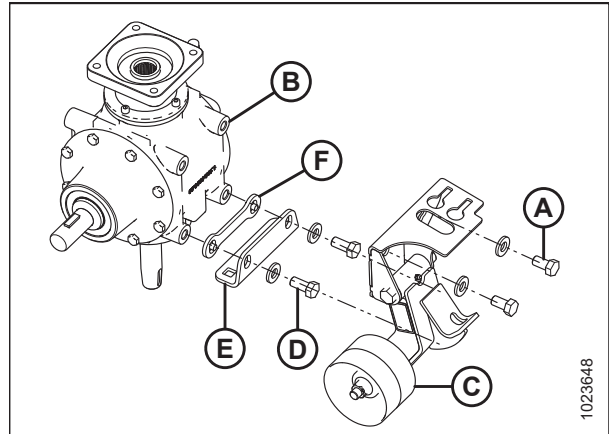


Figure 3.63: Header Drive Gearbox

3. Using a sling and a lifting device, lower the gearbox onto the header.
4. Install four M16 hex head bolts and washers (A). Bolts should be snug but still allow for positioning of the gearbox.

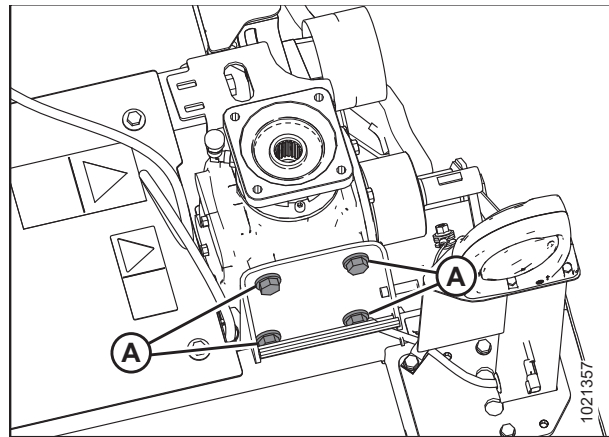


Figure 3.64: Header Drive Gearbox

5. Install two M16 hex head bolts with nuts and washers (A). Bolts should be snug but still allow for positioning of the gearbox.

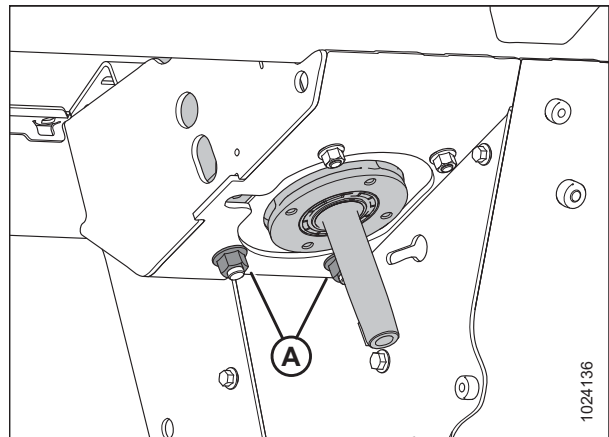


Figure 3.65: Header Drive Gearbox Hardware

INSTALLATION INSTRUCTIONS

6. Install shield (E) with four bolts (F). Apply medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 52 Nm (38 lbf-ft).
7. Insert shaft key (D) and install hub (C) on the tapered shaft. Tap with a dead-blow hammer or mallet. Ensure the key remains in the keyway.
8. Secure hub (C) in place with M14 hex head bolt (A) and washer (B). Apply medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 122 Nm (90 lbf-ft).

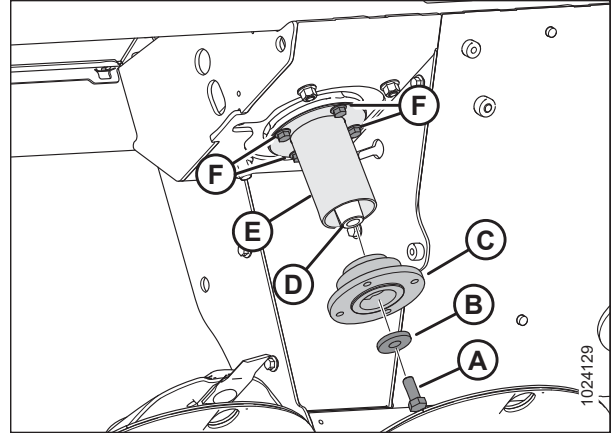


Figure 3.66: Gearbox Vertical Shaft

9. 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.

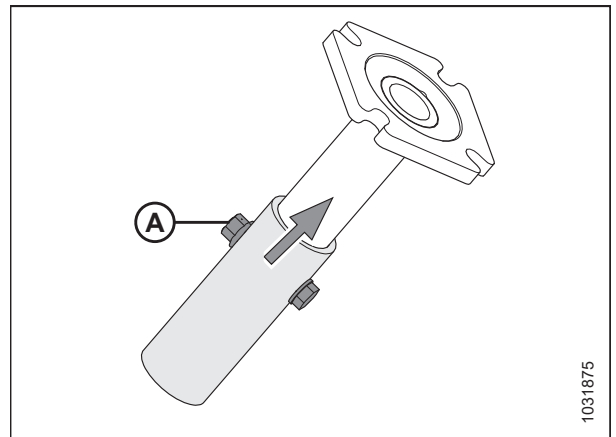


Figure 3.67: Drive Alignment Tool (MD #325683)

10. Attach drive alignment tool (A) to gearbox drive hub (B), and tighten. Slide the bottom tube down over the cutterbar driveshaft.

NOTE:

Tighten all four alignment tool bolts with a wrench (hand tight is not sufficient). If the alignment tool is not secured to the gearbox using all four bolts, the drive hub will be misaligned.

11. Adjust the position of the gearbox so that the bottom tube of the alignment tool slides freely over the cutterbar driveshaft.
12. Tighten all gearbox mounting bolts and recheck shaft alignment. For instructions, refer to Steps 4, page 30 and 5, page 30.

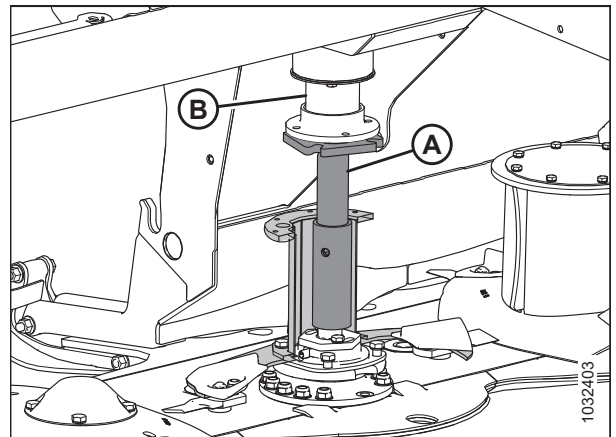


Figure 3.68: Alignment Tool on Driven Drum

INSTALLATION INSTRUCTIONS

- When shaft alignment is complete, apply high-strength threadlocker (Loctite® 262 or equivalent) to bolts (A) one-by-one, and torque to 271 Nm (200 lbf-ft).

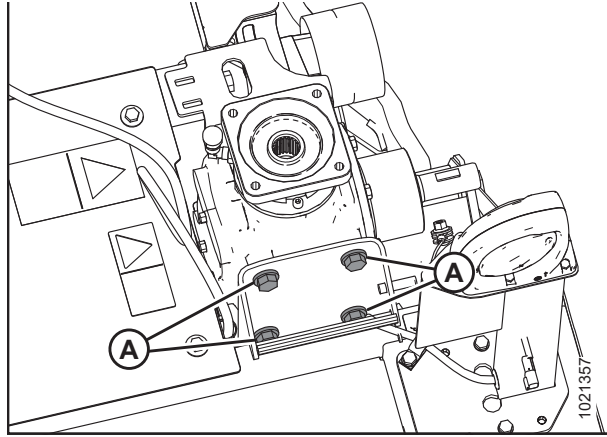


Figure 3.69: Header Drive Gearbox

- Torque nuts (A) to 234 Nm (173 lbf-ft).

NOTE:

Some parts have been removed from the illustration for clarity.

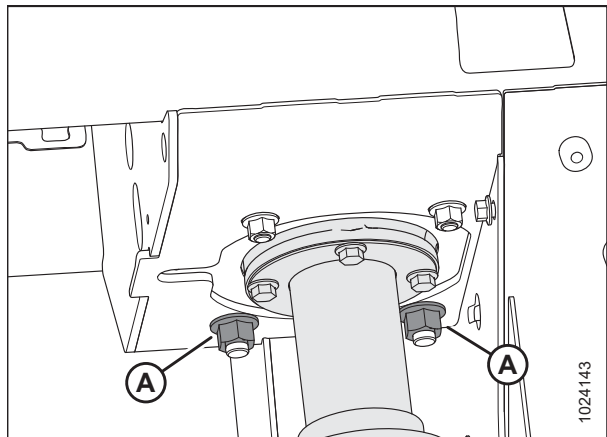


Figure 3.70: Gearbox Install

- Remove bolts securing alignment tool (A) to drive hub (B). Lift the lower tube and remove the tool.

NOTE:

When aligned properly, the lower tube on tool (A) will slide freely over the cutterbar driveshaft.

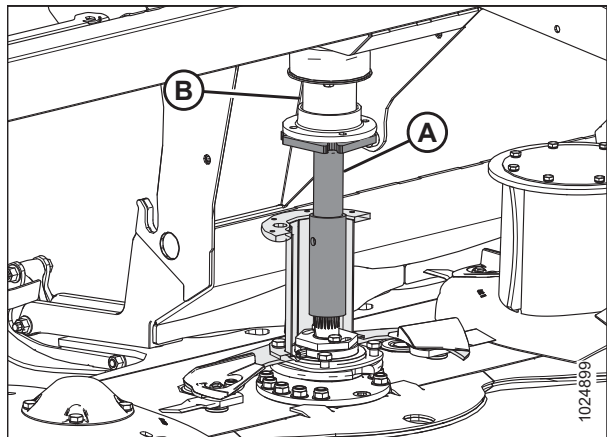


Figure 3.71: Alignment Tool on Driven Drum

INSTALLATION INSTRUCTIONS

16. Lubricate spindle splines (A). For lubricant specifications, refer to the header operator's manual or technical manual.

NOTE:

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

17. Insert driveline (B) at an angle and guide it past hub drive (C) and drum (D).
18. Insert splined spindle end (A) into the splined bore of driveline (B).

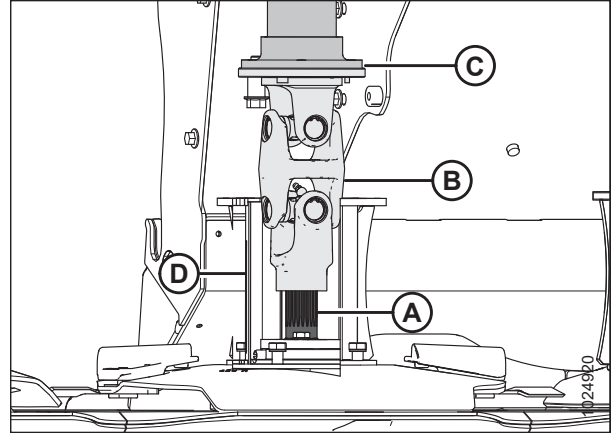


Figure 3.72: Driveline

19. Place a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M12 hex flange head bolts (A). Use the bolts and spacers to secure driveline assembly (B) to hub drive (C). Torque bolts to 102 Nm (75 lbf·ft).

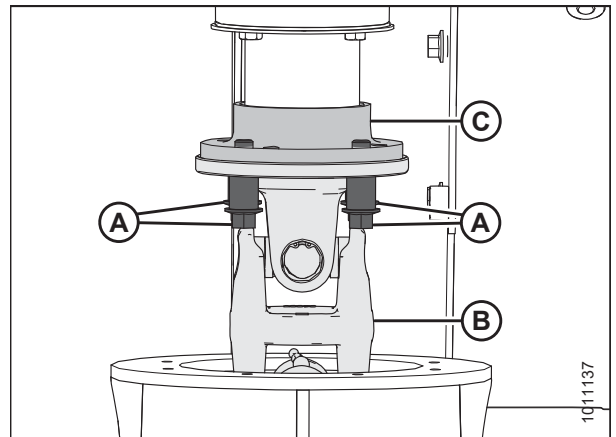


Figure 3.73: Driveline

20. 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).

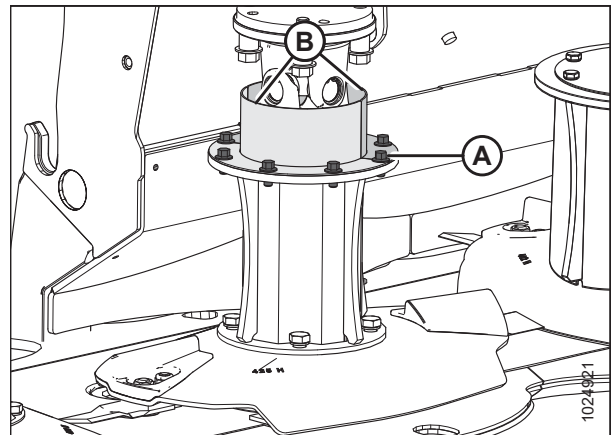


Figure 3.74: Driven Drum

INSTALLATION INSTRUCTIONS

21. Position vertical shield (A) as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of one M10 x 20 mm hex flange head bolt (B) and two M10 x 16 mm hex flange head bolts (C). Use bolts (B) and (C) to secure the vertical shield in place. Torque hardware to 61 Nm (45 lbf-ft).

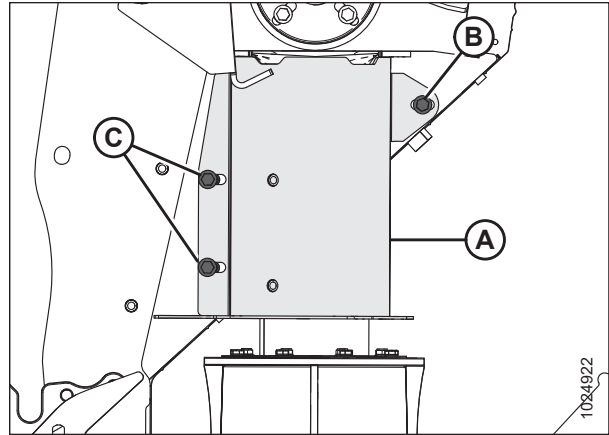


Figure 3.75: Driveline Shield

22. Position top plate (B) and drum top (C) onto the drum as shown. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A). Use the bolts to secure the top plate and drum top in place. Torque hardware to 61 Nm (45 lbf-ft).

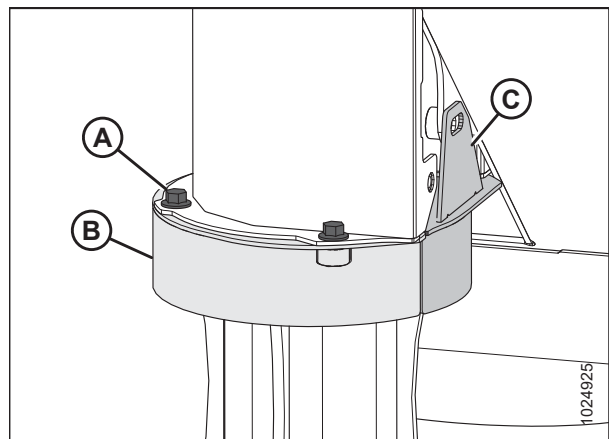


Figure 3.76: Driveline Shield

INSTALLATION INSTRUCTIONS

23. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of M10 hex flange head bolt (B). Install bolt (B) through cover plate (A) and top plate (C). Torque hardware to 61 Nm (45 lbf·ft).
24. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of M10 hex flange head bolt (D). Install bolt (D) through cover plate (A) and vertical shield (E). Torque hardware to 61 Nm (45 lbf·ft).
25. Tighten bolts (B) and (D).

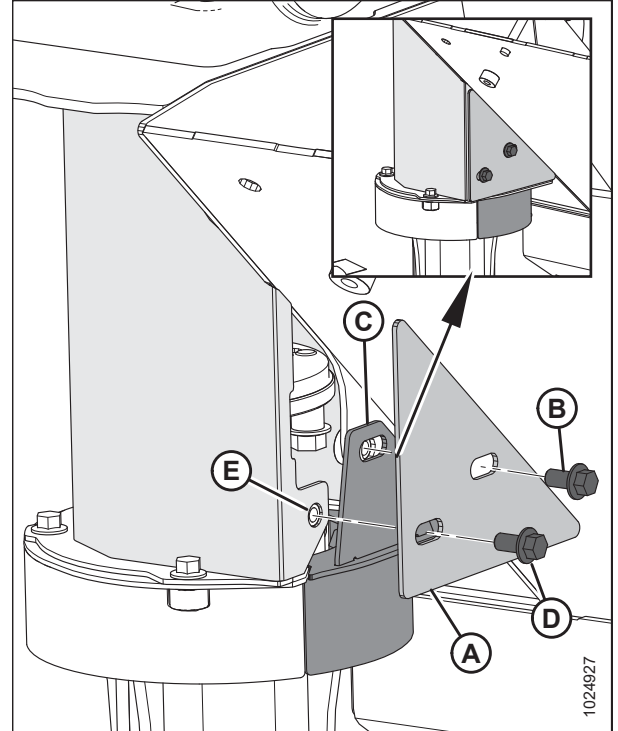


Figure 3.77: Driveline Shield

26. Position vertical driveshield (B) as shown at right. Apply a bead of medium-strength threadlocker (Loctite® 243 or equivalent) around the threads of four M10 hex flange head bolts (A). Use bolts (A) to secure vertical driveshield in place. Torque hardware to 61 Nm (45 lbf·ft).



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.

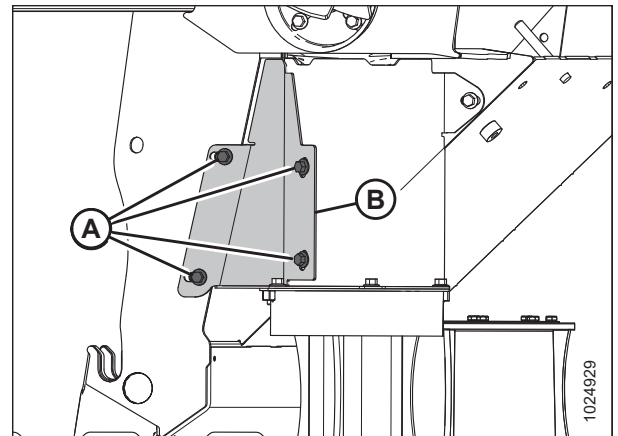


Figure 3.78: Driveline Shield

INSTALLATION INSTRUCTIONS

27. Reattach spring (A) to belt tension pulley assembly (B) with straight pin (C), washer, adjustment nut, and lock nut (D).

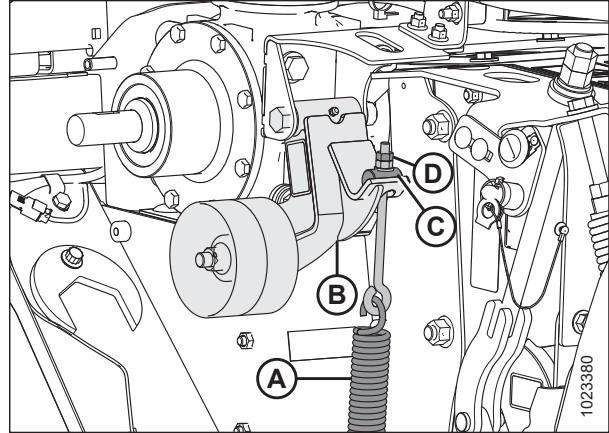


Figure 3.79: Tension Pulley Assembly

28. Install pulley (A) on gearbox shaft. Install tapered lock hub (B) onto the shaft with shaft key (C).

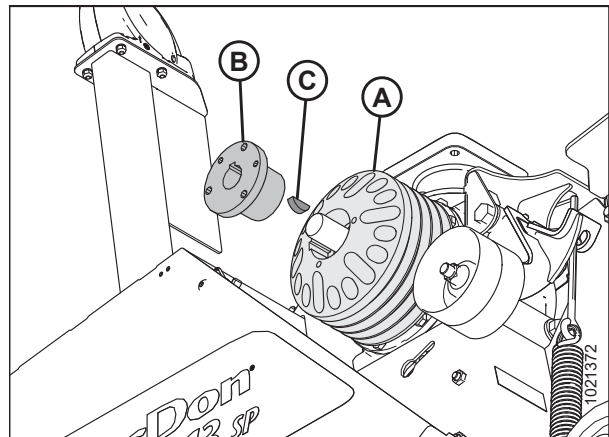


Figure 3.80: Conditioner Belt Pulley

29. Align pulley (A) with pulley (B). The pulleys should be aligned within 6 mm (1/4 in.) of each other.

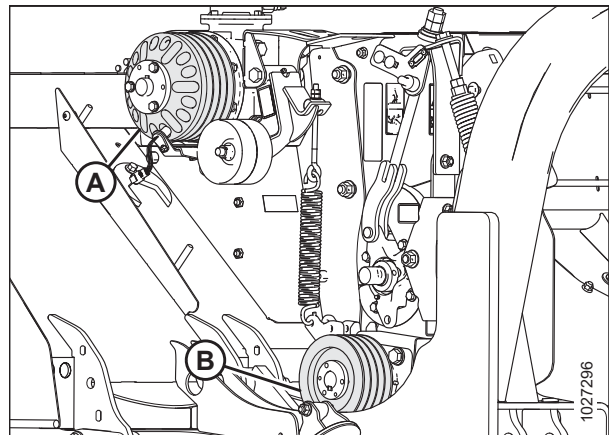


Figure 3.81: Conditioner Belt Pulley Alignment

INSTALLATION INSTRUCTIONS

30. Install taper lock hub (C) with three bolts (B).
31. Attach speed sensor bracket (D) with bolt and nut (A) so that sensor is parallel with face of pulley. If necessary, adjust bracket to achieve a 2–3 mm (5/64–1/8 in.) gap between speed sensor and pulley. Torque nuts to 57 Nm (42 lbf-ft).
32. There are two round holes in the speed sensor bracket (D) that fit the sensor. Ensure the sensor is plugged into the correct hole for the windrower being used.
 - Use the top hole if the header will be used with an M155 or M155E4 Self-Propelled Windrower.
 - Use the bottom hole if the header will be used with an M1 Series Windrower.

NOTE:

The speed sensor in the illustration at right is configured for an M1170 Windrower.

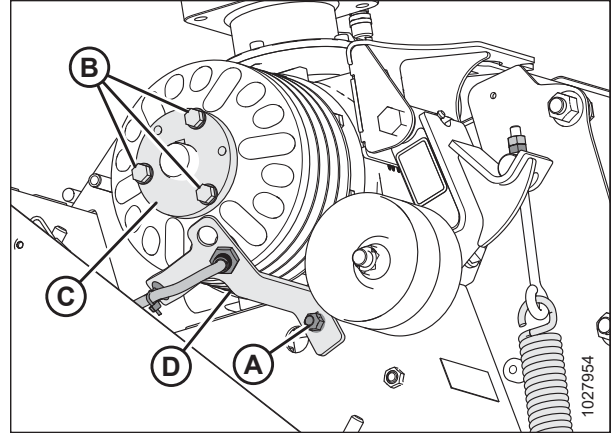


Figure 3.82: Conditioner Belt Pulley

3.8 Reinstalling Conditioner Drive Belt

Reinstall the conditioner drive belt as follows:

1. Install drive belt (A) onto driven pulley (C) first, and then onto drive pulley (B), ensuring that the belt is in the pulley grooves.

NOTE:

If necessary, loosen the jam nut and adjuster nut to relieve the spring tension.

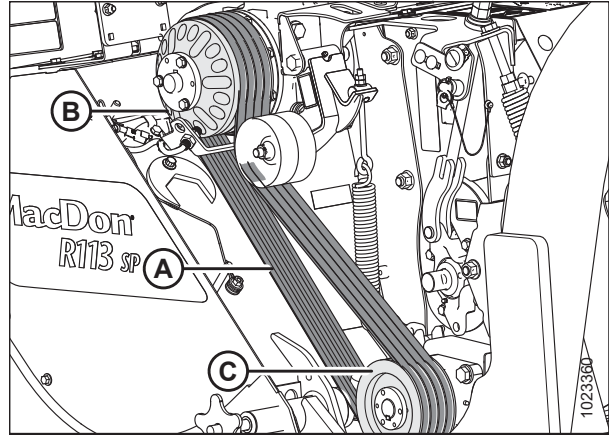


Figure 3.83: Conditioner Drive

2. Measure the length of tensioner spring (C); dimension (D) should be set to 365 mm (14 3/8 in.) for proper belt tension.
3. To adjust spring tension, loosen jam nut (A).
4. Turn adjuster nut (B) clockwise to increase spring/belt tension, or turn adjuster nut (B) counterclockwise to decrease spring/belt tension.
5. Once the correct spring measurement has been achieved, hold adjuster nut (B) and tighten jam nut (A) against it.

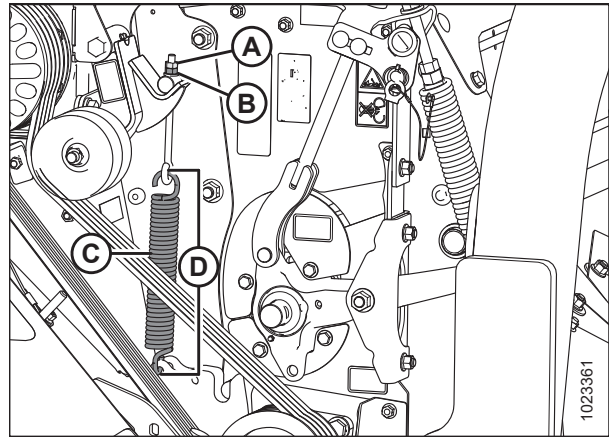


Figure 3.84: Conditioner Drive

6. **Model year 2017:** Reconnect speed sensor (B) to wiring harness (A).

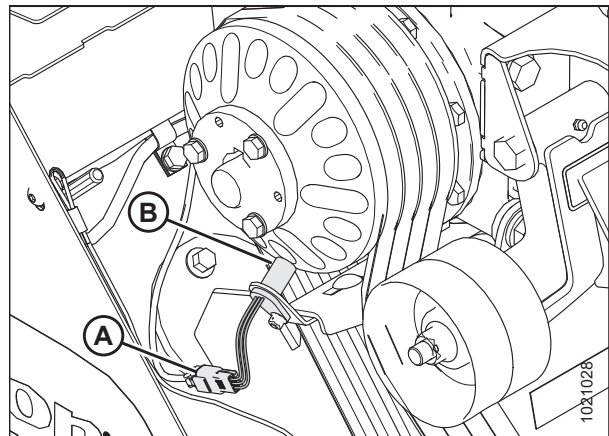


Figure 3.85: Speed Sensor – Model Year 2017

INSTALLATION INSTRUCTIONS

7. **Model year 2018 and Later:** Reconnect speed sensor (B) to wiring harness (A).

NOTE:

In the illustration at right, the sensor is configured for an M1170. The sensor is plugged into the bottom hole (C) in the sensor bracket. If it was configured for an M155 or M155E4, the sensor would be plugged into the top hole (D).

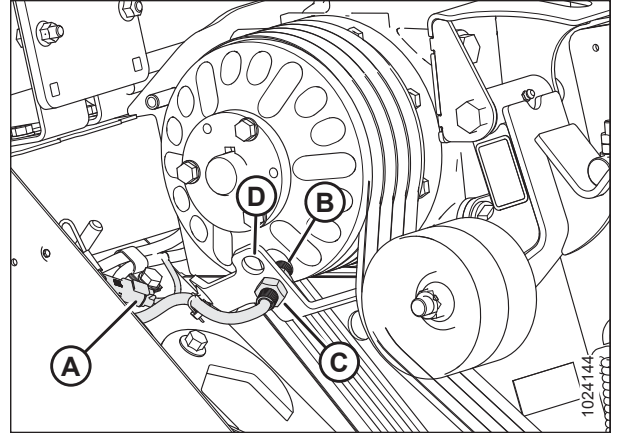


Figure 3.86: Speed Sensor – Model Year 2018 and Later

8. Check clearance between speed sensor (A) and pulley (B). If necessary, adjust sensor nuts to ensure that there is a 2–3 mm gap (C) between the speed sensor and the pulley. Ensure the sensor is parallel with the pulley.
9. Tighten sensor nuts to 12 Nm (9 lbf·ft).

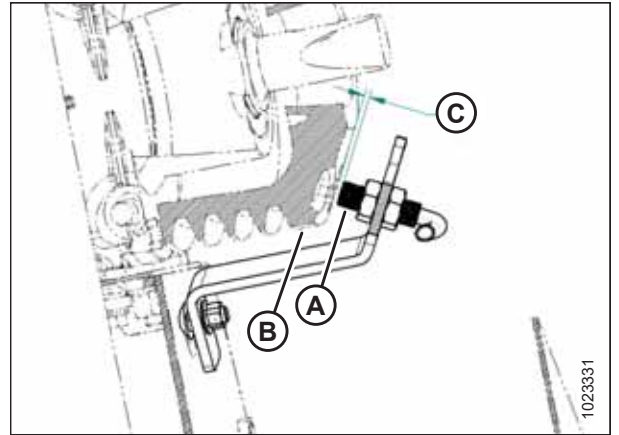


Figure 3.87: Gap between Sensor and Pulley

3.9 Reinstalling Left Driveshield

To reinstall the left driveshield, follow these steps:

⚠ CAUTION

Do NOT operate the machine without the driveshields in place and secured.

1. Position driveshield (A) onto pins (B) at the base of the driveshield.
2. Push the driveshield to engage latch (C).
3. Check that driveshield (A) is properly secured.

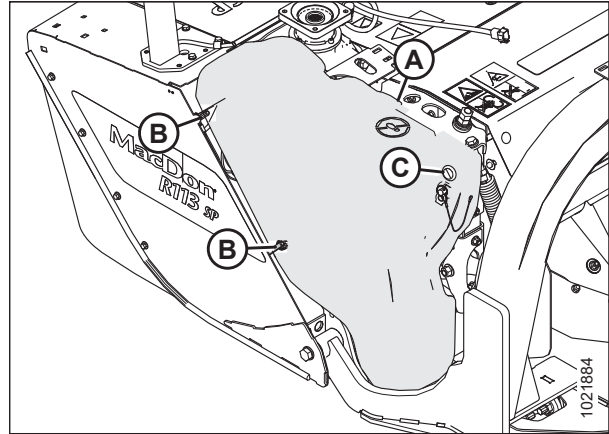


Figure 3.88: Driveshield and Latch

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

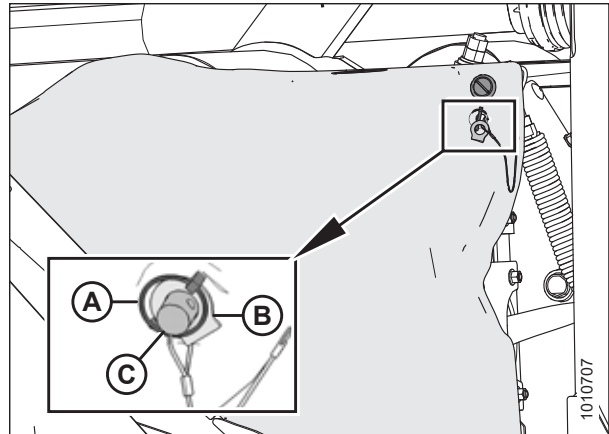


Figure 3.89: Tool to Unlock Driveshield

3.10 Installing Header Drive Motor

1. Attach a sling to the motor with the opposite end attached to a lifting device.

IMPORTANT:

Do **NOT** use the hydraulic lines to lift the motor.

NOTE:

The motor weighs approximately 20 kg (44 lb.).

2. Lower motor (B) onto the gearbox opening.
3. Install four bolts (D). Torque to 140 Nm (103 lbf-ft).
4. Remove the caps from the motor ports. Locate the highest port and pour oil into the motor. For oil type and quantity, refer to the header operator's or technical manual.
5. Remove the caps from the hoses. Reconnect hoses (A) and (C) to the motor.

NOTE:

Hydraulic connections vary depending on the windrower. Refer to the specific instructions supplied with your Hydraulic Drive Kit.

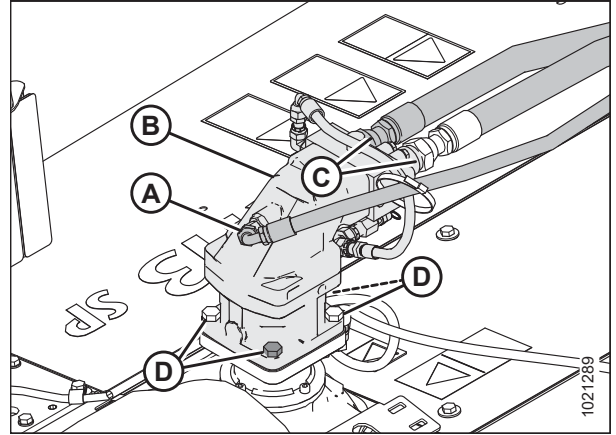


Figure 3.90: Hydraulic Motor

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