MacDon

D2 Series Draper Header with FM200 Float Module

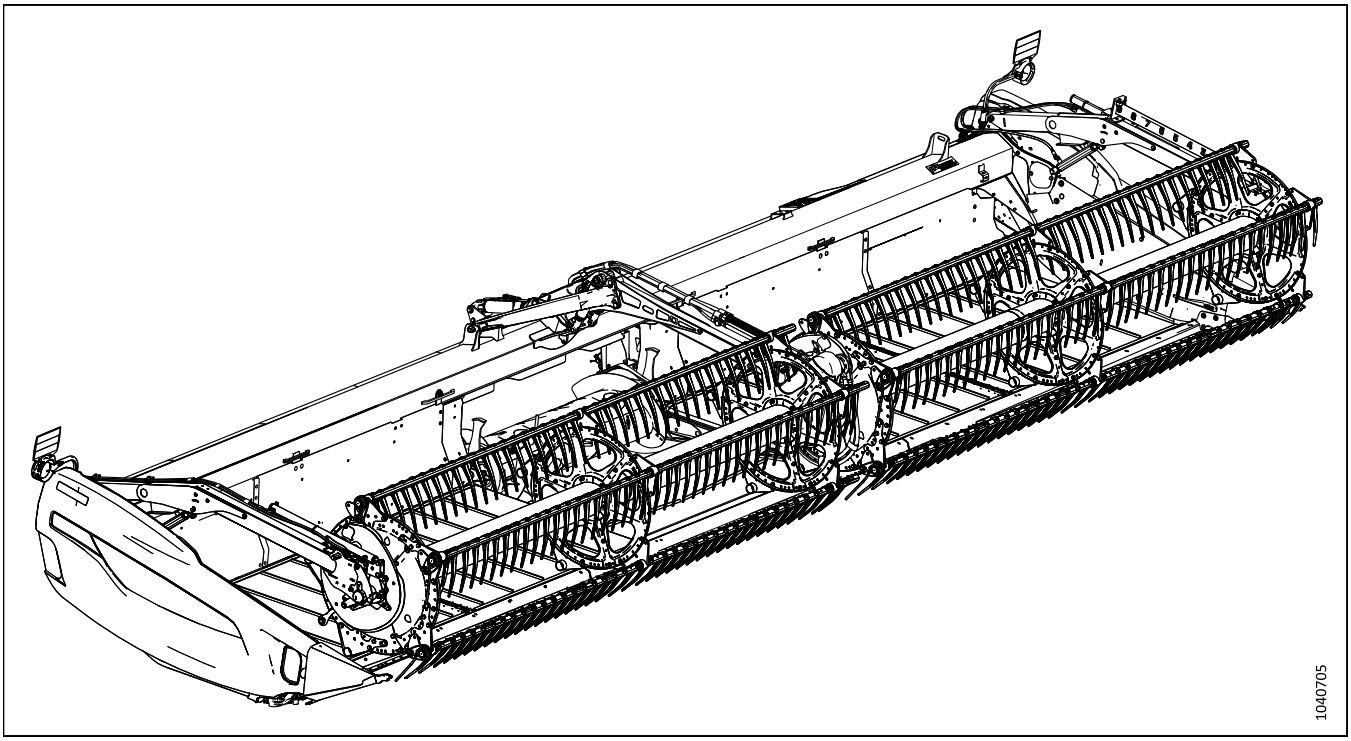
Unloading and Assembly Instructions (North America)

262749 Revision A

Original Instruction

The Harvesting Specialists.

D2 Series Draper Header



Published: November 2024

Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon D2 Series Draper Header with FM200 Float Module.

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

Some sections or steps do not apply to all header configurations and sizes. Follow the instructions for the particular header you are assembling.

Carefully read all of the instructions provided before attempting to unload, assemble, or operate the header.

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 French and English.

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
Introduction	Added French to the list of available languages.	Technical Publications
1.5 Tire Safety, page 5	Added topic.	Technical Publications
1.6 Welding Precautions, page 5	Added FM200's pump name.	Technical Publications
2.1 Header Specifications for Unloading and Assembly, page 9	Updated header weights for model year 2025.	Technical Publications
2.3 Unloading Header and Float Module from Trailer – Headers Shipped Upright, page 13	Updated topic.	ECN 64790, ECN 65337
2.4 Removing Upper Cross Auger from Shipping Location – Option, page 14	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
2.7 Lowering Header to Field Position – D230 and D235, page 20	Revised illustration and steps for lowering the float module onto blocks.	Engineering, Product Support
2.12 Removing Anti-Rotation Strap from Reel and Installing Knife Cover Hardware – D225, D230, and D235 (Parts Bag MD #347598), page 31	Added topic.	Technical Publications
—	Adjusted the order of chapters so the user is instructed to attach the header to a combine as soon as possible – the ability to position the header and reel simplifies the assembly procedure.	Product Support
3.4 Installing Filler Cap (Unmarked Parts Bag), page 43	Revised instructions.	ECN 62121
3.5 Installing Cab Control Kits (Parts Bags MD #337619 or 337627), page 44	Added support mount and hardware to the John Deere kit MD #337619.	ECN 65495
3.7 Retrieving Two-Position Adjustment Plates – John Deere X9 Series Combines, page 46	Updated topic.	Technical Publications
4.1 Attaching Header to Case IH Combine, page 48	Added steps and illustrations for the adjuster plates used with Case AF11 combines.	Engineering
4.4 Attaching Header to IDEAL™ Series Combine, page 68	Added FM200's pump name.	Technical Publications
	Added steps to reflect new anchor adjusting plate.	ECN 66088
4.5 Attaching Header to John Deere Combine, page 75	Added steps and illustrations for the adjuster plates used with John Deere X9 and S7 combines.	Engineering
4.6 Attaching Header to New Holland CR, CX, or CH Combine, page 82	Added steps and illustrations for the adjuster plates used with New Holland CR11 combines.	Engineering
5.2 Removing Shipping Supports, page 97	Revised illustrations to show changes to FM200 shipping straps.	ECN 65226
5.7 Installing Deck Cutterbar Seals – D230 (Parts Bag MD #335987), page 113	Updated cutterbar seals location.	ECN 65605

Section	Summary of Change	Internal Use Only
5.9 Installing Knifehead Guard Hardware (Parts Bag MD #347581), page 119	Added topic.	Product Support
5.11 Attaching Reel Height Sensor, page 123	Updated reel height sensor design.	ECN 65242
–	Removed “Installing Reel Fore-Aft Steel Lines (Parts Bag MD #357107)” topic.	Technical Publications
5.16.1 Installing Tine Tube onto Reel – D225 (Parts Bag MD #357394), page 138	Removed parts bag illustration.	Technical Publications
5.18 Installing Double-Reel Endshields – Parts Bag MD #368323 (Six-Bat Reels), page 160	Corrected note. The D241 configuration has five bats.	Technical Publications
5.18.1 Installing Double-Reel Endshields at Outboard Cam End, page 161	Updated topic.	ECN 65783
5.18.4 Installing Double-Reel Endshields at Outboard Tail End, page 182	Updated topic.	ECN 65783
	Corrected torque value on endshield support bolts to 39 Nm.	ECN 65175
	Removed six-bat reel illustration.	Technical Publications
5.19 Installing Tank Covers (Parts Bag MD #357088), page 188	Moved topic.	Technical Publications
6.1.6 Checking Oil Level in Hydraulic Reservoir, page 198	Corrected instructions for reading the oil level sight gauge.	Product Support
6.1.7 Guard Identification, page 198	PlugFree™ Center Hold-Down (MD #286333) superseded by PlugFree™ Center Hold-Down (MD #286904).	ECN 65553
Adjusting Reel-to-Cutterbar Clearance, page 218	Added a note to refer to the operator’s manual when purging air from the reel lift system.	ECN 65213
Lubrication Points, page 226	Updated illustration of grease location on drive roller bearing housing.	ECN 61544
	Moved grease zerk location from the side of the bearing to the bearing cap.	ECN 63641
	Updated illustration of the transport wheel bearings.	Technical Publications
	Added contour wheel grease points.	Product Support
6.1.16 Checking and Adjusting Reel Height Sensor Orientation, page 232	Revised procedure for model year 2025 and moved to “Predelivery Checks” section.	ECN 65242, Technical Publications
6.1.17 Checking and Adjusting Reel Height Sensor Voltage, page 233		
6.1.18 Checking and Adjusting Fore-Aft Position Sensor Orientation, page 234	Revised procedure for model year 2025 and moved to “Predelivery Checks” section.	ECN 65011, Technical Publications
7.4 Changing Float Spring Configuration and Installation Location, page 247	Removed entries for D241 and D245 (not available in North America).	Technical Publications
	Moved topic from “Reference” section to “Performing Sequential Header Checks and Adjustments” section.	
7.5 Checking and Adjusting Header Float, page 256	Moved topic to within the sequence of header checks and adjustments. Revised the procedure.	Product Support

Section	Summary of Change	Internal Use Only
8 Auto Header Height Control System, page 265	Removed the Auto Header Height Control section and replaced it with quick reference charts.	Product Support, ECN 65584
8.8 Header Settings Quick Reference – John Deere Combines, page 272	Removed reference to John Deere 60 series from the AHHC instructions.	Engineering
	Added John Deere S7 Series.	ECN 65584
	Updated John Deere X9 height and tilt sensitivity settings.	ECN 65441
9.2 Checking and Adjusting Knife Speed – Integrated Hydraulic System, page 284	Added Rostselmash to the Feeder House Speed table.	Engineering
	Revised title from “Dynamic Integrated Pump” to “Integrated Hydraulic System”.	Technical Publications
10.4 Removing Reel Drive Cover, page 300	Added procedure.	Technical Publications
10.5 Installing Reel Drive Cover, page 302	Added procedure.	Technical Publications
Predelivery Checklist, page 317	Added sequential checks to the checklist.	Product Support
—	Added Notes pages.	Product Support

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

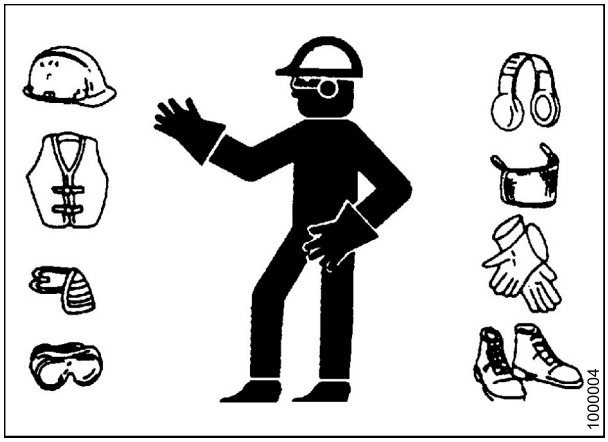


Figure 1.2: Safety Equipment

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.

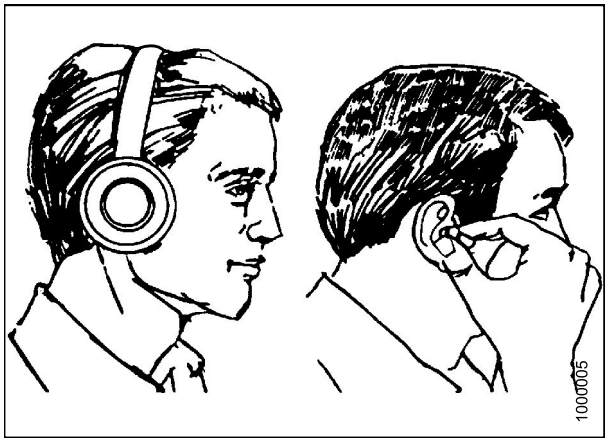


Figure 1.3: Safety Equipment

- 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.

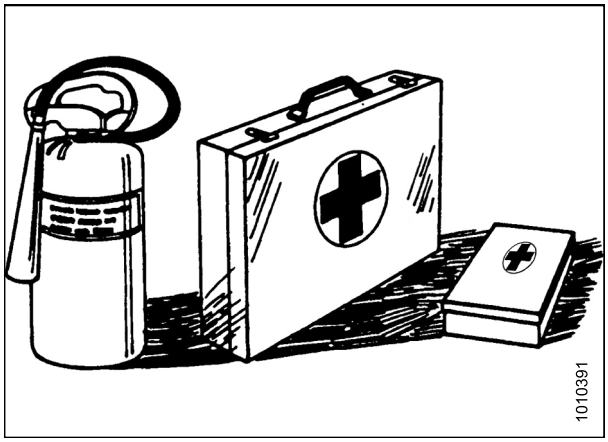


Figure 1.4: Safety Equipment

- 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.

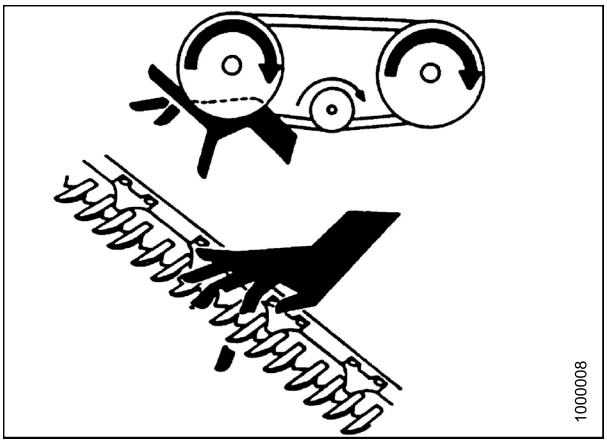


Figure 1.6: Safety around Equipment

- 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.

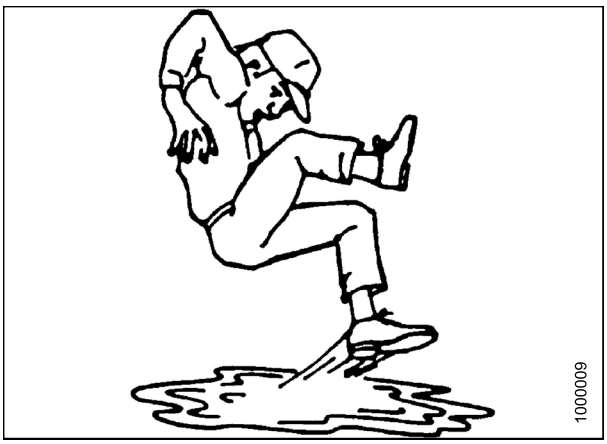


Figure 1.7: Safety around Equipment

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.

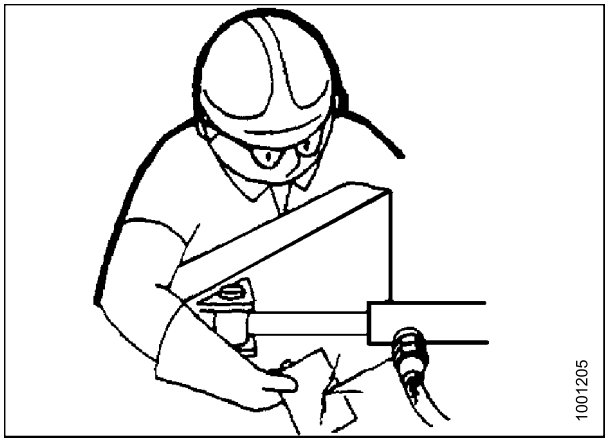


Figure 1.8: Testing for Hydraulic Leaks

- 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.

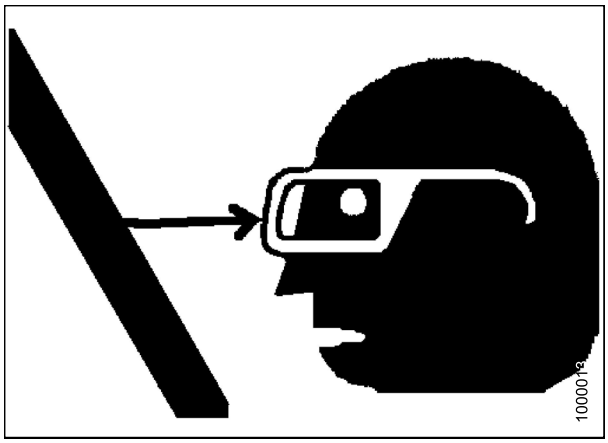


Figure 1.10: Safety around Equipment

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.**

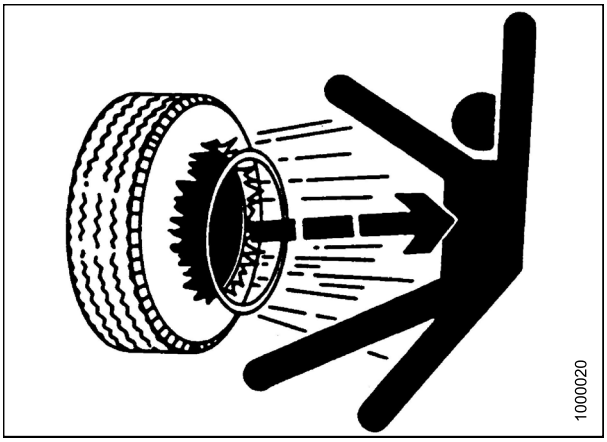


Figure 1.11: Overinflated Tire

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.**

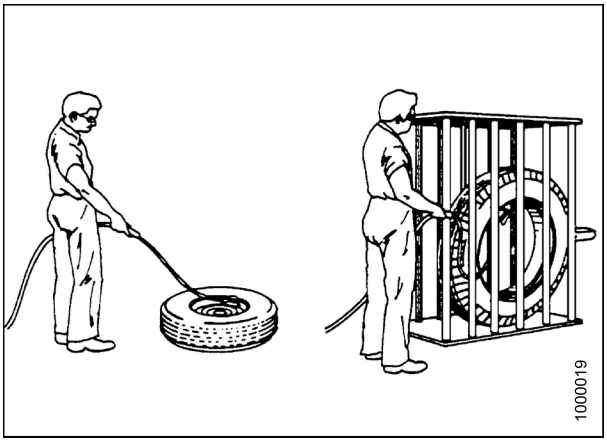


Figure 1.12: Safely Inflating Tire

- **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.**

1.6 Welding Precautions

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

WARNING

NEVER attempt welding on the header while it is connected to a combine. Severe damage to sensitive, expensive electronics can result from welding on the header while it is connected to a combine. 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 combine operator's manual.

Before welding on a header, you **MUST** detach the header from the combine, and then disconnect the following electrical components from the header:

Draper speed control module

1. On the FM200, between the frame and the header, disconnect draper speed control module (A) from solenoid (B).

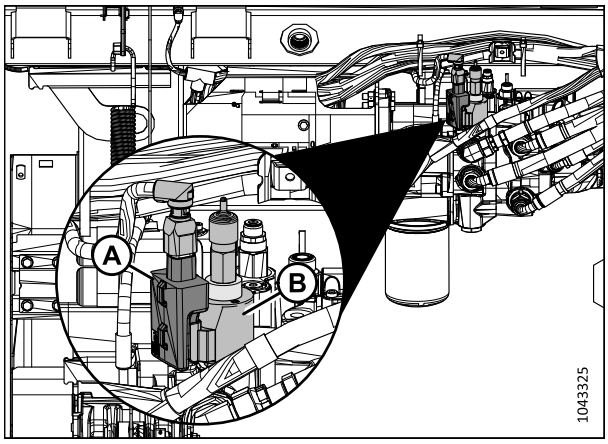


Figure 1.13: Draper Speed Control Module – Integrated Hydraulic System

John Deere X9 and S7 integration module

2. On the FM200 frame, between the header and the float module, disconnect John Deere X9 or S7 integration module (A) by unplugging bulkhead (B) from the module.

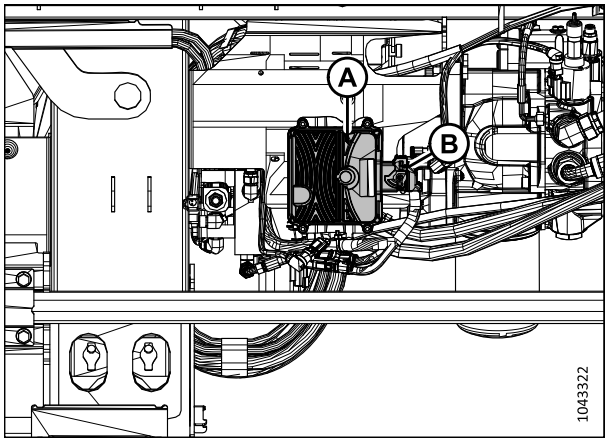


Figure 1.14: John Deere X9 Integration Module

3. To unplug the bulkhead from the module, push in tab (A) to unlatch arm (B).

4. Push arm (B) downward until it is in the position shown. Unplug the bulkhead from the module.

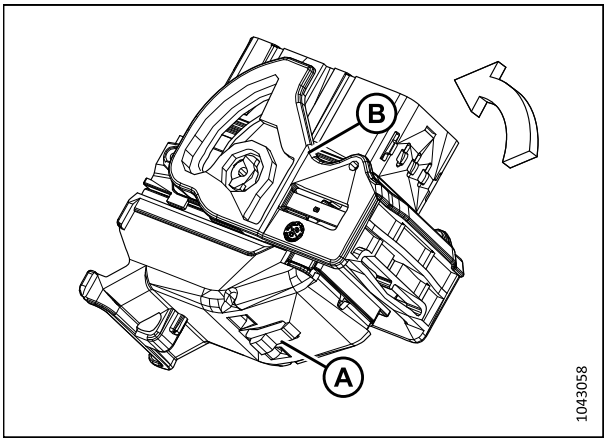


Figure 1.15: Unplugging Bulkhead from Control Module

CLAAS integration module

5. On the FM200 frame, between the header and the adapter, disconnect CLAAS integration module (A) by unplugging connector (B).

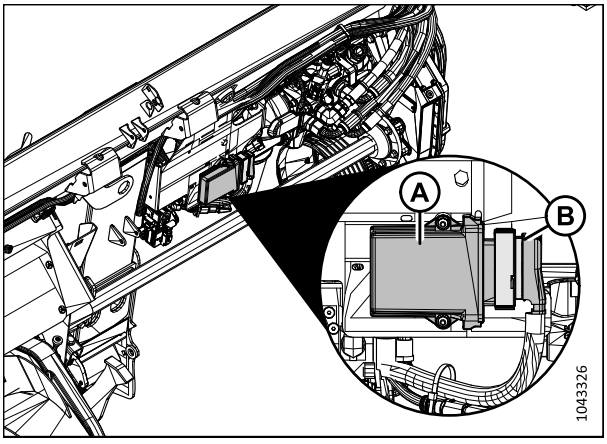


Figure 1.16: CLAAS Integration Module

6. To unplug the connector, slowly pull out latch (A) while allowing the connector to back off of the integration module.

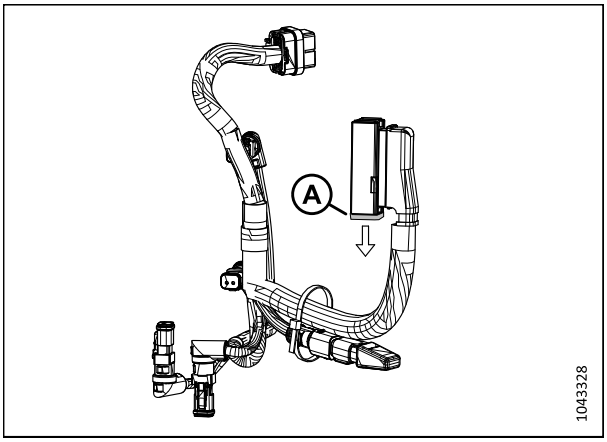


Figure 1.17: CLAAS Integration Harness

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.

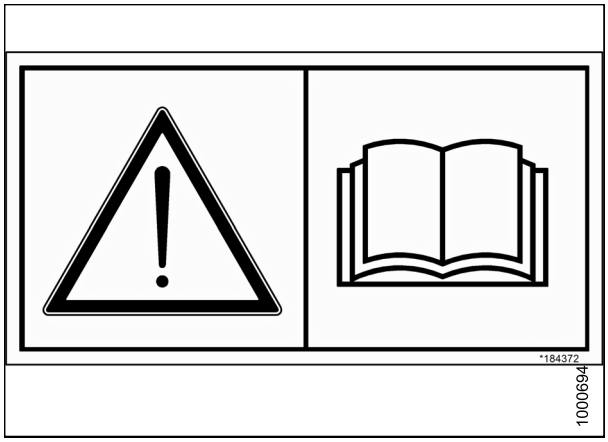


Figure 1.18: Operator's Manual Decal

Chapter 2: Unloading Header

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

2.1 Header Specifications for Unloading and Assembly

The dimensions, weight, and spreader bar specifications for the header are provided so that you can choose the correct equipment to lift, tip, and 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.

IMPORTANT:

The load center of a sample load is indicated by dimension (A). Forklifts are normally rated for a load center projected forward 610 mm (24 in.) from the back end of the forks.

To learn the forklift capacity for a load center at 1220 mm (48 in.) (dimension [B]), contact your forklift distributor. The minimum fork length (shown by dimension [C]) required to unload the header is 1981 mm (78 in.).

For the header and float module weight specifications, refer to Table *2.1, page 9*.

- These approximate weights include the following:
  - Single header
  - Shipping stands
  - One spare knife
  - Float module
  - Specific combine model performance option bundles
- For the dimensions of fully assembled headers attached to shipping stands, refer to Table *2.1, page 9*.
- For the spreader bar dimensions (the spreader bar is used to tip single-reel and triple-reel headers), refer to Table *2.3, page 11* (single-reel) or Table (triple-reel).
- For the dimensions of fully assembled headers attached to shipping stands, refer to Table *2.2, page 10*.

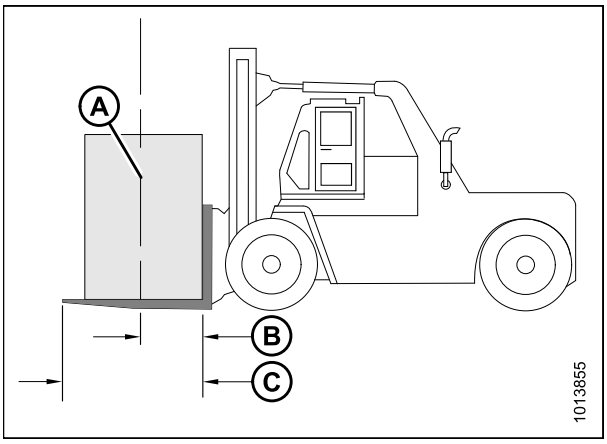


Figure 2.1: Minimum Lifting Capacity

A - Load Center of Gravity
B - Load Center 1220 mm (48 in.) from Back of Forks
C - Minimum Fork Length 1981 mm (78 in.)

Table 2.1 Header Weight[1]

Header Model	Weight
D225	3259 kg (7183 lb.)
D230	3623 kg (7986 lb.)
D235	3845 kg (8474 lb.)

1. These weights assume that the header has no other optional kits installed. When additional optional kits are installed, the weight will increase.

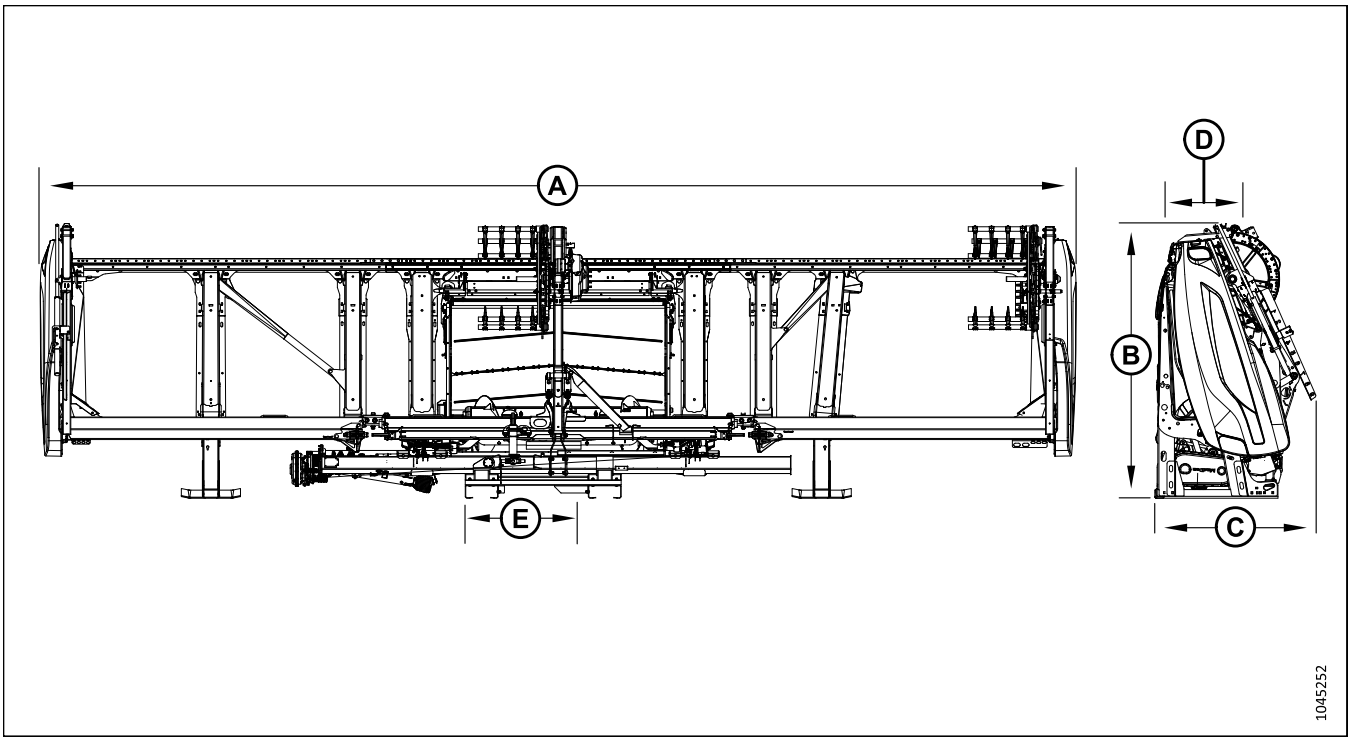


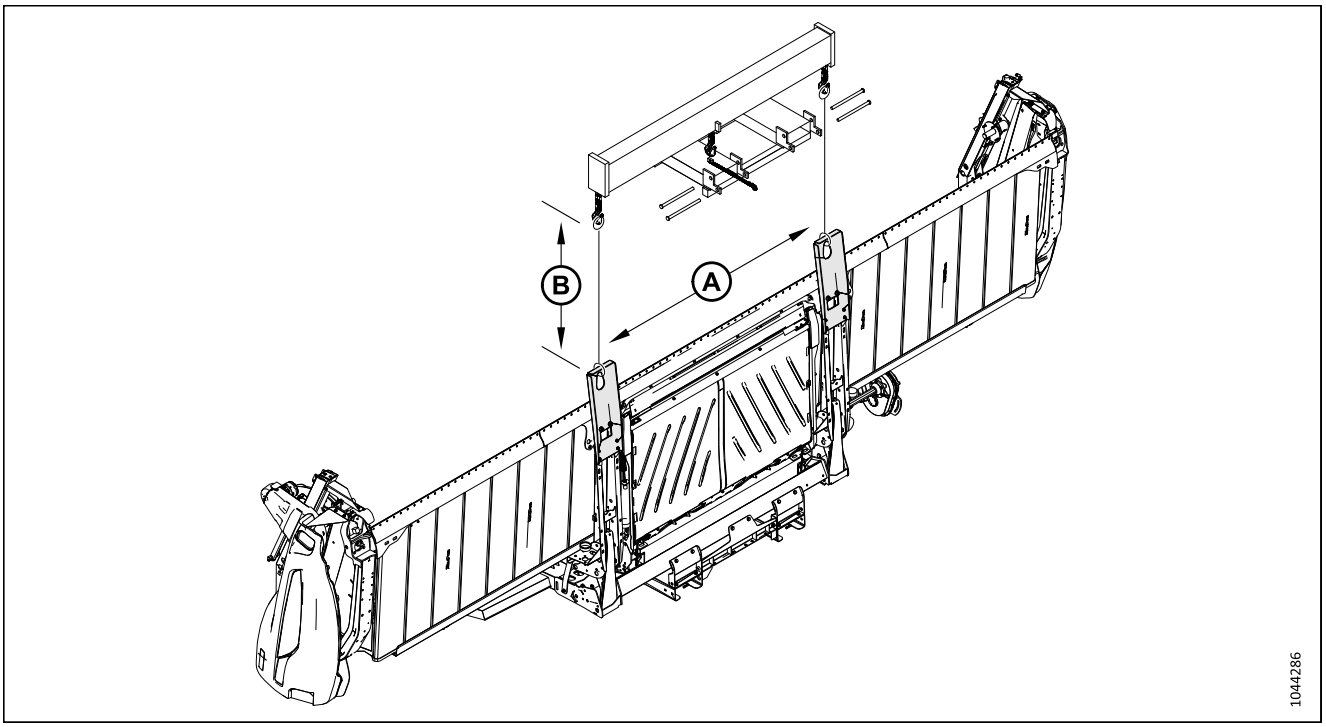
Figure 2.2: Header Fully Assembled and Attached to Shipping Stands

Table 2.2 Header Dimensions – Fully Assembled and Attached to Shipping Stands[2]

Header Model	Dimensions				
	A	B	C	D[3]	E[3]
D225	8.2 m (26 ft. 11 in.)	2.6 m (8 ft. 5 in.)	1.5 m (4 ft. 11 in.)		
D230	9.6 m (31 ft. 7 in.)				
D235	11.2 m (36 ft. 7 in.)				

2. 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.
3. Center of Gravity

Table 2.3 Spreader Bar Specifications – Single-Reel Headers



IMPORTANT:

A spreader bar is required to tip an upright single-reel header down to the field position. The spreader bar must span the distance between the tipping plates (dimension [A]). The chains used to tip the header must be long enough so that the reel does **NOT** contact the spreader bar while the header is being tipped into the field position (dimension [B]). Do **NOT** use the spreader bar for any other purpose, such as lifting the header.

Header Model	Dimension (A)	Dimension (B)
D225	[To be calculated — narrower than FD2]	Minimum: 1225 mm (4 ft.)

2.2 Unloading Header and Float Module from Trailer – Headers Shipped Flat

Headers can be shipped on a flat-deck trailer either lying flat or in the upright position. Headers lying flat will need to be removed from the trailer with a forklift.

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:

To unload headers shipped flat, the forklift must have a fork length of minimum 2286 mm (90 in.) to ensure that the forks extend beyond the cutterbar.

IMPORTANT:

For the minimum lifting equipment requirements, refer to *2.1 Header Specifications for Unloading and Assembly, page 9*.

To unload the header from the trailer, follow these steps:

1. Move the trailer into position, block the trailer wheels, and lower the trailer storage stands.
2. Approach the header from the back. Slide the forks underneath the float module's lower beam structure as far forward as possible.

   IMPORTANT:

   Ensure that the forks extend beyond the cutterbar. If the forks do not lift at the cutterbar, damage to the header may occur.
3. Remove the tie-down straps, chains, and wooden blocks.
4. Slowly raise the header off the trailer deck until the header clears the trailer deck by 102–204 mm (4–8 in.).

   IMPORTANT:

   Maintain adequate clearance between the header and the trailer.

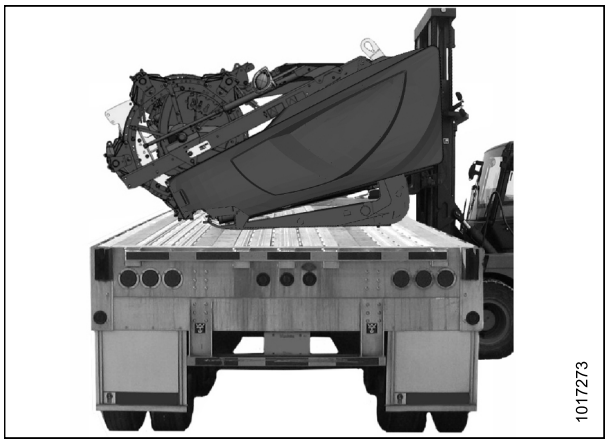


Figure 2.3: Header on Flat Deck

DANGER

Ensure that the forks on the forklift are secure and that no bystanders are present.

5. Back the forklift away from the trailer until the header clears the trailer. Slowly lower the header until it is 150 mm (6 in.) off of the ground.
6. Take the header to the storage or setup area. Ensure that the area is flat and free of rocks or debris that could damage the header.
7. Place 254 mm (10 in.) blocks (A) under each end of the header, and one on each side of the float module. Lower the header onto the blocks.

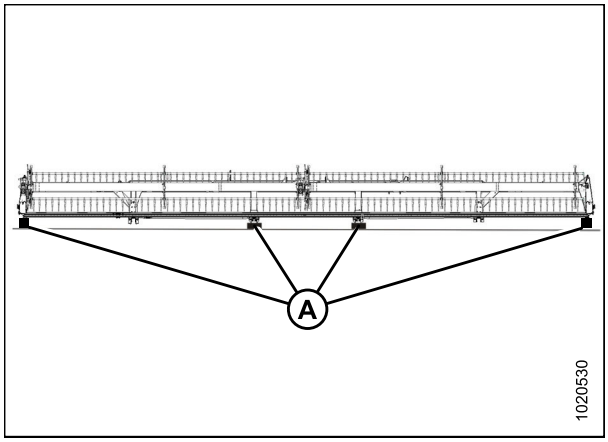


Figure 2.4: Blocks at Each End of Cutterbar

2.3 Unloading Header and Float Module from Trailer – Headers Shipped Upright

Headers can be shipped on a flat-deck trailer either lying flat or in the upright position. Pairs of headers are shipped in the upright position. Headers in the upright position will need to be removed from the trailer with a forklift.

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 the minimum lifting equipment requirements, refer to *2.1 Header Specifications for Unloading and Assembly, page 9*.

To unload the headers from a trailer, follow these steps:

1. Move the trailer into position and block the trailer wheels.
2. Lower the trailer storage stands.
3. Approach one of the headers and line up forks (A) with fork slider channels (B) under the float module frame.
4. Slide forks (A) underneath fork slider channels (B) as far as possible without contacting the shipping support of the opposite header.
5. Remove the tie-down straps, chains, and wooden blocks.
6. Slowly raise the header off of the trailer deck.

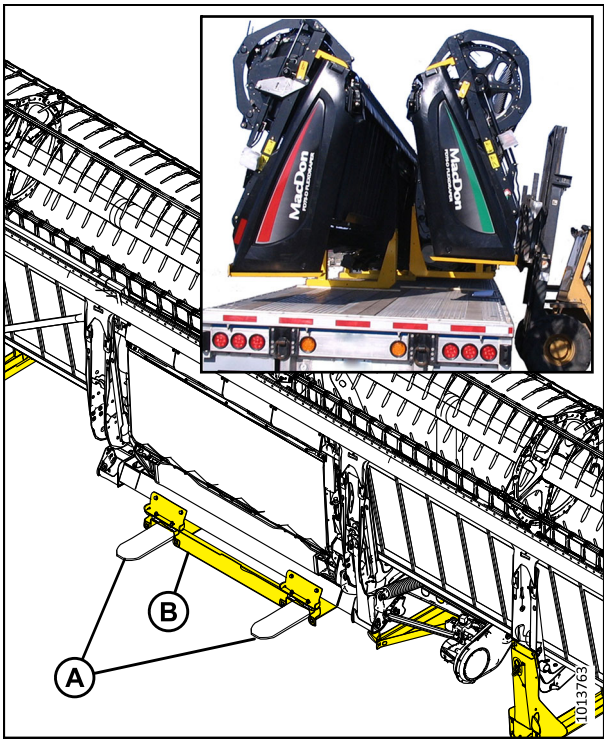


Figure 2.5: Header Shipping Supports

DANGER

Ensure that the forks on the forklift are secure and that no bystanders are present.

7. Back the forklift away from the trailer until the header clears the trailer. Slowly lower the header until it is 254 mm (10 in.) above the ground.
8. Take the header to the storage area. Set the header down securely on level ground free of rocks and debris.
9. Repeat this procedure to unload the second header.

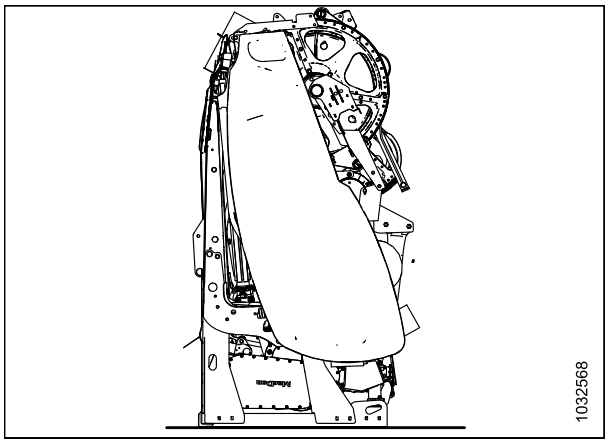


Figure 2.6: Header on Level Ground

2.4 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 *2.5 Removing Parts from Shipping Location, page 15*.

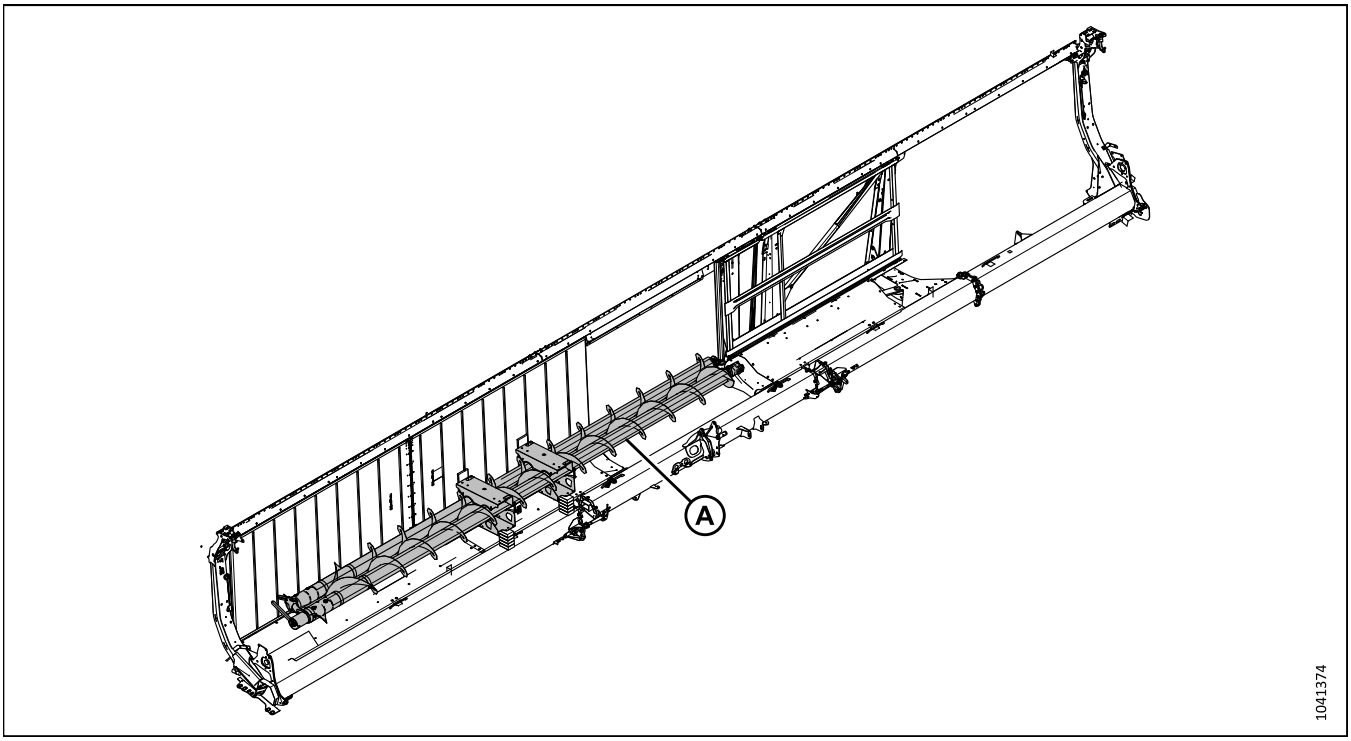


Figure 2.7: Double-Reel Header with Two-Piece Upper Cross Auger (UCA)

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.

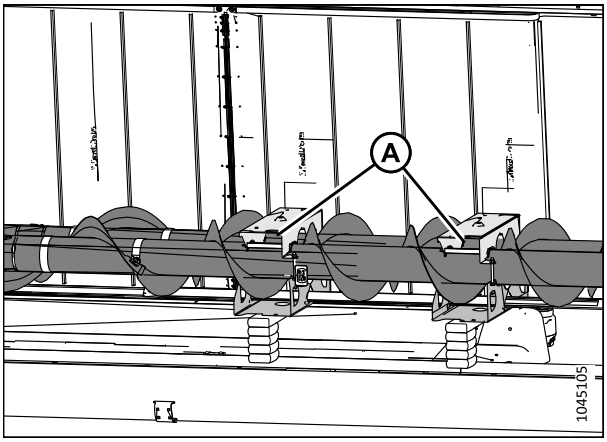


Figure 2.8: Forklift Channels

2.5 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 field position.

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

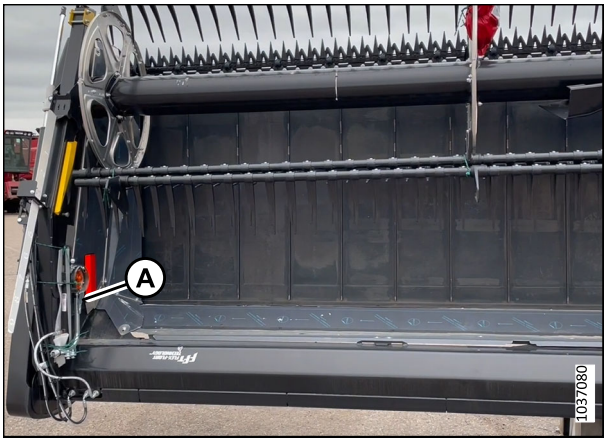


Figure 2.9: Parts Secured to Header

2. Remove and set aside reel endshield bags (A).
3. Remove and set aside right clearance light (B).

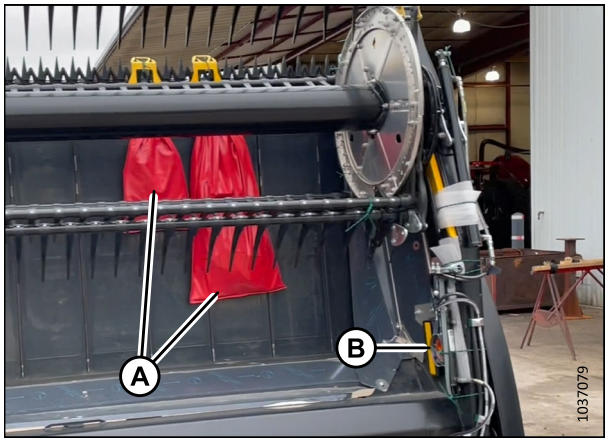


Figure 2.10: Parts Bags Secured to Draper Deck

2.6 Lowering Header to Field Position – D225

Headers shipped upright will need to be lowered to the ground so that the final assembly procedures can be performed.

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.

DANGER

Ensure that all bystanders have cleared the area.

For the minimum lifting equipment requirements, refer to .

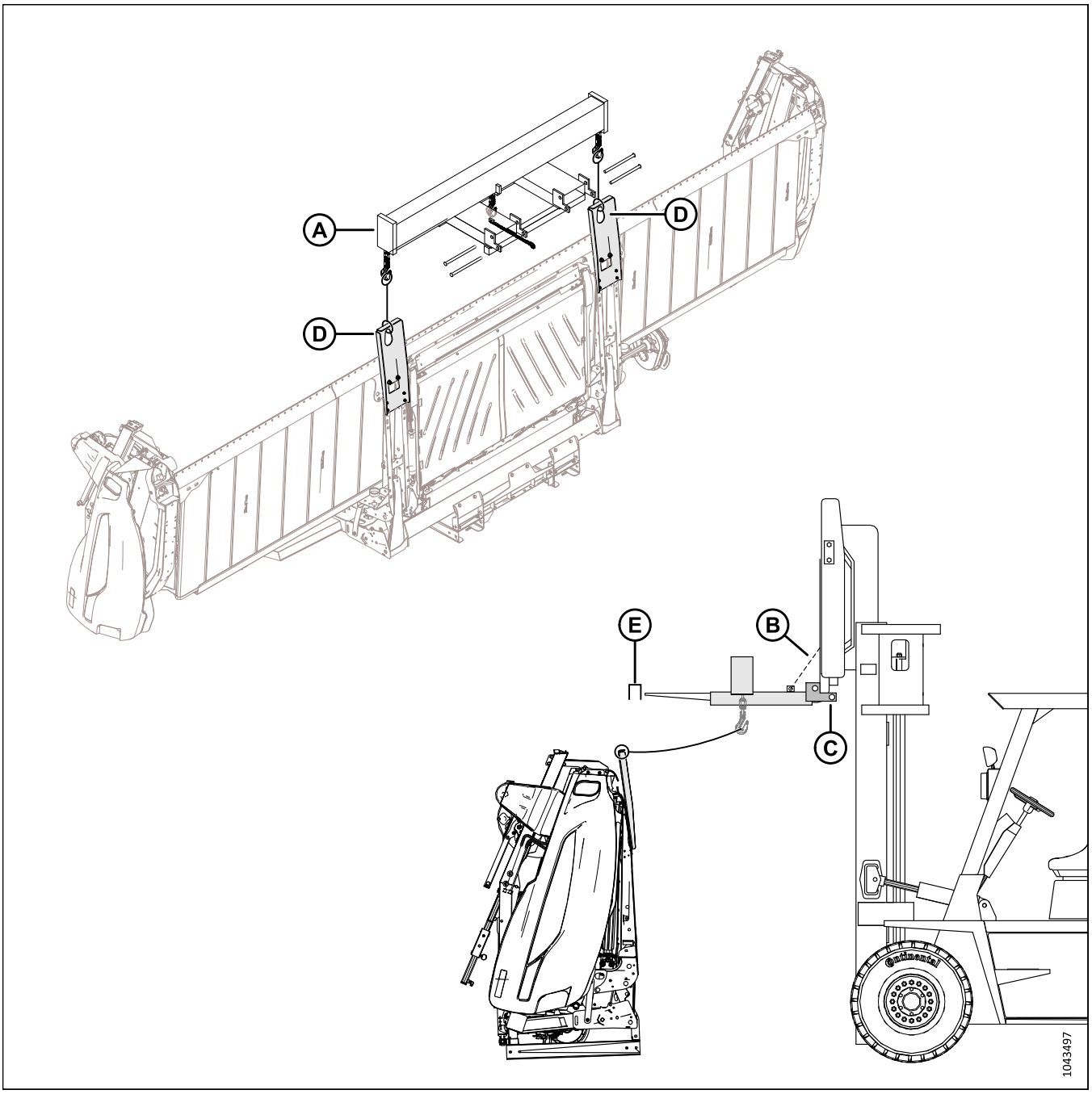


Figure 2.11: Upright Header, Spreader Bar, and Forklift

1. Attach a spreader bar (A) to a forklift. Make sure any devices designed to prevent the spreader bar from falling off the forklift, such as safety chains (B) and locking pins (C), are installed according to the spreader bar manufacturer's instructions.

2. Approach the underside of the header with the forklift. Hang a chain at both ends of the spreader bar. Attach the other end of the chains to tipping plates (D). Make sure there is clearance (E) between the forks and the tipping plates.

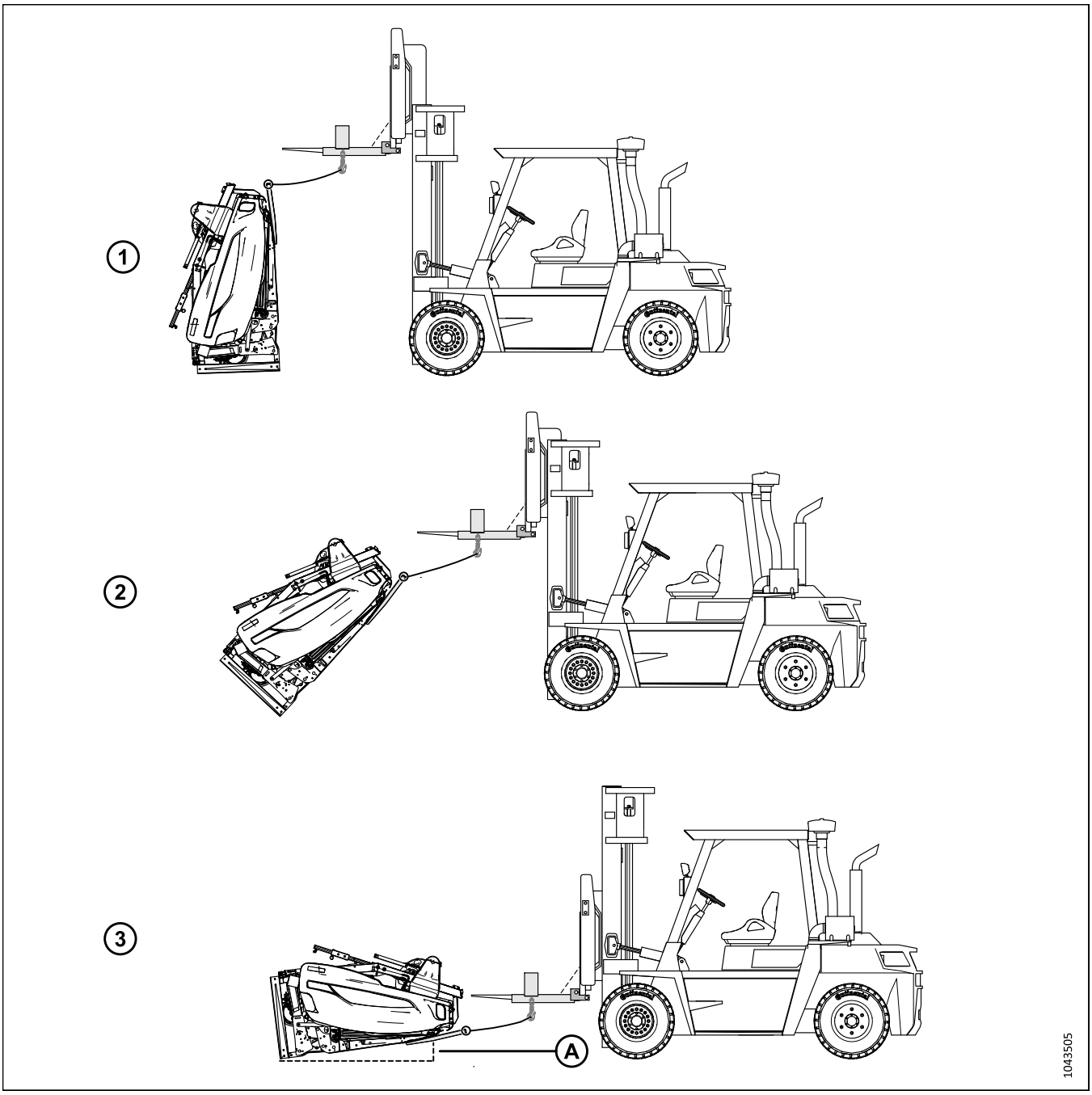


Figure 2.12: Tipping Header into Field Position

3. Back the forklift up **SLOWLY** while lowering the forks, until the header's cutterbar is approximately 254–306 mm (10–14 in.) (A) off the ground.

   IMPORTANT:

   Ensure that the tension on the chains remains as consistent as possible while the header is lowered.

4. Place four 254 mm (10 in.) blocks (A) under the header: one at each end of the header and one on each side of the float module.
5. Lower the header onto the blocks.
6. Remove the chains from the header.
7. Back the forklift away from the header.

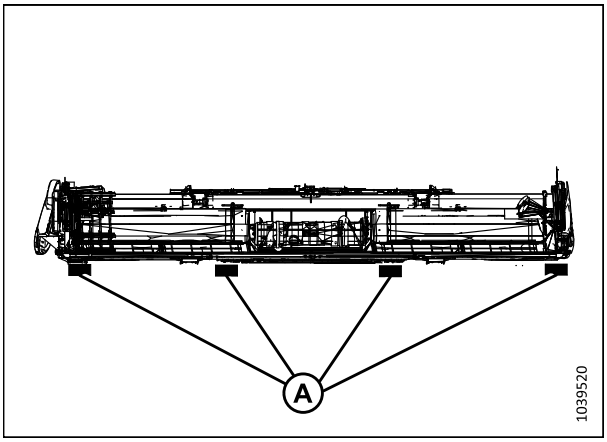


Figure 2.13: Blocks Positioned under Header

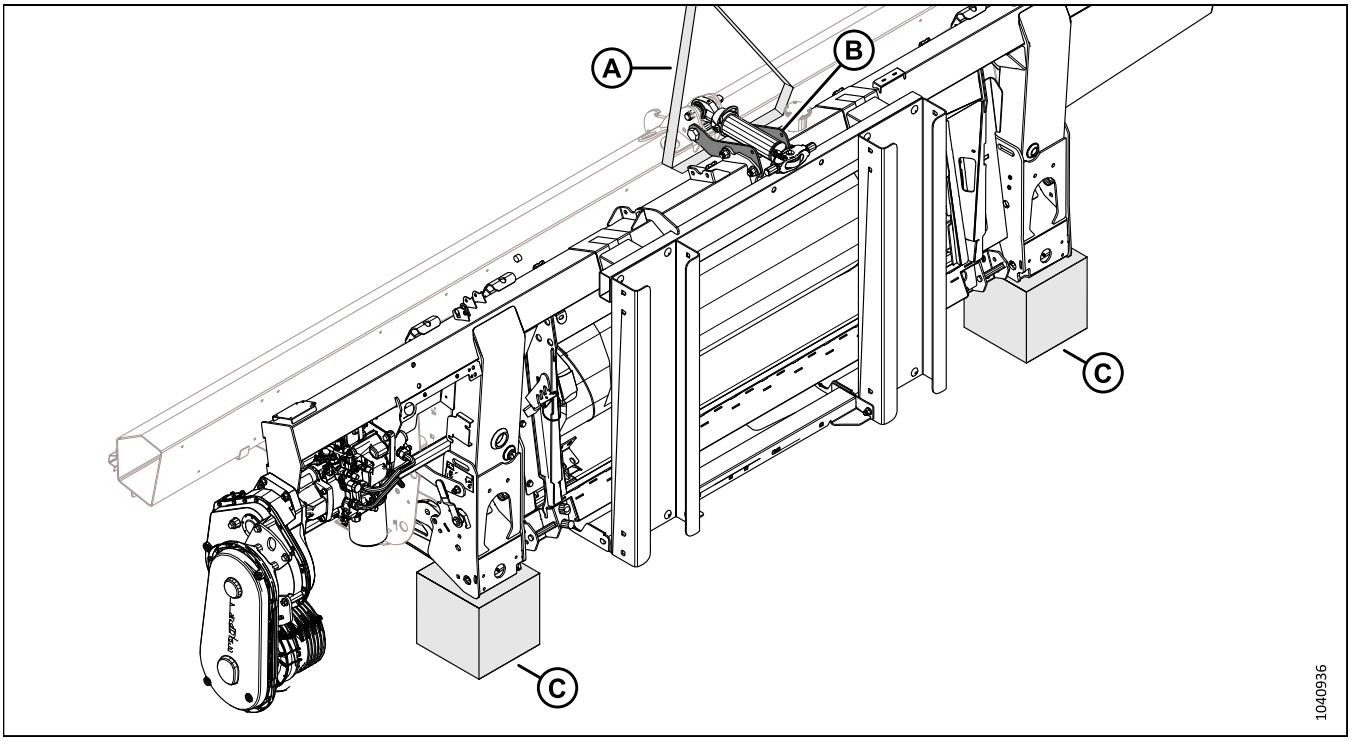


Figure 2.14: Blocks Positioned under Float Module

8. Loop strap (A) under shipping brackets (B).
9. Attach the other end of the strap to the fork of a forklift.
10. Use the forklift to raise the back of the header until it is 254–306 mm (10–14 in.) off of the ground.
11. Place 254 mm (10 in.) blocks (C) under the float module.
12. Lower the header onto blocks (C).
13. Remove the strap from the header.
14. Back the forklift away from the header.

2.7 Lowering Header to Field Position – D230 and D235

Double-reel headers shipped upright will need to be lowered to the ground so that the final assembly procedures can be performed.

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.

DANGER

Ensure that all bystanders have cleared the area.

For the minimum lifting equipment requirements, refer to *2.1 Header Specifications for Unloading and Assembly, page 9*.

1. Approach the underside of the header with the forklift.

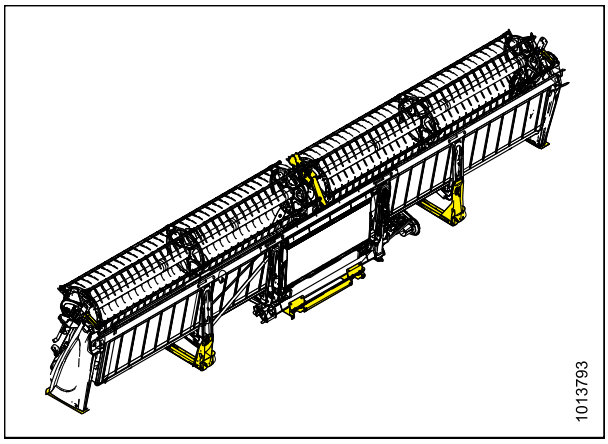


Figure 2.15: Underside of Header

2. Attach a chain to shipping support (A) on the center reel arm.
3. Attach the other end of the chains to the center of a spreader bar. Attach the spreader bar to the forklift forks.

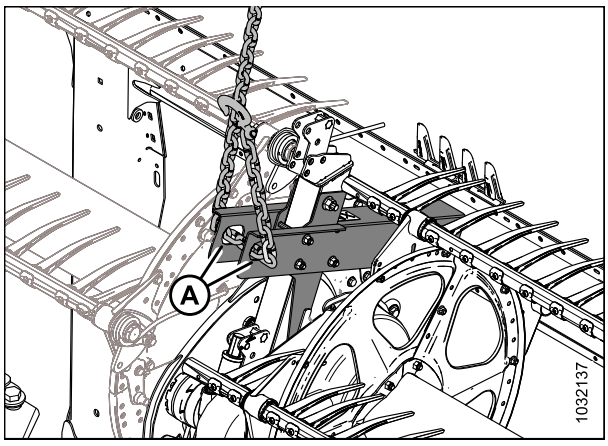


Figure 2.16: Chain Attachment Location – Double Reel

4. Back the forklift up **SLOWLY** while lowering the spreader bar until the cutterbar is approximately 254–306 mm (10–14 in.) off of the ground.

   IMPORTANT:

   Ensure that the tension on the chain remains as consistent as possible.

Figure 2.17: Lowering Header to the Ground

5. Place 254 mm (10 in.) blocks (A) under each end of the header and on each side of the float module. Continue lowering the header onto the blocks.

6. Remove the chain from both shipping supports.

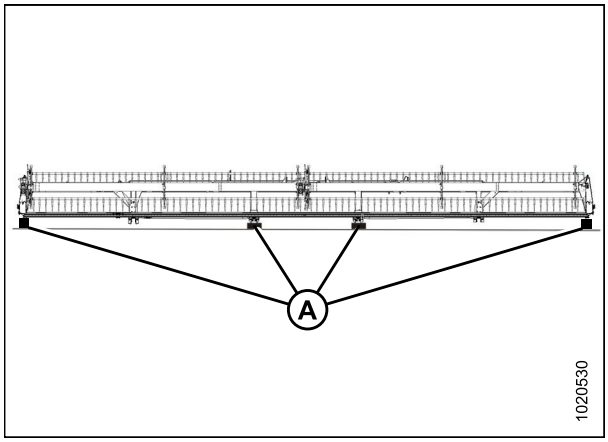


Figure 2.18: Blocks at Each End of Cutterbar

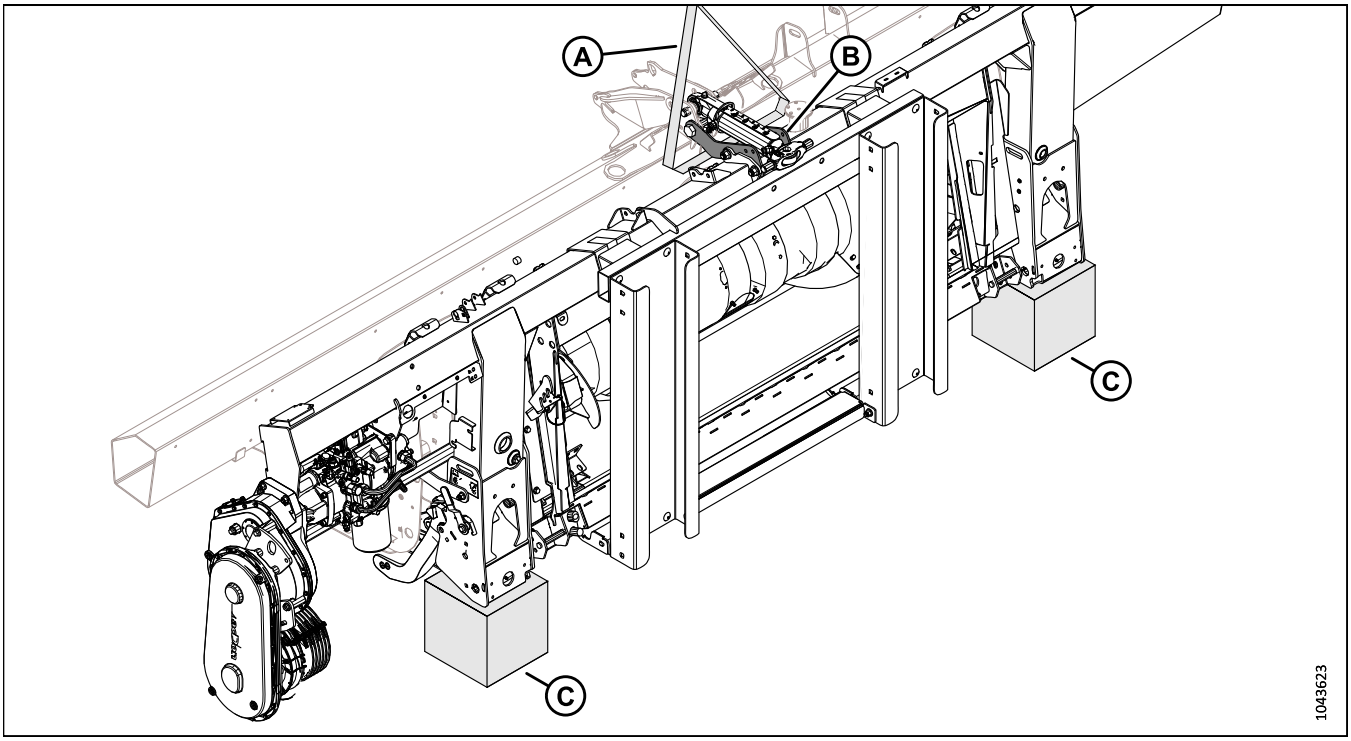


Figure 2.19: Blocks Positioned under Float Module

7. Loop strap (A) under shipping brackets (B).

8. Attach the other end of the strap to the fork of a forklift.

9. Use the forklift to raise the back of the header until it is 254–306 mm (10–14 in.) off of the ground.

10. Place 254 mm (10 in.) blocks (C) under the float module.

11. Lower the header onto blocks (C).

12. Remove the strap from the header.

13. Back the forklift away from the header.

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

Remove the crop dividers from the shipping position.

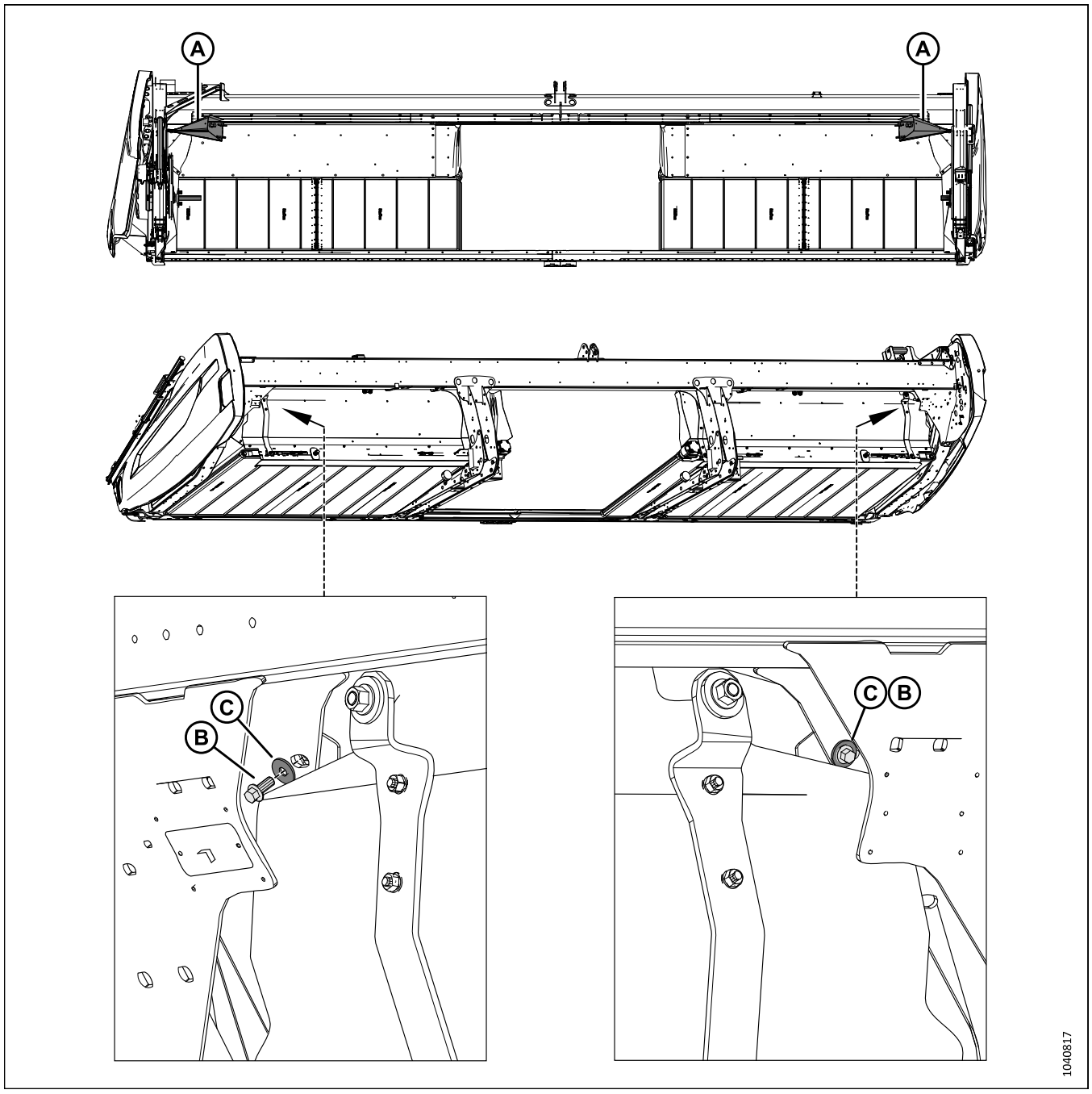


Figure 2.20: Crop Dividers Shipping Location

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.

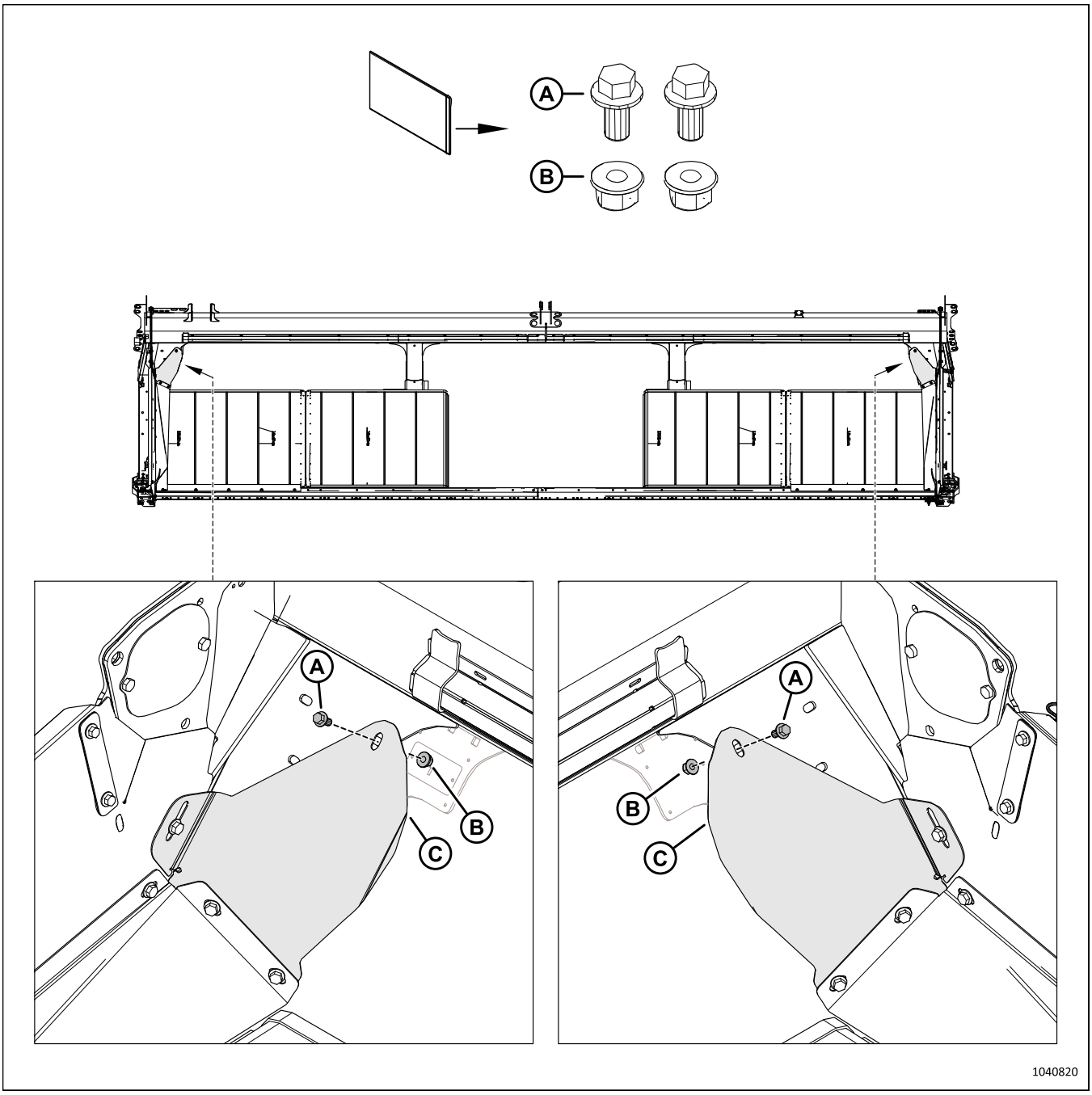


Figure 2.21: Deflector Hardware Installation

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

2.9 Removing Crop Dividers From Double Reel Shipping Position – D230 and D235

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

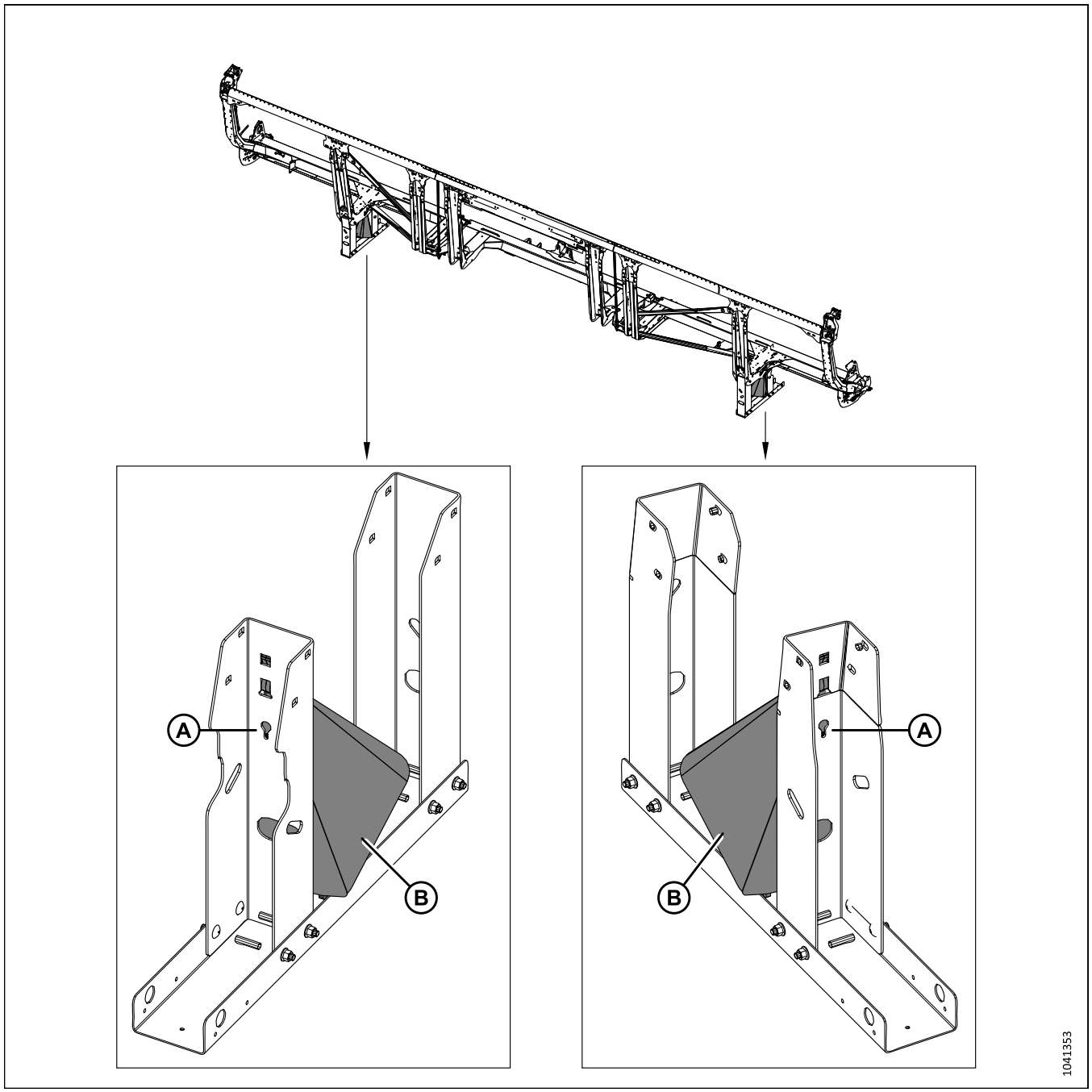


Figure 2.22: Crop Dividers Shipping Location

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

2.10 Removing Shipping Stands and Supports – D225

Parts used to secure the header for shipping must be removed from the header.

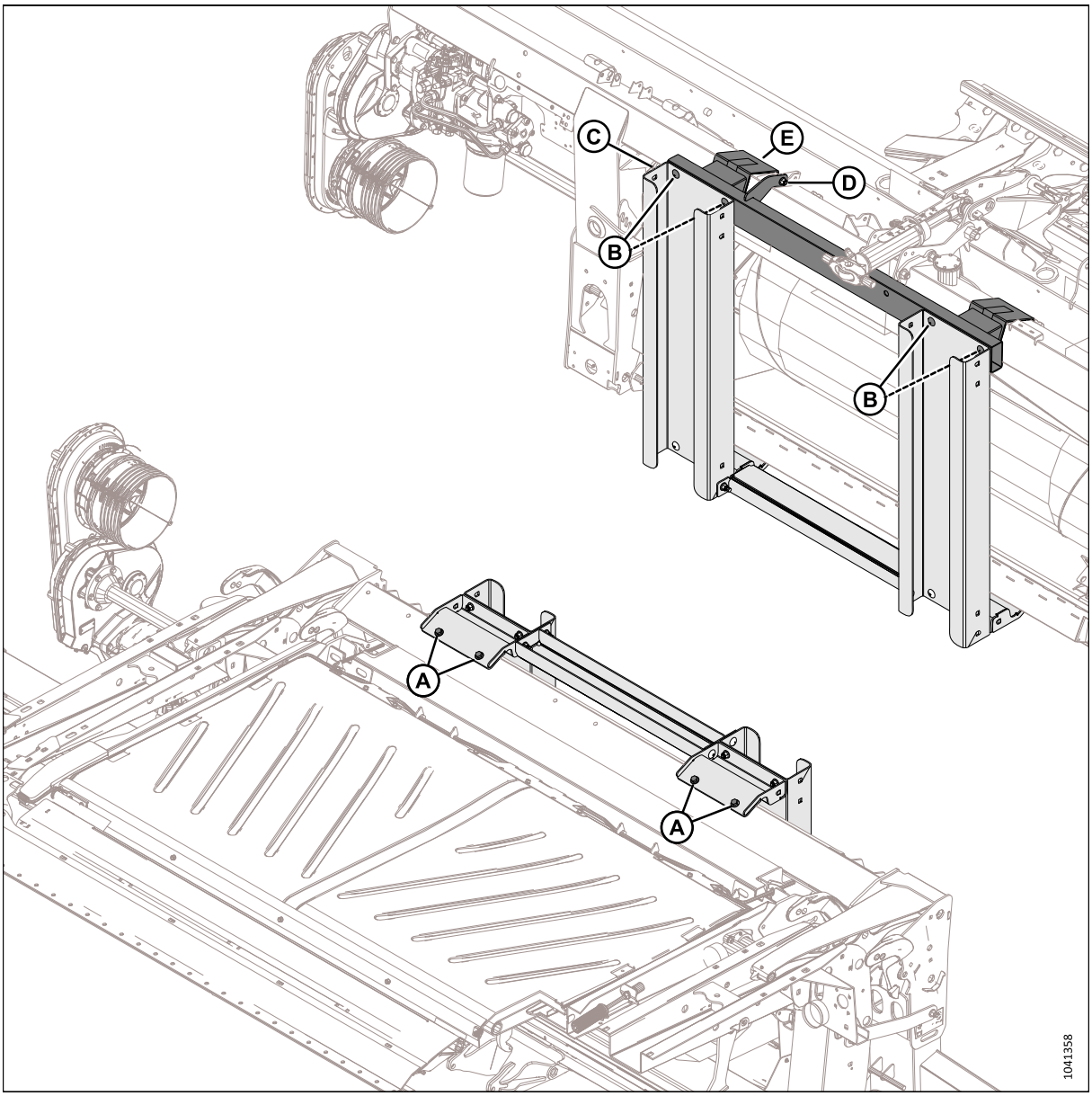


Figure 2.23: Shipping Stands

1. Ensure that the float module is resting on 254 mm. (10 in.) blocks so that you can access the bolts at the float module support stand.

   NOTE:

   The blocks should have been positioned when the header was tipped over. For instructions on positioning the blocks, refer to *2.6 Lowering Header to Field Position – D225, page 16*.

2. Remove and discard the following:

   a. Hardware (A), (B), and stand (C).

   b. Hardware (D) and stand (E).

3. Remove and discard hardware (A) and shipping tag (B) from the inboard deck support. Repeat this step on the opposite side.

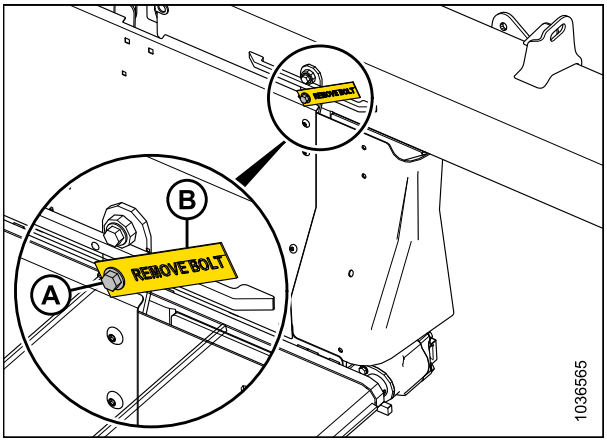


Figure 2.24: Deck Support Shipping Bolt

4. On the front of the header, remove six nuts (A) from right shipping foot (B). Remove right shipping foot (B).

5. Repeat the previous step to remove the left shipping foot.

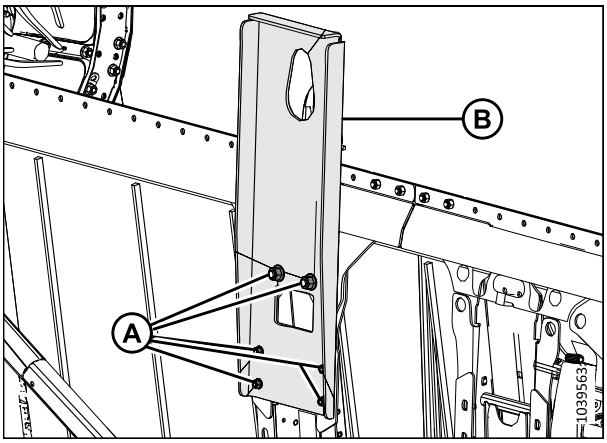


Figure 2.25: Right Shipping Foot – View from Below

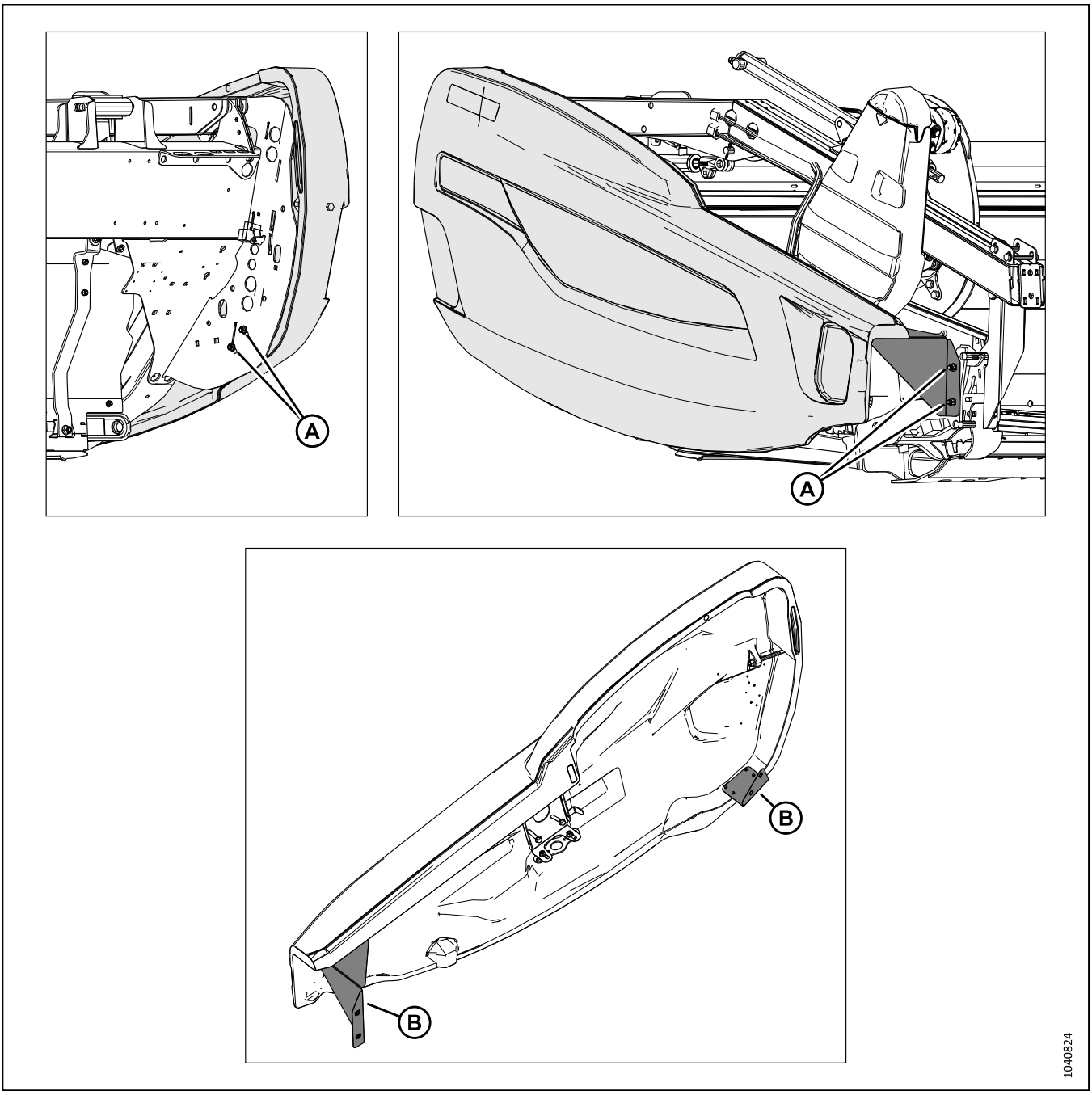


Figure 2.26: Right Endshield in Shipping Configuration

6. On the right endshield, remove and discard hardware (A).

7. Remove brackets (B). Discard the hardware and brackets.

2.11 Removing Shipping Stands – D230 and D235

Shipping stands prevent damage to the header during shipping. They will need to be removed from the header.

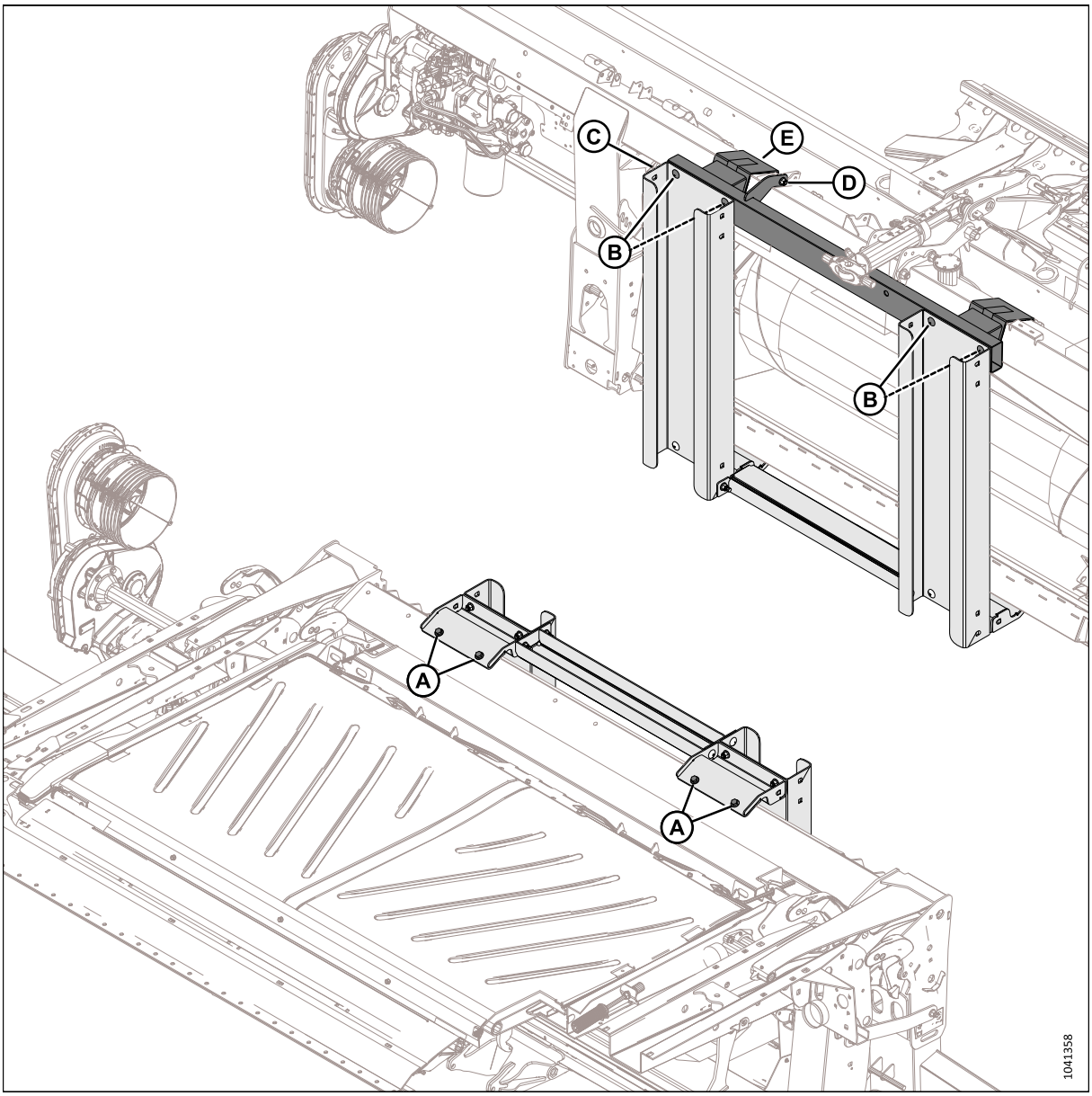


Figure 2.27: Shipping Stands

1. Ensure that the float module is resting on 254 mm. (10 in.) blocks so that you can access the bolts at the float module support stand.

   NOTE:

   The blocks should have been positioned when the header was tipped over. For instructions on positioning the blocks, refer to *2.11 Removing Shipping Stands – D230 and D235, page 29*.

2. Remove and discard the following:

   a. Hardware (A), (B), and stand (C).

   b. Hardware (D) and stand (E).

3. Remove eight bolts (A) and shipping stand (B) from both outboard header legs.

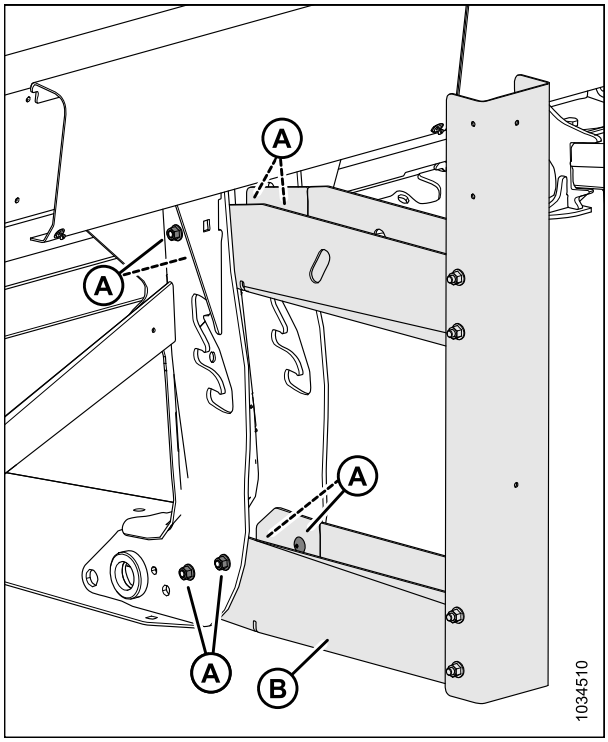


Figure 2.28: Right Shipping Stand on Outboard Leg

4. Remove and discard hardware (A) and shipping tag (B) from both inboard deck supports.

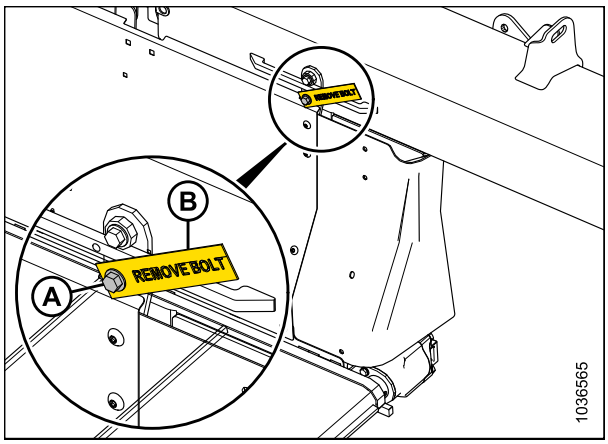


Figure 2.29: Right Deck Support Shipping Bolt

2.12 Removing Anti-Rotation Strap from Reel and Installing Knife Cover Hardware – D225, D230, and D235 (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.

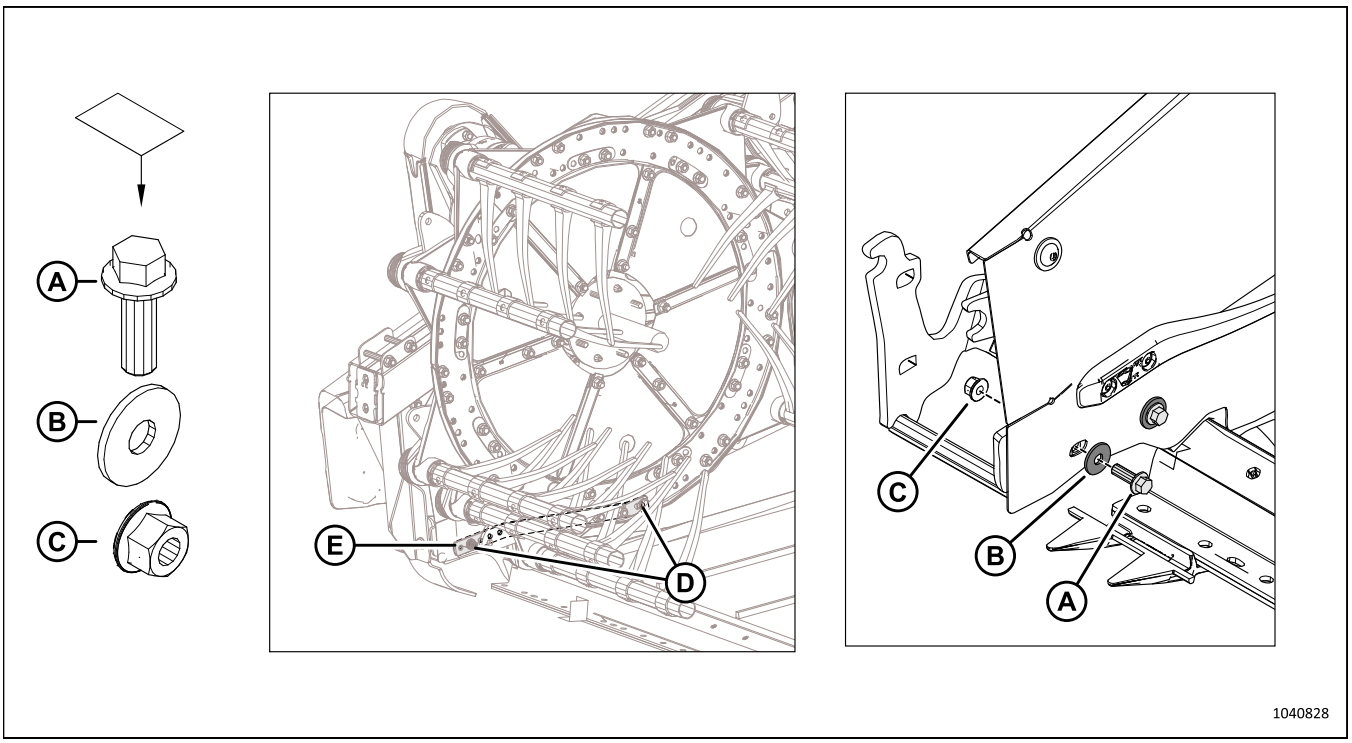


Figure 2.30: Anti-Rotation Strap Removal, Installation of Knife Cover Hardware

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 2.4 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: Setting up Float Module

The float module allows the header to interface with the combine. Some parts of the float module were removed or their position changed for shipping purposes. They will need to be installed or repositioned now.

Perform the procedures in this chapter in the order in which they are listed. Not all procedures apply to all header models.

3.1 Repositioning Completion Gearbox to Working Position

The float module's completion gearbox was placed in the forward position for shipping purposes. It must be moved to the working position.

1. Loosen hex bolt (A) on main gearbox bracket (B).

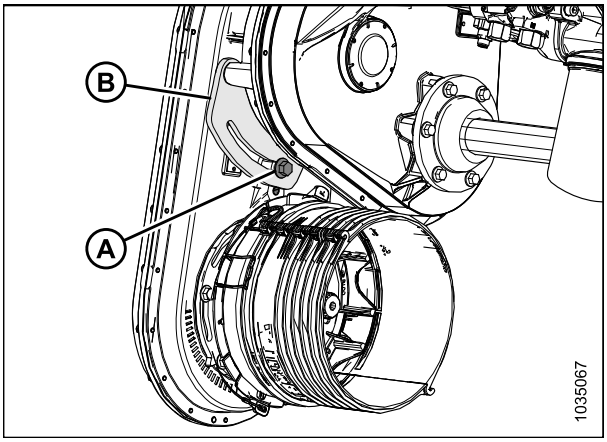


Figure 3.1: Shipping Position

2. Remove and retain two hex bolts (A) from main gearbox bracket (B).
3. Swing the completion gearbox rearward. Align the mounting holes on the bracket with the mounting holes on main gearbox bracket (B).

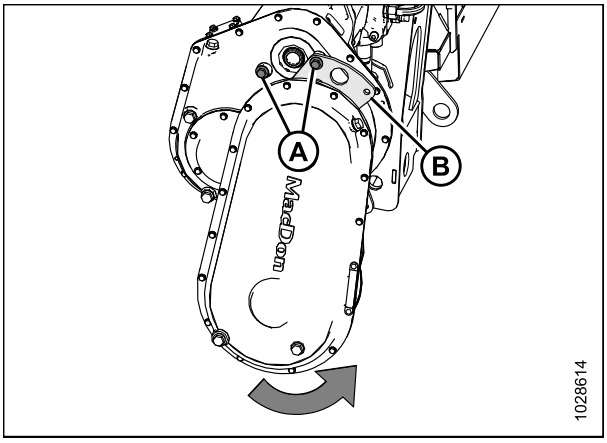


Figure 3.2: Shipping Position

4. Secure bracket (A) with two retained M12 hex bolts (B).
5. Tighten the two M12 hex bolts to 61 Nm (45 lbf·ft).

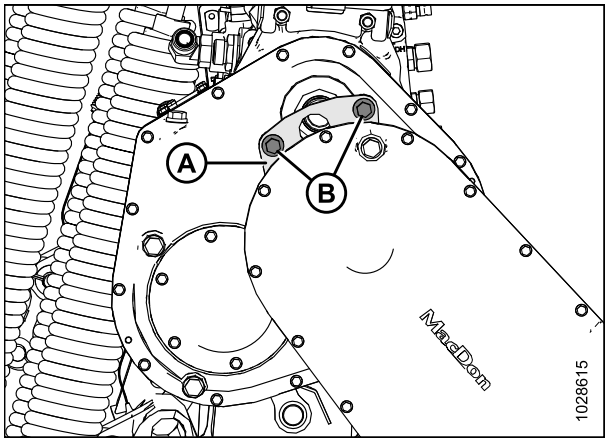


Figure 3.3: Working Position

6. Tighten M12 hex bolt (A) to 61 Nm (45 lbf·ft).

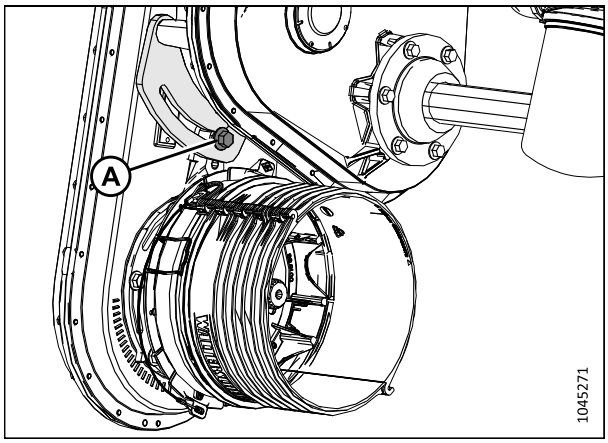


Figure 3.4: Working Position

3.2 Installing Standard Driveline (B7038, B7039, or B7108)

The driveline connects the float module's completion gearbox to the combine's power take-off (PTO). It will need to be installed on the float module.

CAUTION

To prevent injury to the installer and damage to the driveline, hold the driveline so that it doesn't fall to the floor or ground.

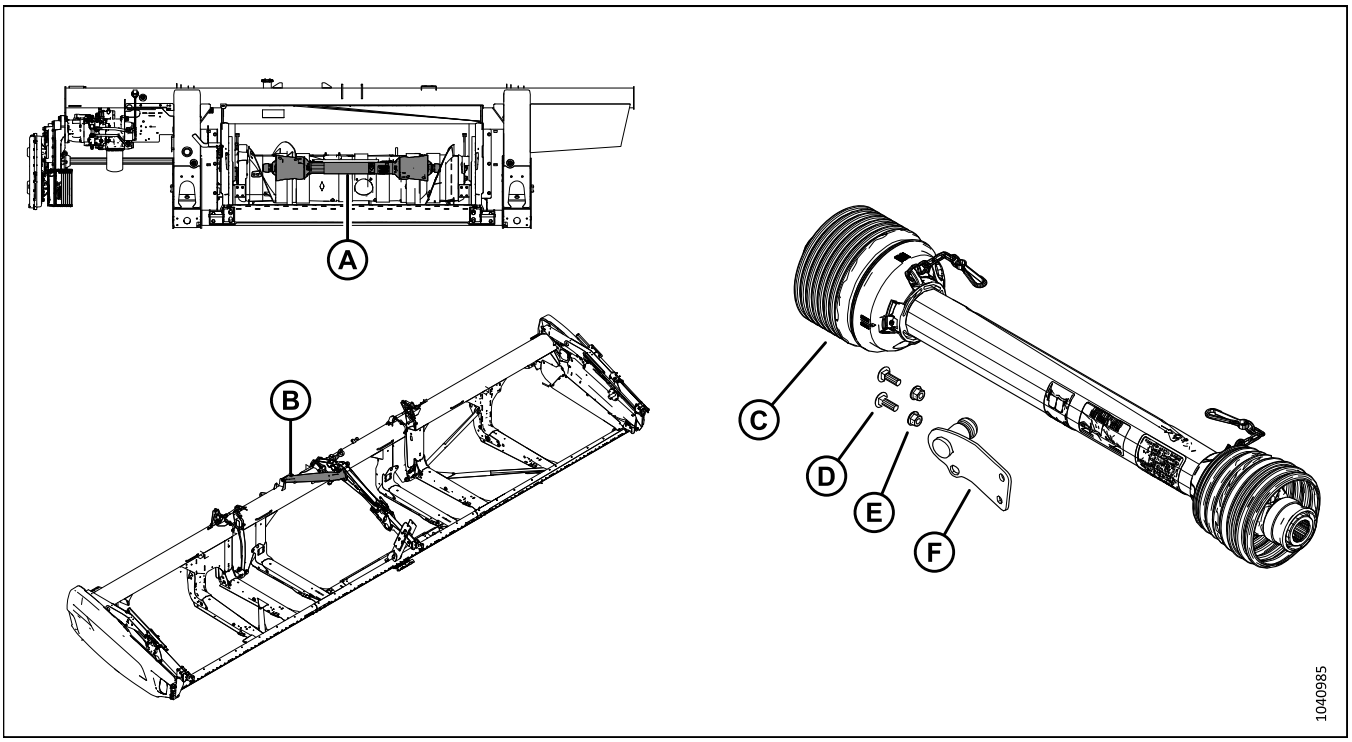


Figure 3.5: Driveline Shipping Locations and Driveline Parts

1. Retrieve the following driveline parts that are shipped packaged on feed auger (A) or reel arm brace (B):
   - Driveline (C)
   - Two M10 x 1.5 x 30 bolts (D)
   - Two M10 nuts (E)
   - Driveline storage support (F)

   NOTE:

   The appearance of storage support (F) varies according to the bundle.
2. Remove the driveline packaging.
3. Grease the driveline before installing it.

4. Position driveline storage support (A) on the left side of the float module as shown. Secure the support with two M10 x 1.5 x 30 carriage bolts and hex flange nuts (B).

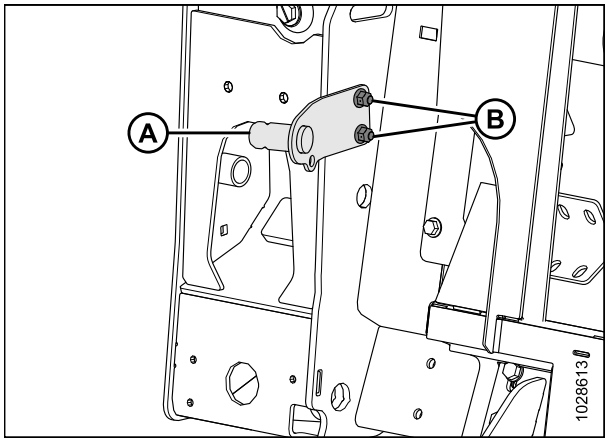


Figure 3.6: Driveline Support

5. On the completion gearbox, pry clips (A) off of shield (B). Remove the shield.

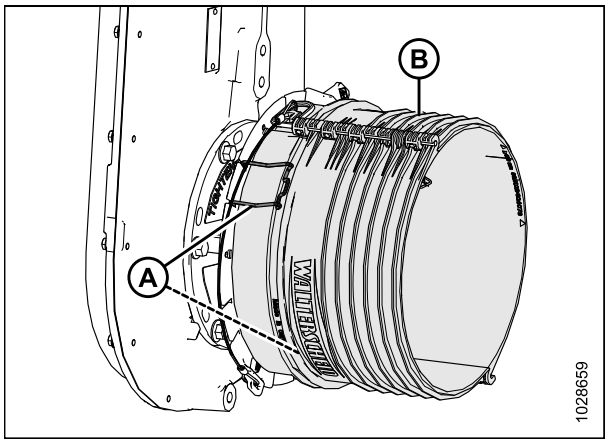


Figure 3.7: Driveline Shield on Float Module Gearbox

6. Slide shield (A) onto the driveline.

7. To install the driveline, pull back collar (B). Slide the quick disconnect yoke onto the shaft on the float module's gearbox until the yoke locks onto the shaft. Release the collar.

   NOTE:

   Ensure that the arrow on the driveline decal points toward the combine. The appearance of the decal on the driveline varies.

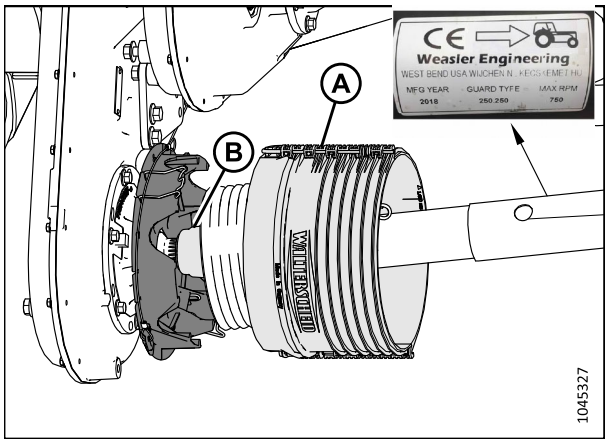


Figure 3.8: Driveline Installed on Float Module Gearbox Shaft

8. Secure shield (A) with clips (B).

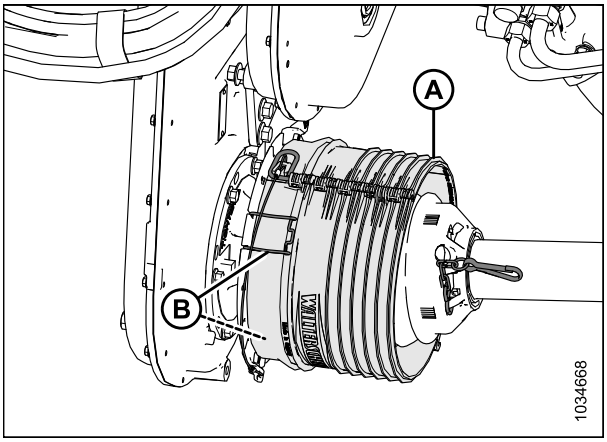


Figure 3.9: Driveline with Shield Installed on Float Module Gearbox

9. Secure the loose end of safety chain (A) to the ear on the aluminum plate.

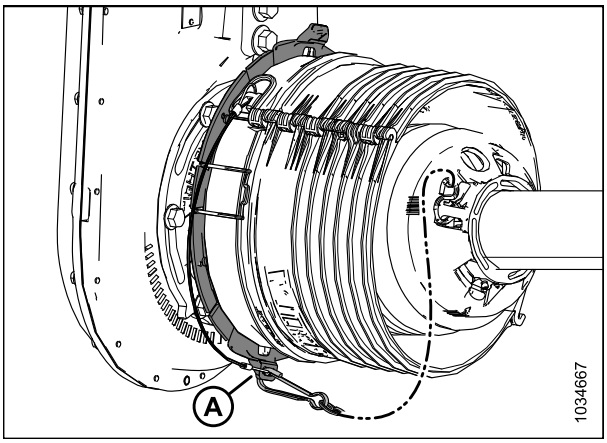


Figure 3.10: Chain Secured to Driveline on Float Module Gearbox

10. Pull back the collar on driveline (A). Slide driveline yoke (A) onto the shaft on storage support (B) until the yoke locks onto the shaft. Release the collar.
11. Secure the loose end of safety chain (C) to the driveline storage support.

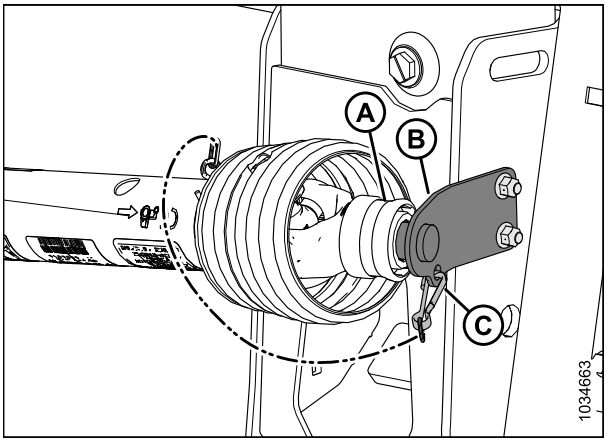


Figure 3.11: Driveline in Storage Position

3.3 Installing Driveline for Combines Equipped with a Slope Compensation Package (B7180, B7181, B7182, or B7326)

The driveline connects the float module's completion gearbox to the combine's power take-off (PTO). This type of driveline allows the header to operate more effectively on sloped terrain, and requires the combine to be equipped with a slope compensation package. It will need to be installed on the float module.

CAUTION

To prevent injury to the installer and damage to the driveline, hold the driveline so that it doesn't fall to the floor or ground.

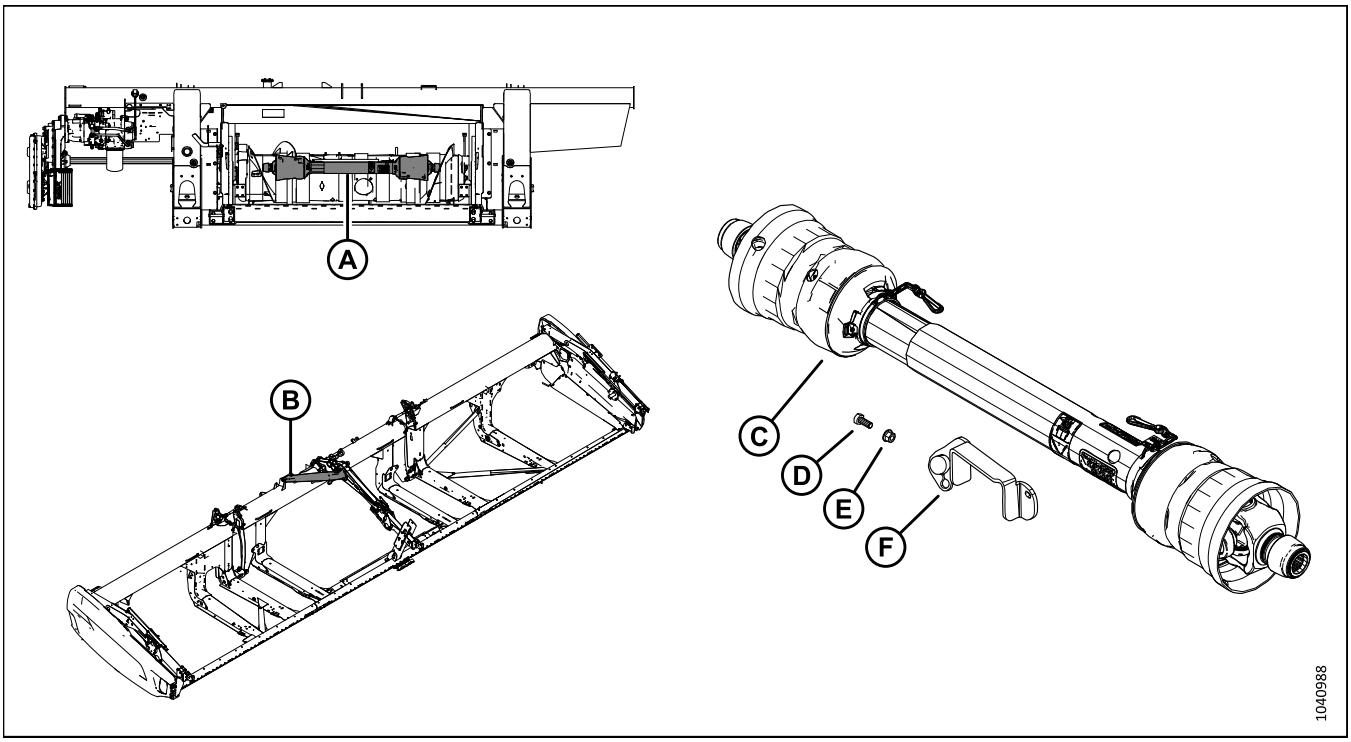


Figure 3.12: Driveline Shipping Locations and Driveline Parts

1. Retrieve the following driveline parts from that are shipped packaged on feed auger (A) (excluding B7326) or reel arm brace (B):
   - Driveline (C) (shipped in two halves for B7326)
   - M10 x 1.5 x 25 mm bolt (D)
   - M10 nut (E)
   - Driveline storage support (F)

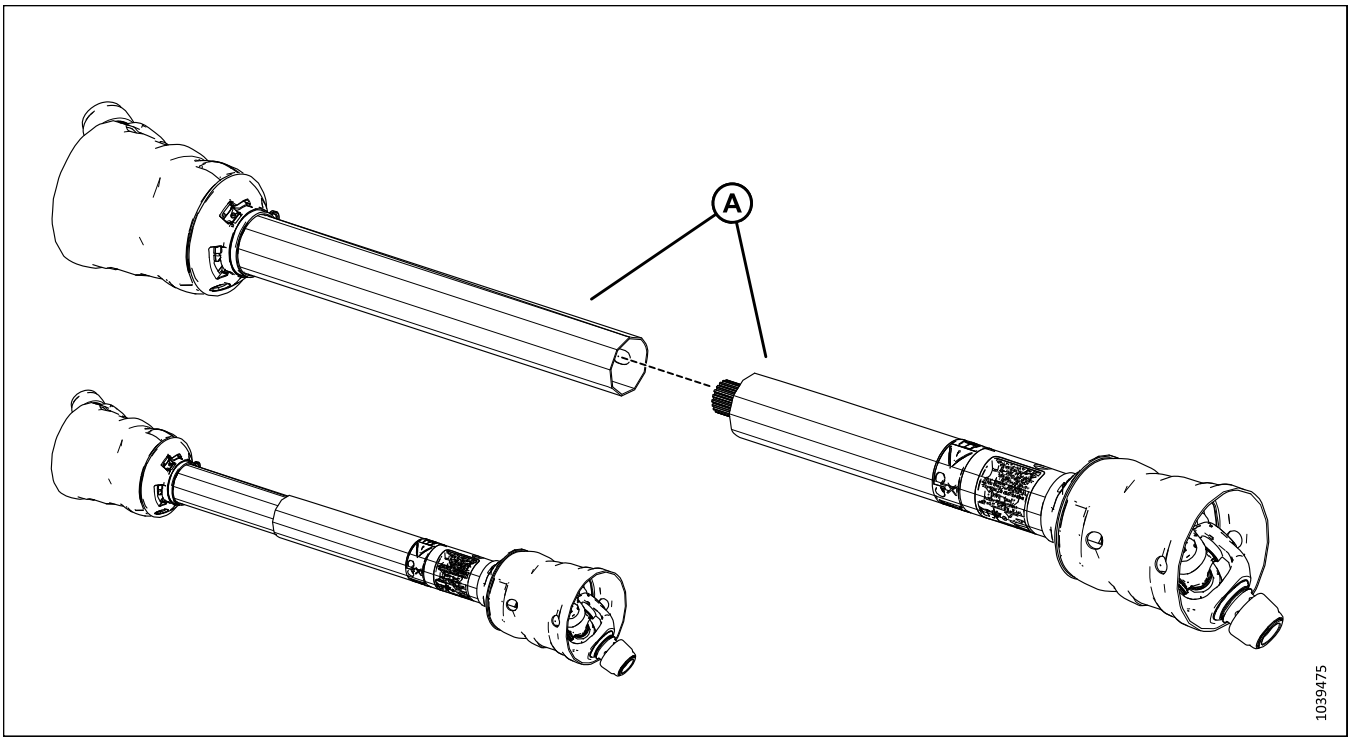


Figure 3.13: Driveline B7326 Assembly

2. **B7326:** Join driveshaft halves (A).

   NOTE:

   The driveshaft halves are phased. There is only one way to join them.

3. Grease the driveline before installing it.

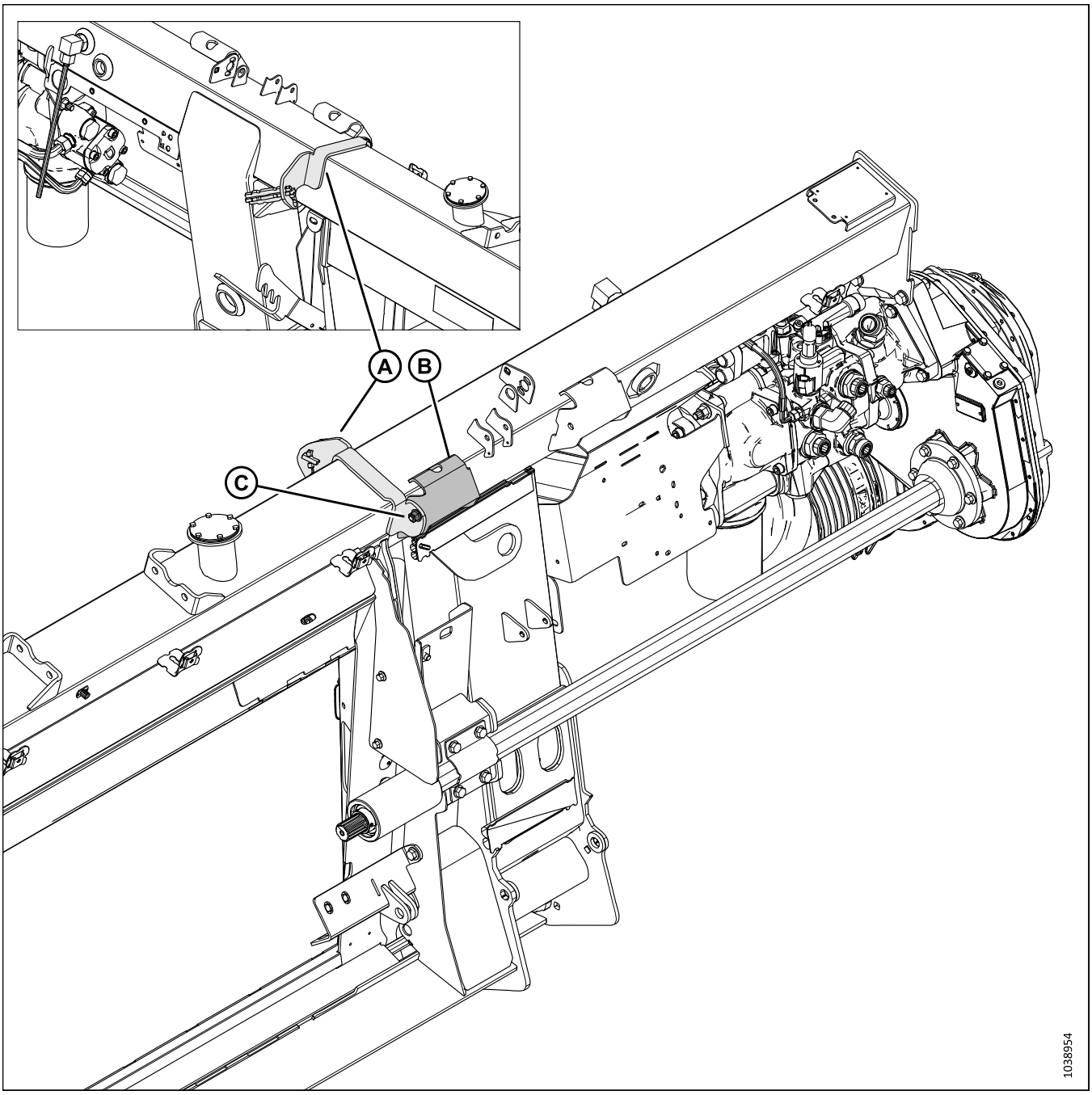


Figure 3.14: Driveline Support on Float Module – View from Behind

4. Attach driveline storage support (A) to bracket (B) using one M10 bolt and nut (C).

5. On the completion gearbox, pry clips (A) off of shield (B). Remove the shield.

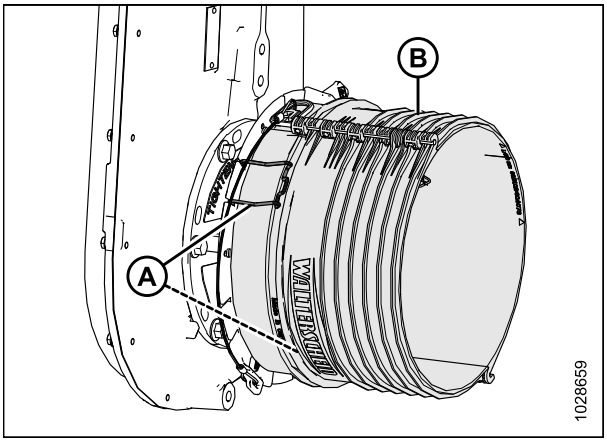


Figure 3.15: Driveline Shield on Float Module Gearbox

6. Slide shield (A) onto the driveline.

7. To install the driveline, pull back collar (B). Slide the quick disconnect yoke onto the shaft on the float module's gearbox until the yoke locks onto the shaft. Release the collar.

   NOTE:

   Ensure that the arrow on the driveline decal points toward the combine. The appearance of the decal on the driveline varies.

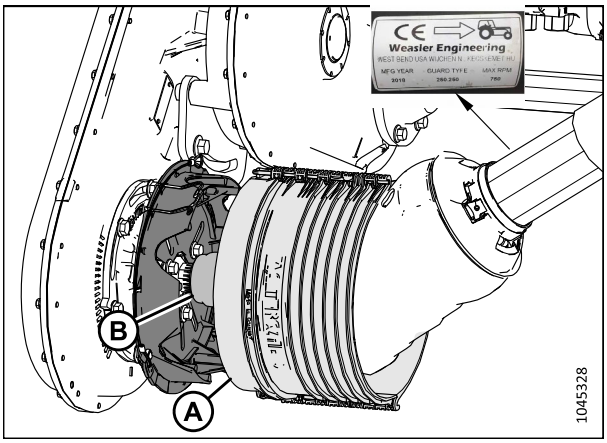


Figure 3.16: Driveline Installed on Float Module Gearbox Shaft

8. Secure shield (A) with clips (B).

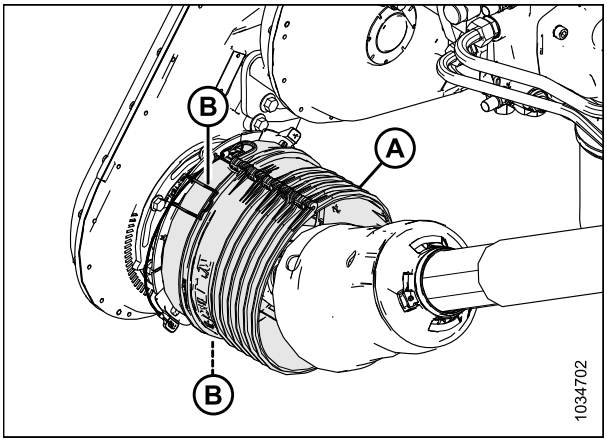


Figure 3.17: Driveline with Shield Installed on Float Module Gearbox Shaft

9. Secure the loose end of safety chain (A) to the ear on the aluminum plate as shown.

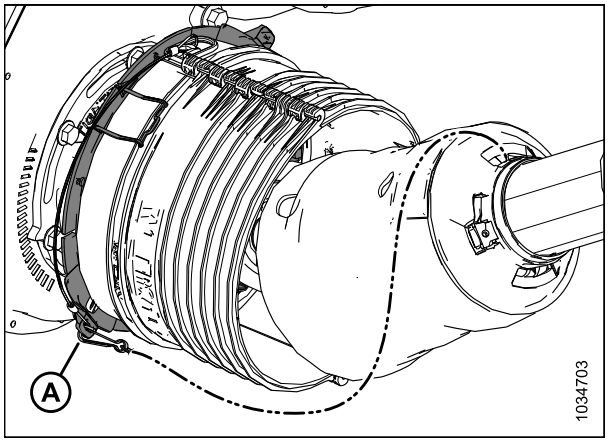


Figure 3.18: Driveline Safety Chain Secured to Float Module Gearbox

10. Pull back the collar on driveline (A). Slide driveline (A) yoke onto the shaft on storage support (B) until the yoke locks onto the shaft. Release the collar.
11. Secure the loose end of safety chain (C) to the driveline storage support.

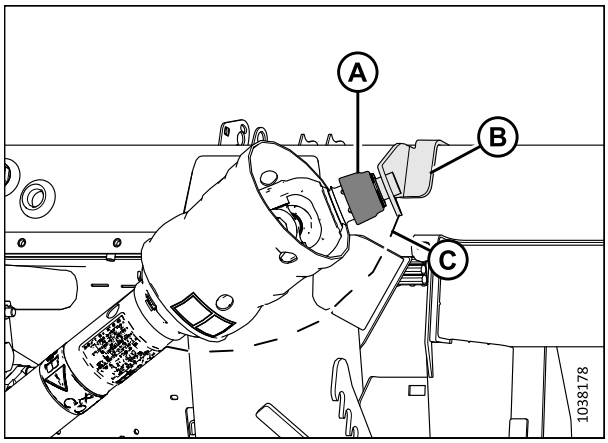


Figure 3.19: Sidehill Driveline in Storage Position on Float Module

3.4 Installing Filler Cap (Unmarked Parts Bag)

The filler cap will need to be installed on the filler neck on the top of the float module.

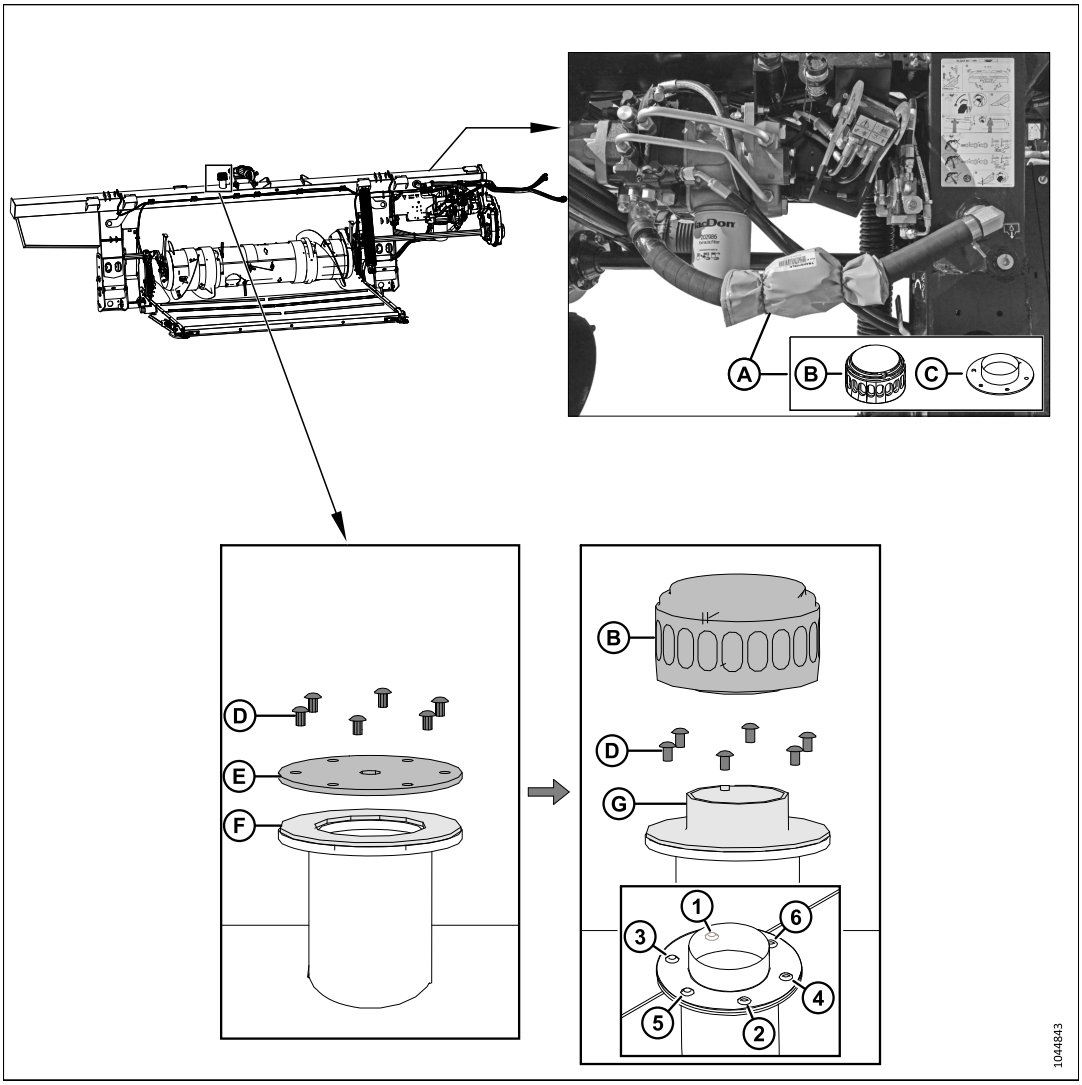


Figure 3.20: Filler Cap Installation

1. Retrieve part bag (A), which contains cap (B) and bayonet (C).

   NOTE:
   If you are also installing the filler neck extension (B7542), install it at this time, using the provided instructions.

2. Slowly remove and retain six screws (D). Discard cover (E). Leave gasket (F) in place.
3. Seat bayonet (G) onto the gasket. Secure the bayonet using six screws (D).
4. Gradually tighten the screws to 3.5 Nm (2.6 lbf·ft [31 lbf·in]) using the tightening sequence shown.
5. Screw cap (B) onto the bayonet.

3.5 Installing Cab Control Kits (Parts Bags MD #337619 or 337627)

Cab control kits supply the parts needed for the combine to control certain header features.

NOTE:

Skip this procedure if the float module is configured for any of the following combines:

- Case
- CLAAS
- John Deere X9 Series
- New Holland

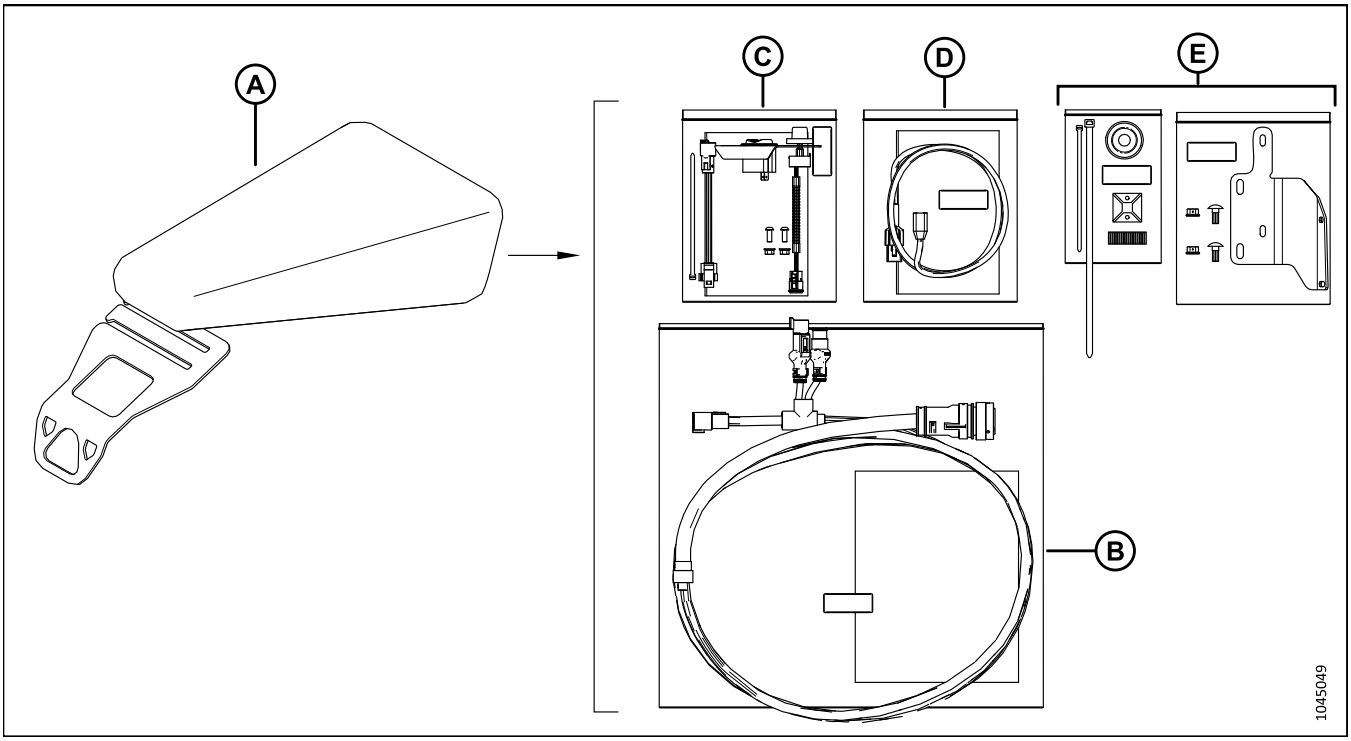


Figure 3.21: John Deere Cab Control Kit MD #337619 – Other Combines Similar

1. Retrieve parts bag (A) that contains the cab control kits. The parts bag is labeled with one of the following numbers:
   - MD #337619 (John Deere excluding X9)
   - MD #337627 (AGCO brands, or if the header is shipped not configured for any brand of combine)
2. Separate instructions are supplied with the kits. Follow the instructions supplied with each kit to install them:
   - Combine Cab Control Harness kit (B)
   - In-Cab Side Draper Speed Control kit (C)
   - Combine Cab Power kits (D)
   - Supplementary parts (E)

     NOTE:

     The support mount and hardware are included only in the John Deere kit (MD #337619).

3.6 Retrieving Limiter Link – CLAAS Lexion Combines

One limiter link is shipped with float modules configured for CLAAS combines, but is to be installed on CLAAS Lexion 5/6/7/8000 series and Trion 600/700 series combines only. The limiter link prevents interference between the float module and the combine feeder house dust blower shroud.

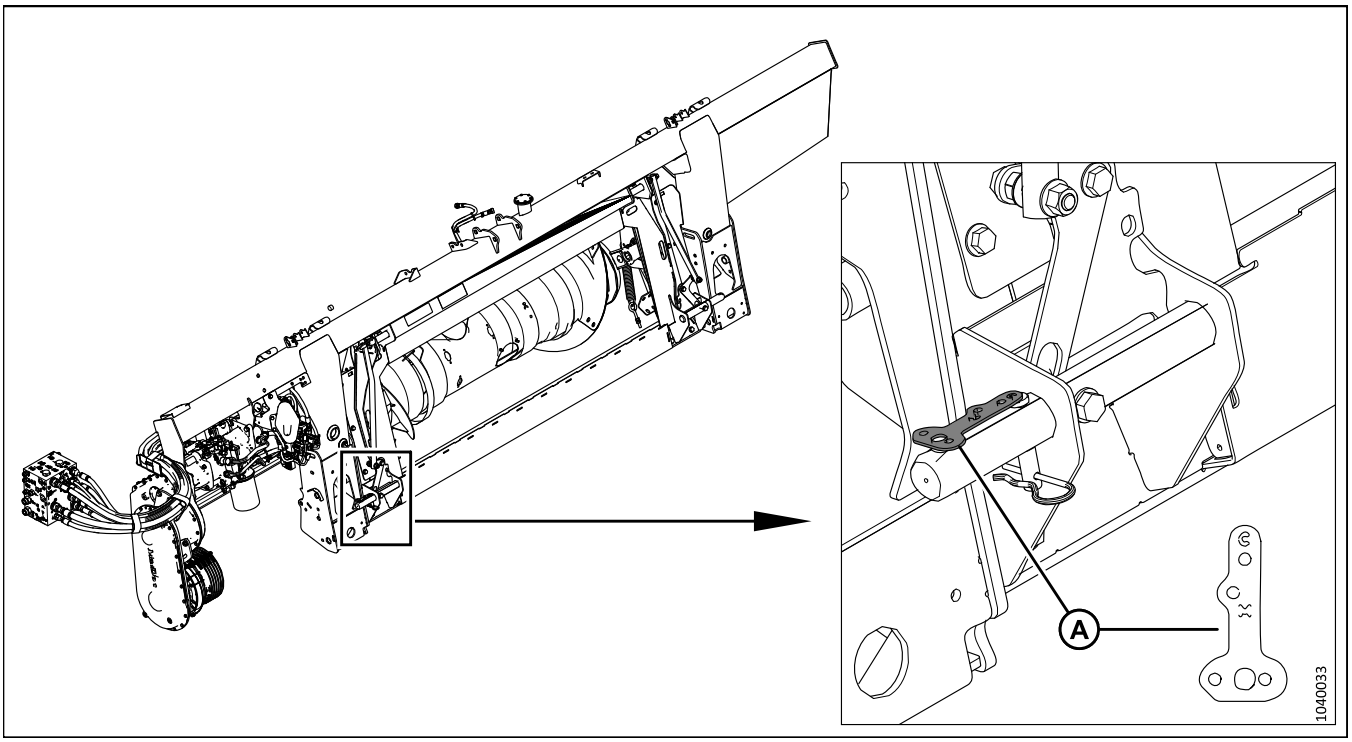


Figure 3.22: Limiter Link Shipping Position

Retrieve limiter link (A) from its shipping position. Proceed as follows:

- If the Customer's combine is **NOT** a CLAAS Lexion 5/6/7/8000 series or Trion 600/700 series combine, then discard the limiter link, and proceed to *4.3 Attaching Header to CLAAS Combine, page 59*.
- If the Customer's combine is a CLAAS Lexion 5/6/7/8000 series or Trion 600/700 series combine, then retrieve the combine. The limiter link is intended for that combine only. Do **NOT** attach the header to the combine. Proceed to *4.3.1 Installing Limiter Link and Performing a Fore/Aft Tilt Calibration – CLAAS Lexion 5000, 6000, 7000 and 8000 Series, and CLAAS Trion 600 and 700 Series Combines, page 64*.

3.7 Retrieving Two-Position Adjustment Plates – John Deere X9 Series Combines

Two adjustment plates have to be retrieved from their shipping location on the float module before the header can be attached to the combine.

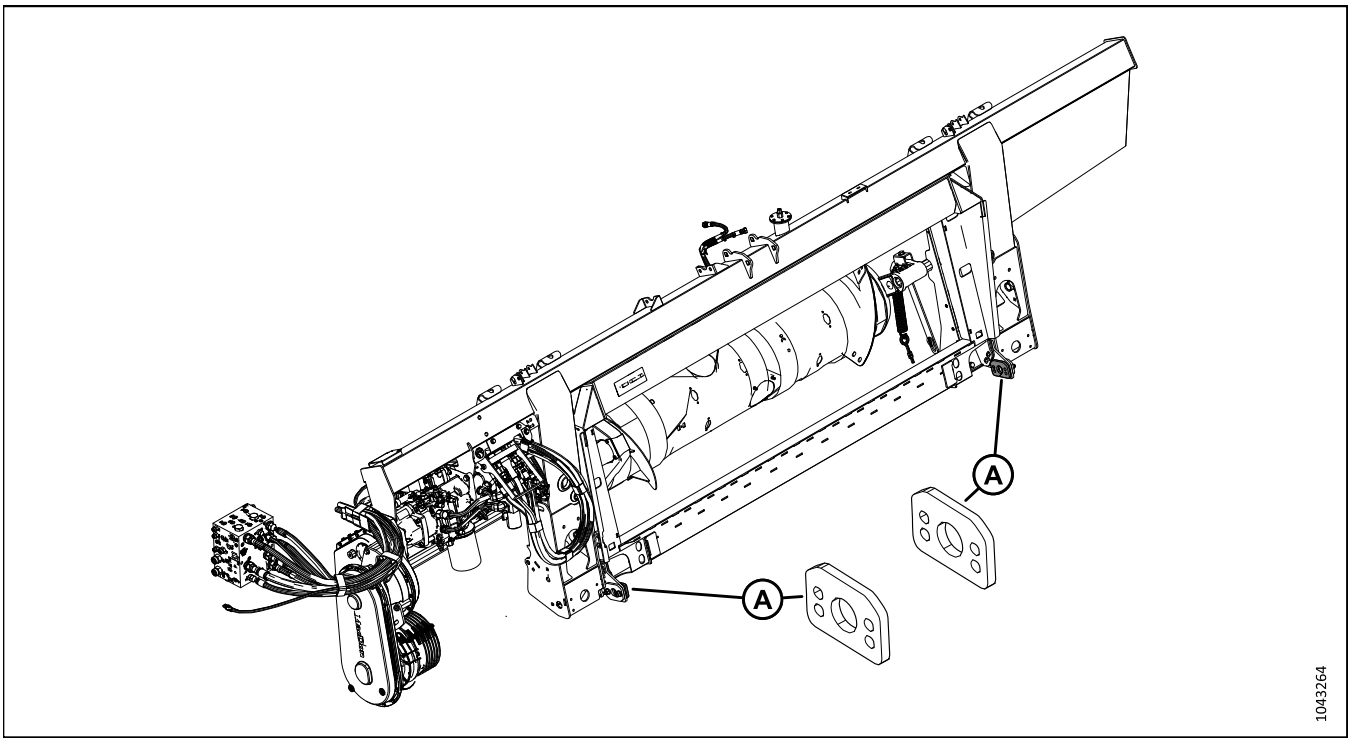


Figure 3.23: John Deere X9 Series Float Module

Retrieve both two-position adjustment plates (A) that are wired to the transition frame anchor plates. Set the plates aside.

- The two-position adjustment plates might be necessary when attaching the header to the combine.
- Make sure the owner of the header receives the adjustment plates.

Chapter 4: Attaching Header to Combine

The header will need to be attached to the combine for further assembly and testing.

The procedures for attaching the header to a combine vary depending on the combine model. Refer to the relevant procedure:

Table 4.1 Combine Model Header Attachment Procedures

Combine	Refer to
Case IH Models: 5/6/7088, 7/8010, 7/8/9120, 130, 140, 150, 230, 240, 250, AF9/10/11 Series Case IH Models: 21XX/23XX/25XX	*4.1 Attaching Header to Case IH Combine, page 48*
Challenger® 66/67/680B, 540C/560C Gleaner® A-Series Models: A66/76/86 Gleaner® R-Series and Super-Series Models: R65/75, R66/76, S67/77, S68/78/88, S96/97/98 Massey Ferguson® 9520/40/50, 9695/9795/9895	*4.2 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine, page 54*
CLAAS/CAT-Lexion Models: 560/570/580/590R, 575/585/595R, 600 CLAAS Lexion 600 and 700 Series Models: 6X0 and 7X0 CLAAS Lexion 5/6/7/8000 Series and Models: 6X00, 7X00, 8X00 CLAAS Lexion TRION Series Models: 6X0 and 7X0	*4.3 Attaching Header to CLAAS Combine, page 59*
IDEAL™ (Massey Ferguson®, Fendt®, and Valtra®) Models: 7, 8, 9, 10	*4.4 Attaching Header to IDEAL™ Series Combine, page 68*
John Deere T, 70 and S-Series Models: T5X0, T6X0, 9X60, 9X70, S6X0, S7X0 John Deere X9 and S7 Series	*4.5 Attaching Header to John Deere Combine, page 75*
New Holland CR Models: CR 9X0, 90X0, X090, X080, X.90, X.80 New Holland CX Models: CX 8X0, 80X0, 8.X0 New Holland CH Model: CH7.70	*4.6 Attaching Header to New Holland CR, CX, or CH Combine, page 82*
Rostselmash 161, T500, and TORUM 785	*4.7 Attaching Header to Rostselmash Combine, page 88*

IMPORTANT:

Ensure that the applicable functions (for example: automatic header height control [AHHC], draper header option, hydraulic center-link option, hydraulic reel drive) are enabled on the combine and in the combine's computer. Failure to do so may result in improper header operation.

NOTE:

Ensure that the combine feeder house's lugs are free of dirt and debris. Check the locking mechanism for freedom of movement, and ensure that it is free of damage; make any necessary repairs to the locking mechanism prior to attaching the header to the combine.

NOTE:

Ensure that all electrical and hydraulic connectors are clean and free of dust and debris.

4.1 Attaching Header to Case IH Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

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:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

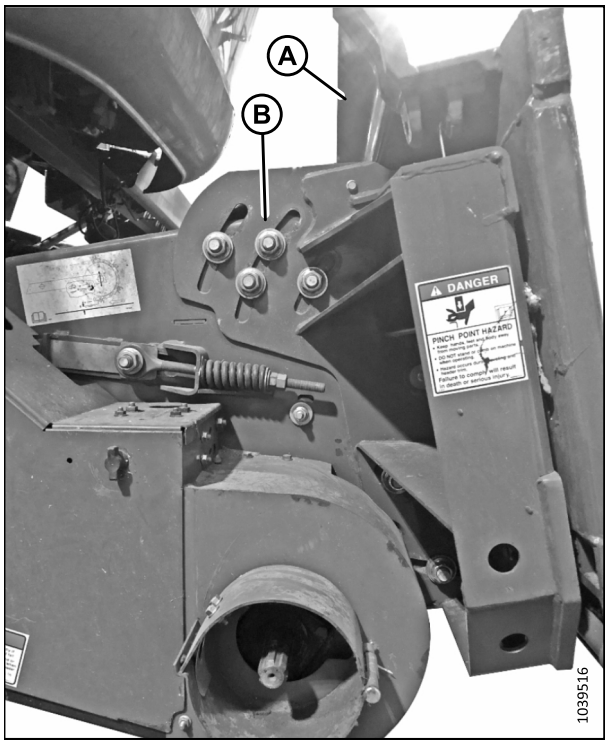


Figure 4.1: Faceplate Tilted to Mid-Position on Combine

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

2. On the combine, ensure that lock handle (A) is positioned so hooks (B) can engage the float module.

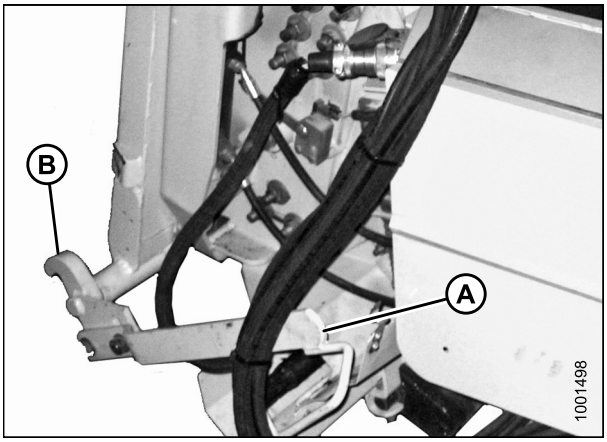


Figure 4.2: Feeder House Locks

3. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
4. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is properly engaged in the float module's frame.
5. Shut down the engine, and remove the key from the ignition.

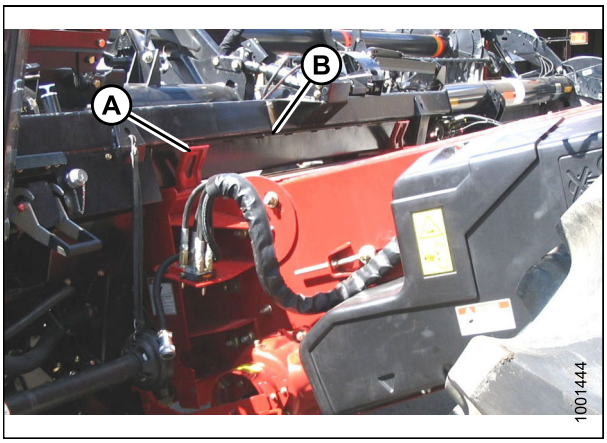


Figure 4.3: Combine and Float Module

6. On the left side of the feeder house, lift lever (A) on the float module and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.

   NOTE:

   AF11 combines: Locking pins are extended/retracted with lever (not shown) on the side of the feeder house. Refer to the combine operator's manual for more information.
7. Push lever (A) down so that the slot in the lever locks the handle.
8. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust the lock. Retighten the bolts.

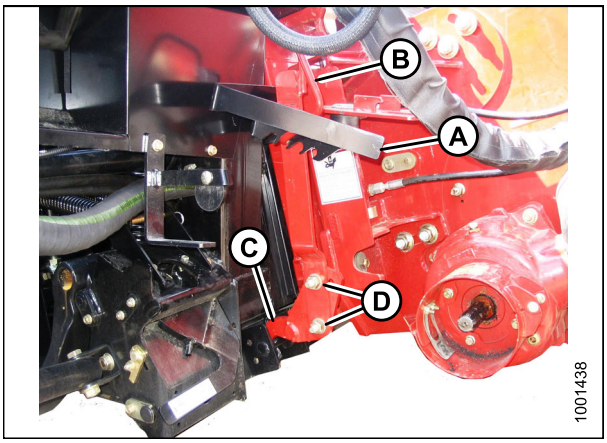


Figure 4.4: Combine and Float Module

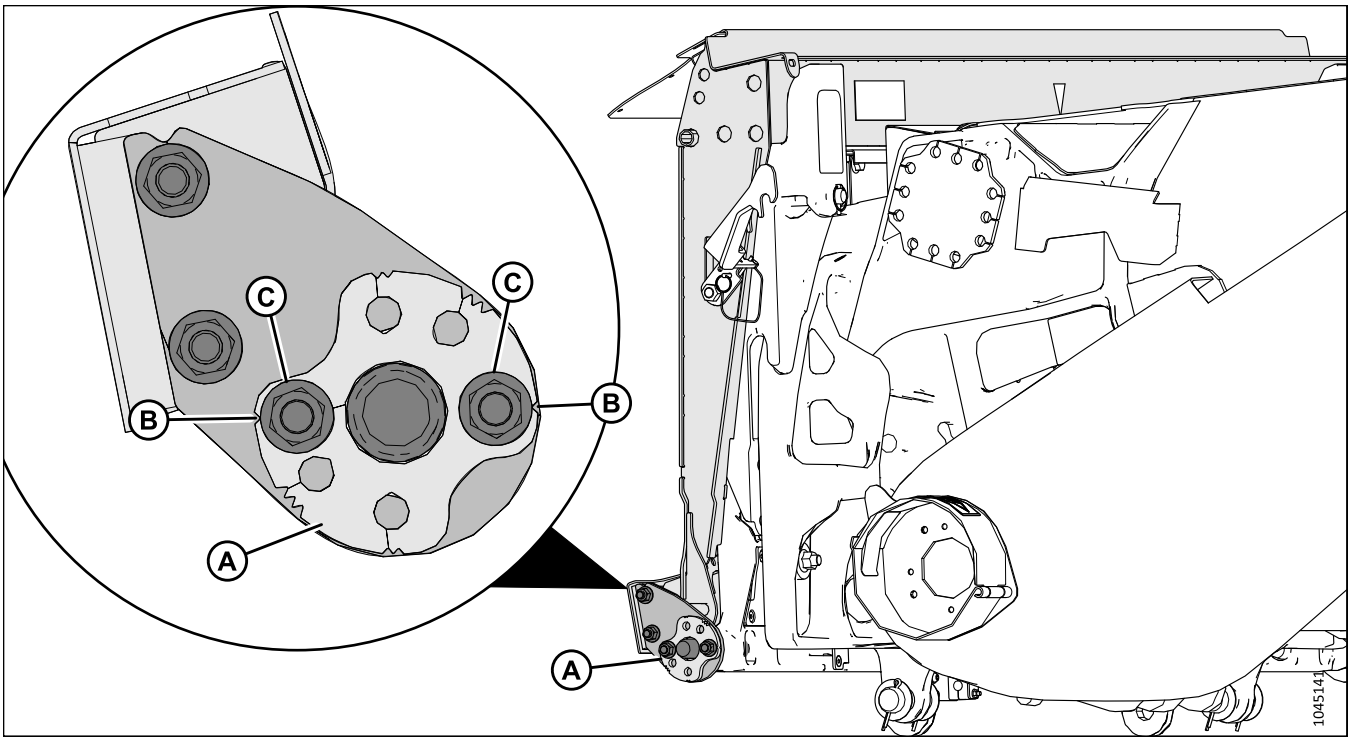


Figure 4.5: AF11 Locking Pins Alignment

9. **AF11 combines:** To ensure the header is attached to the feeder house securely, and to prevent the locking pins from binding, ensure that the locking pins are engaged and centered in float module adjuster plates (A) on both sides of the feeder house.

   NOTE:

   When single notches (B) on adjuster plate are aligned with nuts (C), the adjuster plate is in the neutral position.

10. **AF11 combines:** If an adjustment is needed, note the position of locking pins compared to the center hole of the adjuster plates, remove nuts (C) and reposition adjuster plates (A) as needed. Refer to Figure *4.6, page 51*.

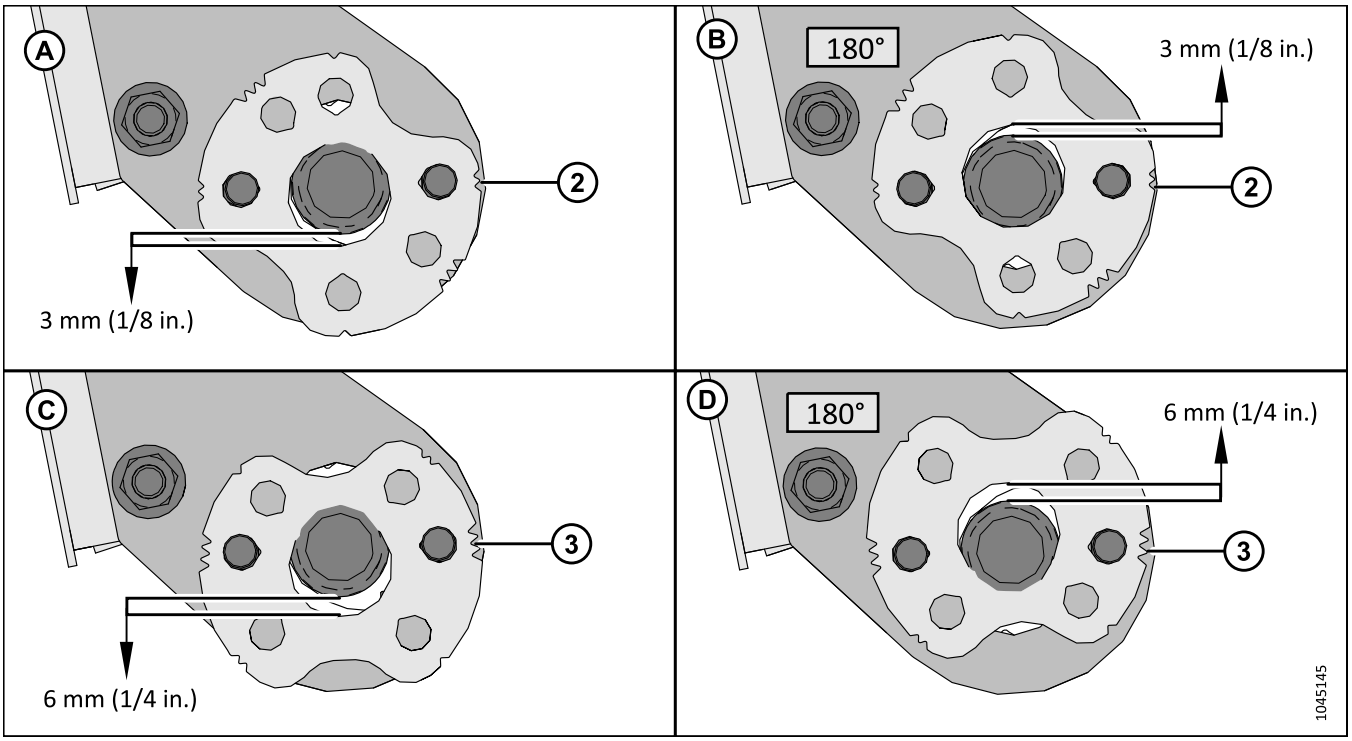


Figure 4.6: AF11 Adjuster Plate Positions

- Image (A) shows the adjuster plate rotated so that the double notches align with the bolts. This position lowers the adjuster plate 3 mm (1/8 in.).
- Image (B) shows the adjuster plate rotated 180° so that the double notches align with the bolts. This position raises the adjuster plate 3 mm (1/8 in.).
- Image (C) shows the adjuster plate rotated so that the triple notches align with the bolts. This position lowers the adjuster plate 6 mm (1/4 in.).
- Image (D) shows the adjuster plate rotated 180° so that the triple notches align with the bolts. This position raises the adjuster plate 6 mm (1/4 in.).

11. **AF11 combines:** When the combine locking pins can engage adjuster plates (A) on both sides of the feeder house without binding, reinstall nuts (B) to secure the adjuster plates to anchor mounts (C).

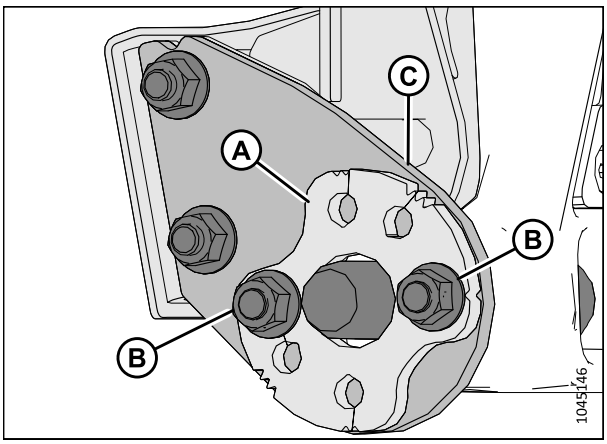


Figure 4.7: AF11 Feeder House Locking Pins

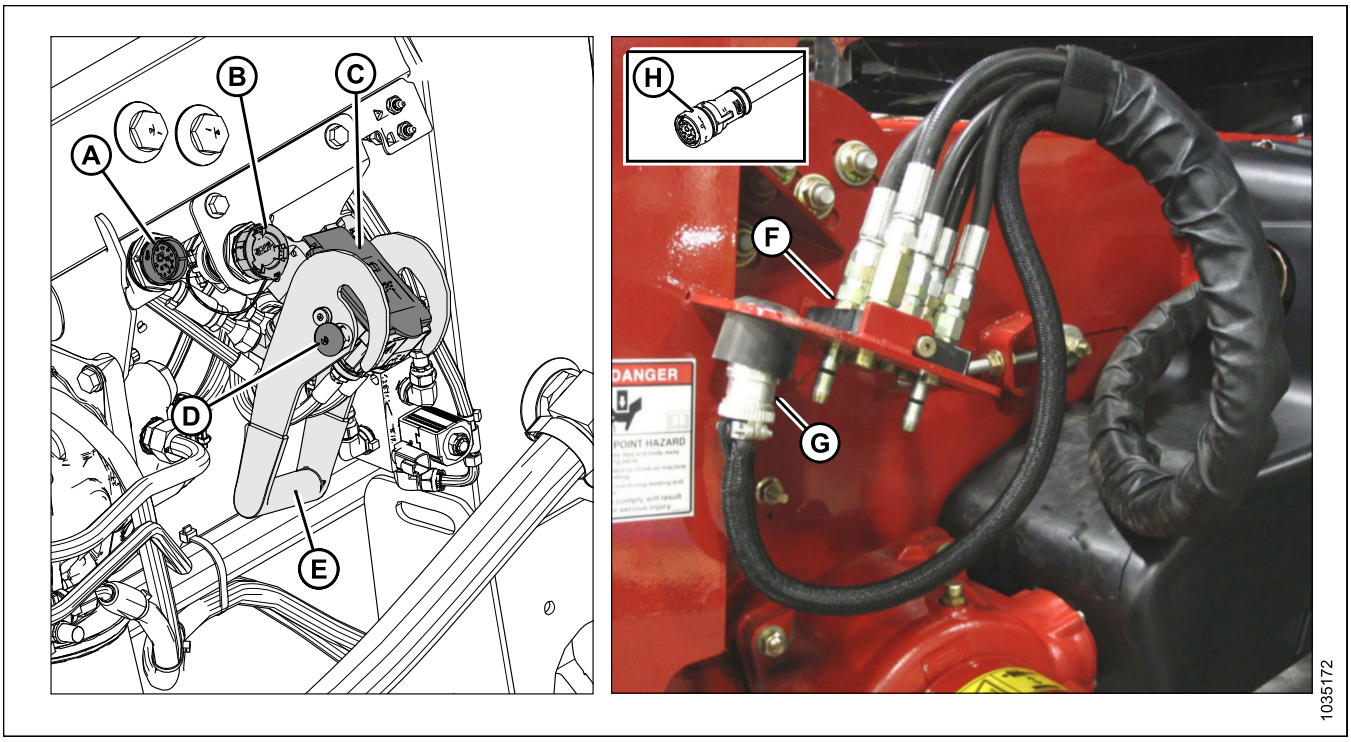


Figure 4.8: Multicoupler and Electrical Connections

12. **If MacDon in-cab controls are installed:** Remove the cap from connector C81B (A).
13. Remove the cap from connector C72B (B).
14. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
15. Push in lock button (D) and pull handle (E) to the fully open position.
16. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
17. Position coupler (F) onto float module receptacle (C), and push handle (E) to engage the pins into the receptacle.
18. Push handle (E) to the closed position until lock button (D) snaps out.
19. Remove combine connector (G) from its storage location on the combine and connect it to receptacle C72B (B). Turn the collar on the connector to lock it in place.
20. **If MacDon in-cab controls are installed:** Remove cab control kit connector C81A (H) from its storage location on the combine and connect it to C81B (A). Turn the collar on the connector to lock it in place.

21. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

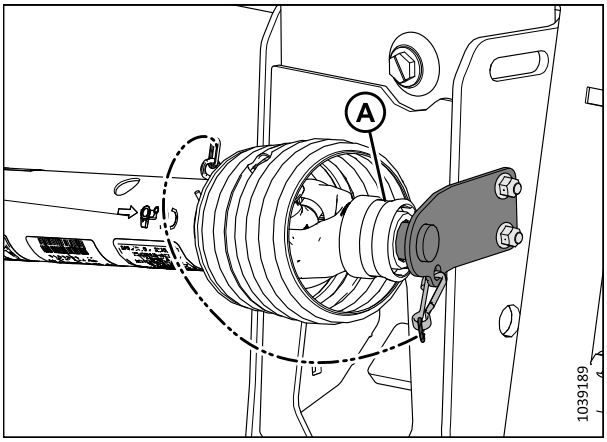


Figure 4.9: Driveline in Storage Position – Driveline B7038 or B7039

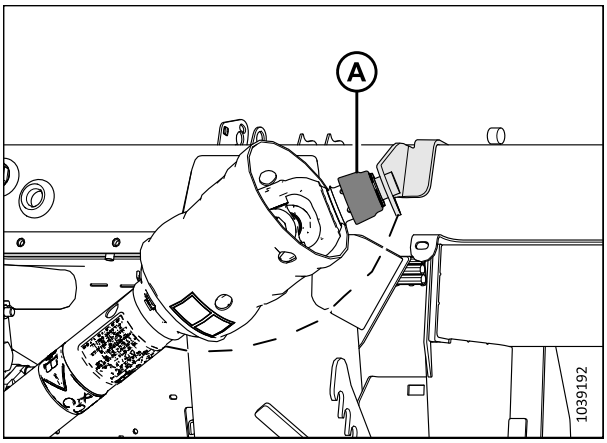


Figure 4.10: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

22. Pull back collar (A) on the end of the driveline. Push the driveline onto combine output shaft (B) until the collar locks.

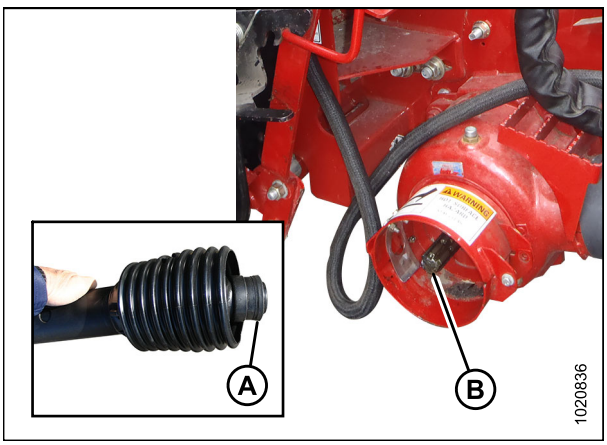


Figure 4.11: Combine Output Shaft

23. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

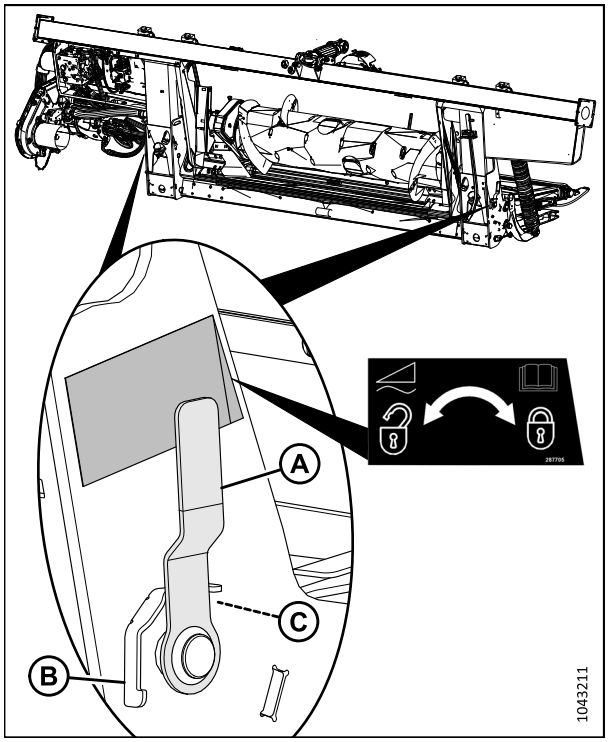


Figure 4.12: Float Lock Handle

4.2 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

NOTE:

The float module is equipped with a multicoupler that connects to the combine. If the combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *4.2, page 54* for a list of needed kits.

Table 4.2 Multicoupler Kits

Combine	AGCO Kit Number
Challenger®	71530662
Gleaner® R/S Series	71414706
Massey Ferguson®	71411594

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.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

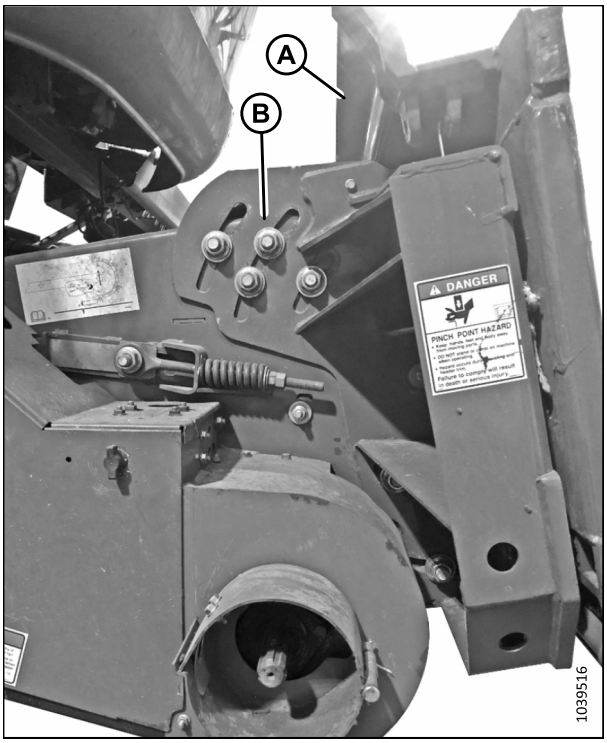


Figure 4.13: Faceplate Tilted to Mid-Position on Combine

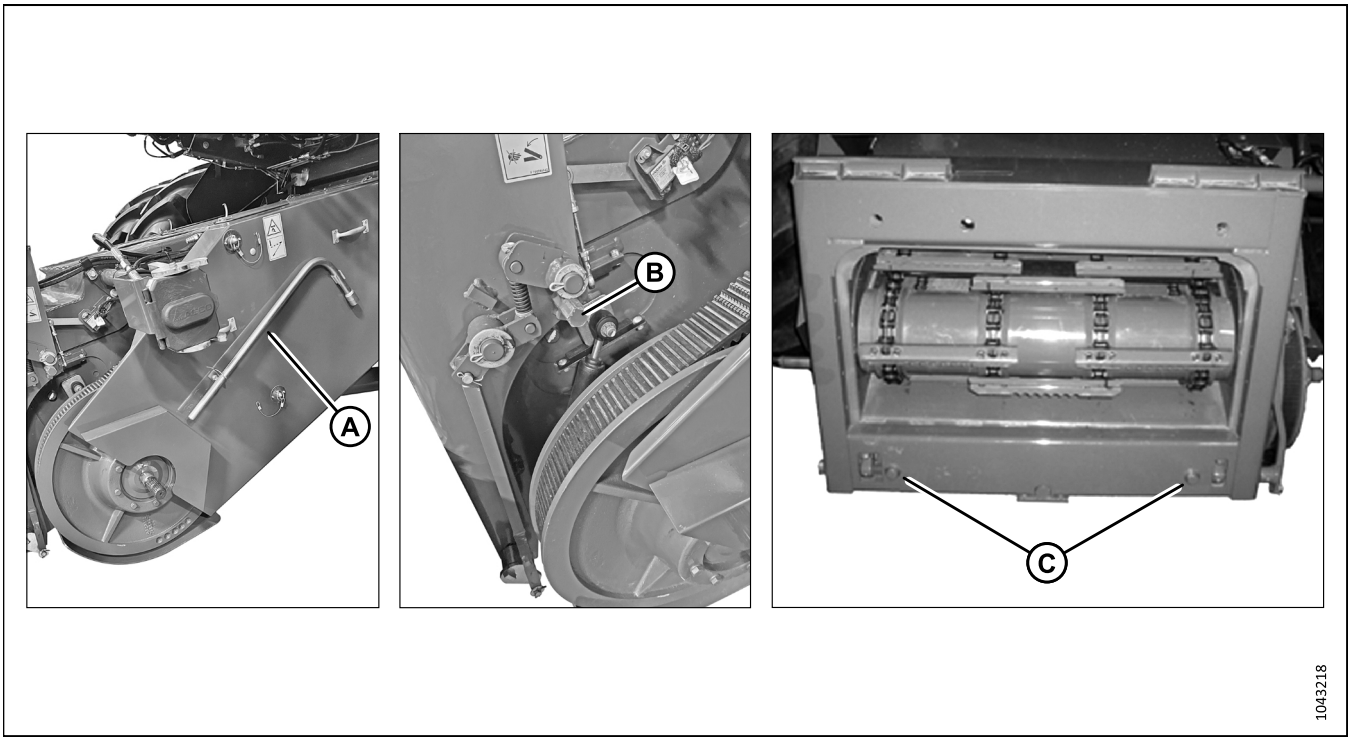


Figure 4.14: Feeder House

1. Shut down the engine, and remove the key from the ignition.
2. Retrieve feeder house tool (A) and install it onto latch bolt (B). Retract feeder house pins (C) by operating the latch.

   NOTE:

   The combine feeder house may not be exactly as shown. If the latch mechanism is different than what is described in this procedure, refer to the combine operator's manual for instructions.

3. Slowly approach the header until the feeder house is directly under float module top cross member (A).

   NOTE:

   Ensure that alignment pins (C) (refer to Figure *4.14, page 55*) on the feeder house align with holes (B) in the float module frame.

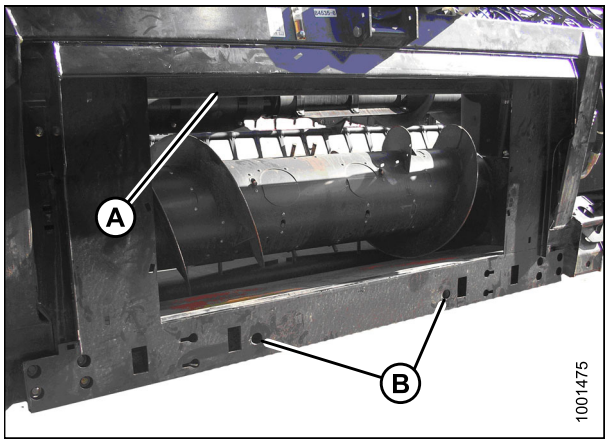


Figure 4.15: Float Module

4. Raise the feeder house slightly to lift the header, ensuring feeder house saddle (A) is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.

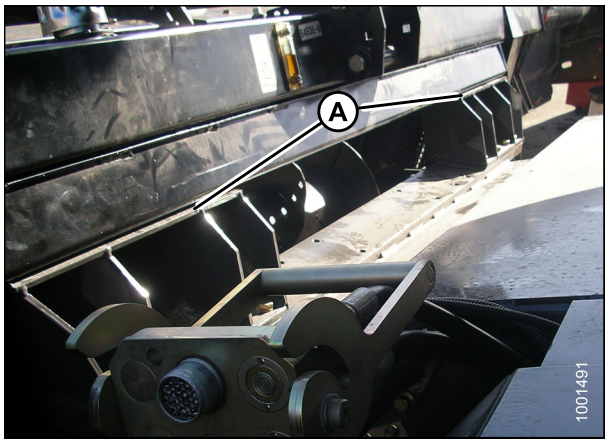


Figure 4.16: Feeder House and Float Module

6. Use latch mechanism (B) to engage pins (A) with the float module.

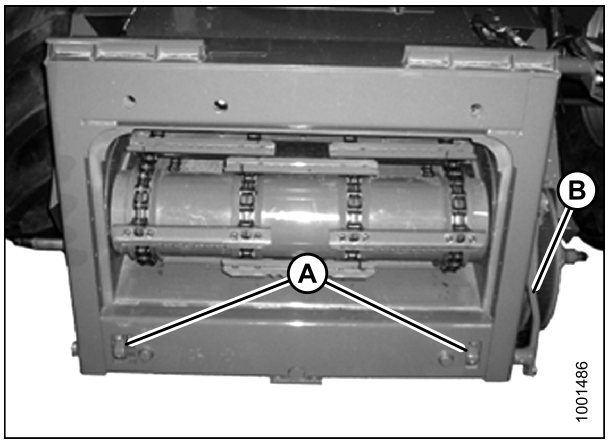


Figure 4.17: AGCO Group Feeder House

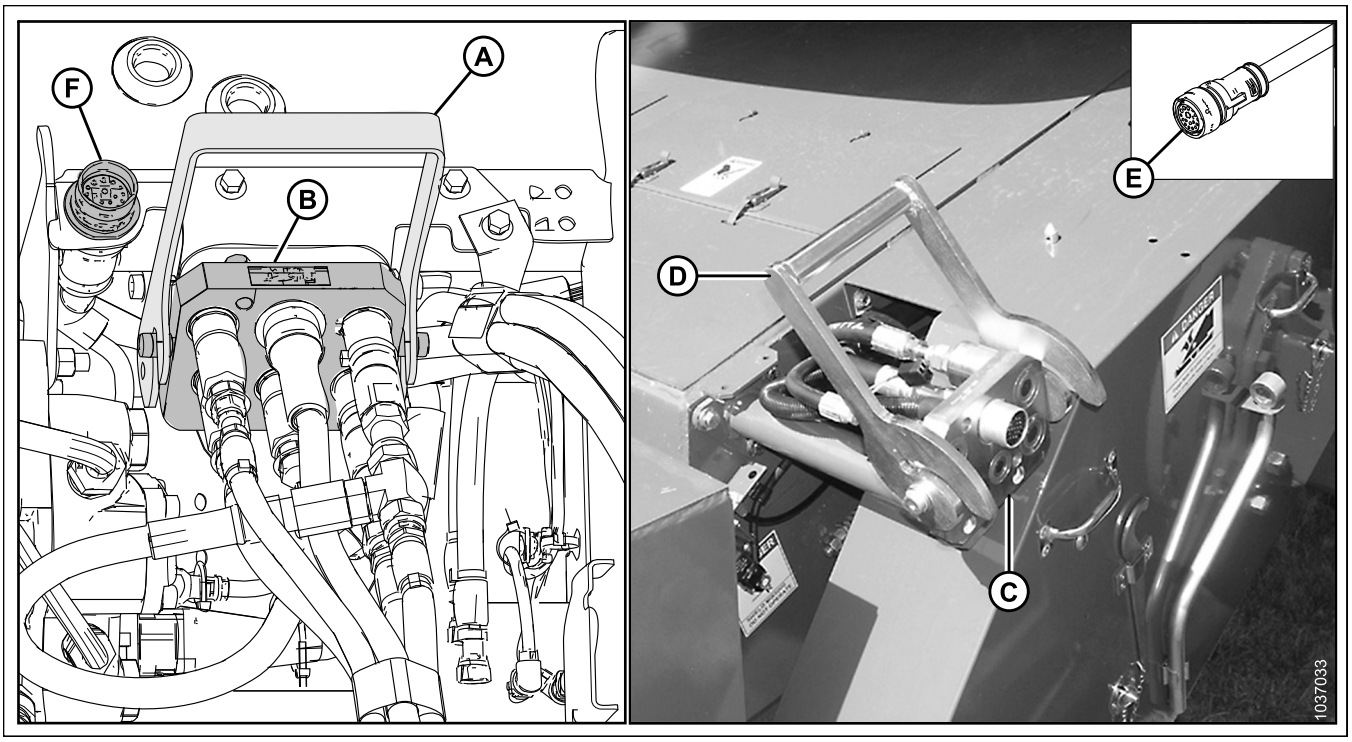


Figure 4.18: Hydraulics and Electrical Multicoupler

7. Raise handle (A) to release multicoupler (B) from the float module.

8. Raise handle (D) on the combine to the fully open position. Clean the mating surfaces of multicoupler (B) and receptacle (C).

9. Install multicoupler (B) into combine receptacle (C). Pull handle (D) to engage the multicoupler into the receptacle.

10. Retrieve cab control kit connector C81A (E) from the storage location on the combine and connect it to connector C81B (F) on the float module. Turn the collar on the connector to lock it.

11. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

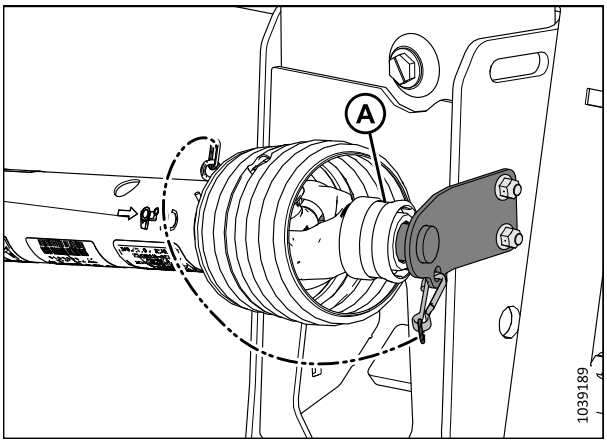


Figure 4.19: Driveline in Storage Position

12. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar is locked.

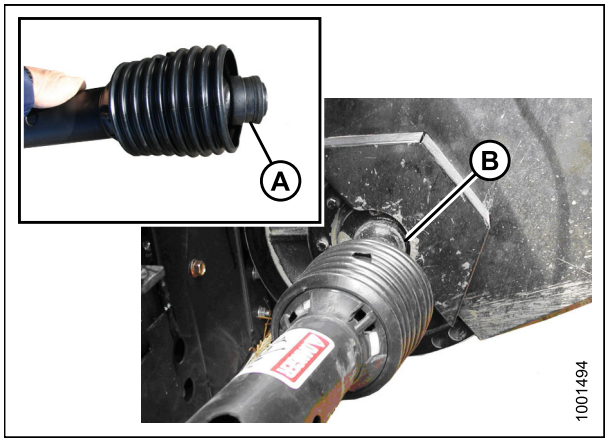


Figure 4.20: Driveline

13. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

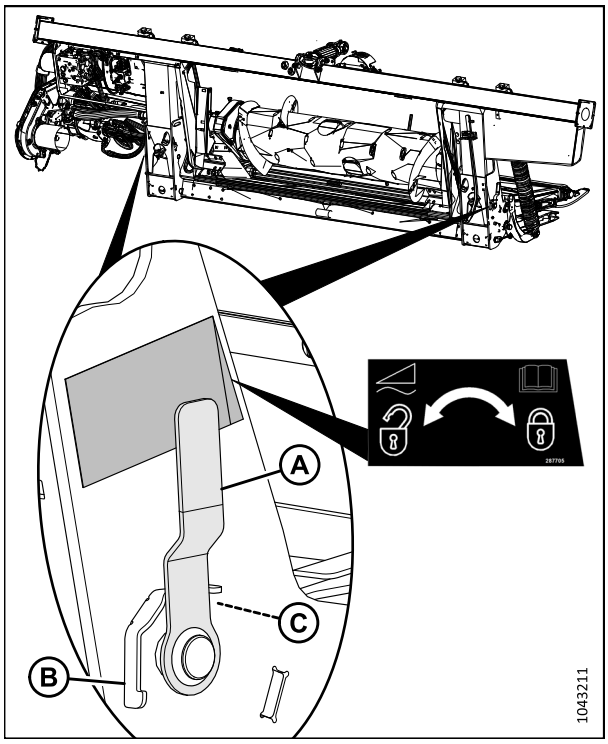


Figure 4.21: Float Lock Handle

4.3 Attaching Header to CLAAS Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

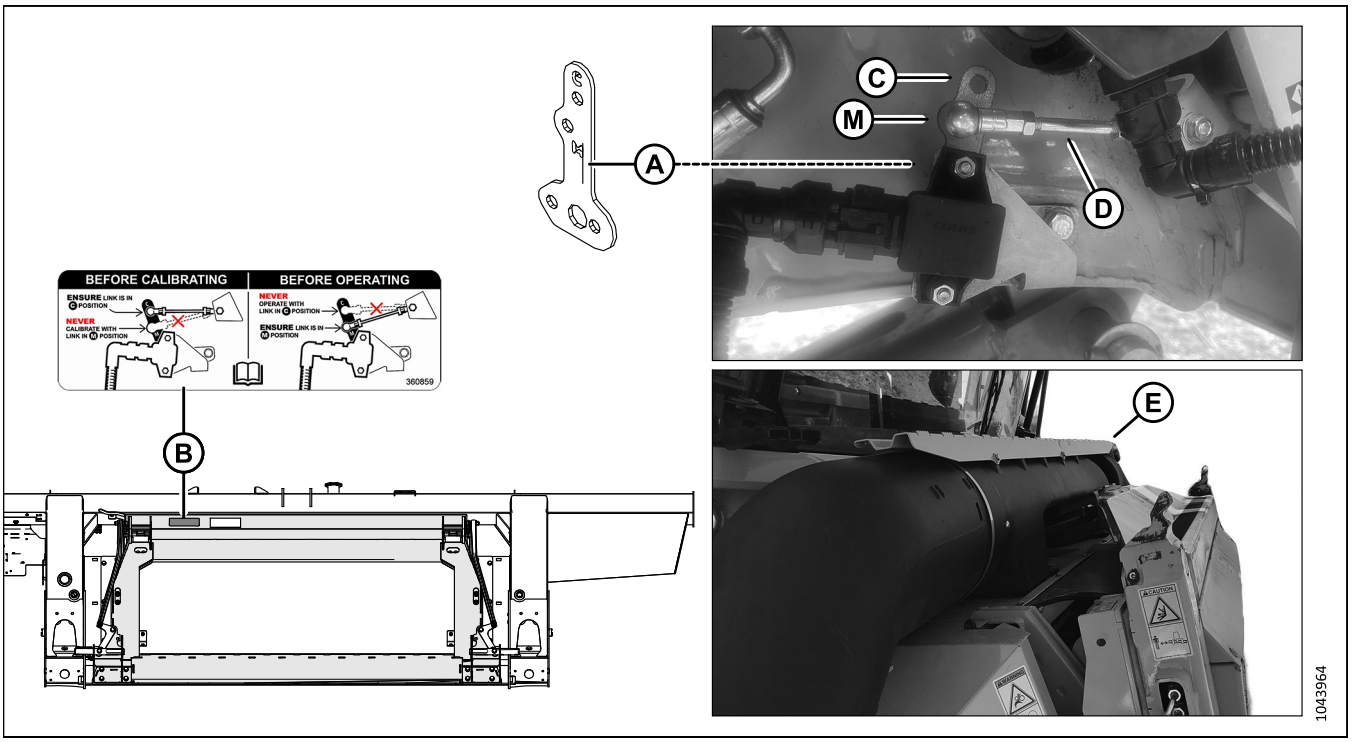


Figure 4.22: Limiter Link, Decal, and Feeder House

IMPORTANT:

Before a CLAAS Lexion 5000/6000/7000/8000 series, or CLAAS Trion 600/700 series combine is attached to the header for the first time, fore/aft tilt sensor limiter link (A) (MD #357776) must be installed on the combine's feeder house, and a feeder house fore/aft tilt calibration must be performed. When properly configured, the limiter link prevents interference between the float module and the feeder house dust blower shroud (E).

- The initial installation of the limiter link, and the initial feeder house fore/aft tilt calibration, is done by a Dealer.
- Sensor linkage (D) must be installed in limiter link hole "C" (C), and the header must be detached from the combine, before performing a feeder house fore/aft tilt calibration. Hole "C" is only used for feeder house fore/aft tilt calibrations.
- Sensor linkage (D) must be installed in limiter link hole "M" (M) as shown before attaching the header to the combine. Hole "M" is used for operating the header, or performing any calibration that is **NOT** a feeder house fore-aft tilt calibration. Examples of calibrations that use hole "M" include auto header height control (AHHC), reel height, and reel fore-aft calibrations.
- Decal (B) (MD #360859) is installed on the float module transition frame to remind the Operator when the sensor linkage must be installed in hole "C" or hole "M".
- For limiter link installation and feeder house fore/aft tilt calibration instructions, refer to *4.3.1 Installing Limiter Link and Performing a Fore/Aft Tilt Calibration – CLAAS Lexion 5000, 6000, 7000 and 8000 Series, and CLAAS Trion 600 and 700 Series Combines, page 64*.

IMPORTANT:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

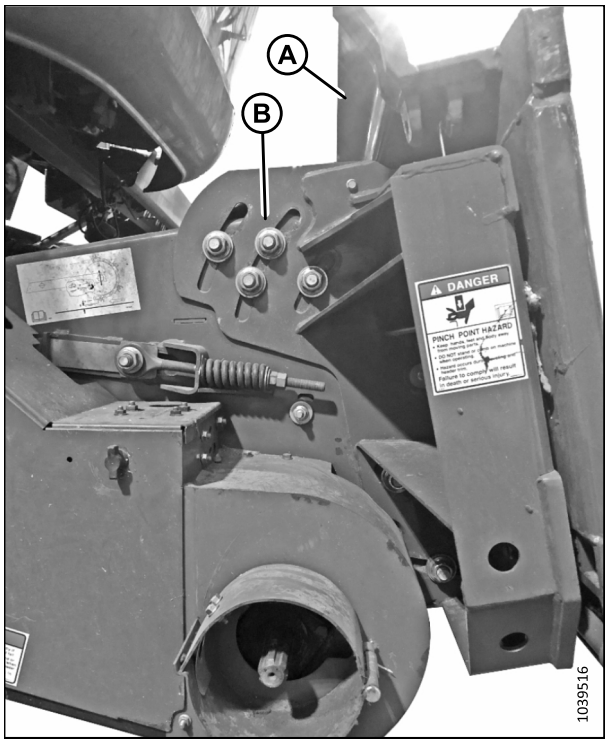


Figure 4.23: Faceplate Tilted to Mid-Position on Combine

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.

DANGER

Ensure that all bystanders have cleared the area.

1. Shut down the engine, and remove the key from the ignition.
2. Move handle (A) on the float module to the raised position. Ensure that pins (B) at the bottom corners of the float module are retracted.

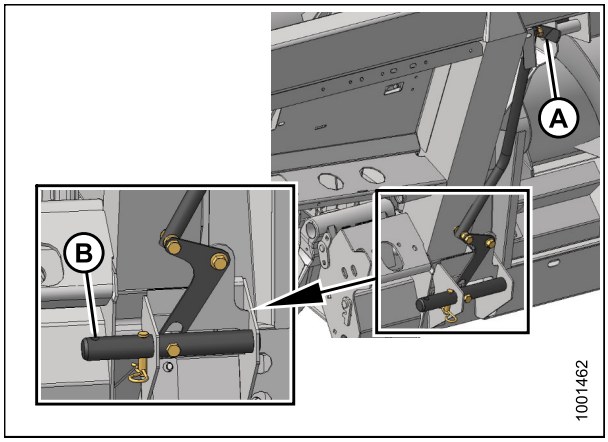


Figure 4.24: Pins Retracted

3. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).

4. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is fully engaged with the float module's frame.

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

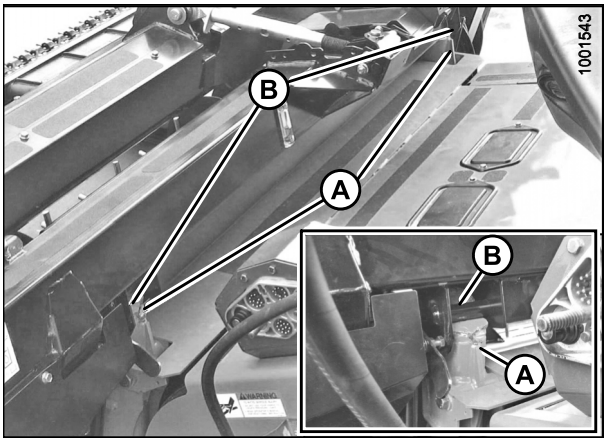


Figure 4.25: Header on Combine

6. Remove locking pin (B) from float module pin (A).

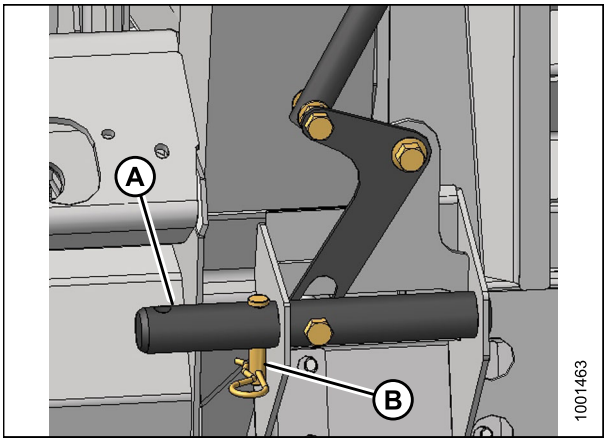


Figure 4.26: Locking Pins

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) as shown. Secure the locking pin with the hairpin.

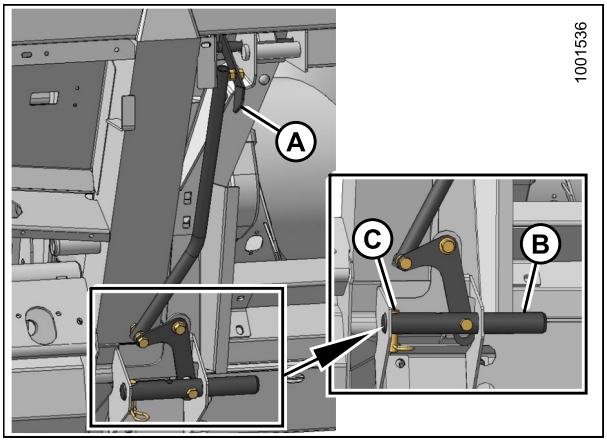


Figure 4.27: Engaging Pins

8. Remove float module receptacle cover (A). Clean the receptacle.

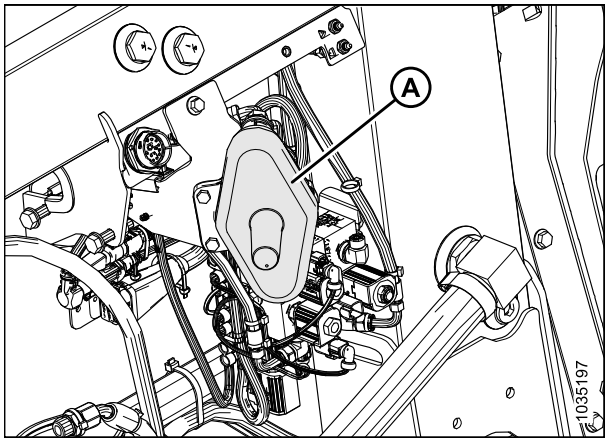


Figure 4.28: Receptacle Cover

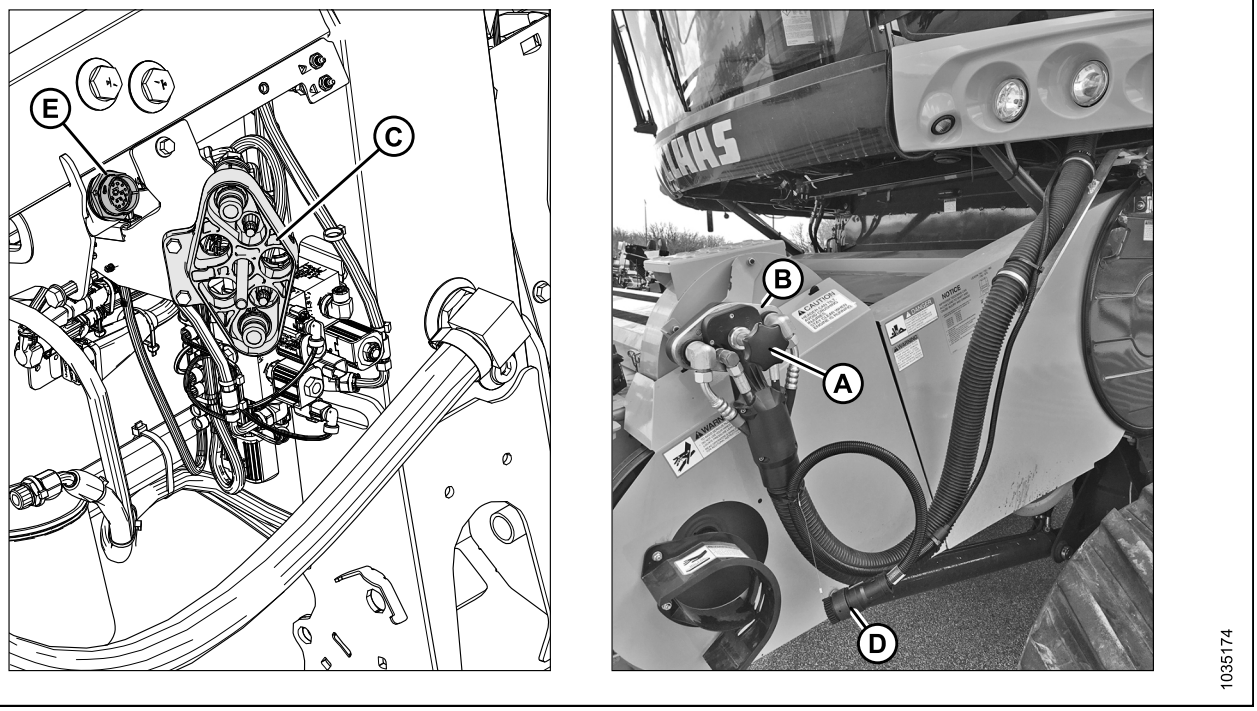


Figure 4.29: Multicoupler and Electrical Connections

9. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.

10. Clean coupler (B) and the receptacle.

11. Install combine coupler (B) onto float module receptacle (C). Secure the coupler by turning knob (A).

12. **If MacDon in-cab controls are installed:** Remove cab control kit connector C81A (D) from the storage location on the combine and connect it to C81B (E) on the float module. Turn the collar on the connector to lock it in place.

13. Place float module receptacle cover (A) onto the combine receptacle as shown in Figure *4.30, page 63*.

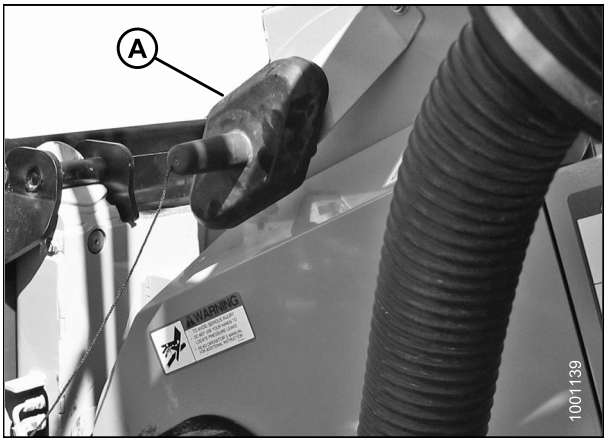


Figure 4.30: Receptacle Cover

14. Pull driveline collar (A) back to release the driveline from the support bracket (B). Remove the driveline from the support bracket.

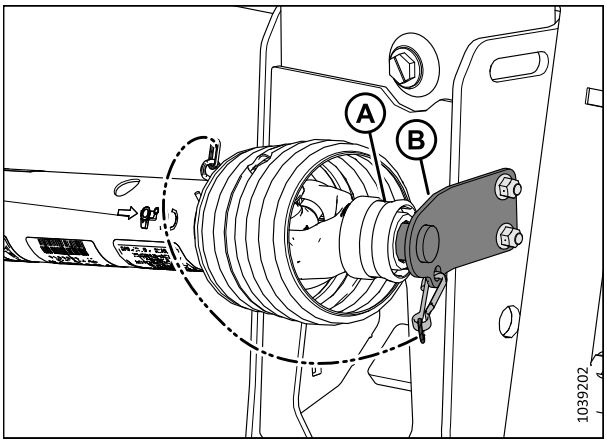


Figure 4.31: Driveline in Storage Position

15. Attach driveline (A) to the combine output shaft.

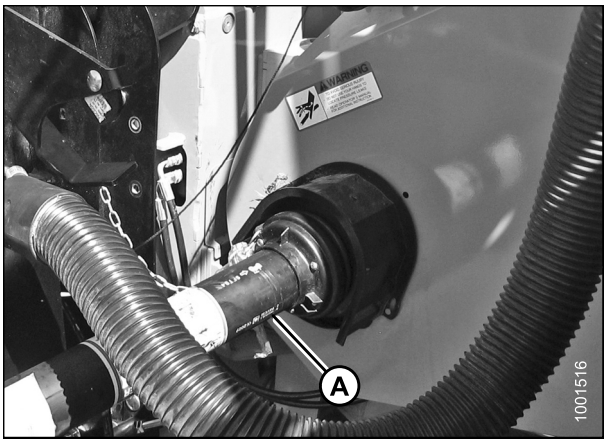


Figure 4.32: Driveline and Output Shaft

16. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

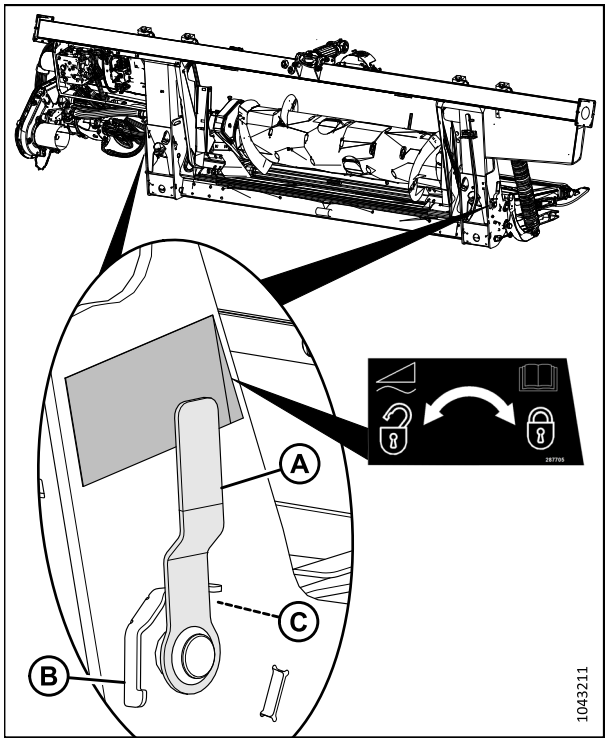


Figure 4.33: Float Lock Handle

4.3.1 Installing Limiter Link and Performing a Fore/Aft Tilt Calibration – CLAAS Lexion 5000, 6000, 7000 and 8000 Series, and CLAAS Trion 600 and 700 Series Combines

To prevent interference between the float module and the feeder house dust blower shroud, a limiter link must be installed, calibrated, and configured on CLAAS Lexion 5000, 6000, 7000 and 8000 series, and CLAAS Trion 600 and 700 series combines before the combine is attached to the header for the first time.

DANGER

To prevent injury or death from the unexpected start-up or fall of a raised machine, always shut off the engine and remove the key from the ignition before leaving the operator's seat or making adjustments to the machine. If the feeder house is fully raised, always engage the safety props.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

To prevent damage caused by interference between the header and feeder house dust blower shroud, make sure the combine is detached from the header before raising the feeder house or performing fore/aft tilt calibration.

1. Park the combine on a level surface.
2. Lower or raise the feeder house fully.

3. In CEBIS, navigate to HEADER (A), SETTINGS (B), and then HEADER PITCH (C). Adjust the faceplate pitch to 0.

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

5. If the feeder house is raised, engage the header safety props. For instructions, refer to the combine operator's manual.

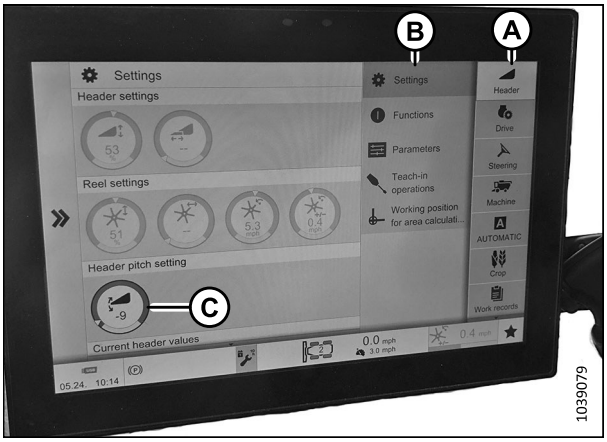


Figure 4.34: CEBIS Settings

6. Proceed as follows:

   - If installing limiter link (A) onto the feeder house, proceed to the next step.
   - If limiter link (A) is already installed on the feeder house, proceed to Step *14, page 66* for calibration instructions.

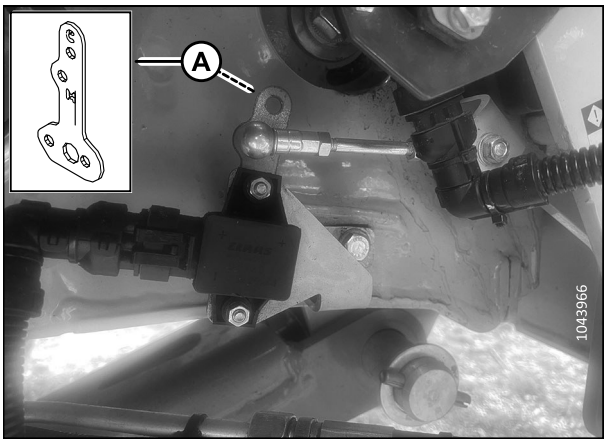


Figure 4.35: Limiter Link

7. Locate feeder house fore/aft tilt sensor (B) on the right side of the combine's feeder house, near header safety prop (A).

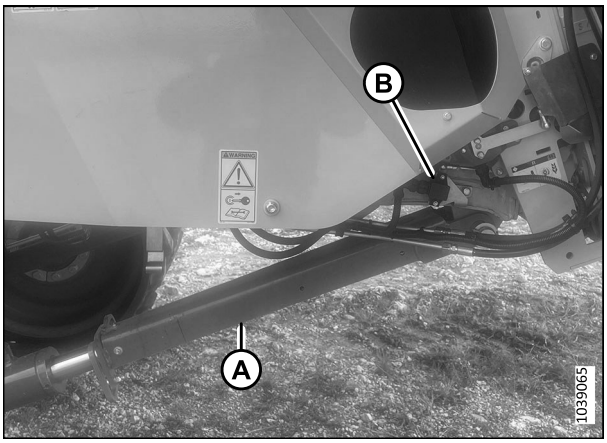


Figure 4.36: Sensor Limiter Link Location – Feeder House

8. Remove the nut that secures linkage (A) to the sensor arm.
9. Remove linkage (A) from the sensor arm.

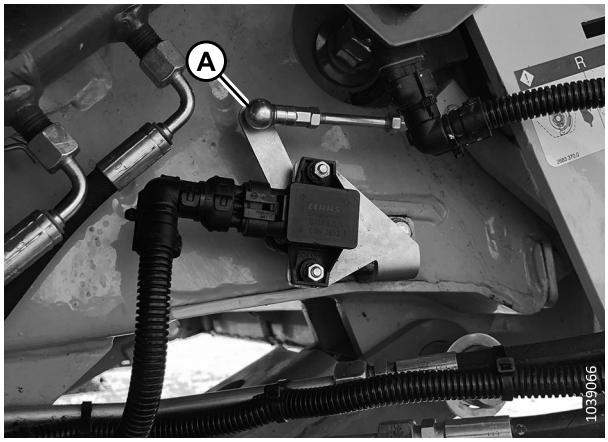


Figure 4.37: Sensor Arm Linkage

10. Remove two bolts (A) that secure sensor arm (B) to the sensor.

    NOTE:

    Do **NOT** unbolt the sensor from the combine.

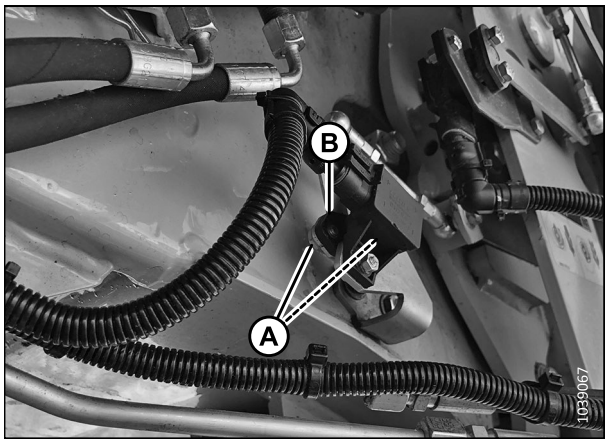


Figure 4.38: Sensor Arm

11. Install sensor arm (A) onto sensor (C). The bottom pointed end (B) of the sensor arm and the sensor pivot that the arm bolts to, should both point towards the back of the combine. The extended part of the sensor arm should be pointing up.
12. Install the two bolts to secure sensor arm (A) to sensor (C).
13. Install linkage (D) into the upper hole labelled “C” on the sensor arm.

    IMPORTANT:

    Make sure the sensor arm is installed in hole labelled “C” before calibrating the system. Calibrating the system with the sensor arm installed in hole labelled “M”, instead of hole labelled “C”, will lead to mechanical interference once the header is connected to the combine.
14. If the header safety props are engaged, disengage them now. For instructions, refer to the combine operator’s manual.
15. Start the engine.

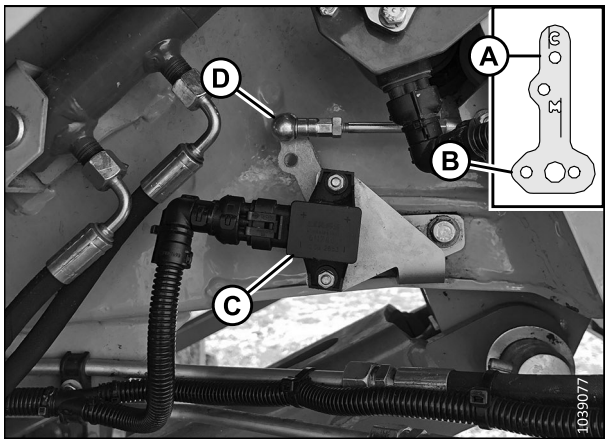


Figure 4.39: Sensor Arm Linkage

16. In CEBIS, navigate to HEADER (A), TEACH IN OPERATIONS (B), and then HEADER PITCH (C).

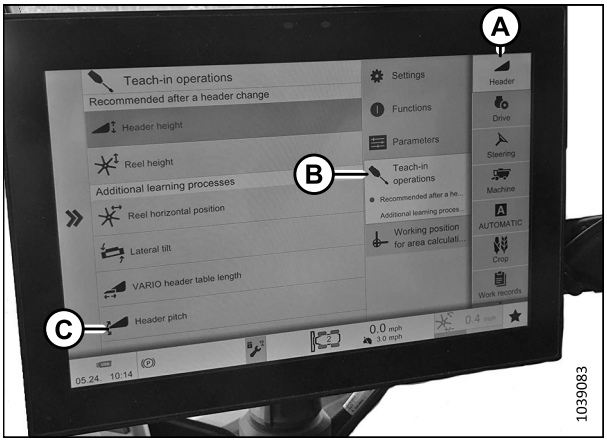


Figure 4.40: CEBIS Settings

17. Press arrow (A) to start the procedure. Follow the on-screen prompts.
18. Lower or raise the feeder house fully.
19. Shut down the engine, and remove the key from the ignition.
20. If the feeder house is raised, engage the header safety props.

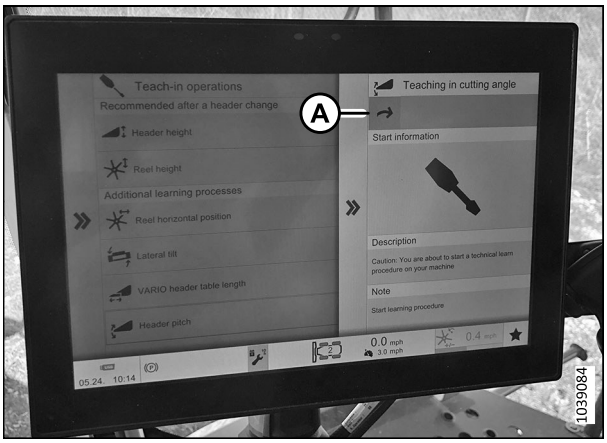


Figure 4.41: CEBIS Settings

21. Change the sensor linkage arm position from upper hole (A) labeled “C” to lower hole (B) labeled “M”.
22. If the header safety props are engaged, disengage them now. For instructions, refer to the combine operator’s manual.
23. Start the engine.
24. Connect the combine to the header. For instructions, refer to *4.3 Attaching Header to CLAAS Combine, page 59*.

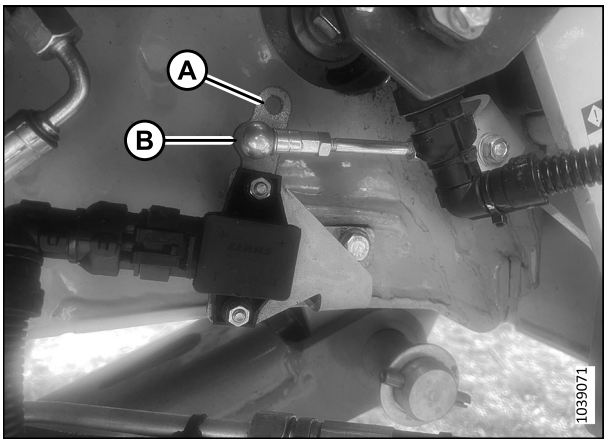


Figure 4.42: Sensor Arm Linkage

25. Slowly tilt the combine faceplate back to ensure that there is **NO** interference between the header and step (A) on the combine feeder house.
26. Tilt the faceplate forward until “0” is shown on the display.

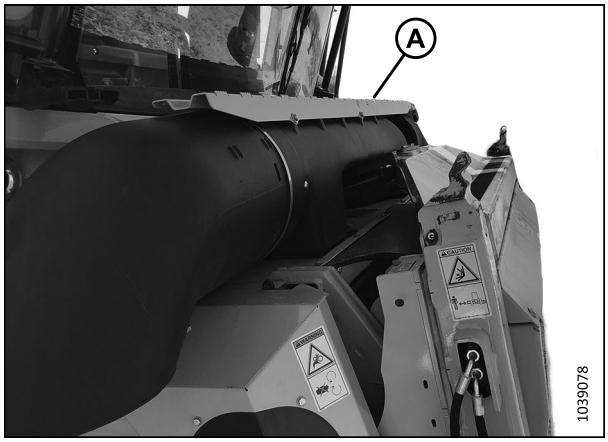


Figure 4.43: Step Contact

4.4 Attaching Header to IDEAL™ Series Combine

The header will need to be physically connected to the combine’s feeder house, and the electrical and hydraulic connections completed.

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:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

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

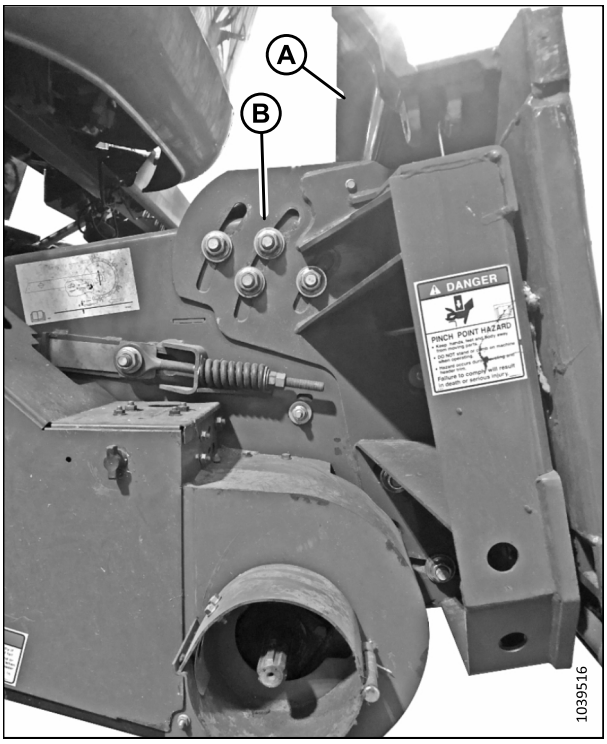


Figure 4.44: Faceplate Tilted to Mid-Position on Combine

1. Pull lever (A) up to retract pins (B) at the bottom left and right sides of the feeder house.

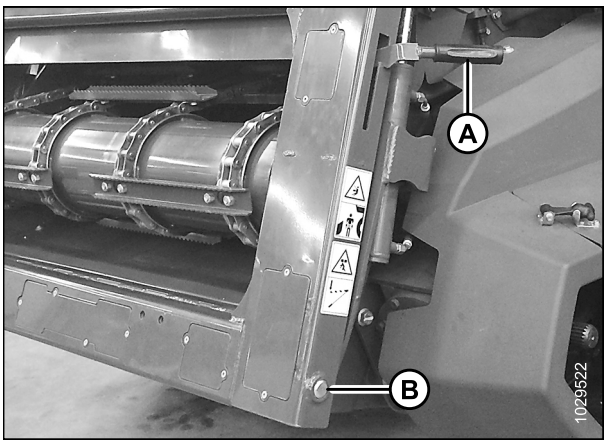


Figure 4.45: Feeder House

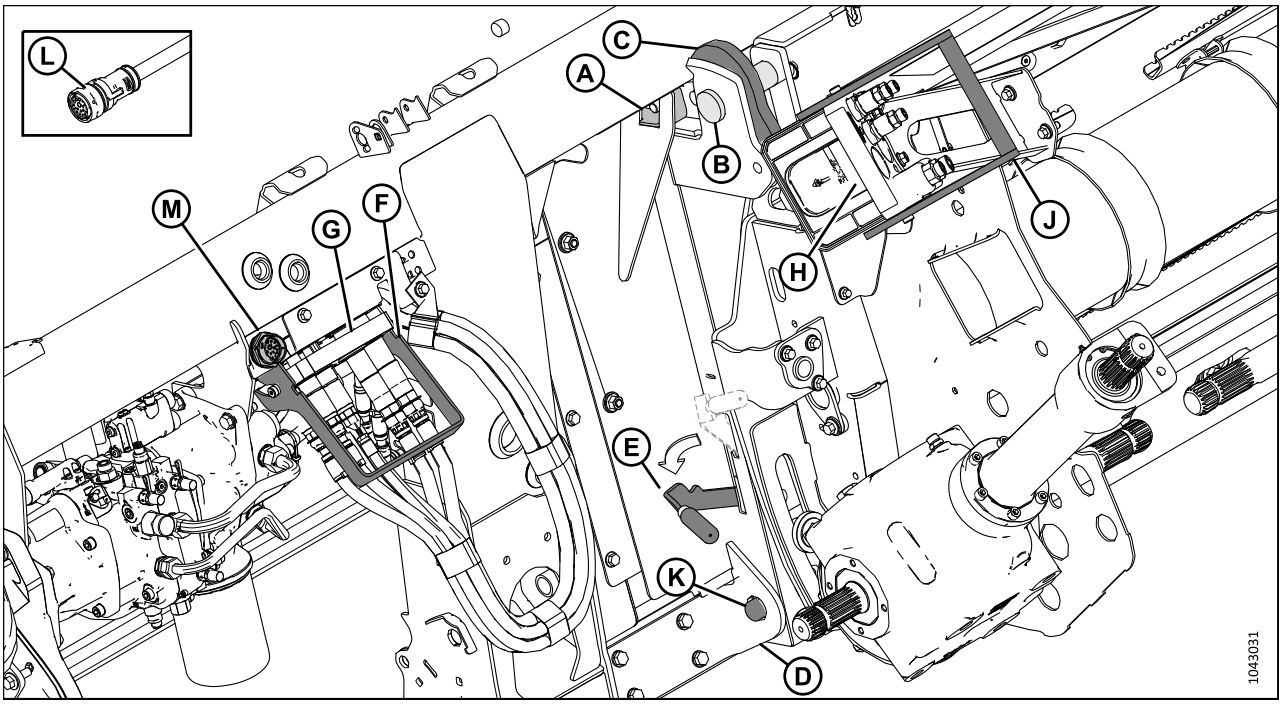


Figure 4.46: Float Module with Integrated Hydraulic System (IHS)

A - Top Beam
B - Pins
C - Hooks
D - Mount
E - Lever
F - Handle
G - Multicoupler
H - Receptacle
J - Handle
K - Locking Pins

2. Drive the combine slowly up to the header until the feeder house is directly under top beam (A), and pins (B) are under hooks (C) on the transition frame.

3. Raise the feeder house until transition frame top beam (A) is fully resting on the feeder house. Raise the header slightly off the ground.

   IMPORTANT:

   The full weight of the header must be on the feeder house, **NOT** on pins (B).

4. Position the bottom of the feeder house so that locking pins (K) align with the holes in mount (D).

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

6. Push lever (E) down to extend locking pins (K) into mount (D).

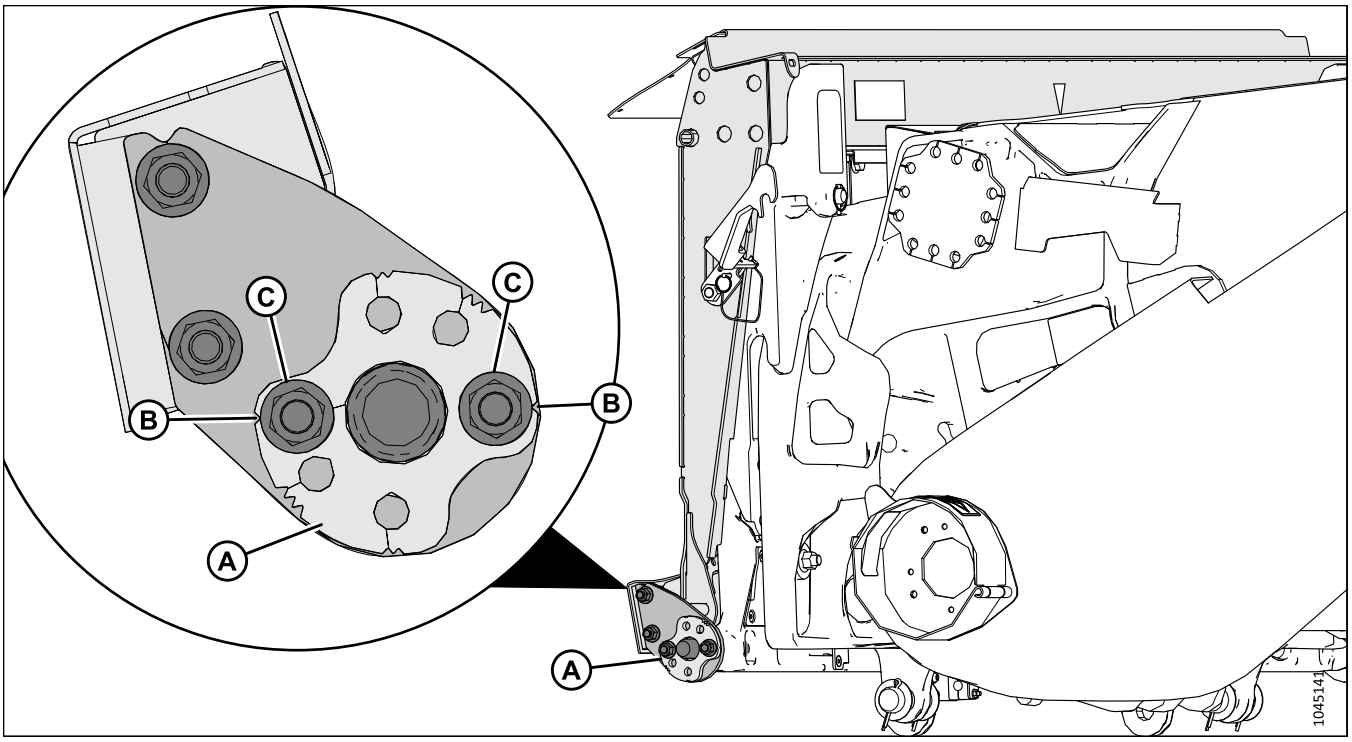


Figure 4.47: Locking Pins Alignment

7. To ensure the header is attached to the feeder house securely, and to prevent the locking pins from binding, ensure that the locking pins are engaged and centered in float module adjuster plates (A) on both sides of the feeder house.

   NOTE:

   When single notches (B) on adjuster plate are aligned with nuts (C), the adjuster plate is in the neutral position.

8. If an adjustment is needed, note the position of locking pins compared to the center hole of the adjuster plates, remove nuts (C) and reposition adjuster plates (A) as needed. Refer to Figure *4.48, page 72*.

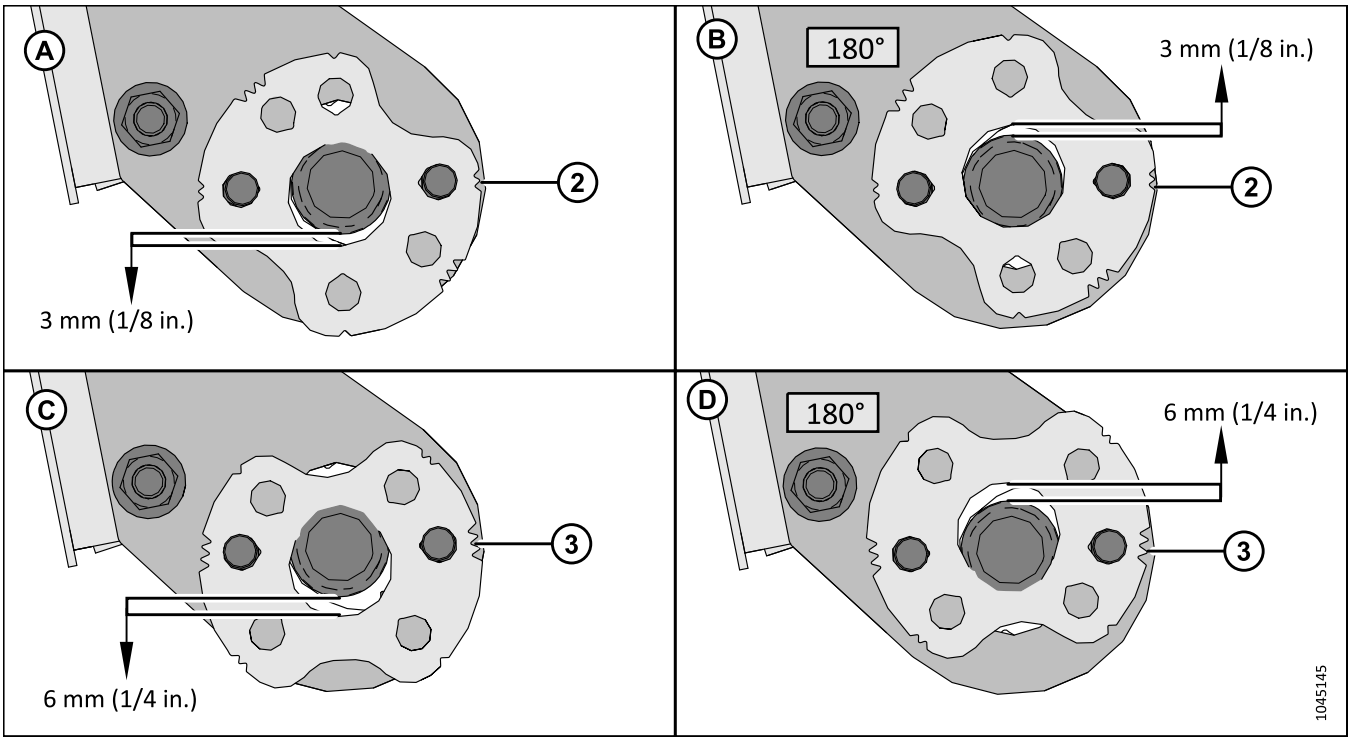


Figure 4.48: Adjuster Plate Positions

- Image (A) shows the adjuster plate rotated so that the double notches align with the bolts. This position lowers the adjuster plate 3 mm (1/8 in.).
- Image (B) shows the adjuster plate rotated 180° so that the double notches align with the bolts. This position raises the adjuster plate 3 mm (1/8 in.).
- Image (C) shows the adjuster plate rotated so that the triple notches align with the bolts. This position lowers the adjuster plate 6 mm (1/4 in.).
- Image (D) shows the adjuster plate rotated 180° so that the triple notches align with the bolts. This position raises the adjuster plate 6 mm (1/4 in.).

9. When the combine locking pins can engage adjuster plates (A) on both sides of the feeder house without binding, reinstall nuts (B) to secure the adjuster plates to anchor mounts (C).

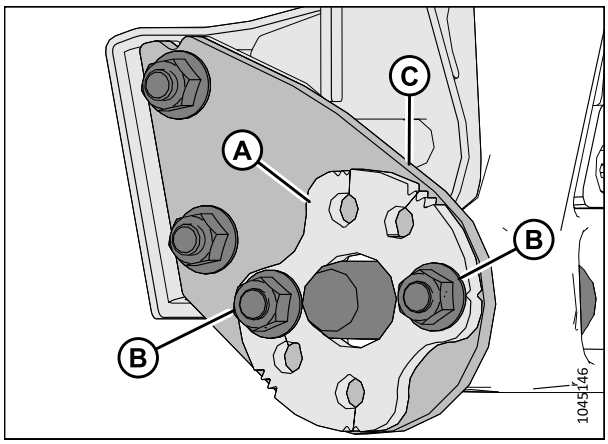


Figure 4.49: Feeder House Locking Pins

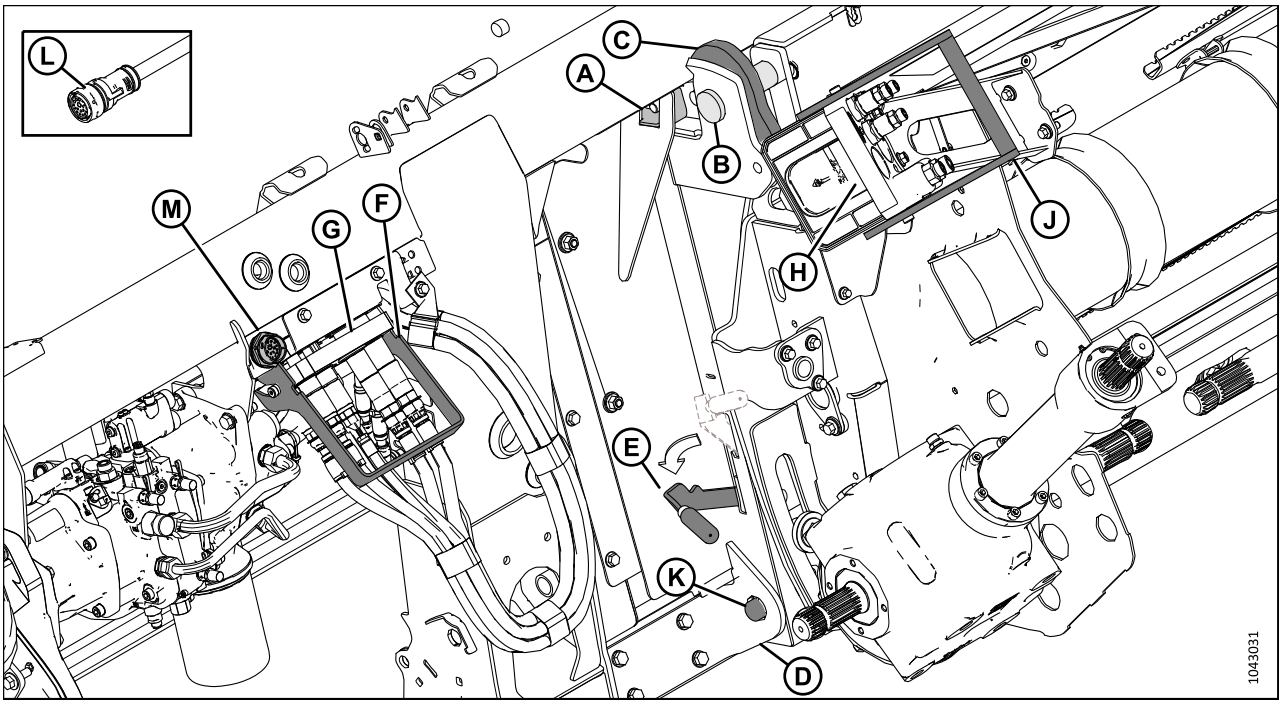


Figure 4.50: Float Module with Integrated Hydraulic System (IHS)

A - Top Beam
B - Pins
C - Hooks
D - Mount
E - Lever
F - Handle
G - Multicoupler
H - Receptacle
J - Handle
K - Locking Pins

10. Lower handle (F) to release multicoupler (G) from the header.
11. Open the cover on combine receptacle (H).
12. Push handle (J) to the fully open position.
13. Clean the mating surfaces of the coupler and receptacle.
14. Position coupler (G) onto combine receptacle (H), and pull handle (J) to fully insert the multicoupler into the receptacle.
15. Remove cab control kit connector C81A (L) from the storage location on the combine and connect it to C81B (M) on the float module. Turn the collar on the connector to lock it in place.

16. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

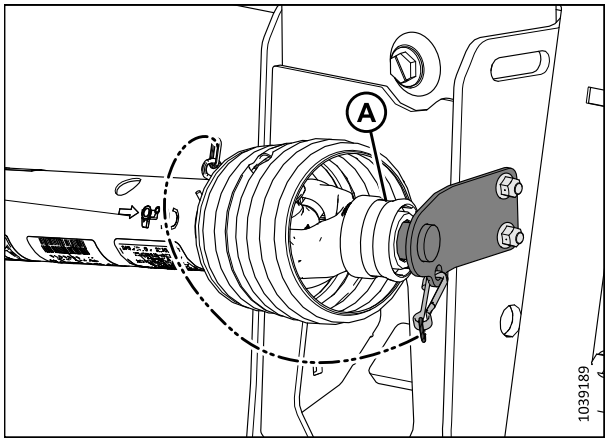


Figure 4.51: Driveline in Storage Position

17. Pull back collar (A) on the end of driveline and push it onto combine output shaft (B) until the collar locks.

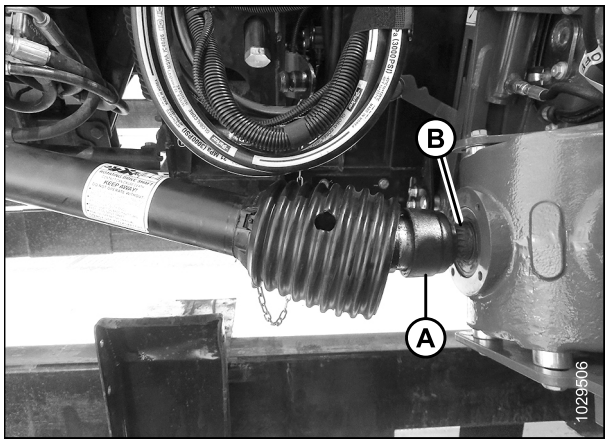


Figure 4.52: Connecting Driveline to Combine

18. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

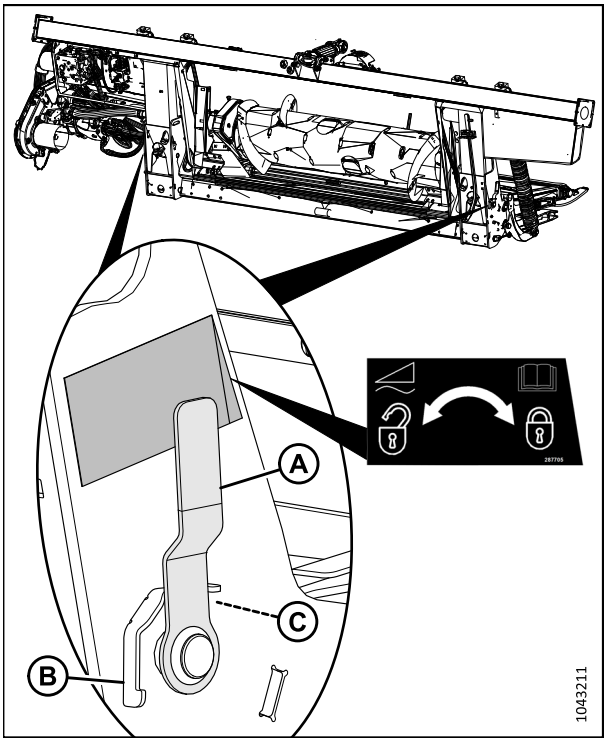


Figure 4.53: Float Lock Handle

4.5 Attaching Header to John Deere Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

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:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

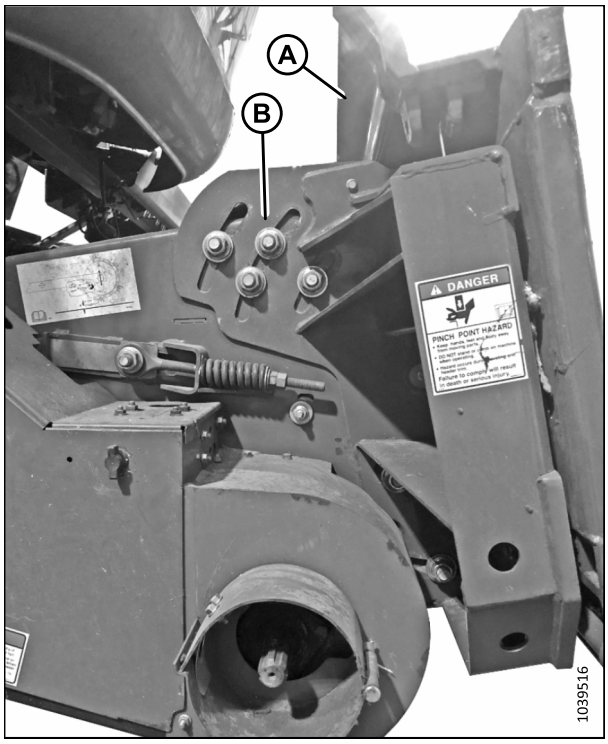


Figure 4.54: Faceplate Tilted to Mid-Position on Combine

1. Shut down the engine, and remove the key from the ignition.
2. Push handle (A) on the combine multicoupler receptacle toward the feeder house to retract pins (B) at the bottom corners of the feeder house. Clean the receptacle.
3. Slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
4. Raise the feeder house slightly to lift the header, ensuring that the feeder house saddle is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.

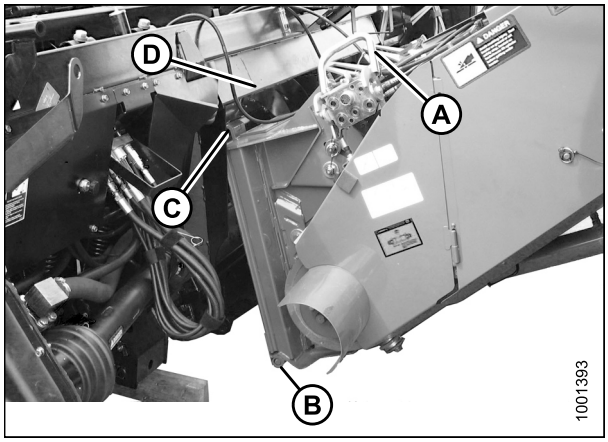


Figure 4.55: Combine and Float Module

6. Pull handle (A) on the float module to release multicoupler (B) from the storage position.
7. Remove the multicoupler, and push the handle back into the float module.

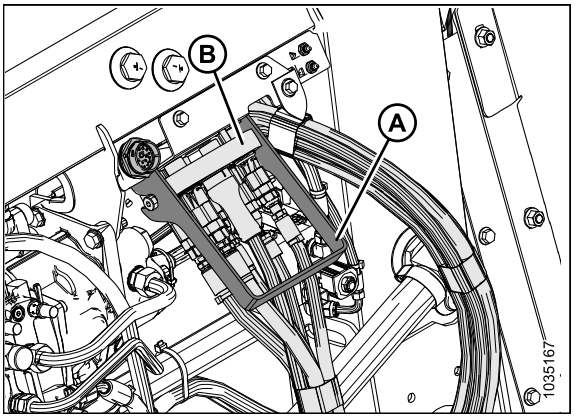


Figure 4.56: Multicoupler Storage

8. Position multicoupler (A) onto the receptacle.
9. Pull locking pin (B) and lower handle (C) until locking pin (B) is fully engaged.

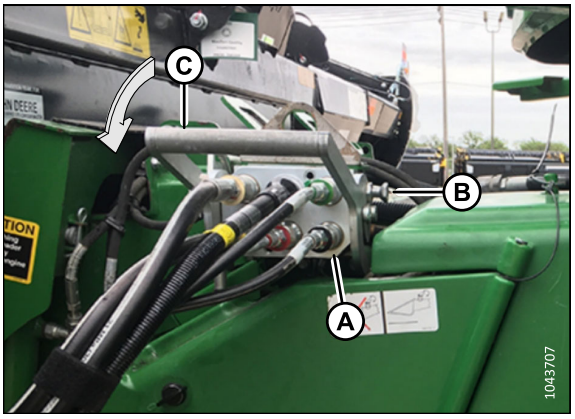


Figure 4.57: Multicoupler

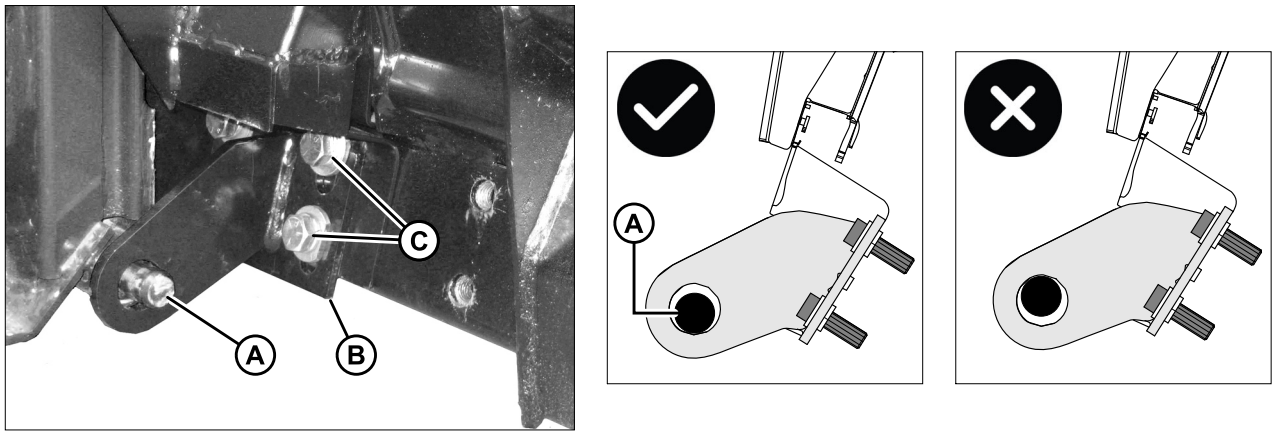


Figure 4.58: Feeder House Locking Pin used on John Deere 70, S, T, or S7 Series

10. **70, S, T, or S7 Series:** Ensure that both feeder house locking pins (A) are fully engaged into the float module anchor brackets (B), and sit toward the bottom of the circular cutouts of the brackets, with some clearance as shown.

    IMPORTANT:

    The header might fall off the feeder house if pins (A) do not fully engage the anchor brackets. If pins (A) do not fully engage the brackets, first ensure that the multicoupler locking pin is fully engaged. If the problem persists, refer to the original equipment manufacturer (OEM) manual for instructions on how to adjust the feeder house locking pins outward.

    IMPORTANT:

    The pin should sit at the bottom of the circular cutout so that there is little to no ability for the frame to lift off the feeder house.

11. To adjust an anchor bracket, loosen bolts (C), reposition the bracket as required, and retighten bolts (C) to 75 Nm (55 lbf·ft).

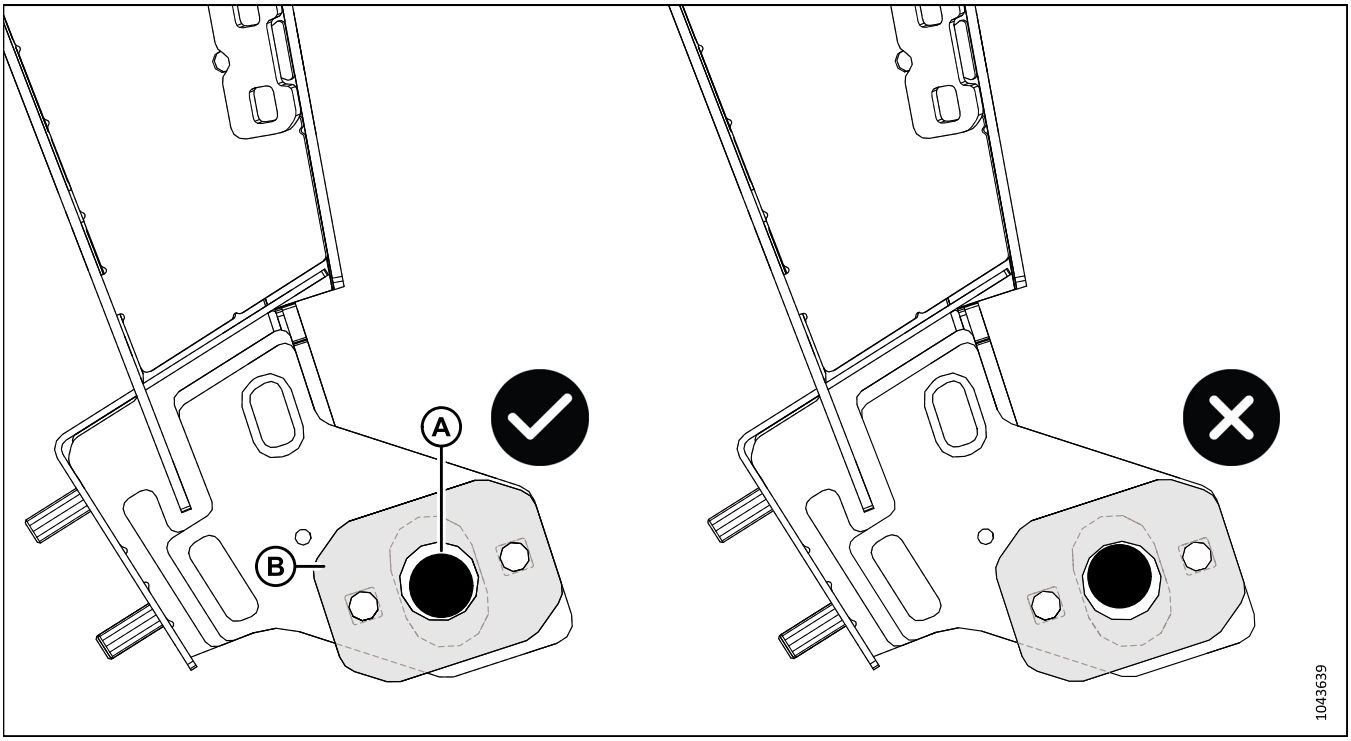


Figure 4.59: John Deere X9 Feeder House Locking Pin Alignment – Single-Position Adjustment Plate

12. **X9 Series:** Ensure that both feeder house locking pins (A) are fully engaged into the float module anchor brackets, and sit toward the bottom of the circular cutout in adjustment plates (B) with some clearance as shown.

    IMPORTANT:

    The header might fall off the feeder house if pins (A) do not fully engage the anchor brackets. If pins (A) do not fully engage the brackets, first ensure that the multicoupler locking pin is fully engaged. If the problem persists, refer to the original equipment manufacturer (OEM) manual for instructions on how to adjust the feeder house locking pins outward.

    IMPORTANT:

    The pin should sit at the bottom of the circular cutout so that there is little to no ability for the frame to lift off the feeder house. Single-position adjustment plates (with only one set of mounting holes) are shown in Figure *4.59, page 78*. If the ideal locking pin alignment cannot be achieved using the single-position plates, then position two-position adjustment plates (with two sets of mounting holes), according to Figure *4.60, page 79* or Figure *4.61, page 79*. All adjustment plates and their mounting nuts **MUST** be on the outboard side of the transition frame anchor plates.

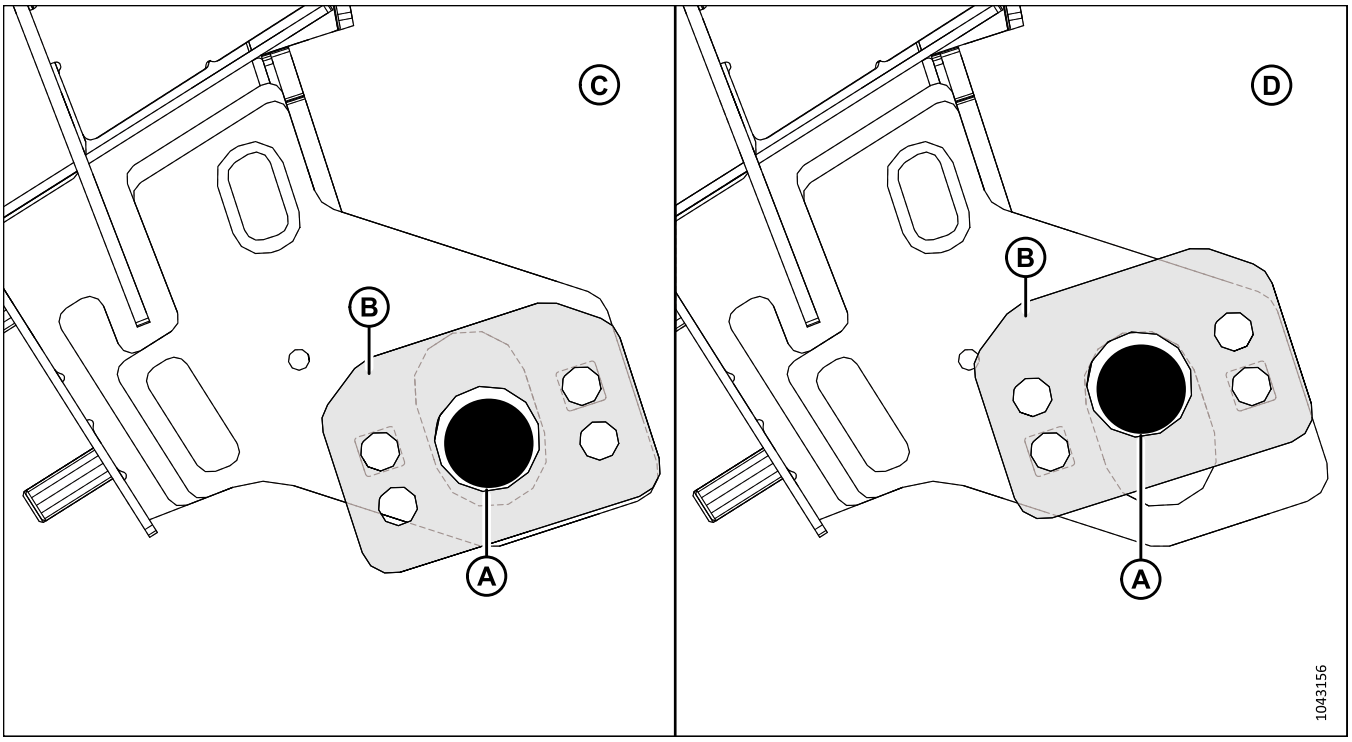


Figure 4.60: X9 Series Two-Position Adjustment Plate, Beveled Edge Pointing Up

A - Combine Locking Pin

B - Two-Position Locking Plate

C - Position 1

D - Position 2

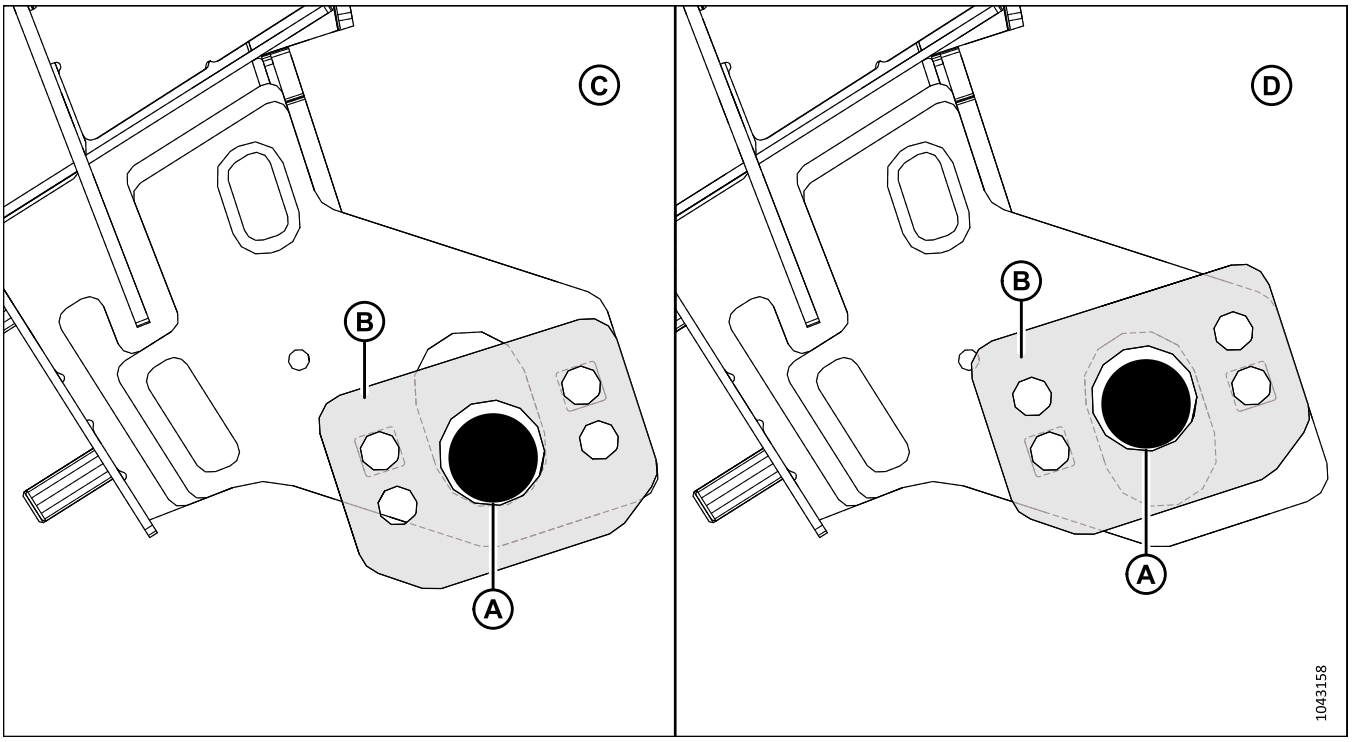


Figure 4.61: X9 Series Two-Position Adjustment Plate, Beveled Edge Pointing Down

A - Combine Locking Pin

B - Two-Position Locking Plate

C - Position 1

D - Position 2

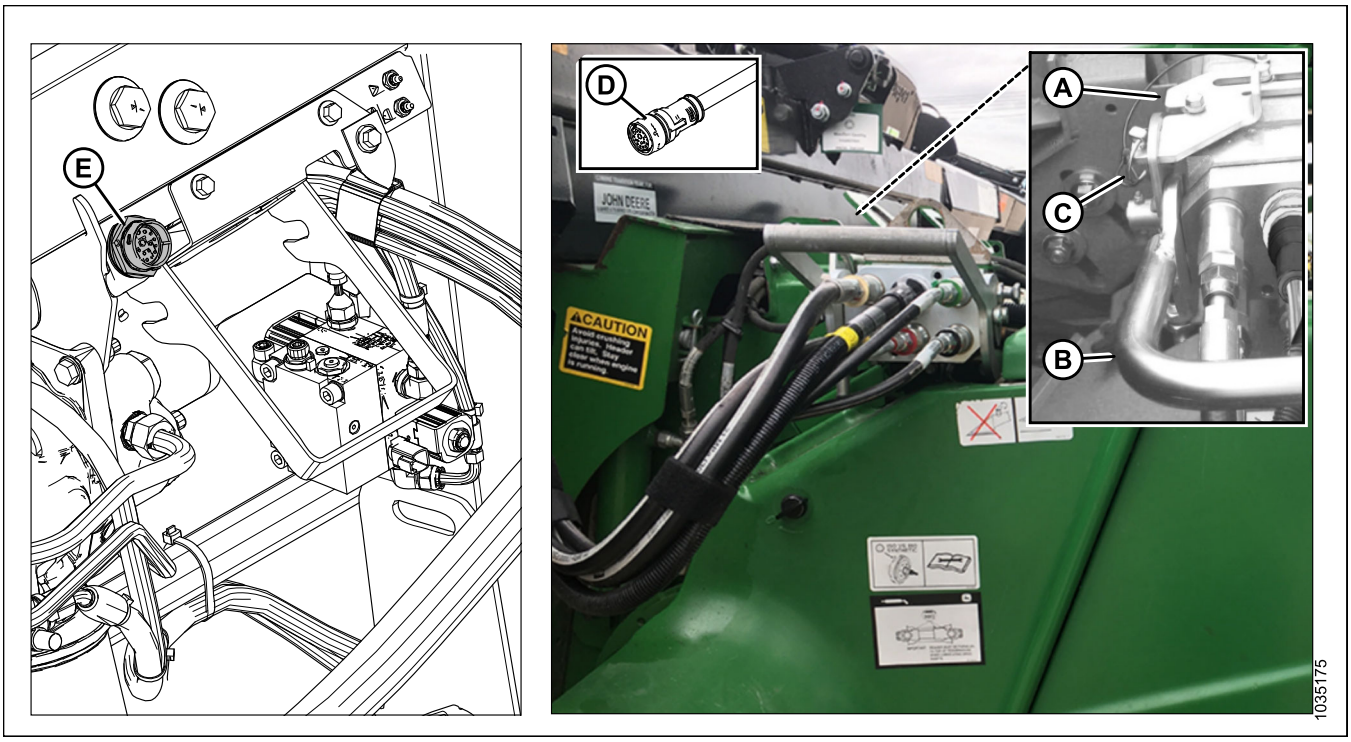


Figure 4.62: Multicoupler Lock, Electrical Connections

13. Slide latch (A) to lock handle (B) in position and secure it with lynch pin (C).

14. **70, S, or T Series:** Remove cab control kit connector C81A (D) from its storage location on the combine and connect it to receptacle C81B (E) on the float module. Turn the collar on the connector to lock it in place.

15. Pull driveline collar (A) back to release the driveline from support bracket (B). Remove the driveline from the support bracket.

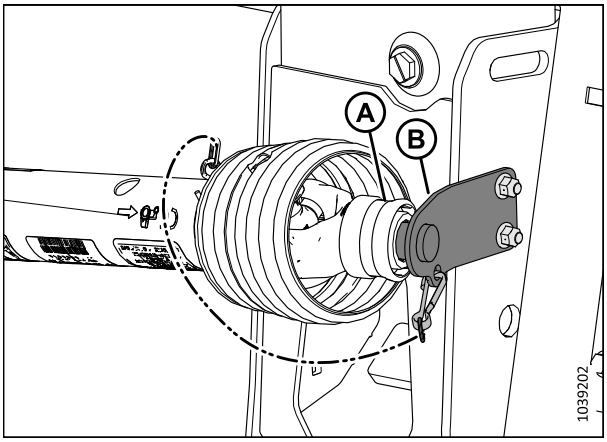


Figure 4.63: Driveline in Storage Position – Driveline B7038 or B7039

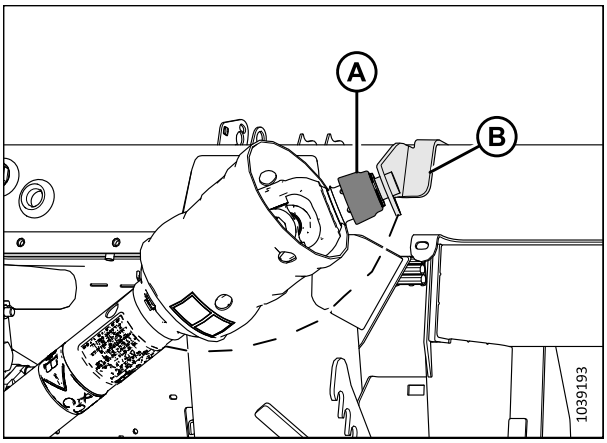


Figure 4.64: Driveline in Storage Position – Sidehill/ Hillside Driveline B7326 or B7182

16. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar locks.

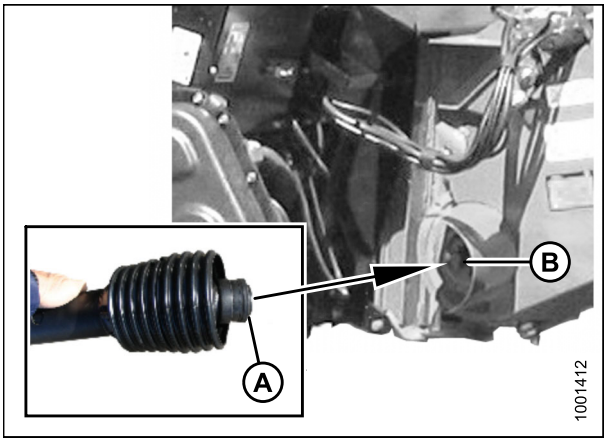


Figure 4.65: Driveline

17. Disengage the float locks by pulling each float lock handle (A) away from the float module, and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

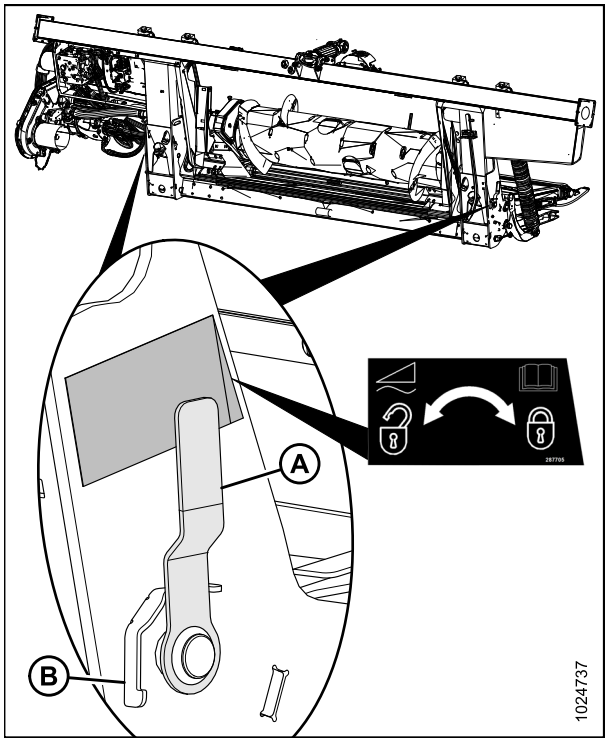


Figure 4.66: Float Lock Handle

4.6 Attaching Header to New Holland CR, CX, or CH Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

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.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

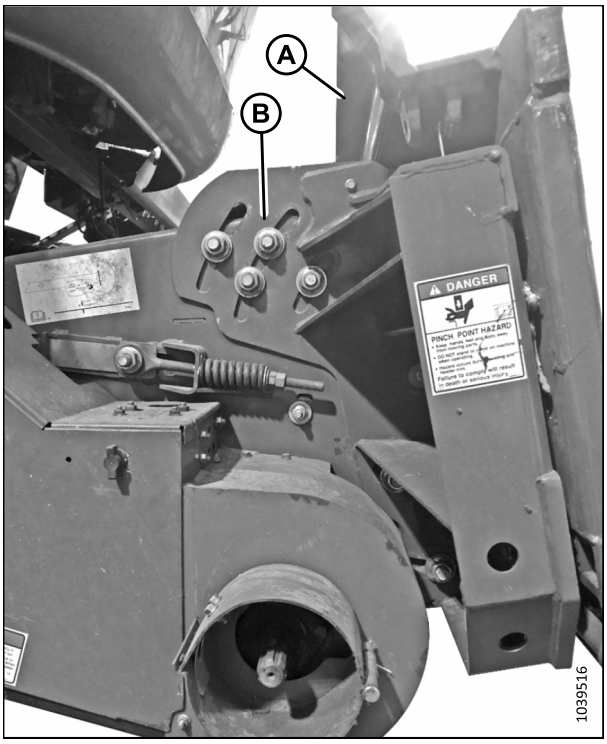


Figure 4.67: Faceplate Tilted to Mid-Position on Combine

1. Shut down the engine, and remove the key from the ignition.
2. Ensure that handle (A) is positioned so that locks (B) can engage the float module.

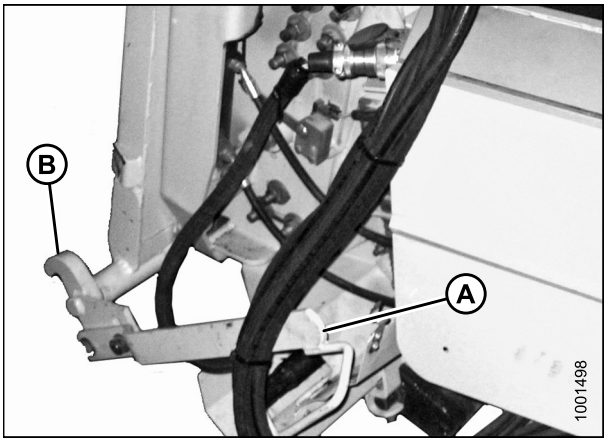


Figure 4.68: Feeder House Locks

3. Slowly drive the combine up to the float module until feeder house saddle (A) is directly under float module top cross member (B).

4. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is fully engaged in the float module frame.

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

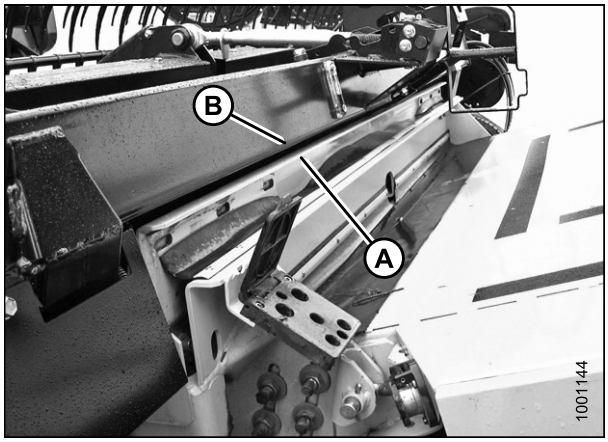


Figure 4.69: Header on Combine

6. On the left side of the feeder house, lift lever (A) on the float module, and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.

   NOTE:

   CR11 combines: Locking pins are extended/retracted with lever (not shown) on the side of the feeder house. Refer to the combine operator's manual for more information.

7. Push down on lever (A) so the slot in the lever engages the handle and locks it in place.

8. If the lock does not fully engage pin (D) on the float module when lever (A) and handle (B) are engaged, loosen bolts (E) and adjust lock (C). Retighten the bolts.

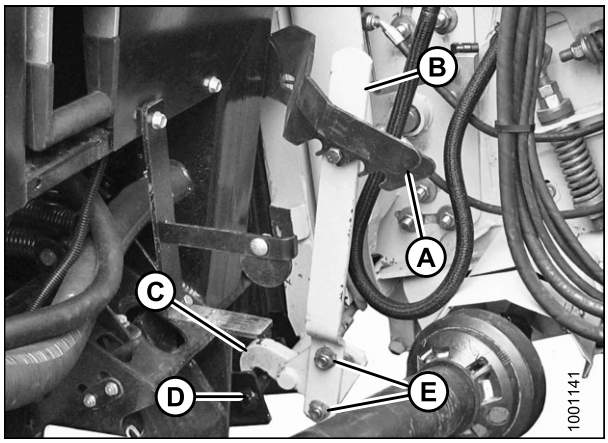


Figure 4.70: Feeder House Locks

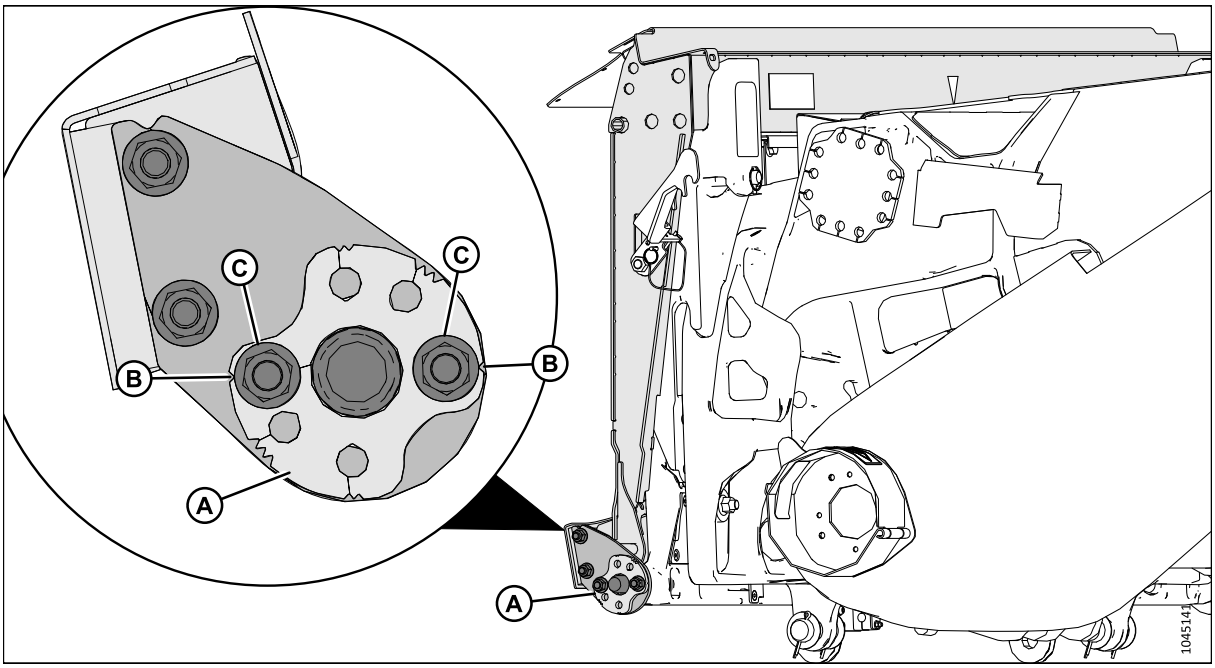


Figure 4.71: CR11 Locking Pin Alignment

9. **CR11 combines:** To ensure the header is attached to the feeder house securely, and to prevent the locking pins from binding, ensure that the locking pins are engaged and centered in float module adjuster plates (A) on both sides of the feeder house.

   NOTE:

   When single notches (B) on adjuster plate are aligned with nuts (C), the adjuster plate is in the neutral position.

10. **CR11 combines:** If an adjustment is needed, note the position of locking pins compared to the center hole of the adjuster plates, remove nuts (C) and reposition adjuster plates (A) as needed. Refer to Figure *4.72, page 85*.

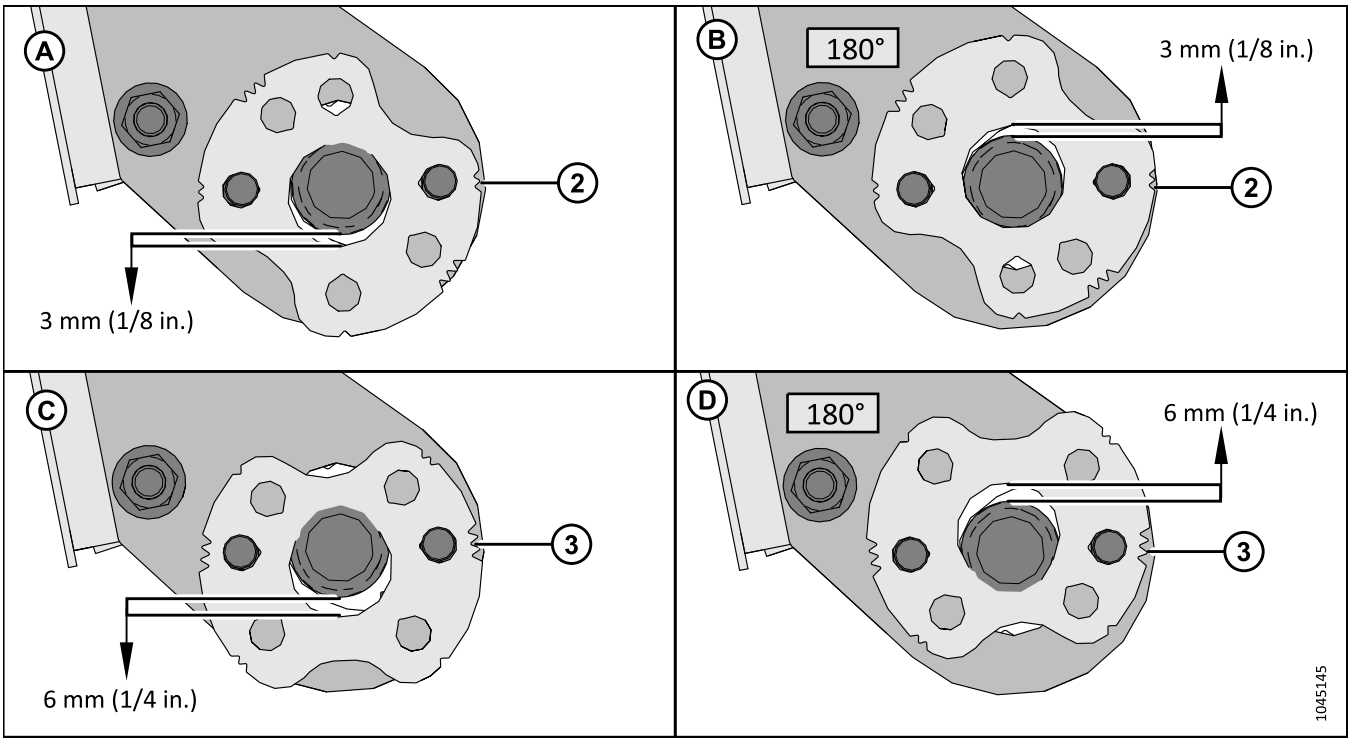


Figure 4.72: CR11 Adjuster Plate Positions

- Image (A) shows the adjuster plate rotated so that the double notches align with the bolts. This position lowers the adjuster plate 3 mm (1/8 in.).
- Image (B) shows the adjuster plate rotated 180° so that the double notches align with the bolts. This position raises the adjuster plate 3 mm (1/8 in.).
- Image (C) shows the adjuster plate rotated so that the triple notches align with the bolts. This position lowers the adjuster plate 6 mm (1/4 in.).
- Image (D) shows the adjuster plate rotated 180° so that the triple notches align with the bolts. This position raises the adjuster plate 6 mm (1/4 in.).

11. **CR11 combines:** When the combine locking pins can engage adjuster plates (A) on both sides of the feeder house without binding, reinstall nuts (B) to secure the adjuster plates to anchor mounts (C).

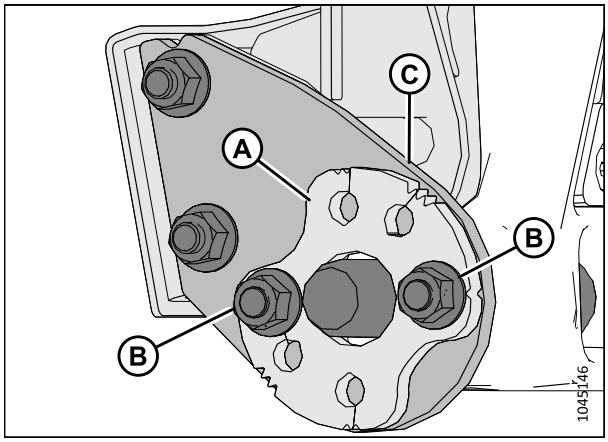


Figure 4.73: CR11 Feeder House Locking Pins

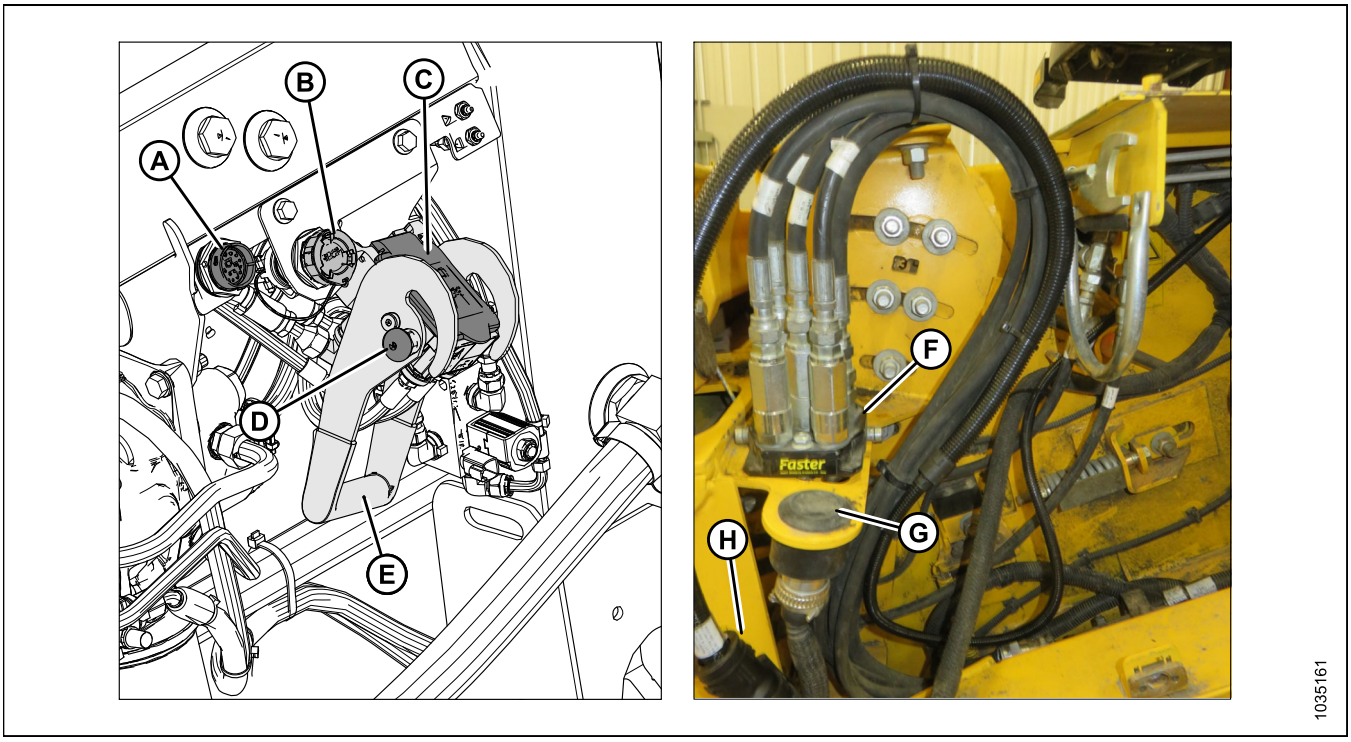


Figure 4.74: Multicoupler and Electrical Connections

12. **If MacDon in-cab controls are installed:** Remove the cap from connector C81B (A).
13. Remove the cap from connector C72B (B).
14. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
15. Push in lock button (D) and pull handle (E) to the fully open position.
16. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
17. Position coupler (F) onto float module receptacle (C).
18. Push handle (E) to the closed position until lock button (D) snaps out.
19. Remove combine connector (G) from its storage location on the combine and connect it to receptacle C72B (B). Turn the collar on the connector to lock it in place.

20. **If MacDon in-cab controls are installed:** Remove cab control kit connector C81A (H) from its storage location on the combine and connect it to receptacle C81B (A). Turn the collar on the connector to lock it in place.

21. Pull driveline collar (A) back to release the driveline from the support bracket (B). Remove the driveline from the support bracket.

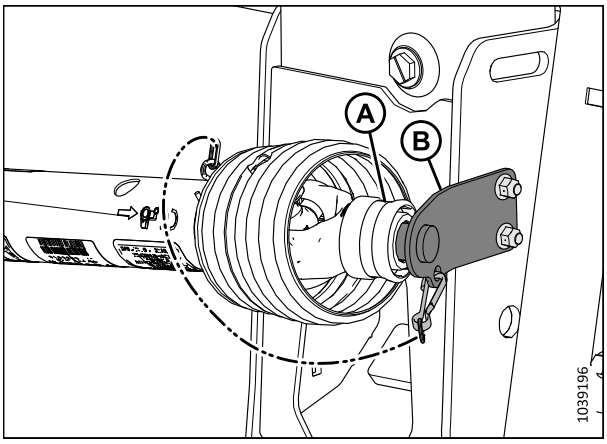


Figure 4.75: Driveline in Storage Position – Driveline B7038 or B7039

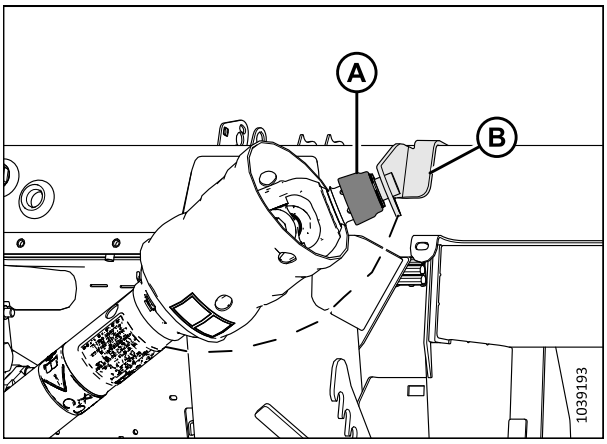


Figure 4.76: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

22. Pull back the collar on the end of the driveline, and push the driveline onto combine output shaft (A) until the collar locks.

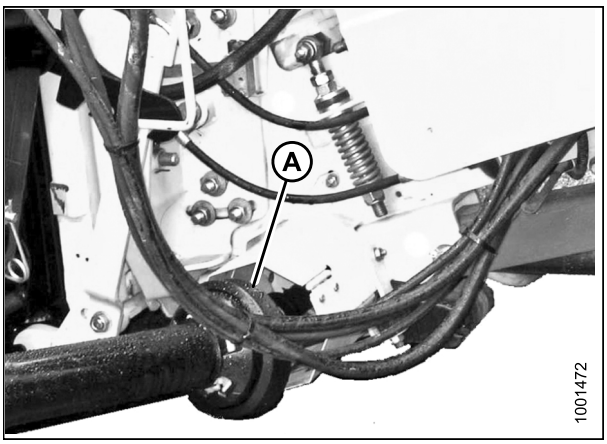


Figure 4.77: Driveline and Output Shaft

23. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

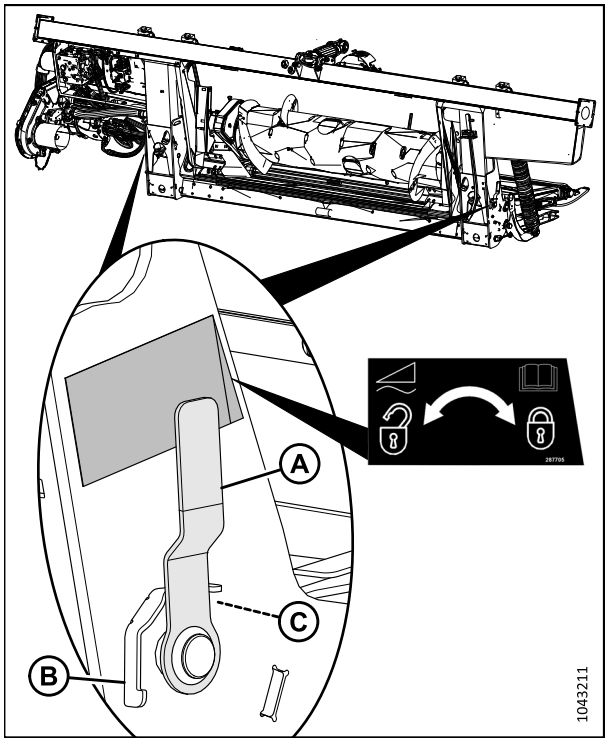


Figure 4.78: Float Lock Handle

4.7 Attaching Header to Rostselmash Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

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.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Feeder house faceplate (A) is recommended to be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

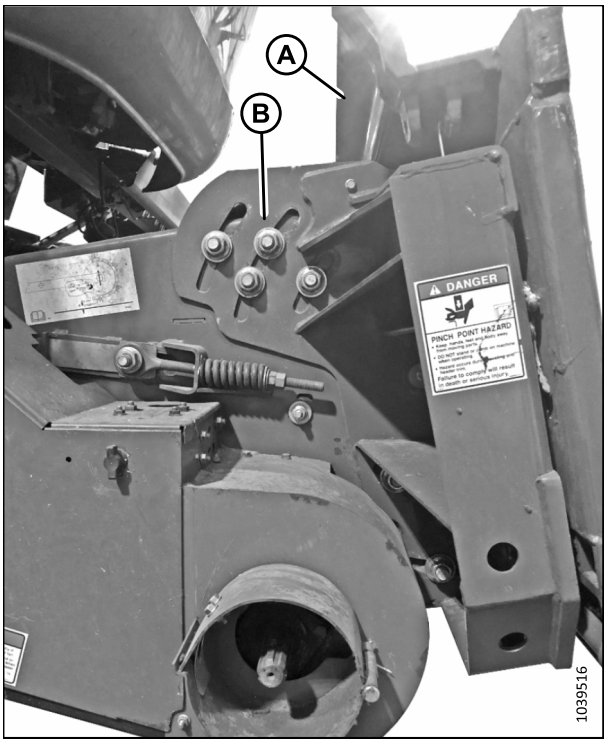


Figure 4.79: Faceplate Tilted to Mid-Position on Combine

1. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
2. Raise the feeder house slightly to lift the header, ensuring the feeder house saddle is properly engaged in the float module frame.
3. Shut down the engine, and remove the key from the ignition.

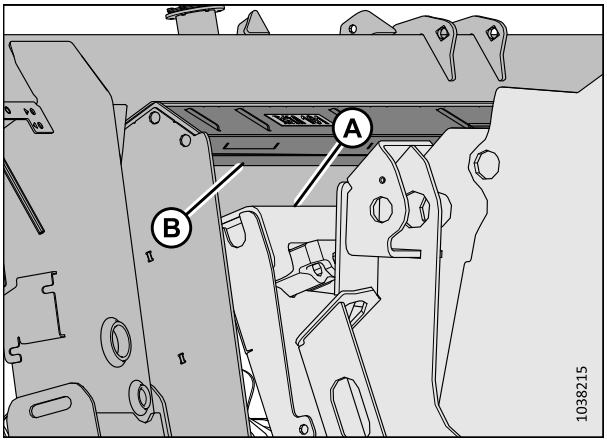


Figure 4.80: Combine and Float Module

4. Pull pin (A) outward and rotate handle (B) until both feeder house pins (C) are fully engaged into float module brackets (D).

   NOTE:

   If pins (C) do not fully engage the float module brackets, loosen bolts (E) and adjust brackets (D) as required.

5. Tighten nuts (E).

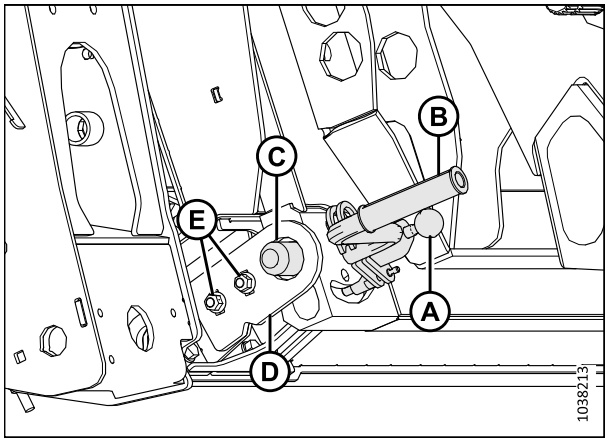


Figure 4.81: Feeder House Pin

6. Push in lock button (A) and pull handle (B) to the fully open position.

7. Remove the hydraulic quick coupler from the storage plate on the combine. Clean the mating surface of the coupler.

8. Position the combine coupler onto the float module receptacle. Push down on the handle to engage the pins into the receptacle.

9. Push the handle down to the closed position until lock button (B) snaps out.

10. Remove the combine connector from the storage location on the combine and connect it to receptacle (C). Turn the collar on the connector to lock it in place.

11. Remove the cab control kit connector C81A from the storage location on the combine and connect it to connector C81B (D). Turn the collar on the connector to lock it.

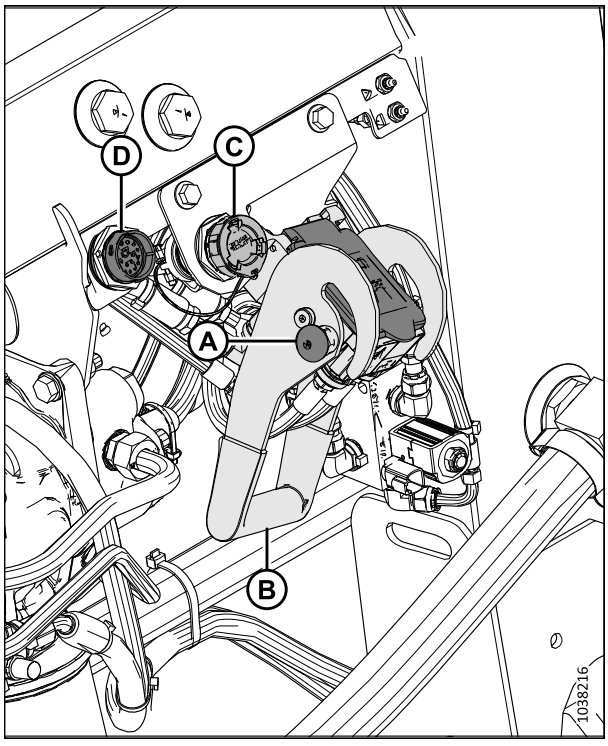


Figure 4.82: Multicoupler Storage

12. Detach safety chain (C) from support bracket (B).

13. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

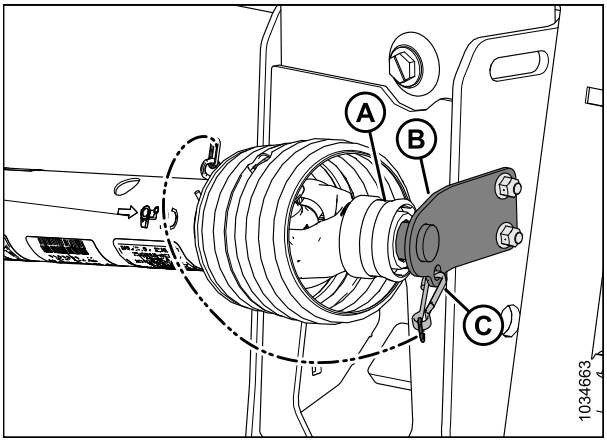


Figure 4.83: Driveline in Storage Position

14. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar locks.

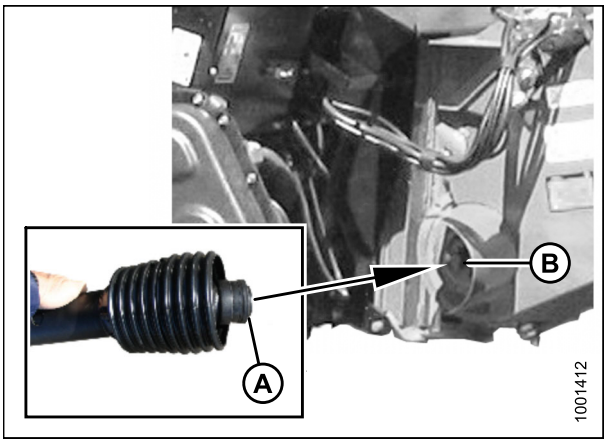


Figure 4.84: Driveline

15. Proceed as follows:

    - Disengage the float locks by pulling each float lock handle (A) away from the float module and into unlocked position (B).
    - If the header is **NOT** going to be used in the field, engage the float locks by pushing each float lock handle (A) toward the float module and into locked position (C).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

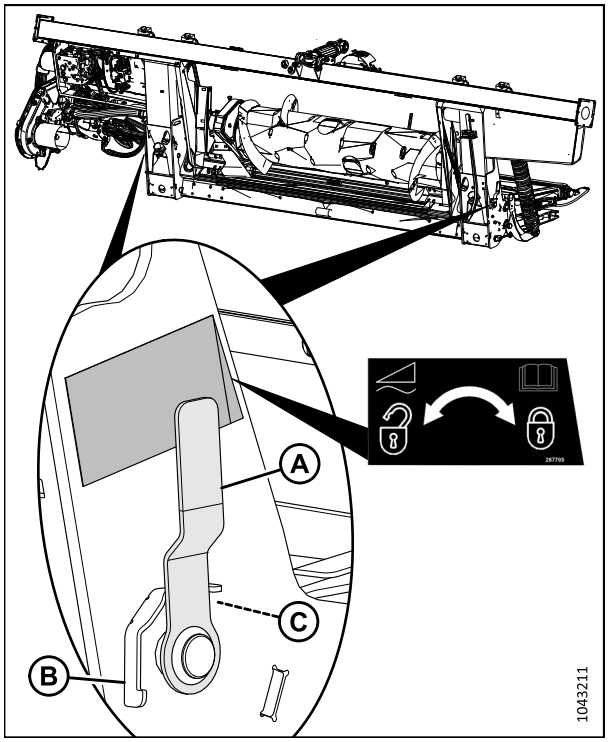


Figure 4.85: Float Lock Handle

Chapter 5: Completing Header Assembly

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

5.1 Installing Center-Link Cylinder (Parts Bag MD #347601)

The center-link cylinder hydraulically adjusts the tilt angle of the header. It will need to be installed on the header.

1. Retrieve the center-link part bag (MD #347601). For a list of parts, refer to Table *5.1, page 93*.

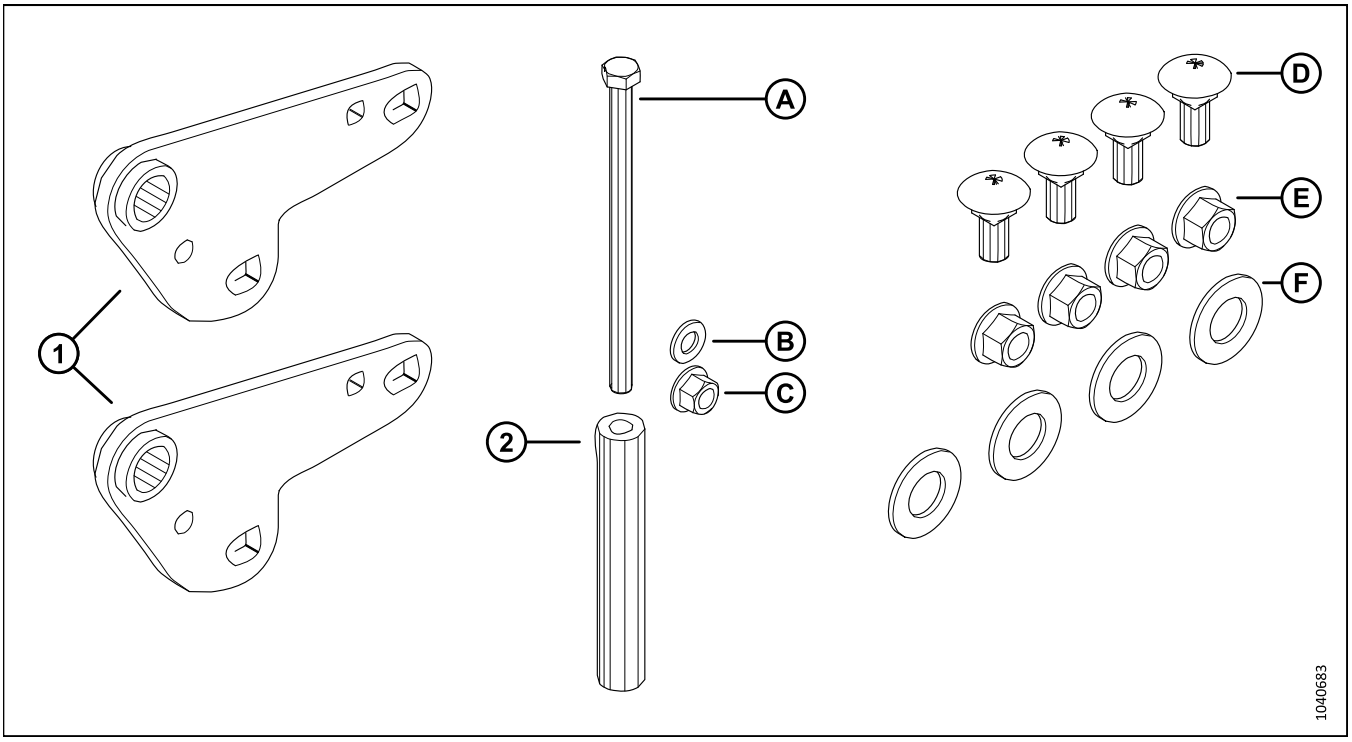


Figure 5.1: Center-Link Part Bag (MD #347601)

Table 5.1 Center-Link Part Bag (MD #347601)

Ref	Part Number	Description	Quantity
1	314645	WELDMENT – TOP LINK ANCHOR	2
2	301318	TUBE – SPACER	1
A	152395	BOLT – HEX HD M12X1.75X200-10.9-AA3L	1
B	184714	WASHER – FLAT REG M12-300HV	1
C	136431	NUT – HEX FLG CTR LOC M12X1.75-10	1
D	136755	BOLT – RHSN M16X2X40-8.8-AA1J	4
E	136440	NUT – HEX FLG CTR LK M16X2-10-AA1J	4
F	18603 – see NOTE [4]	WASHER – FLAT SAE 1 1/16 ID X 2.0 OD	4

4. Only two of the four washers (MD #18603) are required for this procedure. You can keep the remaining two washers as spares.

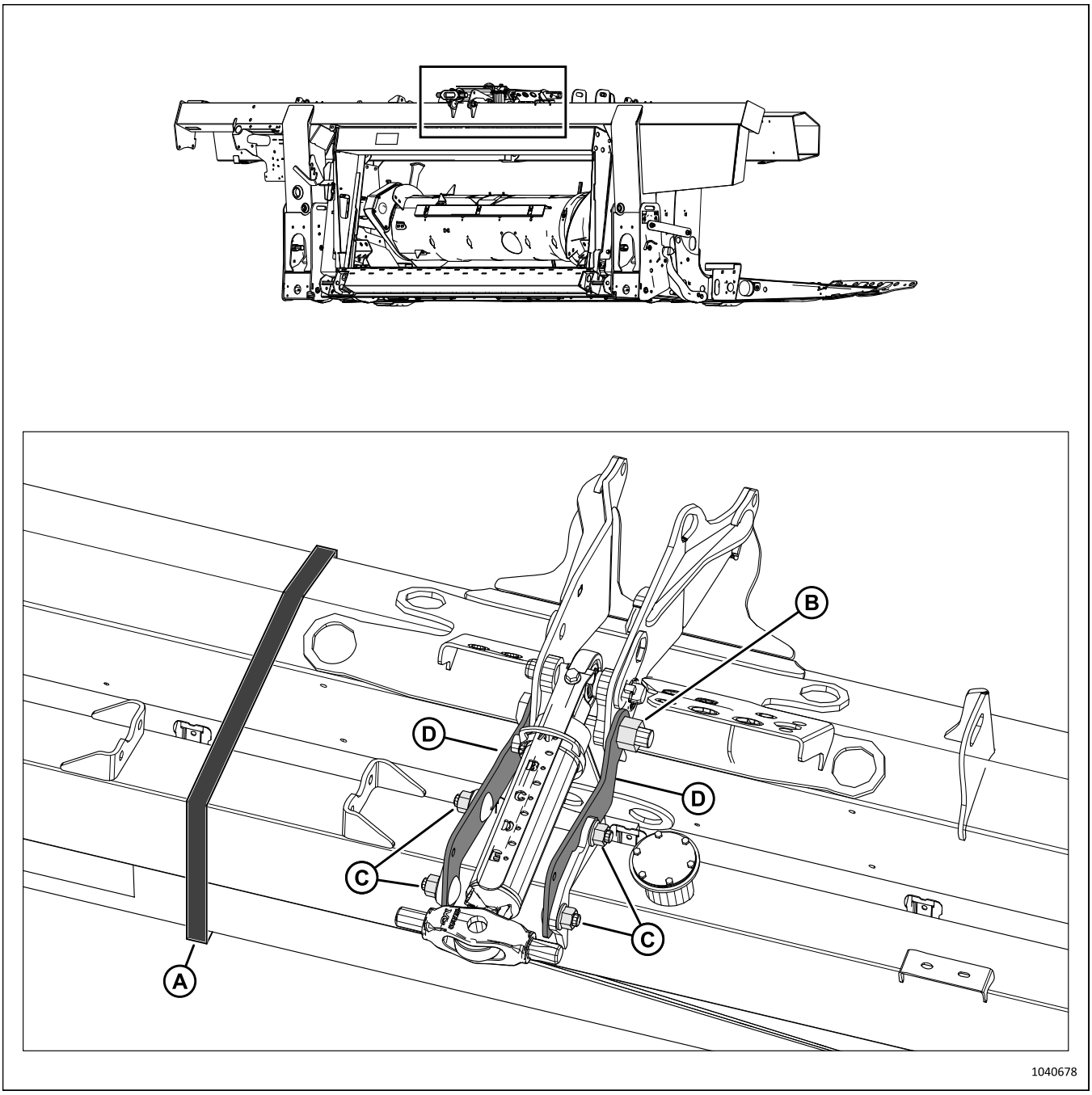


Figure 5.2: Center-Link Installation

2. Install ratchet strap (A) around the float module and the header backtube.
3. Remove nut (B) and bolt. Discard the hardware.
4. Remove four nuts (C) and bolts. Discard the hardware and both brackets (D).

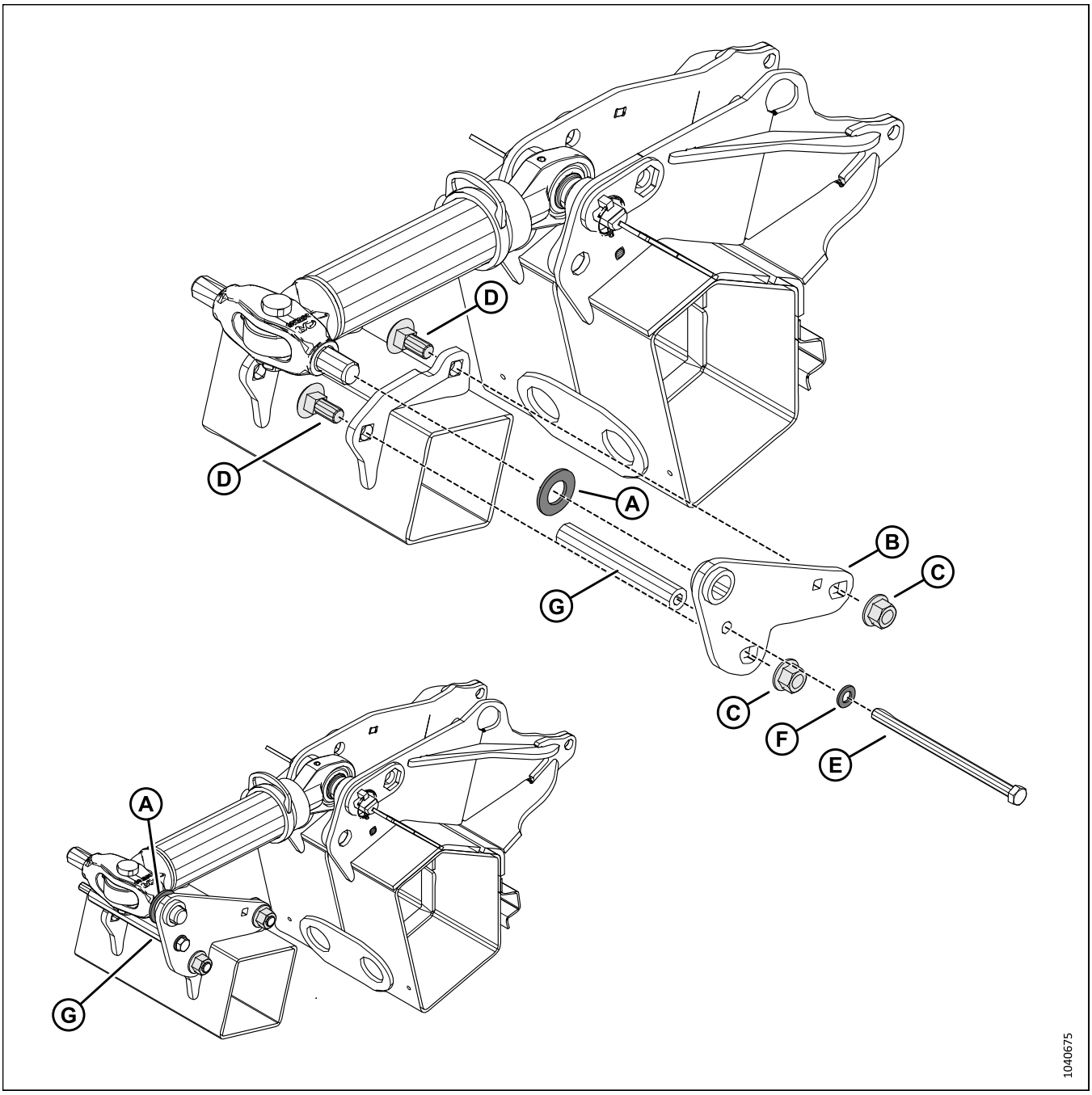


Figure 5.3: Center-Link Installation

5. Install washer (A) (MD #18603) onto the center-link.
6. Attach plate (B) to the float module using two M16 nuts (C) (MD #136440) and carriage head bolts (D) (MD #136755).
7. Insert M12 bolt (E) (MD #152395) through washer (F) (MD #184714), plate (B), and spacer (G).

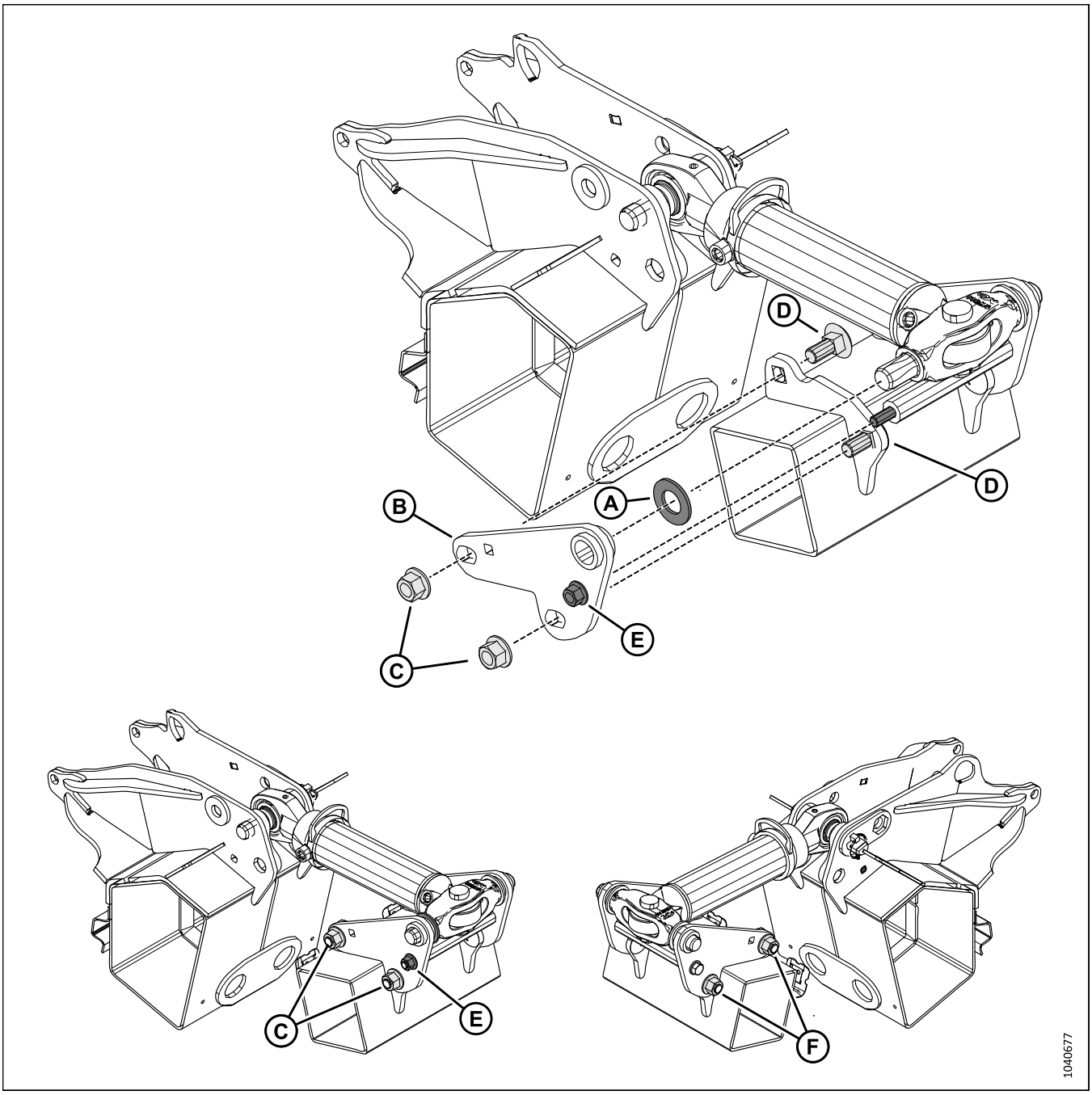


Figure 5.4: Center-Link Installation

8. Install washer (A) onto center-link.
9. Attach plate (B) to the float module using two M16 nuts (C) (MD #136440) and carriage head bolts (D) (MD #136755).
10. Insert M12 nut (E) (MD #136431) onto the spacer bolt.
11. Tighten M16 nuts (C) and (F) to 170 Nm (125 lbf·ft). Tighten M12 nut (E) to 69 Nm (51 lbf·ft).

5.2 Removing Shipping Supports

The shipping stands bolted to the header allow it to be handled safely. These stands are no longer needed after shipping, and must be removed from the header.

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.

DANGER

Clear the area of other persons, pets, etc. Keep children away from the machinery. Walk around the machine to be sure no one is under, on, or close to it.

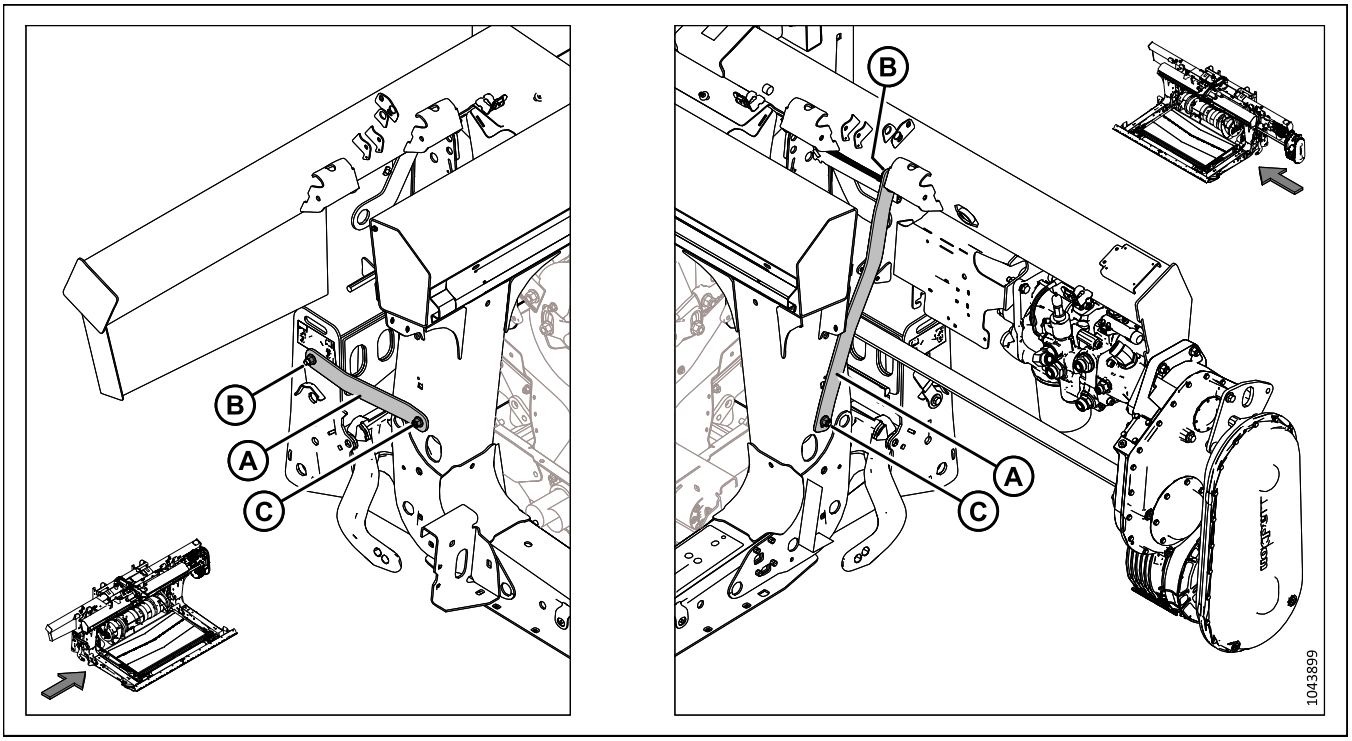


Figure 5.5: Straps on Center Frame

1. Remove straps (A) as follows:

   NOTE:

   If straps (A) are difficult to remove, lift one end of the header to release the load on the straps so that the bolts can be removed.

   a. Remove and discard rear bolts (B) from straps (A) on both sides of the float module.

   b. Start the engine and use the tilt cylinder to tilt the guard angle.

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

   d. Remove and discard front bolts (C) and straps (A) on both sides of the float module.

5.3 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.

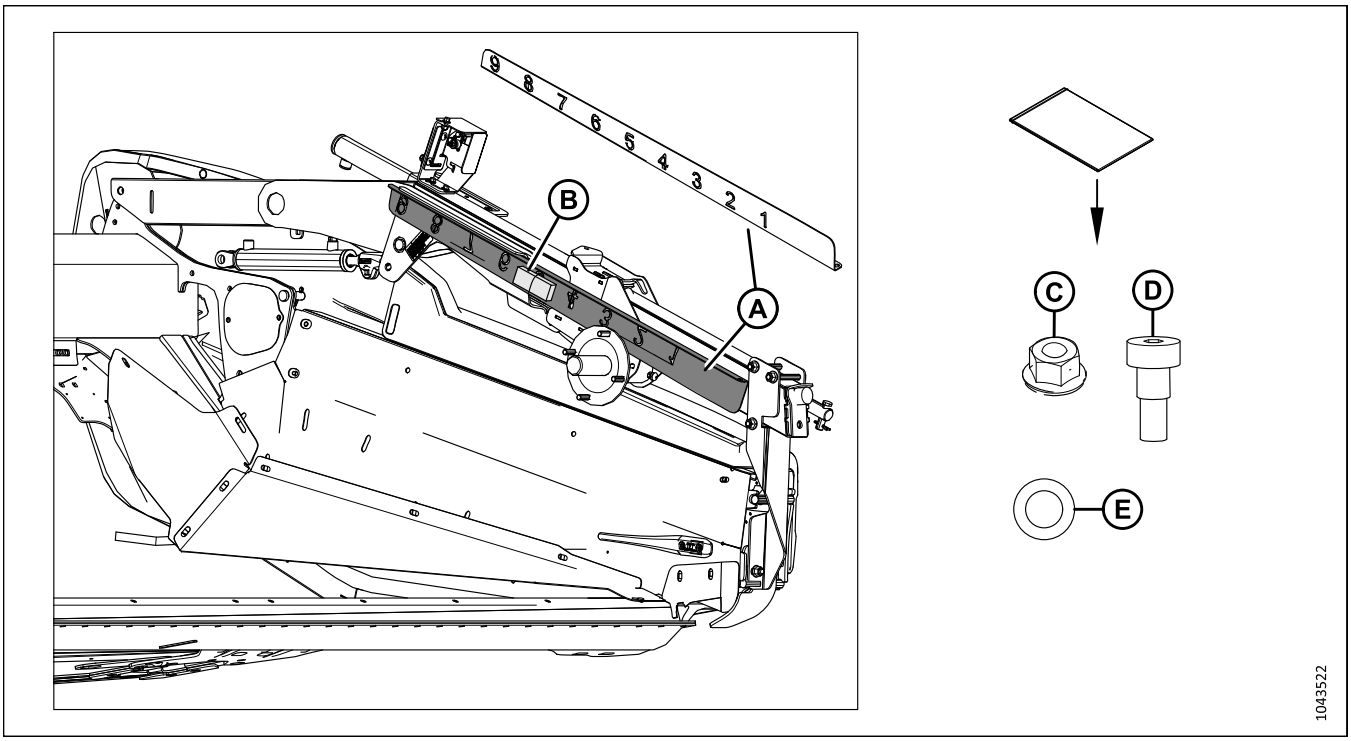


Figure 5.6: Fore-Aft Indicator Shipping Location, Parts Bag MD #368002

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

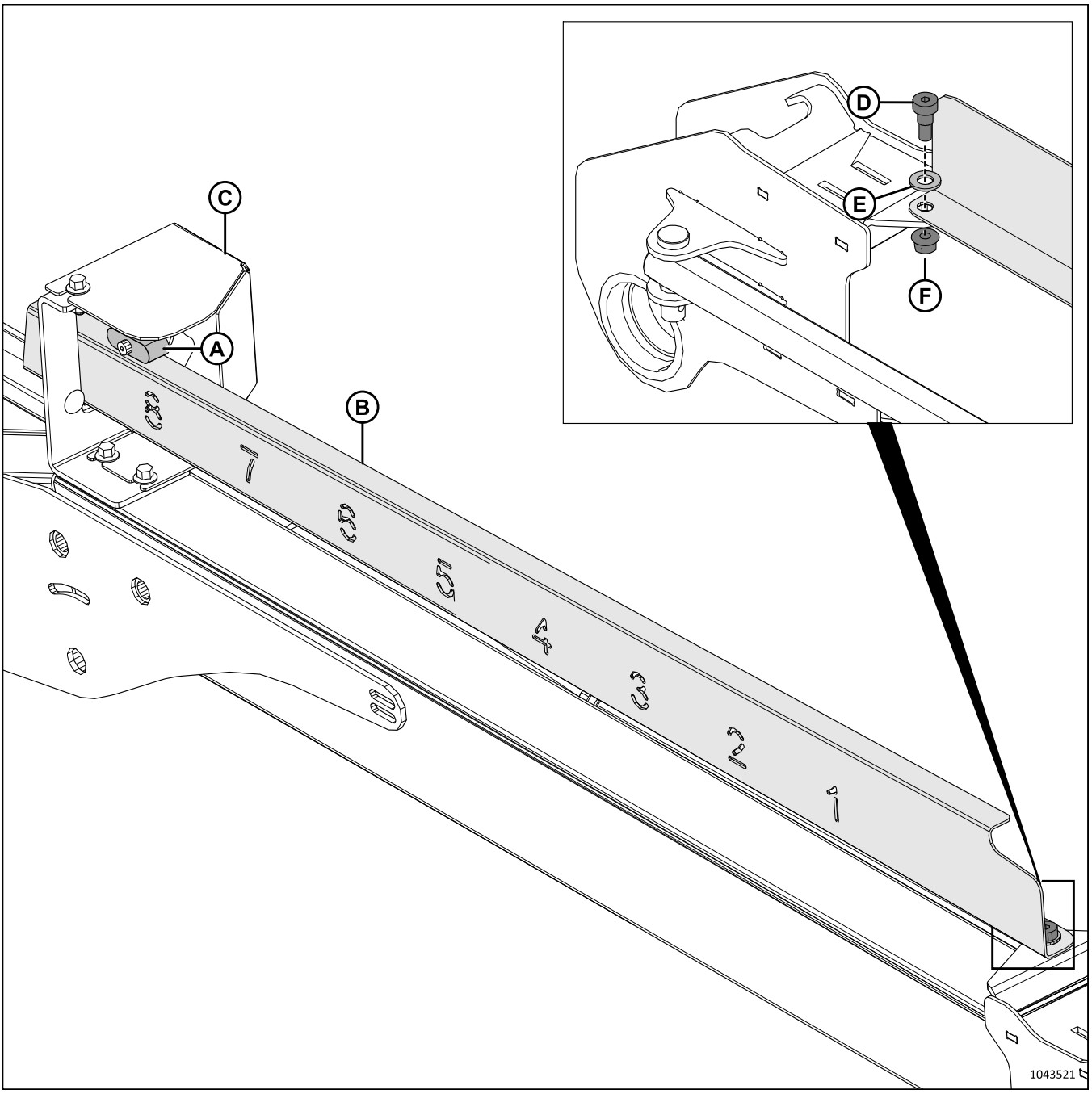


Figure 5.7: Fore-Aft Indicator Installation

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:
   - *5.4 Installing Front Support for Right Endshield – D225 (Parts Bag MD #357468), page 100* for single-reel headers.
   - *5.6 Installing Reel Lift Cylinders – Double Reel, D230 and D235, page 105* for double-reel headers.

5.4 Installing Front Support for Right Endshield – D225 (Parts Bag MD #357468)

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

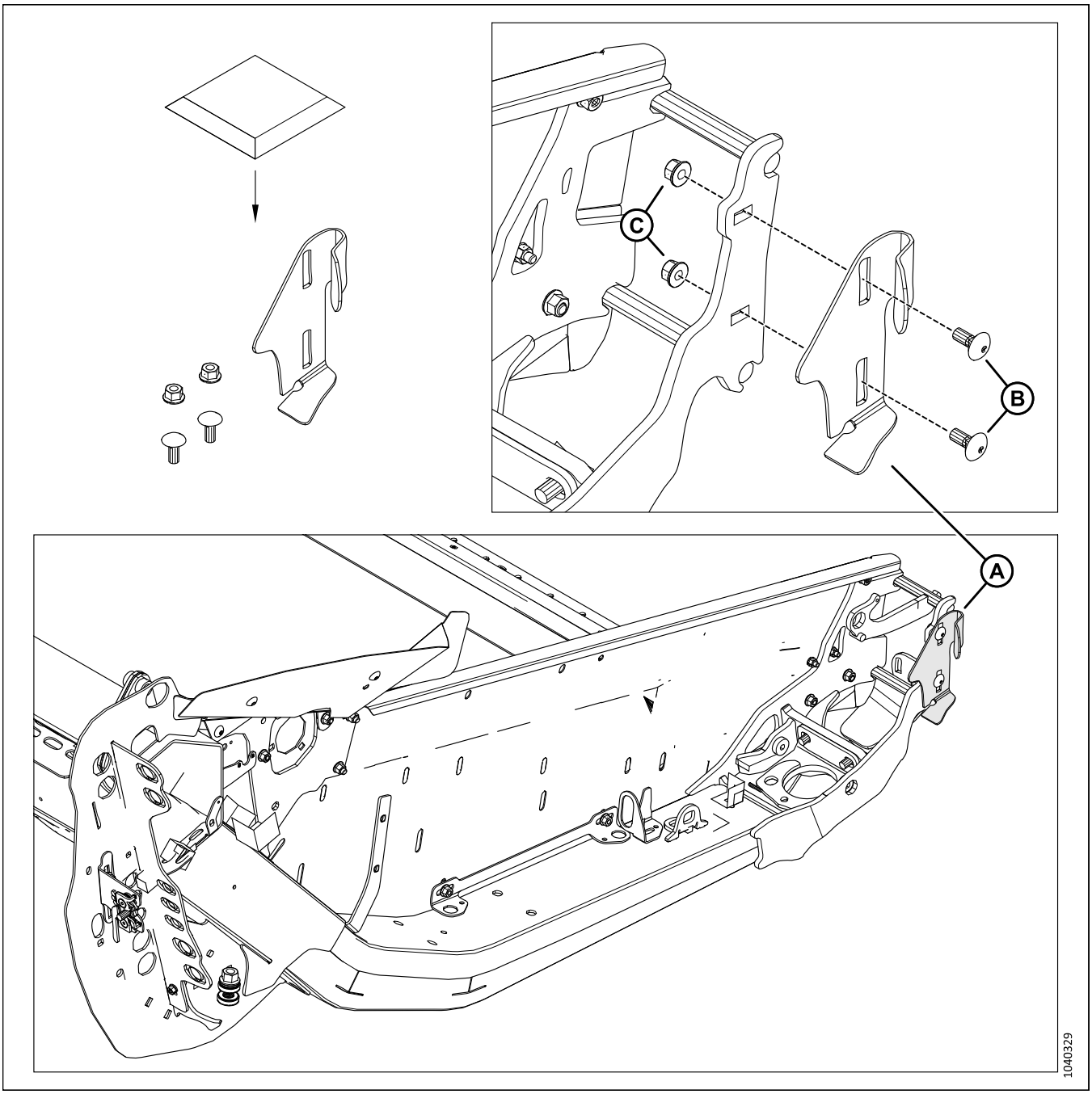


Figure 5.8: Front Support Installation, Parts Bag MD #357468

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

5.5 Installing Reel Lift Cylinders – Single Reel, D225

The left and right reel lift cylinders on single-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.

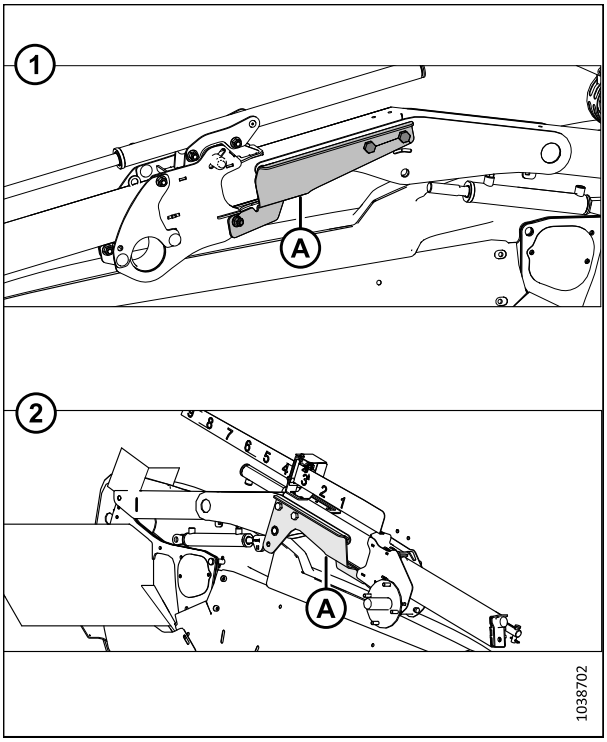


Figure 5.9: Fore-Aft Shipping Supports

1 - Outer Right Reel Arm 2 - Outer Left Reel Arm

1. On left reel arm support (B), remove top two bolts (A).

   IMPORTANT:

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

2. Repeat the previous step to remove the top two bolts from the right reel arm support.

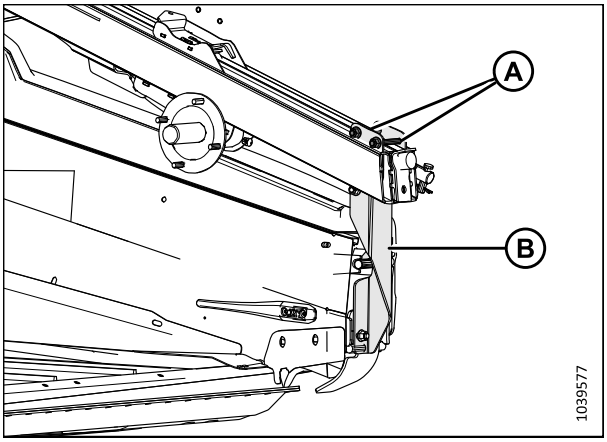


Figure 5.10: Reel Arm Support

3. Retrieve reel lift cylinder (A) from the left reel arm.

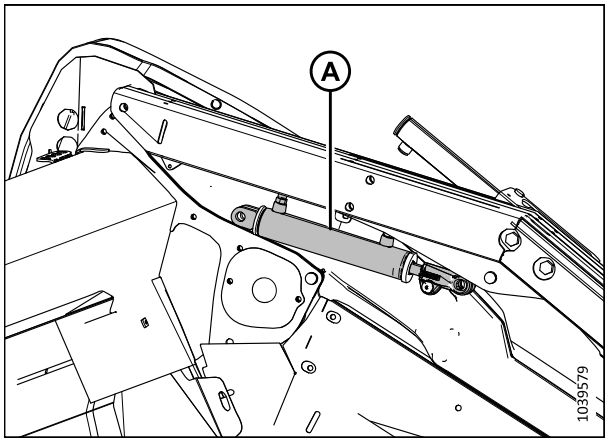


Figure 5.11: Reel Lift Cylinder on Left Reel Arm

4. 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.

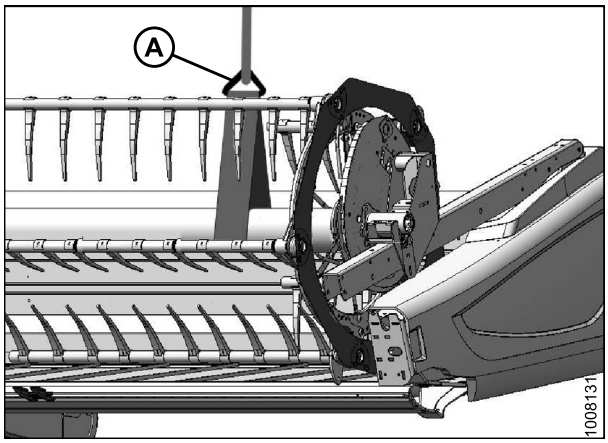


Figure 5.12: Sling Positioned on Left Side of Reel

5. Remove and retain two pins (A).

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.

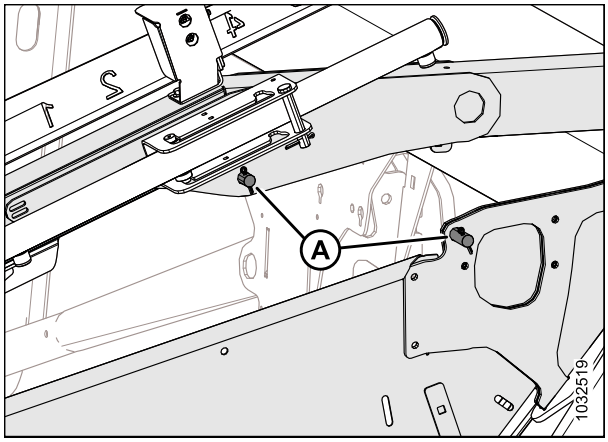


Figure 5.13: Left Reel Lift Cylinder Pins

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.

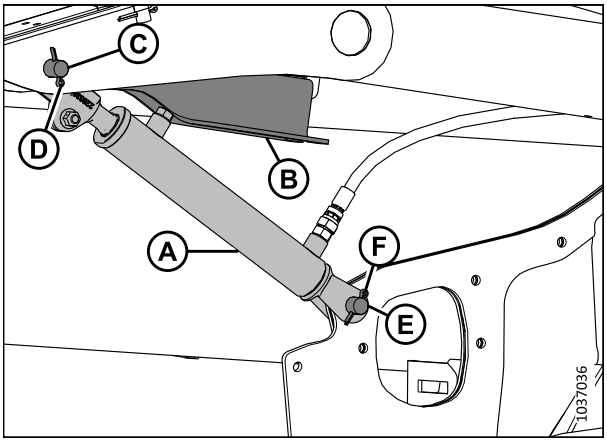


Figure 5.14: Left Reel Lift Cylinder Installed on Header

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

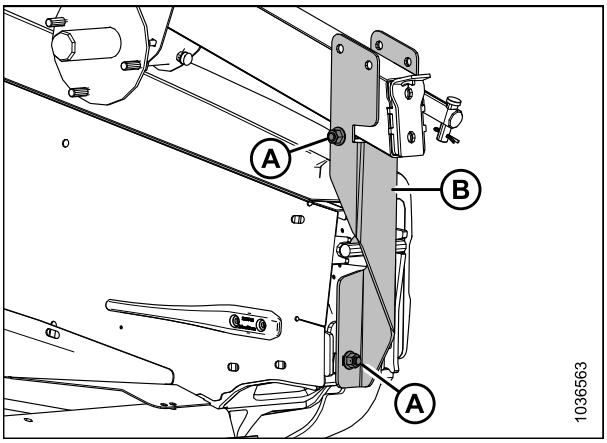


Figure 5.15: Reel Left Arm Support

11. 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.

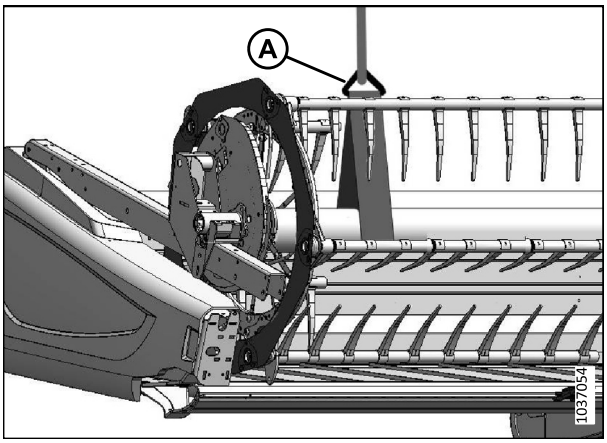


Figure 5.16: Sling Positioned on Right Side of Reel

12. Retrieve reel lift cylinder (A) from the right reel arm.

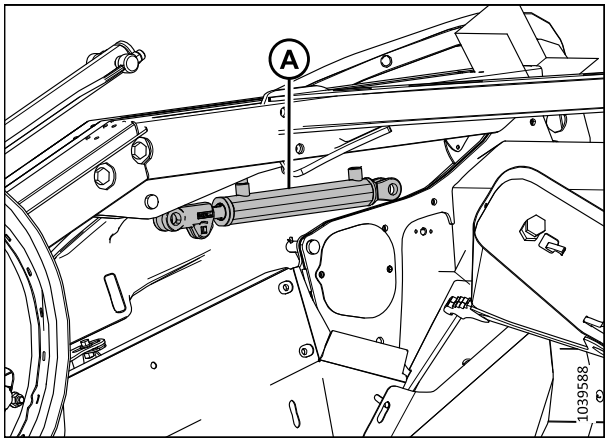


Figure 5.17: Reel Lift Cylinder on Right Reel Arm

13. Remove and retain two pins (A).
14. 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.

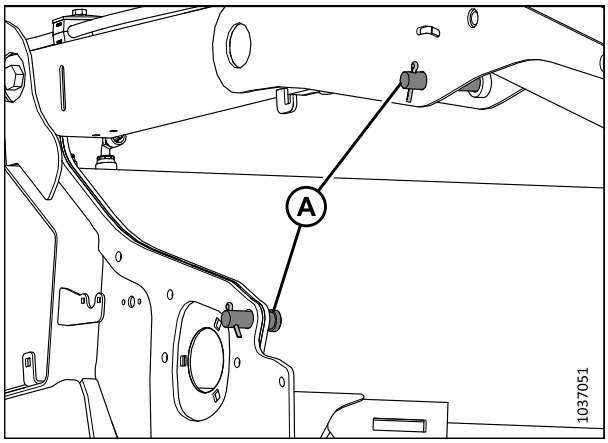


Figure 5.18: Right Reel Lift Cylinder Pins

15. 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.

16. Move reel safety prop (B) up onto the hook under the reel arm.
17. 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.

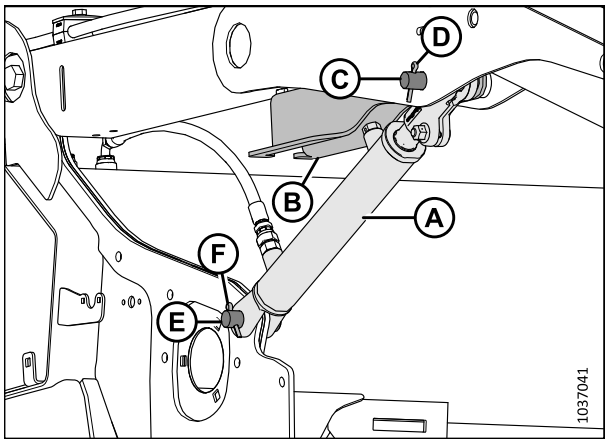


Figure 5.19: Right Lift Cylinder and Safety Prop

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

19. Proceed to *5.11 Attaching Reel Height Sensor, page 123*.

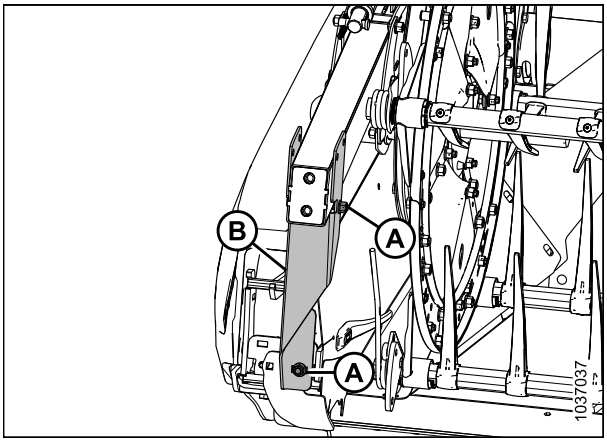


Figure 5.20: Right Reel Arm

5.6 Installing Reel Lift Cylinders – Double Reel, D230 and D235

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.

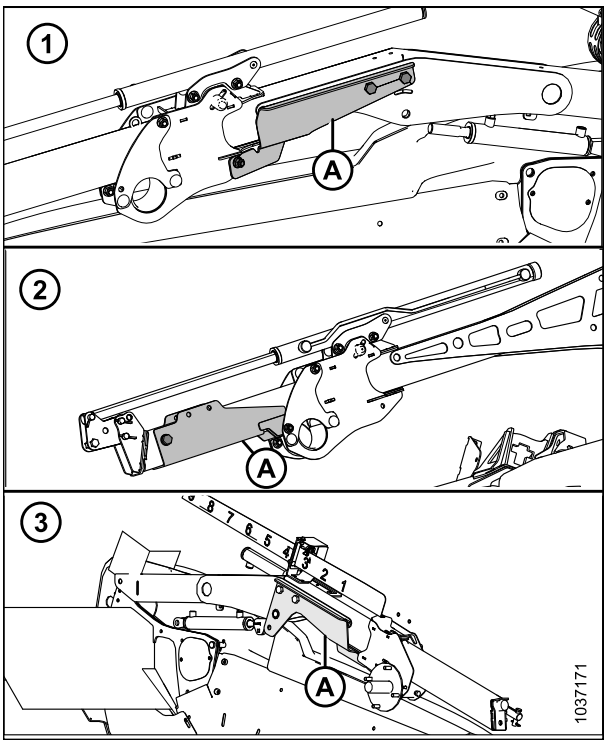


Figure 5.21: Fore-Aft Shipping Supports

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.

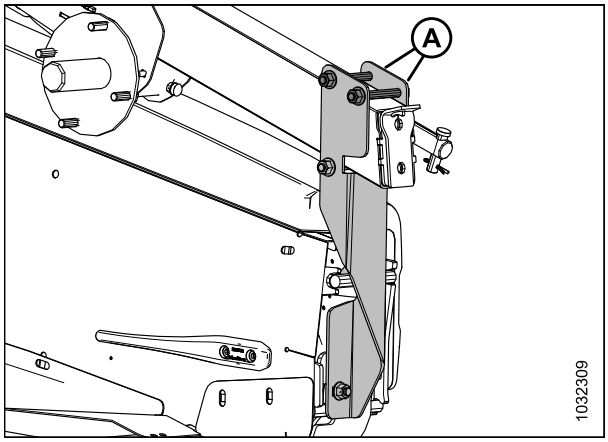


Figure 5.22: Left Reel Arm Shipping Support

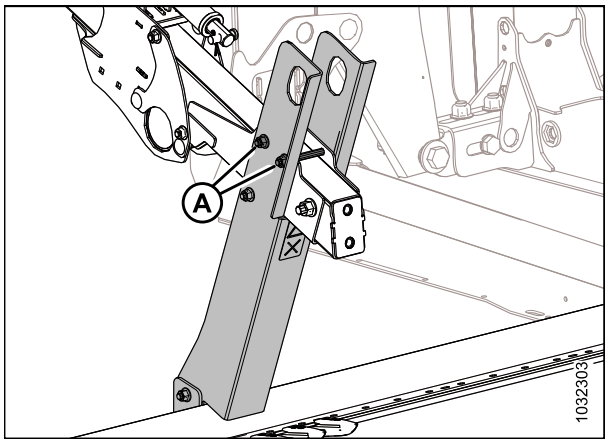


Figure 5.23: Center Arm Shipping Support

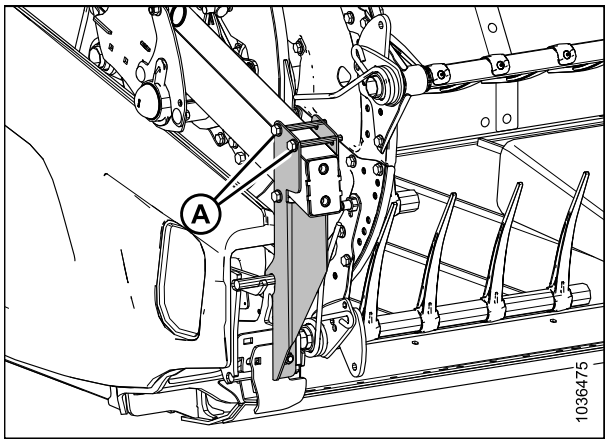


Figure 5.24: Right Reel Arm Shipping Support

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.

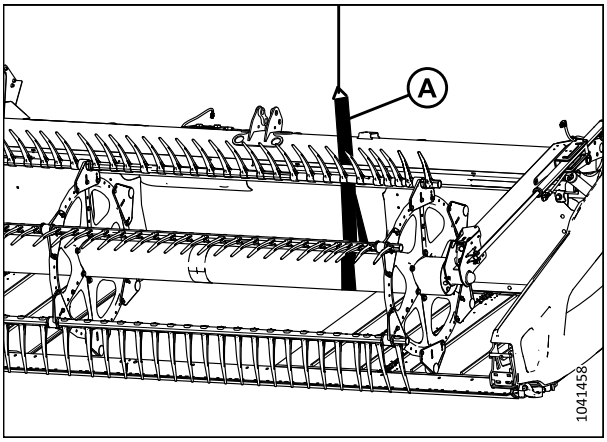


Figure 5.25: Sling Positioned on Left Side of Reel

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.

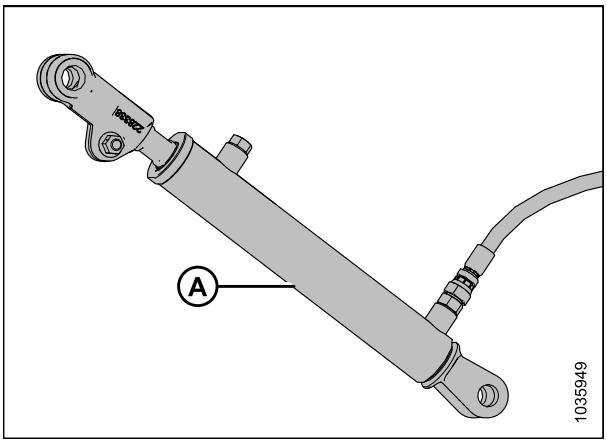


Figure 5.26: Reel Lift Cylinder

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.

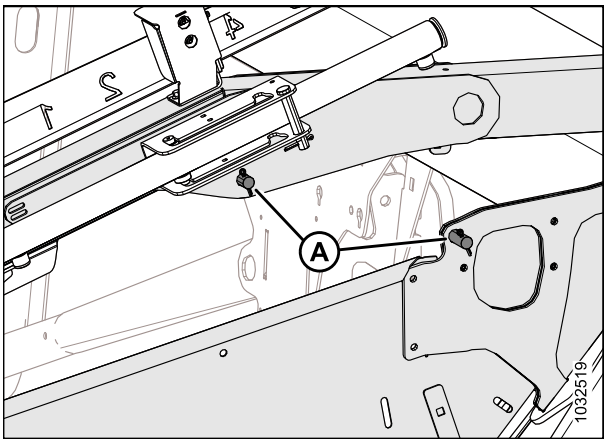


Figure 5.27: Left Reel Lift Cylinder Pins

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.

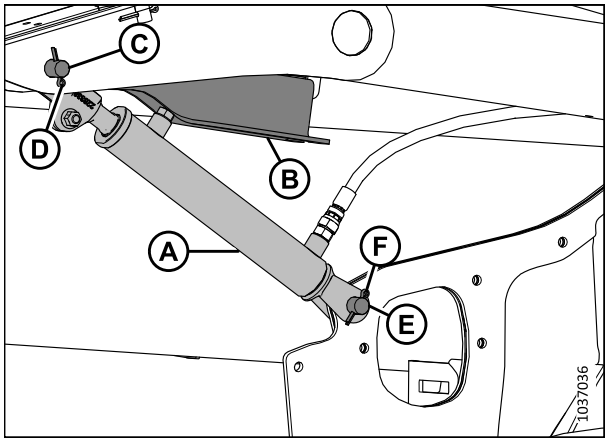


Figure 5.28: Left Reel Lift Cylinder

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

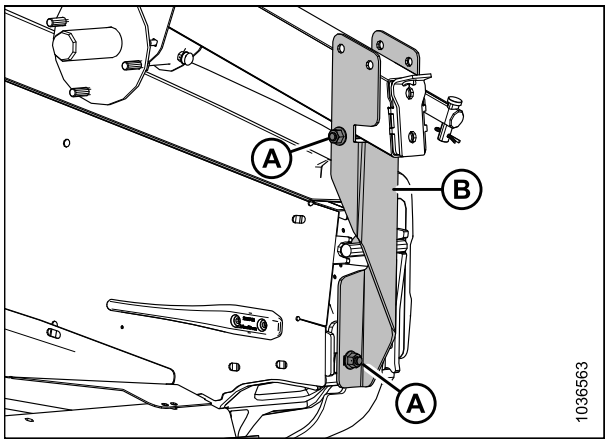


Figure 5.29: Shipping Support – Left Reel Arm

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

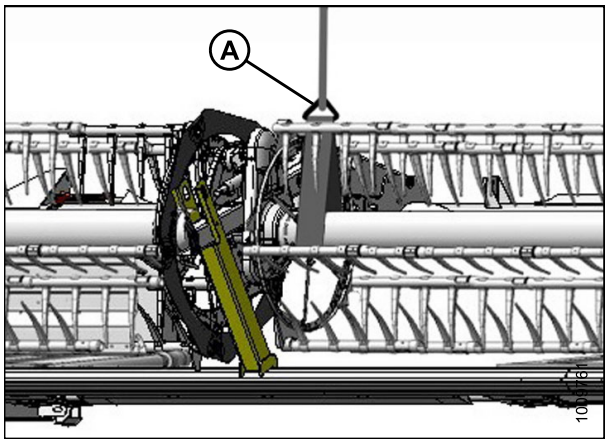


Figure 5.30: Center Arm Shipping Support

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.

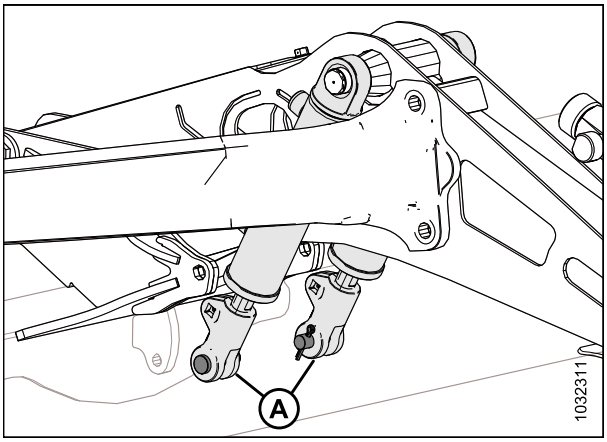


Figure 5.31: Lift Cylinders Secured to Center Arm

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.

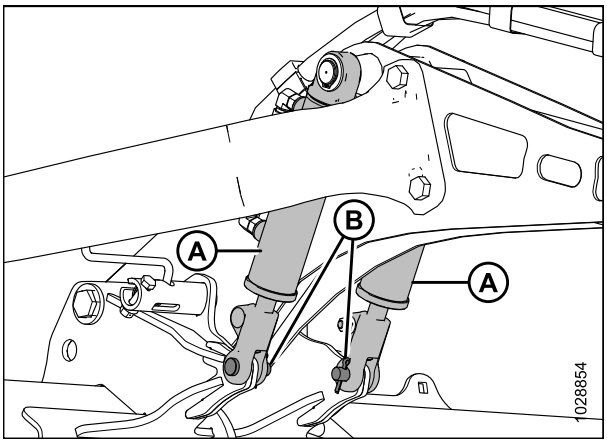


Figure 5.32: Lift Cylinders at Center Arm

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

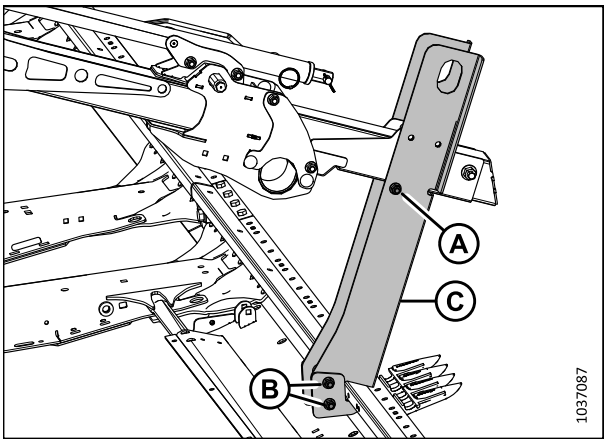


Figure 5.33: Center Arm Support

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.

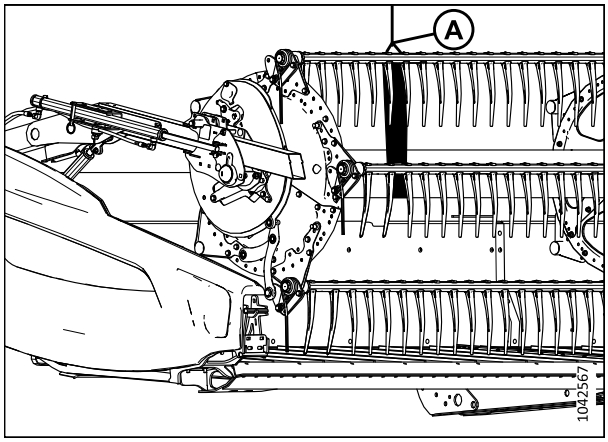


Figure 5.34: Sling Positioned on Right Side of Reel

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.

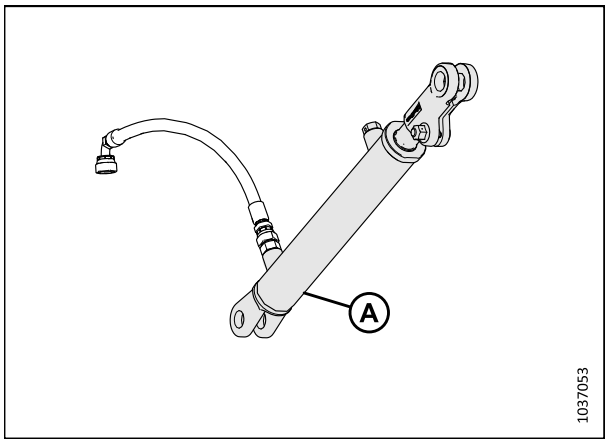


Figure 5.35: Reel Lift Cylinder

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.

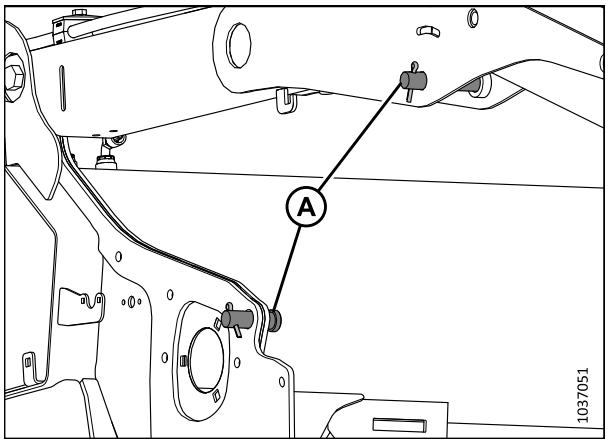


Figure 5.36: Right Reel Arm Lift Cylinder Pins

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.

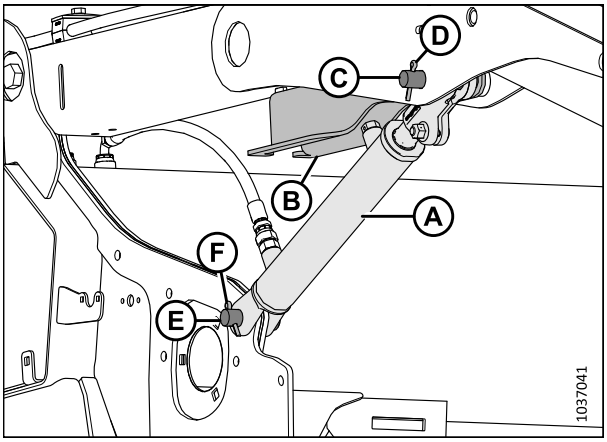


Figure 5.37: Right Lift Cylinder Installed on Reel Arm

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

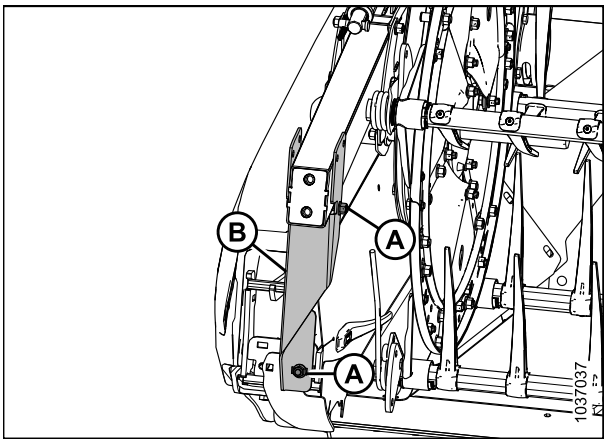


Figure 5.38: Right Reel Arm Shipping Support

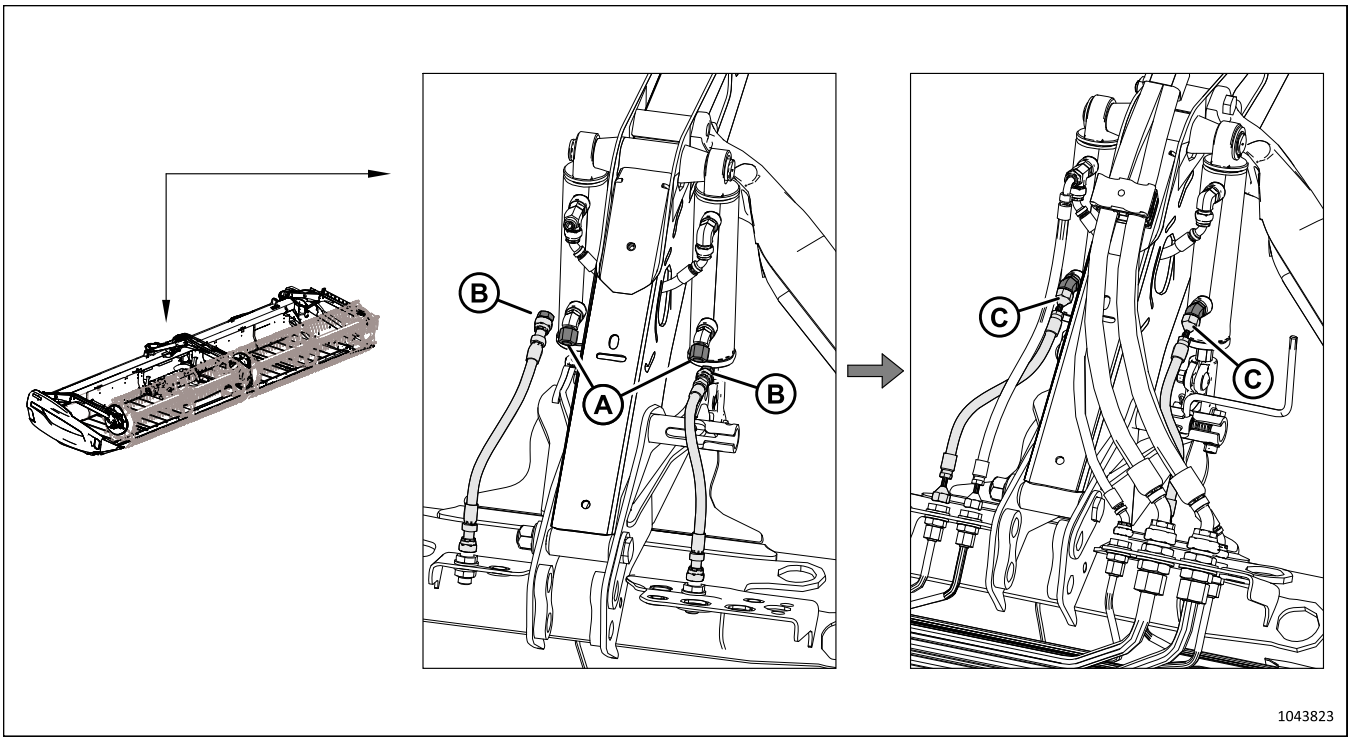


Figure 5.39: Center Arm

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.

5.7 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.

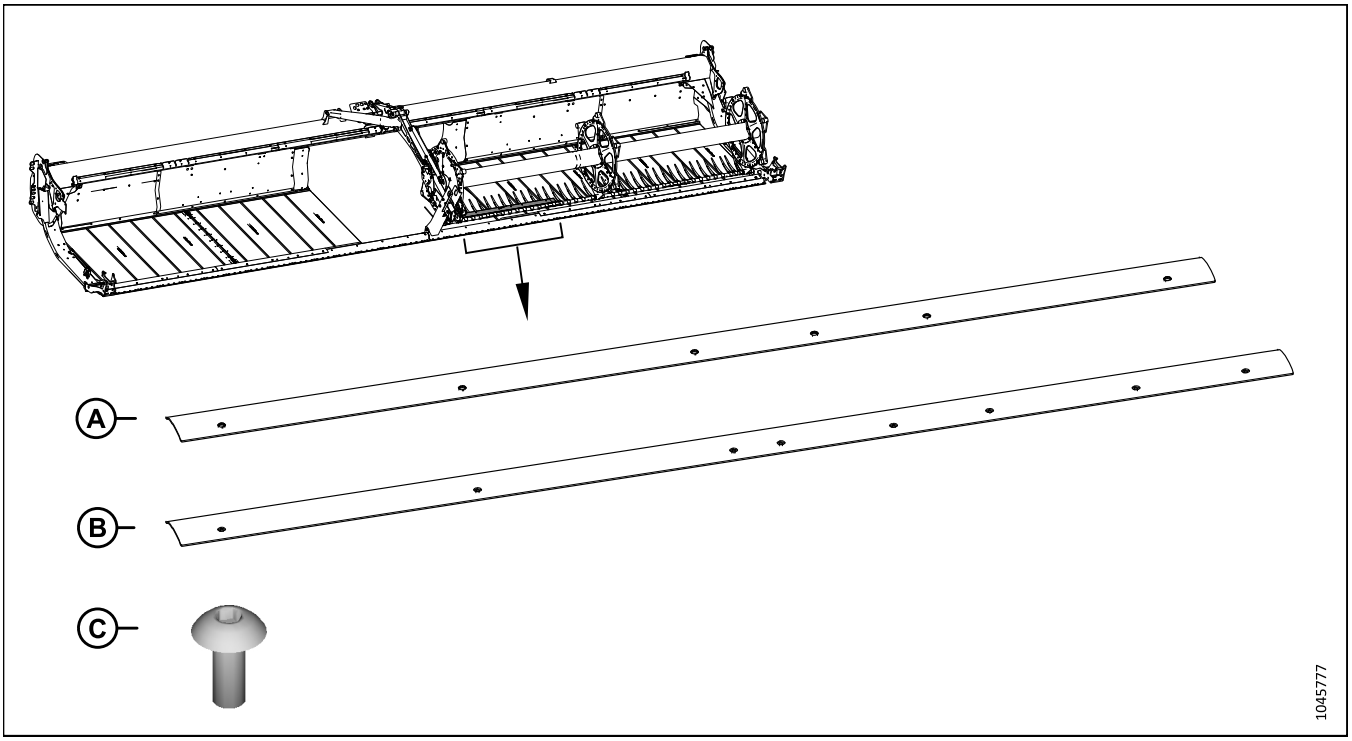


Figure 5.40: Cutterbar Seals and Hardware

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)

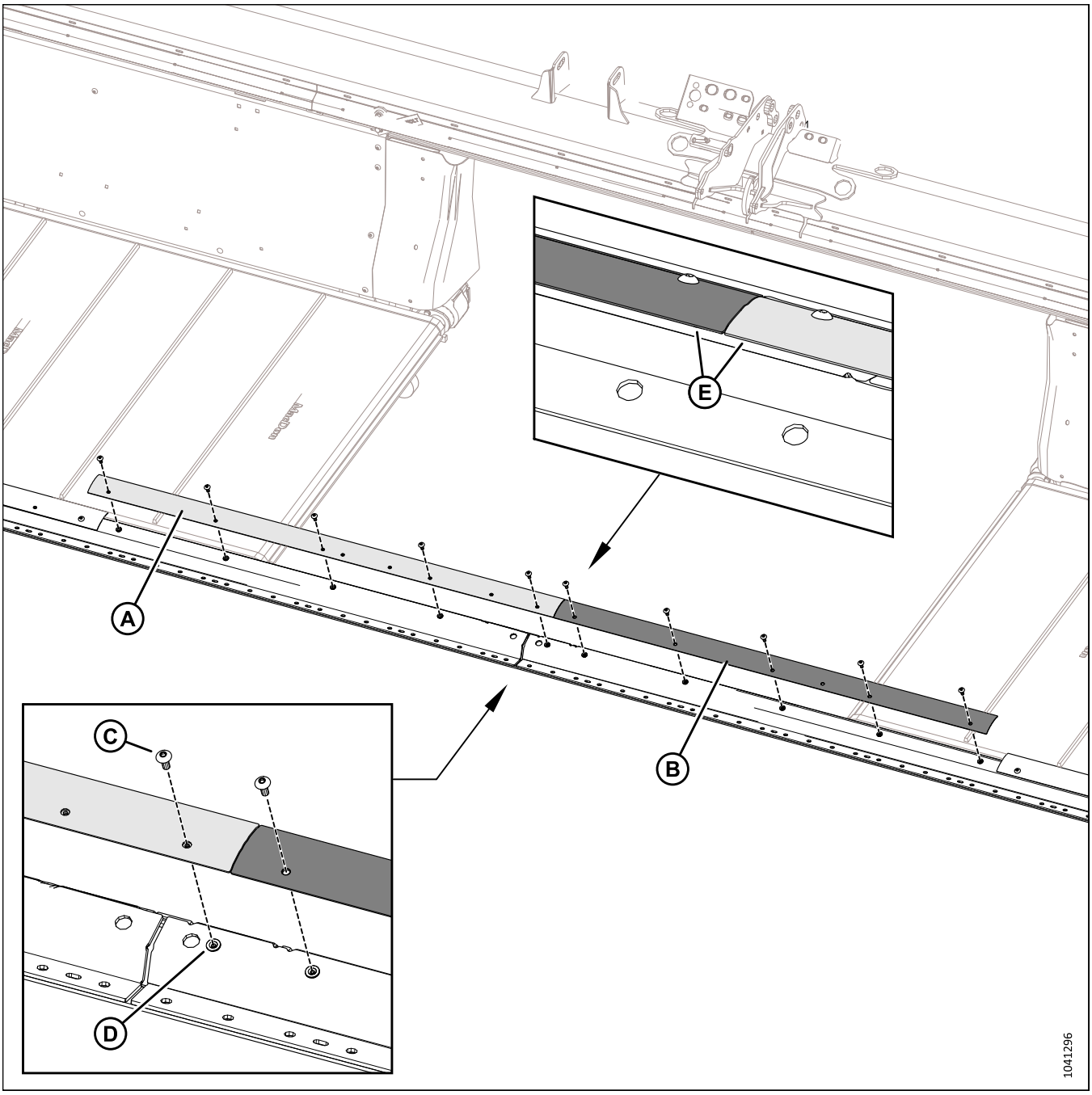


Figure 5.41: Draper Seals – Right Deck

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.

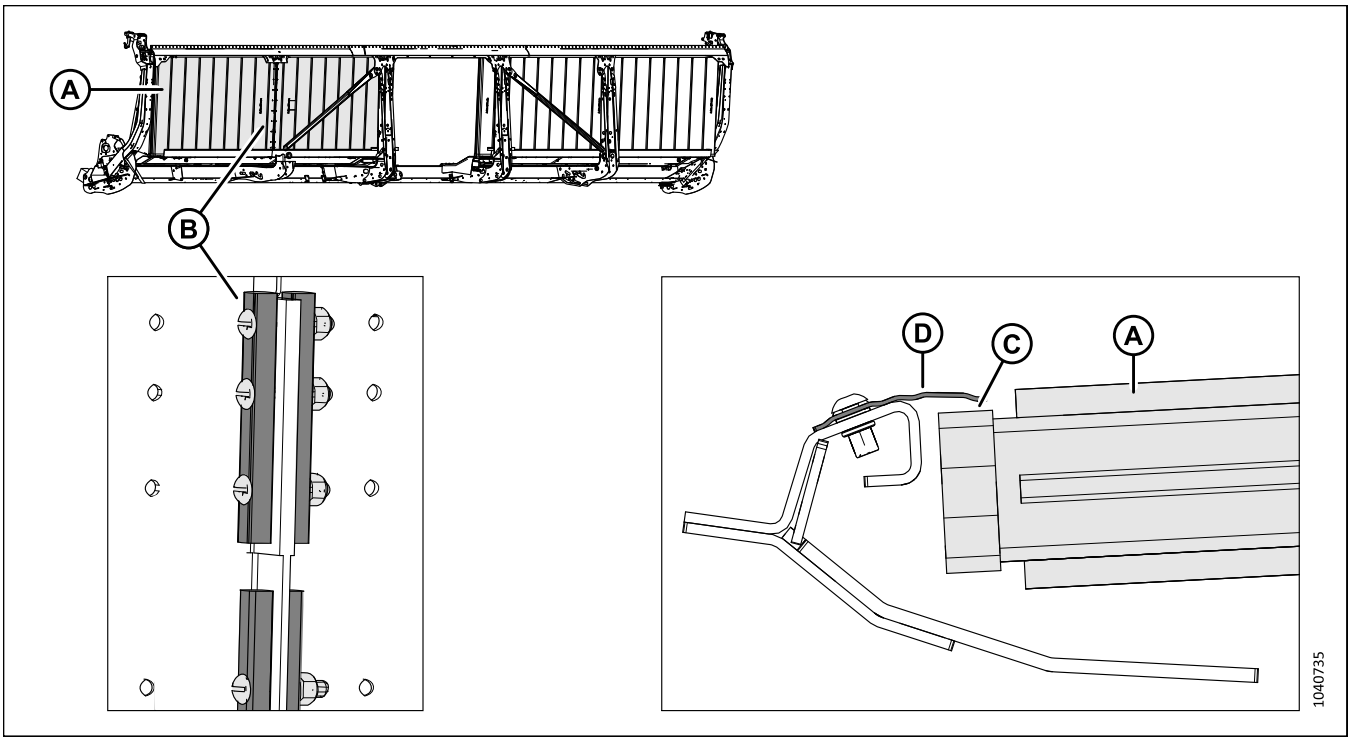


Figure 5.42: Draper Seal Clearance Specifications

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 *10.1 Adjusting Side Draper Deck Height, page 291*.
8. Proceed to *5.21.1 Installing Crop Dividers, page 191*.

5.8 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.

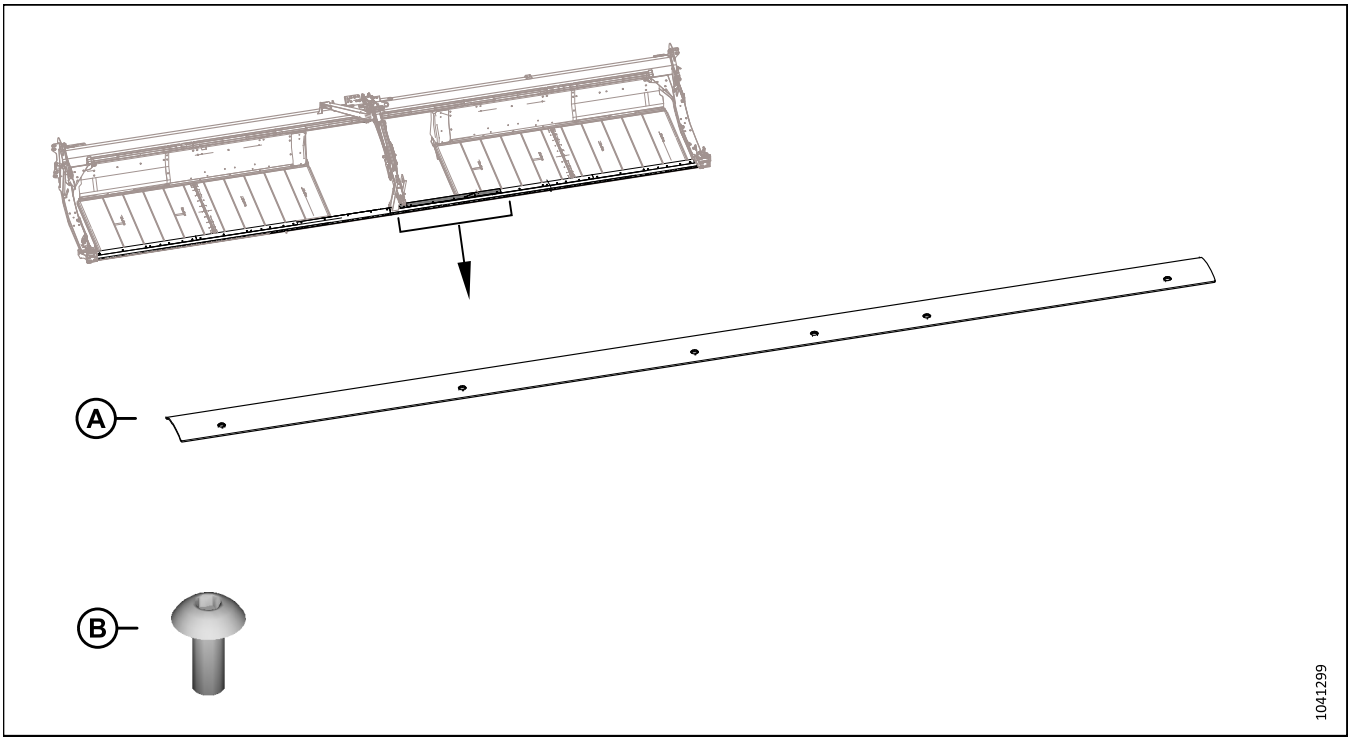


Figure 5.43: Cutterbar Seal and Hardware

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)

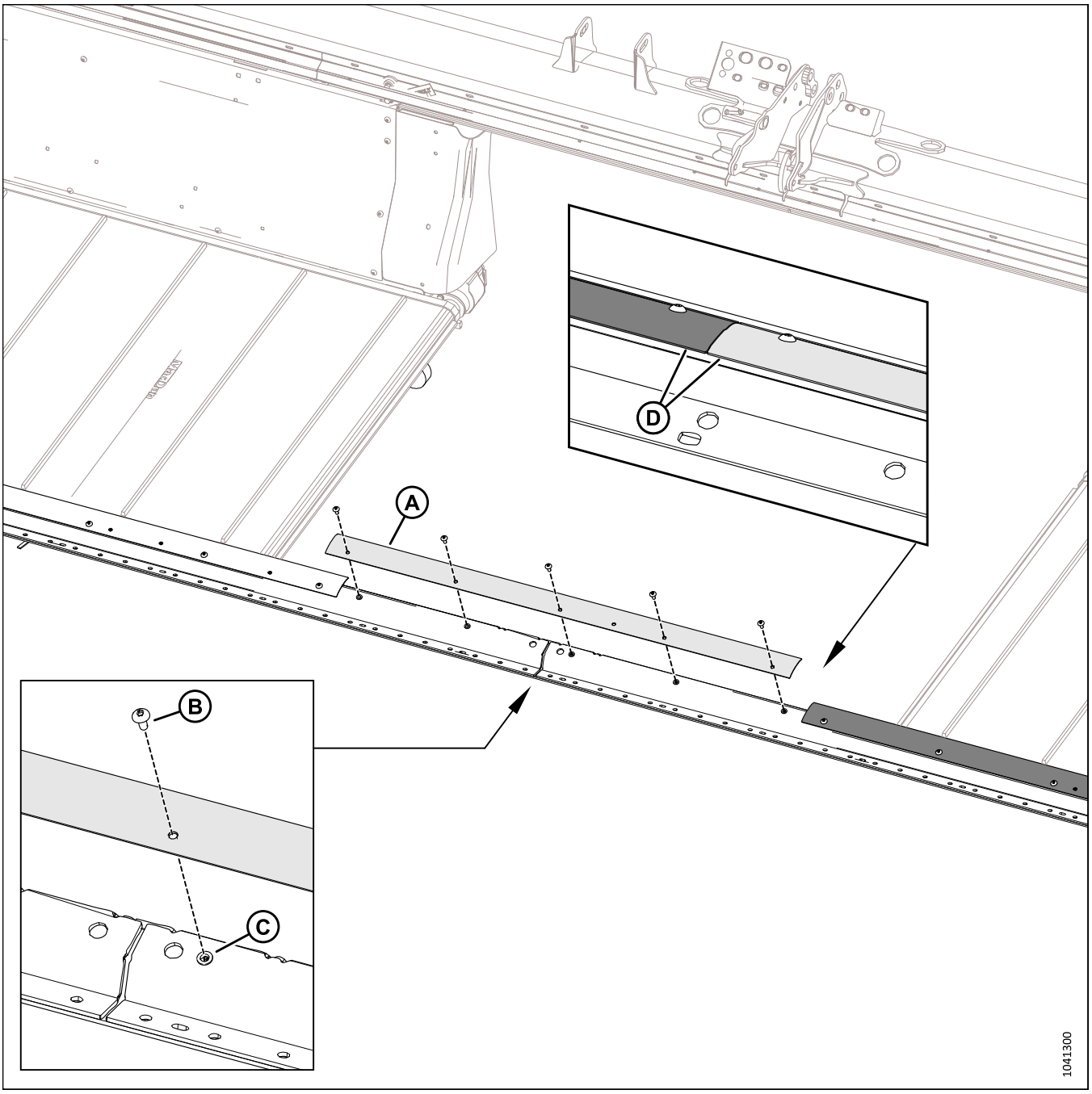


Figure 5.44: Draper Seals – Right Deck

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.

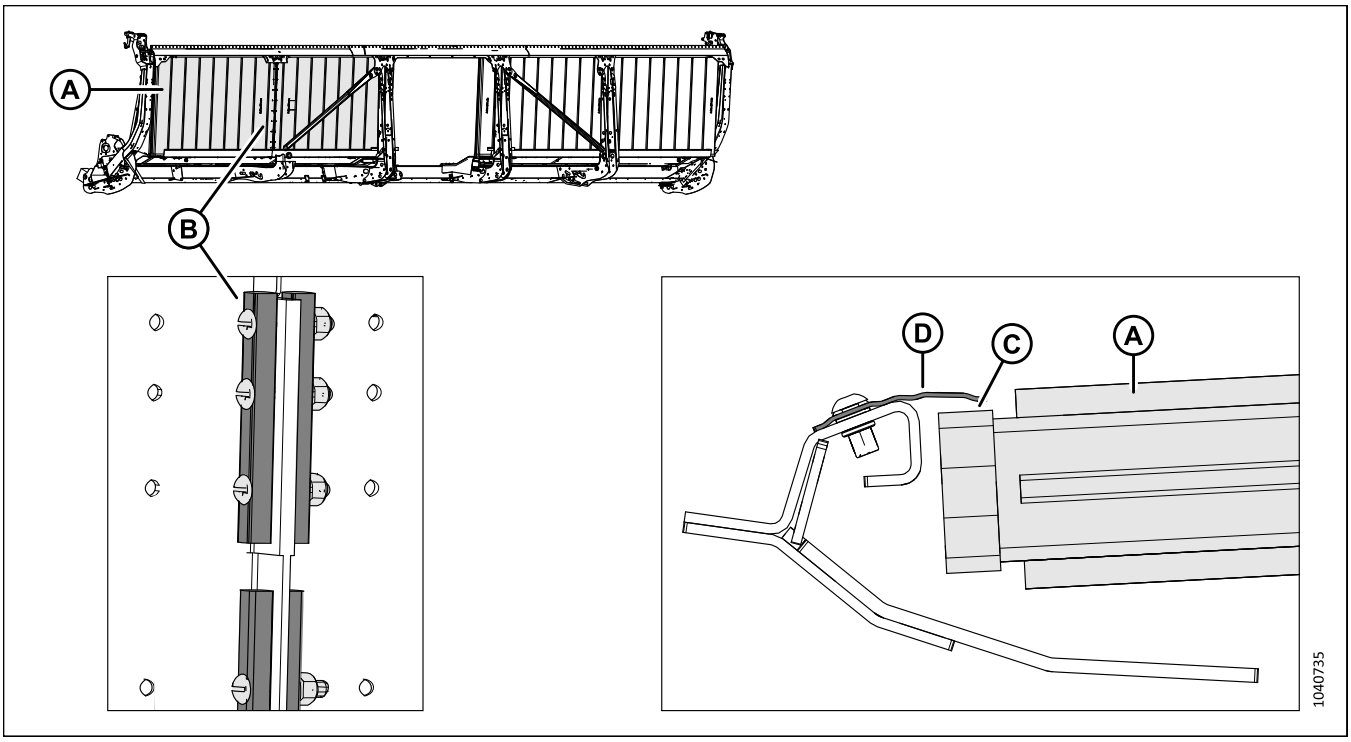


Figure 5.45: Draper Seal Clearance Specifications

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 *10.1 Adjusting Side Draper Deck Height, page 291*.

5.9 Installing Knifehead Guard Hardware (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.

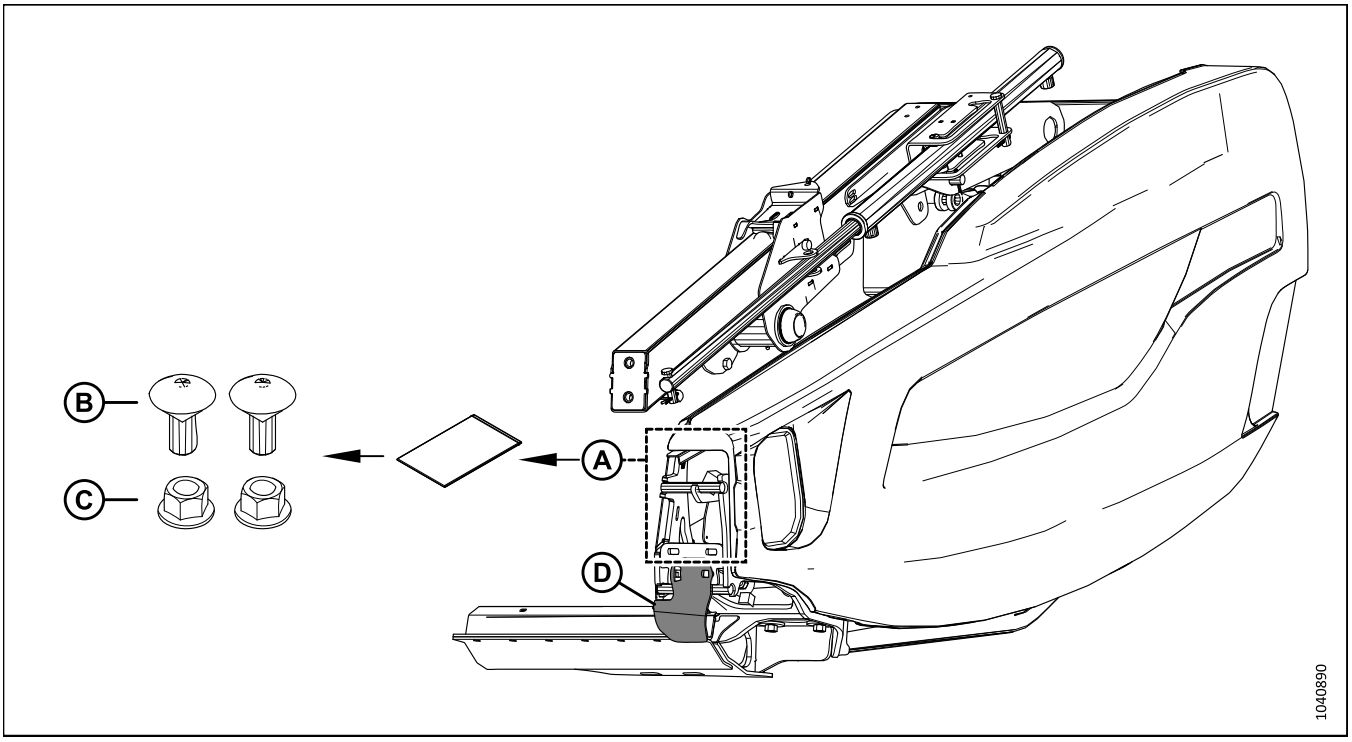


Figure 5.46: Parts Bag MD #347581

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.

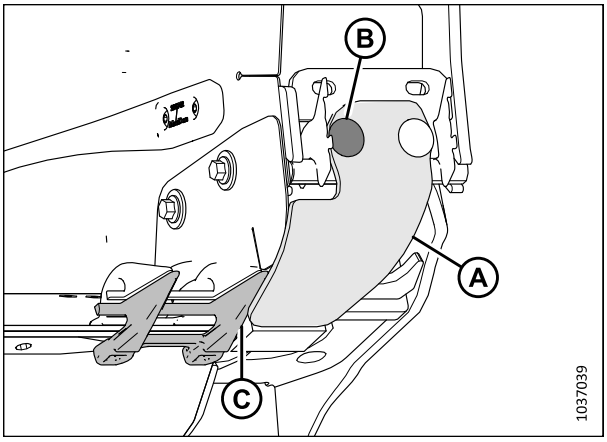


Figure 5.47: Left Knifehead Guard

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.

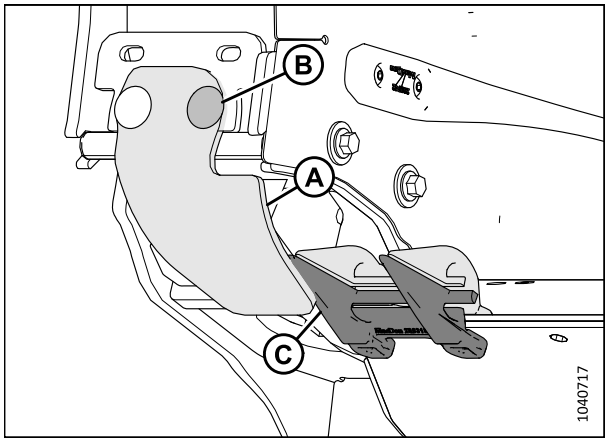


Figure 5.48: Right Knifehead Guard

5.10 Installing Skid Shoes – D225 (Parts Bag MD #357993)

Install the two skid shoes that were removed for shipping purposes by attaching support brackets to the center legs, hooking the skid shoe tabs into the frame and insert the connecting rod through the appropriate holes. Secure the rod, push the skid shoe forward, and tighten all connections.

1. Retrieve parts bag MD #357993. For a list of parts, refer to Table *5.2, page 120*.

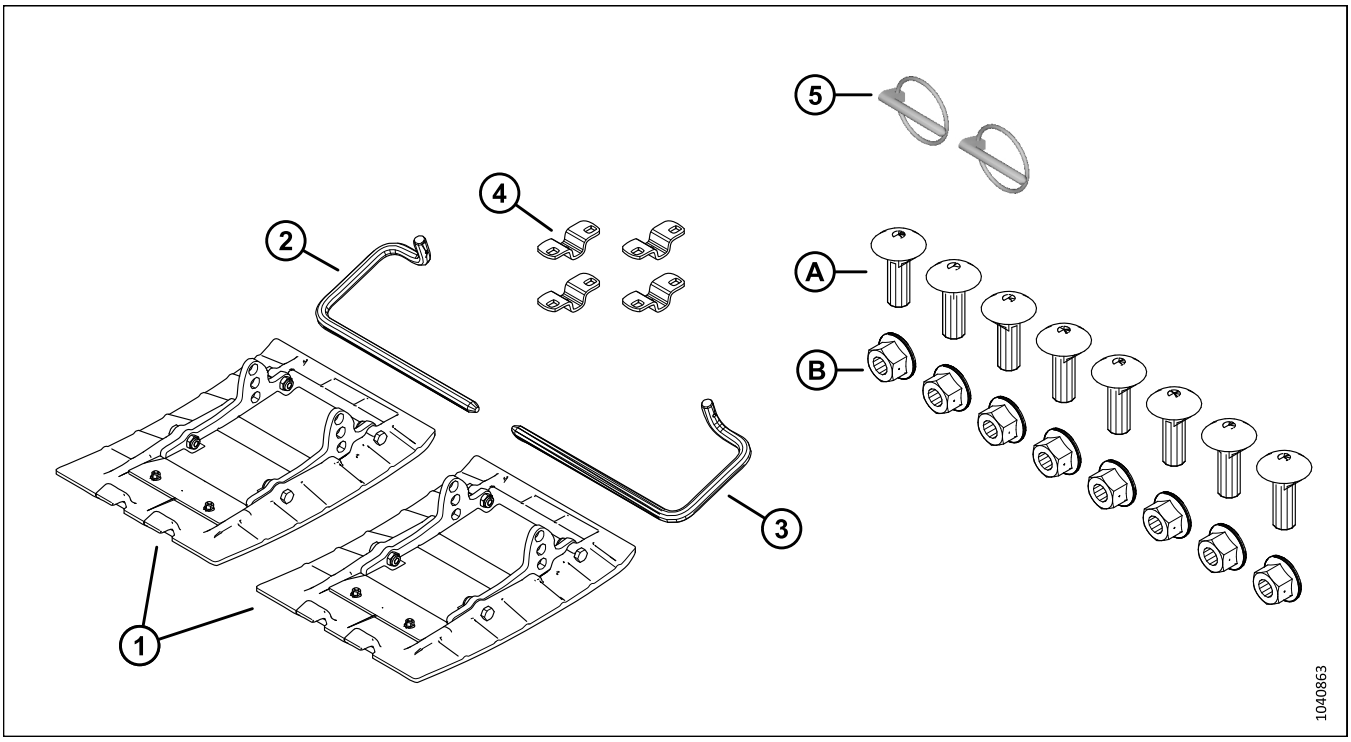


Figure 5.49: Parts Bag MD #357993

Table 5.2 Parts Bag MD #357993

Ref	Part Number	Description	Quantity
1	289761	ASSEMBLY – SKID SHOE	2
2	165588	ROD – ENGAGING RH	1

Table 5.2 Parts Bag MD #357993 (continued)

Ref	Part Number	Description	Quantity
3	165168	ROD – ENGAGING LH	1
4	232806	BRACKET – SHOE SUPPORT	4
5	50193	PIN – LYNCH	2
A	184662	BOLT – RHSN TFL M10 X 1.5 X 30-8.8-AA1J	8
B	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10	8

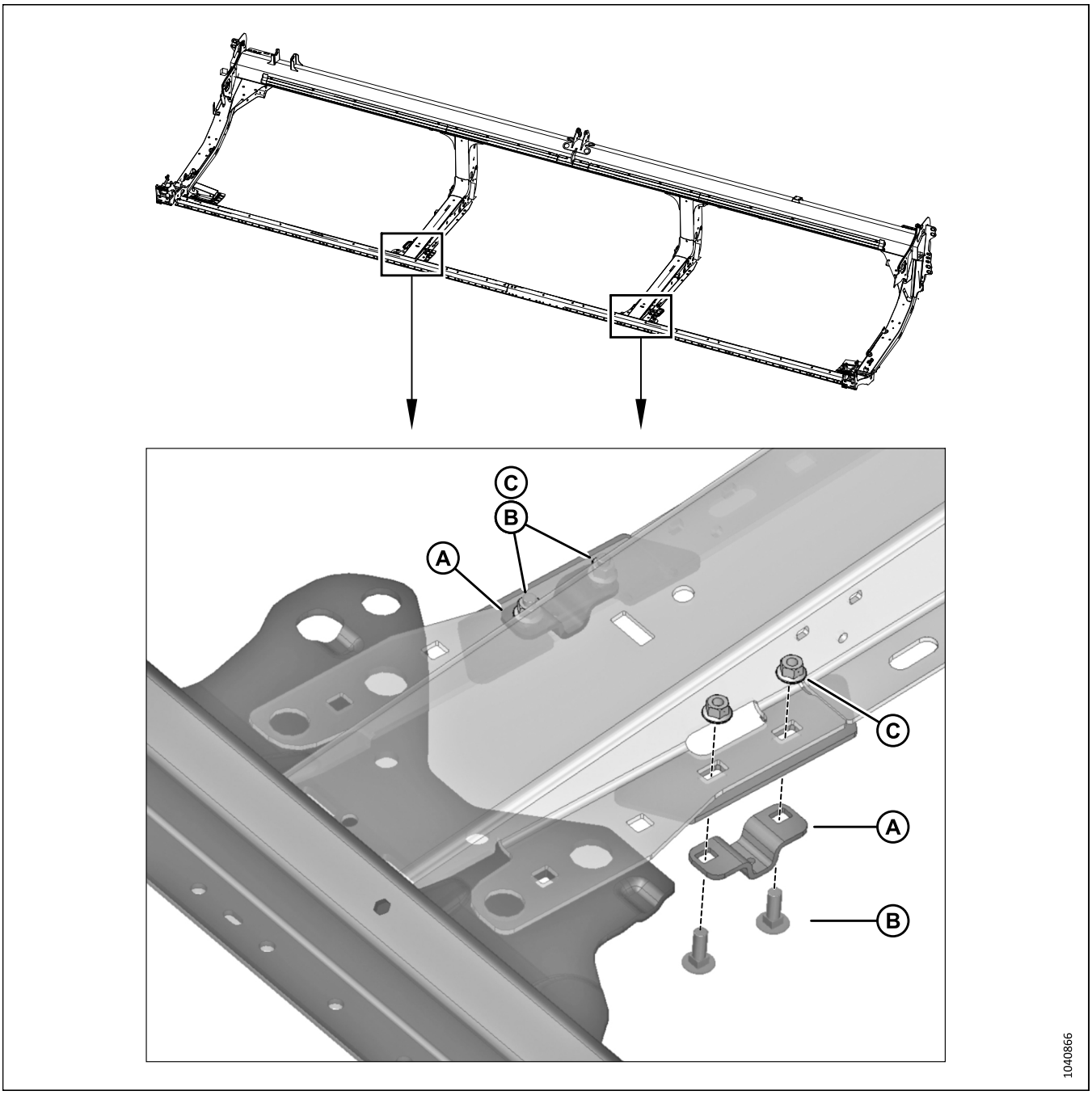


Figure 5.50: Support Bracket Installation

2. Attach two support brackets (A) to both center legs using two bolts (B) and M10 nuts (C) per bracket. Do **NOT** fully tighten nuts (C) yet.

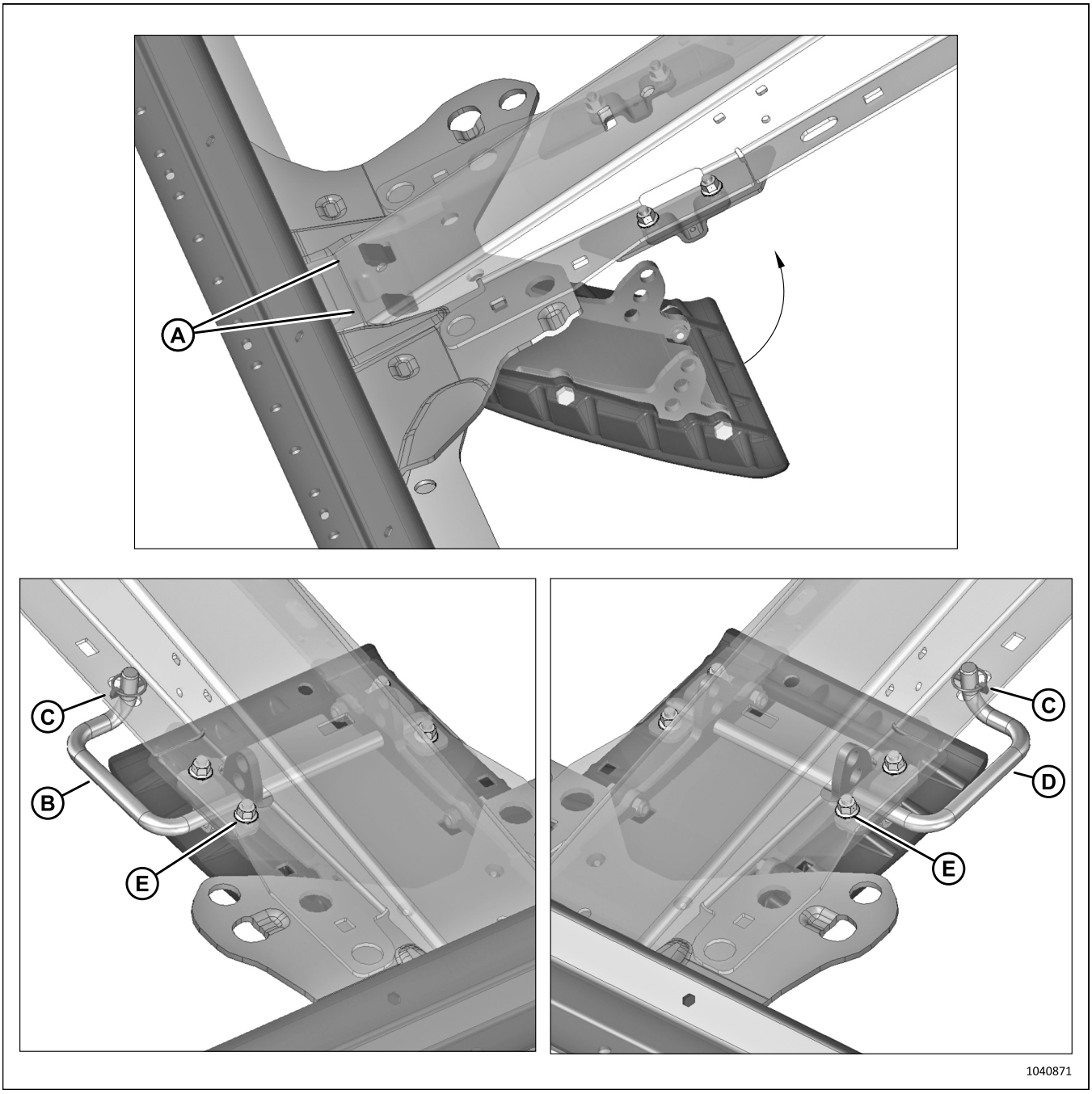


Figure 5.51: Skid Shoe Installation

3. Hook skid shoe tabs (A) into the frame and rotate the shoe upward.
4. Insert the rod through the header leg, support brackets, and skid shoe holes as shown:
   - Rod (B) is for the right leg
   - Rod (D) is for the left leg
5. Secure the rod with pin (C). Push the skid shoe as far forward as possible, and then tighten all bracket nuts (E).

6. Repeat Step *3, page 122* to Step *5, page 122* for the other skid shoe.

5.11 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.

1. Open the right header endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.

2. Remove cable ties (A) securing reel height sensor rod (B) to the top of the end panel.

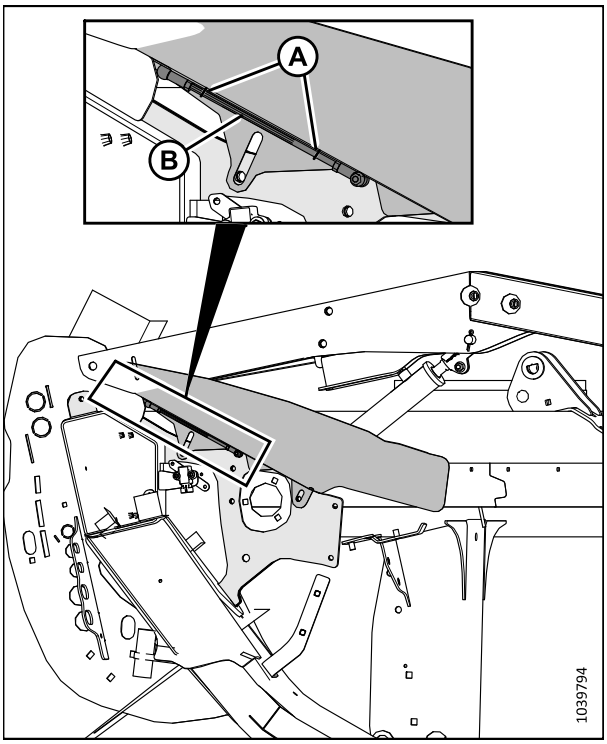


Figure 5.52: Reel Height Sensor Location

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]).

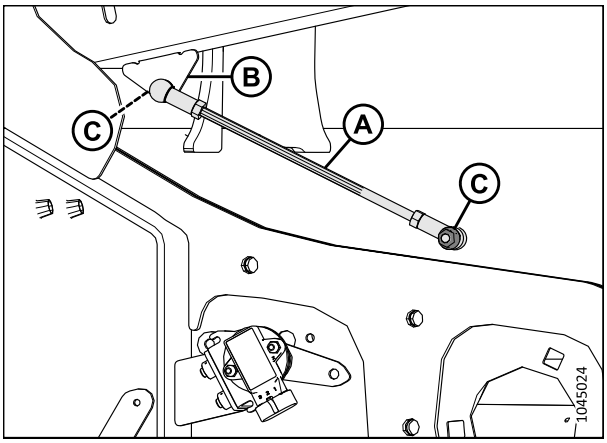


Figure 5.53: Reel Height Sensor Location

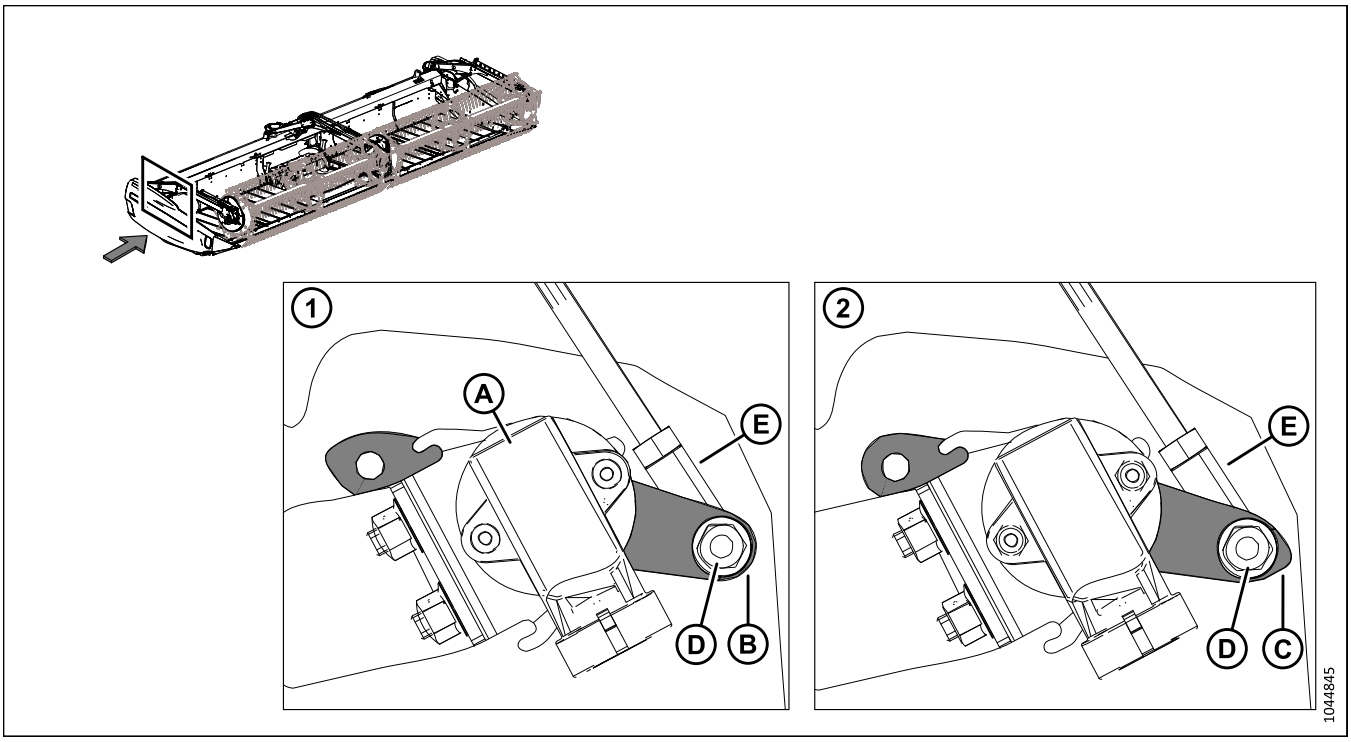


Figure 5.54: Sensor Arm/Pointer Configurations

5. Ensure that the sensor is configured properly for the header:
   - Configuration (1) is used for Challenger®, CLAAS, Gleaner®, IDEAL™, Massey Ferguson®, and John Deere combines. Round end (B) of the sensor arm is attached to rod (E).
   - Configuration (2) is used for Case, New Holland, and Rostselmash combines. 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 *10.3.2 Closing Header Endshields, page 297*.

5.12 Preparing Float Module Hydraulic Hoses

The hydraulic hoses on the left of the float module are temporarily secured during shipping. They will need to be rerouted.

1. On the left of the float module, prepare the hydraulic hoses as follows:

   a. Remove shipping wire (A) from the hydraulic hoses.

   b. Place hose bundle (B) in bracket (C).

   c. Secure the hose bundle in the bracket by reinstalling strap (D) through bracket slot (E) and over the hose bundle.

      NOTE:

      Ensure that hose bundle (B) is securely strapped to bracket (C). Improper strapping can wear through the hoses.

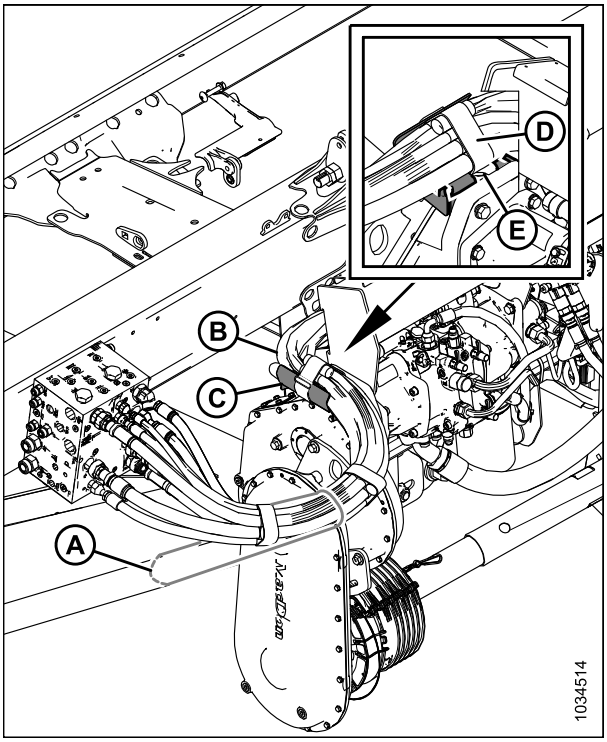


Figure 5.55: Hydraulic Hoses – Narrow Configuration

5.13 Connecting Reel to Fore-Aft Cylinders, Single-Reel Headers – 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 combine. 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.

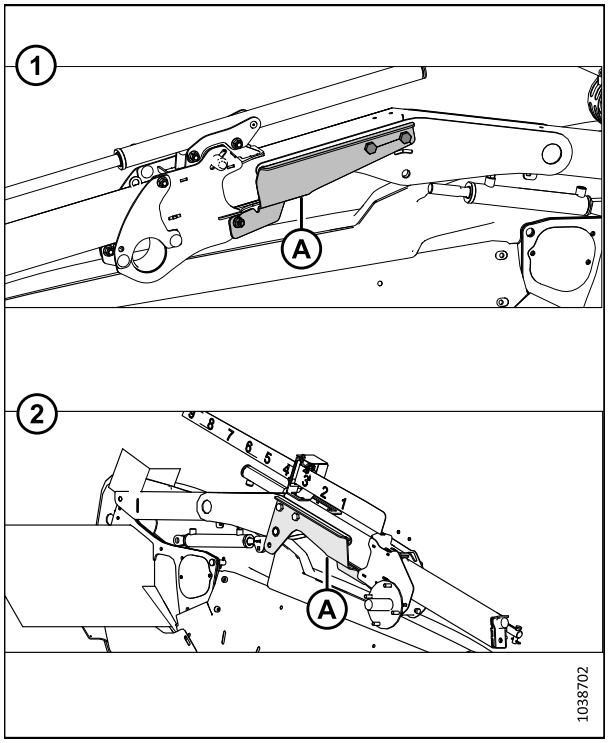


Figure 5.56: Fore-Aft Shipping Supports

1 - Right Reel Arm **2 - Left Reel Arm**

Preparing right reel arm

3. Retrieve parts bag (MD #357467). For a list of parts, refer to Table *5.3, page 127*.

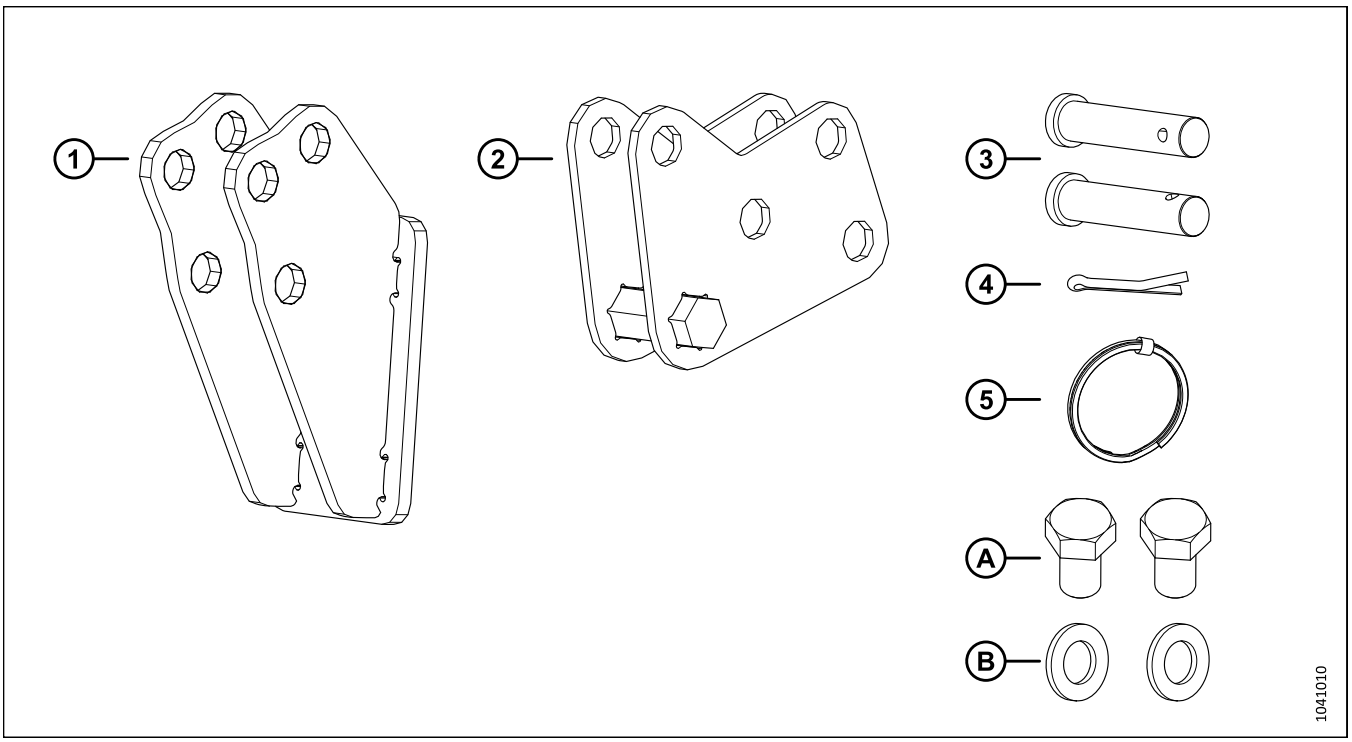


Figure 5.57: Right Reel Arm Fore-Aft Support Parts Bag MD #357467

Table 5.3 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

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).

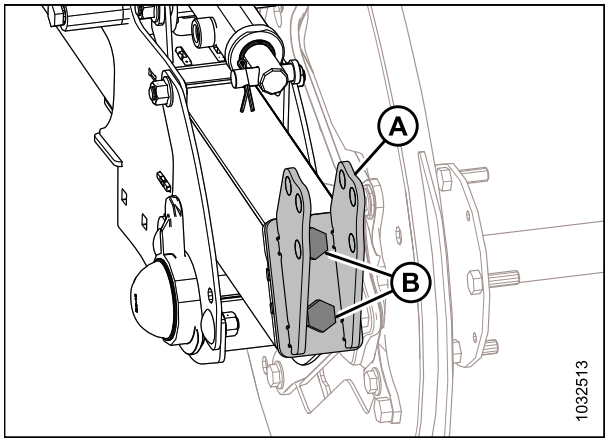


Figure 5.58: Front Anchor Support

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.

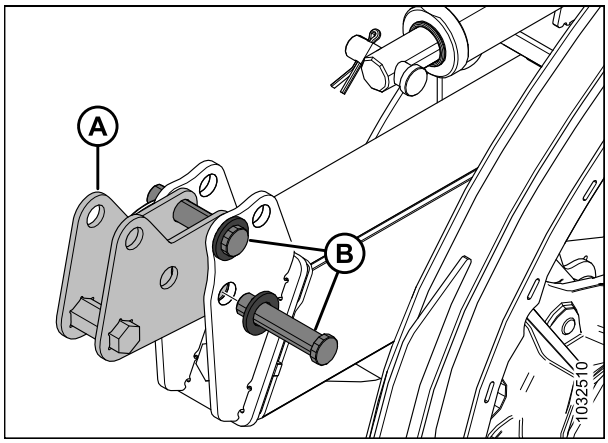


Figure 5.59: Fore-Aft Anchor

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.

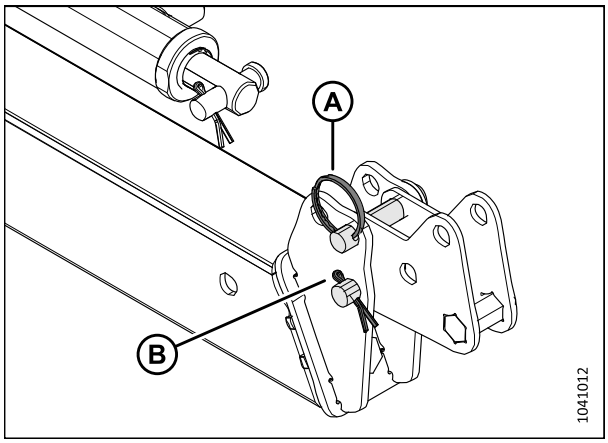


Figure 5.60: Fore-Aft Anchor

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.

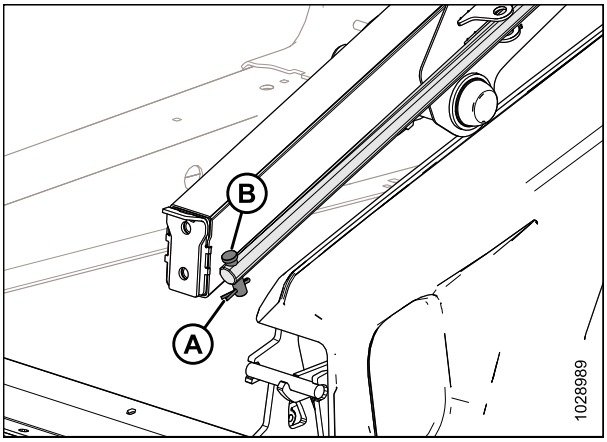


Figure 5.61: Left Reel Arm

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

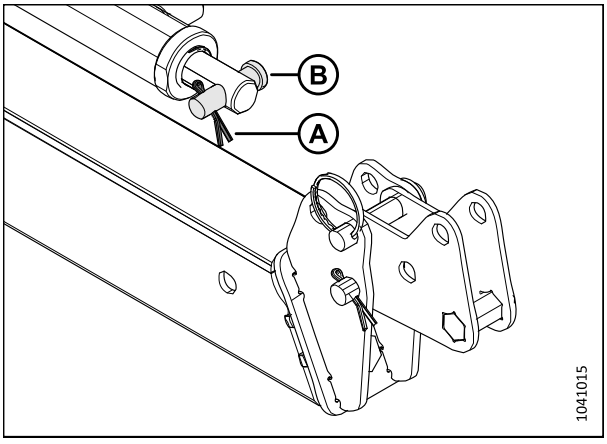


Figure 5.62: Shipping Location of Pins in Right Fore-aft Cylinder

9. Use the combine 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).

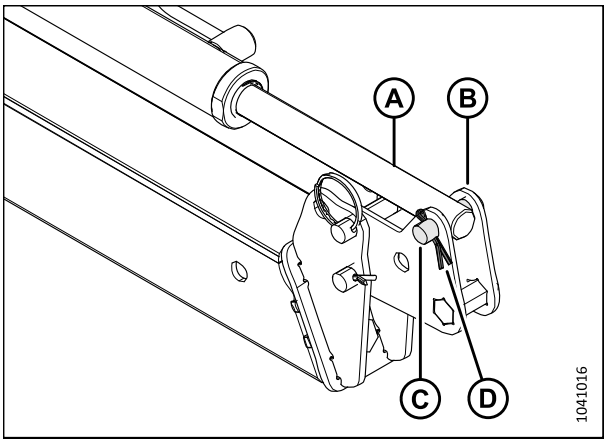


Figure 5.63: Cylinder Secured to Right Reel Arm

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

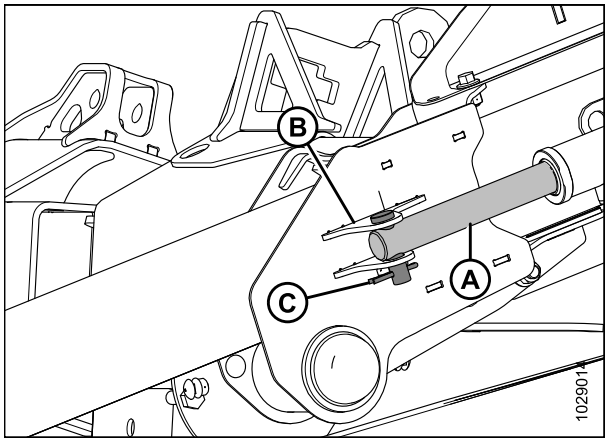


Figure 5.64: Cylinder Secured to Left Reel Arm

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

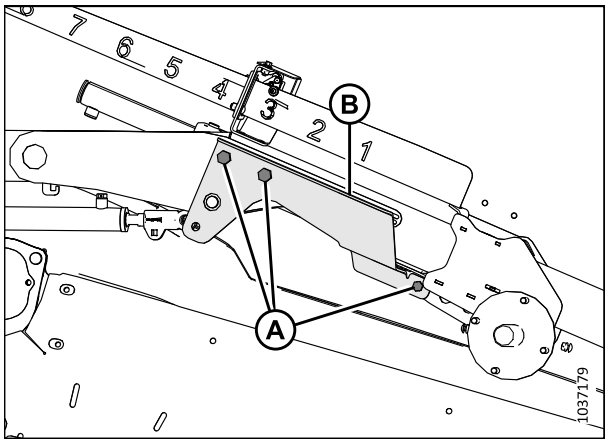


Figure 5.65: Left Reel Arm Shipping Support

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.

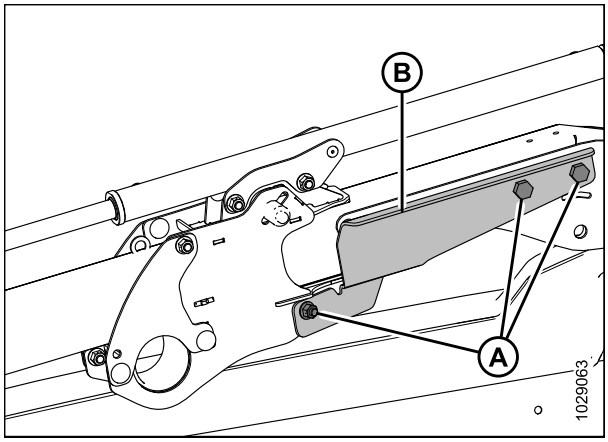


Figure 5.66: Right Reel Arm Shipping Support

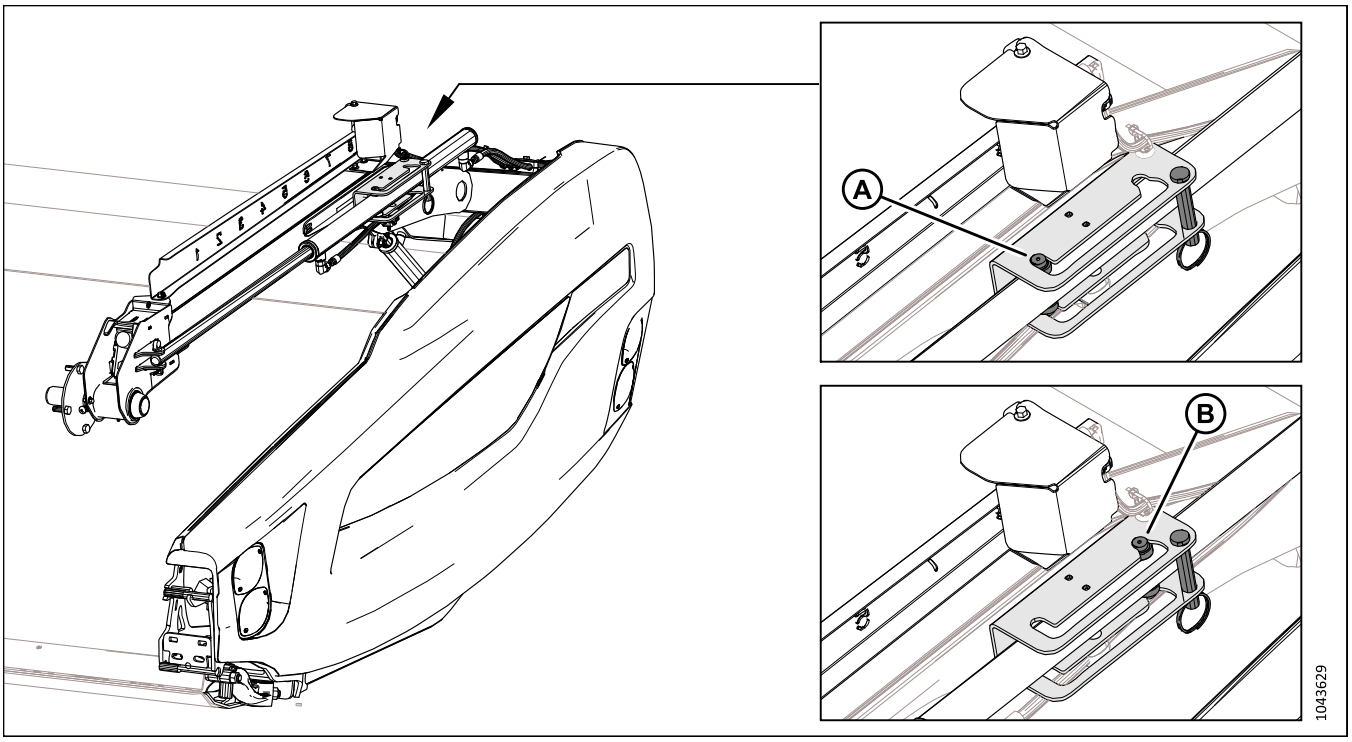


Figure 5.67: Left Arm Cylinder

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.

5.14 Connecting Reel to Fore-Aft Cylinders – Double-Reel Headers D230 and D235 (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 combine. 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.

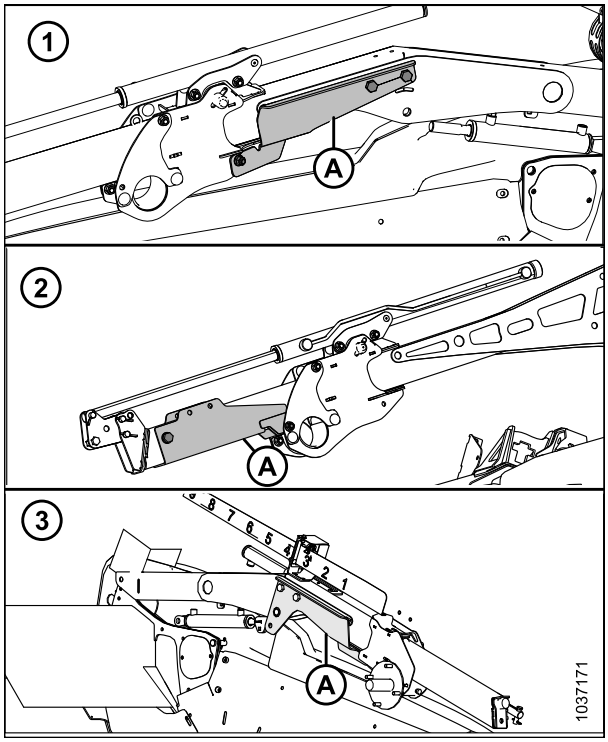


Figure 5.68: Fore-Aft Shipping Supports

1 - Outer Right Reel Arm **2 - Center Arm**

3 - Outer Left Reel Arm

3. Retrieve parts bag MD #347580. For a list of parts, refer to Table *5.4, page 133*.

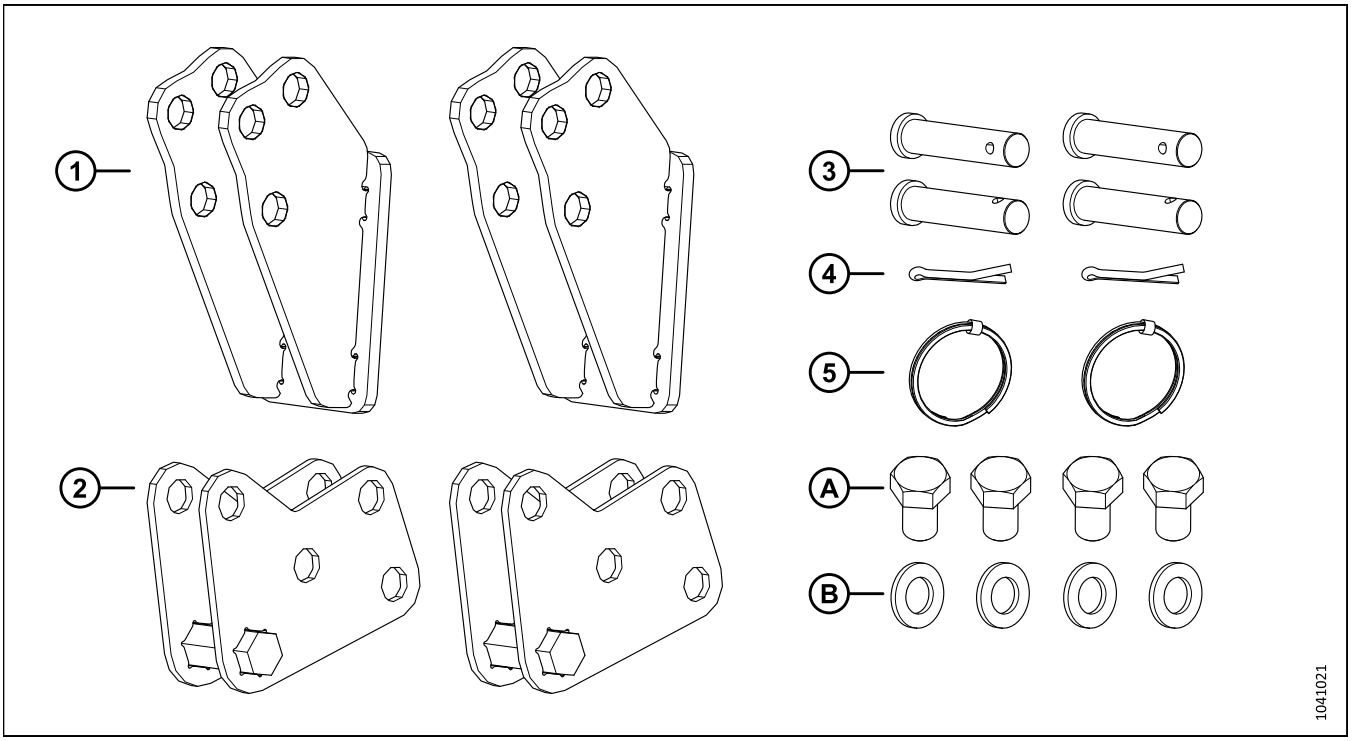


Figure 5.69: Fore-Aft Support Parts Bag MD #347580 for Center Arm and Right Arm

Table 5.4 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

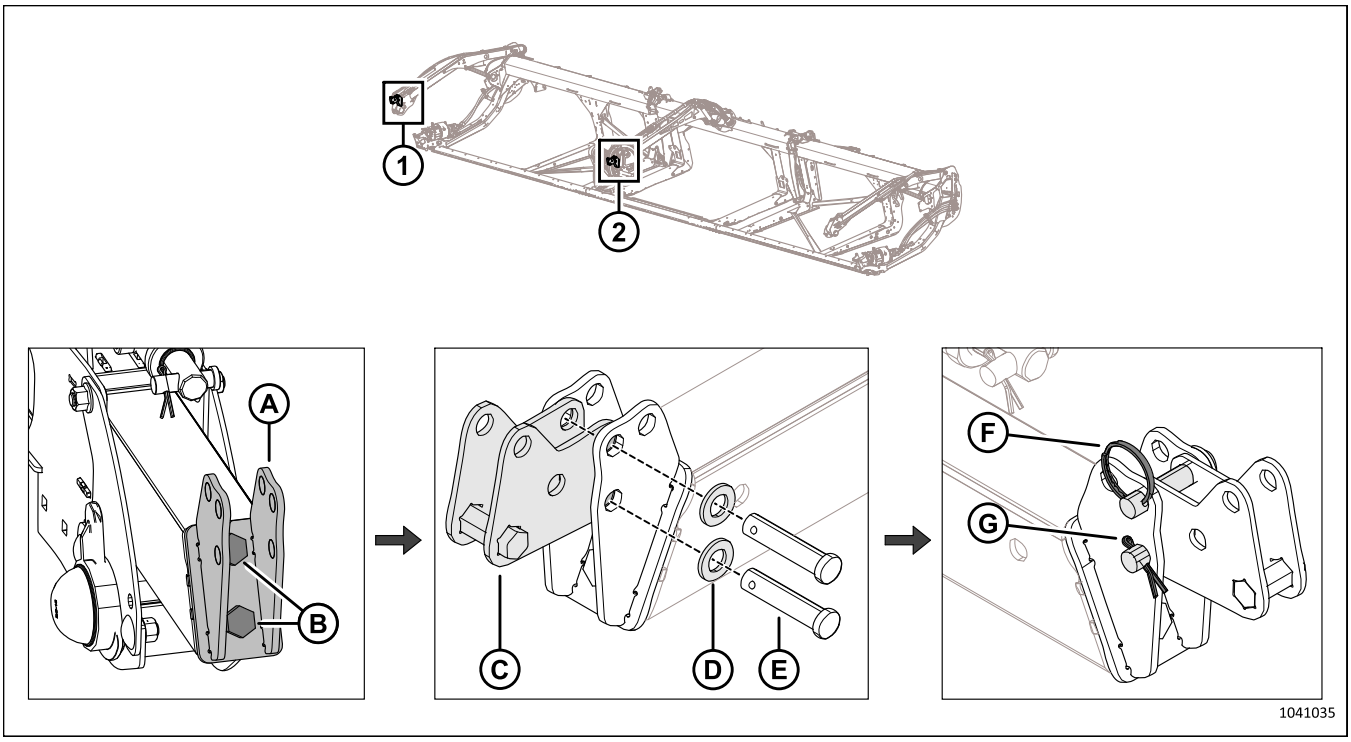


Figure 5.70: Fore-Aft Support Locations

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.

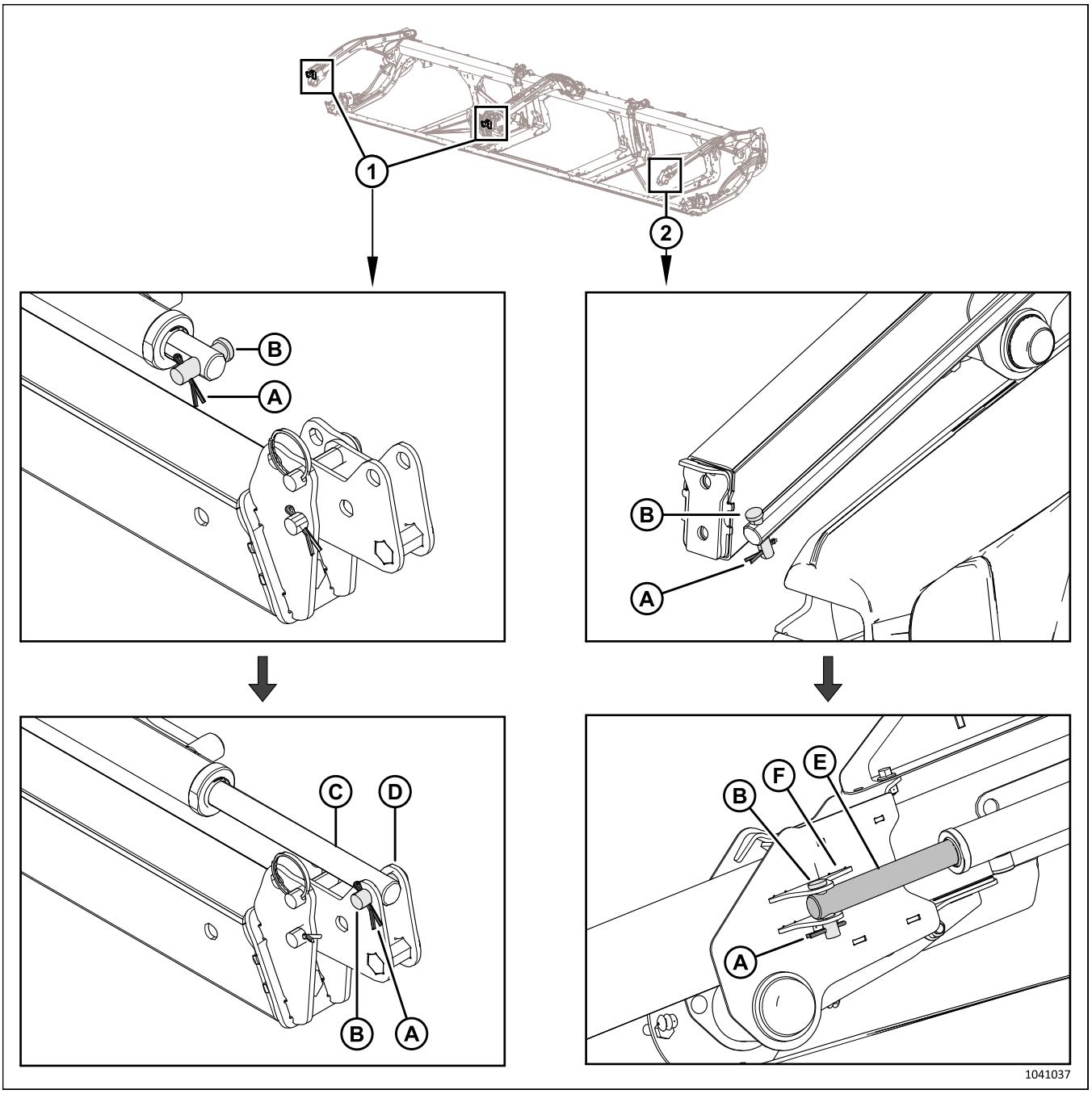


Figure 5.71: Double-Reel Fore-Aft Cylinder Rods

5. Remove and retain cotter pin (A) and clevis pin (B) from all three fore-aft cylinder rods.
6. Use the combine 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).

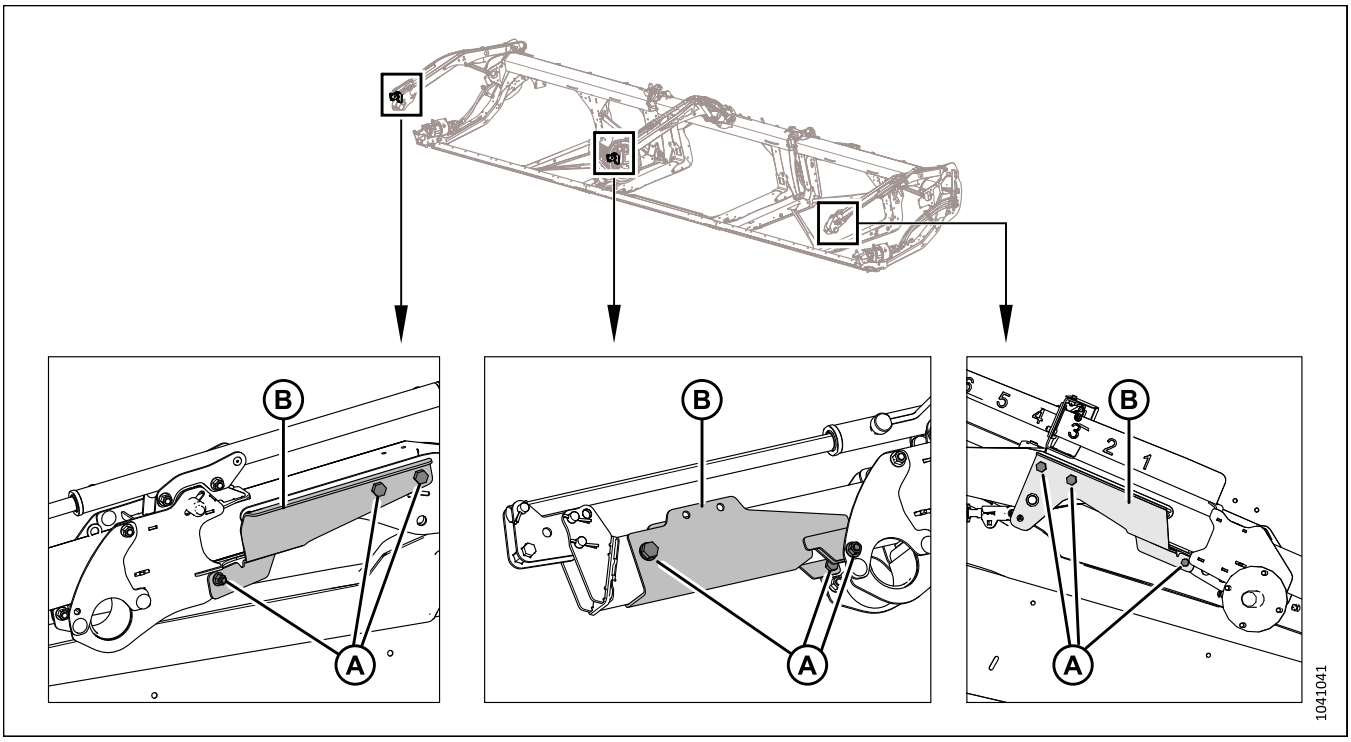


Figure 5.72: Shipping Supports

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.

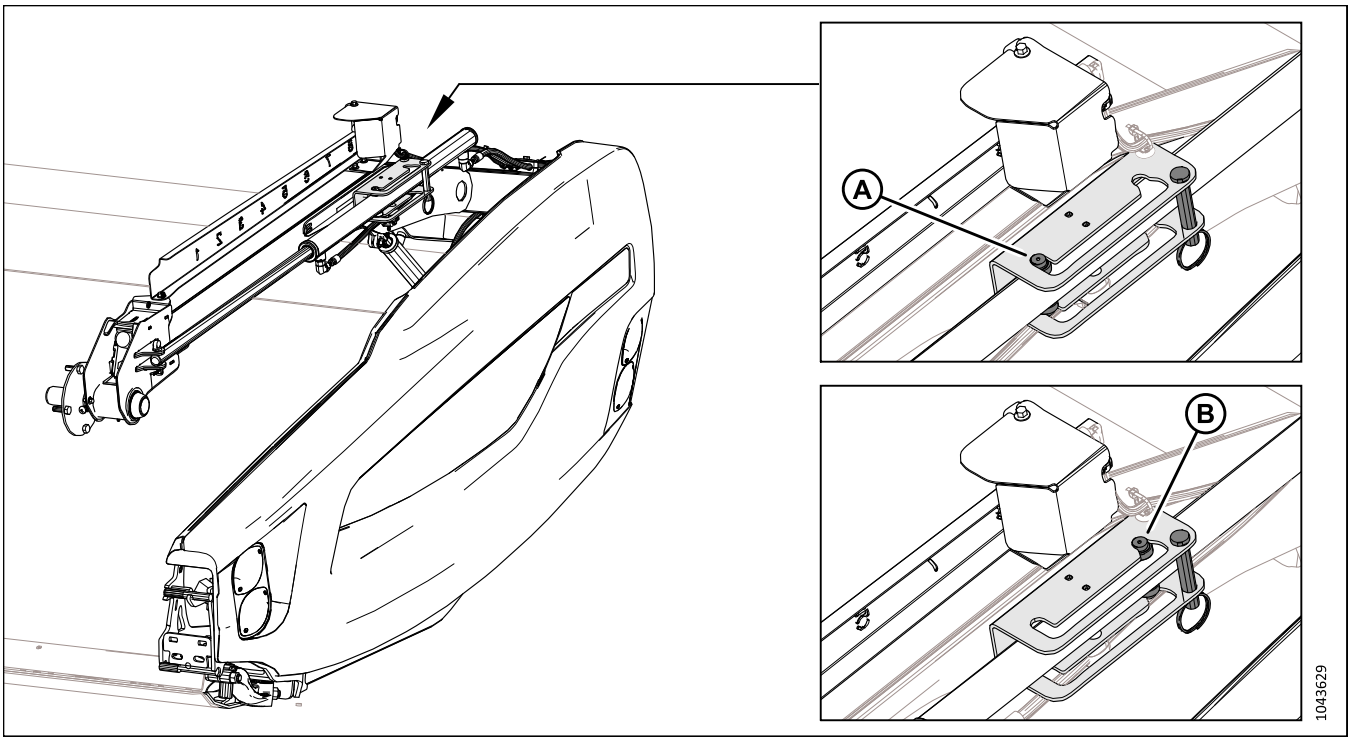


Figure 5.73: Left Arm Cylinder

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.

5.15 Installing Reel Fore-Aft Hose Clamp – D230 and D235

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.

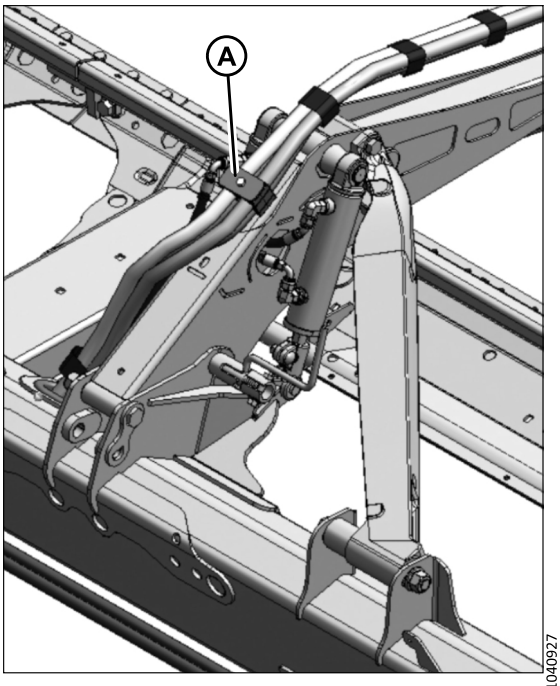


Figure 5.74: Reel Arm Fore-Aft Hose Clamp – Double-Reel

5.16 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.

5.16.1 Installing Tine Tube onto Reel – D225 (Parts Bag MD #357394)

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

1. Retrieve parts bag MD #357394. For a list of parts, refer to Table *5.5, page 138*

Table 5.5 Parts Bag MD #357394

Part Number	Description	Quantity
320175	BOLT – HEX FLG HD TFL M12 X 1.75 X 25 - SPCL - 8.8 - ZINC	3
136431	NUT – HEX FLG CTR LOC M12 X 1.75-10	3
136151	BOLT – HEX FLG HD TFL M10 X 1.5 X 16 - 8.8 - AA1J	8
135799	NUT – HEX FLG CTR LOC M10 X 1.5 -10	8

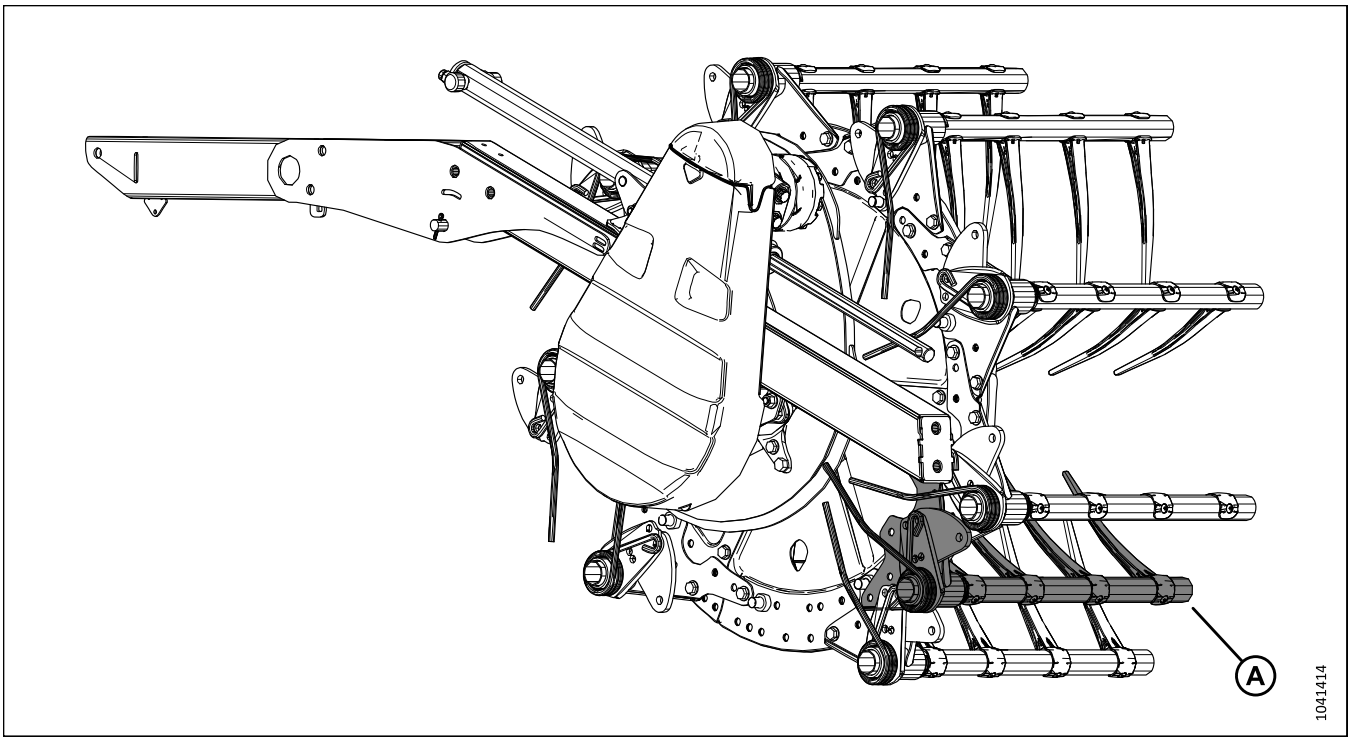


Figure 5.75: Tine Tube in Shipping Position

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

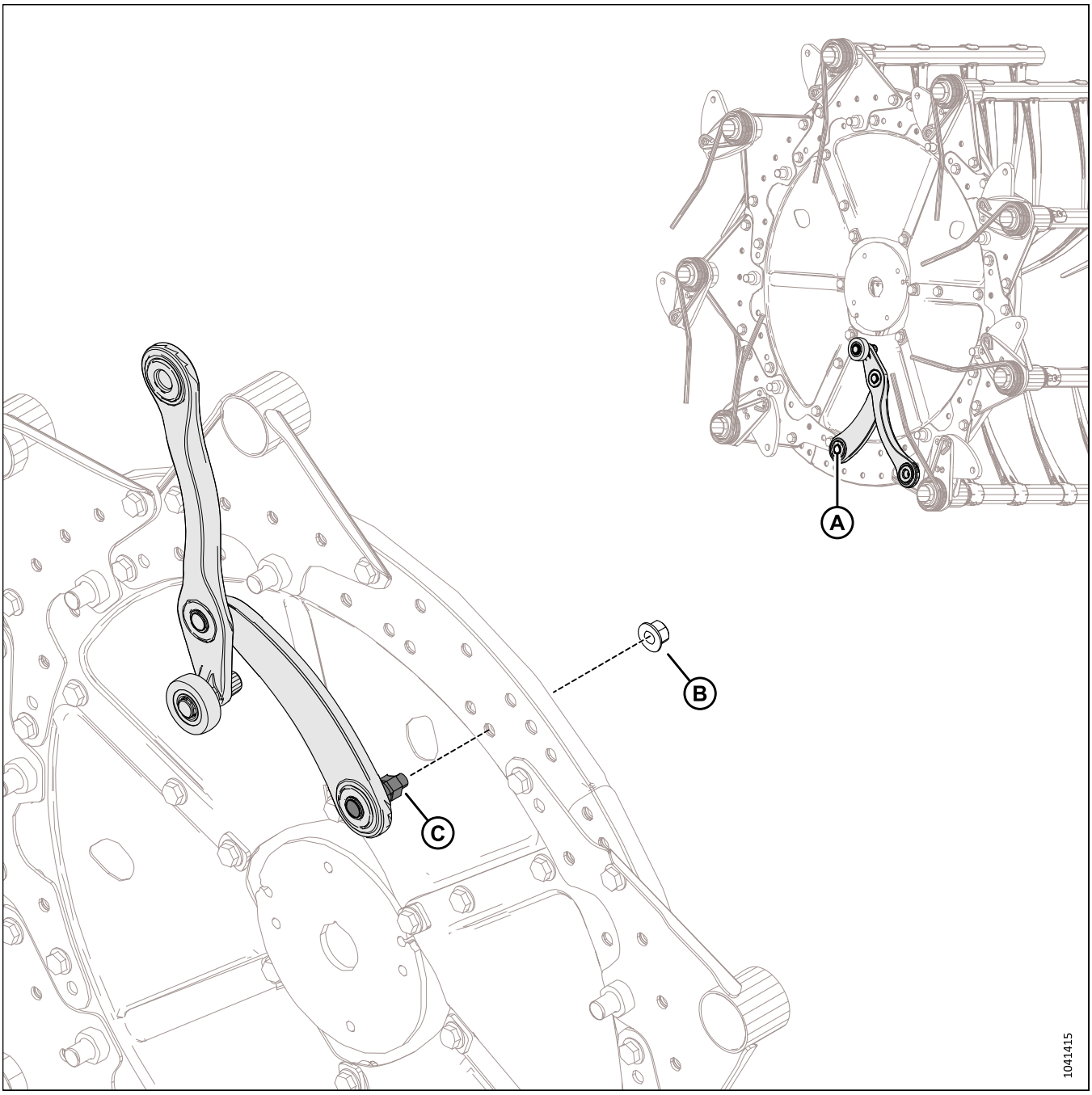


Figure 5.76: Cam Linkage Associated with Removed Tine Tube

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.

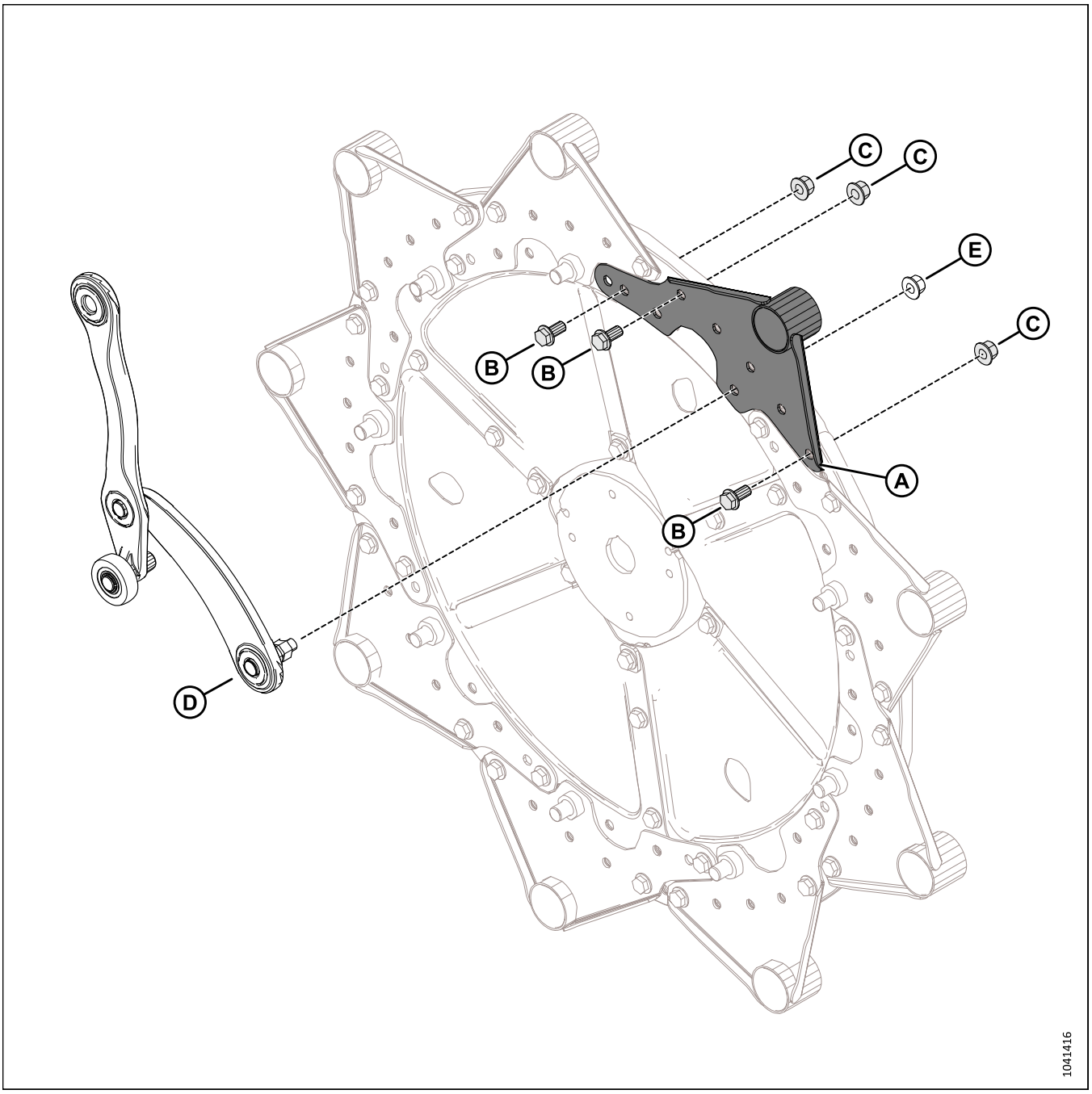


Figure 5.77: Tine Tube and Cam Linkage Installation on Cam End Disc

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).

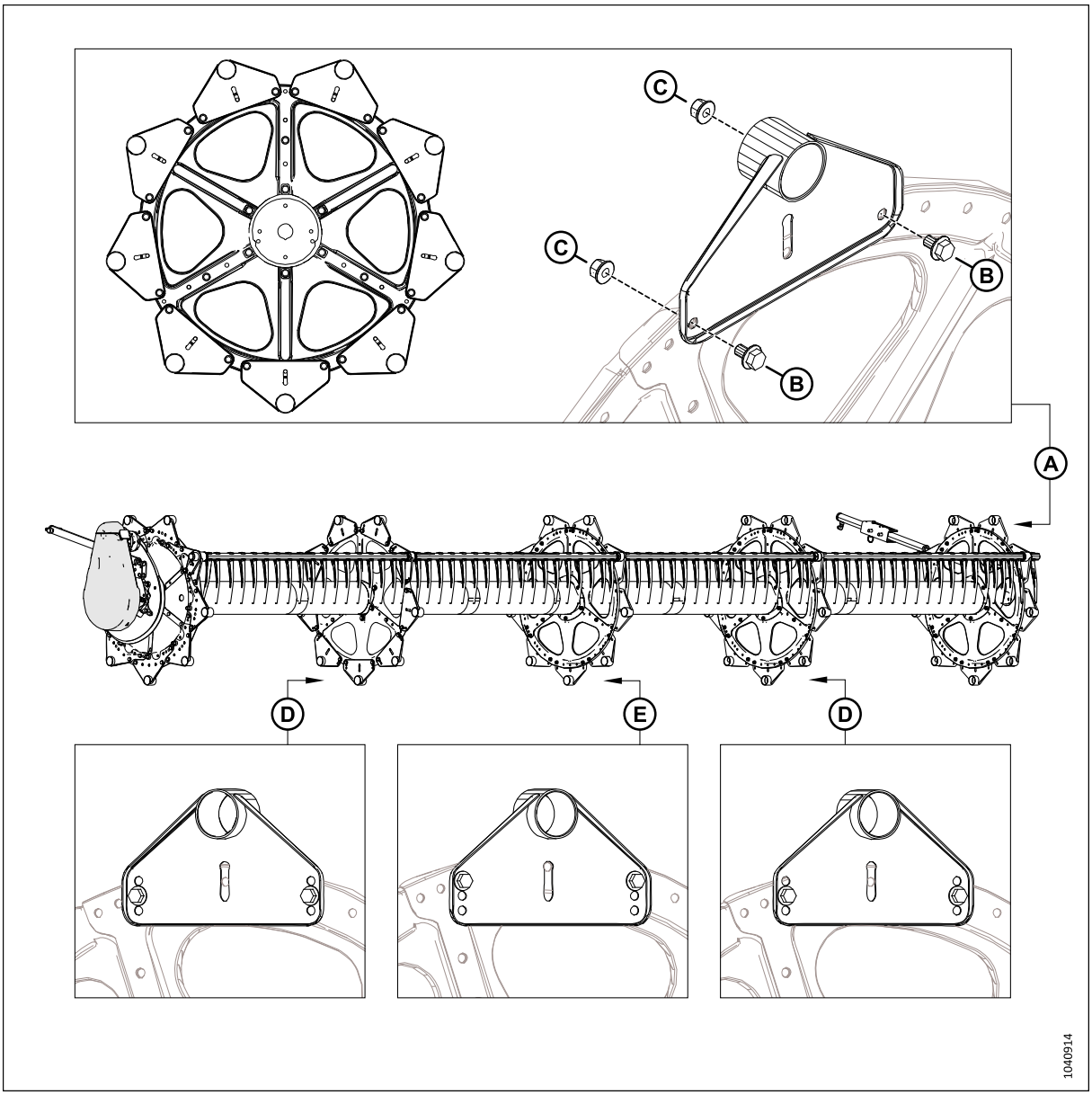


Figure 5.78: Tine Tube Installation on Mid and Tail End Discs

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.

   IMPORTANT:

   Mounting the tine tubes onto the mid-discs according to specification helps maintain an even and correct clearance between the fingers and cutterbar.

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.

5.16.2 Connecting Cam Control Linkages to Tine Tube Cranks – D225 (Parts Bag MD #357743)

Seven of the nine cam linkages need to be attached to the tine tube cranks.

1. Retrieve parts bag MD #357743. This bag contains:
   - Seven M16 x 30 mm bolts (A)
   - Seven shims (B)

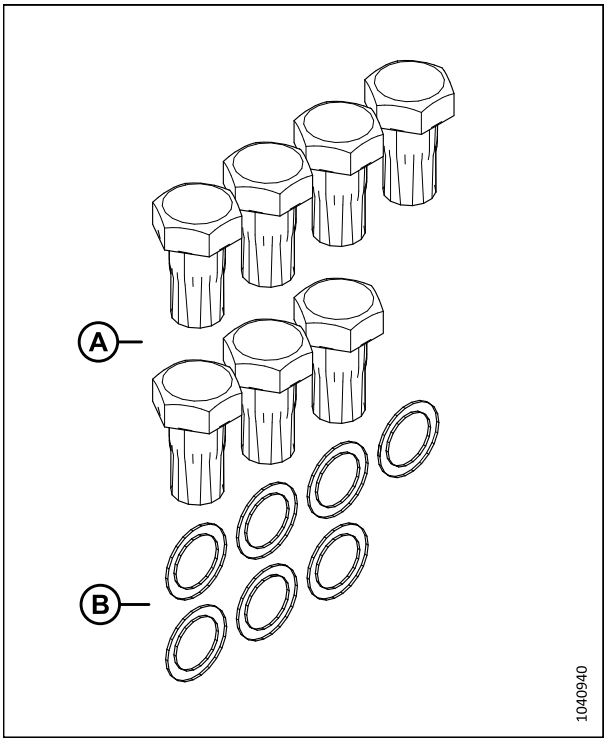


Figure 5.79: Parts Bag MD #357743

2. Install M16 bolt (A) in link (C), and position shim (B) on bolt so that shim is between link (C) and tine bar crank (D).

   NOTE:

   Bolts are precoated with threadlocker so no further locking method is required.

3. Realign link (C) and tine bar crank (D), and thread in bolt (A).
4. Torque bolt (A) to 163 Nm (120 lbf·ft).
5. Repeat this procedure until all seven disconnected cam linkages are re-attached. The reel has a total of nine cam linkages.

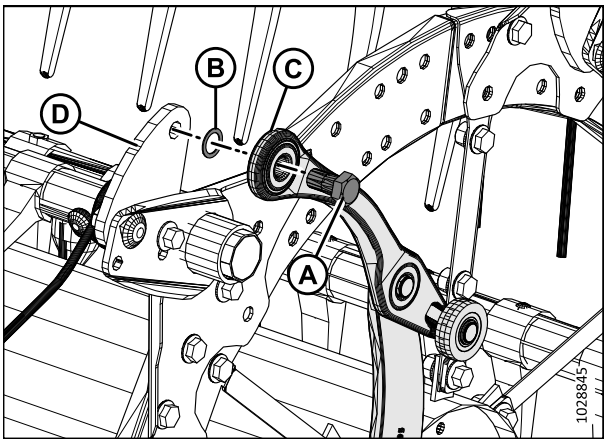


Figure 5.80: Cam Link

5.16.3 Connecting Cam Control Linkages to Tine Tube Cranks – D230 and D235 (Parts Bag MD #347627)

Four of the six cam linkages on each reel need to be reattached to the tine tube cranks.

1. Retrieve parts bag MD #347627. This bag contains:
   - Eight M16 x 30 mm bolts (A)
   - Eight shims (B)

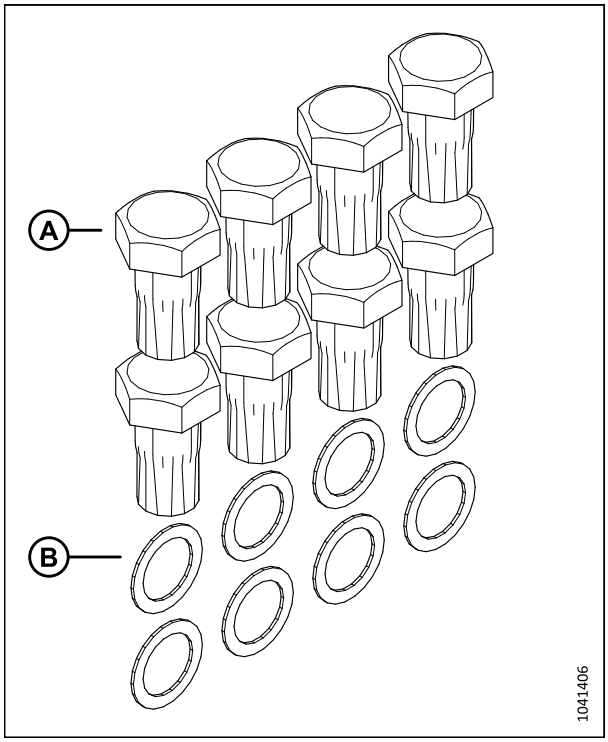


Figure 5.81: Parts Bag MD #347627

2. Install M16 bolt (A) in link (C), and position shim (B) on bolt so that shim is between link (C) and tine bar crank (D).

   NOTE:

   Bolts are pre-coated with Loctite® so no further locking method is required.

3. Realign link (C) and tine bar crank (D), and thread in bolt (A).
4. Torque bolt (A) to 163 Nm (120 lbf·ft).
5. Repeat this procedure until all eight disconnected cam linkages (four per reel) are re-attached. Each reel has six cam linkages.

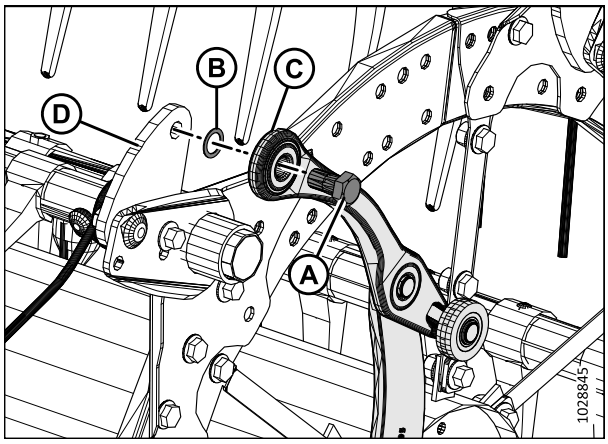


Figure 5.82: Cam Link

5.17 Installing Single-Reel Endshields, Nine-Bat – D225 (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.

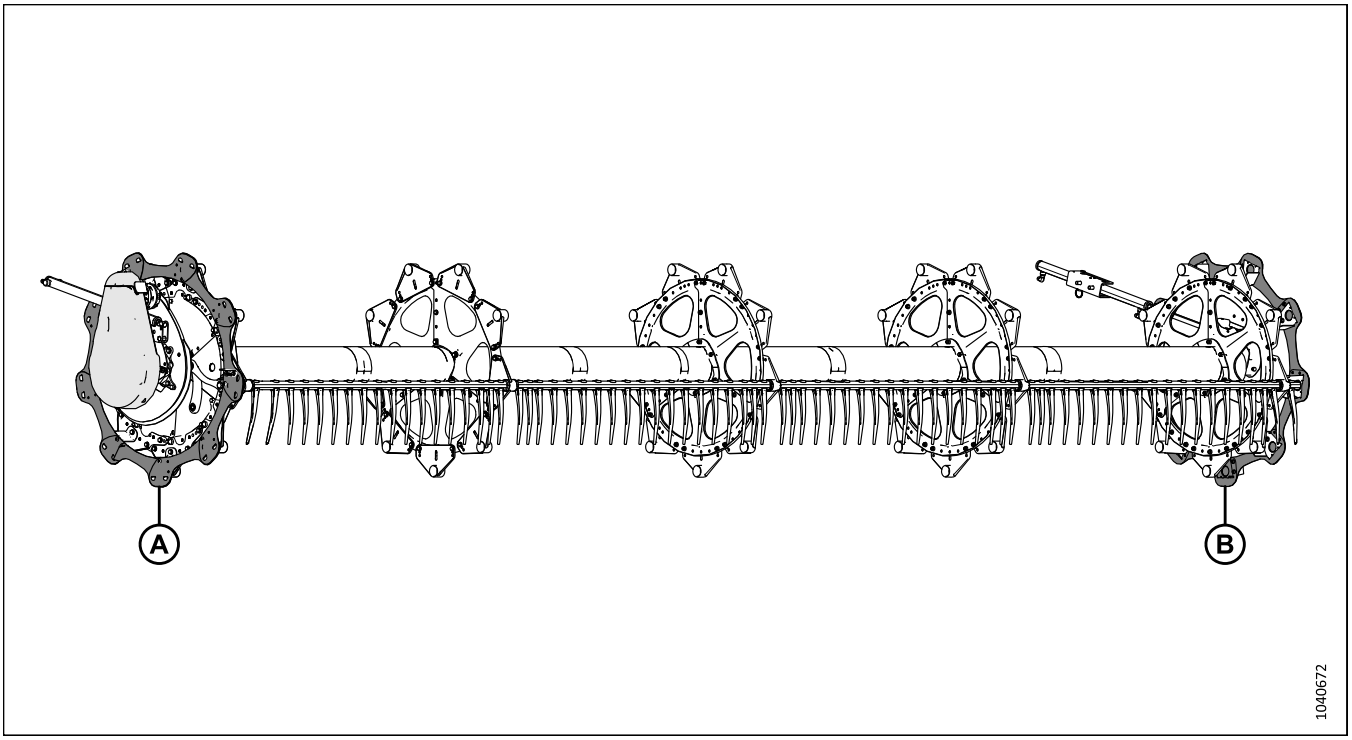


Figure 5.83: Nine-Bat Single-Reel

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 *5.17.1 Installing Single-Reel Endshields at Cam End – Nine-Bat, page 146*.

3. Install tail-end endshields (B). For instructions, refer to *5.17.2 Installing Single-Reel Endshields at Tail End – Nine-Bat, page 153*.

5.17.1 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.

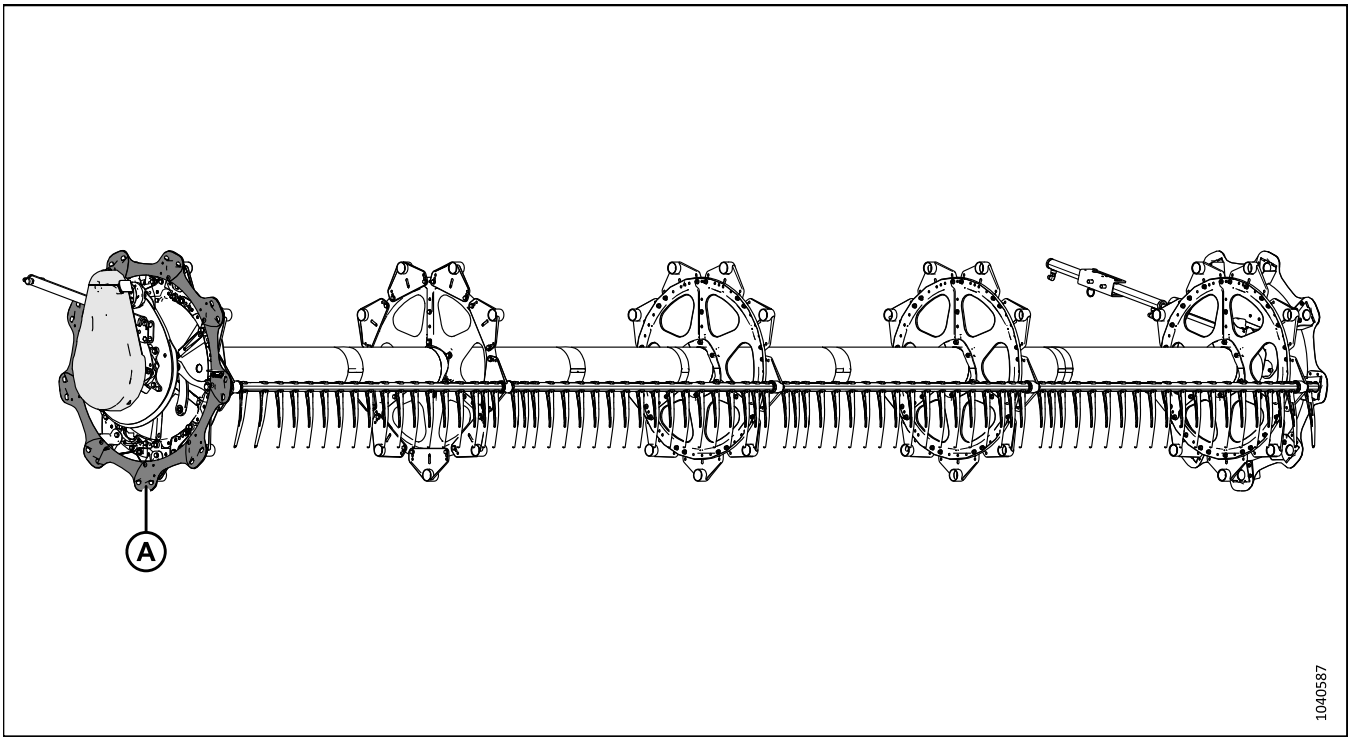


Figure 5.84: Nine-Bat Single-Reel

NOTE:

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

1. Retrieve parts bag (1) labeled with MD #368328. From that bag, retrieve the parts listed in Table *5.6, page 147*.

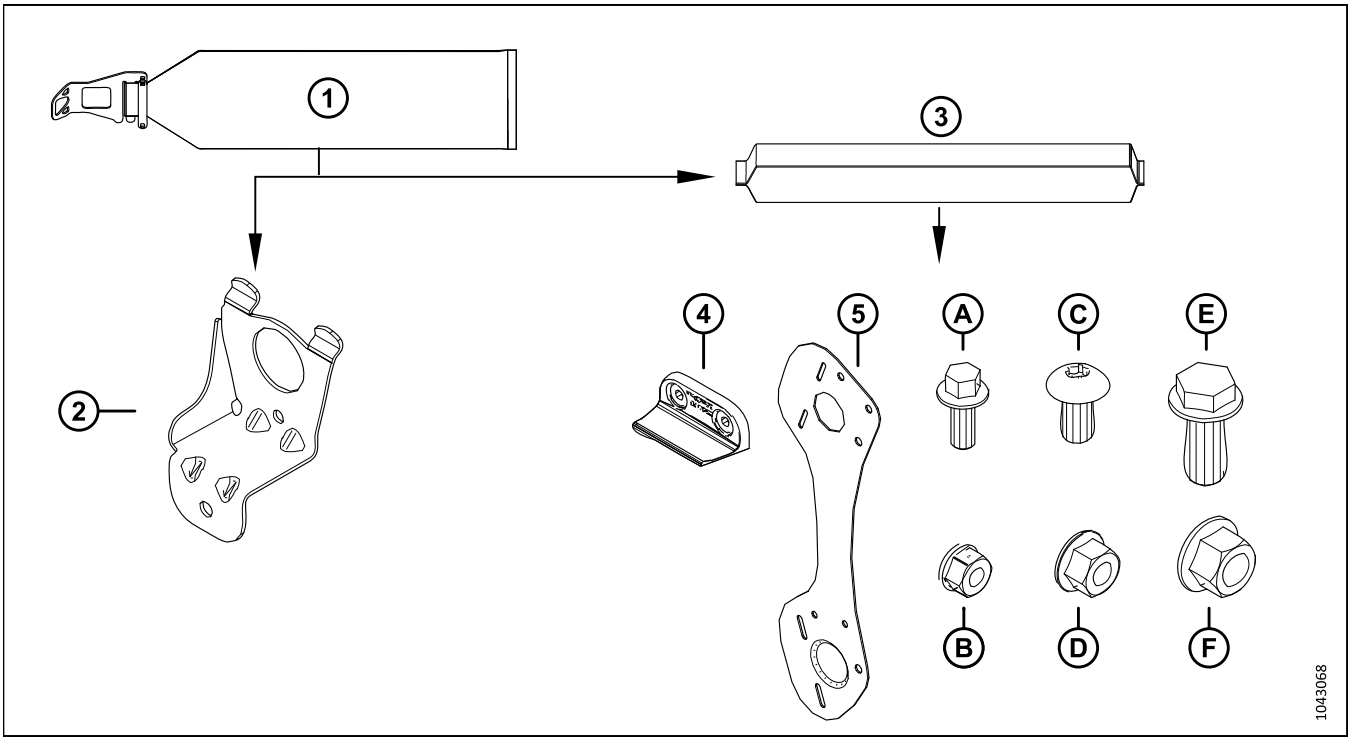


Figure 5.85: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Table 5.6 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Ref	Part Number	Description	Quantity
2	311964 – see note[5]	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

5. 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.

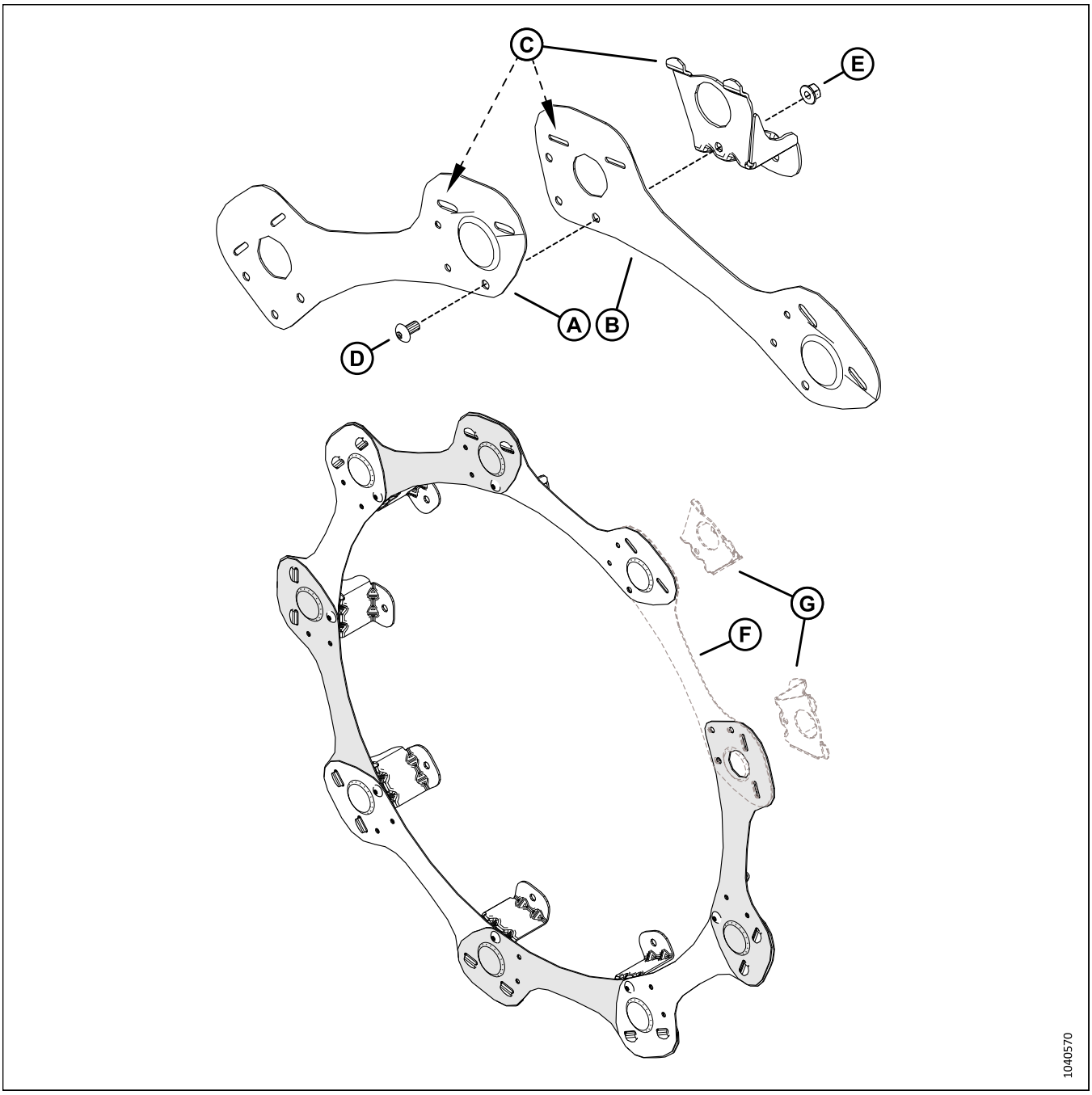


Figure 5.86: Nine-Bat Reel – Initial Endshield Assembly

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.

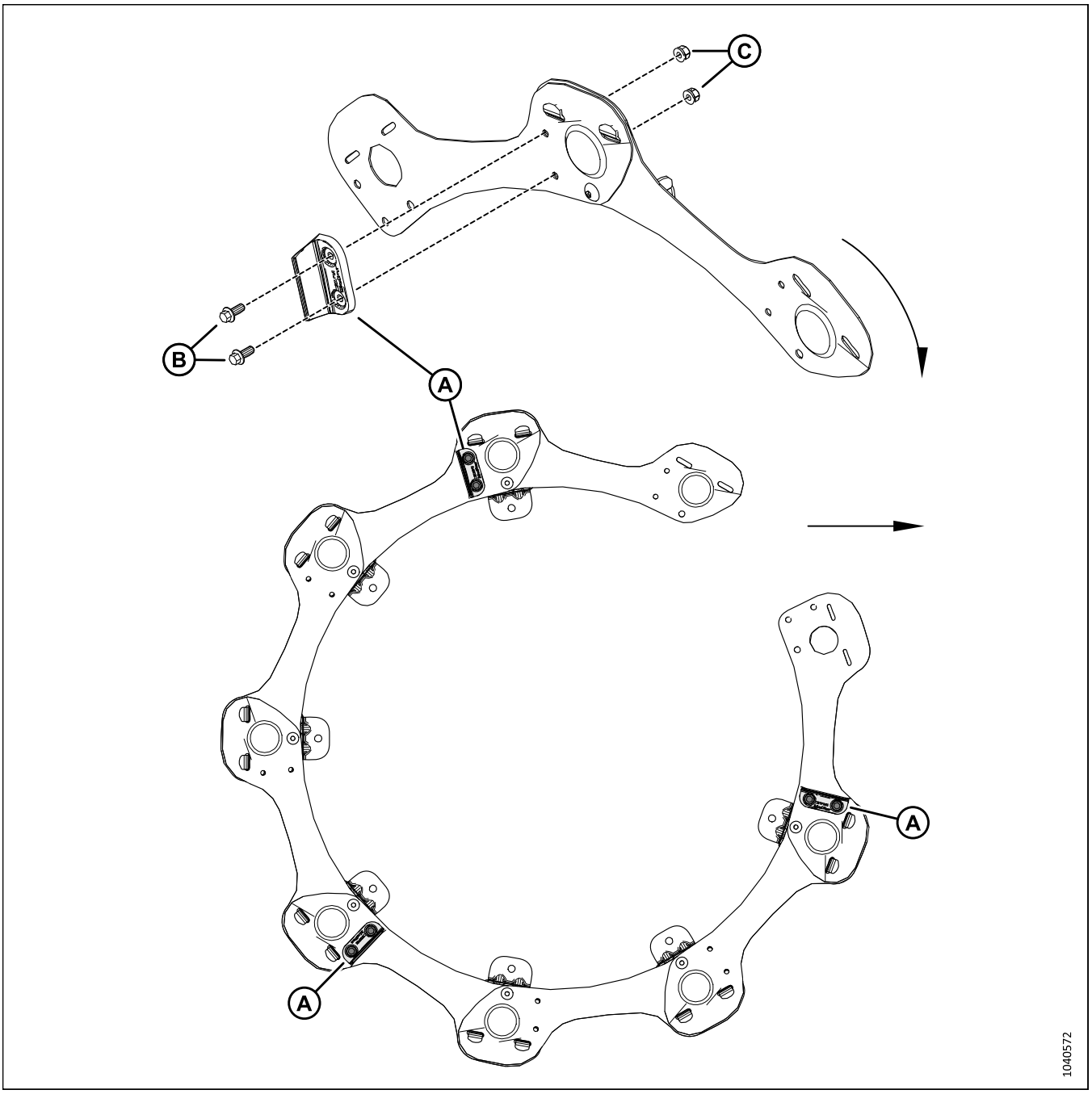


Figure 5.87: Nine-Bat Reel – Initial Endshield Assembly

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.

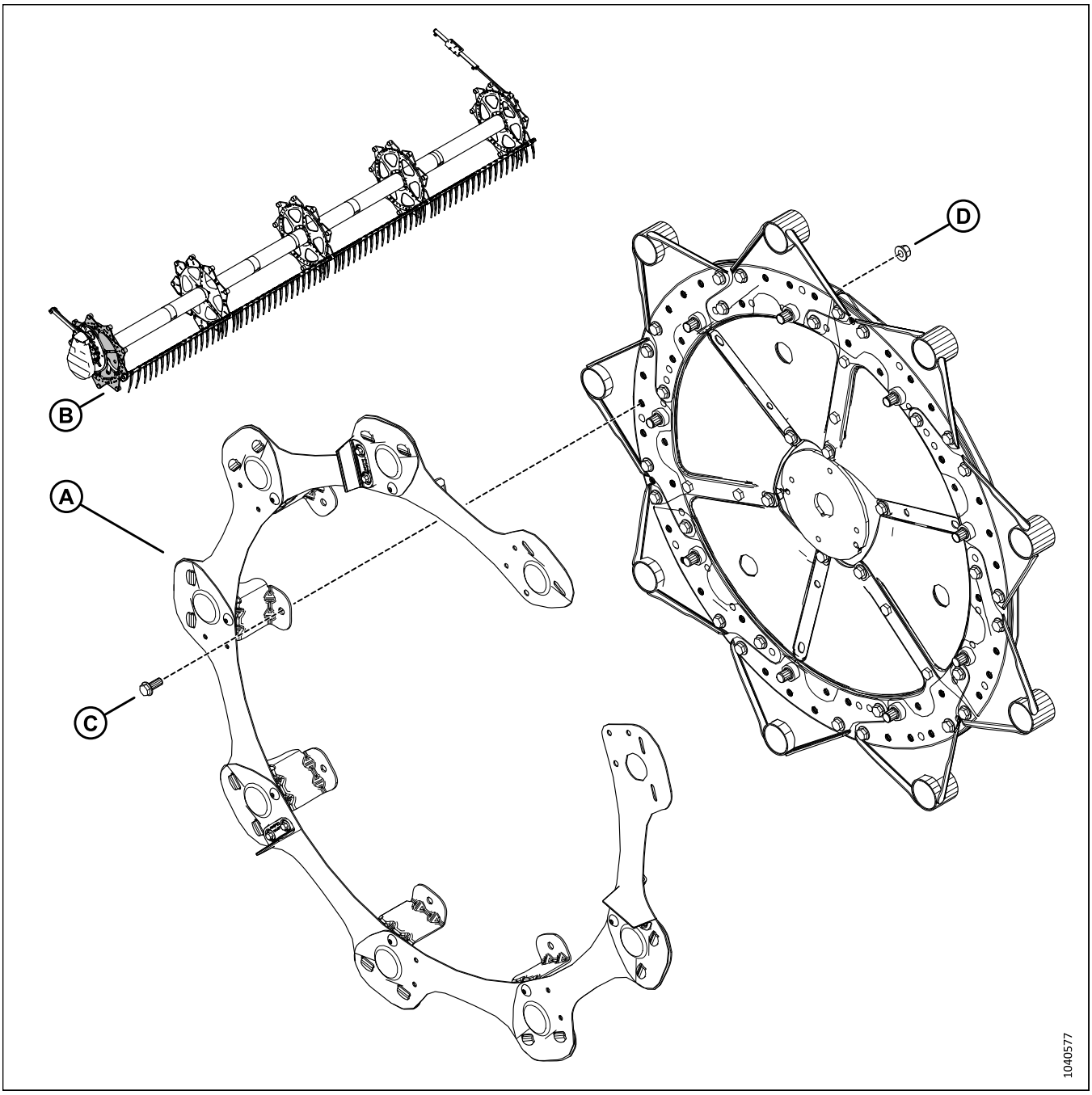


Figure 5.88: Nine-Bat Reel – Initial Endshield Assembly

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.

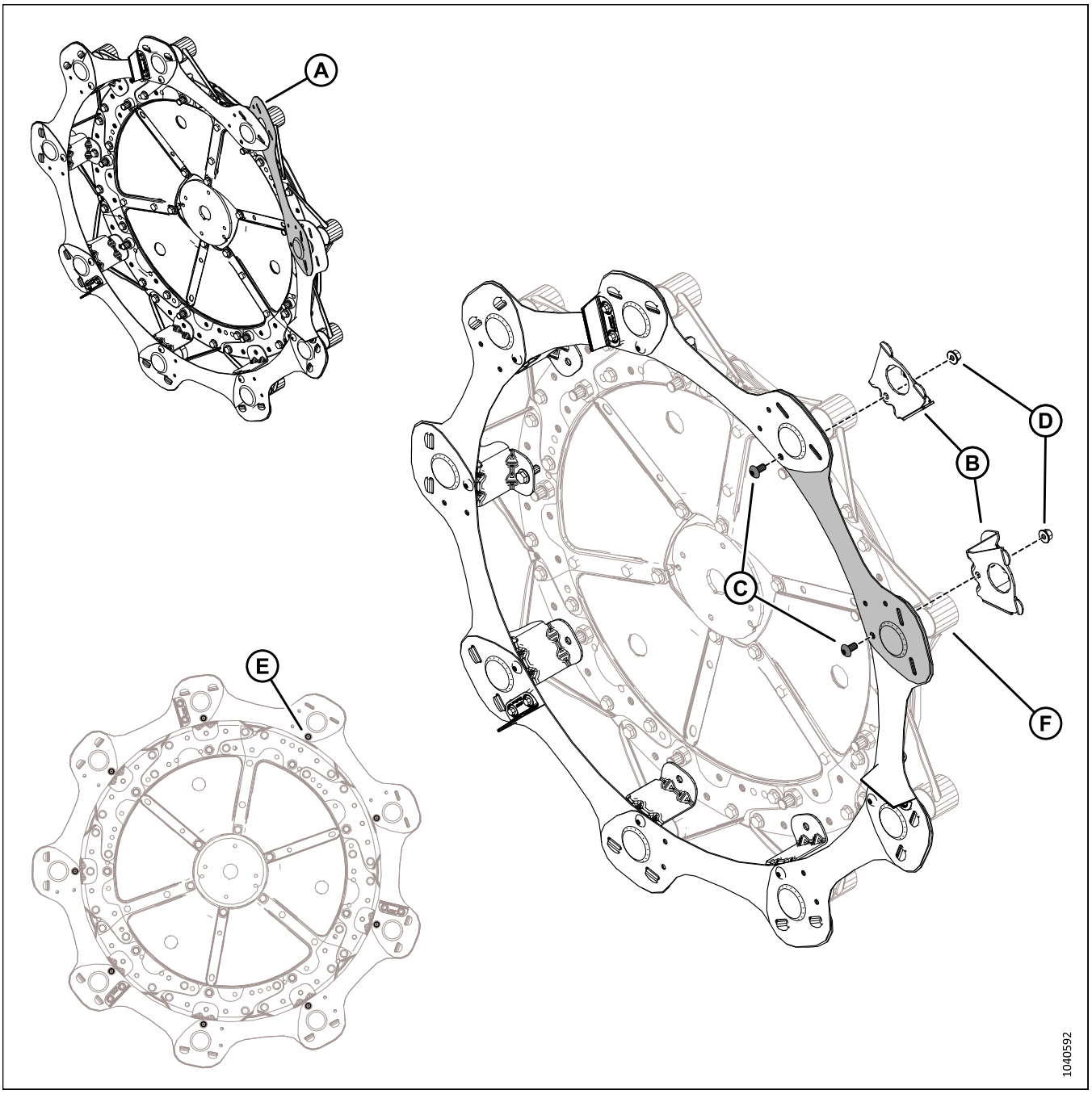


Figure 5.89: Nine-Bat Reel – Initial Endshield Assembly

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).

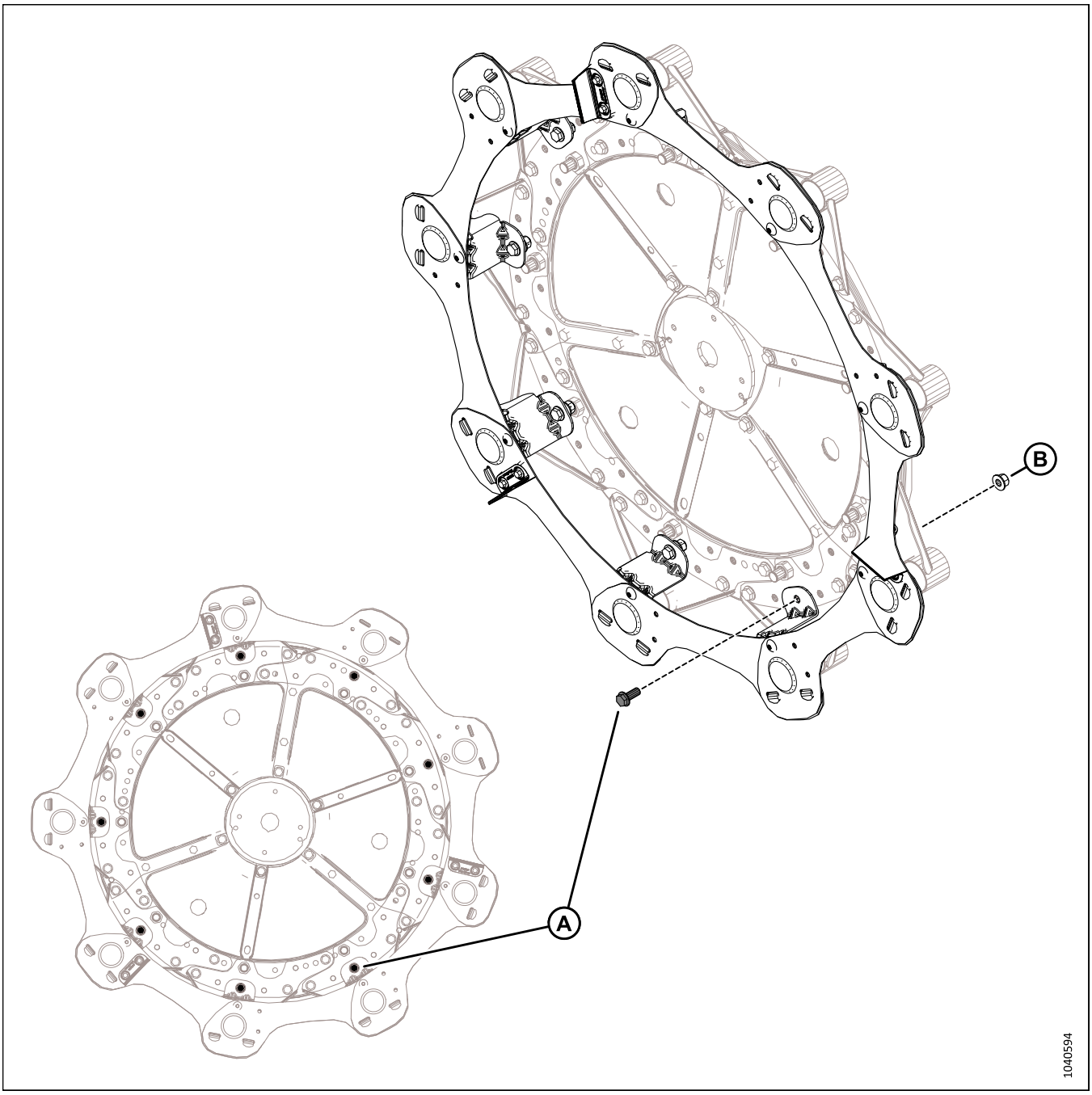


Figure 5.90: Nine-Bat Reel – Initial Endshield Assembly

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).

5.17.2 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.

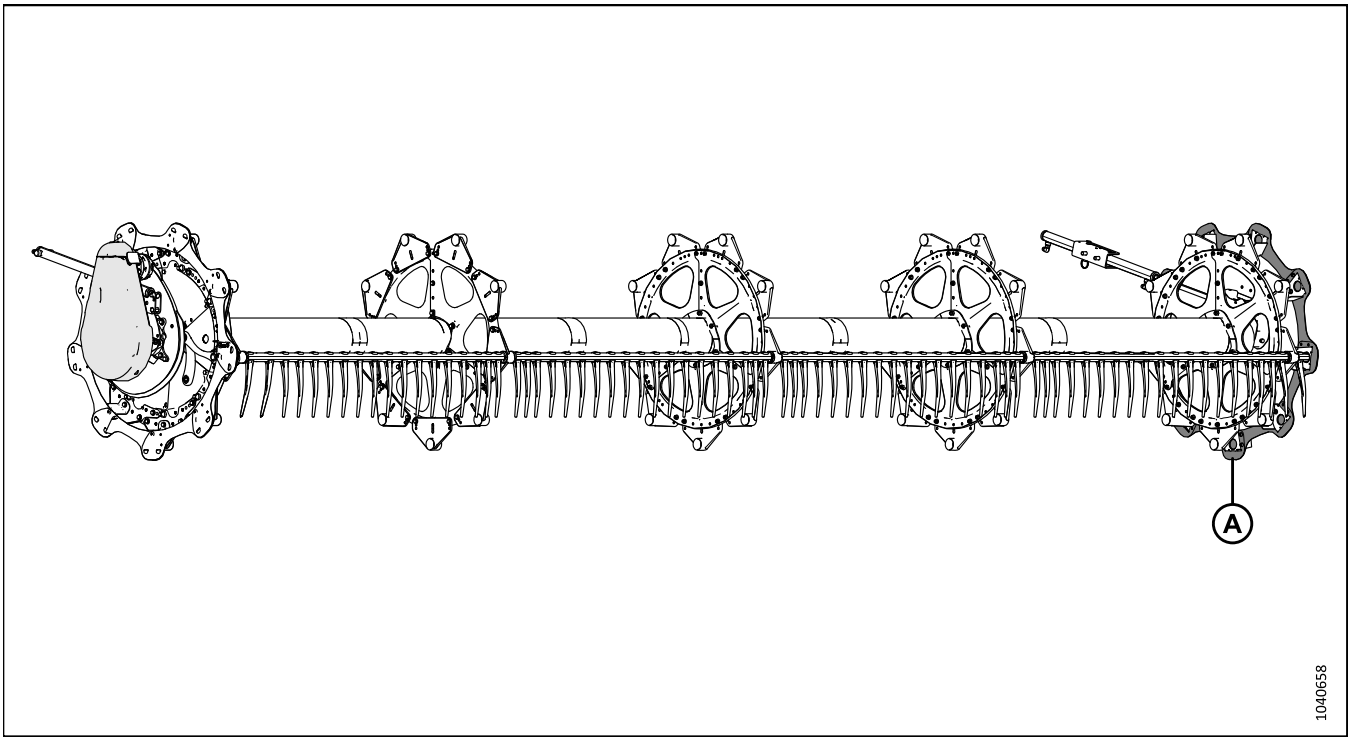


Figure 5.91: Nine-Bat Single-Reel

NOTE:

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

1. Retrieve parts bag (1) labeled with MD #368328. From that bag, retrieve the parts listed in Table *5.7, page 154*.

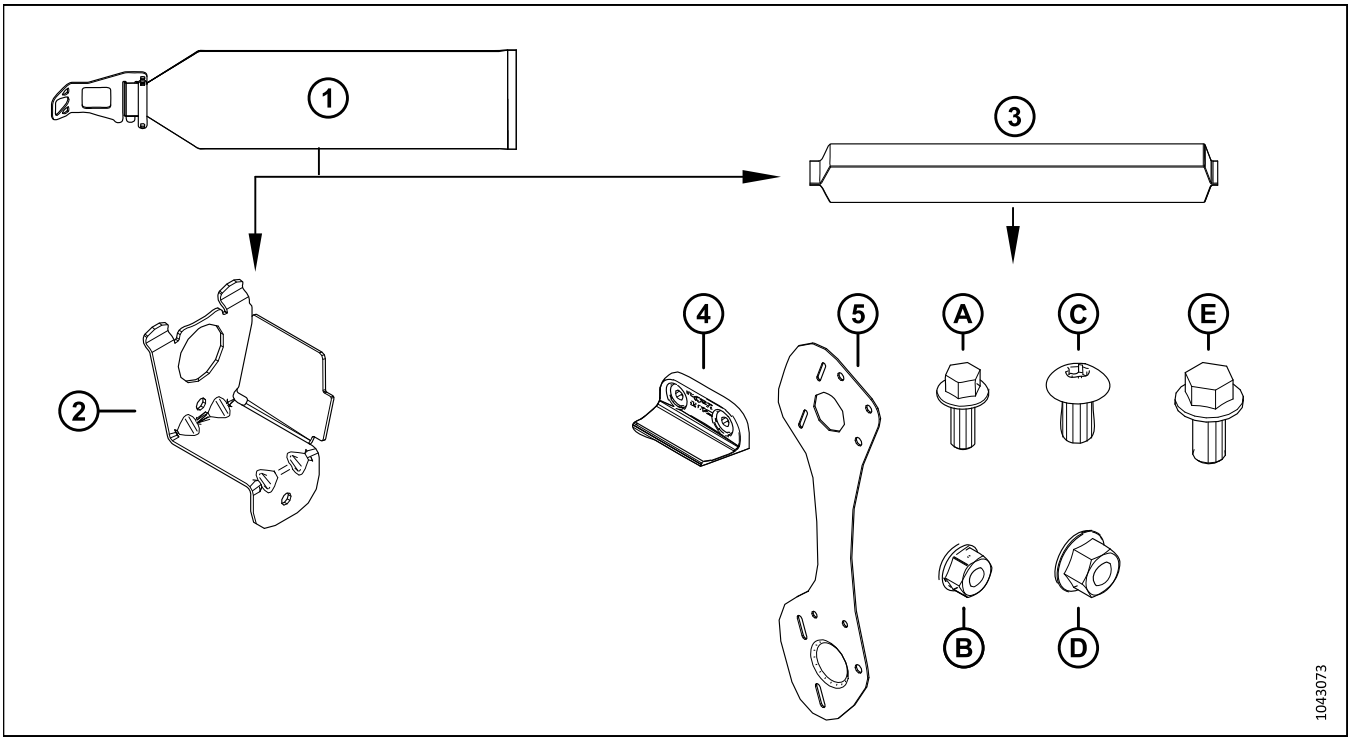


Figure 5.92: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Table 5.7 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #368328

Ref	Part Number	Description	Quantity
2	311965 – see note[6]	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

6. 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.

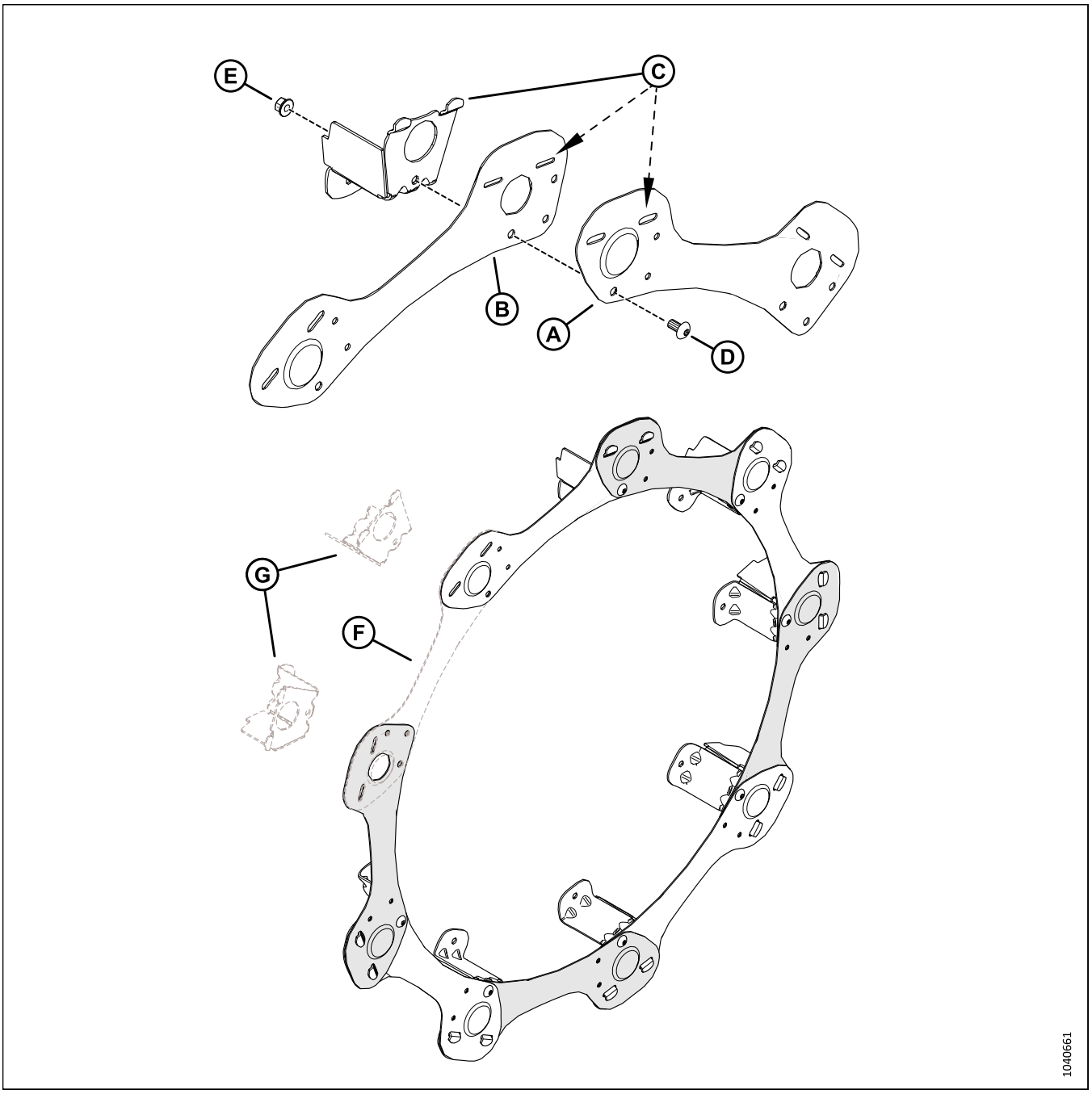


Figure 5.93: Nine-Bat Reel – Initial Endshield Assembly

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.

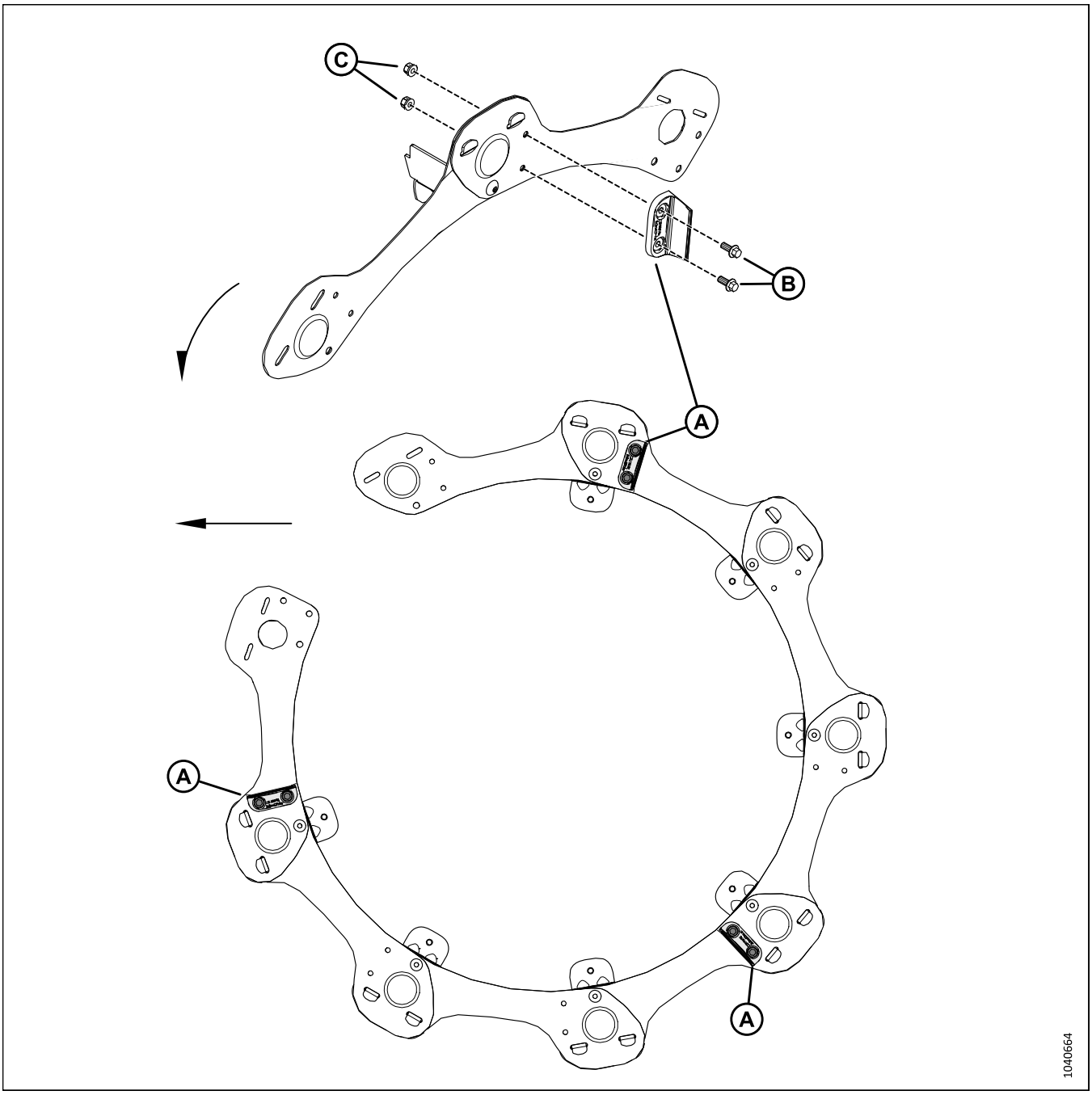


Figure 5.94: Nine-Bat Reel – Initial Endshield Assembly

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.

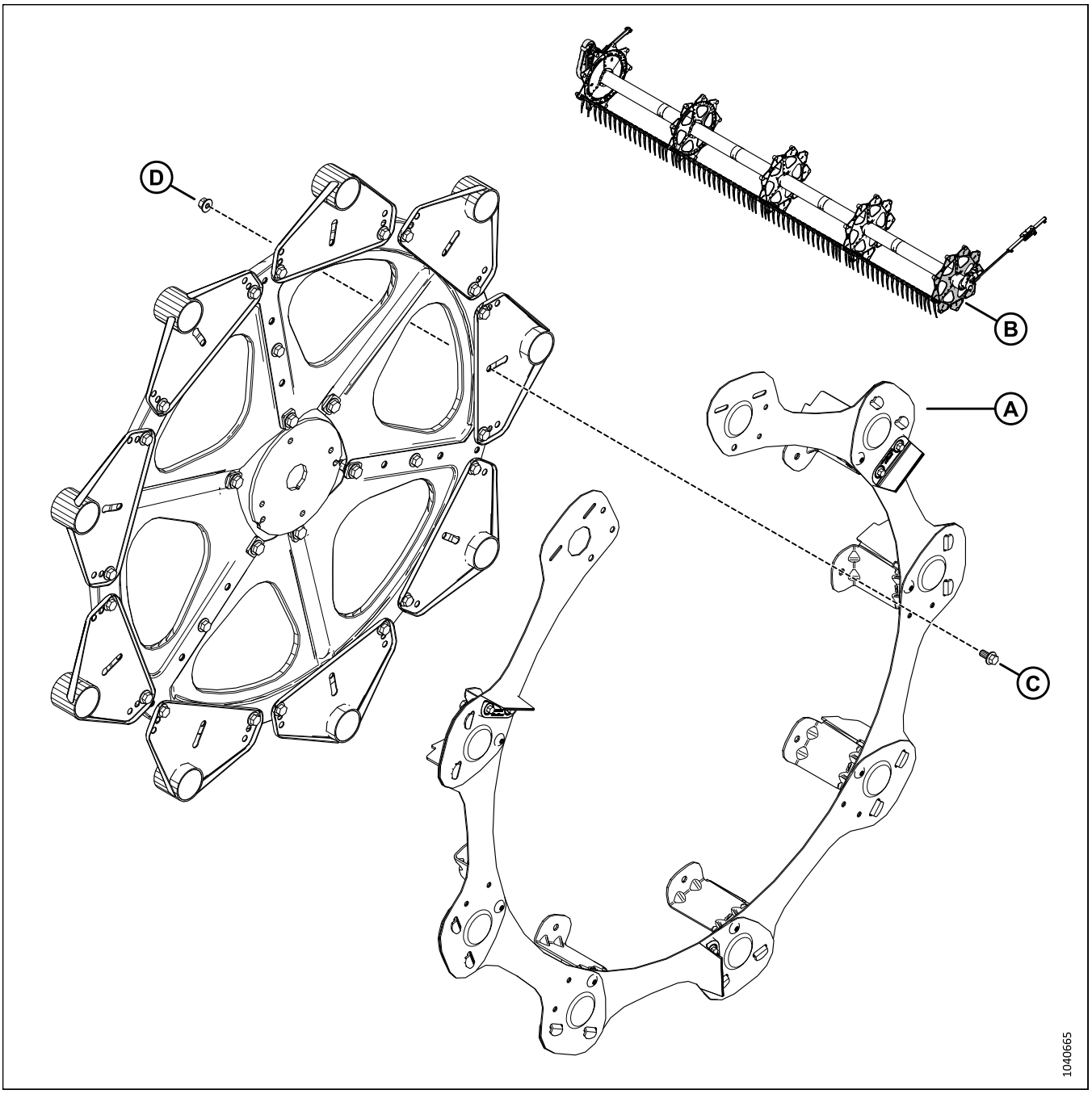


Figure 5.95: Nine-Bat Reel – Initial Endshield Assembly

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.

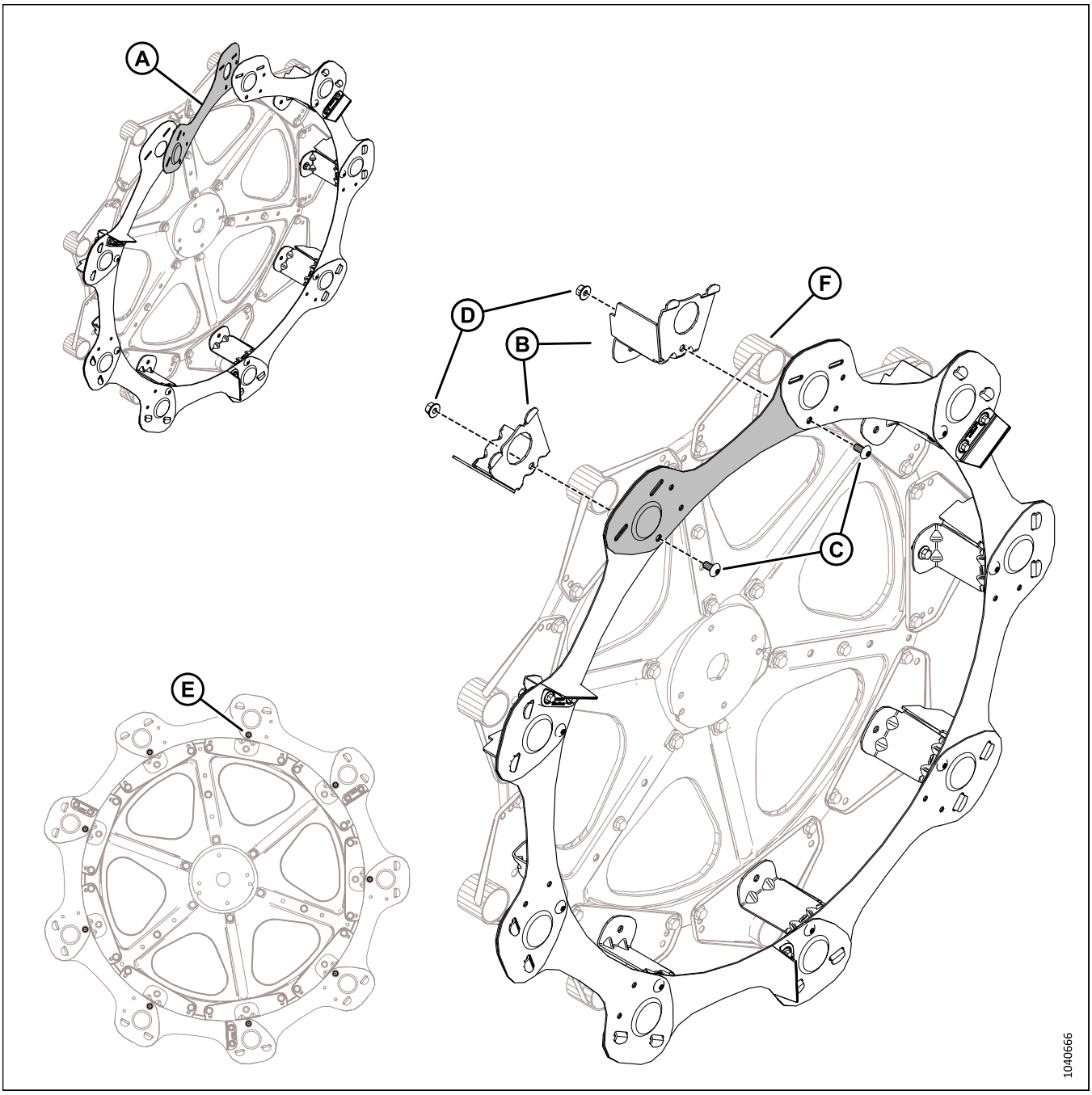


Figure 5.96: Nine-Bat Reel – Initial Endshield Assembly

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).

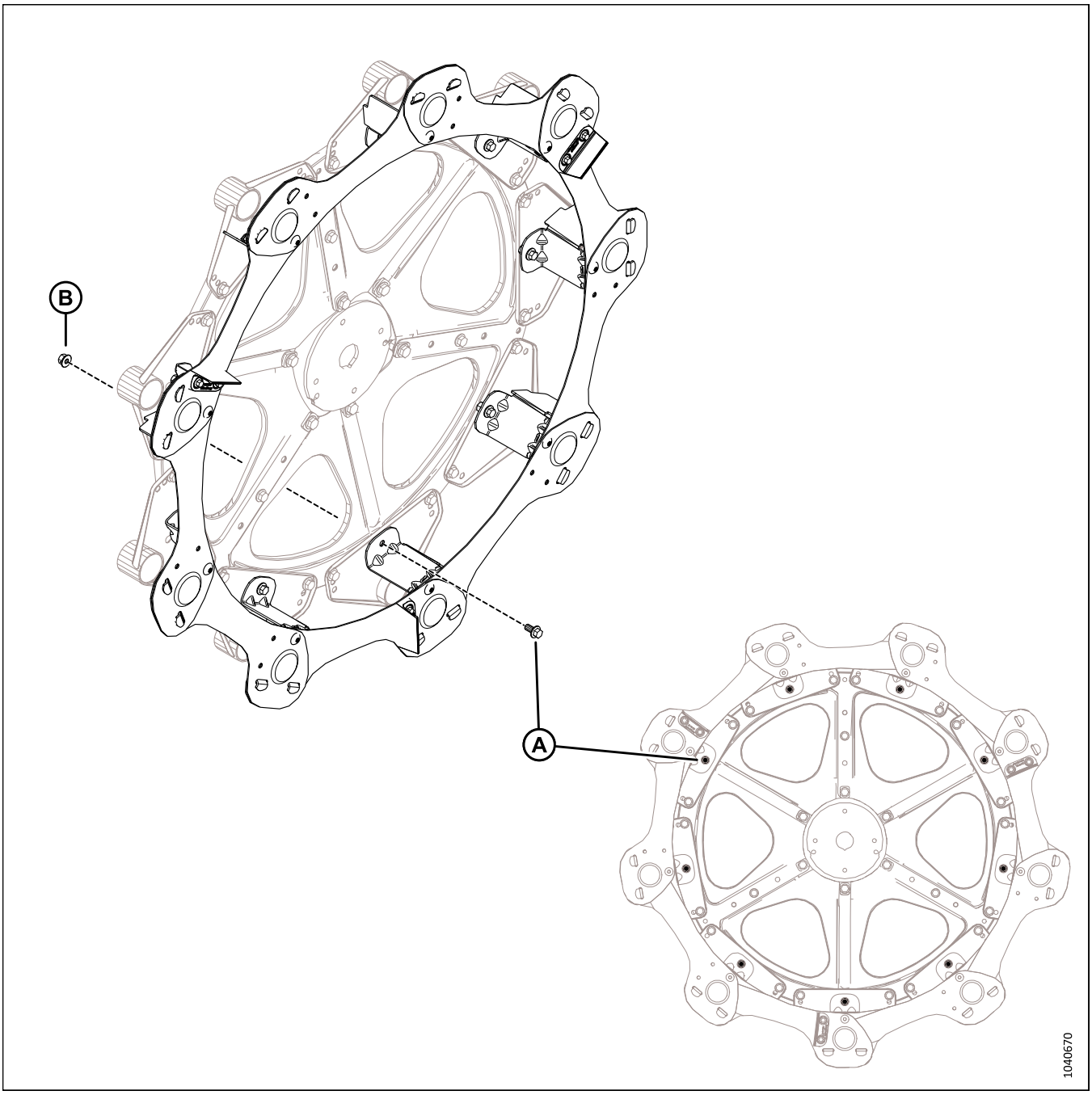


Figure 5.97: Nine-Bat Reel – Initial Endshield Assembly

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 *5.21.1 Installing Crop Dividers, page 191*.

5.18 Installing Double-Reel Endshields – Parts Bag 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.

NOTE:

The endshield assembly illustrations and steps throughout this section of the manual show five-bat reels except where noted. The installation procedure for six-bat reels is similar.

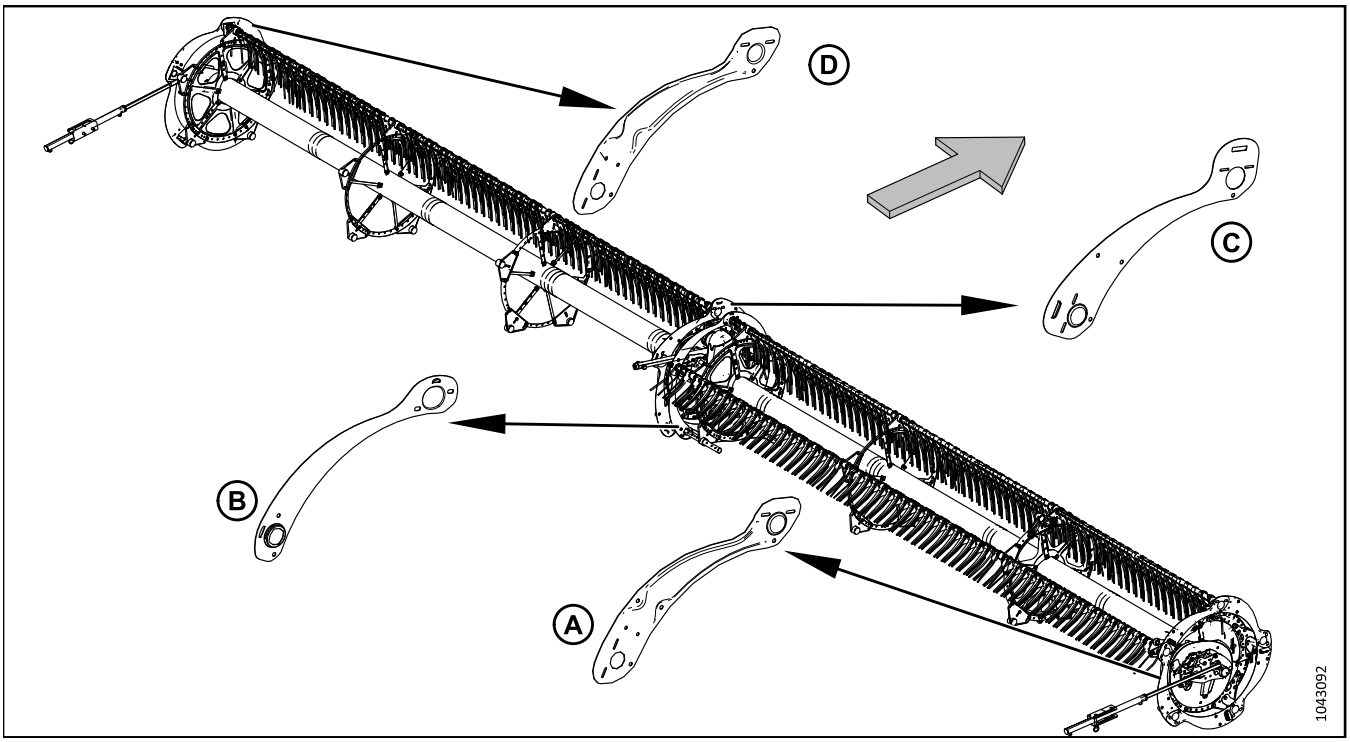


Figure 5.98: Reel Endshields – Double-Reel Endshield (Five-Bat Reel Shown)

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 *5.18.1 Installing Double-Reel Endshields at Outboard Cam End, page 161*.
3. Install inboard tail-end endshields (B). For instructions, refer to *5.18.2 Installing Double-Reel Endshields at Inboard Tail End, page 168*.
4. Install inboard cam-end endshields (C). For instructions, refer to *5.18.3 Installing Double-Reel Endshields at Inboard Cam End, page 175*.

5. Install outboard tail-end endshields (D). For instructions, refer to *5.18.4 Installing Double-Reel Endshields at Outboard Tail End, page 182*.

5.18.1 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.

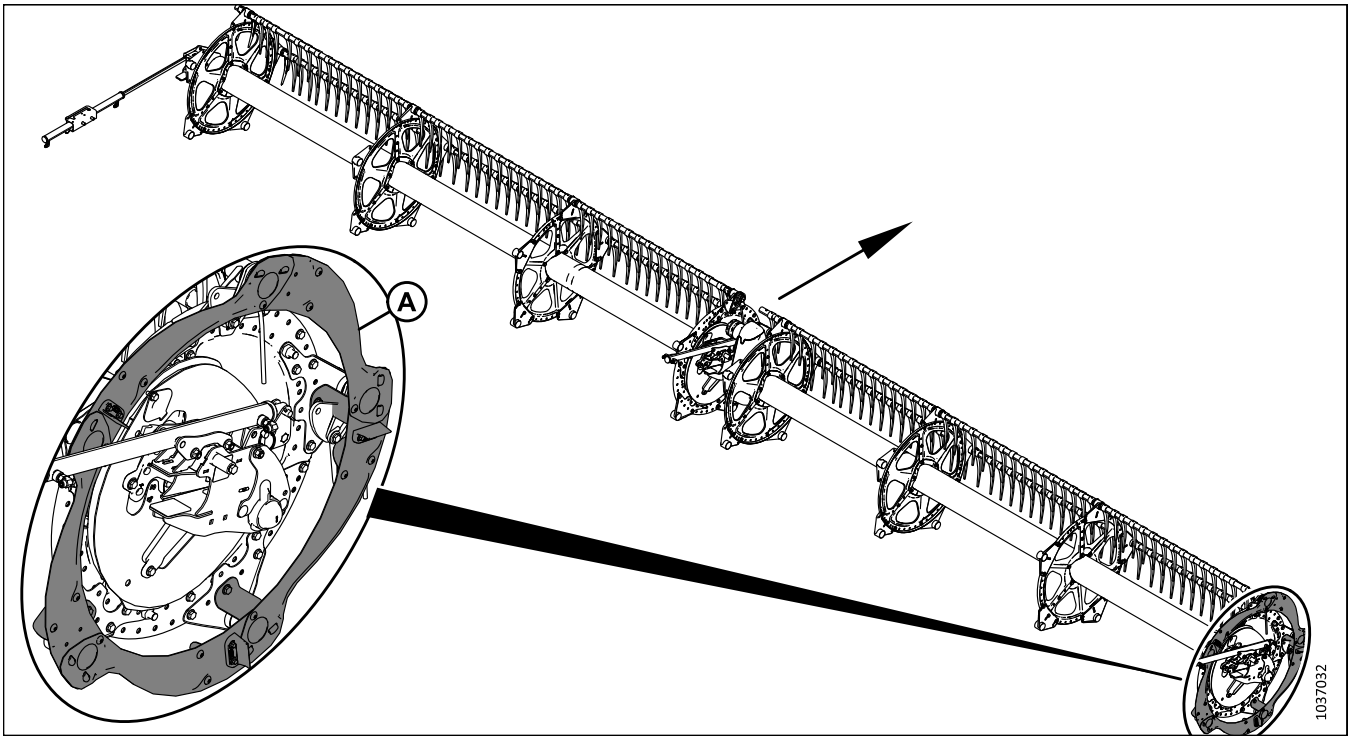


Figure 5.99: Five-Bat Double Reel

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.

1. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table *5.8, page 162*.

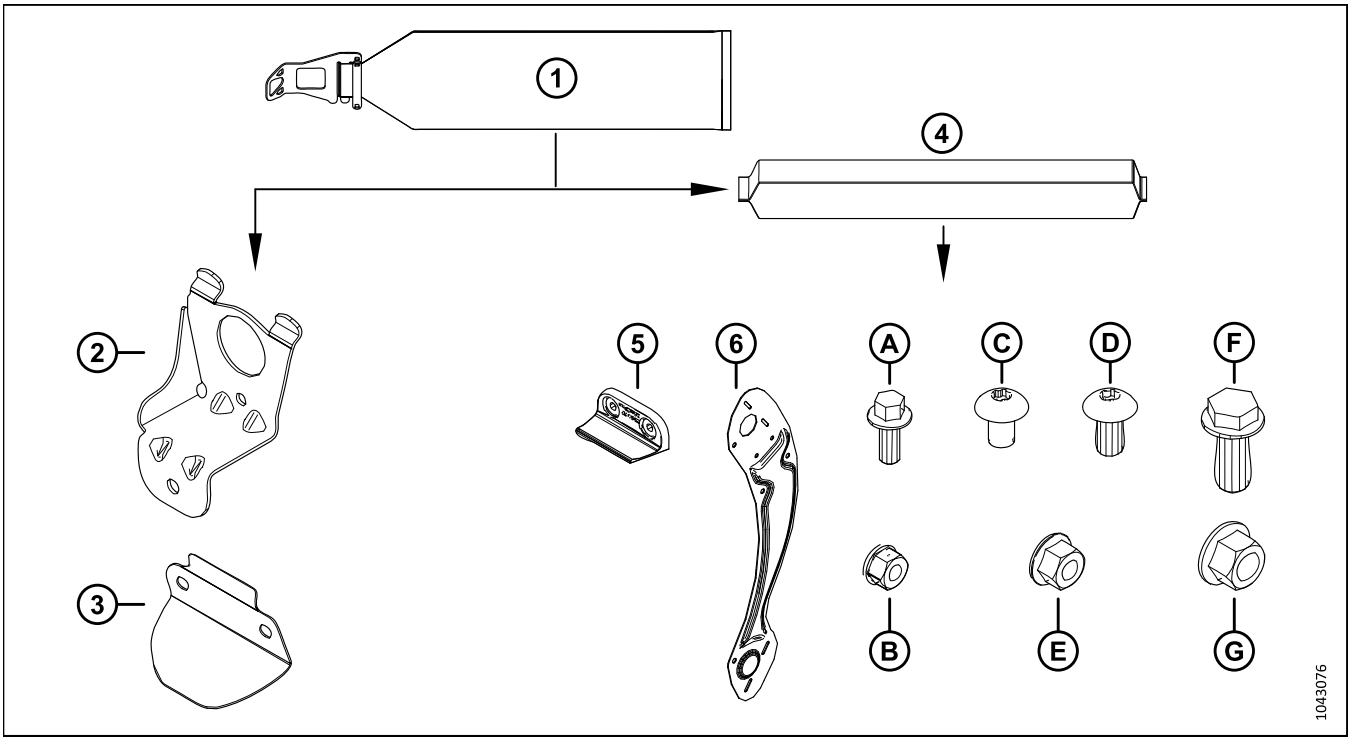


Figure 5.100: Five-Bat Reel Endshield Parts Bag (MD #368322)

Table 5.8 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag (MD #368322)

Ref	Part Number	Description	Quantity
2	311964 – see note[7]	SUPPORT – CAM END	5
3	311729 – see note[7]	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

7. 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.

2. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table *5.9, page 163*.

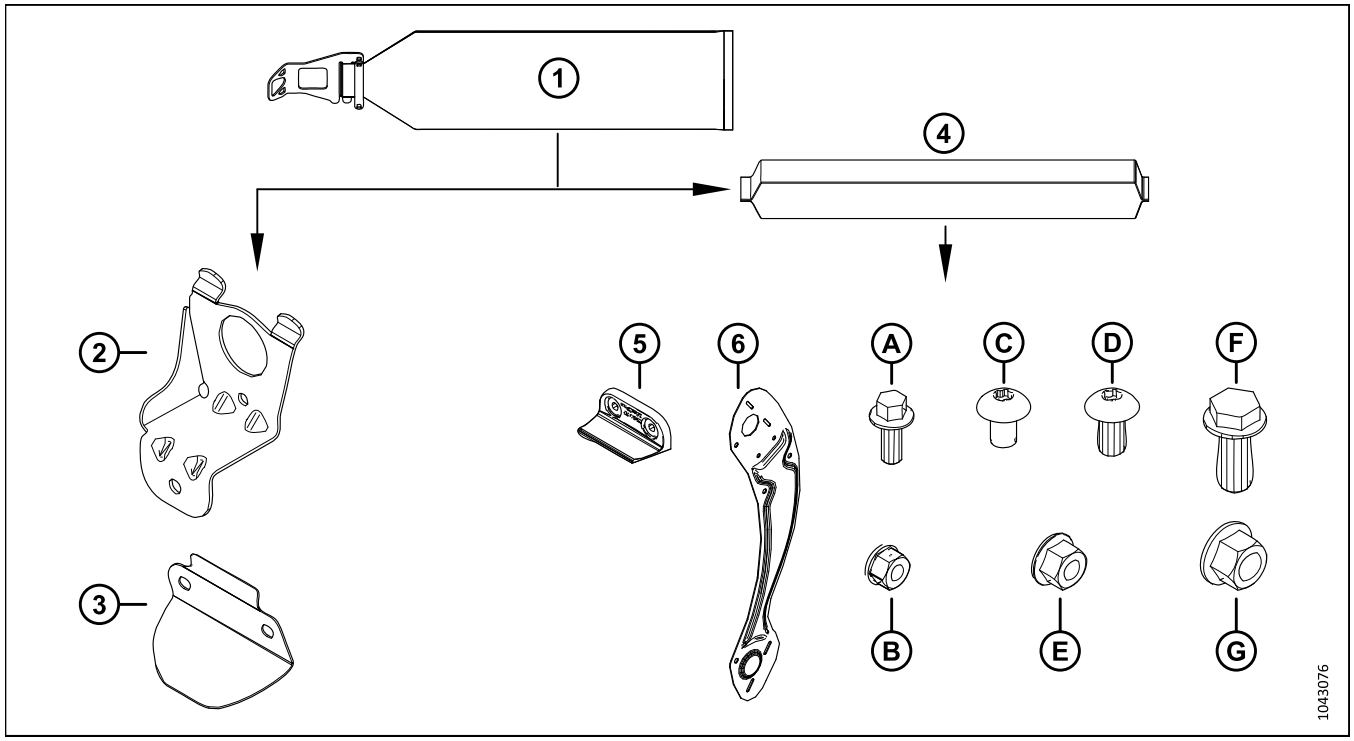


Figure 5.101: Six-Bat Reel Endshield Parts Bag (MD #368323)

Table 5.9 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag (MD #368323)

Ref	Part Number	Description	Quantity
2	311964 – see note[8]	SUPPORT – CAM END	6
3	311729 – see note[8]	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

8. 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.

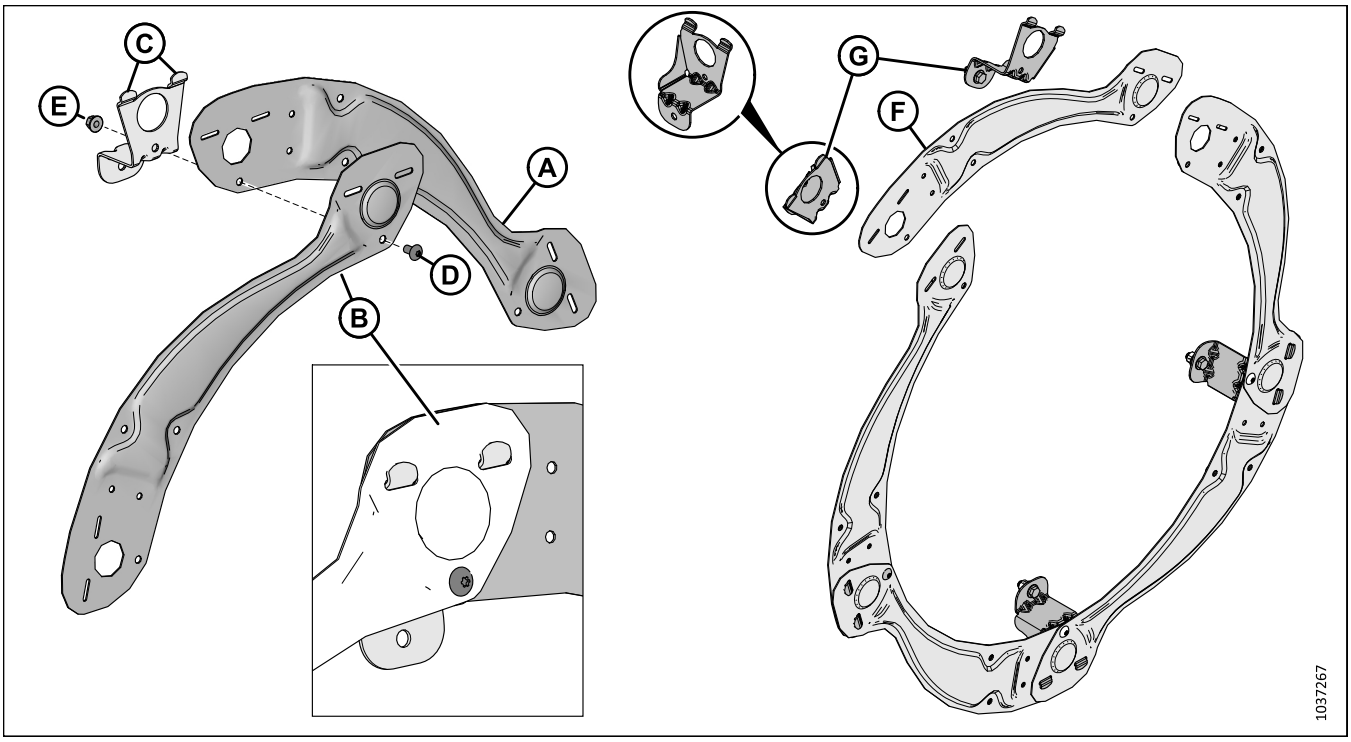


Figure 5.102: Five-Bat Reel – Initial Endshield Assembly

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.

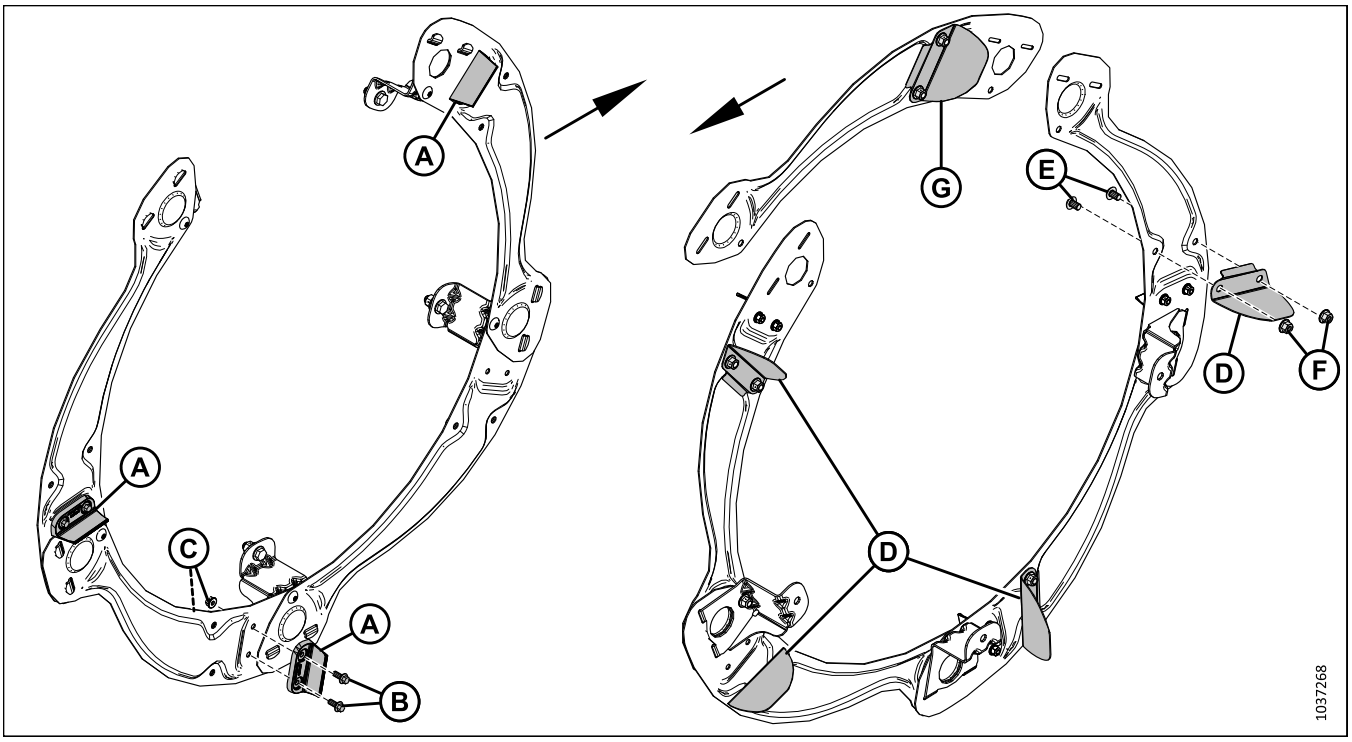


Figure 5.103: Five-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

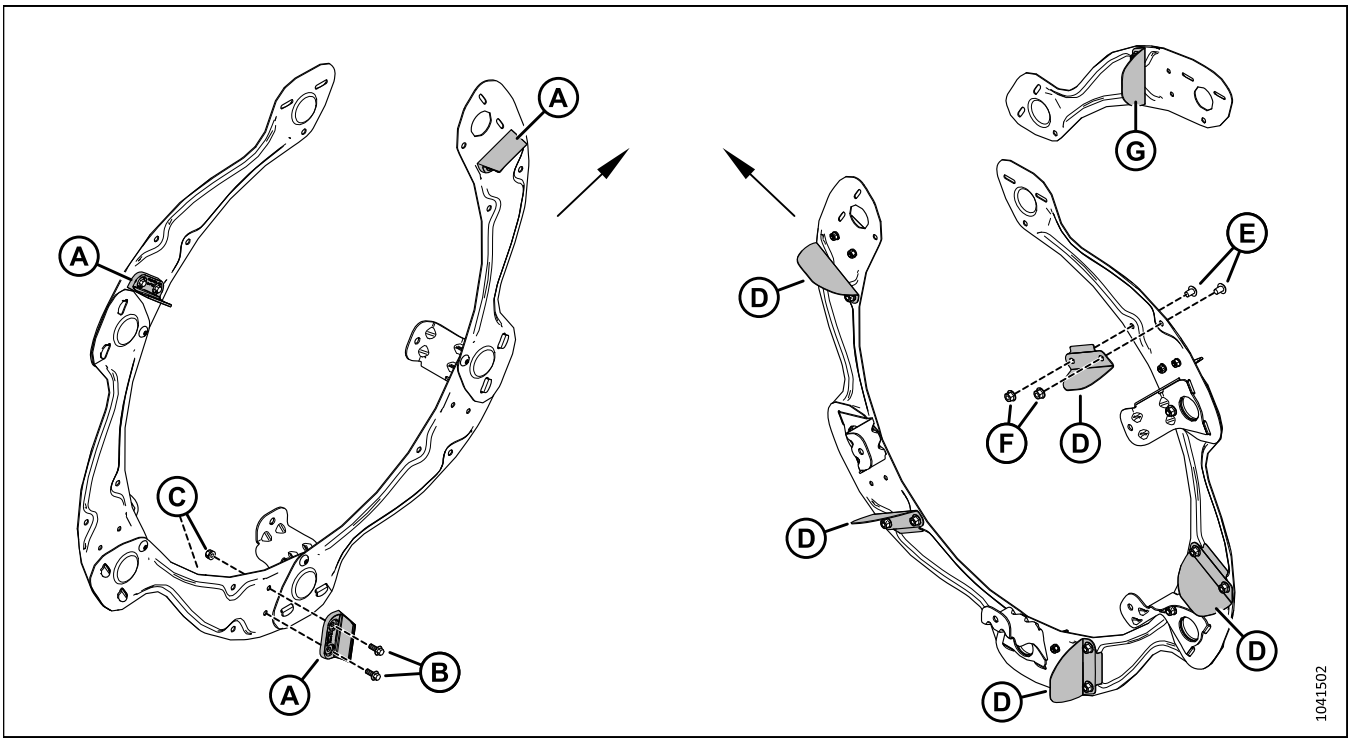


Figure 5.104: Six-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

NOTE:

For five-bat reels, refer to Figure *5.103, page 165*. For six-bat reels, refer to Figure *5.104, page 165*.

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.

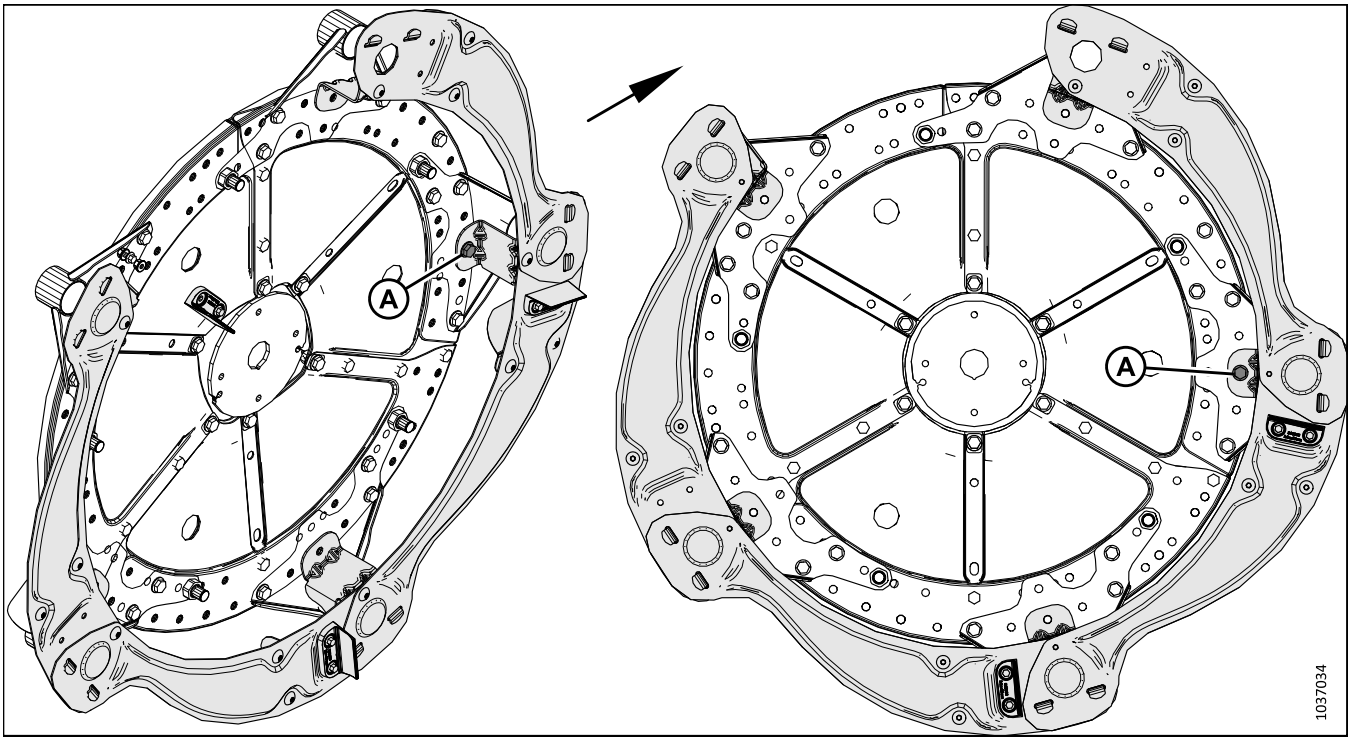


Figure 5.105: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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.

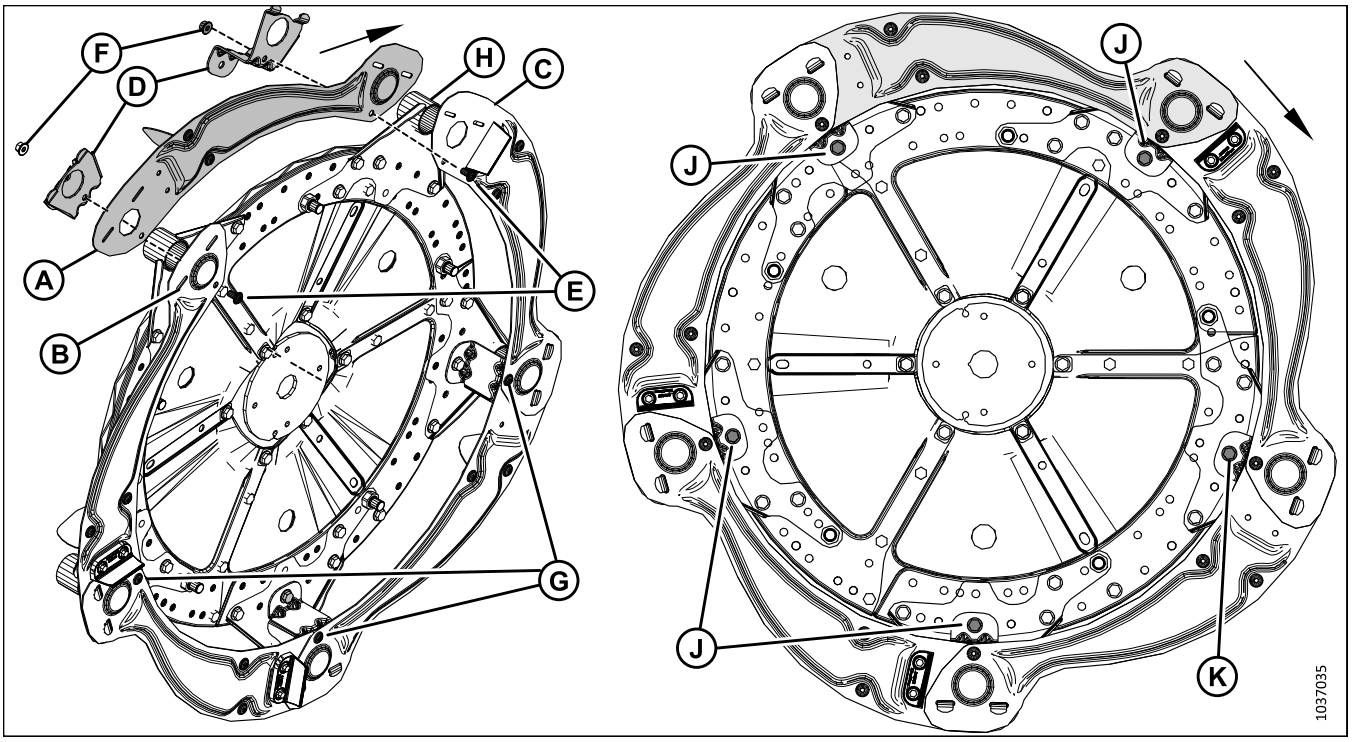


Figure 5.106: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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).

5.18.2 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.

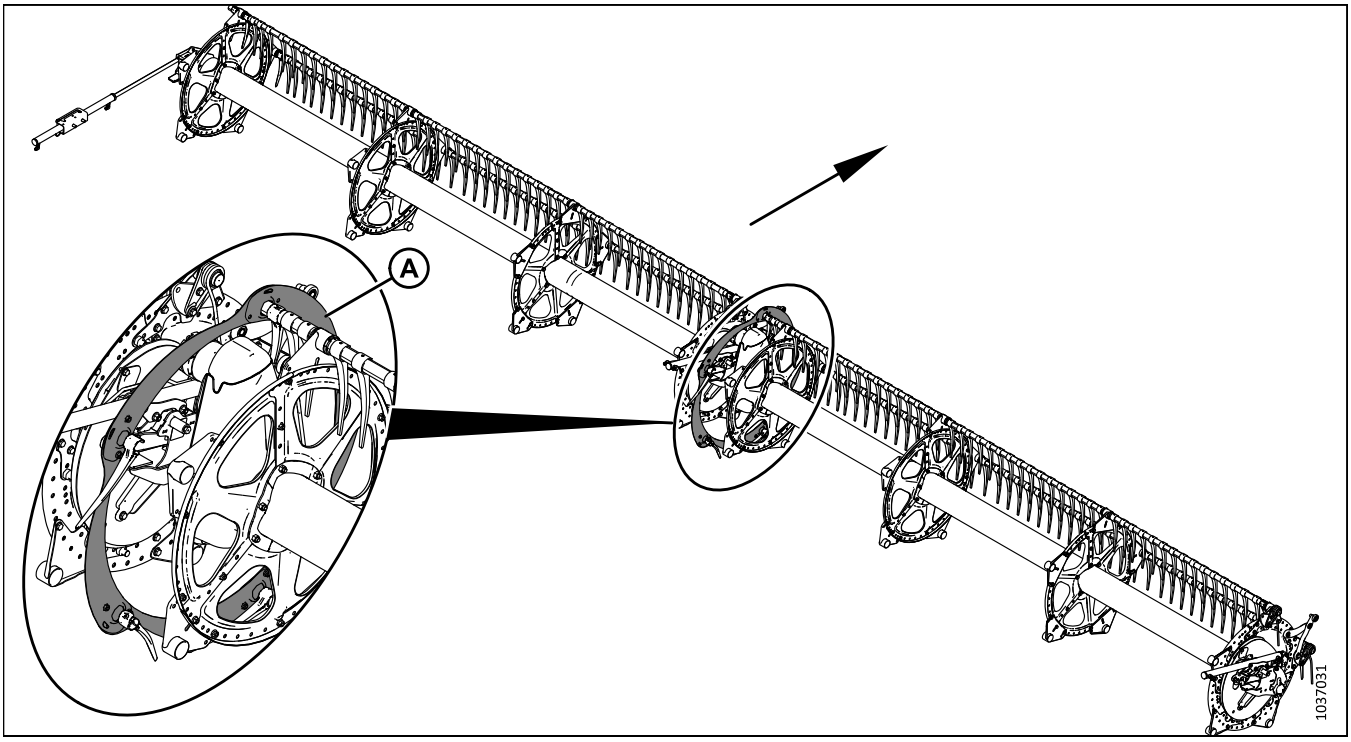


Figure 5.107: Five-Bat Double Reel

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.

2. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table *5.10, page 169*.

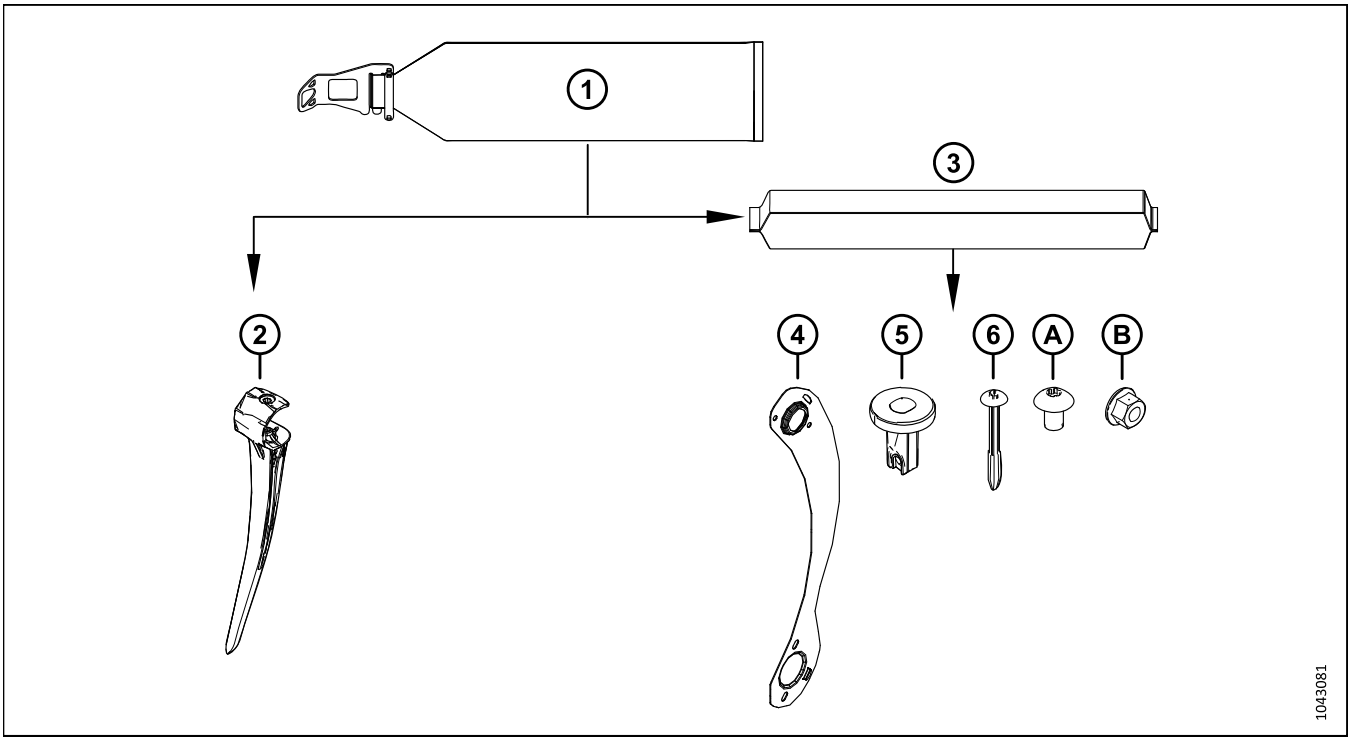


Figure 5.108: Five-Bat Reel Endshield Parts Bag MD #368322

Table 5.10 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag MD #368322

Ref	Part Number	Description	Quantity
2	NSS see notes[9][10]	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

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

3. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table *5.11, page 170*.

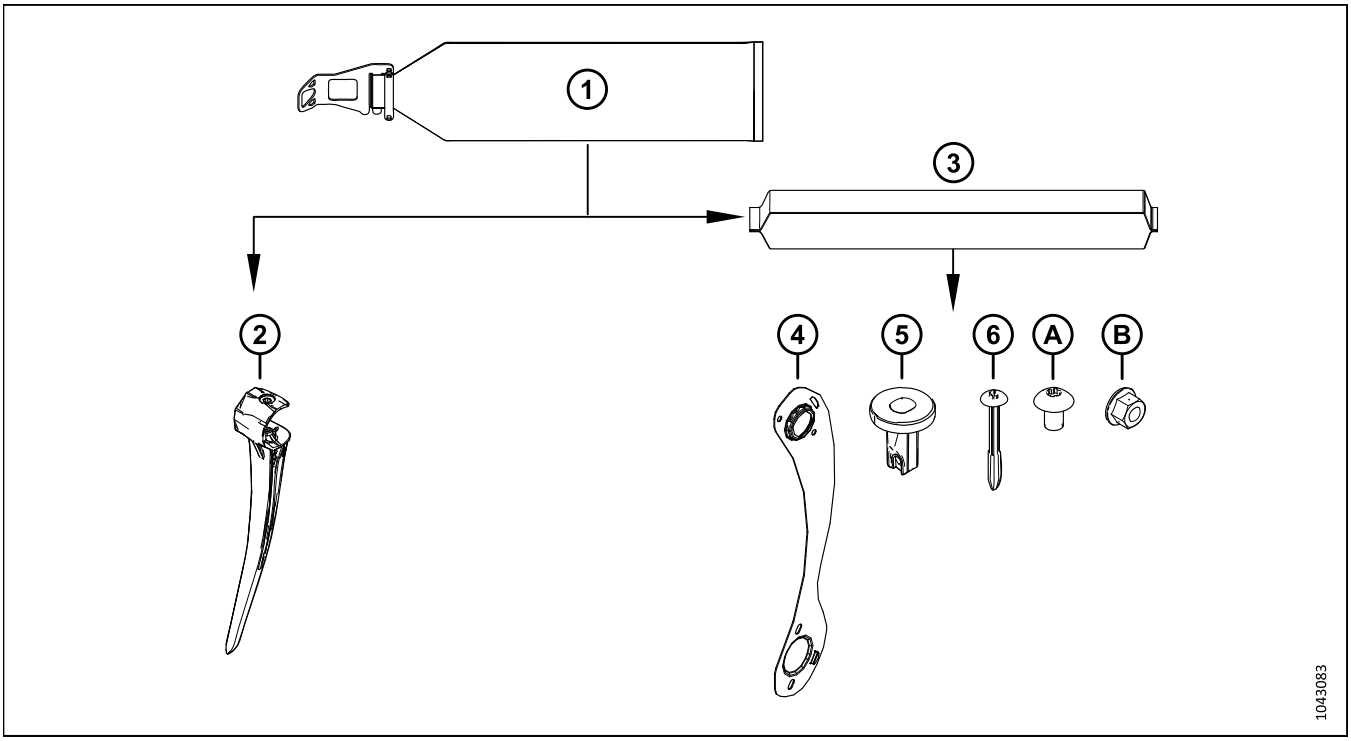


Figure 5.109: Six-Bat Reel Endshield Parts Bag MD #368323

Table 5.11 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag MD #368323

Ref	Part Number	Description	Quantity
2	NSS see notes[11][12]	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

11. Not sold separately. For service parts, can be ordered as a package of 10 (MD #360540).
12. 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.

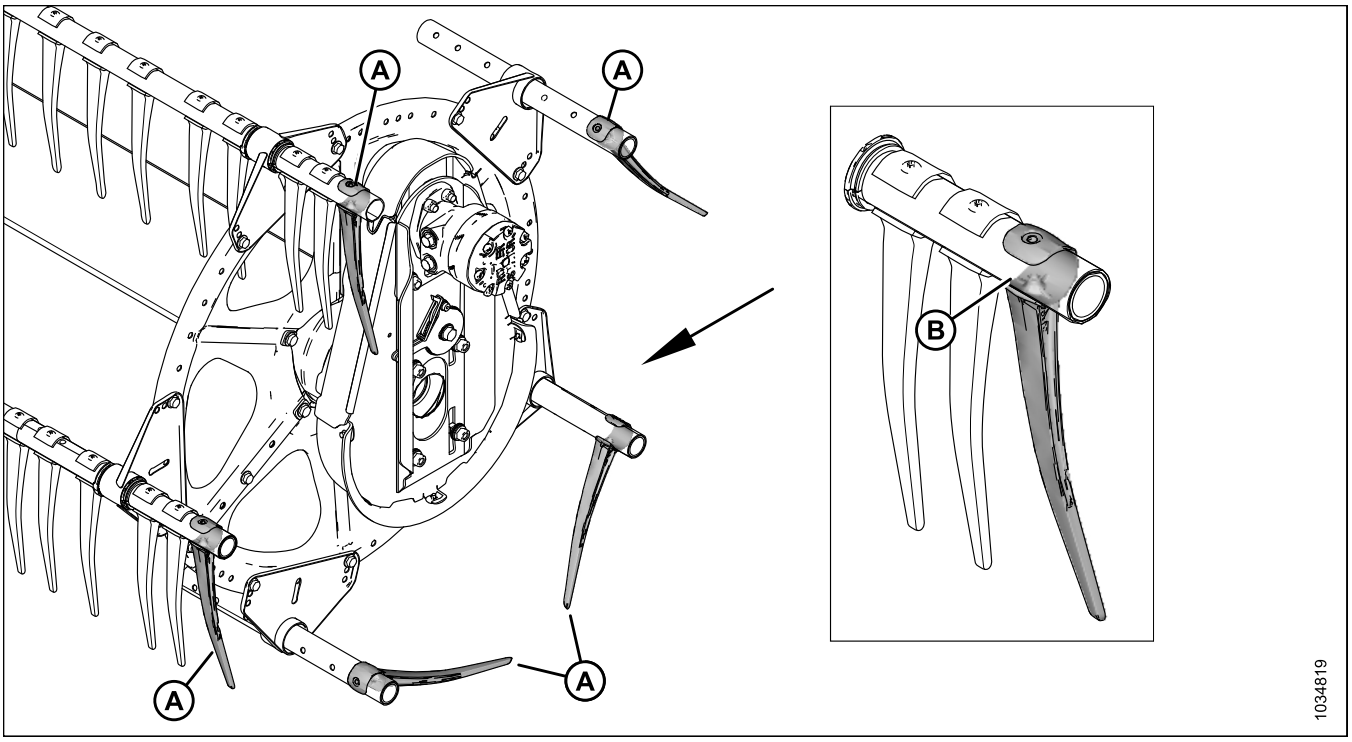


Figure 5.110: Fingers Placed on Tine Tubes

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

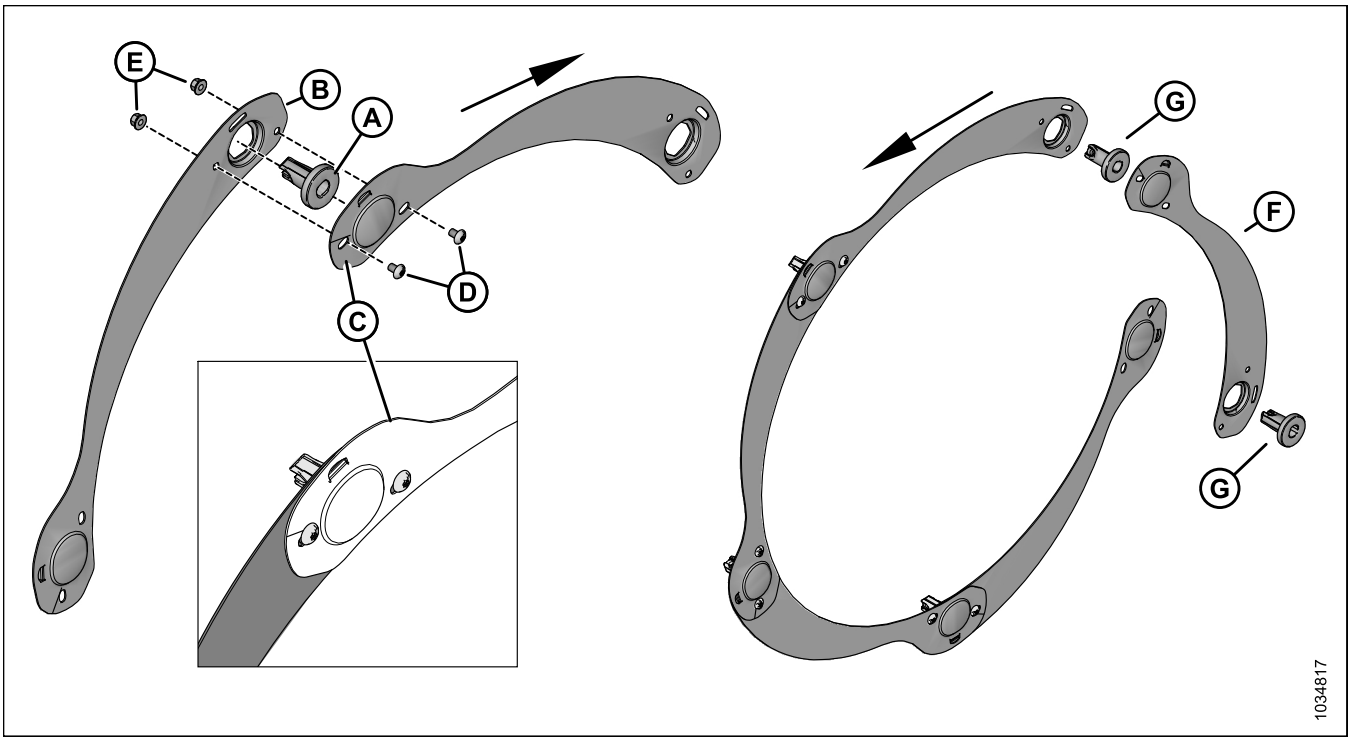


Figure 5.111: Endshield Subassembly

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.

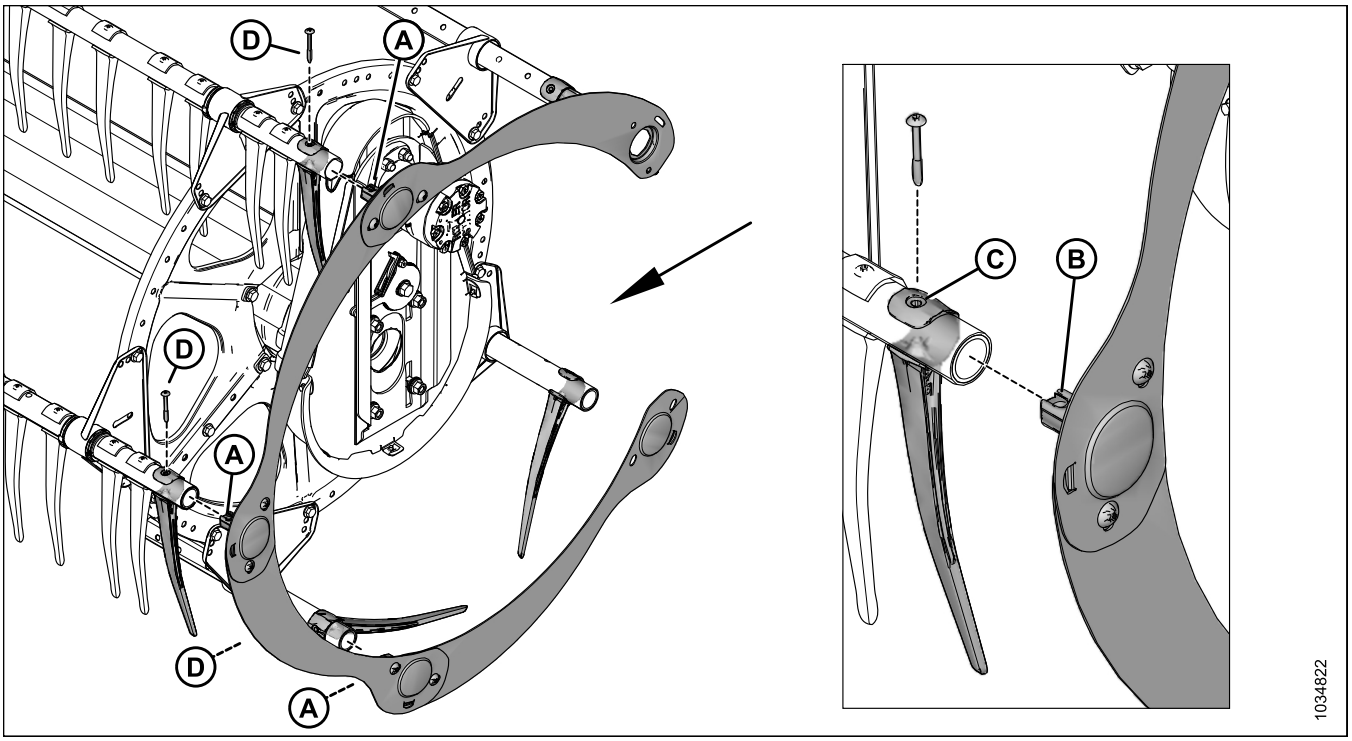


Figure 5.112: Endshield Mounted onto Reel

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.

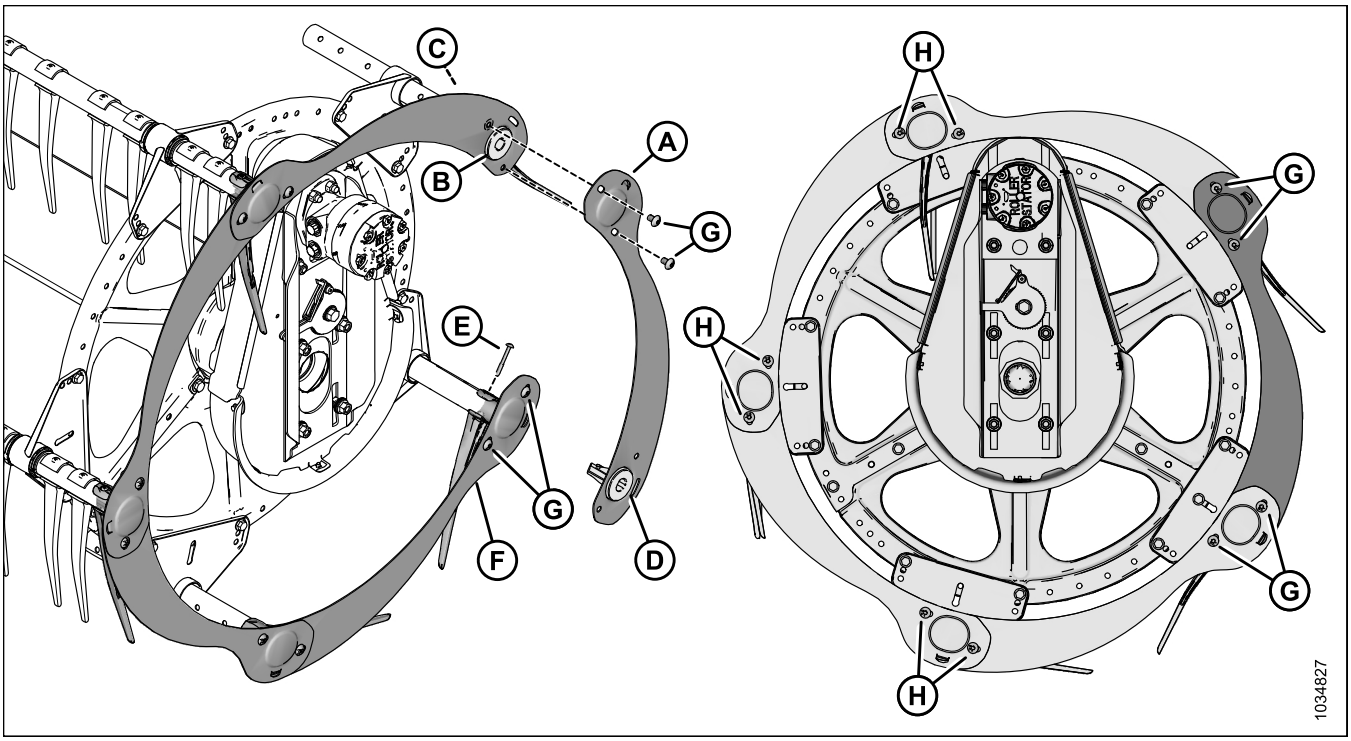


Figure 5.113: Completed Endshield Assembly

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).

5.18.3 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.

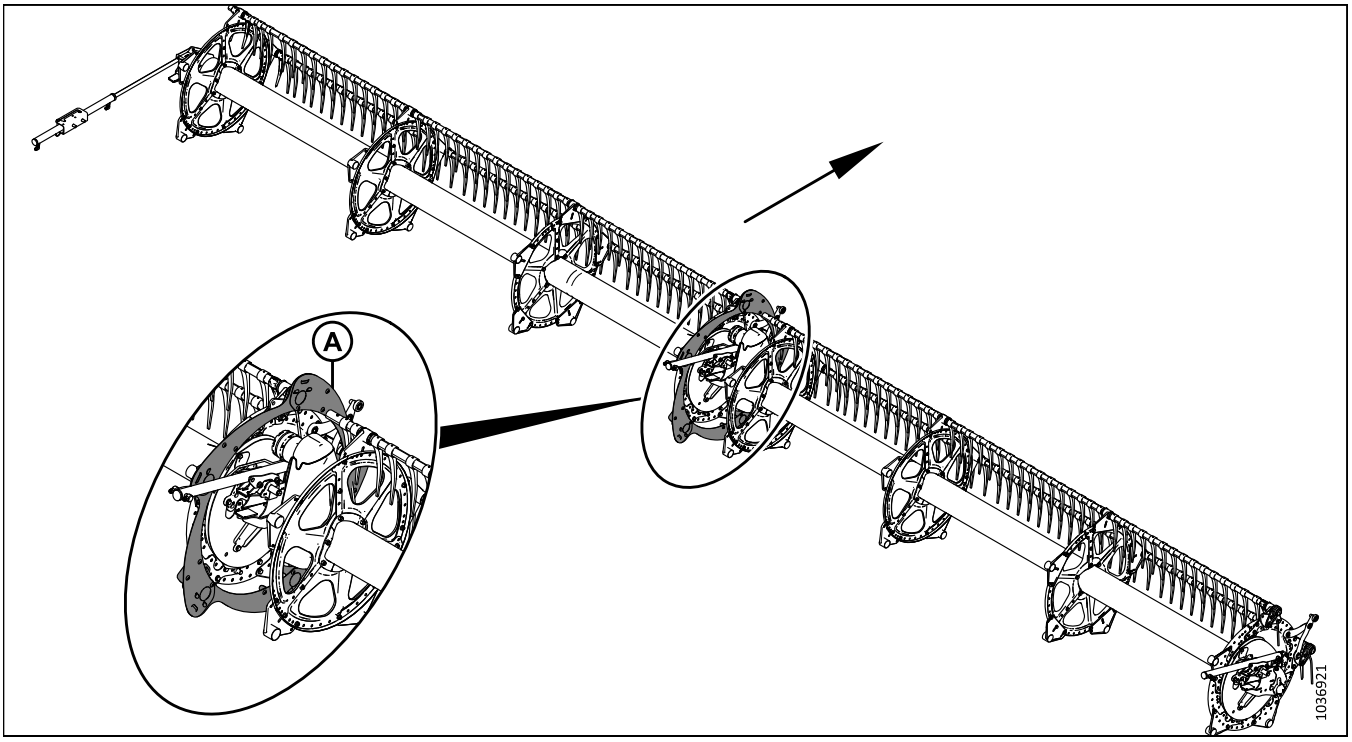


Figure 5.114: Five-Bat Double Reel

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.

2. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table *5.12, page 176*.

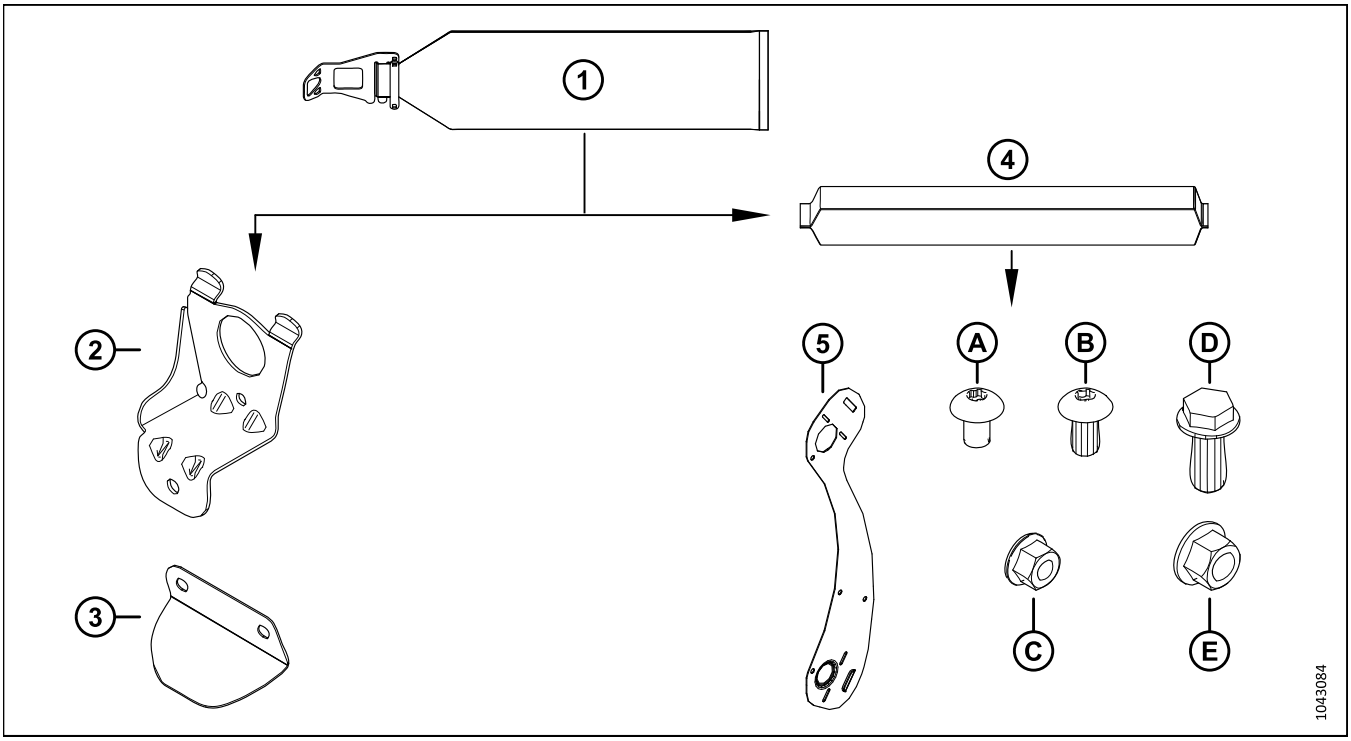


Figure 5.115: Reel Endshield Parts Bag MD #368322

Table 5.12 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag MD #368322

Ref	Part Number	Description	Quantity
2	311964 - see note[13]	SUPPORT – CAM END	5
3	311906 – see note[13]	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

13. 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.

3. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table *5.13, page 177*.

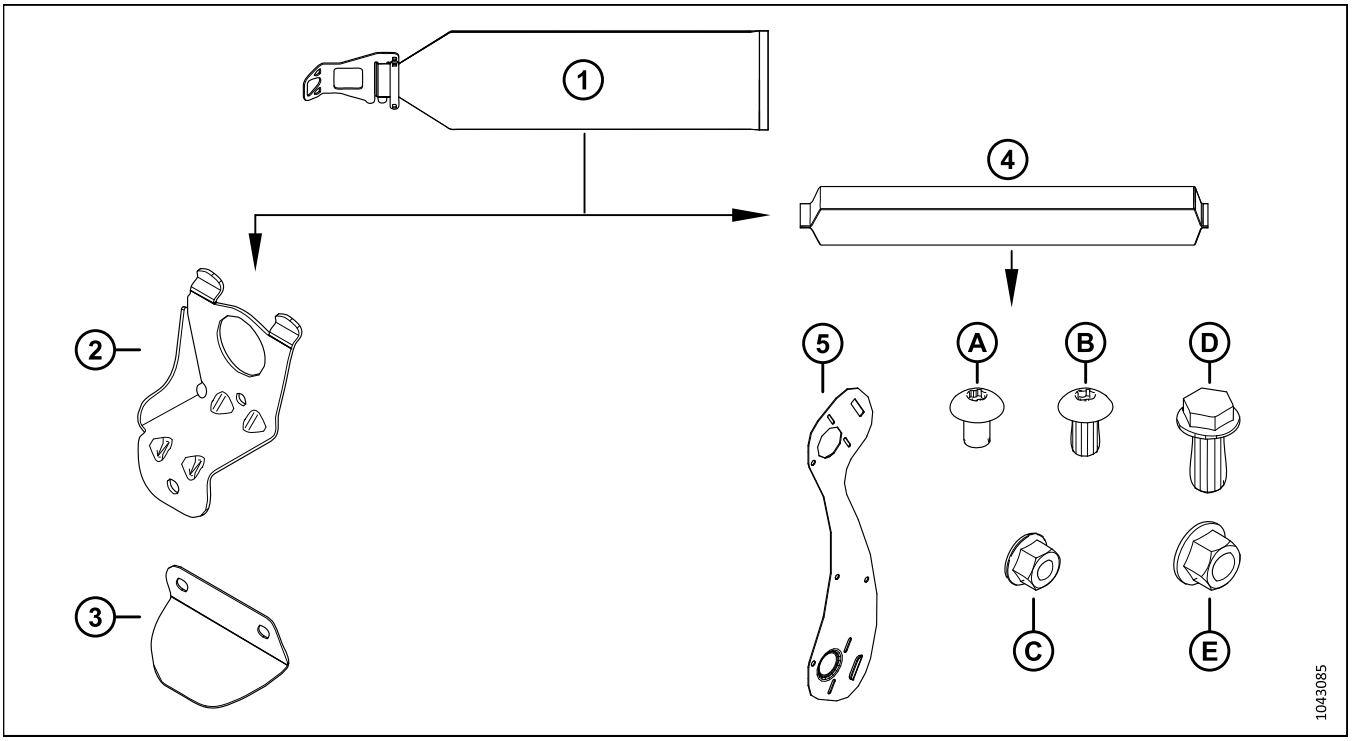


Figure 5.116: Six-Bat Reel Endshield Parts Bag MD #368323

Table 5.13 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag MD #368323

Ref	Part Number	Description	Quantity
2	311964 - see note[14]	SUPPORT – CAM END	6
3	311906 - see note[14]	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

14. 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.

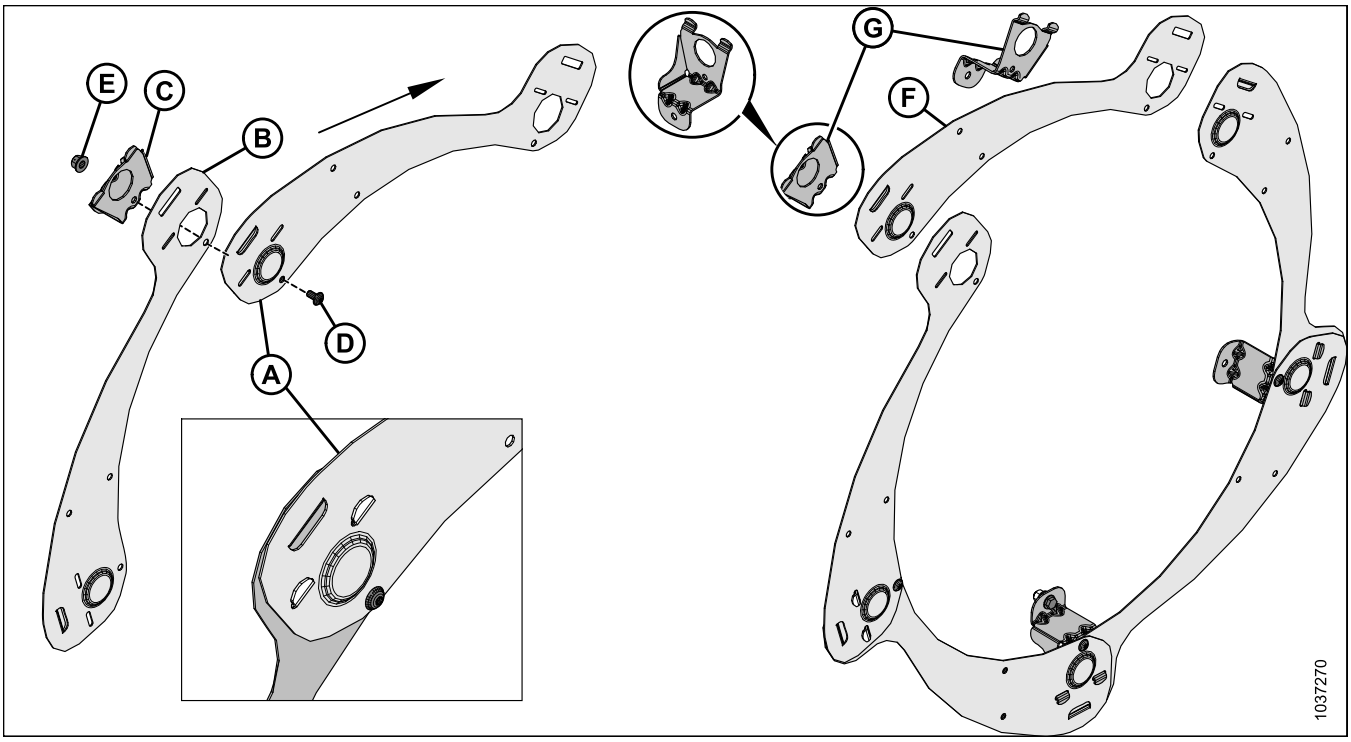


Figure 5.117: Five-Bat Reel – Initial Endshield Assembly

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.

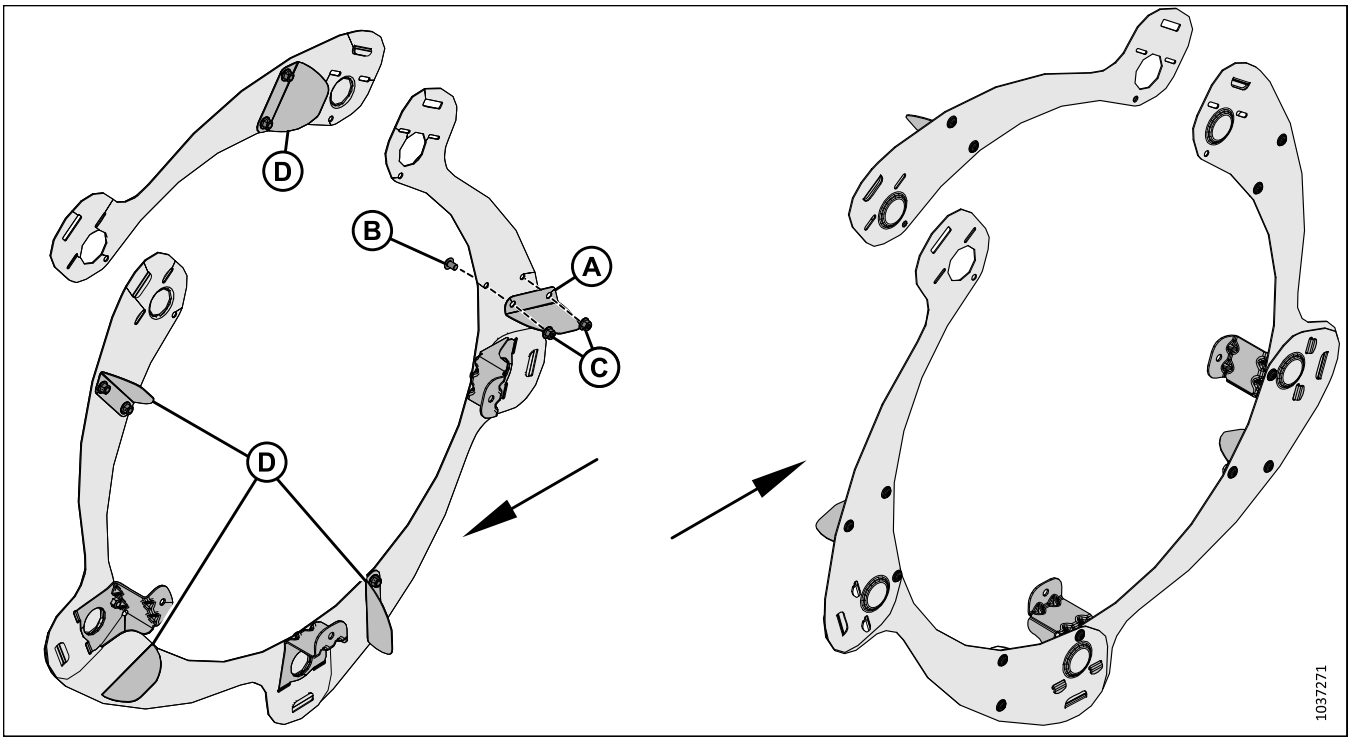


Figure 5.118: Five-Bat Reel – Aluminum Cam Deflectors

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.

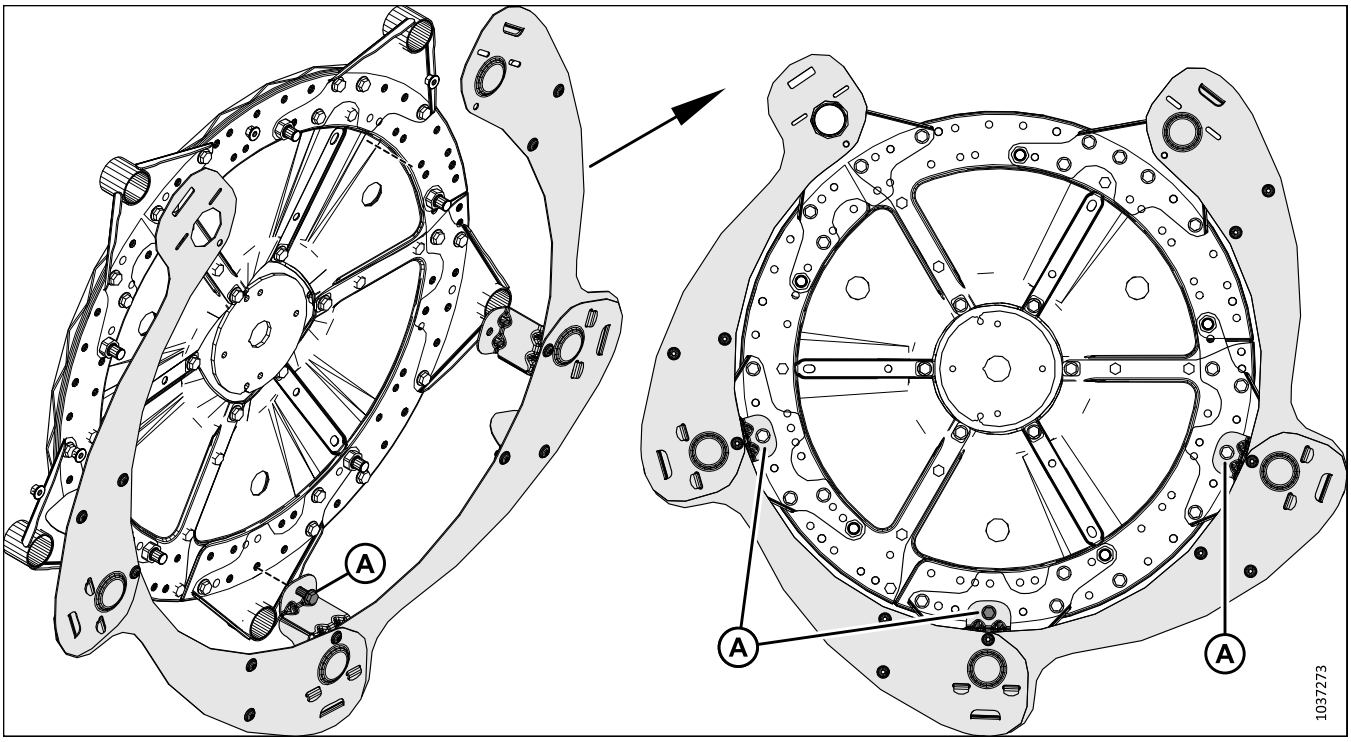


Figure 5.119: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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.

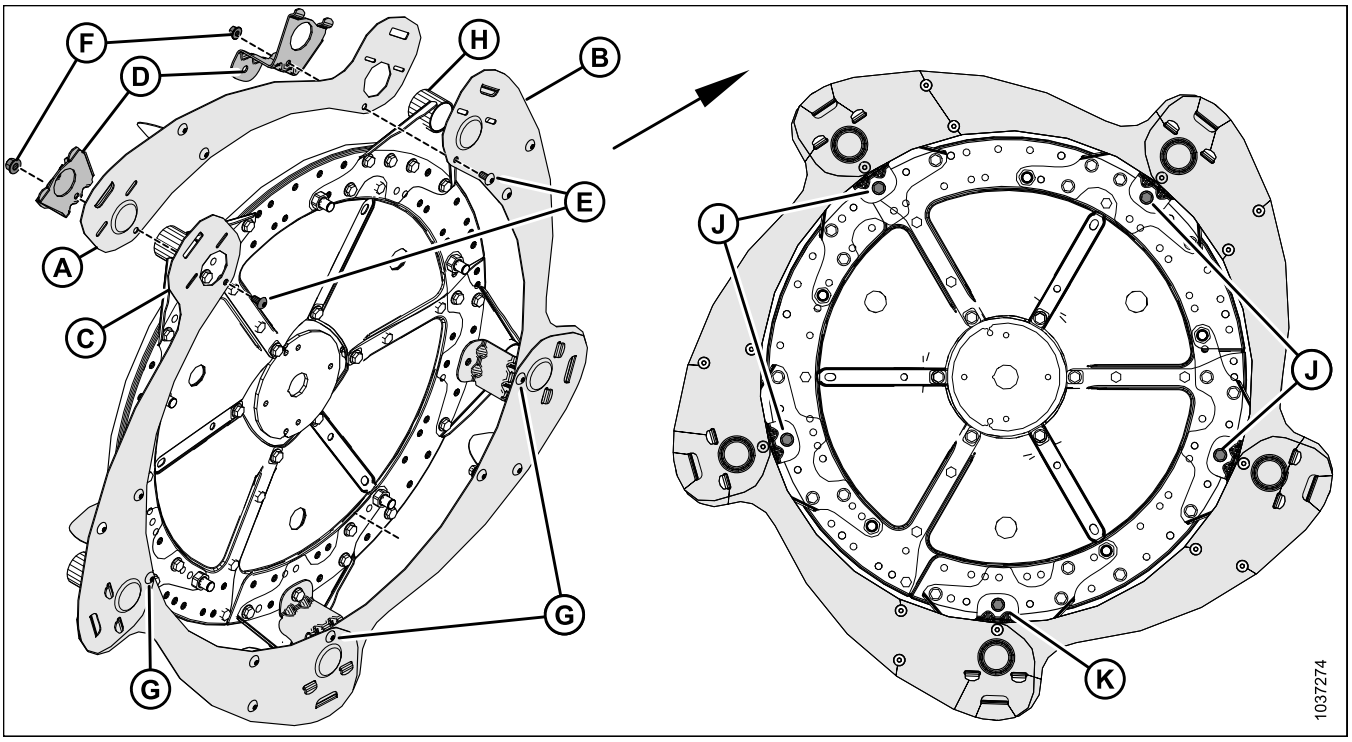


Figure 5.120: Five-Bat Reel – Assembled Reel Endshields on Reel

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).

5.18.4 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.

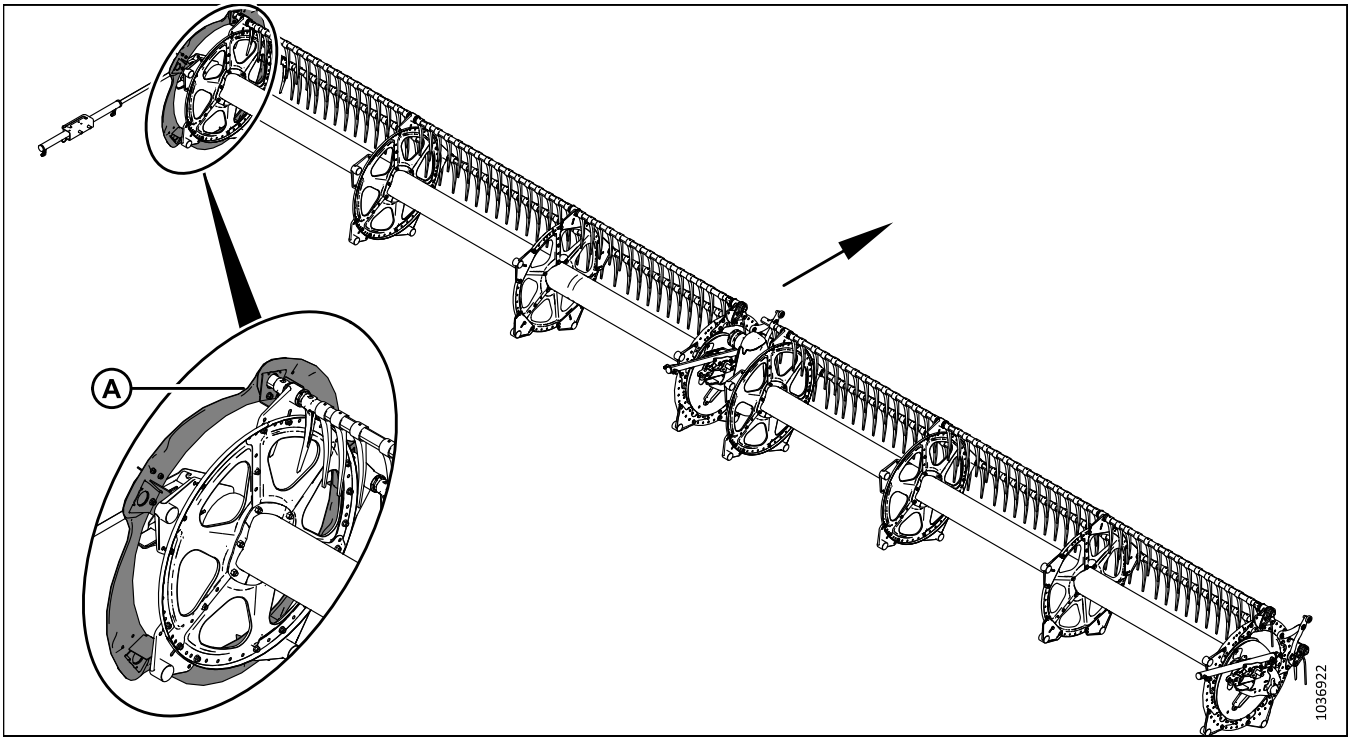


Figure 5.121: Five-Bat Double Reel

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.

1. **Five-bat reels:** Retrieve parts bag (1) labeled with MD #368322. From that bag, retrieve the parts listed in Table *5.14, page 183*.

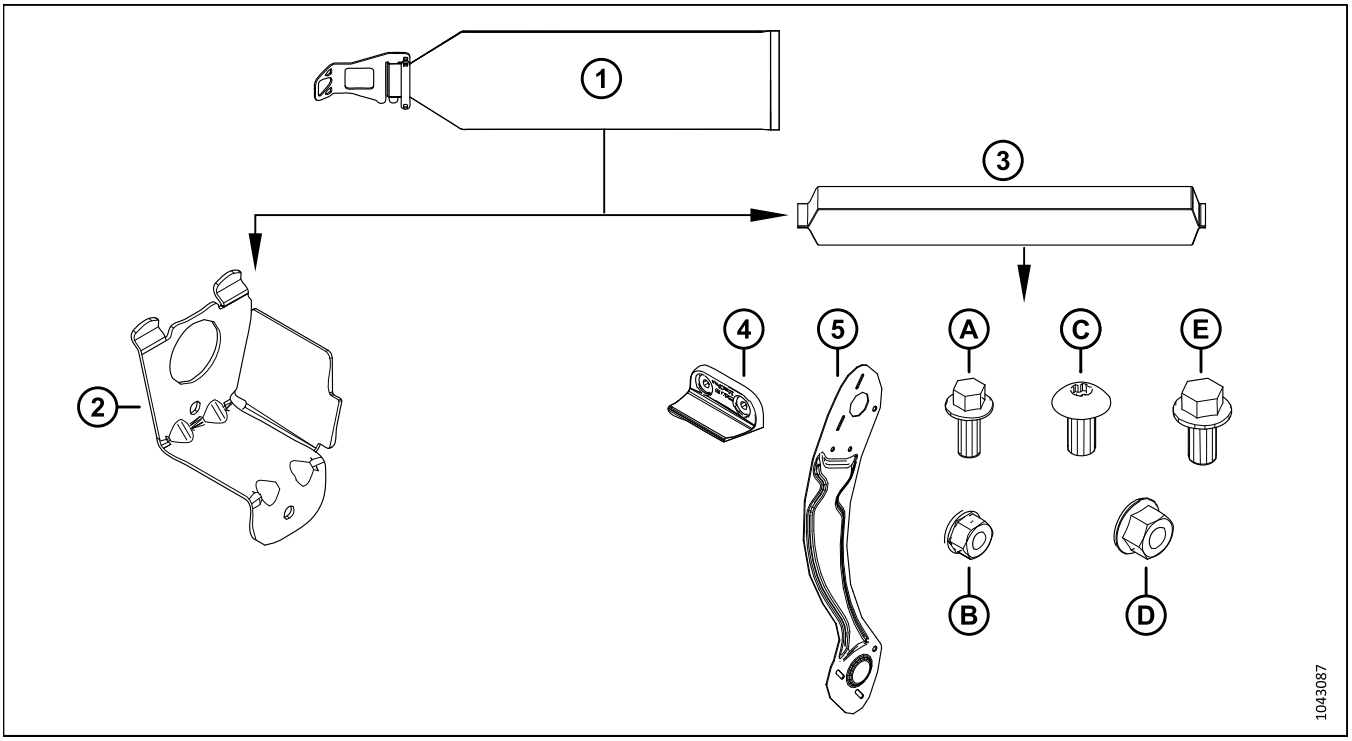


Figure 5.122: Five-Bat Reel Endshield Parts Bag MD #368322

Table 5.14 Parts to Retrieve from Five-Bat Reel Endshields Parts Bag (MD #368322)

Ref	Part Number	Description	Quantity
2	311965 – see note[15]	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 M10X1.5X20XSPCL-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

15. 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.

2. **Six-bat reels:** Retrieve parts bag (1) labeled with MD #368323. From that bag, retrieve the parts listed in Table *5.15, page 184*.

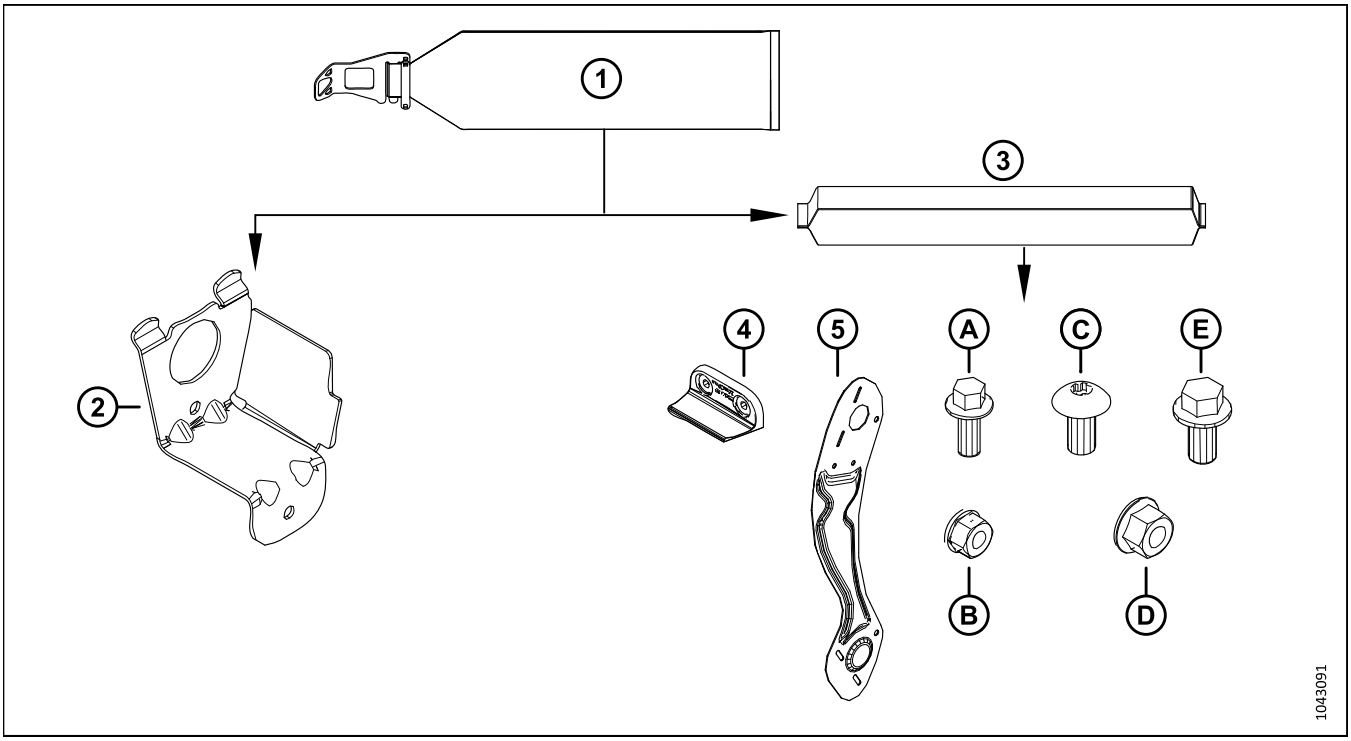


Figure 5.123: Six-Bat Reel Endshield Parts Bag MD #368323

Table 5.15 Parts to Retrieve from Six-Bat Reel Endshields Parts Bag (MD #368323)

Ref	Part Number	Description	Quantity
2	311965 – see note[16]	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 M10X1.5X20XSPCL-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

16. 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.

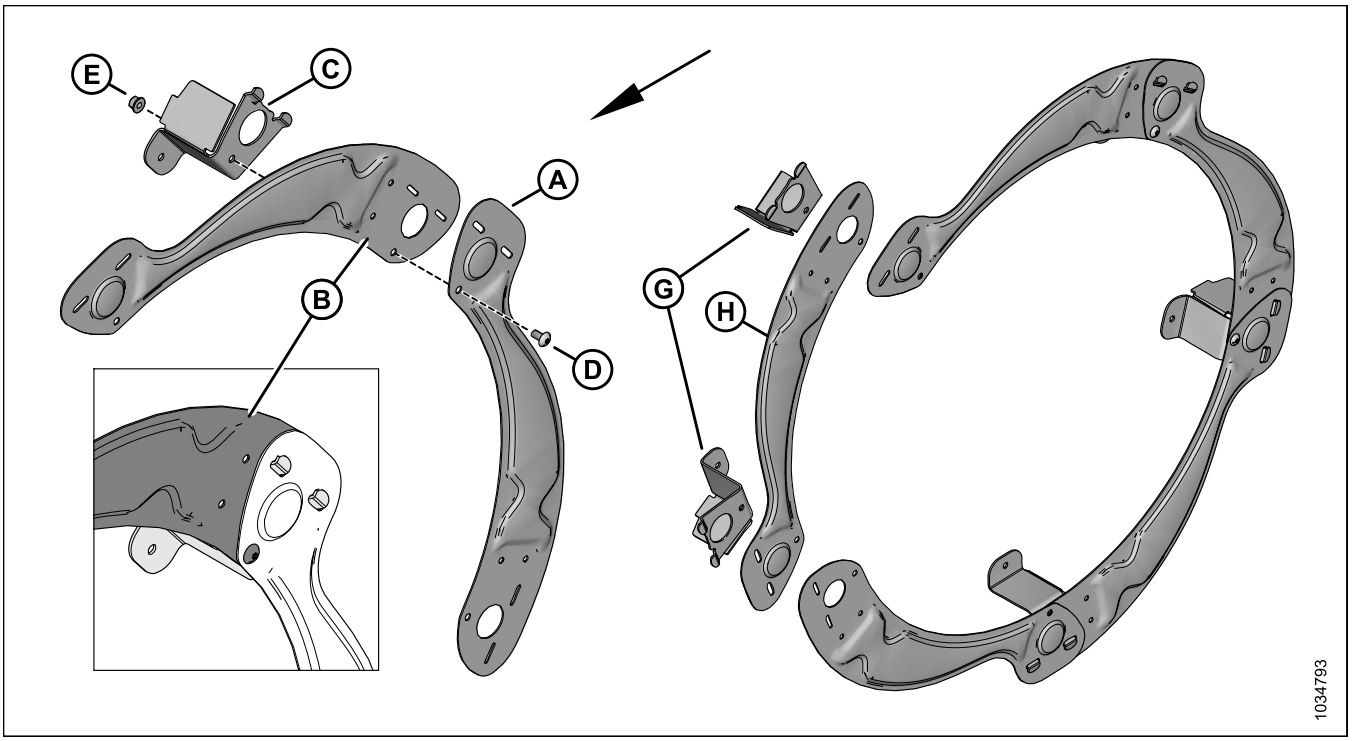


Figure 5.124: Five-Bat Reel – Initial Endshield Assembly

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.

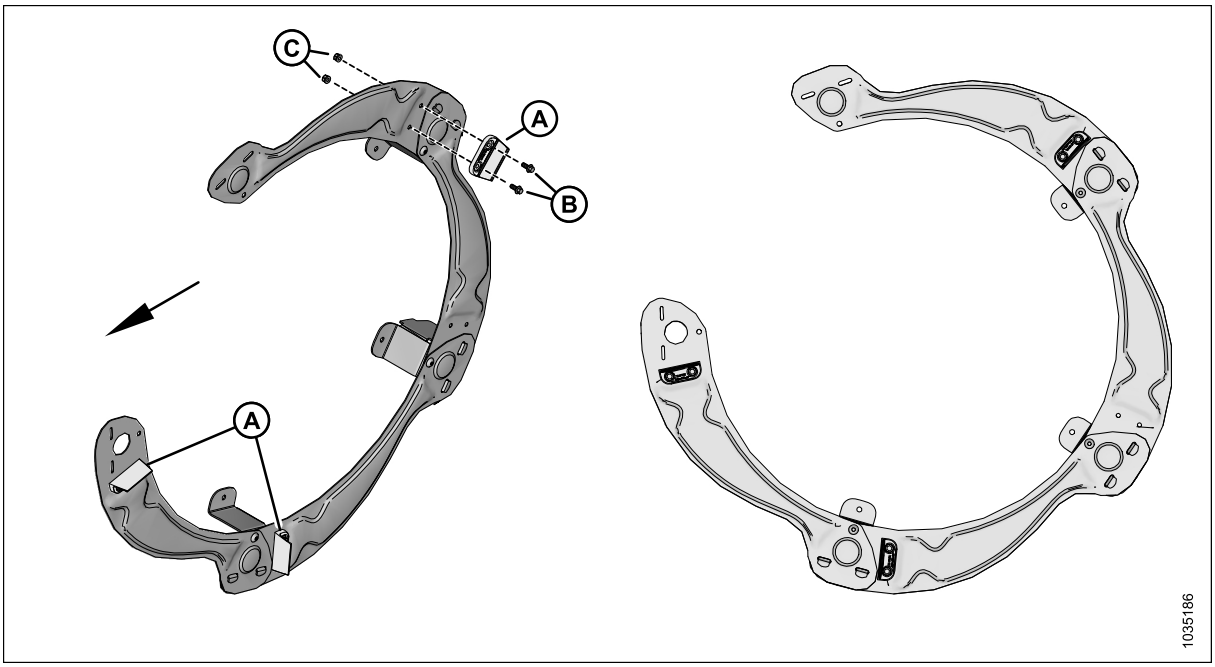


Figure 5.125: Five-Bat Reel – Rubber Paddles

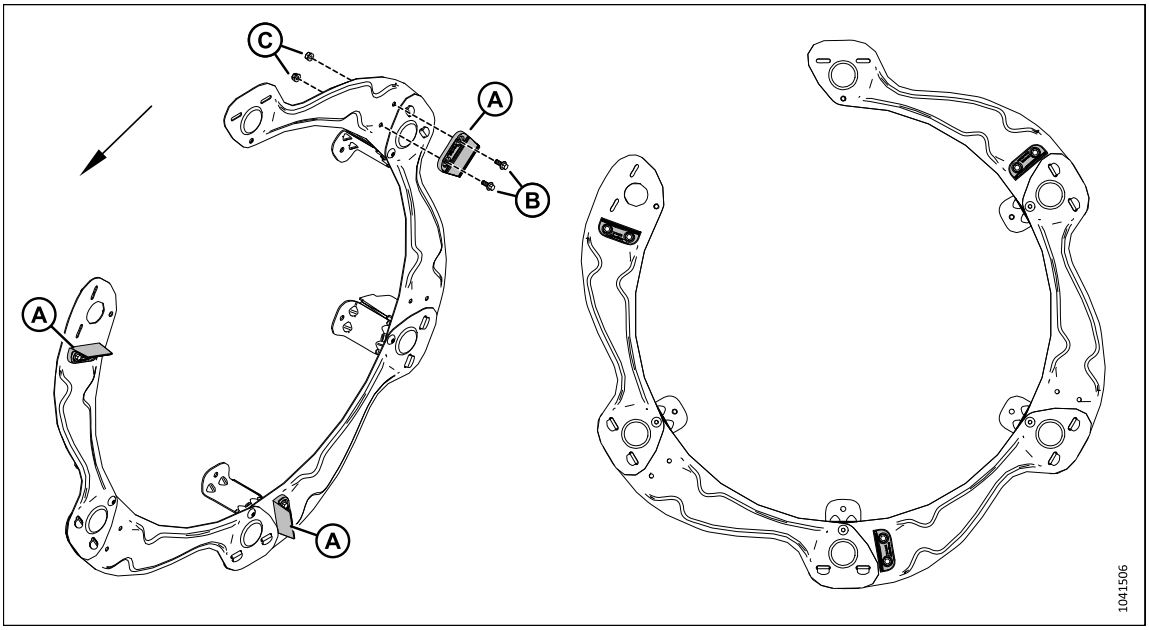


Figure 5.126: Six-Bat Reel – Rubber Paddles

NOTE:

For five-bat reels, refer to Figure *5.125, page 186*. For six-bat reels, refer to Figure *5.126, page 186*.

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]).

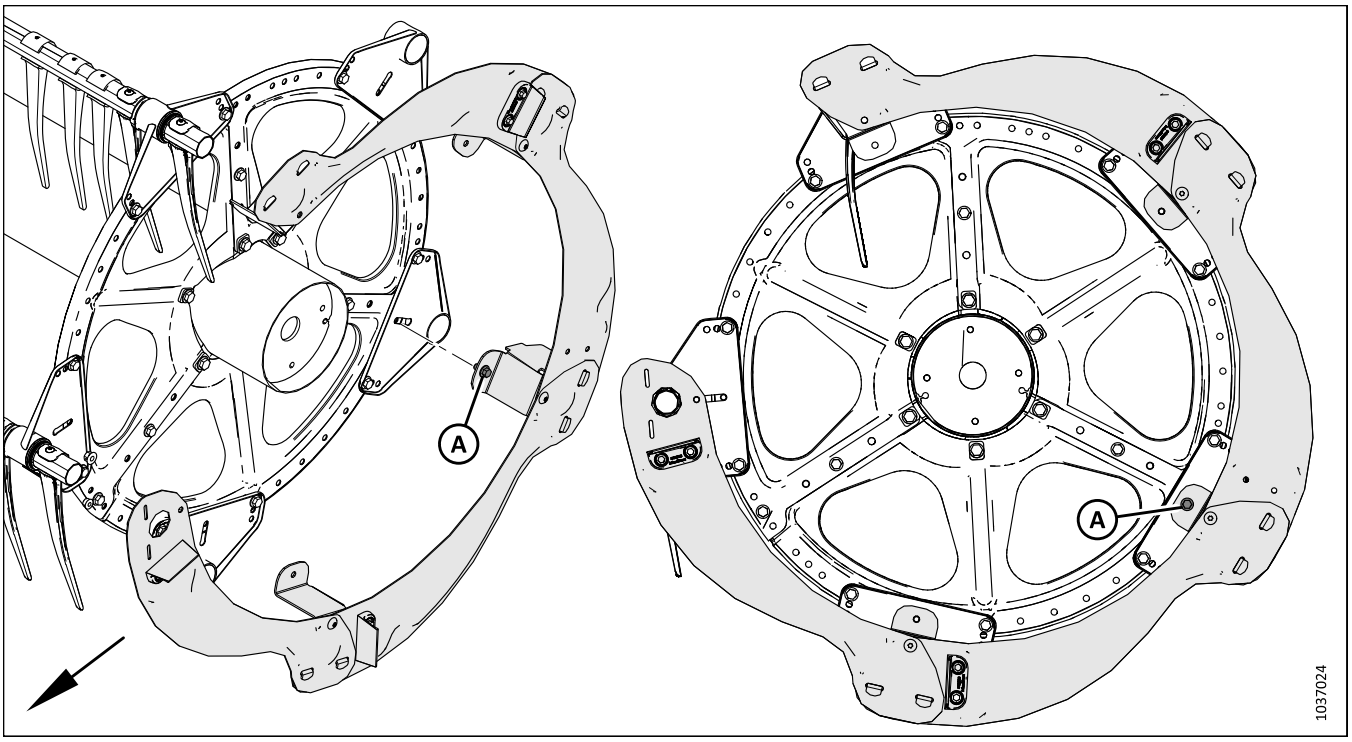


Figure 5.127: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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.

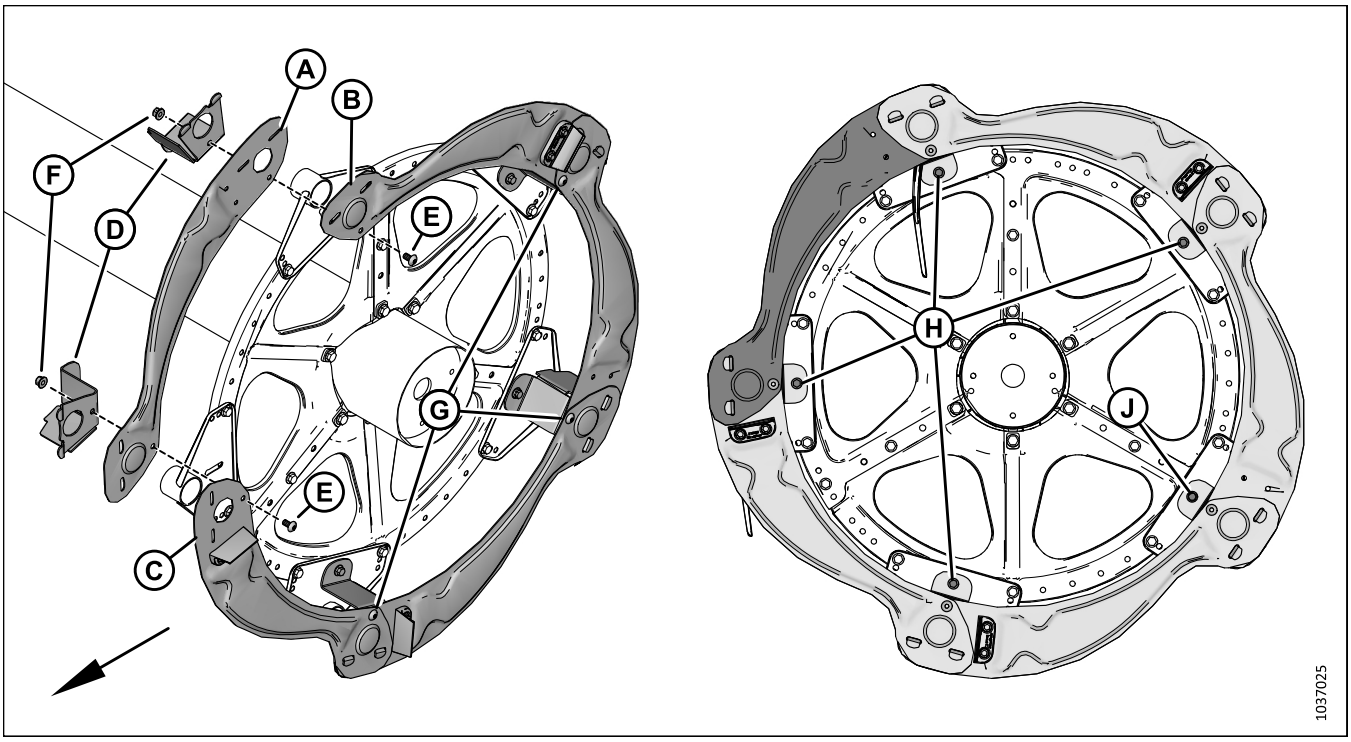


Figure 5.128: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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:
    - *5.7 Installing Deck Cutterbar Seals – D230 (Parts Bag MD #335987), page 113*
    - *5.8 Installing Deck Cutterbar Seal – D235 (Parts Bag MD #335988), page 116*

5.19 Installing Tank Covers (Parts Bag MD #357088)

The tank covers protect the float module's hydraulic fluid tank. They will need to be removed from their shipping position and installed on the float module.

1. Retrieve the previously removed left and right covers (D) and parts bag MD #357088.
2. Raise the header 127 mm (5 in.) off the ground.
3. Extend the hydraulic center-link fully.

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

5. Install covers (A) and (B) on the front of the float module. Secure the covers with push-in clips (C).

   NOTE:

   You may need to slightly bend the tabs on the tank covers to get them to slot in.

   NOTE:

   Use a round punch to assist with aligning the bolt holes.

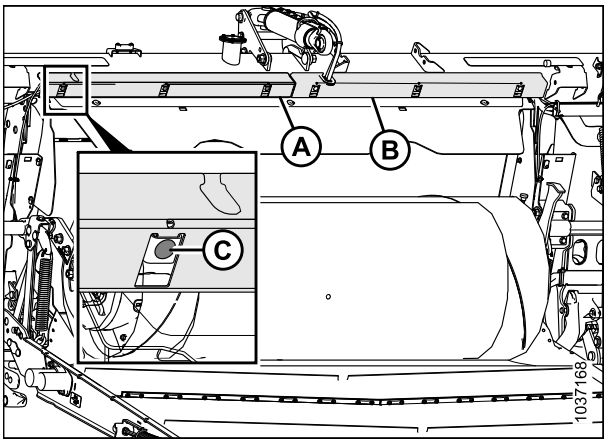


Figure 5.129: Tank Covers Installed on Float Module

5.20 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).

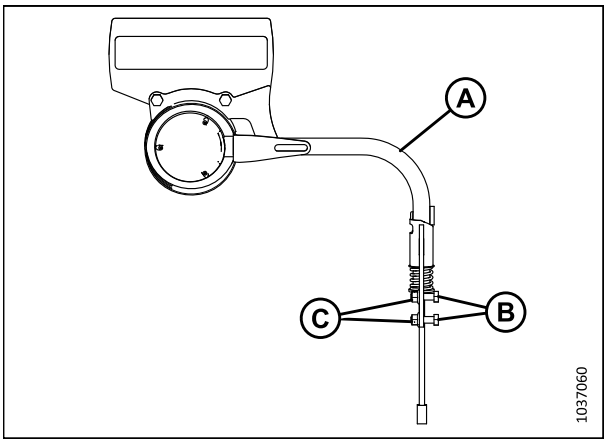


Figure 5.130: Left Clearance Light

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.

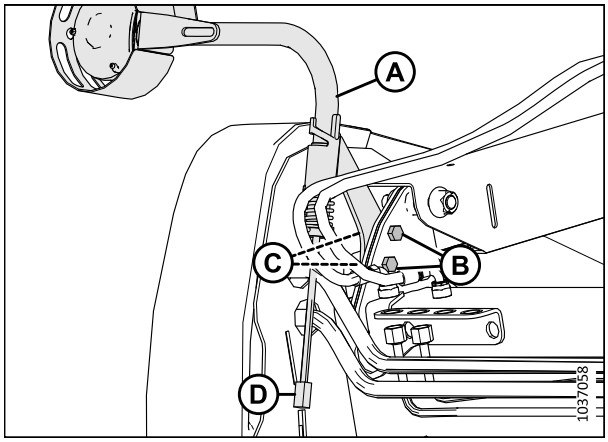


Figure 5.131: Left Clearance Light

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).

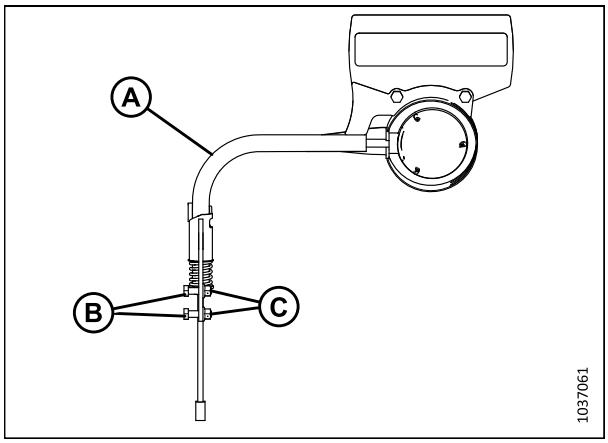


Figure 5.132: Right Clearance Light

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.

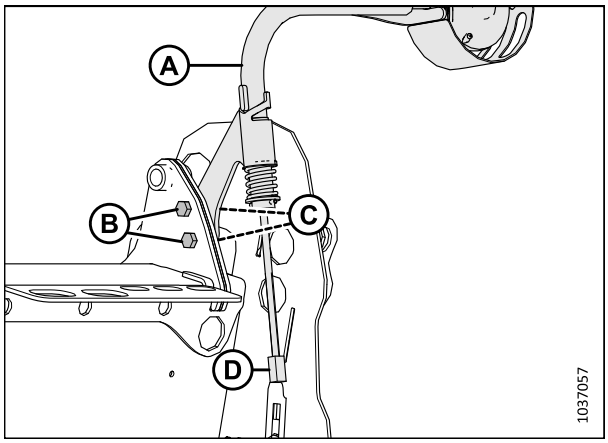


Figure 5.133: Right Clearance Light

5.21 Crop Dividers

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

5.21.1 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 *10.3.1 Opening Header Endshields, page 296*.
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.

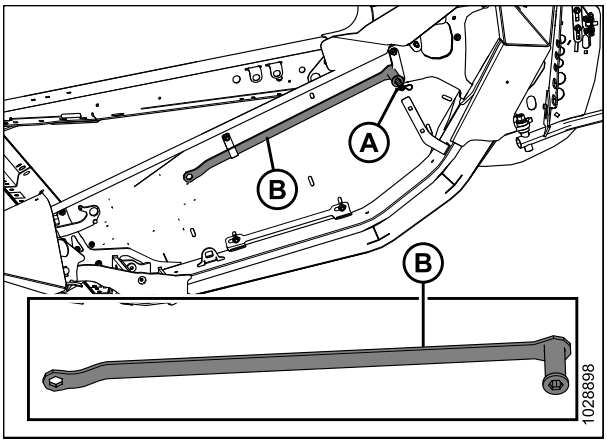


Figure 5.134: Left Endsheet

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).

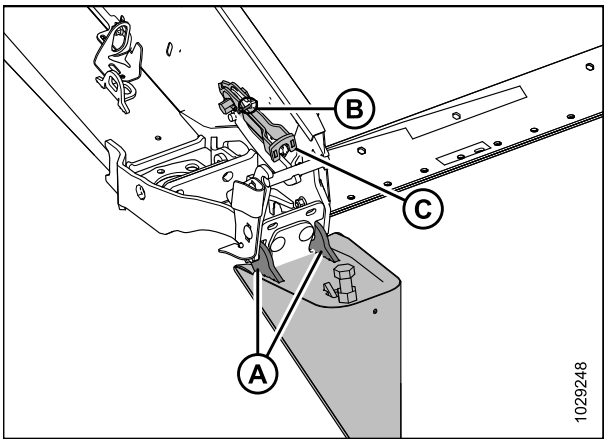


Figure 5.135: Crop Divider

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

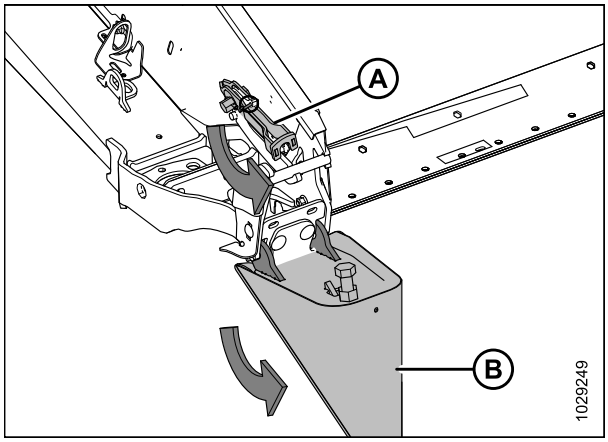


Figure 5.136: Crop Divider

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).

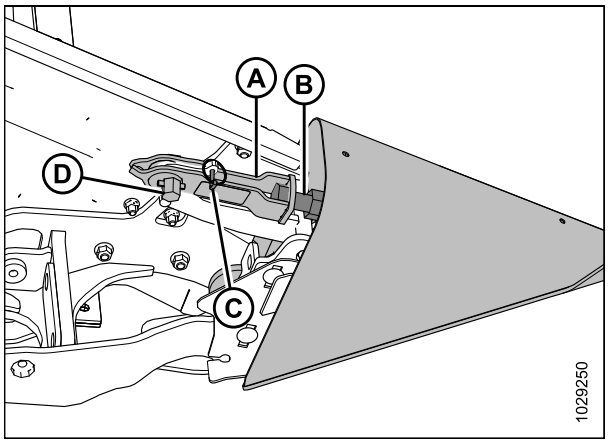


Figure 5.137: Crop Divider

13. Ensure that there is contact between plate (A) and guide (B). Repeat this step on the opposite side.
14. Return the multi-tool to its storage location on the left end panel.
15. Close the left endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

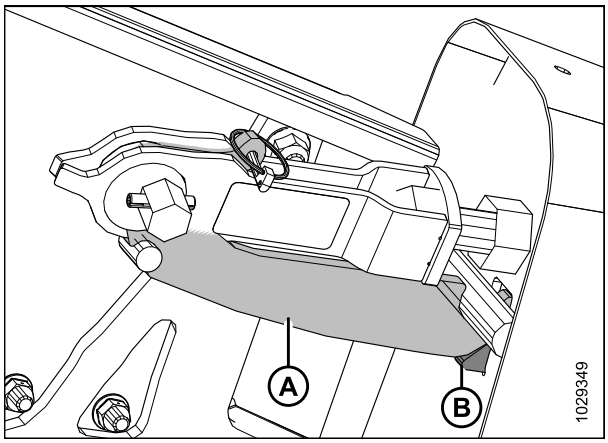


Figure 5.138: Crop Divider's Latch

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 transparent for the sake of clarity.

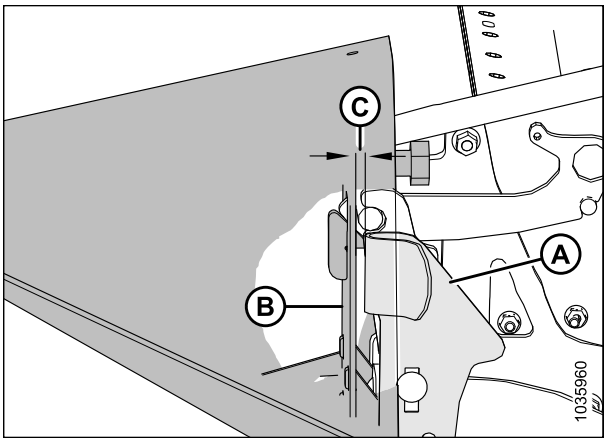


Figure 5.139: Front Support

5.21.2 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 *10.3.1 Opening Header Endshields, page 296*.
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).

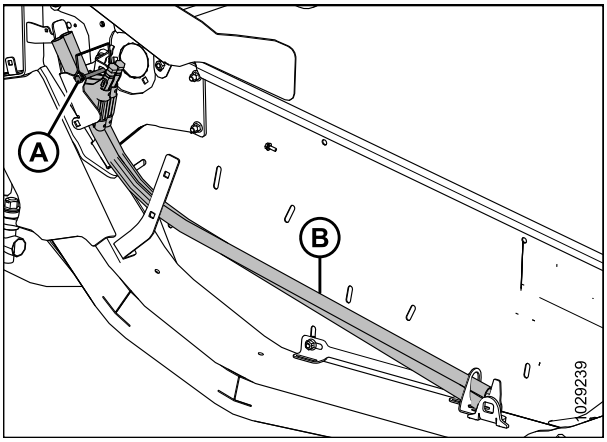


Figure 5.140: Divider Rods

5. Position crop divider rod (A) on the tip of the crop divider. Tighten bolt (B).
6. Repeat Step *2, page 193* to Step *5, page 193* on the opposite end of the header.
7. Close the right and left endshields. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

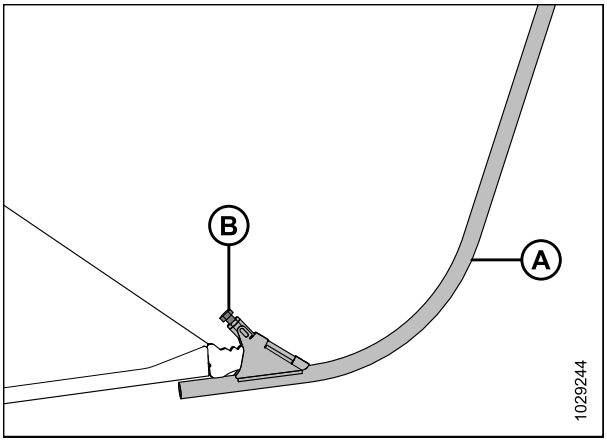


Figure 5.141: Divider Rod on Crop Divider

5.22 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 *6.1 Performing Predelivery Checks, page 195*.

Chapter 6: Predelivery Checks

Perform the final checks and adjustments as listed on the Predelivery Checklist (yellow sheet inside the back cover of this instruction) to ensure the machine is field-ready.

6.1 Performing Predelivery Checks

The predelivery checks and adjustments need to be completed to ensure that the machine is field-ready.

Perform the final checks listed on the Predelivery Checklist (*Predelivery Checklist, page 317*) to ensure that the header is field-ready. Refer to the procedures in this chapter for detailed instructions on performing the tasks listed in the Predelivery Checklist.

The completed Predelivery Checklist should be retained by the Operator or the Dealer.

DANGER

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

- **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.**
- **Clear the area of bystanders.**
- **To prevent 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 leaving the operator's seat or making adjustments to the machine. Never work on or beneath an unsupported header. If the header is fully raised, always engage the safety props. If the header is off of the ground but not raised to its full height, place blocks under the header.**

WARNING

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

- **To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.**
- **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.

6.1.1 Checking Tire Pressure – Option for D230 and D235

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

Table 6.1 Tire Inflation Pressure

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

6.1.2 Checking Transport Wheel Bolt Torque – Option for D230 and D235

For headers with a transport wheel package, the wheel bolts securing the transport wheels must be torqued correctly before the header can be safely transported.

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.

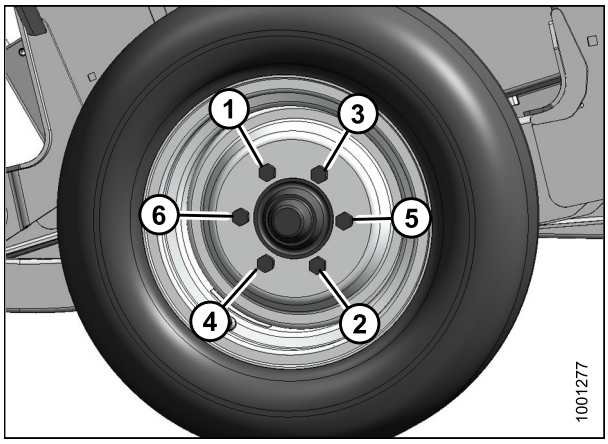


Figure 6.1: Sequence for Tightening Bolts

6.1.3 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 *10.3.1 Opening Header Endshields, page 296*.
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 196* to Step *9, page 196* to check the oil level for the other knife drive.

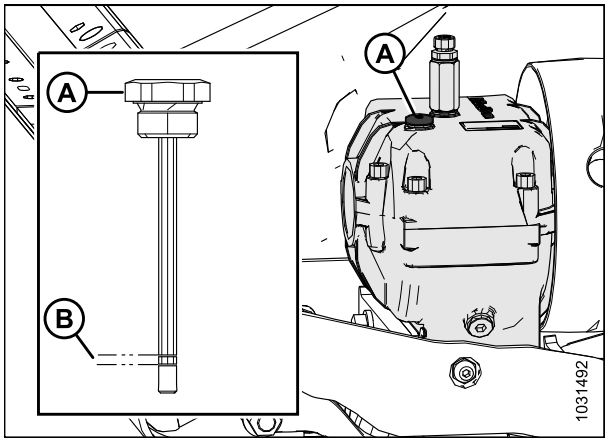


Figure 6.2: Knife Drive Box

6.1.4 Checking Oil Level in Header Drive Main Gearbox

1. Lower the header.
2. Shut down the engine, and remove the key from the ignition.

3. Remove oil level plug (A) from main gearbox (B) and ensure that the oil level is up to the bottom of the hole.
4. Add oil if it is required. For instructions, refer to the header operator's manual.
5. Reinstall oil level plug (A).

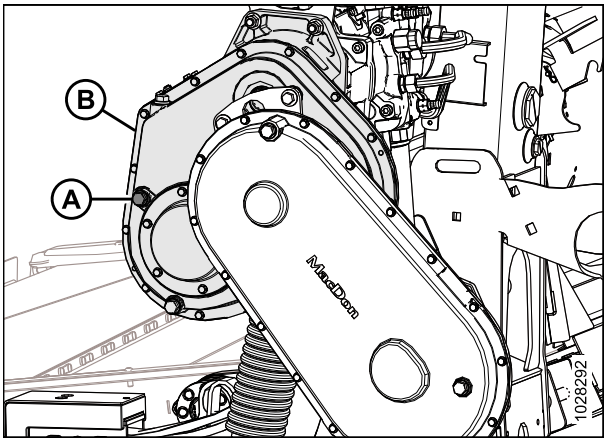


Figure 6.3: Header Drive Main Gearbox

6.1.5 Checking Oil Level in Header Drive Completion Gearbox

1. Lower the header.
2. Shut down the engine, and remove the key from the ignition.
3. Ensure that the completion gearbox has been moved to the working position. For instructions, refer to *3.1 Repositioning Completion Gearbox to Working Position, page 33*.
4. Remove oil level plug (A) from the completion gearbox. The oil should be at the level of the port.
5. If there is an insufficient amount of oil in the completion gearbox, remove filler plug (B) and add oil. For instructions, refer to the header operator's manual.
6. Reinstall oil level plug (A).

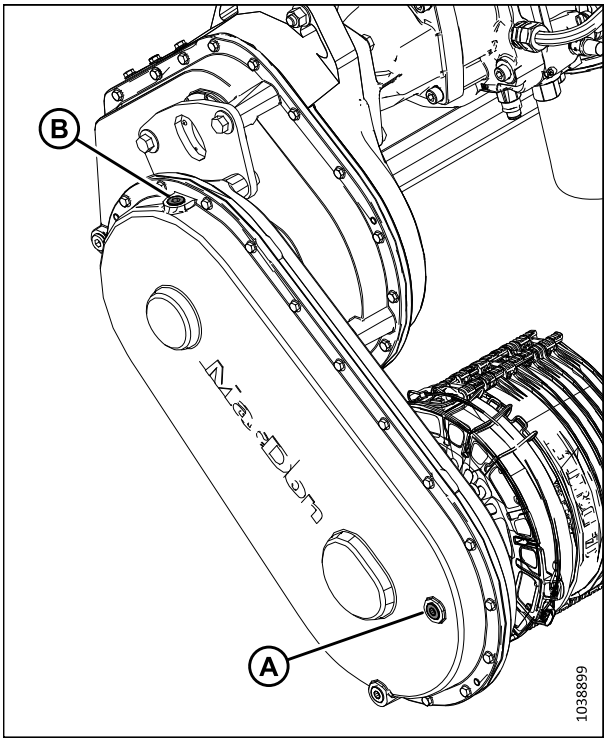


Figure 6.4: Header Drive Completion Gearbox

6.1.6 Checking Oil Level in Hydraulic Reservoir

The hydraulic oil used to operate the header is stored in the float module's reservoir. The oil level will need to be inspected.

1. Ensure that the oil level is at full line (A) at all times.

   NOTE:

   Inspect the hydraulic oil level when the hydraulic oil is cold.

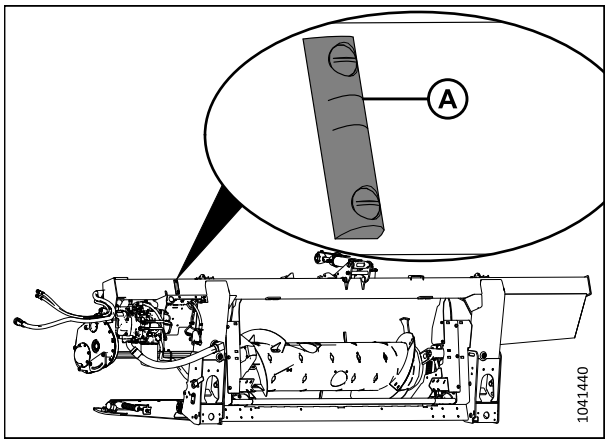


Figure 6.5: Oil Level Sight Gauge

6.1.7 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.

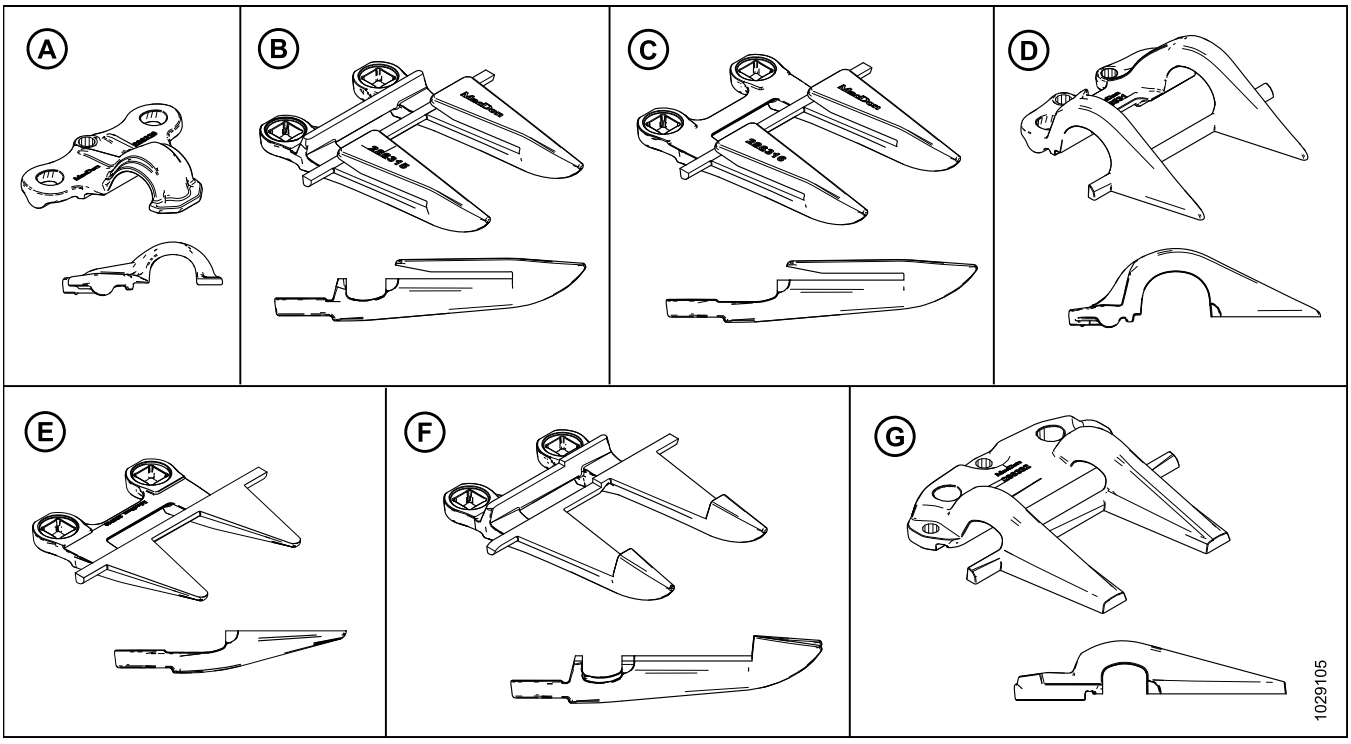


Figure 6.6: Guard and Hold-Down Types Used in Pointed Knife Guard Configurations

A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed-End Knife Guard (without Wear Bar) (MD #286316)[17]
D - PlugFree™ End Hold-Down (MD #286331)
E - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[18]
F - Pointed Center Knife Guard (MD #286317)[19]
G - Pointed Center Hold-Down (MD #286332)

Follow these procedures for checking and adjusting pointed knife guards:

- *Checking Hold-Down – Pointed Knife Guards, page 201*
- *Adjusting Hold-Down – Pointed Knife Guards, page 202*
- *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 202*
- *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 204*

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

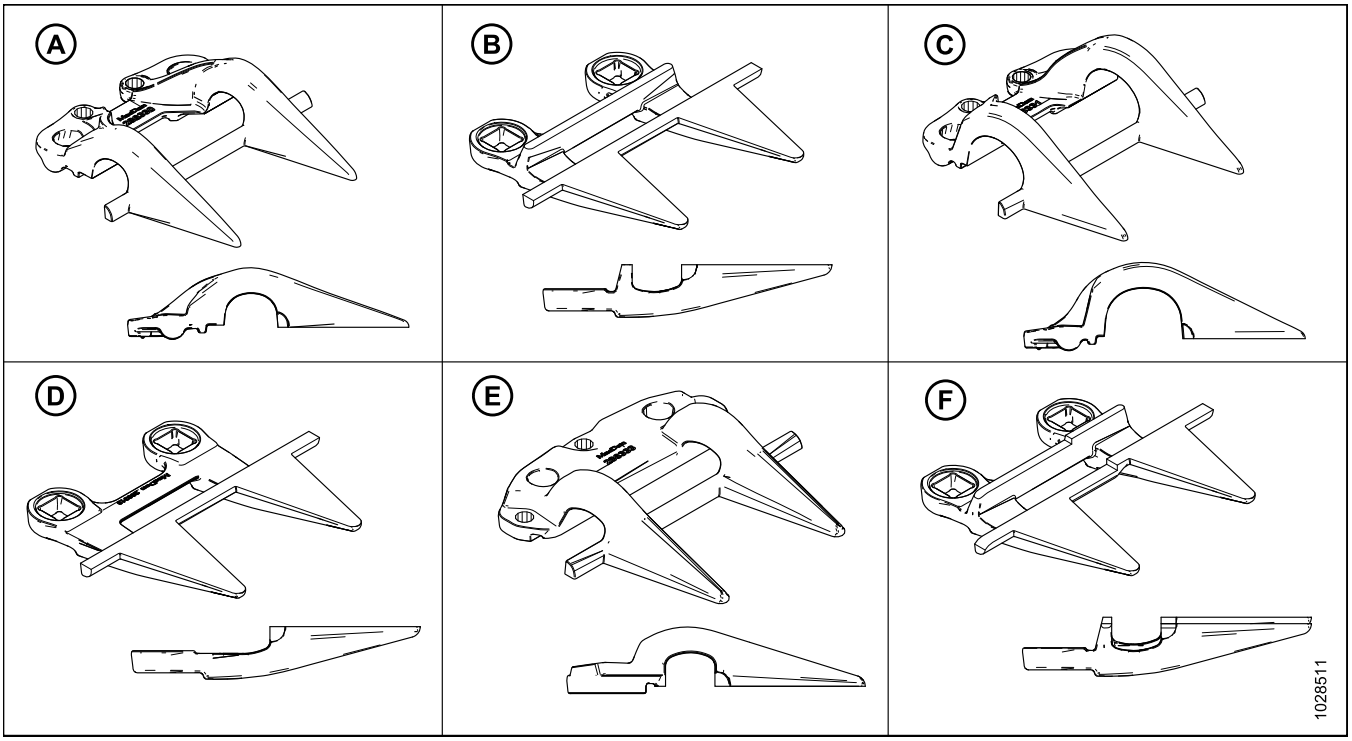


Figure 6.7: Guard and Hold-Down Types used in Short Knife Guard Configurations

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Knife Guard (MD #286318) (standard configuration) or (MD #286910) (grass seed configuration)
C - PlugFree™ End Hold-Down[20] **(MD #286331)**
D - PlugFree™ End Knife Guard (without Wear Bar)[21] **(MD #286319) (standard configuration) or (MD #286911) (grass seed configuration)**
E - PlugFree™ Center Hold-Down (MD #286904)
F - PlugFree™ Center Knife Guard[19] **(MD #286320) (standard configuration) or (MD #286912) (grass seed configuration)**

Follow these procedures for checking and adjusting short knife guards:

17. Installed in positions 2, 3, and 4 on the drive side(s).
18. Installed in position 1 on the drive side(s). Single-knife headers use a standard guard on the right end.
19. Double-knife headers only.
20. Installed in positions 1–3 on the drive side(s); installed in position 1 at the right end of single-knife headers.
21. Installed in positions 1–4 on the drive side(s). Single-knife headers use a standard guard on the right end of the header.

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 *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 202*.

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 *10.2.1 Engaging Reel Safety Props, page 293*.
4. Open the endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.
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 *Adjusting Hold-Down – Pointed Knife Guards, page 202*.
8. Close the endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

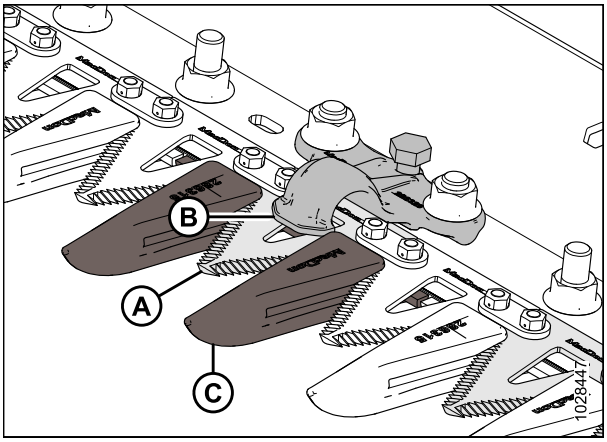


Figure 6.8: Pointed Guard Hold-Down

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 *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 204*.

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 *10.2.1 Engaging Reel Safety Props, page 293*.
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 *Checking Hold-Down – Pointed Knife Guards, page 201*.

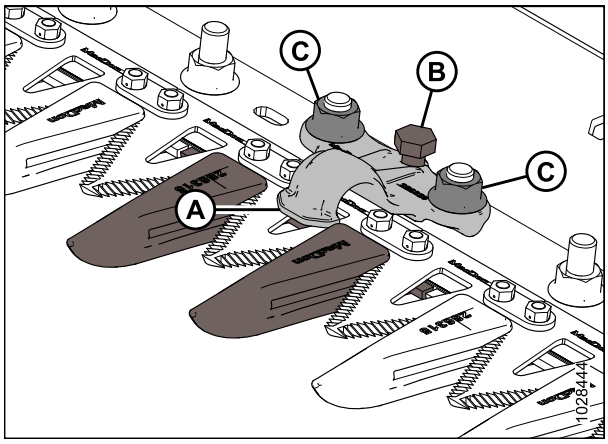


Figure 6.9: Pointed Hold-Down

6. Run the engine at a low idle and listen for noise caused by insufficient clearance. Repeat Step *4, page 202* to Step *5, page 202* if necessary.

   IMPORTANT:

   An insufficient hold-down clearance will cause the knife and the guards to overheat.

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 *10.2.1 Engaging Reel Safety Props, page 293*.
4. Open the endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.

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 *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 204*.
8. After tightening nuts (D), recheck the clearance and adjust if necessary.
9. Close the endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

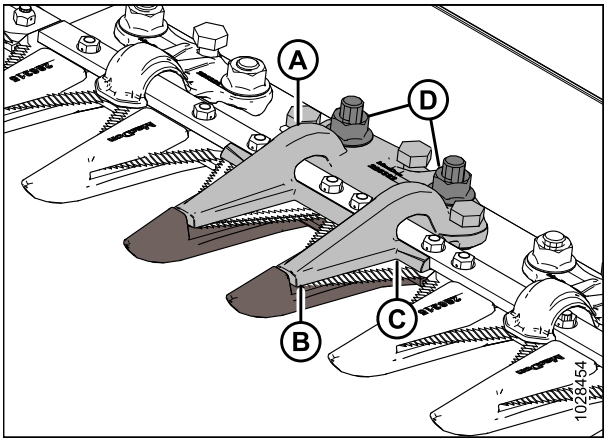


Figure 6.10: Pointed Center Hold-Down

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 *10.2.1 Engaging Reel Safety Props, page 293*.
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).

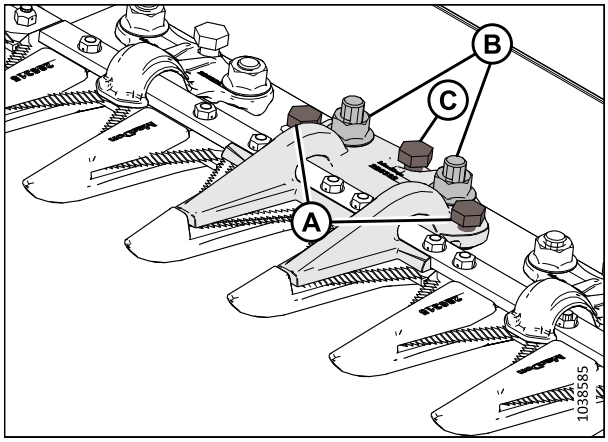


Figure 6.11: Pointed Center Hold-Down

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.

   IMPORTANT:

   Insufficient hold-down clearance will cause the knife and the guards to overheat.
9. Check the center guard clearance. For more information, refer to *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 202*.

Checking Hold-Down – Short Knife Guards

To check the center hold-down on double-knife headers, refer to *Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 206*.

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 *10.2.1 Engaging Reel Safety Props, page 293*.

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 *Adjusting Hold-Down – Short Knife Guards, page 206*.

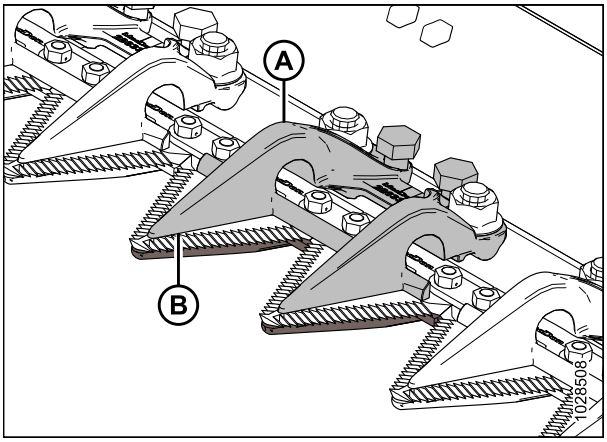


Figure 6.12: Short Knife Guards

Adjusting Hold-Down – Short Knife Guards

To adjust the center hold-down on double-knife headers, refer to *Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 208*.

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 *10.2.1 Engaging Reel Safety Props, page 293*.
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).

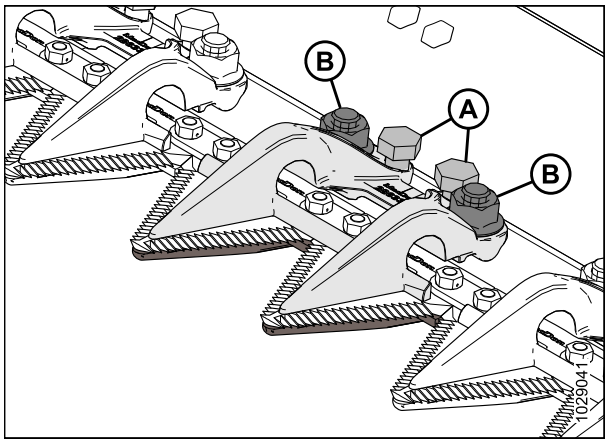


Figure 6.13: Short Knife Guard Hold-Down

5. Run the header at a low idle, and listen for noise caused by insufficient clearance. Adjust the header as necessary.

   IMPORTANT:

   Insufficient hold-down clearance will cause the knife and the guards to overheat.
6. Disengage the reel safety props. For instructions, refer to *10.2.2 Disengaging Reel Safety Props, page 295*.

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 *10.2.1 Engaging Reel Safety Props, page 293*.
4. Open the endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.

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 *Adjusting Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 208*.

8. Tighten nuts (D), recheck the clearance, and adjust if necessary.

9. Close the endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

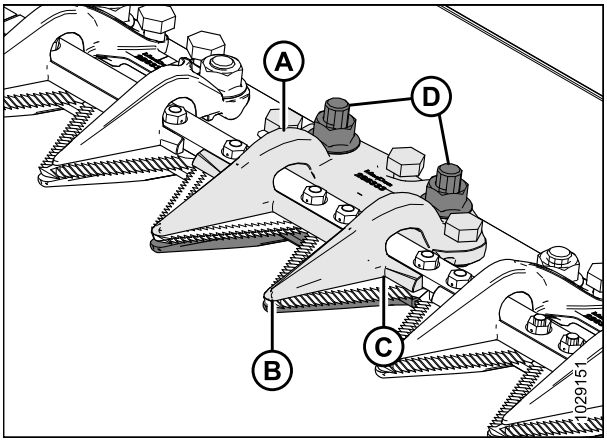


Figure 6.14: Center Knife Guard Hold-Down

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 *10.2.1 Engaging Reel Safety Props, page 293*.
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).

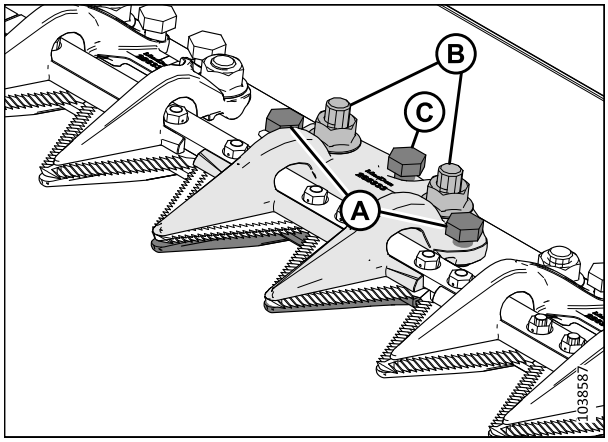


Figure 6.15: Center Hold-Down

7. Torque nuts (B) to 85 Nm (63 lbf·ft).
8. If further adjustment is needed, repeat Step *4, page 208* to Step *7, page 208*.
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.

6.1.8 Checking and Adjusting Side Draper Tension

To check and adjust the draper tension, ensure that the tension indicator is correctly positioned, raise the header, engage the safety props, and verify the draper guide and idler roller alignment. Adjust until the tension indicator shows proper 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 combine operator's manual.

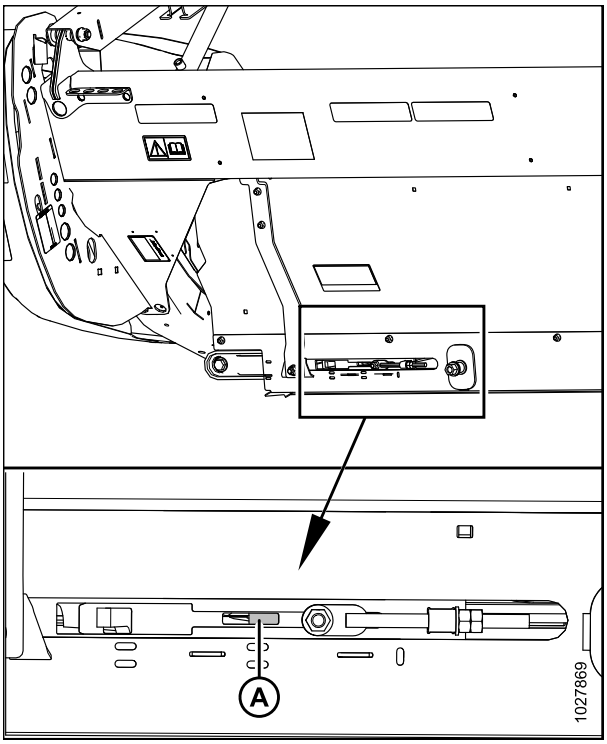


Figure 6.16: Checking Left Tension Adjuster

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

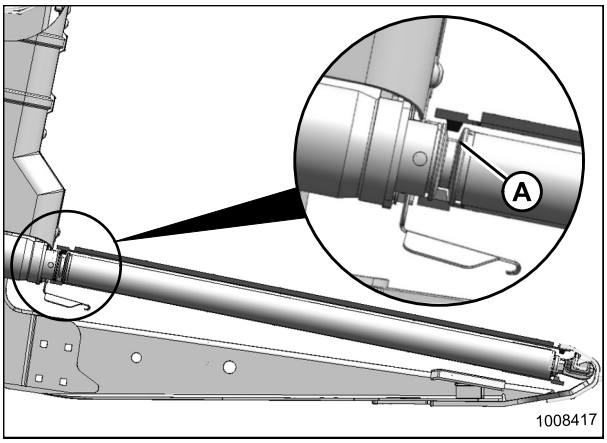


Figure 6.17: Drive Roller

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

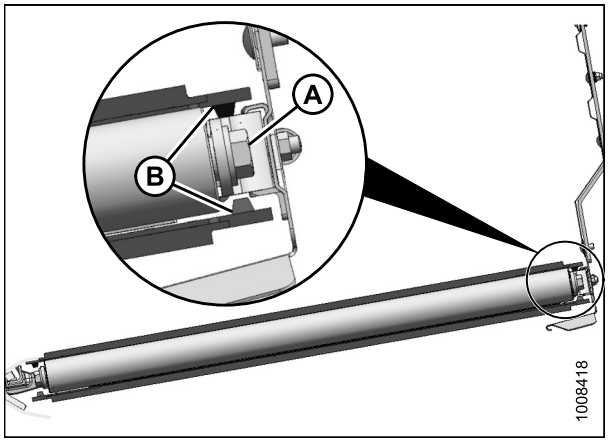


Figure 6.18: Idler Roller

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.

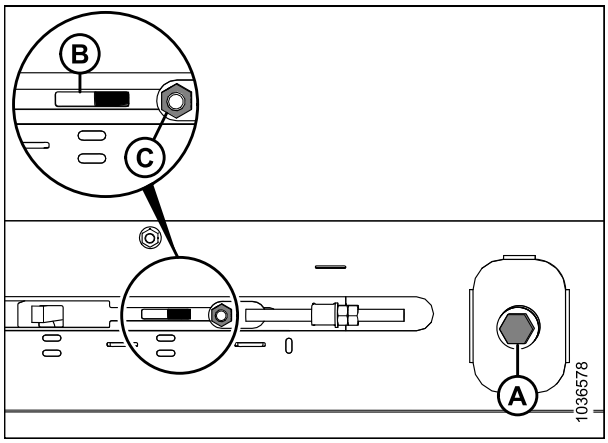


Figure 6.19: Adjusting Left Tensioner

6.1.9 Checking and Adjusting Draper Seal

Checking draper seal

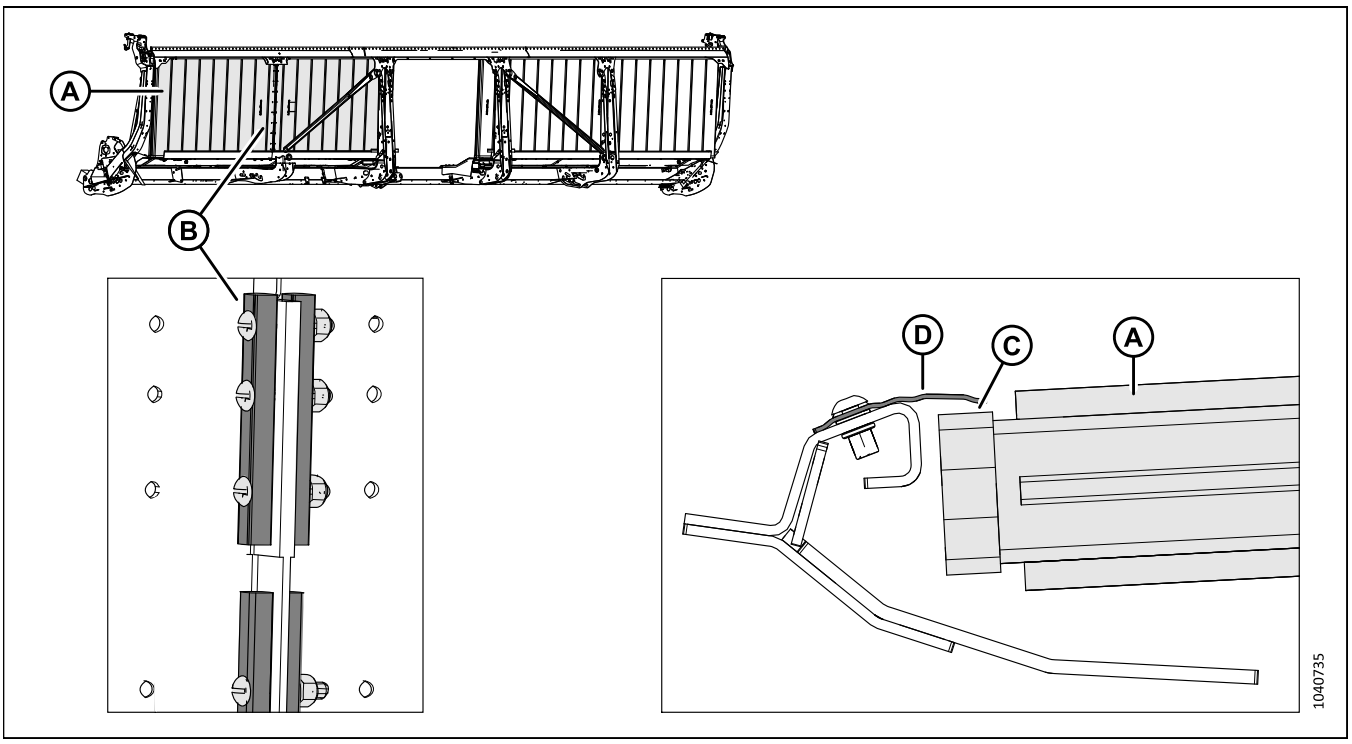


Figure 6.20: Draper Seal Clearance Specifications

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 *6.1.8 Checking and Adjusting Side Draper Tension, page 209*.

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

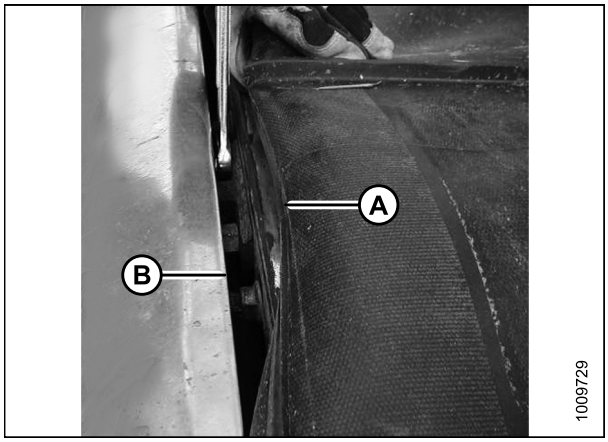


Figure 6.21: Deck Front Hook

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.

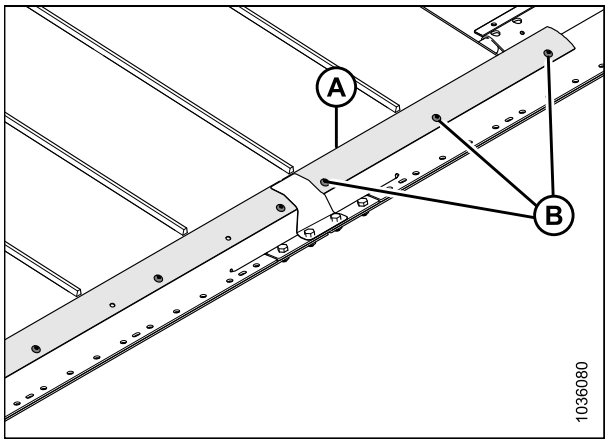


Figure 6.22: Deck Seal Plate

NOTE:

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

Table 6.2 Number of Deck Support Hooks

Model	Quantity
D225 and D230	6
D235	8

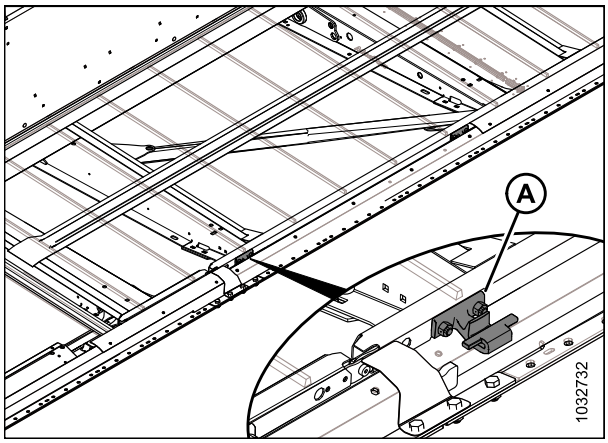


Figure 6.23: Draper Deck Front Hooks

10. Loosen two lock nuts (A) on deck front hook (B) by one half-turn **ONLY**.
11. 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.

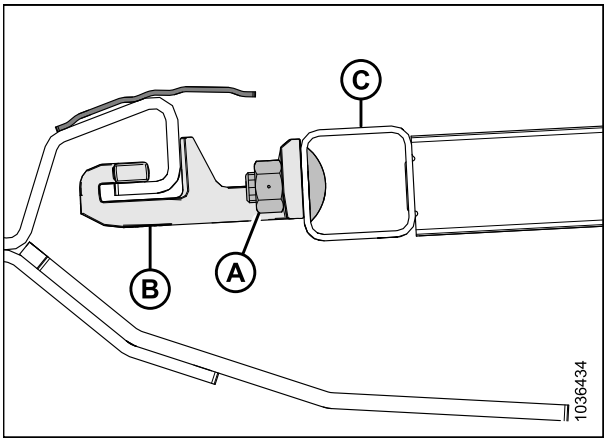


Figure 6.24: Deck Support

12. 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.
13. 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.
14. Tighten hardware (D).
15. Measure gap (B) again using the feeler gauge. For instructions, refer to Step *12, page 213*.
16. If removed, install cutterbar seal (A) and screws (B).

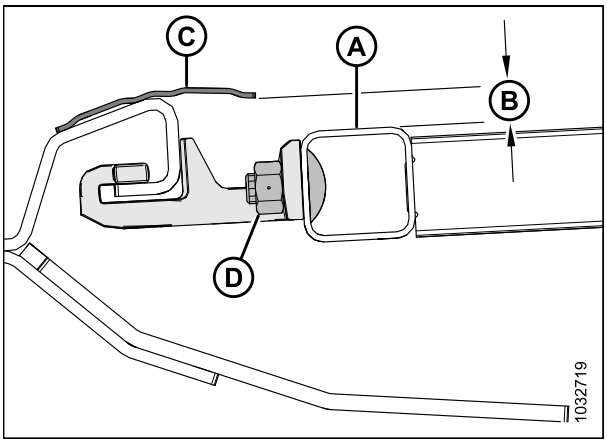


Figure 6.25: Deck Front Hook

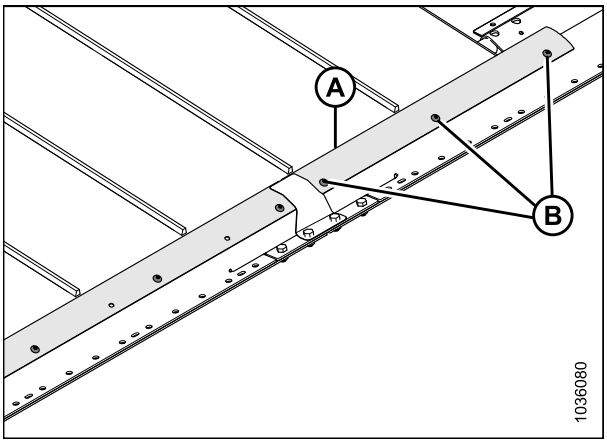


Figure 6.26: Deck Seal Plate

6.1.10 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.

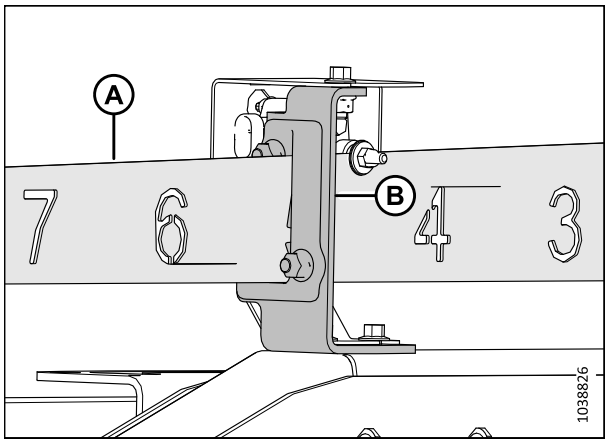


Figure 6.27: Reel Fore-Aft Indicator

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.

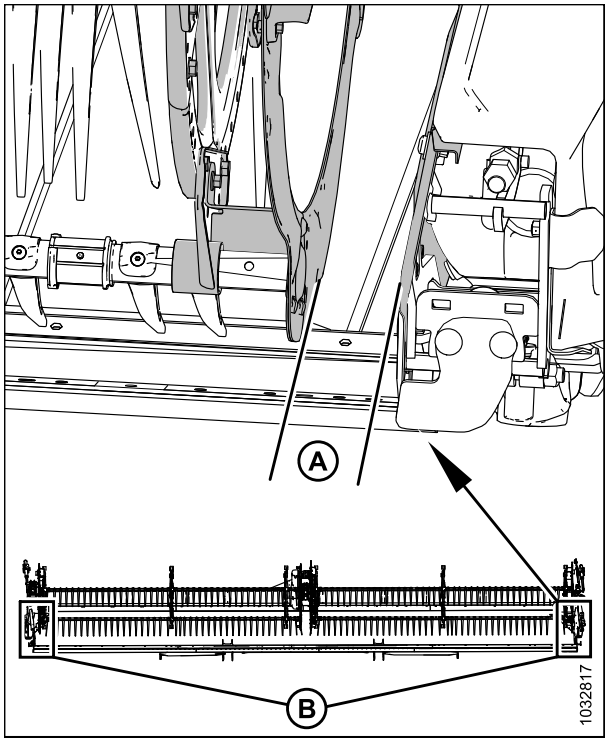


Figure 6.28: Reel Clearance – Double-Reel Header

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).

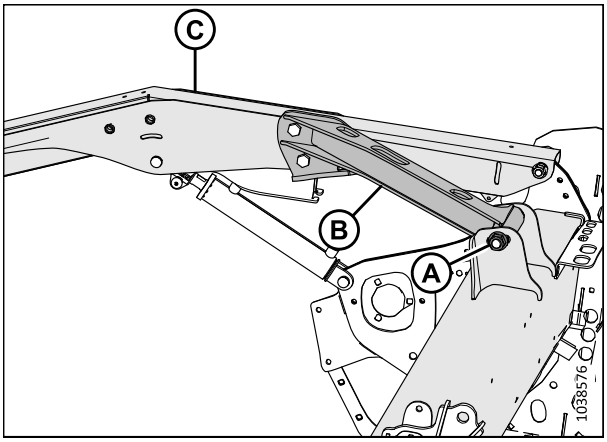


Figure 6.29: Right Support Arm – Single-Reel Header

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).

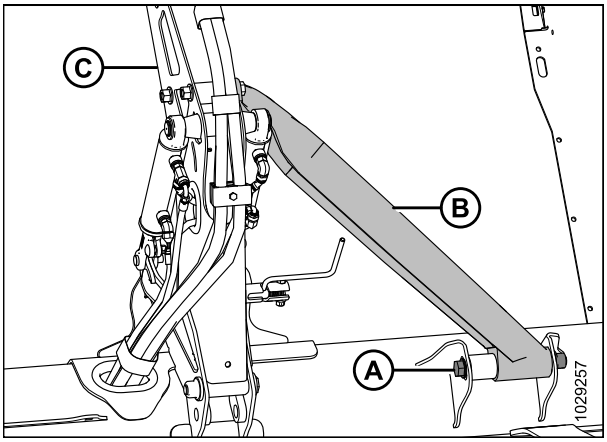


Figure 6.30: Center Support Arm – Double-Reel Header

6.1.11 Reel-to-Cutterbar Clearance

There must be a sufficient clearance between the reel fingers and the cutterbar to ensure that the reel fingers do not contact the cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operating the header.

Measuring Reel-to-Cutterbar Clearance

Make sure there is sufficient clearance between the reel and the cutterbar to prevent the knife from cutting reel finger tips off during operation.

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. Park the combine 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).
3. Shut down the engine, and remove the key from the ignition.

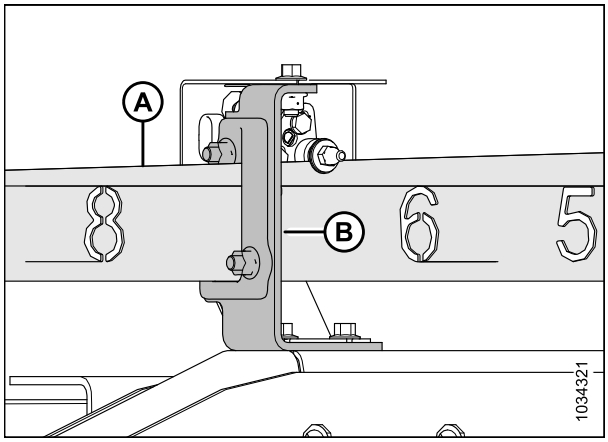


Figure 6.31: Fore-Aft Position

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 *6.3, page 218* and *6.4, page 218*.

   For measurement locations, refer to:

   - Figure *6.33, page 217* – single-reel headers
   - Figure *6.34, page 218* – double-reel headers
6. If required, adjust the reel clearance. For instructions, refer to *Adjusting Reel-to-Cutterbar Clearance, page 218*.

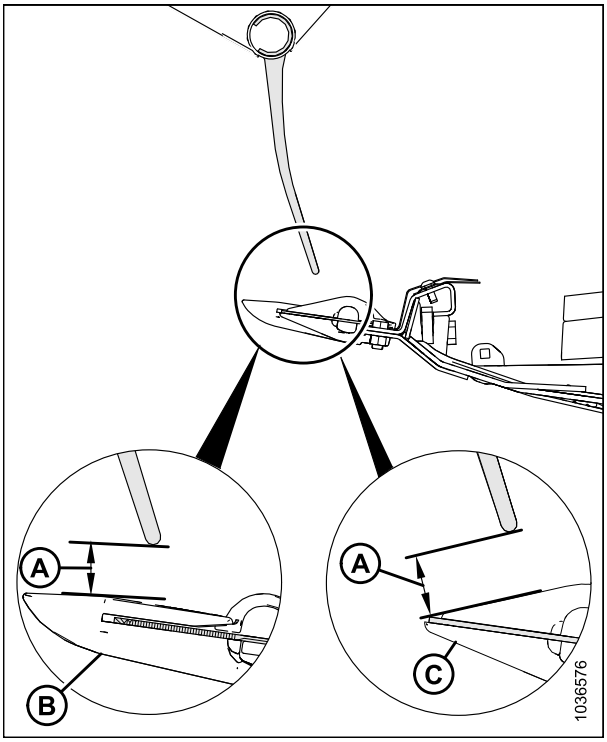


Figure 6.32: Measurement from Finger Tip to Guard

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

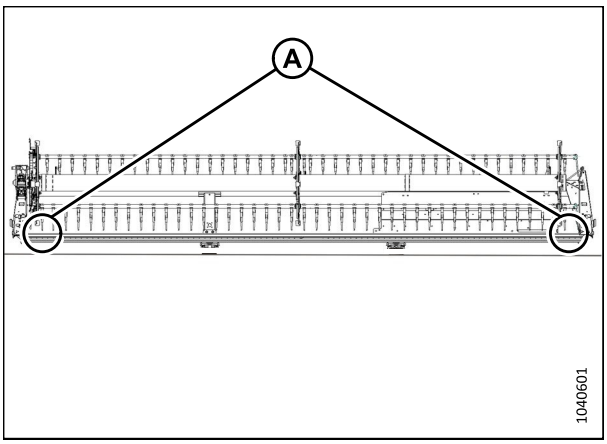


Figure 6.33: Single-Reel Header Measurement Locations

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

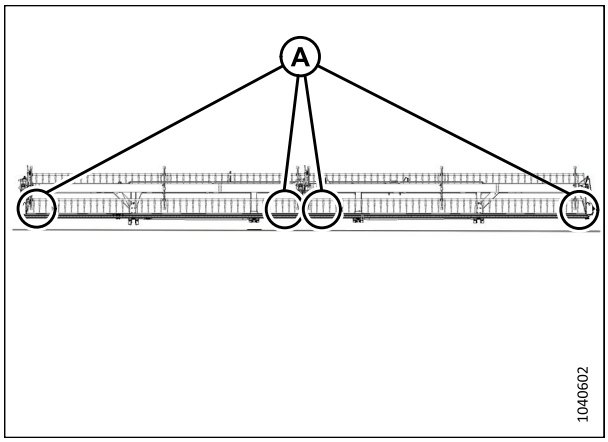


Figure 6.34: Double-Reel Header Measurement Locations

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

Table 6.3 Finger to Guard/Cutterbar Clearance – Single Reel

Header	Reel Ends
D225	25 mm (1 in.)

Table 6.4 Finger to Guard/Cutterbar Clearance – Double Reel

Header	Reel Ends	Beside Center Arm
D230, D235, D241, D245	20 mm (3/4 in.)	20 mm (3/4 in.)

8. Adjust the reel clearance, if required. For instructions, refer to *Adjusting Reel-to-Cutterbar Clearance, page 218*.

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.

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. Prior to making adjustments, make sure that the reel-to-cutterbar clearance has been measured and recorded. For instructions, refer to *Measuring Reel-to-Cutterbar Clearance, page 216*.

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).

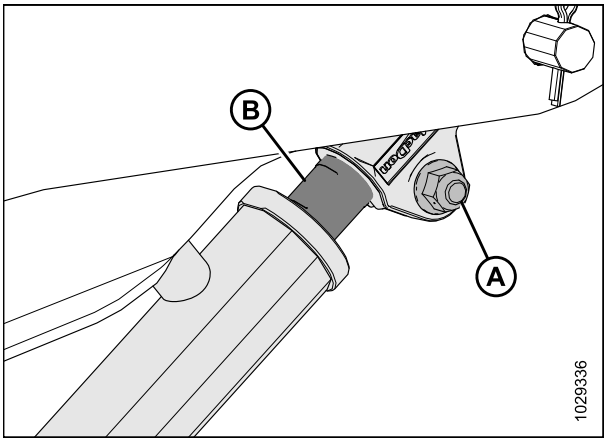


Figure 6.35: Outside Arm Cylinder

3. Repeat Step *2, page 219* 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.

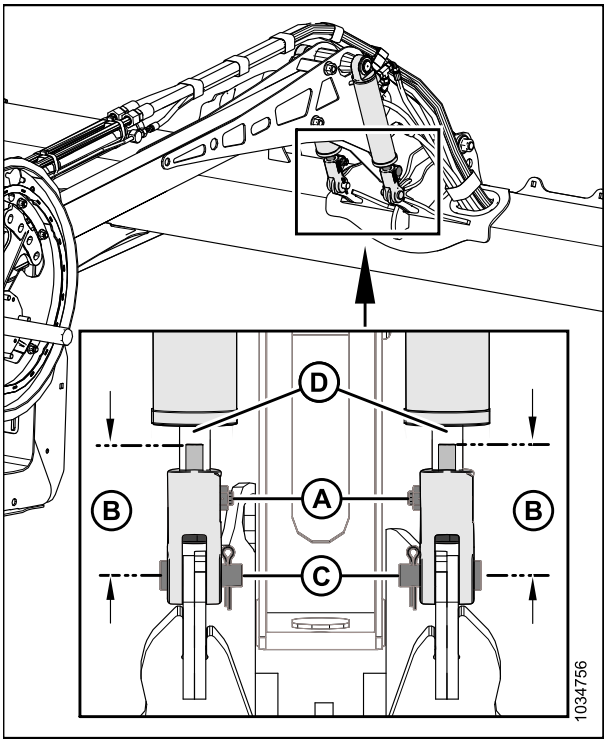


Figure 6.36: Center Arm Cylinders

8. Tighten bolts (A).
9. Raise the reel fully.
10. Lower the reel fully and continue holding the control button down to phase the cylinders.

    NOTE:

    If the reel lift cylinders will not raise/lower equally after phasing the cylinders, purge air from the reel lift hydraulics system. For instructions, refer to the header operator's manual.
11. Shut down the engine, and remove the key from the ignition.
12. Check the reel-to-cutterbar clearance measurements again. If necessary, repeat the adjustment procedures.

13. Move the reel back to ensure that the reel fingers do not contact the deflector shields.
14. 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.
15. Periodically check for evidence of contact during operation. Adjust the reel-to-cutterbar clearance as needed.

6.1.12 Checking and Adjusting Reel Drive Chain

A correctly tensioned drive chain ensures optimum power transfer while minimizing component wear.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the top half of the reel drive cover. For instructions, refer to *10.4 Removing Reel Drive Cover, page 300*.
3. Open the endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.
4. Place multi-tool (A) onto chain tensioner (B).

   IMPORTANT:

   Do **NOT** loosen the motor mount, as it is factory-adjusted and secured with Belleville washers. Adjust the chain tension without loosening the drive mounting bolts.

5. Rotate chain tensioner (B) downward to tension the chain or push tension retainer (C) clockwise with your thumb, and hold it in the unlocked position, then rotate chain tensioner (B) upwards to loosen the chain tension.

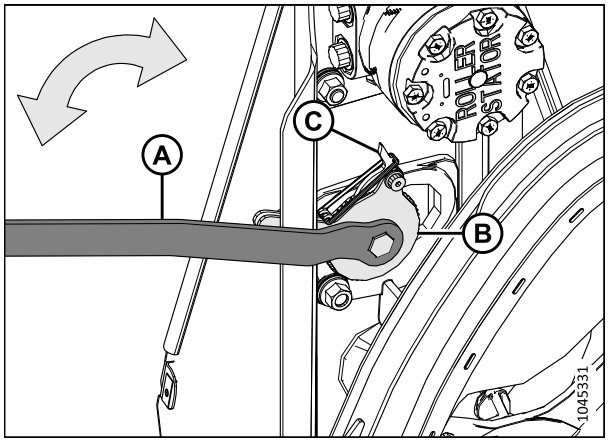


Figure 6.37: Reel Drive

6. Once the chain is tight, rotate the multi-tool upward to properly engage the teeth from the lock/latch into the tightener teeth. If the tightener will not skip a tooth before tightening, do **NOT** force the tightener to the next notch.

   IMPORTANT:

   Do **NOT** overtighten the chain. If the chain is too tight, it can put an excessive load on the sprockets, causing the motor bearings and/or other components to fail prematurely.

   IMPORTANT:

   There should be approximately 38 mm (1 1/2 in.) of play on one side (A) of the chain, while it is tight on the other side (B). This level of tension and play in the chain is required to skip one notch on the chain tightener.

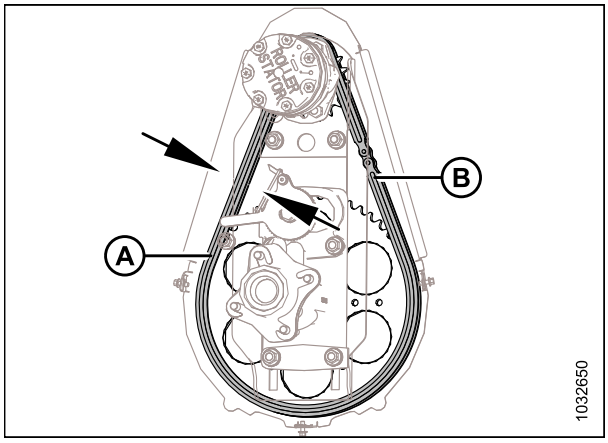


Figure 6.38: Reel Drive

7. Rotate the reel by hand to ensure that the chain properly engages all teeth on lower sprocket (A). To prevent damage, ensure that the chain does not become too tight as the reel rotates.
8. Install the top half of the reel drive cover. For instructions, refer to *10.5 Installing Reel Drive Cover, page 302*.
9. Return the multi-tool to the storage position.

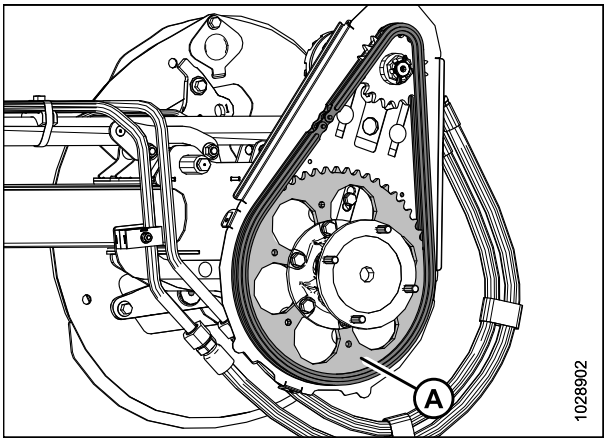


Figure 6.39: Reel Drive

6.1.13 Checking Feed-Auger-to-Pan Clearance

IMPORTANT:

Maintain an appropriate distance between the feed auger and the feed auger pan. Too little of a clearance may result in the fingers or the flighting contacting and damaging the feed draper or the pan when operating the header at certain angles. Look for any evidence of contact when greasing the float module.

1. Extend the center-link to the steepest header angle (setting **E**), and position the header 254–356 mm (10–14 in.) off the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. To fix the problem, make the header heavier by decreasing the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

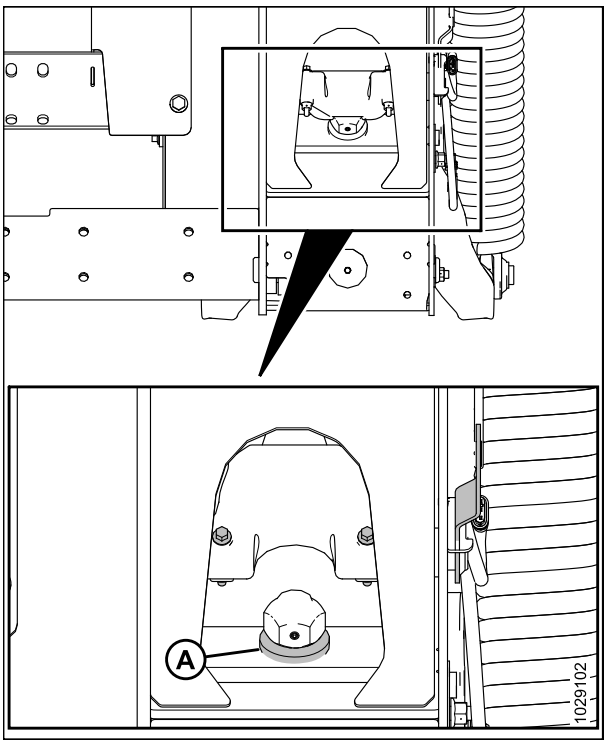


Figure 6.40: Down-Stop Washer

4. Before adjusting the auger-to-pan clearance, check the auger float position to determine how much clearance is required:

   IMPORTANT:

   Ensure that bolts (A) are set at the same location on both ends of the header to prevent damage to the machine during operation.

   - If bolt head (A) is closest to floating symbol (B), the auger is in the floating position.

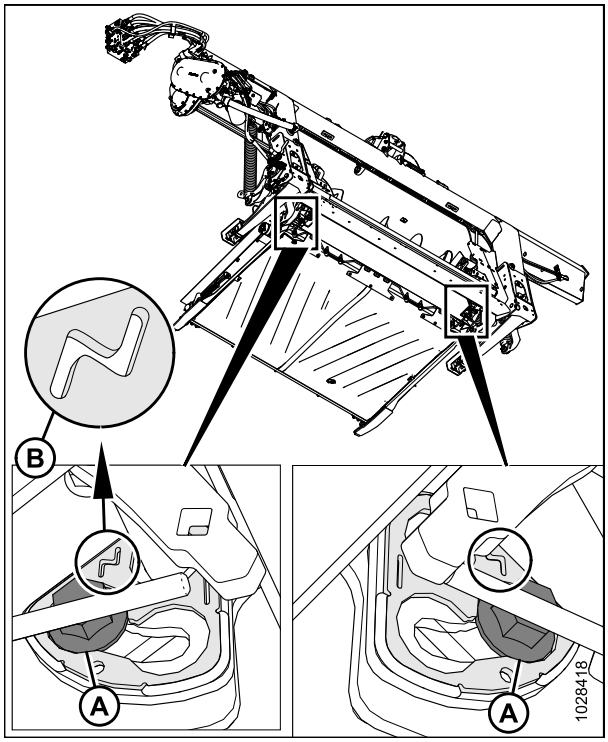


Figure 6.41: Floating Position

   - If bolt head (A) is closest to fixed symbol (B), the auger is in the fixed position.

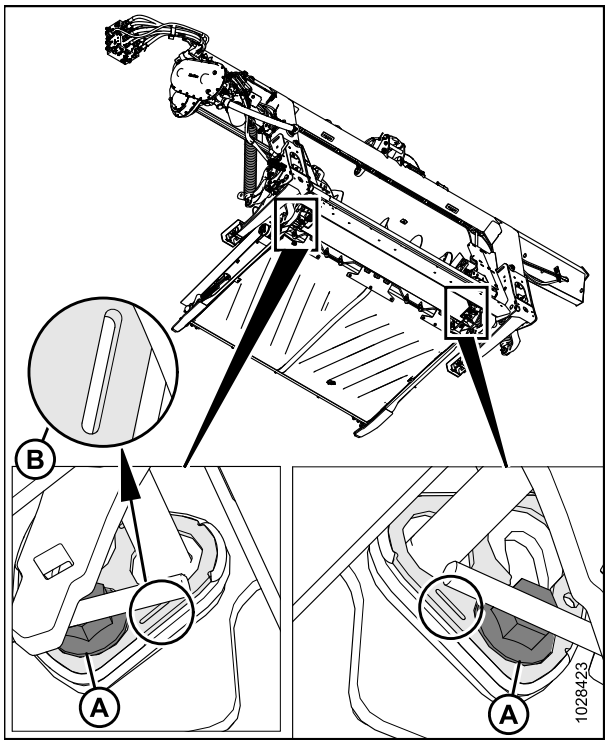


Figure 6.42: Fixed Position

5. Check clearance (C) between the feed auger flighting and the pan.
   - If the feed auger is in the fixed position, the clearance should be 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, the clearance should be 11.5–15.5 mm (7/16–5/8 in.).
6. If the clearance requires adjustment, loosen two nuts (B) and rotate the auger to position the flighting over the feed pan.
7. Turn bolt (A) clockwise to increase clearance (C); turn bolt (A) counterclockwise to decrease clearance (C).
   - If the feed auger is in the fixed position, set the clearance to 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, set the clearance to 11.5–15.5 mm (7/16–5/8 in.).

   NOTE:

   The clearance increases between 25–40 mm (1–1 1/2 in.) when the center-link is fully retracted.

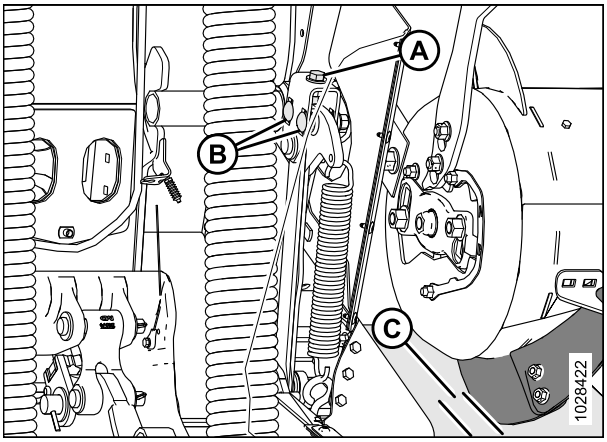


Figure 6.43: Auger Clearance

8. Repeat Step *5, page 223* to Step *7, page 223* on the opposite end of the auger.

   IMPORTANT:

   Adjusting one side of the auger can affect the other side. Always double-check both sides of the auger after making final adjustments.
9. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 96 Nm (70 lbf·ft).
10. Rotate the feed auger and double-check the clearances.

6.1.14 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 6.5 Recommended Lubricant

Lubricant Specification	Description	Application
SAE multipurpose	High temperature, extreme pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Driveline slip-joints
SAE multipurpose	High temperature, extreme pressure (EP2) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	All other lubrication points

Greasing Procedure

Refer to the inside back cover for the recommended lubricants.

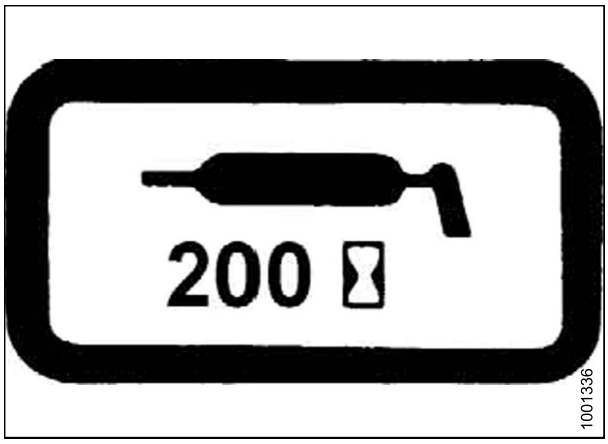


Figure 6.44: Greasing Interval Decal

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.

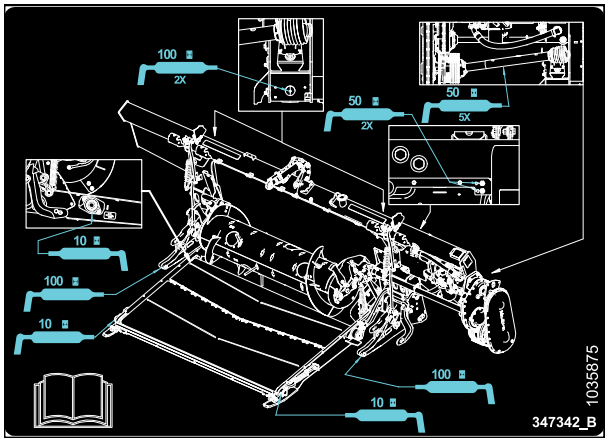


Figure 6.45: FM200 Grease Point Layout Decal

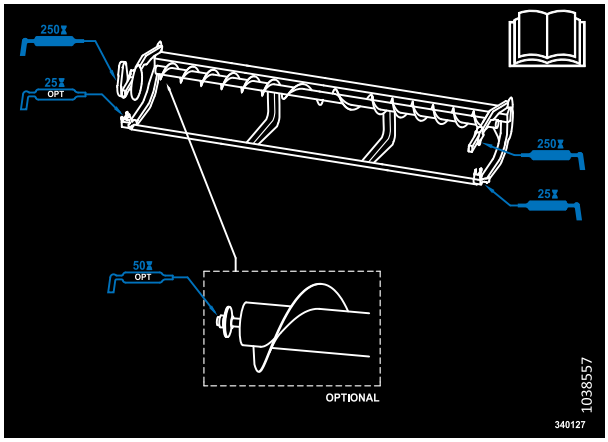


Figure 6.46: Grease Point Decal for Single-Knife Header with One-Piece Upper Cross Auger

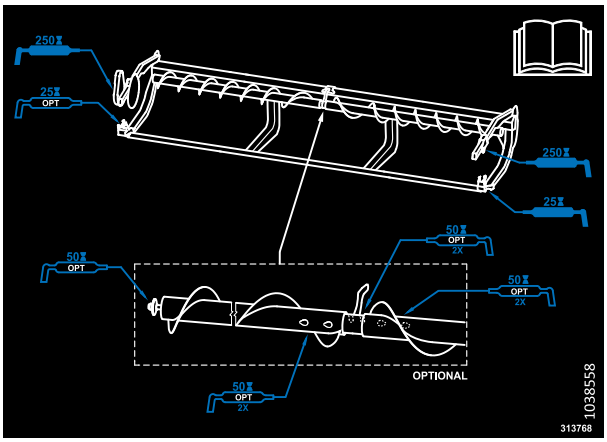


Figure 6.47: Decal for Single-Knife Header with Two-Piece Upper Cross Auger

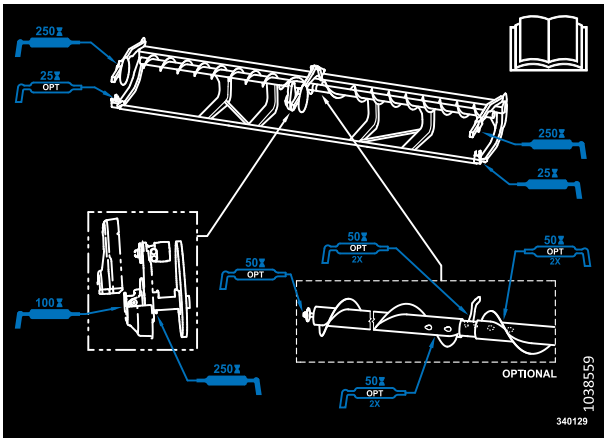


Figure 6.48: Decal for Double-Knife Header with Two-Piece Upper Cross Auger

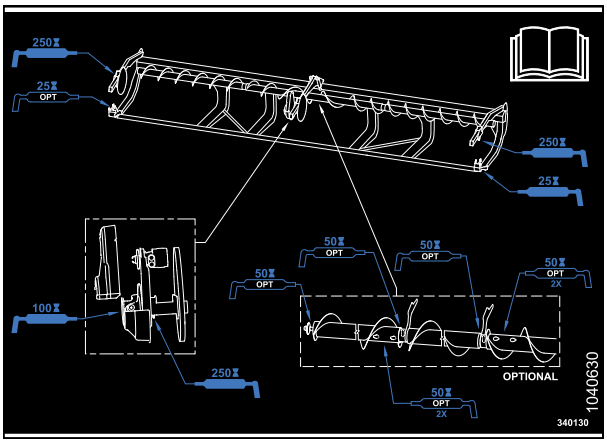


Figure 6.49: Decal for Double-Knife Header with Three-Piece Upper Cross Auger

Lubrication Points

There are several points on the header which will require lubrication.

Lubricate the following grease points using the lubricants specified in *6.1.14 Lubricating Header, page 223*:

1. Clear any debris from around the bearing and bearing housing. Inspect the condition of the bearing and bearing housing.
2. Clear any debris and excess grease from around the feed draper drive roller grease zerk (A) and idler roller grease zerk (B).
3. Grease the feed draper drive roller bearing until grease comes out of the seal. Wipe any excess grease from the area after greasing. Initial greasing on a new header may require additional grease (may require 5–10 pumps).
4. Wipe any excess grease from the area after greasing the bearings.

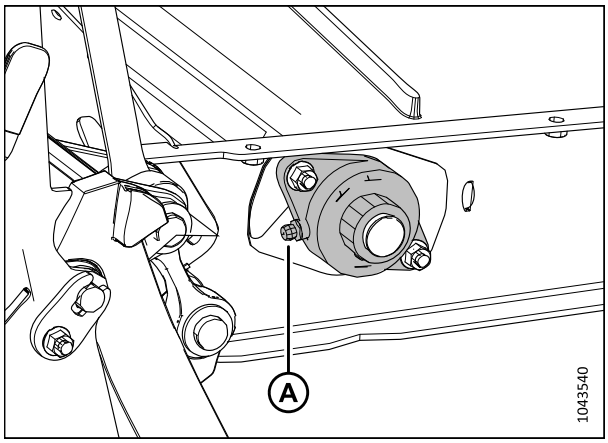


Figure 6.50: Feed Draper Drive Roller

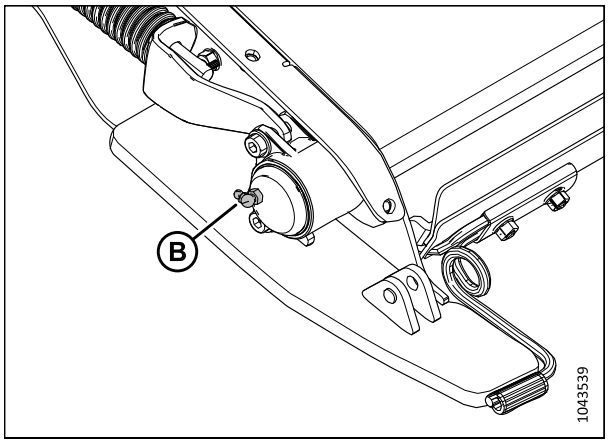


Figure 6.51: Feed Draper Idler Roller

IMPORTANT:

Knifehead grease zerk (A): Overgreasing the knife can cause the knife to bend and make contact with the guards closest to the knifehead. Check for signs of excessive heating on the first few guards after applying grease. If necessary, relieve some of the pressure by removing the grease fitting.

- When greasing for the first time, ensure that the cavity is full of grease, and that movement is not being caused by trapped air in the bearing.
- To prevent binding and/or excessive wear caused by the knife pressing on the guards, do **NOT** overgrease the knifehead.
- Apply only one to two pumps of grease with a grease gun, or just until the knifehead starts to move away from the arm. Do **NOT** use an electric grease gun.

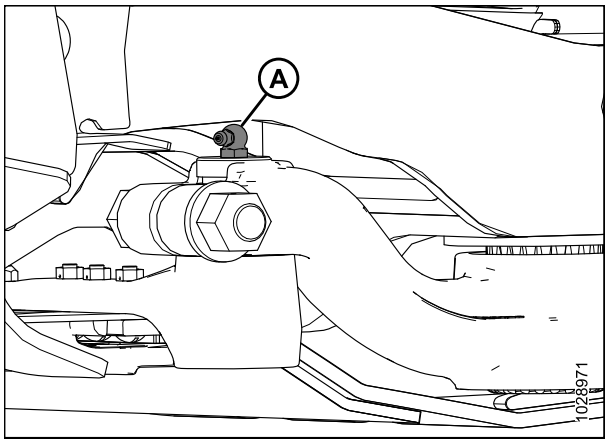


Figure 6.52: Knifehead

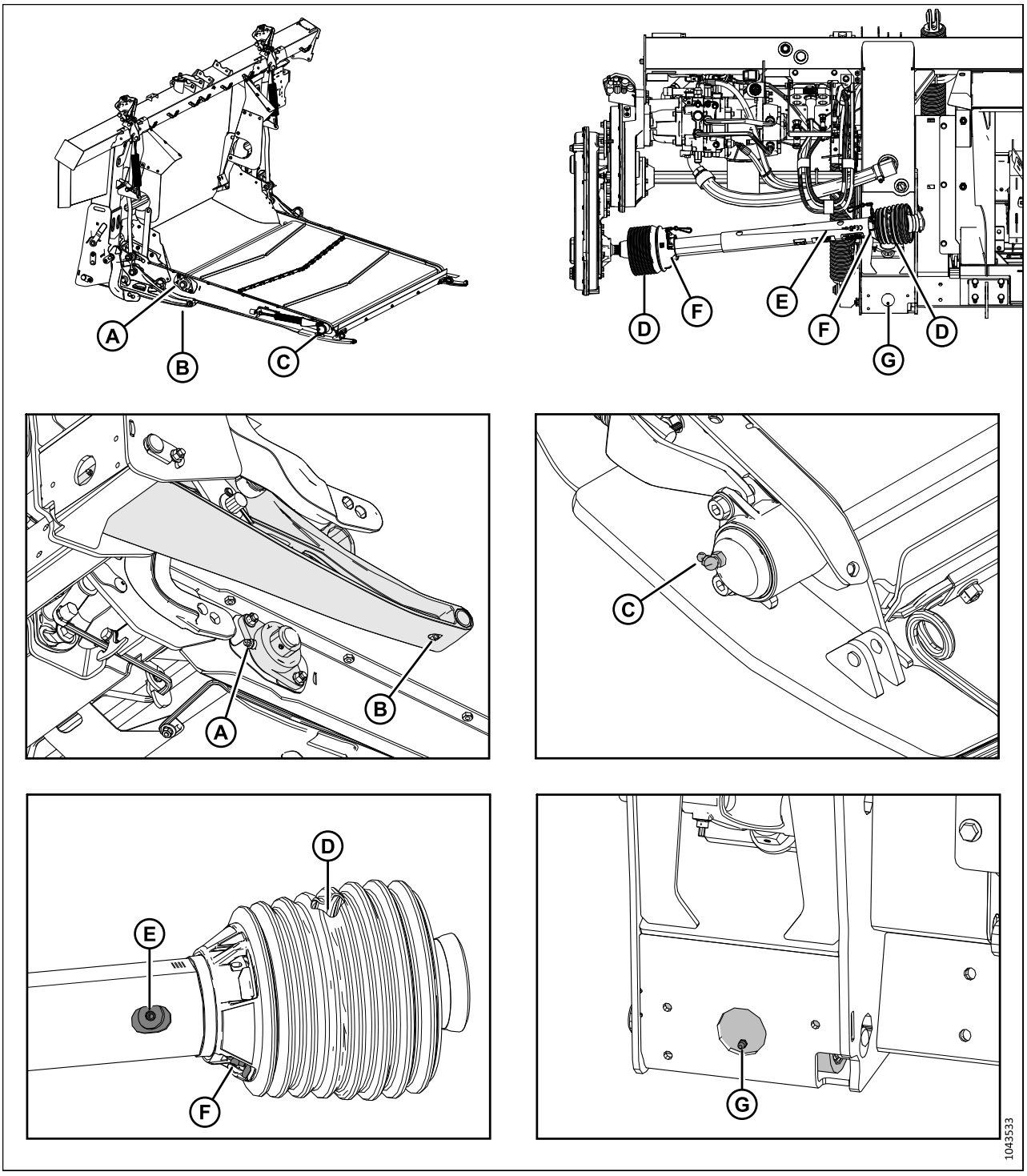


Figure 6.53: Float Module Grease Zerks – Feed Draper and Gearbox

A - Drive Roller Bearing
B - Lower Link Bearing (Two Places)
C - Idler Roller Bearing (Two Places)
D - Driveline Universal (Two Places)
E - Driveline Slip Joint
F - Driveline Guards (Two Places)
G - Float Pivots (Right and Left)

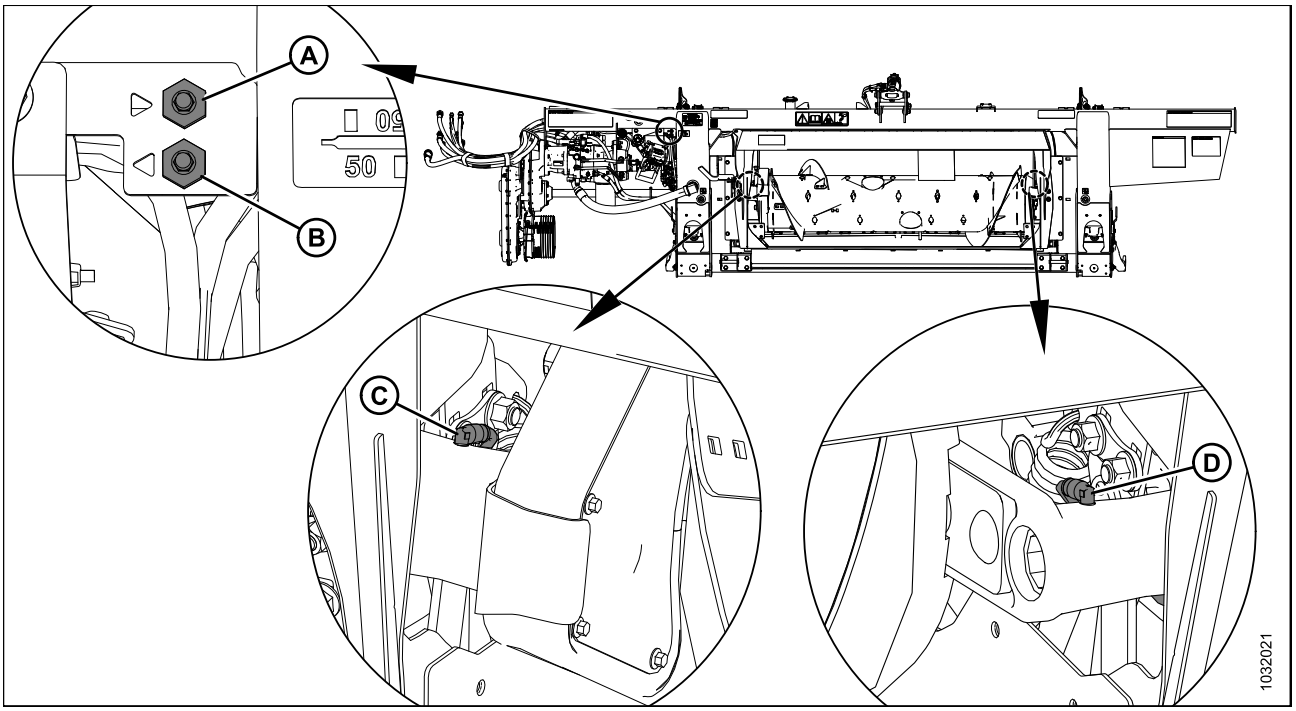


Figure 6.54: Float Module Grease Zerks – Auger

A - Remote Grease Line for Auger Pivot (Right Side)
B - Remote Grease Line for Auger Pivot (Left Side)
C - Auger Pivot (Left Side)
D - Auger Pivot (Right Side)

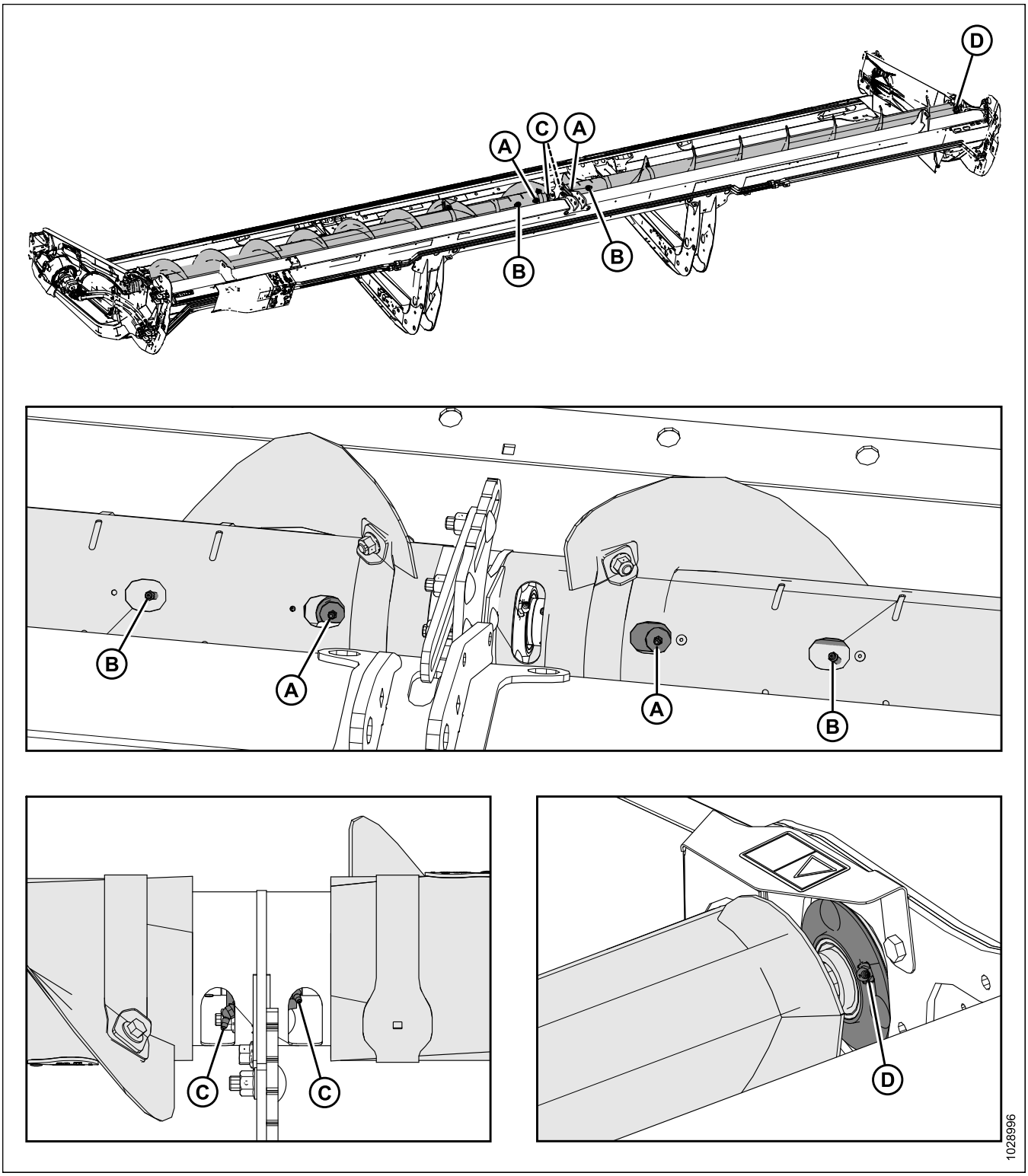


Figure 6.55: Grease Zerks – Two-Piece Upper Cross Auger

A - Upper Cross Auger U-joints (Two Places)
B - Upper Cross Auger Sliding Hubs (Two Places)
C - Upper Cross Auger Center Bearings (Two Places)
D - Right End Bearing

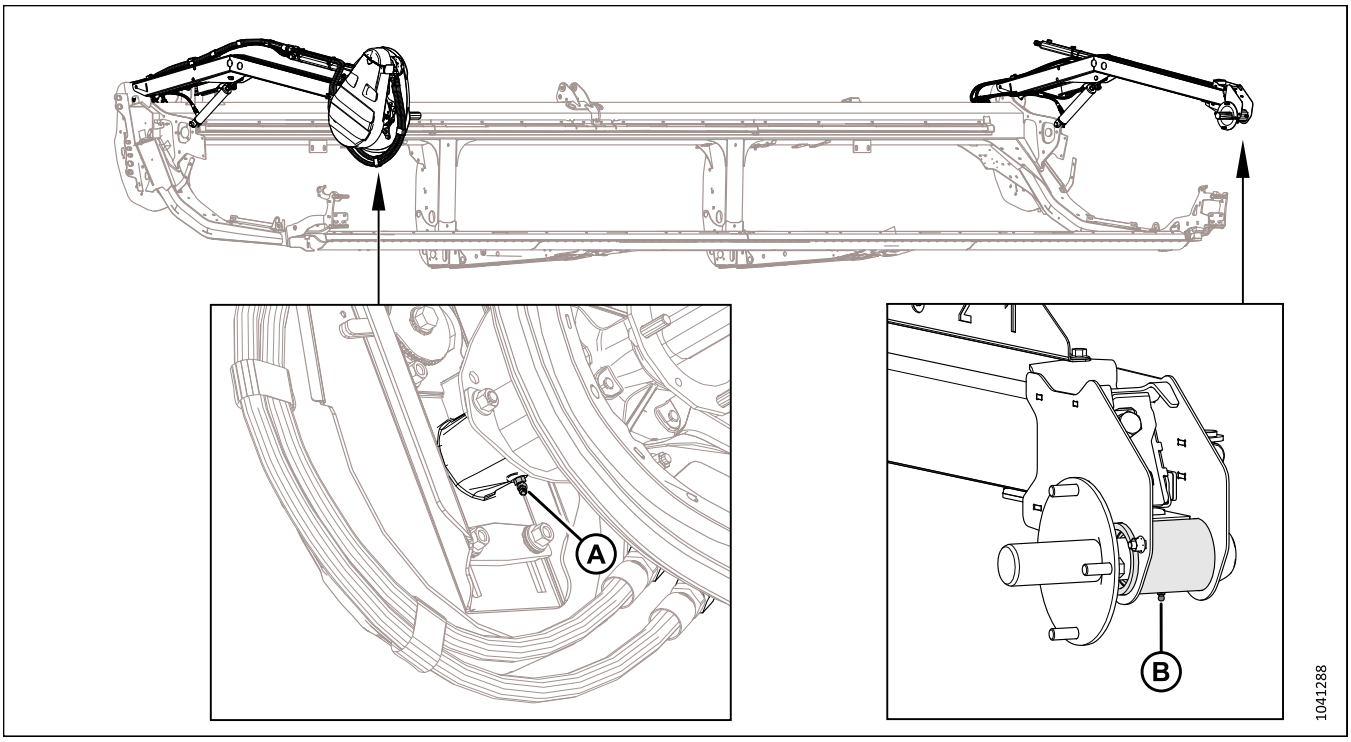


Figure 6.56: Single Reel

A - Reel Right Bearing (One Place)

B - Reel Left Bearing (One Place)

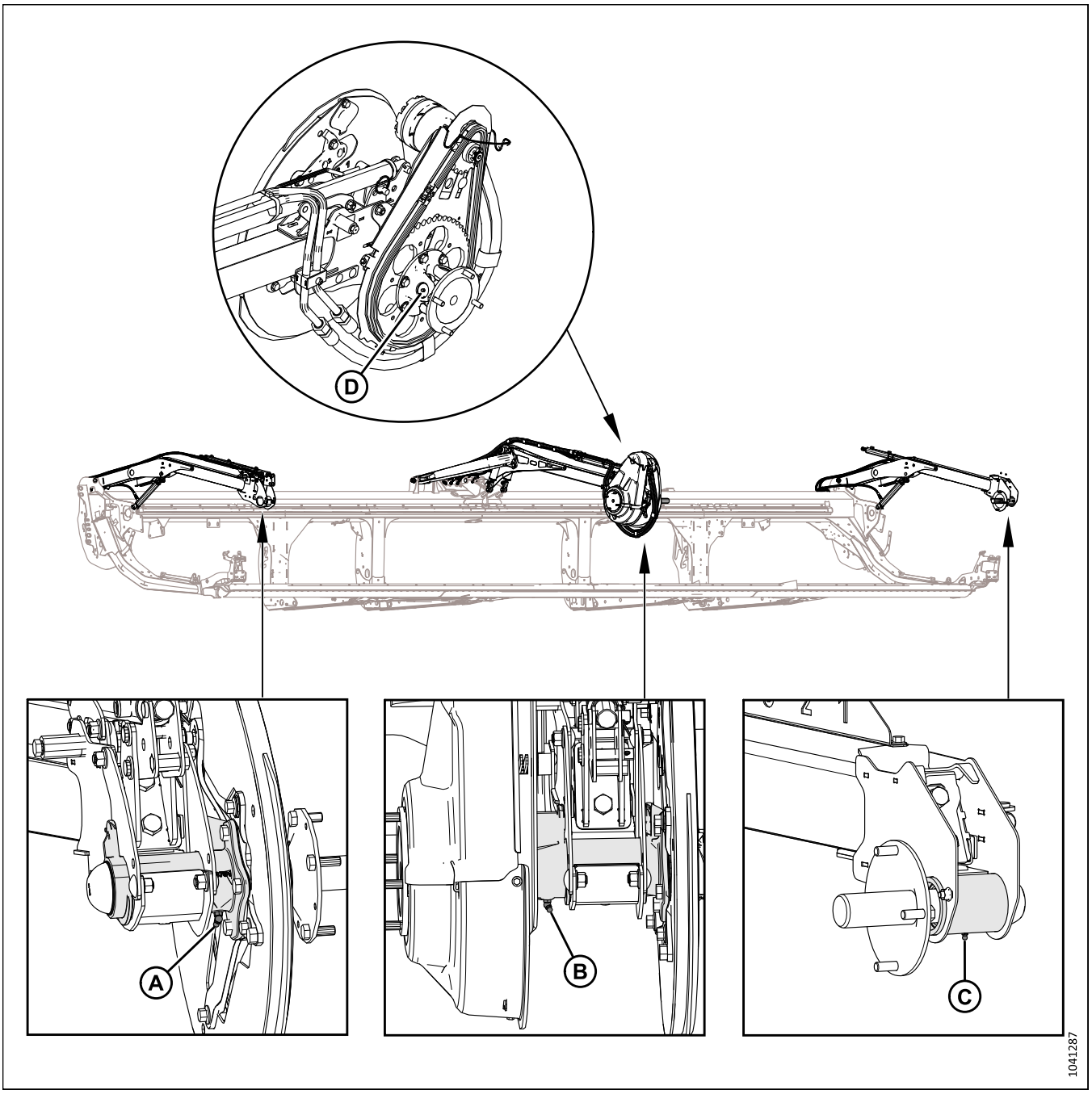


Figure 6.57: Double Reel

A - Reel Right Bearing (One Place) **B - Reel Center Bearing (One Place)** **C - Reel Left Bearing (One Place)**
D - Reel U-joint (One Place)[22]

22. The U-joint has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if the U-joint stops taking grease. Overgreasing will damage the U-joint. Six to eight pumps are sufficient at first grease (factory). Decrease the greasing interval as the U-joint wears and requires more than six pumps.

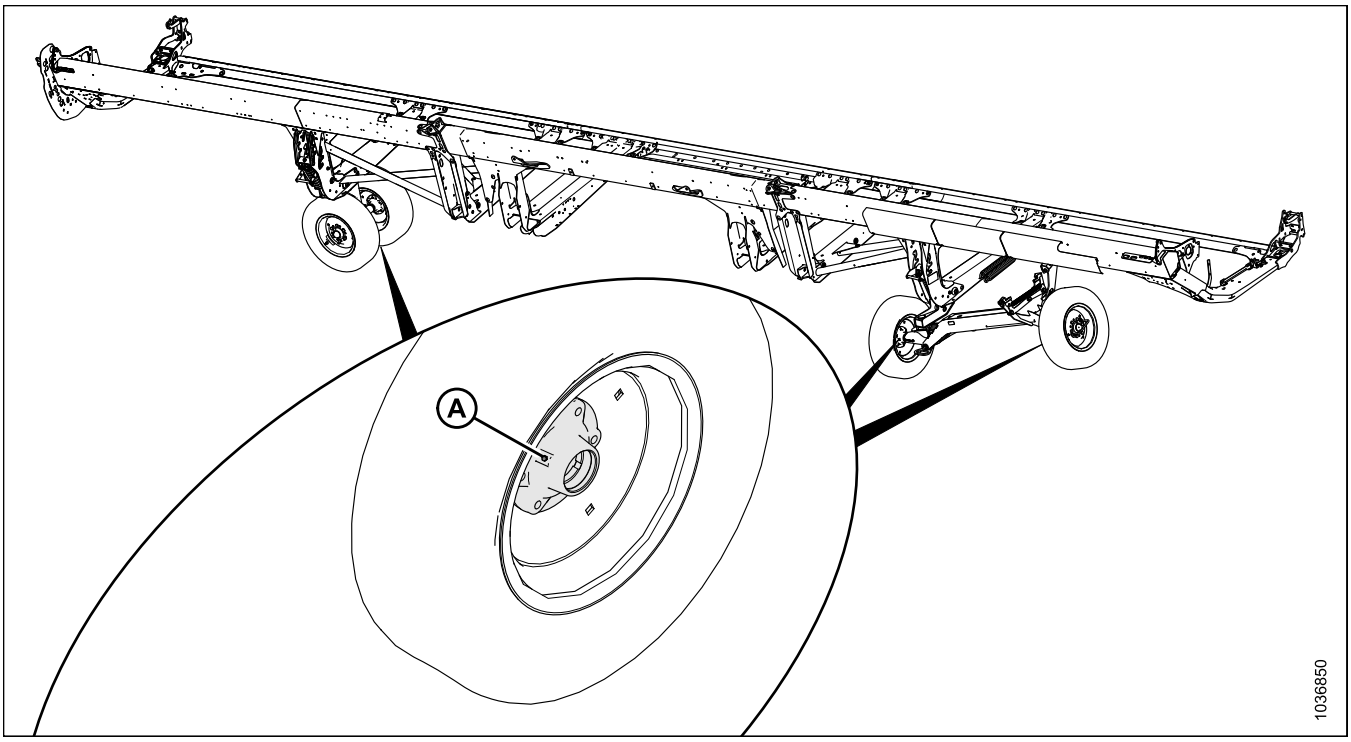


Figure 6.58: Transport Wheel Bearings

A - Wheel Bearings (Four Places)

6.1.15 Checking Manual Case Contents

Check the manual case contents. The manual storage case is located at the rear of the header, beside the right outer leg.

1. Remove the cable tie on manual case (A).
2. Close the manual storage case.

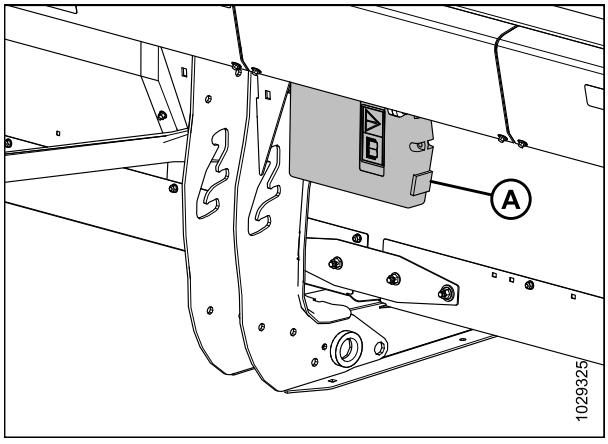


Figure 6.59: Manual Case

6.1.16 Checking and Adjusting Reel Height Sensor Orientation

1. Park the combine on a level surface.
2. Shut down the engine, and remove the key from the ignition.
3. Open the right endshield.

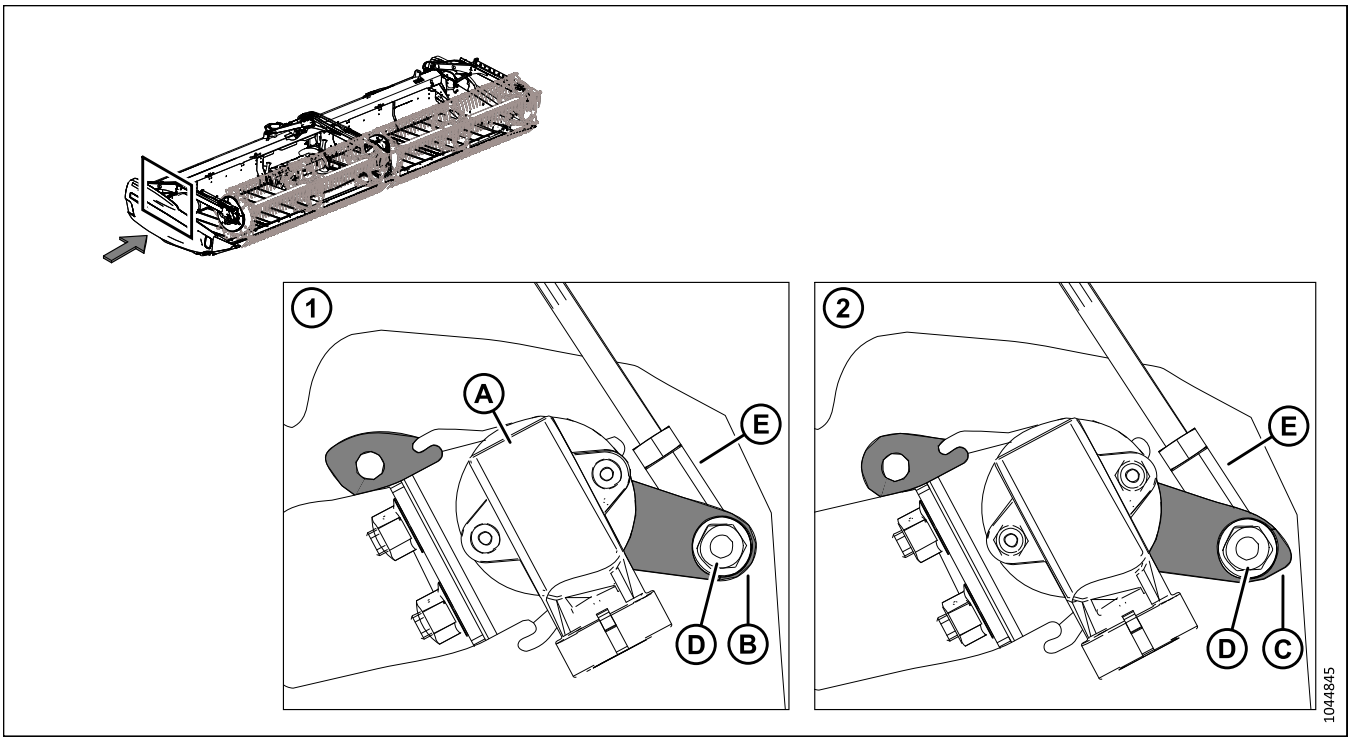


Figure 6.60: Reel Height Sensor Location

4. On the right endsheet, locate reel height sensor (A). The sensor connects to the right reel arm.
5. If the sensor arm orientation is incorrect, remove nut (D) and rod (E) and reposition the sensor to the correct orientation.
6. Torque nut (D) to 8 Nm (6 lbf·ft [71 lbf·in]).

6.1.17 Checking and Adjusting Reel Height Sensor Voltage

IMPORTANT:

Set the minimum reel height before checking or adjusting the reel height sensor voltage. For instructions, refer to *6.1.11 Reel-to-Cutterbar Clearance, page 216* and *Measuring Reel-to-Cutterbar Clearance, page 216*.

NOTE:

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

1. Verify that the reel fore-aft sensor is oriented correctly for the model of combine before checking the voltage. For instructions, refer to *6.1.16 Checking and Adjusting Reel Height Sensor Orientation, page 232*.
2. Lower the reel fully.
3. Use the combine display 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 *6.6, page 234* for the recommended voltage ranges.

   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 234* to Step *14, page 234*.

Table 6.6 Reel Height Sensor Voltage Limits

Combine Type	Voltage with Reel Raised	Voltage with Reel Lowered
Case, New Holland, Rostselmash	0.7–1.1 V	3.9–4.3 V
Challenger®, CLAAS, Gleaner®, IDEAL™ Series, John Deere, Massey Ferguson®	3.9–4.3 V	0.7–1.1 V

NOTE:

For CLAAS combines: To prevent the header's reel from contacting the combine cab, the header is equipped with an automatic reel height limitation feature. Some CLAAS combines have an automatic shutoff feature that engages when the automatic reel height limitation is reached. When raising the header by more than 80%, the reel is automatically lowered. The automatic lowering of the reel can be manually overridden, and a warning will appear on the CEBIS terminal.

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 *10.3.1 Opening Header Endshields, page 296*.
9. Loosen jam nuts (A).
10. Adjust threaded rod (B) to dimension (C) 165 mm (6 1/2 in).
11. Adjust the threaded rod to achieve the recommended voltage for the reel lowered position.
12. Tighten the jam nuts by hand until they are snug, then tighten jam nuts (A) another quarter-turn.
13. Raise the reel fully.
14. Check the reel height voltage in the raised position.
15. Close the endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

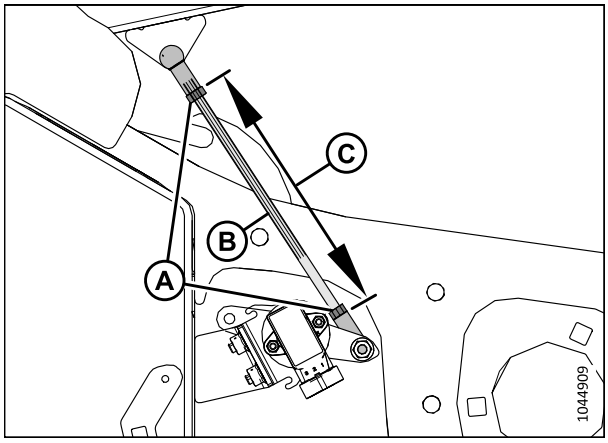


Figure 6.61: Reel Height Sensor – Right Reel Arm Lowered

6.1.18 Checking and Adjusting Fore-Aft Position Sensor Orientation

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

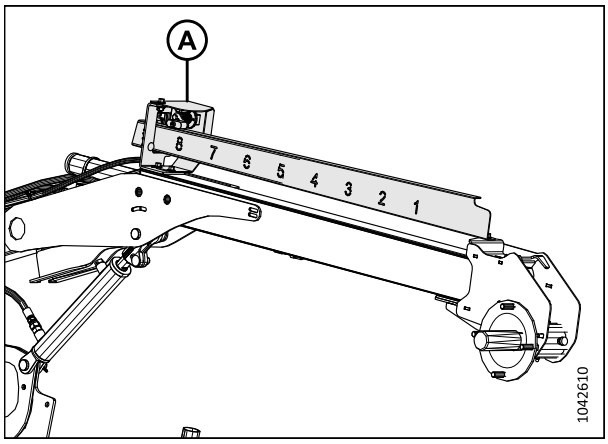
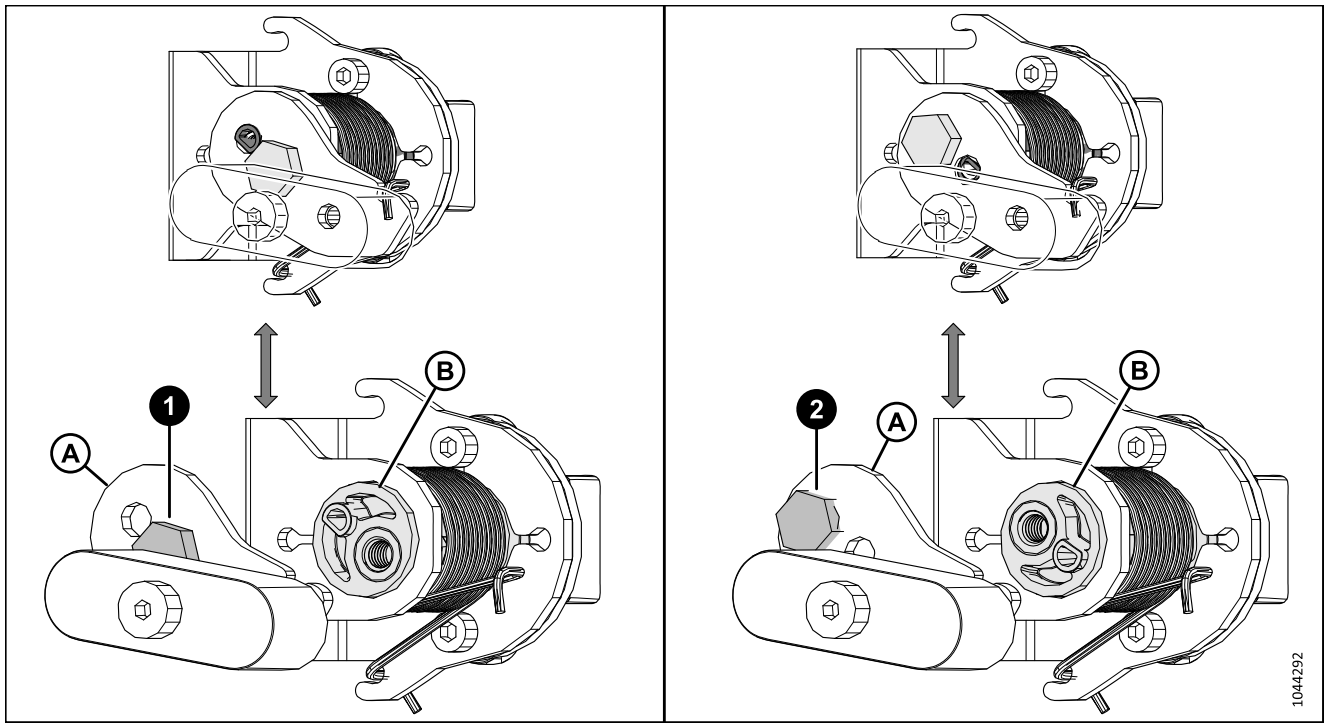


Figure 6.62: Fore-Aft Position Sensor

Figure 6.63: Sensor Arm Position



2. Check the installation location of the sensor mounting bolt. If the bolt is in the incorrect location, proceed to the next step.
   - Location (1) is used for Case, New Holland, and Rostselmash
   - Location (2) is used for Challenger®, CLAAS, Gleaner®, IDEAL™, Massey Ferguson®, and John Deere
3. Remove the bolt and move it to the correct location on arm (A).
4. Rotate sensor pivot (B) by 180°.
5. Reinstall arm (A) onto the sensor pivot.

   NOTE:

   Ensure that 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]).

6.1.19 Checking and Adjusting Fore-Aft Position Sensor Voltage

1. Verify that the reel fore-aft sensor is oriented correctly for the model of combine before checking the voltage. For instructions, refer to *6.1.18 Checking and Adjusting Fore-Aft Position Sensor Orientation, page 234*.
2. Adjust the reel fully rearward.

3. Use the combine display 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 *6.7, page 236*.

   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 236* to Step *10, page 237*.

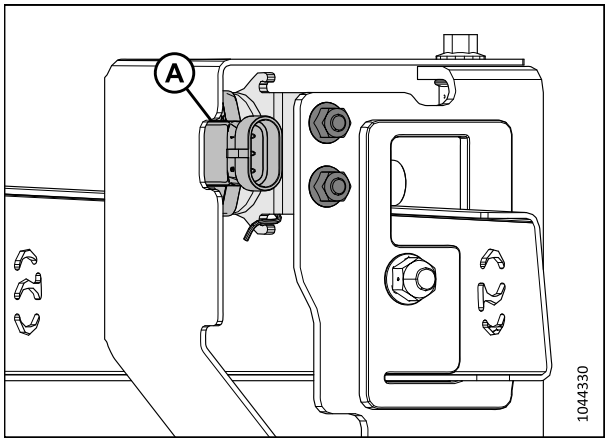


Figure 6.64: Fore-Aft Sensor

Table 6.7 Fore-Aft Sensor Voltage

Combine	Voltage (V) – Reel Fully Retracted	Voltage (V) – Reel Fully Extended	Minimum Range (V)
Case, New Holland, and Rostselmash	3.9 to 4.3	0.7 to 0.11	2.5
Challenger®, CLAAS, Gleaner®, IDEAL™, John Deere, and Massey Ferguson®	0.7 to 0.11	3.9 to 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.

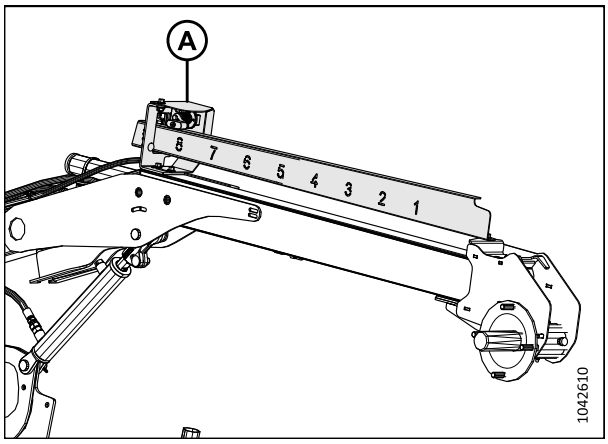


Figure 6.65: Fore-Aft Position Sensor

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 combine fore-aft sensor calibration.

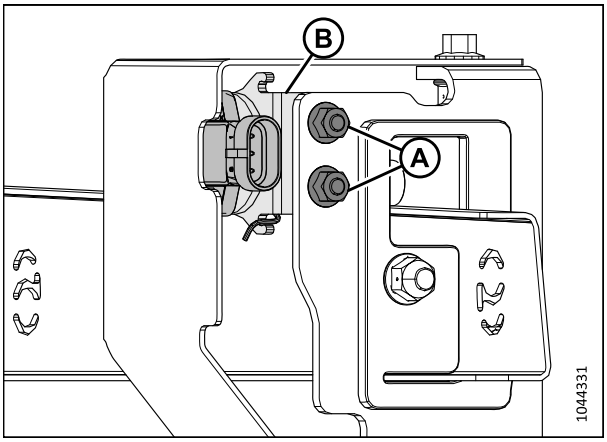


Figure 6.66: Fore-Aft Sensor

Chapter 7: Performing Sequential Header Checks and Adjustments

A series of header checks and adjustments must be performed in sequence to set up the header properly.

Ensure that the following checks and adjustments are performed in the following sequence:

1. Set up and inspect the header. For instructions, refer to *7.1 Setup and Pre-Inspection, page 239*.
2. Ensure that the clearance between the float spring lever and the header frame is correct. For instructions, refer to *7.2 Setting Float Spring Lever to Frame Clearance, page 241*.
3. Ensure that the float indicator has been set to “0” and that the header height voltage range is correct. For instructions, refer to *7.3 Zeroing Float Indicator and Checking Header Height Sensor Voltage Range, page 243*.
4. Ensure that the header float is set properly. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

7.1 Setup and Pre-Inspection

Complete the following checks in order.

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.

WARNING

Do NOT exceed the maximum pressure specified on the tire’s sidewall.

1. Park the combine on a level surface.
2. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

3. Ensure that the header is level with the ground. If adjustment is required:
   - Ensure that the combine is parked on a level surface.
   - If equipped, use the combine's lateral tilt to level the feeder house with the ground.
   - If further adjustment is required, shut the engine off, remove the key from the ignition, and ensure that the combine's tires are inflated to the correct pressure.

   NOTE:

   Ensure that all options and attachments are installed before adjusting the float and wing balance.

   NOTE:

   Spirit level (A) is located on top of the float module frame. The header is level if the bubble is in the center of the spirit level.

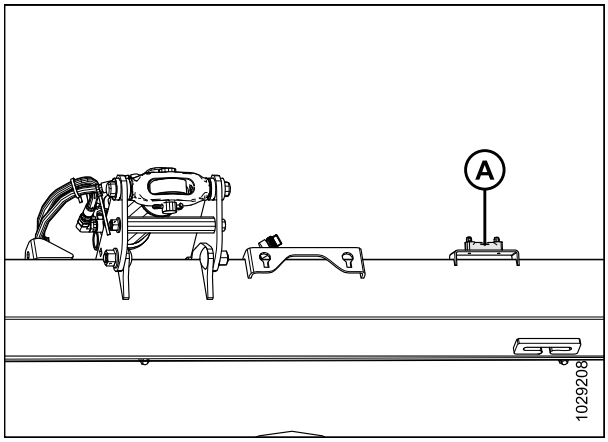


Figure 7.1: Spirit Level

4. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.

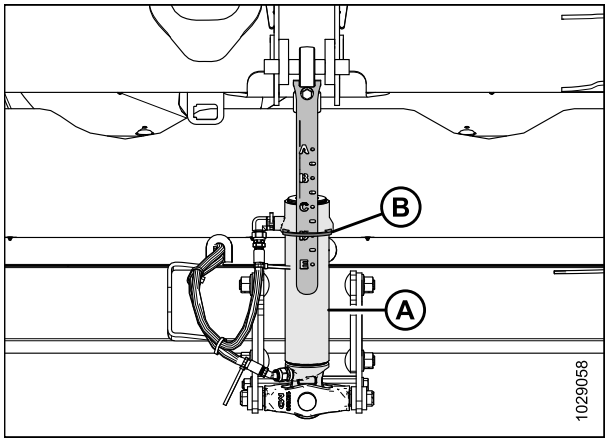


Figure 7.2: Center-Link

5. Adjust the reel fore-aft position so that the indicator on left indicator bracket (A) is at position **6**.

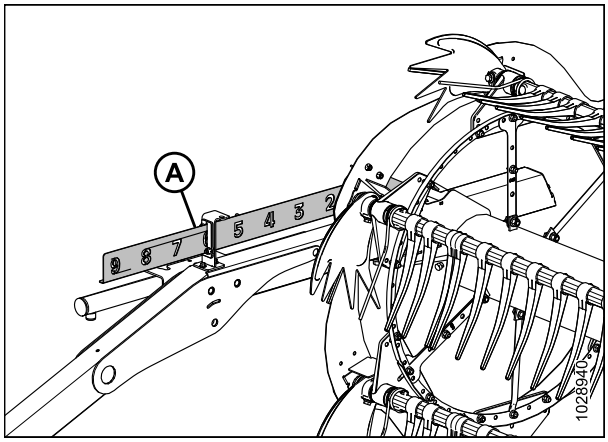


Figure 7.3: Fore-Aft Position

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

7. Install all options. If the transport/stabilizer wheels are installed, move them into the storage position and store the transport hitch on the backtube. For instructions, refer to the header operator's manual.

8. Ensure that breakaway hooks (A) are installed securely in front of both lift legs. Replace broken hooks, if necessary.

   IMPORTANT:

   Broken breakaway hooks can cause misalignment between the float module support arms and the header balance channel. If the arms are not properly seated in the balance channel stops, header float, and level will be affected and inconsistent.

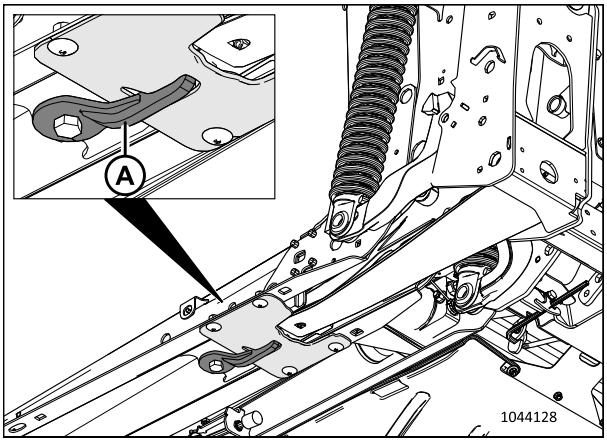


Figure 7.4: Breakaway Hooks – Below Float Module View

9. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. To fix the problem, make the header heavier by decreasing the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

10. Proceed to *7.2 Setting Float Spring Lever to Frame Clearance, page 241*.

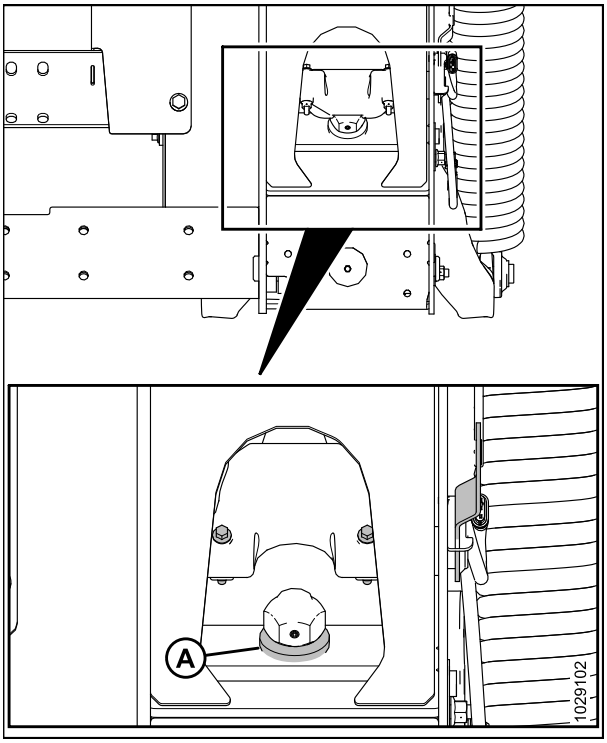


Figure 7.5: Down-Stop Washer

7.2 Setting Float Spring Lever to Frame Clearance

The float module is set at the factory to provide the proper clearance between the float spring lever and the header frame, and should not normally require adjustment. If adjustment is required, a procedure for doing so is provided.

1. Before beginning this procedure, ensure that all preceding checks and adjustments have been completed in sequence according to *7 Performing Sequential Header Checks and Adjustments, page 239*.

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.

IMPORTANT:

The float springs are **NOT** used to level the header.

2. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

3. Ensure that the header is level with the ground. If adjustment is required:

   - Ensure that the combine is parked on a level surface.
   - If equipped, use the combine's lateral tilt to level the feeder house with the ground.
   - If further adjustment is required, shut the engine off, remove the key from the ignition, and ensure that the combine's tires are inflated to the correct pressure.

   NOTE:

   Ensure that all options and attachments are installed before adjusting the float and wing balance.

   NOTE:

   Spirit level (A) is located on top of the float module frame. The header is level if the bubble is in the center of the spirit level.

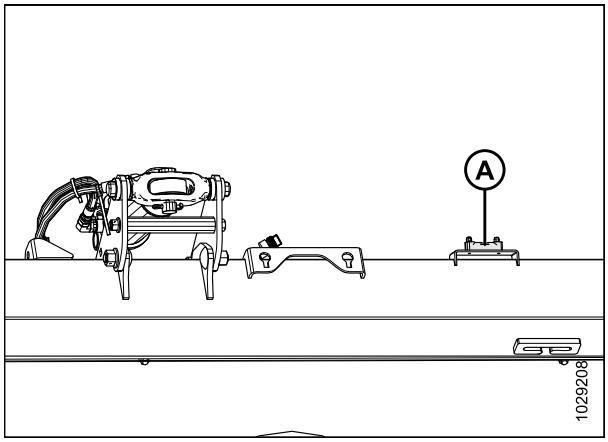


Figure 7.6: Spirit Level

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

5. Unlock the header float. For instructions, refer to the header operator's manual.

6. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. To fix the problem, make the header heavier by decreasing the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

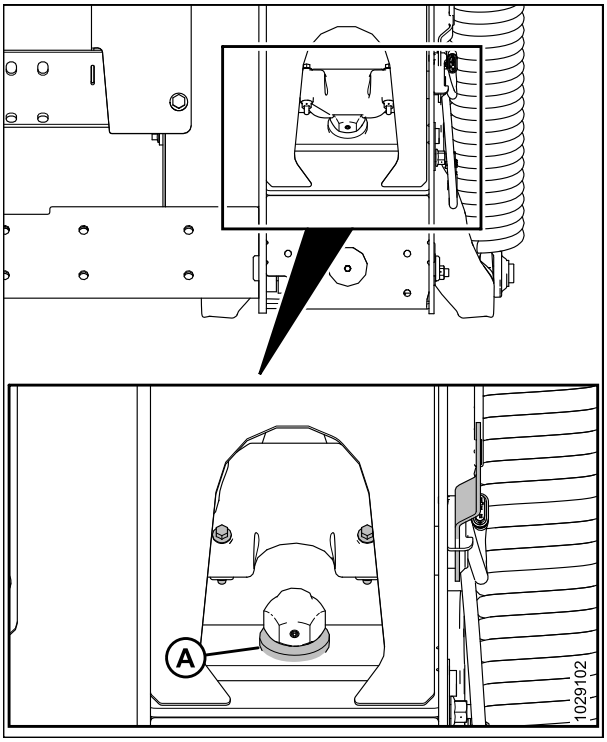


Figure 7.7: Down-Stop Washer

7. Ensure that there is a minimum clearance (A) of 3–6 mm (1/8–1/4 in.) between the back of outboard float spring lever (B) and FM200 Float Module frame (C).

   - If the clearance is correct on both sides of the float module, proceed to *7.3 Zeroing Float Indicator and Checking Header Height Sensor Voltage Range, page 243*. Otherwise, refer to the header technical manual.

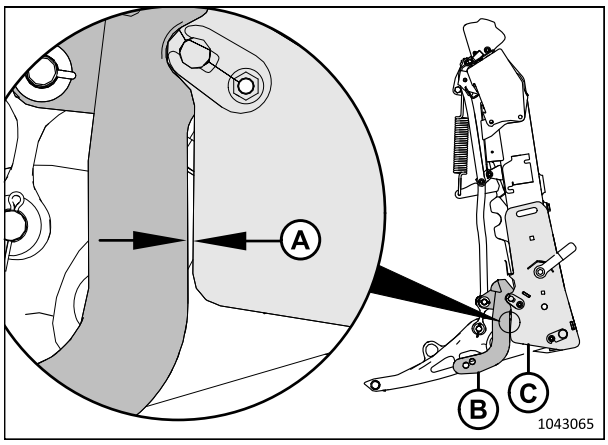


Figure 7.8: Float Spring Lever

7.3 Zeroing Float Indicator and Checking Header Height Sensor Voltage Range

The auto header height control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly. The recommended lower and upper voltage values for best AHHC operation are provided.

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.

DANGER

Ensure that all bystanders have cleared the area.

1. Ensure that all preceding checks and adjustments have been completed in sequence according to *7 Performing Sequential Header Checks and Adjustments, page 239*.

NOTE:

One of the following plugs will be installed in connector P600 (A). This plug determines how the voltage signal is sent to the combine:

- **Auto header height plug (MD #328560 [B7489]):** This plug sends the average of both sensors to the combine.
- **Lateral tilt plug (MD #328318 [B7196]):** This plug sends separate voltage signals from both sensors to the combine, with averaged center signals.
- **Pass-through plug (MD #323698 [B7490]):** Each sensor sends a voltage signal directly to the combine. There are no averaged center signals.

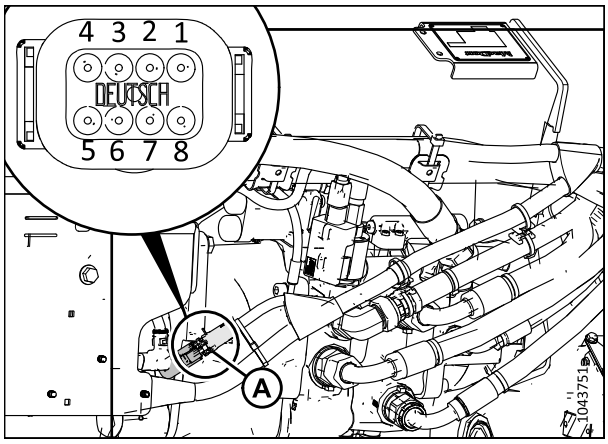


Figure 7.9: Connector

2. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. To fix the problem, make the header heavier by decreasing the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

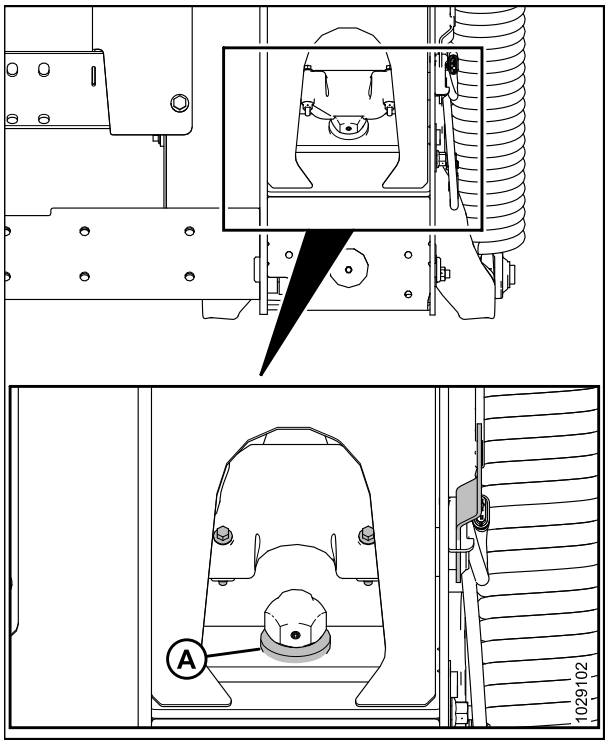


Figure 7.10: Down-Stop Washer

5. If pointer (C) is **NOT** at **0** (D), loosen the nut on bolt (A) and rotate float indicator plate (B) until the pointer is aligned with zero dot (E). Tighten the nut on bolt (A).

   NOTE:

   After adjusting the indicator plate, the float sensor voltage limits must be checked.

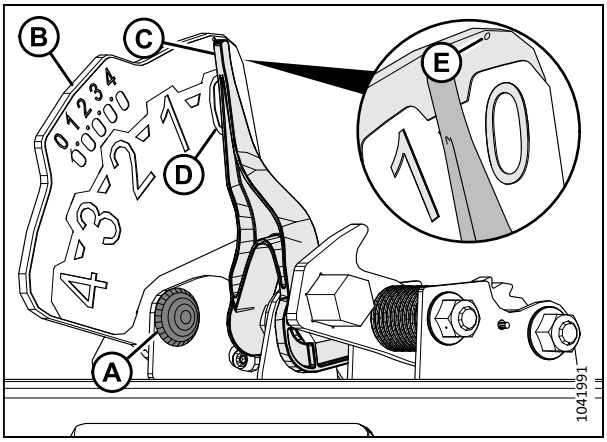


Figure 7.11: Float Indicator

Checking sensor upper voltage limit

6. Locate connector P600 (A) at the left of the float module.
7. Remove plug (B).
8. Inside the combine cab, insert the key into the ignition and turn it to the RUN position.
9. Using a digital multimeter, check connector P600 for power from the combine. The multimeter should read 5 V at pin 7.
   - Pin 7 - FM2215E – power
   - Pin 8 - FM2515E – ground
10. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the upper range specified in Table *7.1, page 245*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

    NOTE:

    With the float lock linkage on the down stops, the upper voltage reading must be within 0.1–0.2 V for both (left and right) sensors.

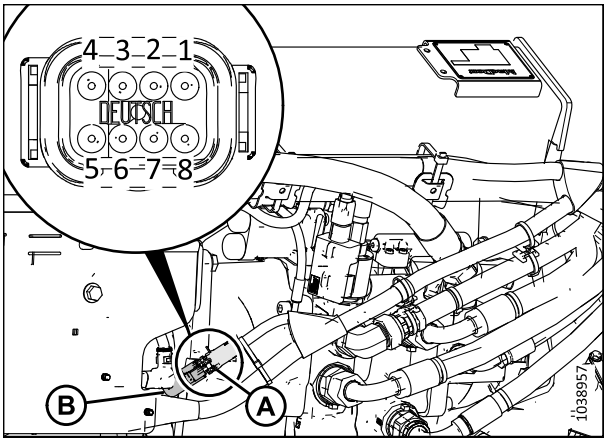


Figure 7.12: Connector P600 – View from Rear

Table 7.1 Combine Voltage Limits

Combine	Lower Voltage Limit (V)	Upper Voltage Limit (V)	Minimum Range (V)
New Holland combine equipped with 10 V systems	2.8	7.2	4.1–4.4
All other models of combine	0.7	4.3	2.5

NOTE:

Some combine models do not support checking sensor output voltage from the cab. For these models, check output voltage manually. For instructions, refer to *8.13 Manually Checking Voltage Limits, page 276*.

11. If you need to adjust the voltage, then loosen nuts (A), reposition sensor (B) in the indicator plate, then tighten nuts (A) to 3 Nm (2.2 lbf·ft [22 lbf·in]).

    NOTE:

    While tightening the nuts, make sure that sensor (B) does **NOT** move in the indicator plate.

12. Turn the key to the OFF position, and remove the key from the ignition.

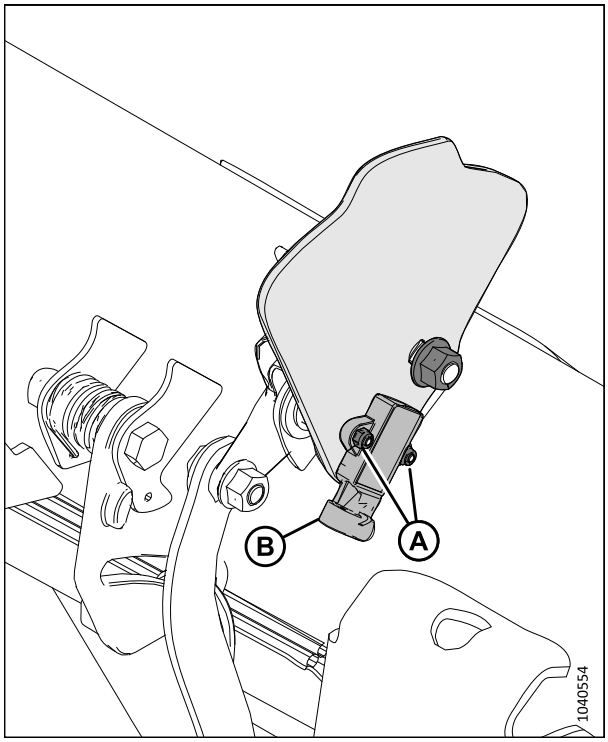


Figure 7.13: Left Float Indicator Plate

Checking sensor lower voltage limit

13. Disengage both of the header float locks by pulling float lock handle (A) away from the float module and push the float lock handle down and into position (B) (UNLOCK).

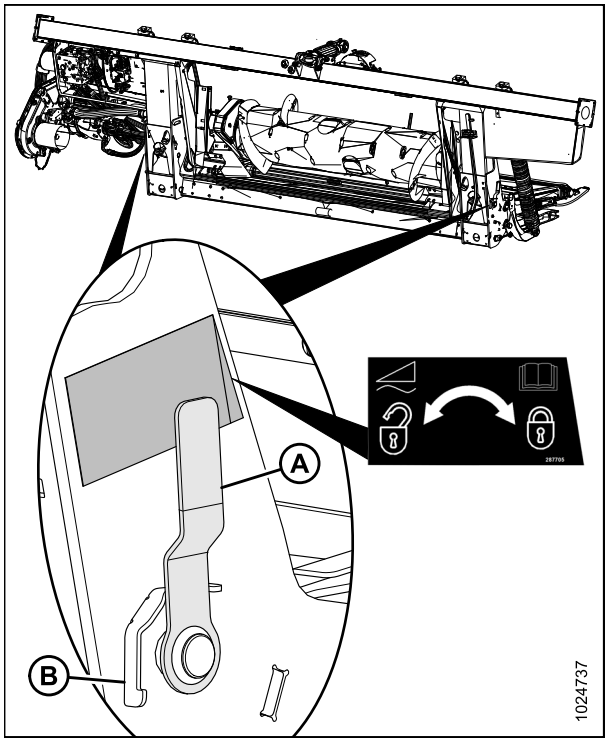


Figure 7.14: Header Float Lock in Locked Position

14. Extend the guard angle until header angle indicator (A) is at position **E** on the center-link.
15. Lower the header.
16. Shut down the engine, and remove the key from the ignition.

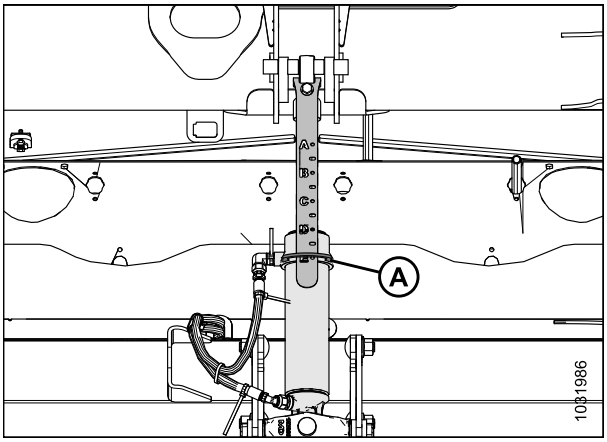


Figure 7.15: Center-Link

17. Float indicator pointer (A) should be at 4 (B).
18. Insert the key and turn it to the RUN position.
19. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the lower voltage specified in *7.1, page 245*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground
20. If you need to adjust the voltage, refer to Step *11, page 246* for instructions.
21. Proceed to *7.4 Changing Float Spring Configuration and Installation Location, page 247*.

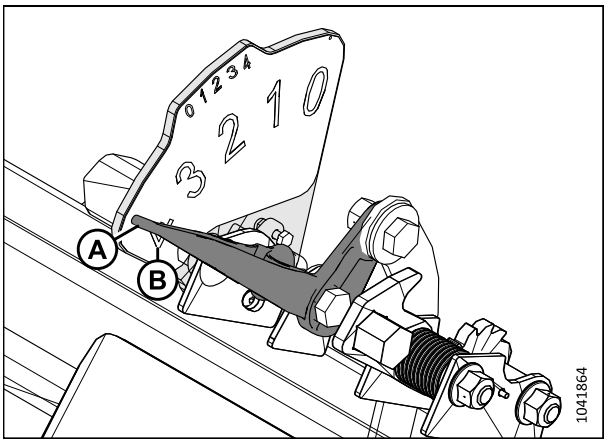


Figure 7.16: Left Float Indicator – View from Rear

7.4 Changing Float Spring Configuration and Installation Location

The header's float spring configuration and location is determined by the weight of the header.

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.

If the weight of the header has changed (for example, due to the addition of optional equipment), the float spring configuration (A) (single spring or double spring) or location [float lever front hole (B) or back hole (C)] may need to be changed. To determine the appropriate float spring configuration and installation location, the weight of the header and optional equipment must be calculated. For instructions, proceed to Step *1, page 249*.

NOTE:

For D2 Series Headers shipped in North America (D225, D230, and D235), this information is intended for reference only. Changing the float spring configuration and installation location should not be necessary for those models.

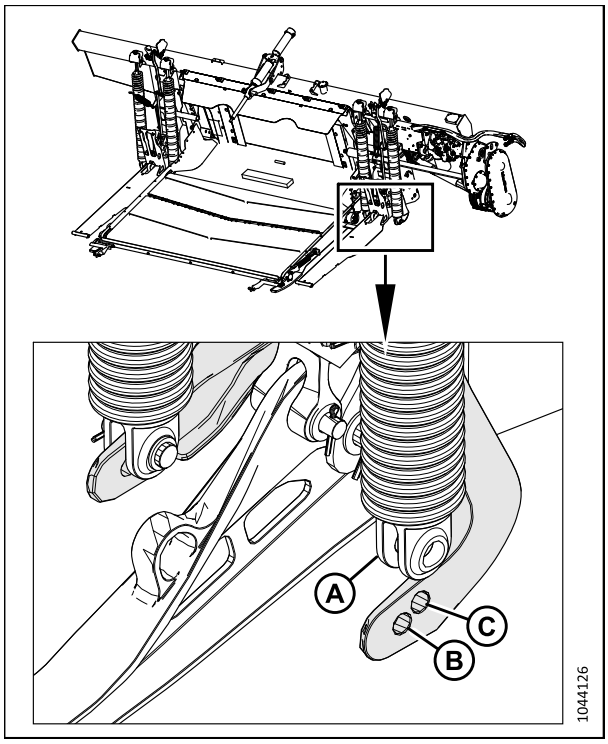


Figure 7.17: Float Spring Detached from Float Lever

Determining header weight, spring configuration, and spring installation location

1. Refer to Table *7.2, page 249* to determine the total header weight according to the following formula:

(A) Base Header Weight (no options)	+	**(B)** Dividers Weight (if installed)	+	**(C)** and **(D)** Option Weight (sum of all options)	=	**Total Header Weight**

Table 7.2 Header Component Weights

Category	Header Model	Knife Configuration	Reel Configuration	Weight
(A) Base header weight – select one	D225	Single	Single	1850 kg (4079 lb.)
	D230	Single	Double	2300 kg (5070 lb.)
	D235	Single	Double	2500 kg (5512 lb.)
(B) Dividers – select up to one option	**Divider Option Installed**			20 kg (44 lb.)
	Rice divider rods			
	Vertical knives			185 kg (408 lb.)[23]
(C) Upper cross auger (UCA) – select one size option[24]	**UCA Option Installed**			142 kg (312 lb.)
	9.1 m (30 ft.) two-piece auger			
	10.7 m (35 ft.) two-piece			156 kg (343 lb.)
(D) Other options – add any installed options	**Option Installed**			379 kg (835 lb.)
	Transport wheels			
	Stabilizer wheels			160 kg (353 lb.)

23. Weight includes B7029 and B7410 (hydraulic package for D245).
24. Add 24.5 kg (54 lb.) for hydraulic plumbing, if this was installed separately.

2. Using the total header weight determined in the previous step, refer to Table *7.3, page 250* to determine which weight range the header is in and which float lever hole and float spring configuration are most appropriate for the header.

   NOTE:

   Generally, heavier headers will need the float springs placed in the front float lever hole and lighter headers will use the back hole. Some headers only have one possible float spring configuration and installation location.

Table 7.3 Float Spring Installation Location

Header Model	Knife Configuration	Reel Configuration	Lighter Weight Range	Float Lever Hole	Heavier Weight Range	Float Lever Hole	Float Spring Configuration See Table *7.4, page 250*
D225	Single	Single	Use the back hole on the float lever for all configurations				1
D230	Single	Double	Use the back hole on the float lever for all configurations				1
D235	Single	Double	Use the back hole on the float lever for all configurations				1

Table 7.4 Float Springs Configuration

Float Springs Configuration				
Configuration "S" = Single Spring (MD #308878) "D" = Double Spring (MD #308879)	Outer Left Side	Inner Left Side	Inner Right Side	Outer Right Side
1 – SSSS	Single	Single	Single	Single
2 – SSSD	Single	Single	Single	Double

3. Proceed as follows:

   - If the float springs need to be moved to a different float lever hole, proceed to the next step.
   - If a float spring needs to be changed, refer to the header technical manual.

Changing which float lever hole is used

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

5. Lock the header float by pulling the float lock handle into position (A) on the left side of the float module.

   NOTE:

   The float is unlocked when the handle is in position (B).

6. Repeat the previous step to set the float lock handle on the other side of the float module.

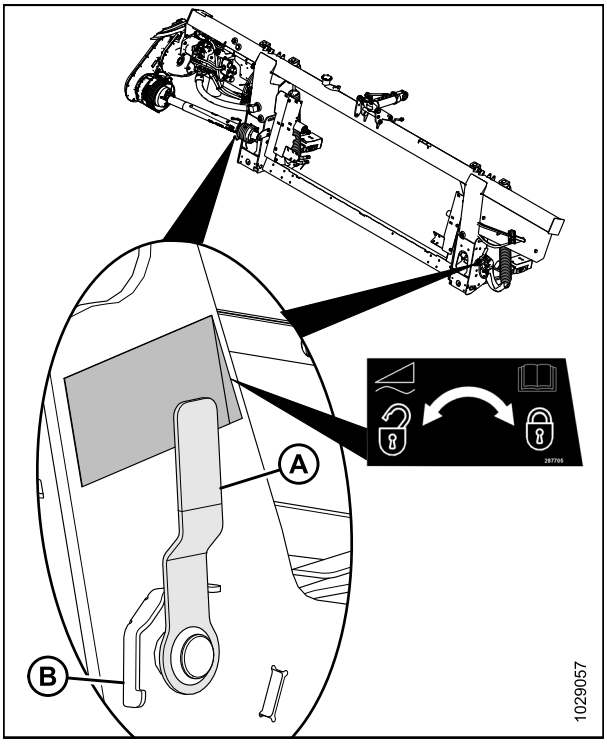


Figure 7.18: Header Float Lock in Locked Position

7. Access float spring adjustment bolts (A) by loosening bolts (C) and rotating spring locks (B) forward.

8. Loosen adjustment bolts (A) by making small adjustments to each bolt, one after the other, in identical increments, until the springs are loose.

   NOTE:

   The adjustment bolts will rise slightly above the washers when the springs are loose.

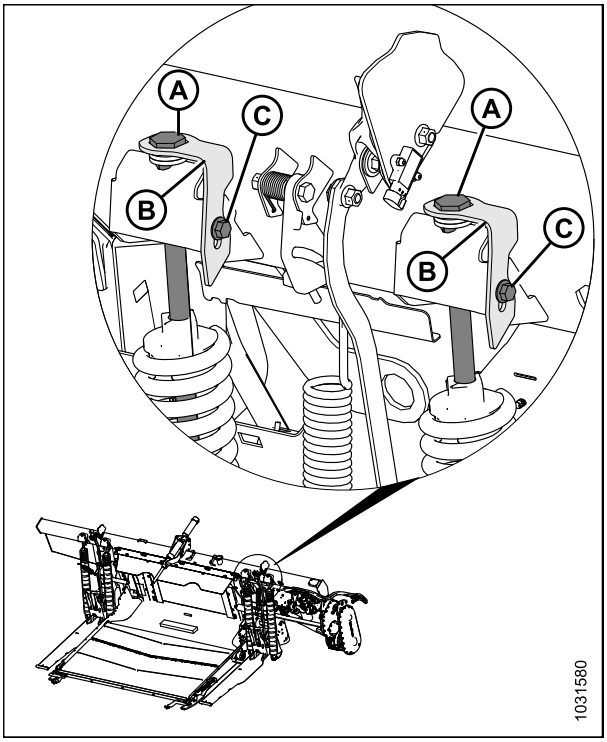


Figure 7.19: Left Float Adjustment

9. Remove cotter pin (C) from pin (A).
10. Remove pin (A) and washers (B).

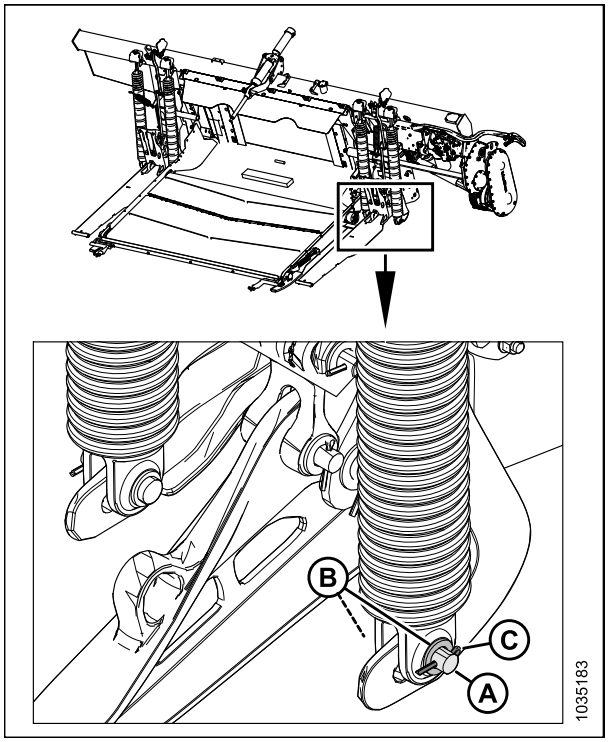


Figure 7.20: Left Float Spring Installed in Rear Float Lever Hole

11. Align the spring with front float lever hole (A) or back float lever hole (B) according to the specifications in Table *7.3, page 250*.

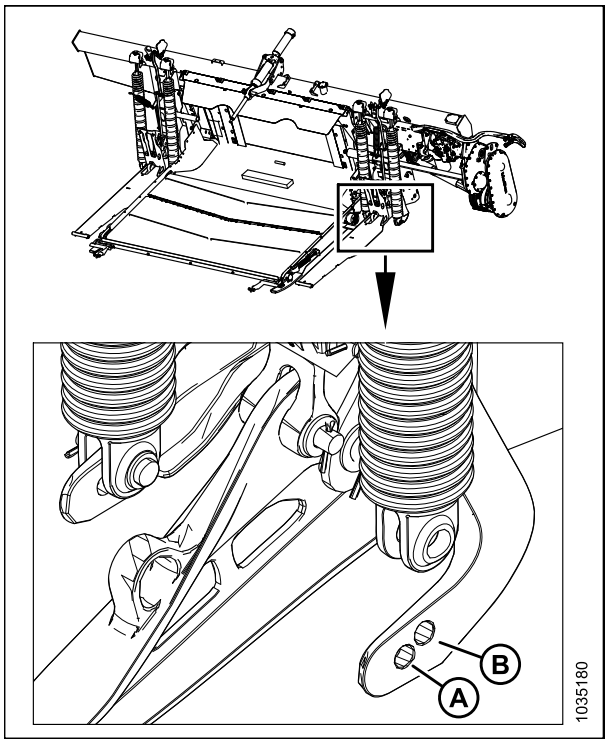


Figure 7.21: Left Float Spring Installed in Rear Float Lever Hole

12. Install pin (A) and two washers (B) into the new hole.
13. Secure the pin with cotter pin (C).
14. Repeat Step *9, page 252* to Step *13, page 253* to configure other spring (D).

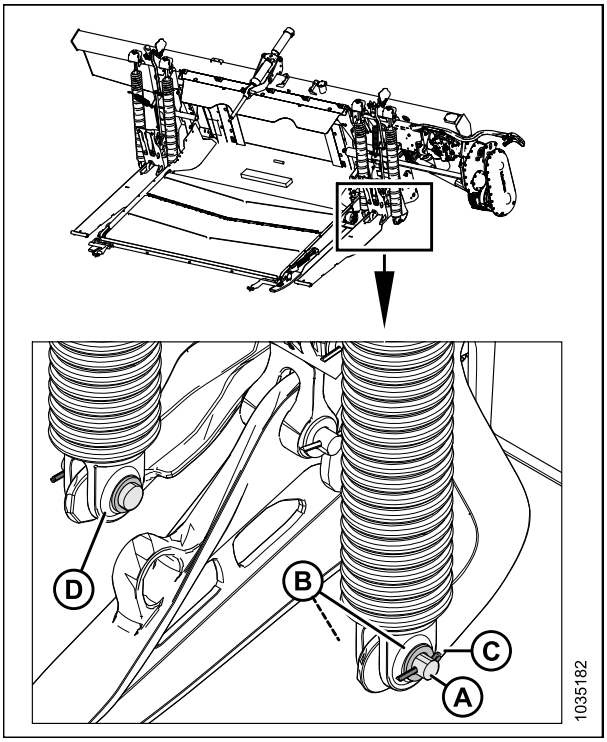


Figure 7.22: Left Float Spring – Installed in Rear Float Lever Hole

15. Retighten adjustment bolts (A) by making small adjustments to each bolt, one after the other, in identical increments, until the float springs are the same length.
16. Repeat Step *7, page 251* to Step *15, page 253* on the pair of float springs (B) on the opposite side of the float module.
17. Check and adjust the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

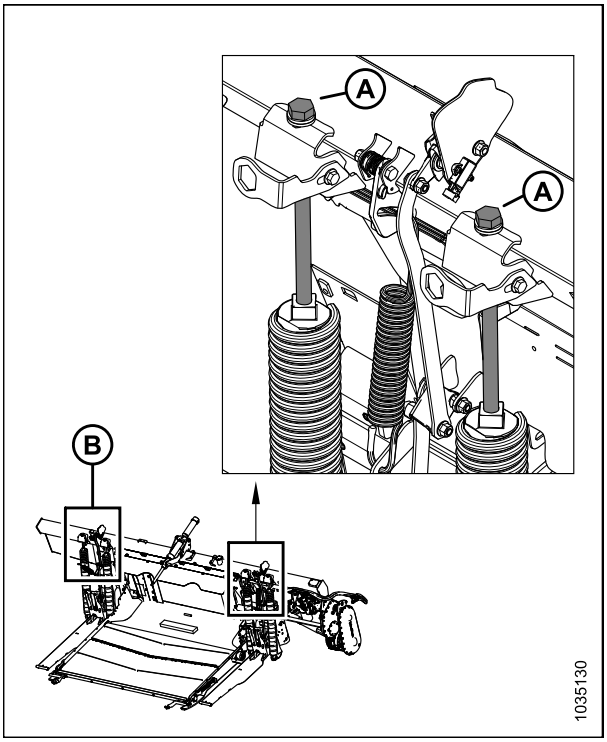


Figure 7.23: Float Adjustment – Left

7.4.1 Changing Float Springs – Float Levers with Two Holes

The float springs are configured according to the weight of the header. You may have to change the float spring configuration if optional equipment is added or removed from the header.

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.

NOTE:

Make sure to familiarize yourself with float spring configurations before changing a spring. For more information, refer to *7.4 Changing Float Spring Configuration and Installation Location, page 247*.

1. Before beginning this procedure, ensure that all preceding checks and adjustments have been completed in sequence according to *7 Performing Sequential Header Checks and Adjustments, page 239*.
2. Shut down the engine, and remove the key from the ignition.
3. Lock the header float by pulling the float lock handle into position (A) on both sides of the float module.

   NOTE:

   The float is unlocked when the handle is in position (B).

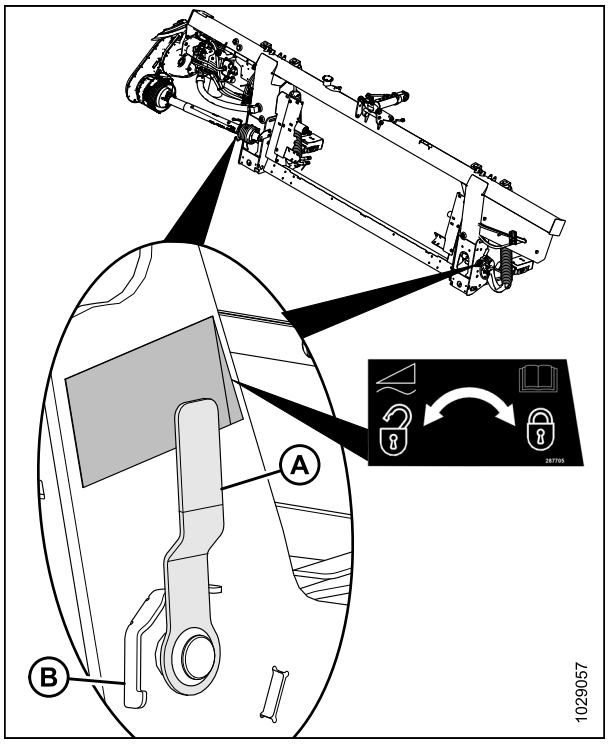


Figure 7.24: Header Float Lock in Locked Position

4. Determine which float spring you are changing. The outer left spring is changed in this procedure as an example. Access the corresponding adjustment bolt (C) by loosening bolt (A) and rotating spring lock (B).

5. Unscrew and remove the adjustment bolt (C) and washers (D) from the spring.

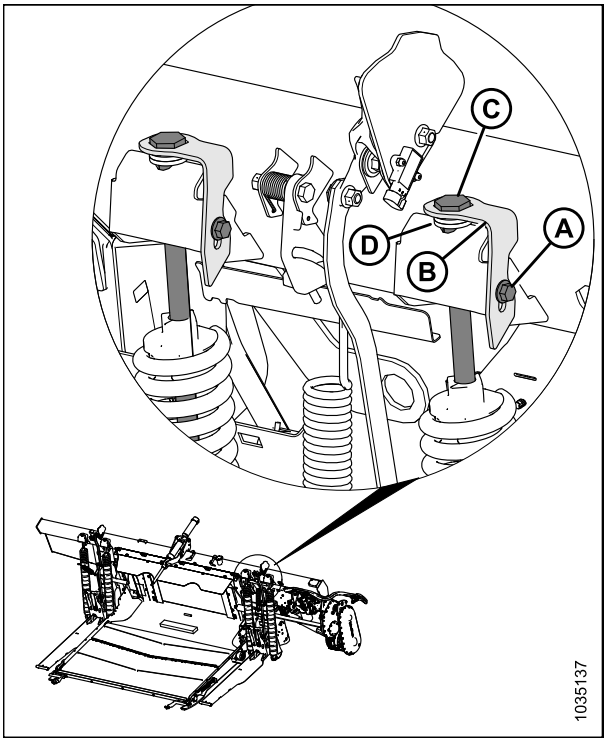


Figure 7.25: Float Adjustment Bolts – Left Shown, Right is Similar

6. Remove cotter pin (C) from pin (A).

7. Mark whether the spring is installed in the front or the rear float lever hole, and then remove pin (A) and washers (B).

8. Change spring (D).

9. Reinstall pin (A) and two washers (B) into the hole that was marked in Step *7, page 255*.

10. Reinstall cotter pin (C).

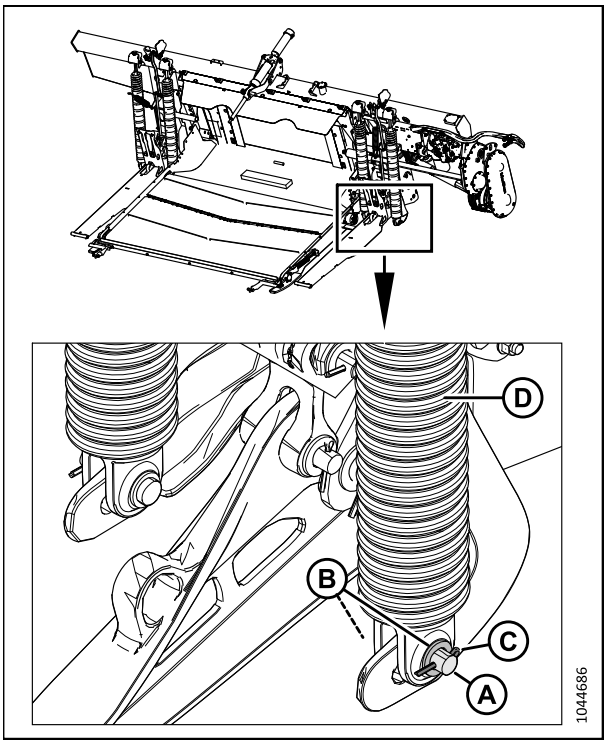


Figure 7.26: Left Float Spring Installed in Rear Float Lever Hole

11. Reinstall bolt (A) and washers (B) into spring (C). Make sure both float springs are the same length (D) (even if you only changed one spring).
12. Repeat Step *4, page 255* to Step *11, page 256* for the remaining springs.
13. Check the header float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

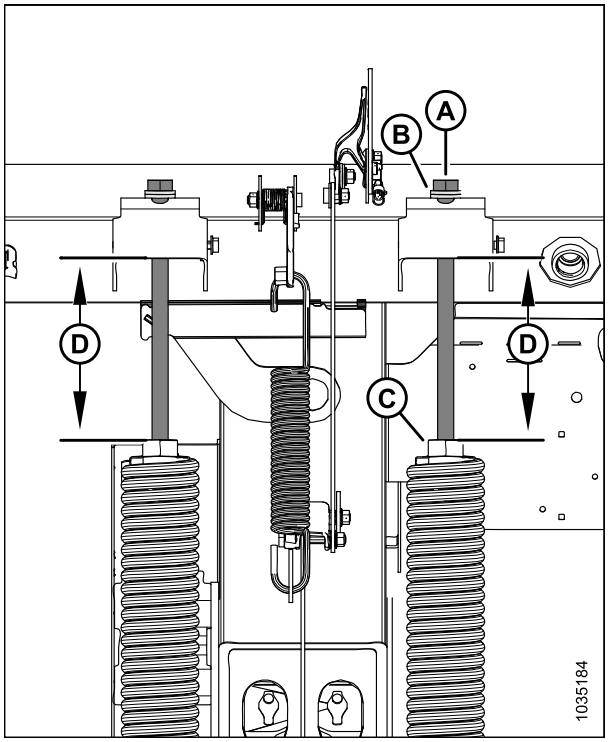


Figure 7.27: Left Float Springs

7.5 Checking and Adjusting Header Float

The header is equipped with a suspension system that floats the header over the ground to compensate for changes in ground elevation. If the header float is not set properly, the cutterbar may push soil or it may leave crop uncut. If the float setting is not satisfactory, it will need to be inspected and adjusted.

IMPORTANT:

Do **NOT** use the float module springs to level the header.

When adjusting the float, use the following guidelines:

- Set the header float as light as possible, but not so light that the header bounces when the combine is moving. This will help prevent knife breakage, soil pushing, soil build-up at the cutterbar in wet conditions, and excessive wear to the skid shoes and cutterbar wearplates.
- To prevent the header from bouncing excessively and cutting unevenly when the float is light, operate the combine at a lower ground speed.
- To cut crop while the header is above ground level, use the stabilizer or contour wheels in conjunction with the header float. This will minimize bouncing at the header ends and help regulate the cut height.

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.

To check and adjust the float settings, do the following:

Preliminary steps

1. Park the combine on a level surface.
2. Ensure that the header is level with the ground. If adjustment is required:
   - Ensure that the combine is parked on a level surface.
   - If equipped, use the combine's lateral tilt to level the feeder house with the ground.
   - If further adjustment is required, shut the engine off, remove the key from the ignition, and ensure that the combine's tires are inflated to the correct pressure.

   NOTE:

   Ensure that all options and attachments are installed before adjusting the float and wing balance.

   NOTE:

   Spirit level (A) is located on top of the float module frame. The header is level if the bubble is in the center of the spirit level.
3. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.
4. Adjust the reel fore-aft position so that the indicator on left indicator bracket (A) is at position **6**.

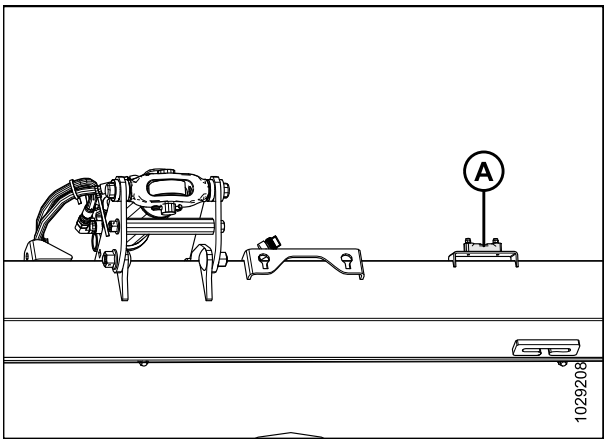


Figure 7.28: Spirit Level

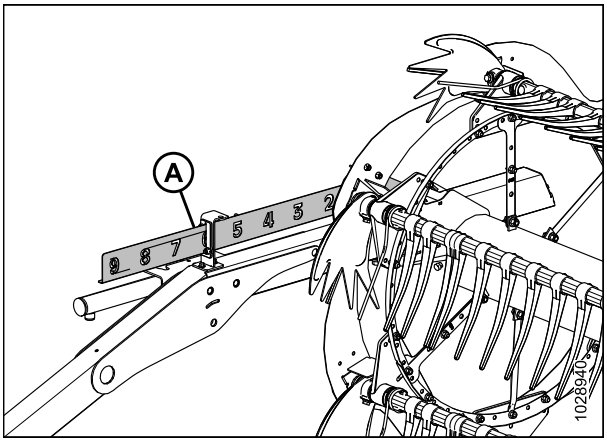


Figure 7.29: Fore-Aft Position

5. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
6. Lower the reel fully.
7. If contour wheels are installed, raise them.
8. Shut down the engine, and remove the key from the ignition.
9. If the stabilizer wheels are installed on the header, move them to the uppermost position.
10. If the float indicator plate was adjusted, refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.
11. If pointer (A) is not on on **0** (B), return to *7.3 Zeroing Float Indicator and Checking Header Height Sensor Voltage Range, page 243*, because the voltage will need to be re-checked after the pointer is adjusted.

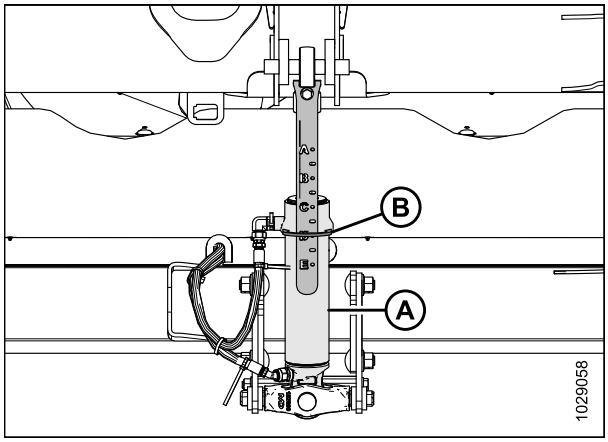


Figure 7.30: Center-Link

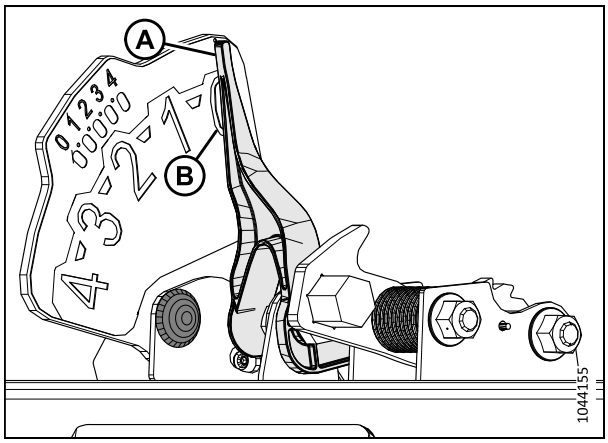


Figure 7.31: Float Indicator

12. Disengage both of the header float locks by pulling float lock handle (A) away from the float module and push the float lock handle down and into position (B) (UNLOCK).

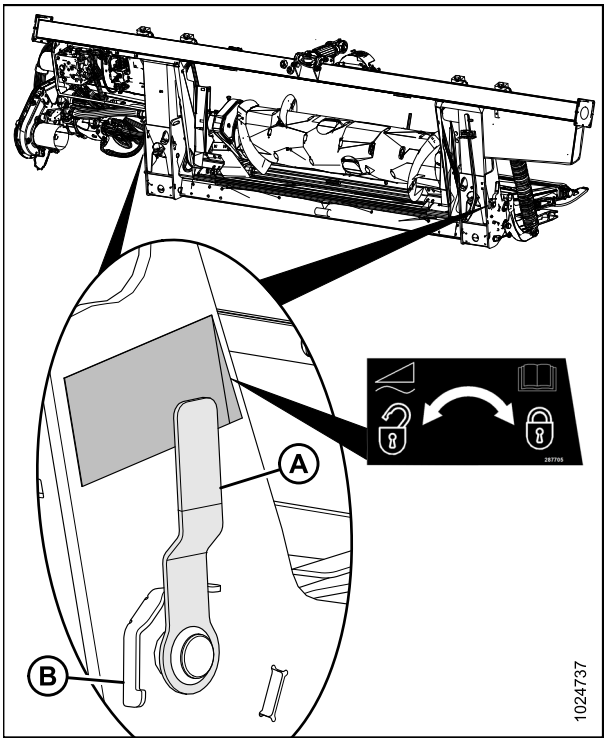


Figure 7.32: Header Float Lock in Locked Position

13. Open the left endshield.
14. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.
15. Remove multi-tool (B). Replace the hairpin.

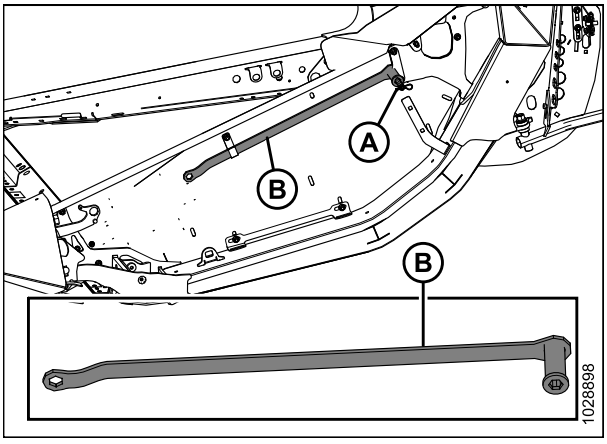


Figure 7.33: Multi-Tool Location

Setting the float setting levers

16. On the left side of the float module, lift float setting lever (A) by hand so that the lever is free of slack.

    NOTE:

    Some parts have been removed from the illustration for clarity.

17. Fully engage the flat end of multi-tool (B) onto the float setting lever. The multi-tool should be angled toward the front of the float module.

18. Pull multi-tool (B) toward the back of the float module until float setting lever (A) cannot be pulled back any further and it is locked into place on last tooth (C) of the lever.

19. Repeat Steps *16, page 260* to *18, page 260* to set the right float setting lever.

    IMPORTANT:

    Set both the left and the right float setting levers **BEFORE** adjusting the float on either side of the header.

20. Remove the multi-tool and set it aside.

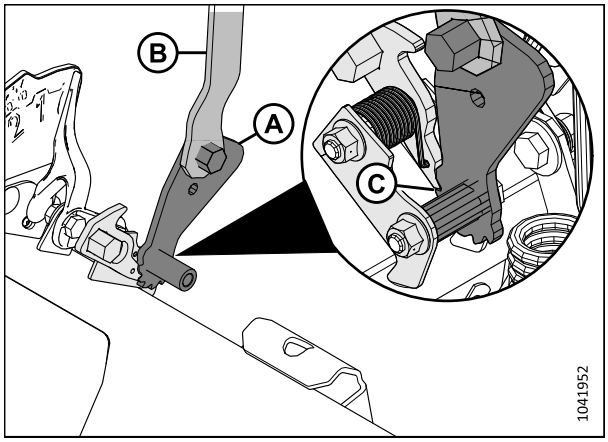


Figure 7.34: Multi-Tool Engaged with Left Float Setting Assembly

Checking the float

21. Set the left float by pushing the left end of the header down by approximately 76 mm (3 in.). Allow the header to rise. Repeat this step at least three times.

    NOTE:

    Moving the left side of the header up and down ensures that the reading on the left indicator will be accurate.

22. On the left side of the float module, inspect upper scale on float setting indicator (FSI) (B). Arm (A) on the indicator should point to the number 2.

    - If arm (A) on indicator (B) points to a value higher than 2, then the float is too heavy.
    - If arm (A) on indicator (B) points to a value lower than 2, then the float is too light.

    NOTE:

    The lower set of numbers indicates the float height while the header is operating in the field.

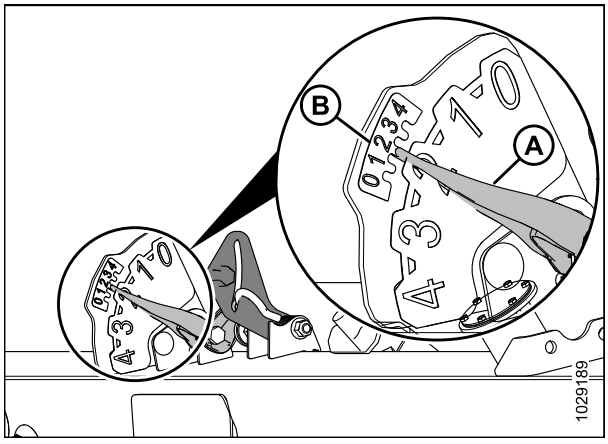


Figure 7.35: Left Float Setting and AHHC Indicator

Adjusting the float

23. On the left side of the float module, loosen bolts (C). Rotate spring locks (B) so that bolt heads (A) are accessible.

24. Increase or decrease the float on the left side of the float module as needed:

    - To make the header lighter (to increase the float), turn adjustment bolts (A) clockwise.
    - To make the header heavier (to decrease the float), turn adjustment bolts (A) counterclockwise.

    NOTE:

    Adjust each pair of bolts (A) by the same amount.

25. Check the left float again. Refer to Step *21, page 260* for instructions.

26. If the left float setting is not satisfactory, repeat Step *24, page 261* to Step *25, page 261*.

27. Check and adjust the right float. For instructions, refer to Step *21, page 260* to Step *26, page 261*.

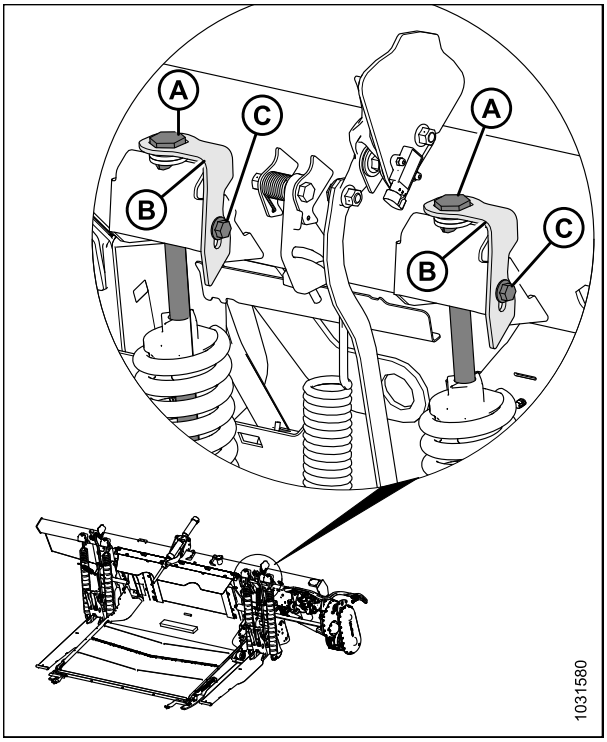


Figure 7.36: Left Float Adjustment

28. Check the float on both sides of the header one more time:

    a. Push the header down by approximately 76 mm (3 in.) as shown in illustration section (1). Allow the header to rise. Repeat this step at least three times.

    b. Ensure that the arm on the float setting indicator is pointing to “2”. Adjust the float if necessary by repeating Step *24, page 261* to Step *25, page 261*.

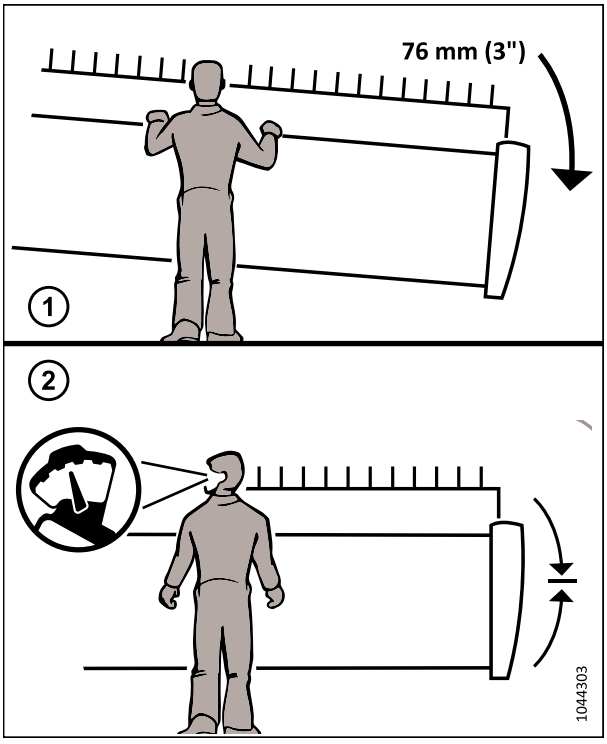


Figure 7.37: Float Inspection

29. On both sides of the float module, lock adjustment bolts (A) with spring locks (B). Ensure that bolt heads (A) are engaged in the spring lock cutouts. Tighten bolts (C) to secure the spring locks.

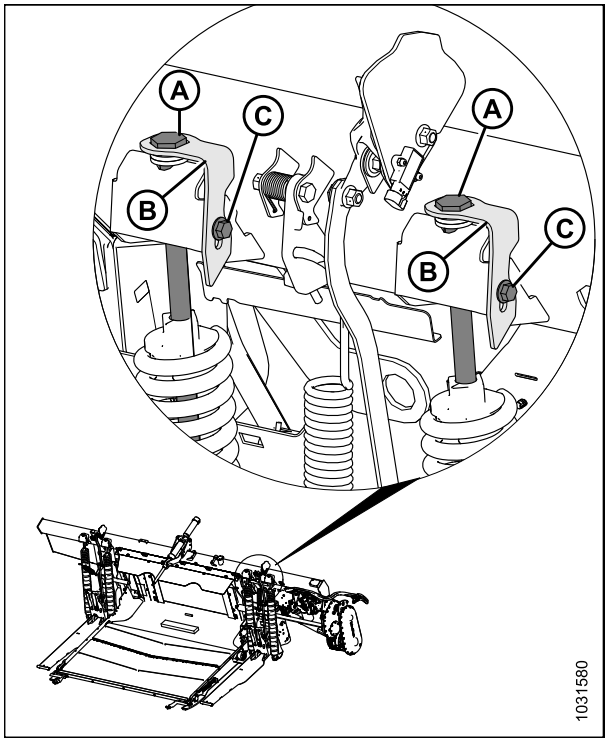


Figure 7.38: Left Float Adjustment

Releasing the float setting levers

IMPORTANT:

Release the float setting lever before resuming operation to avoid potential machine damage.

30. Fully engage multi-tool (C) onto pawl (B) and push it upward to release float setting lever (A).

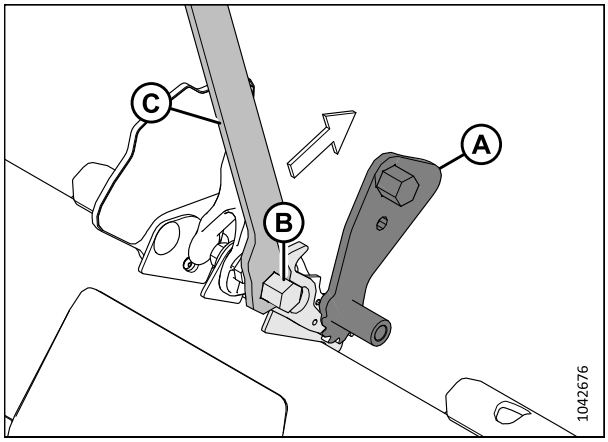


Figure 7.39: Multi-Tool Engaged with Left Pawl

31. Return the multi-tool (B) to the bracket on the left endsheet. Secure it with hairpin (A).

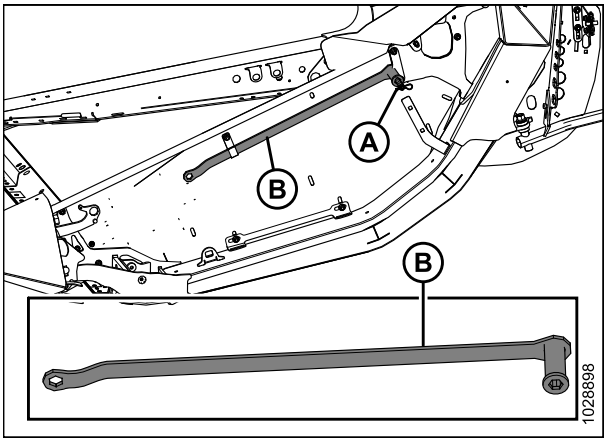


Figure 7.40: Multi-Tool Location

Chapter 8: Auto Header Height Control System

The auto header height control (AHHC) system works in conjunction with the AHHC option available on certain combine models. Once the header has been assembled and attached to the combine, the AHHC system will need to be configured to work with the combine.

Two Hall effect sensors (A) are installed on the float setting indicators on the float module. These sensors send signals to the combine, which allow the combine to maintain the header at a consistent cutting height and the optimum float setting as the header follows the contours of the ground.

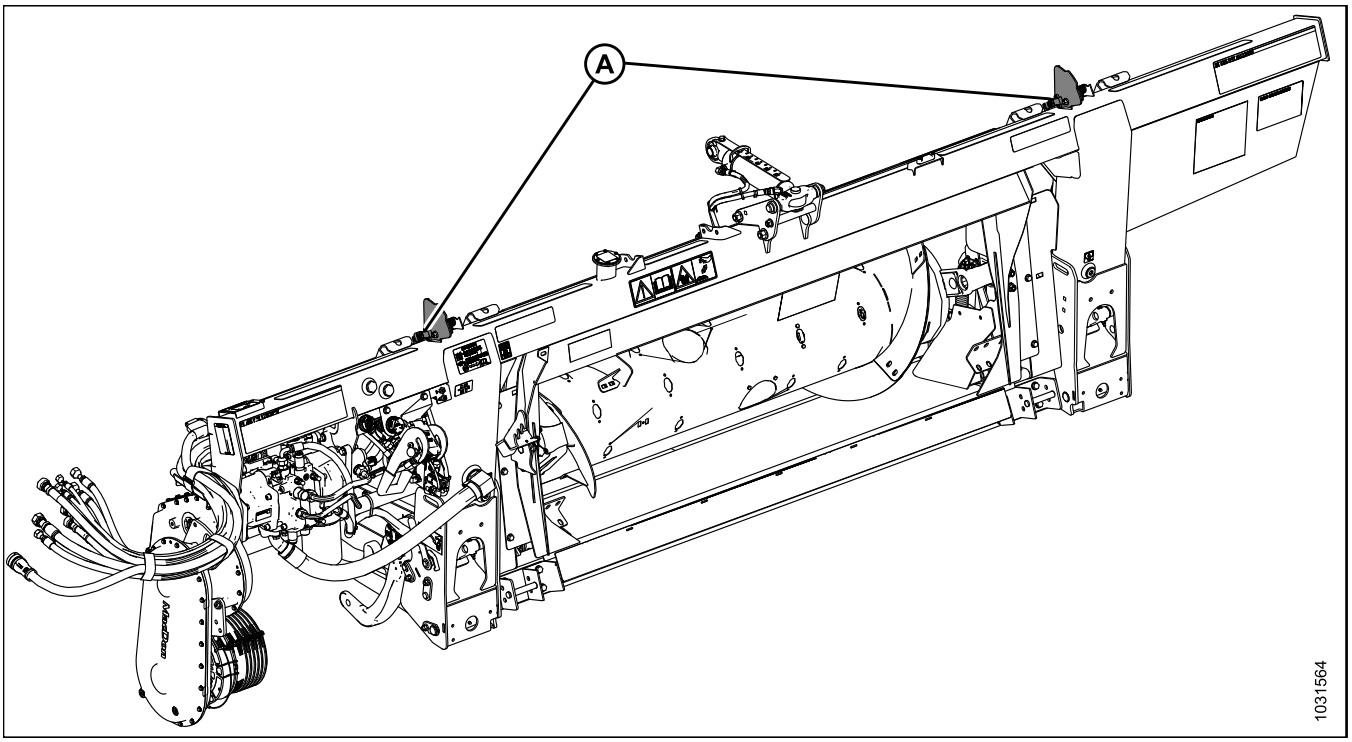


Figure 8.1: FM200 Float Module

To configure the AHHC system for a particular combine model, refer to the relevant procedure:

8.1 Header Settings Quick Reference – Case IH 130, 140, 150, and 160 Series

The following table provides recommended auto header height control (AHHC) settings for Case 130, 140, 150, and 160 Series combines connected to Series FlexDraper® Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.1 Header Settings – Case IH 130, 140, and 150 Series

Setup Parameter		Suggested Setting	
Header type		Draper/Varifeed	
Cutting type		Platform	
Draper grain header style		Rigid 2000 series	
Header pressure float		Not installed	
Header lateral tilt	**Two sensor**	Installed	
	One sensor	Not installed	
Auto tilt sensitivity		150	
HHC height sensitivity	**Two sensor**	250	
	One sensor	180	
HHC tilt sensitivity		150	
Reel drive type		19-tooth sprocket (standard)	4
		14-tooth high-torque drive sprocket (optional)	5
		10-tooth high-torque drive sprocket (optional)	6
Reel drive type		Both	
Side knives		Not installed	

Table 8.2 Header Settings – Case IH 160 Series

Setup Parameter		Suggested Setting
		160 series (Ver. 37.14.0.0)
Header type		Draper
Cutting type		Platform
Header sub type		FD2/D2 series
Frame type		Flex Header
Head width		Set according to header specification
Header sensors		Enable
Header pressure float		No
Height/Tilt response		Fast
HHC height sensitivity	**Two sensor**	250
	One sensor	180
HHC tilt sensitivity		150

Table 8.2 Header Settings – Case IH 160 Series (continued)

Setup Parameter		Suggested Setting
		160 series (Ver. 37.14.0.0)
Reel speed sprocket		19/56 (Default)
		15/56
		20/52
Reel speed slope		—
Reel diameter		40.16 in (102 cm)
Reel displacement per revolution (cc/rev)		19/56 - 769 cc/rev
		14/56 - 1044 cc/rev
		20/52 - 679 cc/rev
Reel drive type		—
Hydraulic reel		Yes
Hydraulic reel reverse		Yes
Reel speed sensor		Yes
Reel fore-aft		Yes
Reel vertical position sensor		Yes
Reel horizontal position sensor		Yes
Knife fore/aft		No
Vertical knives		No
Header lateral tilt		—
Autotilt	Two sensor	Yes
	One sensor	No
Fore/Aft tilt		—
Fore/Aft control		—

8.2 Header Settings Quick Reference – Case IH 120, 230, 240, 250 and 260 Series

The following table provides recommended auto header height control (AHHC) settings for Case IH 120, 230, 240, 250, and 260 Series combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Setup Parameter	Suggested Setting			
	250, 260 series (Ver. 36.4.X.X)	250, 240 series (Ver. 28 to Ver. 36)	240 series (Prior to Ver. 28)	8010
Header type	Draper			
Cutting type	Platform			
Header sub type	FD2/D2 series	2000 series	2000 series	—

Setup Parameter		Suggested Setting			
		250, 260 series (Ver. 36.4.X.X)	250, 240 series (Ver. 28 to Ver. 36)	240 series (Prior to Ver. 28)	8010
Frame type		Flex Header			
Head width		Set according to header specification			
Header sensors		Enable	Enable	??	—
Header pressure float		No			
Height/Tilt response		Fast			—
HHC height sensitivity	Two-sensor	250			—
	One-sensor	180			—
HHC tilt sensitivity		150			—
Reel speed sprocket		19/56 (Default)	—	—	—
		15/56	—	—	—
		20/52	—	—	—
Reel speed slope		—	133	133	—
Reel diameter		40.16 in (102 cm)			—
Reel displacement per revolution (cc/rev)		19/56 - 769 cc/rev			—
		14/56 - 1044 cc/rev			—
		20/52 - 679 cc/rev			—
Reel drive type		—	Hydraulic	Hydraulic	Hydraulic
Hydraulic reel		Yes	—	—	—
Hydraulic reel reverse		Yes	—	—	—
Reel speed sensor		Yes	No	—	—
Reel fore-aft		Yes	Yes	—	—
Reel vertical position sensor		Yes	Yes	—	—
Reel horizontal position sensor		Yes	Yes	—	—
Knife fore/aft		No	No	—	—
Vertical knives		No	No	—	—
Header lateral tilt		—	—	—	—
Autotilt	Two-sensor	Yes			—
	One-sensor	No			—
Fore/Aft tilt		—	—	Yes	Installed
Fore/Aft control		—	—	Yes	—

8.3 Header Settings Quick Reference – Challenger® and Massey Ferguson® 6 and 7 Series Combines

The following table provides recommended auto header height control (AHHC) settings for Challenger® or Massey Ferguson® 6 and 7 Series combines connected to D2 Series Draper Headers.

The following system components are required in order for the AHHC to work:

- Main module (PCB board) and header driver module (PCB board) mounted in the card box in the fuse panel module (FP)

- Multifunction control handle operator inputs
- Operator inputs mounted in the control console module (CC) panel
- The electrohydraulic header lift control valve

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.
2. Modify the combine settings as per the table below.

Table 8.3 Header Settings – Challenger® and Massey Ferguson® 6 and 7 Series Combines

Setup Parameter	Suggested Setting
First message box	AHHC icon should be displayed
Header calibration	Complete
Header height	Set to Operator's preference
Raise/lower speed	Set to Operator's preference
AHHC sensitivity	Set to Operator's preference

8.4 Header Settings Quick Reference – CLAAS/CAT or Lexion Combines

The following table provides recommended auto header height control (AHHC) settings for CLAAS/CAT or Lexion combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

   NOTE:

   Some combine models do not support checking sensor output voltage from the cab. For these models, check output voltage manually. For instructions, refer to *8.13 Manually Checking Voltage Limits, page 276*.

2. Modify the combine settings as per the table below.

Setup Parameter	Suggested Setting		
	Lexion 5000, 6000, 7000, 8000 Series, Trion 600 and 700 Series	**Lexion 6X0, 700 Series**	**Claas CAT Lexion 500 and 600 Series**
Header parameters	Flex cutterbar product by other manufacturer, Vario	Flex header, third-party product	—
Drop rate with auto contour	Start at 0 and adjust to preference	—	—
Reel speed adjust	Set to operator preference		
Sensitivity CAC	—	Start at 0 and adjust to preference	Start at 50% and adjust to preference: 0%- 48% typical for Rigid 49% -60% typical for Flex

Setup Parameter	Suggested Setting		
	Lexion 5000, 6000, 7000, 8000 Series, Trion 600 and 700 Series	Lexion 6X0, 700 Series	Claas CAT Lexion 500 and 600 Series
Working width	Set header width		
Auto header (Automatic Header Height)	On	On	On
Auto reel speed control	On	On	—
Auto reel height	On	On	On
Auto reel horizontal control	On	On	—
Vario Auton.	Off	Off	Off
Auto cutting angle	Off	Off	—
Lateral leveling	On	On	—
Auto contour sensitivity	Set to operator preference		
Auto conveyor belts	Set to operator preference	—	—

8.5 Header Settings Quick Reference – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series Combines

The recommended auto header height control (AHHC) settings for operating with a Gleaner® R65, R66, R75, R76, and Pre-2016 S Series combines connected to D2 Series Draper Headers.

The following system components are required in order for the auto header height control (AHHC) to work:

- Main module and header driver module mounted in card box in fuse panel (FP) module.
- Multifunction control handle operator inputs.
- Operator inputs mounted in the control console (CC) module panel.
- Electrohydraulic header lift control valve.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.4 Header Settings – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series Combines

Setup Parameter	Suggested Setting
Header height	Set to Operator's preference
Accumulator	Off
Raise/Lower speed	Set to Operator's preference
Ground pressure	Set to Operator's preference
AHHC sensitivity	Set to Operator's preference

8.6 Header Settings Quick Reference – Gleaner® S9 Series

The following table provides recommended auto header height control (AHHC) settings for Gleaner® S9 Series combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.5 Header Settings – Gleaner® S9 Series

Setup Parameter	Suggested Setting		
Header type	Power Flow		
Header has reel attached check box	Checked		
Reel diameter	40		
Reel PPR[25]	Standard - 38	High-torque sprocket - 61	High-speed sprocket - 34
Sensitivity (RTC)	50		
Sensitivity (AHHC)	60		
Header control speed[26]	Slow: Up 45/Down 40 Fast: Up 100/Down 100		
Header lateral offset	0		
Feeder house to cutter	68		

8.7 Header Settings Quick Reference – IDEAL™ Series

The following table provides recommended auto header height (AHHC) settings for IDEAL™ Series connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.6 Header Settings – IDEAL™

Setup Parameter	Suggested Setting		
Header type	Power Flow		
Reel check box	Checked		
Reel diameter	102 cm (40 in.)[27]		
Reel PPR[25]	Standard - 38	High-torque sprocket - 61	High-speed sprocket - 34

25. Pulses per revolution.
26. A two-stage button with slow speed on the first detent and fast on the second.
27. If the reel speed does not index correctly, then the reel diameter can be increased to 112 cm (44 in.).

Table 8.6 Header Settings – IDEAL™ (continued)

Setup Parameter	Suggested Setting
Sensitivity (RTC)	50
Sensitivity (AHHC)	60
Header control speed[28]	Slow: Up 45/Down 40 Fast: Up 100/Down 100
Header lateral offset	0
Feeder house to cutter	68

8.8 Header Settings Quick Reference – John Deere Combines

The following table provides recommended auto header height (AHHC) settings for John Deere combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Setup Parameter	Suggested Setting			
	X9 and S7	**S700**	**S600 and T-Series**	**70-Series**
Header Type	Hinged draper	Flex platform	—	—
Header width	Set to header specification	Set to header specification	—	—
Raise/lower speed[29]	Set to Operator's preference			
Tilt speed	Set to operator preference	Set to operator preference	—	—
Height sensitivity[29]	Range: 10–60	Set to Operator's preference	Set to Operator's preference	Set to Operator's preference
Tilt sensitivity	Range: 10–100	Set to Operator's preference	—	—
Height Resume (Return To Cut)	On	On	On	—
Height Sensing	On	On	On	—
Feederhouse Float	—	Off	Off	—
Lateral Tilt	On	On	On	—
Auto Reel Speed	On	On	—	—
Auto Belt Speed	Off	—	—	—
Fore/Aft Resume	On	On	—	—
Reel Position Resume	On	On	On	—
Header Float	—	—	—	Unlocked

28. A two-stage button with slow speed on the first detent and fast on the second.
29. This function requires calibration. Follow the combine on-screen instructions.

8.9 Header Settings Quick Reference – New Holland CR and CX Series Combines – 2014 and Earlier

The following table provides recommended auto header height control (AHHC) settings for New Holland CR and CX Series Combines – 2014 and Earlier connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.7 Header Settings – New Holland CR and CX Series Combines – 2014 and Earlier Series

Setup Parameter	Suggested Setting
Cutting type	Platform
Header sub type	80/90
Header autofloat	Installed
Auto header lift	Installed
Manual HHC raise/lower rate	Set for best performance
HHC height sensitivity	Set for best performance **NOTE:** The sensitivity can be changed from 10–250 in increments of 10. The factory setting is 100.
HHC tilt sensitivity	Set for best performance
Reel height sensor	Yes
Left header height sen	Voltage range: 0.7–4.3 Voltage range with 10 V sensor: 2.8–7.2
Header lateral float	Installed
Header calibration	Complete
Maximum stubble height calibration	Complete
Header raise rate	Set to Operator's preference **NOTE:** The raise rate can be changed from 32–236 in increments of 34. The factory setting is 100.
Header lower rate	Set to Operator's preference **NOTE:** The header lower rate can be changed from 2–247 in increments of 7. The factory setting is 100.
Header height	Set to Operator's preference

8.10 Header Settings Quick Reference – New Holland Combines – CR Series (2015 and Later) and CH

The following table provides recommended auto header height control (AHHC) settings for New Holland CR (2015 and Later) or CH Series combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Setup Parameter		Suggested Setting		
		CR10.90, 9.90, 8.90 (Version 36.4.0.0 or Newer)	CR10.90 / CX8.80/8.90 (Pre 36.4.0.0 Software)	CH7.70, CR (Pre-Model Year 2019), CX (Pre-Model Year 2020), CX5.90/6.90 (All Software Versions Beginning Model Year 2015)
Header type		Draper	Draper/Varifeed	Draper/Varifeed
Cutting type		Platform		
Header sub type		FD2/D2 Series	FlexHead	Rigid
Frame type		Flex Header	80/90	80/90
Head width		Set to header specification		
Reel position sensors		—	—	Installed
AutoFloat (header pressure float)		Not installed		
Height/Tilt response		Set for best performance		
HHC height sensitivity	**Two sensor**	250	—	—
	One sensor	180	—	—
HHC tilt sensitivity		Set for best performance		
Reel speed sprocket		19/56 (Default)	—	—
		15/56	—	—
		20/52	—	—
Reel speed slope		133	133	133
Reel diameter		102 cm (40 in.)		
Reel displacement per revolution (cc/rev)		19/56 - 769 cc/rev		
		14/56 - 1044 cc/rev		
		20/52 - 679 cc/rev		
Reel drive type		—	Installed	Hydraulic
Hydraulic reel		Yes	—	—
Hydraulic reel reverse		Yes	—	—
Reel speed sensor		Yes	Installed	Installed
Reel fore-aft		Yes	—	—
Reel vertical position sensor		Yes	Installed	Installed

Setup Parameter		Suggested Setting		
		CR10.90, 9.90, 8.90 (Version 36.4.0.0 or Newer)	CR10.90 / CX8.80/8.90 (Pre 36.4.0.0 Software)	CH7.70, CR (Pre-Model Year 2019), CX (Pre-Model Year 2020), CX5.90/6.90 (All Software Versions Beginning Model Year 2015)
Reel horizontal position sensor		Yes	Installed	Installed
Knife fore/aft		No	Not installed	Not installed
Vertical knives		No	Not installed	Not installed
Header lateral tilt		—	—	Installed
Autotilt	Two sensor	Yes	Installed	Installed
	One sensor	No	—	—
Fore/Aft tilt		Fast	—	—
Fore/Aft control		—	—	—

8.11 Header Settings Quick Reference – Rostselmash Combines – RSM 161, T500, and TORUM 785

The following table provides recommended auto header height control (AHHC) settings for Rostselmash Combines – RSM 161, T500, and TORUM 785 Series combines connected to D2 Series Draper Headers.

NOTE:

For detailed setup instructions, refer to the combine operator's manual or the AHHC section in the header operator's manual.

1. Check the sensor voltage range. For voltage information refer to *8.12 Recommended Sensor Output Voltages for Combines, page 275*.

2. Modify the combine settings as per the table below.

Table 8.8 Header Settings – Rostselmash Combines – RSM 161, T500, and TORUM 785

Setup Parameter	Suggested Setting
GFCS calibration	Complete
Reel speed calibration	Complete
GCFS settings	Mode 1: Cutting height maintaining mode Mode 2: Cutting height maintaining mode
Header height	Set to Operator's preference

8.12 Recommended Sensor Output Voltages for Combines

The auto header height control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly. The recommended lower and upper voltage values for operation are provided.

Table 8.9 Combine Voltage Limits

Combine	Lower Voltage Limit (V)	Upper Voltage Limit (V)	Minimum Range (V)
New Holland combine equipped with 10 V systems	2.8	7.2	4.1–4.4
All other models of combine	0.7	4.3	2.5

Table 8.9 Combine Voltage Limits (continued)

NOTE:

Some combine models do not support checking sensor output voltage from the cab. For these models, check output voltage manually. For instructions, refer to *8.13 Manually Checking Voltage Limits, page 276*.

8.13 Manually Checking Voltage Limits

For the auto header height (AHHC) system to function correctly, the voltages reported to the combine by the header height sensors must occur within the specified range.

NOTE:

One of the following plugs will be installed in connector P600 (A). This plug determines how the voltage signal is sent to the combine:

- **Auto header height plug (MD #328560 [B7489]):** This plug sends the average of both sensors to the combine.
- **Lateral tilt plug (MD #328318 [B7196]):** This plug sends separate voltage signals from both sensors to the combine, with averaged center signals.
- **Pass-through plug (MD #323698 [B7490]):** Each sensor sends a voltage signal directly to the combine. There are no averaged center signals.

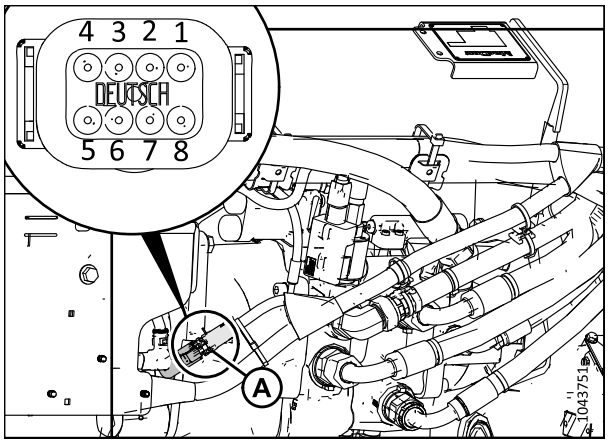


Figure 8.2: Connector

NOTE:

On some combine models, you can see the voltage on the combine display.

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. Park the combine on a level surface.
2. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

Checking sensor upper voltage limit

3. Extend the guard angle until header angle indicator (A) is at position **E** on the center-link.

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

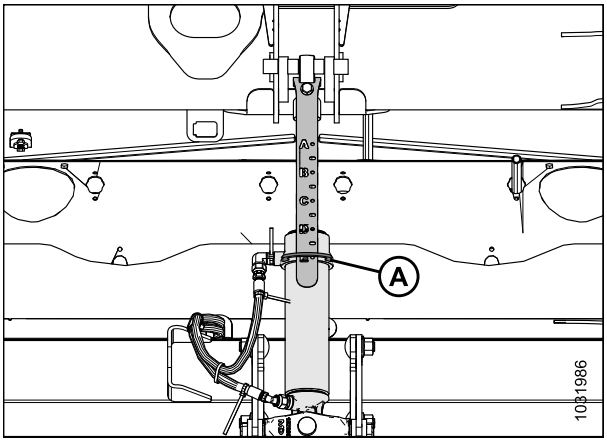


Figure 8.3: Center-Link

5. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. To fix the problem, make the header heavier by decreasing the float. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

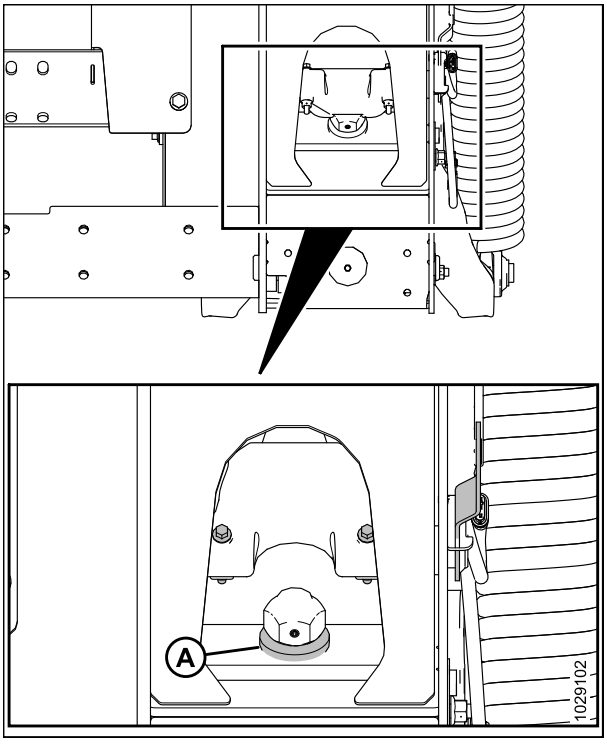


Figure 8.4: Down-Stop Washer

6. If pointer (C) is **NOT** at **0** (D), loosen the nut on bolt (A) and rotate float indicator plate (B) until the pointer is aligned with zero dot (E). Tighten the nut on bolt (A).

   NOTE:

   After adjusting the indicator plate, the float sensor voltage limits must be checked.

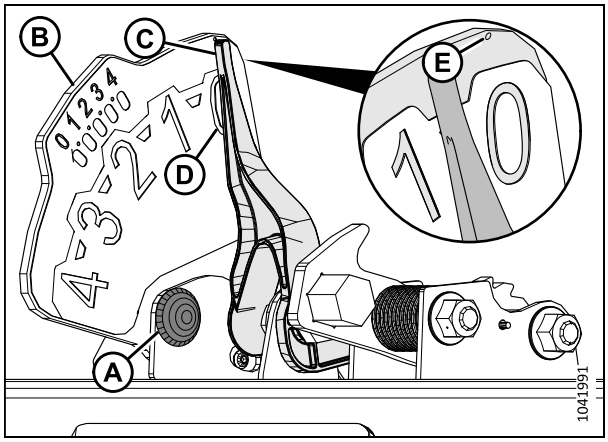


Figure 8.5: Float Indicator

7. Locate connector P600 (A) at the left of the float module.
8. Remove plug (B).
9. Inside the combine cab, insert the key into the ignition and turn it to the RUN position.
10. Using a digital multimeter, check connector P600 for power from the combine. The multimeter should read 5 V at pin 7.
    - Pin 7 - FM2215E – power
    - Pin 8 - FM2515E – ground
11. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the upper range specified in *8.12 Recommended Sensor Output Voltages for Combines, page 275*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

    NOTE:

    With the float lock linkage on the down stops, the upper voltage reading should ideally be the same on both (left and right) sensors; however, a difference of 0.1–0.2 V is acceptable.

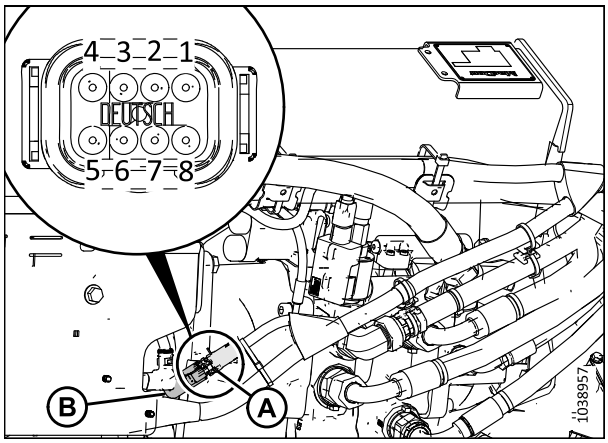


Figure 8.6: Connector P600 – View from Rear

12. If a voltage adjustment is required, loosen nuts (A), reposition sensor (B) in the indicator plate, then tighten nuts (A) to 3 Nm (2.2 lbf·ft [22 lbf·in]).

    NOTE:

    While tightening the nuts, make sure that sensor (B) does **NOT** move in the indicator plate.

13. Turn the key to the OFF position, and remove the key from the ignition.

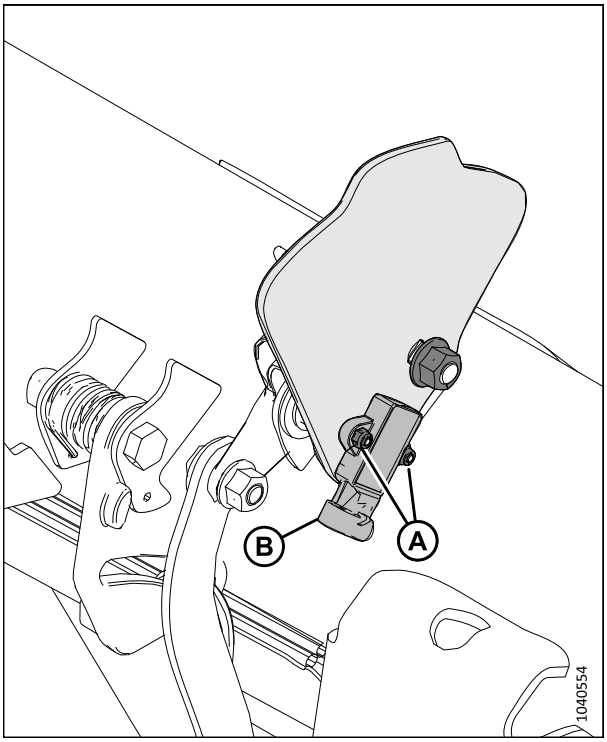


Figure 8.7: Left Float Indicator Plate

Checking sensor lower voltage limit

14. Extend the guard angle until header angle indicator (A) is at position **E** on the center-link.

15. Lower the header.

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

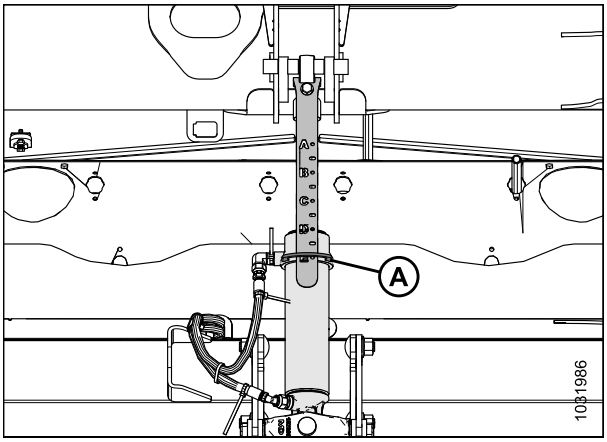


Figure 8.8: Center-Link

17. Float indicator pointer (A) should be at 4 (B).
18. Insert the key and turn it to the RUN position.
19. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the lower voltage specified in *8.12 Recommended Sensor Output Voltages for Combines, page 275*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground
20. If you need to adjust the voltage, refer to Step *12, page 279* for instructions.

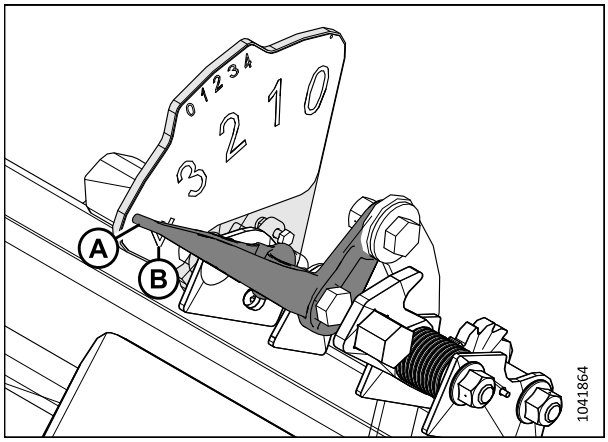


Figure 8.9: Left Float Indicator – View from Rear

8.14 10 Volt Adapter – New Holland Combines

New Holland combines equipped with a 10 V system require an adapter in order to calibrate the auto header height control (AHHC) system.

If a 10 V New Holland combine does not have adapter (A) installed, the AHHC output will read 0 V, regardless of the sensor's position.

For instructions on checking the sensor voltages, refer to header operator's manual or *8.13 Manually Checking Voltage Limits, page 276*.

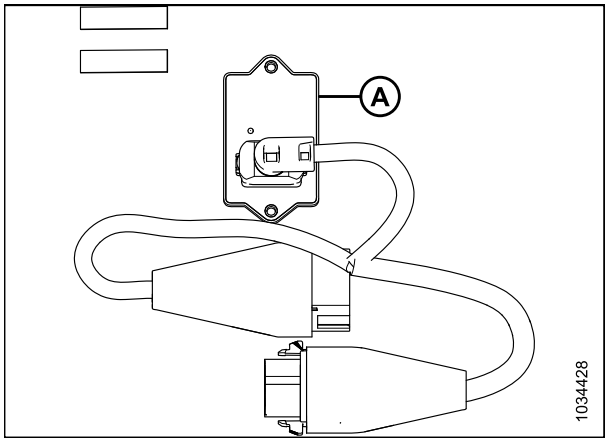


Figure 8.10: 10 V Adapter (B7241)

Chapter 9: Running up Header

Before delivering the header to the customer, observe its performance to ensure that all of its features are functional.

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.

DANGER

Ensure that all bystanders have cleared the area.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.
4. Lower the plastic pan under the float module. Check for debris that may have fallen under the float module draper.
5. Rotate latches (A) to unlock handles (B).
6. Hold pan (C) and rotate handles (B) to release the pan. Lower the pan to expose the draper.

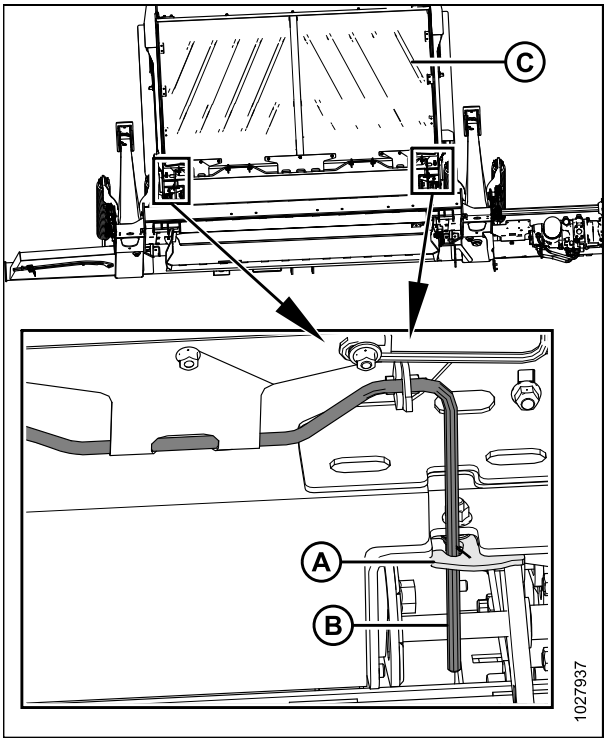


Figure 9.1: Float Module Plastic Pan

7. Remove any debris from pan (A) and the draper.

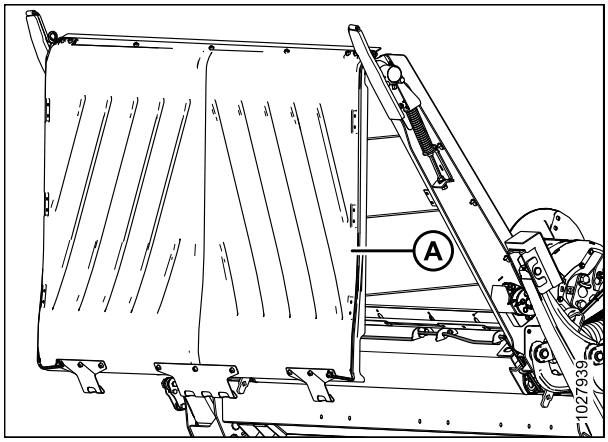


Figure 9.2: Float Module Plastic Pan

8. Raise the pan. Rotate handle (A) so that the rod engages clips (B) on the pan.

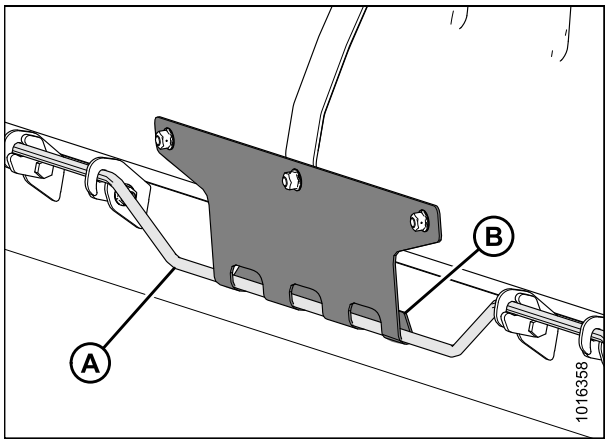


Figure 9.3: Clips Engaged

9. Push handle (A) into the slot and secure it with latches (B).
10. Ensure that the feeder house variable speed is set to maximum.
11. Engage the header with the combine running at low idle.
12. Run the machine for two minutes while watching and listening from the operator's seat for binding or interfering parts.

    NOTE:

    The reel and the side drapers will not operate until the hydraulic oil flow fills the lines.

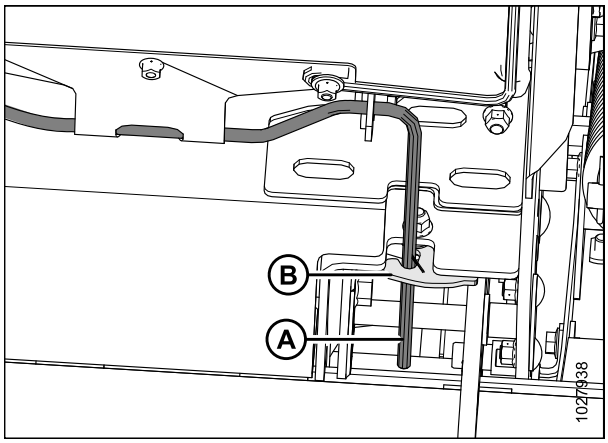


Figure 9.4: Latches Secured

13. Adjust the reel speed to maximum. For instructions, refer to the combine operator's manual.
14. Adjust the draper speed to maximum. For instructions, refer to *9.1 Adjusting Side Draper Speed, page 283*.
15. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.

16. Check the knife speed. For instructions, refer to *9.2 Checking and Adjusting Knife Speed – Integrated Hydraulic System, page 284*.
17. Perform the run-up checks listed in (the yellow sheet attached to this instruction) to ensure that the machine is field-ready.
18. Check the speed of flywheel (A) using a tachometer.
19. Compare the actual flywheel speed with the values in Table *9.1, page 283*.

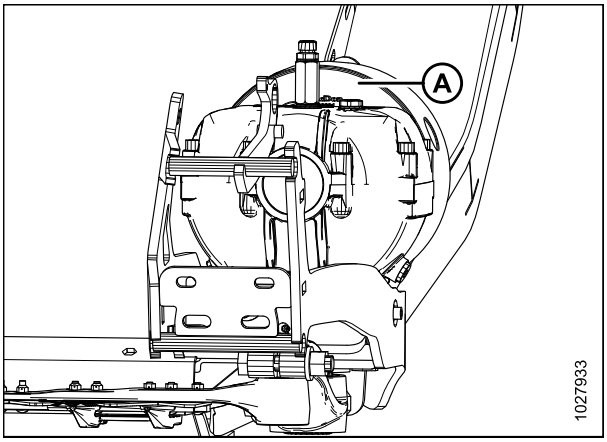


Figure 9.5: Knife Drive Box

Table 9.1 D2 Series Knife Speed

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
D225	600–700	—
D230	600–750	—
D235	600–700	600–750

9.1 Adjusting Side Draper Speed

The side drapers carry the cut crop to the float module feed draper, which then feeds the crop into the combine. You can adjust the speed of the side drapers for various crops and crop conditions.

Side drapers (A) are driven by hydraulic motors and by a pump that is powered by the combine feeder house drive through a gearbox on the float module. From inside the cab, you can adjust the side draper speed on the side draper speed control, which regulates the flow to the draper hydraulic motors.

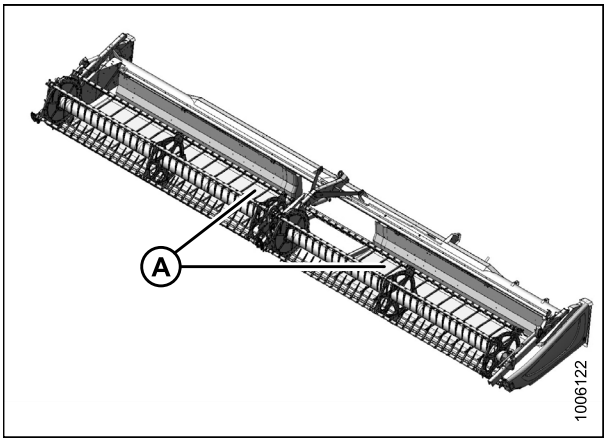


Figure 9.6: Side Drapers

Combines with integrated controls

Use the integrated draper controls to set the draper speed. For instructions, refer to the combine operator's manual. For header settings, refer to the header operator's manual.

Combines with MacDon In-Cab Side Draper Speed Control

Rotate knob (A) to set the draper speed. For header settings, refer to the header operator's manual.

NOTE:

Switch (B) in Figure *9.7, page 284* allows the operator to switch between the header tilt and reel fore-aft controls.

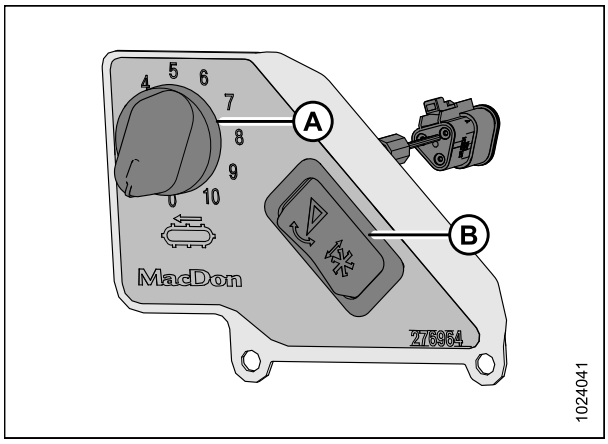


Figure 9.7: In-Cab Side Draper Speed Control

Rotate knob (A) to set the draper speed. For header settings, refer to the header operator's manual.

NOTE:

For Case IH and New Holland combines, the switch to activate the header tilt and reel fore-aft controls is located behind the ground speed lever (GSL).

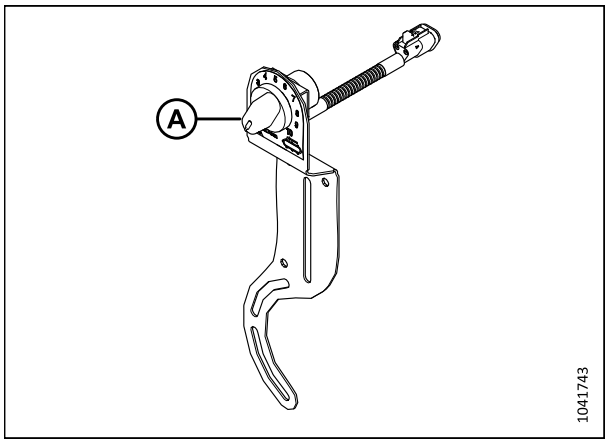


Figure 9.8: Case IH and New Holland In-Cab Side Draper Speed Control

9.2 Checking and Adjusting Knife Speed – Integrated Hydraulic System

If the knife drive is not operating within the recommended speed range, the knife speed will need to be adjusted.

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. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.

3. Start the engine.

4. Engage the header drive, and run the feeder house at the maximum speed as shown in Table *9.2, page 285*.

   IMPORTANT:

   Before checking the knife speed, make sure the feeder house is set to maximum speed. This will prevent the knife from overspeeding when making further adjustments.

5. Run the float module until the oil is at a minimum of 40°C (100°F).

Table 9.2 Feeder House Speed

Combine Make	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS Lexion 500/600/700	Display Speed: 420 Actual Shaft Speed: 750
CLAAS Lexion 5000/6000/7000/8000 Series CLAAS Trion 600/700 Series	785
Gleaner®	625
IDEAL™ Series	620
John Deere[30]	490
Massey Ferguson®	625
New Holland	580
Rostselmash	580

6. Measure and record the rpm of flywheel (A) with a hand-held photo tachometer.

   NOTE:

   One revolution (rpm) is equivalent to two knife strokes (spm) (1 rpm = 2 spm).

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

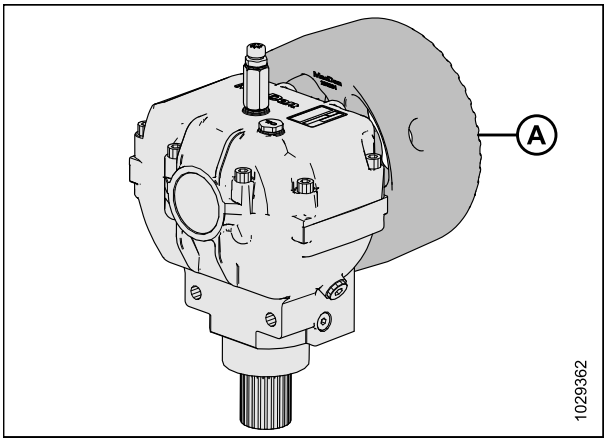


Figure 9.9: Flywheel

8. Compare the flywheel rpm measurement with the rpm values in Table *9.3, page 285*.

   NOTE:

   The knife drive speed on all header model is factory-set to 650 rpm.

Table 9.3 D2 Series Knife Speed

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
D225	600–700	—
D230	600–750	—
D235	600–700	600–750

30. Some John Deere combines have a fixed feeder house speed of 520 rpm. For hydraulic testing purposes, this difference is not significant.

9. Loosen bolt (A).
10. Turn knife drive adjuster (B) clockwise to increase or counterclockwise to decrease the knife speed.
11. If the desired flywheel rpm is achieved, re-tighten bolt (A), and proceed to Step *17, page 286*.
    - If the desired flywheel rpm is not achieved, proceed to the next step to make coarser adjustments to the pump flow.

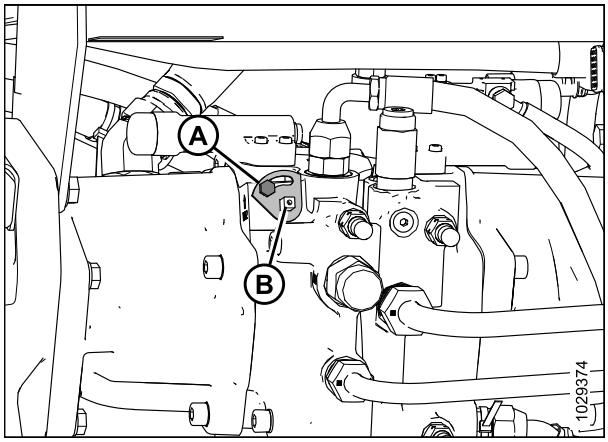


Figure 9.10: Integrated Hydraulic System Pump

12. Remove bolt (A).
13. Remove adjuster plate (B).

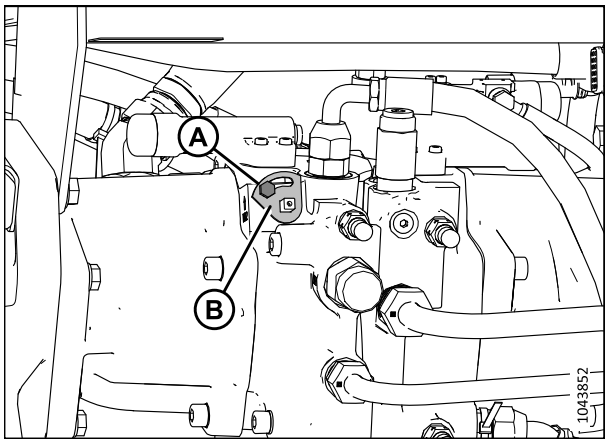


Figure 9.11: Integrated Hydraulic System Pump

14. Turn knife drive adjuster (A) clockwise to increase, or counterclockwise to decrease, the knife speed.
15. If the desired flywheel rpm is achieved, reinstall the adjuster plate and bolt and retighten the bolt. Proceed to Step *17, page 286*.
16. If the desired rpm cannot be achieved after adjusting the knife drive pump, the knife drive motor or pump will need to be tested. For instructions on testing the motor or pump, refer to the header's technical manual.
17. Close the endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

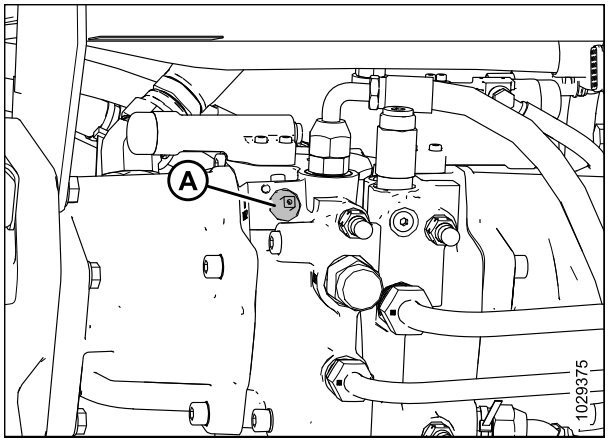


Figure 9.12: Integrated Hydraulic System Pump

9.3 Adjusting Side Draper Tracking

If the side drapers rub the header frame during operation, the draper tracking may need to be adjusted.

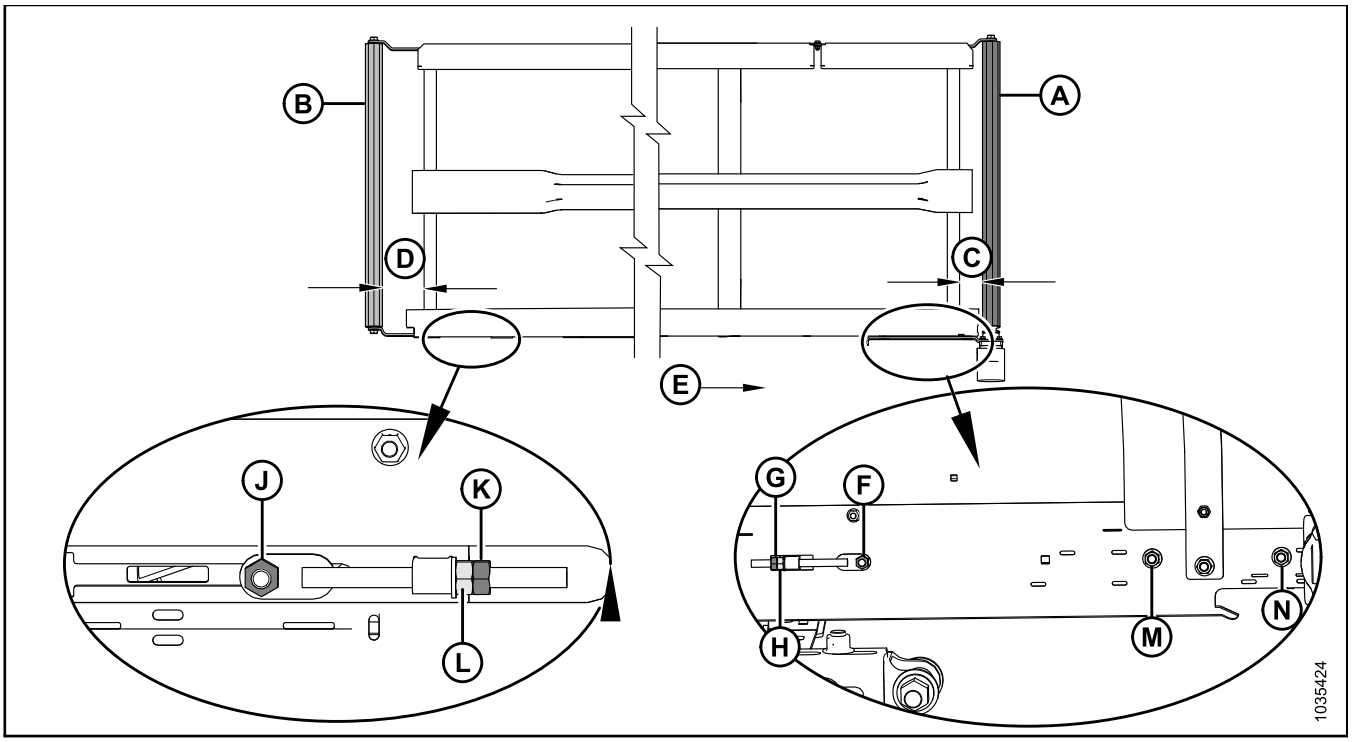


Figure 9.13: Draper Tracking Adjustments – Left Draper

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 9.4 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)

2. Adjust drive roller (A) to change **C** (refer to Table *9.4, page 287* and Figure *9.13, page 287*) 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 *9.4, page 287* and Figure *9.13, page 287*) 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).

9.4 Post Run-Up Adjustments

After running up the header up for the first time, a few adjustments will need to be made.

Perform the post run-up checks listed in the Predelivery Checklist (the yellow sheet attached to this instruction - *Predelivery Checklist, page 317*) to ensure that the machine is field-ready.

9.4.1 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.

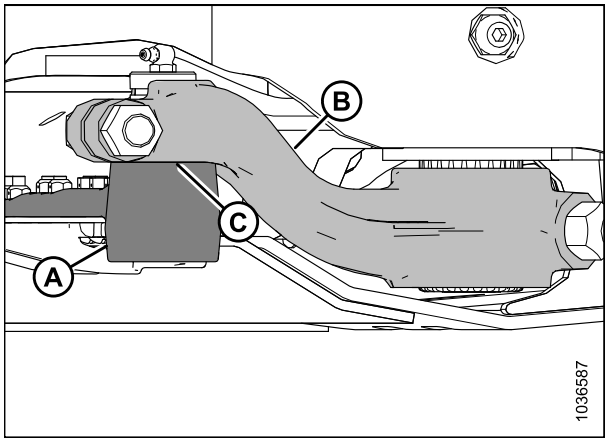


Figure 9.14: Knifehead and Drive Arm

9.4.2 Checking and Adjusting Feed Draper Tension

In order for the draper to operate correctly, it must be tensioned properly. Inspect the tension on the draper and if necessary, adjust it.

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.

NOTE:

The illustrations in this procedure show the left side of the header; the right side of the header is similar.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.

Checking the feed draper tension

4. Ensure that the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove on the drive roller and that the idler roller is between the guides.
5. Check the position of spring retainer disc (A). If the feed draper tracks properly and the spring retainers on both sides of the draper are correctly positioned, then no adjustment is necessary.

   NOTE:

   The starting position of spring retainer disc (A) is centered within the U shape on indicator (B); however, the position of disc (A) will vary after the draper tracking is adjusted.
6. If adjustment is necessary, proceed to Step *7, page 290*.

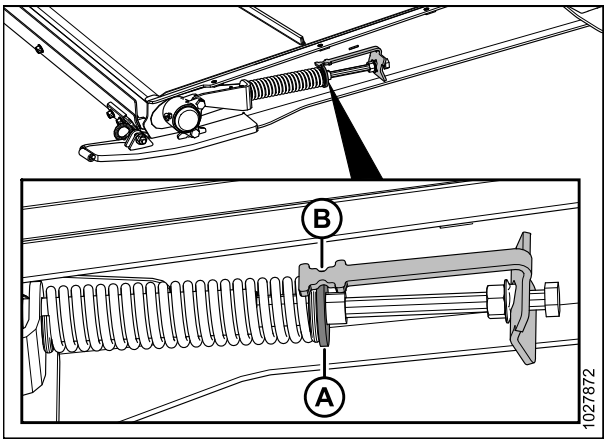


Figure 9.15: Feed Draper Tensioner

Adjusting the feed draper tension

7. Adjust the draper tension by loosening jam nut (A) and turning bolt (B) clockwise to increase the tension on the draper (or counterclockwise to decrease the tension on the draper). Retainer disc (C) should be in the middle of indicator (D).

   IMPORTANT:

   For small tension adjustments, only one side of the draper needs to be adjusted. To prevent uneven draper tracking for larger tension adjustments, both sides of the draper will need to be adjusted.

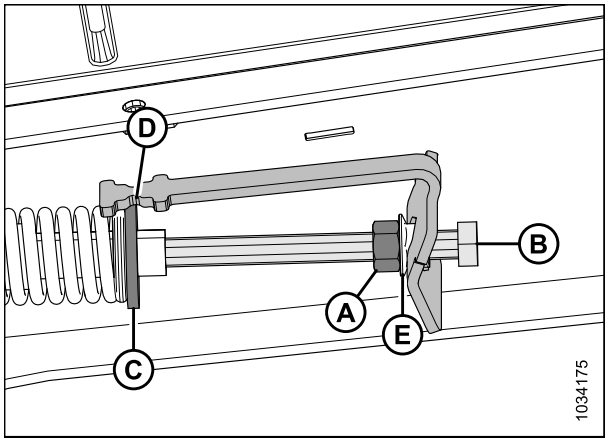


Figure 9.16: Feed Draper Tensioner – Left Side

8. If the draper is not tracking properly, adjust retainer disc (C) so that it is **NOT** in the middle of indicator (D), but within the following range:
   - When loosened to 3 mm (1/8 in.), retainer disc (C) will move toward the front of the deck from center of indicator (D).
   - When tightened to 6 mm (1/4 in.), retainer disc (C) will move toward the back of the deck from the center of indicator (D).
9. Tighten jam nut (A). Ensure that flange nut (E) is tight against the indicator bracket.
10. Disengage the header safety props. Refer to the combine operator's manual for instructions.

Chapter 10: Reference

Refer to the procedures and information in this chapter as needed.

10.1 Adjusting Side Draper Deck Height

A properly adjusted deck height will prevent material from entering into the side drapers and stalling them.

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. Lower the header to a comfortable working position
2. Shut down the engine, and remove the key from the ignition.

   NOTE:

   Take measurements at deck supports (A) when the header is in the working position. Depending on the size of the header, there will be three, four, or five supports per deck.

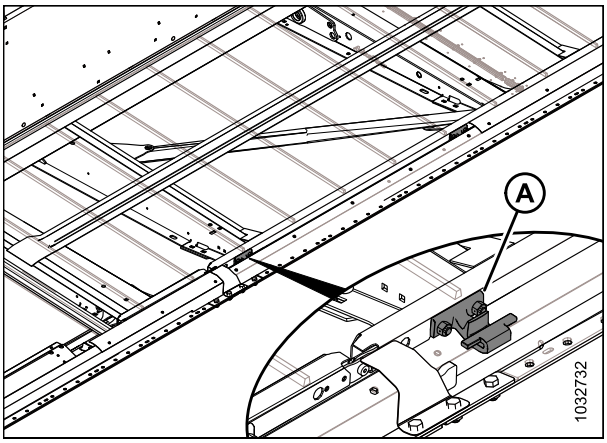


Figure 10.1: Draper Deck Supports

3. Ensure that clearance (A) between draper (B) and metal seal (C) is 1–4 mm (0.04–0.16 in.).

   NOTE:

   The tighter the draper seal, the less crop debris will get inside the draper.

4. Relieve the tension on the draper. For instructions, refer to *6.1.8 Checking and Adjusting Side Draper Tension, page 209*.

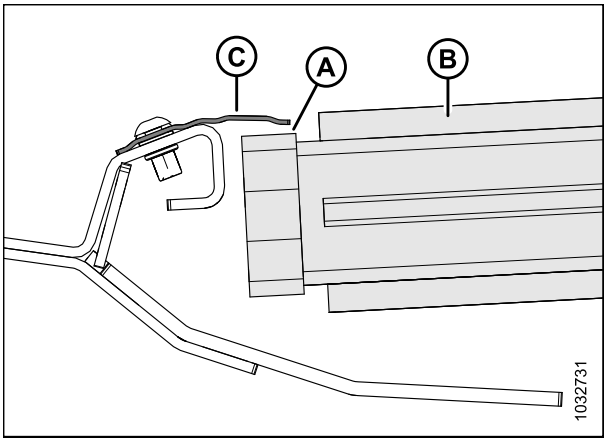


Figure 10.2: Draper Seal

5. Lift front edge of draper (A) past cutterbar (B) to expose the deck support.

6. Measure and note the thickness of the draper belt.

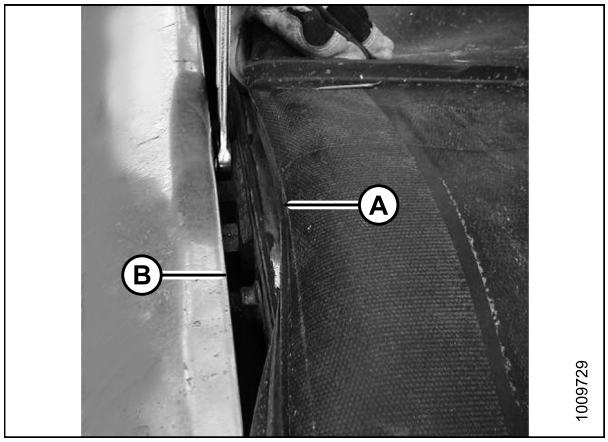


Figure 10.3: Deck Support

NOTE:

The draper has been removed in the image to show the deck.

7. Loosen two lock nuts (A) on deck support (B) by one half-turn **ONLY**.

8. Tap deck (C) with a hammer and a block of wood to lower the deck relative to the deck supports. Tap deck support (B) using a punch to raise the deck relative to the deck supports.

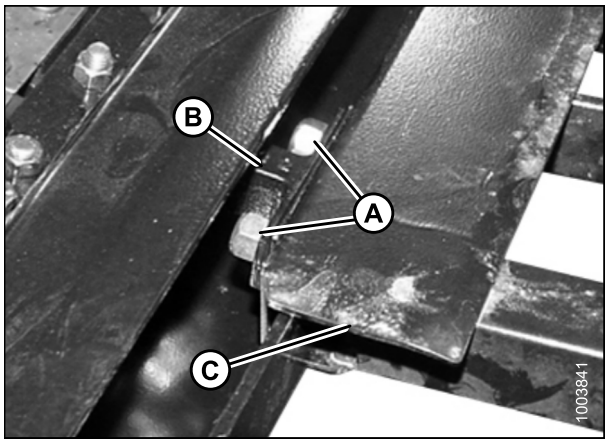


Figure 10.4: Deck Support

Table 10.1 Total Number of Deck Supports (B)

Model	Quantity
D225, D230	6
D235	8

9. Use a feeler gauge that is the same thickness as the draper belt, plus 1 mm (0.04 in.). Slide the gauge along deck (A) under metal seal (C) to properly set the gap.

10. To create a seal, adjust deck (A) so that clearance (B) between metal seal (C) and the deck is the same thickness as the draper belt plus 1 mm (0.04 in.).

NOTE:

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

11. Tighten deck support hardware (D).

12. Recheck gap (B) with the feeler gauge. For instructions, refer to Step *9, page 292*.

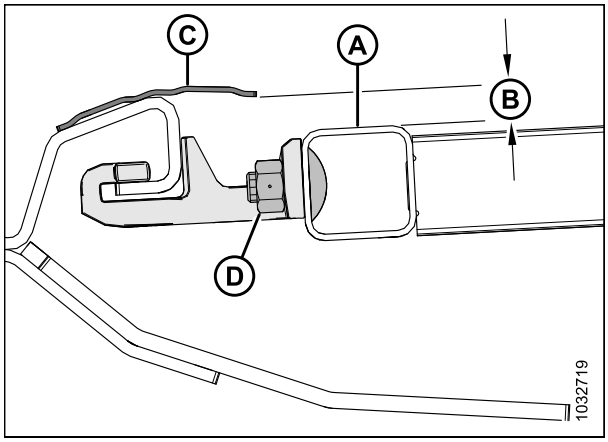


Figure 10.5: Deck Support

10.2 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.

10.2.1 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).

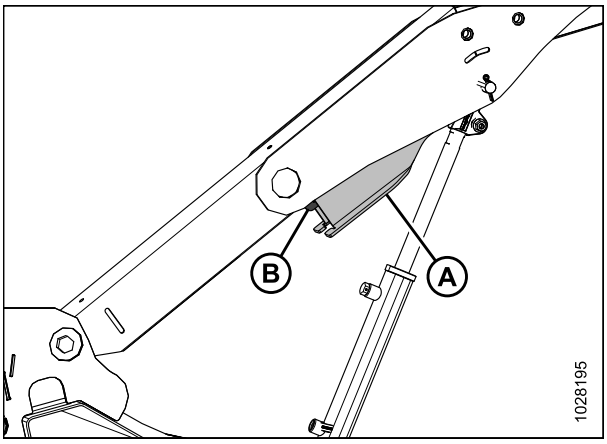


Figure 10.6: Outer Arm

4. Lower safety prop (A) and engage it on the cylinder shaft as shown. Repeat this step on the opposite reel arm.

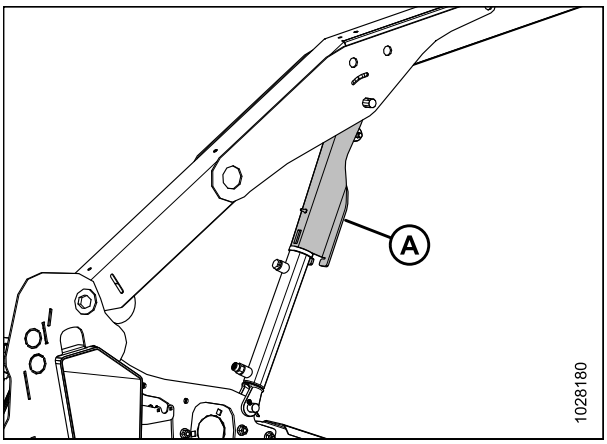


Figure 10.7: Engaged Reel Safety Prop – Outer Arm

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.

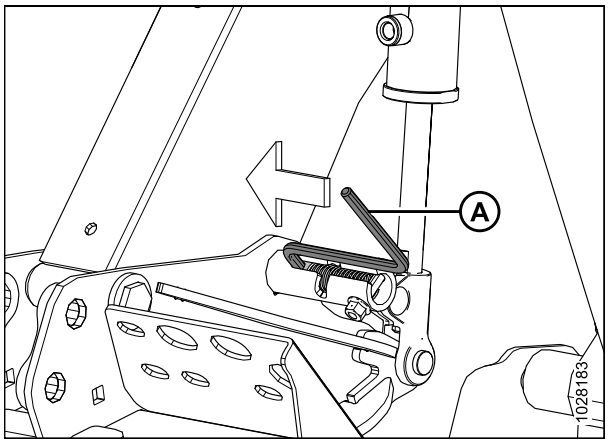


Figure 10.8: Engaged Reel Safety Prop – Center Arm

10.2.2 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.

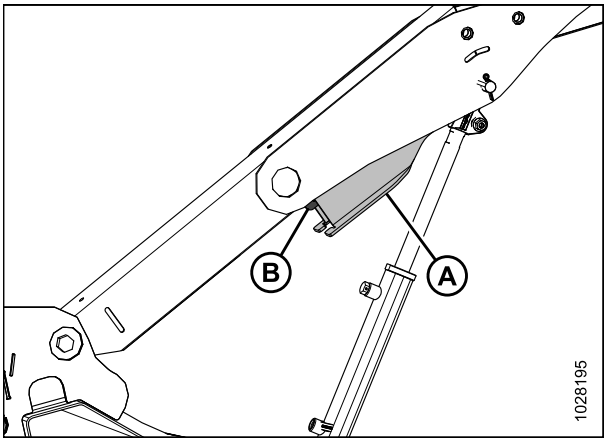


Figure 10.9: Reel Safety Prop – Right Outer Arm

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.

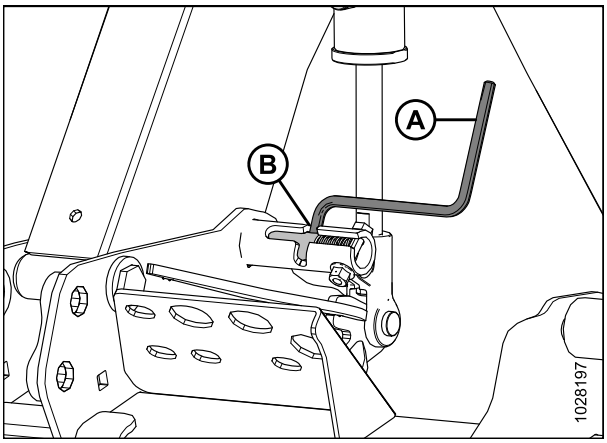


Figure 10.10: Reel Safety Prop – Center Arm

10.3 Header Endshields

A hinged, polyethylene endshield is fitted on each end of the header to protect critical drive components.

10.3.1 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 (headers sold outside of North America).

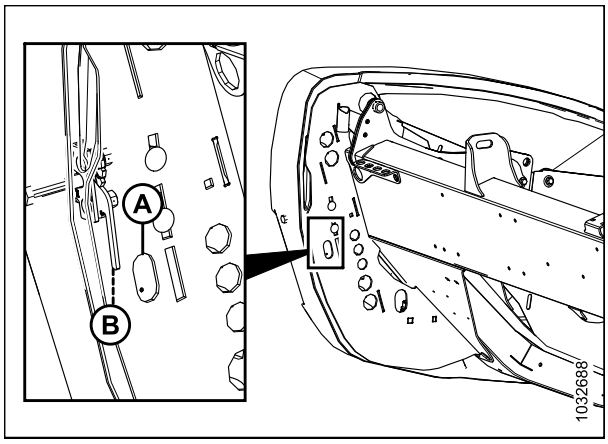


Figure 10.11: Left Header Endshield

2. Pull header endshield (A) open.

   NOTE:

   The header endshield is retained by tab (B) and will open in direction (C).

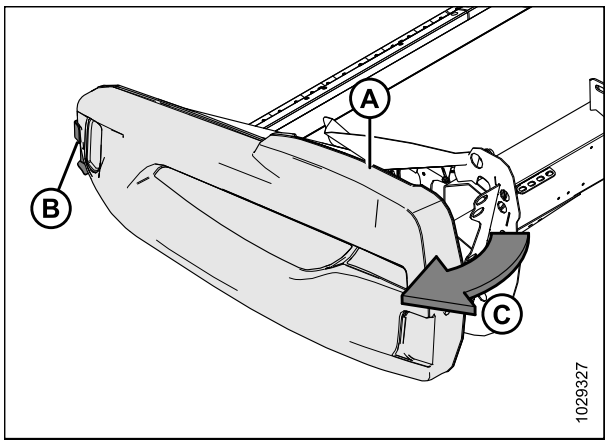


Figure 10.12: Left Header Endshield

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.

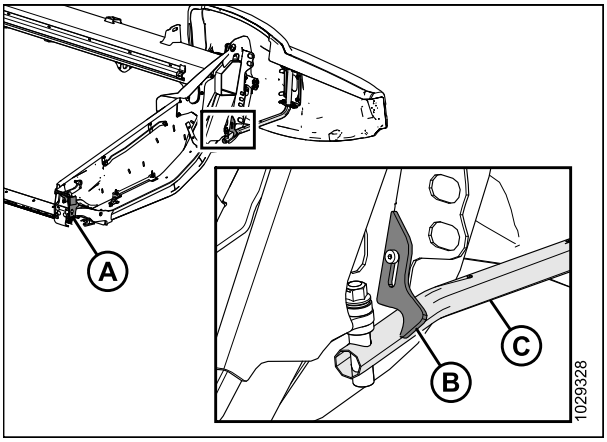


Figure 10.13: Left Header Endshield

10.3.2 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.

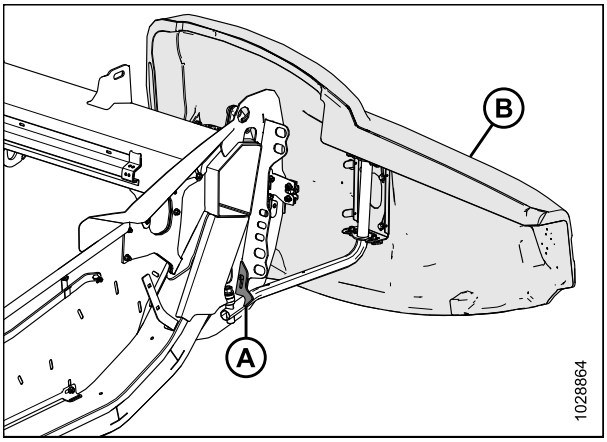


Figure 10.14: Left Header Endshield

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.

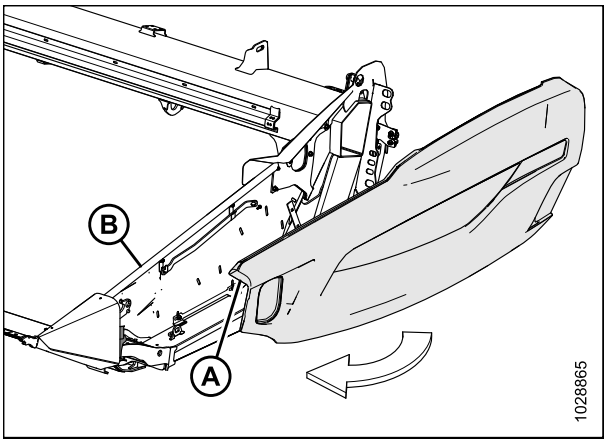


Figure 10.15: Left Header Endshield

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.

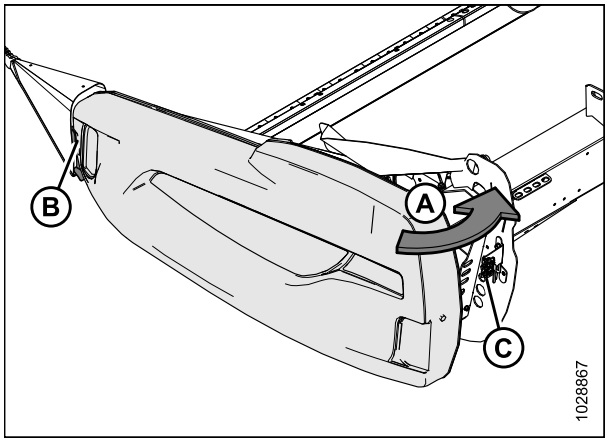


Figure 10.16: Left Header Endshield

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.

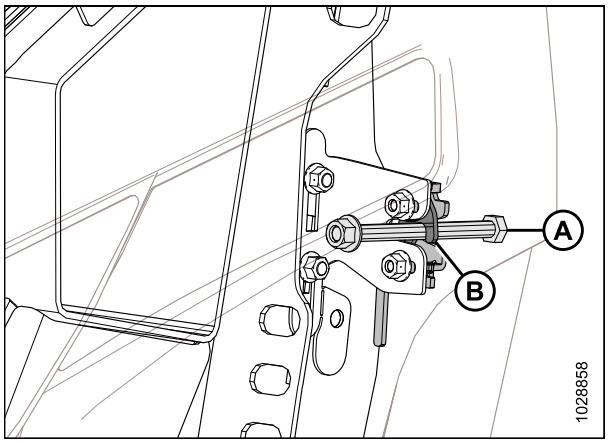


Figure 10.17: Two-Stage Latch

10.3.3 Removing Header Endshields

Remove the endshields to increase access to the components inside.

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 leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Fully open the header endshield. For instructions, refer to *10.3.1 Opening Header Endshields, page 296*.
3. Engage latch (A) to prevent the endshield from moving.
4. Remove self-tapping screw (B).
5. Slide the header endshield upward and remove it from hinge arm (C).
6. Place the header endshield away from the work area.

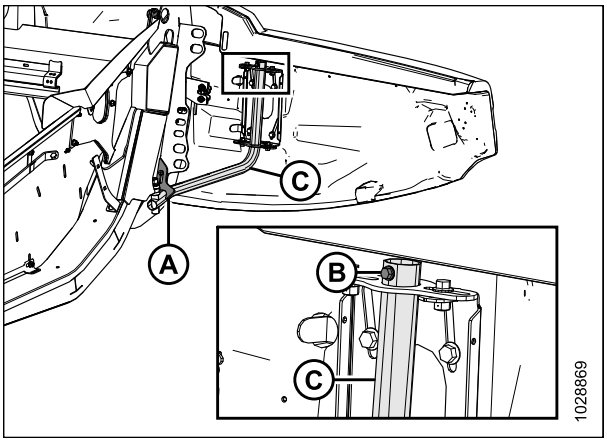


Figure 10.18: Left Header Endshield

10.3.4 Installing Header Endshields

To ensure that the endshields are installed correctly, follow the procedure provided here.

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. Guide the header endshield onto hinge arm (C) and slowly slide it downwards.

   IMPORTANT:

   Ensure that the header endshield does **NOT** rest on the aluminum endsheet.

3. Install self-tapping screw (B). Torque the screw to 7 Nm (5.2 lbf·ft [62 lbf·in]).

4. Disengage latch (A) to allow the header endshield to move.

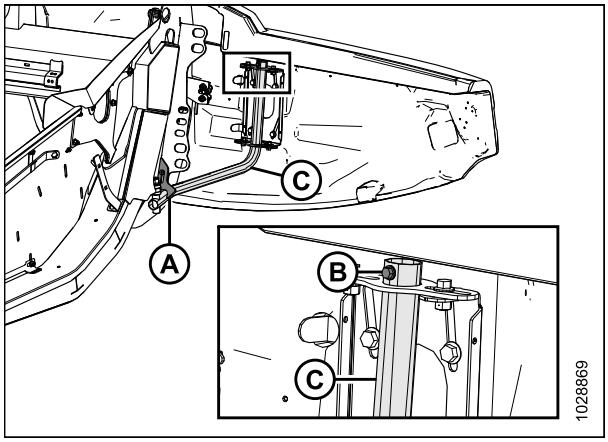


Figure 10.19: Left Header Endshield

5. Close the header endshield. For instructions, refer to *10.3.2 Closing Header Endshields, page 297*.

   NOTE:

   The header endshields can warp due to extreme changes in temperature. Adjust the position of the header endshield to compensate for these changes. For instructions, refer to the header technical manual.

10.4 Removing Reel Drive Cover

Remove the reel drive cover to service the reel drive components.

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.

DANGER

Ensure that all bystanders have cleared the area.

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

Single-reel drive

4. Support reel drive cover (A), and rotate spring latch (B) up and over the back plate.

5. Slide the reel drive cover down to unlatch it from two tabs (C). Remove reel drive cover (A).

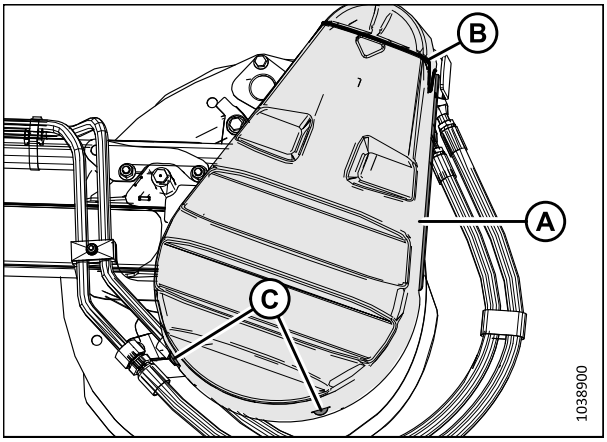


Figure 10.20: Drive Cover

Double-reel drive

6. Rotate spring latch (A) up and over the back plate.

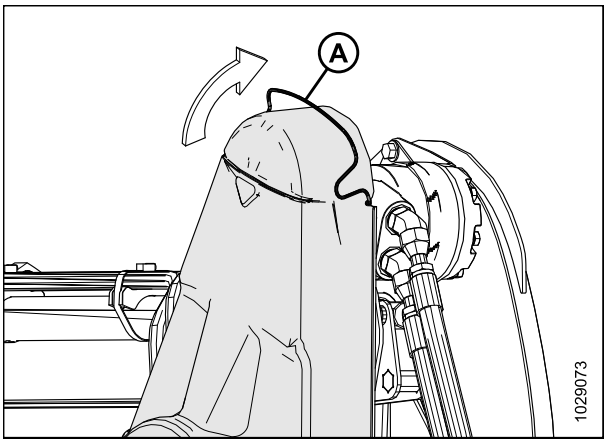


Figure 10.21: Upper Drive Cover

7. Unclip upper cover (A) from the lower cover at locations (B), and remove the upper cover. Keep the two clips engaged on the lower cover.

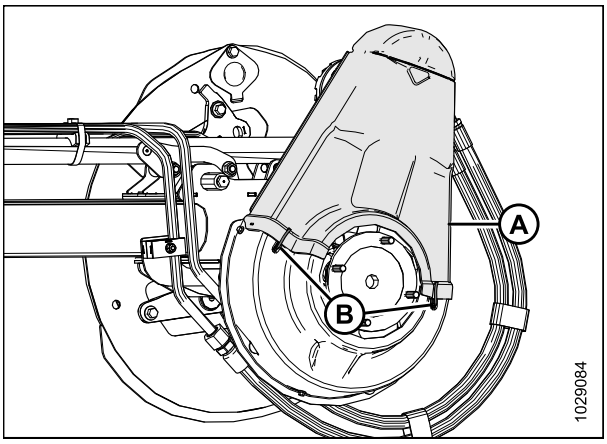


Figure 10.22: Upper Drive Cover

10.5 Installing Reel Drive Cover

The reel drive cover protects the drive components from weather and debris. Do **NOT** operate the header without the reel drive cover.

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.

Single-reel drive

2. Align the slot in the bottom of reel drive cover (A) to tabs (C) on the reel drive back plate support, and slide the reel drive up.

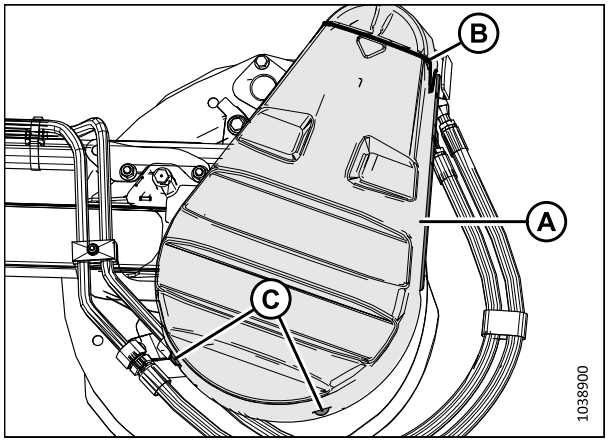


Figure 10.23: Drive Cover

3. Rotate spring latch (A) down to secure the upper cover to the reel drive. Ensure that V-shaped loop (C) points down, and the spring end remains inserted into back plate hole (B) on both sides of the reel drive.

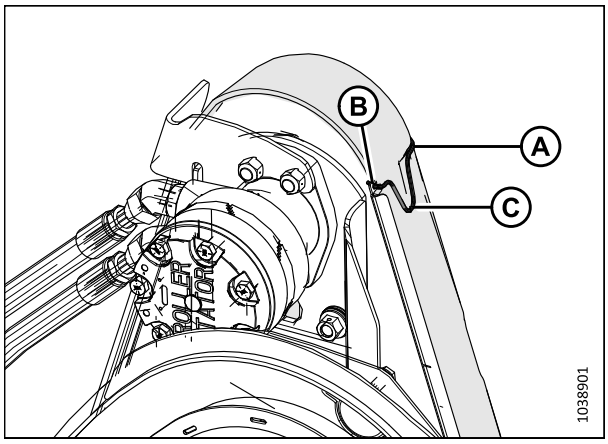


Figure 10.24: Reel Drive

Double-reel drive

4. Position upper cover (A) on the reel drive.
5. Secure the cover with two clips (B) on the lower cover.

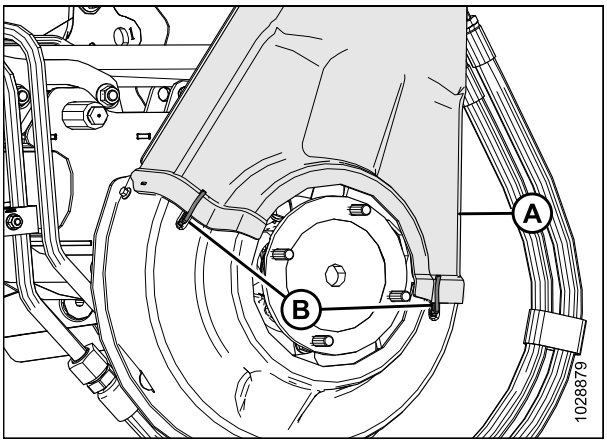


Figure 10.25: Upper Drive Cover

6. Rotate spring latch (A) down to secure the upper cover to the reel drive. Ensure that V-shaped loop (C) points down, and the spring end remains inserted into back plate hole (B) on both sides of the reel drive.

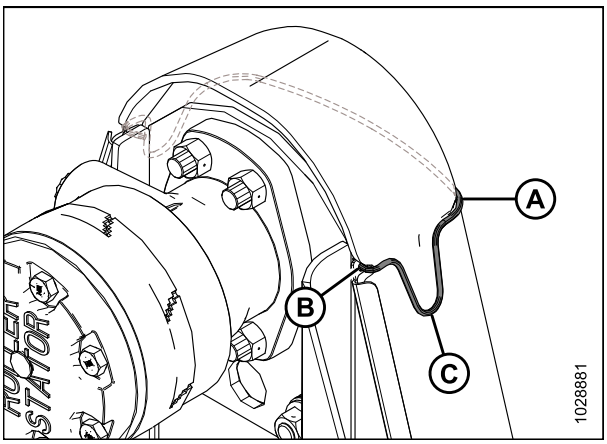


Figure 10.26: Reel Drive

10.6 Leveling Header

The float module is set at the factory to provide the proper level for the header and should not normally require adjustment. However, if adjustment is required, a procedure for doing so is provided.

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.

Before attempting to level the header, ensure the following:

- Ensure that the combine's tires are inflated to the correct pressure.
- Ensure that the combine's feeder house is level. For instructions, refer to the combine operator's manual.
- Ensure that the top of the float module is level and is parallel with the combine's feeder house by checking the spirit level on the float module.

IMPORTANT:

The float springs are **NOT** used to level the header.

If the header still is not level, perform the following steps:

1. Park the combine on a level surface.
2. Inspect the header to determine which side is too high, and which side is too low.
3. Shut down the engine, and remove the key from the ignition.
4. Check the float, and adjust it if necessary. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.
5. Disengage both of the header float locks by pulling float lock handle (A) away from the float module and push the float lock handle down and into position (B) (UNLOCK).

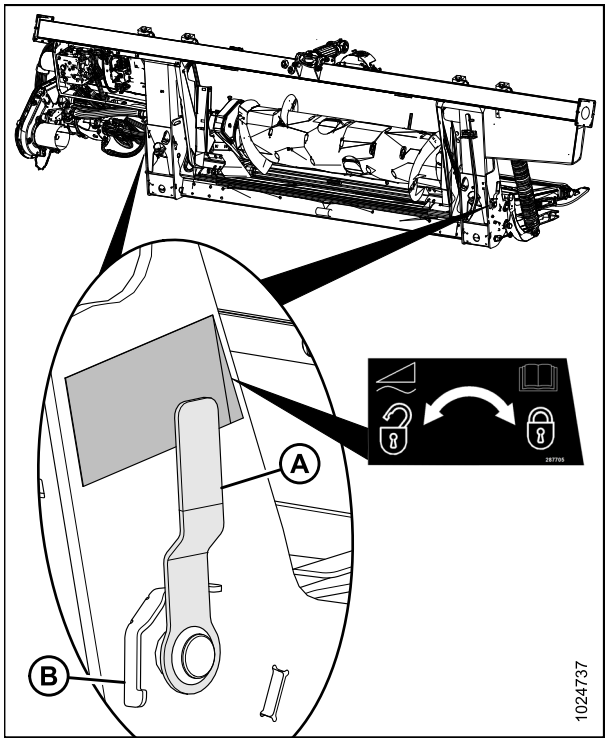


Figure 10.27: Header Float Lock in Locked Position

6. On the high side of the header, make one small (1/4–1/2 turn) counterclockwise adjustment to nut (A). Do **NOT** make any further adjustments to the float lock nut on this side of the header yet.

   IMPORTANT:

   Adjusting nut (A) more than two turns in either direction may adversely affect the header float.

   NOTE:

   Turning the float lock nut clockwise raises that side of the header; turning it counterclockwise lowers that side of the header.

   NOTE:

   Set screw (B) does not require loosening for adjustments of up to one-half turn of nut (A).

7. Make the same adjustment to the float lock nut on the low side of the header in the counterclockwise direction. For example, if an adjustment of 1/4 turn counterclockwise was made on the high side of the header, make an adjustment of 1/4 turn clockwise on the low side of the header.

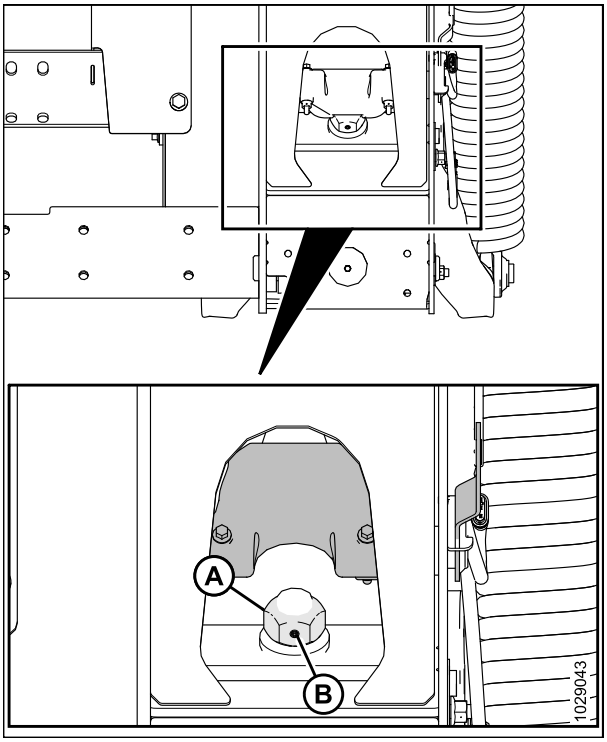


Figure 10.28: Float Lock – Right

8. Reset the float indicator to zero by loosening bolt (A) and sliding float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

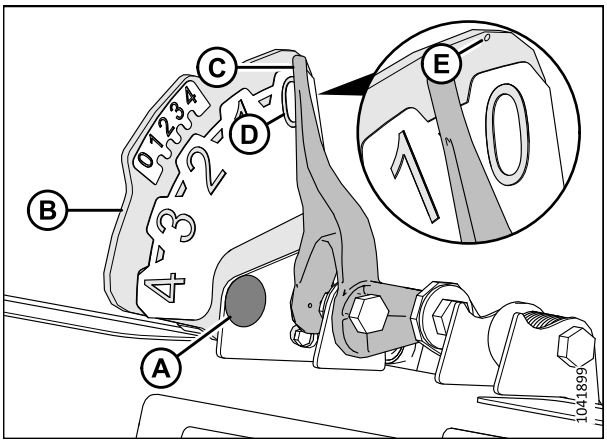


Figure 10.29: Float Indicator

9. Ensure that there is a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.
10. Check the float after leveling the header. For instructions, refer to *7.5 Checking and Adjusting Header Float, page 256*.

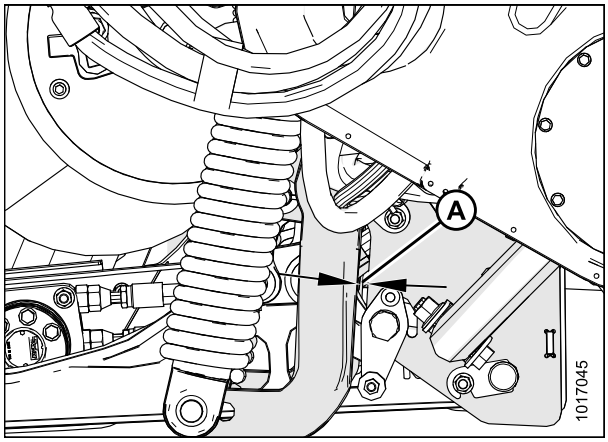


Figure 10.30: Bell Crank

10.7 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.

10.7.1 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 10.2 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

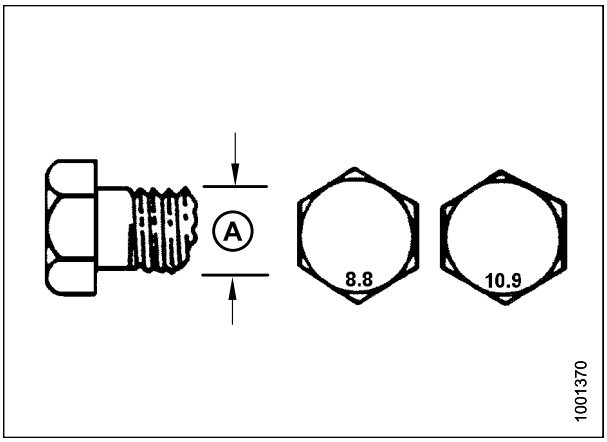


Figure 10.31: Bolt Grades

Table 10.3 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

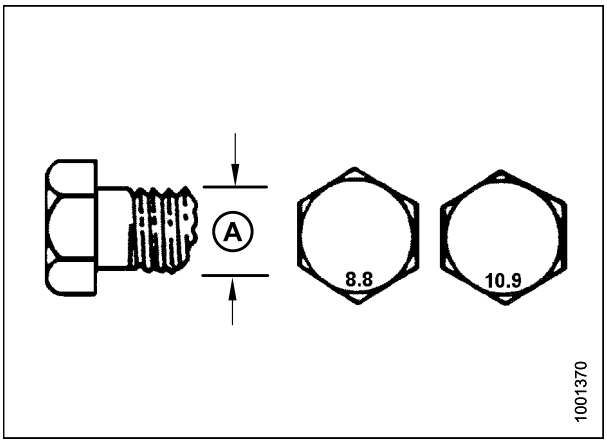


Figure 10.32: Bolt Grades

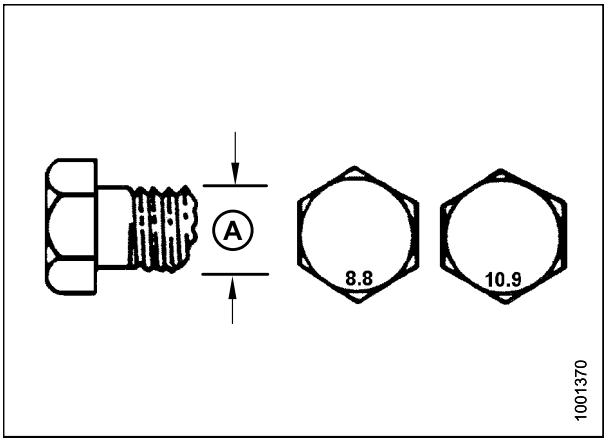


Figure 10.33: Bolt Grades

Table 10.4 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

Table 10.5 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

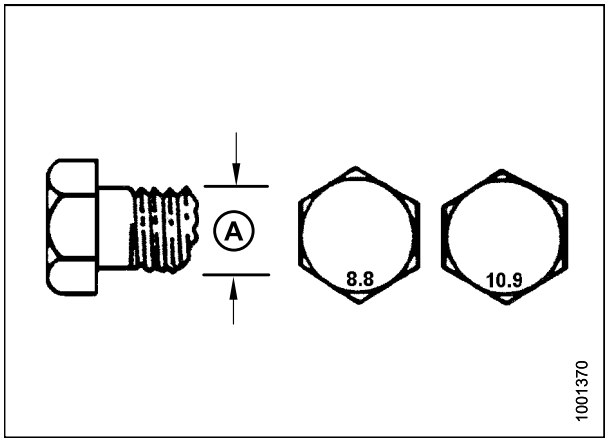


Figure 10.34: Bolt Grades

10.7.2 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 10.6 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	–	–	–	–

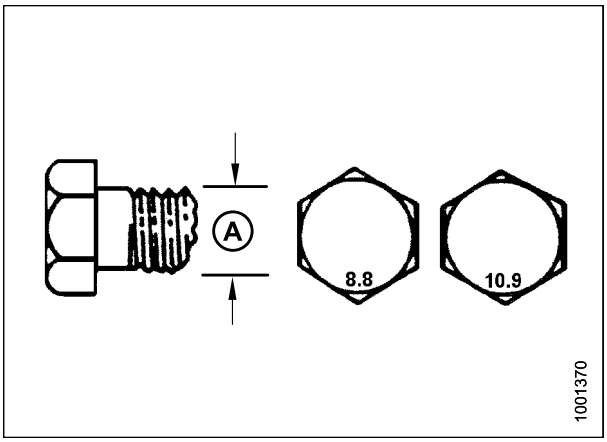


Figure 10.35: Bolt Grades

10.7.3 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).

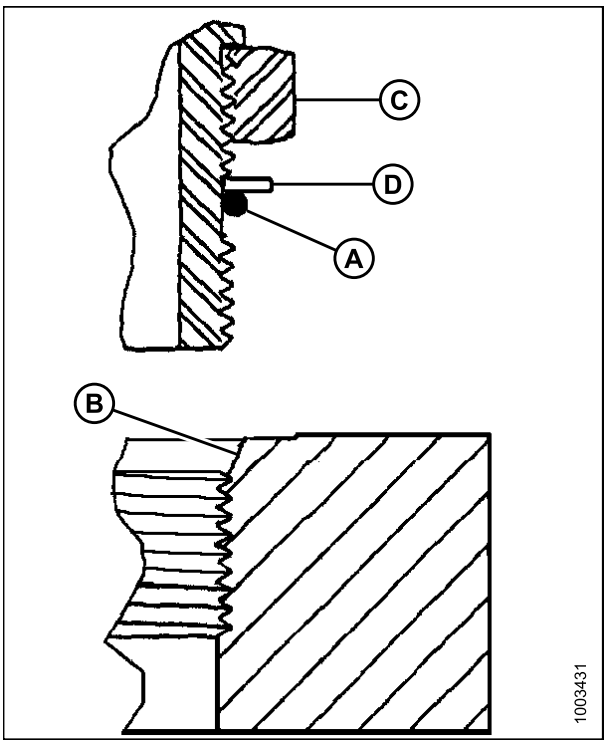


Figure 10.36: Hydraulic Fitting

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.

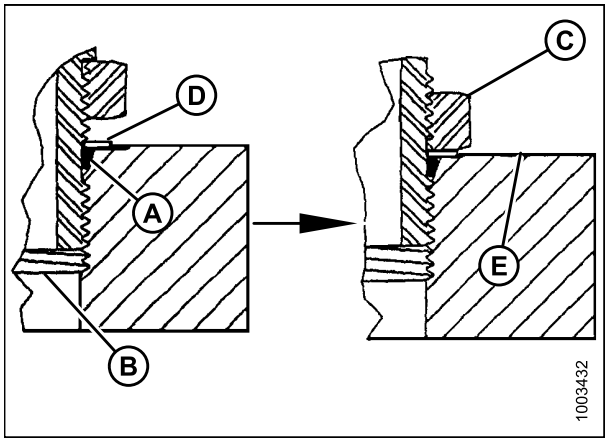


Figure 10.37: Hydraulic Fitting

Table 10.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[31]	
		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

31. Torque values shown are based on lubricated connections as in reassembly.

10.7.4 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 *10.8, page 311*.
6. Verify the final condition of the fitting.

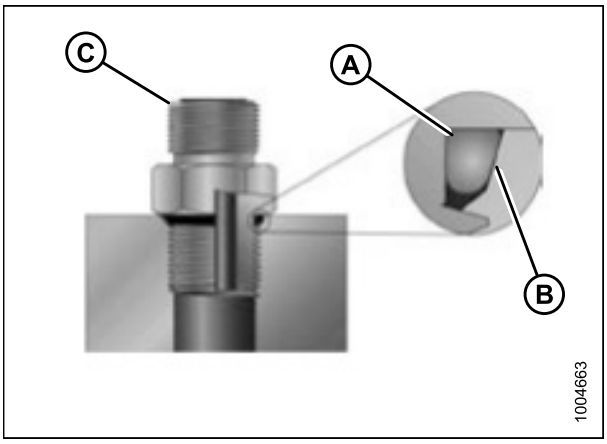


Figure 10.38: Hydraulic Fitting

Table 10.8 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[32]	
		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

10.7.5 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 *10.9, page 312*.

32. Torque values shown are based on lubricated connections as in reassembly.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

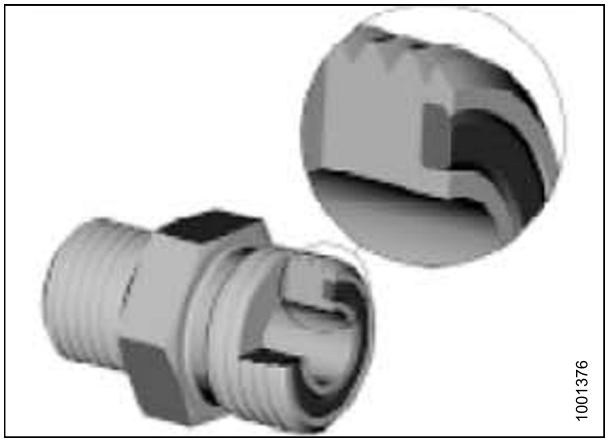


Figure 10.39: Hydraulic Fitting

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 *10.9, page 312*.

   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).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

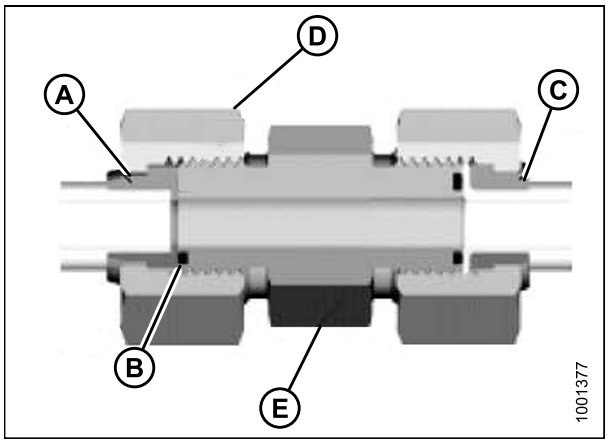


Figure 10.40: Hydraulic Fitting

Table 10.9 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[33]	
			Nm	lbf·ft
-3	Note[34]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[34]	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[34]	7/8	–	–
-16	1 7/16	1	150–165	111–122

33. Torque values and angles shown are based on lubricated connection as in reassembly.
34. O-ring face seal type end not defined for this tube size.

Table 10.9 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[35]	
			Nm	lbf·ft
-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

10.7.6 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.
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 *10.10, page 313*. 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 10.10 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

35. Torque values and angles shown are based on lubricated connection as in reassembly.

10.8 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 10.11 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.

10.9 Definitions

The following terms, abbreviations, and acronyms are used in this instruction.

Table 10.12 Definitions

Term	Definition
AHHC	Automatic header height control
API	American Petroleum Institute
Bolt	A headed and externally threaded fastener designed to be paired with a nut
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 Header	MacDon D225, D230, D235, D241, and D245 rigid draper headers for combines
Export header	The header configuration typical outside North America
FFFT	Flats from finger tight

Table 10.12 Definitions (continued)

Term	Definition
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
FM200	The float module used with a D2 Series Draper Header for combining
FSI	Float setting indicator
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts crop and feeds it into an attached combine
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
IHS	Integrated hydraulic system
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for the original 37° flared fitting
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
PTO	Power take-off
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
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
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

Table 10.12 Definitions (continued)

Term	Definition
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

Predelivery Checklist

Use the predelivery checklist is used to confirm that all of the relevant assembly and testing procedures have been performed on the header before it is delivered to the customer.

Perform the checks listed in the table below before delivering the header to the Customer. Generally, adjustments to the header are not required after assembly is complete. If adjustments are required, refer to the relevant procedure specified in the table.

The completed checklist must be retained by either the Operator or the Dealer.

CAUTION

Carefully follow the instructions provided in this manual. Be alert for safety related messages that bring your attention to hazards and unsafe practices.

Header Serial Number: **Float Module Serial Number:**

D2 Series Draper Header Predelivery Checklist – North America

✓	Item	Reference
	Ensure that the header has no shipping damage or missing parts and that all of the shipping materials have been removed.	—
	Check for loose hardware. Tighten any loose hardware to the specified torque value.	*10.7 Torque Specifications, page 306*
	If the header is equipped with stabilizer wheels, check the tire pressure on the stabilizer wheels.	*6.1.1 Checking Tire Pressure – Option for D230 and D235, page 195*
	If the header is equipped with stabilizer wheels, check the torque of the stabilizer wheel bolts.	*6.1.2 Checking Transport Wheel Bolt Torque – Option for D230 and D235, page 196*
	Check the lubricant level in the knife drive box.	*6.1.3 Checking Oil Level in Knife Drive Box, page 196*
	Check the lubricant level in the float module's main drive gearbox.	*6.1.4 Checking Oil Level in Header Drive Main Gearbox, page 196*
	Check the lubricant level in the hydraulic reservoir before and after running up the header.	*6.1.6 Checking Oil Level in Hydraulic Reservoir, page 198*
	Ensure that the reel is centered between the header endsheets.	*6.1.10 Checking and Adjusting Reel-to-Endsheet Clearance, page 214*
	Grease all the bearings and the drivelines.	*6.1.14 Lubricating Header, page 223*
	Check the tension on the side drapers.	*6.1.8 Checking and Adjusting Side Draper Tension, page 209*
	Check the draper seal.	*6.1.9 Checking and Adjusting Draper Seal, page 211*
	Check, and if necessary adjust, the header in the following order:	
	1. Prepare the header for checks and adjustments. Perform initial inspections.	*7.1 Setup and Pre-Inspection, page 239*
	2. Check the clearance between the float spring lever and the frame.	*7.2 Setting Float Spring Lever to Frame Clearance, page 241*
	3. Ensure that the float indicator is set to zero, then check, and if necessary adjust, the header height sensor voltage.	*7.3 Zeroing Float Indicator and Checking Header Height Sensor Voltage Range, page 243*

D2 Series Draper Header Predelivery Checklist – North America

✓	Item	Reference
	4. Check, and if necessary adjust, the float spring configuration and installation location according to the weight of the header.	*7.4 Changing Float Spring Configuration and Installation Location, page 247*
	5. Check, and if necessary adjust, the header float.	*7.5 Checking and Adjusting Header Float, page 256*
	Remaining Tasks Prior to Run-up	
	Ensure that there is adequate clearance between the reel fingers and the cutterbar.	*6.1.11 Reel-to-Cutterbar Clearance, page 216*
	Ensure that there is adequate clearance between the auger and the feed pan.	*6.1.13 Checking Feed-Auger-to-Pan Clearance, page 221*
	Check the knife hold-downs.	
	Ensure that the skid shoes are properly adjusted and at a setting appropriate for the crop.	—
	Ensure that the feeder house variable speed is set to minimum.	—
	Ensure that the auto header height control (AHHC) system is calibrated and functioning correctly.	*8 Auto Header Height Control System, page 265*
Run-up procedure		*9 Running up Header, page 281*
	Ensure that the reel rotates in the correct direction.	—
	Ensure that the hydraulic hoses and wiring harness have sufficient slack when the header and reel are raised and lowered.	—
	Ensure that the reel lift cylinders can extend fully.	—
	Ensure that the reel moves fully fore and aft.	—
	Check the knife speed.	*9.2 Checking and Adjusting Knife Speed – Integrated Hydraulic System, page 284*
	Ensure that the side drapers track properly.	*9.3 Adjusting Side Draper Tracking, page 287*
Post run-up check. Stop the engine.		*9.4 Post Run-Up Adjustments, page 288*
	Ensure that the knife and reel drives do not have heated bearings.	*6.1.14 Lubricating Header, page 223*
	Check the knife sections for discoloration caused by misalignment of components. Adjust the hold-downs as required.	*9.4.1 Checking Knife Position, page 288*
	Ensure that the feed draper is properly tensioned.	*9.4.2 Checking and Adjusting Feed Draper Tension, page 289*
	Check for hydraulic leaks.	—
	Ensure that the header endshields can be fully opened and securely closed.	*10.3.2 Closing Header Endshields, page 297* *10.3.1 Opening Header Endshields, page 296*, if adjustment is required, refer to the headers technical manual.
	Ensure that the manual storage case contains the operator's manual, parts catalog, and quick card.	

Date Checked: **Checked by:**

Notes

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	—
		High-temperature extreme-pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear lubricant	SAE 85W-140	API service class GL-5	Knife drive box	1.5 liters (1.6 quarts)
			Main gearbox	2.75 liters (2.9 quarts)
			Completion gearbox	2.25 liters (2.4 quarts)
Hydraulic oil	Single grade trans-hydraulic oil. Viscosity at 60.1 cSt @ 40°C (104°F) Viscosity at 9.5 cSt @ 100°C (212°F) Recommended Brands: • Petro-Canada Duratran • John Deere Hy-Gard J20C • CNH Hy-Tran Ultraction • CNH Hy-Tran Multi-traction • AGCO Permatran 821 XL	Lubricant trans / hydraulic oil	Header drive systems reservoir	95 liters (25.1 US gallons)
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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