

R85
Rotary Disc 16-Footer Header and
Mower Conditioner

Auger Upgrade Kit (MD #236930) Installation Instructions

169857 Revision C
Original Instruction

Published: December 2015

Introduction

R85 16-foot rotary disc headers and mower conditioners built before model year 2014 had a different auger than the one factory installed on R85 16-foot rotary disc headers and mower-conditioners built in model year 2014 and later. The Auger Upgrade kit can be used to replace the old auger with the new one. This document explains how to install the new auger. 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 6.5 hours.

Conventions

The following conventions are used in this document:

- Right-hand (RH) and left-hand (LH) are determined from the operator's position. The front of the header is the side that faces the crop; the back of the header is the side that connects to the windrower or carrier frame.
- 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 not currently available in any language except English.

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
Added notes about online updates and translations.	<i>Introduction, page i</i>
Added Safety chapter.	<i>1 Safety, page 1</i>
Updated the auger alignment checking and adjusting procedures.	<i>3.3 Checking and Adjusting Auger Alignment, page 13</i>
Updated tension spring illustration.	<i>3.40: Belt Tension Adjustment, page 23</i>

TABLE OF CONTENTS

Introduction	i
List of Revisions	ii
1 Safety	1
1.1 Signal Words.....	1
1.2 General Safety	2
2 Parts List.....	5
3 Installation Instructions	7
3.1 Installing Left-Hand Auger and Center Support.....	7
3.2 Installing Right-Hand Auger.....	11
3.3 Checking and Adjusting Auger Alignment.....	13
3.3.1 Checking Auger Alignment.....	13
3.3.2 Adjusting Auger Alignment.....	15
3.4 Setting Stripper Bar Clearance	18
3.5 Installing Auger Center Shields.....	20
3.6 Installing Tensioning System.....	22

1 Safety

1.1 Signal Words

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

DANGER

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

WARNING

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

CAUTION

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

1.2 General Safety

CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all the protective clothing and personal safety devices that **could** be necessary for the job at hand. Don't take chances. 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 ear muffs or ear plugs to help protect against objectionable or loud noises.

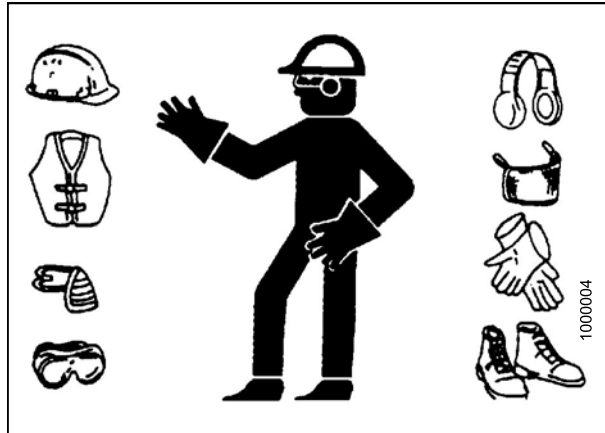


Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

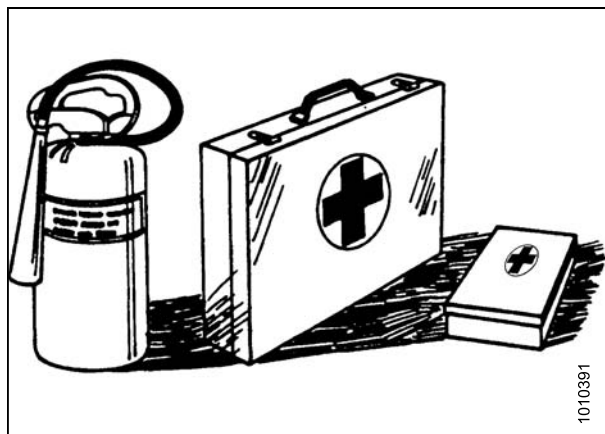


Figure 1.3: Safety Equipment

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 the shaft and can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet strength, design, or safety requirements.



Figure 1.4: 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. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key from ignition before leaving operator's seat for any reason.

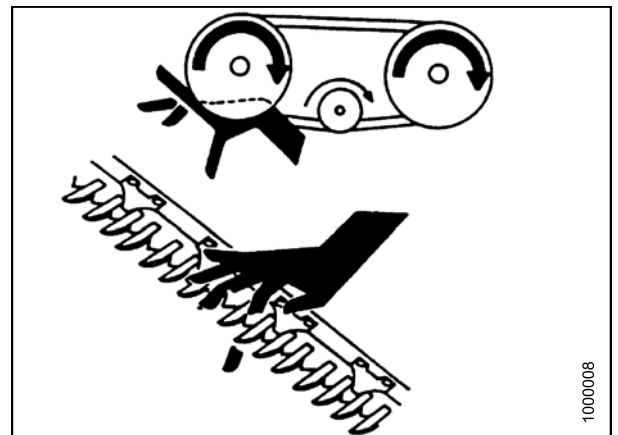


Figure 1.5: Safety around Equipment

- Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- 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

2 Parts List

The following parts are included in this kit:

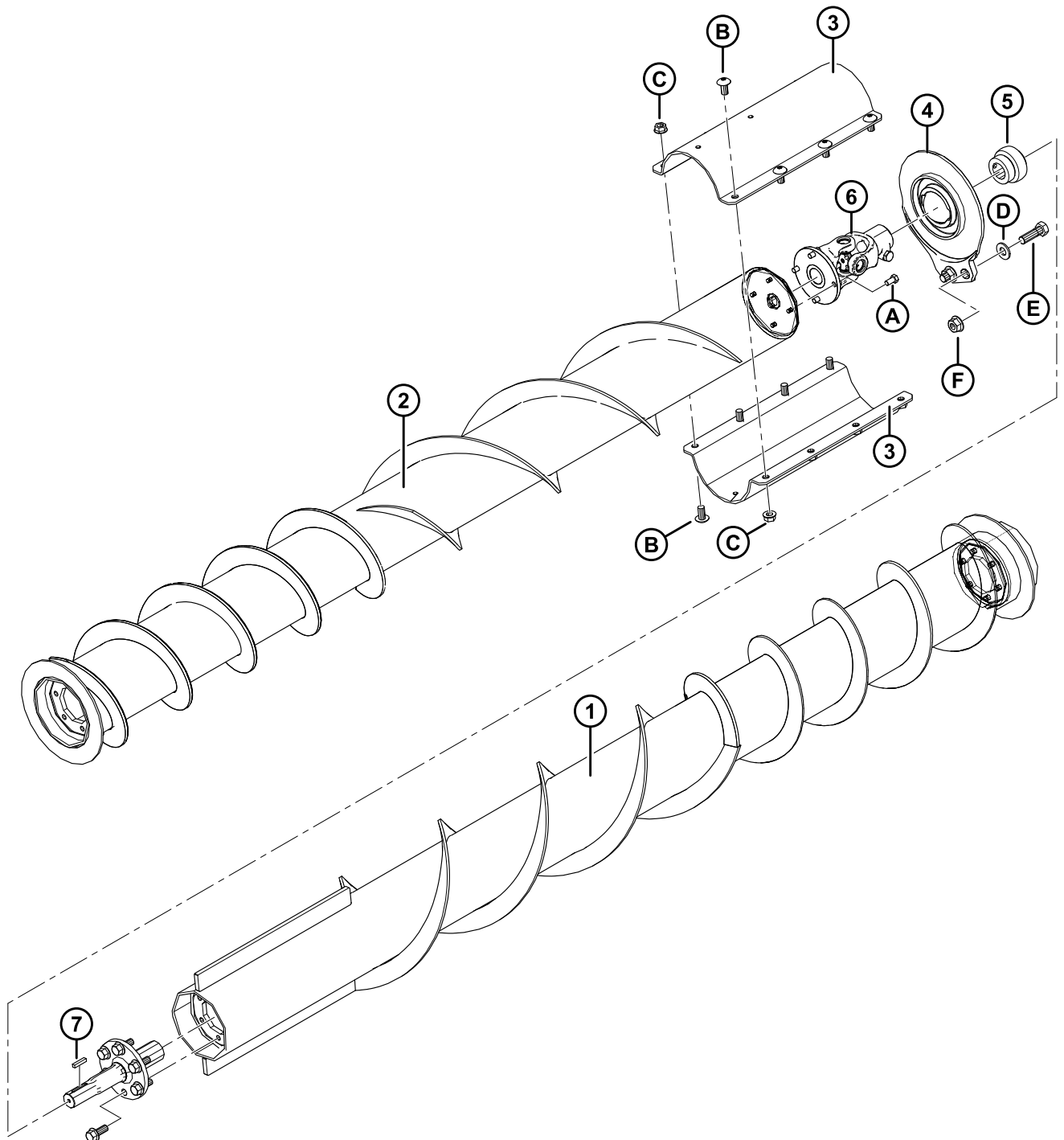


Figure 2.1: Parts Included in Auger Upgrade Kit (MD #236930)

1015738

PARTS LIST

Ref	Part Number	Description	Quantity
1	236972	AUGER CW SHAFT BAL-LH 16'-22/7 FLIGHT	1
2	236974	AUGER CW SHAFT BAL-RH 16'-22/7 FLIGHT	1
3	235310	SHIELD – AUGER - CENTER	2
4	236030	PLATE – MACHINED	1
5	150438	BEARING – BALL SPH OD CW LC (1 3/8 IN. BORE)	1
6	236975	UNIVERSAL JOINT	1
7	1113	KEY	1
A	21567	BOLT – HEX HD .375-16UNC X 0.75 LG	4
B	105136	SCREW – MACHINE	8
C	50186	NUT – FLANGE LOCK SM FACE DT 0.500-13UNC GR5	8
D	30441	WASHER – HARDENED	2
E	30861	BOLT – HH 5/8 NF X 2.0 LG GR 8 ZP	2
F	136792	NUT – HEX SMTH FLG 5/8-18 GR 8 ZP	2

3 Installation Instructions

To install the Auger Upgrade kit, follow these procedures in order:

CAUTION

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. Lower the header fully.
2. Shut down the engine and remove the key.
3. Open cutterbar doors. For instructions, refer to the R85 Rotary Disc Pull-Type Mower Conditioner & Self-Propelled Windrower Header Technical Manual (MD #169477).
4. Remove old auger. For instructions, refer to the R85 Rotary Disc Pull-Type Mower Conditioner & Self-Propelled Windrower Header Technical Manual (MD #169477).

3.1 Installing Left-Hand Auger and Center Support

CAUTION

Use a suitable lifting device or two people to install the overshot auger.

1. Install the six bolts (A) that secure the tail shaft (B) to the left-hand auger. Torque to 60 ft·lbf (80 N·m).

NOTE:

Do **NOT** over torque bolts.

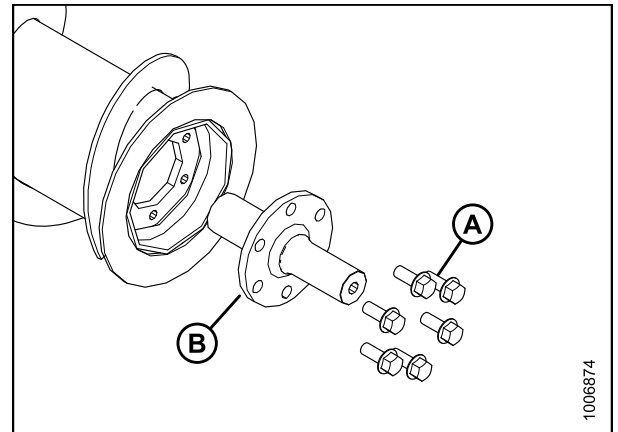


Figure 3.1: LH Auger Tail Shaft

2. Install the six bolts (A) that secure the inner shaft (B) to the left-hand auger. Align the keyway in shaft with the welded flat bar on the auger. Torque to 60 ft·lbf (80 N·m).

NOTE:

Do **NOT** over torque bolts.

3. Lift the left-hand auger into the frame.

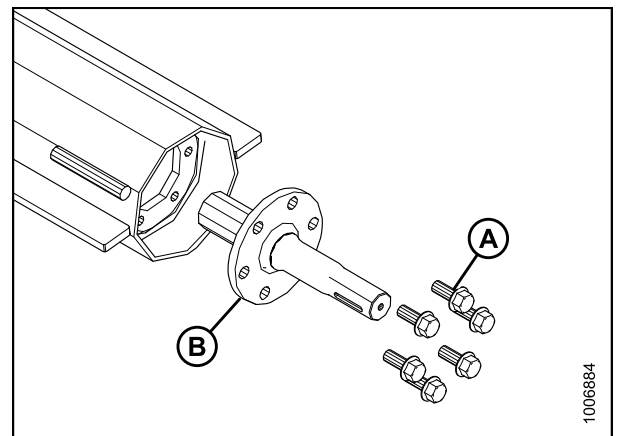


Figure 3.2: LH Auger Inner Shaft

INSTALLATION INSTRUCTIONS

4. Install bearing (B) into center support (A).

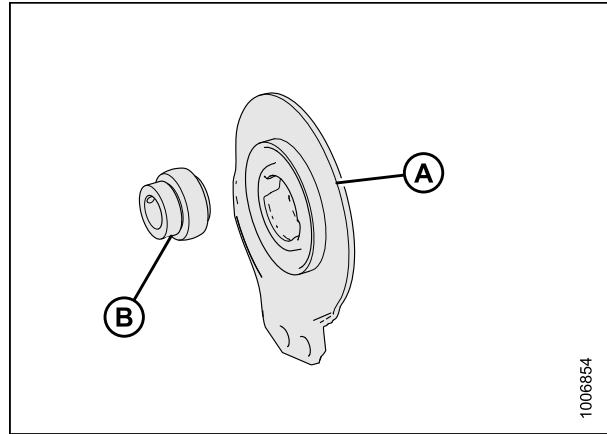


Figure 3.3: Auger Center Support

5. Install the center support (A) onto the left-hand auger inner shaft. Install two bolts (B). Do **NOT** tighten hardware.
6. Place lock collar onto left-hand auger inner shaft, but do **NOT** lock it at this time.

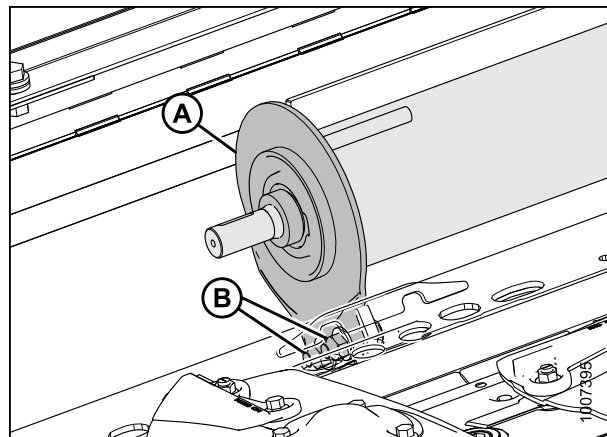


Figure 3.4: Auger Center Support

7. Slip the universal joint (A) onto the left-hand auger inner shaft (B), all the way up to the lock collar.

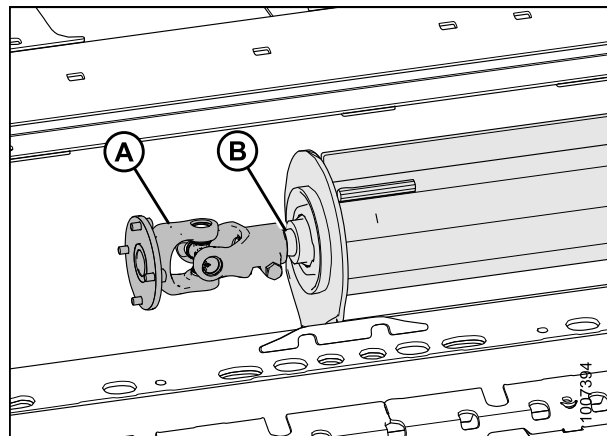


Figure 3.5: Universal Joint

INSTALLATION INSTRUCTIONS

8. Install the left-hand support plate and bearing onto the left-hand auger tail shaft.
9. Install the lock collar (A), but do **NOT** lock it at this time.
10. Install the three bolts (B) that secure the support plate to the header. Do **NOT** tighten these bolts at this time.

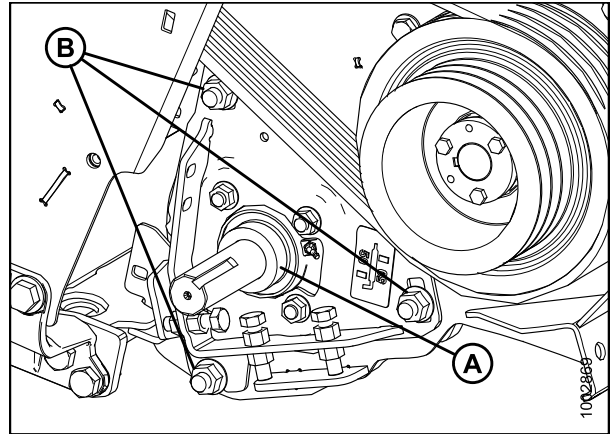


Figure 3.6: LH Auger Support Plate

11. Check clearance between the left-hand auger (B) and center support (A). There should be clearance of 1/8 in. (3 mm) (C).

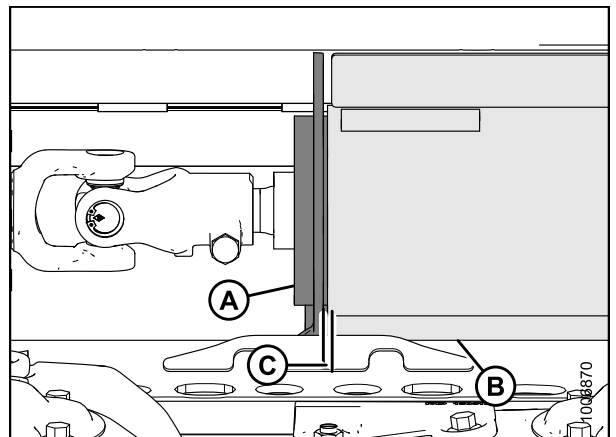


Figure 3.7: Center Support Clearance

12. Lock the bearing collar (A) on the inner shaft in the direction of rotation (counterclockwise).

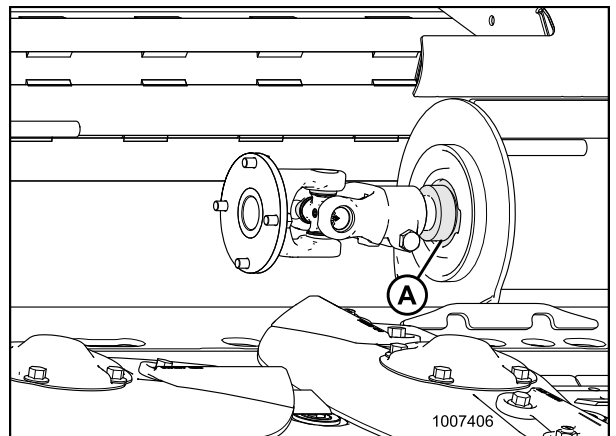


Figure 3.8: Bearing Collar on Inner Shaft

INSTALLATION INSTRUCTIONS

13. Lock the bearing collar (A) on the tail shaft in the direction of rotation (clockwise).

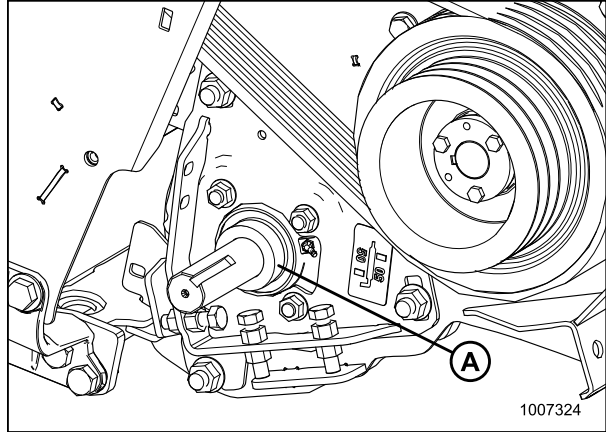


Figure 3.9: Bearing Collar on Tail Shaft

3.2 Installing Right-Hand Auger

CAUTION

Use a suitable lifting device or two people to install the overshoot auger.

1. Install the six bolts (A) that secure the tail shaft (B) to the right-hand auger. Torque to 60 ft·lbf (80 N·m).

NOTE:

Do **NOT** over torque bolts.

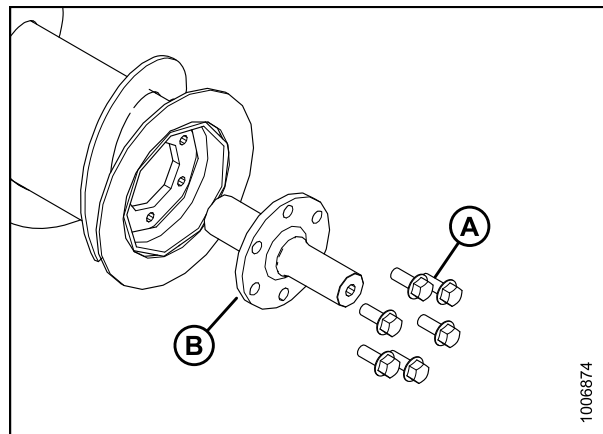


Figure 3.10: RH Auger Tail Shaft

2. Install the right-hand auger. Align the keyway in the universal joint with the key in the machined shaft. Slide right-hand auger towards the center support.
3. Install bolt (A) securing the universal joint (B) to the left-hand auger shaft. Do **NOT** tighten bolt as adjustment may be required.
4. Ensure that end of flighting (C) on the right-hand auger is indexed approximately 90 degrees from the welded flat bar (D) on the left-hand auger.

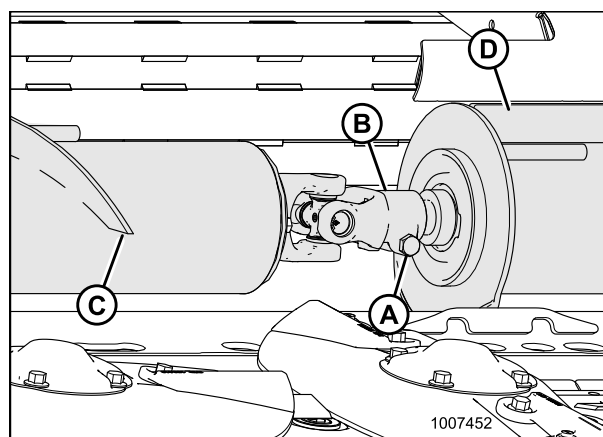


Figure 3.11: RH Auger Installation

5. Secure universal joint (B) to right-hand auger with four bolts (A). Use Loctite® 262 on the threads and torque to 36 ft·lbf (48 N·m).

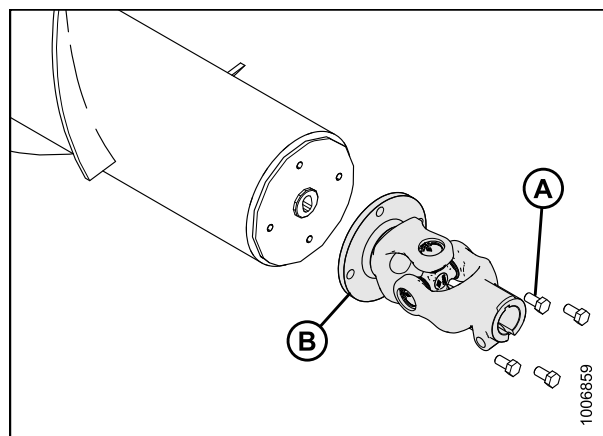


Figure 3.12: Universal Joint

INSTALLATION INSTRUCTIONS

6. Install the support plate and bearing onto the right-hand auger tail shaft.
7. Install the three bolts (A) that secure the support plate to the header. Do **NOT** tighten these bolts at this time.
8. Install the locking collar (B), but do **NOT** lock it at this time.

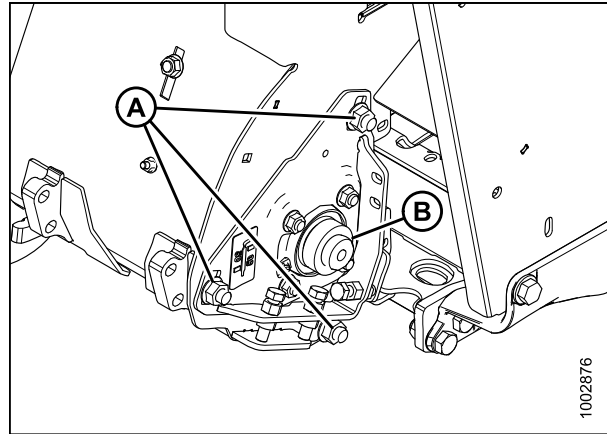


Figure 3.13: RH Auger Support Plate

9. Adjust the right-hand auger position until there is clearance of $13/32$ in. (10.5 mm) (C) between the end of the auger (B) and the frame support (A).

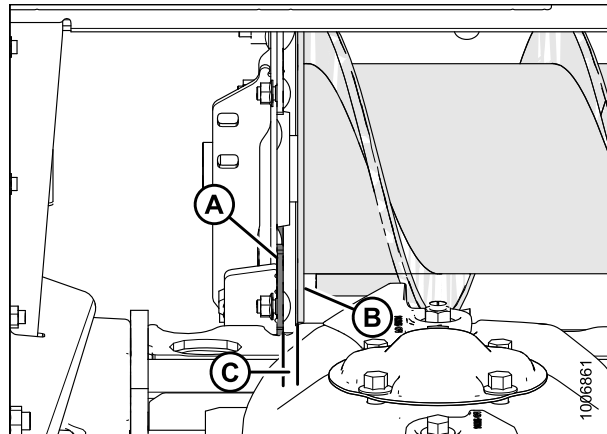


Figure 3.14: RH Auger and Frame Support

10. Lock the bearing collar (A) in the direction of auger rotation (counterclockwise).

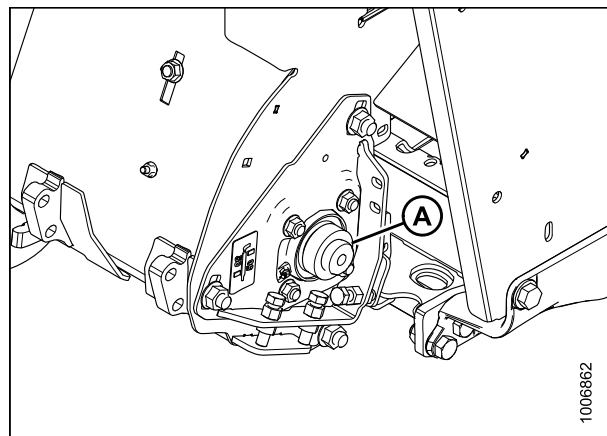


Figure 3.15: Bearing Collar on RH Tail Shaft

3.3 Checking and Adjusting Auger Alignment

Before adjusting the auger, use the following procedure to determine how much adjustment is necessary. Record the values taken at the measurement vertical points (M1 and M2) and the fore/aft points (M3 and M4).

3.3.1 Checking Auger Alignment

Checking Vertical Alignment

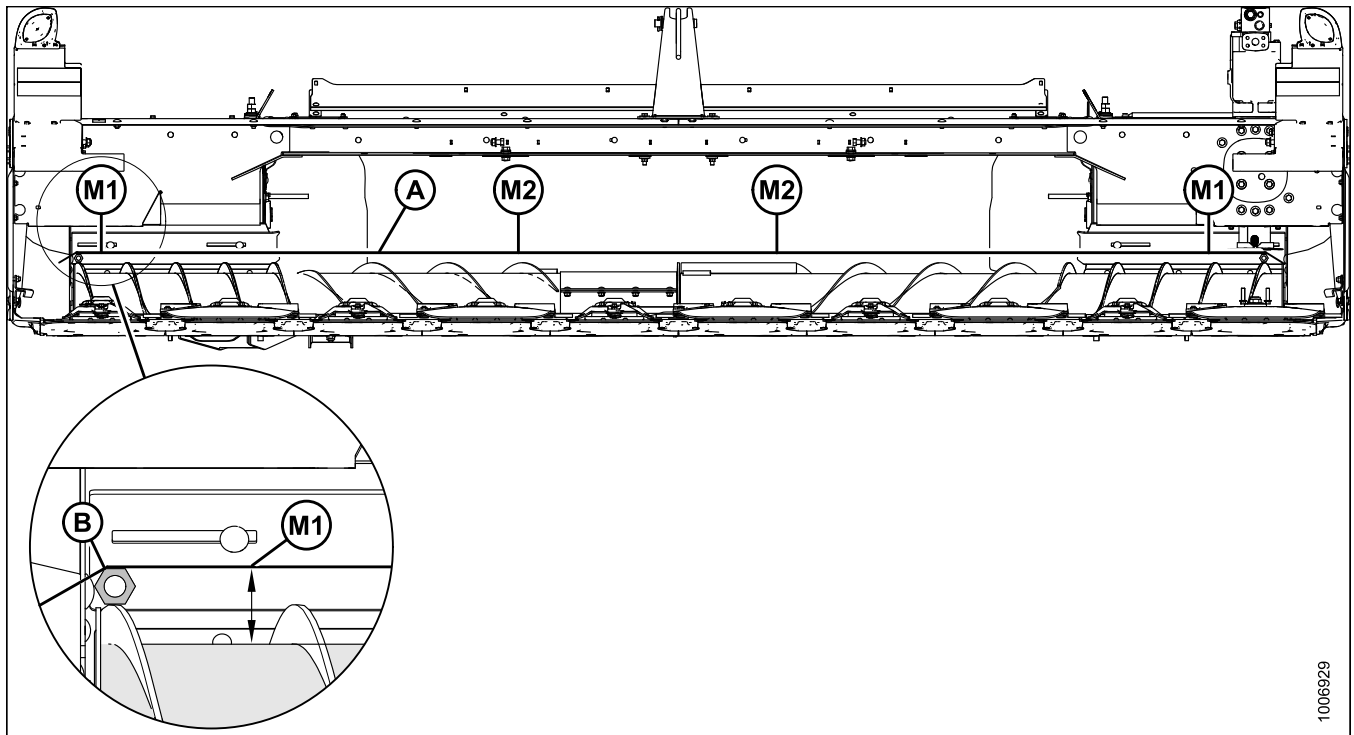


Figure 3.16: Vertical Alignment String Routing and Measurement Points

A – String Across Top of Auger

B – 1/2 in. (12.7 mm) Nut

M1 – Measurement Point One

M2 – Measurement Point Two

1. Create a reference line for measurement. Route a string (A) around the auger shaft and across the top of the auger's entire length. Ensure the string is pulled tight and secure it to the opposite end of the auger.

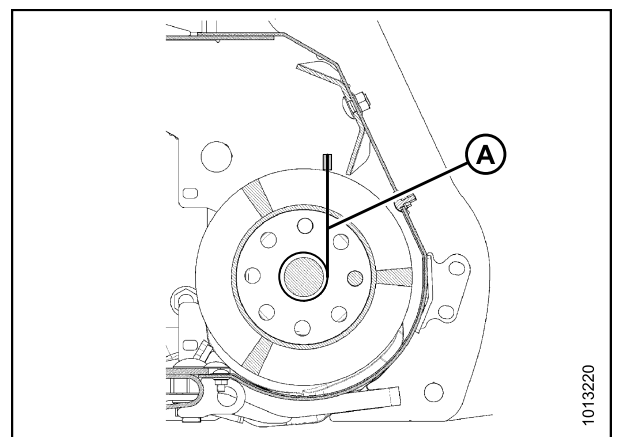


Figure 3.17: Vertical Alignment String Routing

INSTALLATION INSTRUCTIONS

2. Insert a 1/2 in. nut (A) between string (B) and flighting. Repeat on opposite end.

NOTE:

To avoid a measurement error, use a wire brush to clean the surface area where nuts meet the flighting and at the auger center tube where buildup may occur.

3. Measure from the auger tube to the string at two locations (M1 and M2) shown in Figure 3.16: *Vertical Alignment String Routing and Measurement Points, page 13*. The difference between the two measurements should be less than 3/16 in. (5 mm).

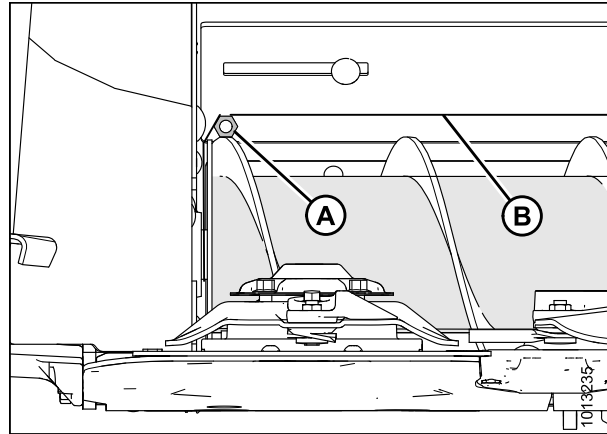


Figure 3.18: Vertical Alignment String Routing

Checking Fore/Aft Alignment

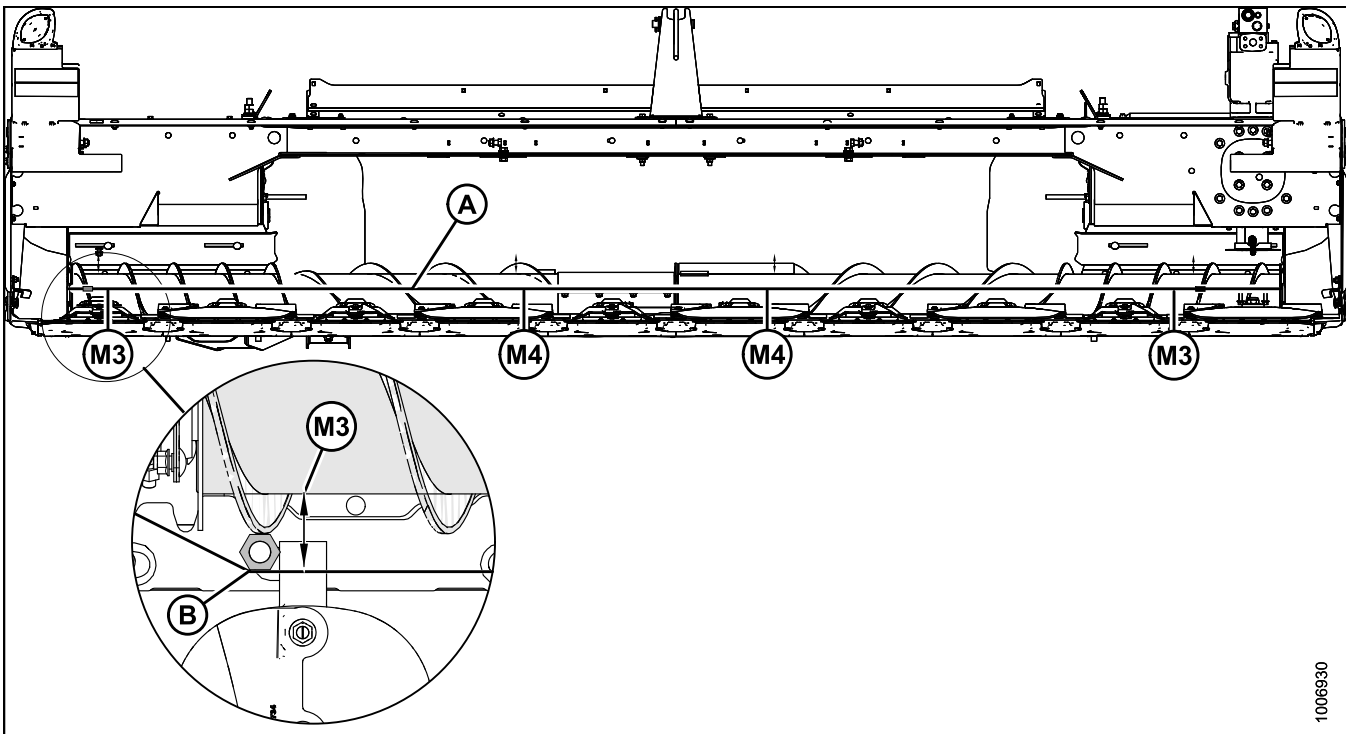


Figure 3.19: Fore/Aft Alignment String Routing and Measurement Points

A – String in Front of Auger

B – 1/2 in. (12.7 mm) Nut

M3 – Measurement Point Three

M4 – Measurement Point Four

INSTALLATION INSTRUCTIONS

4. Move the reference string (A) across the front of the auger's entire length. Ensure the string is pulled tight and secure it to the opposite end of the auger.

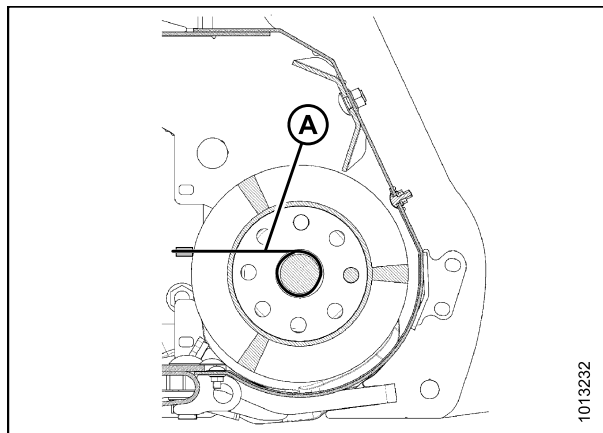


Figure 3.20: Fore/Aft Alignment String Routing

5. Insert a 1/2 in. (12.7 mm) nut (A) between string (B) and flighting. Repeat on opposite end.

NOTE:

To avoid a measurement error, use a wire brush to clean the surface area where nuts meet the flighting and at the auger center tube where buildup may occur.

6. Measure from the auger tube to the string (B) at the two locations (M3 and M4) shown in Figure 3.19: [Fore/Aft Alignment String Routing and Measurement Points, page 14](#). The difference should be less than 5/32 in. (4 mm).

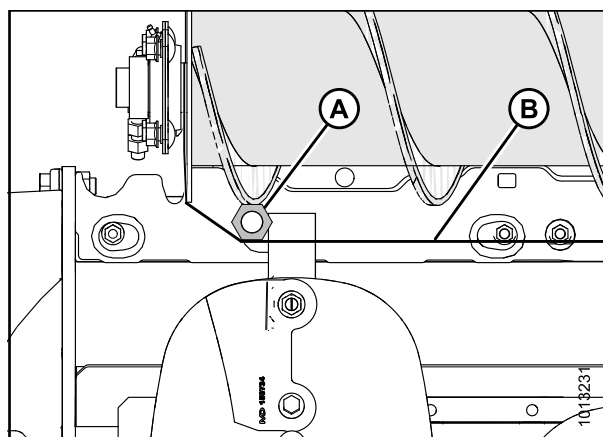


Figure 3.21: Fore/Aft Alignment String Routing

3.3.2 Adjusting Auger Alignment

Before adjusting the auger, check the vertical and fore/aft alignment. Refer to [3.3.1 Checking Auger Alignment, page 13](#). Record the values taken at the vertical measurement points (M1 and M2), and the fore/aft measurement points (M3 and M4).

NOTE:

If adjustment is required, set the auger position at the center support first—maintaining a clearance of 1/2–5/8 in. (12.5–16 mm) to the conditioner rolls—before adjusting the fore/aft and vertical alignment of the auger assembly.

INSTALLATION INSTRUCTIONS

Adjusting the Center Position of the Auger Assembly

1. Loosen the auger center support bolts (A). The holes in the center support (A) are slightly elongated to allow some adjustment.
2. Set auger as low as possible while maintaining a clearance (B) of 1/2–5/8 in. (12.5–16 mm) to the conditioner rolls.
3. Apply Loctite® 262 or 263 to bolts and torque to 200 ft-lbf (270 N-m).

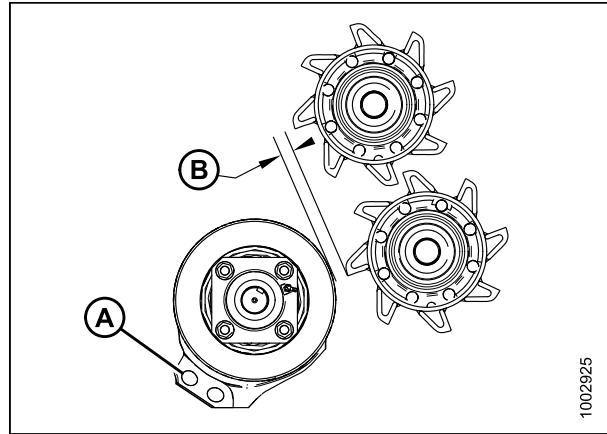


Figure 3.22: Auger to Conditioner Roller Clearance

Adjusting the Fore/Aft Auger Alignment – Right Side

4. Loosen bolts (A) and lock nut (B).
5. Adjust bolt (C) to set the auger fore/aft alignment until the difference between measurements at (M3 and M4) is less than 5/32 in. (4 mm).
6. When adjustment is complete, tighten lock nut (B) and bolts (A).

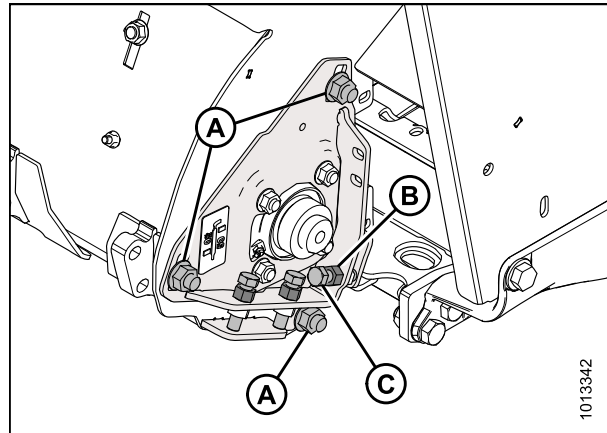


Figure 3.23: RH Auger End

Adjusting the Fore/Aft Auger Alignment – Left Side

7. Loosen bolts (A) and lock nut (B).
8. Adjust bolt (C) to set the auger fore/aft alignment until the difference between measurements at (M3 and M4) is less than 5/32 in. (4 mm).
9. When adjustment is complete, tighten lock nut (B) and bolts (A).

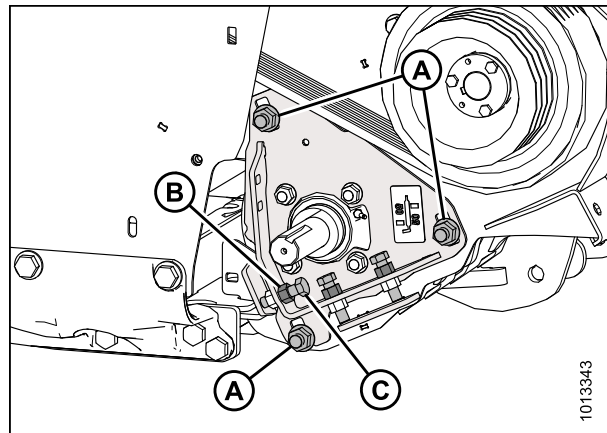


Figure 3.24: LH Auger End

INSTALLATION INSTRUCTIONS

Adjusting the Auger Vertical Position – Right Side

10. Loosen bolts (A) and lock nuts (B).
11. Adjust bolts (C) to set the auger vertical alignment until the difference between measurements at (M1 and M2) is less than 3/16 in. (5 mm).
12. When adjustment is complete, tighten lock nuts (B) and bolts (A).

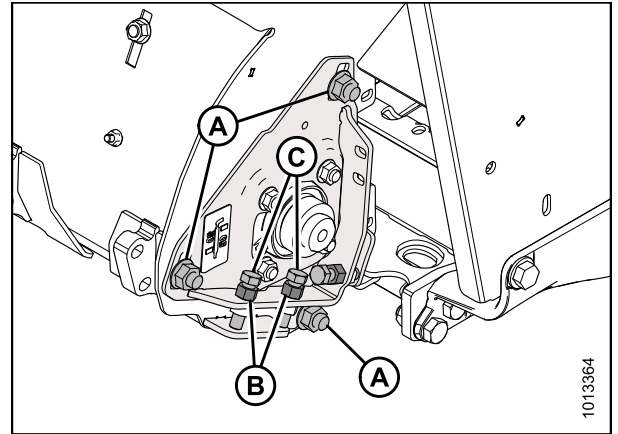


Figure 3.25: RH Auger End

Adjusting the Auger Vertical Position – Left Side

13. Loosen bolts (A) and lock nuts (B).
14. Adjust bolts (C) to set the auger vertical alignment until the difference between measurements at (M1 and M2) is less than 3/16 in. (5 mm).
15. When adjustment is complete, tighten lock nuts (B) and bolts (A).

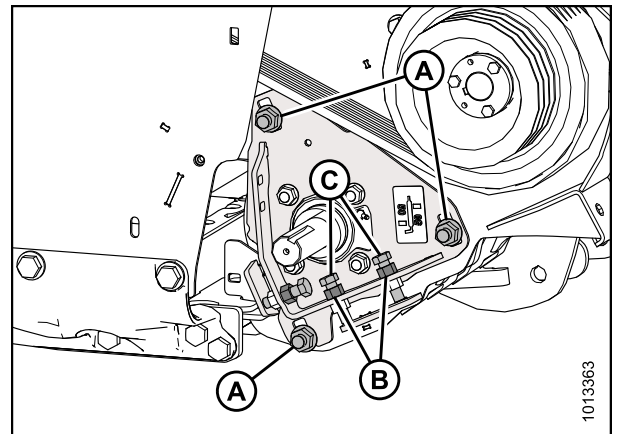


Figure 3.26: LH Auger End

3.4 Setting Stripper Bar Clearance

1. Lower header fully.
2. Shut down the windrower/tractor and remove the key.
3. Open cutterbar doors.
4. Open driveshield.
5. Loosen nuts (A) on the two bolts securing stripper bar to the pan sufficiently so that stripper bar can be moved.

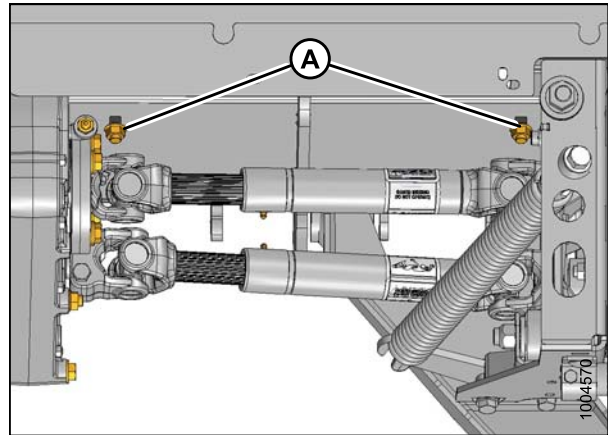


Figure 3.27: Left End

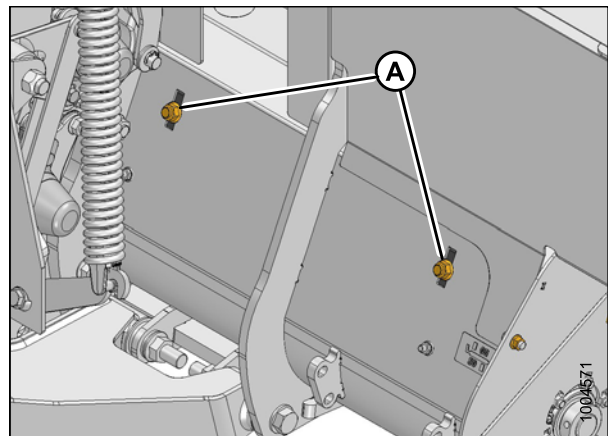


Figure 3.28: Right End

6. Position stripper bar (A) as close as possible to auger flighting without contacting it. Rotate auger in direction shown to check position.
7. Repeat the previous two steps for opposite side.
8. Manually rotate auger to check that auger does **NOT** contact stripper bars. Readjust as required.

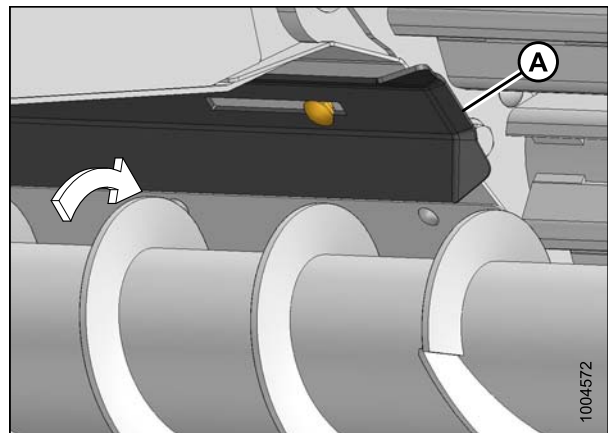


Figure 3.29: Stripper Bar

INSTALLATION INSTRUCTIONS

9. Tighten nuts (A).

NOTE:

Right-side and left-side stripper bars are interchangeable. Each stripper bar can be flipped when one bar wears out or becomes damaged.

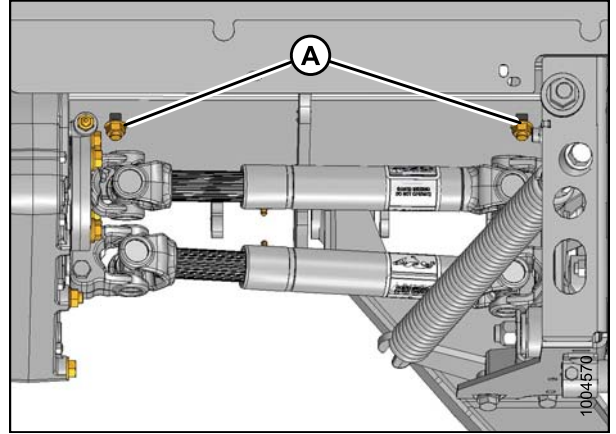


Figure 3.30: Left End

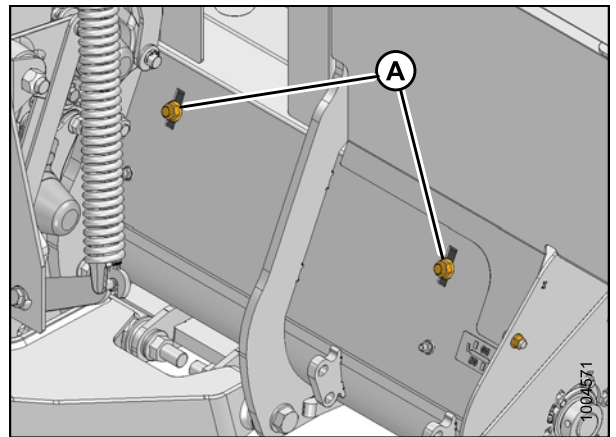


Figure 3.31: Right End

3.5 Installing Auger Center Shields

1. Torque universal joint bolt (A) to 72 ft-lbf (98 N·m).

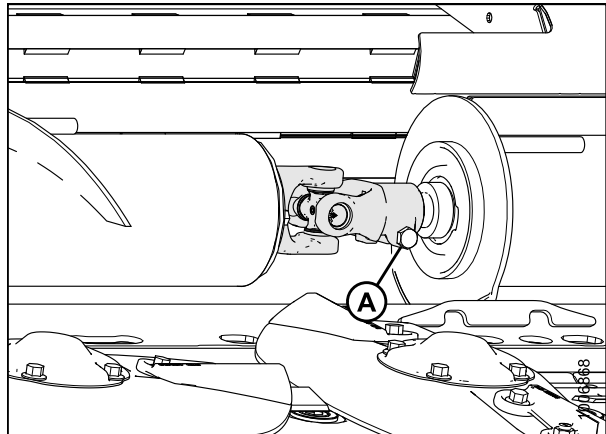


Figure 3.32: Universal Joint Bolt

2. Place beads of silicone (A) on the shield.

NOTE:

The bead of silicone on the end of the shield should be on the end with the tooling holes.

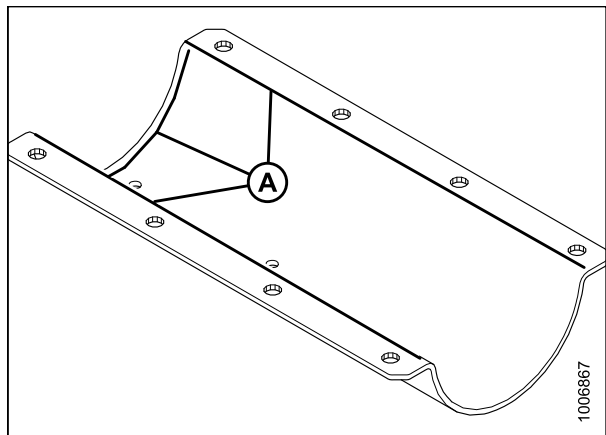


Figure 3.33: Auger Center Shield

3. Install the end of the shields (A) with the silicone bead onto the tube. Install the eight bolts (B) with bolt heads leading rotation.
4. Align the auger center shield flange (A) with the end of the fighting (C).

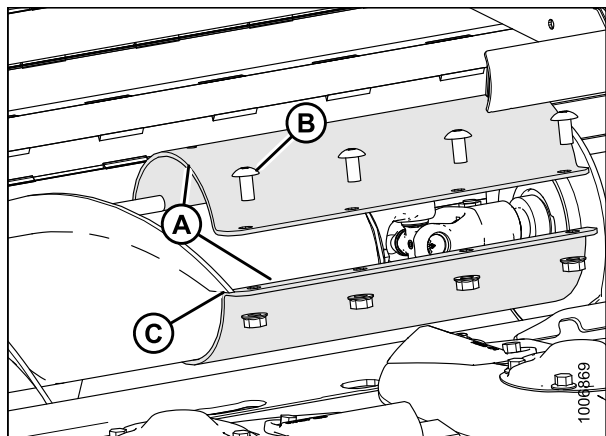


Figure 3.34: Auger Center Shields

INSTALLATION INSTRUCTIONS

5. Check clearance between the center shield (A) and center support (B). There should be clearance of 0.12 in. (3 mm) (C).
6. Tighten bolts (D).
7. Close cutterbar doors.

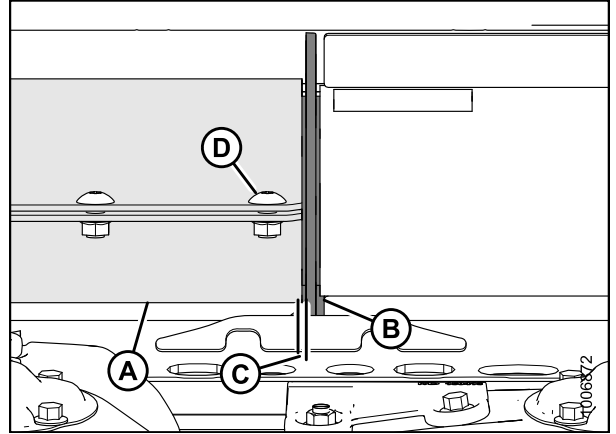


Figure 3.35: Clearance

8. Install the inner shield (A) to the header frame, and secure with bolts (B).

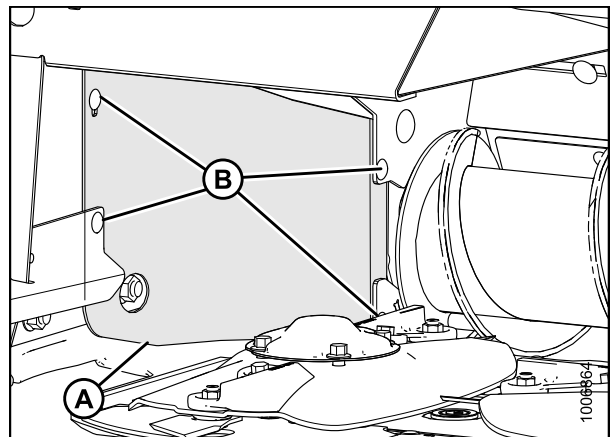


Figure 3.36: Inner Shield

INSTALLATION INSTRUCTIONS

3.6 Installing Tensioning System

1. Install 1.5 in. (38.9 mm) ID flat washer (A) onto the overshoot auger shaft.
2. Install idler arm assembly (B) onto the overshoot auger shaft.

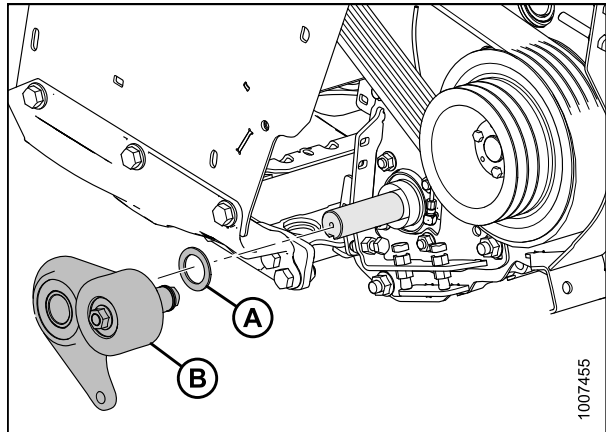


Figure 3.37: Idler Arm Assembly

3. Install pulley (A) and taper bushing (B) onto the overshoot auger shaft. Position auger pulley (A) and align outer face within 0.08–0.20 in. (2–5 mm) of main drive pulley face (C).
4. Ensure that the idler arm assembly moves freely.

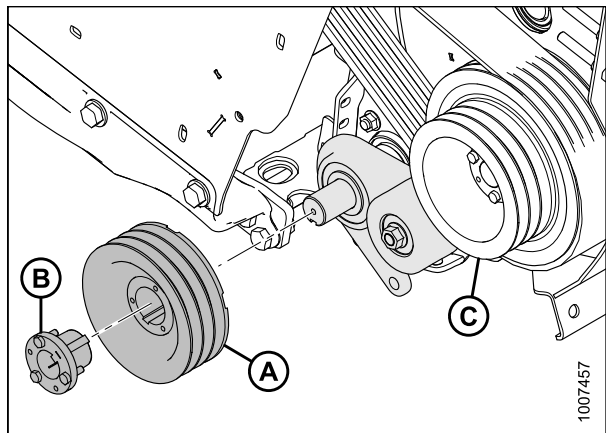


Figure 3.38: Auger Drive Pulley

5. Install triple belt (A) around pulleys.

NOTE:

Belt (A) must not overhang edge of idler pulley (B). If required, washers in the idler arm assembly can be relocated on bolt to laterally position pulley.

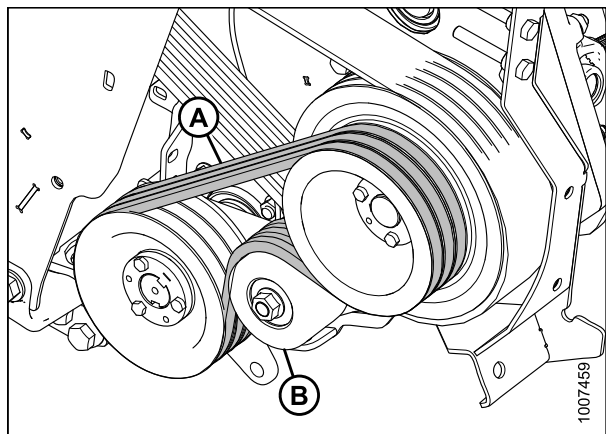


Figure 3.39: Triple Belt

INSTALLATION INSTRUCTIONS

6. Install spring (A) by inserting hook into opening (B).
7. Insert eye bolt (C) into spring bracket (D), and attach with spacer (E) and two hex nuts (F). Do **NOT** tighten.
8. Tension spring (A) until spring length (G) is 10-5/16 in. (262 mm).
9. Tighten nuts (F) to lock into position.

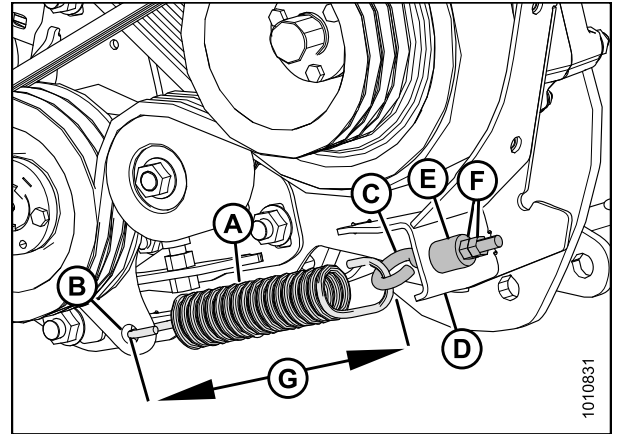


Figure 3.40: Belt Tension Adjustment

10. Install the end panel to the header, and secure with four bolts (A).

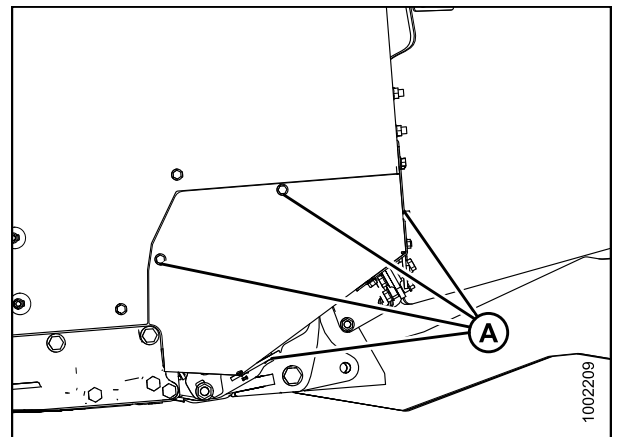


Figure 3.41: End Panel

11. Install the bottom gearbox panel, and secure with six bolts (A).

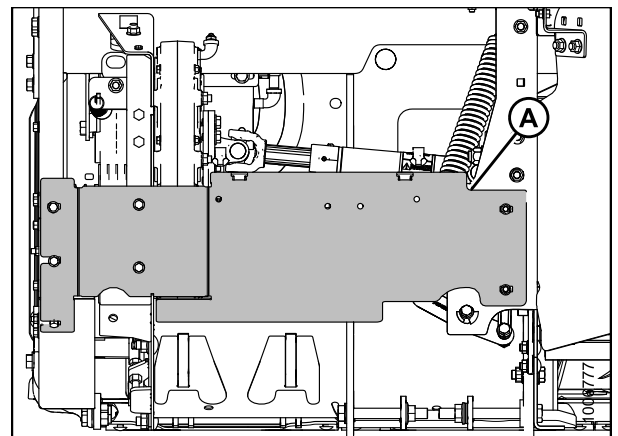


Figure 3.42: Bottom Gearbox Panel

MacDon Industries Ltd.

680 Moray Street
Winnipeg, Manitoba
Canada R3J 3S3
t. (204) 885-5590
f. (204) 832-7749

MacDon, Inc.

10708 N. Pomona Avenue
Kansas City, Missouri
United States 64153-1924
t. (816) 891-7313
f. (816) 891-7323

MacDon Australia Pty. Ltd.

A.C.N. 079 393 721
P.O. Box 243, Suite 3, 143 Main Street
Greensborough, Victoria, Australia 3088
t. 03 9432 9982
f. 03 9432 9972

LLC MacDon Russia Ltd.

123317 Moscow, Russia
10 Presnenskaya nab, Block C
Floor 5, Office No. 534, Regus Business Centre
t. +7 495 775 6971
f. +7 495 967 7600

CUSTOMERS

MacDon.com

DEALERS

Portal.MacDon.com

Trademarks of products are the marks of their
respective manufacturers and/or distributors.

Printed in Canada