

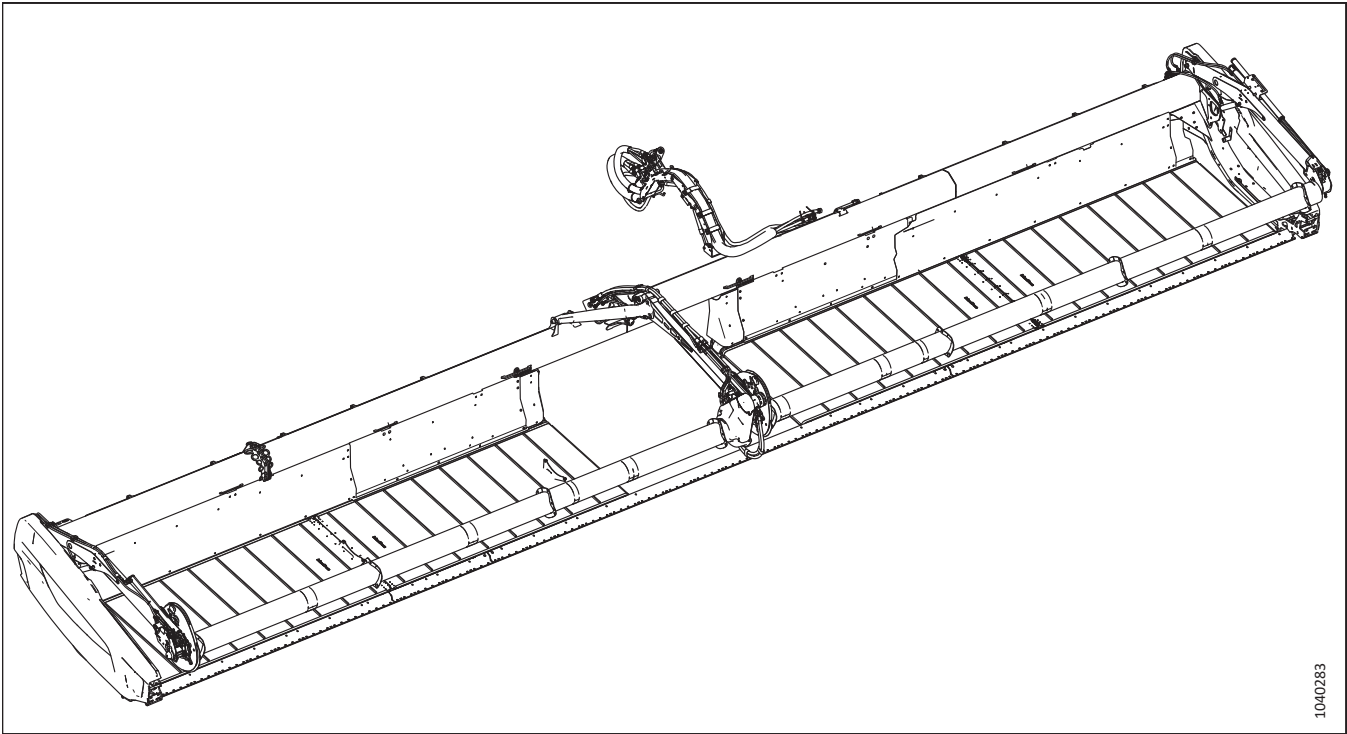
D2 Series Draper Header for M, M1, and M2 Series Windrowers

Unloading and Assembly Instructions (North America)

262677 Revision A

Original Instruction

D2 Series Draper Header For Windrowers



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Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon D2 Series Draper Header for windrowers.

To ensure the best performance from this product and the safety of your customers, carefully follow the unload and assembly procedure from the beginning through to completion.

Some sections/steps do not apply to all header configurations and sizes. Refer to the instructions for your specific header.

Carefully read all the material provided before attempting to unload, assemble, or use the machine.

If the shipment is damaged or is missing parts, contact shortageanddamage@macdon.com.

Retain this instruction for future reference.

NOTE:

Keep your MacDon publications up-to-date. The latest version can be downloaded from our website (www.macdon.com) or from our Dealer portal (<https://portal.macdon.com>) (login required).

This document is currently available in English only.

Summary of Changes

The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
<i>2.1 Header Specifications for Unloading and Assembly, page 9</i>	Updated topic.	Product Support
<i>2.3 Removing Upper Cross Auger from Shipping Location – Option, page 13</i>	Updated illustration with a North American version of single-reel header with one-piece UCA. Added illustration indicating the lift locations of the UCA.	Product Support
<i>3.1 Attaching Draper Header Supports, page 29</i>	Added notes about the recommended installation of header support clevis pin for narrow transport configured windrowers.	ECN 65336
<i>3.4.2 Connecting Header Hydraulic and Electrical Systems to M2 Series Windrower, page 75</i>	Added illustration and corresponding steps about the position of the hydraulic hoses on D215 and D220 Draper Headers.	Product Support
<i>4.6 Installing Knifehead Guard Hardware – D215, D220, D225, D230, and D235 (Parts Bag MD #347581), page 96</i>	Added topic.	Product Support
<i>5.5 Adjusting Knife Speed Sensor, page 202</i>	Added topic.	ECN 65317
<i>5.9.2 Adjusting Reel-to-Cutterbar Clearance, page 213</i>	Added a note and link to purge air from the reel lift system.	ECN 65213
<i>5.9.3 Removing Air from Reel Lift Hydraulic System, page 214</i>	Added topic.	ECN 65213
<i>5.10 Guard Identification, page 215</i>	Updated the topic. Knife hold-down MD #286333 was superseded by MD #286904.	ECN 65553

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Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

The safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

This symbol means:

- **ATTENTION!**
- **BECOME ALERT!**
- **YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

- Accidents disable and kill
- Accidents cost
- Accidents can be avoided



Figure 1.1: Safety Symbol

1.2 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 it is not prevented, will result in death or serious injury.

WARNING

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

CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

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. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.



Figure 1.2: Safety Equipment



Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

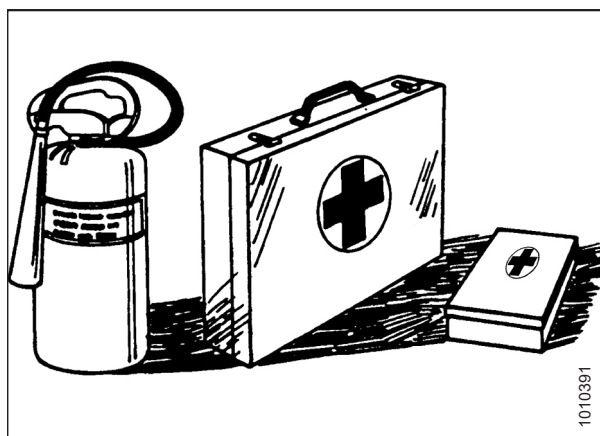


Figure 1.4: Safety Equipment

SAFETY

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as hoodies, scarves, or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements.



Figure 1.5: 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 the functionality and/or safety of the machine. It may also shorten the machine's service life.
- To avoid injury or death from the 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.

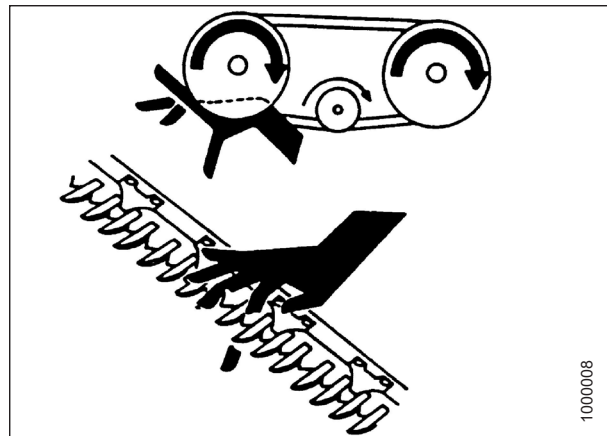


Figure 1.6: Safety around Equipment

- Keep the machine service area clean and dry. Wet and/or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Ensure that all electrical outlets and tools are properly grounded.
- Keep the 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 they are stored.
- **NEVER** use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover any sharp or extending components to prevent injury from accidental contact.



Figure 1.7: Safety around Equipment

1.4 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. Follow the proper safety procedures when inspecting hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in **NEUTRAL** before leaving the operator's seat.
- Ensure that all of the components in the hydraulic system are kept clean and in good condition.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do **NOT** attempt any makeshift repairs to hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs can fail suddenly and create hazardous conditions.

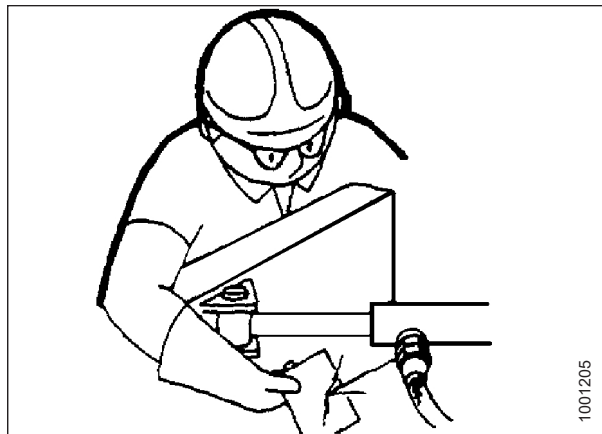


Figure 1.8: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic fluid leaks. Use a piece of cardboard as a backstop instead of your hands to isolate and identify a leak.
- If you are injured by a concentrated, high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or a toxic reaction can develop from hydraulic fluid piercing the skin.

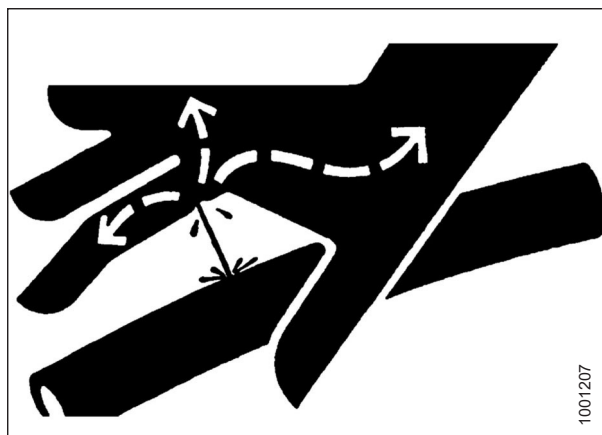


Figure 1.9: Hydraulic Pressure Hazard

- Ensure that all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to a hydraulic system.

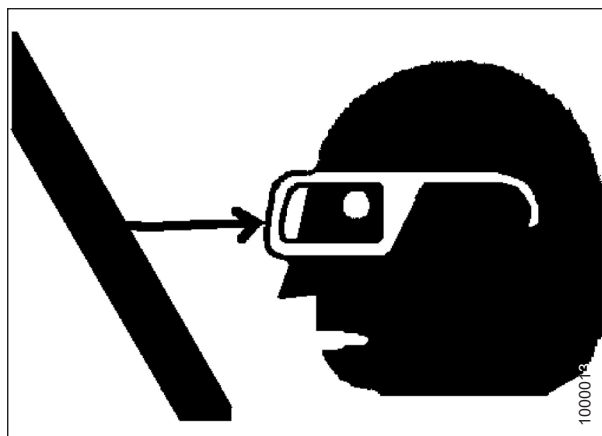


Figure 1.10: Safety around Equipment

1.5 Tire Safety

Understand the risks of handling tires before performing maintenance tasks.

WARNING

- A tire can explode during inflation, causing serious injury or death.
- Follow the proper procedures when mounting a tire. Failure to do so can produce an explosion, causing serious injury or death.

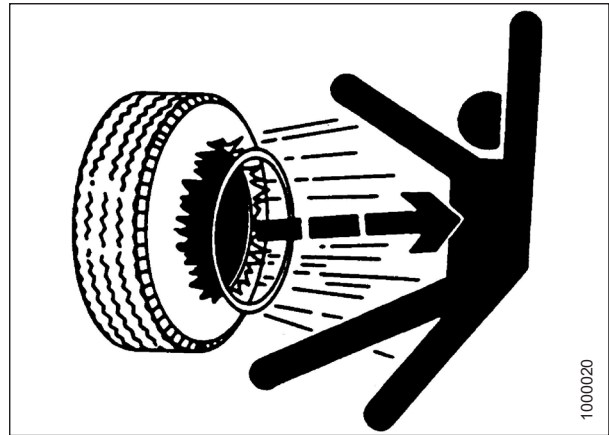


Figure 1.11: Overinflated Tire

WARNING

- Do NOT remove, install, or repair a tire on a rim unless you have the proper equipment and experience to perform the task. Take the tire and rim to a qualified tire repair shop if necessary.
- Ensure that the tire is correctly seated on the rim before inflating it. If the tire is not correctly positioned on the rim or is overinflated, the tire bead can loosen on one side causing air to escape at high speed and with great force. An air leak of this nature can thrust the tire in any direction, endangering anyone in the area.
- Do NOT stand over the tire when inflating it. Use a clip-on chuck and extension hose when inflating a tire.
- Do NOT exceed the maximum inflation pressure indicated on the tire label.
- Never use force on an inflated or partially-inflated tire.
- Ensure that all air is removed from the tire before removing the tire from the rim.
- Never weld a wheel rim.
- Replace tires that have defects. Replace wheel rims that are cracked, worn, or severely rusted.



Figure 1.12: Safely Inflating Tire

1.6 Welding Precautions

To prevent damage to sensitive electronics, **NEVER** attempt welding on the header while it is connected to a windrower.

WARNING

NEVER attempt welding on the header while it is connected to a windrower. Severe damage to sensitive, expensive electronics can result from welding on the header while it is connected to a windrower. It can be impossible to know what effect a high current may have regarding future malfunctions or a shorter lifespan.

For further welding precautions, consult the windrower operator's manual.

If it is not practical to disconnect the header from the windrower before welding, you **MUST** disconnect the following electrical components from the header:

1. On the left side of the header, disconnect electronically timed double-knife (ETDK) control module (A) by unplugging bulkhead (B) from the module.

NOTE:

Parts have been removed from the illustration for clarity.

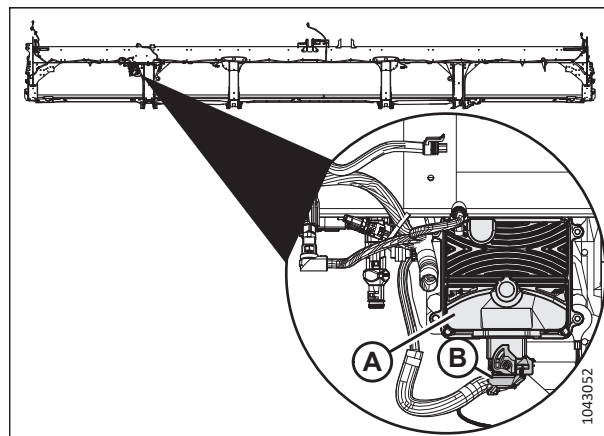


Figure 1.13: ETDK Control Module

2. To unplug the bulkhead from the module, push in tab (A) to unlatch arm (B).
3. Push arm (B) downward until it is in the position shown. Unplug the bulkhead from the module.

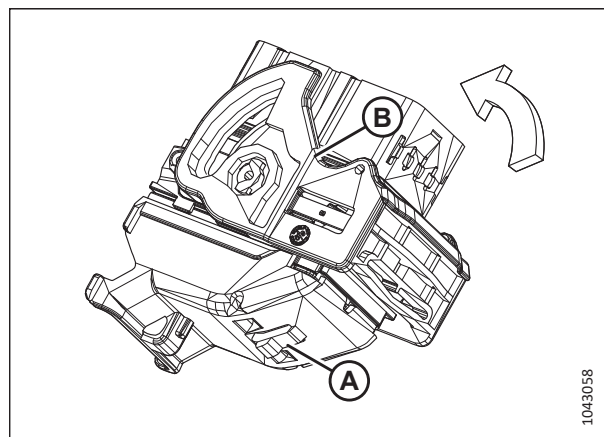


Figure 1.14: Unplugging Bulkhead from Control Module

1.7 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or illegible.
- If the original part on which a safety sign was installed is replaced, ensure that the repair part displays the current safety sign.

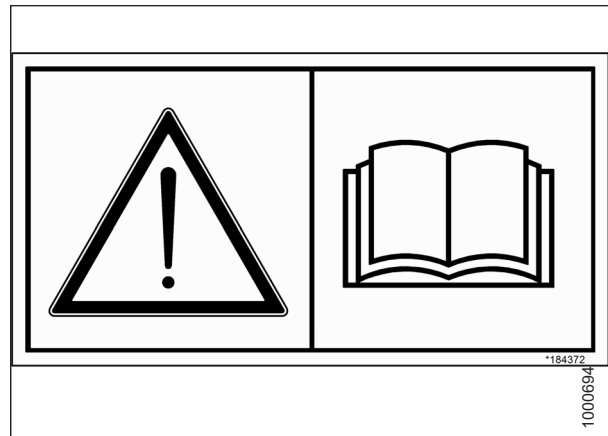


Figure 1.15: Operator's Manual Decal

Chapter 2: Unloading Header

Carefully follow these procedures in the order in which they are presented.

2.1 Header Specifications for Unloading and Assembly

Header dimensions, weight, and spreader bar specifications are provided so that you can choose the correct equipment to lift, tip, or transport the header safely.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to operators or bystanders.

Refer to the following specifications:

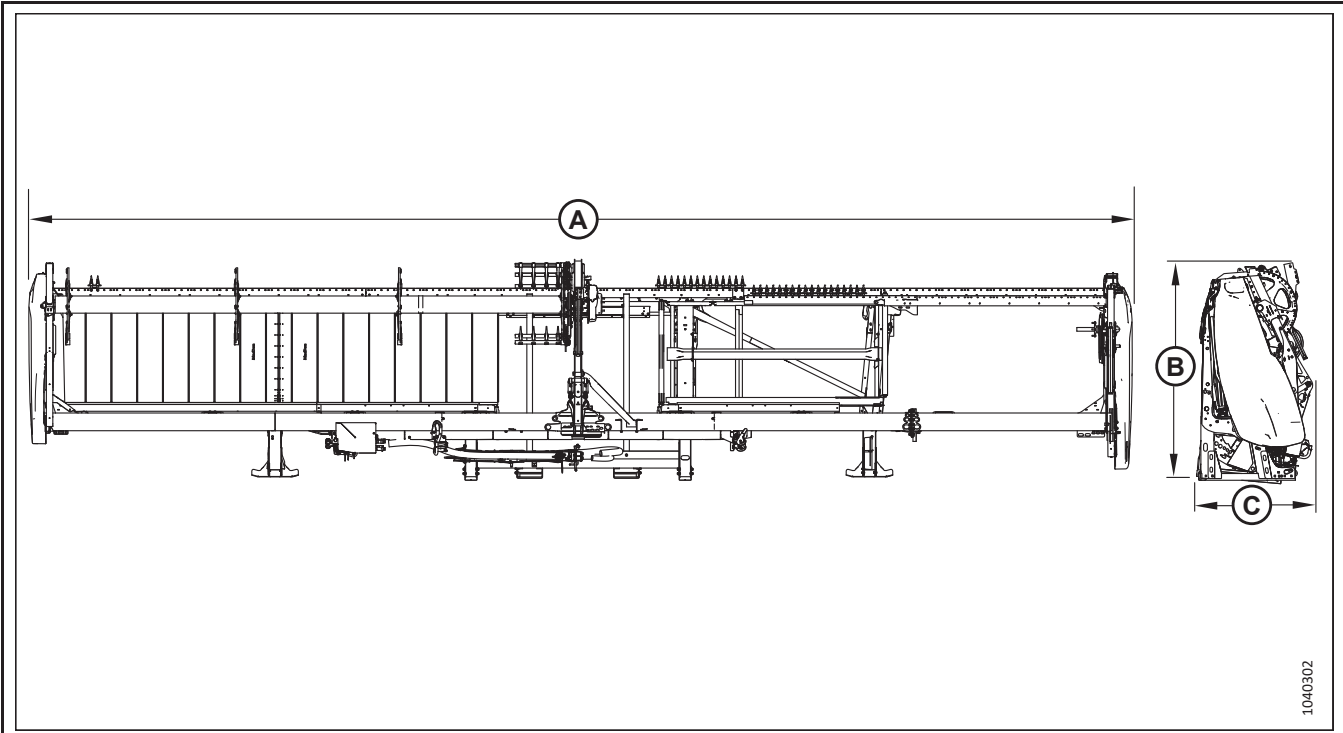
- For header weight, refer to Table 2.1, page 9.
- For header dimensions (fully assembled header attached to shipping stands), refer to Table 2.2, page 10.

Table 2.1 Header Weight

IMPORTANT:	
These are approximate weights for a SINGLE HEADER that include the bare header and shipping stands. When additional optional kits are installed, the weight will increase.	
Header Model	Weight
D215	1689 kg. (3723 lb.)
D220	1852 kg. (4081 lb.)
D225	2163 kg. (4768 lb.)
D230	2622 kg. (5779 lb.)
D235	2843 kg. (6266 lb.)
D241	2946 kg. (6493 lb.)

UNLOADING HEADER

Table 2.2 Header Dimensions – Fully Assembled and Attached to Shipping Stands



IMPORTANT:

These approximate dimensions are provided to help you choose the correct size of vehicle to lift or transport the header. These dimensions assume the header is assembled and attached to the shipping stands.

Header Model	Dimensions		
	A	B	C
D215	5.1 m (16 ft. 7 in.)	2.6 m (8.4 ft.)	1.5 m (4.9 ft.)
D220	6.6 m (21 ft. 7 in.)		
D225	8.1 m (26 ft. 7 in.)		
D230	9.6 m (31 ft. 7 in.)		
D235	11.2 m (36 ft. 7 in.)		
D241	13.0 m (42 ft. 7 in.)		

2.2 Unloading Header from Trailer

To ensure that the header is unloaded safely and without damage, follow the recommended unloading procedure provided here.

DANGER

To prevent injury to bystanders caused by being struck by machinery, do NOT allow people to stand in the unloading area.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to operators or bystanders.

IMPORTANT:

For minimum lifting equipment requirements, refer to [2.1 Header Specifications for Unloading and Assembly, page 9](#).

1. Move the trailer into position and block the trailer wheels.
2. Lower the trailer storage stands.
3. Approach one of the headers with a forklift, and slide forks (A) through shipping support (B) as far as possible without contacting the shipping support of the second header.

IMPORTANT:

Avoid lifting the second header and ensure the forks do not interfere with the shipping frame. If the forks contact the second header, the header could be damaged.

4. Remove the hauler's tie-down straps, chains, and wooden blocks.
5. Slowly raise the header off the trailer deck.

NOTE:

Raise the header just enough to clear the trailer deck.

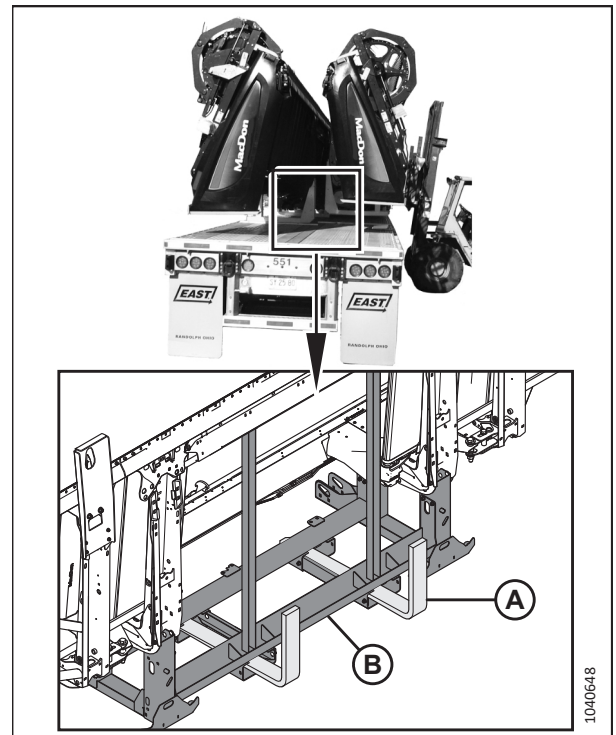


Figure 2.1: Header Shipping Supports

UNLOADING HEADER

6. Back up until the header clears the trailer and slowly lower it to 254 mm (10 in.) from the ground.
7. Take the header to the storage area, and set it down securely on level ground. Ensure the ground is flat and free of rocks or debris that could damage the header.
8. Check for shipping damage and missing parts.

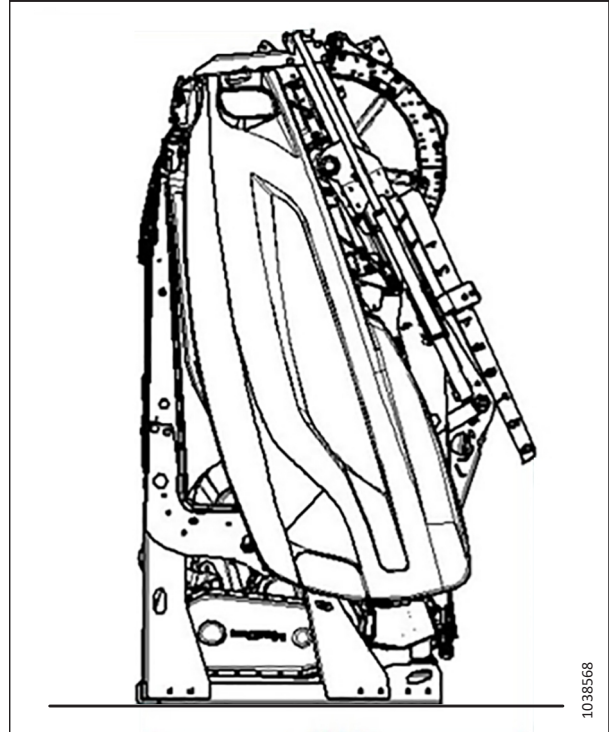


Figure 2.2: Header on Level Ground

2.3 Removing Upper Cross Auger from Shipping Location – Option

If the header was ordered with an upper cross auger (UCA), the UCA will be secured to the front of the header for shipping. The UCA components will need to be removed from the header before the header can be lowered into field position.

If the header was shipped without a UCA, proceed to [2.4 Removing Parts from Shipping Location, page 15](#).

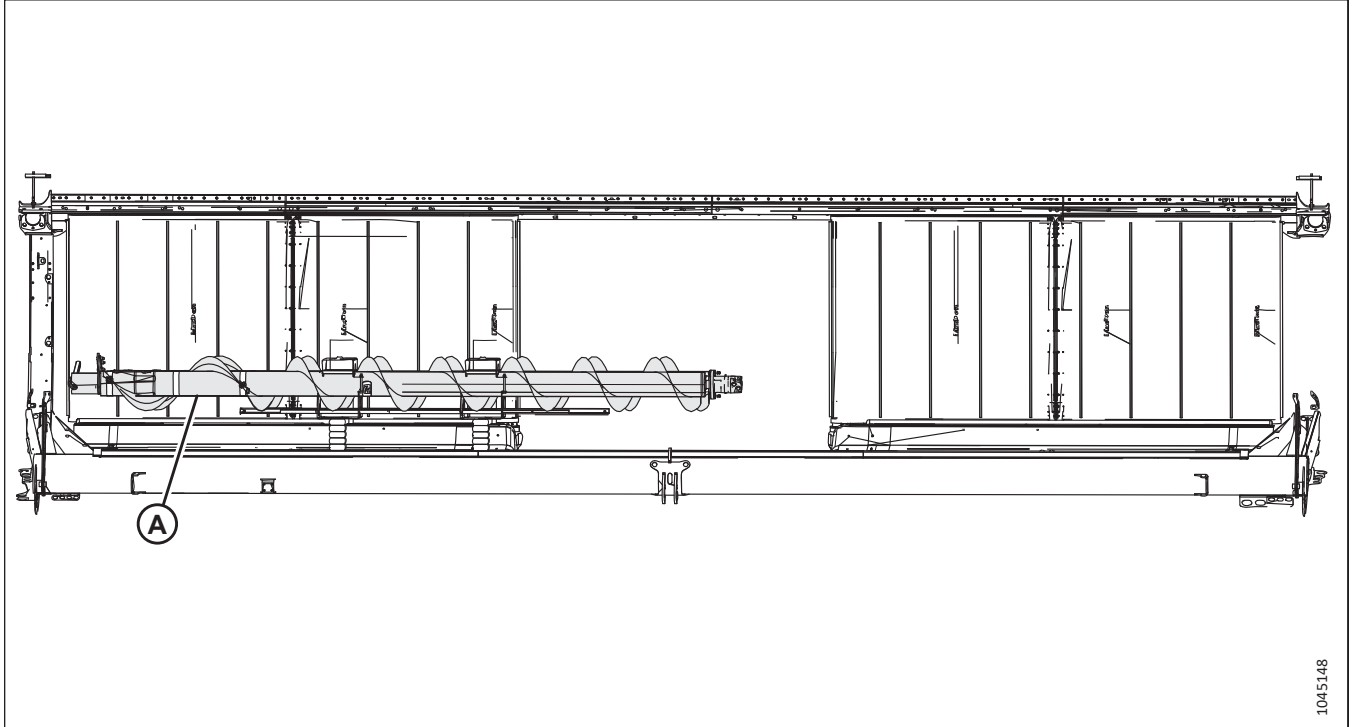


Figure 2.3: Single-Reel Header with One-Piece UCA

NOTE:

The illustration above shows a D225 header configured for shipment outside of North America. One-piece UCA's are shipped in the same position on all single-reel headers, regardless of where they are being shipped.

UNLOADING HEADER

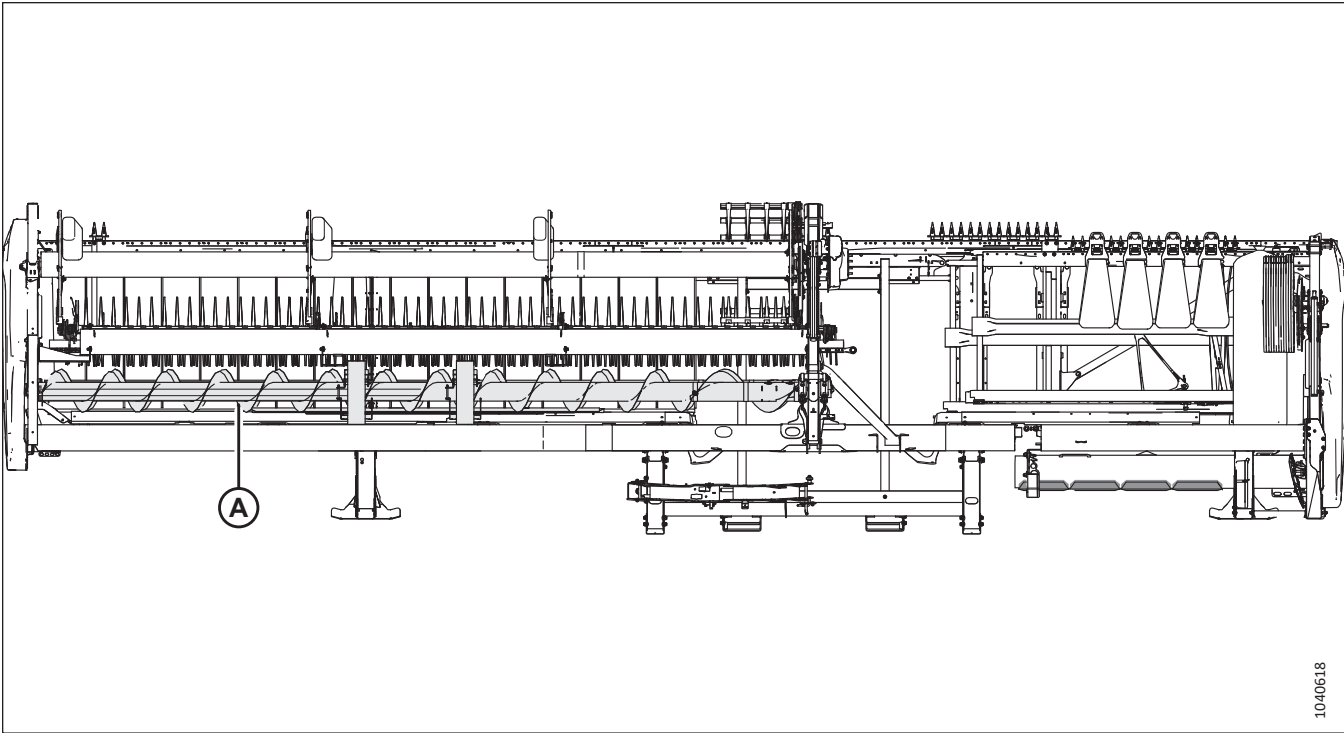


Figure 2.4: Double-Reel Header with Two-Piece Upper Cross Auger (UCA)

NOTE:

The illustration above shows a D241 header configured for shipment outside of North America. Two-piece UCAs are shipped in the same position on all double-reel headers, regardless of where they are being shipped.

1. Remove any banding and blocks securing UCA (A) to the header.
2. Position the forklift forks, or appropriate lifting device, into top forklift channels (A) on the UCA shipping bracket to avoid damaging the attached aluminum deflectors.
3. Set the UCA aside.

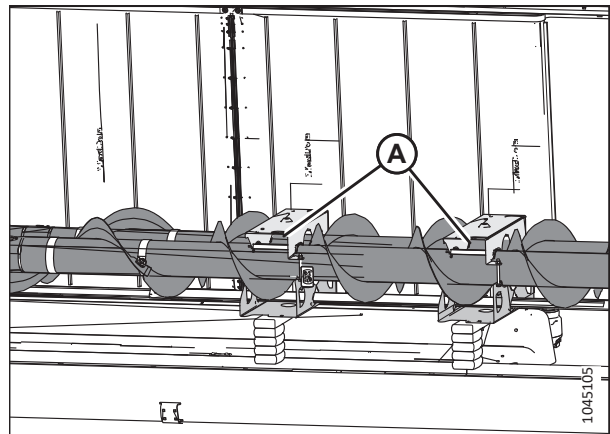


Figure 2.5: Forklift Channels

2.4 Removing Parts from Shipping Location

The header was shipped with several parts strapped to the draper deck and reel. They will need to be removed from the header.

NOTE:

Parts can also be removed after the header is lowered to the field position.

1. Remove and set aside left clearance light (A).

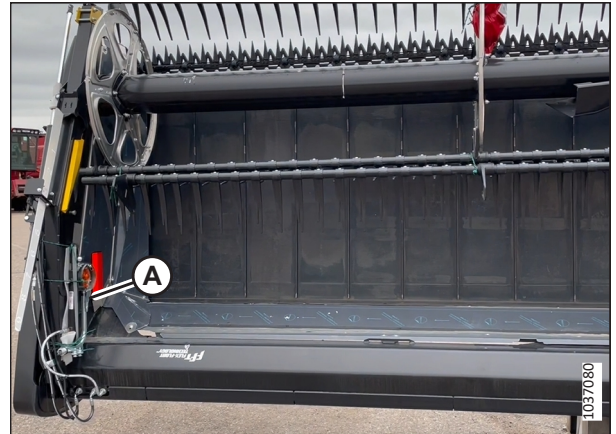


Figure 2.6: Parts Secured to Header

2. Remove and set aside reel endshield bags (A).

NOTE:

This bag can be removed after the header is lowered to field position.

3. Remove and set aside right clearance light (B).

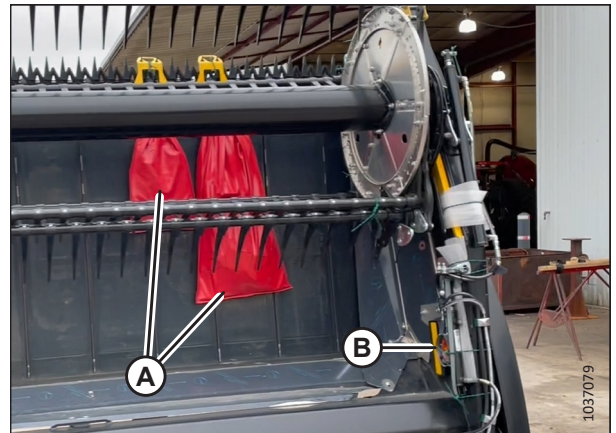


Figure 2.7: Parts Bags Secured to Draper Deck

4. Remove the straps securing windrower supports (A) to the center shipping stand, and set them aside.

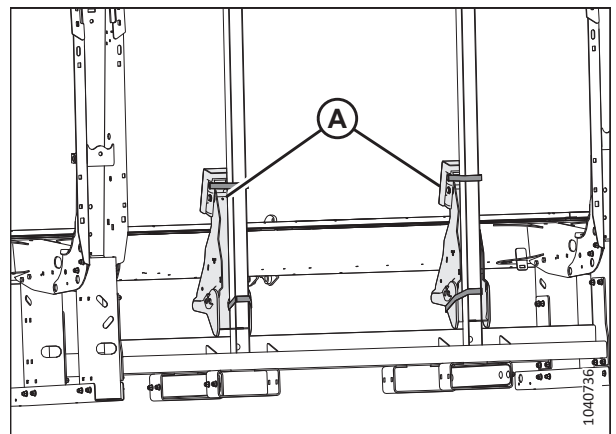


Figure 2.8: Windrower Supports

2.5 Lowering Header to Field Position

Headers are shipped resting on their backs, and must be lowered into field position before assembly can continue. The procedure for lowering the header differs depending on whether the header has a single or double reel.

To lower the header, follow the relevant procedure:

- **Single-reel headers:** refer to [2.5.1 Lowering Header to Field Position – Single Reel, page 16](#).
- **Double-reel headers:** refer to [2.5.2 Lowering Header to Field Position – Double Reel, page 18](#).

2.5.1 Lowering Header to Field Position – Single Reel

To lower the single reel header to field position, use a forklift to raise it slightly, attach a chain, back up slowly while lowering it onto blocks, and then remove the chain.

IMPORTANT:

For information on lifting equipment requirements, refer to [2.1 Header Specifications for Unloading and Assembly, page 9](#).

1. Approach header (A) from its underside.
2. Raise forklift forks (B) until they are just below the cutterbar. Attach chain (C) to the shipping stand. Secure the other end of the chain to the lifting vehicle.

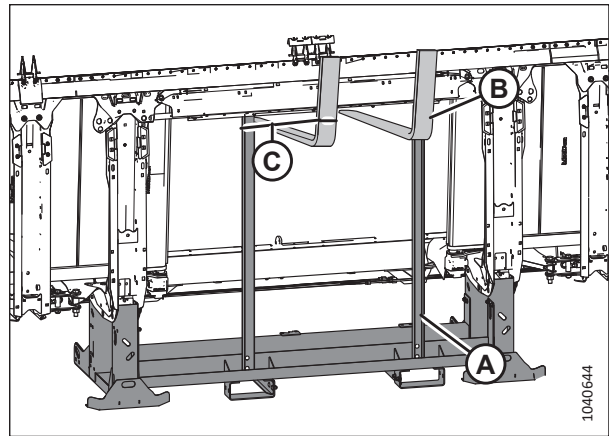


Figure 2.9: Shipping Frame

UNLOADING HEADER

CAUTION

Stand clear when lowering the header; the machine may sway from side to side.

3. Back the forklift up **SLOWLY** while lowering the forks until the header is 254 mm (10 in.) from the ground, as shown in the numbered steps in the illustration.

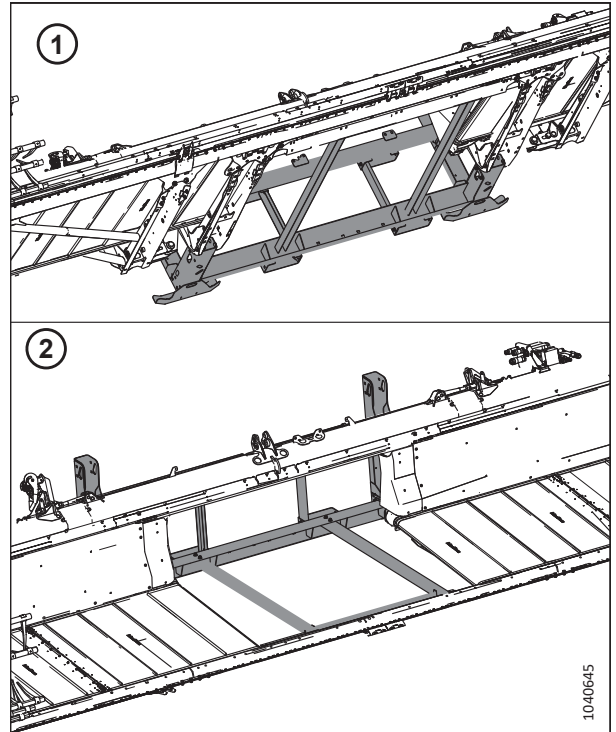


Figure 2.10: Lowering the Header

4. At shipping frame (A), place two 254 mm (10 in.) blocks (B) under the legs.

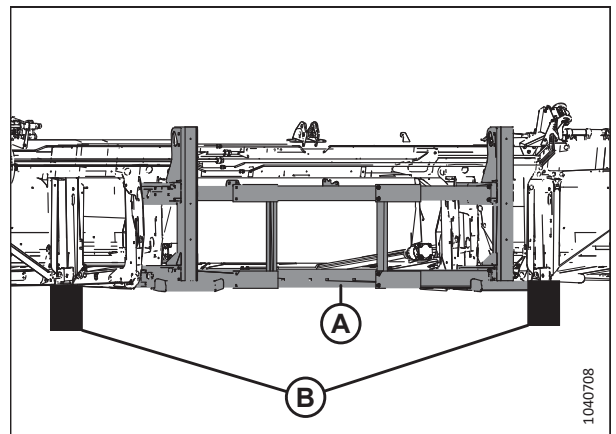


Figure 2.11: Blocks Under the Frame

UNLOADING HEADER

- At the cutterbar, place 254 mm (10 in.) blocks (A) under each end of the header, and one block on each side of the center opening. Continue lowering the header onto the blocks.
- Remove the chain from the shipping support.
- Proceed to [2.6 Removing Crop Dividers From Shipping Position, and Installing Deflector Hardware – D215, D220, and D225 \(Parts Bag MD #357731\), page 22.](#)

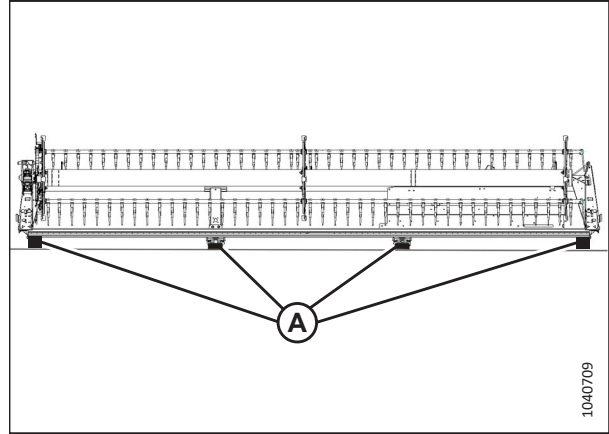


Figure 2.12: Blocks Under the Cutterbar

2.5.2 Lowering Header to Field Position – Double Reel

To lower the double reel header to field position, approach with a lifting vehicle, attach a chain to the shipping support, and back up slowly while lowering the header onto blocks placed under the center and ends, then remove the chain.

DANGER

The equipment used for loading or unloading a machine must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, and bodily harm to operators or bystanders.

For information on lifting equipment requirements, refer to [2.1 Header Specifications for Unloading and Assembly, page 9.](#)

- Approach the underside of the header with the lifting vehicle.

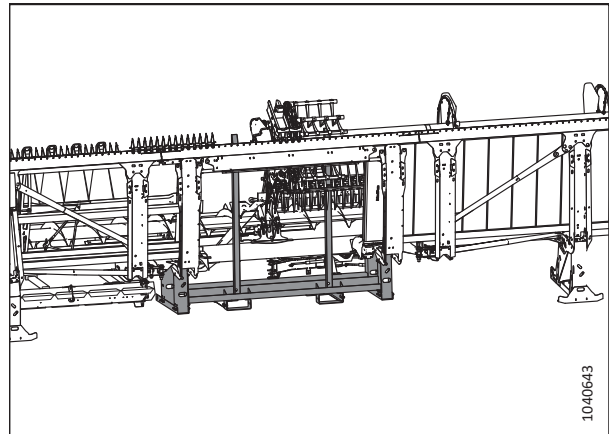


Figure 2.13: Underside of Header

UNLOADING HEADER

2. Attach a chain to shipping support (A) at the center support arm.

IMPORTANT:

Do **NOT** lift at the cutterbar when unloading from the trailer. This procedure is **ONLY** for laying the machine over into working position.

CAUTION

Stand clear of the header when lowering it. The machine may swing.

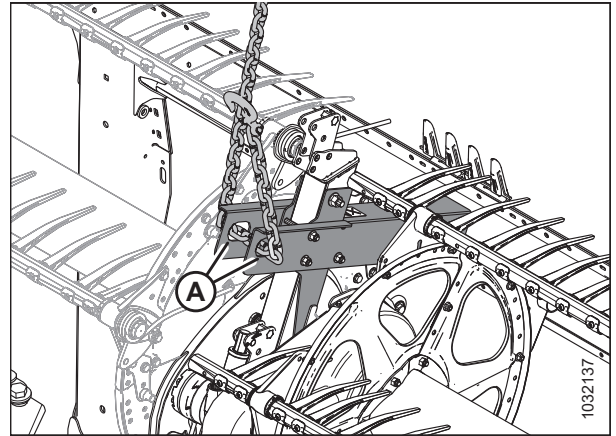


Figure 2.14: Chain Attachment Location – Double Reel

3. Back the forklift up **SLOWLY** while lowering the forks until the header is 254 mm (10 in.) from the ground, as shown in the numbered steps in the illustration.

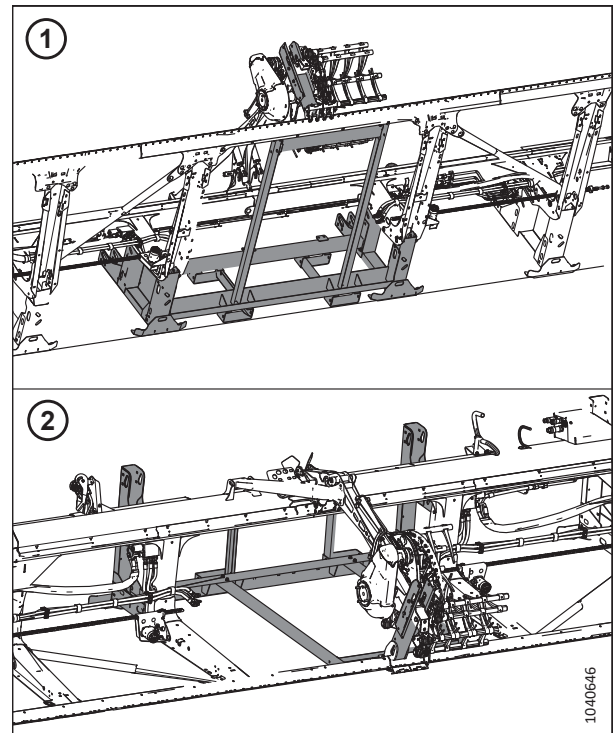


Figure 2.15: Header Lowered onto Ground

UNLOADING HEADER

- At shipping frame (A), place two 254 mm (10 in.) blocks (B) under the legs, as shown.

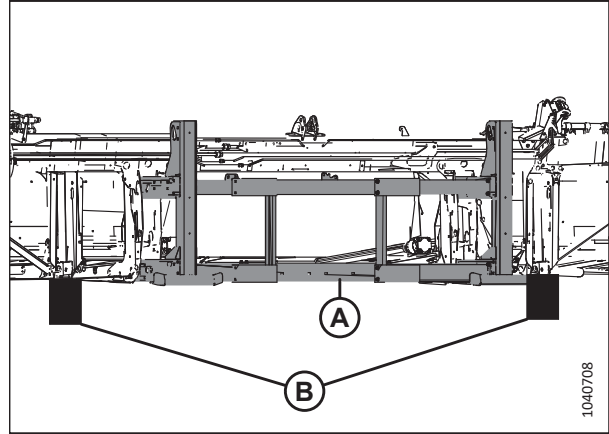


Figure 2.16: Blocks Under the Frame

- At the cutterbar, place 254 mm (10 in.) blocks (A) under each end of the header, and one block on each side of the center opening. Continue lowering the header onto the blocks.
- Remove the chain from the shipping support.

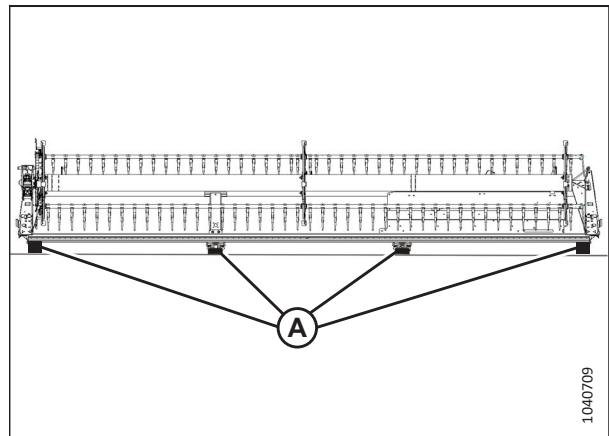


Figure 2.17: Blocks Under the Cutterbar

2.5.3 Removing and Installing Hydraulic Hose Management System – M1 and M2 Series Windrowers Only

To remove and install the hydraulic hose management system, cut the securing wire, attach a sling, remove and discard the shipping support bolts, align the management mount onto the shaft, and reinstall the retained nut and bolt. The hydraulic hose management system weighs approximately 54 kg (120 lb.).

NOTE:

The hydraulic hoses have been removed from the illustrations in this procedure for the sake of clarity.

UNLOADING HEADER

1. Cut and remove any wire securing hydraulic hose management system (A) to the shipping stand.
2. Route sling (E) between the gas strut and the hose management frame, then attach it to the forklift or lifting device.
3. Remove the two bolts securing shipping support (B). Discard the bolts and the shipping support.
4. Remove the three bolts securing shipping support (C). Discard the bolts and the shipping support.
5. Remove the bolt securing shipping support (D). Discard the bolts and the shipping support.

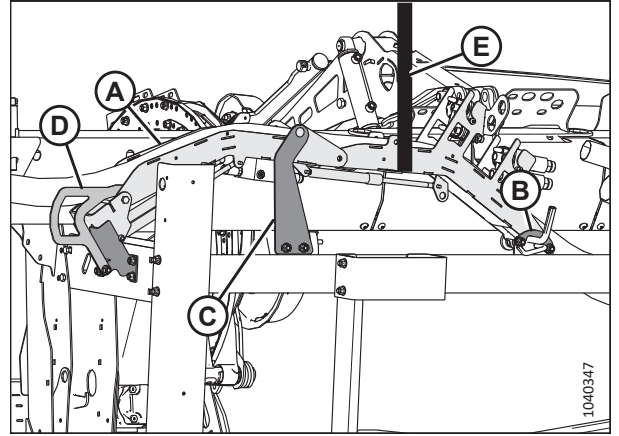


Figure 2.18: Hydraulic Hose Management System

6. Remove nut and bolt (A) and retain them.
7. Align and lower hydraulic hose management mount (B) onto shaft (C) on the hose support mount.

NOTE:

The plastic bushing may come out when lowering the hydraulic hose management system.

8. Install nut and bolt (A).

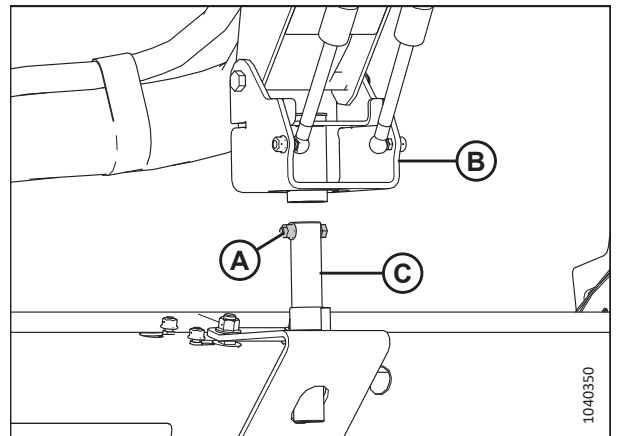


Figure 2.19: Hydraulic Hose Management System

9. **D215 Only:** Remove four bolts and nuts (B) and reposition latch assembly (A) from the shipping position. It should point towards the back of the header.

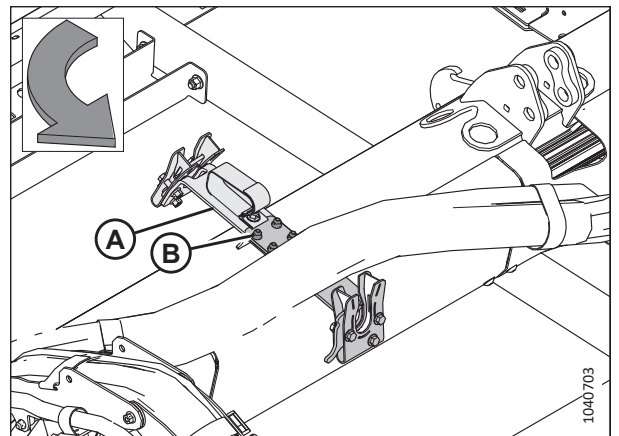


Figure 2.20: Hydraulic Hose Management Latch

2.6 Removing Crop Dividers From Shipping Position, and Installing Deflector Hardware – D215, D220, and D225 (Parts Bag MD #357731)

To remove crop dividers from the single reel shipping position, remove the shipping wire and discard the bolts and washers attaching the dividers to the deflectors, then set the dividers aside and attach the deflectors to the header using new bolts and nuts from the parts bag.

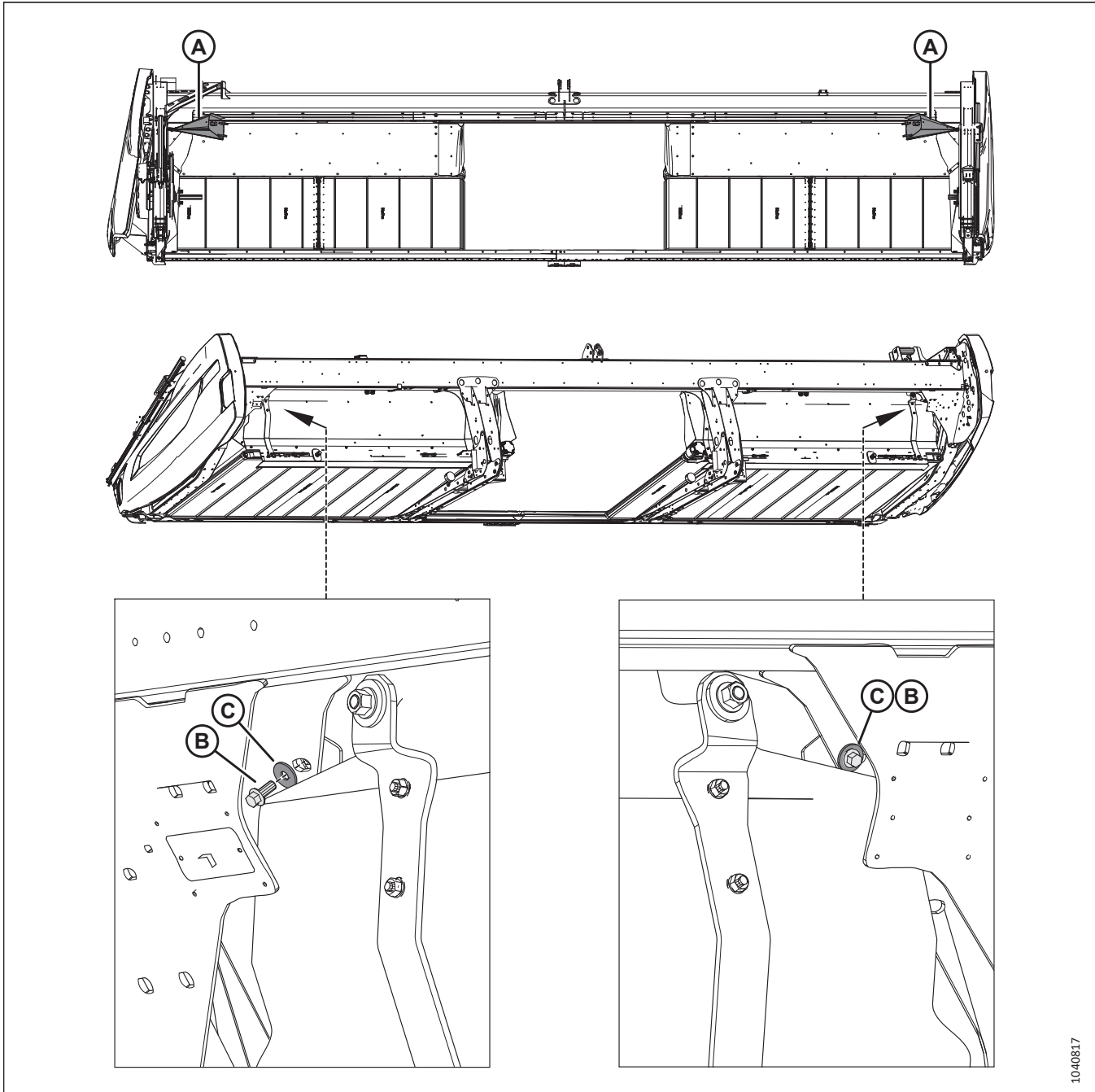
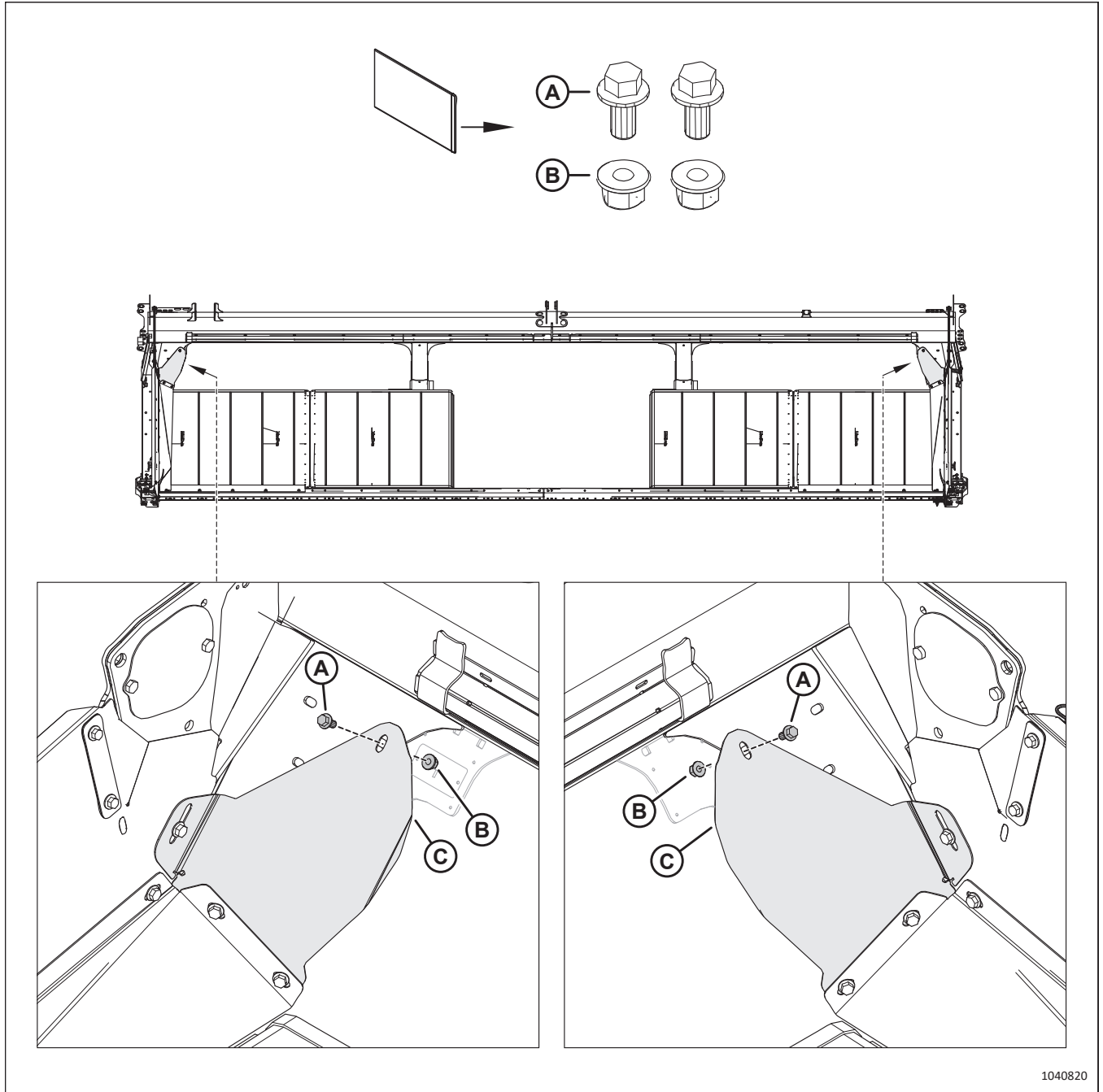


Figure 2.21: Crop Dividers Shipping Location

1. Remove shipping wire from crop dividers (A).
2. Remove and discard bolts (B) and washers (C) that attach the crop dividers to the deflectors.
3. Set the crop dividers aside.

UNLOADING HEADER



1040820

Figure 2.22: Deflector Hardware Installation

4. Retrieve parts bag MD #357731, which contains the following:
 - Two M10 bolts (A)
 - Two M10 nuts (B)
5. Secure deflectors (C) to header using M10 bolt (A) and nut (B).

2.7 Removing Crop Dividers From Double Reel Shipping Position – D230, D235, and D241

The crop dividers need to be moved from the shipping location for later installation.

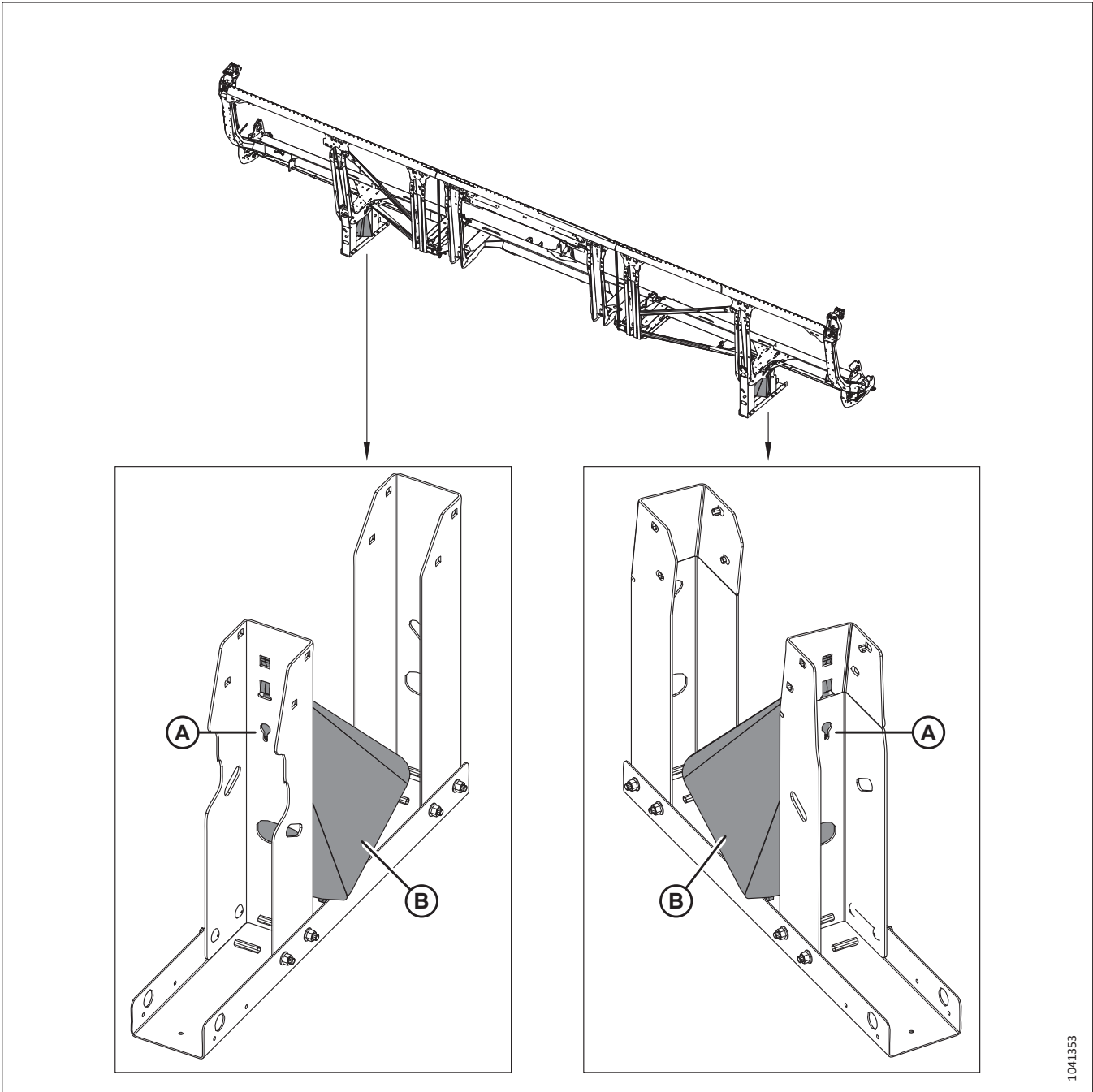


Figure 2.23: Crop Dividers Shipping Location

1. Remove and discard bolts (A).
2. Set both crop dividers (B) aside.

2.8 Removing Shipping Stands and Supports

Unless otherwise specified, discard stands, shipping material, and hardware.

1. Support shipping stand (B) with a forklift.
2. Remove four bolts (A) from the four shipping stand attachment points.
3. Remove shipping stand (B).

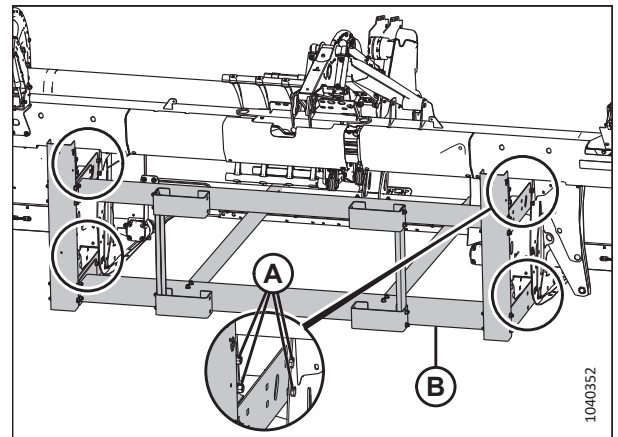


Figure 2.24: Shipping Stand

4. **D230, D235, D241:** Remove the eight bolts (A) and shipping stand (B) from both outboard header legs.

NOTE:

Four of the bolts are on the opposite side of the shipping stand.

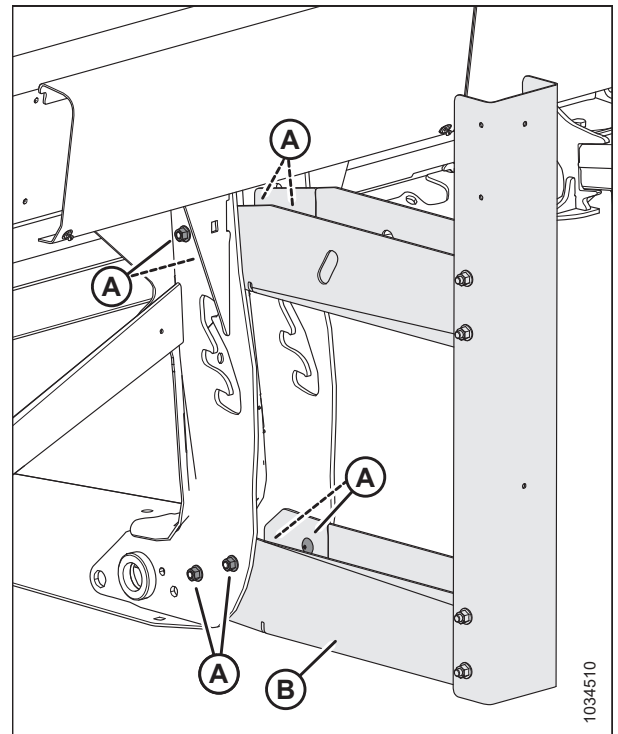


Figure 2.25: Shipping Stands at Outboard Legs – D230, D235, D241 (Right Side Shown)

UNLOADING HEADER

CAUTION

To avoid injury from rotating reel, remove the tine tubes from shipping position before attempting to remove the anti-rotation strap.

5. Remove the shipping wire securing tine tubes (A) to reel (B), and remove the tine tubes.

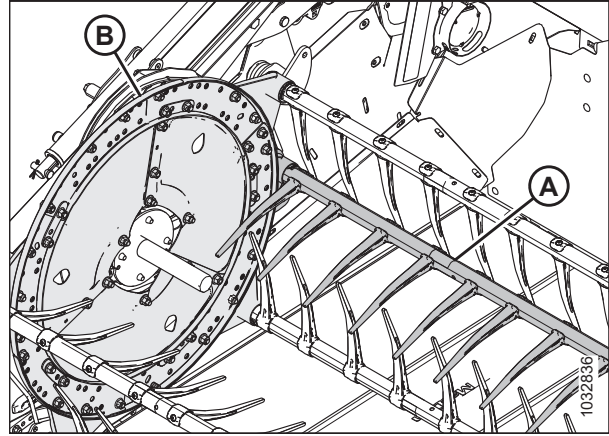


Figure 2.26: Tine Tube in Shipping Position

6. Remove and discard hardware (A) and shipping tag (B) from the inboard deck support. Repeat on the opposite deck.

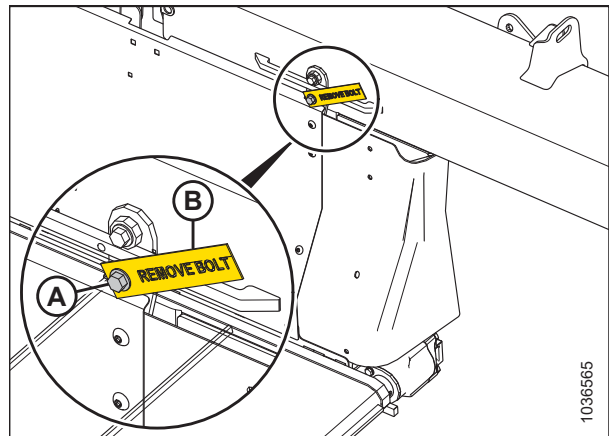


Figure 2.27: Deck Support Shipping Bolt

2.9 Removing Anti-Rotation Strap from Reel and Installing Knife Cover Hardware (Parts Bag MD #347598)

To remove the anti-rotation strap from the reel and install the knife cover hardware, support the reel with a lifting device, retrieve the specified parts, discard the old strap and hardware, and securely attach the new components.

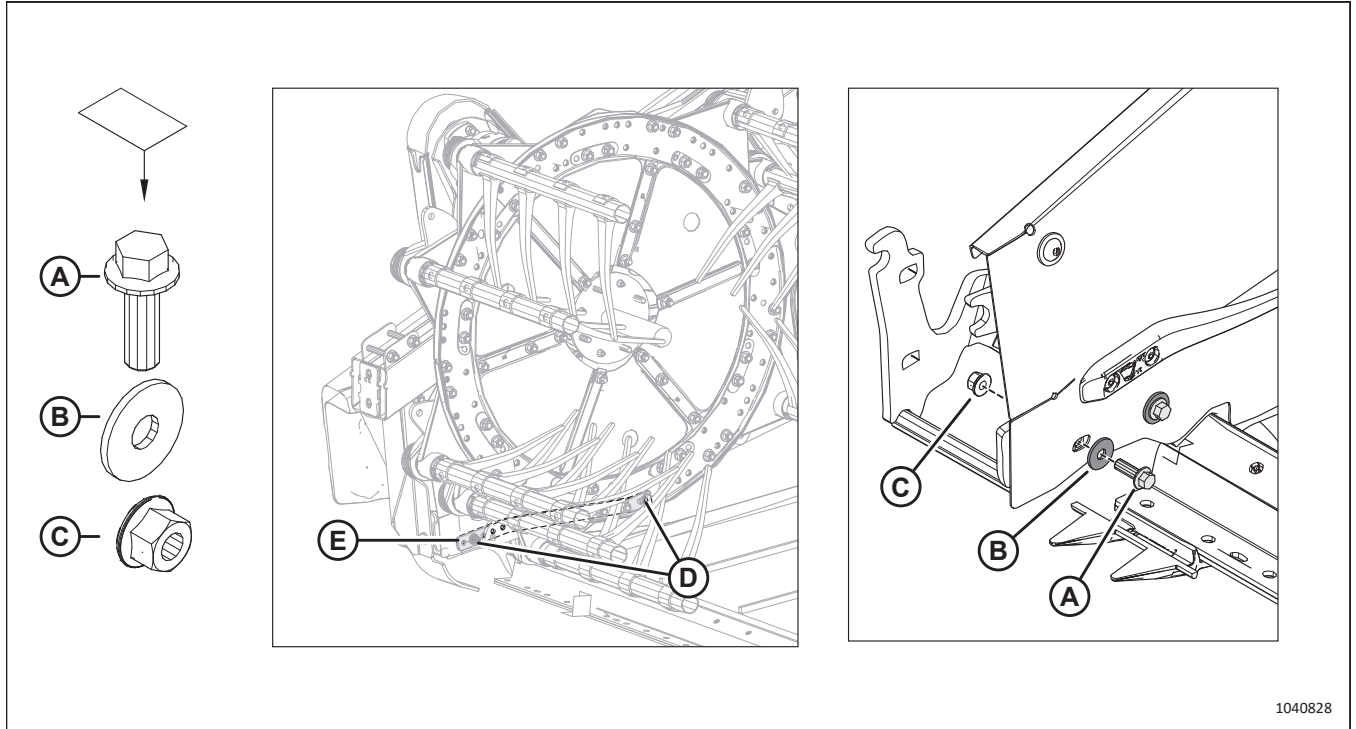


Figure 2.28: Anti-Rotation Strap Removal, Installation of Knife Cover Hardware

1. Ensure that the header is resting on 254 mm (10 in.) blocks.

CAUTION

If the reel is not supported, it can rotate, which can result in injury.

2. Use an appropriate lifting device to support the weight of the reel and to prevent it from rotating.
3. Retrieve parts bag MD #347598, which contains the following:

Table 2.3 Parts Bag MD #347598

Ref	Part Number	Description	Quantity
A	184665	BOLT – HEX FLG HD M10X1.5X30-10.9-AA1J	1
B	184712	WASHER – FLAT LARGE M10-200HV	1
C	228316	NUT – HEX FLG CTR LOC M10X1.5-10	1

4. Remove hardware (D) securing anti-rotation strap (E). Discard the hardware and strap.
5. Install M10 bolt (A), washer (B), and nut (C) to secure the endsheet to the header frame.
6. Tighten nut (C) to 11 Nm (8 lbf·ft [97 lbf·in]).

Chapter 3: Attaching Headers to Windrowers

The procedure for attaching a header to a windrower varies with the windrower model and features.

Proceed to [3.1 Attaching Draper Header Supports](#), page 29.

3.1 Attaching Draper Header Supports

To attach draper header supports, this procedure involves removing the hairpin and clevis pin, positioning the support on the windrower lift linkage, reinstalling and securing the clevis pin with the hairpin, and repeating these steps for the remaining support. The draper header supports are required to attach a D2 Series Draper Header to a windrower.

DANGER

To prevent bodily injury or death from the 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. Shut down the engine, and remove the key from the ignition.

IMPORTANT:

M Series Windrowers: To prevent damage to the lift system when lowering the header lift linkages without a header or a weight box attached to the windrower, ensure that the float engagement pin is installed in storage position (B) and **NOT** in engaged position (A).

NOTE:

M1/M2 Series Windrowers: To prevent damage to the lift system when lowering the header lift linkages without a header or weight box attached, ensure that the float is removed. For instructions, refer to the windrower operator manual.

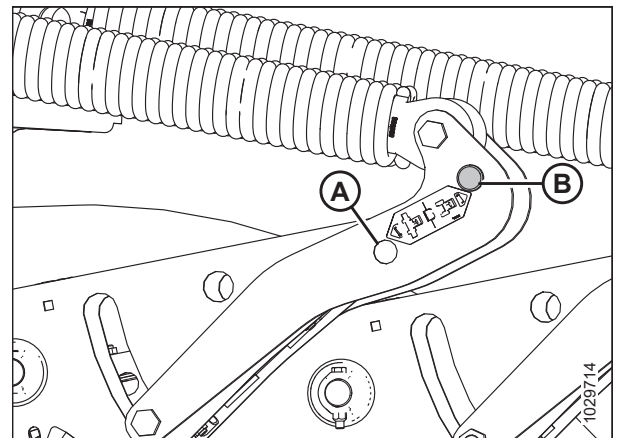


Figure 3.1: Header Float Linkage – M Series

2. Remove hairpin (A) from clevis pin (B) on draper header support (C). Remove clevis pin (B).

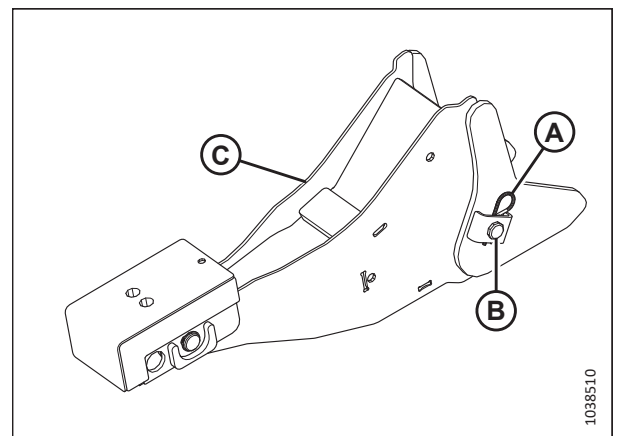


Figure 3.2: Draper Header Support

ATTACHING HEADERS TO WINDROWERS

3. Position draper header support (B) on windrower lift linkage (A). Reinstall clevis pin (C).

NOTE:

All windrower models EXCEPT narrow transport (NT): to ensure that the pin doesn't snag the windrow, install the clevis pin on the outboard side of the draper header support.

NOTE:

Narrow transport (NT) configured windrowers only: to avoid contact with the tires, install the clevis pin on the inboard side of the draper header support.

4. Secure clevis pin (C) with hairpin (D).
5. Repeat Step 2, page 29 to Step 4, page 30 to install the remaining draper header support.
6. Proceed to the attachment procedure that applies to your windrower model:
 - [3.2 Attaching Header to M Series Windrower, page 31](#)
 - [3.3.1 Attaching Header to M1 Series Windrower, page 53](#)
 - [3.4.1 Attaching Header to M2 Series Windrower, page 65](#)

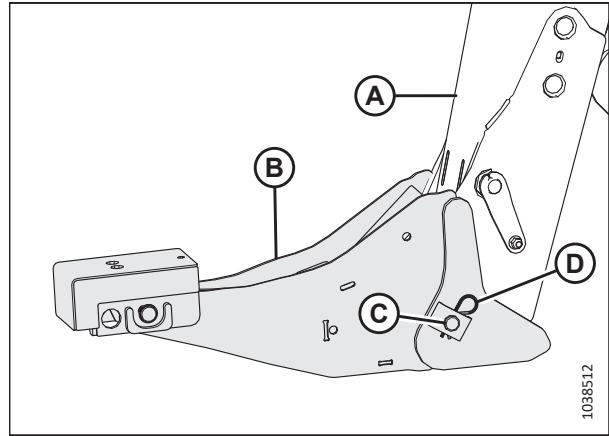


Figure 3.3: Draper Header Support

3.2 Attaching Header to M Series Windrower

To attach a D2 Series Draper Header to an M Series Windrower, follow the procedures provided.

Proceed to the applicable procedure:

- [3.2.1 Attaching Header to M Series Windrower, page 31](#)
- [3.2.2 Attaching Header to M Series Windrower – Hydraulic Center-Link with Self-Alignment, page 36](#)
- [3.2.3 Attaching Header to M Series Windrower – Hydraulic Center-Link without Self-Alignment, page 41](#)
- [3.2.4 Attaching Header to M Series Windrower – Mechanical Center-Link, page 46](#)

3.2.1 Attaching Header to M Series Windrower

This procedure covers three separate configurations: windrowers with the center-link self-alignment feature, without the center-link self-alignment feature, and a mechanical center-link.

DANGER

To prevent bodily injury or death from the 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. Shut down the engine, and remove the key from the ignition.
2. Ensure that the float engagement pin is installed in storage position (B) and **NOT** in engaged position (A).

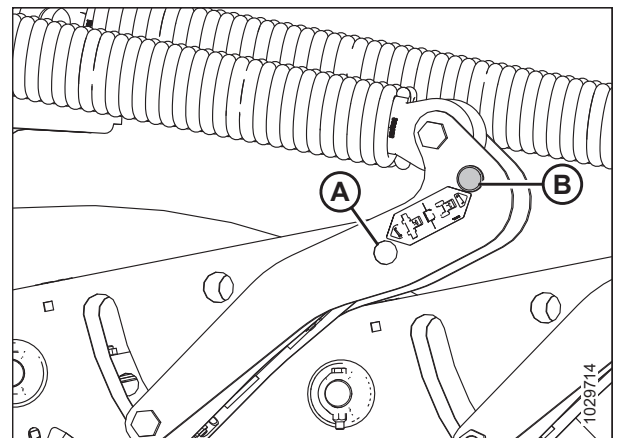


Figure 3.4: Header Float Linkage

3. Remove ring (A) from pin (B), and remove the pin from the header leg. Repeat this step on the other header leg.

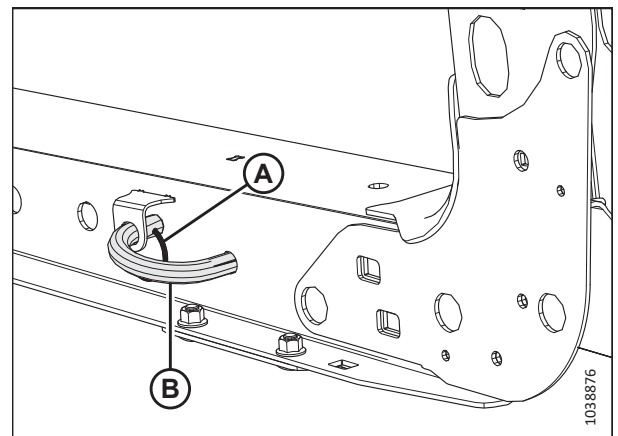


Figure 3.5: Header Leg

⚠ DANGER

Ensure that all bystanders have cleared the area.

4. Activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract the header lift cylinders.

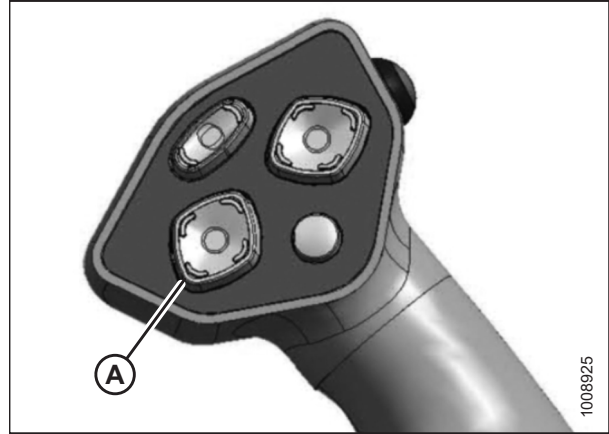


Figure 3.6: Ground Speed Lever

5. Press REEL UP switch (A) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.



Figure 3.7: Ground Speed Lever

6. Drive the windrower slowly forward until header supports (A) enter header legs (B). Continue driving slowly forward until the header supports contact the support plates in the header legs and the header nudges forward.
7. Ensure that the lift linkages are properly engaged in the header supports and that the linkages are contacting the support plates.

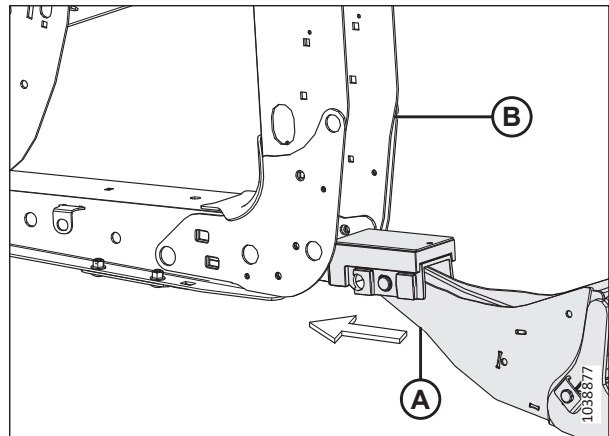


Figure 3.8: Header Leg and Support

ATTACHING HEADERS TO WINDROWERS

8. Use the following GSL functions to position the center-link hook above the header attachment pin:
 - REEL UP (A) to raise the center-link
 - REEL DOWN (B) to lower the center-link
 - HEADER TILT UP (C) to retract the center-link
 - HEADER TILT DOWN (D) to extend the center-link

IMPORTANT:

The hook release must be down to enable the self-locking mechanism. If the release is open (up), manually push it down after the hook engages the header pin.

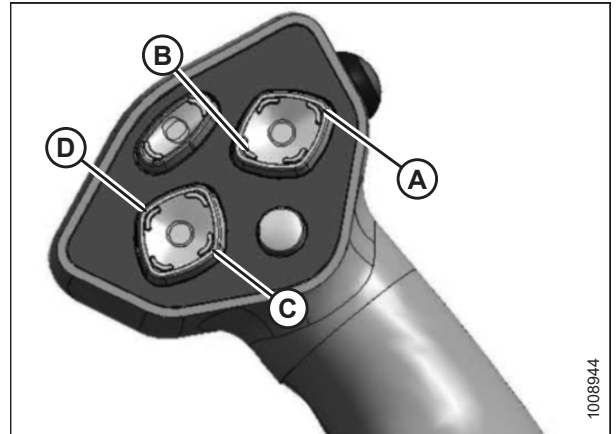


Figure 3.9: Ground Speed Lever

9. Lower center-link (A) onto the header with the REEL DOWN switch on the GSL until it locks into position (hook release [B] is down).
10. Check that center-link (A) is locked onto the header by pressing the REEL UP switch on the GSL.

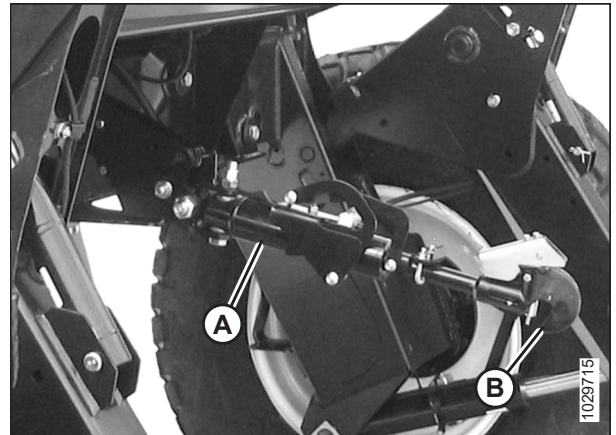


Figure 3.10: Hydraulic Center-Link

11. Press HEADER UP switch (A) to raise the header to its maximum height.
12. If one end of the header does **NOT** fully rise, rephase the lift cylinders as follows:
 - a. Press and hold the HEADER UP switch until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds to fully phase the cylinders.

NOTE:

You may need to repeat this step if there is air in the hydraulic system.

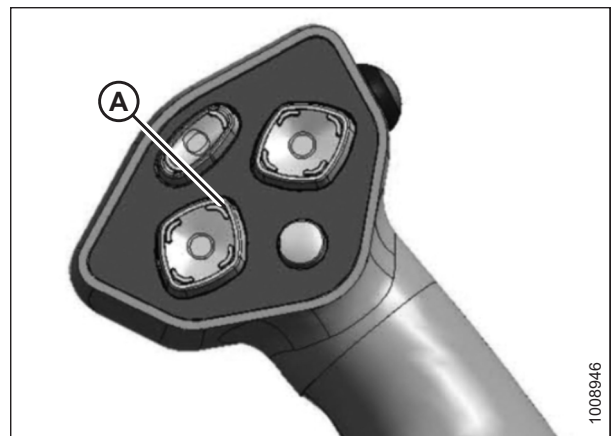


Figure 3.11: Ground Speed Lever

ATTACHING HEADERS TO WINDROWERS

13. Engage the safety props on both lift cylinders:
 - a. Shut down the engine, and remove the key from the ignition.
 - b. Pull lever (A) and rotate it towards the header to release and lower safety prop (B) onto the lift cylinder.
 - c. Repeat the previous steps for the opposite lift cylinder.

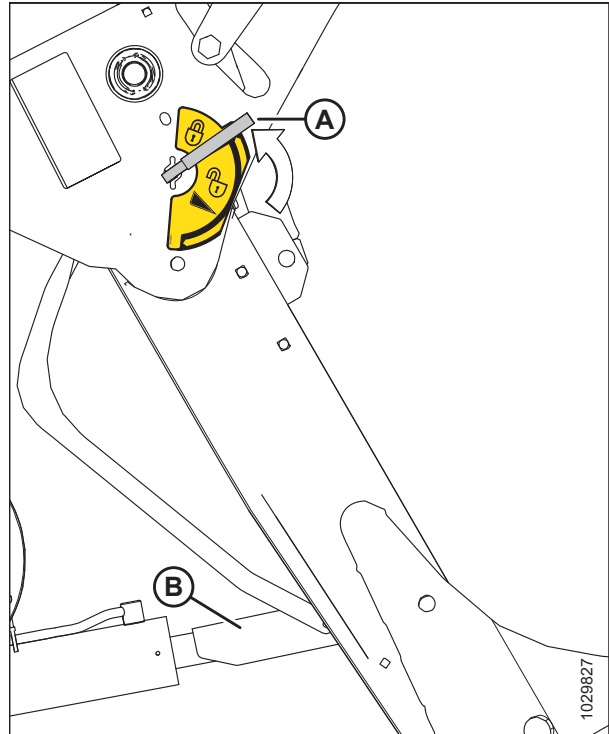


Figure 3.12: Safety Prop

14. Install pin (B) through the header leg, engaging the header support in the lift linkage. Secure the pin with ring (A). Repeat this step on the other header leg.

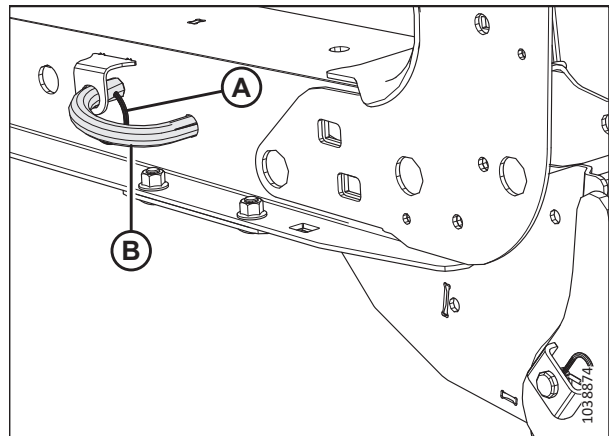


Figure 3.13: Header Leg

ATTACHING HEADERS TO WINDROWERS

15. Remove the clevis pin from storage position (B) in the linkage and insert it into hole (A) to engage the float springs. Secure the clevis pin with the hairpin. Repeat this step on the opposite float linkage.

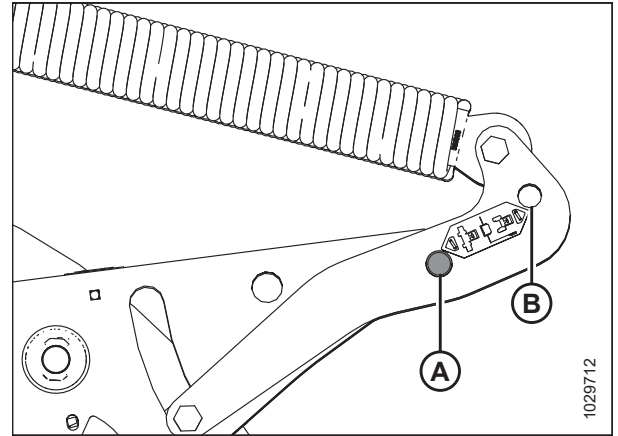


Figure 3.14: Header Float Linkage

16. Disengage the safety prop by turning lever (A) downward until the lever locks into the vertical position.
17. Repeat the previous step to disengage the other safety prop.

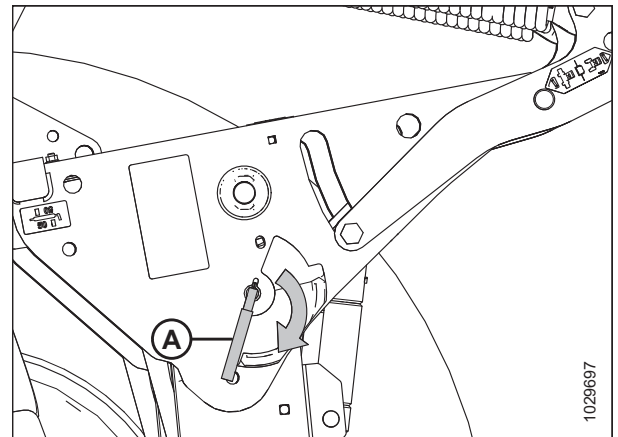


Figure 3.15: Safety Prop Lever

18. Press HEADER DOWN switch (A) on the GSL to fully lower the header.
19. Shut down the engine, and remove the key from the ignition.

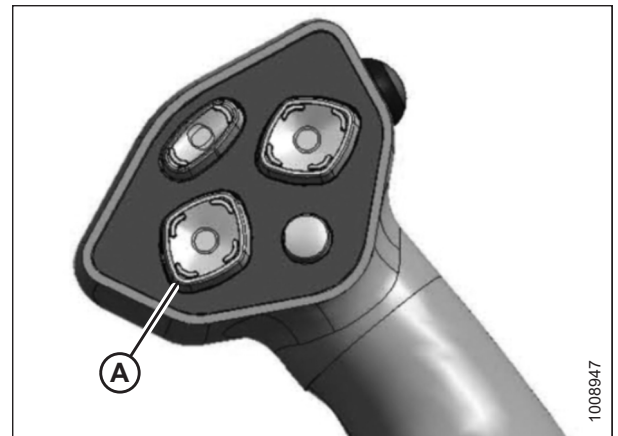


Figure 3.16: Ground Speed Lever

3.2.2 Attaching Header to M Series Windrower – Hydraulic Center-Link with Self-Alignment

The header will need to be physically attached to the windrower, and the hydraulic connections completed. This procedure is for windrowers equipped with an optional self-aligning hydraulic center-link, which allows the Operator to control the vertical position of the center-link from the cab.

⚠ DANGER

Ensure that all bystanders have cleared the area.

⚠ DANGER

To prevent bodily injury or death from the 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. Shut down the engine, and remove the key from the ignition.
2. Ensure that the float engagement pin is installed in storage position (B) and **NOT** in engaged position (A).

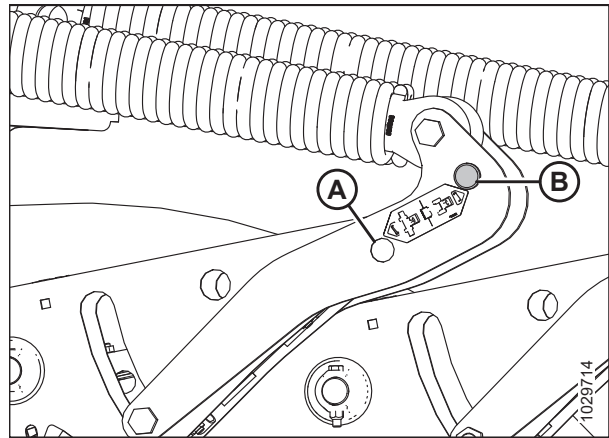


Figure 3.17: Header Float Linkage

3. Remove ring (A) from pin (B), and remove the pin from the header leg. Repeat this step on the other header leg.

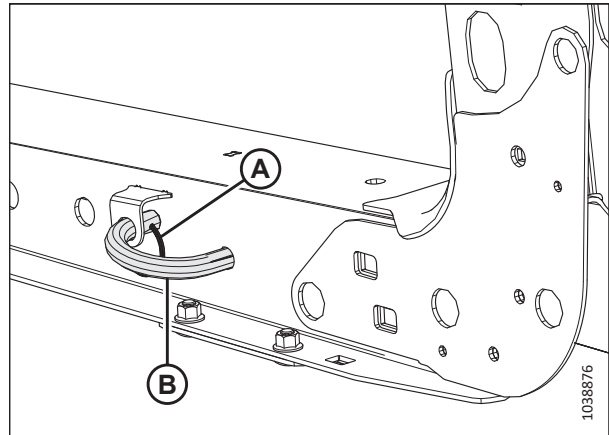


Figure 3.18: Header Leg

ATTACHING HEADERS TO WINDROWERS

4. Activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract the header lift cylinders.

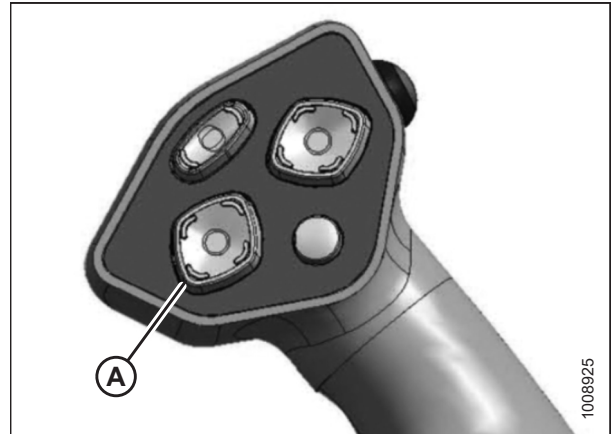


Figure 3.19: Ground Speed Lever

5. Press REEL UP switch (A) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

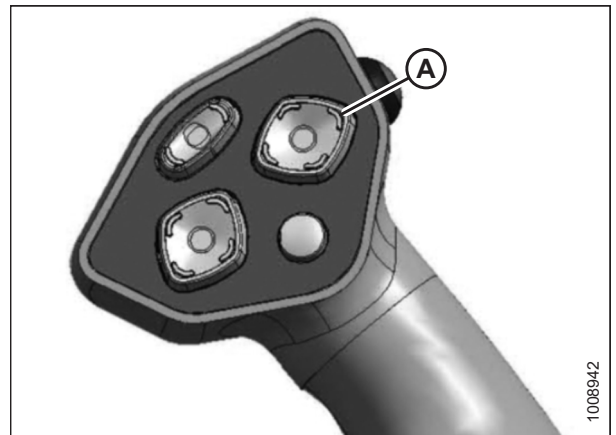


Figure 3.20: Ground Speed Lever

6. Drive the windrower slowly forward until header supports (A) enter header legs (B). Continue driving slowly forward until the header supports contact the support plates in the header legs and the header nudges forward.
7. Ensure that the lift linkages are properly engaged in the header supports and that the linkages are contacting the support plates.

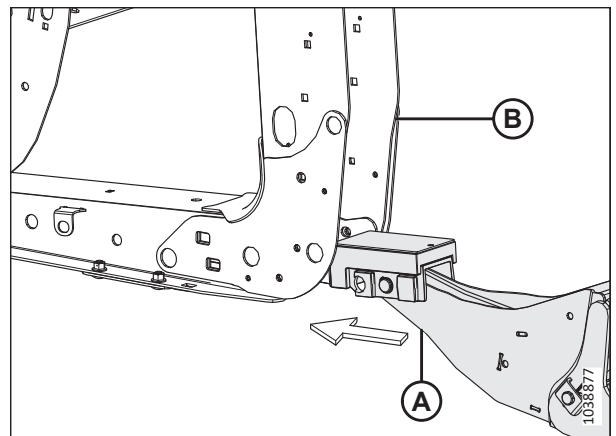


Figure 3.21: Header Leg and Support

ATTACHING HEADERS TO WINDROWERS

8. Use the following GSL functions to position the center-link hook above the header attachment pin:

- REEL UP (A) to raise the center-link
- REEL DOWN (B) to lower the center-link
- HEADER TILT UP (C) to retract the center-link
- HEADER TILT DOWN (D) to extend the center-link

IMPORTANT:

The hook release must be down to enable the self-locking mechanism. If the release is open (up), manually push it down after the hook engages the header pin.

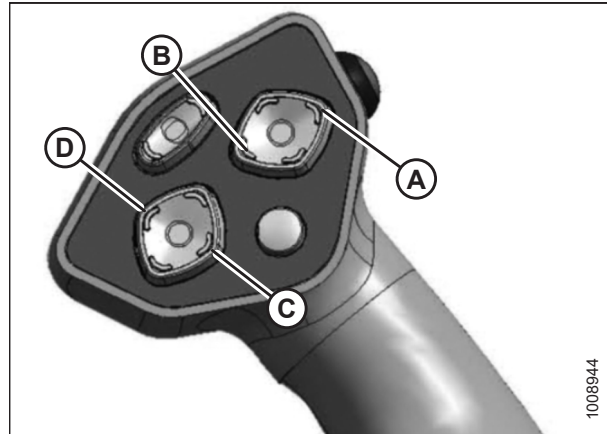


Figure 3.22: Ground Speed Lever

9. Lower center-link (A) onto the header with the REEL DOWN switch on the GSL until it locks into position (hook release [B] is down).
10. Check that center-link (A) is locked onto the header by pressing the REEL UP switch on the GSL.

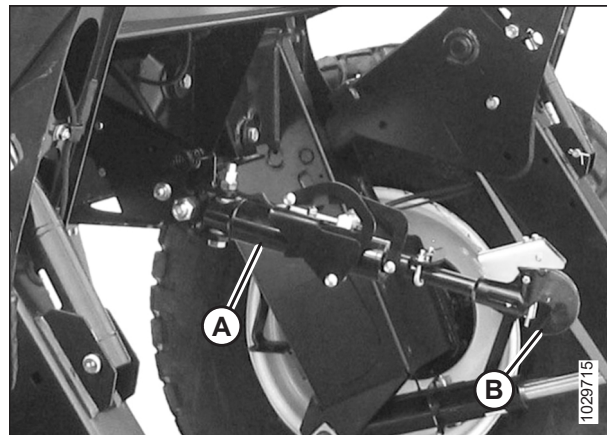


Figure 3.23: Hydraulic Center-Link

11. Press HEADER UP switch (A) to raise the header to its maximum height.
12. If one end of the header does **NOT** fully rise, rephase the lift cylinders as follows:
- a. Press and hold the HEADER UP switch until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds to fully phase the cylinders.

NOTE:

You may need to repeat this step if there is air in the hydraulic system.

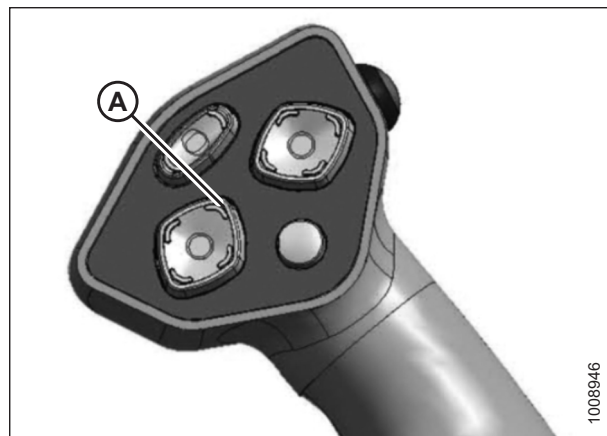


Figure 3.24: Ground Speed Lever

ATTACHING HEADERS TO WINDROWERS

13. Engage the safety props on both lift cylinders:
 - a. Shut down the engine, and remove the key from the ignition.
 - b. Pull lever (A) and rotate it towards the header to release and lower safety prop (B) onto the lift cylinder.
 - c. Repeat the previous steps for the opposite lift cylinder.

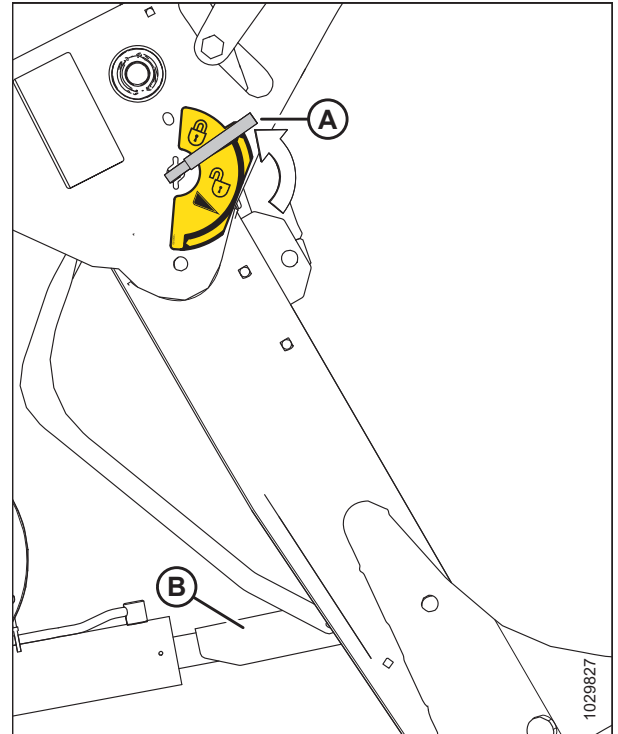


Figure 3.25: Safety Prop

14. Install pin (B) through the header leg, engaging the header support in the lift linkages. Secure the pin with ring (A). Repeat this step on the other header leg.

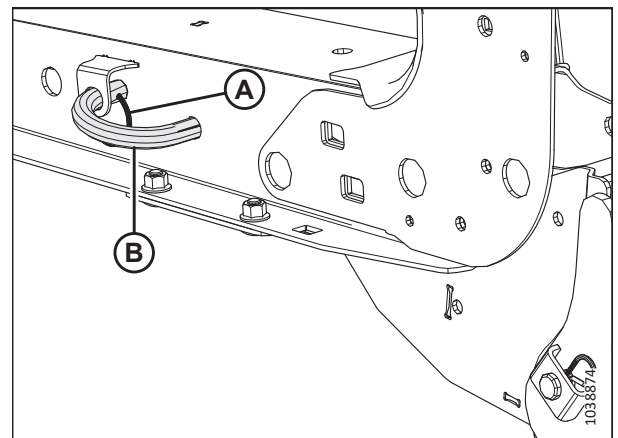


Figure 3.26: Header Leg

ATTACHING HEADERS TO WINDROWERS

15. Remove the clevis pin from storage position (B) in the linkage and insert it into hole (A) to engage the float springs. Secure the clevis pin with the hairpin. Repeat this step on the opposite float linkage.

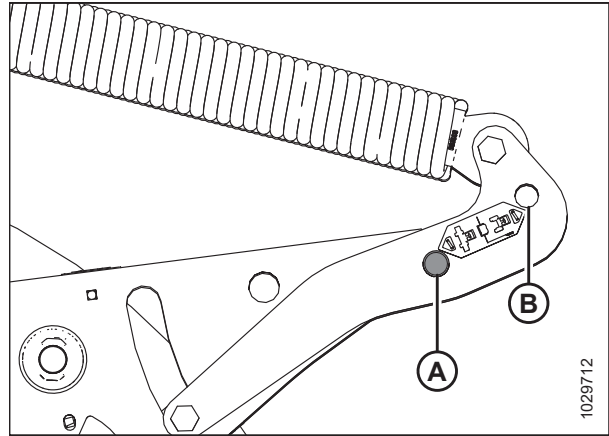


Figure 3.27: Header Float Linkage

16. Disengage the safety prop by turning lever (A) downward until the lever locks into the vertical position.
17. Repeat the previous step to disengage the other safety prop.

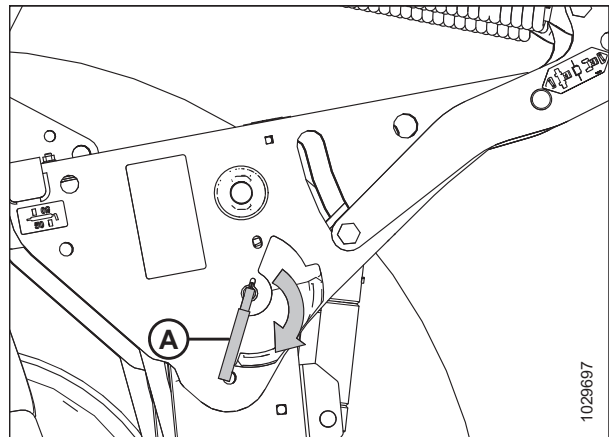


Figure 3.28: Safety Prop Lever

18. Press HEADER DOWN switch (A) on the GSL to fully lower the header.
19. Shut down the engine, and remove the key from the ignition.



Figure 3.29: Ground Speed Lever

3.2.3 Attaching Header to M Series Windrower – Hydraulic Center-Link without Self-Alignment

The header will need to be physically attached to the windrower, and the hydraulic connections completed. This procedure is for windrowers without the center link self-alignment feature.

NOTE:

If you are attaching the header to the windrower for the first time, draper header supports must be installed onto the windrower lift linkage before beginning this procedure. For instructions, refer to [3.1 Attaching Draper Header Supports](#), page 29.

⚠ DANGER

Ensure that all bystanders have cleared the area.

⚠ DANGER

To prevent bodily injury or death from the 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. Ensure that the float engagement pin is installed in storage position (B) and **NOT** in engaged position (A).
2. Shut down the engine, and remove the key from the ignition.

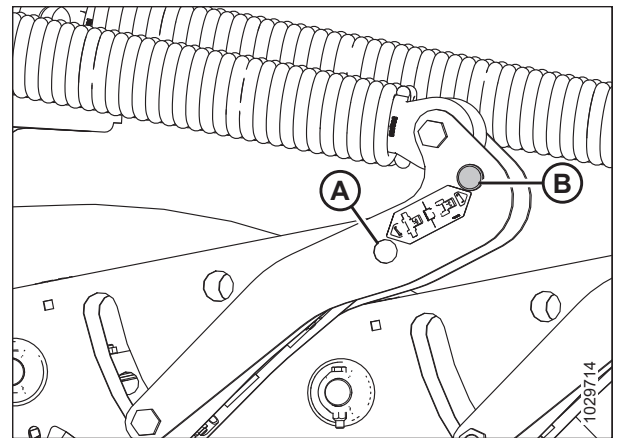


Figure 3.30: Header Float Linkage

3. Remove ring (A) from pin (B), and remove the pin from the header leg. Repeat this step on the other header leg.

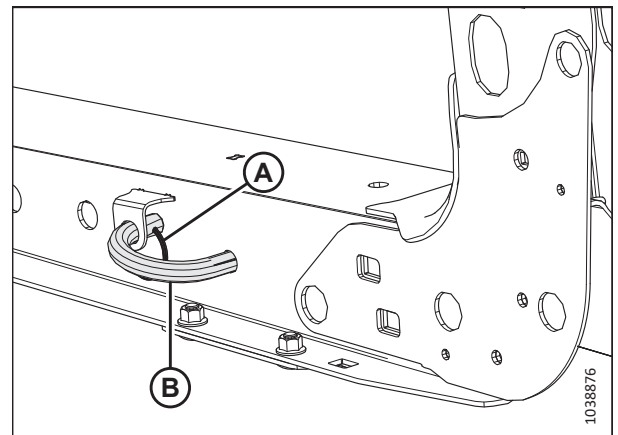


Figure 3.31: Header Leg

ATTACHING HEADERS TO WINDROWERS

4. Activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract the header lift cylinders.
5. Shut down the engine, and remove the key from the ignition.

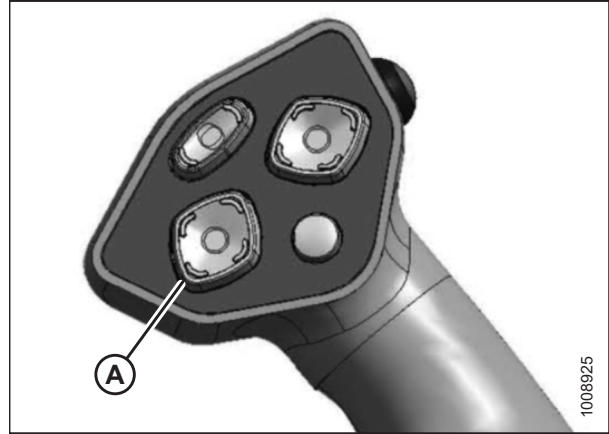


Figure 3.32: Ground Speed Lever

6. Remove pin (A) from the frame linkage and raise center-link (B) until the hook is above the attachment pin on the header. Replace pin (A) to hold the center-link in place.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.

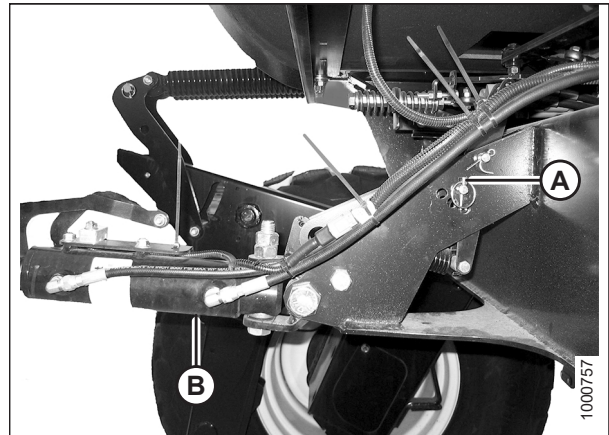


Figure 3.33: Hydraulic Center-Link without Self-Alignment Kit

7. Drive the windrower slowly forward until header supports (A) enter header legs (B). Continue driving slowly forward until the header supports contact the support plates in the header legs and the header nudges forward.
8. Ensure that the lift linkages are properly engaged in the header supports and that the linkages are contacting the support plates.

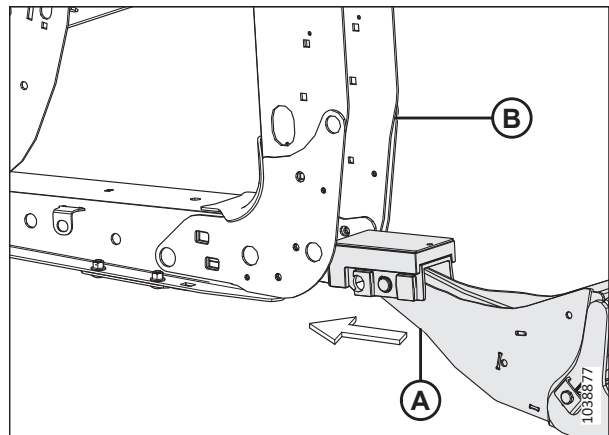


Figure 3.34: Header Leg and Support

ATTACHING HEADERS TO WINDROWERS

9. Start the engine.
10. Use the following GSL functions to position the center-link hook above the header attachment pin:
 - HEADER TILT UP (A) to retract the center-link
 - HEADER TILT DOWN (B) to extend the center-link
11. Shut down the engine, and remove the key from the ignition.

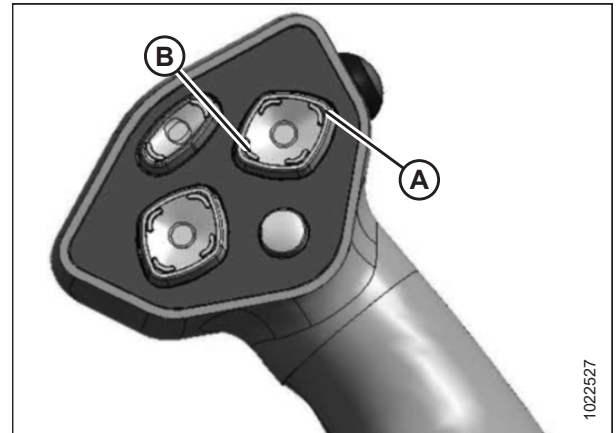


Figure 3.35: Ground Speed Lever

12. Push down on the rod end of link cylinder (A) until hook (B) engages and locks onto the header pin.

IMPORTANT:

The hook release must be down to enable the self-locking mechanism. If the release is open (up), manually push it down after the hook engages the header pin.

13. Check that center-link (A) is locked onto the header by pulling upward on the rod end of the cylinder.

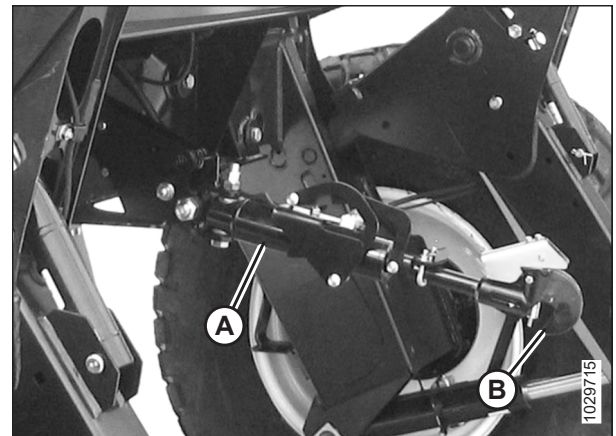


Figure 3.36: Hydraulic Center-Link

14. Start the engine.
15. Press HEADER UP switch (A) to raise the header to its maximum height.
16. If one end of the header does **NOT** fully rise, rephase the lift cylinders as follows:
 - a. Press and hold the HEADER UP switch until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds. The cylinders are now phased.

NOTE:

You may need to repeat this step if there is air in the hydraulic system.

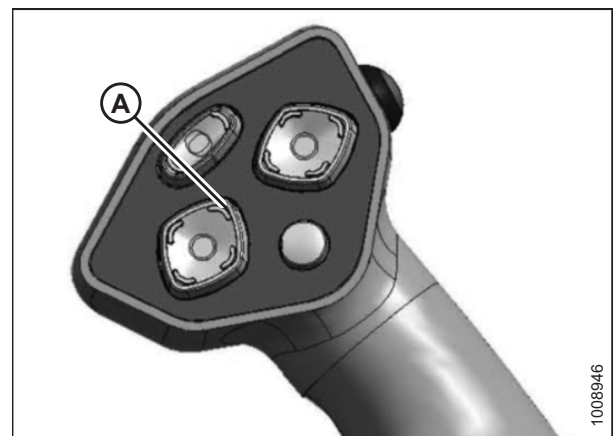


Figure 3.37: Ground Speed Lever

ATTACHING HEADERS TO WINDROWERS

17. Engage the safety props on both lift cylinders:
 - a. Shut down the engine, and remove the key from the ignition.
 - b. Pull lever (A) and rotate it towards the header to release and lower safety prop (B) onto the lift cylinder.
 - c. Repeat the previous steps for the opposite lift cylinder.

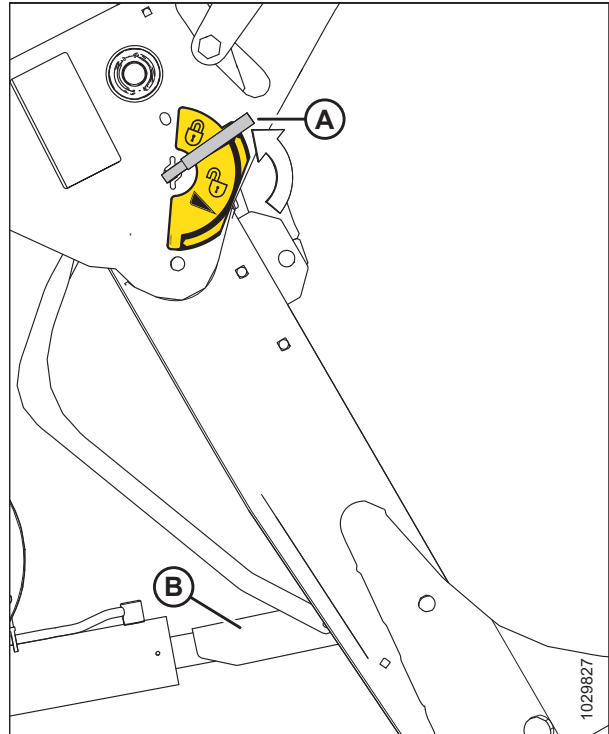


Figure 3.38: Safety Prop

18. Install pin (B) through the header leg, engaging the header support in the lift linkages. Secure the pin with ring (A). Repeat this step on the other header leg.

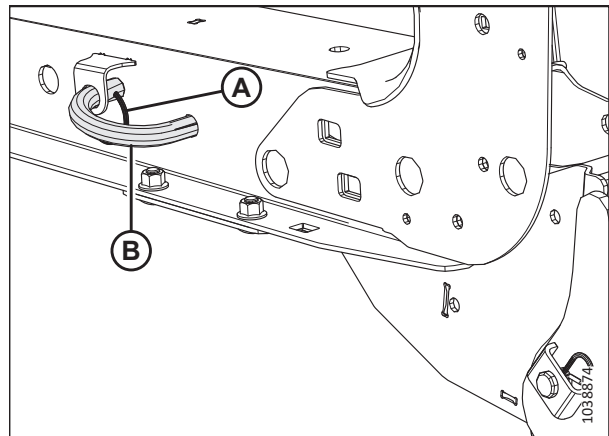


Figure 3.39: Header Leg

ATTACHING HEADERS TO WINDROWERS

19. Remove the clevis pin from storage position (B) in the linkage and insert it into hole (A) to engage the float springs. Secure it with the hairpin. Repeat this step on the opposite float linkage.

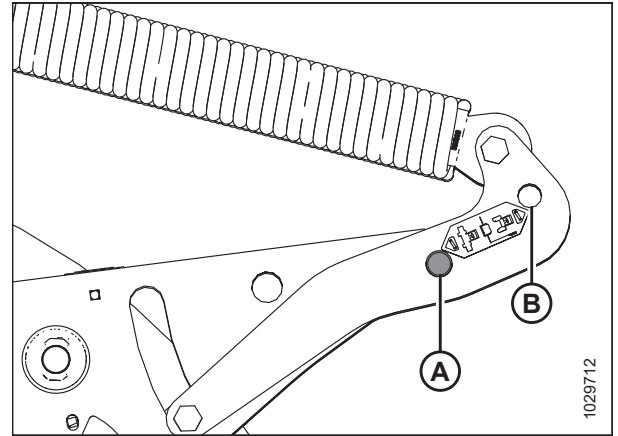


Figure 3.40: Header Float Linkage

20. Disengage the safety prop by turning lever (A) downwards until the lever locks into the vertical position.
21. Repeat the previous step to disengage the other safety prop.
22. Start the engine.

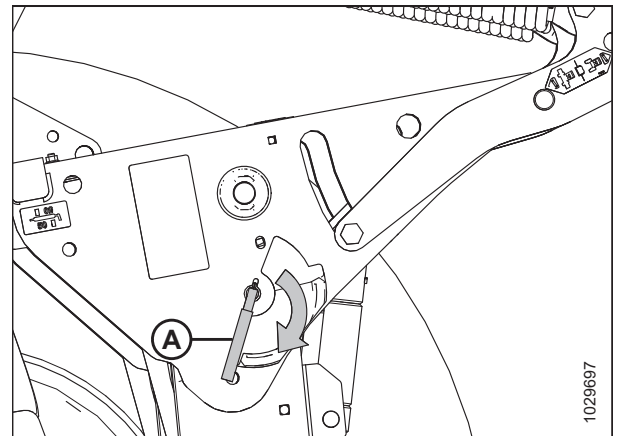


Figure 3.41: Safety Prop Lever

23. Press HEADER DOWN switch (A) on the GSL to fully lower the header.
24. Shut down the engine, and remove the key from the ignition.
25. Proceed to [3.2.5 Connecting Header Hydraulics and Electrical System to M Series Windrower, page 50](#).

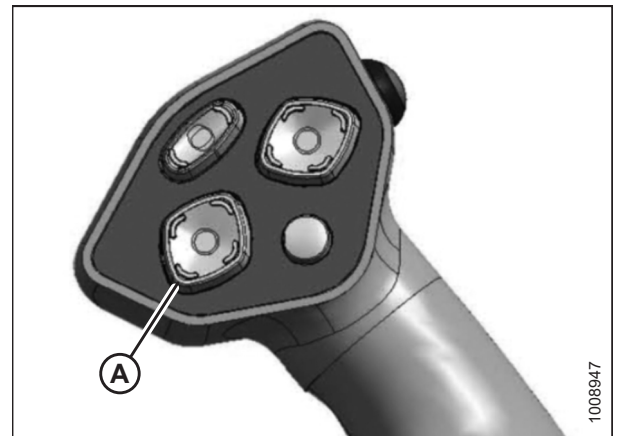


Figure 3.42: Ground Speed Lever

3.2.4 Attaching Header to M Series Windrower – Mechanical Center-Link

To attach a D2 Series Draper Header to an M Series Windrower equipped with a mechanical center-link, the center-link will need to be manually connected to the header's center pin.

NOTE:

If you are attaching the header to the windrower for the first time, draper header supports must be installed onto the windrower lift linkage before beginning this procedure. For instructions, refer to [3.1 Attaching Draper Header Supports](#), page 29.

⚠ DANGER

Ensure that all bystanders have cleared the area.

⚠ DANGER

To prevent bodily injury or death from the 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. Shut down the engine, and remove the key from the ignition.
2. Ensure that the float engagement pin is installed in storage position (B) and **NOT** in engaged position (A).

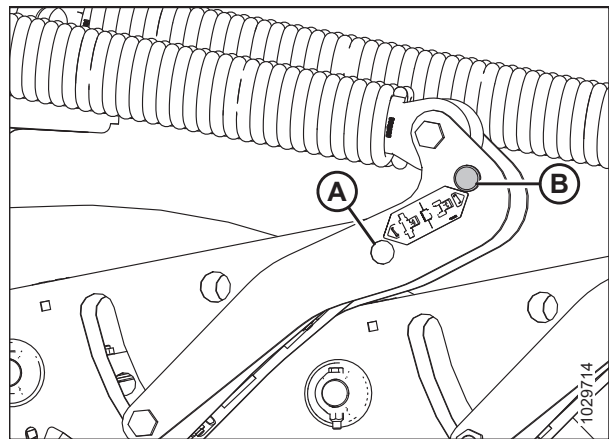


Figure 3.43: Header Float Linkage

3. Remove ring (A) from pin (B), and remove the pin from the header leg. Repeat this step on the other header leg.

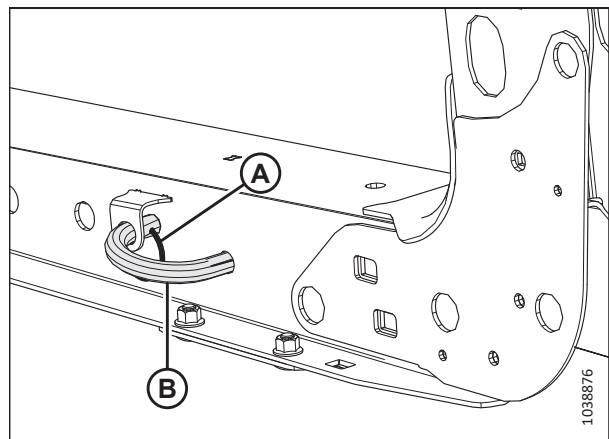


Figure 3.44: Header Leg

ATTACHING HEADERS TO WINDROWERS

4. Activate HEADER DOWN button (A) on the ground speed lever (GSL) to fully retract the header lift cylinders.

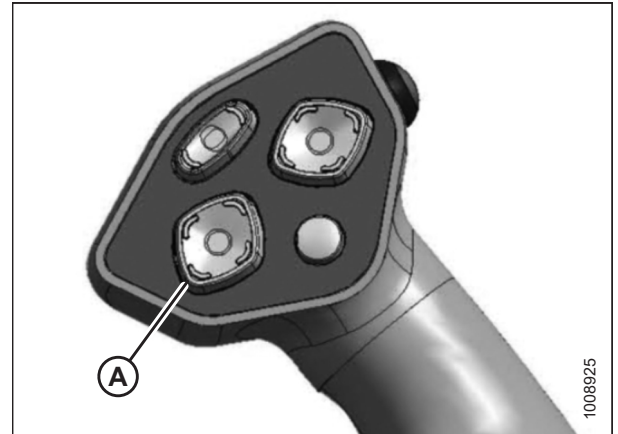


Figure 3.45: Ground Speed Lever

5. Drive the windrower slowly forward until header supports (A) enter header legs (B). Continue driving slowly forward until the header supports contact the support plates in the header legs and the header nudges forward.
6. Ensure that the lift linkages are properly engaged in the header supports and that the linkages are contacting the support plates.

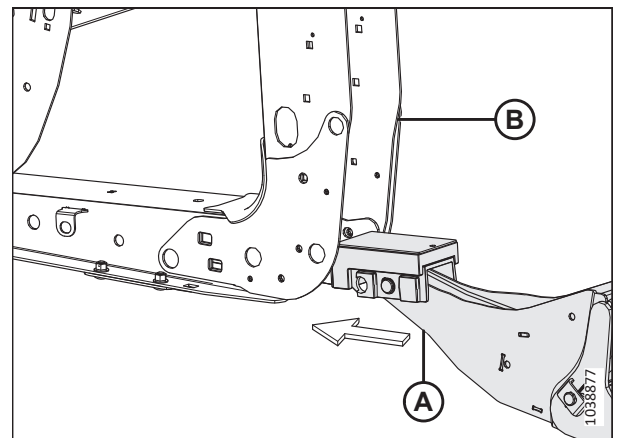


Figure 3.46: Header Leg and Support

7. Shut down the engine, and remove the key from the ignition.
8. Loosen nut (A) and rotate barrel (B) to adjust length until the link is aligned with the header bracket.
9. Install clevis pin (C) and secure it with cotter pin (D).
10. Adjust the length of the link to achieve the proper header angle by rotating barrel (B). Tighten nut (A) against the barrel (a slight tap with a hammer is sufficient).

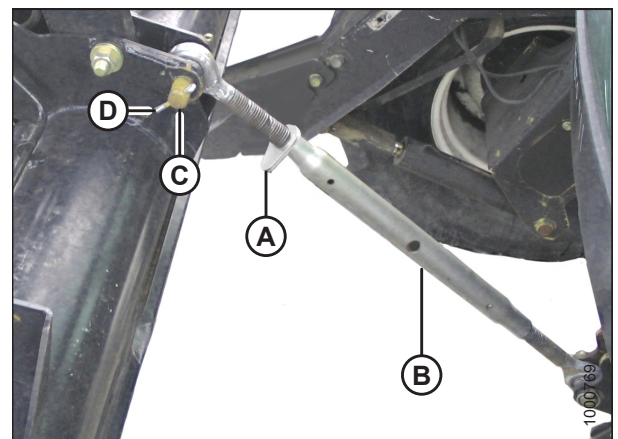


Figure 3.47: Mechanical Center-Link

ATTACHING HEADERS TO WINDROWERS

11. Start the engine.
12. Press HEADER UP switch (A) to raise the header to its maximum height.
13. If one end of the header does **NOT** fully raise, rephase the lift cylinders as follows:
 - a. Press and hold the HEADER UP switch until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds. The cylinders are now phased.

NOTE:

You may need to repeat this step if there is air in the hydraulic system.

14. Engage the safety props on both lift cylinders:
 - a. Shut down the engine, and remove the key from the ignition.
 - b. Pull lever (A) and rotate it towards the header to release and lower safety prop (B) onto the lift cylinder.
 - c. Repeat the previous steps for the opposite lift cylinder.

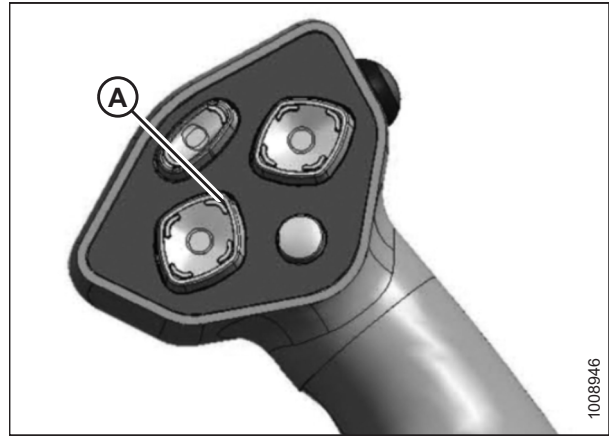


Figure 3.48: Ground Speed Lever

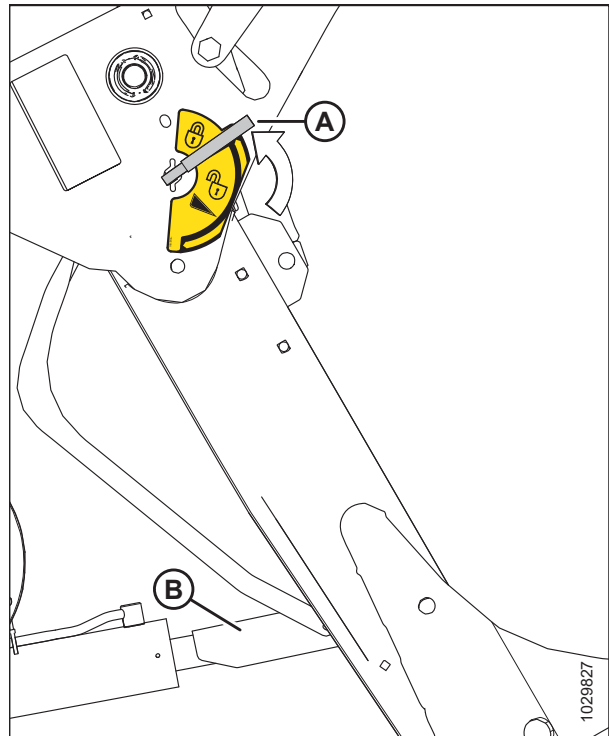


Figure 3.49: Safety Prop

ATTACHING HEADERS TO WINDROWERS

15. Install pin (B) through the header leg, engaging the header support in the lift linkages. Secure the pin with ring (A). Repeat this step on the other header leg.

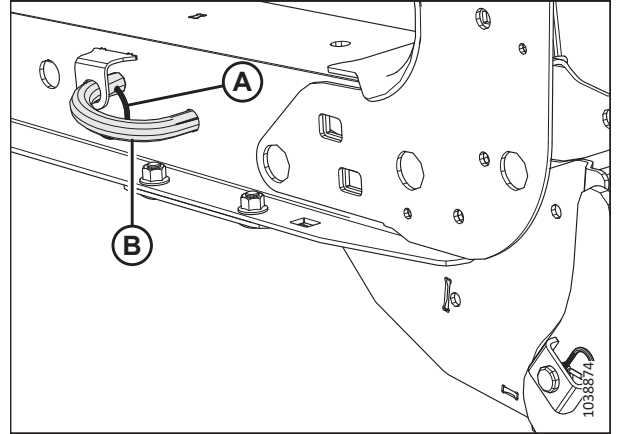


Figure 3.50: Header Leg

16. Remove the clevis pin from storage position (B) in the linkage and insert it into hole (A) to engage the float springs. Secure it with the hairpin. Repeat this step on the opposite float linkage.

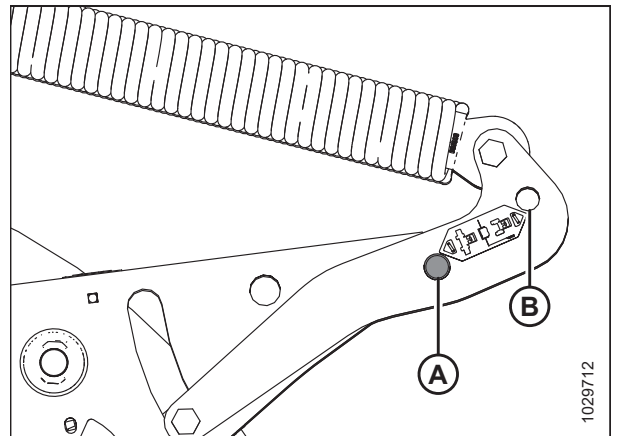


Figure 3.51: Header Float Linkage

17. Disengage the safety prop by turning lever (A) downwards until the lever locks into the vertical position.
18. Repeat the previous step to disengage the other safety prop.

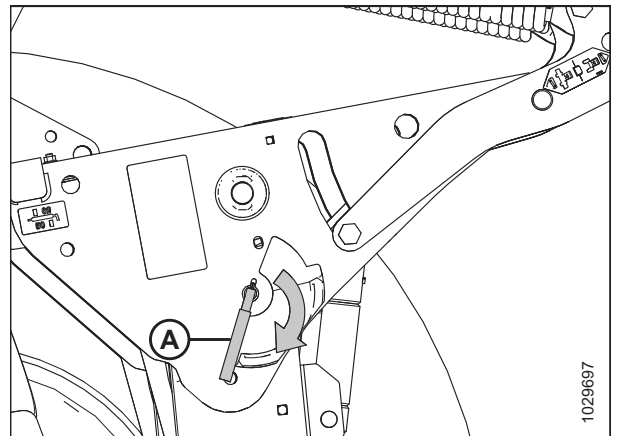


Figure 3.52: Safety Prop Lever

ATTACHING HEADERS TO WINDROWERS

19. Press HEADER DOWN switch (A) on the GSL to fully lower the header.
20. Shut down the engine, and remove the key from the ignition.
21. Proceed to [3.2.5 Connecting Header Hydraulics and Electrical System to M Series Windrower, page 50](#).

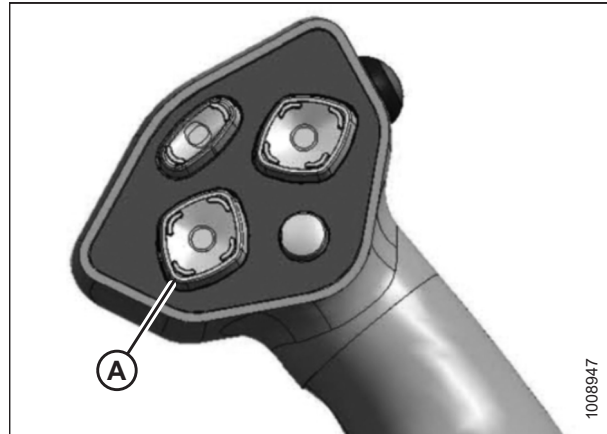


Figure 3.53: Ground Speed Lever

3.2.5 Connecting Header Hydraulics and Electrical System to M Series Windrower

The header drive hydraulic hoses and electrical harness are located on the left cab-forward side of the windrower. The reel drive and control hoses are located on the right cab-forward side.

1. Before connecting header drive hydraulics (A) and electrical harness (B) to the header, check the fittings and connectors. Clean them if required.



Figure 3.54: Header Drive Hoses

2. Disengage and rotate lever (A) counterclockwise to a fully upward position.
3. Remove cap (B) securing the electrical connector to the frame.
4. Move hose bundle (C) from the windrower hose support and route it along the header hose guide.

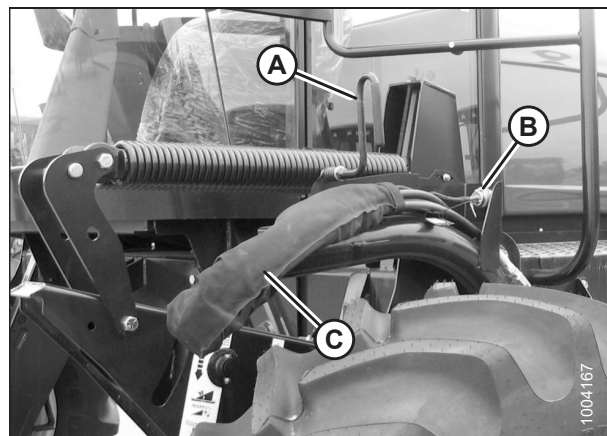


Figure 3.55: Header Drive Hoses

ATTACHING HEADERS TO WINDROWERS

5. Push the hose connectors onto the mating receptacle until the collar on the receptacle snaps into place.
6. Remove the cover from electrical receptacle (A).
7. Push the electrical connector onto the receptacle and turn the collar on the connector to lock it in.
8. Attach the cover to the mating cover on the windrower's wiring harness.

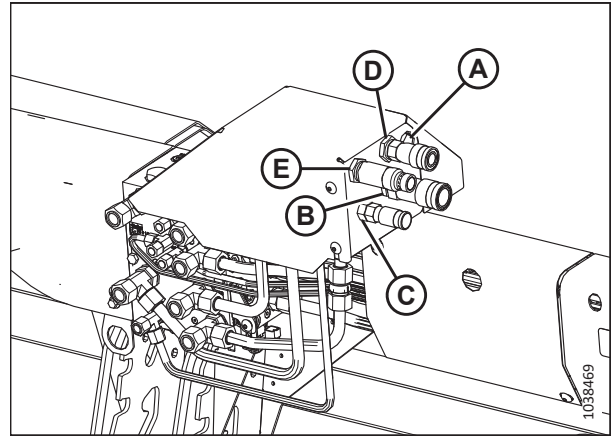


Figure 3.56: Header Receptacles

A - Electrical Receptacle B - Knife Drive
C - Case Drain (Double Knife) D - Draper Drive
E - Return

9. Lower lever (A) and engage it in the down position.

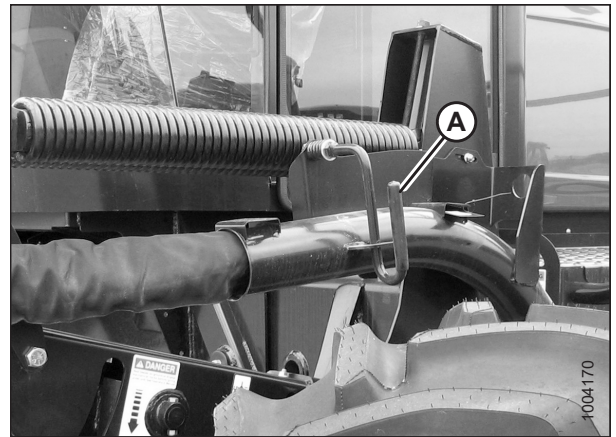


Figure 3.57: Hose Storage

10. Before connecting the reel hydraulics, check the fittings. If the fittings are dirty, clean them.

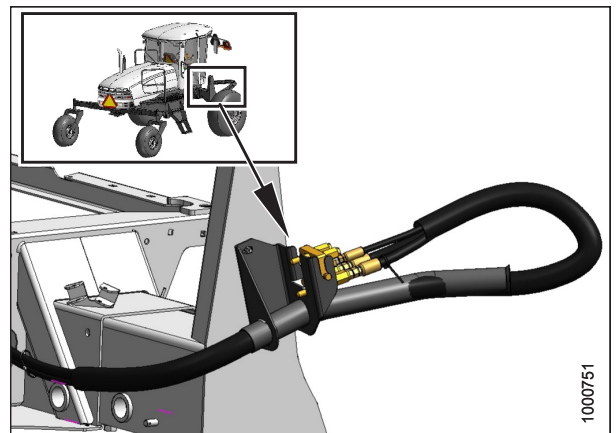


Figure 3.58: Reel Hose Storage

ATTACHING HEADERS TO WINDROWERS

11. Open cover (A) on header receptacle (B).
12. Push in lock button (C) and pull handle (D) to the half-open position.

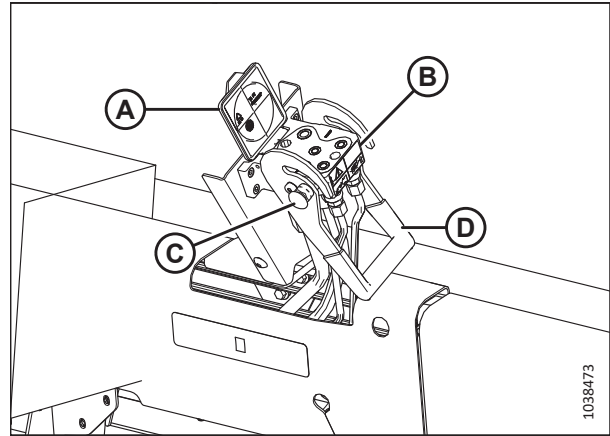


Figure 3.59: Reel Hydraulics Receptacle

13. Remove the hose bundle with multicoupler (C) from the windrower.
14. Place the multicoupler onto the header receptacle, and push handle (B) to engage the connector pins.
15. Push the handle away from the hoses until lock button (A) snaps out.
16. Move the header and the reel to allow trapped air to pass back to the reservoir.
17. Proceed to *4 Completing Header Assembly, page 79*.

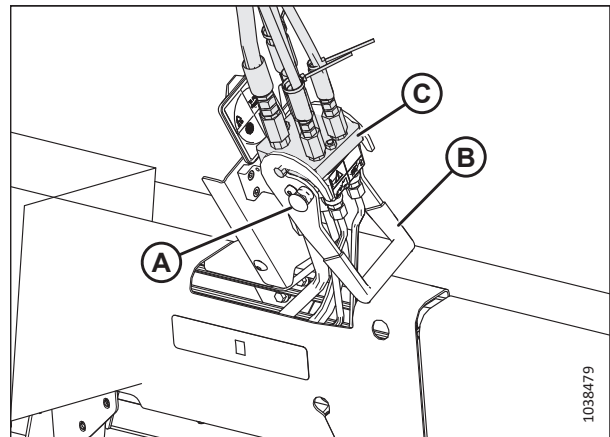


Figure 3.60: Reel Hose Connection

3.3 Attaching Header to M1 Series Windrower

To attach a D2 Series Draper Header to an M1 Series Windrower, follow the procedures for your machine configuration.

3.3.1 Attaching Header to M1 Series Windrower

The windrower's lift linkage and center-link will need to be connected to the draper header. The windrower may be equipped with an optional self-aligning hydraulic center-link, which allows control over the vertical position of the center-link from the cab.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent bodily injury or death from the 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.

NOTE:

If you are attaching the header to the windrower for the first time, draper header supports must be installed onto the windrower lift linkage before beginning this procedure. For instructions, refer to [3.1 Attaching Draper Header Supports](#), page 29.

1. Shut down the engine, and remove the key from the ignition.
2. **Narrow transport windrowers only:** Extend the windrower wheels from transport into field mode. For instructions, refer to the windrower operator's manual.
3. **Windrowers without the self-aligning center-link kit:** Relocate pin (A) in the frame linkage as needed to raise center-link (B) until the hook is above the attachment pin on the header.

IMPORTANT:

Ensure that the center-link is positioned high enough that it does not contact the header as the windrower approaches the header.

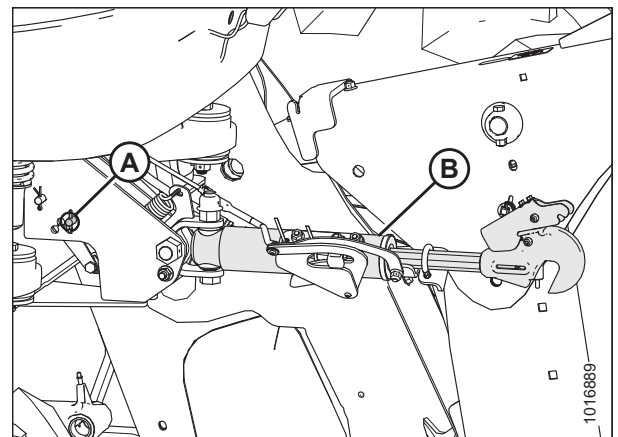


Figure 3.61: Center-Link without Self-Alignment

ATTACHING HEADERS TO WINDROWERS

4. **Narrow transport windrowers only:** Rotate left signal light placard (A) to the up (vertical) position before connecting the windrower to the header.

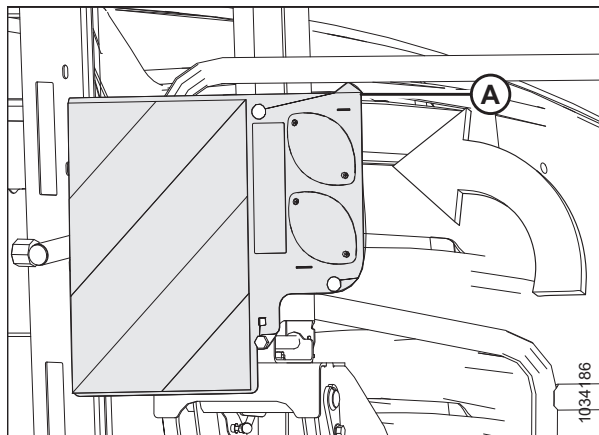


Figure 3.62: Left Signal Light Placard

5. Remove ring (A) from pin (B), and remove the pin from the header leg. Repeat this step on the other header leg.
6. Start the engine.

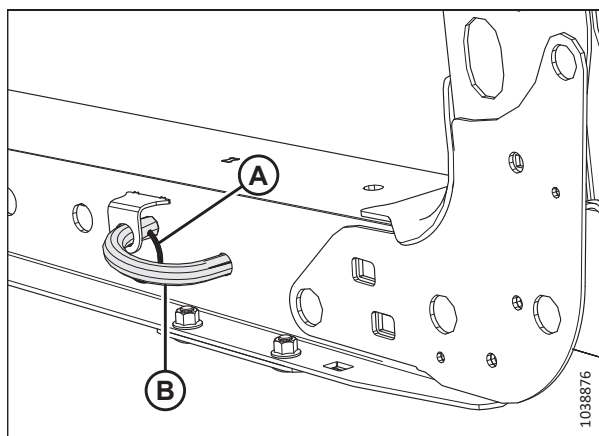


Figure 3.63: Header Leg

7. Release the tension in header float springs (A) by removing the header float.
 - If the Harvest Performance Tracker (HPT) displays a message saying that the float should be removed, then remove the float and proceed to Step 11, page 55.
 - If the Harvest Performance Tracker (HPT) does **NOT** display a message saying that the float should be removed, then proceed to Step 8, page 55 to remove the float manually.

IMPORTANT:

To lower the header lift legs without a header or weight box attached to the windrower, ensure that the tension on the float springs is fully released. This will prevent damage to the header lift linkages.

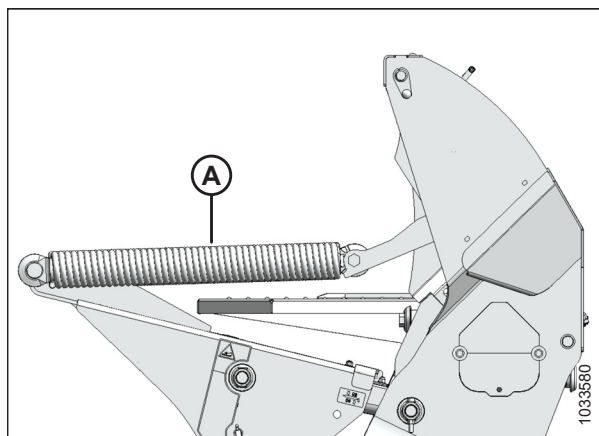


Figure 3.64: Header Float Springs

ATTACHING HEADERS TO WINDROWERS

8. In the windrower cab, press scroll knob (A) to display the QuickMenu page.
9. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B) and press the scroll knob to select it.



Figure 3.65: HPT Display

10. On the FLOAT ADJUST page, press soft key 3 (A) to disable the float.



Figure 3.66: HPT Display

11. **Windrowers equipped with the self-aligning center-link kit:**
 - a. Press HEADER DOWN switch (E) on the ground speed lever (GSL) to fully retract the header lift cylinders.
 - b. Press REEL UP switch (B) on the GSL to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

If the center-link is too low, it may contact the header as the windrower approaches the header.

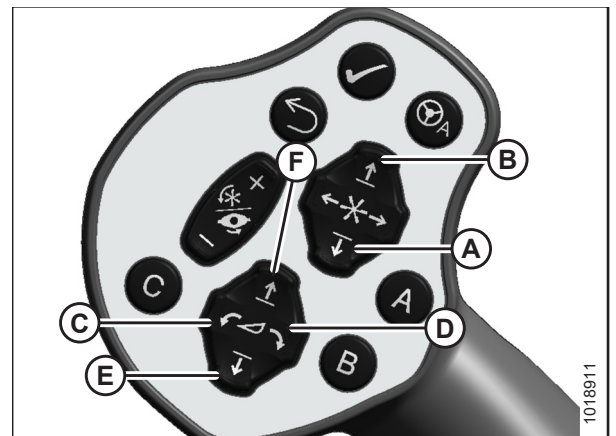


Figure 3.67: GSL Switches

- | | |
|----------------------|--------------------|
| A - Reel Down | B - Reel Up |
| C - Header Tilt Down | D - Header Tilt Up |
| E - Header Down | F - Header Up |

ATTACHING HEADERS TO WINDROWERS

12. Slowly drive the windrower forward until header supports (A) enter header legs (B). Continue driving slowly forward until the header supports contact the support plates in the header legs and the header nudges forward.
13. Ensure that the lift linkages are properly engaged in the header legs and are in contact with the support plates.

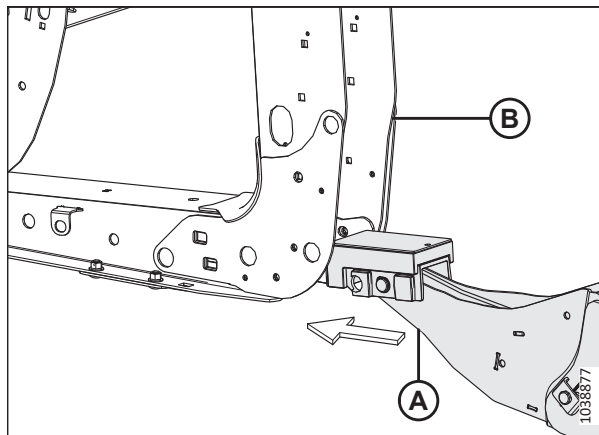


Figure 3.68: Header Leg and Support

14. Windrowers equipped with the self-aligning center-link kit:

- a. Adjust the position of center-link cylinder (A) with the switches on the GSL until hook (B) is above the header attachment pin.

IMPORTANT:

Hook release (C) must be down to enable the self-locking mechanism to function.

- b. If hook release (C) is open (in the up position), shut down the engine, and remove the key from the ignition. Manually push hook release (C) down after the hook engages the header pin.
- c. Lower center-link (A) onto the header with the REEL DOWN switch on the GSL until the center-link locks into position and hook release (C) is down.
- d. Check that the center-link is locked onto the header by pressing the REEL UP switch on the GSL.

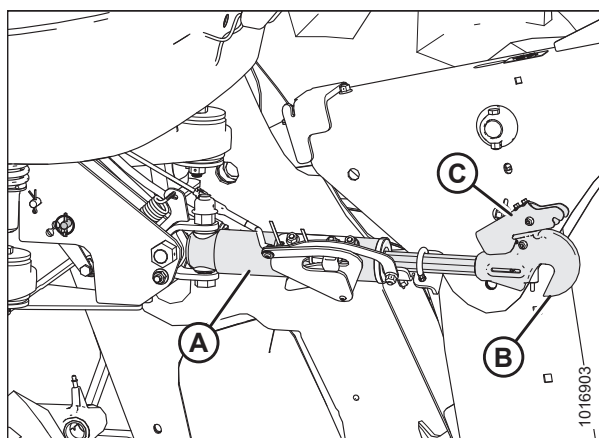


Figure 3.69: Hydraulic Center-Link

ATTACHING HEADERS TO WINDROWERS

15. Windrowers without the self-aligning center-link kit:

- a. Press the HEADER TILT UP or HEADER TILT DOWN cylinder switches on the GSL to extend or retract the center-link cylinder until the hook is aligned with the header attachment pin.
- b. Shut down the engine, and remove the key from the ignition.
- c. Push down on rod end (B) of the link cylinder until the hook engages and locks onto the header pin.

IMPORTANT:

The hook release must be down to enable the self-locking mechanism to function. If the hook release is open (in the up position), manually push it down after the hook engages the pin.

- d. Check that center-link (A) is locked onto the header by pulling upward on rod end (B) of the cylinder.
- e. Start the engine.

16. Press HEADER UP switch (A) to raise the header to its maximum height.

17. Shut down the engine, and remove the key from the ignition.

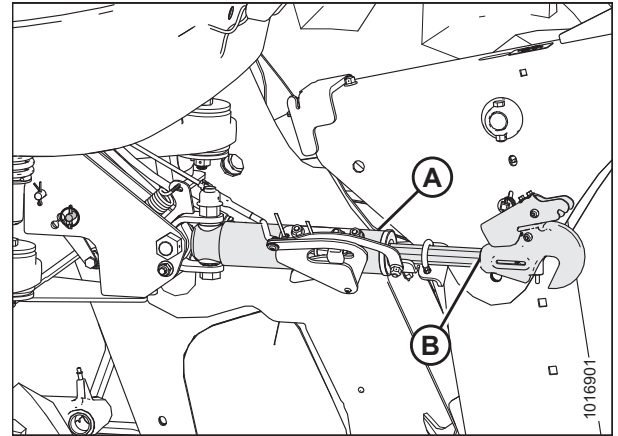


Figure 3.70: Hydraulic Center-Link

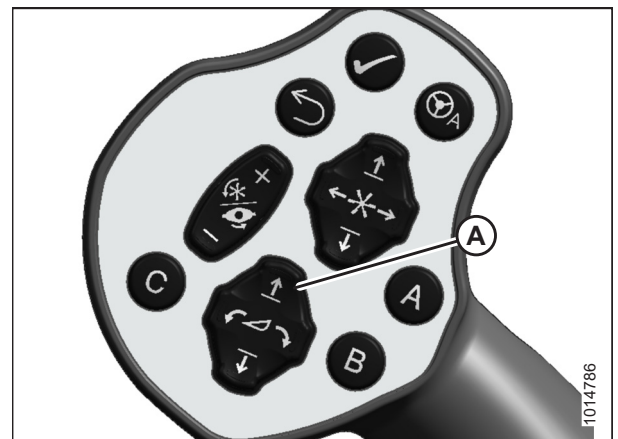


Figure 3.71: GSL

18. Engage the safety props on both lift cylinders as follows:

- a. Pull lever (A) toward you to release it, then rotate it toward the header to lower the safety prop onto the cylinder.
- b. Repeat the previous step for the opposite lift cylinder.

IMPORTANT:

Ensure that the safety props engage over the cylinder piston rods. If the safety prop does **NOT** engage properly, raise the header until the safety prop fits over the rod.

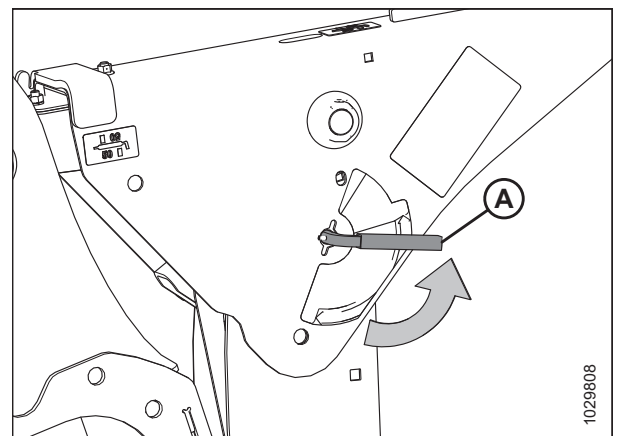


Figure 3.72: Safety Prop Lever

ATTACHING HEADERS TO WINDROWERS

19. Install pin (B) through the header leg, engaging the header support in the lift linkages. Secure the pin with ring (A). Repeat this step on the other header leg.

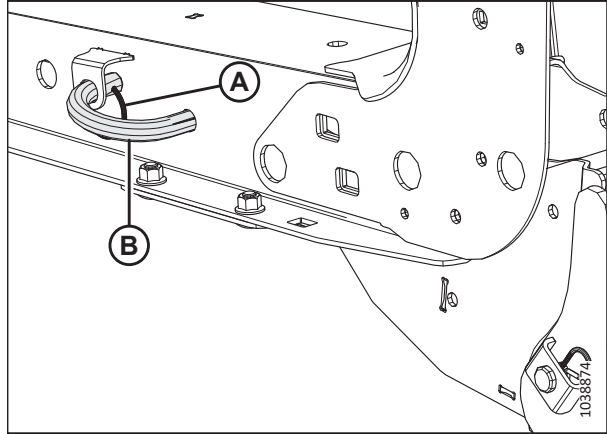


Figure 3.73: Header Leg

20. Disengage the safety props on both lift cylinders as follows:
 - a. Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
 - b. Repeat the previous step for the opposite cylinder.

NOTE:

If the safety prop will **NOT** disengage, raise the header to release the prop.

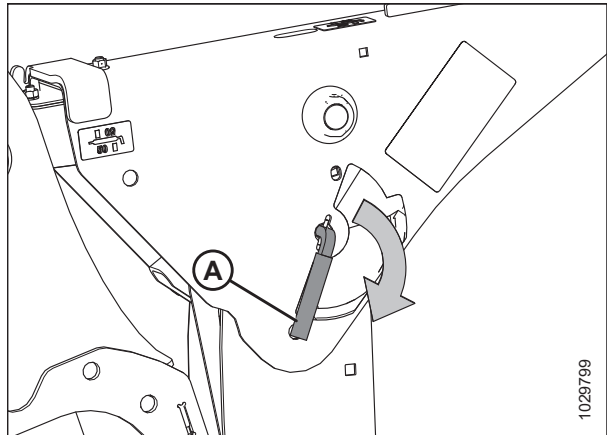


Figure 3.74: Safety Prop Lever

21. Start the engine.
22. Press HEADER DOWN switch (A) on the GSL to fully lower the header.
23. Shut down the engine, and remove the key from the ignition.

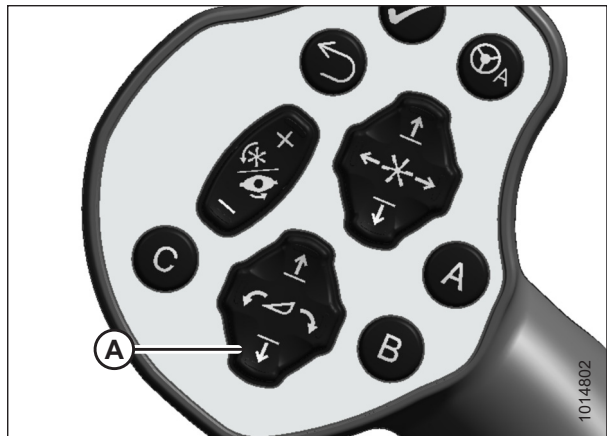


Figure 3.75: GSL

ATTACHING HEADERS TO WINDROWERS

24. Press rotary scroll knob (A) on the HPT to highlight the QuickMenu options.
25. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B) and press the scroll knob to select it.



Figure 3.76: HPT Display

26. Turn scroll knob (A) to highlight left float (B) or right float (C). Press knob (A) to activate the selection.
27. Rotate scroll knob (A) to adjust the float setting. Press the knob to confirm the setting.

IMPORTANT:

Adjusting the float by increments of 1.0 (out of 10) changes the header weight at the cutterbar by approximately 91 kg (200 lb.). Adjust the float in increments of 0.05 to fine-tune the header's performance.

28. Shut down the engine, and remove the key from the ignition.
29. Grasp one end of the draper header and lift it. The lifting force should be 357 N (80 lbf). Repeat this step on the other side of the header.



Figure 3.77: HPT Display

3.3.2 Connecting Header Hydraulics to M1 Series Windrower

To connect the header hydraulics to an M1 Series Windrower, approach from the left side, secure the platform, and manage the hydraulic hose system by disengaging and connecting various components. Ensure proper alignment and connection of hydraulic hoses and electrical connectors, and finalize the setup by adjusting the platform and ensuring all latches are engaged.

DANGER

To prevent bodily injury or death from the 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.

IMPORTANT:

To prevent contamination of the hydraulic system, use a clean rag to remove dirt and moisture from all hydraulic couplers.

1. Shut down the engine, and remove the key from the ignition.
2. Approach platform (A) on the left side of the windrower. Ensure that the cab door is closed.
3. Push latch (B) and pull platform (A) toward the walking beam until it stops and the latch engages.

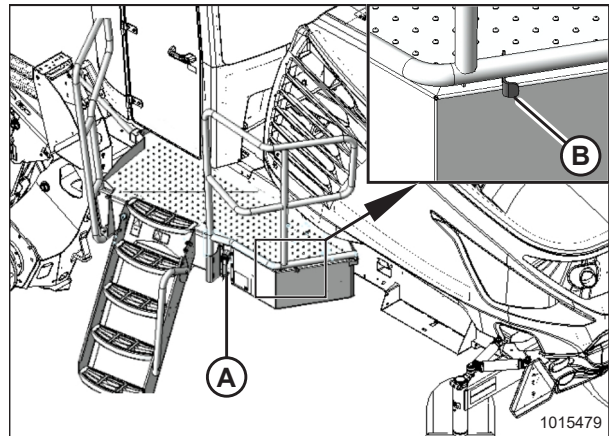


Figure 3.78: Left Platform

4. **All headers except D215:** Push lever (A) up and pull arm (B) to remove pin (C) from latch (D).

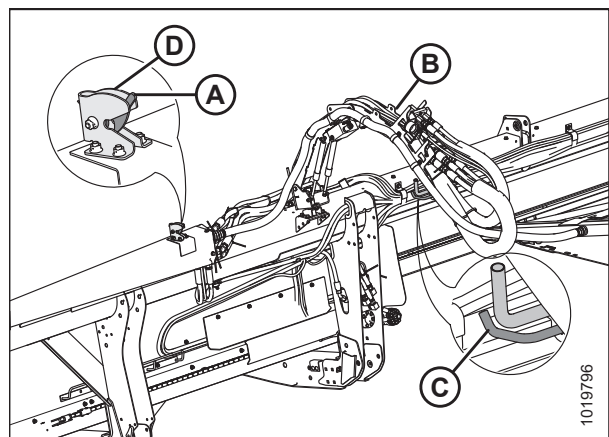


Figure 3.79: Hydraulic Hose Management System – All Headers Except D215

ATTACHING HEADERS TO WINDROWERS

5. **D215 Draper Headers:** Pull hydraulic hose management system (A) toward the left outboard end of the header, and disengage ball stud (B) from the cradle in support (C).

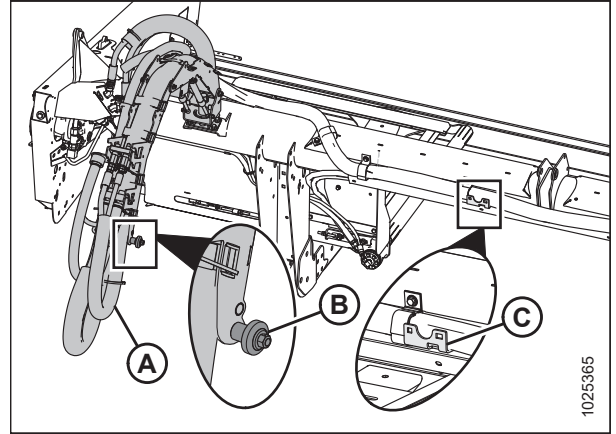


Figure 3.80: Hydraulic Hose Management System – D215

6. Push the link on latch (C) and pull handle (A) on hydraulic hose management system (B) rearward to disengage the arm from the latch.
7. Move hydraulic hose management system (B) toward the left cab-forward side of the windrower.

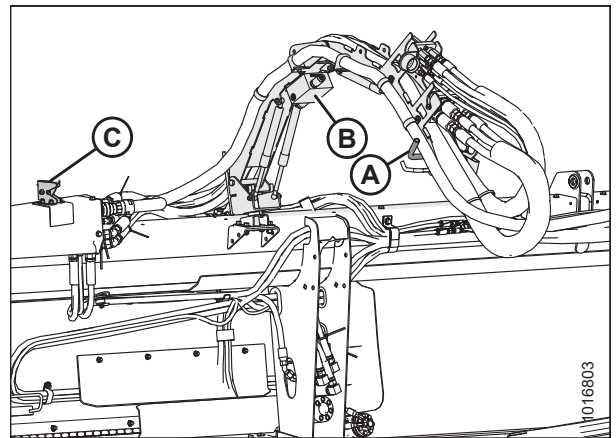


Figure 3.81: Hydraulic Hose Management System

8. Connect hydraulic hose management system (A) to the left outer leg of the windrower by pushing ball stud (B) into ball stud latch (C).

NOTE:

The hydraulic hoses have been removed from the illustration for clarity.

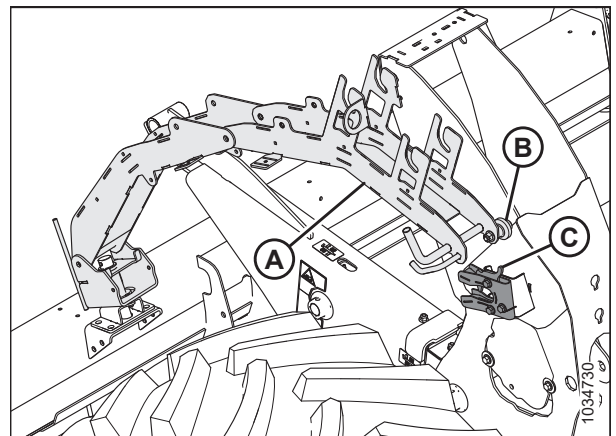


Figure 3.82: Windrower Left Outer Leg

ATTACHING HEADERS TO WINDROWERS

9. Retrieve draper drive and reel control multicoupler (A) from the hydraulic hose management system.
10. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
11. Open cover (D) and position the coupler onto the receptacle.
12. Align the pins in the coupler with the slots in handle (C) and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) pops out.
13. Remove hose quick disconnect (F) from its storage location. Connect the quick disconnect to the receptacle on the frame.

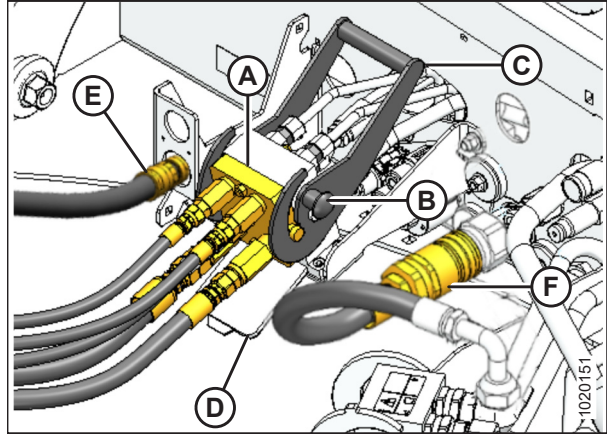


Figure 3.83: Draper/Reel Multicoupler

14. Remove the cover from electrical connector (E). Push the electrical connector onto the receptacle. Secure the connector by turning the collar on the electrical connector clockwise.
15. Retrieve draper drive and reel control multicoupler (A) from the hydraulic hose management system.
16. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
17. Open cover (D) and position the coupler onto the receptacle. Align the pins in the coupler with the slots in handle (C) and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) pops out.
18. Remove the cover from electrical connector (E), push the electrical connector onto the receptacle, and secure it by turning the collar on the electrical connector clockwise.
19. Remove hose quick disconnect (F) from its storage location and connect it to the receptacle on the frame.

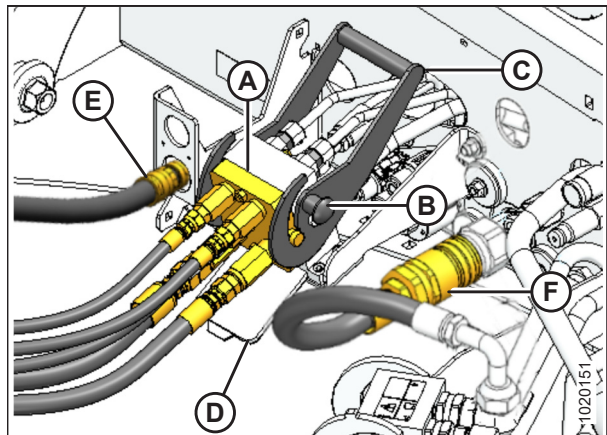


Figure 3.84: Draper/Reel Multicoupler

NOTE:

Hose quick disconnect (F) is only present on M1240 and M2260 Windrowers.

ATTACHING HEADERS TO WINDROWERS

20. Retrieve knife and reel drive multicoupler (A) from the hydraulic hose management system.
21. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
22. Open cover (D) and position the coupler onto the receptacle. Align the pins in the coupler with the slots in handle (C), and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) pops out.

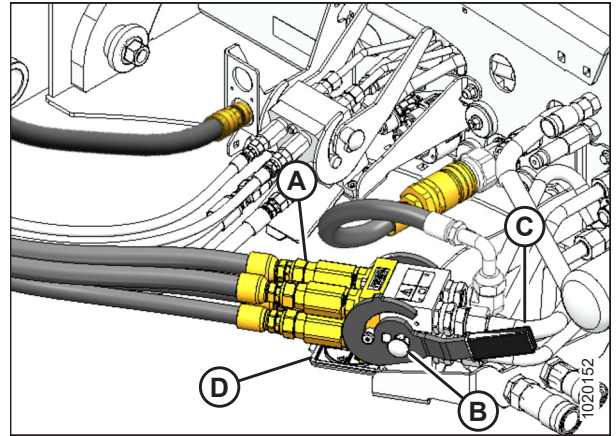


Figure 3.85: Knife/Reel Drive Multicoupler

23. Ensure that the hydraulic hose routing is as straight as possible.

IMPORTANT:

Straight routing will prevent abrasion damage to the hydraulic hoses.

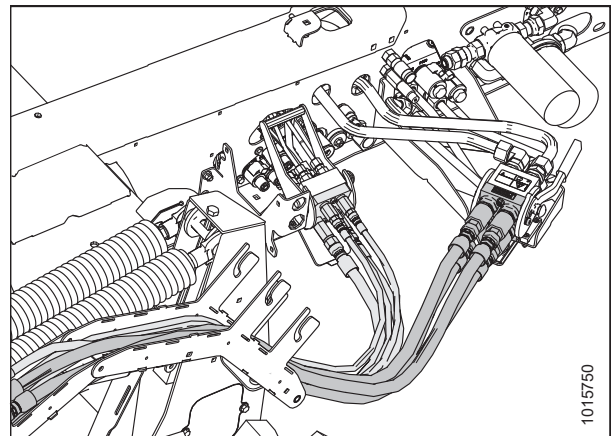


Figure 3.86: Hydraulic Multicouplers and Hose Routing

24. Push latch (A) to unlock platform (B).

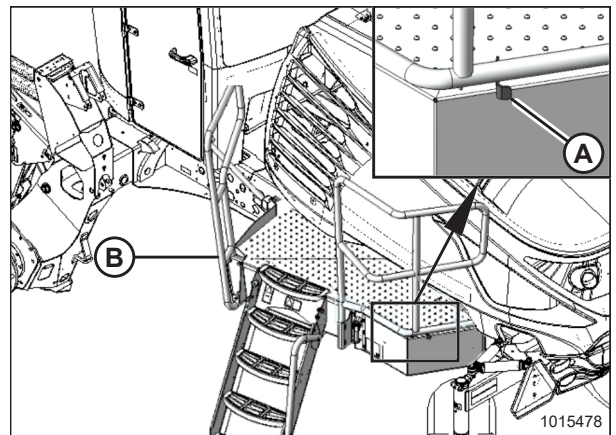


Figure 3.87: Left Platform

ATTACHING HEADERS TO WINDROWERS

25. Pull platform (A) toward the cab until it stops and the latch is engaged.
26. Proceed to [4 Completing Header Assembly, page 79](#).

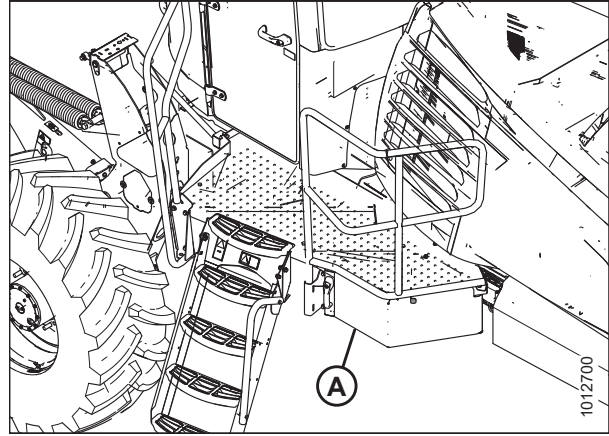


Figure 3.88: Left Platform

3.4 Attaching Header to M2 Series Windrower

To attach or detach a D2 Series Draper Headers to an M2 Series Windrower, follow the procedures provided here in the order presented.

3.4.1 Attaching Header to M2 Series Windrower

To attach the header to an M2 Series Windrower, remove any existing forming shields and ensure the draper header supports are properly installed. Prepare the header and center-link, align the lift linkages, and securely lock the center-link onto the header attachment pin. Finally, raise the header, engage the safety props, and set up the float system as needed.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. If the windrower was previously attached to an R216 Rotary Disc Header, make sure to remove the forming shield (not shown), including forming shield support brackets (A) and hardware (B) from both legs. You can store the brackets and hardware in the windrower tool box.

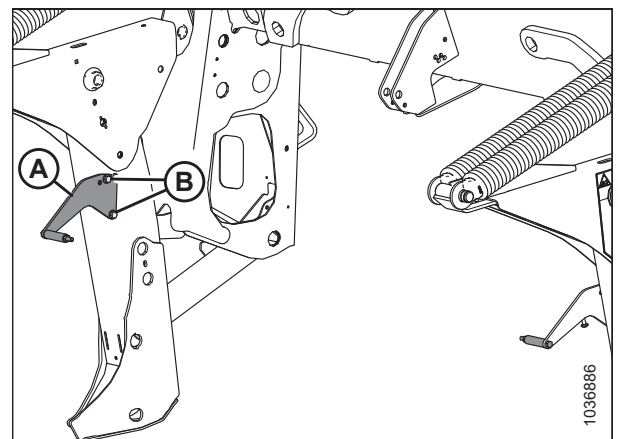


Figure 3.89: Forming Shield bracket – R2 Series

ATTACHING HEADERS TO WINDROWERS

3. Before beginning this procedure, ensure draper header supports (A) are either:

- (B) Installed on the windrower lift linkages, or
- (C) Installed in the header legs

For instructions on installing the header supports onto the windrower, refer to [3.1 Attaching Draper Header Supports](#), page 29. Header supports are typically left installed in the header legs when the header is detached from the windrower.

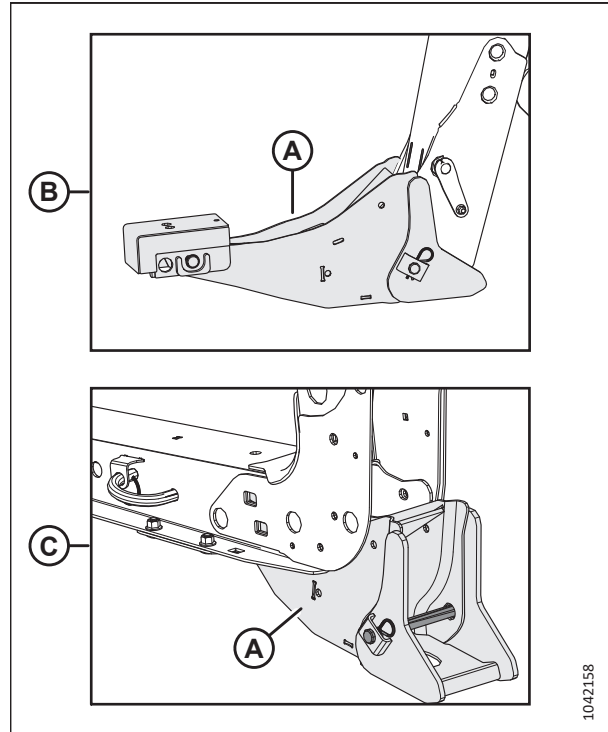


Figure 3.90: Header Supports Installed

4. **Narrow transport windrowers:** Extend the windrower wheels from narrow transport into field mode. For instructions, refer to the windrower operator's manual.
5. **Narrow transport windrowers:** Rotate left signal light placard (A) to the up (vertical) position before connecting the windrower to the header.

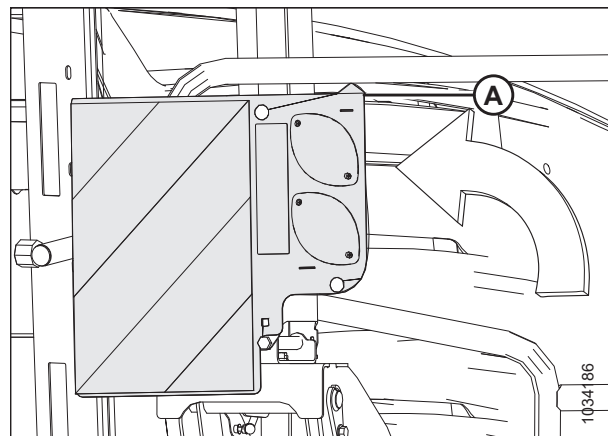


Figure 3.91: Left Signal Light Placard

ATTACHING HEADERS TO WINDROWERS

6. Prepare the header as follows:
 - **If the header supports are installed on the windrower:**
Remove ring (A) and pin (B) from the header leg.
 - **If the header supports are installed in the header:**
Remove hairpin (C) and clevis pin (D) from the header support.Repeat this step on the other header leg.
7. Start the engine.

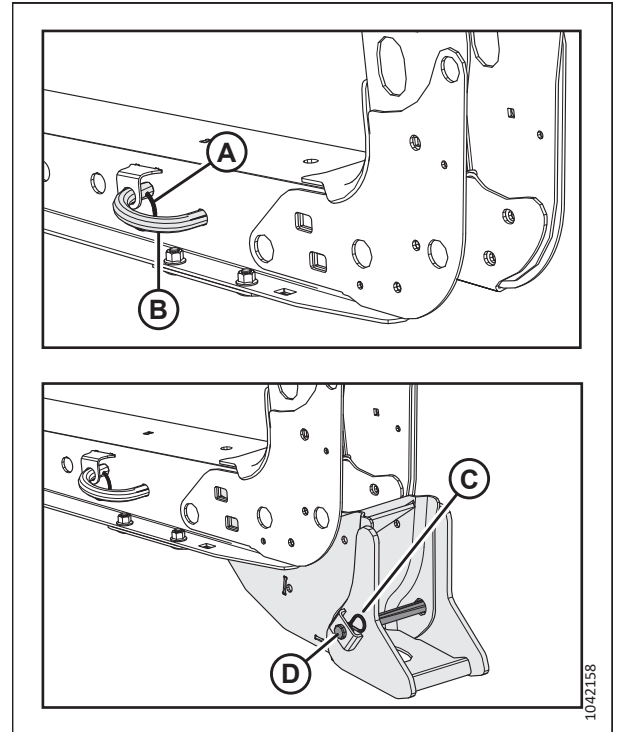


Figure 3.92: Header Leg — Left Side Shown

ATTACHING HEADERS TO WINDROWERS

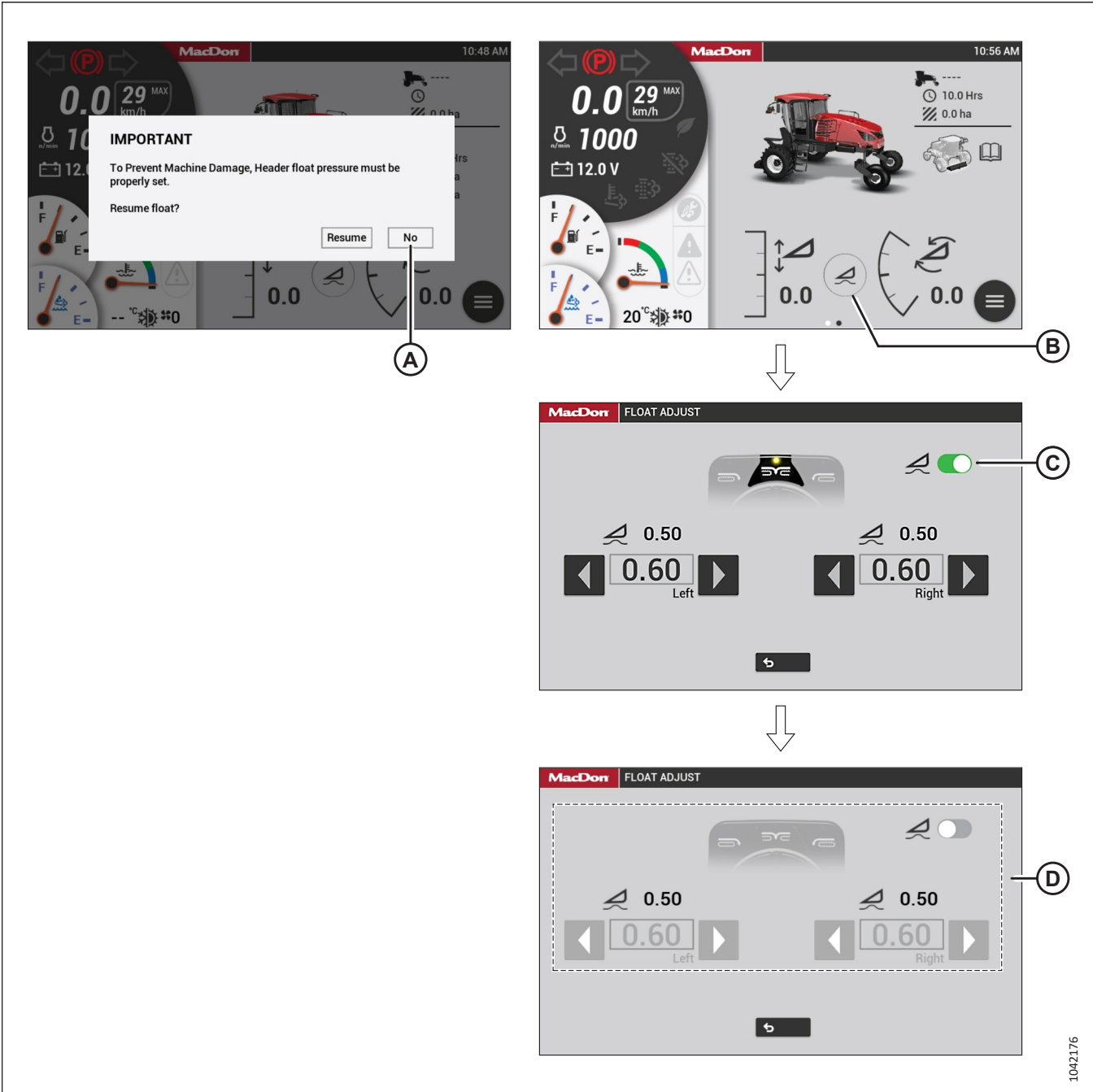


Figure 3.93: Float Removal

8. Remove the float as follows:

- If the HarvestTouch™ Display shows the message “Resume Float?”, then select NO (A).
- If the HarvestTouch™ Display does **NOT** show the message, then select FLOAT ADJUST (B), select switch (C), and confirm the switch and float settings (D) are grayed out.

IMPORTANT:

Removing the float will release the tension in the float springs. This will prevent damage to the header lift linkages when lowering the legs without a header or weight box attached to the windrower.

ATTACHING HEADERS TO WINDROWERS

9. Prepare the center-link as follows:

- **If not equipped with the Center-Link Alignment kit:** Relocate pin (A) in the frame linkage as needed to raise center-link (B) until the hook is above the attachment pin on the header.
- **If equipped with the Center-Link Alignment kit:** Press REEL UP switch (D) on the ground speed lever (GSL) to raise the center-link until the hook is above the attachment pin on the header.

IMPORTANT:

Ensure that the center-link is positioned high enough that it does not contact the header as the windrower approaches the header.

10. Press HEADER DOWN switch (C) on the GSL until the windrower lift linkages are fully lowered.

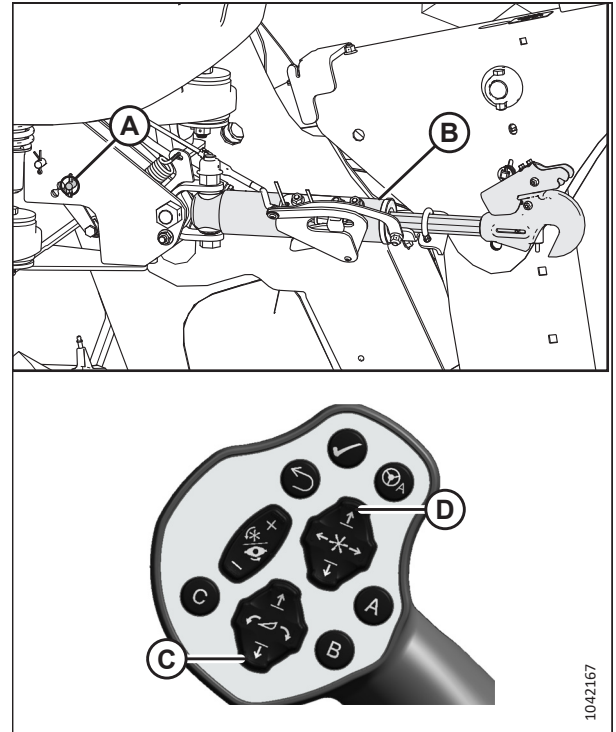


Figure 3.94: Center-Link without Self-Alignment

11. Proceed as follows:

- **If the header supports are installed on the windrower:** Drive the windrower slowly forward until header supports (A) enter header legs (B).
- **If the header supports are installed in the header:** Drive the windrower slowly forward until windrower lift linkages (C) enter header supports (D) in the header legs.

Continue driving slowly forward until the header is nudged forward.

12. Ensure that the lift linkages are properly engaged in the header legs and are in contact with the support plates.

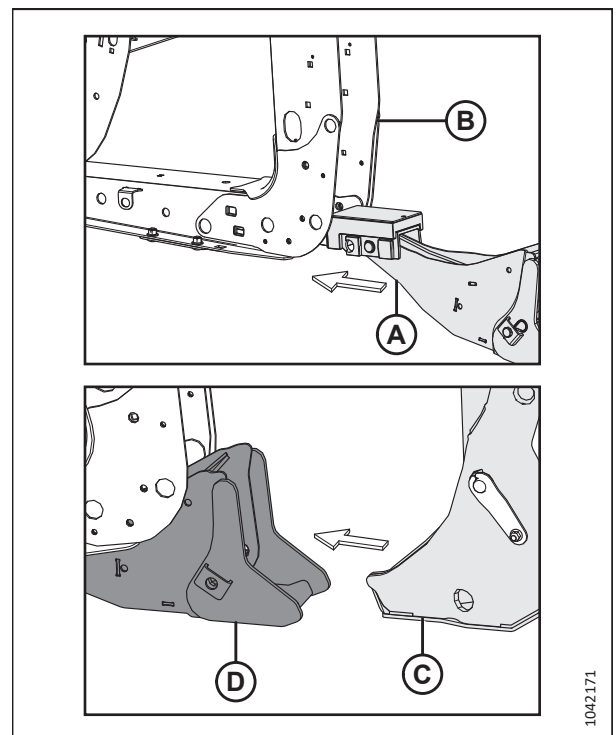


Figure 3.95: Header Leg and Support

ATTACHING HEADERS TO WINDROWERS

13. Windrowers equipped with the Center-Link Alignment kit:

- Press HEADER TILT UP (A) or HEADER TILT DOWN (B) switches on the GSL to extend or retract the center-link cylinder until hook (C) is aligned with the header attachment pin.
- Lower the center-link onto the header with REEL DOWN (D) switch on the GSL until the center-link locks into position and hook release (E) is down.

IMPORTANT:

The hook release must be down to enable the self-locking mechanism. If the hook release is open (in the up position), manually push it down after the hook engages the pin.

- Check that the center-link is locked onto the header by pressing REEL UP (F) switch on the GSL.

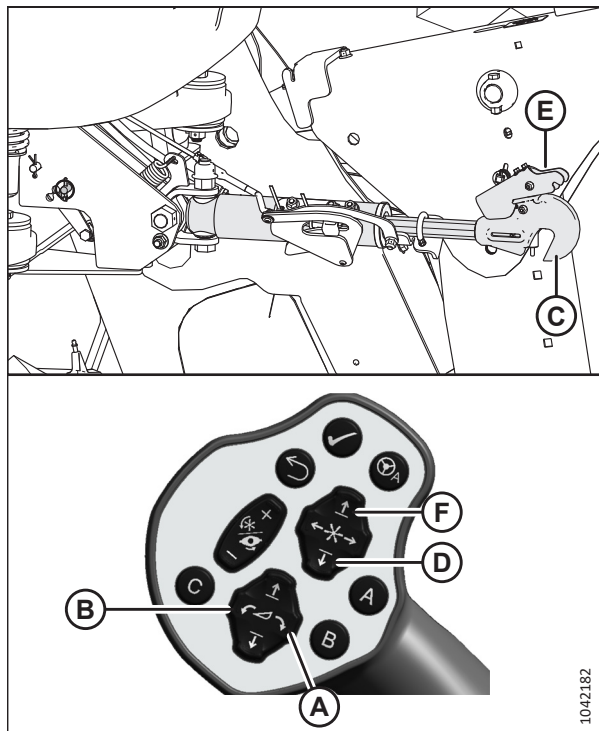


Figure 3.96: Hydraulic Center-Link

14. Windrowers without the Center-Link Alignment kit:

- Press HEADER TILT UP (A) or HEADER TILT DOWN (B) switches on the GSL to extend or retract the center-link cylinder until the hook is aligned with the header attachment pin.
- Shut down the engine, and remove the key from the ignition.
- Push down on rod end (C) of the link cylinder until hook (D) engages and locks onto the header pin.

IMPORTANT:

Hook release (E) must be down to enable the self-locking mechanism. If the hook release is open (in the up position), manually push it down after the hook engages the pin.

- Check that the center-link is locked onto the header by pulling upward on rod end (C) of the cylinder.
- Start the engine.

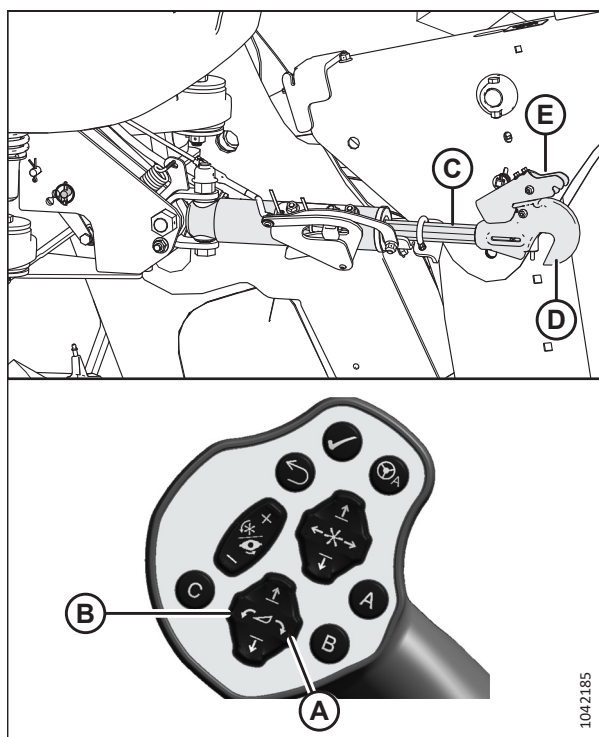


Figure 3.97: Hydraulic Center-Link

ATTACHING HEADERS TO WINDROWERS

15. Press HEADER UP switch (A) to raise the header to its maximum height.

NOTE:

If one end of the header does **NOT** fully rise, rephase the lift cylinders as follows:

- a. Press and hold HEADER UP switch (A) until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds. The cylinders are now phased.
16. Shut down the engine, and remove the key from the ignition.

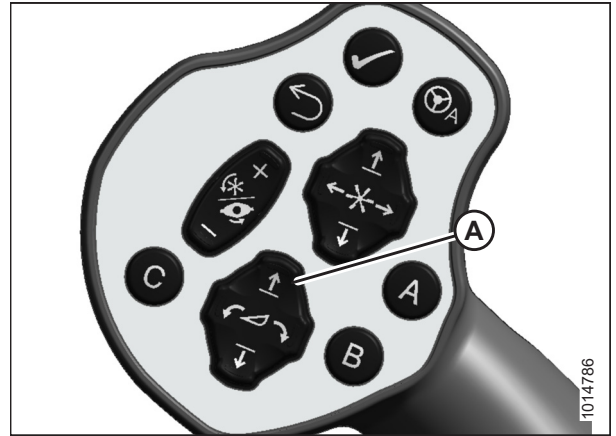


Figure 3.98: Ground Speed Lever (GSL)

17. Engage the safety props on both lift cylinders as follows:

- a. Pull lever (A) toward you to release it, then rotate it toward the header to lower the safety prop onto the cylinder.
- b. Repeat the previous step for the opposite lift cylinder.

IMPORTANT:

Ensure that the safety props engage over the cylinder piston rods. If the safety prop does **NOT** engage properly, raise the header until the safety prop fits over the rod.

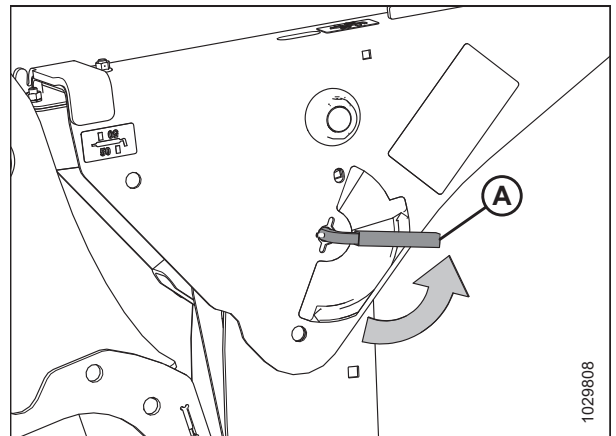


Figure 3.99: Safety Prop Lever

ATTACHING HEADERS TO WINDROWERS

18. Proceed as follows:

- **If the header supports are installed on the windrower:**
Install pin (B) through the header leg, engaging the header support in the lift linkage. Secure the pin with ring (A).
- **If the header supports are installed in the header:**
Secure windrower lift linkage (C) to header supports (D) using clevis pin (E) and hairpin (F).

NOTE:

All windrower models EXCEPT narrow transport (NT): to ensure that the pin does **NOT** snag the windrow, install the clevis pin on the outboard side of the draper header support.

NOTE:

Narrow transport (NT) configured windrowers only: to avoid contact with the tires, install the clevis pin on the inboard side of the draper header support.

Repeat this step on the other header leg.

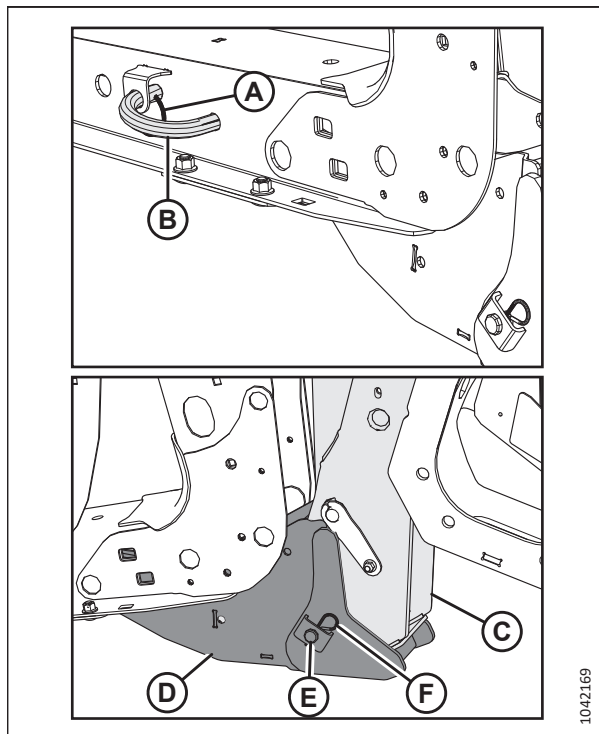


Figure 3.100: Windrower Lift Linkage and Header Leg

19. Disengage the safety props on both lift cylinders as follows:

- a. Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
- b. Repeat the previous step for the opposite cylinder.

NOTE:

If the safety prop will **NOT** disengage, raise the header to release the prop.

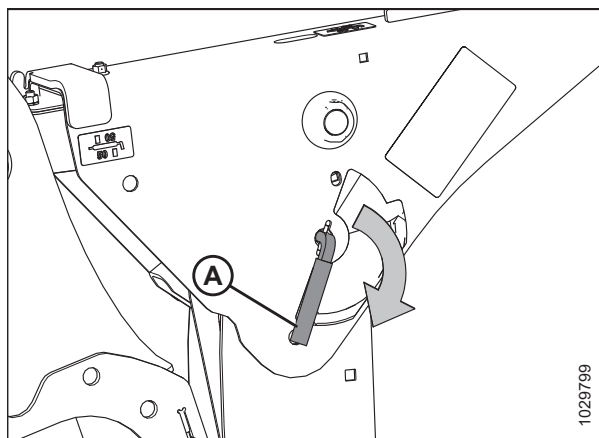


Figure 3.101: Safety Prop Lever

ATTACHING HEADERS TO WINDROWERS

20. Start the engine.
21. Press HEADER DOWN switch (A) on the GSL to fully lower the header.



Figure 3.102: Ground Speed Lever (GSL)

3.4.2 Connecting Header Hydraulic and Electrical Systems to M2 Series Windrower

To connect the header hydraulics to an M2 Series Windrower, approach from the left side, secure the platform, and manage the hydraulic hose system by disengaging and connecting various components. Ensure proper alignment and connection of hydraulic hoses and electrical connectors, and finalize the setup by adjusting the platform and ensuring all latches are engaged.

⚠ DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

⚠ CAUTION

Do NOT stand on an unlocked platform. It is unstable and may cause you to fall.

IMPORTANT:

To prevent contamination of the hydraulic system, use a clean rag to remove dirt and moisture from all (fixed and movable) hydraulic couplers.

1. Shut down the engine, and remove the key from the ignition.
2. Approach platform (A) on the left side of the windrower. Ensure that the cab door is closed.
3. Push latch (B) and pull platform (A) toward the walking beam until it stops and the latch engages.

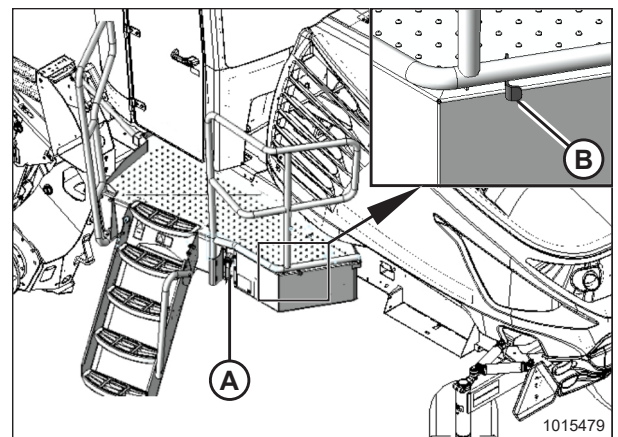


Figure 3.104: Left Platform

4. **D215 Draper Headers:** Pull hydraulic hose management system (A) toward the left outboard end of the header, disengage ball stud (B) from the cradle in support (C).

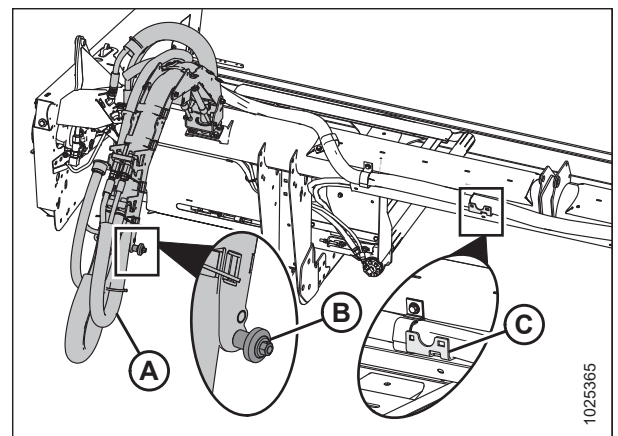


Figure 3.105: Hydraulic Hose Management System – D215 Draper Header

ATTACHING HEADERS TO WINDROWERS

5. Push the link on latch (C) and pull handle (A) on hydraulic hose management system (B) rearward to disengage the arm from the latch.
6. Move hydraulic hose management system (B) toward the left cab-forward side of the windrower.

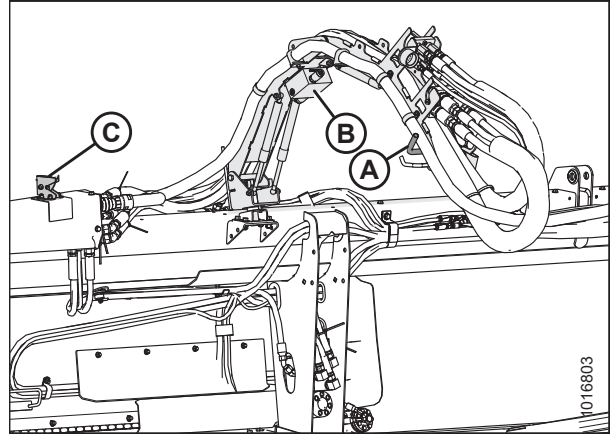


Figure 3.106: Hydraulic Hose Management System

7. Connect hydraulic hose management system (A) to the left outer leg of the windrower by pushing ball stud (B) into ball stud latch (C).

NOTE:

The hydraulic hoses have been removed from the illustration for clarity.

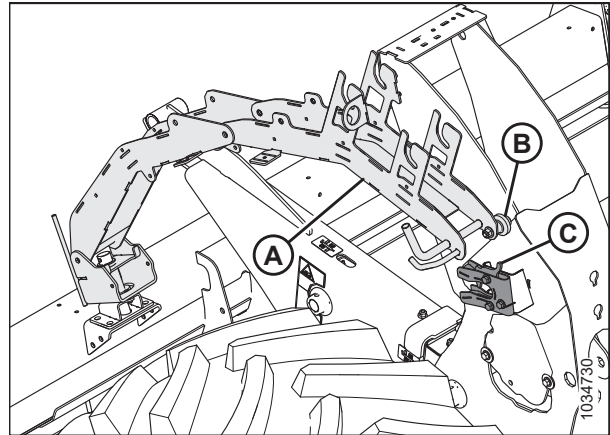


Figure 3.107: Windrower Left Outer Leg

8. **M2170 NT:** Rotate left signal light placard (A) to the up (vertical) position.

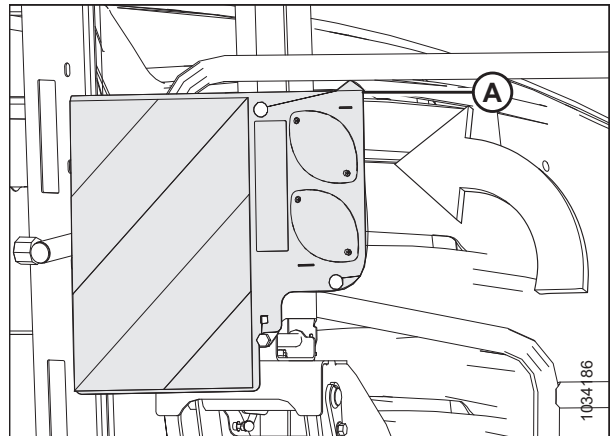


Figure 3.108: Left Signal Light Placard

ATTACHING HEADERS TO WINDROWERS

9. Retrieve draper drive and reel control multicoupler (A) from the hydraulic hose management system.
10. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
11. Open cover (D) and position the coupler onto the receptacle.
12. Align the pins in the coupler with the slots in handle (C) and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) pops out.
13. Remove the cover from electrical connector (E).
14. Push the electrical connector onto the receptacle. Secure the connector by turning the collar on the electrical connector clockwise.
15. Retrieve knife and reel drive multicoupler (A) from the hydraulic hose management system.
16. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
17. Open cover (D) and position the coupler onto the receptacle.
18. Align the pins in the coupler with the slots in handle (C), and push the handle toward the windrower so that the coupler locks onto the receptacle and knob (B) pops out.

19. Ensure that the hydraulic hose routing is as straight as possible.

IMPORTANT:

Straight routing will prevent abrasion damage to the hydraulic hoses.

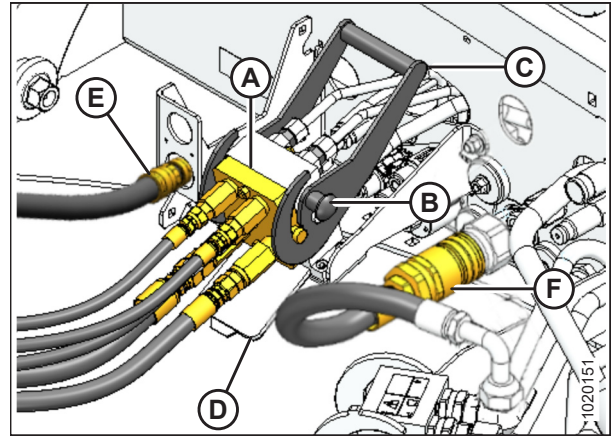


Figure 3.109: Draper/Reel Multicoupler

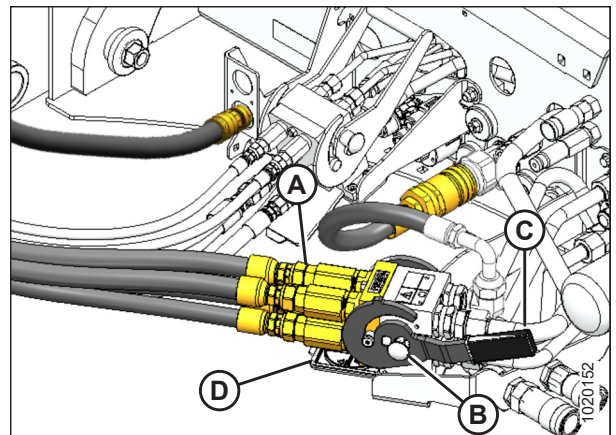


Figure 3.110: Knife/Reel Drive Multicoupler

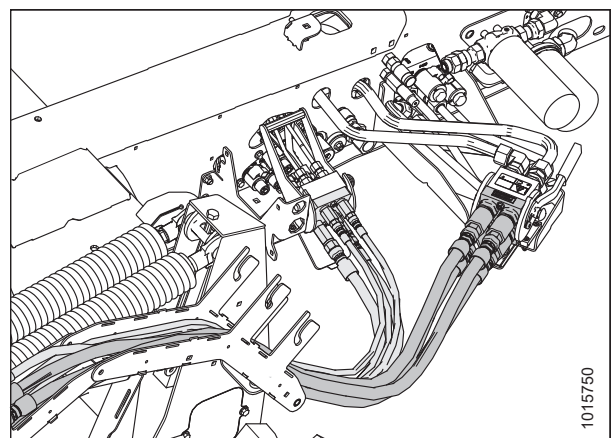


Figure 3.111: Hydraulic Multicouplers and Hose Routing

ATTACHING HEADERS TO WINDROWERS

20. Ensure that hydraulic hoses (A) are secured tightly with straps (B).
21. Ensure that the hydraulic hoses are positioned above frame (C) of the central delivery opening.

IMPORTANT:

The hydraulic hoses could be damaged if they sag below frame (C).

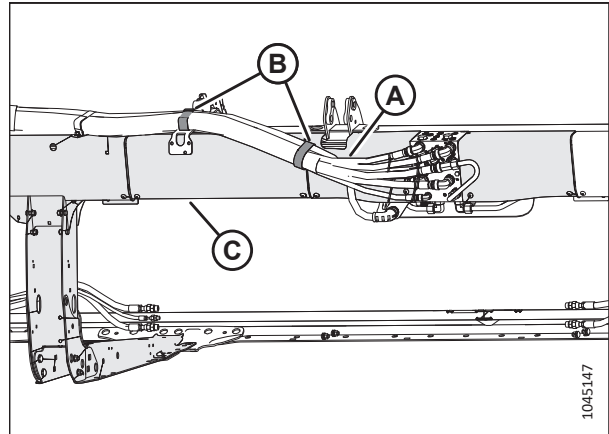


Figure 3.112: D215/D220 Draper Headers Hose Position

22. Push latch (A) to unlock platform (B).

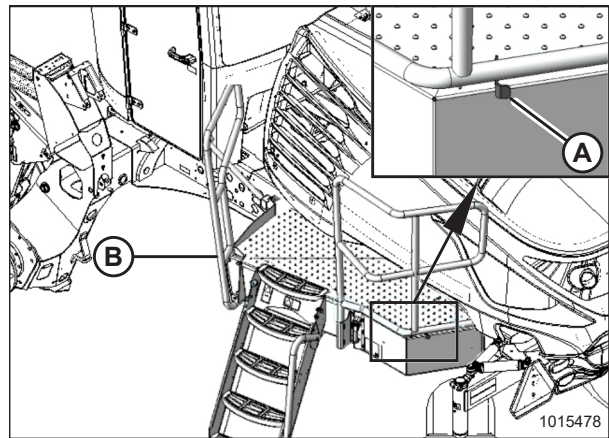


Figure 3.113: Left Platform

23. Pull platform (A) toward the cab until it stops and the latch is engaged.

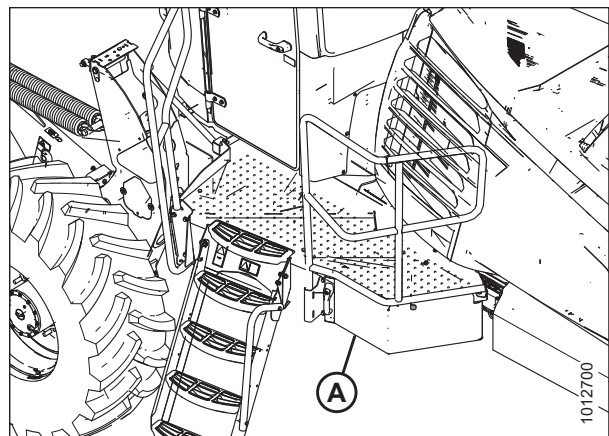


Figure 3.114: Left Platform

Chapter 4: Completing Header Assembly

The header will need further assembly before it can be run up and tested.

4.1 Installing Clearance Lights

Clearance lights are used when transporting the header. They are secured to the sides of the reel arms for shipping purposes and must be repositioned for field use.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Retrieve previously removed left clearance light assembly (A).
3. Remove two M10 locking flange nuts (C) and two M10 X 1.5 X 35 mm bolts (B).

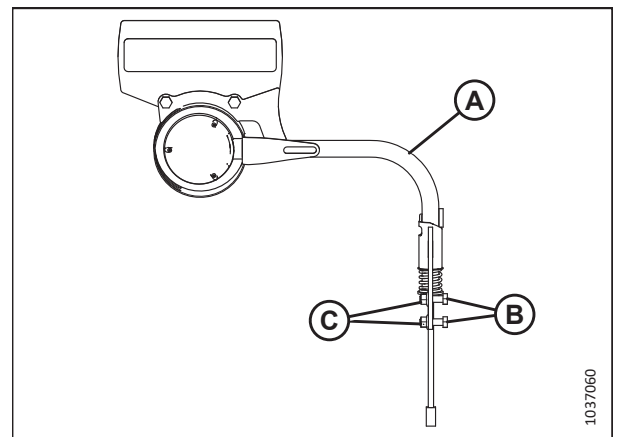


Figure 4.1: Left Clearance Light

4. Position left clearance light assembly (A) on the outboard side of the left reel arm support.
5. Secure left clearance light assembly (A) to the left reel arm support with two M10 X 1.5 X 35 mm bolts (B) and two M10 locking flange nuts (C).
6. Connect electrical harness (D) to the header harness.

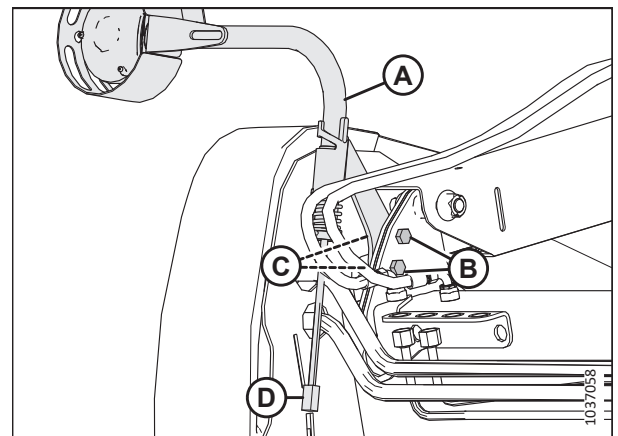


Figure 4.2: Left Clearance Light

COMPLETING HEADER ASSEMBLY

7. Retrieve previously removed right clearance light assembly (A).
8. Remove two M10 locking flange nuts (C) and M10 X 1.5 X 35 mm bolts (B).

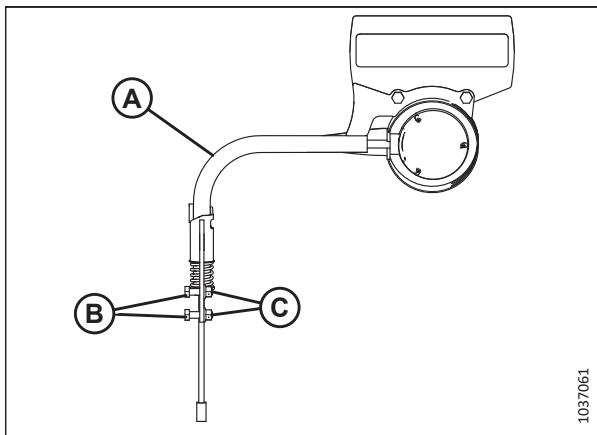


Figure 4.3: Right Clearance Light

9. Position right clearance light assembly (A) on the outboard side of the right reel arm support.
10. Secure right clearance light assembly (A) to the right reel arm support with two M10 X 1.5 X 35 mm bolts (B) and two M10 locking flange nuts (C).
11. Connect electrical harness (D) to the header harness.

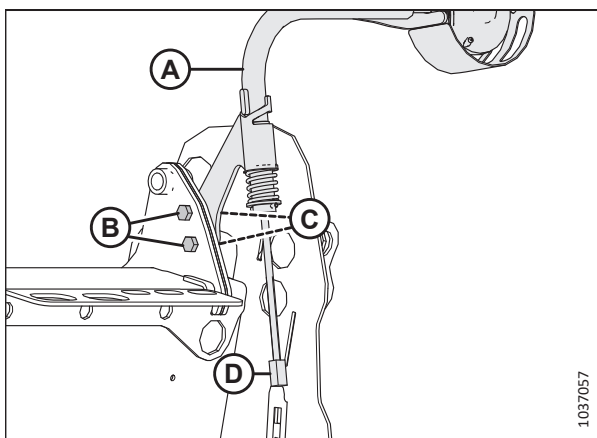


Figure 4.4: Right Clearance Light

4.2 Installing Fore-Aft Indicator and Sensor Spring (Parts Bag MD #368002)

To prevent damage during shipping, the fore-aft indicator parts were removed and will need to be installed.

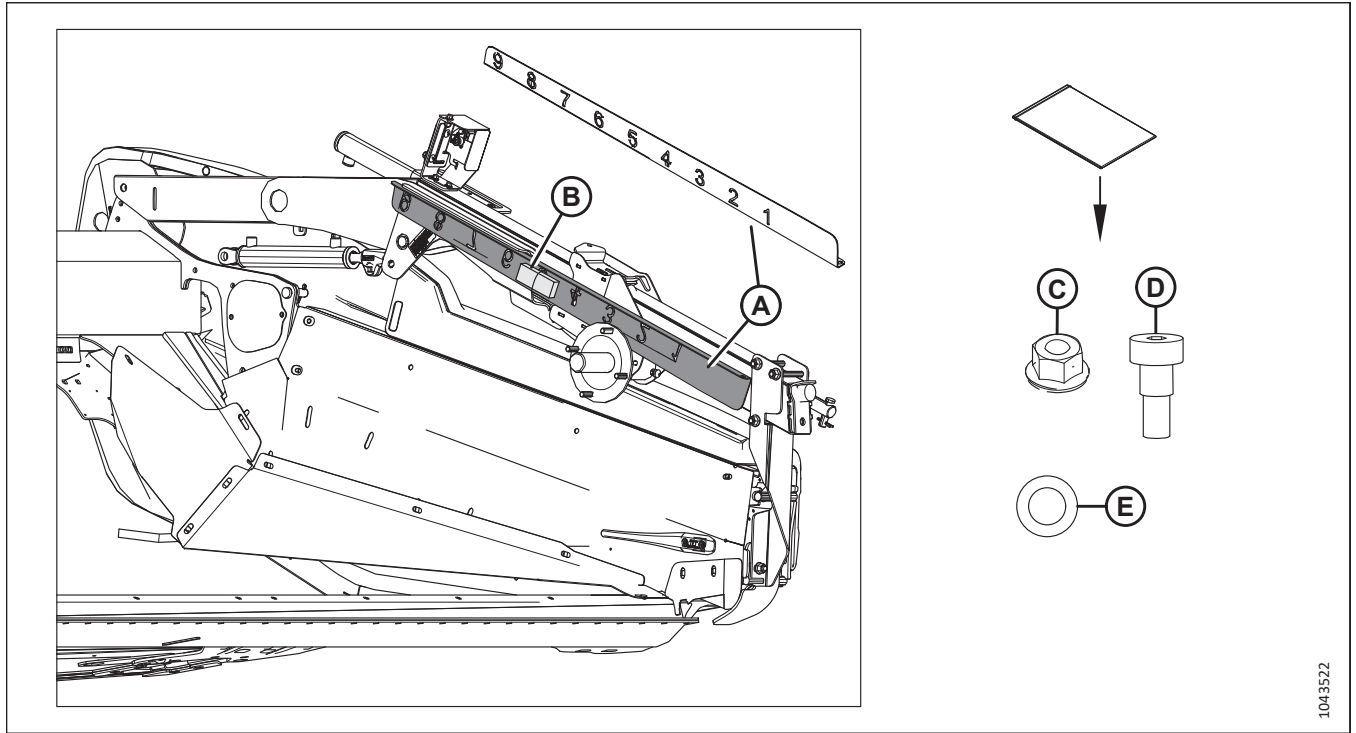


Figure 4.5: Fore-Aft Indicator Shipping Location, Parts Bag MD #368002

1. Retrieve fore-aft indicator (A) and parts bag (B) MD #368002 from the left reel arm. This bag contains the following:
 - One M8 nut (C) MD #135337
 - One M10 hex socket shoulder bolt (D) MD #135894
 - One M10 washer (E) MD #184711

COMPLETING HEADER ASSEMBLY

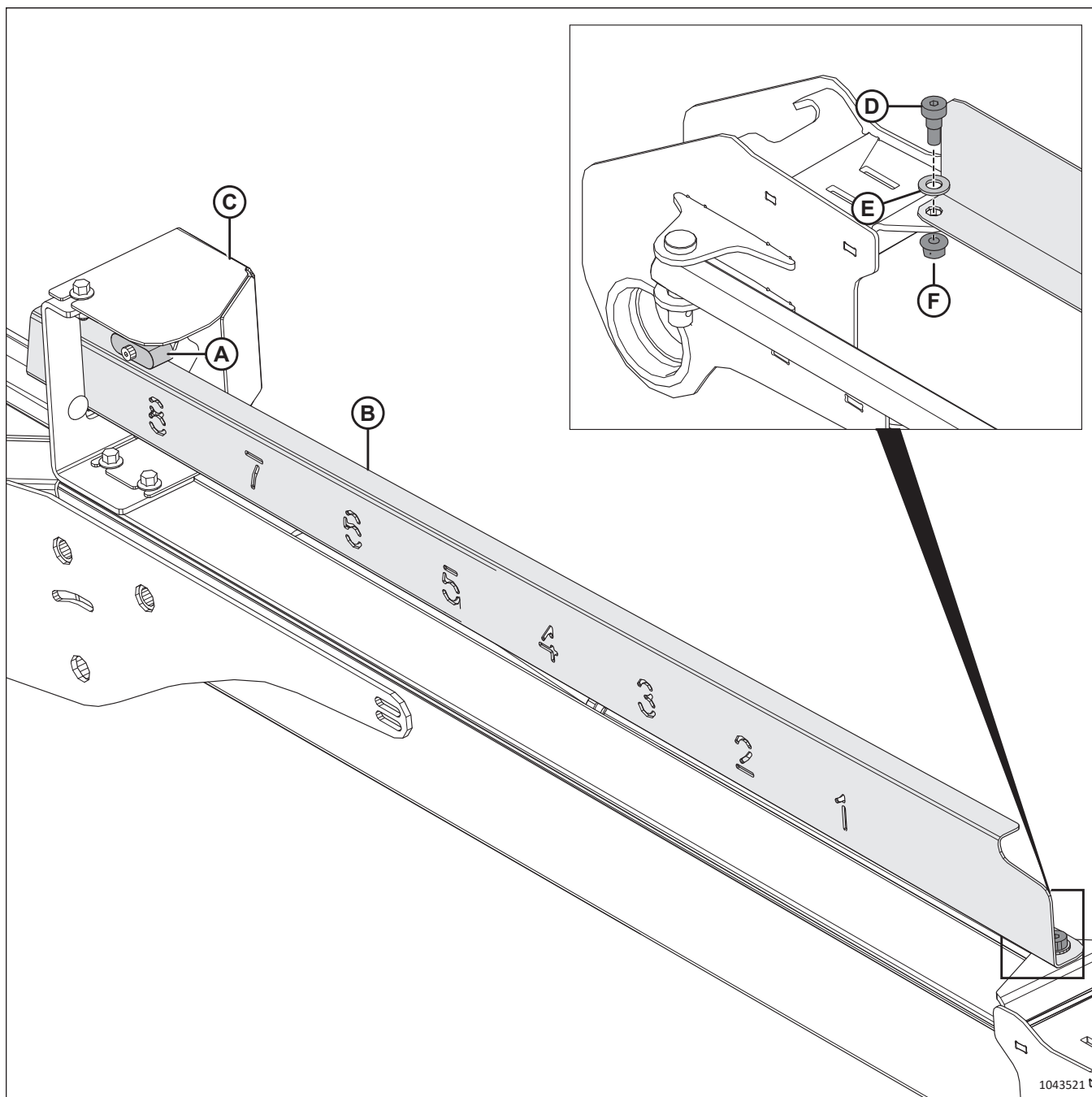


Figure 4.6: Fore-Aft Indicator Installation

2. Lift sensor slider (A) up, and slide fore-aft indicator (B) through sensor bracket (C).
3. Secure the indicator using shoulder bolt (D), washer (E), and M8 nut (F).

NOTE:

The shoulder bolt ensures that the bolt will remain free-spinning.

4. Proceed to the applicable procedure:
 - [4.3 Installing Front Support for Right Endshield – Single Reel \(Parts Bag MD #357468\), page 83](#) for single-reel headers.
 - [4.5 Installing Reel Lift Cylinders – Double Reel, page 89](#) for double-reel headers.

4.3 Installing Front Support for Right Endshield – Single Reel (Parts Bag MD #357468)

The front support is installed using hardware from the parts bag, and it helps secure the endshield to the header.

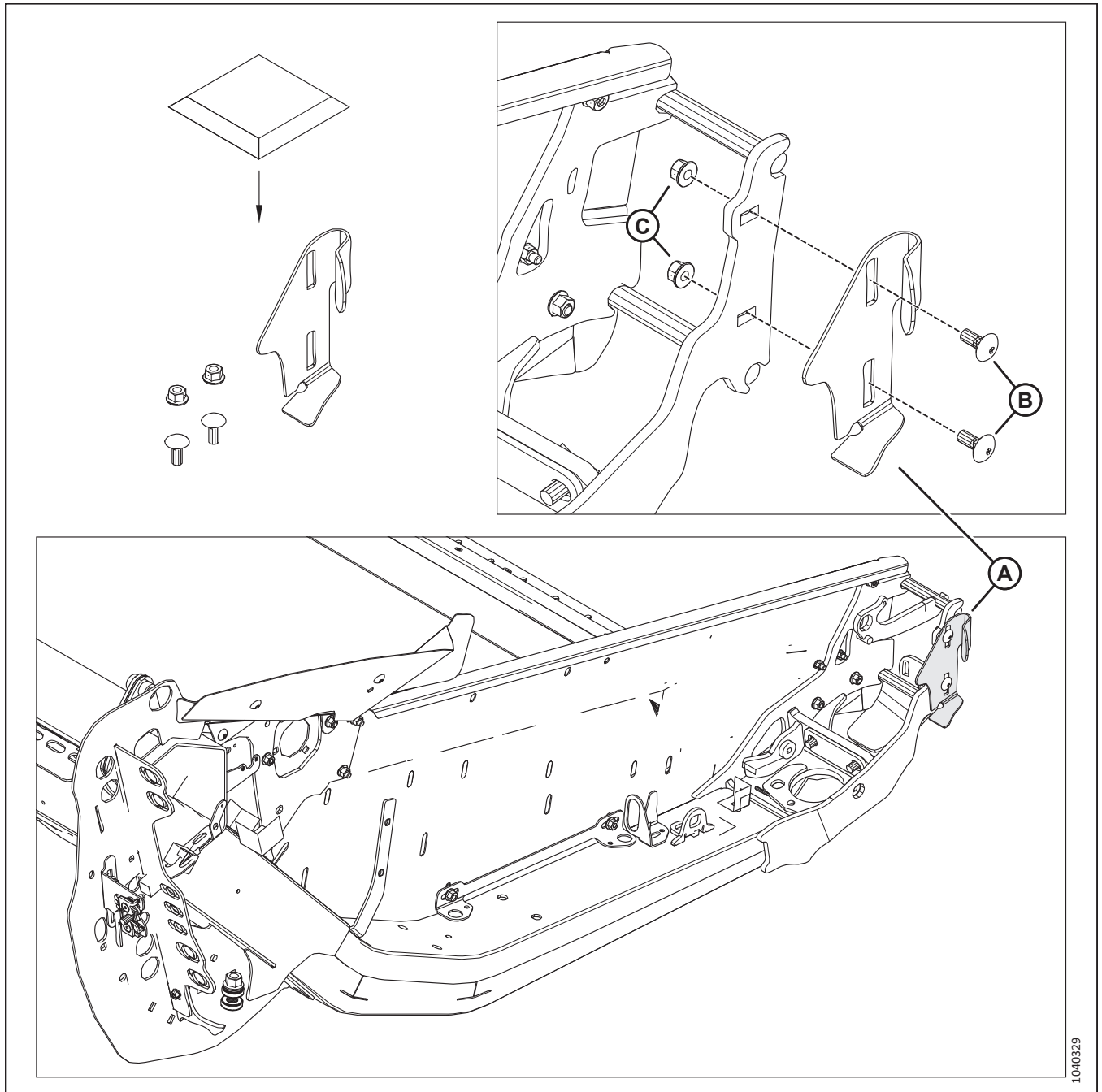


Figure 4.7: Front Support Installation, Parts Bag MD #357468

1. Retrieve parts bag MD #357468.
2. Install front support (A) using two bolts (B) and nuts (C) supplied in the parts bag.

4.4 Installing Reel Lift Cylinders – Single Reel

The reel lift cylinders are detached for shipping. They need to be reinstalled on the header.

CAUTION

Do NOT REMOVE reel fore-aft shipping supports (A). The reel fore-aft hydraulic cylinders must be connected to the reel before fore-aft shipping supports (A) can be removed. If the fore-aft shipping supports are removed before the hydraulic cylinders have been connected, the reel can slide forward, which may result in injury.

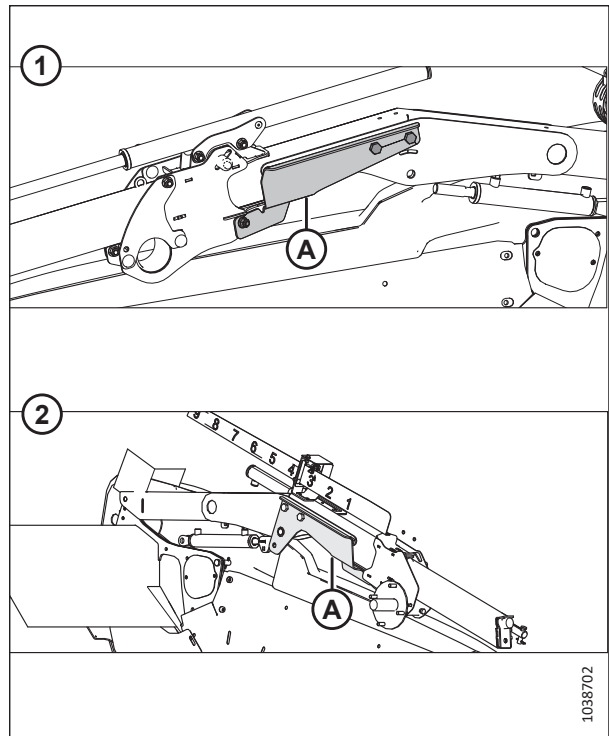


Figure 4.8: Fore-Aft Shipping Supports

1 - Right Reel Arm

2 - Left Reel Arm

1. Remove top two bolts (A) from both reel arm supports.

IMPORTANT:

The top two bolts (A) must be removed from the reel arm supports before connecting any of the lift cylinders to prevent the reel from twisting.

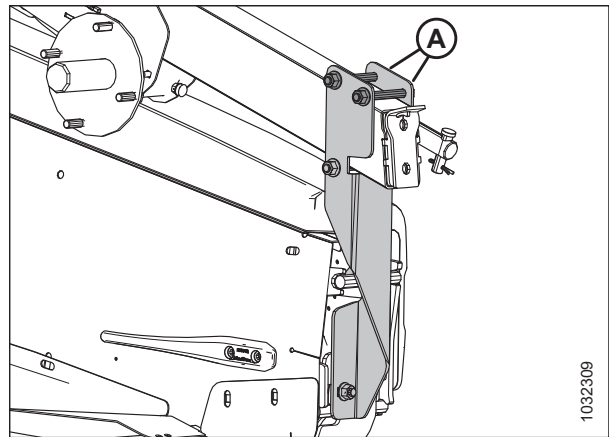


Figure 4.9: Left Arm Shipping Support

COMPLETING HEADER ASSEMBLY

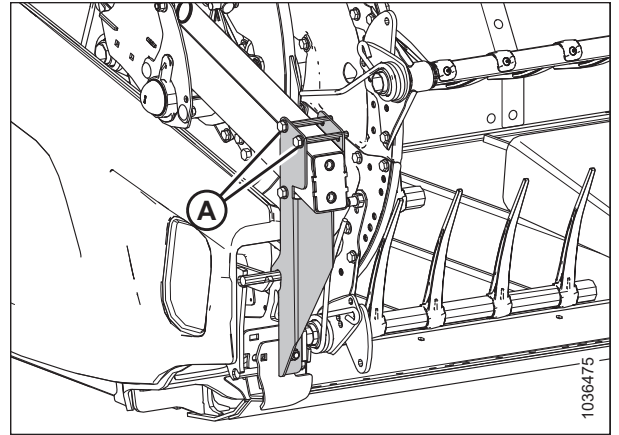


Figure 4.10: Right Arm Shipping Support

2. On the left end of the reel, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift.

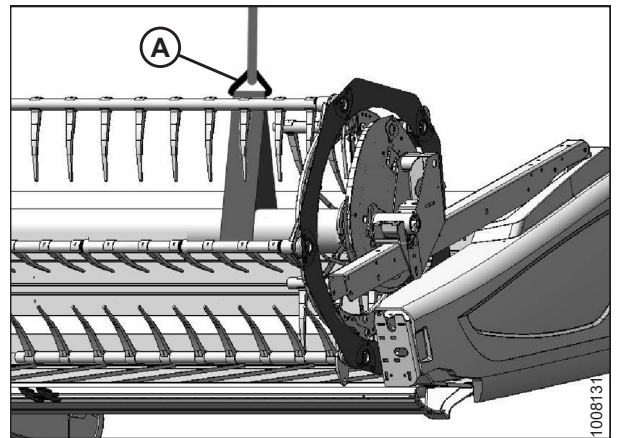


Figure 4.11: Sling Positioned on Left Side of Reel

3. Remove the shipping wire securing reel lift cylinder (A) to the left reel arm.

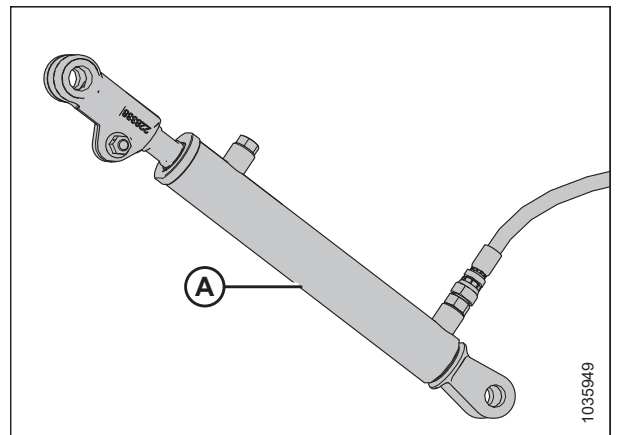


Figure 4.12: Reel Lift Cylinder

COMPLETING HEADER ASSEMBLY

- Remove and retain two sets of pins (A) from the lug on the endsheet and the reel arm.

WARNING

The safety prop inside the reel arm may fall when the upper pin is removed and cause personal injury.

- Use the forklift to lift the reel so that the reel lift cylinder mounting holes line up with the lug on the endsheet and the hole in the reel arm.

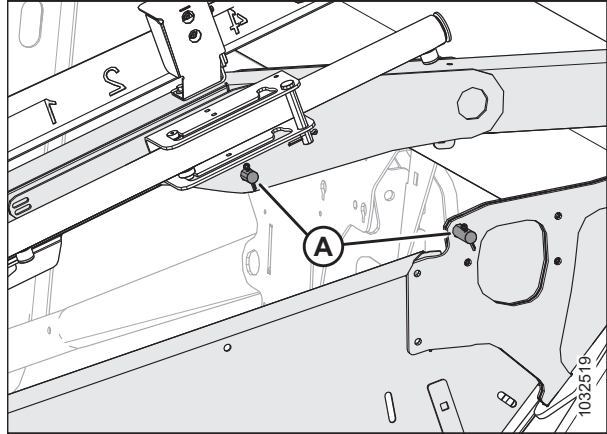


Figure 4.13: Left Reel Lift Cylinder Pins

- Install the rod end of lift cylinder (A) and safety prop (B) using clevis pin (C) and cotter pin (D).

IMPORTANT:

Install cotter pin (D) on the outboard side of the header.

- Move reel safety prop (B) up onto the hook under the reel arm.
- Secure the base of cylinder (A) to the endsheet using clevis pin (E) and cotter pin (F).

IMPORTANT:

Install cotter pin (F) on the outboard side of the header.

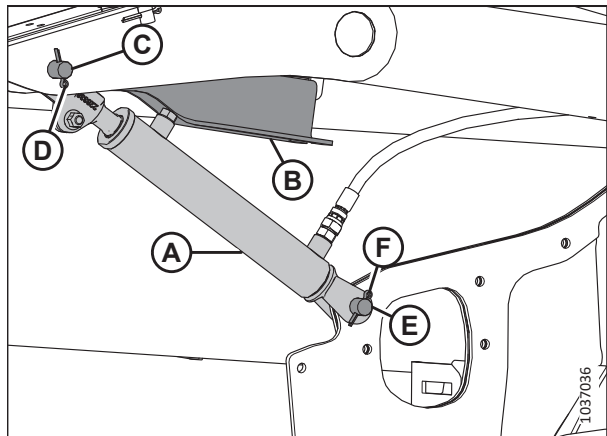


Figure 4.14: Left Reel Lift Cylinder

- Remove hardware (A) from outboard arm support (B). Discard support (B) and hardware (A).

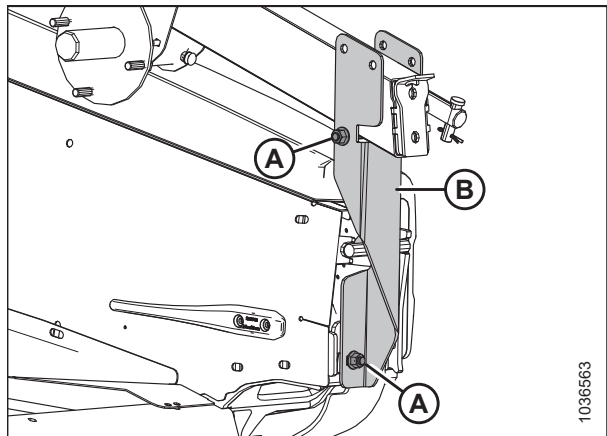


Figure 4.15: Shipping Support – Left Reel Arm

COMPLETING HEADER ASSEMBLY

10. On the right end of the reel, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift.

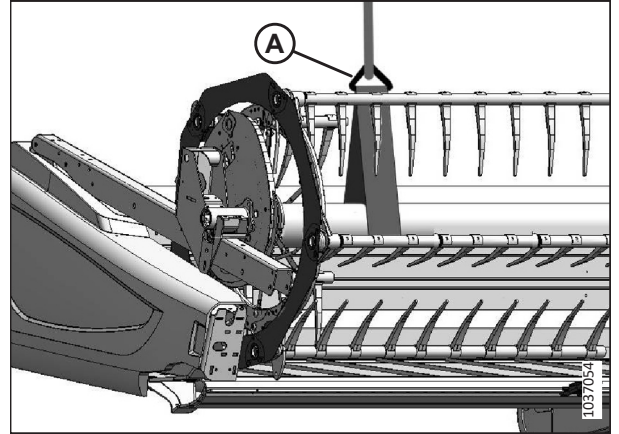


Figure 4.16: Sling Positioned on Right Side of Reel

11. Remove the shipping wire securing reel lift cylinder (A) to the right reel arm.

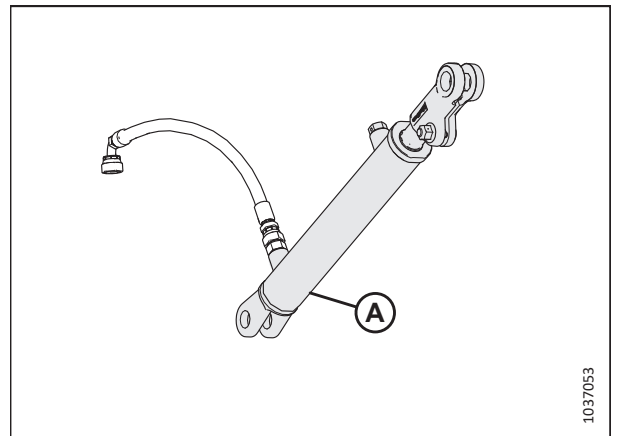


Figure 4.17: Reel Lift Cylinder

12. Remove and retain two sets of pins (A) from the lug on the endsheet and the reel arm.

NOTE:

The safety prop may fall when the upper pin is removed.

13. Lift the reel so that the reel lift cylinder mounting holes line up with the lug on the endsheet and the hole in the reel arm.

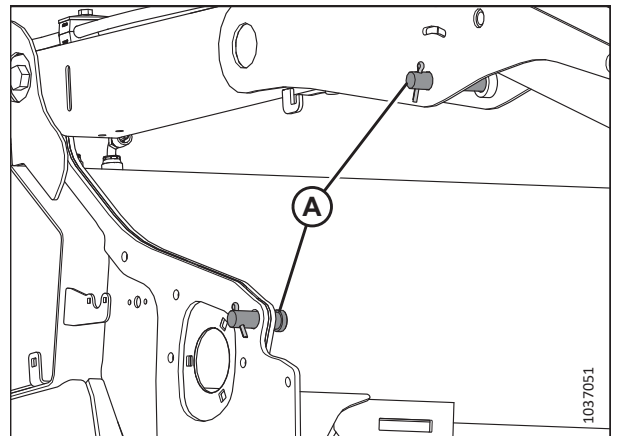


Figure 4.18: Right Reel Arm Lift Cylinder Pins

COMPLETING HEADER ASSEMBLY

14. Install rod end of lift cylinder (A) and safety prop (B) using clevis pin (C) and cotter pin (D).

IMPORTANT:

Install cotter pin (D) on the outboard side of the header.

15. Move reel safety prop (B) up onto the hook under the reel arm.
16. Secure the base of cylinder (A) to the endsheet using clevis pin (E) and cotter pin (F).

IMPORTANT:

Install cotter pin (F) on the outboard side of the header.

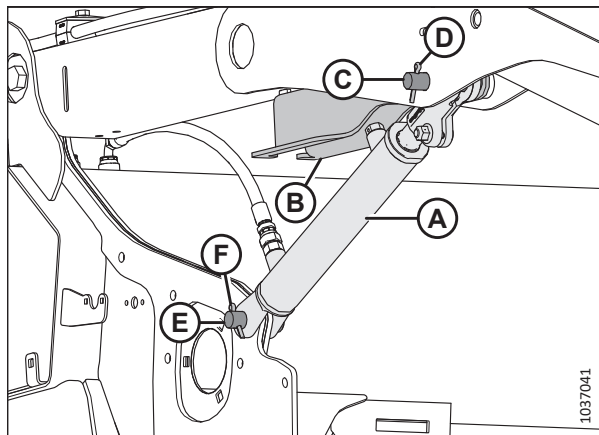


Figure 4.19: Right Lift Cylinder Installed on Reel Arm

17. Remove hardware (A) from right reel arm support (B). Discard support (B) and hardware (A).

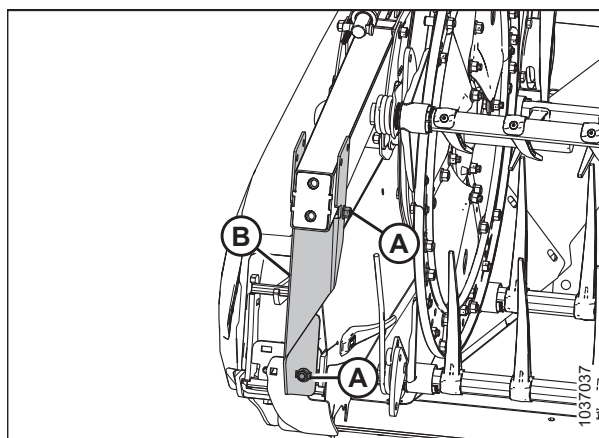


Figure 4.20: Right Reel Arm Shipping Support

18. Proceed to [4.6 Installing Knifehead Guard Hardware – D215, D220, D225, D230, and D235 \(Parts Bag MD #347581\)](#), page 96.

4.5 Installing Reel Lift Cylinders – Double Reel

The left, center, and right reel lift cylinders on double-reel headers have been detached from the reel lift arms for shipping purposes. They will need to be installed on the header.

CAUTION

Do NOT REMOVE reel fore-aft shipping supports (A). The reel fore-aft hydraulic cylinders must be connected to the reel before fore-aft shipping supports (A) can be removed. If the fore-aft shipping supports are removed before the hydraulic cylinders have been connected, the reel can slide forward, which may result in injury.

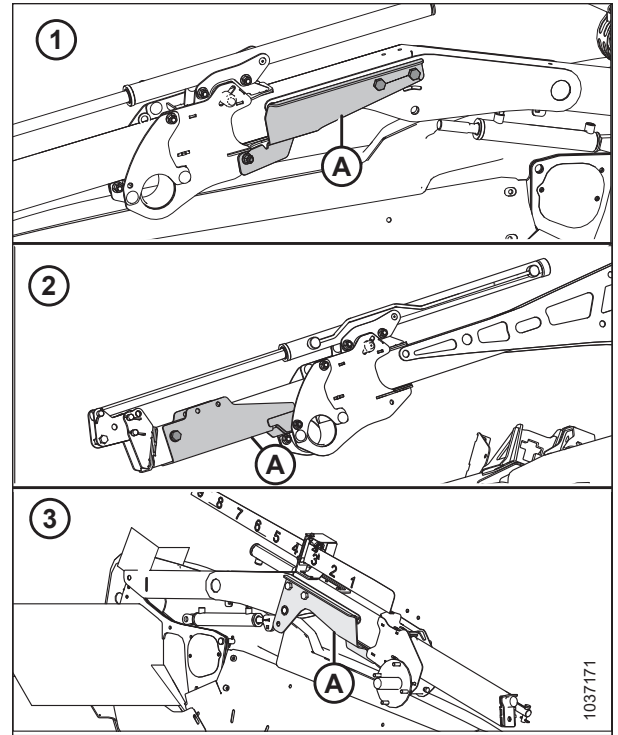


Figure 4.21: Fore-Aft Shipping Supports

1 - Outer Right Reel Arm

2 - Center Support Arm

3 - Outer Left Reel Arm

1. Remove top two bolts (A) from all three reel arm supports.

IMPORTANT:

The top bolts **MUST** be removed from both reel arm supports before the lift cylinders are connected.

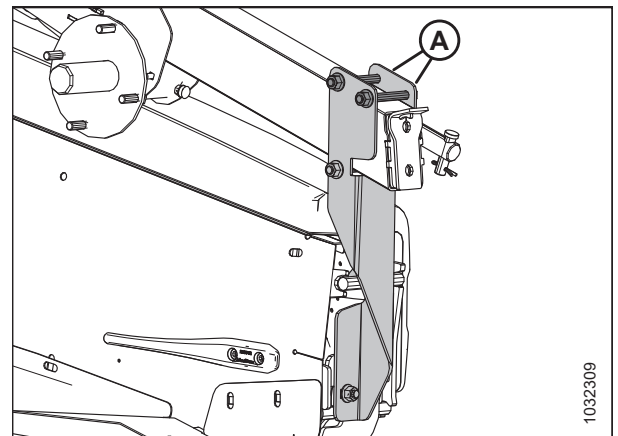


Figure 4.22: Left Reel Arm Shipping Support

COMPLETING HEADER ASSEMBLY

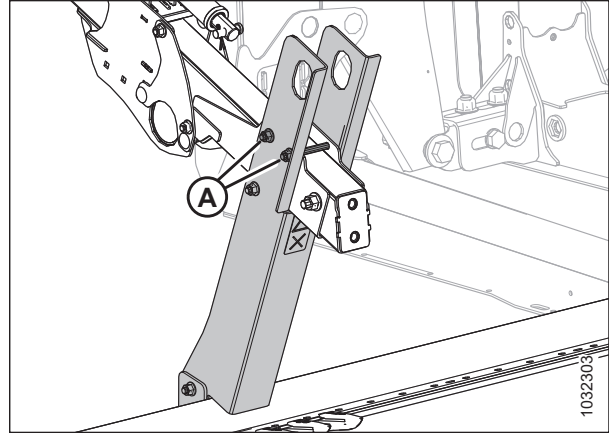


Figure 4.23: Center Arm Shipping Support

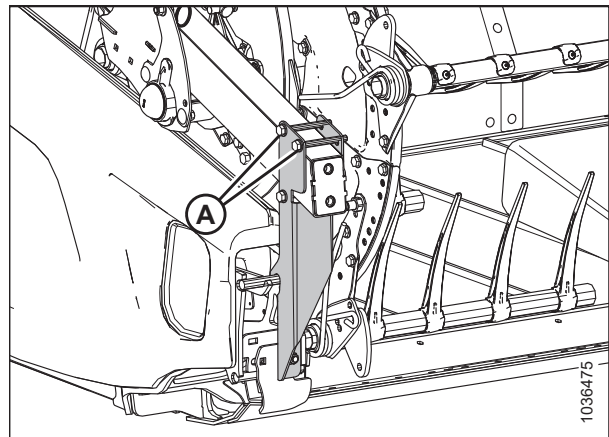


Figure 4.24: Right Reel Arm Shipping Support

2. On the left end of the left reel, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift.

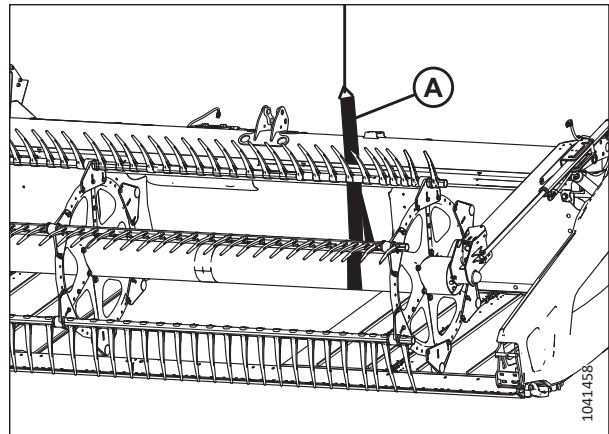


Figure 4.25: Sling Positioned on Left Side of Reel

COMPLETING HEADER ASSEMBLY

3. Remove the shipping wire securing reel lift cylinder (A) to the left reel arm.
4. Remove and set aside the left light assembly strapped to the reel lift cylinder.

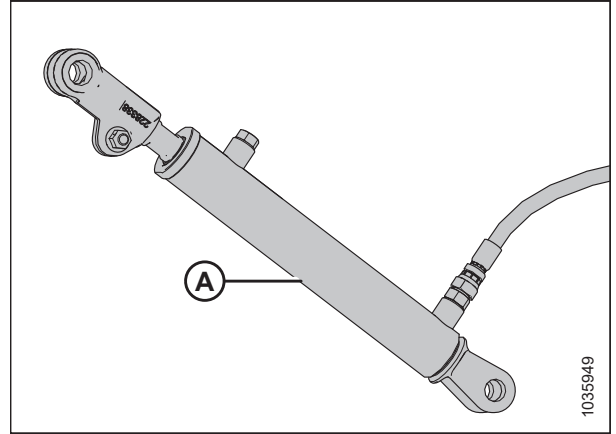


Figure 4.26: Reel Lift Cylinder

5. Remove and retain two sets of pins (A) from the lug on the endsheet and the reel arm.

WARNING

The safety prop inside the reel arm may fall when the upper pin is removed and cause personal injury.

6. Use the forklift to lift the reel so that the reel lift cylinder mounting holes line up with the lug on the endsheet and the hole in the reel arm.

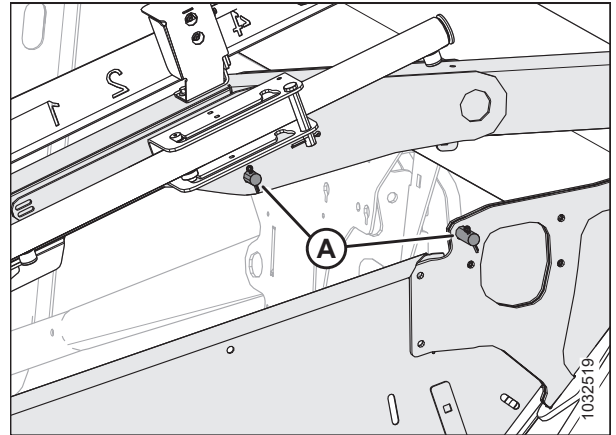


Figure 4.27: Left Reel Lift Cylinder Pins

7. Install the rod end of lift cylinder (A) and safety prop (B) using clevis pin (C) and cotter pin (D).

IMPORTANT:

Install cotter pin (D) on the outboard side of the header.

8. Move reel safety prop (B) up onto the hook under the reel arm.
9. Secure the base of cylinder (A) to the endsheet using clevis pin (E) and cotter pin (F).

IMPORTANT:

Install cotter pin (F) on the outboard side of the header.

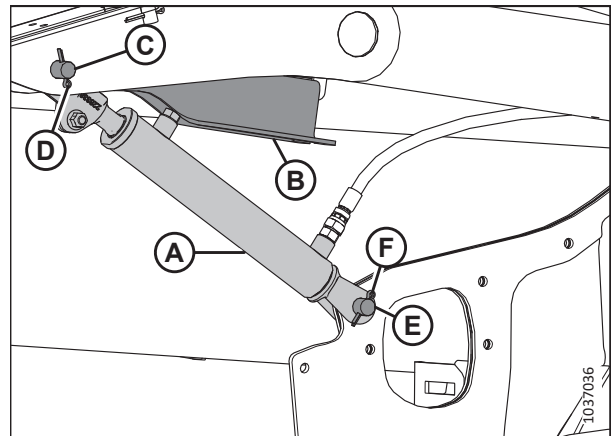


Figure 4.28: Left Reel Lift Cylinder

COMPLETING HEADER ASSEMBLY

10. Remove hardware (A) from outboard arm support (B).
Discard support (B) and hardware (A).

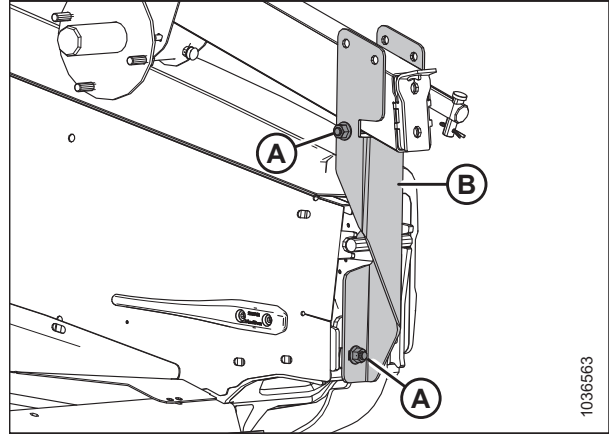


Figure 4.29: Shipping Support – Left Reel Arm

11. Reposition sling (A) near the center support arm.

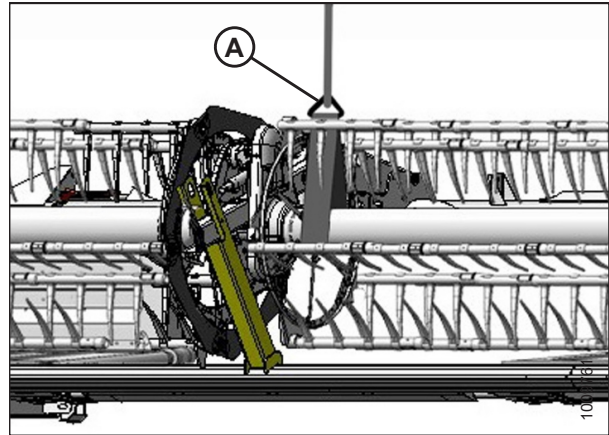


Figure 4.30: Center Arm Shipping Support

12. Remove the shipping wires securing lift cylinders (A) to the center arm.
13. Remove and retain the pins from the rod ends of both lift cylinders.

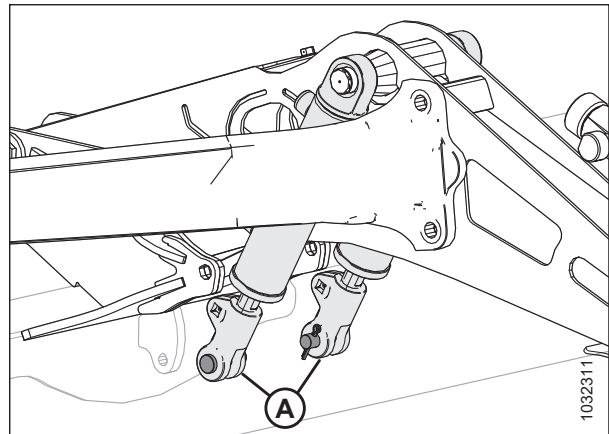


Figure 4.31: Lift Cylinders Secured to Center Arm

COMPLETING HEADER ASSEMBLY

14. Use the forklift to lift the reel. Align the holes on cylinders (A) with the holes on the reel support plates. Secure the cylinders with clevis pins and cotter pins (B).

IMPORTANT:

Install cotter pins (B) on the inboard side as shown.

15. Ensure that the hydraulic fittings on cylinders (A) are tight.

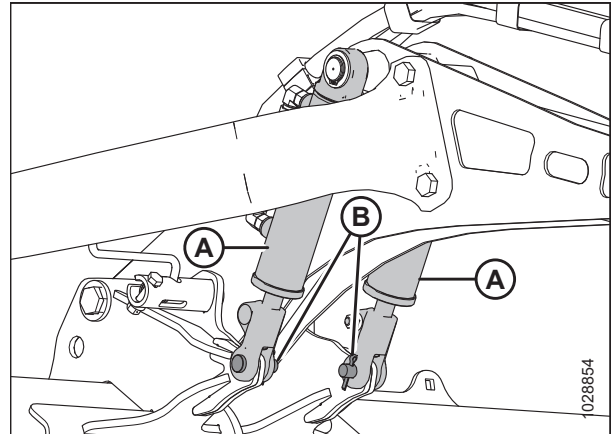


Figure 4.32: Lift Cylinders at Center Arm

16. At the center arm, remove and discard bolts (A) and bolts (B).

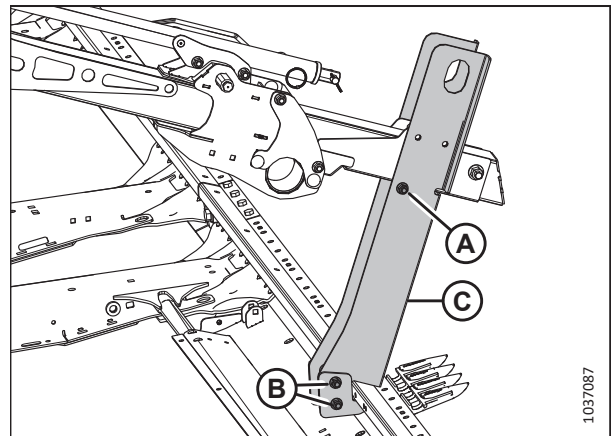


Figure 4.33: Center Arm Support

17. On the right end of the right reel, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift.

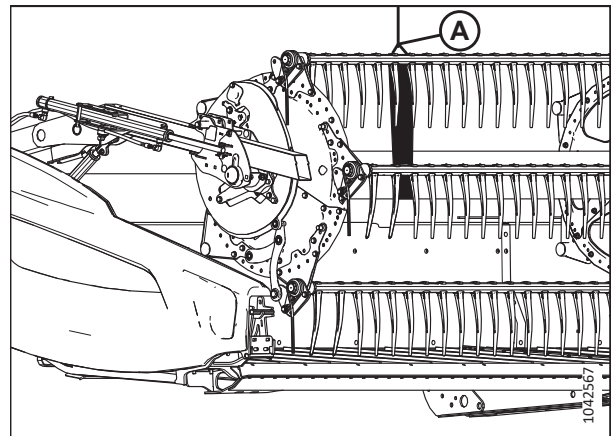


Figure 4.34: Sling Positioned on Right Side of Reel

COMPLETING HEADER ASSEMBLY

18. Remove the shipping wire securing reel lift cylinder (A) to the right reel arm.
19. Remove and set aside the right light assembly strapped to the reel lift cylinder.

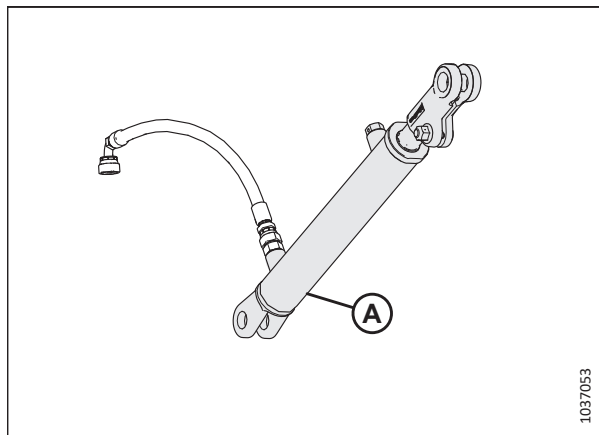


Figure 4.35: Reel Lift Cylinder

20. Remove and retain two sets of pins (A) from the lug on the endsheet and the reel arm.

NOTE:

The safety prop may fall when the upper pin is removed.

21. Lift the reel so that the reel lift cylinder mounting holes line up with the lug on the endsheet and the hole in the reel arm.

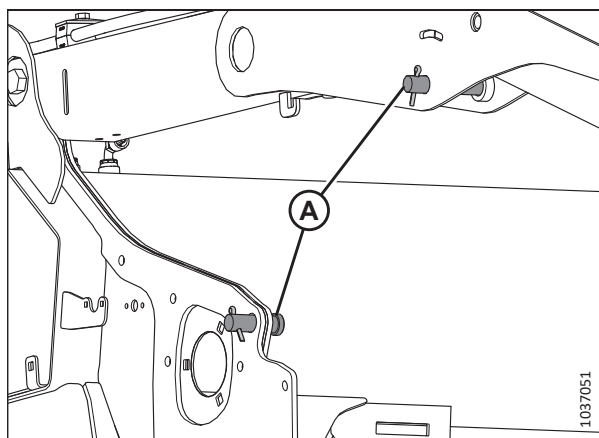


Figure 4.36: Right Reel Arm Lift Cylinder Pins

22. Install rod end of lift cylinder (A) and safety prop (B) using clevis pin (C) and cotter pin (D).

IMPORTANT:

Install cotter pin (D) on the outboard side of the header.

23. Move reel safety prop (B) up onto the hook under the reel arm.

24. Secure the base of cylinder (A) to the endsheet using clevis pin (E) and cotter pin (F).

IMPORTANT:

Install cotter pin (F) on the outboard side of the header.

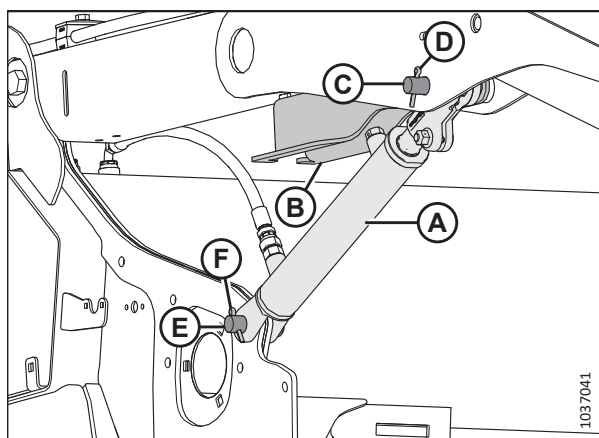


Figure 4.37: Right Lift Cylinder Installed on Reel Arm

COMPLETING HEADER ASSEMBLY

25. Remove hardware (A) from right reel arm support (B).
Discard support (B) and hardware (A).

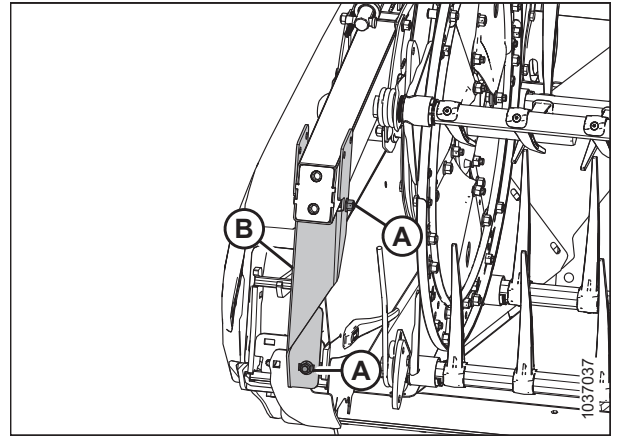


Figure 4.38: Right Reel Arm Shipping Support

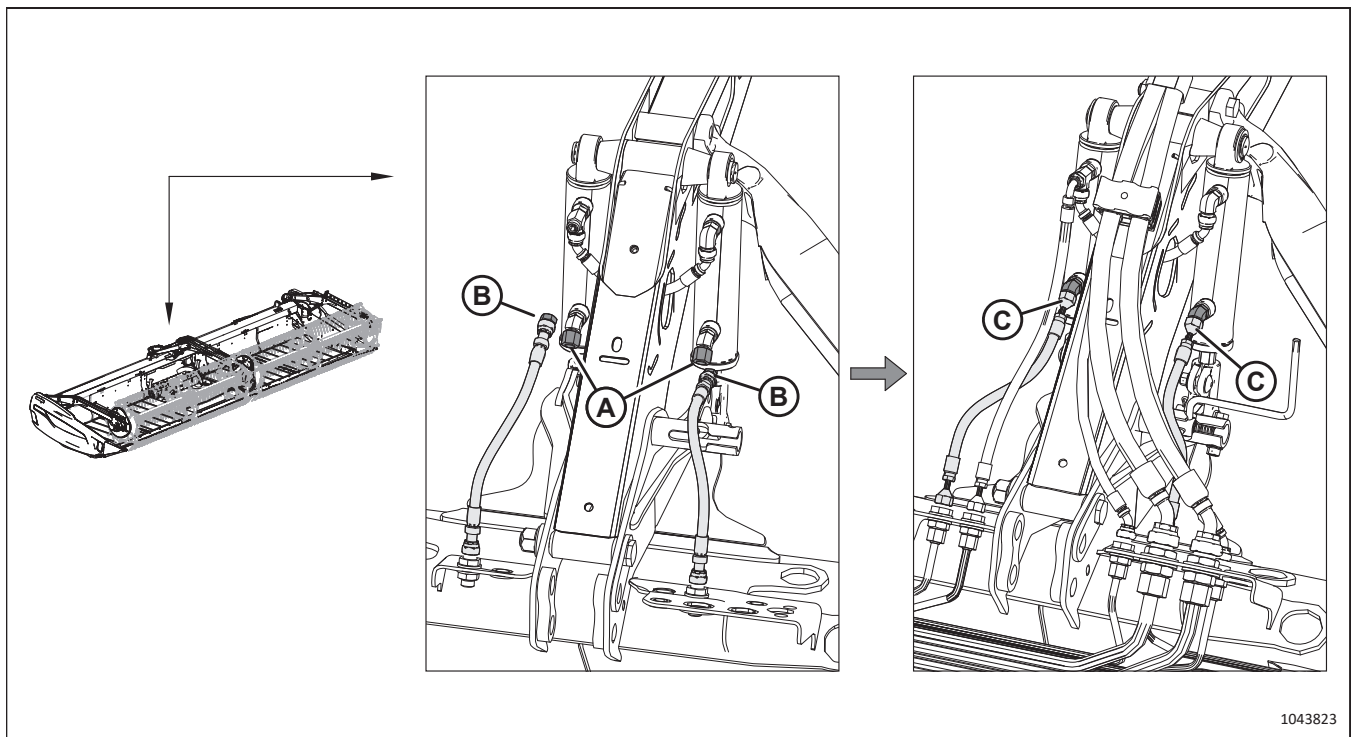


Figure 4.39: Center Arm

26. At the center arm, remove caps (A) from the lift cylinders.
27. Remove caps (B) from both reel lift hoses.
28. Connect reel lift hoses (C) to the cylinders.

4.6 Installing Knifehead Guard Hardware – D215, D220, D225, D230, and D235 (Parts Bag MD #347581)

To install the knifehead guard hardware, this procedure involves positioning the left and right knifehead guards properly in line with the first guard points and securing them in place.

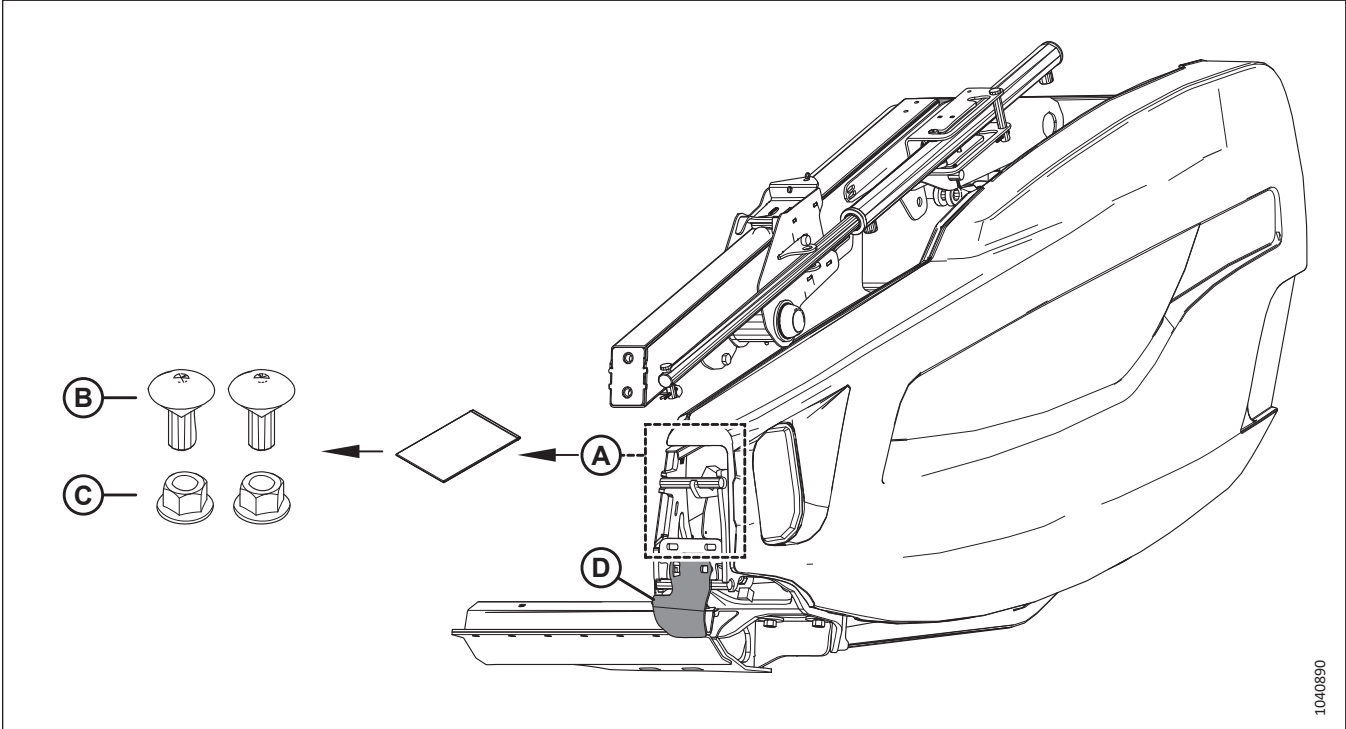


Figure 4.40: Parts Bag MD #347581

1. Retrieve parts bag MD #347581 from location (A). This bag contains the following hardware for the left knifehead guard (D) and the right knifehead guard (not shown):
 - Two M12 x 30 mm bolts (B)
 - Two M12 nuts (C)
2. Position left knifehead guard (A) as close as possible to the bottom of guard (C). The inboard edge of guard (A) should be in line with or just inboard of the center of the first guard point (C).
3. Secure left knifehead guard (A) with one M12 bolt (B) and nut.

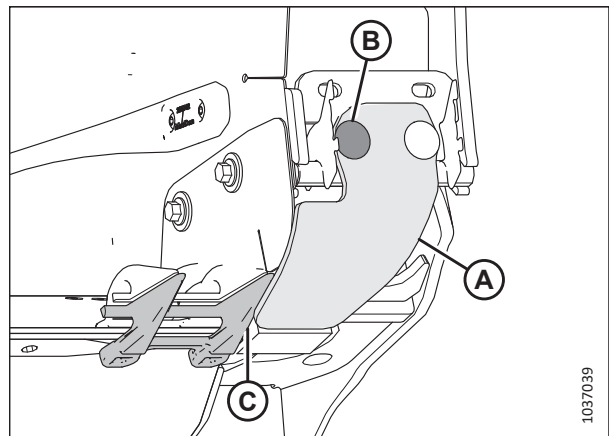


Figure 4.41: Left Knifehead Guard

COMPLETING HEADER ASSEMBLY

4. Position right guard (A) as close as possible to the bottom of guard (C). The inboard edge of guard (A) should be in line with or just inboard of the center of the first guard point (C).
5. Secure right knifehead guard (A) with one M12 bolt (B) and nut.

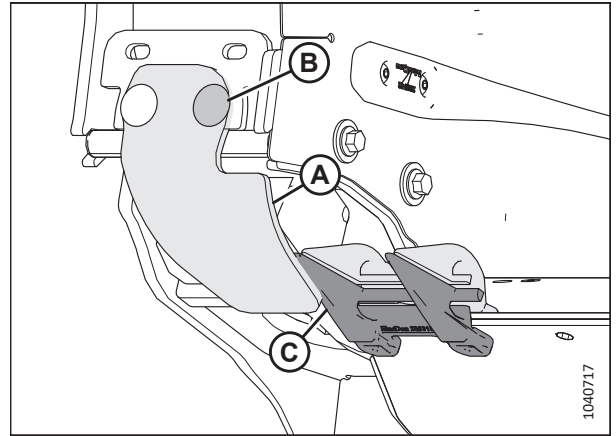


Figure 4.42: Right Knifehead Guard

4.7 Attaching Reel Height Sensor

This procedure involves attaching the reel height sensor by opening the right header endshield, securing the sensor rod to the reel arm bracket and sensor arm with nuts torqued to the specified values, and then closing the endshield.

NOTE:

If the header is being used with an M Series Self-Propelled Windrower, the reel height sensor will not be usable. However, to prevent damage to the sensor, it should still be connected following the procedure provided here.

1. Open the right header endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
2. Remove cable ties (A) securing reel height sensor rod (B) to the top of the end panel.

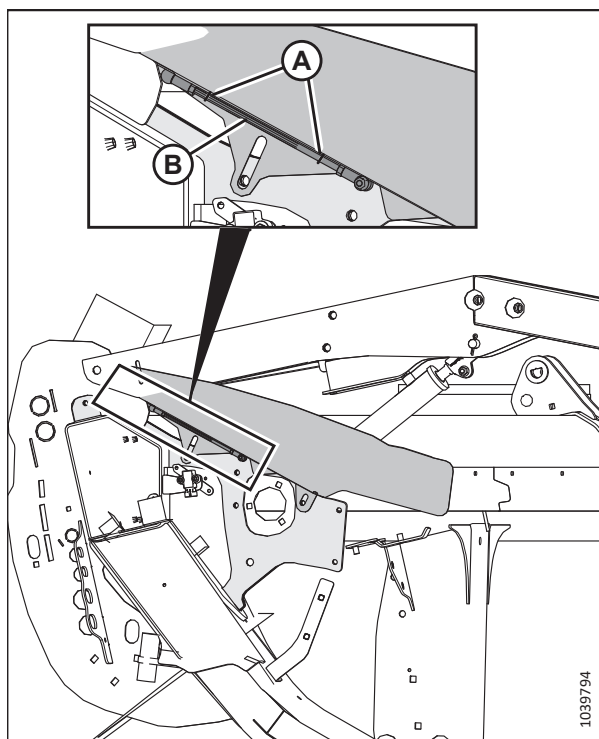


Figure 4.43: Reel Height Sensor Location

3. Remove nuts (C) from sensor rod (A).
4. Attach reel height sensor rod (A) to reel arm bracket (B) from the outboard side of the reel arm. Install nut (C) and torque it to 8 Nm (6 lbf·ft [73 lbf·in]).

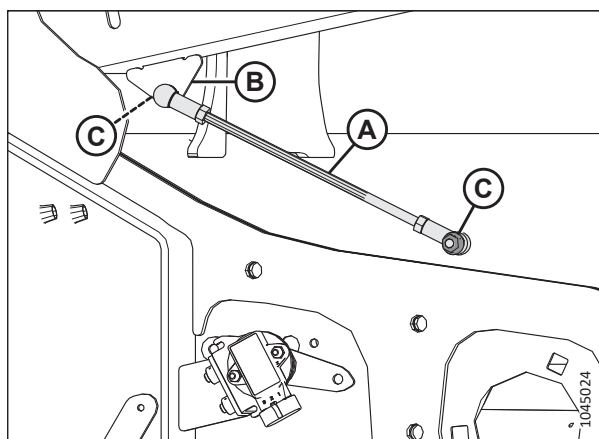


Figure 4.44: Reel Height Sensor Location

COMPLETING HEADER ASSEMBLY

5. Ensure that the sensor is configured properly for the header:
 - Configuration (1) is incorrect. Round end (B) of the sensor arm is attached to rod (E).
 - Configuration (2) is correct. Pointed end (C) of the sensor arm is attached to rod (E).
6. Connect height sensing rod (E) to the sensor arm.
7. Install nut (D) and torque it to 8 Nm (6 lbf-ft [71 lbf-in]).
8. Close the right header endshield. For instructions, refer to *7.2.2 Closing Header Endshields, page 239*.
9. Proceed to the applicable procedure:
 - *4.8 Connecting Reel to Fore-Aft Cylinders, Single-Reel Headers – D215, D220, and D225 (Parts Bag MD #357467), page 100* for single-reel headers.
 - *4.9 Connecting Reel to Fore-Aft Cylinders – Double-Reel Headers (Parts Bag MD #347580), page 106* for double-reel headers.

4.8 Connecting Reel to Fore-Aft Cylinders, Single-Reel Headers – D215, D220, and D225 (Parts Bag MD #357467)

To connect reel arms to fore-aft cylinders on single-reel headers, this procedure includes raising the reel arms, installing anchor supports, attaching fore-aft anchors with clevis pins and cotter pins, and phasing the cylinders by adjusting the reel.

! DANGER

Ensure that all bystanders have cleared the area.

! DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

! CAUTION

The reel fore-aft hydraulic cylinders must be connected to the reel before fore-aft shipping supports (A) are removed. Failure to do so may result in the reel sliding fully forward when the supports are removed.

! CAUTION

Ensure that the header hydraulics are connected to the windrower. Lift the reel to level the reel support arms; this will prevent the reel from moving when the fore-aft shipping supports are removed.

1. Raise the reel arms until they are parallel with the ground.
2. Shut down the engine, and remove the key from the ignition.

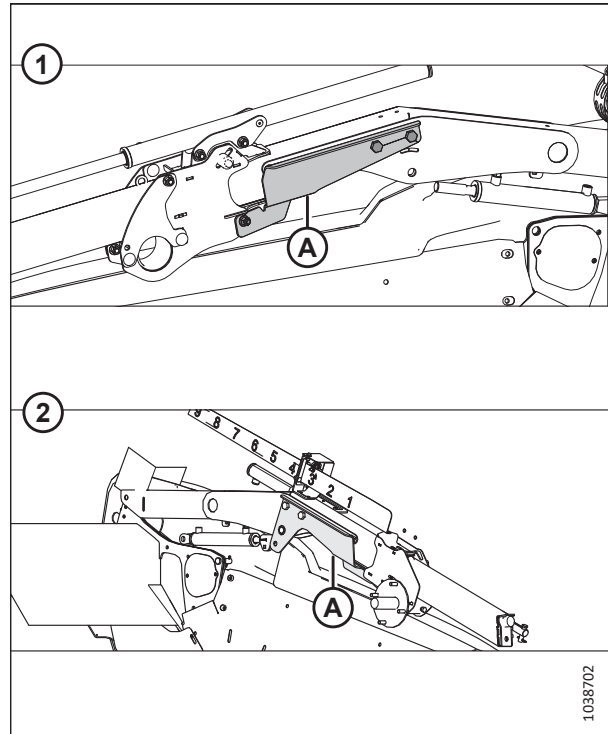


Figure 4.45: Fore-Aft Shipping Supports

1 - Right Reel Arm

2 - Left Reel Arm

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COMPLETING HEADER ASSEMBLY

Preparing right reel arm

3. Retrieve parts bag (MD #357467). For a list of parts, refer to Table 4.1, page 101.

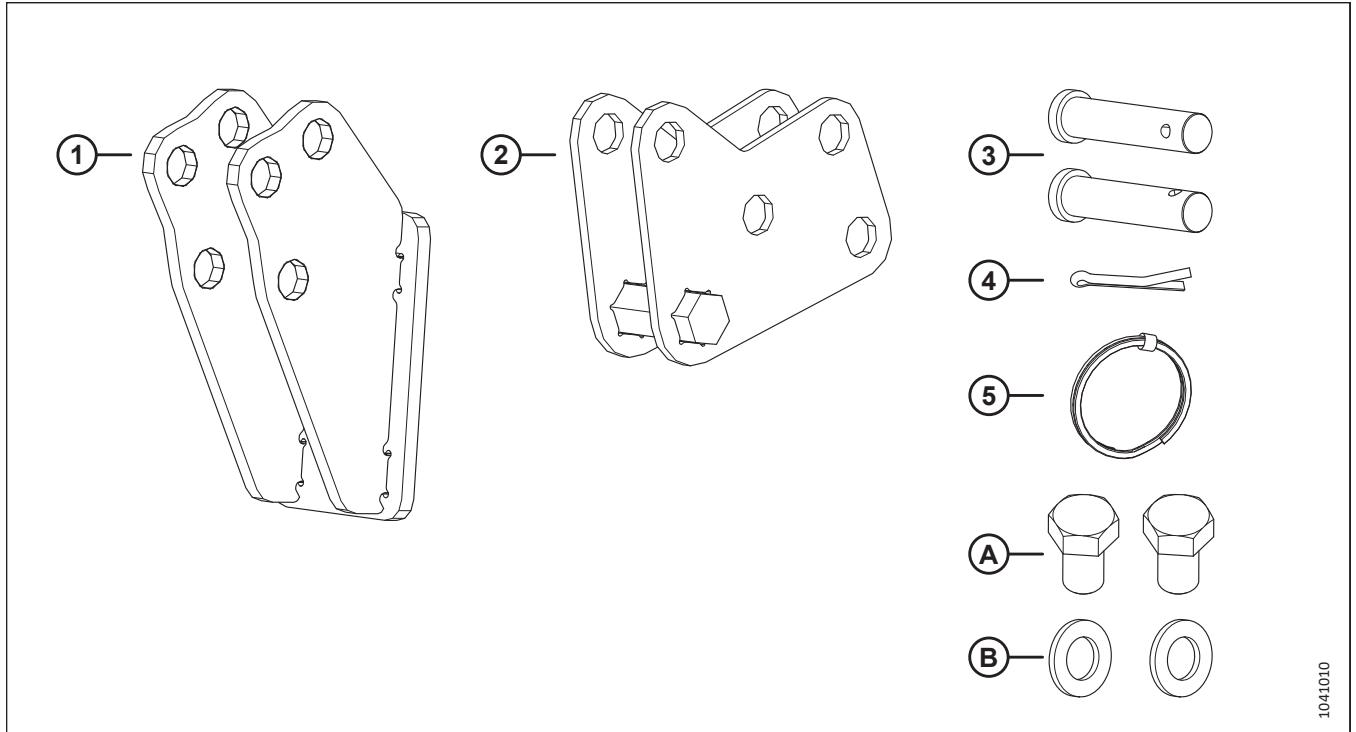


Figure 4.46: Right Reel Arm Fore-Aft Support Parts Bag MD #357467

Table 4.1 Right Reel Arm Fore-Aft Support Parts Bag MD #357467

Ref	Part Number	Description	Quantity
1	311237	SUPPORT – FRONT ANCHOR	1
2	311238	ANCHOR – FORE-AFT	1
3	18704	PIN – CLEVIS	2
4	18607	PIN – COTTER 5/32 DIA X 1.5 ZP	1
5	320207	RING – SPLIT	1
A	136143	BOLT – HEX HD TFL M16 X 2 X 30-10.9 AA1J	2
B	184717	WASHER – FLAT REG M16-200HV-AA1J	2

COMPLETING HEADER ASSEMBLY

4. Install front anchor support (A) on the end of the right reel arm using two M16 x 30 mm bolts (B) as shown. Torque the bolts to 249 Nm (184 lbf·ft).

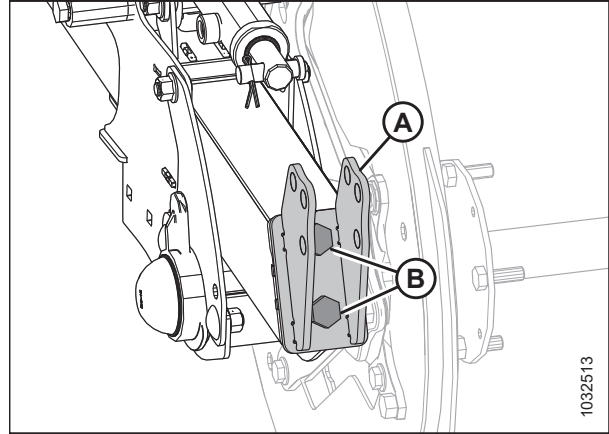


Figure 4.47: Front Anchor Support

5. Attach fore-aft anchor (A) to the front support using two clevis pins (B) and two washers.

IMPORTANT:

Ensure that anchor (A) is installed in the forward position as shown. The cylinder on the left arm is installed in the forward position from the factory; all fore-aft cylinders must be installed in the same position to prevent damage to the reel during operation.

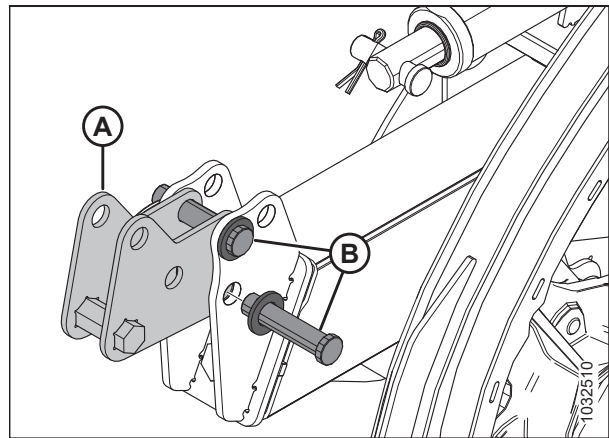


Figure 4.48: Fore-Aft Anchor

6. Secure the clevis pins with split ring (A) and cotter pin (B).

NOTE:

It is easier for the Operator to toggle between the two cylinder positions if the split ring is installed on the top clevis pin.

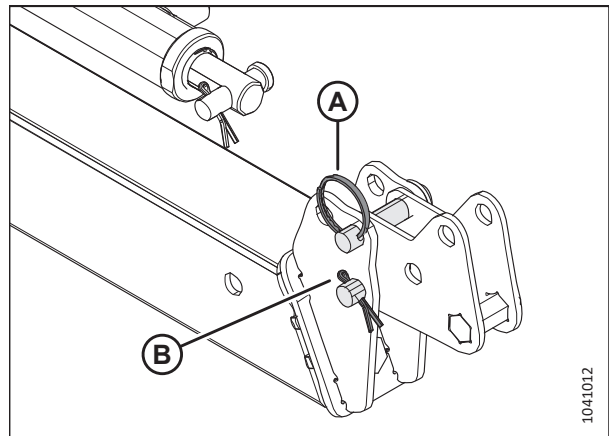


Figure 4.49: Fore-Aft Anchor

COMPLETING HEADER ASSEMBLY

Securing cylinders to reel arms

7. Remove and retain cotter pin (A) and clevis pin (B) from the left fore-aft cylinder rod. Remove the shipping wire securing the cylinder rod to the reel support.

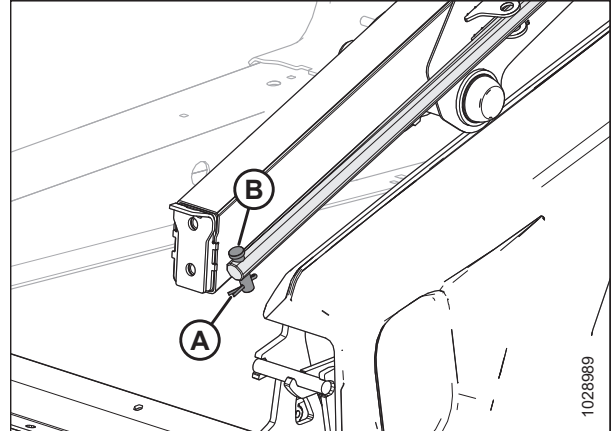


Figure 4.50: Left Reel Arm

8. Remove and retain cotter pin (A) and clevis pin (B) from the right fore-aft cylinder rod.

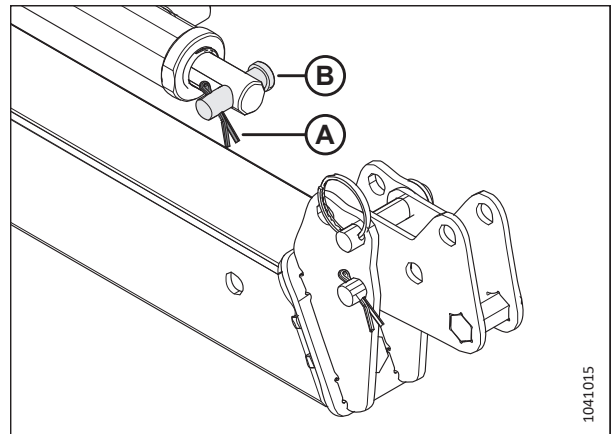


Figure 4.51: Shipping Location of Pins in Right Fore-aft Cylinder

9. Use the windrower controls or move the reel by hand to align the reel arm mounting holes with the fore-aft cylinders.
10. Shut down the engine, and remove the key from the ignition.
11. On the right arm, attach fore-aft cylinder rod (A) to fore-aft anchor (B) with retained clevis pin (C) and cotter pin (D).

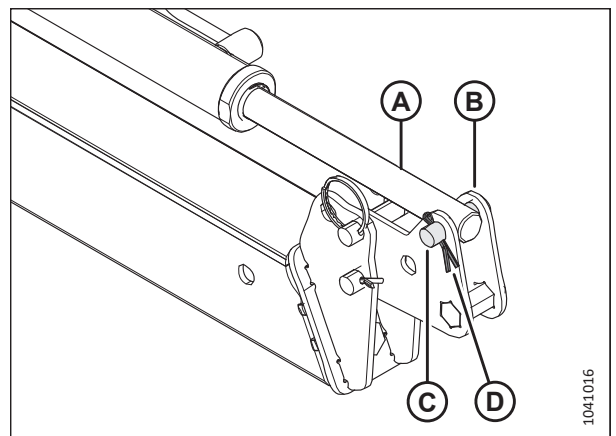


Figure 4.52: Cylinder Secured to Right Reel Arm

COMPLETING HEADER ASSEMBLY

12. On the left arm, attach fore-aft cylinder rod (A) to reel end support (B) with clevis pin and cotter pin (C).

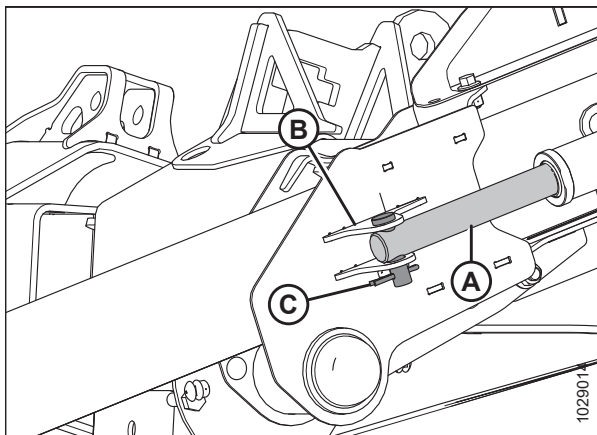


Figure 4.53: Cylinder Secured to Left Reel Arm

13. On the left reel arm, remove hardware (A) and shipping support (B).

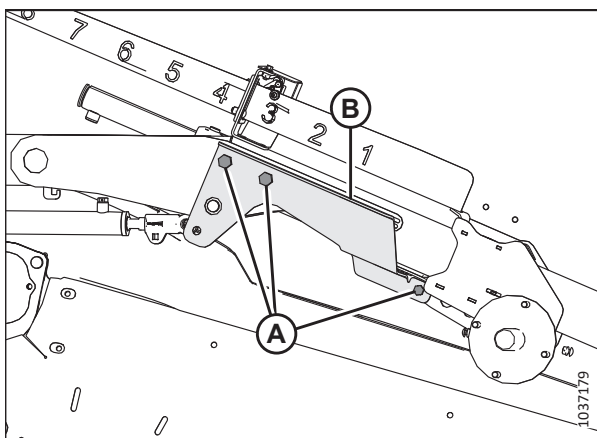


Figure 4.54: Left Reel Arm Shipping Support

14. On the right reel arm, remove hardware (A) and shipping support (B).
15. Phase the fore-aft cylinders by adjusting the reel fully forward and fully rearward two or three times.
16. Shut down the engine, and remove the key from the ignition.

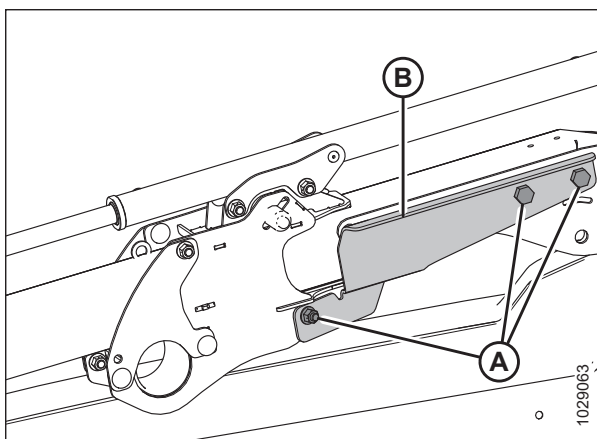


Figure 4.55: Right Reel Arm Shipping Support

COMPLETING HEADER ASSEMBLY

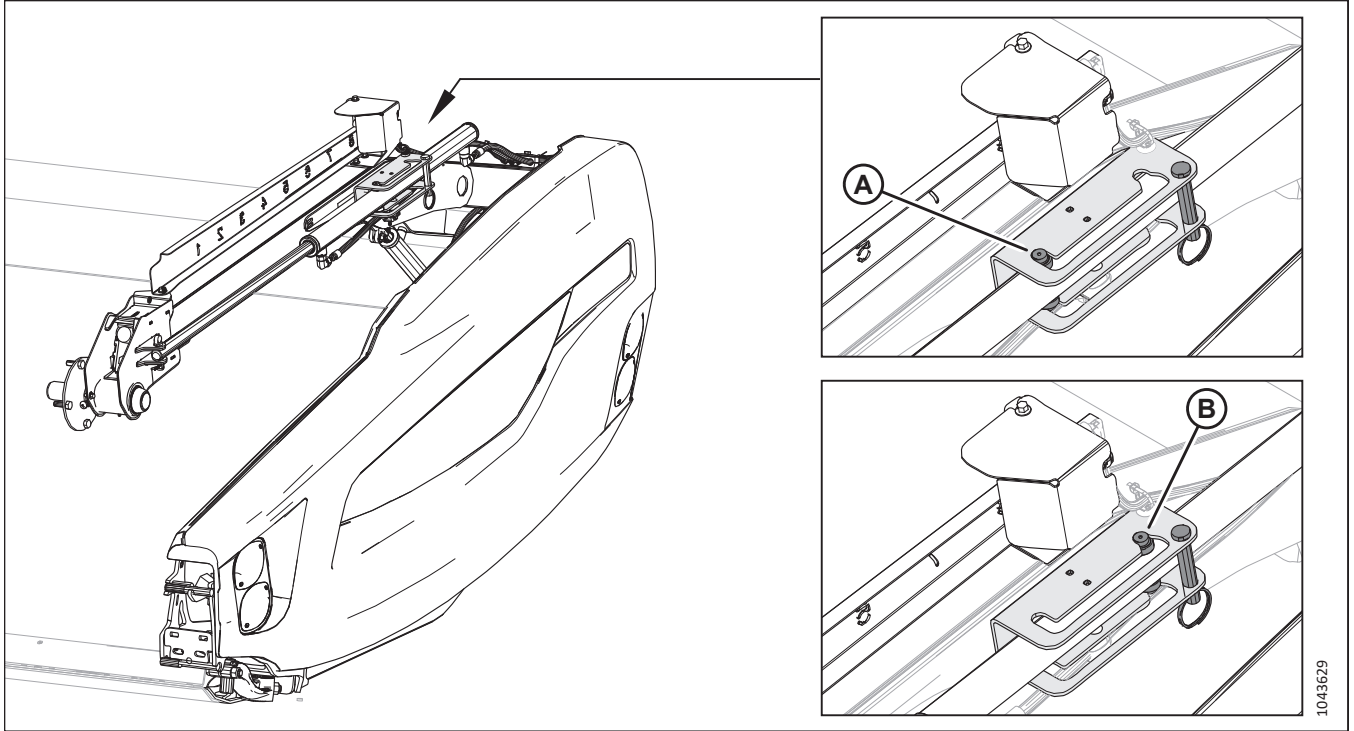


Figure 4.56: Left Arm Cylinder

NOTE:

From the factory, the reel is set in the fore position (A). This allows the reel to reach lodged crop ahead of the cutterbar to carry it onto the drapers. For delicate and shatter-prone crops, it may be necessary to reposition the fore-aft cylinders to the aft position (B). Doing so allows the reel to be positioned over the drapers, which prevents seed loss. For further instructions, refer to the header operator's manual.

NOTE:

To install vertical knives, the fore-aft cylinders will need to be in the aft position. For further instructions, refer to the header operator's manual.

17. Proceed to .

4.9 Connecting Reel to Fore-Aft Cylinders – Double-Reel Headers (Parts Bag MD #347580)

To connect reel arms to fore-aft cylinders on double-reel headers, this procedure includes raising the reel arms, installing anchor supports, attaching fore-aft anchors with clevis pins and cotter pins, and phasing the cylinders by adjusting the reel.

⚠ DANGER

Ensure that all bystanders have cleared the area.

⚠ DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

⚠ CAUTION

The reel fore-aft hydraulic cylinders must be connected to the reel before fore-aft shipping supports (A) are removed. Failure to do so may result in the reel sliding fully forward when the supports are removed.

⚠ CAUTION

Ensure that the header hydraulics are connected to the windrower. Lift the reel to level the reel support arms; this will prevent the reel from moving when the fore-aft shipping supports are removed.

1. Raise the reel arms until they are parallel with the ground.
2. Shut down the engine, and remove the key from the ignition.

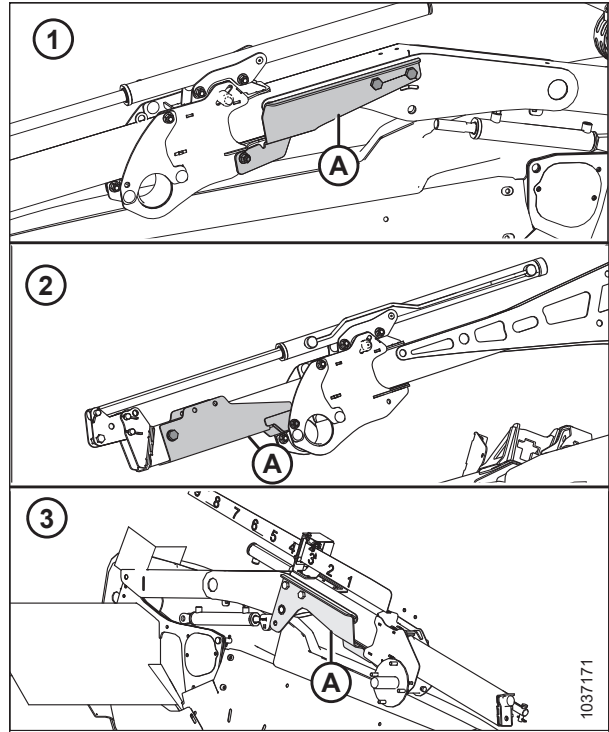


Figure 4.57: Fore-Aft Shipping Supports

1 - Outer Right Reel Arm

2 - Center Arm

3 - Outer Left Reel Arm

COMPLETING HEADER ASSEMBLY

3. Retrieve parts bag MD #347580. For a list of parts, refer to Table 4.2, page 107.

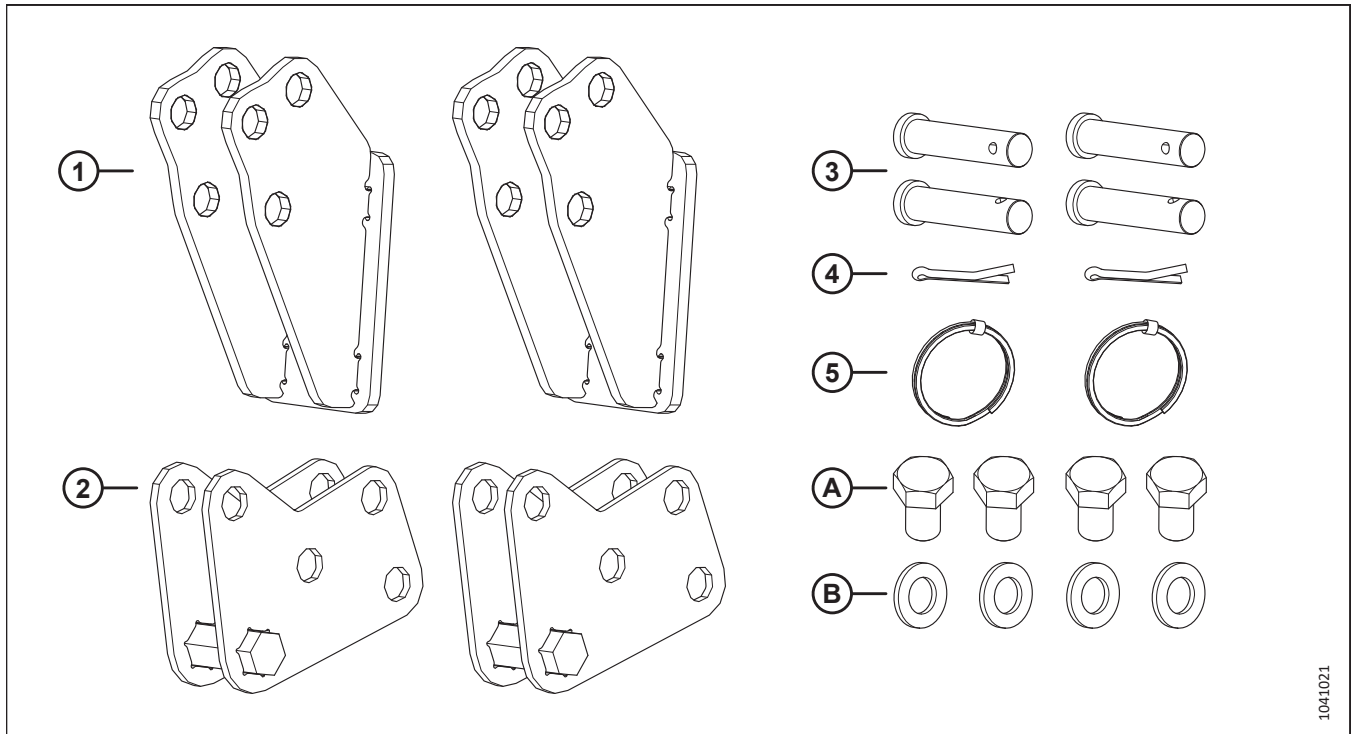


Figure 4.58: Fore-Aft Support Parts Bag MD #347580 for Center Arm and Right Arm

Table 4.2 Fore-Aft Support Parts Bag MD #347580 for Center Arm and Right Arm

Ref	Part Number	Description	Quantity
1	311237	SUPPORT – FRONT ANCHOR	2
2	311238	ANCHOR – FORE-AFT	2
3	18704	PIN – CLEVIS	4
4	18607	PIN – COTTER 5/32 DIA X 1.5 ZP	2
5	320207	RING – SPLIT	2
A	136143	BOLT – HEX HD TFL M16 X 2 X 30-10.9 AA1J	4
B	184717	WASHER – FLAT REG M16-200HV-AA1J	4

COMPLETING HEADER ASSEMBLY

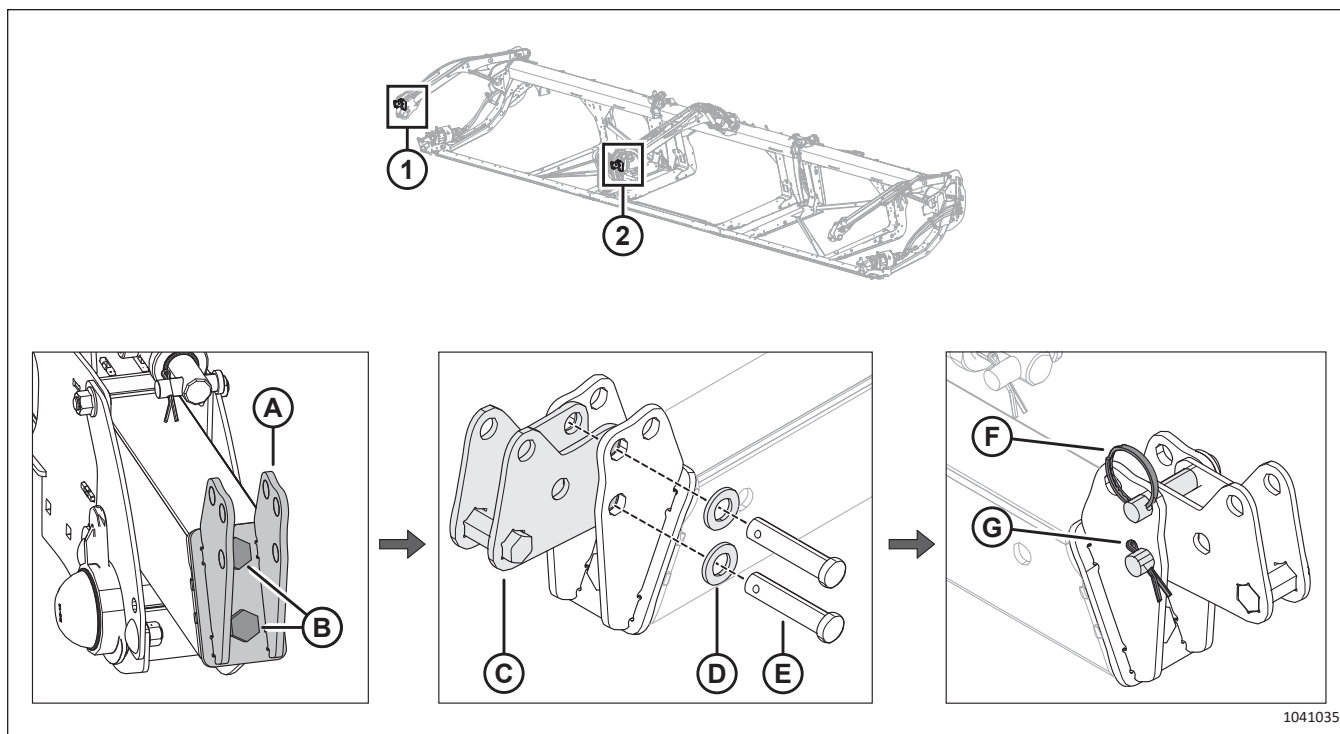


Figure 4.59: Fore-Aft Support Locations

4. Install the contents of parts bag MD #347580 on right arm (1) and center arm (2):
 - a. Install front support (A) using two M16 bolts (B). Tighten the bolts to 249 Nm (184 lbf·ft).
 - b. Attach fore-aft anchor (C) to the front support using two washers (D) and two clevis pins (E).

IMPORTANT:

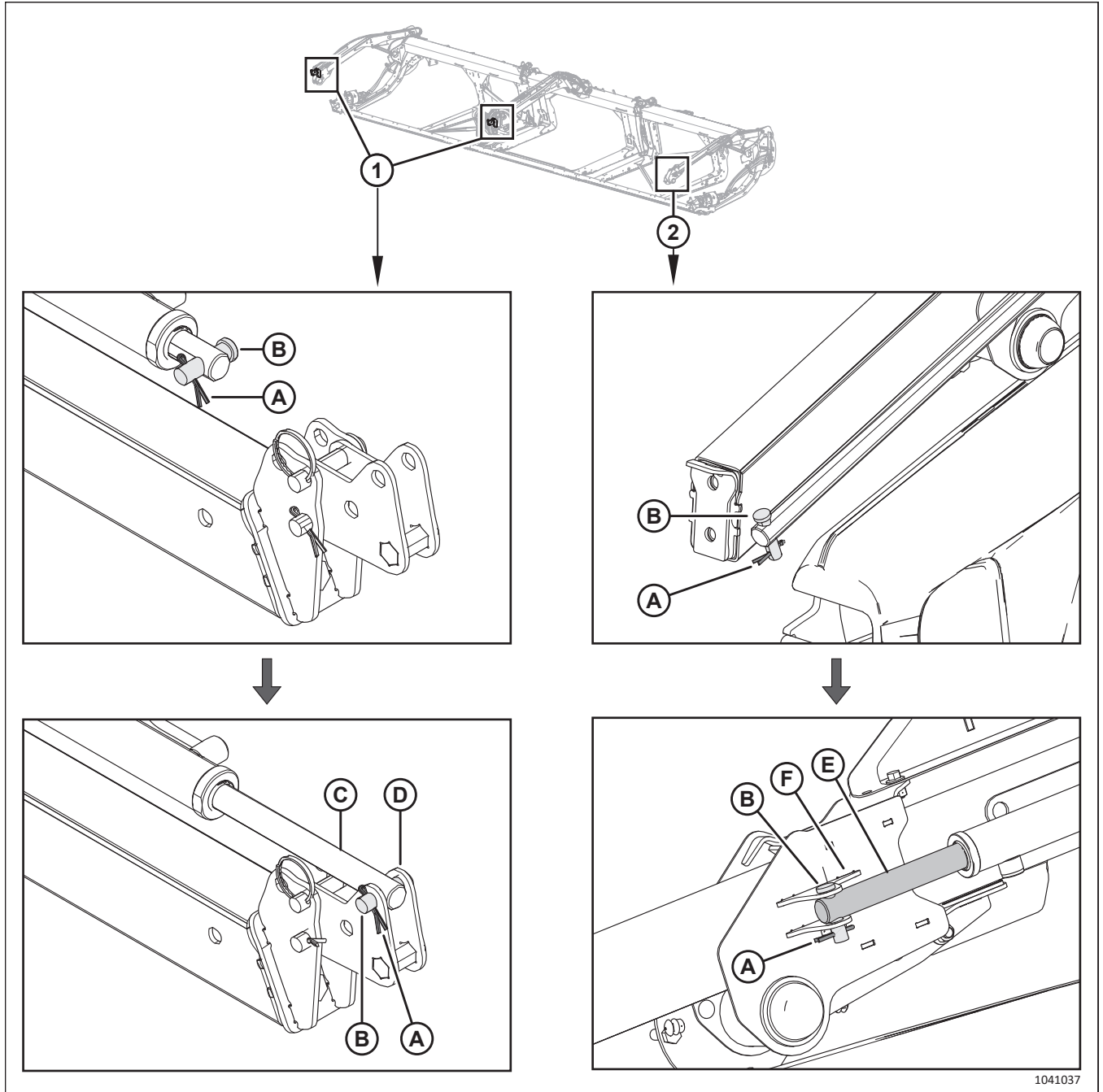
Ensure that anchor (C) is installed in the forward position as shown. The cylinder on the left arm is installed in the forward position from the factory. All fore-aft cylinders must be installed in the same position to prevent damage to the reel during operation.

- c. Secure the top clevis pin with split ring (F). Secure the bottom clevis pin with cotter pin (G).

NOTE:

It is easier for the Operator to toggle between the two cylinder position if the split ring is installed on the top clevis pin.

COMPLETING HEADER ASSEMBLY



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Figure 4.60: Double-Reel Fore-Aft Cylinder Rods

5. Remove and retain cotter pin (A) and clevis pin (B) from all three fore-aft cylinder rods.
6. Use the windrower controls or move the reel by hand to align the reel arm mounting holes with the fore-aft cylinders.
7. Shut down the engine, and remove the key from the ignition.
8. On right and center arms (1), secure cylinder rod (C) to anchor (D) using clevis pin (B) and cotter pin (A).
9. On left reel arm (2), secure cylinder rod (E) to support (F) using clevis pin (B) and cotter pin (A).

COMPLETING HEADER ASSEMBLY

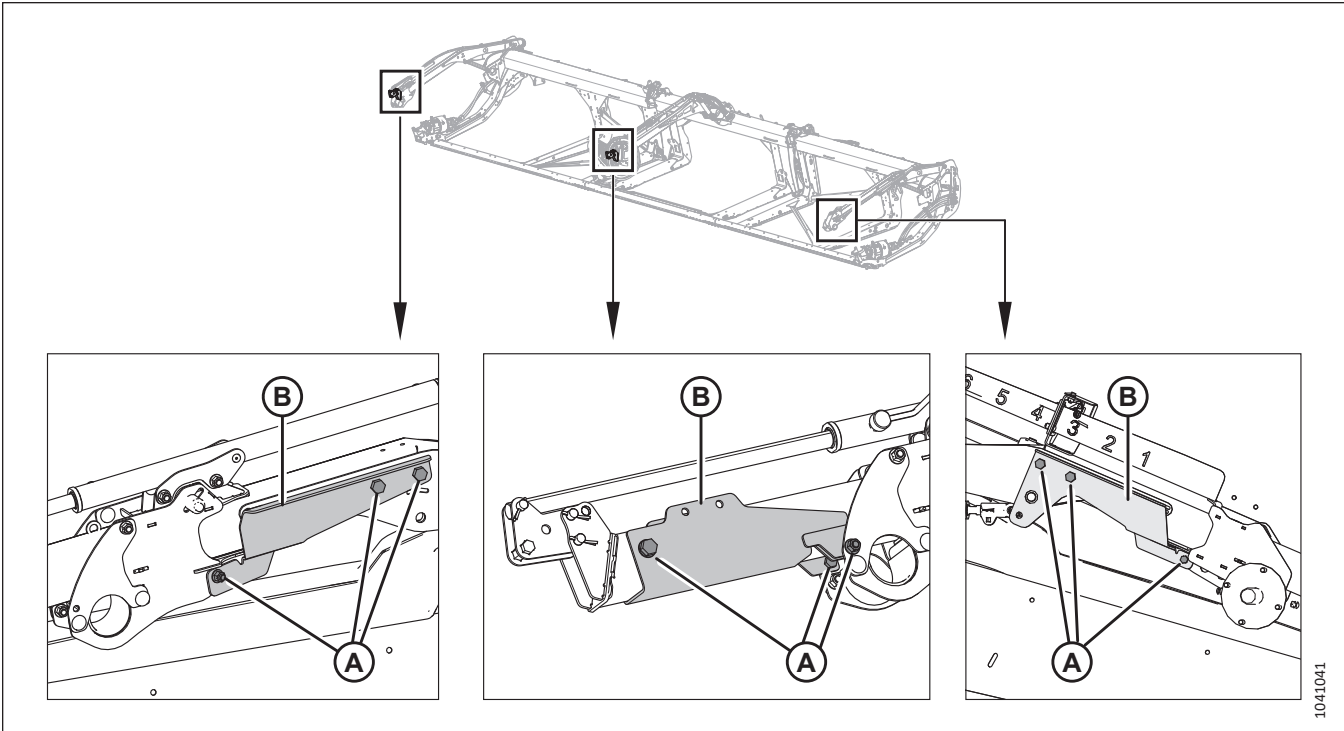


Figure 4.61: Shipping Supports

10. Remove hardware (A) from all three shipping supports (B). Discard these parts.
11. Phase the fore-aft cylinders by adjusting the reel fully forward and fully rearward two or three times.
12. Shut down the engine, and remove the key from the ignition.

COMPLETING HEADER ASSEMBLY

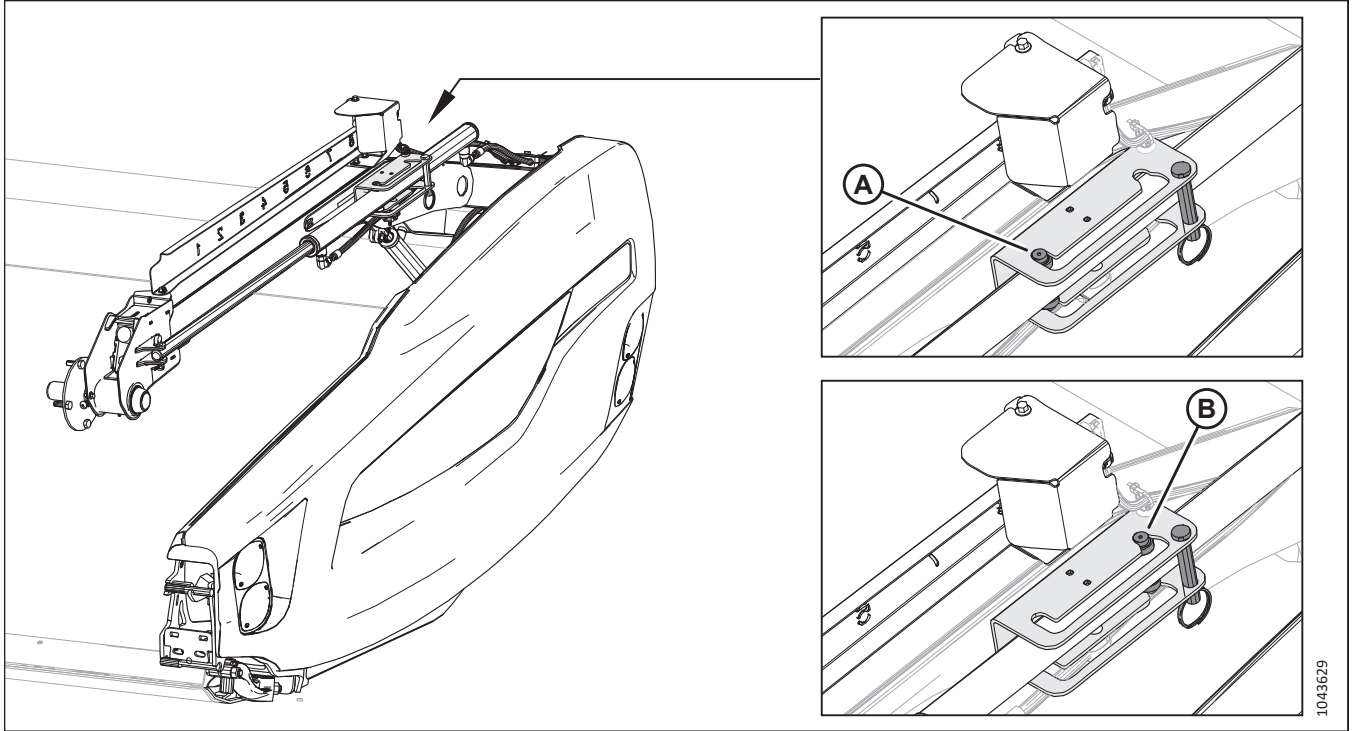


Figure 4.62: Left Arm Cylinder

NOTE:

From the factory, the reel is set in the fore position (A). This allows the reel to reach lodged crop ahead of the cutterbar to carry it onto the drapers. For delicate and shatter-prone crops, it may be necessary to reposition the fore-aft cylinders to the aft position (B). Doing so allows the reel to be positioned over the drapers, which prevents seed loss. For further instructions, refer to the header operator's manual.

NOTE:

To install vertical knives, the fore-aft cylinders will need to be in the aft position. For further instructions, refer to the header operator's manual.

4.10 Installing Reel Fore-Aft Hose Clamp – Double Reel Headers

A hose clamp for the reel fore-aft hoses must be installed at the center arm.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Adjust the reel fully forward.
2. Shut down the engine, and remove the key from the ignition.
3. Reinstall the fore-aft hose clamp at location (A) as follows:
 - a. Discard the nut installed on the bottom of the clamp.
 - b. Align the bottom of the clamp with the mark on the hoses.
 - c. Ensure that there is a loop in the hose bundle to allow the reel to move forward.
 - d. Secure the clamp by installing the clamp bolt into the reel arm.

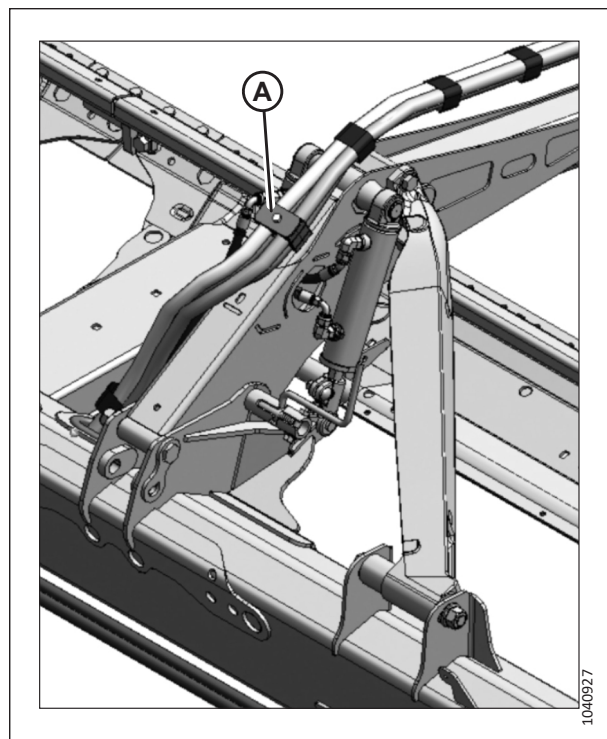


Figure 4.63: Reel Arm Fore-Aft Hose Clamp – Double-Reel

4.11 Installing Tine Tubes and Cam Control Linkages

These procedures apply to headers with one-piece frames, as opposed to wide headers shipped with the frame split on one end.

CAUTION

Wear gloves to protect yourself from cuts and scrapes while working on the reel.

4.11.1 Installing Tine Tube onto Reel – Nine-Bat (Parts Bag MD #347634 or 347635)

One tine tube has been removed for shipping purposes. The tine tube must be installed for the reel to operate properly.

1. Retrieve the parts bag for your header size:

- **D215:** retrieve parts bag MD #347634.
- **D220:** retrieve parts bag MD #347635.

For a list of parts, refer to Table 4.3, page 113.

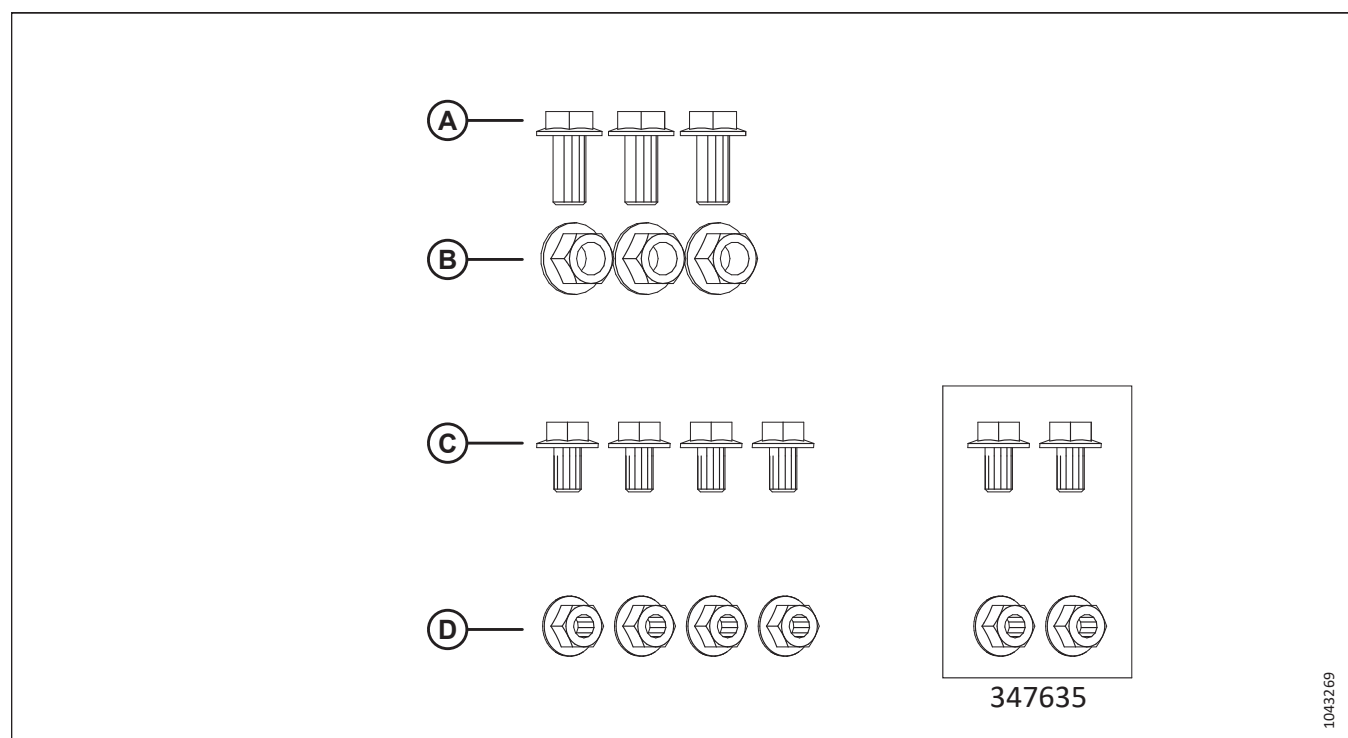
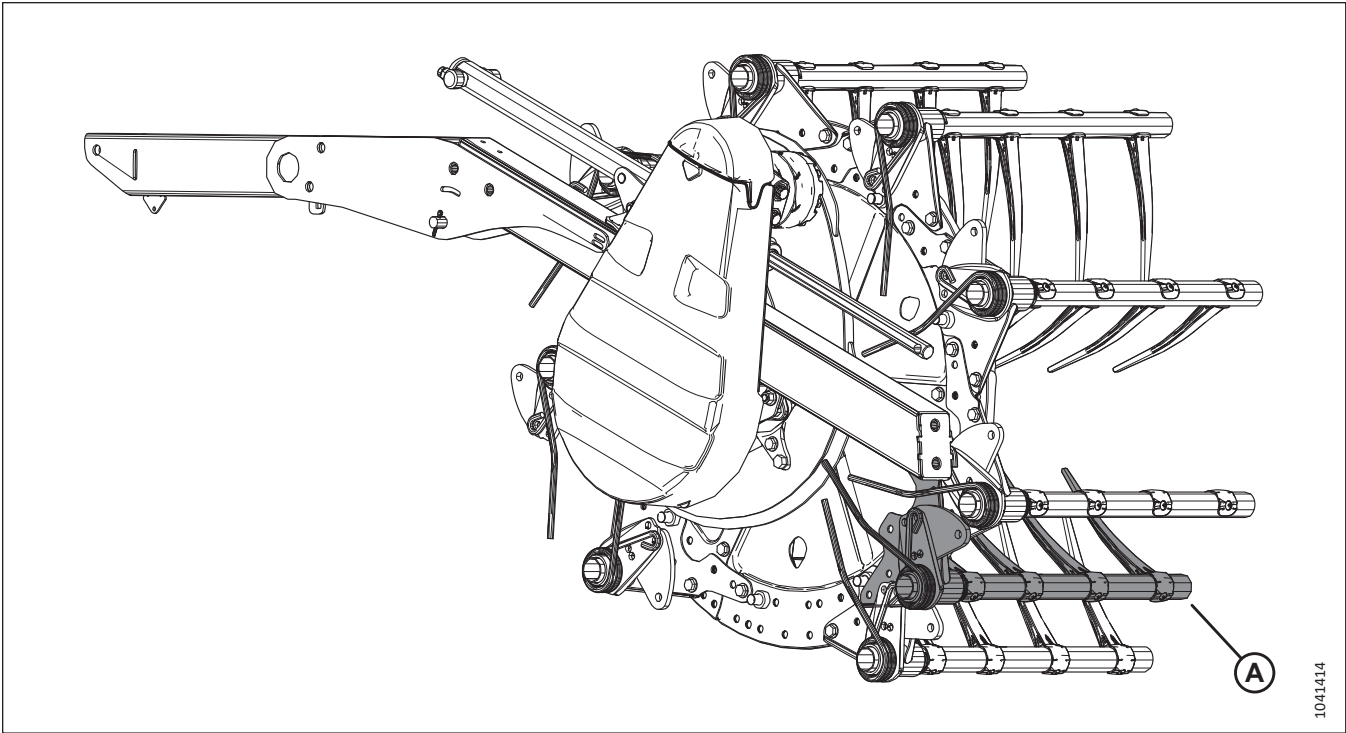


Figure 4.64: Parts Bags MD #347634 or 347635

Table 4.3 Parts Bags MD #347634 or 347635

Ref	Part Number	Description	Bag 347634	Bag 347635
			Quantity	Quantity
A	320175	BOLT – HEX FLG HD TFL M12 X 1.75 X 25 - SPCL - 8.8 - ZINC	3	3
B	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	3	3
C	136151	BOLT – HEX FLG HD TFL M10 X 1.5 X 16 - 8.8 - AA1J	4	6
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5 -10	4	6

COMPLETING HEADER ASSEMBLY



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Figure 4.65: Tine Tube in Shipping Position

2. Remove the detached tine tube (A) from the reel.

COMPLETING HEADER ASSEMBLY

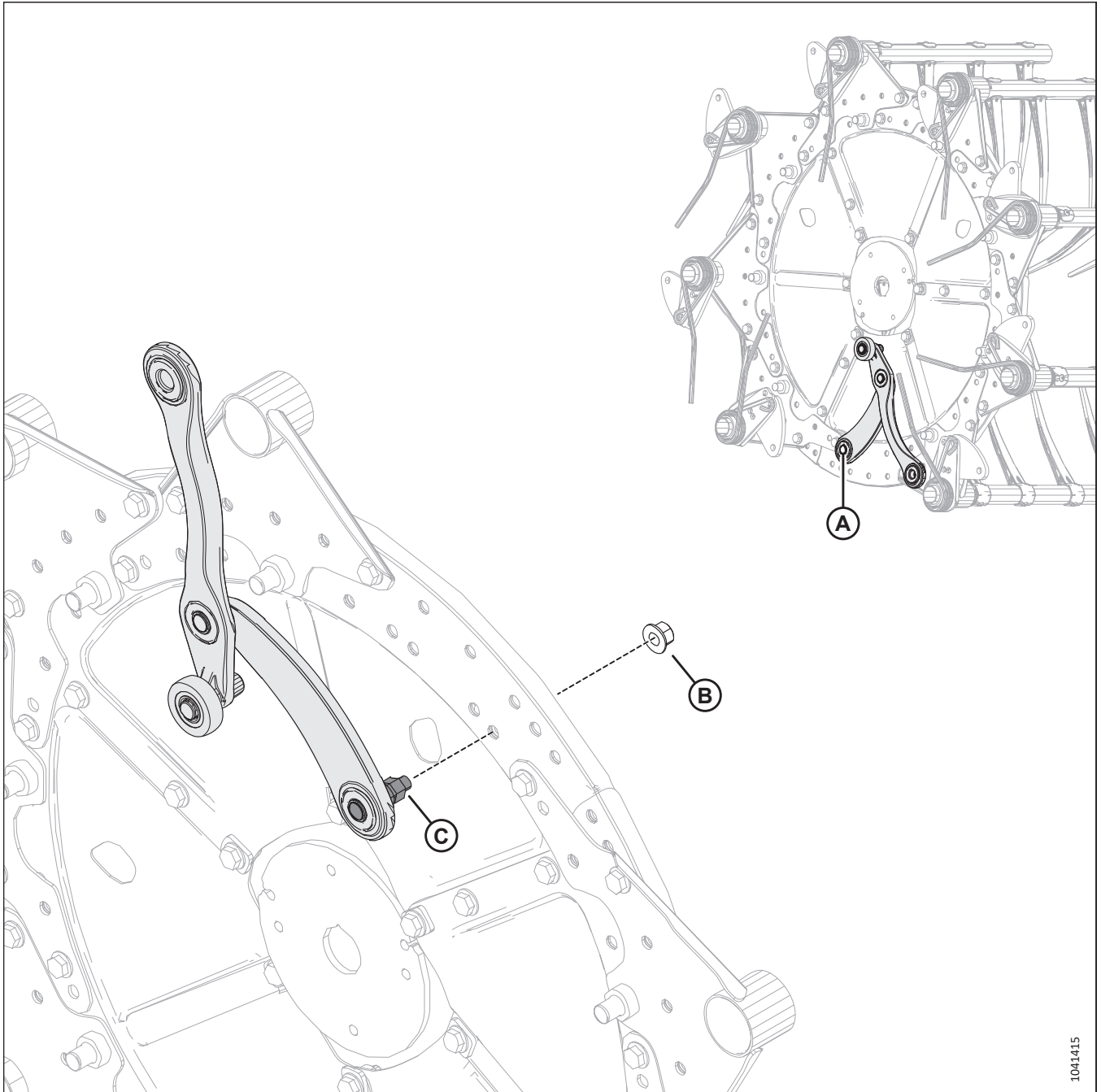


Figure 4.66: Cam Linkage Associated with Removed Tine Tube

3. Locate the one cam linkage (A) attached to the disc where there is no tine tube installed.
4. Remove and retain M12 nut (B) from cam linkage stud (C).

NOTE:

The M12 nut is the same as the M12 nuts supplied in the parts bag.

5. Pull the stud end of the cam linkage out of the disc.

COMPLETING HEADER ASSEMBLY

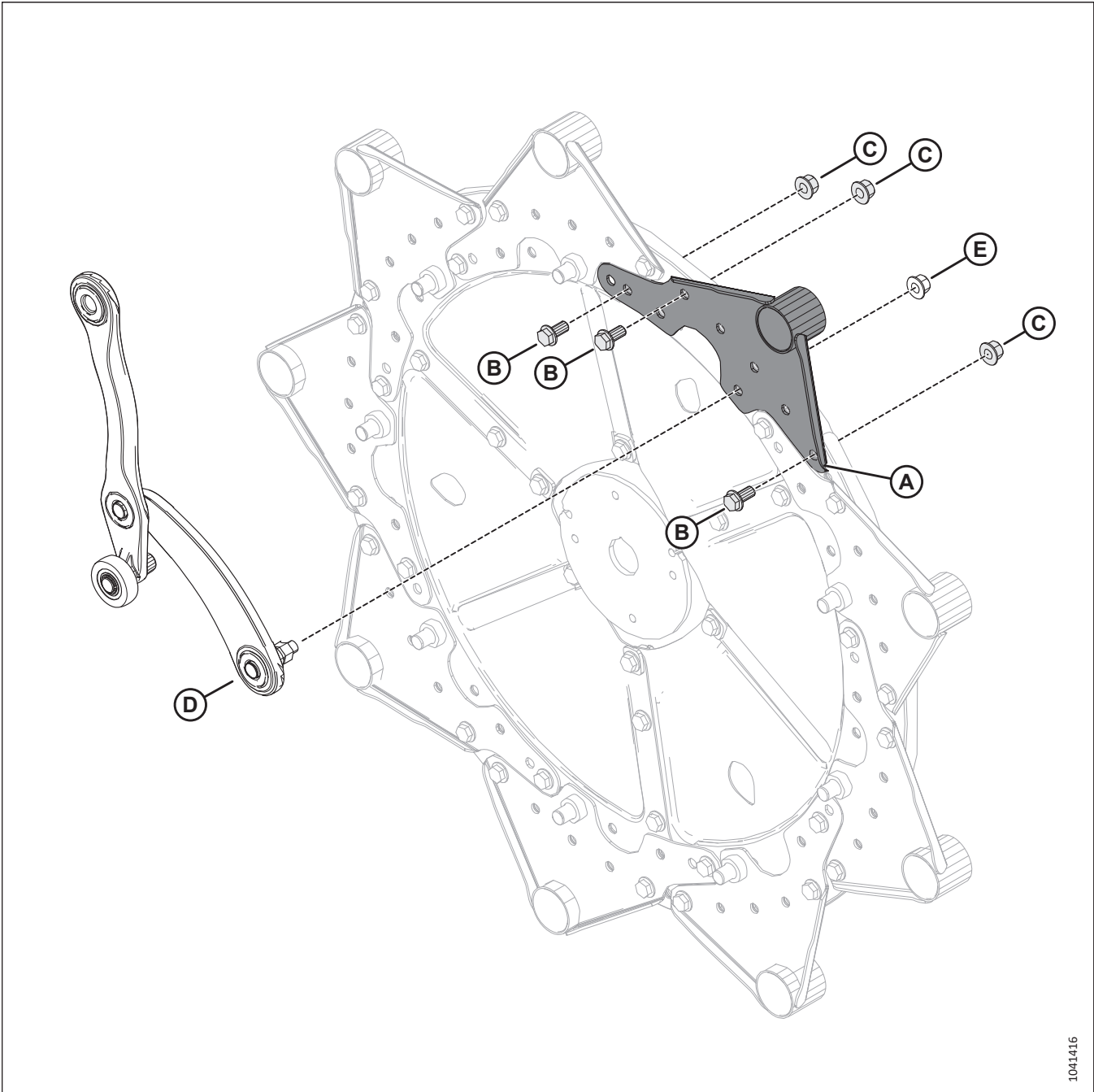


Figure 4.67: Tine Tube and Cam Linkage Installation on Cam End Disc

6. Attach tine tube (A) to the disc using three M12 bolts (B), and nuts (C).
7. Insert cam linkage stud (D) through the tine tube and secure with M12 nut (E).

COMPLETING HEADER ASSEMBLY

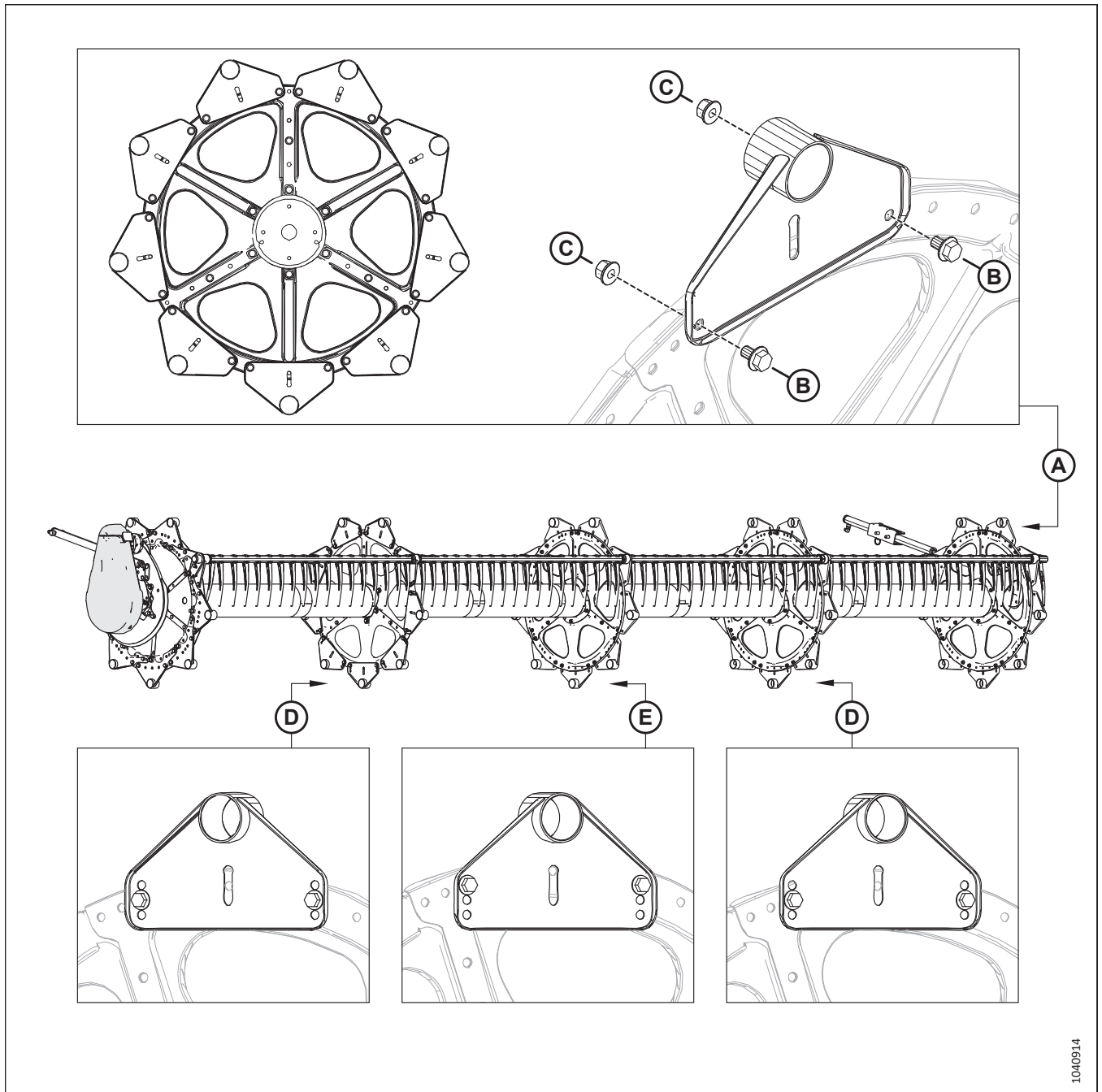


Figure 4.68: Tine Tube Installation on Mid and Tail End Discs

8. On tail end disc (A), attach the tine tube using two M10 bolts (B) and nuts (C).
9. On mid discs (D) and (E), align the tine tube mounting holes as shown, and attach it using two M10 bolts and nuts.
10. Starting on the right of the reel and working toward the left, tighten the mounting nuts:
 - Tighten all nuts on a disc before proceeding to the next disc.
 - Tighten the M12 nuts on the cam end disc to 68.5 Nm (51 lbf-ft).
 - Tighten the M10 nuts on the remaining discs to 39 Nm (29 lbf-ft).
 - Mark tightened nuts with a paint marker.

4.11.2 Attaching Cam Arms

Cam arms are disconnected from the tine tubes for shipping. They will need to be reconnected.

⚠ DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

⚠ DANGER

Ensure that all bystanders have cleared the area.

1. Retrieve the parts bag containing bearing shims (A) and bolts (B) required to attached the cam arms. Refer to Table 4.4, page 118 for a list of parts.

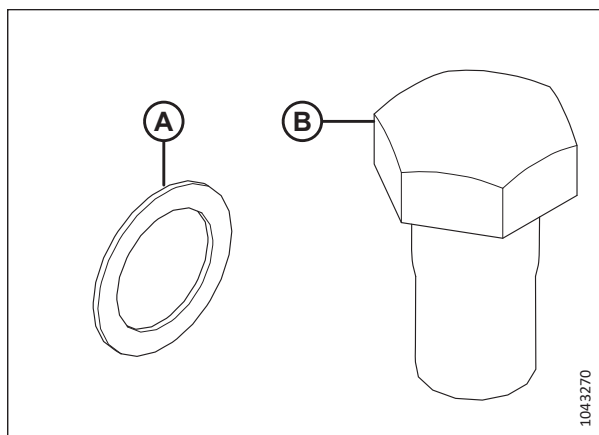


Figure 4.69: Removed Linkage Parts

Table 4.4 Removed Linkage Parts

Ref	Part Number	Description	9-Bat Single Reel Bag 357743	6-Bat Single Reel Bag 357392	5/6-Bat Double Reel Bag 347627
			Quantity	Quantity	Quantity
A	137529	SHIM – CRANK BEARING	7	4	8
B	228316	BOLT – HEX HD M16 X 1.5 X 30-SPCL-8.8-ZINC	7	4	8

NOTE:

The cam arm installation is easier when it is completed one row at a time. Leave the shipping wire on other rows until you are ready to rotate the reel to the next position.

2. Adjust the reel fully forward.
3. Shut down the engine, and remove the key from the ignition.

COMPLETING HEADER ASSEMBLY

4. Rotate tine bar crank (A). Position link (B) so that the attachment holes in the bar crank are aligned with the hole in the link.
5. Install bolt (C) in the link. Position shim (D) on the bolt so that the shim is between link (B) and tine bar crank (A).

IMPORTANT:

Ensure that shim (D) is installed in the correct location to prevent damage to the bar crank.

NOTE:

The bolts are precoated with threadlocker.

6. Realign link (B) and tine bar crank (A) and the thread in bolt (C).
7. Torque the bolts to 165 Nm (120 lbf-ft).
8. Repeat Step 4, [page 119](#) to Step 6, [page 119](#) for the remaining tine bars.
9. Proceed to the applicable procedure:
 - [4.12 Installing Single-Reel Endshields, Nine-Bat – \(Parts Bag MD #368328\), page 120](#) for installing nine-bat single-reel endshields.
 - [4.13 Installing Single-Reel Endshields, Six-Bat – \(Parts Bag MD #368326\), page 135](#) for installing six-bat single-reel endshields.
 - [4.14 Installing Double-Reel Endshields – Parts Bag MD #368322 \(Five-Bat Reels\) or MD #368323 \(Six-Bat Reels\), page 148](#) for installing five-bat or six-bat double-reel endshields.

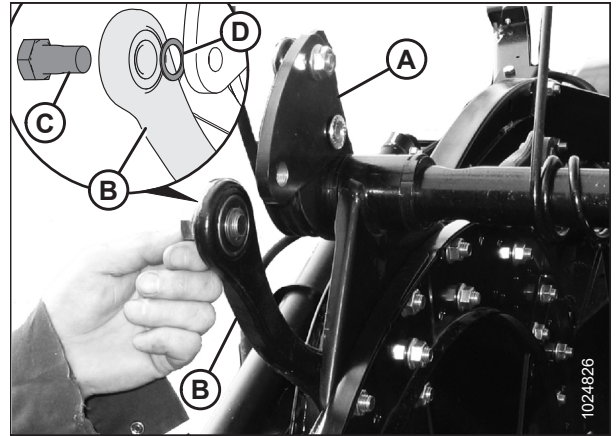


Figure 4.70: Bar Crank Attachment Holes and Link Alignment

4.12 Installing Single-Reel Endshields, Nine-Bat – (Parts Bag MD #368328)

The reel endshields on single-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

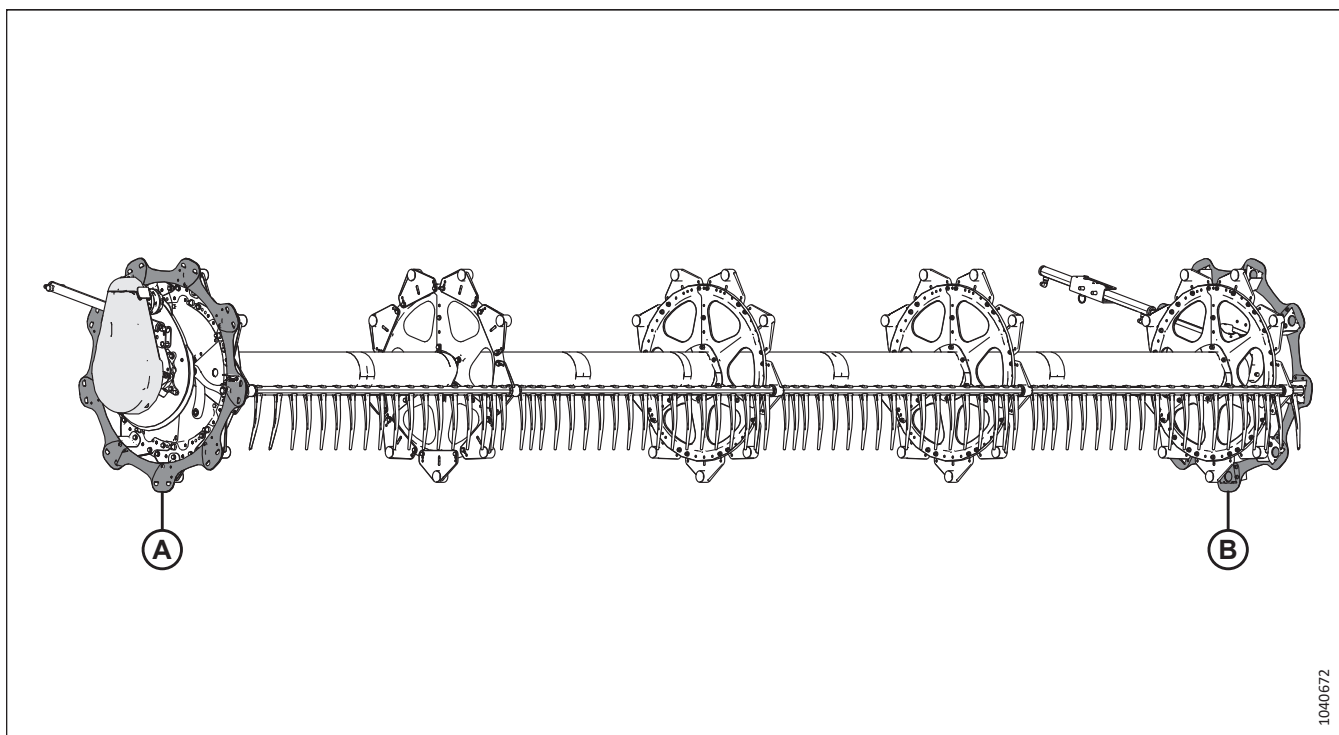


Figure 4.71: Nine-Bat Single-Reel

1. Retrieve parts bag MD #368328.

NOTE:

Parts lists and illustrations are included in the procedures referenced in the steps below.

2. Install cam-end endshields (A). For instructions, refer to [4.12.1 Installing Single-Reel Endshields at Cam End – Nine-Bat, page 121](#).
3. Install tail-end endshields (B). For instructions, refer to [4.12.2 Installing Single-Reel Endshields at Tail End – Nine-Bat, page 128](#).

4.12.1 Installing Single-Reel Endshields at Cam End – Nine-Bat

To install single-reel endshields at the cam end, this procedure involves positioning and securing endshield segments, installing rubber reel end paddles, attaching the endshield assembly to the cam-end reel disc, and finally tightening all hardware.

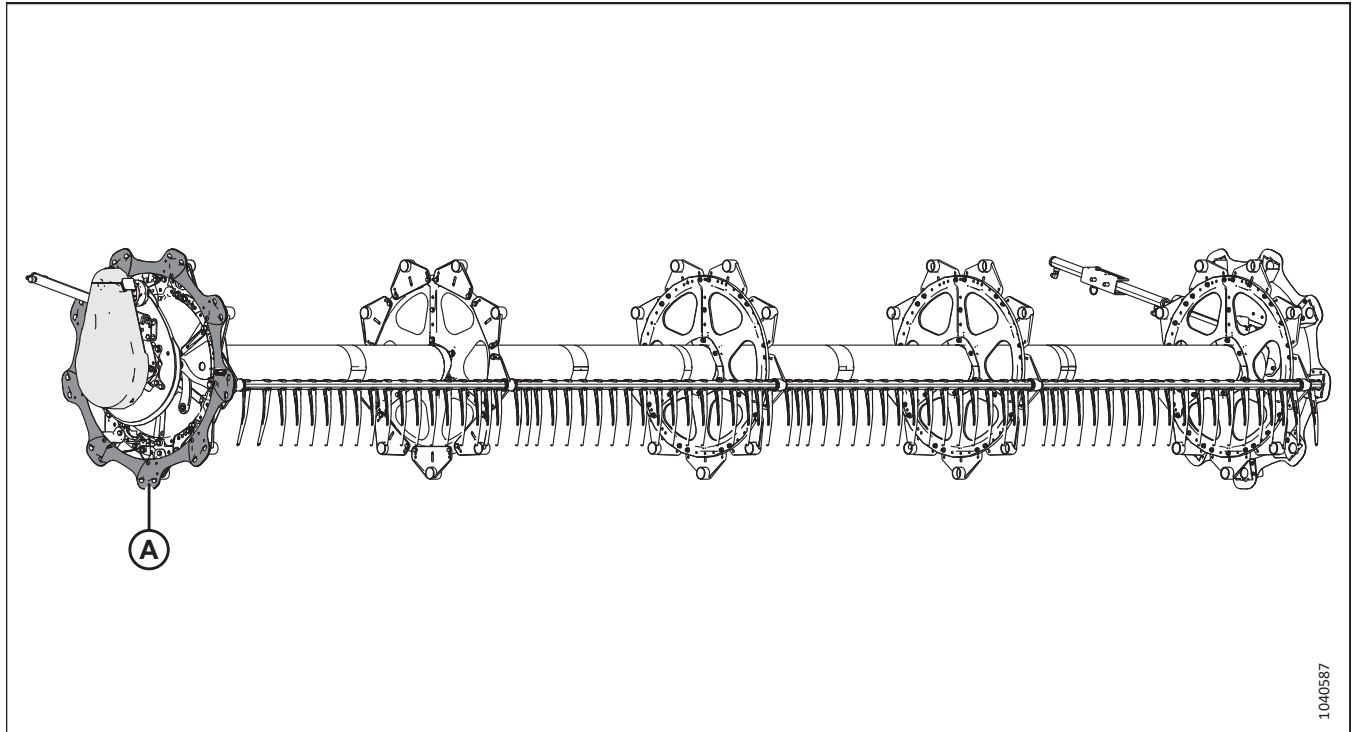


Figure 4.72: Nine-Bat Single-Reel

NOTE:

Cam-end endshields (A) are installed on the right of the reel.

1040587

COMPLETING HEADER ASSEMBLY

- Retrieve parts bag (1) labeled with MD #368328. From that bag, retrieve the parts listed in Table 4.5, page 122.

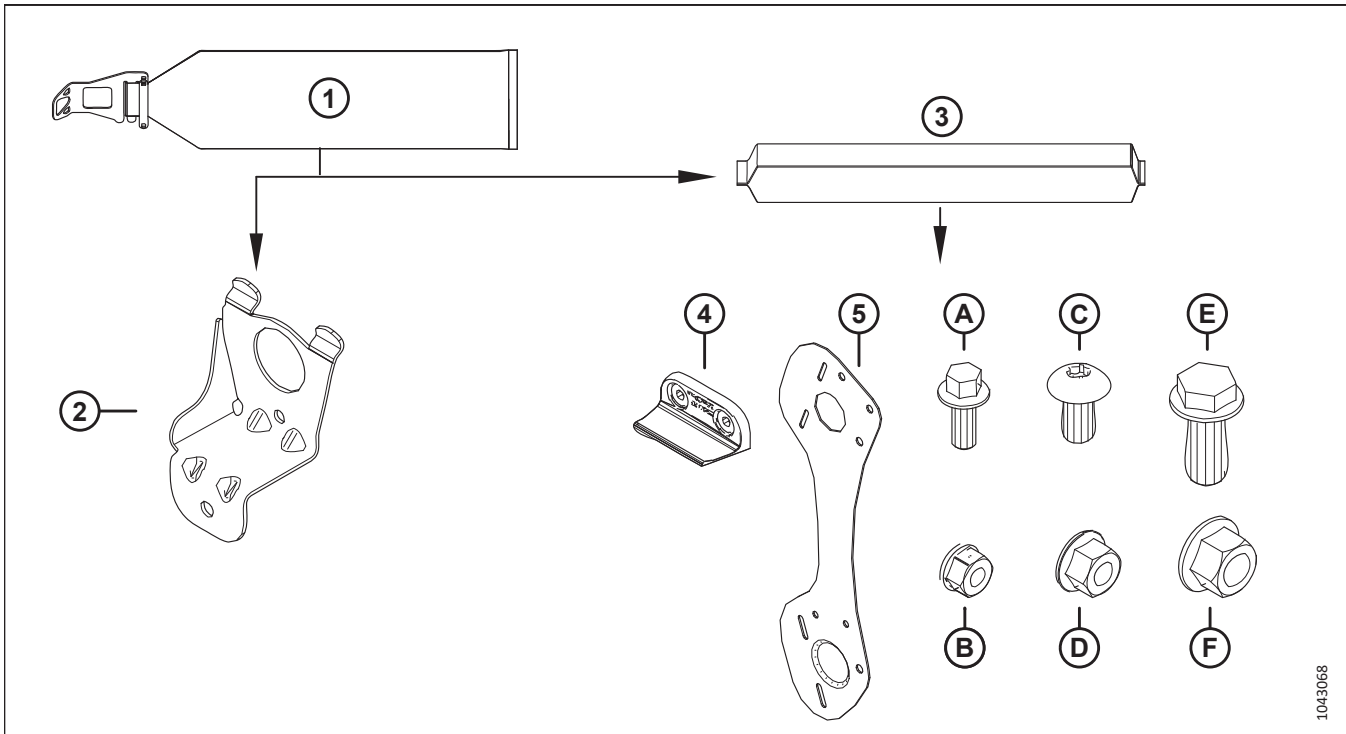


Figure 4.73: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Table 4.5 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Ref	Part Number	Description	Quantity
2	311964 – see note ¹	SUPPORT – CAM END	9
3	368337	ENDSHLD BAG – 9 BAT RH OB CAM NOTE: This parts bag is labeled “RH” and/or MD #368337.	1
4	313035	PADDLE – REEL END; HYTREL	3
5	311863	SHIELD – OUTBOARD RH 9 BAT	9
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	9
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	9
E	320180	BOLT – HEX FLG HD M12 X 1.75 X 30-SPCL-8.8-ZINC	9
F	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	9

- These parts are marked with a red cable tie to indicate that they belong with parts bag (3) (“RH”, MD #368337) which should also be marked with a red cable tie.

COMPLETING HEADER ASSEMBLY

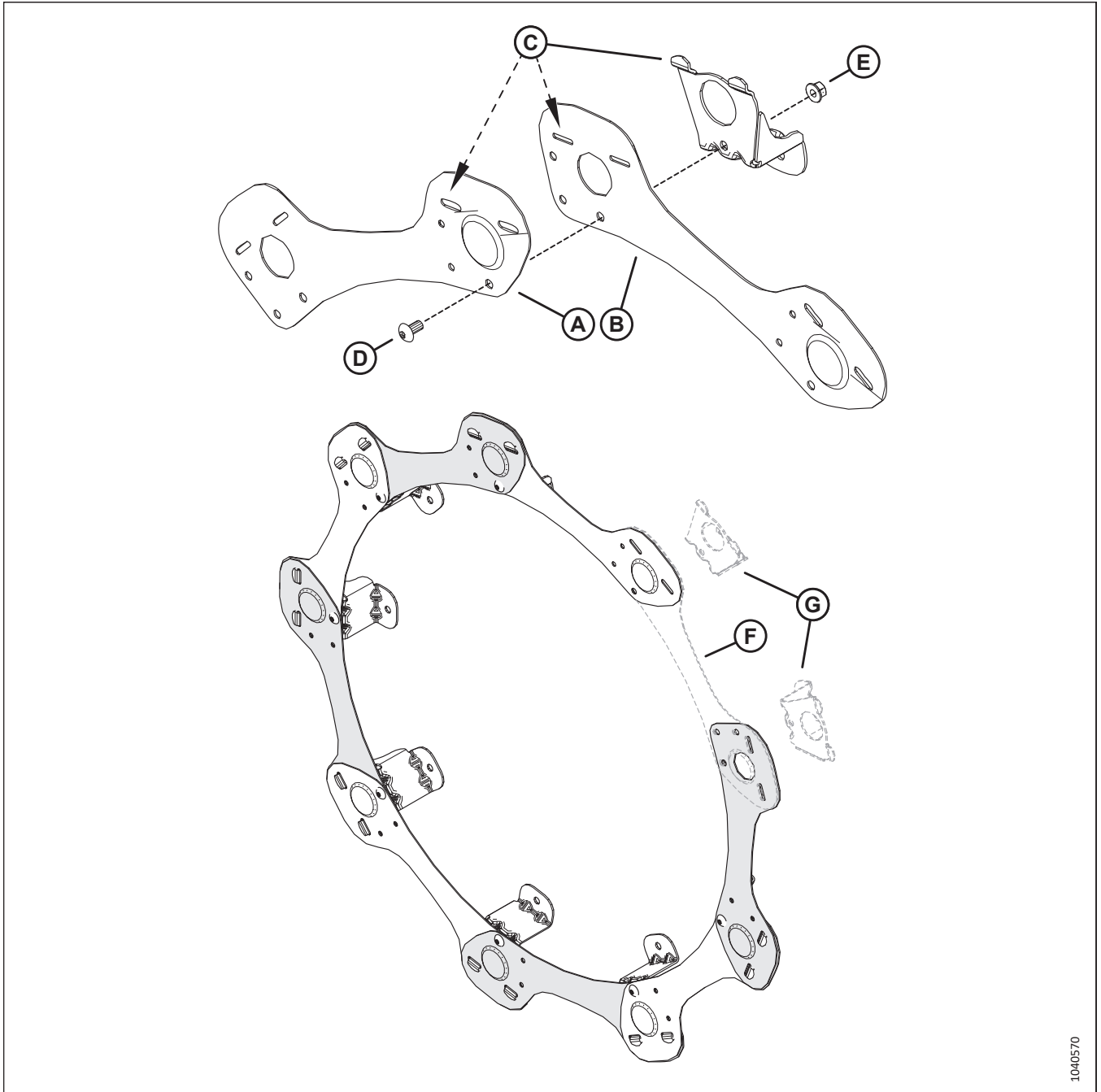
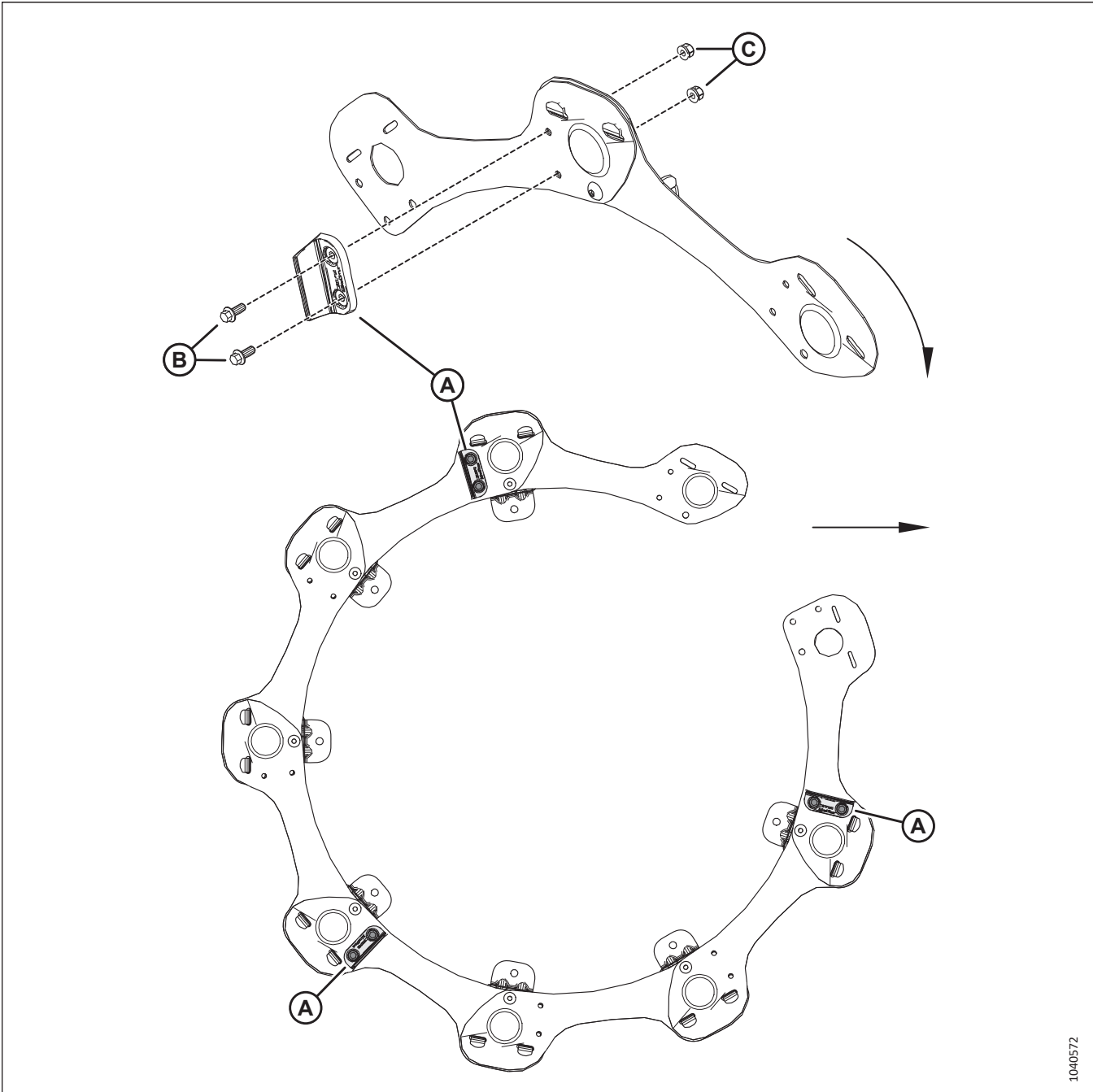


Figure 4.74: Nine-Bat Reel – Initial Endshield Assembly

2. Position one endshield segment (A) on top of another segment (B). Engage endshield support tabs (C) through both segments.
3. Secure the segments with M10 Torx® screw (D) (MD #136395) and nut (E) (MD #135799). Do **NOT** tighten the hardware yet.
4. Repeat the previous step for the remaining segments, except do **NOT** install last segment (F) and two supports (G) yet.

COMPLETING HEADER ASSEMBLY



1040572

Figure 4.75: Nine-Bat Reel – Initial Endshield Assembly

5. Install three rubber reel end paddles (A) on the outboard face of the endshield assembly using two M8 bolts (B) (MD #136300) and nuts (C) (MD #135337) per paddle.

IMPORTANT:

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

COMPLETING HEADER ASSEMBLY

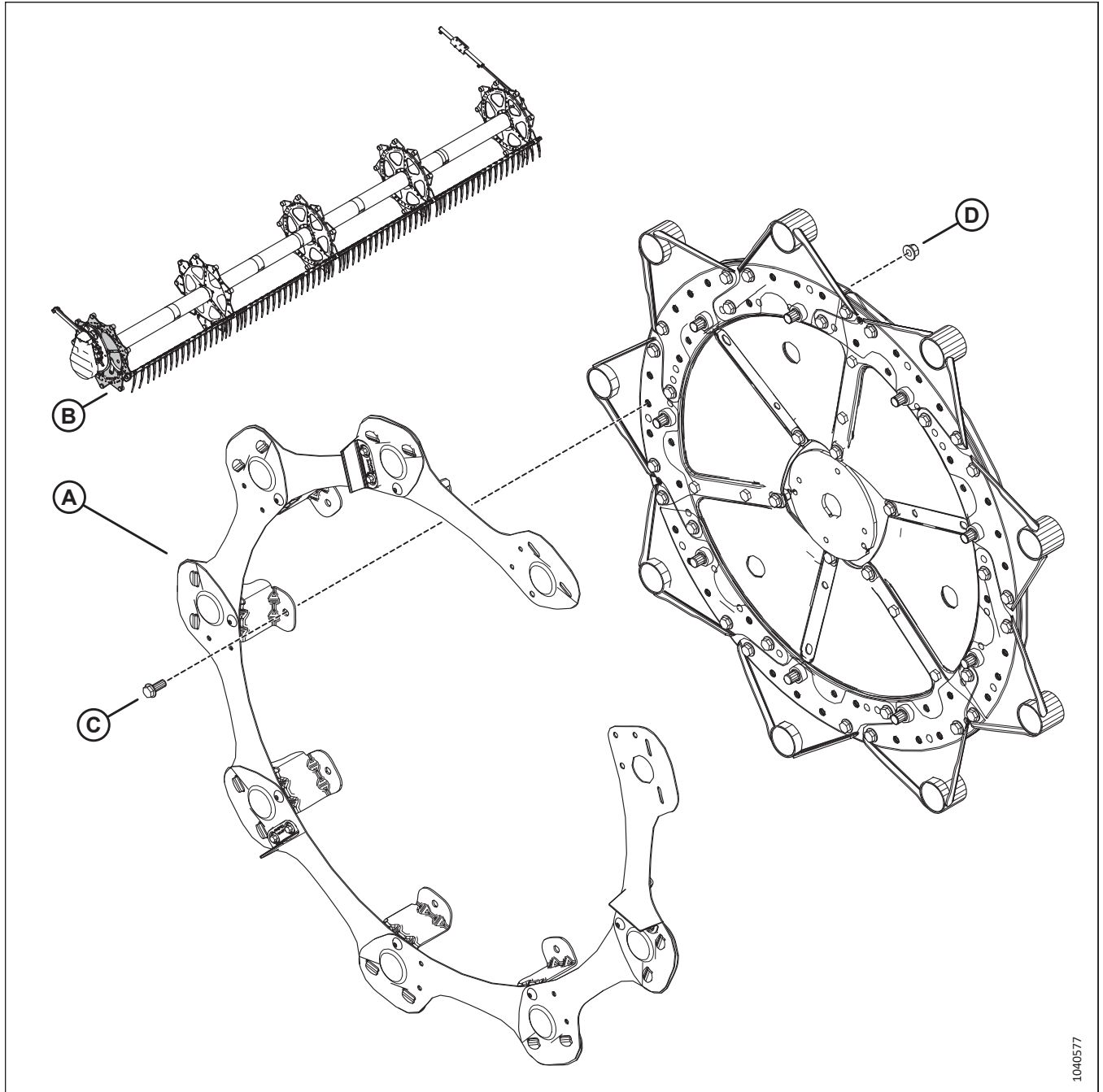


Figure 4.76: Nine-Bat Reel – Initial Endshield Assembly

6. Attach endshield assembly (A) to the cam-end reel disc (B) with one M12 bolt (C) (MD #320180) and nut (D) (MD #136431). Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

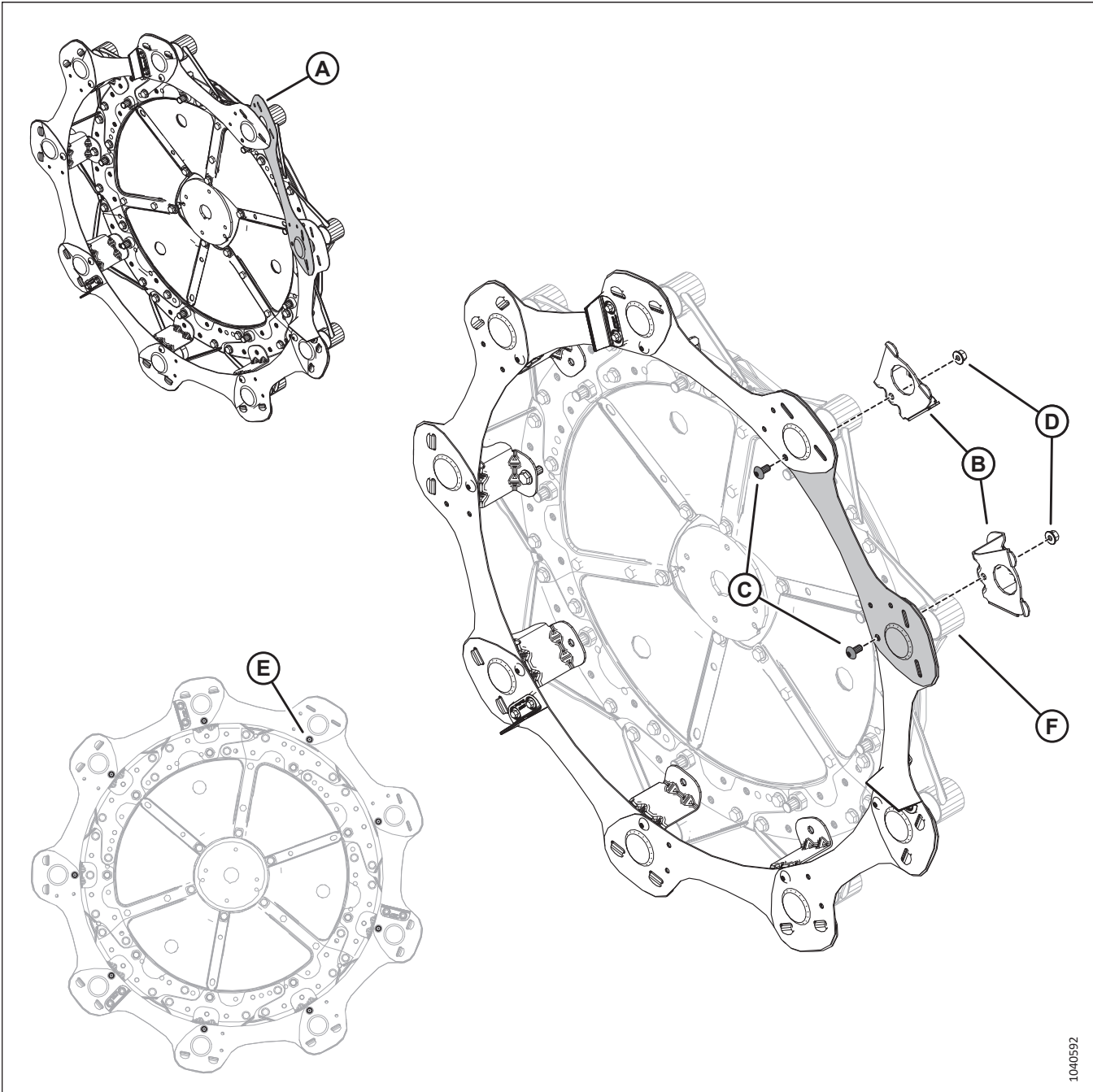


Figure 4.77: Nine-Bat Reel – Initial Endshield Assembly

7. Position ninth endshield (A) into place.
8. Insert the tabs of two endshield supports (B) through the endshield segments. Secure the endshield supports with two M10 Torx® screws (C) (MD #136395) and nuts (D) (MD #135799).
9. Tighten all nine M10 Torx® screws (E) to 39 Nm (29 lbf-ft).
10. Install the endshield supports on tine tubes (F).

COMPLETING HEADER ASSEMBLY

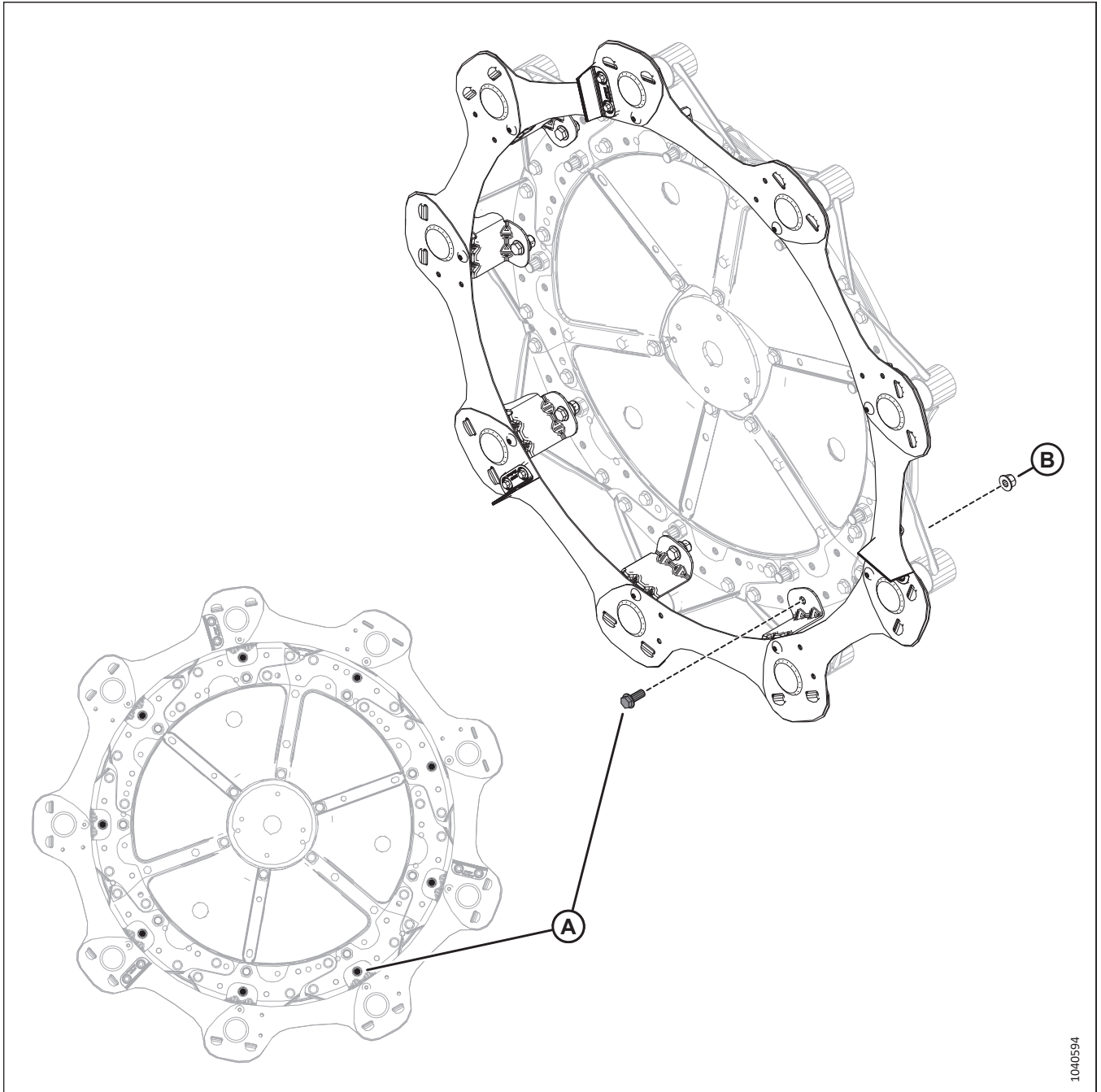


Figure 4.78: Nine-Bat Reel – Initial Endshield Assembly

11. Secure the remaining eight endshield supports to the reel disc using M12 bolts (A) (MD #320180) and nuts (B) (MD #136431).
12. Tighten all nine M12 bolts (A) to 69 Nm (51 lbf-ft).

4.12.2 Installing Single-Reel Endshields at Tail End – Nine-Bat

To install single-reel endshields at the tail end, this procedure involves positioning and securing endshield segments, installing rubber reel end paddles, attaching the endshield assembly to the tail-end reel disc, and finally tightening all hardware.

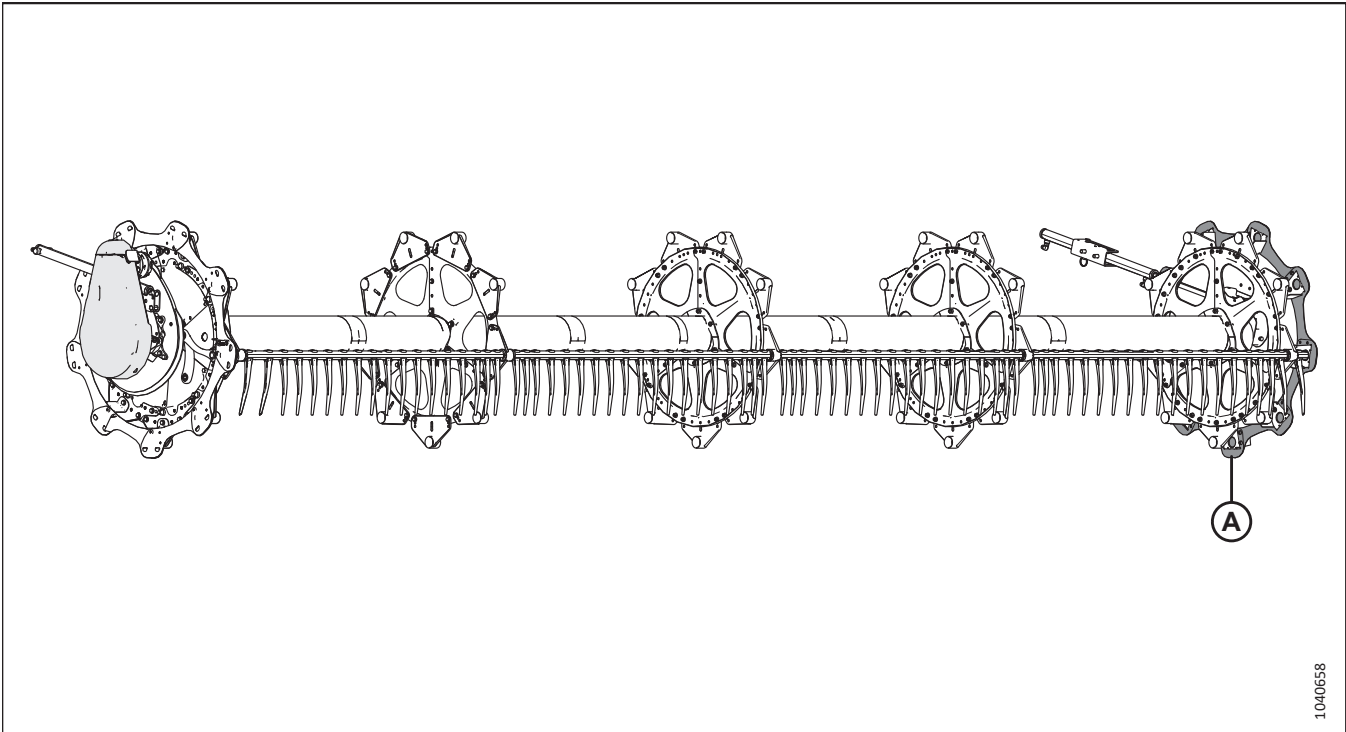


Figure 4.79: Nine-Bat Single-Reel

NOTE:

Tail-end endshields (A) are installed on the left of the reel.

1040658

COMPLETING HEADER ASSEMBLY

- Retrieve parts bag (1) labeled with MD #368328. From that bag, retrieve the parts listed in Table 4.6, page 129.

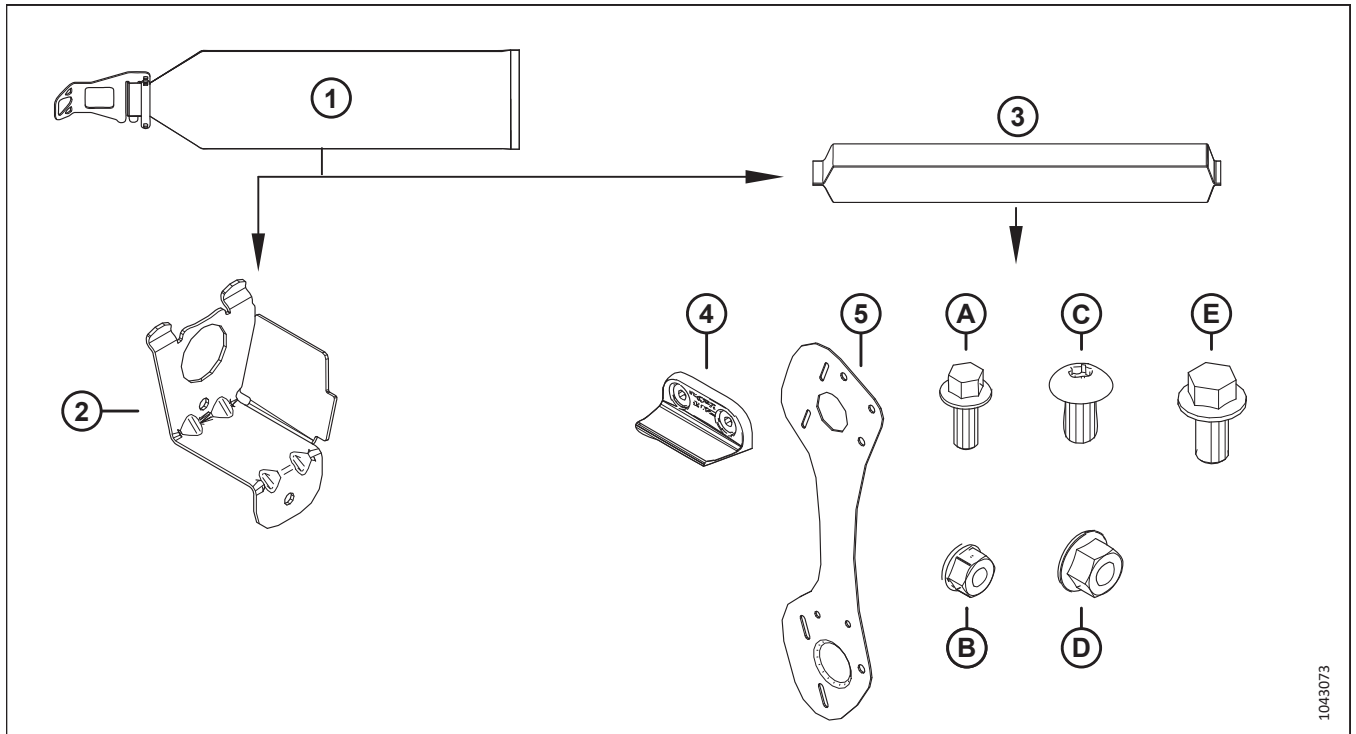


Figure 4.80: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Table 4.6 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Ref	Part Number	Description	Quantity
2	311965 – see note ²	SUPPORT – TAIL END	9
3	368336	ENDSHLD BAG – 9 BAT LH OB TAIL NOTE: This parts bag is labeled “LH” and/or MD #368336.	1
4	313035	PADDLE – REEL END; HYTREL	3
5	311864	SHIELD – OUTBOARD LH 9 BAT	9
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	9
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	18
E	152655	BOLT – HEX FLG HD M10 X 1.5 X 20-8.8-AA1J	9

- These parts are marked with a yellow cable tie to indicate that they belong with parts bag (3) (“LH”, MD #368336) which should also be marked with a yellow cable tie.

COMPLETING HEADER ASSEMBLY

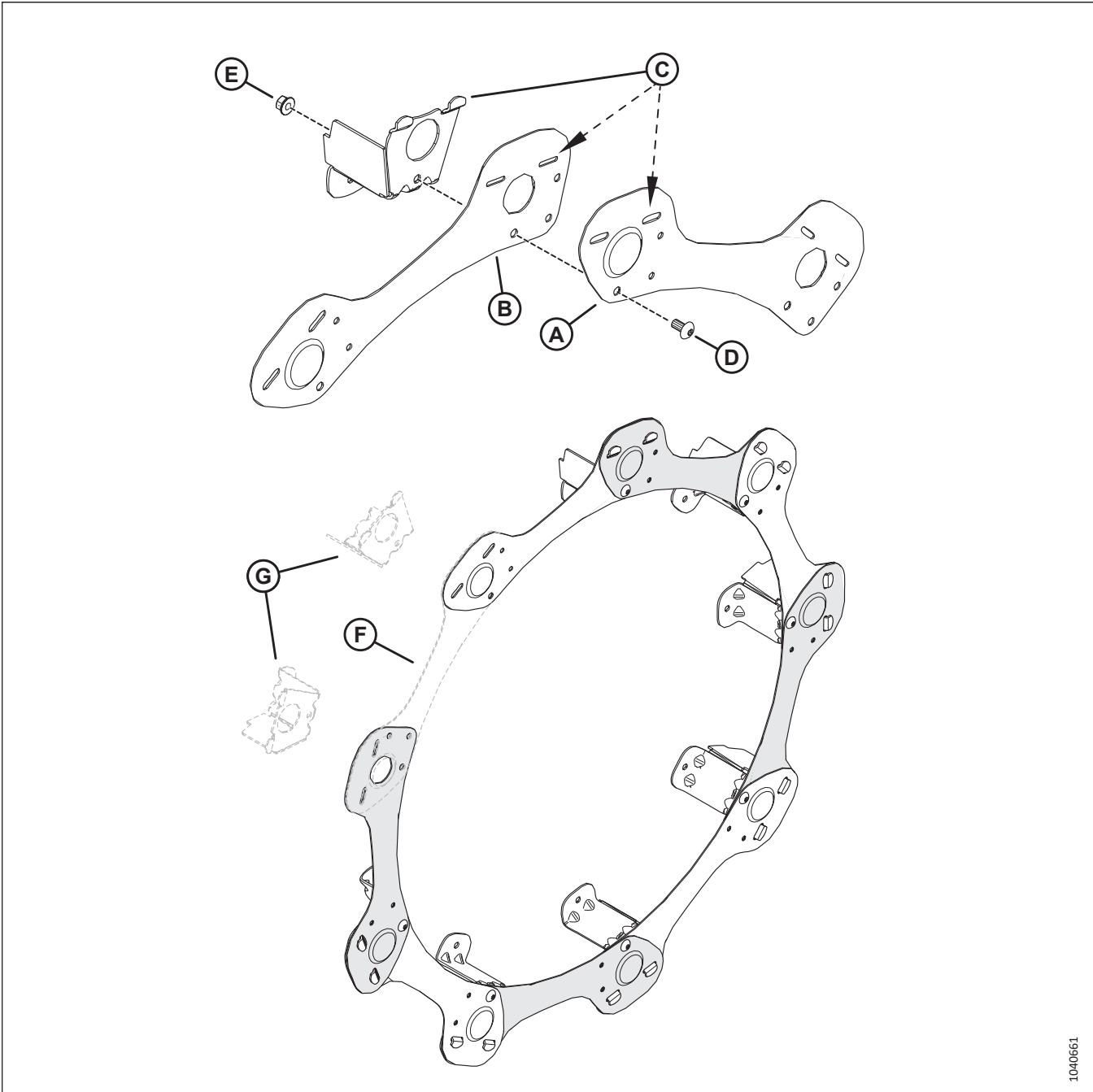


Figure 4.81: Nine-Bat Reel – Initial Endshield Assembly

2. Position one endshield segment (A) on top of another segment (B). Engage endshield support tabs (C) through both segments.
3. Secure the segments with M10 Torx® screw (D) (MD #136395) and nut (E) (MD #135799). Do **NOT** tighten the hardware yet.
4. Repeat the previous step for the remaining segments, except do **NOT** install last segment (F) and two supports (G) yet.

COMPLETING HEADER ASSEMBLY

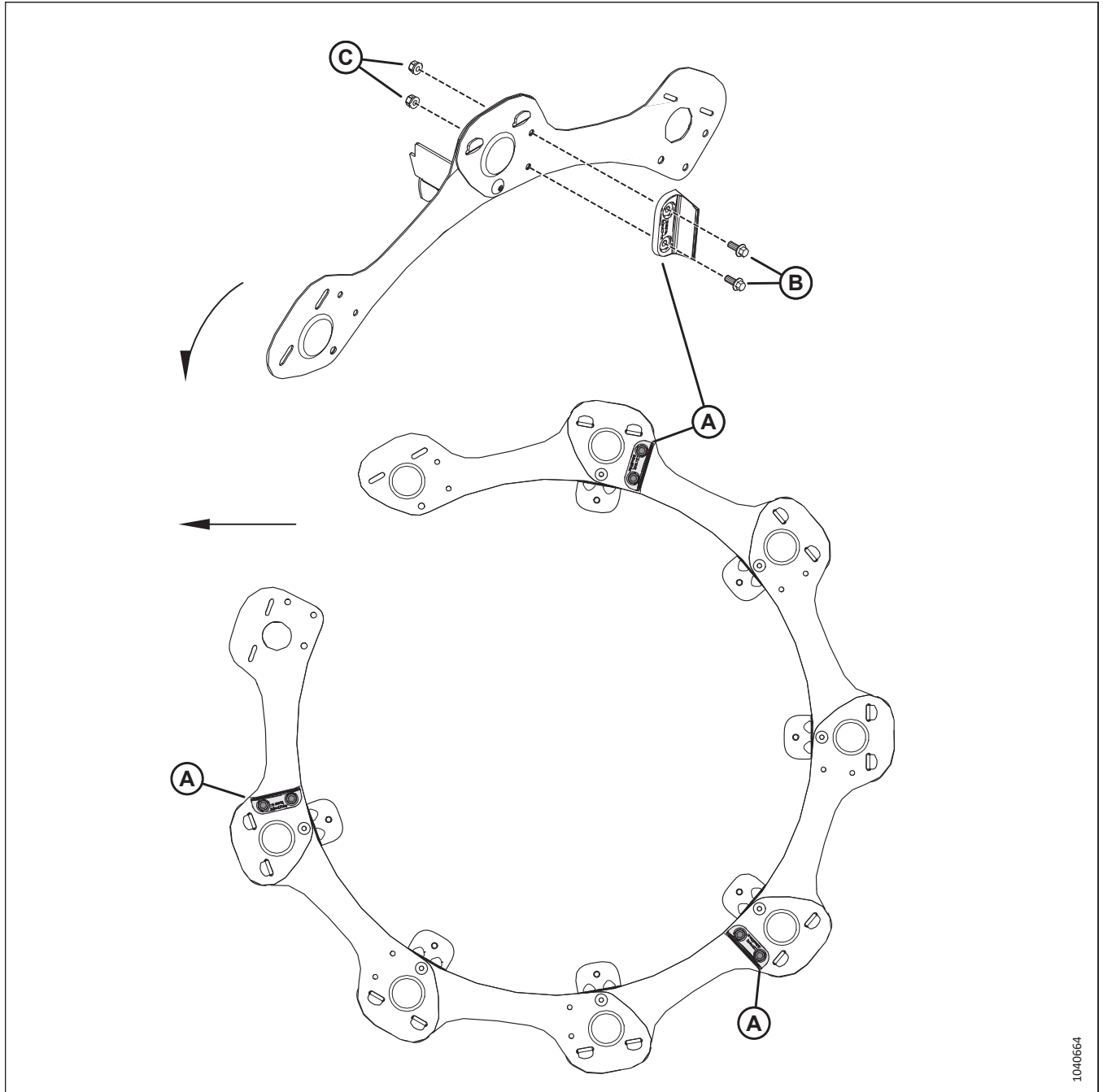


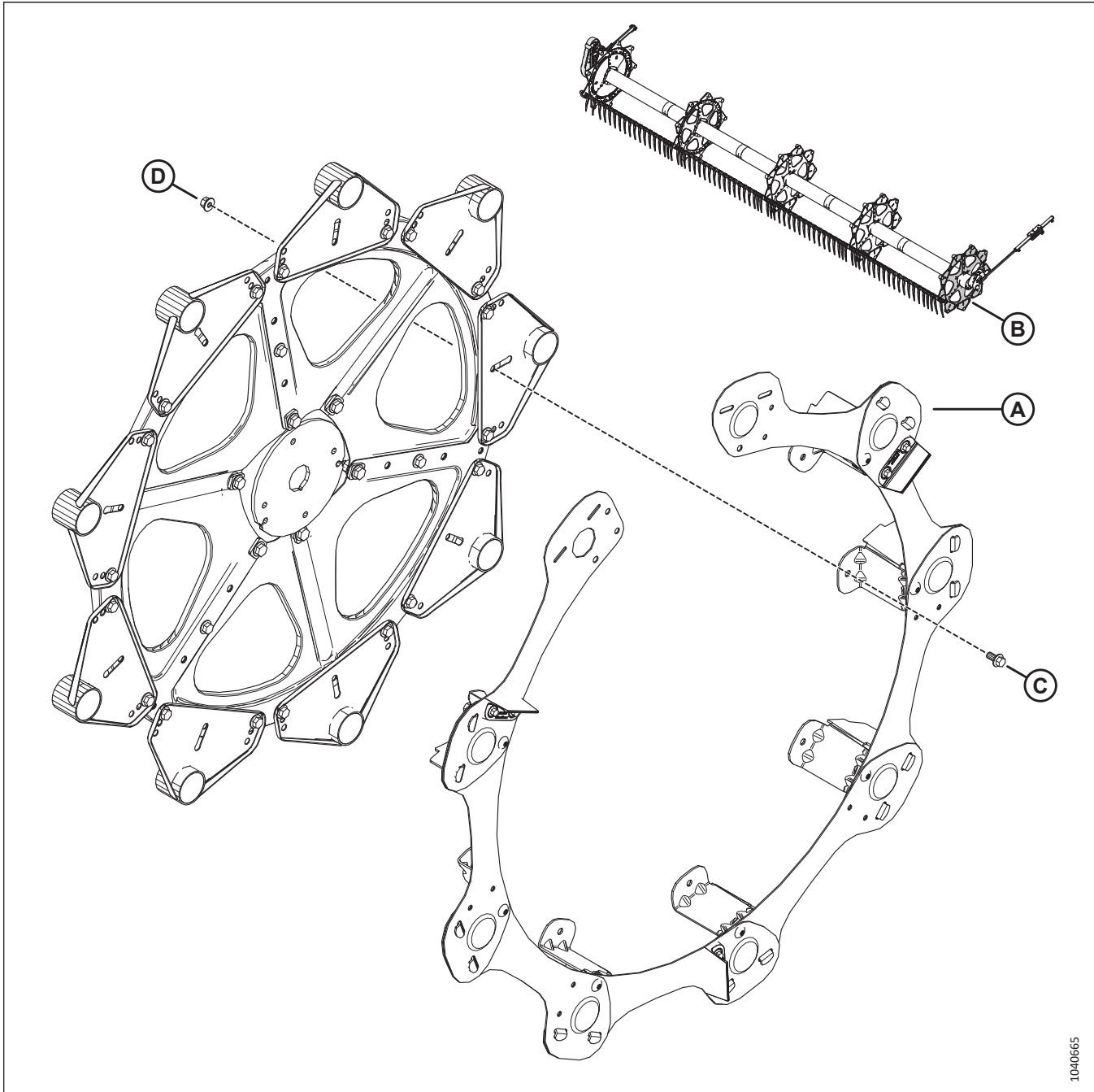
Figure 4.82: Nine-Bat Reel – Initial Endshield Assembly

5. Install three rubber reel end paddles (A) on the outboard face of the endshield assembly using two M8 bolts (B) (MD #136300) and nuts (C) (MD #135337) per paddle.

IMPORTANT:

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

COMPLETING HEADER ASSEMBLY



1040665

Figure 4.83: Nine-Bat Reel – Initial Endshield Assembly

6. Attach endshield assembly (A) to the tail-end reel disc (B) with one M10 bolt (C) (MD #152655) and nut (D) (MD #135799). Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

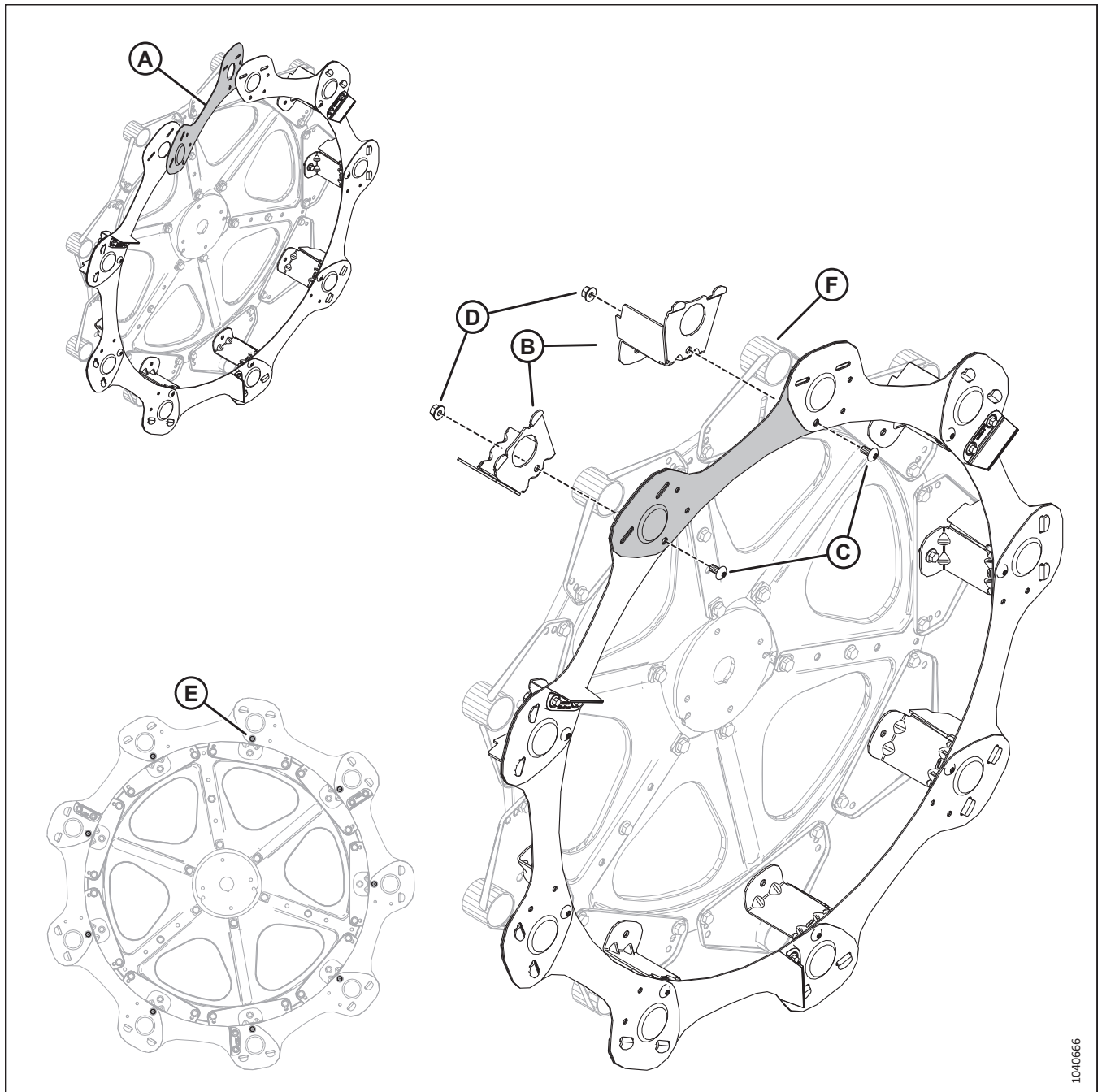
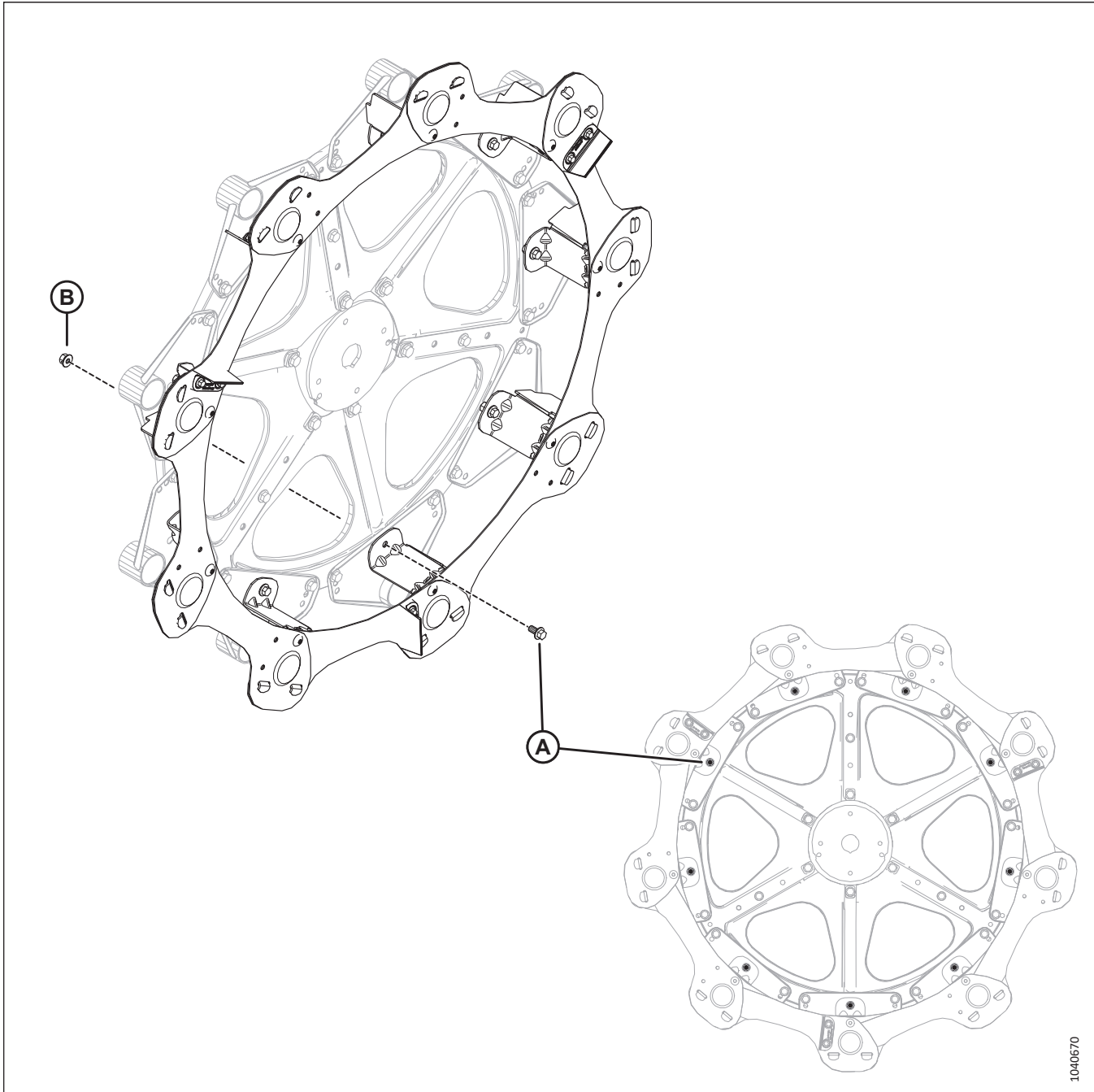


Figure 4.84: Nine-Bat Reel – Initial Endshield Assembly

7. Position ninth endshield (A) into place.
8. Insert the tabs of two endshield supports (B) through the endshield segments. Secure the endshield supports with two M10 Torx® screws (C) (MD #136395) and nuts (D) (MD #135799).
9. Tighten all nine M10 Torx® screws (E) to 39 Nm (29 lbf-ft).
10. Install the endshield supports on tine tubes (F).

COMPLETING HEADER ASSEMBLY



1040670

Figure 4.85: Nine-Bat Reel – Initial Endshield Assembly

11. Secure the remaining eight endshield supports to the reel disc using one M10 bolt (A) (MD #152655) and nut (B) (MD #135799).
12. Tighten all nine M10 bolts (A) to 39 Nm (29 lbf-ft).
13. Proceed to [4.17.1 Installing Crop Dividers](#), page 183.

4.13 Installing Single-Reel Endshields, Six-Bat – (Parts Bag MD #368326)

The reel endshields on single-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

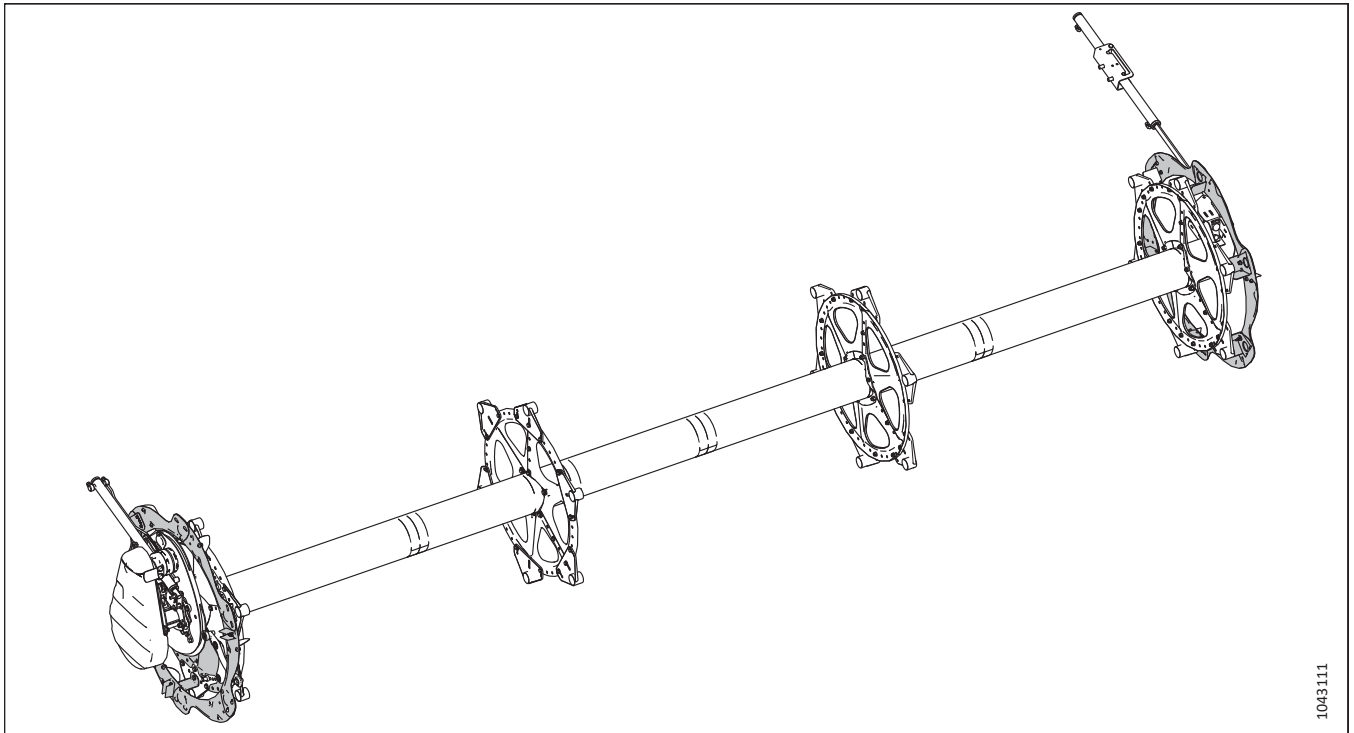


Figure 4.86: Six-Bat Single-Reel

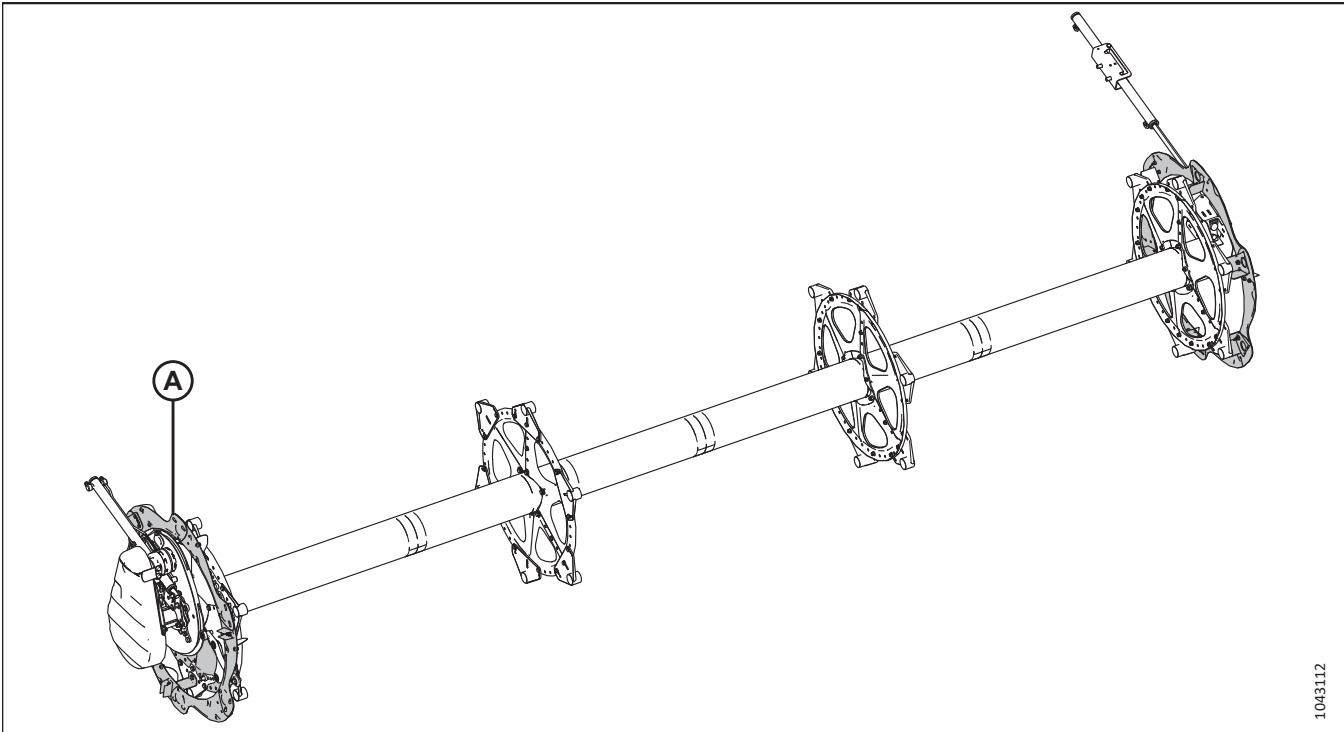
1. Retrieve parts bag MD #368326.

NOTE:

Parts lists and illustrations are included in the procedures referenced in the steps below.

4.13.1 Installing Single-Reel Endshields at Cam End – Six-Bat

To install single-reel endshields at the cam end, this procedure involves positioning and securing endshield segments, installing rubber reel end paddles, attaching the endshield assembly to the cam-end reel disc, and finally tightening all hardware.



1043112

Figure 4.87: Six-Bat Single-Reel

NOTE:

Cam-end endshields (A) are installed on the right of the reel.

COMPLETING HEADER ASSEMBLY

1. Retrieve parts bag (1) labeled with MD #368326. From that bag, retrieve the parts listed in Table 4.7, page 137.

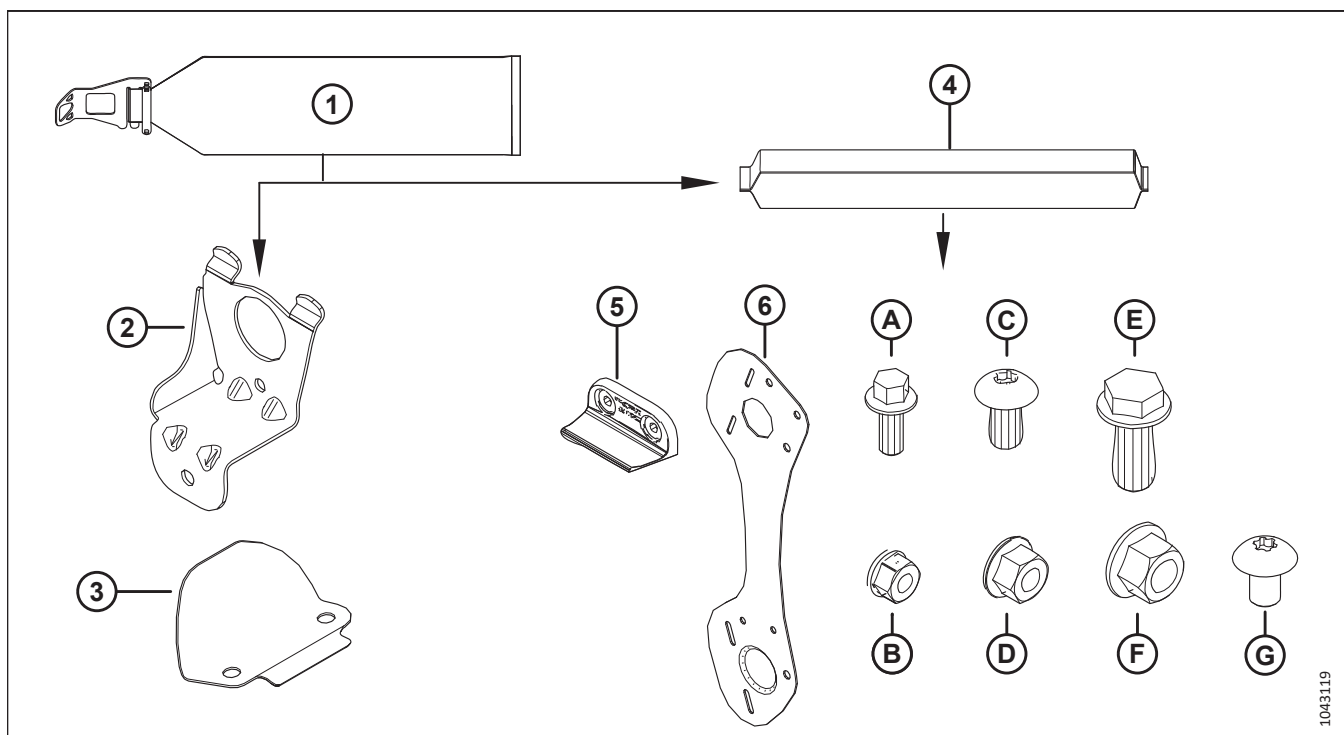
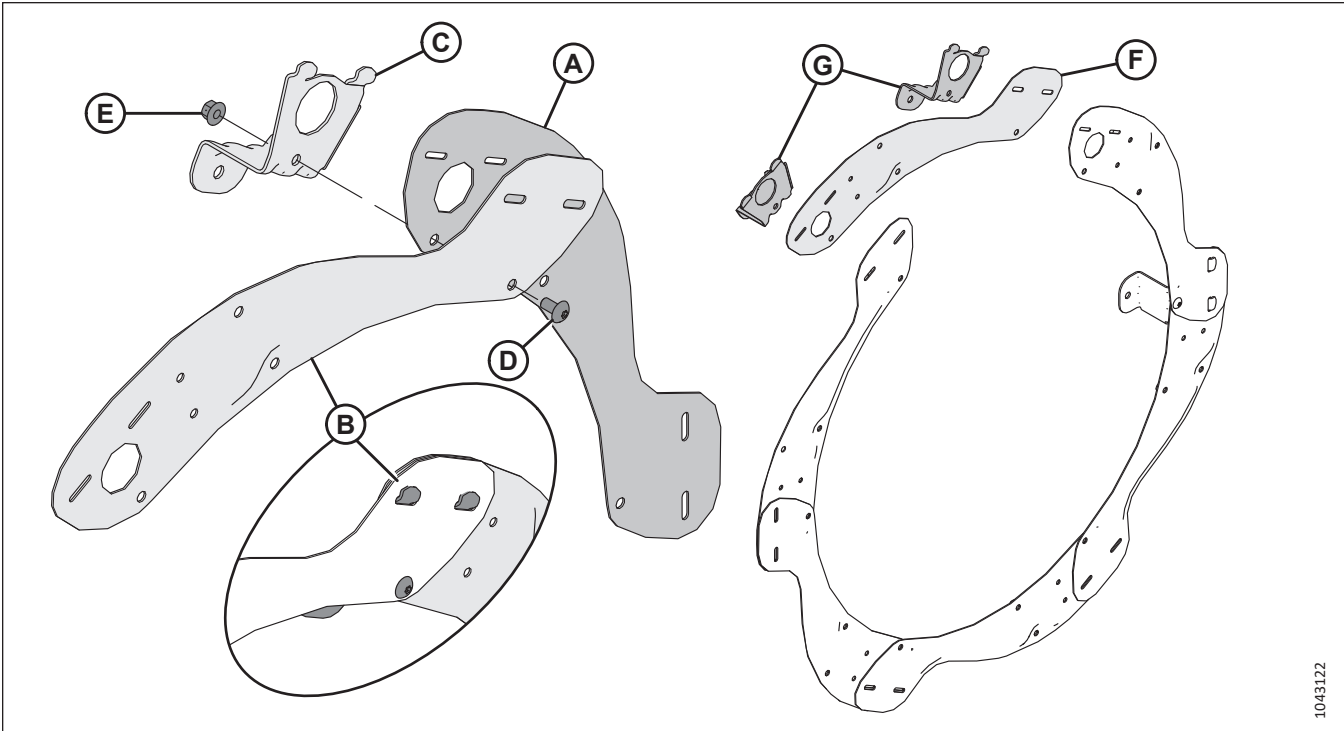


Figure 4.88: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368326

Table 4.7 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag – MD #368326

Ref	Part Number	Description	Quantity
2	311964	SUPPORT – CAM END NOTE: These parts are marked with a red cable tie to indicate that they belong with parts bag (3) (“RH”, MD #368337) which should also be marked with a red cable tie.	6
3	311729	DEFLECTOR – CAM OUTBOARD	6
4	368335	ENDSHLD BAG – 9 BAT RH OB CAM NOTE: This parts bag is labeled “RH” and/or MD #368335, and should be marked with a red cable tie. This bag contains the parts listed below.	1
5	313035	PADDLE – REEL END; HYTREL	3
6	311752	SHIELD – OUTBOARD RH 6 BAT	6
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	6
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	18
E	320180	BOLT – HEX FLG HD M12 X 1.75 X 30-SPCL-8.8-ZINC	6
F	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	6
G	136640	SCR-TORX TRUSS HD M10 X 1.5 X 16 X SPCL-8.8-AA1J	12

COMPLETING HEADER ASSEMBLY



1043122

Figure 4.89: Six-Bat Reel – Initial Endshield Assembly

2. Assemble the endshield as follows:

- a. Position endshield segment (A) behind segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.
- b. Repeat step a) for the remaining segments. Do **NOT** install last segment (F) and two support tabs (G) yet.

COMPLETING HEADER ASSEMBLY

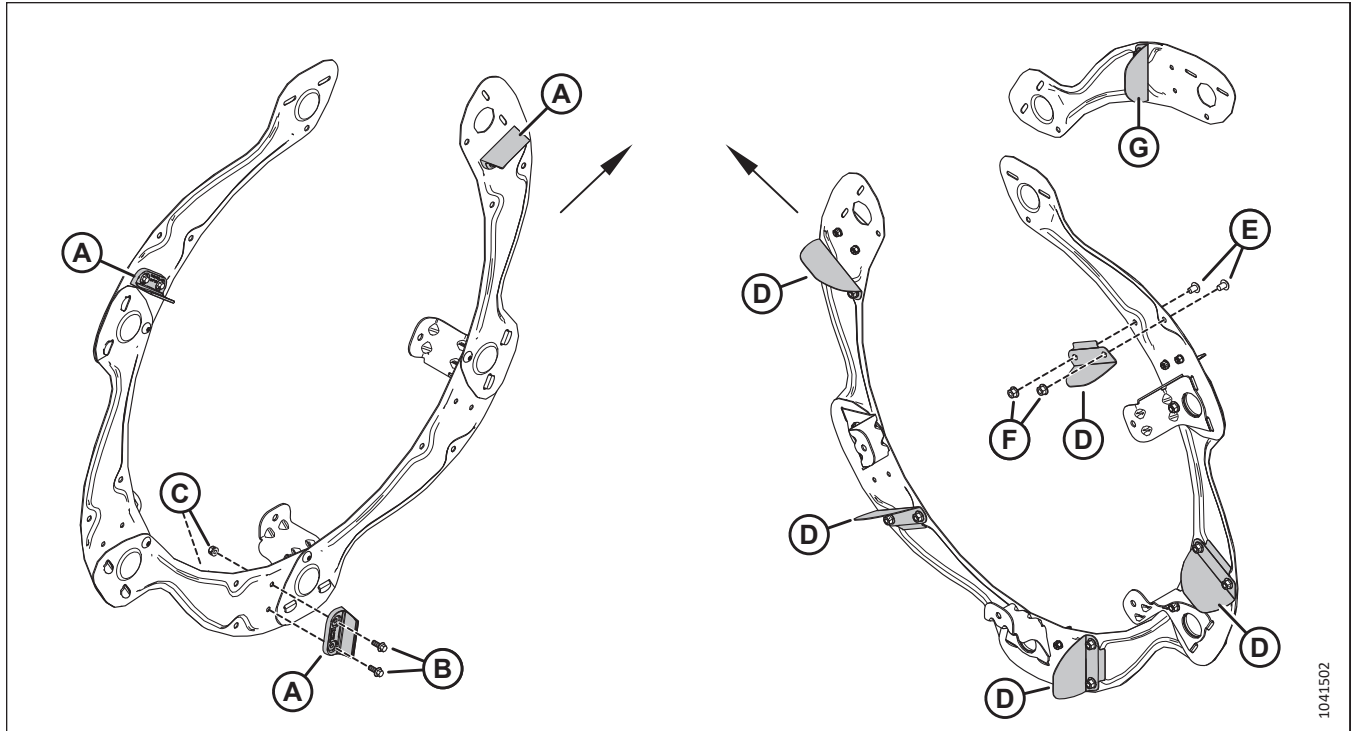


Figure 4.90: Six-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

3. Install all 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:

Ensure that the rubber paddles and cam deflectors are oriented as shown.

4. Install aluminum cam deflectors (D) (MD #311729) on the inboard face of the endshield assembly shown using two M10 X 1.5 X 16 Torx® screws (E) and hex nuts (F).
5. Install aluminum cam deflector (G) (MD #311729) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

COMPLETING HEADER ASSEMBLY

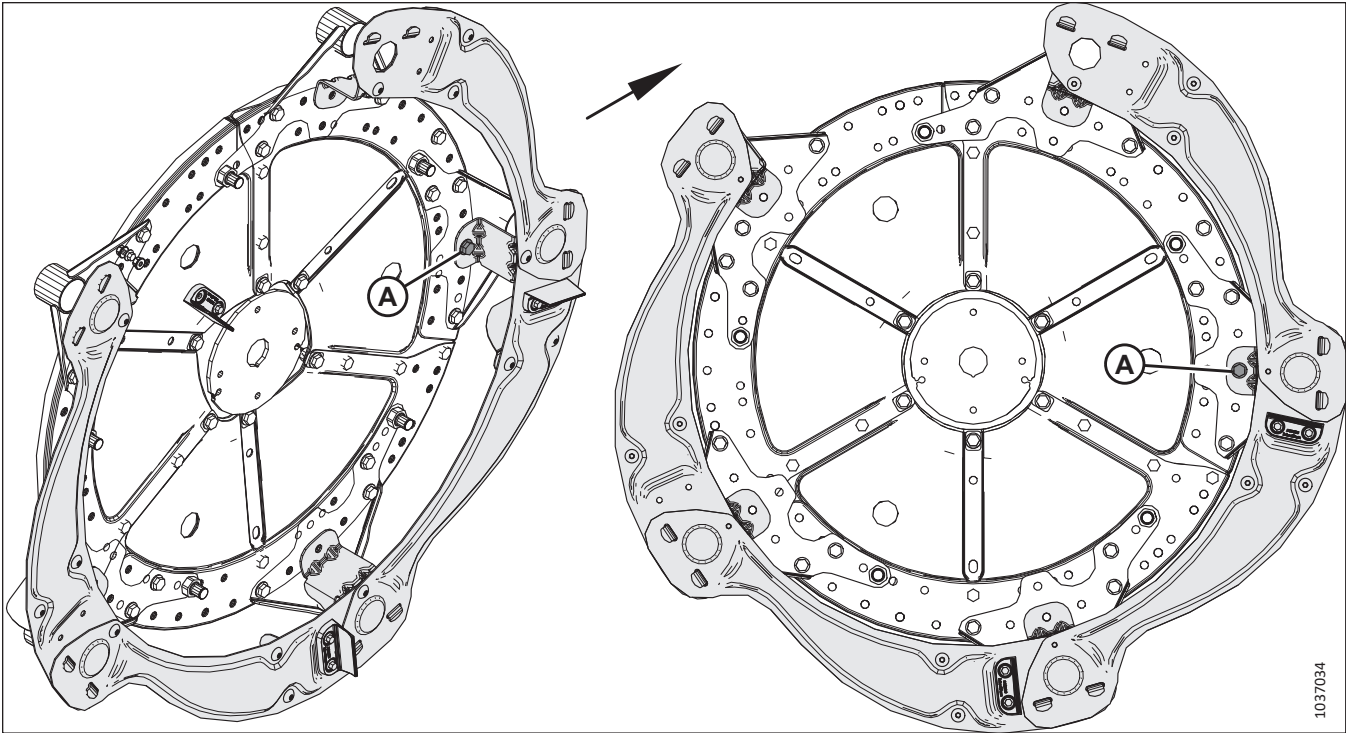


Figure 4.91: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

6. Position the partially assembled reel endshield on the reel.

NOTE:

The illustration shows the five-bat reel. The six-bat version is similar.

7. Secure the endshield to the reel with one M12 X 1.75 X 30 hex bolt and nut (A). Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

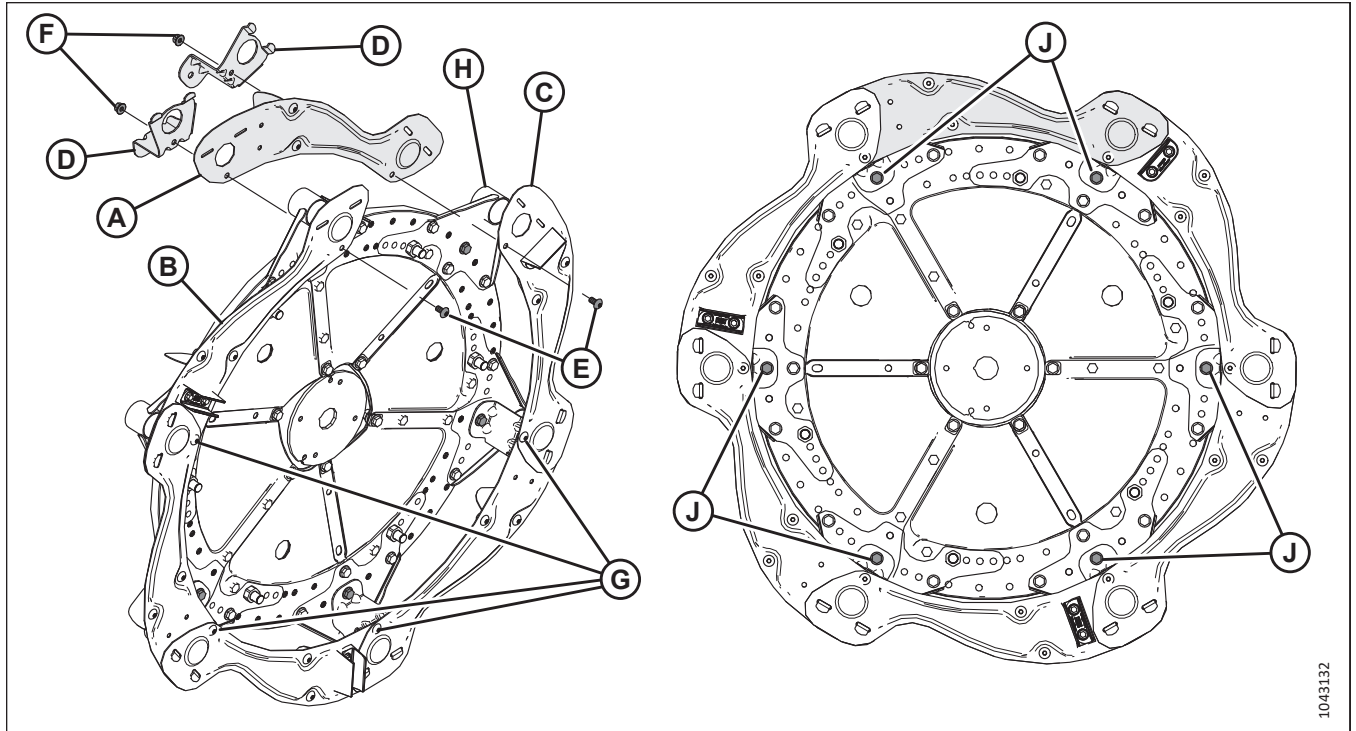


Figure 4.92: Six-Bat Reel – Partially Assembled Reel Endshields on Reel

8. 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 the last segment on top of segment (C).
 - b. Insert the tabs of endshield supports (D) through the endshield segments.
 - c. Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
 - d. Torque six 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.
9. Install the endshield supports on tine tubes (H).

NOTE:
Not all of the tine tubes are shown in the illustration.
10. Secure the remaining endshield supports to the reel disc using one M12 X 1.75 X 30 hex bolt (J) and nut per endshield support.
11. Tighten M12 X 1.75 X 30 hex bolts (J) and the nuts securing the endshield supports to the cam discs to 68.5 Nm (50.5 lbf-ft).

4.13.2 Installing Single-Reel Endshields at Tail End – Six-Bat

To install single-reel endshields at the tail end, this procedure involves positioning and securing endshield segments, installing rubber reel end paddles, attaching the endshield assembly to the tail-end reel disc, and finally tightening all hardware.

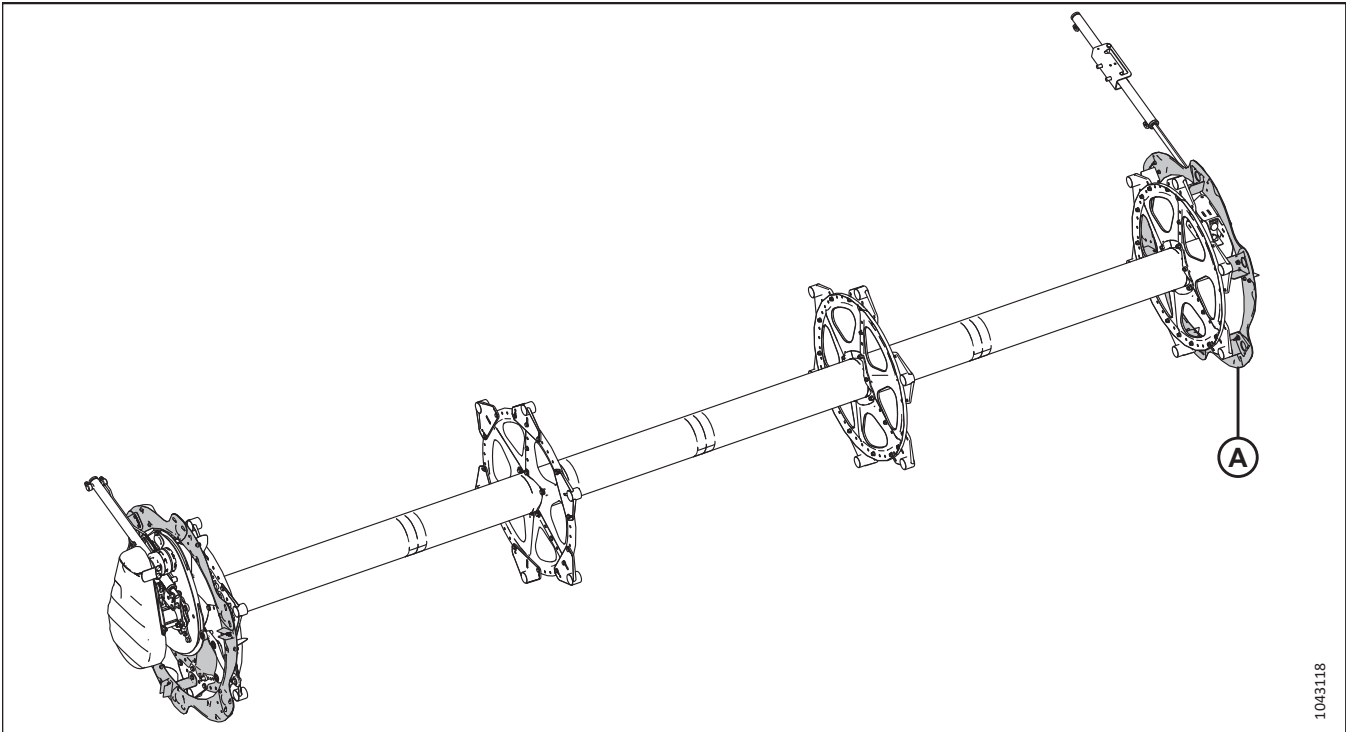


Figure 4.93: Six-Bat Single-Reel

NOTE:

Tail-end endshields (A) are installed on the left of the reel.

1043118

COMPLETING HEADER ASSEMBLY

1. Retrieve parts bag (1) labeled with MD #368326. From that bag, retrieve the parts listed in Table 4.8, page 143.

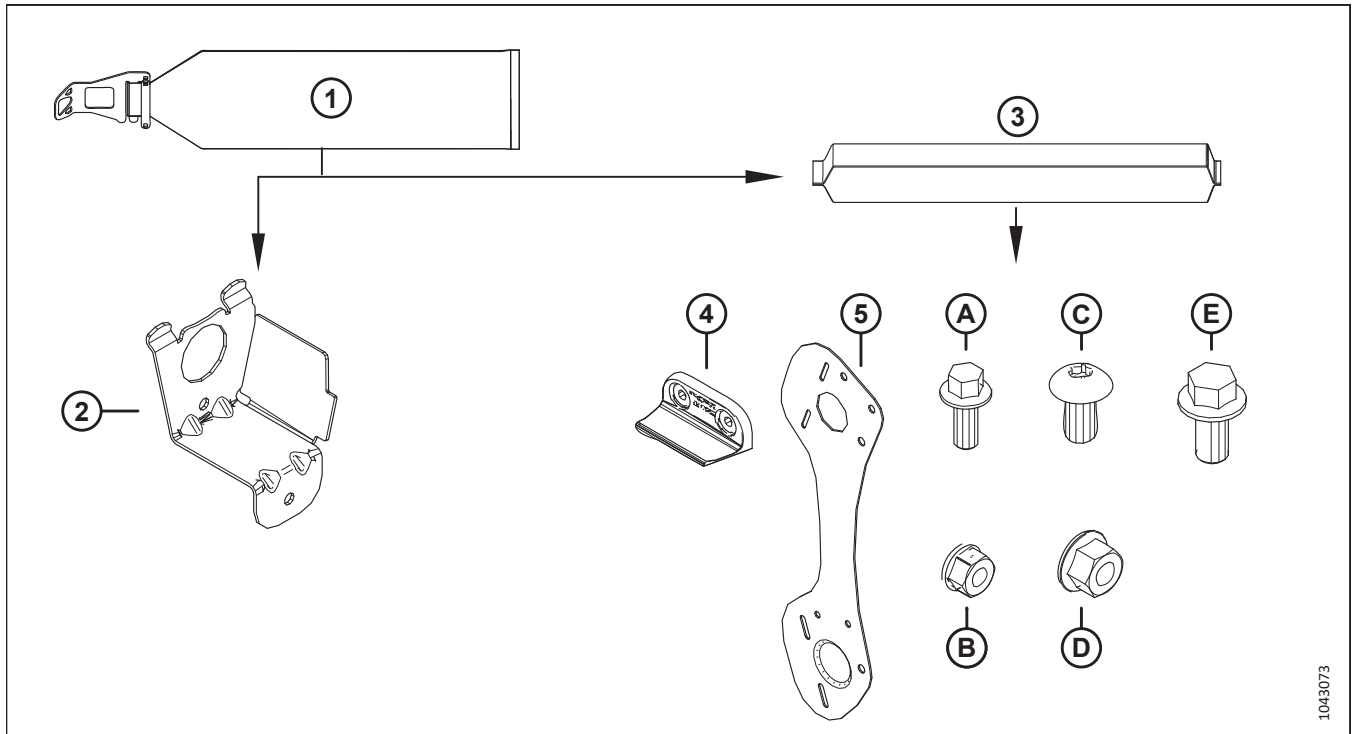


Figure 4.94: Parts to Retrieve from Six-Bat Reel Endshields Parts Bag – MD #368326

Table 4.8 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag – MD #368326

Ref	Part Number	Description	Quantity
2	311965	SUPPORT – TAIL END NOTE: These parts are marked with a yellow cable tie to indicate that they belong with parts bag (3) (“LH”, MD #368333) which should also be marked with a yellow cable tie.	6
3	368333	ENDSHLD BAG – 6 BAT LH OB TAIL NOTE: This parts bag is labeled “LH” and/or MD #368336, and should be marked with a yellow cable tie. This bag contains the parts listed below.	1
4	313035	PADDLE – REEL END; HYTREL	3
5	311753	SHIELD – OUTBOARD LH 6 BAT	6
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	6
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	12
E	152655	BOLT – HEX FLG HD M10 X 1.5 X 20-8.8-AA1J	6

COMPLETING HEADER ASSEMBLY

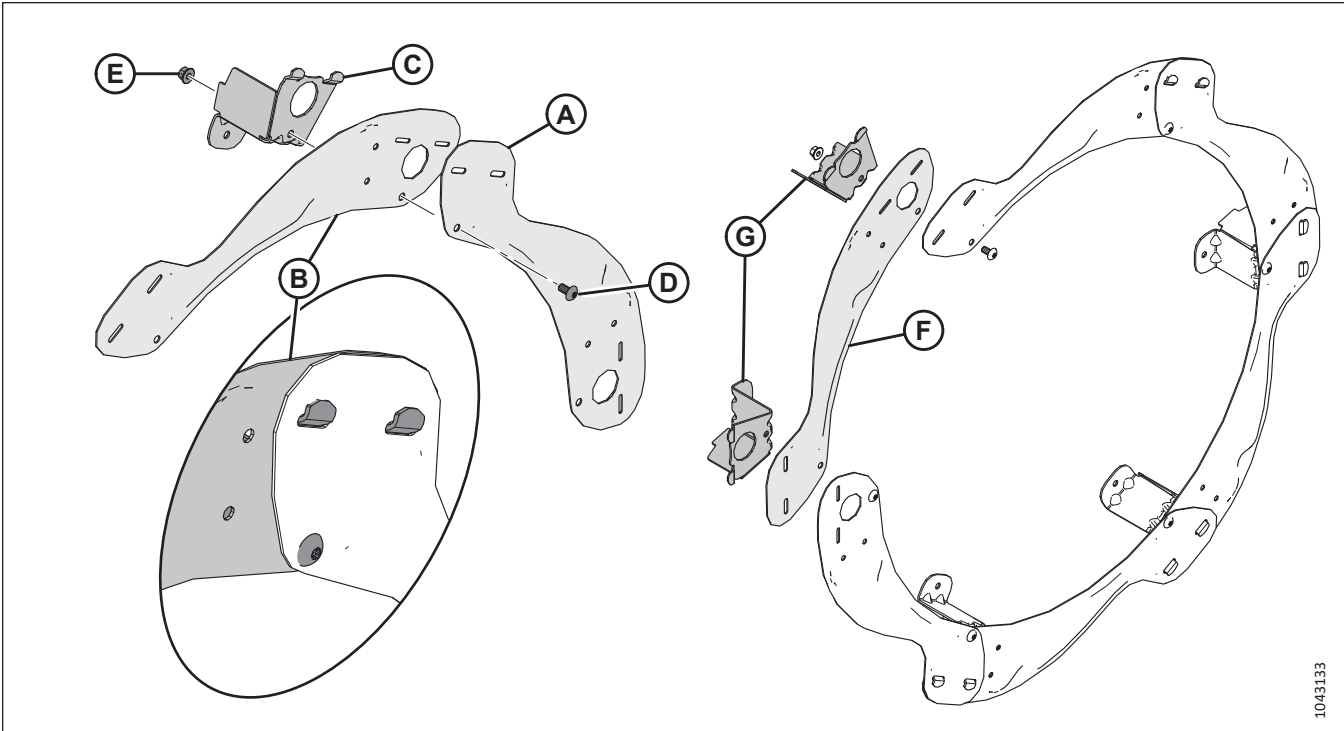


Figure 4.95: Six-Bat Reel – Initial Endshield Assembly

2. Assemble the endshield as follows:

- a. Position endshield segment (A) in front of segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.
- b. Repeat the previous step to assemble the remaining segments. Do **NOT** install last segment (F) and two support tabs (G) yet.

COMPLETING HEADER ASSEMBLY

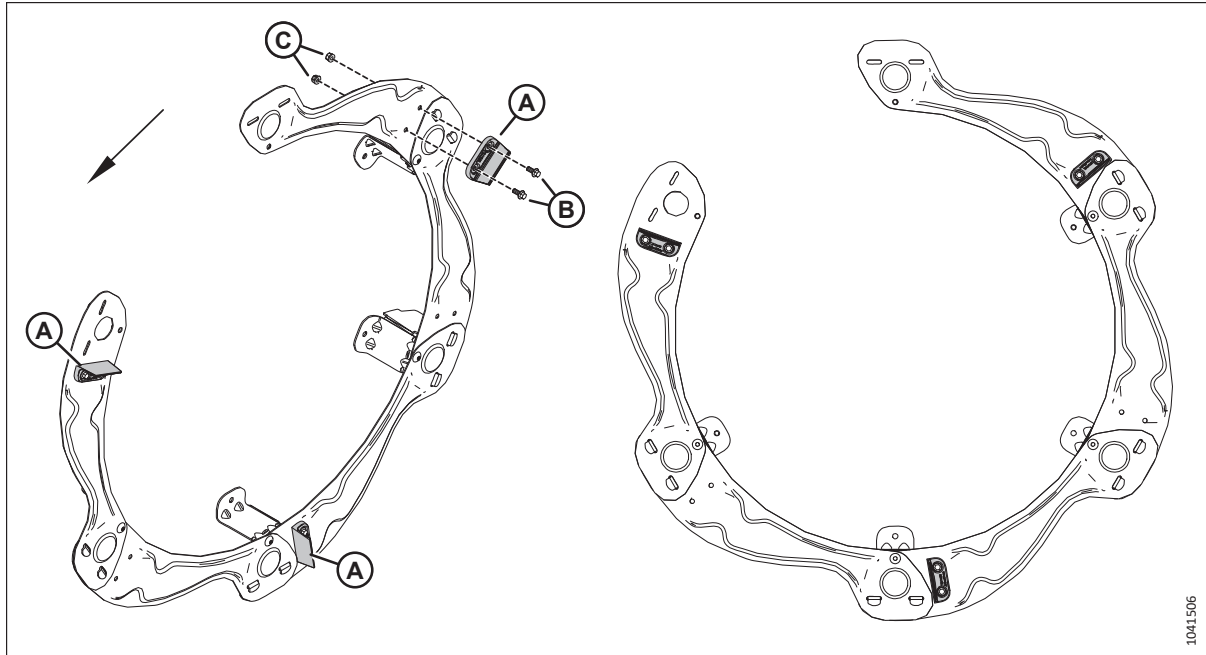


Figure 4.96: Six-Bat Reel – Rubber Paddles

3. 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:

Ensure that 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.

COMPLETING HEADER ASSEMBLY

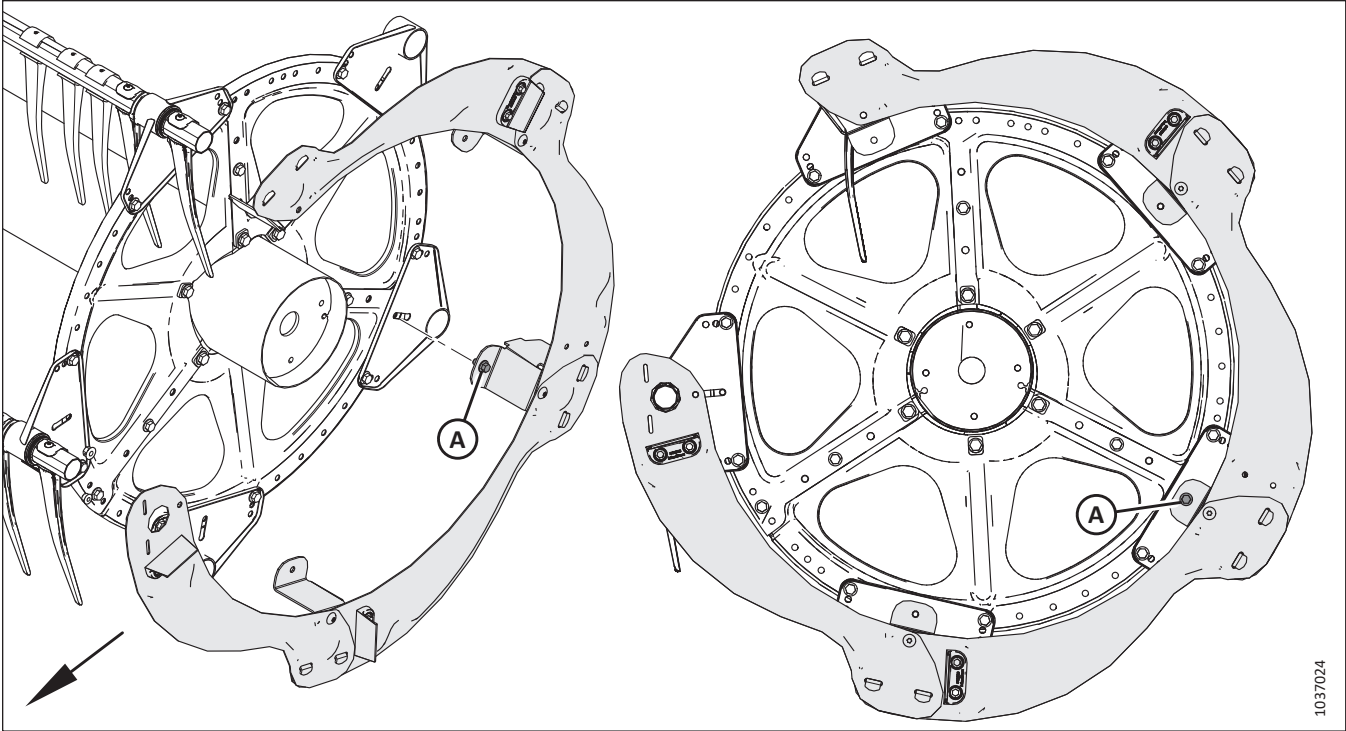


Figure 4.97: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

4. Position the partially assembled reel endshield on the reel and tine tubes.

NOTE:

The illustration shows the five-bat reel. The six-bat version is similar.

5. Identify the endshield support tab opposite the opening in the circle of endshield segments. Secure that support tab to the reel with one M10 X 1.5 X 20 hex bolt (A) and nut. Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

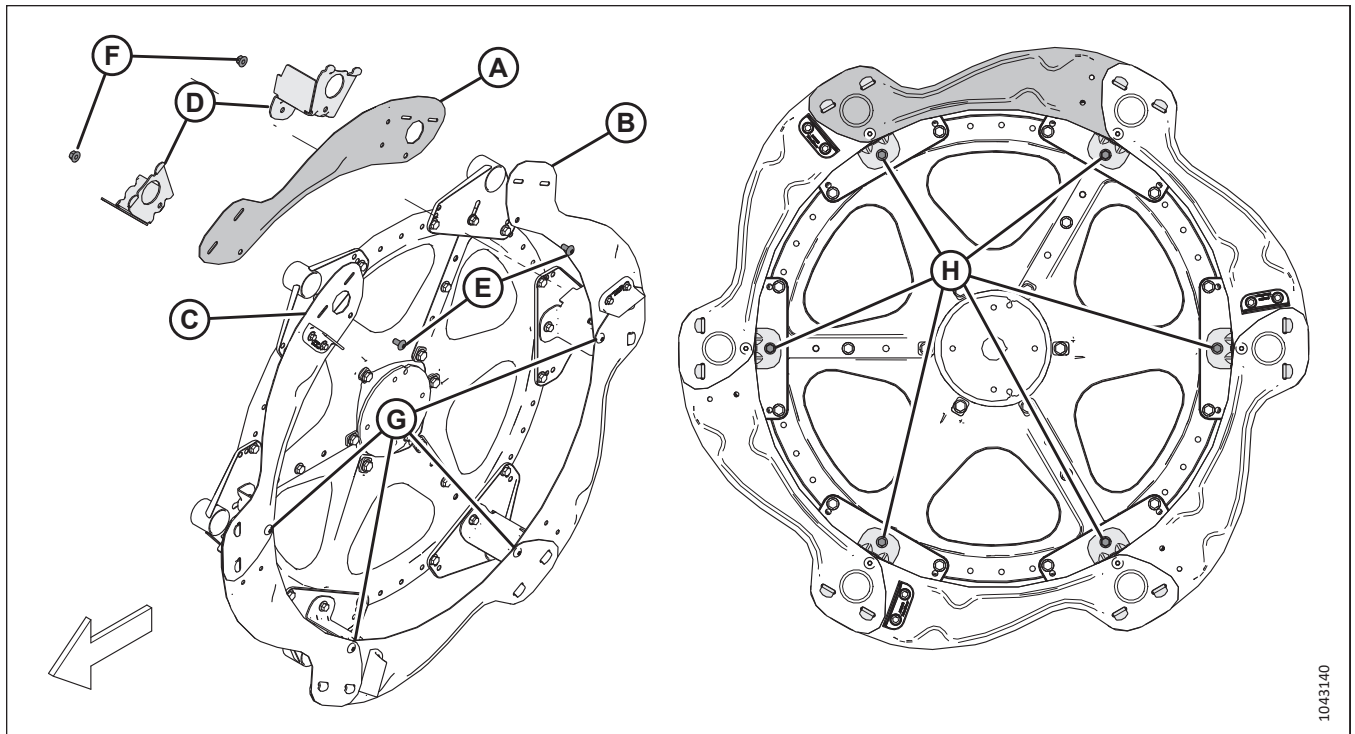


Figure 4.98: Six-Bat Reel – Partially Assembled Reel Endshields on Reel

6. 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. Insert the tabs of endshield supports (D) through the endshield segments.
 - c. Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
 - d. Torque 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 necessary.
7. Secure the endshield supports to the reel disc using one M10 X 1.5 X 20 hex bolt and nut (H) per endshield support.
8. Torque M10 X 1.5 X 20 hex bolts (H) and the nuts that secure the endshield supports to the cam discs to 68.5 Nm (50.5 lbf-ft).

4.14 Installing Double-Reel Endshields – Parts Bag MD #368322 (Five-Bat Reels) or MD #368323 (Six-Bat Reels)

The reel endshields on double-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

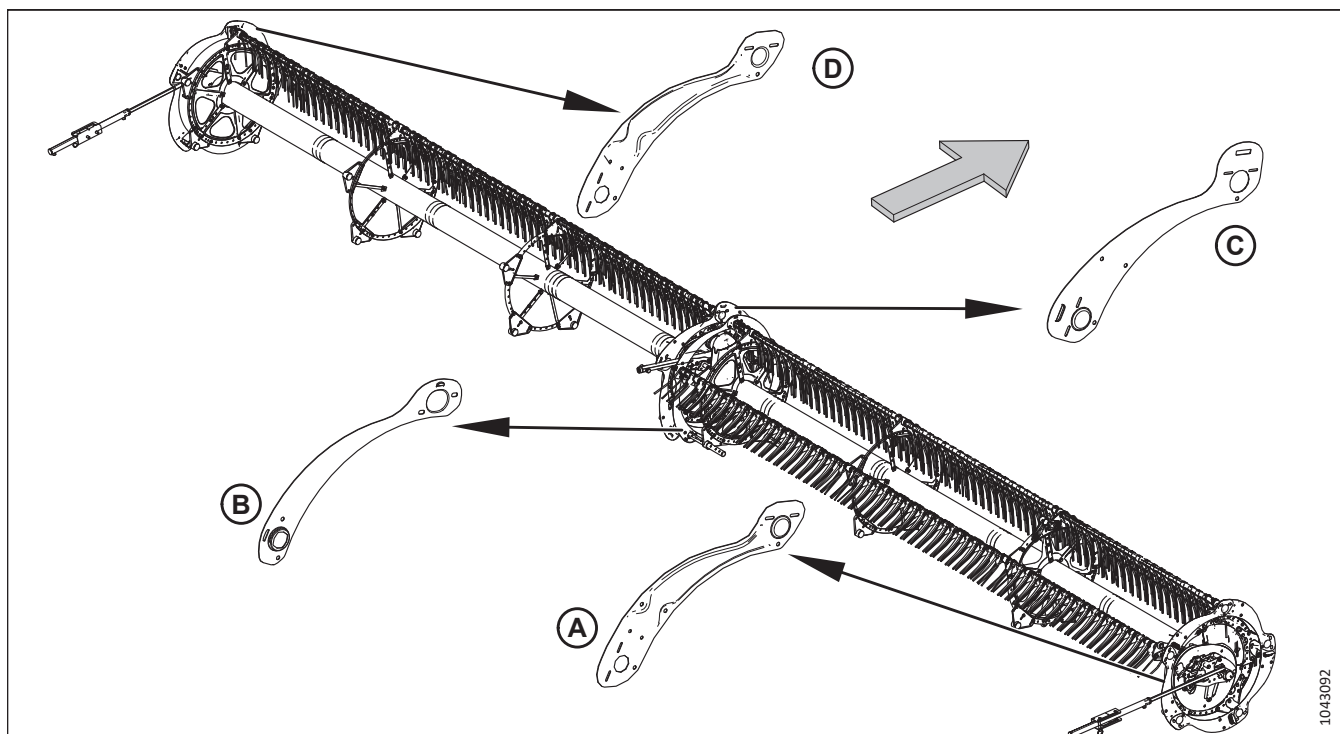


Figure 4.99: Reel Endshields – Double-Reel Endshield (Five-Bat Reel Shown)

NOTE:

The large arrow indicates the front of the header.

1. Retrieve the parts bag containing the endshields:
 - **Five-bat reel:** Retrieve parts bag MD #368322.
 - **Six-bat reel:** Retrieve parts bag MD #368323.

NOTE:

Parts lists and illustrations are included in the procedures referenced in the steps below.

2. Install outboard cam-end endshields (A). For instructions, refer to [4.14.1 Installing Double-Reel Endshields at Outboard Cam End, page 149](#).
3. Install inboard tail-end endshields (B). For instructions, refer to [4.14.2 Installing Double-Reel Endshields at Inboard Tail End, page 156](#).
4. Install inboard cam-end endshields (C). For instructions, refer to [4.14.3 Installing Double-Reel Endshields at Inboard Cam End, page 163](#).
5. Install outboard tail-end endshields (D). For instructions, refer to [4.14.4 Installing Double-Reel Endshields at Outboard Tail End, page 170](#).

4.14.1 Installing Double-Reel Endshields at Outboard Cam End

The reel endshields on double-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

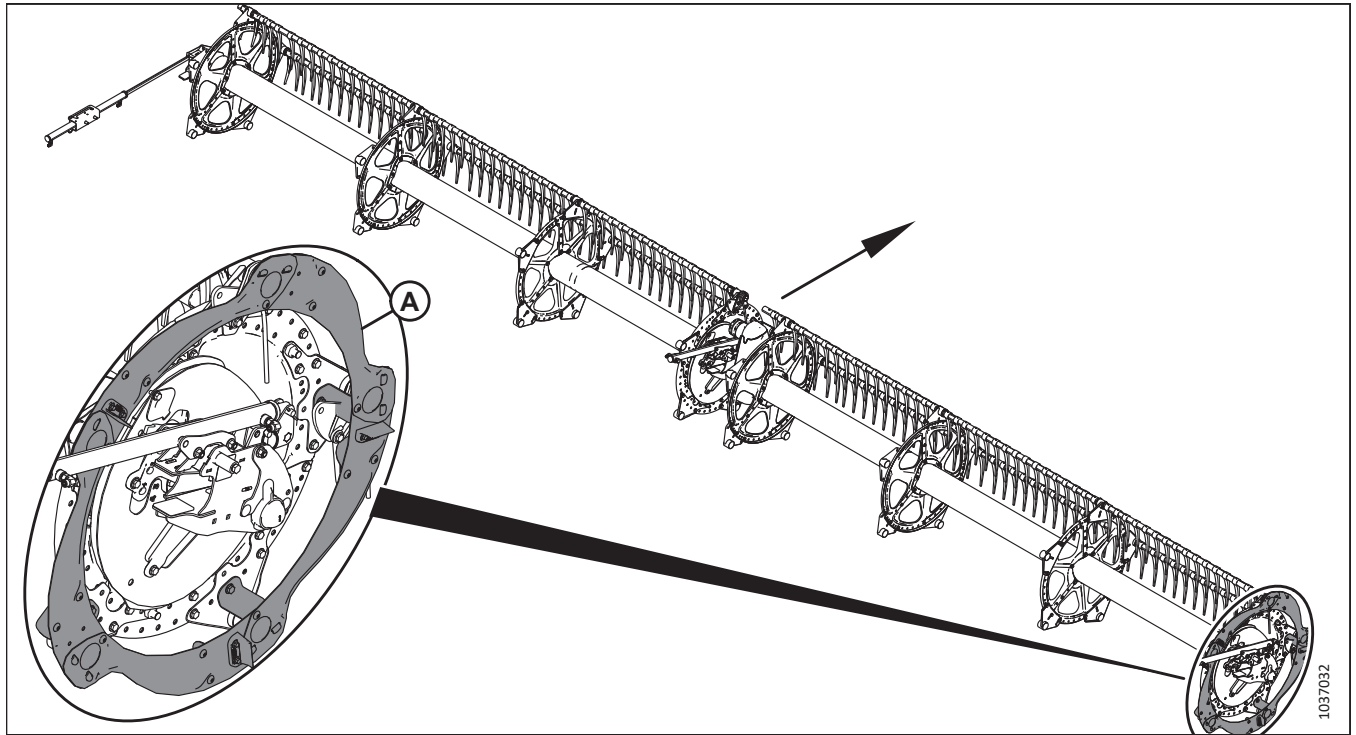


Figure 4.100: Five-Bat Double Reel

NOTE:

Outboard cam-end endshields (A) are installed on the right of the reel.

NOTE:

The arrow in the illustration indicates the front of the header.

NOTE:

This procedure applies to five-bat reels. The procedure for six-bat reels is similar.

COMPLETING HEADER ASSEMBLY

- Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table 4.9, page 150.

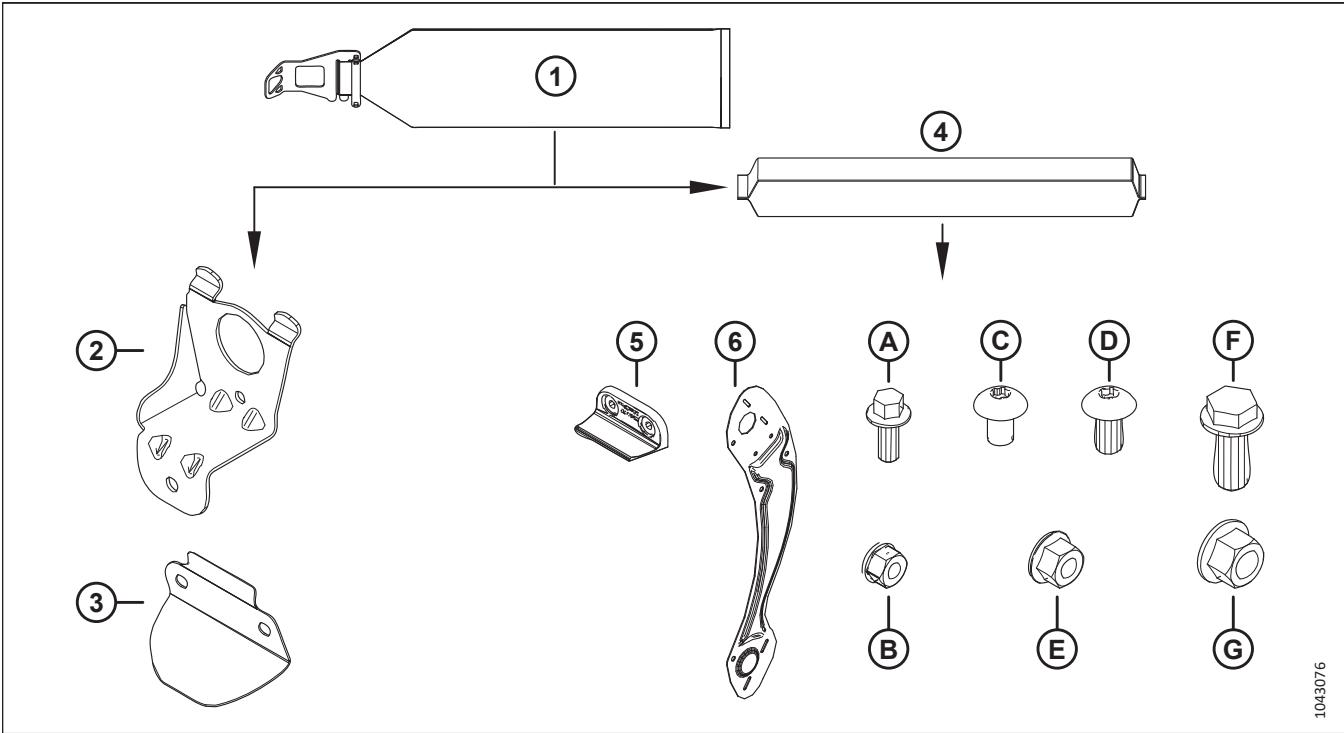


Figure 4.101: Five-Bat Reel Endshield Parts Bag (MD #368322)

Table 4.9 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag (MD #368322)

Ref	Part Number	Description	Quantity
2	311964 – see note ³	SUPPORT – CAM END	5
3	311729 – see note ³	DEFLECTOR – CAM OUTBOARD	5
4	368332	ENDSHLD BAG – 5 BAT RH OB CAM NOTE: This parts bag is labeled “RH CAM” and/or MD #368332.	1
5	313035	PADDLE – REEL END; HYTREL	3
6	311694	SHIELD – OUTBOARD RH 5 BAT	5
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136640	SCR – TORX TRUSS HD M10 X 1.5 X 16 X SPCL-8.8-AA1J	10
D	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	5
E	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	15
F	320180	BOLT – HEX FLG HD M12 X 1.75 X 30-SPCL-8.8-ZINC	5
G	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	5

- These parts are marked with a red cable tie to indicate that they belong with parts bag (4) (“RH CAM”, MD #368332) which should also be marked with a red cable tie.

COMPLETING HEADER ASSEMBLY

2. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table 4.10, page 151.

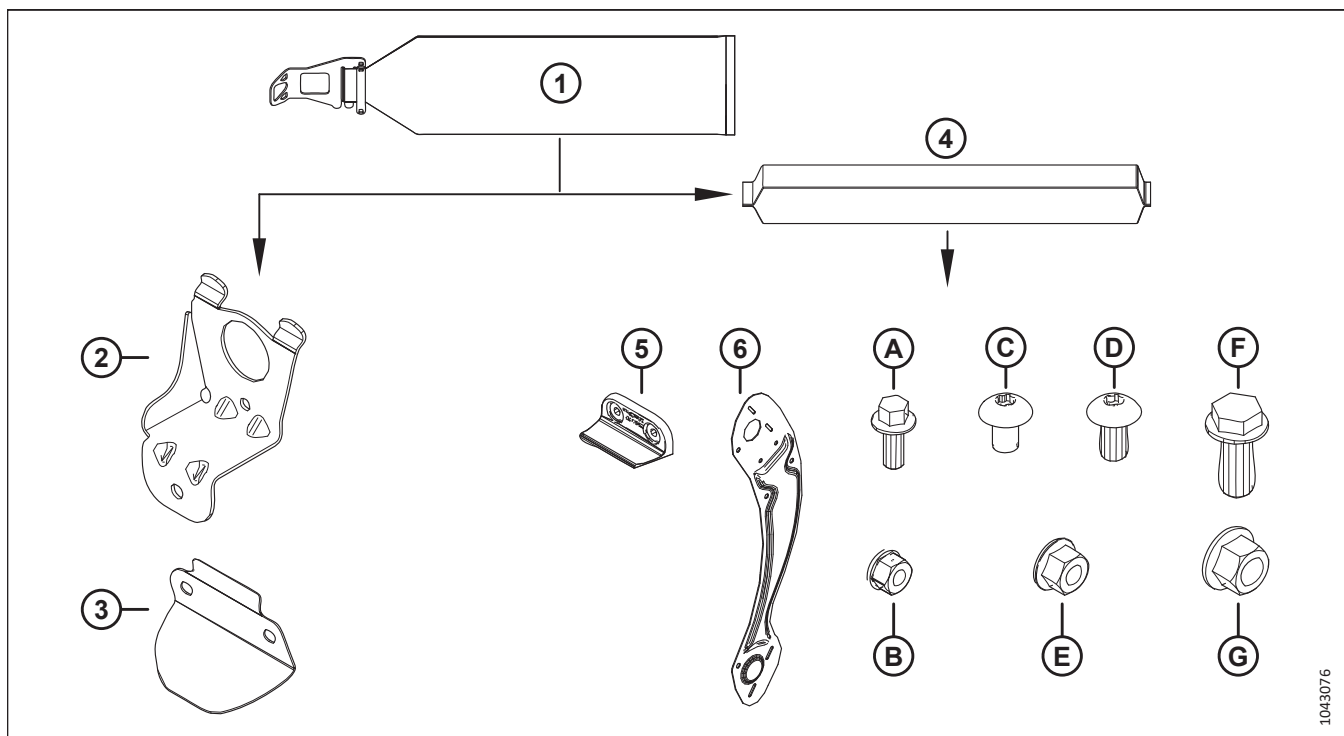


Figure 4.102: Six-Bat Reel Endshield Parts Bag (MD #368323)

Table 4.10 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag (MD #368323)

Ref	Part Number	Description	Quantity
2	311964 – see note ⁴	SUPPORT – CAM END	6
3	311729 – see note ⁴	DEFLECTOR – CAM OUTBOARD	6
4	368335 (“RH CAM”)	ENDSHLD BAG – 6 BAT RH OB CAM NOTE: This bag contains the parts listed below.	1
5	313035	PADDLE – REEL END; HYTREL	3
6	311752	SHIELD – OUTBOARD RH 6 BAT	6
A	136300	BOLT – HEX FLG HD TFL M8 X 1.25 X 20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J	6
C	136640	SCR – TORX TRUSS HD M10 X 1.5 X 16 X SPCL-8.8-AA1J	12
D	136395	SCR – TORX TRUSS HD M10 X 1.5 X 20 X SPCL-8.8-A3L	6
E	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	18
F	320180	BOLT – HEX FLG HD M12 X 1.75 X 30-SPCL-8.8-ZINC	6
G	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	6

4. These parts are marked with a red cable tie to indicate that they belong with parts bag (4) (“RH CAM”, MD #368335) which should also be marked with a red cable tie.

COMPLETING HEADER ASSEMBLY

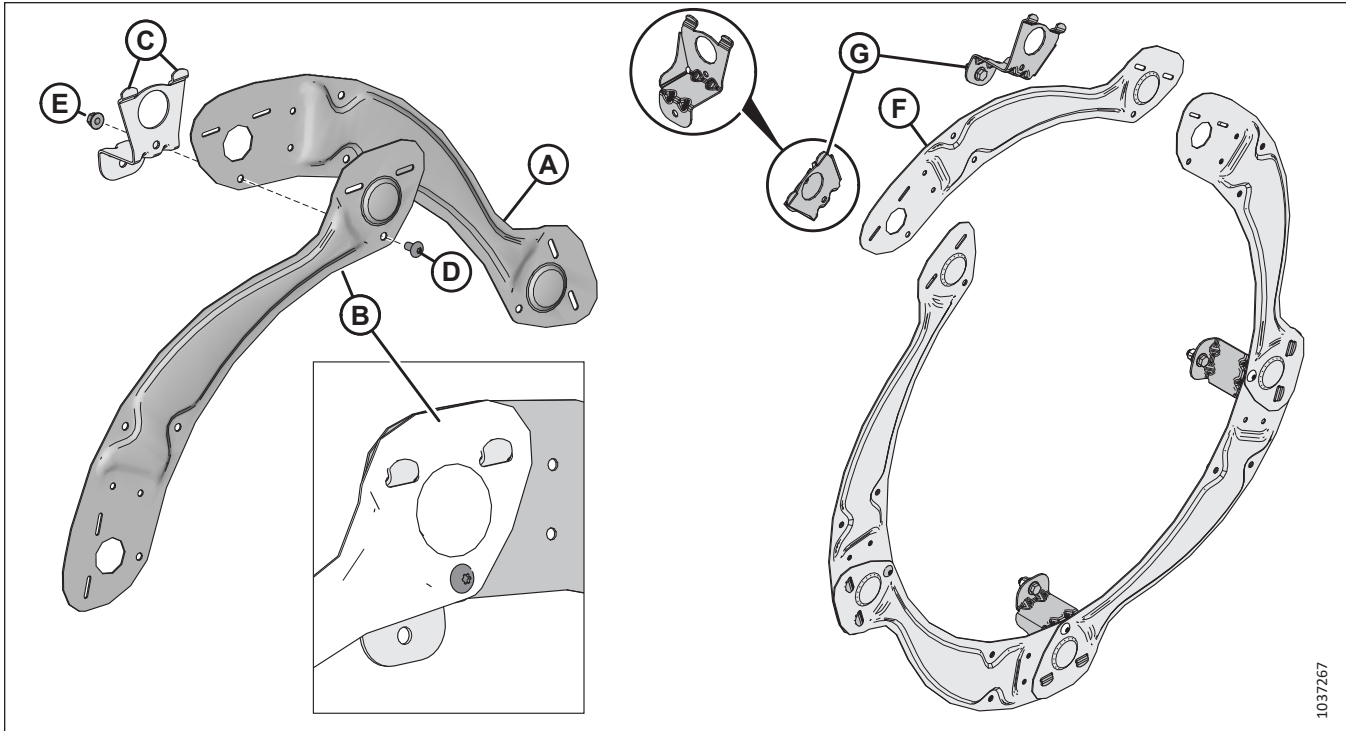


Figure 4.103: Five-Bat Reel – Initial Endshield Assembly

3. Assemble the endshield as follows:

- a. Position endshield segment (A) behind segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.
- b. Repeat step (a.) for the remaining segments. Do **NOT** install last segment (F) and two support tabs (G) yet.

COMPLETING HEADER ASSEMBLY

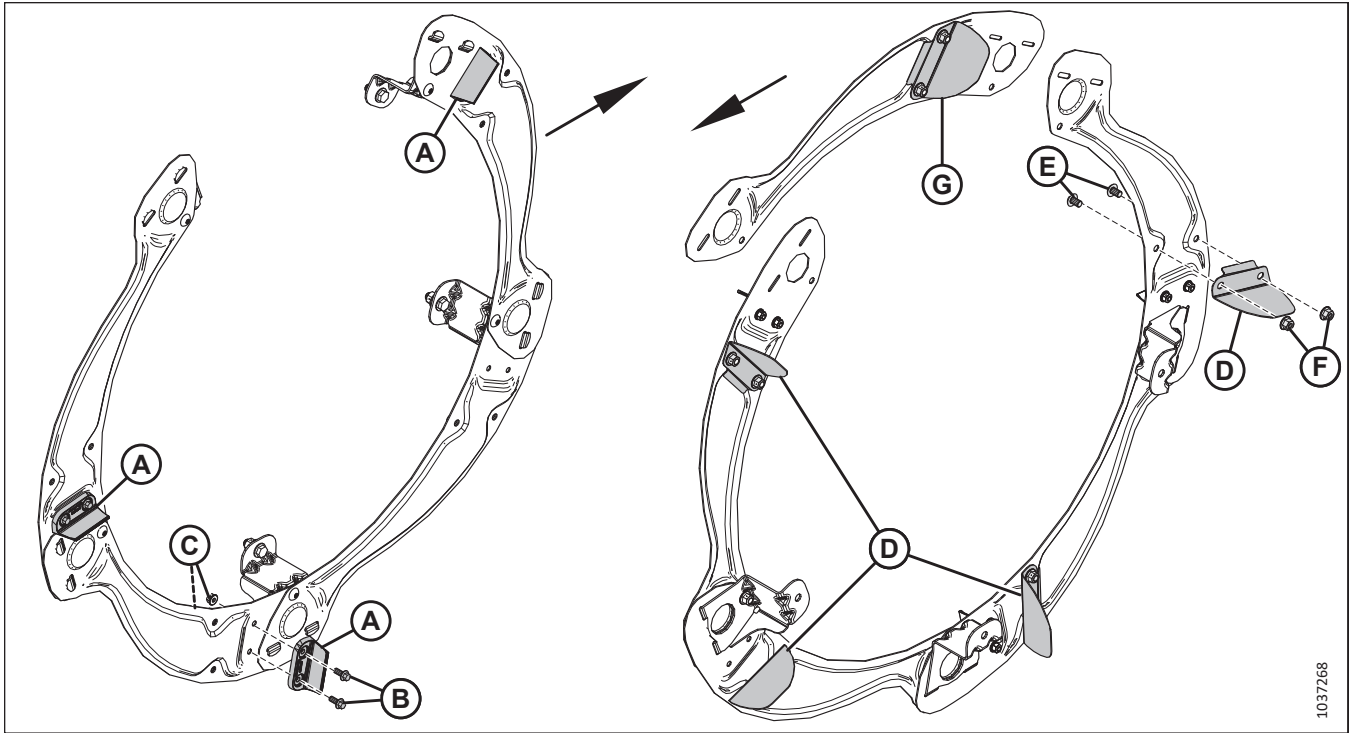


Figure 4.104: Five-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

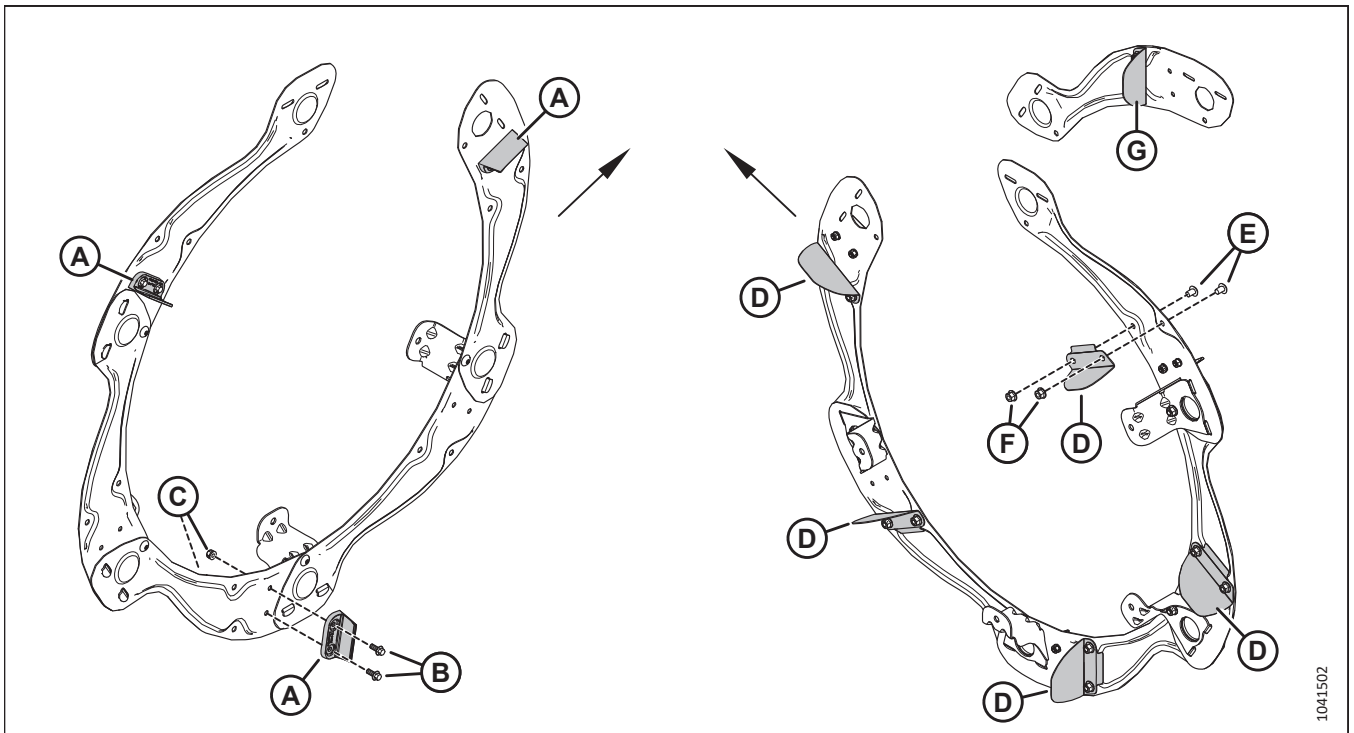


Figure 4.105: Six-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

NOTE:

For five-bat reels, refer to Figure 4.104, page 153. For six-bat reels, refer to Figure 4.105, page 153.

COMPLETING HEADER ASSEMBLY

4. Install all 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:

Ensure that the rubber paddles and cam deflectors are oriented as shown.

5. Torque six M8 X 1.25 X 20 hex bolts (B) to 5 Nm (0.7 lbf-ft [9 lbf-in]).
6. Install aluminum cam deflectors (D) (MD #311729) on the inboard face of the endshield assembly shown using two M10 X 1.5 X 16 Torx® screws (E) and hex nuts (F).
7. Install aluminum cam deflector (G) (MD #311729) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

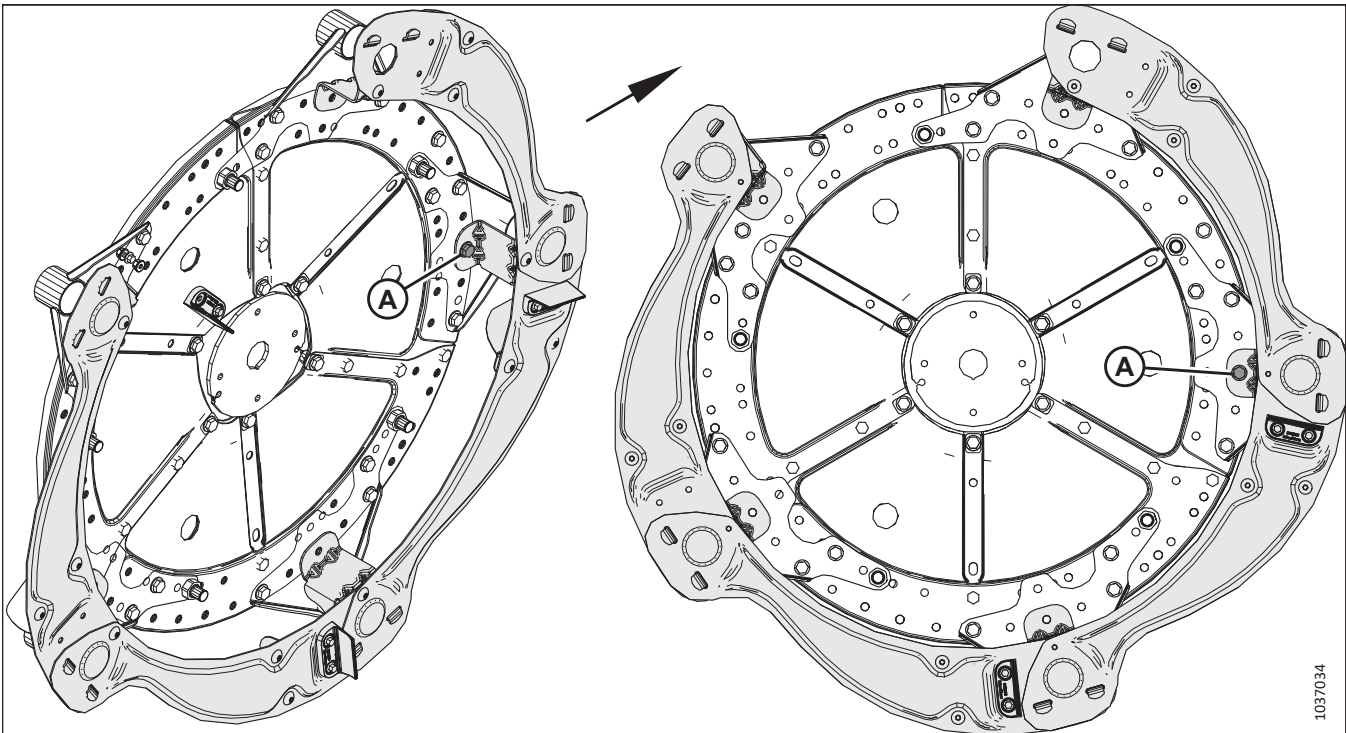


Figure 4.106: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

8. Position the partially assembled reel endshield on the reel.
9. Secure the endshield to the reel with one M12 X 1.75 X 30 hex bolt and nut (A). Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

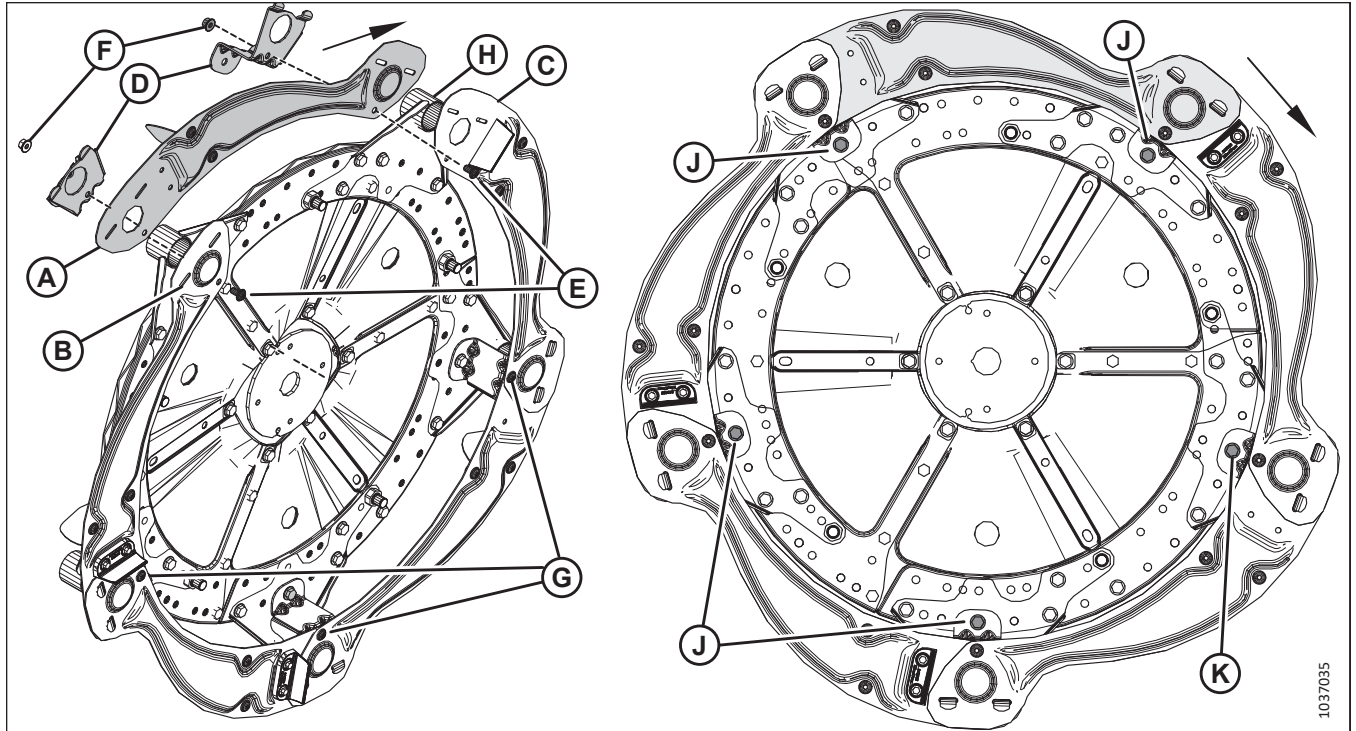


Figure 4.107: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

10. 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 the last segment on top of segment (C).
- b. Insert the tabs of endshield supports (D) through the endshield segments.
- c. Secure the 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.

11. Install the endshield supports on tine tubes (H).

NOTE:

Not all of the tine tubes are shown in the illustration.

12. Secure the remaining endshield supports to the reel disc using one M12 X 1.75 X 30 hex bolt (J) and nut per endshield support.

13. Tighten M12 X 1.75 X 30 hex bolts (J) and (K) and the nuts securing the endshield supports to the cam discs to 69 Nm (51 lbf·ft).

4.14.2 Installing Double-Reel Endshields at Inboard Tail End

The reel endshields on double-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

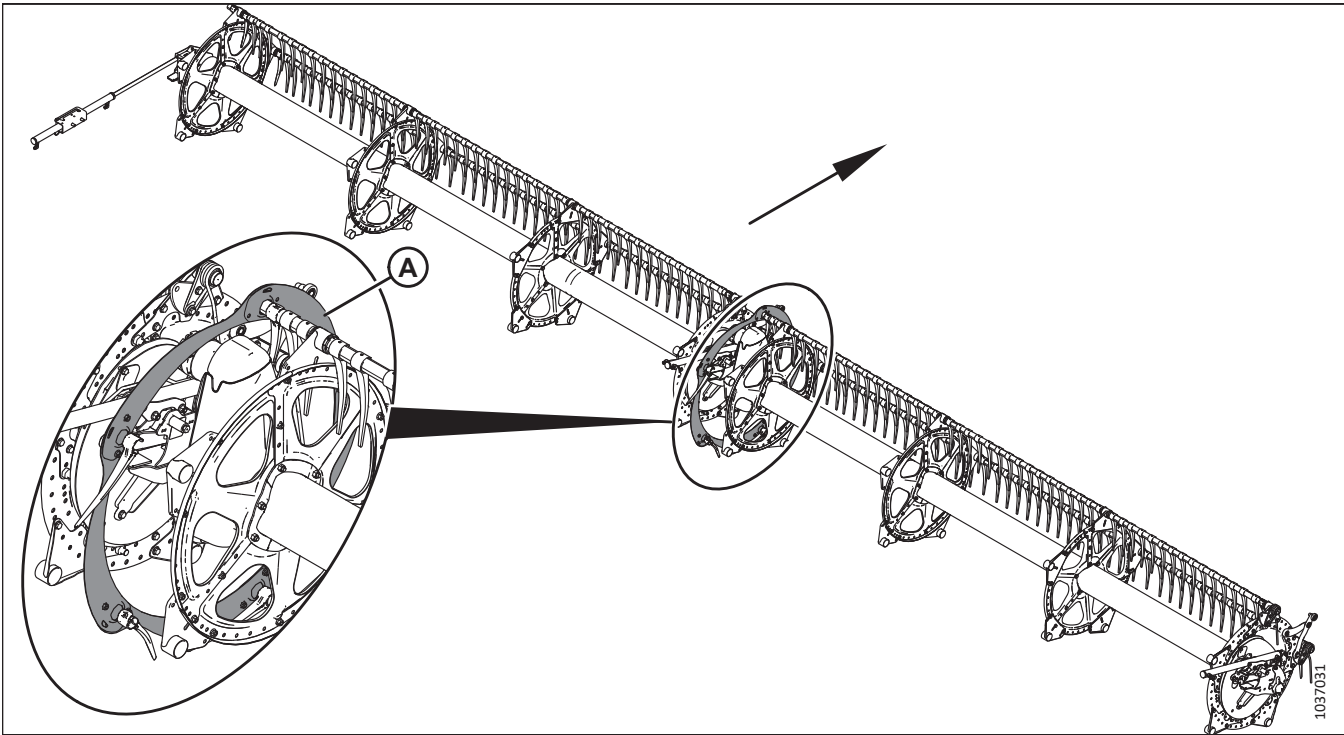


Figure 4.108: Five-Bat Double Reel

NOTE:

Inboard tail-end endshields (A) are installed on the left of the reel.

NOTE:

The arrow in the illustration indicates the front of the header.

NOTE:

This procedure applies to five-bat reels. The procedure for six-bat reels is similar.

1. If not already done at least once, raise the reel fully, and then lower it fully.

IMPORTANT:

Raising the reel fully, and then lowering it fully, will fill the hydraulic lines with oil and will purge them of air. Doing this before installing the inboard endshields will prevent the inboard endshields from contacting and damaging each other when the reel is subsequently raised.

COMPLETING HEADER ASSEMBLY

2. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table 4.11, page 157.

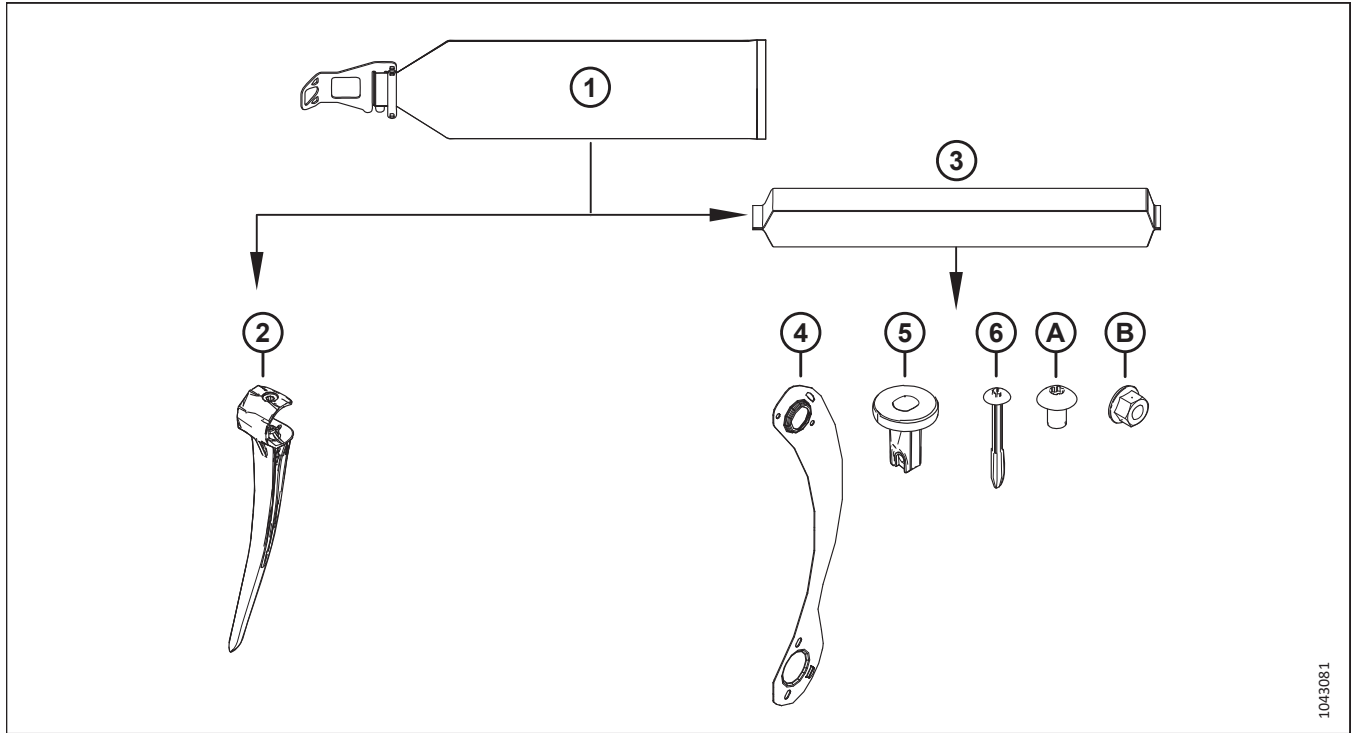


Figure 4.109: Five-Bat Reel Endshield Parts Bag MD #368322

Table 4.11 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag MD #368322

Ref	Part Number	Description	Quantity
2	NSS see notes ⁵⁶	FINGER – PLASTIC – LH ANGLED 45 MM	5
3	368331	ENDSHLD BAG – 5 BAT RH IB TAIL NOTE: This parts bag is labeled “RH” and/or MD #368331.	1
4	311795	SHIELD – 5 BAT RH REEL-TAIL END	5
5	273968	BUSHING – ENDSHIELD	5
6	252687	SCREW – 48° PLASTITE TWIN HELIX	5
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	10
B	135799	NUT – HEX FLG CTR LOC M10X1.5-10	10

5. Not sold separately. For service parts, can be ordered as a package of 10 (MD #360540).
 6. These parts are marked with a black cable tie to indicate that they belong with parts bag (3) (“RH”, MD #368331) which should also be marked with a black cable tie.

COMPLETING HEADER ASSEMBLY

3. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table 4.12, page 158.

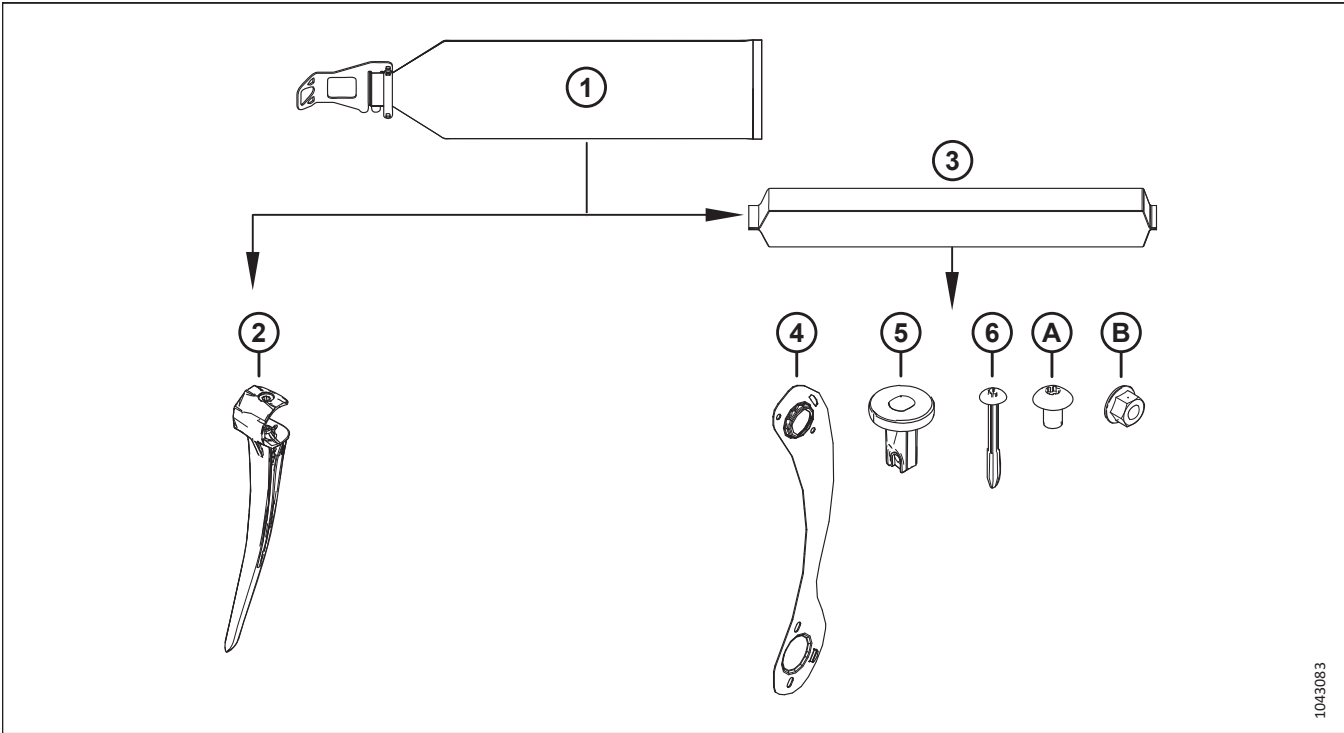


Figure 4.110: Six-Bat Reel Endshield Parts Bag MD #368323

Table 4.12 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag MD #368323

Ref	Part Number	Description	Quantity
2	NSS see notes ⁷⁸	FINGER – PLASTIC – LH ANGLED 45MM	6
3	368334	ENDSHLD BAG – 6 BAT RH IB TAIL NOTE: This parts bag is labeled “RH” and/or MD #368334.	1
4	311822	SHIELD – 6 BAT RH REEL-TAIL END	6
5	273968	BUSHING – ENDSHIELD	6
6	252687	SCREW – 48° PLASTITE TWIN HELIX	6
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	12
B	135799	NUT – HEX FLG CTR LOC M10X1.5-10	12

7. Not sold separately. For service parts, can be ordered as a package of 10 (MD #360540).

8. These parts are marked with a black cable tie to indicate that they belong with parts bag (3) (“RH IB TAIL”, MD #368334) which should also be marked with a black cable tie.

COMPLETING HEADER ASSEMBLY

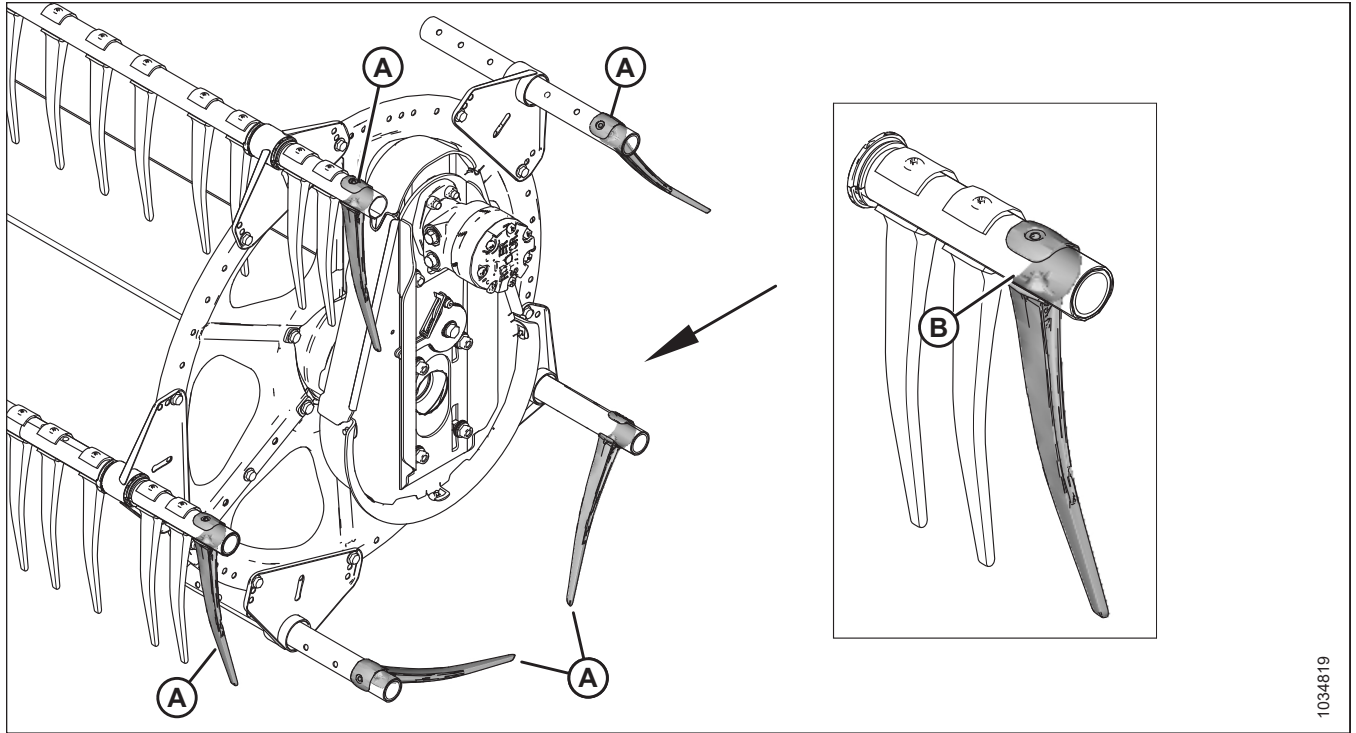
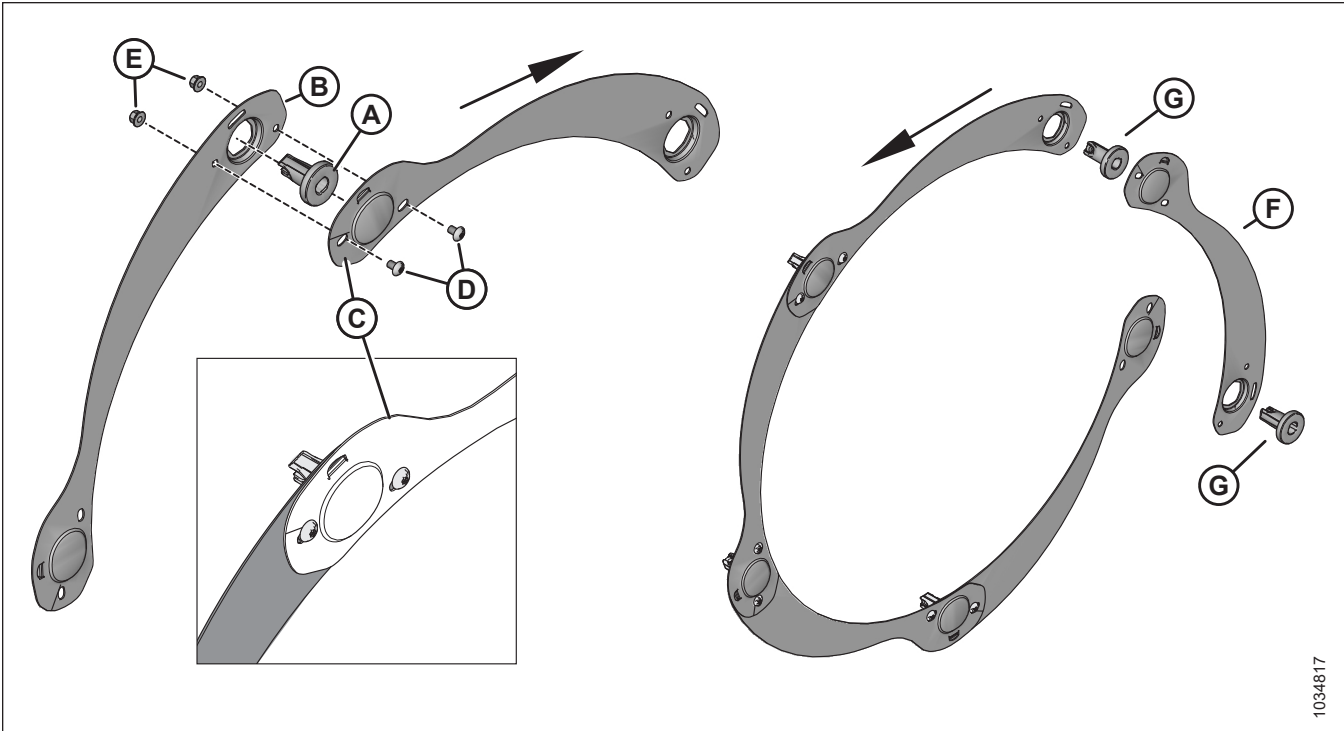


Figure 4.111: Fingers Placed on Tine Tubes

4. Place one finger (A) onto each tine tube. Ensure that open face (B) of each finger faces the front of the header.

COMPLETING HEADER ASSEMBLY



1034817

Figure 4.112: Endshield Subassembly

5. 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). Secure the segments using two M10 X 1.5 X 16 Torx® screws (D) and nuts (E). Do **NOT** tighten the hardware yet.
 - c. Repeat Substep (a.) and Substep (b.) to install the remaining segments. Do **NOT** install last segment (F) and two bushings (G) yet.

COMPLETING HEADER ASSEMBLY

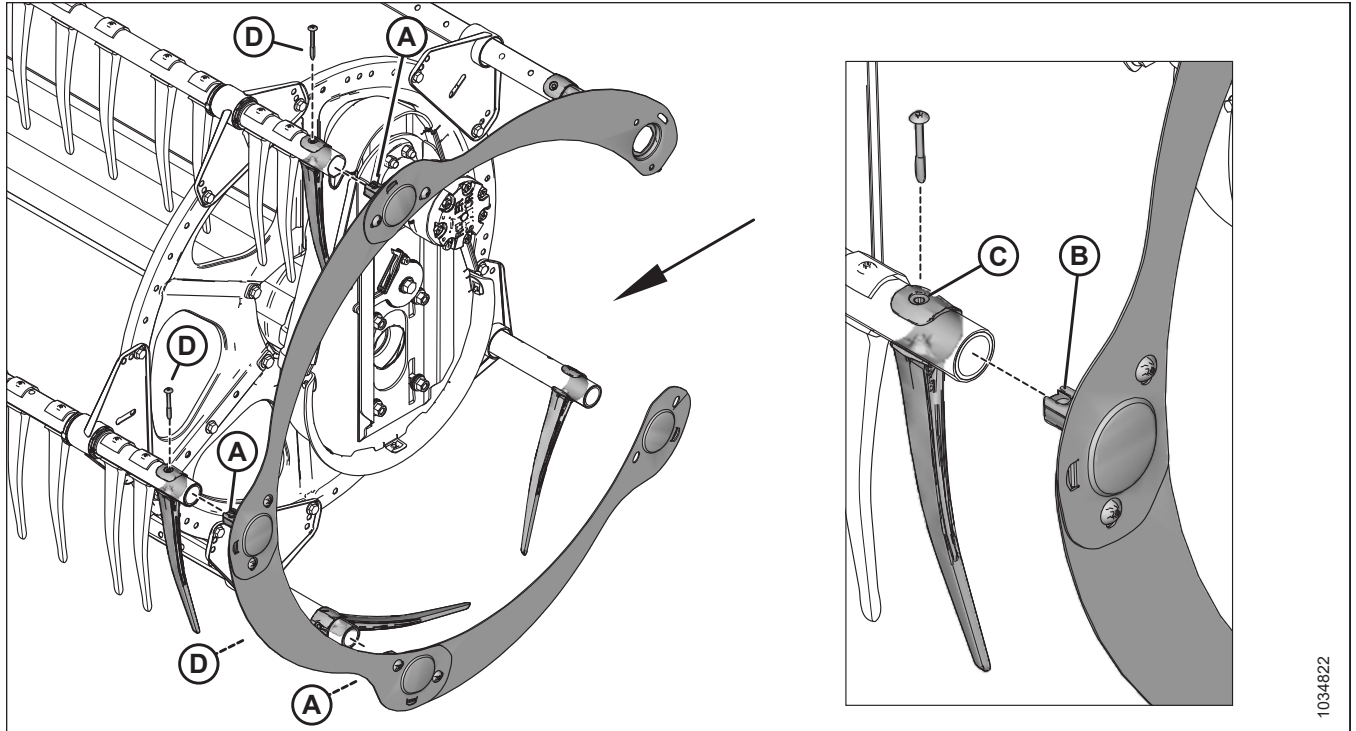


Figure 4.113: Endshield Mounted onto Reel

6. Mount the endshield onto the reel as follows:

- a. Insert three bushings (A) into the tine tubes. Align the holes in bushing (B) and finger (C) with the hole in the tine tube.
- b. Secure the bushings and the fingers using Torx® Plastite® screws (D). Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

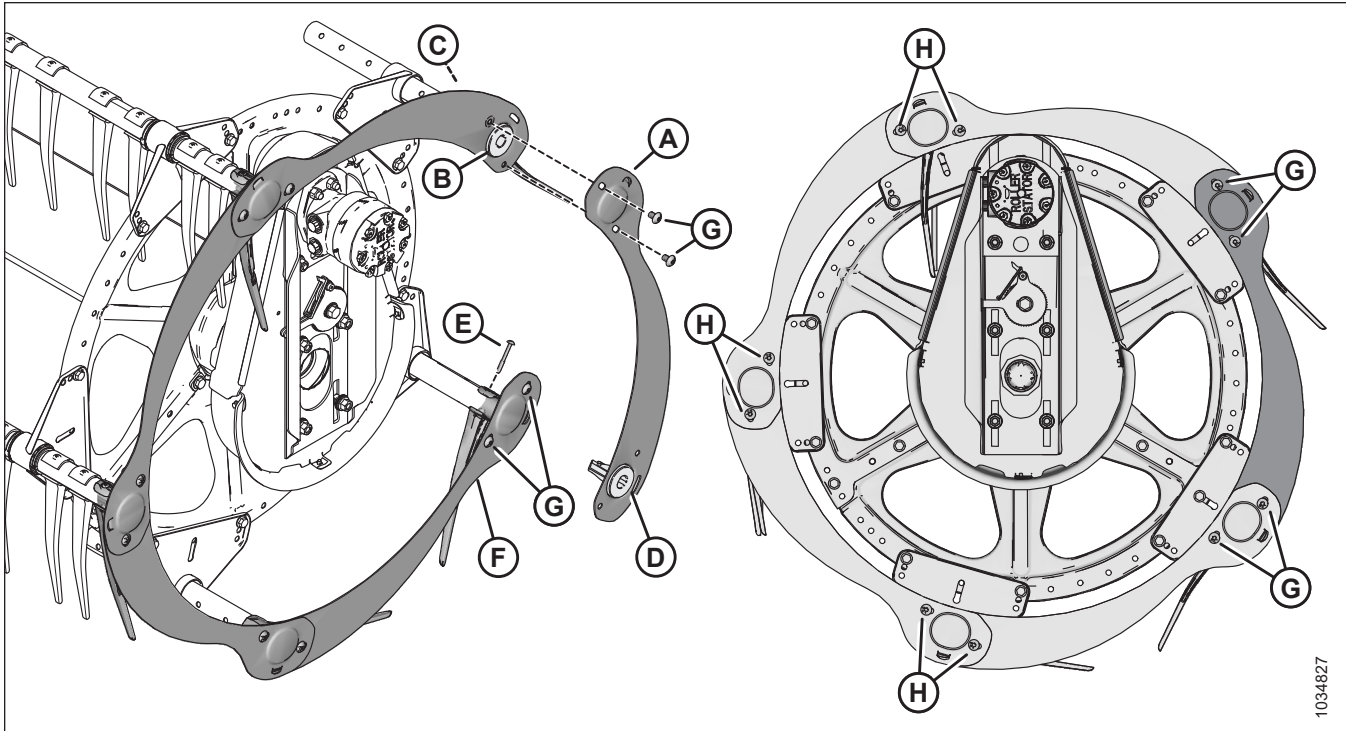


Figure 4.114: Completed Endshield Assembly

7. Install remaining endshield segment (A) as follows:
 - a. Install bushing (B) into the endshield segment and the tine tube. Secure the bushing with Torx® Plastite® screw (C). Do **NOT** tighten the hardware yet.
 - b. Install bushing (D) into the endshield segment.
 - c. Insert the end of the segment with bushing (D) into the tine tube. Secure it with Torx® Plastite® screw (E). Do **NOT** tighten the hardware yet.
 - d. Place the cupped end of segment (F) on top of segment (A).
 - e. Secure the endshield segments with M10 X 1.5 X 16 Torx® screws and nuts (G).
8. Tighten all the tine tube finger Torx® Plastite® screws to 9 Nm (7 lbf-ft [80 lbf-in]). Do **NOT** overtighten the screws; overtightening will flatten the tubes.
9. Torque all M10 X 1.5 X16 Torx® screws (G) and (H) to 39 Nm (29 lbf-ft).

4.14.3 Installing Double-Reel Endshields at Inboard Cam End

The reel endshields on double-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

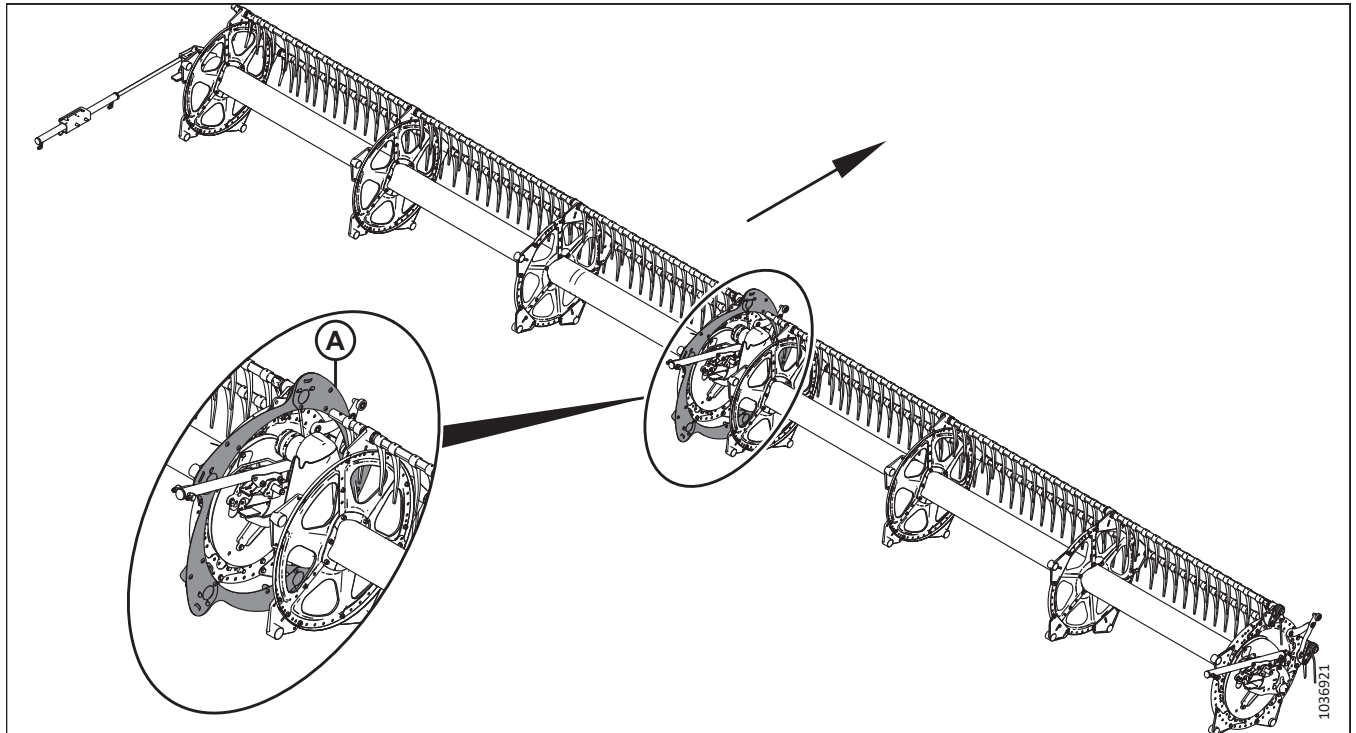


Figure 4.115: Five-Bat Double Reel

NOTE:

Inboard cam-end endshields (A) are installed on the right of the reel.

NOTE:

The arrow in the illustration in this procedure indicate the front of the header.

NOTE:

The illustrations in this procedure all show five-bat reel endshields. The procedure for installing six-bat endshields is the same, only the quantity of parts is different.

1. If not already done at least once, raise the reel fully, and then lower it fully.

IMPORTANT:

Raising the reel fully, and then lowering it fully, will fill the hydraulic lines with oil and will purge them of air. Doing this before installing the inboard endshields will prevent the inboard endshields from contacting and damaging each other when the reel is subsequently raised.

COMPLETING HEADER ASSEMBLY

2. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table 4.13, page 164.

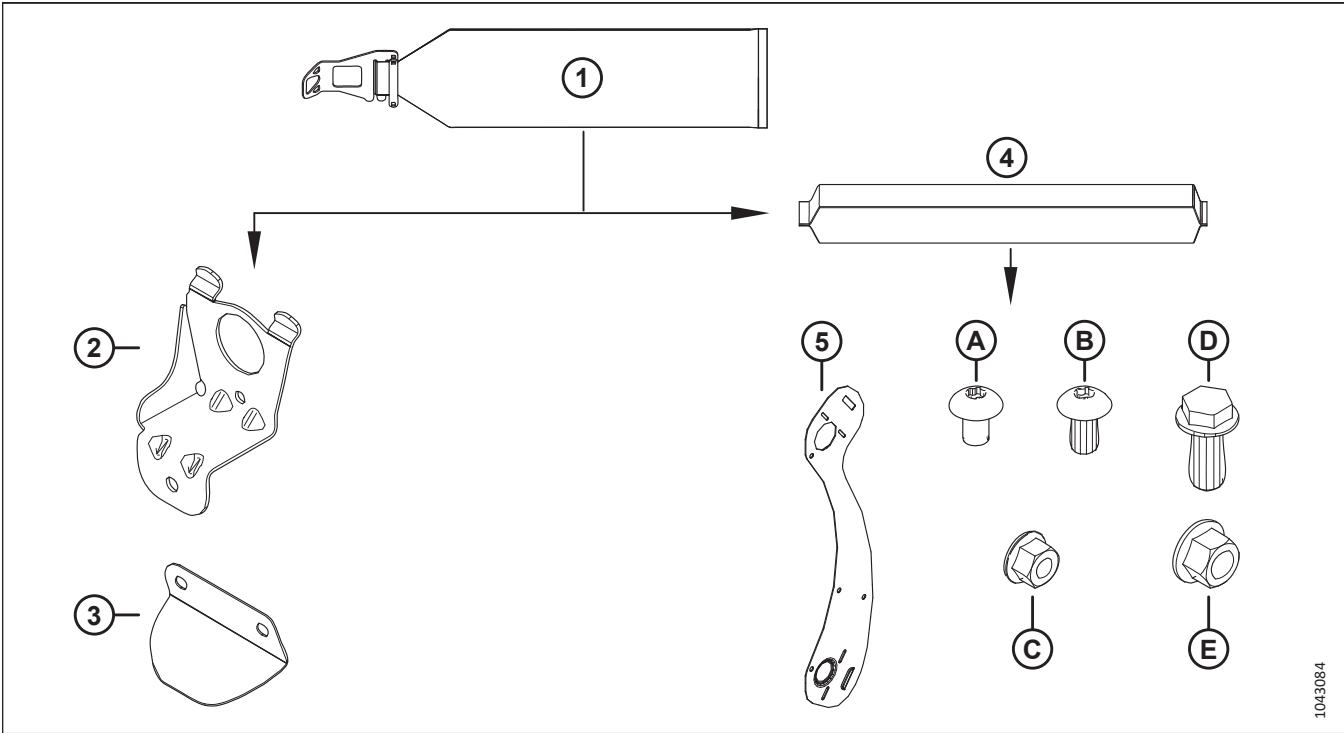


Figure 4.116: Reel Endshield Parts Bag MD #368322

Table 4.13 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag MD #368322

Ref	Part Number	Description	Quantity
2	311964 - see note ⁹	SUPPORT – CAM END	5
3	311906 – see note ⁹	DEFLECTOR – CAM INBOARD	5
4	368330	ENDSHLD BAG – 5 BAT LH IB CAM NOTE: This parts bag is labeled “LH CAM” and/or MD #368330.	1
5	273823	SHIELD – 5 BAT LH REEL CAM END	5
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	10
B	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	5
C	135799	NUT – HEX FLG CTR LOC M10X1.5-10	15
D	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	5
E	136431	NUT – HEX FLG CTR LOC M12X1.75-10	5

9. These parts are marked with a green cable tie to indicate that they belong with parts bag (4) (“LH CAM”, MD #368330) which should also be marked with a green cable tie.

COMPLETING HEADER ASSEMBLY

3. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table 4.14, page 165.

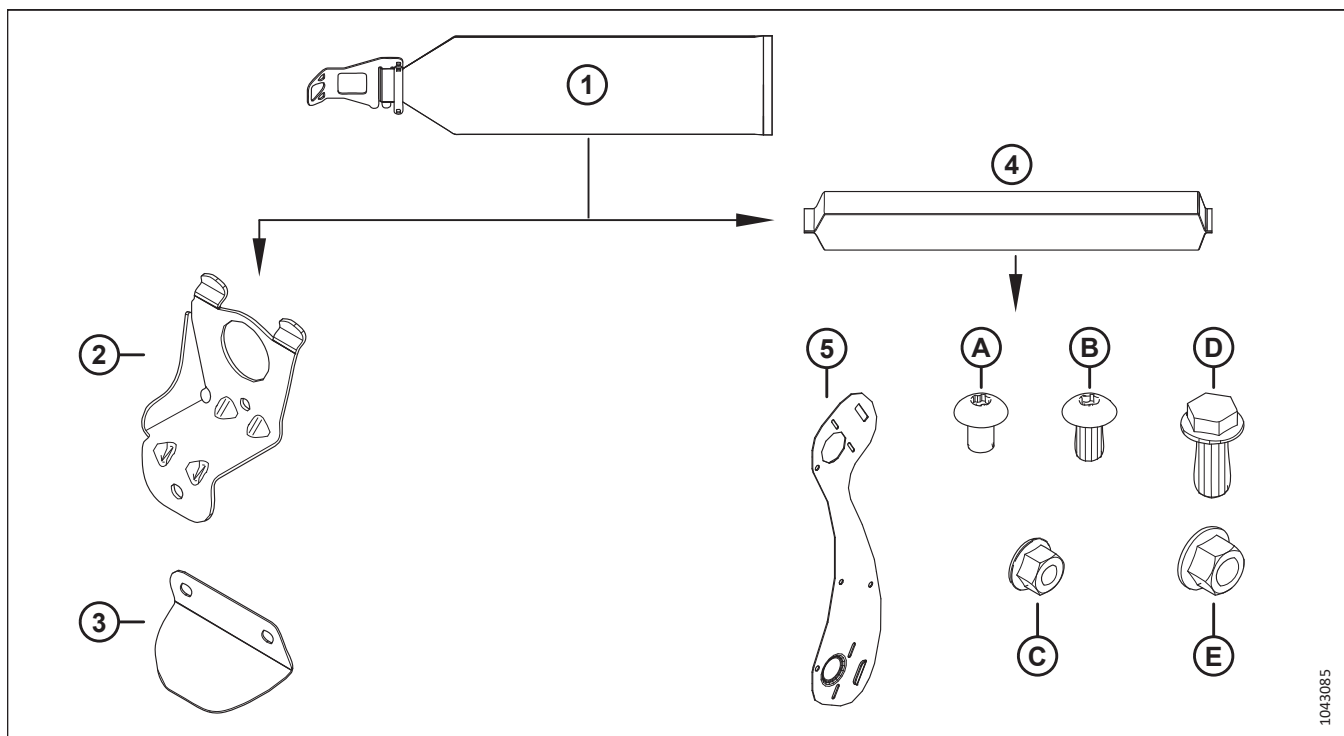


Figure 4.117: Six-Bat Reel Endshield Parts Bag MD #368323

Table 4.14 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag MD #368323

Ref	Part Number	Description	Quantity
2	311964 - see note ¹⁰	SUPPORT – CAM END	6
3	311906 - see note ¹⁰	DEFLECTOR – CAM INBOARD	6
4	368341	ENDSHLD BAG – 6 BAT LH IB CAM NOTE: This parts bag is labeled “LH” and/or MD #368341.	1
5	273813	SHIELD – 6 BAT LH REEL CAM END	6
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	12
B	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	6
C	135799	NUT – HEX FLG CTR LOC M10X1.5-10	18
D	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	6
E	136431	NUT – HEX FLG CTR LOC M12X1.75-10	6

10. These parts are marked with a green cable tie to indicate that they belong with parts bag (4) (“LH CAM”, MD #368341) which should also be marked with a green cable tie.

COMPLETING HEADER ASSEMBLY

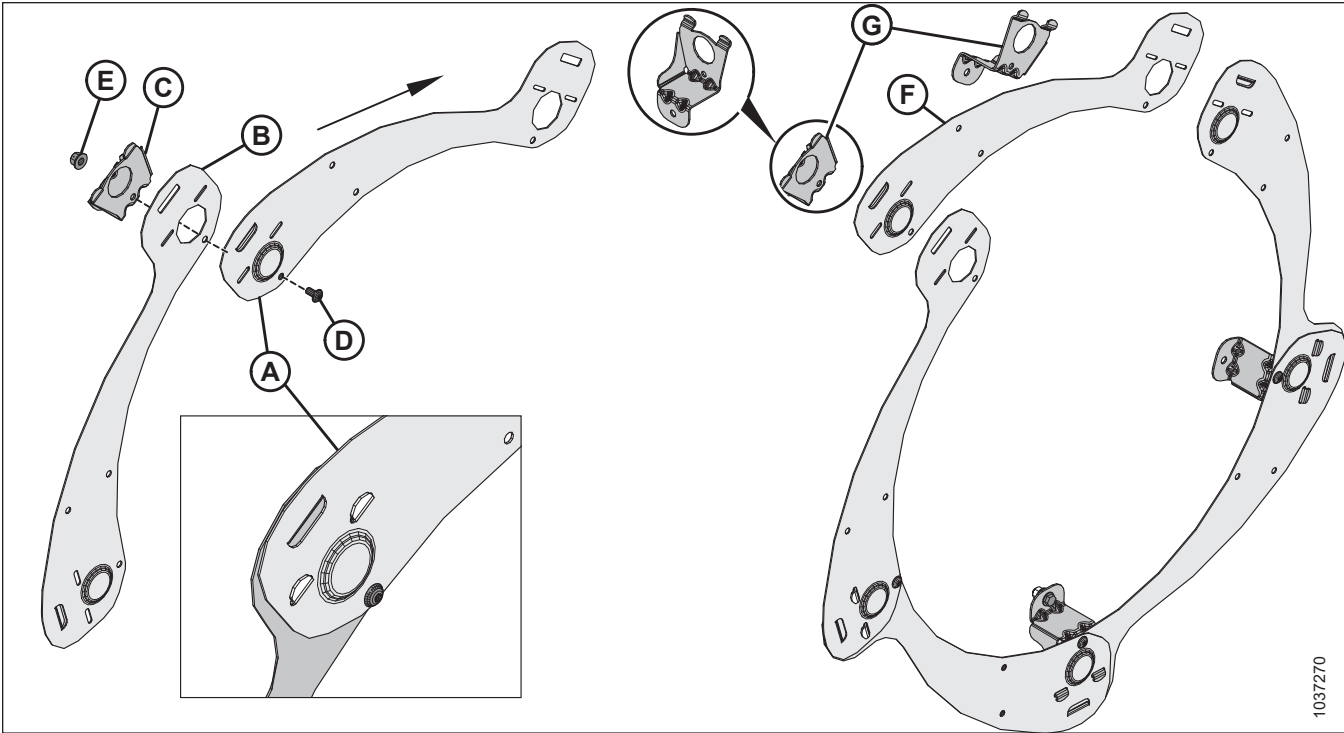


Figure 4.118: Five-Bat Reel – Initial Endshield Assembly

4. Assemble the endshield as follows:

- a. Position endshield segment (A) behind segment (B). Engage endshield support tabs (C) through both segments. Secure the segment with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.
- b. Repeat the previous step to install the remaining segments. Do **NOT** install last segment (F) and two support tabs (G) yet.

COMPLETING HEADER ASSEMBLY

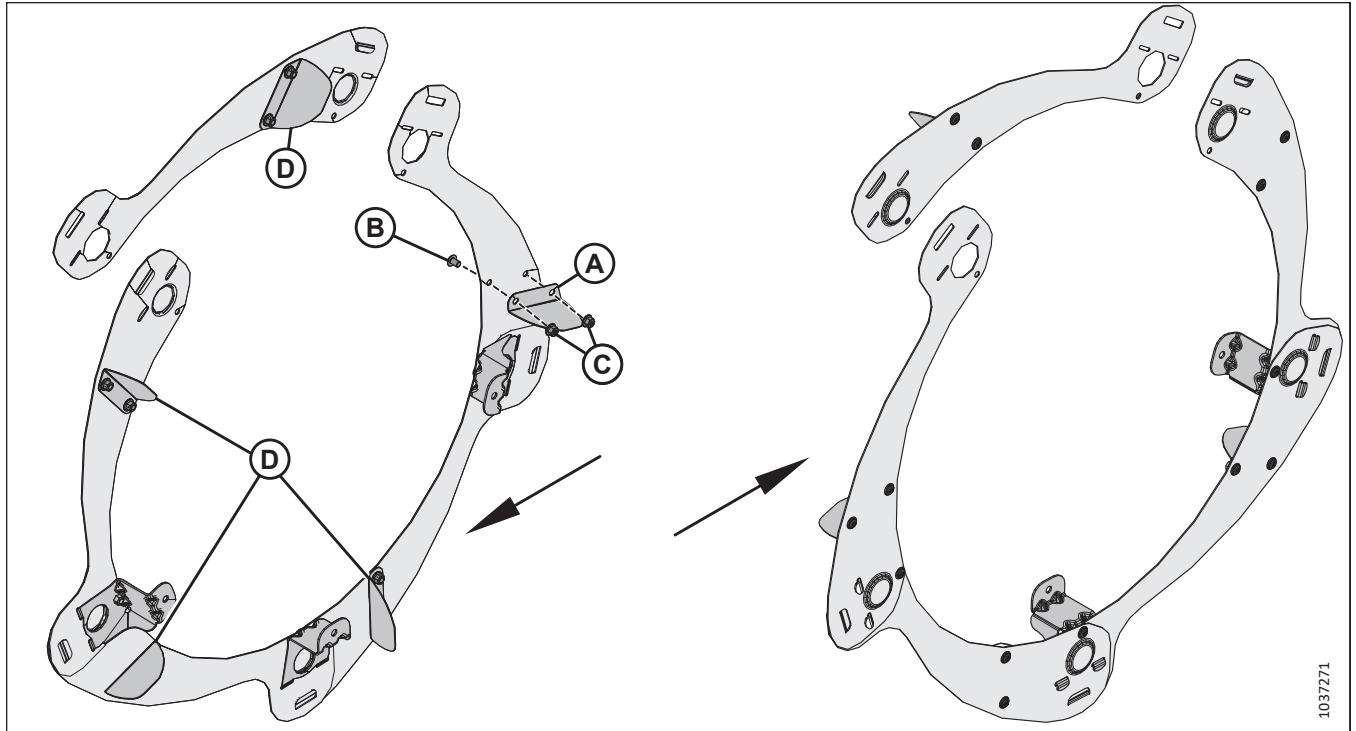


Figure 4.119: Five-Bat Reel – Aluminum Cam Deflectors

5. Install four aluminum cam deflectors (A) (MD #311906) on the inboard face of the endshield assembly using two M10 X 1.5 X 16 Torx® screws (B) and hex nuts (C).
6. Install aluminum cam deflector (D) (MD #311906) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

COMPLETING HEADER ASSEMBLY

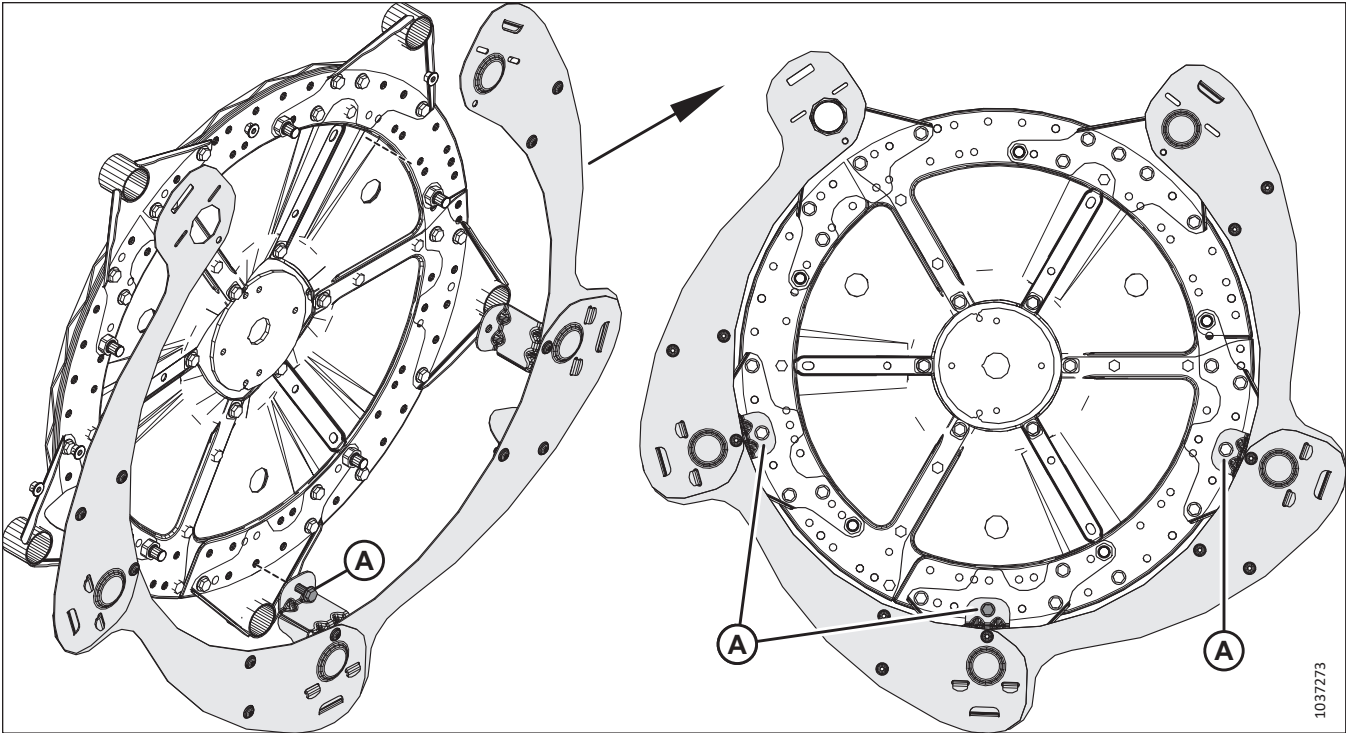


Figure 4.120: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

7. Position the partially assembled reel endshield on the reel.
8. Secure the endshield with three M12 X 1.75 X 30 hex bolts (A) and nuts. Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

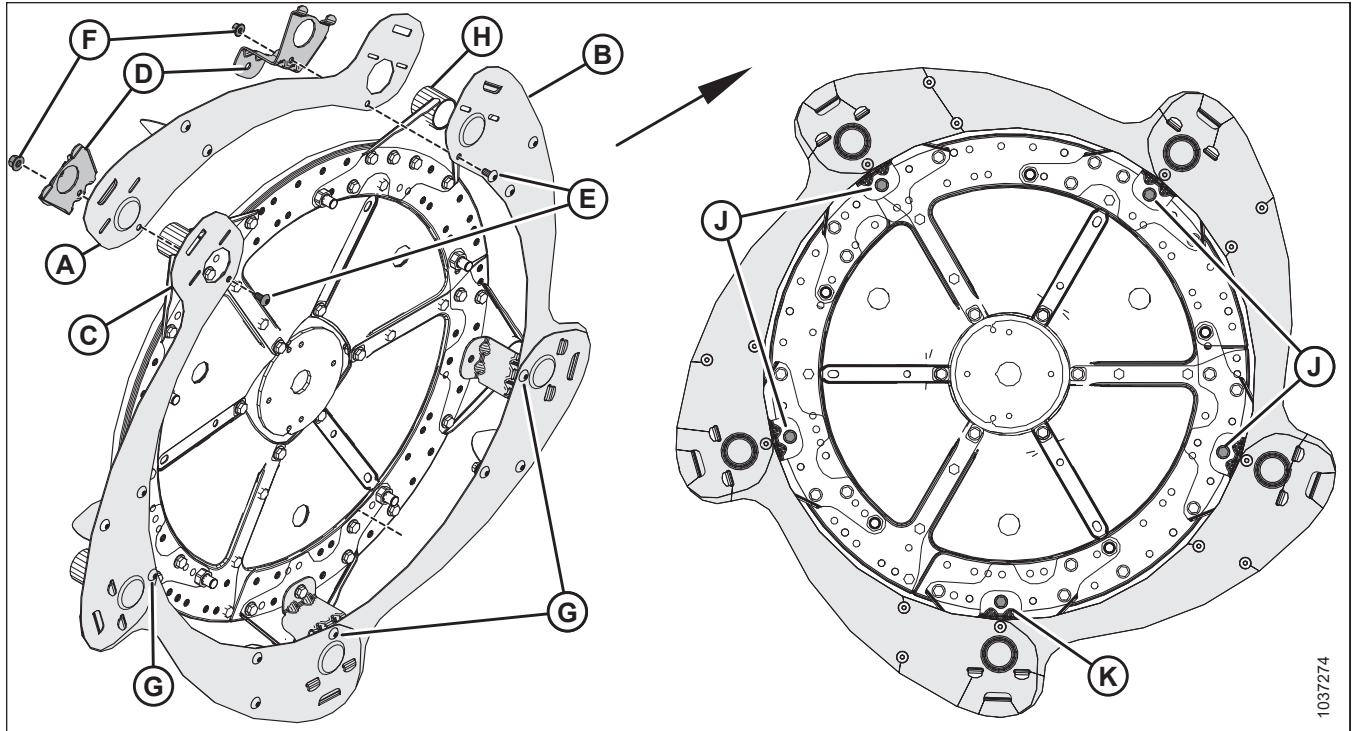


Figure 4.121: Five-Bat Reel – Assembled Reel Endshields on Reel

9. 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. Insert the tabs of endshield supports (D) through the endshield segments.
- c. Secure the 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 necessary.

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

NOTE:

Not all of the tine tubes are shown in the illustration.

11. Secure the remaining endshield supports to the reel disc using one M12 X 1.75 X 30 hex bolts (J) and nut per endshield support.

12. Torque M12 X 1.75 X 30 hex bolts (J) and (K) and the nuts that secure the endshield supports to the cam discs to 69 Nm (51 lbf-ft).

4.14.4 Installing Double-Reel Endshields at Outboard Tail End

The reel endshields on double-reel headers have been removed for shipping purposes. The reel endshields will need to be unpacked and installed on the header.

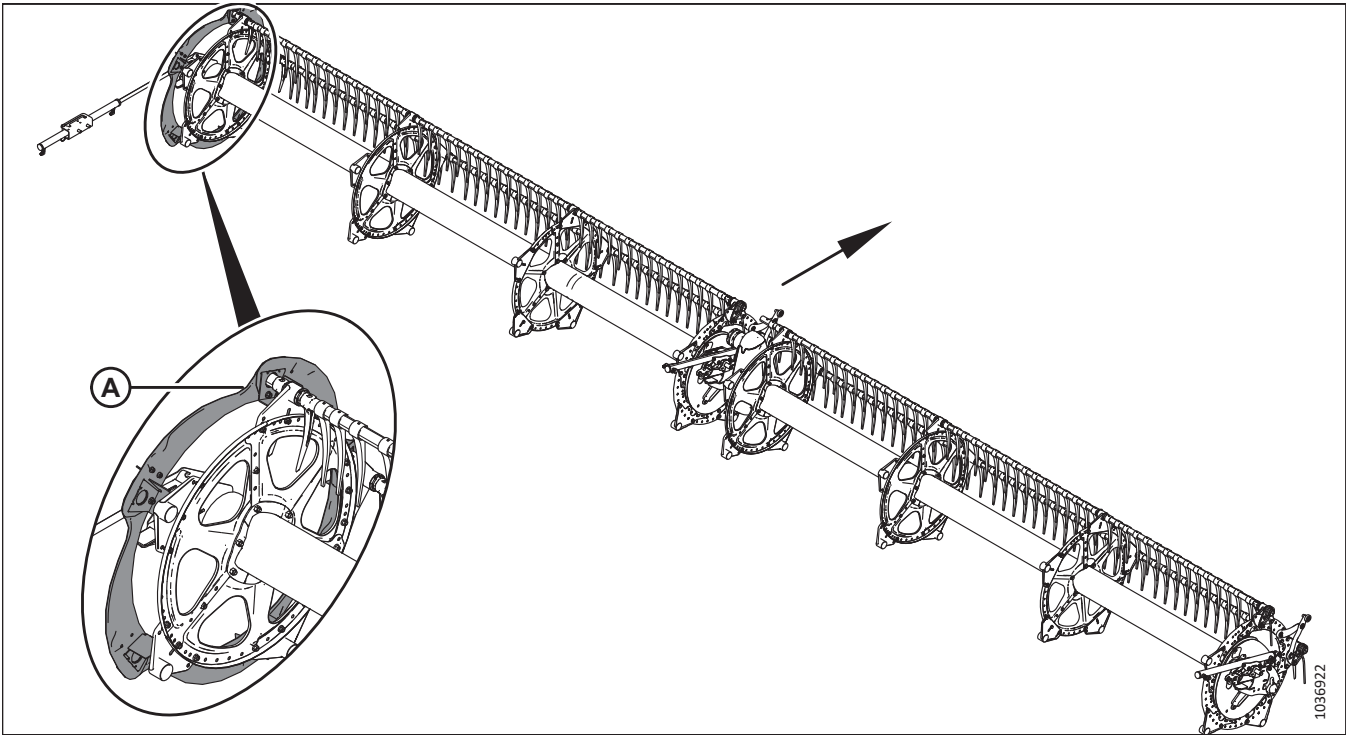


Figure 4.122: Five-Bat Double Reel

NOTE:

Outboard tail-end endshields (A) are installed on the left of the reel.

NOTE:

The arrow in the illustrations indicates the front of the header.

NOTE:

This procedure applies to five-bat reels. The procedure for six-bat reels is similar.

COMPLETING HEADER ASSEMBLY

1. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table 4.15, page 171.

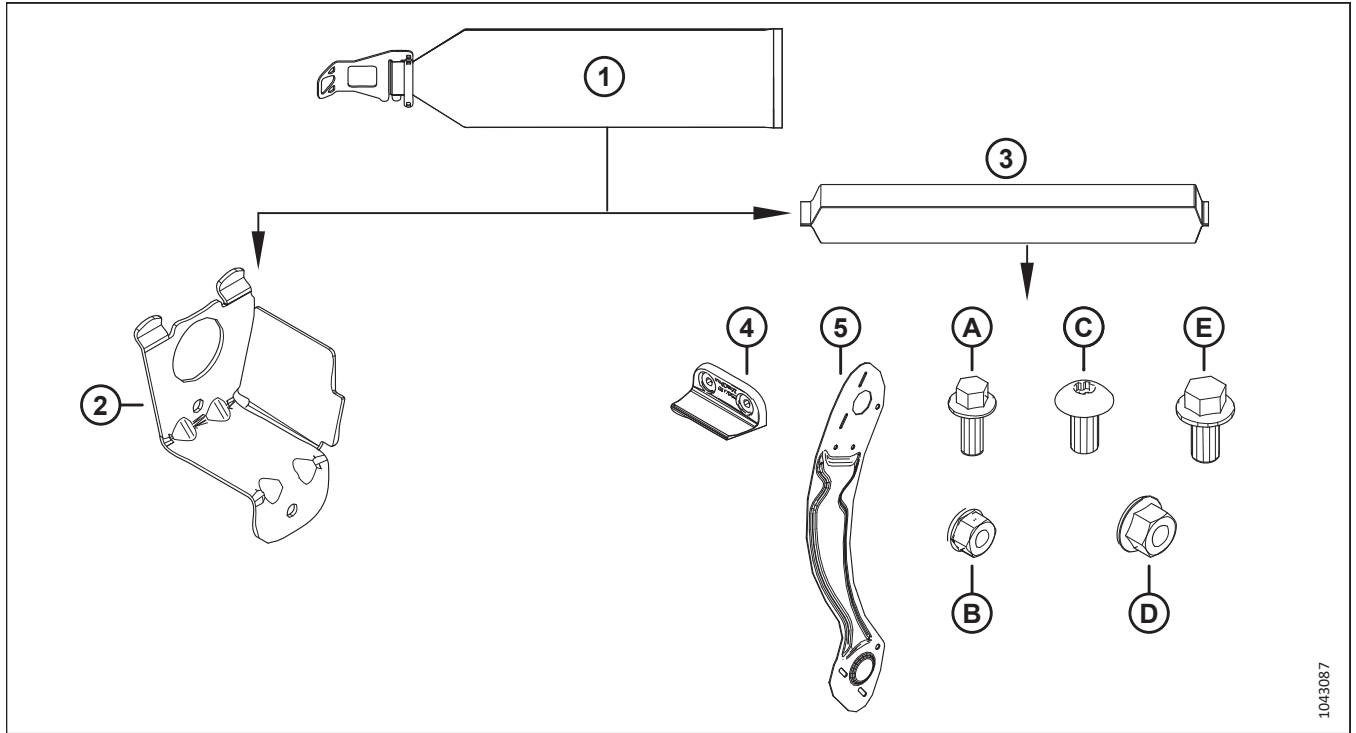


Figure 4.123: Five-Bat Reel Endshield Parts Bag MD #368322

Table 4.15 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag (MD #368322)

Ref	Part Number	Description	Quantity
2	311965 – see note ¹¹	SUPPORT – TAIL END	5
3	368329 (“LH”)	ENDSHLD BAG – 5 BAT LH OB TAIL NOTE: This parts bag is labeled “LH” and/or MD #368329.	1
4	313035	PADDLE – REEL END; HYTREL	3
5	311695	SHIELD – OUTBOARD LH 5 BAT	5
A	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10X1.5X20SPCL-8.8-A3L	5
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	10
E	152655	BOLT – HEX FLG HD M10X1.5X20-8.8-AA1J	5

11. These parts are marked with a yellow cable tie to indicate that they belong with parts bag (3) (“LH”, MD #368329) which should also be marked with a yellow cable tie.

COMPLETING HEADER ASSEMBLY

2. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table 4.16, page 172.

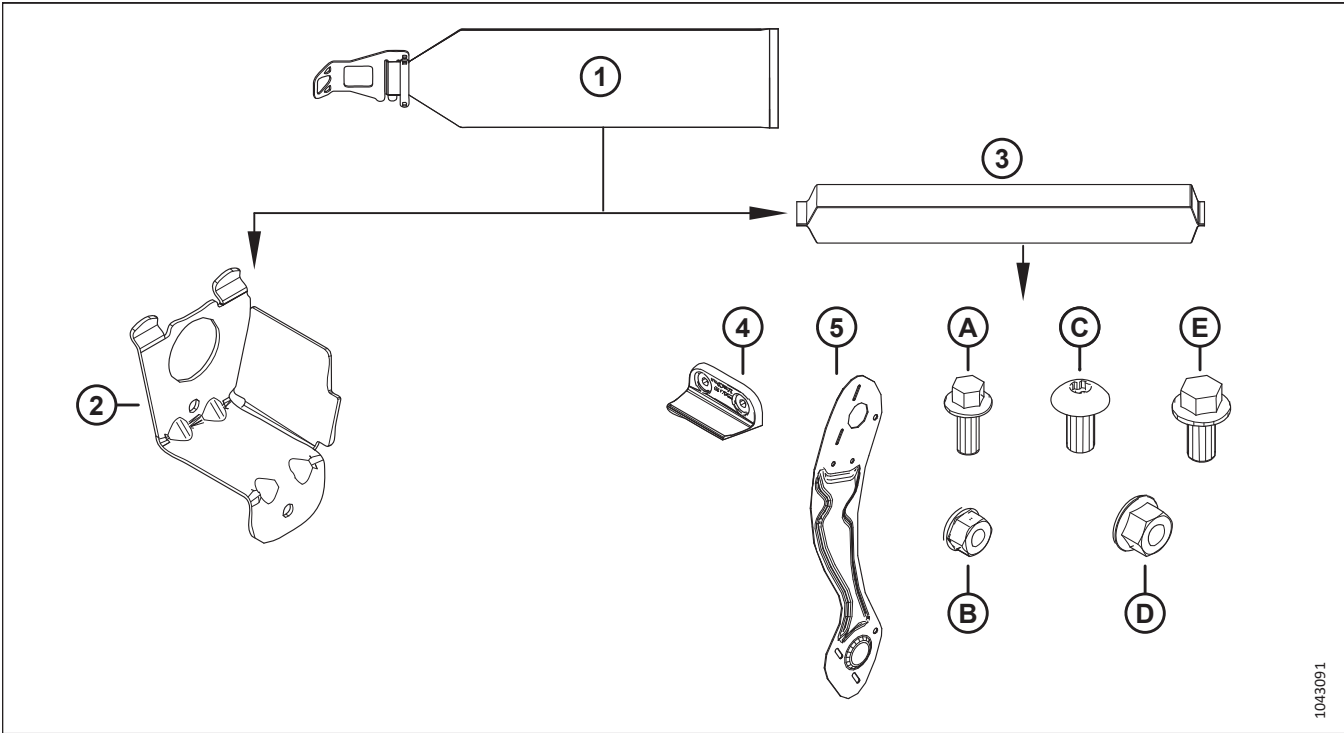


Figure 4.124: Six-Bat Reel Endshield Parts Bag MD #368323

Table 4.16 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag (MD #368323)

Ref	Part Number	Description	Quantity
2	311965 – see note ¹²	SUPPORT – TAIL END	6
3	368333	ENDSHLD BAG – 6 BAT LH OB TAIL NOTE: This parts bag is labeled “LH” and/or MD #368333.	1
4	313035	PADDLE – REEL END; HYTREL	3
5	311753	SHIELD – OUTBOARD LH 6 BAT	6
A	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
B	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
C	136395	SCR – TORX TRUSS HD M10X1.5X20SPCL-8.8-A3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	12
E	152655	BOLT – HEX FLG HD M10X1.5X20-8.8-AA1J	6

12. These parts are marked with a yellow cable tie to indicate that they belong with parts bag (3) (“LH”, MD #368333) which should also be marked with a yellow cable tie.

COMPLETING HEADER ASSEMBLY

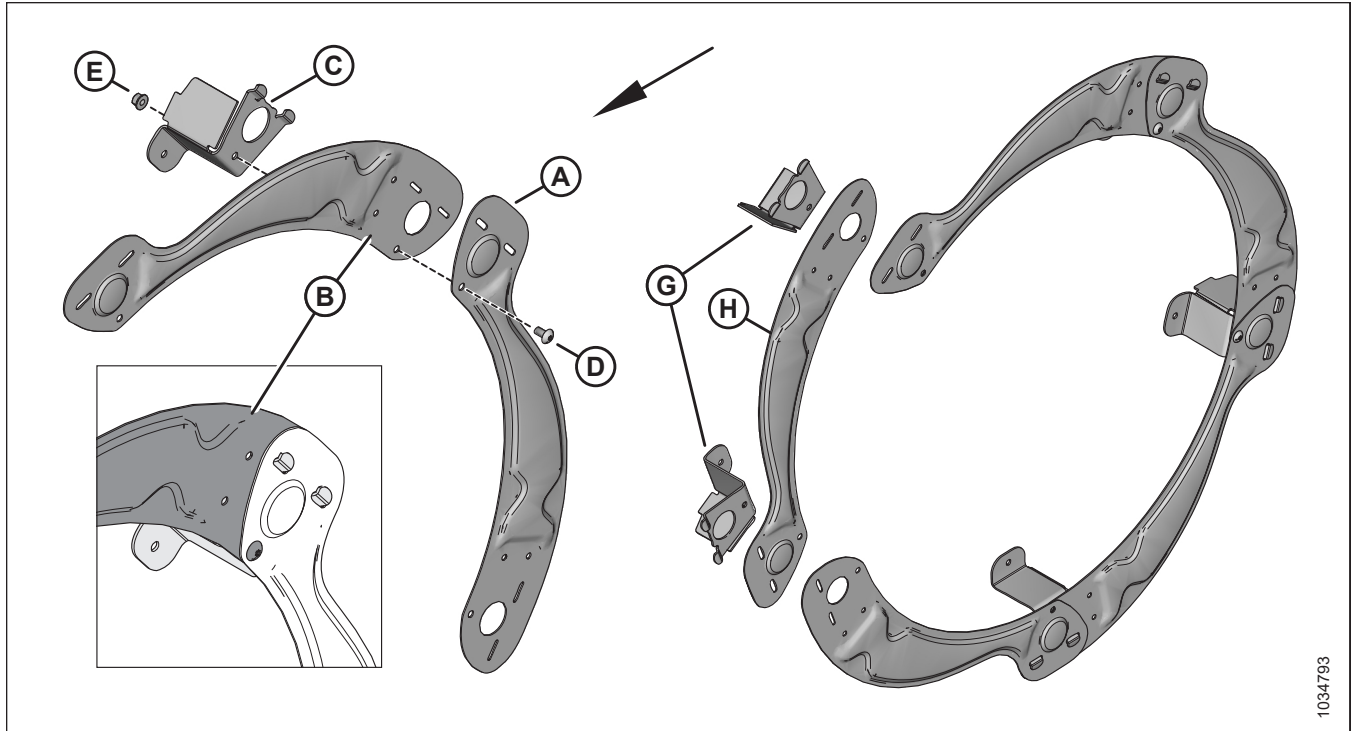


Figure 4.125: Five-Bat Reel – Initial Endshield Assembly

3. Assemble the endshield as follows:

- a. Position endshield segment (A) in front of segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.
- b. Repeat the previous step to assemble the remaining segments. Do **NOT** install last segment (H) and two support tabs (G) yet.

COMPLETING HEADER ASSEMBLY

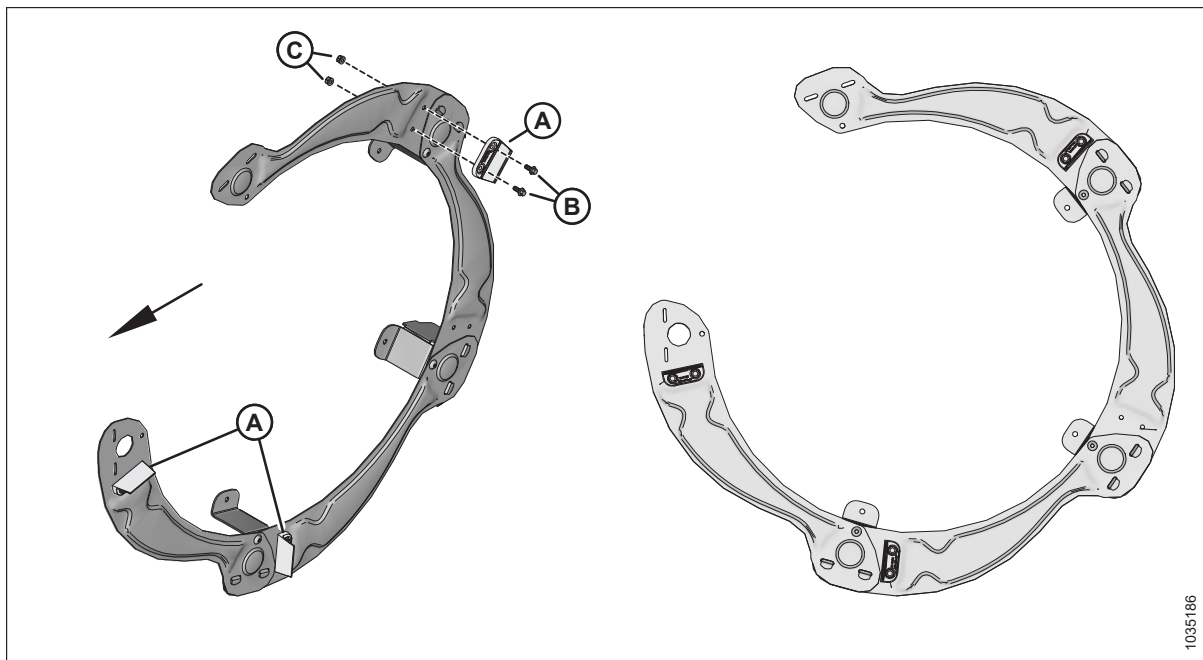


Figure 4.126: Five-Bat Reel – Rubber Paddles

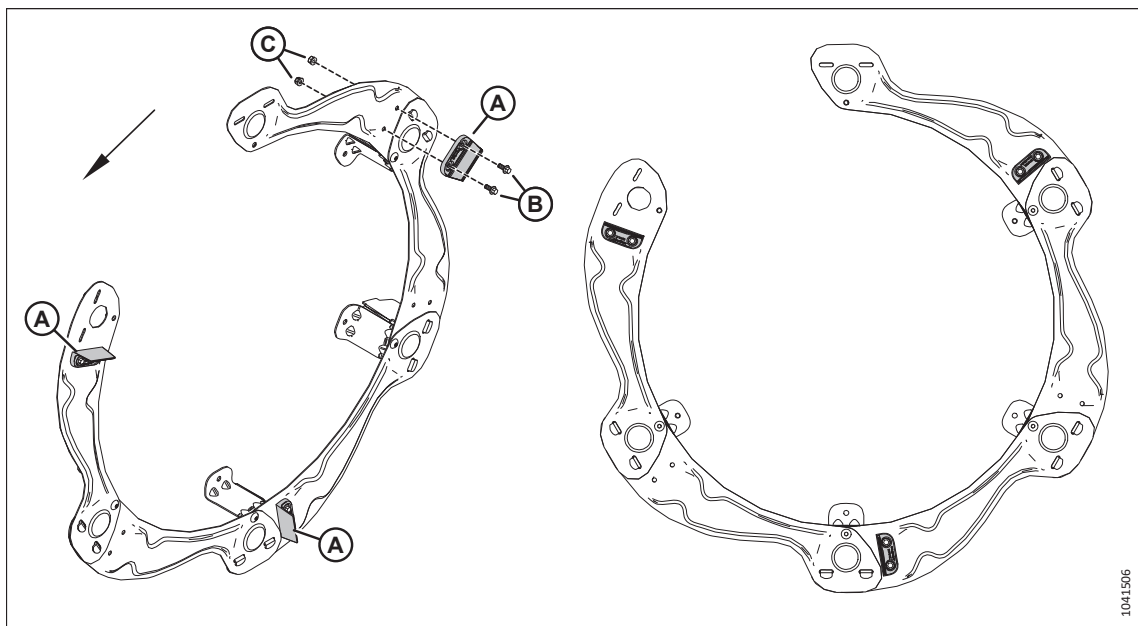


Figure 4.127: Six-Bat Reel – Rubber Paddles

NOTE:

For five-bat reels, refer to Figure 4.126, page 174. For six-bat reels, refer to Figure 4.127, page 174.

4. 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:

Ensure that 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.

5. Torque six M8 X 1.25 X 20 hex bolts (B) to 5 Nm (0.7 lbf·ft [9 lbf·in]).

COMPLETING HEADER ASSEMBLY

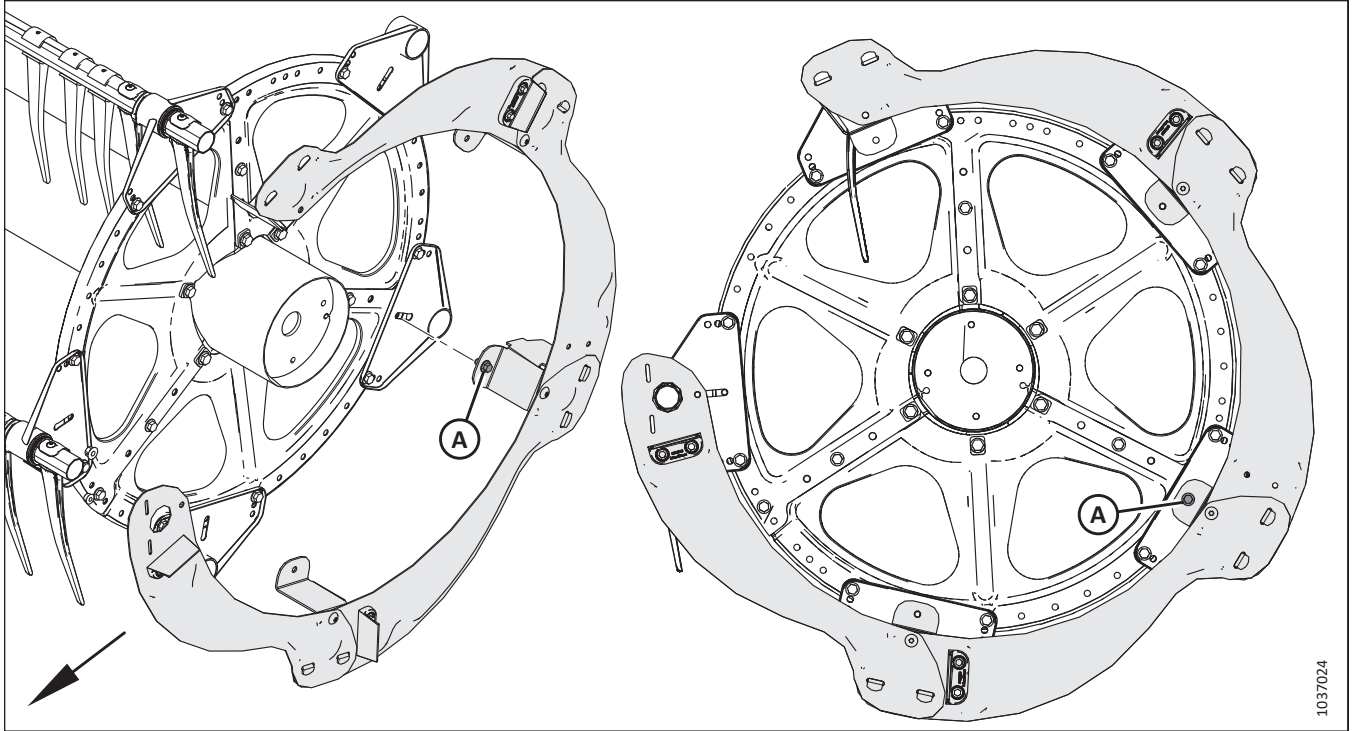


Figure 4.128: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

6. Position the partially assembled reel endshield on the reel and tine tubes.
7. Identify the endshield support tab opposite the opening in the circle of endshield segments. Secure that support tab to the reel with one M10 X 1.5 X 20 hex bolt (A) and nut. Do **NOT** tighten the hardware yet.

COMPLETING HEADER ASSEMBLY

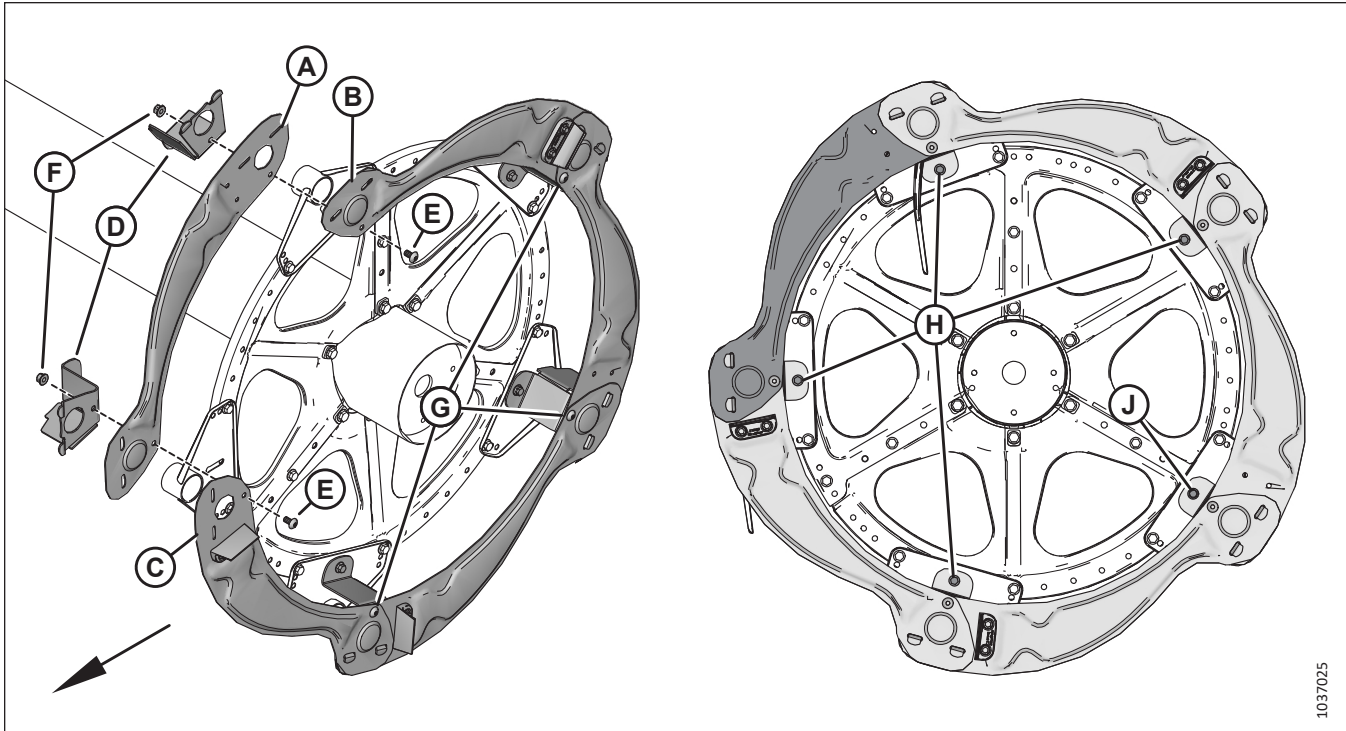


Figure 4.129: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

8. 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. Insert the tabs of endshield supports (D) through the endshield segments.
 - c. Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
 - d. Torque 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 necessary.
9. Secure the endshield supports to the reel disc using one M10 X 1.5 X 20 hex bolt and nut (H) per endshield support.
10. Torque M10 X 1.5 X 20 hex bolts (H) and (J) and the nuts that secure the endshield supports to the cam discs to 39 Nm (29 lbf-ft).
11. Proceed to the applicable procedure:
 - [4.15 Installing Deck Cutterbar Seals – D230 \(Parts Bag MD #335987\), page 177](#)
 - [4.16 Installing Deck Cutterbar Seal – D235 \(Parts Bag MD #335988\), page 180](#)

4.15 Installing Deck Cutterbar Seals – D230 (Parts Bag MD #335987)

Two cutterbar seals were removed from the center of the cutterbar for shipping purposes. They will need to be installed.

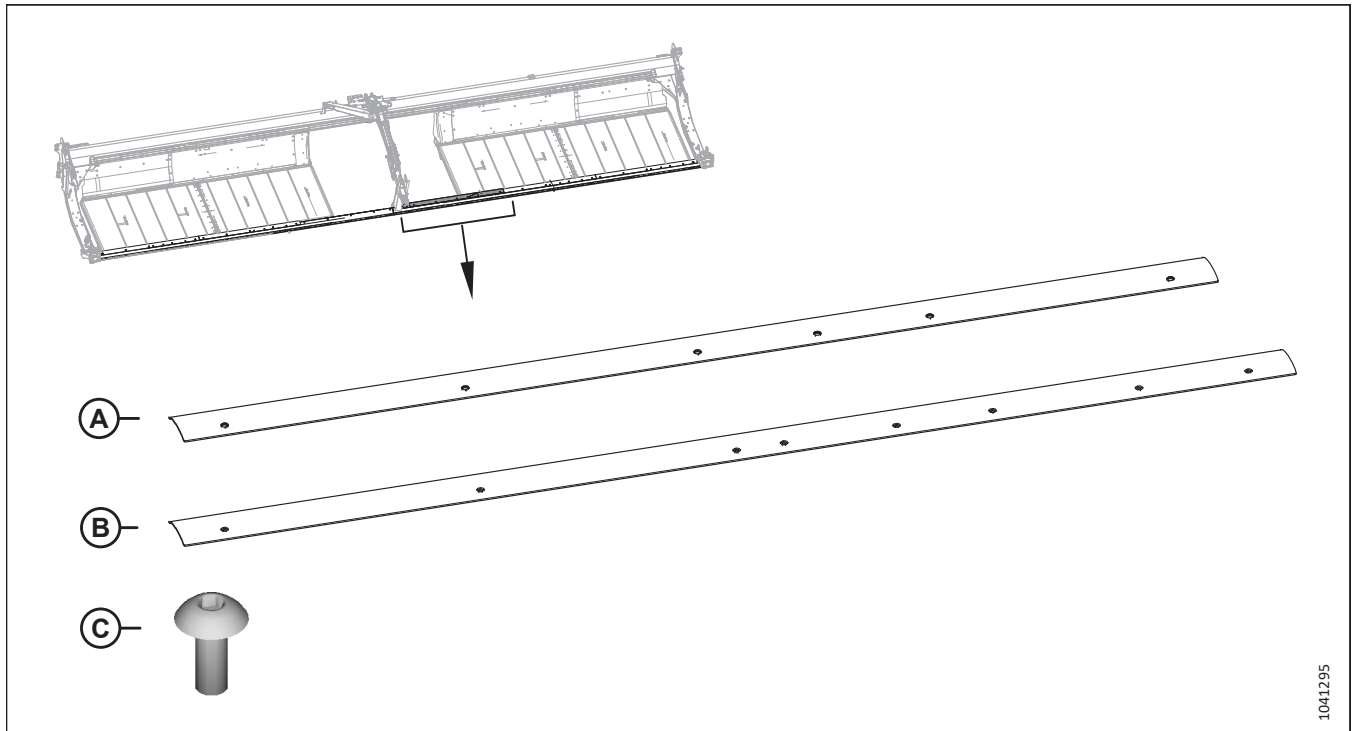
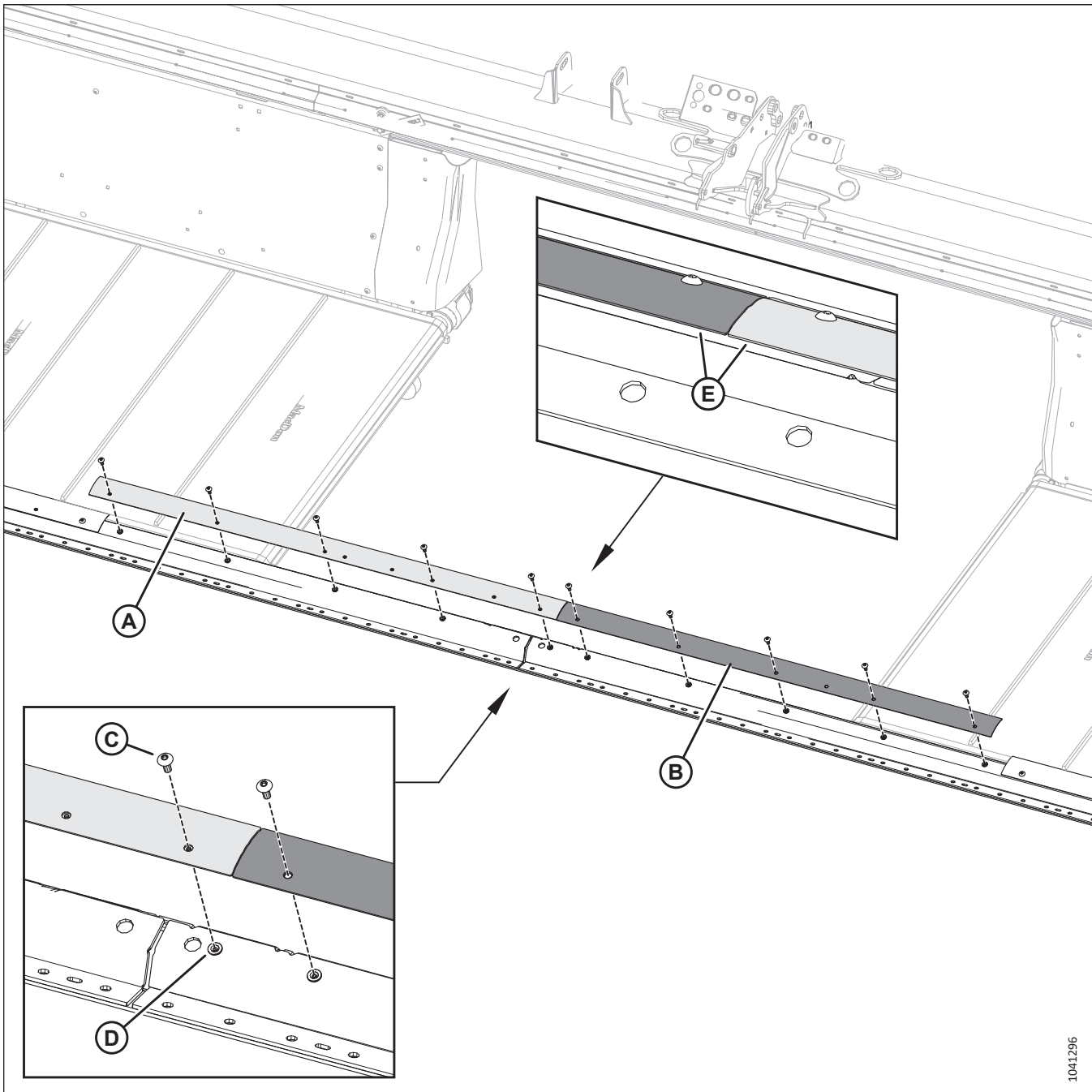


Figure 4.130: Cutterbar Seals and Hardware

1. Retrieve the following parts shipped wired to the cutterbar:
 - Short seal (A)
 - Long seal (B)
 - Parts bag MD #335987, which contains ten M8 Torx[®] screws (C) (MD #320190)

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Figure 4.131: Draper Seals – Right Deck

2. Secure longer (A) and shorter (B) seals using five Torx® screws (C) and rivnuts (D) per seal.
3. Tighten all Torx® screws to 29 Nm (21 lbf-ft [257 lbf-in]).
4. Make sure back edges (E) of the seals are aligned with each other. To align the seals, bend them.

COMPLETING HEADER ASSEMBLY

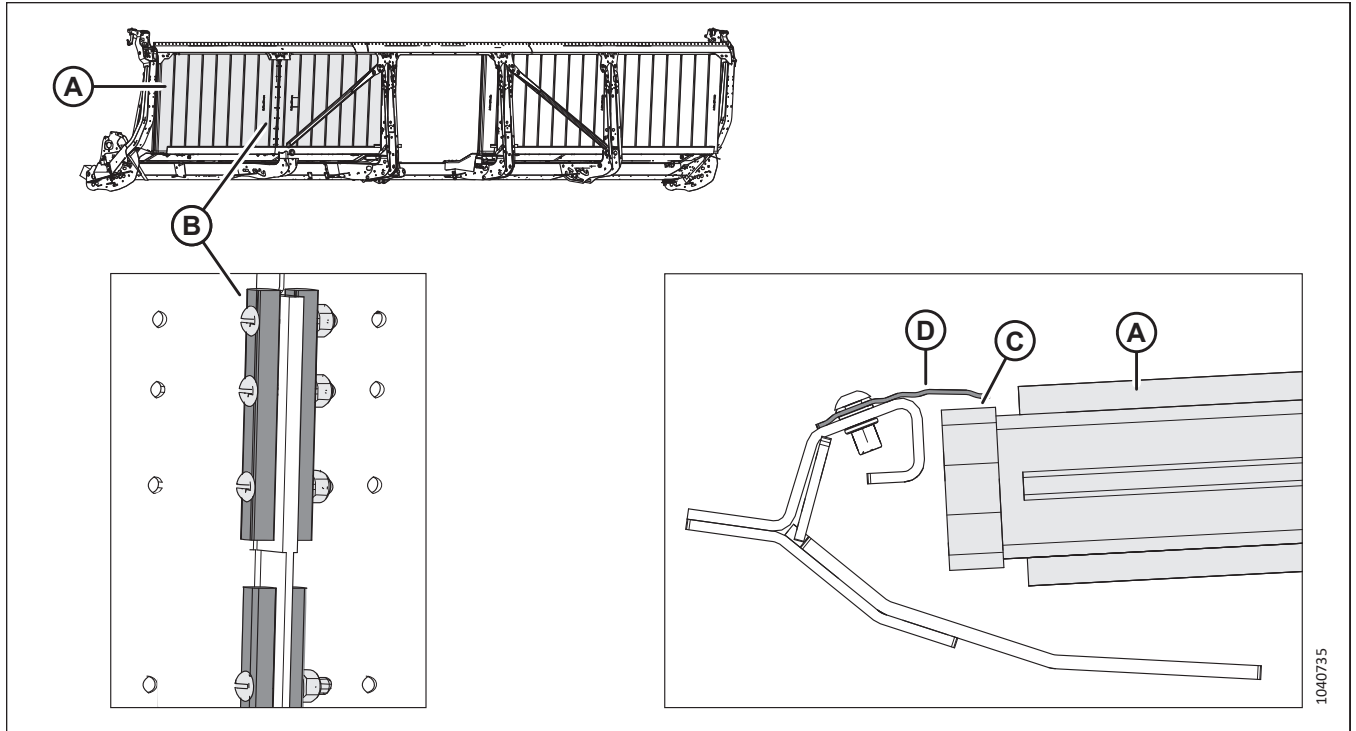


Figure 4.132: Draper Seal Clearance Specifications

5. Move draper (A) so that connector bar (B) is on the bottom of the header.
6. Ensure that clearance (C) between draper (A) and metal seal (D) is 1–4 mm (0.04–0.16 in.).
7. If the draper clearance is not within the correct range, adjust the deck height. For instructions, refer to [5.8 Checking and Adjusting Draper Seal](#), page 207.
8. Proceed to [4.17.1 Installing Crop Dividers](#), page 183.

4.16 Installing Deck Cutterbar Seal – D235 (Parts Bag MD #335988)

One cutterbar seal was removed from the center of the cutterbar for shipping purposes. It will need to be installed.

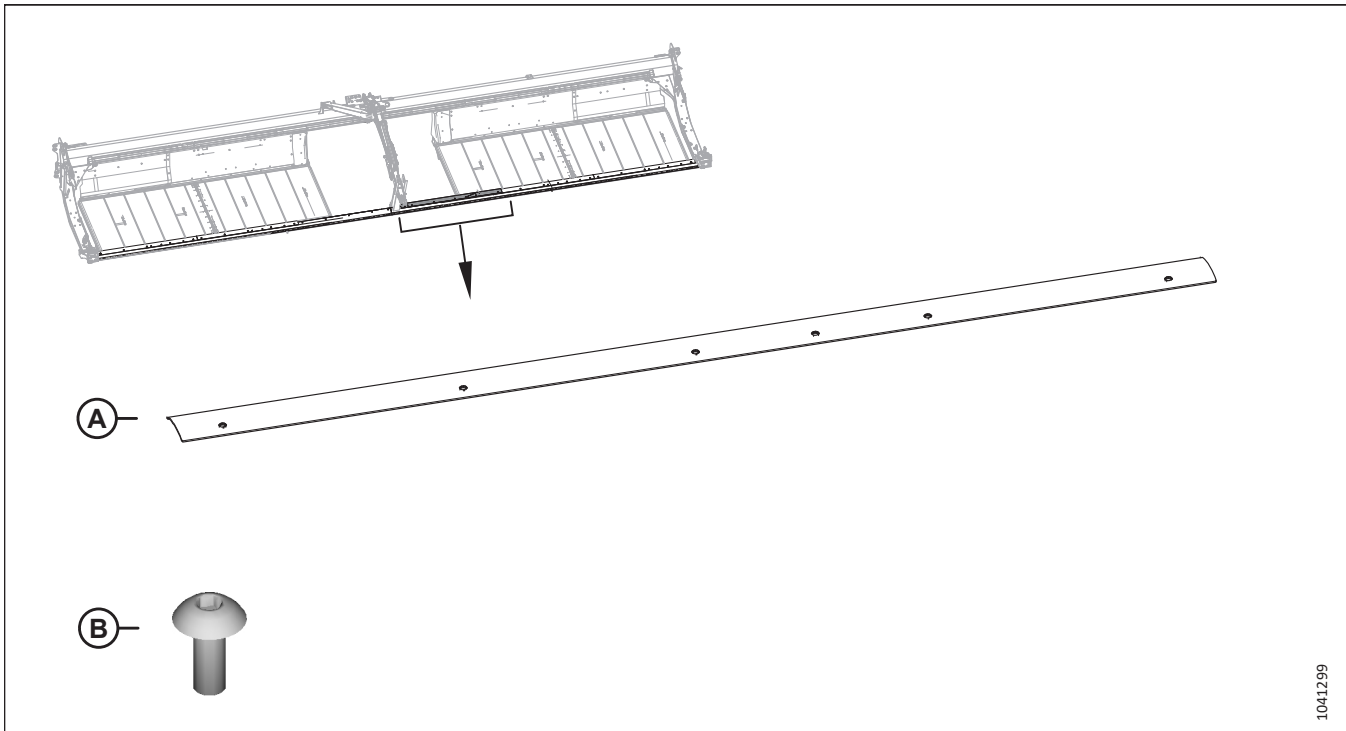


Figure 4.133: Cutterbar Seal and Hardware

1. Retrieve the following parts shipped wired to the cutterbar:
 - Seal (A)
 - Parts bag MD #335988, which contains five M8 Torx[®] screws (B) (MD #320190)

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COMPLETING HEADER ASSEMBLY

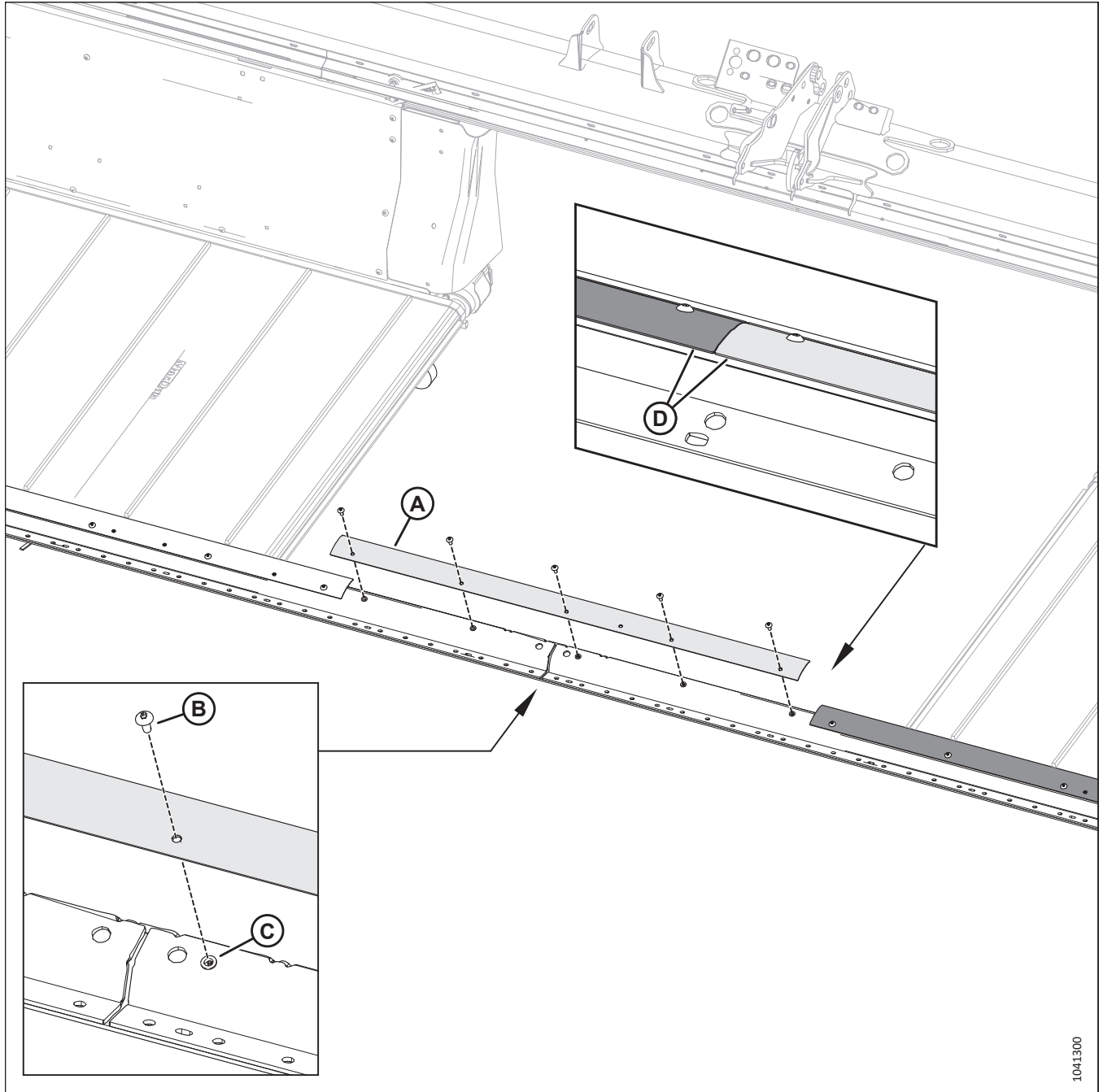


Figure 4.134: Draper Seals – Right Deck

2. Secure seal (A) using five Torx® screws (B) and rivnuts (C).
3. Tighten all Torx® screws to 29 Nm (21 lbf-ft [257 lbf-in]).
4. Make sure back edges (D) of the seals are aligned with each other. To align the seals, bend them.

COMPLETING HEADER ASSEMBLY

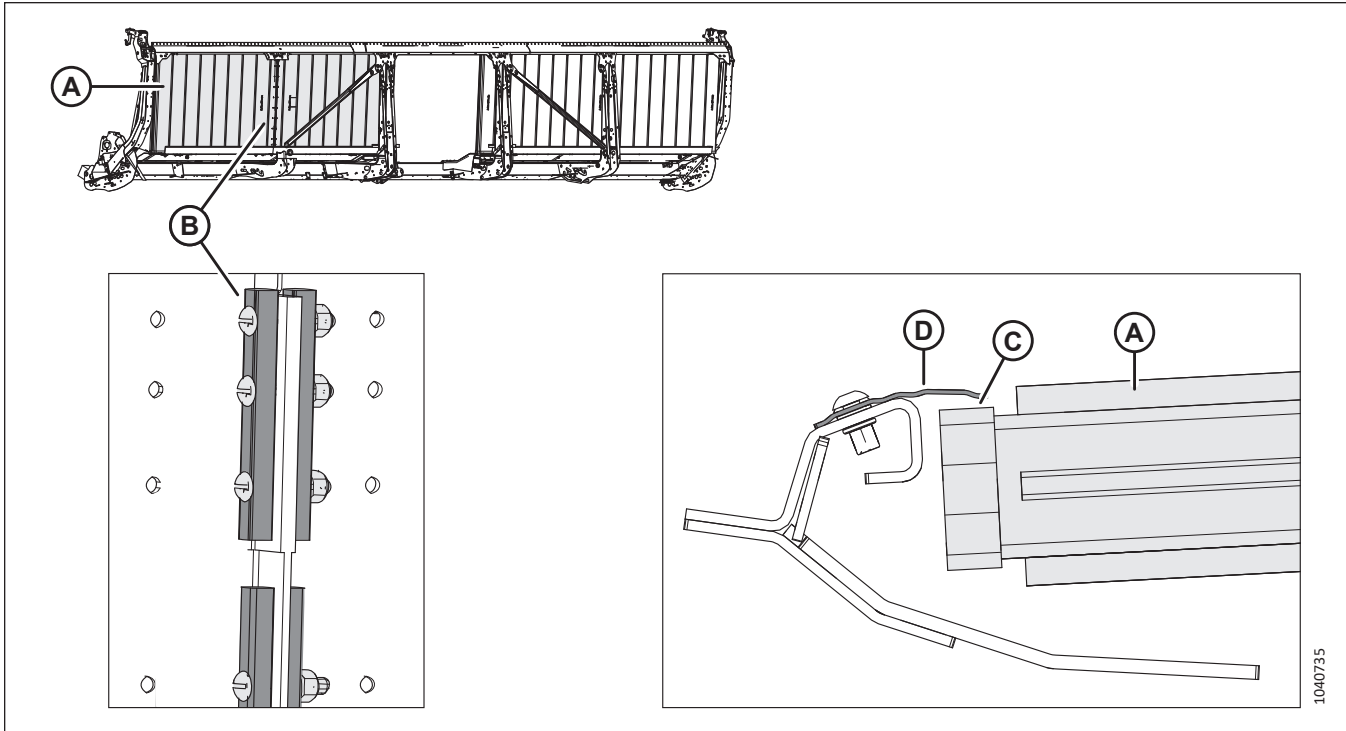


Figure 4.135: Draper Seal Clearance Specifications

5. Move draper (A) so that connector bar (B) is on the bottom of the header.
6. Ensure that clearance (C) between draper (A) and metal seal (D) is 1–4 mm (0.04–0.16 in.).
7. If the draper clearance is not within the correct range, adjust the deck height. For instructions, refer to [5.8 Checking and Adjusting Draper Seal](#), page 207.

4.17 Crop Dividers

Crop dividers separate the crop when harvesting. Remove them to install vertical knives and to decrease transport width.

4.17.1 Installing Crop Dividers

Crop dividers are removed for shipping. They need to be reinstalled on the ends of the header.

NOTE:

This procedure applies to the standard crop dividers shipped with every header. If you are installing the optional Floating Crop Dividers kit (B7346), refer to the installation instructions provided with the kit.

1. Open the left endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
2. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.
3. Remove multi-tool (B). Insert the hairpin in the bracket.
4. Retrieve the previously removed crop dividers.

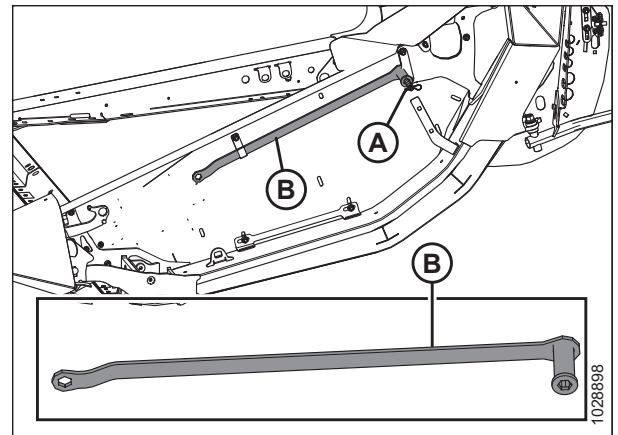


Figure 4.136: Left Endsheets

5. Insert lugs (A) on the crop divider into the holes in the knife drive box support as shown.
6. Remove lynch pin (B) from latch (C).

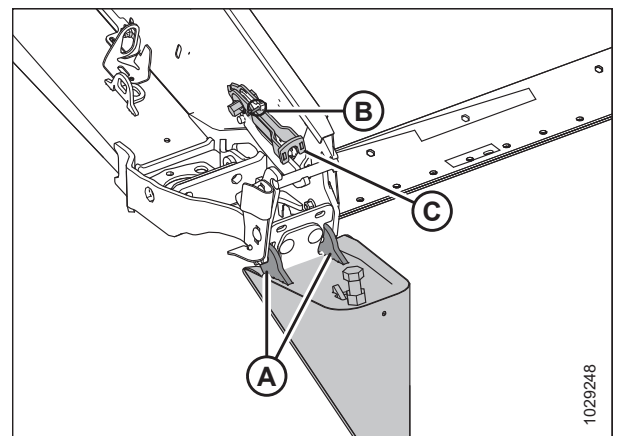


Figure 4.137: Crop Divider

COMPLETING HEADER ASSEMBLY

7. Lift the forward end of latch (A) and crop divider (B).

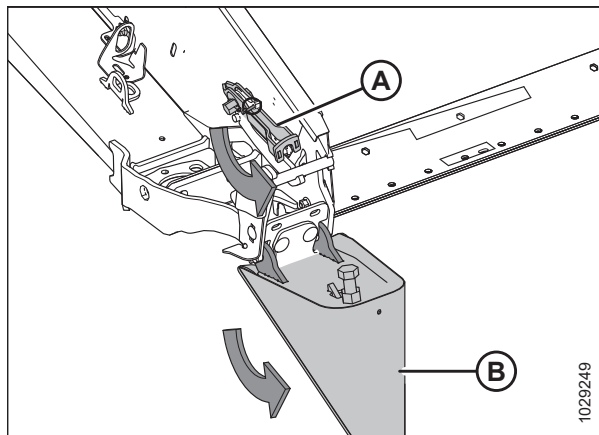


Figure 4.138: Crop Divider

8. Engage latch (A) over crop divider bolt (B).
9. Attach the multi-tool to hex shaft (D). Rotate the multi-tool counter-clockwise to lock latch (A).
10. To close the latch, turn hex shaft (D) counterclockwise.
11. If necessary, tighten bolt (B) to increase the torque required to close the latch, or back the bolt off to decrease the torque required to close the latch.

NOTE:

If the crop divider bolt is adjusted correctly, the latch should require 40–54 Nm to close.

12. Secure latch (A) with lynch pin (C).
13. Ensure that there is contact between plate (A) and guide (B).
14. Repeat on opposite side.
15. Return the multi-tool to its storage location on the left end panel.
16. Close the left endshield. For instructions, refer to [7.2.2 Closing Header Endshields, page 239](#).

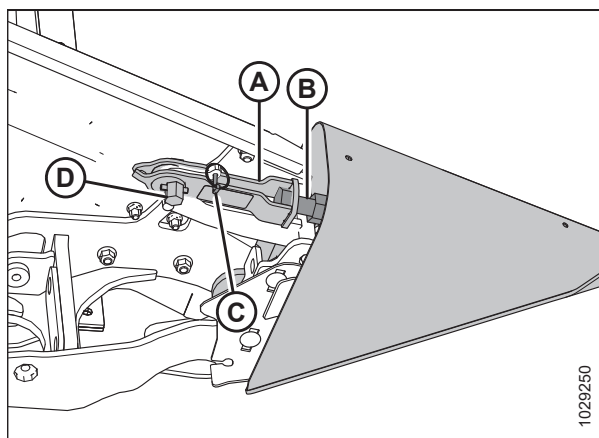


Figure 4.139: Crop Divider

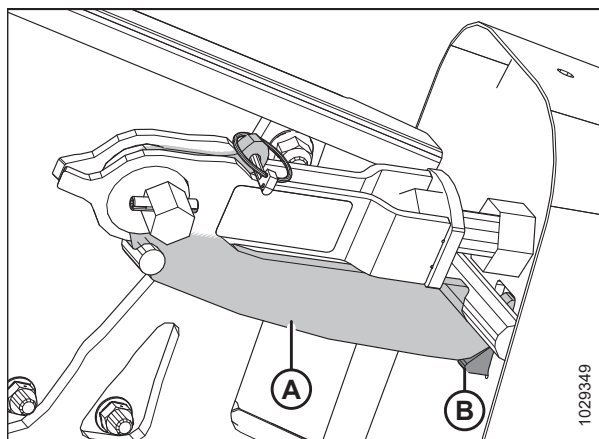


Figure 4.140: Crop Divider's Latch

COMPLETING HEADER ASSEMBLY

IMPORTANT:

Ensure that there is no contact between front support (A) and the back of crop divider (B). If there is contact, the front support may bend. There should be a gap of 10 mm (3/8 in.) (C) from the end panel and the front support to allow the crop divider to expand.

NOTE:

Part of the crop divider is illustrated as though it were transparent for the sake of clarity.

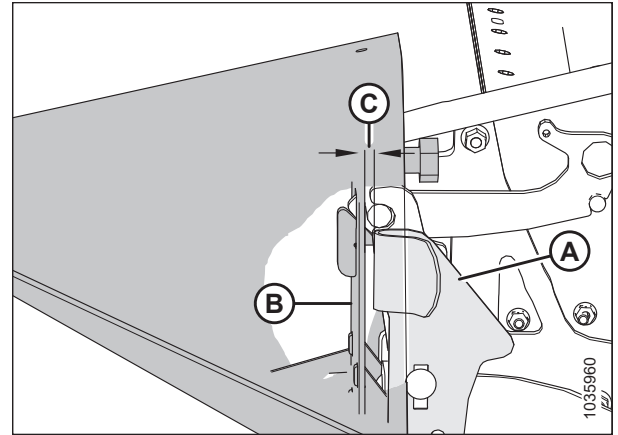


Figure 4.141: Front Support

4.17.2 Installing Crop Divider Rods

The crop divider rods can be installed on the ends of the crop dividers to help separate bushy crop.

1. Open the right and the left endshields. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
2. Undo lynch pin (A) securing divider rods (B) to the header endsheet.
3. Remove the divider rods from their shipping location.
4. Reinstall lynch pin (A).

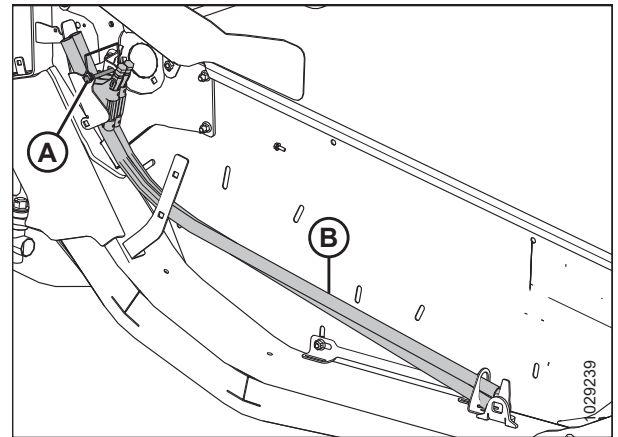


Figure 4.142: Divider Rods

5. Position crop divider rod (A) on the tip of the crop divider. Tighten bolt (B).
6. Repeat Step 2, [page 185](#) to Step 5, [page 185](#) on the opposite end of the header.
7. Close the right and left endshields. For instructions, refer to [7.2.2 Closing Header Endshields, page 239](#).

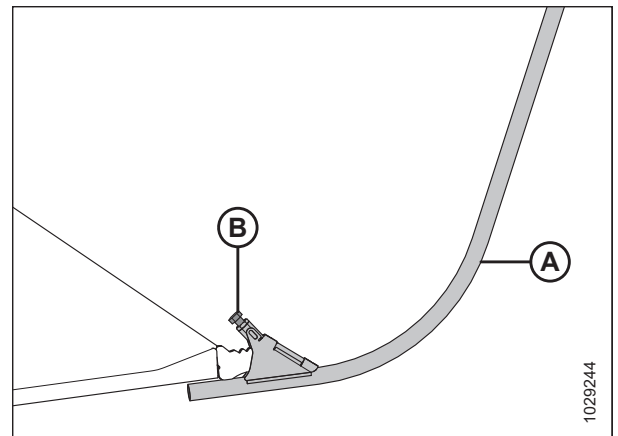


Figure 4.143: Divider Rod on Crop Divider

4.18 Setting up Reel Position Sensors – M1 and M2 Series Only

The header has multiple sensors to inform the Operator where the reel is positioned.

4.18.1 Checking and Adjusting Reel Height Sensor Orientation – M1 and M2 Series Only

The orientation of the reel height sensor arm must be checked manually at the sensor. The output voltage range of the sensor can be checked either manually at the sensor or from the cab.

NOTE:

This procedure is not required for headers used with M Series Windrowers.

1. Park the windrower on a level surface.
2. Shut down the engine, and remove the key from the ignition.
3. On the right endsheet, locate reel height sensor (A). The sensor connects to the right reel arm.

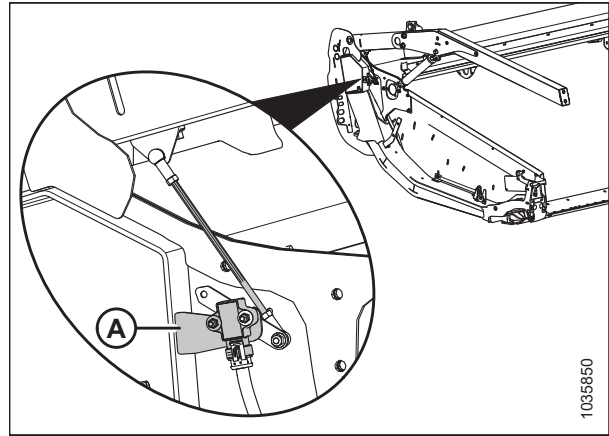
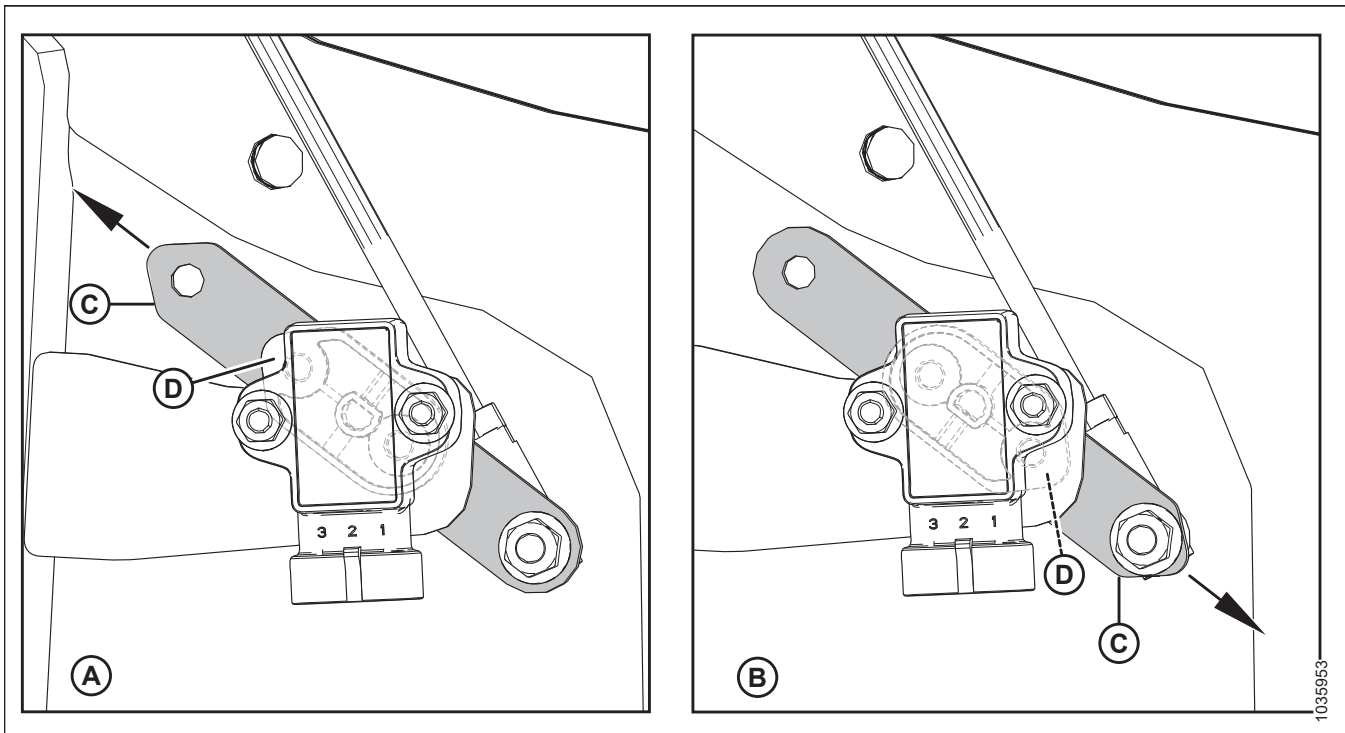


Figure 4.144: Reel Height Sensor Location



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Figure 4.145: Sensor Arm/Pointer Configurations

A - Incorrect Configuration

B - Correct Windrower Configuration

C - Sensor Arm

D - Sensor Pointer (Located Between Sensor and Sensor Arm)

4. Ensure that sensor arm (C) and pointer (D) are configured properly for the header. For instructions, refer to Figure [4.145, page](#) .

NOTE:

In configuration **A**, the arrow indicates that the pointed end of the sensor arm is pointed toward the back of the header.

In configuration **B**, the arrow indicates that the pointed end of the sensor arm is pointed toward the front of the header.

5. If the sensor arm orientation is incorrect, remove sensor arm (C) and reposition it in the correct orientation. Torque the nut to 8.2 Nm (6 lbf·ft [72.5 lbf·in]).

4.18.2 Checking and Adjusting Reel Height Sensor Voltage – M1 and M2 Series Only

The orientation of the reel height sensor arm must be checked manually at the sensor. The output voltage range of the sensor can be checked either manually at the sensor or from the cab.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

Set the minimum reel height before checking or adjusting the reel height sensor voltage. For instructions, refer to and ..

NOTE:

For in-cab instructions, refer to the windrower operator's manual.

NOTE:

This procedure is not required for headers used with M Series Windrowers.

1. Verify that the reel fore-aft sensor is oriented correctly for the windrower before checking the voltage. For instructions, refer to [4.18.3 Checking and Adjusting Fore-Aft Position Sensor Orientation – M1 and M2 Series Only, page 190](#).
2. Lower the reel fully.
3. Use the Harvest Performance Tracker (HPT) (M1 Series Windrowers), or the HarvestTouch™ Display (M2 Series Windrowers), or a voltmeter (if measuring the sensor manually) to measure the voltage range. If you are using a voltmeter, check sensor voltage between pin 2 (ground) and pin 3 (signal). Refer to Table for range requirements.

IMPORTANT:

To measure the output voltage of the reel height sensor, the engine needs to be running and supplying power to the sensor.

4. Raise the reel fully.
5. Check the voltage. If the sensor needs adjustment, refer to Step [6, page 188](#) to Step [19, page 189](#)
6. Lower the reel fully.
7. Shut down the engine, and remove the key from the ignition.
8. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).

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9. Locate reel height sensor (B).
10. Loosen jam nuts (D) and (E).
11. Adjust threaded rod (A) to dimension (C) 165 mm (6.5 in).
12. Check the reel height voltage in the lowered position. Readjust the threaded rod to achieve the recommended voltage.
13. Tighten the jam nuts by hand until they are snug, then tighten jam nuts (D) and (E) another quarter-turn.
14. Raise the reel fully.
15. Check the reel height voltage in the raised position. If adjustment is required, proceed to Step 16, page 189
16. Loosen two M5 hex nuts (B) and rotate sensor (A) to achieve the recommended voltage.
17. Tighten nuts (B) to 2.5 Nm (1.8 lbf·ft [22 lbf·in]).
18. Lower the reel fully.
19. If required, run the windrower reel height sensor calibration.
20. Shut down the engine, and remove the key from the ignition.

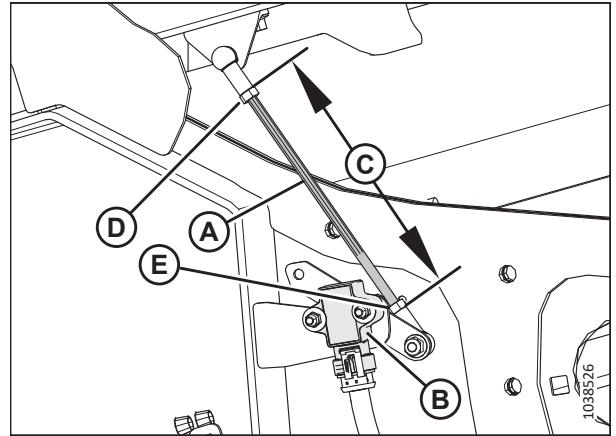


Figure 4.146: Reel Height Sensor – Right Reel Arm Lowered

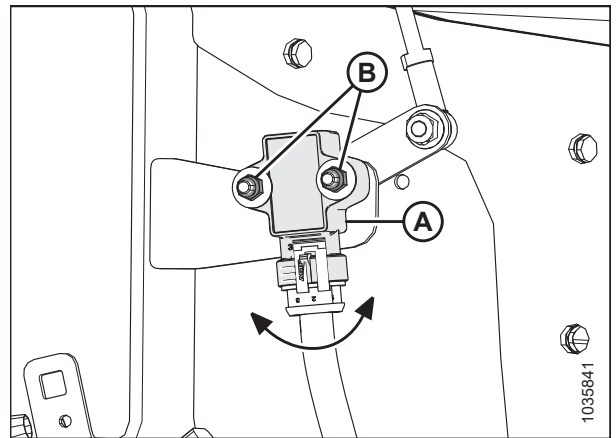


Figure 4.147: Reel Height Sensor — Right Reel Arm Raised

4.18.3 Checking and Adjusting Fore-Aft Position Sensor Orientation – M1 and M2 Series Only

1. Locate fore-aft position sensor (A) on the left reel arm.

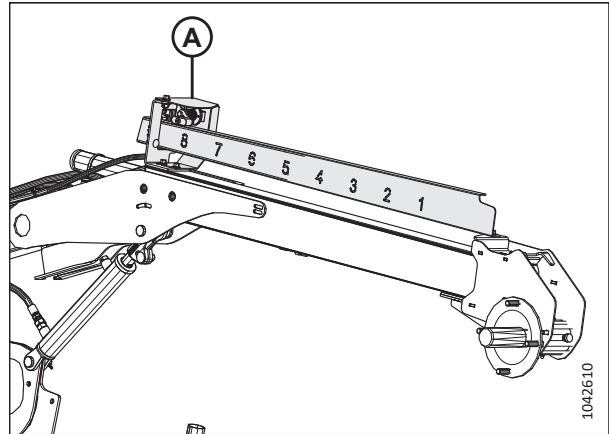


Figure 4.148: Fore-Aft Position Sensor

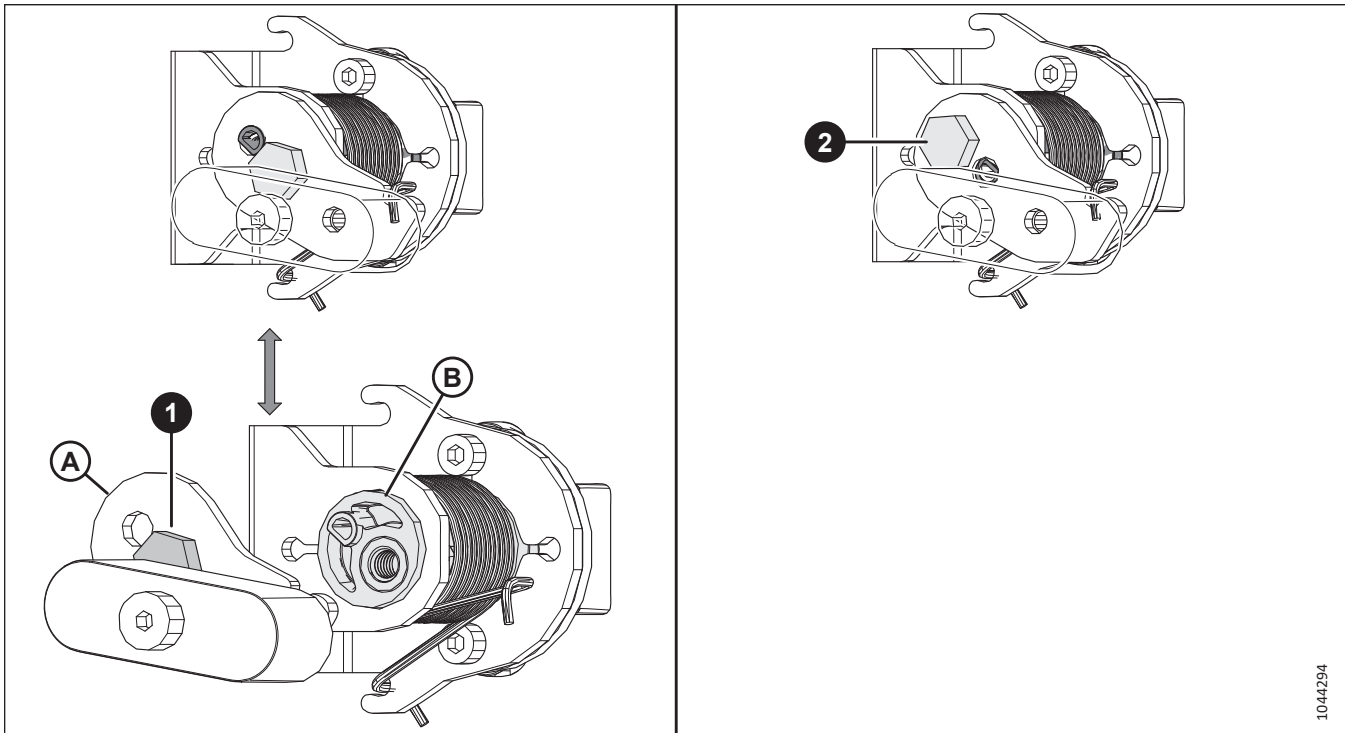


Figure 4.149: Sensor Arm Position

2. Check the installation location of sensor mounting bolt, If the bolt is in the incorrect location, proceed to the next step.
 - Location (1) is correct
 - Location (2) is incorrect
3. Remove the bolt and move it to the correct location on arm (A).
4. Rotate sensor pivot (B) 180°.
5. Reinstall arm (A) onto the sensor pivot. Ensure the raised bump is in the other hole where the bolt was removed from.
6. Tighten the bolt to 6 Nm (4 lbf·ft [53 lbf·in]).

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4.18.4 Checking and Adjusting Fore-Aft Position Sensor Voltage – M1 and M2 Series Only

1. Verify that the reel fore-aft sensor is oriented correctly for the windrower before checking the voltage. For instructions, refer to [4.18.3 Checking and Adjusting Fore-Aft Position Sensor Orientation – M1 and M2 Series Only, page 190](#).
2. Adjust the reel fully rearward.
3. Use the Harvest Performance Tracker (HPT) (M1 Series Windrowers), or the HarvestTouch™ Display (M2 Series Windrowers), or a voltmeter (if measuring the sensor manually) to measure the voltage range. If you are using a voltmeter, check sensor voltage (A) between pin 2 (ground) and pin 3 (signal). For the voltage range, refer to [Table 4.17, page 192](#).

IMPORTANT:

To measure the output voltage of the fore-aft sensor, the engine needs to be running and supplying power to the sensor.

4. Adjust the reel fully forward.
5. Check the voltage. If the sensor needs adjustment, refer to [Step 6, page 192](#) to [Step 10, page 193](#)

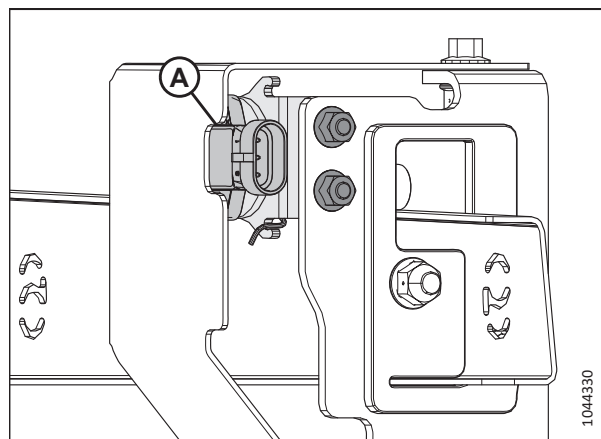


Figure 4.150: Fore-Aft Sensor

Table 4.17 Fore-Aft Sensor Voltage

Voltage (V) – Reel Fully Retracted	Voltage (V) – Reel Fully Extended	Minimum Range (V)
0.7	4.3	2.5

6. Shut down the engine, and remove the key from the ignition.
7. Locate fore-aft position sensor (A) on the left reel arm.

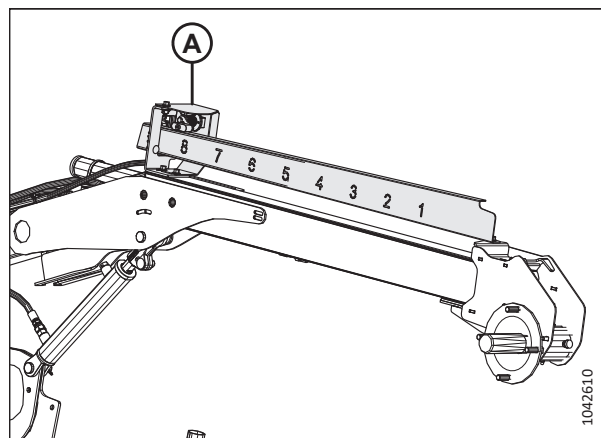


Figure 4.151: Fore-Aft Position Sensor

COMPLETING HEADER ASSEMBLY

8. Loosen hardware (A) and move sensor support (B) until the voltage is in the correct range.
9. Once sensor adjustment is complete, torque the hardware to 8 Nm (6 lbf-ft [71 lbf-in]).
10. If required, run the windrower fore-aft sensor calibration.

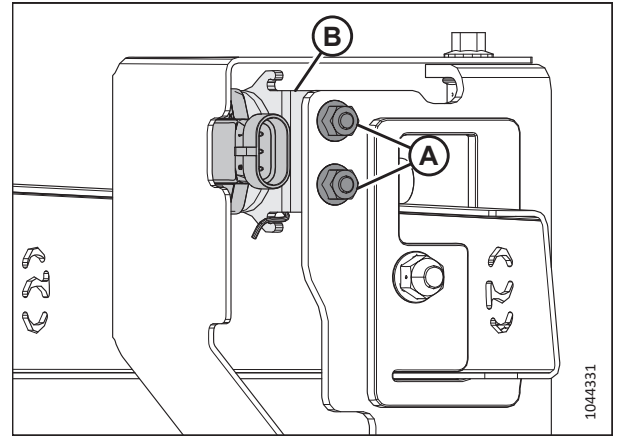


Figure 4.152: Fore-Aft Sensor

4.19 Installing Options

Once primary assembly of the header is complete, the optional kits included with the shipment will need to be installed.

1. Retrieve the kits supplied as options with the header, and install them according to the instructions supplied with each kit.
2. Proceed to Chapter [5 Performing Predelivery Checks, page 197](#).

4.20 Adding Tire Ballast – M Series Only

Adding fluid ballast to the windrower’s caster tires will improve the windrower's stability when it is paired with a large header.

With respect to ballast capacity, a tire is considered to be full of ballast fluid when 75% of the inner volume of the tire is occupied by ballast fluid, or else when the ballast fluid is level with the wheel’s valve stem when the stem is positioned at the 12 o’clock position and the windrower is on level ground. When adding ballast fluid to the caster wheels, always add an identical amount to each wheel. The caster wheels can safely hold any volume of ballast fluid up to and including their maximum capacity, as specified in the table below.

Table 4.18 Ballast Fluid Capacity of Various Caster Wheel Tires

Tire Size	Ballast Fluid Volume per Tire at 75% Capacity Liters (US gal.)	Total Weight of Ballast Fluid in Both Tires When Filled to 75% Capacity kg (lb.) ¹³
7.5 x 16	38 (10)	91 (200)
10 x 16	69 (18)	170 (380)
16.5 x 16.1	158 (41)	377 (830)

Table 4.19 Recommended Ballast

Header Size	Applicable Windrower	Rec. Tire Size	Recommended Ballast			
			Level Ground		Hills	
			Fluid Per Tire liters (U.S. Gal.)	Both Tires kg (lb.) ¹⁴	Fluid Per Tire liters (U.S. Gal.)	Both Tires kg (lb.) ¹⁴
D215	All	7.5 x 16 10 x 16 16.5 x 16.1	0	0	0	0
D220, D225	All	Level ground: 10 x 16 16.5 x 16.1 Hills: 16.5 x 16.1	69 (18)	170 (380)	115 (30)	288 (630)
D230, D235, D241	All	16.5 x 16.1	158 (41)	377 (830)	158 (41)	377 (830)

13. The weights provided in this column rely on the assumption that the tires will be filled with a standard mixture of calcium chloride and water. If you intend to fill the tire with only water (for example, in regions where the ambient temperature does not fall below freezing), then multiply the relevant fill weight specified in this column by 0.8 to learn the weight of both tires when they are filled with water alone.

14. The weights provided in this column rely on the assumption that the tires will be filled with a standard mixture of calcium chloride and water. If you intend to add water alone, then increase the volume of water added by 20% (up to the maximum allowable volume per tire) to compensate for the difference in density between calcium chloride and water.

Chapter 5: Performing Predelivery Checks

All pre-delivery and operational checks must be completed before the machine is delivered to the customer.

Perform final checks and adjustments as listed on the Predelivery Checklist (yellow sheet at the back of this instruction) to ensure that the machine is field-ready. Refer to the pages on the Predelivery Checklist for detailed instructions.

DANGER

Follow these safety guidelines during predelivery checks to prevent bodily injury or death:

- Clear the area of bystanders.
- Always shut off the engine and remove the key from the ignition before adjusting or inspecting the machine, or leaving the operator's seat for any reason.
- If the machine is raised, always place blocks under each end of the cutterbar, and close the lock-out valves. Never work on or beneath an unsupported machine.
- Block the machine wheels before detaching it from the tractor.

WARNING

Follow these safety guidelines during predelivery checks to prevent bodily injury or death:

- Install all machine shields and covers before operating the machine.
- Wear close-fitting clothing and cover long hair. NEVER wear dangling items such as hoodies, scarves, or bracelets.
- Wait for shafts and other parts to stop moving before approaching them.
- Wear safety glasses and safety gloves when working near the cutterbar.
- Never exceed the maximum inflation pressure indicated on the tire label.

NOTE:

For recommended fluids and lubricants, refer to the chart on the inside back cover.

5.1 Checking Tire Pressure – Option

Check the pressure of the transport/stabilizer tires. If necessary, inflate or deflate the tires to the pressure specified below:

Table 5.1 Tire Inflation Pressure

Size	Load Range	Pressure
225/75 R15	F	655 kPa (95 psi)

5.2 Checking Transport Wheel Bolt Torque – Option

1. Check the torque value of each wheel bolt. A correctly torqued wheel bolt will show a torque reading of 115 Nm (85 lbf·ft).
2. Tighten all wheel bolts according to the bolt-tightening pattern depicted in the illustration at right.

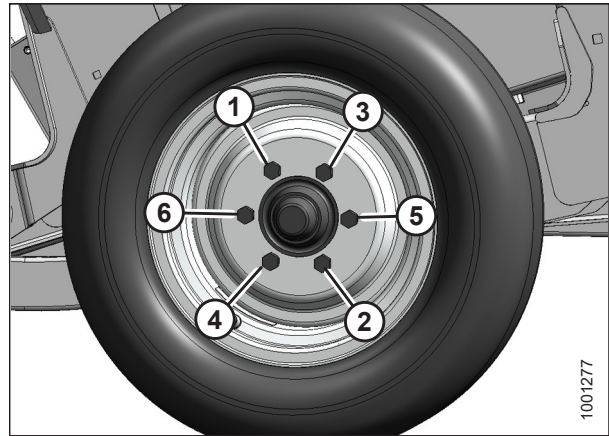


Figure 5.1: Sequence for Tightening Bolts

5.3 Checking Oil Level in Knife Drive Box

1. Ensure that the header is level.
2. Lower the header.
3. Adjust the header angle so that the top of the knife drive box is level with the ground.
4. Shut down the engine, and remove the key from the ignition.
5. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
6. Remove oil level dipstick (A), wipe it, and then reinstall it. Tighten it until it is finger-tight.
7. Remove the dipstick again to check the oil level. The oil level must be within range (B), between the lines near the bottom of the dipstick.
8. Add oil to the knife drive box if needed. For instructions on adding oil, refer to the header operator's manual.
9. Reinstall dipstick (A). Tighten the dipstick to 23 Nm (17 lbf-ft [204 lbf-in]).
10. Repeat Step [5, page 199](#) to Step [9, page 199](#) to check the oil level for the other knife drive.

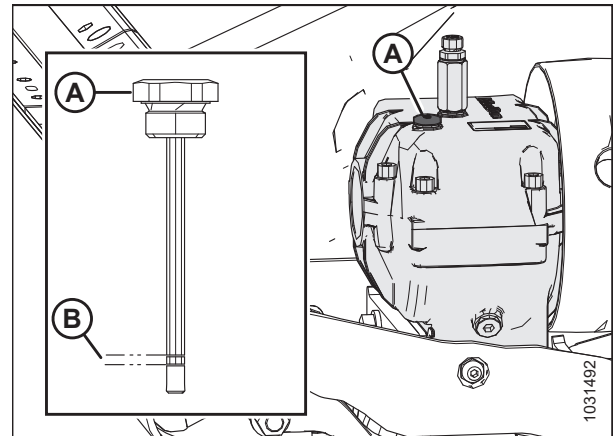


Figure 5.2: Knife Drive Box

5.4 Checking and Adjusting Reel-to-Endsheet Clearance

Checking reel clearance

1. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.
2. Lower the reel fully.
3. Adjust the reel until the number 5 on reel fore-aft indicator (A) is hidden by sensor support (B).
4. Shut down the engine, and remove the key from the ignition.
5. Manually rotate the reel to position a tine tube above the cutterbar.

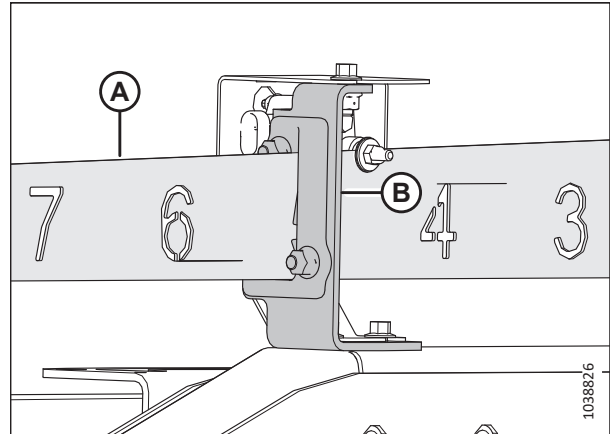


Figure 5.3: Reel Fore-Aft Indicator

6. Measure clearance (A) at locations (B) between the reel tine tube and the endsheet at both ends of the header. If the reel is centered, the clearances will be identical. If the clearance needs to be adjusted, proceed to the next step.

NOTE:

If reel endshields are pre-installed, measure between the reel endshield and the header endsheet, at the location of the tine tube, as shown.

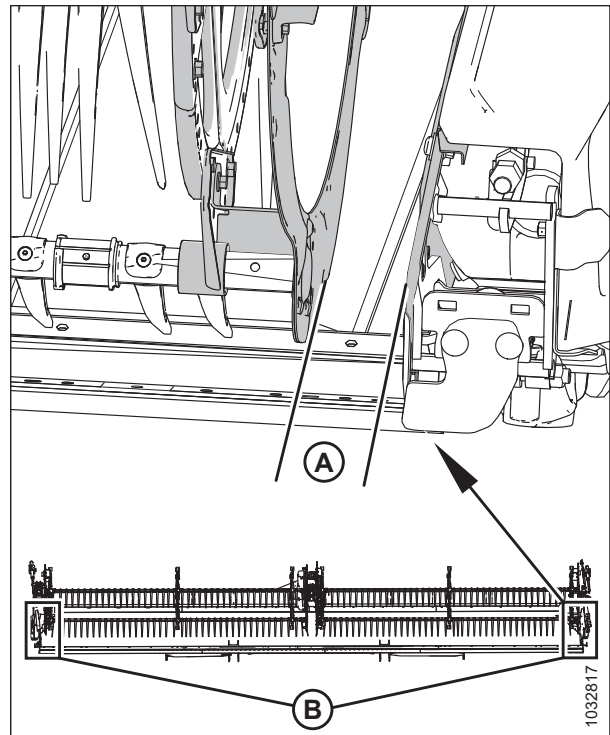


Figure 5.4: Reel Clearance – Double-Reel Header

PERFORMING PREDELIVERY CHECKS

Adjusting reel clearance – single-reel headers

7. Center the reel as follows:
 - a. Loosen bolt (A) on brace (B) on the right reel arm.
 - b. Move the forward end of reel support arm (C) laterally as needed to center the reel.
 - c. Torque bolts (A) to 457 Nm (337 lbf-ft).

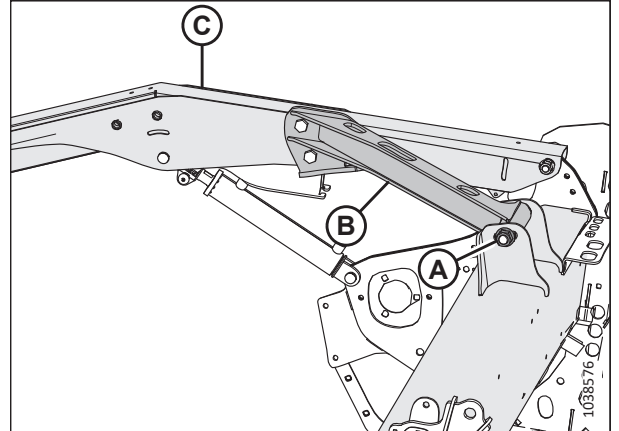


Figure 5.5: Right Support Arm – Single-Reel Header

Adjusting reel clearance – double-reel headers

8. Center the reel as follows:
 - a. Loosen bolt (A) on brace (B) at the center support arm.
 - b. Move the forward end of reel support arm (C) laterally as needed to center the reel.
 - c. Torque bolt (A) to 457 Nm (337 lbf-ft).

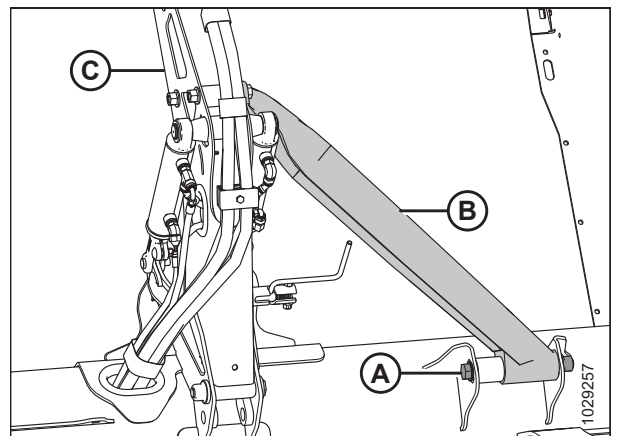


Figure 5.6: Center Support Arm – Double-Reel Header

5.5 Adjusting Knife Speed Sensor

The knife system uses sensors to read knife speed information at the flywheel. Correct readings depend on proper sensor alignment.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Lower the header.
2. Shut down the engine, and remove the key from the ignition.
3. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields](#), page 238.

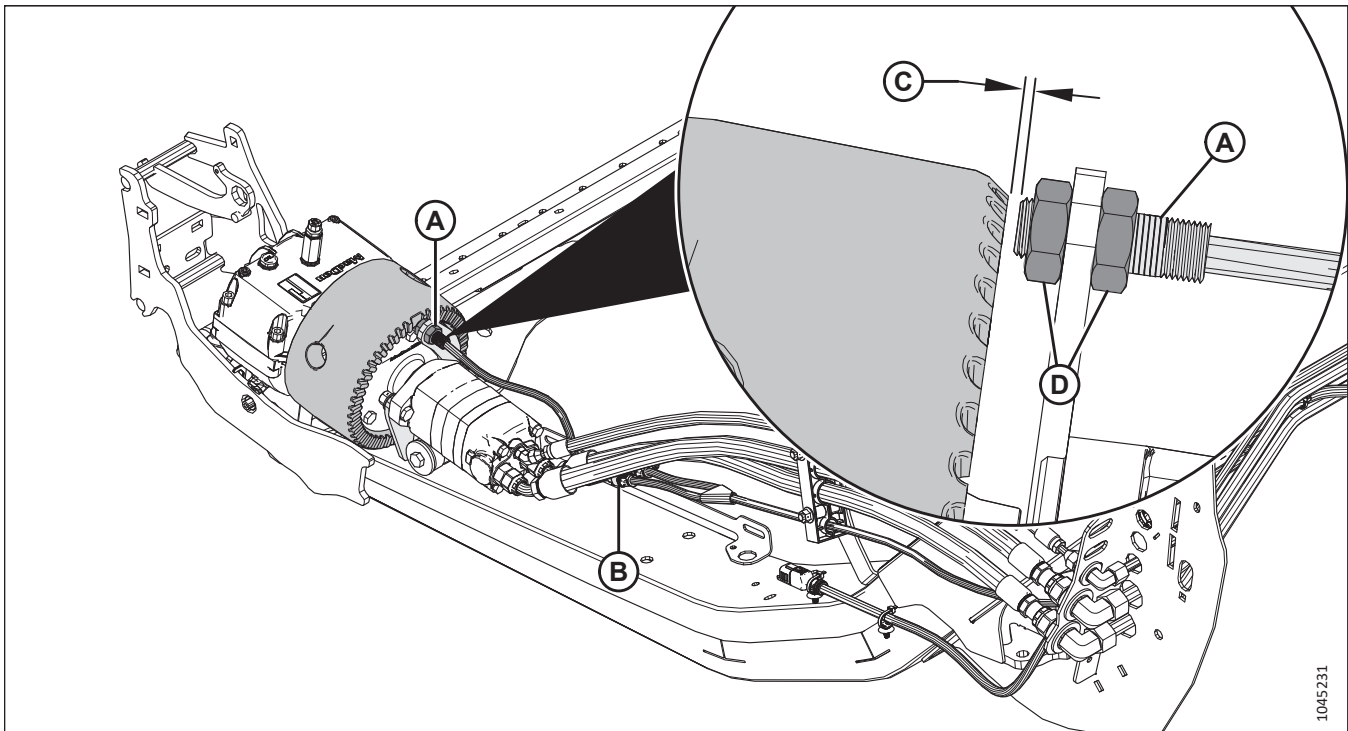


Figure 5.7: Left Speed Sensor – M1/M2 Series Position

4. Inspect the condition of sensor (A), sensor harness, and connector (B).
5. Inspect gap (C) between the sensor and the flywheel. Ensure the gap is 2–3 mm (0.08–0.12 in). Repeat inspection on the opposite side of the header.

NOTE:

The illustration shows the M1/M2 Series sensor position. For M Series windrowers, the sensor is secured to a lower position on the bracket.

6. If adjustment is required, loosen nuts (D) to position the sensor, and then retighten the nuts to secure the sensor.

5.6 Lubricating Header

All of the lubrication points on the header will need to be inspected to ensure that they can accept grease.

Use the proper lubricant for the application. Refer to the table below for information on the type of lubricant to use:

Table 5.2 Recommended Lubricant

Lubricant Specification	Description	Application
SAE multipurpose	High temperature, extreme pressure (EP2) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	All other lubrication points

5.6.1 Greasing Procedure

1. Before lubricating a grease fitting, wipe it with a clean cloth to avoid injecting dirt and grit into the fitting.

IMPORTANT:

Use clean, high-temperature, extreme-pressure grease only.

2. Inject the grease through the fitting with a grease gun until the grease overflows the fitting (except where noted).
3. Leave the excess grease on the fitting to keep the dirt out.
4. Replace any loose or broken grease fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Clean the lubricant passageway. Replace the fitting if necessary.

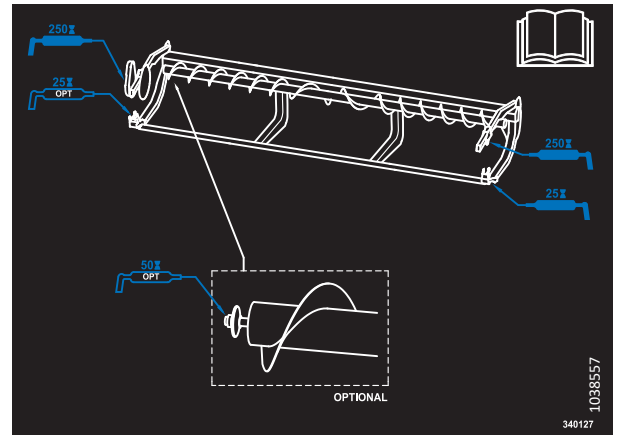


Figure 5.8: Grease Point Decal for Single-Knife Header with One-Piece Upper Cross Auger

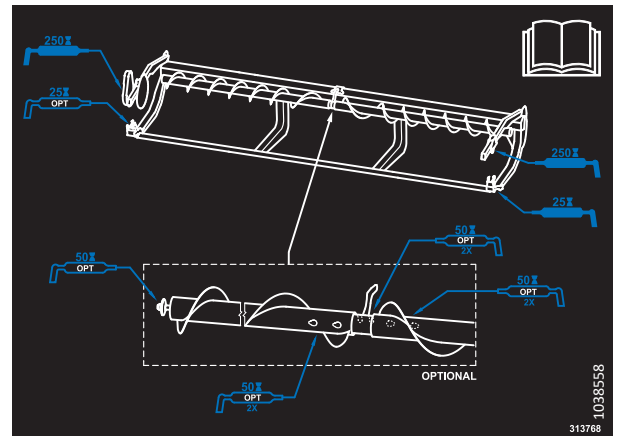


Figure 5.9: Decal for Single-Knife Header with Two-Piece Upper Cross Auger

PERFORMING PREDELIVERY CHECKS

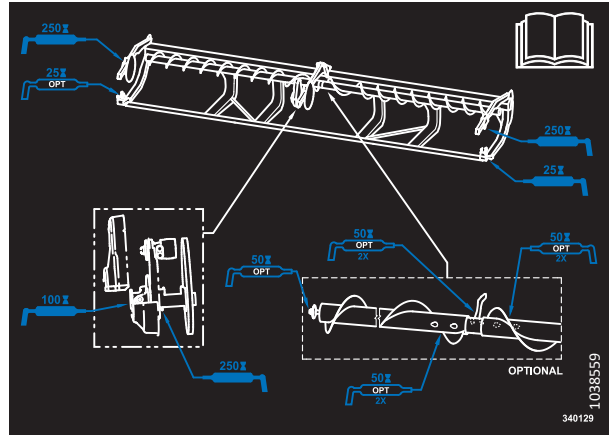


Figure 5.10: Decal for Double-Knife Header with Two-Piece Upper Cross Auger

5.7 Checking and Adjusting Draper Tension

1. Ensure that tension indicator (A) covers the inboard half of the window.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the windrower operator's manual.

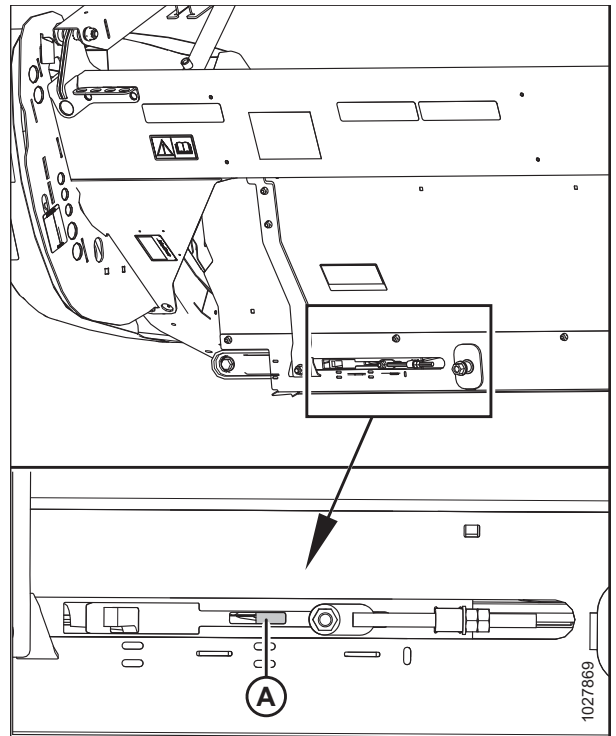


Figure 5.11: Checking Left Tension Adjuster

5. Ensure that the draper guide (the rubber track on the underside of the draper) is engaged in groove (A) of the drive roller.

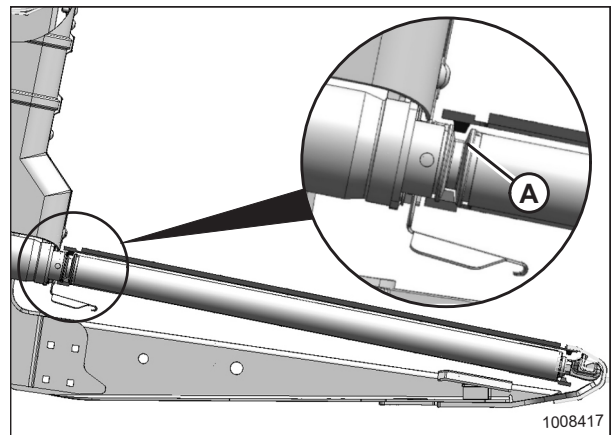


Figure 5.12: Drive Roller

PERFORMING PREDELIVERY CHECKS

6. Ensure that idler roller (A) is between guides (B).

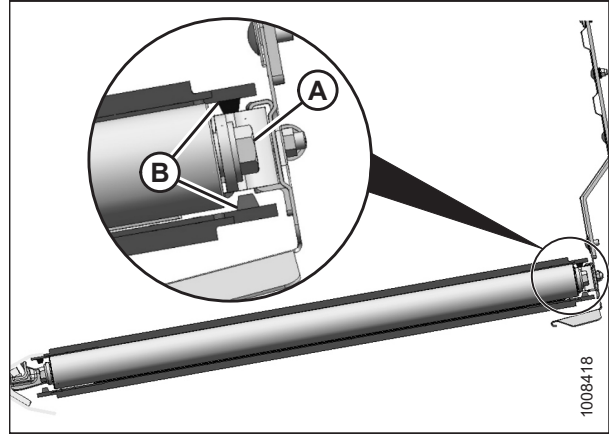


Figure 5.13: Idler Roller

7. Tighten adjuster bolt (A) until the tensioner indicator covers the inboard half of the window. Tensioner indicator (B) will move inboard to show that the draper is tightening.

IMPORTANT:

To avoid premature failure of the draper, draper rollers, and/or the tightener components, do **NOT** operate the header when the tension indicator is not visible.

IMPORTANT:

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

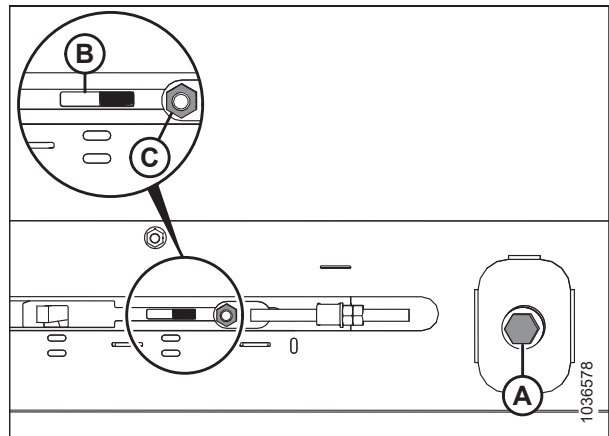


Figure 5.14: Adjusting Left Tensioner

5.8 Checking and Adjusting Draper Seal

Checking draper seal

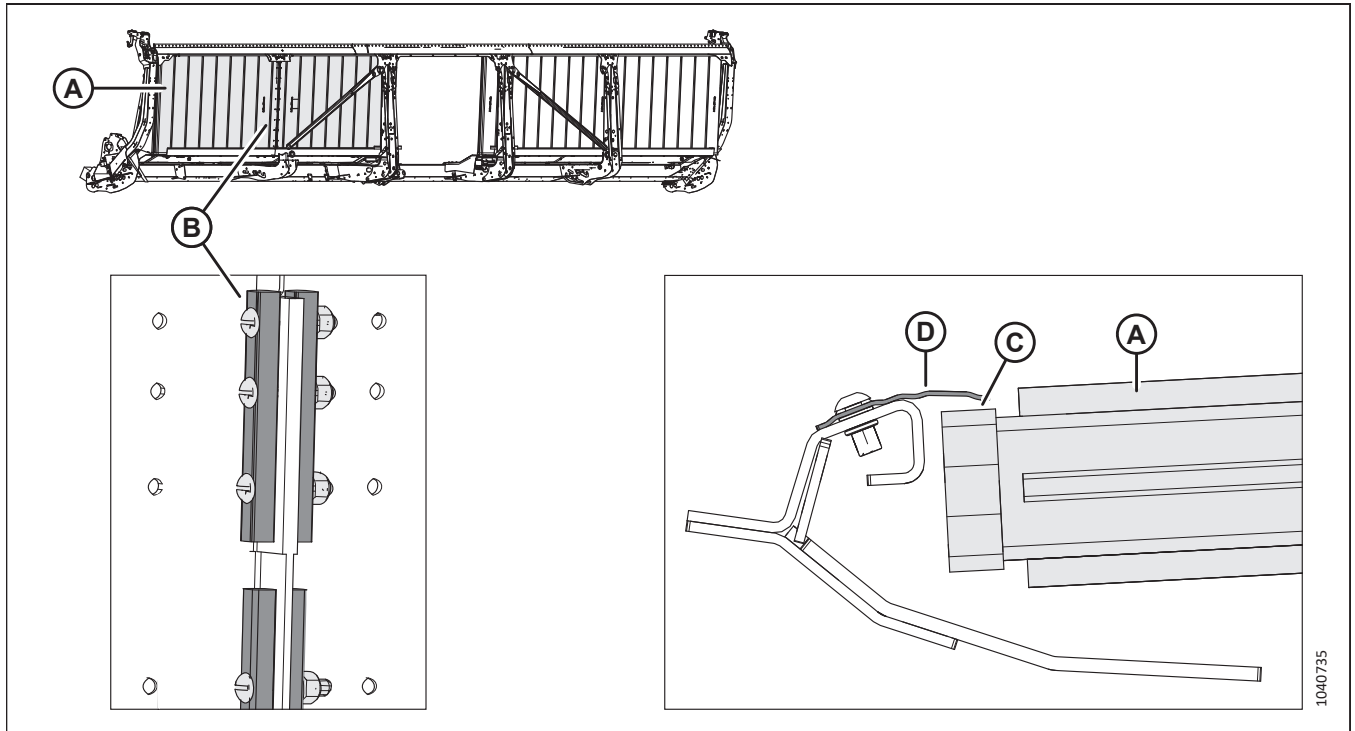


Figure 5.15: Draper Seal Clearance Specifications

1. Lower the header to the working position.
2. Move draper (A) so that connector bar (B) is on the bottom of the header.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that clearance (C) between draper (A) and metal seal (D) is 1–4 mm (0.04–0.16 in.).
5. If the clearance requires adjustment, proceed to the next step.

Adjusting draper seal

6. Release the tension on the draper. For instructions, refer to .

PERFORMING PREDELIVERY CHECKS

7. Lift the front edge of draper (A) past cutterbar (B) to expose the front hook.
8. Measure the thickness of the draper belt.

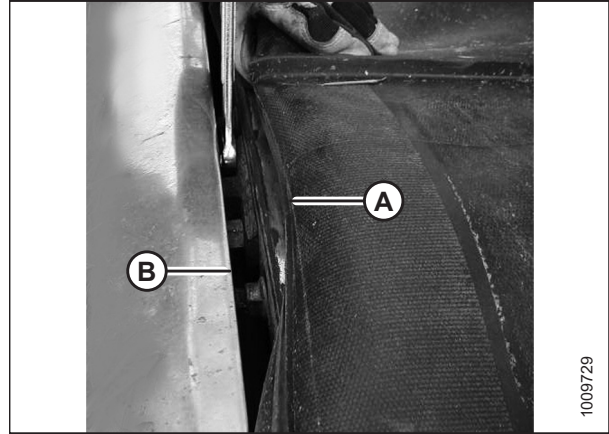


Figure 5.16: Deck Front Hook

9. Remove screws (B) and cutterbar seal (A) above the cutterbar.

NOTE:

This step is not strictly necessary, but performing it allows better access to the front hooks.

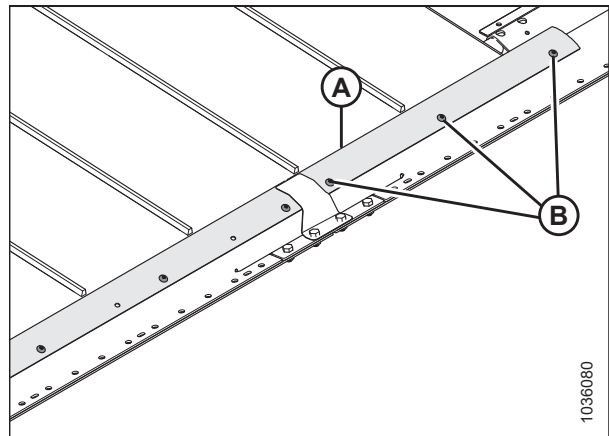


Figure 5.17: Deck Seal Plate

NOTE:

The draper deck is supported by deck front hooks (A). The header width determines the number of hooks:

Table 5.3 Number of Deck Support Hooks

Model	Quantity
D215 and D220	4
D225 and D230	6
D235	8
D241	10

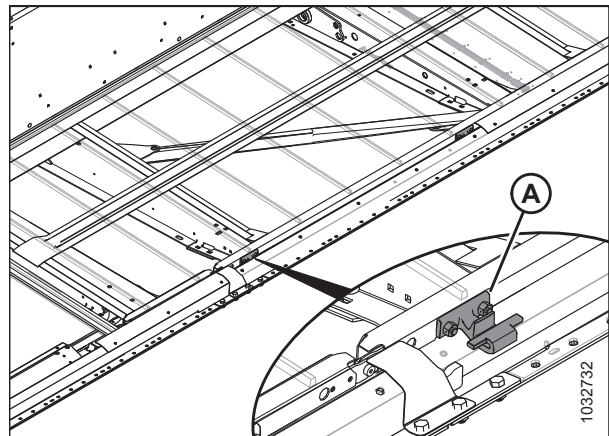


Figure 5.18: Draper Deck Front Hooks

PERFORMING PREDELIVERY CHECKS

- Loosen two lock nuts (A) on deck front hook (B) by one half-turn **ONLY**.
- Tap deck (C) with a hammer and a block of wood to lower the deck relative to the deck front hooks. Tap deck front hook (B) using a punch to raise the deck relative to the deck front hooks.

NOTE:

The deck is shown with parts removed for clarity.

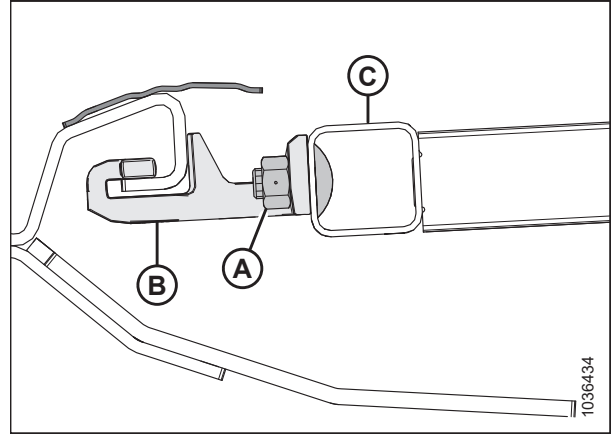


Figure 5.19: Deck Support

- Use a feeler gauge of the same thickness as the draper belt, plus 1 mm (0.04 in.). Slide the feeler gauge along deck (A) under cutterbar seal plate (C) to set the clearance.
- To create a seal, adjust deck (A) so that clearance (B) between cutterbar seal plate (C) and the deck is the same as the thickness as the draper belt plus 1 mm (0.04 in.).

NOTE:

To check the clearance at a draper roller, measure from the roller tube, **NOT** the deck.

- Tighten hardware (D).
- Measure gap (B) again using the feeler gauge. For instructions, refer to Step 12, page 209.
- If removed, install cutterbar seal (A) and screws (B).

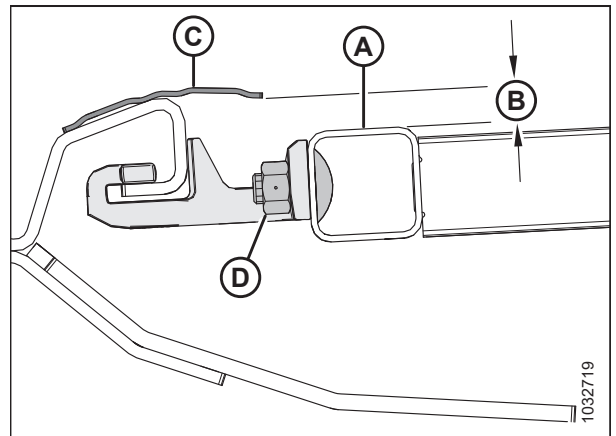


Figure 5.20: Deck Front Hook

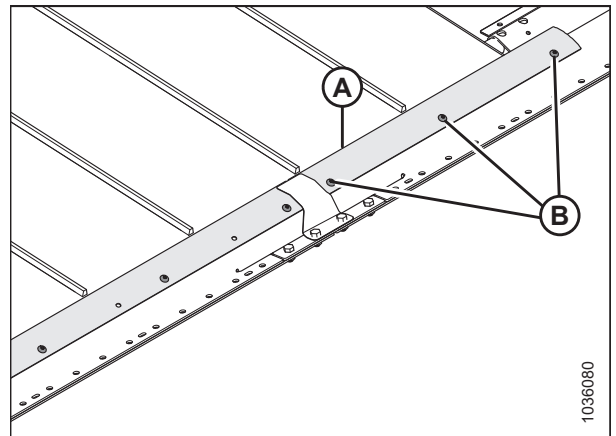


Figure 5.21: Deck Seal Plate

PERFORMING PREDELIVERY CHECKS

5.9 Reel-to-Cutterbar Clearance

5.9.1 Measuring Reel-to-Cutterbar Clearance

1. Park the windrower on a level surface.
2. Adjust the reel fore-aft position until the 7 on fore-aft indicator (A) is hidden by sensor support (B).

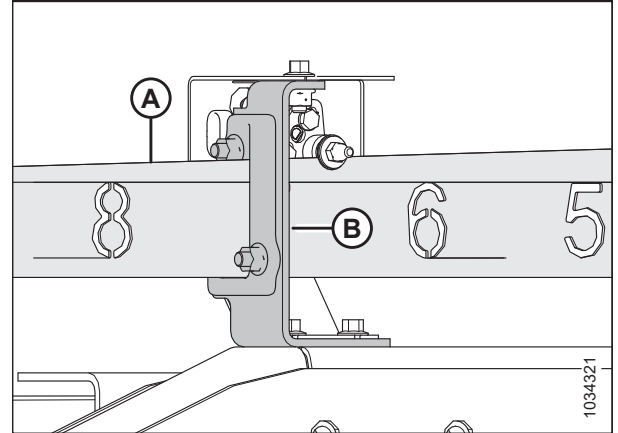


Figure 5.22: Fore-Aft Position

3. Shut down the engine, and remove the key from the ignition.
4. Rotate the reel by hand until a tine tube is directly above the cutterbar.
5. Measure and record clearance (A) from the finger tip to the top of pointed guard (B) or short guard (C). For clearance specifications, refer to Tables 5.4, page 212 and 5.5, page 212.

For measurement locations, refer to:

- Figure 5.24, page 212 – single-reel headers
- Figure 5.25, page 212 – double-reel headers

6. If needed, adjust the reel clearance. For instructions, refer to 5.9.2 *Adjusting Reel-to-Cutterbar Clearance*, page 213.

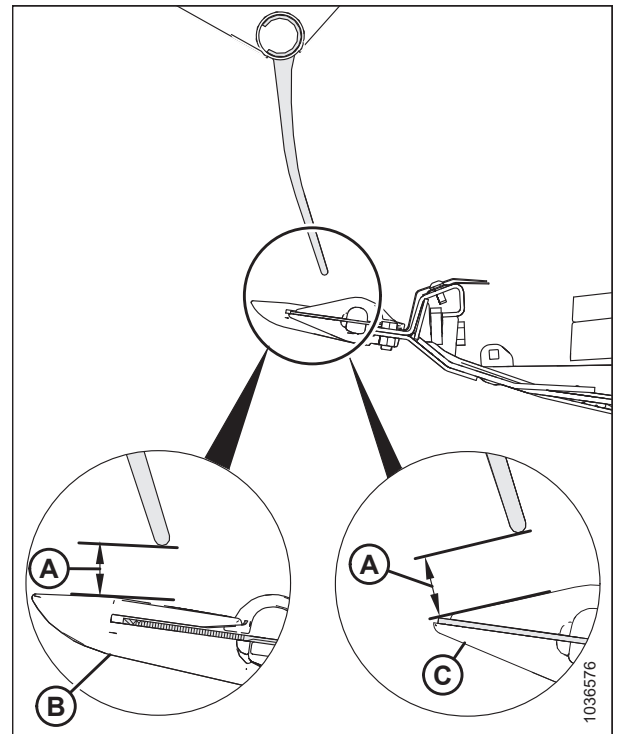


Figure 5.23: Measurement from Finger Tip to Guard

PERFORMING PREDELIVERY CHECKS

Single-reel header measurement locations (A): Outer ends of the reel (two places).

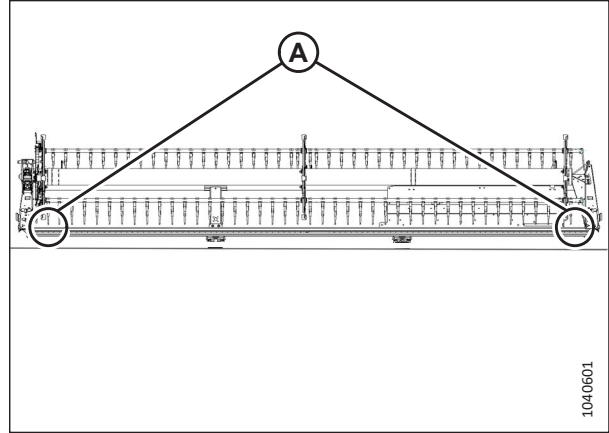


Figure 5.24: Single-Reel Header Measurement Locations

Double-reel header measurement locations (A): Both ends of both reels (four places).

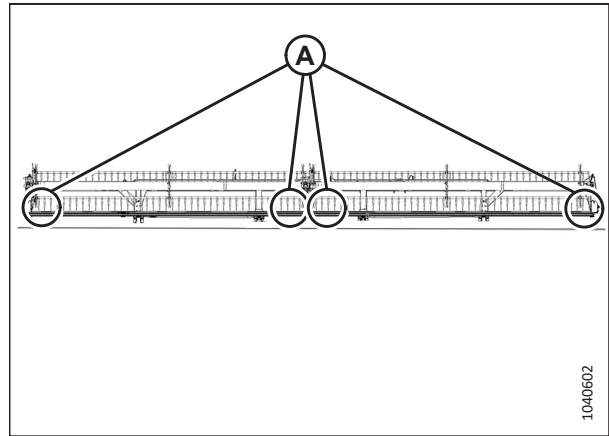


Figure 5.25: Double-Reel Header Measurement Locations

7. Compare your measurements with the specifications in the table below.

Table 5.4 Finger to Guard/Cutterbar Clearance – Single Reel

Header	Reel Ends
D215 SP	20 mm (3/4 in.)
D220 SP	20 mm (3/4 in.)
D225 SP	25 mm (1 in.)

Table 5.5 Finger to Guard/Cutterbar Clearance – Double Reel

Header	Reel Ends	Beside Center Arm
D230, D235, D241	20 mm (3/4 in.)	20 mm (3/4 in.)

8. Adjust the reel clearance, if required. For instructions, refer to [5.9.2 Adjusting Reel-to-Cutterbar Clearance, page 213](#).

5.9.2 Adjusting Reel-to-Cutterbar Clearance

NOTE:

This procedure can be performed with the reel fore-aft cylinders in either the standard position or the canola-harvesting position, as long as the fore-aft cylinders remain in the same position for the duration of the procedure.

1. Prior to making adjustments, make sure that the reel-to-cutterbar clearance has been measured and recorded. For instructions, refer to .
2. Adjust the clearance at the outboard ends of the reel as follows:
 - a. Loosen bolt (A) on the outer arm cylinder.
 - b. Adjust cylinder rod (B) as needed:
 - To increase the clearance between the reel fingers and the cutterbar, turn cylinder rod (B) out of the clevis.
 - To decrease the clearance between the reel fingers and the cutterbar, turn cylinder rod (B) into the clevis.
 - c. Tighten bolt (A).
3. Repeat Step 2, [page 213](#) on the opposite side of the header.
4. Loosen bolts (A) on both center arm cylinders.
5. Adjust the clearance as follows:

IMPORTANT:

Adjust both cylinder rods equally.

- To increase the clearance between the reel fingers and the cutterbar, turn cylinder rods (D) out of the clevis.
- To decrease the clearance between the reel fingers and the cutterbar, turn cylinder rods (D) into the clevis.

6. Ensure that measurement (B) is identical on both cylinders.

NOTE:

Measurement (B) runs from the center of mounting pins (C) to the tops of the notches in cylinder rods (D).

7. Ensure that both mounting pins (C) **CANNOT** be rotated by hand. If one of the mounting pins can be rotated, adjust cylinder rods (D) as needed:
 - Turn the cylinder rod out of the clevis to increase the load on the cylinder rod.
 - Turn the cylinder rod into the clevis to decrease the load on the cylinder rod.

8. Tighten bolts (A).
9. Raise the reel fully.

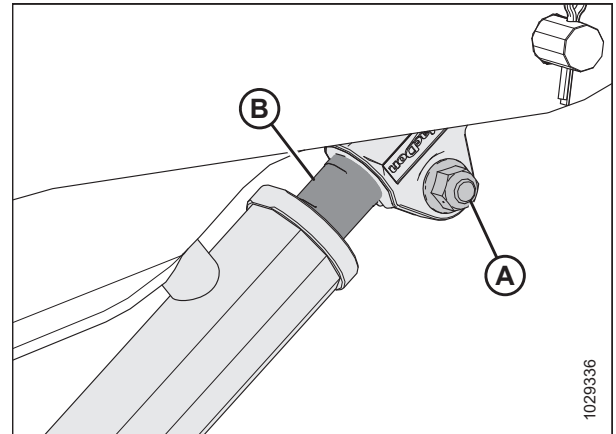


Figure 5.26: Outside Arm Cylinder

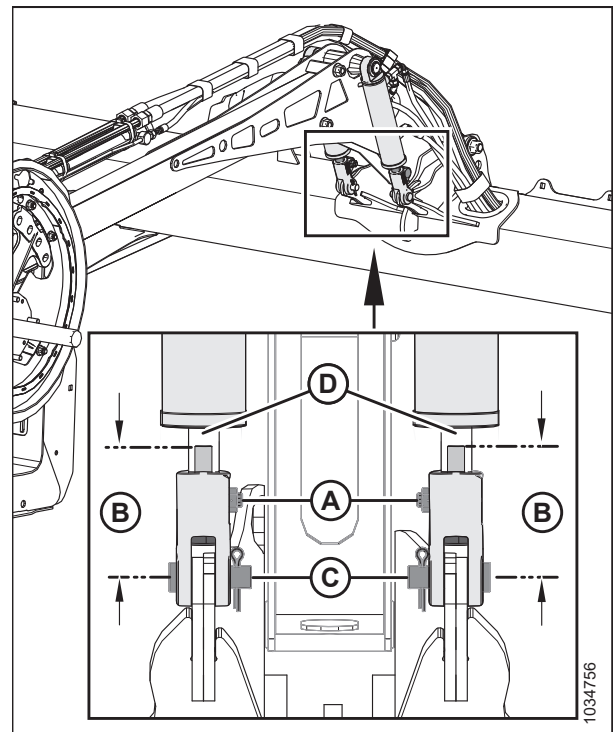


Figure 5.27: Center Arm Cylinders

PERFORMING PREDELIVERY CHECKS

- Lower the reel fully and continue holding the control button down to phase the cylinders.

NOTE:

If after phasing the cylinders, the reel lift cylinders will not raise/lower equally, purge air from the reel lift hydraulics system. For instructions, refer to the operators manual.

- Shut down the engine, and remove the key from the ignition.
- Check the reel-to-cutterbar clearance measurements again. If necessary, repeat the adjustment procedures.
- Move the reel back to ensure that the reel fingers do not contact the deflector shields.
- If the reel fingers contact the deflector shields, adjust the reel upward to maintain the clearance at all reel fore-aft positions. If contact still occurs after the reel is adjusted, trim the fingers as needed.
- Periodically check for evidence of contact during operation. Adjust the reel-to-cutterbar clearance as needed.

5.9.3 Removing Air from Reel Lift Hydraulic System

Purge air from the hydraulic reel lift system after completing setup of the hydraulic system.

NOTE:

Single reel headers have an air release coupler located on the right reel lift cylinder. Double reel headers have air release couplers the left and the right reel lift cylinders.

- Install a hose onto air release coupler (A) on the right lift cylinder. Place the opposite end of the hose in a clean pail.
- Press and hold the reel raise button until the oil flows with no foam or bubbles.
- Shut down the engine, and remove the key from the ignition.

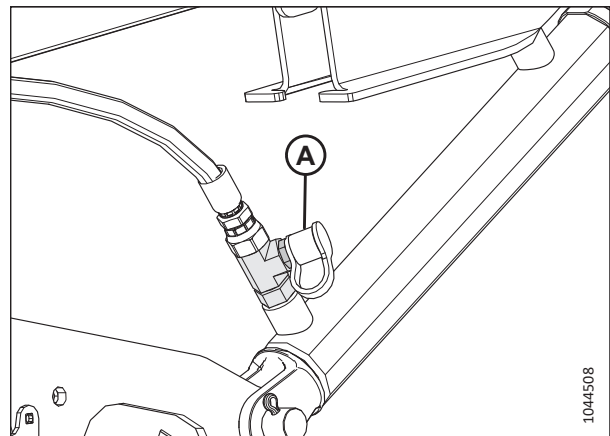


Figure 5.28: Reel Lift Air Release Coupler

- Remove the hose from the lift cylinder air release coupler.
- Verify that the reel lift cylinders raise and lower at the same time.
- Shut down the engine, and remove the key from the ignition.

5.10 Guard Identification

The following knife guards and hold-downs are used in pointed guard configurations:

NOTE:

Pointed knife guard configurations require two short knife guards, one at each end of the cutterbar.

NOTE:

A Four-Point Guard kit can be used to replace the knife guards. Four point guards are ideal for use in rocky conditions or for harvesting shatter-prone crops such as lentils. For more information, refer to the header parts catalog.

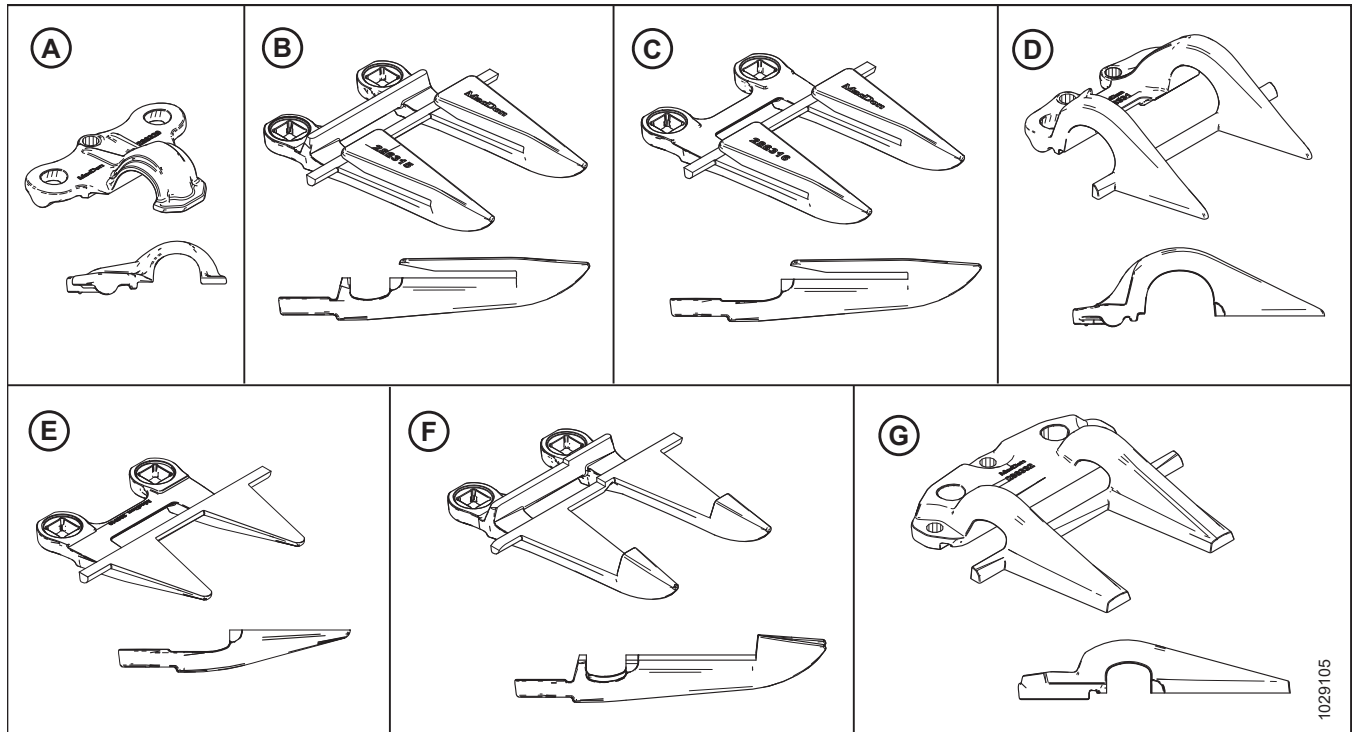


Figure 5.29: Guard and Hold-Down Types Used in Pointed Knife Guard Configurations

A - Pointed Hold-Down (MD #286329)

C - Pointed-End Knife Guard (without Wear Bar) (MD #286316)¹⁵

E - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)¹⁶

G - Pointed Center Hold-Down (MD #286332)

B - Pointed Knife Guard (MD #286315)

D - PlugFree™ End Hold-Down (MD #286331)

F - Pointed Center Knife Guard (MD #286317)¹⁷

Follow these procedures for checking and adjusting pointed knife guards:

- [5.10.1 Checking Hold-Down – Pointed Knife Guards, page 217](#)
- [5.10.2 Adjusting Hold-Down – Pointed Knife Guards, page 218](#)
- [5.10.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 219](#)
- [5.10.4 Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 220](#)

15. Installed in positions 2, 3, and 4 on the drive side(s).

16. Installed in position 1 on the drive side(s). Single-knife headers use a standard guard on the right end.

17. Double-knife headers only.

PERFORMING PREDELIVERY CHECKS

The following knife guards and hold-downs are used in short knife guard configurations:

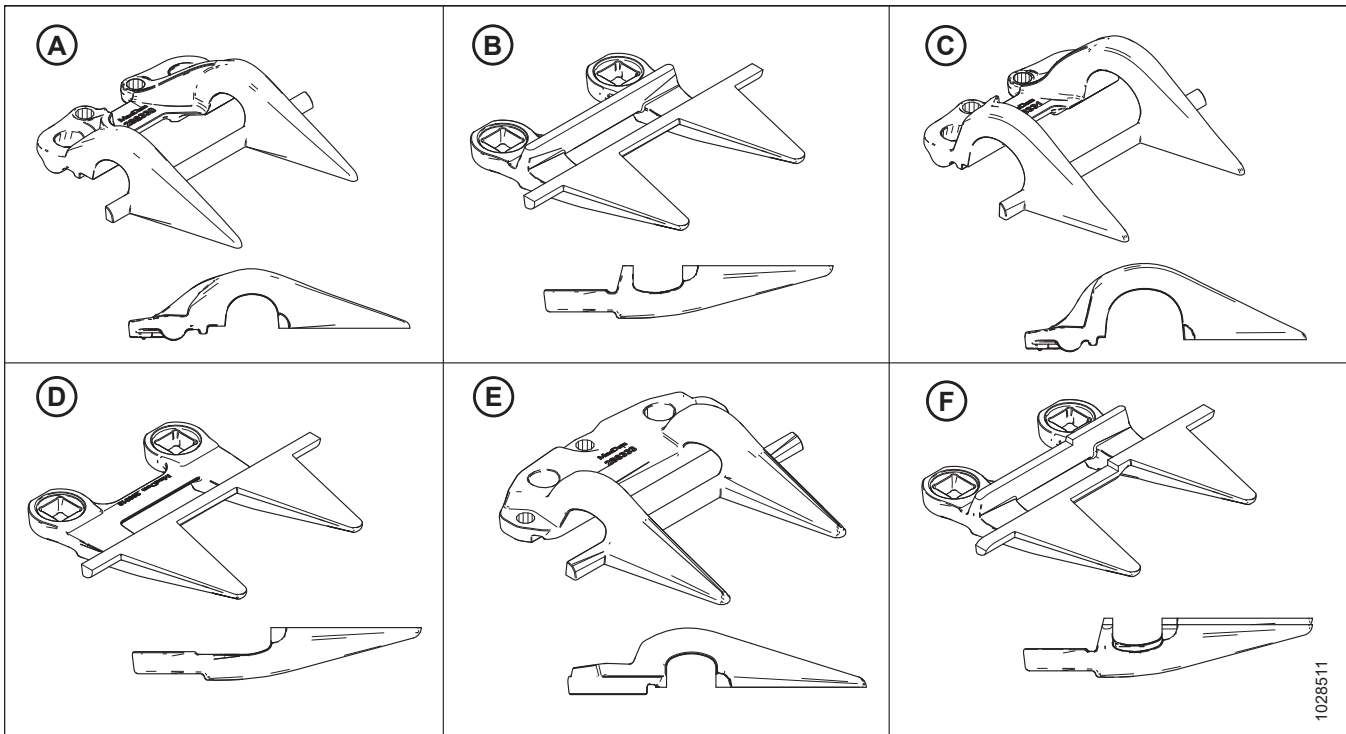


Figure 5.30: Guard and Hold-Down Types used in Short Knife Guard Configurations

A - PlugFree™ Hold-Down (MD #286330)

C - PlugFree™ End Hold-Down (MD #286331)¹⁸

E - PlugFree™ Center Hold-Down (MD #286904)

B - PlugFree™ Knife Guard (MD #286318)

D - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)¹⁹

F - PlugFree™ Center Knife Guard (MD #286320)²⁰

Follow these procedures for checking and adjusting short knife guards:

- [5.10.5 Checking Hold-Down – Short Knife Guards, page 221](#)
- [5.10.6 Adjusting Hold-Down – Short Knife Guards, page 222](#)
- [5.10.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 223](#)
- [5.10.8 Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 224](#)

18. Installed in positions 1–3 on the drive side(s); installed in position 1 at the right end of single-knife headers.

19. Installed in positions 1–4 on the drive side(s). Single-knife headers use a standard guard on the right end of the header.

20. Double-knife headers only.

5.10.1 Checking Hold-Down – Pointed Knife Guards

This procedure is for standard hold-downs. To check the center hold-down on double-knife headers, refer to [5.10.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 219](#).

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
5. Rotate the flywheel attached to the knife drive box to position knife section (A) under hold-down (B), and between guard (C).
6. Push down on knife section (A) with approximately 44 N (10 lbf) of force, and use a feeler gauge to measure the clearance between hold-down (B) and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).
7. If adjustment is necessary, refer to [5.10.2 Adjusting Hold-Down – Pointed Knife Guards, page 218](#).
8. Close the endshield. For instructions, refer to [7.2.2 Closing Header Endshields, page 239](#).

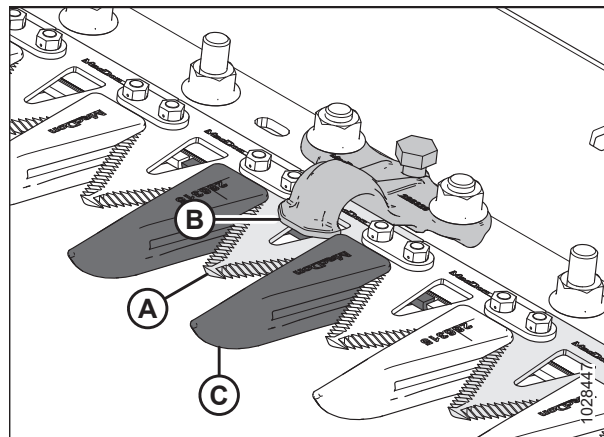


Figure 5.31: Pointed Guard Hold-Down

5.10.2 Adjusting Hold-Down – Pointed Knife Guards

Following the checking procedure, if a pointed or four-point knife guard hold-down is binding the knife, adjust the hold-down.

This procedure applies to standard hold-downs. To adjust the center hold-down on double-knife headers, refer to [5.10.4 Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 220](#).

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Adjust the hold-down clearance as follows:
 - To lower the front of hold-down (A) and decrease the clearance, rotate adjuster bolt (B) clockwise.
 - To raise the front of hold-down (A) and increase the clearance, rotate adjuster bolt (B) counterclockwise.

NOTE:

For larger adjustments, it may be necessary to loosen nuts (C) before rotating adjuster bolt (B). After adjustment, retighten the nuts to 85 Nm (63 lbf-ft).

5. Check the hold-down clearance. For instructions, refer to [5.10.1 Checking Hold-Down – Pointed Knife Guards, page 217](#).

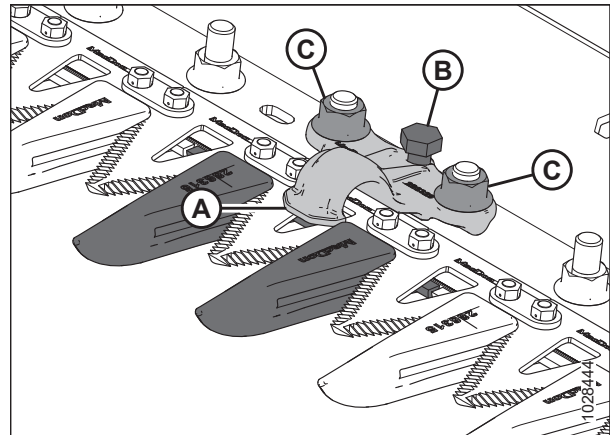


Figure 5.32: Pointed Hold-Down

6. Run the engine at a low idle and listen for noise caused by insufficient clearance. Repeat Step 4, [page 218](#) to Step 5, [page 218](#) if necessary.

IMPORTANT:

An insufficient hold-down clearance will cause the knife and the guards to overheat.

5.10.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
5. Rotate the flywheel attached to the knife drive box to position the knife fully inboard until the knife sections are under hold-down (A). Repeat this step to move the other knife.
6. Push down on the knife section with approximately 44 N (10 lbf) of force, and use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure that the clearance is as follows:
 - At tip (B) of hold-down: 0.1–0.5 mm (0.004–0.020 in.)
 - At rear (C) of hold-down: 0.1–1.0 mm (0.004–0.040 in.)
7. If adjustment is required, refer to [5.10.4 Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 220](#).
8. After tightening nuts (D), recheck the clearance and adjust if necessary.
9. Close the endshield. For instructions, refer to [7.2.2 Closing Header Endshields, page 239](#).

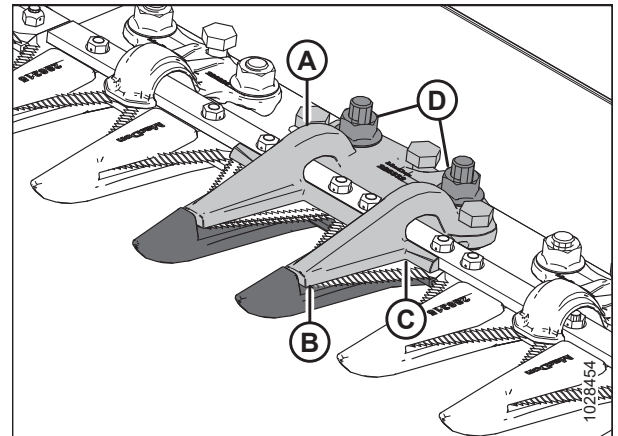


Figure 5.33: Pointed Center Hold-Down

5.10.4 Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Loosen mounting hardware (B).
5. Adjust the hold-down clearance as follows:
 - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten the bolts).
 - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen the bolts).
6. To adjust the clearance at the hold-down tip only, use adjustment bolt (C) as follows:
 - To increase the clearance, rotate adjuster bolt (C) counterclockwise (loosen the bolts).
 - To decrease the clearance, rotate adjuster bolt (C) clockwise (tighten the bolts).
7. Tighten nuts (B) to 85 Nm (63 lbf-ft).
8. Run the engine at a low idle, and listen for noise caused by insufficient clearance.

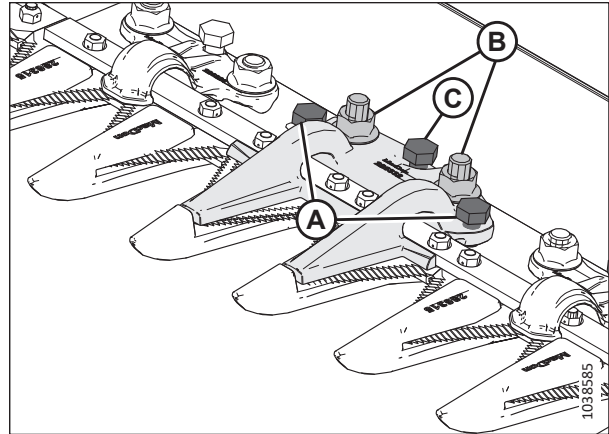


Figure 5.34: Pointed Center Hold-Down

IMPORTANT:

An insufficient hold-down clearance will cause the knife and the guards to overheat.

9. Check the center guard clearance. For more information, refer to [5.10.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 219](#).

5.10.5 Checking Hold-Down – Short Knife Guards

To check the center hold-down on double-knife headers, refer to [5.10.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 223](#).

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Rotate the flywheel attached to the knife drive box to position the knife inboard until the knife sections are under hold-down (A).
5. Push down on the knife section with approximately 44 N (10 lbf) of force and use a feeler gauge to measure the clearance between the tip of hold-down (B) and the knife section. Ensure that the clearance is 0.1–0.5 mm (0.004–0.020 in.).
6. If adjustment is required, refer to [5.10.6 Adjusting Hold-Down – Short Knife Guards, page 222](#).

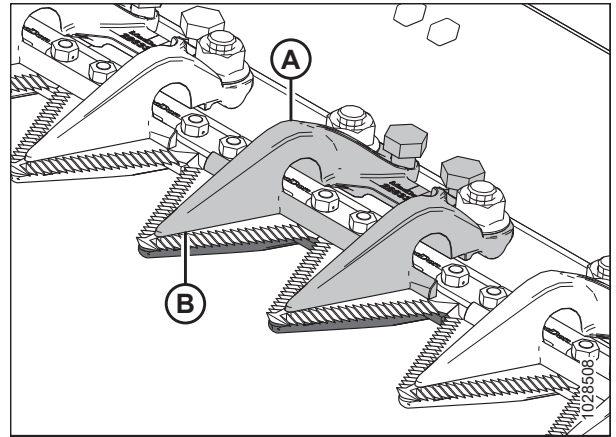


Figure 5.35: Short Knife Guards

5.10.6 Adjusting Hold-Down – Short Knife Guards

To adjust the center hold-down on double-knife headers, refer to [5.10.8 Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 224](#).

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Adjust the hold-down clearance as follows:
 - To decrease the clearance, rotate adjuster bolts (A) clockwise.
 - To increase the clearance, rotate adjuster bolts (A) counterclockwise.

NOTE:

For larger adjustments, loosen nuts (B) before rotating adjuster bolts (A). After adjustment, retighten the nuts to 85 Nm (63 lbf-ft).

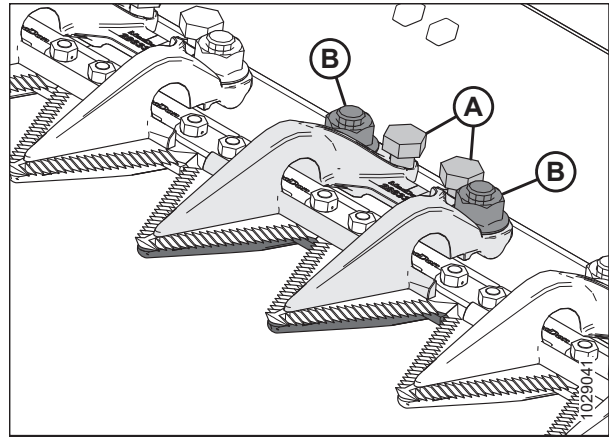


Figure 5.36: Short Knife Guard Hold-Down

5. Run the header at a low idle, and listen for noise caused by insufficient clearance. Adjust the header as necessary.

IMPORTANT:

An insufficient hold-down clearance will cause the knife and the guards to overheat.

6. Disengage the reel safety props. For instructions, refer to [7.1.2 Disengaging Reel Safety Props, page 237](#).

5.10.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).
4. Open the endshield. For instructions, refer to [7.2.1 Opening Header Endshields, page 238](#).
5. Rotate the flywheel attached to the knife drive box to position the knife inboard until the knife section is under hold-down (A). Repeat this step to move the other knife.
6. Push down on the knife section with approximately 44 N (10 lbf) of force. Use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure that the clearance is as follows:
 - At tip (B) of hold-down: 0.1–0.5 mm (0.004–0.020 in.)
 - At rear (C) of hold-down: 0.1–1.0 mm (0.004–0.040 in.)
7. If adjustment is required, refer to [5.10.8 Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 224](#).
8. Tighten nuts (D), recheck the clearance, and adjust if necessary.
9. Close the endshield. For instructions, refer to [7.2.2 Closing Header Endshields, page 239](#).

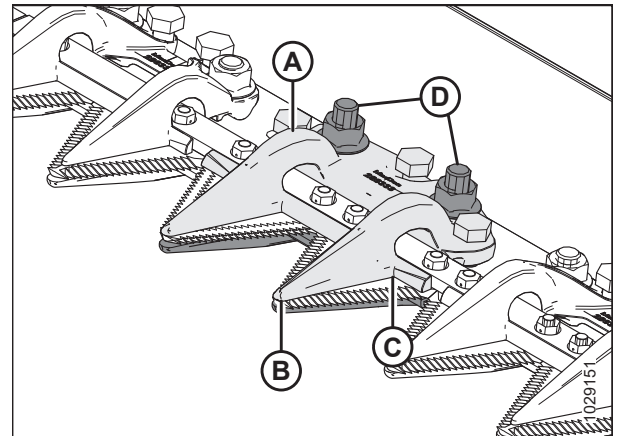


Figure 5.37: Center Knife Guard Hold-Down

5.10.8 Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to [7.1.1 Engaging Reel Safety Props, page 235](#).

4. Loosen mounting hardware (B).
5. Adjust the hold-down clearance as follows:
 - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten the bolts).
 - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen the bolts).
6. To adjust the clearance at the tip of the hold-down, turn adjustment bolt (C) as follows:
 - To increase the clearance, turn adjuster bolt (C) counterclockwise (loosen the bolts).
 - To decrease the clearance, turn adjuster bolt (C) clockwise (tighten the bolts).

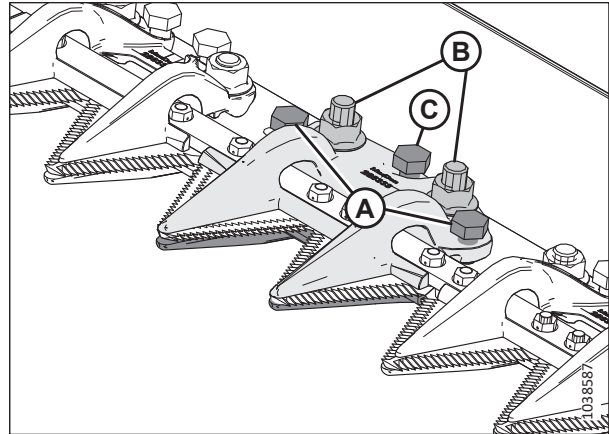


Figure 5.38: Center Hold-Down

7. Torque nuts (B) to 85 Nm (63 lbf-ft).
8. If further adjustment is needed, repeat Step [4, page 224](#) to Step [7, page 224](#).
9. Run the engine at a low idle while listening for noise caused by insufficient clearance. Adjust the knives as necessary.

IMPORTANT:

An insufficient hold-down clearance will cause the knife and the guards to overheat.

5.11 Checking and Adjusting Header Endshields

The header endshields can warp due to extreme changes in temperature. Adjust the position of the header endshield to compensate for dimensional changes.

1. Shut down the engine, and remove the key from the ignition.

IMPORTANT:

Ensure that the header endshield does **NOT** rest on the aluminum endsheet.

2. Measure clearance (A) between header endshield (B) and endsheet (C). The clearance should be 1–3 mm (1/16–1/8 in.).

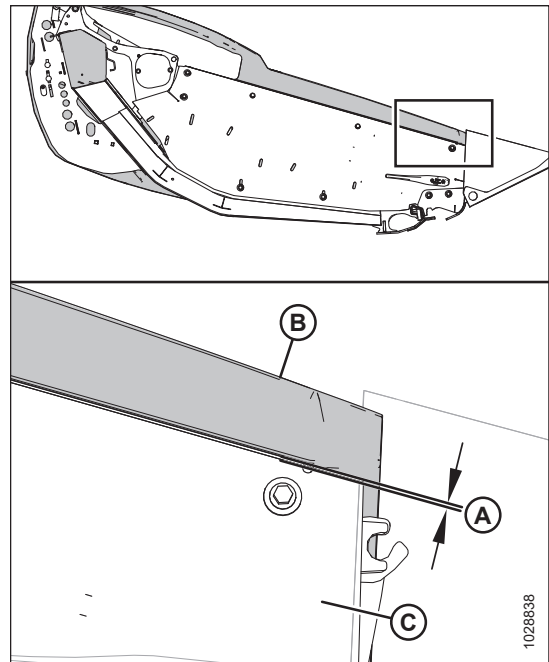


Figure 5.39: Clearance between Endshield and Endsheet

3. If the clearance between the header endshield and the endsheet is insufficient, adjust support bracket (A) as follows:
 - a. Loosen bolts (B).
 - b. Move support bracket (A) up or down as needed.
 - c. Retighten the hardware.

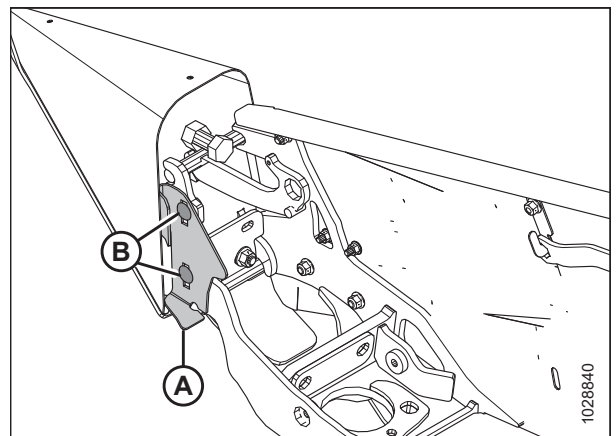


Figure 5.40: Header Endshield Support Bracket

PERFORMING PREDELIVERY CHECKS

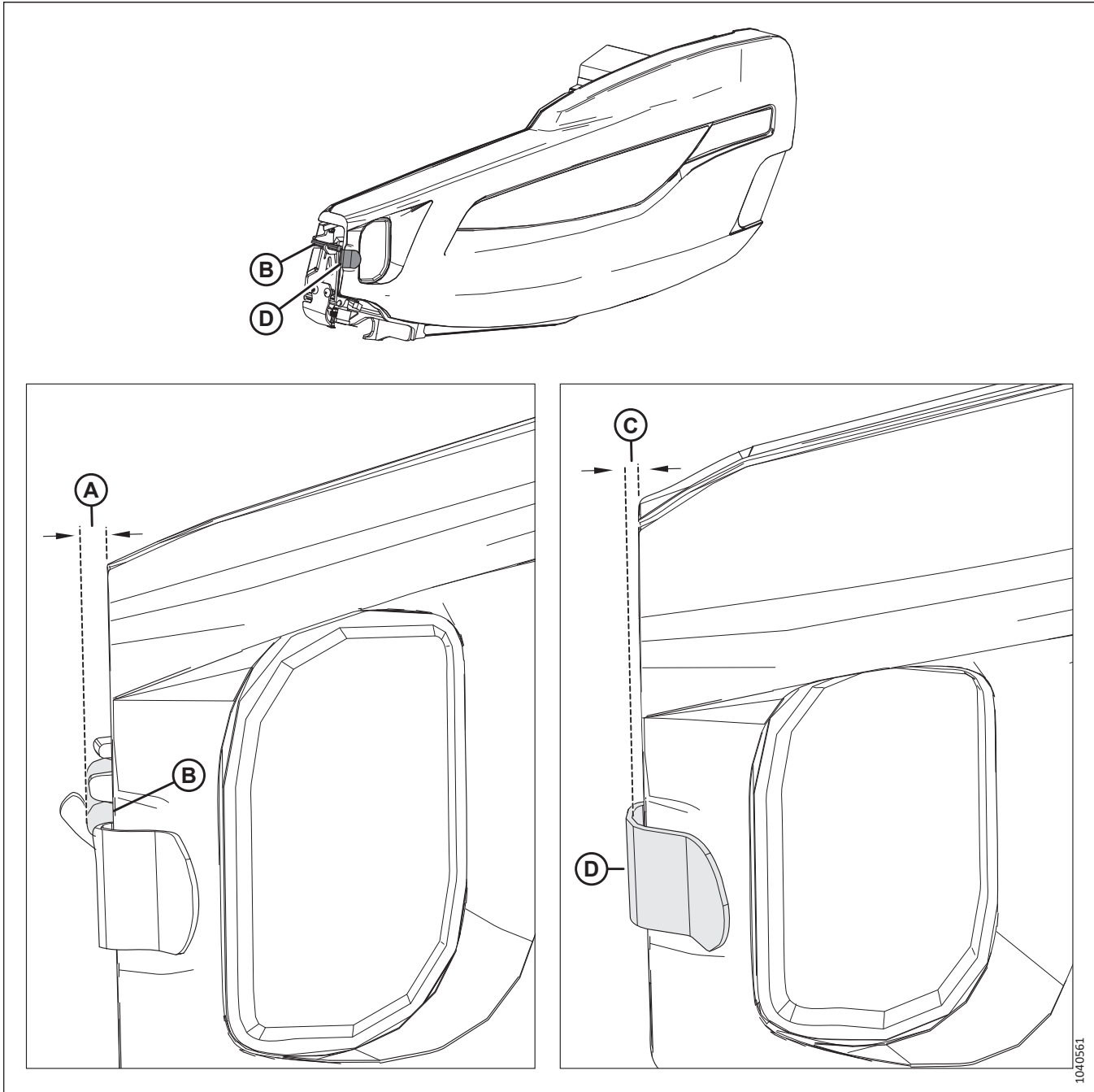


Figure 5.41: Clearance Specifications at Front of Endshield

4. Measure clearance (A) between the front of the header endshield and pin (B). The clearance should be 8–18 mm (1/32–11/16 in.)
5. Measure clearance (C) between the front of the header endshield and support bracket (D). The clearance should be 6–10 mm (1/4–3/8 in.).

PERFORMING PREDELIVERY CHECKS

6. If the clearances at the front of the endshield are insufficient, adjust the position of hinge arm (A) as follows:
 - a. Loosen four nuts (B).
 - b. Slide brackets (C) and hinge arm (A) fore or aft as required to achieve the correct clearance.
 - c. Retighten the hardware.

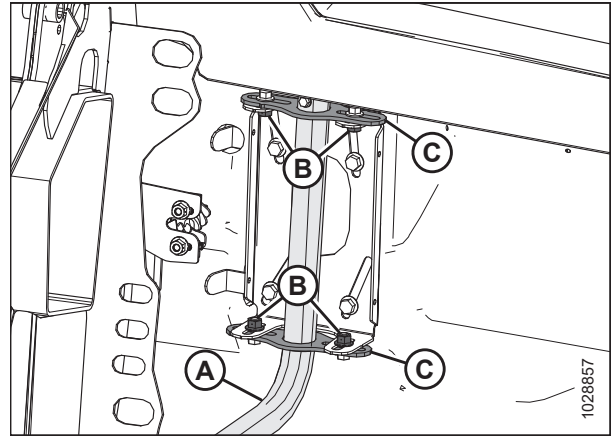


Figure 5.42: Left Header Endshield

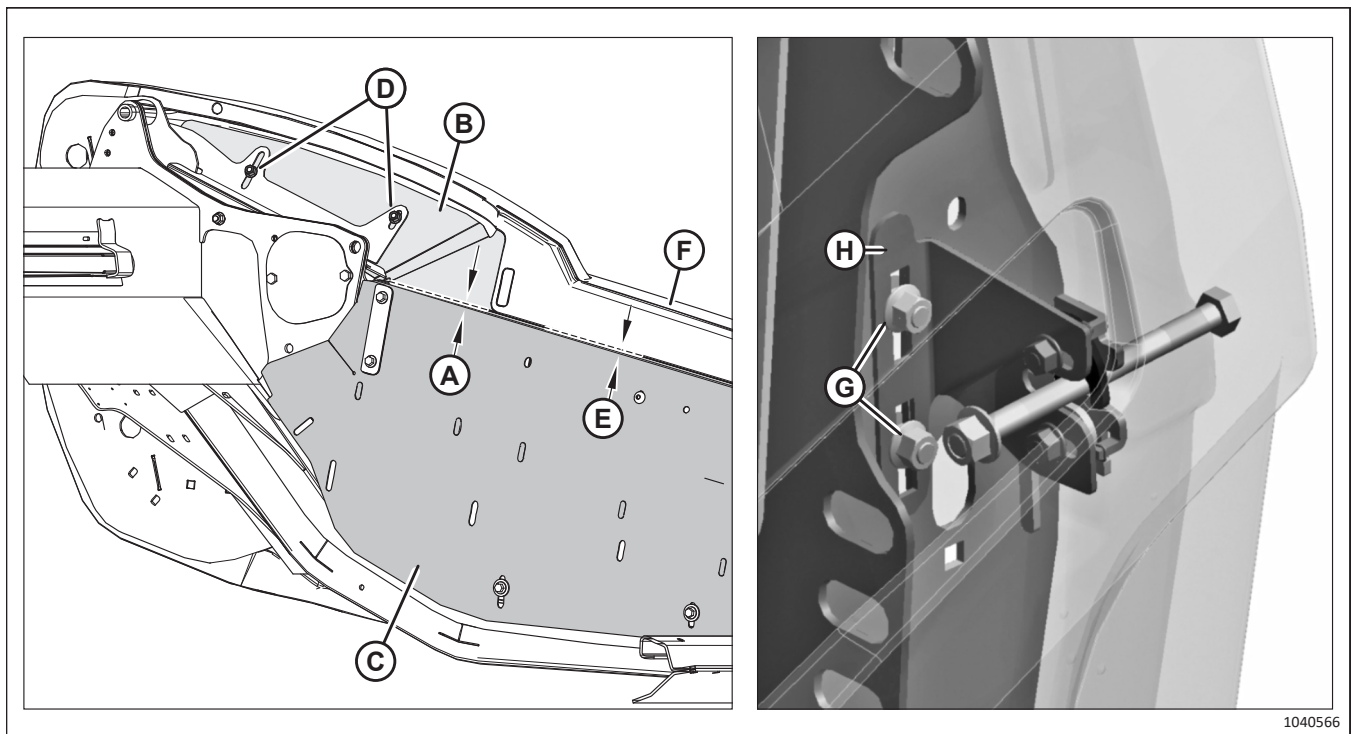


Figure 5.43: Clearance Specification between Neck Shield and End Panel

7. Measure clearance (A) between neck shield (B) and end panel (C). The clearance must be at least 3 mm (1/8 in.). To adjust the clearance, loosen two nuts (D), move neck panel (B), and tighten nuts (D).
8. Measure clearance (E) between end panel (C) and endshield (F). The clearance must be 1–3 mm (1/16–1/8 in.). To adjust the clearance, loosen two nuts (G), slide bracket (H) up or down, and tighten the nuts.

NOTE:

Ensure that the endshield does **NOT** rest on neck panel (B).

PERFORMING PREDELIVERY CHECKS

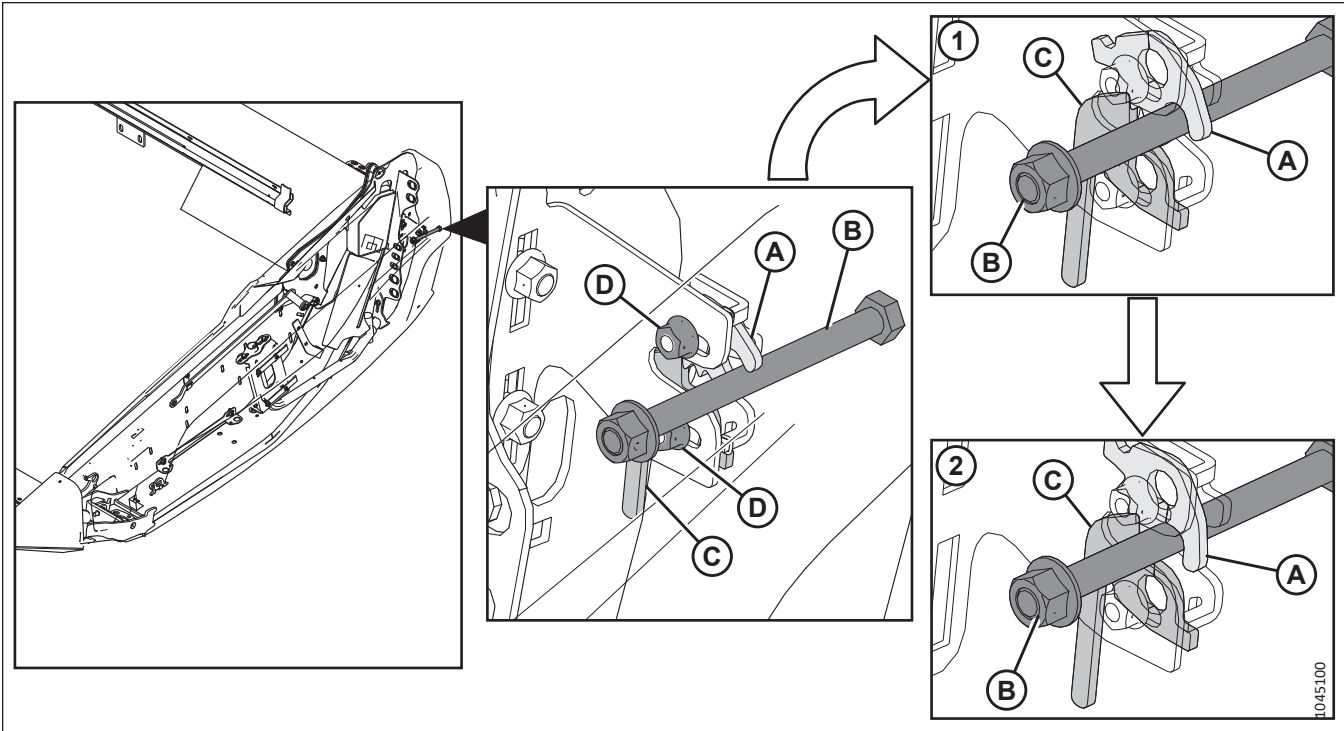


Figure 5.44: Two-Stage Endshield Latch

- 1 - Endshield Latch Stage One
- 2 - Endshield Latch Stage Two

When the endshield is closed, latch (A) should engage bolt (B). As the endshield is pressed fully closed, two-stage latch (A) engages lever (C) to secure endshield bolt (B). Confirm the endshield latch functions properly by following Step 9, page 228 to Step 11, page 228.

9. Close the endshield. Confirm bolt (B) engages latch (A).
10. Momentarily press the release latch.
11. Try to open the endshield.
 - If you can open the endshield partially, but **NOT** completely, then the latch is positioned properly.
 - If you can open the endshield completely, loosen nuts (D), move latch along the slotted holes, then retighten the nuts. Repeat Step 9, page 228 to Step 11, page 228.

PERFORMING PREDELIVERY CHECKS

12. Check that bolt (A) is tight. If adjustment is required, tighten nut (B) until there is no gap under the nut.

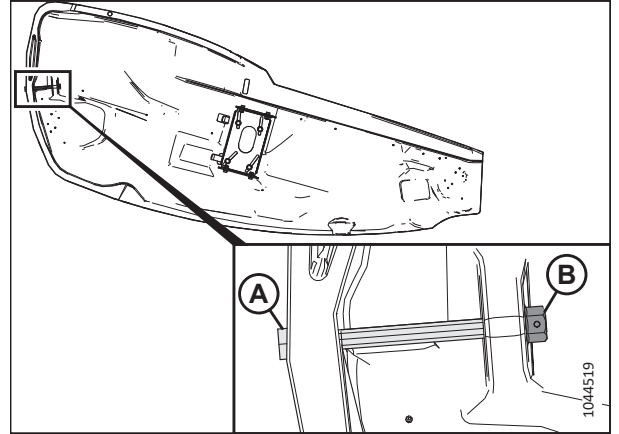


Figure 5.45: Endshield Bolt

5.12 Checking Manuals

Check the manual case contents. On D215, D220, and D225 Draper Headers, the manual storage case is located at the rear of the header, inboard of the left endsheet. On the larger draper headers, the manual storage case is located at the rear of the header, outboard of the right outer leg.

1. Remove the cable tie on manual case (A).
2. Confirm that the case contains the following manuals:
 - D2 Series Draper Header for Windrowers Operator's Manual
 - D2 Series Draper Header for Windrowers Quick Card
 - D2 Series Draper Header for Windrowers Parts Catalog
3. Close the manual storage case.

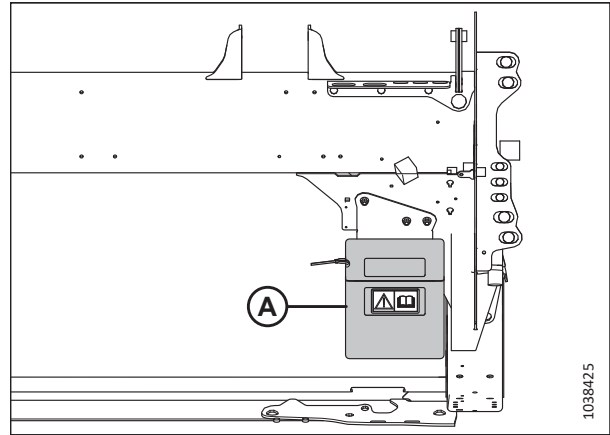


Figure 5.46: Manual Case – D215, D220, and D225

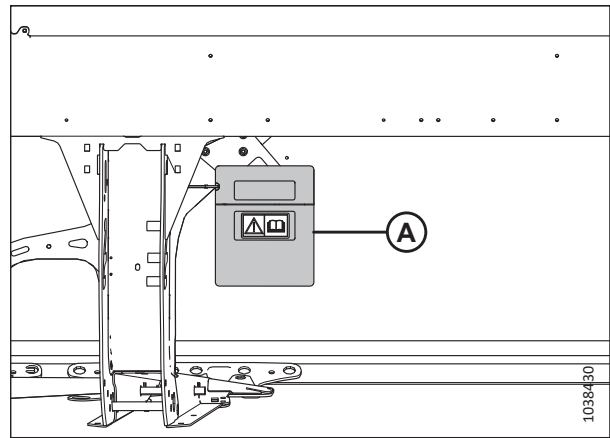


Figure 5.47: Manual Case – D230, D235, and D241

Chapter 6: Running up Header

To run up the header, calibrate the knife drive and header position sensors, then engage the header and run it at low speed for 5 minutes followed by operating speed for 15 minutes, monitoring for any issues. Complete the run-up check to ensure the machine is field-ready. The header must be run up before it is delivered to the customer, to ensure that all its features are functional.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

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

1. Start the engine.
2. **M1 and M2 Series Only:** Calibrate the knife drive. For instructions, refer to the windrower operators manual.
3. Calibrate the header position sensors. For instructions, refer to the windrower operators manual.
4. Engage the header and let it run at low speed for 5 minutes while watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.

NOTE:

The reel and side drapers will not operate until oil flow fills the lines.

5. Run the machine at operating speed for an additional 15 minutes while watching and listening **FROM THE OPERATOR'S SEAT** for any unusual sounds or abnormal vibration.
6. Shut down the engine, and remove the key from the ignition.
7. Perform run-up check as listed on *Predelivery Checklist, page 253* (yellow sheet attached to this instruction) to ensure the machine is field-ready.

6.1 Checking and Adjusting Header Float

D2 Series Draper Headers are designed to ride on the skid shoes when cutting on the ground. The windrower float system reduces the ground pressure so that the header floats over obstacles and follows ground contours instead of being supported by the windrower lift cylinders.

Refer to your windrower operator's manual for details about header float adjustments.

6.2 Adjusting Draper Tracking

If the drapers rub the header frame during operation, the draper tracking may need to be adjusted.

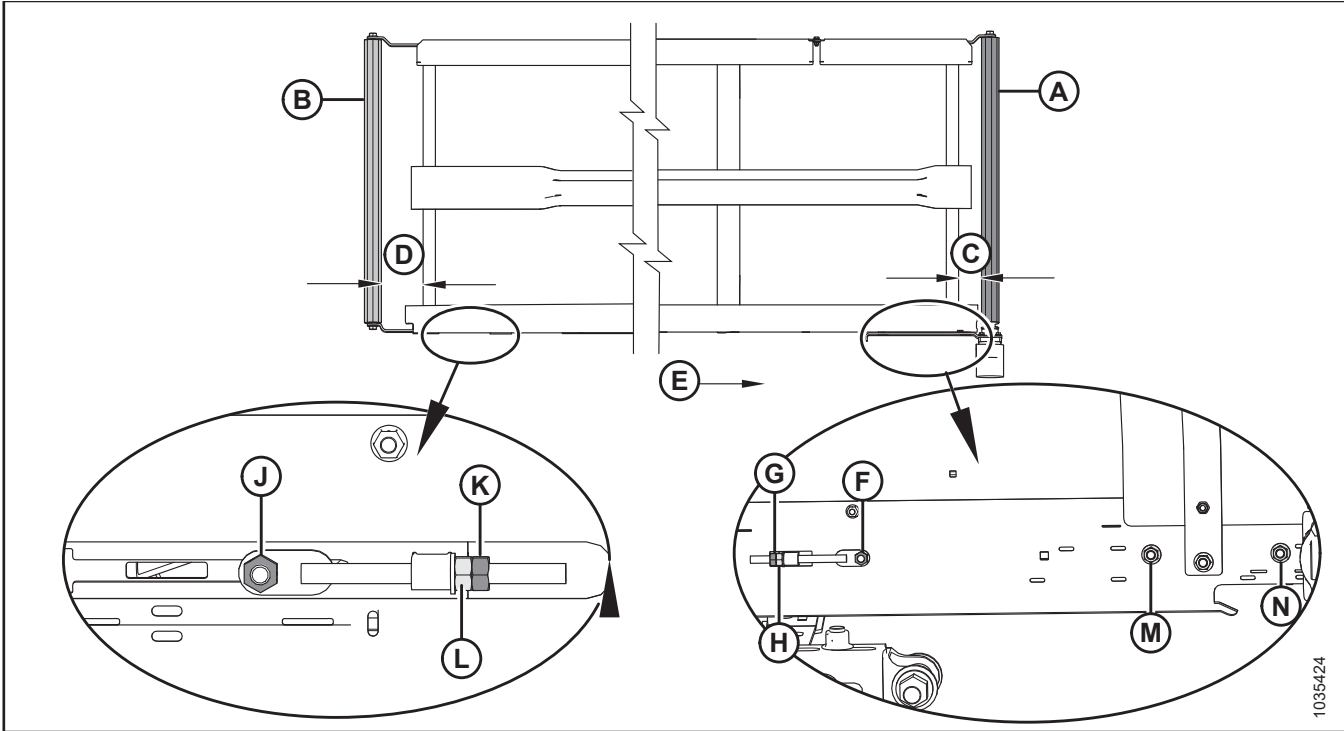


Figure 6.1: Draper Tracking Adjustments – Left Draper

- A - Drive Roller
- B - Idler Roller
- C - Drive Roller Adjust
- D - Idler Roller Adjust
- E - Draper Direction
- F - Nut on Drive Roller Side
- G - Jam Nut for Drive Roller
- H - Adjuster Nut for Drive Roller
- J - Nut on Idler Roller Side
- K - Jam Nut for Idler Roller
- L - Adjuster Nut for Idler Roller
- M - Nut on Drive Roller Side
- N - Nut on Drive Roller Side

1. To determine which roller requires adjustment and which adjustments are necessary, refer to the following table:

Table 6.1 Draper Tracking

If tracking towards	Location	Adjustment	Method
Backsheet	Drive roller	Increase C	Tighten adjuster nut (H)
Cutterbar	Drive roller	Decrease C	Loosen adjuster nut (H)
Backsheet	Idler roller	Increase D	Tighten adjuster nut (L)
Cutterbar	Idler roller	Decrease D	Loosen adjuster nut (L)

RUNNING UP HEADER

2. Adjust drive roller (A) to change **C** (refer to Table 6.1, page 232 and Figure 6.1, page 232) as follows:
 - a. Loosen nuts (F), (M), and (N), and jam nut (G).
 - b. Turn adjuster nut (H).
 - c. Tighten nuts (F), (M), and (N), and jam nut (G).
3. Adjust idler roller (B) to change **D** (refer to Table 6.1, page 232 and Figure 6.1, page 232) as follows:
 - a. Loosen nut (J) and jam nut (K).
 - b. Turn adjuster nut (L).

NOTE:

If the draper does not track at the idler roller end after the idler roller has been adjusted, the drive roller is likely not in line with the deck. Adjust the drive roller, and then readjust the idler roller.

- c. Tighten nut (J) and jam nut (K).

6.3 Checking Knife Position

To check the knife position, inspect the guards for signs of heating and verify the clearance between the knifehead and the drive arm, ensuring it is within the specified range. Adjust the drive arm as needed according to the technical manual.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Check the guards for signs of heating during run-up due to insufficient clearance between the guard and the knife.
3. Check clearance (C) between knifehead (A) and drive arm (B). There should be 0.2–1.2 mm (0.007–0.047 in.) of clearance.

IMPORTANT:

Overgreasing the knife can cause it to bend and make contact with the guards closest to the knifehead. Check the knife for signs of excessive heating on first few guards after greasing. If necessary, relieve some of the pressure by pressing the check-ball in the grease fitting, or by removing the grease fitting.

4. If the drive arm needs adjustment, refer to the header's technical manual for instructions.

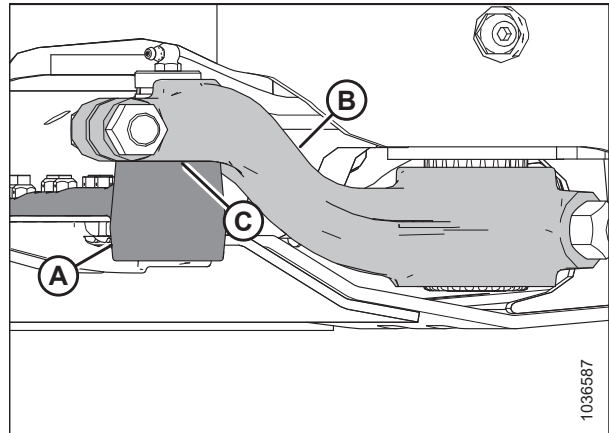


Figure 6.2: Knifehead and Drive Arm

Chapter 7: Reference

Refer to the procedures and information in this chapter as needed.

7.1 Reel Safety Props

The reel safety props are located on the reel arms. When engaged, the reel safety props prevent the reel from falling unexpectedly.

IMPORTANT:

To prevent damage to the reel support arms, do **NOT** transport the header with the reel safety props engaged.

7.1.1 Engaging Reel Safety Props

Engage the reel safety props anytime you need to work around a raised reel. When the reel safety props are engaged, they prevent the reel from unexpectedly lowering.

 **DANGER**

Ensure that all bystanders have cleared the area.

 **DANGER**

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

Outer reel arms

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Lift up on safety prop (A) and push it forward to remove the prop from hook (B).

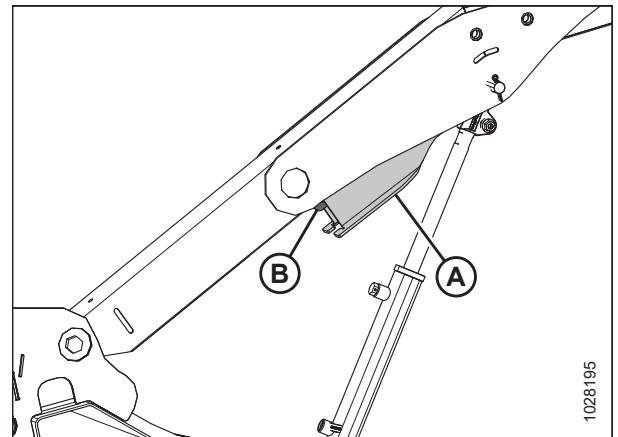


Figure 7.1: Outer Arm

REFERENCE

4. Lower safety prop (A) and engage it on the cylinder shaft as shown. Repeat this step on the opposite reel arm.

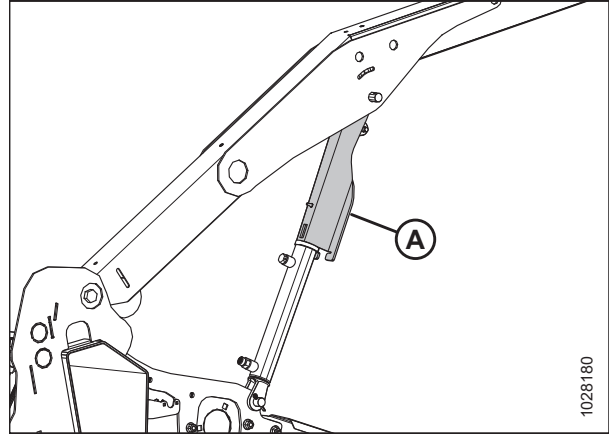


Figure 7.2: Engaged Reel Safety Prop – Outer Arm

Center arm – double-reel headers

5. Rotate handle (A) to release the spring tension and push the handle inboard to ensure the pin is engaged in the locked position.
6. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pins.
7. Shut down the engine, and remove the key from the ignition.

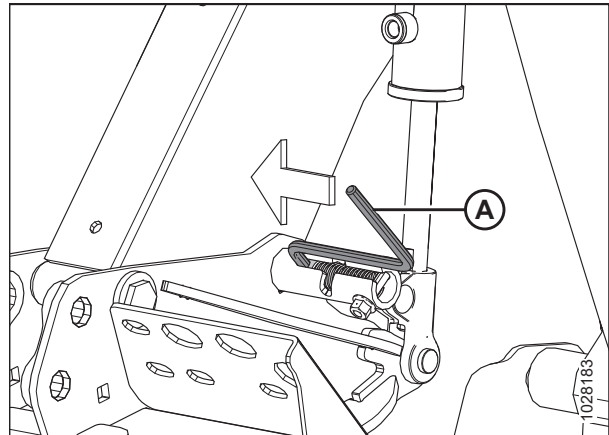


Figure 7.3: Engaged Reel Safety Prop – Center Arm

7.1.2 Disengaging Reel Safety Props

Disengage the reel safety props once you have completed working on or around a raised reel.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.

Outer reel arms

3. Move reel safety prop (A) up onto hook (B) under the reel arm. Repeat this step on the opposite reel arm.

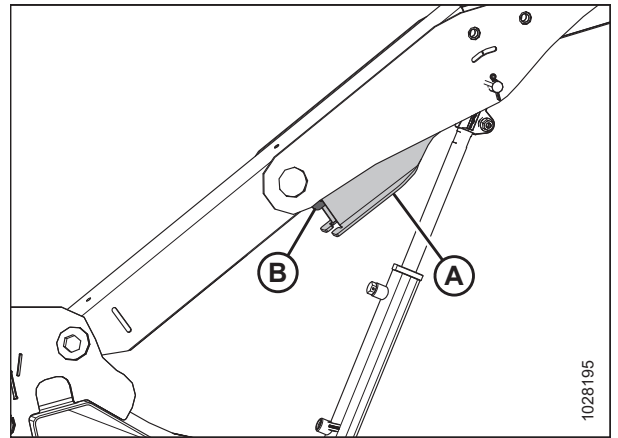


Figure 7.4: Reel Safety Prop – Right Outer Arm

Center arm – double-reel headers

4. Move handle (A) outboard and into slot (B) to put the pin into the unlocked position.
5. Lower the reel fully.
6. Shut down the engine, and remove the key from the ignition.

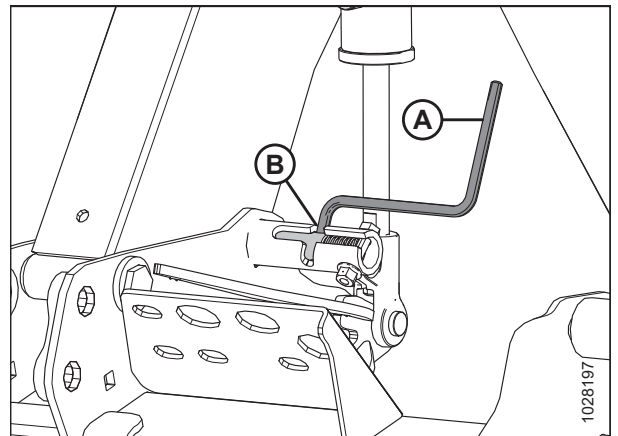


Figure 7.5: Reel Safety Prop – Center Arm

7.2 Header Endshields

A hinged, polyethylene endshield is fitted on each end of the header to protect critical drive components.

7.2.1 Opening Header Endshields

The header endshields cover the knife drive components, the hydraulic hoses, the electrical connections, the header wrench, the spare knife, and the optional transport hitch. To access these components, you will need to open the endshield.

1. To unlock the shield, push release lever (B) using access hole (A) on the backside of the header endshield.

NOTE:

A tool (e.g., a screwdriver) is required to push the release lever on headers configured for Export.

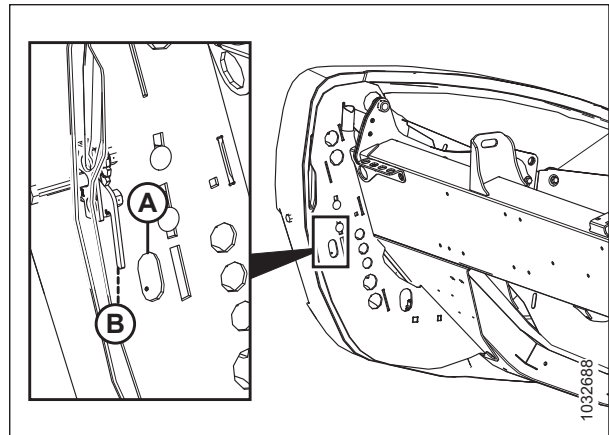


Figure 7.6: Left Header Endshield

2. Pull header endshield (A) open.

NOTE:

The header endshield is retained by tab (B) and will open in direction (C).

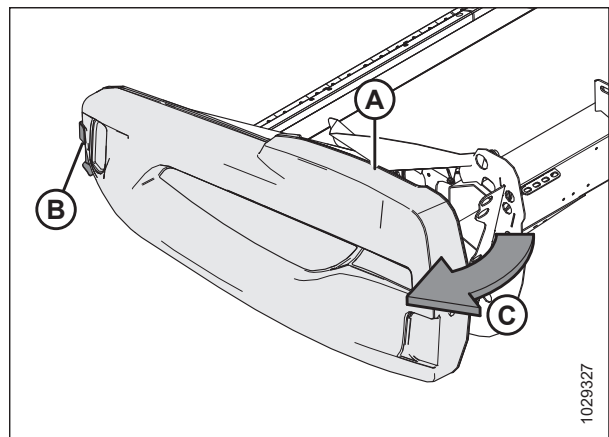


Figure 7.7: Left Header Endshield

REFERENCE

3. If additional clearance is required, pull the header endshield free of tab (A), then swing the shield toward the rear of the header.
4. Engage safety latch (B) on hinge arm (C) to secure the shield in the fully open position.

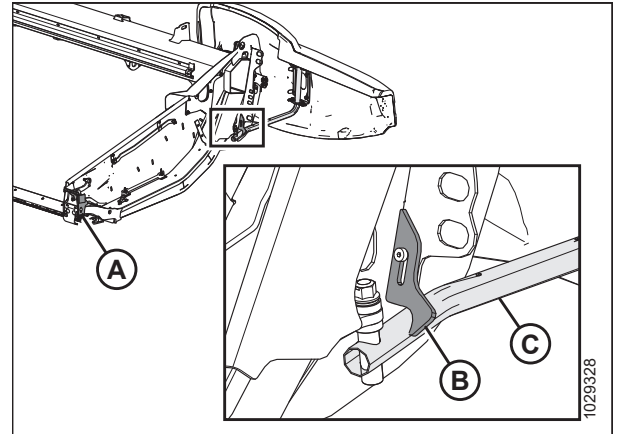


Figure 7.8: Left Header Endshield

7.2.2 Closing Header Endshields

Close the header endshields to protect the drive components, the hoses, and the electrical connections from dirt and debris.

1. If the endshield is fully open and secured behind the header, disengage lock (A) to allow header endshield (B) to move.
2. Rotate the header endshield toward the front of the header.

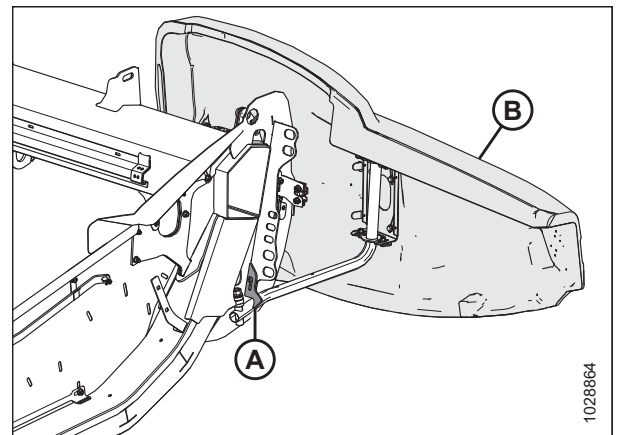


Figure 7.9: Left Header Endshield

3. While closing endshield (A), ensure that it does not contact the top of endsheet (B).

IMPORTANT:

Ensure that the header endshield does **NOT** rest on the aluminum endsheet.

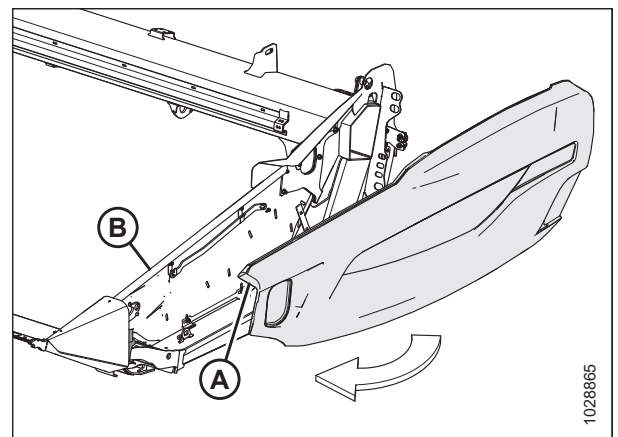


Figure 7.10: Left Header Endshield

REFERENCE

4. Insert the front of the header endshield behind hinge tab (B) and into the divider cone.
5. Swing the header endshield in direction (A) into the closed position. Engage two-stage latch (C) with a firm push.

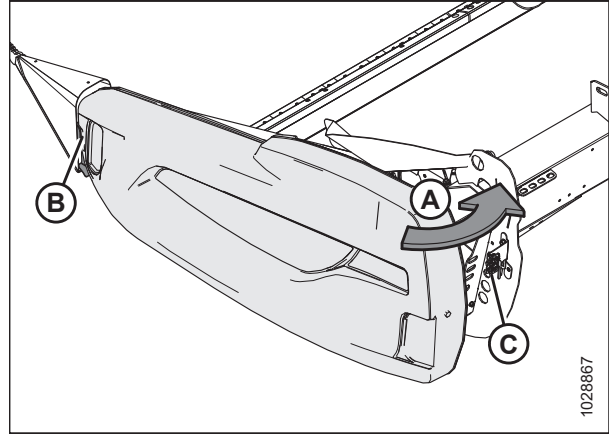


Figure 7.11: Left Header Endshield

IMPORTANT:

To ensure that the header endshield is locked, bolt (A) must be fully engaged on two-stage latch (B) to prevent the header endshield from opening while you are operating the header.

NOTE:

The header endshield is transparent in the illustration to show the latch.

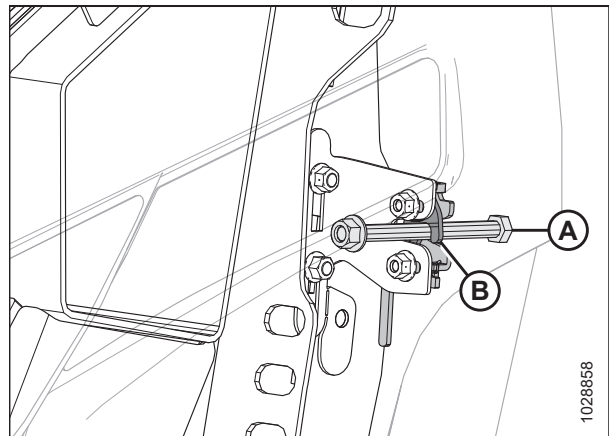


Figure 7.12: Two-Stage Latch

7.3 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

7.3.1 Metric Bolt Specifications

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 7.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

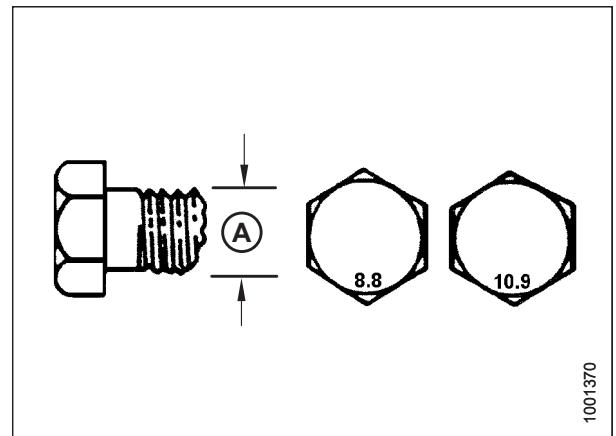


Figure 7.13: Bolt Grades

REFERENCE

Table 7.2 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

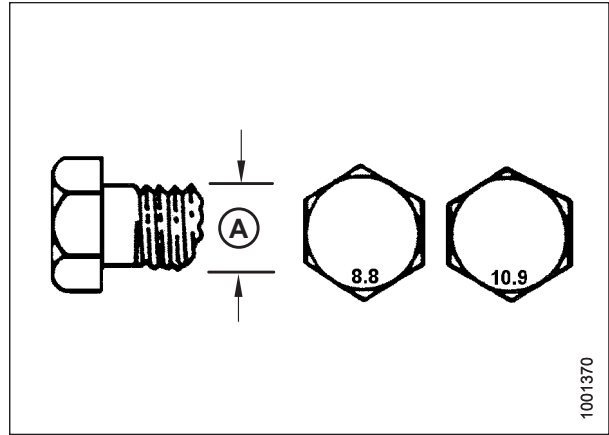


Figure 7.14: Bolt Grades

Table 7.3 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

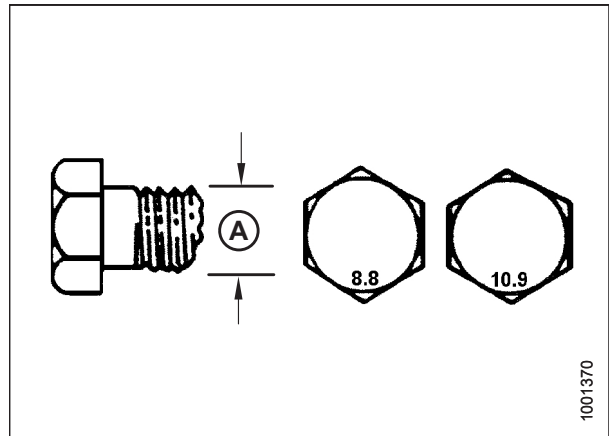


Figure 7.15: Bolt Grades

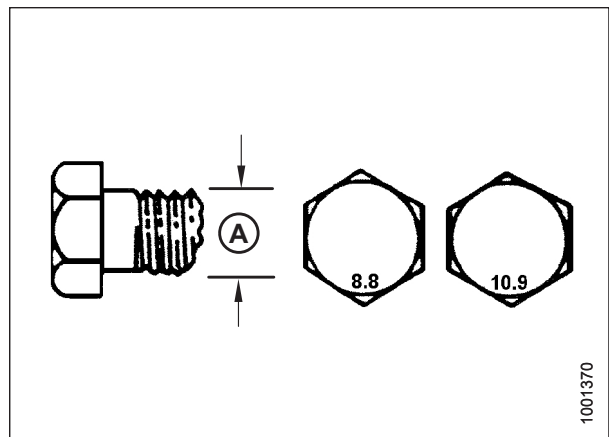


Figure 7.16: Bolt Grades

REFERENCE

Table 7.4 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

7.3.2 Metric Bolt Specifications – Cast Aluminum

Specifications are provided for the appropriate final torque values for various sizes of metric bolts in cast aluminum.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 7.5 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf-ft	Nm	lbf-ft
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

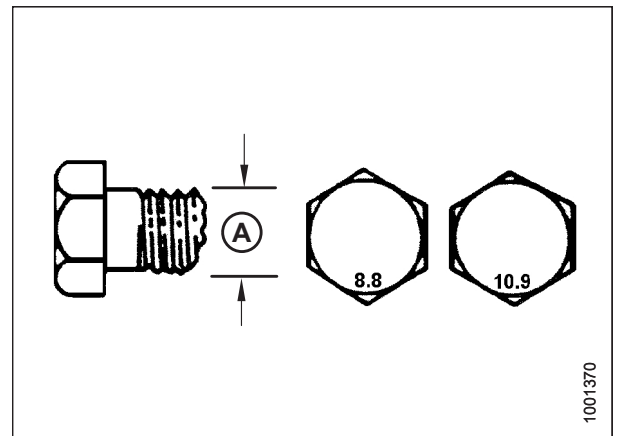


Figure 7.17: Bolt Grades

1001370

7.3.3 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and that it is pushed toward lock nut (C) as far as possible.
3. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
4. Apply hydraulic system oil to O-ring (A).

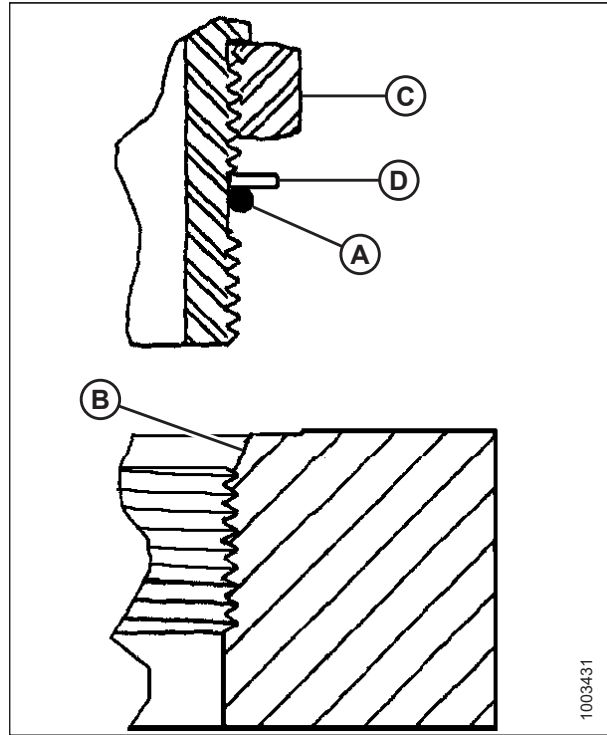


Figure 7.18: Hydraulic Fitting

5. Install fitting (B) into the port until backup washer (D) and O-ring (A) contact part face (E).
6. Position the angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten it to the torque value indicated in the table. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Verify the final condition of the fitting.

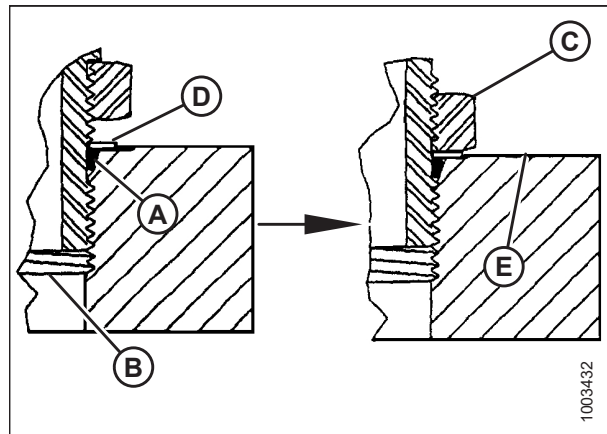


Figure 7.19: Hydraulic Fitting

REFERENCE

Table 7.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ²¹	
		Nm	lbf-ft (*lbf-in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26
-6	9/16–18	40–44	30–32
-8	3/4–16	70–77	52–57
-10	7/8–14	115–127	85–94
-12	1 1/16–12	183–201	135–148
-14	1 3/16–12	237–261	175–193
-16	1 5/16–12	271–298	200–220
-20	1 5/8–12	339–373	250–275
-24	1 7/8–12	414–455	305–336
-32	2 1/2–12	509–560	375–413

7.3.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values for non-adjustable hydraulic fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table 7.7, page 245.
6. Verify the final condition of the fitting.

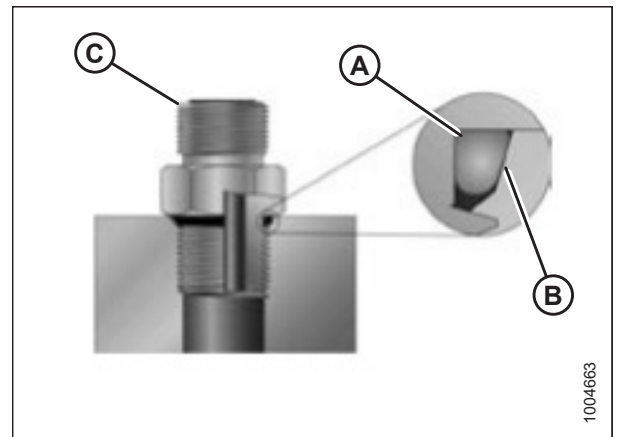


Figure 7.20: Hydraulic Fitting

Table 7.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ²¹	
		Nm	lbf-ft (*lbf-in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26

21. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

Table 7.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ²²	
		Nm	lbf-ft (*lbf-in)
-6	9/16-18	40-44	30-32
-8	3/4-16	70-77	52-57
-10	7/8-14	115-127	85-94
-12	1 1/16-12	183-201	135-148
-14	1 3/16-12	237-261	175-193
-16	1 5/16-12	271-298	200-220
-20	1 5/8-12	339-373	250-275
-24	1 7/8-12	414-455	305-336
-32	2 1/2-12	509-560	375-413

7.3.5 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Torque values are shown in the Table 7.8, page 247.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.



Figure 7.21: Hydraulic Fitting

22. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table 7.8, page 247.

NOTE:

If applicable, hold the hex flange on fitting body (E) to prevent the rotation of the fitting body and the hose when tightening fitting nut (D).

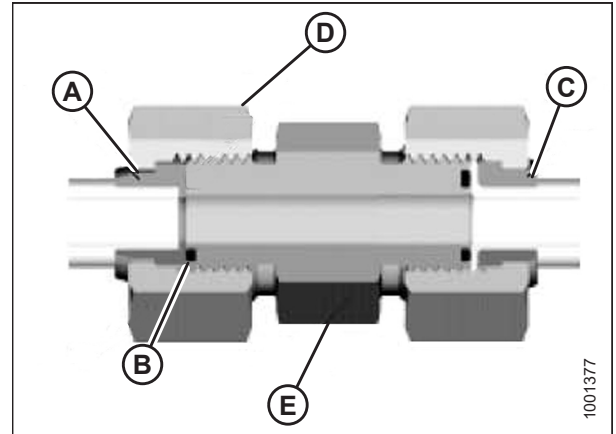


Figure 7.22: Hydraulic Fitting

6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

Table 7.8 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ²³	
			Nm	lbf-ft
-3	Note ²⁴	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ²⁴	5/16	–	–
-6	11/16	3/8	40–44	30–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note ²⁴	7/8	–	–
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

7.3.6 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.

23. Torque values and angles shown are based on lubricated connection as in reassembly.

24. O-ring face seal type end not defined for this tube size.

REFERENCE

4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 7.9, page 248. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with an appropriate cleaner.
6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

NOTE:

The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

Table 7.9 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
1/8-27	2-3	12-18
1/4-18	2-3	12-18
3/8-18	2-3	12-18
1/2-14	2-3	12-18
3/4-14	1.5-2.5	12-18
1-11 1/2	1.5-2.5	9-15
1 1/4-11 1/2	1.5-2.5	9-15
1 1/2-11 1/2	1.5-2.5	9-15
2-11 1/2	1.5-2.5	9-15

7.4 Conversion Chart

This manual uses both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 7.10 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
Length	meter	m	x 3.2808 =	foot	ft.
Power	kilowatt	kW	x 1.341 =	horsepower	hp
Pressure	kilopascal	kPa	x 0.145 =	pounds per square inch	psi
Pressure	megapascal	MPa	x 145.038 =	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	x 14.5038 =	pounds per square inch	psi
Torque	Newton meter	Nm	x 0.7376 =	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	x 8.8507 =	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	(°C x 1.8) + 32 =	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	x 3.2808 =	feet per minute	ft/min
Velocity	meters per second	m/s	x 3.2808 =	feet per second	ft/s
Velocity	kilometers per hour	km/h	x 0.6214 =	miles per hour	mph
Volume	liter	L	x 0.2642 =	US gallon	US gal
Volume	milliliter	mL	x 0.0338 =	ounce	oz.
Volume	cubic centimeter	cm ³ or cc	x 0.061 =	cubic inch	in. ³
Weight	kilogram	kg	x 2.2046 =	pound	lb.

REFERENCE

7.5 Definitions

The following terms, abbreviations, and acronyms are used in this instruction.

Table 7.11 Definitions

Term	Definition
API	American Petroleum Institute
Bolt	A headed and externally threaded fastener designed to be paired with a nut
Cab-forward	Windrower operation mode in which the operator's seat faces the header
CDM	The cab display module in an M Series Windrower
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
D2 Series Draper Header	MacDon D215, D220, D225, D230, D235, and D241 Draper Headers for M, M1, and M2 Series Windrowers, and the TM100 Tractor Mount.
Engine-forward	Windrower operation with Operator and engine facing in direction of travel
ETDK	Electronically Timed Double Knife
Export header	The header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	A reference position in which the given sealing surfaces or components are making contact with each other. The fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
HarvestTouch™ Display	The touch screen display in an M2 Series Windrower
Header	A machine that cuts and lays crop into a windrow when attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
HPT display	The Harvest Performance Tracker display in an M1 Series Windrower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for the original 37° flared fitting
M Series Windrowers	MacDon M100, M105, M150, M155, M155E4, M200, and M205 Windrowers
M1 Series Windrowers	MacDon M1170, M1170 NT, M1170 NT5, and M1240 Windrowers
M2 Series Windrowers	MacDon M2170, M2170 NT, and M2260 Windrowers
n/a	Not applicable
North American header	The header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-Ring Seal
SAE	Society of Automotive Engineers

REFERENCE

Table 7.11 Definitions (continued)

Term	Definition
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when it is inserted into a mating part
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time
spm	Strokes per minute
SR	Single reel
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Timed (knife drive)	Synchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm), foot-pounds (lbf·ft), or inch-pounds (lbf·in)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
UCA	Upper cross auger
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism
Windrower	The power unit for a header

Predelivery Checklist

Perform these checks prior to delivery to your Customer. **Adjustments are normally not required as the machine is factory-assembled and adjusted.** If adjustments are required, refer to the relevant page number in this instruction. Either the Operator or the Dealer should keep the completed checklist.

CAUTION

Carefully follow the instructions. Be alert for safety related messages that bring your attention to hazards and unsafe practices.

Header Serial Number: _____

D2 Series Draper Header Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage has been removed.	—
	Check for loose hardware. Tighten hardware to the required torque values.	<i>7.3 Torque Specifications, page 241</i>
	Check the tire pressure (transport/stabilizer option).	<i>5.1 Checking Tire Pressure – Option, page 197</i>
	Check the wheel bolt torque (transport/stabilizer option).	<i>5.2 Checking Transport Wheel Bolt Torque – Option, page 198</i>
	Check the lubricant level in the knife drive box.	<i>5.3 Checking Oil Level in Knife Drive Box, page 199</i>
	Ensure the reel is centered between the header endsheets.	<i>5.4 Checking and Adjusting Reel-to-Endsheet Clearance, page 200</i>
	Grease all bearings and drivelines.	<i>5.6.1 Greasing Procedure, page 203</i>
	Check side draper tension.	<i>5.7 Checking and Adjusting Draper Tension, page 205</i>
	Check the draper seal.	<i>5.8 Checking and Adjusting Draper Seal, page 207</i>
	Check the header float.	The windrower operator's manual
	Ensure all reel cams are in the same position.	—
	Check the reel tine-to-cutterbar clearance.	<i>5.9 Reel-to-Cutterbar Clearance, page 211</i>
	Test the reel safety props.	<i>7.1 Reel Safety Props, page 235</i>
	Check the knife hold-downs.	<i>5.10 Guard Identification, page 215</i>
	Ensure the skid shoes are evenly adjusted and at a setting appropriate for the crop.	—
	Check all in-cab control functions (draper speed, header tilt, etc.).	The windrower operator's manual
	Run-up procedure	<i>6 Running up Header, page 231</i>
	Ensure the reel rotates in the correct direction.	—
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering the header and reel.	—
	Ensure the reel lift cylinders can extend fully.	—
	Ensure the reel moves fully fore and aft.	—
	Check/adjust side draper tracking	<i>6.2 Adjusting Draper Tracking, page 232</i>
	Post run-up check. Stop engine.	
	Check the knife and reel drives for heated bearings.	—

REFERENCE

✓	Item	Reference
	Check knife sections for discoloration caused by misalignment of components. Adjust hold-downs as required.	<i>6.3 Checking Knife Position, page 234</i>
	Check for hydraulic leaks.	—
	Check the fit of the endshields.	<i>5.11 Checking and Adjusting Header Endshields, page 225</i>
	Check that the manual storage case contains an operator's manual.	<i>5.12 Checking Manuals, page 230</i>

Date Checked:

Checked by:

Recommended Fluids and Lubricants

Ensure that your machine operates at top efficiency by using clean fluids and lubricants only.

- Use clean containers to handle all fluids and lubricants.
- Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High-temperature extreme-pressure (EP) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
Gear lubricant	SAE 85W-140	API service class GL-5	Knife drive box	1.5 liters (1.6 quarts)
Chain oil	Chain oil with a viscosity of 100–150 sCt at 40°C (104°F) or mineral oil SAE 20W-50 that has no detergents or solvents	Chain oil is formulated to provide good wear protection and resistance to foaming. It protects the chain and drive sprockets against wear.	Reel drive chain	—

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