

FD2 Series FlexDraper® Header for Combines

Steel Finger Kits (MD #311054, 311055, 311068, and 311069)
Installation Instructions

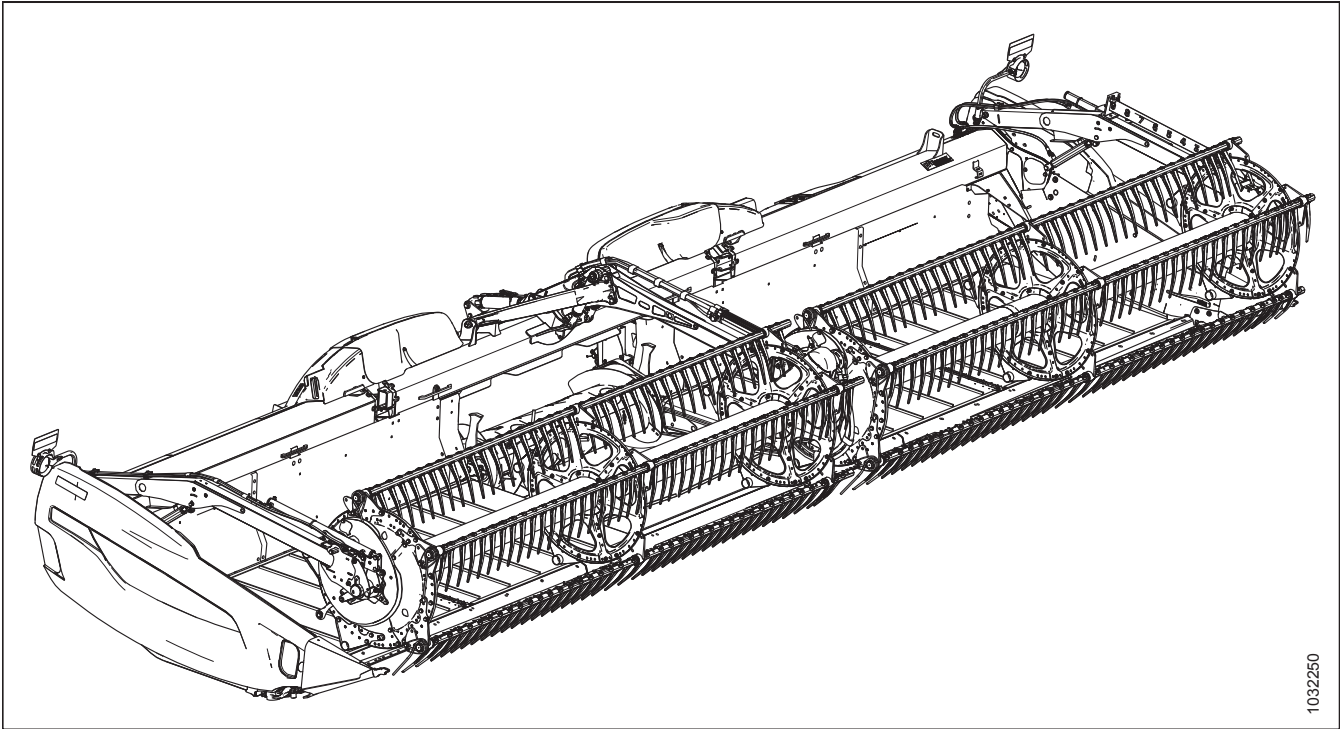
215505 Revision A

Original Instruction

Featuring MacDon FLEX-FLOAT Technology®

The Harvesting Specialists.

FD2 Series FlexDraper® Header



Published March 2021

© 2021 MacDon Industries, Ltd.

The information in this publication is based on the information available and in effect at the time of printing. MacDon Industries, Ltd. makes no representation or warranty of any kind, whether expressed or implied, with respect to the information in this publication. MacDon Industries, Ltd. reserves the right to make changes at any time without notice.

Introduction

This document explains where to install the different steel fingers in the correct locations for FD230 and FD235 headers. A list of parts included in each kit is provided in Chapter [2 Parts List, page 5](#).

Installation time

Installation time for this kit is approximately 3 hours.

Conventions

The following conventions are used in this document:

- Right and left 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 combine.
- Unless otherwise noted, use the standard torque values provided in the header operator's manual and technical manual.

NOTE:

This document is currently available in English only.

TABLE OF CONTENTS

Introduction	i
Chapter 1: Safety	1
1.1 Signal Words	1
1.2 General Safety	2
Chapter 2: Parts List.....	5
2.1 Steel Finger Kit MD #311054 (FD230, Double Reel, Five Bats)	5
2.2 Steel Finger Kit MD #311055 (FD230, Double Reel, Six Bats).....	6
2.3 Steel Finger Kit MD #311068 (FD235, Double Reel, Five Bats)	7
2.4 Steel Finger Kit MD #311069 (FD235, Double Reel, Six Bats).....	8
Chapter 3: Steel Finger Placement.....	9
3.1 FD230, Double Reel, Five and Six Bats – Narrow.....	10
3.2 FD230, Double Reel, Five and Six Bats – Wide.....	11
3.3 FD235, Double Reel, Five and Six Bats – Narrow.....	12
3.4 FD235, Double Reel, Five and Six Bats – Wide.....	13
Chapter 4: Removing Existing Fingers and Bushings.....	15
4.1 Removing Bushings and Steel or Plastic Fingers from Reels	15
Chapter 5: Installation Instructions	25
5.1 Installing Bushings and Steel Fingers to Reels	25
5.2 Installing Reel Endshields	33
5.2.1 Installing Reel Endshields at Outboard Cam End	34
5.2.2 Installing Reel Endshields at Inboard Tail End	39
5.2.3 Installing Reel Endshields at Inboard Cam End.....	43
5.2.4 Installing Reel Endshields at Outboard Tail End	48

Chapter 1: Safety

Understanding and following safety procedures consistently will help to ensure the safety of machine operators and bystanders.

1.1 Signal Words

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

Signal words are selected using the following guidelines:



DANGER

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



WARNING

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



CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.2 General Safety

Protect yourself when assembling, operating, and servicing machinery.

CAUTION

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

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

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

In addition, take the following precautions:

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



Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

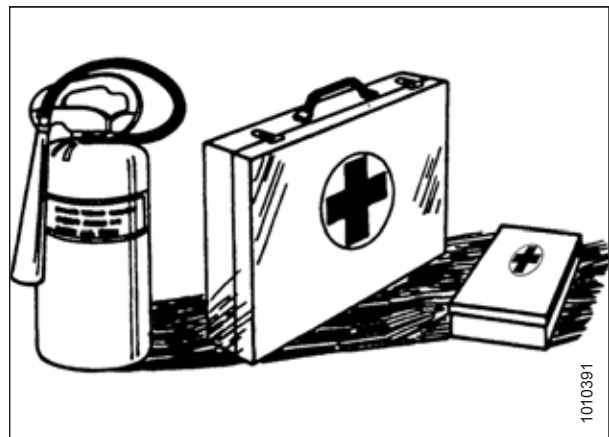


Figure 1.3: Safety Equipment

SAFETY

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



Figure 1.4: Safety around Equipment

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

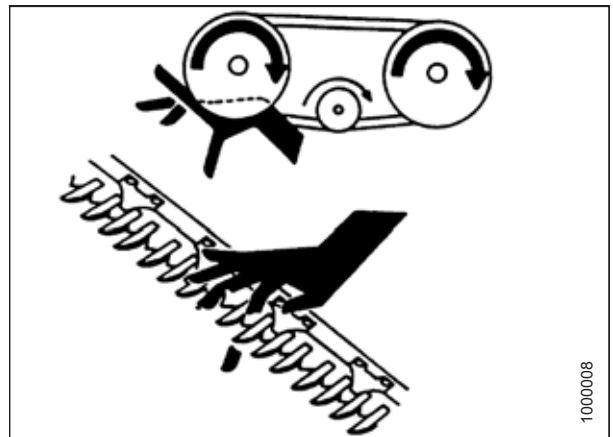


Figure 1.5: Safety around Equipment

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

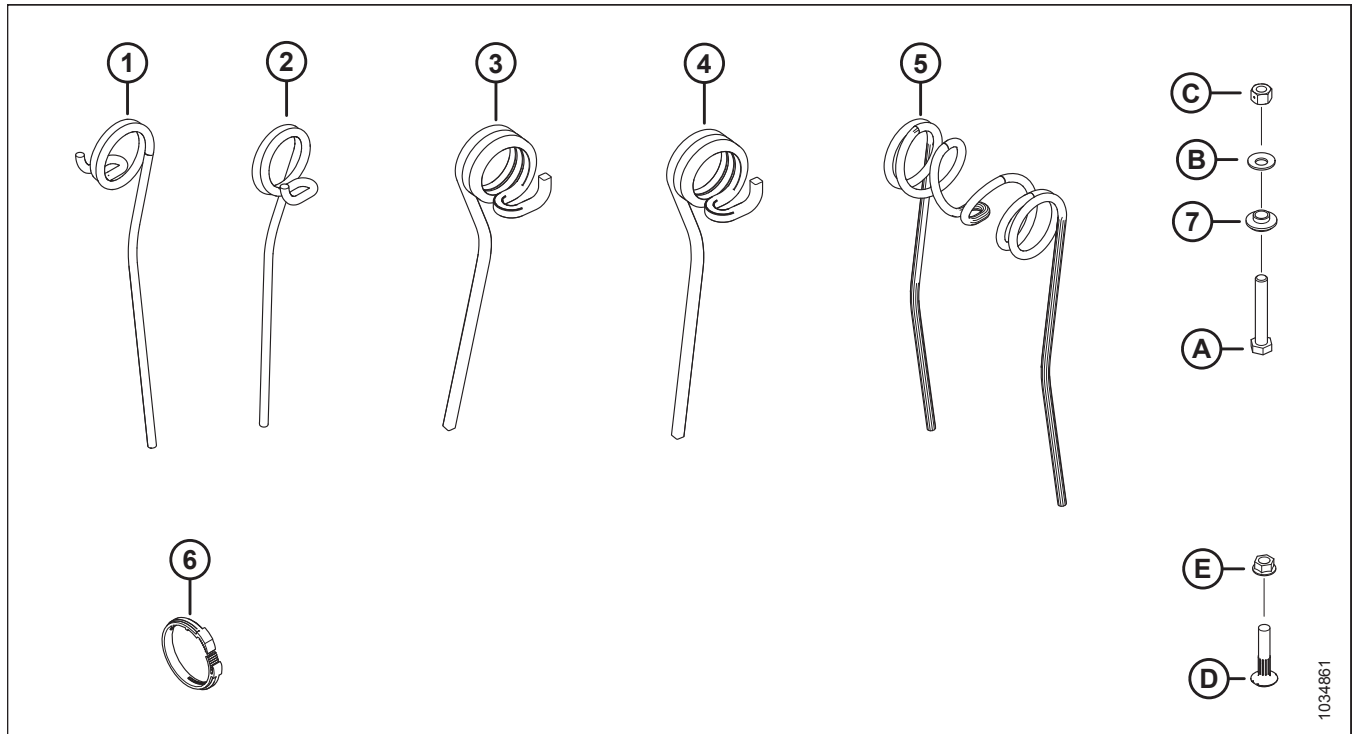


Figure 1.6: Safety around Equipment

Chapter 2: Parts List

A parts list is provided in this instruction so that you can confirm that you have received all required parts before you begin installation.

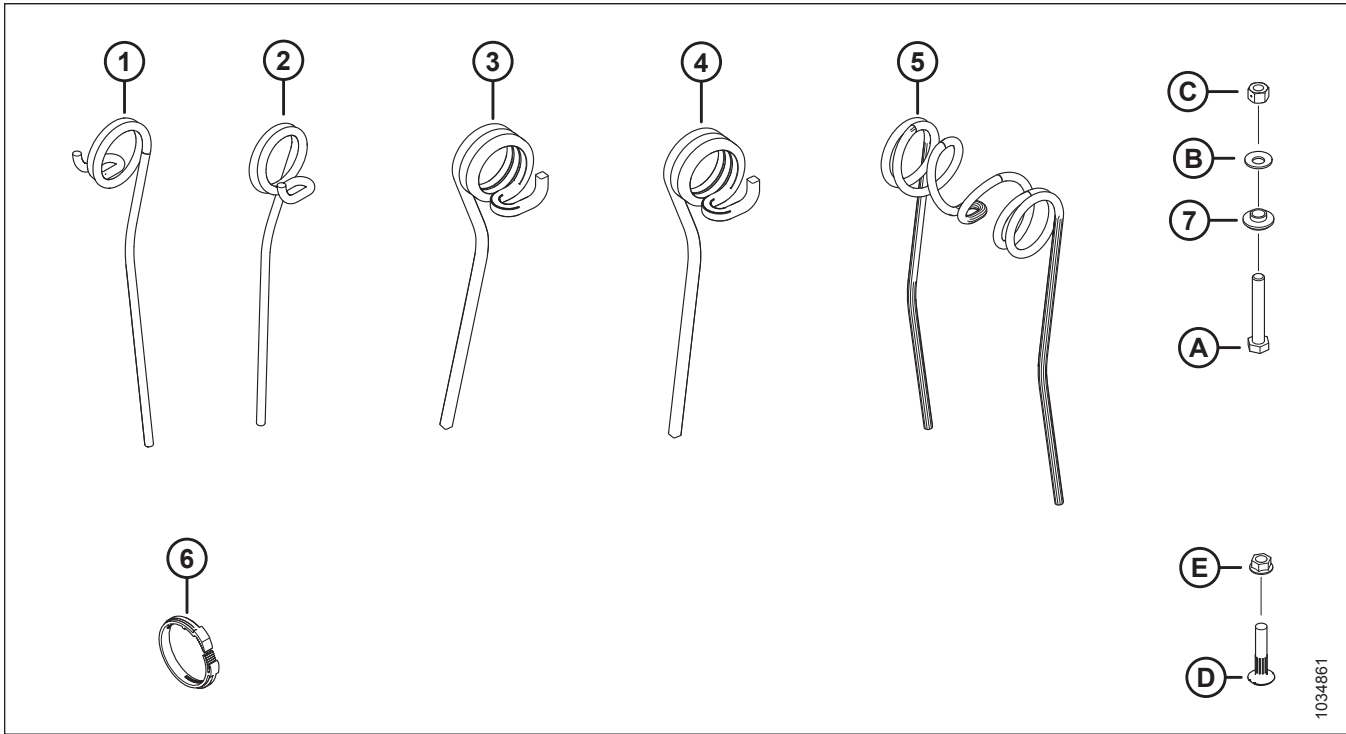
2.1 Steel Finger Kit MD #311054 (FD230, Double Reel, Five Bats)



Ref	Part Number	Description	Quantity
1	311324	FINGER – LH SINGLE CONCENTRIC	10
2	311323	FINGER – RH SINGLE CONCENTRIC	4
3	311322	FINGER – TAIL END INBOARD	5
4	311321	FINGER – TAIL END OUTBOARD	5
5	137092	FINGER	135
6	220941	CLAMP – TINE TUBE BUSHING, CENTER RIB (BOX OF 5)	6
7	273052	RETAINER – END FINGER	10
A	108172	BOLT – HEX HD M10 X 1.5 X 65-8.8-AA1J	10
B	184584	WASHER – CON SPRING M10 STL SAE	10
C	135800	NUT – HEX CTR LOC SPCL M10 X 1.5-9-AA1J	10
D	137118	BOLT – BTN HD RIB NK 3/8 NC	149
E	30228	NUT – FLG DT SM FACE 3/8-16 UNC-GR5-AA1J	149

PARTS LIST

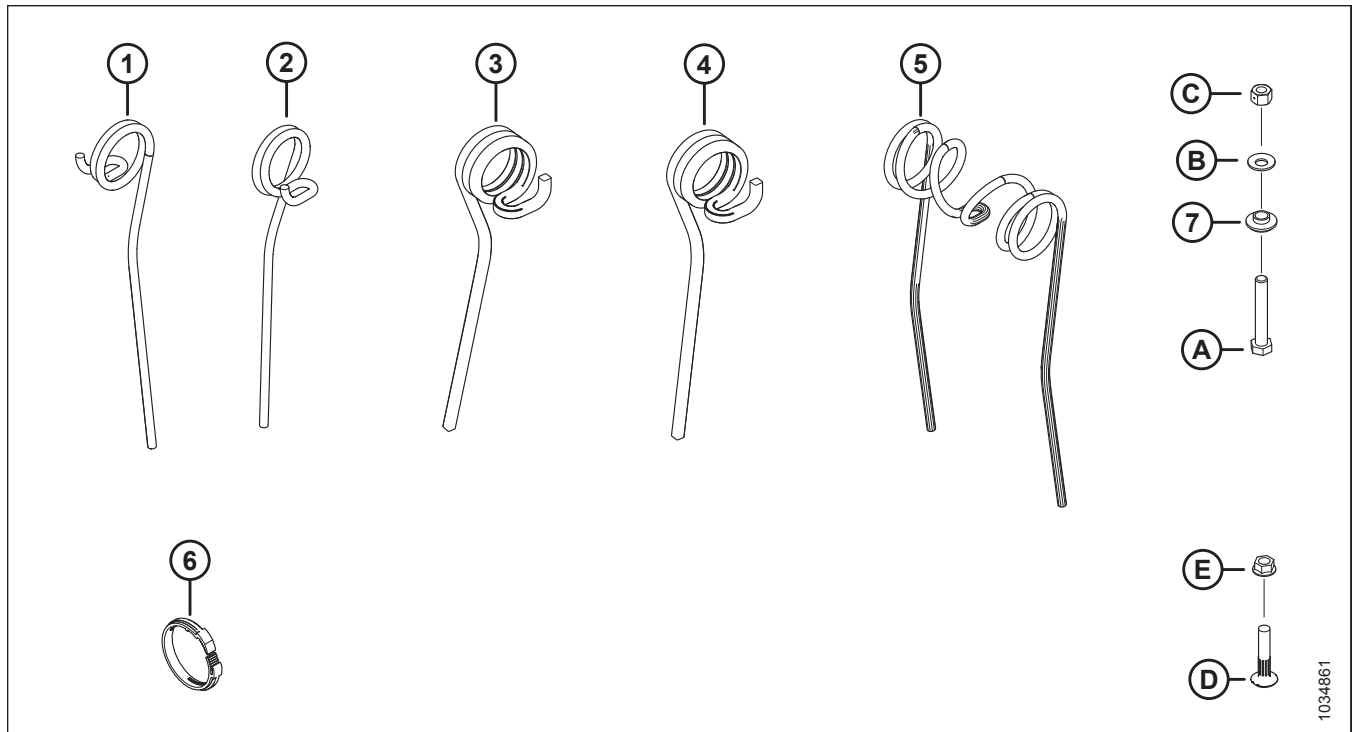
2.2 Steel Finger Kit MD #311055 (FD230, Double Reel, Six Bats)



Ref	Part Number	Description	Quantity
1	311324	FINGER – LH SINGLE CONCENTRIC	12
2	311323	FINGER – RH SINGLE CONCENTRIC	6
3	311322	FINGER – TAIL END INBOARD	6
4	311321	FINGER – TAIL END OUTBOARD	6
5	137092	FINGER	135
6	220941	CLAMP – TINE TUBE BUSHING, CENTER RIB (BOX OF 5)	8
7	273052	RETAINER – END FINGER	12
A	108172	BOLT – HEX HD M10 X 1.5 X 65-8.8-AA1J	12
B	184584	WASHER – CON SPRING M10 STL SAE	12
C	135800	NUT – HEX CTR LOC SPCL M10 X 1.5-9-AA1J	12
D	137118	BOLT – BTN HD RIB NK 3/8 NC	153
E	30228	NUT – FLG DT SM FACE 3/8-16 UNC-GR5-AA1J	153

PARTS LIST

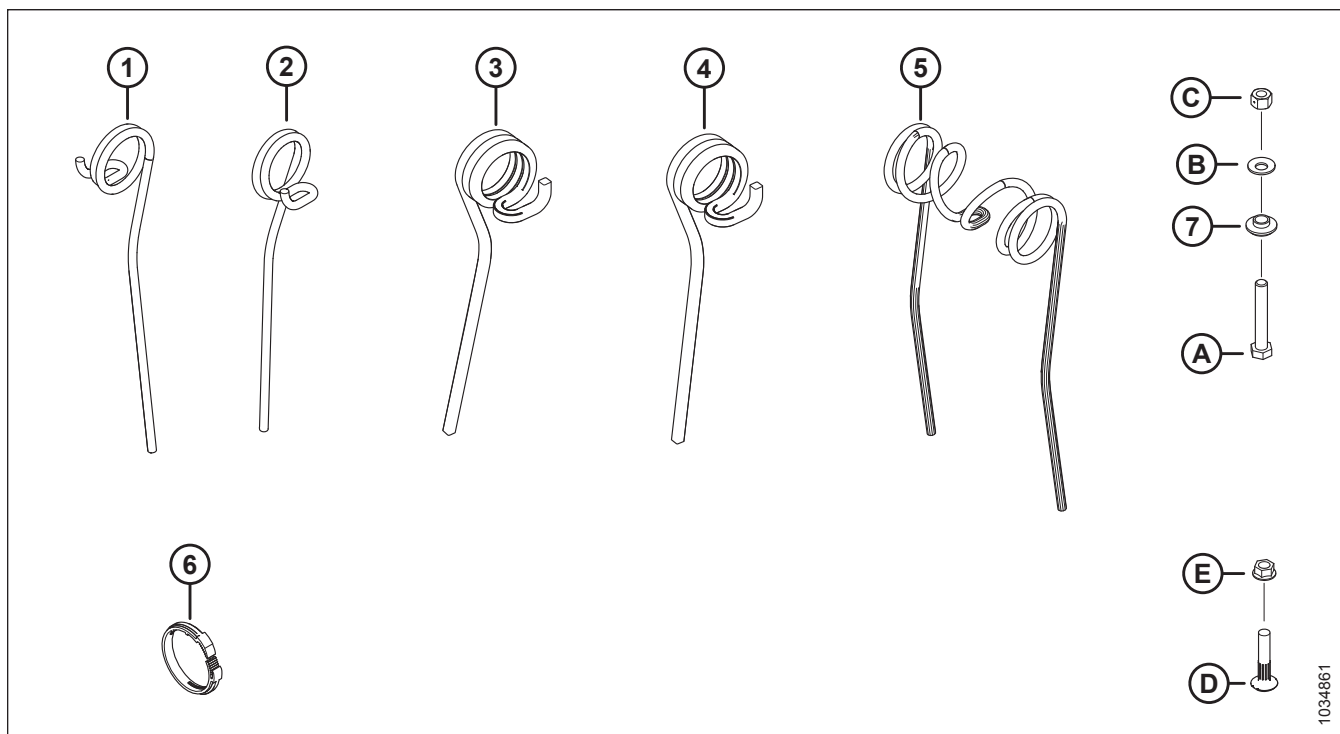
2.3 Steel Finger Kit MD #311068 (FD235, Double Reel, Five Bats)



Ref	Part Number	Description	Quantity
1	311324	FINGER – LH SINGLE CONCENTRIC	30
2	311323	FINGER – RH SINGLE CONCENTRIC	18
3	311322	FINGER – TAIL END INBOARD	5
4	311321	FINGER – TAIL END OUTBOARD	5
5	137092	FINGER	143
6	220941	CLAMP – TINE TUBE BUSHING, CENTER RIB (BOX OF 5)	8
7	273052	RETAINER – END FINGER	10
A	108172	BOLT – HEX HD M10 X 1.5 X 65-8.8-AA1J	10
B	184584	WASHER – CON SPRING M10 STL SAE	10
C	135800	NUT – HEX CTR LOC SPCL M10 X 1.5-9-AA1J	10
D	137118	BOLT – BTN HD RIB NK 3/8 NC	191
E	30228	NUT – FLG DT SM FACE 3/8-16 UNC-GR5-AA1J	191

PARTS LIST

2.4 Steel Finger Kit MD #311069 (FD235, Double Reel, Six Bats)



Ref	Part Number	Description	Quantity
1	311324	FINGER – LH SINGLE CONCENTRIC	36
2	311323	FINGER – RH SINGLE CONCENTRIC	24
3	311322	FINGER – TAIL END INBOARD	6
4	311321	FINGER – TAIL END OUTBOARD	6
5	137092	FINGER	171
6	220941	CLAMP – TINE TUBE BUSHING, CENTER RIB (BOX OF 5)	10
7	273052	RETAINER – END FINGER	12
A	108172	BOLT – HEX HD M10 X 1.5 X 65-8.8-AA1J	12
B	184584	WASHER – CON SPRING M10 STL SAE	12
C	135800	NUT – HEX CTR LOC SPCL M10 X 1.5-9-AA1J	12
D	137118	BOLT – BTN HD RIB NK 3/8 NC	231
E	30228	NUT – FLG DT SM FACE 3/8-16 UNC-GR5-AA1J	231

Chapter 3: Steel Finger Placement

Refer to the following illustrations during the installation process to make sure the fingers are placed in the correct locations for your application:

- *3.1 FD230, Double Reel, Five and Six Bats – Narrow, page 10*
- *3.2 FD230, Double Reel, Five and Six Bats – Wide, page 11*
- *3.3 FD235, Double Reel, Five and Six Bats – Narrow, page 12*
- *3.4 FD235, Double Reel, Five and Six Bats – Wide, page 13*

3.1 FD230, Double Reel, Five and Six Bats – Narrow

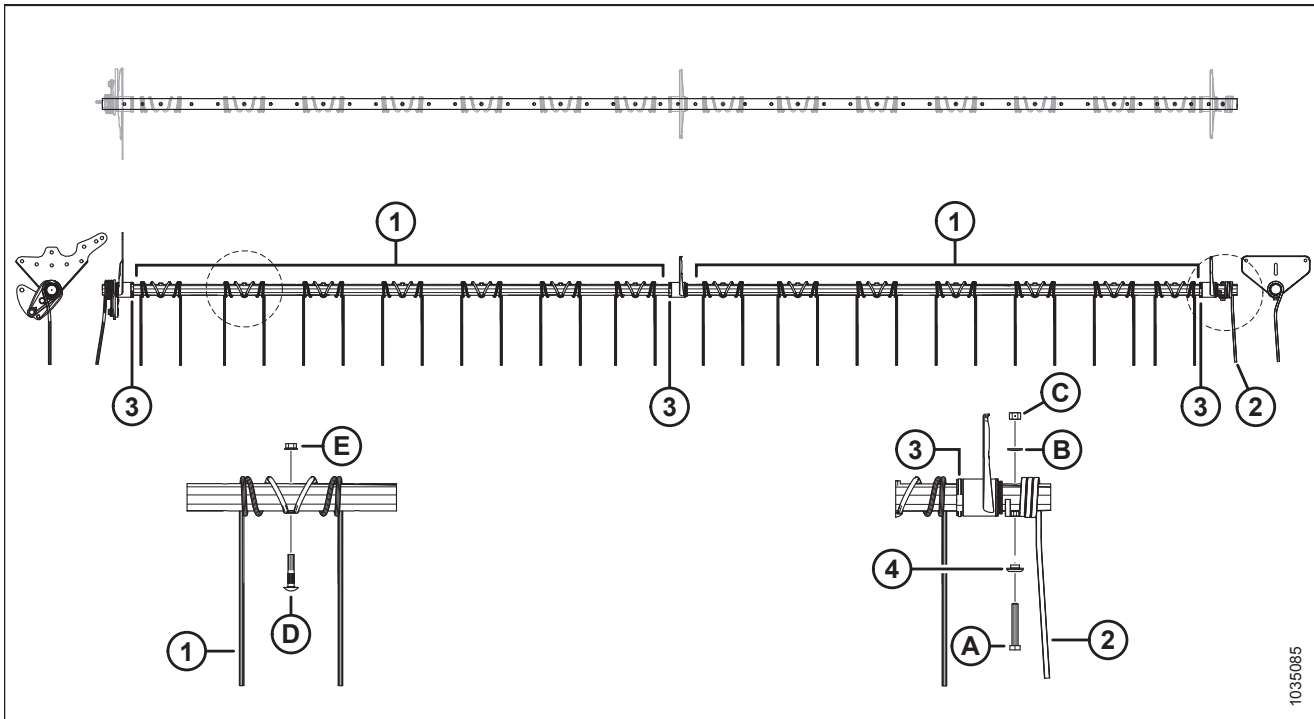


Figure 3.1: Left Side Narrow

1 - MD #137092 2 - MD #311321 3 - MD #220941 4 - MD #273052 E - MD #30228
A - MD #108172 B - MD #184584 C - MD #135800 D - MD #137118

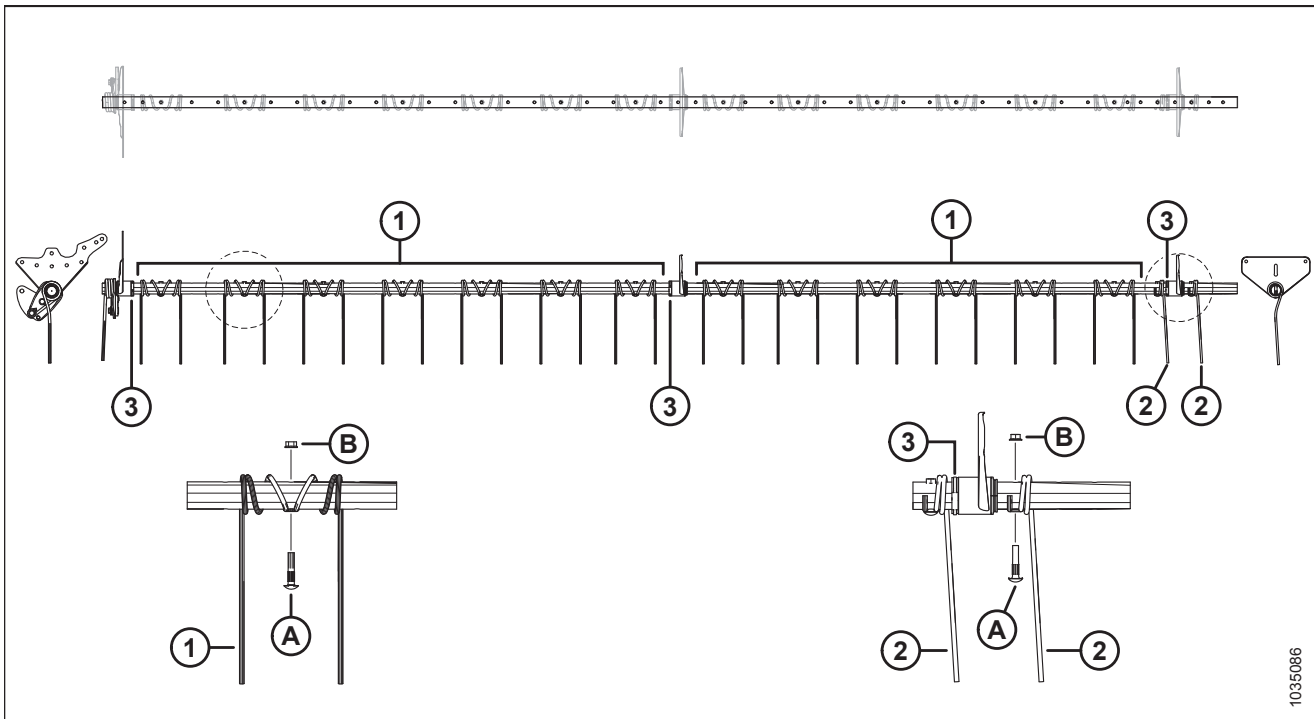


Figure 3.2: Right Side Narrow

1 - MD #137092 2 - MD #311324 3 - MD #220941 A - MD #137118 B - MD #30228

3.2 FD230, Double Reel, Five and Six Bats – Wide

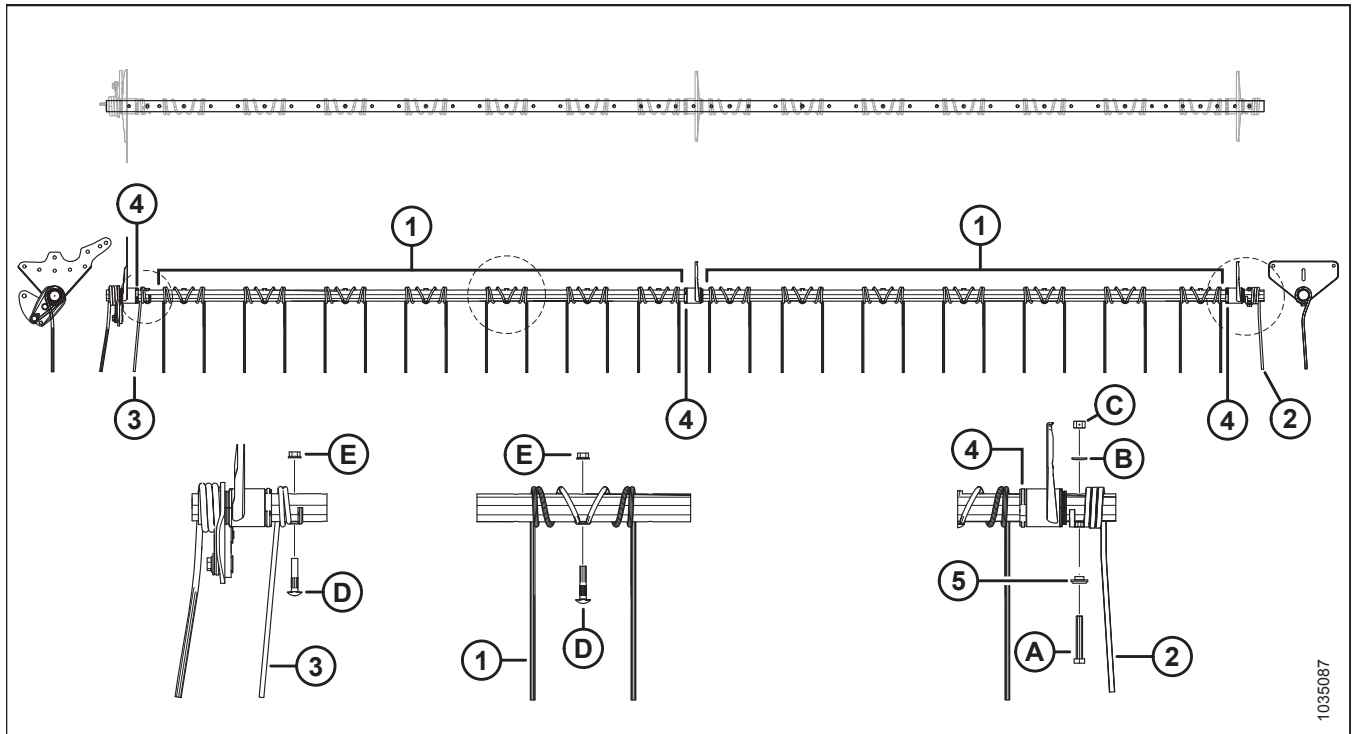


Figure 3.3: Left Side Wide

1 - MD #137092 2 - MD #311321 3 - MD #311323 4 - MD #220941 5 - MD #273052
A - MD #108172 B - MD #184584 C - MD #135800 D - MD #137118 E - MD #30228

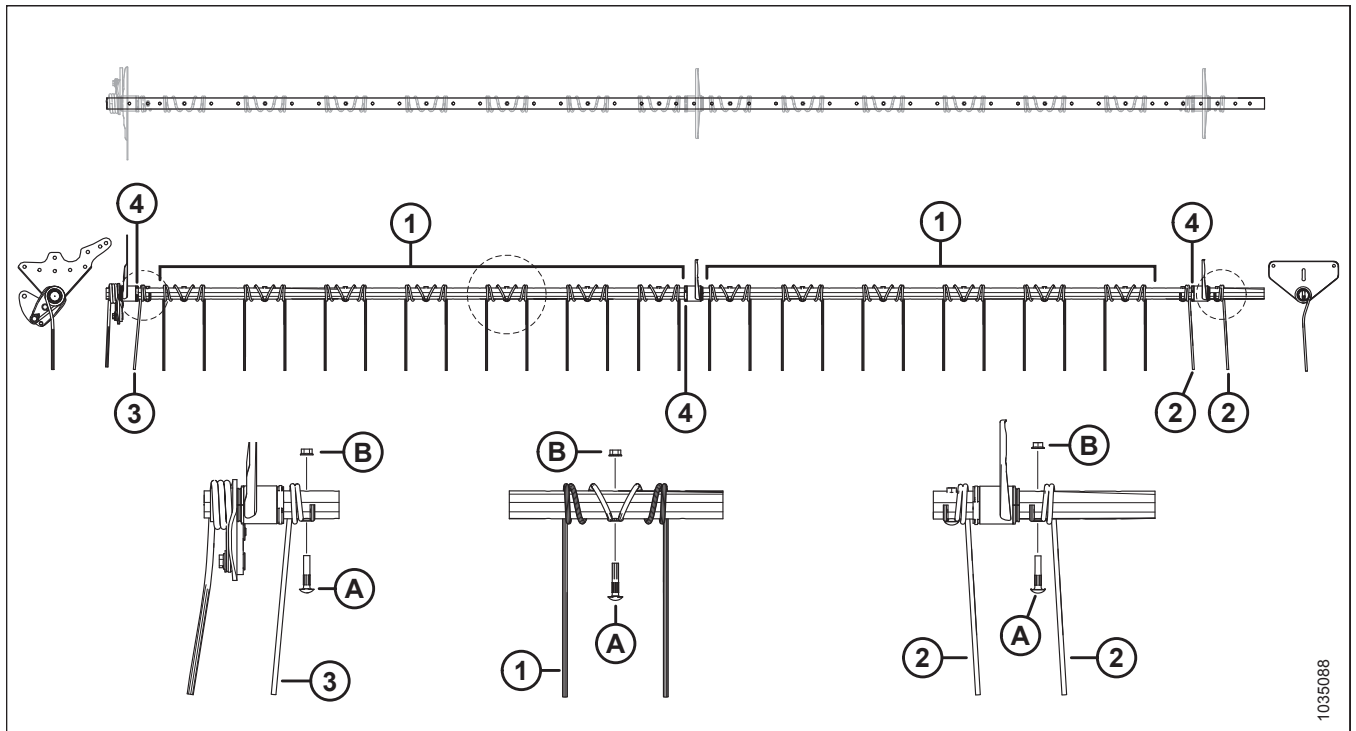


Figure 3.4: Right Side Wide

1 - MD #137092 2 - MD #311324 3 - MD #311323 4 - MD #220941 A - MD #137118 B - MD #30228

3.3 FD235, Double Reel, Five and Six Bats – Narrow

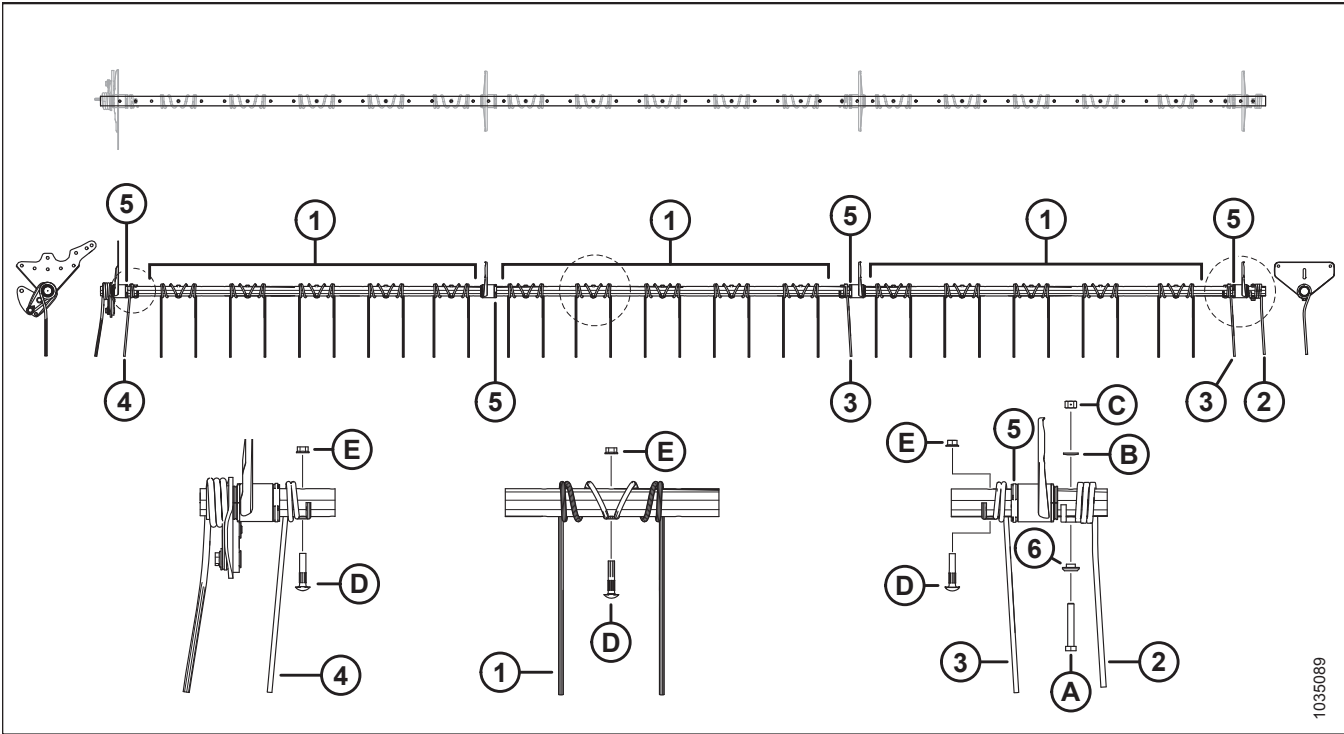


Figure 3.5: Left Side Narrow

- | | | | | | |
|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 - MD #137092 | 2 - MD #311321 | 3 - MD #311324 | 4 - MD #311323 | 5 - MD #220941 | 6 - MD #273052 |
| A - MD #108172 | B - MD #184584 | C - MD #135800 | D - MD #137118 | E - MD #30228 | |

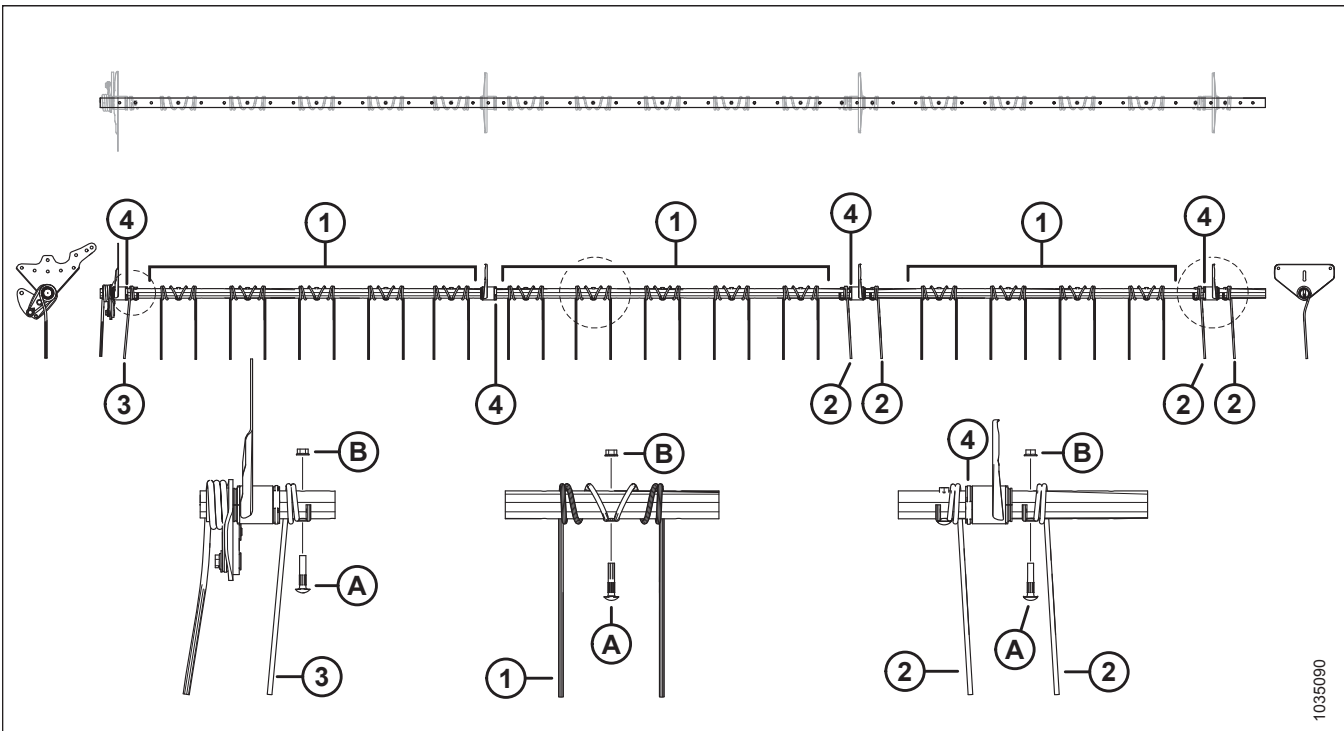


Figure 3.6: Right Side Narrow

- | | | | | | |
|----------------|----------------|----------------|----------------|----------------|---------------|
| 1 - MD #137092 | 2 - MD #311324 | 3 - MD #311323 | 4 - MD #220941 | A - MD #137118 | B - MD #30228 |
|----------------|----------------|----------------|----------------|----------------|---------------|

3.4 FD235, Double Reel, Five and Six Bats – Wide

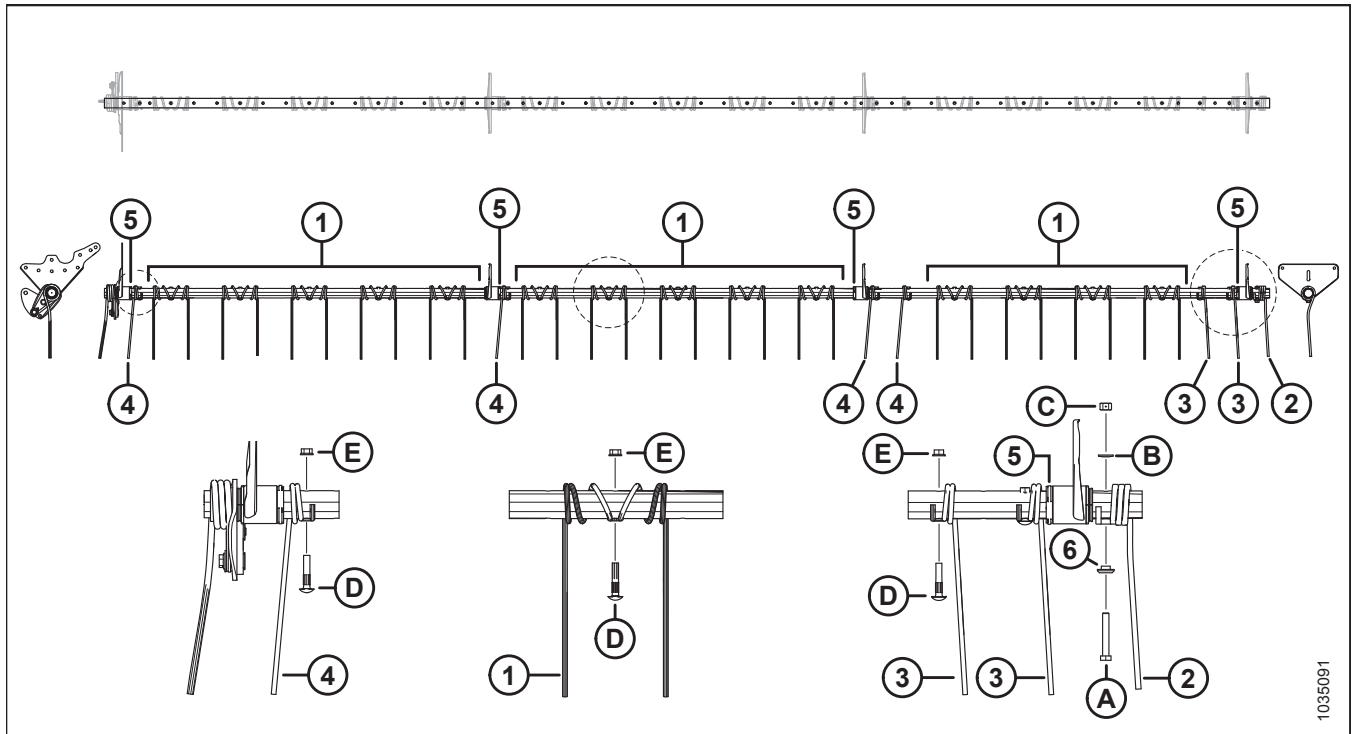


Figure 3.7: Left Side Wide

1 - MD #137092 2 - MD #311321 3 - MD #311324 4 - MD #311323 5 - MD #220941 6 - MD #273052
 A - MD #108172 B - MD #184584 C - MD #135800 D - MD #137118 E - MD #30228

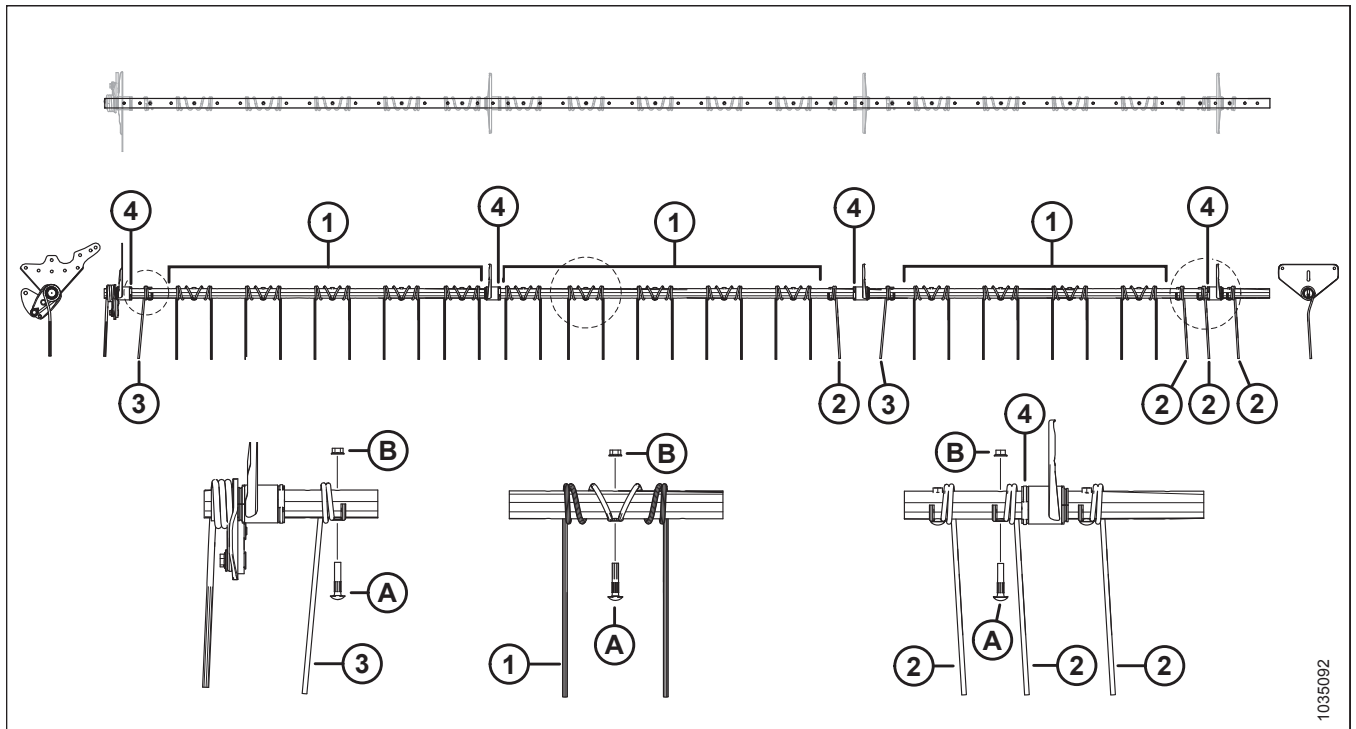


Figure 3.8: Right Side Wide

1 - MD #137092 2 - MD #311324 3 - MD #311323 4 - MD #220941 A - MD #137118 B - MD #30228

Chapter 4: Removing Existing Fingers and Bushings

To remove existing fingers and bushings, follow the procedures in the order provided.

4.1 Removing Bushings and Steel or Plastic Fingers from Reels

Bushing are located at the point where the reel tine connects to the reel disc.

DANGER

To avoid bodily injury or death from the unexpected start-up or fall of a raised machine, always stop engine and remove key before leaving the operator's seat, and always engage safety props before going under the machine for any reason.

WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube and other components.

1. Lower the header fully.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to the FD2/FM200 Operators Manual.

Center disc and tail end bushings

5. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

NOTE:

There are no endshields on the center disc.

6. Remove bolts (A) securing tine tube arm (B) to the disc.

IMPORTANT:

Note the hole locations in the arm and disc and ensure bolts (A) are reinstalled at the original locations.

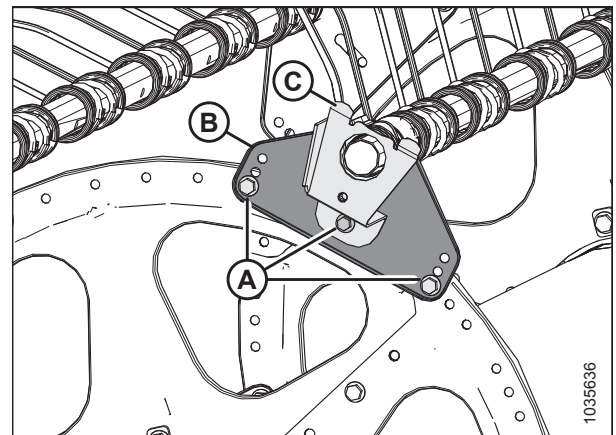


Figure 4.1: Tail End

REMOVING EXISTING FINGERS AND BUSHINGS

7. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

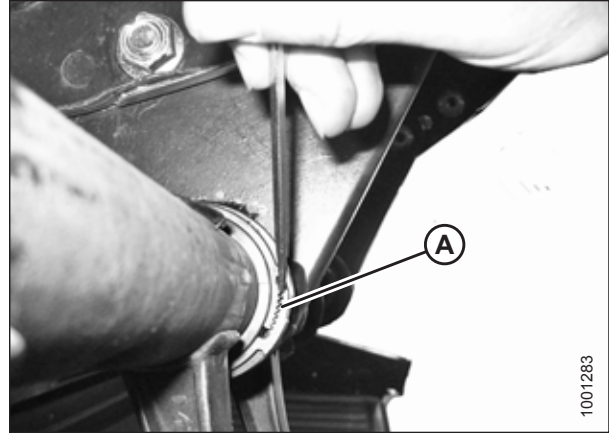


Figure 4.2: Bushing Clamp

8. Rotate tine tube arm (A) until clear of the disc and slide the arm inboard off of bushing (B).
9. Remove bushing halves (B). If required, remove the next steel or plastic finger, so the arm can slide off the bushing. Refer to the following steps as necessary for removing steel or plastic fingers:

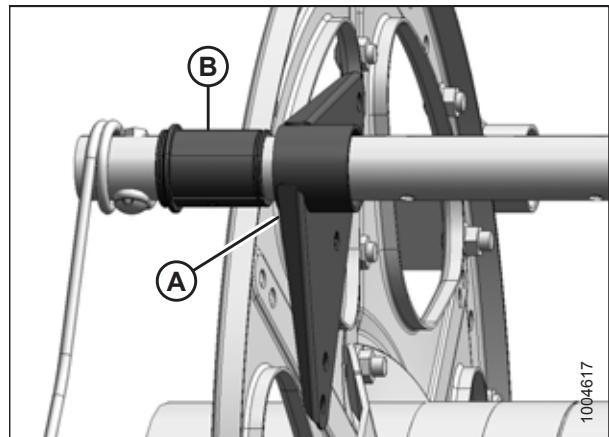


Figure 4.3: Bushing

Steel Finger

10. Remove bolts (B) from the existing fingers and slide the fingers over the tine tube to remove. (remove tine tube arms (A) from the tine tubes as necessary).

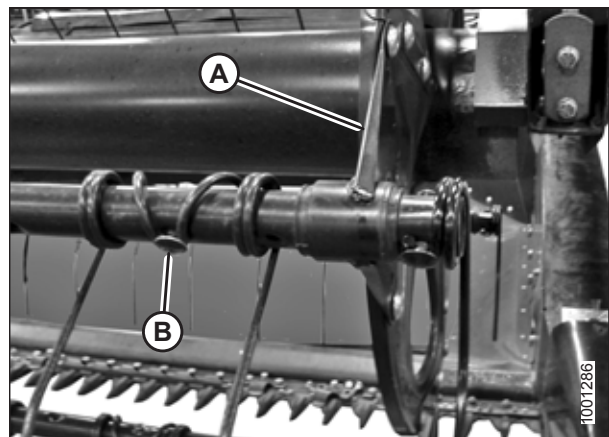


Figure 4.4: Removing Steel Finger

REMOVING EXISTING FINGERS AND BUSHINGS

Plastic Finger

11. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

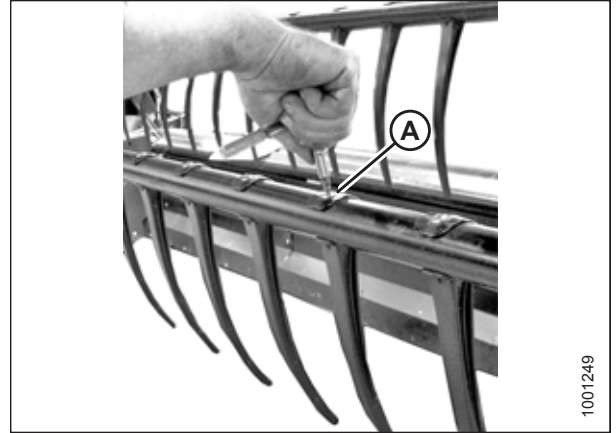


Figure 4.5: Removing Plastic Finger

Plastic Finger

12. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.



Figure 4.6: Removing Plastic Finger

Cam end bushings

13. Remove the endshields and endshield support (A) at the applicable tine tube location on the cam end.

NOTE:

Removing cam end bushings requires the tine tube to be moved through the disc arms to expose the bushing.

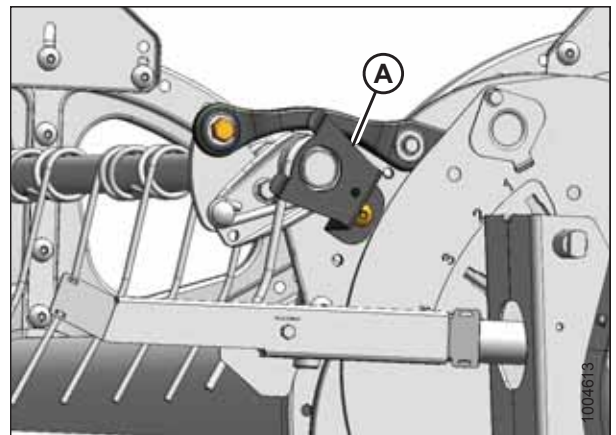


Figure 4.7: Cam End

REMOVING EXISTING FINGERS AND BUSHINGS

14. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

NOTE:

There are no endshields on the center disc.

15. Remove bolts (A) securing tine tube arms (B) to the tail and center discs.

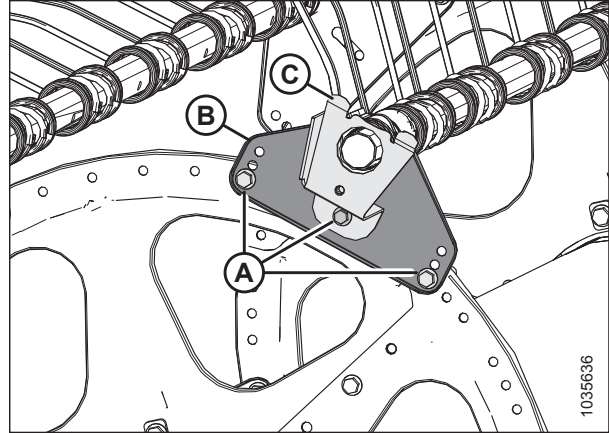


Figure 4.8: Tail End

Tine tube reinforcing kit (option)¹

16. Release the bushing clamps or disconnect the support channels from the tine tube support (if installed) depending on which tine tube is being moved. Three tine tubes (A) require channel disconnection and two tine tubes (B) require only bushing clamp removal.

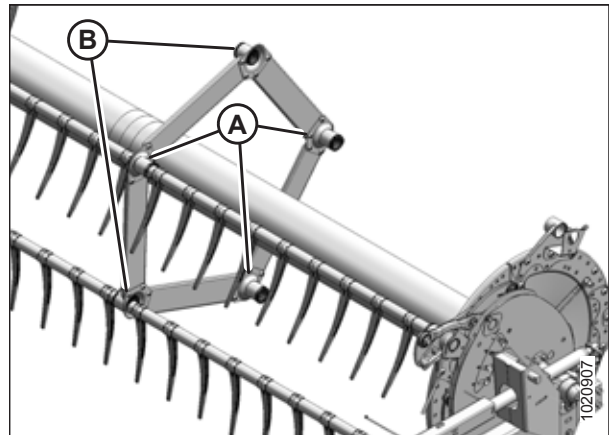


Figure 4.9: Tine Tube Supports

17. Remove bolt (C) and washer (D) from the cam arm (B) so tine tube (A) is free to rotate.

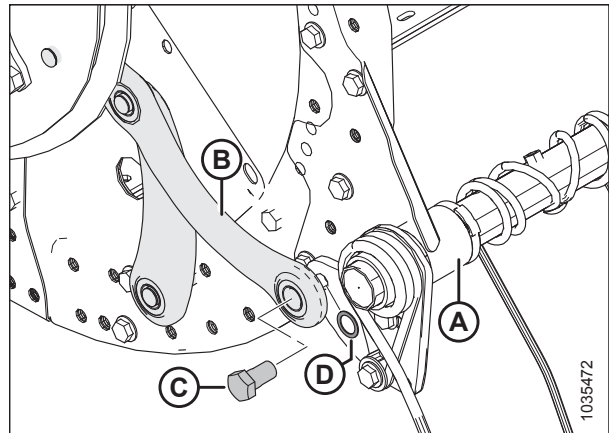


Figure 4.10: Cam End

1. Five-Bat Reel MD #B5825, Six-Bat Reel MD #B5826.

REMOVING EXISTING FINGERS AND BUSHINGS

18. Release bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

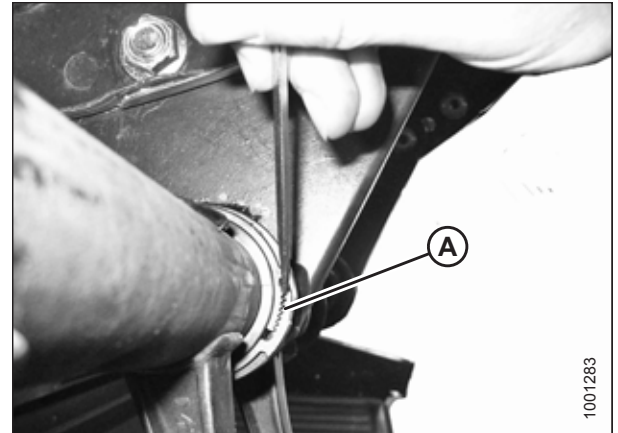


Figure 4.11: Bushing Clamp

19. Slide tine tube (A) outboard to expose bushing (B).
20. Remove bushing halves (B). If required, remove the next steel or plastic finger so the arm can slide off the bushing. Refer to the following steps as necessary for removing steel or plastic fingers:

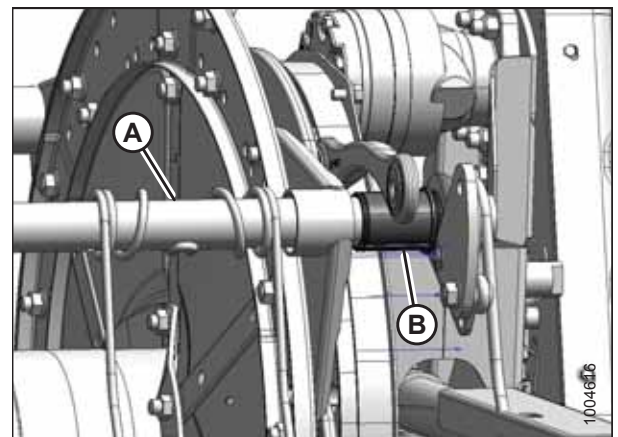


Figure 4.12: Cam End

Steel Finger

21. Remove bolts (B) from the existing fingers and slide the fingers over the tine tube to remove. (remove tine tube arms (A) from the tine tubes as necessary).

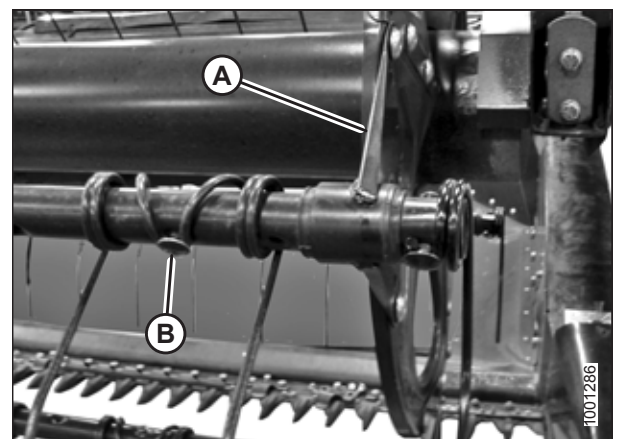


Figure 4.13: Removing Steel Finger

REMOVING EXISTING FINGERS AND BUSHINGS

Plastic Finger

22. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

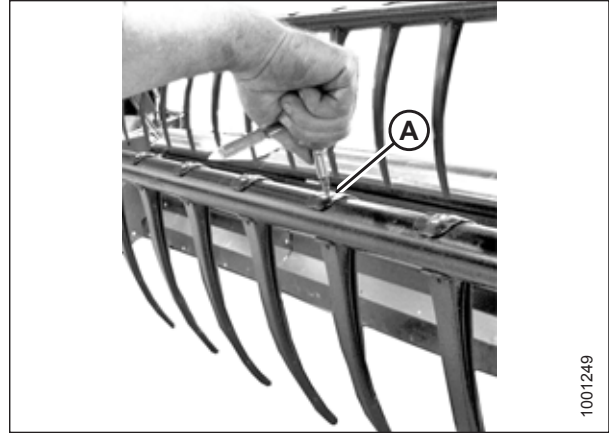


Figure 4.14: Removing Plastic Finger

Plastic Finger

23. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.



Figure 4.15: Removing Plastic Finger

Tine tube reinforcing kit bushings (option)

24. Locate support (A) that requires a new bushing.
25. Remove four bolts (B) securing channel (C) to support (A).
26. Remove screw (E) and remove finger (D) if it is too close to the support to allow access to the bushing. Refer to the following steps as necessary for removing steel or plastic fingers:

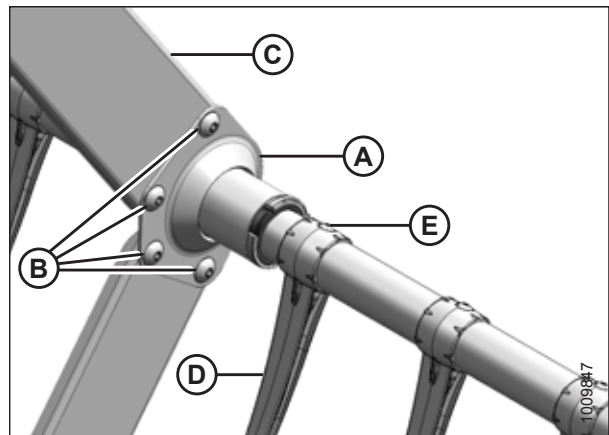


Figure 4.16: Tine Tube Support

REMOVING EXISTING FINGERS AND BUSHINGS

Steel Finger

27. Remove bolts (B) from the existing fingers and slide the fingers over the tine tube to remove. (remove tine tube arms (A) from the tine tubes as necessary).

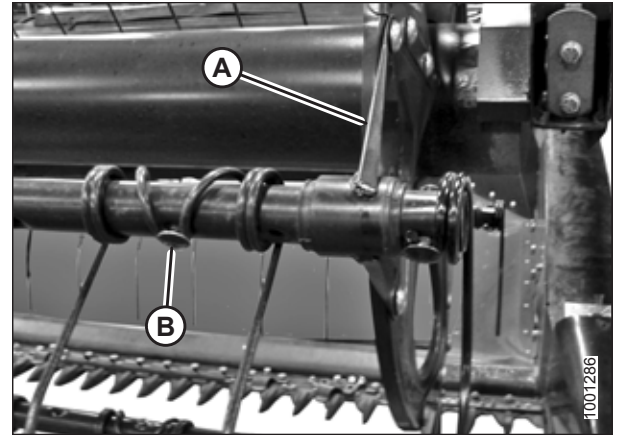


Figure 4.17: Removing Steel Finger

Plastic Finger

28. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

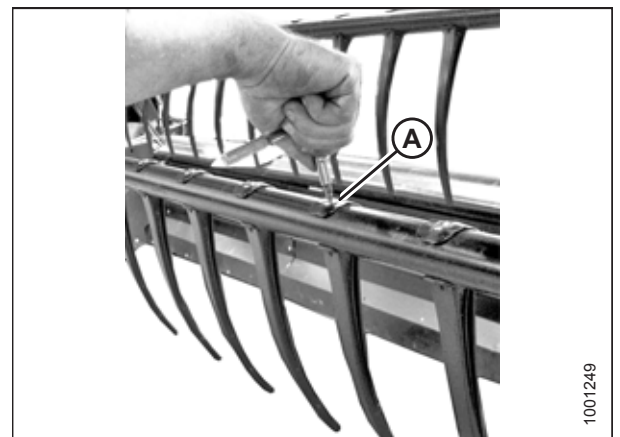


Figure 4.18: Removing Plastic Finger

Plastic Finger

29. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.



Figure 4.19: Removing Plastic Finger

REMOVING EXISTING FINGERS AND BUSHINGS

30. Release bushing clamps (A) using a small screwdriver to separate the serrations.

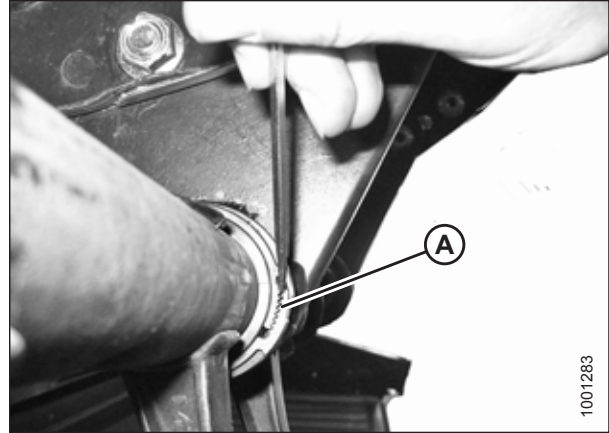


Figure 4.20: Bushing Clamp

31. Move clamps (A) off the bushings.

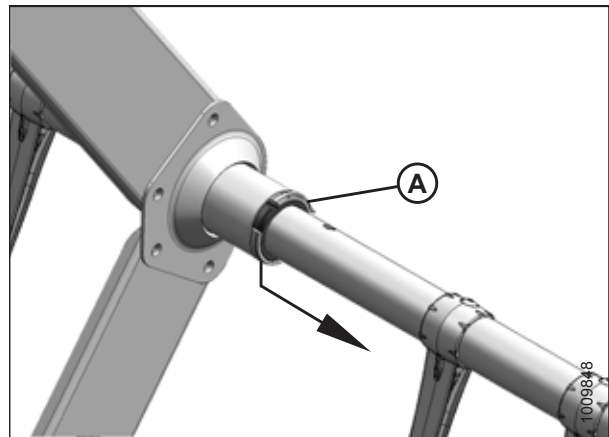


Figure 4.21: Tine Tube Reinforcing Kit Bushing Clamp (Option)

32. On each reel, there are three right-facing supports (A). Slide the support off bushing halves (B).

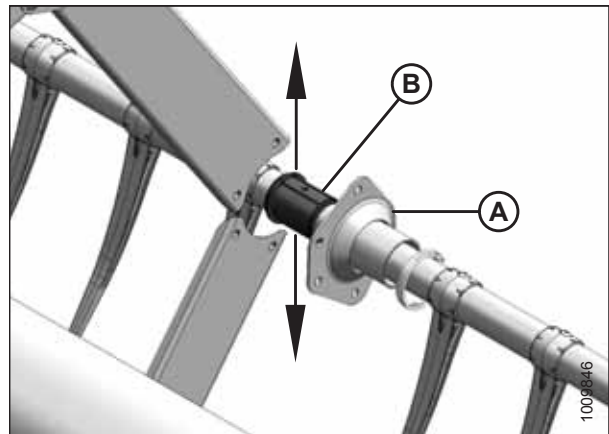


Figure 4.22: Tine Tube Reinforcing Kit Support (Option)

REMOVING EXISTING FINGERS AND BUSHINGS

33. On each reel, there are two left-facing supports (A). Rotate the supports until the flanges clear the channels before moving them off bushing (B). Move the tube slightly away from the reel if necessary.
34. Remove bushing halves (B) from the tine tubes.

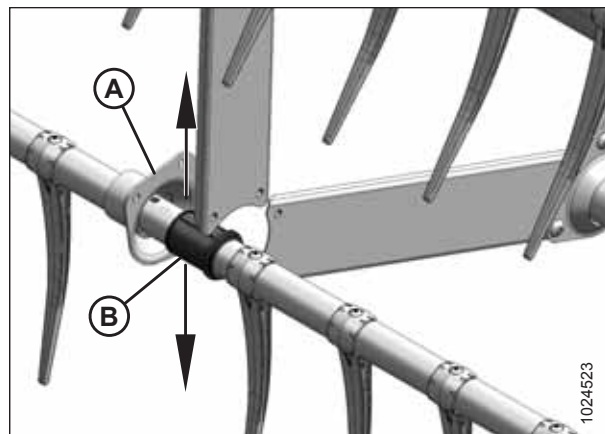


Figure 4.23: Tine Tube Reinforcing Kit Opposite Support (Option)

Chapter 5: Installation Instructions

To install the kits, follow all procedures in the order provided.

5.1 Installing Bushings and Steel Fingers to Reels

Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure pliers in a vise and grind a notch (B) into the end of each arm to fit the clamp as shown.

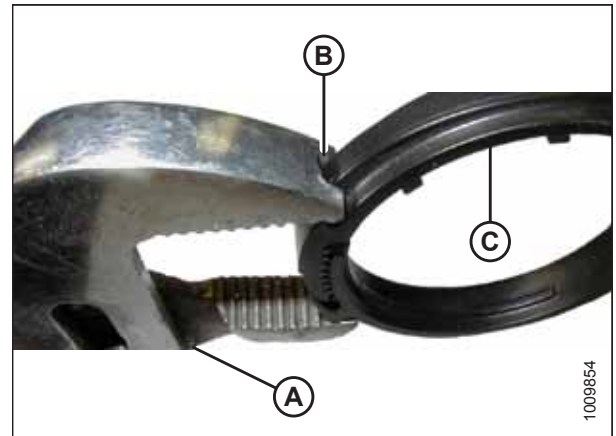


Figure 5.1: Modified Channel Lock Pliers

1. Support the tine tube at all times to prevent damage to the tube or other components.

Cam end bushings

2. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
3. Slide tine tube (A) towards the tail end of the reel to insert bushing (B) into the tine tube arm. If the tine tube supports are installed, ensure the bushings at those locations slide into the support.

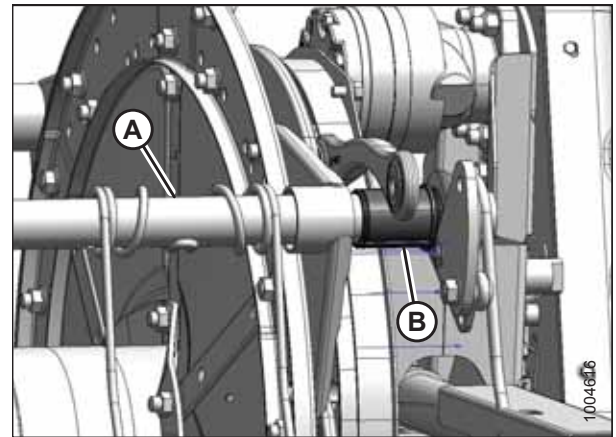


Figure 5.2: Cam End

INSTALLATION INSTRUCTIONS

- Slide the new finger and tine tube arm (A) onto the end of the tube.
- Attach the fingers to the tine tube with bolts and nuts (B). For finger location and proper hardware installation refer to [3 Steel Finger Placement, page 9](#).
- Torque steel finger hardware to 35 Nm (26 lbf-ft).

NOTE:

Do NOT overtighten hardware, may result in flattening of tube.

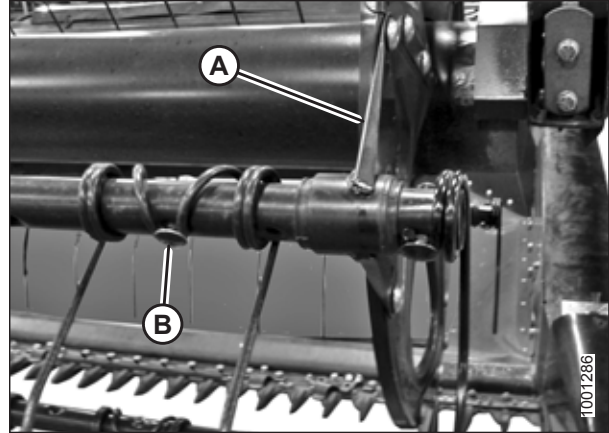


Figure 5.3: Tine Tube

- Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
- Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

NOTE:

Clamp is not symmetrical, inner flange needs to be to the outside.

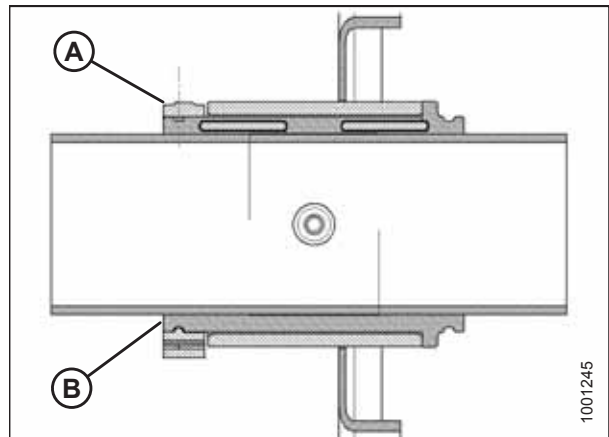


Figure 5.4: Bushing

- Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will not move the clamp.

NOTE:

Make sure notches are engaged between clamp and bushing.

IMPORTANT:

Do NOT overtighten the clamp, it may result in breakage.

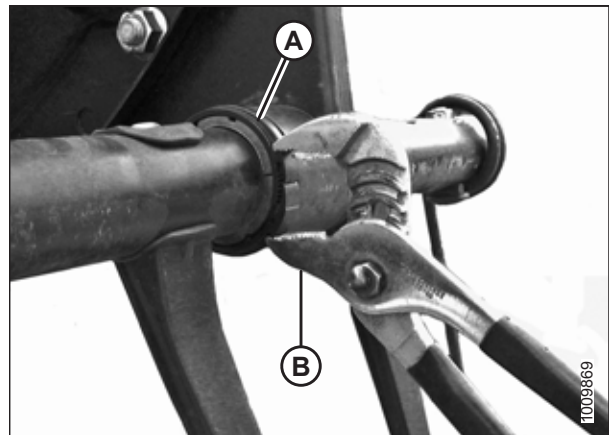


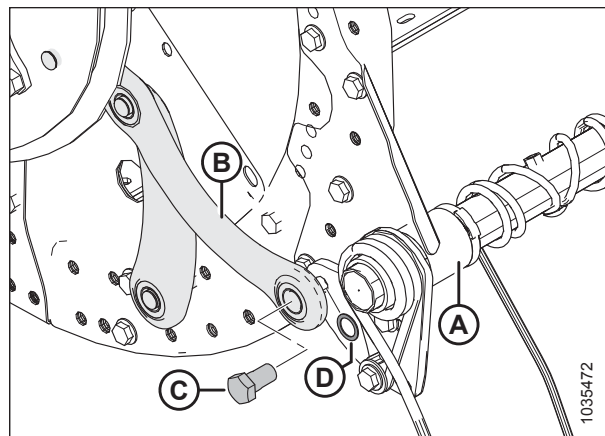
Figure 5.5: Installing Clamp

INSTALLATION INSTRUCTIONS

10. Line up tine tube (A) with the cam arm (B) and install bolt (C) and washer (D). Torque bolt to 165 Nm (120 lbf-ft).

NOTE:

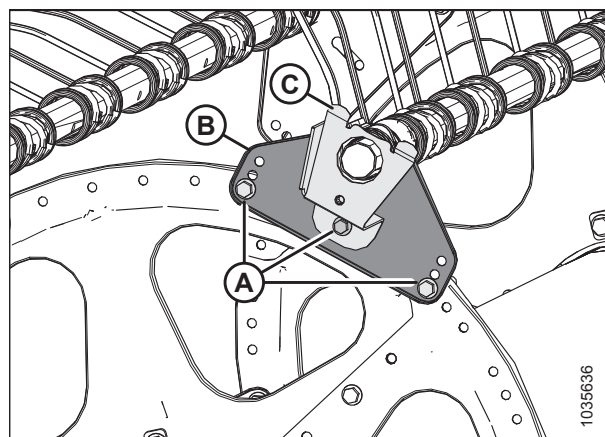
Make sure washer is placed between tine tube and cam arm.



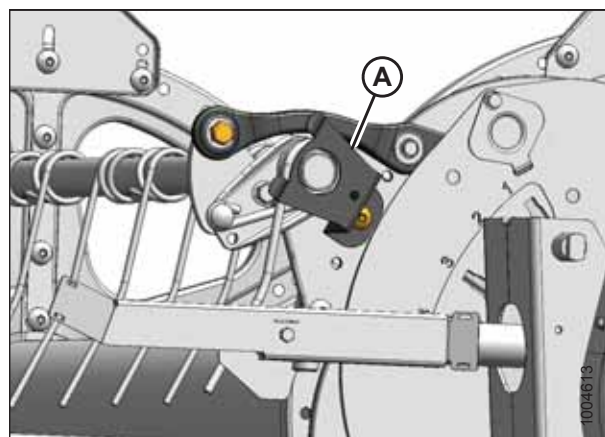
11. Install bolts (A) securing tine tube arm (B) to the center disc.
12. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

NOTE:

There are no endshields on the center discs.



13. Install endshield support (A) at the applicable tine tube location at the cam end.



INSTALLATION INSTRUCTIONS

Center disc and tail end bushings

14. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
15. Slide tine tube (A) onto bushing (B) and position against the disc at the original location.

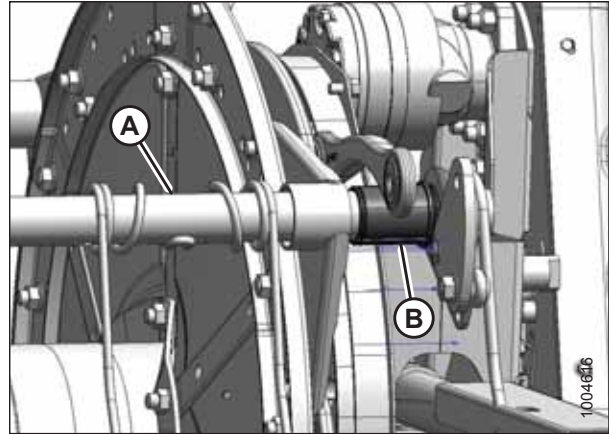


Figure 5.9: Cam End

16. Slide the new finger and tine tube arm (A) onto the end of the tube.
17. Attach the fingers to the tine tube with bolts and nuts (B). For finger location and proper hardware installation refer to [3 Steel Finger Placement, page 9](#).
18. Torque steel finger hardware to 35 Nm (26 lbf·ft).

NOTE:

Do NOT overtighten hardware, may result in flattening of tube.

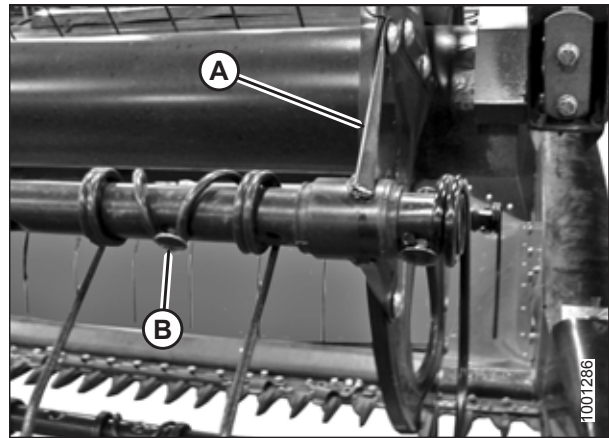


Figure 5.10: Tine Tube

19. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
20. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

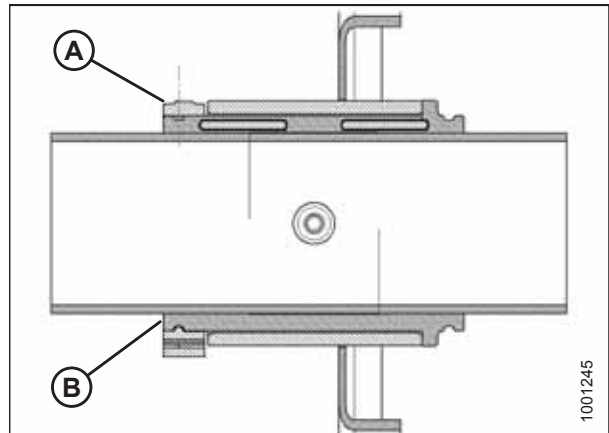


Figure 5.11: Bushing

INSTALLATION INSTRUCTIONS

21. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

IMPORTANT:

Overtightening clamp may result in breakage.

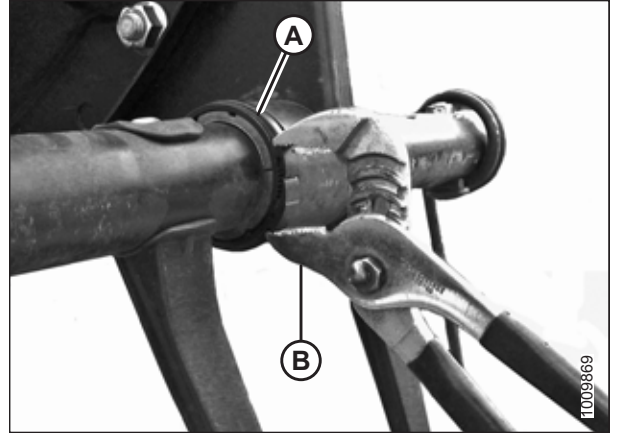


Figure 5.12: Installing Clamp

22. Install bolts (A) securing tine tube arm (B) to the center disc.
23. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

NOTE:

There are no endshields on the center discs.

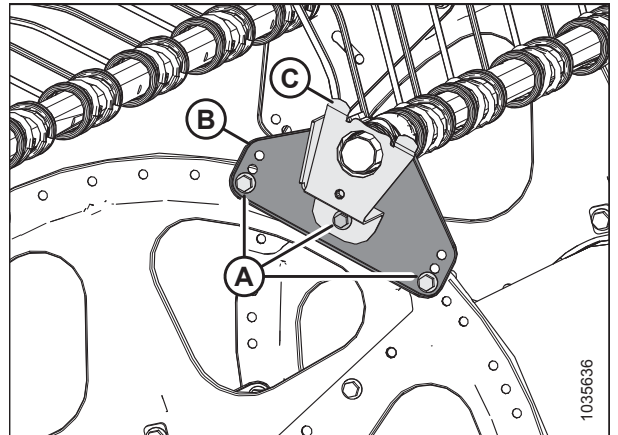


Figure 5.13: Tail End

Tine tube reinforcing kit (option)²

24. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.

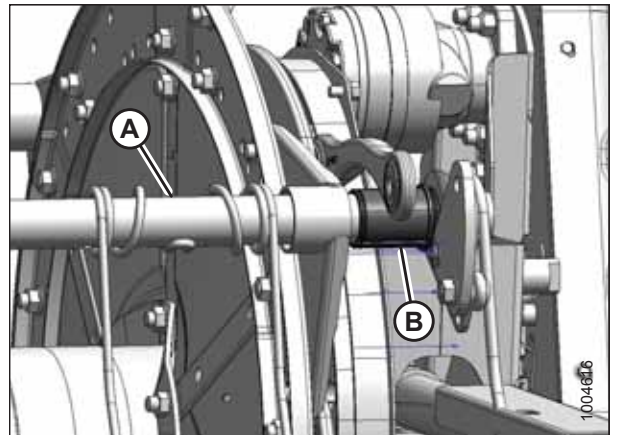


Figure 5.14: Cam End

2. Five-bat reel (MD #B5825), Six-bat reel (MD #B5826).

INSTALLATION INSTRUCTIONS

25. On each reel, there are three right-facing supports (A). Slide the support onto bushing (B).

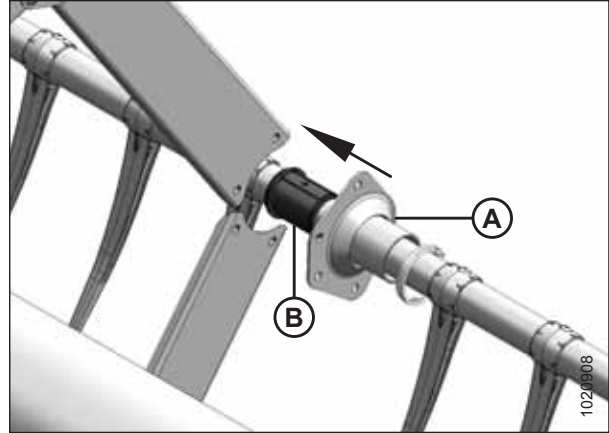


Figure 5.15: Tine Tube Reinforcing Kit Support (Option)

26. On each reel, there are two left-facing supports (A). Rotate support (A) until its flanges clear channels (C) before moving the support onto bushing (B).

NOTE:

If necessary, move tine tube (D) slightly away from the reel to allow the support flange enough room to clear the channel.

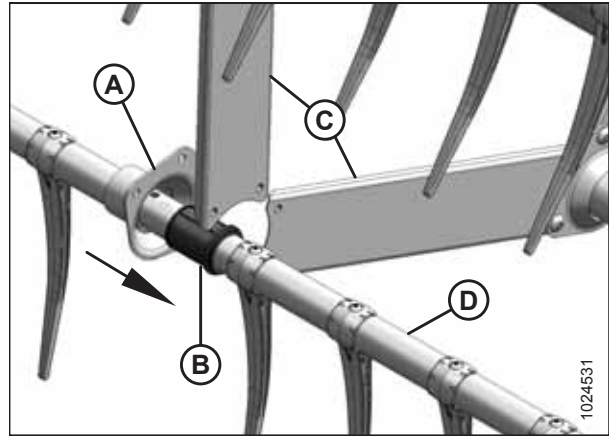


Figure 5.16: Tine Tube Reinforcing Kit Opposite Support (Option)

27. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
28. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

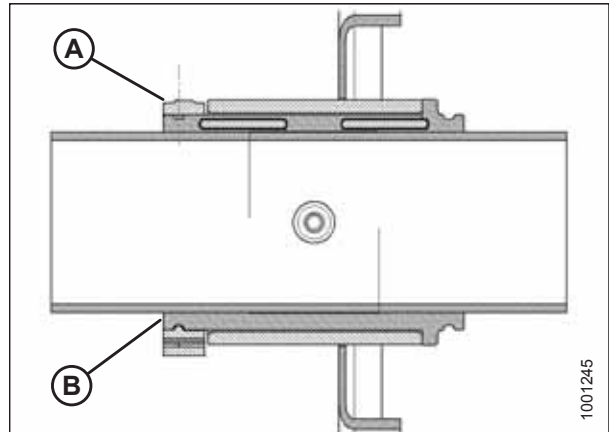


Figure 5.17: Bushing

INSTALLATION INSTRUCTIONS

29. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

IMPORTANT:

Overtightening clamp may result in breakage.

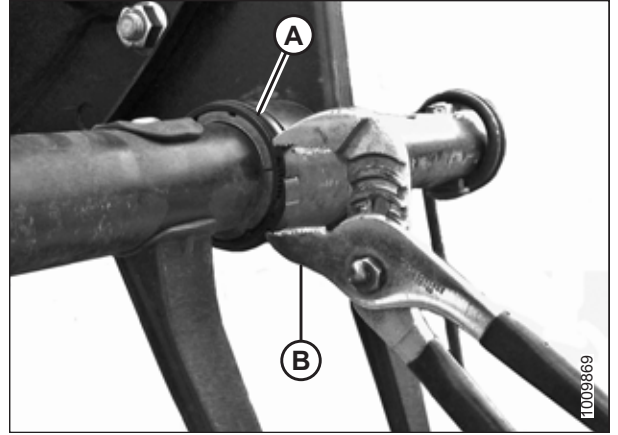


Figure 5.18: Installing Clamp

30. Reattach channels (C) to the three right-facing supports (A) on each reel with screws (B) and nuts. Torque screws to 43 Nm (32 lbf·ft).

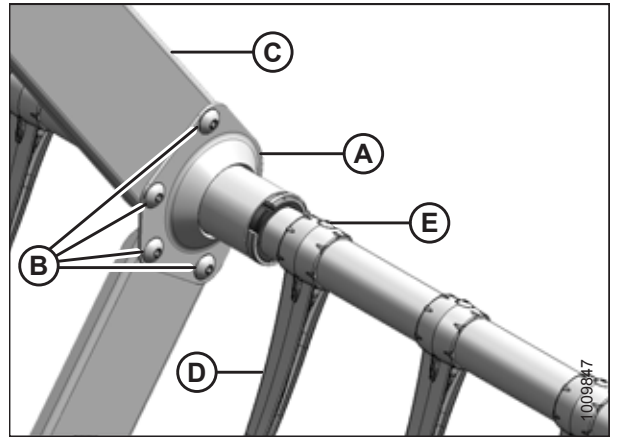


Figure 5.19: Tine Tube Reinforcing Kit Support (Option)

31. Slide the new finger and tine tube arm (A) onto the end of the tube.
32. Attach the fingers to the tine tube with bolts and nuts (B). For finger location and proper hardware installation refer to [3 Steel Finger Placement, page 9](#).
33. Torque steel finger hardware to 35 Nm (26 lbf·ft).

NOTE:

Do NOT overtighten hardware, may result in flattening of tube.

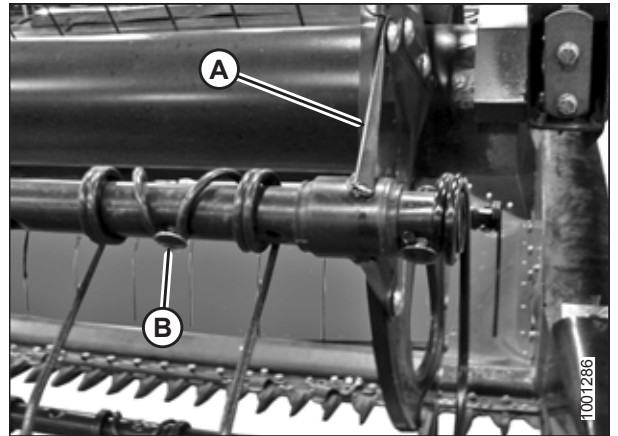


Figure 5.20: Tine Tube

INSTALLATION INSTRUCTIONS

34. Reattach channels (C) to two left-facing supports (A) on each reel with screws (B) and nuts. Torque screws to 43 Nm (32 lbf·ft).

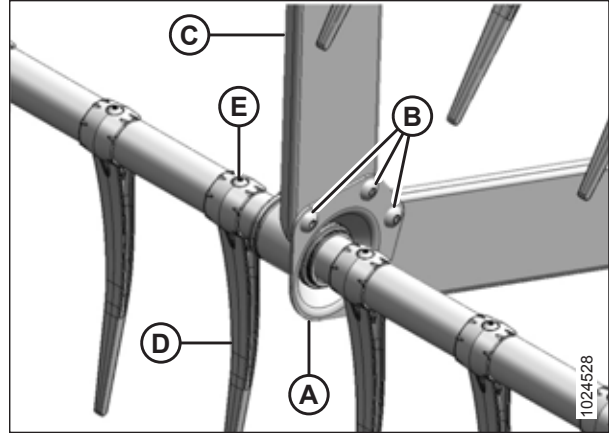


Figure 5.21: Tine Tube Reinforcing Kit Opposite Support (Option)

35. Slide the new finger and tine tube arm (A) onto the end of the tube.
36. Attach the fingers to the tine tube with bolts and nuts (B). For finger location and proper hardware installation refer to [3 Steel Finger Placement, page 9](#).
37. Torque steel finger hardware to 35 Nm (26 lbf·ft).

NOTE:

Do NOT overtighten hardware, may result in flattening of tube.

38. Continue onto installing endshields. For instructions, refer to [5.2 Installing Reel Endshields, page 33](#).

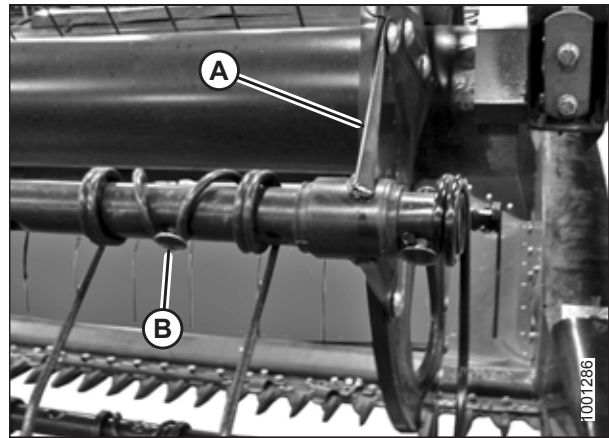


Figure 5.22: Tine Tube

5.2 Installing Reel Endshields

There are four kinds of endshields. Ensure you are reinstalling the endshields in the correct locations as shown below:

NOTE:

The arrow points to the front of the machine.

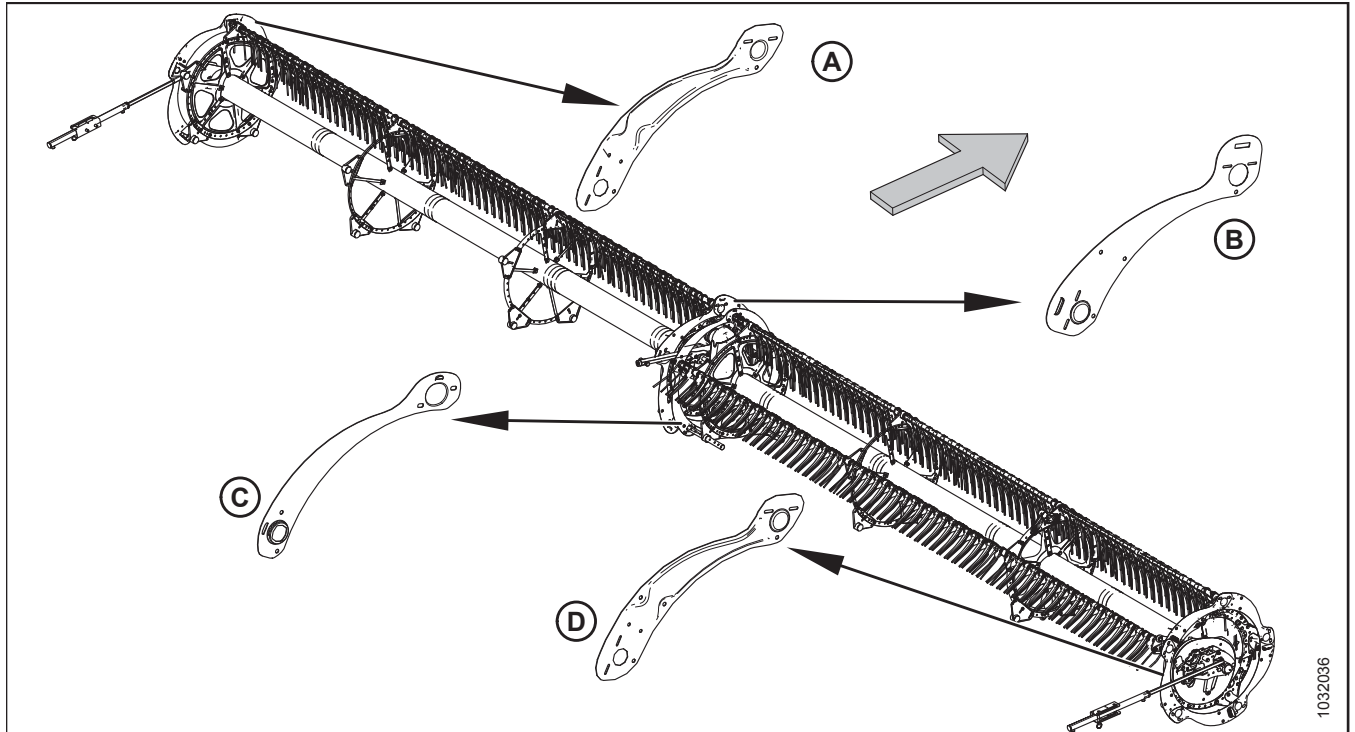


Figure 5.23: Reel Endshields

A - Tail End, Outboard (MD #311695)

C - Tail End, Inboard (MD #311795)

B - Cam End, Inboard (MD #273823)

D - Cam End, Outboard (MD #311694)

5.2.1 Installing Reel Endshields at Outboard Cam End

This procedure is applicable to the outboard cam end on all reel configurations.

To install the cam end (outboard) endshield (A), follow these steps:

NOTE:

The endshield segments used for this procedure have two additional holes (B) on one end. Do **NOT** confuse them with the segments (C) used for the outboard tail end of the reel.

NOTE:

The arrow points to the front of the machine.

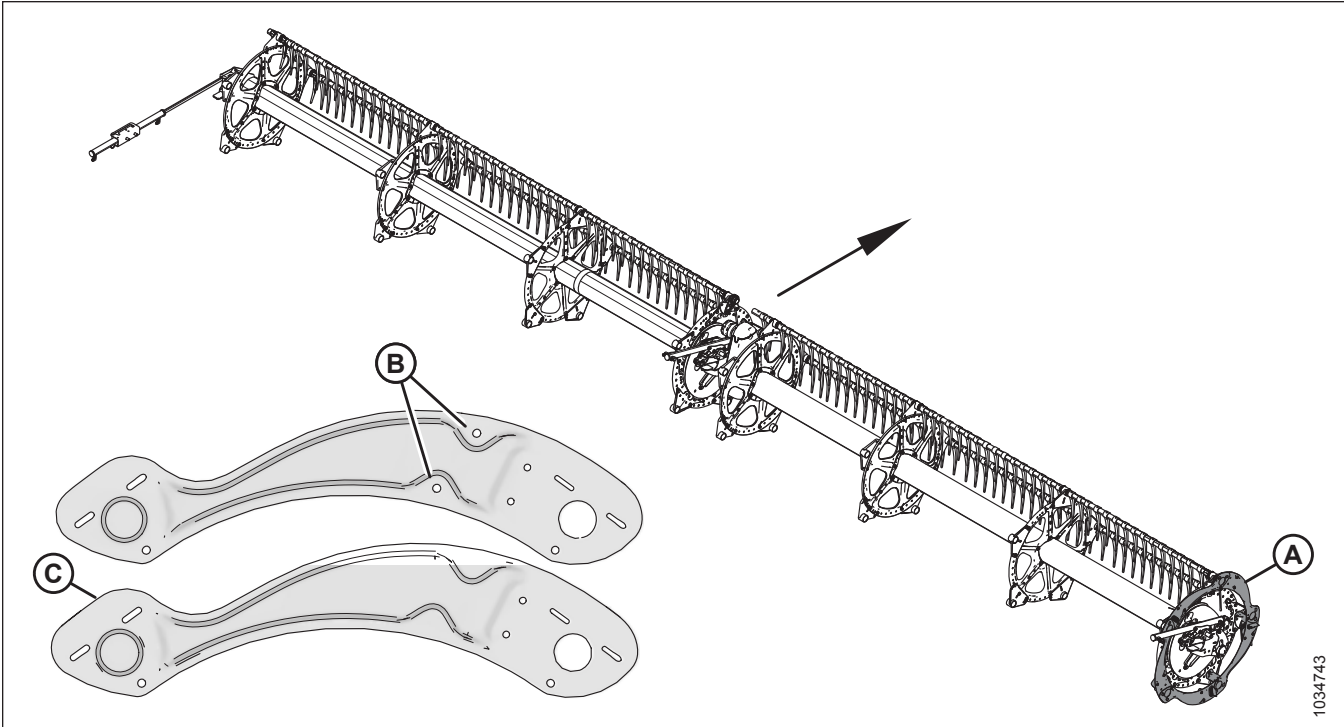


Figure 5.24: Five-Bat Reel – Endshield, Cam End, Outboard

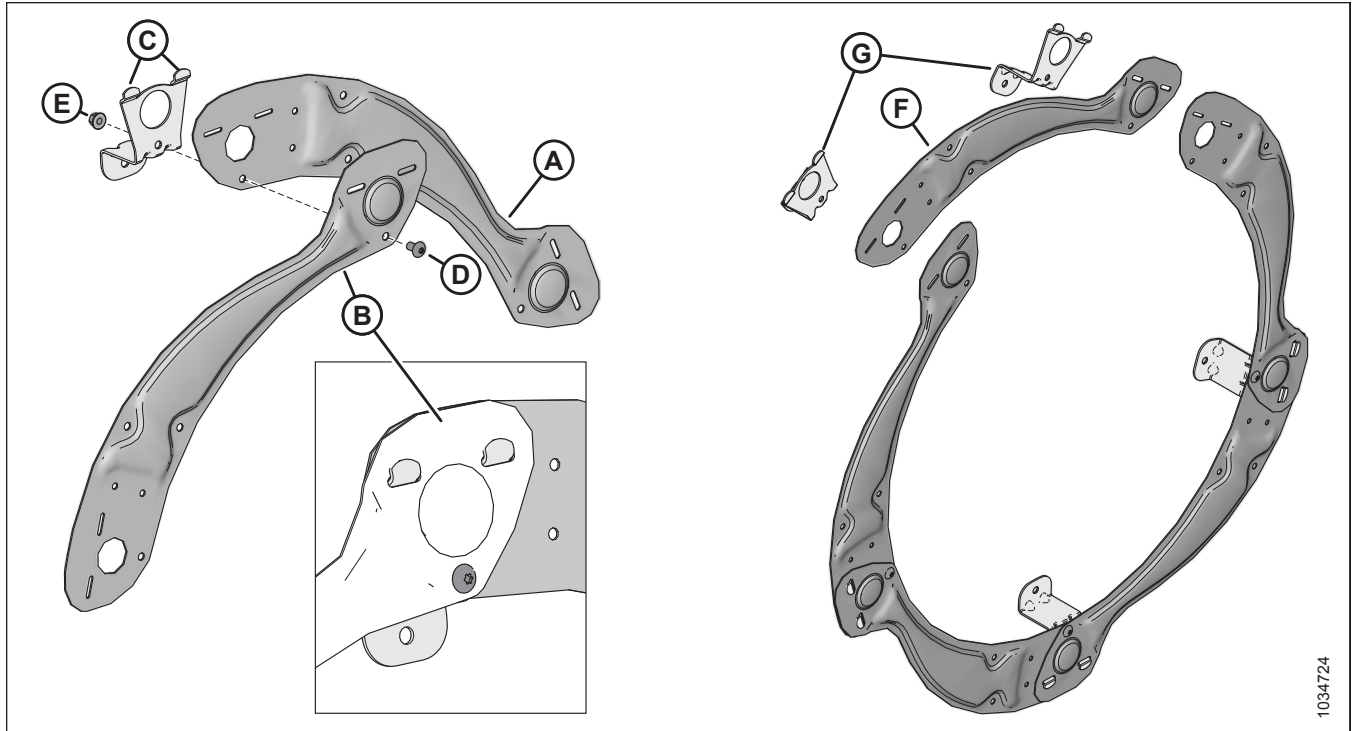


Figure 5.25: Five-Bat Reel – Initial Endshield Assembly

1. Assemble the endshield as follows:
 - a. Position endshield segment (A) **BEHIND** segment (B). Engage endshield support tabs (C) through both segments, and secure with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten.
 - b. Repeat for the remaining segments leaving last segment (F) and two support tabs (G) uninstalled.

INSTALLATION INSTRUCTIONS

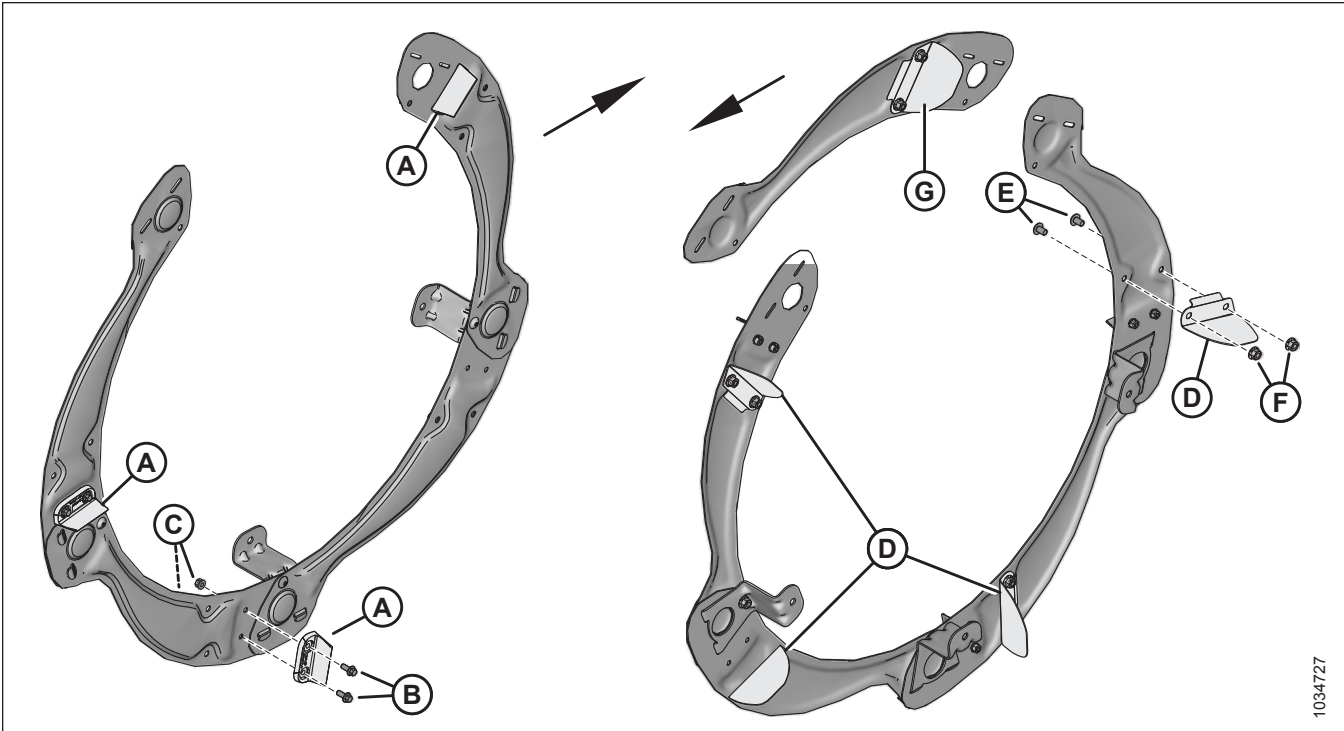


Figure 5.26: Five-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

IMPORTANT:

The arrows point to the front of the machine. Ensure rubber paddles and cam deflectors are oriented as shown.

2. If removed, install three **RUBBER** reel end paddles (A) on the **OUTBOARD FACE** of the endshield assembly using two M8 X 1.25 X 20 hex bolts (B) and nuts (C) per paddle.
3. If removed, install four **ALUMINUM** cam deflectors (D) on the **INBOARD FACE** of the endshield assembly shown using two M10 X 1.5 X 16 Torx® screws (E) and hex nuts (F).
4. Install **ALUMINUM** cam deflector (G) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

INSTALLATION INSTRUCTIONS

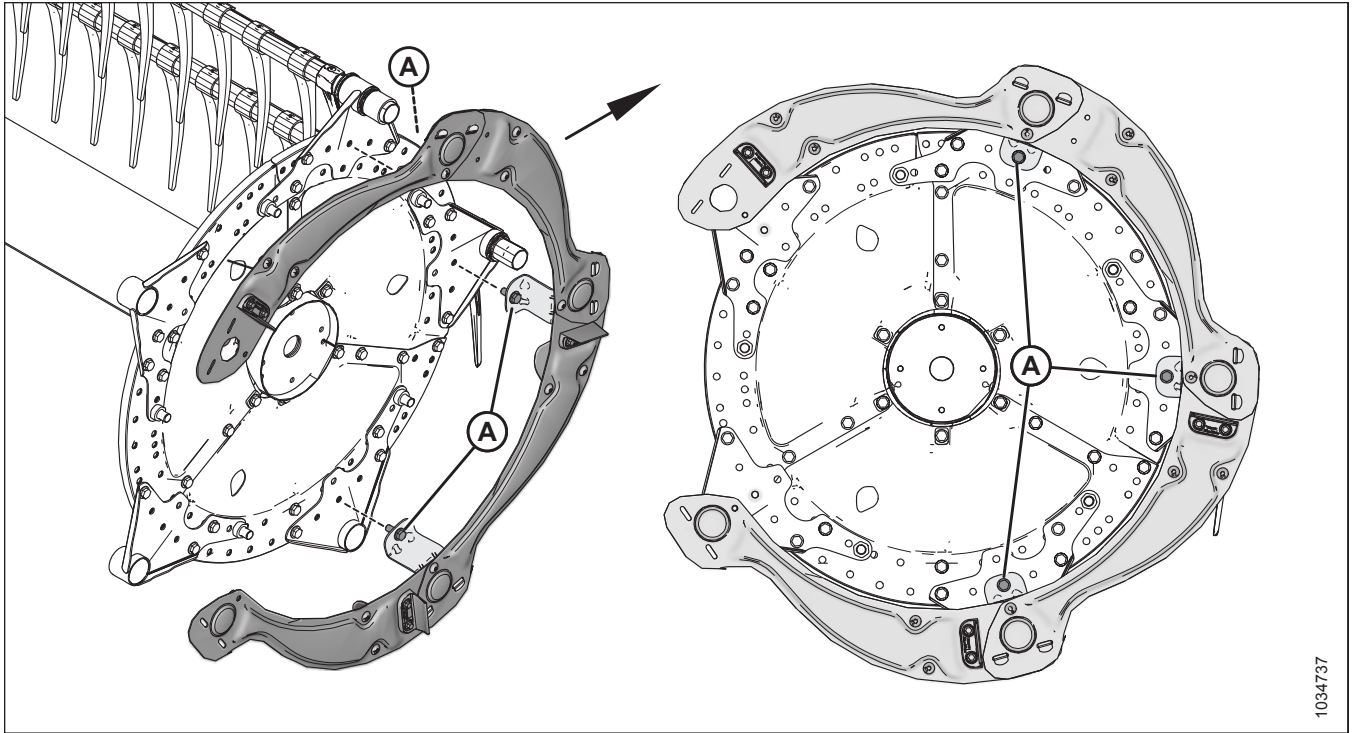


Figure 5.27: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

NOTE:

The arrow points to the front of the machine.

5. Position the partially assembled reel endshield onto the reel.
6. Secure with three M12 X 1.75 X 30 hex bolts (A) and nuts. Do **NOT** tighten.

INSTALLATION INSTRUCTIONS

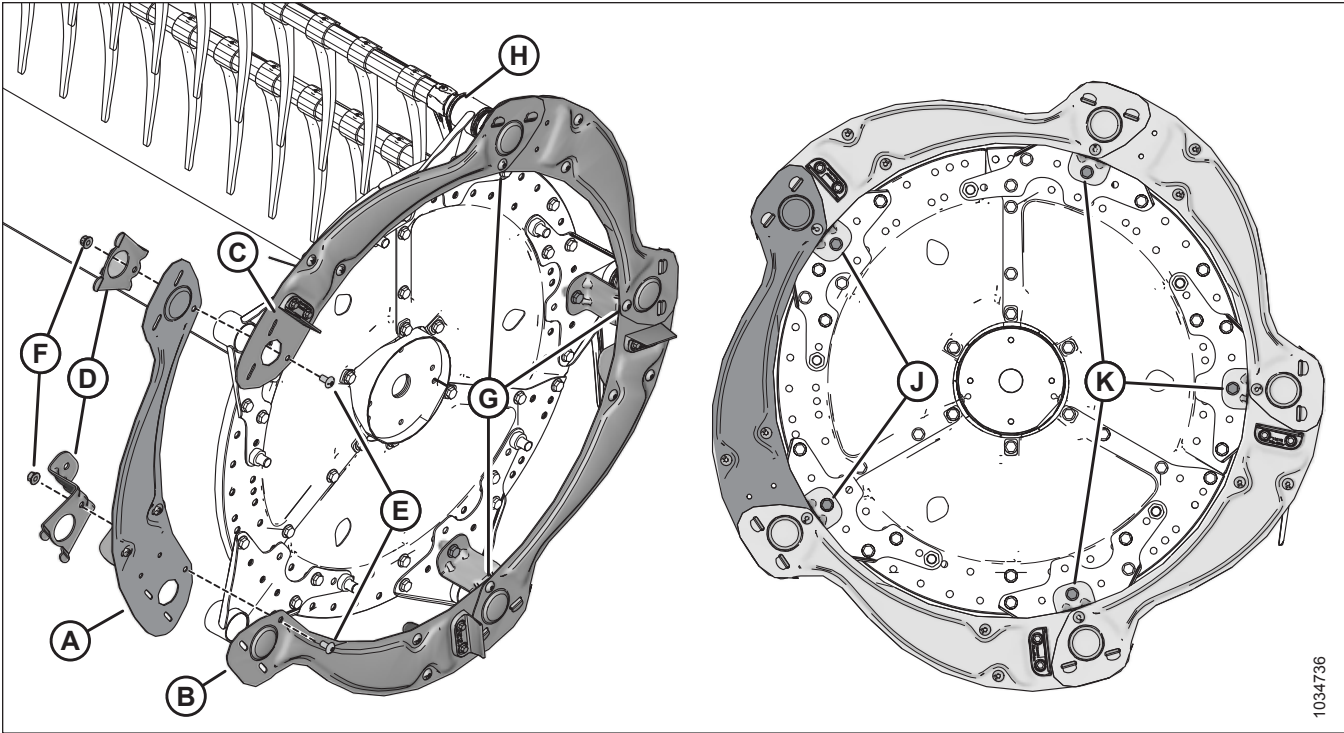


Figure 5.28: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

7. Install the last segment of endshield (A) as follows:
 - a. Position the wide end of last segment (A) **BEHIND** segment (B). Position the other end of last segment **ON TOP** of segment (C).
 - b. Install the tabs of endshield supports (D) through the endshield segments.
 - c. Secure endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
 - d. Torque five M10 X 1.5 X 20 Torx® screws (E) and (G) to 39 Nm (29 lbf-ft). Rotate the reel to reach the screws if required.
 8. Slip the endshield supports onto tine tubes (H).
- NOTE:**
Not all tine tubes shown in illustration.
9. Secure the two endshield supports to the reel disc using two M12 X 1.75 X 30 hex bolts (J) and nuts.
 10. Tighten five M12 X 1.75 X 30 hex bolts (J) and (K) and nuts that secure the endshield supports to the cam discs to 68.5 Nm (50.5 lbf-ft).

5.2.2 Installing Reel Endshields at Inboard Tail End

This procedure is applicable to the inboard tail end on all reel configurations.

To install the tail end (inboard) endshield (A), follow these steps:

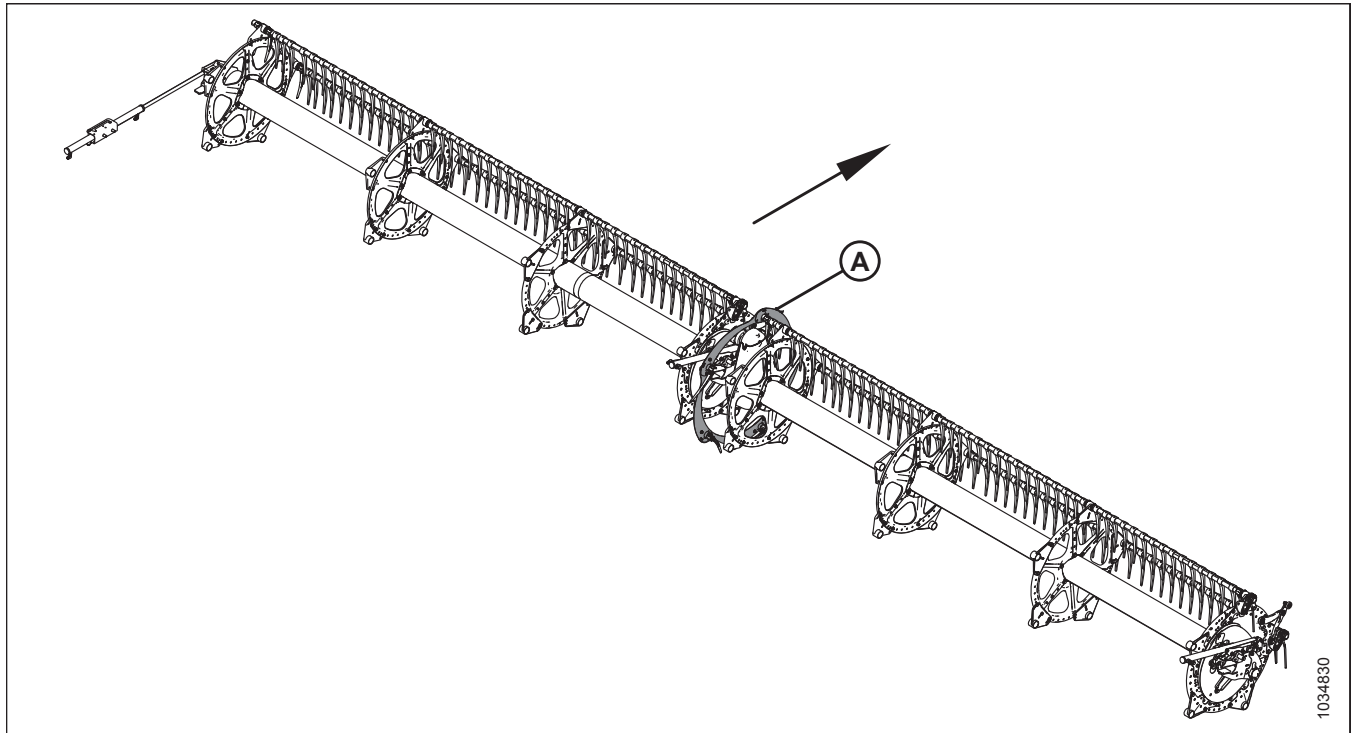


Figure 5.29: Inboard Tail End

INSTALLATION INSTRUCTIONS

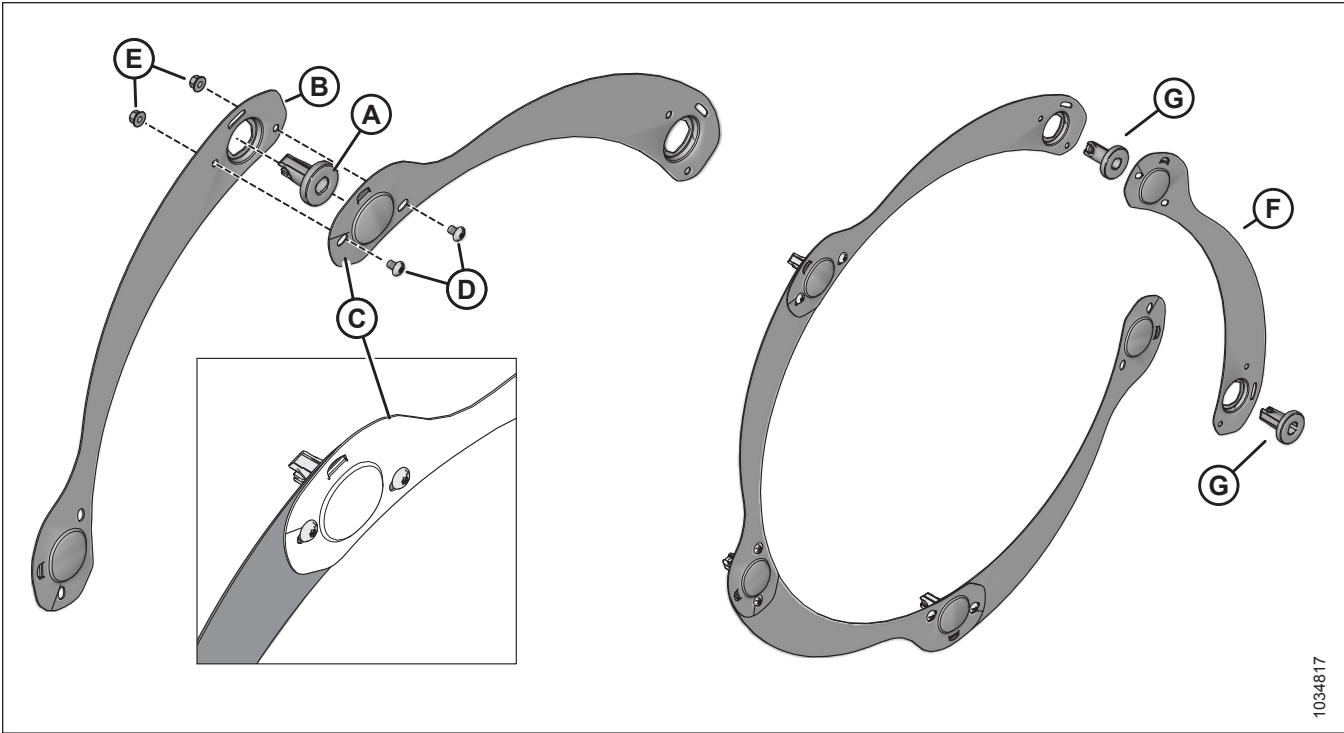


Figure 5.30: Endshield Subassembly

1. Assemble the endshield as follows:
 - a. Insert bushing (A) into endshield segment (B).
 - b. Place the cupped end of endshield segment (C) **ON TOP** of segment (B). Attach the segments using two with M10 X 1.5 X 16 Torx® screws (D) and nuts (E). Do **NOT** tighten the hardware.
 - c. Repeat for the remaining segments leaving last segment (F) and two bushings (G) uninstalled.

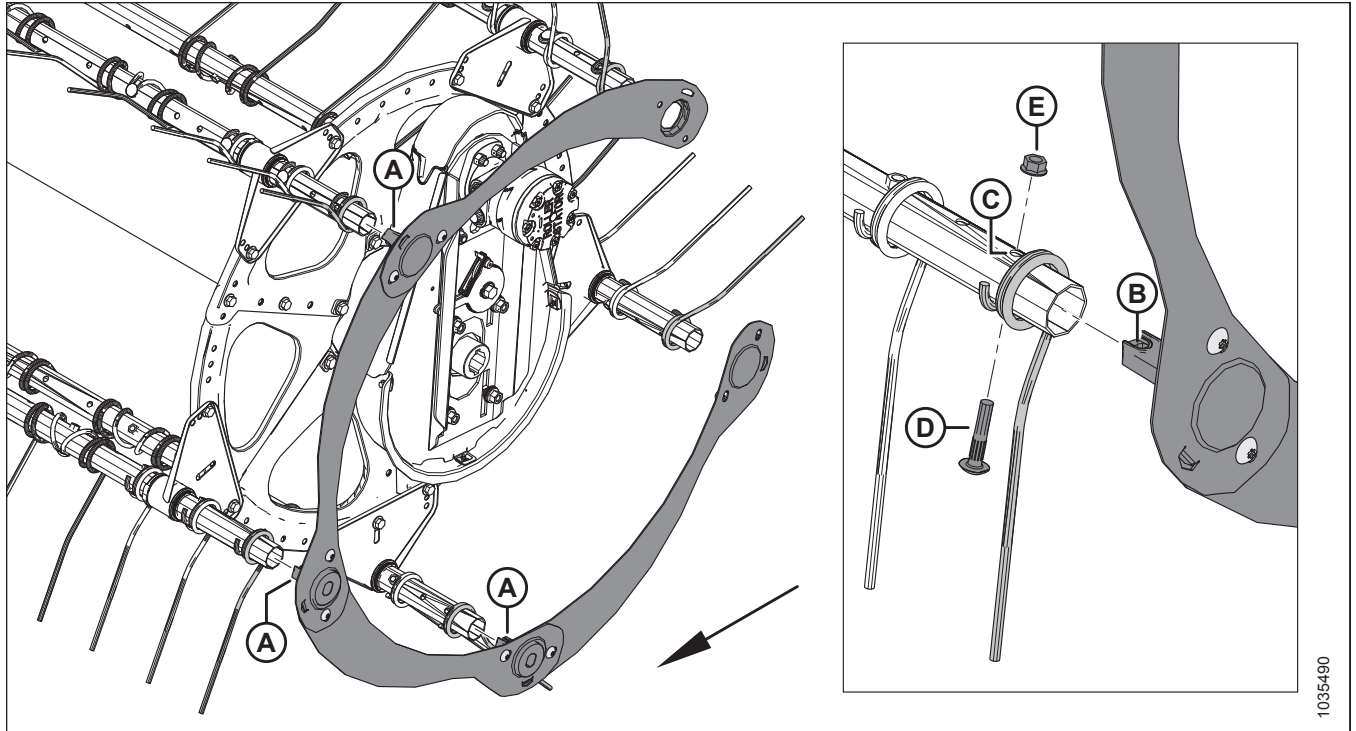


Figure 5.31: Endshield Mounted onto Reel

2. Mount the endshield onto the reel as follows:

- a. Insert three bushings (A) into the tine tubes. Align the bushing hole (B) and finger slot with the hole in the tine tube (C).
- b. Secure the bushings and fingers to the tine tube using bolt (D) and nut (E). Do **NOT** tighten.

NOTE:

The arrow points to the front of the machine.

INSTALLATION INSTRUCTIONS

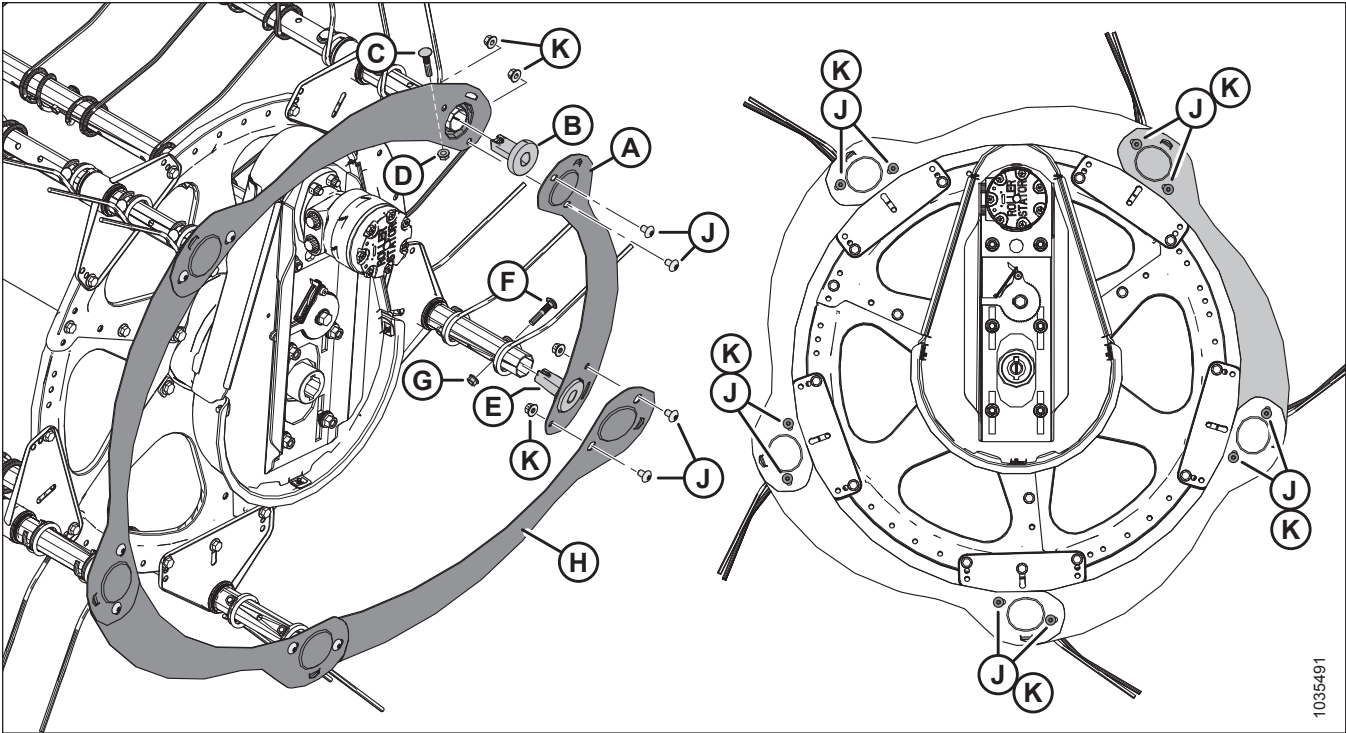


Figure 5.32: Completed Endshield Assembly

3. Install the remaining endshield segment (A) as follows:
 - a. Install bushing (B) into the endshield segment and tine tube. Secure the bushing and finger to the tine tube using bolt (C) and nut (D). Do **NOT** tighten.
 - b. Install bushing (E) into the endshield segment.
 - c. Insert bushing (E) end of segment into the tine tube. Secure the bushing and finger to the tine tube using bolt (F) and nut (G). Do **NOT** tighten.
 - d. Place cupped end of segment (H) **ON TOP** of segment (A).
 - e. Secure the endshield segments with M10 X 1.5 X 16 Torx® screws (J) and nuts (K).
4. Prevent the flattening of the tubes. Torque all the tine tube steel finger bolts and nuts to 9 Nm (7 lbf·ft). Do **NOT** overtighten the screws.
5. Torque all M10 X 1.5 X16 Torx® screws (J) and nuts (K) to 39 Nm (29 lbf·ft).

5.2.3 Installing Reel Endshields at Inboard Cam End

This procedure is applicable to the inboard cam end on all reel configurations.

To install the cam end (inboard) endshield (A), follow these steps:

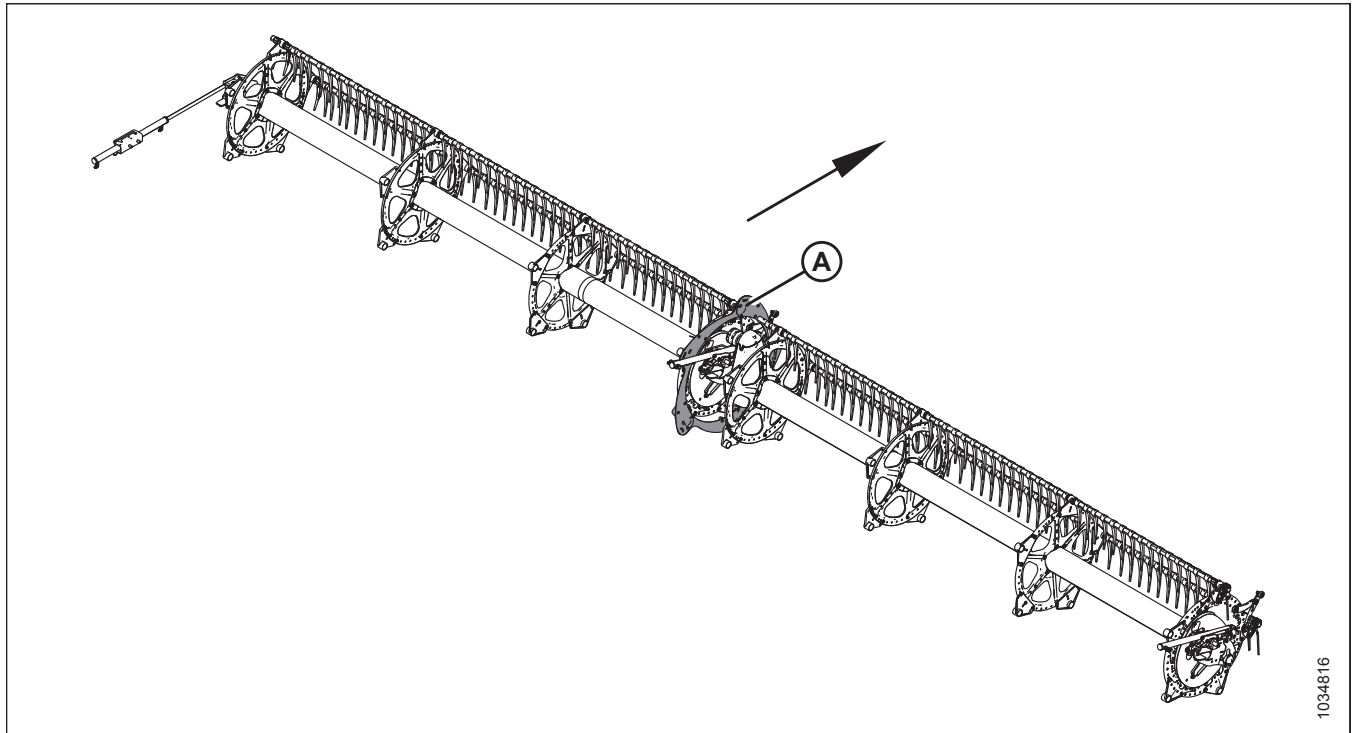


Figure 5.33: Five-Bat Reel – Endshield, Cam End, Inboard

INSTALLATION INSTRUCTIONS

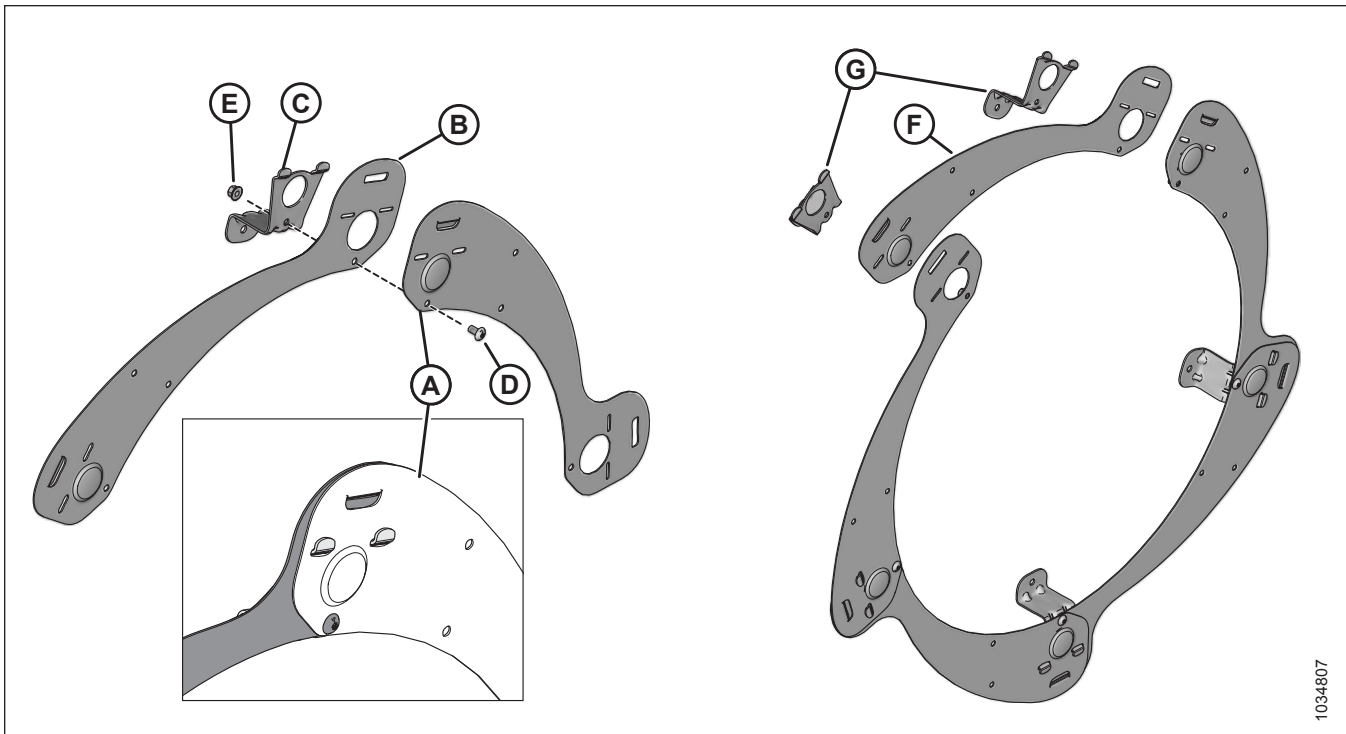


Figure 5.34: Five-Bat Reel – Initial Endshield Assembly

1. Assemble the endshield as follows:
 - a. Position endshield segment (A) **BEHIND** segment (B). Engage endshield support tabs (C) through both segments, and secure with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten.
 - b. Repeat for the remaining segments leaving last segment (F) and two support tabs (G) uninstalled.

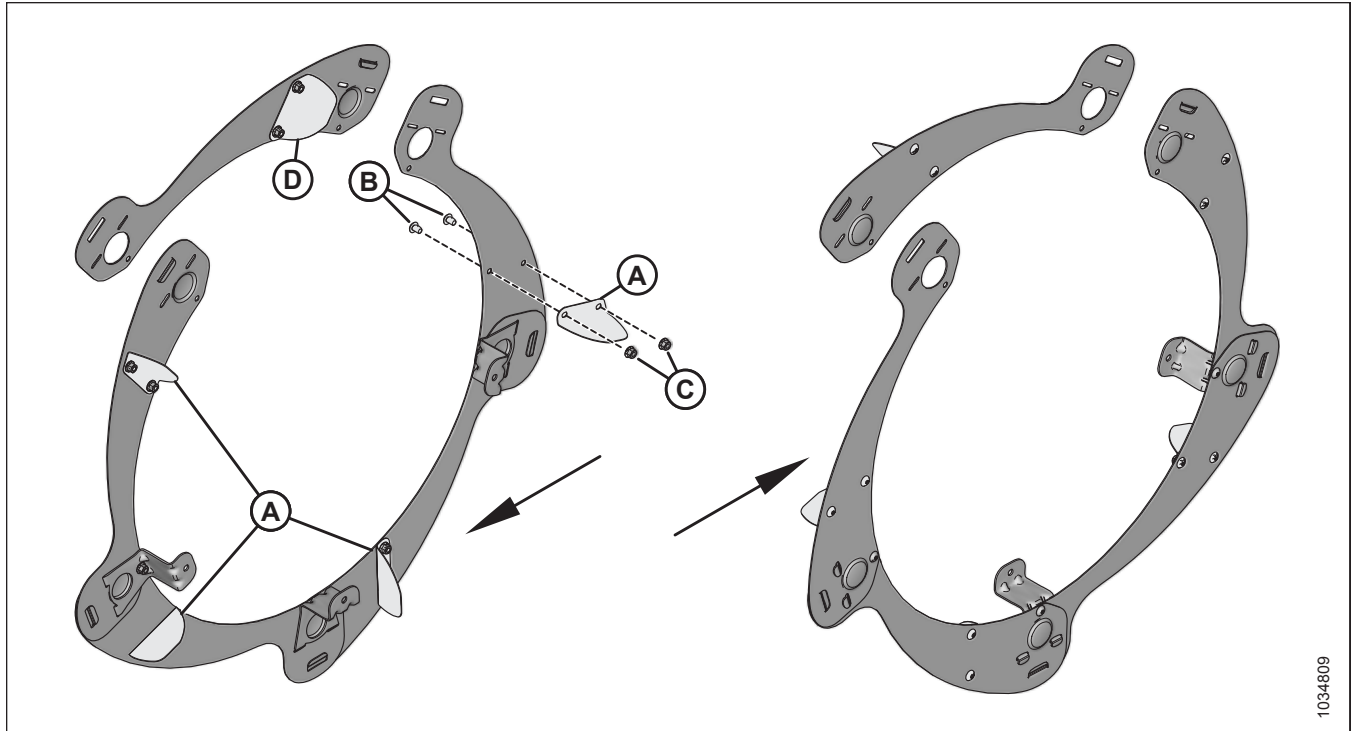


Figure 5.35: Five-Bat Reel – Aluminum Cam Deflectors

IMPORTANT:

The arrows point to the front of the machine. Ensure the cam deflectors are oriented as shown.

2. If removed, install four **ALUMINUM** cam deflectors (A) on the **INBOARD FACE** of the endshield assembly shown using two M10 X 1.5 X 16 Torx® screws (B) and hex nuts (C).
3. If removed, install **ALUMINUM** cam deflector (D) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

INSTALLATION INSTRUCTIONS

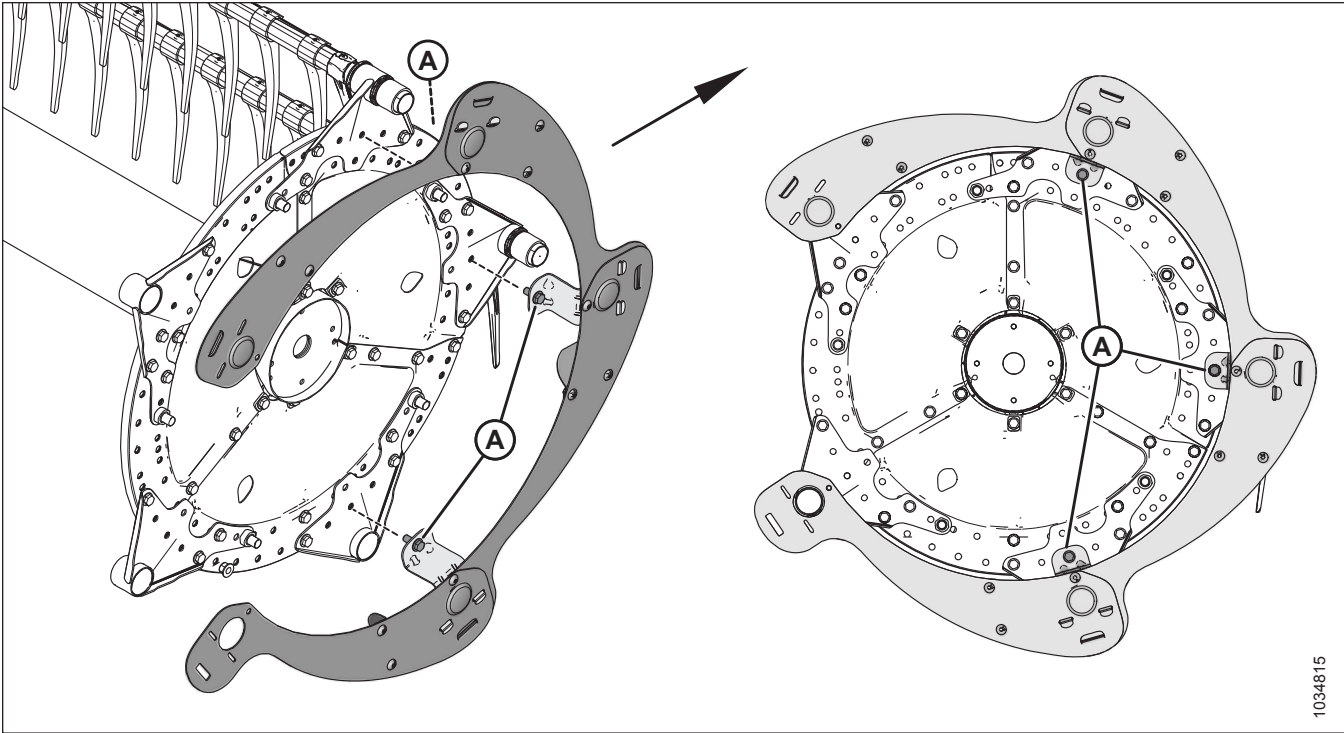


Figure 5.36: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

4. Position the partially assembled reel endshield onto the reel.

NOTE:

The arrow points to the front of the machine.

5. Secure with three M12 X 1.75 X 30 hex bolts (A) and nuts. Do **NOT** tighten.

INSTALLATION INSTRUCTIONS

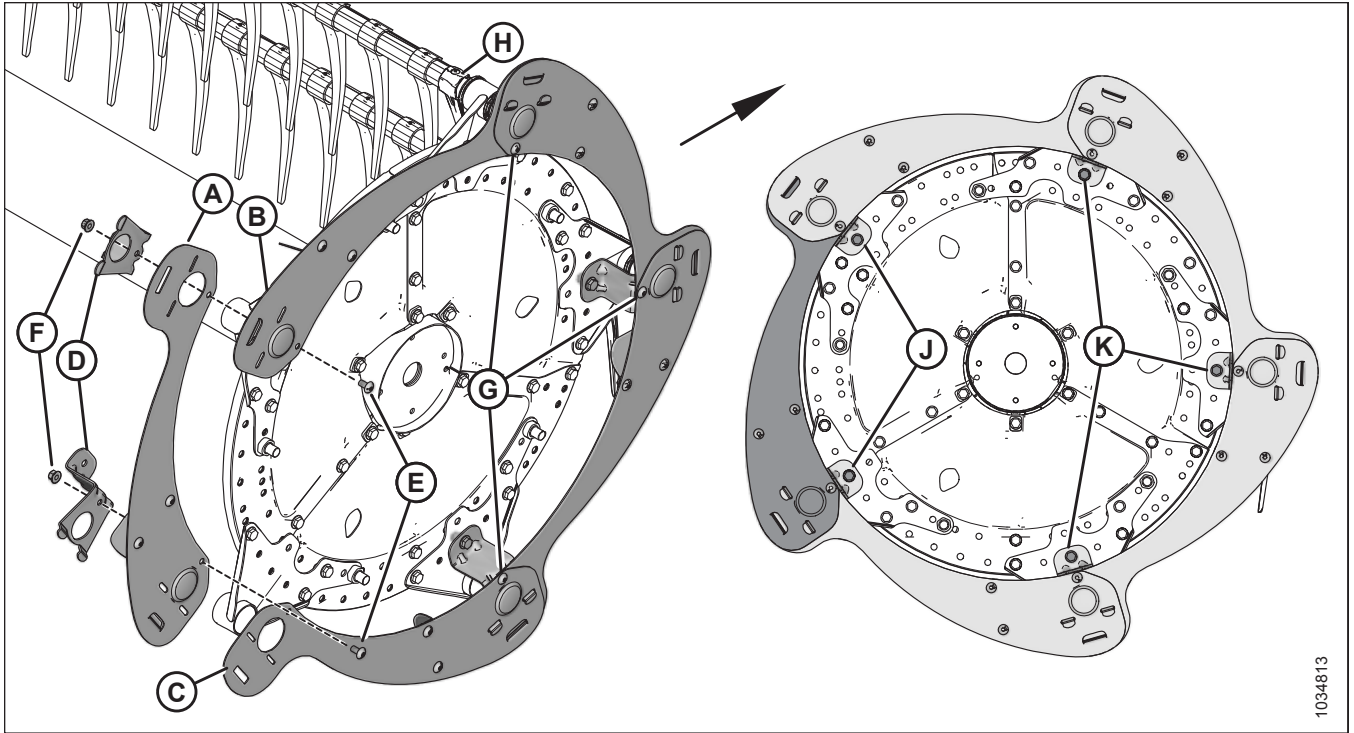


Figure 5.37: Five-Bat Reel – Assembled Reel Endshields on Reel

6. Install the last segment of endshield (A) as follows:

NOTE:

The arrow points to the front of the machine.

- Position the wide end of last segment (A) **BEHIND** segment (B). Position the other end of last segment **ON TOP** of segment (C).
- Install the tabs of endshield supports (D) through the endshield segments.
- Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
- Torque five M10 X 1.5 X 20 Torx® screws (E) and (G) to 39 Nm (29 lbf·ft). Rotate the reel to reach the screws if required.

7. Slip the endshield supports onto tine tubes (H).

NOTE:

Not all tine tubes are shown in illustration.

- Secure the two endshield supports to the reel disc using two M12 X 1.75 X 30 hex bolts (J) and nuts.
- Tighten five M12 X 1.75 X 30 hex bolts (J) and (K) and nuts that secure the endshield supports to the cam discs to 68.5 Nm (50.5 lbf·ft).

5.2.4 Installing Reel Endshields at Outboard Tail End

This procedure is applicable to the outboard tail end on all reel configurations.

To install the tail end (outboard) endshield (A), follow these steps:

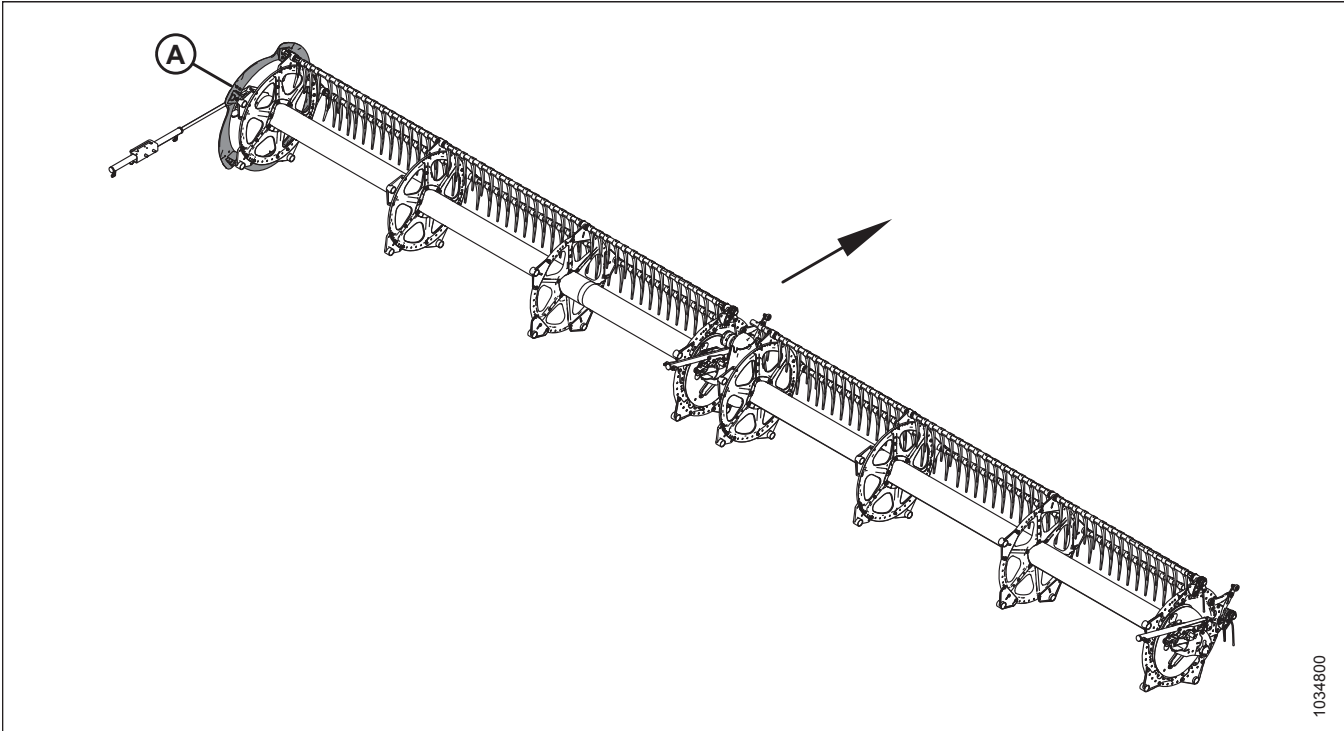


Figure 5.38: Five-Bat Reel – Endshield, Outboard Tail End

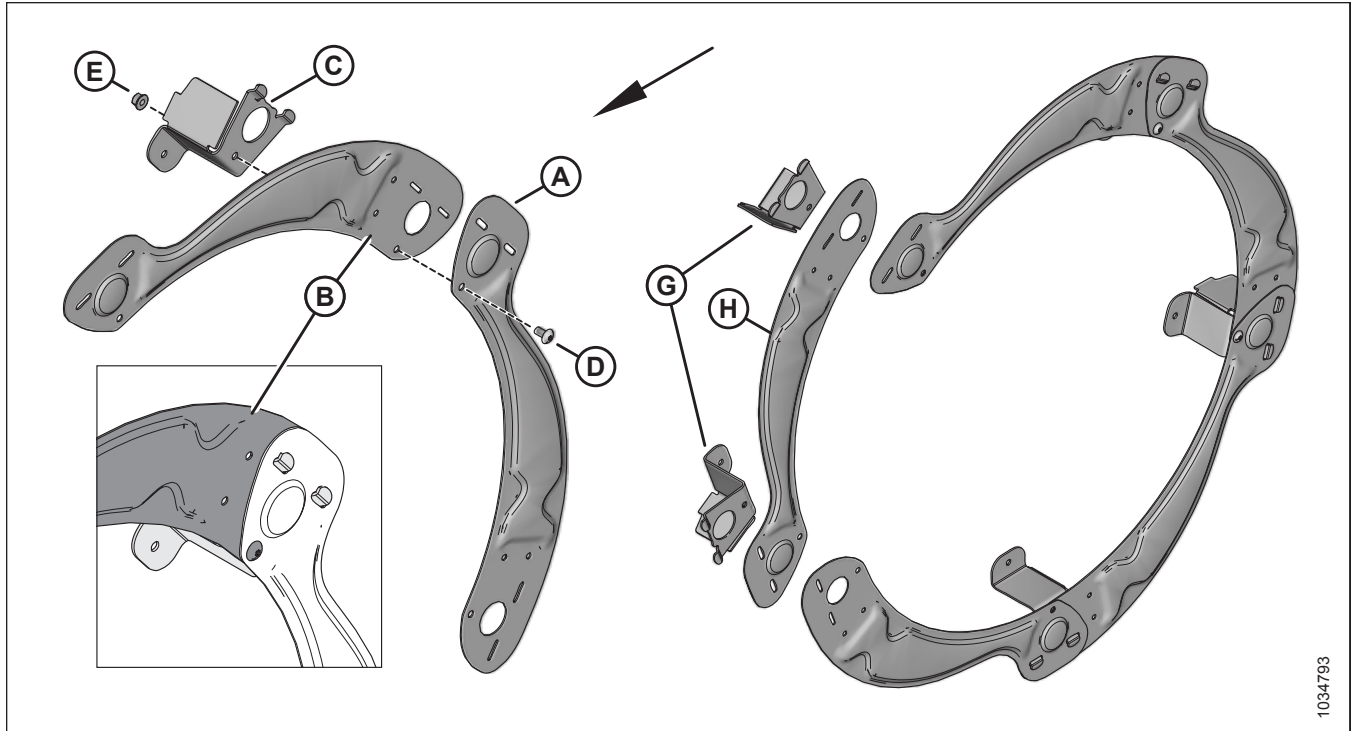


Figure 5.39: Five-Bat Reel – Initial Endshield Assembly

1. Assemble the endshield as follows:

NOTE:

The arrow points to the front of the machine.

- a. Position endshield segment (A) **IN FRONT** of segment (B). Engage endshield support tabs (C) through both segments, and secure with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten.
- b. Repeat for remaining segments leaving last segment (H) and two support tabs (G) uninstalled.

INSTALLATION INSTRUCTIONS

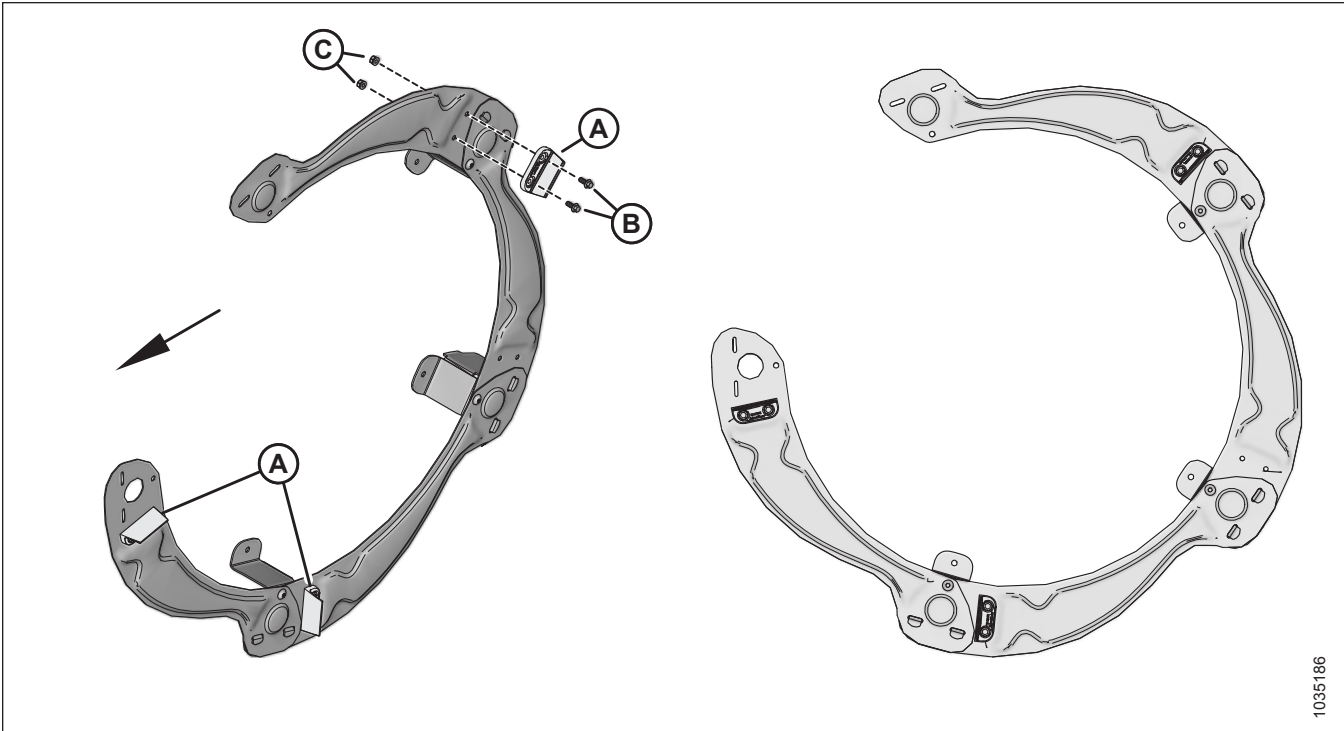


Figure 5.40: Five-Bat Reel – Rubber Paddles

2. If removed, install three **RUBBER** reel end paddles (A) on the **OUTBOARD FACE** of the endshield assembly using two M8 X 1.25 X 20 hex bolts (B) and nuts (C) per paddle.

IMPORTANT:

The arrow points to the front of the machine. Ensure the rubber paddles are oriented as shown. The rubber paddles on both ends of the reel (the outboard cam and outboard tail ends) should be aligned.

INSTALLATION INSTRUCTIONS

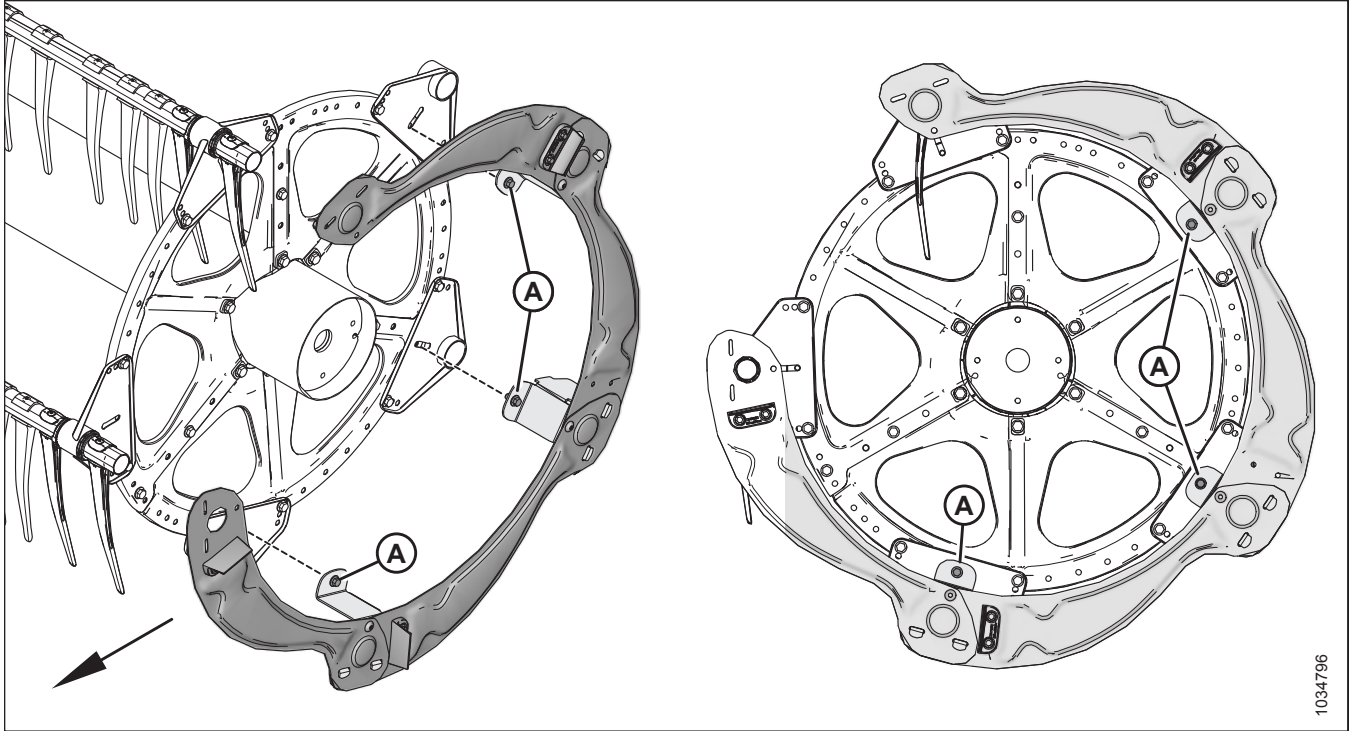


Figure 5.41: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

3. Position the partially assembled reel endshield onto the reel and tine tubes.

NOTE:

The arrow points to the front of the machine.

4. Secure with three M12 X 1.75 X 30 hex bolts (A) and nuts. Do **NOT** tighten.

INSTALLATION INSTRUCTIONS

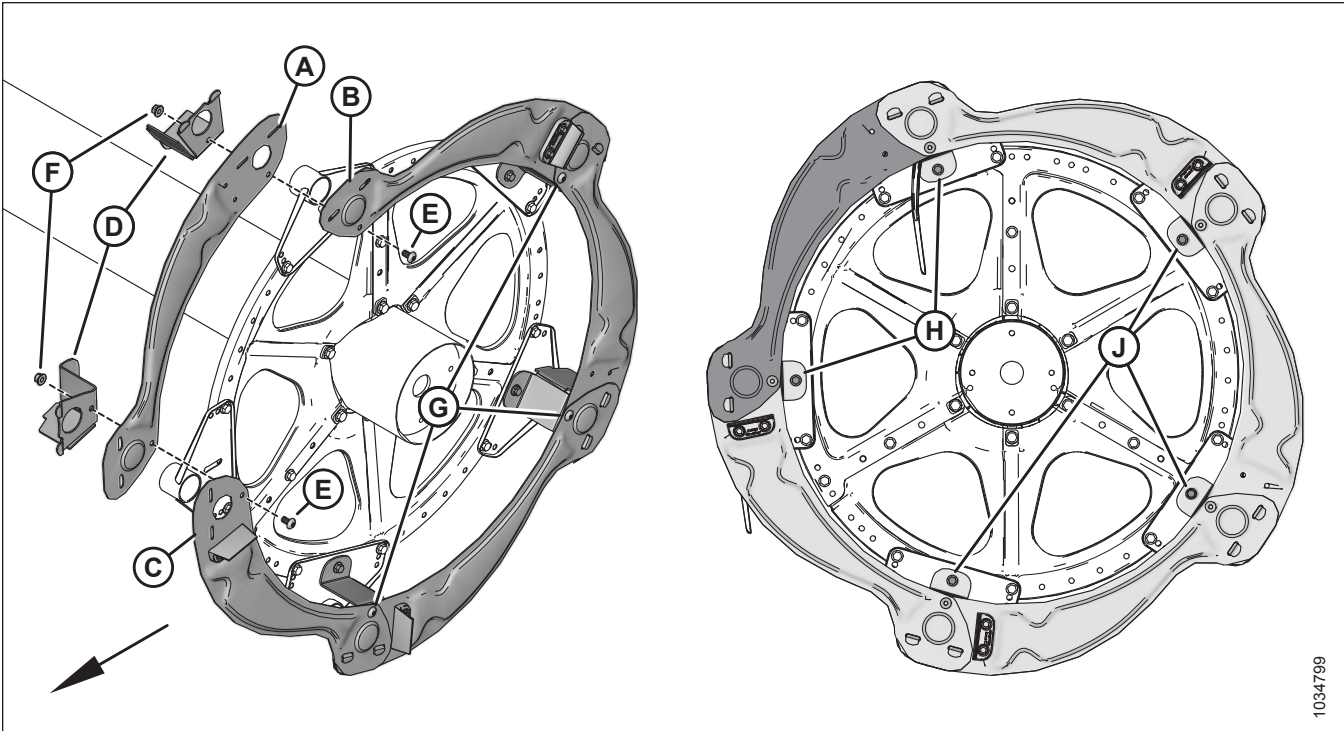


Figure 5.42: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

5. Install the last segment of endshield (A) as follows:

NOTE:

The arrow points to the front of the machine.

- Position the wide end of last segment (A) **BEHIND** segment (B). Position the other end of last segment **ON TOP** of segment (C).
 - Install the tabs of endshield supports (D) through the endshield segments.
 - Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
 - Torque five M10 X 1.5 X 20 Torx® screws (E) and (G) to 39 Nm (29 lbf·ft). Rotate the reel to reach the screws if required.
6. Secure the two endshield supports to the reel disc using two M12 X 1.75 X 30 hex bolts (H) and nuts.
7. Tighten five M12 X 1.75 X 30 hex bolts (H) and (J) and nuts that secure the endshield supports to the cam discs to 68.5 Nm (50.5 lbf·ft).

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
54 National Boulevard, Campbellfield, Victoria,
Australia 3061
t. +61 3 8301 1911 f. +61 3 8301 1912

MacDon Brasil Agribusiness Ltda.

Rua Grã Nicco, 113, Sala 404, B. 04
Mossunguê, Curitiba, Paraná
CEP 81200-200 Brasil
t. +55 41 2101 1713 f. +55 41 2101 1699

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

MacDon Europe GmbH

Edisonstrasse 63
Haus A, 12459 Berlin
Germany
t. +49 30 408 172 839

CUSTOMERS**MacDon.com****DEALERS****Portal.MacDon.com**

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

Printed in Canada