MacDon

D2 Series
Draper Header with FM200 Float Module

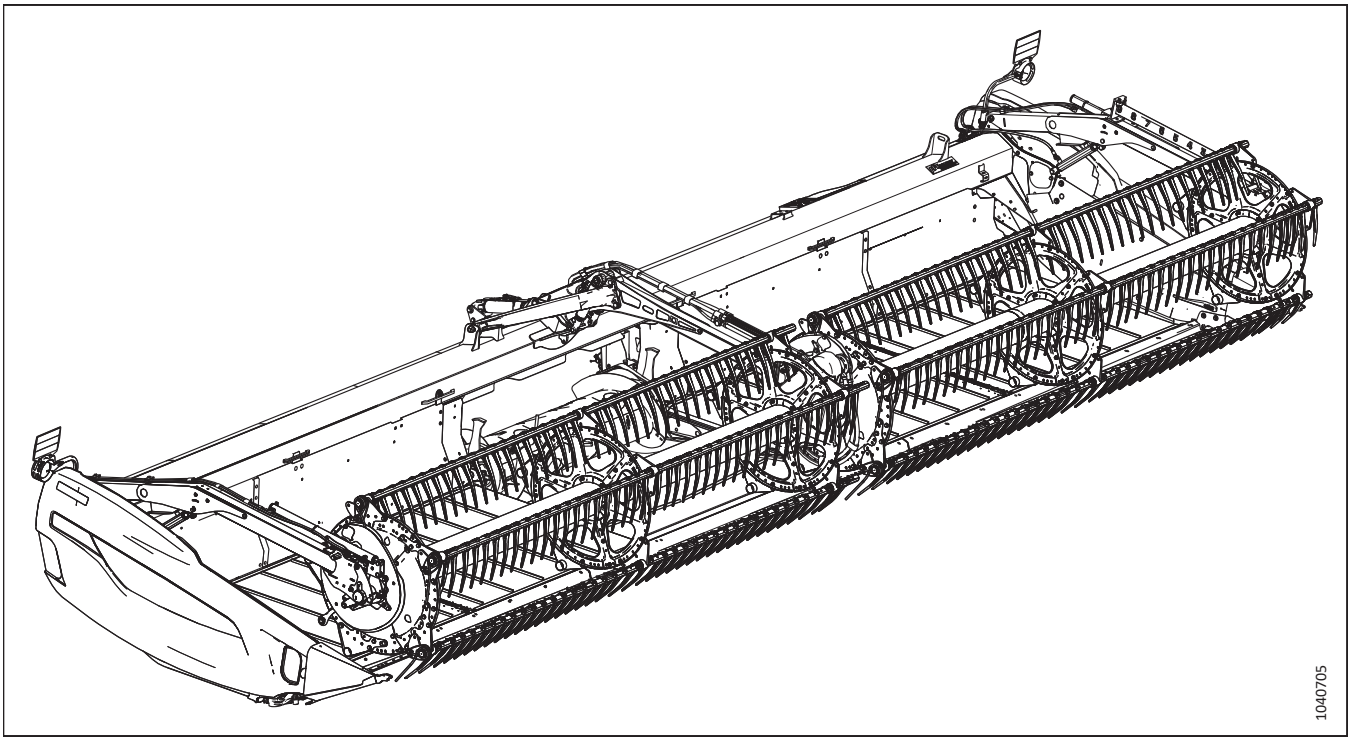
Unloading and Assembly Instructions (North America)

214831 Revision B

Original Instruction

The Harvesting Specialists.

D2 Series Draper Header



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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 English only.

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

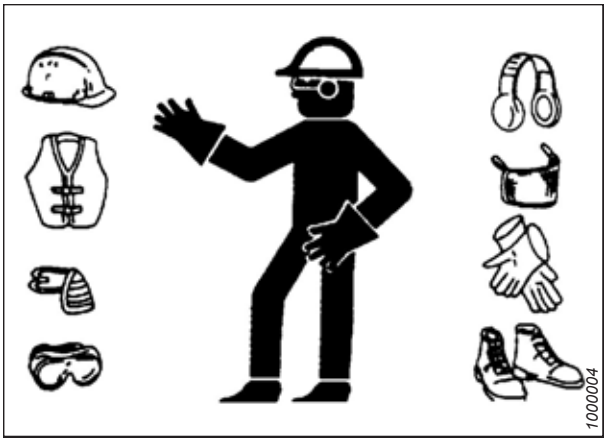


Figure 1.2: Safety Equipment

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.

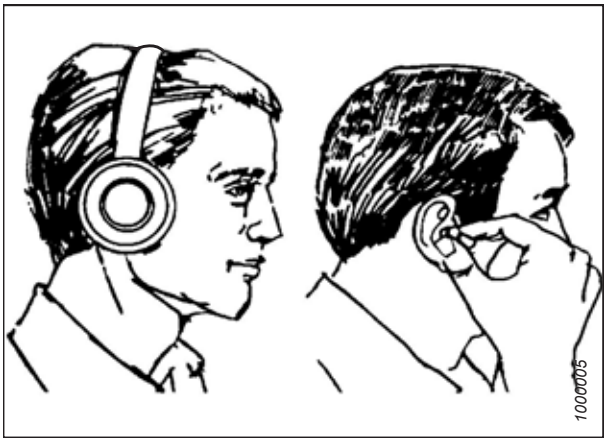


Figure 1.3: Safety Equipment

- 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.

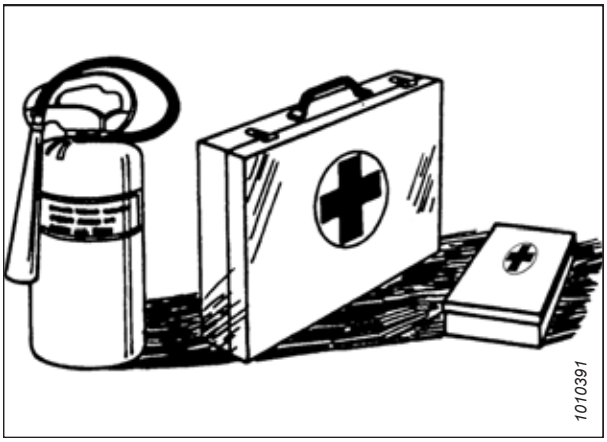


Figure 1.4: Safety Equipment

- 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.

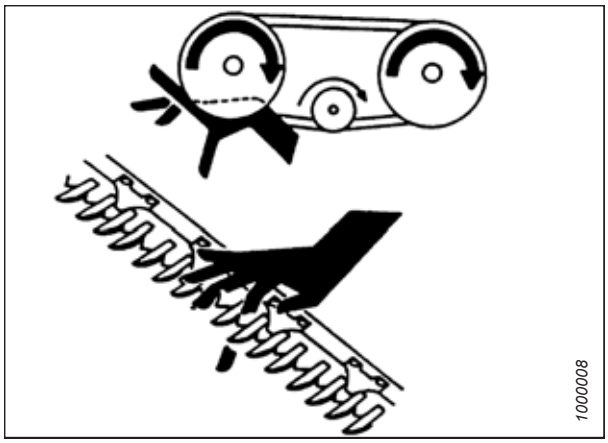


Figure 1.6: Safety around Equipment

- 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. The proper safety procedures must be followed when inspecting for hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in Neutral before leaving the operator's seat.
- Ensure that all 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.

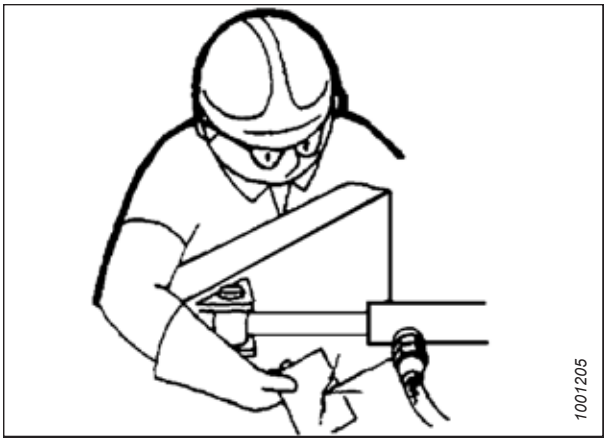


Figure 1.8: Testing for Hydraulic Leaks

- 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 injured by a concentrated, high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or 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.

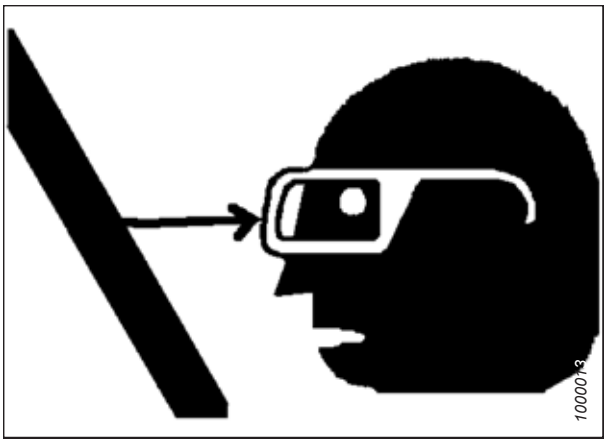


Figure 1.10: Safety around Equipment

1.5 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.

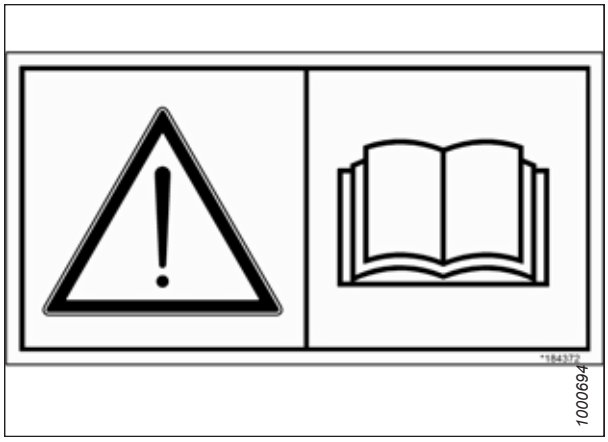


Figure 1.11: Operator's Manual Decal

Chapter 2: Unloading Header

Unload all header parts before beginning assembly. 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 header must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

NOTE:

When a header and float module are ordered together, they are shipped with the float module already installed in the header.

To determine the equipment needed to handle the header, refer to the relevant tables below:

- For the header weight specifications, refer to Table *2.1, page 7*.
- For the float module weight specifications, refer to Table *2.2, page 7*.
- For the dimensions of fully assembled headers attached to shipping stands, refer to Table *2.3, page 8*.

Table 2.1 Header Weight

IMPORTANT:

These are approximate weights for a **SINGLE HEADER** that include the bare header and shipping stands. When additional optional kits are installed, the weight will increase. To get the total weight of the float module and header, add the weights together.

Header Model	Weight
D225	2120 kg. (4672 lb.)
D230	2484 kg. (5475 lb.)
D235	2706 kg. (5963 lb.)

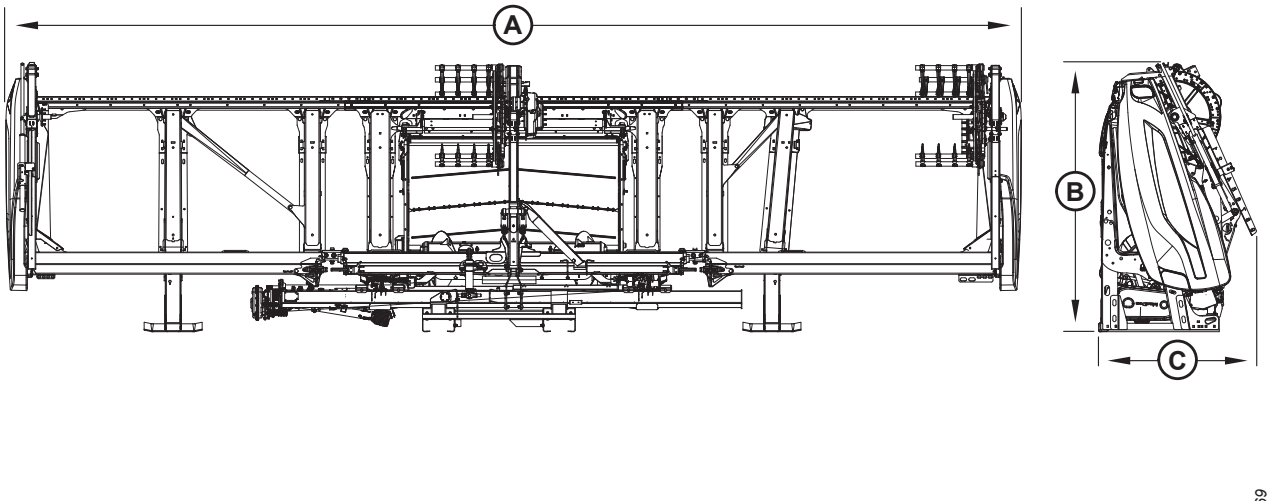
Table 2.2 Weight of FM200 Float Module with Driveline

IMPORTANT:

This is the approximate weight of the heaviest configuration of float module with a driveline. To get the total weight of the float module and header, add the weights together.

Component	Weight
Float module with driveline	1171 kg (2581 lb.)

Table 2.3 Header Dimensions – Fully Assembled and Attached to Shipping Stands



IMPORTANT:

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

Header Model	Dimensions		
	A	B	C
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.)		

2.2 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 header must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or 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 7*.

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.

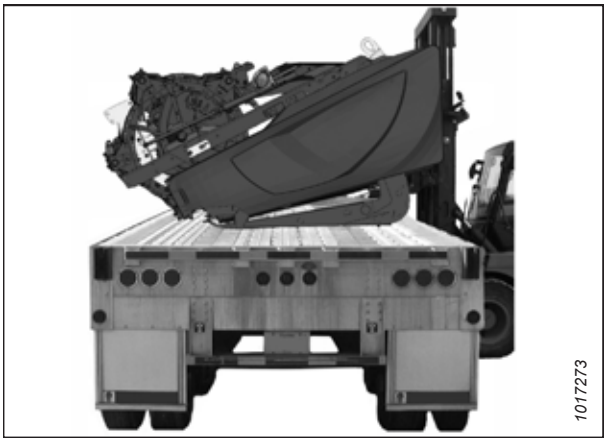


Figure 2.1: Header on Flat Deck

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.

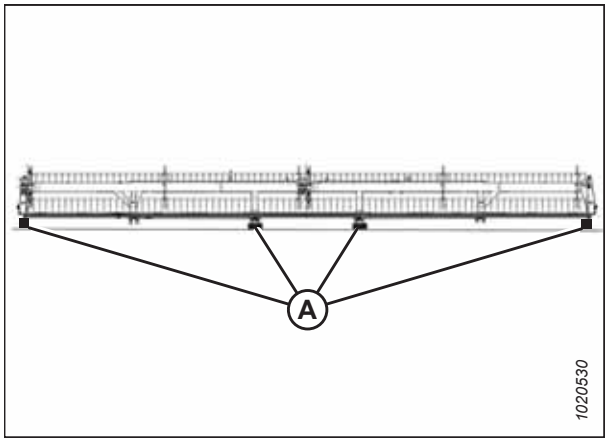


Figure 2.2: Blocks at Each End of Cutterbar

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 header must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

IMPORTANT:

For the minimum lifting equipment requirements, refer to *2.1 Header Specifications for Unloading and Assembly, page 7*.

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.

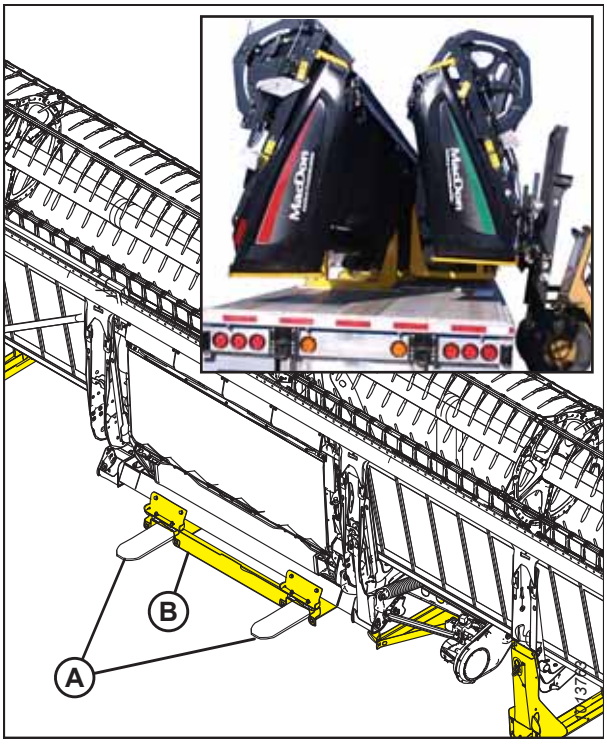


Figure 2.3: Header Shipping Supports

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.

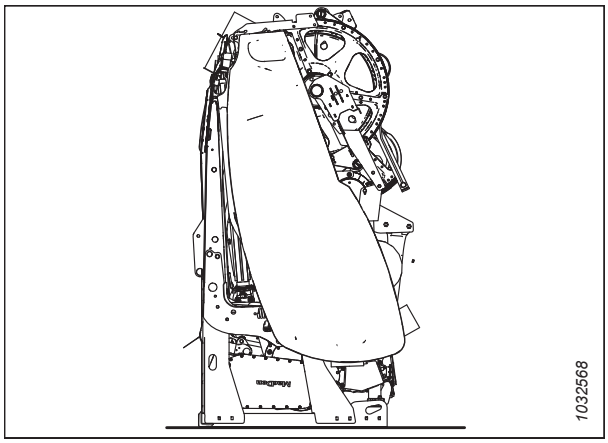


Figure 2.4: Header on Level Ground

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 an upper cross auger (UCA), proceed to *2.5 Removing Parts from Shipping Location, page 14*.

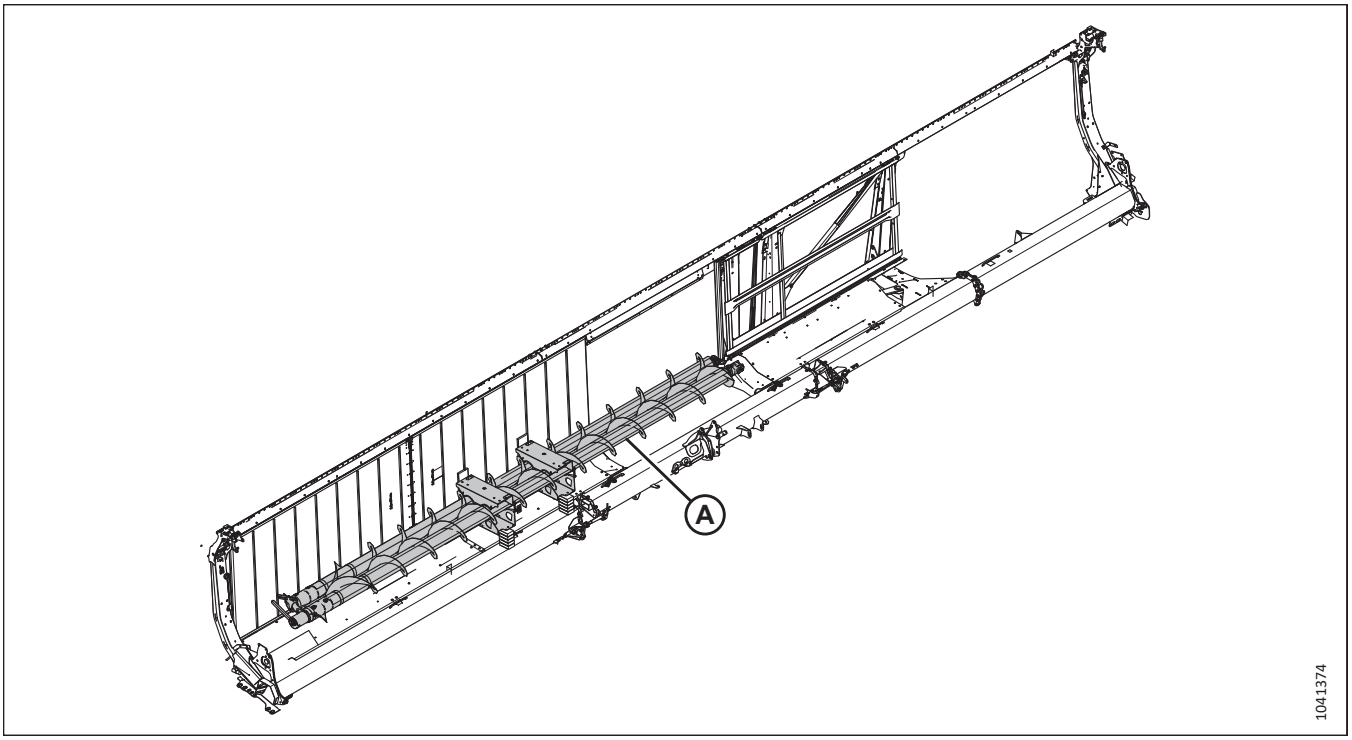


Figure 2.5: Double-Reel Header with Two-Piece Upper Cross Auger (UCA)

1. Remove any banding and blocks securing UCA (A) to the header.

   IMPORTANT:

   When positioning a forklift or lifting device use the pockets on the UCA shipping bracket to avoid damaging the attached aluminum deflectors.

2. Set the UCA aside.

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).

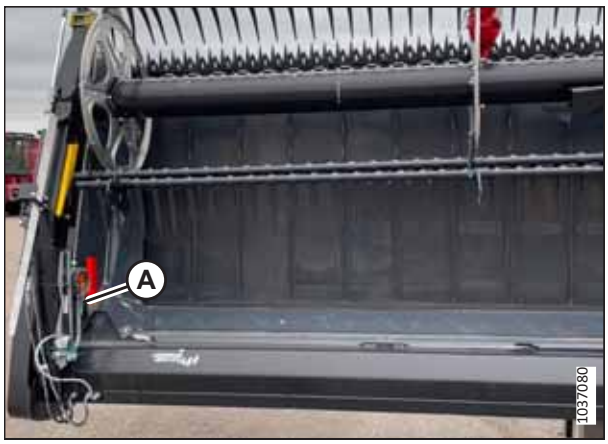


Figure 2.6: Parts Secured to Header

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

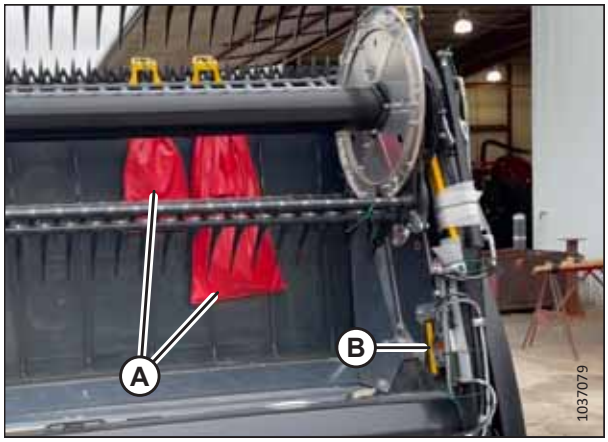


Figure 2.7: Parts Bags Secured to Draper Deck

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.

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

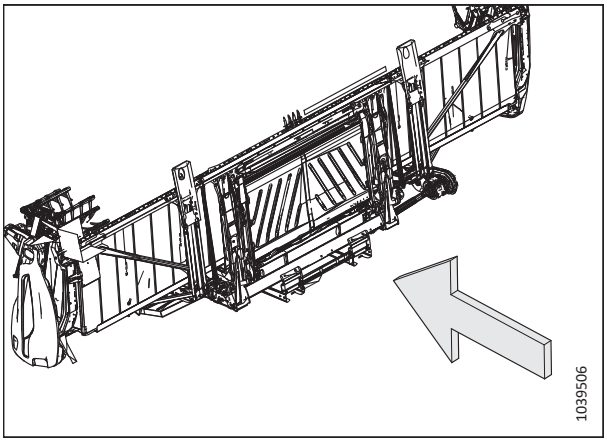


Figure 2.8: Underside of Header – Approach Angle

2. Retrieve two chains. Attach one end of each chain to one of the shipping feet (A). Secure the other end of each chain (B) to the fork of a forklift.

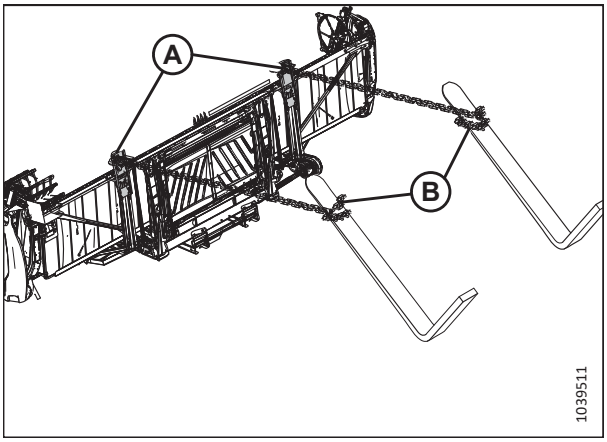


Figure 2.9: Chain Attachment Points

3. Position the forklift forks over the header's cutterbar. Ensure that the distance between the end of the forks and the shipping feet on the header is as short as possible.

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

   IMPORTANT:

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

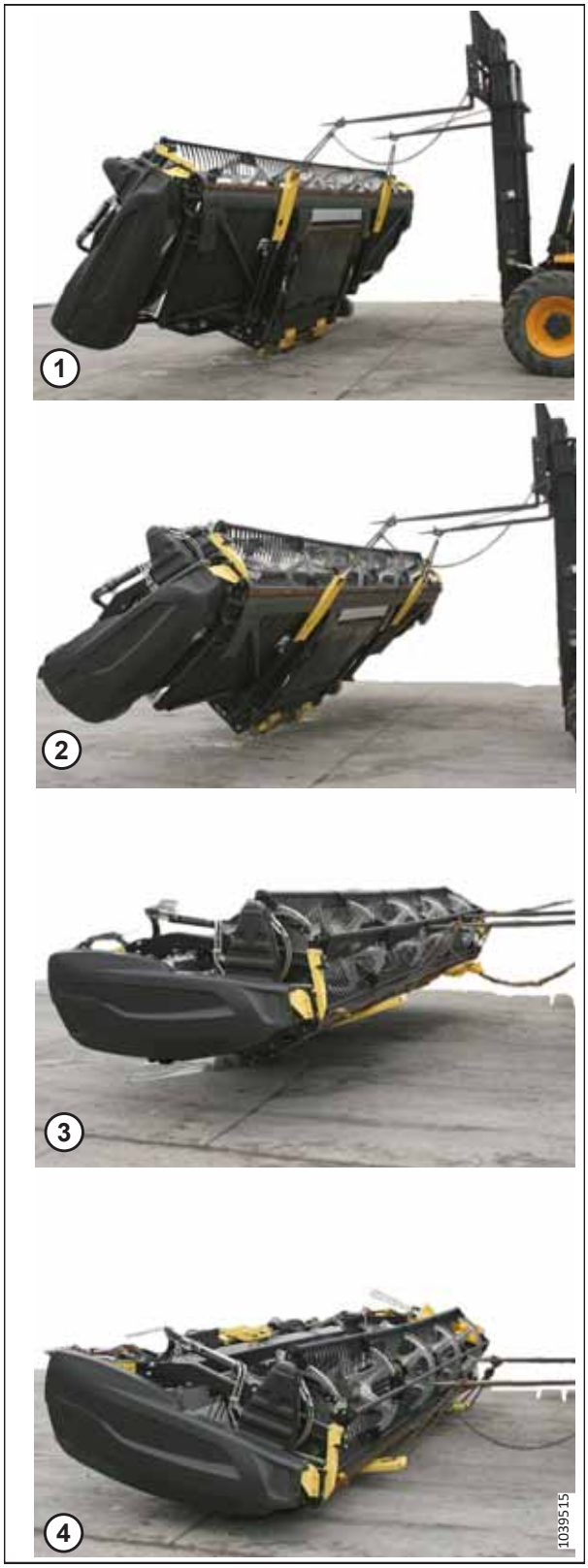


Figure 2.10: Lowering Header to the Ground

5. 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.
6. Lower the header onto the blocks.
7. Remove the chains from the header.

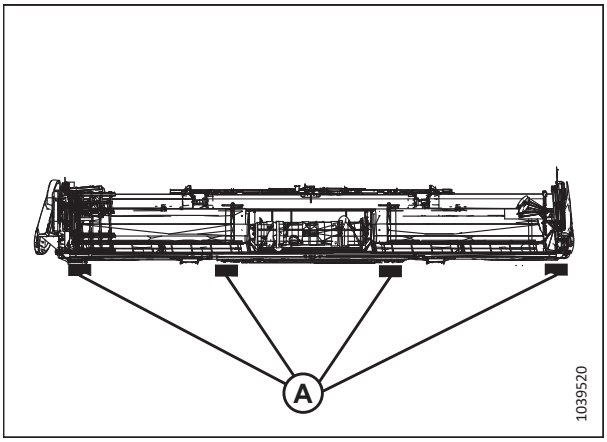


Figure 2.11: Blocks Positioned under Header

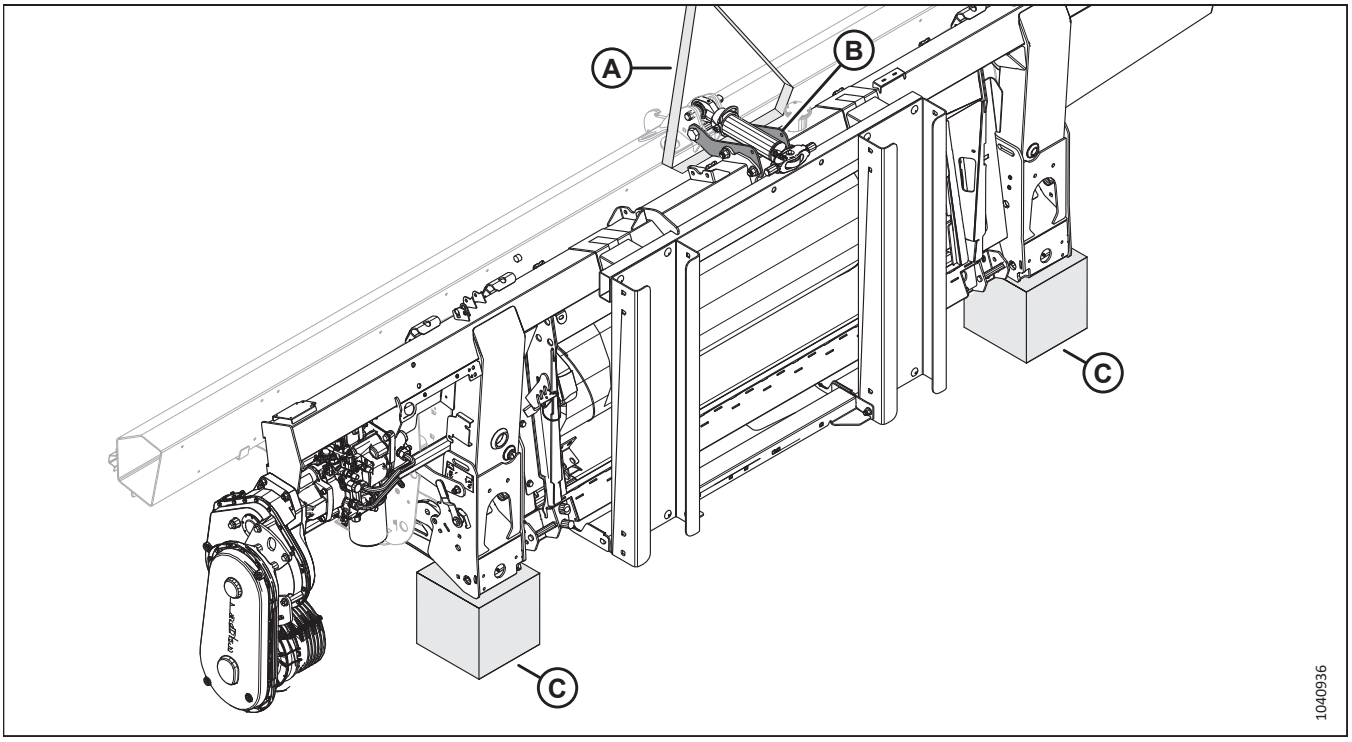


Figure 2.12: Blocks Positioned under Float Module

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 chain 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 header must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

For the minimum lifting equipment requirements, refer to *2.1 Header Specifications for Unloading and Assembly, page 7*.

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

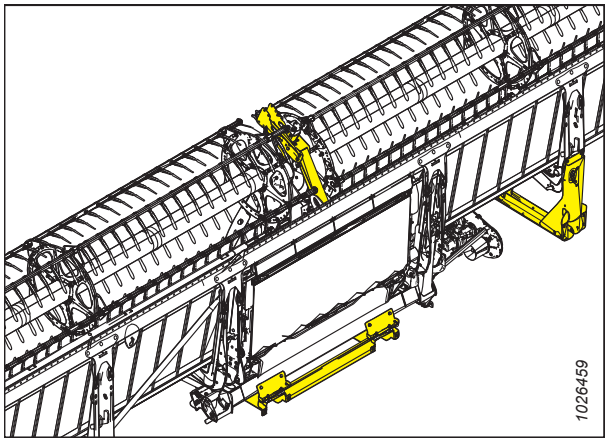


Figure 2.13: Underside of Header

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

DANGER

Ensure that no bystanders are present when the header is lowered.

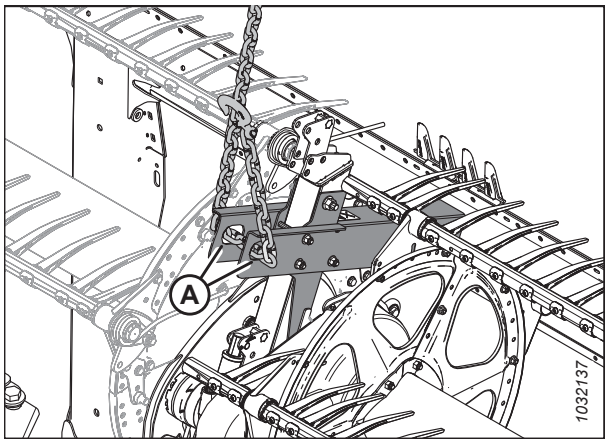


Figure 2.14: Chain Attachment Location – Double Reel

3. Place 254 mm (10 in.) blocks (A) under each end of the header, and one on each side of the float module.

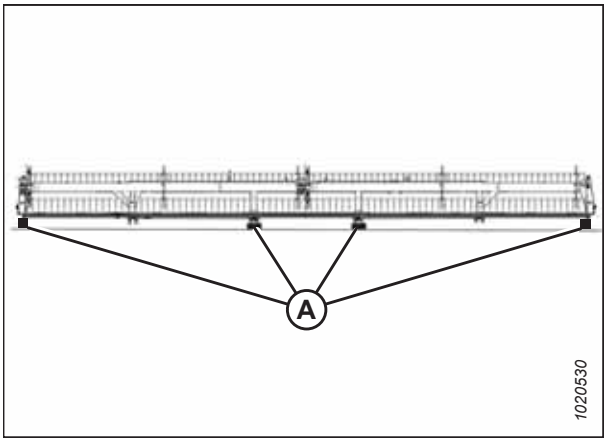


Figure 2.15: Blocks at Each End of Cutterbar

4. Back up **SLOWLY** while lowering the forks until the header rests on the blocks.

Figure 2.16: Header Lowered to Field Position

5. Remove the chain from both shipping supports.

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

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

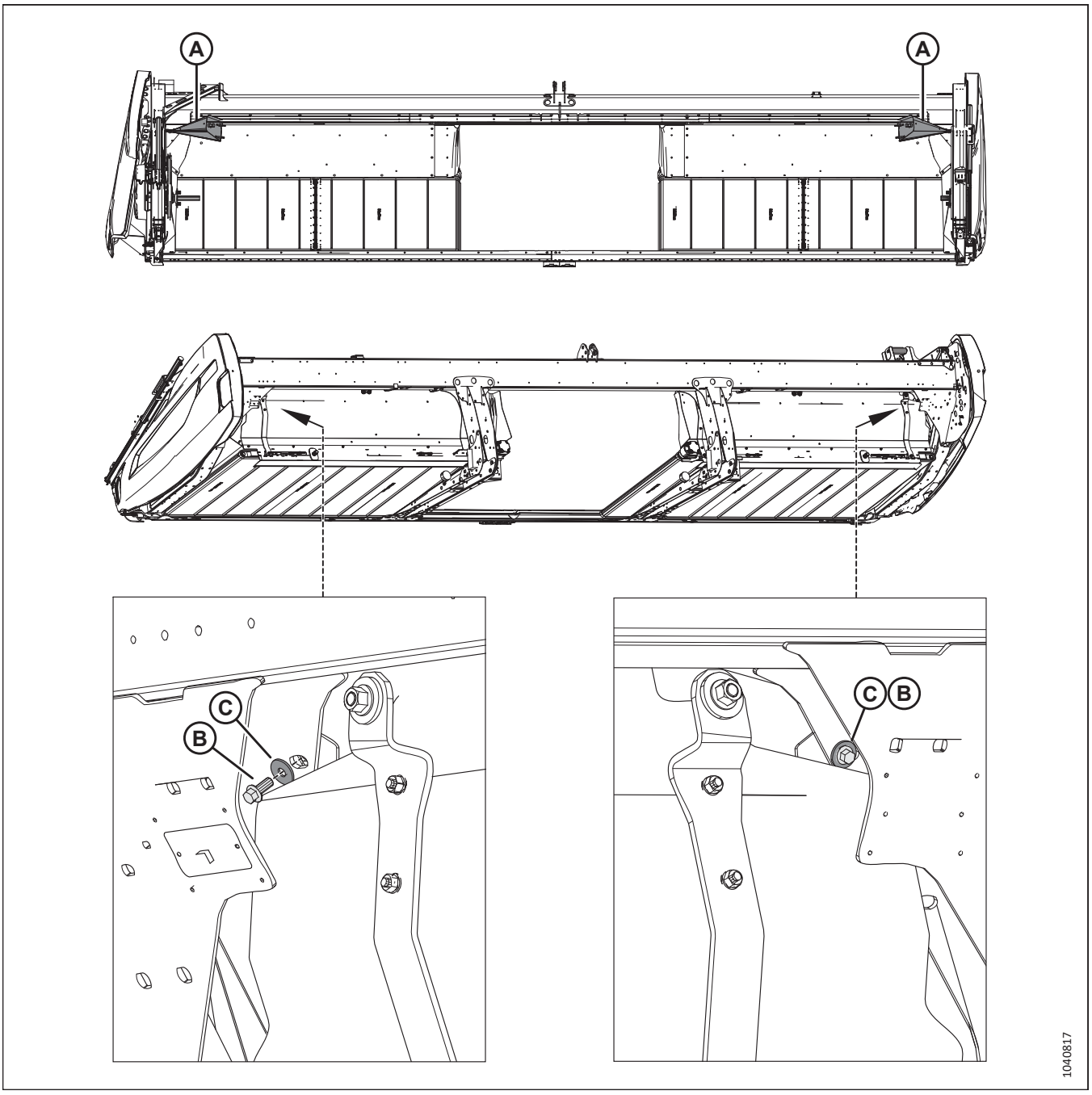


Figure 2.17: Crop Dividers Shipping Location

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.

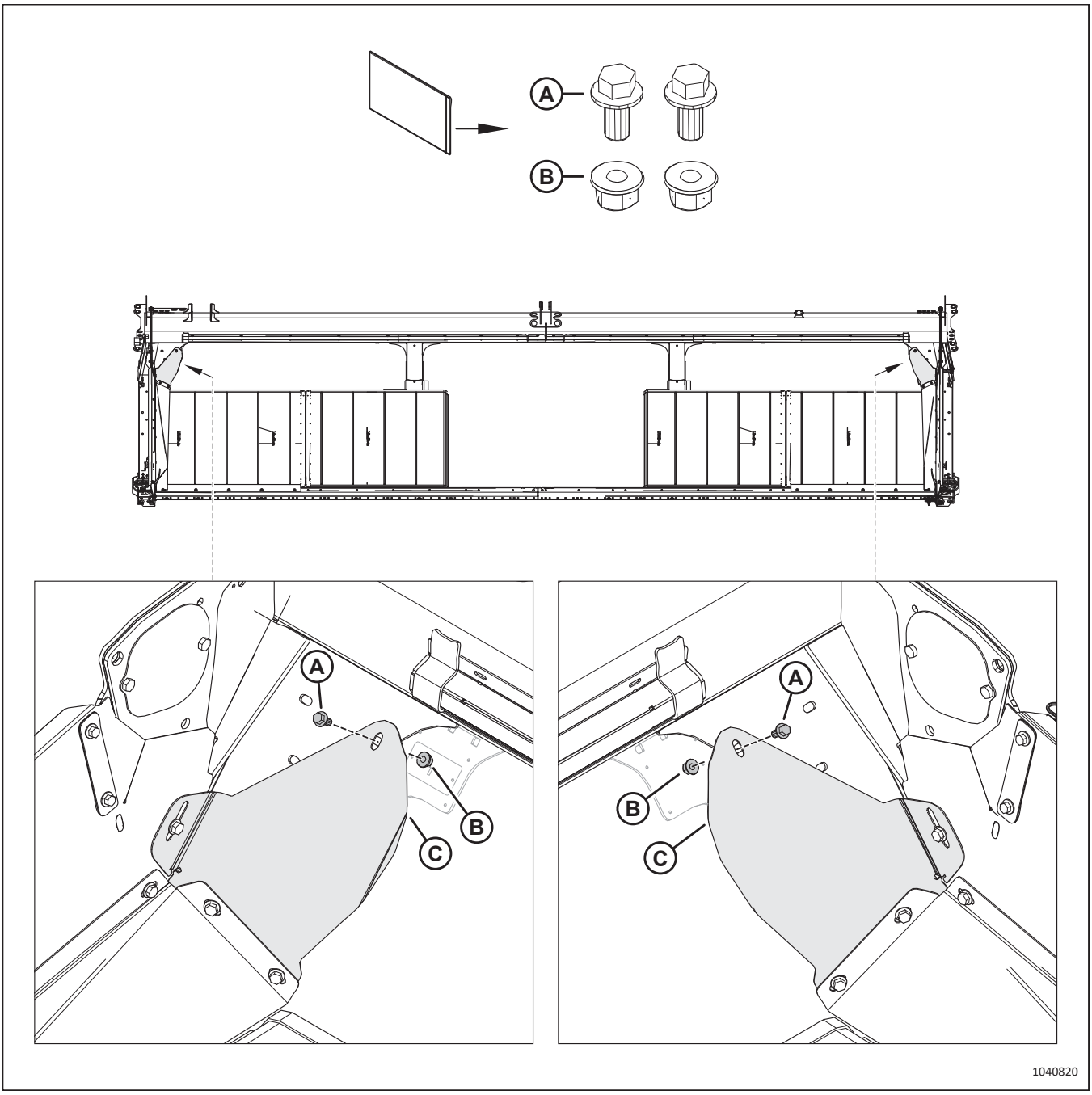


Figure 2.18: Deflector Hardware Installation

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

2.9 Removing Crop Dividers From Shipping Position – D230 and D235

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

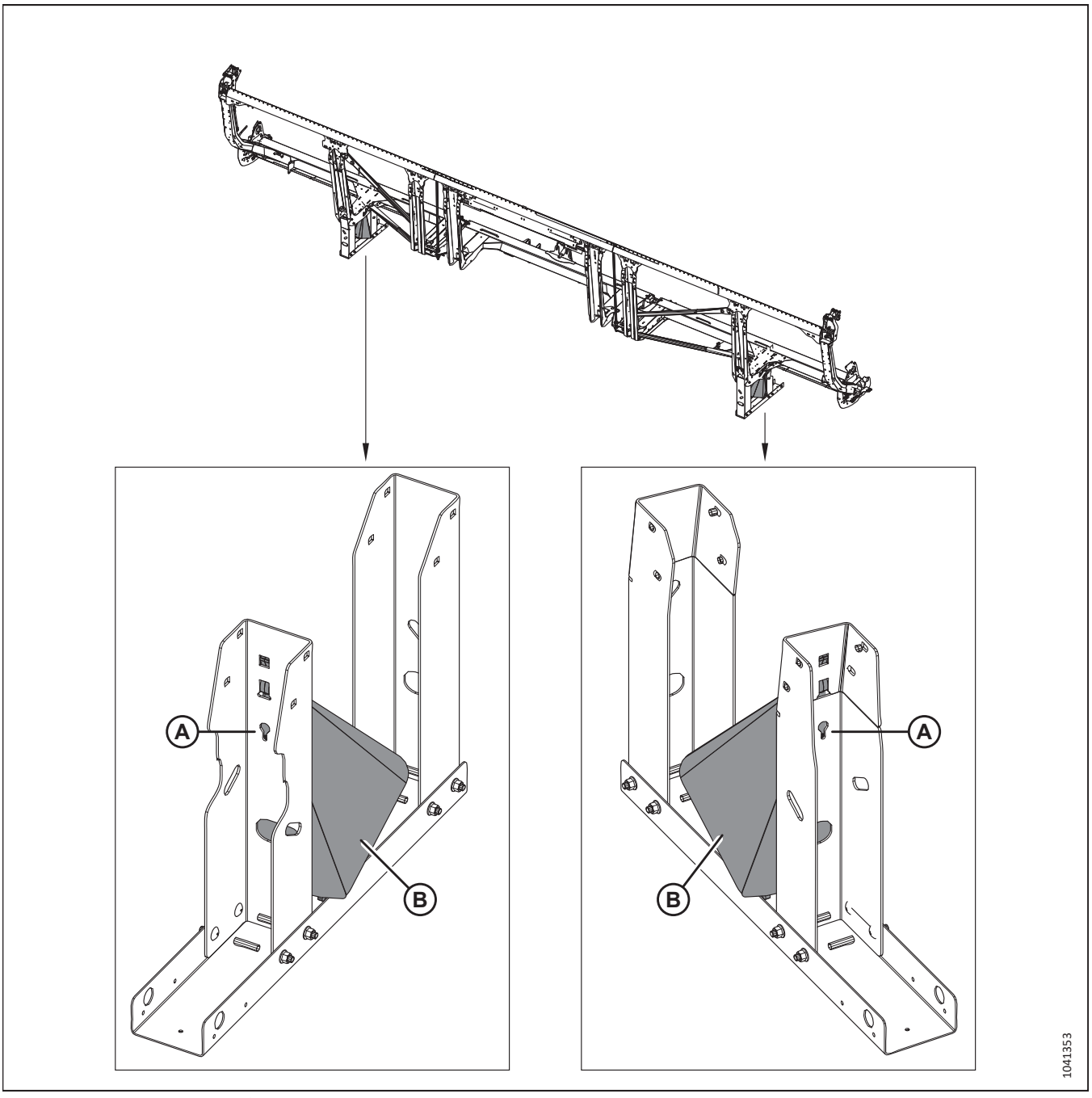


Figure 2.19: Crop Dividers Shipping Location

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.

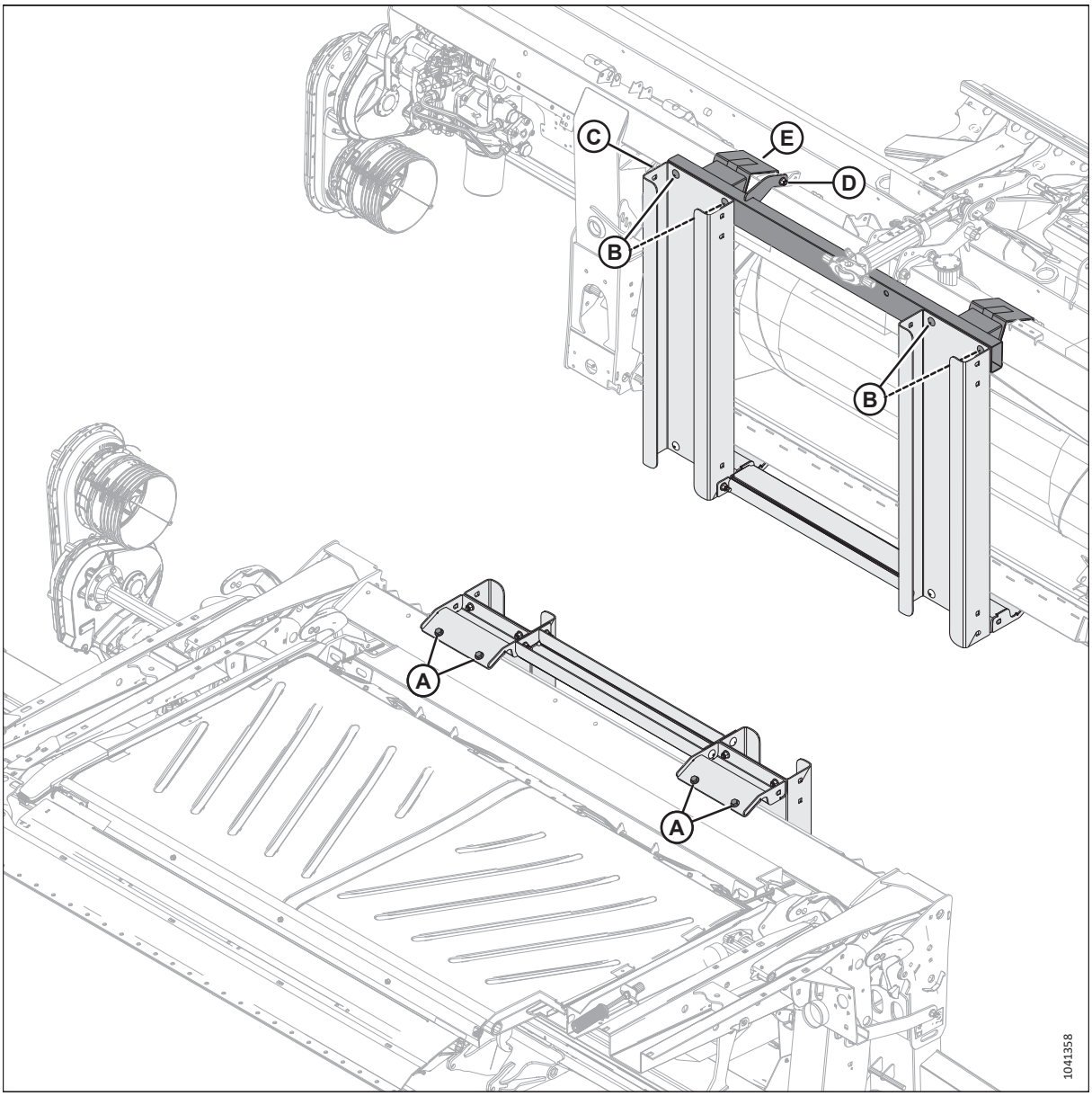


Figure 2.20: Shipping Stands

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 15*.

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.

4. Repeat the previous step to remove the shipping tag from the opposite deck.

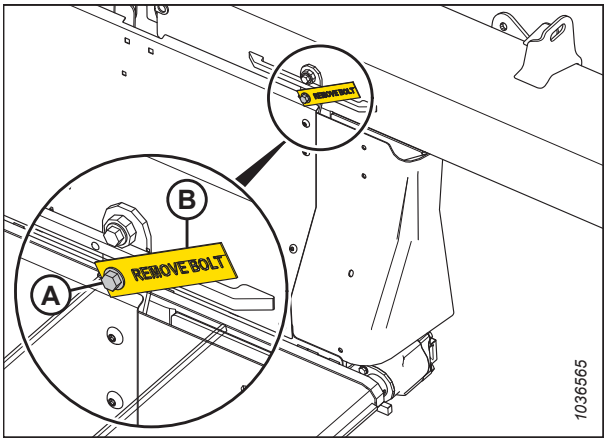


Figure 2.21: Deck Support Shipping Bolt

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

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

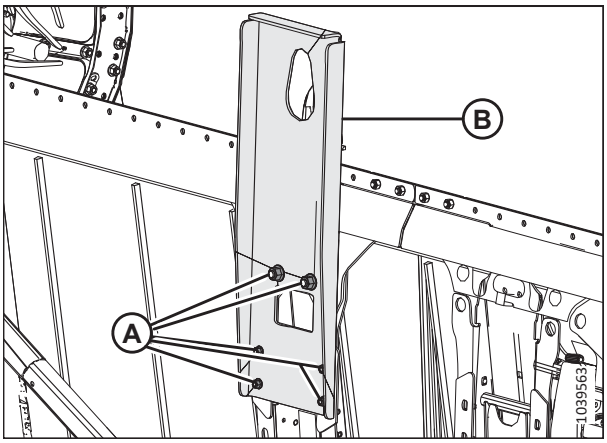


Figure 2.22: Right Shipping Foot – View from Below

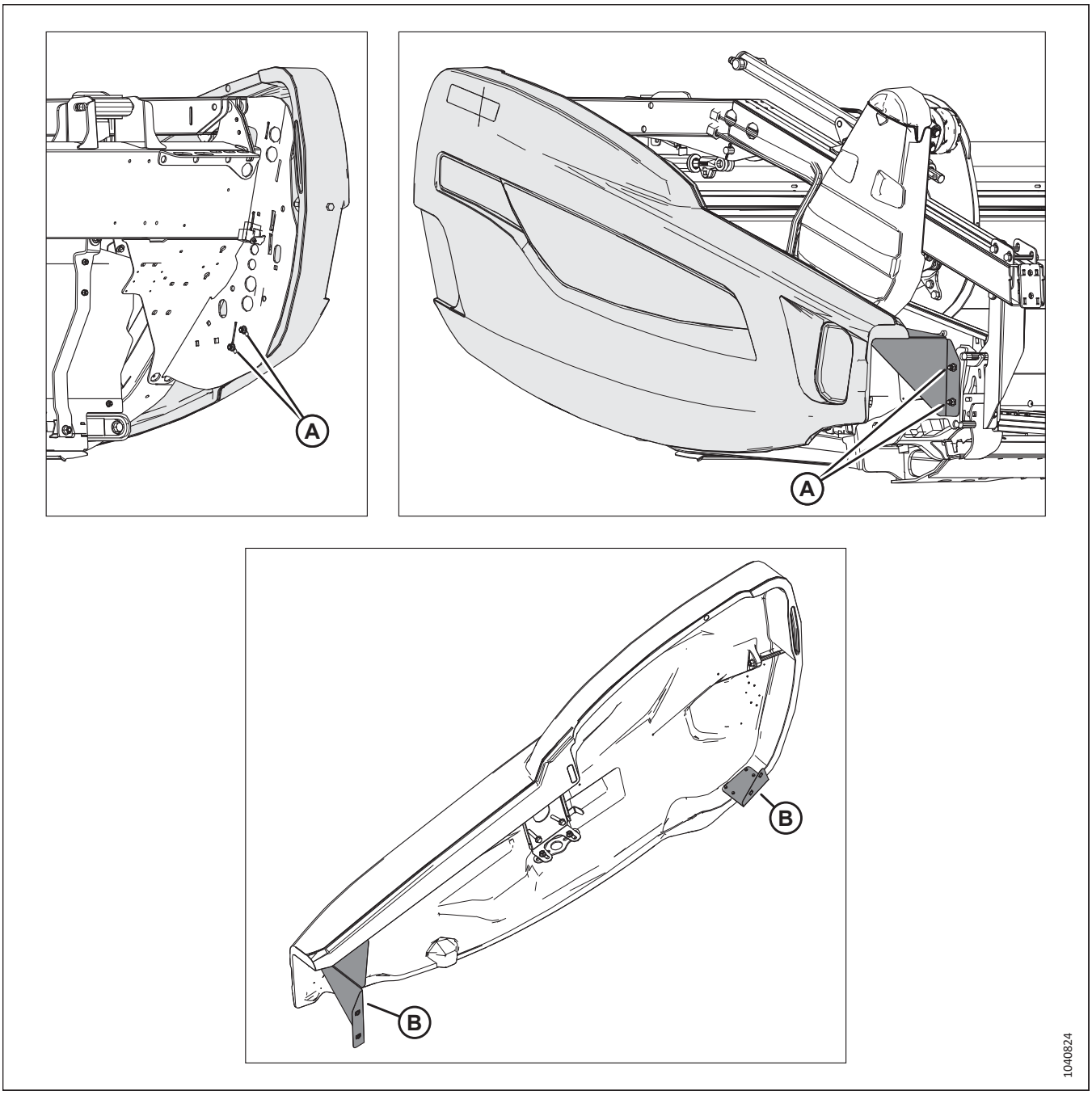


Figure 2.23: Right Endshield in Shipping Configuration

7. On the right endshield, remove and discard hardware (A).
8. 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.

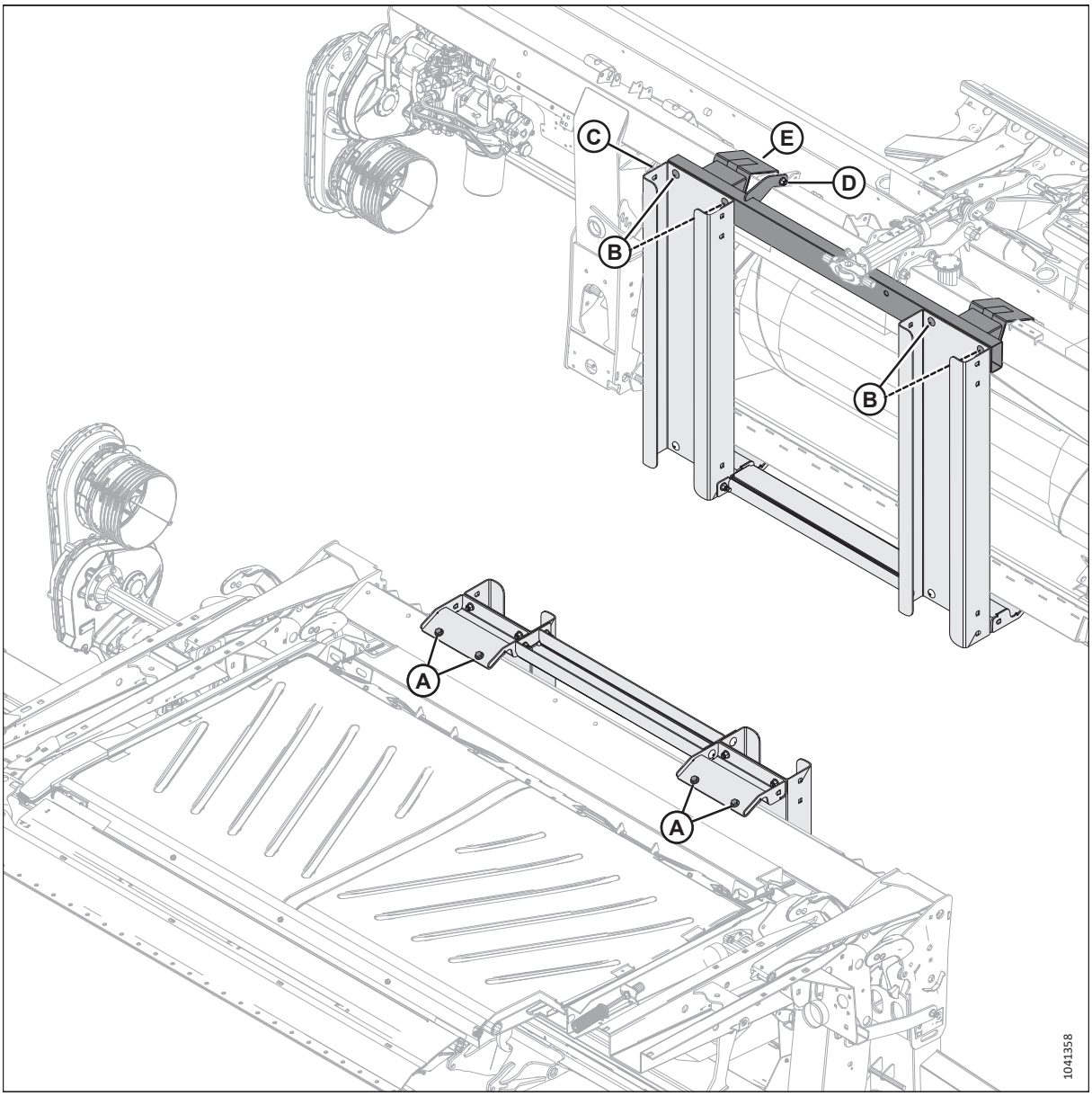


Figure 2.24: Shipping Stands

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 27*.

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.

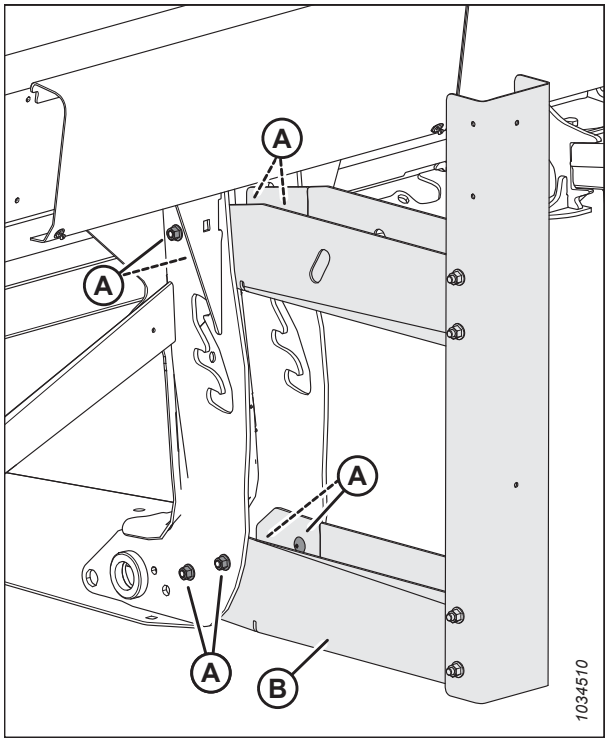


Figure 2.25: Right Shipping Stand on Outboard Leg

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

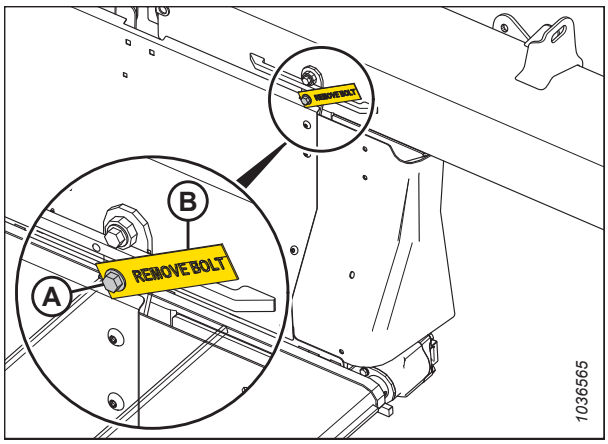


Figure 2.26: Right Deck Support Shipping Bolt

2.12 Removing Anti-Rotation Strap from Reel and Installing Knife Cover Hardware – D225, D230, and D235 (Parts Bag MD #347598)

The anti-rotation strap prevents the reel from rotating during shipping.

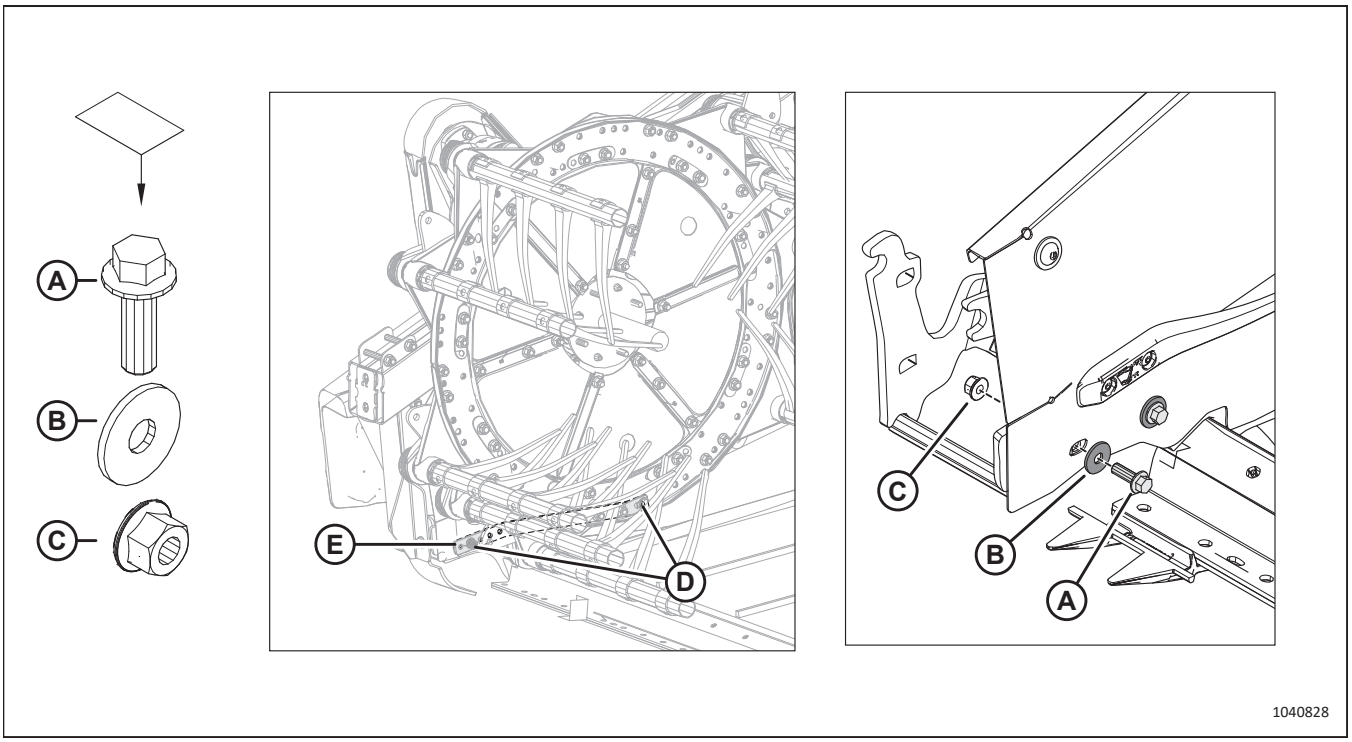


Figure 2.27: Anti-Rotation Strap Removal, Installation of Knife Cover Hardware

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

   NOTE:

   The blocks should have been positioned when the header was tipped over.

CAUTION

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

2. Support the weight of the reel to prevent it from rotating.
3. Retrieve parts bag MD #347598, which contains the following:
   - One M10 x 30 bolt (A)
   - One M10 washer (B)
   - One M10 nut (C)
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 (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 will need to be moved to the working position.

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

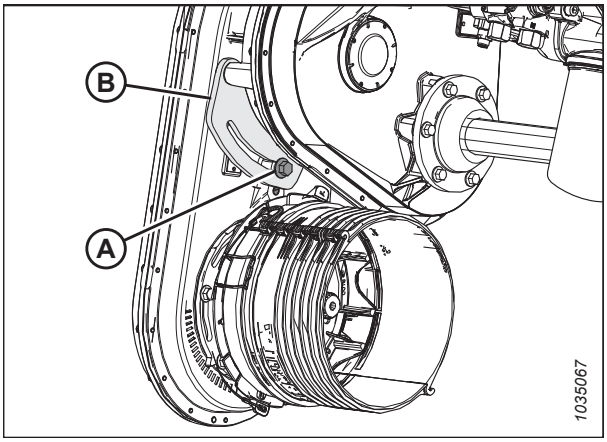


Figure 3.1: Shipping Position

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

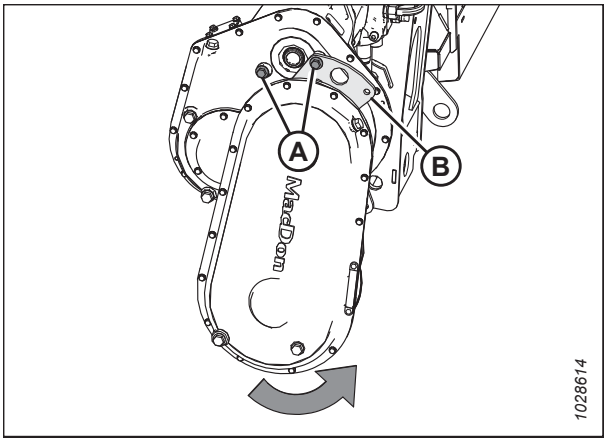


Figure 3.2: Shipping Position

4. Secure bracket (A) with two retained M12 hex bolts (B).
5. Tighten the three M12 hex bolts to 58 Nm (42 lbf·ft).

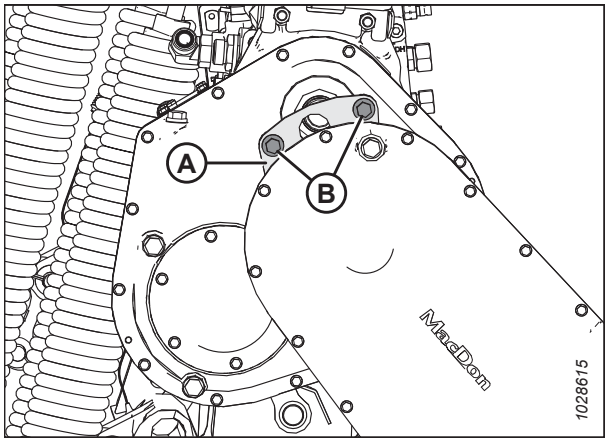


Figure 3.3: Working Position

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.

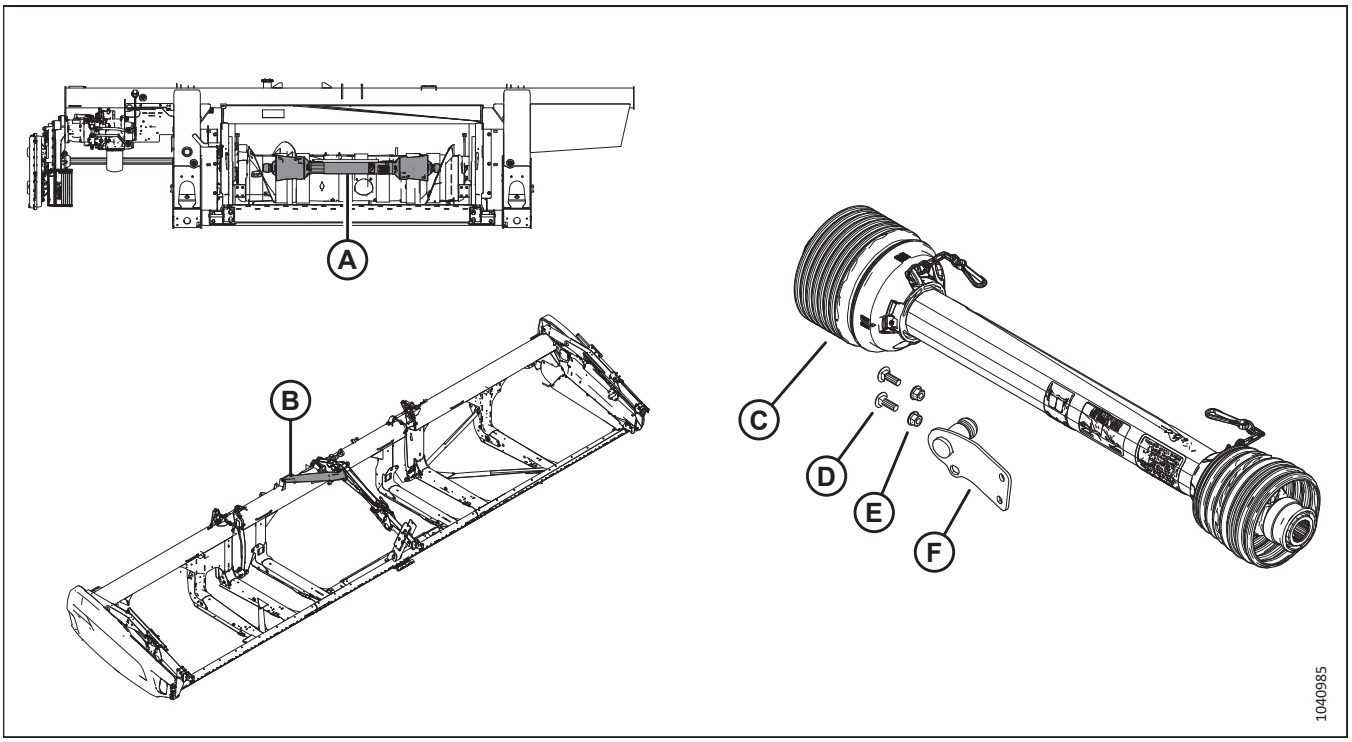


Figure 3.4: Driveline Shipping Locations and Driveline Parts

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. 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).

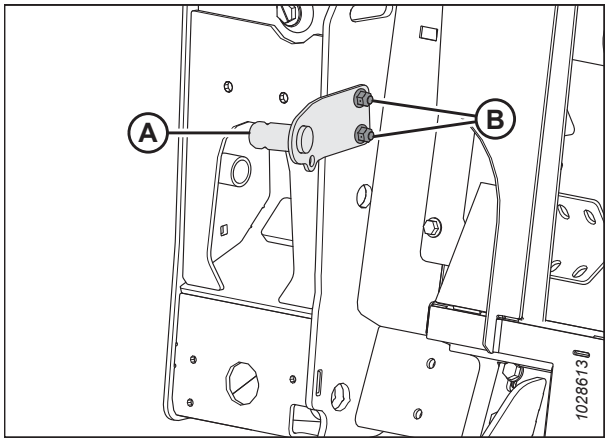


Figure 3.5: Driveline Support

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

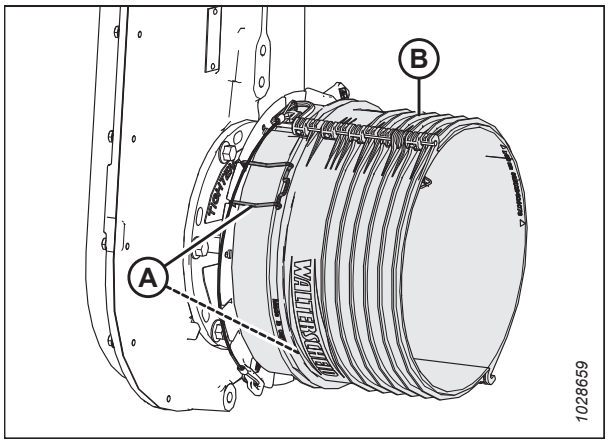


Figure 3.6: Driveline Shield on Float Module Gearbox

NOTE:

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

Figure 3.7: Sample Driveline Decal

4. Slide shield (A) onto the driveline.

5. 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.

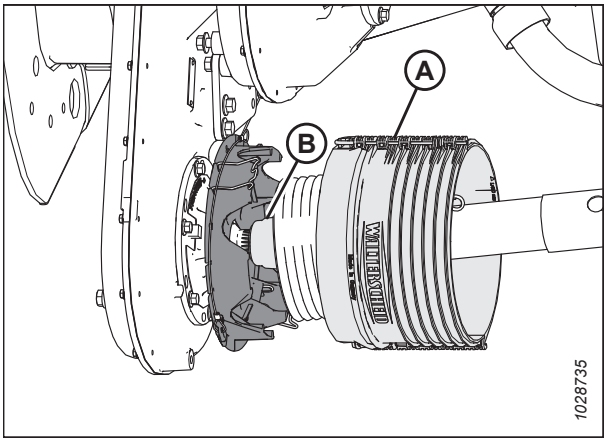


Figure 3.8: Driveline Installed on Float Module Gearbox Shaft

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

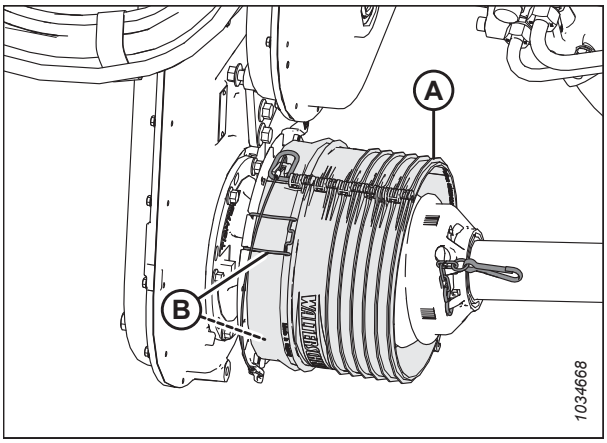


Figure 3.9: Driveline with Shield Installed on Float Module Gearbox

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

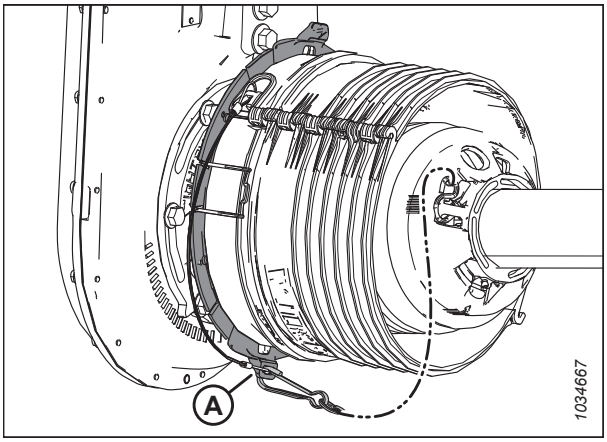


Figure 3.10: Chain Secured to Driveline on Float Module Gearbox

8. 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.

9. Secure the loose end of safety chain (C) to the driveline storage support.

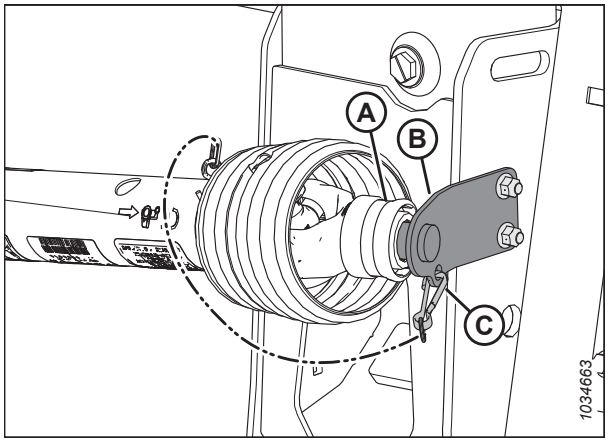


Figure 3.11: Driveline in Storage Position

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, do not drop the driveline.

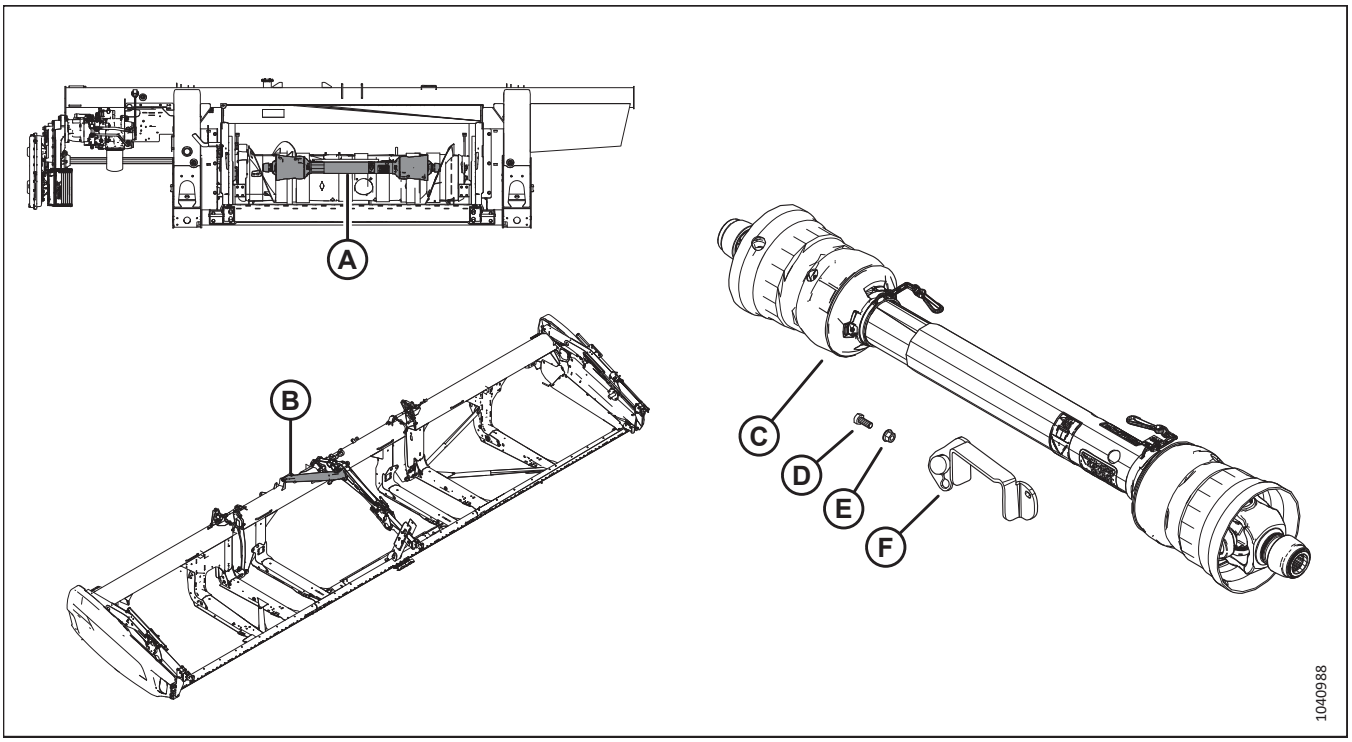


Figure 3.12: Driveline Shipping Locations and Driveline Parts

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)

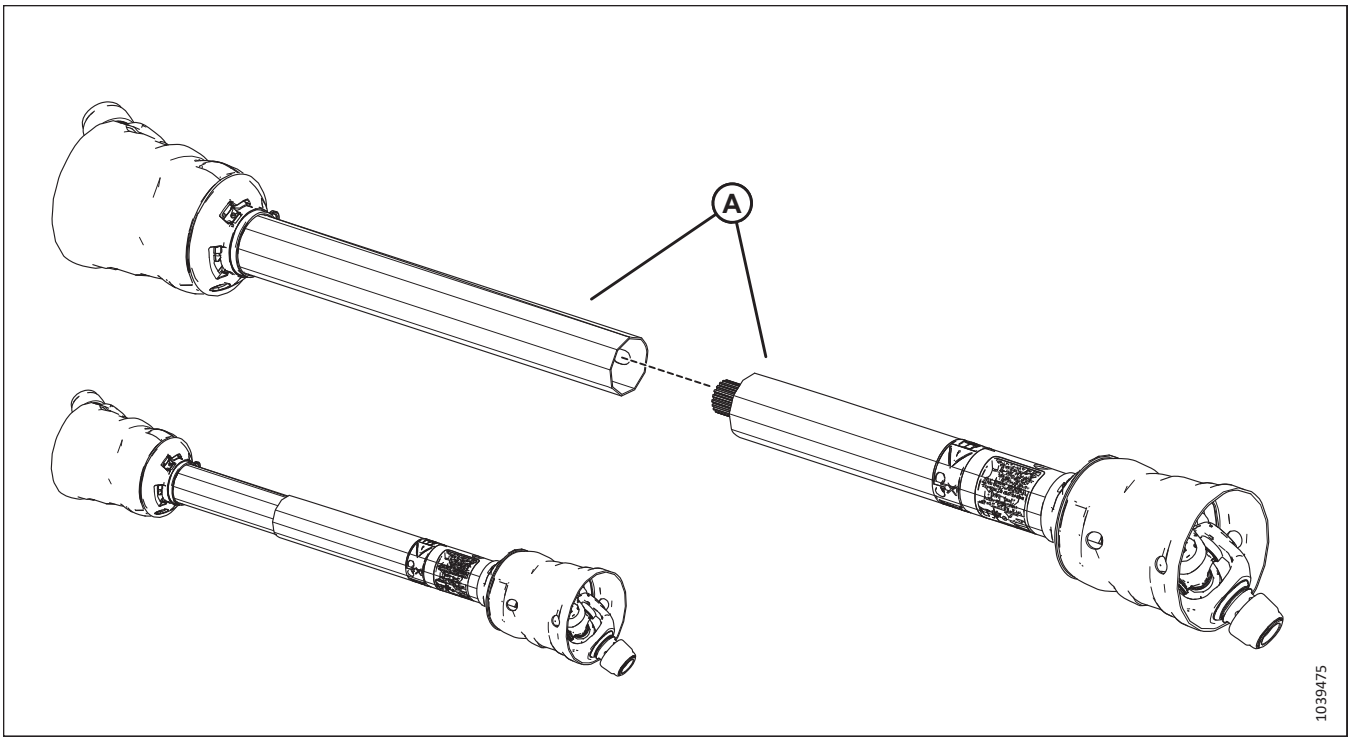


Figure 3.13: MD #B7326 Assembly

2. **B7326:** Join the driveshaft halves.

   NOTE:

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

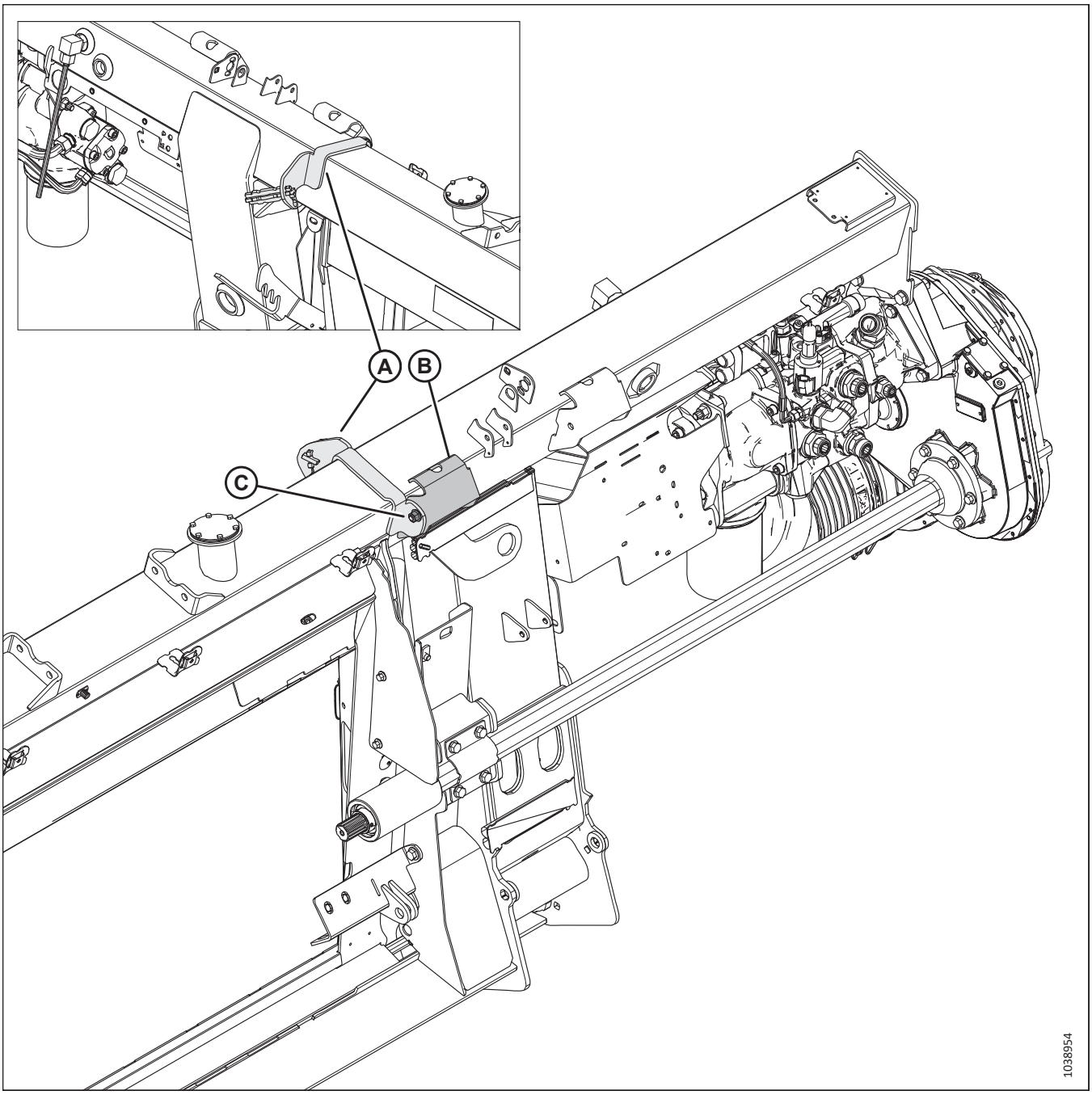


Figure 3.14: Driveline Support on Float Module – View from Behind

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

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

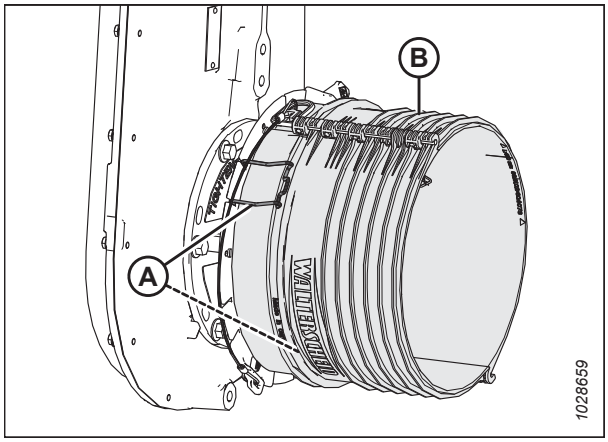


Figure 3.15: Driveline Shield on Float Module Gearbox

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: Sample Driveline Decal

5. Slide shield (A) onto the driveline.

6. 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.

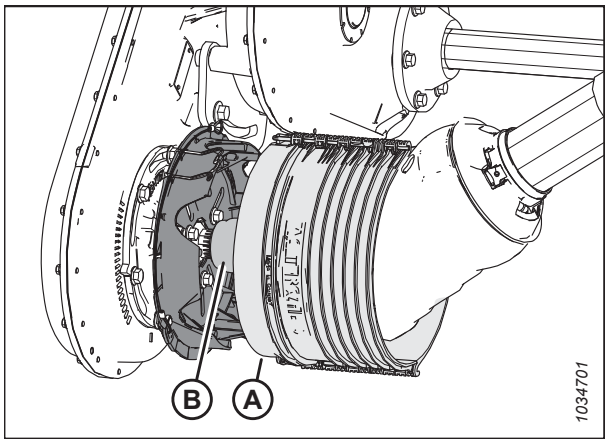


Figure 3.17: Driveline Installed on Float Module Gearbox Shaft

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

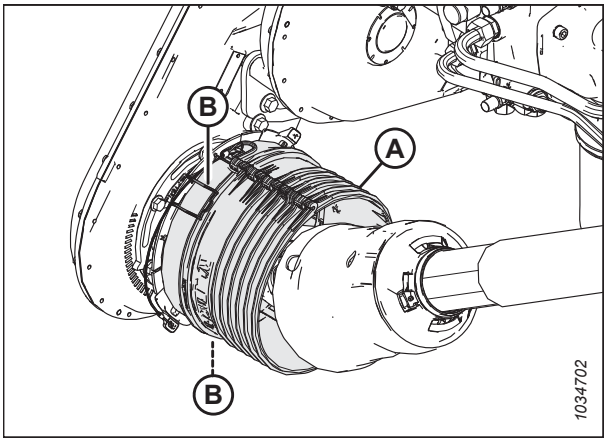


Figure 3.18: Driveline with Shield Installed on Float Module Gearbox Shaft

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

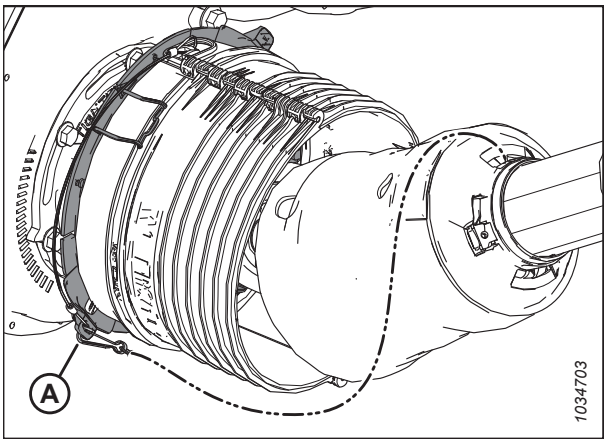


Figure 3.19: Driveline Safety Chain Secured to Float Module Gearbox

9. 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.
10. Secure the loose end of safety chain (C) to the driveline storage support.

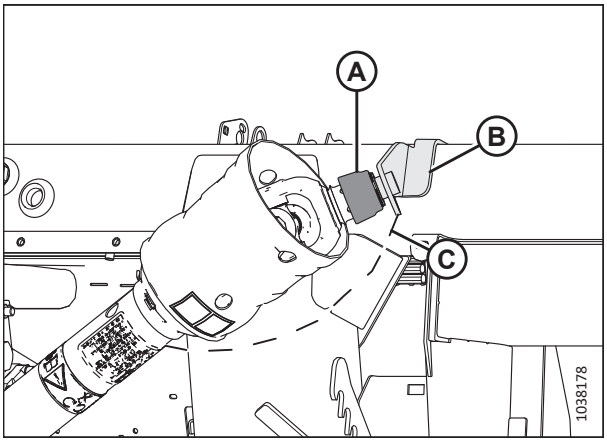


Figure 3.20: Sidehill Driveline in Storage Position on Float Module

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.

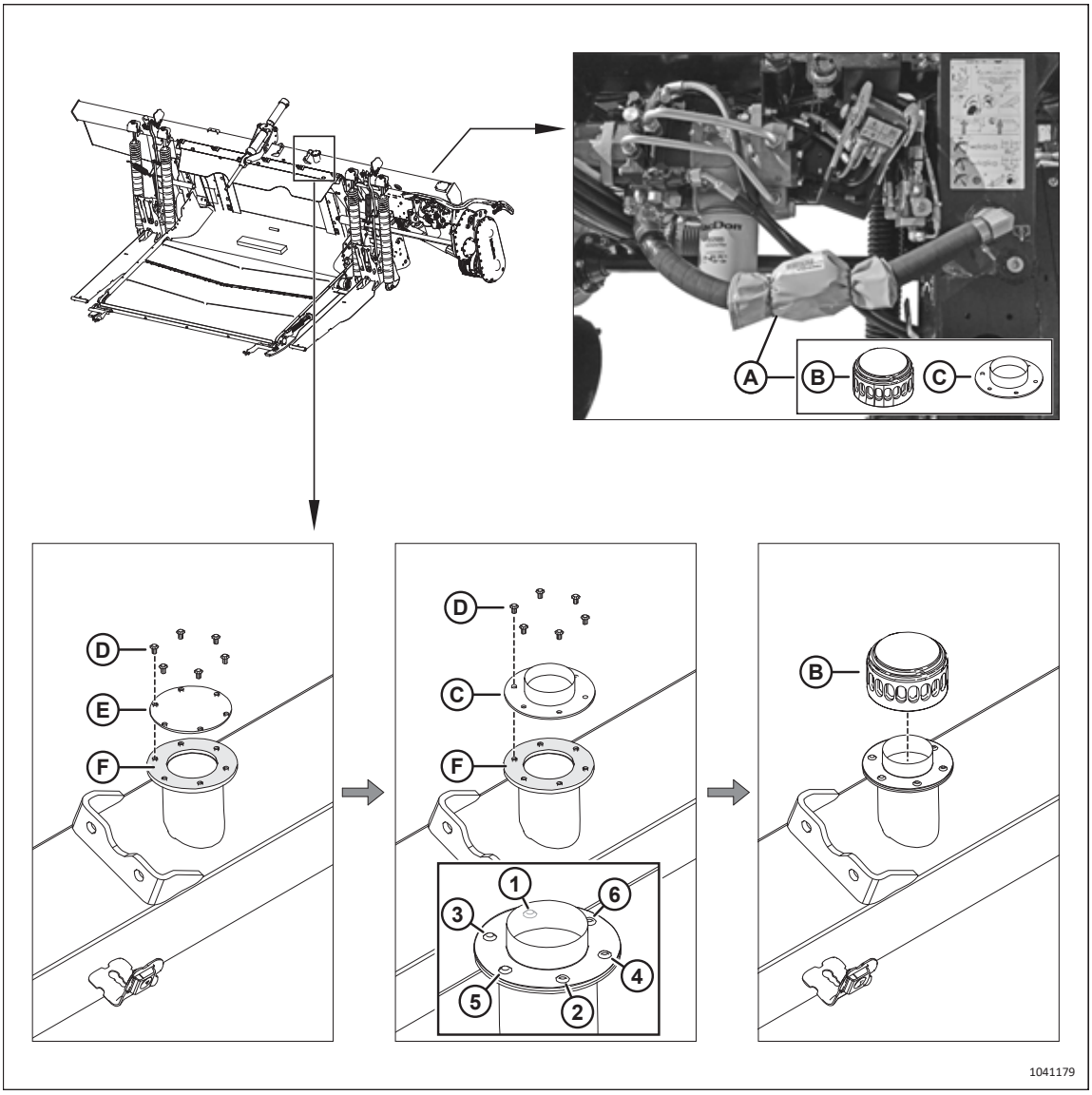


Figure 3.21: Filler Cap Installation

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

CAUTION

Hydraulic fluid may be under pressure. Relieve the pressure by loosening the screws and slowly moving the shipping cover away from you.

2. Remove and retain six screws (D). Discard cover (E). Leave gasket (F) in place.
3. Seat bayonet (C) onto gasket (F). Secure the bayonet using six screws (D).
4. Tighten the screws in the order shown (1–6).
5. Screw cap (B) onto bayonet.

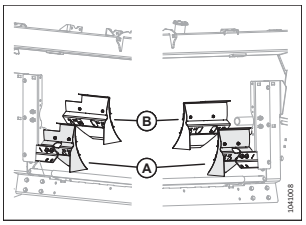
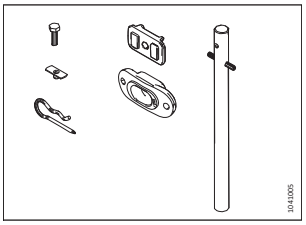
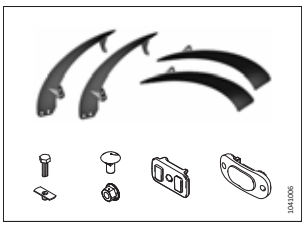
3.5 Setting Up Feed Opening on Float Modules for New Holland

Float modules configured for New Holland are shipped with enough kits to set up either a medium or narrow feed opening, which are standard configurations for the models of CR and CX combines listed in Table *3.1, page 43*. Set up the feed opening according to the instructions in the table below. All parts are shipped packaged on the feed auger unless otherwise noted.

NOTE:

Optional configurations, or further modification of the feed opening system, are beyond the scope of this manual. For more information, refer to the float module setup section of the header operator's manual.

Table 3.1 Feed Opening Setup for Float Modules Shipped Configured for New Holland Combines

Parts Shipped with FM200	Medium Feed Opening		Narrow Feed Opening	
	CR models	970/980, 9070/9080, 8090/9090, X.90, X.80	CR models	920/940/960, 9020/40/60/65, 6090/7090, 8060/8070/8080
	CX models	8X0, 80X0, 8.X0	CX models	Incompatible
 2 wide deflectors 2 narrow deflectors	The float module is shipped with wide deflectors (A) installed. Leave them installed. Use wide deflectors with feeder houses that have a feed opening of approximately 52 in. (1317 mm).		Swap wide deflectors (A) with narrow ones (B). For instructions, refer to *3.5.1 Replacing Feeder Deflectors on Float Modules for New Holland CR and CX Combines, page 44*. Use narrow deflectors with feeder houses that have a feed opening of approximately 44 in. (1115 mm).	
 1 finger kit (4 fingers)	Install the kit according to the instructions supplied with it. The feed auger should have 22 fingers in total.		Do **NOT** install the kit. The feed auger should have 18 fingers in total.	
 1 flighting kit	Do **NOT** install the kit.		Install the kit according to the instructions supplied with it.	

3.5.1 Replacing Feeder Deflectors on Float Modules for New Holland CR and CX Combines

Follow this procedure to replace deflectors, or to change the type of deflector (wide or narrow) installed on the float module.

1. Remove two bolts and nuts (B) securing feed deflector (A) to the float module frame. Remove the feeder deflector.
2. Position replacement feeder deflector (A) as shown. Secure the feeder deflector with bolts and nuts (B). Ensure that the nuts face the combine. Do **NOT** tighten the nuts yet.

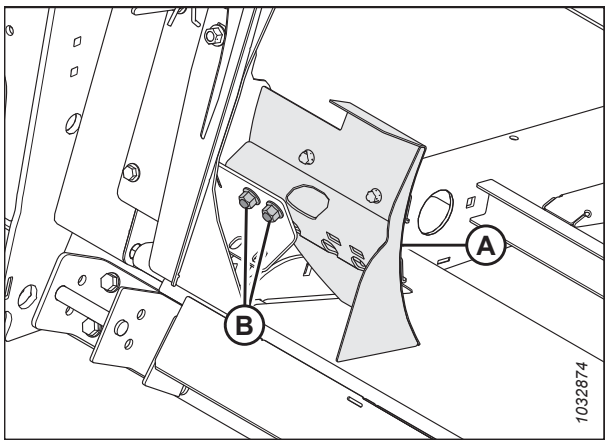


Figure 3.22: Feed Deflector

3. Adjust deflector (A) so that distance (C) between the pan and the deflector is 4–6 mm (5/32–1/4 in.).
4. Tighten nuts (B).
5. Repeat this procedure to install the other deflector.
6. Attach the header to the combine. For instructions, refer to *5 Attaching Header to Combine, page 51*.
7. After attaching the header to the combine, fully extend the center-link and check the gap between the deflector and the pan. Ensure that the gap is 4–6 mm (5/32–1/4 in.).

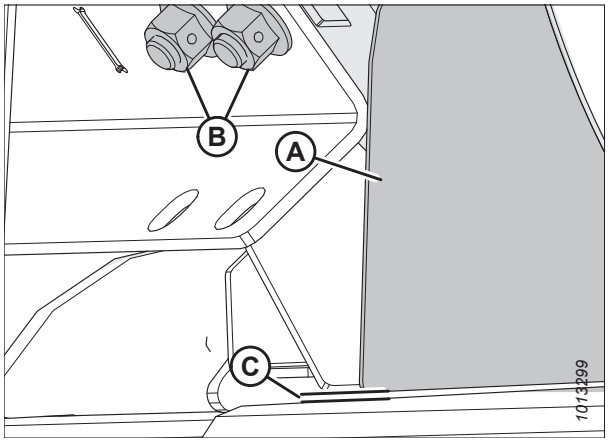


Figure 3.23: Pan and Deflector Distance

Chapter 4: Installing Link Limiter – CLAAS 7000 and 8000 Series Combines

One center-link limiter is shipped with float modules configured for CLAAS combines. The link limiter limits the fore/aft tilt range of the CLAAS feeder house to prevent interference between the tilt cylinder on the header and a step on the combine's feeder house.

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.

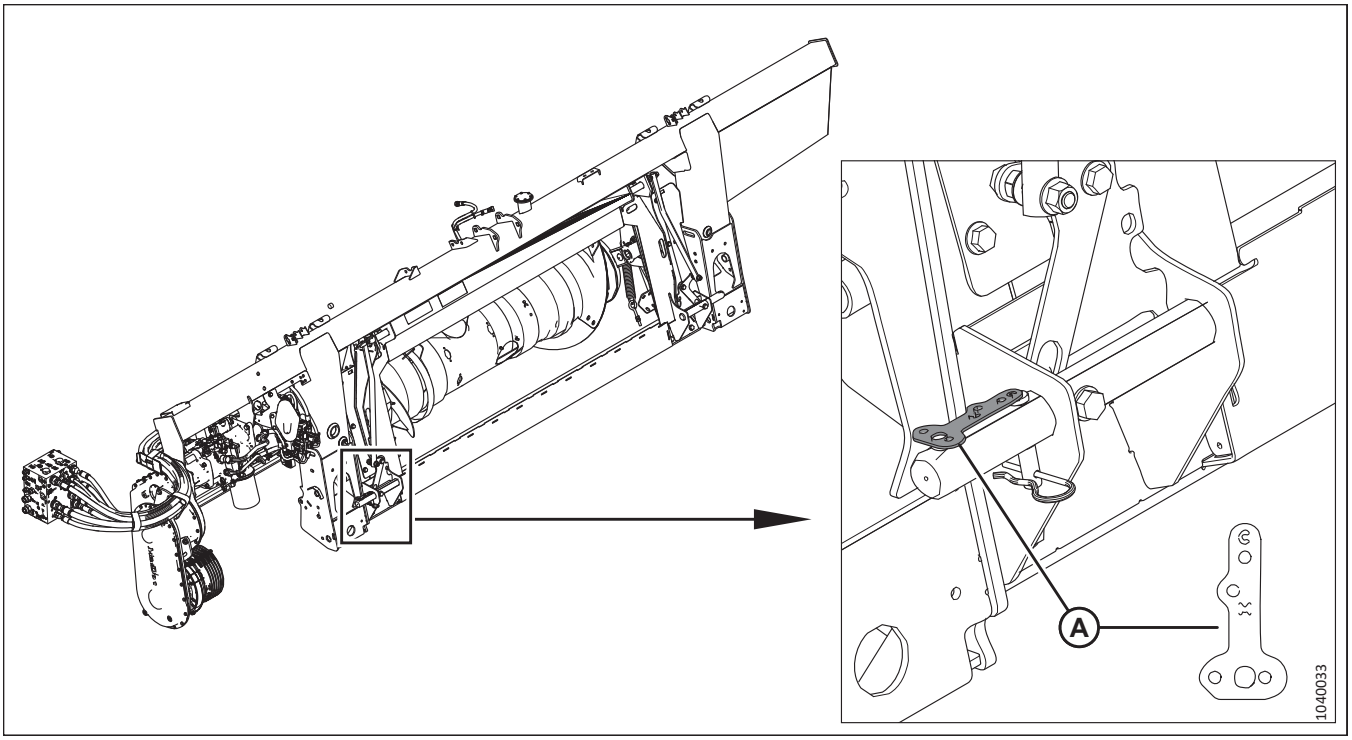


Figure 4.1: Link Limiter Shipping Position

To install the link limiter, follow these steps:

1. Retrieve link limiter (A) from its shipping position.
2. Start the engine.
3. Park the combine on a level surface.

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

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

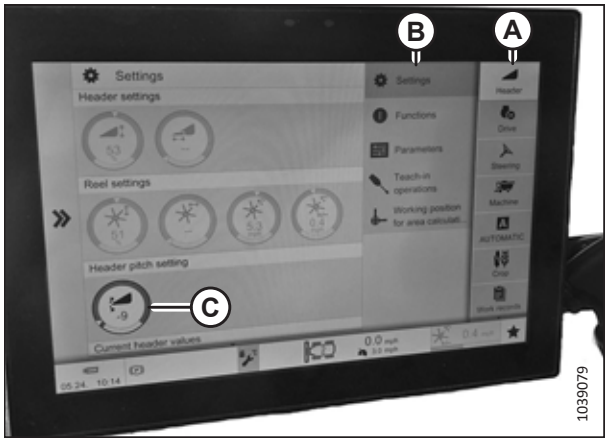


Figure 4.2: CEBIS Settings

6. Engage header safety props (A). For instructions, refer to the combine operator's manual.

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

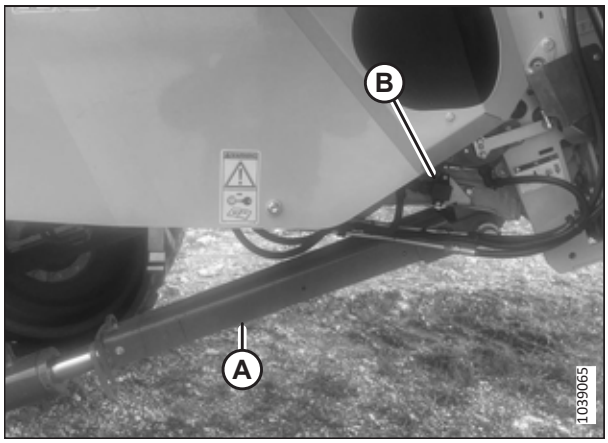


Figure 4.3: Sensor Location

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

9. Remove linkage (A) from the sensor arm.

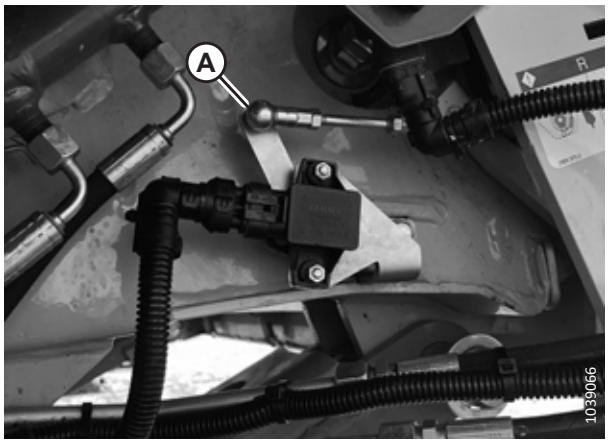


Figure 4.4: Sensor Arm Linkage

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

    NOTE:

    Do not unbolt the sensor from the combine.

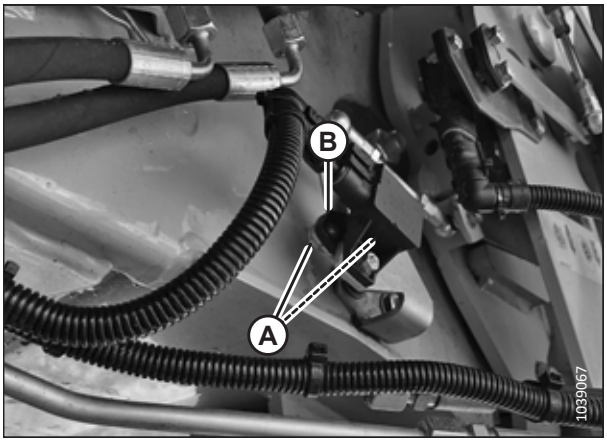


Figure 4.5: Sensor Arm

11. Retrieve sensor arm (A) (MD #357776) from the shipping location.
12. 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.
13. Install the two bolts to secure sensor arm (A) to sensor (C).
14. Install linkage (D) into the upper hole “C” on the sensor arm.

    IMPORTANT:

    Make sure the sensor arm is installed in hole “C” before calibrating the system. Calibrating the system with the sensor arm installed in hole “M”, instead of hole “C”, will lead to mechanical interference once the header is connected to the combine.

15. Disengage the header safety props. For instructions, refer to the combine operator’s manual.

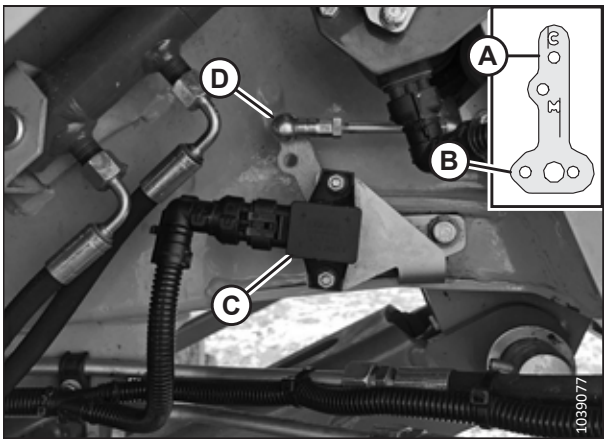


Figure 4.6: Sensor Arm Linkage

DANGER

Ensure that all bystanders have cleared the area.

16. Start the engine.
17. Perform a feeder house fore/aft tilt calibration. For instructions, refer to the combine operator’s manual.

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

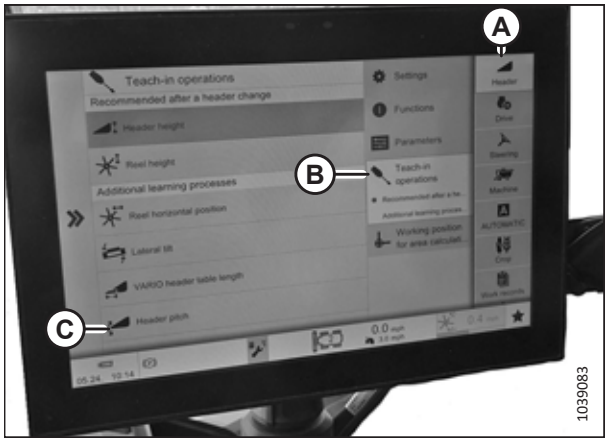


Figure 4.7: CEBIS Settings

19. Press arrow (A) to start the procedure. Follow the on-screen prompts.
20. Shut down the engine, and remove the key from the ignition.
21. Engage the header safety props. For instructions, refer to the combine operator's manual.

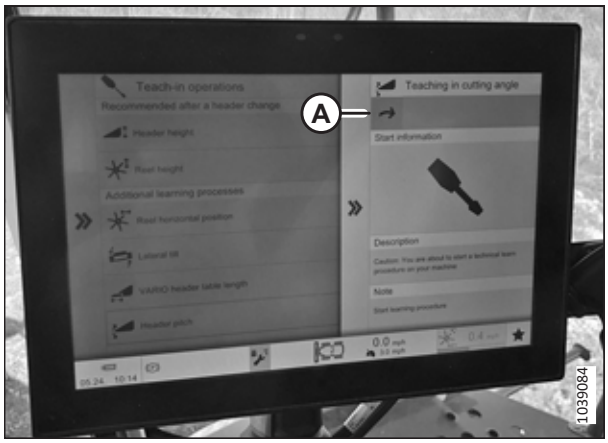


Figure 4.8: CEBIS Settings

22. Change the sensor linkage arm position from upper hole (A) labeled "C" to lower hole (B) labeled "M".
23. Disengage the header safety props. For instructions, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

24. Start the engine.
25. Connect the combine to the header. For instructions, refer to *5.3 Attaching Header to CLAAS Combine, page 62*.

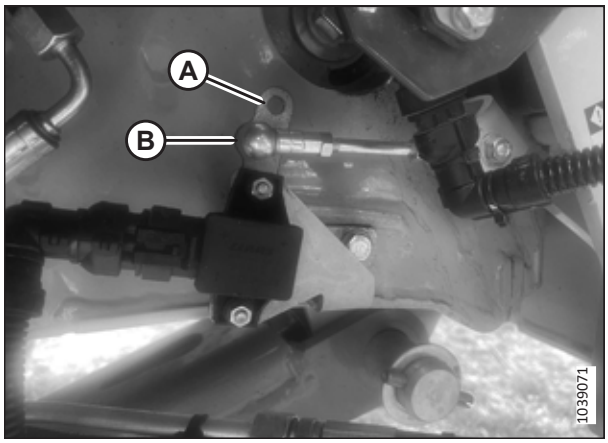


Figure 4.9: Sensor Arm Linkage

26. Slowly tilt the combine faceplate back to ensure that there is **NO** interference between the header and step (A) on the combine feeder house.

27. Tilt the faceplate forward until “0” is shown on the display.

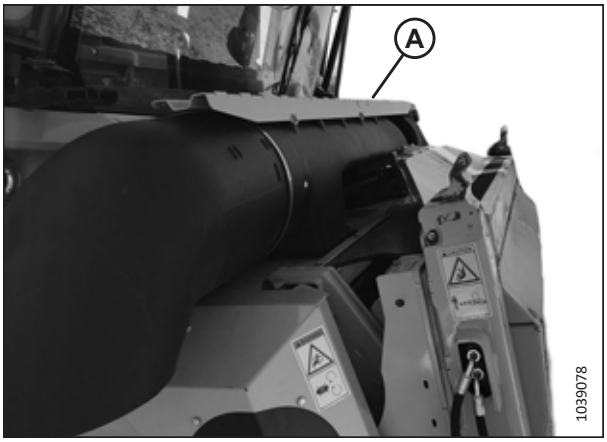


Figure 4.10: Step Contact

Chapter 5: 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 5.1 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 Series Case IH Models: 21XX/23XX/25XX	*5.1 Attaching Header to Case IH Combine, page 51*
Challenger® 66/67/680B, 540C/560C Gleaner® A-Series Models: A66/76/86 Gleaner® R-Series & Super-Series Models: R65/75, R66/76, S67/77, S68/78/88, S96/97/98 Massey Ferguson® 9520/40/50, 9695/9795/9895	*5.2 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine, page 57*
CLAAS 500 Models: 56/57/58/590R, 57/58/595R CLAAS 600/700, 6000/7000/8000 Series Models: 6X0, 7X0, 7X00, 8X00	*5.3 Attaching Header to CLAAS Combine, page 62*
IDEAL™ (Massey Ferguson®, Fendt®, and Valtra®) Models: 7, 8, 9, 10	*5.4 Attaching Header to IDEAL™ Series Combine, page 67*
John Deere T, 60/70 and S-Series Models: T5X0, T6X0, 9X60, 9X70, S6X0, S7X0 John Deere X9 Series	*5.5 Attaching Header to John Deere Combine, page 70*
New Holland CR Models: CR 9X0, 90X0, X090, X080, X.90, X.80 New Holland CX Models: CX 8X0, 80X0, 8.X0	*5.6 Attaching Header to New Holland CR or CX Combine, page 75*
Rostselmash 161, T500, and TORUM 785	*5.7 Attaching Header to Rostselmash Combine, page 80*

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.

5.1 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

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

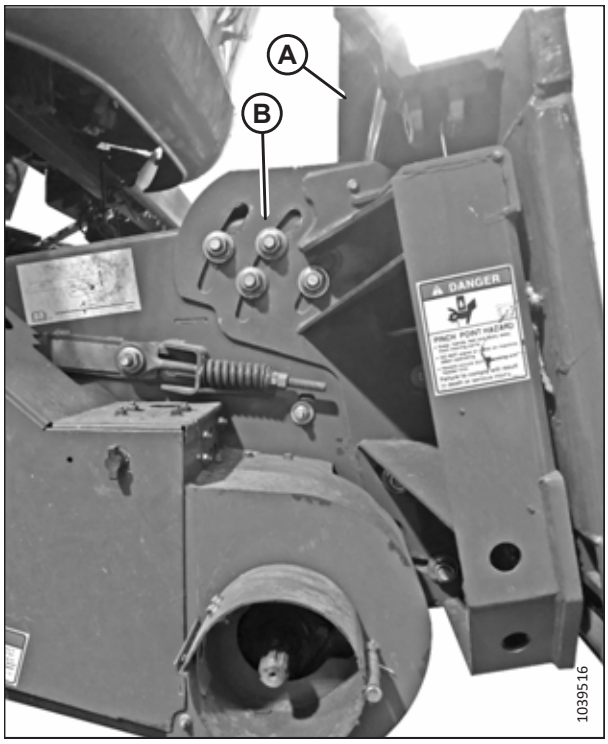


Figure 5.1: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. On the combine, ensure lock handle (A) is positioned so hooks (B) can engage the float module.

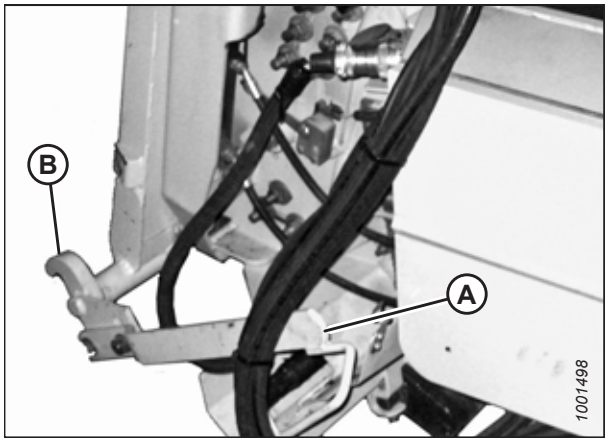


Figure 5.2: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
5. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is properly engaged in the float module's frame.
6. Shut down the engine, and remove the key from the ignition.
7. 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.
8. Push lever (A) down so that the slot in the lever locks the handle.
9. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust the lock. Retighten the bolts.

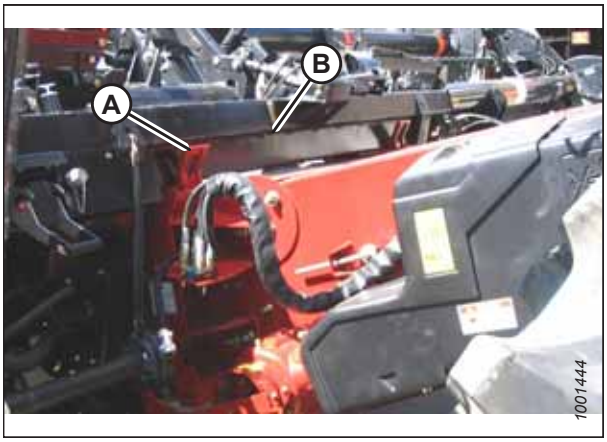


Figure 5.3: Combine and Float Module

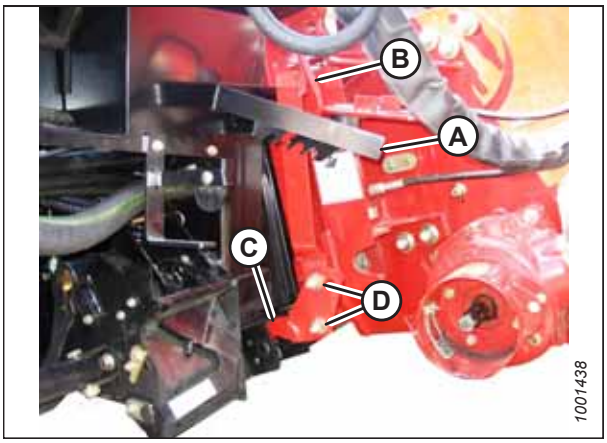


Figure 5.4: Combine and Float Module

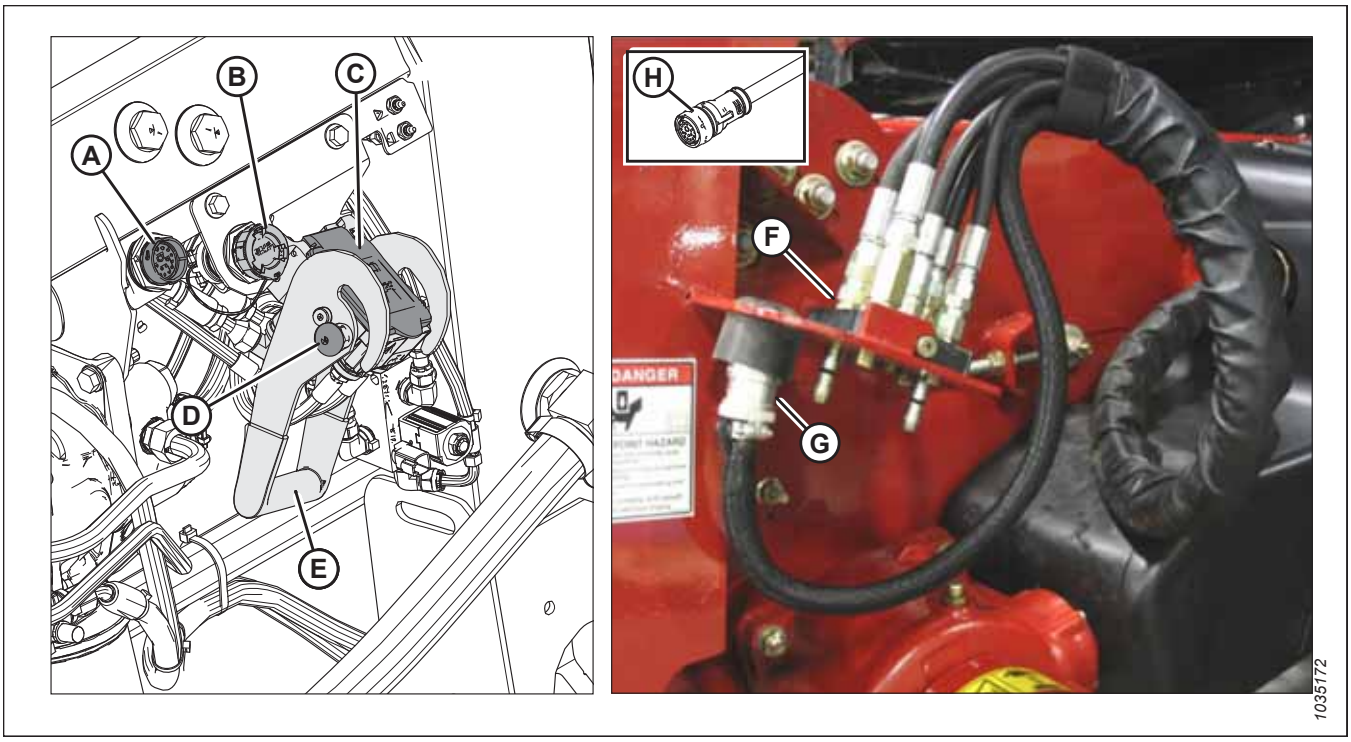


Figure 5.5: Multicoupler and Electrical Connections

10. Remove the caps from connectors C81B (A) and (B).
11. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
12. Push in lock button (D) and pull handle (E) to the fully open position.
13. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
14. Position coupler (F) onto float module receptacle (C), and push handle (E) to engage the pins into the receptacle.
15. Push handle (E) to closed position until lock button (D) snaps out.
16. Remove combine connector (G) from the storage location on the combine and connect it to receptacle (B). Turn the collar on the connector to lock it in place.
17. Remove cab control kit connector C81A (H) from the storage location on the combine and connect it to C81B (A). Turn the collar on the connector to lock it in place.

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

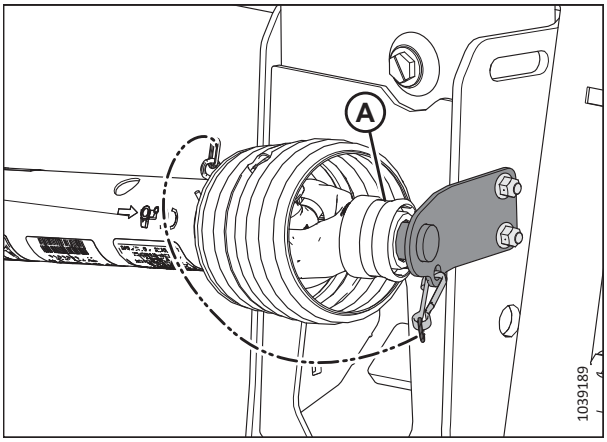


Figure 5.6: Driveline in Storage Position – Driveline B7038 or B7039

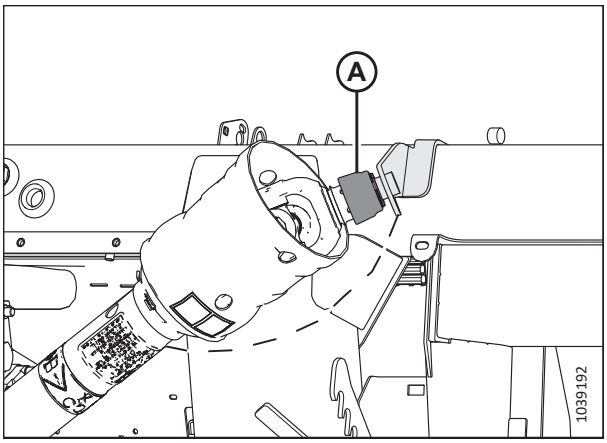


Figure 5.7: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

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

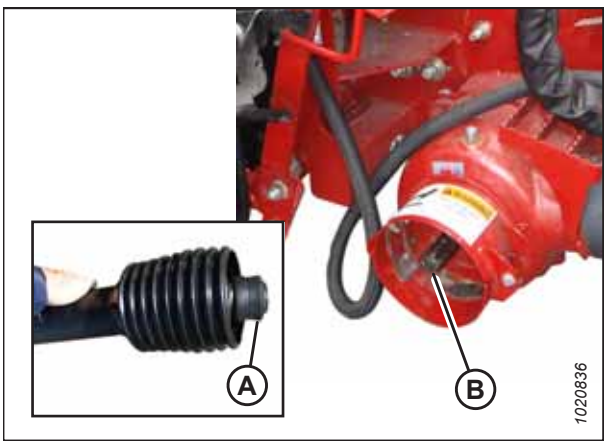


Figure 5.8: Combine Output Shaft

20. 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 right float lock of the header; the left float lock is similar.

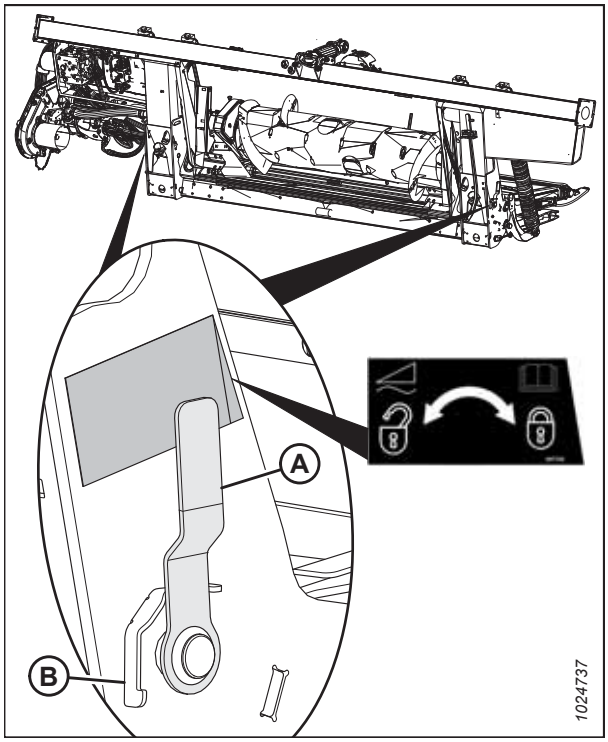


Figure 5.9: Float Lock Handle

5.2 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.

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

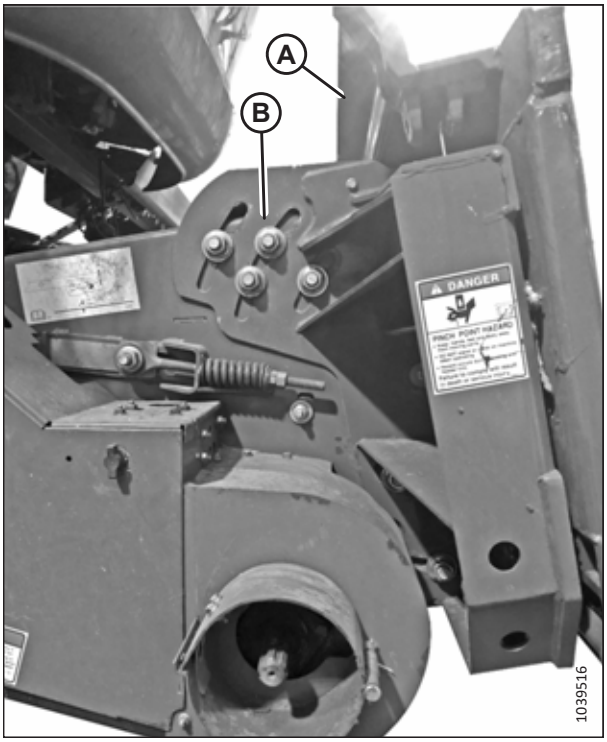


Figure 5.10: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

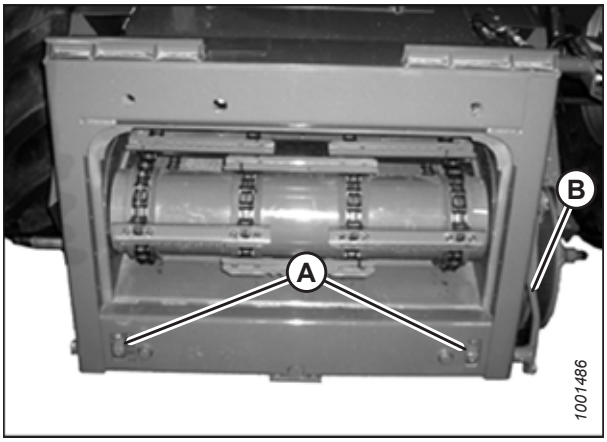


Figure 5.11: AGCO Group Feeder House

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.

4. Slowly approach the header until the feeder house is directly under float module top cross member (A). Ensure that alignment pins (C) (refer to Figure *5.13, page 58*) on the feeder house are aligned with holes (B) in the float module frame.

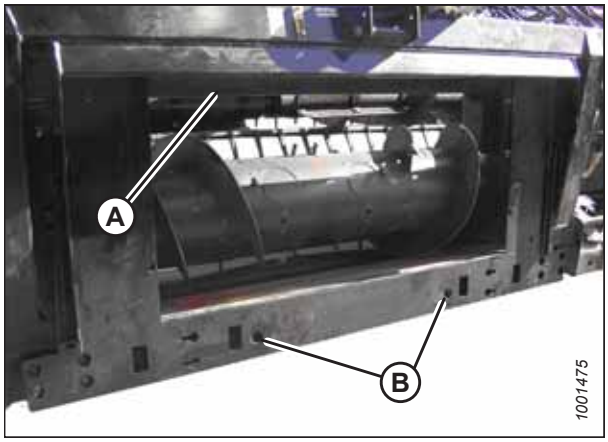


Figure 5.12: Float Module

NOTE:

The combine feeder house may not be exactly as shown.

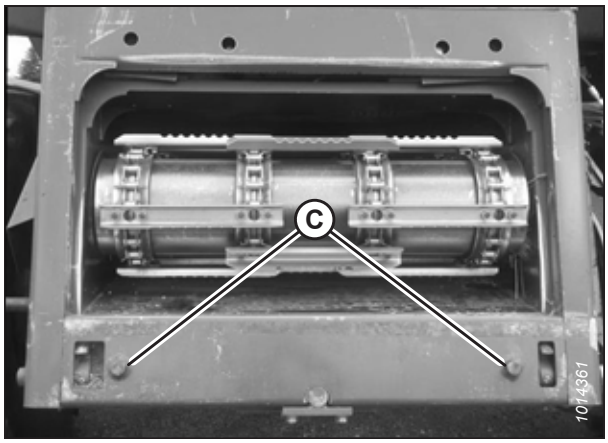


Figure 5.13: AGCO Group Alignment Pins

5. Raise the feeder house slightly to lift the header, ensuring feeder house saddle (A) is properly engaged in the float module frame.

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

Figure 5.14: Feeder House and Float Module

7. Use lock handle (B) to engage lugs (A) with the float module.

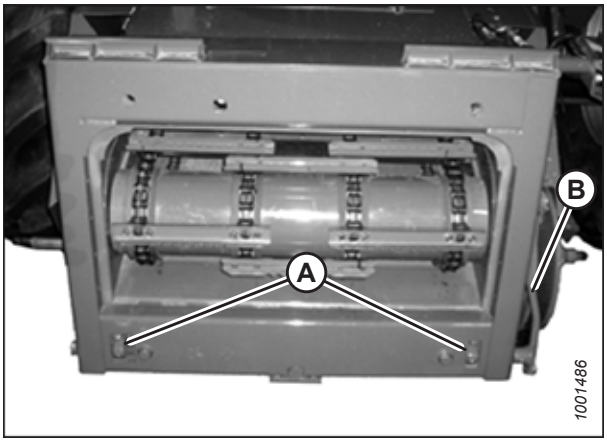


Figure 5.15: AGCO Group Feeder House

DANGER

Ensure that all bystanders have cleared the area.

8. Start the engine.

9. Lower the header fully.

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 *5.2, page 59* for a list of needed kits.

Table 5.2 Multicoupler Kits

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

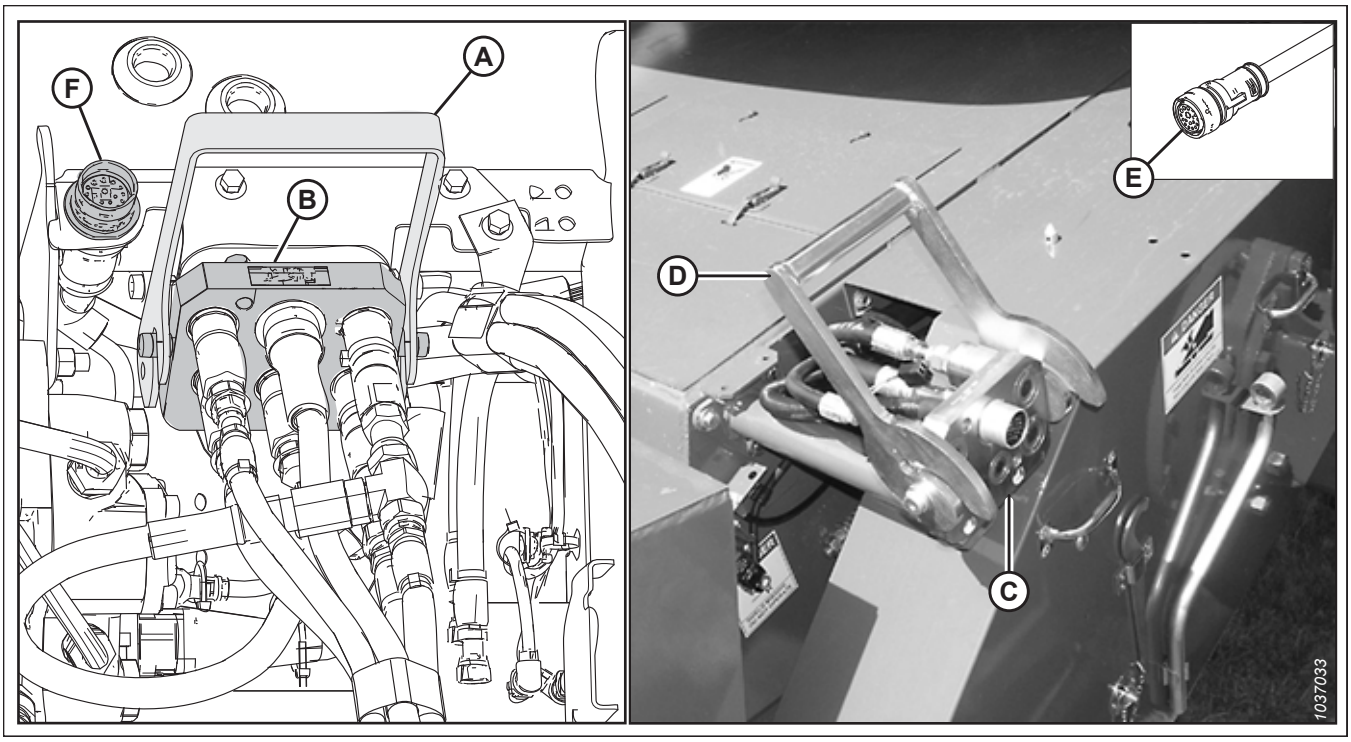


Figure 5.16: Hydraulics and Electrical Multicoupler

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

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

12. Instal multicoupler (B) into combine receptacle (C). Pull handle (D) to engage the multicoupler into the receptacle.

13. 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.

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

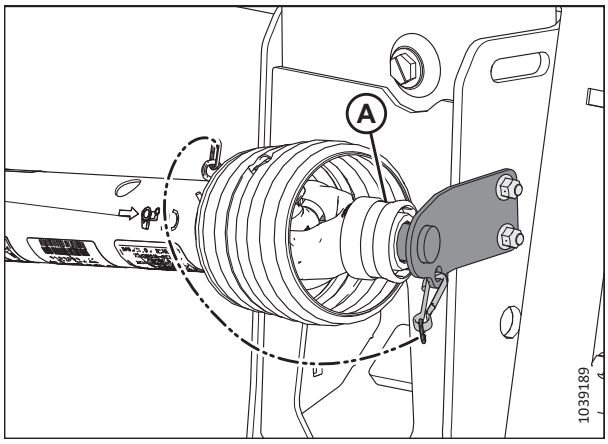


Figure 5.17: Driveline in Storage Position

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

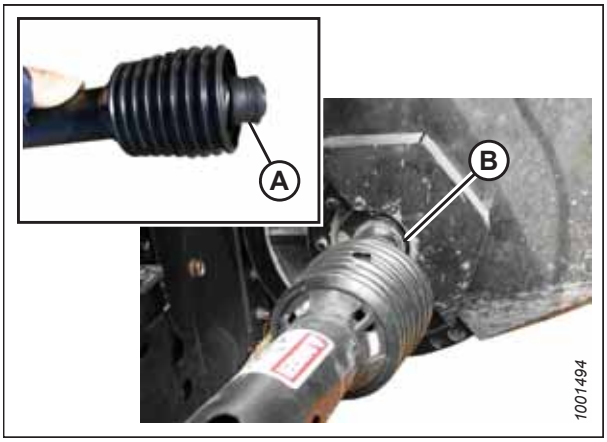


Figure 5.18: Driveline

5.3 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.

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

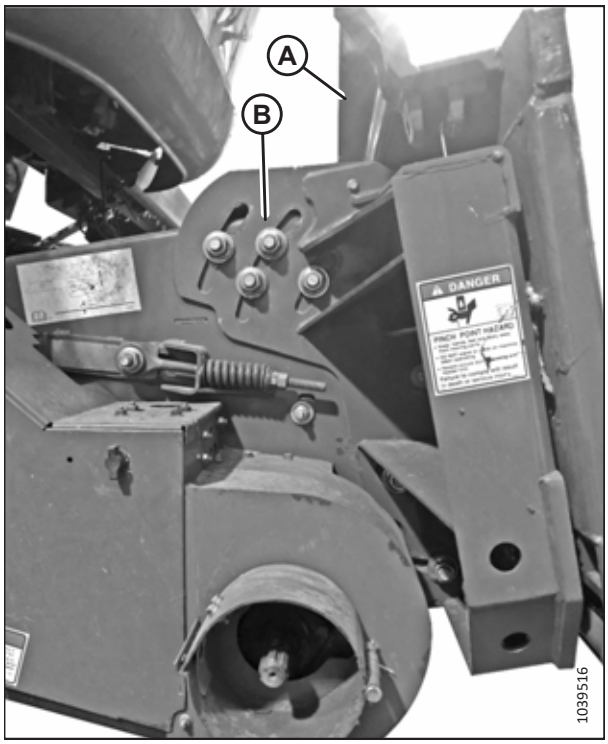


Figure 5.19: Faceplate Tilted to Mid-Position on Unspecified Combine

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.

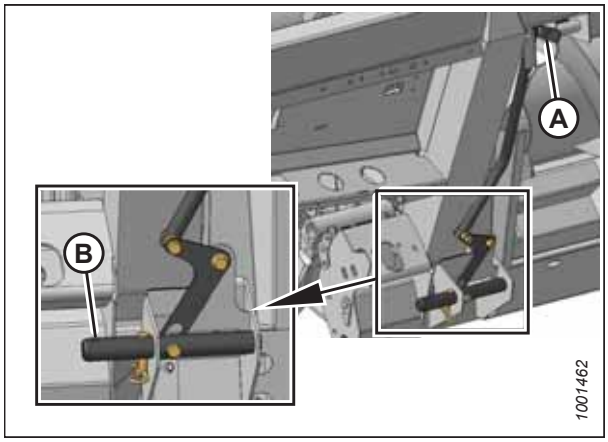


Figure 5.20: Pins Retracted

DANGER

Ensure that all bystanders have cleared the area.

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

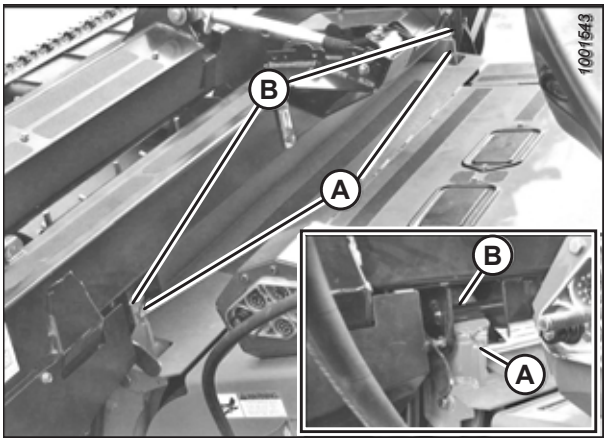


Figure 5.21: Header on Combine

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

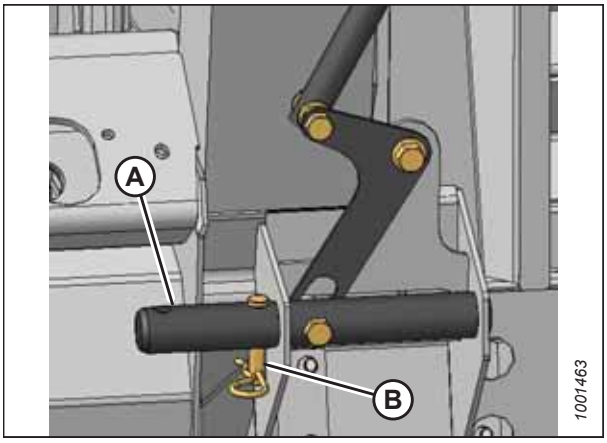


Figure 5.22: Locking Pins

8. 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.
9. Remove the blocks from under the cutterbar.

DANGER

Ensure that all bystanders have cleared the area.

10. Start the engine.
11. Lower the header fully.
12. Shut down the engine, and remove the key from the ignition.

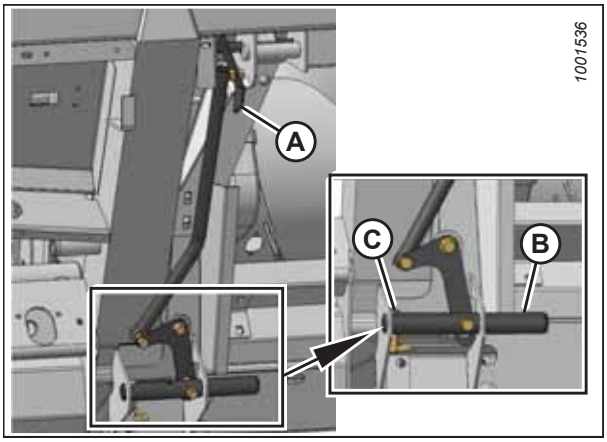


Figure 5.23: Engaging Pins

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

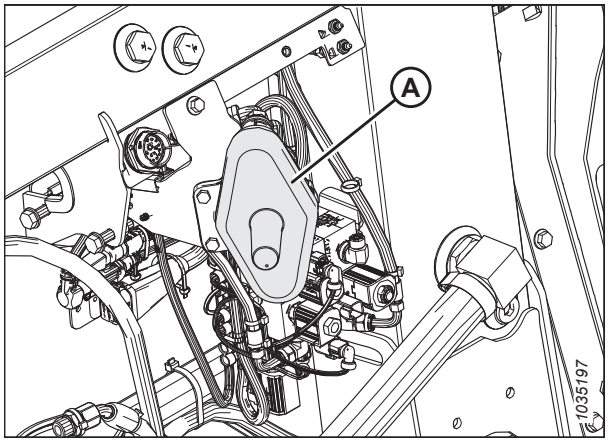


Figure 5.24: Receptacle Cover

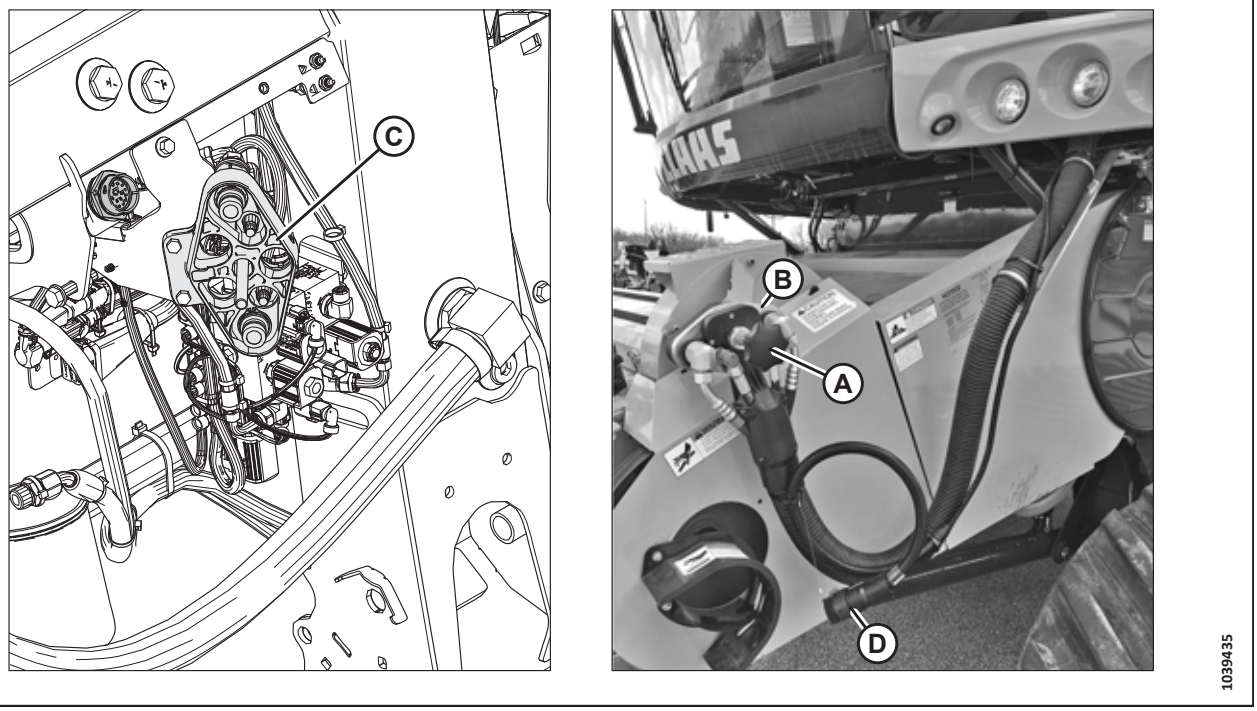


Figure 5.25: Multicoupler and Electrical Connections

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

15. Clean coupler (B) and the receptacle.

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

    NOTE:

    Combine electrical connector (D) does not need to be connected to the float module – the electrical connection is integrated into the multicoupler.

17. Place float module receptacle cover (A) onto the combine receptacle.

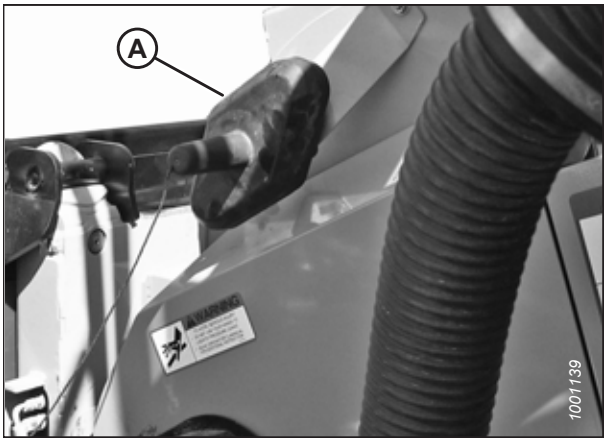


Figure 5.26: Receptacle Cover

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

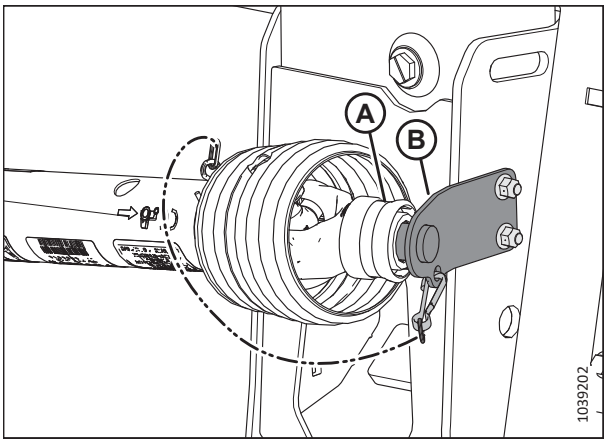


Figure 5.27: Driveline in Storage Position

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

Figure 5.28: Driveline and Output Shaft

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

    NOTE:

    The magnified portion of the illustration shows the right float lock; the left float lock is similar.

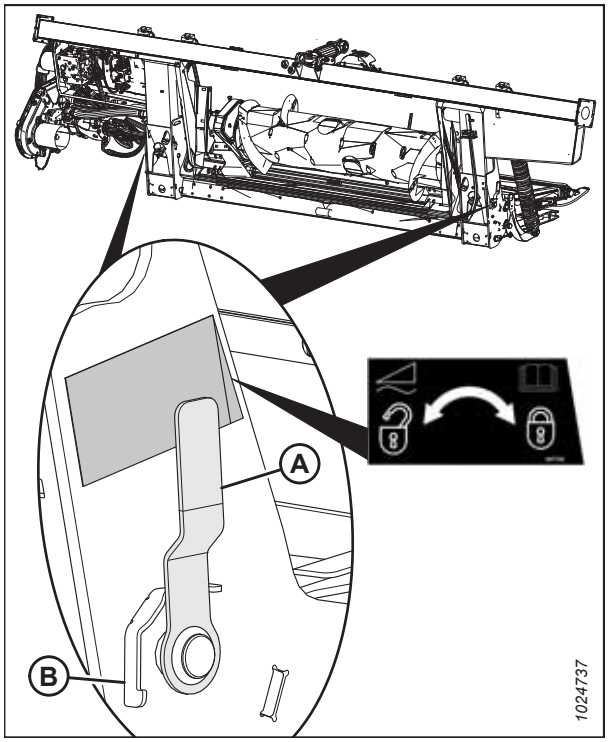


Figure 5.29: Float Lock Handle

5.4 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

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

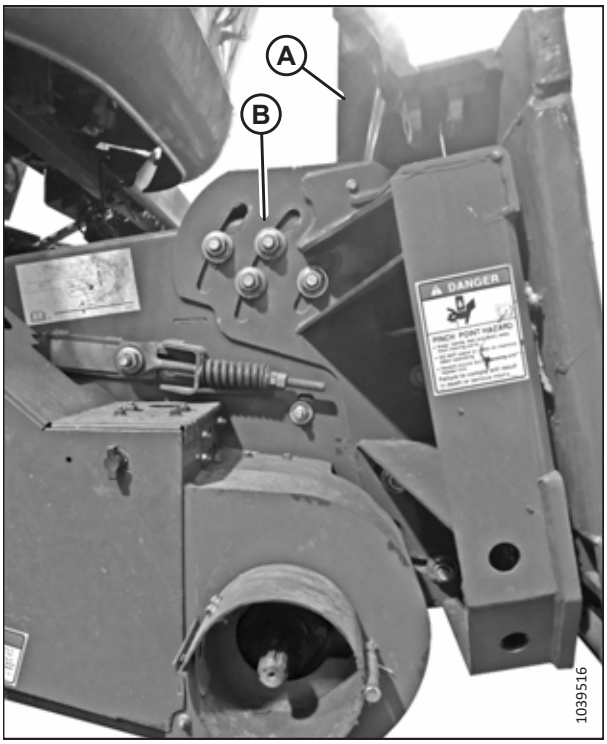


Figure 5.30: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Pull lever (A) up to retract pins (B) at the bottom left and right sides of the feeder house.
3. Start the engine.

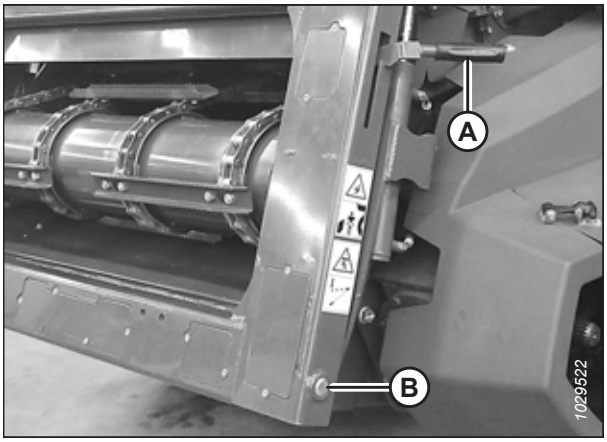


Figure 5.31: Feeder House

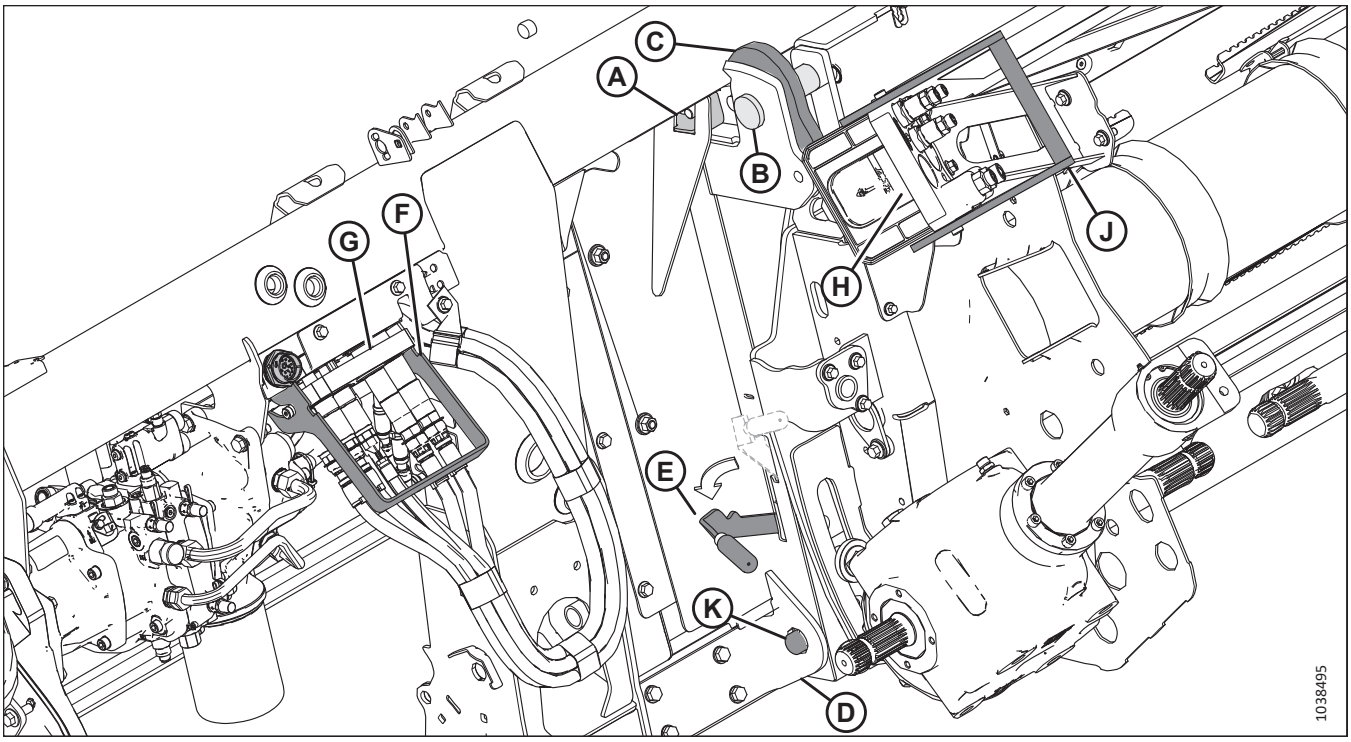


Figure 5.32: Float Module

4. 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.

5. 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).

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

7. Push lever (E) down to extend locking pins (K) so they engage in mount (D).

8. Lower handle (F) to release multicoupler (G) from the header.

9. Open the cover on combine receptacle (H).

10. Push handle (J) to the fully open position.

11. Clean the mating surfaces of the coupler and receptacle.

12. Position coupler (G) onto combine receptacle (H), and pull handle (J) to fully insert the multicoupler into the receptacle.

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

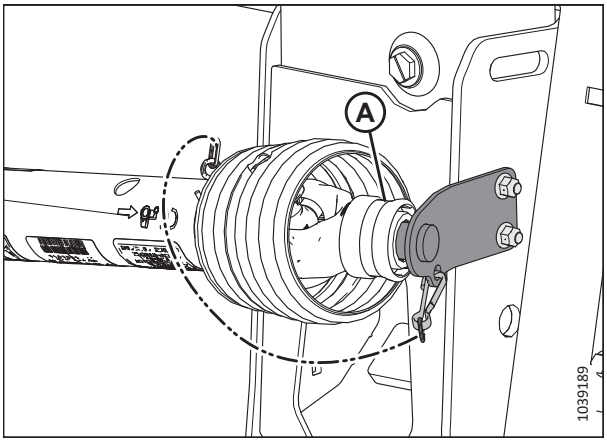


Figure 5.33: Driveline in Storage Position

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

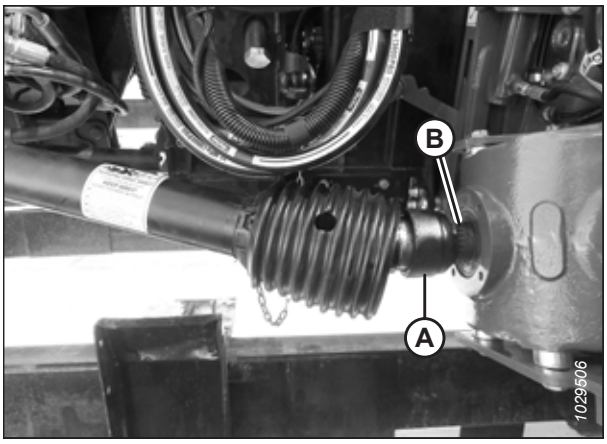


Figure 5.34: Connecting Driveline to Combine

5.5 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

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

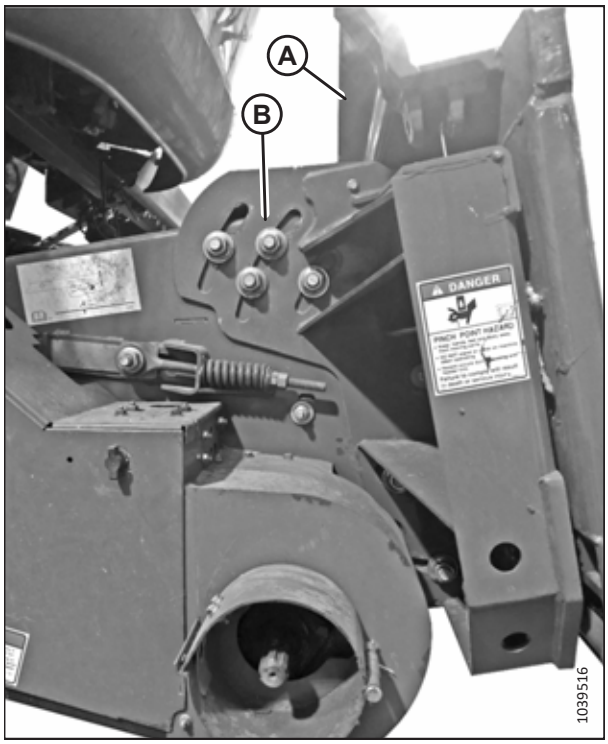


Figure 5.35: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Push handle (A) on the combine multicoupler receptacle towards the feeder house to retract pins (B) at the bottom corners of the feeder house. Clean the receptacle.

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
5. Raise the feeder house slightly to lift the header, ensuring that the feeder house saddle is properly engaged in the float module frame.

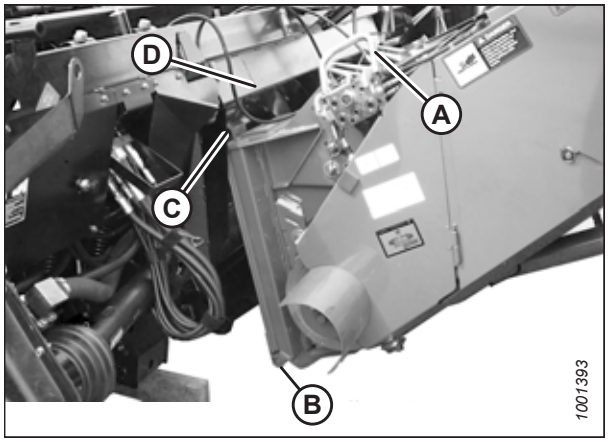


Figure 5.36: Combine and Float Module

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

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

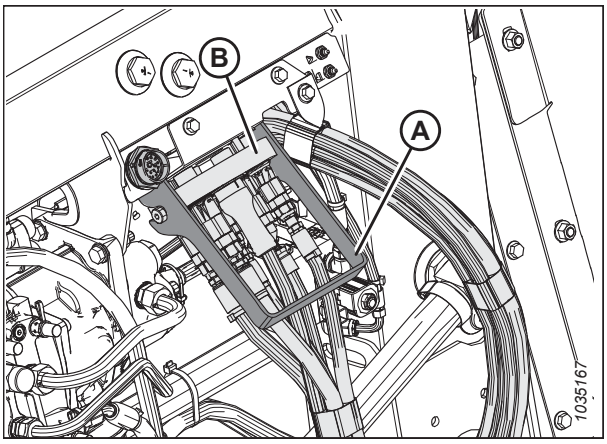


Figure 5.37: Multicoupler Storage

8. Position multicoupler (A) on the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.

9. Pull handle (B) to the horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

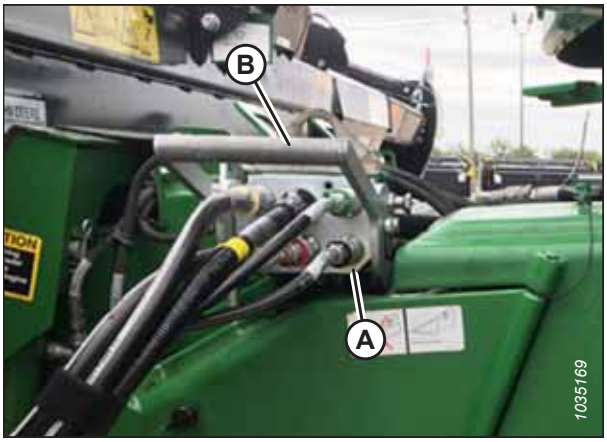


Figure 5.38: Multicoupler

10. Ensure that both feeder house pins (A) are fully engaged into the float module brackets.

    NOTE:

    If pins (A) do not fully engage the float module brackets, loosen bolts (B) and adjust the bracket as required.

11. Tighten bolts (B).

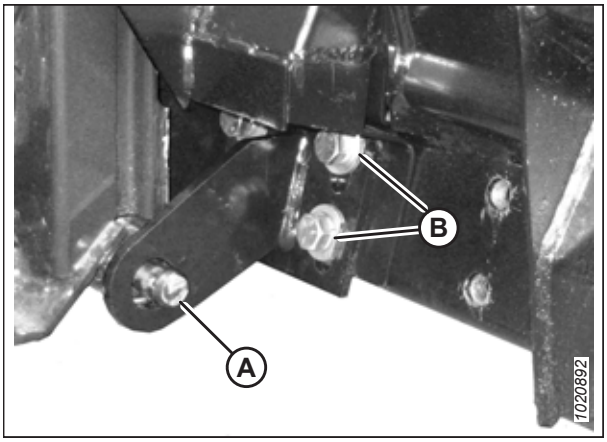


Figure 5.39: Feeder House Pin used on John Deere 60, 70, S, or T Series – X9 Series is Similar

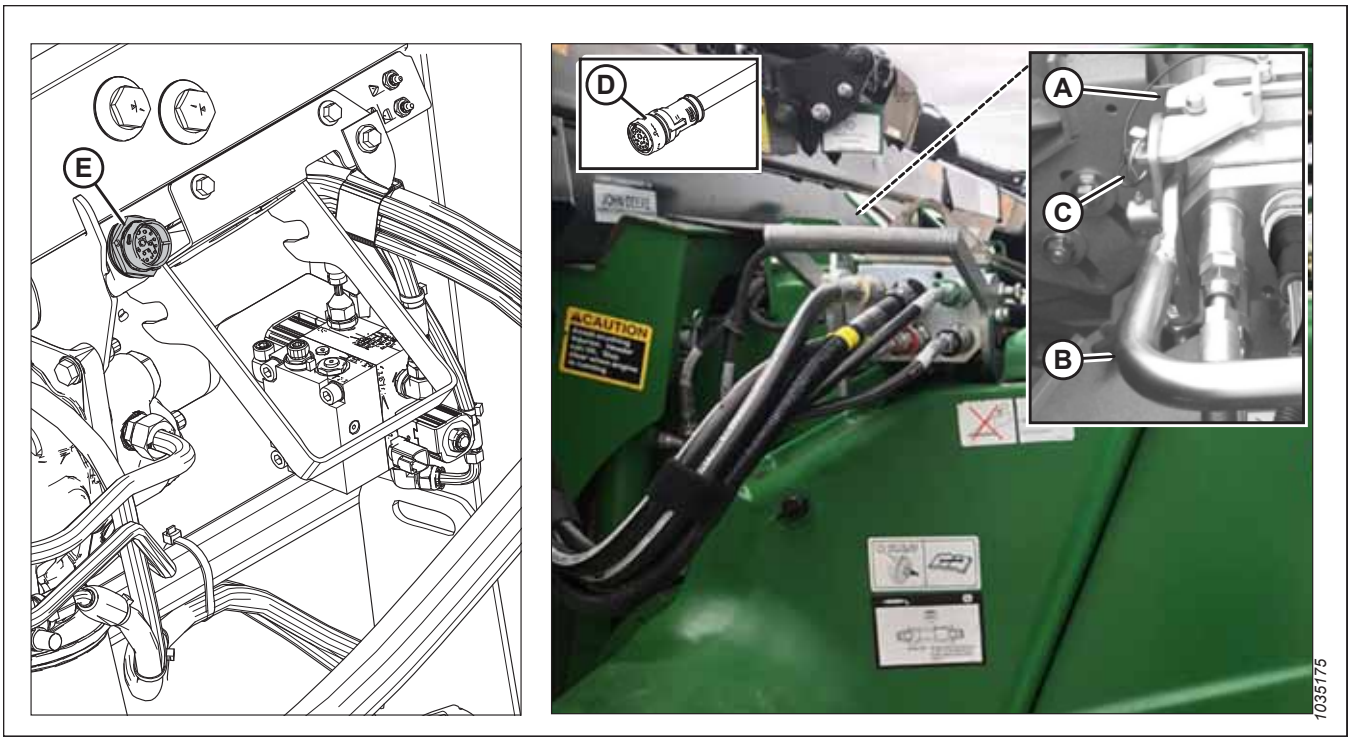


Figure 5.40: Multicoupler Lock, Electrical Connections

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

13. **60, 70, S, or T Series:** 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.

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

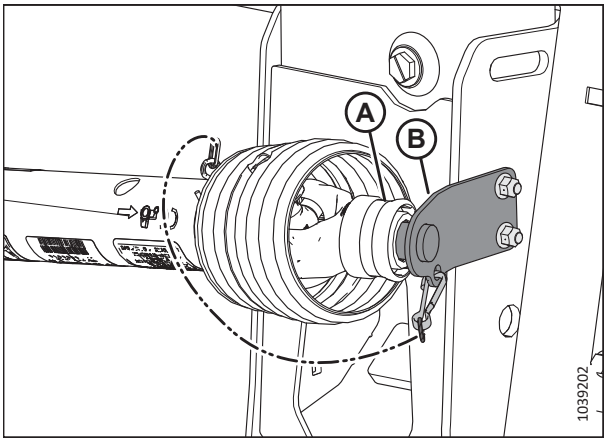


Figure 5.41: Driveline in Storage Position – Driveline B7038 or B7039

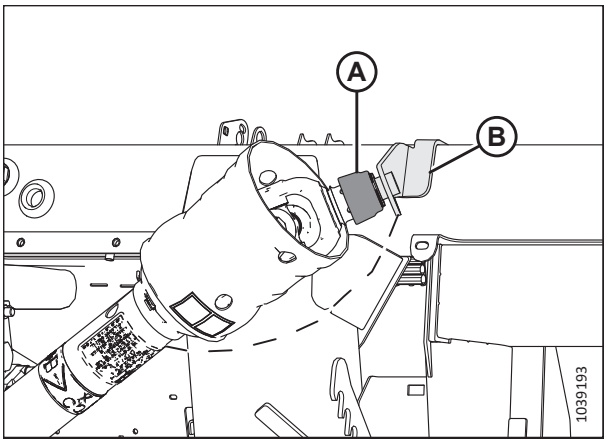


Figure 5.42: Driveline in Storage Position – Sidehill/ Hillside Driveline B7326 or B7182

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

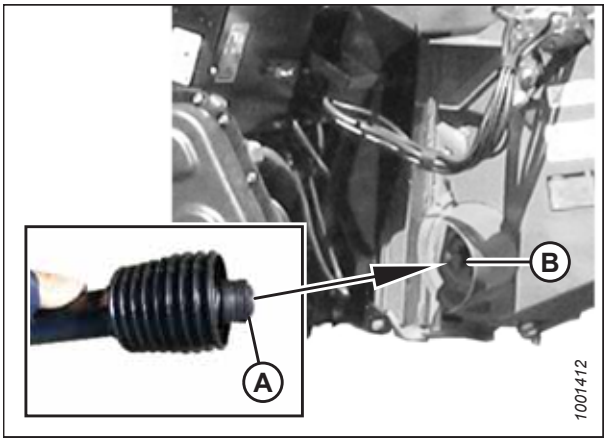


Figure 5.43: Driveline

16. 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 right float lock; the left float lock is similar.

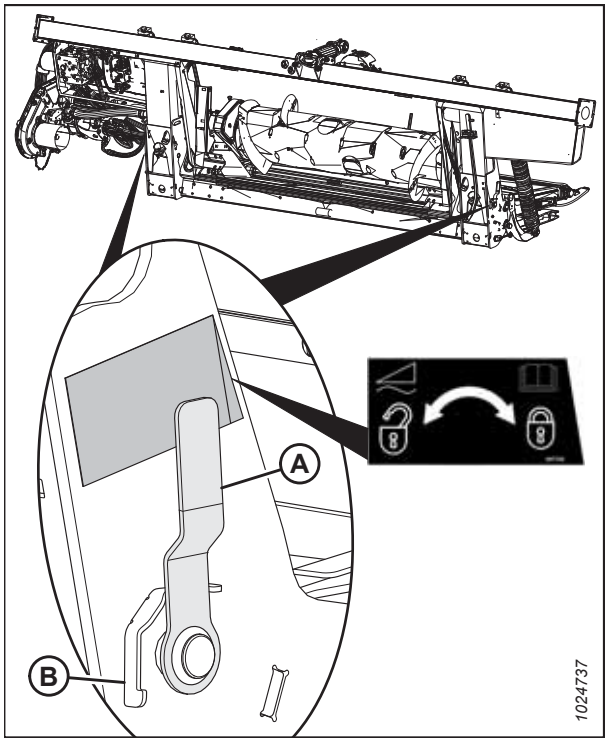


Figure 5.44: Float Lock Handle

5.6 Attaching Header to New Holland CR or CX Combine

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

Refer to the table below for information on the New Holland combine models that are compatible with this header.

Table 5.3 New Holland Combine Compatibility

New Holland Combine Series	Combine Model
CR	920, 940, 960, 970, 980
	9020, 9040, 9060, 9065, 9070, 9080
	6090, 7090, 8080, 8090, 9090
	6.80, 6.90, 7.90, 8.90, 9.90, 10.90
CX	840, 860, 870, 880
	8070, 8080, 8090
	8080 Elevation, 8090 Elevation

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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

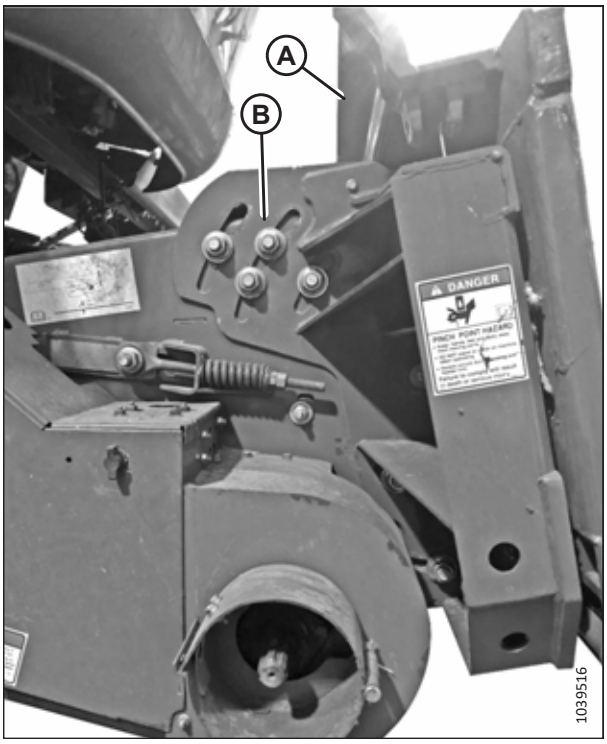


Figure 5.45: Faceplate Tilted to Mid-Position on Unspecified Combine

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

2. Ensure that handle (A) is positioned so that hooks (B) can engage the float module.

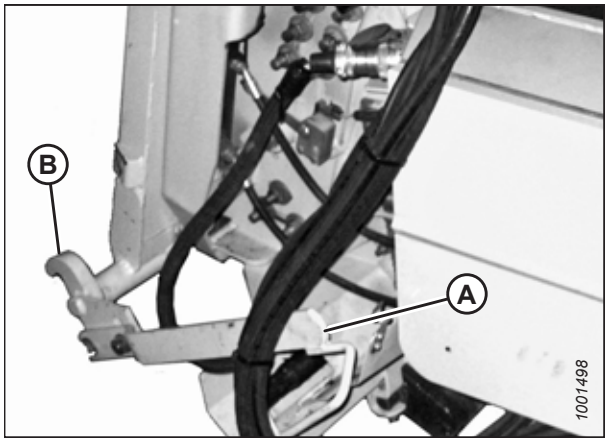


Figure 5.46: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

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

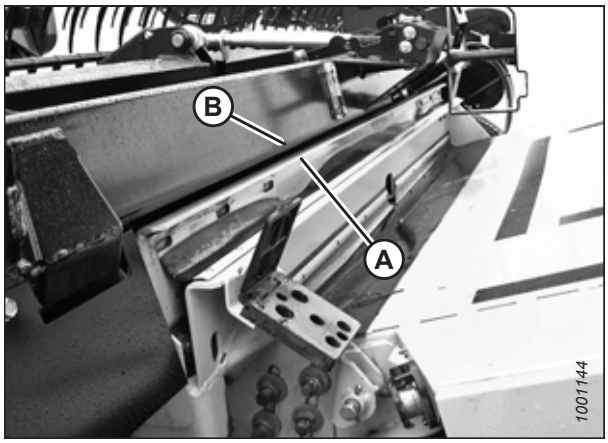


Figure 5.47: Header on Combine

7. Lift lever (A) on the float module on the left side of the feeder house, and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
8. Push down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
9. 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.

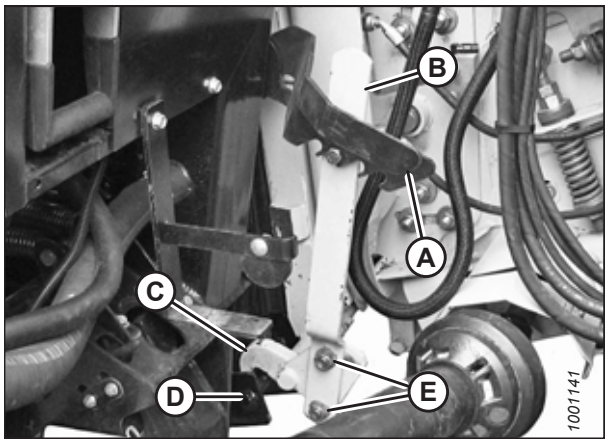


Figure 5.48: Feeder House Locks

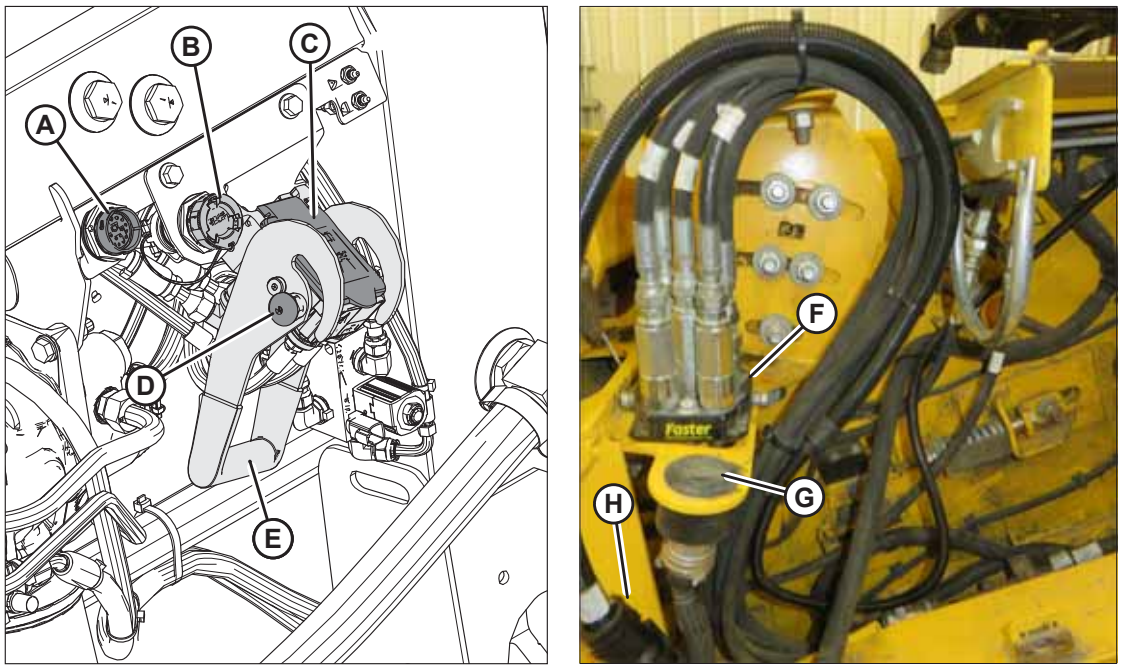


Figure 5.49: Multicoupler and Electrical Connections

10. Remove the caps from connectors C81B (A) and (B).
11. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
12. Push in lock button (D) and pull handle (E) to the fully open position.
13. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
14. Position coupler (F) onto float module receptacle (C). Push handle (E) to insert the pins into the receptacle.
15. Push handle (E) to the closed position until lock button (D) snaps out.
16. Remove combine connector (G) from the storage location on the combine and connect it to receptacle (B). Turn the collar on the connector to lock it in place.
17. Remove cab control kit connector C81A (H) from the storage location on the combine and connect it to C81B (A). Turn the collar on the connector to lock it in place.

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

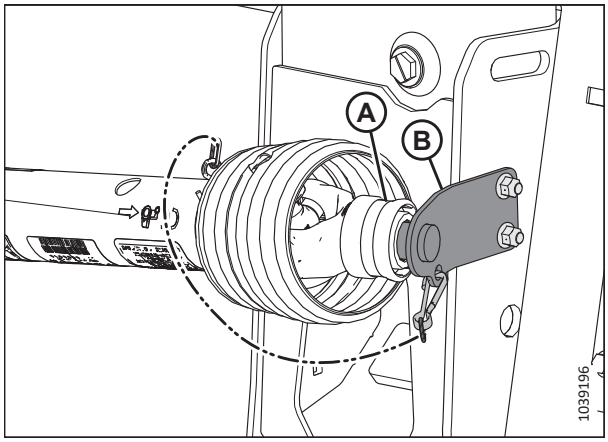


Figure 5.50: Driveline in Storage Position – Driveline B7038 or B7039

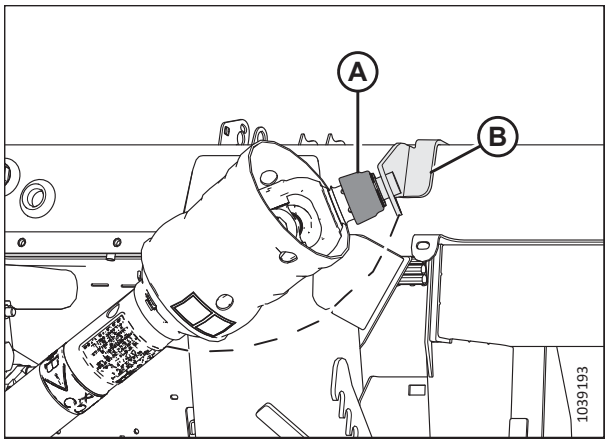


Figure 5.51: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

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

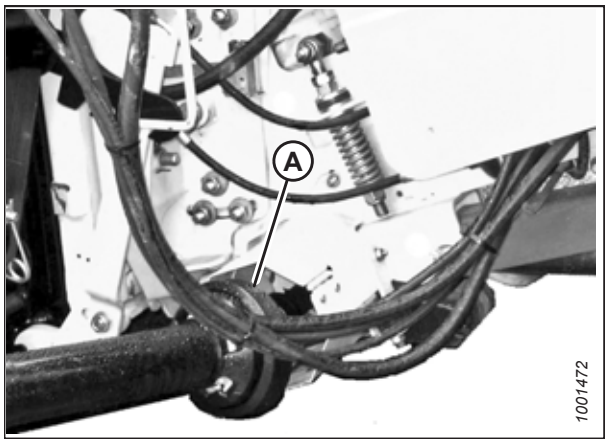


Figure 5.52: Driveline and Output Shaft

20. 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 right float lock; the left float lock is similar.

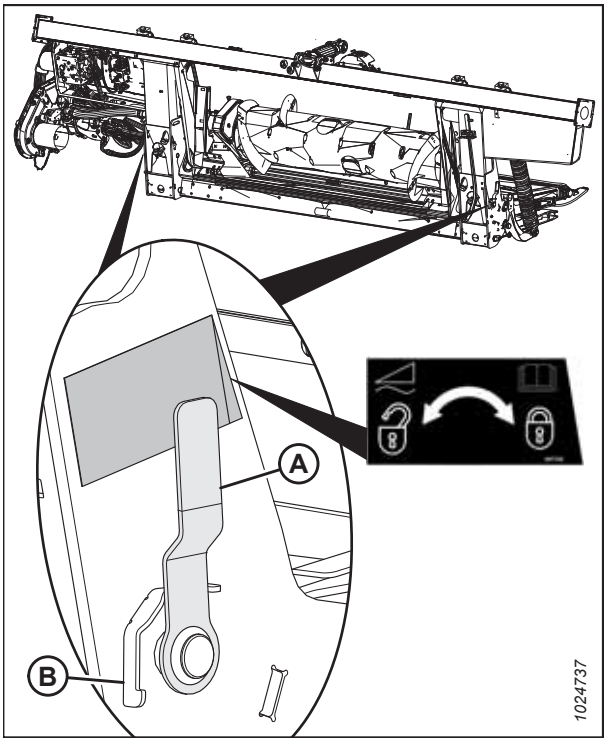


Figure 5.53: Float Lock Handle

5.7 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:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** 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.

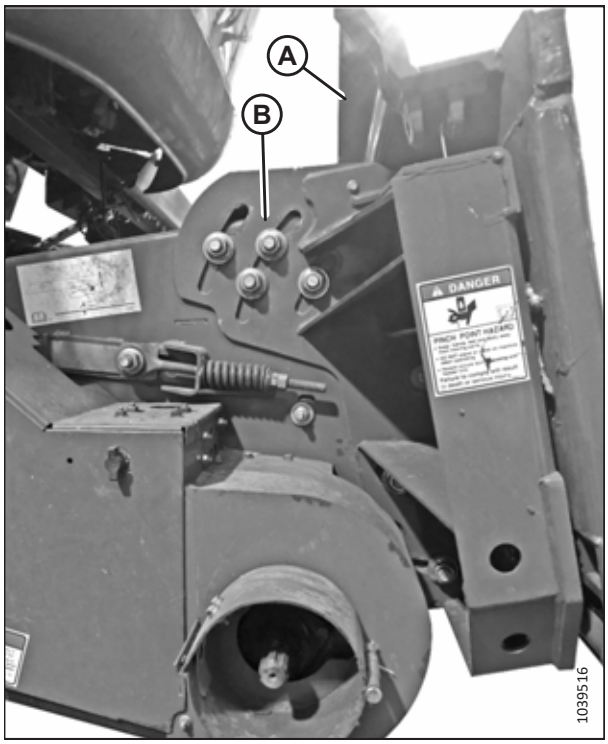


Figure 5.54: Faceplate Tilted to Mid-Position on Unspecified Combine

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

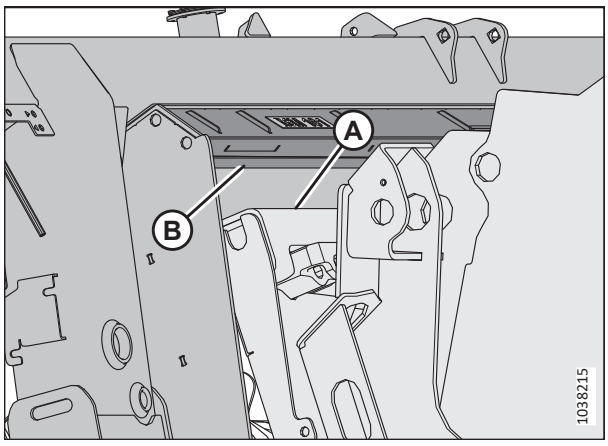


Figure 5.55: Combine and Float Module

5. 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.

6. Tighten nuts (E).

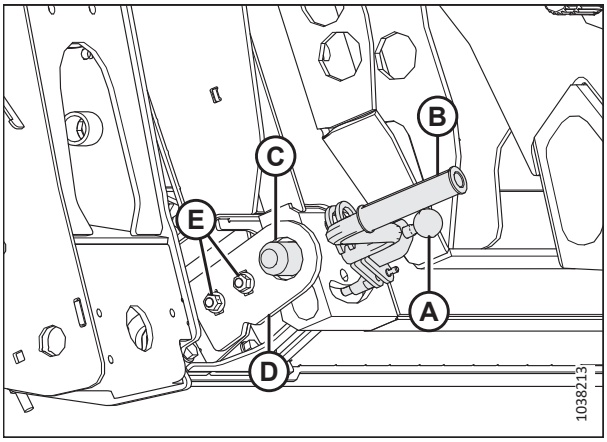


Figure 5.56: Feeder House Pin

7. Push in lock button (A) and pull handle (B) to the fully open position.
8. Remove the hydraulic quick coupler from the storage plate on the combine. Clean the mating surface of the coupler.
9. Position the combine coupler onto the float module receptacle. Push down on the handle to engage the pins into the receptacle.
10. Push the handle down to the closed position until lock button (B) snaps out.
11. 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.
12. 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.

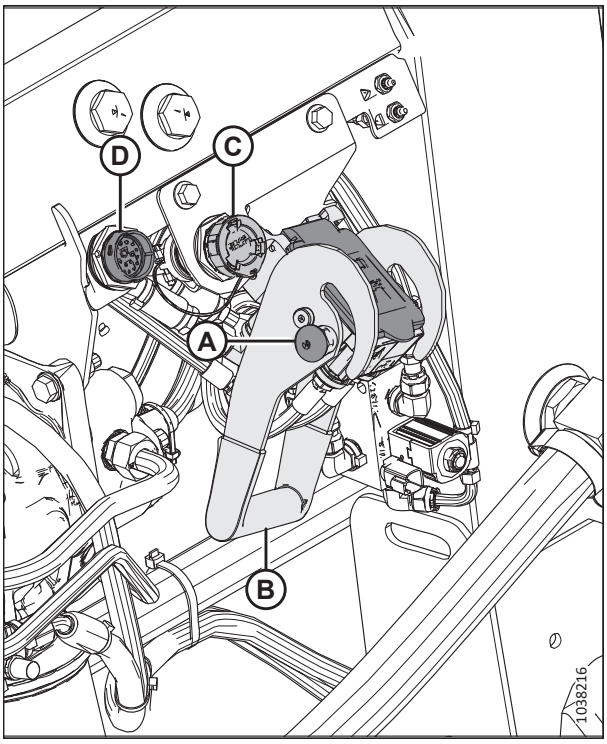


Figure 5.57: Multicoupler Storage

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

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

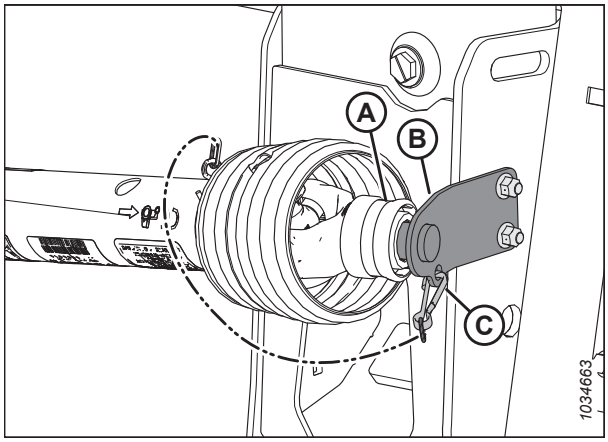


Figure 5.58: Driveline in Storage Position

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

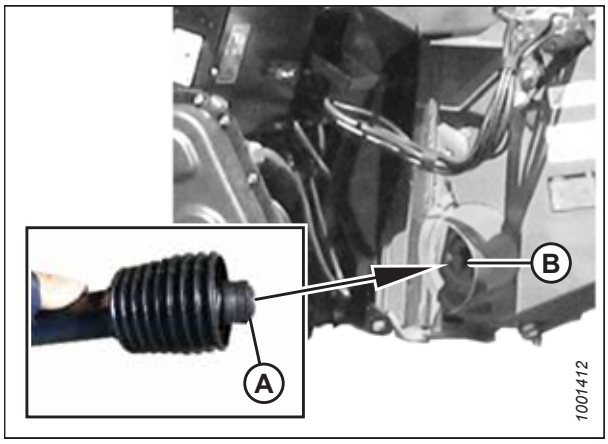


Figure 5.59: Driveline

16. 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 at the right shows the right side of the header. The float lock on the left side of the header is opposite.

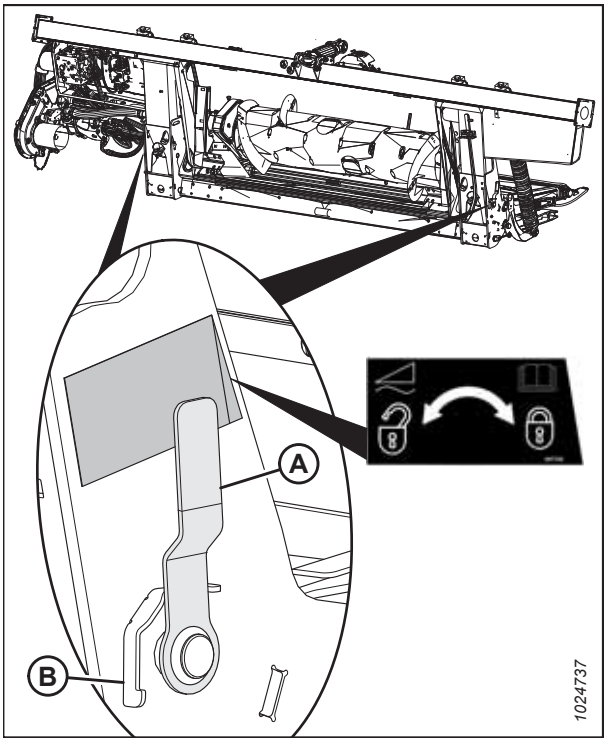


Figure 5.60: Float Lock Handle

Chapter 6: Installing Cab Control Kits (Parts Bag MD #337611, 337619, 337627, or 357970)

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

NOTE:

This procedure does **NOT** apply if the float module was shipped configured for John Deere X9 combines.

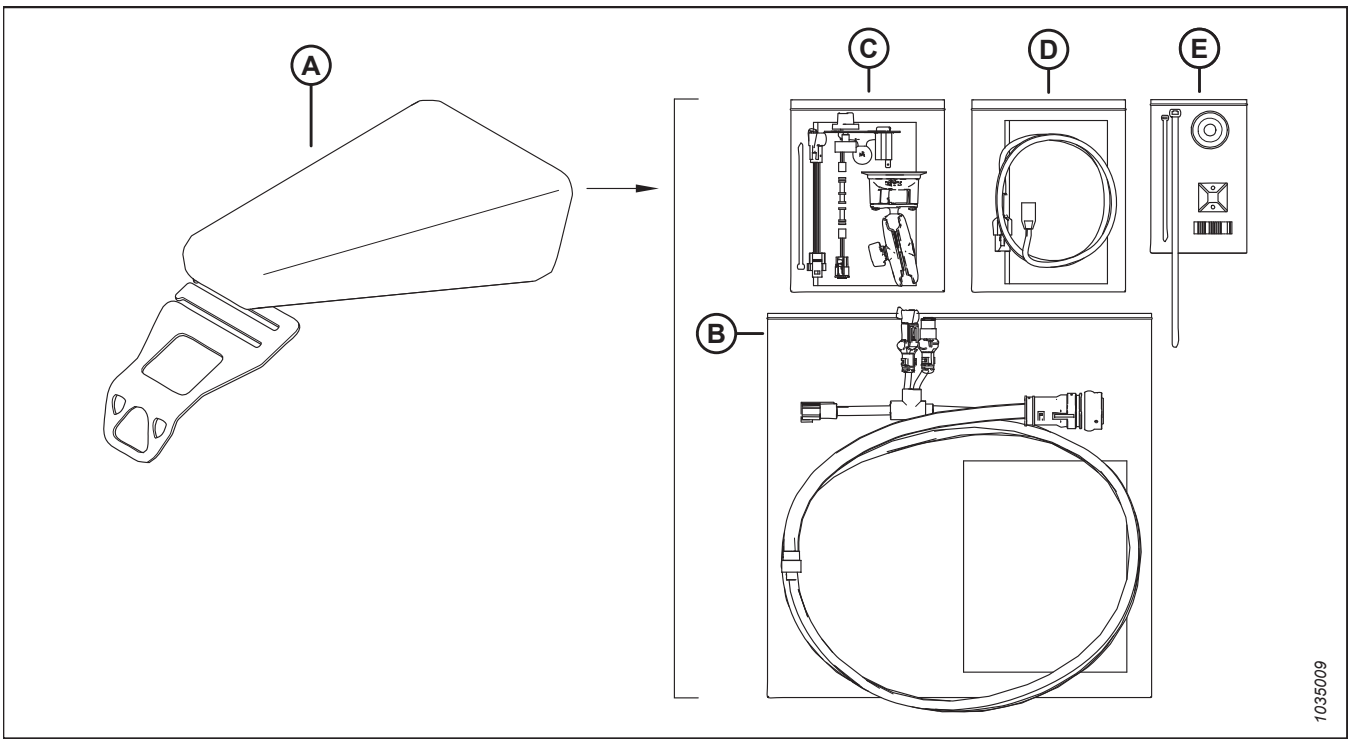


Figure 6.1: John Deere Cab Control Kit MD #337619 – Other Combines Similar

1. Retrieve parts bag (A) that contains the cab control kits. The parts bag is labeled with one of the following numbers:
   - MD #337611 (CLAAS)
   - MD #337619 (John Deere excluding X9)
   - MD #337627 (AGCO brands, or if the header is shipped not configured for any brand of combine)
   - MD #357970 (Case IH and New Holland)
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)

Chapter 7: Completing Header Assembly

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

7.1 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 *7.1, page 87*.

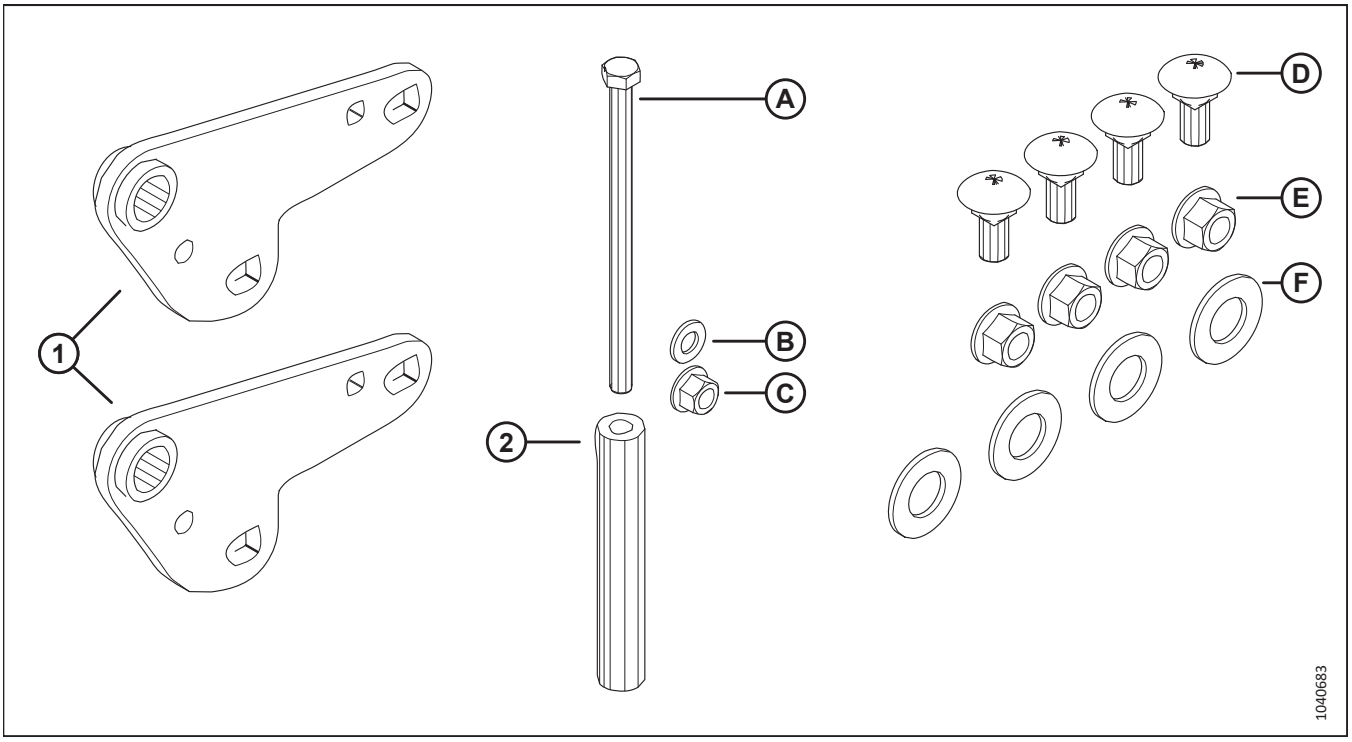


Figure 7.1: Center-Link Part Bag (MD #347601)

Table 7.1 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 [1]	WASHER – FLAT SAE 1 1/16 ID X 2.0 OD	4

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

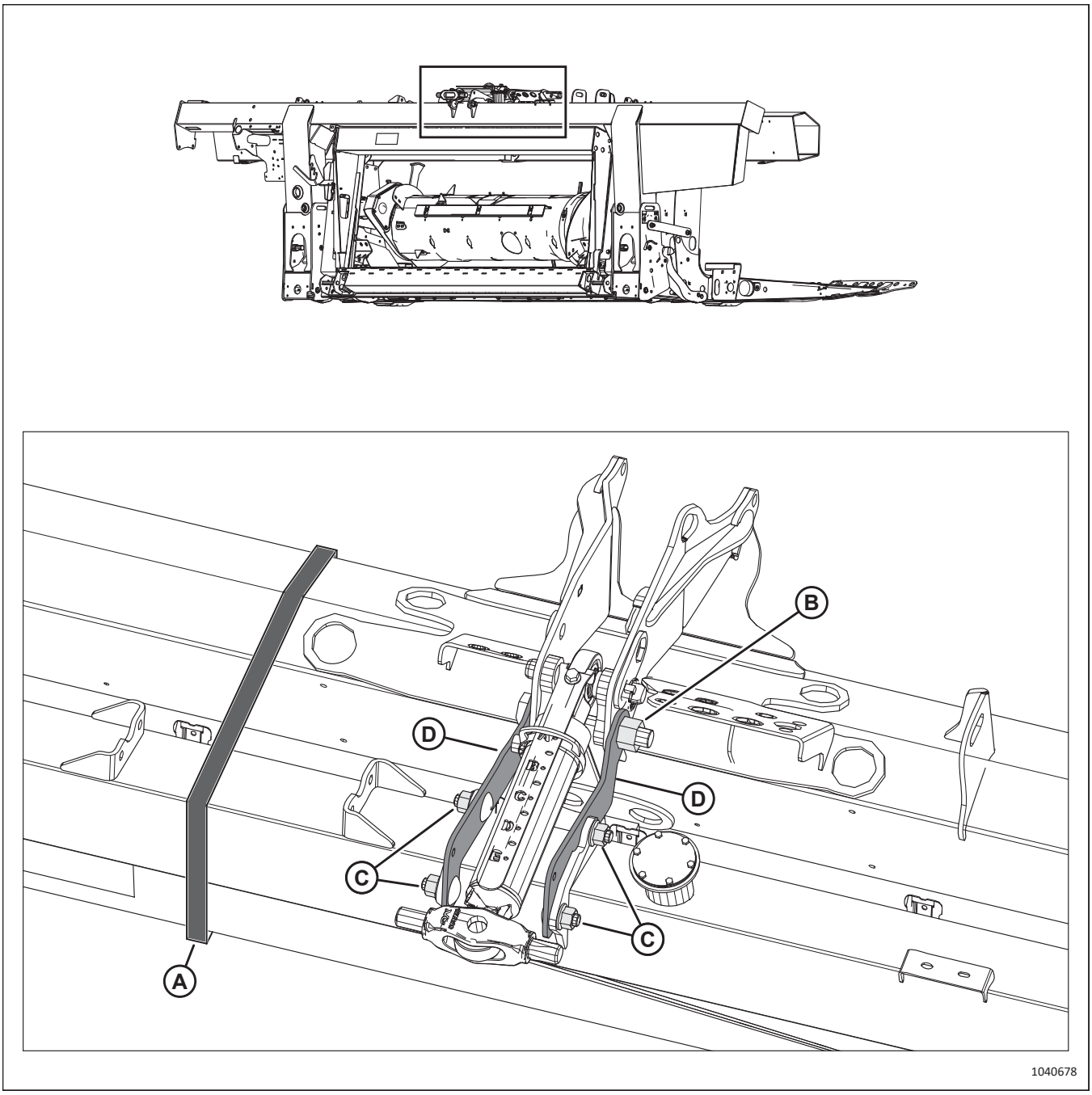


Figure 7.2: Center-Link Installation

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).

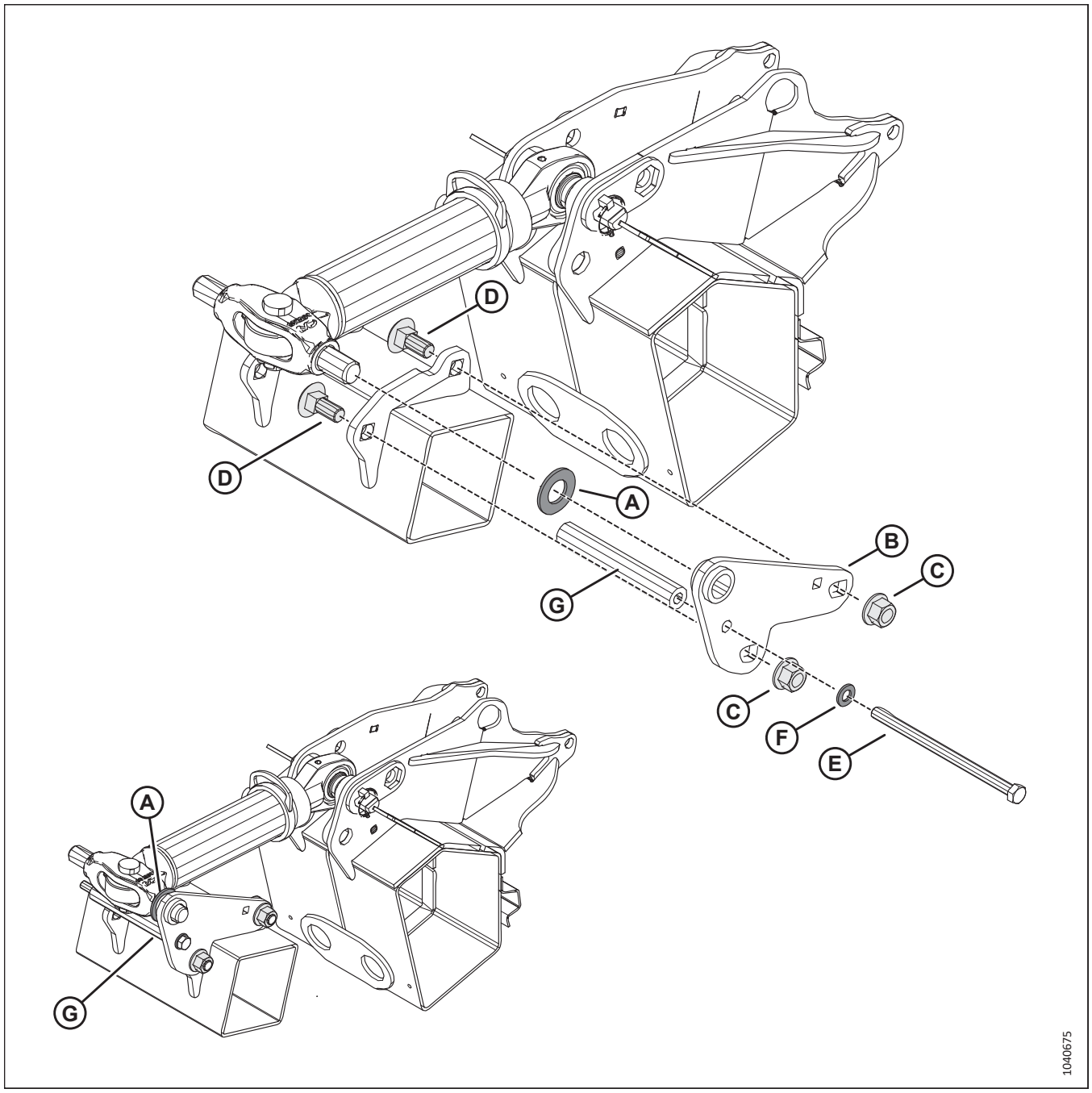


Figure 7.3: Center-Link Installation

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).

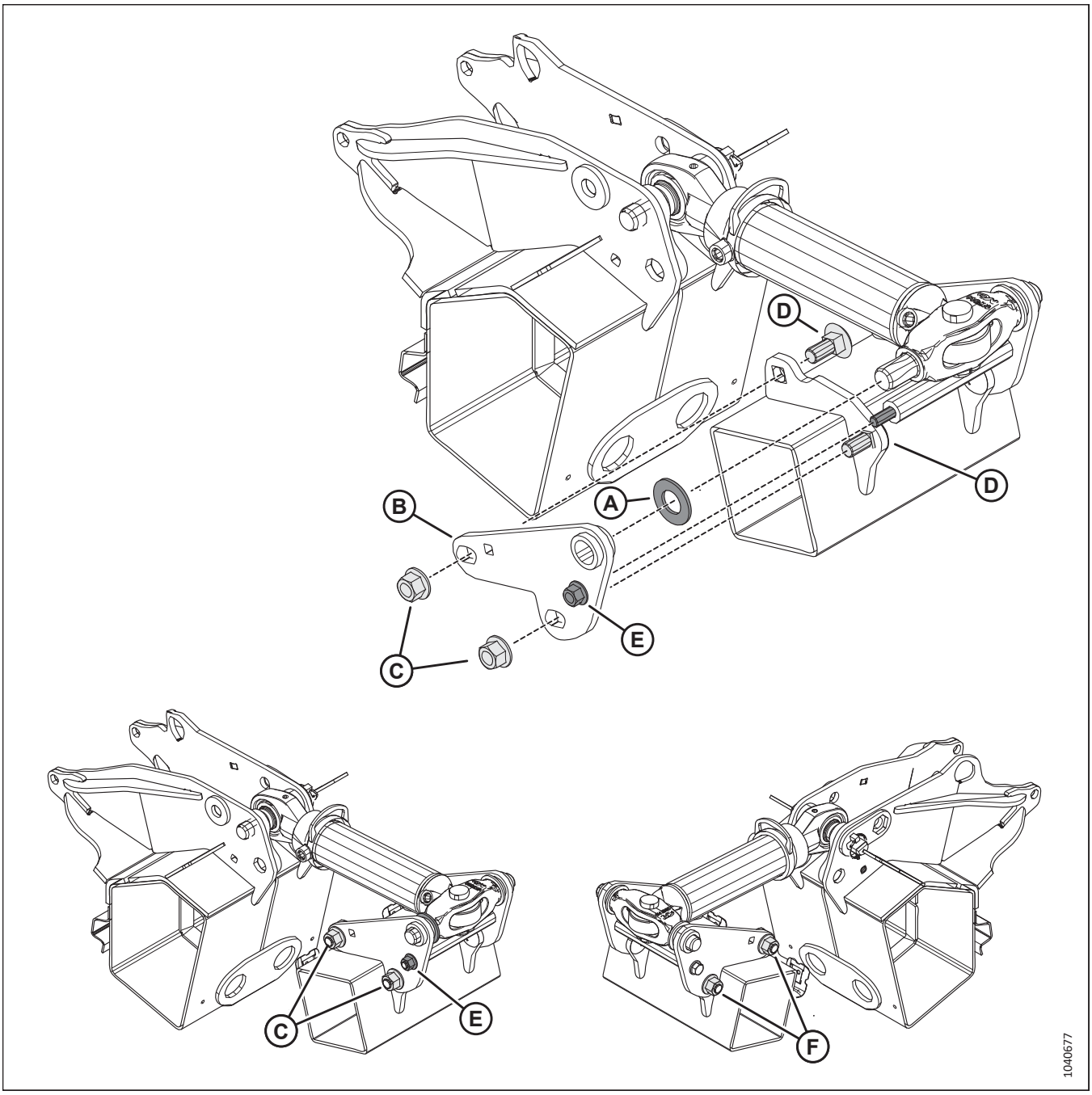


Figure 7.4: Center-Link Installation

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).

7.2 Removing Shipping Supports

The shipping stands bolted to the header allow it to be handled safely. These stands are no longer needed, 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.

NOTE:

Unless you are directed to do otherwise, discard the supports as well as all shipping material and hardware.

1. Remove bolts (A) and (B) as follows:

   NOTE:

   If strap (C) is difficult to remove, lift one end of the header to release the load on the strap so that the bolts can be removed.

   a. Remove rear bolt (B) from strap (C) on both sides of the float module.

   ### 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.

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

   c. Remove front bolt (A) and strap (C) on both sides of the float module.

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

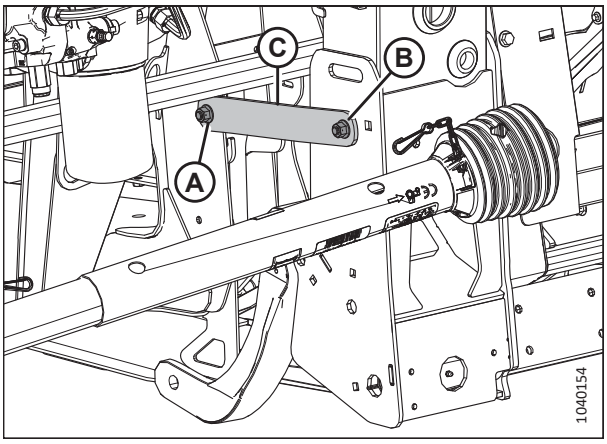


Figure 7.5: Strap on Center Frame

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

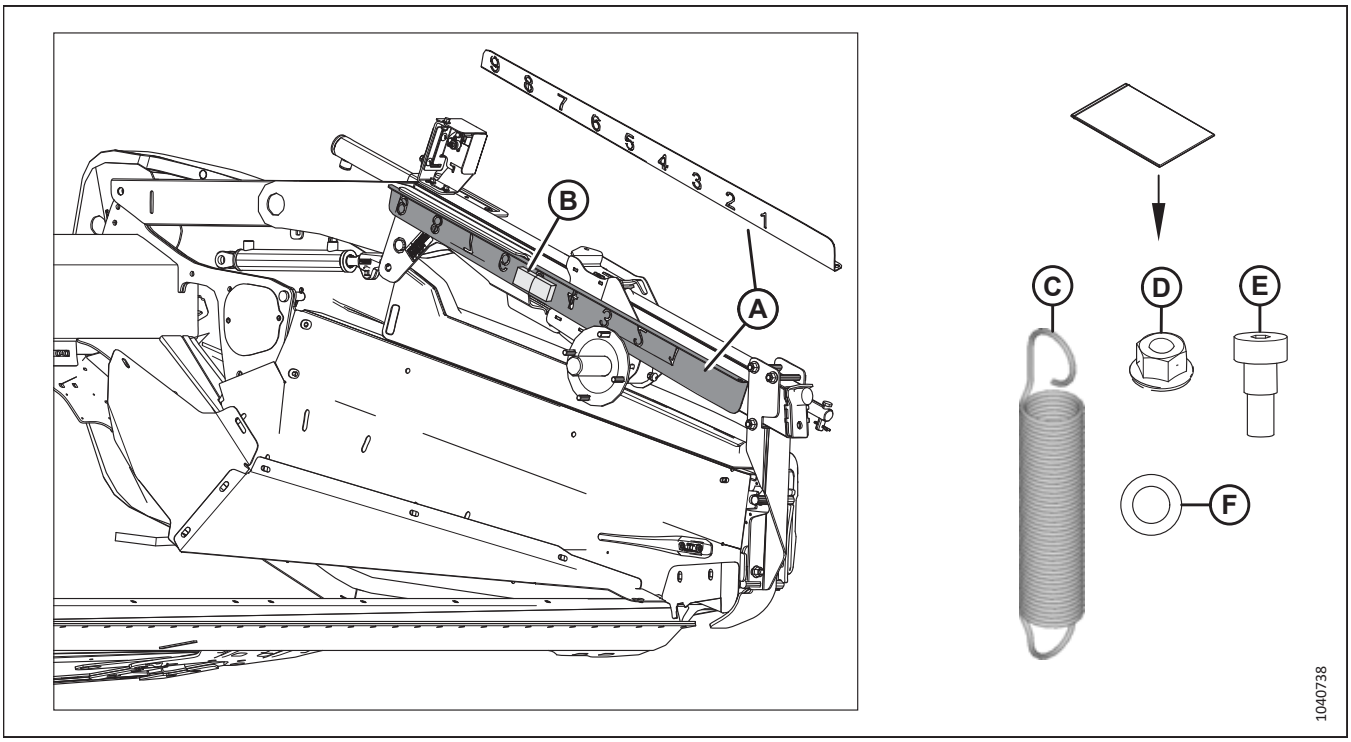


Figure 7.6: Fore-Aft Indicator Shipping Location, Parts Bag MD #368002

1. Retrieve fore-aft indicator (A) and parts bag (B) MD #368002 from the left reel arm. This bag contains the following:
   - One spring (C)MD #328556
   - One M8 nut (D) MD #135337
   - One M10 hex socket shoulder bolt (E) MD #135894
   - One M10 washer (F) MD #184711

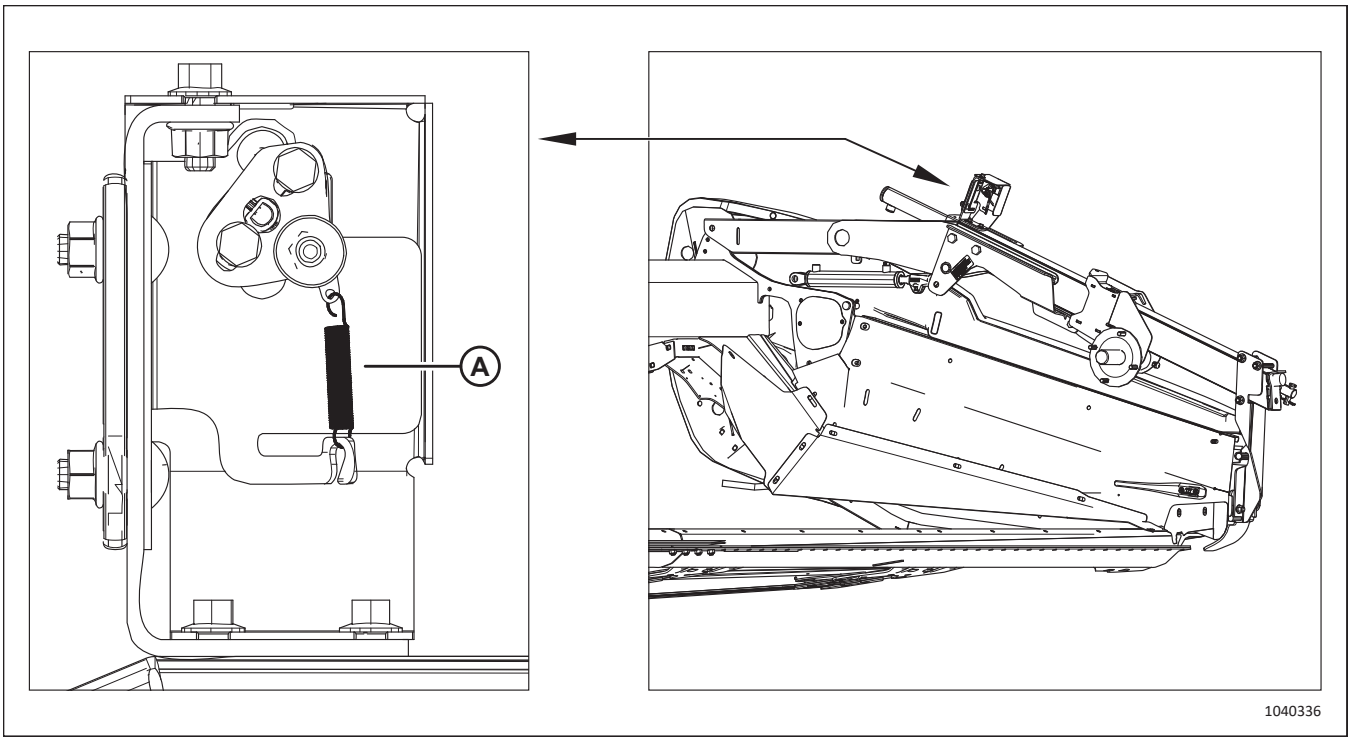


Figure 7.7: Fore-Aft Sensor Spring Installation

2. Attach spring (A) to the sensor assembly.

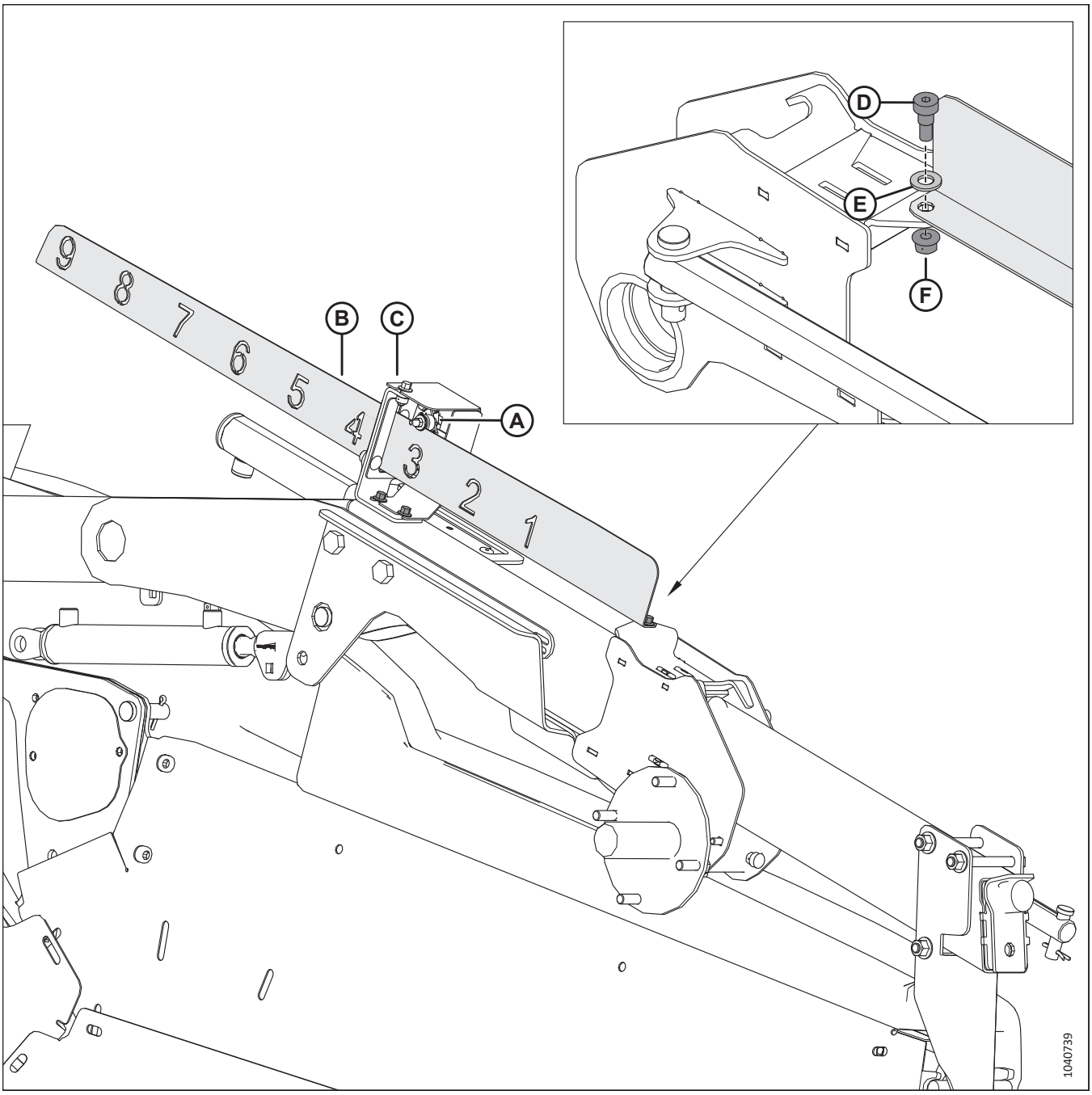


Figure 7.8: Fore-Aft Indicator Installation

3. Lift sensor arm (A) up, and slide fore-aft indicator (B) through sensor bracket (C).
4. Secure the indicator using shoulder bolt (D), washer (E), and M8 nut (F).
5. Torque nut (F) to 8.2 Nm (6 lbf·ft).

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

The front support helps secure the endshield to the header.

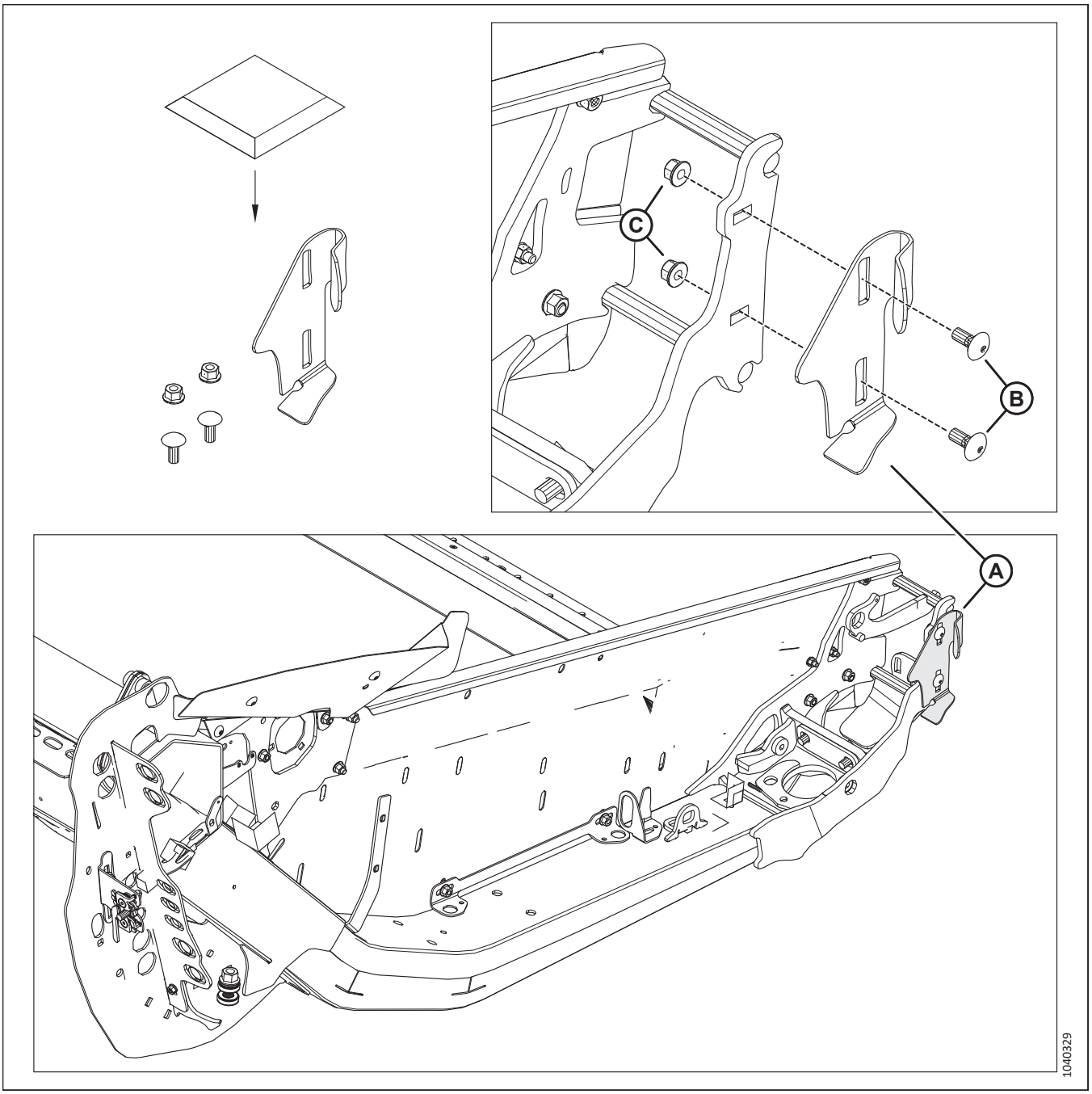


Figure 7.9: Front Support Installation, Parts Bag MD #357468

1. Retrieve parts bag MD #357468.
2. Install front support (A) using two bolts (B) and nuts (C) supplied in the parts bag.
3. Install the right endshield. For instructions, refer to *12.3.4 Installing Header Endshields, page 499*.

7.5 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.

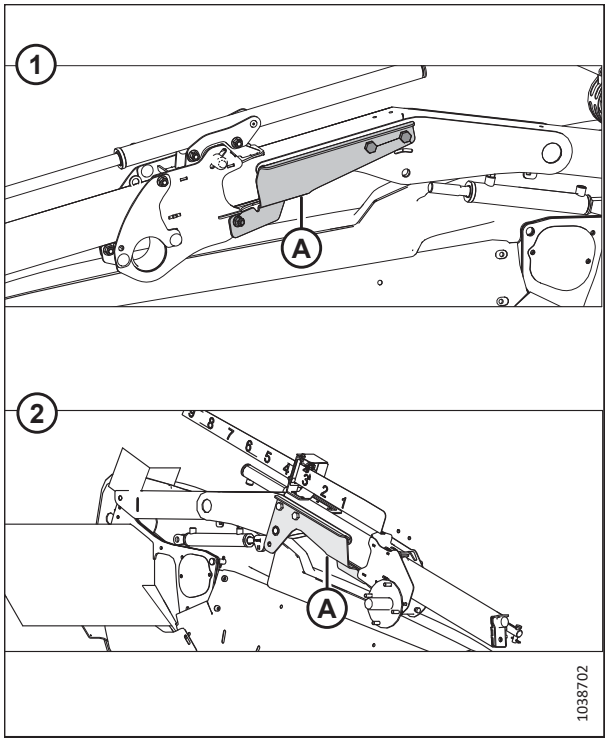


Figure 7.10: Fore-Aft Shipping Supports

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.

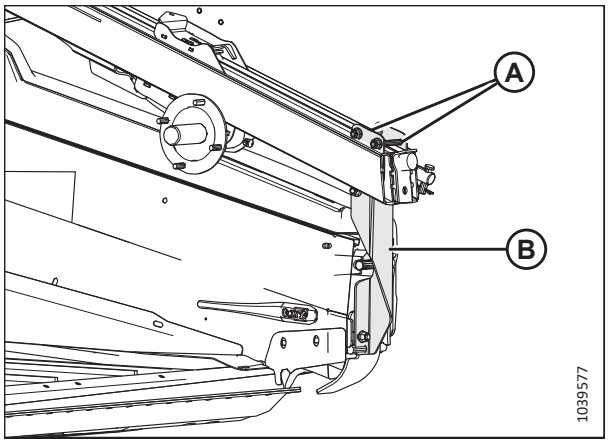


Figure 7.11: Reel Arm Support

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

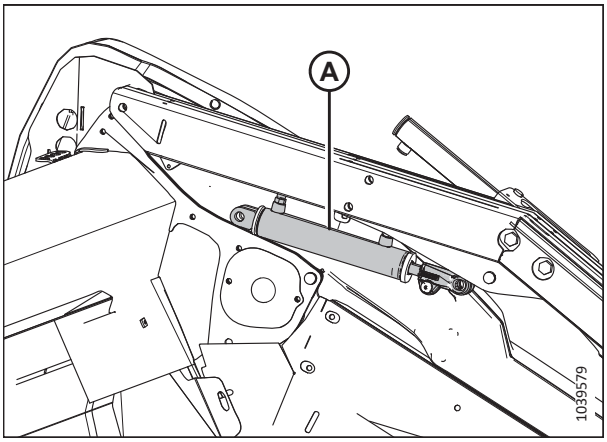


Figure 7.12: Reel Lift Cylinder on Left Reel Arm

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.

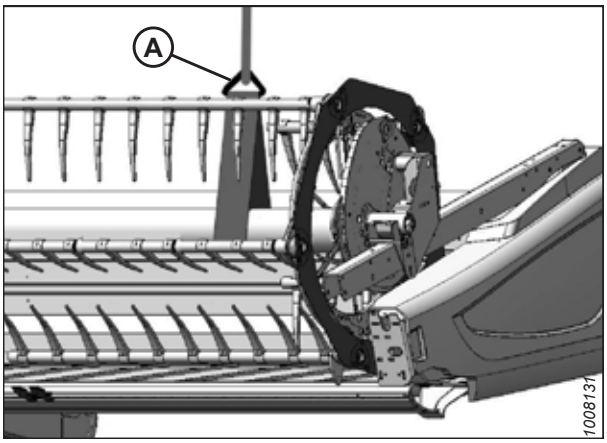


Figure 7.13: Sling Positioned on Left Side of Reel

5. Remove and retain two pins (A).

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.

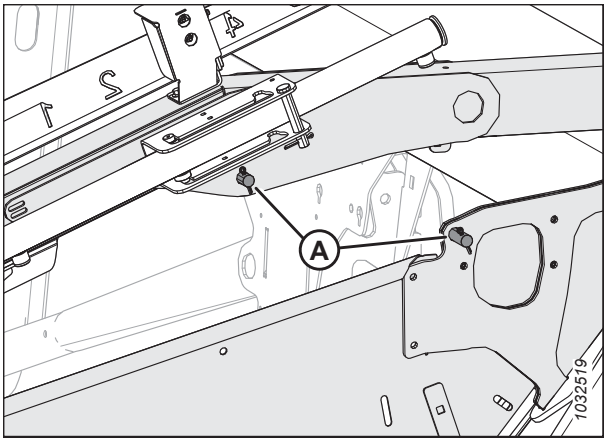


Figure 7.14: Left Reel Lift Cylinder Pins

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.

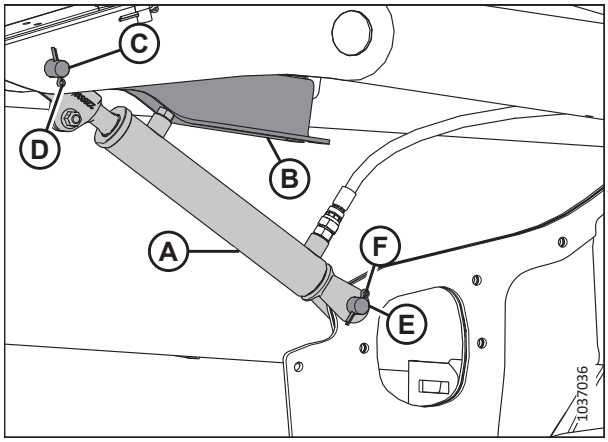


Figure 7.15: Left Reel Lift Cylinder Installed on Header

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

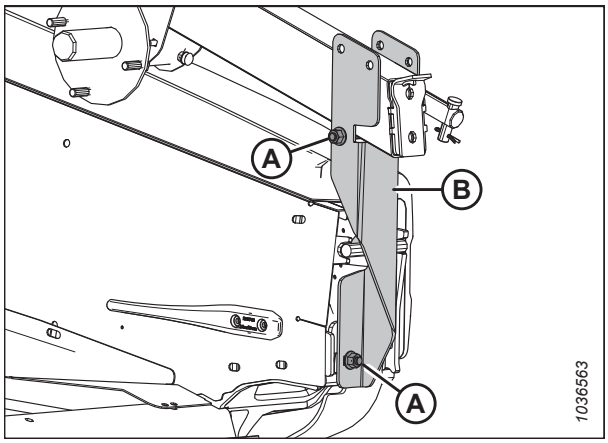


Figure 7.16: Reel Left Arm Support

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.

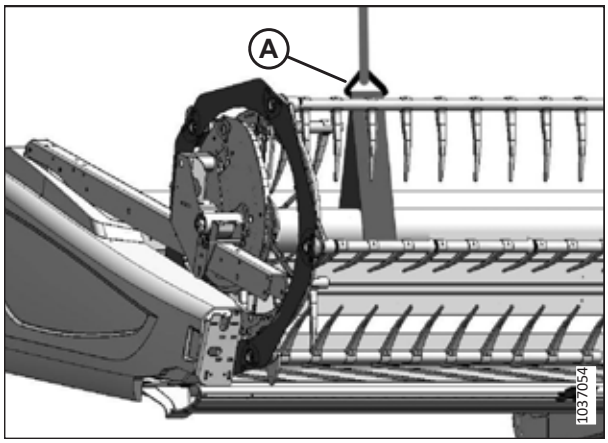


Figure 7.17: Sling Positioned on Right Side of Reel

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

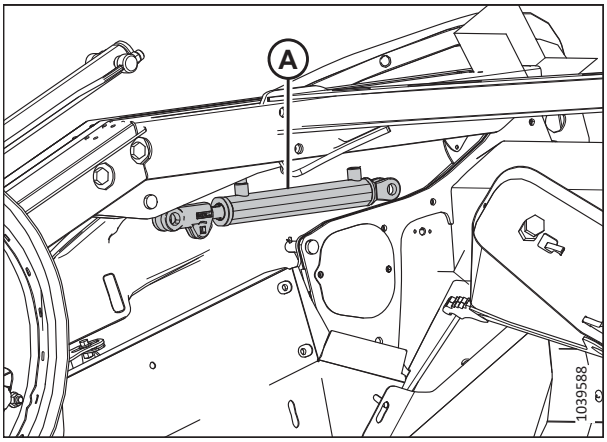


Figure 7.18: Reel Lift Cylinder on Right Reel Arm

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.

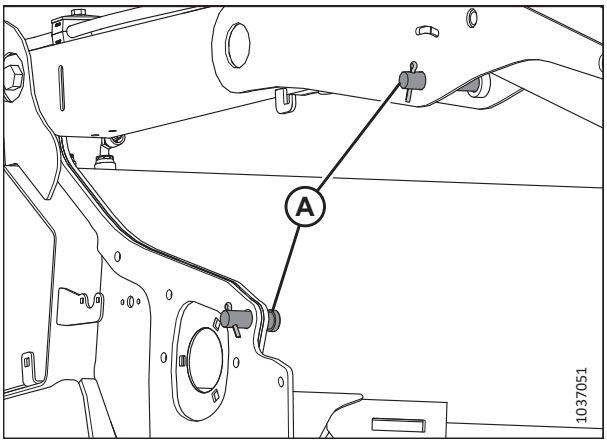


Figure 7.19: Right Reel Lift Cylinder Pins

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.

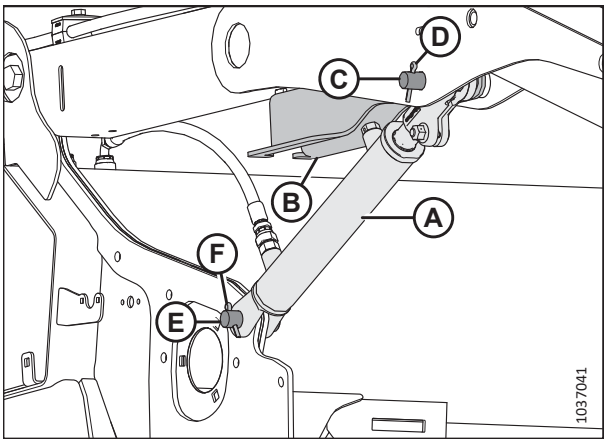


Figure 7.20: Right Lift Cylinder and Safety Prop

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

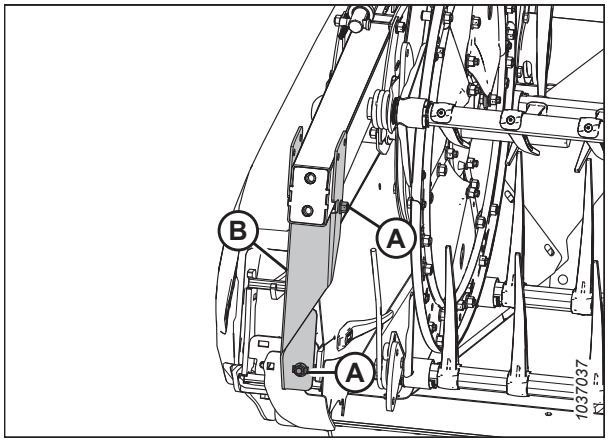


Figure 7.21: Right Reel Arm

7.6 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.

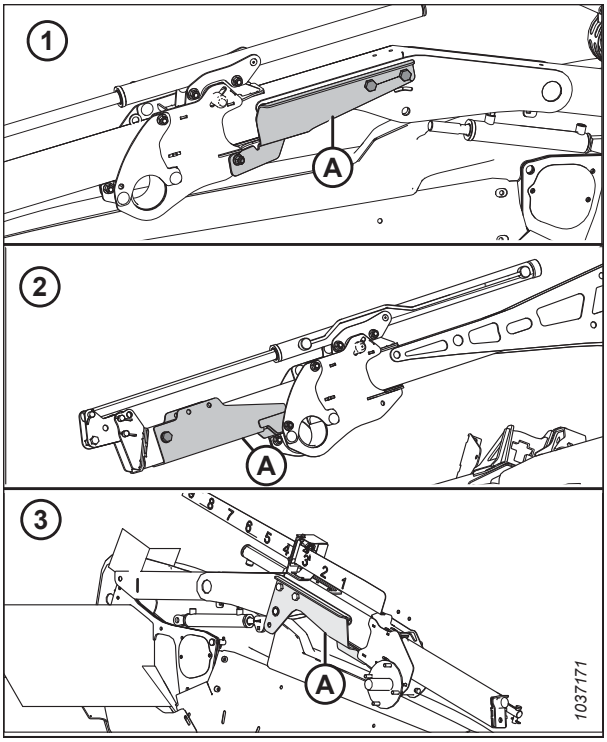


Figure 7.22: Fore-Aft Shipping Supports

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

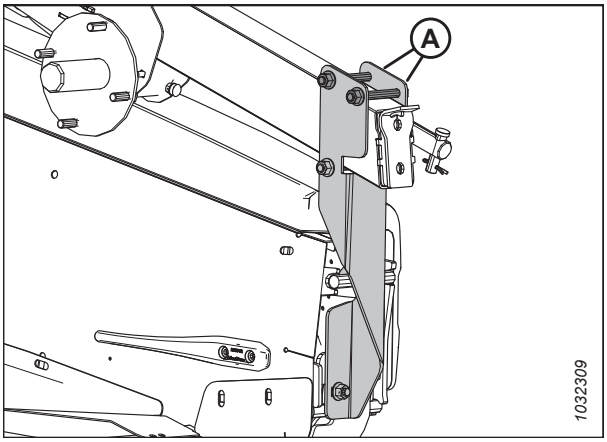


Figure 7.23: Right Reel Arm Shipping Support

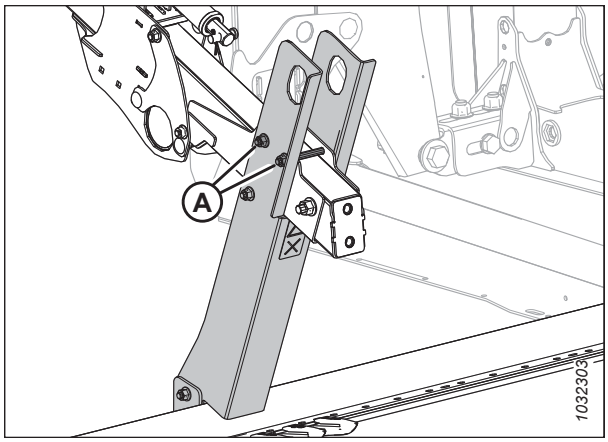


Figure 7.24: Center Arm Shipping Support

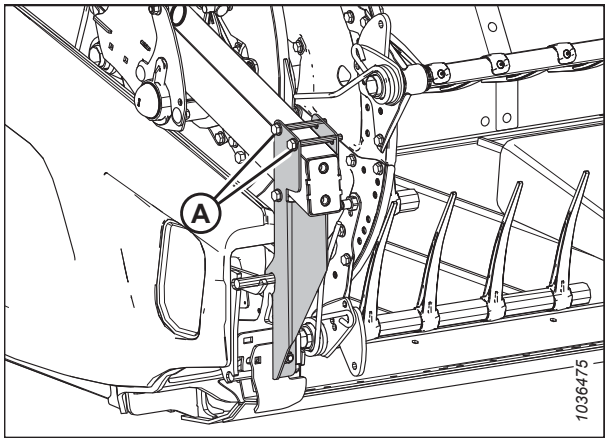


Figure 7.25: Left Reel Arm Shipping Support

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.

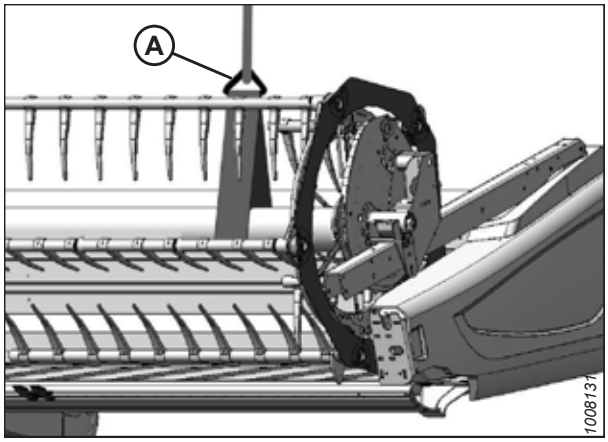


Figure 7.26: Sling Positioned on Left Side of Reel

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.

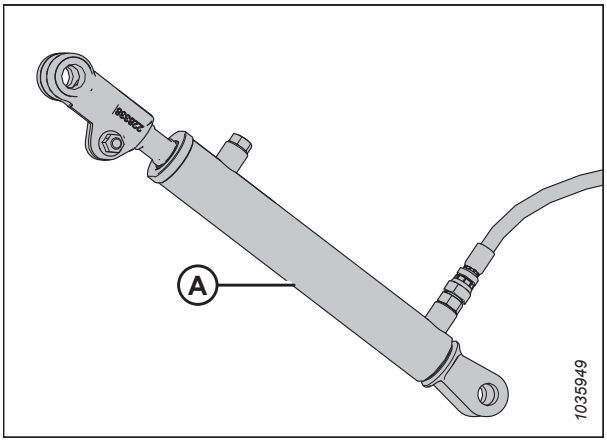


Figure 7.27: Reel Lift Cylinder

5. 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.

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.

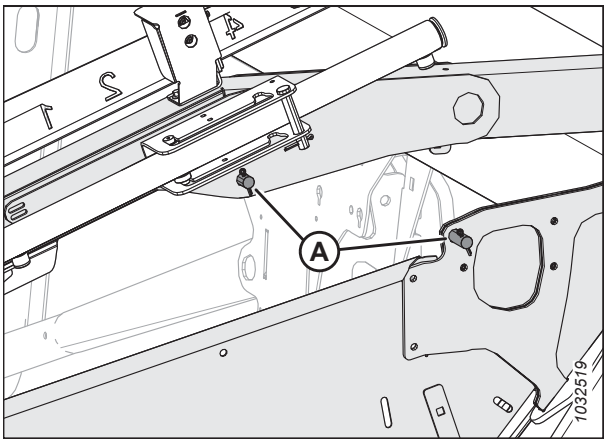


Figure 7.28: Left Reel Lift Cylinder Pins

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.

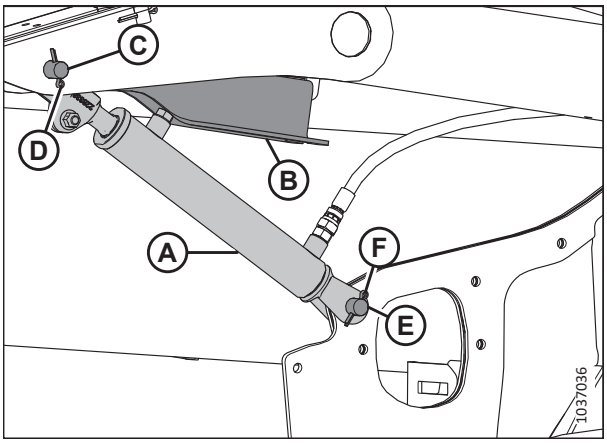


Figure 7.29: Left Lift Cylinder

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

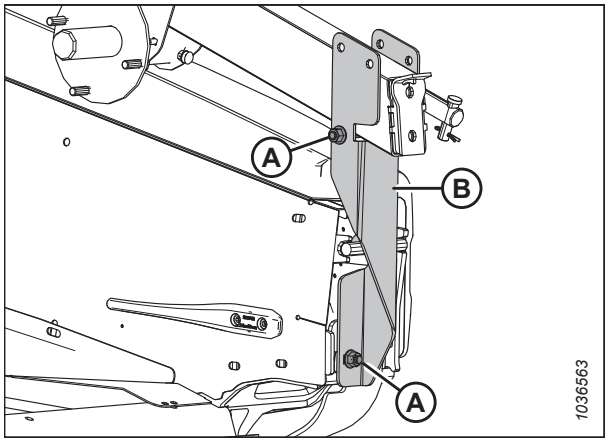


Figure 7.30: Reel Left Arm Support

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

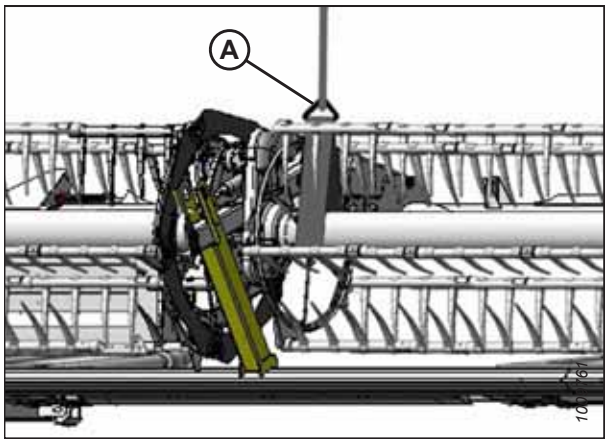


Figure 7.31: Center Arm Shipping Support

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

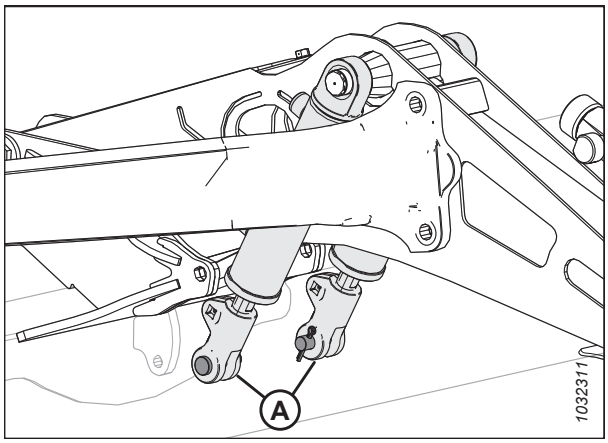


Figure 7.32: Lift Cylinders Secured to Center Reel Arm

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.

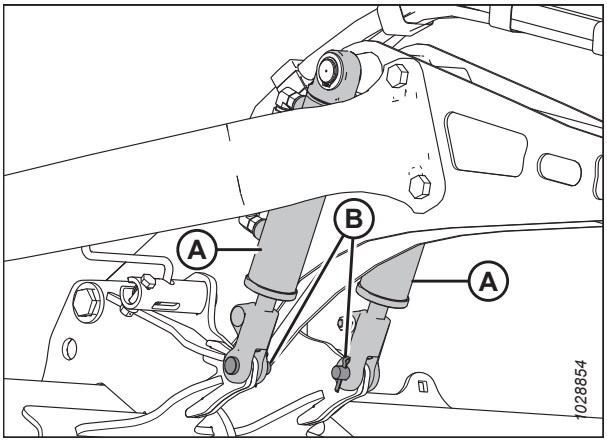


Figure 7.33: Lift Cylinders at Center Reel Arm

16. At the center arm, remove bolt (A).

17. Remove four bolts (B) (two bolts are shown) securing the shipping support to the cutterbar. Remove and discard shipping support (C).

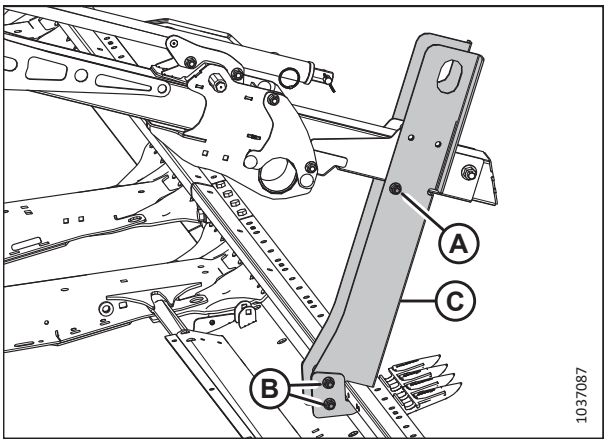


Figure 7.34: Center Reel Arm Support

18. 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.

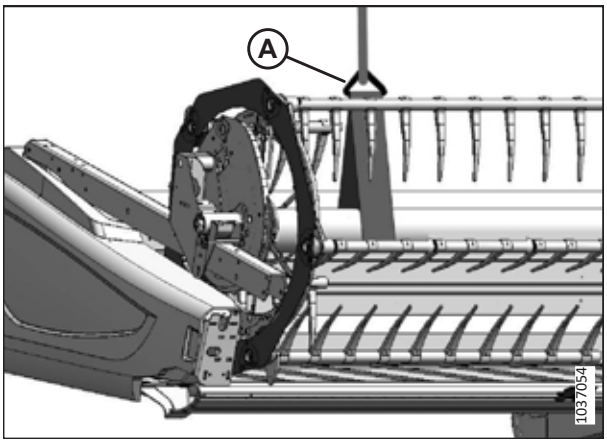


Figure 7.35: Sling Positioned on Right Side of Reel

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

20. Remove and set aside the right light assembly strapped to the reel lift cylinder.

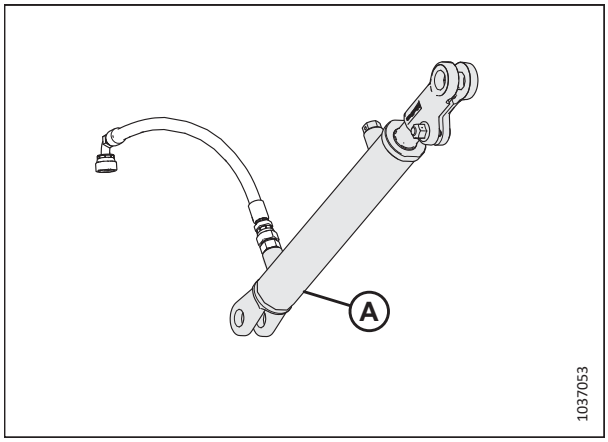


Figure 7.36: Reel Lift Cylinder

21. 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.

22. 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.

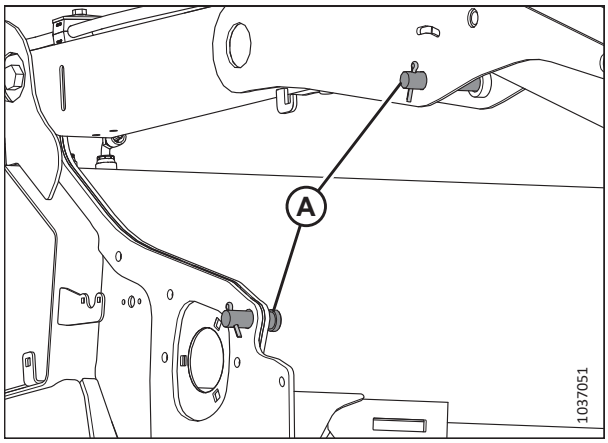


Figure 7.37: Right Reel Lift Cylinder Pins

23. 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.

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

25. 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.

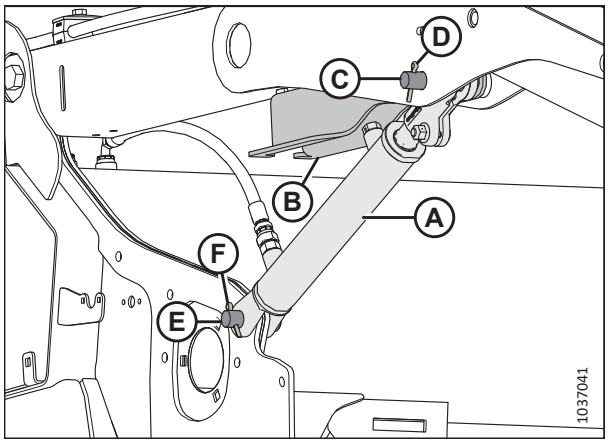


Figure 7.38: Right Lift Cylinder Installed on Reel Arm

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

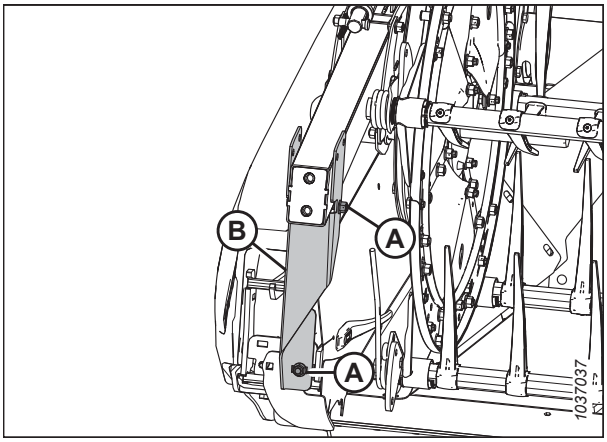


Figure 7.39: Right Reel Arm

7.7 Installing Deck Cutterbar Seals – D230 (Unmarked Parts Bag)

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

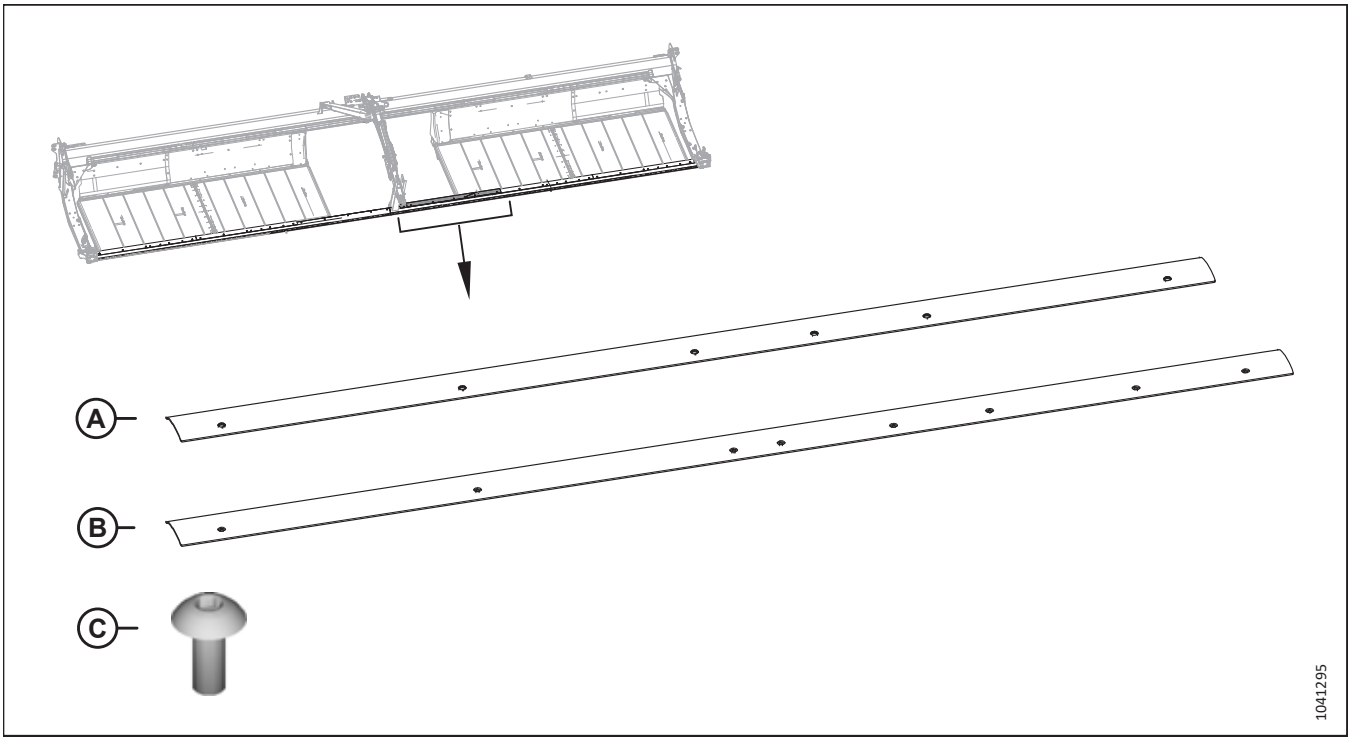


Figure 7.40: Cutterbar Seals and Hardware

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

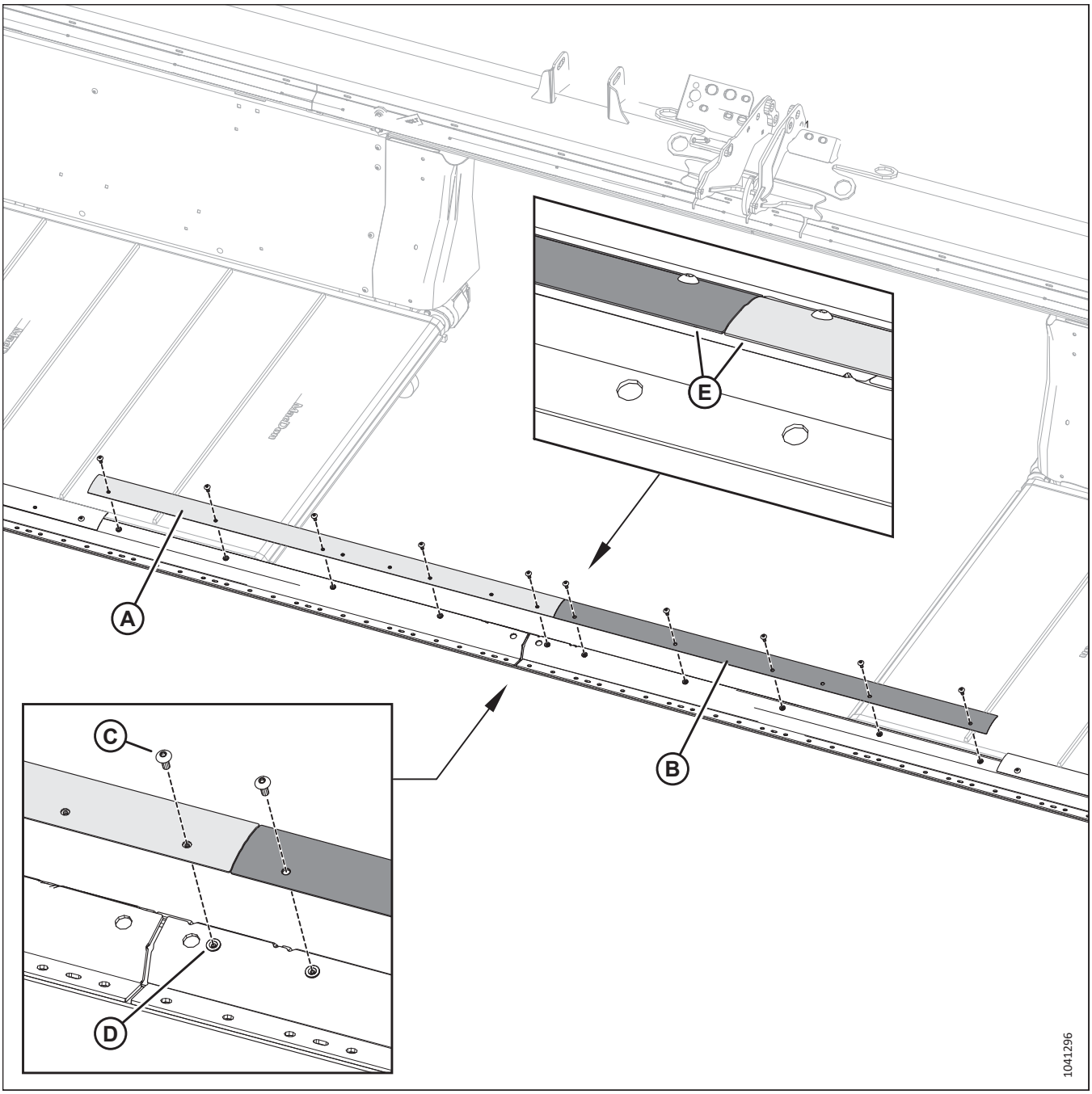


Figure 7.41: Draper Seals – Right Deck

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

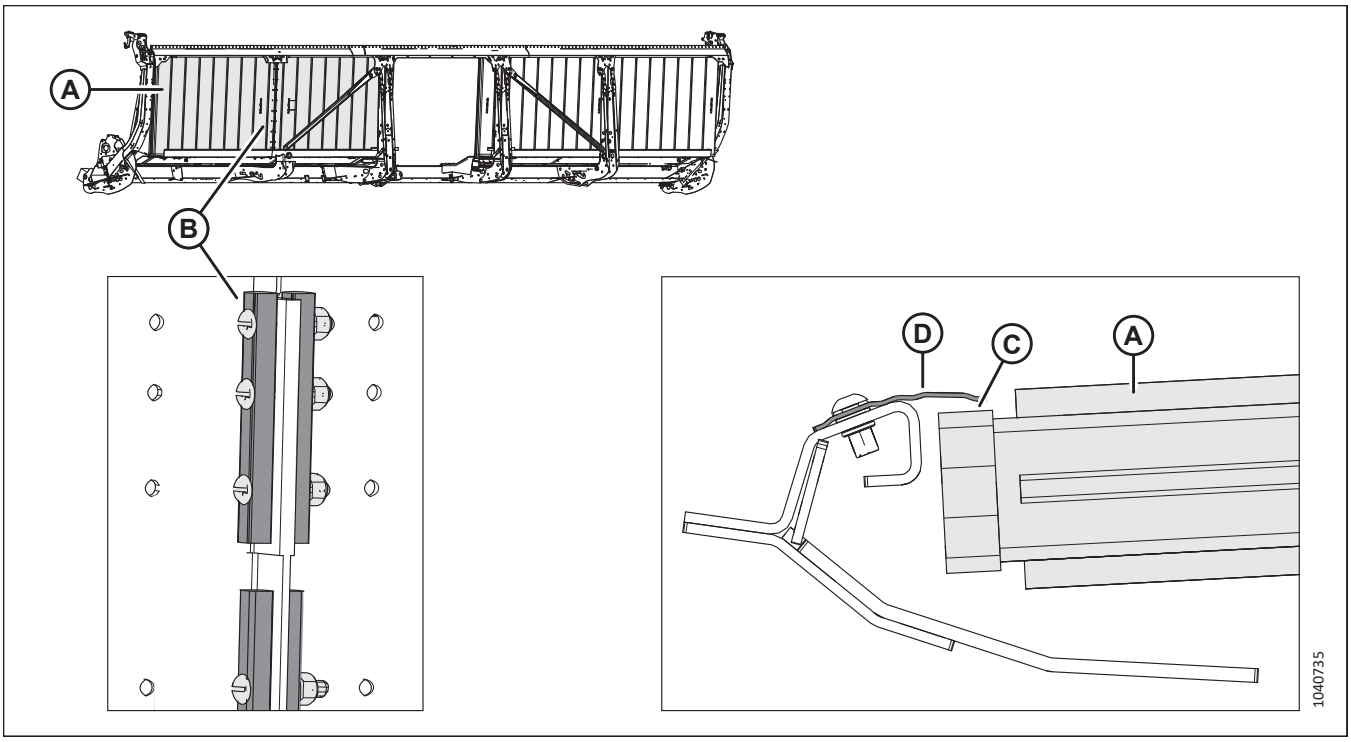


Figure 7.42: Draper Seal Clearance Specifications

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 *12.1 Adjusting Side Draper Deck Height, page 491*.

7.8 Installing Deck Cutterbar Seal – D235 (Unmarked Parts Bag)

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

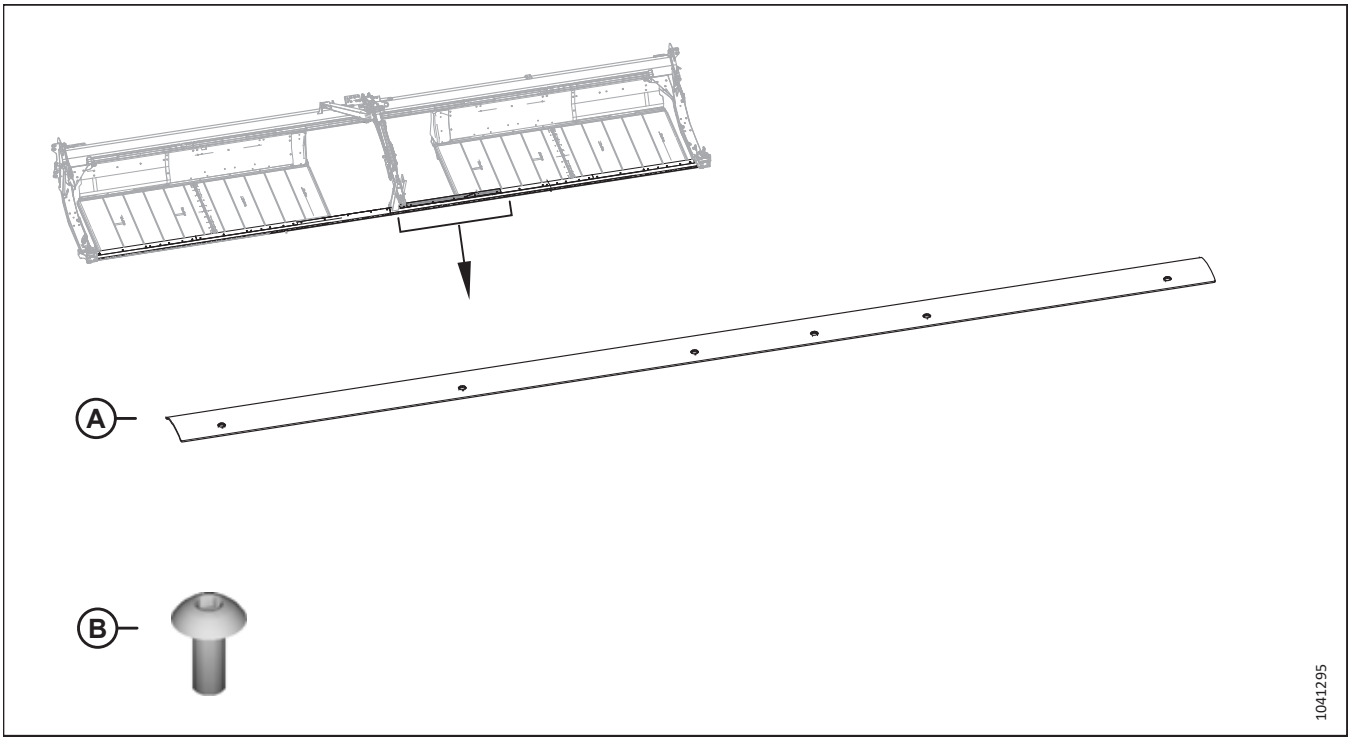


Figure 7.43: Cutterbar Seal and Hardware

1. Retrieve the following parts shipped wired to the cutterbar:
    - Seal (A)
    - Parts bag containing five M8 Torx ® screws (B) (MD #320190)

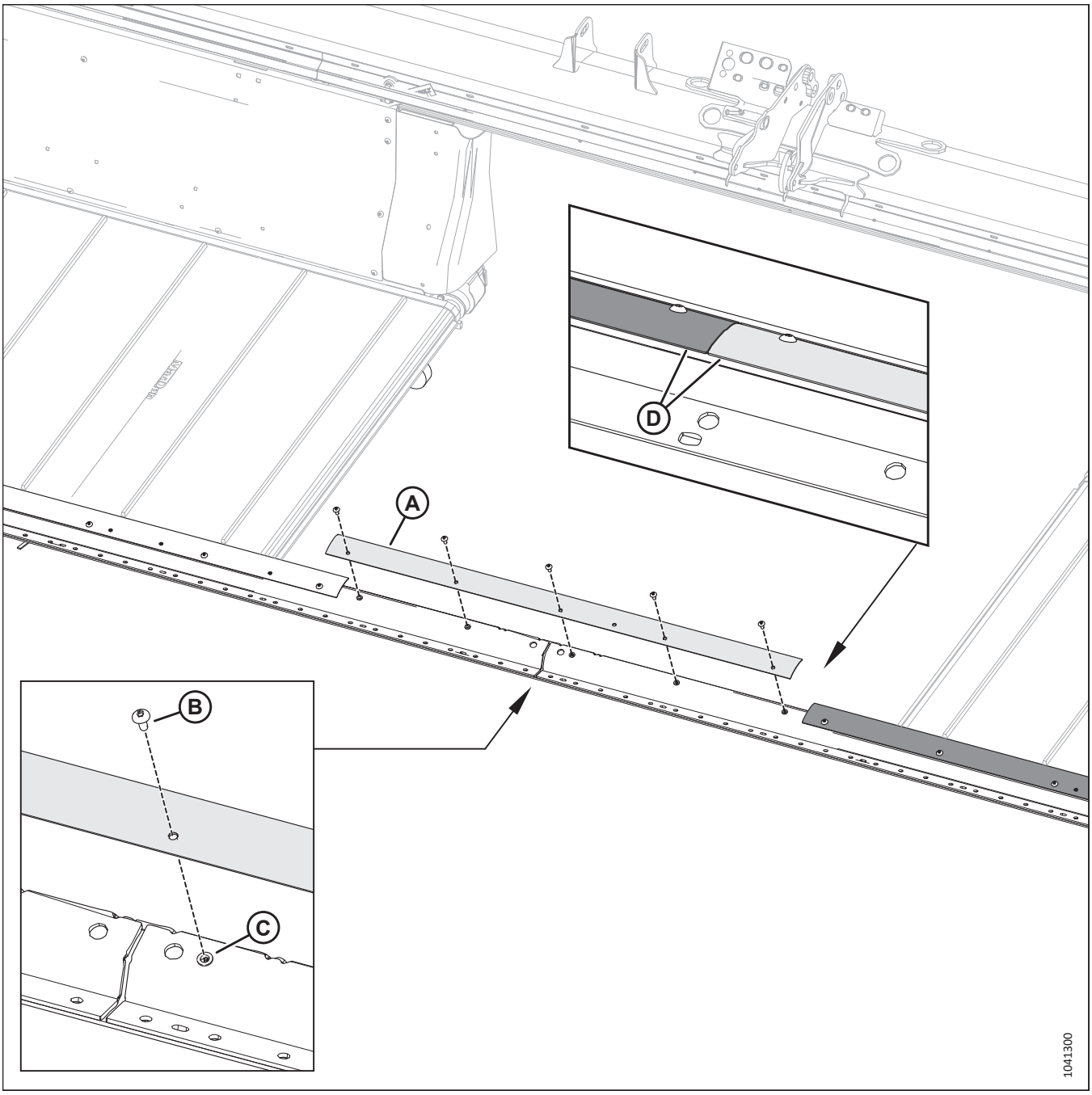


Figure 7.44: Draper Seals – Right Deck

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

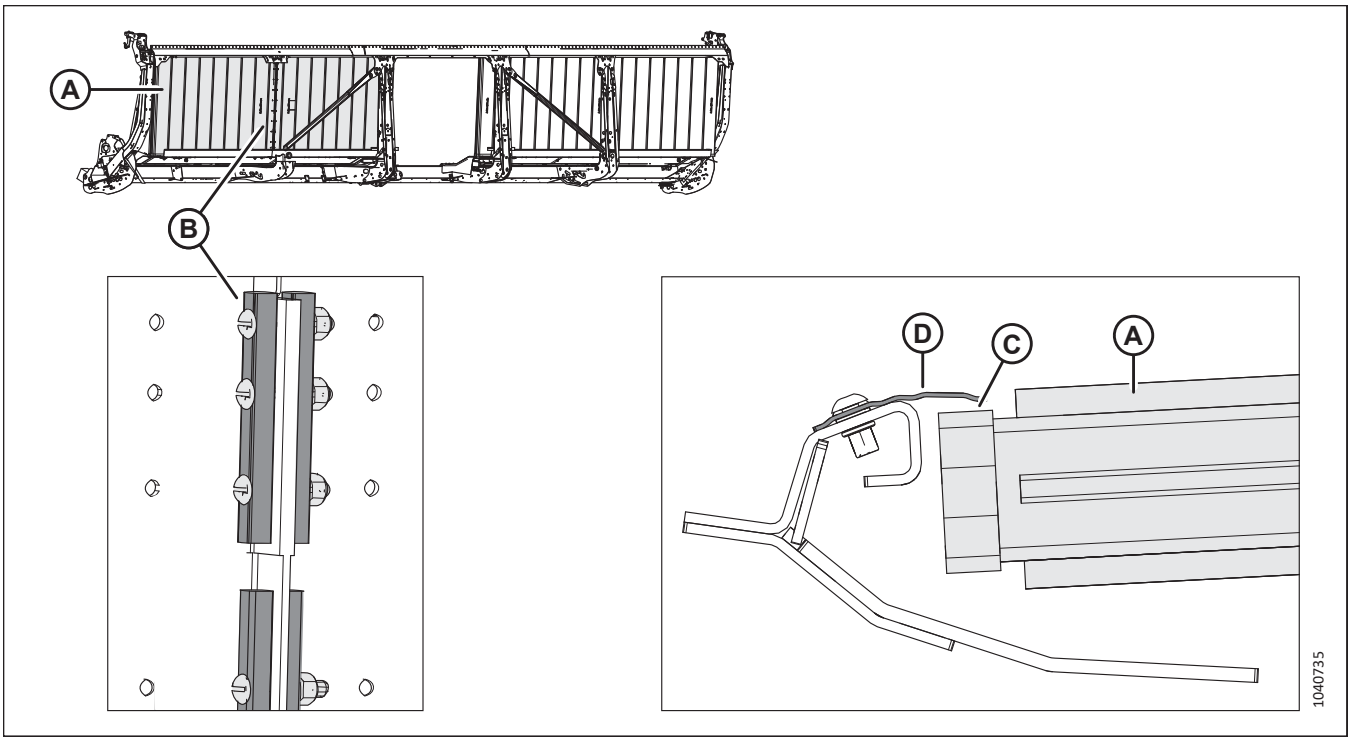


Figure 7.45: Draper Seal Clearance Specifications

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 *12.1 Adjusting Side Draper Deck Height, page 491*.

7.9 Installing Knifehead Guard Hardware (Parts Bag MD #347581)

The knifehead guards are shipped partially installed on the header.

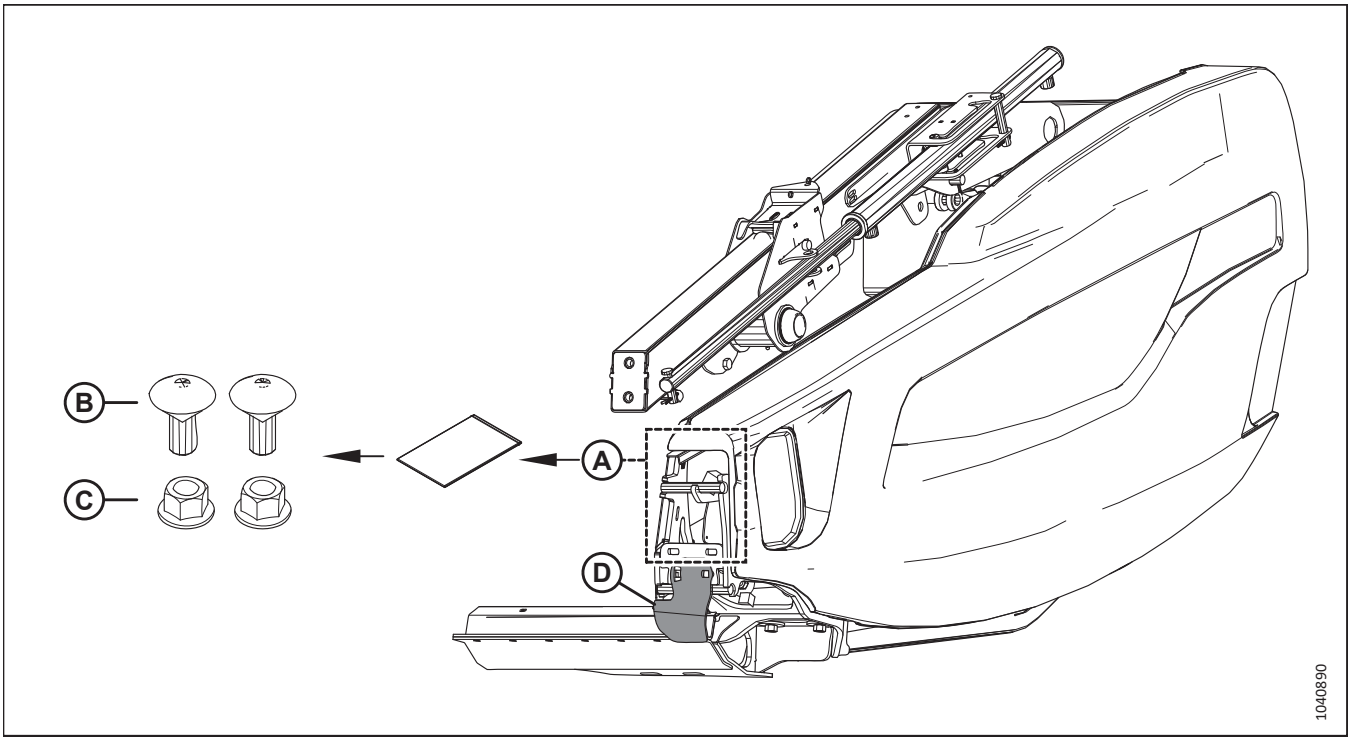


Figure 7.46: Parts Bag MD #347581

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.

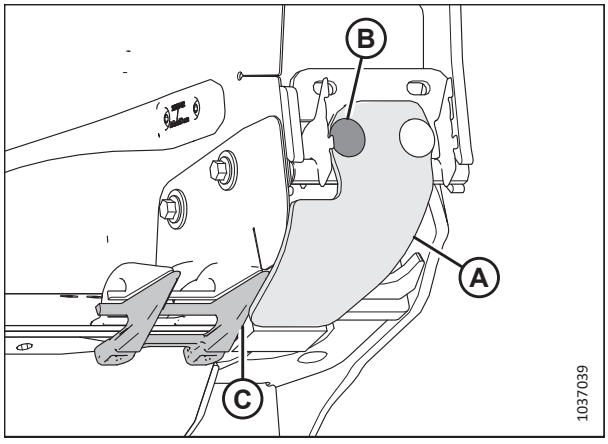


Figure 7.47: Left Knifehead Guard

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.

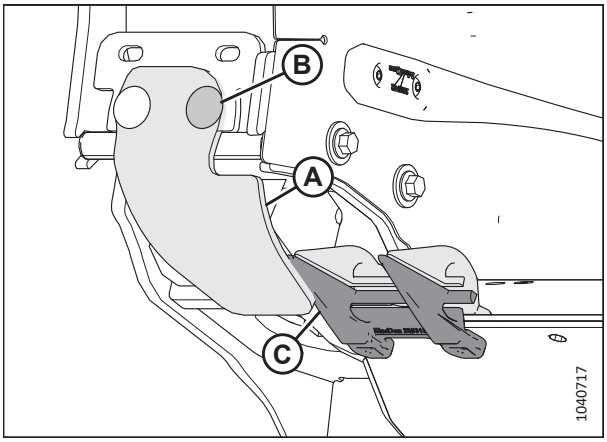


Figure 7.48: Right Knifehead Guard

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

Install the two skid shoes that were removed for shipping purposes.

1. Retrieve parts bag MD #357993. For a list of parts, refer to Table *7.2, page 116*.

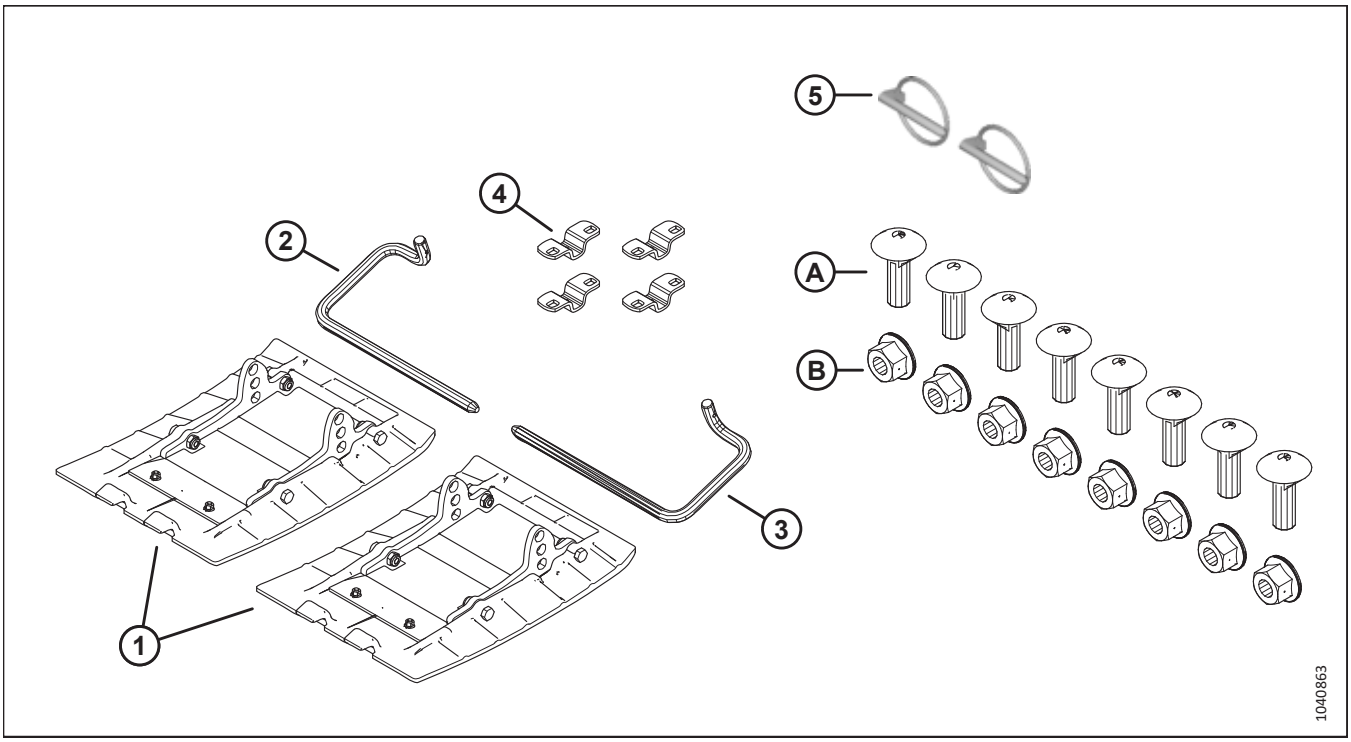


Figure 7.49: Parts Bag MD #357993

Table 7.2 Parts Bag MD #357993

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

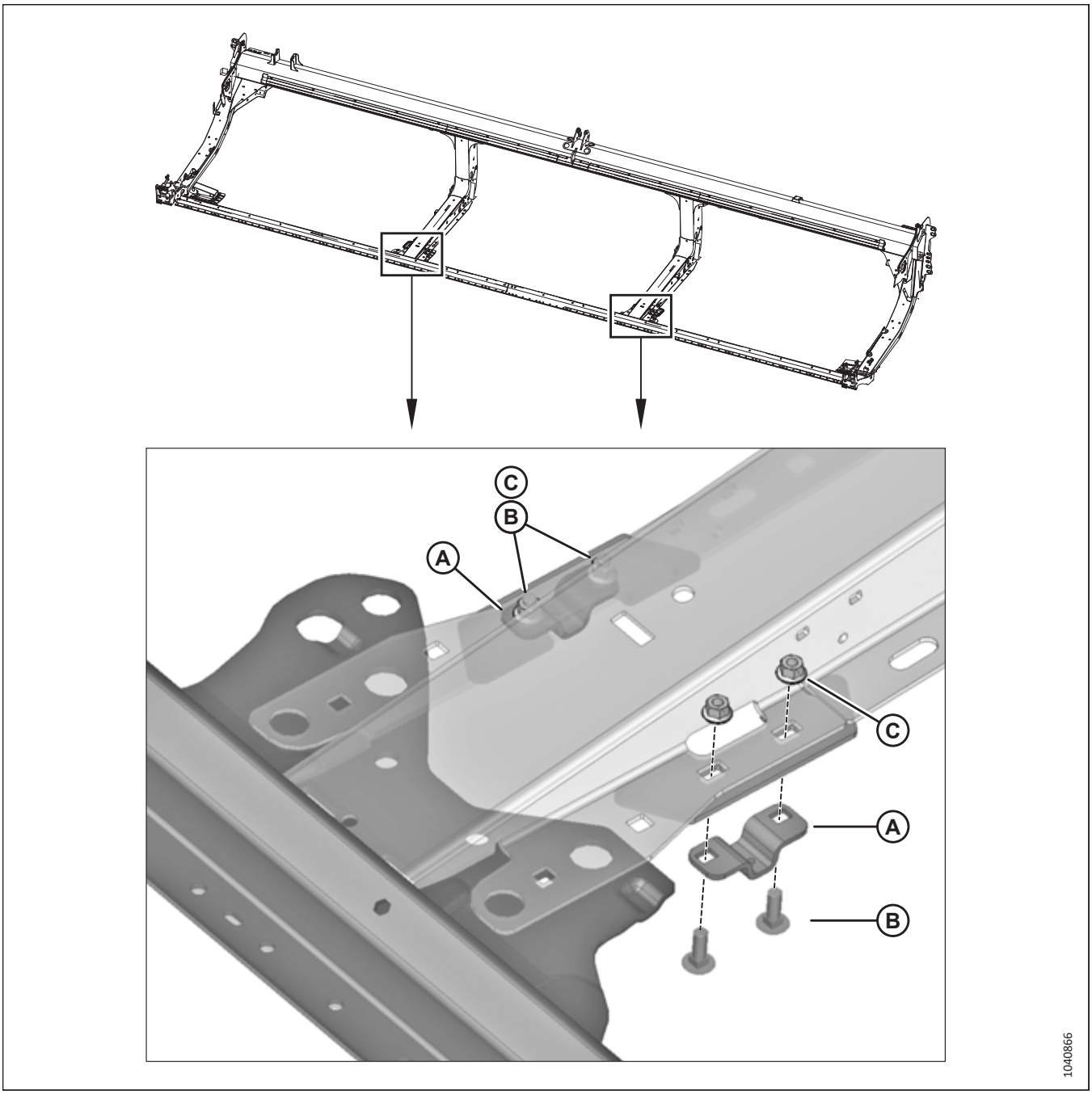


Figure 7.50: Support Bracket Installation

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.

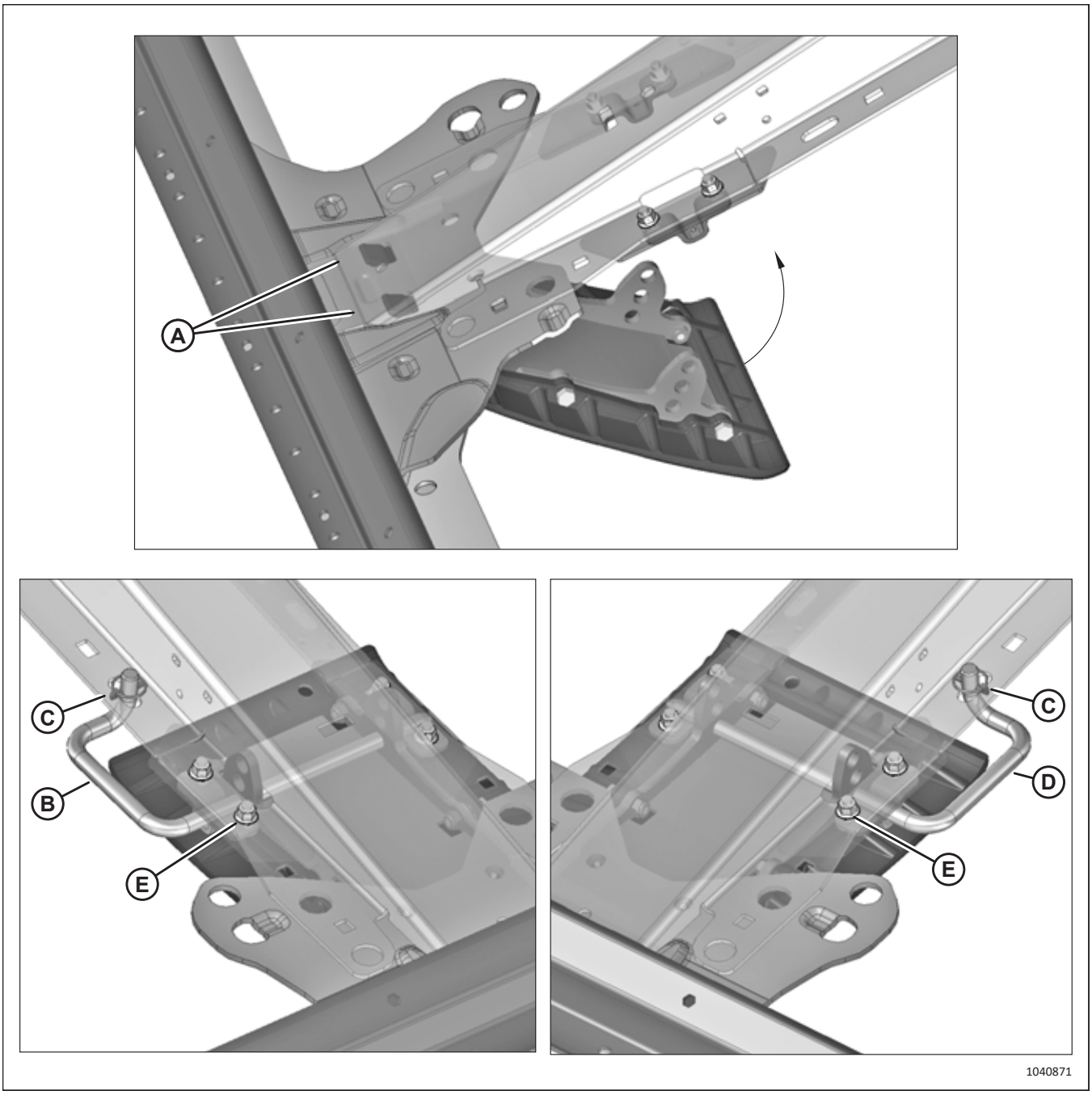


Figure 7.51: Skid Shoe Installation

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 118* to Step *5, page 118* for the other skid shoe.

7.11 Attaching Reel Height Sensor

The reel height sensor linkage inside the right endshield was disconnected to prevent shipping damage. It will need to be reconnected.

1. Open the right header endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.

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

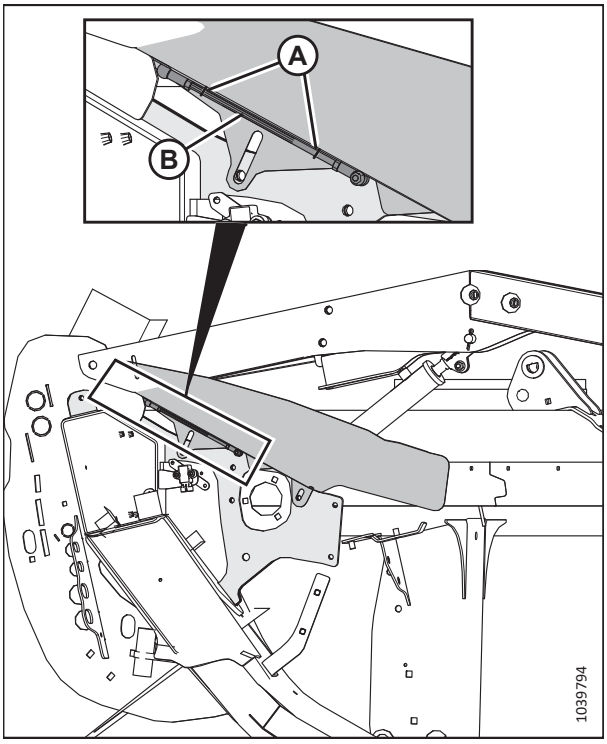


Figure 7.52: Reel Height Sensor Location

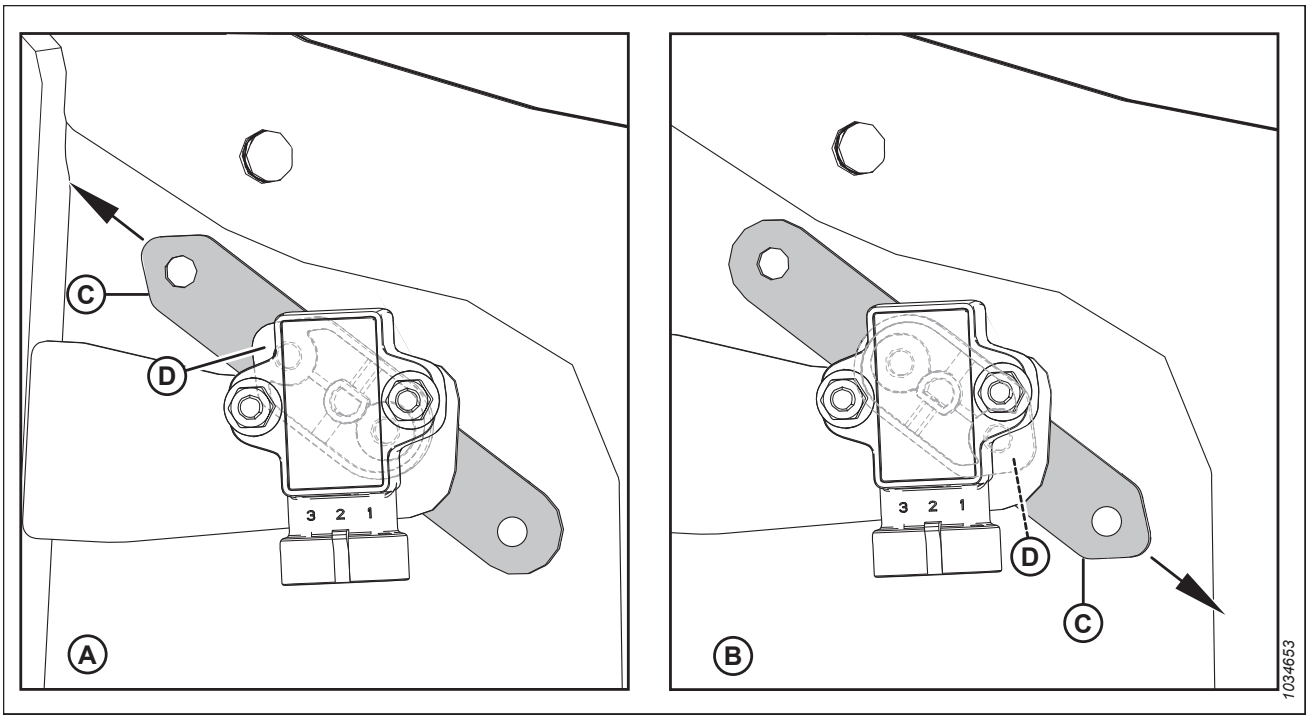


Figure 7.53: Sensor Arm/Pointer Configurations

A - John Deere, CLAAS, AGCO IDEAL™ Configuration

B - Case/New Holland Configuration

C - Sensor Arm (Shown Semitransparent)

D - Sensor Pointer (Shown Under Sensor Arm)

3. Attach reel height sensor rod (A) to reel arm bracket (B) with already installed nut (C). Secure the other end of the rod to the sensor arm with nut (D). Torque nuts (C) and (D) to 8 Nm (6 lbf·ft).

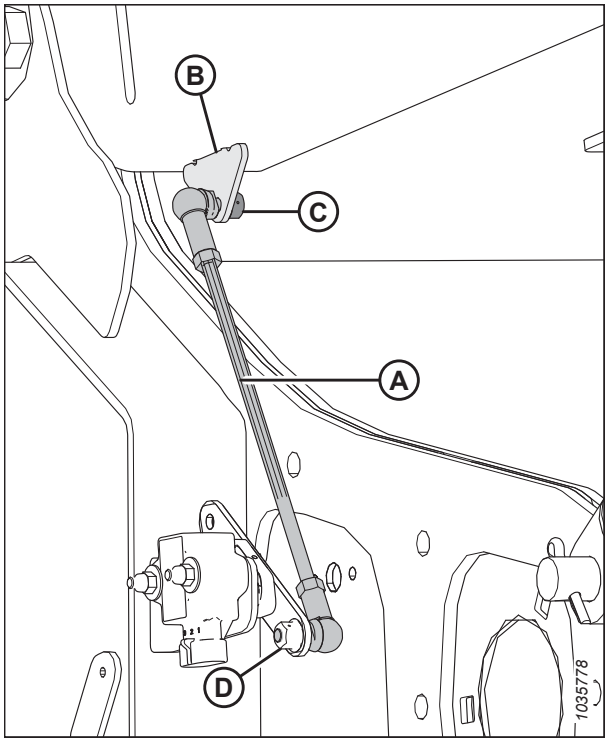


Figure 7.54: Reel Height Sensor

NOTE:

Dimension (A) is set to 165 mm (6 1/2 in.), but might need to be adjusted in *10.1 Checking and Adjusting Reel Height Sensor, page 473* to achieve the correct voltage range.

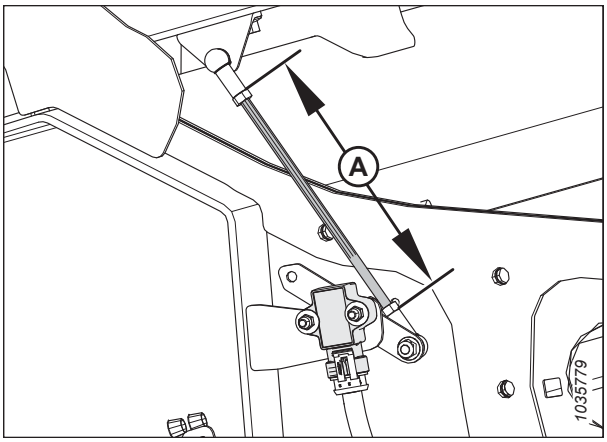


Figure 7.55: Reel Height Sensor – Right Reel Arm with Reel Down

4. Close the right header endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

7.12 Installing Reel Fore-Aft Steel Tubes (Parts Bag MD #357107)

The steel tubes on one of the reel arms need to be clamped into place.

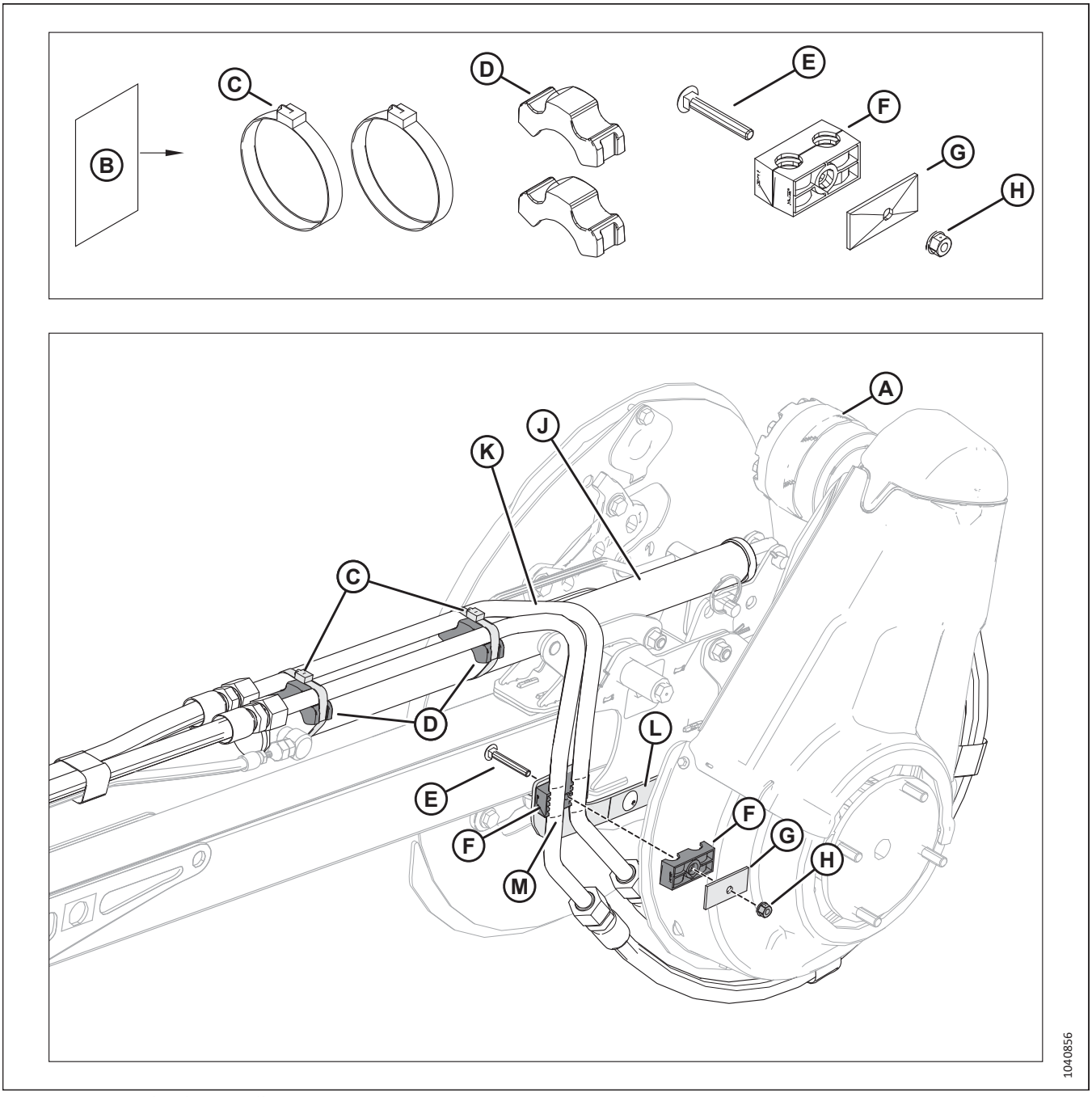


Figure 7.56: Steel Tube Installation

1. Locate reel drive motor (A). Retrieve bag (B) MD #357107, which contains parts (C), (D), (E), (F), (G), and (H).

   NOTE:

   On headers that are 35 ft. or narrower, the bag is attached to cylinder (J). On wider headers, the bag was packaged on the reel.

2. Remove the foam and shipping wire from tubes (K). Place both tubes on top of cylinder (J) and against bracket (L).

3. Install clamp (F) onto both tubes, between markings (M). Attach the clamp to bracket (L) using bolt (E), cover (G), and M8 nut (H).

4. Seat the tubes in clamps (D). Secure the clamps and tubes to the cylinder using gear clamps (C). Make sure the barrel end of the gear clamps is on top as shown.

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

Install the reel fore-aft hose clamp that was detached from the center reel 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.

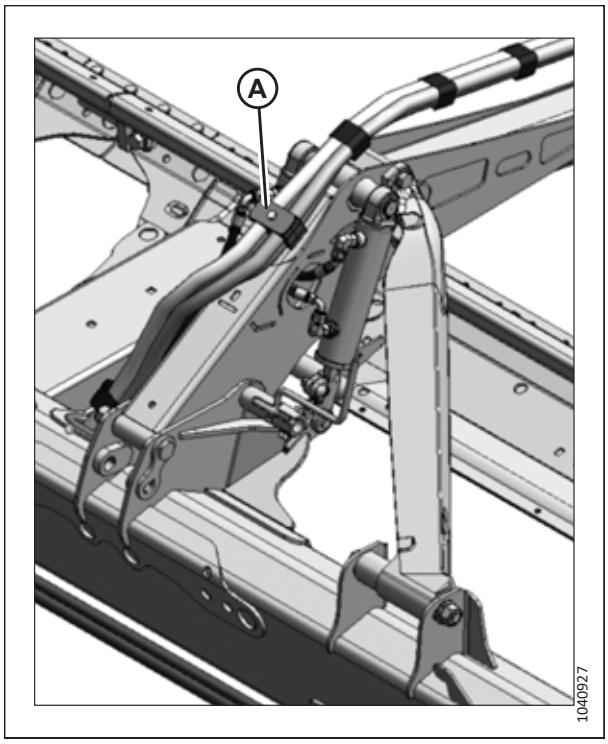


Figure 7.57: Reel Arm Fore-Aft Hose Clamp – Double-Reel

7.14 Preparing 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 side of the float module, remove shipping wire (A) from the hydraulic hoses.

2. Place hose bundle (B) in bracket (C). Secure the hose bundle in the bracket by reinstalling strap (D) through bracket slot (E) and over the hose bundle.

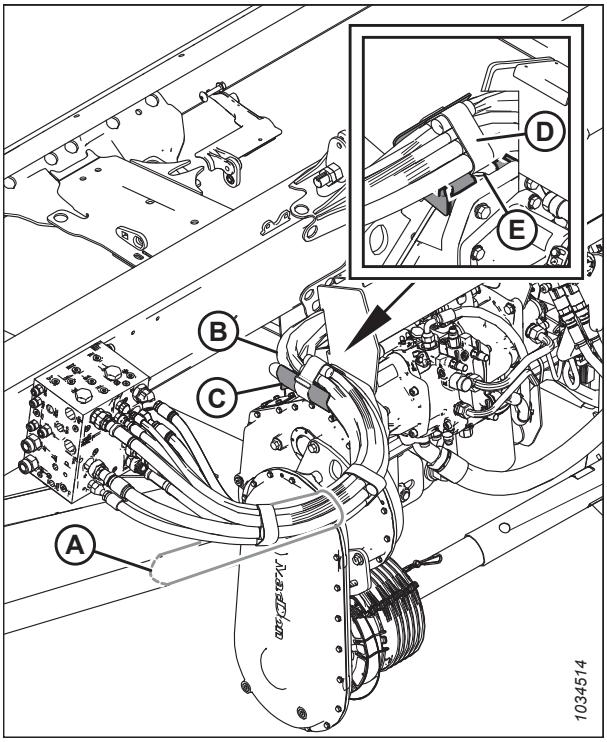


Figure 7.58: Hydraulic Hoses – Narrow Configuration

7.15 Connecting Reel to Fore-Aft Cylinders, Single-Reel – D225 (Parts Bag MD #357467)

Fore-aft cylinders move the reel fore and aft on the reel arms. The hydraulic connections fore-aft cylinders on single-reel headers will need to be completed.

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.

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

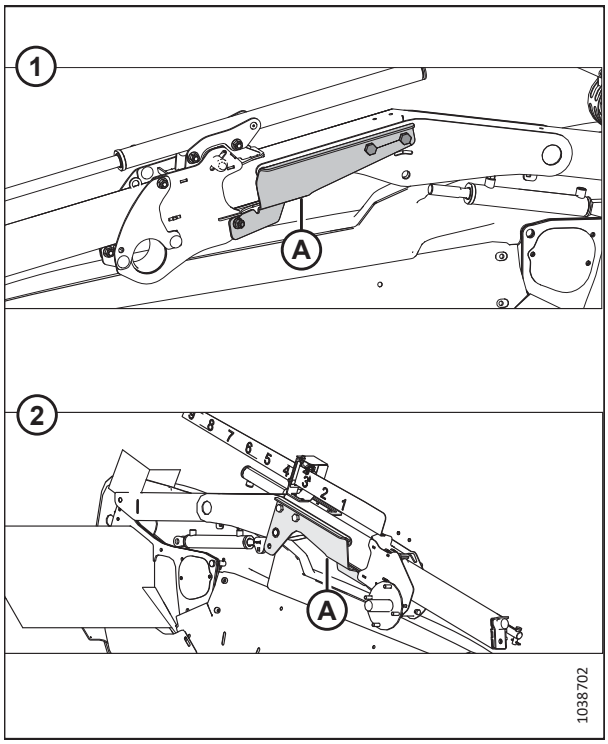


Figure 7.59: Fore-Aft Shipping Supports

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 *7.3, page 127*.

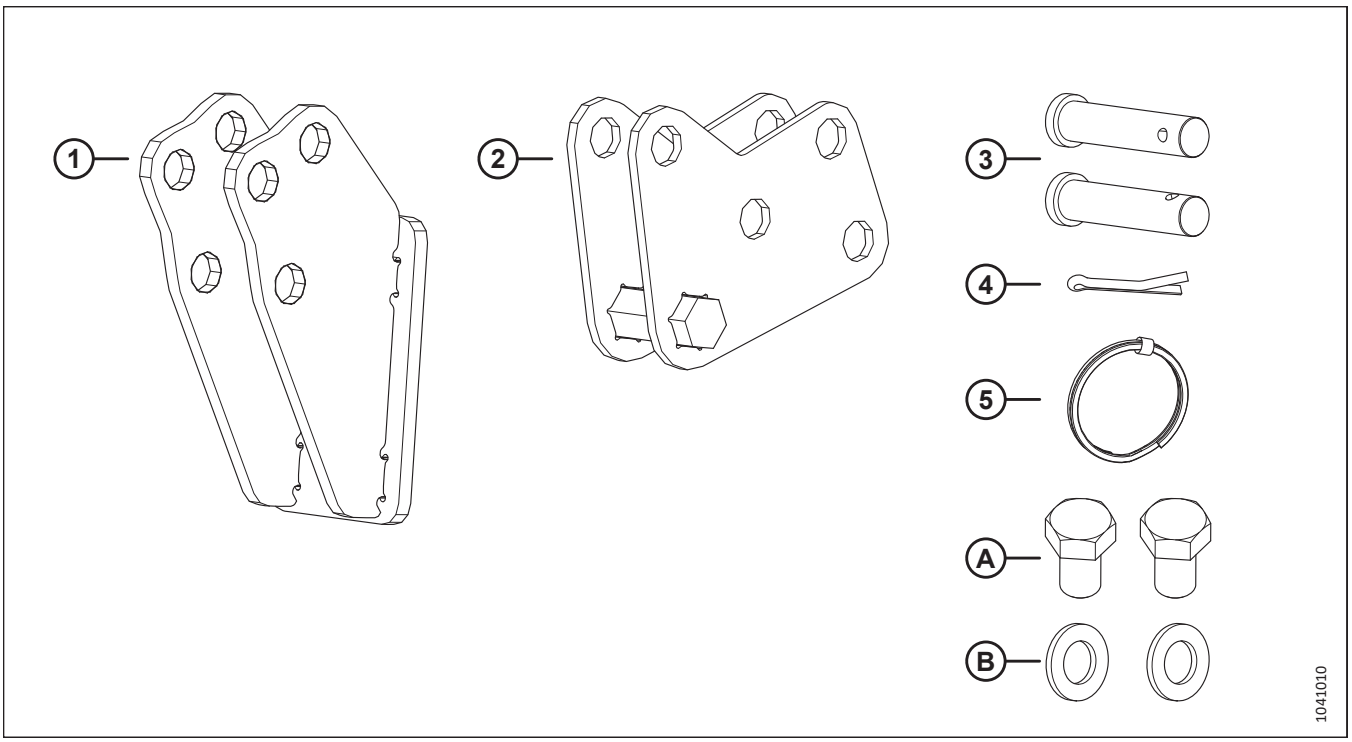


Figure 7.60: Right Reel Arm Fore-Aft Support Parts Bag MD #357467

Table 7.3 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).

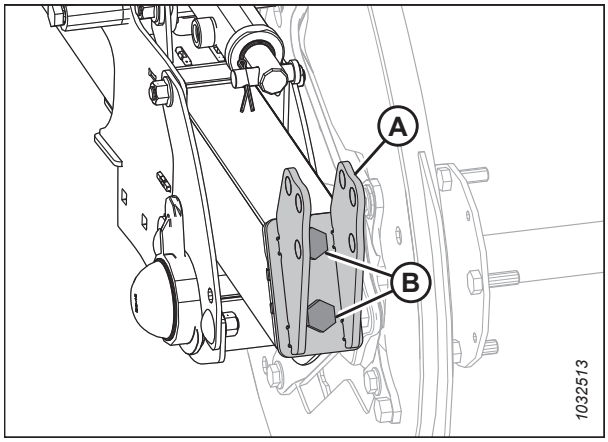


Figure 7.61: Front Anchor Support

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.

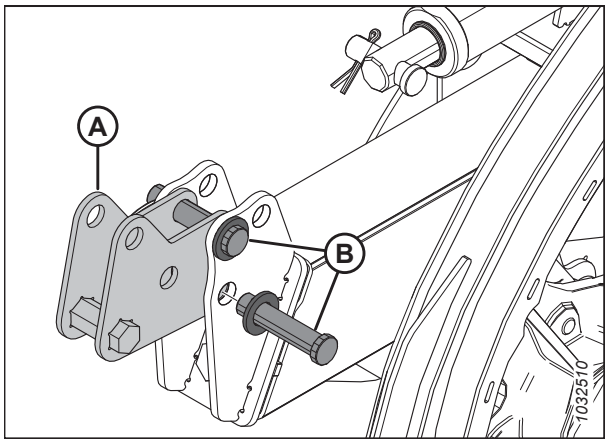


Figure 7.62: Fore-Aft Anchor

6. Secure the clevis pins with 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.

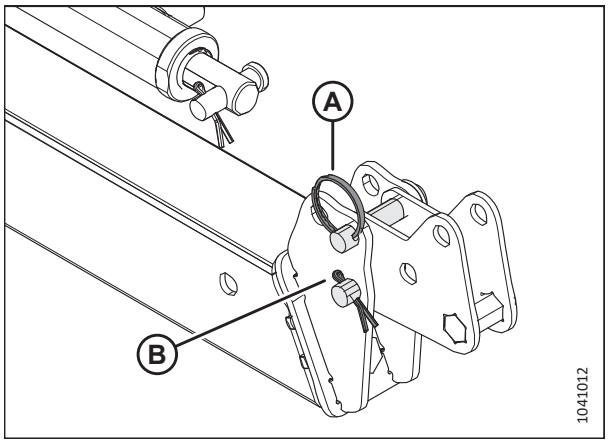


Figure 7.63: Fore-Aft Anchor

Preparing left reel arm

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.

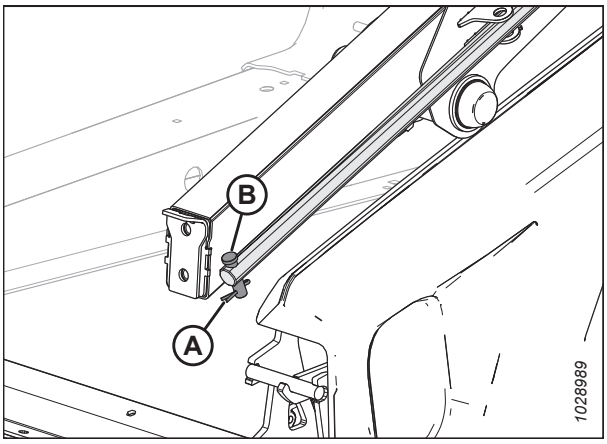


Figure 7.64: Left Reel Arm

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

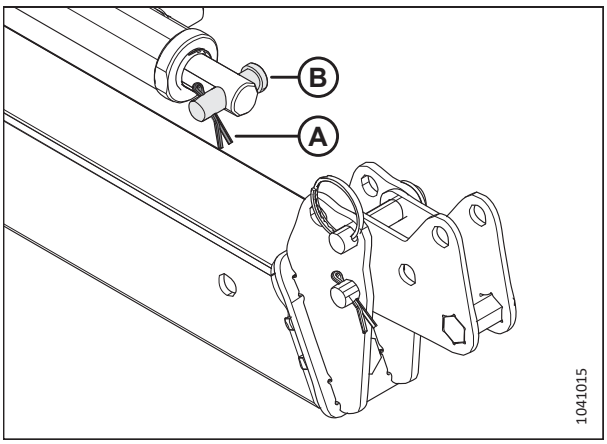


Figure 7.65: Shipping Location of Pins in Right Fore-aft Cylinder

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).

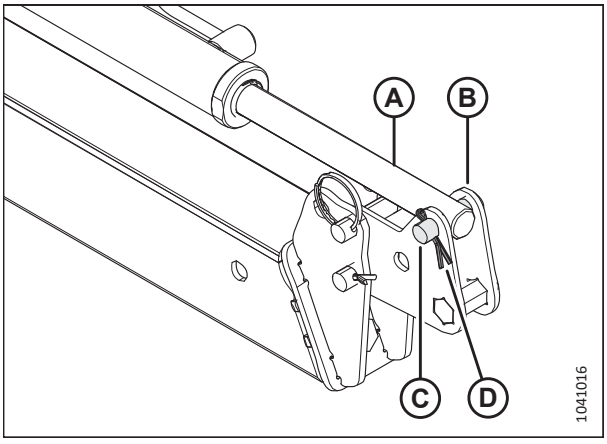


Figure 7.66: Cylinder Secured to Right Reel Arm

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

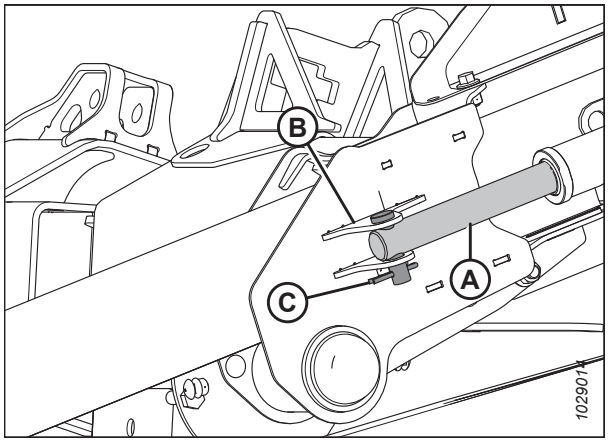


Figure 7.67: Cylinder Secured to Left Reel Arm

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

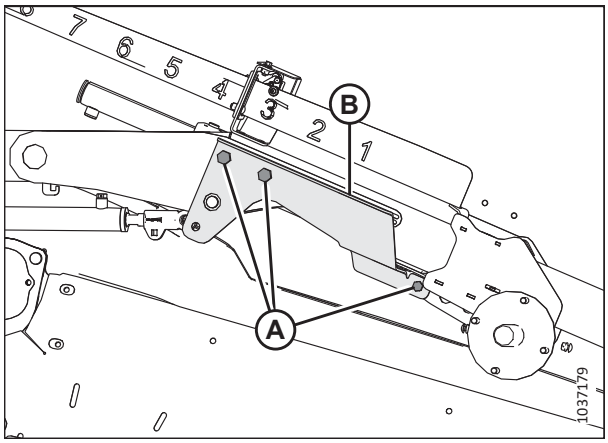


Figure 7.68: Left Reel Arm Shipping Support

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.

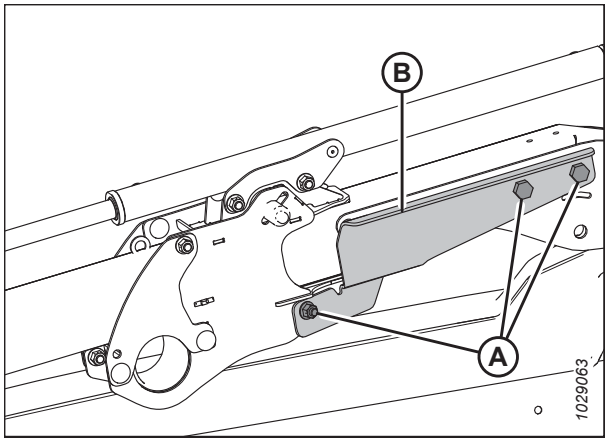


Figure 7.69: Right Reel Arm Shipping Support

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.

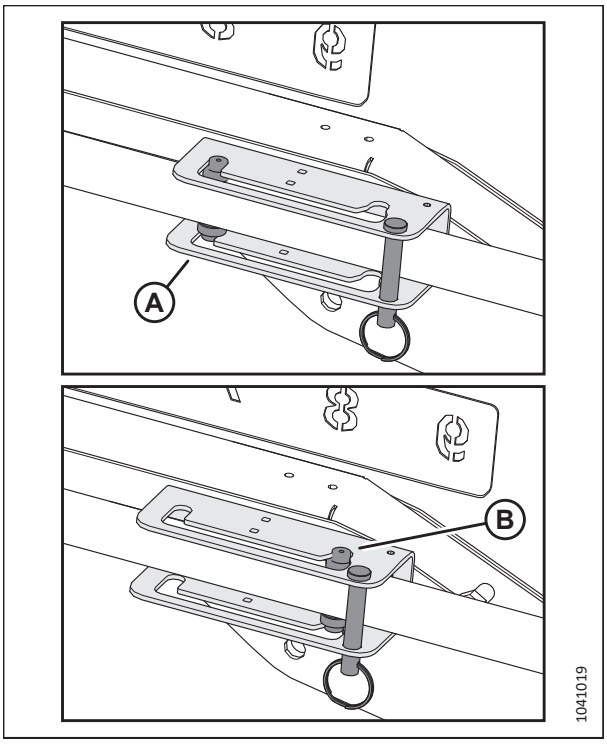


Figure 7.70: Left Arm Cylinder – Forward Position

7.16 Connecting Reel to Fore-Aft Cylinders – Double-Reel, D230 and D235 (Parts Bag MD #347580)

The fore-aft cylinders move the reel fore and aft on the reel arms. The cylinders on the headers will need to be installed.

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.

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

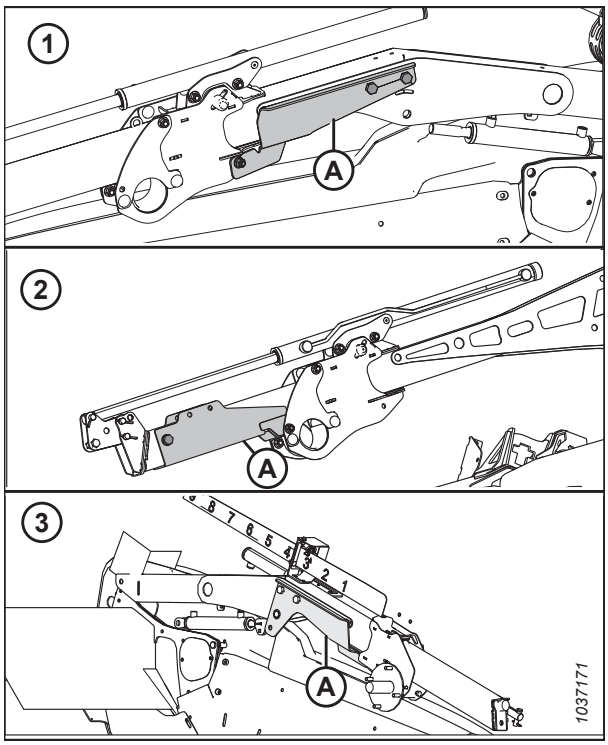


Figure 7.71: Fore-Aft Shipping Supports

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

3 - Outer Left Reel Arm

3. Retrieve parts bag MD #347580. For a list of parts, refer to Table *7.4, page 133*.

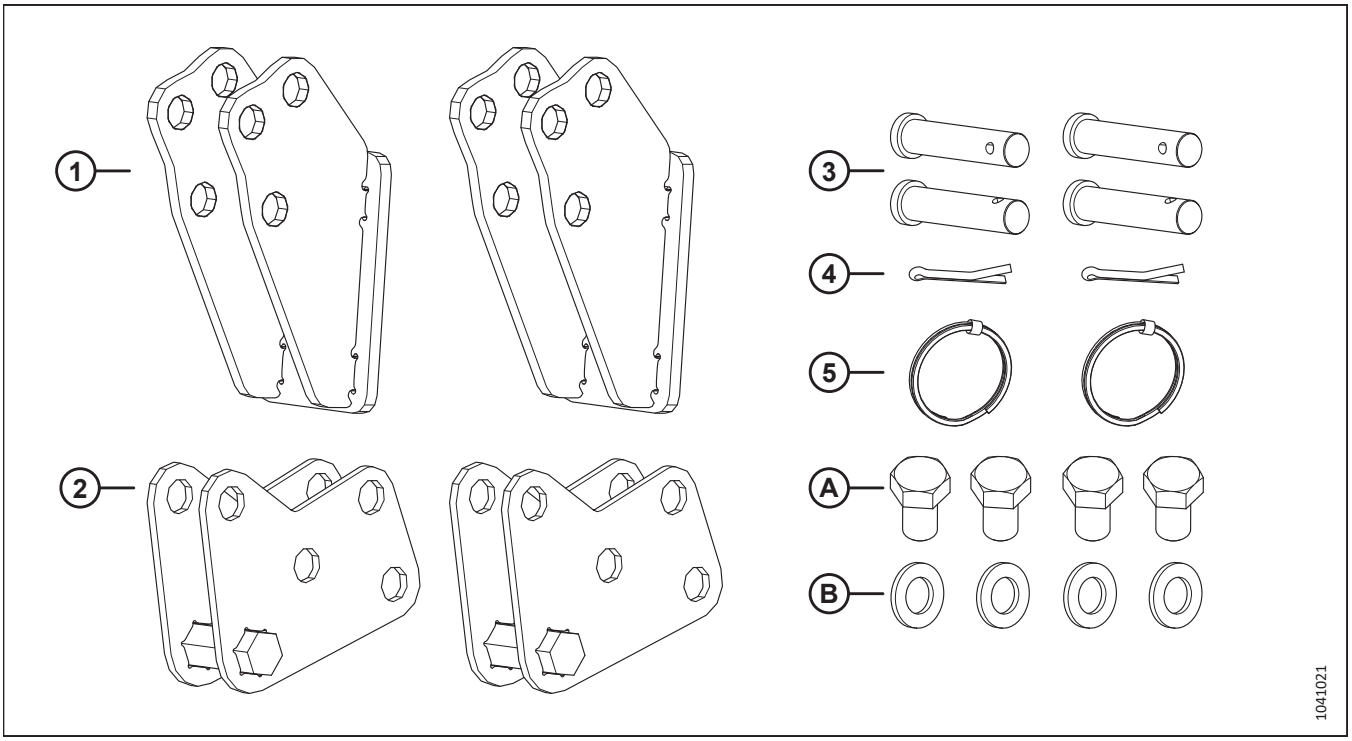


Figure 7.72: Fore-Aft Support Parts Bag MD #347580 for Center Arm and Right Arm

Table 7.4 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

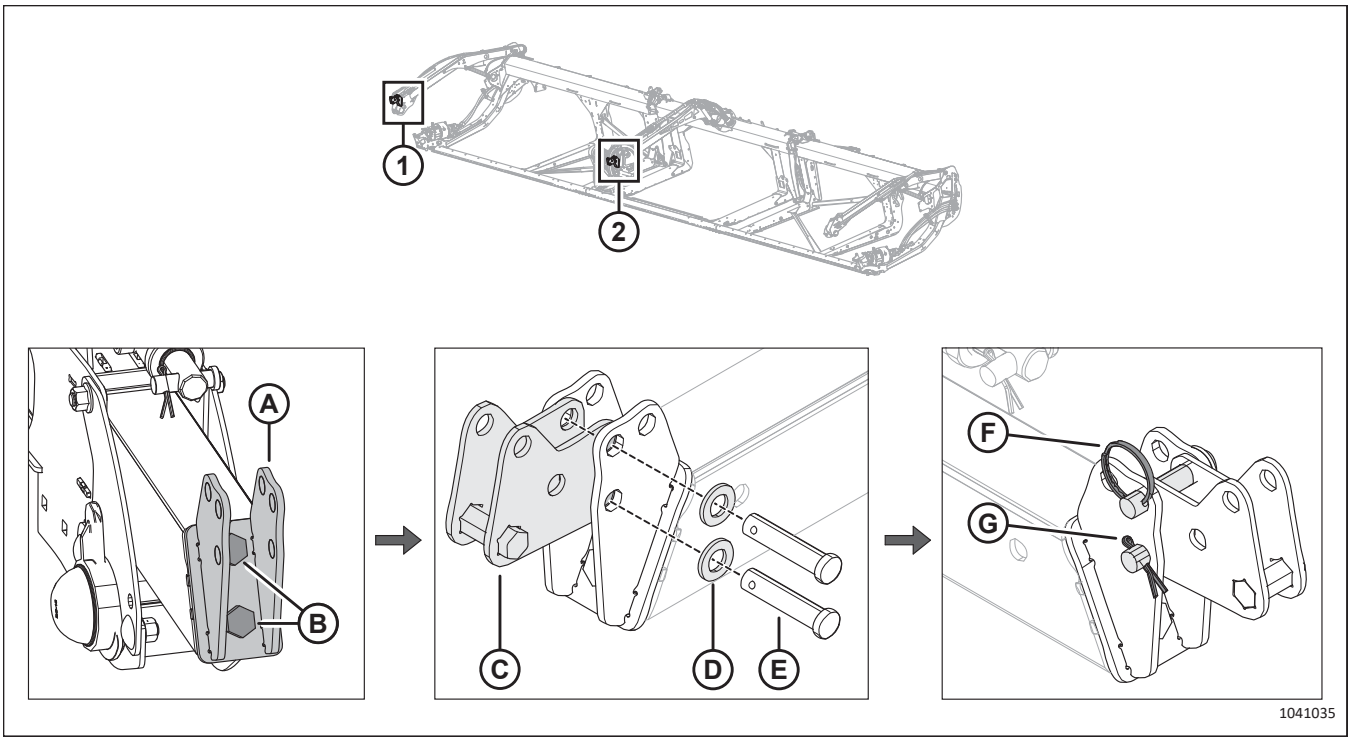


Figure 7.73: Fore-Aft Support Locations

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.

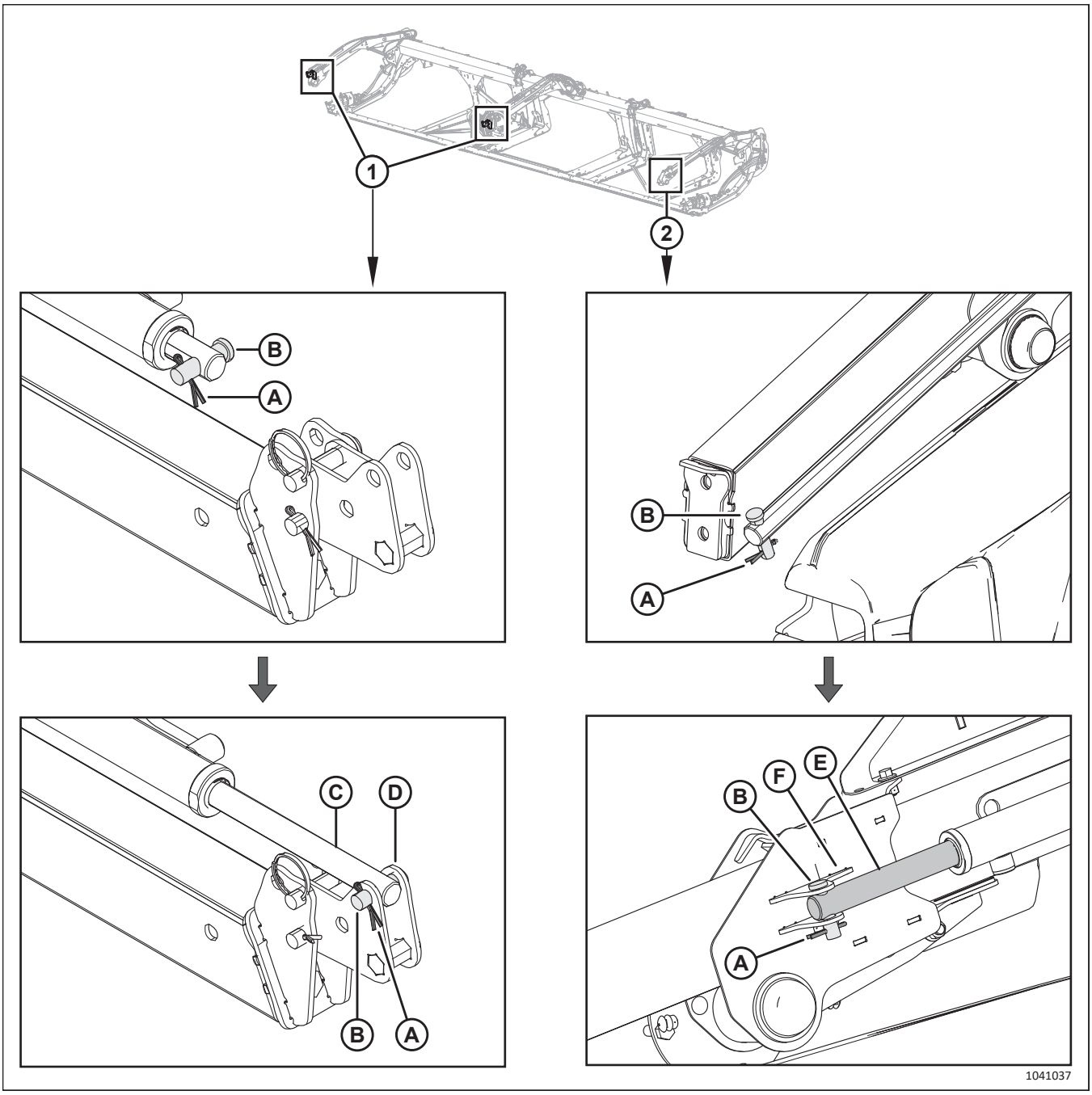


Figure 7.74: Double-Reel Fore-Aft Cylinder Rods

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 reel 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).

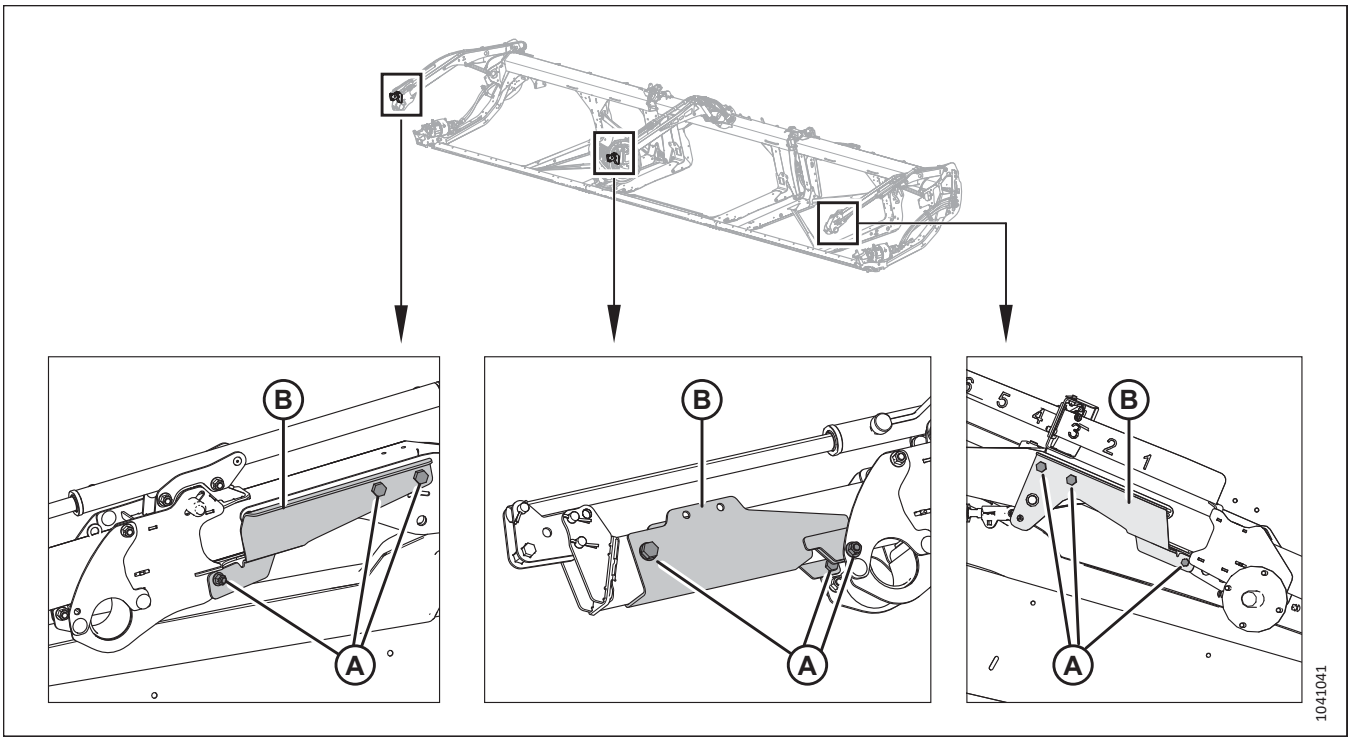


Figure 7.75: Shipping Supports

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.

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.

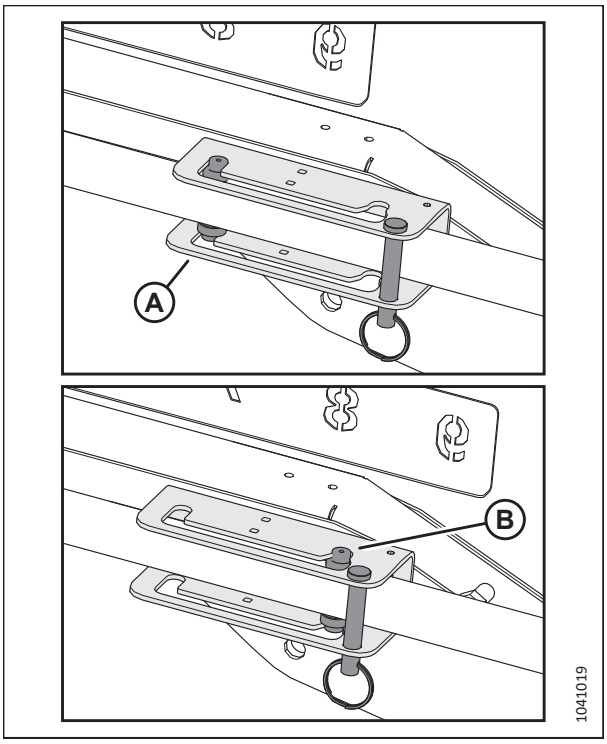


Figure 7.76: Left Arm Cylinder – Forward Position

7.17 Installing Tine Tubes and Cam Control Linkages – D225, D230, and D235

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.

7.17.1 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 *7.5, page 138*.

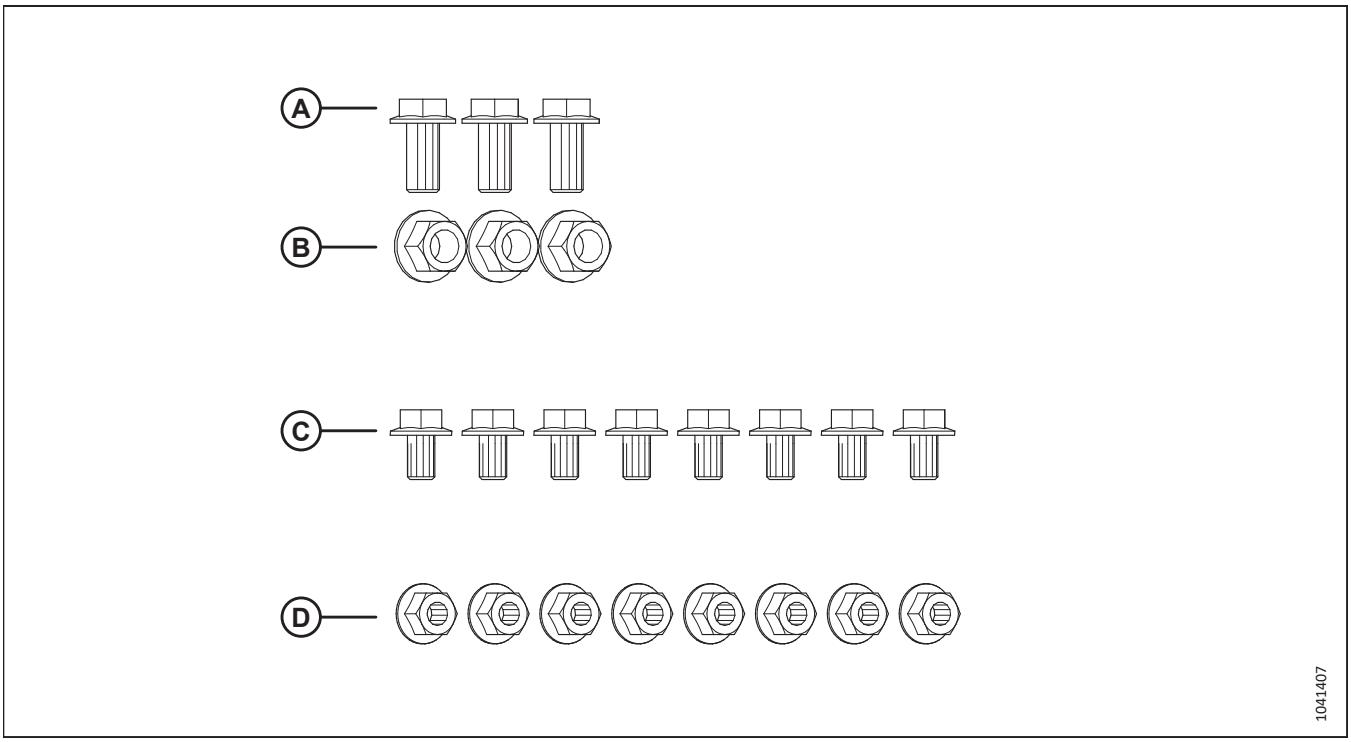


Figure 7.77: Parts Bag MD #357394

Table 7.5 Parts Bag MD #357394

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

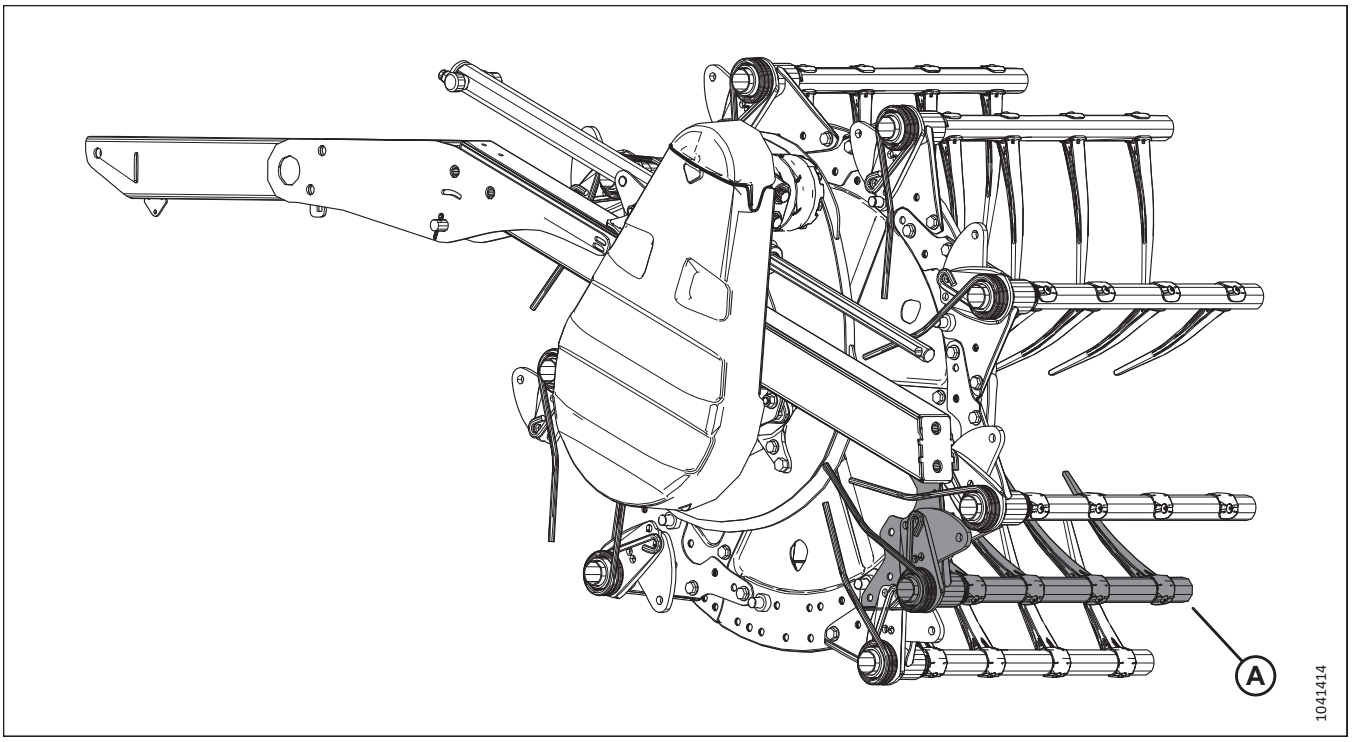


Figure 7.78: Tine Tube in Shipping Position

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

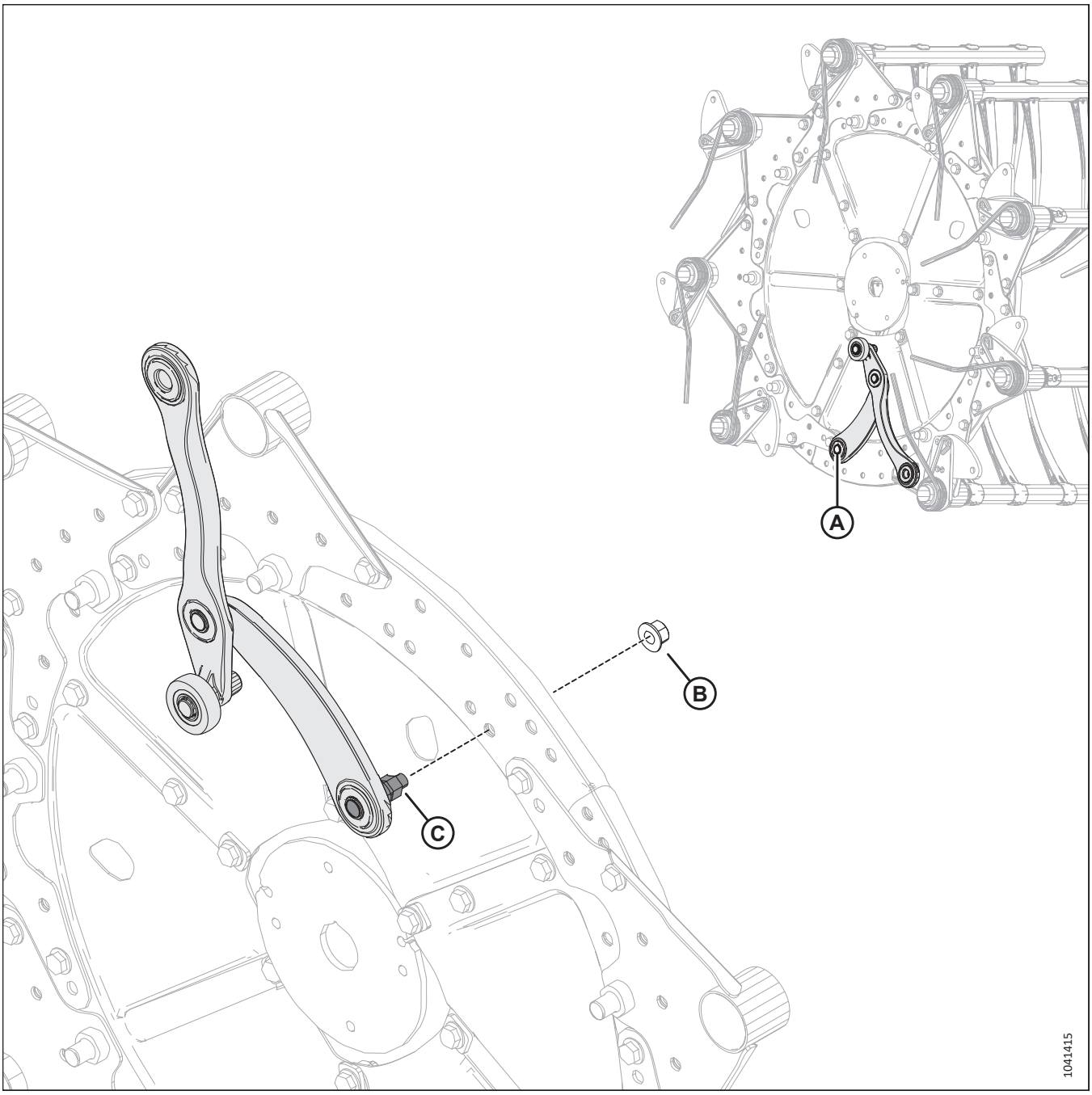


Figure 7.79: Cam Linkage Associated with Removed Tine Tube

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.

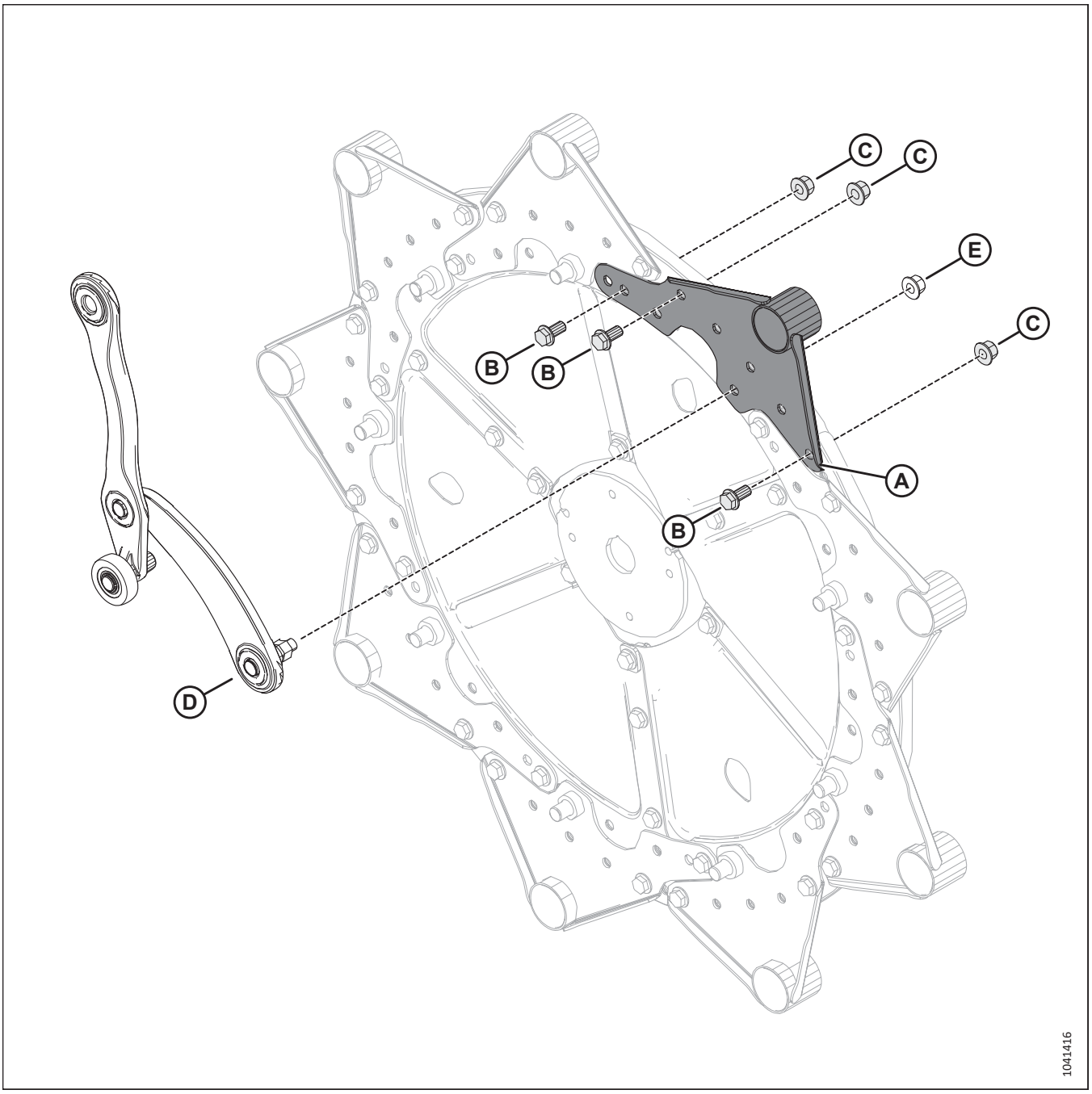


Figure 7.80: Tine Tube and Cam Linkage Installation on Cam End Disc

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).

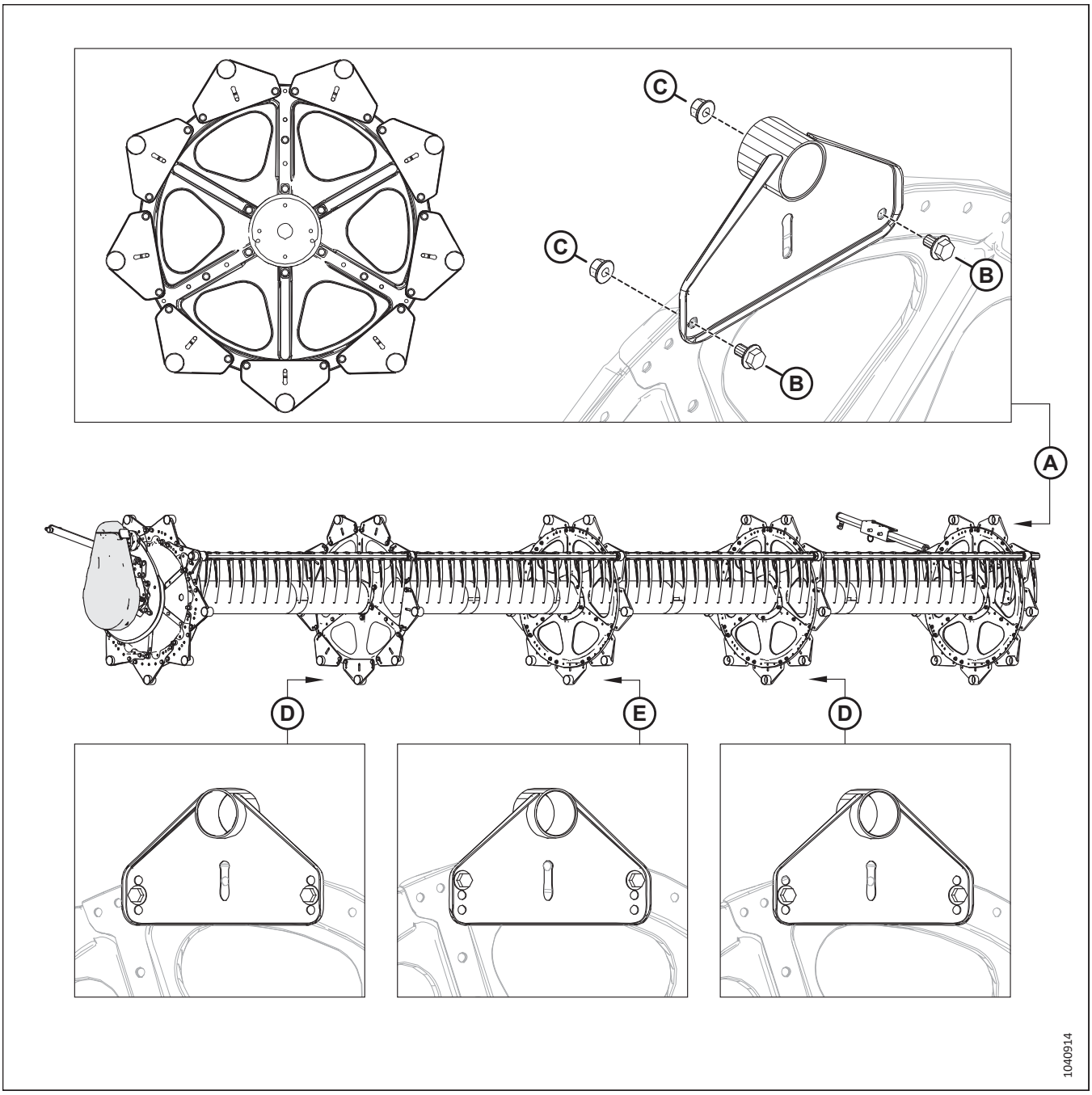


Figure 7.81: Tine Tube Installation on Mid and Tail End Discs

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

7.17.2 Attaching Cam Control Linkages to Tine Tubes – 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)

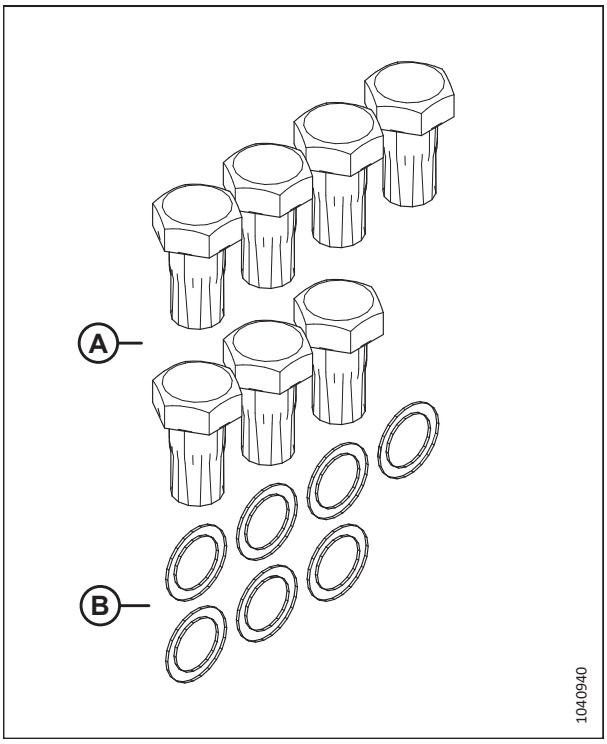


Figure 7.82: Parts Bag MD #357743

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 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 seven disconnected cam linkages are re-attached. The reel has a total of nine cam linkages.

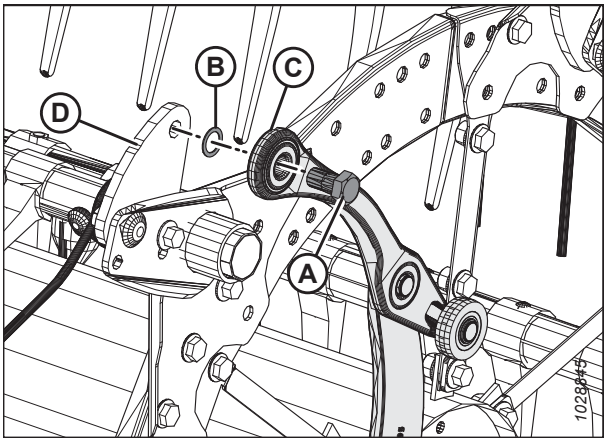


Figure 7.83: Cam Link

7.17.3 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 #357743. This bag contains:
   - Eight M16 x 30 mm bolts (A)
   - Eight shims (B)

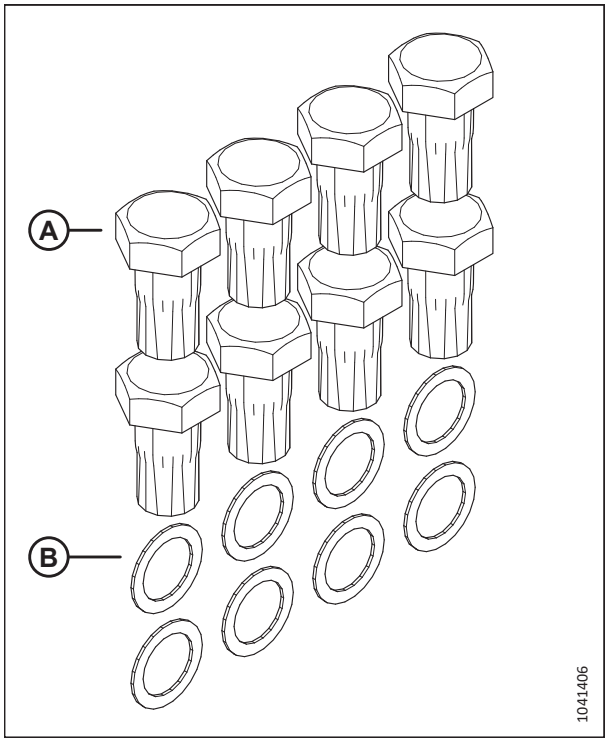


Figure 7.84: Parts Bag MD #347627

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.

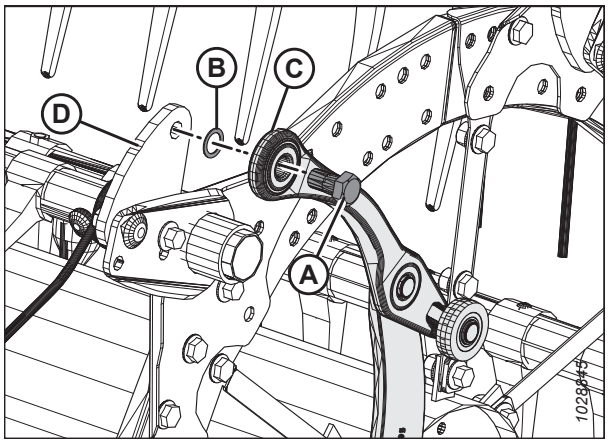


Figure 7.85: Cam Link

7.18 Installing Single-Reel Endshields, Nine-Bat – D225 (Parts Bag MD #311363)

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.

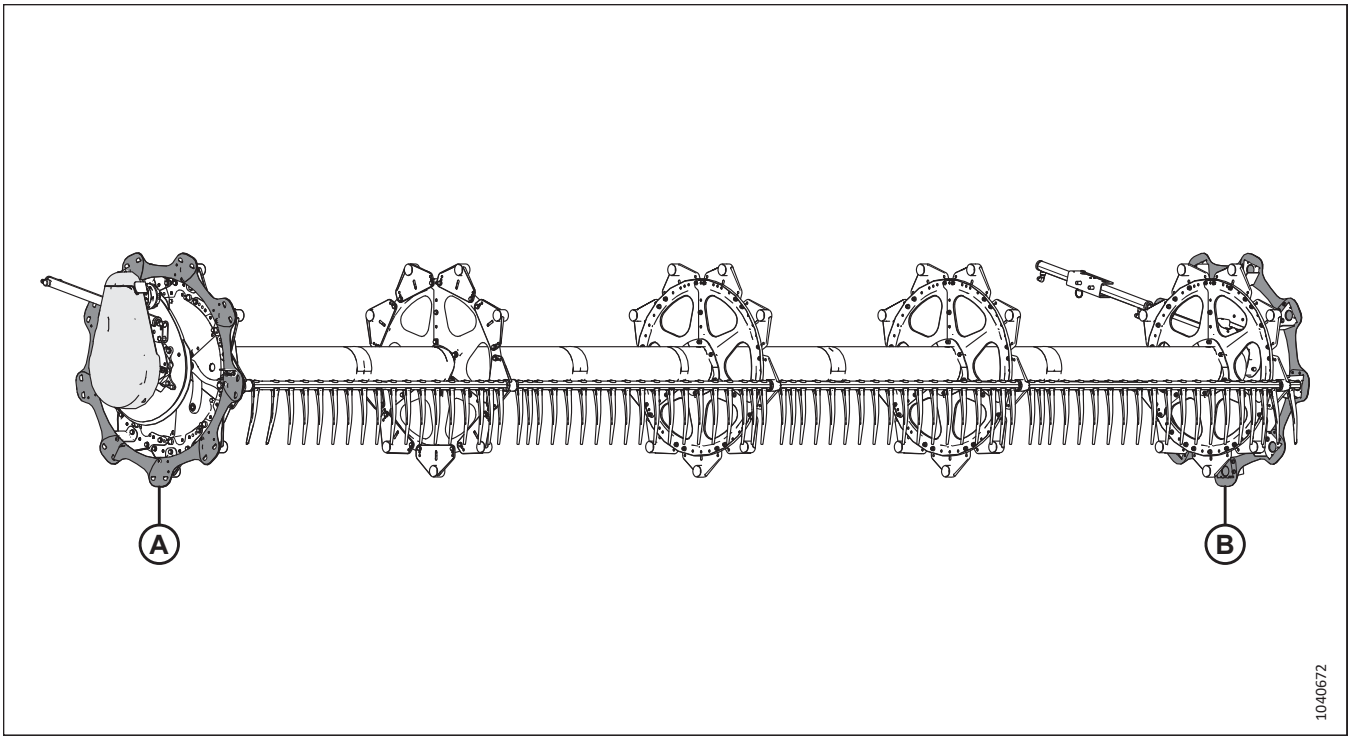


Figure 7.86: Nine-Bat Single-Reel

1. Retrieve parts bag MD #311363.

   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 *7.18.1 Installing Single-Reel Endshields at Cam End, page 146*.

3. Install tail-end endshields (B). For instructions, refer to *7.18.2 Installing Single-Reel Endshields at Tail End, page 153*.

7.18.1 Installing Single-Reel Endshields at Cam End

Single-reel headers have had the cam-end (right) reel endshield parts removed for shipping purposes. These parts will need to be assembled and installed on the reel.

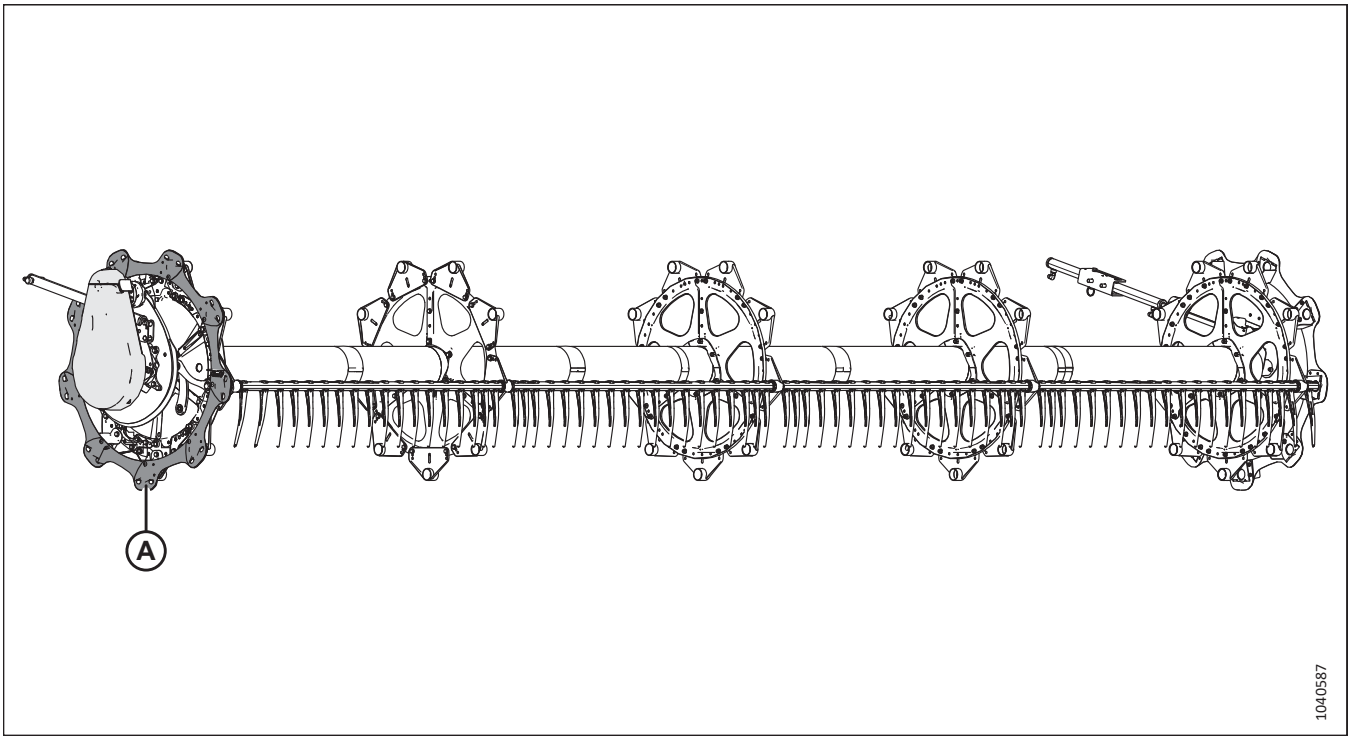


Figure 7.87: Nine-Bat Single-Reel

NOTE:

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

1. Retrieve parts bag (1) labeled with MD #311363. From that bag, retrieve the parts listed in Table *7.6, page 147*.

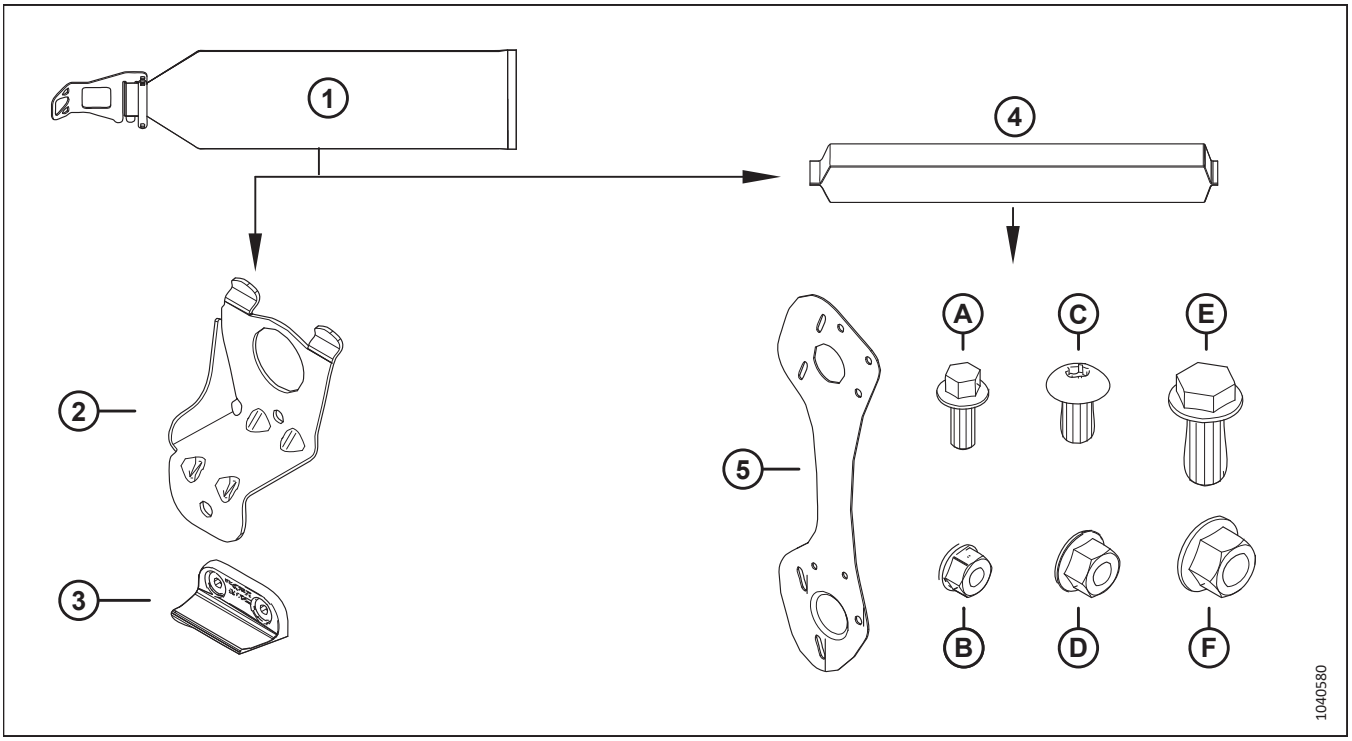


Figure 7.88: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #311363

Table 7.6 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #311363

Ref	Part Number	Description	Quantity to Retrieve
2	311964	SUPPORT – CAM END	9
3	313035	PADDLE – REEL END; HYTREL	3
4	360020 or "BAG 1"	**NOTE:** This parts bag is labeled with "BAG #1" and/or MD #360020. This bag contains the parts listed below.	1
5	311863	SHIELD – OUTBOARD RH 9 BAT	9
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	9
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	9
E	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	9
F	136431	NUT – HEX FLG CTR LOC M12X1.75-10	9

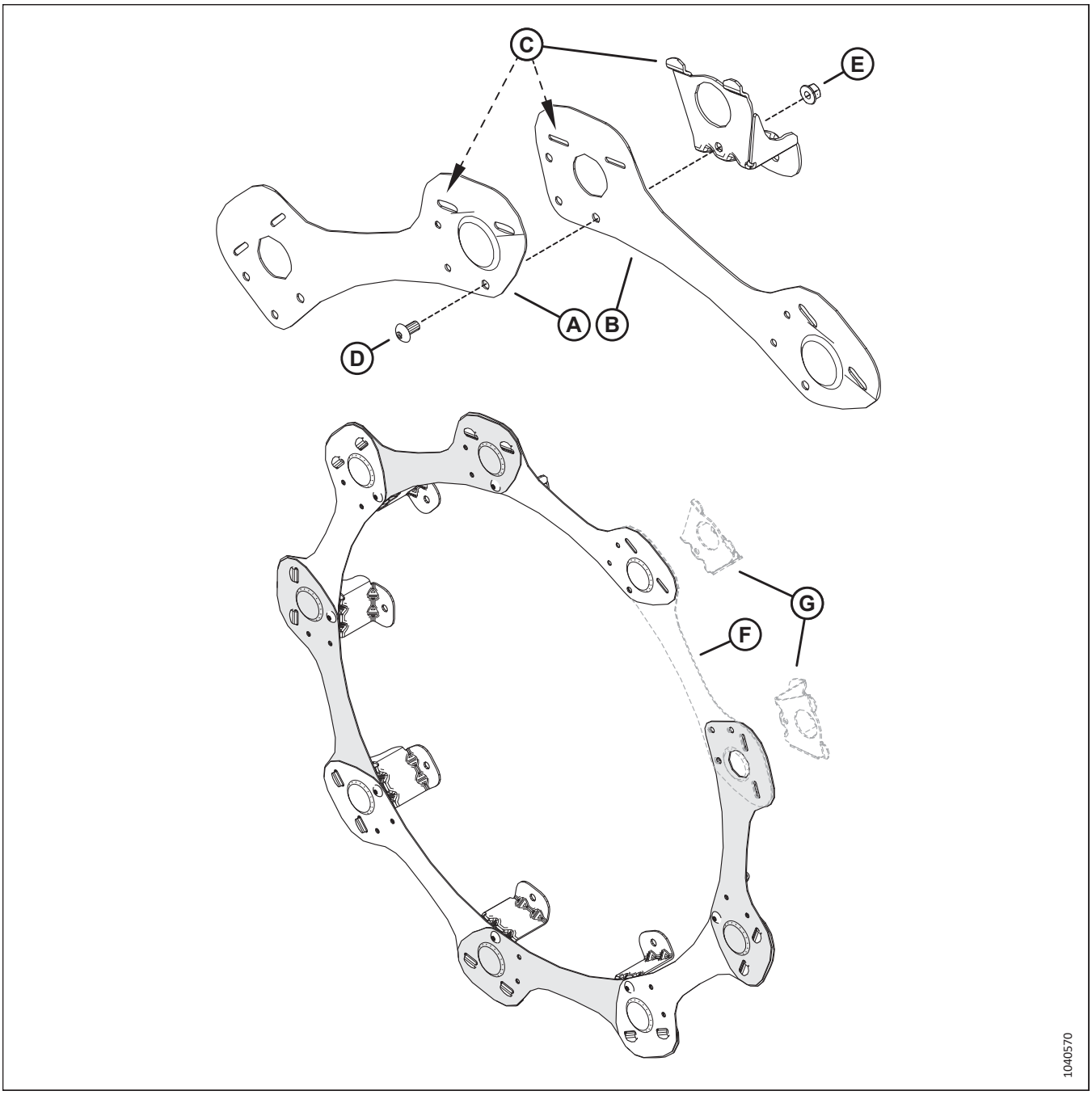


Figure 7.89: Nine-Bat Reel – Initial Endshield Assembly

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.

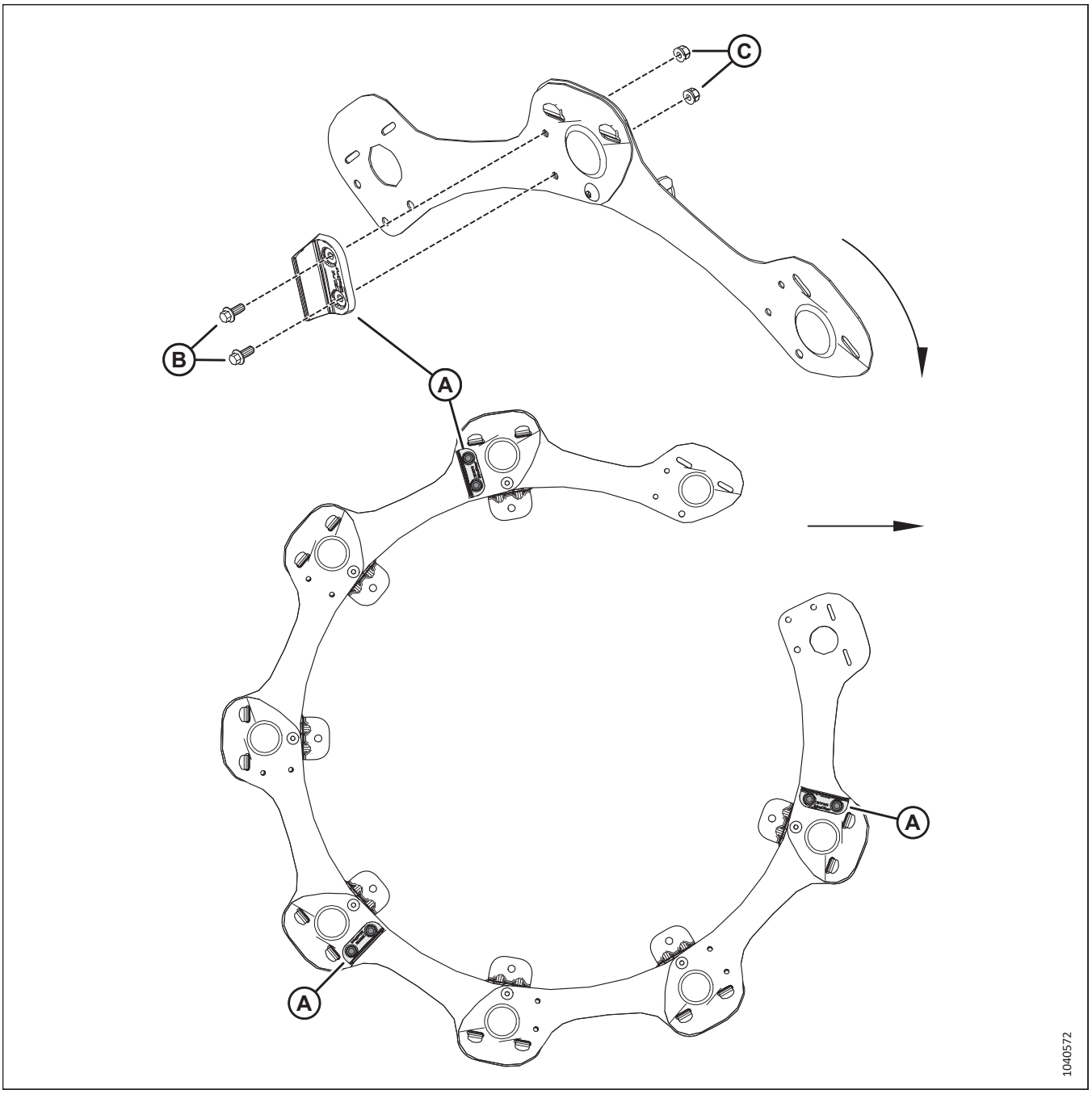


Figure 7.90: Nine-Bat Reel – Initial Endshield Assembly

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 arrow points to the front of the machine. Ensure that the rubber paddles are oriented as shown.

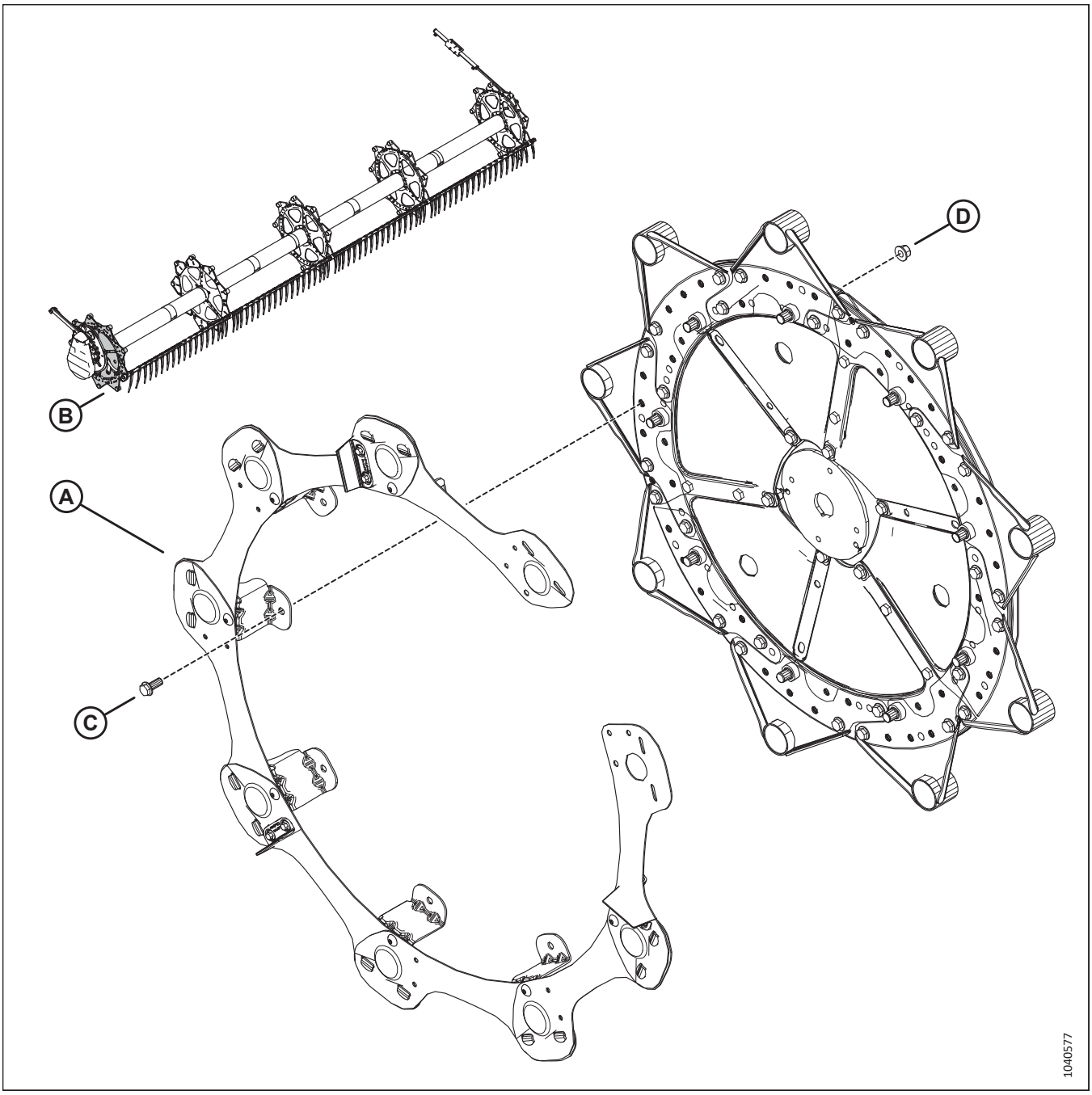


Figure 7.91: Nine-Bat Reel – Initial Endshield Assembly

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.

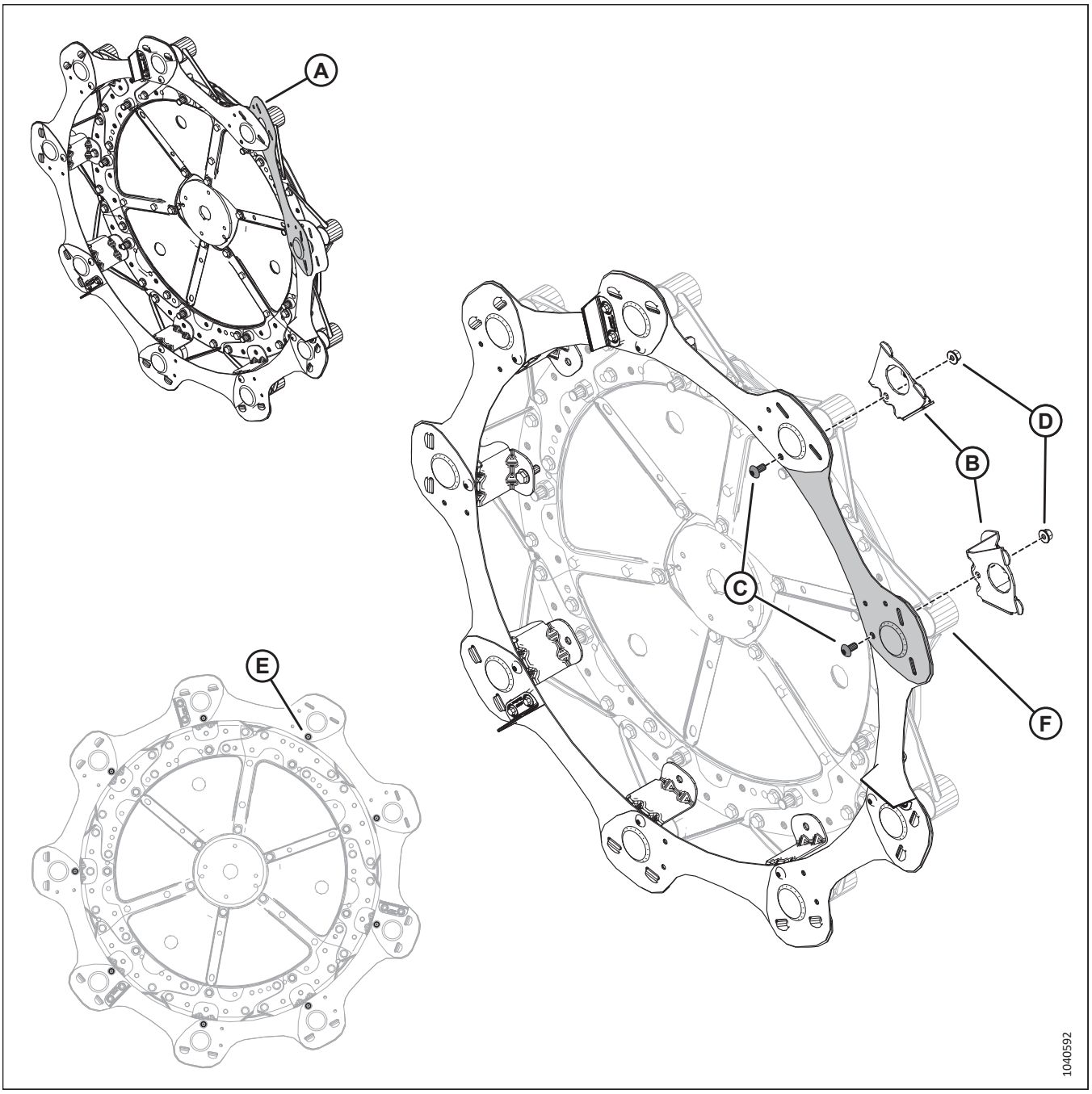


Figure 7.92: Nine-Bat Reel – Initial Endshield Assembly

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).

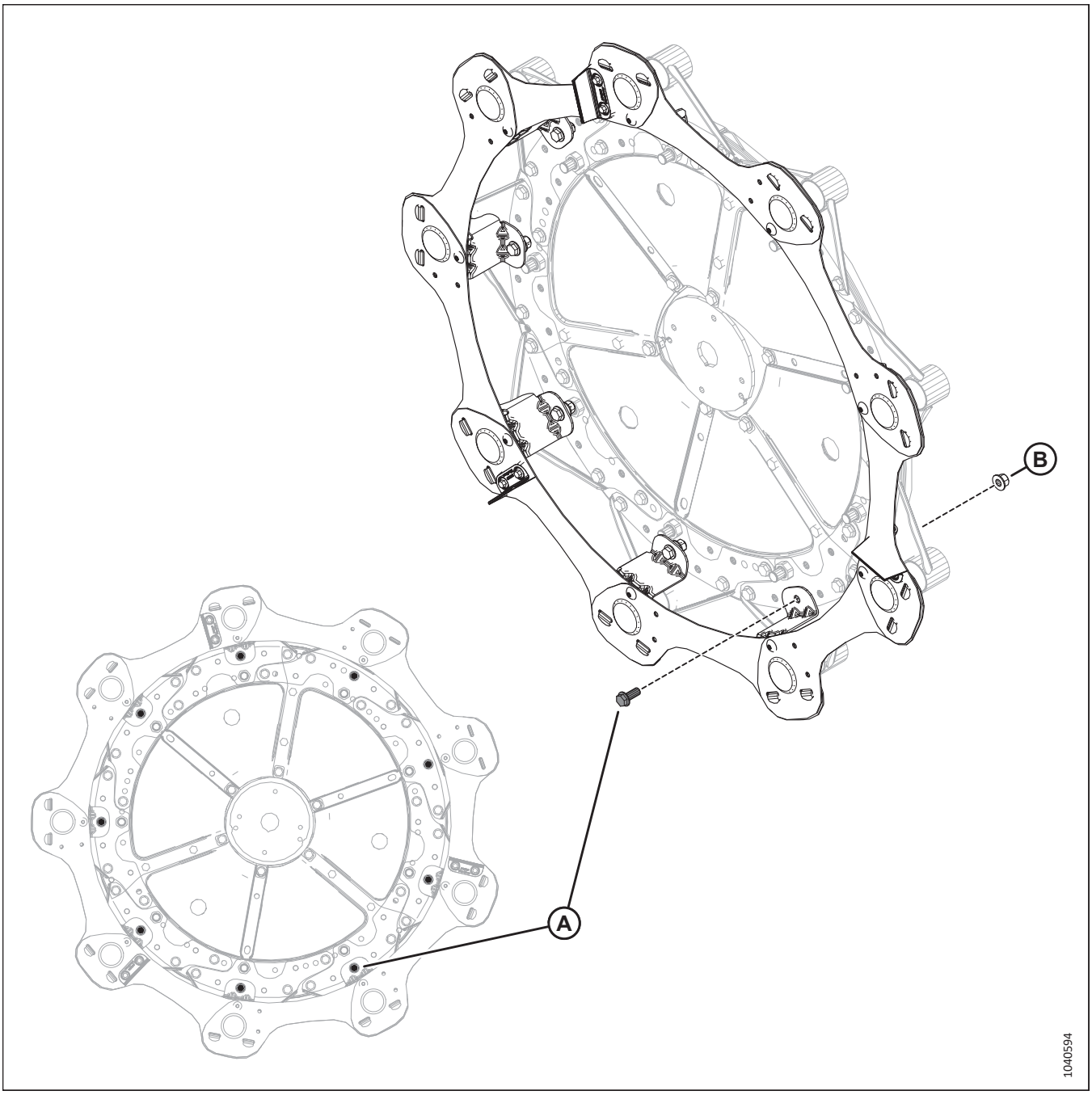


Figure 7.93: Nine-Bat Reel – Initial Endshield Assembly

11. Secure the remaining eight endshield supports to the reel disc using one M12 bolt (A) (MD #320180) and nut (B) (MD #136431).

12. Tighten all nine M12 bolts (A) to 68.5 Nm (50.5 lbf·ft).

7.18.2 Installing Single-Reel Endshields at Tail End

Single-reel headers have had the tail-end reel endshield parts removed for shipping purposes. These parts will need to be assembled and installed on the reel.

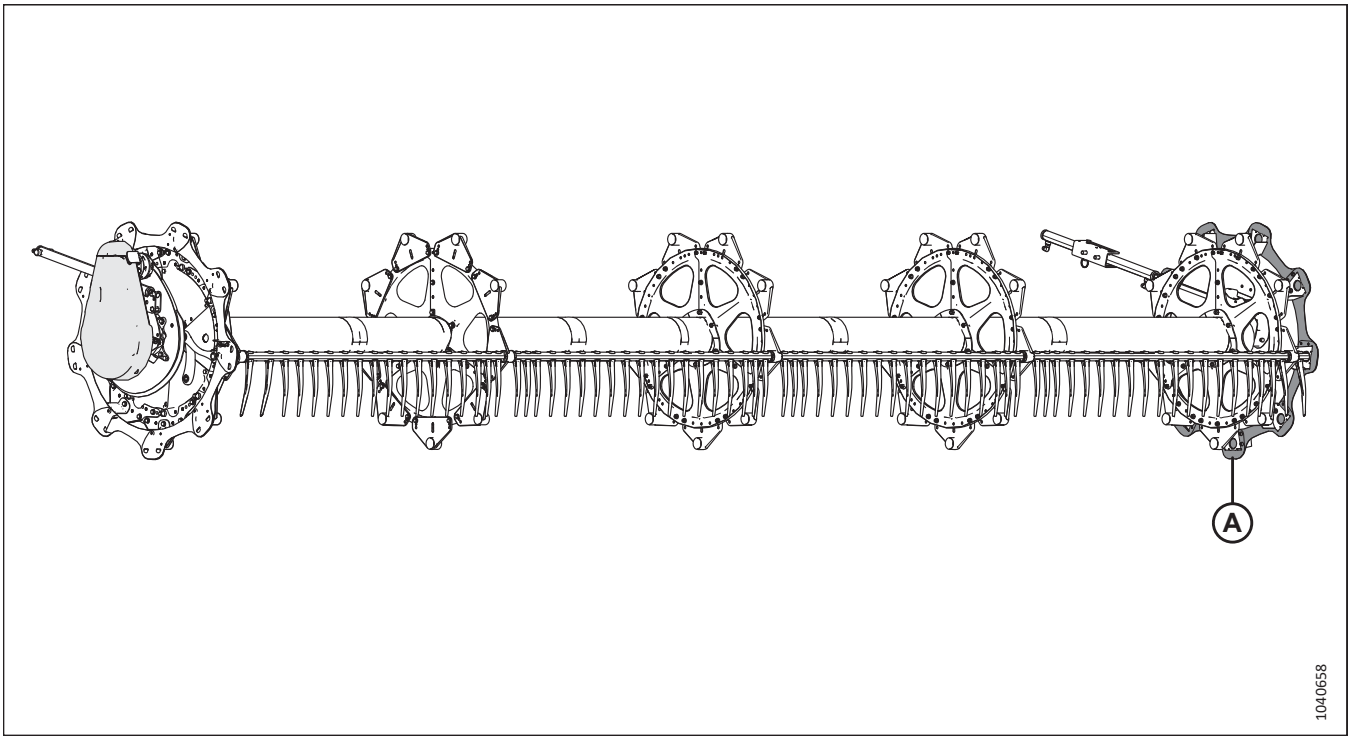


Figure 7.94: Nine-Bat Single-Reel

NOTE:

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

1. Retrieve parts bag (1) labeled with MD #311363. From that bag, retrieve the parts listed in Table*7.7, page 154*.

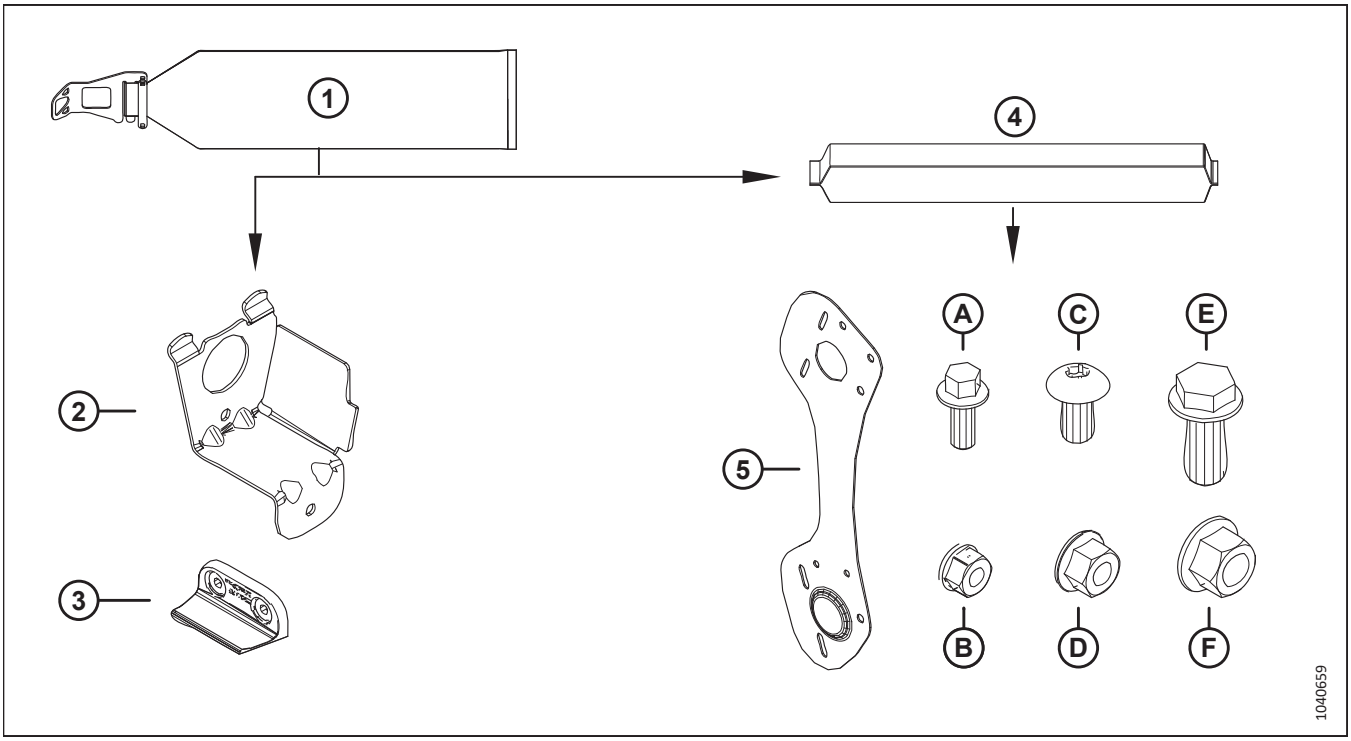


Figure 7.95: Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #311363

Table 7.7 Parts to Retrieve from Nine-Bat Reel Endshields Parts Bag – MD #311363

Ref	Part Number	Description	Quantity to Retrieve
2	311965	SUPPORT – TAIL END	9
3	313035	PADDLE – REEL END; HYTREL	3
4	360019 or “BAG #2”	**NOTE:** This parts bag is labeled with “BAG #2” and/or MD #360019. This bag contains the parts listed below.	1
5	311864	SHIELD – OUTBOARD LH 9 BAT	9
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	9
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	9
E	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	9
F	136431	NUT – HEX FLG CTR LOC M12X1.75-10	9

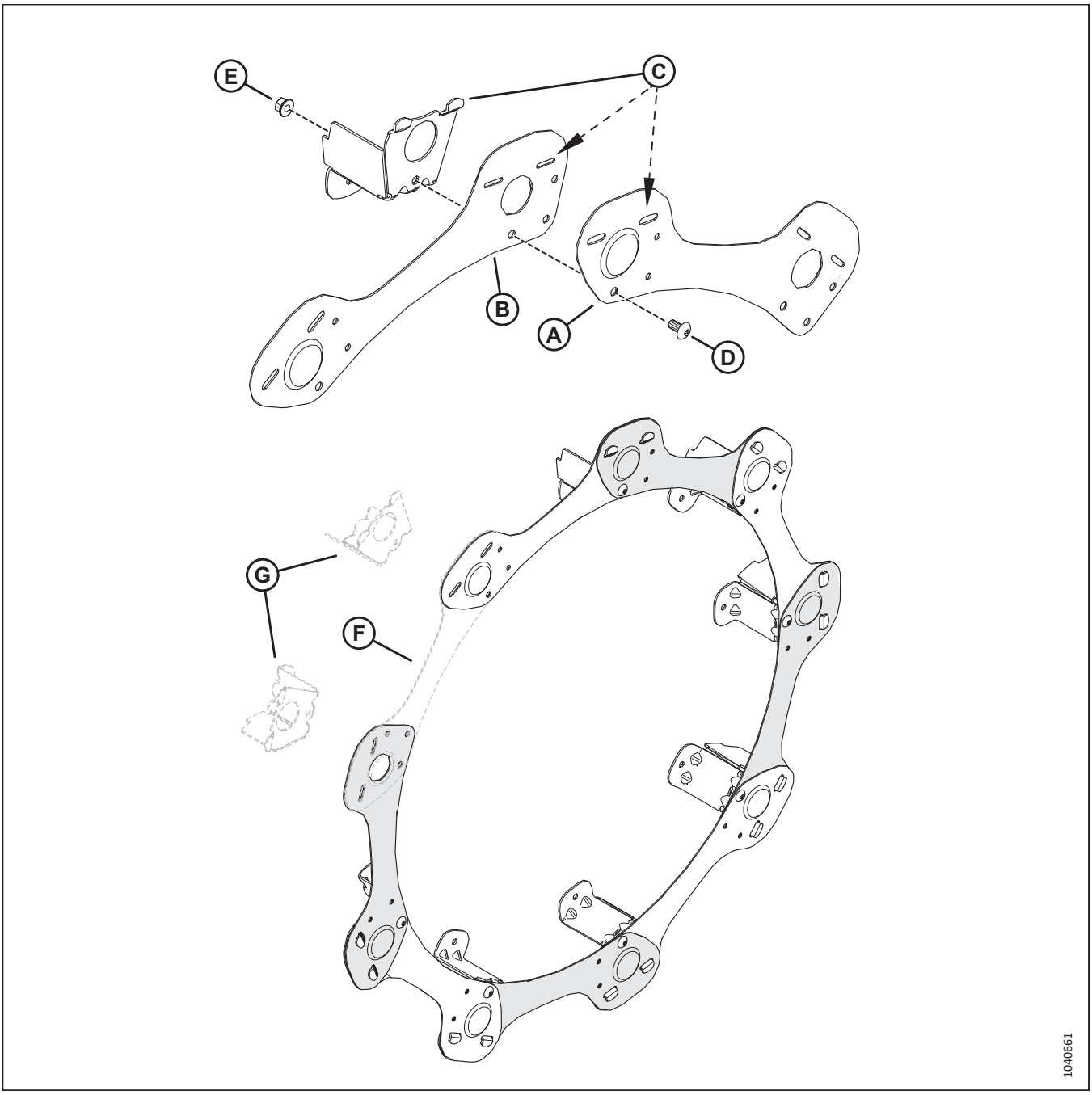


Figure 7.96: Nine-Bat Reel – Initial Endshield Assembly

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.

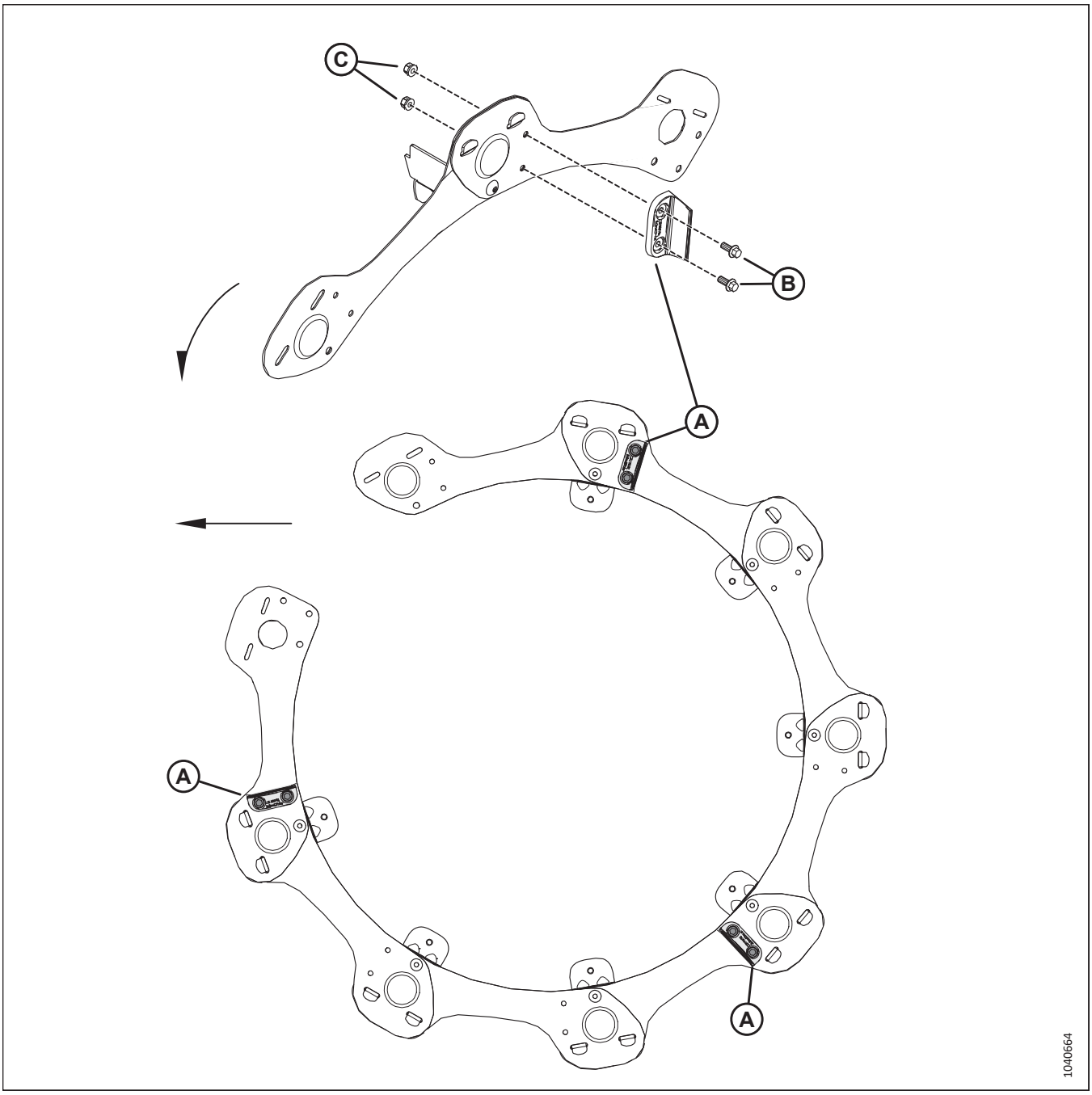


Figure 7.97: Nine-Bat Reel – Initial Endshield Assembly

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 arrow points to the front of the machine. Ensure that the rubber paddles are oriented as shown.

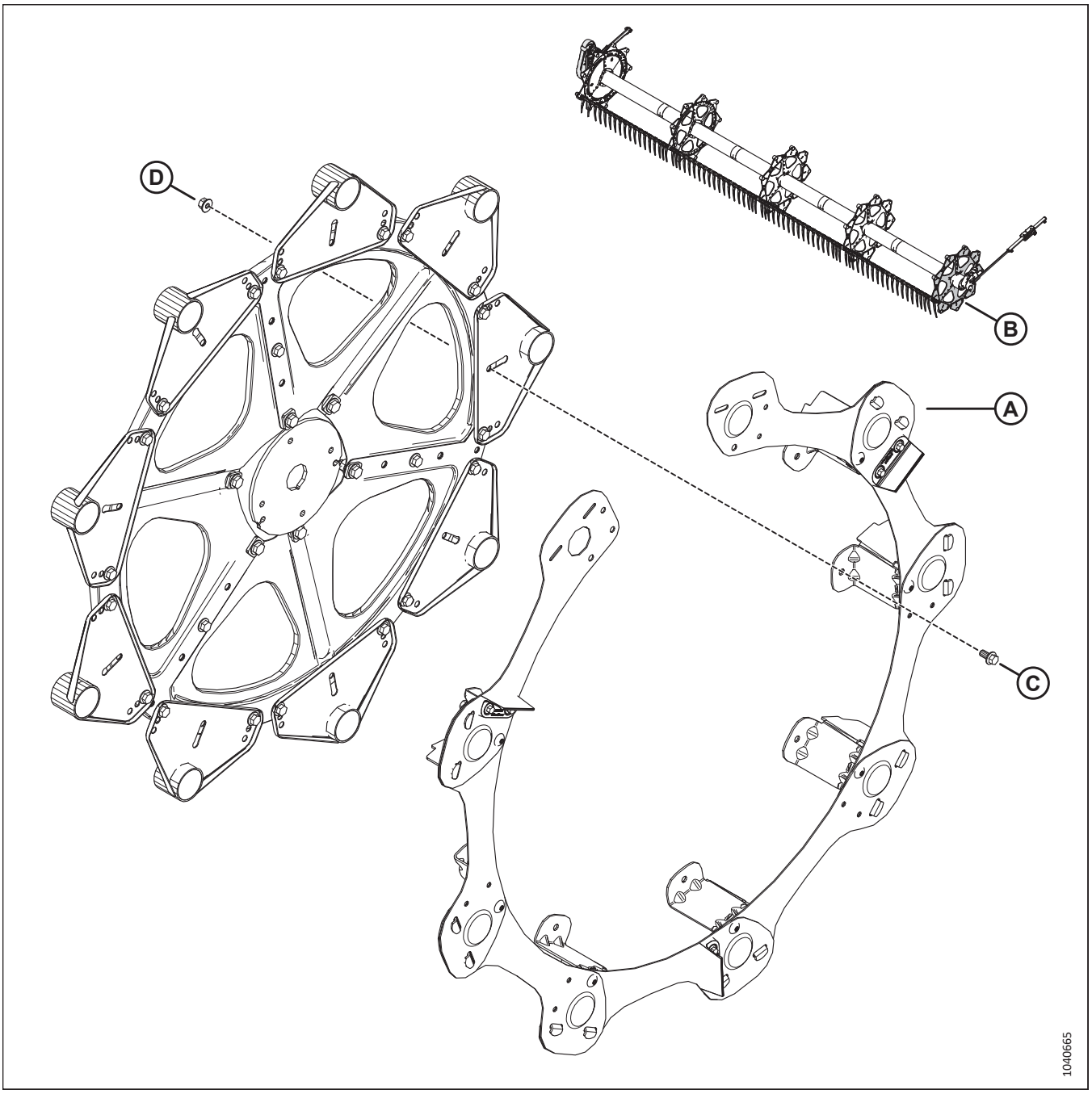


Figure 7.98: Nine-Bat Reel – Initial Endshield Assembly

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.

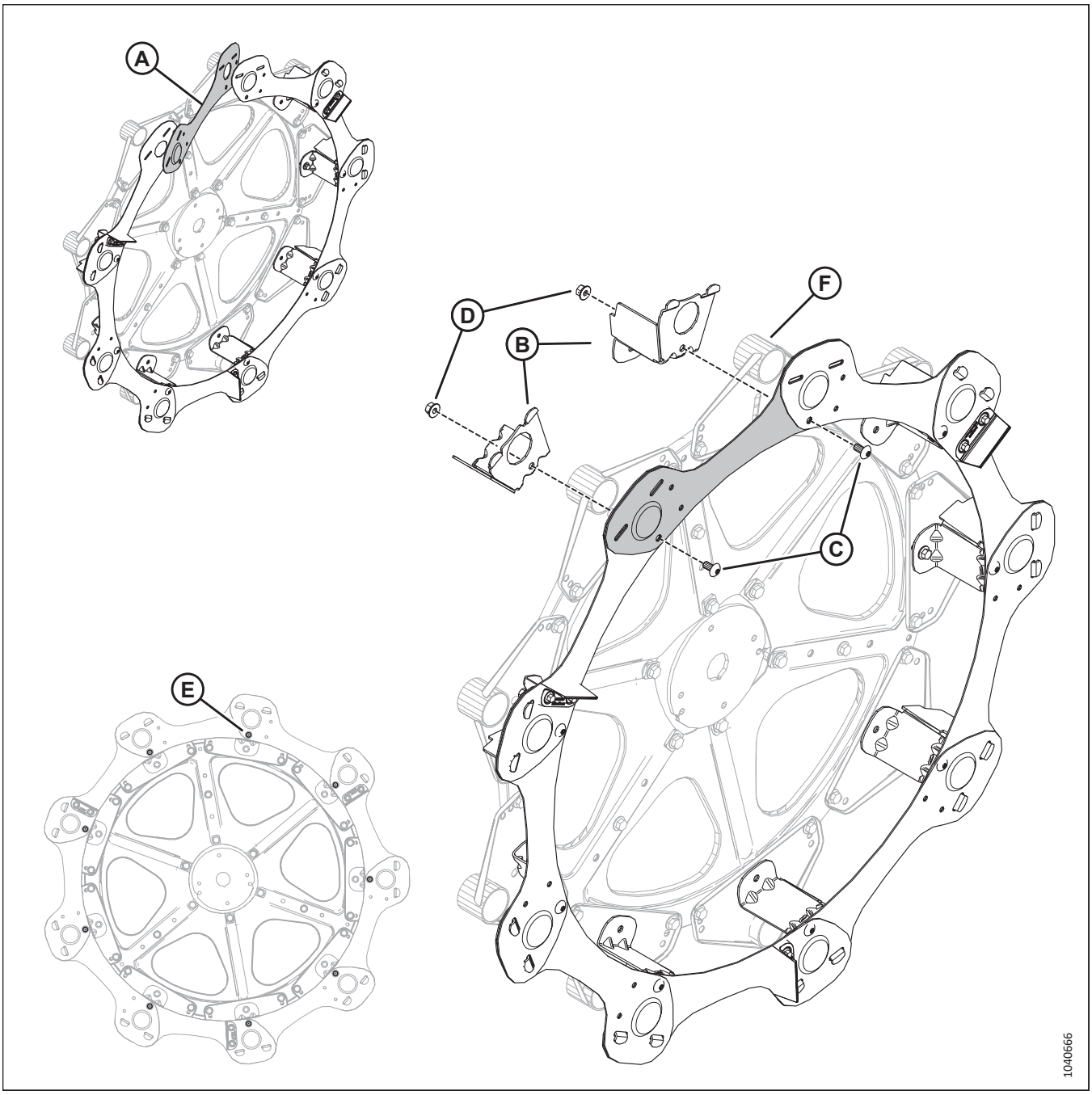


Figure 7.99: Nine-Bat Reel – Initial Endshield Assembly

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).

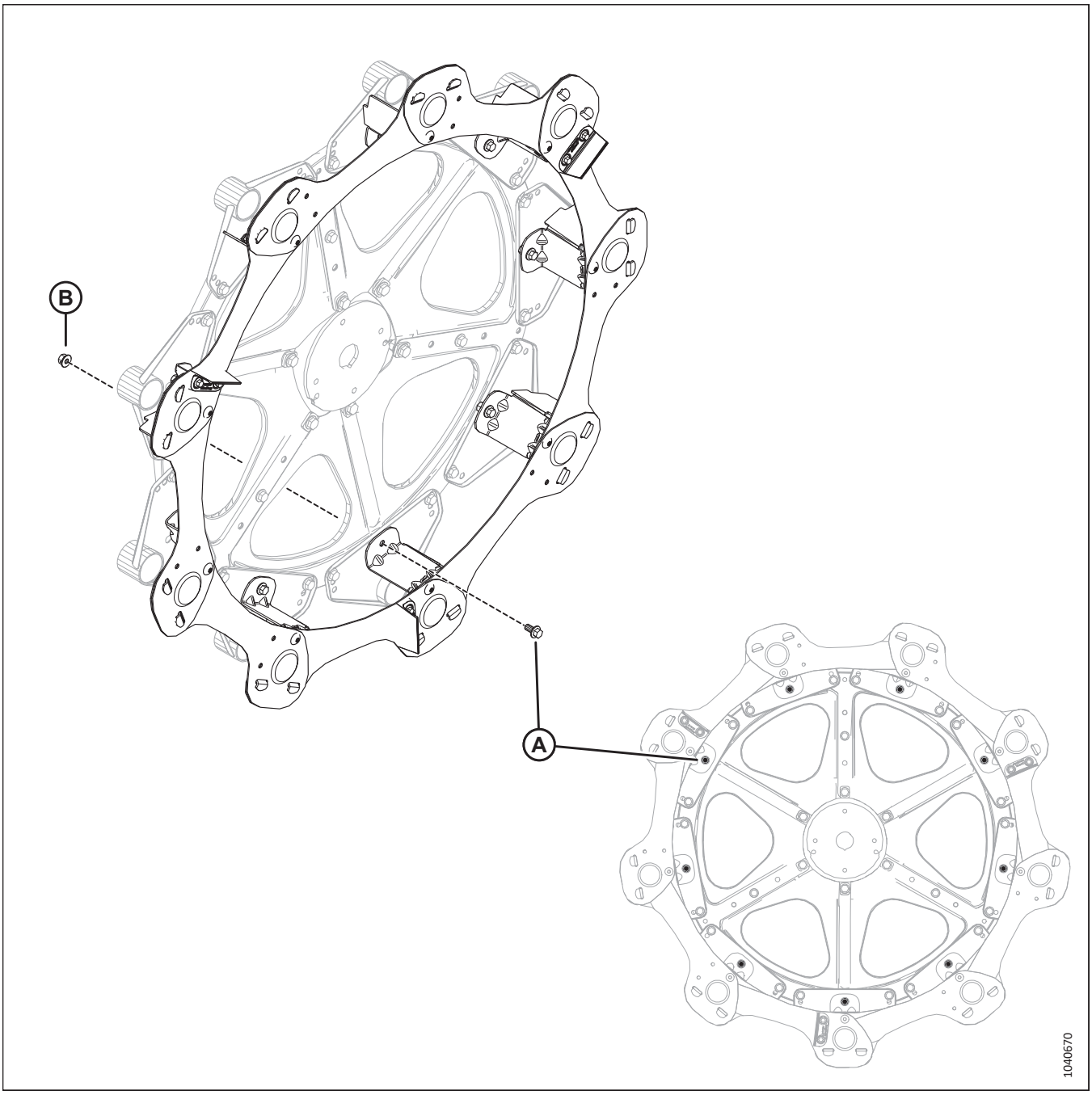


Figure 7.100: Nine-Bat Reel – Initial Endshield Assembly

11. Secure the remaining eight endshield supports to the reel disc using one M12 bolt (A) (MD #320180) and nut (B) (MD #136431).

12. Tighten all nine M12 bolts (A) to 68.5 Nm (50.5 lbf·ft).

7.19 Installing Double-Reel Endshields – Parts Bags MD #340985 (Five-Bat Reels) or MD #340986 (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:

As of model year 2023, D2 Series Draper Headers sold in North America are only offered in six-bat reels. 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.

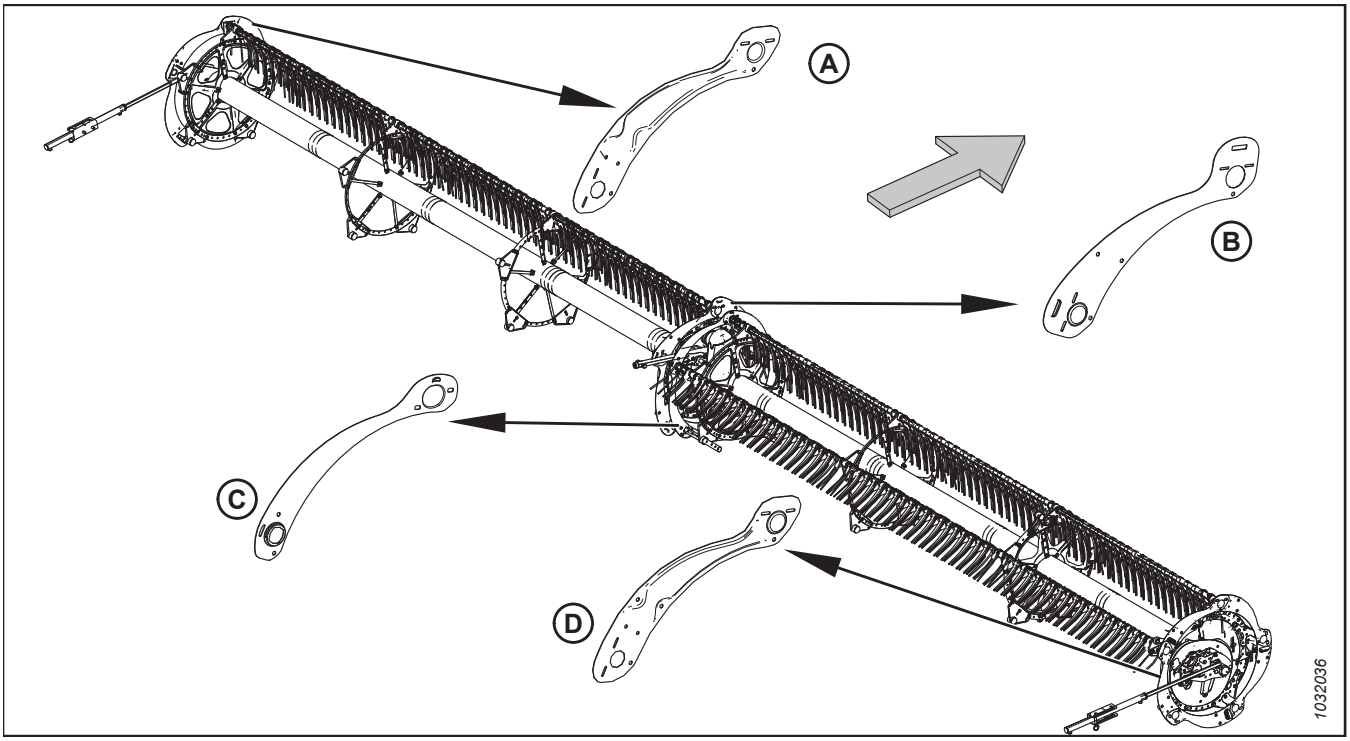


Figure 7.101: Reel Endshields – Double-Reel (Five-Bat Shown)

A - Tail End, Outboard (MD #311695), Bag 1
B - Cam End, Inboard (MD #273823), Bag 2
C - Tail End, Inboard (MD #311795), Bag 3
D - Cam End, Outboard (MD #311694), Bag 4

NOTE:

The large arrow indicates the front of the header.

1. **Five-bat reel:** Retrieve parts bag MD #340985. For a list of parts, refer to Table *7.8, page 162*.
2. **Six-bat reel:** Retrieve parts bag MD #340986. For a list of parts, refer to Table *7.9, page 164*.

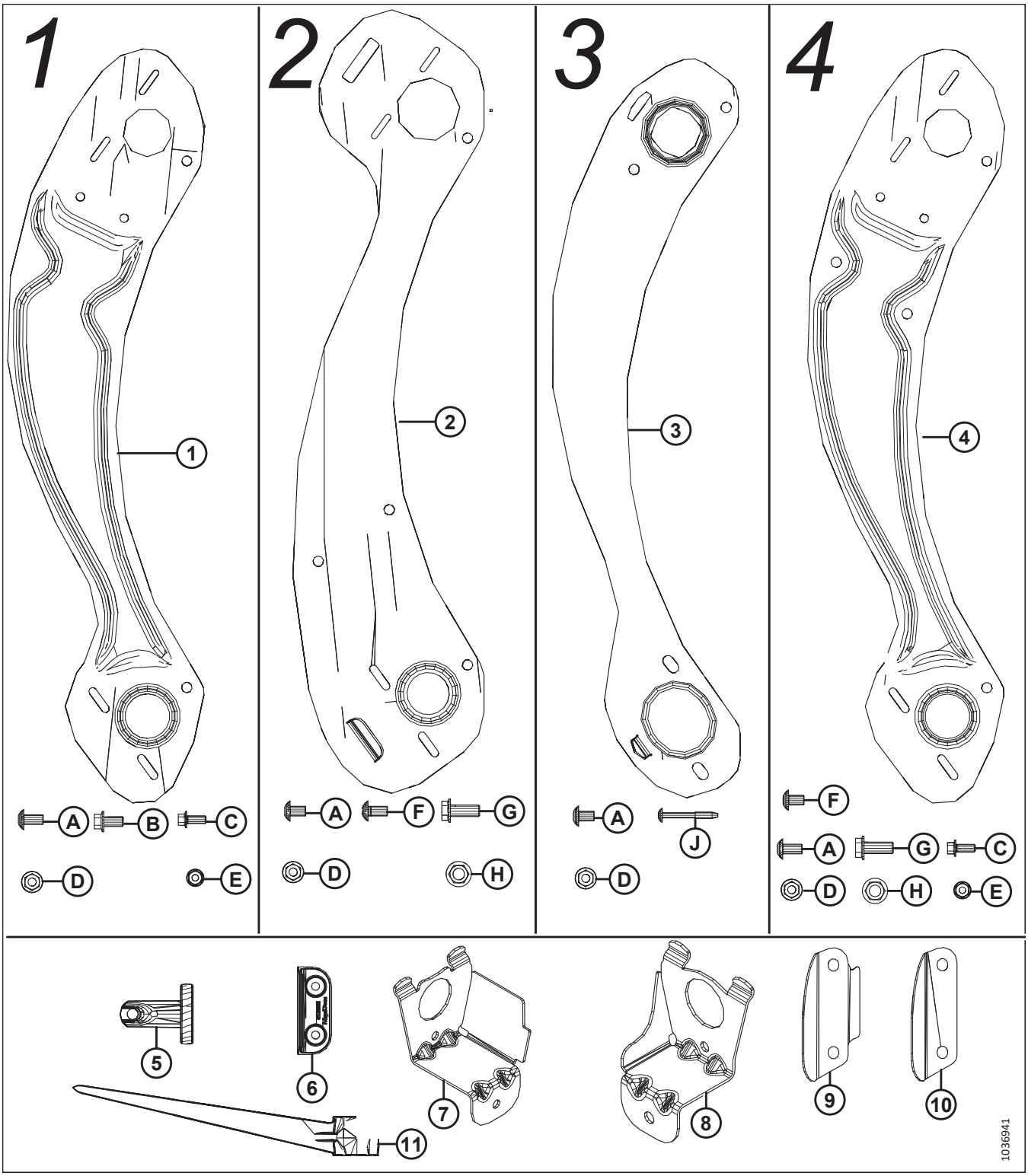


Figure 7.102: Five-Bat Double Reel Endshields – MD #340985

Table 7.8 Five-Bat Double Reel Bag – MD #340985

Ref	Part Number	Description	Qty
Bag #1			
1	311695	SHIELD – 5-BAT LH OUTBOARD TAIL END	5
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	5
B	152655	BOLT – HEX FLG HD M10X1.5X20-8.8-AA1J	5
C	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	10
E	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
Bag #2			
2	273823	SHIELD – 5-BAT LH REEL CAM END	5
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	5
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	15
F	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	10
G	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	5
H	136431	NUT – HEX FLG CTR LOC M12X1.75-10	5
Bag #3			
3	311795	SHIELD – 5-BAT RH REEL TAIL END	5
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-A3L	10
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	10
J	252687	SCREW – 48° PLASTITE TWIN HELIX	5
Bag #4			
4	311694	SHIELD – 5-BAT RH OUTBOARD CAM END	5
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	5
C	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	15
G	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	5
H	136431	NUT – HEX FLG CTR LOC M12X1.75-10	5
E	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
F	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	10
Contained in MD #340985, but outside of Bags #1–#4			
5	273968	BUSHING – ENDSHIELD	5
6	313035	PADDLE – REEL END, HYTREL	6
7	311965	SUPPORT – WELDT TAIL END	5
8	311964	SUPPORT – WELDT CAM END	10
9	311729	DEFLECTOR – CAM OUTBOARD	5
10	311906	DEFLECTOR – CAM INBOARD	5
11	NSS[2]	FINGER-PLASTIC – LH ANGLED 52 MM	5

2. Not sold separately. This part can be ordered as a pack of 10 (MD #360540)

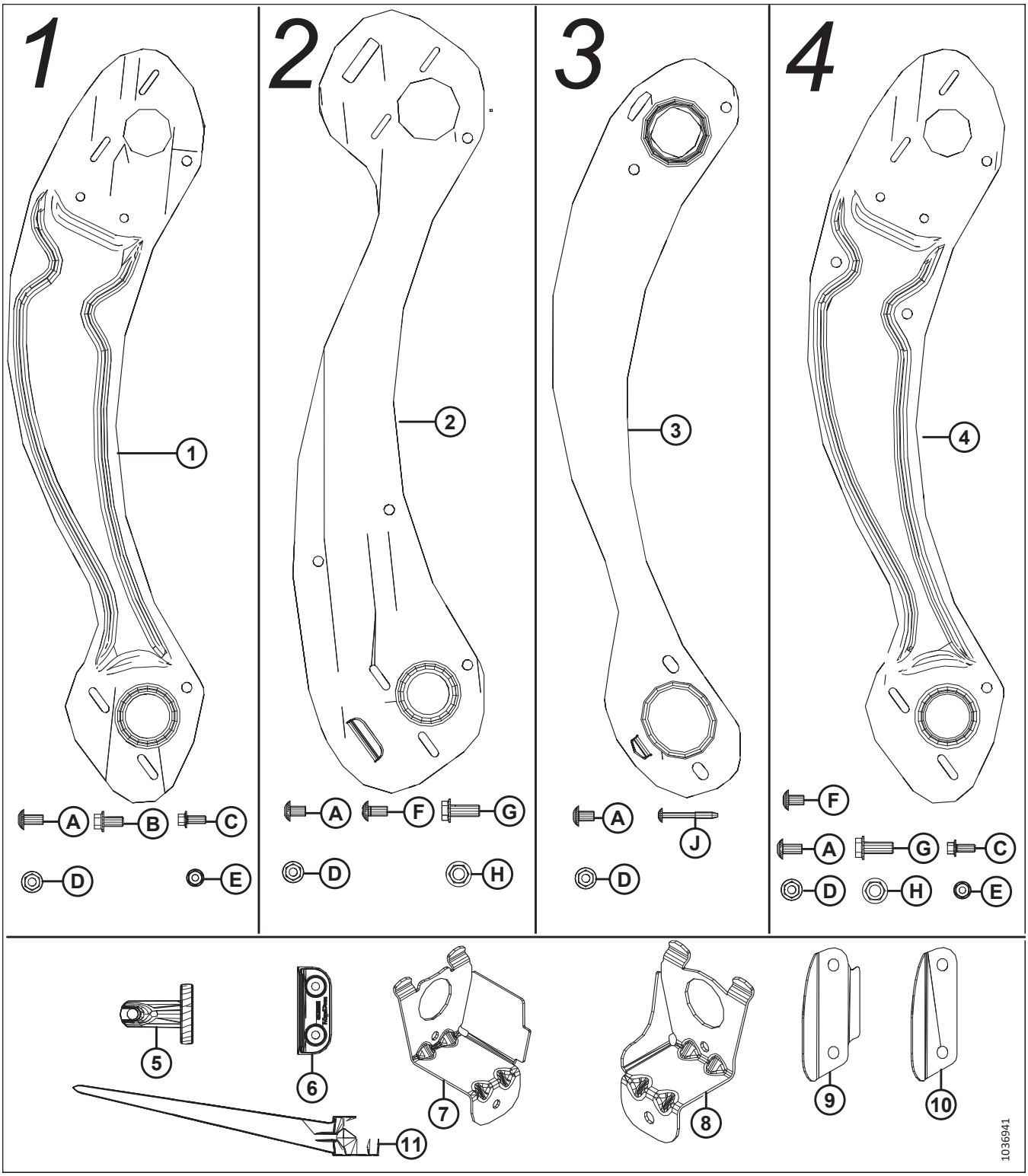


Figure 7.103: Six-Bat Double-Reel Endshields – MD #340986

Table 7.9 Six-Bat Double-Reel Bag – MD #340986

Ref	Part Number	Description	Qty
		Bag #1	
1	311753	SHIELD – OUTBOARD LH 6 BAT	6
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	6
B	152655	BOLT – HEX FLG HD M10X1.5X20-8.8-AA1J	6
C	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	12
E	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
		Bag #2	
2	273813	SHIELD – 6-BAT LH REEL CAM END	6
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	18
F	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	12
G	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	6
H	136431	NUT – HEX FLG CTR LOC M12X1.75-10	6
		Bag #3	
3	311822	SHIELD – 6-BAT RH REEL TAIL END	6
A	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-A3L	12
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	12
J	252687	SCREW – 48° PLASTITE TWIN HELIX	6
		Bag #4	
4	311752	SHIELD – 6-BAT RH OUTBOARD CAM END	6
A	136395	SCR – TORX TRUSS HD M10X1.5X20XSPCL-8.8-A3L	6
C	136300	BOLT – HEX FLG HD TFL M8X1.25X20-8.8-AA3L	6
D	135799	NUT – HEX FLG CTR LOC M10X1.5-10	18
G	320180	BOLT – HEX FLG HD M12X1.75X30-SPCL-8.8-ZINC	6
H	136431	NUT – HEX FLG CTR LOC M12X1.75-10	6
E	135337	NUT – HEX FLG CTR LK M8X1.25-8-AA1J	6
F	136640	SCR – TORX TRUSS HD M10X1.5X16XSPCL-8.8-AA1J	12
		Contained in MD #340986, but outside of Bags #1–#4	
5	273968	BUSHING – ENDSHIELD	6
6	313035	PADDLE – REEL END, HYTREL	6
7	311965	SUPPORT – WELDT TAIL END	6
8	311964	SUPPORT – WELDT CAM END	12
9	311729	DEFLECTOR – CAM OUTBOARD	6
10	311906	DEFLECTOR – CAM INBOARD	6
11	NSS[3]	FINGER-PLASTIC – LH ANGLED 52 MM	6

3. Not sold separately. This part can be ordered as a pack of 10 (MD #360540)

7.19.1 Installing Double-Reel Endshields at Outboard Cam End

Endshields need to be installed at the cam end of the right reel to prevent crop from wrapping around the reel.

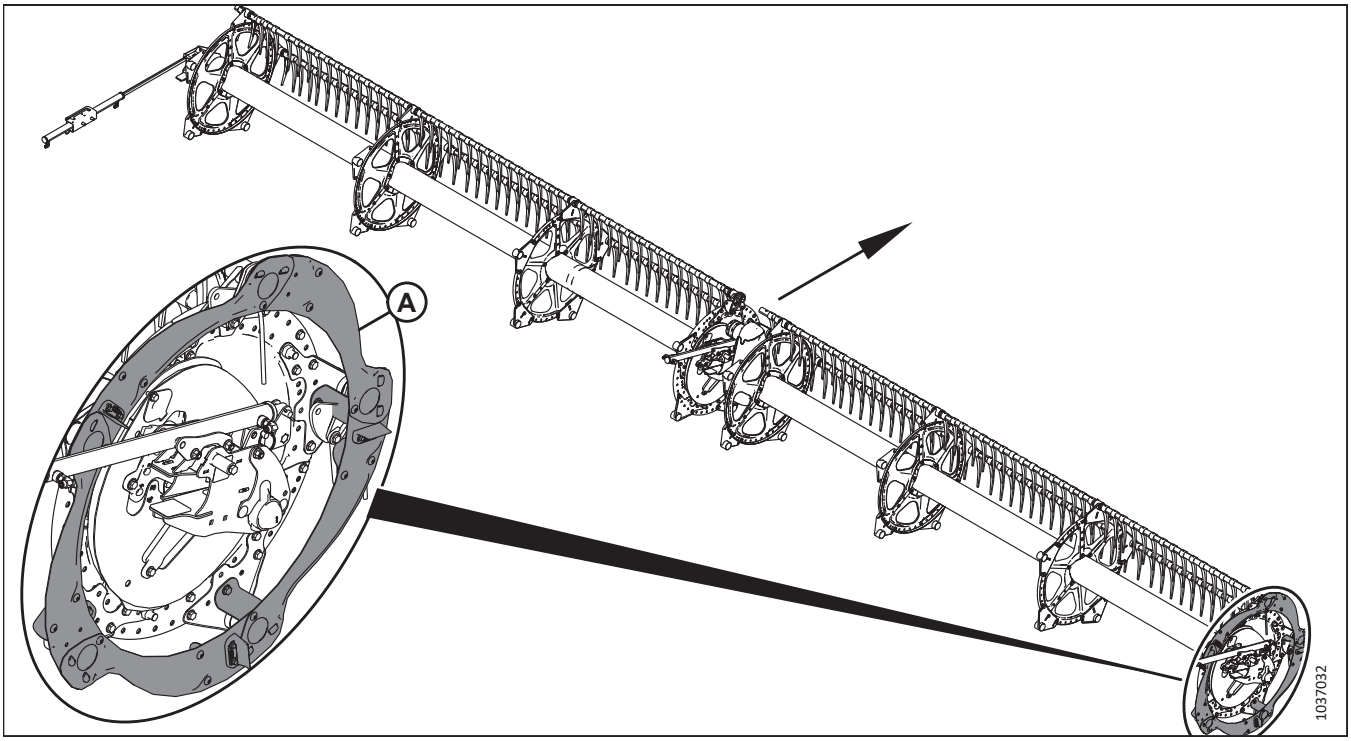


Figure 7.104: Five-Bat Double Reel

A - Five-Bat Cam-End Outboard Shield (MD #311694)

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.

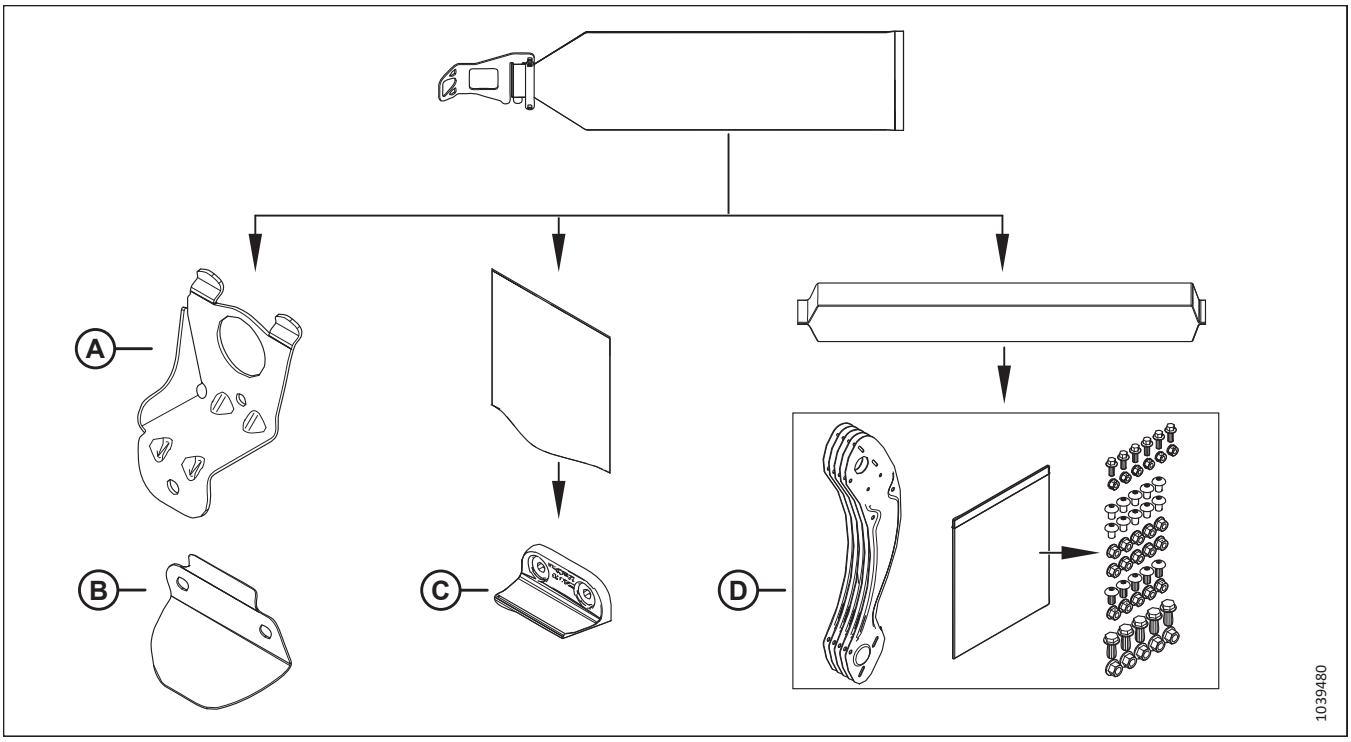


Figure 7.105: Reel Endshield Parts Bag (MD #340985) – MD #340986 is Similar

1. Retrieve the following parts supplied in shipping bag (MD #340985 for five-bat reel) or (MD #340986 for six-bat reel):

   Five-bat reel:

   - Five supports (A) (MD #311964)
   - Five cam deflectors (B) (MD #311729)
   - Three rubber paddles (C) (MD #313035)
   - The bag labeled “Bag #4” (D)

   Six-bat reel:

   - Six supports (A) (MD #311964)
   - Six cam deflectors (B) (MD #311729)
   - Three rubber paddles (C) (MD #313035)
   - The bag labeled “Bag #4” (D)

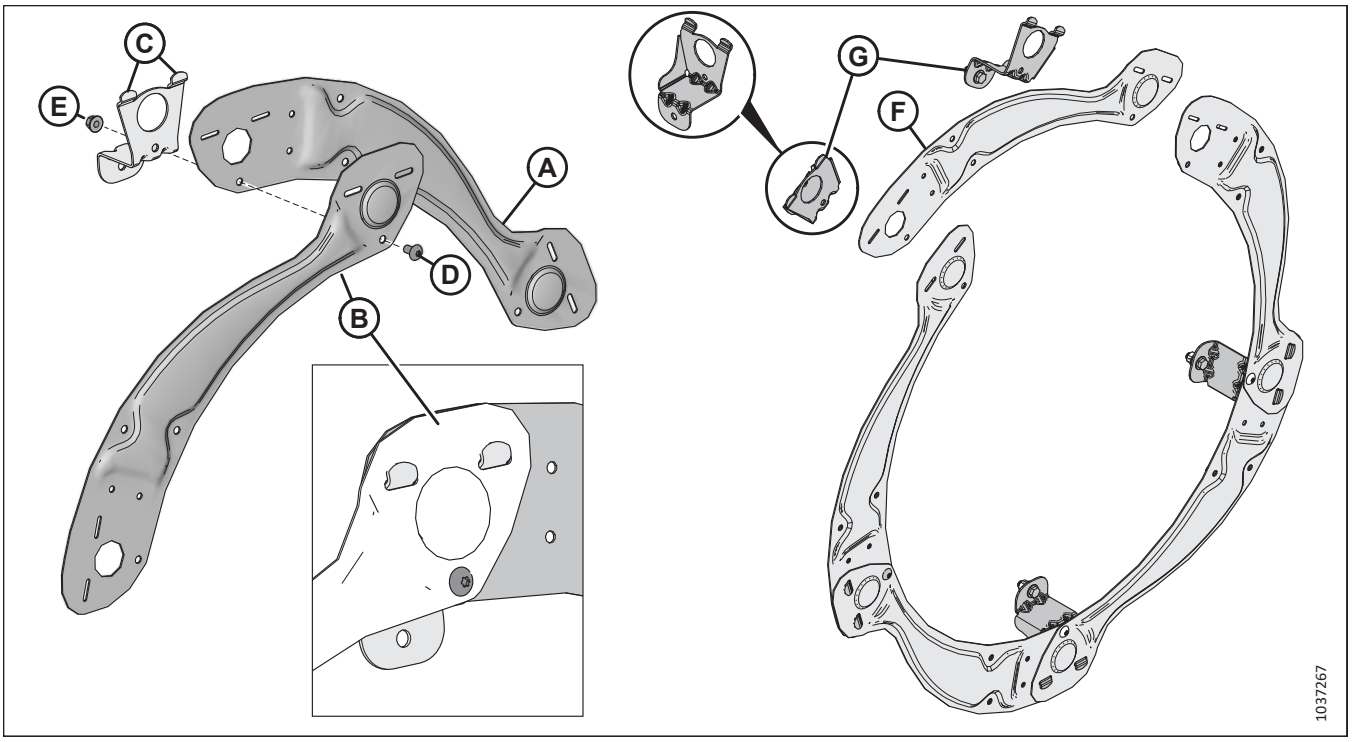


Figure 7.106: Five-Bat Reel – Initial Endshield Assembly

2. Assemble the endshield as follows:

   a. Position endshield segment (A) behind segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.

   b. Repeat step a) for the remaining segments. Do **NOT** install last segment (F) and two support tabs (G) yet.

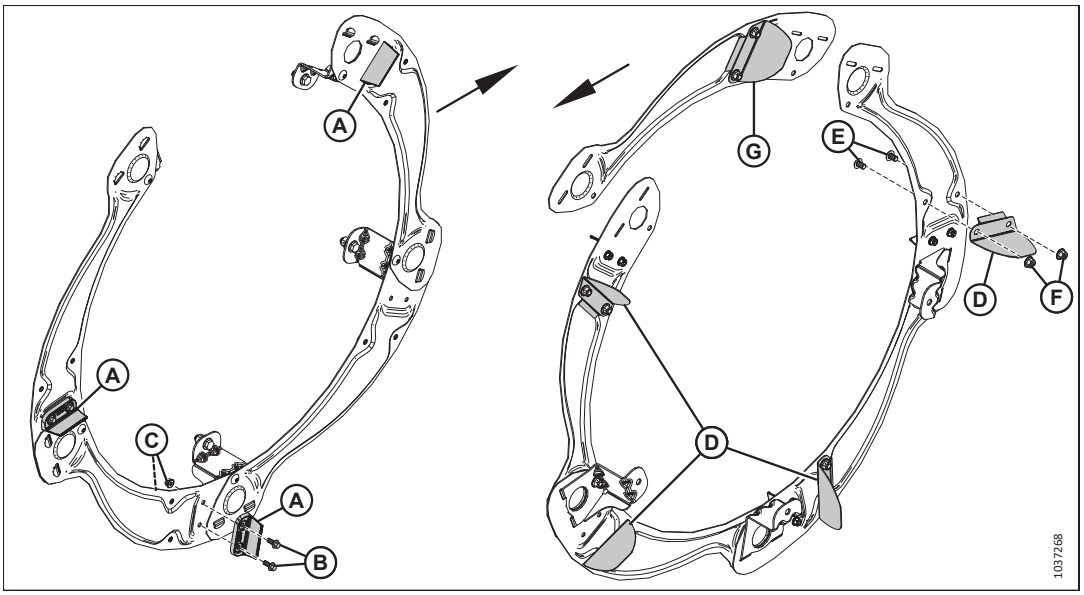


Figure 7.107: Five-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

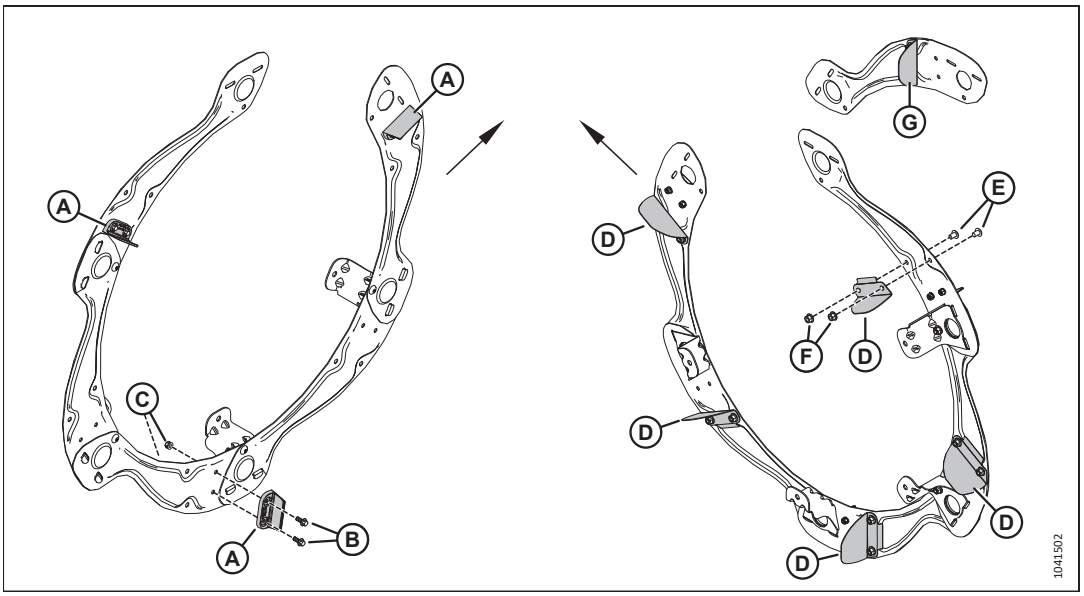


Figure 7.108: Six-Bat Reel – Rubber Paddles and Aluminum Cam Deflectors

NOTE:

For five-bat reels, refer to Figure *7.107, page 168*. For six-bat reels, refer to Figure *7.108, page 168*.

3. Install all rubber reel end paddles (A) on the outboard face of the endshield assembly using two M8 X 1.25 X 20 hex bolts (B) and nuts (C) per paddle.

   IMPORTANT:

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

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

5. Install aluminum cam deflector (G) (MD #311729) on the last segment as shown using two M10 X 1.5 X 16 Torx® screws and hex nuts.

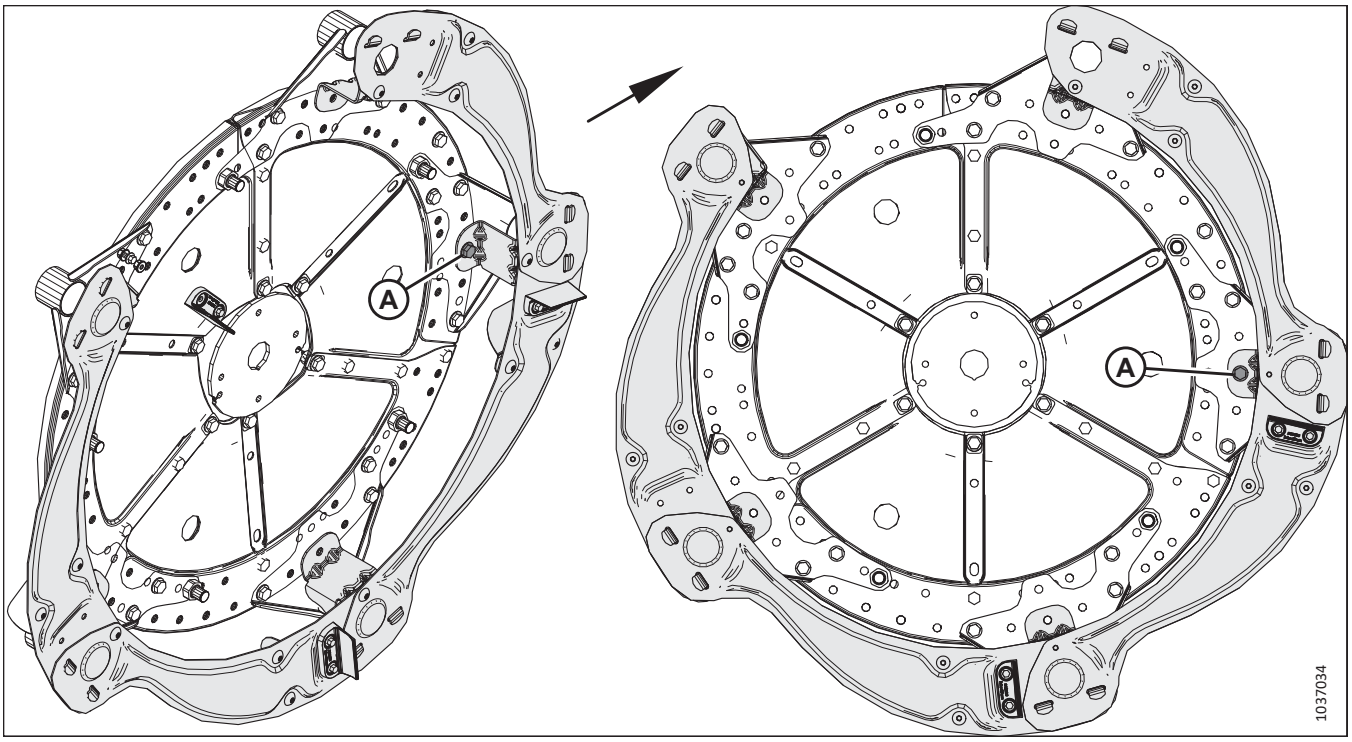


Figure 7.109: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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

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

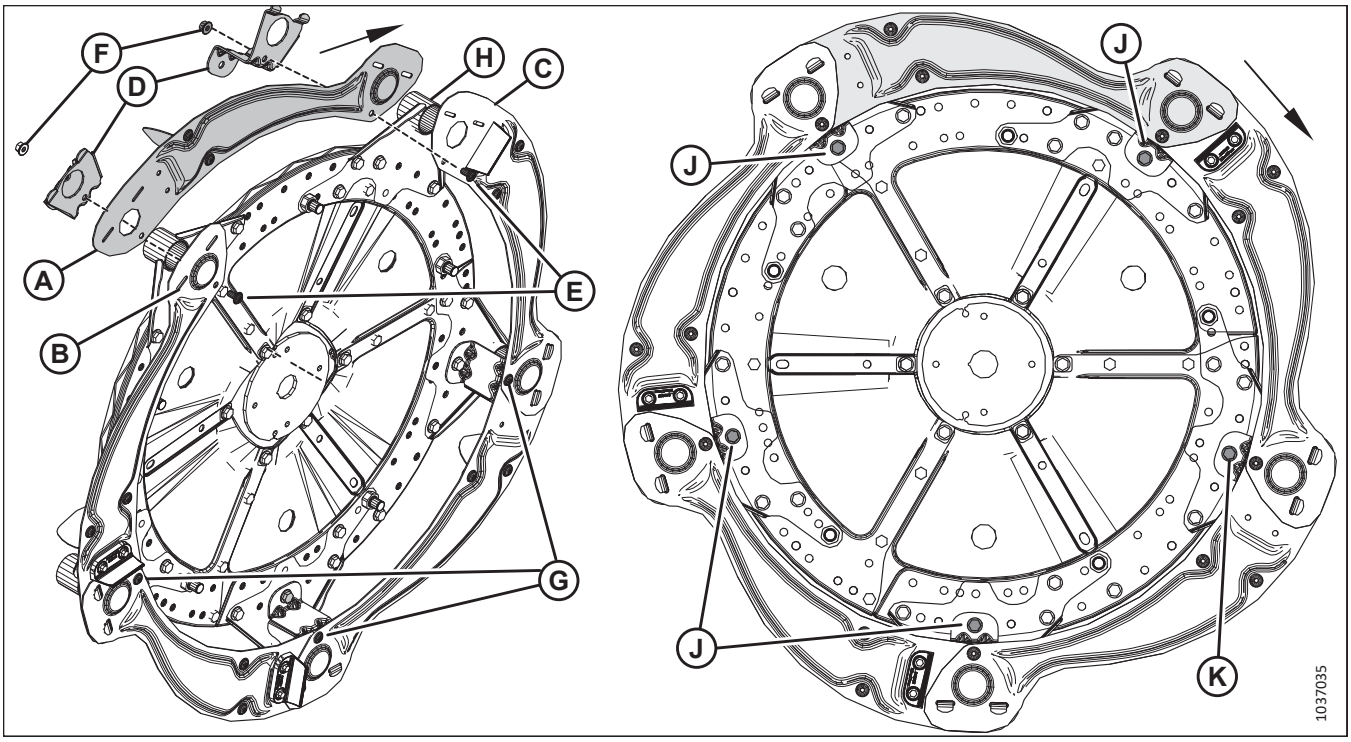


Figure 7.110: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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

   NOTE:

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

7.19.2 Installing Double-Reel Endshields at Inboard Tail End

Endshields need to be installed on the tail end of the right reel to prevent crop from wrapping around the reel.

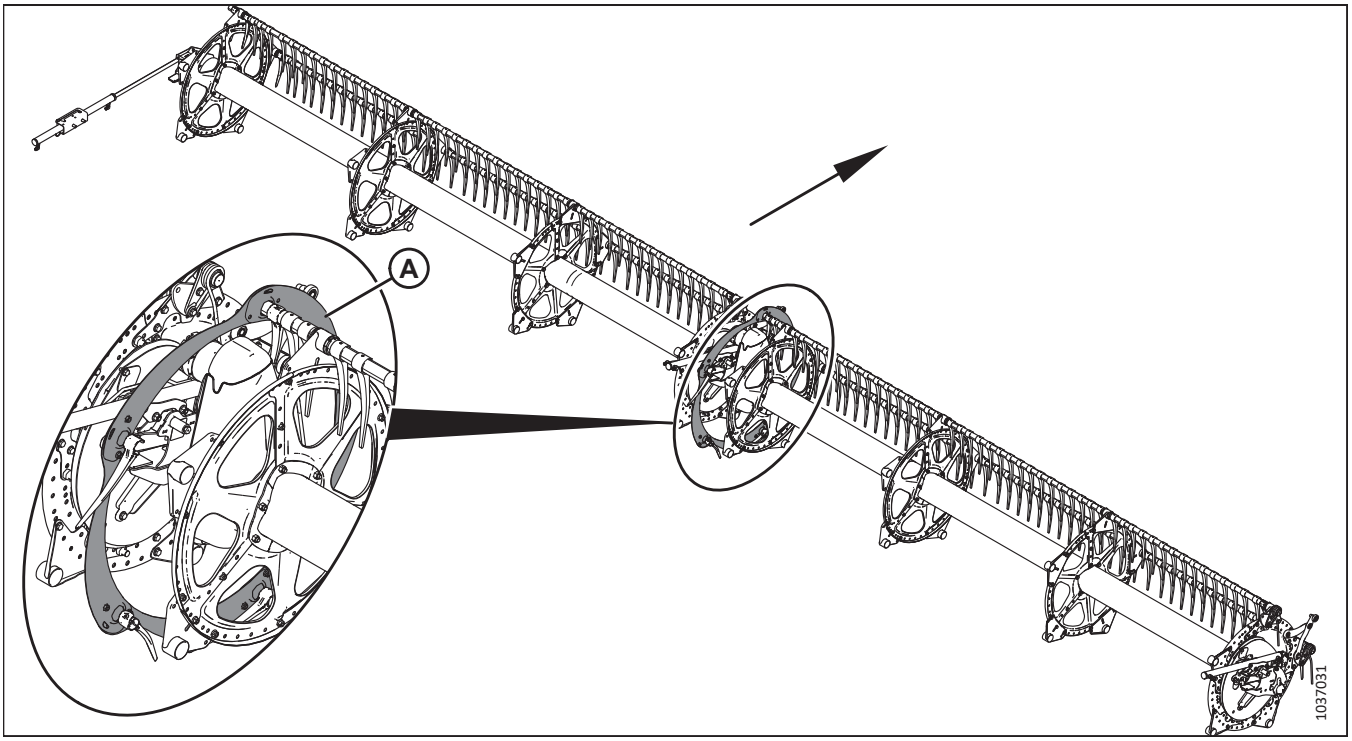


Figure 7.111: Five-Bat Double Reel

A - Five-Bat, Inboard, Tail Endshield (MD #311795)

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.

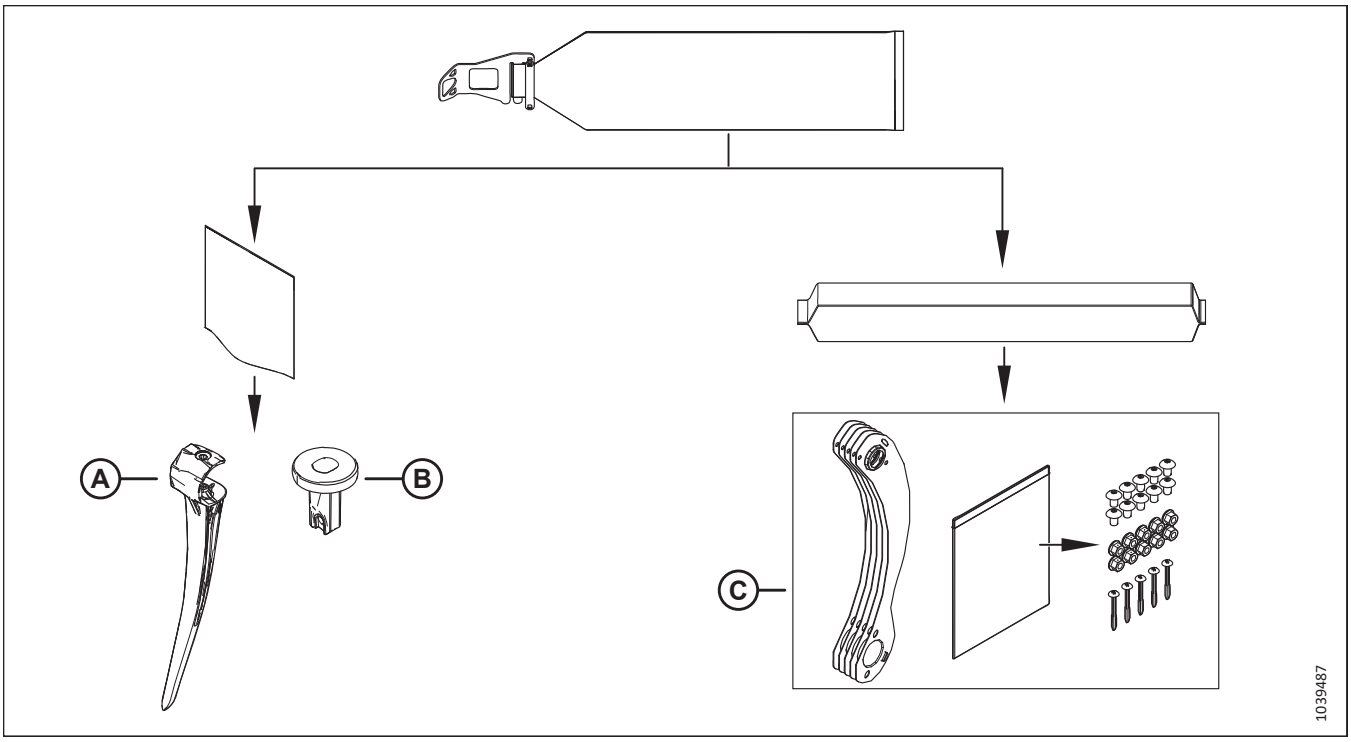


Figure 7.112: Reel Endshield Parts Bag MD #340985 – MD #340986 is Similar

1. Retrieve the following parts supplied in shipping bag (MD #340985 for five-bat reel) or (MD #340986 for six-bat reel):

   Five-bat reel:

   - Five fingers (A)
   - Five bushings (B)
   - The bag labeled “Bag #3” (C)

   Six-bat reel:

   - Six fingers (A)
   - Six bushings (B)
   - The bag labeled “Bag #3” (C)

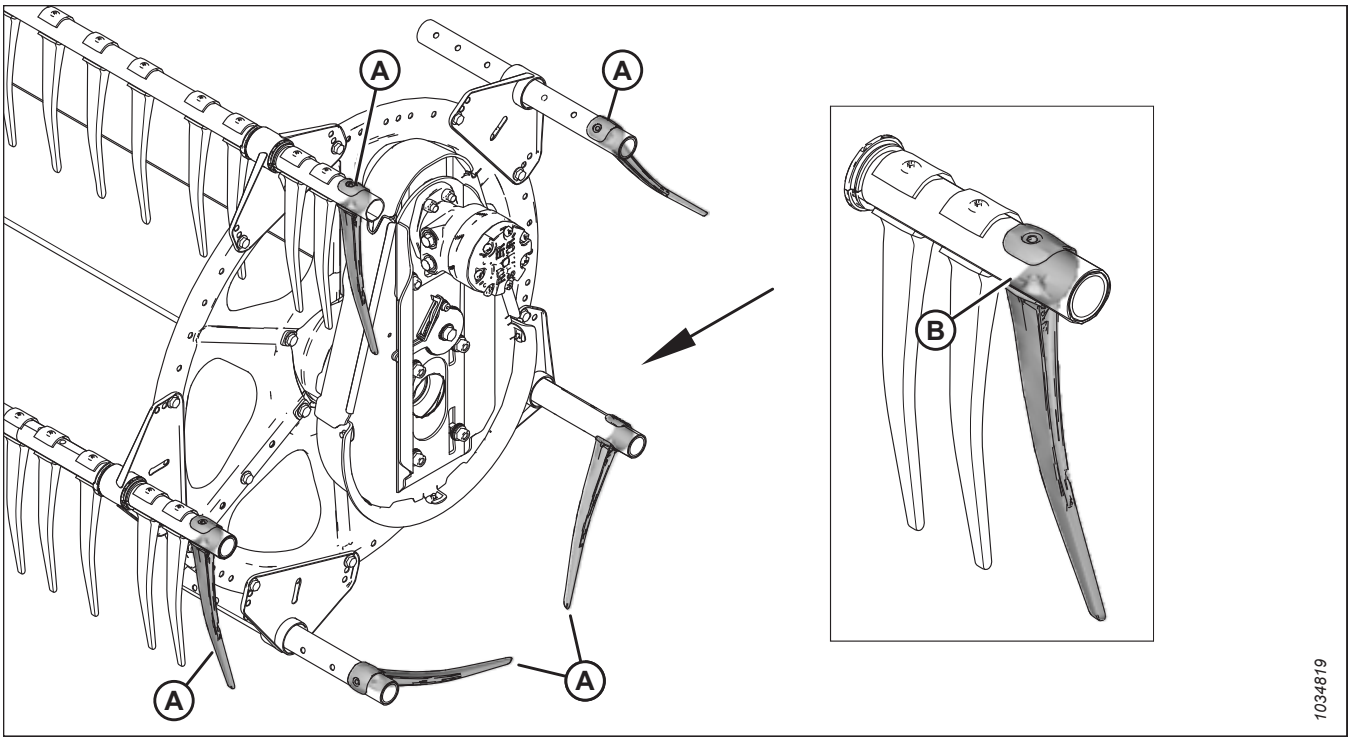


Figure 7.113: Fingers Placed on Tine Tubes

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

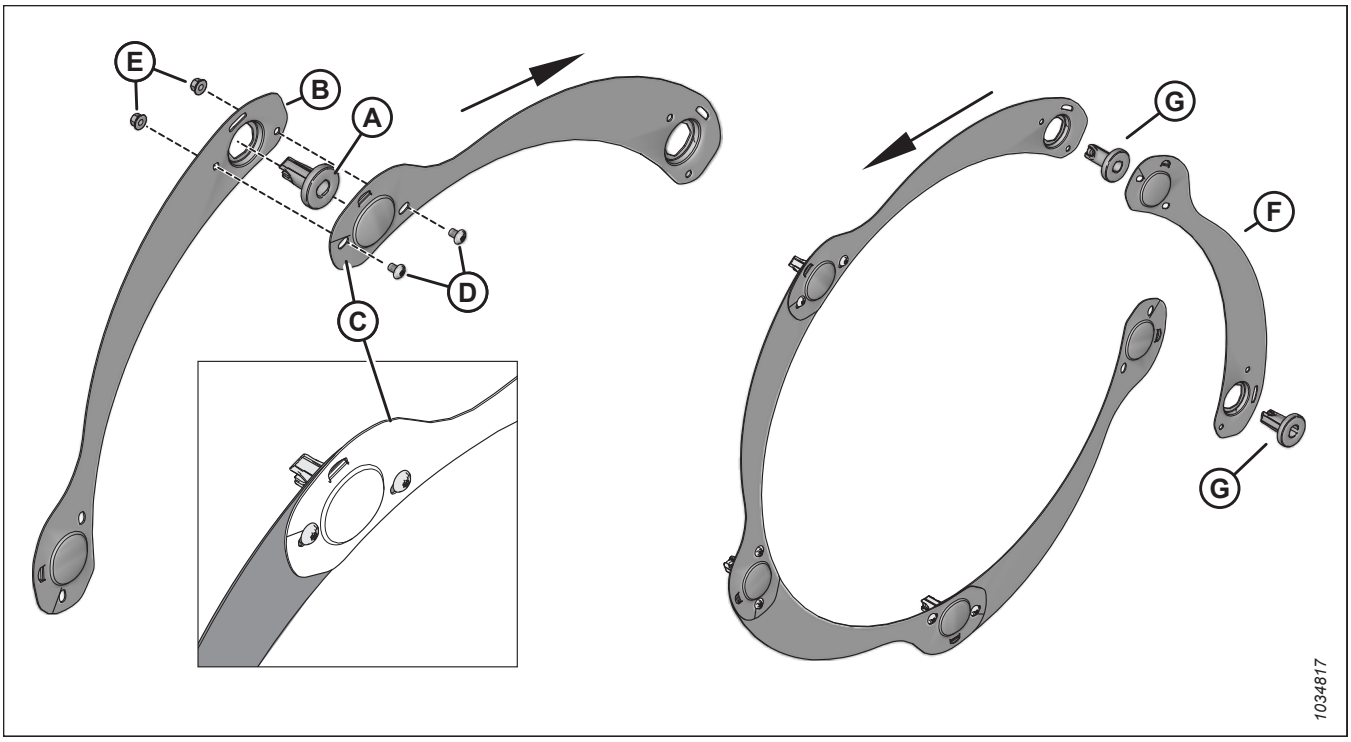


Figure 7.114: Endshield Subassembly

3. 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 steps a) and b) to install the remaining segments. Do **NOT** install last segment (F) and two bushings (G) yet.

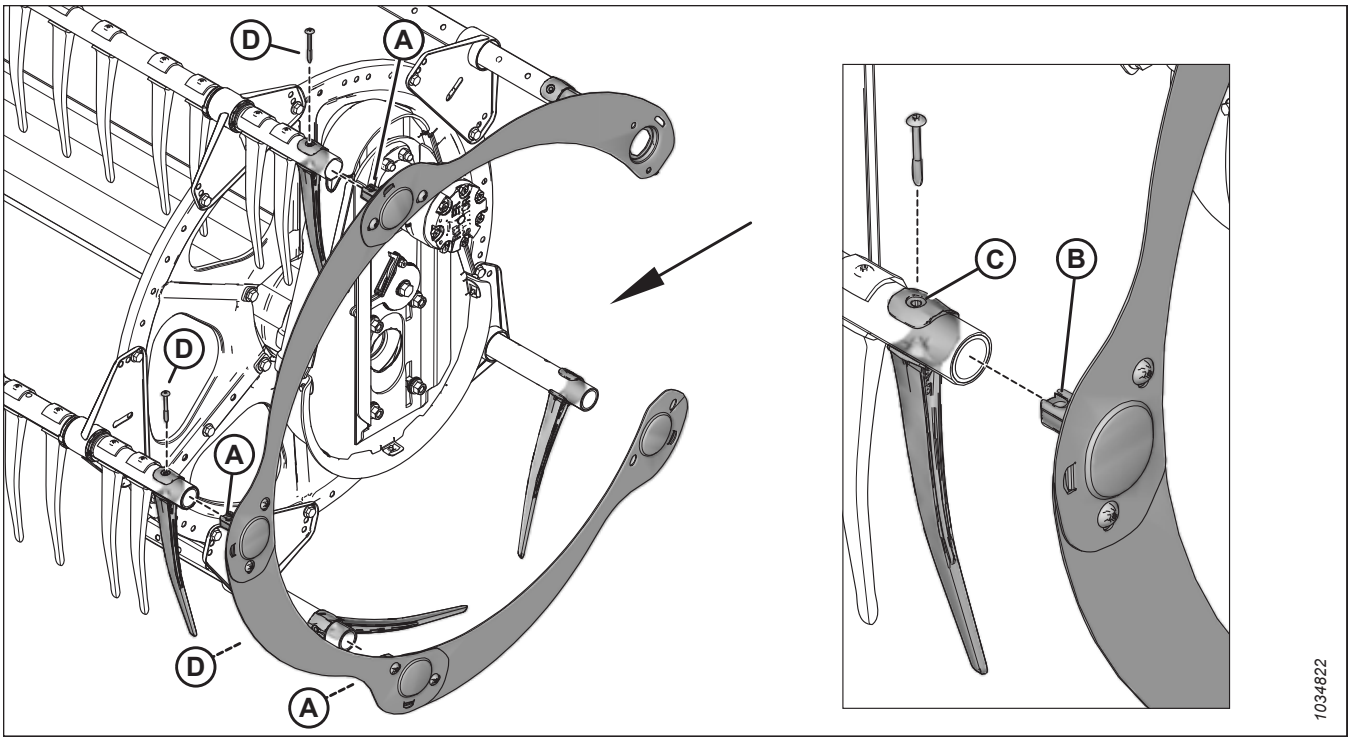


Figure 7.115: Endshield Mounted onto Reel

4. 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.

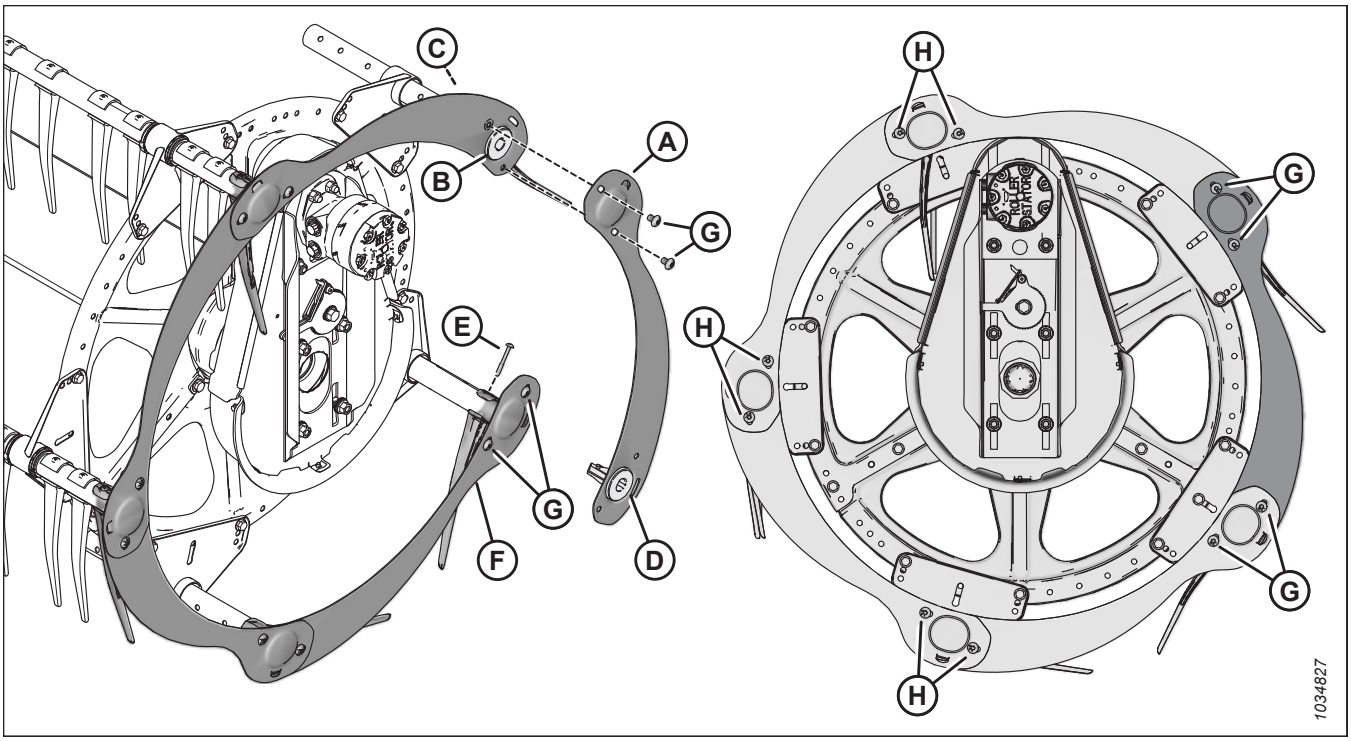


Figure 7.116: Completed Endshield Assembly

5. 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).

6. Tighten all the tine tube finger Torx® Plastite® screws to 9 Nm (7 lbf·ft). Do **NOT** overtighten the screws; overtightening will flatten the tubes.

7. Torque all M10 X 1.5 X16 Torx® screws (G) and (H) to 39 Nm (29 lbf·ft).

7.19.3 Installing Double-Reel Endshields at Inboard Cam End

Endshields need to be installed at the cam end of the left reel to prevent crop from wrapping around the reel.

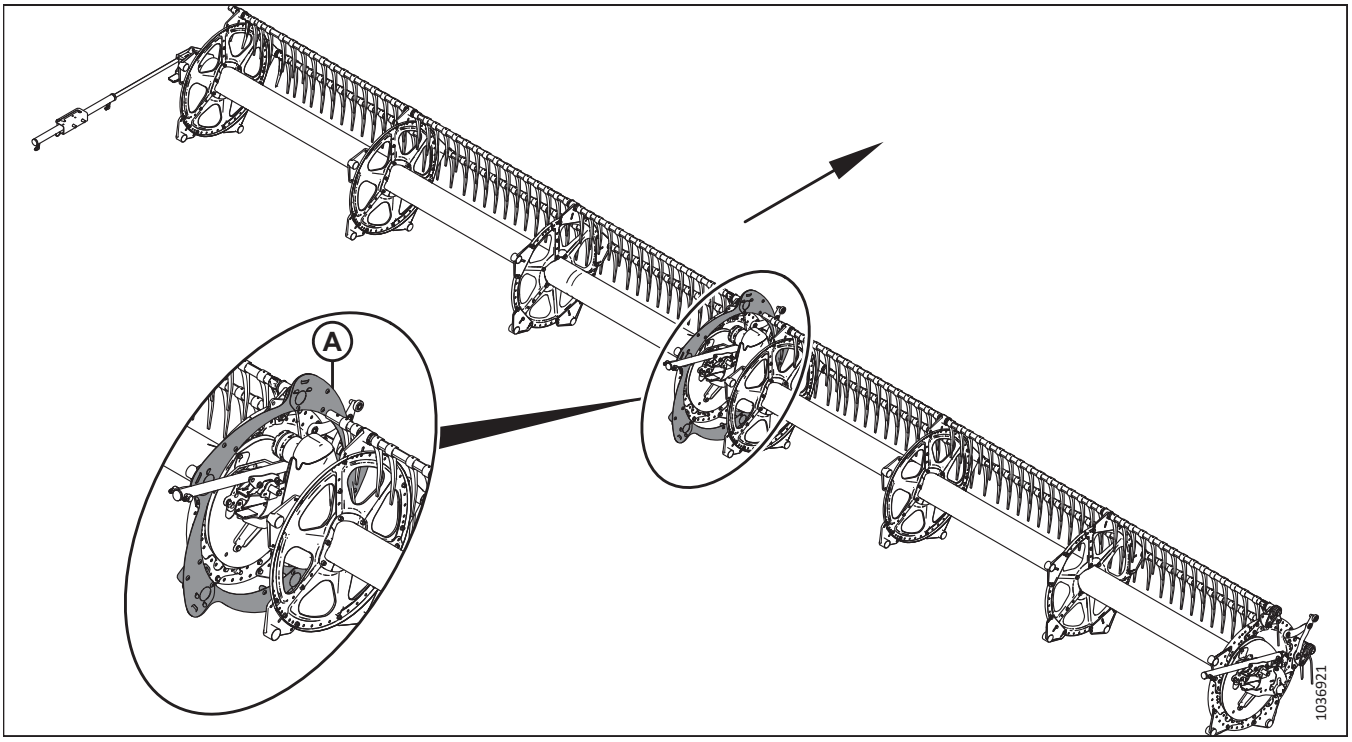


Figure 7.117: Five-Bat Double Reel

A - Five-Bat, Cam-End, Inboard Shield (MD #273823)

NOTE:

The arrow in the illustrations 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.

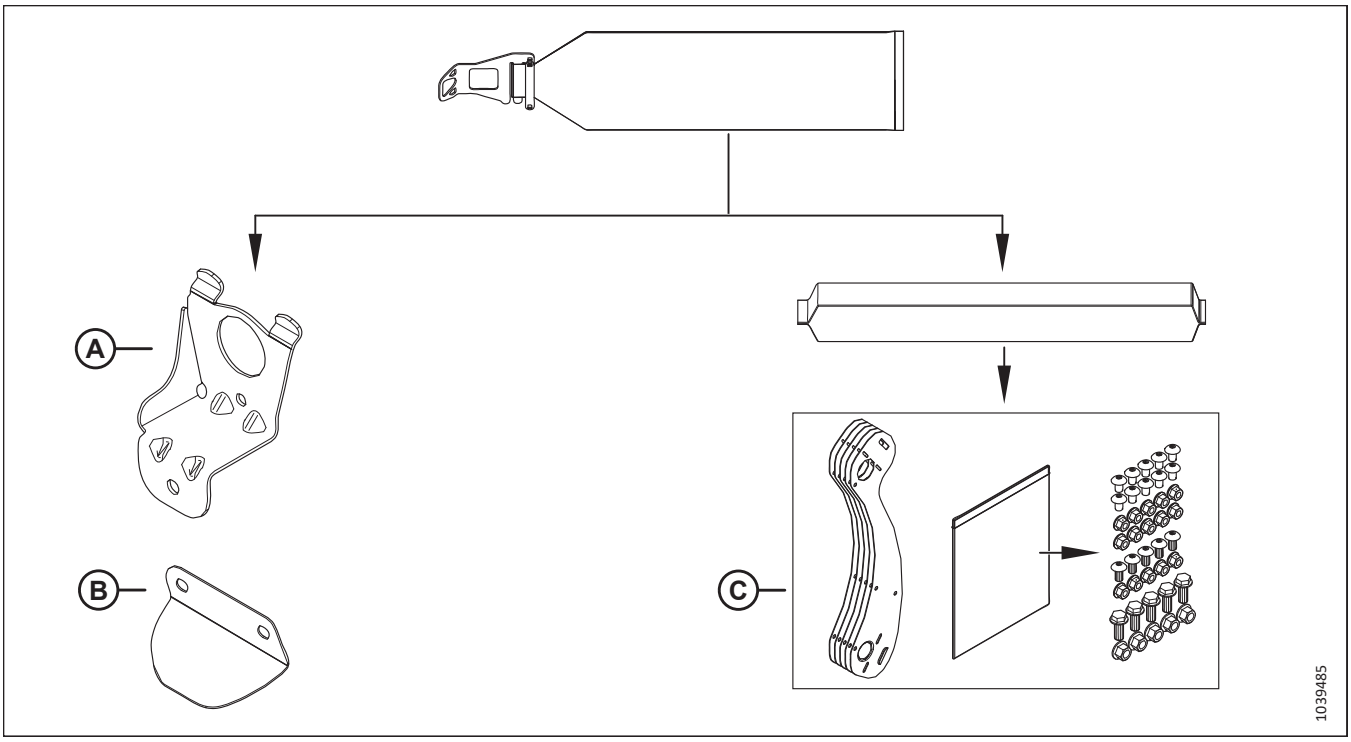


Figure 7.118: Reel Endshield Parts Bag MD #340985 – MD #340986 is Similar

1. Retrieve the following part supplied in shipping bag (MD #340985 for five-bat reel) or (MD #340986 for six-bat reel):

   Five-bat reel:

   - Five supports (A) (MD #311964)
   - Five cam deflectors (B) (MD #311906)
   - The bag labeled “Bag #2” (C)

   Six-bat reel:

   - Six supports (A) (MD #311964)
   - Six cam deflectors (B) (MD #311906)
   - The bag labeled “Bag #2” (C)

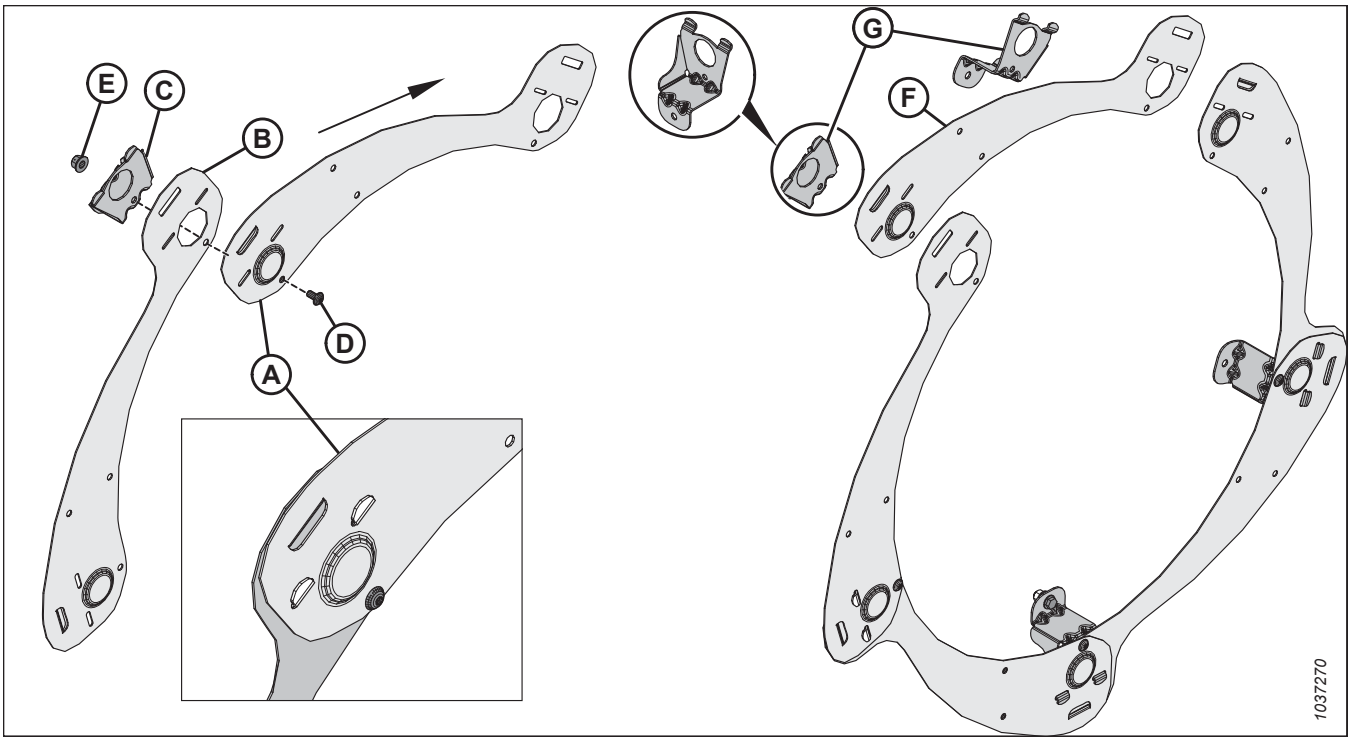


Figure 7.119: Five-Bat Reel – Initial Endshield Assembly

2. Assemble the endshield as follows:

   a. Position endshield segment (A) behind segment (B). Engage endshield support tabs (C) through both segments. Secure the 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.

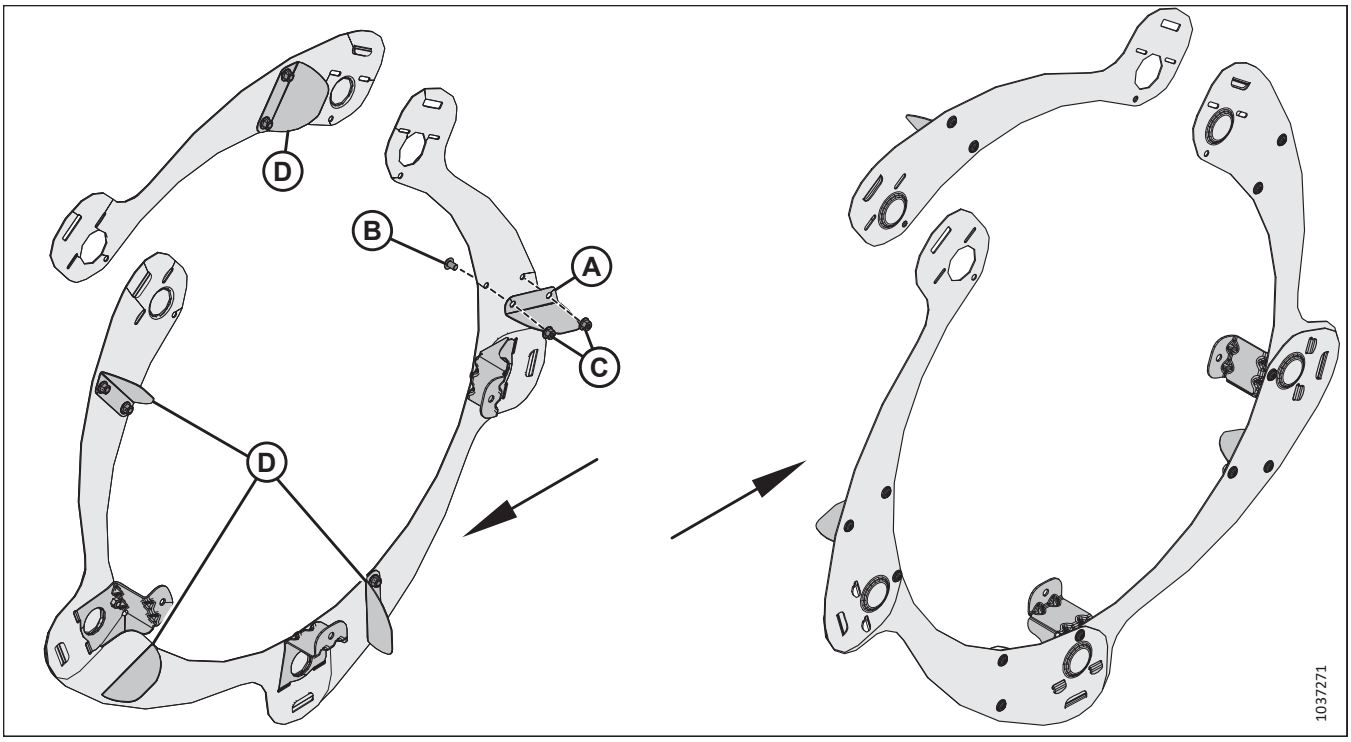


Figure 7.120: Five-Bat Reel – Aluminum Cam Deflectors

3. 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).

4. 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.

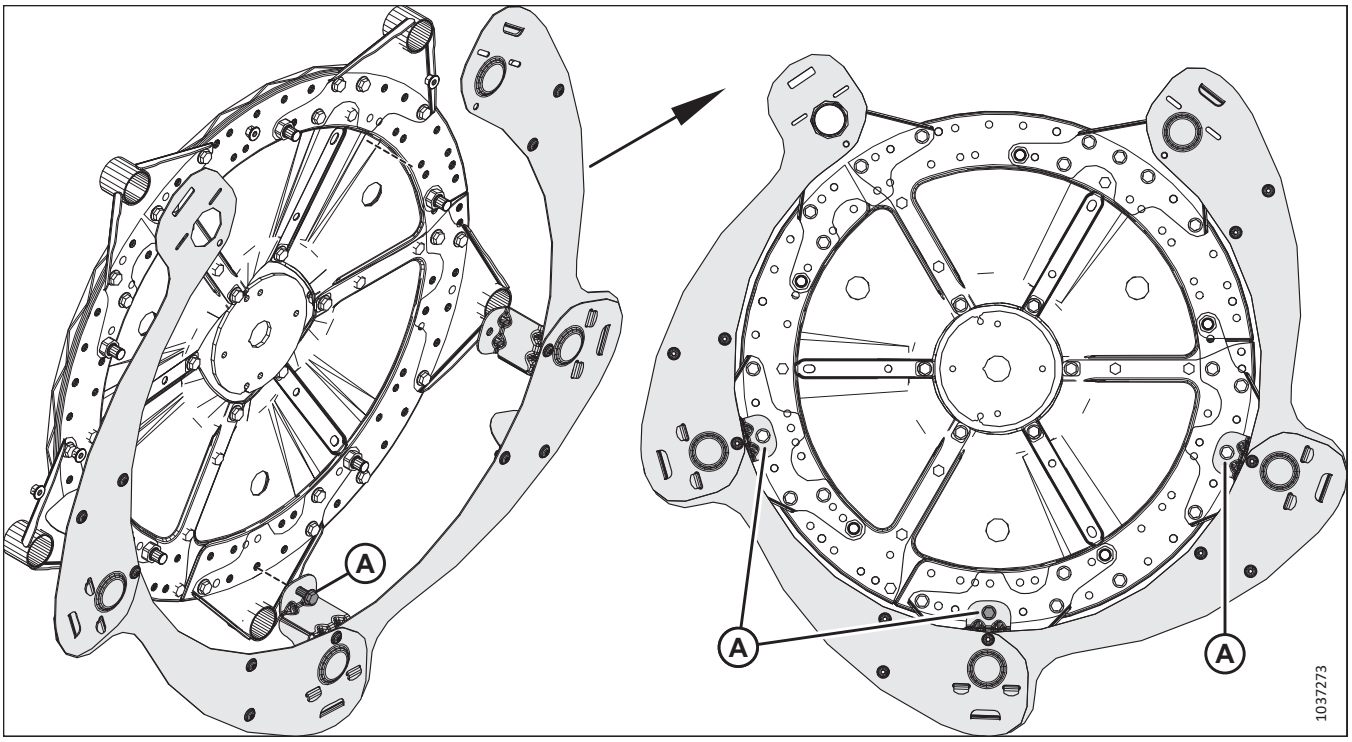


Figure 7.121: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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

6. Secure the endshield with three M12 X 1.75 X 30 hex bolts (A) and nuts. Do **NOT** tighten the hardware yet.

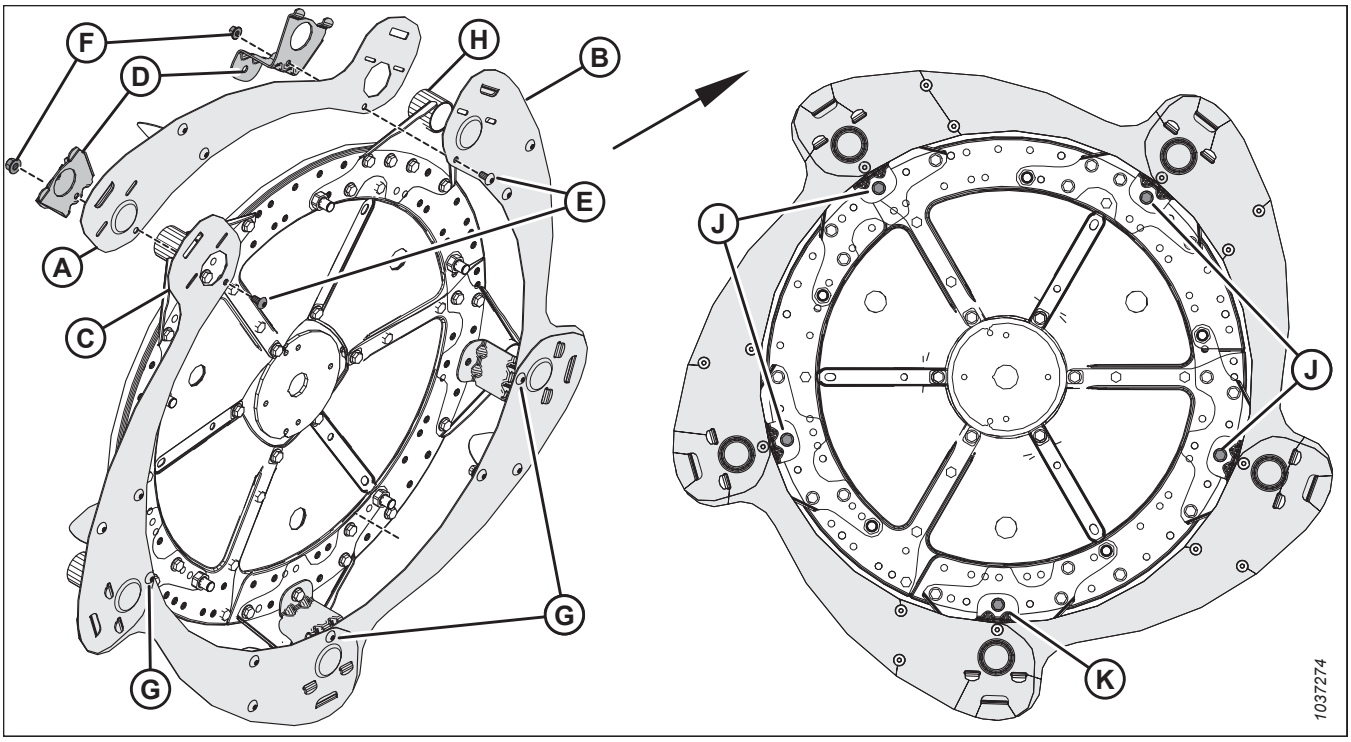


Figure 7.122: Five-Bat Reel – Assembled Reel Endshields on Reel

7. Install the last segment of endshield (A) as follows:
   a. Position the wide end of last segment (A) behind segment (B). Position the other end of last segment on top of segment (C).
   b. 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.
8. Slip endshield supports onto tine tubes (H).

   NOTE:

   Not all of the tine tubes are shown in the illustration.
9. 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.
10. 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 68.5 Nm (50.5 lbf·ft).

7.19.4 Installing Double-Reel Endshields at Outboard Tail End

Endshields need to be installed on the tail end of the left reel to prevent crop from wrapping around the reel.

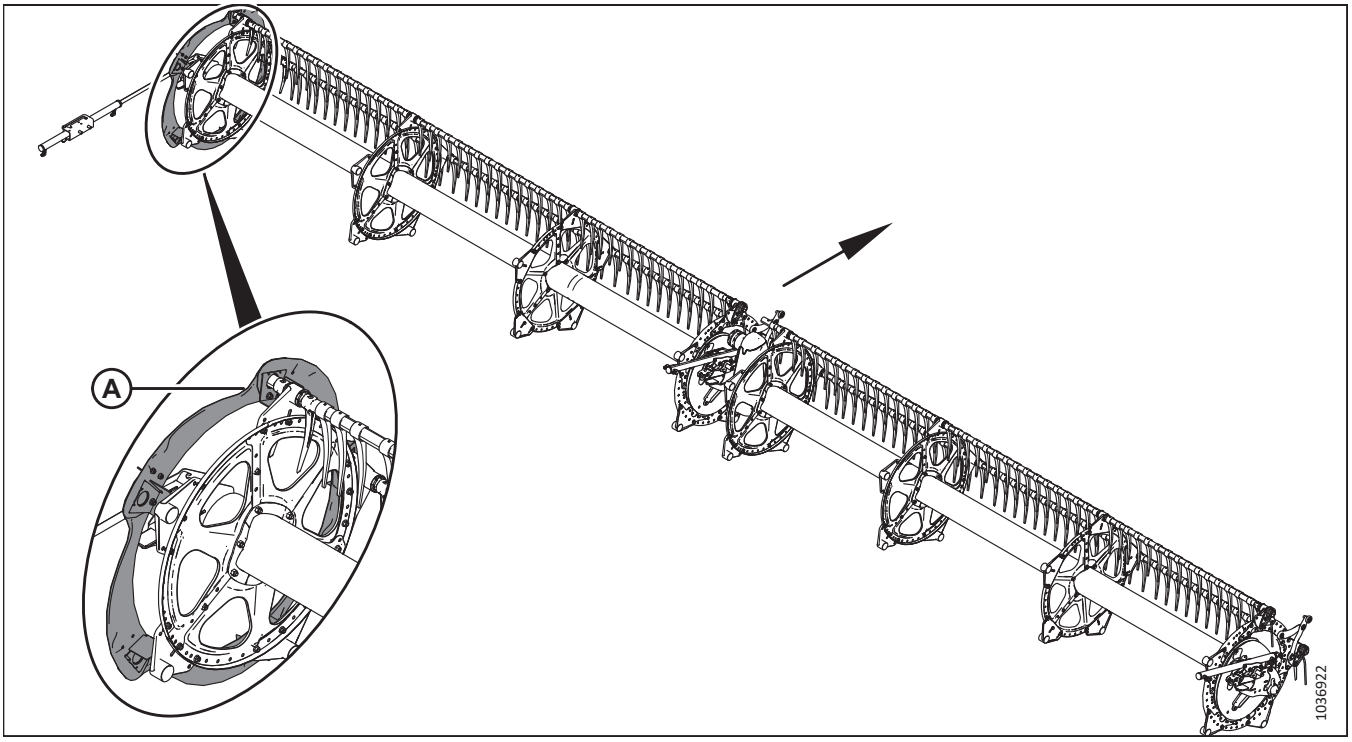


Figure 7.123: Five-Bat Double Reel

A - Five-Bat Outboard Tail End Endshield (MD #311695)

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.

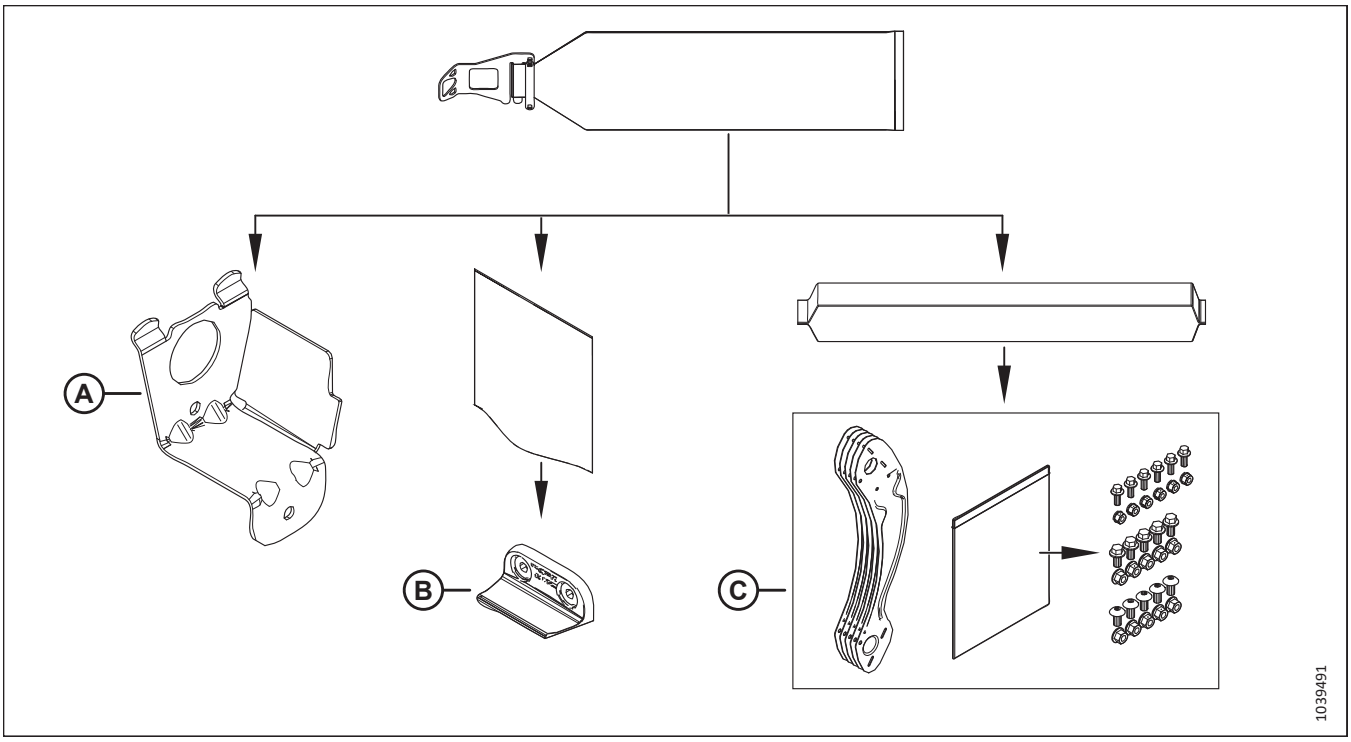


Figure 7.124: Reel Endshield Parts Bag MD #340985 – MD #340986 is Similar

1. Retrieve the following part supplied in shipping bag (MD #340985 for five-bat reel) or (MD #340986 for six-bat reel):

   Five-bat reel:

   - Five supports (A)
   - Three rubber paddles (B)
   - The bag labeled “Bag #1” (C)

   Six-bat reel:

   - Six supports (A)
   - Three rubber paddles (B)
   - The bag labeled “Bag #1” (C)

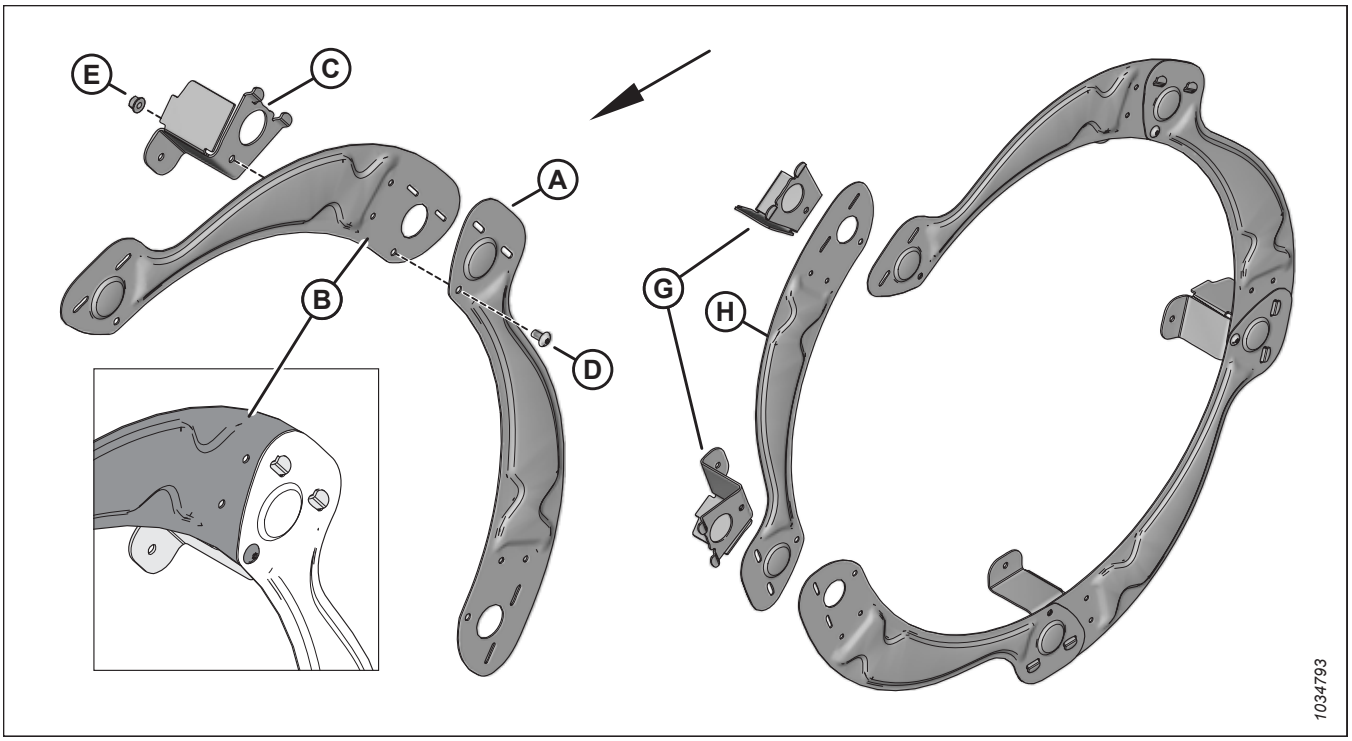


Figure 7.125: Five-Bat Reel – Initial Endshield Assembly

2. Assemble the endshield as follows:

   a. Position endshield segment (A) in front of segment (B). Engage endshield support tabs (C) through both segments. Secure the segments with M10 X 1.5 X 20 Torx® screw (D) and hex nut (E). Do **NOT** tighten the hardware yet.

   b. Repeat the previous step to assemble the remaining segments. Do **NOT** install last segment (H) and two support tabs (G) yet.

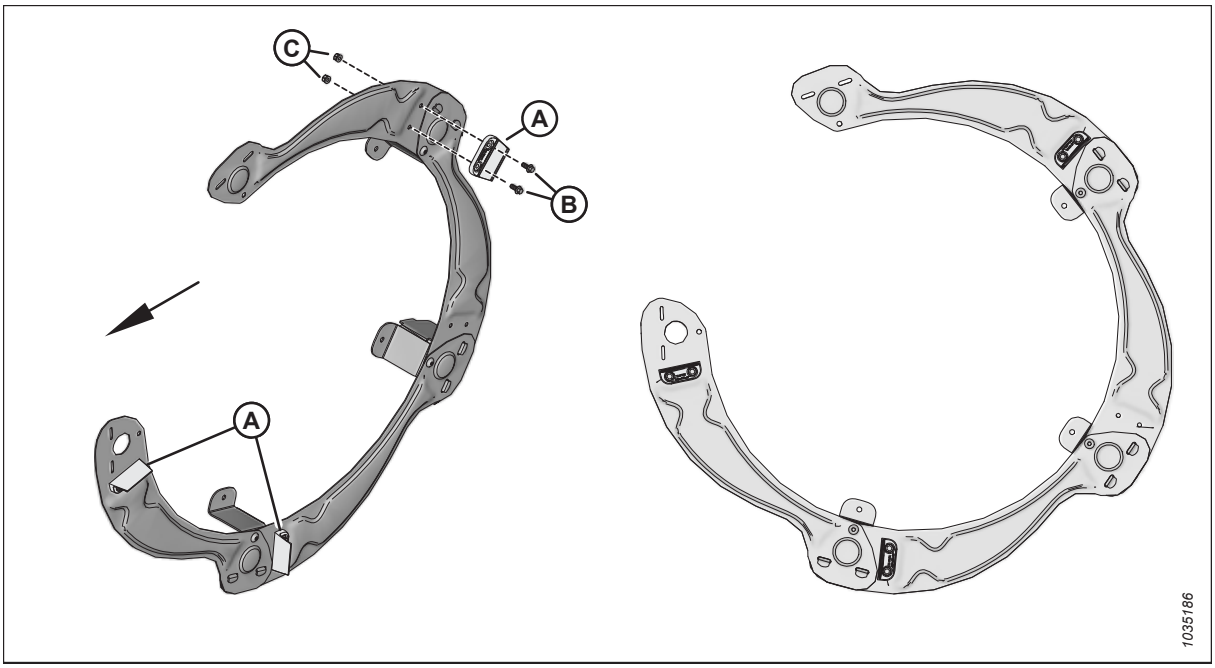


Figure 7.126: Five-Bat Reel – Rubber Paddles

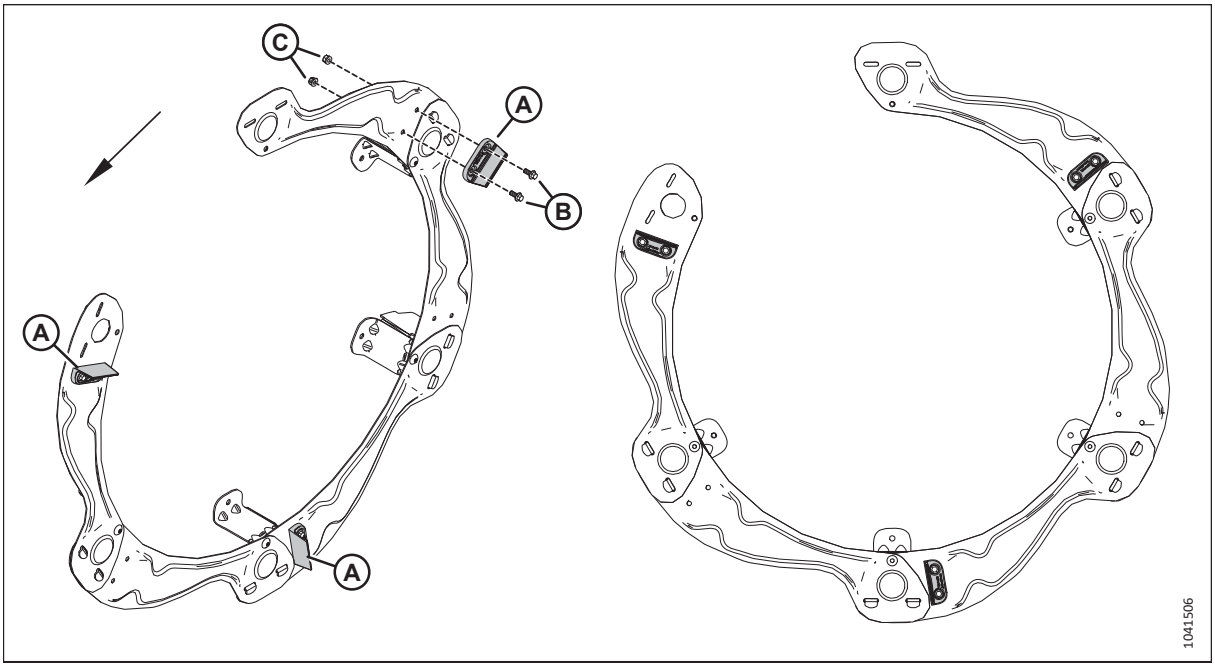


Figure 7.127: Six-Bat Reel – Rubber Paddles

NOTE:

For five-bat reels, refer to Figure *7.126, page 186*. For six-bat reels, refer to Figure *7.127, page 186*.

3. Install three rubber reel end paddles (A) on the outboard face of the endshield assembly using two M8 X 1.25 X 20 hex bolts (B) and nuts (C) per paddle.

   IMPORTANT:

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

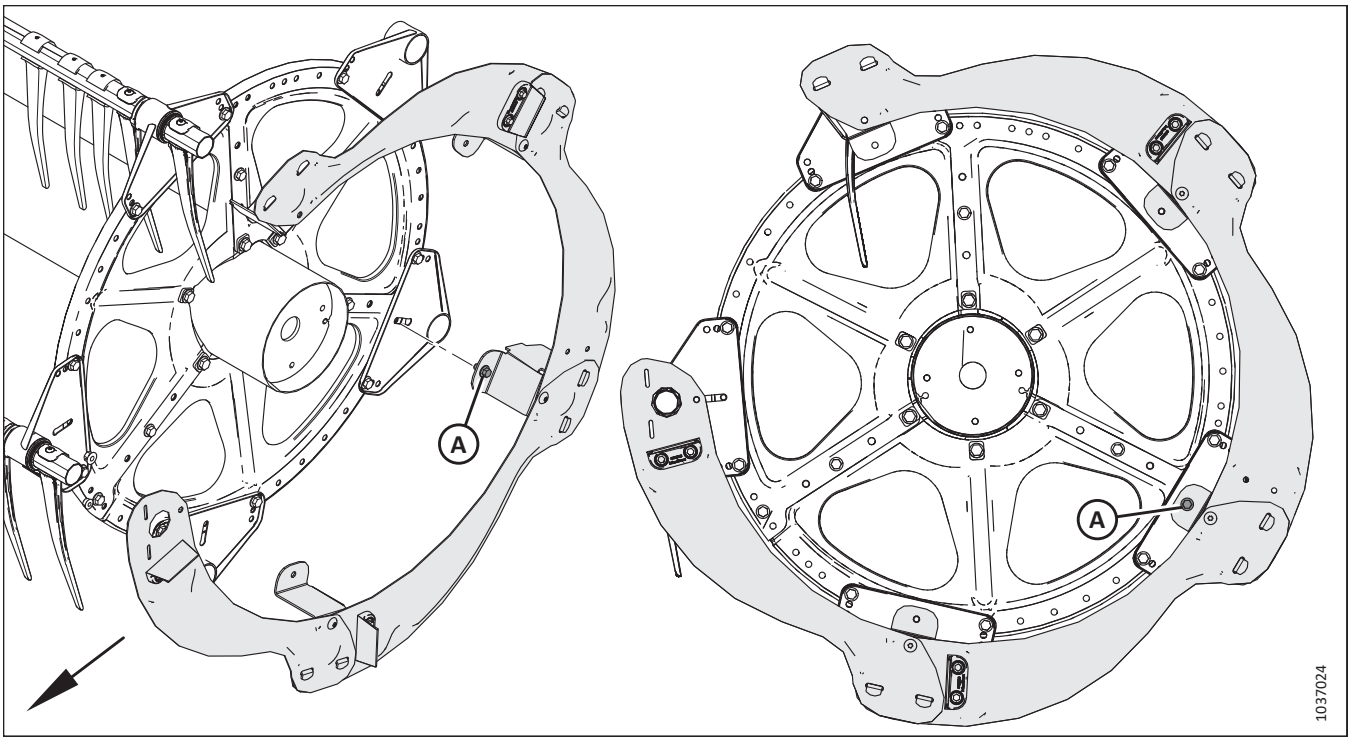


Figure 7.128: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

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

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

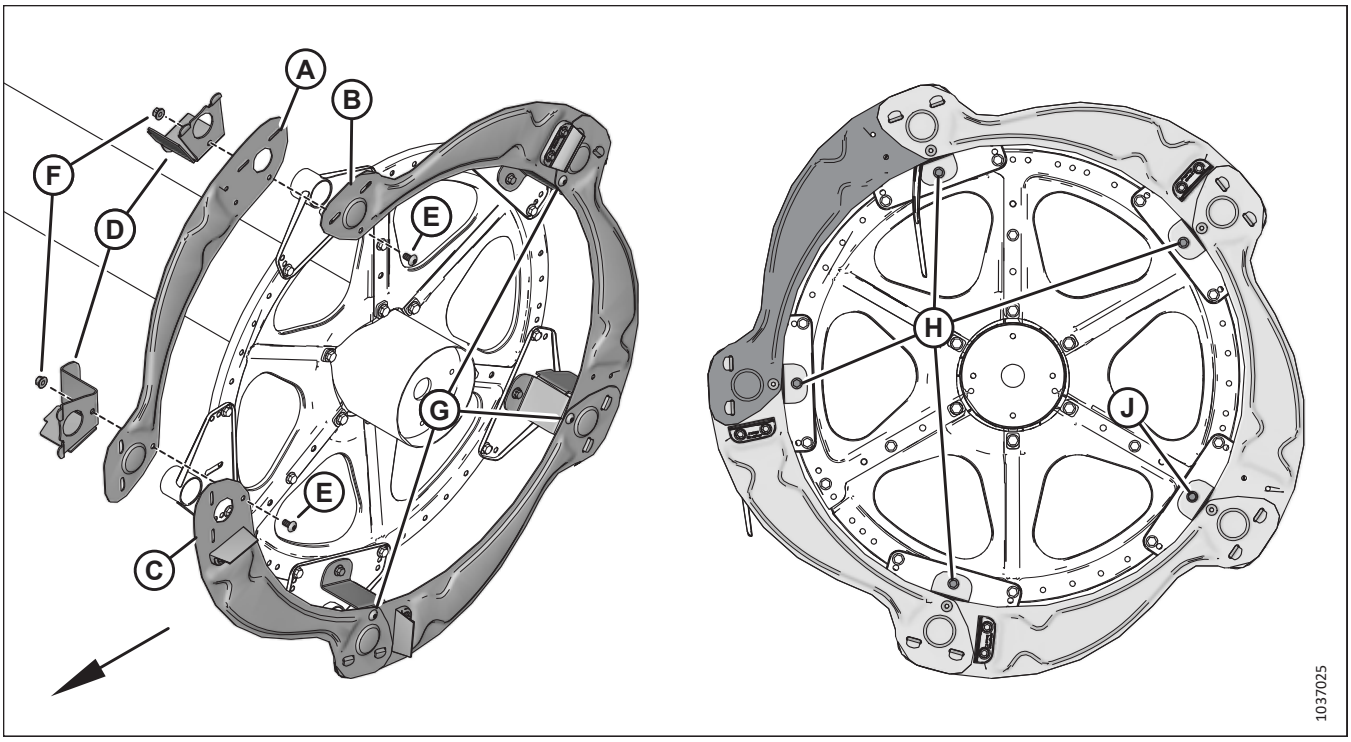


Figure 7.129: Five-Bat Reel – Partially Assembled Reel Endshields on Reel

6. Install the last segment of endshield (A) as follows:
   a. Position the wide end of last segment (A) behind segment (B). Position the other end of last segment on top of segment (C).
   b. Insert the tabs of endshield supports (D) through the endshield segments.
   c. Secure the endshield supports using two M10 X 1.5 X 20 Torx® screws (E) and nuts (F).
   d. Torque M10 X 1.5 X 20 Torx® screws (E) and (G) to 39 Nm (29 lbf·ft). Rotate the reel to reach the screws if necessary.
7. Secure the endshield supports to the reel disc using one M10 X 1.5 X 20 hex bolt and nut (H) per endshield support.
8. Torque M10 X 1.5 X 20 hex bolts (H) and (J) and the nuts that secure the endshield supports to the cam discs to 68.5 Nm (50.5 lbf·ft).

7.20 Installing Float Module Top Cover (Parts Bag MD #357511)

The top cover (also referred to as a “dust cover”) will need to be installed now.

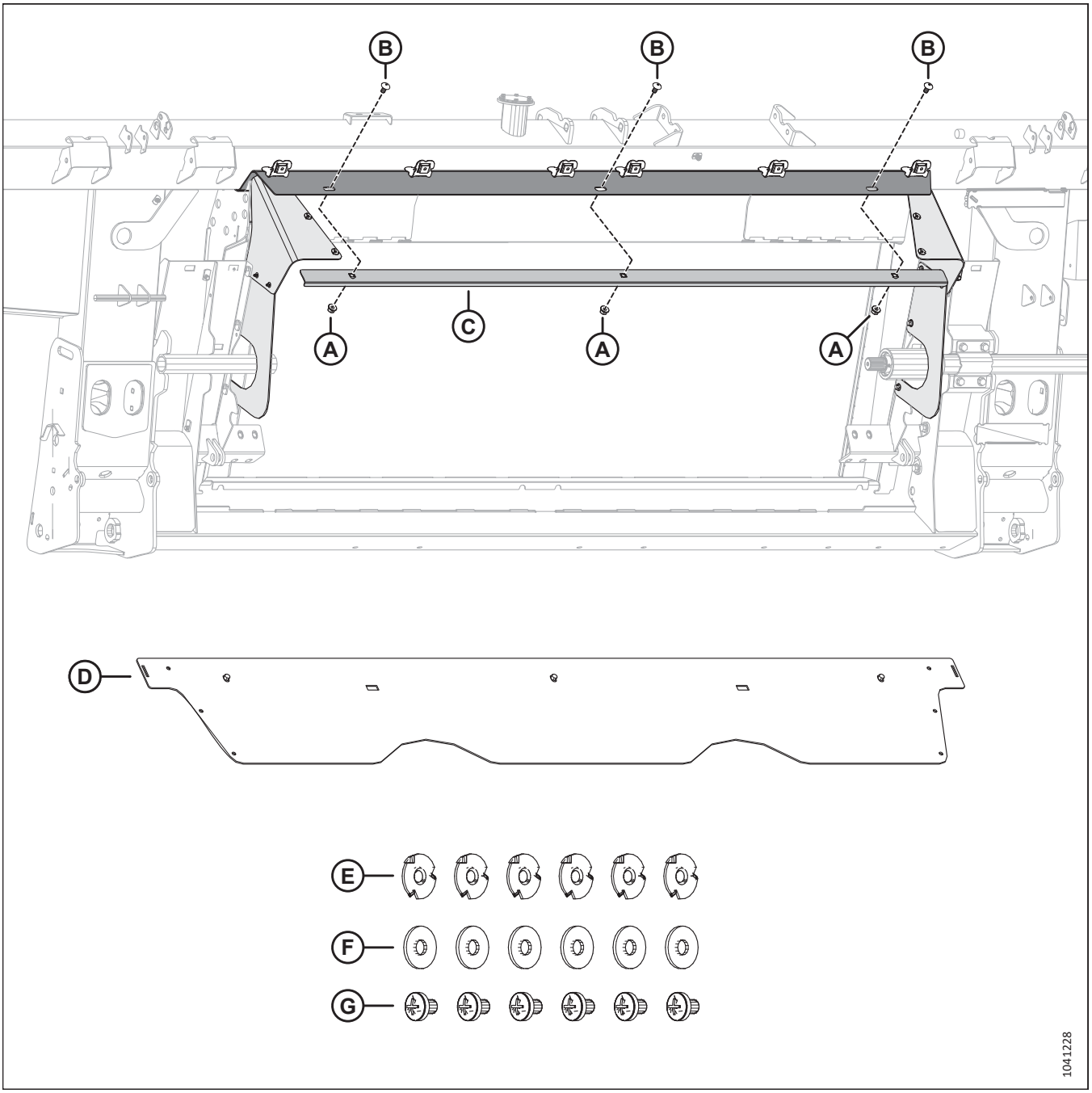


Figure 7.130: Float Module Feed Opening, Parts to Retain and Retrieve

1. Remove and retain three M10 nuts (A), bolts (B), and retainer (C).
2. Retrieve top cover (D) from its shipping position on the header’s backtube.
3. Retrieve parts bag MD #357511, which contains six tee nuts (E), washers (F), and screws (G).

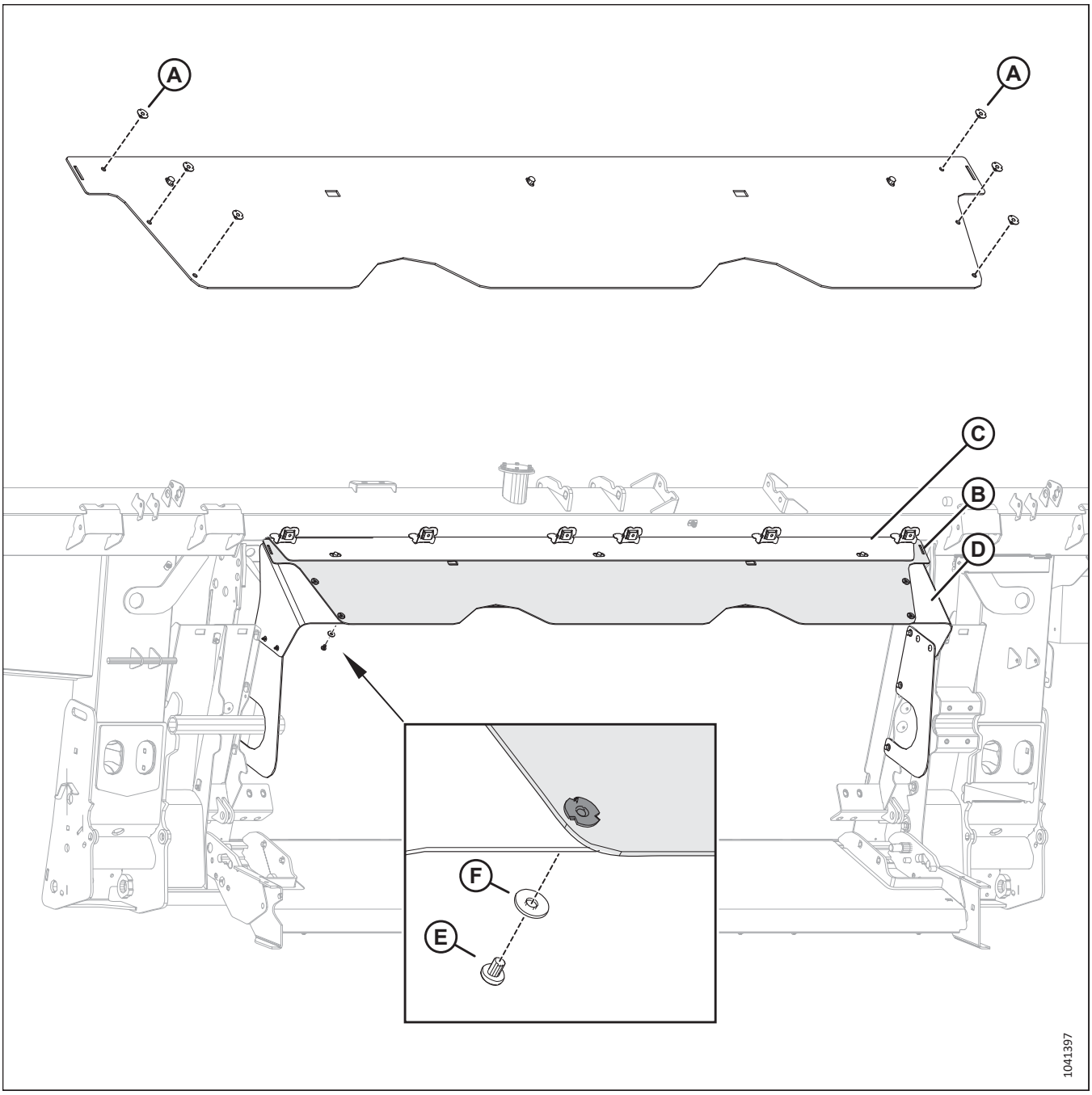


Figure 7.131: Top Cover Installation

4. Install all six tee nuts (A) into the top cover.
5. Insert top cover (B) between beam (C) and side covers (D).
6. Attach the top cover to the side covers using one screw (E) and washer (F) per tee nut.

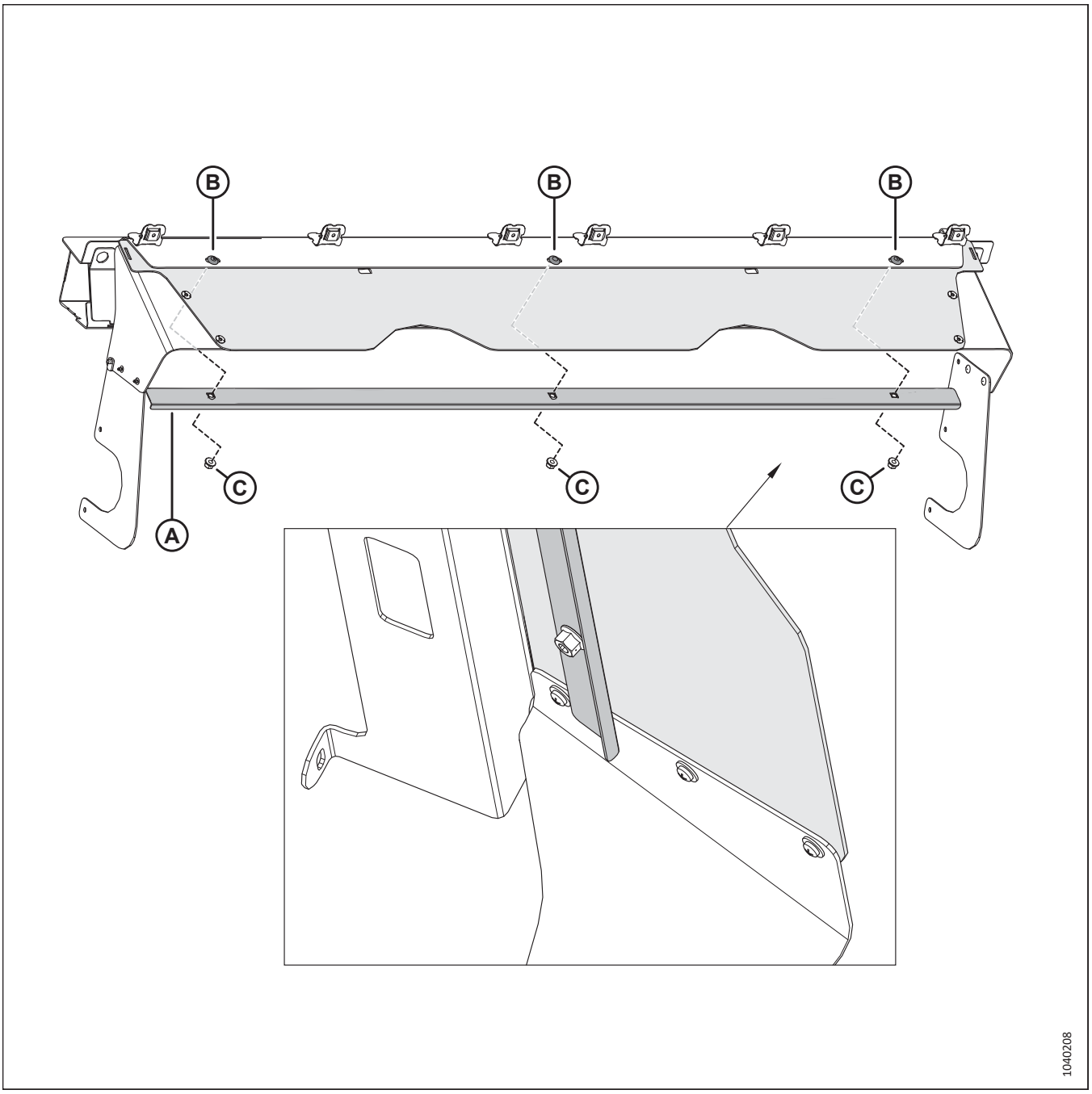


Figure 7.132: Retainer And Top Cover Installation

7. Attach retainer (A) to the top cover using three bolts (B) and M10 nuts (C).

7.21 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. Remove and discard banding (A) and blocks (B) from the back of the feed auger.

2. Retrieve left and right covers (C) and parts bag MD #357088.

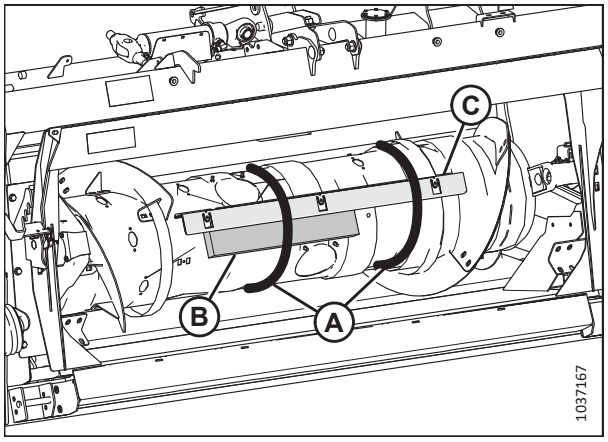


Figure 7.133: Tanks Covers Secured to Float Module's Feed Auger

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

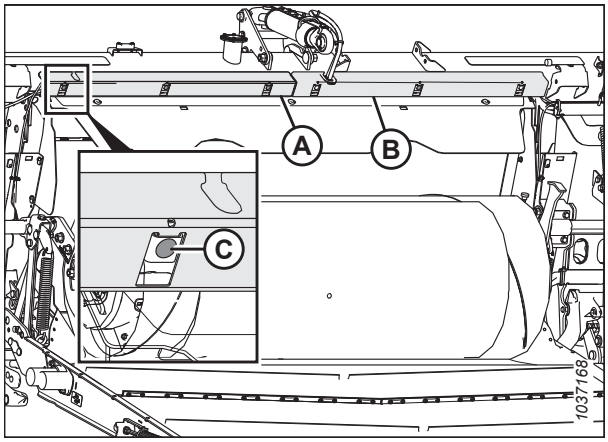


Figure 7.134: Tank Covers Installed on Float Module

7.22 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).

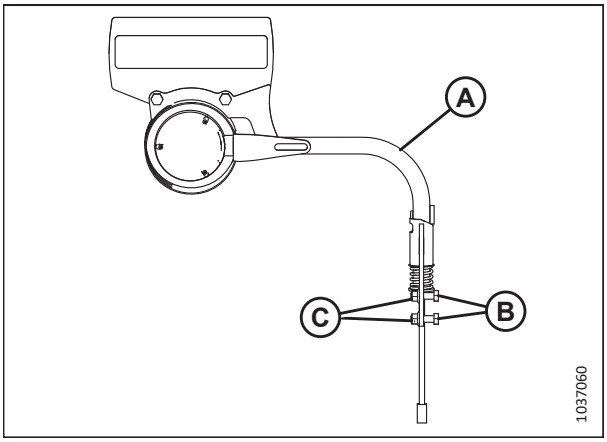


Figure 7.135: Left Clearance Light

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.

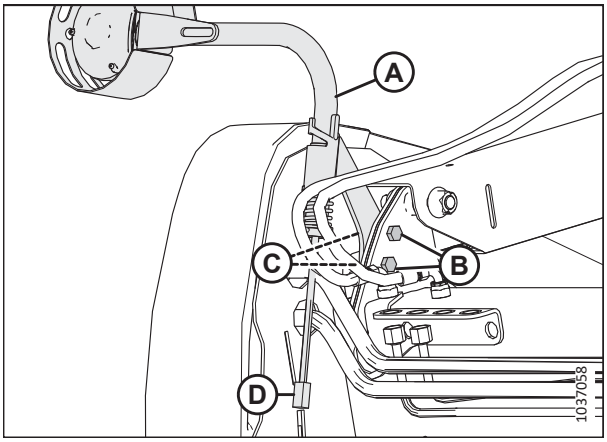


Figure 7.136: Left Clearance Light

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).

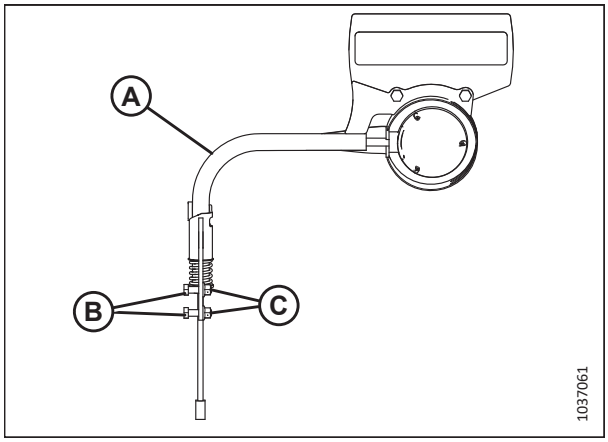


Figure 7.137: Right Clearance Light

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.

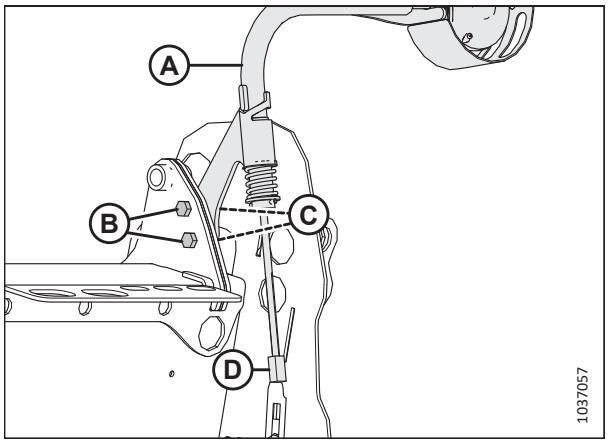


Figure 7.138: Right Clearance Light

7.23 Crop Dividers

Crop dividers are used to separate the crop when harvesting. They are removable to allow the installation of vertical knives or the sunflower attachment, and to decrease transport width.

7.23.1 Installing Crop Dividers

The crop dividers were removed from the header for shipping purposes. They will need to be installed.

NOTE:

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

1. Open the left endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.
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.

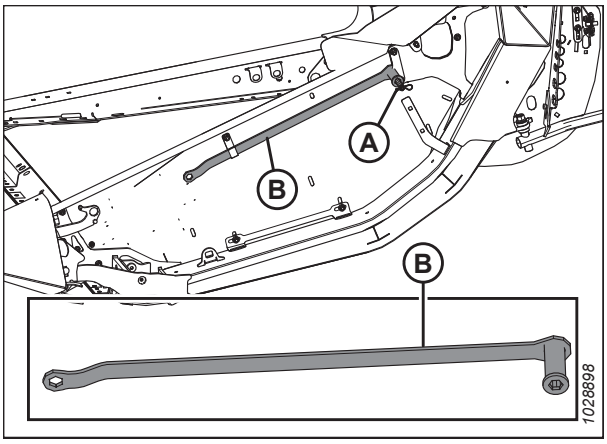


Figure 7.139: Left Endsheet

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).

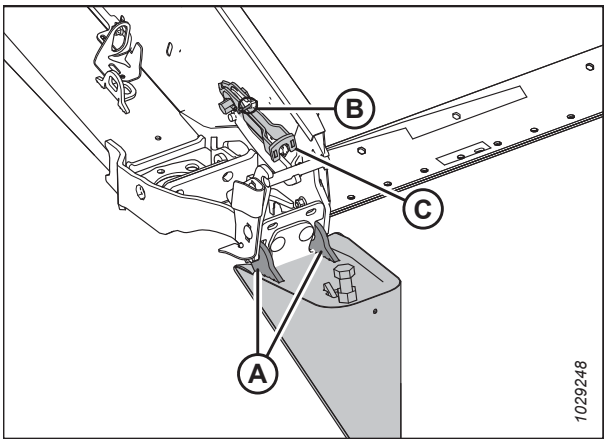


Figure 7.140: Crop Divider

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

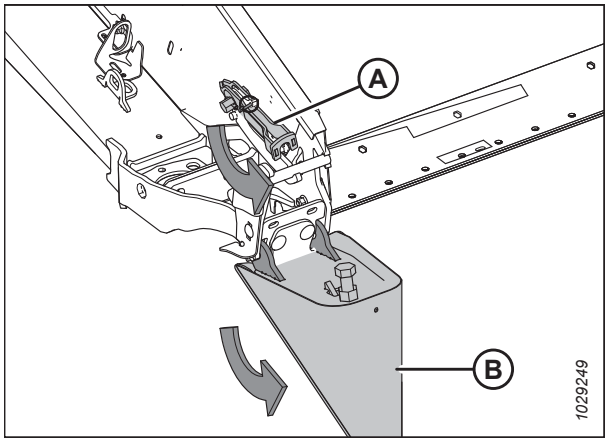


Figure 7.141: Crop Divider

8. Insert latch (A) into crop divider bolt (B).
9. Attach the multi-tool to latch-locking hex shaft (D). Rotate the multi-tool counter-clockwise to lock latch (A).
10. Secure latch (A) with lynch pin (C).
11. To close the latch, torque hex shaft (D) to 40–54 Nm (30–40 lbf·ft).
12. 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.

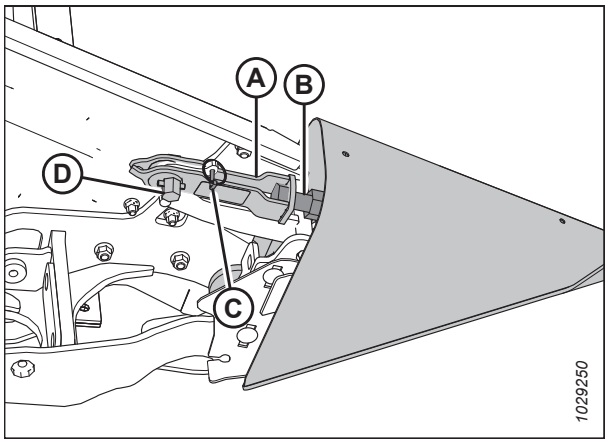


Figure 7.142: Crop Divider

13. Ensure that there is contact between plate (A) and guide (B).
14. Return the multi-tool to its storage location on the left end panel.
15. Close the left endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

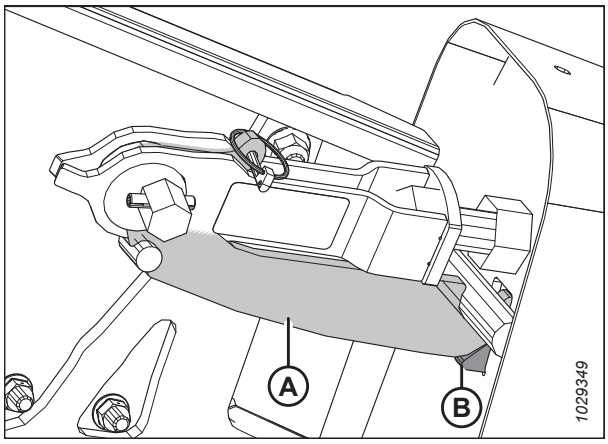


Figure 7.143: Crop Divider's Latch

IMPORTANT:

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

NOTE:

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

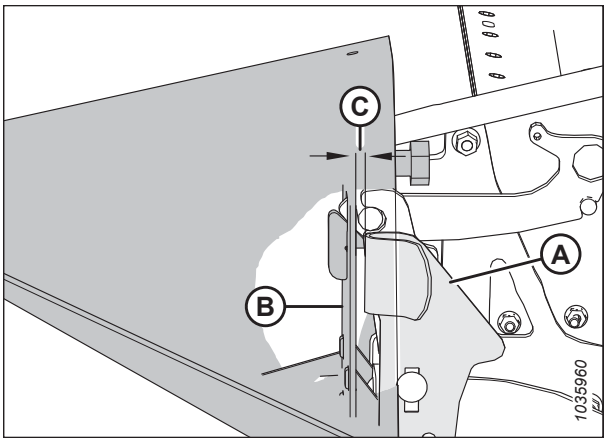


Figure 7.144: Front Support

7.23.2 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 endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.
2. Undo lynch pin (A) securing divider rods (B) to the header endsheet. Remove the divider rods from their shipping location.
3. Reinstall lynch pin (A).

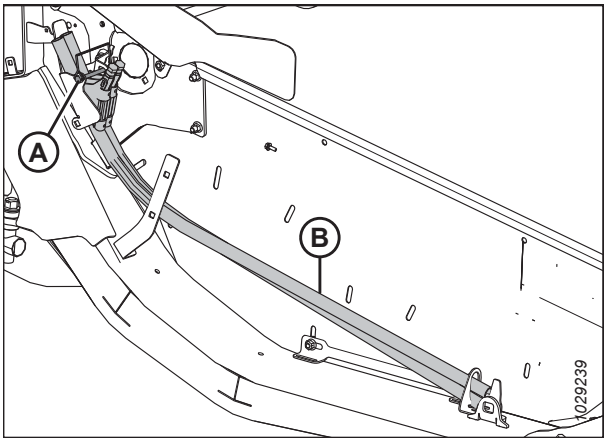


Figure 7.145: Divider Rods in Shipping Storage at Right Header Endsheet

4. Position crop divider rod (A) on the tip of the crop divider as shown. Tighten bolt (B).

5. Repeat this procedure to install the crop divider rod on the the opposite end of the header.

6. Close the right endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

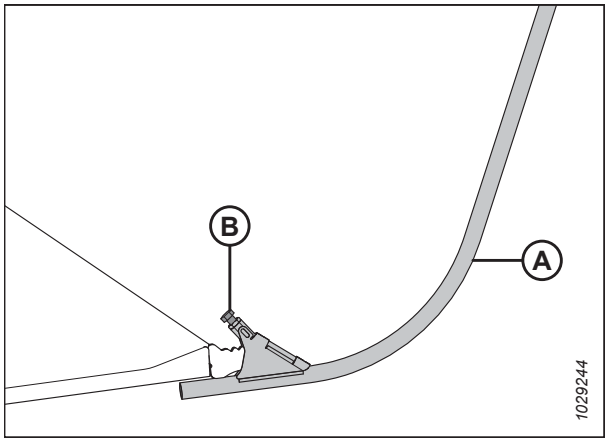


Figure 7.146: Divider Rod on Crop Divider

7.24 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 *8 Performing Predelivery Checks, page 201*.

Chapter 8: Performing Predelivery Checks

Once the header has been assembled and the optional kits have been installed, the header will need to be run up and its performance tested.

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.

IMPORTANT:

Ensure that shipping material has not fallen into the header.

Perform the final checks listed on the Predelivery Checklist (*Predelivery Checklist, page 511*) 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.

8.1 Checking Tire Pressure – Option for D230 and D235

Some headers may have stabilizer wheels installed. If so, the tire pressure levels will need to be checked and, if necessary, adjusted.

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

Table 8.1 Tire Inflation Pressure

Size	Load Range	Pressure
225/75 R15	E	552 kPa (80 psi)

8.2 Checking Wheel Bolt Torque – Option for D230 and D235

The wheel bolts securing the transport wheels must be torqued correctly before the header can be safely transported.

1. Measure the torque value of each wheel bolt. A correctly torqued wheel bolt will show a torque reading of 115 Nm (85 lbf·ft).
2. If a wheel bolt is not set to the correct torque value, adjust its torque as needed.
3. Tighten all wheel bolts according to the bolt-tightening pattern depicted in the illustration at right.

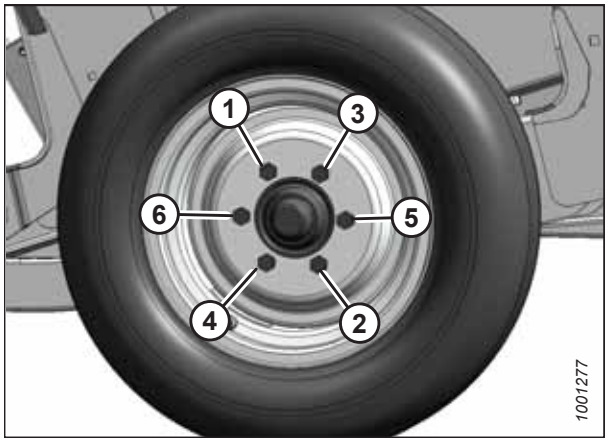


Figure 8.1: Sequence for Tightening Bolts

8.3 Checking Oil Level in Knife Drive Box

There must be a sufficient level of oil in each knife drive box for the knife drive to work correctly. The knife drive's oil level can be inspected using the dipstick installed in each knife drive.

DANGER

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

1. Lower the header fully.
2. Adjust the header angle so that the top of the knife drive box is level with the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that the header is level.
5. Open the endshield.
6. Remove oil level dipstick (A). Check the oil level. The oil level must be within range (B), between the lines near the bottom of the dipstick.
7. Add oil to the knife drive box if needed. For instructions on adding oil, refer to the header operator's manual.
8. Reinstall oil level dipstick (A). Tighten the dipstick to 23 Nm (204 lbf·in).
9. If the header has two knife drives, repeat this procedure to check the oil level on the other knife drive.

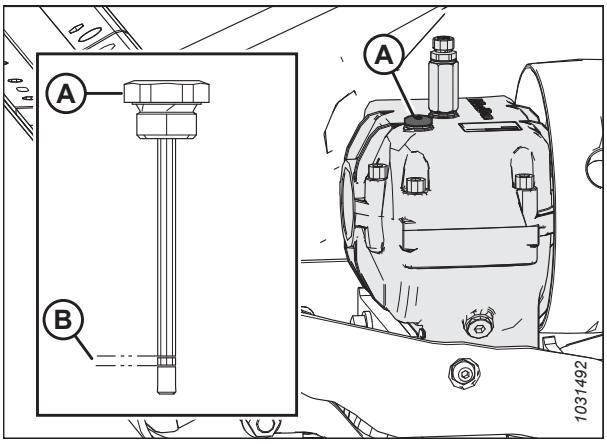


Figure 8.2: Knife Drive Box

8.4 Checking Oil Level in Header Drive Main Gearbox

The oil level in the header's main drive gearbox on the float module will need to be inspected before the header can be operated.

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 fully.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) from main gearbox (B) and check that the oil level is up to the bottom of the hole.
4. Add oil, if required. For instructions, refer to the header operator's manual.
5. Reinstall oil level plug (A).

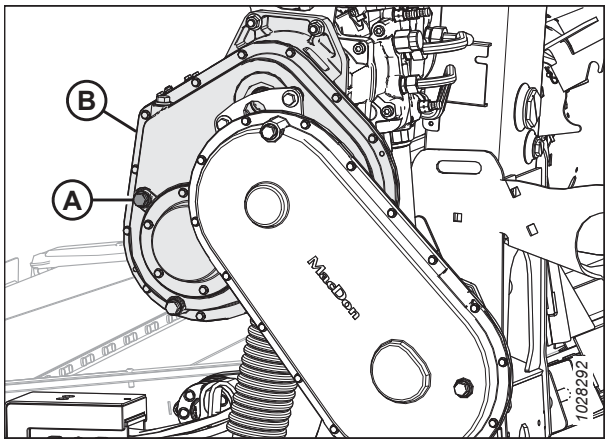


Figure 8.3: Header Drive Main Gearbox

8.5 Checking Oil Level in Header Drive Completion Gearbox

The oil level in the header drive completion gearbox will need to be inspected before the header can be operated.

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 fully.
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 31*.
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, add oil through filler plug (B). For instructions, refer to the header operator's manual.
6. Reinstall oil level plug (A).

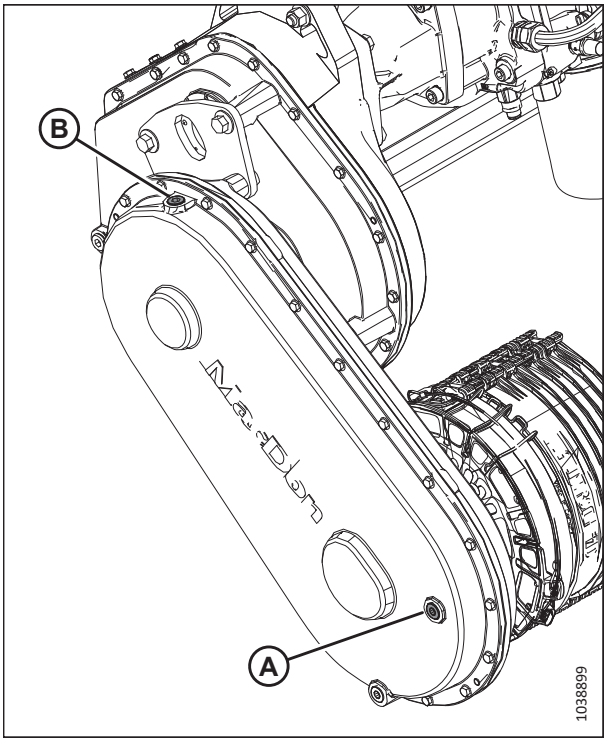


Figure 8.4: Header Drive Completion Gearbox

8.6 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.

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:

The hydraulic oil level should be inspected when the hydraulic oil is cold.

1. Lower the header to the ground.
2. Fully retract the center-link.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that the oil is at the appropriate level for the terrain as follows:
   - **Level terrain:** Oil level should fill approximately one half (A) of the gauge.
   - **Sloped terrain:** Oil level should fill approximately three quarters (B) of the gauge.

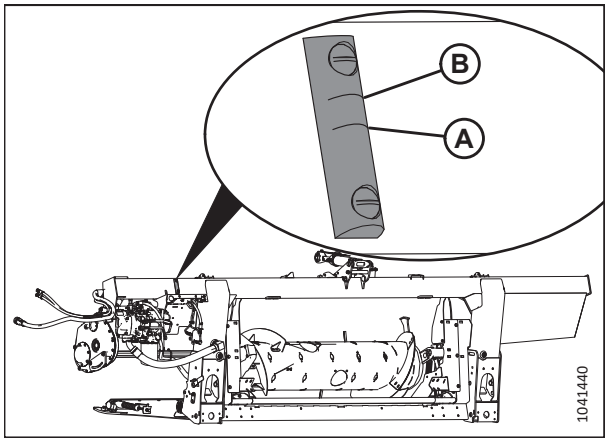


Figure 8.5: Oil Level Sight Gauge

8.7 Guard Identification

There are two different knife guard options available: pointed knife guards and the shorter PlugFree™ (or short) knife guards. Each type of guard has its own checking and adjusting procedures.

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 knife guards. Four point guards are ideal for use in rocky conditions or for harvesting shatter-prone crops such as lentils. Refer to the header parts catalog for more information.

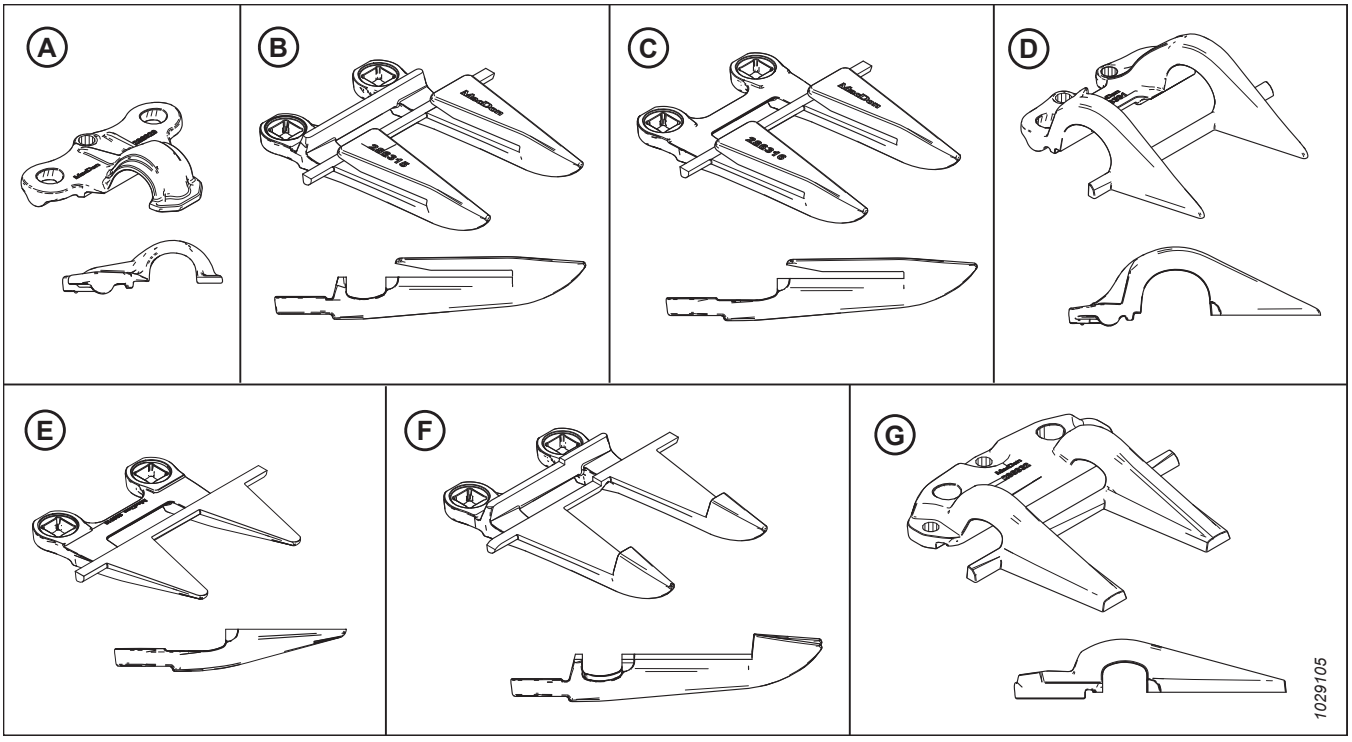


Figure 8.6: Guard and Hold-Down Types Used in Pointed Knife Guard Configurations

A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed-End Knife Guard (without Wear Bar) (MD #286316)[4]
D - PlugFree™ End Hold-Down (MD #286331)
E - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[5]
F - Pointed Center Knife Guard (MD #286317)[6]
G - Pointed Center Hold-Down (MD #286332)

Follow these procedures for checking and adjusting pointed knife guards:

- *8.7.1 Checking Hold-Down – Pointed Knife Guards, page 208*
- *8.7.2 Adjusting Hold-Down – Pointed Knife Guards, page 209*
- *8.7.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 210*
- *8.7.4 Adjusting Center Hold-Down on Double-Knife Headers – Pointed Knife Guards, page 211*

4. Installed in positions 2, 3, and 4 on the drive side(s).
5. Installed in position 1 on the drive side(s). Single-knife headers use standard guard (MD #286318) on the right end.
6. Double-knife headers only.

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

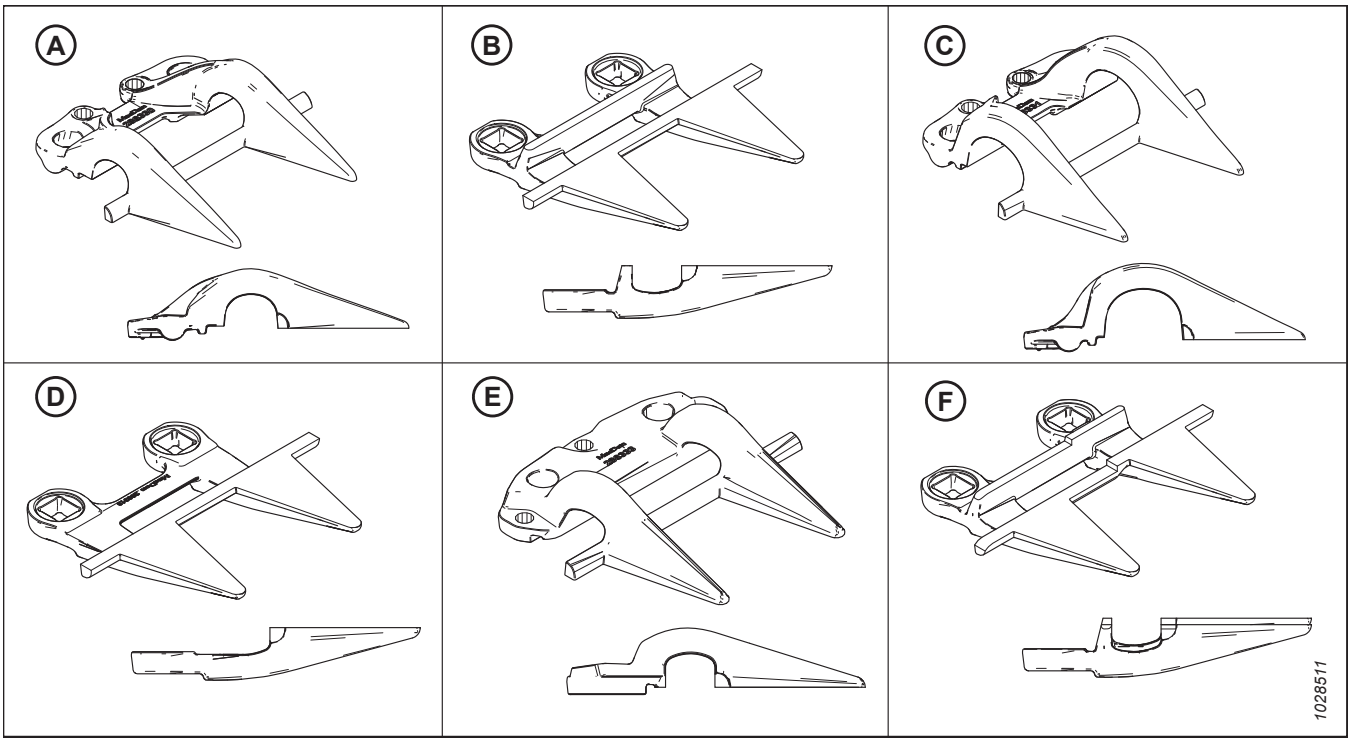


Figure 8.7: Guard and Hold-Down Types used in Short Knife Guard Configurations

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down (MD #286331)[7]
D - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[8]
E - PlugFree™ Center Hold-Down (MD #286333)
F - PlugFree™ Center Knife Guard (MD #286320)[9]

Follow these procedures for checking and adjusting short knife guards:

- *8.7.5 Checking Hold-Down – Short Knife Guards, page 212*
- *8.7.6 Adjusting Hold-Down – Short Knife Guards, page 213*
- *8.7.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 214*
- *8.7.8 Adjusting Center Hold-Down – Short Knife Guards, page 215*

8.7.1 Checking Hold-Down – Pointed Knife Guards

The pointed knife guard hold-downs prevent the knife sections on the cutterbar from lifting off of the guards, while still allowing the knife to slide. The hold-downs will need to be inspected to ensure that there is adequate clearance between the hold-downs and knife sections.

This procedure is for standard hold-downs. To check the center hold-down on double-knife headers, refer to *8.7.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 210*.

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.

7. Installed in positions 1–3 on the drive side(s); installed in position 1 at the right end of single-knife headers.
8. Installed in positions 1–4 on the drive side(s). Single-knife headers use a standard guard (MD #286318) on the right end.
9. Double-knife headers only.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.
5. Open the endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.
6. Rotate the flywheel attached to the knife drive box to position knife section (A) under hold-down (B), and between guard (C).
7. 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.).
8. If adjustment is necessary, refer to *8.7.2 Adjusting Hold-Down – Pointed Knife Guards, page 209*.
9. Close the endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

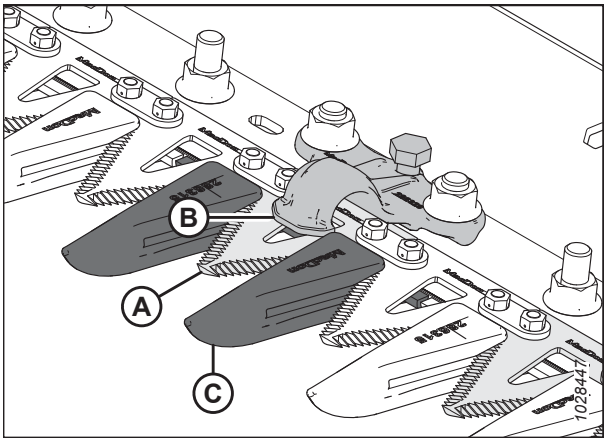


Figure 8.8: Pointed Guard Hold-Down

8.7.2 Adjusting Hold-Down – Pointed Knife Guards

If a pointed or four-point knife guard hold-down is binding the knife, the hold-down will need to be adjusted.

This procedure applies to standard hold-downs. To adjust the center hold-down on double-knife headers, refer to *8.7.4 Adjusting Center Hold-Down on Double-Knife Headers – Pointed Knife Guards, page 211*.

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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.
5. Adjust the hold-down clearance as follows:
   - To lower the front of hold-down (A) and decrease clearance, rotate adjuster bolt (B) clockwise
   - To raise the front of hold-down (A) and increase 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).
6. Check the hold-down clearance. For instructions, refer to *8.7.1 Checking Hold-Down – Pointed Knife Guards, page 208*.

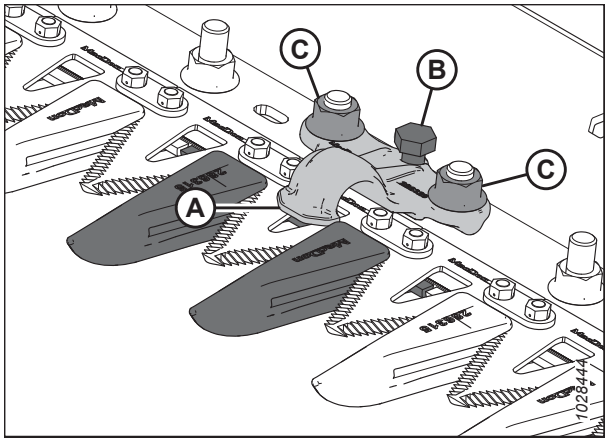


Figure 8.9: Pointed Hold-Down

7. Run the engine at low idle, and listen. If there is noise caused by insufficient clearance, repeat Step *5, page 210* to Step *6, page 210*.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards.

8.7.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards

The pointed center knife guard hold-down prevents the center knife section on the cutterbar from lifting off of the guard while still allowing the knives to slide. The center hold-down will need to be inspected to ensure that there is adequate clearance between the hold-down and the center knife section.

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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.

5. Open the endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.

6. 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.

7. 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 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.)

8. If adjustment is required, refer to *8.7.4 Adjusting Center Hold-Down on Double-Knife Headers – Pointed Knife Guards, page 211*.

9. After tightening nuts (D), recheck clearance and adjust if necessary.

10. Close the endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

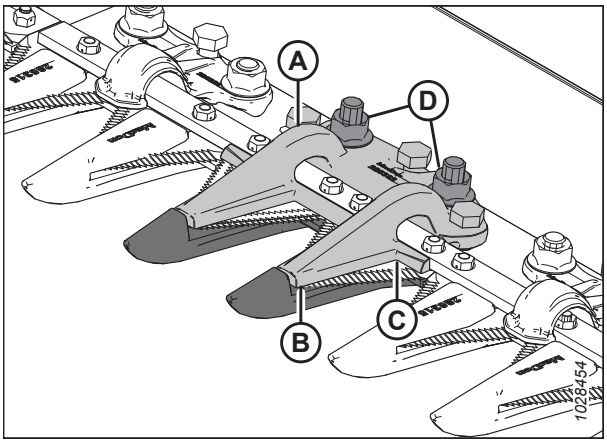


Figure 8.10: Pointed Center Hold-Down

8.7.4 Adjusting Center Hold-Down on Double-Knife Headers – Pointed Knife Guards

If the pointed center knife guard hold-down is binding the knife, the center hold-down 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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.

2. Raise the reel fully.

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

4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.

5. Loosen mounting hardware (B).
6. Adjust the hold-down clearance as follows:
   - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten).
   - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen).
7. 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).
   - To decrease the clearance, rotate adjuster bolt (C) clockwise (tighten).

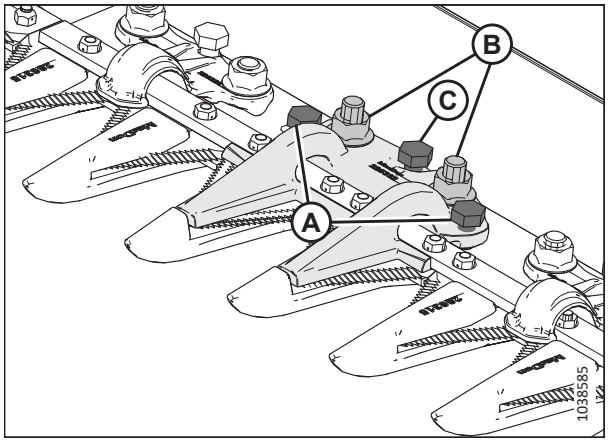


Figure 8.11: Pointed Center Hold-Down

8. Tighten nuts (B) to 85 Nm (63 lbf·ft).
9. Run the engine at low idle, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in the knife and the guards overheating.
10. Check the center guard clearance. For more information, refer to *8.7.3 Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 210*.

8.7.5 Checking Hold-Down – Short Knife Guards

The short knife guard hold-downs prevent the knife sections on the cutterbar from lifting off of the guards while still allowing the knife to slide. The hold-downs should be inspected to ensure adequate clearance between the hold-downs and knife sections.

To check the center hold-down on double-knife headers, refer to *8.7.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 214*.

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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.

5. Rotate the flywheel attached to the knife drive box to position the knife inboard until the knife sections are under hold-down (A).

6. Push down on 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.).

7. If adjustment is required, refer to *8.7.6 Adjusting Hold-Down – Short Knife Guards, page 213*.

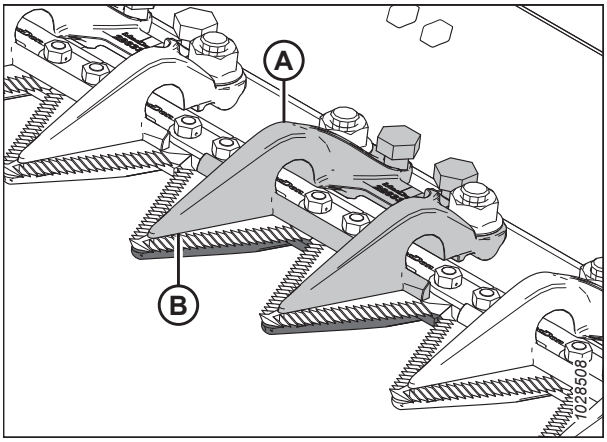


Figure 8.12: Short Knife Guards

8.7.6 Adjusting Hold-Down – Short Knife Guards

If a short knife guard hold-down is binding its knife, the hold-down will need to be adjusted.

To adjust the center hold-down on double-knife headers, refer to *8.7.8 Adjusting Center Hold-Down – Short Knife Guards, page 215*.

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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.

2. Raise the reel fully.

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

4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.

5. 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 nuts to 85 Nm (63 lbf·ft).

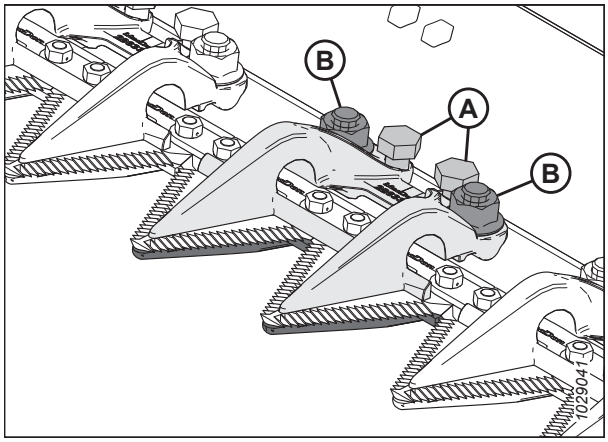


Figure 8.13: Short Knife Guard Hold-Down

6. Run the header at low engine speed, and listen for noise caused by insufficient clearance. Adjust as necessary.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards.

7. Disengage the reel safety props. For instructions, refer to *12.2.2 Disengaging Reel Safety Props, page 494*.

8.7.7 Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards

The short center knife guard hold-down prevents the center knife sections on the cutterbar from lifting off of the guard while still allowing the knife to slide. The center hold-down should be inspected to ensure adequate clearance between the hold-down and the center knife sections.

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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.
5. Open the endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.

6. 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.
7. 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.)
8. If adjustment is required, refer to *8.7.8 Adjusting Center Hold-Down – Short Knife Guards, page 215*.
9. Tighten nuts (D), recheck the clearance, and adjust if necessary.
10. Close the endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

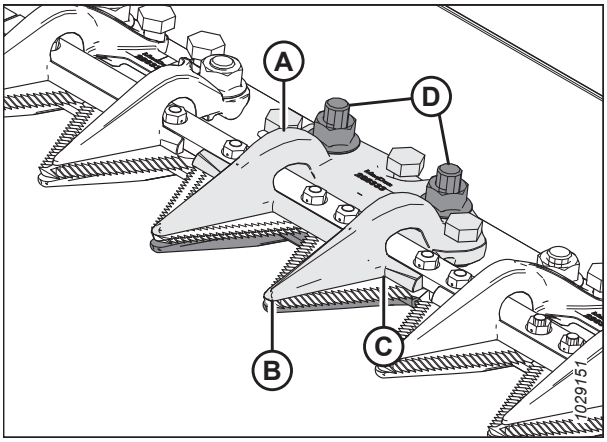


Figure 8.14: Center Knife Guard Hold-Down

8.7.8 Adjusting Center Hold-Down – Short Knife Guards

If a short knife guard hold-down is binding the knife, the hold-down 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.

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

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 *12.2.1 Engaging Reel Safety Props, page 493*.

4. Loosen mounting hardware (B).
5. Adjust the hold-down clearance as follows:
   - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten).
   - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen).
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).
   - To decrease the clearance, turn adjuster bolt (C) clockwise (tighten).

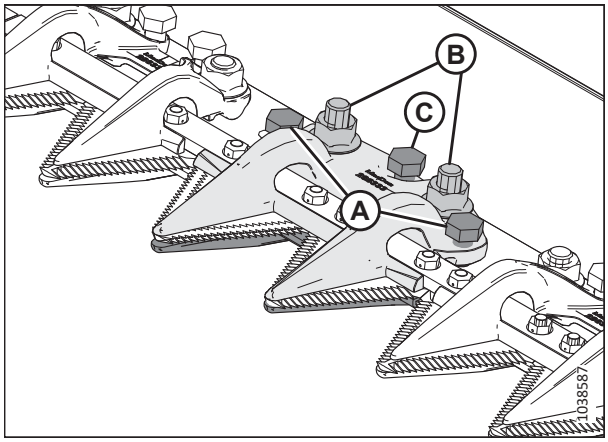


Figure 8.15: Center Hold-Down

7. Torque nuts (B) to 85 Nm (63 lbf·ft).
8. Run the engine at low idle while listening for noise caused by insufficient clearance. Adjust the knives as necessary.

   IMPORTANT:

   Insufficient hold-down clearance will result in the knife and guards overheating.

8.7.9 Adjusting Knife Guards and Guard Bar

If a knife guard or the guard bar is misaligned due to contact with a rock or obstruction, use the guard straightening tool to correct the alignment.

DANGER

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

WARNING

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.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *12.2.1 Engaging Reel Safety Props, page 493*.

5. To adjust the guard tips upwards, position the tool as shown and pull up.

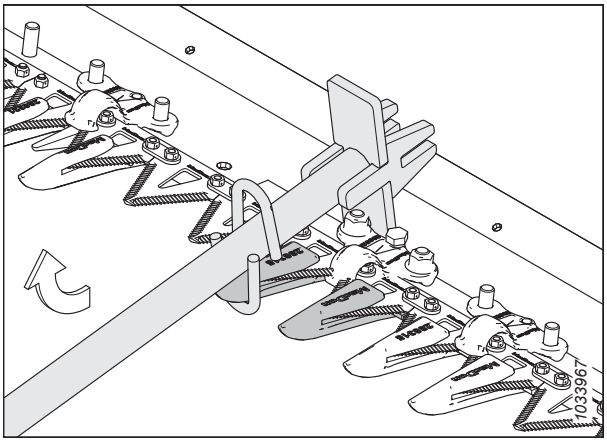


Figure 8.16: Upward Adjustment – Pointed Guard

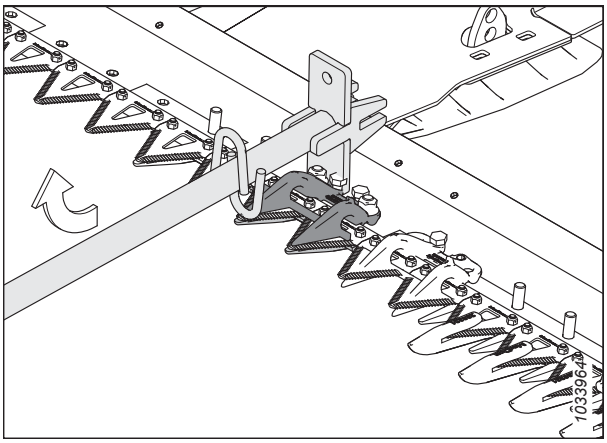


Figure 8.17: Upward Adjustment – Short Knife Guard

6. To adjust the guard tips downwards, position the tool as shown and push down.

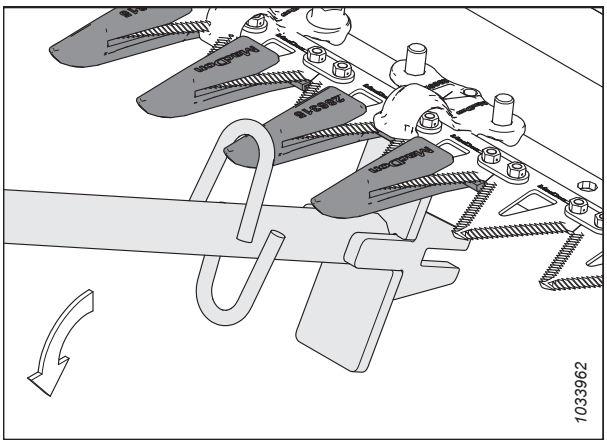


Figure 8.18: Downward Adjustment – Pointed Guard

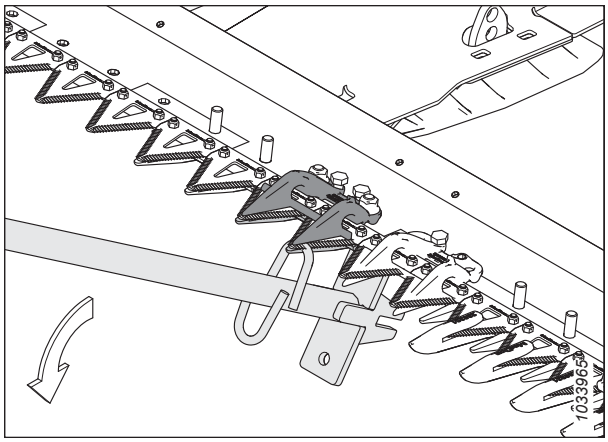


Figure 8.19: Downward Adjustment – Short Knife Guard

7. To adjust the guard bar, position the tool as shown, then push down or pull up on the tool accordingly.

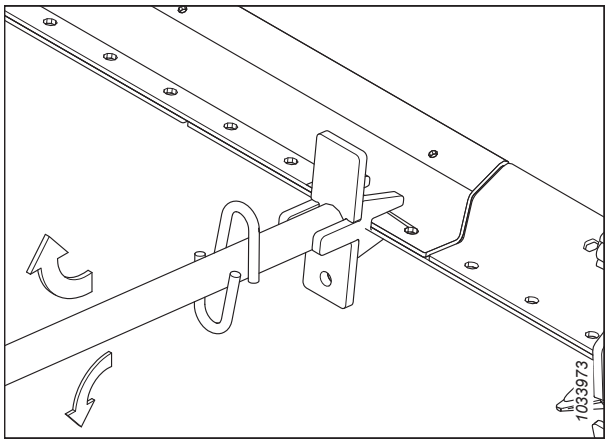


Figure 8.20: Guard Bar Adjustment – No Guards

8.8 Checking and Adjusting Fore-Aft Position Sensor

The fore-aft position sensor indicates the position of the reel in the fore-aft plane. The sensor arm's orientation and the sensor's output voltage range must be calibrated.

Checking and adjusting sensor arm orientation

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

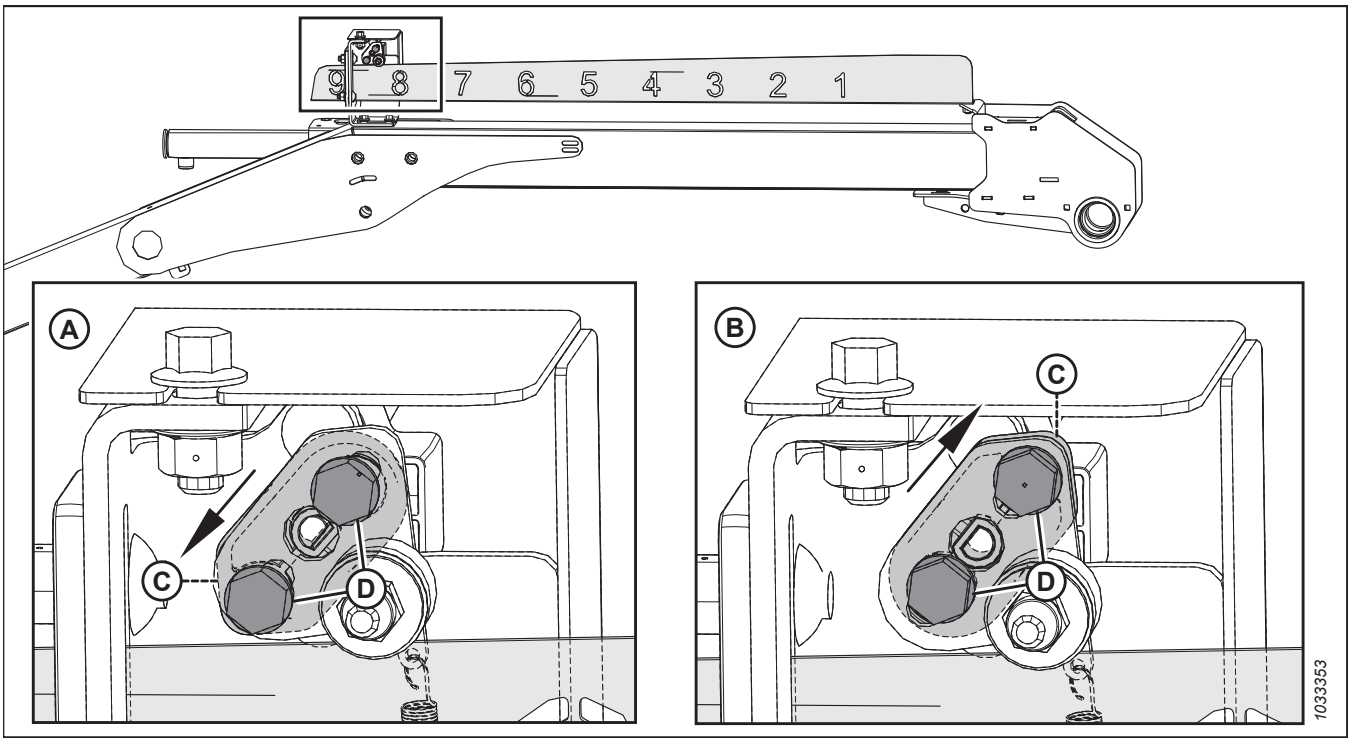


Figure 8.21: Sensor Arm Configurations

A - John Deere, CLAAS, IDEAL™ Configuration

B - Case/New Holland Configuration

C - Sensor Arm

D - Mounting Hardware

3. Check the orientation of sensor arm (C) and hardware (D). If sensor arm (C) is not oriented correctly, remove it and reinstall it in the correct orientation.

Checking and adjusting sensor output voltage

DANGER

Ensure that all bystanders have cleared the area.

4. Engage the parking brake.

   IMPORTANT:

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

5. Start the engine.

6. Adjust the reel to the fully forward position. Ensure that dimension (A) (from the sensor bracket to the end of the indicator) is 62–72 mm (2.4–2.8 in.).

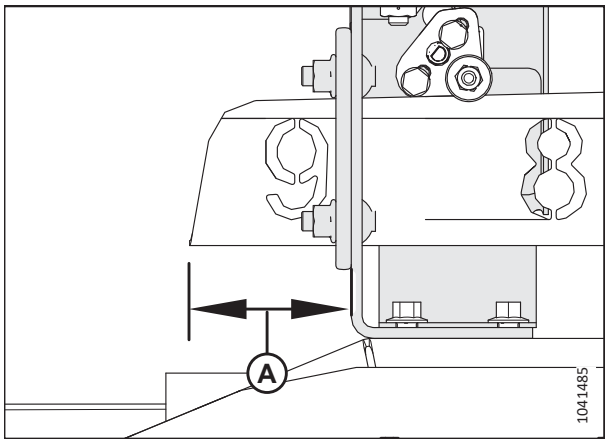


Figure 8.22: Fore-Aft Bracket

7. Use the combine display or a voltmeter (if measuring the sensor manually) to measure the voltage range. If using a voltmeter, check sensor voltage (A) between pin 2 (ground) and pin 3 (signal).

   - For Case and New Holland combines, the voltage range should be 0.7–1.1 V
   - For Challenger®, CLAAS, Gleaner, IDEAL®, John Deere, and Massey Ferguson®combines, the voltage range should be 3.9–4.3 V

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

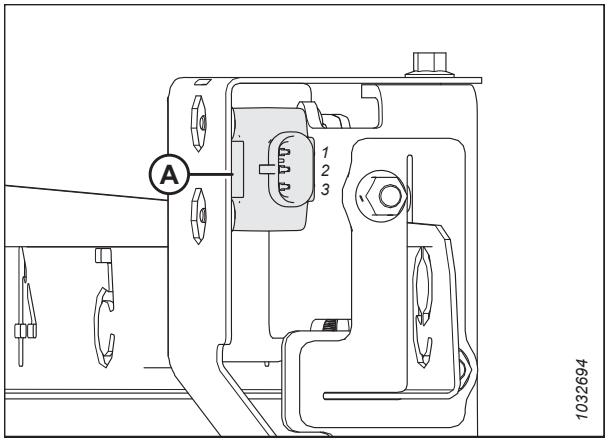


Figure 8.23: Fore-Aft Sensor

9. If adjustment is required, loosen hardware (A) and rotate sensor (B) until the voltage is in the correct range.

10. Once sensor adjustment is complete, torque the hardware to 2.1 Nm (22 lbf·in).

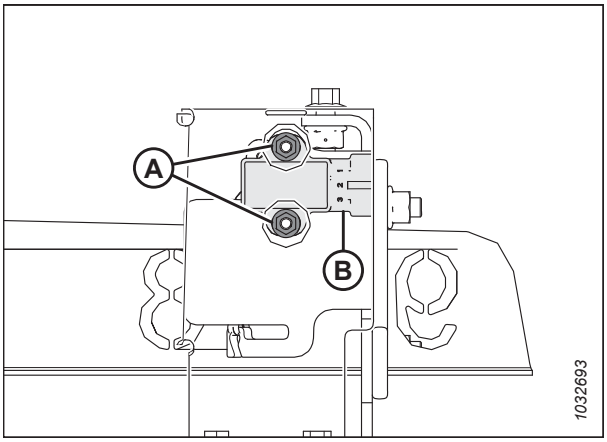


Figure 8.24: Fore-Aft Sensor

8.9 Checking and Adjusting Reel to Endsheet Clearance

Reel to endsheet clearance refers to the side distance between the outboard edge of the reel and the endsheets on the header. If the reel clearance is not satisfactory, it 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.

WARNING

Ensure that all bystanders have cleared the area.

Checking reel clearance

1. Start the engine.
2. Raise or lower the header until the cutterbar sits 254–356 mm (10–14 in.) above the ground.
3. Lower the reel fully.
4. Extend or retract the reel until the **5** on reel fore-aft indicator (A) is hidden by sensor support (B).
5. Shut down the engine, and remove the key from the ignition.

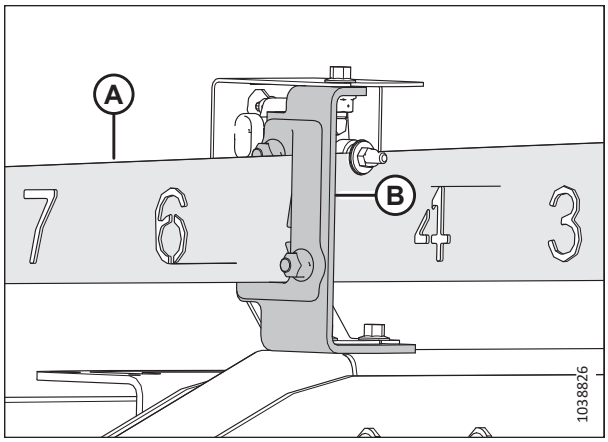


Figure 8.25: Reel Fore-Aft Indicator

6. Manually rotate the reel to position a tine tube above the cutterbar.

7. 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 end shields are pre-installed, measure between the reel end shield and the header end sheet, at the location of the tine tube, as shown.

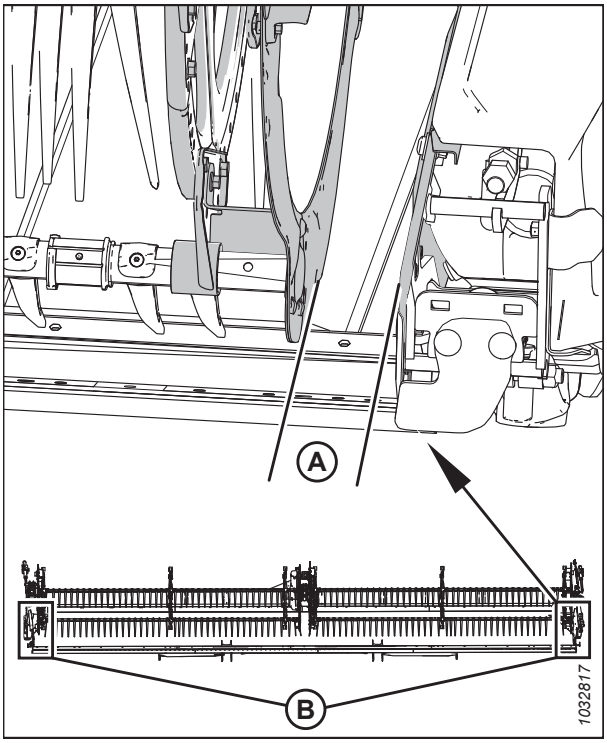


Figure 8.26: Reel Clearance – Double-Reel Header

Adjusting reel clearance – single-reel headers

8. 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).

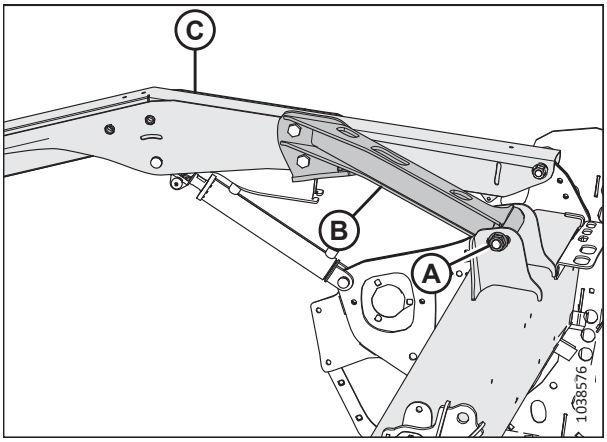


Figure 8.27: Right Support Arm – Single-Reel Header

Adjusting reel clearance – double-reel headers

9. 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).

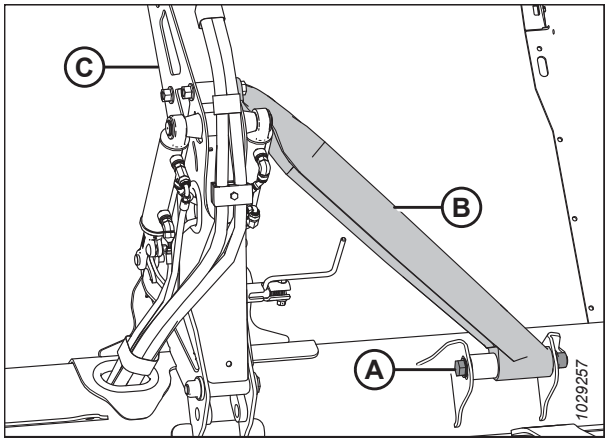


Figure 8.28: Center Support Arm – Double-Reel Header

8.10 Reel to Cutterbar Clearance

There must be 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 the header can be operated.

Measure clearance (A) between the tip of the reel finger and the guard: guard (B) or short guard (C), depending on the configuration of the header. Compare the measurement to the specifications listed in the table below:

Table 8.2 Finger to Guard/Cutterbar Clearance – Single-Reel

Header	End Panels
D225	25 mm (1 in.)

Table 8.3 Finger to Guard/Cutterbar Clearance – Double-Reel

Header	End Panels	Beside Center Arm
D230 D235 D241 D245	20 mm (0.80 in.)	20 mm (0.80 in.)

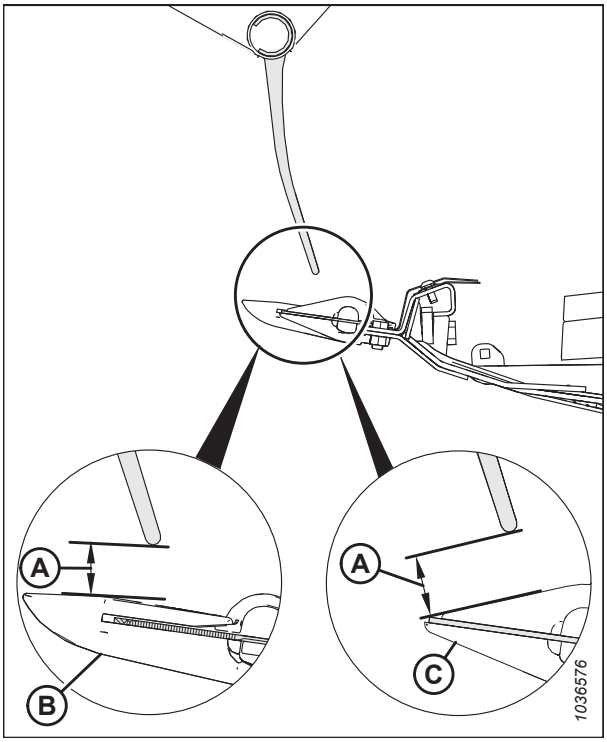


Figure 8.29: Finger Clearance

8.10.1 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

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. Start the engine. For instructions, refer to the combine operator's manual.
2. Park the combine on a level surface.
3. Adjust the reel fore-aft position until the 7 on fore-aft indicator (A) is hidden by sensor support (B).

4. Adjust the reel fore-aft position until sensor support (B) hides the number seven on fore-aft indicator (A).

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

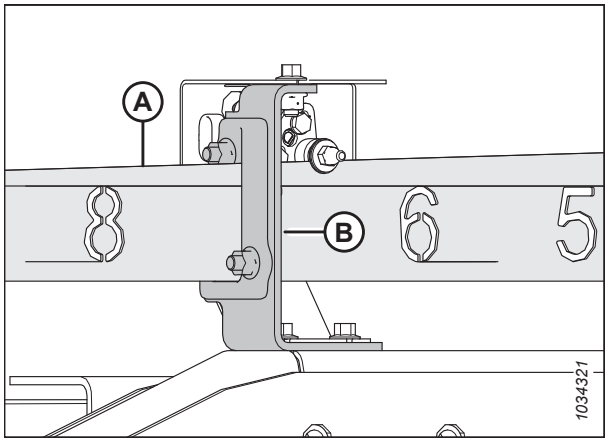


Figure 8.30: Fore-Aft Position

6. Rotate the reel by hand until a tine tube is directly above the cutterbar.

7. 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 *8.10 Reel to Cutterbar Clearance, page 225*.

   For measurement locations, refer to:

   - Figure *8.32, page 227* – single-reel
   - Figure *8.33, page 227* – double-reel

8. Adjust the reel clearance, if required. For instructions, refer to *8.10.2 Adjusting Reel-to-Cutterbar Clearance, page 227*.

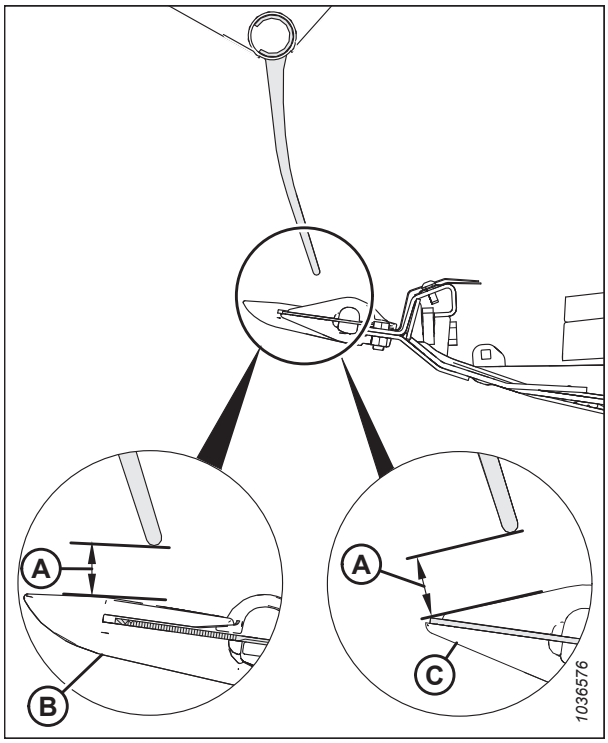


Figure 8.31: Measurement from Finger Tip to Guard

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

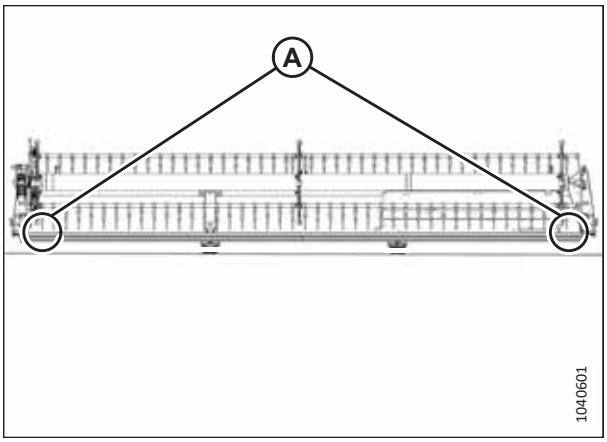


Figure 8.32: Single-Reel Measurement Locations

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

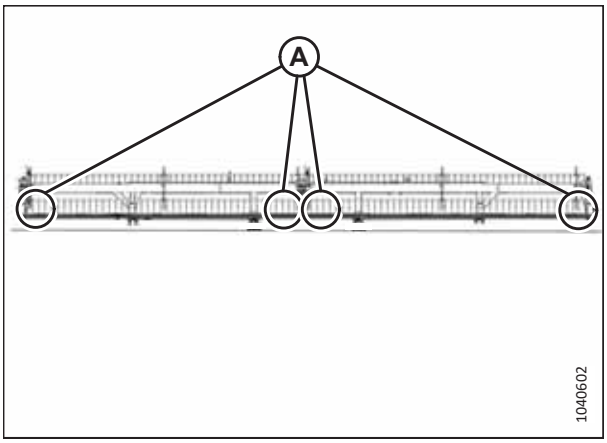


Figure 8.33: Double-Reel Measurement Locations

8.10.2 Adjusting Reel-to-Cutterbar Clearance

If the clearance between the reel fingers and the cutterbar is insufficient, it will need to be adjusted so that damage to the equipment does not occur.

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 that position for the duration of the procedure.

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.

WARNING

Ensure that all bystanders have cleared the area.

1. Measure the reel-to-cutterbar clearance. For instructions, refer to *8.10.1 Measuring Reel-to-Cutterbar Clearance, page 225*.
2. Start the engine.

3. Adjust the reel fore-aft position until the **7** on fore-aft indicator (A) is hidden by sensor support (B).

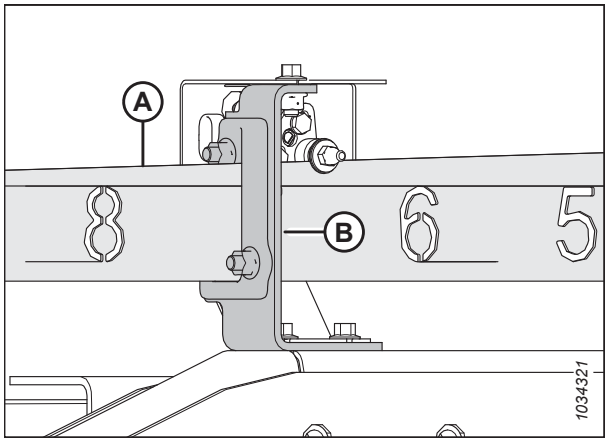


Figure 8.34: Fore-Aft Position

4. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.
5. Lower the reel fully, and continue holding the control button down to phase the cylinders.
6. Shut down the engine, and remove the key from the ignition.
7. 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).
8. Repeat Step *7, page 228* on the opposite side of the header.

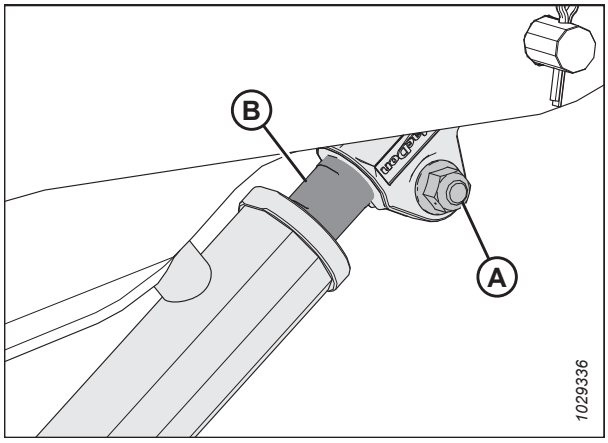


Figure 8.35: Outside Arm Cylinder

9. Loosen bolts (A) on both center arm cylinders.
10. 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.
11. Ensure that distance measurement (B) is identical on both cylinders.

    NOTE:

    Distance measurement (B) runs from the center of mounting pins (C) to the tops of the notches in cylinder rods (D).
12. Ensure that both mounting pins (C) are **NOT** able to be rotated by hand. If one of the mounting pins is 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.
13. Tighten bolts (A).

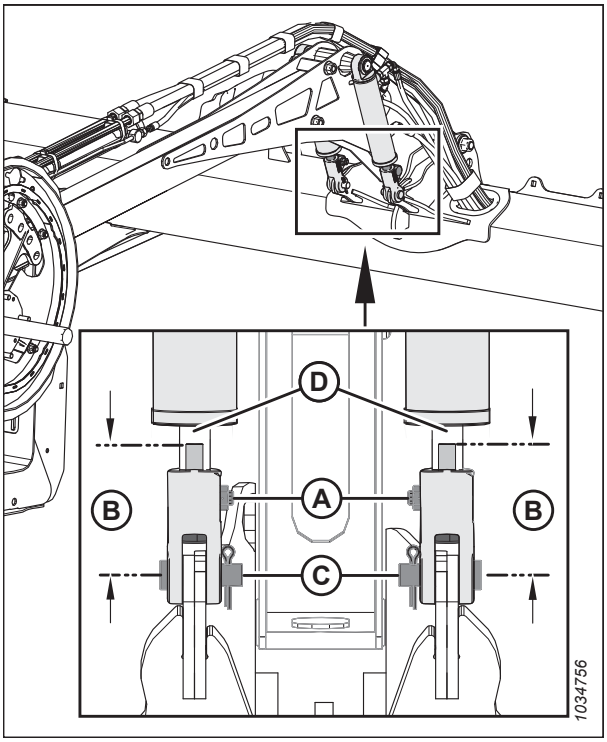


Figure 8.36: Center Arm Cylinders

DANGER

Ensure that all bystanders have cleared the area.

14. Start the engine.
15. Raise the reel fully.
16. Lower the reel fully, and continue holding the control button down to phase the cylinders.
17. Shut down the engine, and remove the key from the ignition.
18. Check the reel-to-cutterbar clearance measurements again. If necessary, repeat the adjustment procedures.
19. Move the reel back to ensure that the steel end fingers do not contact the deflector shields.
20. 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 steel end fingers as needed.
21. Periodically check for evidence of contact during operation. Adjust the reel-to-cutterbar clearance as needed.

8.11 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 scoop soil or 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.

Use the following guidelines when adjusting the float:

- 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 plates.
- 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 wheels in conjunction with the header float. This will minimize bouncing at the header ends and will help regulate the cut height.

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.

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

Preliminary steps

1. Park the combine on a level surface.
2. Locate spirit level (A) on top of the float module frame. Ensure that the bubble is in the center.
3. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

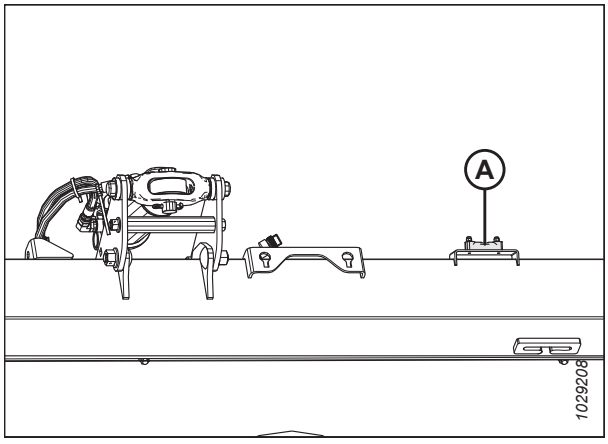


Figure 8.37: Spirit Level

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

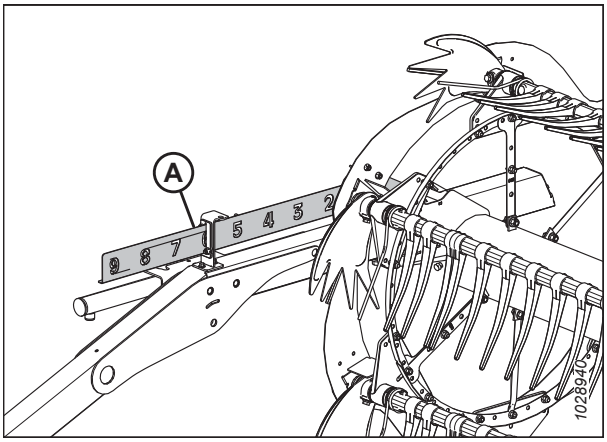


Figure 8.38: Fore-Aft Position

5. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
6. Lower the reel fully.
7. Shut down the engine, and remove the key from the ignition.
8. If transport wheels are installed on the header, move the transport wheels to the uppermost position.

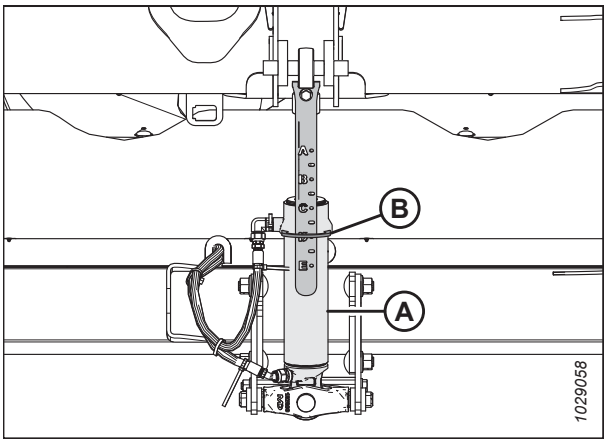


Figure 8.39: Center-Link

9. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

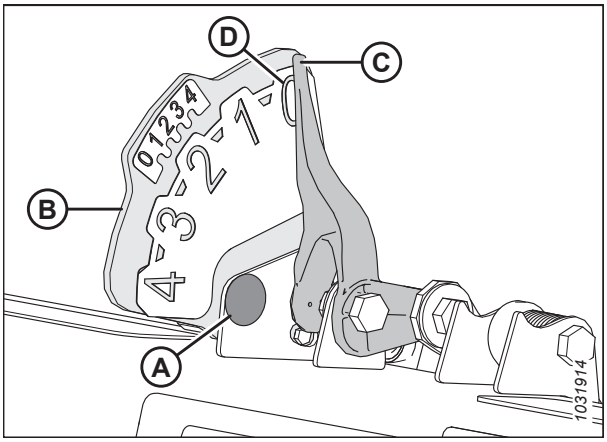


Figure 8.40: Float Indicator

10. On the left side of the float module, pull float lock handle (A) away from the float module, and pull the float lock handle down and into position (B) (UNLOCK).

11. Repeat the previous step on the right side of the float module.

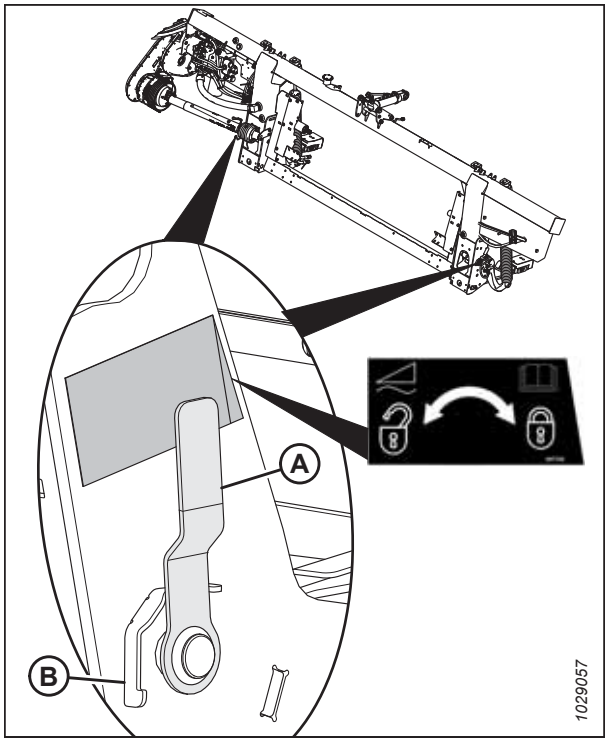


Figure 8.41: Header Float Lock in Locked Position

12. Open the left endshield.

13. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.

14. Remove multi-tool (B). Replace the hairpin.

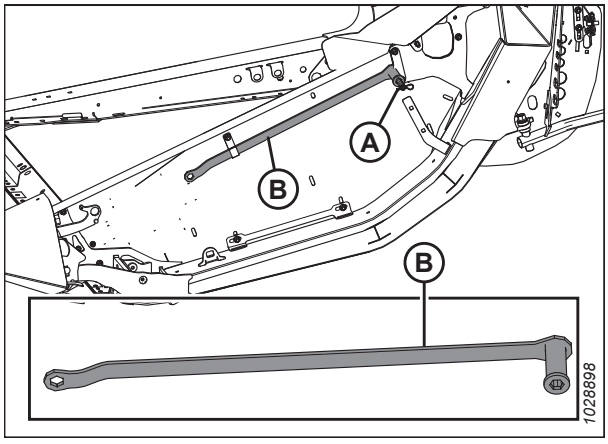


Figure 8.42: Multi-Tool Location

Setting float setting levers

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

16. Place the flat end of multi-tool (B) on the float setting lever as shown. The multi-tool should be angled slightly toward the front of the float module.

    IMPORTANT:

    To prevent damage to the float setting lever, ensure that multi-tool (B) is fully engaged with the lever.

WARNING

To avoid injury, remove the multi-tool from the float checking lever IMMEDIATELY after it is moved into the checking position. The multi-tool should NOT be left attached in case the spring-loaded lever snaps back to its starting position.

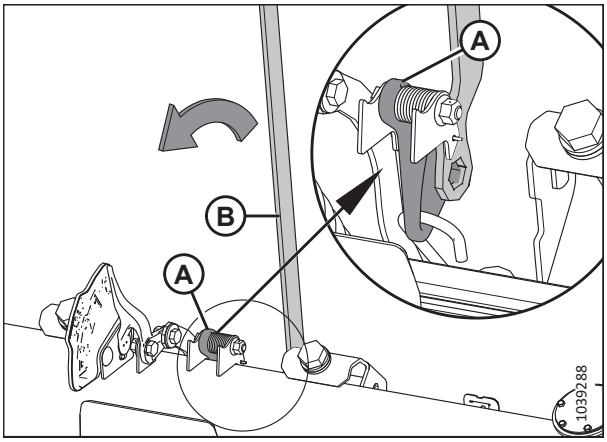


Figure 8.43: Multi-Tool Engaged with Left Float Setting Assembly

17. Pull multi-tool (B) toward the back of the float module until float setting lever (A) is locked into place and will not return to its original position. Remove the multi-tool.

18. Repeat Steps *15, page 233* to *17, page 233* to set the right float setting lever.

    IMPORTANT:

    Both the left and the right float setting levers must be set before the float on either side of the header can be adjusted.

19. Place the multi-tool back in its storage location. Secure the multi-tool with the hairpin.

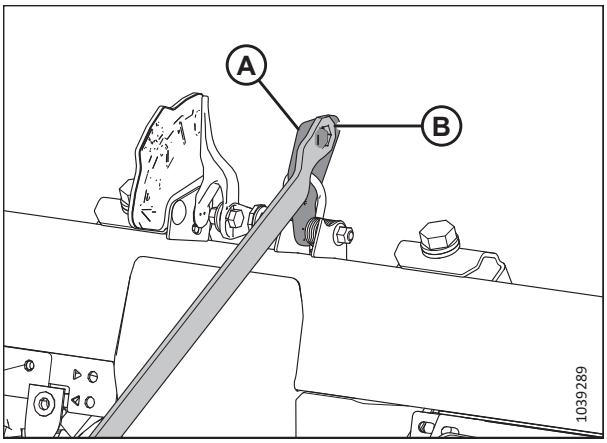


Figure 8.44: Left Float Setting Lever in Set Position

Checking float

20. 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 float setting indicator (FSI) will be accurate.

21. On the left side of the float module, inspect smaller float setting indicator (FSI) (B). Arm (A) on the FSI should point to the number 2.
    - If arm (A) on FSI (B) points to a value higher than 2, the float is too heavy.
    - If arm (A) on FSI (B) points to a value lower than 2, the float is too light.

    NOTE:

    The larger set of numbers is used to determine the float height setting. They are used when the header is being operated in the field.

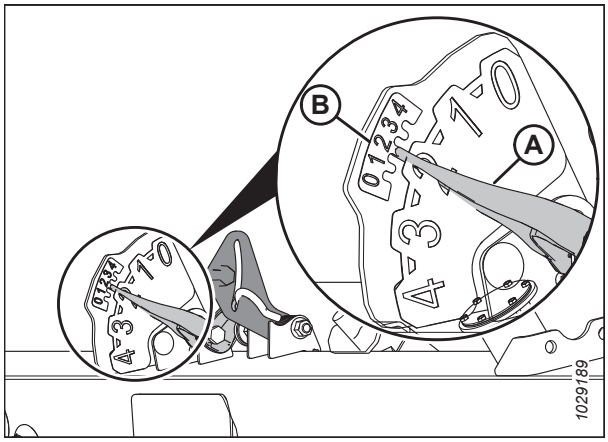


Figure 8.45: Left Float Setting Indicator

Adjusting float

22. On the left side of the float module, loosen bolts (C). Move spring locks (B) so that bolt heads (A) are accessible.
23. Increase or decrease the float on the left side of the float module as needed:
    - To increase the float, turn both left adjustment bolts (A) clockwise.
    - To decrease the float, turn both left adjustment bolts (A) counterclockwise.

    NOTE:

    Each pair of bolts (A) must be adjusted by the same amount.
24. Set the left float again. Refer to Step *20, page 233* for instructions.
25. Check the left FSI indicator again. Refer to Step *21, page 234* for instructions.
26. If the left float setting is not satisfactory, repeat Step *23, page 234* to Step *25, page 234* until the left float setting is satisfactory.
27. Check and adjust the right float. For instructions, refer to Step *20, page 233* to Step *26, page 234*.
28. 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.

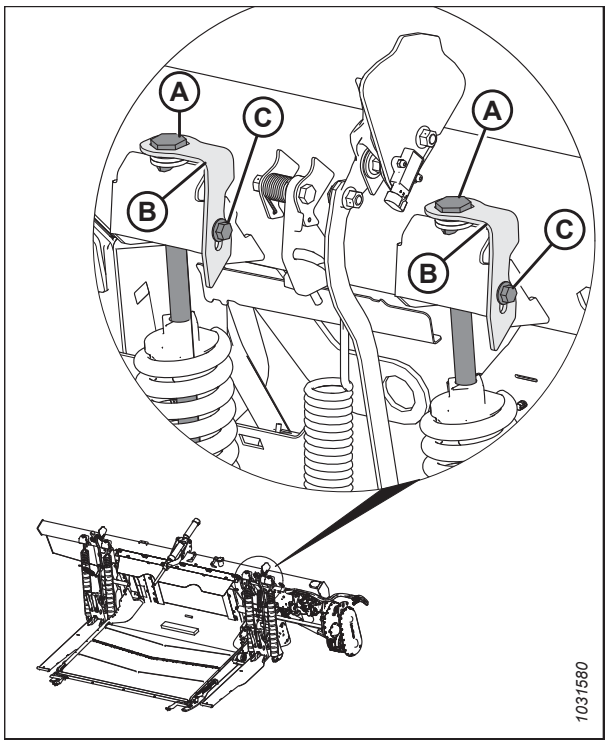


Figure 8.46: Left Float Adjustment

Releasing float setting levers

29. Start the engine.

WARNING

Do NOT use the multi-tool to release the float setting lever. Using the multi-tool to release the float setting lever can result in injury.

30. Fully lower the header.

    NOTE:

    This will cause the left and right float setting levers to return to their original positions.

8.12 Adjusting Feed-Auger-to-Pan Clearance

There must be adequate clearance between the feed auger and the pan on the float module to ensure smooth crop feeding.

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:

Maintain an appropriate distance between the feed auger and the feed auger pan. Too little clearance may result in the fingers or flighting contacting and damaging the feed draper or pan when operating the header at certain angles. Look for 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 of the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be rotated) at both locations.

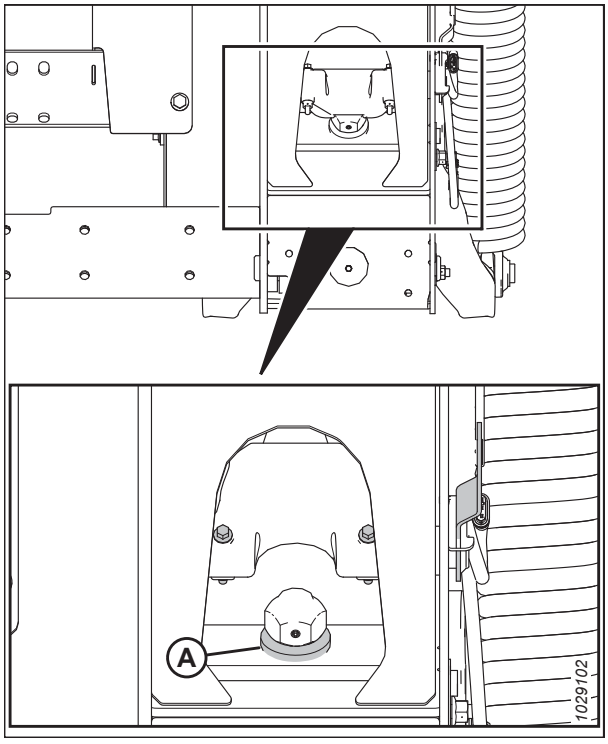


Figure 8.47: Down Stop Washer

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.

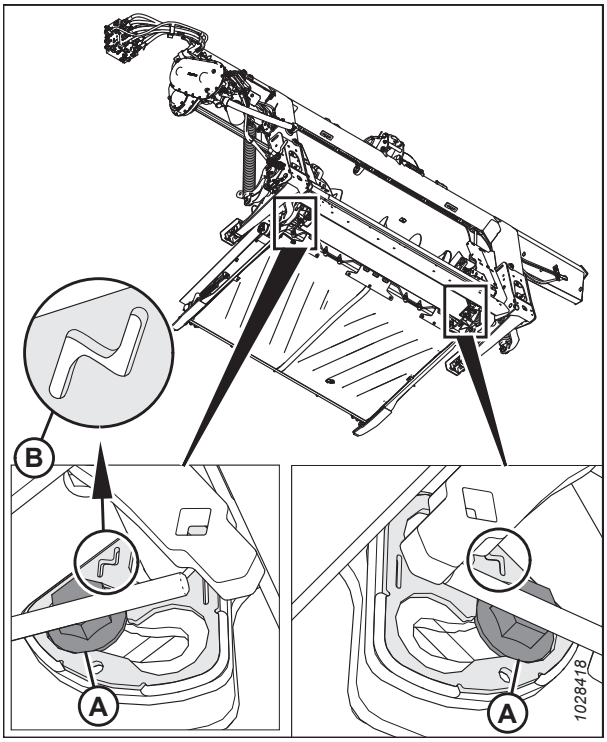


Figure 8.48: Floating Position

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

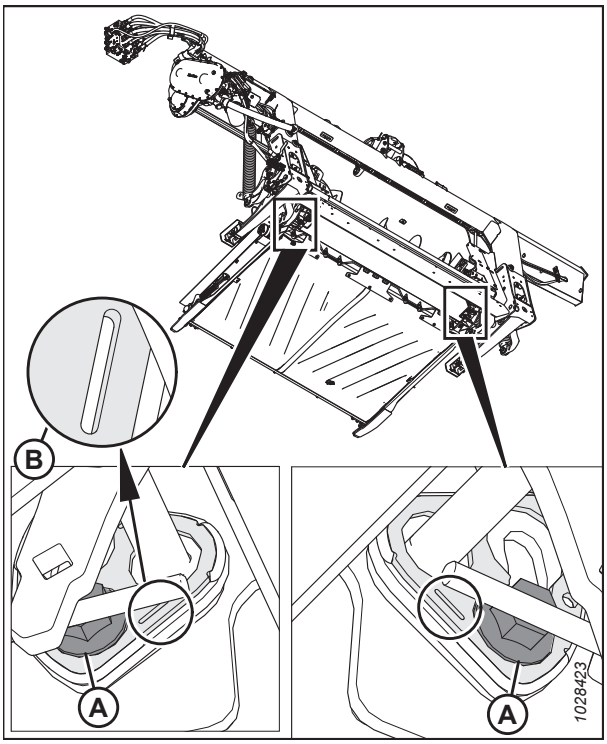


Figure 8.49: Fixed Position

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.
8. Repeat Step *5, page 238* and Step *7, page 238* for 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 clearances.

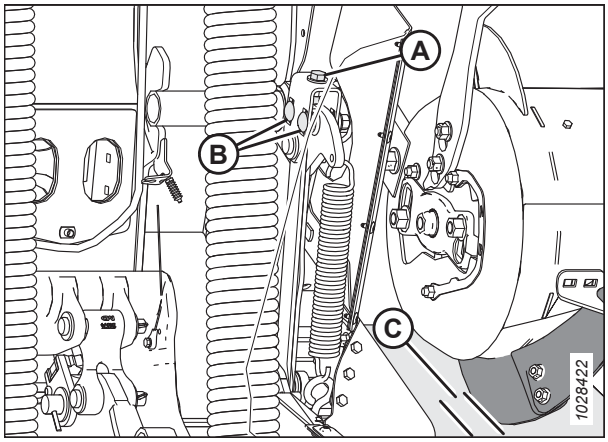


Figure 8.50: Auger Clearance

8.13 Checking and Adjusting Side Draper Tension

The tension on the drapers can be adjusted using the draper tension adjusters on the end of each draper.

DANGER

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

IMPORTANT:

The draper tension is set at the factory, and should not require adjustment. If adjustment is necessary, ensure that the tension is set so that the draper does not slip or sag below the cutterbar. Excessive tension on the draper can damage the draper drive and rollers.

1. Ensure that tension indicator (A) covers the inboard half of the window.

DANGER

Ensure that all bystanders have cleared the area.

2. Start the engine.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.

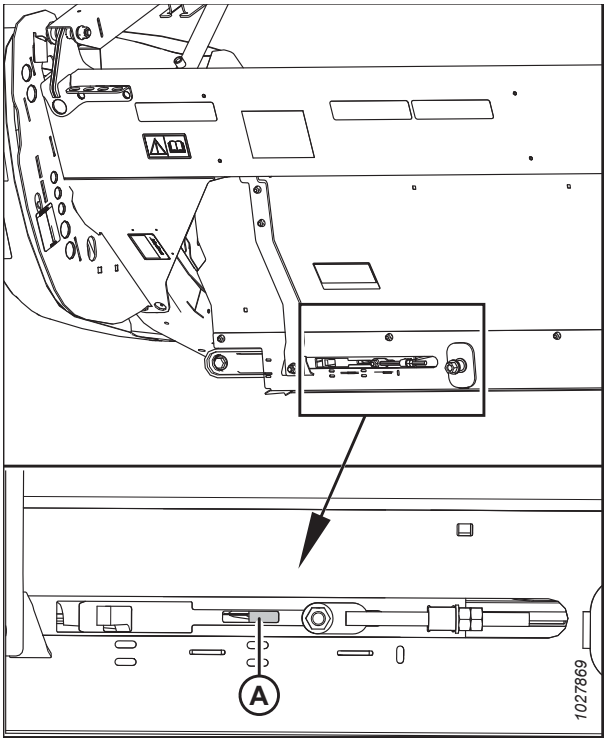


Figure 8.51: Checking Left Tension Adjuster

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

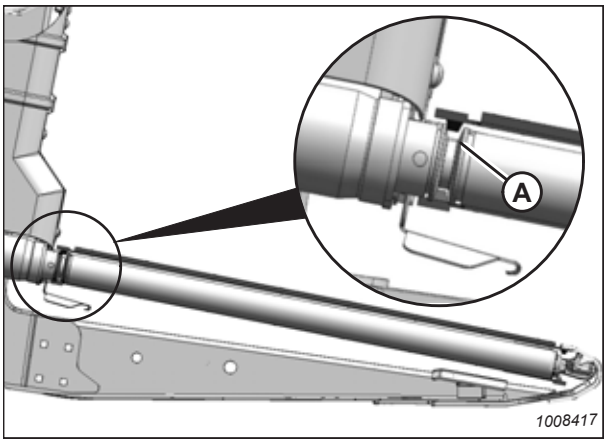


Figure 8.52: Drive Roller

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

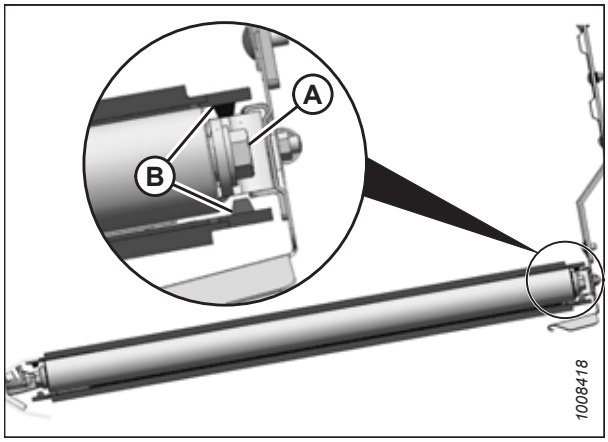


Figure 8.53: Idler Roller

8. Turn adjuster bolt (A) clockwise to increase the tension on the draper; turn bolt (A) counterclockwise to decrease the tension on the draper. Tensioner indicator (B) will move inboard to show that the draper is tightening. Tighten the adjuster bolt until the tensioner indicator covers the inboard half of the window.

   IMPORTANT:

   To avoid premature failure of the draper, draper rollers, and/or 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.

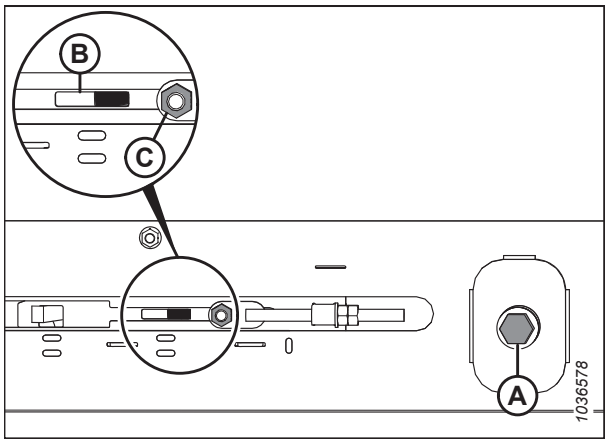


Figure 8.54: Adjusting Left Tensioner

8.14 Checking Draper Seal

Draper seal refers to the clearance between the draper belt and the cutterbar seal plate. A properly sealed draper should have as small a gap as possible between the draper and the cutterbar seal plate. If the draper seal is unsatisfactory, it will need to be adjusted.

Checking draper seal

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.

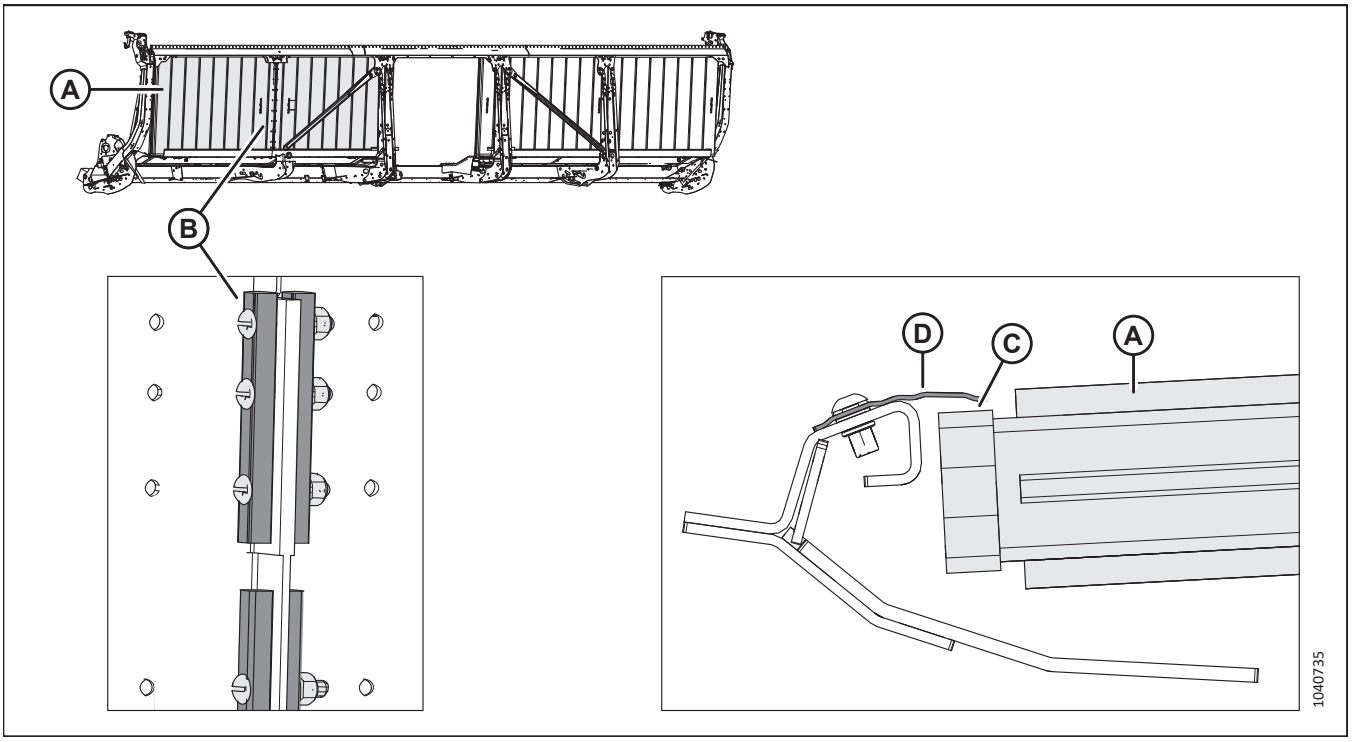


Figure 8.55: Draper Seal Clearance Specifications

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

Adjusting draper seal

7. Release the tension on the draper. For instructions, refer to *8.13 Checking and Adjusting Side Draper Tension, page 239*.

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

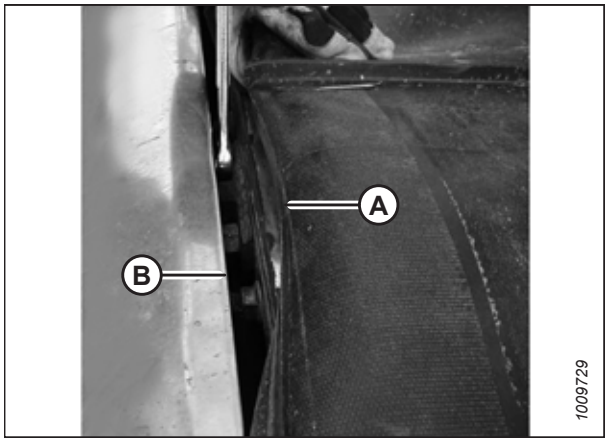


Figure 8.56: Deck Front Hook

10. 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.

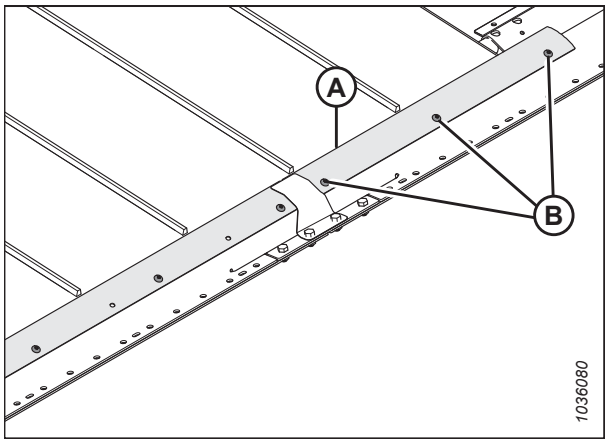


Figure 8.57: Deck Seal Plate

NOTE:

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

- **D225 and D230:** Six deck front hooks
- **D235:** Eight deck front hooks

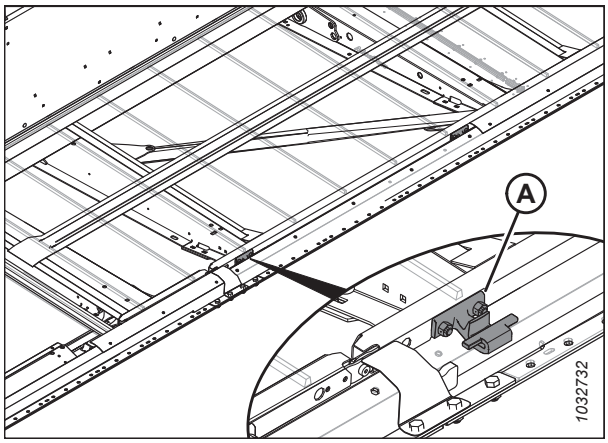


Figure 8.58: Draper Deck Front Hooks

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

12. 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.

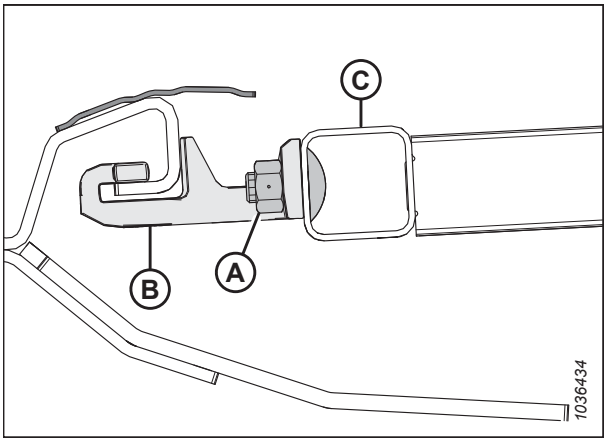


Figure 8.59: Deck Support

13. 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.

14. 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.

15. Tighten hardware (D).

16. Measure gap (B) again using the feeler gauge. For instructions, refer to Step *13, page 243*.

17. If removed, install cutterbar seal (A) and screws (B).

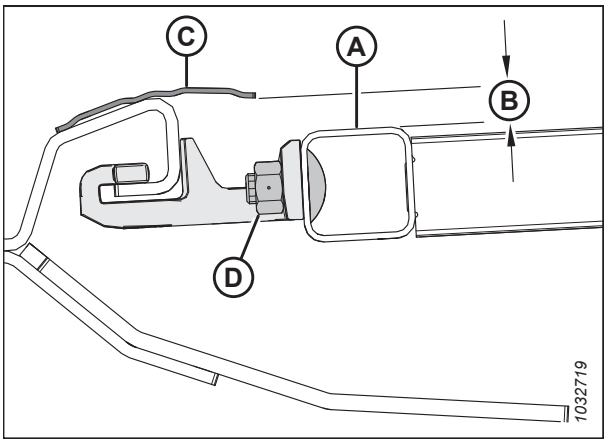


Figure 8.60: Deck Front Hook

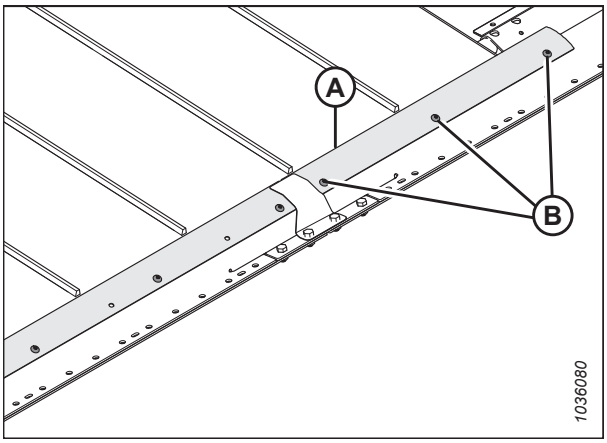


Figure 8.61: Deck Seal Plate

8.15 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 8.4 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

8.15.1 Greasing Procedure

Greasing points are identified on the machine by decals showing a grease gun and grease interval in hours of operation. Grease point layout decals are located on the header and on the right side of the float module.

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. Wipe the grease fitting with a clean cloth before greasing to avoid injecting it with dirt and grit.

   IMPORTANT:

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

2. Inject the grease through the fitting with a grease gun until 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. Also clean the lubricant passageway. Replace the fitting if necessary.

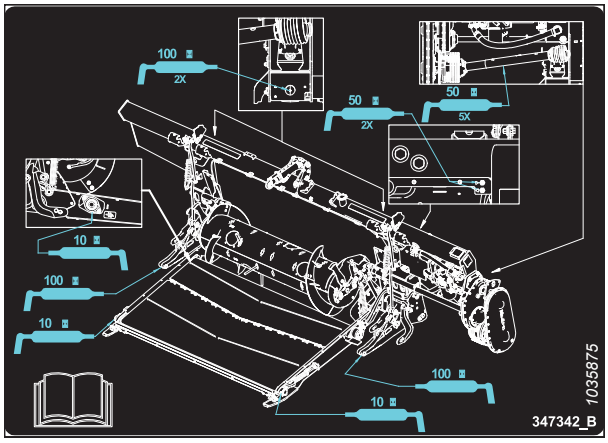


Figure 8.62: FM200 Grease Point Layout Decal

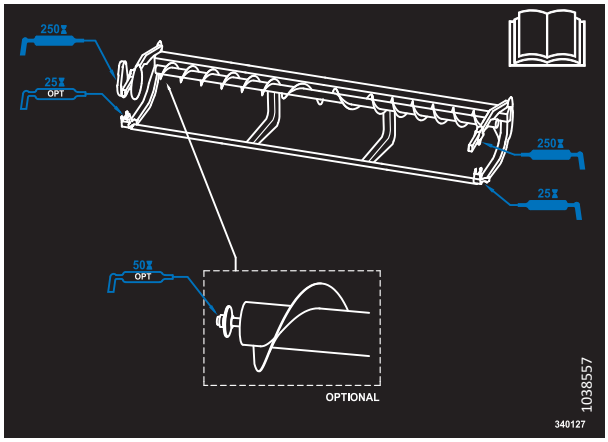


Figure 8.63: Grease Point Decal for Single-Knife Header with One-Piece Upper Cross Auger

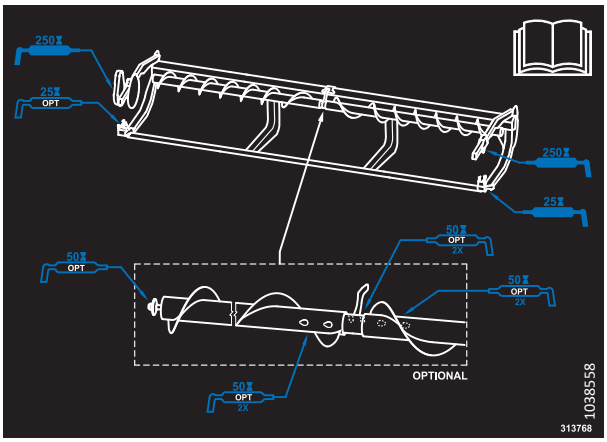


Figure 8.64: Decal for Single-Knife Header with Two-Piece Upper Cross Auger

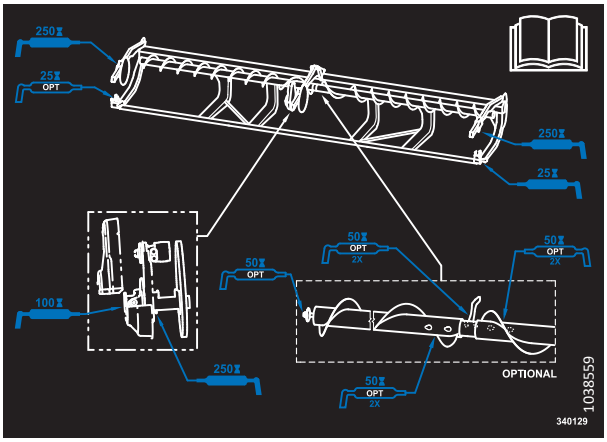


Figure 8.65: Decal for Double-Knife Header with Two-Piece Upper Cross Auger

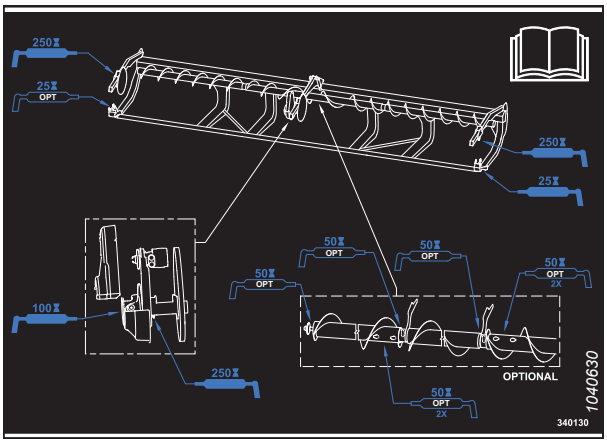


Figure 8.66: Decal for Double-Knife Header with Three-Piece Upper Cross Auger

8.15.2 Lubrication Points

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

Lubricate the following grease points using the lubricants specified in *8.15 Lubricating Header, page 244*:

Feed draper driver roller zerk (A)

IMPORTANT:

Clear any debris and excess grease from around the bearing and bearing housing. Inspect the condition of the bearing and bearing housing. 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). Wipe any excess grease from the area after greasing.

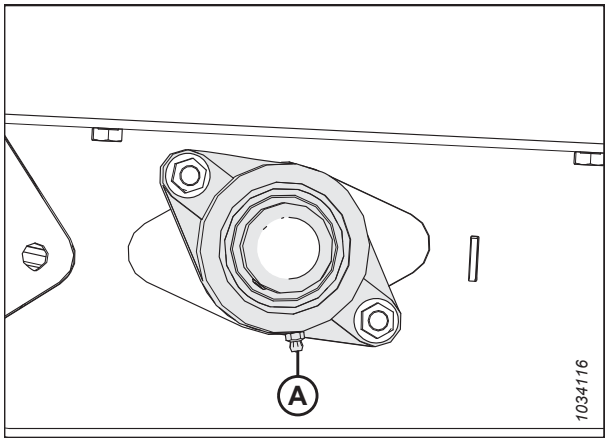


Figure 8.67: Feed Draper Drive Roller

Feed draper idler roller zerk (A)

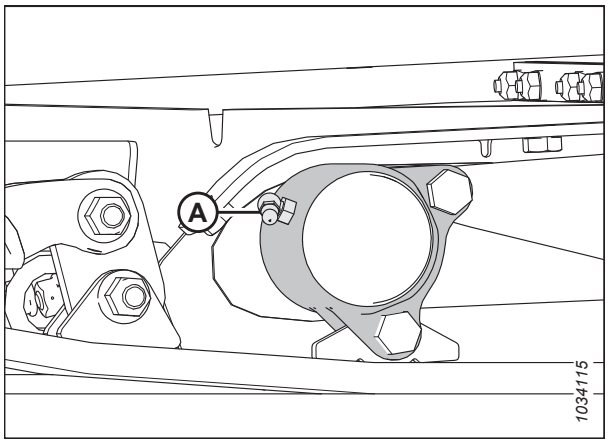


Figure 8.68: Feed Draper Idler Roller

Knifehead zerk (A)

NOTE:

There is one knifehead on a single-knife header and two on a double-knife header.

IMPORTANT:

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.

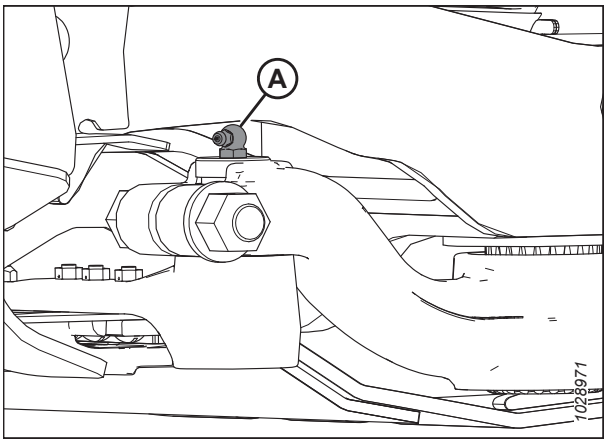


Figure 8.69: Knifehead

- 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.
- If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead.

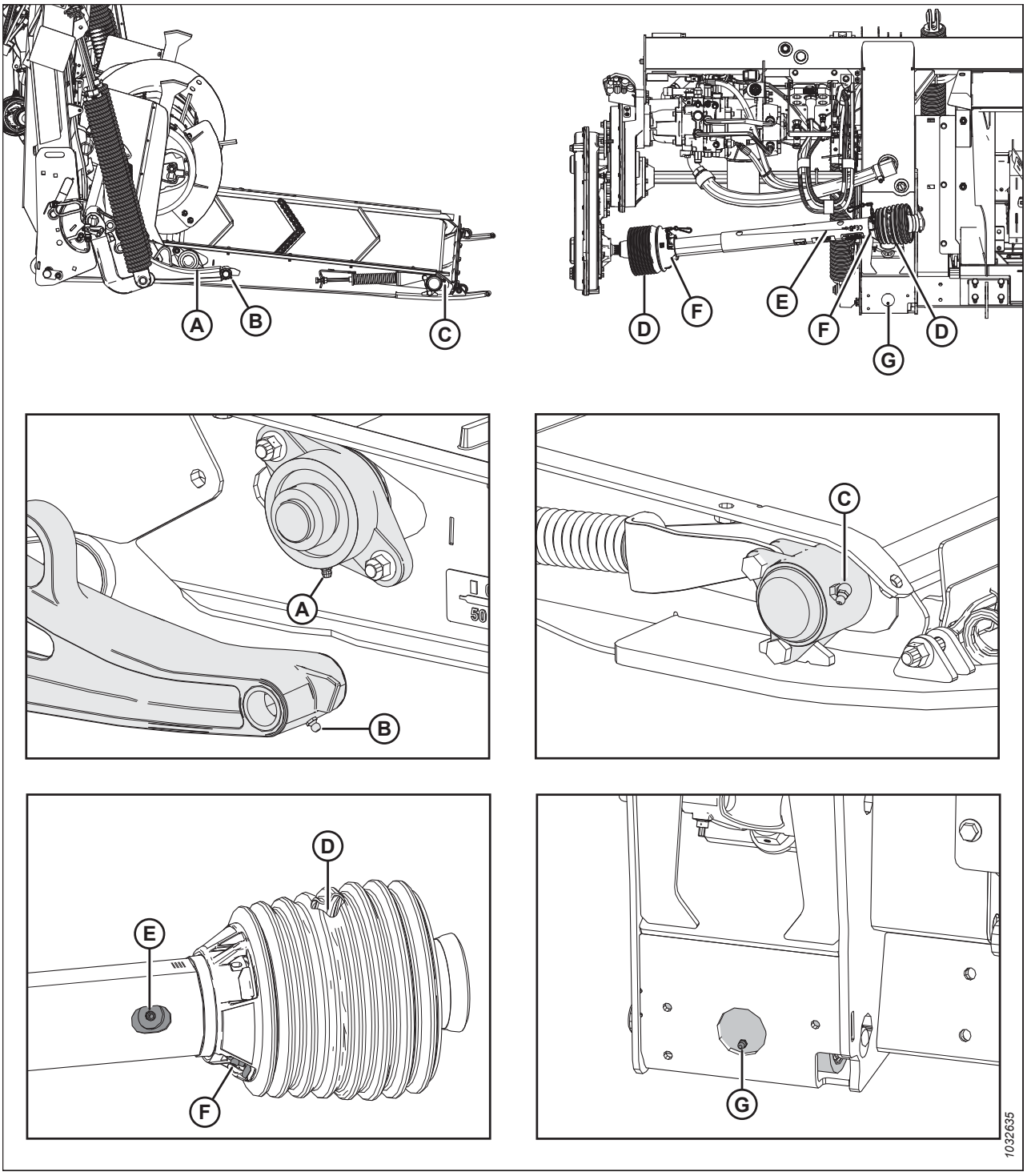


Figure 8.70: Float Module Grease Zerks – Feed Draper and Gearbox

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)

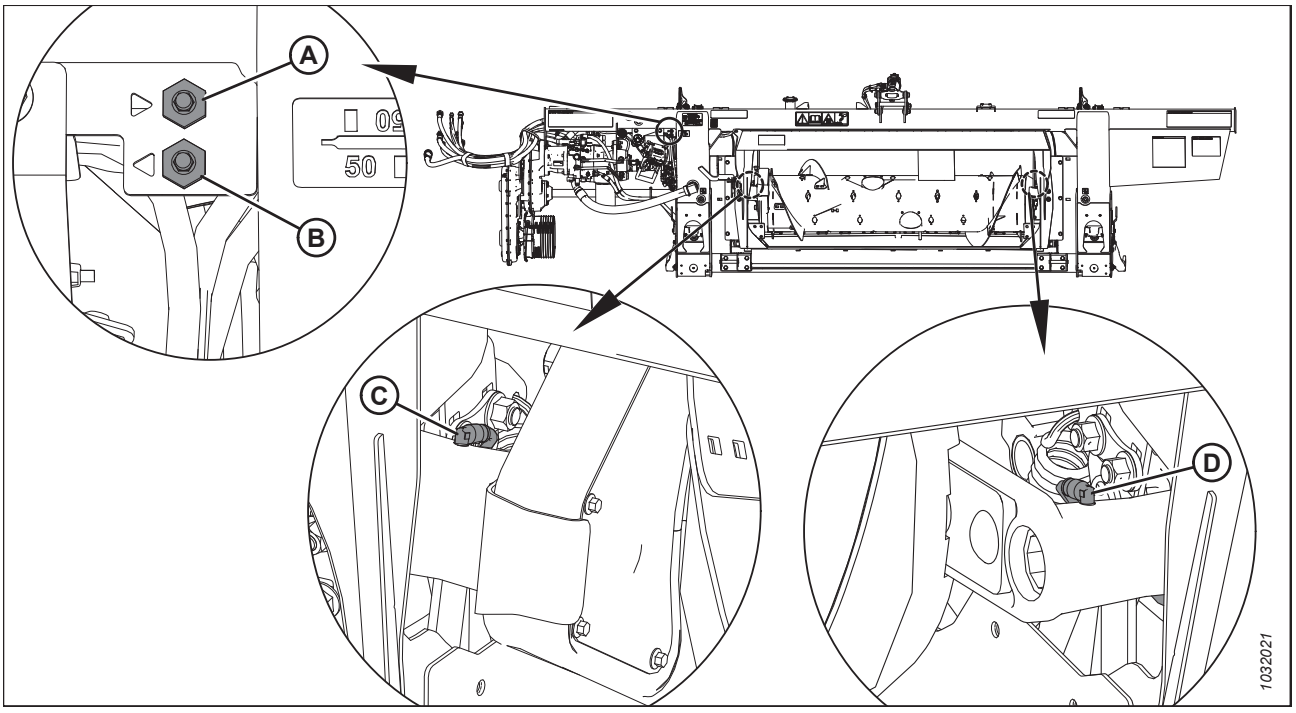


Figure 8.71: Float Module Grease Zerks – Auger

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)

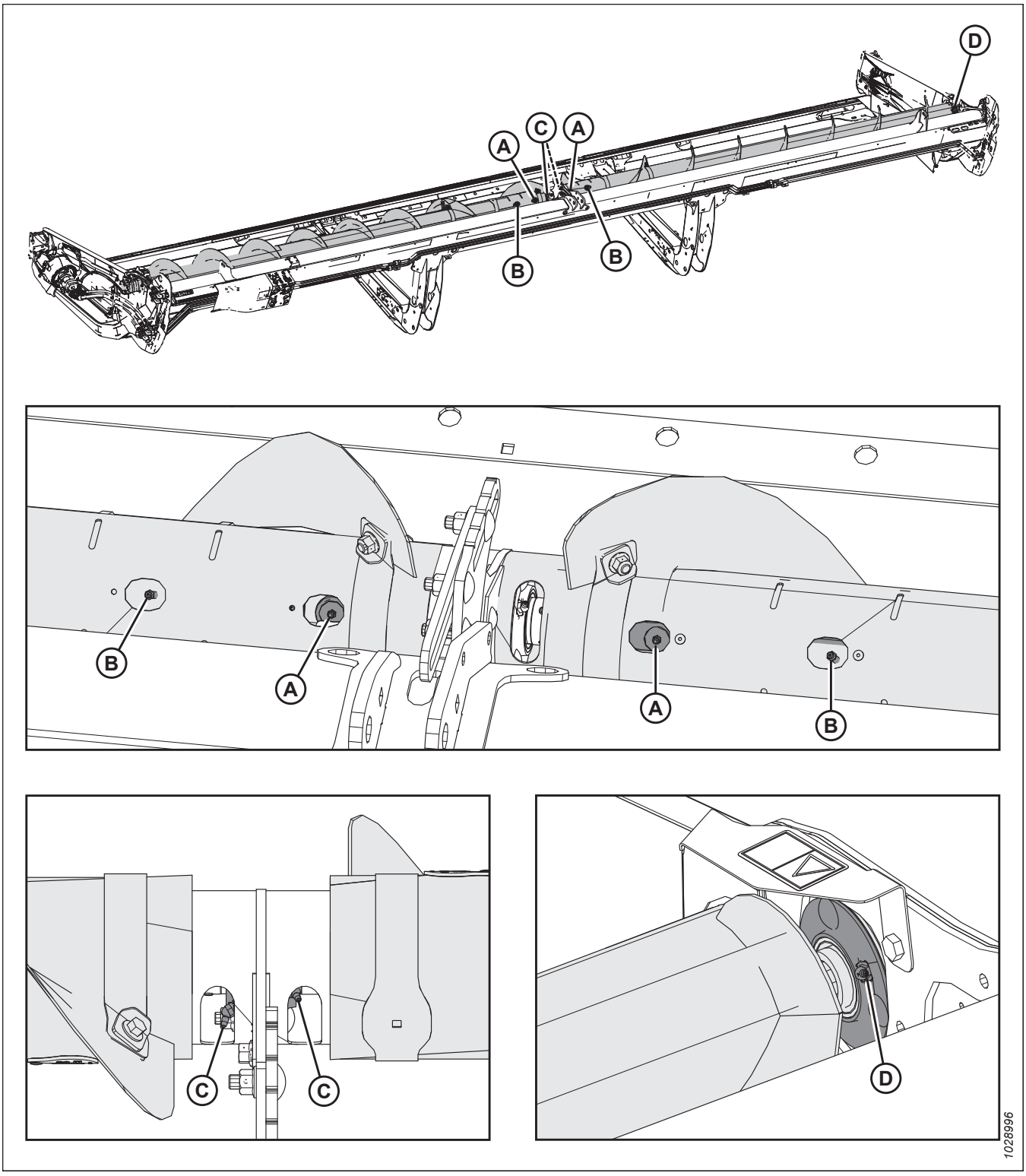


Figure 8.72: Grease Zerks – Two-Piece Upper Cross Auger

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

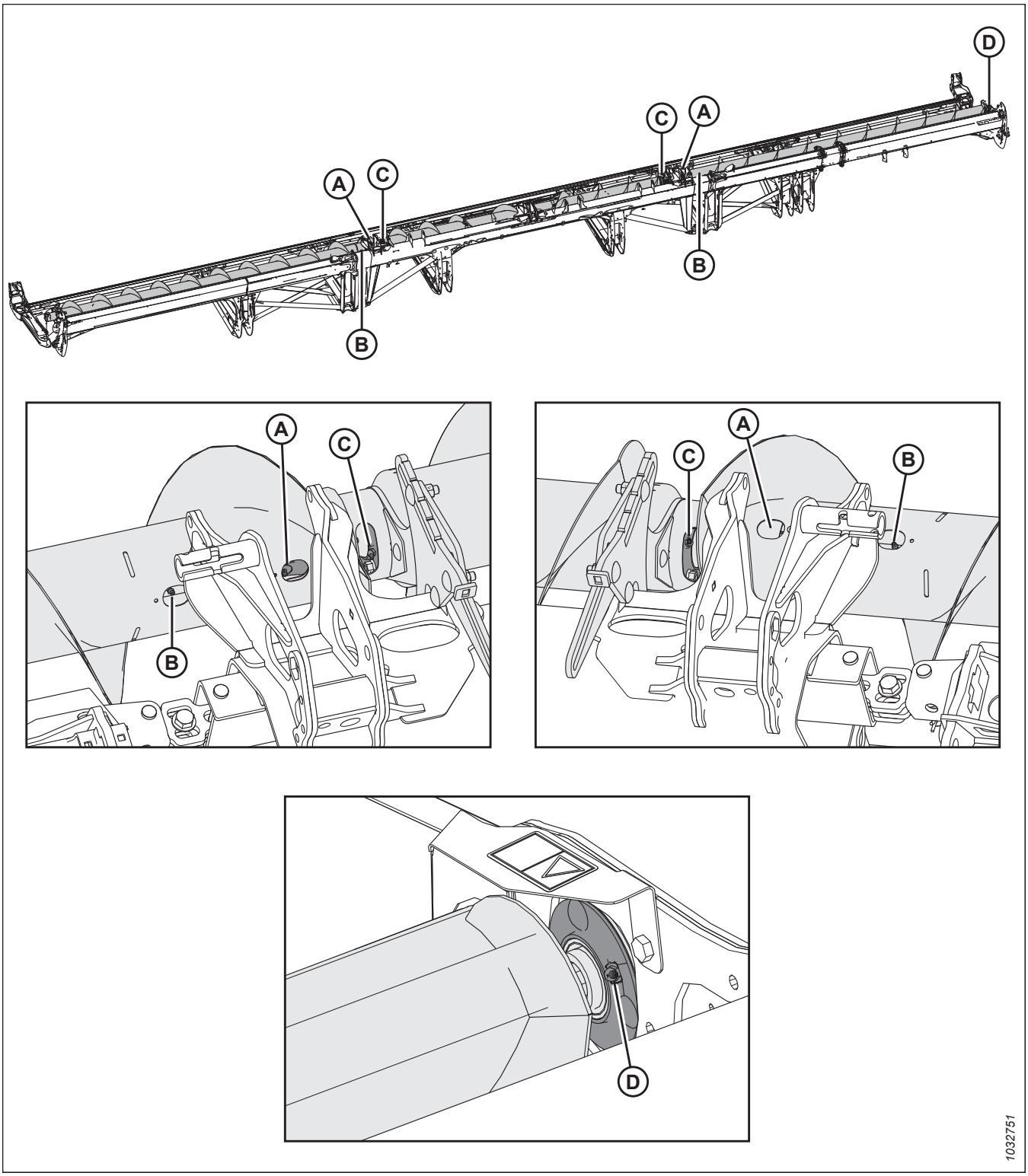


Figure 8.73: Three-Piece Upper Cross Auger

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

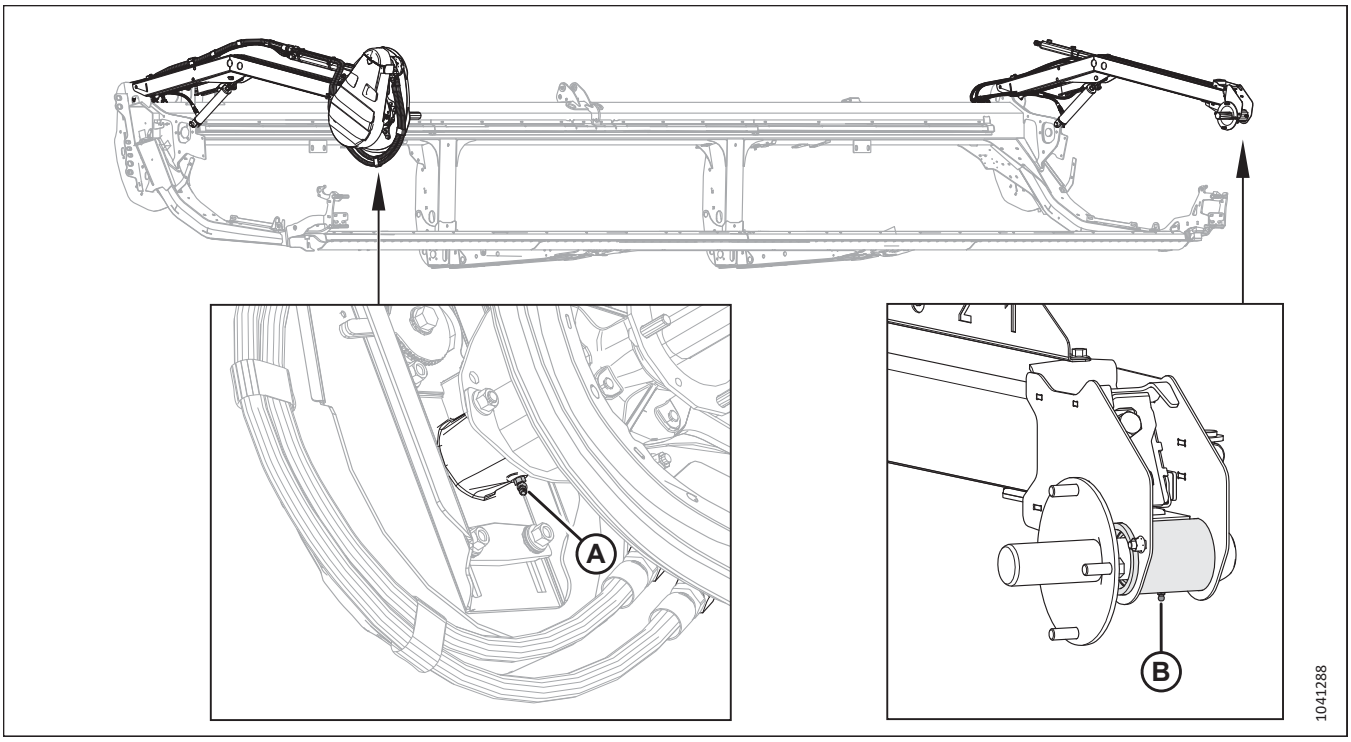


Figure 8.74: Single Reel

A - Reel Right Bearing (One Place)

B - Reel Left Bearing (One Place)

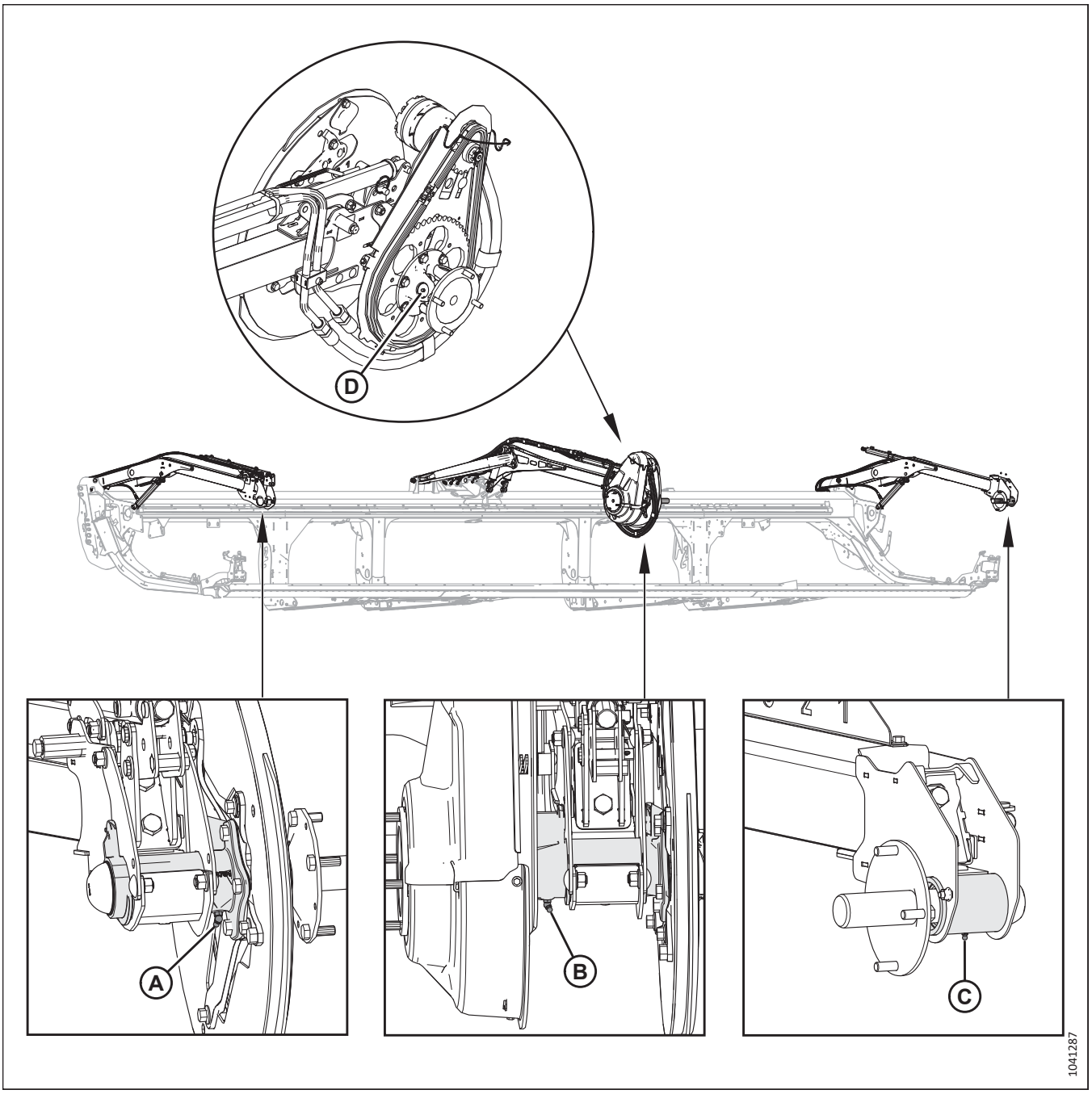


Figure 8.75: Double Reel

A - Reel Right Bearing (One Place) **B - Reel Center Bearing (One Place)** **C - Reel Left Bearing (One Place)**
D - Reel U-joint (One Place)[10]

10. 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.

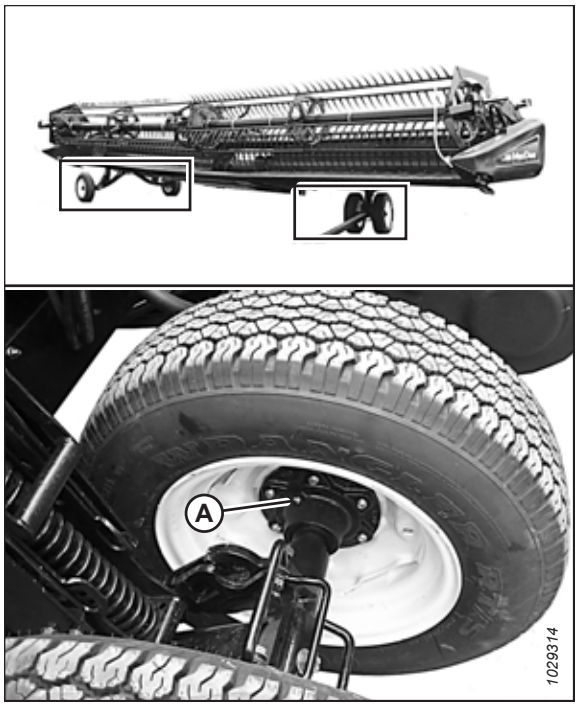


Figure 8.76: Transport Wheel Bearings

A - Wheel Bearings (Four Places)

8.16 Checking and Adjusting Header Endshields

Header endshields are subject to expansion or contraction caused by large temperature variations. The position of the header endshield can be adjusted to compensate for dimensional changes.

IMPORTANT:

The aluminum endsheet will be damaged if the weight of the polyethylene header endshield rests on it.

1. Measure clearance (A) between header endshield (B) and endsheet (C). The clearance should be 1–3 mm (0.04–0.12 in.).

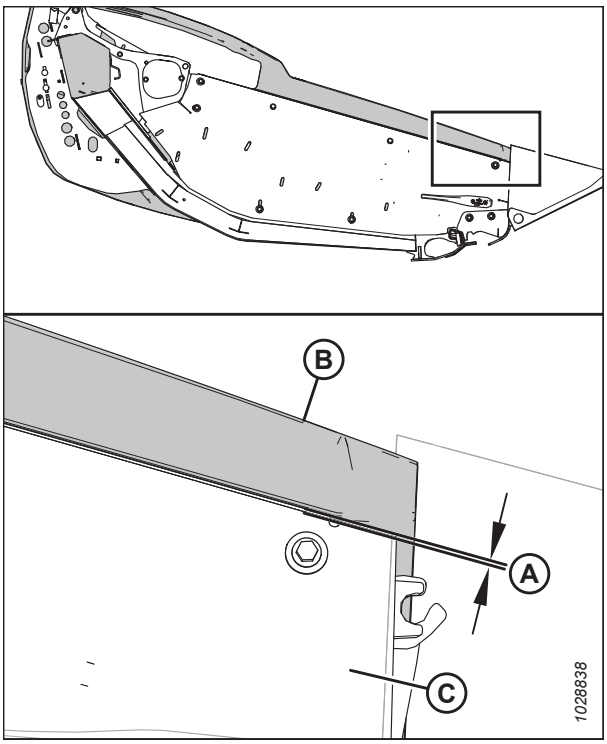


Figure 8.77: Clearance between Header Endshield and Endsheet

2. If the clearance between the header endshield and the endshield is insufficient, adjust support bracket (A) as follows:
   a. Loosen bolts (B).
   b. Move support bracket (A) up or down as needed.
   c. Retighten the hardware.

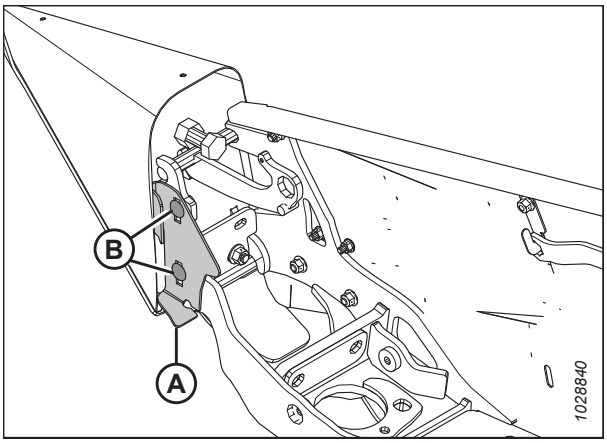


Figure 8.78: Header Endshield Support Bracket

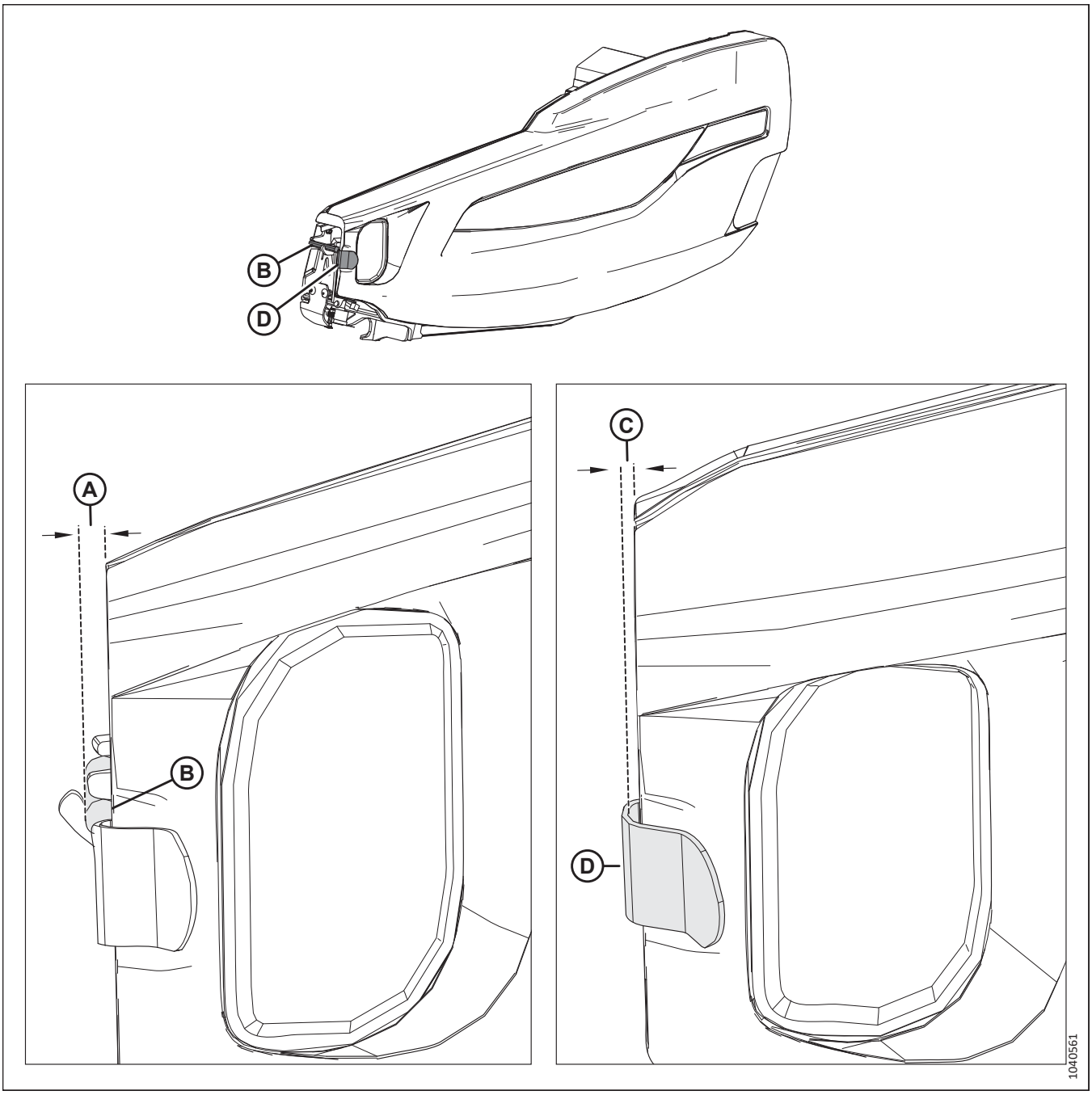


Figure 8.79: Clearance Specifications at the Front of the Endshield

3. Measure clearance (A) between the front of the header endshield and pin (B). The clearance should be 8–18 mm (0.3–0.7 in).

4. Measure clearance (C) between the front of the header endshield and support bracket (D). The clearance should be 6–10 mm (0.24–0.39 in).

5. If the clearances at the front of the endshield are insufficient, adjust the position of hinge arm (A) as follows:
   a. Loosen four nuts (B).
   b. Slide brackets (C) and hinge arm (A) fore or aft as required to achieve the correct clearance.
   c. Retighten the hardware.

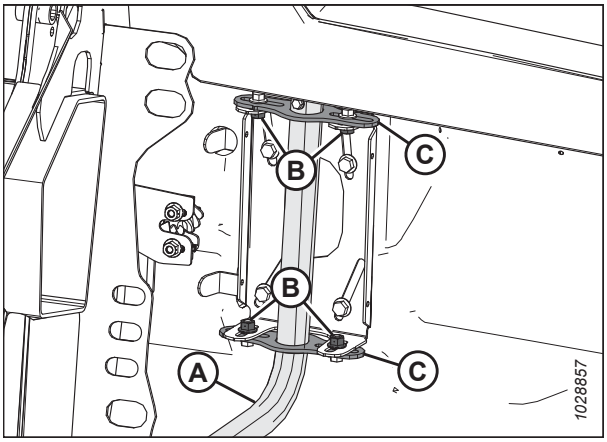


Figure 8.80: Left Header Endshield

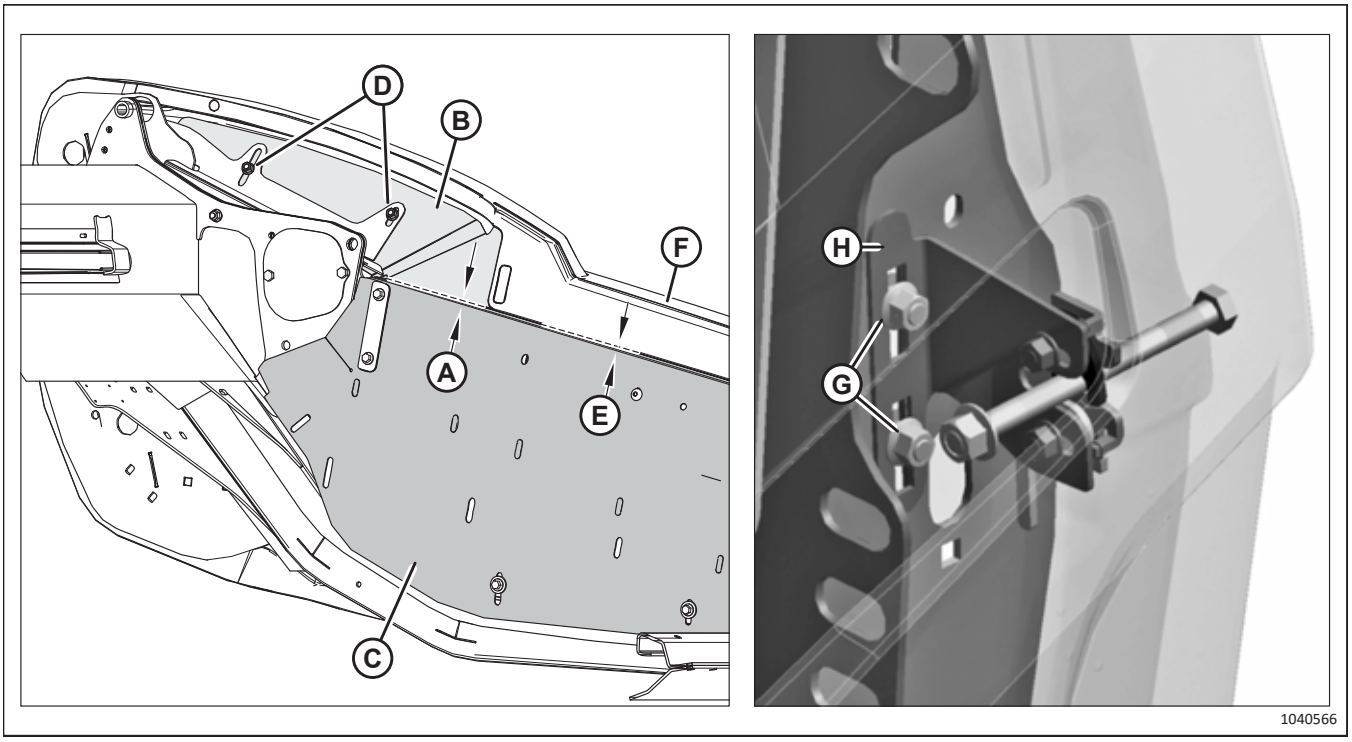


Figure 8.81: Clearance Specification between Neck Shield and Panel

6. Measure clearance (A) between neck shield (B) and panel (C). The clearance must be at least 3 mm (0.12 in.). To adjust the clearance, loosen two nuts (D), move neck panel (B), and tighten nuts (D).

7. Measure clearance (E) between panel (C) and endshield (F). The clearance must be 1–3 mm (0.04–0.12 in.). To adjust the clearance, loosen two nuts (G), slide bracket (H) up or down, and re-tighten the nuts. Make sure the endshield does **NOT** rest on neck panel (B).

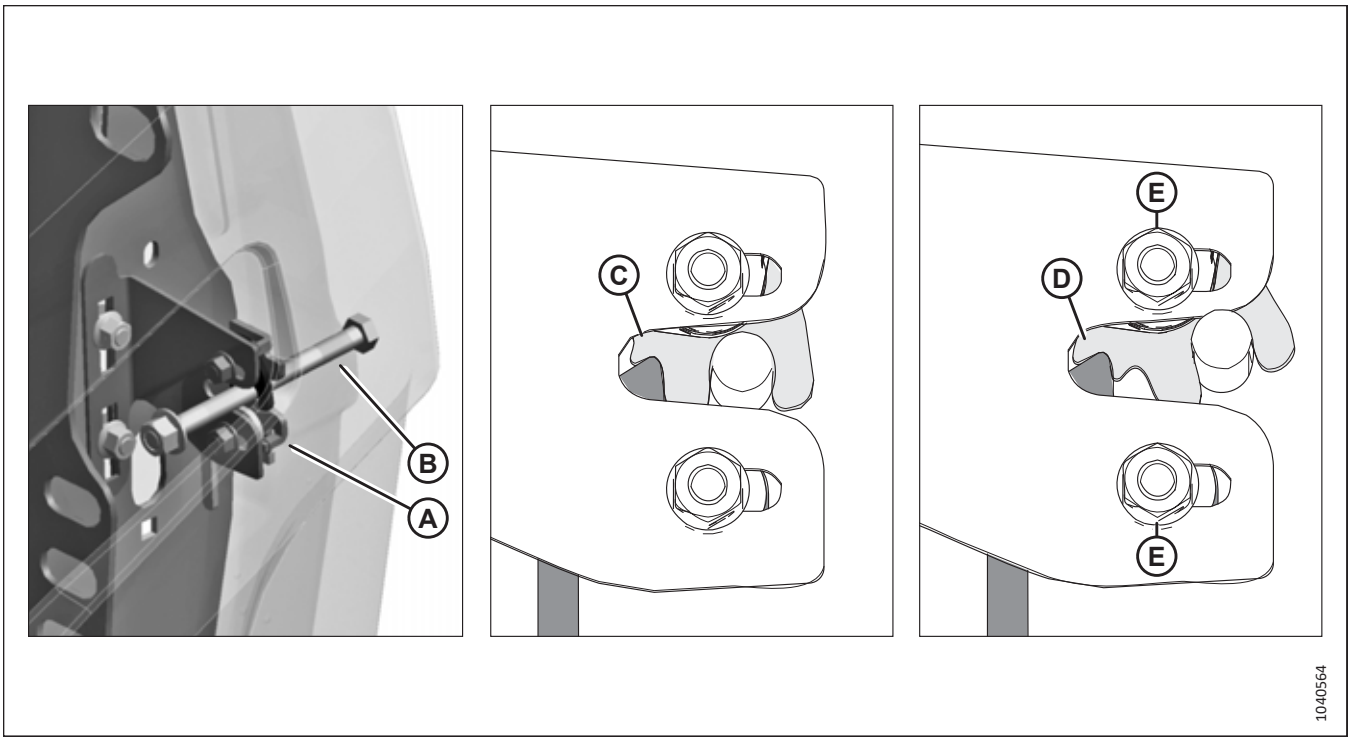


Figure 8.82: Two-Stage Latch

8. When the endshield is closed, two-stage latch (A) must engage first catch (C). This will allow second catch (D) to prevent the endshield from opening completely in case the endshield unlatches by accident. Confirm the endshield latches properly by following Step *9, page 258* to Step *11, page 258*.

9. Close the endshield. Confirm bolt (B) engages latch (A).

10. Release the latch.

11. Try to open the endshield.

    - If you can open the endshield partially, but **NOT** completely, then the latch is positioned properly. No further adjustment is necessary.
    - If you can open the endshield completely, then loosen two nuts (E), move the latch along the slotted holes, and then re-tighten the nuts. Repeat Step *9, page 258* to Step *11, page 258*.

8.17 Checking Manuals

Check the manual case contents. On D225 Draper Headers, the manual storage case is located at the rear of the header, inboard of the left endsheet. On the larger draper headers, the manual storage case is located at the rear of the header, outboard of the right outer leg.

1. Remove the cable tie on manual case (A).
2. Confirm that the case contains the following manuals:
   - D2 Series Draper Header for Combine Operator's Manual
   - D2 Series Draper Header for Combine Quick Card
   - D2 Series Draper Header for Combine Parts Catalog
3. Close the manual storage case.

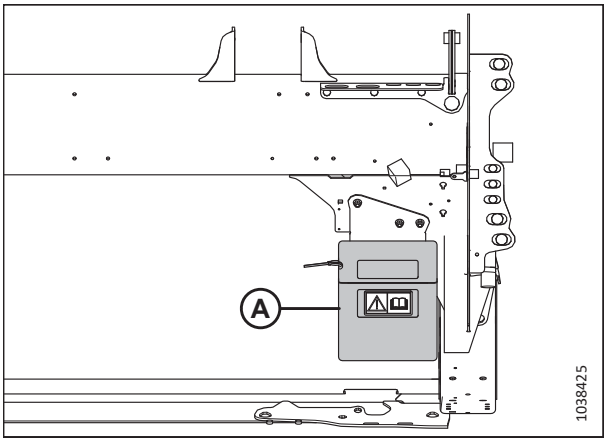


Figure 8.83: Manual Case – D225

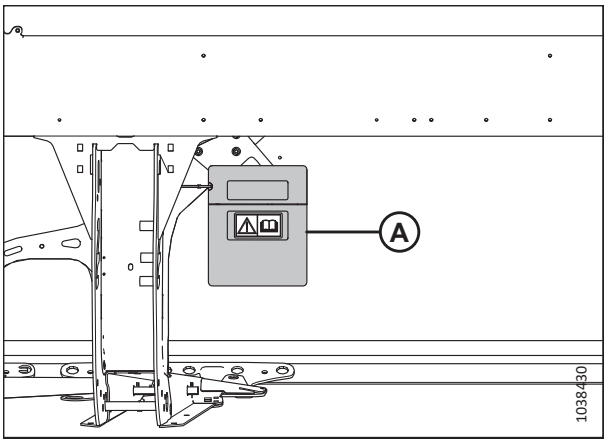


Figure 8.84: Manual Case – D230, D235, D241 , and D245

Chapter 9: Auto Header Height Control System

MacDon's 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.

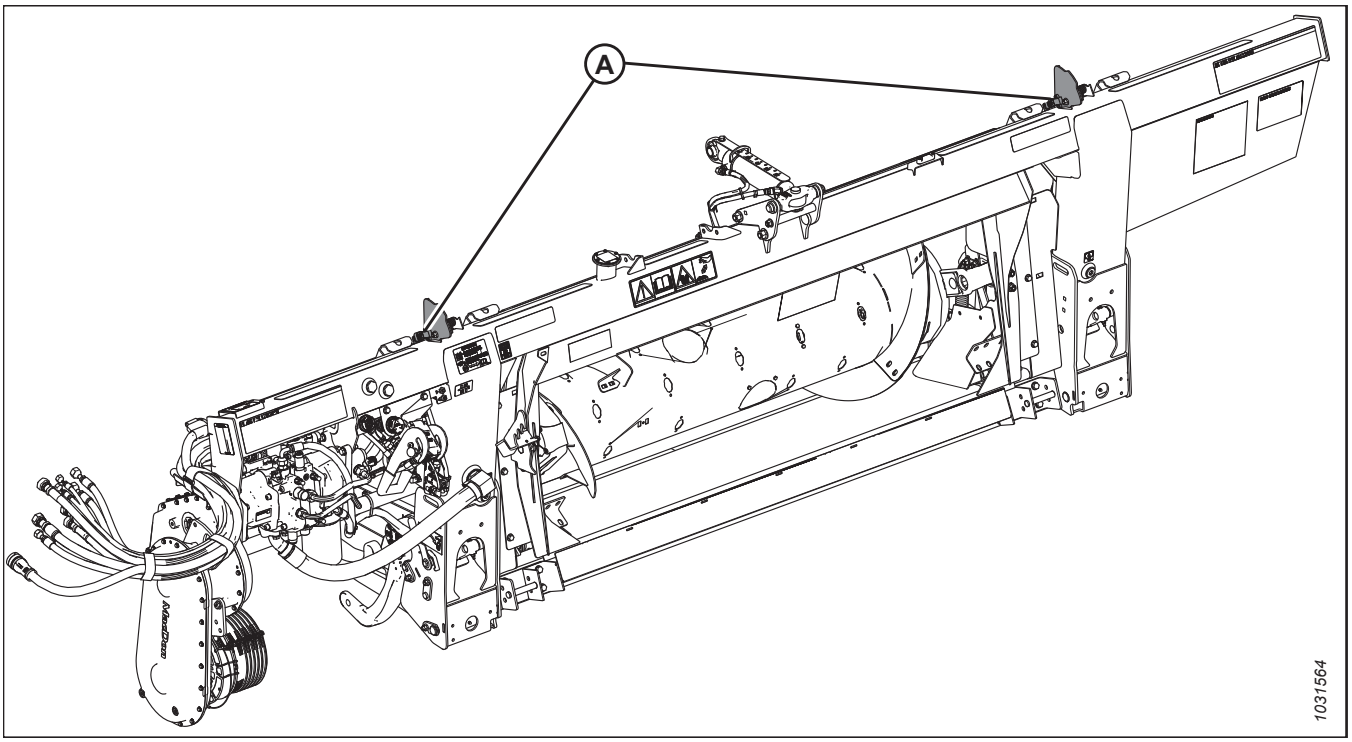


Figure 9.1: FM200 Float Module

The following tasks will need to be completed before the AHHC system can be used:

1. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the instructions for your combine).
2. Calibrate the sensors used by the AHHC system so that the combine can correctly interpret data from the Hall effect sensors on the float module. For more information, refer to the combine operator's manual.

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

- *9.6 Case IH 130 and 140 Series Mid-Range Combines, page 273*
- *9.7 Case IH 120, 230, 240, and 250 Series Combines, page 282*
- *9.8 Challenger® and Massey Ferguson® 6 and 7 Series Combines, page 296*
- *9.9 CLAAS 500 Series Combines, page 304*
- *9.10 CLAAS 600 and 700 Series Combines, page 315*
- *9.11 CLAAS 5000, 6000, 7000, and 8000 Series Combines, page 326*
- *9.12 Gleaner® R65, R66, R75, R76, and S Series Combines, page 338*
- *9.13 Gleaner® S9 Series Combines, page 349*
- *9.14 IDEAL™ Series Combines, page 366*

9.1 Auto Header Height Control Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system communicate data about the header's height to the combine's computer.

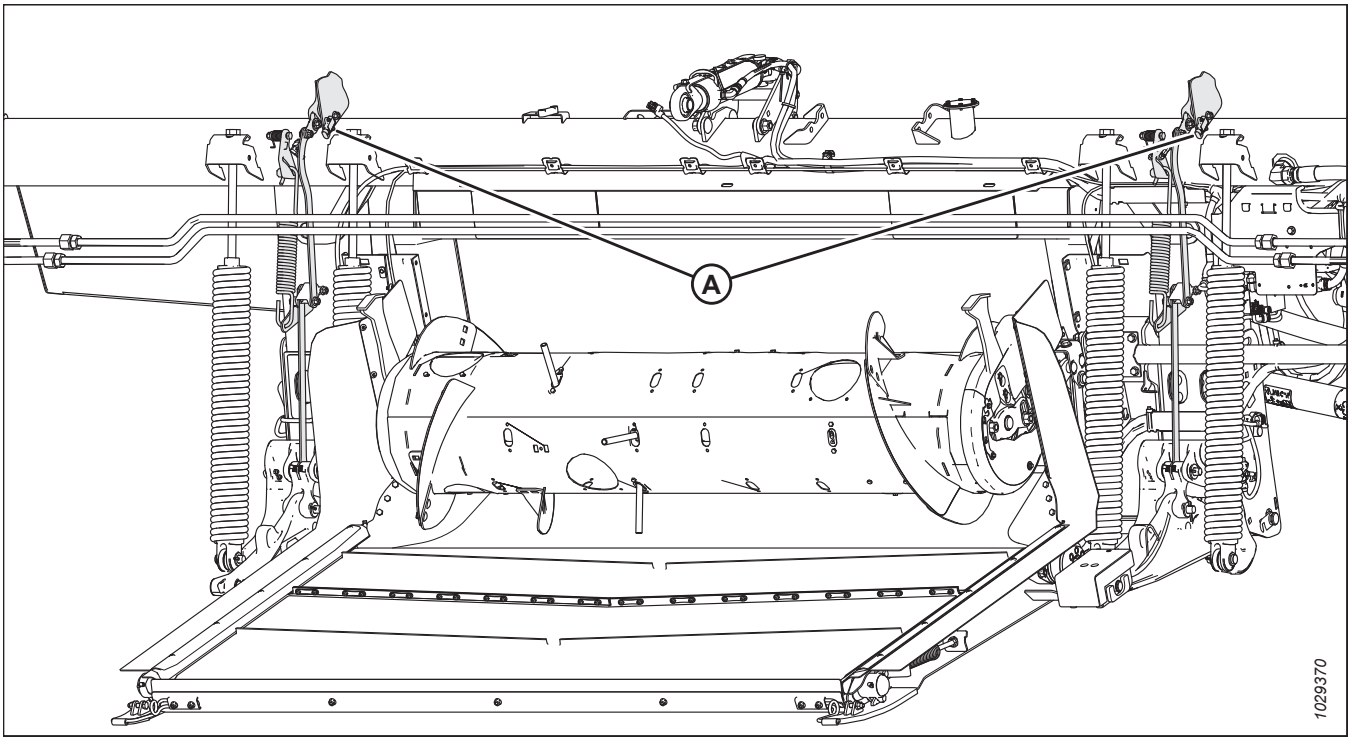


Figure 9.2: Height Control Sensor Locations on Float Module

Auto header height control sensor overview

Two Hall effect sensors are installed on float indicator needles (A). As the header rises and falls, the sensors communicate the header's height to the combine's computer. The combine's computer will, in response, raise or lower the feeder house so that the header can maintain a consistent cutting height.

The normal operating signal voltages for the sensors fall between 0.7 VDC and 4.3 VDC. An increase in sensor voltage correlates to an increase in header height, while a decrease in sensor voltage correlates to a decrease in header height. Any sensor error results in a 0 V signal, which indicates either a faulty sensor or insufficient voltage supply.

Auto header height control sensor voltage ranges

The voltage reported by the sensors occurs in a range of at least 2.5 V (Range [A]) and at most 4.0 V (Range [C]). The ideal voltage range for the sensors is 0.7–4.3 V (Range C), a total range of 3.6 V. If the voltage is too close to low end (D) of the voltage range, calibrating the AHHC system will be difficult. A properly set sensor will have sufficient clearance on both ends of the voltage range.

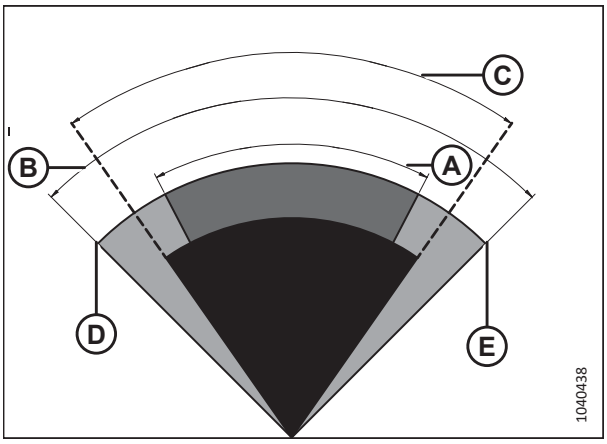


Figure 9.3: Optimal Sensor Voltage Range

A - Minimum Voltage Range – 2.5 V
B - Maximum Voltage Range – 4.0 V
C - Ideal Voltage Range – 3.3 V, between 0.7 and 4.3 V
D Minimum Voltage – 0.5 V
E Maximum Voltage – 4.5 V

A sensor that is configured so that the voltage range (for example, voltage range [C]) is too close to the sensor's low voltage limit (D) or high voltage limit (E) will have difficulty staying within the sensor's operating range of ideal operating range (A) of 0.7-4.3 V. If the sensor reports values that are above maximum voltage (E) or minimum voltage (D), the AHHC system will stop functioning correctly.

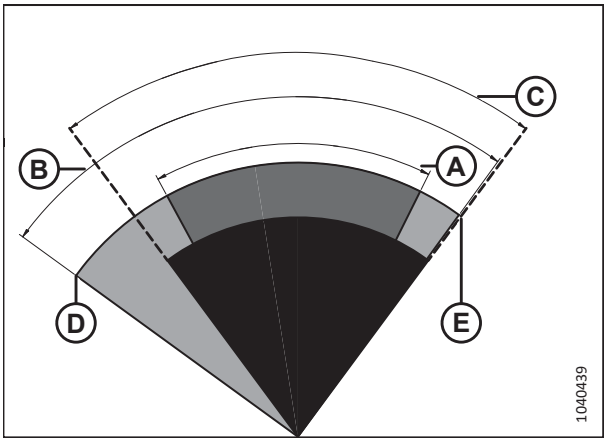


Figure 9.4: Sensor Range Set too Close to Voltage Limit

A - Minimum Voltage Range – 2.5 V
B - Maximum Voltage Range – 4.0 V
C - Configured Voltage Range
D Minimum Voltage – 0.5 V
E Maximum Voltage – 4.5 V

A sensor configured to have a voltage range that is less than 2.5 V (for example, range [C]) will have difficulty staying within the ideal range of 3.6 V. The combine will seek to keep the sensor within the narrow set range, resulting in the combine continually raising and lowering the header to search for the appropriate header height.

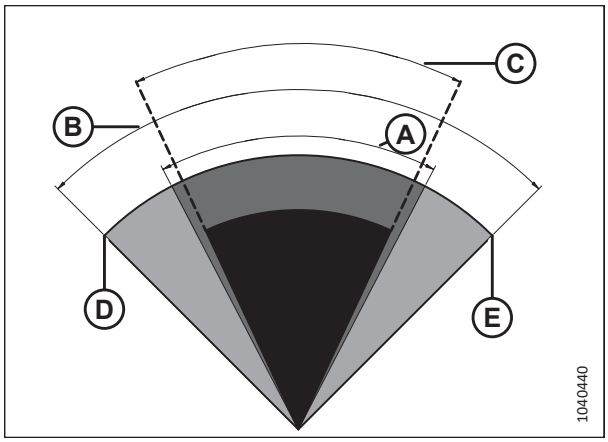


Figure 9.5: Sensor Range too Narrow

A - Minimum Voltage Range – 2.5 V
B - Maximum Voltage Range – 4.0 V
C - Configured Voltage Range
D Minimum Voltage – 0.5 V
E Maximum Voltage – 4.5 V

9.2 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 best AHHC operation are provided.

Table 9.1 Combine Voltage Limits

Combine	Lower Voltage Limit (V)	Upper Voltage Limit (V)	Minimum Range (V)
Case IH 5088/6088/7088, 5130/6130/7130, 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240	0.7	4.3	2.5
Challenger® B and C Series	0.7	4.3	2.5
CLAAS 500/600/700 Series, 5000/6000/7000/8000 Series, and Tucano Series	0.7	4.3	2.5
IDEAL™ Series	0.7	4.3	2.5
Gleaner® R, and S Series	0.7	4.3	2.5
John Deere 70, S, and T Series	0.7	4.3	2.5
Massey Ferguson® 9005 and 9500	0.7	4.3	2.5
New Holland CR/CX - 5 V system	0.7	4.3	2.5
New Holland CR/CX - 10 V system	2.8	7.2	4.1–4.4

9.3 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:

On some combine models, the voltage can be seen in the combine cab.

NOTE:

If the standard plug is installed in connector P600, the plug sends the average of both sensors to the combine. If the optional lateral tilt plug is installed in connector P600, the plug sends separate voltage signals from both sensors to the 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.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Park the combine on a level surface.
3. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

Checking sensor upper voltage limit

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

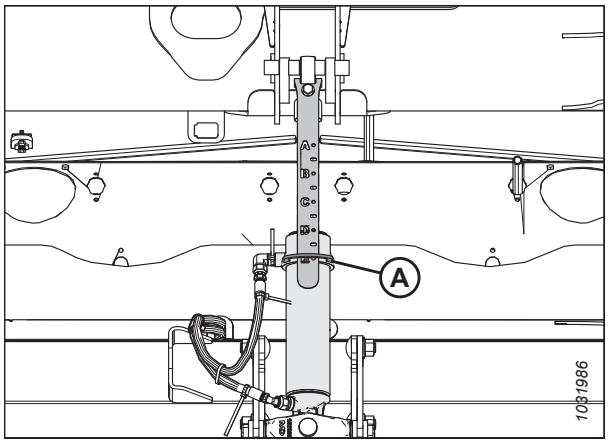


Figure 9.6: Center-Link

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

   NOTE:

   If the header is **NOT** on its down stops, the voltage may go out of range during operation causing a malfunction of the AHHC system.

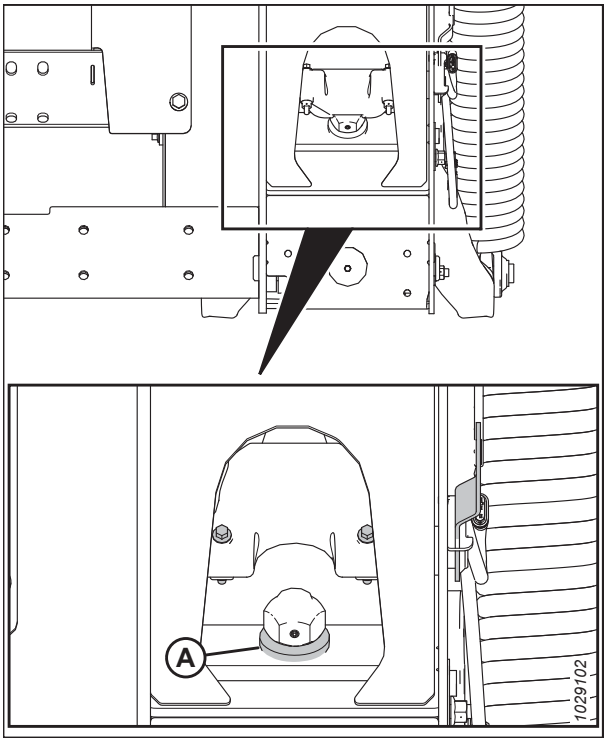


Figure 9.7: Down Stop Washer

7. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

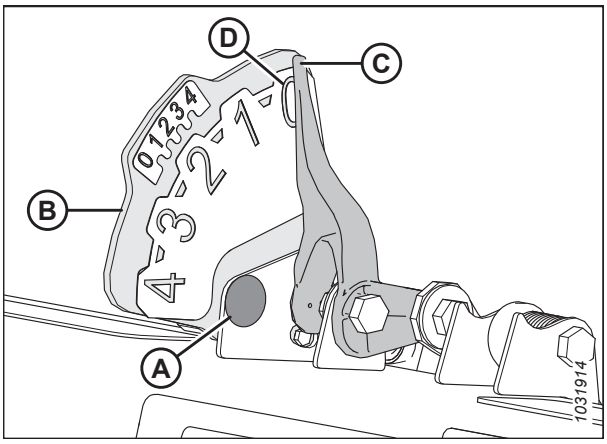


Figure 9.8: Float Indicator

8. Locate connector P600 (A) at the left of the float module.
9. Remove plug cap (B).
10. Insert the key and turn it to the RUN position.
11. Using a digital multimeter, check connector P600 for power from the combine. The multimeter should read 5V at pin 7.
    - Pin 7 - FM2215E – power
    - Pin 8 - FM2515E – ground
12. 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 *9.2 Recommended Sensor Output Voltages for Combines, page 265*.
    - 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 the same on both (left and right) sensors.
13. If you need to adjust the voltage, then loosen both nuts (A), reposition sensor (B) in the indicator plate, and then tighten nuts () to 3 Nm (22 lbf·in.). While tightening the nuts, make sure that sensor (B) does **NOT** move in the indicator plate.
14. Turn the key to the OFF position, and remove the key from the ignition.

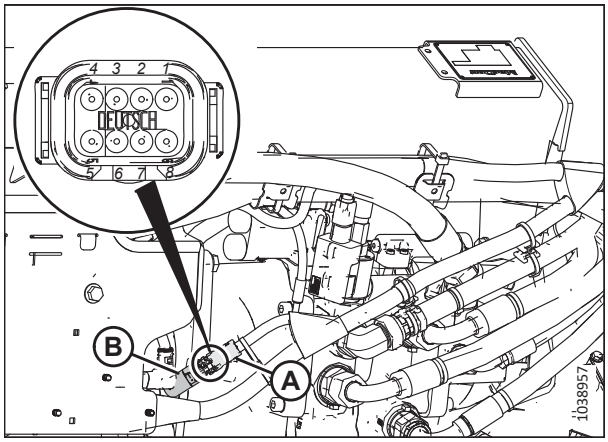


Figure 9.9: Connector P600 – View from Rear

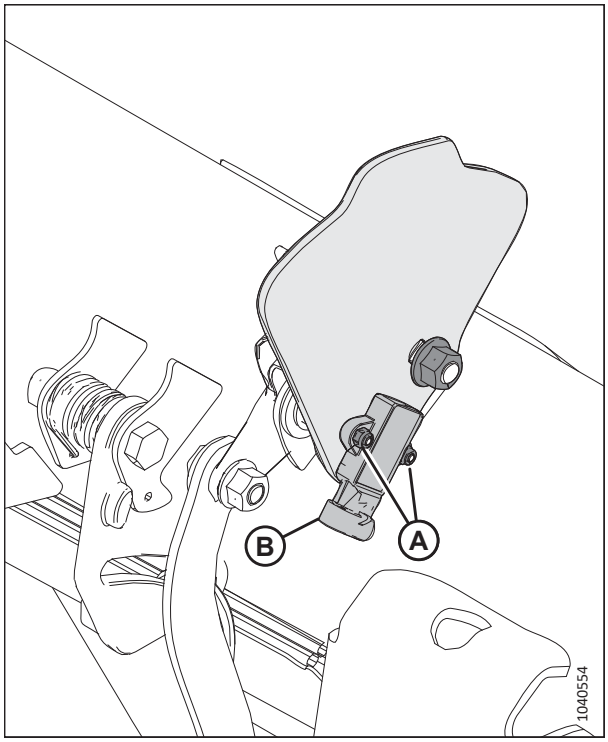


Figure 9.10: Left Float Indicator Plate

Checking sensor lower voltage limit

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

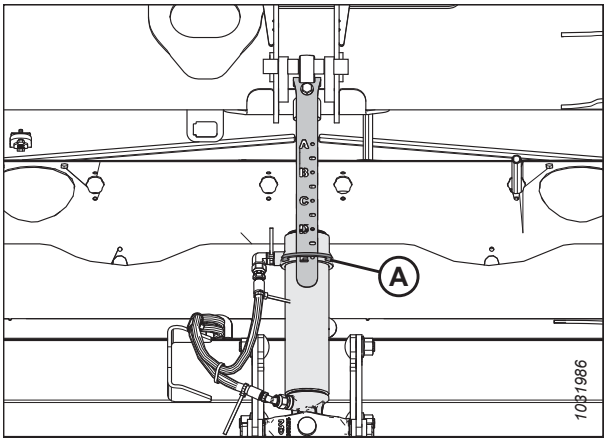


Figure 9.11: Center-Link

18. Float indicator pointer (A) should be at 4 (B).
19. Insert the key and turn it to the RUN position.
20. 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 *9.2 Recommended Sensor Output Voltages for Combines, page 265*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground
21. If you need to adjust the voltage, refer to Step *13, page 268* for instructions.

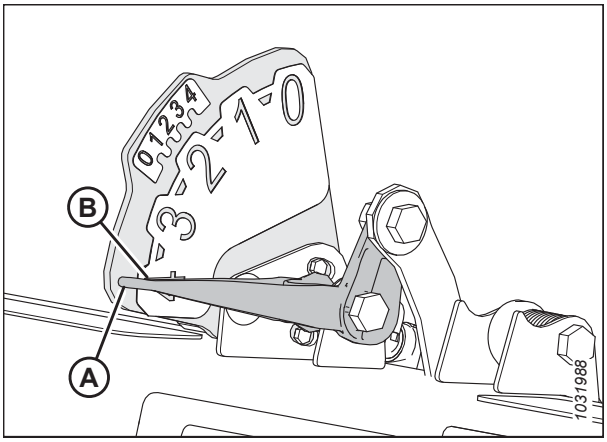


Figure 9.12: Left Float Indicator – View from Rear

9.4 Replacing Float Height Sensor

If a float height sensor is not reporting the correct voltage to the combine, it will need to be replaced. This procedure applies to both the left and right float height sensors.

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. Lower the header fully.
3. Lower the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Disconnect harness plug P537 (C) from the sensor on the left side of the float module.

   NOTE:

   If the float height indicator sensor on the right side of the float module needs to be replaced, disconnect plug P539 also.
6. Remove and retain bolt (A).
7. Remove and retain indicator plate (B). The sensor should be attached to the plate.

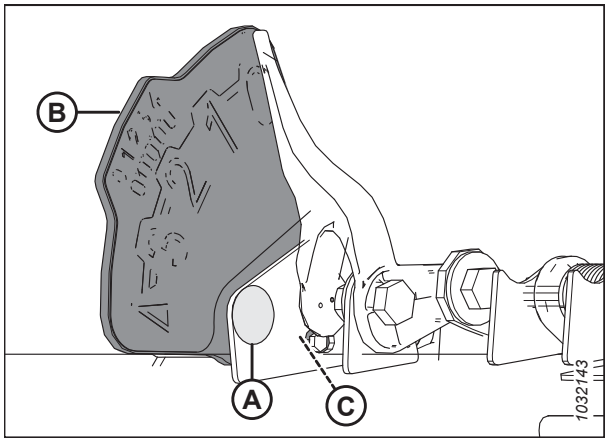


Figure 9.13: Float Setting Indicator – Left

8. Remove and retain two bolts and nuts (A).
9. Remove and discard old sensor (B).
10. Install new sensor (B) so that the plug faces down.
11. Install two bolts and nuts (A) so that the bolt heads are on the same side as the decal.

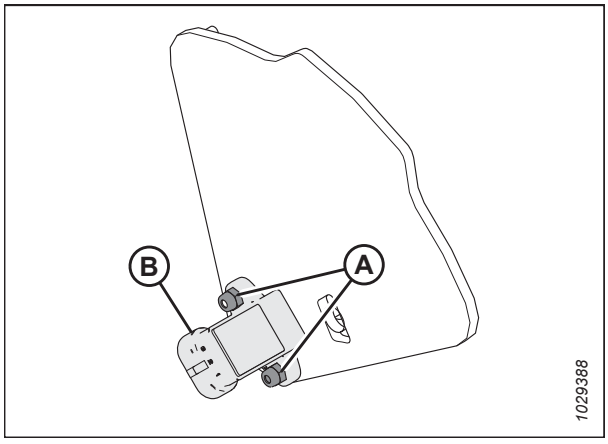


Figure 9.14: Float Height Sensor

12. Reinstall indicator plate (B). The sensor should be attached to the plate.
13. Reinstall bolt (A).
14. Connect harness plug (C).
15. Check the voltage range using the combine's instrumentation. If the combine does not have instruments for checking the voltage, it will need to be checked manually. For instructions, refer to *9.3 Manually Checking Voltage Limits, page 266*.

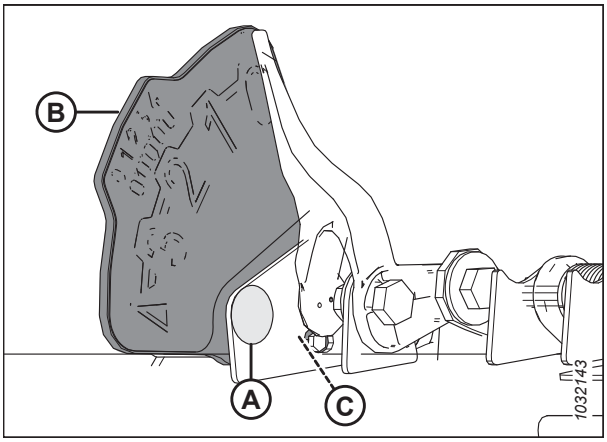


Figure 9.15: Float Setting Indicator – Left

9.5 10 Volt Adapter – New Holland Combines Only

New Holland combines equipped with a 10 V system require a 10 V adapter in order for the auto header height control (AHHC) system to be calibrated.

If a 10 V New Holland combine does not have adapter (A) installed, the AHHC output will always read 0 V, regardless of the sensor's position.

For instructions on checking the sensor voltages, refer to *9.19.1 Checking Voltage Range from Combine Cab – New Holland CR and CX Series, page 436* or *9.3 Manually Checking Voltage Limits, page 266*.

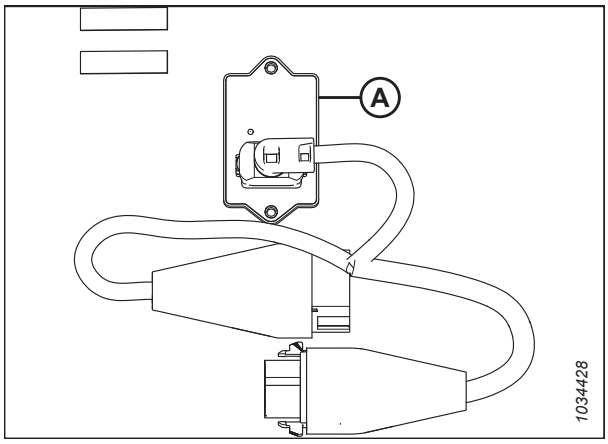


Figure 9.16: 10 V Adapter (B7241)

9.6 Case IH 130 and 140 Series Mid-Range Combines

To make your header's auto header height control (AHHC) system compatible with Case IH 130 and 140 Series mid-range combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.6.1 Checking Voltage Range from Combine Cab – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

The auto header height control sensor needs to operate within a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the header float. For instructions refer to the header operator's manual.
3. Shut down the engine, and remove the key from the ignition.
4. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the auto header height control (AHHC) system.

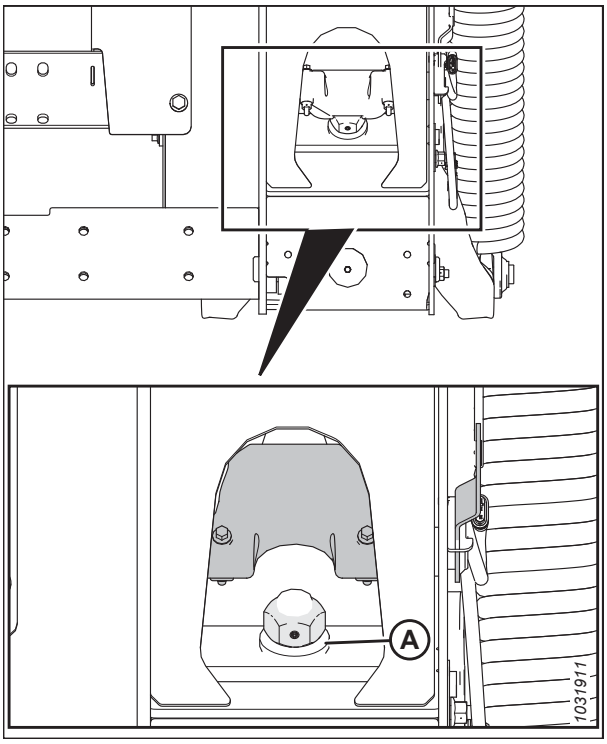


Figure 9.17: Float Lock

5. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

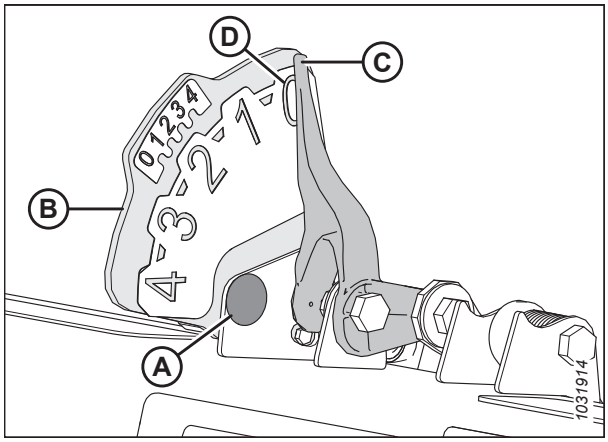


Figure 9.18: Float Indicator

6. Ensure that the header float is unlocked.

7. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

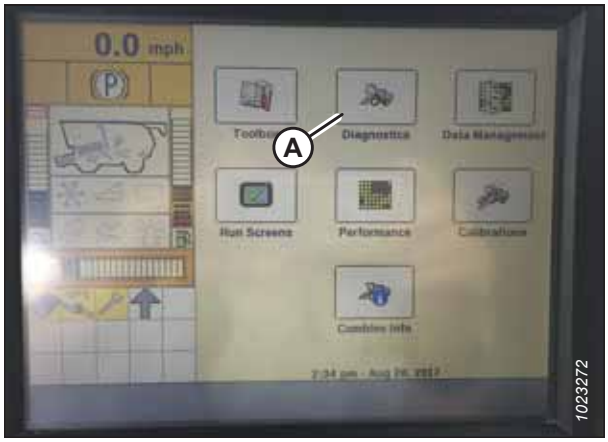


Figure 9.19: Case IH Combine Display

8. Select SETTINGS (A). The SETTINGS page appears.

9. From the GROUP menu, select HEADER (B).

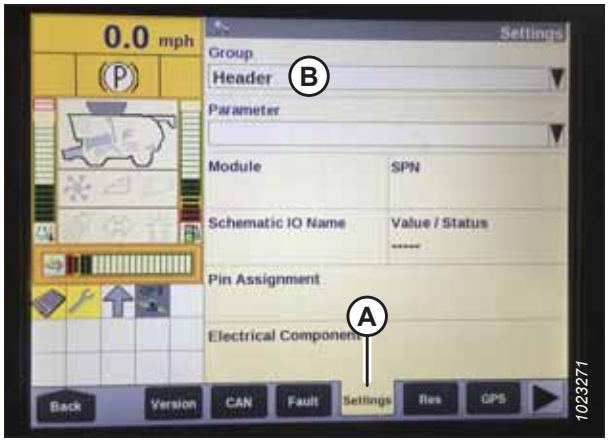


Figure 9.20: Case IH Combine Display

10. From the PARAMETER menu, select LEFT HEIGHT/TILT SENSOR (A).

Figure 9.21: Case IH Combine Display

11. The SETTINGS page updates to display the voltage in VALUE/STATUS field (A). Lower the feeder house fully, and then raise it 254–356 mm (10–14 in.) off the ground to view the full range of voltage readings.

Figure 9.22: Case IH Combine Display

9.6.2 Setting up Header on Combine Display – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

To set up the header to work with the combine, you will need to access the HEADER SETUP page on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. On the main page of the combine display, select TOOLBOX (A).

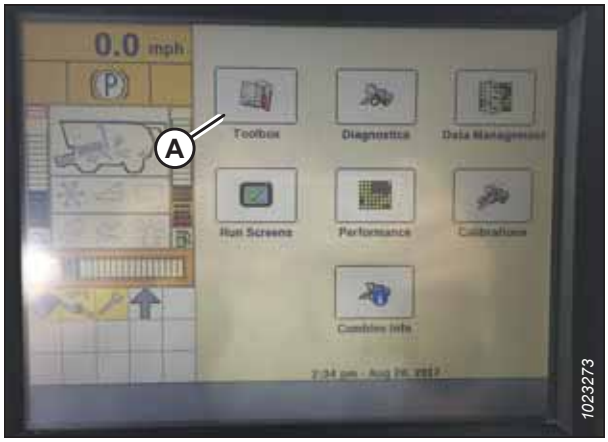


Figure 9.23: Case IH Combine Display

2. Select HEAD 1 tab (A). The HEADER SETUP page appears.

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (C).

3. From CUTTING TYPE menu (B), select PLATFORM.

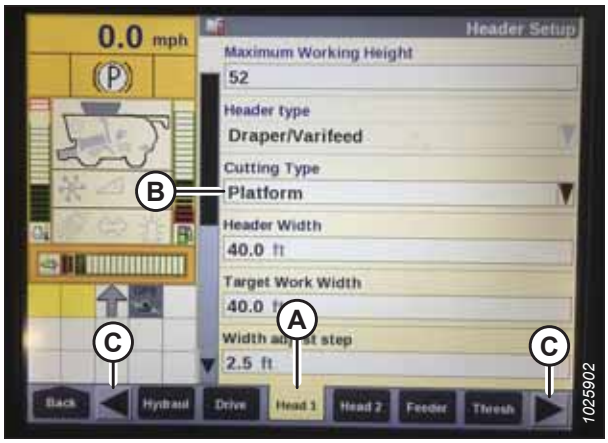


Figure 9.24: Case IH Combine Display

4. Select HEAD 2 tab (A). The HEADER SETUP 2 page appears.
5. From HEADER PRESSURE FLOAT menu (B), select NOT INSTALLED.
6. From DRAPER GRAIN HEADER STYLE menu (C), select RIGID 2000 SERIES.

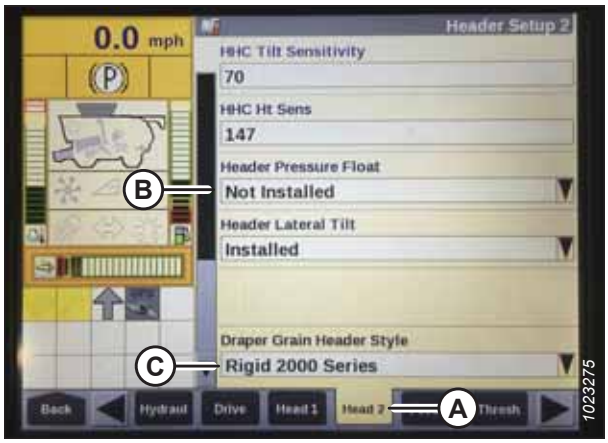


Figure 9.25: Case IH Combine Display

7. Locate HHC HEIGHT SENSITIVITY field (A). Enter the following settings:

   - **If using a two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.
   - **If using a single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.

   NOTE:

   If the combine continually raises and lowers the header during operation (a behavior termed “hunting”), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.

8. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease this value as desired.

9. From REEL DRIVE TYPE menu (A), select one of the following:

   - 4 if the combine is equipped with a standard 19-tooth drive sprocket.
   - 5 if the combine is equipped with an optional high-torque 14-tooth drive sprocket.
   - 6 if the combine is equipped with an optional high-torque 10-tooth drive sprocket.

10. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 9.26: Case IH Combine Display

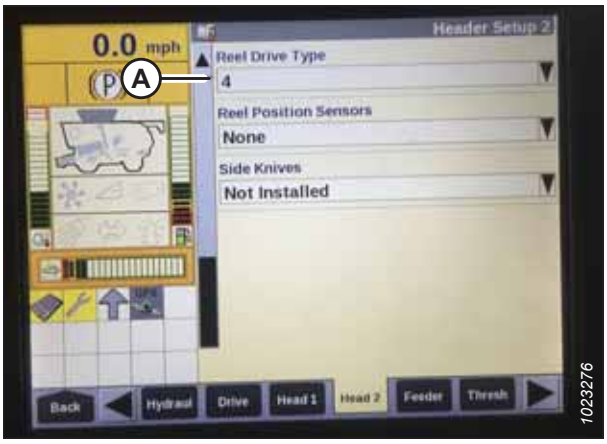


Figure 9.27: Case IH Combine Display

Figure 9.28: Case IH Combine Display

11. Locate AUTOTILT field (A).
    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

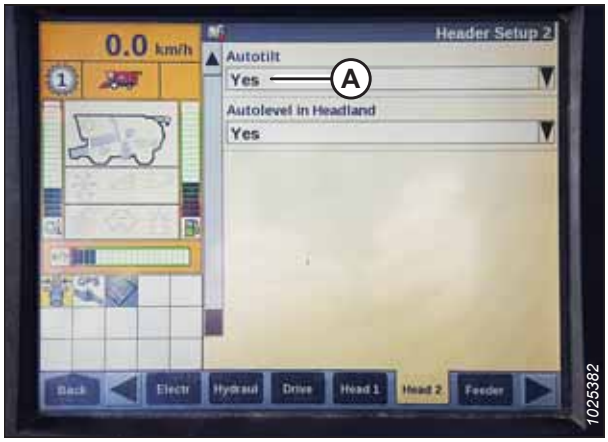


Figure 9.29: Case IH Combine Display

9.6.3 Calibrating Auto Header Height Control – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with a software version 28.00 or above, refer to *9.7.3 Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 288*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. In order to prevent the header from separating from the float module, it may be necessary to change the float to a heavier setting during the calibration procedure.

1. To view the software version, select the DIAGNOSTICS button from the Home Screen, then select VERSION tab (A).

Figure 9.30: Case IH Combine Display

2. Ensure that the center-link is set to **D**.

   NOTE:

   For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

3. Confirm that all electrical and hydraulic connections between the header and float module are functional.

4. Start the combine engine, but do **NOT** engage the separator or the feeder house.

5. Locate the HEADER CONTROL switch on the right console. Set the HEADER CONTROL to HT (AHHC mode).

6. Push and hold the DOWN button for 10 seconds until the combine feeder house has been lowered all the way down (the feeder house will stop moving).

7. Push and hold the RAISE button until the feeder house travels all the way up. It will stop 61 cm (2 ft.) above the ground for 5 seconds then will resume traveling upward. This is an indication that the calibration procedure was successful.

8. If the float was changed to a heavier setting to complete the AHHC calibration procedure, adjust it to the recommended operating float weight after the calibration is complete.

9.6.4 Setting Preset Cutting Height – Case 5130, 5140, 6130, 6140, 7130, and 7140

The header's cutting and raised positions can be configured as presets on the combine's control console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Indicator (A) should be at position **0** (B) when the header is 254–356 mm (10–14 in.) above the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal float setting is as light as possible without the header bouncing or missing crop. Operating with a heavy float setting prematurely wears the cutterbar wearplates.

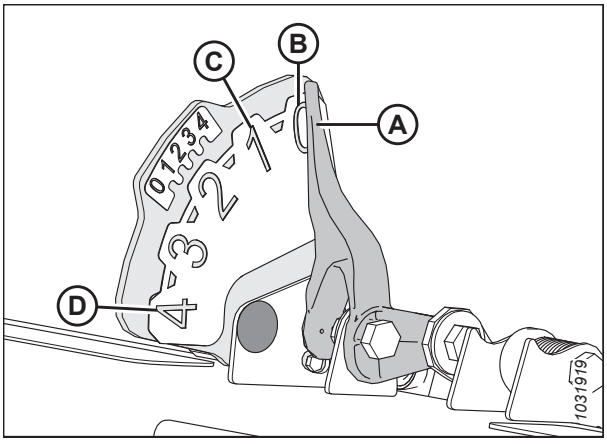


Figure 9.31: Float Indicator

1. Engage the separator and header.
2. Raise or lower the header to the desired cutting height.
3. Press 1 on button (A). A yellow light next to the button will light up.

   NOTE:

   Always set the header position before setting the reel position. If the header and the reel are set at the same time, the reel setting will not be saved.
4. Raise or lower the reel to the desired working position.
5. Press 1 on button (A). A yellow indicator next to the button will light up.

Figure 9.32: Case Combine Console

6. Raise or lower the header to a second desired cutting height.
7. Press 2 on button (A). A yellow indicator next to the button will light up.
8. Raise or lower the reel to the desired working position.
9. Press 2 on button (A). A yellow indicator next to the button will light up.

Figure 9.33: Case Combine Console

The up and down arrows should now appear in MANUAL HEIGHT box (A) on the RUN 1 page on the combine display. This indicates that the auto header height control (AHHC) is functioning.

Figure 9.34: Case Combine Display – Run 1 Page

10. To enable the presets, activate AHHC button (A) to place the header on the ground. To enable the first preset, tap the button once. To enable the second preset, tap the button twice.

    To lift the header to its maximum working height, hold the SHIFT button on the back of the control handle while tapping AHHC button (A).

Figure 9.35: Case Combine Control Handle

11. The maximum working height can be adjusted on the HEADER SETUP page on the combine display. Enter the desired height in MAXIMUM WORKING HEIGHT field (A).

Figure 9.36: Case Combine Display – Header Setup Page

12. If necessary, adjust the position of one of the presets using button (A) on the combine console.

Figure 9.37: Case Combine Console

9.7 Case IH 120, 230, 240, and 250 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.7.1 Checking Voltage Range from Combine Cab – Case IH, 120, 230, 240, and 250 Series Combines

In order for the auto header height control (AHHC) system to work correctly, the header height sensors must detect the correct voltage readings. The sensor outputs can be viewed using the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground, and unlock the float.
2. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the auto header height control (AHHC) system.

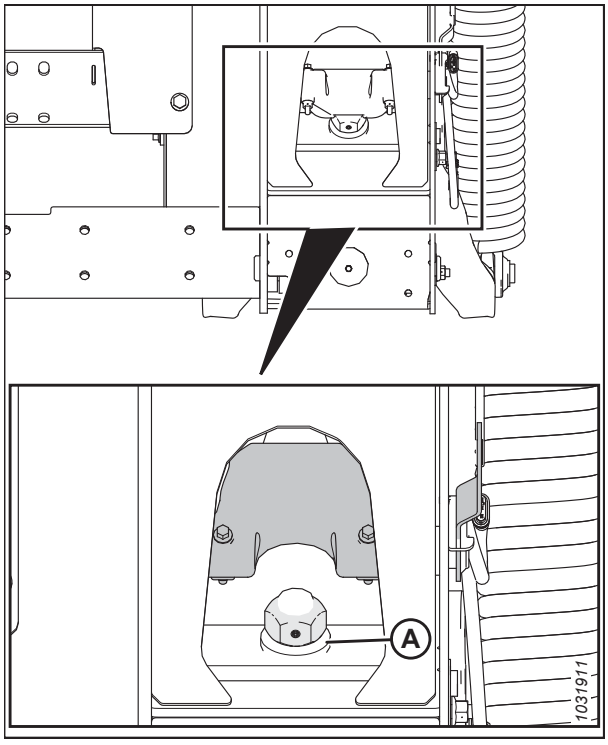


Figure 9.38: Float Lock

3. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

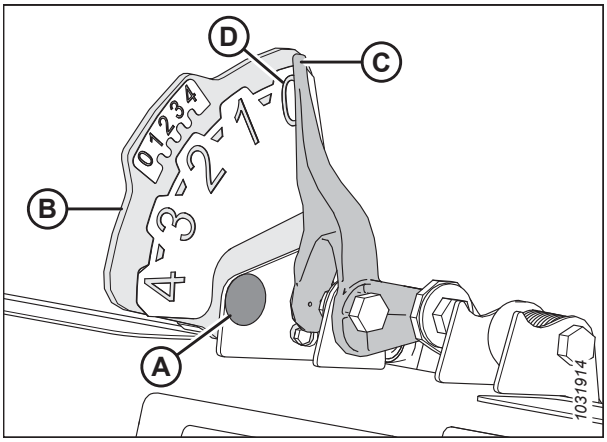


Figure 9.39: Float Indicator

4. Ensure the header float is unlocked.
5. Select DIAGNOSTICS (A) on the MAIN page. The DIAGNOSTICS page opens.
6. Select SETTINGS. The SETTINGS page opens.

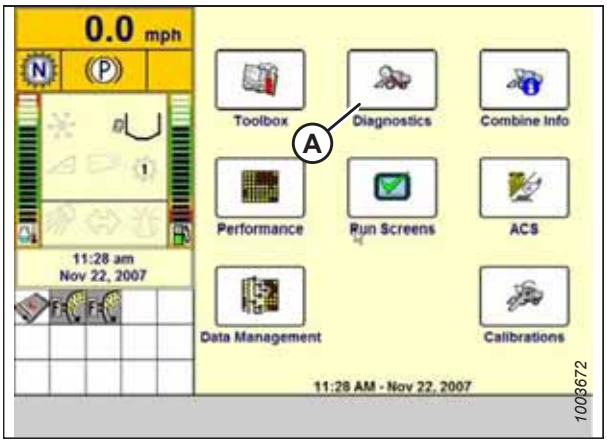


Figure 9.40: Case IH Combine Display

7. Select GROUP drop-down menu (A). The GROUP dialog box opens.

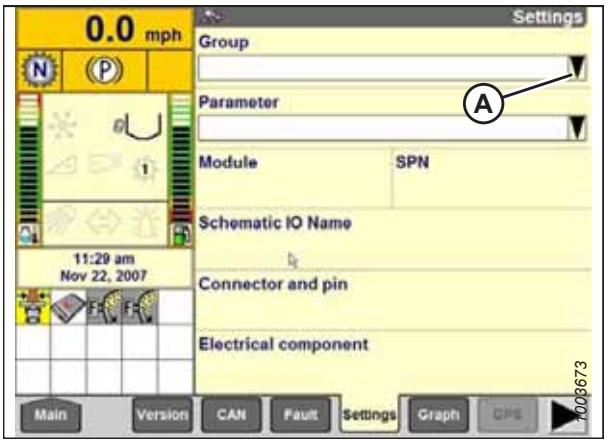


Figure 9.41: Case IH Combine Display

8. Select HEADER HEIGHT/TILT (A). The PARAMETER page opens.

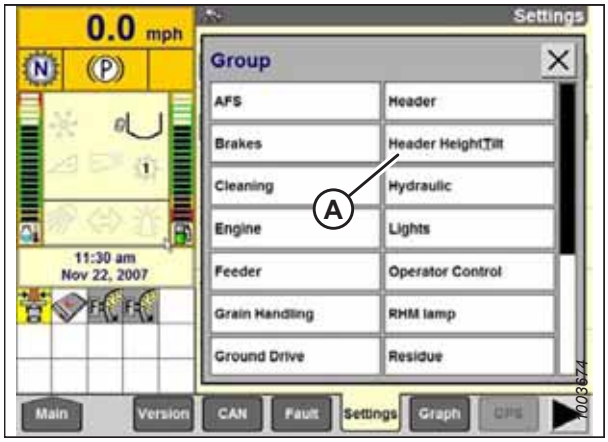


Figure 9.42: Case IH Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of page. Raise and lower the header to see the full range of voltage readings.

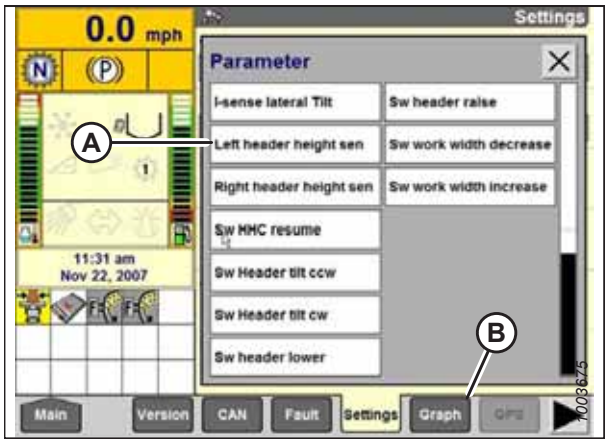


Figure 9.43: Case IH Combine Display

9.7.2 Calibrating Auto Header Height Control – Case IH 120, 230, 240, and 250 Series Combines

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to *9.7.3 Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 288*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the auto header height control (AHHC), perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to the header operator's manual.

1. Ensure that the center-link is set to **D**.
2. Confirm that all electrical and hydraulic connections between the header and float module are functional.
3. Select TOOLBOX (A) on the MAIN page.

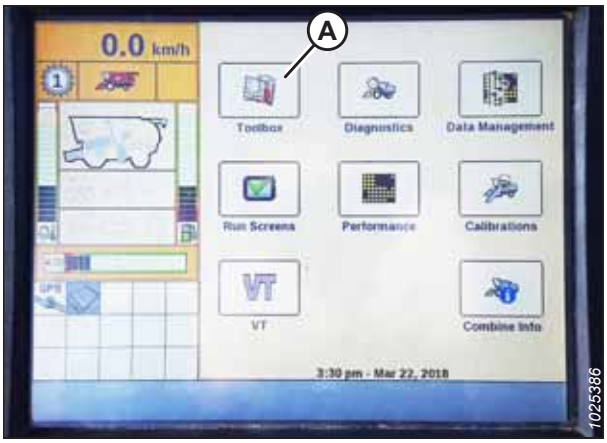


Figure 9.44: Case IH Combine Display

4. Select HEADER tab (A).

   NOTE:

   To locate the HEADER tab, you may need to scroll to the right using side arrows (C).

5. Set HEADER STYLE (B) to FLEXHEAD.

Figure 9.45: Case IH Combine Display

6. Set AUTO REELSPEED SLOPE.

   NOTE:

   The AUTO REEL SPEED SLOPE value automatically maintains the speed of the reel relative to ground speed. For example, if the value is set to 133, then the reel's rotational speed will be higher than the combine's ground speed. In general, the reel's speed should be higher than the combine's ground speed; however, adjust the value according to crop conditions.

7. Set HEADER PRESSURE FLOAT to NO. Ensure that REEL DRIVE is set to HYDRAULIC.

Figure 9.46: Case IH Combine Display

8. Set REEL FORE-BACK to YES (if applicable).

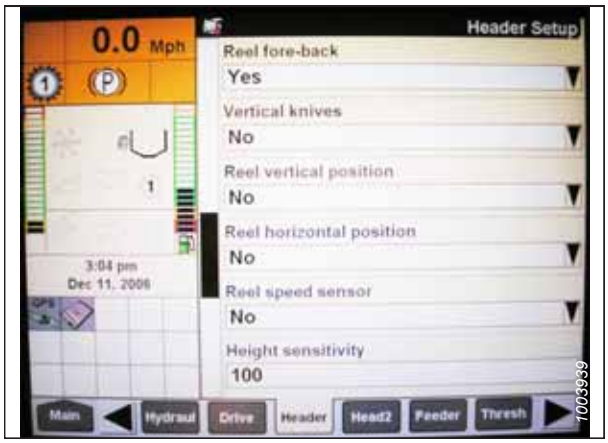


Figure 9.47: Case IH Combine Display

9. Locate HHC HEIGHT SENSITIVITY field (A), and set it as follows:

   - **Two-sensor systems:** Set HHC HEIGHT SENSITIVITY to 250.
   - **Single-sensor systems:** Set HHC HEIGHT SENSITIVITY to 180.

   NOTE:

   If the combine continually raises and lowers the header during operation (a behavior termed "hunting"), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.

10. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease the sensitivity as desired.

Figure 9.48: Case IH Combine Display

11. Set FORE/AFT CONTROL and HDR FORE/AFT TILT to YES (if applicable).

Figure 9.49: Case IH Combine Display

12. Press HEAD2 (A) at the bottom of the page.
13. Ensure HEADER TYPE (B) is set to DRAPER.

    NOTE:

    If the recognition resistor is plugged in to the header harness, you will not be able to change this.

14. Set CUTTING TYPE (C) to PLATFORM.
15. Set HEADER WIDTH (D) and HEADER USAGE (E) to the appropriate values.

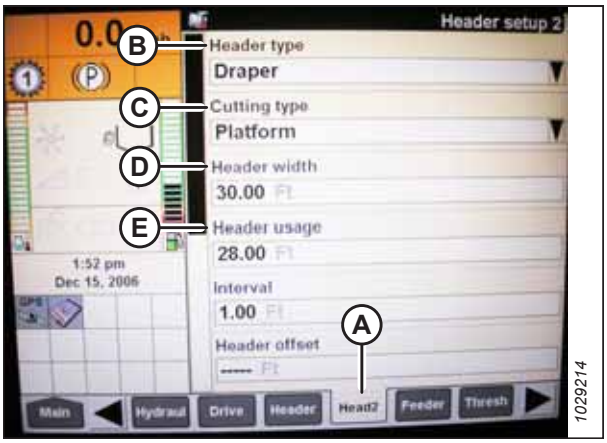


Figure 9.50: Case IH Combine Display

16. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 9.51: Case IH Combine Display

17. Locate AUTOTILT field (A) and set it as follows:
    - **Two-sensor system:** Select YES in the AUTOTILT field.
    - **Single-sensor system:** Select NO in the AUTOTILT field.

    NOTE:

    If the float was changed to a heavier setting to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

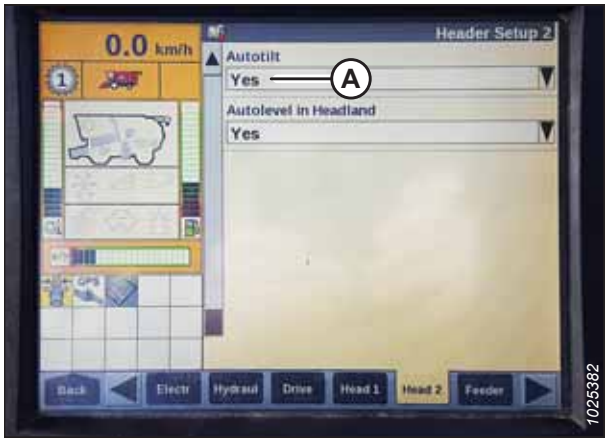


Figure 9.52: Case IH Combine Display

9.7.3 Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software

Calibrate the auto header height control (AHHC) sensor output for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. To view the software version, select the DIAGNOSTICS button from the Home Screen, then select VERSION tab (A).

    NOTE:

    If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

    NOTE:

    For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

2. Set the header center-link to **D**.
3. Raise the header onto the down stops and unlock the float.

Figure 9.53: Case IH Combine Display

Adjusting combine display settings

4. Select TOOLBOX (A) on the MAIN page.

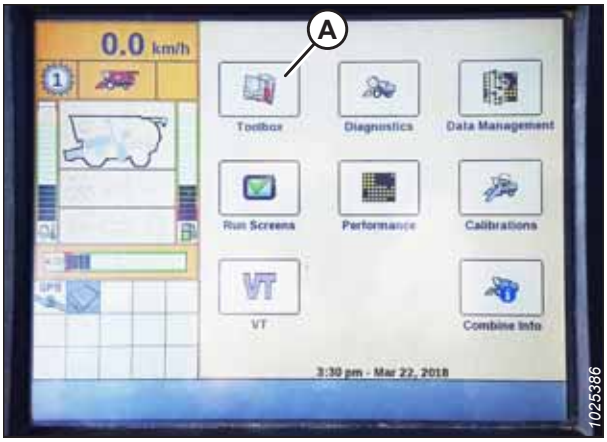


Figure 9.54: Case IH Combine Display

5. Select HEAD 1 tab (A).

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (B).

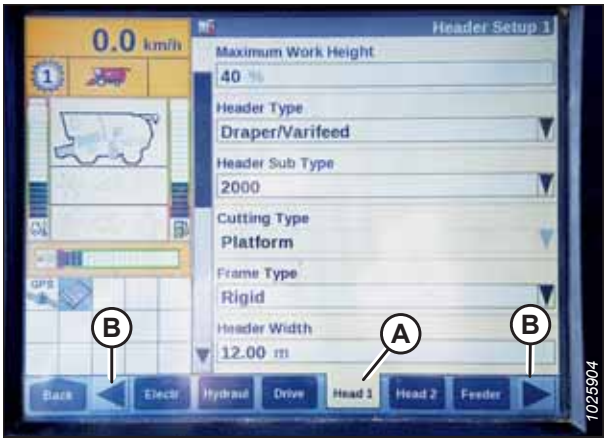


Figure 9.55: Case IH Combine Display

6. Locate the HEADER SUB TYPE field.
7. Select the following value from the HEADER SUB TYPE field:
   - If software version 34 or later is installed, select FD2 SERIES (A).

     NOTE:

     Selecting FD2 SERIES will optimize AHHC performance on FD2 and D2 Series headers.

   - If a software version prior to version 34 is installed, select 2000 (B).

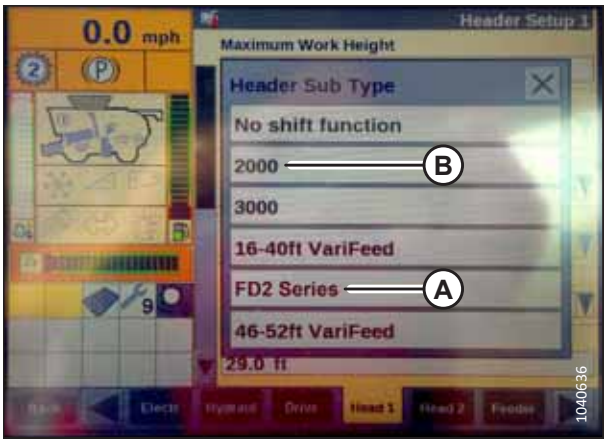


Figure 9.56: Case IH Combine Display

8. Return to the HEAD 1 page and choose RIGID from FRAME TYPE drop-down menu (A).

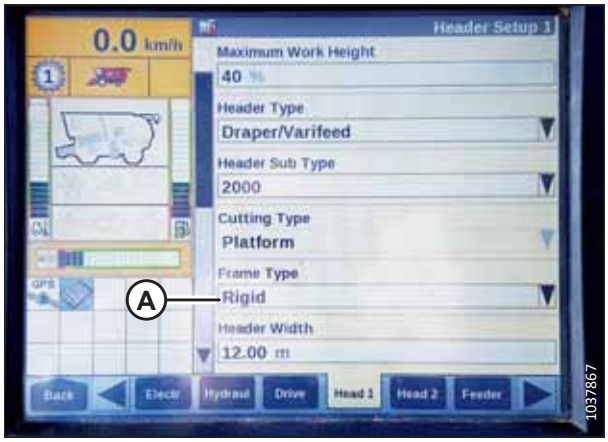


Figure 9.57: Case IH Combine Display

9. Select HEAD 2 tab (A).
10. In HEADER SENSORS field (B), select ENABLE.
11. In HEADER PRESSURE FLOAT field (C), select NO.
12. In HEIGHT/TILT RESPONSE field (D), select FAST.
13. In AUTO HEIGHT OVERRIDE field (E), select YES.
14. Press down arrow (F) to go to the next page.

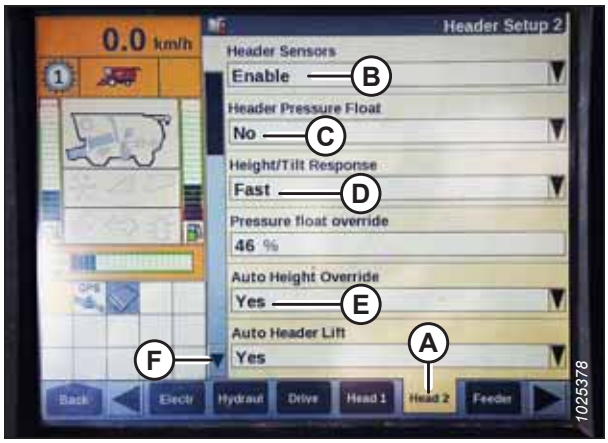


Figure 9.58: Case IH Combine Display

15. Locate HHC HEIGHT SENSITIVITY field (A), and set it as follows:
    - **Single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.
    - **Two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.

    NOTE:

    If the combine continually raises and lowers the header during operation (a behavior termed “hunting”), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.
16. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease the sensitivity as desired.

Figure 9.59: Case IH Combine Display

17. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 9.60: Case IH Combine Display

18. Scroll to the AUTOTILT field (A), and set it as follows:
    - **Two-sensor system:** Select YES in the AUTOTILT field.
    - **Single-sensor system:** Select NO in the AUTOTILT field.

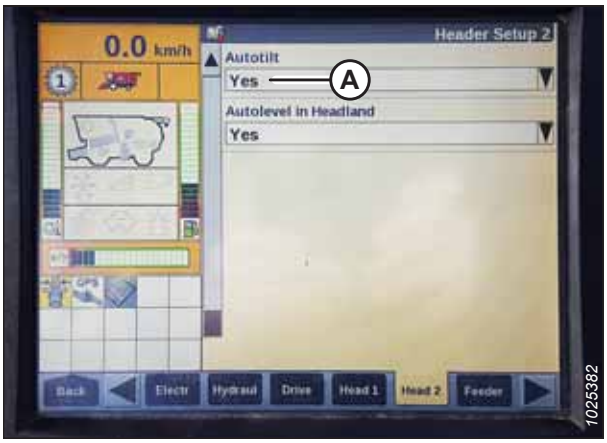


Figure 9.61: Case IH Combine Display

Calibrating Auto Header Height Control

19. Select CALIBRATION on the combine display and press the right arrow navigation key to enter the information box.
20. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

    NOTE:

    Use the UP and DOWN navigation keys to move between options.

Figure 9.62: Case IH Combine Display

21. Follow the calibration steps in the order in which they appear in the dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

    NOTE:

    Pressing the ESC key during any of the steps or letting the system sit idle for over 3 minutes will stop the calibration procedure.

    NOTE:

    Refer to your combine operator's manual for an explanation of any error codes.

22. When all the steps have been completed, CALIBRATION SUCCESSFUL message displays on the page. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

    NOTE:

    If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

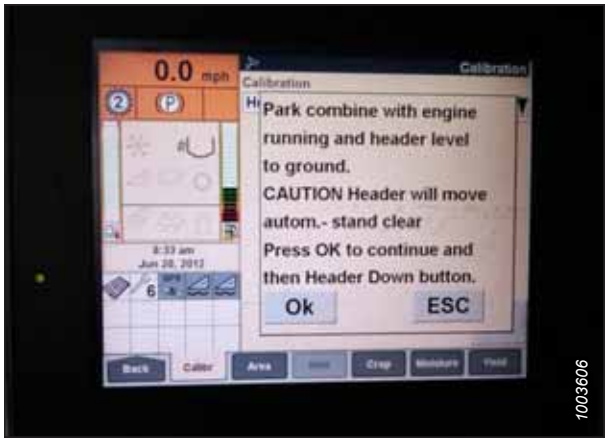


Figure 9.63: Case IH Combine Display

23. Ensure AUTO HEIGHT icon (A) appears on the monitor as shown at location (B). When the header is set for cutting on the ground, this verifies that the combine is correctly using the sensor on the header to detect the ground pressure.

    NOTE:

    Icons (A) and (B) appear on the monitor only after engaging the separator and header, and then pressing HEADER RESUME button on the control panel.

    NOTE:

    AUTO HEIGHT field (B) may appear on any of the RUN tabs and not necessarily on the RUN 1 tab.

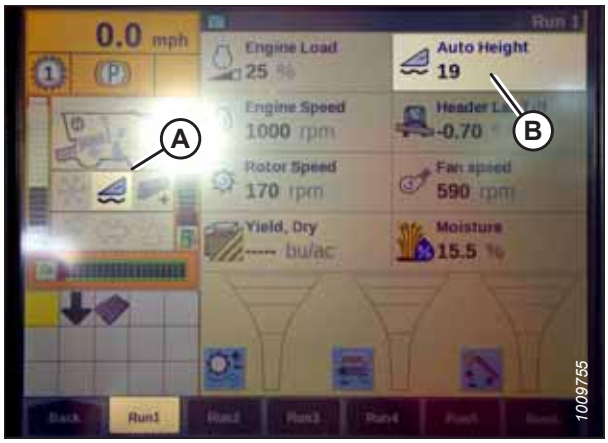


Figure 9.64: Case IH Combine Display

9.7.4 Checking Reel Height Sensor Voltages – Case IH Combines

The voltage output of the reel height sensors can be inspected using the combine display in the cab.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

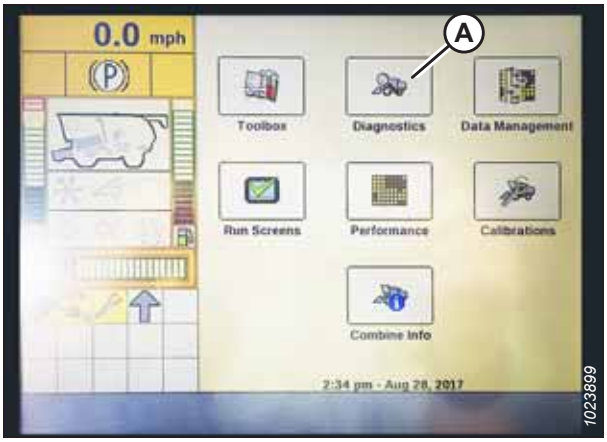


Figure 9.65: Case IH Combine Display

2. Select SETTINGS tab (A). The SETTINGS page appears.
3. From the GROUP menu, select HEADER (B).
4. From the PARAMETER menu, select REEL VERTICAL POSITION (C).

Figure 9.66: Case IH Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph appears.
6. Lower the reel to view upper voltage (B). The voltage should be within 4.1–4.5 V.
7. Raise the reel to view lower voltage (C). The voltage should be within 0.5–0.9 V.
8. If either voltage is out of range, refer to *10.1 Checking and Adjusting Reel Height Sensor, page 473*.

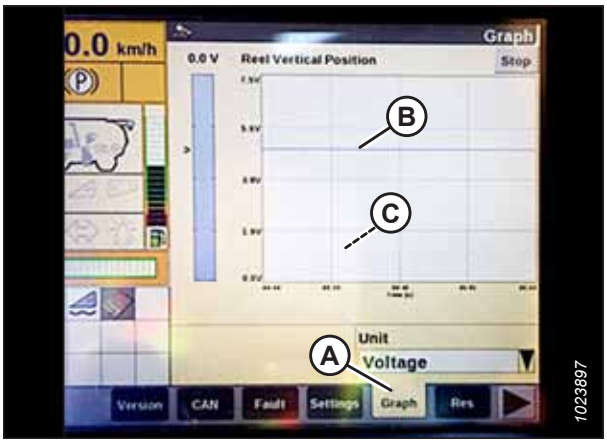


Figure 9.67: Case IH Combine Display

9.7.5 Setting Preset Cutting Height – Case IH, 120, 230, 240, and 250 Series Combines

Once the auto header height control (AHHC) system has been configured to work with the header, the preset cutting height can be configured. The preset cutting height refers to the header height that the AHHC system will attempt to maintain as the combine moves forward.

DANGER

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. The crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

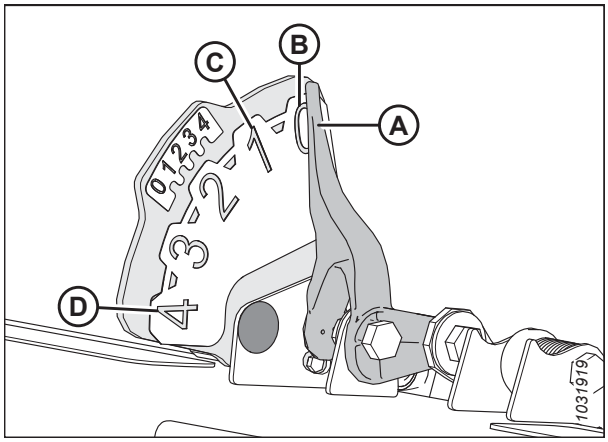


Figure 9.68: Float Indicator

1. Engage the separator and the header.
2. Manually raise or lower the header to a desired cutting height.
3. Press SET #1 switch (A). The light beside switch (A) will appear.

   NOTE:

   Use switch (C) for fine adjustments.

   NOTE:

   When setting the presets, always set the header position before setting the reel position. If the header and the reel are set at the same time, the reel setting will not be saved.
4. Raise or lower the reel to the desired position.
5. Press SET #1 switch (A). The light beside switch (A) will light up.
6. Raise or lower the header to a second desired cutting height.

Figure 9.69: Case Combine Controls

7. Press SET #2 switch (B). The light beside switch (B) will light up.
8. Raise or lower the reel to a second desired working position.
9. Press SET #2 switch (B). The light beside switch (B) will light up.
10. To swap between the set points, press HEADER RESUME (A).
11. To raise the header, press and hold SHIFT button (B) at the back of the control handle and press HEADER RESUME switch (A). To lower the header, press HEADER RESUME switch (A) once to return to the header preset height.

    NOTE:

    Pressing HEADER RAISE/LOWER switches (C) and (D) disengages AUTO HEIGHT mode. Press HEADER RESUME (A) to re-engage AUTO HEIGHT mode.

Figure 9.70: Case Combine Controls

9.8 Challenger® and Massey Ferguson® 6 and 7 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.8.1 Checking Voltage Range from Combine Cab – Challenger® and Massey Ferguson®

The auto header height control sensor needs to operate within a specific voltage range in order to work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Position the header 254–356 mm (10–14 in.) above the ground, and unlock the float.
2. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation, causing a malfunction of the auto header height control (AHHC) system.

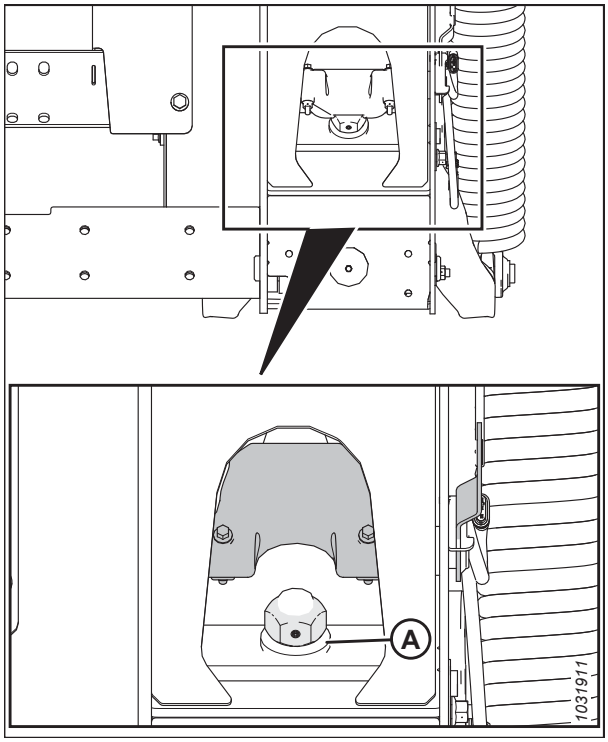


Figure 9.71: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on 0 (D).
4. Tighten bolt (A).

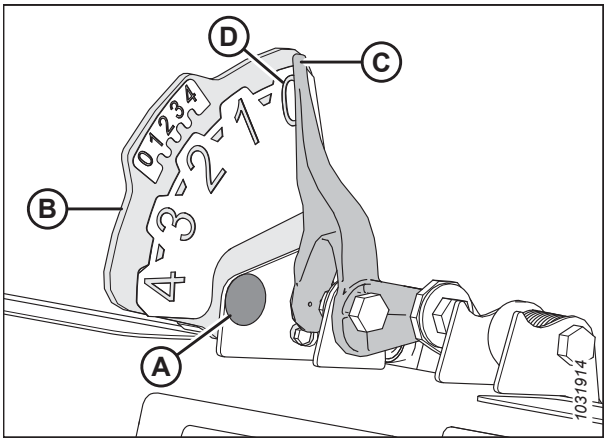


Figure 9.72: Float Indicator

5. Go to the FIELD page on the combine monitor, and then press the diagnostics icon. The MISCELLANEOUS page appears.
6. Select VMM DIAGNOSTIC (A). The VMM DIAGNOSTIC page appears.

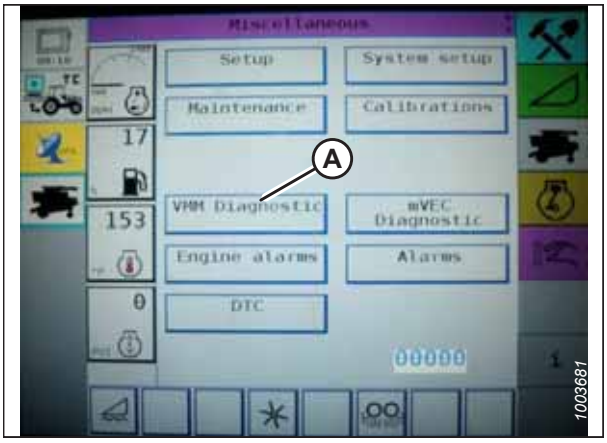


Figure 9.73: Challenger® Combine Display

7. Go to ANALOG IN tab (A), and then select VMM MODULE 3 by selecting the text box below the four tabs. The voltage from the AHHC sensor is now displayed on the page as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. The readings may be slightly different.

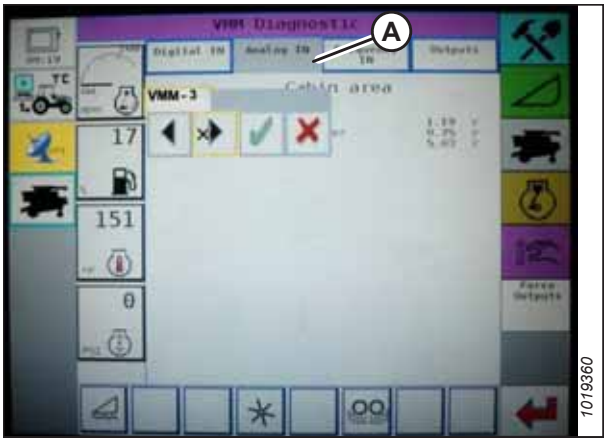


Figure 9.74: Challenger® Combine Display

8. Fully lower the combine feeder house (the float module should be fully separated from the header).

   NOTE:

   You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

9. Read the voltage.

10. Raise the header 254–356 mm (10–14 in.) above the ground, and unlock the float.

11. Read the voltage.

12. If the sensor voltage is not within the lower and upper limits, or if the range between the lower and upper limits is insufficient, adjust the voltage limits. For instructions, refer to *9.3 Manually Checking Voltage Limits, page 266*.

Figure 9.75: Challenger® Combine Display

9.8.2 Engaging Auto Header Height Control – Challenger® and Massey Ferguson®

The auto header height control (AHHC) system must be engaged before its features can be configured.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

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

To engage the AHHC, follow these steps:

1. Scroll through the header control options on the combine display using the header control switch until AHHC icon (A) is displayed in the first message box. The AHHC will adjust the header height in relation to the ground according to the height setting and sensitivity setting.

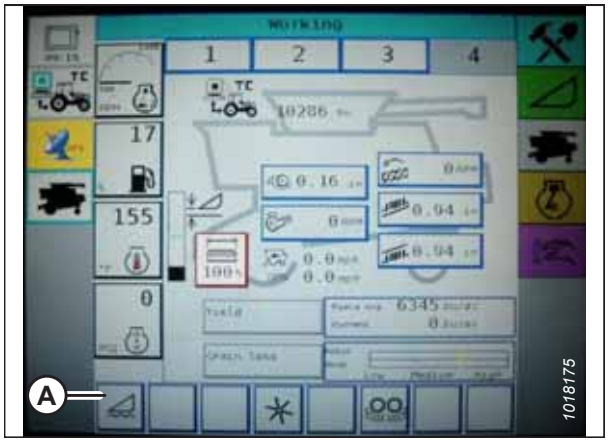


Figure 9.76: Challenger® Combine Display

9.8.3 Calibrating Auto Header Height Control – Challenger® and Massey Ferguson®

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the AHHC calibration. You may need to set the float heavier for the calibration procedure so the header doesn't separate from the float module.

NOTE:

For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to the header operator's manual.

1. Ensure the center-link is set to **D**.
2. On the FIELD page, select DIAGNOSTICS icon (A). The MISCELLANEOUS page appears.

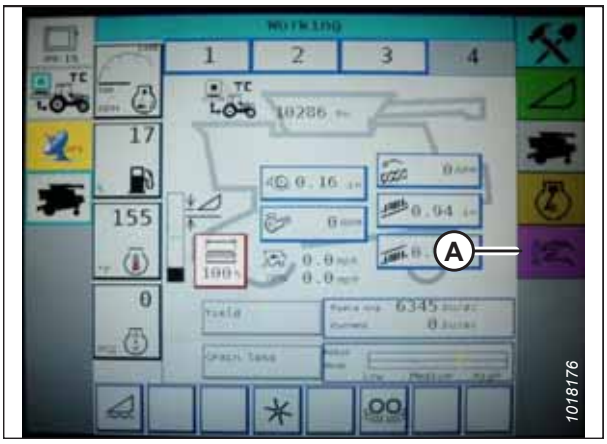


Figure 9.77: Challenger® Combine Display

3. Select CALIBRATIONS (A). The CALIBRATIONS page appears.

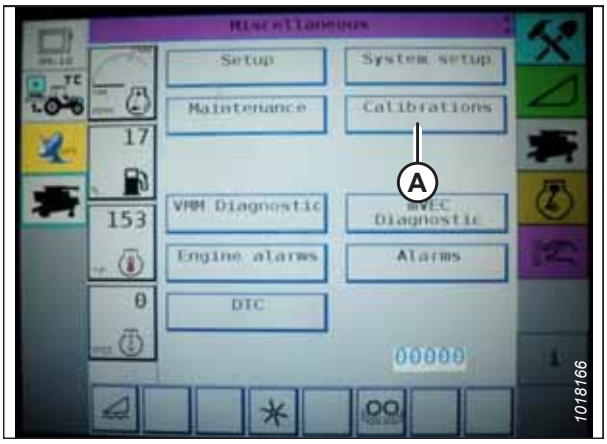


Figure 9.78: Challenger® Combine Display

4. Select HEADER (A). The HEADER CALIBRATION page displays a WARNING.

Figure 9.79: Challenger® Combine Display

5. Read the WARNING message, and then select the green check mark button.

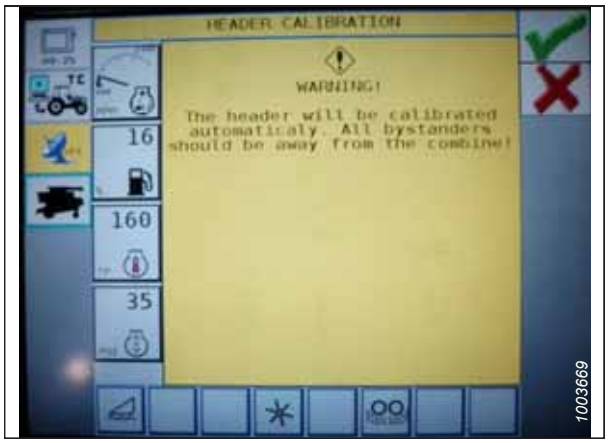


Figure 9.80: Challenger® Combine Display

6. Follow the on-screen prompts to complete calibration.

   NOTE:

   The calibration procedure can be canceled at any time by pressing the CANCEL button on the screen. While the header calibration is running, the calibration can also be canceled by using the UP, DOWN, TILT RIGHT, or TILT LEFT buttons on the control handle.

   NOTE:

   If the combine does not have HEADER TILT installed or if it is inoperable, you may receive warnings during calibration. Press the green check mark if these warnings appear. This will not affect the AHHC calibration.

   NOTE:

   If the float was set heavier to complete the AHHC calibration procedure, adjust to the recommended operating float after the calibration is complete.

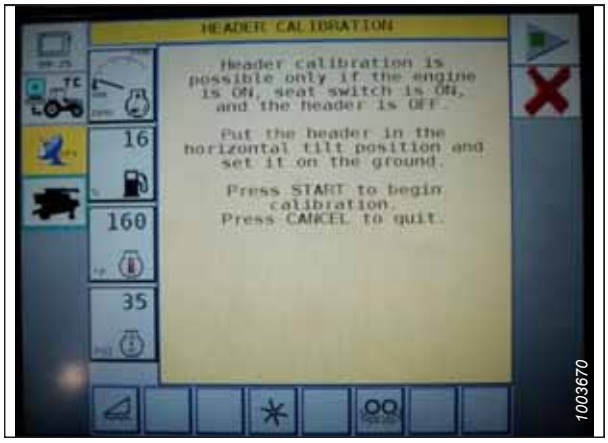


Figure 9.81: Challenger® Combine Display

9.8.4 Adjusting Header Height – Challenger® and Massey Ferguson®

The auto header height control (AHHC) feature allows the operator to set specific header heights.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

Once the AHHC is activated, press and release the HEADER LOWER button on the control handle. The AHHC will automatically lower the header to the selected height setting.

You can adjust the selected AHHC height using HEIGHT ADJUSTMENT knob (A) on the control console. Turning the knob clockwise increases the selected height, and turning the knob counterclockwise decreases the selected height.

Figure 9.82: Height Adjustment Knob on the Combine Control Console

9.8.5 Adjusting Header Raise/Lower Rate – Challenger® and Massey Ferguson®

The rate at which the header rises and falls can be configured by accessing the HEADER CONTROL menu on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Select HEADER icon (A) on the FIELD page. The HEADER page appears.

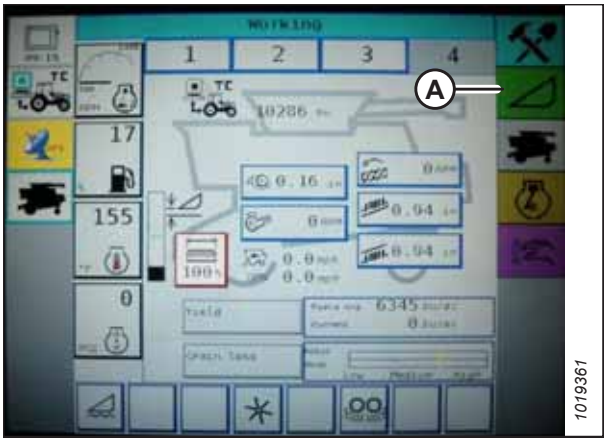


Figure 9.83: Challenger® Combine Display

2. Select HEADER CONTROL (A). The HEADER CONTROL page appears.

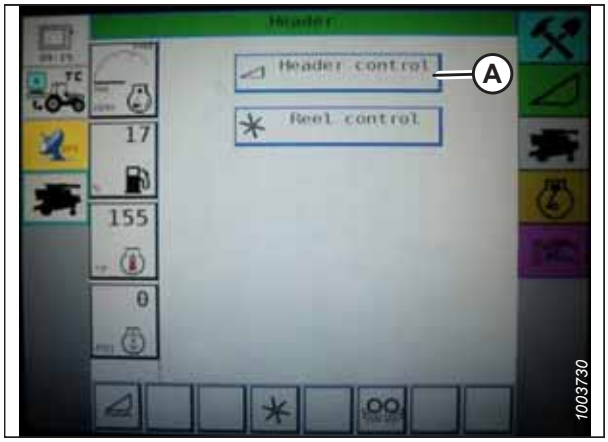


Figure 9.84: Challenger® Combine Display

3. Go to the TABLE SETTINGS tab.
4. Select the up arrow on MAX UP PWM to increase the percentage number and increase the raise speed. Select the down arrow on MAX UP PWM to decrease the percentage number and decrease the raise speed.
5. Select the up arrow on MAX DOWN PWM to increase the percentage number and increase the lower speed. Select the down arrow on MAX DOWN PWM to decrease the percentage number and decrease the lower speed.

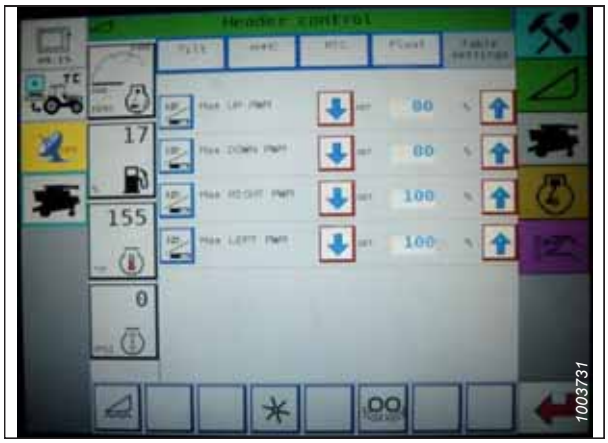


Figure 9.85: Challenger® Combine Display

9.8.6 Setting Auto Header Height Control Sensitivity – Challenger® and Massey Ferguson®

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Select the HEADER icon on the FIELD page. The HEADER page appears.

2. Select HEADER CONTROL button (A). The HEADER CONTROL page appears. You can adjust sensitivity on this page using the up and down arrows.

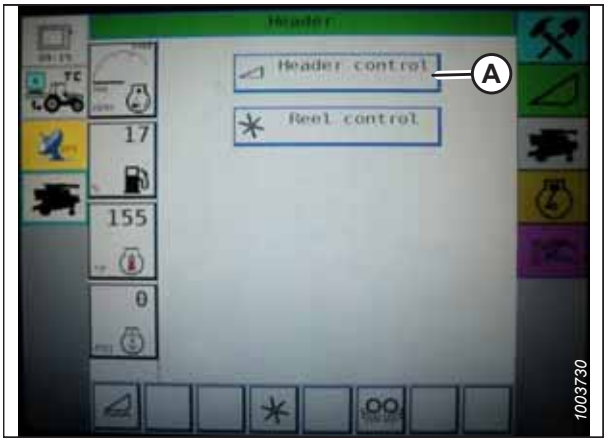


Figure 9.86: Challenger® Combine Display

3. Adjust the sensitivity to the maximum setting.
4. Activate the AHHC, and press HEADER LOWER button on the control handle.
5. Decrease the sensitivity until the feeder house remains steady and does not bounce up and down.

   NOTE:

   This is the maximum sensitivity and is only an initial setting. The final setting must be made in the field, as the system reaction will vary with changing surfaces and operating conditions.

   NOTE:

   If maximum sensitivity is not needed, a less sensitive setting will reduce the frequency of header height corrections and component wear. Partially opening the accumulator valve will cushion the action of the header lift cylinders and reduce header hunting.

Figure 9.87: Challenger® Combine Display

9.9 CLAAS 500 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.9.1 Calibrating Auto Header Height Control – CLAAS 500 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the AHHC, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. Ensure that the center-link is set to **D**.
2. Press < key (A) or > key (B) to select AUTO HEADER, and press OK key (C). The E5 page indicates whether the automatic header height is on or off.

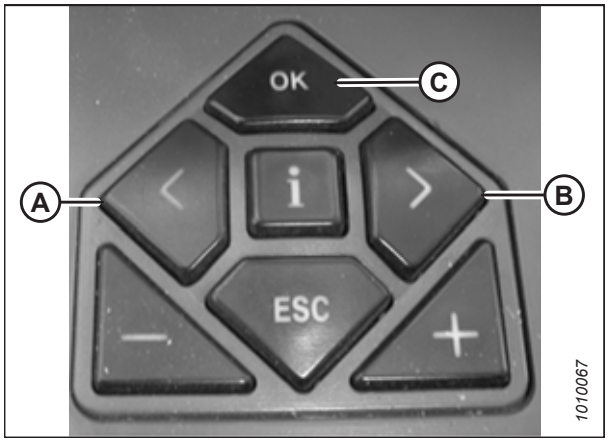


Figure 9.88: CLAAS Combine Controls

3. Press **–** key (A) or **+** key (B) to turn the AHHC on, and press OK key (C).
4. Engage the threshing mechanism and the header.

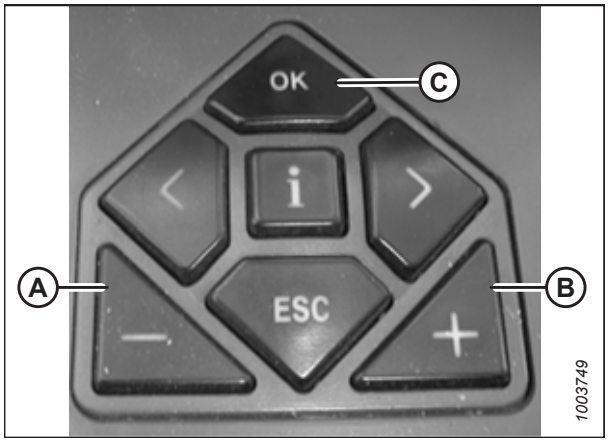


Figure 9.89: CLAAS Combine Controls

5. Press the < or > key to select CUTT. HEIGHT LIMITS, and press the combine control's OK key.

6. Follow the procedure displayed on the screen to program the upper and lower limits of the header into the CEBIS.

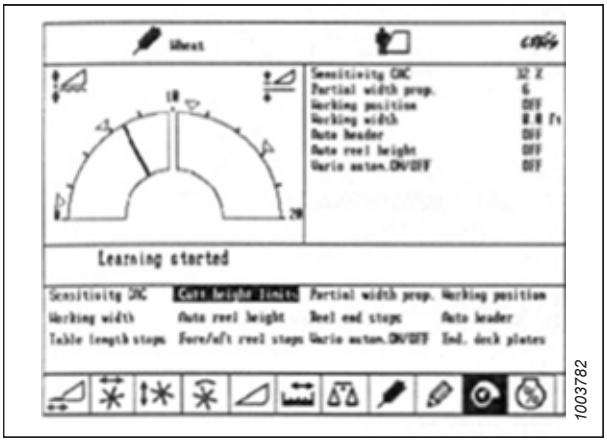


Figure 9.90: CLAAS Combine Display

7. Press the **<** or **>** key to select SENSITIVITY CAC, and press the combine control's OK key.

   NOTE:

   Setting the sensitivity of the AHHC system affects the reaction speed of the AHHC on the header.

8. Press the **–** key or the **+** key to change the reaction speed setting, and press the combine control's OK key.

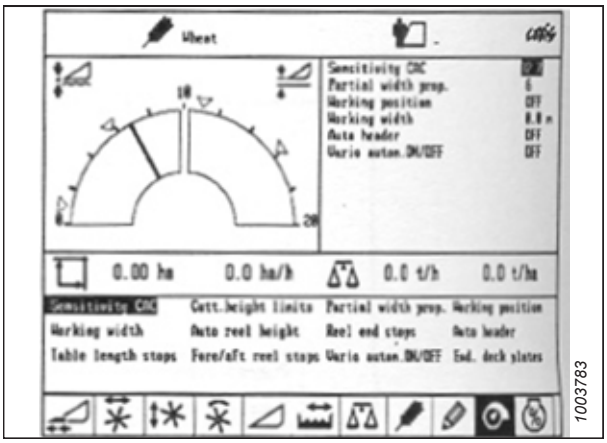


Figure 9.91: CLAAS Combine Display

9. Check the sensitivity setting by using line (A) or value (B).

   NOTE:

   The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

10. If the float was adjusted for the calibration procedure, check and adjust the float.

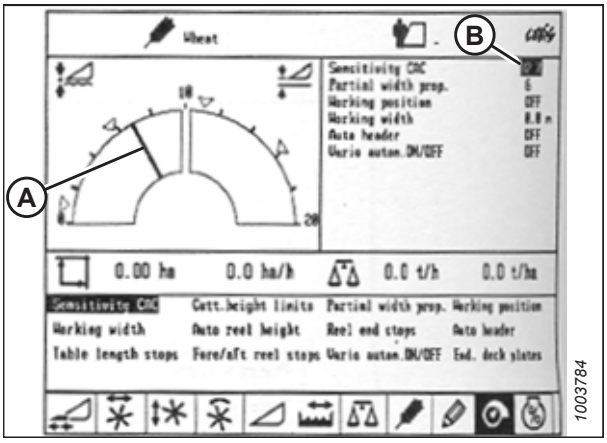


Figure 9.92: CLAAS Combine Display

11. Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown. Reinstall the nut.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

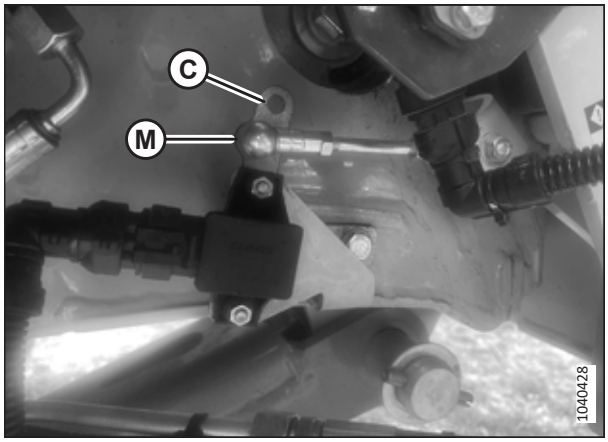


Figure 9.93: Sensor Link Limiter – CLAAS Transition Frame

9.9.2 Cutting Height – CLAAS 500 Series

Cutting heights can be programmed into the preset cutting height and auto contour systems. Use the preset cutting height system for cutting heights above 150 mm (6 in.), and use the auto contour system for cutting heights below 150 mm (6 in.).

Setting Preset Cutting Height – CLAAS 500 Series

Once the auto header height control (AHHC) system has been configured and activated, the preset cutting height can be configured.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Activate the machine enable switch.
3. Engage the threshing mechanism.
4. Engage the header.

5. Briefly press button (A) in order to activate the auto contour system, or briefly press button (B) in order to activate the preset cutting height system.

   NOTE:

   Button (A) is used only with AHHC function. Button (B) is used only with the return to cut function.

Figure 9.94: Control Handle Buttons

6. Press < key (C) or > key (D) to select the CUTTING HEIGHT page, and press OK key (E).
7. Press – key (A) or + key (B) to set the desired cutting height. An arrow indicates the selected cutting height on the scale.

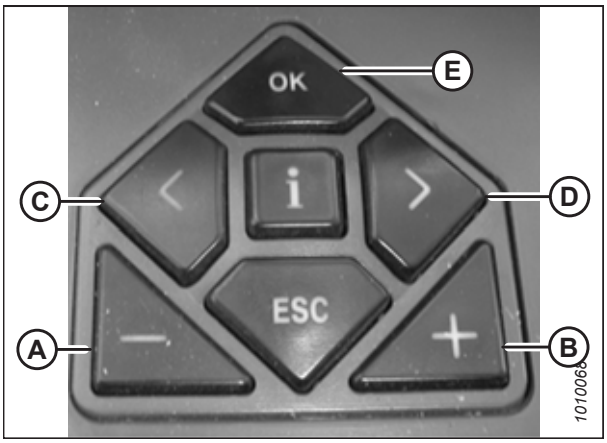


Figure 9.95: CLAAS Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7, page 307* for the set point.

Figure 9.96: Control Handle Buttons

Setting Cutting Height Manually – CLAAS 500 Series

Once the auto header height control (AHHC) system has been configured and activated, the preset cutting height can be configured.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press button (A) to raise the header, or button (B) to lower the header to the desired cutting height.
2. Press and hold button (C) for 3 seconds to store the cutting height (an alarm will sound when the new setting has been stored).
3. Program a second set point, if desired, by using button (A) to raise the header, or button (B) to lower the header to the desired cutting height, and briefly press button (C) to store the second set point (an alarm will sound when the new setting has been stored).

   NOTE:

   For above-the-ground cutting, repeat Step *1, page 308*, and use button (D) instead of button (C) while repeating Step *2, page 308*.

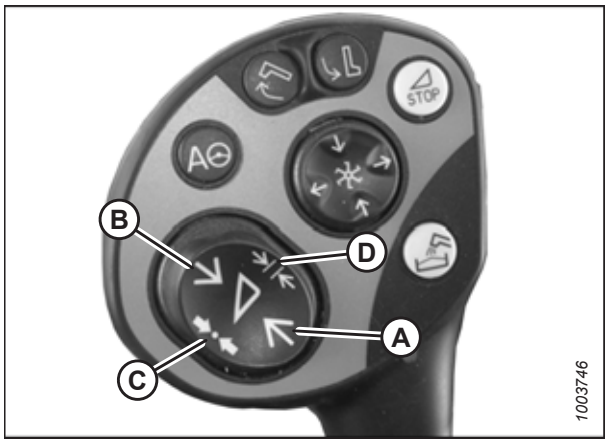


Figure 9.97: Control Handle Buttons

9.9.3 Setting Auto Header Height Control Sensitivity – CLAAS 500 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

NOTE:

The upper and lower limits of the header must be set before adjusting the sensitivity of the AHHC system. The setting can be adjusted from 0–100%. When the sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When the sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press **<** key (C) or **>** key (D) to select SENSITIVITY CAC, and press OK key (E).
2. Press **–** key (A) or **+** (B) key to change the reaction speed setting, and press OK key (E).

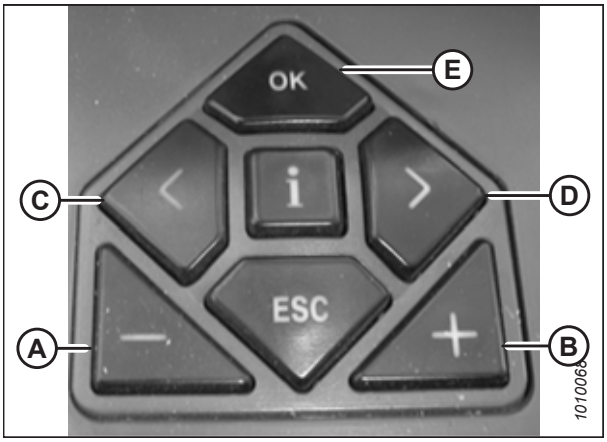


Figure 9.98: CLAAS Combine Controls

3. Check the sensitivity setting by using line (A) or value (B).

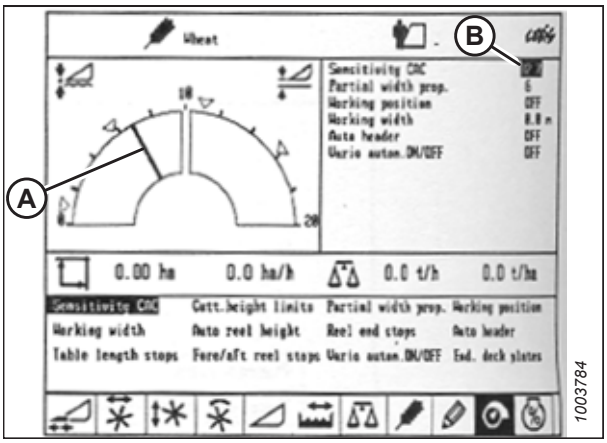


Figure 9.99: CLAAS Combine Display

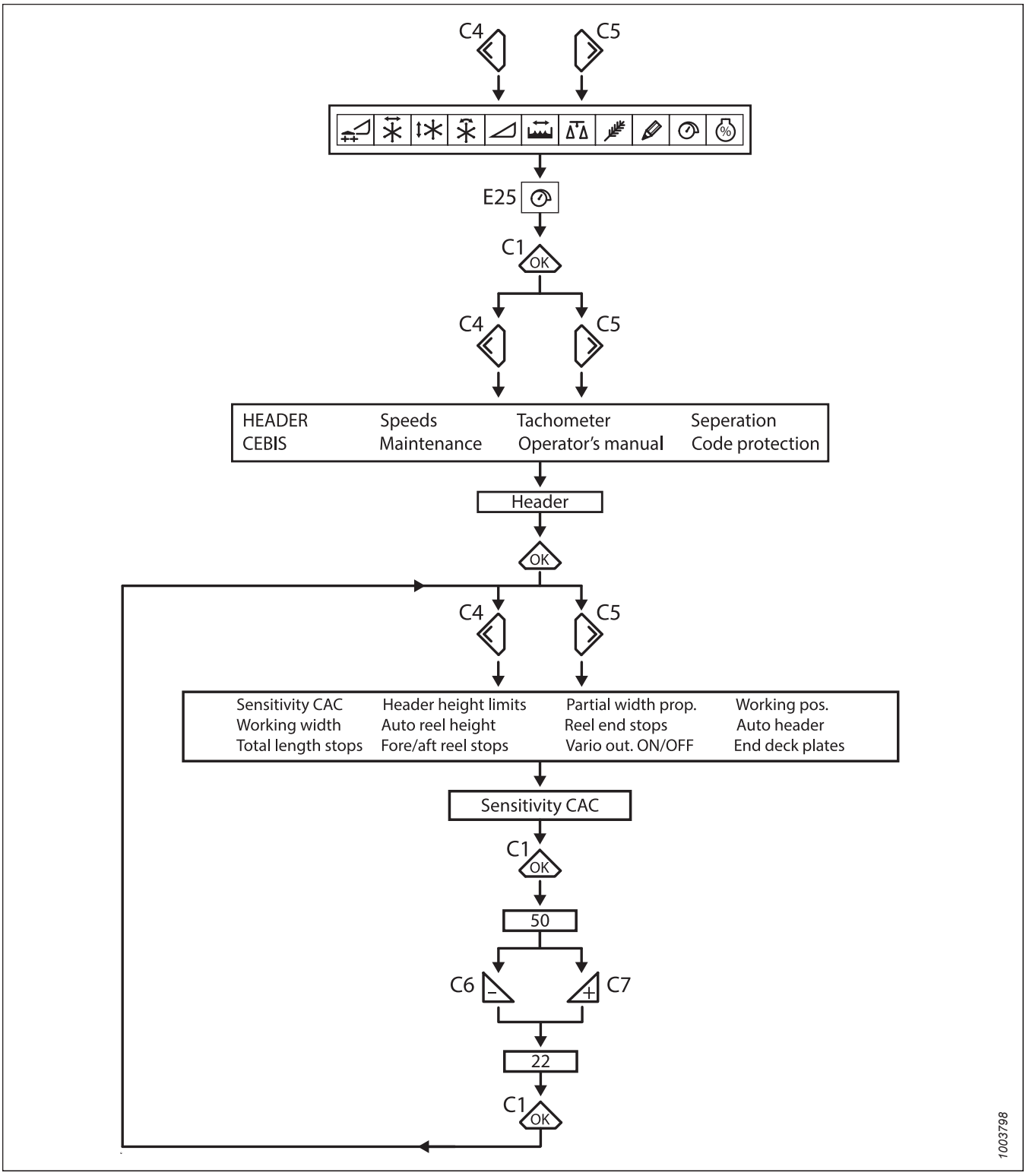


Figure 9.100: Flow Chart for Setting the Sensitivity of the Float Optimizer

9.9.4 Adjusting Auto Reel Speed – CLAAS 500 Series

The preset reel speed can be set when the automatic header functions are activated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press the **<** or **>** key to select REEL WINDOW. Window E15 displays the current advance or retard speed of the reel in relation to the ground speed.

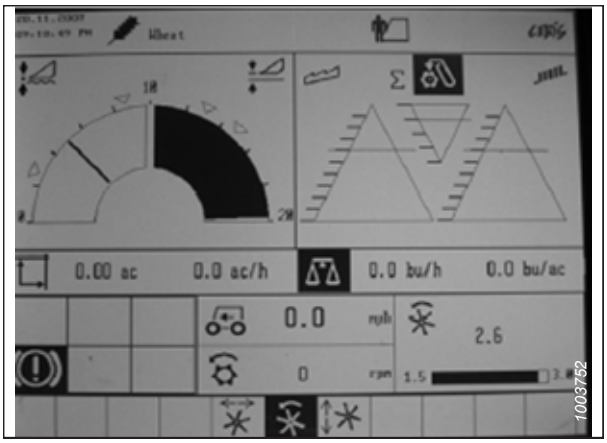


Figure 9.101: CLAAS Combine Display

2. Press OK key (C) to open the REEL SPEED window.
3. Press **–** key (A) or **+** key (B) to set the reel speed in relation to the current ground speed. Window E15 displays the selected reel speed.

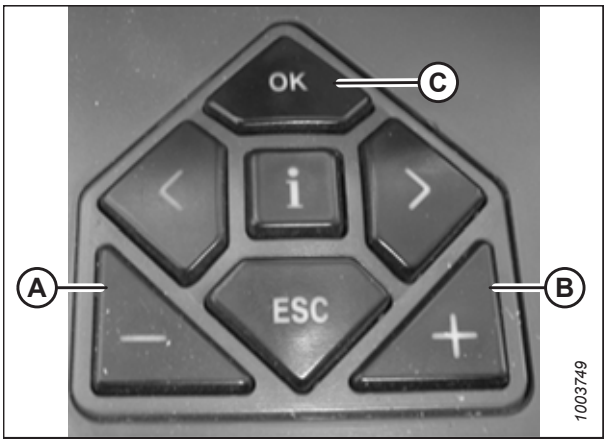


Figure 9.102: CLAAS Combine Controls

4. Adjust the reel speed by rotating the rotary switch to reel position (A).

5. Press the **–** or **+** key to set the reel speed.

Figure 9.103: CLAAS Combine Rotary Switch

6. Press and hold button (A) or button (B) for 3 seconds to store the setting (an alarm sounds when the new setting has been stored).

   NOTE:

   Whenever button (A) or button (B) is pressed for 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 9.104: CLAAS Control Handle Buttons

7. Press the **<** or **>** key to select the REEL WINDOW. Window E15 displays the current advance or retard speed of the reel in relation to the ground speed.

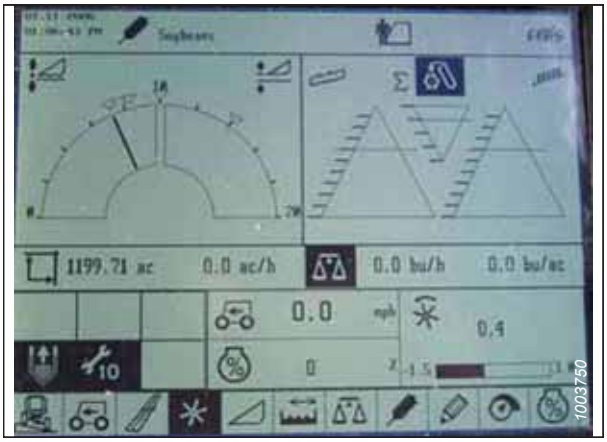


Figure 9.105: CLAAS Combine Display

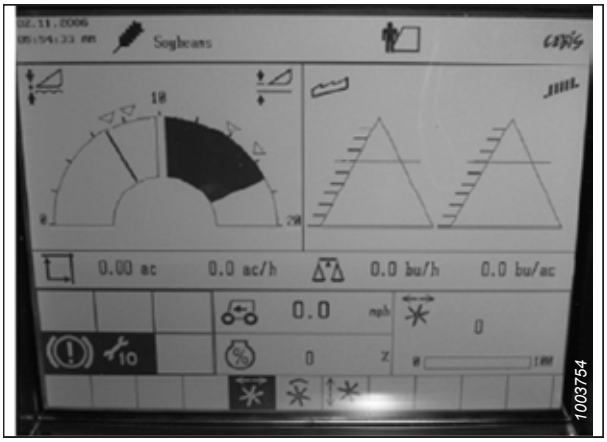


Figure 9.106: CLAAS Combine Display

8. Press OK key (E), and use < key (C) or > key (D) to select the REEL FORE AND AFT window.
9. Use **–** key (A) or **+** key (B) to set the reel fore-aft position.

   NOTE:

   Control handle button (A) or button (B) (as shown in Figure *9.108, page 314*) can also be used to set the reel fore-aft position.

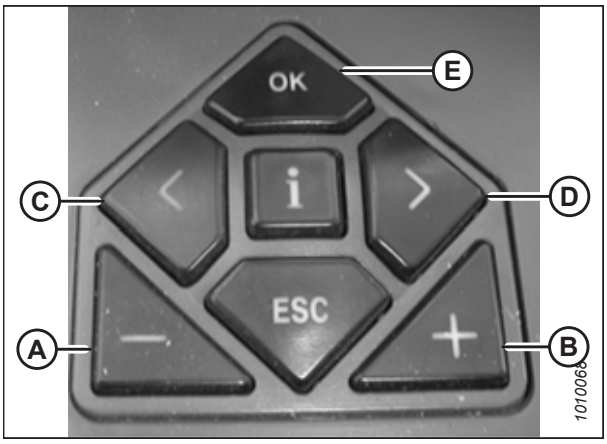


Figure 9.107: CLAAS Combine Controls

10. Press and hold button (A) or button (B) for 3 seconds to store the setting into the CEBIS (an alarm sounds when the new setting has been stored).

    NOTE:

    Whenever button (A) or button (B) is pressed for 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 9.108: CLAAS Control Handle Buttons

9.10 CLAAS 600 and 700 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.10.1 Calibrating Auto Header Height Control – CLAAS 600 and 700 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the AHHC calibration. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the AHHC, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. Ensure that the center-link is set to **D**.
2. Ensure that the header float is unlocked.
3. Use control knob (A) to highlight AUTO CONTOUR icon (B). Press control knob (A) to select it.

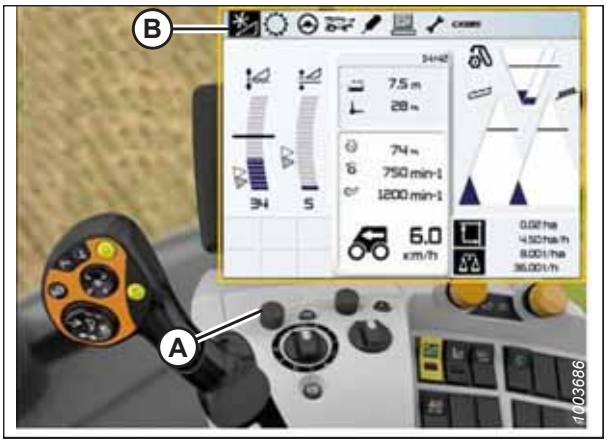


Figure 9.109: CLAAS Combine Display, Console, and Control Handle

4. Use control knob (A) to highlight the icon resembling a header with up and down arrows (not shown). Press control knob (A) to select it. Highlighted header icon (B) will appear on the screen.

Figure 9.110: CLAAS Combine Display, Console, and Control Handle

5. Use control knob (A) to highlight header icon (B) with the up and down arrows. Press control knob (A) to select it.

Figure 9.111: CLAAS Combine Display, Console, and Control Handle

6. Use control knob (A) to highlight screwdriver icon (B).
7. Engage the combine separator and feeder house.
8. Press control knob (A). A progress bar appears.

Figure 9.112: CLAAS Combine Display, Console, and Control Handle

9. Fully raise the feeder house. Progress bar (A) advances to 25%.
10. Fully lower the feeder house. Progress bar (A) advances to 50%.
11. Fully raise the feeder house. Progress bar (A) advances to 75%.
12. Fully lower the feeder house. Progress bar (A) advances to 100%.

Figure 9.113: CLAAS Combine Display, Console, and Control Handle

13. Ensure that progress bar (A) is at 100%. The calibration procedure is now complete.

    NOTE:

    If the voltage is not within the range of 0.7–4.3 V at any time throughout the calibration process, the monitor will indicate that the learning procedure has not concluded.

14. If the float was adjusted for the calibration procedure, check and adjust the float.

Figure 9.114: CLAAS Combine Display, Console, and Control Handle

15. Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown. Reinstall the nut.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

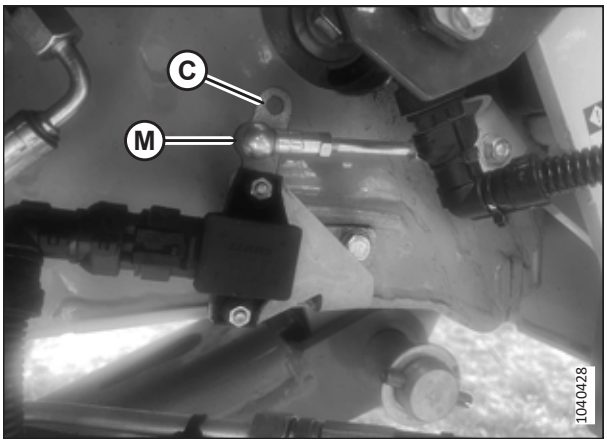


Figure 9.115: Sensor Link Limiter – CLAAS Transition Frame

9.10.2 Setting Cutting Height – CLAAS 600 and 700 Series

The Operator can configure two different cutting height presets. The height presets can be selected using the combine's control handle.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Lower the header to the desired cutting height or to the ground pressure setting. The float indicator box should be set to 1.5.
2. Hold the left side of header raise and lower switch (A) until you hear a ping sound.

Figure 9.116: CLAAS Combine Display, Console, and Control Handle

9.10.3 Setting Auto Header Height Control Sensitivity – CLAAS 600 and 700 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Use control knob (A) to highlight HEADER/REEL icon (B). Press control knob (A) to select it. The HEADER/REEL dialog box opens.
2. Select the HEADER icon.

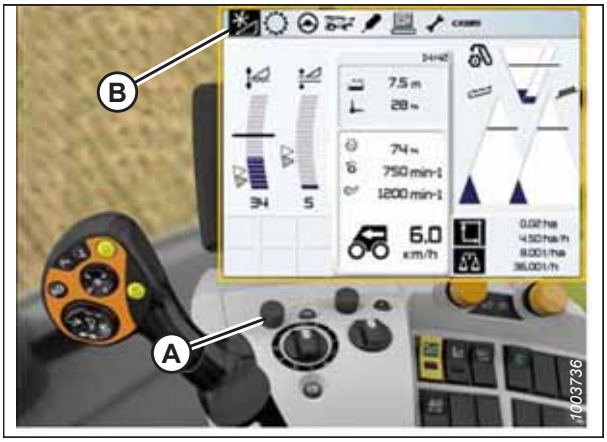


Figure 9.117: CLAAS Combine Display, Console, and Control Handle

3. Select FRONT ATTACHMENT PARAMETER SETTINGS icon (A). A list of settings appears.
4. Select SENSITIVITY CAC (B) from the list.

Figure 9.118: CLAAS Combine Display, Console, and Control Handle

5. Select SENSITIVITY CAC icon (A).

   NOTE:

   To set the sensitivity, change CUTTING HEIGHT ADJUSTMENT (B) from the 0 default. The settings from 1–50 provide a faster response, whereas the settings from -1 to -50 provide a slower response. For the best results, make adjustments in increments of 5.

6. If the reaction time between the header and the float module is too slow while cutting on the ground, increase the CUTTING HEIGHT ADJUSTMENT setting. If the reaction time between the header and the float module is too fast, decrease the CUTTING HEIGHT ADJUSTMENT setting.
7. If the header is lowered too slowly, increase the sensitivity. If the header hits the ground too hard or is lowered too quickly, decrease the sensitivity.

Figure 9.119: CLAAS Combine Display

9.10.4 Adjusting Auto Reel Speed – CLAAS 600 and 700 Series

The preset reel speed can be set when the automatic header functions are activated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Use control knob (A) to highlight HEADER/REEL icon (B). Press control knob (A) to select it. The HEADER/REEL dialog box appears.

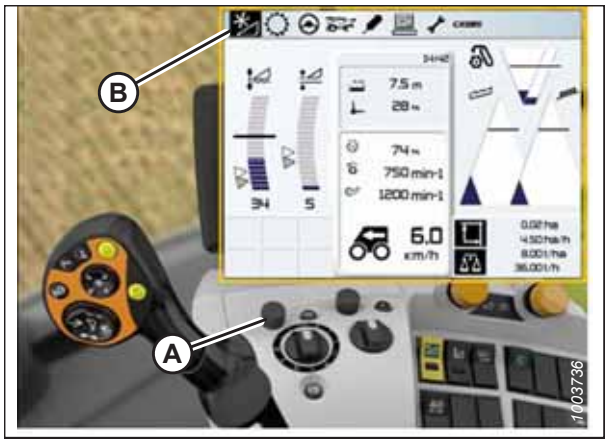


Figure 9.120: CLAAS Combine Display, Console, and Control Handle

2. Use control knob (A) to select REEL SPEED (B), and adjust the reel speed (if you are **NOT** using Auto Reel Speed). A graph appears in the dialog box.

Figure 9.121: CLAAS Combine Display, Console, and Control Handle

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED dialog box (if you are using Auto Reel Speed). The ACTUAL VALUE dialog box indicates the auto reel speed.

Figure 9.122: CLAAS Combine Display, Console, and Control Handle

4. Use control knob (A) to raise or lower the reel speed.

   NOTE:

   This option is only available with the engine at full throttle.

Figure 9.123: CLAAS Combine Display, Console, and Control Handle

9.10.5 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 600 and 700 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

Calibrating the reel fore-aft sensor is only possible if the optional CLAAS integration kit (B7231) is installed.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) off the ground. Keep the engine running.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

3. Use control knob (A) to highlight FRONT ATTACHMENT icon (B). Press control knob (A) to select it.

Figure 9.124: CLAAS Combine Display, Console, and Control Handle

4. Use control knob (A) to highlight REEL icon (B). Press control knob (A) to select it.

Figure 9.125: CLAAS Combine Display and Console

5. Highlight REEL HEIGHT icon (A). Press the control knob to select it.
6. Select LEARNING END STOPS (B) from the list.

Figure 9.126: CLAAS Combine Display and Console

7. Use control knob (A) to highlight screwdriver icon (B).
8. Press the control knob.

Figure 9.127: CLAAS Combine Display, Console, and Control Handle

9. Progress bar chart (A) appears on the screen.
10. Follow the prompts on the screen to raise and lower the reel.

Figure 9.128: CLAAS Combine Display, Console, and Control Handle

11. Ensure progress bar chart (A) displays 100%. When the progress bar chart displays 100%, the calibration procedure is complete.

Figure 9.129: CLAAS Combine Display, Console, and Control Handle

12. **If equipped with CLAAS integration kit (MD #B7231):** Calibrate the reel fore-aft sensor by selecting REEL HORIZONTAL POSITION (A), then LEARNING END STOPS (B). Then repeat Step *7, page 323* to Step *11, page 324*.

Figure 9.130: CLAAS Combine Display and Console

9.10.6 Adjusting Auto Reel Height – CLAAS 600 and 700 Series

The auto reel height setting can be configured by accessing the REEL menu on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Use HOTKEY rotary dial (A) to select REEL icon (B).

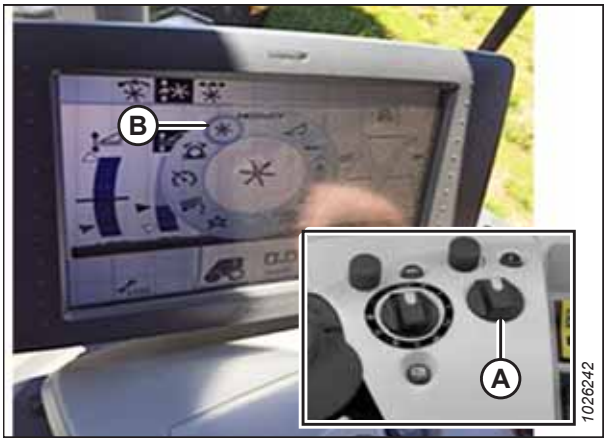


Figure 9.131: CLAAS Combine Display and Console

2. Use control knob (A) to select AUTO REEL HEIGHT icon (B) at the top of the page.

   NOTE:

   AUTO REEL HEIGHT icon (C) at the center of the page should be highlighted black. If it is not black, either the end stops have not been set or the auto header height control (AHHC) is not active. For instructions, refer to *9.10.5 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 600 and 700 Series, page 321*.

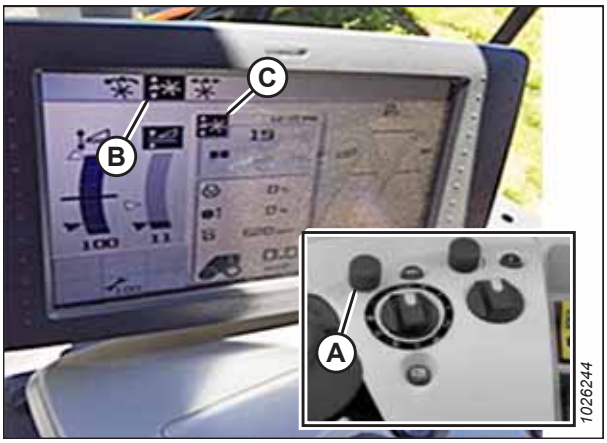


Figure 9.132: CLAAS Combine Display and Console

3. Adjust the auto reel height position for the current AHHC position using outer scroll knob (A). To lower the preset reel position, turn the scroll knob counterclockwise; to raise the preset reel position, turn the scroll knob clockwise. The display will update current setting (B).

   NOTE:

   If the AUTO REEL HEIGHT icon in the center of the page is not black, an AHHC position is not currently active.

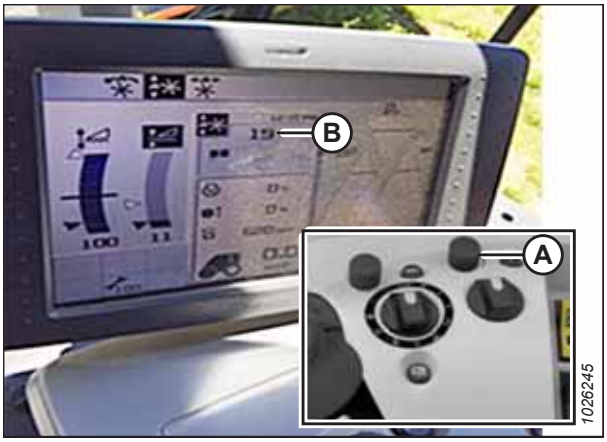


Figure 9.133: CLAAS Combine Display and Console

9.11 CLAAS 5000, 6000, 7000, and 8000 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.11.1 Header Settings Quick Reference – CLAAS 5000, 6000, 7000, and 8000 Series

The recommended auto header height control (AHHC) settings for a D2 Series draper header operating with a CLAAS 5000, 6000, 7000, or 8000 Series combine are provided.

Table 9.2 Header Settings – CLAAS 5000, 6000, 7000, and 8000 Series

Setup Parameter	Suggested Setting
Front attachment type	Draper product by other manufacturer
Working width	Set header width
Drop rate with auto contour	Adjust to preference
Reel speed adjust	Adjust to preference

9.11.2 Setting up Header – CLAAS 5000, 6000, 7000, and 8000 Series

To set up a header to work with the auto header height control (AHHC) system, you will need to access the FRONT ATTACHMENT menu using the CEBIS terminal.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 9.134: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 9.135: Front Attachment Page

3. From the FRONT ATTACHMENT PARAMETERS page, select FRONT ATTACHMENT TYPE (A).
4. From the drop down list, select DRAPER PRODUCT BY OTHER MANUFACTURER (B).

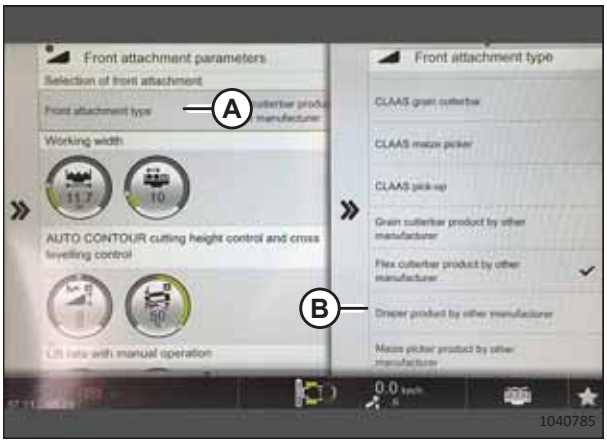


Figure 9.136: Attachment Parameters Page

5. From the FRONT ATTACHMENT PARAMETERS page, select WORKING WIDTH (A).
6. Set the header width by sliding adjuster arrow (B) up or down.
7. Select check mark (C) to save the settings.

Figure 9.137: Attachment Parameters Page

9.11.3 Calibrating Auto Header Height Control – CLAAS 5000, 6000, 7000, and 8000 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly. Newer CLAAS transition frames are equipped with a sensor link limiter, which must be configured before the AHHC system can be calibrated.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. **Headers from model year 2023 and newer:** Locate feeder house fore/aft tilt sensor (B) on the right side of the combine's feeder house, near header safety prop (A).

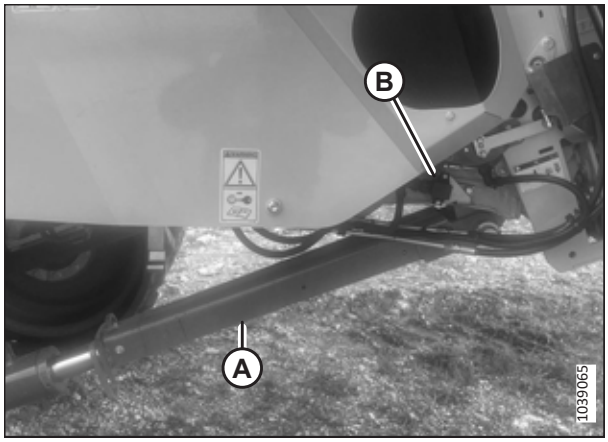


Figure 9.138: Sensor Link Limiter Location – CLAAS Transition Frame

2. **Headers from model year 2023 and newer:** Ensure that the sensor link limiter is in hole (C) as shown. If it is not, undo the nut holding the sensor link limiter, move the link limiter from hole (M) to hole (C), and reinstall the nut.

   IMPORTANT:

   Do **NOT** attempt to calibrate the header when the link limiter is in position (M).

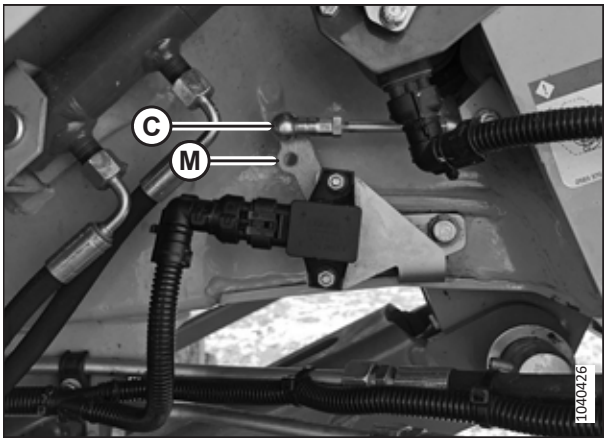


Figure 9.139: Sensor Arm Linkage

3. From the MAIN page, select FRONT ATTACHMENT (A).

Figure 9.140: CEBIS Main Page

4. Select LEARNING PROCEDURES (A) from the menu.

5. Select FRONT ATTACHMENT HEIGHT (B).

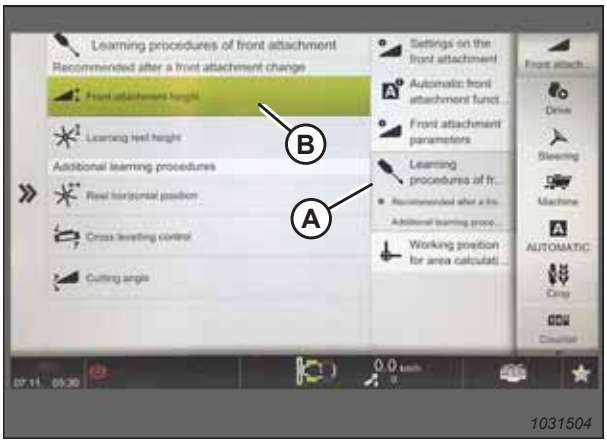


Figure 9.141: Learning Procedures Page

6. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

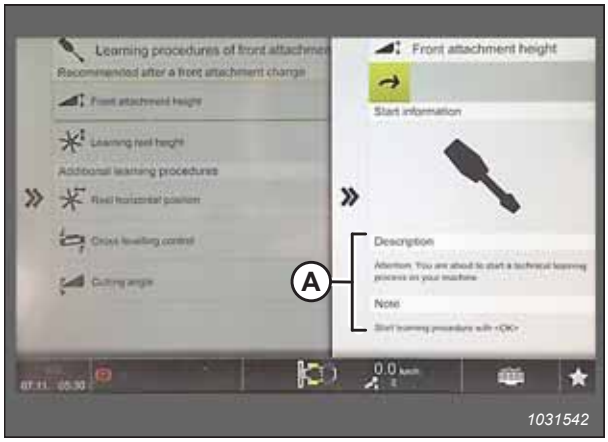


Figure 9.142: Front Attachment Height Page

7. When prompted, press OK button (A) to start the learning procedure.

Figure 9.143: Operator Controls

8. When prompted, raise the front attachment with button (A) on the multifunction lever.
9. When prompted, lower the front attachment with button (B) on the multifunction lever.
10. Repeat the previous steps as prompted until calibration is complete.

Figure 9.144: Multifunction Lever

11. **Headers from model year 2023 and newer:** Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

12. Reinstall the nut.

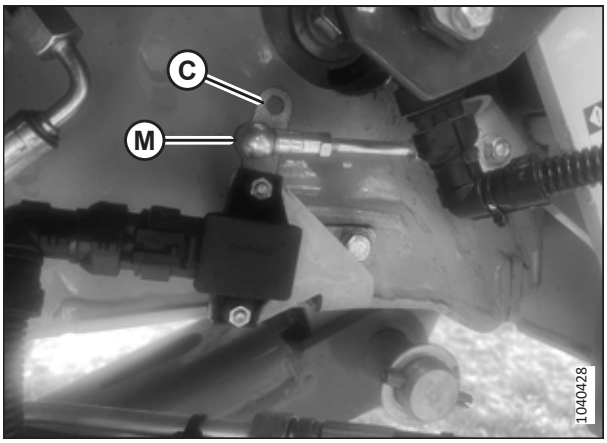


Figure 9.145: Sensor Link Limiter – CLAAS Transition Frame

9.11.4 Setting Cut and Reel Height Preset – CLAAS 5000, 6000, 7000, and 8000 Series

The reel and cut height setting can be stored in the combine. When harvesting, the setting can be selected from the control handle.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Set the desired cutting height with feeder house raise/ lower buttons (A) on the multifunction lever.
2. Set the desired reel position with buttons (B).
3. Press and hold AUTO HEIGHT PRESET button (C) to store the settings.

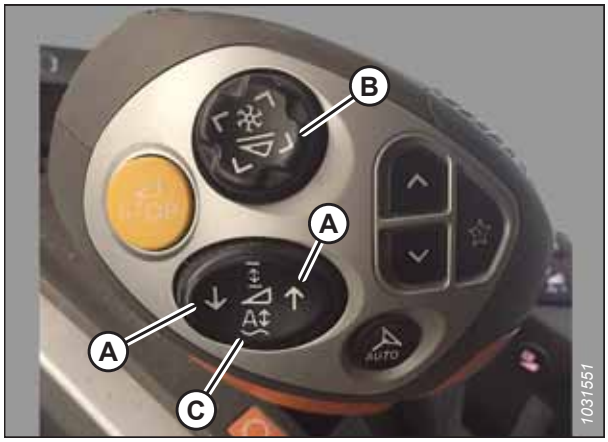


Figure 9.146: Multifunction Lever

NOTE:

Triangle (A) appears on the header height gauge indicating the preset level.

Figure 9.147: CEBIS Main Page

9.11.5 Setting Auto Header Height Control Sensitivity – CLAAS 5000, 6000, 7000, and 8000 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 9.148: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 9.149: Front Attachment Parameters Page

3. Scroll through the list and select DROP RATE WITH AUTO CONTOUR icon (A).
4. Adjust the drop rate by sliding adjuster arrow (B) up or down.
5. Select check mark (C) to confirm the settings.

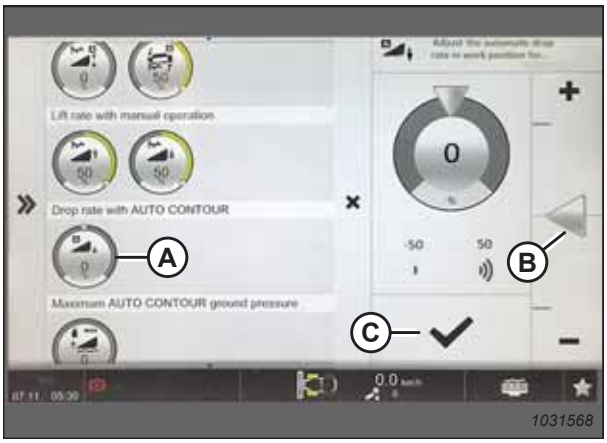


Figure 9.150: Drop Rate with Auto Contour Page

9.11.6 Adjusting Auto Reel Speed – CLAAS 5000, 6000, 7000, and 8000 Series

The preset reel speed can be set when the automatic header functions are activated.

DANGER

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 9.151: CEBIS Main Page

2. From the list, select SETTINGS ON FRONT ATTACHMENT (A).
3. Select REEL TARGET VALUES (B).
4. Select REEL SPEED ADJUST icon (C).

Figure 9.152: Settings on Front Attachment Page

5. Adjust the reel speed target value by sliding adjuster arrow (A) up or down.
6. Select check mark (B) to save the setting.

Figure 9.153: Reel Speed Target Value Page

9.11.7 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 5000, 6000, 7000, and 8000 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the reel position feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Calibrating the reel fore-aft sensor is only possible if the optional CLAAS integration kit (MD #B7231) is installed.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the reel raise and lower functions do not work as expected on model year 2022 and newer CLAAS combines, contact your MacDon or CLAAS Dealer.

1. Position the header 254–356 mm (10–14 in.) off the ground.

   NOTE:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. From the main page, select FRONT ATTACHMENT (A).

Figure 9.154: CEBIS Main Page

3. Select LEARNING PROCEDURES FOR FRONT ATTACHMENT (A).
4. Select LEARNING REEL HEIGHT (B).

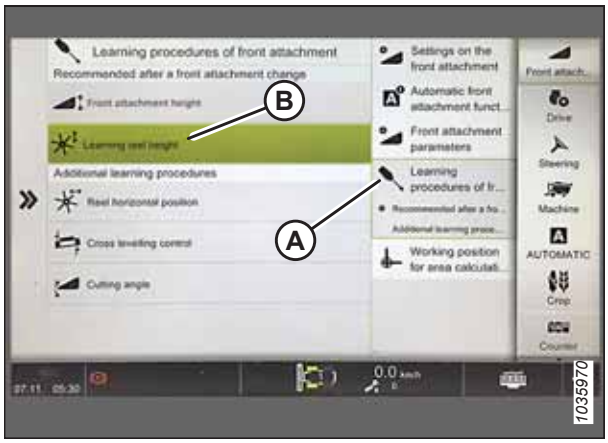


Figure 9.155: Front Attachment Page

5. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

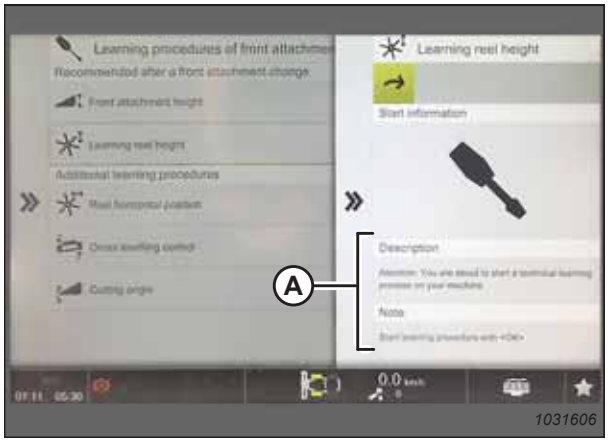


Figure 9.156: Learning Reel Height Page

6. When prompted, select OK button (A) to start the learning procedure.

Figure 9.157: Operator Controls

7. **If equipped with CLAAS integration kit (MD #B7231):** Calibrate the reel fore-aft sensor by selecting REEL HORIZONTAL POSITION (A) as the learning procedure and follow the prompts.

Figure 9.158: Front Attachment Page

9.12 Gleaner® R65, R66, R75, R76, and S Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.12.1 Checking Voltage Range from Combine Cab – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the float.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

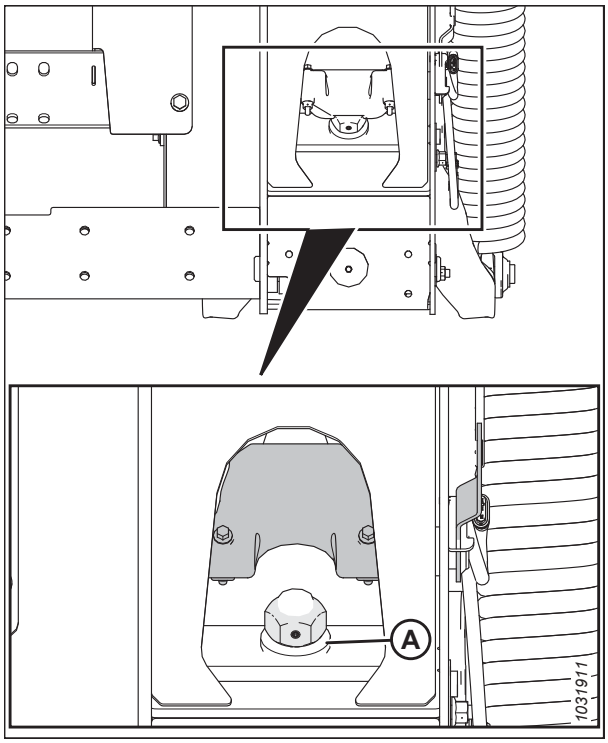


Figure 9.159: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

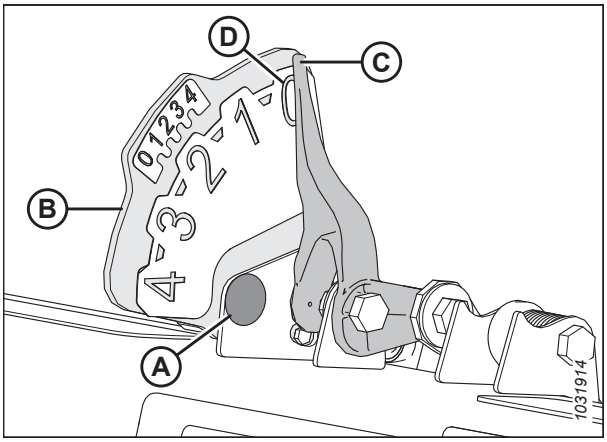


Figure 9.160: Float Indicator

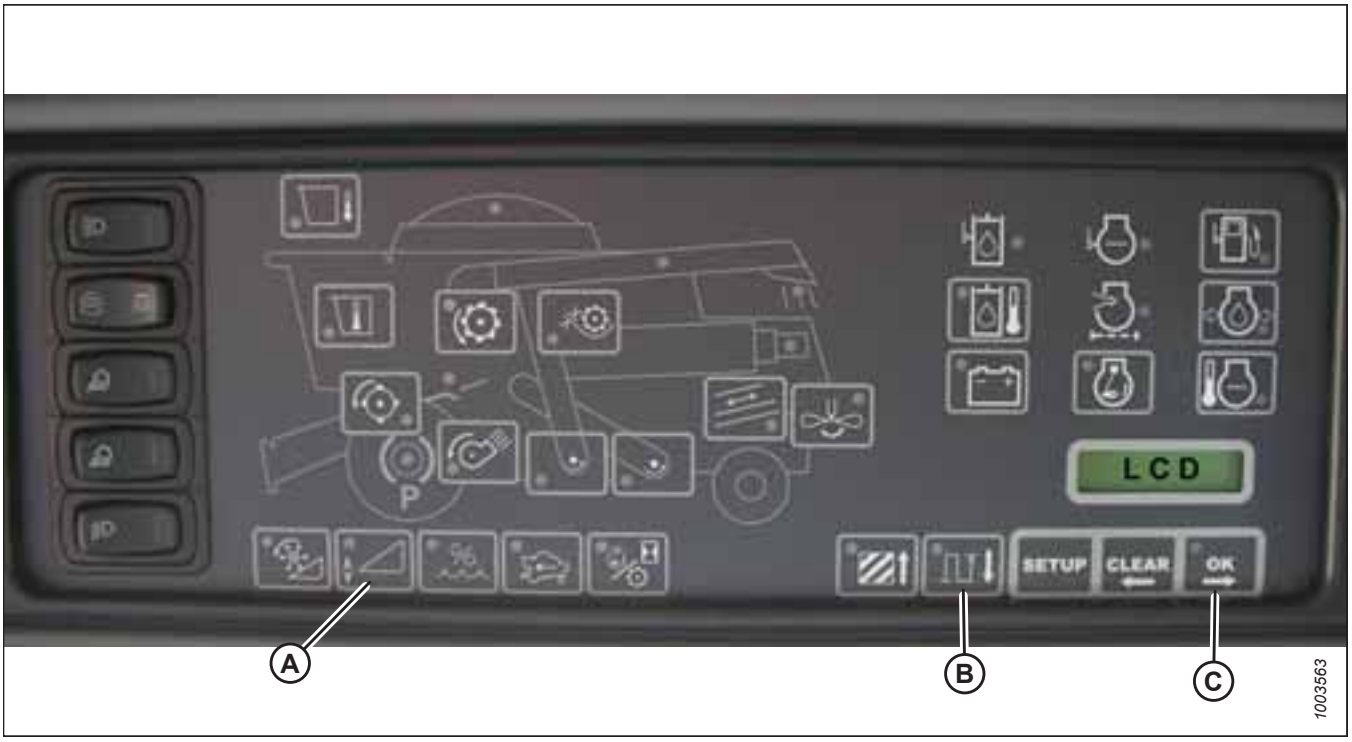


Figure 9.161: Combine Heads-Up Display

5. Ensure that the header float is unlocked.
6. Press and hold button (A) on the heads-up display for 3 seconds to enter diagnostic mode.
7. Scroll down using button (B) until LEFT is displayed on the LCD screen.
8. Press OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the AHHC. Raise and lower the header to see the full range of the voltage readings.

9.12.2 Engaging Auto Header Height Control – Gleaner R65, R66, R75, R76, and Pre-2016 S Series

Engage the auto header height control (AHHC) before adjusting it for height and sensitivity.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

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.

Figure 9.162: Combine Auto Header Height Controls

1. Press AUTO MODE button (A) until AHHC LED light (B) begins flashing. If the RTC light is flashing, press AUTO MODE button (A) again until it switches to the AHHC.

2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header should drop to the ground. The AHHC is now engaged and can be adjusted for height and sensitivity.

3. Use the controls to adjust the height and sensitivity to the constant changing ground conditions such as shallow gullies and field drainage trenches.

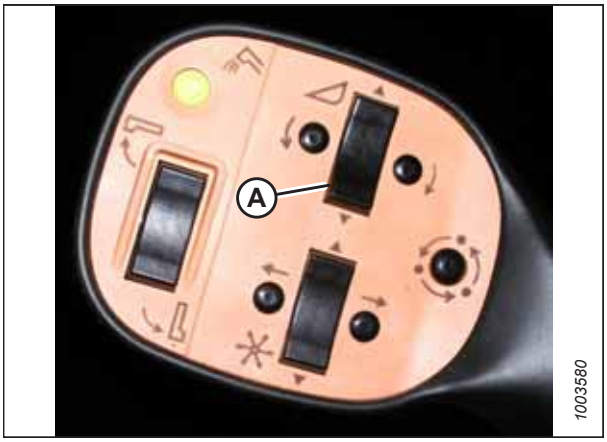


Figure 9.163: Control Handle

9.12.3 Calibrating Auto Header Height Control – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for calibration procedure so the header does not separate from the float module.

Figure 9.164: Combine Auto Header Height Controls

A - AUTO MODE Button
B - AHHC Light
C - CAL1 Button
D - Raise Header Light
E - Lower Header Light
F - AUTO Mode
G - CAL2 Button

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

NOTE:

Calibration should be done on flat, level ground without the header engaged. The header height and header tilt functions must not be in auto or standby modes. The engine rpm must be above 2000 rpm. The header tilt option on 2004 and earlier model combines does not work with MacDon headers. This system will have to be removed and disabled in order to calibrate the AHHC. For instructions, refer to the combine operator's manual.

1. Ensure that the center-link is set to **D**.
2. Press AUTO MODE button (A) until AHHC light (B) lights up.
3. Press and hold CAL1 button (C) until you see the following lights flash: raise header (D), lower header (E), tilt AUTO MODE (F), and AHHC (B).
4. Fully lower the header, and continue to hold the HEADER LOWER button for 5–8 seconds to ensure the float module has separated from the header.
5. Press CAL2 button (G) until lower header light (E) stops flashing, and release it when raise header light (D) begins flashing.
6. Raise the header to its maximum height, and ensure the header is resting on the down stop pads.

7. Press CAL2 button (G) until raise header light (D) turns off.

   NOTE:

   The following steps are applicable only to 2005 and newer combines with the Smartrac feeder house.

8. Wait for the HEADER TILT LEFT light (not shown) to start flashing, and then tilt the header to the maximum left position.

9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing, and release the button when the HEADER TILT RIGHT light (not shown) begins flashing.

10. Tilt the header to the maximum right position.

11. Press CAL2 button (G) until all of the following lights flash: raise header (D), lower header (E), height AUTO MODE (A), right header and left header (not shown), and tilt AUTO MODE (F).

12. Center the header.

13. Press CAL1 button (C) to exit calibration and save all values. All lights should stop flashing.

    NOTE:

    If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

9.12.4 Turning off Accumulator – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The accumulator being on will affect the combine's height adjustment reaction time, which can affect the auto header height control (AHHC) system's performance.

Refer to the combine operator's manual for the procedure for turning the accumulator off and on. For best performance, turn the feeder house accumulator off.

NOTE:

The accumulator is located in front of the front left axle beam.

Figure 9.165: Combine Accumulator ON/OFF Switch
A - Accumulator Lever (Off Position)

9.12.5 Adjusting Header Raise/Lower Rate – Gleaner R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) system's stability is affected by hydraulic flow rates. Adjust the header raise/lower rate to ensure the stability of the auto header height control system.

Ensure that header raise restrictor (A) and header lower restrictor (B) in the hydraulic manifold are adjusted so that it takes approximately 6 seconds to raise the header from ground level to maximum height (that is, to the point at which the hydraulic cylinders are fully extended), and approximately 6 seconds to lower the header from maximum height to ground level.

If there is excessive header movement (for example, hunting) when the header is on the ground, adjust the lower rate so that it takes 7 or 8 seconds for the header to drop down to ground level.

NOTE:

Make this adjustment with the hydraulic system at its normal operating temperature (54.4°C [130°F]) and the engine running at full throttle.

Figure 9.166: Header Raise and Lower Adjustable Restrictors

9.12.6 Adjusting Ground Pressure – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Adjust the header ground pressure setting so that the pressure is as light as possible, but sufficiently heavy that the header does not bounce while in operation.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Ensure indicator (A) is at position **0** (B) with the header is 254–356 mm (10–14 in.) off the ground. If not, the float sensor output voltage should be checked. For instructions, refer to *9.12.1 Checking Voltage Range from Combine Cab – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series, page 338*.

   NOTE:

   When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

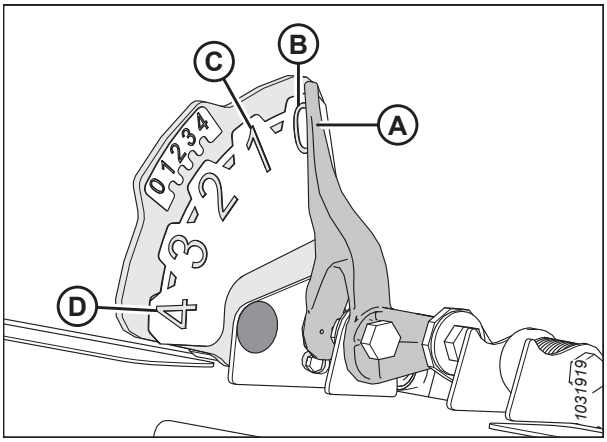


Figure 9.167: Float Indicator

2. Ensure the header is in auto header height control (AHHC) mode. This is indicated by AUTO MODE LED light (A) displaying a continuous, solid light.

3. The header will lower to the height (ground pressure) corresponding to the position selected with height control knob (B). Turn the knob counterclockwise for minimum ground pressure, and clockwise for maximum ground pressure.

Figure 9.168: AHHC Console

9.12.7 Adjusting Auto Header Height Control Sensitivity – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Auto header height control (AHHC) sensitivity refers to the distance that the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

Figure 9.169: Auto Header Height Control Console

SENSITIVITY ADJUSTMENT dial (A) controls the distance the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

When SENSITIVITY ADJUSTMENT dial (A) is set to maximum (turned completely clockwise), only small changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 19 mm (3/4 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

When SENSITIVITY ADJUSTMENT dial (A) is set to minimum (turned completely counterclockwise), large changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 51 mm (2 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

The HEADER SENSE LINE input also changes the range of the sensitivity. When connected to a draper, the counterclockwise position (least sensitive) allows for approximately 102 mm (4 in.) of vertical travel before correction is made.

9.12.8 Troubleshooting Alarms and Diagnostic Faults – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Refer to this section to learn the meaning of the alarms and faults related to the auto header height control (AHHC) system. Alarms and diagnostic faults are displayed on the combine's electronic instrument panel (EIP).

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

Display type:

Displayed on tachometer (A) as XX or XXX.

Figure 9.170: Tachometer

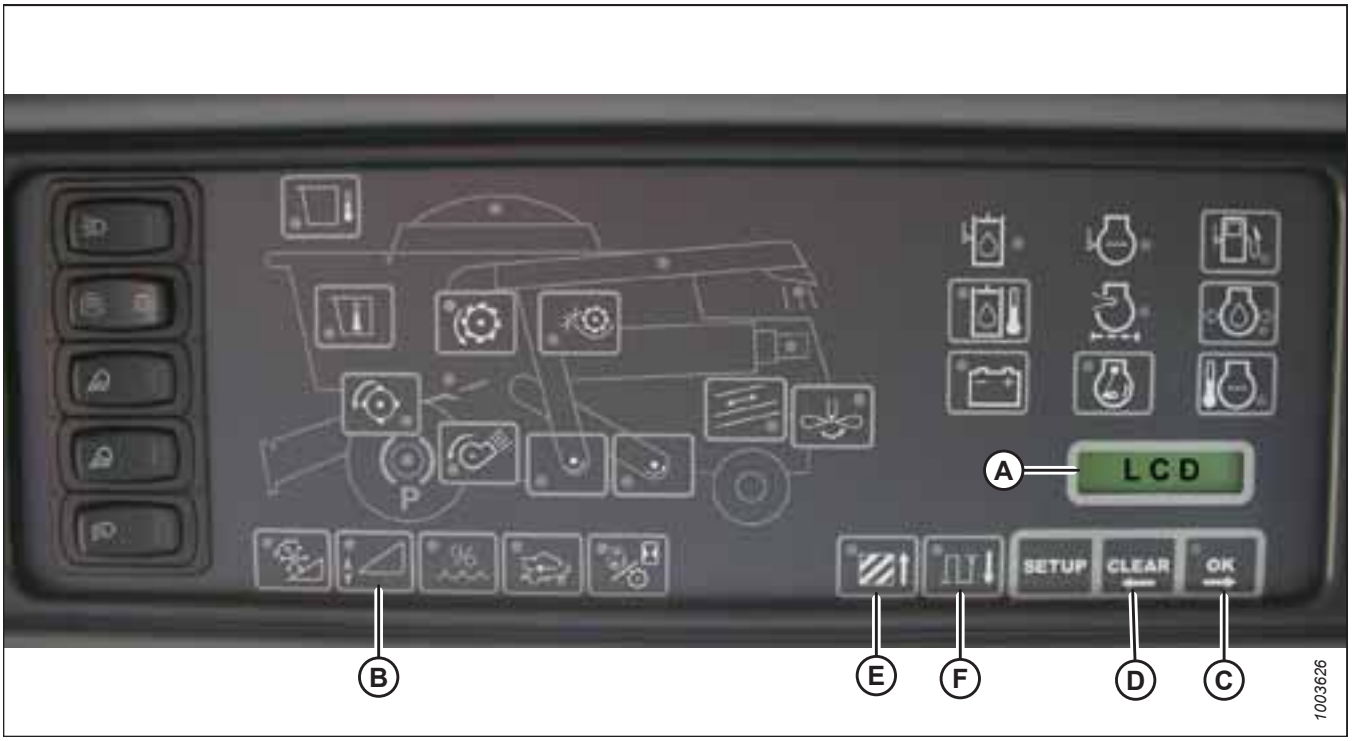


Figure 9.171: Combine Electronic Instrument Panel (EIP)

NOTE:

Displayed on LCD (A) as XX in. or XXX cm.

Alarm conditions:

If an error message is received from the fuse panel, an alarm sounds. The alarm buzzer sounds five times every 10 seconds. LCD (A) on the electronic instrument panel (EIP) indicates the header system in error as HDR CTRL followed by HGT ERR for height, and HDR CTRL followed by TILT ERR for tilt. The header height LED flashes yellow two times every second.

When an alarm condition occurs, a green LED flashes (green, yellow, or red depending on the input). In addition, a message is displayed on the LCD to identify the nature of the alarm. For example, HYD TEMP, OPEN, SHRT will be flashed alternately.

Diagnostic fault failures:

Refer to Figure *9.171, page 347*.

Pressing header height switch (B) for a minimum of 5 seconds will put the EIP in header diagnostic mode. The LCD (shown on previous screen) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after 3 seconds, header fault parameter labels are displayed on the EIP LCD. All the information displayed is read-only.

OK (C) and CLEAR (D) buttons allow you to scroll through the list of parameters. If there are no active fault codes, the EIP LCD will display NO CODE.

When a parameter is displayed, its label is displayed for 3 seconds, after which its value is automatically displayed.

Pressing OK button (C) while the value is displayed will advance to the next parameter and display its label.

When a parameter label is displayed and OK button (C) is pressed before 3 seconds, the parameter's value will be displayed.

Pressing AREA (E) will cycle through the options. When LEFT is displayed on the LCD, press OK button (C), and the auto header height control (AHHC) voltage will be shown on the display.

Press DIST button (F) to cycle back through the table.

Press CLEAR button (D) to exit header diagnostics and return to normal mode.

9.13 Gleaner® S9 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.13.1 Setting up Header – Gleaner® S9 Series

To set up a header to work with the auto header height control (AHHC) system, you will need to access the HEADER SETTINGS menu using the Tyton terminal.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

AGCO Tyton terminal (A) is used to set up and manage a MacDon draper header on Gleaner® S9 Series Combines. Use the touch screen display to select the desired item on the screen.

Figure 9.172: Operator's Station – Gleaner S9®

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right quadrant of the home page, select COMBINE icon (A). The COMBINE MAIN MENU opens.

Figure 9.173: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, select HEADER SETTINGS (A). The HEADER SETTINGS page appears.

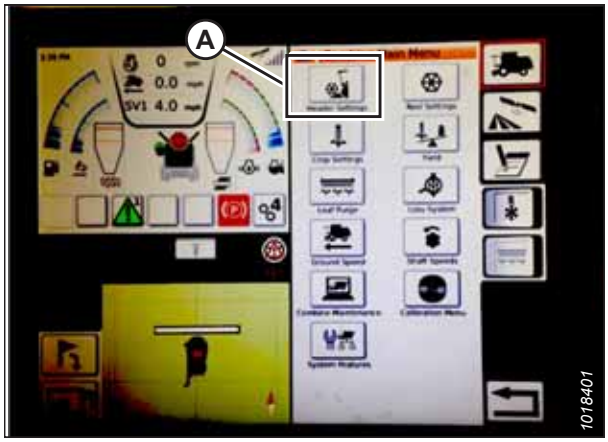


Figure 9.174: Header Settings in Combine Main Menu

3. Select HEADER CONFIGURATION field (A). A dialog box showing predefined headers appears..
   - If your MacDon header is already set up, it appears on the header list. Select MacDon header title (B) to highlight the selection in blue, and then select green check mark (E) to continue.
   - If only default header (D) is shown, select ABC button (C), and use the on-screen keyboard to enter the MacDon header information. When complete, select one of the following options to return to the HEADER SETTINGS page:
     - Green check mark (E) saves the settings
     - Garbage can icon (F) deletes the highlighted header from the list
     - Red X (G) cancels the change(s)

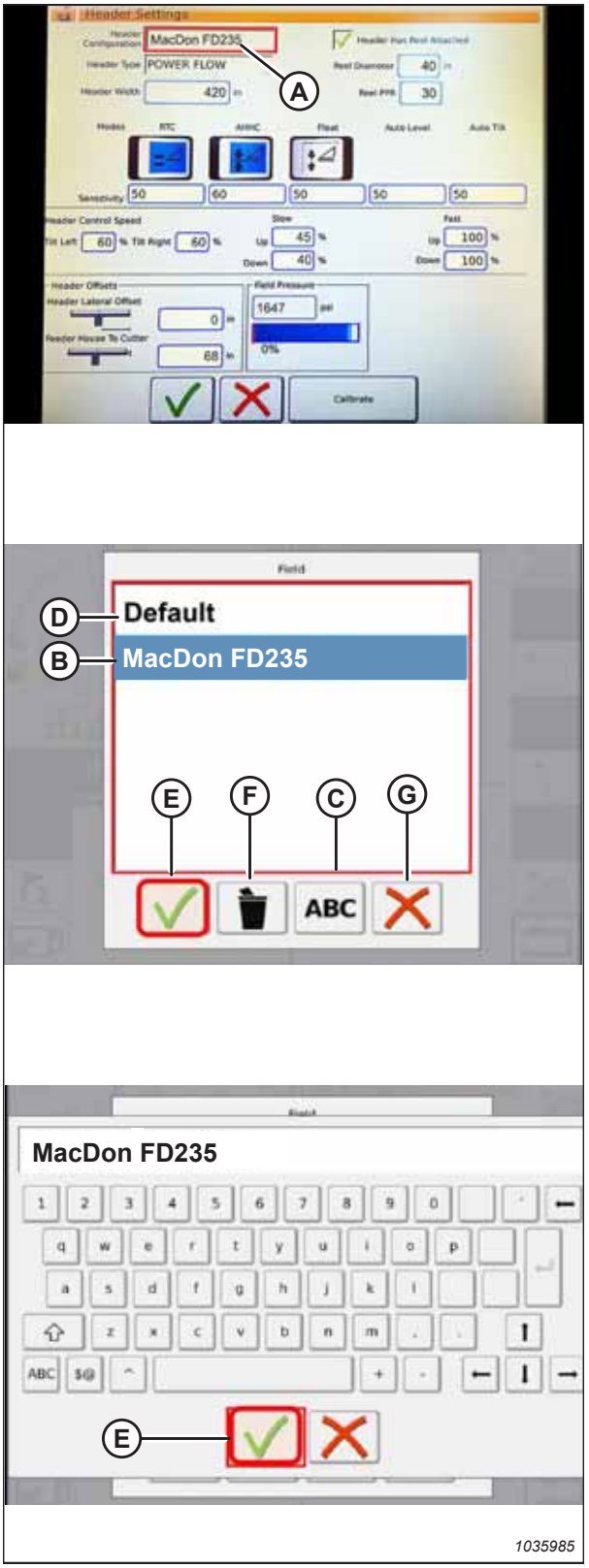


Figure 9.175: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A). A list of predefined header types appears.

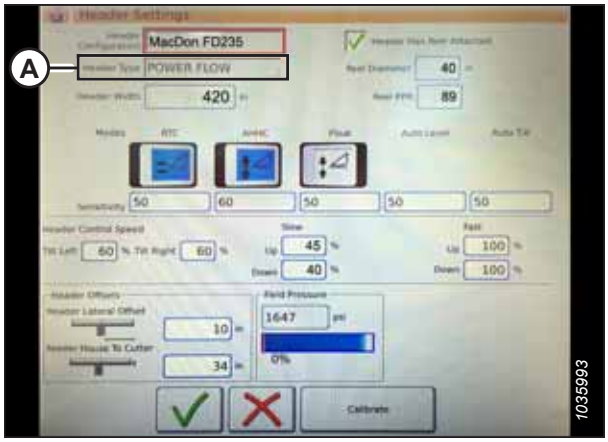


Figure 9.176: Header Settings

5. Touch POWER FLOW (A). Touch green check mark (B) to save the selection.

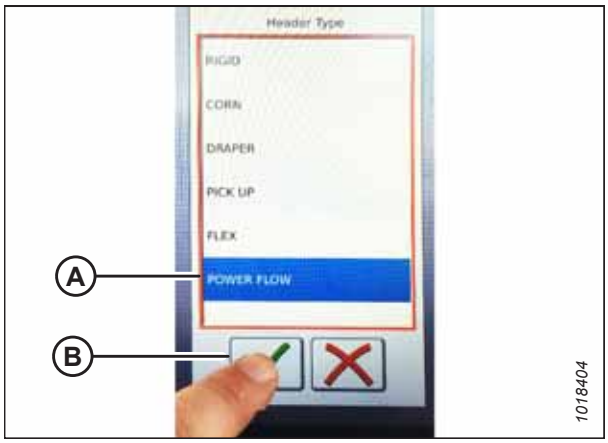


Figure 9.177: Header Type

6. Ensure that HEADER HAS REEL ATTACHED check box (A) is checked.

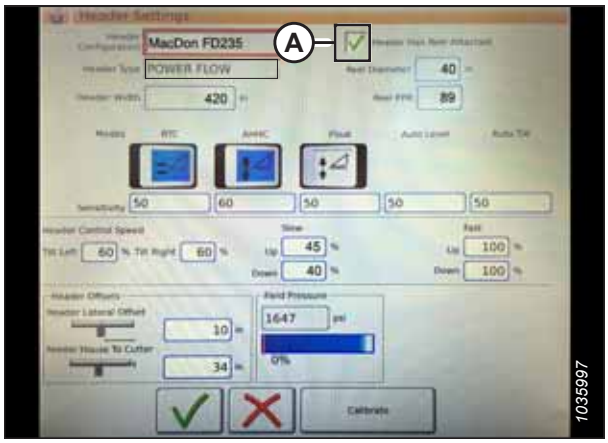


Figure 9.178: Header Settings

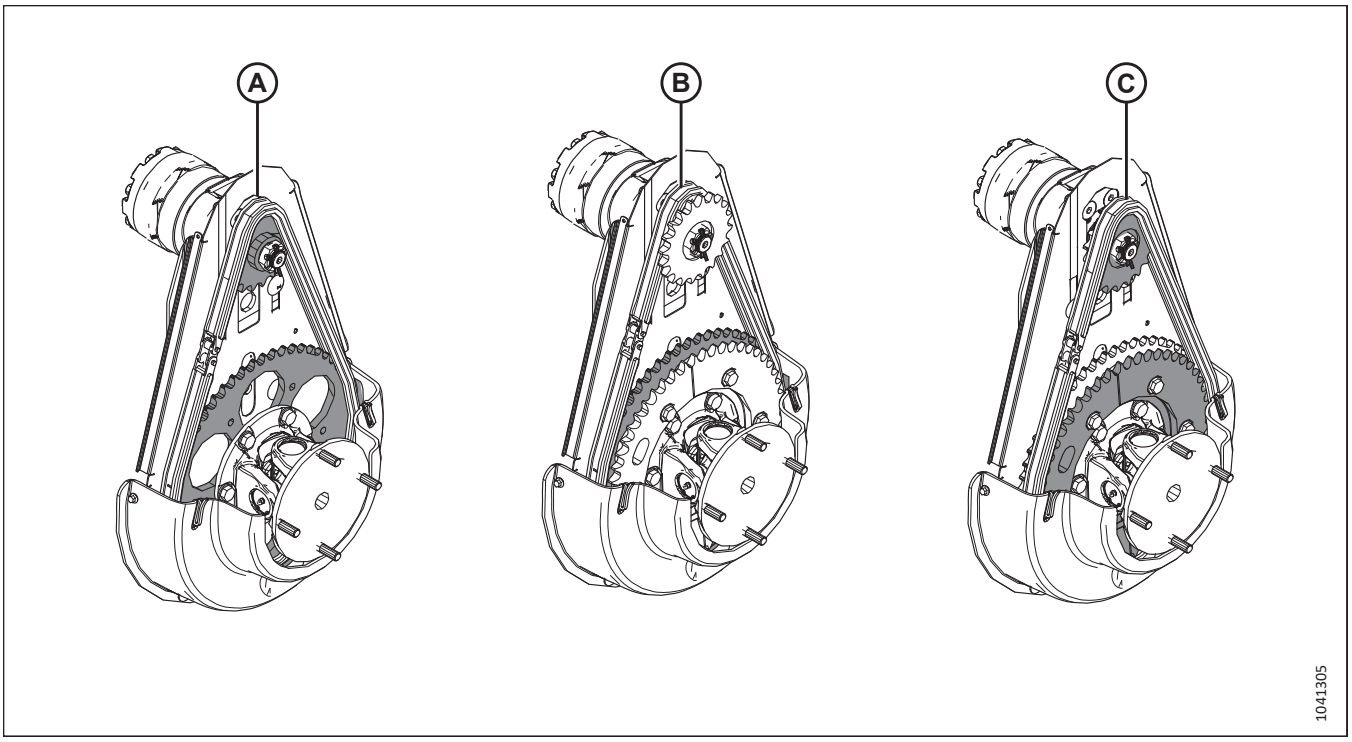


Figure 9.179: Reel Drive Configurations

7. If not already known, identify the type of reel drive configuration installed on the header:
   - (A) Standard configuration: One set of sprockets is installed.
   - (B) High torque/low speed: The chain is installed on the inner set of sprockets.
   - (C) High speed/low torque: The chain is installed on the outer set of sprockets.

8. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** for a MacDon reel.

9. Touch REEL PPR (pulses per revolution) field (B). Enter the value according to the type of reel drive sprocket configuration:
   - Standard configuration: **192**
   - High torque/low speed: **303**
   - Low torque/high speed: **169**

   NOTE:

   When AHHC is enabled, the reel should be moving slightly faster than the combine's ground speed. If the reel moves faster or slower than desired at the above PPR setting, contact the Dealer for assistance.

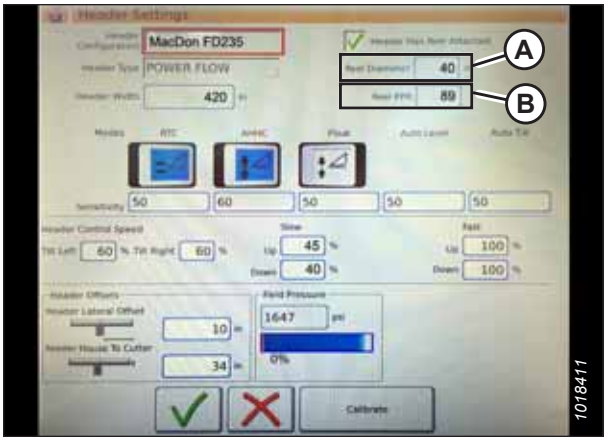


Figure 9.180: Header Settings

10. Touch green check mark (B) at the bottom of numeric keypad (A).

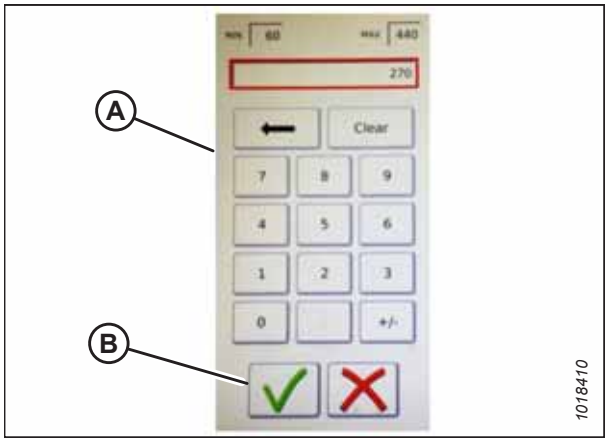


Figure 9.181: Numeric Keypad

11. Touch green check mark (A) at the bottom of the HEADER SETTINGS page.

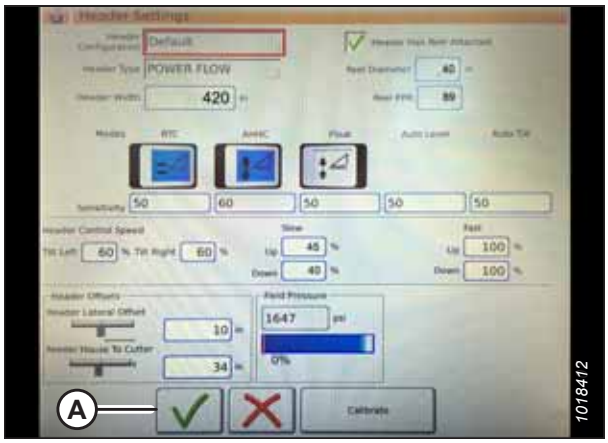


Figure 9.182: Header Settings Page

9.13.2 Setting Minimum Reel Speed and Calibrating Reel – Gleaner® S9 Series

To set up the header's minimum reel speed to work with the auto header height control (AHHC) system, and to calibrate the reel, the REEL SETTINGS menu will need to be accessed.

DANGER

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

Figure 9.183: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard appears. Enter the desired value. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in mph and rpm.

   NOTE:

   At the bottom of the REEL SETTINGS page, the reel diameter and reel pulses per revolution (PPR) are displayed. These values have already been set in the HEADER SETTINGS page.

3. To calibrate the reel speed, touche CALIBRATE button (A) in the top right of the page. The CALIBRATION WIZARD opens and displays a hazard warning.

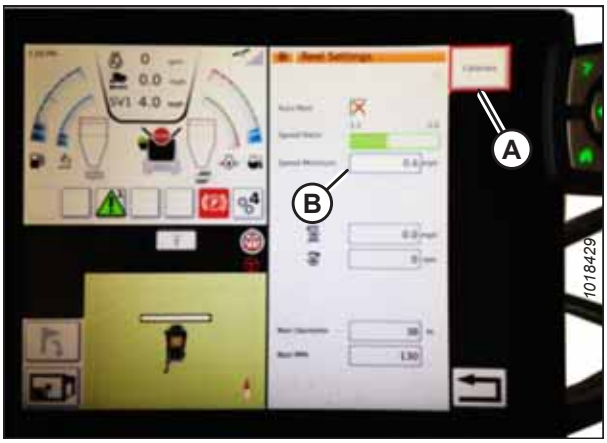


Figure 9.184: Reel Settings Calibration

4. Review the conditions listed in the CALIBRATION WIZARD warning and make sure you meet all of them. Press green check mark (A) to accept and start the reel calibration. Pressing red X (B) will cancel the calibration procedure.

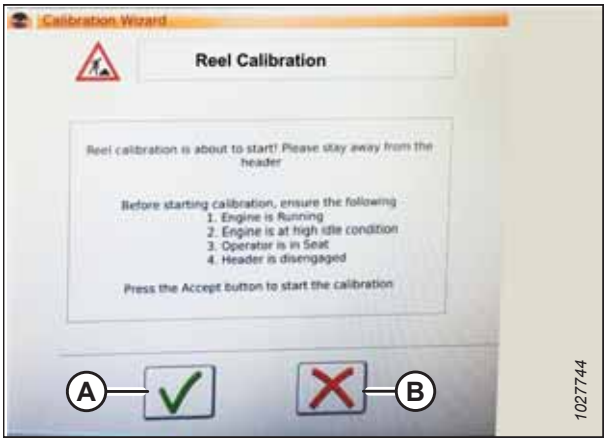


Figure 9.185: Calibration Wizard

5. A message appears in the CALIBRATION WIZARD stating that the reel calibration has started. The reel will begin turning slowly and the reel speed will increase to high speed. A progress bar is provided. If necessary, touch the red X to cancel. Otherwise, wait for the message that reel calibration has completed successfully. Touch the green check mark to save the calibrated settings.

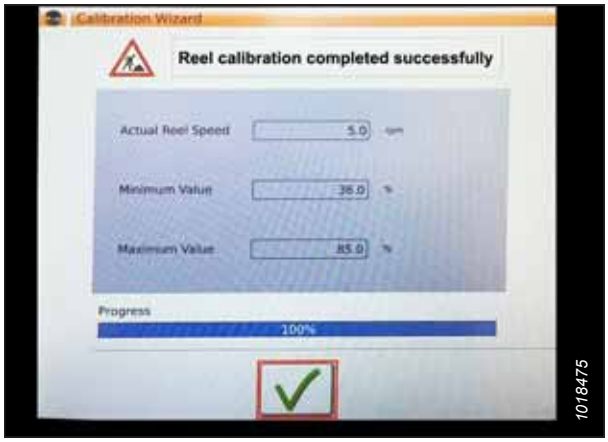


Figure 9.186: Calibration Progress

9.13.3 Setting up Automatic Header Controls – Gleaner® S9 Series

Automatic header functions are configured on the HEADER SETTINGS page.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. **Automatic control functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches are disabled (not highlighted).

2. **Sensitivity:** Setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase the sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease the sensitivity if the combine hunts for a position in Auto Mode.

   NOTE:

   The sensitivity starting points for MacDon headers are as follows:

   - **50** for RTC (A)
   - **60** for AHHC (B)

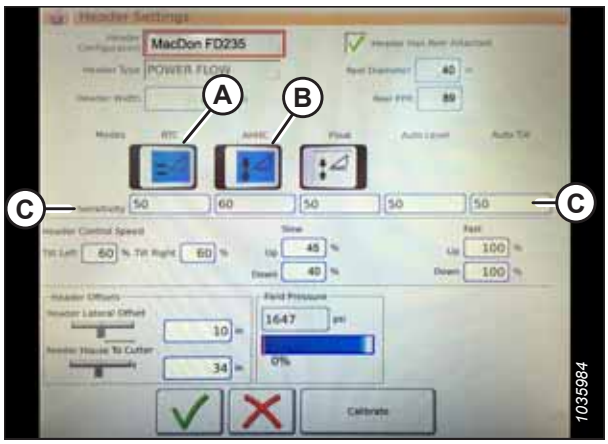


Figure 9.187: Automatic Controls and Sensitivity Settings

3. **Header speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate.
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on the first detent and fast on the second.

   NOTE:

   The control speed starting points for MacDon headers are as follows:

   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

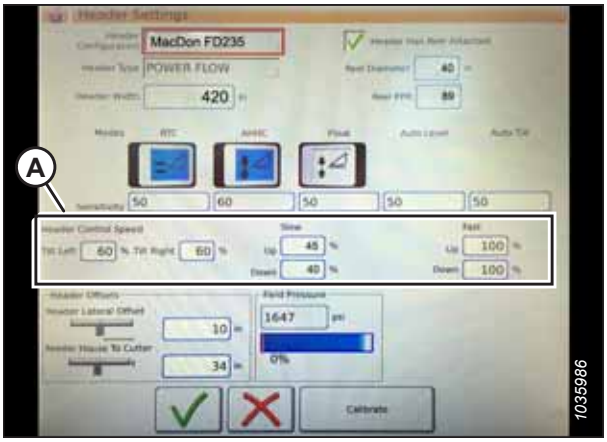


Figure 9.188: Header Speed Control Settings

4. **Header offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:

   - Header Lateral Offset: the distance between the centerline of the header and the centerline of the machine. Set to **0** for a MacDon header.
   - Feeder House to Cutter: the distance from the machine interface to the cutterbar. Set to **68** for a MacDon header.

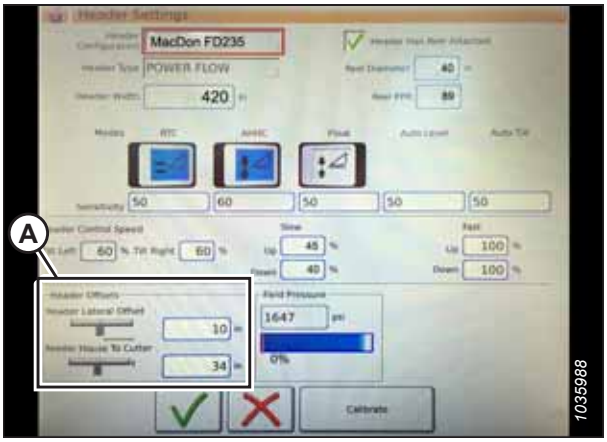


Figure 9.189: Header Offset Settings

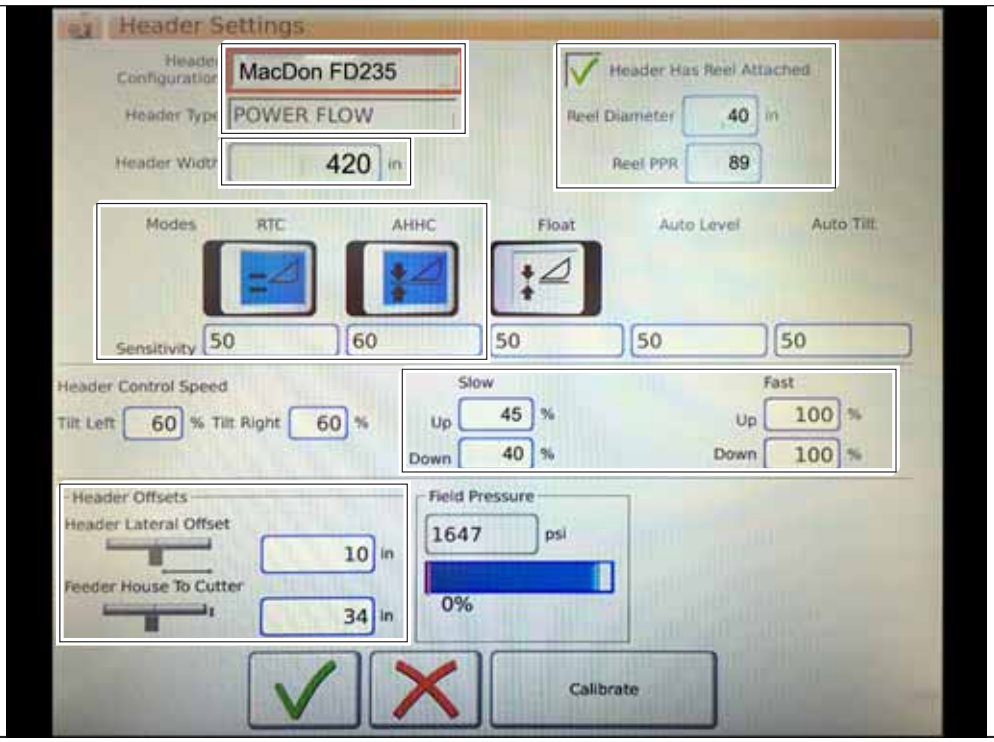


Figure 9.190: MacDon Header Settings Inputs

9.13.4 Calibrating Auto Header Height Control – Gleaner® S9 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. On the COMBINE MAIN MENU, select HEADER SETTINGS (A).

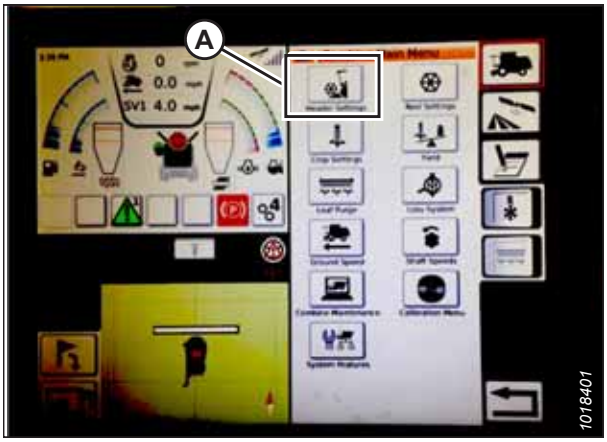


Figure 9.191: Combine Main Menu

2. Select CALIBRATE (A) at the bottom right of the page. The HEADER CALIBRATION page appears.

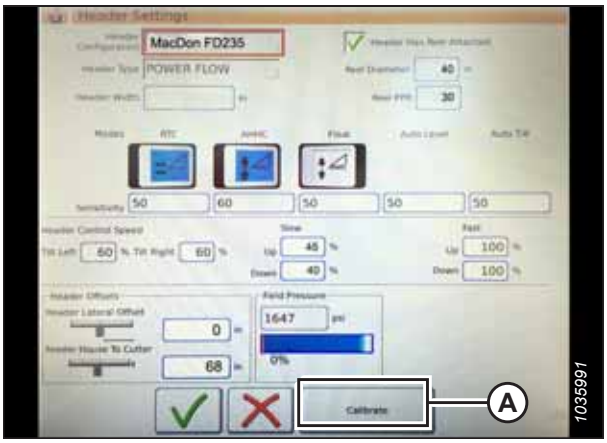


Figure 9.192: Header Settings Page

The right side of the page shows header calibration information (A). The results are shown for a variety of sensors (B):

- Left and right header sensor (voltage) (values will be the same with MacDon headers)
- Header height sensor (mA)
- Tilt position sensor (mA)

The following valid modes are shown with check marks (C) below sensor values (B):

- Return to cut
- Automatic header height control

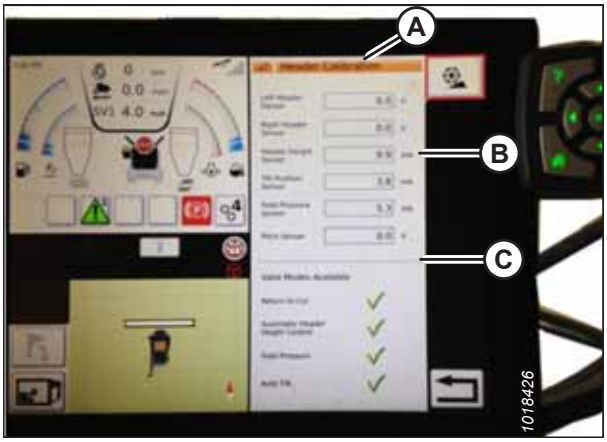


Figure 9.193: Header Calibration Page

3. On the control handle, press HEADER DOWN button (A). The sensor values on the HEADER CALIBRATION page will change as the header falls.

Figure 9.194: Header Down Switch

4. Select CALIBRATE icon (A).

Figure 9.195: Header Calibration

5. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.

6. Select the green check mark at the bottom of the page to start the CALIBRATION WIZARD.

Figure 9.196: Header Calibration Warning

A calibration progress bar displays at the bottom of the screen. The process can be stopped at any time by selecting the red X. The header moves automatically and erratically during this process.

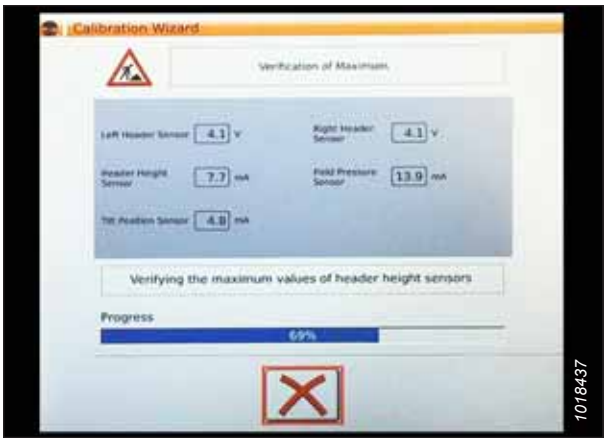


Figure 9.197: Calibration in Progress

7. When the calibration is complete, a message will appear, showing summary information (A). Green check marks means that functions (B) have been calibrated. Select bottom green check mark (C).

Figure 9.198: Completed Calibration Page

NOTE:

Touch CALIBRATION icon (A) on the COMBINE MAIN MENU page. The CALIBRATION MENU appears. On the CALIBRATION MENU, several features can be calibrated, such as the header and the reel.

Figure 9.199: Direct Calibration Menu

9.13.5 Operating Auto Header Height Control – Gleaner® S9 Series

Once the auto header height control (AHHC) system has been set up, follow these instructions to take advantage of its functions.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

The following controls are used to operate the auto header height control AHHC functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

Use the combine operator's manual to familiarize yourself with the controls.

Figure 9.200: Gleaner® S9 Operator Controls

1. With the header running, set lateral tilt switch (A) to MANUAL.
2. Engage the AHHC by pressing switch (B) upward to the **I** position.

Figure 9.201: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current set point position.

Figure 9.202: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the position.

Figure 9.203: Header Control Cluster

9.13.6 Reviewing Header In-Field Settings – Gleaner® S9 Series

The auto header height control (AHHC) settings can be reviewed at a glance by pressing the HEADER icon on the Tyton terminal's home page.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. To view the following header group settings, select HEADER icon (A) on the right side of the home page:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by the red line)
   - HEADER symbol (D) – select to adjust the set point cut-off position using the scroll wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune with the header height set point control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

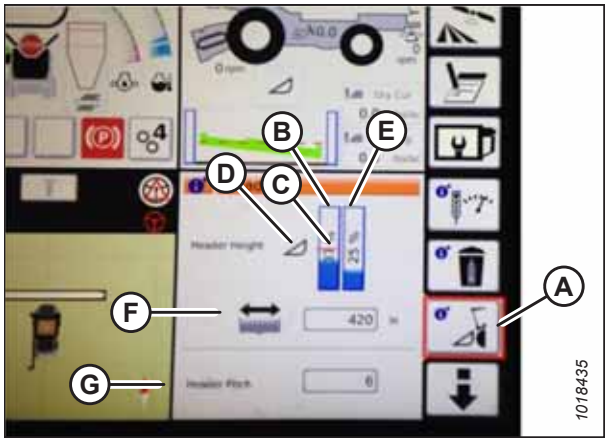


Figure 9.204: Header Groups

2. Selecting a field opens the on-screen keyboard, so that the values can be adjusted. Enter the new value and select the green check mark when complete.

   NOTE:

   Scroll wheel (A) is located on the right side of the Tyton terminal.

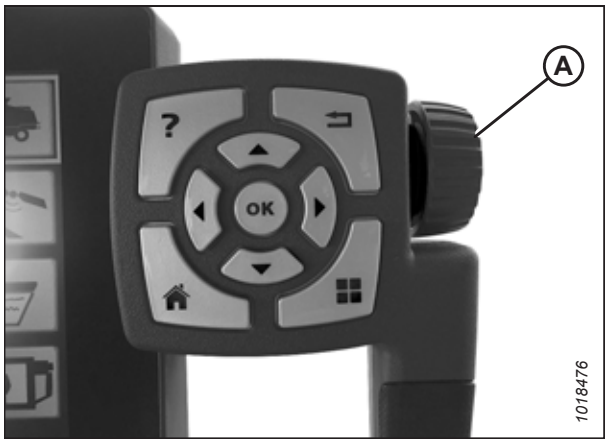


Figure 9.205: Adjustment Wheel on Right Side of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 9.206: Header Control Cluster

9.13.7 Header Settings Quick Reference – Gleaner S9 Series

The recommended auto header height control (AHHC) settings for a D2 Series draper header operating with a Gleaner S9 Series combine are provided.

Table 9.3 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[11]	192
Sensitivity (RTC)	50
Sensitivity (AHHC)	60
Header control speed[12]	Slow: Up 45/Down 40 Fast: Up 100/Down 100
Header lateral offset	0
Feeder house to cutter	68

11. Pulses per revolution.
12. A two-stage button with slow speed on the first detent and fast on the second.

9.14 IDEAL™ Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.14.1 Setting up Header – IDEAL™ Series

Set these initial configuration options on your IDEAL™ Series combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

Tyton terminal (A) is used to set up and manage the on an IDEAL™ Series combine. Use the touch screen display to select the desired item on the page.

Figure 9.207: IDEAL™ Series Operator's Station

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right of the home page, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

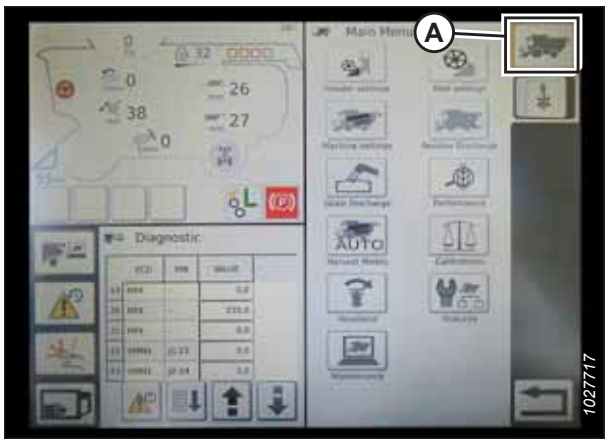


Figure 9.208: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

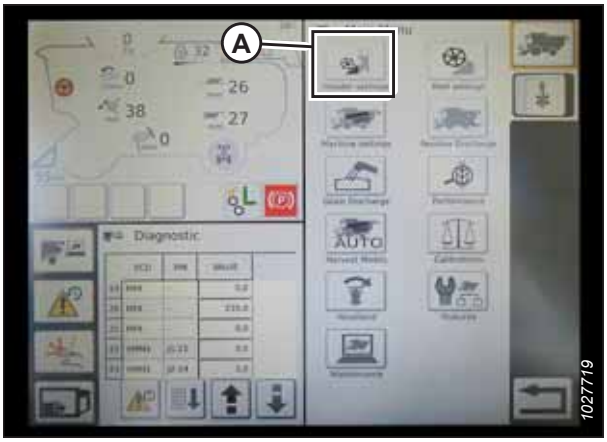


Figure 9.209: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A dialog box showing a list of predefined header configuration profiles opens.
   - If the MacDon header is already set up, it appears on the header list. Touch MacDon header title (B) to highlight the selection in blue, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ABC button (C) and use the on-screen keyboard to enter the MacDon header information. When complete, select one of the following options to return to the HEADER SETTINGS page:
     – Green check mark (E) saves the settings
     – Garbage can icon (F) deletes the highlighted header from the list
     – Red X (G) cancels the change(s)

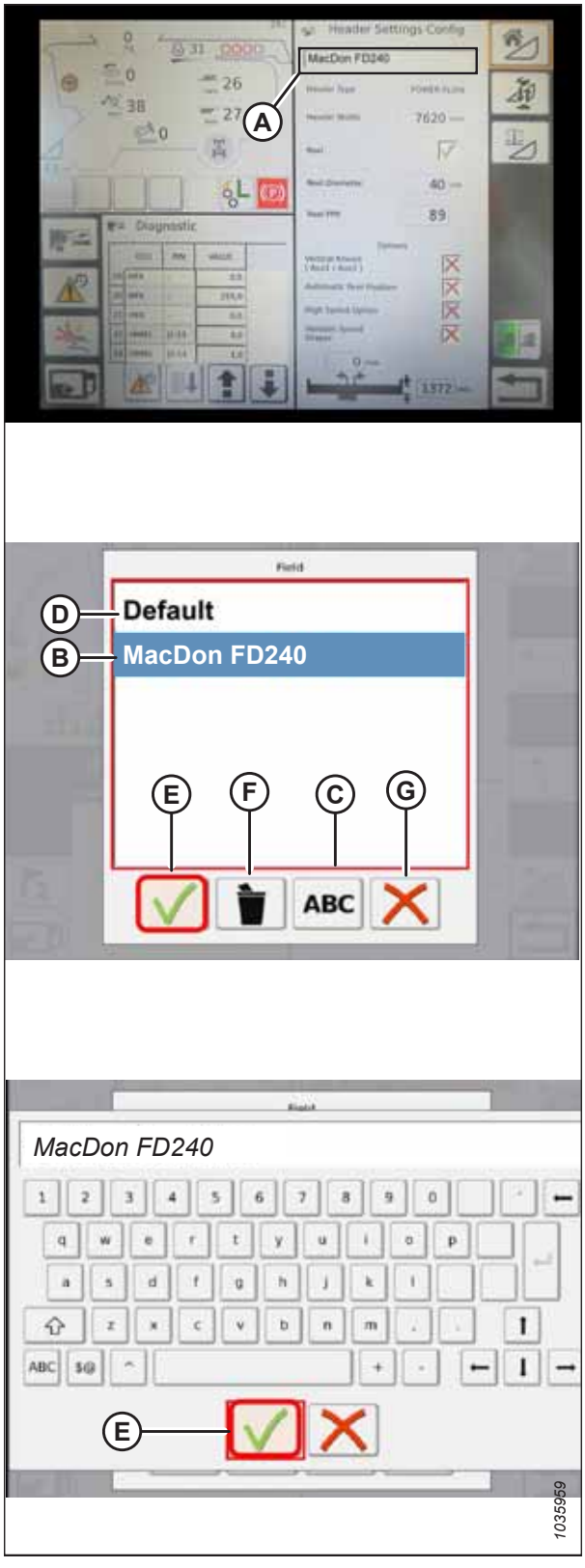


Figure 9.210: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A).

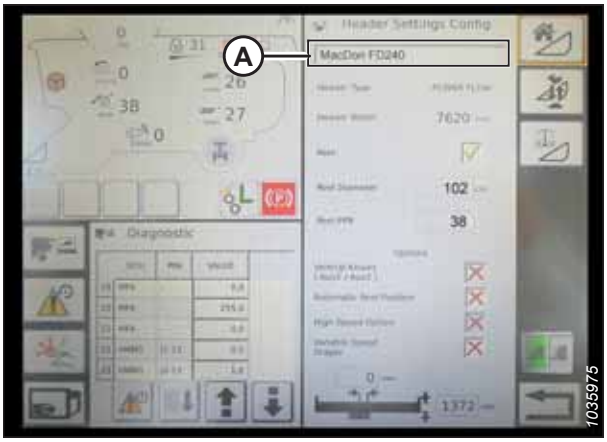


Figure 9.211: Header Settings

5. From the list of predefined header types, touch POWER FLOW (A).
6. Touch green check mark (B) to save the selection and continue.

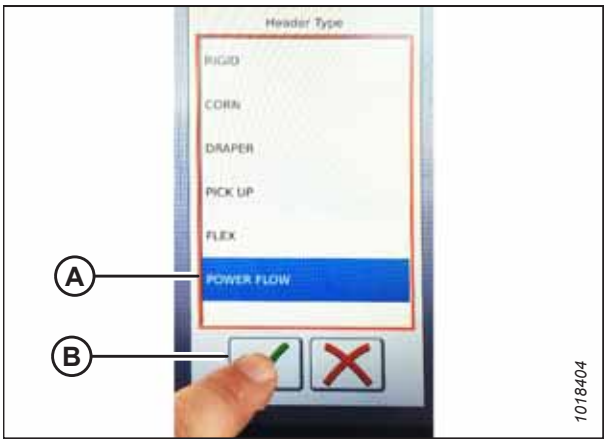


Figure 9.212: Header Type

7. Ensure that REEL check box (A) is checked.

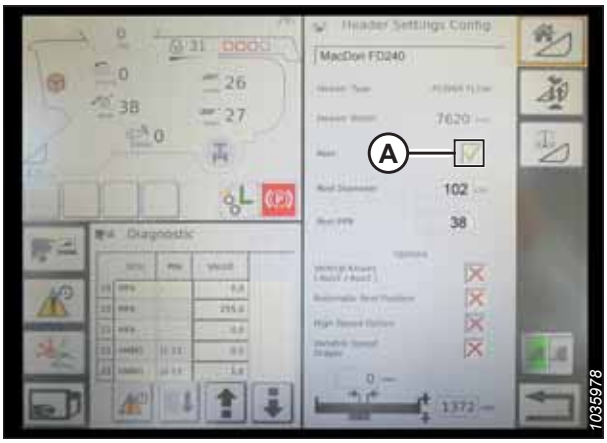


Figure 9.213: Header Settings

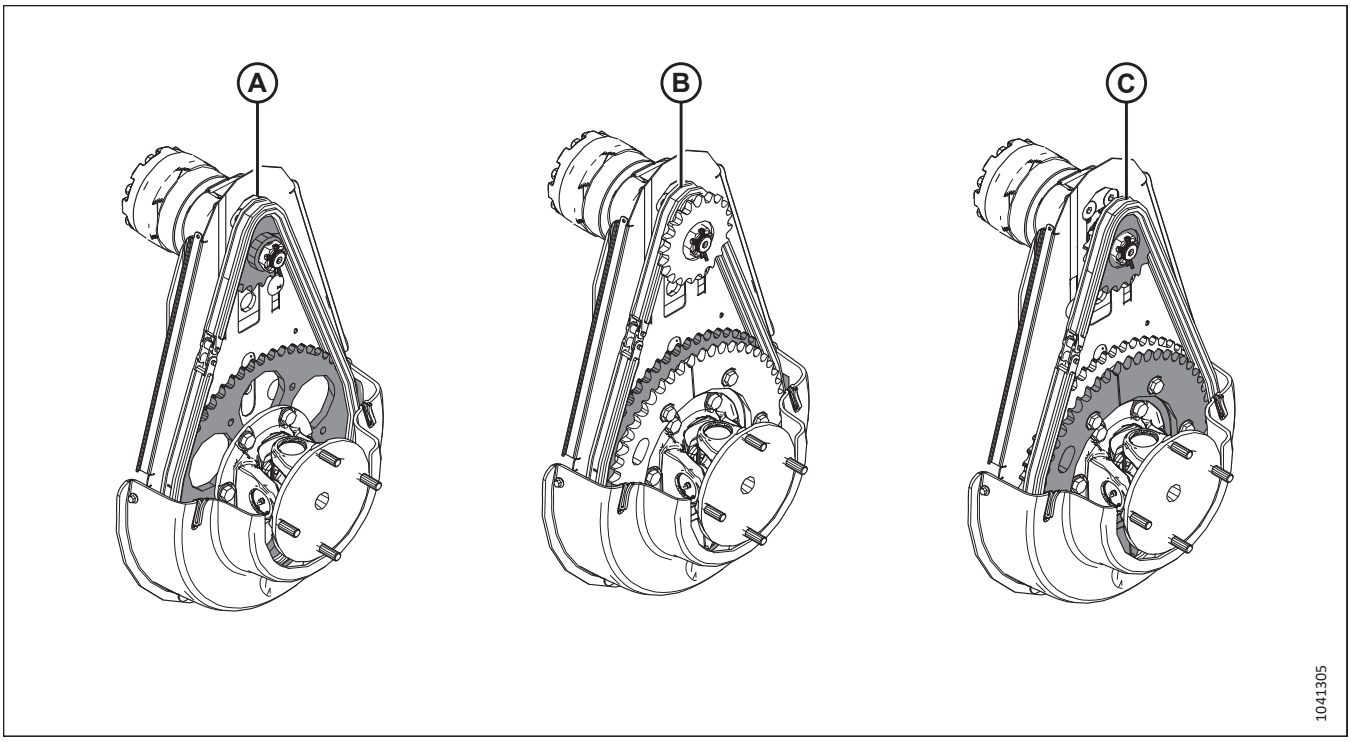


Figure 9.214: Reel Drive Configurations

8. If not already known, identify the type of reel drive configuration installed on the header:
   - (A) Standard configuration: One set of sprockets is installed.
   - (B) High torque/low speed: The chain is installed on the inner set of sprockets.
   - (C) High speed/low torque: The chain is installed on the outer set of sprockets.

9. Touch REEL DIAMETER field (A). A numeric keypad appears. Enter the following value for a MacDon reel:
   - 102 cm (40 in.)

   NOTE:

   If the reel speed does not index correctly, then the reel diameter can be increased to 112 cm (44 in.).

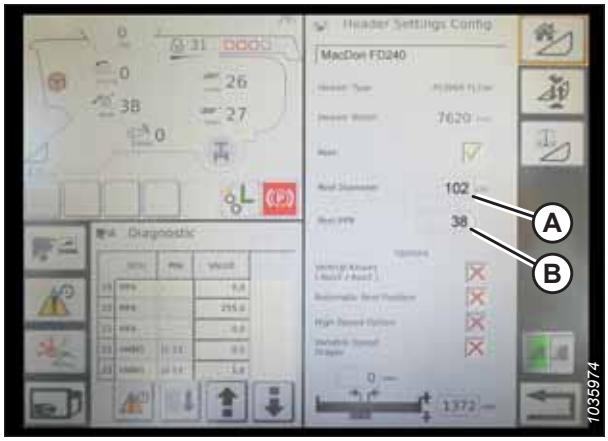


Figure 9.215: Header Settings

10. Touch REEL PPR (pulses per revolution) field (B) and enter the relevant value:
    - **Standard:** 38
    - **High torque/low speed:** 61
    - **High speed/low torque:** 34

NOTE:

When AHHC is enabled, the reel should be moving slightly faster than the combine's ground speed. If the reel moves faster or slower than desired at the above PPR setting, contact the Dealer for assistance.

11. Touch green check mark (B) at the bottom of numeric keypad (A).

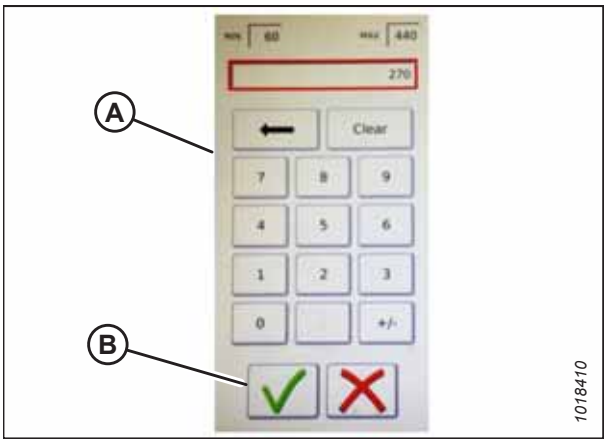


Figure 9.216: Numeric Keypad

12. Touch green check mark (A) at the bottom of the HEADER SETTINGS page.

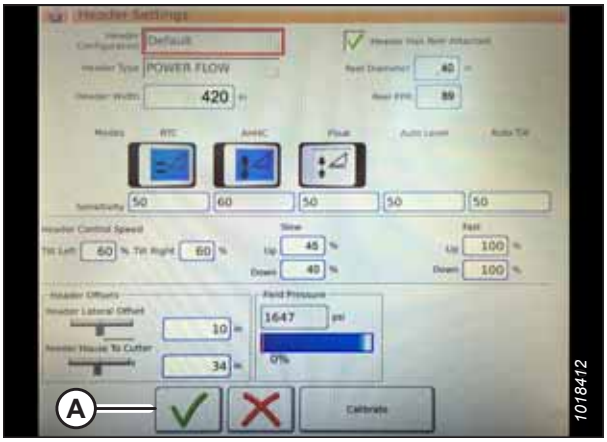


Figure 9.217: Header Settings Page

9.14.2 Setting Minimum Reel Speed and Calibrating Reel – IDEAL™ Series

To configure the reel speed on the header to work with the auto header height control system (AHHC) on an IDEAL™ Series combine, the reel operation parameters must be configured and the combine must run an automatic reel calibration procedure.

DANGER

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

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for updated information.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

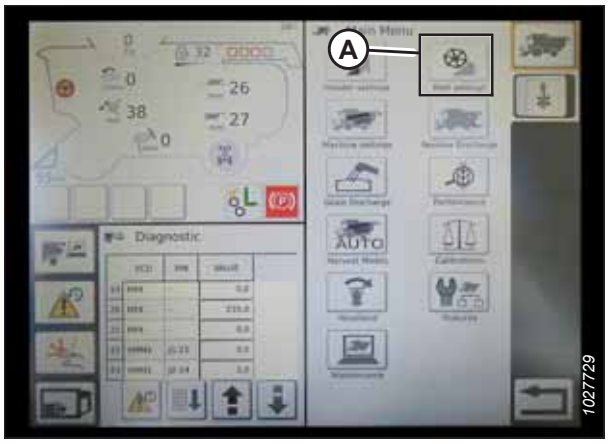


Figure 9.218: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard appears. Enter the desired value. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in miles per hour (mph) and rotations per minute (rpm).

   NOTE:

   The reel diameter and reel pulses per revolution (PPR) are displayed at the bottom of the REEL SETTINGS page. These values have already been set in the HEADER SETTINGS page.

3. Touch CALIBRATE button (A) at the top right corner of the REEL SETTINGS page. The CALIBRATION WIZARD appears.

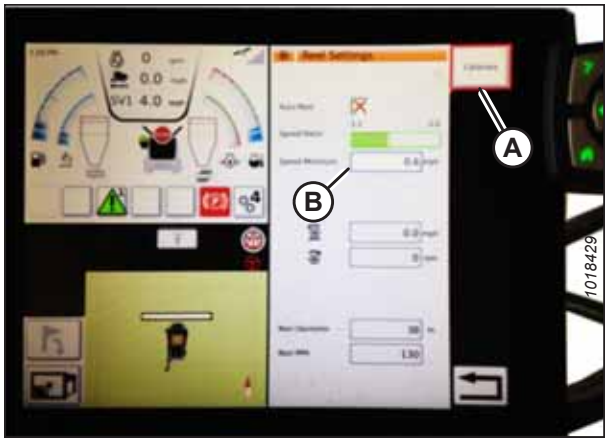


Figure 9.219: Reel Settings Calibration

4. Ensure that all of the conditions listed in the CALIBRATION WIZARD warning have been met. Press the green check mark to start the reel calibration procedure. Pressing the red X will cancel the calibration procedure.

Figure 9.220: Calibration Wizard

5. A message appears in the CALIBRATION WIZARD stating that the reel calibration procedure has started. The reel will begin turning slowly and its speed will gradually increase. If necessary, touch the red X (not shown) to cancel the calibration procedure. Otherwise, wait for the message that the reel calibration procedure has completed successfully. Touch the green check mark to save the calibrated settings.

Figure 9.221: Calibration Progress

9.14.3 Setting up Automatic Header Controls – IDEAL™ Series

To configure the automatic header height control (AHHC) functions on an IDEAL™ Series combine to work with your header, navigate to the HEADER SETTINGS page on the combine's computer.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. **Automatic Control Functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure that the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches should be disabled (not highlighted).

2. **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase the sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease the sensitivity if the combine continually hunts for a position in Auto Mode.

   NOTE:

   The following sensitivity settings are recommended for MacDon headers:

   - **50** for RTC (A)
   - **60** for AHHC (B)

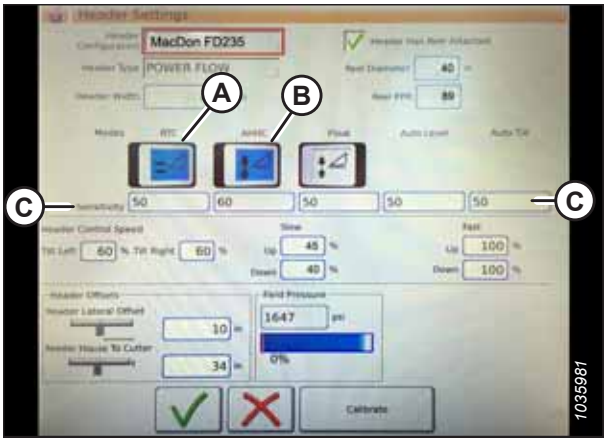


Figure 9.222: Automatic Controls and Sensitivity Settings

3. **Header Speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate.
   - The header raise/lower function uses a two-detent button: the first detent is a slow raise/lower rate; the second detent is a fast raise/lower rate.

   NOTE:

   The recommended header control speed settings are:

   - Slow: Up 45/Down 40
   - Fast: Up 100/Down 100

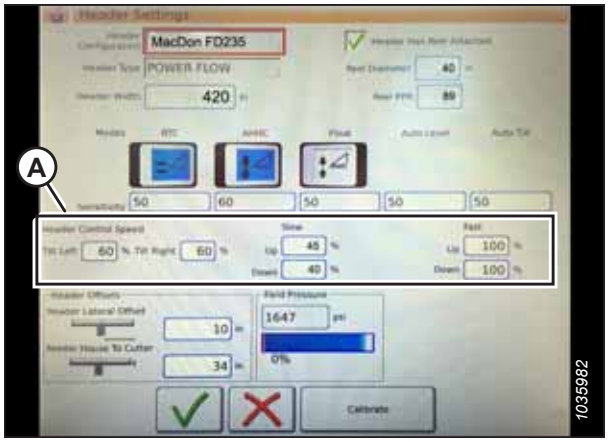


Figure 9.223: Header Speed Control Settings

4. **Header Offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:

   - HEADER LATERAL OFFSET: the distance between the centerline of the header and the centerline of the machine. This should be set at **0** for a MacDon header.
   - FEEDER HOUSE TO CUTTER: the distance from the machine interface to the cutterbar. This should be set at **68** for a MacDon header.

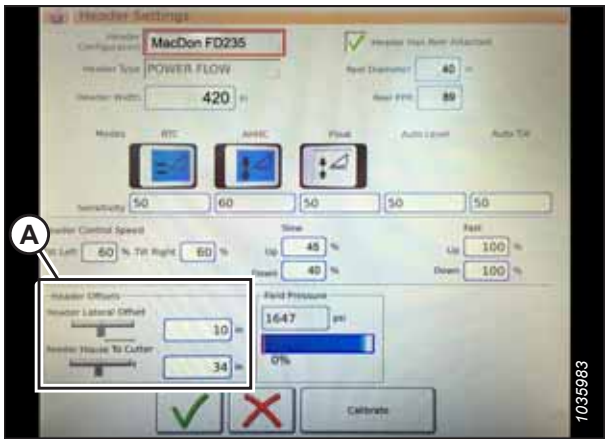


Figure 9.224: Header Offset Settings

9.14.4 Calibrating Header – IDEAL™ Series

The auto header height control (AHHC) sensor output must be calibrated for the combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. On the COMBINE MAIN MENU, select HEADER SETTINGS (A).

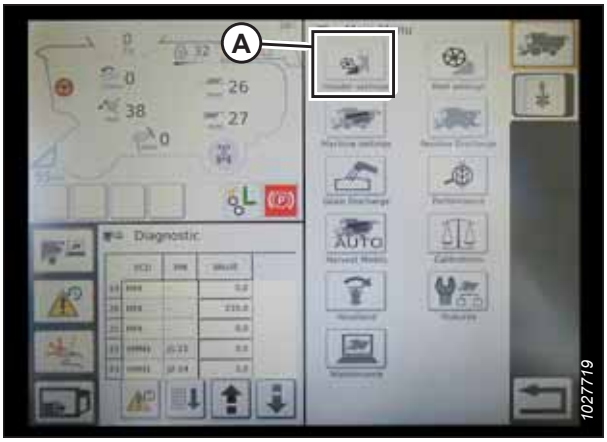


Figure 9.225: Combine Main Menu

2. Select HEADER CALIBRATE (A) at the right side of the HEADER SETTINGS CONFIG page.

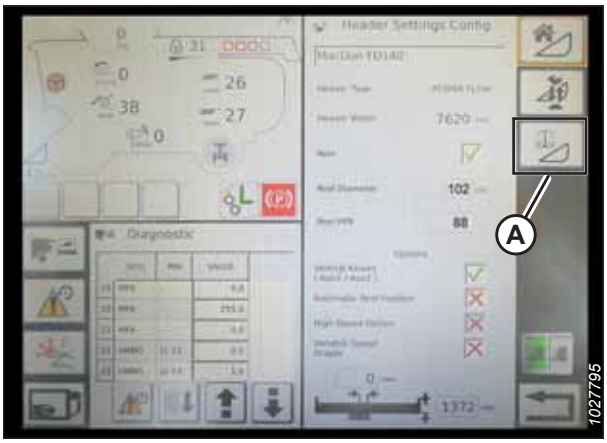


Figure 9.226: Header Settings Page

3. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.
4. Select the green check mark at the bottom of the page to start the calibration procedure and follow the on-screen commands.

Figure 9.227: Header Calibration Warning

A progress bar is provided and the calibration can be stopped by selecting the red X. The header moves automatically and erratically during this process.

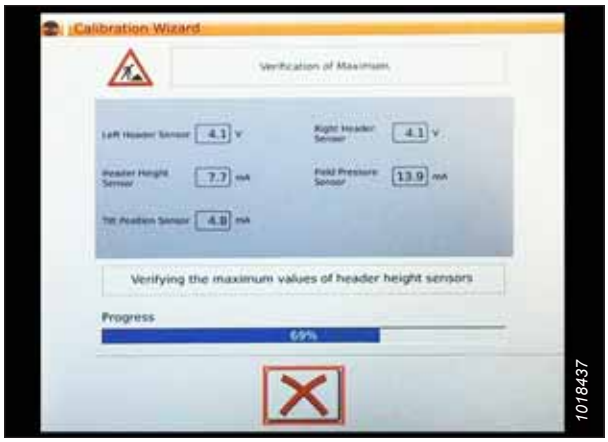


Figure 9.228: Calibration in Progress

5. When the calibration procedure is complete:
   - Review summary information (A)
   - Review green check marks confirming calibrated functions (B)
   - Touch check mark (C) to save

Figure 9.229: Completed Calibration Page

NOTE:

Touch CALIBRATIONS icon (A) on the MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.

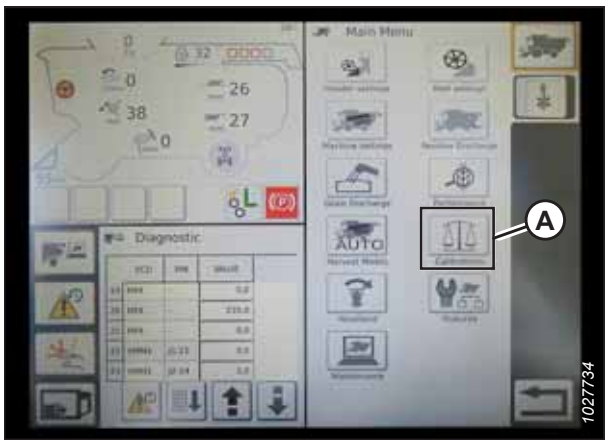


Figure 9.230: Direct Calibration Menu

9.14.5 Operating Header – IDEAL™ Series

Once the auto header height control (AHHC) system has been configured on your IDEAL™ Series combine, the AHHC system can be controlled from the combine cab.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

The following are used to operate the AHHC functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

Refer to the combine operator's manual to familiarize yourself with the combine's controls.

Figure 9.231: Operator's Station

1. With the header running, set the lateral tilt to MANUAL by pressing switch (A). The light above the switch should be off.
2. Engage the AHHC by pressing switch (B). The light above the switch should be on.

Figure 9.232: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the configured set point position.

Figure 9.233: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the header position.

Figure 9.234: Header Control Cluster

9.14.6 Reviewing Header In-Field Settings – IDEAL™ Series

Once the auto header height control (AHHC) system is working correctly with your IDEAL™ Series combine, you can fine-tune these AHHC settings to your liking.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Touch HEADER icon (A) on the right side of the home page to view the following header group settings:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by the red line)
   - HEADER symbol (D) – touch this to adjust the set point cut-off position using the adjustment wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune this setting with the header height set point control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

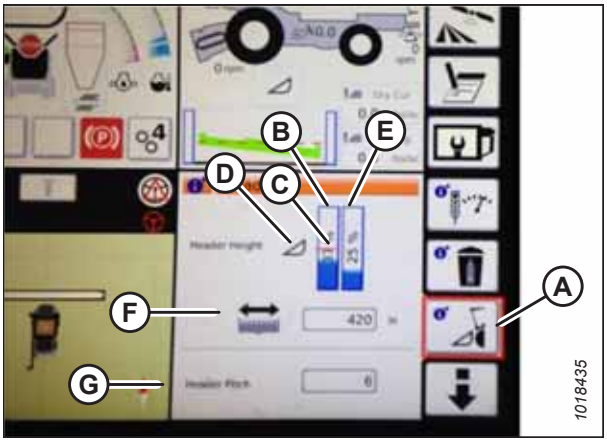


Figure 9.235: Header Groups

2. Touching a field opens the on-screen keyboard so that the values can be adjusted. Enter the new value and touch the green check mark.

   NOTE:

   Adjustment wheel (A) is located on the right of the Tyton terminal.

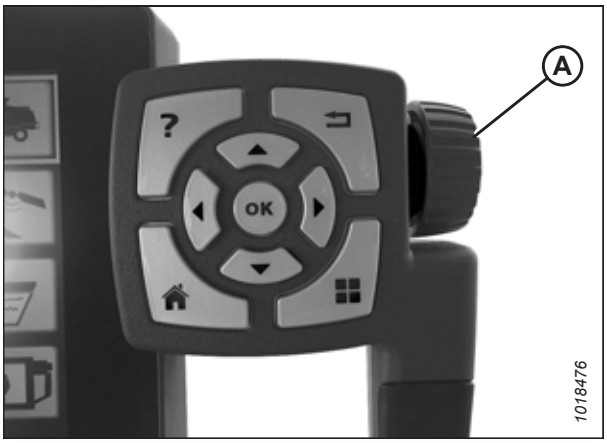


Figure 9.236: Adjustment Wheel on Right of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 9.237: Header Control Cluster

9.15 John Deere 70 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.15.1 Checking Voltage Range from Combine Cab – John Deere 70 Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the float.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

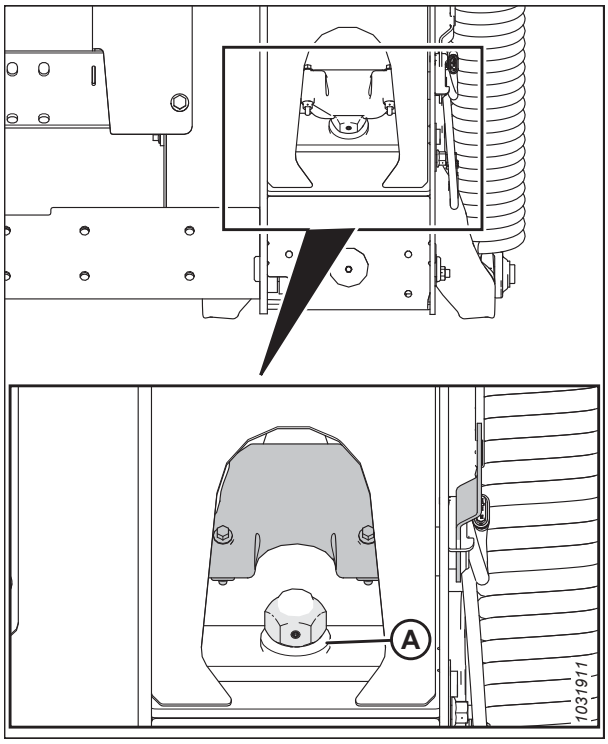


Figure 9.238: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

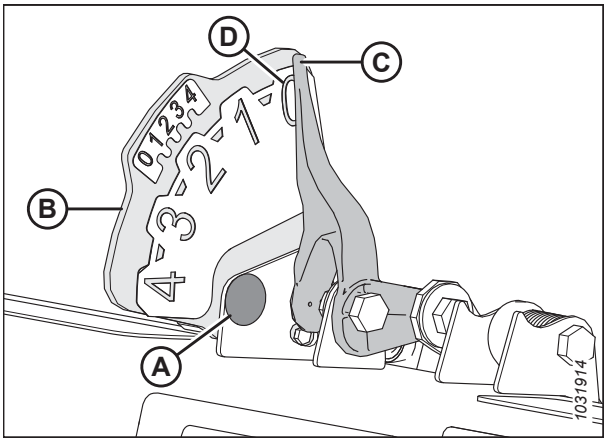


Figure 9.239: Float Indicator

5. Press HOME PAGE button (A) on the main page of the display.

Figure 9.240: John Deere Combine Display

6. Ensure that three icons (A) shown in the illustration at right appear on the display.

Figure 9.241: John Deere Combine Display

7. Use scroll knob (A) to highlight the middle icon (the green i) and press check mark button (B) to select it. The MESSAGE CENTER appears.

Figure 9.242: John Deere Combine Control Console

8. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column. Select it by pressing the check mark button.
9. Use the scroll knob to highlight drop-down box (B). Press the check mark button to select it.

Figure 9.243: John Deere Combine Display

10. Use the scroll knob to highlight LC 1.001 VEHICLE (A). Press the check mark button to select it.

Figure 9.244: John Deere Combine Display

11. Use the scroll knob to highlight down arrow (A). Press the check mark button to scroll through the list until 029 DATA (B) appears and voltage reading (C) appears on the display.

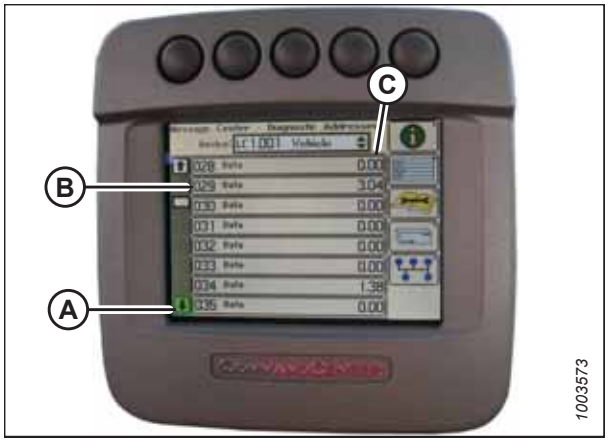


Figure 9.245: John Deere Combine Display

12. Ensure that the header float is unlocked.
13. Start the engine.

NOTE:

You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

14. Fully lower the feeder house to the ground.
15. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *9.2 Recommended Sensor Output Voltages for Combines, page 265*.
16. Raise the header so it is just off the ground and recheck the sensor reading.

9.15.2 Calibrating Feeder House Speed – John Deere 70 Series

The feeder house speed must be calibrated before you calibrate the auto header height control (AHHC) system.

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

9.15.3 Adjusting Manual Header Raise/Lower Rate – John Deere 70 Series

The rate at which the header can be raised or lowered using the controls in the combine cab can be adjusted using the combine console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press button (A) and the current raise/lower rate setting will appear on the display (the lower the reading, the slower the speed at which the header moves).
2. Use scroll knob (B) to adjust the rate. The adjustment will be saved automatically.

   NOTE:

   If the display remains idle for a short period of time, it will automatically return to the previous page. Pressing check mark button (C) will also return the display to the previous page.

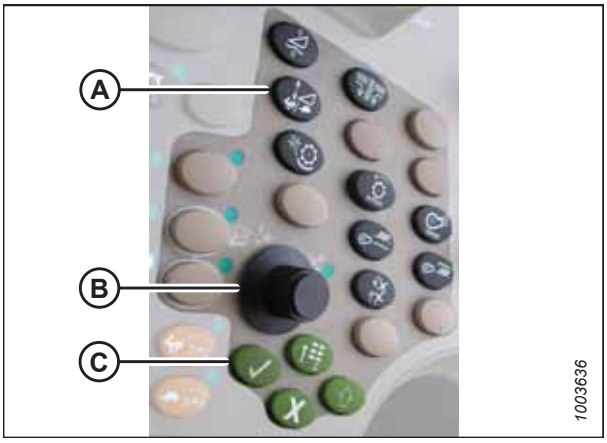


Figure 9.246: John Deere Combine Control Console

NOTE:

The numbers shown on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 9.247: John Deere Combine Display

9.15.4 Calibrating Auto Header Height Control – John Deere 70 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

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.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Shut down the engine, and remove the key from the ignition.
4. Unlock the float.
5. Press the button located fourth from the left along the top of display (A) to select the icon that resembles an open book with a wrench on it (B).
6. Press top button (A) a second time to enter diagnostics and calibration mode.

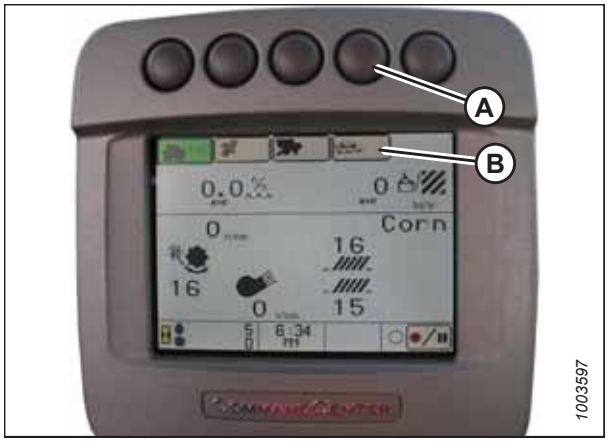


Figure 9.248: John Deere Combine Display

7. Select HEADER in box (A) by scrolling down to the box using the scroll knob, and then pressing the check mark button.

   NOTE:

   The knob and button are shown in Figure *9.250, page 385*.

8. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.

9. Follow the steps listed on the page to perform the calibration.

   NOTE:

   If an error code appears on the display, the sensor is not in the correct working range. Check and adjust the range. For instructions, refer to *9.16.1 Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

10. If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

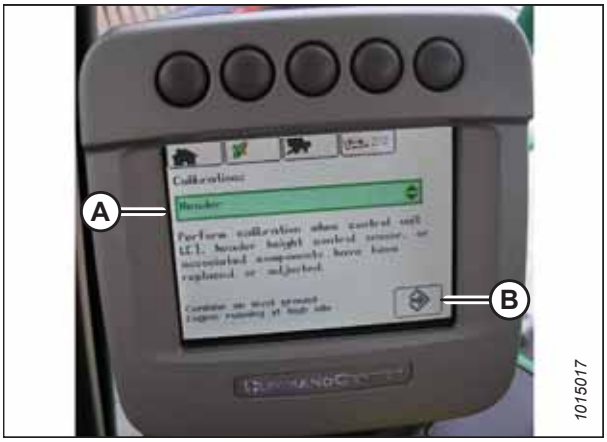


Figure 9.249: John Deere Combine Display

Figure 9.250: John Deere Combine Control Console

A - Scroll Knob **B - Check Mark Button**

9.15.5 Setting Auto Header Height Control Sensitivity – John Deere 70 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press button (A) twice. The current sensitivity setting will appear on the display.

   NOTE:

   The lower the reading, the lower the sensitivity.

2. Use scroll knob (B) to adjust the sensitivity setting. The adjustment will be saved automatically.

   NOTE:

   If the page remains idle for a short period of time, it will automatically return to the previous page. Pressing check mark button (C) also will return the display to the previous page.

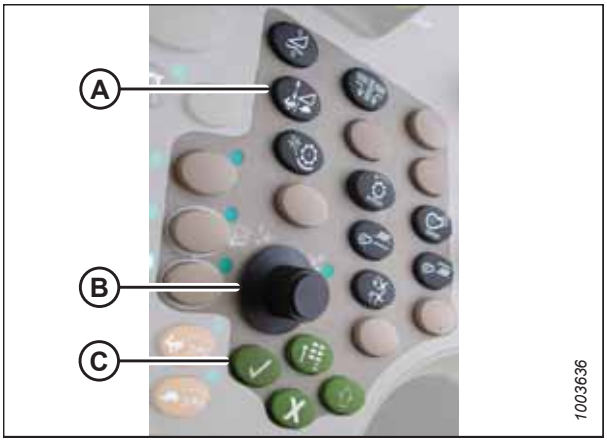


Figure 9.251: John Deere Combine Control Console

NOTE:

The numbers shown on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 9.252: John Deere Combine Display

9.16 John Deere S and T Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.16.1 Checking Voltage Range from Combine Cab – John Deere S and T Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the float.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

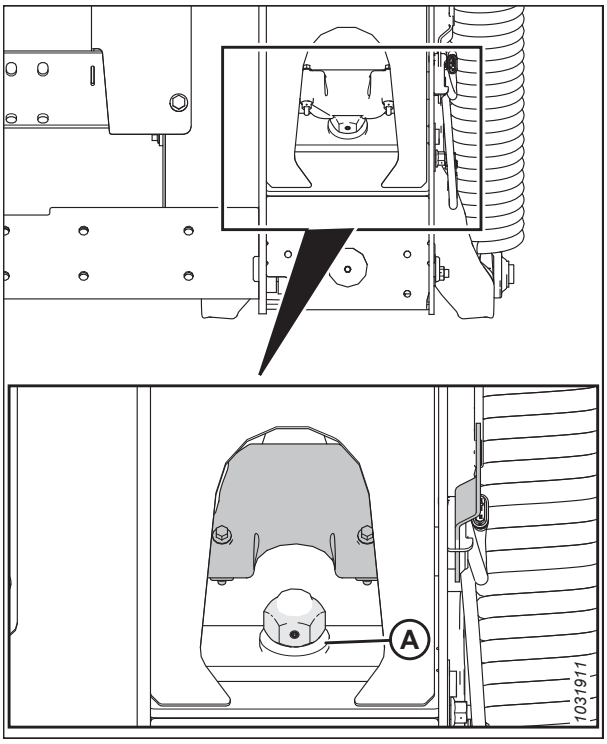


Figure 9.253: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

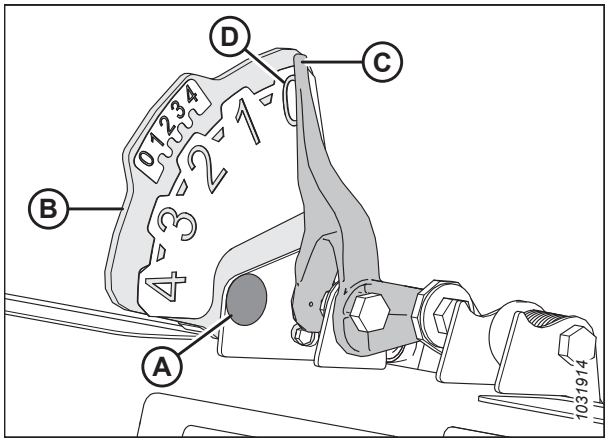


Figure 9.254: Float Indicator

5. Select CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 9.255: John Deere Combine Display

6. Select DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

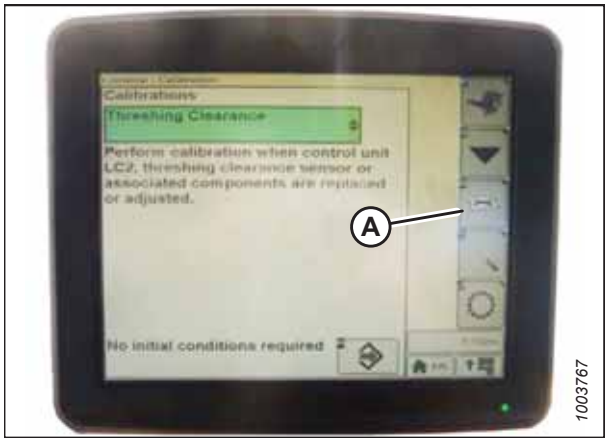


Figure 9.256: John Deere Combine Display

7. Select AHHC RESUME (A) and a list of calibration options appears.

Figure 9.257: John Deere Combine Display

8. Select the AHHC SENSING option.
9. Press icon (A). The AHHC SENSING menu appears and five pages of information appear.

Figure 9.258: John Deere Combine Display

10. Press icon (A) until it reads Page 5 near the top of the page and the following sensor readings appear:
    - LEFT HEADER HEIGHT
    - CENTER HEADER HEIGHT
    - RIGHT HEADER HEIGHT

    A reading is displayed for both the left and right sensors. On the MacDon header, there may be one sensor located in the float indicator box (standard) or two sensors located at the back of the float module side frame (optional).

Figure 9.259: John Deere Combine Display

11. Ensure the header float is unlocked.
12. Start the engine and fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

13. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *9.2 Recommended Sensor Output Voltages for Combines, page 265*.

9.16.2 Adjusting Manual Header Raise/Lower Rate – John Deere S and T Series

The rate at which the header can be raised or lowered using the combine controls can be changed from the height sensitivity screen in the combine command center.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. The crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

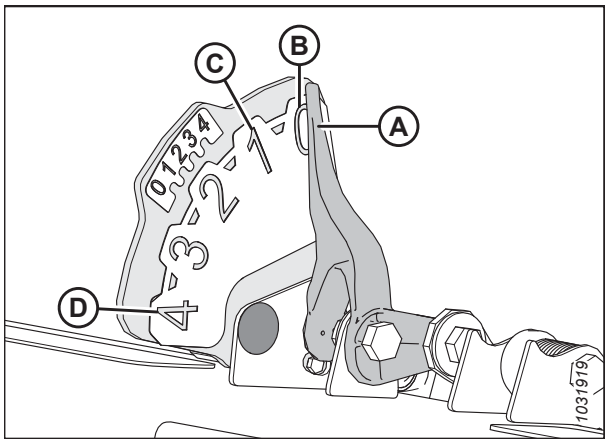


Figure 9.260: Float Indicator

1. Press button (A). The current sensitivity setting will appear on the display.

Figure 9.261: John Deere Combine Command Center

2. Press **–** or **+** icons (A) to adjust the rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 9.262: John Deere Combine Display

9.16.3 Calibrating Auto Header Height Control – John Deere S and T Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

WARNING

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

If header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so header does not physically separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Unlock the float.

4. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 9.263: John Deere Combine Display

5. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

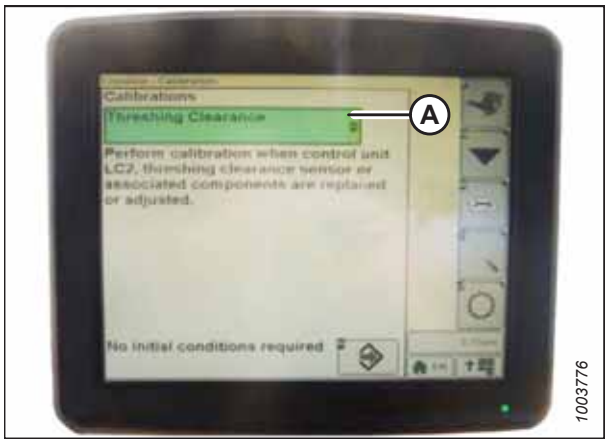


Figure 9.264: John Deere Combine Display

6. Select FEEDER HOUSE SPEED (A) from the list of calibration options.

   NOTE:

   Feeder house speed calibration must be done before header calibration.

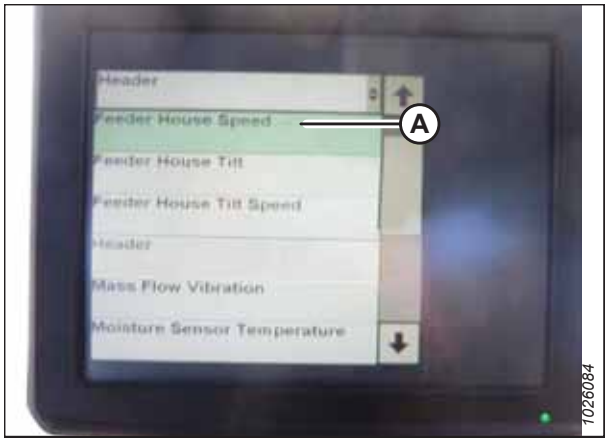


Figure 9.265: John Deere Combine Display

7. With FEEDER HOUSE SPEED selected, select icon (A). The icon turns green.

Figure 9.266: John Deere Combine Display

8. Select icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

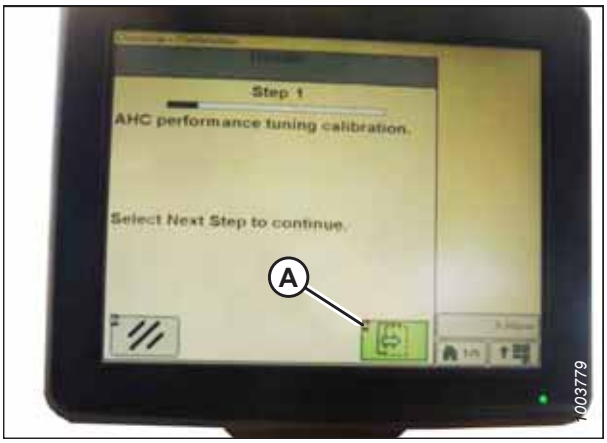


Figure 9.267: John Deere Combine Display

9. Select HEADER (A) from the list of calibration options.

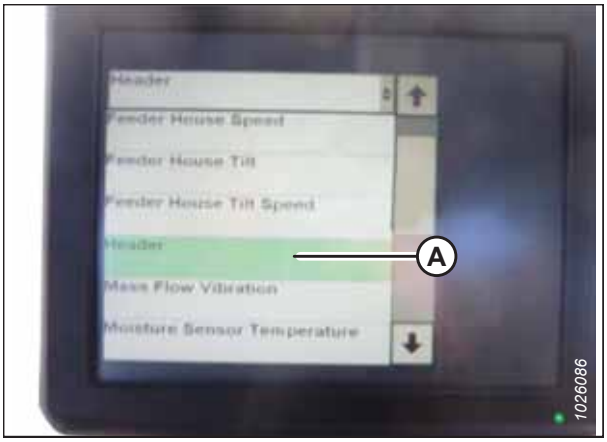


Figure 9.268: John Deere Combine Display

10. With HEADER selected, select icon (A). The icon turns green.

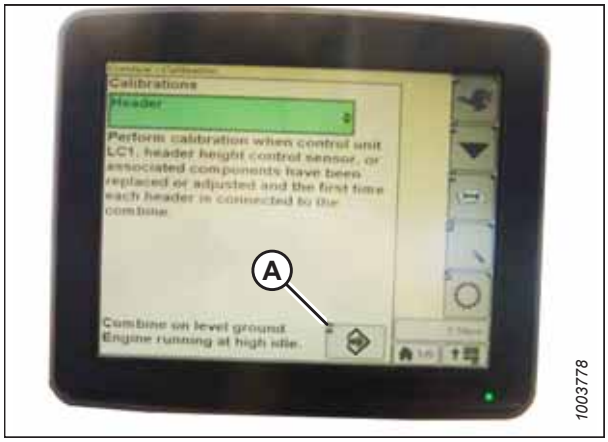


Figure 9.269: John Deere Combine Display

11. Select icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

    NOTE:

    If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *9.16.1 Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

    NOTE:

    If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

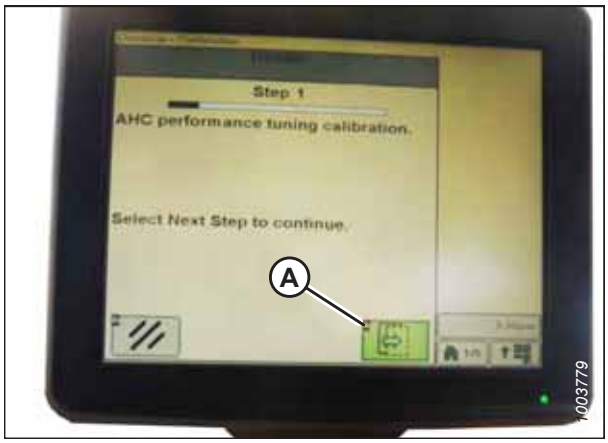


Figure 9.270: John Deere Combine Display

9.16.4 Setting Auto Header Height Control Sensitivity – John Deere S and T Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press button (A) twice and the current sensitivity setting will appear on the display.

Figure 9.271: John Deere Combine Command Center

2. Press **–** or **+** icons (A) to adjust the rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 9.272: John Deere Combine Display

9.16.5 Setting Preset Cutting Height – John Deere S and T Series

The reel and cut height setting can be stored in the combine's computer as presets. These settings can be set and selected using the combine's control handle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Ensure indicator (A) is at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground.

   NOTE:

   When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

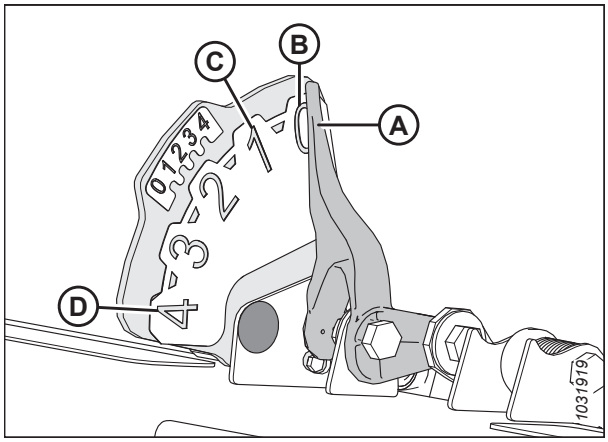


Figure 9.273: Float Indicator

2. Select COMBINE – HEADER SETUP icon (A) on the main page. The COMBINE – HEADER SETUP page appears. This page is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.

Figure 9.274: Combine Display

3. Select COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC page appears.

Figure 9.275: Combine Display

4. Select AUTO HEIGHT SENSING (A), RETURN TO CUT (B), and REEL POSITION (C) icons.

   NOTE:

   If REEL POSITION icon (C) cannot be selected (no check mark), the reel height sensor requires calibration. For instructions, refer to *9.16.8 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – John Deere S and T Series, page 403*.

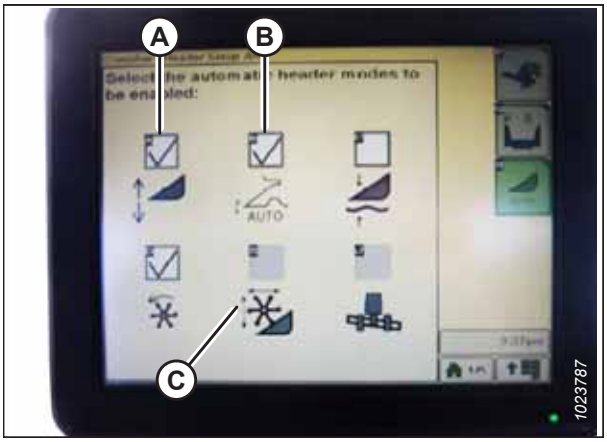


Figure 9.276: Combine Display

5. Engage the header.
6. Move the header to the desired position and use knob (A) to fine tune the position.
7. Move the reel to the desired position.

Figure 9.277: Combine Control Console

8. Press and hold preset switch 2 (B) until the reel height icon flashes on display.
9. Repeat the previous three steps for preset switch 3 (C).
10. Select an appropriate ground pressure setting. Use preset button 2 (B) on the control handle for a low ground pressure setting in muddy or soft soil conditions, and preset 3 (C) for a high ground pressure setting in firm soil conditions and a higher ground speed.

    NOTE:

    Preset button 1 (A) is reserved for header lift on the headland and is not used for cutting on the ground.

Figure 9.278: Control Handle Buttons

NOTE:

When the AHHC is engaged, AHHC icon (A) appears on the display and the number indicating which button was pressed (B) is shown on the page.

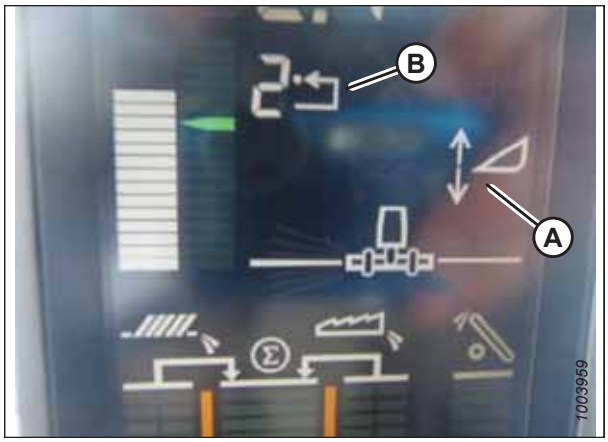


Figure 9.279: Combine Display

9.16.6 Calibrating Feeder House Fore-Aft Tilt Range – John Deere S and T Series

Follow this procedure to properly calibrate the combine feeder house fore-aft tilt range. This procedure applies only to model year 2015 and later John Deere S and T Series Combines.

To ensure the best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the control handle.

Figure 9.280: John Deere Control Handle

NOTE:

The feeder house fore/aft tilt controls can be changed to work with buttons E and F by selecting control handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from drop-down menu (B).

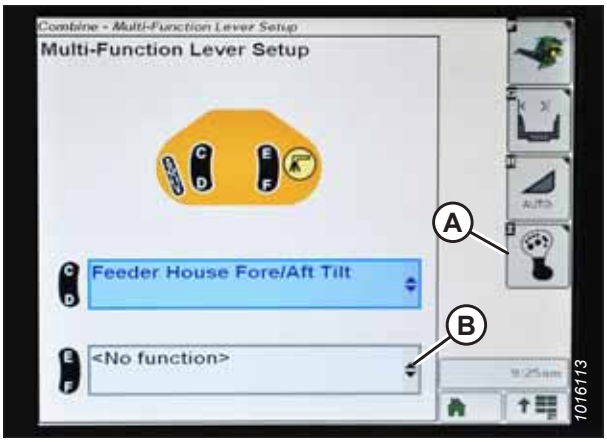


Figure 9.281: John Deere Combine Display

To calibrate the feeder house fore-aft tilt range, follow these steps:

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the float.
3. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page displays.

Figure 9.282: John Deere Combine Display

4. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.

Figure 9.283: John Deere Combine Display

5. Select arrow (A) to cycle up through the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

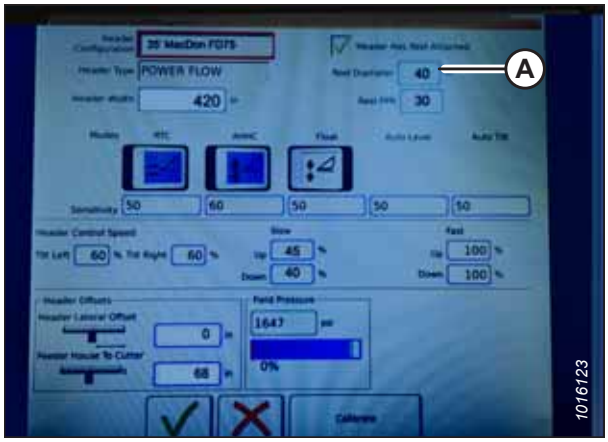


Figure 9.284: John Deere Combine Display

6. Select ENTER icon (A).

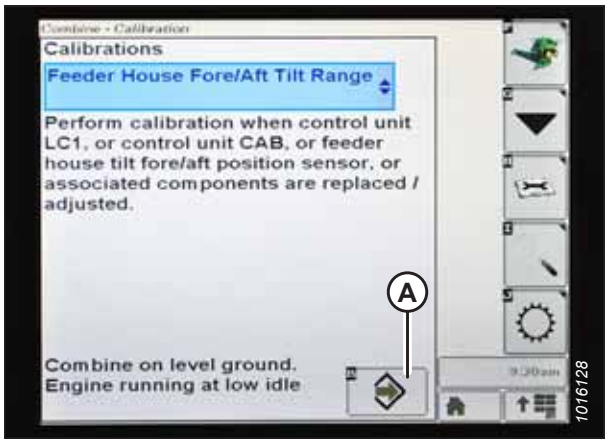


Figure 9.285: John Deere Combine Display

7. Follow the instructions that appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *9.16.1 Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

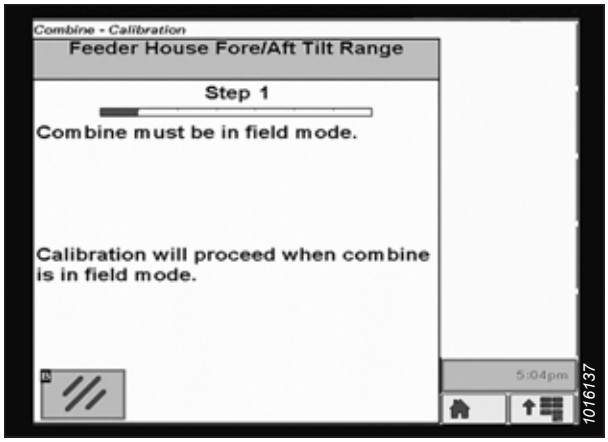


Figure 9.286: John Deere Combine Display

9.16.7 Checking Reel Height Sensor Voltages – John Deere S and T Series

Check the reel height sensor voltages to ensure they are within the prescribed range.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Select CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 9.287: John Deere Combine Display

2. Select DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

Figure 9.288: John Deere Combine Display

3. Select drop-down menu (A) to view the list of calibration options.

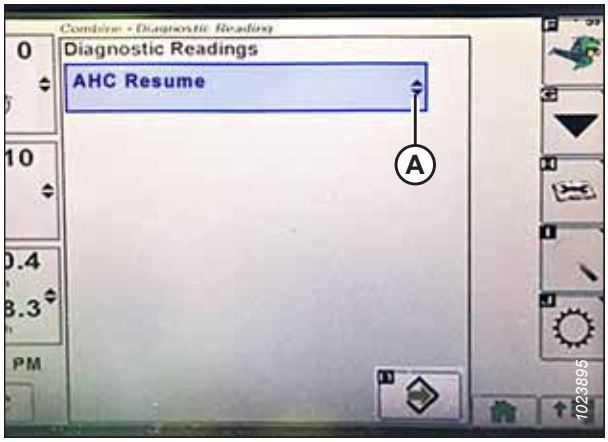


Figure 9.289: John Deere Combine Display

4. Scroll down and select REEL RESUME (A).

Figure 9.290: John Deere Combine Display

5. Select ENTER icon (A). The REEL RESUME page appears.

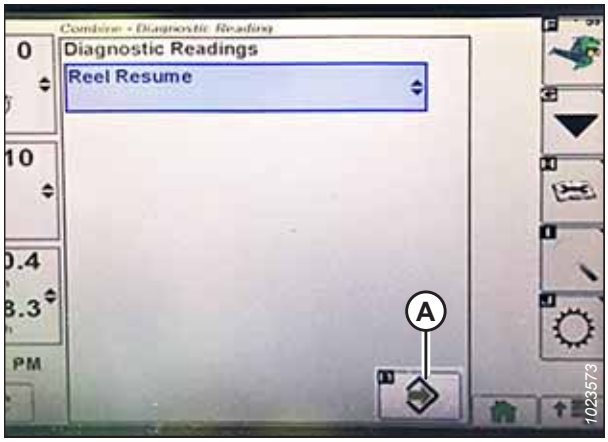


Figure 9.291: John Deere Combine Display

6. Select NEXT PAGE icon (A) to cycle to page 3.

7. Lower the reel to view lower voltage limit (B). The voltage should be within 0.5–0.9 V.

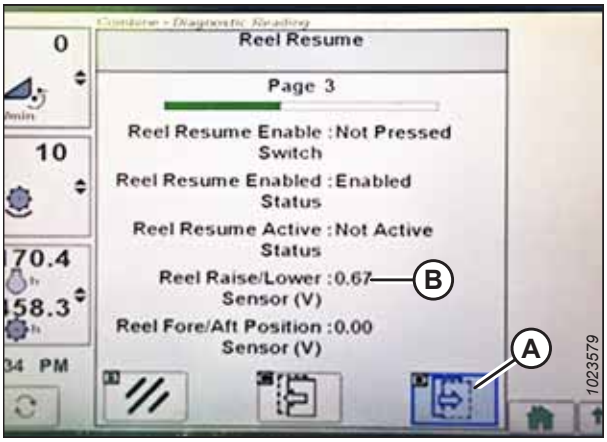


Figure 9.292: John Deere Combine Display

8. Raise the reel to view upper voltage limit (A). The voltage should be within 4.1–4.5 V.

9. If either voltage is not within the correct range, refer to *10.1 Checking and Adjusting Reel Height Sensor, page 473*.

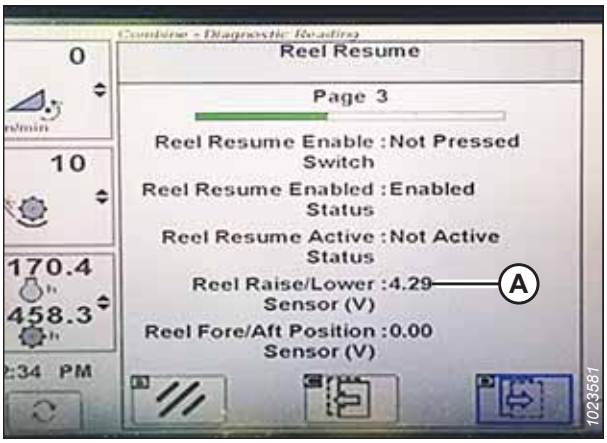


Figure 9.293: John Deere Combine Display

9.16.8 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – John Deere S and T Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the reel position feature will not work properly. The following procedure applies only to model year 2015 and later John Deere S and T Series Combines.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Position the header 254–356 mm (10–14 in.) off the ground.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page is shown.

Figure 9.294: John Deere Combine Display

3. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.
4. Scroll through the list of options and select REEL POSITION.
5. Select ENTER icon (B).

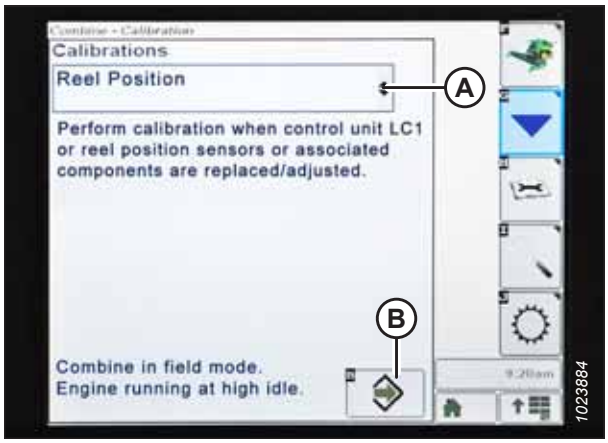


Figure 9.295: John Deere Combine Display

6. Follow the instructions that appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step. This calibration requires you to use reel raise (A) and reel lower (B) switches on the control handle.

Figure 9.296: John Deere Control Handle

7. Press and hold REEL LOWER switch until the reel is fully lowered. Continue holding REEL LOWER switch until prompted by the display.

Figure 9.297: John Deere Combine Display

8. Press and hold the REEL RAISE switch until the reel is fully raised. Continue holding the REEL RAISE switch until prompted by the display.

Figure 9.298: John Deere Combine Display

9. When all steps have been completed, CALIBRATION COMPLETE message is displayed on the page. Exit the CALIBRATION menu by pressing ENTER icon (A).

   NOTE:

   If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *9.16.7 Checking Reel Height Sensor Voltages – John Deere S and T Series, page 401*.

Figure 9.299: John Deere Combine Display

9.17 John Deere S7 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere S7 Series combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.17.1 Setting up Header – John Deere S7 Series

Set these initial configuration options on your combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Press header button (A) on the panel below the display. The HEADER page appears.

Figure 9.300: John Deere S7 Display

2. Select HEADER TYPE field (A). The HEADER DETAILS dialog box opens.

Figure 9.301: John Deere S7 Display – Header Page

3. Verify correct header width is displayed under WIDTH.
4. To change header width, select field (A). The WIDTH dialog box opens.

Figure 9.302: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then select OK.

Figure 9.303: John Deere S7 Display – Setting Header Width

6. Select close button (A) in the top right corner to return to the HEADER page.

Figure 9.304: John Deere S7 Display – Header Details Dialog Box

7. Raise/lower speed (A), tilt speed (B), height sensitivity (C), and tilt sensitivity (D) can all be adjusted from this page. Select the option you would like to adjust. The following example shows the raise/lower speed adjustment.

Figure 9.305: John Deere S7 Display – Header Page

8. Use **+** and **–** buttons (A) to adjust the setting.

9. Select the close button in top right corner of the window to return to the HEADER page.

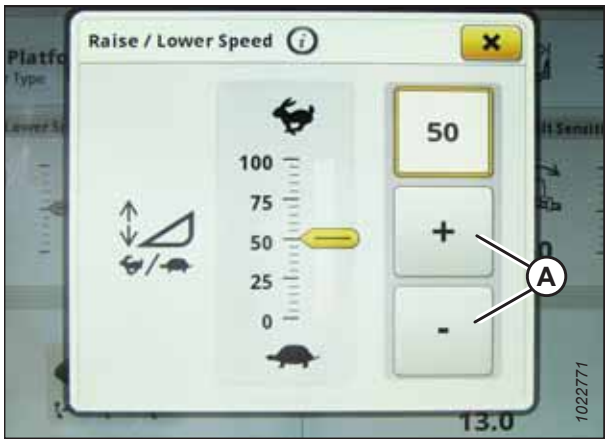


Figure 9.306: John Deere S7 Display – Raise/Lower Speed Adjustment

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

Figure 9.307: John Deere S7 Display – Header Page

11. If the header has not been calibrated yet, an error icon will appear on HEIGHT SENSING button (A). Select button (A) to view the error message.

Figure 9.308: John Deere S7 Display – Auto Header Controls

12. Read the error message and then select OK.

13. Proceed to *9.17.2 Checking Voltage Range from Combine Cab – John Deere S7 Series, page 409*.

Figure 9.309: John Deere S7 Display – Height Sensing Error Message

9.17.2 Checking Voltage Range from Combine Cab – John Deere S7 Series

The auto header height control (AHHC) sensor output must be within a specific range, or the feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.

2. Unlock the float.

3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of auto header height control (AHHC) system.

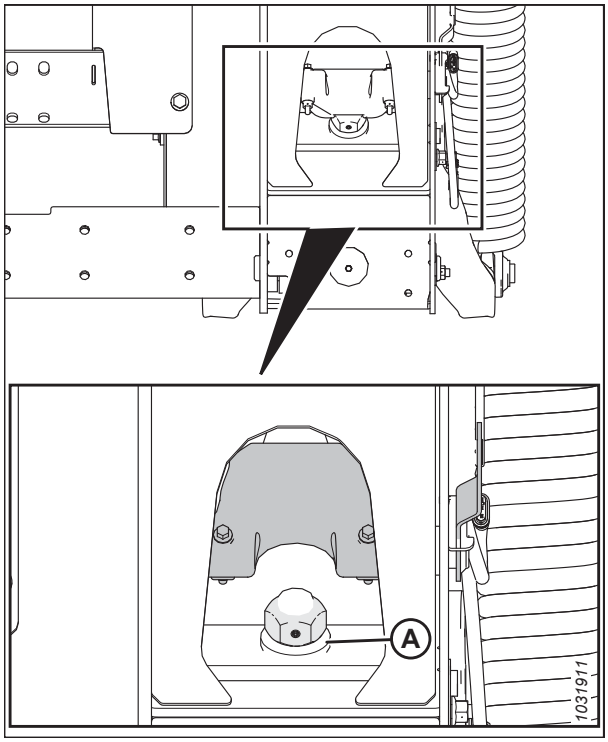


Figure 9.310: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

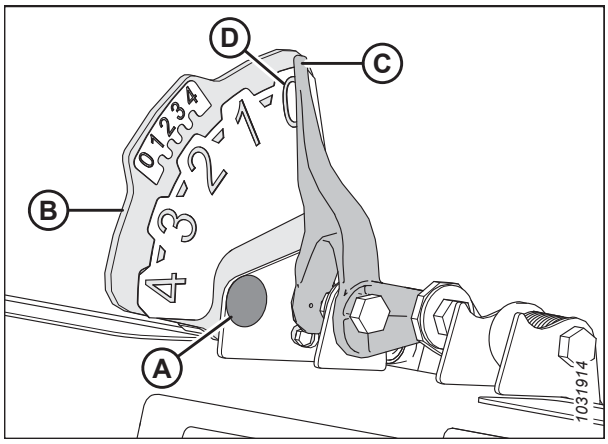


Figure 9.311: Float Indicator

5. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page.

Figure 9.312: John Deere S7 Display – Harvesting Page

6. On the MENU page, select SYSTEM tab (A). The MENU opens.
7. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

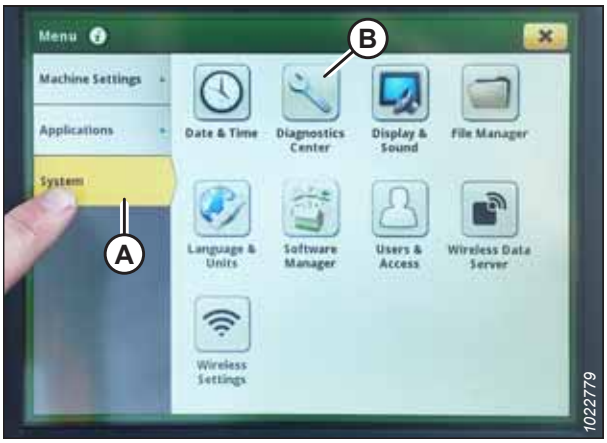


Figure 9.313: John Deere S7 Display – Menu

8. Select AHC - SENSING (A). The AHC - SENSING\DIAGNOSTICS page appears.

Figure 9.314: John Deere S7 Display – Diagnostics Center

9. Select SENSOR tab (A) to view the sensor voltages. Center header height sensor voltage (B) must be between 0.5 and 4.5 V, with at least 3 V of variation between 0 and 4 on the float indicator box.

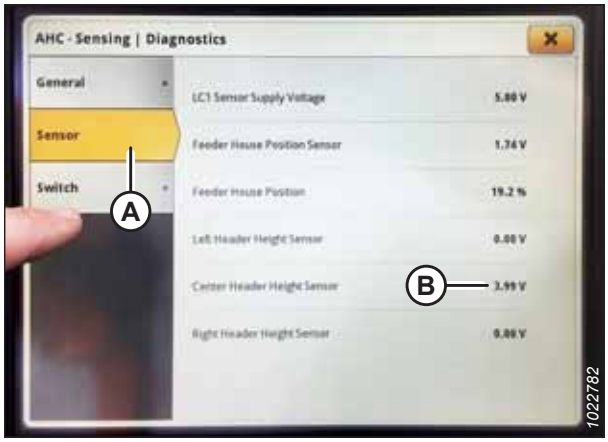


Figure 9.315: John Deere S7 Display – Checking Sensor Voltage

9.17.3 Calibrating Feeder House – John Deere S7 Series

Feeder house calibration must be done before header calibration.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the float.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of page. The MENU opens.

Figure 9.316: John Deere S7 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

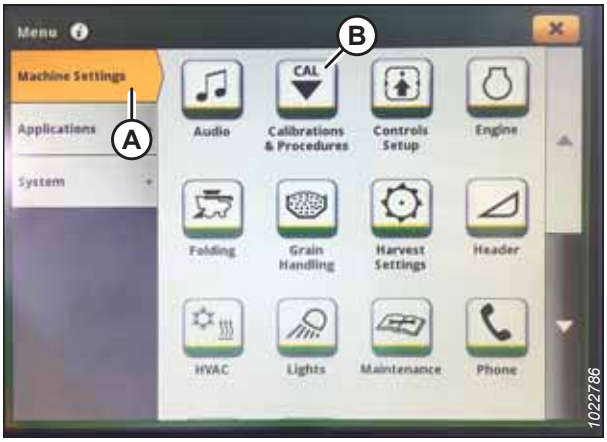


Figure 9.317: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).
7. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page appears.

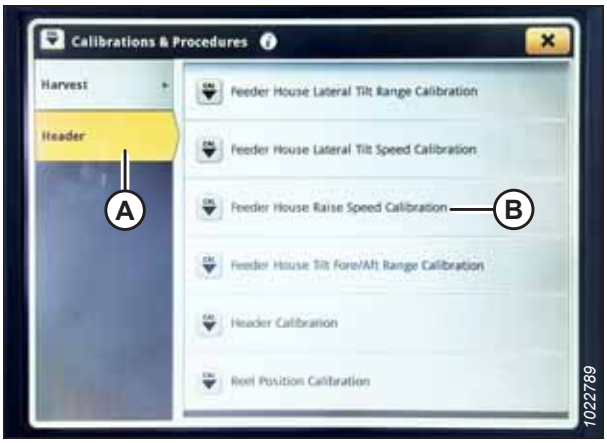


Figure 9.318: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at the bottom of the page. A calibration overview appears.

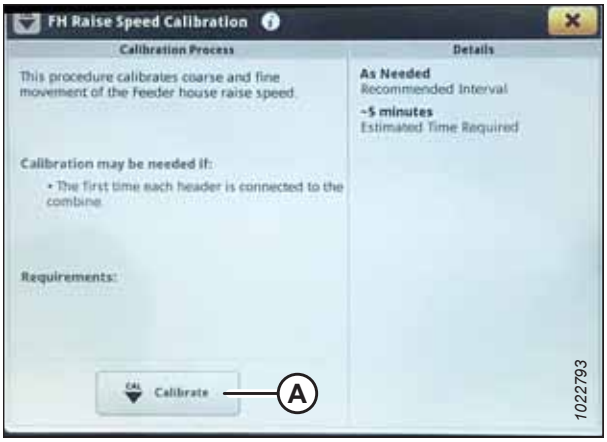


Figure 9.319: John Deere S7 Display – Feeder House Calibration

9. Read the calibration overview, and then press START.

Figure 9.320: John Deere S7 Display – Feeder House Calibration

10. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

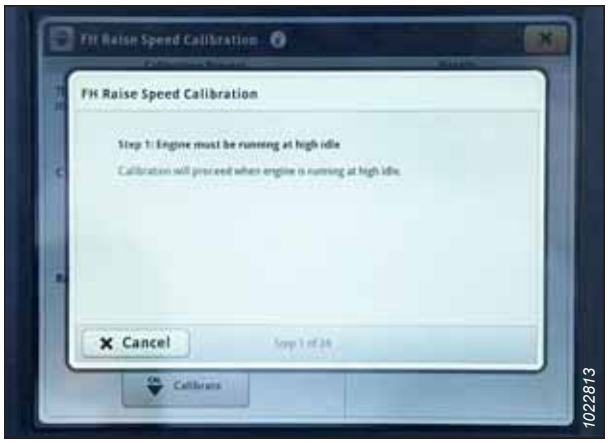


Figure 9.321: John Deere S7 Display – Feeder House Calibration

11. When calibration is complete, select SAVE to confirm the calibration.

Figure 9.322: John Deere S7 Display – Feeder House Calibration

9.17.4 Calibrating Header – John Deere S7 Series

Before the auto header height control (AHHC) system can be used, it must be calibrated.

DANGER

Ensure that all bystanders have cleared the area.

Feeder house calibration must be done before header calibration. If feeder house has not yet been calibrated, refer to *9.17.3 Calibrating Feeder House – John Deere S7 Series, page 412*.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the float module float.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 9.323: John Deere S7 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

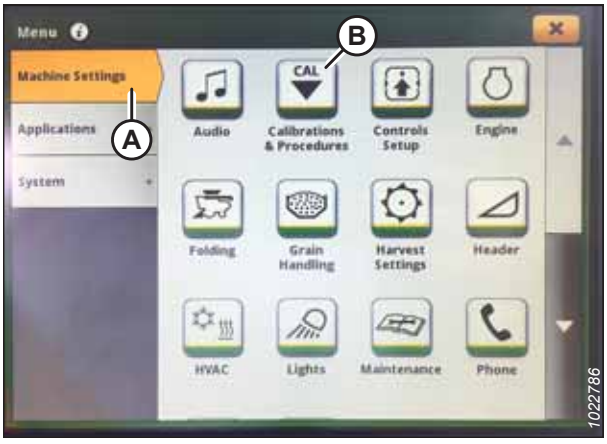


Figure 9.324: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).

7. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page appears.

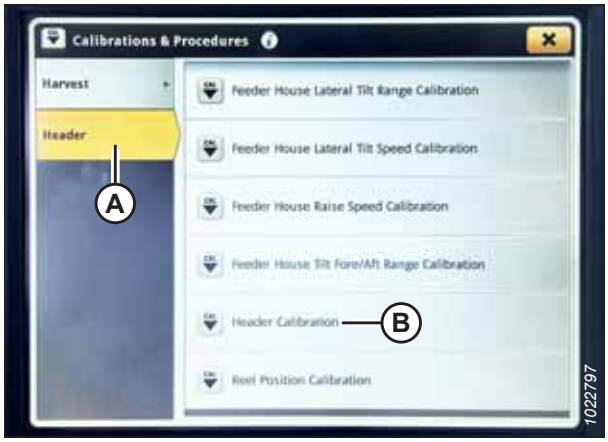


Figure 9.325: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at the bottom of the page. The calibration overview window opens.

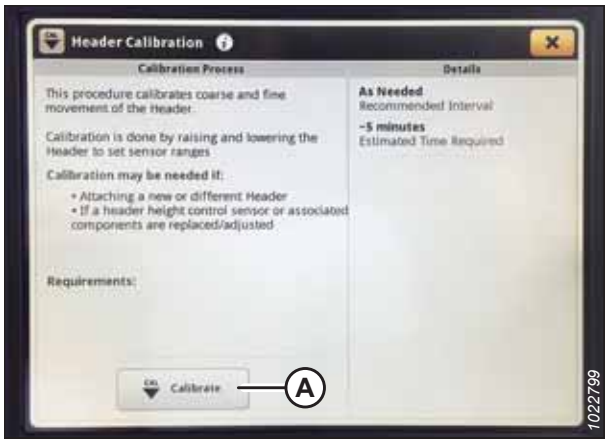


Figure 9.326: John Deere S7 Display – Header Calibration

9. Press button (A) on the console to set the engine to high idle.

Figure 9.327: John Deere S7 Console

10. Select START on the CALIBRATION OVERVIEW page.

11. Follow the instructions that appear on the combine display. As you proceed through the calibration process, the display will automatically update to show the next step.

Figure 9.328: John Deere S7 Display – Header Calibration

12. When the calibration is complete, select SAVE to confirm the calibration.

Figure 9.329: John Deere S7 Display – Header Calibration

9.18 John Deere X9 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the touch screen settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

9.18.1 Setting up Header in CommandCenter™ Display – John Deere X9 Series

The main header auto header height control (AHHC) settings can be configured in the CommandCenter™ Display in the combine cab.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.330: CommandCenter™ Display

3. Ensure that header type (A) and size (B) are correct.

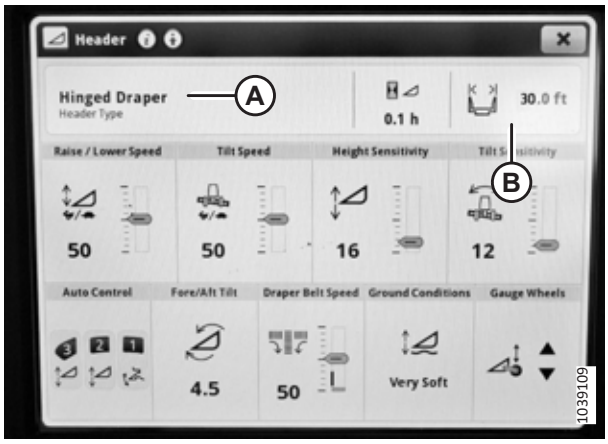


Figure 9.331: CommandCenter™ Display – Header Page

4. On the HEADER page, select AUTO CONTROL (A).

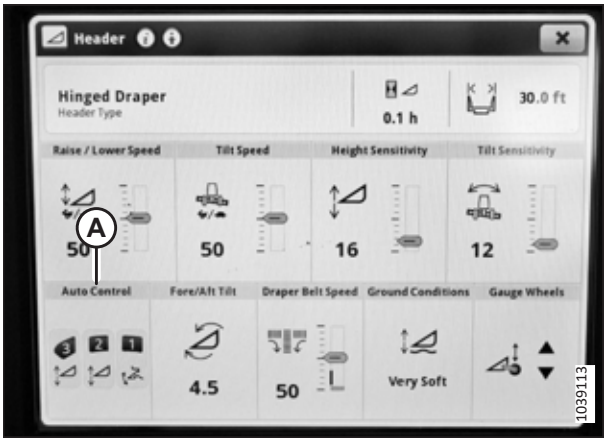


Figure 9.332: CommandCenter™ Display – Auto Header Controls Page

5. On the AUTO HEADER CONTROLS page, ensure that the following HEADER AUTOMATION OPTIONS are set to ON:
   - HEIGHT RESUME
   - HEIGHT SENSING
   - LATERAL TILT
6. On the AUTO HEADER CONTROLS page, ensure that the following RESUME PREFERENCES are set to ON:
   - AUTO REEL SPEED
   - FORE/AFT RESUME
   - REEL POSITION RESUME
7. Set any other settings in the AUTO HEADER CONTROLS PAGE not referred to in the previous two steps to OFF.
8. On the HEADER page, select HEIGHT SENSITIVITY (A). Change the setting to 10.
9. On the HEADER page, select TILT SENSITIVITY (B). Change the setting to 10.
10. Press X (C) to exit the HEADER screen.

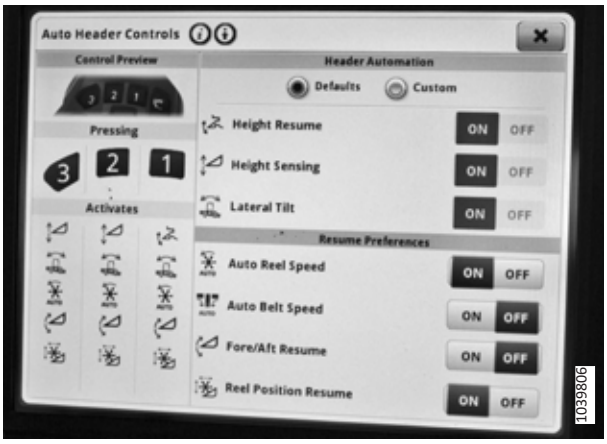


Figure 9.333: CommandCenter™ Display – Auto Header Controls Page

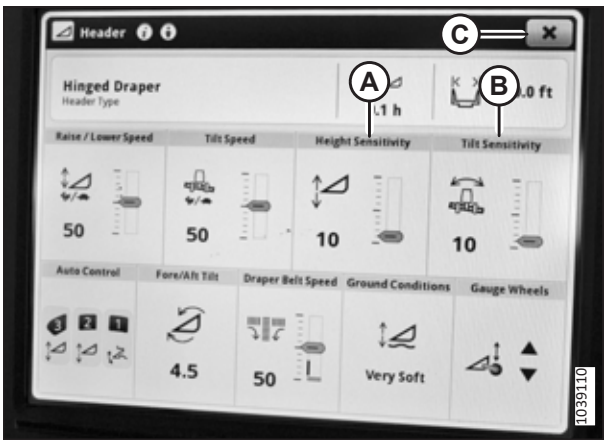


Figure 9.334: CommandCenter™ Display – Header Page

9.18.2 Calibrating Auto Header Height Control – John Deere X9 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. Park the combine on a level surface.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of page. The MENU appears.

Figure 9.335: John Deere X9 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

Figure 9.336: John Deere X9 Display – Machine Settings

6. Select HEADER tab (A).
7. Select GAUGE WHEEL RANGE CALIBRATION (B). The GAUGE WHEEL RANGE CALIBRATION page appears.
8. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.
9. Select SAVE to confirm the calibration.

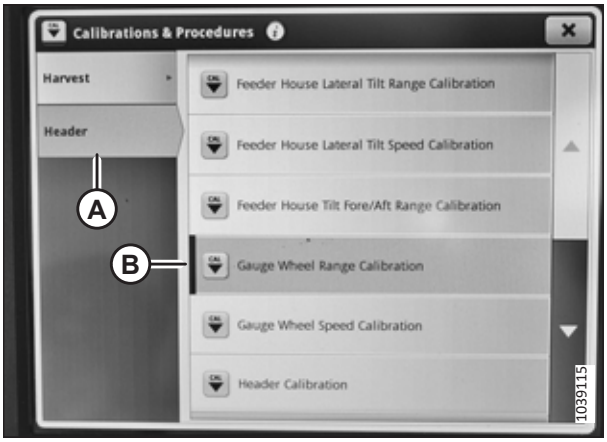


Figure 9.337: John Deere X9 Display – Gauge Wheel Range Calibration

10. Select HEADER CALIBRATION (A). The HEADER CALIBRATION page appears.
11. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.
12. Select SAVE to confirm the calibration.

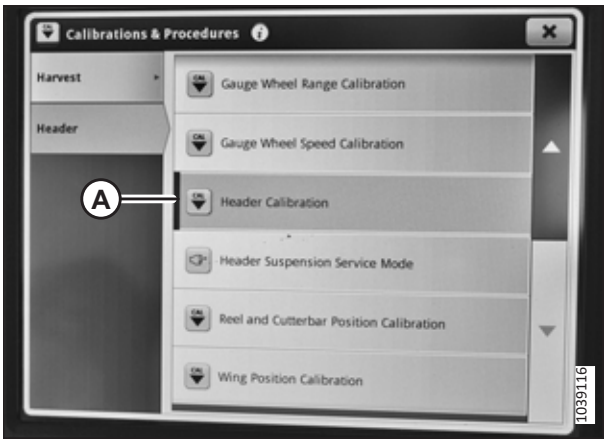


Figure 9.338: John Deere X9 Display – Header Calibration

13. Select REEL AND CUTTERBAR POSITION CALIBRATION (A). The REEL AND CUTTERBAR POSITION CALIBRATION page appears.
14. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.
15. Select SAVE.
16. Press the X in the top right corner to exit the CALIBRATION & PROCEDURES screen.

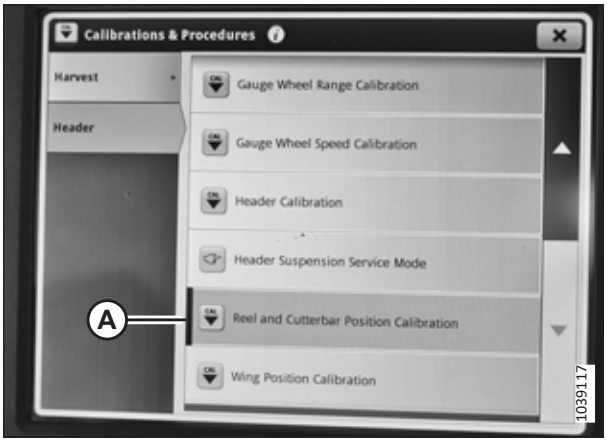


Figure 9.339: John Deere X9 Display – Reel and Cutterbar Position Calibration

9.18.3 Checking Voltage Range from Combine Cab – John Deere X9 Series

The voltage of the auto header height control (AHHC) sensors will need to be verified to ensure the proper operation of the system.

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.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 9.340: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 9.341: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).
5. Select HEADER/HITCH CONTROLLER (B).

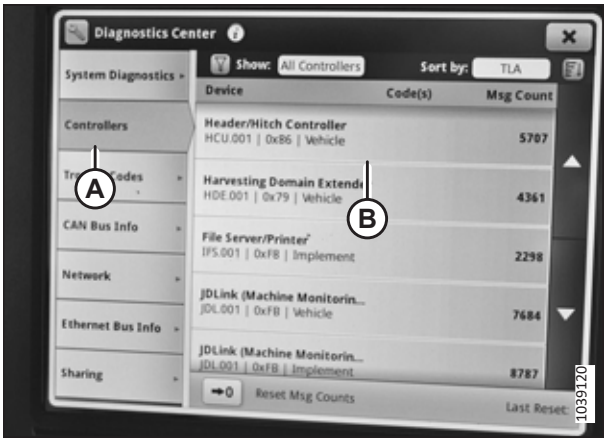


Figure 9.342: John Deere X9 Display – Diagnostics Center

6. Select READINGS (A) on the display and scroll through list (B) to find the desired voltage reading. For information on the appropriate voltage range, refer to *9.2 Recommended Sensor Output Voltages for Combines, page 265*.
7. Press the X in the top right corner to exit the HEADER/ HITCH CONTROLLER screen.

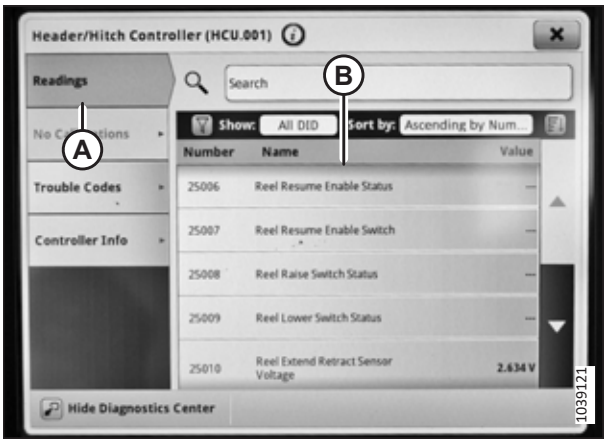


Figure 9.343: John Deere X9 Display – Header/Hitch Controller

9.18.4 Assigning Multi-Function Lever Buttons – John Deere X9 Series

The function of the buttons on the multi-function lever in the cab of the combine can be customized to suit the Operator's preferences.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.344: CommandCenter™ Display

3. Press multi-function lock button (A) until the light turns off. The CONTROLS SETUP screen appears.

Figure 9.345: John Deere X9 Display – Console

4. On multi-function lever (A), select a function button (A, B, C, or D) to configure.
5. On SELECT FUNCTION window (A), press the UP or DOWN arrows to find the desired function.
6. Select the function to assign to the selected button.
7. Select the X in the top right corner to exit the Controls Setup screen.

Figure 9.346: John Deere X9 Display – Controls Setup

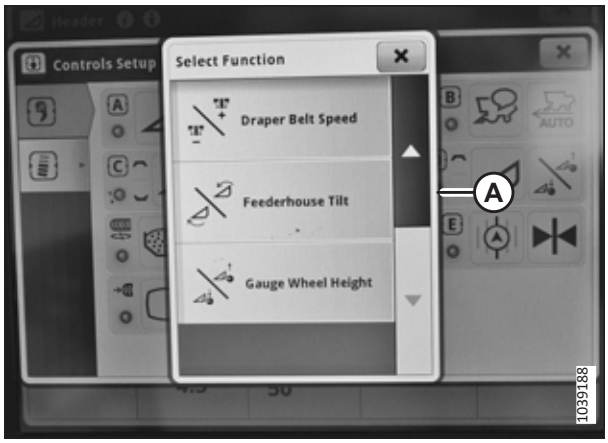


Figure 9.347: John Deere X9 Display – Controls Setup

9.18.5 Assigning Console Buttons – John Deere X9 Series

The function of the buttons on the console in the cab of the combine can be customized to suit the preferences of the Operator.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.348: CommandCenter™ Display

3. Press CONSOLE LOCK button (A) until the light turns off. The CONTROLS SETUP screen appears.

Figure 9.349: John Deere X9 Display – Console

4. Press the function button on console (A) that you want to program or modify.

   NOTE:

   Only button 2 is a rocker switch.

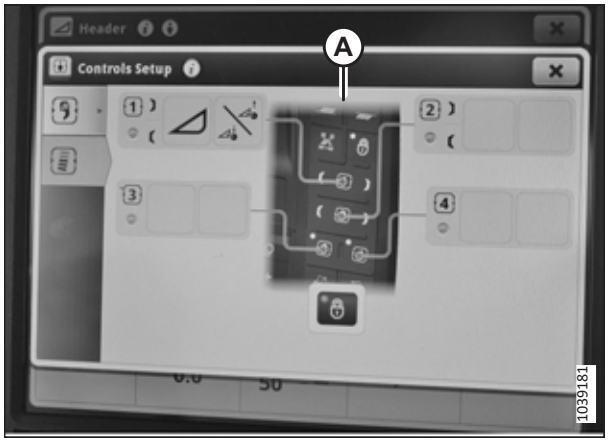


Figure 9.350: John Deere X9 Display – Controls Setup

5. On SELECT FUNCTION window (A), press the UP or DOWN arrow to find the desired function.
6. Select the function to assign it to the selected button.
7. Select the X in the top right corner to exit the CONTROLS SETUP screen.

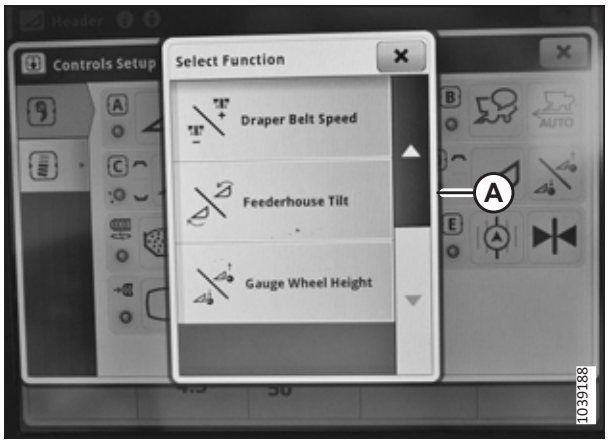


Figure 9.351: John Deere X9 Display – Controls Setup

9.18.6 Using Auto Header Height Control – John Deere X9 Series

The multi-function lever in the cab of the combine has three buttons which can be used to control the auto header height control (AHHC) system.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.352: CommandCenter™ Display

3. On the HEADER page, select AUTO CONTROL (A).

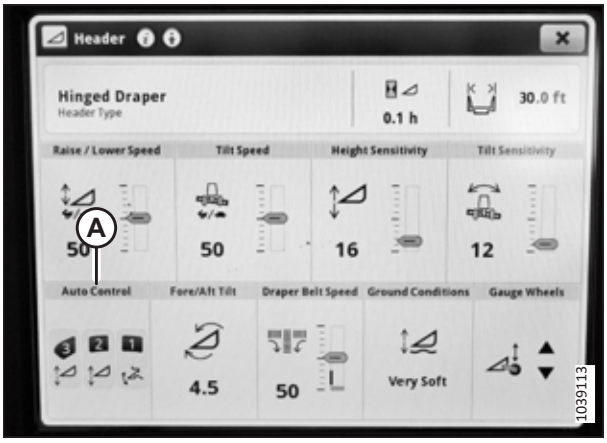


Figure 9.353: CommandCenter™ Display – Auto Header Controls Page

4. On the AUTO HEADER CONTROLS screen, locate CONTROL PREVIEW (A).

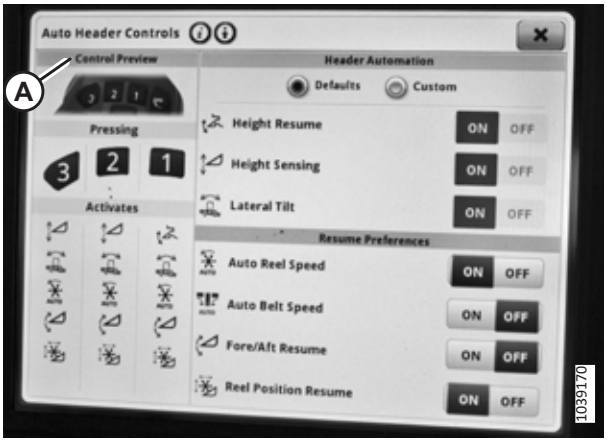


Figure 9.354: John Deere X9 Display – Auto Header Controls Screen

NOTE:

When buttons 2 or 3 (A) on the multi-function lever are pressed, the system automatically moves the header to the preset setting. The preset setting can be set by the Operator.

NOTE:

Beneath each button is a list of functions that the button will operate.

NOTE:

Button 1 is used for the RETURN TO HEIGHT function.

Figure 9.355: John Deere X9 – Multi-Function Lever

5. Press button 2 or 3 (B) on the multi-function lever to set the reel position.
6. Press button (A) to adjust the reel fore-aft and reel height positions. Hold the button for 3 seconds to save the setting. This will become the preset reel setting for button 2 or 3.

   NOTE:

   Buttons 2 and 3 can have different settings.

Figure 9.356: John Deere X9 – Multi-Function Lever

7. If the header is equipped with the ContourMax™ option, the GAUGE WHEELS setting will need to be configured, depending on the desired cutting height. Proceed to the relevant topic:
   - *Cutting Above Ground Level – Headers Equipped with ContourMax™, page 428*
   - *Cutting at Ground Level – Headers Equipped with ContourMax™, page 430*

Cutting Above Ground Level – Headers Equipped with ContourMax™

On John Deere X9 Series Combines, the auto header height control (AHHC) system works only when cutting above ground level if the ContourMax™ option is installed on the header. The header float will need to be configured for headers cutting off of the ground which have the ContourMax™ option installed.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.357: CommandCenter™ Display

3. On the HEADER page, select GAUGE WHEELS (A).

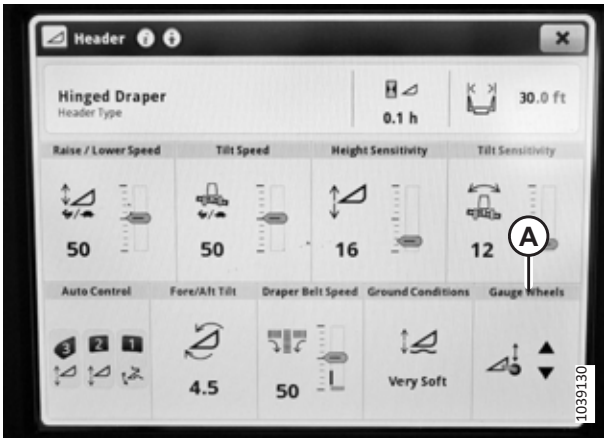


Figure 9.358: John Deere X9 Display – Header Page

4. Adjust the height using the controls on the display or using dial (A) on the console. The setting will be saved automatically to multi-function lever button 2 or 3.

Figure 9.359: John Deere X9 Display – Header Page

5. On the HEADER page, locate GROUND CONDITIONS (A).

   NOTE:

   This setting can be changed only when height sensing mode is enabled.

6. Choose one of the following header ground pressure settings:

   - VERY FIRM (1 on the float indicator)
   - FIRM (1.5 on the float indicator)
   - TYPICAL (2 on the float indicator)
   - SOFT (2.5 on the float indicator)
   - VERY SOFT (3 on the float indicator)

   NOTE:

   The firmer the setting, the more ground pressure is applied to the header.

   NOTE:

   These settings are automatically saved to button 2 or 3 on the multi-function handle, depending on which one is selected. The selected button is displayed on the corner display post.

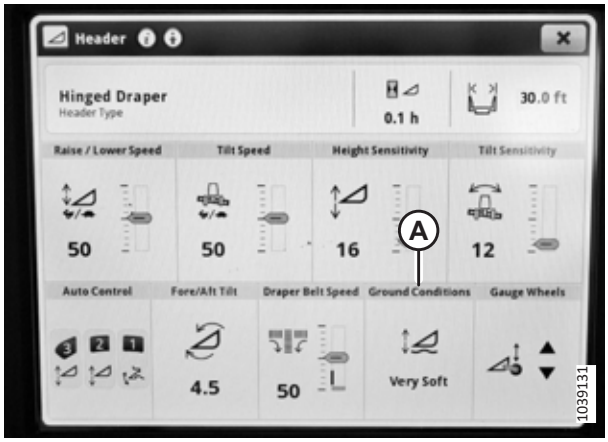


Figure 9.360: John Deere X9 Display – Header Page

Cutting at Ground Level – Headers Equipped with ContourMax™

The header's auto header height control (AHHC) system allows it to follow the contours of the ground during harvesting. If the header is equipped with the ContourMax™ option, the GAUGE WHEELS setting in the HEADER page on the CommandCenter™ in the combine cab will need to be adjusted.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 9.361: CommandCenter™ Display

3. On the HEADER page, select GAUGE WHEELS (A).

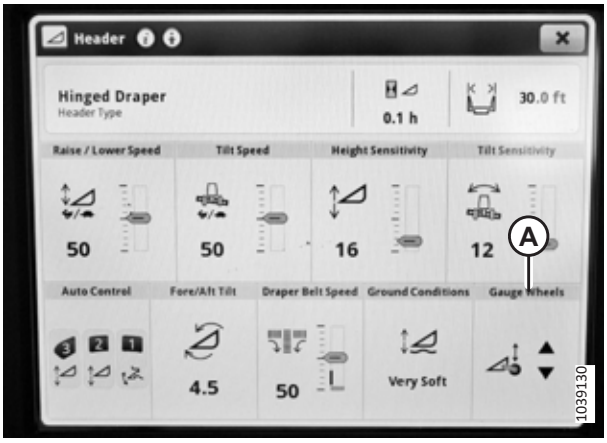


Figure 9.362: John Deere X9 Display – Header Page

4. Fully retract the wheels using the height adjustment on the display or use dial (A) on the console. The setting will be saved automatically to the active multi-function lever button (2 or 3).

5. Engage the header.

Figure 9.363: John Deere X9 Display – Header Page

6. On the HEADER page, locate GROUND CONDITIONS (A).

   NOTE:

   This setting can be changed only when sensing mode is enabled.

7. Choose one of the following header ground pressure settings:

   - VERY FIRM (1 on the float indicator)
   - FIRM (1.5 on the float indicator)
   - TYPICAL (2 on the float indicator)
   - SOFT (2.5 on the float indicator)
   - VERY SOFT (3 on the float indicator)

   NOTE:

   The firmer the setting, the more ground pressure is applied to the header.

   NOTE:

   These settings are saved automatically to the selected multi-function handle button (2 or 3). The active button selected is shown on the corner display post.

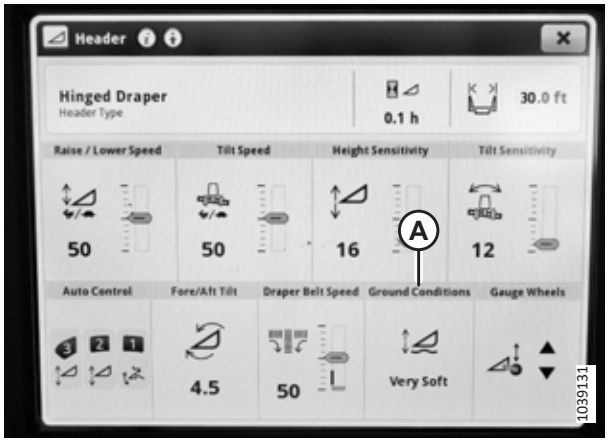


Figure 9.364: John Deere X9 Display – Header Page

9.18.7 Checking Error Codes on Header Controller – John Deere X9 Series

If errors occur while the auto header height control (AHHC) system is operating, the resulting error codes can be viewed in the combine computer's DIAGNOSTICS CENTER.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.

2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 9.365: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 9.366: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).
5. Select HEADER/HITCH CONTROLLER (B).

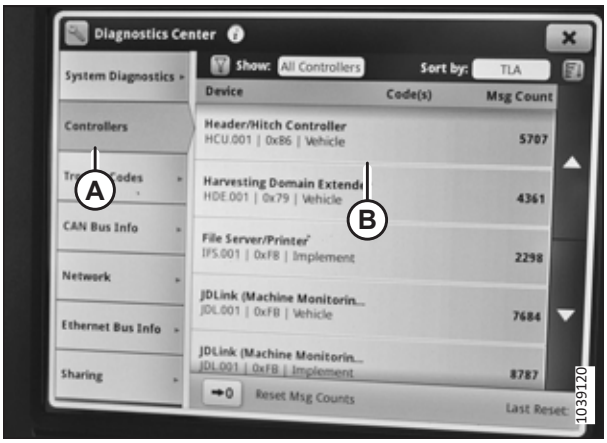


Figure 9.367: John Deere X9 Display – Diagnostics Center

6. Select TROUBLE CODES (A). Trouble codes will appear on right side (B) of the display.
7. Press the X in the top right corner to exit the HEADER/ HITCH CONTROLLER screen.

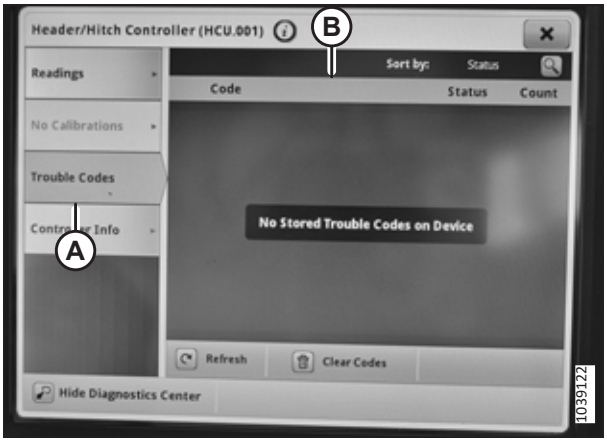


Figure 9.368: John Deere X9 Display – Header/Hitch Controller

9.18.8 Checking Software Version of Header Controller – John Deere X9 Series

The software version of the header controller on the combine can be viewed in the CommandCenter™ display's DIAGNOSTICS CENTER.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 9.369: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 9.370: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).
5. Select HEADER/HITCH CONTROLLER (B).

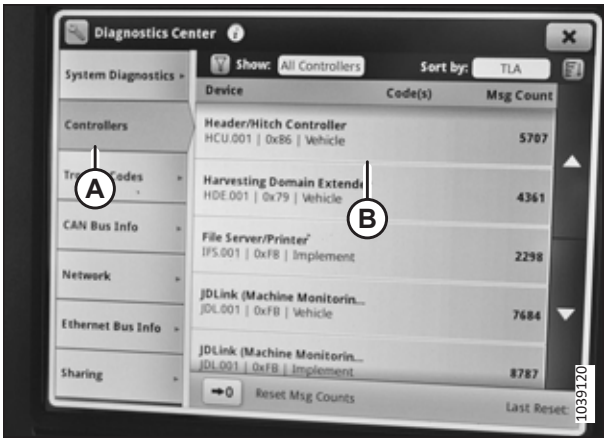


Figure 9.371: John Deere X9 Display – Diagnostics Center

6. Select CONTROLLER INFO (A). Locate SOFTWARE MAIN COMPONENT (B).
7. select the X in the top right corner to exit the HEADER/ HITCH CONTROLLER SCREEN.

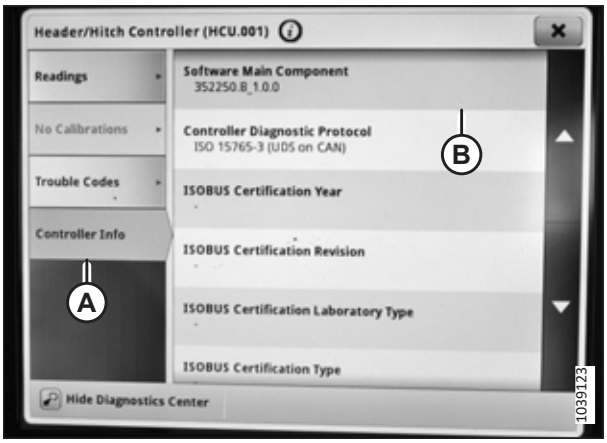


Figure 9.372: John Deere X9 Display – Header/Hitch Controller

9.19 New Holland CR and CX Series Combines – 2014 and Earlier

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

This section applies only to pre-model year 2015 New Holland CR/CX models.

9.19.1 Checking Voltage Range from Combine Cab – New Holland CR and CX Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the float.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

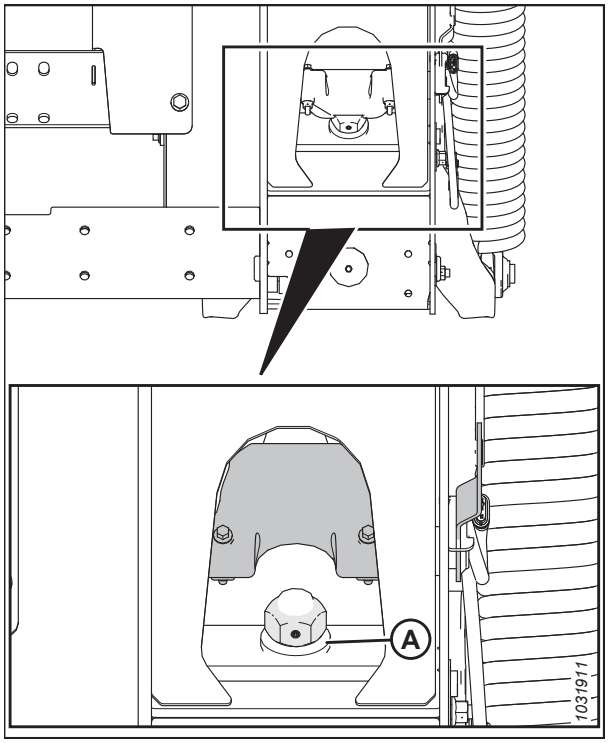


Figure 9.373: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

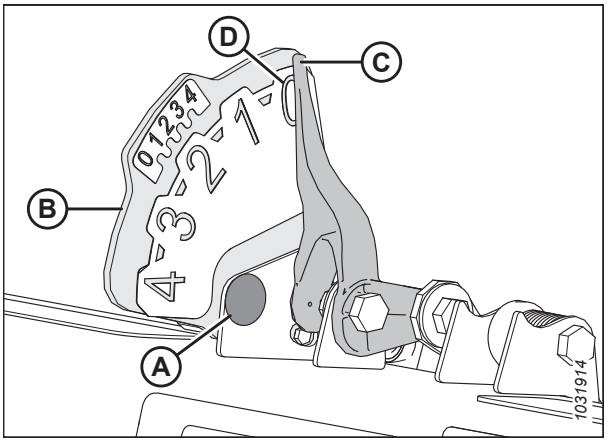


Figure 9.374: Float Indicator

5. Ensure the header float is unlocked.
6. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.
7. Select SETTINGS. The SETTINGS page appears.

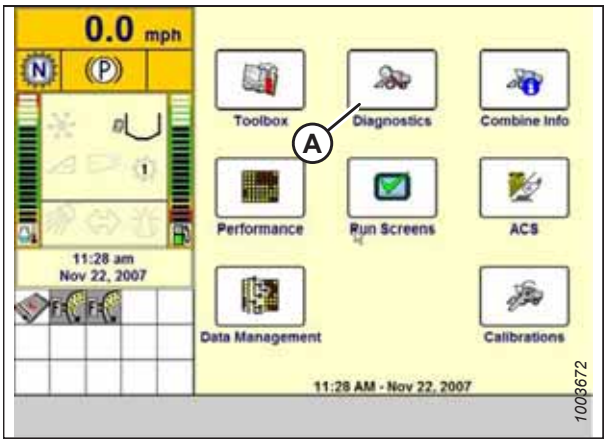


Figure 9.375: New Holland Combine Display

8. Select GROUP drop-down menu (A). The GROUP dialog box appears.

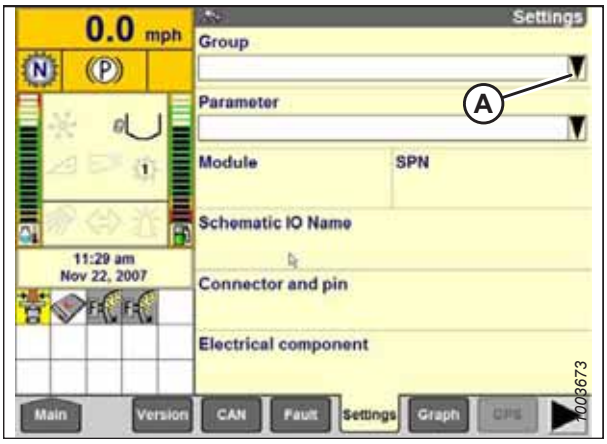


Figure 9.376: New Holland Combine Display

9. Select HEADER HEIGHT/TILT (A). The PARAMETER page appears.

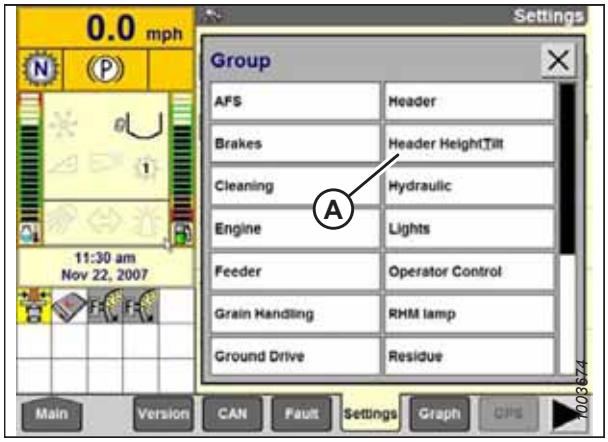


Figure 9.377: New Holland Combine Display

10. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The voltage reading appears at the top of the page.
11. Raise and lower the header to see the full range of voltage readings.
12. Compare the voltage readings on the display to voltage ranges specified in *9.2 Recommended Sensor Output Voltages for Combines, page 265*.

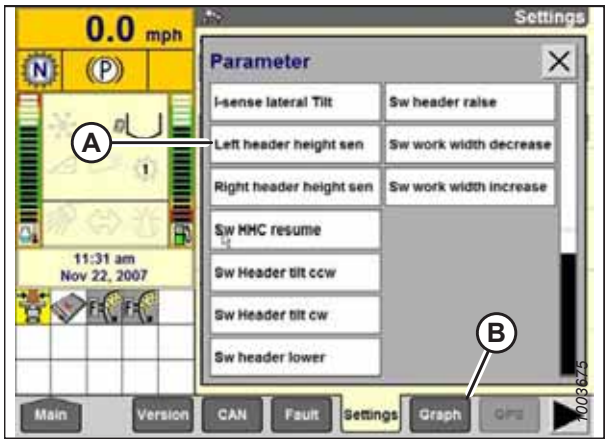


Figure 9.378: New Holland Combine Display

9.19.2 Header Settings Quick Reference – New Holland CR Series

Use the information in the following table to quickly reference the recommended settings for a header paired with a New Holland CR Series combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

Table 9.4 Header Settings – New Holland CR Series

Setup Parameter	Suggested Setting
Cutting type	Platform
Header sub type	80/90
Autofloat	Installed
Auto header lift	Installed
Manual HHC raise/lower rate	Set for best performance
HHC height sensitivity	Set for best performance
HHC tilt sensitivity	Set for best performance
Reel height sensor	Yes

9.19.3 Setting up Auto Header Height Control – New Holland CR and CX Series

Auto header height control (AHHC) is set up using the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

1. Select HEADER LATERAL FLOAT on the combine display, and press ENTER.
2. Use the up and down navigation keys to move between options, and select INSTALLED.

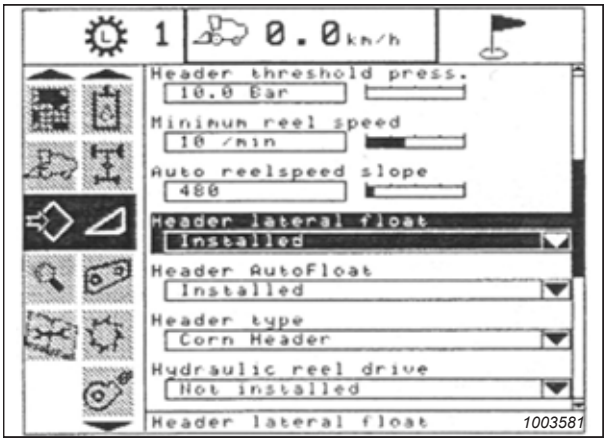


Figure 9.379: New Holland Combine Display

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

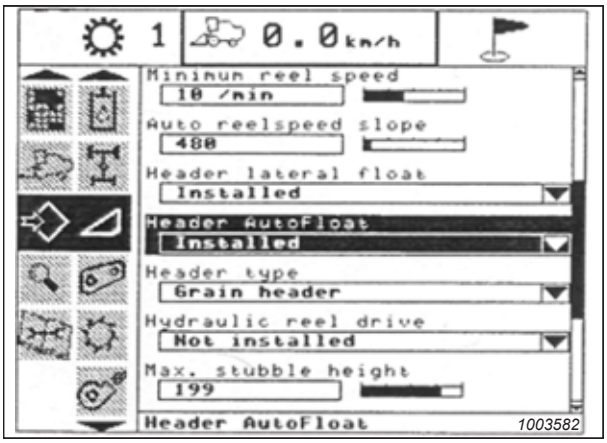


Figure 9.380: New Holland Combine Display

9.19.4 Calibrating Auto Header Height Control – New Holland CR and CX Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

Check the following conditions before starting the header calibration procedure:

- The header is attached to the combine.
- The combine is on level ground, with the header level to the ground.
- The header is on down stops, and the center-link is set to **D**.
- The engine is running.
- The combine is not moving.
- No faults have been received from the Header Height Controller (HHC) module.
- The header/feeder is disengaged.
- The lateral float buttons are **NOT** pressed.
- The ESC key is **NOT** pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATION on the combine display, and press the RIGHT ARROW navigation key to enter the information box.
2. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

   NOTE:

   You can use the up and down navigation keys to move between the options.

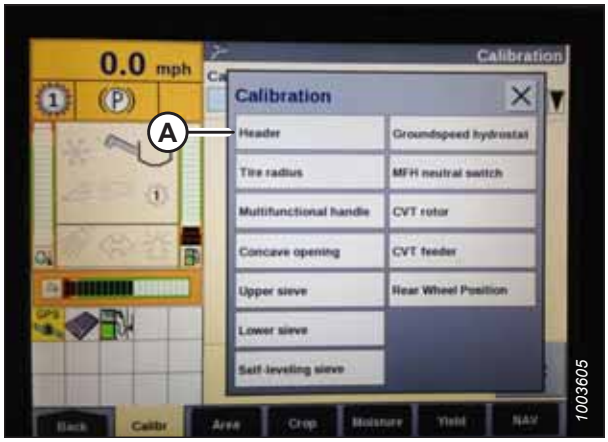


Figure 9.381: New Holland Combine Display

3. Follow the calibration steps in the order in which they appear in the dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will cause the calibration procedure to stop.

   NOTE:

   Refer to your combine operator's manual for an explanation of any error codes.

Figure 9.382: New Holland Combine Display

4. When all steps have been completed, a CALIBRATION SUCCESSFUL message will appear on the screen. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

   NOTE:

   If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

5. If the unit does not function properly, conduct the maximum stubble height calibration. For instructions, refer to *9.19.5 Calibrating Maximum Stubble Height – New Holland CR and CX Series, page 441*.

9.19.5 Calibrating Maximum Stubble Height – New Holland CR and CX Series

This procedure details how to set the height at which the harvest area counter will start and stop counting harvested area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

IMPORTANT:

- If the value is set too low, the area counter may **NOT** be accurate since the header is sometimes raised above this threshold although the combine is still cutting.
- If the value is set too high, the area counter will keep counting even when the header is raised (but below this threshold) and the combine is no longer cutting crop.

DANGER

Ensure that all bystanders have cleared the area.

1. Select the MAXIMUM STUBBLE HEIGHT calibration dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

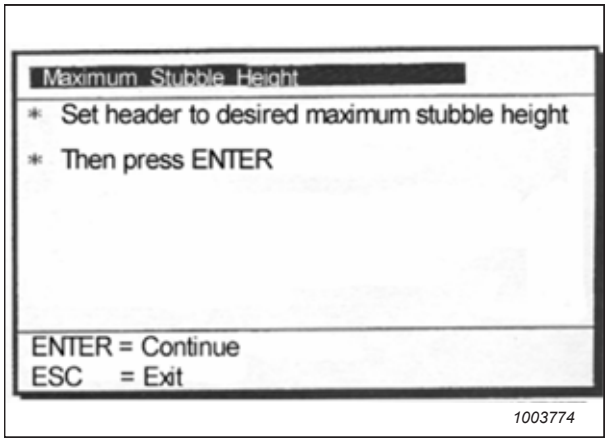


Figure 9.383: New Holland Calibration Dialog Box

2. Move the header to the desired maximum stubble height using the header up or down control switch on the multifunction handle.

   NOTE:

   Set the header to a height which will never be attained while harvesting. This will ensure that the harvest area counter never stops recording harvesting data while the auto header height control (AHHC) system is active.

3. Press ENTER to continue. As you proceed through the calibration process, the display will automatically update to show the next step.

4. Press ENTER or ESC to close the calibration screen. The calibration is now complete.

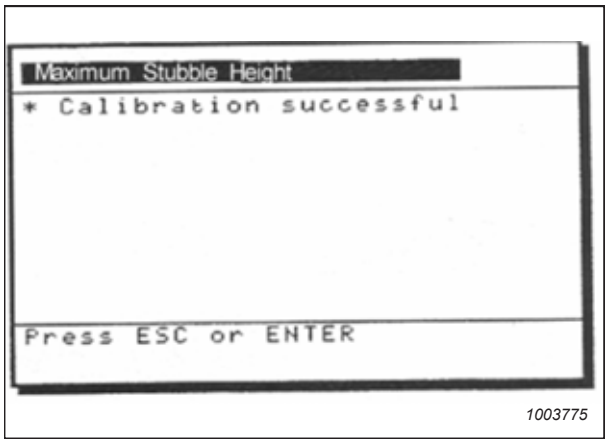


Figure 9.384: New Holland Calibration Dialog Box

9.19.6 Adjusting Header Raise Rate – New Holland CR and CX Series

If necessary, the header raise rate (the first speed on the HEADER HEIGHT rocker switch of the multifunctional handle) can be adjusted.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

1. Select HEADER RAISE RATE on the combine display.
2. Use the + or – buttons to change the setting.
3. Press ENTER to save the new setting.

NOTE:

The raise rate can be changed from 32–236 in increments of 34. The factory setting is 100.

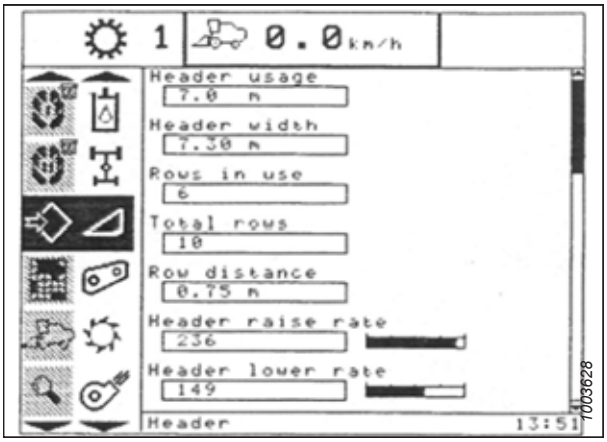


Figure 9.385: New Holland Combine Display

9.19.7 Setting Header Lower Rate – New Holland CR and CX Series

If necessary, the header lower rate (the automatic header height control button or second speed on the header height rocker switch of the multifunction handle) can be adjusted.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

1. Select HEADER LOWER RATE on the combine display.
2. Use the + or – buttons to change the setting to 50.
3. Press ENTER to save the new setting.

NOTE:

The header lower rate can be changed from 2–247 in increments of 7. It is factory-set to 100.

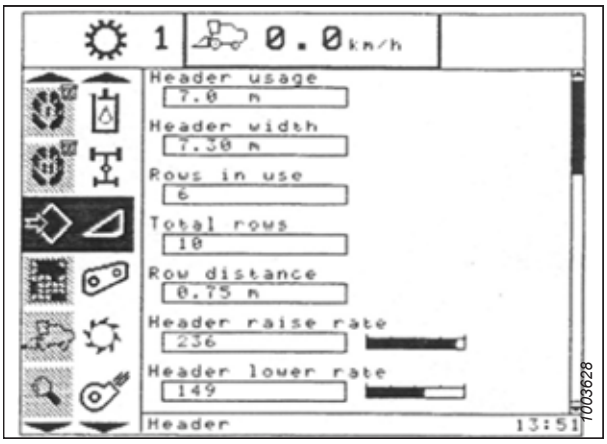


Figure 9.386: New Holland Combine Display

9.19.8 Setting Auto Header Height Control Sensitivity – New Holland CR and CX Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

DANGER

Ensure that all bystanders have cleared the area.

1. Engage the threshing mechanism and the feeder house.
2. Select HEIGHT SENSITIVITY on the combine display.
3. Use the + or – buttons to change the setting to 200.
4. Press ENTER to save the new setting.

   NOTE:

   The sensitivity can be changed from 10–250 in increments of 10. It is factory-set to 100.

Figure 9.387: New Holland Combine Display

9.19.9 Setting Preset Cutting Height – New Holland CR and CX Series

The reel and cut height setting can be stored in the combine's computer as presets. These settings can be set and selected using the combine's control console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *9.20 New Holland Combines – CR Series, 2015 and Later, page 447*.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

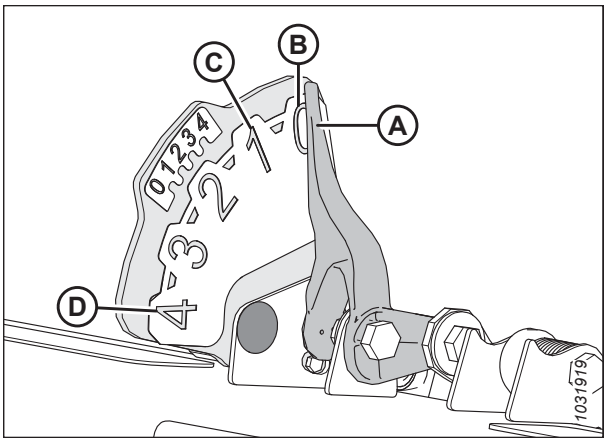


Figure 9.388: Float Indicator

1. Engage the threshing mechanism and the feeder house with switches (A) and (B).
2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT mode position (A) or (B).
3. Raise or lower the header to the desired cutting height using HEADER HEIGHT and HEADER LATERAL FLOAT momentary switch (C).
4. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep confirms the setting.

   NOTE:

   It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT mode position (A) or (B).
5. Raise or lower the reel to the desired working height using the REEL HEIGHT momentary switch.
6. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep confirms the setting.

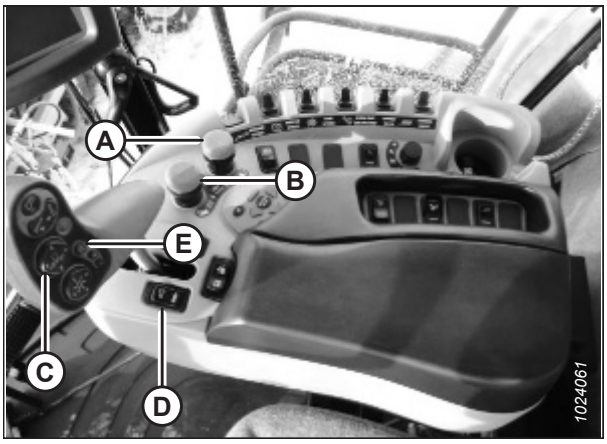


Figure 9.389: New Holland Combine Controls

7. To change one of the memorized header height set points while the combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOAT rocker switch (A) (slow up/down) to raise or lower header to the desired value. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (B) for a minimum of 2 seconds to store the new height position. A beep confirms setting.

   NOTE:

   Fully pressing AUTOMATIC HEADER HEIGHT CONTROL button (B) will disengage float mode.

   NOTE:

   It is not necessary to press rocker switch (C) again after changing header height set point.

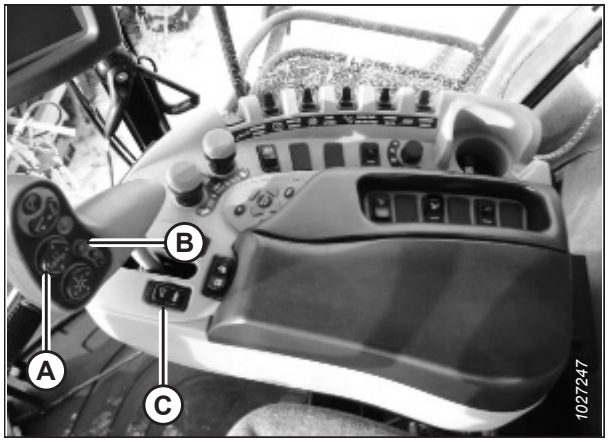


Figure 9.390: New Holland Combine Controls

9.20 New Holland Combines – CR Series, 2015 and Later

To make your header's auto header height control (AHHC) system compatible with model year 2015 and newer New Holland CR Series Combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

9.20.1 Checking Voltage Range from Combine Cab – New Holland CR Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *9.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 436*.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 254–356 mm (10–14 in.) above the ground.
2. Unlock the float.
3. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

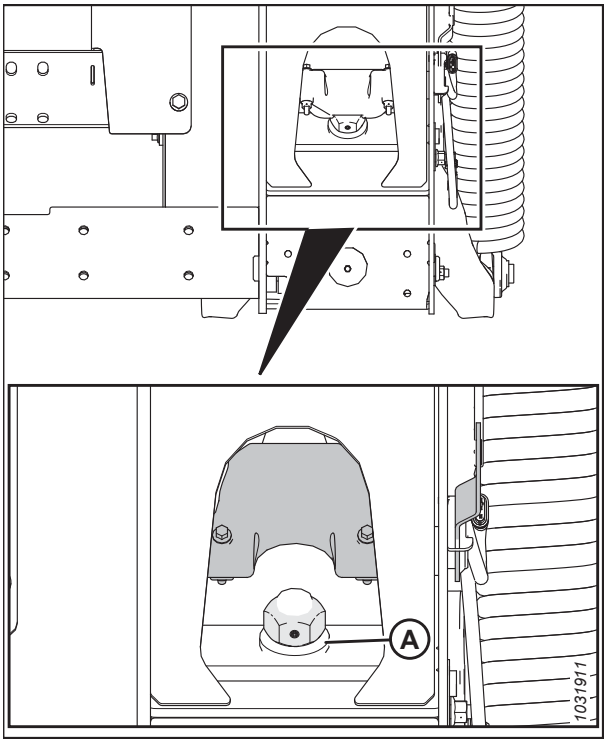


Figure 9.391: Float Lock

4. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

5. Ensure the header float is unlocked.

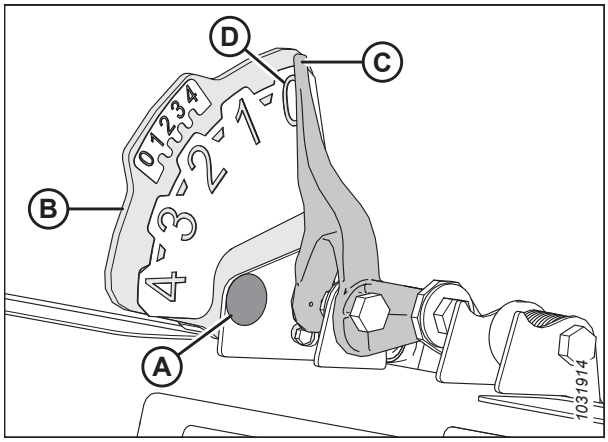


Figure 9.392: Float Indicator

6. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.

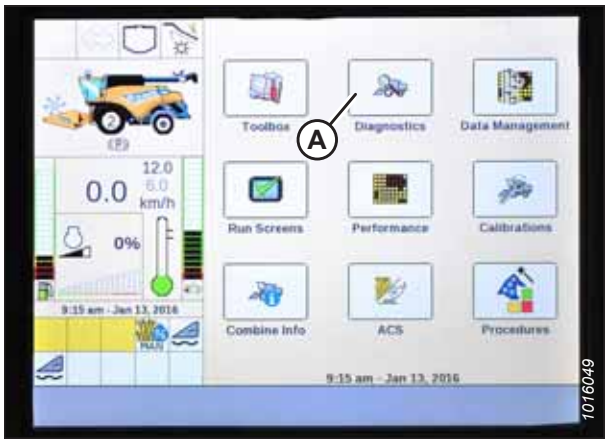


Figure 9.393: New Holland Combine Display

7. Select SETTINGS (A). The SETTINGS page appears.

Figure 9.394: New Holland Combine Display

8. Select HEADER HEIGHT/TILT (A) from the GROUP drop-down menu.
9. Select HEADER HEIGHT SENS. L (B) from the PARAMETER drop-down menu.

Figure 9.395: New Holland Combine Display

10. Select GRAPH (A). The exact voltage (B) is displayed at the top of the page.
11. Raise and lower the header to see the full range of voltage readings.

Figure 9.396: New Holland Combine Display

9.20.2 Setting up Auto Header Height Control – New Holland CR Series

Auto header height control (AHHC) is set up using the combine display and control handle.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *9.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 436*.

1. Ensure the center-link is set to **D**.
2. Shut down the engine.
3. Turn the key to the run position.

4. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 9.397: New Holland Combine Display

5. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.

   NOTE:

   Software in some New Holland combines may not allow you to change the header from FLEX to PLATFORM or the header type from DEFAULT to 80/90 at the main menu. This is now a dealer setting, and requires you to access the DEALER SETTING page by pressing and holding both the UNLOAD and RESUME buttons on the control handle for approximately 10 seconds. The DEALER SETTING page should appear and will allow you to change the header and header type settings.

Figure 9.398: New Holland Combine Controls

6. Select HEAD 1 (A). The HEADER SETUP 1 page displays.

7. Select CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

Figure 9.399: New Holland Combine Display

8. Select HEADER SUB TYPE drop-down arrow, and set HEADER SUB TYPE to 80/90 (A).

Figure 9.400: New Holland Combine Display

9. Select HEAD 2 (A). The HEADER SETUP 2 page displays.

Figure 9.401: New Holland Combine Display

10. Select the AUTOFLOAT drop-down menu and set AUTOFLOAT to INSTALLED (A).
11. Select the AUTO HEADER LIFT drop-down menu and set AUTO HEADER LIFT to INSTALLED (B).

    NOTE:

    With AUTO HEADER LIFT installed and AHHC engaged, the header will lift up automatically when you pull back on the control handle.

12. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.

Figure 9.402: New Holland Combine Display

13. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

Figure 9.403: New Holland Combine Display

14. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 9.404: New Holland Combine Display

9.20.3 Setting up Reel Speed – New Holland CR Series

The reel diameter and reel displacement settings will need to be entered into the combine's computer before the reel can be operated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

1. Shut down the engine.
2. Turn the key to the run position.
3. Ensure that the combine display software is updated to the relevant version specified below or better:
   - Combines from model years 2015–2018: UCM v38.10.0.0
   - Combines from model year 2019 or newer: UCM v1.4.0.0

4. Ensure the center-link is set to **D**.
5. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 9.405: New Holland Combine Display

6. Access Dealer mode by simultaneously pressing UNLOAD (A) and RESUME (B) buttons on the control handle for approximately 10 seconds. The DEALER SETTING page should appear and is required to change the REEL DIAMETER and REEL DISPLACEMENT PER REVOLUTION settings.

Figure 9.406: New Holland Combine Controls

7. Select HEAD 2 (A). The HEADER SETUP 2 page appears.
8. Select REEL DIAMETER (B) and enter 102 cm (40.16 in).
9. Select REEL DIAMETER PER REVOLUTION (C) and enter the appropriate value according to the specific combination of drive and driven sprocket sizes detailed in the following table.

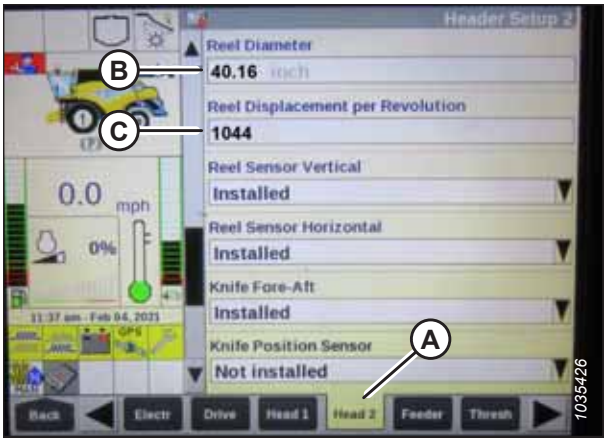


Figure 9.407: New Holland Combine Display

Table 9.5 Reel Displacement per Revolution Chart

Drive Sprocket Size (Number of Teeth)	Driven Sprocket Size (Number of Teeth)	Reel Displacement Per Revolution
19 (standard)	56	769
14 (high torque / low speed)[13]	56	1044
20 (low torque / high speed)[14]	52	679

9.20.4 Calibrating Auto Header Height Control – New Holland CR Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *9.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 436*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to the header operator's manual.

Check the following conditions before starting the header calibration procedure:

- The header is attached to the combine.
- The combine is on level ground, with the header level to the ground.
- The header is on down stops, and the center-link is set to **D**.
- The engine is running.
- The combine is not moving.
- No faults have been received from the header height controller (HHC) module.
- The header/feeder is disengaged.
- The lateral float buttons are **NOT** pressed.
- The ESC key is **NOT** pressed.

13. Two speed kit with chain on inner sprockets.
14. Two speed kit with chain on outer sprockets.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main page. The CALIBRATION page appears.

Figure 9.408: New Holland Combine Display

2. Select CALIBRATION drop-down menu (A).

Figure 9.409: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

Figure 9.410: New Holland Combine Display

4. Follow the calibration steps in the order in which they appear on the page. As you proceed through the calibration process, the display updates to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes stops the calibration procedure.

   NOTE:

   Refer to your combine operator's manual for an explanation of any error codes.

Figure 9.411: New Holland Combine Display

5. When all steps have been completed, the CALIBRATION COMPLETED message appears on the page.

   NOTE:

   If the float was set heavier to complete AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

Figure 9.412: New Holland Combine Display

9.20.5 Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – New Holland CR Series

The reel height sensor and reel fore-aft sensor will need to be calibrated before the auto header height control (AHHC) system can be used. Calibrating the reel position calibrates the reel height sensor and the reel fore-aft sensor.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

To calibrate the reel position, follow these steps:

1. Position the header 254–356 mm (10–14 in.) off the ground.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. Select CALIBRATIONS (A) on the main page. The CALIBRATION page appears.

Figure 9.413: New Holland Combine Display

3. Select CALIBRATION drop-down menu (A).

Figure 9.414: New Holland Combine Display

4. Select REEL POSITION (A) from the list of calibration options.

Figure 9.415: New Holland Combine Display

5. CAUTION statement (A) will appear. Select ENTER.

Figure 9.416: New Holland Combine Display

6. If the statement “Confirm varifeed knife is completely retracted” (A) appears, select ENTER. The varifeed knife is not applicable to MacDon headers.

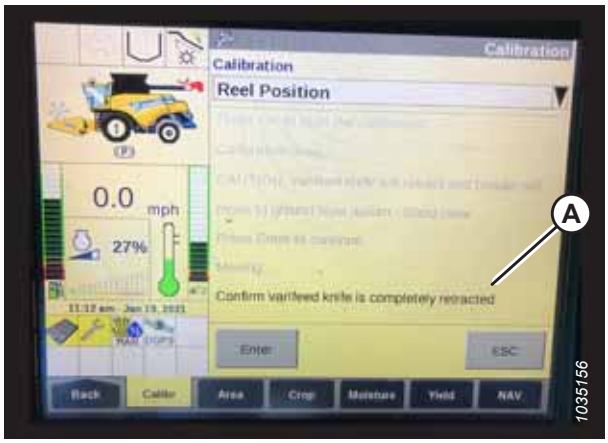


Figure 9.417: New Holland Combine Display

7. Follow calibration steps (A) in the order in which they appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will cause the calibration procedure to stop.

   NOTE:

   Refer to your combine operator’s manual for an explanation of any error codes.

Figure 9.418: New Holland Combine Display

9.20.6 Checking Reel Height Sensor Voltages – New Holland CR Series

Check the reel height sensor voltages to ensure they are within the prescribed range.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

Figure 9.419: New Holland Combine Display

2. Select SETTINGS tab (A). The SETTINGS page appears.
3. From GROUP menu (B), select HEADER.
4. From PARAMETER menu (C), select REEL VERTICAL POSITION.

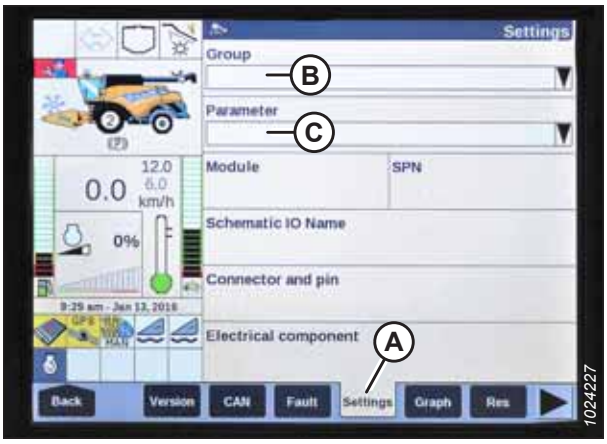


Figure 9.420: New Holland Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Raise the reel to view high voltage (B). The voltage should be within 4.1–4.5 V.
7. Lower the reel to view low voltage (C). The voltage should be within 0.5–0.9 V.

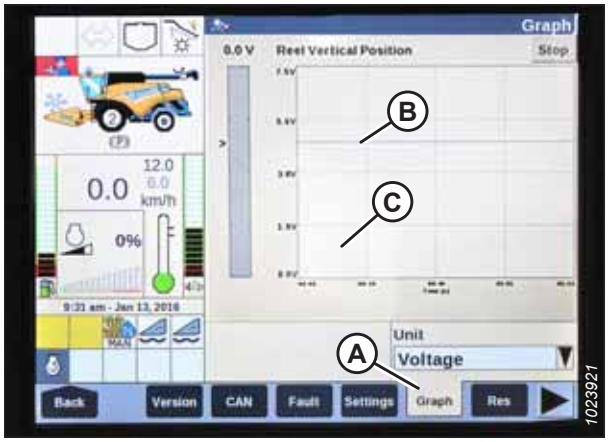


Figure 9.421: New Holland Combine Display

9.20.7 Setting Preset Cutting Height – New Holland CR Series

The cut height setting can be stored in the combine. When harvesting, the setting can be selected from the control handle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *9.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 436*.

The console has two buttons used for auto height presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A) and (B). Third button (C) is not configured.

DANGER

Ensure that all bystanders have cleared the area.

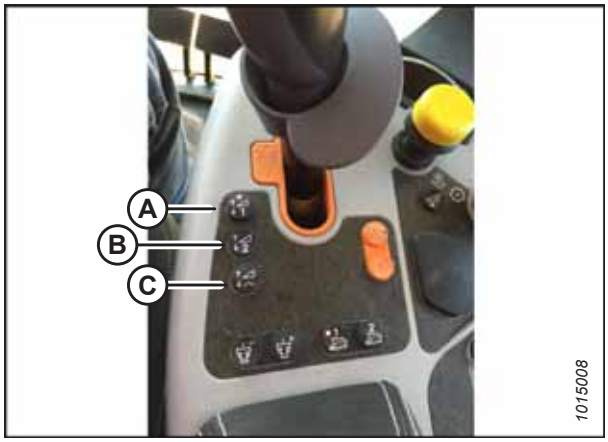


Figure 9.422: New Holland Combine Controls

To set preset cutting height, follow these steps:

1. Engage the separator and the header.
2. Press preset button 1 (A). A yellow light on the button lights up.
3. Raise or lower the header to the desired cutting height.

Figure 9.423: New Holland Combine Controls

4. Hold RESUME button (C) on the multifunction handle to set the preset, until the monitor beeps.

   NOTE:

   When setting presets, always set the header position before setting the reel position. If the header and reel are set at the same time, the reel setting will not save.

5. Raise or lower the reel to the desired working position.
6. Hold RESUME button (C) on the multifunction handle to set the preset.
7. Repeat Step *2, page 461* to Step *6, page 461*, using preset button 2.

Figure 9.424: New Holland Combine Multifunction Handle

8. Lower the header to the ground.
9. Select RUN SCREENS (A) on the main page.

Figure 9.425: New Holland Combine Display

10. Select the RUN tab that shows MANUAL HEIGHT.

    NOTE:

    The MANUAL HEIGHT field may appear on any of the RUN tabs. When an auto height preset button is pressed, the display changes to AUTO HEIGHT (A).

11. Press one of the auto height preset buttons to select a preset cutting height.

Figure 9.426: New Holland Combine Display

9.20.8 Setting Maximum Work Height – New Holland CR Series

The maximum work height can be set using the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *9.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 436*.

1. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 9.427: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP page appears.
3. Select MAXIMUM WORK HEIGHT field (B).

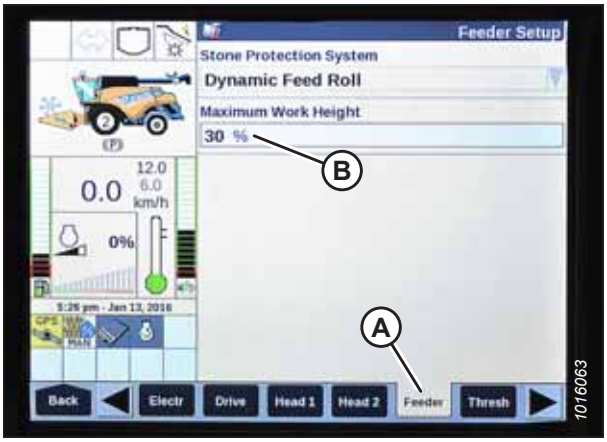


Figure 9.428: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to the desired value.
5. Select SET and then press ENTER.

Figure 9.429: New Holland Combine Display

9.20.9 Configuring Reel Fore-Aft, Header Tilt, and Header Type – New Holland CR Series

The reel fore-aft, header tilt, and header type settings for the auto header height control (AHHC) system can be changed by accessing the HEAD menus.

NOTE:

This procedure applies only to 2016 New Holland CR models 6.90, 7.90, 8.90, and 9.90.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Turn the ignition key to the RUN position.

2. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.

Figure 9.430: New Holland Combine Controls

3. On the HEAD 1 page, change the CUTTING TYPE from FLEX to PLATFORM as shown at location (A).

Figure 9.431: New Holland Combine Display

4. On the HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at location (A).

Figure 9.432: New Holland Combine Display

There are now two different buttons for the ON GROUND presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A) and (B). Third button down (C) is not configured.

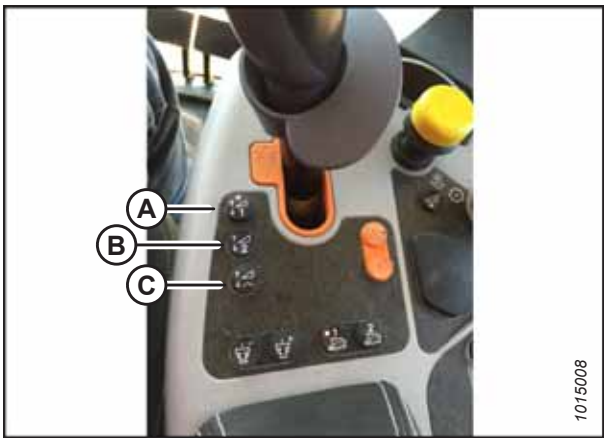


Figure 9.433: New Holland Combine Controls

9.21 Rostselmash Combines – RSM-081.27 and RSM–161.27

Instructions on using the header's auto header height control (AHHC) system with Rostselmash RSM-081.27 and RSM–161.27 combines are provided.

9.21.1 Calibrating Auto Header Height Control – Rostselmash RSM-081.27 and RSM–161.27

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly. The AHHC feature on Rostelsmash RSM-081.27 and RSM–161.27 combines can be calibrated using the automatic calibration procedure.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Set the center-link to **D**. For instructions, refer to the header operator's manual.
2. Start the engine.
3. Set the engine throttle to operating speed.
4. Park the combine on a level surface.
5. Allow the engine to reach normal operating temperature.
6. Lower the header to the ground.
7. Ensure that needle (A) on the float module's float indicator is pointing to 4 (B), as shown.

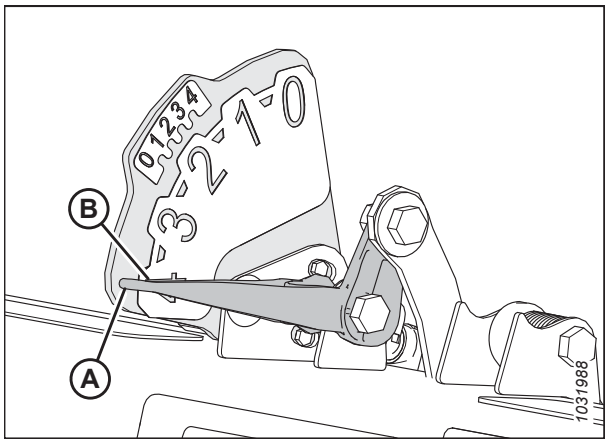


Figure 9.434: Float Indicator

8. Select WRENCH (A). SETTINGS menu (B) will appear.

Figure 9.435: Settings Menu

9. Select CALIBRATION (A). The CALIBRATION SETTINGS menu will appear.

Figure 9.436: Settings Menu – Calibration Button

10. Select GFCS (A).

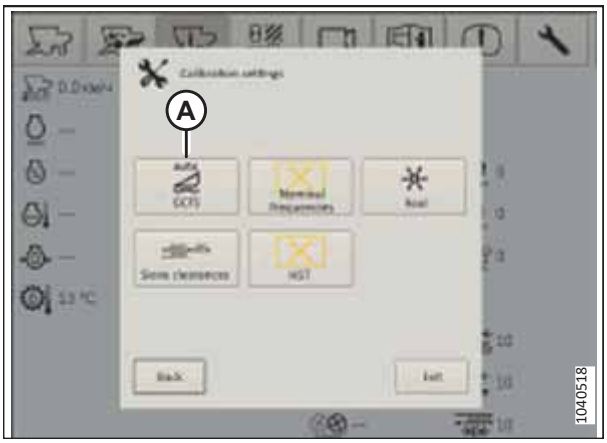


Figure 9.437: Calibration Settings Menu

11. Press START CALIBRATION (A). The header will rise to its maximum height, then fall to the lowest possible position.

    NOTE:

    If the system reports sensor voltages that are out of the acceptable range (0.7 – 4.3 V), the calibration will fail. The voltage range should be measured at the sensors. For instructions on inspecting the voltage range of the header height sensors, refer to *9.3 Manually Checking Voltage Limits, page 266*.

12. Adjust the center-link to the desired setting. For instructions, refer to the header operator's manual

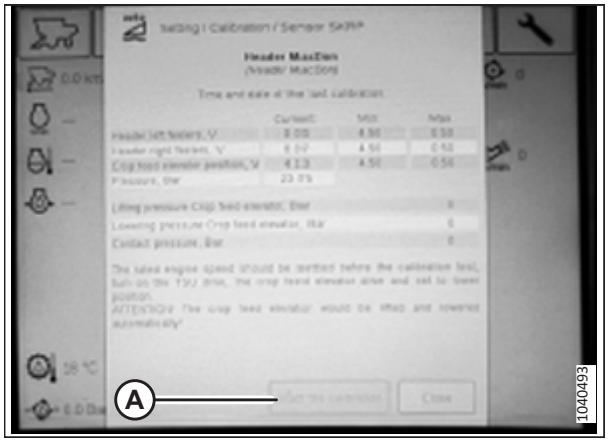


Figure 9.438: Calibration Screen

9.21.2 Engaging Auto Header Height Control – Rostselmash RSM-081.27 and RSM–161.27

Once the auto header height control (AHHC) system has been configured on the combine, the AHHC system will need to be activated in the combine's computer.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Press WRENCH (A). SETTINGS menu (B) will appear.
2. Press GCFS button (C). The GCFS SETTINGS page will appear.

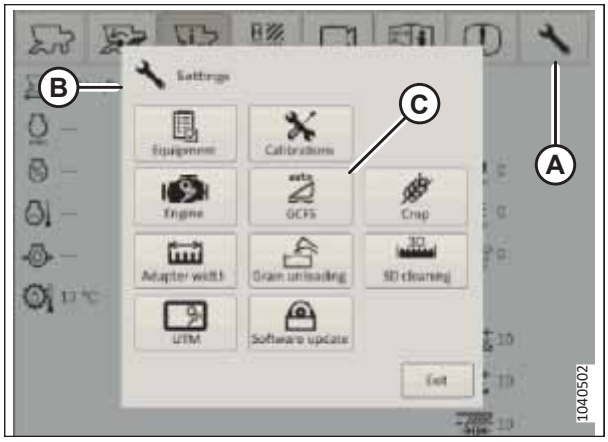


Figure 9.439: Settings Menu

3. Ensure that MODE 1 (A) and MODE 2 (B) are set to CUTTING HEIGHT MAINTAINING MODE.
4. Select OK button (C) to confirm the changes.

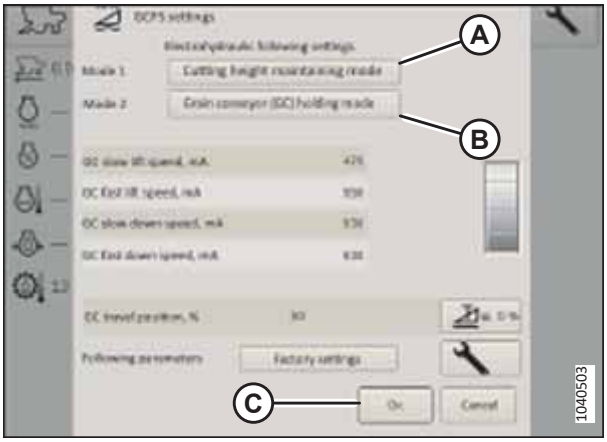


Figure 9.440: Settings Menu

9.21.3 Calibrating Reel Speed – Rostselmash RSM-081.27 and RSM–161.27

The reel speed will need to be calibrated before the automatic reel speed feature of the auto header height control (AHHC) system on Rostselmash RSM-081.27 and RSM–161.27 combines can be used.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. Park the combine on a level surface.
3. Allow the engine to reach normal operating temperature.
4. On the combine's computer, select WRENCH (A). SETTINGS menu (B) will appear.

Figure 9.441: Settings Menu

5. Select CALIBRATION (A). The CALIBRATION SETTINGS menu will appear.

Figure 9.442: Settings Menu – Calibration Button

6. Select REEL (A). The REEL CALIBRATION page will appear.

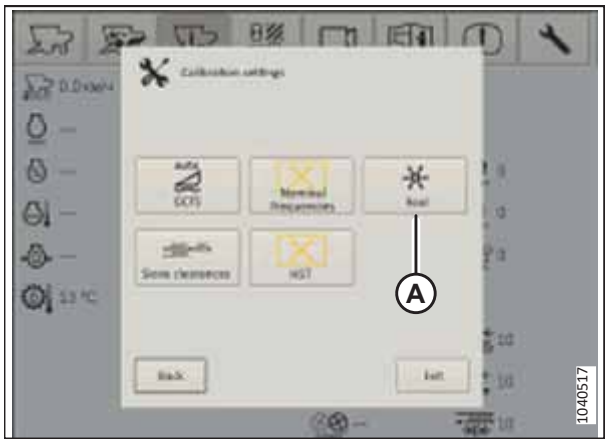


Figure 9.443: Calibration Settings Menu

7. Select START CALIBRATION (A). The display will emit a beep to indicate that the procedure has begun. The reel will begin rotating and will stop when calibration is complete. This procedure may take several minutes to complete.
8. Select OK (B).

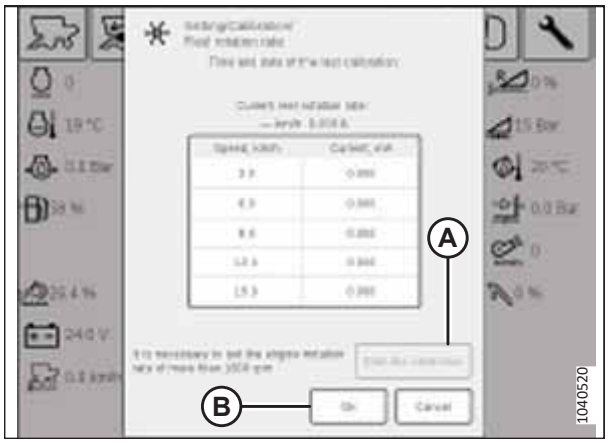


Figure 9.444: Reel Calibration Page

9.21.4 Operating Header – Rostselmash RSM-081.27 and RSM–161.27

Once the auto header height control (AHHC) system has been calibrated, the header settings can be optimized using the controls in the combine's cab.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual for the most up-to-date information.

1. Start the engine.
2. Engage the combine's feeder house. For instructions, refer to the combine operator's manual.
3. Engage the header. For instructions, refer to the combine operator's manual.
4. On the combine control handle, use raise/lower header button (A) to move the header to the desired height.

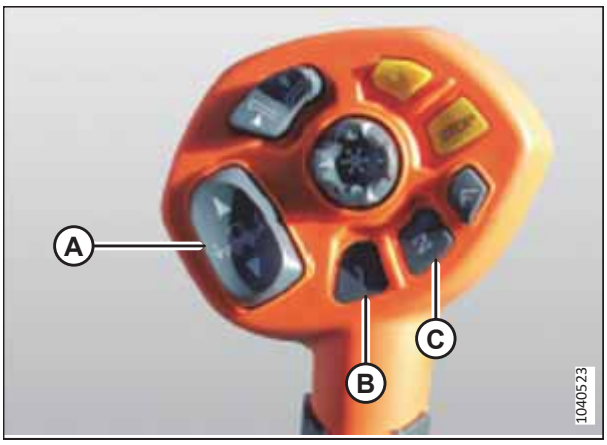


Figure 9.445: Combine Control Handle

NOTE:

Preset height settings should be between 10 and 50% ground pressure, as indicated on GROUND PRESSURE BAR (A).

Figure 9.446: Combine Operating Screen

5. Press and hold button (B) for 3 seconds to save the height preset. Press and release button (B) again to cause the header to move to the preset height.
6. If you wish to set another preset on button (C):
   a. Use raise/lower header button (A) to move the header to another desired height.
   b. Press and hold button (C) for 3 seconds to save the second height preset. Press and release button (C) again to move the header to the second preset height.

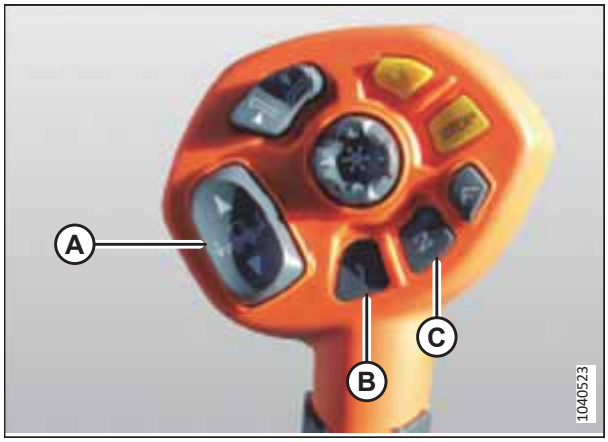


Figure 9.447: Combine Control Handle

Chapter 10: Setting up Reel Position Sensors

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

10.1 Checking and Adjusting Reel Height Sensor

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

IMPORTANT:

Ensure that the minimum reel height is set before adjusting the reel height sensor. For instructions, refer to *8.10 Reel to Cutterbar Clearance, page 225*.

NOTE:

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

DANGER

Ensure that all bystanders have cleared the area.

1. On the right endsheet, locate reel height sensor (A). It connects to the right reel arm.

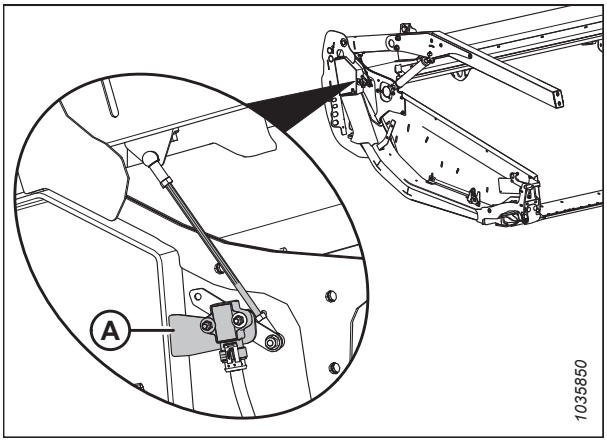


Figure 10.1: Reel Height Sensor Location

Checking and adjusting sensor output voltage when reel is lowered

2. Engage the parking brake.
3. Start the engine. For instructions, refer to the combine operator's manual.
4. Lower the reel fully.
5. Use the combine display or a voltmeter to measure the voltage range when the reel is lowered. Refer to Table *10.1, page 474* for the recommended voltage ranges.

Table 10.1 Reel Height Sensor Voltage Limits

Combine Type	Recommended Voltage Range	
	Voltage with Reel Raised	Voltage with Reel Lowered
Case/New Holland	0.7–1.1 V	3.9–4.3 V
CLAAS	3.9–4.3 V	0.7–1.1 V
IDEAL™	3.9–4.3 V	0.7–1.1 V
John Deere	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. Shut down the engine, and remove the key from the ignition.

7. Using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at reel height sensor (A).

8. Ensure that the voltage is within the recommended voltage range. If the voltage is not within the range, loosen jam nuts (B) and (C), and adjust the rod length. Hand-tighten the jam nuts until snug and then tighten the jam nuts by another quarter-turn.

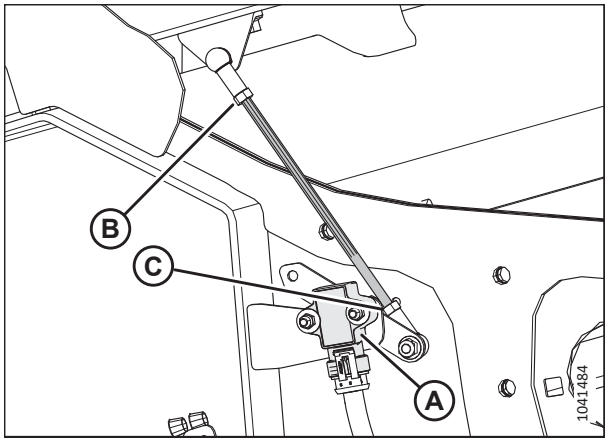


Figure 10.2: Reel Height Sensor – Right Reel Arm with Reel Down

Checking and adjusting sensor output voltage when reel is raised

9. Start the engine.

10. Fully raise the reel.

11. Use the combine display or a voltmeter to measure the voltage range when the reel is raised. Refer to Table *10.1, page 474* for the recommended voltage ranges.

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

13. Using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at reel height sensor (A).

14. If the voltage is not within the recommended range, loosen two M5 hex nuts (B) and rotate sensor (A) to achieve the recommended voltage range. Tighten nuts (B) to 2.5 Nm (22 lbf·in).

15. Start the engine.

16. Lower the reel fully.

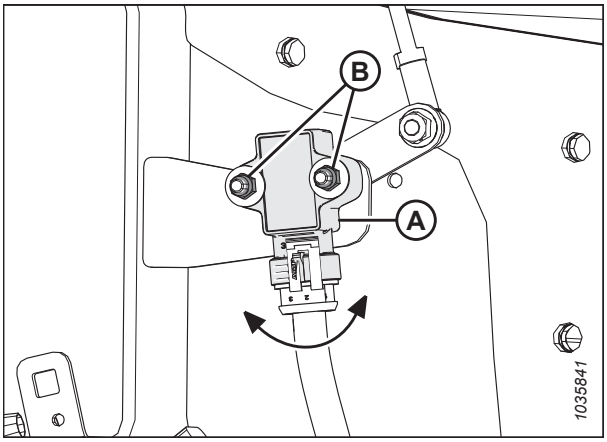


Figure 10.3: Reel Height Sensor – Right Reel Arm with Reel Up

10.2 Checking and Adjusting Fore-Aft Position Sensor

The fore-aft position sensor indicates the position of the reel in the fore-aft plane. The sensor arm's orientation and the sensor's output voltage range must be calibrated.

Checking and adjusting sensor arm orientation

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

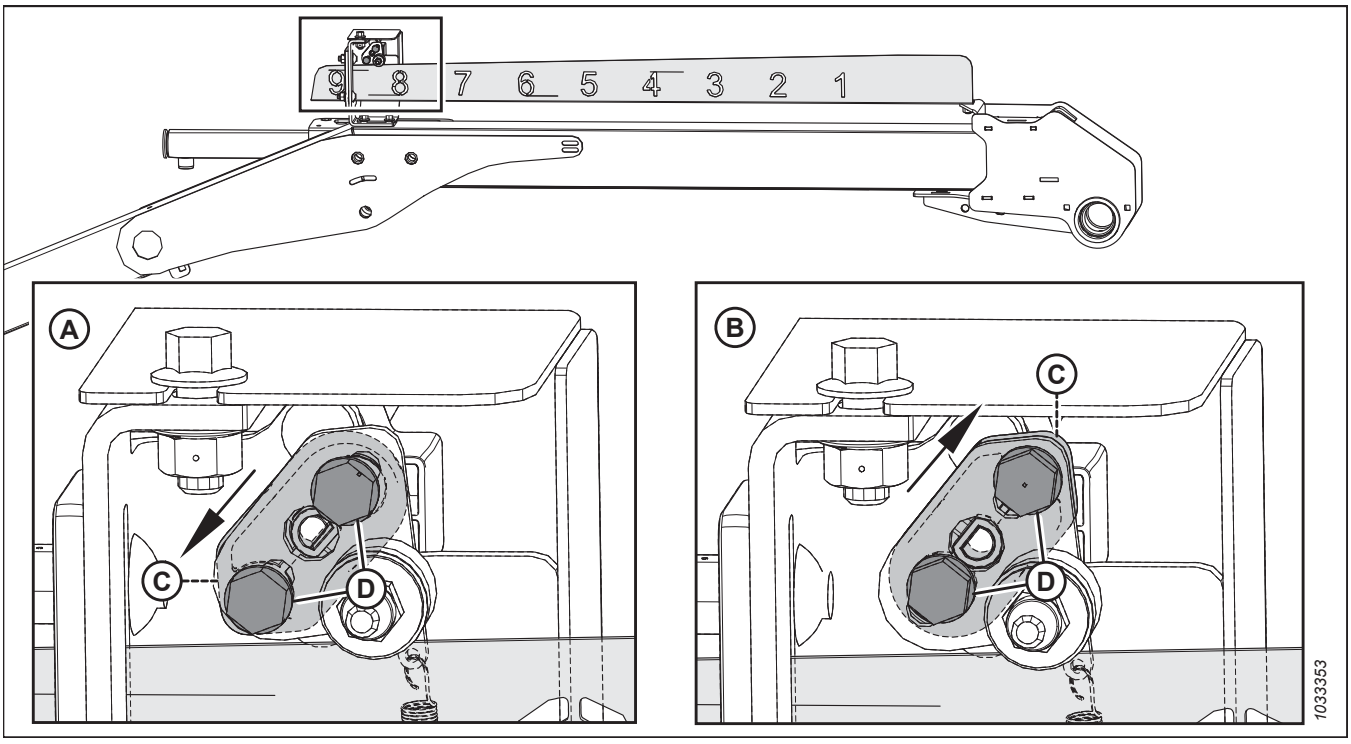


Figure 10.4: Sensor Arm Configurations

A - John Deere, CLAAS, IDEAL™ Configuration

B - Case/New Holland Configuration

C - Sensor Arm

D - Mounting Hardware

3. Check the orientation of sensor arm (C) and hardware (D). If sensor arm (C) is not oriented correctly, remove it and reinstall it in the correct orientation.

Checking and adjusting sensor output voltage

DANGER

Ensure that all bystanders have cleared the area.

4. Engage the parking brake.

   IMPORTANT:

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

5. Start the engine.

6. Adjust the reel to the fully forward position. Ensure that dimension (A) (from the sensor bracket to the end of the indicator) is 62–72 mm (2.4–2.8 in.).

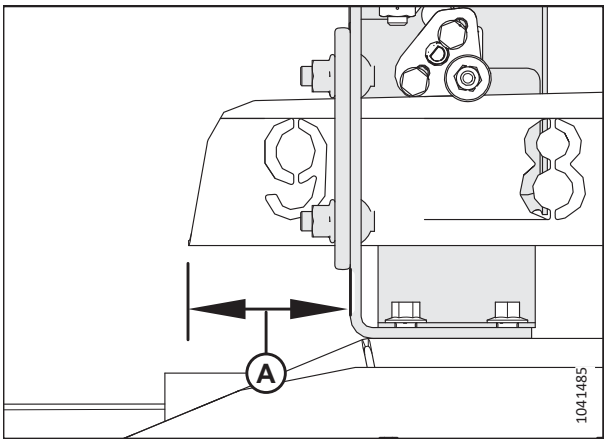


Figure 10.5: Fore-Aft Bracket

7. Use the combine display or a voltmeter (if measuring the sensor manually) to measure the voltage range. If using a voltmeter, check sensor voltage (A) between pin 2 (ground) and pin 3 (signal).

   - For Case and New Holland combines, the voltage range should be 0.7–1.1 V
   - For Challenger®, CLAAS, Gleaner, IDEAL®, John Deere, and Massey Ferguson®combines, the voltage range should be 3.9–4.3 V

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

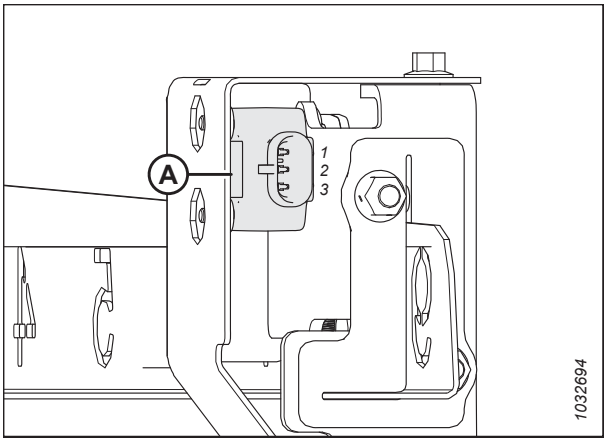


Figure 10.6: Fore-Aft Sensor

9. If adjustment is required, loosen hardware (A) and rotate sensor (B) until the voltage is in the correct range.

10. Once sensor adjustment is complete, torque the hardware to 2.1 Nm (22 lbf·in).

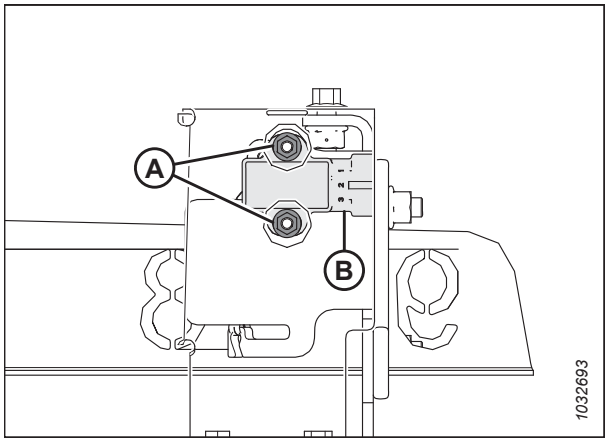


Figure 10.7: Fore-Aft Sensor

Chapter 11: Running up Header

The header will need to be operated and its performance observed before it can be delivered to the customer, to ensure that all 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. Start the engine.
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.
5. Lower the plastic pan under the float module. Check for debris that may have fallen under the float module draper.
6. Rotate latches (A) to unlock handles (B).
7. Hold pan (C) and rotate handles (B) to release the pan. Lower the pan to expose the draper.

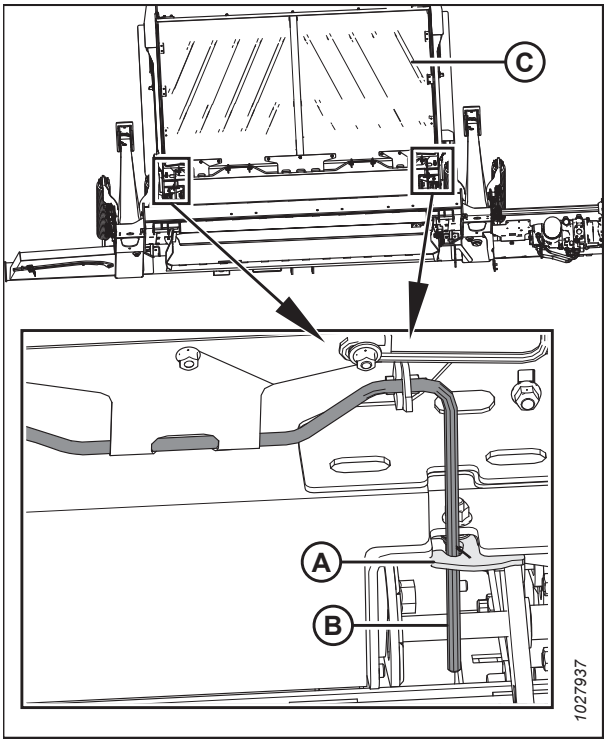


Figure 11.1: Float Module Plastic Pan

8. Remove any debris from pan (A) and the draper.

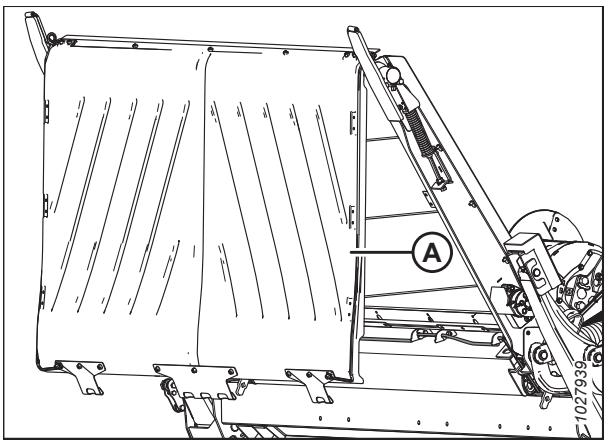


Figure 11.2: Float Module Plastic Pan

9. Raise the pan. Rotate handle (A) so that the rod engages clips (B) on the pan.

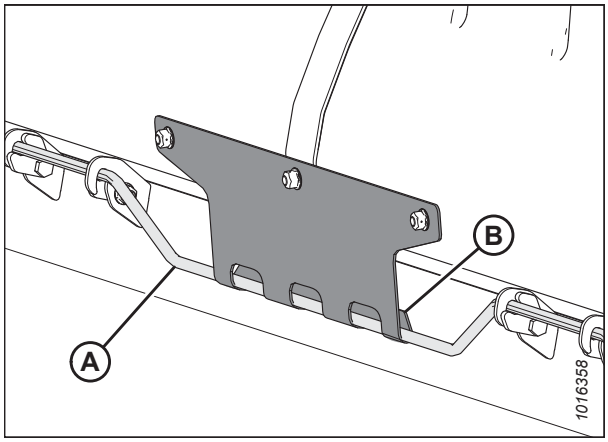


Figure 11.3: Clips Engaged

10. Push handle (A) into the slot and secure it with latches (B).
11. Open the left endshield.

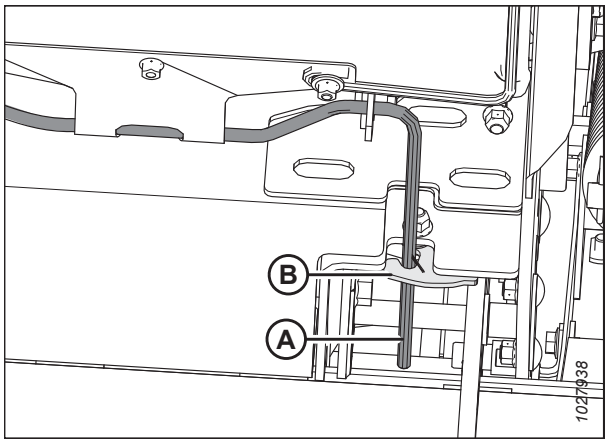


Figure 11.4: Latches Secured

12. In the combine cab, set the side draper flow to maximum (10) using in-cab control (A).

13. Ensure that the feeder house variable speed is set to maximum.

DANGER

Ensure that all bystanders have cleared the area.

14. Start the engine. For instructions, refer to the combine operator's manual.

15. Run the machine slowly for 5 minutes while watching and listening from the operator's seat for binding or interfering parts.

    NOTE:

    The reel and side drapers will not operate until oil flow fills the lines.

16. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.

17. Perform the run-up checks listed in (the yellow sheet attached to this instruction) to ensure that the machine is field-ready.

Figure 11.5: In-Cab Side Draper Speed Control – IDEAL™, Challenger®, CLAAS, Gleaner®, John Deere, and Massey Ferguson® Combines

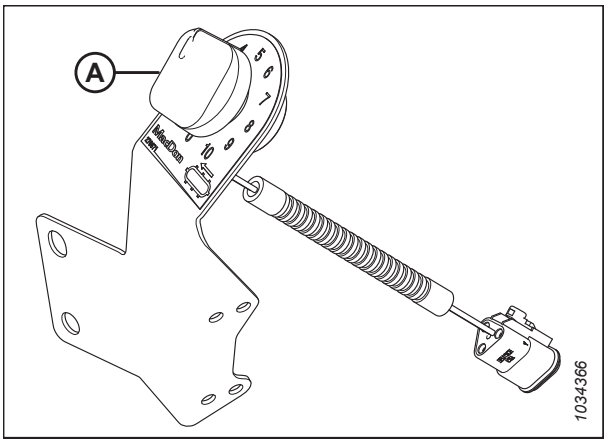


Figure 11.6: In-Cab Side Draper Speed Control – Case IH and New Holland Combines

18. Check the speed of the flywheel (A) using a tachometer.

19. Compare the actual flywheel speed with values in Table *11.1, page 482*.

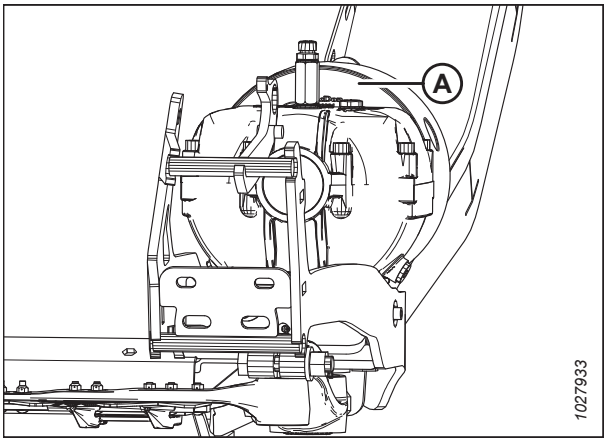


Figure 11.7: Knife Drive Box

Table 11.1 D2 Series Header 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

11.1 Checking Knife Speed

For best performance, the header's knife drive must run within the specified rpm range. The knife speed can be checked at the flywheel of the knife drive motor using a photo tachometer.

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. Open the endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine. For instructions, refer to the combine operator's manual.
4. Engage the header drive, and run the feeder house at the maximum speed. For maximum speed information, refer to the table above.

   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 and the header until the oil temperature is 38°C to 52°C (100°F to 125°F).

Table 11.2 Feeder House Speed

Combine Make	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS[15, 16]	420
Gleaner®	625
IDEAL™	620
John Deere[17]	490
Massey Ferguson®	625
New Holland	580

15. For CLAAS 600/700 combines, the value on the display reflects the top shaft speed, not the output shaft speed. When the display value is 420 rpm, the actual output shaft speed is 750 rpm.
16. For CLAAS 8000/7000 combines, the value on the display reflects the bottom shaft speed. The actual output shaft speed is 750 rpm.
17. Some John Deere combines have a fixed feeder house speed of 520 rpm. For hydraulic testing purposes, this difference is not significant.

6. Measure 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.

8. If the knife speed is not within the specified range, adjust the knife drive pump. For instructions, refer to *11.2 Adjusting Knife Speed, page 484*.

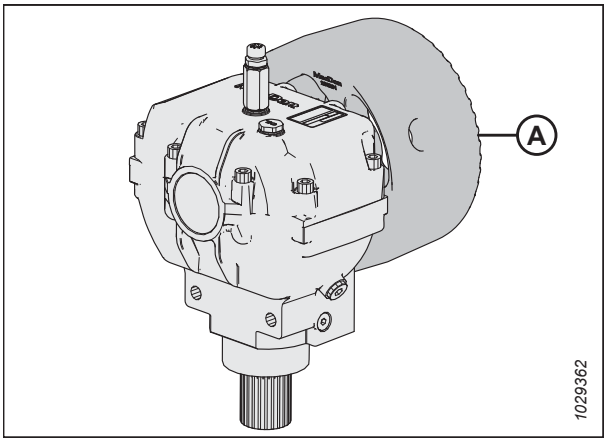


Figure 11.8: Flywheel

11.2 Adjusting Knife Speed

If the knife drive is not operating within the recommended speed range, the knife speed will need to be adjusted.

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. Verify the knife speed. For instructions refer to *11.1 Checking Knife Speed, page 482*.
2. Shut down the engine, and remove the key from the ignition.
3. Remove bolt (A).
4. Remove lock plate (B).

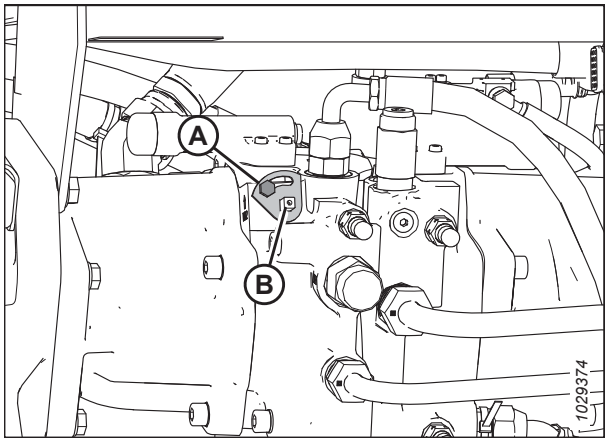


Figure 11.9: Integrated Pump

5. Turn knife drive adjuster (A) clockwise to increase or counterclockwise to decrease the knife speed.

   NOTE:

   There are preset stops on the adjuster. If the desired knife speed is between the stops, the lock plate and bolt can be used to hold the adjuster in place.

6. Open the endshield. For instructions, refer to *12.3.1 Opening Header Endshields, page 496*.

DANGER

Ensure that all bystanders have cleared the area.

7. Start the engine.

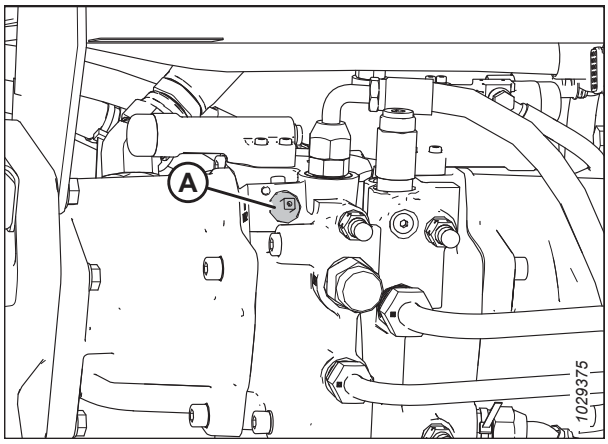


Figure 11.10: Integrated Pump

8. Engage the header drive, and run the feeder house at the maximum speed as shown in Table *11.3, page 485*.

   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.

Table 11.3 Feeder House Speed

Combine Make	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS[18, 19]	420
Gleaner®	625
IDEAL™	620
John Deere[20]	490
Massey Ferguson®	625
New Holland	580

9. 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).

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

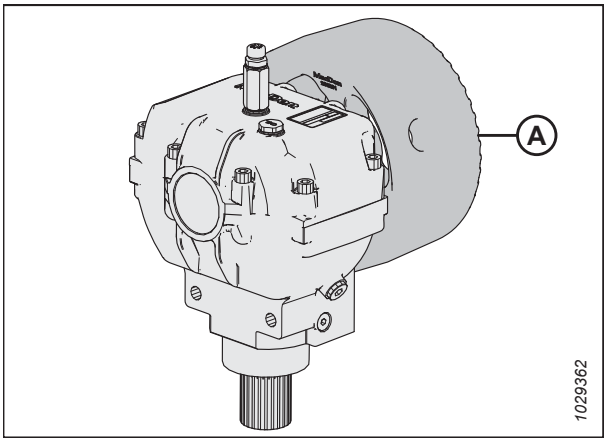


Figure 11.11: Flywheel

11. Compare the flywheel rpm measurement with the rpm values in Table *11.4, page 485*.

    NOTE:

    The knife drive speed on all header model is factory-set to 650 rpm.

12. If necessary, continue adjusting the pump until the desired flywheel rpm is achieved.

Table 11.4 D2 Series Header 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

18. For CLAAS 600/700 combines, the value on the display reflects the top shaft speed, not the output shaft speed. When the display value is 420 rpm, the actual output shaft speed is 750 rpm.
19. For CLAAS 8000/7000 combines, the value on the display reflects the bottom shaft speed. The actual output shaft speed is 750 rpm.
20. Some John Deere combines have a fixed feeder house speed of 520 rpm. For hydraulic testing purposes, this difference is not significant.

13. Reinstall adjuster plate (B).
14. Reinstall bolt (A) and tighten it.
15. 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, refer to the header's technical manual.

    For instructions on testing the pump, refer to the header's technical manual.
16. Close the endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

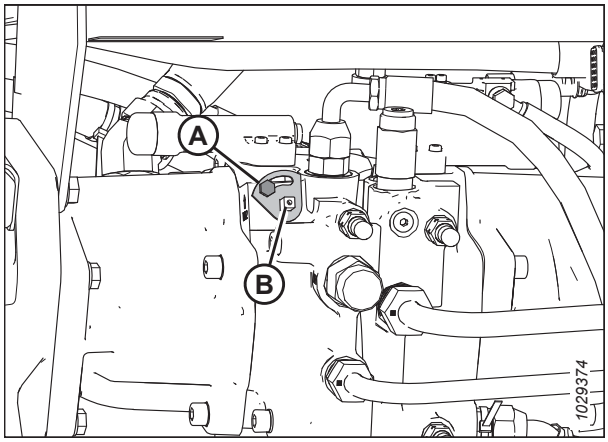


Figure 11.12: Integrated Pump

11.3 Adjusting Side Draper Tracking

To ensure that the side drapers rotate smoothly without rubbing the side of the header frame, the side draper tracking may need to be adjusted.

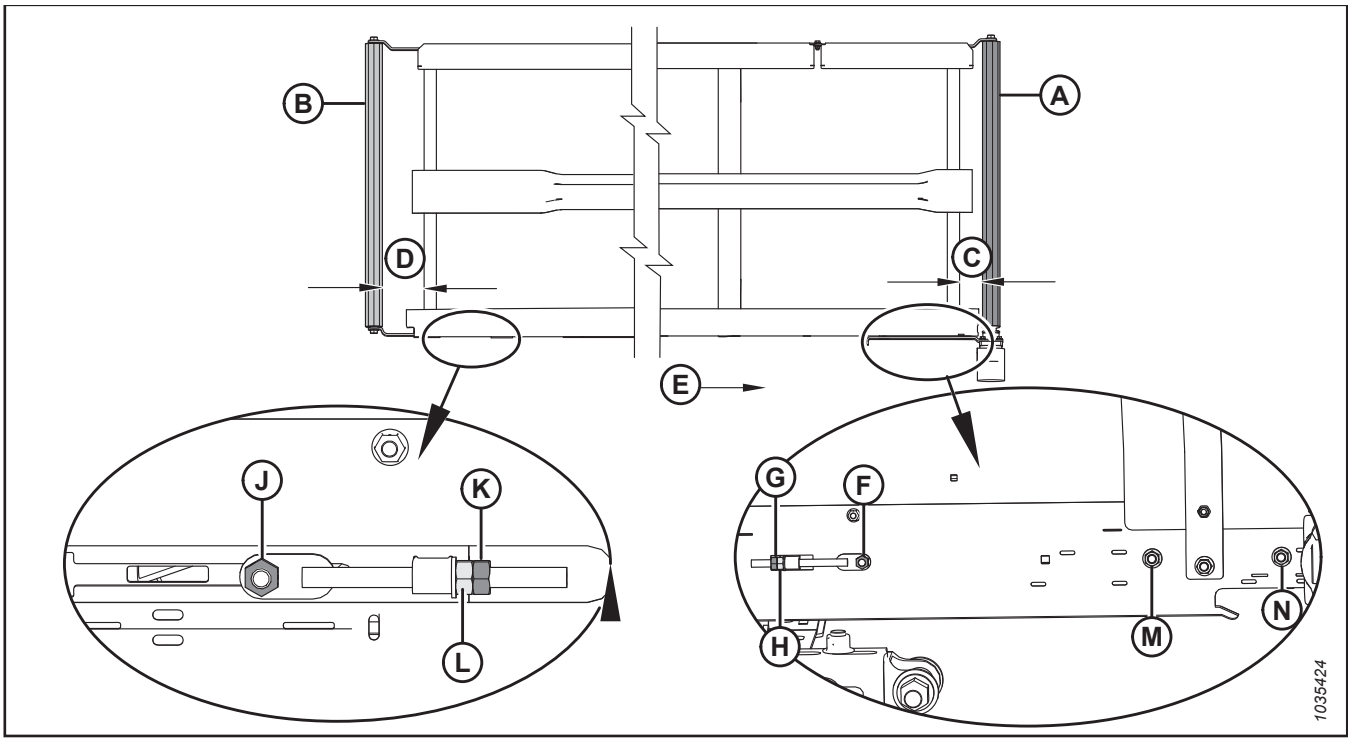


Figure 11.13: Draper Tracking Adjustments – Left Draper

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 11.5 Draper Tracking

Tracking Tendency	Location	Adjustment	Method
Toward backsheet	Drive roller	Increase **C**	Tighten adjuster nut (H)
Toward cutterbar	Drive roller	Decrease **C**	Loosen adjuster nut (H)
Toward backsheet	Idler roller	Increase **D**	Tighten adjuster nut (L)
Toward cutterbar	Idler roller	Decrease **D**	Loosen adjuster nut (L)

2. Adjust drive roller (A) to change **C** (refer to Table *11.5, page 487* and Figure *11.13, page 487*) 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 *11.5, page 487* and Figure *11.13, page 487*) 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).

11.4 Post Run-Up Adjustments

After the header has been run 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 -) to ensure machine is field-ready.

11.4.1 Checking Knife Position

The clearance between the knifehead and drive arm will need to be inspected.

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 can cause the knife to bend and make contact with the guards closest to the knifehead. Check 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.

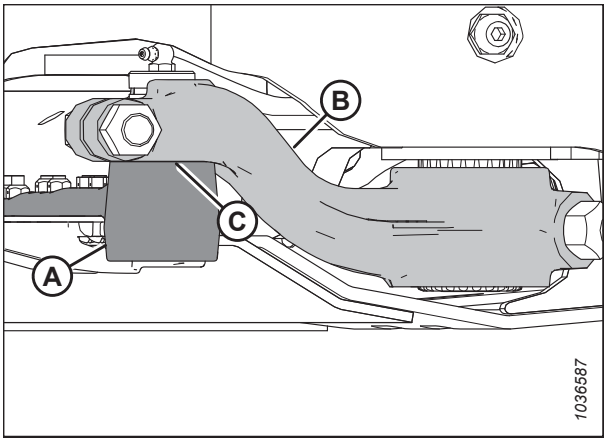


Figure 11.14: Knifehead and Drive Arm

11.4.2 Checking and Adjusting Feed Draper Tension

In order for the draper to operate correctly, it must be tensioned properly. The tension on the draper will need to be inspected and, if necessary, adjusted.

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 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.

Checking 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 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 490*.

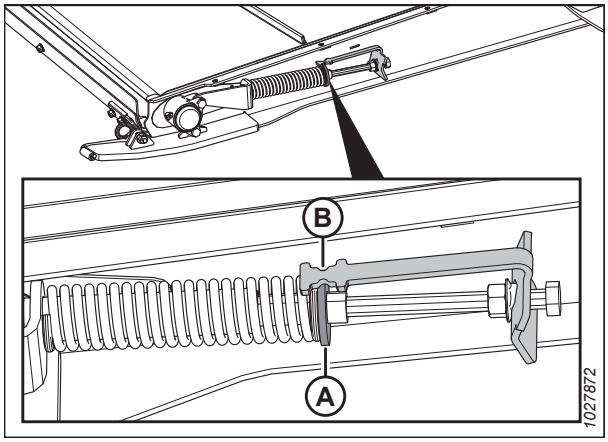


Figure 11.15: Feed Draper Tensioner

Adjusting 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. For larger tension adjustments, and to prevent uneven draper tracking, both sides of the draper will need to be adjusted.

8. If the draper is not tracking properly, retainer disc (C) can be adjusted so that it is **NOT** in the middle of indicator (D), but is within the following range:

   - Loosened to 3 mm (1/8 in.), retainer disc (C) will move towards the front of the deck from center of indicator (D).
   - Tightened to 6 mm (1/4 in.), retainer disc (C) will move towards 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.

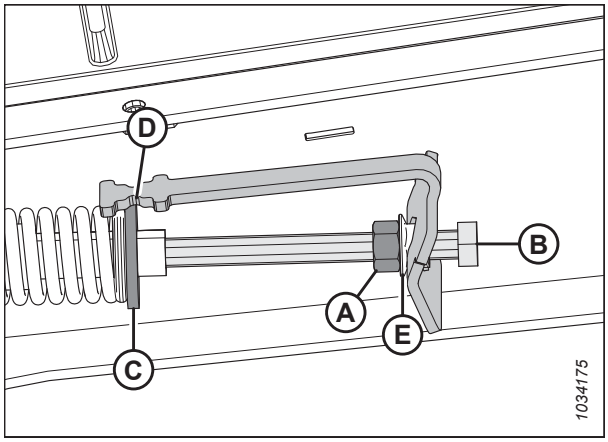


Figure 11.16: Feed Draper Tensioner – Left Side

Chapter 12: Reference

The procedures and information in this chapter can be referred to as needed.

12.1 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 bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

1. 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 two, three, or four supports per deck.

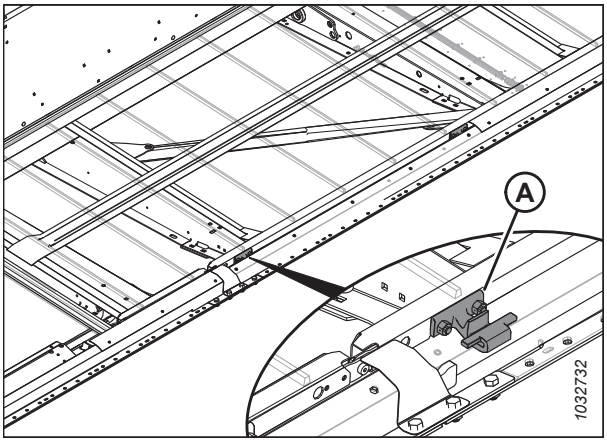


Figure 12.1: Draper Deck Supports

2. Check that clearance (A) between draper (B) and metal seal (C) is 0–2 mm (0.004–0.08 in.).

3. Relieve the tension on the draper. For instructions, refer to *8.13 Checking and Adjusting Side Draper Tension, page 239*.

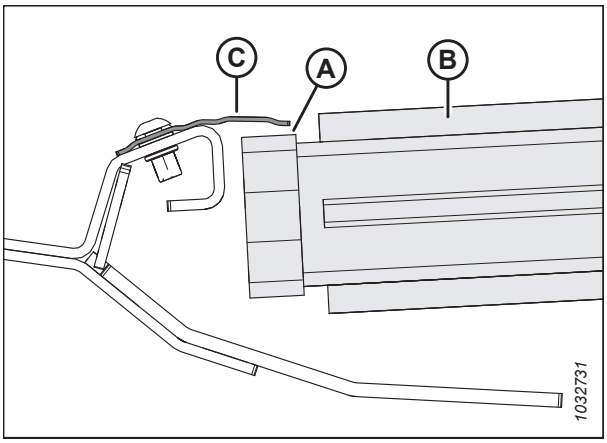


Figure 12.2: Draper Seal

4. Lift front edge of draper (A) past cutterbar (B) to expose the deck support.

5. Measure and note the thickness of the draper belt.

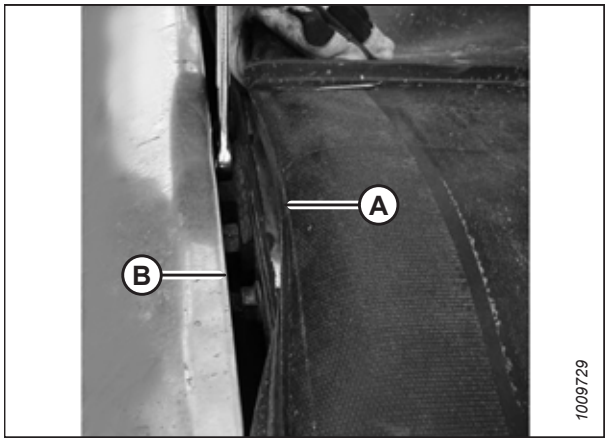


Figure 12.3: Deck Support

NOTE:

The deck is shown with the draper removed.

6. Loosen two lock nuts (A) on deck support (B) one half-turn **ONLY**.

7. Tap deck (C) with a hammer and 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.

Table 12.1 Number of Deck Supports (B)

Model	Quantity
7.6– 9.1 m (25–30 ft.)	6
10.7–12.2 m (35–41 ft.)	8
13.7 m (45 ft.)	10

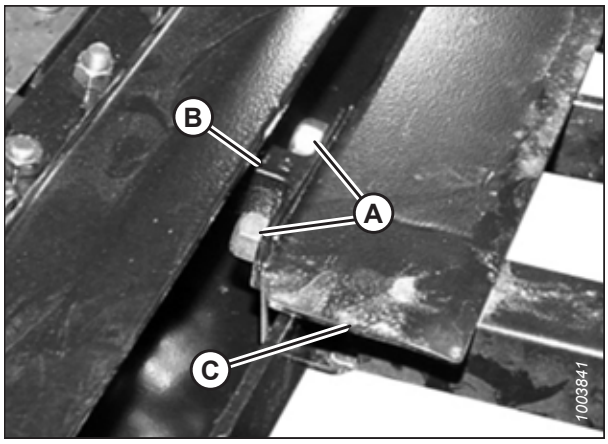


Figure 12.4: Deck Support

8. Use a feeler gauge that is the same thickness as the draper belt, plus 1 mm (0.04 in.). Slide the feeler gauge along deck (A) under metal seal (C) in order to properly set the gap.

9. 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.

10. Tighten deck support hardware (D).

11. Recheck gap (B) with the feeler gauge. For instructions, refer to Step *8, page 492*.

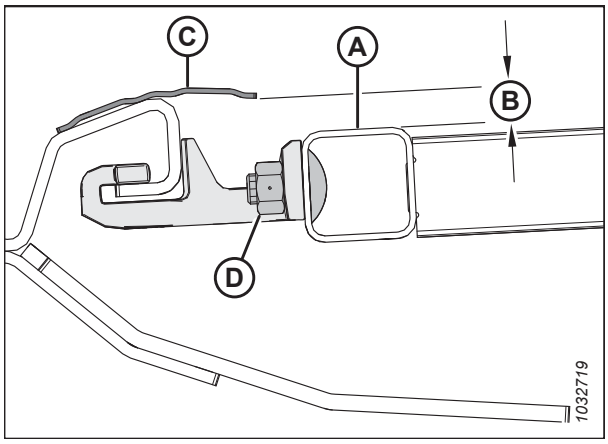


Figure 12.5: Deck Support

12.2 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.

12.2.1 Engaging Reel Safety Props

Engage the reel safety props anytime you need to work around a raised reel. When engaged, the reel safety props prevent the reel from unexpectedly lowering.

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.

Outer reel arms

2. Raise the reel to its maximum height.
3. Lift up on safety prop (A) and push it forward to remove the prop from hook (B).

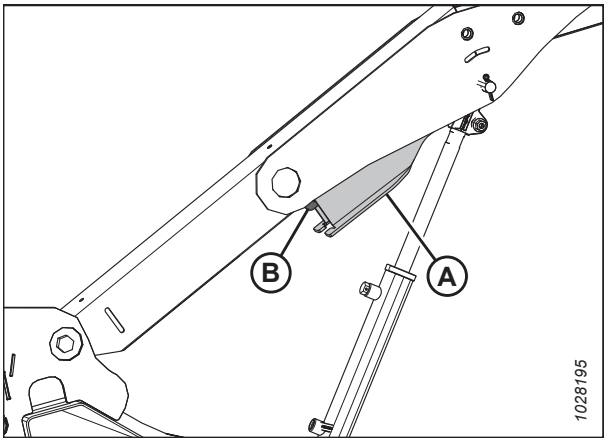


Figure 12.6: Outer Arm

4. Lower safety prop (A) and engage it on the cylinder shaft as shown. Repeat on the opposite arm.

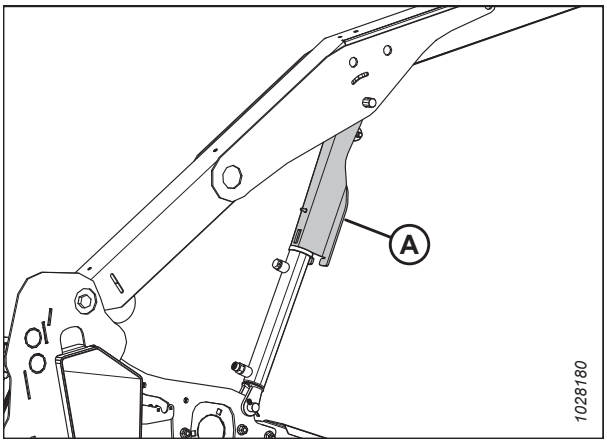


Figure 12.7: Engaged Reel Safety Prop – Outer Arm

Center reel arm – double-reel headers

5. Rotate handle (A) to release the spring tension and allow the spring to guide the pin into the locked position.
6. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pins.

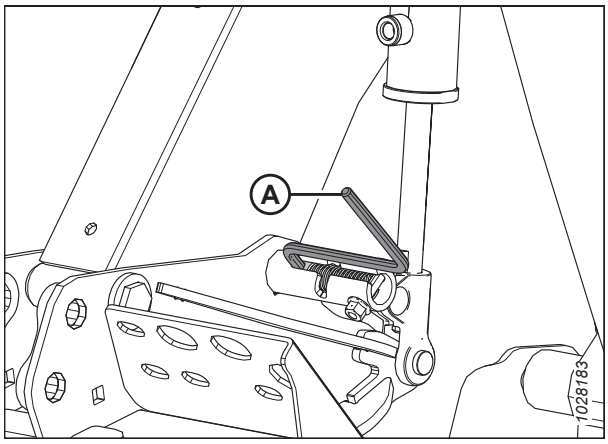


Figure 12.8: Engaged Reel Safety Prop – Center Arm

12.2.2 Disengaging Reel Safety Props

To ensure the proper operation of the reel and header, disengage the reel safety props once you have completed working on or around a raised reel.

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.

Outer reel arms

2. Raise the reel to its maximum height.
3. Move reel safety prop (A) up onto hook (B) under the reel arm. Repeat this step on the opposite reel arm.

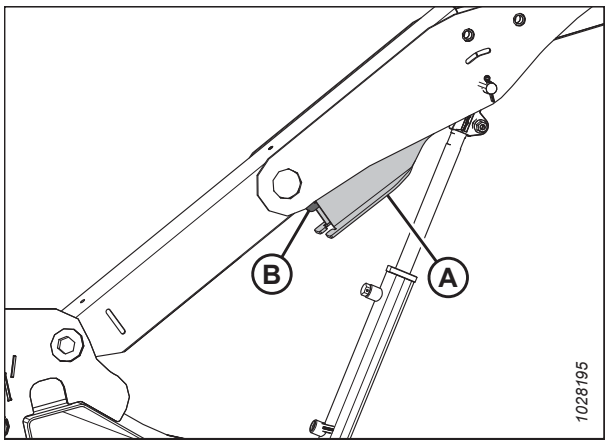


Figure 12.9: Reel Safety Prop – Right Outer Arm

Center reel arm – double-reel headers

4. Move handle (A) outboard and into slot (B) to put the pin into the unlocked position.

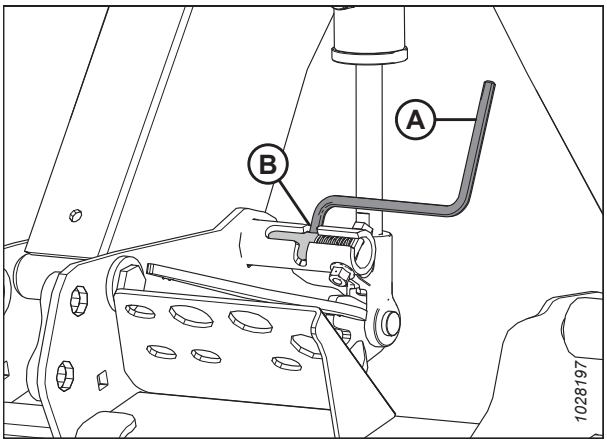


Figure 12.10: Reel Safety Prop – Center Arm

12.3 Header Endshields

A hinged, polyethylene endshield is fitted on each end of the header to protect critical drive components.

12.3.1 Opening Header Endshields

The header endshields covers knife drive components, hydraulic hoses, electrical connections, the header wrench, the spare knife, and the optional transport hitch. To access the components you will need to open the endshield.

1. Push release lever (B) using access hole (A) on the backside of the header endshield to unlock the shield.

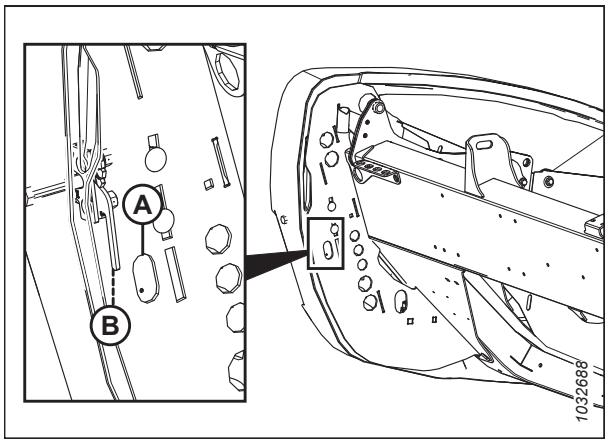


Figure 12.11: Left Header Endshield

2. Pull header endshield (A) open.

   NOTE:

   The header endshield is retained by tab (B) and will open in direction (C).

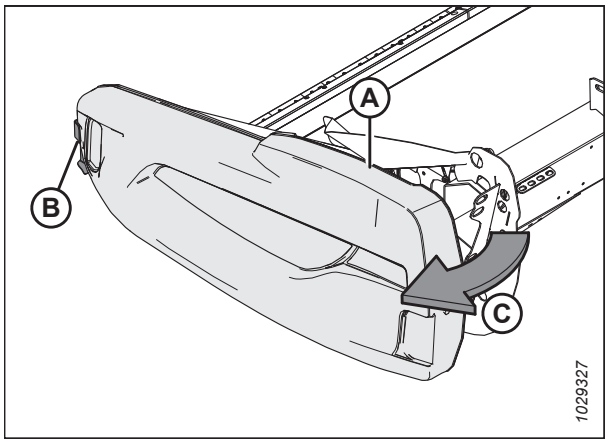


Figure 12.12: Left Header Endshield

3. If additional clearance is required, pull the header endshield free of tab (A) and 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.

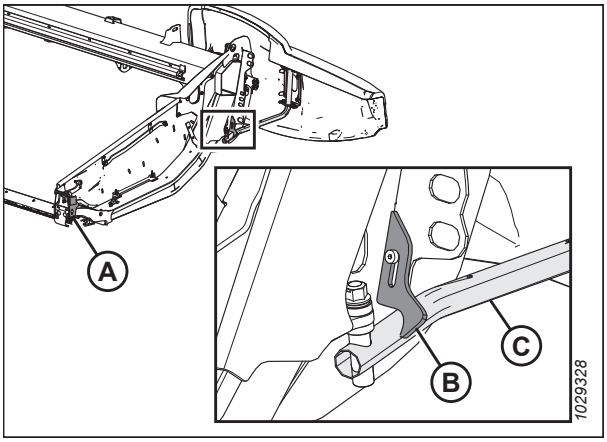


Figure 12.13: Left Header Endshield

12.3.2 Closing Header Endshields

Close the header endshields to protect drive components, hoses, and electrical connections from dirt and debris.

1. If the endshield is fully opened 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.

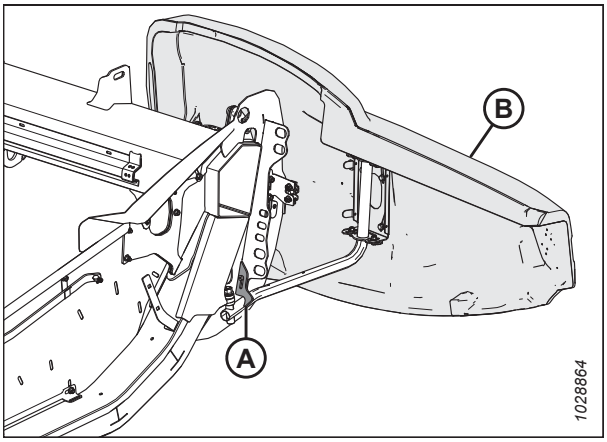


Figure 12.14: Left Header Endshield

3. While closing endshield (A), ensure it does not contact the top of endsheet (B).

   IMPORTANT:

   The aluminum endsheet will be damaged if the weight of the endshield rests on it.

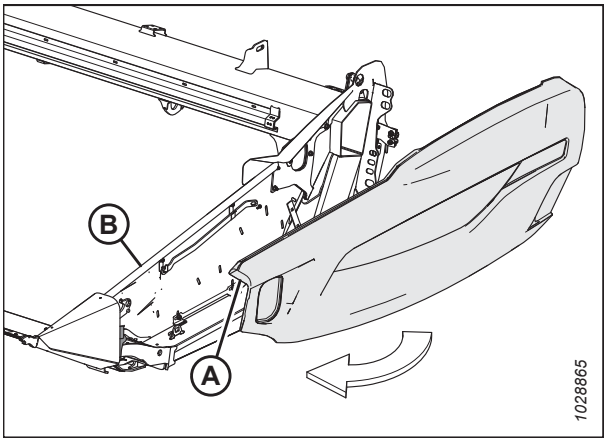


Figure 12.15: Left Header Endshield

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.

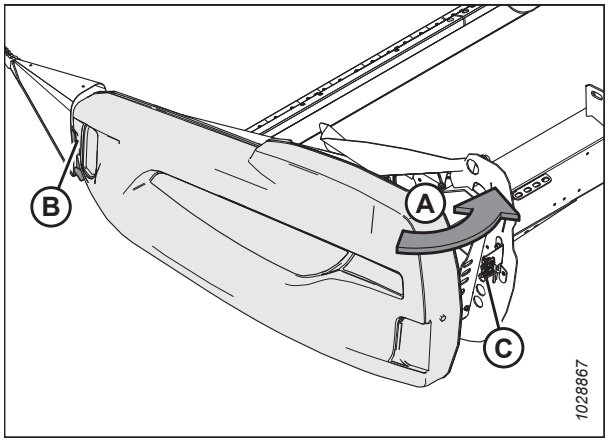


Figure 12.16: Left Header Endshield

IMPORTANT:

Check that the header endshield is locked. Ensure bolt (A) is fully engaged on two-stage latch (B) to prevent the header endshield from opening while operating the header.

NOTE:

The header endshield is transparent in the illustration to show the latch.

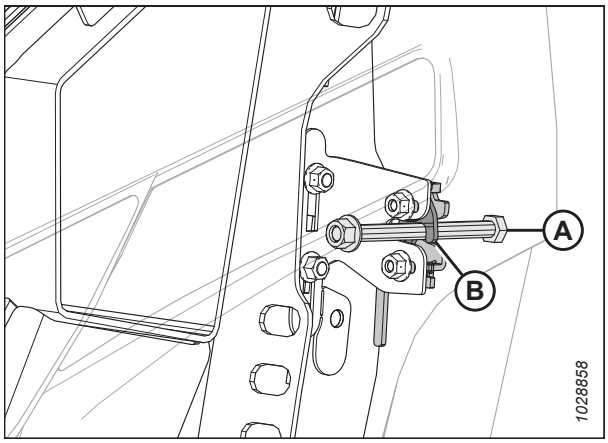


Figure 12.17: Two-Stage Latch

12.3.3 Removing Header Endshields

Endshields can be removed to provide more access.

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 *12.3.1 Opening Header Endshields, page 496*.
3. Engage latch (A) to prevent any endshield movement.
4. Remove self-tapping screw (B).
5. Slide the header endshield upwards and remove it from hinge arm (C).
6. Place the header endshield away from the work area.

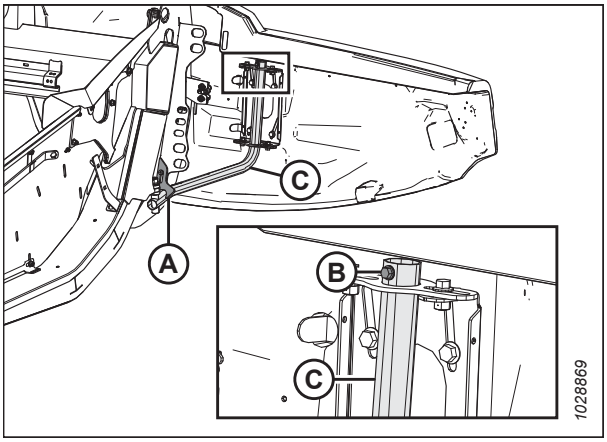


Figure 12.18: Left Header Endshield

12.3.4 Installing Header Endshields

To ensure the endshields are installed correctly, follow the recommended installation procedure provided here.

IMPORTANT:

To avoid damage to the aluminum endsheet, do not rest the endshield on the endsheet.

1. Guide the header endshield onto hinge arm (C) and slowly slide it downwards.
2. Install self-tapping screw (B).
3. Disengage latch (A) to allow the header endshield to move.
4. Close the header endshield. For instructions, refer to *12.3.2 Closing Header Endshields, page 497*.

   NOTE:

   Header endshields may expand or contract when subjected to large temperature changes. The header endshield position can be adjusted to compensate for dimensional changes. For instructions, refer to *8.16 Checking and Adjusting Header Endshields, page 255*.

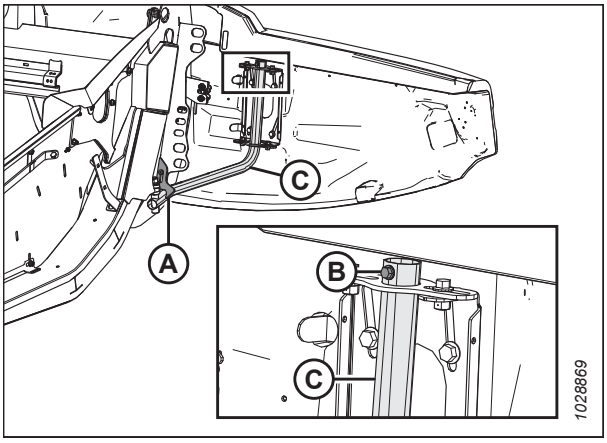


Figure 12.19: Left Header Endshield

12.4 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.

12.4.1 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 12.2 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

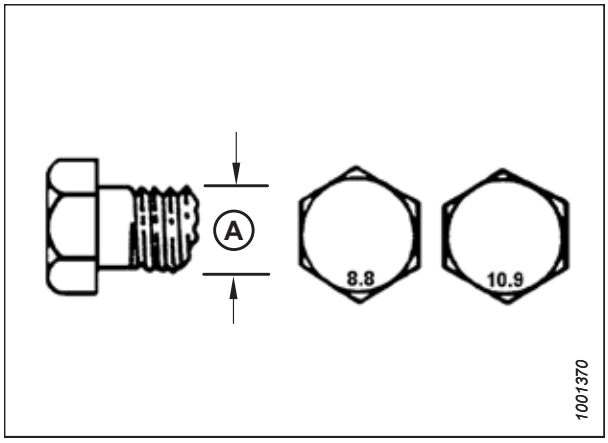


Figure 12.20: Bolt Grades

Table 12.3 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

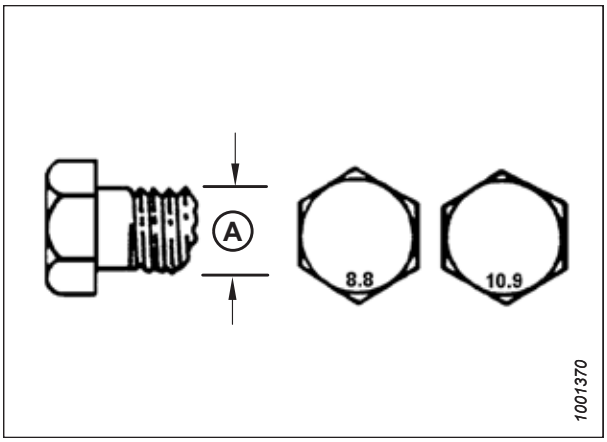


Figure 12.21: Bolt Grades

Table 12.4 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

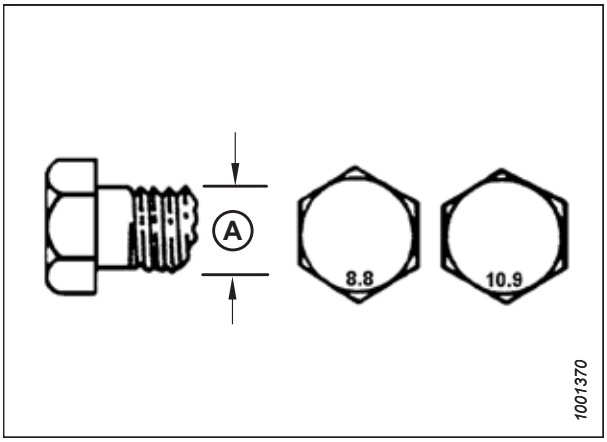


Figure 12.22: Bolt Grades

Table 12.5 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

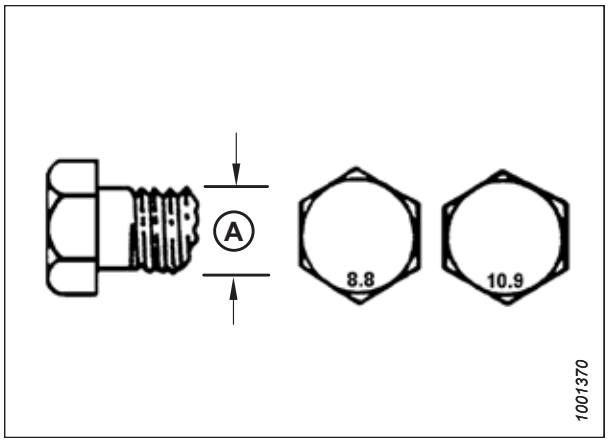


Figure 12.23: Bolt Grades

12.4.2 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 12.6 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	–	–	–	–

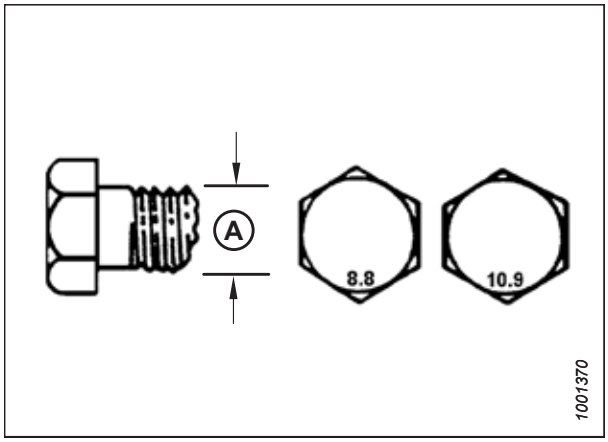


Figure 12.24: Bolt Grades

12.4.3 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 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).

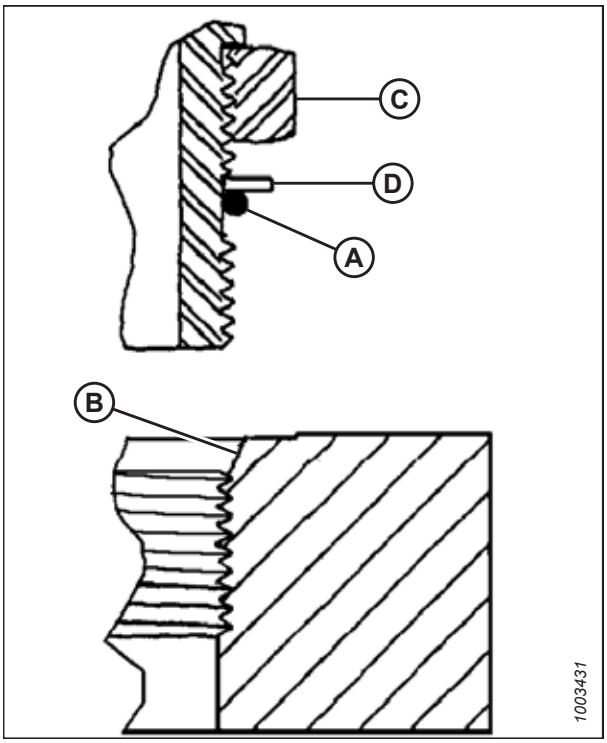


Figure 12.25: Hydraulic Fitting

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.

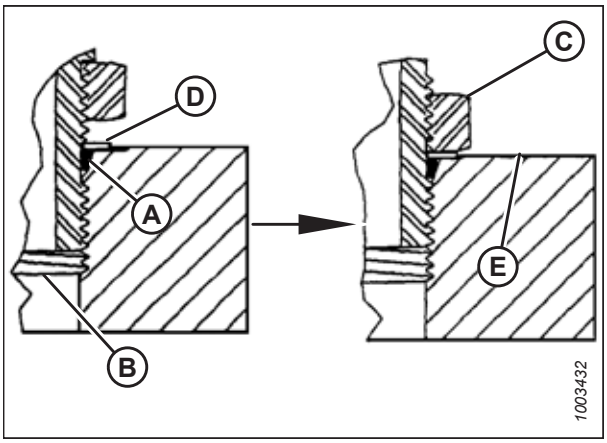


Figure 12.26: Hydraulic Fitting

Table 12.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[21]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

12.4.4 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 *12.8, page 504*.
6. Verify the final condition of the fitting.

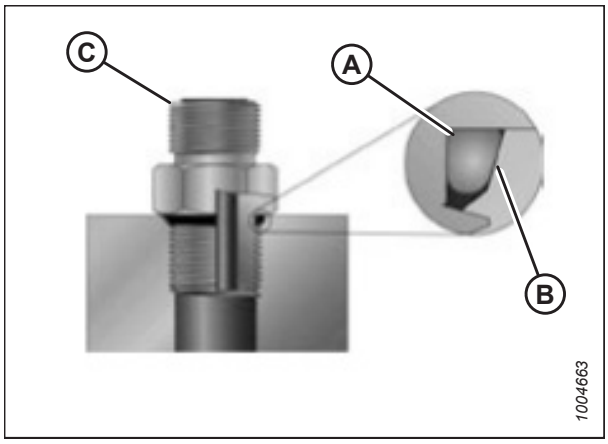


Figure 12.27: Hydraulic Fitting

Table 12.8 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[21]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24

21. Torque values shown are based on lubricated connections as in reassembly.

Table 12.8 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[22]	
		Nm	lbf·ft (*lbf·in)
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

12.4.5 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 *12.9, page 506*.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 12.28: Hydraulic Fitting

22. Torque values shown are based on lubricated connections as in reassembly.

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 *12.9, page 506*.

   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.

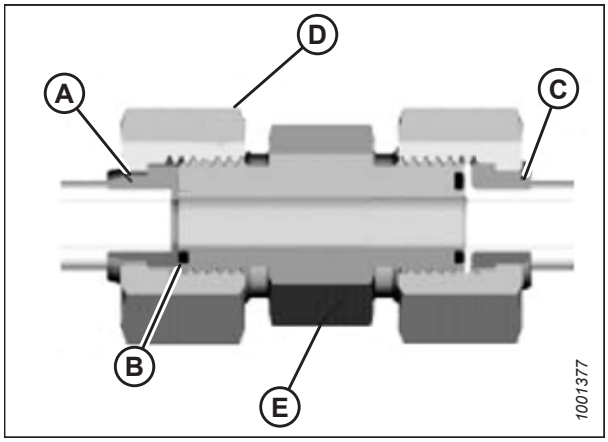


Figure 12.29: Hydraulic Fitting

Table 12.9 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[23]	
			Nm	lbf·ft
-3	Note[24]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[24]	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note[24]	7/8	–	–
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

12.4.6 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.

23. Torque values and angles shown are based on lubricated connection as in reassembly.
24. O-ring face seal type end not defined for this tube size.

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 *12.10, page 507*. 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 12.10 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

12.5 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 12.11 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.

12.6 Definitions

The following terms, abbreviations, and acronyms are used in this instruction.

Table 12.12 Definitions

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
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
Finger tight	Finger tight is a reference position in which the given sealing surfaces or components are making contact with each other and 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 or FD2 Series 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
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
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for 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
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when 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
SST	Slow speed transport
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

Table 12.12 Definitions (continued)

Term	Definition
Timed knife drive	Synchronized motion applied at 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) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor or from two hydraulic motors
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

The Predelivery Checklist is used to confirm that all 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 / FM200 Float Module Predelivery Checklist – North America

✓	Item	Reference
	Check the header for shipping damage or missing parts. Ensure that all shipping material has been removed from the header.	—
	Check for loose hardware. Tighten any loose hardware to the specified torque value.	*12.4 Torque Specifications, page 500*
	On headers equipped with stabilizer wheels, check the stabilizer wheel tire pressure.	*8.1 Checking Tire Pressure – Option for D230 and D235, page 201*
	On headers equipped with stabilizer wheels, check the torque of the bolts securing the stabilizer wheels.	*8.2 Checking Wheel Bolt Torque – Option for D230 and D235, page 202*
	Check the lubricant level in the knife drive box.	*8.3 Checking Oil Level in Knife Drive Box , page 203*
	Check the level of the lubricant in the float module's main drive gearbox.	*8.4 Checking Oil Level in Header Drive Main Gearbox, page 204*
	Check the lubricant level in the float module's main reservoir before and after the header has been run up.	*8.6 Checking Oil Level in Hydraulic Reservoir, page 206*
	Ensure that the reel is centered between the header endsheets.	*8.9 Checking and Adjusting Reel to Endsheet Clearance, page 222*
	Grease all bearings and drivelines.	*8.15 Lubricating Header, page 244*
	Check the tension on the side draper.	*8.13 Checking and Adjusting Side Draper Tension, page 239*
	Check the draper seal.	*8.14 Checking Draper Seal, page 241*
	Check the header float.	*8.11 Checking and Adjusting Header Float, page 230*
	Ensure that the reel tine-to-cutterbar clearance is adequate.	*8.10 Reel to Cutterbar Clearance, page 225*
	Ensure that the auger flighting-to-feed-pan clearance is adequate.	*8.12 Adjusting Feed-Auger-to-Pan Clearance, page 236*
	Check the knife hold-downs.	*8.7 Guard Identification, page 207*
	Ensure that the skid shoes are properly adjusted and at a setting appropriate for crop.	—
	Ensure that the feeder house variable speed is set to minimum.	—

✓	Item	Reference
	Ensure that the auto header height control (AHHC) system is calibrated and functioning correctly.	*9 Auto Header Height Control System, page 261*
Run-up procedure		*11 Running up Header, page 479*
	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 extend fully.	—
	Ensure that the reel moves fully fore and aft.	—
	Check the speed of the knife drive.	*11.1 Checking Knife Speed, page 482*
	Ensure that the side drapers track properly.	*11.3 Adjusting Side Draper Tracking, page 487*
Post run-up check.		*11.4 Post Run-Up Adjustments, page 489*
	Ensure that the knife and reel drives do not have heated bearings.	*8.15 Lubricating Header, page 244*
	Check the knife sections for discoloration. Adjust the hold-downs as needed.	*11.4.1 Checking Knife Position, page 489*
	Ensure that the feed draper is properly tensioned.	*11.4.2 Checking and Adjusting Feed Draper Tension, page 489*
	Check for hydraulic leaks.	—
	Ensure that the endshields can be fully opened and securely closed.	*8.16 Checking and Adjusting Header Endshields, page 255*
	Ensure that the manual storage case contains the operator's manual, parts catalog, and quick card.	*8.17 Checking Manuals, page 259*

Date Checked: **Checked by:**

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