FFT FLEX-FLOAT TECHNOLOGY®

MacDon®

# FD2 Series
# FlexDraper® Combine Header with FM200 Float Module

## Unloading and Assembly Instructions (North America)

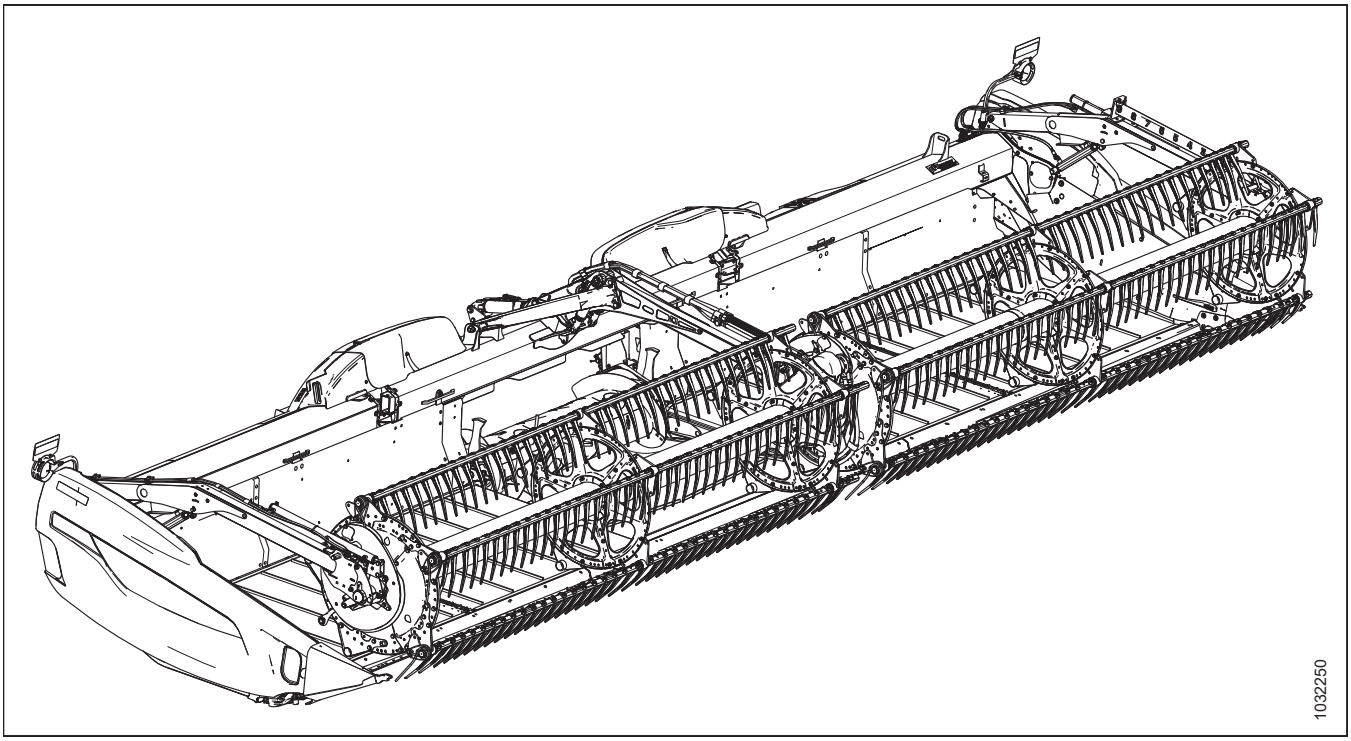
215363 Revision A

Original Instruction

*Featuring MacDon FLEX-FLOAT Technology™*

*The Harvesting Specialists.*

FD2 Series FlexDraper® Header

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## Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon FD2 Series FlexDraper® Combine Header with FM200 Float Module.

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

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

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

Retain this instruction for future reference.

This document is currently available in English only.

# Chapter 1: Safety

## 1.1 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information. Signal words are selected using the following guidelines:

### DANGER

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

### WARNING

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

### CAUTION

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

**IMPORTANT:**

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

**NOTE:**

Provides additional information or advice.

## 1.2 General Safety

### CAUTION

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

Protect yourself when assembling, operating, and servicing 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

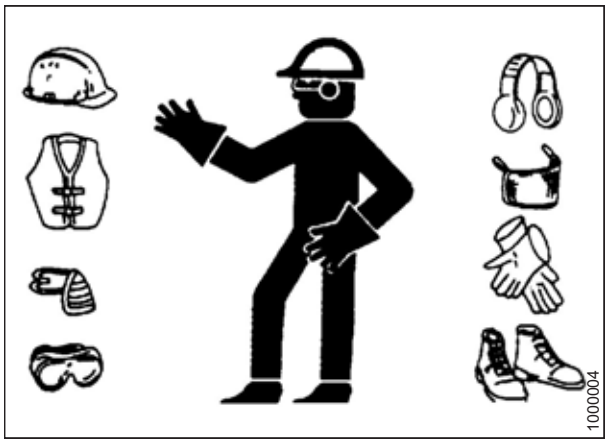


**Figure 1.1: Safety Equipment**

In addition, take the following precautions:

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


**Figure 1.2: Safety Equipment**

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

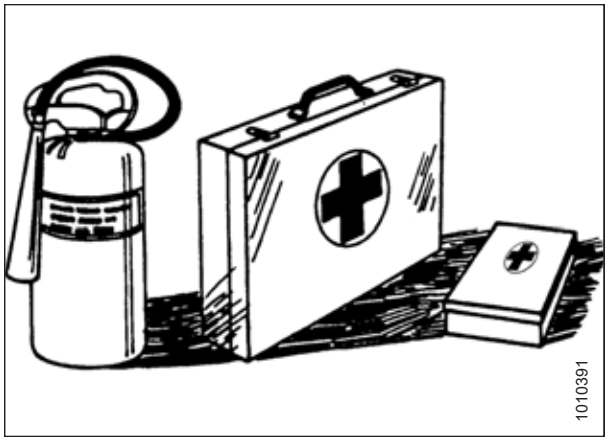


**Figure 1.3: Safety Equipment**

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


**Figure 1.4: Safety around Equipment**

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

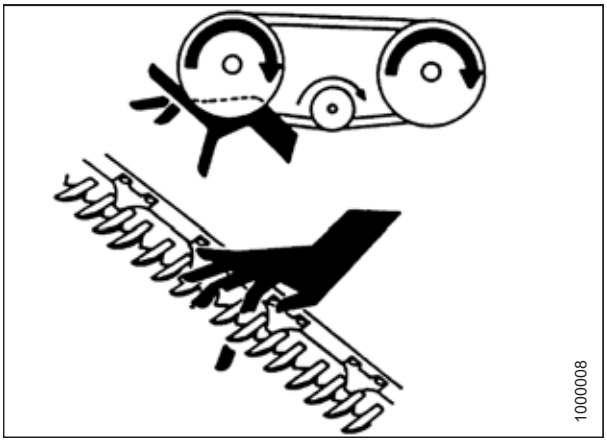


**Figure 1.5: Safety around Equipment**

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


**Figure 1.6: Safety around Equipment**

## 1.3 Safety Signs

- 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, be sure the repair part displays the current safety sign.

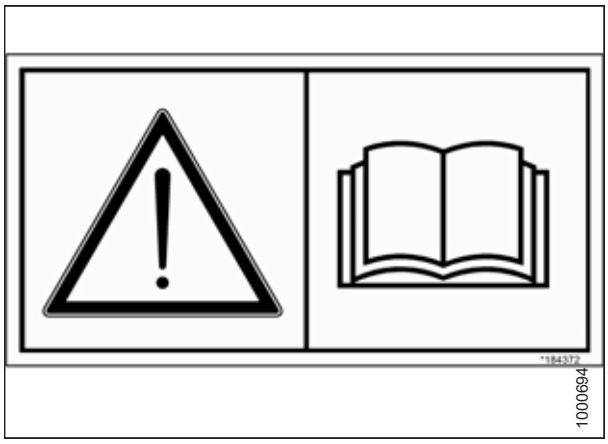


**Figure 1.7: Operator's Manual Decal**

# Chapter 2: Unloading the Header

Perform all procedures in this chapter in the order they are listed.

## 2.1 Unloading Header and Float Module from Trailer

### CAUTION

**To avoid injury to bystanders from being struck by machinery, do not allow people to stand in unloading area.**

### CAUTION

**Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in chain breakage, vehicle tipping, or machine damage.**

**IMPORTANT:**

Forklifts are normally rated with the load centered 610 mm (24 in.) from the back end of forks. To obtain forklift capacity for a load centered at 1220 mm (48 in.), check with your forklift distributor.

**Table 2.1 Lifting Vehicle Requirements**

| | |
|---|---|
| **Minimum Lifting Capacity** | 4082 kg (9000 lb.)<br>load center (A) at 1220 mm (48 in.)<br>(B) from back of forks |
| **Minimum Fork Length (C)** | 1981 mm (78 in.) |

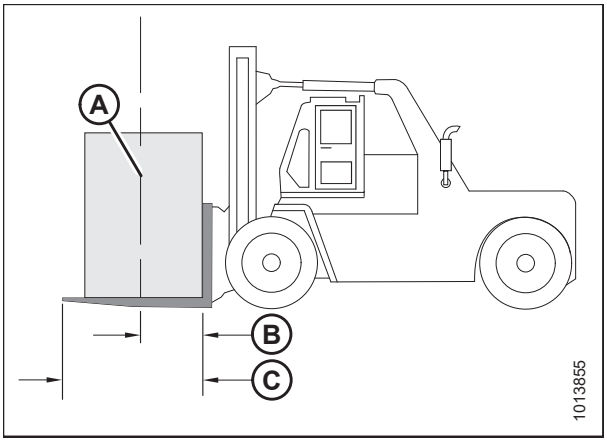


**Figure 2.1: Minimum Lifting Capacity**

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

To unload the header and float module from a trailer, follow these steps:

1. Move the trailer into position and block the trailer wheels.
2. Lower the trailer storage stands.
3. Slide forks fully underneath fork slider channels.
4. Remove the hauler's tie-down straps, chains, and wooden blocks.
5. Slowly raise the header off the trailer deck.

### WARNING

**Be sure forks are secure before moving away from load. Stand clear when lifting.**

**IMPORTANT:**

If the header is shipped on transport wheels, one of the transport wheels was removed prior to shipping. Ensure you install the removed wheel before setting the header onto the ground. Attach the wheel to the hub using the six bolts provided in the hub, and then torque the bolts to 110–120 Nm (80–90 lbf·ft) in the sequence shown in illustration.

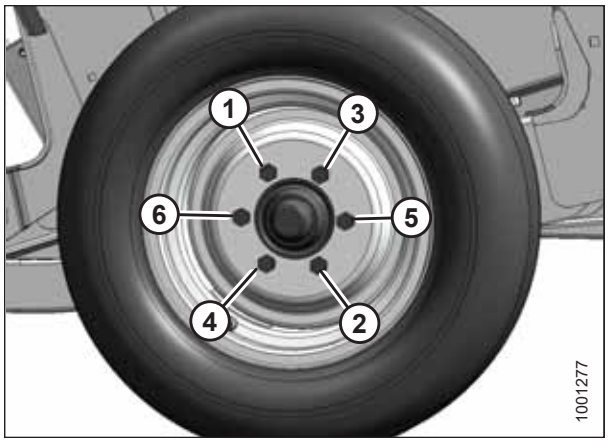


**Figure 2.2: Transport Wheel**

6. Back up until the header clears the trailer and slowly lower it to 150 mm (6 in.) from the ground.
7. Take the header to the storage or setup area. Ensure the ground is flat and free of rocks or debris that could damage the header.
8. Check for shipping damage and missing parts.

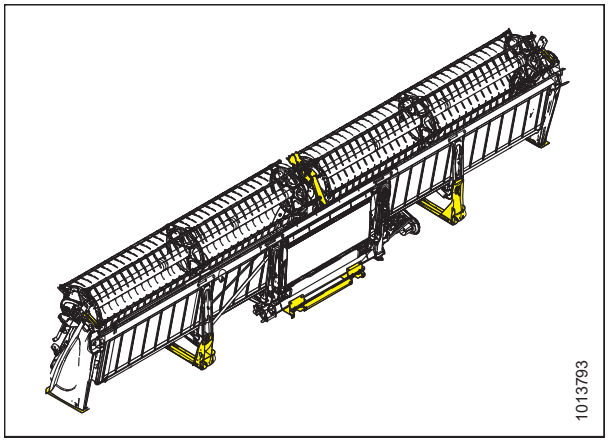


**Figure 2.3: Header on Level Ground**

## 2.2 Lowering Header – Double Reel

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

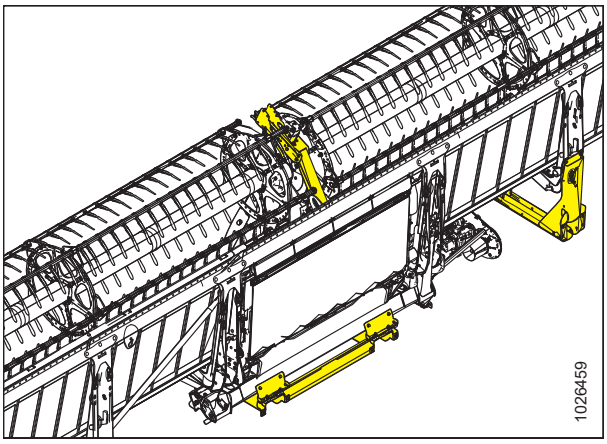


**Figure 2.4: Underside of Header**

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

   **IMPORTANT:**

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

**CAUTION**

**Stand clear of header when lowering. Machine may swing.**

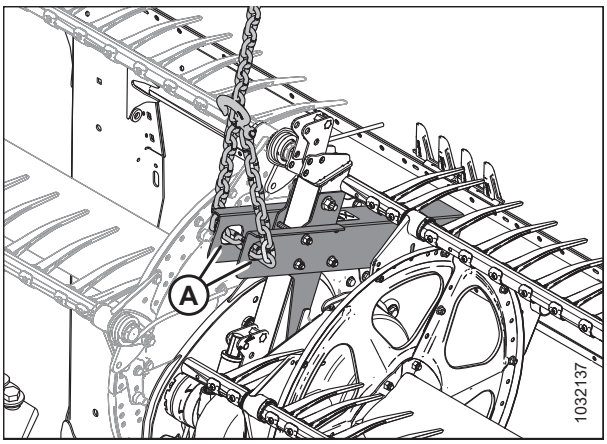


**Figure 2.5: Chain Attachment Location – Double Reel**

3. Back up **SLOWLY** while lowering forks until header rests on the ground.


**Figure 2.6: Header Lowered onto Ground**

4. Place 150 mm (6 in.) blocks (A) under each end and at the center of cutterbar, then lower header onto blocks.
5. Remove chain.

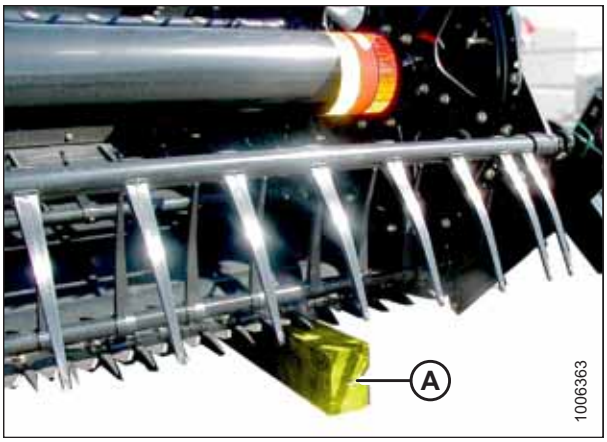


**Figure 2.7: Blocks at Each End of Cutterbar**

## 2.3 Lowering Header – Triple Reel

**IMPORTANT:**

This procedure requires the use of a forklift spreader bar.

1. Choose an area with level ground.
2. Approach the underside of the header with the lifting vehicle.

   **IMPORTANT:**

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

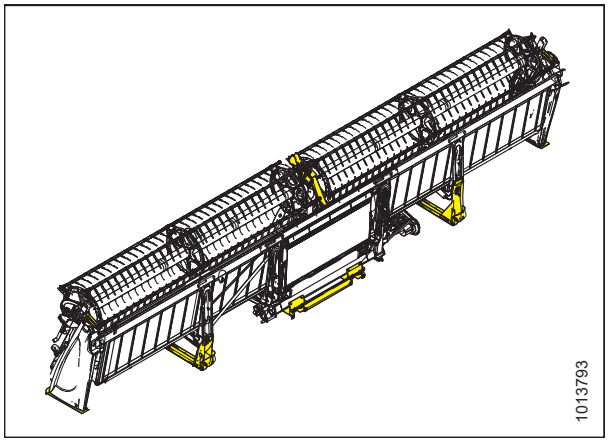


**Figure 2.8: Underside of Header**

3. Align the outer hooks on the spreader bar with the two shipping supports on the header.

**CAUTION**

**Stand clear of header when lowering. Machine may swing.**

4. Attach chain (A) through the reel arm supports to spreader bar (B).

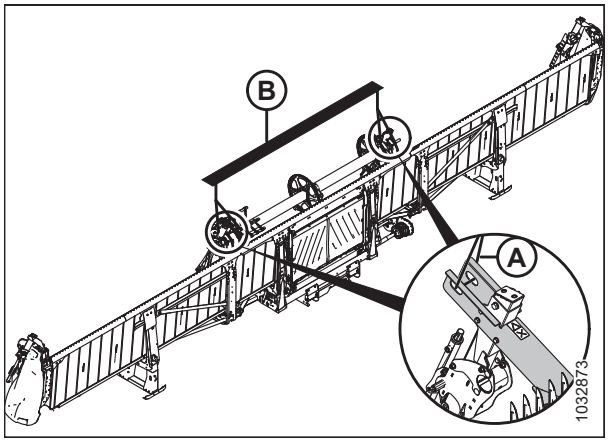


**Figure 2.9: Shipping Support – Triple Reel Header**

5. Back up **SLOWLY** while lowering spreader bar (A) until the cutterbar is approximately 305 mm (12 in.) off the ground.

   **NOTE:**

   Keep the tension on the chains as consistent as possible.

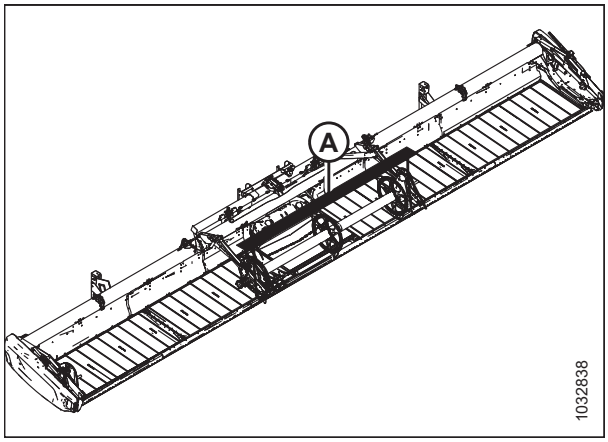


**Figure 2.10: Lowered the Header**

6. Place 150 mm (6 in.) blocks (A) under each end of the header, and one on each side of the float module. Continue lowering header onto the blocks.
7. Remove the chain from both shipping supports.

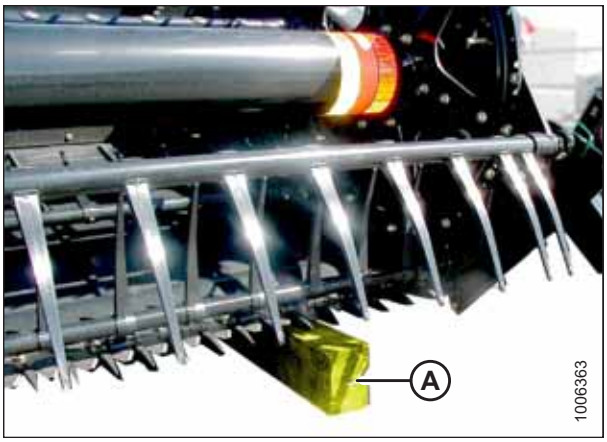


**Figure 2.11: Blocks at Each End of Cutterbar**

## 2.4 Removing Shipping Stands

**NOTE:**

Unless otherwise specified, discard stands, shipping material, and hardware. The removable stands are painted yellow or unpainted.

1. Remove the four bolts (A) securing the shipping stand to the bottom of the float module.

   **NOTE:**

   To access the bolts at the lower stand support, the header must be supported with 150 mm (6 in.) blocks.

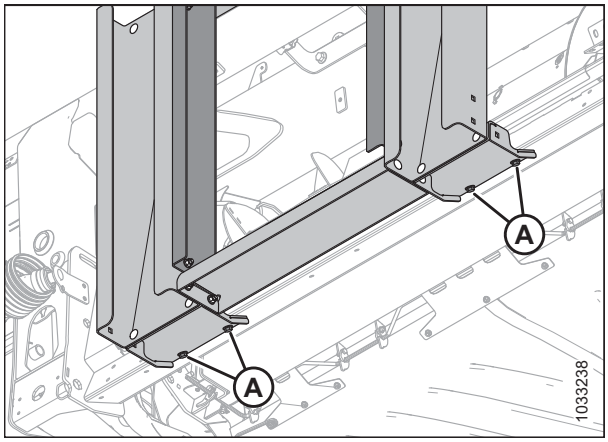


**Figure 2.12: Shipping Supports – Rear of FM200**

2. Remove four bolts (A) securing the top of the shipping stand to shipping brace (B), and remove shipping stand from the float module.

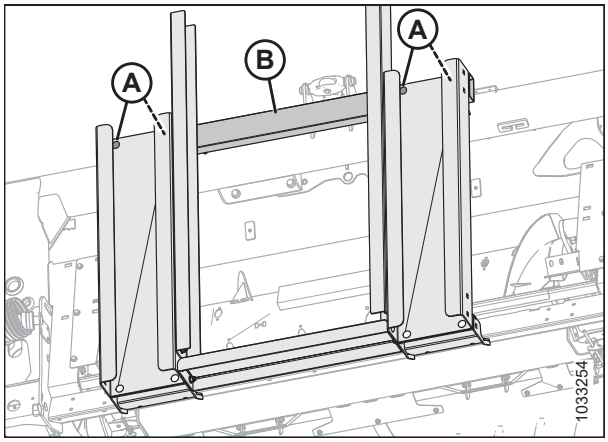


**Figure 2.13: Shipping Supports – Rear of FM200**

3. Remove bolt (A) securing shipping brace (B) to the top of the float module.
4. Slide shipping brace (B) upward and remove.

   **NOTE:**

   Shipping strap (C) gets removed after the header is attached to the combine in order to release the load on the bolts by adjusting the tilt cylinder.

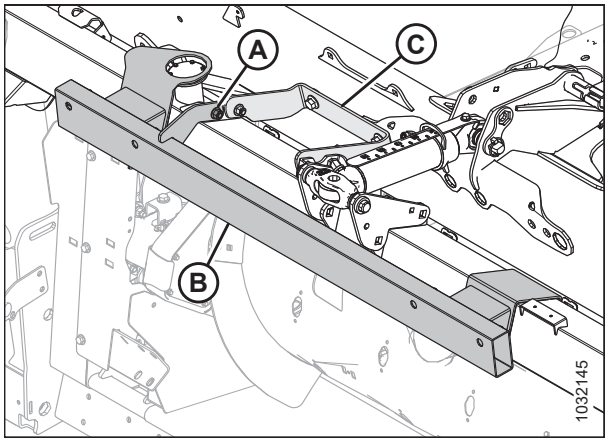


**Figure 2.14: FM200 Shipping Supports**

5. Remove right tank cover (A) from shipping position. It is tied to the bottom of the left tank cover (B).

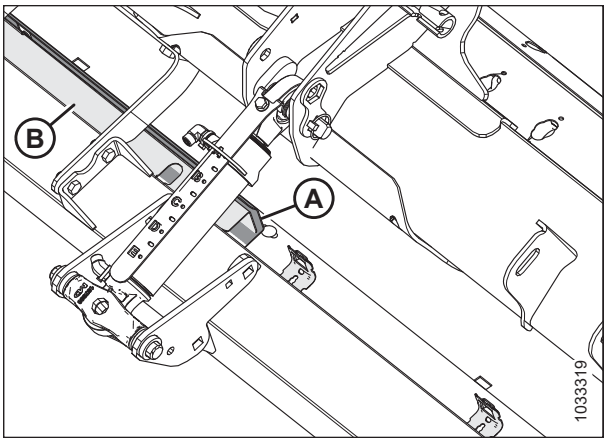


**Figure 2.15: FM200 – Top View**

6. Retrieve three push clips (C) from shipping bag and secure right cover (A) to the three L-brackets (B).

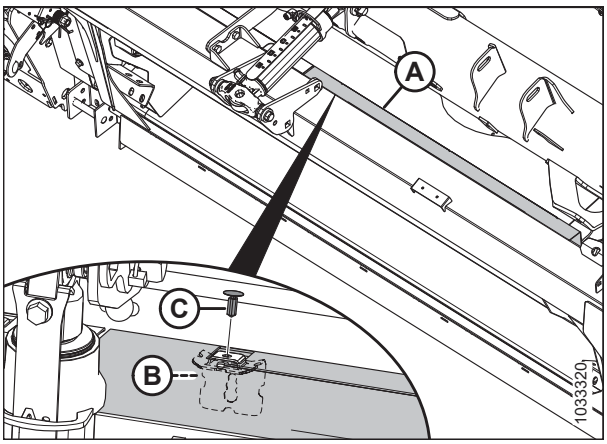


**Figure 2.16: FM200 – Top View**

7. Remove banding (A) and remove 2 x 4 (B) from the back of the feed auger.

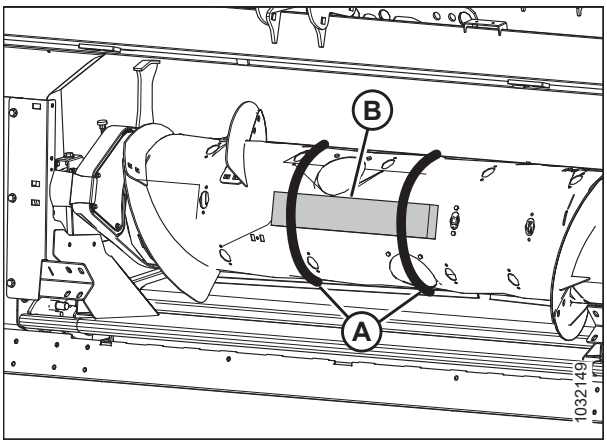


**Figure 2.17: Feed Auger**

**NOTE:**

The header leg shipping stands and divider cone shipping position varies slightly depending on if the header is equipped with transport/stabilizer wheels or without.

***With Transport/Stabilizer Wheels:***

8. Remove and retain bolt (A), and remove divider cone (B) from shipping position. Reinstall bolt (A) onto the divider cone.
9. Remove the second divider cone on the opposite shipping stand.

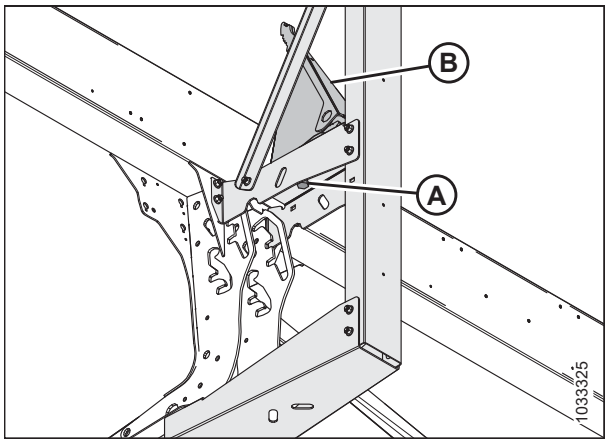


**Figure 2.18: Header Leg Shipping Stand – With Transport/Stabilizer Wheels**

***Without Transport/Stabilizer Wheels:***

10. Loosen bolt (A) securing divider cone (B) to the header leg shipping stand.
11. Slide the divider cone forward so that the bolt clears the keyhole, and remove divider cone from shipping position.
12. Remove and discard bolt (A).
13. Remove the second divider cone on the opposite shipping stand.

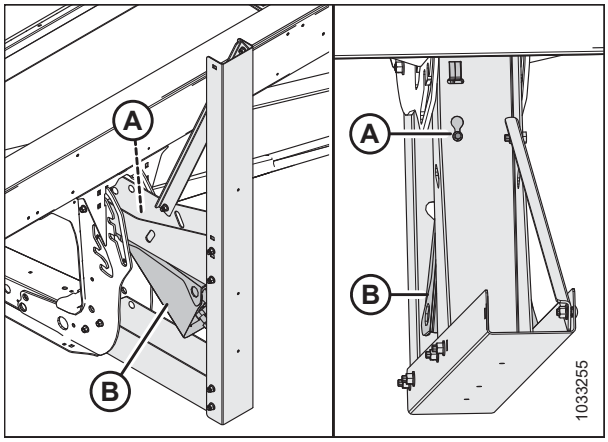


**Figure 2.19: Header Leg Shipping Stand – Without Transport/Stabilizer Wheels**

***With Transport/Stabilizer Wheels:***

14. Remove the six bolts (A) and shipping stand (B) from both outboard header legs.

    **NOTE:**

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

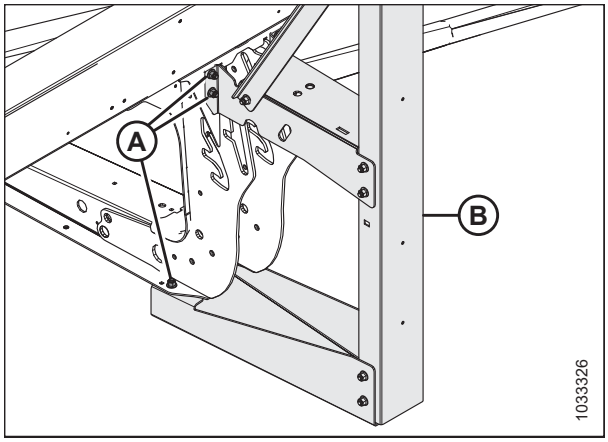


**Figure 2.20: Header Leg Shipping Stand – With Transport/Stabilizer Wheels**

***Without Transport/Stabilizer Wheels:***

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

    **NOTE:**

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

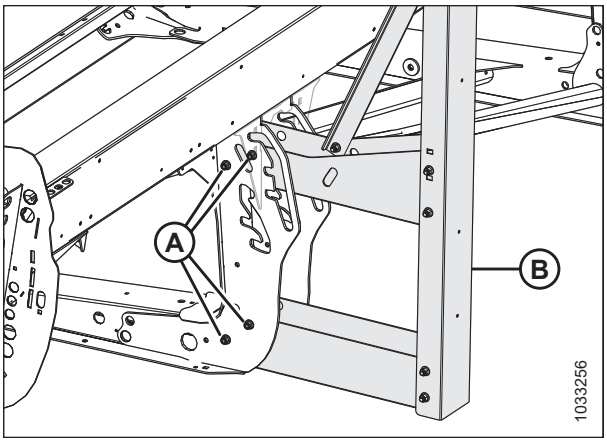


**Figure 2.21: Header Leg Shipping Stand – Without Transport/Stabilizer Wheels**

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

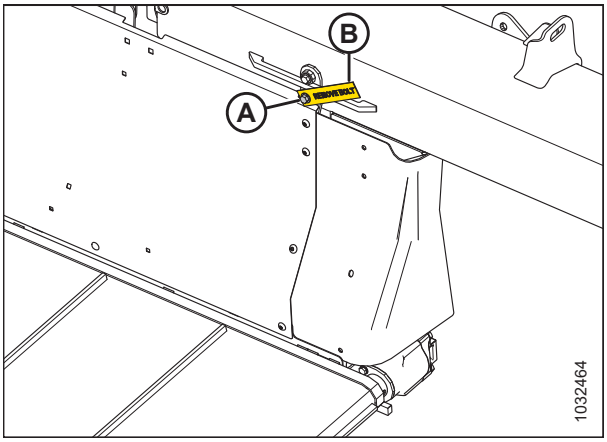


**Figure 2.22: Deck Support Shipping Bolt**

# Chapter 3: Assembling Header and Float Module

Perform all the procedures in this chapter in the order in which they are listed.

## 3.1 Installing Reel Lift Cylinders – Double Reel

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

   **IMPORTANT:**

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

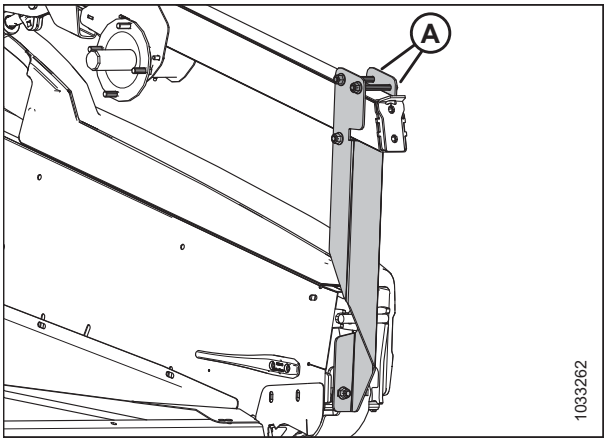


**Figure 3.1: Outboard Arm Shipping Support – Left Side**

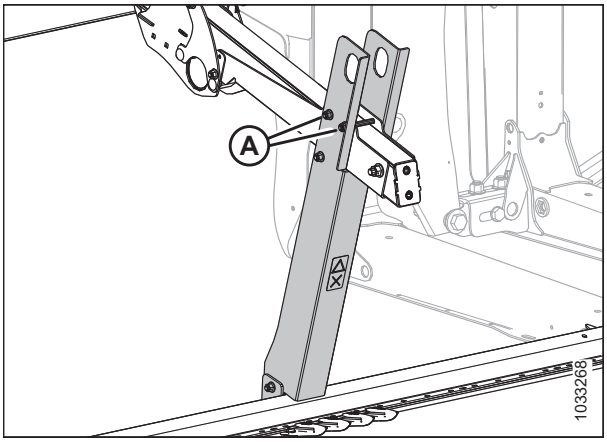


**Figure 3.2: Center Arm Shipping Support**

2. Position a sling around the reel tube—close to the left end of reel—and attach sling to a forklift (or equivalent).
3. Raise end of reel with a forklift or crane so the reel lift cylinder can be attached.

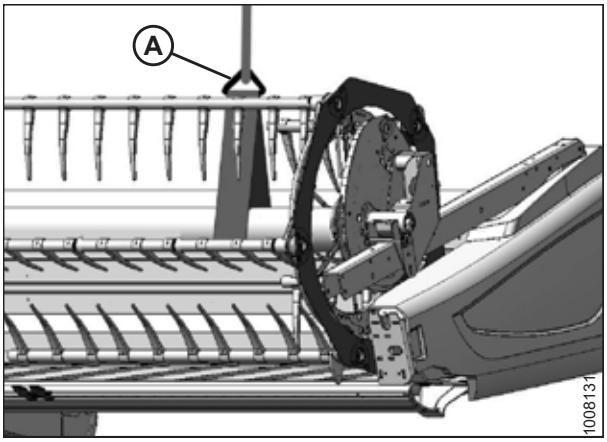


**Figure 3.3: Left Reel Arm**

4. Remove and retain the set of pins (A) from the lug on the endsheet.
5. Lift the reel so that the cylinder base mounting holes line up with the lug on the endsheet.

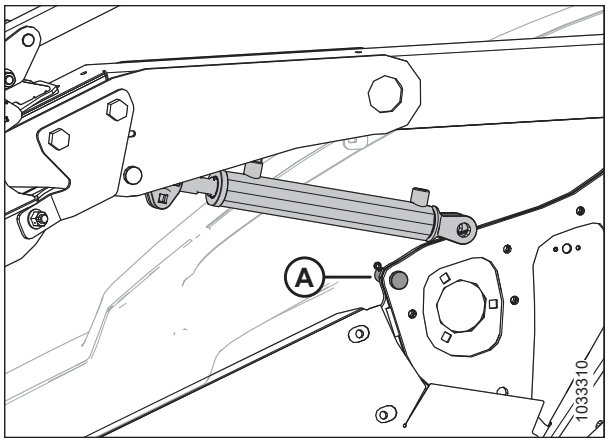


**Figure 3.4: Lift Cylinder**

6. Secure base of cylinder to the endsheet using retained clevis pin (A) and cotter pin.

   **IMPORTANT:**

   Install cotter pin on the outboard side of the header.

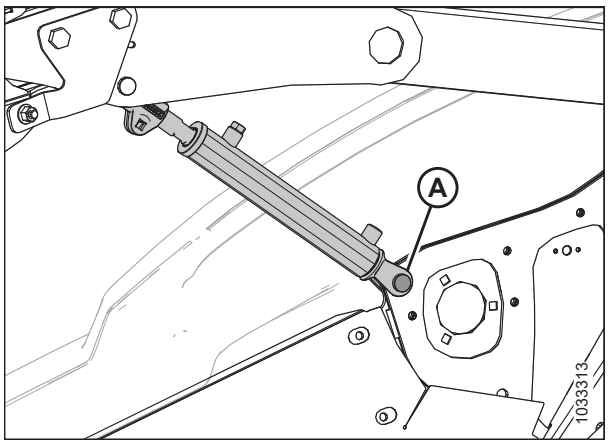


**Figure 3.5: Lift Cylinder**

7. Reposition sling (A) near reel center support arm.

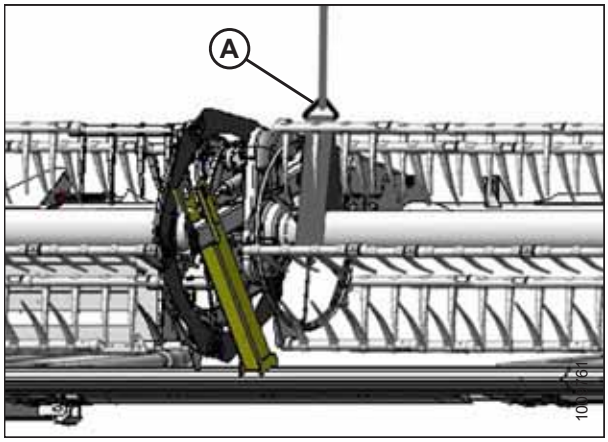


**Figure 3.6: Center of Reel**

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

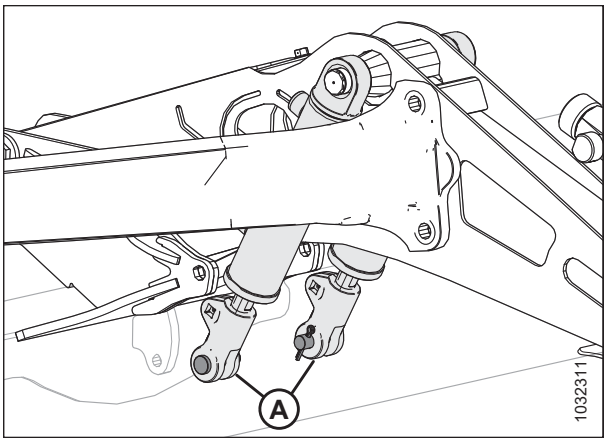


**Figure 3.7: Lift Cylinders at Center Reel Arm**

10. Lift the reel and align the holes on cylinders (A) to the holes on the reel support plates. Secure them with clevis pins and cotter pins (B).

    **IMPORTANT:**

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

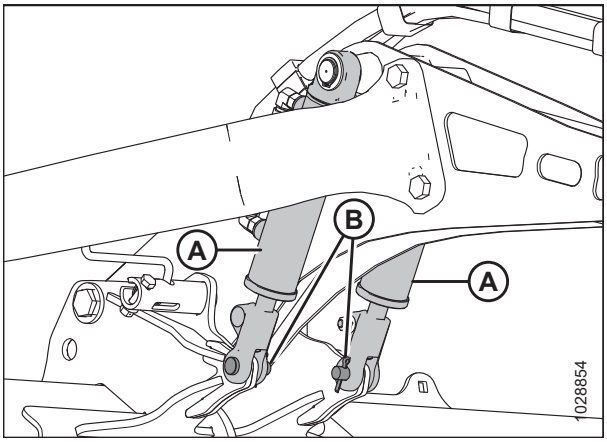


**Figure 3.8: Lift Cylinders at Center Reel Arm**

11. Repeat Step *2, page 17* to Step *6, page 18* to connect the right arm lift cylinder.

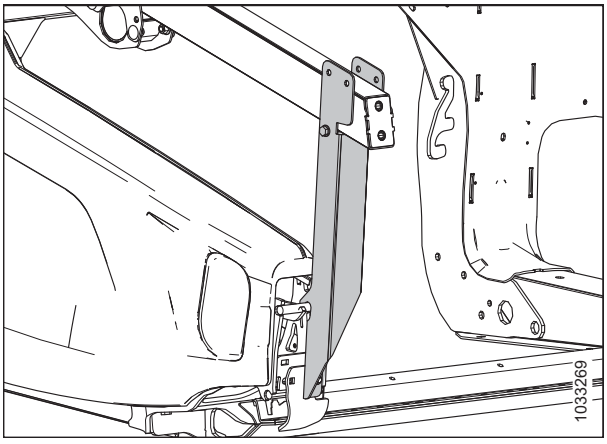


**Figure 3.9: Right Reel Arm**

12. At the center arm, remove bolt (A).
13. Remove four bolts (B) (two shown) that clamp the shipping support to the cutterbar, and remove the shipping support.

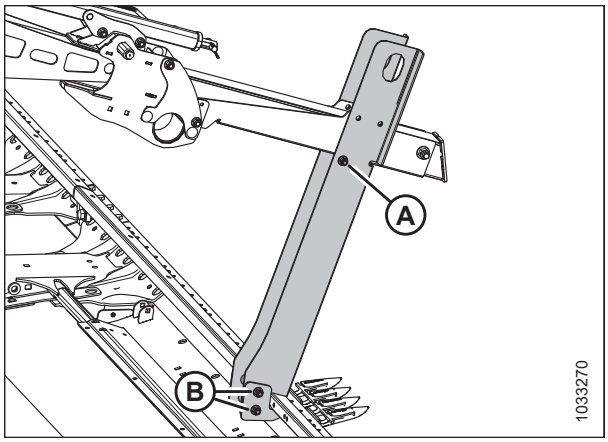


**Figure 3.10: Center Reel Arm Support**

14. Remove hardware (A) from outboard arm support (B), and remove support.

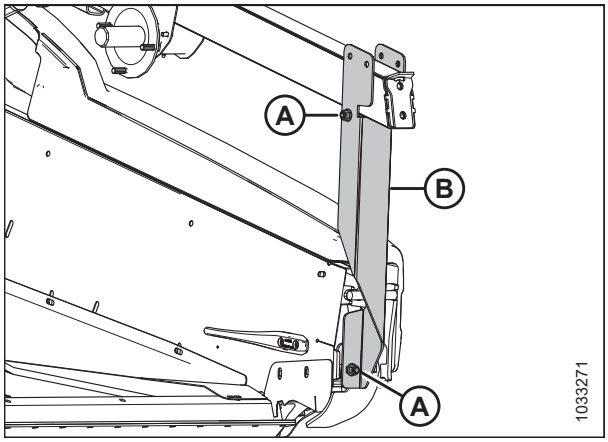


**Figure 3.11: Reel Left Arm Support**

15. Retrieve M12 x 30 mm round head square neck bolt (A) and center lock hex flange nut from the shipping bag, and install on knife cover (B) where the arm support hardware was removed.
16. Repeat Step *14, page 20* and Step *15, page 20* at the opposite end of the header.

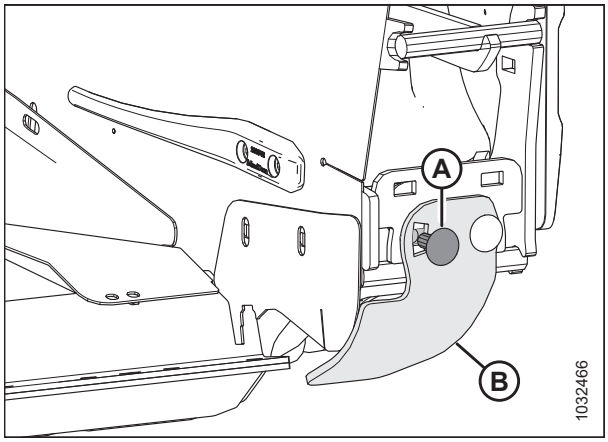


**Figure 3.12: Left Knife Cover**

## 3.2 Installing Reel Lift Cylinders – Triple Reel

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

   **IMPORTANT:**

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

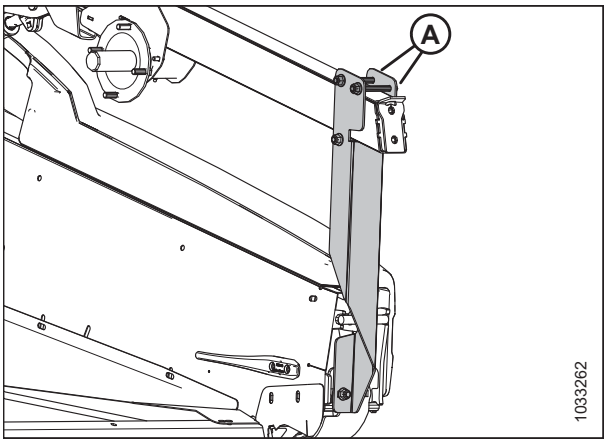


**Figure 3.13: Outboard Arm Shipping Support**

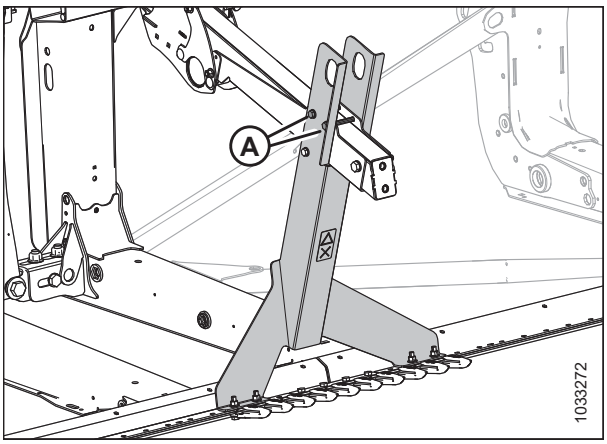


**Figure 3.14: Center Arm Shipping Support**

2. Position a sling around the reel tube—close to the outboard end of reel—and attach sling to a forklift (or equivalent).
3. Raise end of reel with a forklift or crane so the reel lift cylinder can be attached.

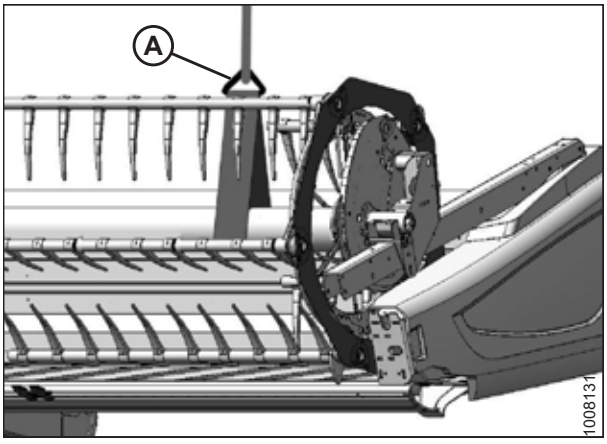


**Figure 3.15: Left Reel Arm**

4. Remove and retain the set of pins (A) from the lug on the endsheet.
5. Lift the reel so that the cylinder base mounting holes line up with the lug on the endsheet.

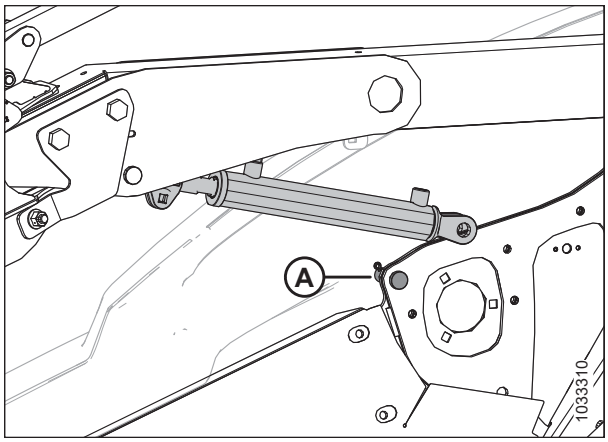


**Figure 3.16: Lift Cylinder**

6. Secure base of cylinder to the endsheet using retained clevis pin (A) and cotter pin.

   **IMPORTANT:**

   Install cotter pin on the outboard side of the header.

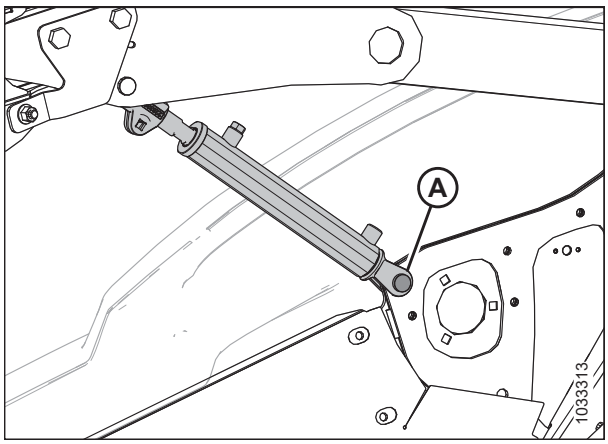


**Figure 3.17: Lift Cylinder**

7. Reposition sling (A) near one of the two center arms.

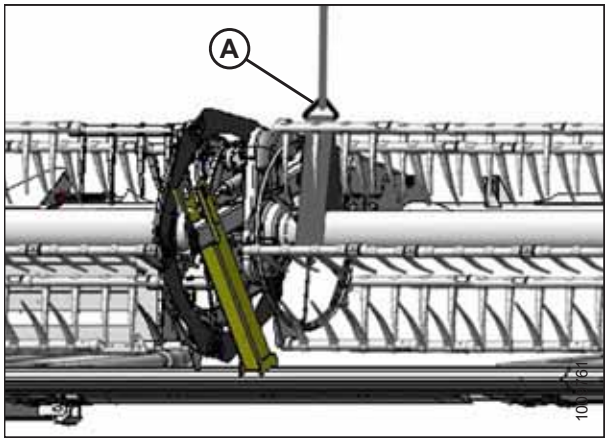


**Figure 3.18: Center Reel Arm**

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

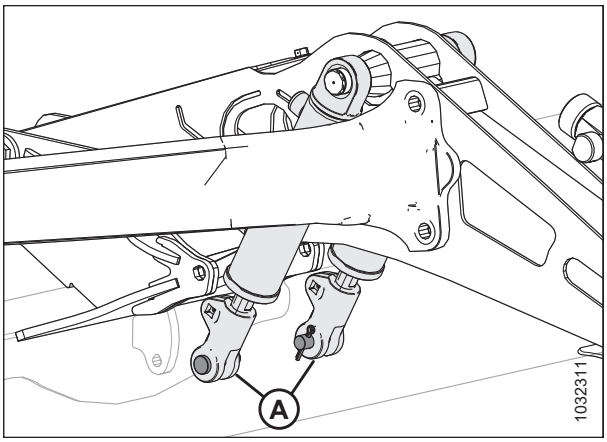


**Figure 3.19: Lift Cylinders at Center Reel Arm**

10. Lift the reel and align the holes on cylinders (A) to the holes on the reel support plates. Secure them with clevis pins and cotter pins (B).

    **IMPORTANT:**

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

11. Repeat Step *7, page 22* to Step *10, page 23* to connect the lift cylinders on the second center arm.

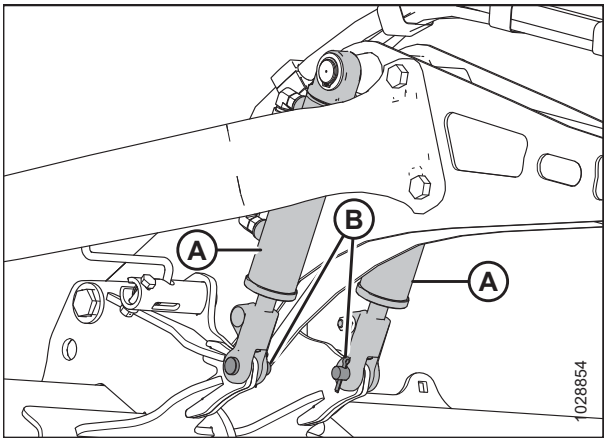


**Figure 3.20: Lift Cylinders at Center Reel Arm**

12. Repeat Step *2, page 21* to Step *6, page 22* to connect the right arm lift cylinder.

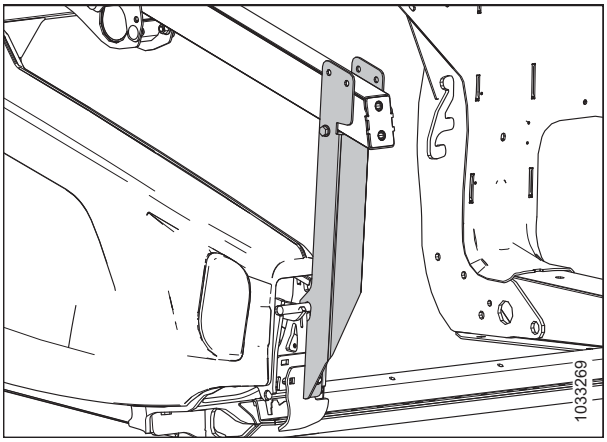


**Figure 3.21: Right Reel Arm**

13. Remove hardware (A) from outboard arm support (B), and remove support.

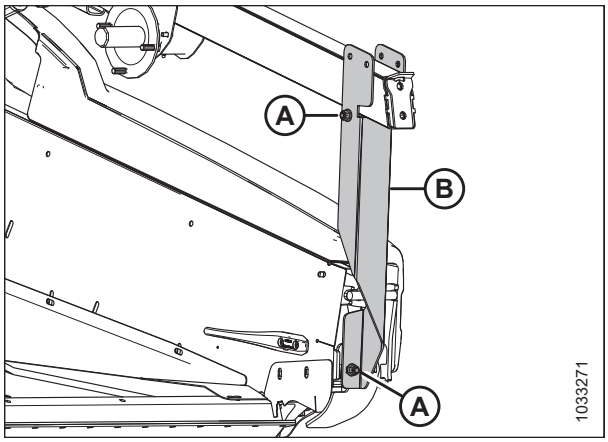


**Figure 3.22: Reel Left Arm Support**

14. Retrieve M12 x 30 mm round head square neck bolt (A) and center lock hex flange nut from the shipping bag, and install on knife cover (B) where the arm support hardware was removed.
15. Repeat Step *13, page 24* and Step *14, page 24* at the other end of the header.

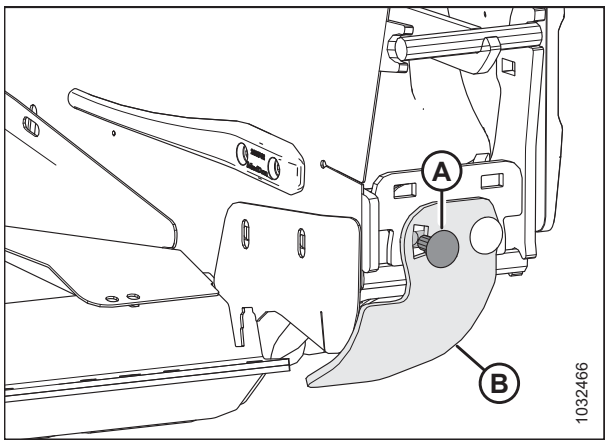


**Figure 3.23: Left Knife Cover**

## 3.3 Installing Cutterbar Wearplates and Hold-Downs – Triple Reel

At the center arm shipping supports on triple-reel headers, some cutterbar wearplates and knife hold-downs were removed prior to shipping in order to attach the supports to the cutterbar.

1. Remove and discard hardware (A) from center arm support (C).
2. Remove and discard hardware (B) securing the support to the cutterbar, and remove the support from the header.
3. Repeat on opposite arm shipping support.
4. Proceed to the correct procedure for your knife guard type:
   - *3.3.1 Installing Pointed Guard Hold-Downs and Wearplates, page 25*
   - *3.3.2 Installing PlugFree™ Short Guard Hold-Downs and Wearplates, page 27*

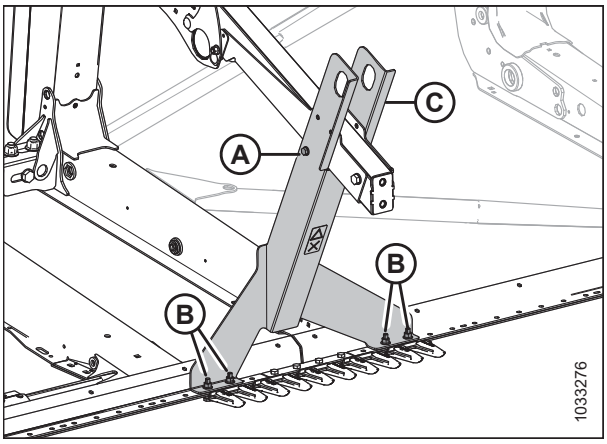


**Figure 3.24: Center Reel Arm Shipping Bracket**

### 3.3.1 Installing Pointed Guard Hold-Downs and Wearplates

**NOTE:**

On pointed guard configurations, the knife hold-downs (A) are installed alternately.

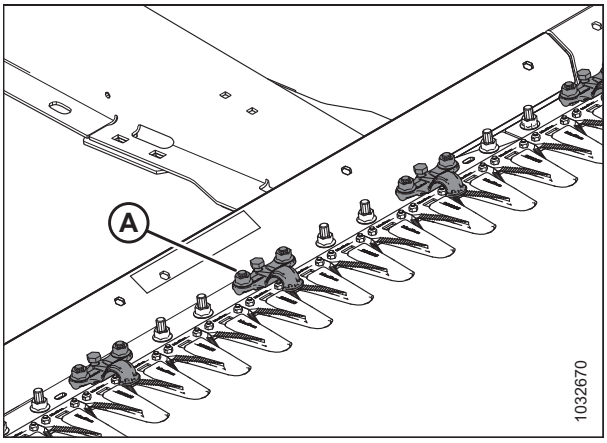


**Figure 3.25: Pointed Knife Guard Configuration**

1. Retrieve the wearplates, hold-downs, and hardware from the shipping bag.
2. Position plastic wearplate (A) and pointed knife guard (B) under the cutterbar.

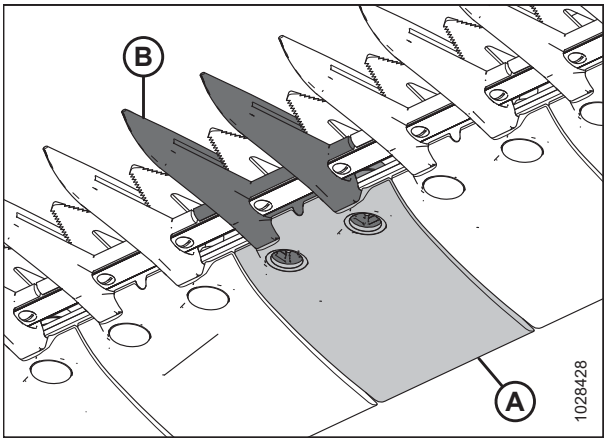


**Figure 3.26: Pointed Knife Guard and Wearplate**

3. Position hold-down (A) (if applicable), and loosen adjustment bolt (C) so that it is not protruding from the bottom of the hold down.
4. Secure pointed knife guard, wearplate, and hold-down with two M12 x 47 mm square neck bolts and hex flange nuts (B). Tighten nuts to 100 Nm (74 lbf·ft).

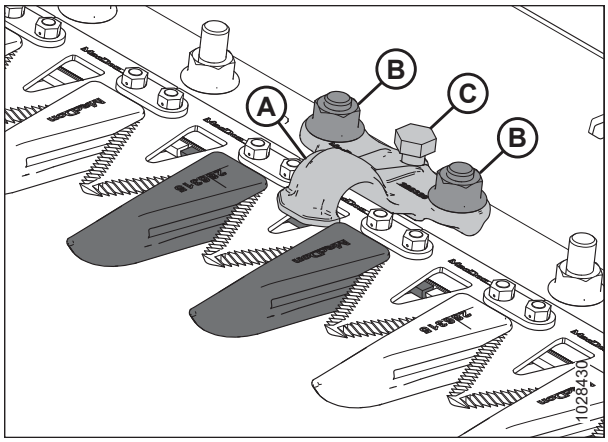


**Figure 3.27: Pointed Knife Guards**

5. Check the clearance at hold-down (B) as follows:
   a. Manually stroke the knife to position knife section (A) under hold-down (B).
   b. Push down on knife section (A) with approximately 44 N (10 lbf), 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.).

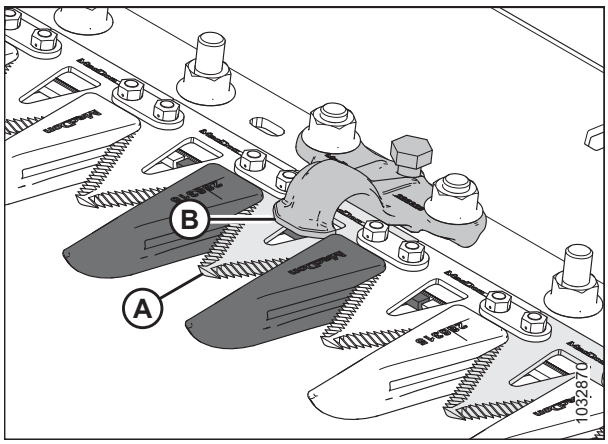


**Figure 3.28: Pointed Hold-Down**

6. If adjustment is required, adjust the hold-down clearance as follows:
   a. To lower the front of hold-down (A) and decrease clearance, turn adjuster bolt (B) clockwise.
   b. To raise the front of hold-down (A) and increase clearance, turn adjuster bolt (B) counterclockwise.

   **NOTE:**

   For larger adjustments, it may be necessary to loosen nuts (C) before turning adjuster bolt (B). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).
7. Repeat procedure to install remaining hold-downs and wearplates.

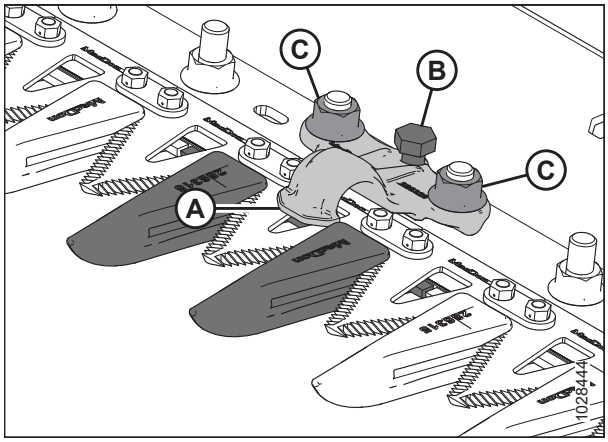


**Figure 3.29: Pointed Hold-Down**

## 3.3.2 Installing PlugFree™ Short Guard Hold-Downs and Wearplates

**NOTE:**

On short guard configurations, the knife hold-downs (A) are installed on every guard.

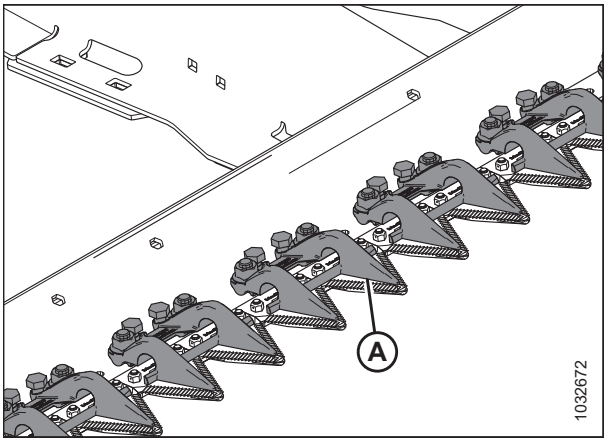


**Figure 3.30: Short Knife Guard Configuration**

1. Retrieve the wearplates, hold-downs, and hardware from the shipping bag.
2. Position plastic wearplate (A) and short knife guard (B) under the cutterbar.

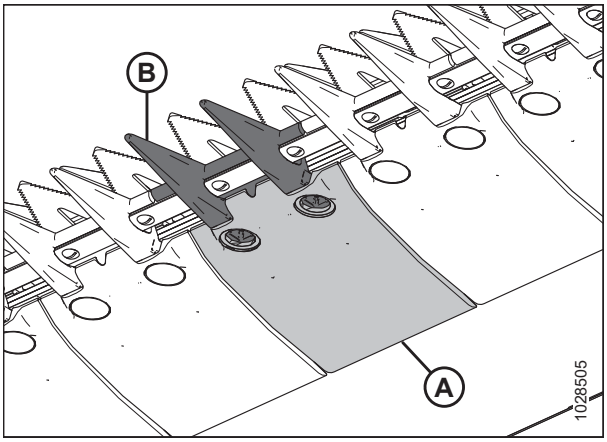


**Figure 3.31: Short Knife Guard and Wearplate**

3. Position hold-down (A), and loosen the two adjustment bolts so that they are not protruding from the bottom of the hold down.
4. Secure short knife guard, wearplate, and hold-down with two M12 x 47 mm square neck bolts and hex flange nuts (B). Tighten nuts to 100 Nm (74 lbf·ft).

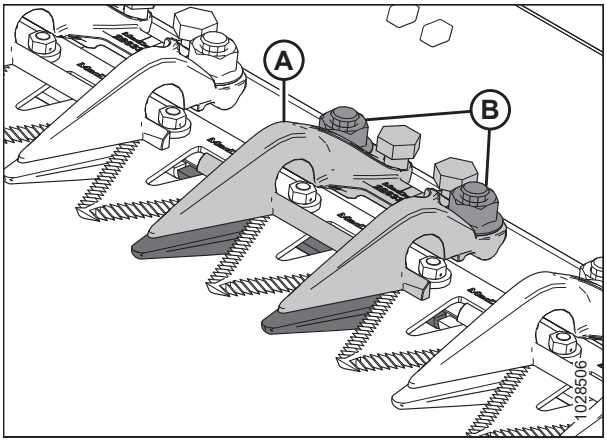


**Figure 3.32: Short Knife Guard**

5. Check the clearance at the hold-down as follows:

   a. Manually stroke knife to locate section under hold-down (A).

   b. Use a feeler gauge to measure the clearance (B) between the tip of the hold-down and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).

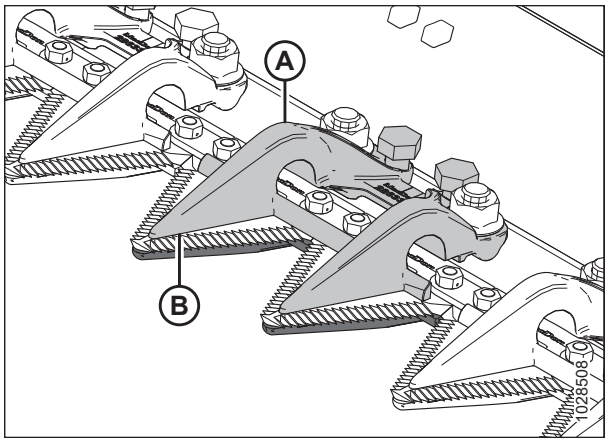


**Figure 3.33: Short Knife Guards**

6. If adjustment is required, adjust the hold-down clearance as follows:

   a. To decrease clearance, turn adjuster bolts (A) clockwise.

   b. To increase clearance, turn adjuster bolts (A) counterclockwise.

      **NOTE:**

      For larger adjustments, it may be necessary to loosen nuts (B) before turning adjuster bolts (A). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).

   c. Recheck clearances, and make further adjustments if necessary.

7. Repeat procedure to install remaining hold-downs and wearplates.

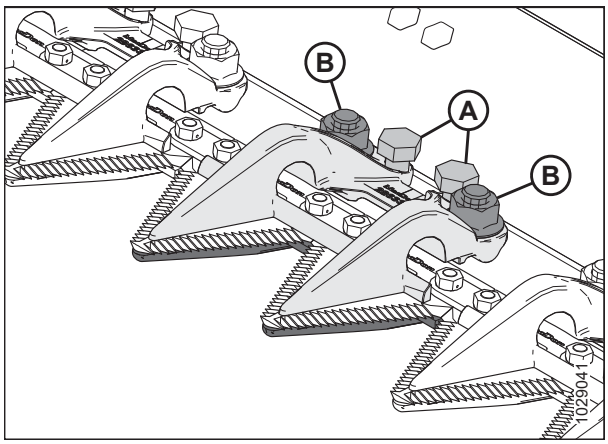


**Figure 3.34: Short Knife Guard Hold-Down**

## 3.4 Connecting Reel to Fore-Aft Cylinders

### WARNING

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

### CAUTION

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

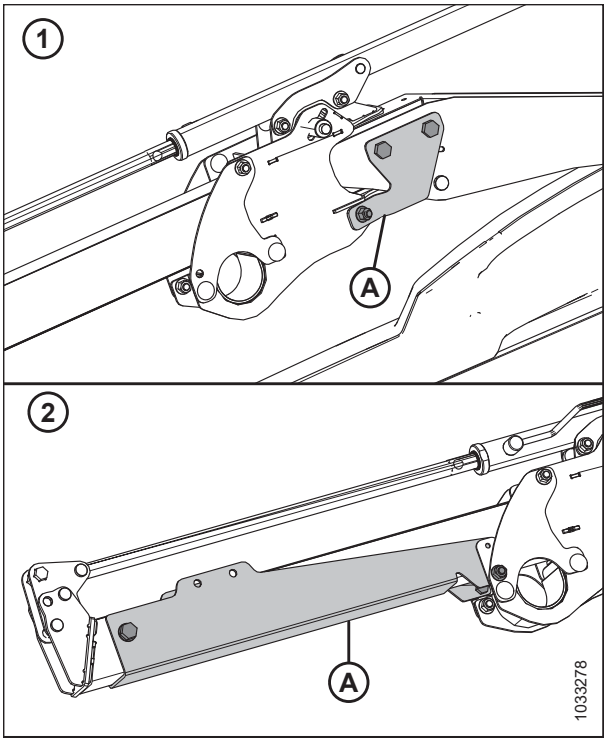


**Figure 3.35: Fore-Aft Shipping Supports**

**1 - Outer Reel Arm**

**2 - Center Reel Arm**

1. Retrieve front supports (A), fore-aft anchors (B), M16 x 30 mm bolts (C), clevis pins (D), flat washers (E), cotter pin (F), and split ring (G) from shipping bag.

   **NOTE:**

   One set of parts is shown; two sets are needed.

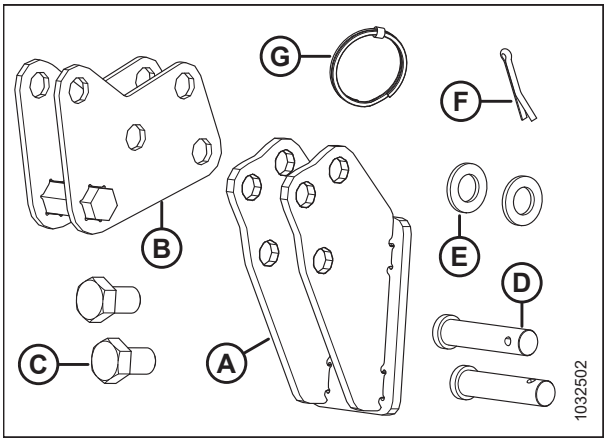


**Figure 3.36: Fore-Aft Support Parts**

2. Note where to install the fore-aft support parts:
   - On double-reel headers, the above parts need to be installed on the center arm (A) and the right arm (B).
   - On triple-reel headers, the above parts need to be installed on the center-left arm (C) and the center-right arm (D).

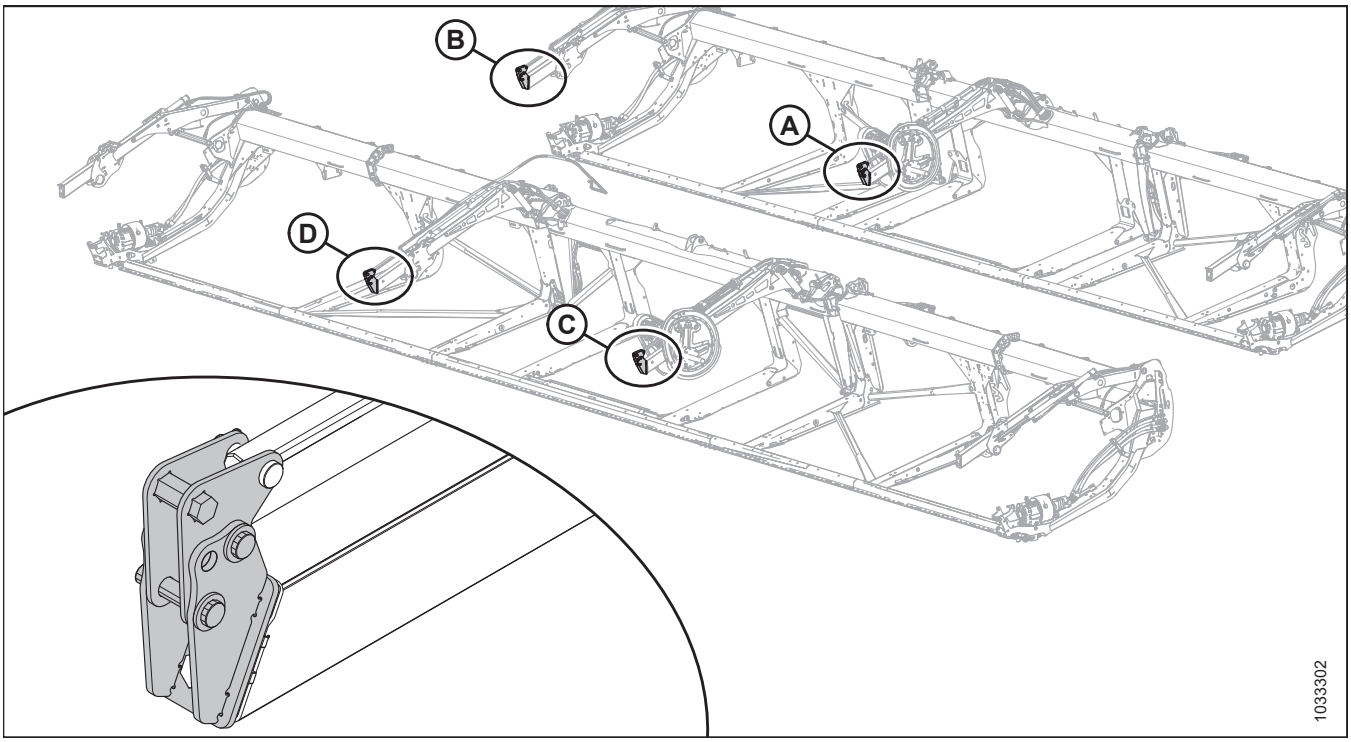


**Figure 3.37: Fore-Aft Support Locations**

3. Install front support (A) on the end of the reel arm using two M16 x 30 mm bolts (B) as shown. Tighten to 249 Nm (184 lbf·ft).
4. Remove and retain cotter pin and clevis pin (C) from the cylinder rod.

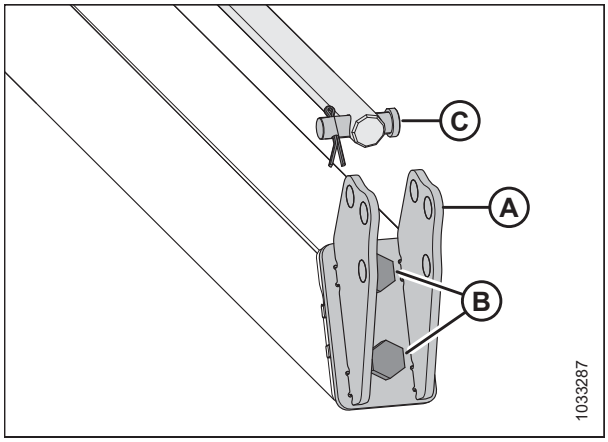


**Figure 3.38: Front Support – Double Reel, Right Arm**

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

   **IMPORTANT:**

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

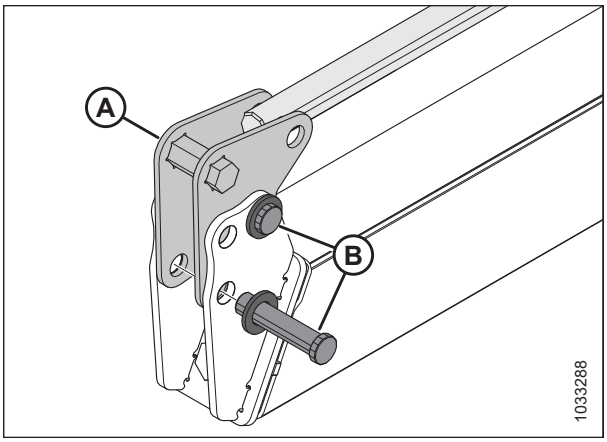


**Figure 3.39: Double Reel, Right Arm – Rear (Canola) Position Shown**

6. Secure top clevis pin with split ring (A), and secure bottom clevis pin with cotter pin (B).

   **NOTE:**

   The split ring gets installed on the top clevis pin to make it easier for the Operator to toggle between the two cylinder positions.

7. Repeat Step *1, page 29* to Step *6, page 31* to install the second set of fore-aft support parts.

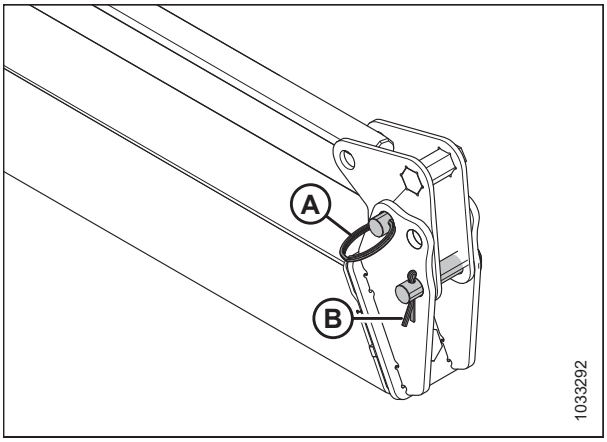


**Figure 3.40: Double Reel, Right Arm – Rear (Canola) Position Shown**

## WARNING

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

8. Start the engine.
9. Raise the reel arms until they are level.
10. **Double-reel headers:** On the right and center arms, attach fore-aft cylinder (A) to fore-aft anchor (B) with retained clevis pin and cotter pin (C).

    **Triple-reel headers:** On the center-right and center-left arms, attach fore-aft cylinder (A) to fore-aft anchor (B) with retained clevis pin and cotter pin (C).

## CAUTION

**Ensure all fore-aft cylinders are connected before removing the shipping supports.**

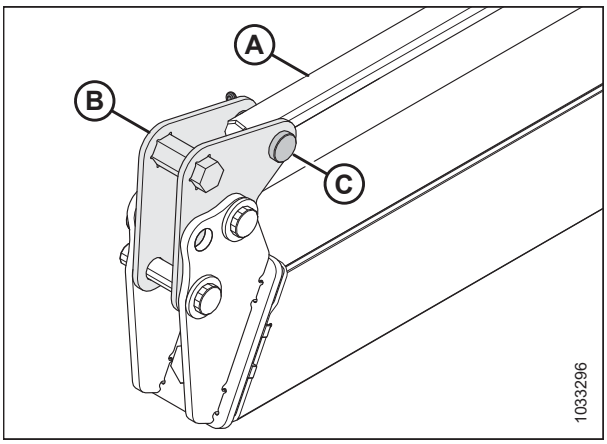


**Figure 3.41: Cylinder Secured to Reel Arm**

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

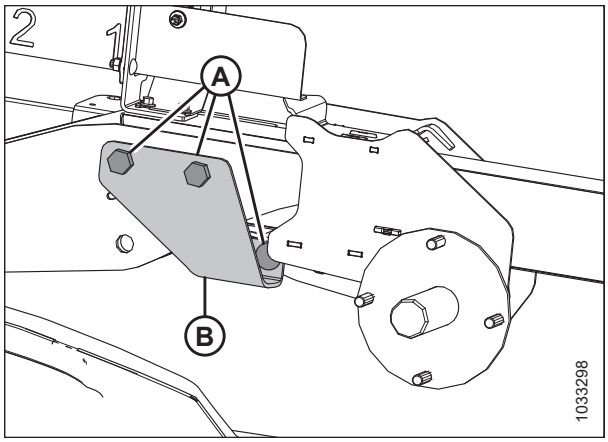


**Figure 3.42: Left Reel Arm Shipping Support**

12. **Double-reel headers:** On the center reel arm, remove hardware (A) and shipping support (B).

    **Triple-reel headers:** On the center-left and center-right reel arms, remove hardware (A) and shipping support (B).

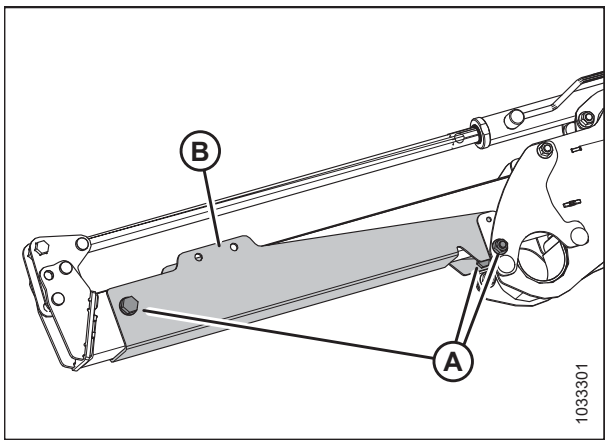


**Figure 3.43: Center Reel Arm Shipping Support**

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

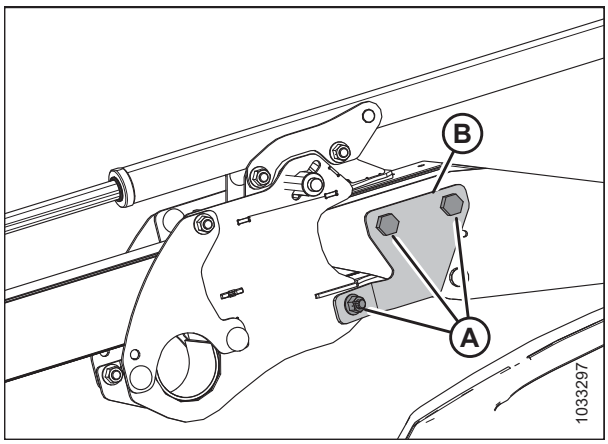


**Figure 3.44: Right Reel Arm Shipping Support**

## 3.5 Attaching Reel Height Sensor

The reel height sensor linkage (located toward the back of the right reel arm) is disconnected to prevent shipping damage. Reconnect the sensor using the following procedure:

1. Remove the shipping wire from sensor (A).

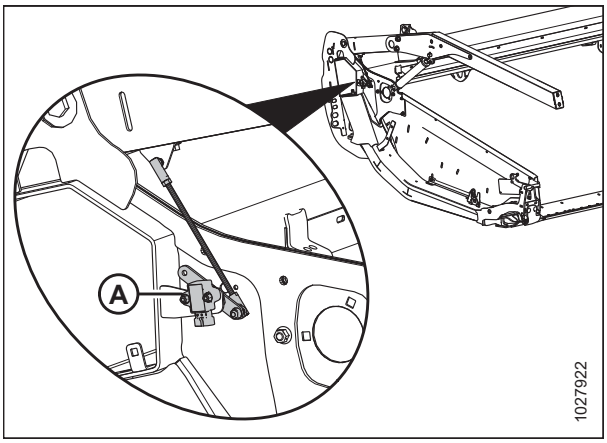


**Figure 3.45: Reel Height Sensor Location**

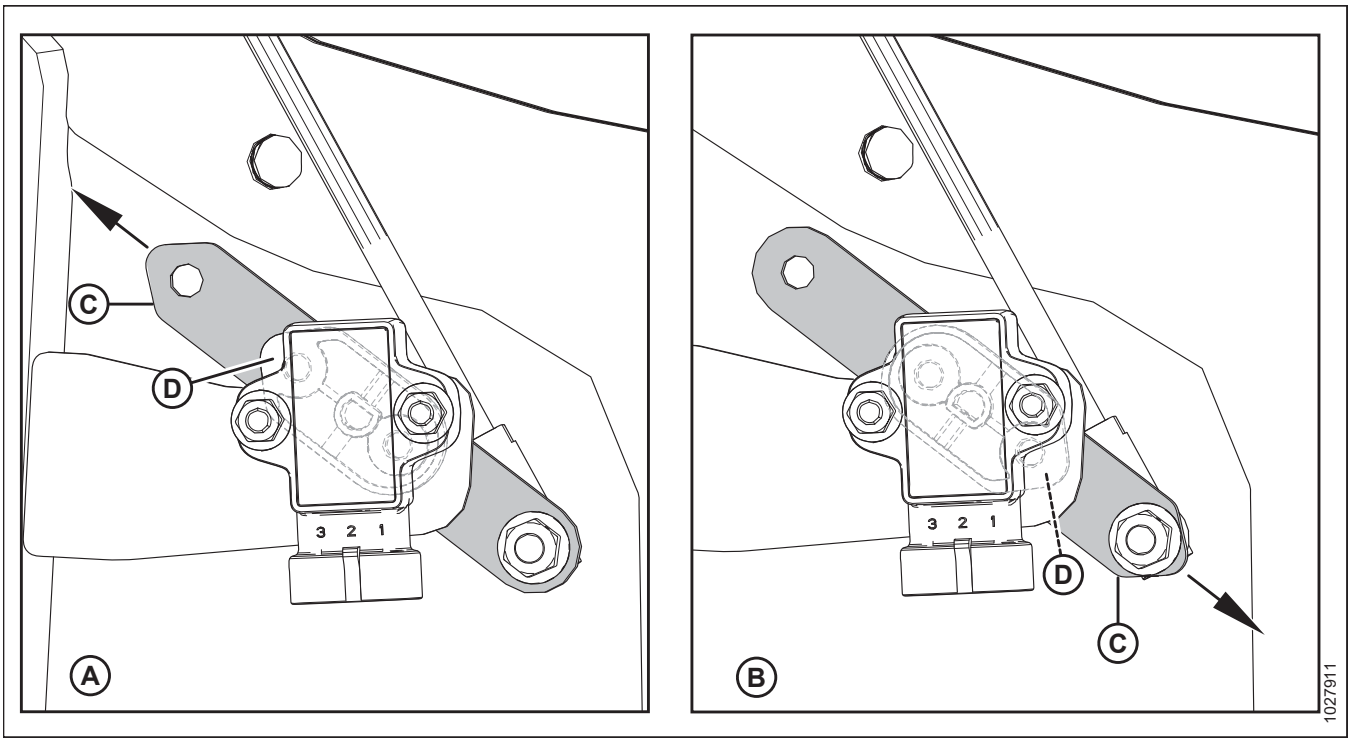


**Figure 3.46: Sensor Arm/Pointer Configurations**

**A - John Deere, CLAAS, AGCO IDEAL Configuration**

**B - Case/New Holland Configuration**

**C - Sensor Arm (Shown Semitransparent)**

**D - Sensor Pointer (Shown Under Sensor Arm)**

**NOTE:**

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

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

2. Check that sensor arm (C) and pointer (D) are configured properly for your combine. Refer to Figure *3.46, page 33*.

3. Attach reel height sensor plate (A) to reel arm with existing bolts and nuts (B). Torque to 8.2 Nm (6 lbf·ft).

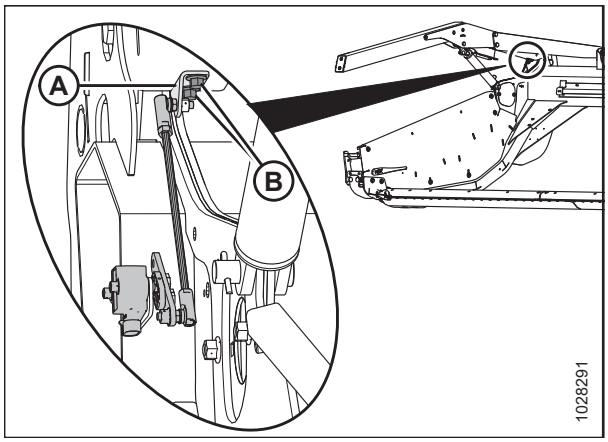


**Figure 3.47: Reel Height Sensor**

## 3.6 Connecting Fore-Aft Position Sensor

1. Locate the left fore-aft position sensor (A) on the reel arm.
2. Connect P532 to fore-aft sensor (A).

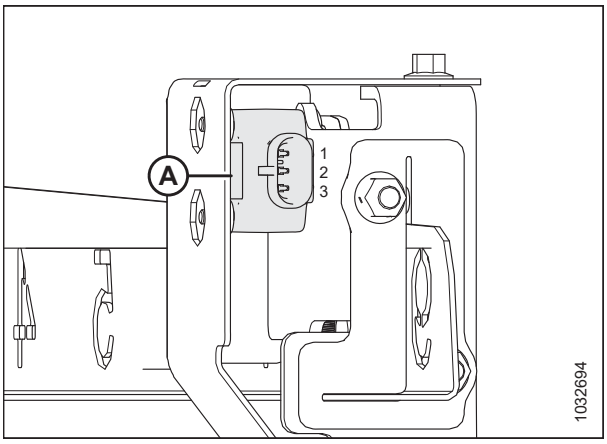


**Figure 3.48: Fore-Aft Sensor**

# Chapter 4: Setting up Float Module

Perform all the procedures in this chapter in the order in which they are listed.

## 4.1 Repositioning Gearbox

1. Remove and retain two hex bolts (A) from the pump box bracket (B).

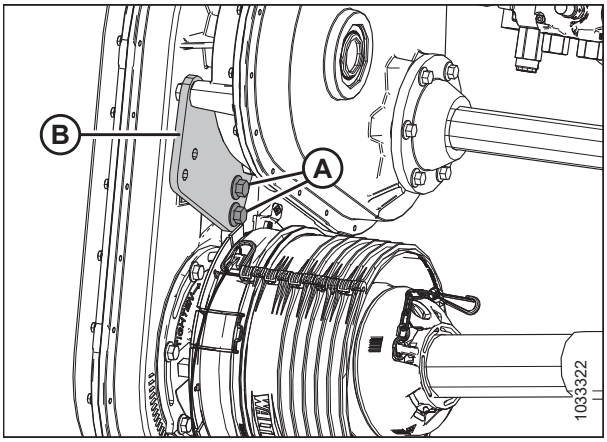


**Figure 4.1: Shipping Position**

2. Remove and retain two hex bolts (A) from bracket (B).
3. Swing gearbox rearward, and align mounting holes on bracket with mounting holes on pump box.

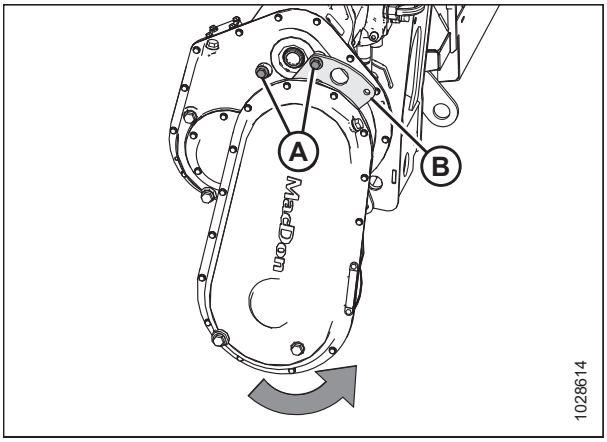


**Figure 4.2: Shipping Position**

4. Secure bracket (A) with two retained M12 hex bolts (B).

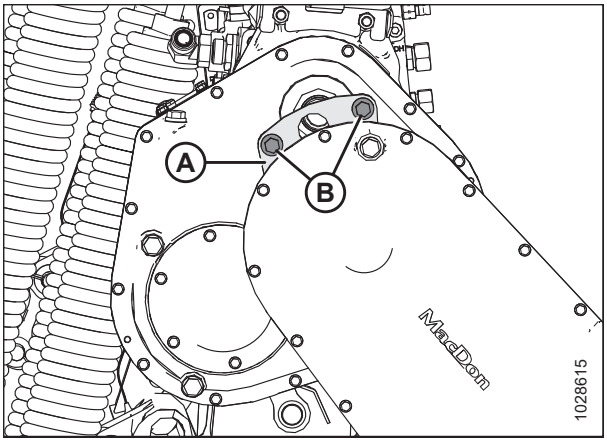


**Figure 4.3: Working Position**

5. Secure pump box bracket (A) to gearbox with two retained bolts (B).

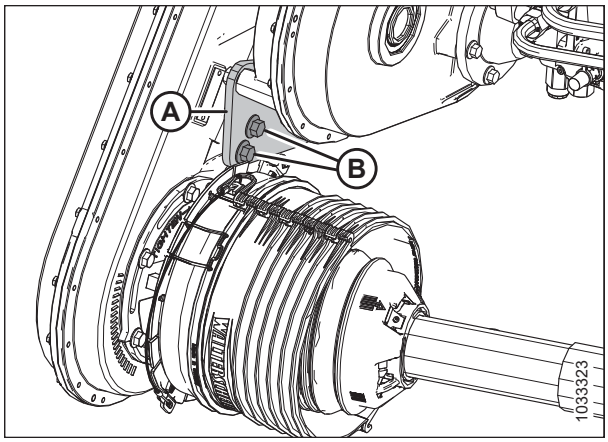


**Figure 4.4: Working Position**

## 4.2 Installing Filler Cap

1. Remove filler cap from bag (A).

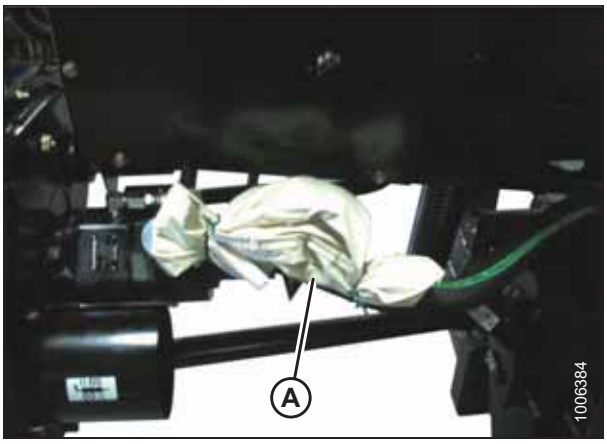


**Figure 4.5: Hardware Bag**

### CAUTION

**Fluid may be under pressure. Allow pressure to equalize by loosening screws and lifting the shipping cover slightly.**

2. Remove yellow shipping cover (A) from the float module frame. Discard cover. Keep screws if screws are not supplied with filler cap.

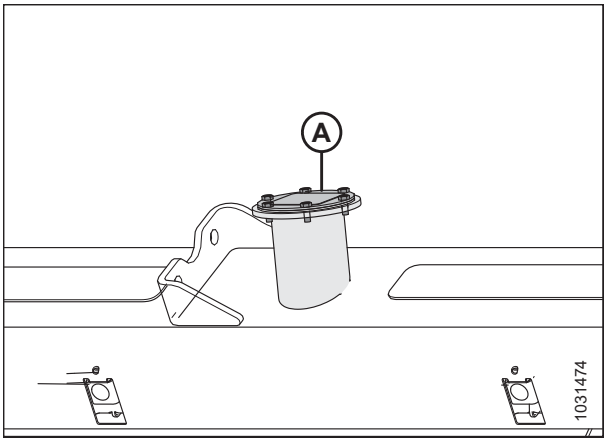


**Figure 4.6: Yellow Shipping Cover**

3. Remove top gasket (A) for use in the next step.

   **NOTE:**

   There are two gaskets—one on each side of the filler strainer flange.

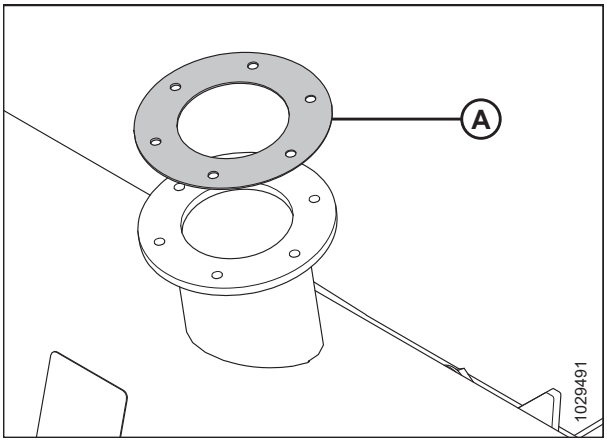


**Figure 4.7: Top Gasket**

4. Place gasket (A) (removed from the top of the filler strainer) onto filler cap neck (B) and align holes.
5. Install #10-32 screws (if supplied with cap, otherwise use existing screws) into filler cap neck (B) and push screws through gasket (A).

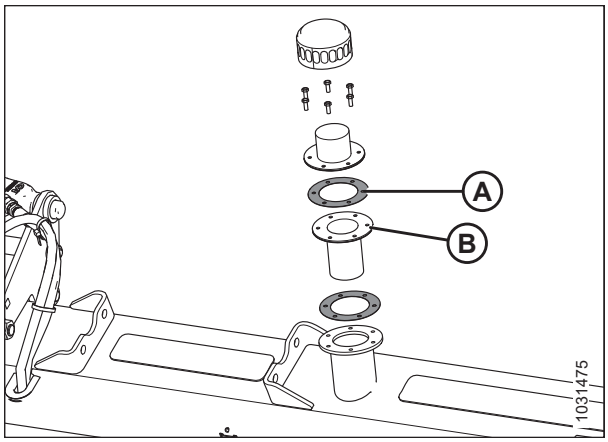


**Figure 4.8: Filler Cap**

6. Place filler cap neck (A) (complete with screws) over opening and ensure the machine screws are aligned with the threaded holes.
7. Carefully thread in the machine screws using a cross pattern (as shown) in order to prevent cross threading of tapped holes.
8. Repeat pattern to gradually tighten screws to 3.5 Nm (31 lbf·in).

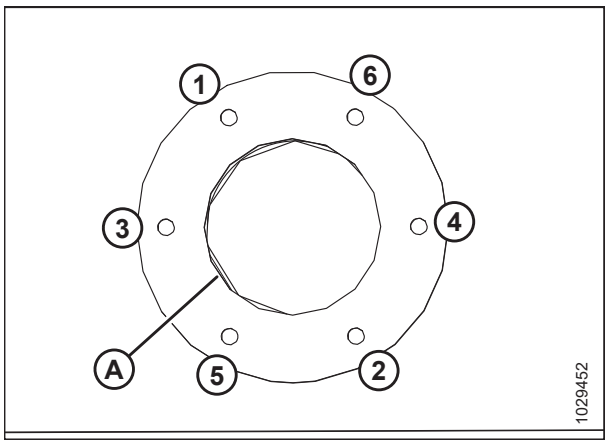


**Figure 4.9: Screw Hole Locations**

9. Install filler cap (A).

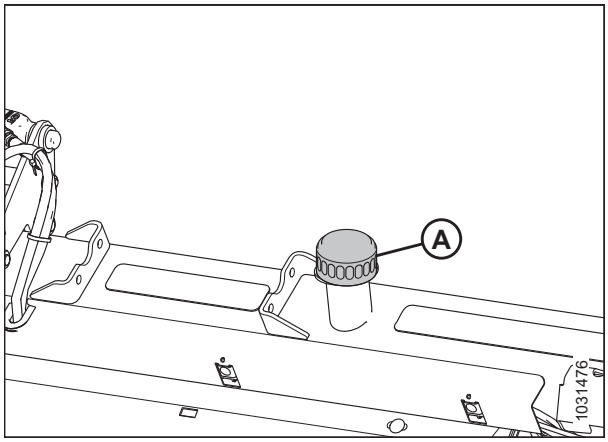


**Figure 4.10: Filler Cap Neck**

# 4.3 FM200 Feed Auger Configurations

The FM200 feed auger can be configured to suit various crop conditions; there are five configurations available.

**NOTE:**

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

**Narrow configuration** is a standard configuration for the following combines:

- AGCO IDEAL™ Series
- Gleaner R6/75, R6/76, S6/77, S6/7/88, S96/7/8
- New Holland CR 920/940/960, 9020/40/60/65, 6090/7090, 8060/8070/8080

Narrow configuration uses 4 long bolt-on flightings (2 on the left and 2 on the right) and 18 feed auger fingers are recommended.

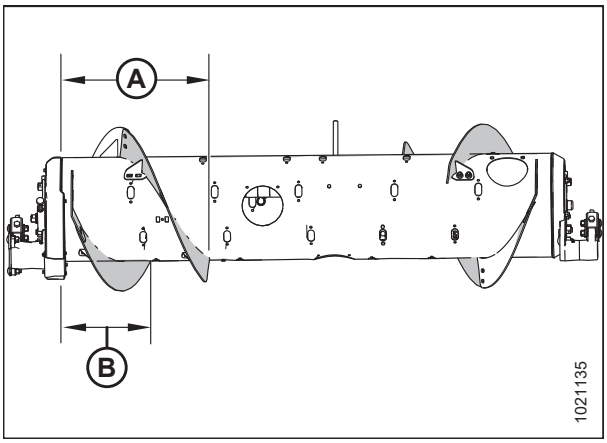


**Figure 4.11: Narrow Configuration – Rear View**

**A - 514 mm (20 1/4 in.)** **B - 356 mm (14 in.)**

**NOTE:**

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

**Medium configuration** is a standard configuration for the following combines:

- Case IH 2300/2500 Series
- Case IH 5/6/7088, 7/8010, 7/8/9120, 5/6/7130, 7/8/9230, 5/6/7140, 7/8/9240, 5/6/7150, 7/8/9250
- Challenger 66/67/680B, 54/560C, 54/560E
- CLAAS 56/57/58/590R, 57/58/595R, 62/63/64/65/66/670, 73/74/75/76/77/780, 7000/8000
- John Deere 95/96/97/9860, 95/96/97/9870, S65/66/67/68/690, T670, S76/77/78/790
- Massey Ferguson 96/97/9895, 9520/40/60, 9545/65, 9380
- New Holland CR 970/980, 9070/9080, 8090/9090, X.90, X.80, 10.80/10.90
- New Holland CX 8X0, 80X0, 8.X0, 8080/8090
- Rostselmash Torum 760/780
- Versatile RT490

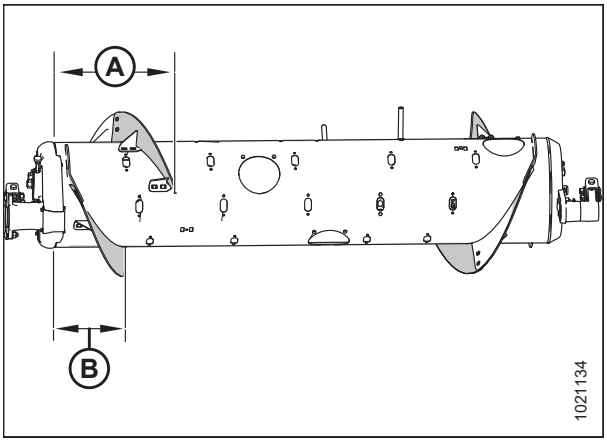


**Figure 4.12: Medium Configuration – Rear View**

**A - 410 mm (16 1/8 in.)** **B - 260 mm (10 1/4 in.)**

**Medium configuration** is an optional configuration for AGCO IDEAL™ Series.

Medium configuration uses 4 short bolt-on flightings (2 on the left and 2 on the right) and 22 feed auger fingers are recommended.

**NOTE:**

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

**Wide configuration** is an optional configuration for the following combines:

- Challenger 670B/680B, 540C/560C, 540E/560E
- CLAAS 590R/595R, 660/670, 760/770/780, 8000
- John Deere T670
- Massey Ferguson 9895, 9540, 9560, 9545, 9565, 9380
- New Holland CX 8X0, 80X0, 8.X0

Wide configuration uses 2 short bolt-on flightings (1 on the left and 1 on the right) and 30 feed auger fingers are recommended.

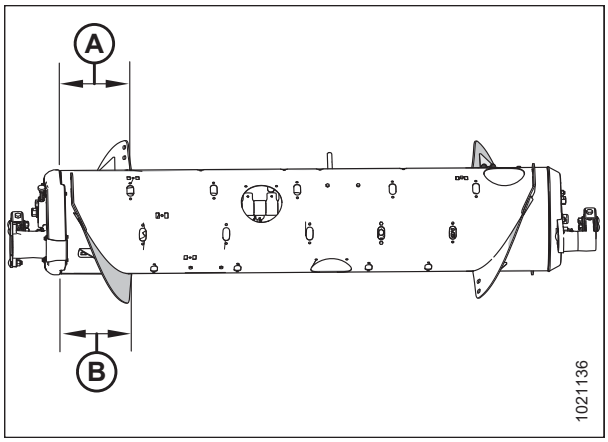


**Figure 4.13: Wide Configuration – Rear View**

**A - 257 mm (10 1/8 in.)** **B - 257 mm (10 1/8 in.)**

**NOTE:**

This configuration may increase combine capacity on wide feeder house combines in certain crop conditions.

**NOTE:**

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

**Ultra Narrow configuration** is an optional configuration that may improve feeding performance on combines with narrow feeder houses. It may also be helpful when harvesting rice.

Ultra Narrow configuration uses 8 long bolt-on flightings (4 on the left and 4 on the right) and 18 auger fingers are recommended.

**NOTE:**

You will need to drill holes in the flighting and in the drum to install the extra flighting.

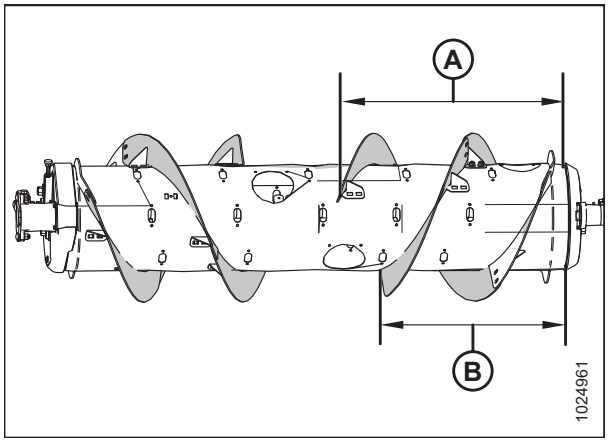


**Figure 4.14: Ultra Narrow Configuration – Rear View**

**A - 760 mm (29 15/16 in.)** **B - 602 mm (23 11/16 in.)**

**Ultra Wide configuration** is an optional configuration for the following combines:

- CLAAS 590R/595R, 660/670, 760/770/780/7000/8000

The Ultra Wide configuration uses no bolt on flighting; only the factory-welded flighting (A) is responsible for conveying the crop.

**NOTE:**

This configuration may improve feeding for wide feeder house combines.

A total of 30 auger fingers are recommended for this configuration.

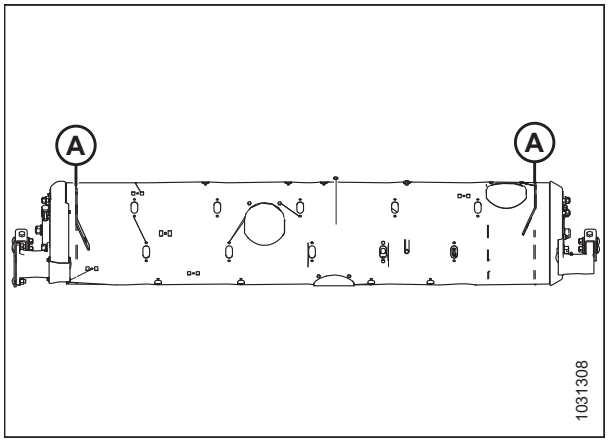


**Figure 4.15: Ultra Wide Configuration – Rear View**

## 4.3.1 Installing Feed Auger Fingers

**NOTE:**

Not all parts needed for this procedure are included in this kit and, depending on the original configuration of the feed auger, additional parts may need to be ordered. Refer to *4.3 FM200 Feed Auger Configurations, page 41* to see which parts are available.

1. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain parts for reinstallation.

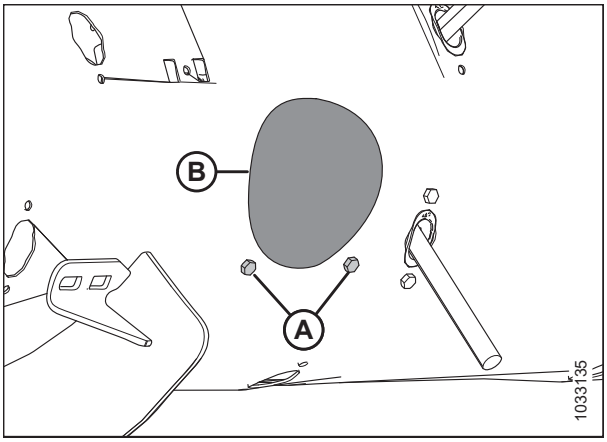


**Figure 4.16: Auger Access Hole Cover**

2. Remove two bolts (B), tee nuts, and plug (A).

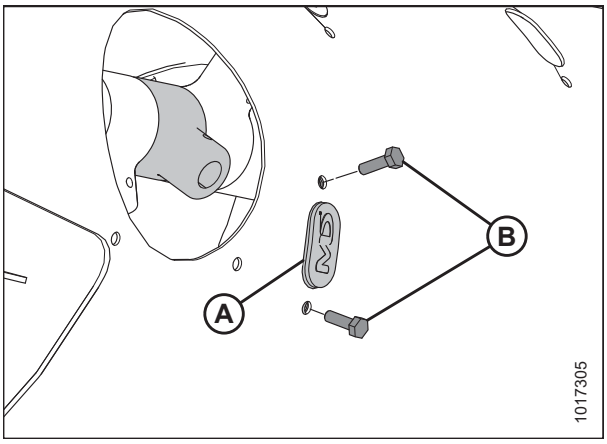


**Figure 4.17: Auger Finger Hole**

3. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent), and then insert a **NEW** solid finger guide (B) from inside the auger and secure it with bolts and tee nuts. Torque bolts to 9 Nm (80 lbf·in).

   **IMPORTANT:**

   Always install a new guide when replacing a solid finger.

   **NOTE:**

   When installing additional fingers, ensure you install an equal number on each side of the auger.

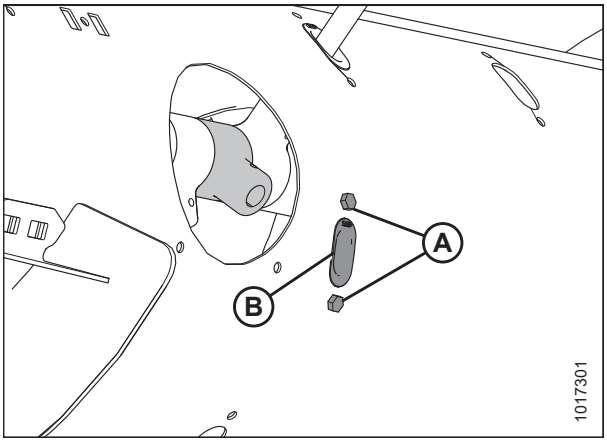


**Figure 4.18: Auger Finger Hole**

4. Insert solid finger (A) through guide (B) and into holder (C).
5. Secure the finger by inserting hairpin (D) into the holder. Make sure the round end (S-shaped side) of the hairpin faces the chain drive side of the auger. Make sure the closed end of the hairpin points in the direction of auger-forward rotation.

   **NOTE:**

   Position the hairpin correctly as described in this step to prevent the hairpin from falling out during operation. If fingers are lost, the header might not be able to feed crop into the combine properly. Fingers that fall into the drum might damage internal components.

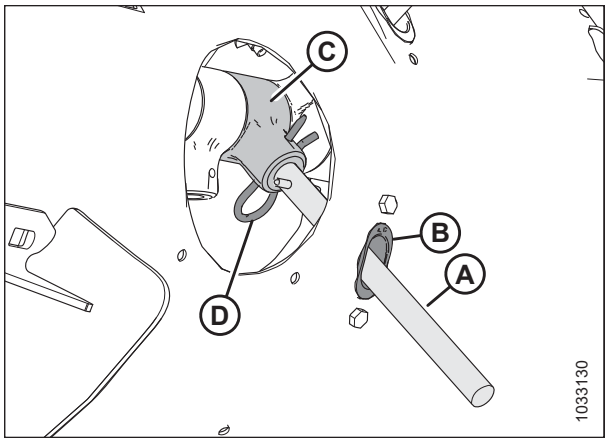


**Figure 4.19: Auger Finger**

6. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent) and reinstall access cover (B). Secure the access cover in place with bolts (A). Torque bolts to 9 Nm (80 lbf·in).

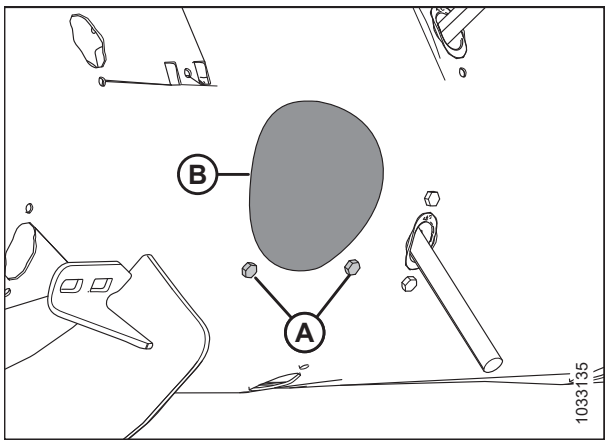


**Figure 4.20: Auger Access Hole Cover**

## 4.3.2 Removing Feed Auger Fingers

1. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain parts for reinstallation.

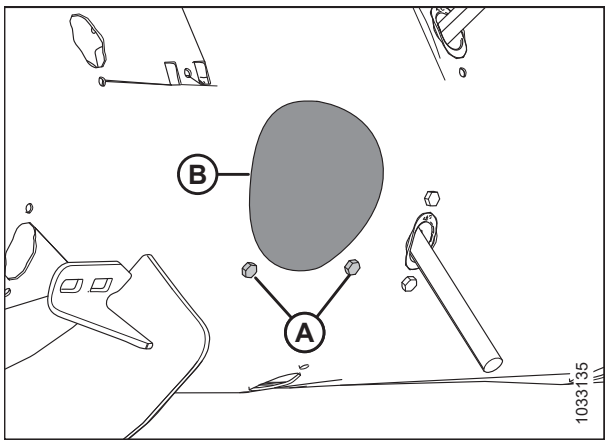


**Figure 4.21: Auger Access Hole Cover**

2. Remove hairpin (A) and pull finger (B) out of finger holder (C) and through guide (D). If the finger broke, remove any remnants from holder (C) and from inside the drum.

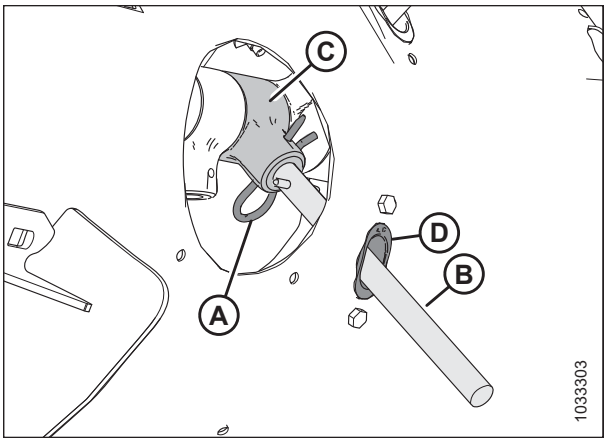


**Figure 4.22: Auger Finger**

3. Remove and retain two bolts (A) and tee nuts (not shown) securing finger guide (B) to the auger. Remove guide (B).

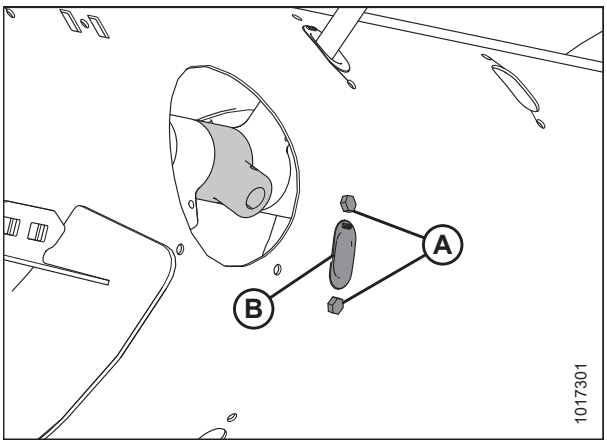


**Figure 4.23: Auger Finger Hole**

4. Coat bolts (B) with medium-strength threadlocker (Loctite® 243 or equivalent), and then position plug (A) into the hole from inside the auger. Secure with two M6 hex head bolts (B) and tee nuts. Torque to 9 Nm (80 lbf·in).

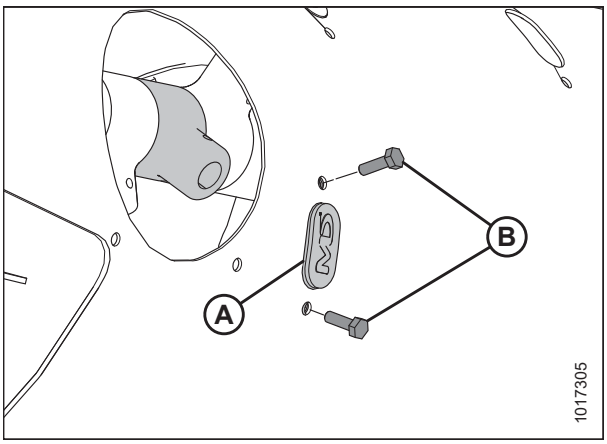


**Figure 4.24: Plug**

5. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent) and reinstall access cover (B). Secure the access cover in place with bolts (A). Torque bolts to 9 Nm (80 lbf·in).

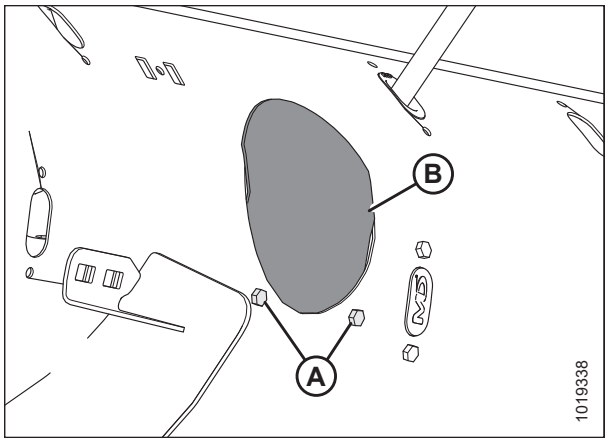


**Figure 4.25: Auger Access Hole Cover**

# 4.4 FM200 Stripper Bars and Feed Deflectors

## 4.4.1 Removing Stripper Bars

Stripper bar kits may have been supplied with your header to improve feeding in certain crops such as rice. They are **NOT** recommended for cereal crops.

**NOTE:**

The following procedure does **NOT** apply to New Holland CR960, 9060, 970, 9070, and 9080 combines. For these combines, refer to *4.4.2 CR Feeder Deflectors, page 47*.

If necessary, remove auger stripper bars as follows:

1. Remove four bolts (A) and nuts securing bars (B) to float module frame. Remove bars.
2. Repeat for opposite set of stripper bars.

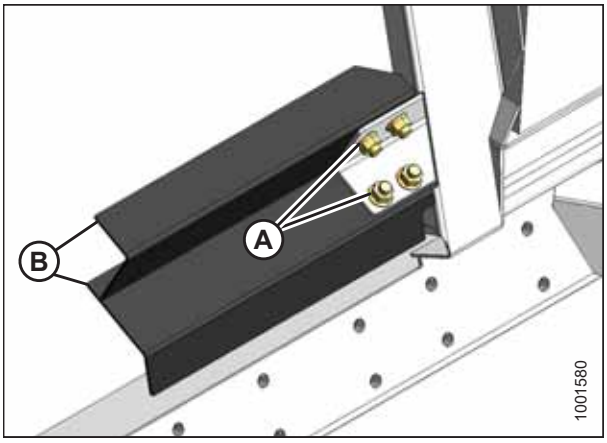


**Figure 4.26: Auger Stripper Bar**

## 4.4.2 CR Feeder Deflectors

This section is for New Holland CR combines only. If operating a New Holland CX combine, remove feed deflectors.

**For New Holland CR combines only:** Wide feeder deflectors have been factory-installed on the float module to improve feeding into the feeder house. Remove the feeder deflectors if necessary. For instructions, refer to *4.4.3 Replacing Feed Deflectors on New Holland CR Combines, page 48*.

Long feeder kits are provided for narrow feeder house combines and can be installed to replace the short feeder deflectors.

**Table 4.1 FM200 Feeder Kits for CR Model Combines**

| Feeder House Size | Feeder Kit Size | MacDon Part Number |
|---|---|---|
| 1250–1350 mm (49–65 in.) | Narrow: 200 mm (7 7/8 in.) | MD #328082, 328083 |
| 1100 mm (43-1/2 in.) and below | Wide: 325 mm (12 13/16 in.) | MD #314690, 314691 |

## 4.4.3 Replacing Feed Deflectors on New Holland CR Combines

This section is for New Holland CR combines only. If operating a New Holland CX combine, remove feed deflectors.

1. Remove two bolts and nuts (B) securing feed deflector (A) to the float module frame, and remove the feed deflector.
2. Position replacement feed deflector (A), and secure with bolts and nuts (B) (ensure the nuts are facing the combine). Do **NOT** tighten nuts.

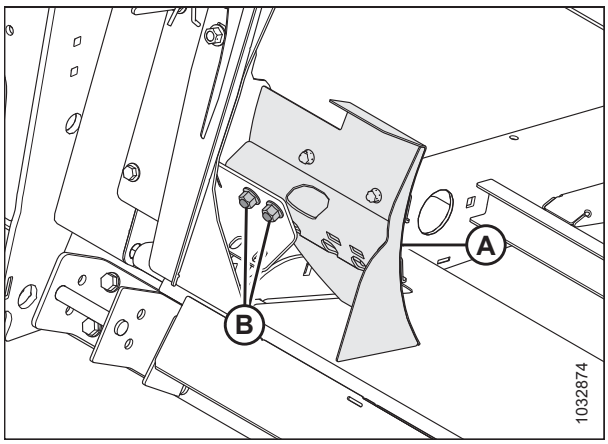


**Figure 4.27: Feed Deflector**

3. Adjust deflector (A) so that distance (C) between pan and deflector is 4–6 mm (5/32–1/4 in.).
4. Tighten nuts (B).
5. Repeat for opposite deflector.
6. Attach header to the combine. For instructions, refer to Chapter *5 Attaching Header to Combine, page 49*.
7. After attaching the header to the combine, fully extend the center-link and check the gap between the deflector and pan. Maintain the 4–6 mm (5/32–1/4 in.) gap.

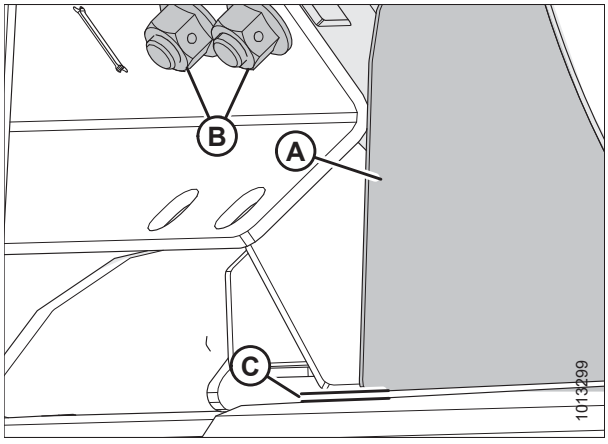


**Figure 4.28: Pan and Deflector Distance**

# Chapter 5: Attaching Header to Combine

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

**Table 5.1 Combine Model Header Attachment Procedures**

| Combine | Refer to |
|---|---|
| AGCO Gleaner R and S Series;<br>Challenger 660, 670, 680B, 540C, and 560C;<br>Massey Ferguson 9690, 9790, 9895, 9520, 9540, and 9560 | *5.1 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines, page 49* |
| AGCO IDEAL™ | *5.2 AGCO IDEAL™ Series Combines, page 54* |
| Case IH 7010, 8010, 7120, 8120, 9120, 5088, 6088, 7088, 5130, 6130, 7130, 7230, 8230, and 9230 | *5.3 Case IH Combines, page 57* |
| CLAAS 500, 600, and 700 (R Series) | *5.4 CLAAS Combines, page 62* |
| John Deere 60, 70, S, and T Series | *5.5 John Deere Combines, page 75* |
| New Holland CR and CX | *5.6 New Holland Combines, page 79* |

**IMPORTANT:**

Ensure applicable functions (automatic header height control [AHHC], Draper Header Option, Hydraulic Center-Link Option, Hydraulic Reel Drive, etc.) are enabled on the combine and in the combine computer. Failure to do so may result in improper header operation.

## 5.1 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines

### 5.1.1 Attaching Header to an AGCO (Challenger, Gleaner, or Massey Ferguson) Combine

**WARNING**

**To avoid injury or death from unexpected start-up of 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. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

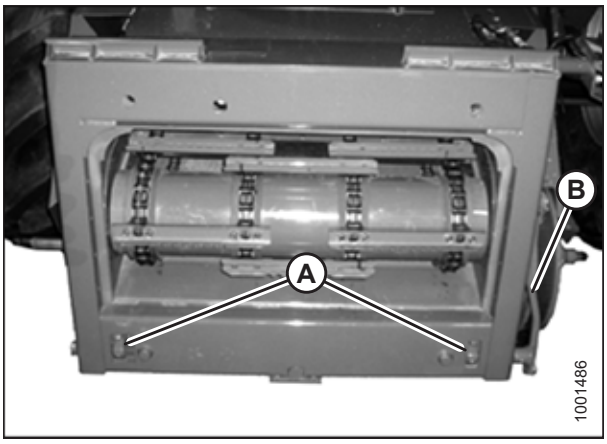


**Figure 5.1: AGCO Group Feeder House**

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

3. Start the engine and slowly approach the header until the feeder house is directly under float module top cross member (A) and alignment pins (C) (refer to Figure *5.3, page 50*) on the feeder house are aligned with holes (B) in the float module frame.

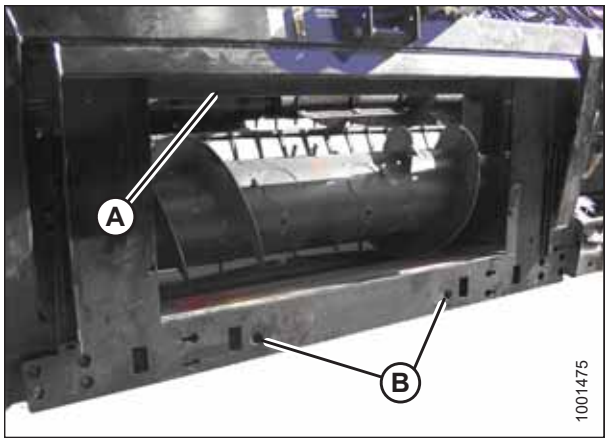


**Figure 5.2: Float Module**

**NOTE:**

Your combine feeder house may not be exactly as shown.

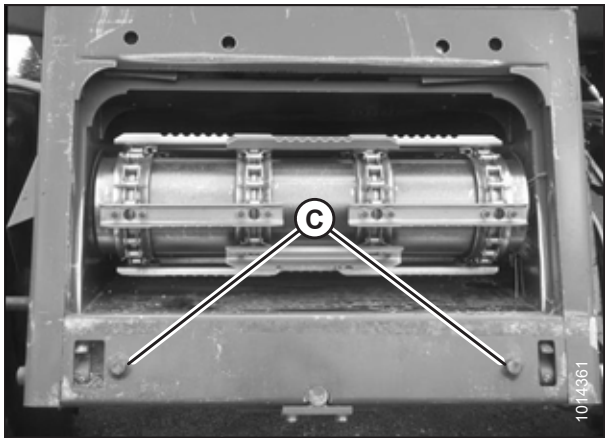


**Figure 5.3: AGCO Group Alignment Pins**

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


**Figure 5.4: Feeder House and Float Module**

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

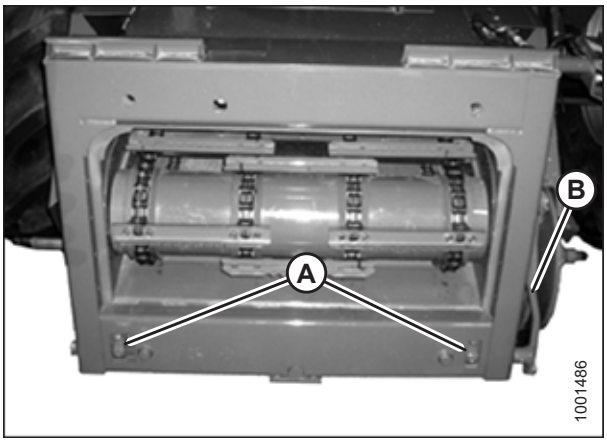


**Figure 5.5: AGCO Group Feeder House**

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

7. Start the engine. For instructions, refer to the combine operator's manual.
8. Lower the header fully.

**NOTE:**

The float module is equipped with a multicoupler that connects to the combine. If your combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *5.2, page 51* for a list of kits and installation instructions that are available through your combine Dealer.

**Table 5.2 Multicoupler Kits**

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

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

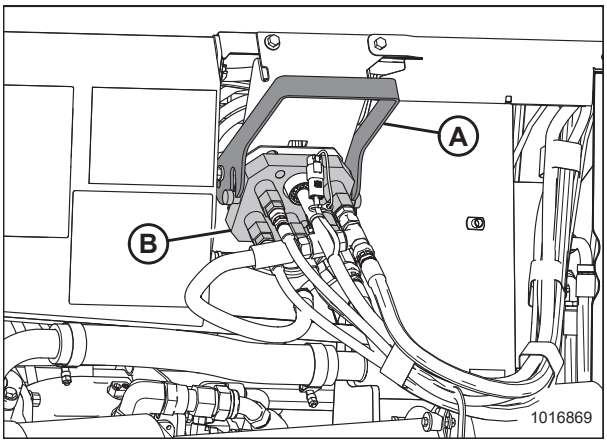


**Figure 5.6: Float Module Multicoupler**

10. Push handle (A) on the combine to the fully-open position.
11. Clean the mating surfaces of multicoupler (B) and receptacle if necessary.

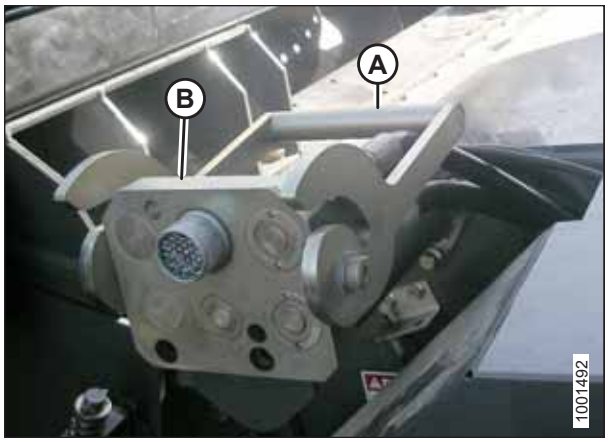


**Figure 5.7: Combine Receptacle**

12. Position multicoupler (A) onto the combine receptacle, and pull handle (B) to fully engage the multicoupler into the receptacle.
13. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).

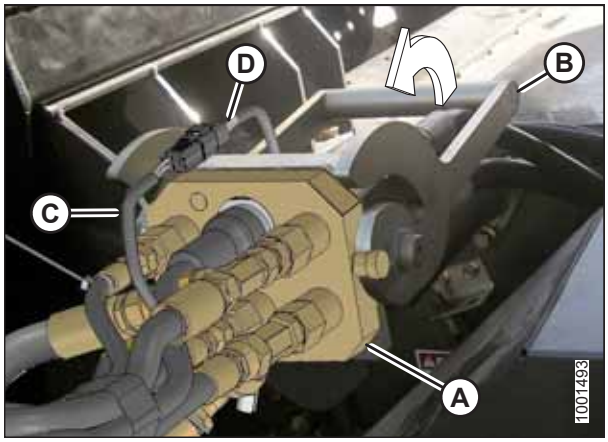


**Figure 5.8: Multicoupler**

14. Detach safety chain (C) from support bracket (B).
15. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

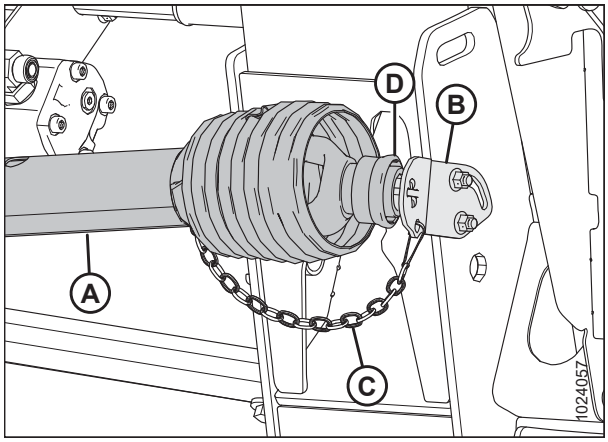


**Figure 5.9: Driveline**

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

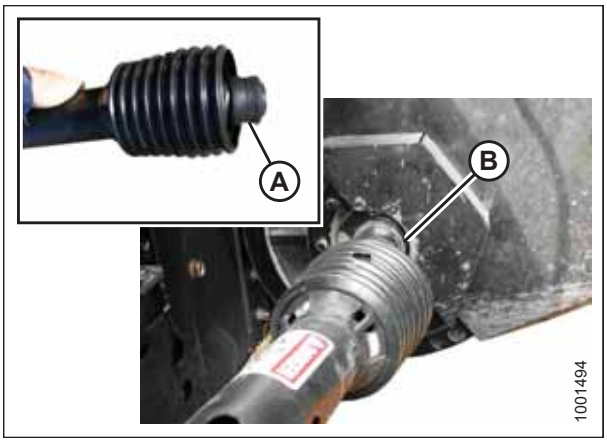


**Figure 5.10: Driveline**

# 5.2 AGCO IDEAL™ Series Combines

## 5.2.1 Attaching Header to an AGCO IDEAL™ Series Combine

### WARNING

**To avoid bodily injury or death from unexpected startup of 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. Pull lever (A) up to retract pins (B) at the bottom left and right sides of the feeder house.
3. Start the engine. For instructions, refer to the combine operator's manual.

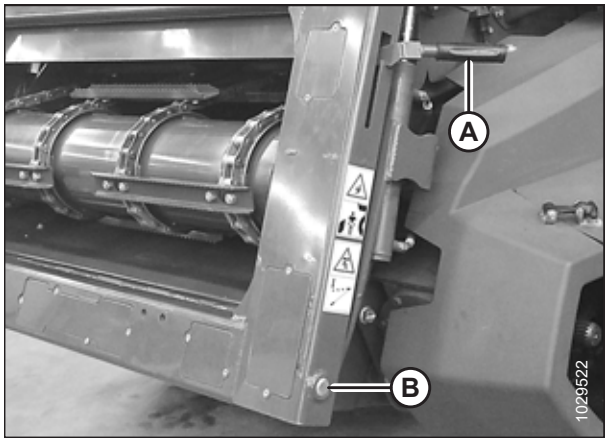


**Figure 5.11: Feeder House**

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.

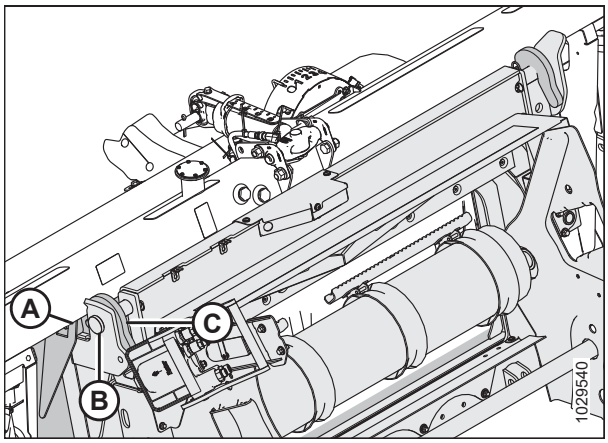


**Figure 5.12: Feeder House**

5. Raise 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).

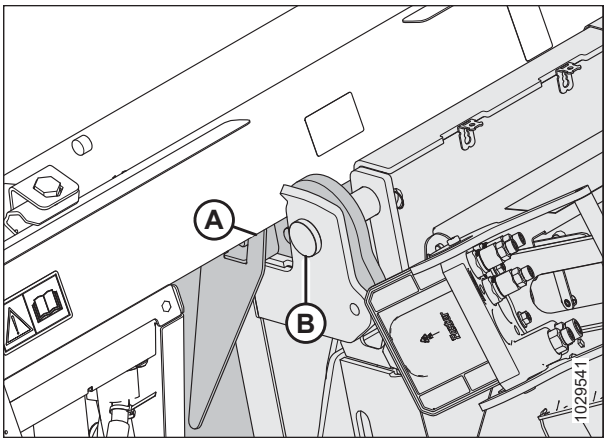


**Figure 5.13: Top Beam Resting on Feeder House**

6. Position bottom of feeder house so that locking pins (B) align with the holes in mount (C).
7. Push lever (A) down to extend locking pins (B) so they engage in mount (C).

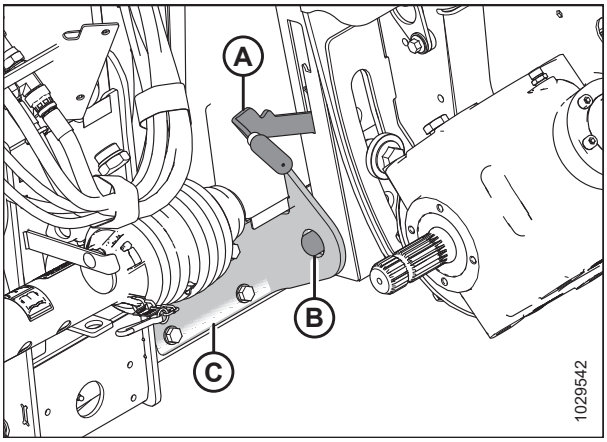


**Figure 5.14: Feeder House Locking Pins**

8. Rotate lock disc (A) upward and remove driveline (B) from the support.

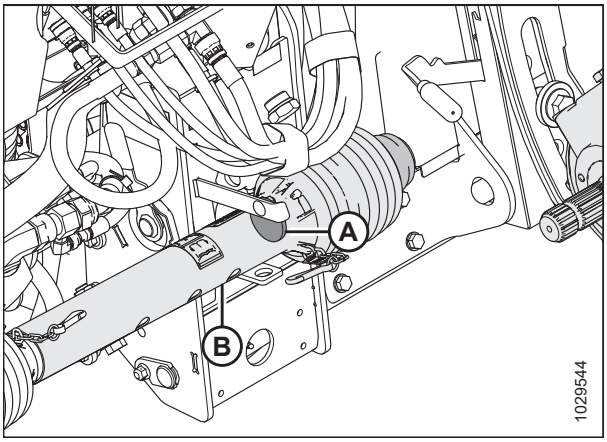


**Figure 5.15: Driveline in Storage Position**

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

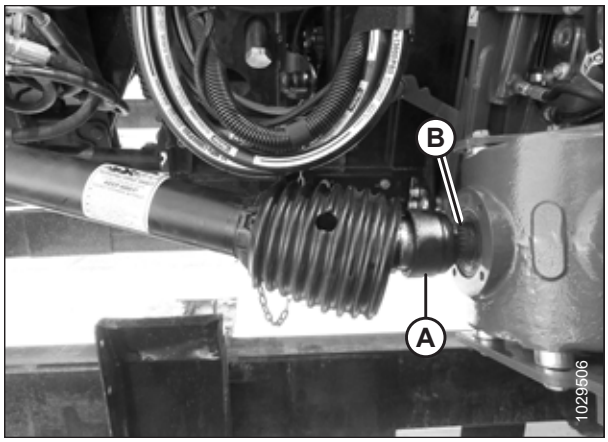


**Figure 5.16: Connecting Driveline to Combine**

10. Lower handle (A) to release multicoupler (B) from header.
11. Open cover (C) on the combine receptacle.
12. Push handle (D) to fully open position.
13. Clean mating surfaces of coupler and receptacle if necessary.

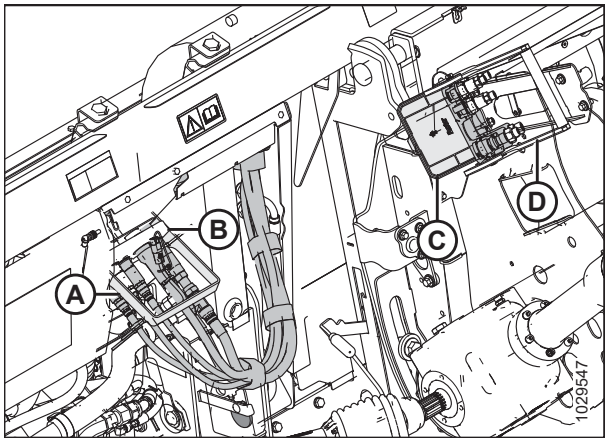


**Figure 5.17: Multicoupler Receptacles**

14. Position coupler (A) onto combine receptacle, and pull handle (B) to fully engage multicoupler into receptacle.

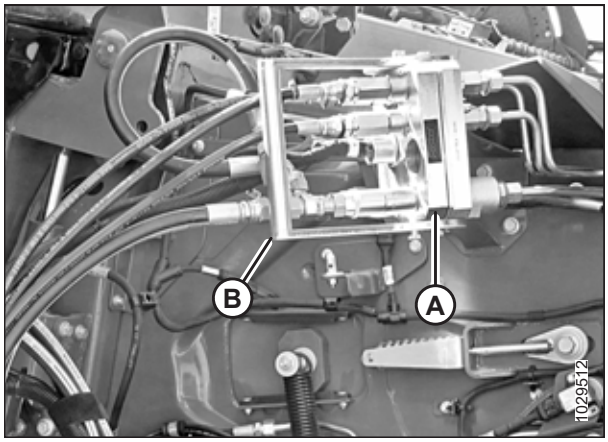


**Figure 5.18: Multicoupler**

# 5.3 Case IH Combines

## 5.3.1 Attaching Header to Case IH Combine

### WARNING

**To avoid injury or death from unexpected start-up of 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. On the combine, ensure lock handle (A) is positioned so hooks (B) can engage the float module.

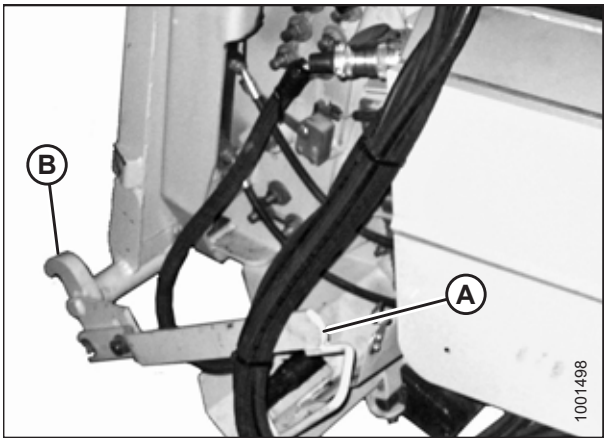


**Figure 5.19: Feeder House Locks**

### WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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

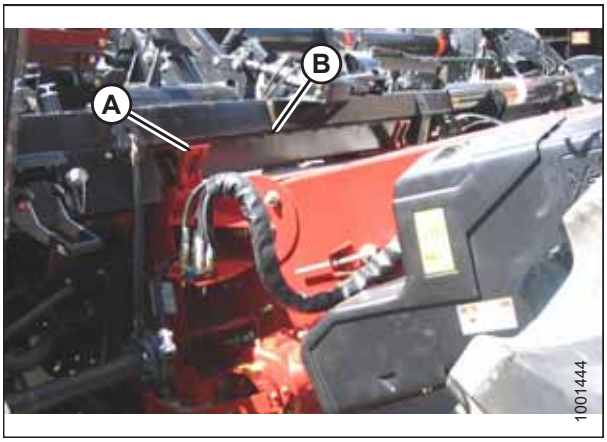


**Figure 5.20: Combine and Float Module**

6. On the left side of the feeder house, lift lever (A) on the float module and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
7. Push down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
8. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust lock. Retighten bolts.

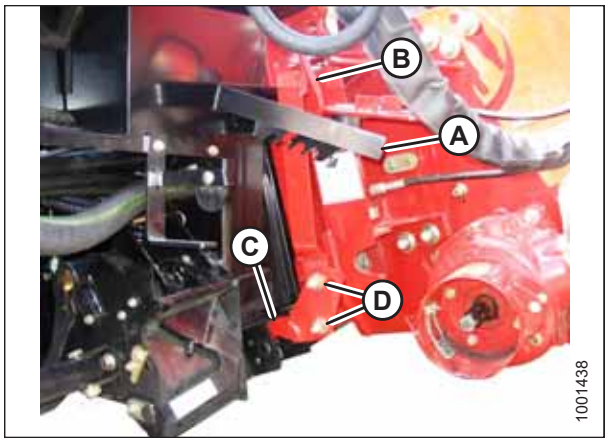


**Figure 5.21: Combine and Float Module**

9. Open the cover on receptacle (A) located on the left side of the float module.
10. Press lock button (B) and pull handle (C) to the fully-open position.
11. Clean the receptacle mating surfaces.

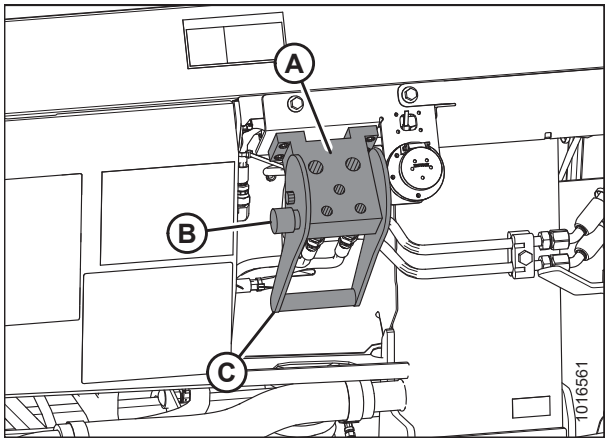


**Figure 5.22: Float Module Receptacle**

12. Remove hydraulic quick coupler (A) from the combine, and clean the mating surfaces.


**Figure 5.23: Combine Connectors**

13. Position the coupler onto coupler receptacle (A) and push handle (B) (not shown) to engage the multicoupler pins into the receptacle.
14. Push handle (B) to the closed position until lock button (C) snaps out.

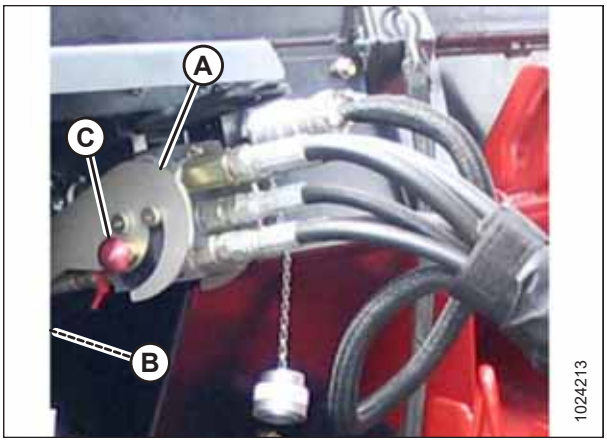


**Figure 5.24: Hydraulic Connection**

15. Remove the cover from electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

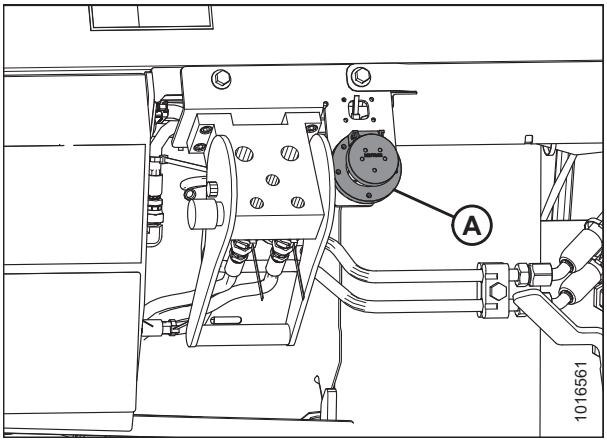


**Figure 5.25: Electrical Receptacle**

16. Remove electrical connector (A) from the storage cup on the combine and route it to the float module receptacle.


**Figure 5.26: Combine Connectors**

17. Align the lugs on connector (A) with the slots in receptacle (B), push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

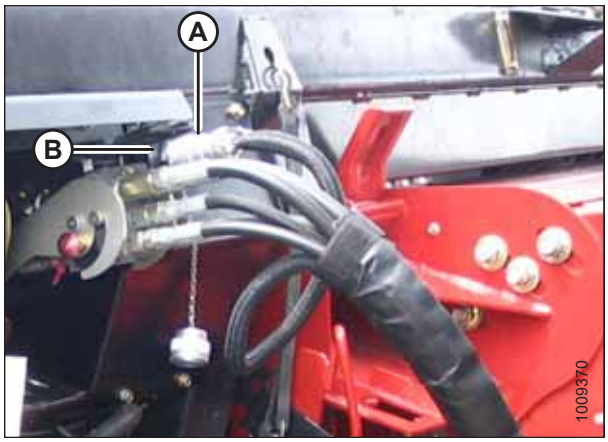


**Figure 5.27: Electrical Connection**

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

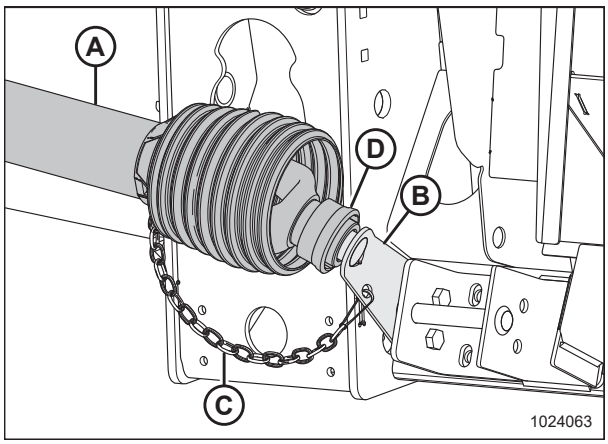


**Figure 5.28: Driveline in Storage Position**

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

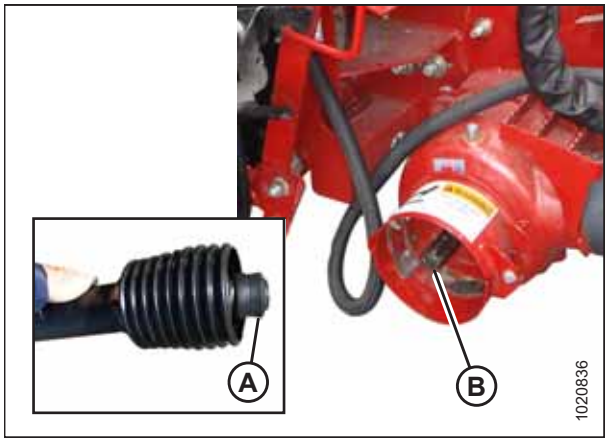


**Figure 5.29: Combine Output Shaft**

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

    **NOTE:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

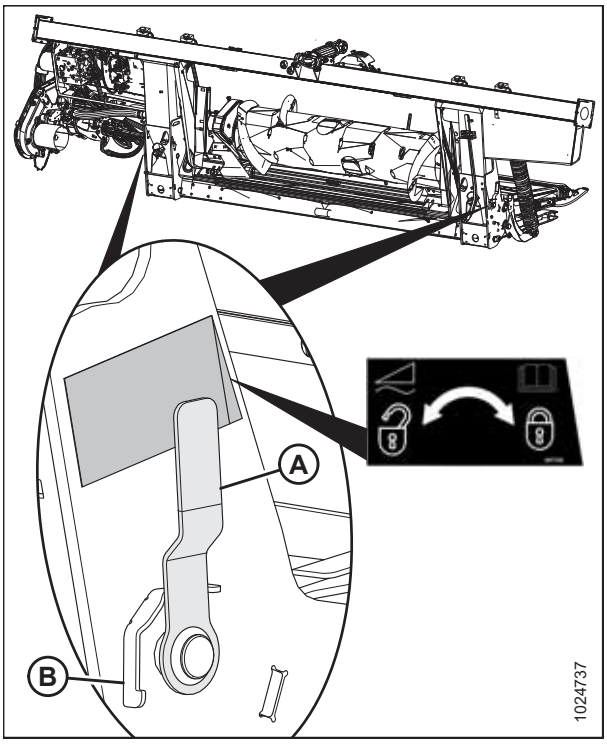


**Figure 5.30: Float Lock Handle**

# 5.4 CLAAS Combines

The FD2 Series FlexDraper® Header is compatible with CLAAS Lexion 500, 600, and 700 Series, Tucano, and 8000, 7000 series combines.

## 5.4.1 Attaching Header to CLAAS Combine

### WARNING

**To avoid injury or death from unexpected start-up of 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. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

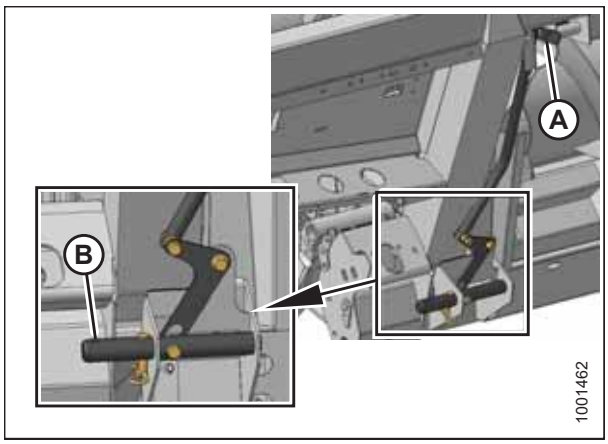


**Figure 5.31: Pins Retracted**

### WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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

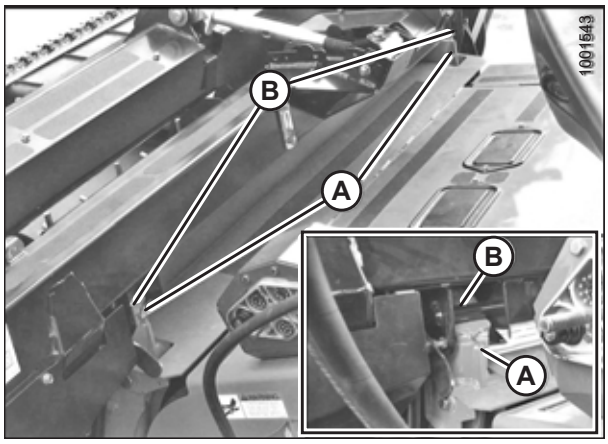


**Figure 5.32: Header on Combine**

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

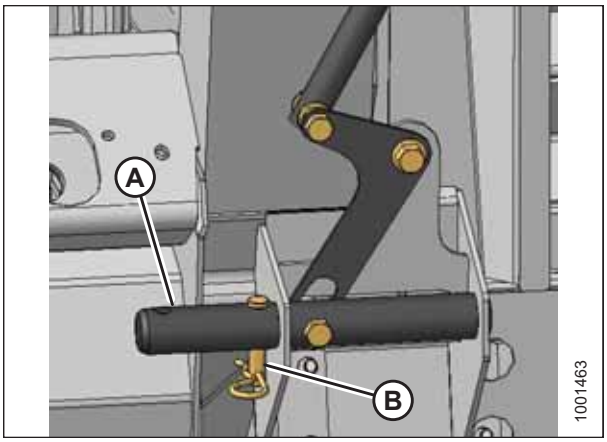


**Figure 5.33: Locking Pins**

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
8. Remove the blocks from under the cutterbar.

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

9. Start the engine. For instructions, refer to the combine operator's manual.
10. Lower the header fully.
11. Shut down the engine, and remove the key from the ignition.
12. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
13. Clean coupler (B) and receptacle.

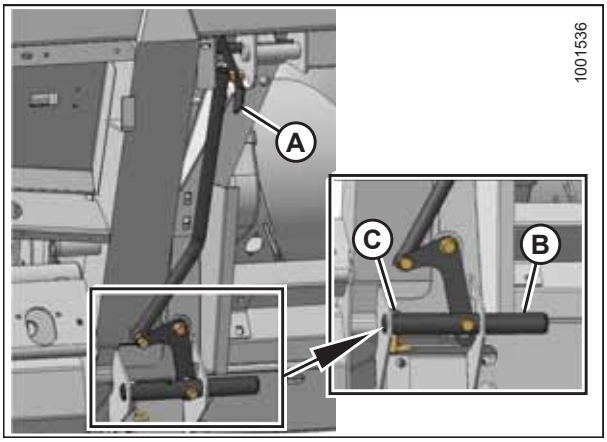


**Figure 5.34: Engaging Pins**

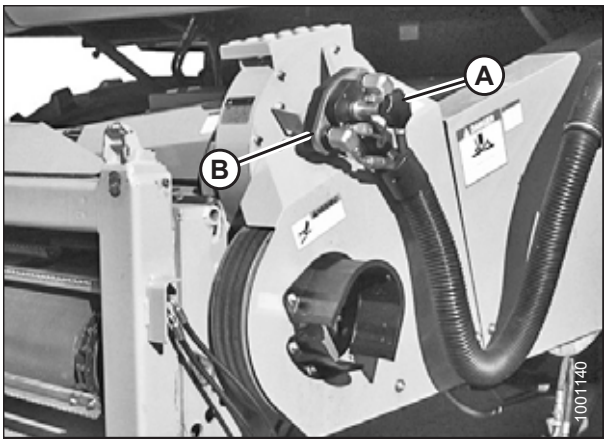


**Figure 5.35: Combine Coupler**

14. Remove float module receptacle cover (A).

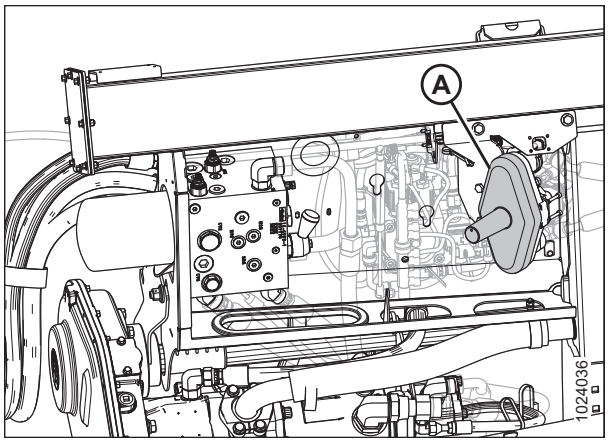


**Figure 5.36: Receptacle Cover**

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

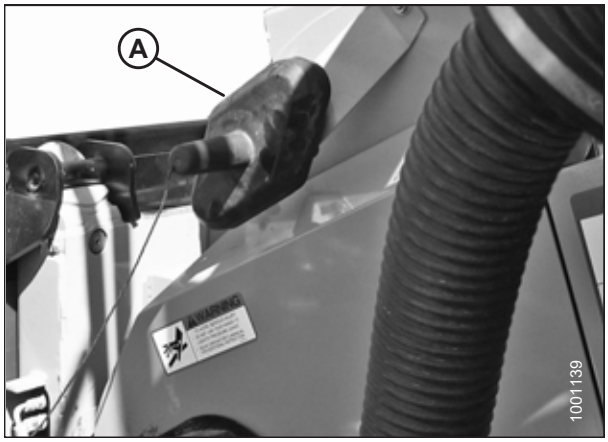


**Figure 5.37: Receptacle Cover**

16. Clean mating surface of coupler (A) and position onto float module receptacle (C).
17. Turn knob (B) to secure the coupler to the receptacle.

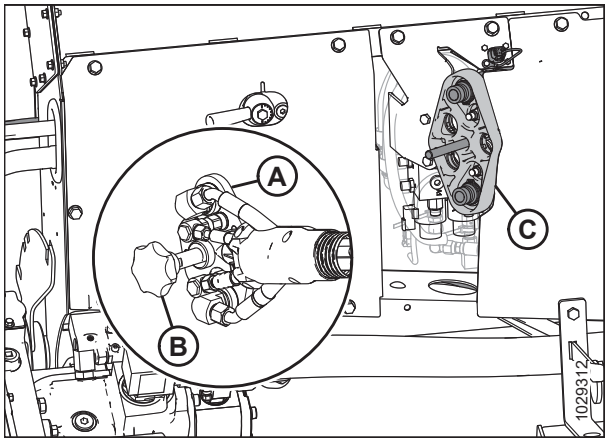


**Figure 5.38: Coupler**

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

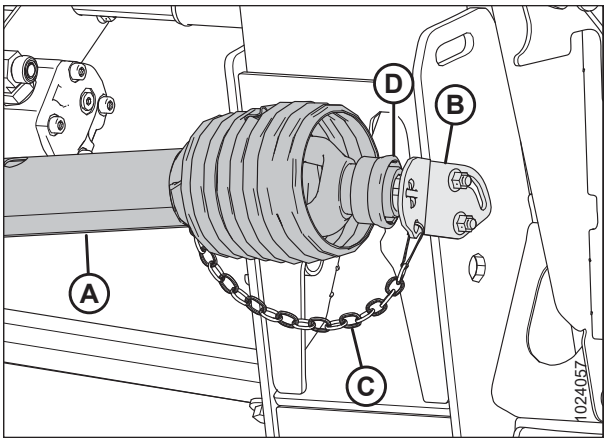


**Figure 5.39: Driveline**

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

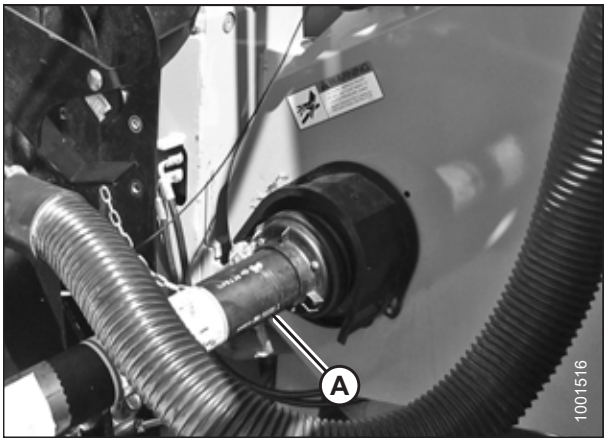


**Figure 5.40: Driveline and Output Shaft**

21. 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:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

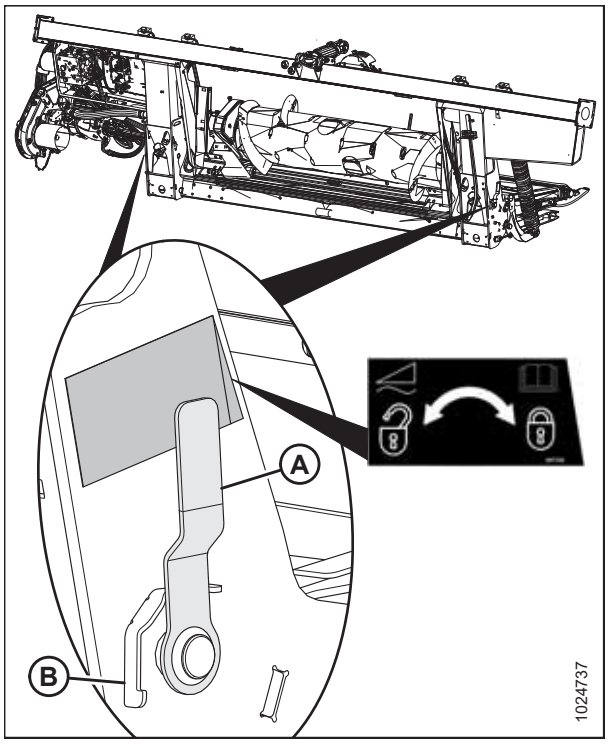


**Figure 5.41: Float Lock Handle**

## 5.4.2 Attaching Header to CLAAS 8000, 7000 Combine

### WARNING

**To avoid injury or death from unexpected start-up of 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. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

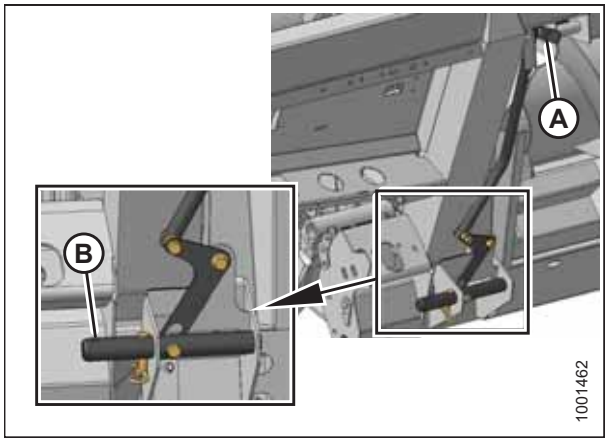


**Figure 5.42: Pins Retracted**

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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

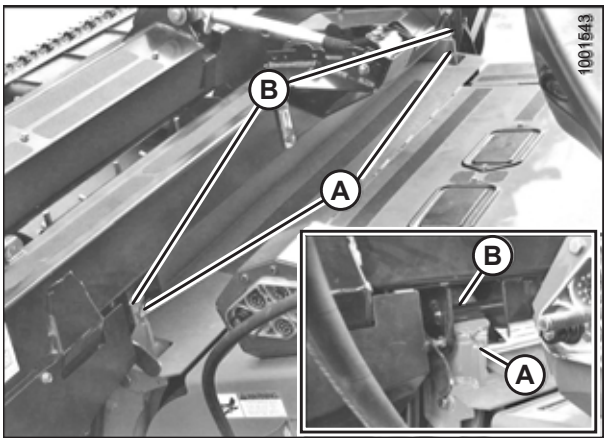


**Figure 5.43: Header on Combine**

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

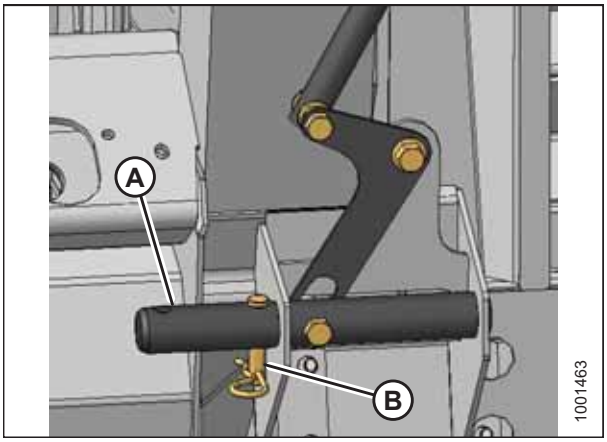


**Figure 5.44: Locking Pins**

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
8. Remove the blocks from under the cutterbar.

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

9. Start the engine. For instructions, refer to the combine operator's manual.
10. Lower the header fully.
11. Shut down the engine, and remove the key from the ignition.

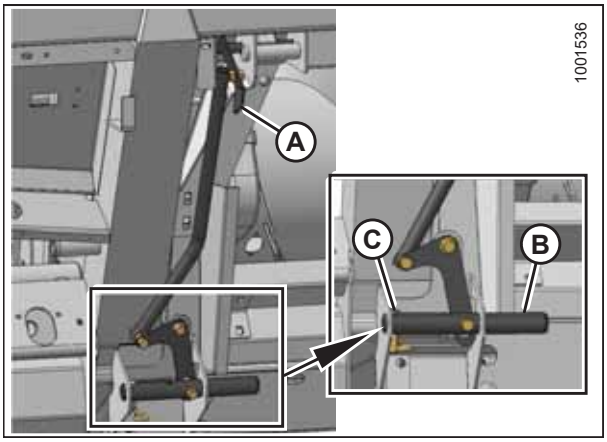


**Figure 5.45: Engaging Pins**

12. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
13. Clean coupler (B) and receptacle.

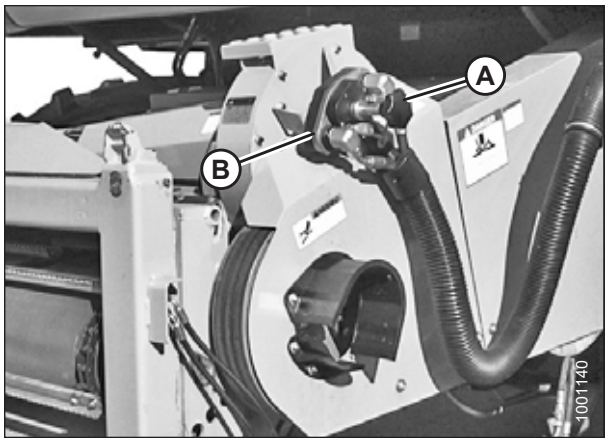


**Figure 5.46: Combine Coupler**

14. Remove float module receptacle cover (A).

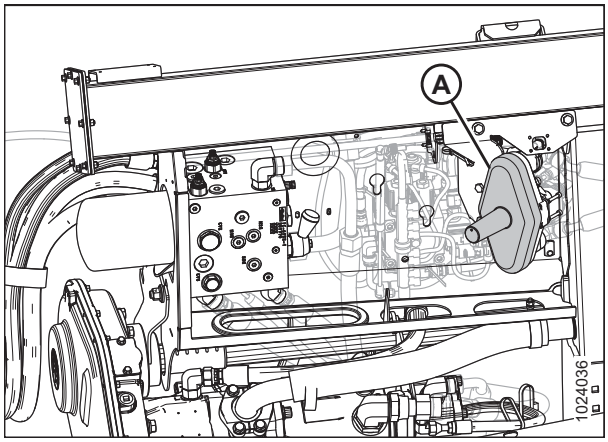


**Figure 5.47: Receptacle Cover**

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

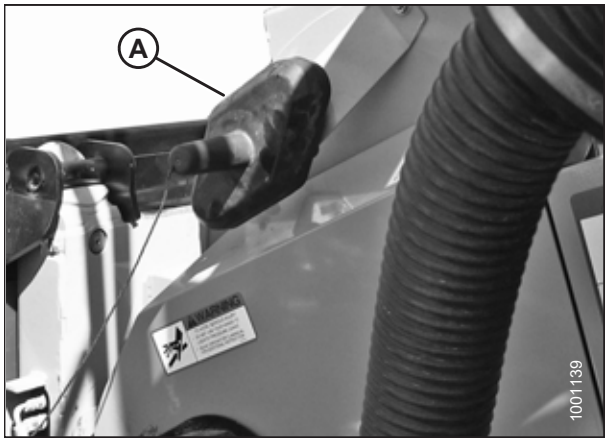


**Figure 5.48: Receptacle Cover**

16. Clean mating surface of coupler (A) and position onto float module receptacle (C).
17. Turn knob (B) to secure the coupler to the receptacle.

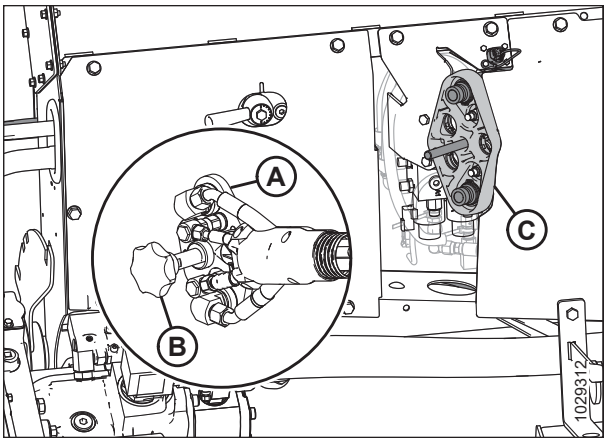


**Figure 5.49: Coupler**

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

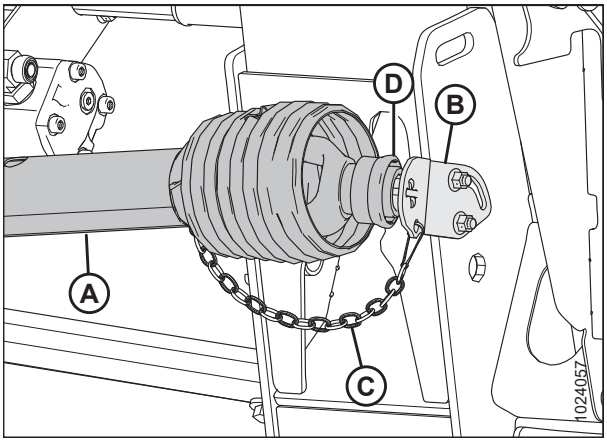


**Figure 5.50: Driveline**

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

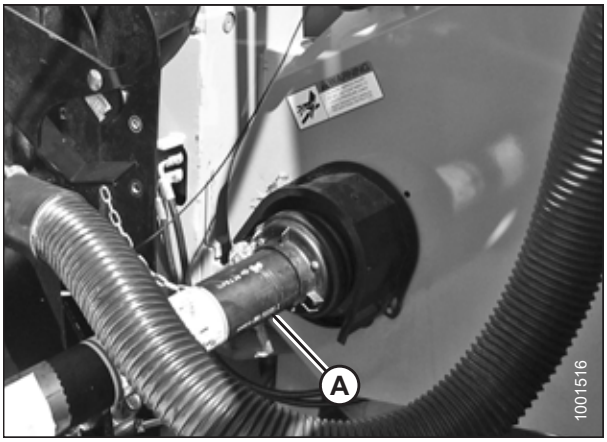


**Figure 5.51: Driveline and Output Shaft**

21. 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:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

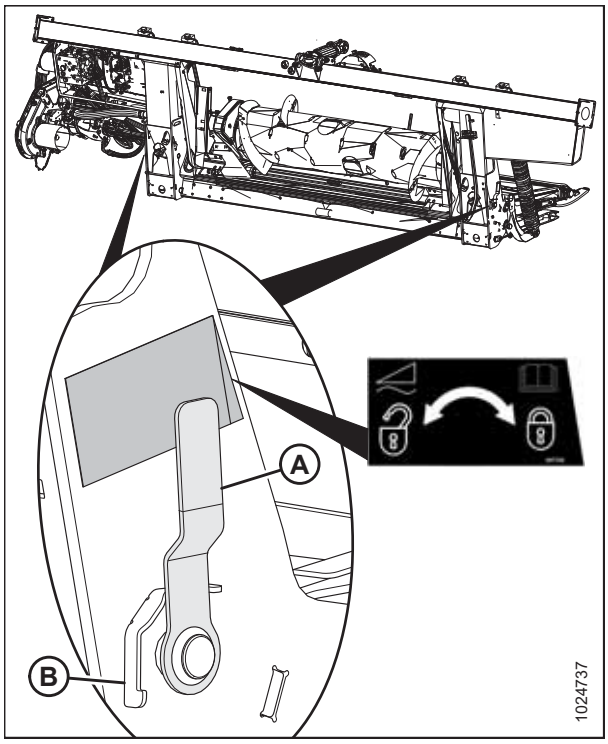


**Figure 5.52: Float Lock Handle**

## 5.4.3 Attaching Header to CLAAS Tucano Combine

### WARNING

**To avoid injury or death from unexpected start-up of 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. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

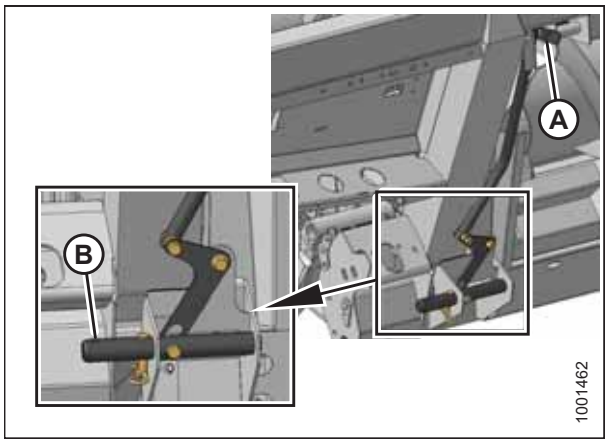


**Figure 5.53: Pins Retracted**

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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

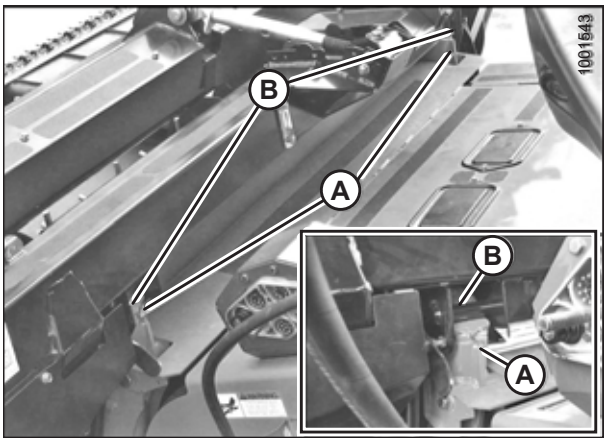


**Figure 5.54: Header on Combine**

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

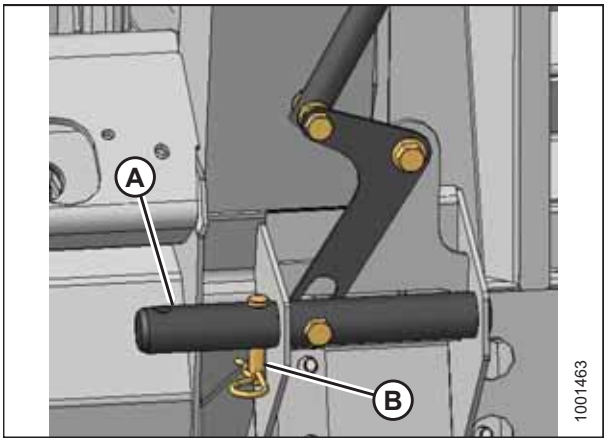


**Figure 5.55: Locking Pins**

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
8. Remove the blocks from under the cutterbar.

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

9. Start the engine. For instructions, refer to the combine operator's manual.
10. Lower the header fully.
11. Shut down the engine, and remove the key from the ignition.

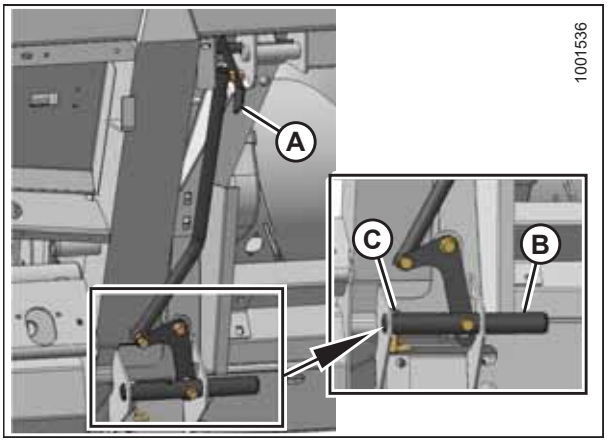


**Figure 5.56: Engaging Pins**

12. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
13. Clean coupler (B) and receptacle.

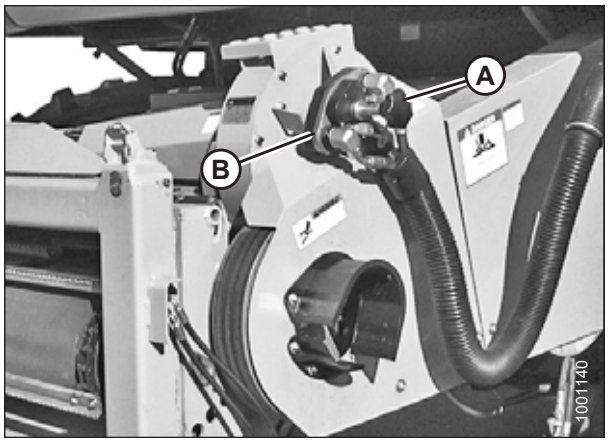


**Figure 5.57: Combine Coupler**

14. Remove float module receptacle cover (A).

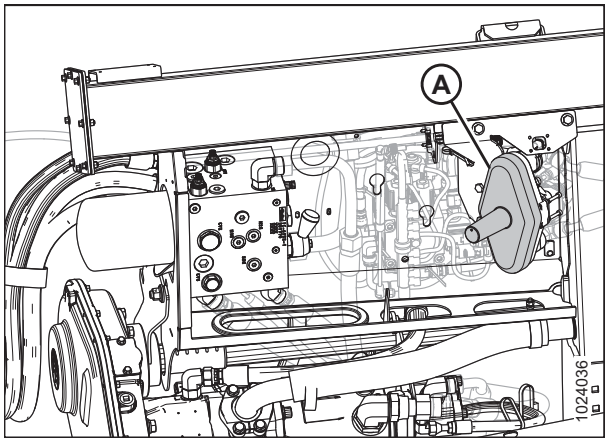


**Figure 5.58: Receptacle Cover**

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

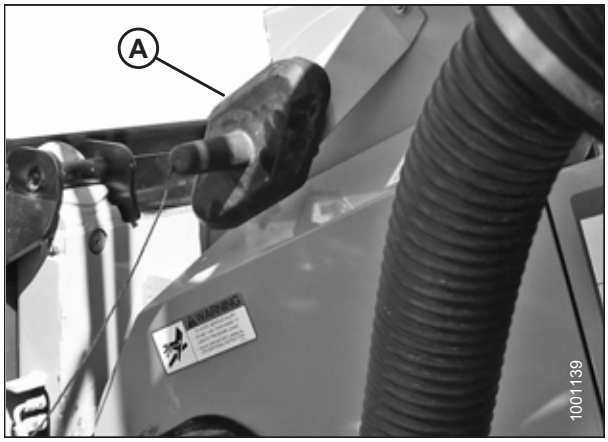


**Figure 5.59: Receptacle Cover**

16. Clean mating surface of coupler (A) and position onto float module receptacle (C).
17. Turn knob (B) to secure the coupler to the receptacle.

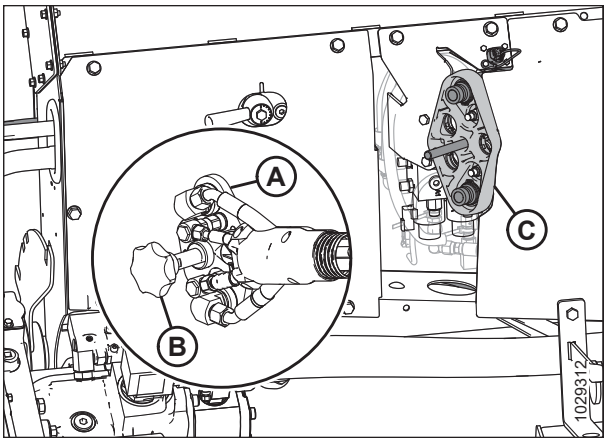


**Figure 5.60: Coupler**

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

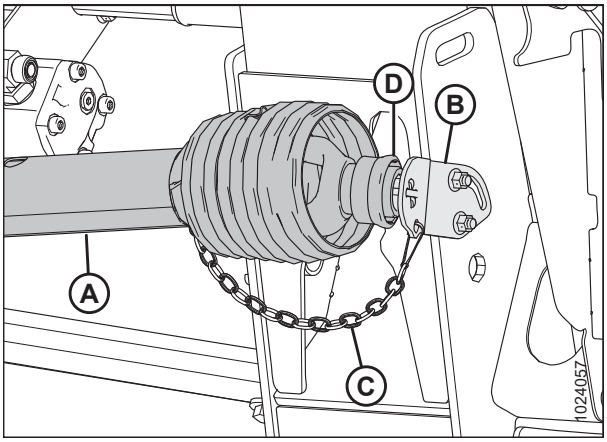


**Figure 5.61: Driveline**

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

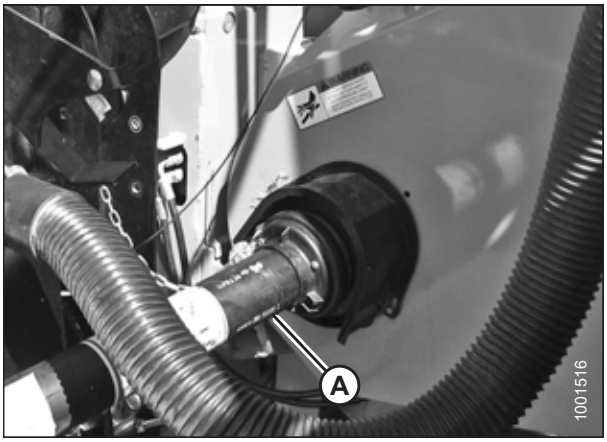


**Figure 5.62: Driveline and Output Shaft**

21. 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:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

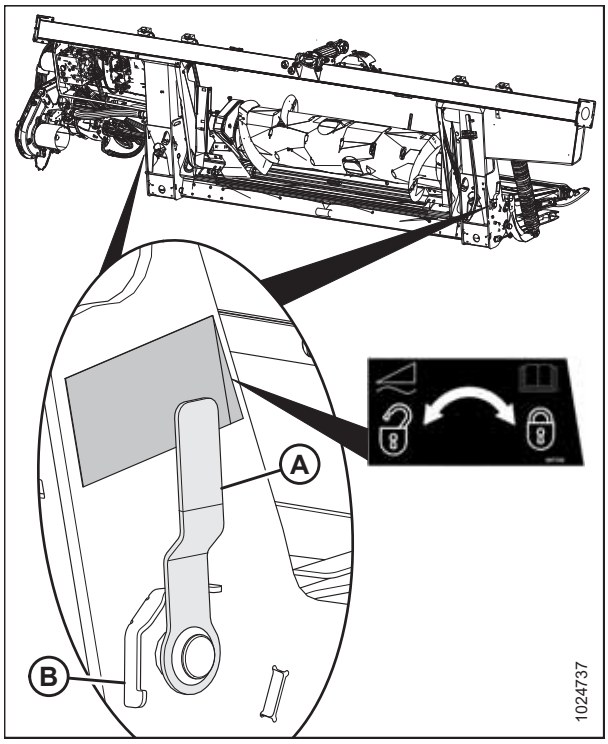


**Figure 5.63: Float Lock Handle**

# 5.5 John Deere Combines

The FD2 Series FlexDraper® Header is compatible with John Deere 60, 70, S, and T Series combines.

## 5.5.1 Attaching Header to John Deere Combine

### WARNING

**To avoid injury or death from unexpected start-up of 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. 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.

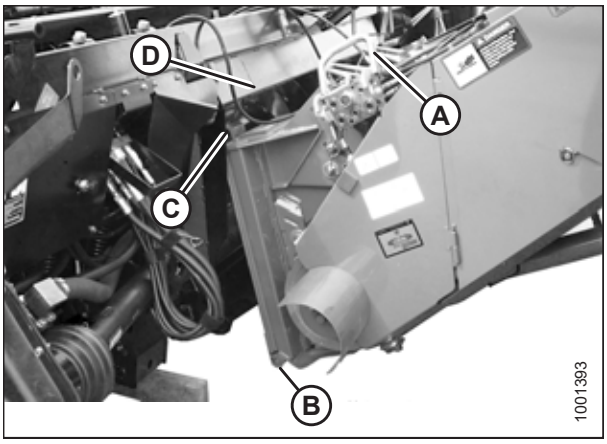


**Figure 5.64: Combine and Float Module**

### WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

3. Start the engine and slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
4. Raise the feeder house slightly to lift the header ensuring the feeder house saddle is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.
6. 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 to store.

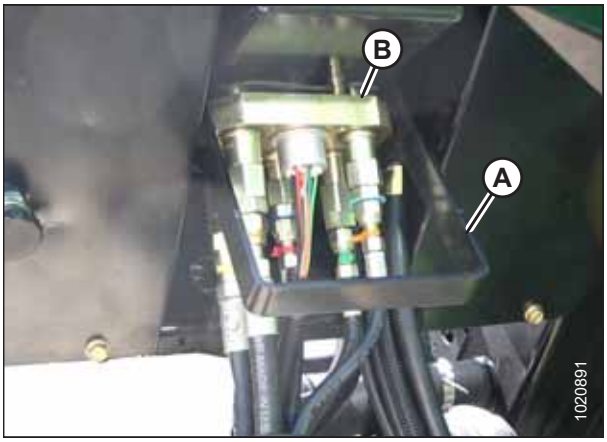


**Figure 5.65: Multicoupler Storage**

7. Position multicoupler (A) onto the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.
8. Pull handle (B) to a horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

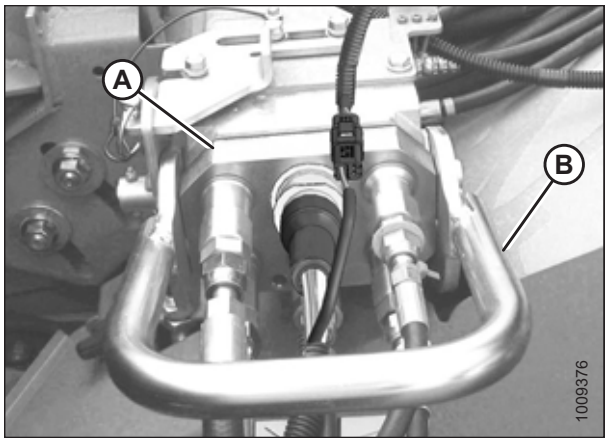


**Figure 5.66: Multicoupler**

9. 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.

10. Tighten bolts (B).

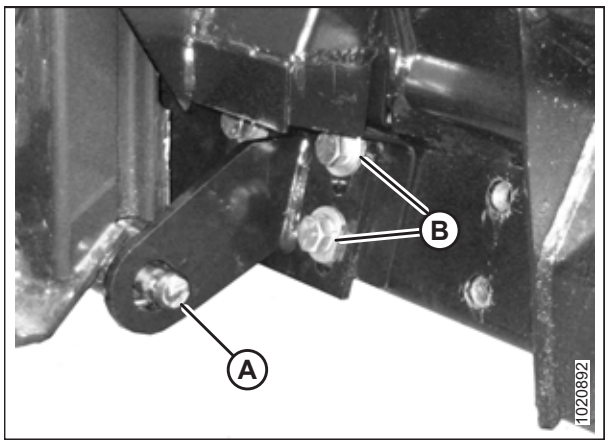


**Figure 5.67: Feeder House Pin**

11. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).
12. If the float module is equipped with the reel fore-aft/header tilt selector, connect harness (D) to combine connector (E).

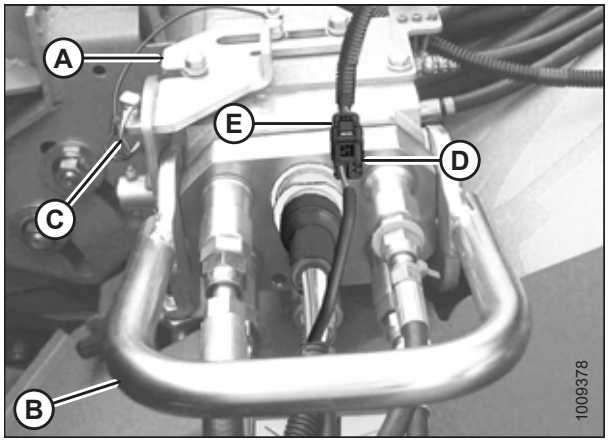


**Figure 5.68: Multicoupler**

13. Detach safety chain (C) from support bracket (B).
14. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

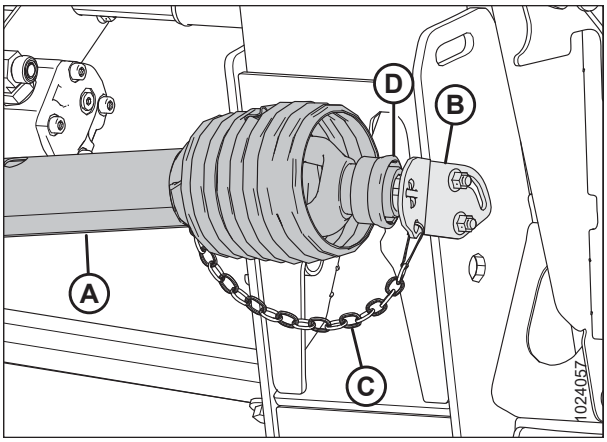


**Figure 5.69: Driveline**

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

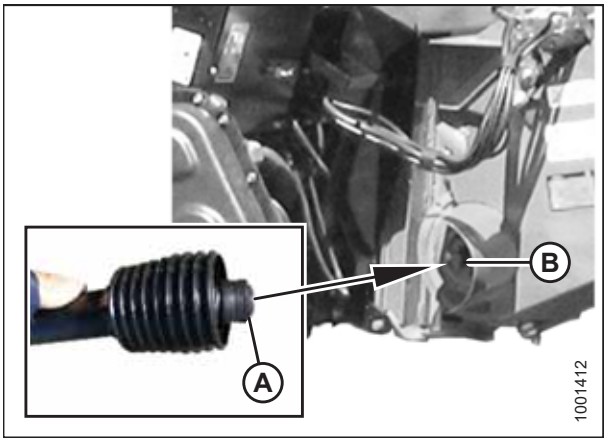


**Figure 5.70: Driveline**

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:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

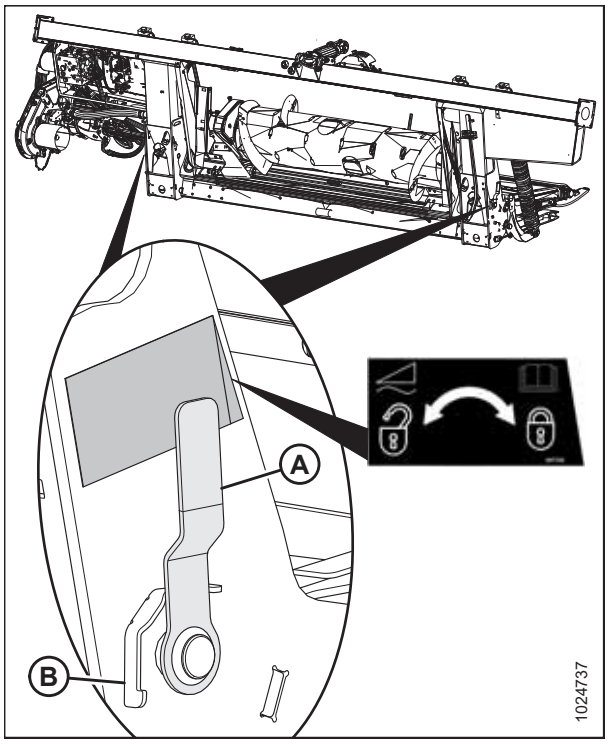


**Figure 5.71: Float Lock Handle**

## 5.6 New Holland Combines

The FD2 Series FlexDraper® Header is compatible with the following New Holland combines:

**Table 5.3 Header and Combine Compatibility**

| 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 |

### 5.6.1 Attaching Header to New Holland CR/CX Combine

**WARNING**

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

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

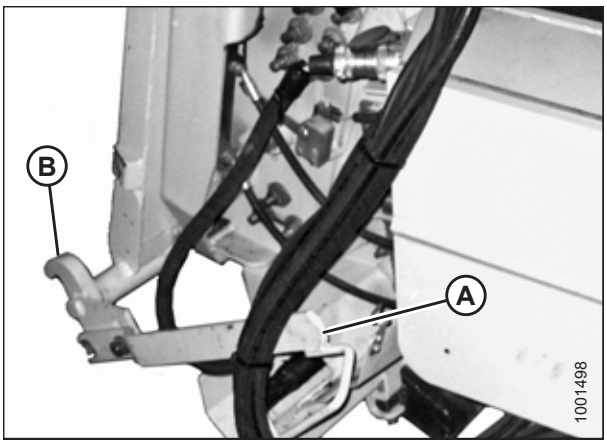


**Figure 5.72: Feeder House Locks**

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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

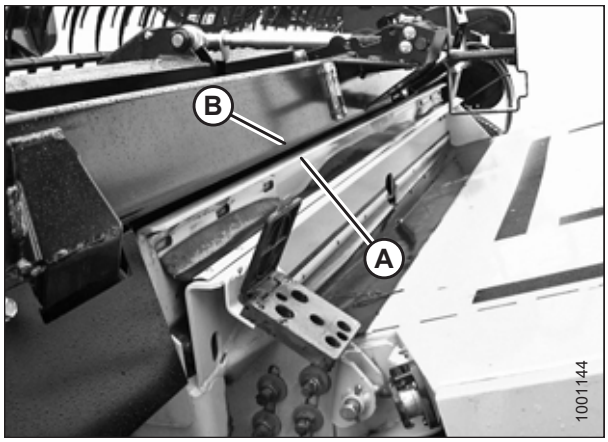


**Figure 5.73: Header on Combine**

6. 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.
7. Push down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
8. If the lock does not fully engage pin (D) on the float module when lever (A) and handle (B) are engaged, loosen bolts (E) and adjust lock (C). Retighten bolts.

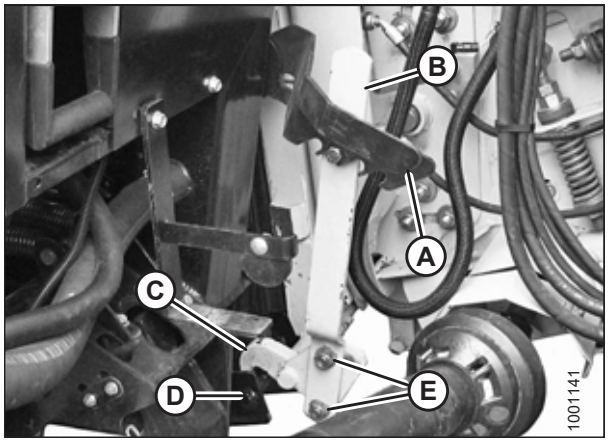


**Figure 5.74: Feeder House Locks**

9. Open the cover on receptacle (A) located on the left side of the float module.
10. Push in lock button (B) and pull handle (C) to the fully open position.
11. Clean the receptacle mating surfaces.

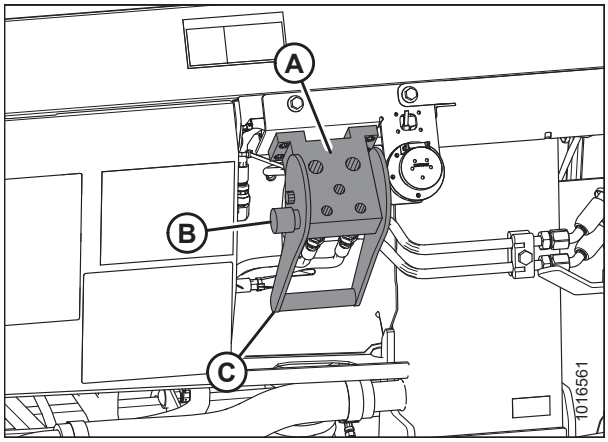


**Figure 5.75: Float Module Receptacle**

12. Remove hydraulic quick coupler (A) from the storage plate on the combine, and clean the mating surface of the coupler.

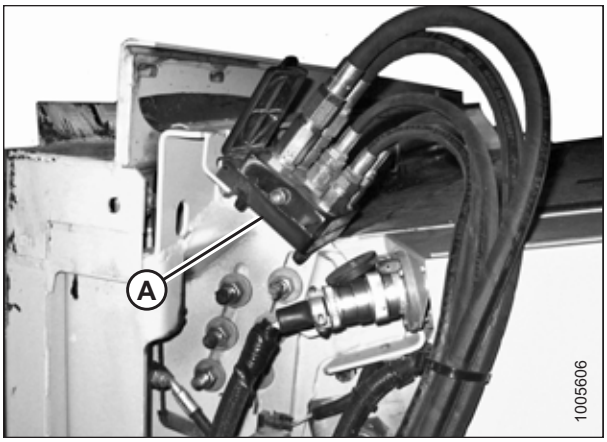


**Figure 5.76: Combine Coupler**

13. Position coupler (A) onto the float module receptacle, and push handle (B) to engage the pins into the receptacle.
14. Push handle (B) to closed position until lock button (C) snaps out.
15. Remove the cover on the float module electrical receptacle.
16. Remove connector (D) from the combine.
17. Align lugs on connector (D) with the slots in the float module receptacle, and push the connector onto the receptacle. Turn the collar on the connector to lock it in place.

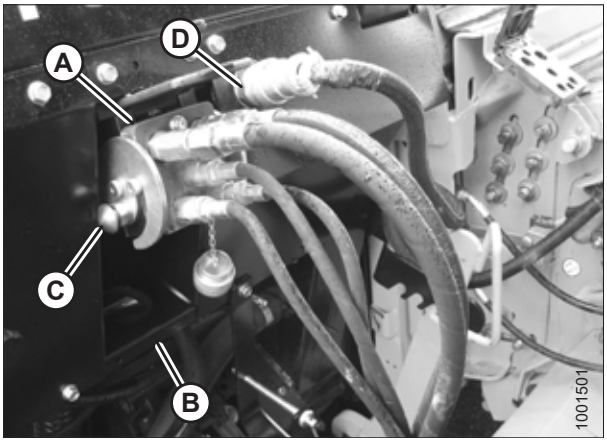


**Figure 5.77: Connections**

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

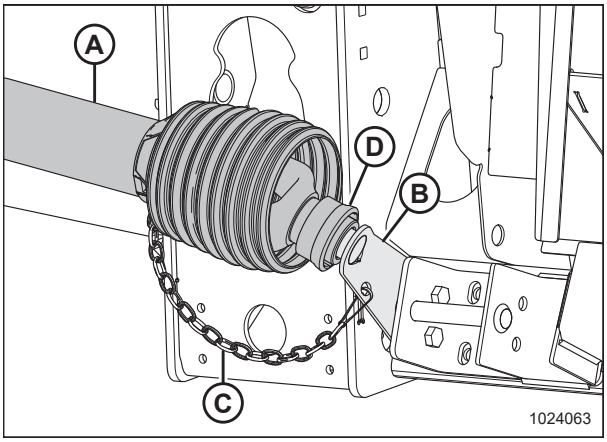


**Figure 5.78: Driveline in Storage Position**

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

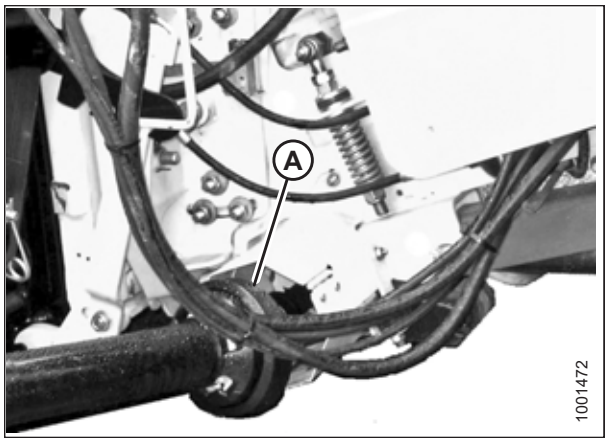


**Figure 5.79: Driveline and Output Shaft**

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

    **NOTE:**

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

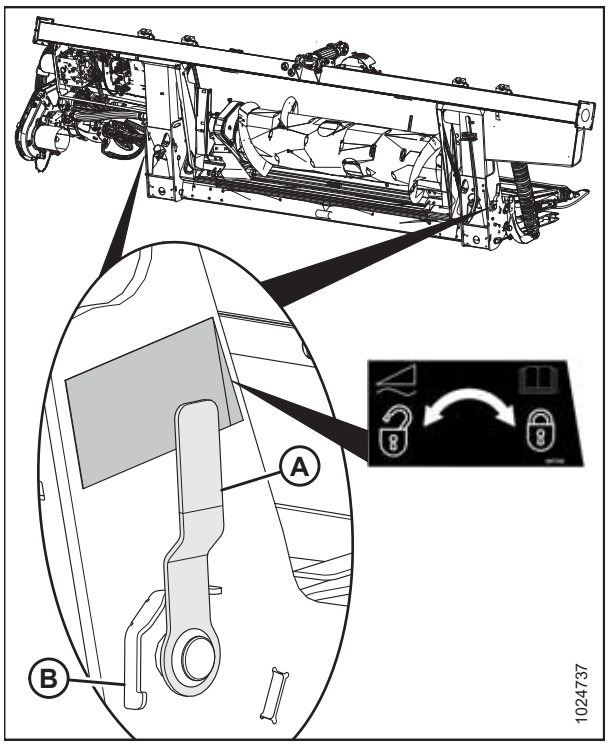


**Figure 5.80: Float Lock Handle**

# 5.7 Completing Header Assembly

## 5.7.1 Removing Shipping Supports

The removable supports are painted yellow. Refer to illustrations and remove the remaining supports as follows:

**NOTE:**

Unless otherwise specified, discard supports as well as all shipping material and hardware.

1. If necessary, move the tilt cylinder in small increments to take the load off bolts (A).
2. Remove two bolts (A) and remove strap (B) from both sides of center frame.

   **NOTE:**

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

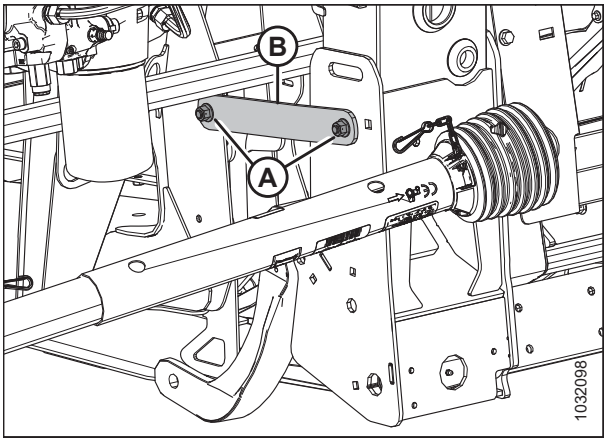


**Figure 5.81: Strap on Center Frame**

3. Remove five bolts (A) that secure shipping brace (B) to the top of the header and float module, and remove shipping brace (B).

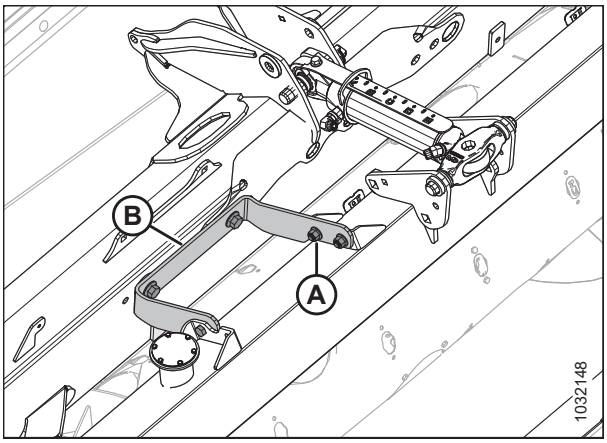


**Figure 5.82: Shipping Brace**

## 5.7.2 Crop Dividers

Crop dividers are used to help divide the crop when harvesting. They are removable to allow installation of vertical knives and to decrease transport width.

### *Opening Header Endshields*

1. Push release lever (B) using access hole (A) located on the backside of the header endshield to unlock the shield.

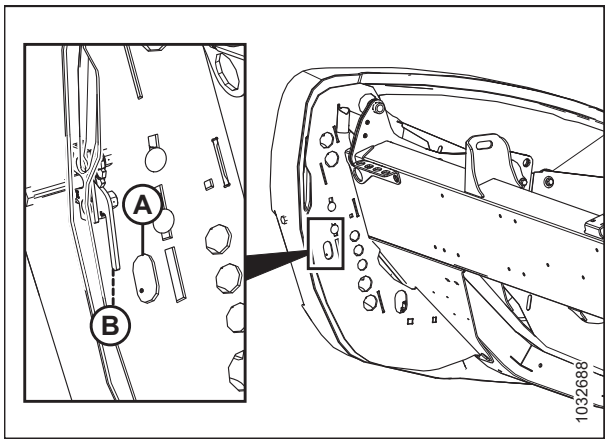


**Figure 5.83: Left Header Endshield**

2. Pull header endshield (A) open. The header endshield is retained by a tab (B) and will open in direction (C).

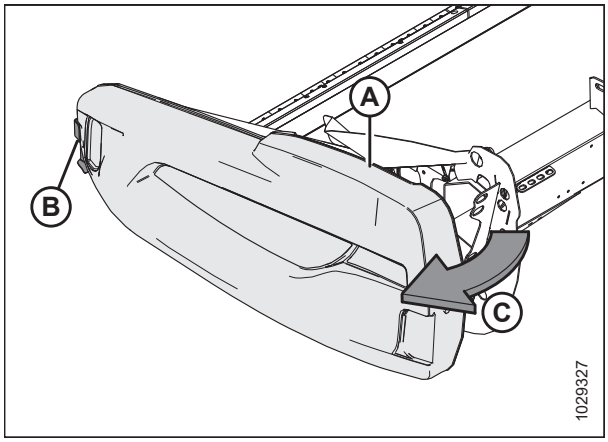


**Figure 5.84: Left Header Endshield**

3. If additional clearance is required, pull the header endshield free of tab (A) and swing shield toward the rear of the header.
4. Engage safety latch (B) on hinge arm (C) to secure the shield in fully open position.

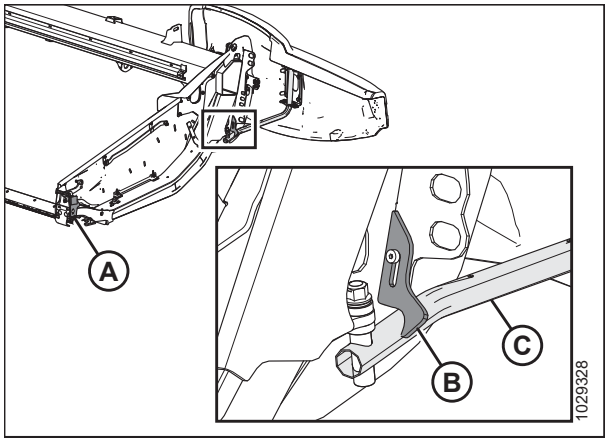


**Figure 5.85: Left Header Endshield**

## *Installing Crop Dividers*

1. Open the left end shield. Refer to *Opening Header Endshields, page 84*.
2. Remove hairpin (A) securing tool to bracket on left endsheet.
3. Remove tool (B), and reinstall hairpin to bracket.
4. Retrieve crop dividers, previously removed from the shipping location.

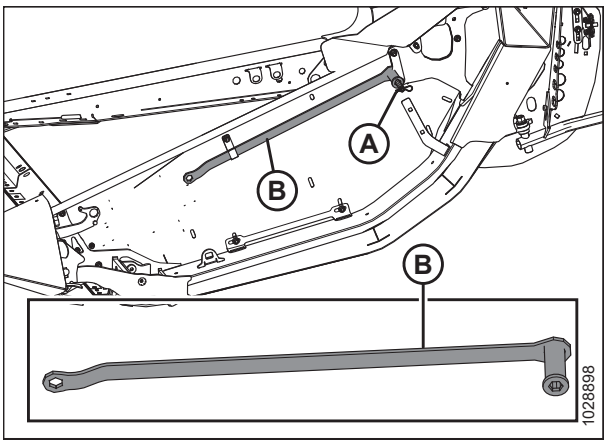


**Figure 5.86: Left Endsheet**

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

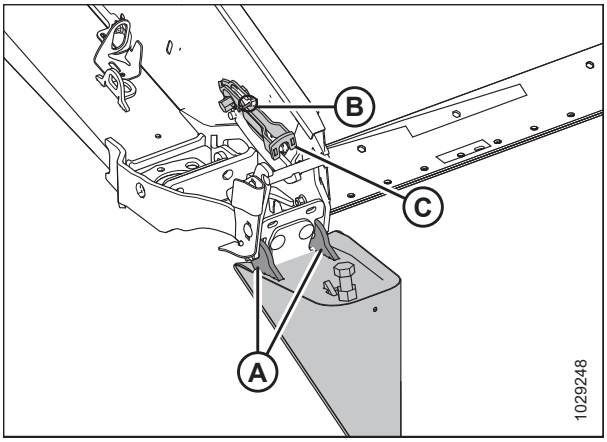


**Figure 5.87: Crop Divider**

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

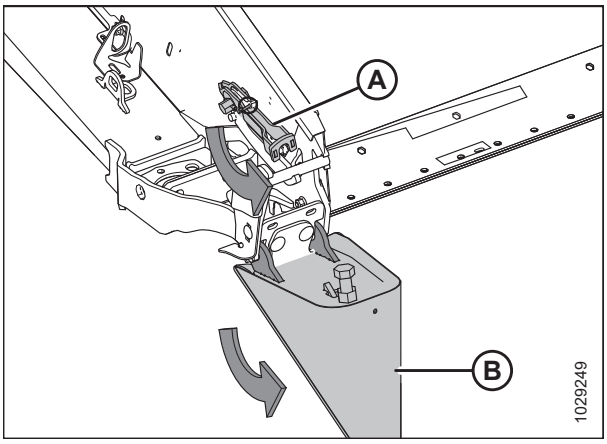


**Figure 5.88: Crop Divider**

8. Engage latch (A) to crop divider bolt (B), and secure with lynch pin (C).
9. Attach tool (stored on left endsheet) to latch locking bolt (D) and rotate **COUNTER CLOCKWISE** to lock latch (B).
10. To close latch, torque hex shaft (D) to 40–54 Nm (30–40 lbf·ft).
11. Tighten bolt (B) to increase torque to close latch or back off bolt to decrease torque to close latch.

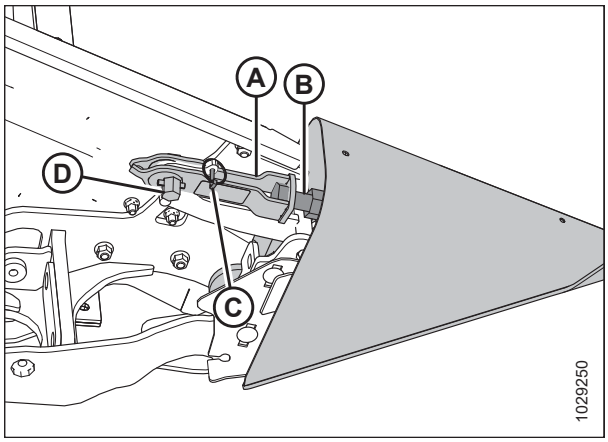


**Figure 5.89: Crop Divider**

12. Ensure there is contact between plate (A) and guide (B).
13. Return wrench to the left end panel.
14. Close the left end shield.

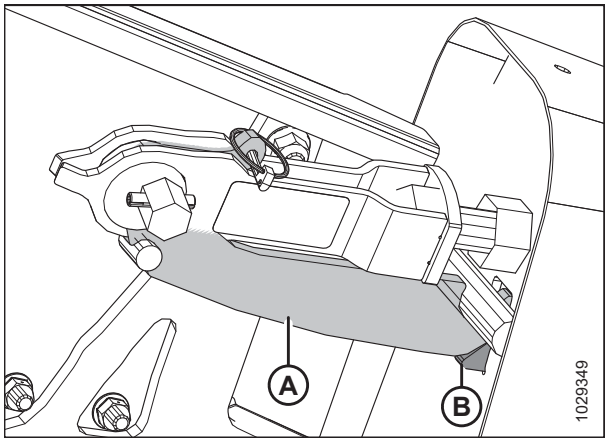


**Figure 5.90: Crop Divider's Latch**

**NOTE:**

Watch for contact between front support (A) and the back of the crop divider. If there is to much contact the front support may bend. There should be a gap of 10 mm from the end panel and the front support to allow it to expand.

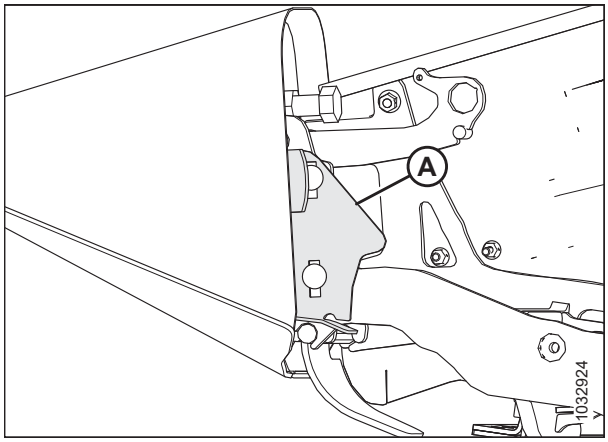


**Figure 5.91: Front Support**

## *Installing Crop Divider Rods*

1. Undo lynch pin (A) securing divider rods (B) to the header endsheet, and remove divider rods from shipping location.
2. Reinstall lynch pin (A).

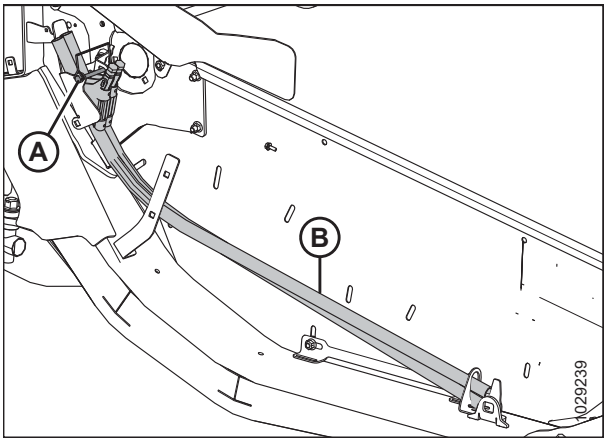


**Figure 5.92: Divider Rods in Shipping Storage at Right Header Endsheet**

3. Position crop divider rod (A) on tip of crop divider as shown and tighten bolt (B).
4. Repeat procedure at opposite end of header.

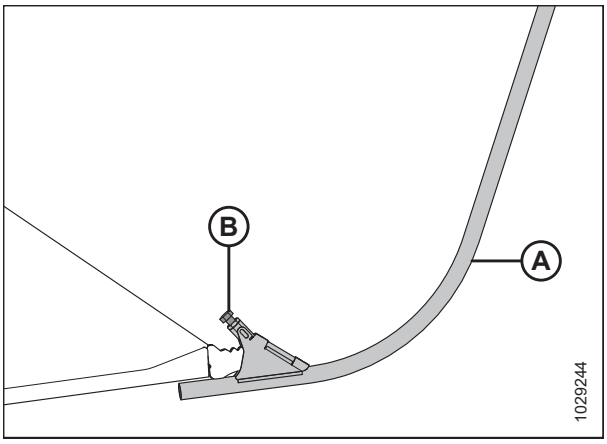


**Figure 5.93: Divider Rod on Crop Divider**

## *Closing Header Endshields*

1. Disengage lock (A) to allow header endshield (B) to move.
2. Rotate header endshield toward the front of the header.

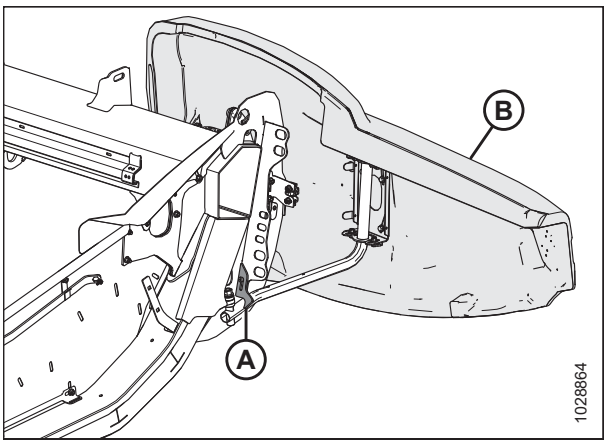


**Figure 5.94: Left Header Endshield**

3. While closing, ensure header endshield (A) does not contact the top of endsheet (B). If adjustment is required, refer to *6.19 Checking and Adjusting Header Endshields, page 140*.

   **IMPORTANT:**

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

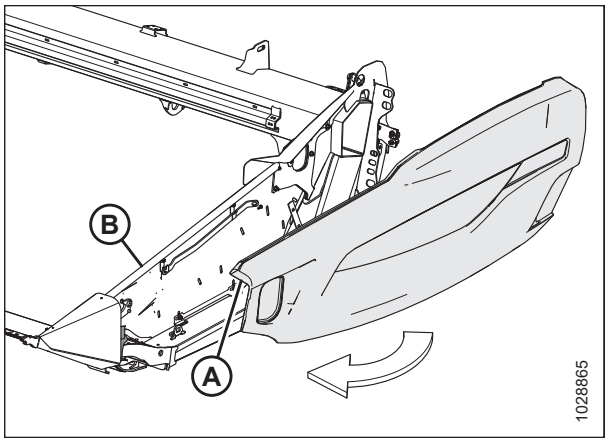


**Figure 5.95: Left Header Endshield**

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 closed position. Engage two-stage latch (C) with a firm push.

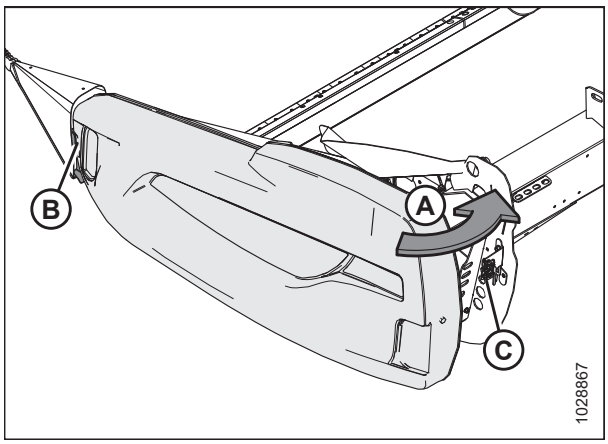


**Figure 5.96: Left Header Endshield**

**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 during operation.

**NOTE:**

The header endshield is transparent in the illustration to show the latch.

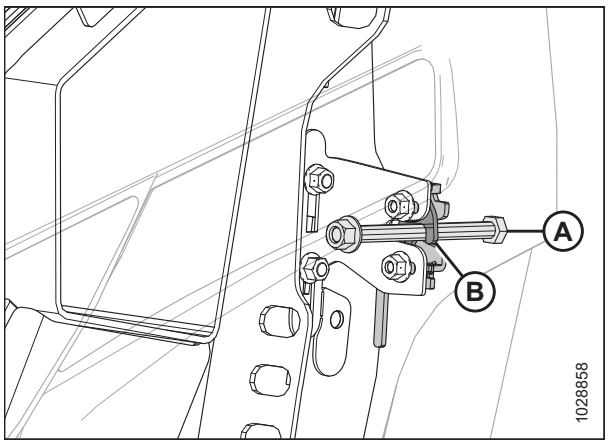


**Figure 5.97: Two-Stage Latch**

# Chapter 6: Performing Predelivery Checks

The following checks will ensure your machine provides maximum performance. If adjustments are necessary, follow the procedures in this chapter.

## WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

**IMPORTANT:**

To avoid machine damage, check that no shipping material has fallen into the machine.

1. Perform the final checks as listed on the **Predelivery Checklist** (yellow sheet attached to this instruction – *Predelivery Checklist, page 339*) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the Checklist. The completed Checklist should be retained by either the Operator or the Dealer.

## 6.1 Recording Model and Serial Number

Record the machine serial numbers on the Predelivery Checklist.

Header Model: _____

Serial Number: _____

Year: _____

The header's serial number plate (A) is located on the back of the header, beside the right endsheet.

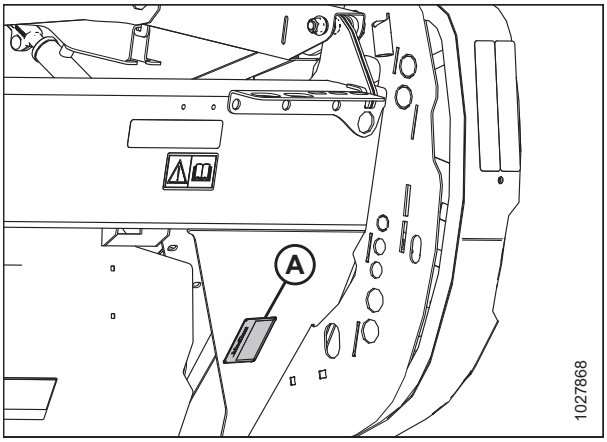


**Figure 6.1: Header Serial Number Plate Location**

**FM200 Float Module for Combine**

Serial Number: _____

Year: _____

The float module's serial number plate (A) is located on the top left side of the float module.

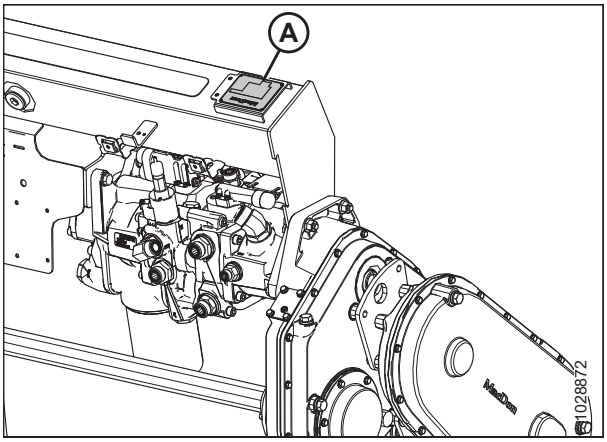


**Figure 6.2: Float Module Serial Number Plate Location**

**EasyMove™ Transport Option**

Serial Number: _____

Year: _____

The EasyMove™ transport's serial number plate (A) is located on the right axle assembly.

**NOTE:**

The transport is an option and may not be installed on this machine.

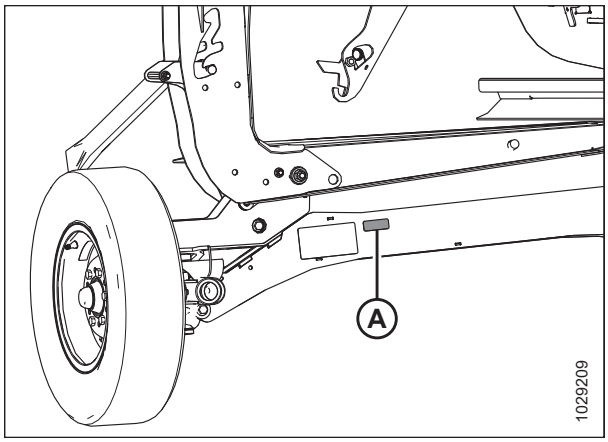


**Figure 6.3: EasyMove™ Transport Option**

## 6.2 Checking Tire Pressure – Stabilizer Wheels, or Transport with Stabilizer Wheels (Option)

Check tire inflation pressure. If necessary, inflate tires according to the following table:

**Table 6.1 Tire Inflation Pressure**

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

**IMPORTANT:**

Do **NOT** exceed maximum pressure specified on tire sidewall.

## 6.3 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels

Perform the following procedure to ensure that transport and stabilizer wheel bolts are correctly torqued:

1. Check that wheel bolt torque is 110–120 Nm (80–90 lbf·ft).
2. If necessary, adjust torque. Refer to bolt tightening sequence illustration at right.

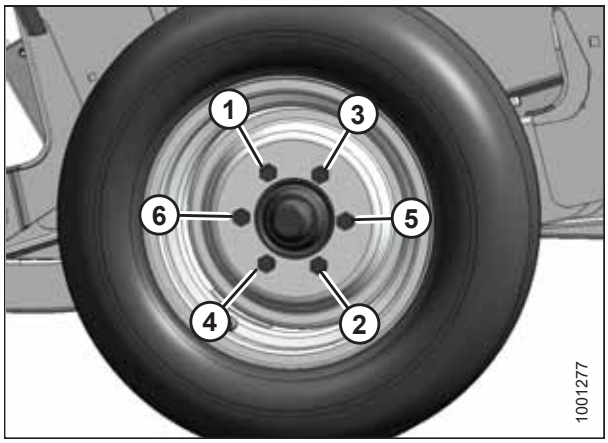


**Figure 6.4: Sequence for Tightening Bolts**

## 6.4 Checking Oil Level in Knife Drive Box

Single-knife headers have one knife-drive box and double-knife headers have two knife-drive boxes. To access the knife drive box(es), the endshield(s) must be fully opened.

### DANGER

**To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Push release lever (B) using access hole (A) located on the backside of the endshield to unlock the shield.

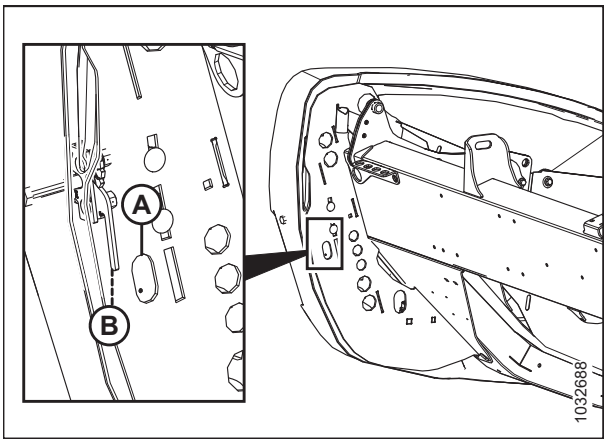


**Figure 6.5: Left Endshield**

3. Pull endshield (A) open. The endshield is retained by a tab (B) and will open in direction (C).

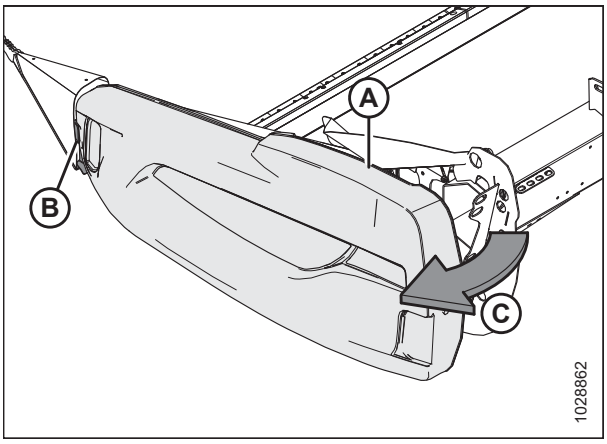


**Figure 6.6: Left Endshield**

4. Pull the endshield free of tab (A) and swing the shield toward the rear of the header.
5. Engage safety latch (B) on hinge arm (C) to secure the shield in fully open position.

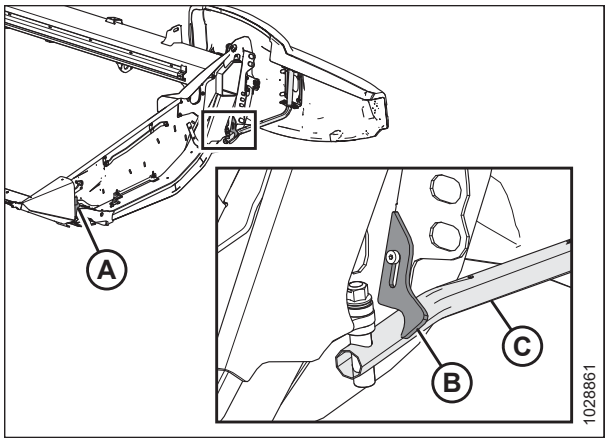


**Figure 6.7: Left Endshield**

6. Remove oil level dipstick (A) and check the oil level. The oil level must be within range (B).

   **NOTE:**

   Check the oil level with the top of the knife drive box horizontal and with oil level dipstick (A) screwed in.

7. Reinstall oil level dipstick (A), and tighten to 23 Nm (17 lbf·ft).

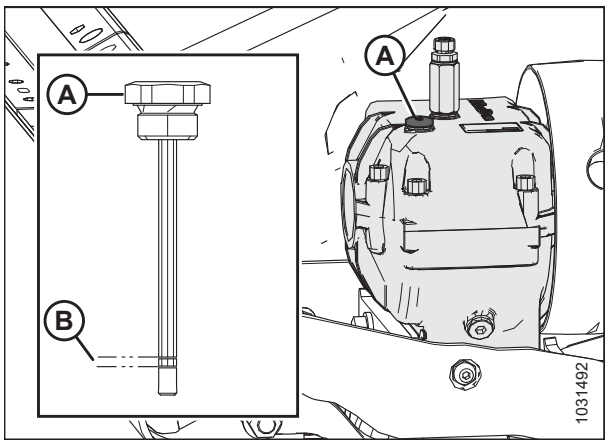


**Figure 6.8: Knife Drive Box**

## 6.5 Checking Oil Level in Header Drive Main Gearbox

### WARNING

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

1. Lower the cutterbar to the ground and ensure main gearbox (B) is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) from the main gearbox and check that the oil level is up to the bottom of the hole.
4. Reinstall oil level plug (A).

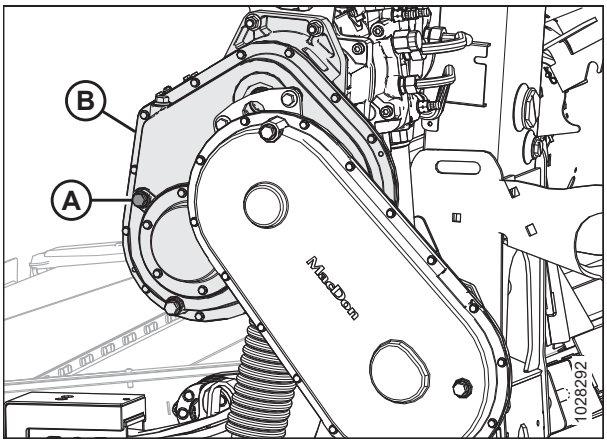


**Figure 6.9: Header Drive Main Gearbox**

## 6.6 Checking Oil Level in Header Drive Completion Gearbox

### WARNING

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

1. Lower the header to the ground and ensure the completion gearbox (B) is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) from the completion gearbox and check that the oil level is up to the bottom of the hole.
4. Reinstall oil level plug (A).

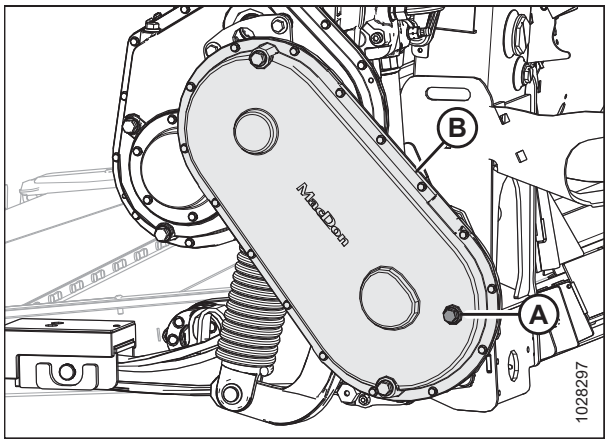


**Figure 6.10: Header Drive Completion Gearbox**

# 6.7 Checking Oil Level in Hydraulic Reservoir

**NOTE:**

Check the level when the oil is cold.

1. Check the oil level using lower sight (A) and upper sight (B) with the cutterbar just touching the ground and with the center-link retracted.
2. Ensure the oil is at the appropriate level for the terrain as follows:
   - **Hilly terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
   - **Normal terrain:** Maintain level so lower sight (A) is full, and upper sight (B) is empty.

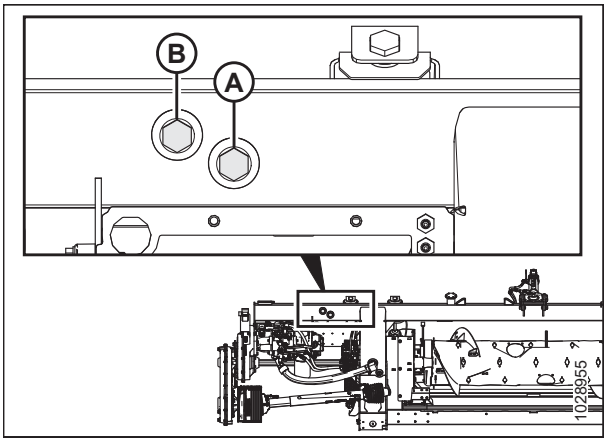


**Figure 6.11: Oil Level Sight Glasses**

## 6.8 Guard Identification

There are two different guard options available, pointed knife guards and short knife guards. Determine which guards are installed on the header and follow the correct checking procedure.

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.

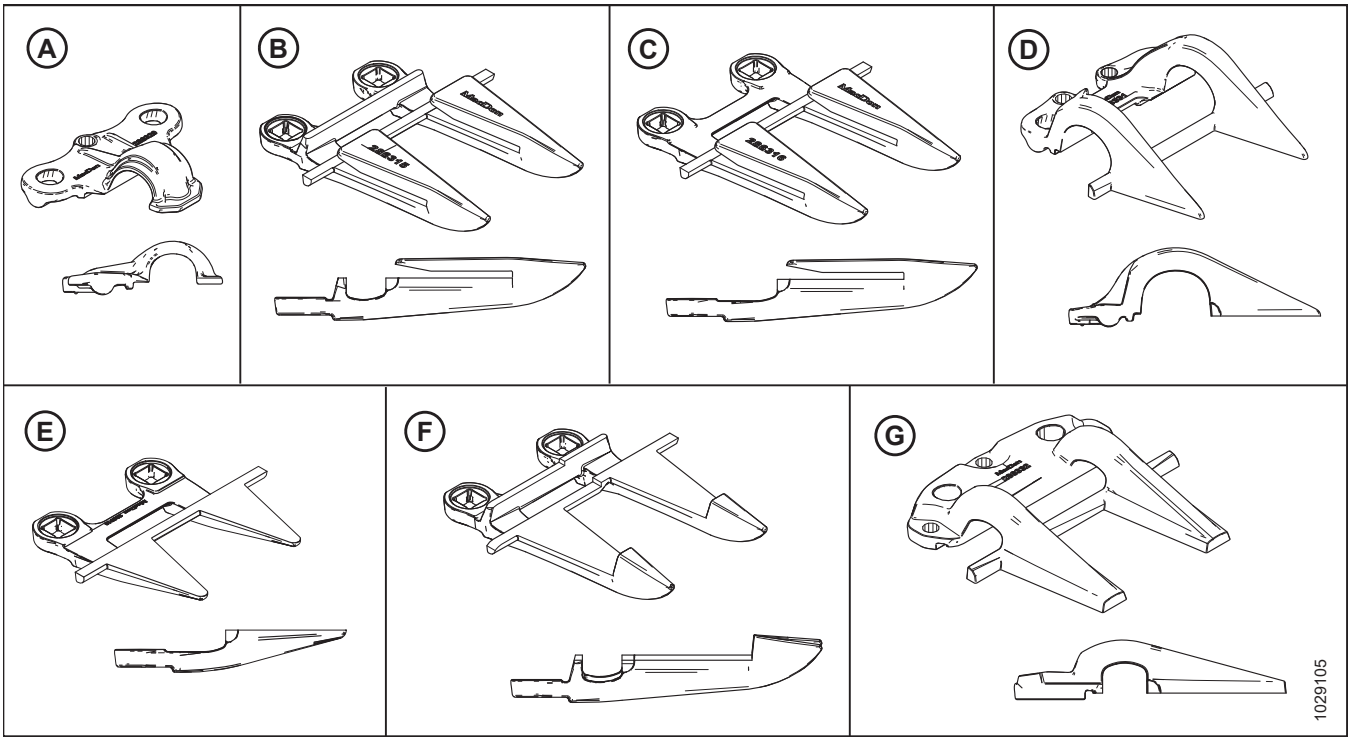


**Figure 6.12: Guard and Hold-Down Types used in Pointed Knife Guard Configurations**

**A - Pointed Hold-Down (MD #286329)**
**B - Pointed Knife Guard (MD #286315)**
**C - Pointed End Knife Guard (without Wear Bar) (MD #286316)[1]**
**D - Short Knife Hold-Down (MD #286331)**
**E - Short Knife Guard (without Wear Bar) (MD #286319)[2]**
**F - Pointed Center Knife Guard (MD #286317)[3]**
**G - Pointed Center Hold-Down (MD #286332)**

Follow these procedures for checking and adjusting pointed knife guards:

- *6.8.1 Checking Hold-Down – Pointed Knife Guards, page 99*
- *6.8.2 Adjusting Hold-Down – Pointed Knife Guards, page 100*
- *6.8.3 Checking Center Hold-Down – Pointed Knife Guards, page 100*
- *6.8.4 Adjusting Center Hold-Down – Pointed Knife Guards, page 101*

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

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

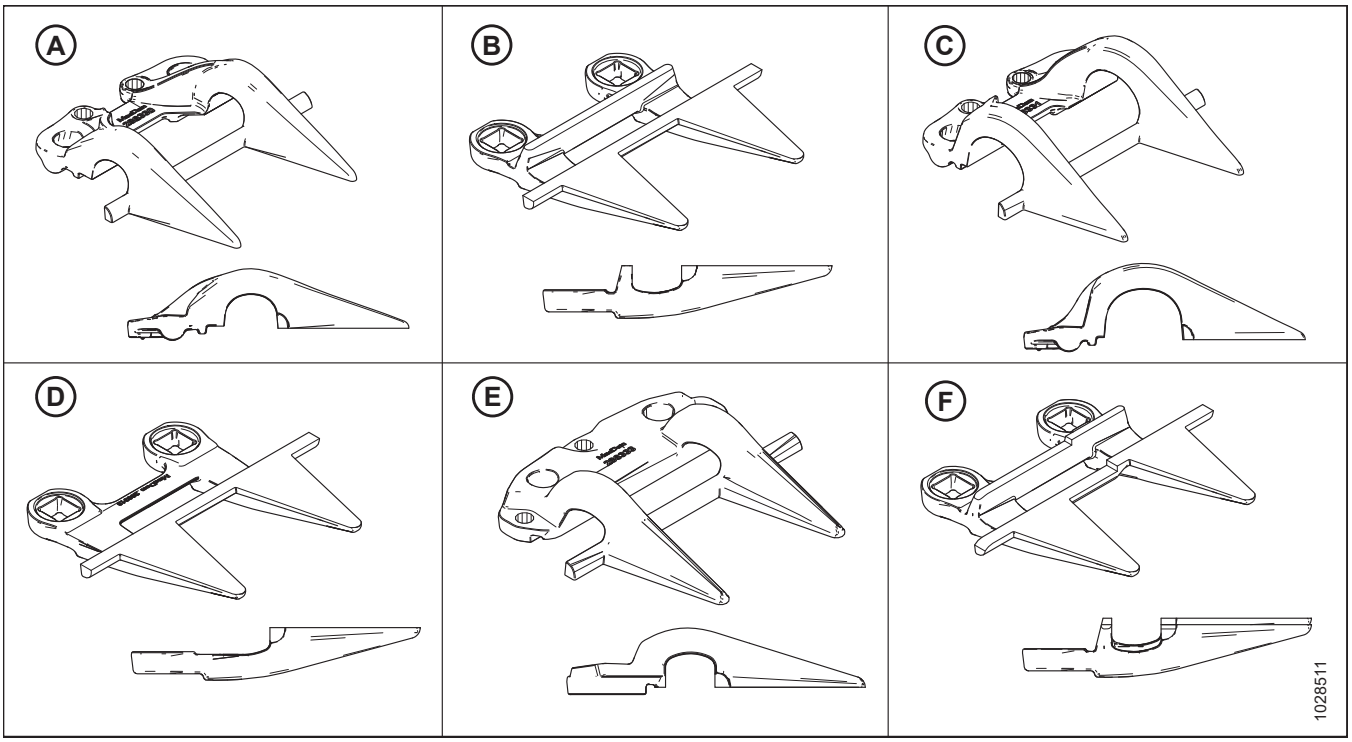


**Figure 6.13: Guard and Hold-Down Types used in Short Knife Guard Configurations**

**A - Short Knife Hold-Down (MD #286330)**
**B - Short Knife Guard (MD #286318)**
**C -Short Knife End Hold-Down (MD #286331)**[4]
**D - Short Knife End Knife Guard (without Wear Bar) (MD #286319)**[5]
**E - Short Knife Center Hold-Down (MD #286333)**
**F - Short Knife Center Knife Guard (MD #286320)**[6]

Follow these procedures for checking and adjusting short knife guards:

- *6.8.5 Checking Hold-Down – Short Knife Guards, page 101*
- *6.8.6 Adjusting Hold-Down – Short Knife Guards, page 102*
- *6.8.7 Checking Center Hold-Down – Short Knife Guards, page 103*
- *6.8.8 Adjusting Center Hold-Down – Short Knife Guards, page 103*

## 6.8.1 Checking Hold-Down – Pointed Knife Guards

This procedure is for standard hold-down. To check the center hold-down on double-knife headers, refer to *6.8.3 Checking Center Hold-Down – Pointed Knife Guards, page 100*.

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

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

4. Installed in positions 1–3 on drive side(s); installed in position 1 at right end of single-knife headers. Refer to the chapters in the above list for reference.
5. Installed in positions 1–4 on drive side(s). Single-knife headers use standard guard (MD #286318) on the right end. Refer to the chapters in the above list for reference.
6. Double-knife headers only.

2. Manually stroke the knife to position knife section (A) under hold-down (B).
3. Push down on knife section (A) with approximately 44 N (10 lbf), 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.).
4. If adjustment is required, refer to *6.8.2 Adjusting Hold-Down – Pointed Knife Guards, page 100*.

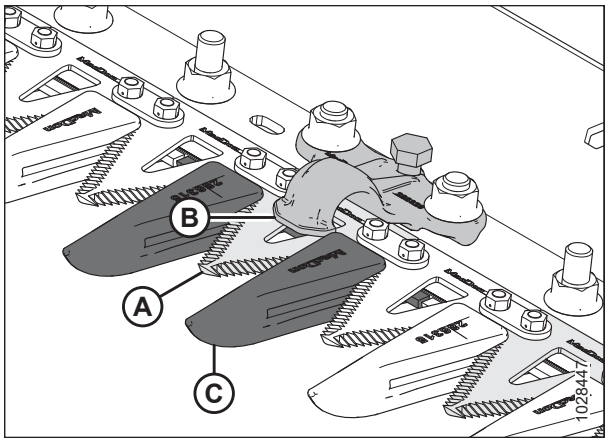


**Figure 6.14: Pointed Hold-Down**

## 6.8.2 Adjusting Hold-Down – Pointed Knife Guards

This procedure is for standard hold-down. To adjust the center hold-down on double-knife headers, refer to *6.8.4 Adjusting Center Hold-Down – Pointed Knife Guards, page 101*.

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Adjust the hold-down clearance as follows:
   a. To lower the front of hold-down (A) and decrease clearance, turn adjuster bolt (B) clockwise.
   b. To raise the front of hold-down (A) and increase clearance, turn adjuster bolt (B) counterclockwise.

   **NOTE:**

   For larger adjustments, it may be necessary to loosen nuts (C) before turning adjuster bolt (B). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).
3. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   **IMPORTANT:**

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

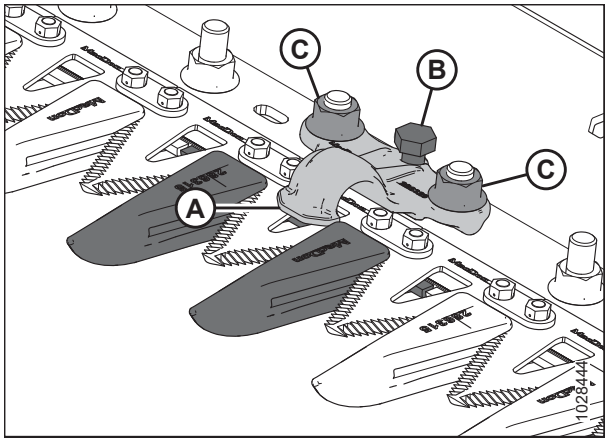


**Figure 6.15: Pointed Hold-Down**

## 6.8.3 Checking Center Hold-Down – Pointed Knife Guards

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

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

2. Manually stroke both knives to their inboard end so that knife sections are under hold-down (A).
3. Push down on knife section with approximately 44 N (10 lbf), 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.)
4. If adjustment is required, refer to *6.8.4 Adjusting Center Hold-Down – Pointed Knife Guards, page 101*.
5. If no adjustment is required, tighten nuts (D) to 100 Nm (74 lbf·ft).
6. Recheck clearance after tightening nuts, and adjust if necessary.

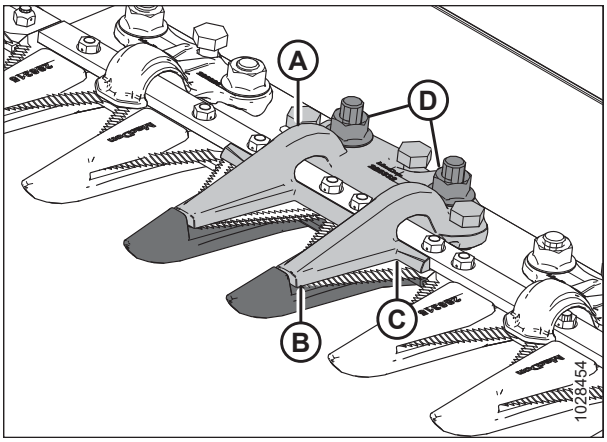


**Figure 6.16: Pointed Center Hold-Down**

## 6.8.4 Adjusting Center Hold-Down – Pointed Knife Guards

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. If increasing the clearance, loosen mounting hardware (B) before adjusting bolts (A).
3. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise (tighten).
   b. To increase clearance, turn adjuster bolts (A) counterclockwise (loosen).

   **NOTE:**

   To adjust clearance at tip only, adjust using only center (rear) adjustment bolt.
4. Tighten nuts (B) to 100 Nm (74 lbf·ft).
5. Recheck clearances, and make further adjustments if necessary.

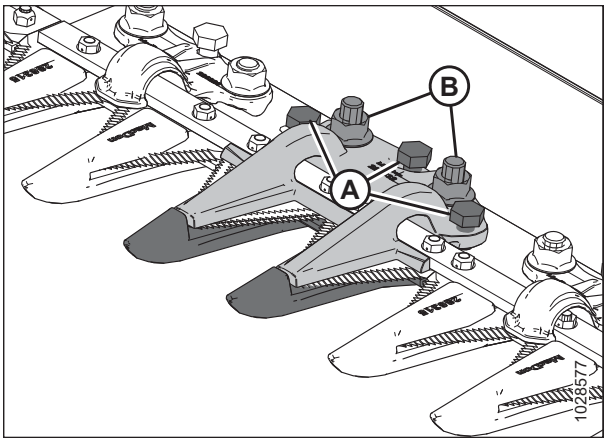


**Figure 6.17: Pointed Center Hold-Down**

6. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   **IMPORTANT:**

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

## 6.8.5 Checking Hold-Down – Short Knife Guards

To check the center hold-down on double-knife headers, refer to *6.8.7 Checking Center Hold-Down – Short Knife Guards, page 103*.

## WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke knife to position section under hold-down (A).
3. Push down on knife section with approximately 44 N (10 lbf), and use a feeler gauge to measure the clearance between the tip of hold-down (B) and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).
4. If adjustment is required, refer to *6.8.6 Adjusting Hold-Down – Short Knife Guards, page 102*.

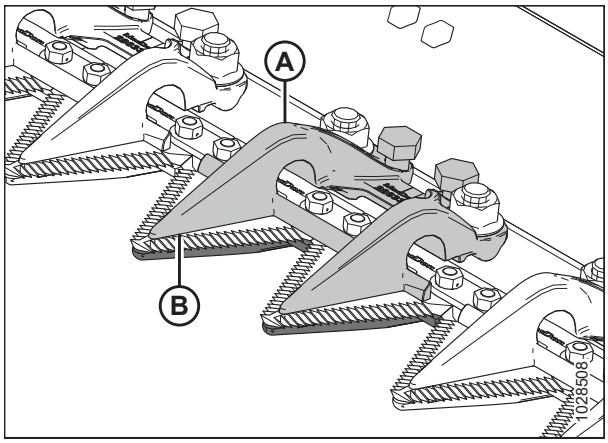


**Figure 6.18: Short Knife Guards**

## 6.8.6 Adjusting Hold-Down – Short Knife Guards

To adjust the center hold-down on double-knife headers, refer to *6.8.8 Adjusting Center Hold-Down – Short Knife Guards, page 103*.

## WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise.
   b. To increase clearance, turn adjuster bolts (A) counterclockwise.

      **NOTE:**

      For larger adjustments, it may be necessary to loosen nuts (B) before turning adjuster bolts (A). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).

   c. Recheck the first point after adjusting the second point, as adjustments to each side can influence the other.
   d. Make further adjustments as necessary.
3. Recheck clearances, and make further adjustments if necessary.
4. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

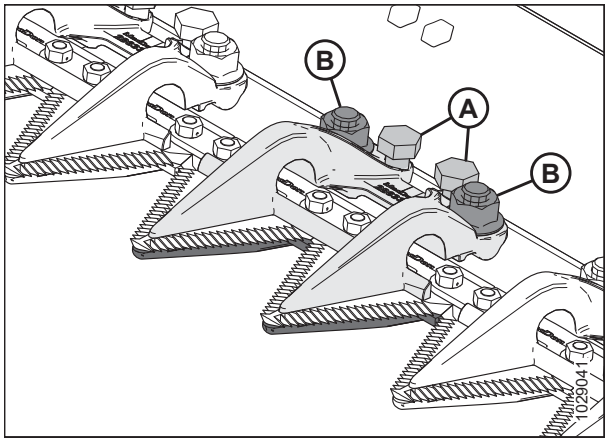


**Figure 6.19: Short Knife Guard Hold-Down**

**IMPORTANT:**

Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

## 6.8.7 Checking Center Hold-Down – Short Knife Guards

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke both knives to their inboard end so that knife sections are under hold-down (A).
3. Push down on knife section with approximately 44 N (10 lbf), 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.)
4. If adjustment is required, refer to *6.8.8 Adjusting Center Hold-Down – Short Knife Guards, page 103*.
5. If no adjustment is required, tighten nuts (D) to 100 Nm (74 lbf·ft).
6. Recheck clearance after tightening nuts and adjust if necessary.

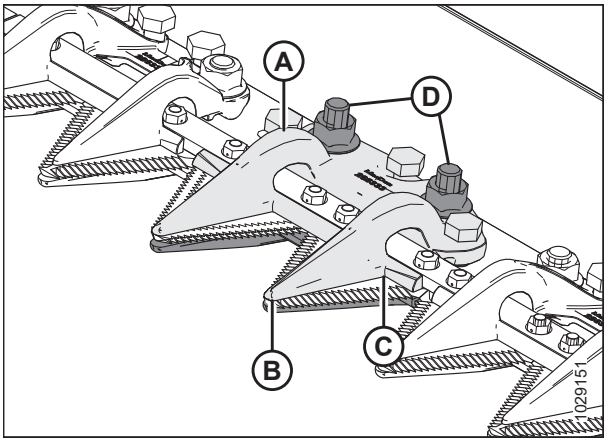


**Figure 6.20: Center Knife Guard Hold-Down**

## 6.8.8 Adjusting Center Hold-Down – Short Knife Guards

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. If increasing the clearance, loosen the mounting hardware (B) before adjusting bolts (A).
3. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise (tighten).
   b. To increase clearance, turn adjuster bolts (A) counterclockwise (loosen).

   **NOTE:**

   To adjust clearance at tip only, adjust using only center (rear) adjustment bolt.
4. Tighten nuts (B) to 100 Nm (74 lbf·ft).
5. Recheck clearances, and make further adjustments if necessary.

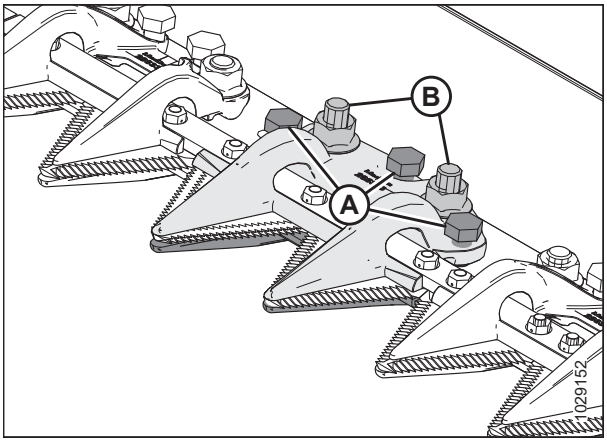


**Figure 6.21: Center Hold-Down**

6. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   **IMPORTANT:**

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

## 6.9 Checking Reel Clearance

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Start the engine and set the cutterbar height at approximately 150 mm (6 in.) above the ground.
2. Lower reel and adjust fore-aft position to 5 on reel arm indicator decal.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the float locks and wing locks.
5. Manually rotate the reel to position a tine tube above the cutterbar.
6. Measure clearance (A) at locations (B) between reel tine tube and endsheet at both ends of header.

   **NOTE:**

   The clearances should be the same if the reel is centered.

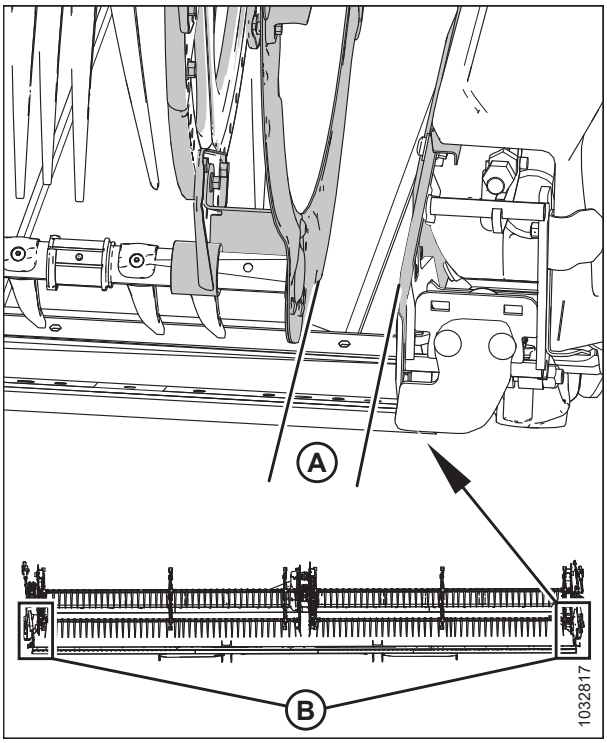


**Figure 6.22: Reel Clearance**

## 6.10 Centering Reel

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Shut down the engine, and remove the key from the ignition.
2. Loosen bolt (A) on brace (B) at the center support arm.
3. Move the forward end of reel support arm (C) laterally as required to center the reel.
4. Tighten bolt (A) and torque to 457 Nm (337 lbf·ft).

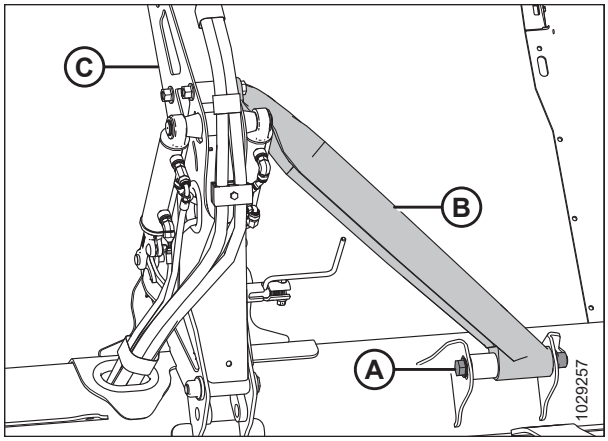


**Figure 6.23: Center Support Arm**

## 6.11 Checking and Adjusting Header Float

The header is equipped with a suspension system that floats the header over the ground to compensate for ridges, trenches, and other variations in ground contour. If the header float is not set properly, it may cause the cutterbar to push into the ground or leave uncut crop. This procedure describes how to check the header float and adjust to the factory-recommended settings.

**IMPORTANT:**

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

### WARNING

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

Use the following guidelines when adjusting the float:

- Set the header float as light as possible (without causing excessive bouncing) to prevent knife component breakage, pushing soil, and soil build-up at the cutterbar in wet conditions.
- To avoid excessive bouncing and an uneven cut with a light float setting, use a slower ground speed.
- When cutting off the ground, use the stabilizer wheels in conjunction with the header float to minimize bouncing at the header ends and to control cut height.

**NOTE:**

If adequate header float cannot be achieved using all of the available adjustments, an optional heavy-duty spring is available.

1. Park the combine on a level surface.
2. Locate spirit level (A) on top of the float module frame. Check 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.

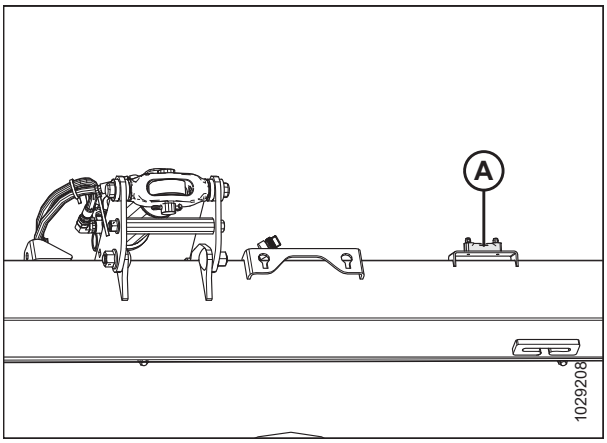


**Figure 6.24: Spirit Level**

4. Adjust the reel fore-aft to position 6 on indicator bracket (A) located on the left arm.

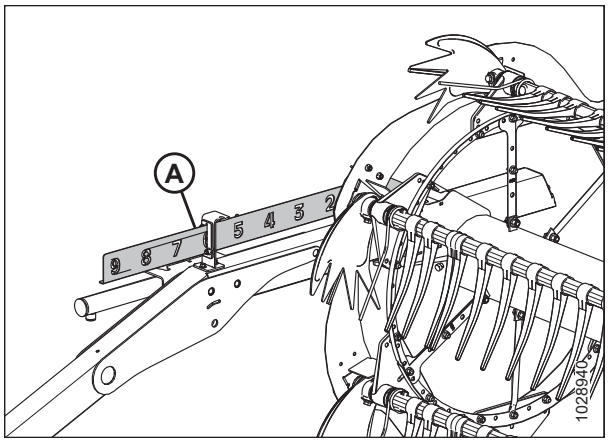


**Figure 6.25: Fore-Aft Position**

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. Lock the header wings.

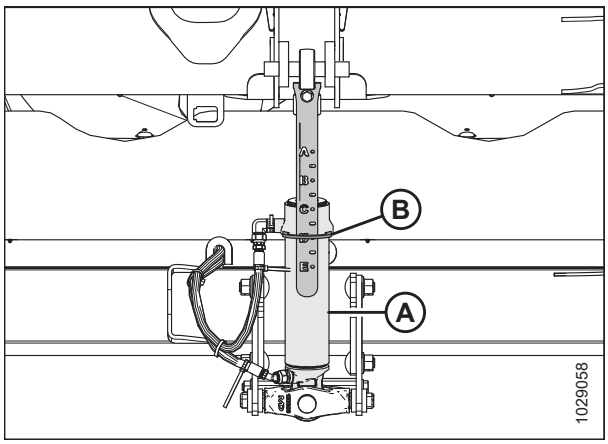


**Figure 6.26: Center-Link**

9. Disengage both header float locks by pulling float lock handle (A) away from the float module and pushing the float lock handle down and into position (B) (**UNLOCK**).

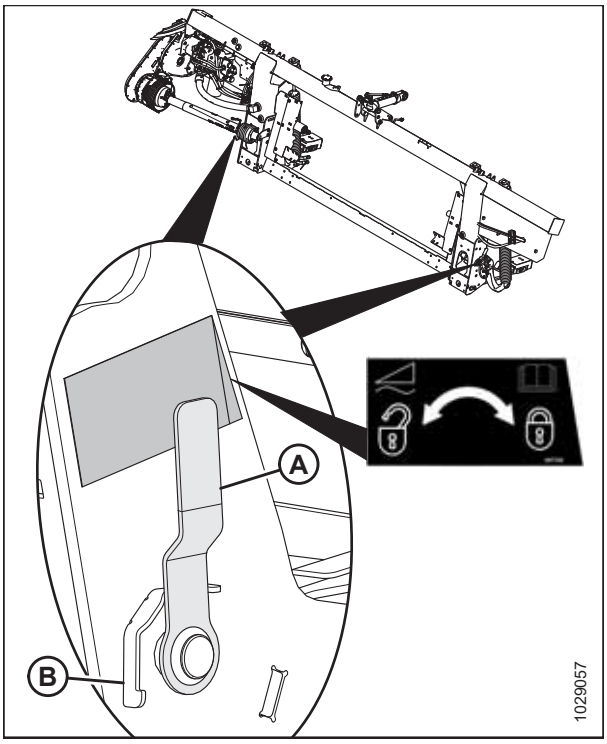


**Figure 6.27: Header Float Lock in Locked Position**

10. Open the left endshield.
11. Remove hairpin (A) securing tool (B) to tool holder bracket on the left endsheet.
12. Remove tool (B), and reinstall hairpin to tool holder.

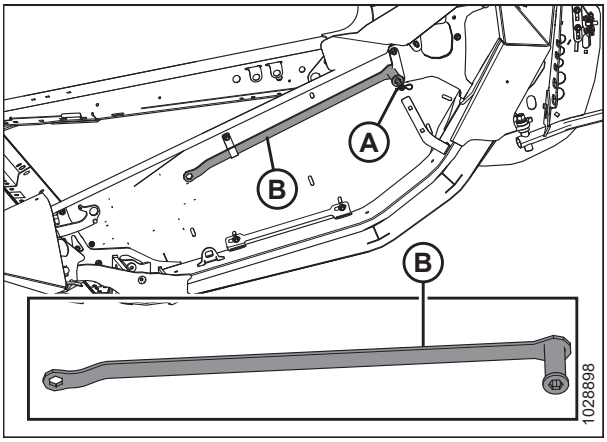


**Figure 6.28: Tool Location**

13. Lift float setting lever (A) by hand to remove any slack.
14. Place tool (B) on the float setting lever. The tool should be slightly angled towards the front of the header.

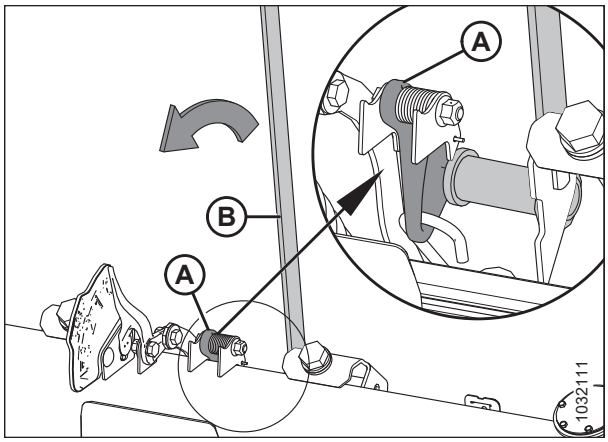


**Figure 6.29: Float Setting Assembly – Left**

15. Pull down on tool (B) towards the back of the header until lever (A) is over center and will not return to its original position. Remove the tool and repeat on the opposite side.

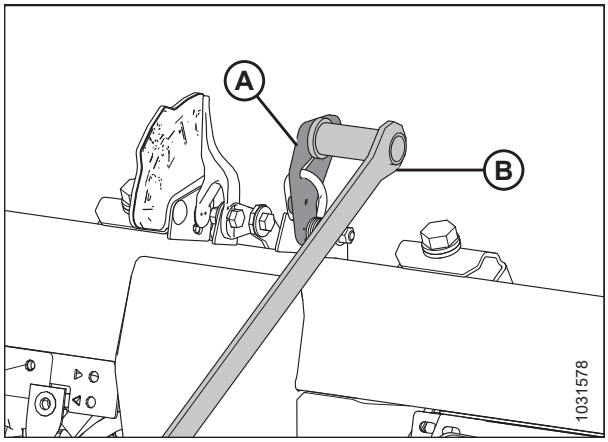


**Figure 6.30: Float Setting Assembly – Left**

16. Return tool (B) to its storage position, and secure with hairpin (A).
17. On the same side that you are adjusting, push header down 76 mm (3 in.) and then let go, and recheck the float setting. If the setting remains out of range, proceed with adjustment.

    **NOTE:**

    Pushing down on (shaking) the header releases friction and prevents gauge errors.

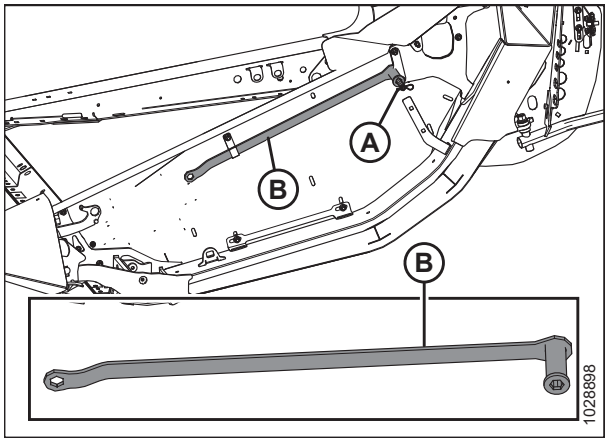


**Figure 6.31: Tool Location**

18. Check the smaller float setting indicator (B) for the current float value. The arm on the float setting indicator should be on 2 (B).
    - If arm (A) on the float setting indicator (FSI) (B) is higher than 2, the header is heavy.
    - If the reading on the FSI (B) is lower than 2, the header is light.

    **NOTE:**

    The larger numbers are for the float height indicator and used when operating the header in the field.

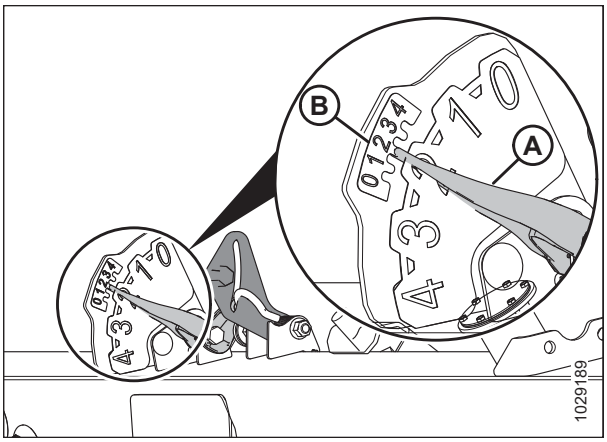


**Figure 6.32: FSI – Left**

19. To access float spring adjustment bolts (A), loosen bolts (C) and rotate spring locks (B).

    **NOTE:**

    For the following step, each pair of bolts (A) must be adjusted equally.

20. To increase float and (decrease ground force), turn both adjustment bolts (A) on the left side clockwise. Repeat adjustment at opposite side.

    To decrease the float and (increase ground force), turn left side adjustment bolts (A) counterclockwise. Repeat adjustment at opposite side.

21. Repeat the sequence of shaking the header, and checking FSI reading between adjustments (Steps *17, page 110* to *20, page 111*) until both FSI gauges read 2, or until the desired value is achieved on both sides of the header.

22. Lock adjustment bolts (A) with spring locks (B). Ensure bolt heads (A) are engaged in the spring lock cutouts. Tighten bolts (C) to secure spring locks in place.

23. Proceed to *6.13.2 Adjusting Wing Balance, page 118*.

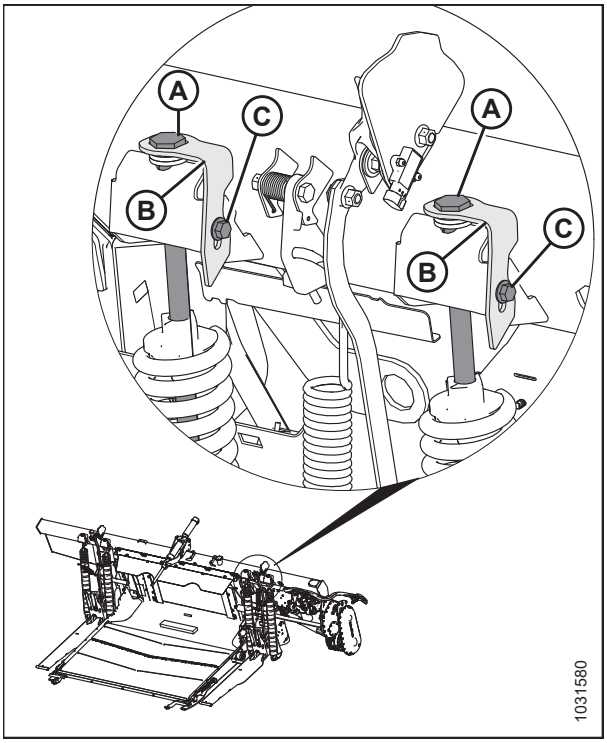


**Figure 6.33: Float Adjustment – Left**

## 6.12 Checking that Top-Link is Parallel

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

**NOTE:**

Cutterbar should be straight when checking that the top-link is parallel.

1. Shut down the engine, and remove the key from the ignition.
2. Lock wing (A).
3. Place torque wrench (B) on bolt (C).

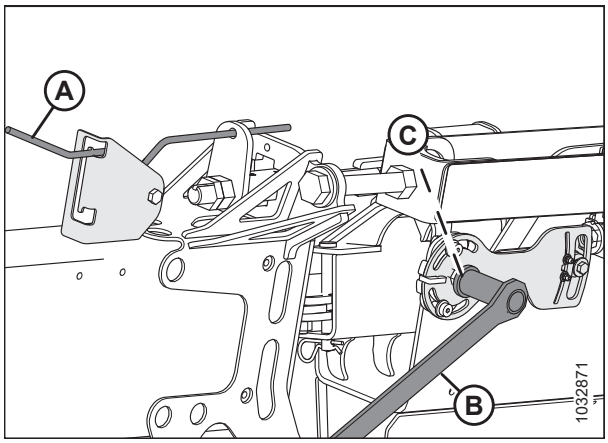


**Figure 6.34: Wing in Locked Position – Left Side Shown**

4. Check that bottom edge of bell crank (A) is parallel with top-link (B) when moving wrench up and down.

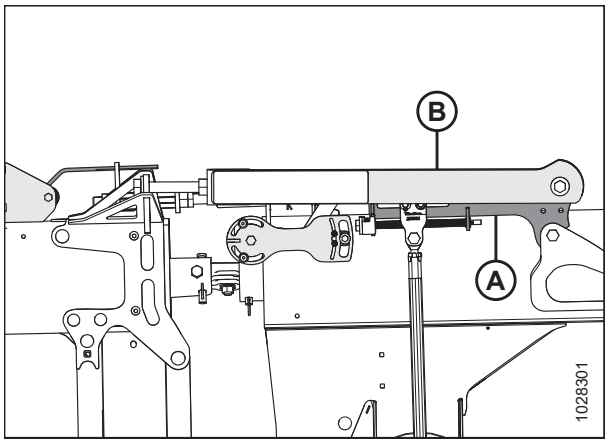


**Figure 6.35: Bottom Edge of Bell Crank Parallel with Top-Link**

5. If parallel is not achieved, adjust as follows:

   a. Unlock nuts (B), and turn bolt (A) until edges are parallel.

   b. Lock nuts (B).

   **NOTE:**

   Some parts made transparent for clarity.

6. Replace linkage cover.

7. Repeat procedure on opposite side.

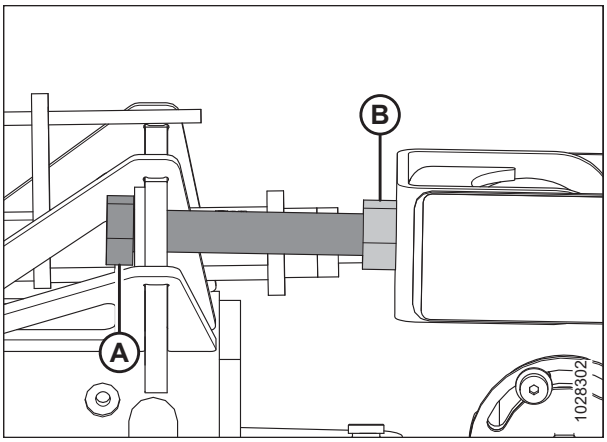


**Figure 6.36: Adjustment Bolt**

# 6.13 Wing Balance

**IMPORTANT:**

Before proceeding, the header float must be set properly. For instructions, refer to *6.11 Checking and Adjusting Header Float, page 107*.

The header wing balance allows the wings to react to changing ground conditions. If set too light, the wings will bounce or not follow ground contours, leaving uncut crop. If set too heavy, the end of the header will dig into the ground. After the header float has been set, the wings must be balanced for the header to follow the ground contours properly.

## 6.13.1 Checking Wing Balance

This procedure describes how to check the balance of each wing.

**IMPORTANT:**

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *6.11 Checking and Adjusting Header Float, page 107*.

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

The header wings are balanced when it takes an equal amount of force to move a wing up or down.

### WARNING

**Check to be sure all bystanders have cleared the area.**

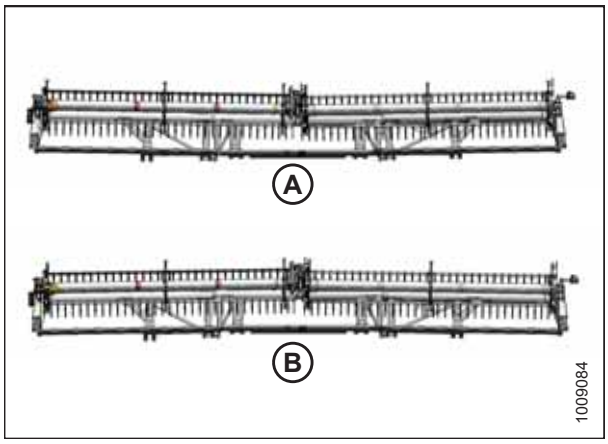


**Figure 6.37: Wing Imbalance**

1. Adjust the reel fore-aft to position 6 on indicator bracket (A) located on the left arm.
2. Lower the reel fully.

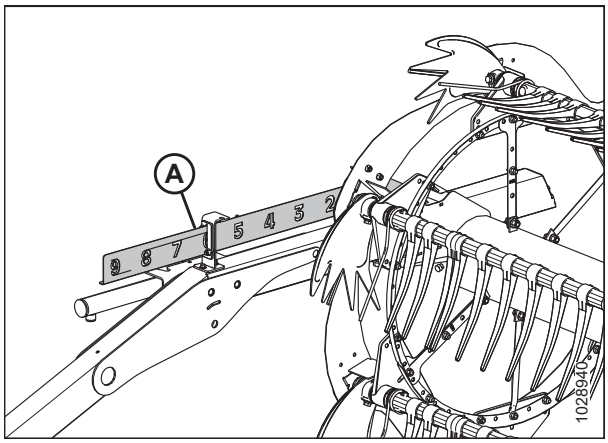


**Figure 6.38: Fore-Aft Position**

3. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
4. If installed, move transport wheels so that they are supported by the header. Refer to instructions provided with the transport system.
5. Park the combine on a level surface.
6. Position the header until it is 254–306 mm (10–14 in.) off the ground.

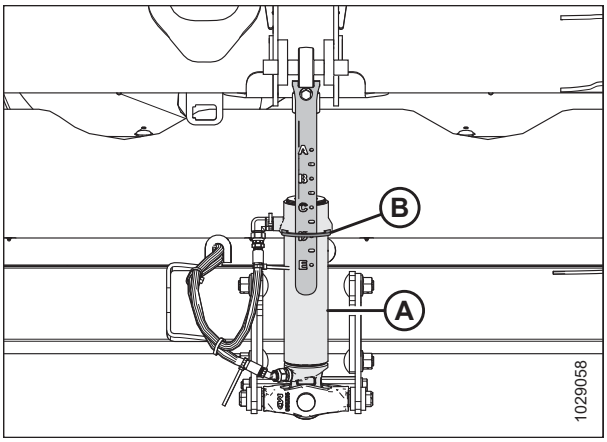


**Figure 6.39: Center-Link**

7. Locate spirit level (A) on top of the float module frame. Check that the bubble is in the center.
8. Shut down the engine, and remove the key from the ignition.
9. Open left header endshield. For instructions, refer to *Opening Header Endshields, page 84*.

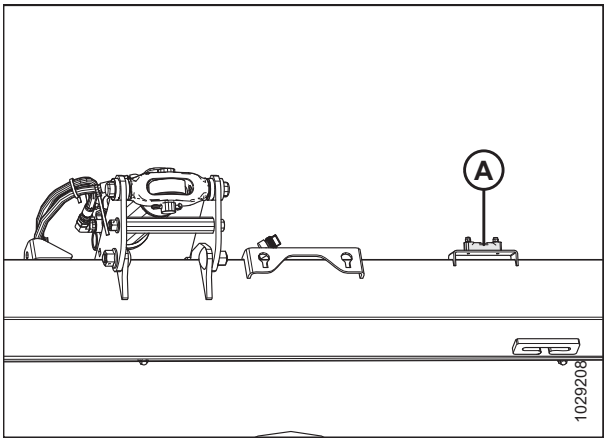


**Figure 6.40: Spirit Level**

10. Remove hairpin (A) securing tool to tool holder bracket on left endsheet.
11. Remove tool (B), and reinstall hairpin to tool holder.

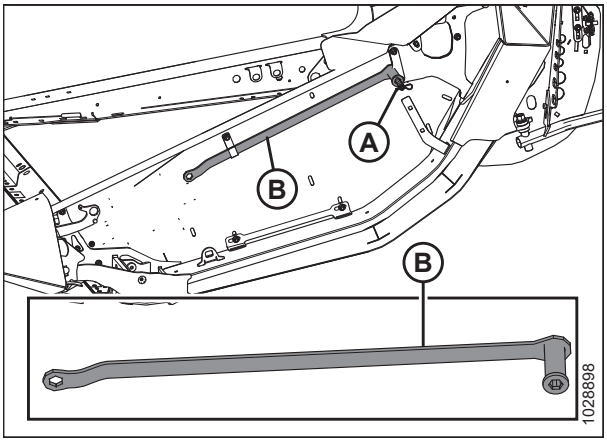


**Figure 6.41: Left Endsheet**

12. Unlock the wing you are checking by moving spring handle (A) to the lower (UNLOCK) position. Unlock **ONLY** the wing you are checking. Ensure the opposite wing is locked.

    **NOTE:**

    There should be an audible click when you move the spring handle indicating that the internal mechanism engaged or disengaged.

13. If the internal lock mechanism does not engage, move the wing with tool (B) until you hear an audible click.

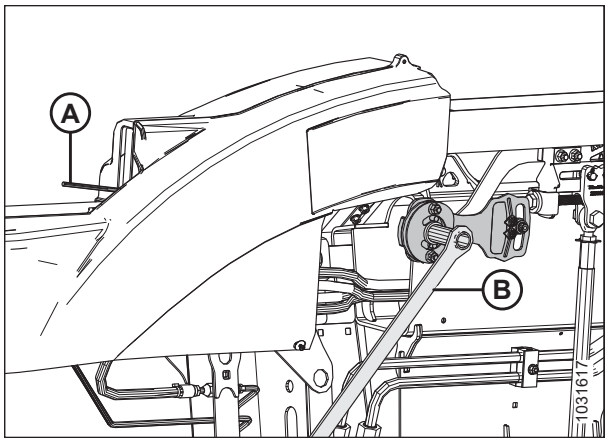


**Figure 6.42: Wing Unlocked Position**

14. Ensure float checking toggles (A) are disengaged (down) on both sides of the float module.

15. Ensure float locks (B) are engaged (up) on both sides of the float module.

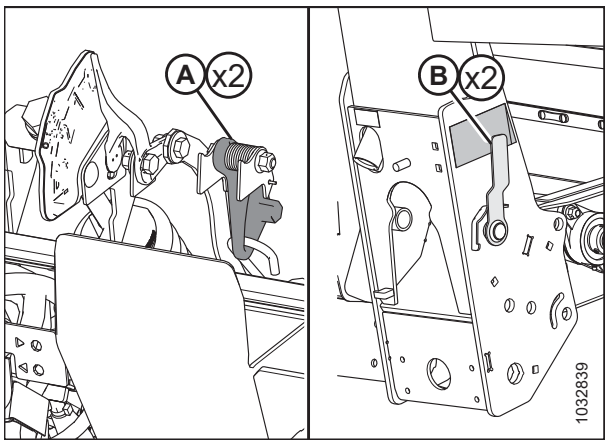


**Figure 6.43: Checker Plate Assembly**

16. On checker plate assembly (A), pinch two indicators (B) together with your fingers to reset the indicators against the spring (C) located behind the plate.

    **NOTE:**

    Checker plate assembly (A) made transparent in illustration to show spring (C).

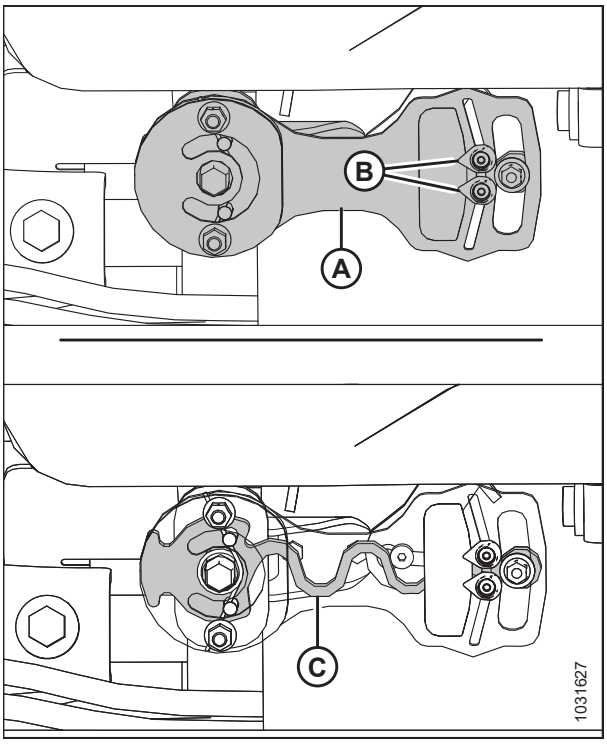


**Figure 6.44: Checker Plate Assembly**

17. Pull tool (C) down to rotate checker plate assembly (A) until pin (B) bottoms out at the end of slot. The lower indicator (D) will move down to give the first reading.

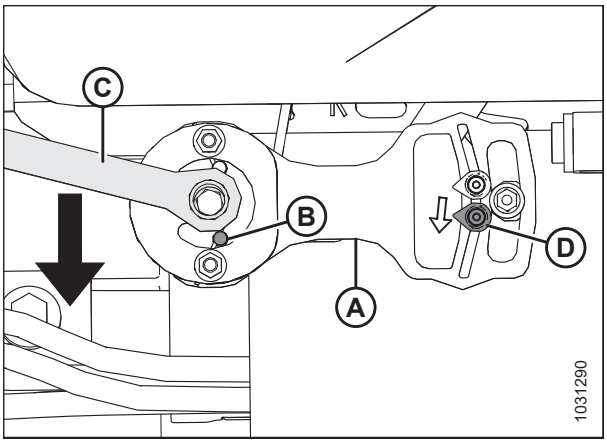


**Figure 6.45: Checker Plate Assembly**

18. Push tool (C) up to rotate checker plate assembly (A) until pin (B) bottoms out at the end of slot. Upper indicator (D) will move up to give the second reading.
19. For the most accurate reading, performs Steps *17, page 117* and *18, page 118* twice before noting the reading.

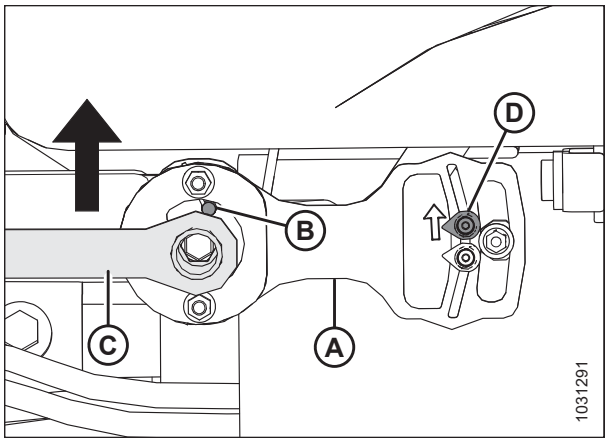


**Figure 6.46: Checker Plate Assembly**

20. Refer to decal (A) and compare the two readings.

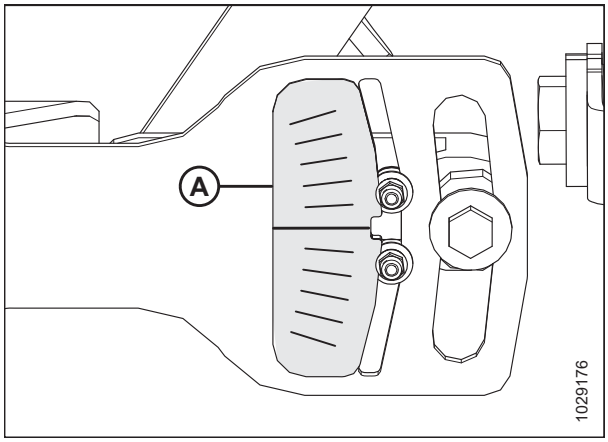


**Figure 6.47: Flex Checker Decal Location**

- (A) – If both indicators move equally, then the wing is balanced; no adjustment is required. Reinstall the linkage cover, and repeat the procedure on the opposite wing.
- (B) – If the top indicator moved more than the bottom indicator, then the wing is too light and must be made heavier. For instructions, refer to *6.13.2 Adjusting Wing Balance, page 118*.
- (C) – If the bottom indicator moved more than the top indicator, then the wing is too heavy and must be made lighter. For instructions, refer to *6.13.2 Adjusting Wing Balance, page 118*.

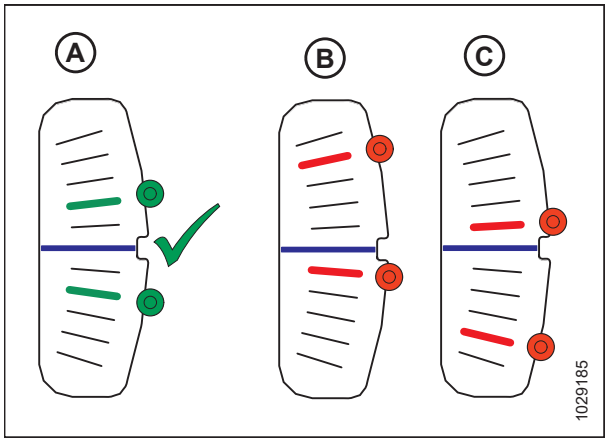


**Figure 6.48: Wing Balance Reference**

## 6.13.2 Adjusting Wing Balance

### WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

This procedure describes how to adjust the balance of each wing. Before proceeding, refer to *6.13.1 Checking Wing Balance, page 114* to determine if adjustments are necessary.

**IMPORTANT:**

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *6.11 Checking and Adjusting Header Float, page 107*. The float module must be sitting level before performing any adjustments.

1. Ensure spring handle (A) is in the lower (UNLOCK) position. Unlock **ONLY** the wing you are adjusting. Keep the opposite wing locked.

   **NOTE:**

   There should be an audible click when you move the spring handle indicating that the internal mechanism engaged or disengaged.

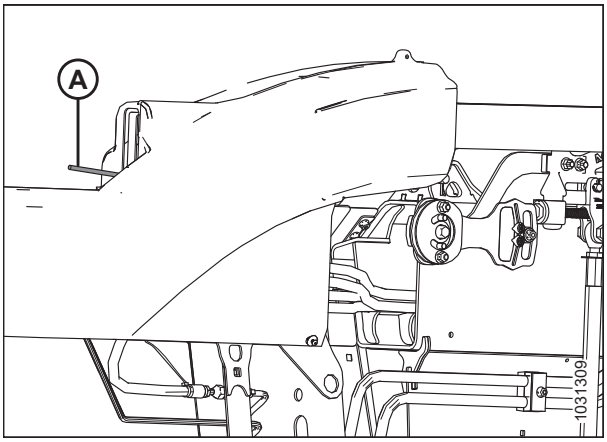


**Figure 6.49: Wing in Unlocked Position**

2. If necessary, perform the following adjustments:

   - If upper indicator (E) moved more than lower indicator (F), the wing is too light. Make wing heavier by turning adjuster bolt (A) to move clevis (B) in direction (D).
   - If lower indicator (F) moved more than upper indicator (E), the wing is too heavy. Make wing lighter by turning adjuster bolt (A) to move clevis (B) in direction (C).

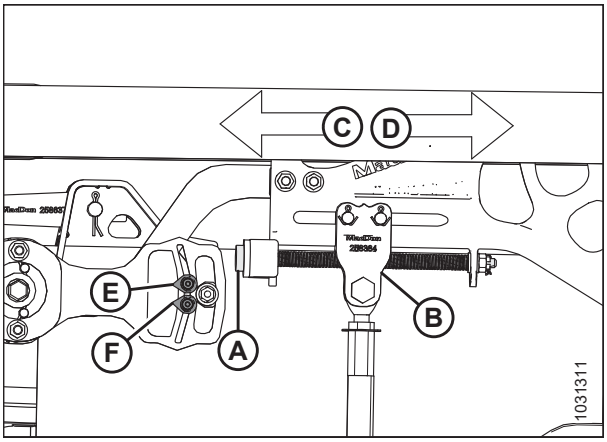


**Figure 6.50: Balance Linkage – Left Side**

3. Move spring handle (A) to the upper (LOCK) position.
4. If the lock does not engage, move the wing up and down with tool (B) until it locks. When locked, there will be some movement in the linkage.
5. If the cutterbar is not straight when the wings are in lock mode, then further adjustments are required.
6. Return the tool to its storage location and reinstall the linkage cover.

   **NOTE:**

   Adjustment to the main float may be required to maintain good wing balance when operating in the field. For instructions, refer to *6.11 Checking and Adjusting Header Float, page 107*.

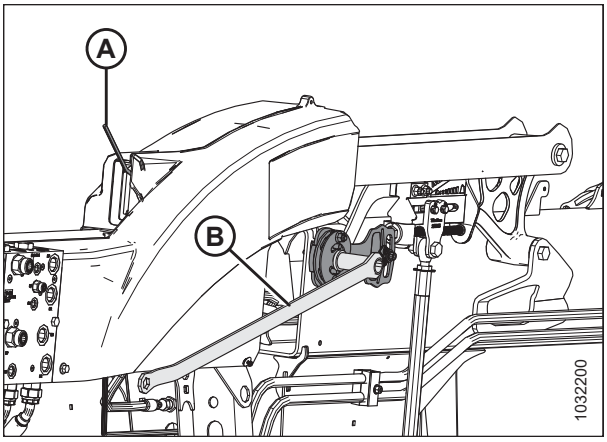


**Figure 6.51: Wing in Locked Position**

## 6.14 Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the cutterbar ensures 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 operation.

The finger to guard/cutterbar clearance (A) is shown in the tables below.

**Table 6.2 Finger to Guard/Cutterbar Clearance – Triple Reel**

| Header | Outer End Panels | Beside Center Arms |
|---|---|---|
| FD240<br>FD241<br>FD245<br>FD250 | 292–298 mm<br>(11.5–11.7 in.) | 292–298 mm<br>(11.5–11.7 in.) |

**Table 6.3 Finger to Guard/Cutterbar Clearance – Double Reel**

| Header | End Panels | At Hinge Points |
|---|---|---|
| FD230<br>FD235<br>FD240<br>FD241 | 292–298 mm<br>(11.5–11.7 in.) | 292–298 mm<br>(11.5–11.7 in.) |

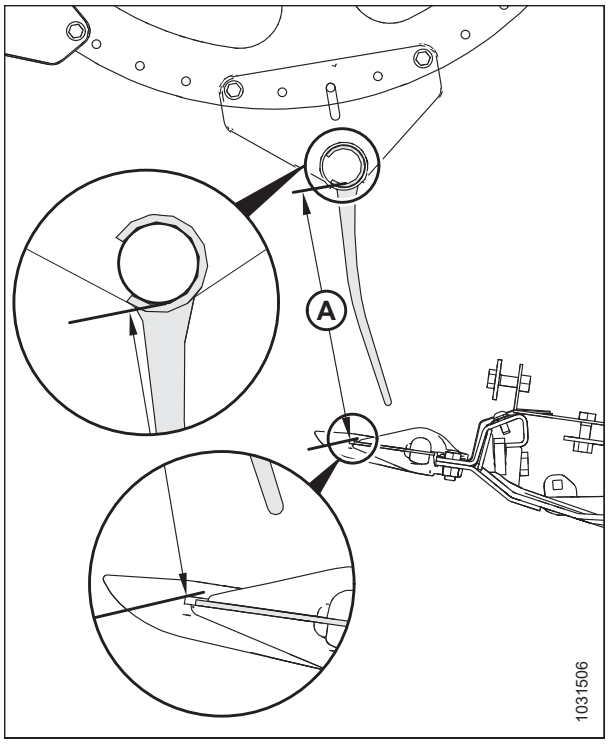


**Figure 6.52: Finger Clearance**

## 6.14.1 Measuring Reel Clearance

### DANGER

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

### WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

1. Park the combine on a level surface.
2. Shut down the engine, and remove the key from the ignition.
3. Lower the header until it is 254–306 mm (10–14 in.) off the ground.

   **NOTE:**

   Parts hidden for clarity.
4. Set fore-aft position (A) to 98–118 mm from the bottom edge of front anchor support (B) to the edge of reel support (C).

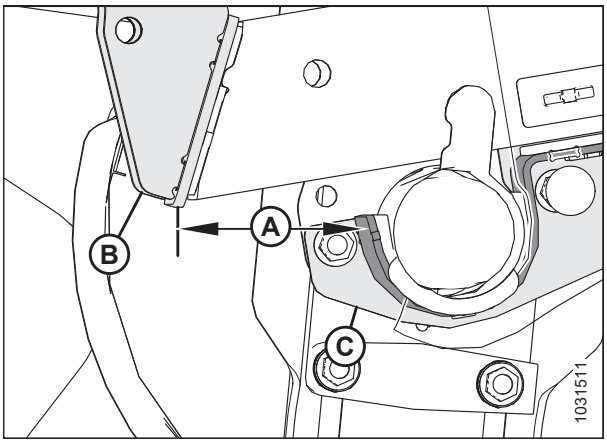


**Figure 6.53: Fore-Aft Position**

5. Move wing lock spring handles (A) down to UNLOCK position.

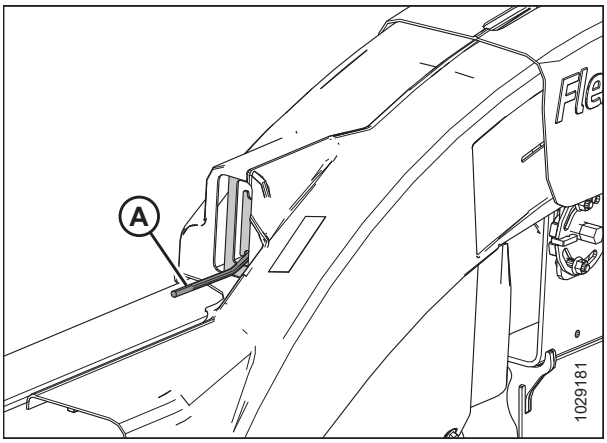


**Figure 6.54: Wing Lock in UNLOCK Position**

6. Raise header and place two 150 mm (6 in.) blocks (A) under the cutterbar, just inboard of the wing flex points.
7. Lower header fully, allowing it to flex into full frown mode.

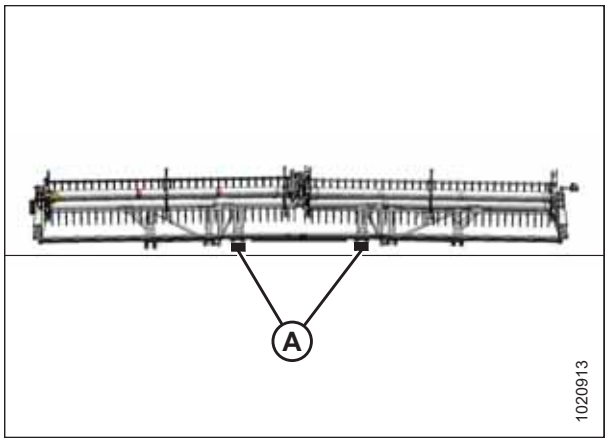


**Figure 6.55: FlexDraper® Block Locations**

8. Measure clearance (A) between points (B) and (C) at the ends of the reels. For clearance specifications, refer to *6.14 Reel Clearance to Cutterbar, page 120*.

   For measurement locations, refer to:

   - Figure *6.59, page 123* – double reel
   - Figure *6.60, page 124* – triple reel

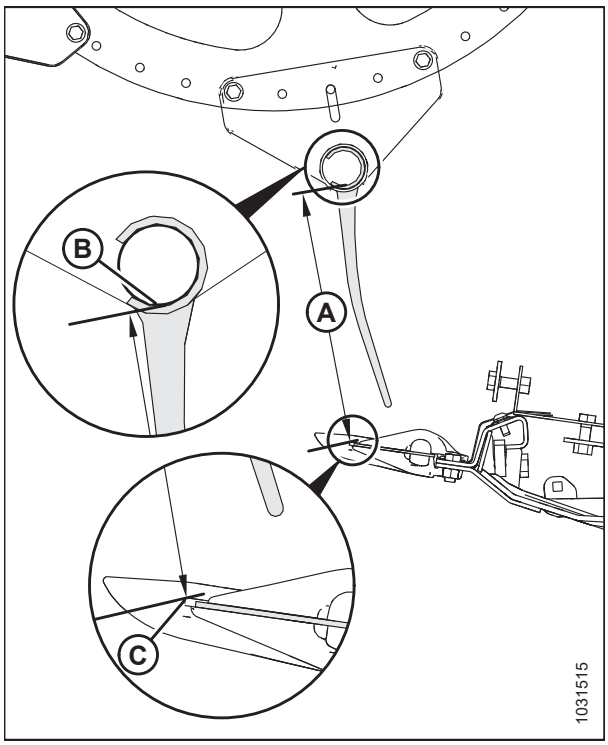


**Figure 6.56: Wing Lock in UNLOCK Position**

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

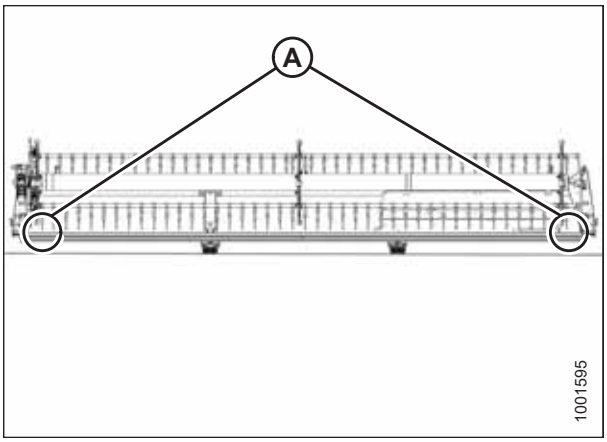


**Figure 6.57: Single Reel Measurement Locations**

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

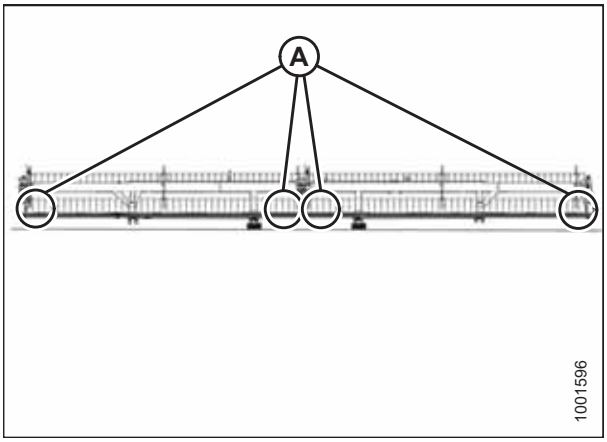


**Figure 6.58: Double Reel Measurement Locations**

**FlexDraper® Measurement location (A):** Outer ends of the reels and at both hinge points (four places).

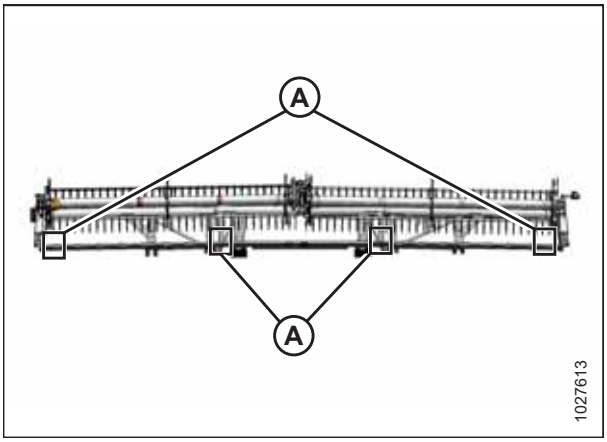


**Figure 6.59: FlexDraper® Measurement Locations – Double Reel**

**Triple reel measurement location (A):** Both ends of three reels (six places).

Adjust the reel clearance, if required. For instructions, refer to *6.14.2 Adjusting Reel Clearance, page 124*.

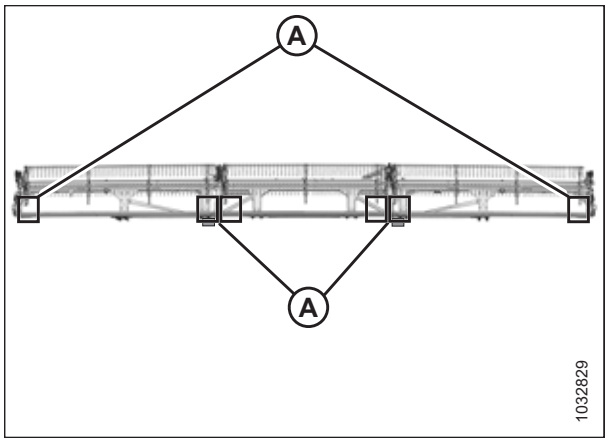


**Figure 6.60: FlexDraper® Measurement Locations – Triple Reel**

## 6.14.2 Adjusting Reel Clearance

### DANGER

**To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.**

Adjust the clearance at the outboard ends of the reel as follows:

1. Shut down the engine, and remove the key from the ignition.
2. Loosen bolt (A).
3. Adjust cylinder rod (B) as required:
   - To increase clearance to the cutterbar, turn cylinder rod (B) out of clevis to raise the reel.
   - To decrease clearance to the cutterbar, turn cylinder rod (B) into clevis to lower the reel.
4. Tighten bolt (A).
5. Repeat at opposite side of the header.

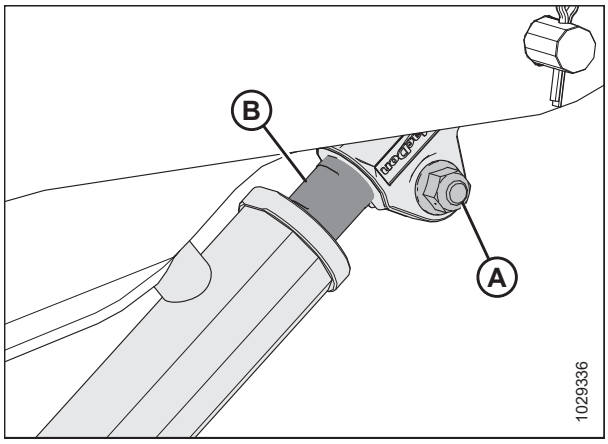


**Figure 6.61: Outside Arm Cylinder**

Adjust the clearance at the inboard ends of the reels as follows:

6. Loosen bolts (A).
7. Adjust cylinder rods (B) as required:

   **IMPORTANT:**

   Adjust both cylinder rods equally.

   - To increase clearance to the cutterbar, turn cylinder rods (B) out of clevis to raise the reel.
   - To decrease clearance to the cutterbar, turn cylinder rods (B) into clevis to lower the reel.

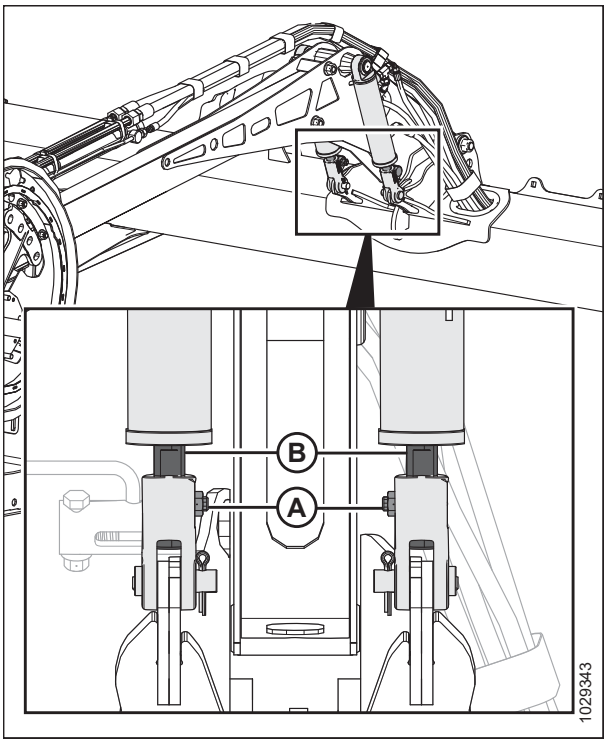


**Figure 6.62: Center Arm Cylinders**

8. Ensure measurement (A) is equal on both cylinders.
9. Verify that both mounting pins (B) cannot be rotated by hand. If one of the mounting pins is free to rotate, then adjust cylinder rod as required.
10. Tighten bolts (C).

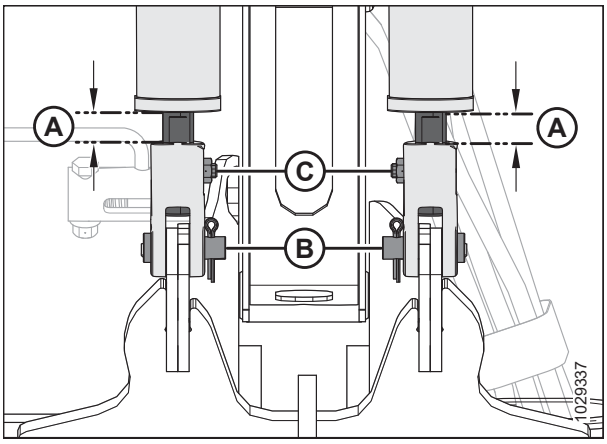


**Figure 6.63: Center Arm Cylinders**

11. Check measurements and, if necessary, repeat adjustment procedures.
12. Move the reel back to ensure the steel end fingers do not contact the deflector shields.
13. If contact occurs, adjust the reel upward to maintain the clearance at all reel fore-aft positions. If contact cannot be avoided after adjusting the reel, trim the steel end fingers to obtain proper clearance.
14. Periodically check for evidence of contact during operation, and adjust clearance as required.

# 6.15 Adjusting Feed Auger to Pan Clearance

## WARNING

**To avoid injury or death from unexpected start-up of 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, and position the header 254–306 mm (10–14 in.) off the ground.
2. Lock the header wings.
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.

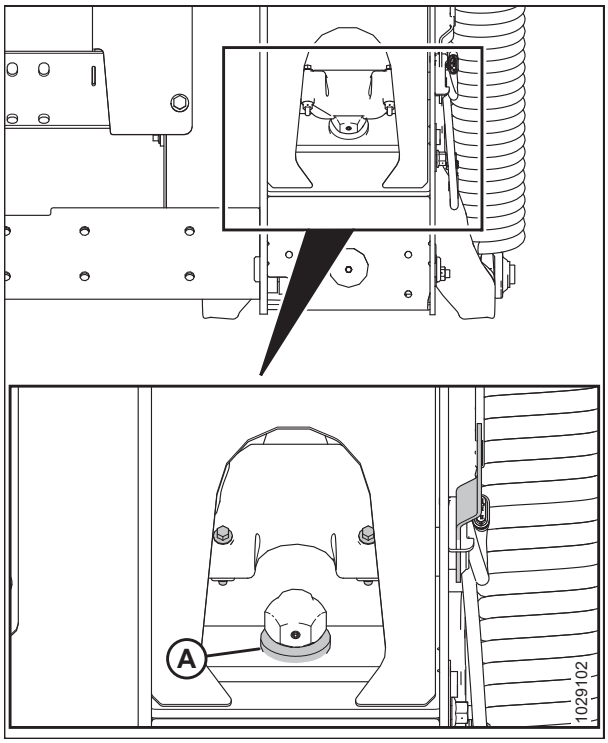


**Figure 6.64: Down Stop Washer**

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

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

   **IMPORTANT:**

   Make sure bolts (A) are set at the same location on both ends of the header to prevent damaging the machine during operation.

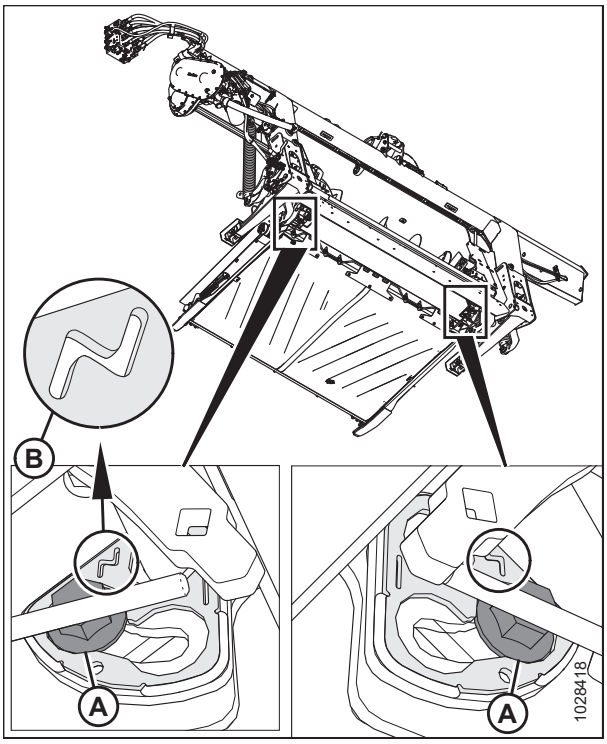


**Figure 6.65: Floating Position**

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

   **IMPORTANT:**

   Make sure bolts (A) are set at the same location on both ends of the header to prevent damaging the machine during operation.

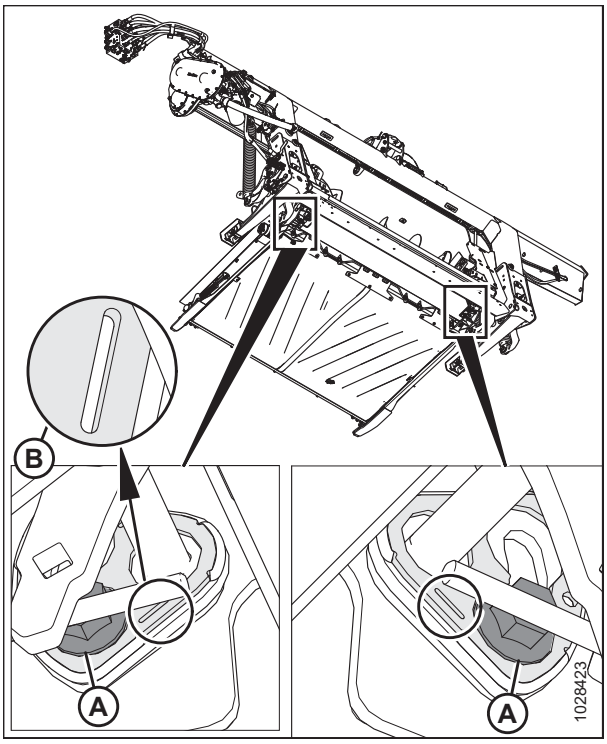


**Figure 6.66: Fixed Position**

6. 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 clearance to 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, set 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 Steps *6, page 128* and *7, page 128* 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 93–99 Nm (68–73 lbf·ft).
10. Rotate the drum and double-check clearances.

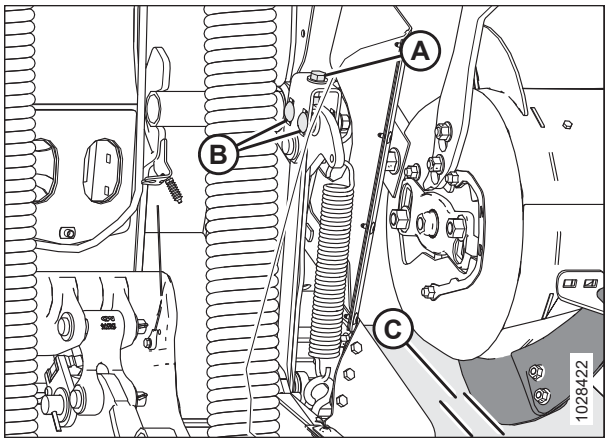


**Figure 6.67: Auger Clearance**

## 6.16 Checking and Adjusting Side Draper Tension

### DANGER

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

The drapers are tensioned at the factory and should **NOT** require adjustment. If adjustment is required, draper tension should be just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure tensioner indicator (A) is approximately halfway in the window.

### WARNING

**Check to be sure all bystanders have cleared the area.**

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

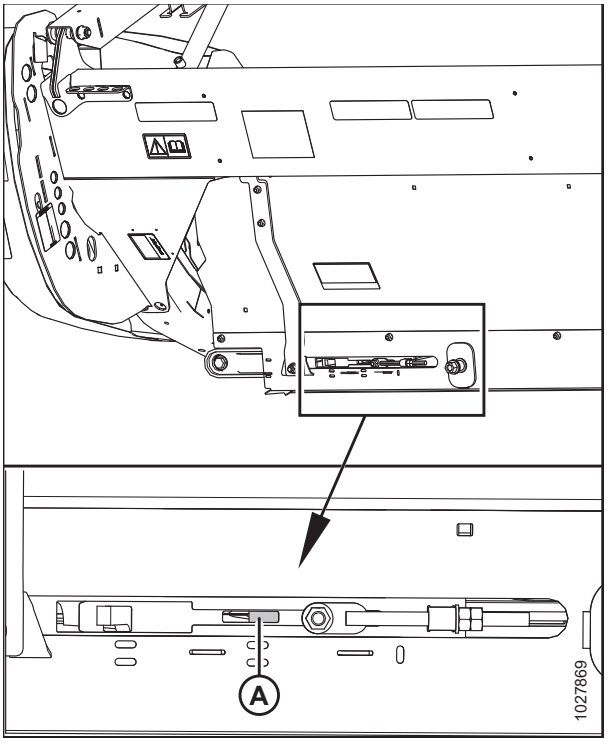


**Figure 6.68: Tension Adjuster – Left Side Shown, Right Side Opposite**

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

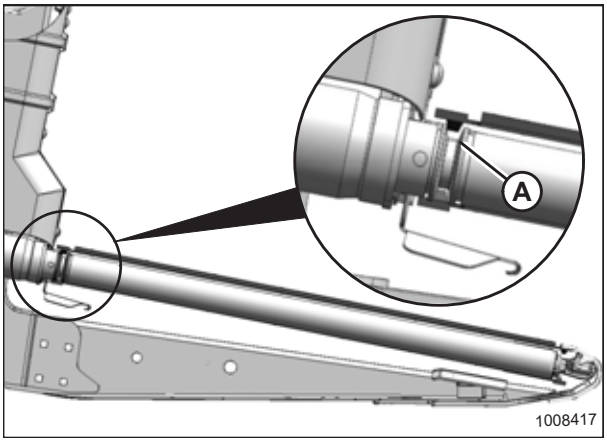


**Figure 6.69: Drive Roller**

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

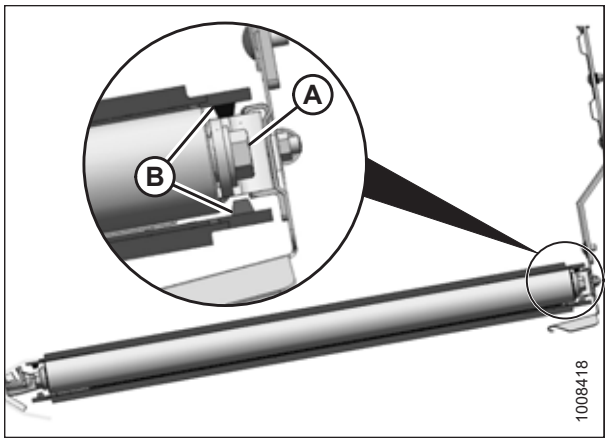


**Figure 6.70: Idler Roller**

**IMPORTANT:**

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

8. Turn adjuster bolt (A) counterclockwise to loosen. Loosen until the adjuster bolt runs out of adjustment and hits a hard stop.
9. Turn adjuster bolt (A) clockwise to tighten. Tensioner indicator (B) will move inboard to indicate that the draper is tightening. Tighten until the bar is about halfway in the window.

**IMPORTANT:**

To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tensioner indicator not visible.

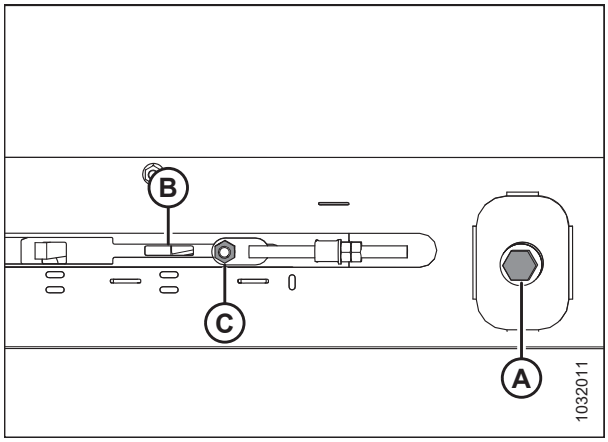


**Figure 6.71: Tension Adjuster – Left Side Shown, Right Side Opposite**

# 6.17 Checking Draper Seal

## WARNING

**To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.**

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the header to working position.
3. Shut down the engine, and remove the key from the ignition.

   **NOTE:**

   Take measurements at deck supports (A) with the header in working position. Depending on the header size, there are between four and seven supports per deck.

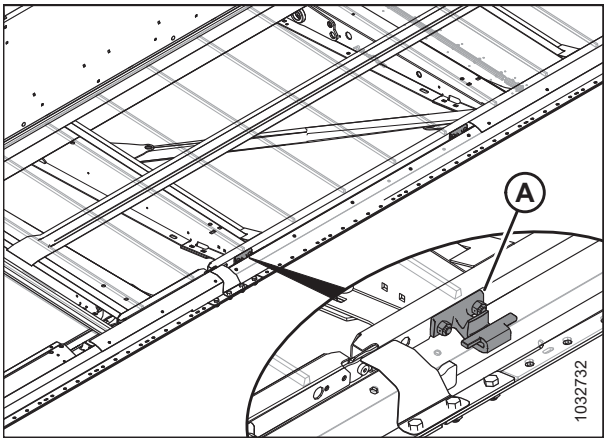


**Figure 6.72: Draper Deck Supports**

4. Check that clearance (A) between draper (B) and metal seal (C) is 1–3 mm (0.04–0.12 in.).

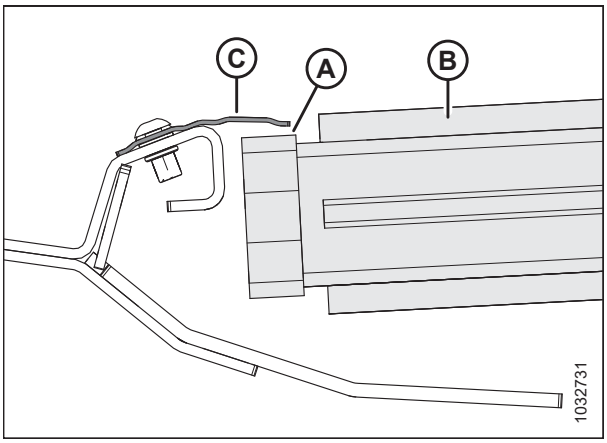


**Figure 6.73: Draper Seal**

***If adjustment is required, proceed as follows:***

5. Loosen the draper tension. For instructions, refer to *6.16 Checking and Adjusting Side Draper Tension, page 129*.
6. Lift front edge of draper (A) past cutterbar (B) to expose the deck support.
7. Measure and note the thickness of the draper belt.

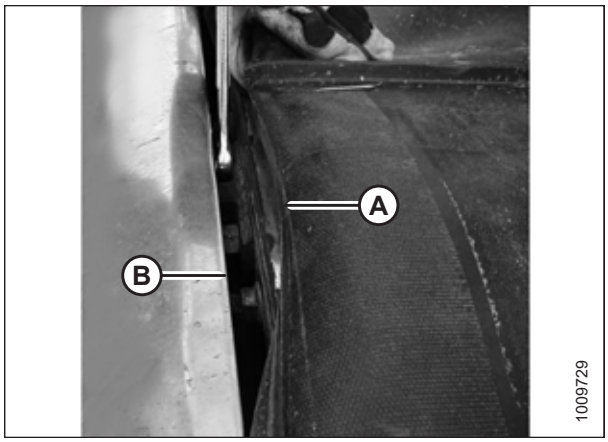


**Figure 6.74: Deck Support**

8. Loosen two lock nuts (A) on deck support (B) one half-turn **ONLY**.

   **NOTE:**

   The deck is shown with the draper removed. The number of deck supports (B) is determined by the header width as follows:

   - **FD230:** Eight supports
   - **FD235, FD240, FD241:** Ten supports
   - **FD250:** Fourteen supports

9. 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.

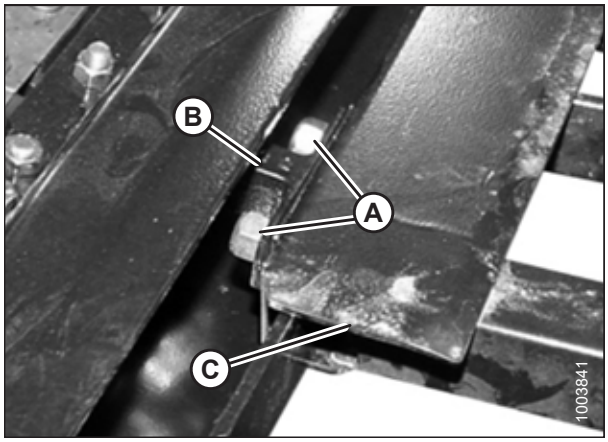


**Figure 6.75: Deck Support**

10. Locate a gauge that is the same thickness as the draper belt, plus 1 mm (0.04 in.). Slide the thickness gauge along deck (A) under the metal seal (C) in order to properly set the gap.
11. To create a seal, adjust deck (A) so that clearance (B) between metal seal (C) and deck is the same thickness as the draper belt plus 1 mm (0.04 in.).

    **NOTE:**

    When checking clearance at either roller, measure from the roller tube, **NOT** the deck.

12. Tighten deck support hardware (D).
13. Recheck gap (B) with thickness gauge. For instructions, refer to Step *10, page 132*.

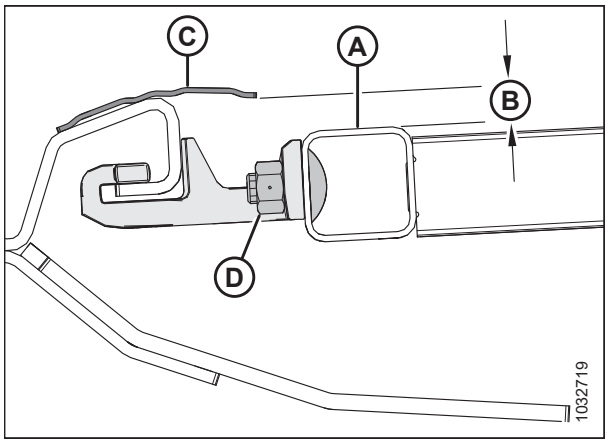


**Figure 6.76: Deck Support**

# 6.18 Lubricating the Header

**Table 6.4 Recommended Lubricant**

| Specification | Description | Use |
|---|---|---|
| SAE multipurpose | High temperature, extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base | As required unless otherwise specified |
| SAE multipurpose | High temperature, extreme pressure (EP) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base | Driveline slip-joints |

## 6.18.1 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.

### WARNING

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

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

   **IMPORTANT:**

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

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

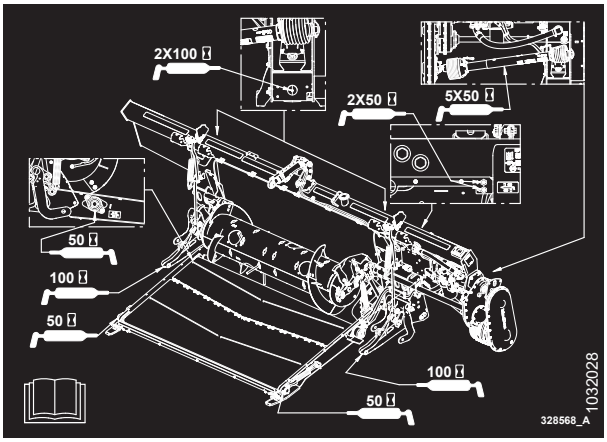


**Figure 6.77: FM200 Grease Point Layout Decal**

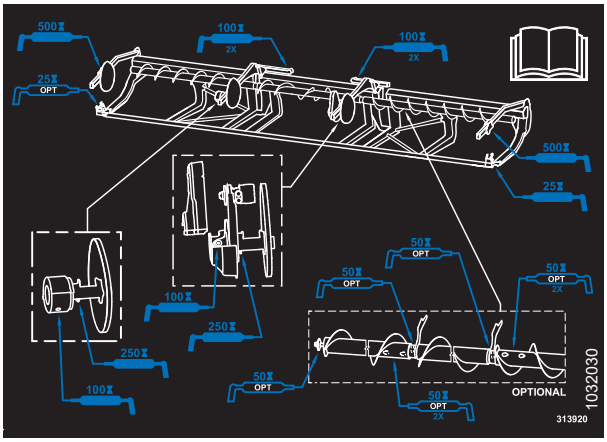


**Figure 6.78: FD2 Series Grease Point Layout Decal**

## 6.18.2 Lubrication Points

**NOTE:**

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base grease unless otherwise specified.

***Knifehead***

**NOTE:**

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

**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 required, relieve some pressure by removing the grease fitting.

- To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** overgrease the knifehead (A).
- Apply only 1–2 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 6–8 pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead.
- Check for signs of excessive heating on first few guards after greasing. If required, relieve pressure by pressing check-ball in grease fitting.

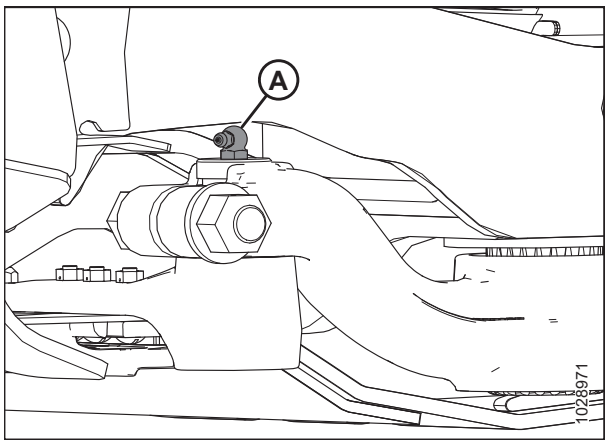


**Figure 6.79: Knifehead**

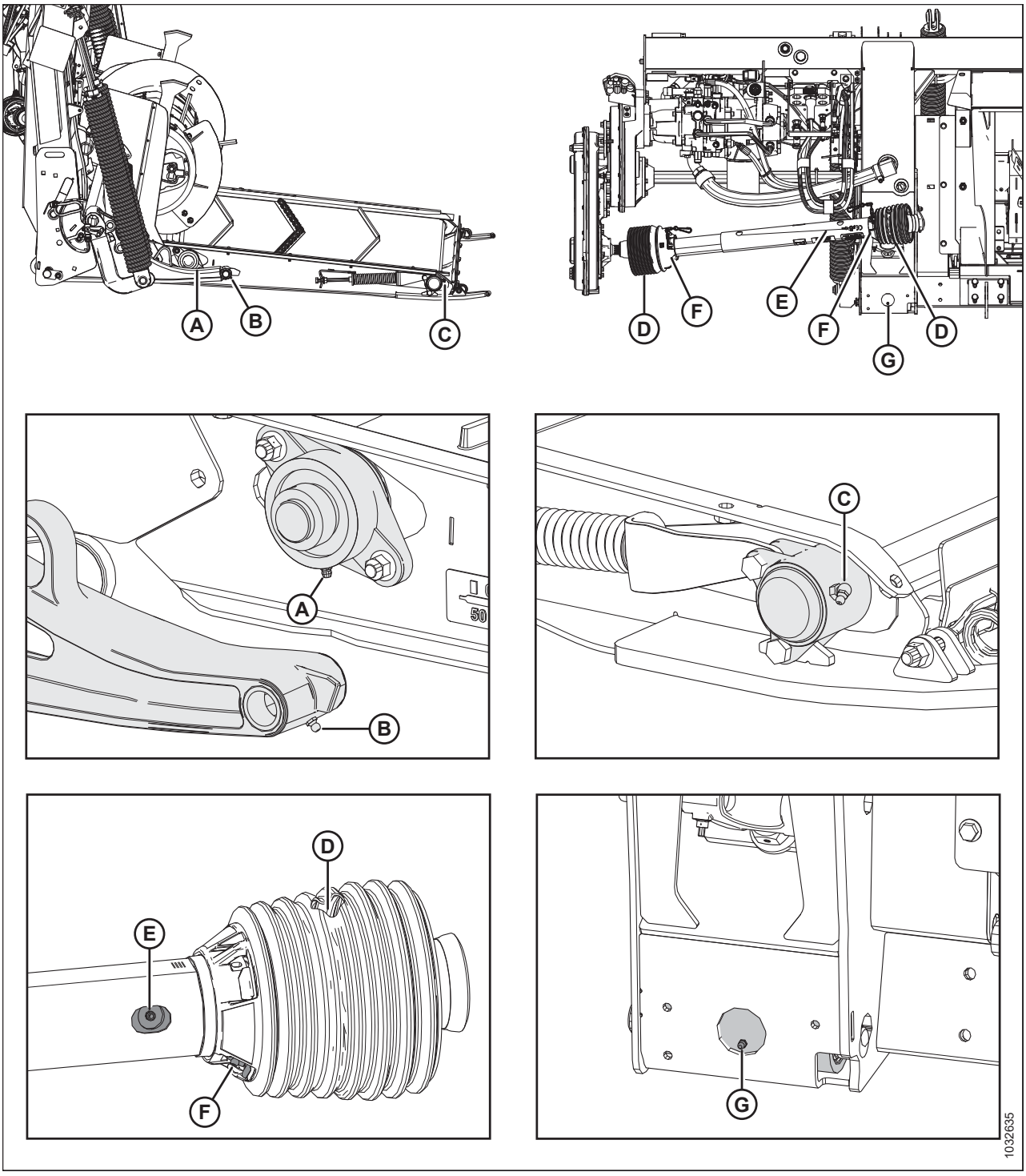


**Figure 6.80: FM200**

**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**[7]
**F - Driveline Guards (Two Places)**
**G - Float Pivots (Right and Left)**

7. Use high temperature extreme pressure (EP2) performance grease with 10% max molybdenum disulphide (NLGI Grade 2) lithium base.

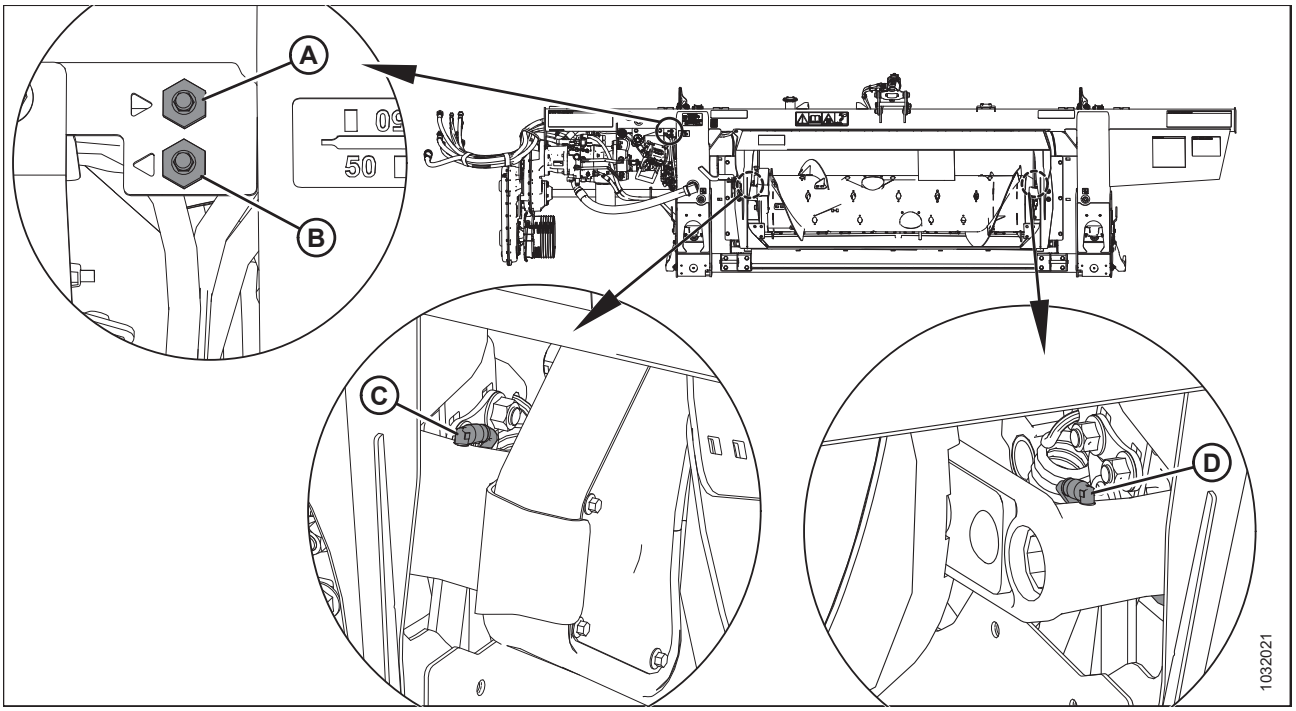


**Figure 6.81: FM200**

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

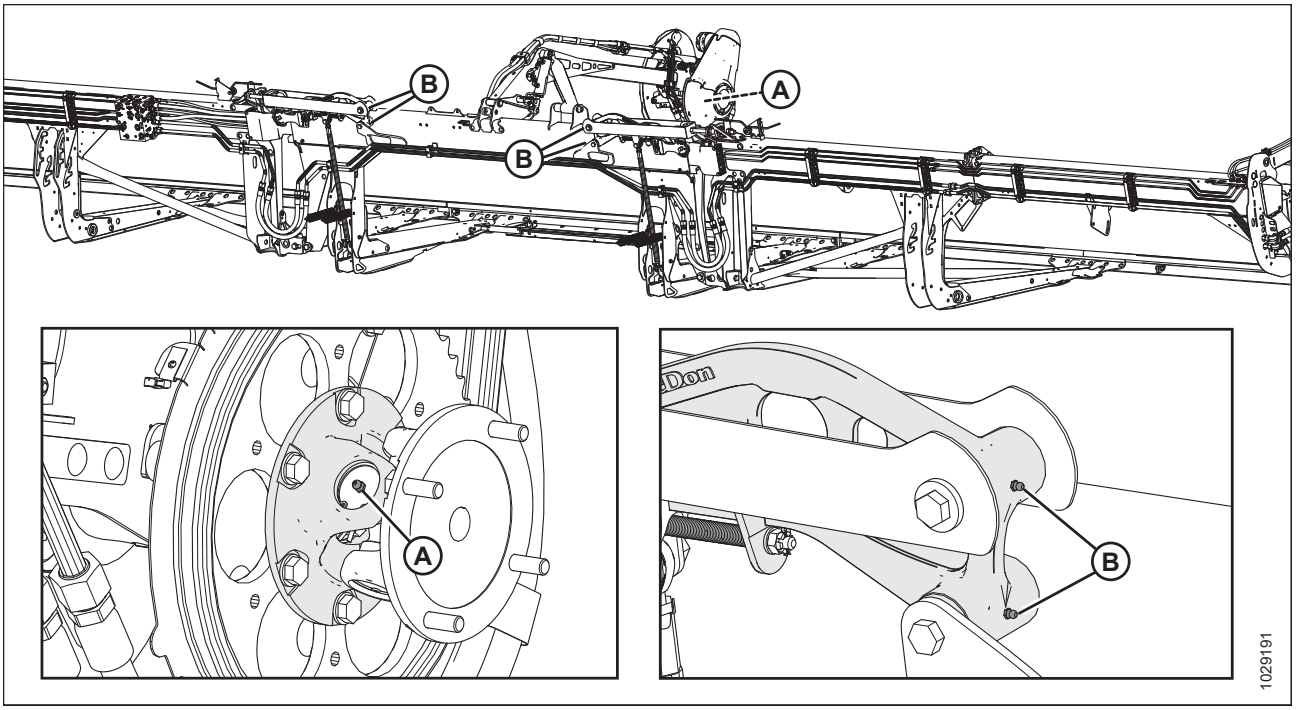


**Figure 6.82: Reel U-Joint and Flex Linkage**

**A - Reel U-joint (One Place)**[8]
**B - Flex Linkage (Two Places) – Both Sides**

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

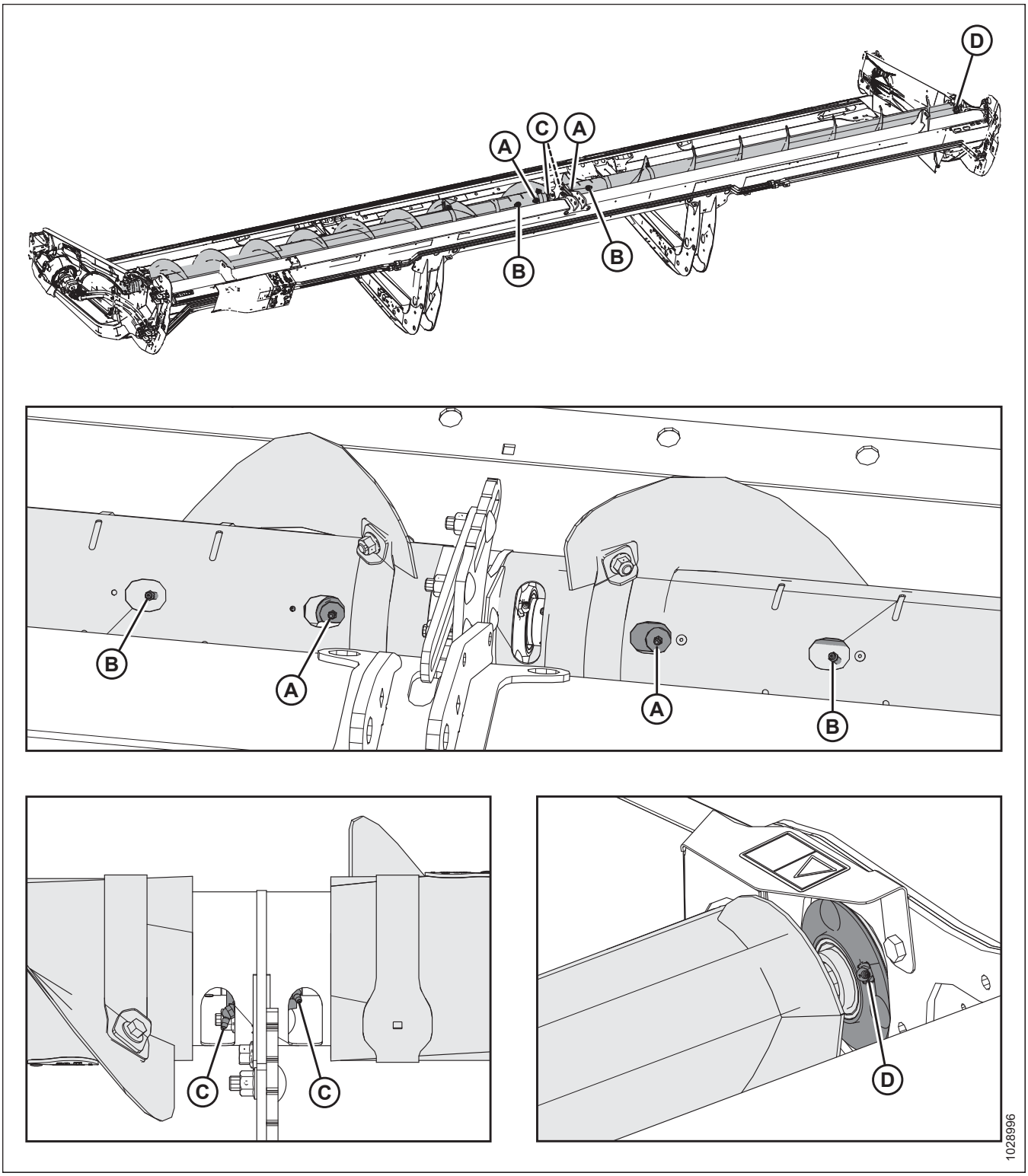


**Figure 6.83: Two-Piece Upper Cross Auger**

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

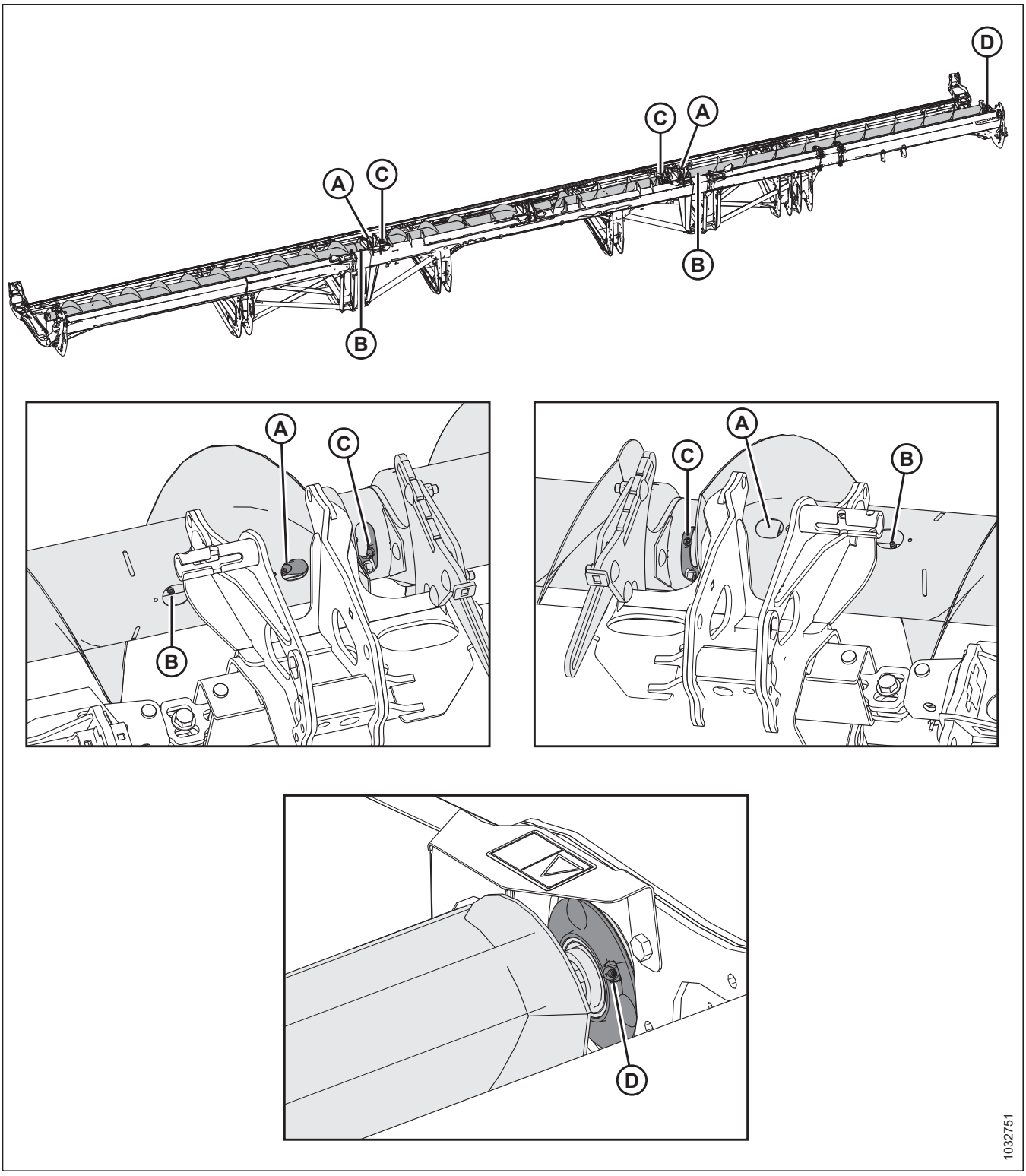


**Figure 6.84: Three-Piece Upper Cross Auger**

**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**

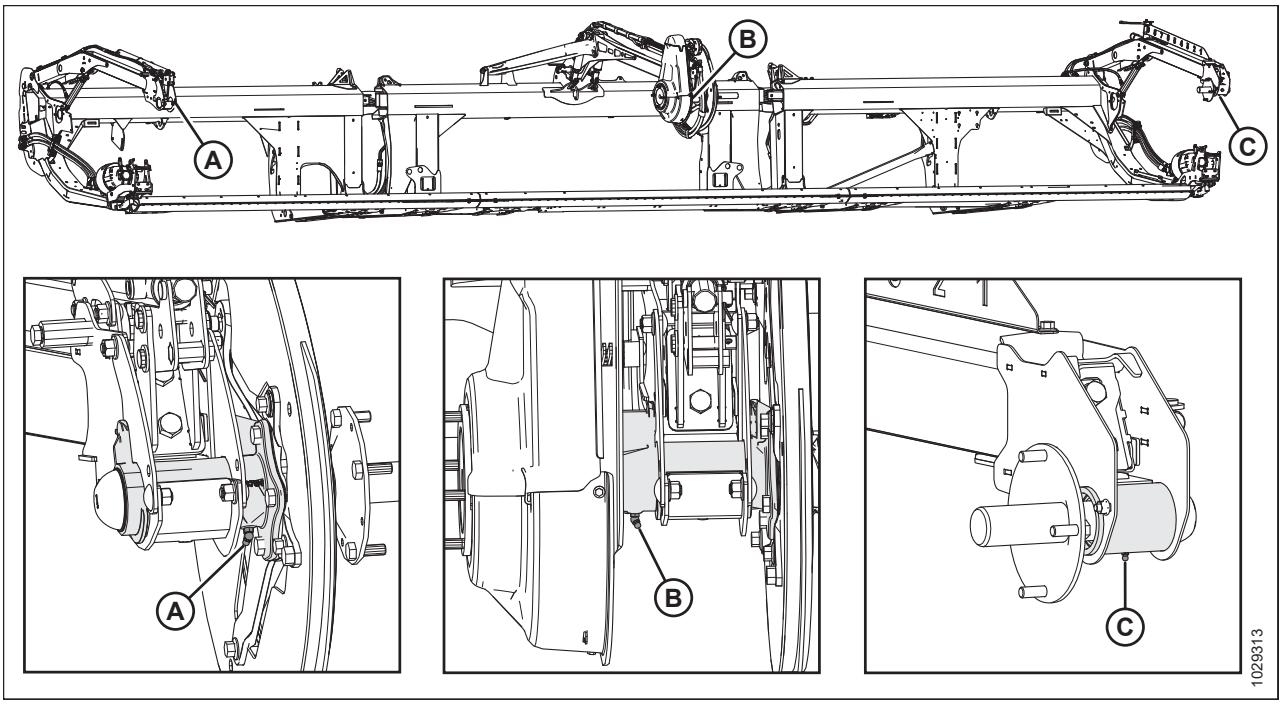


**Figure 6.85: Reel**

A - Reel Right Bearing (One Place)

B - Reel Center Bearing (One Place)

C - Reel Left Bearing (One Place)

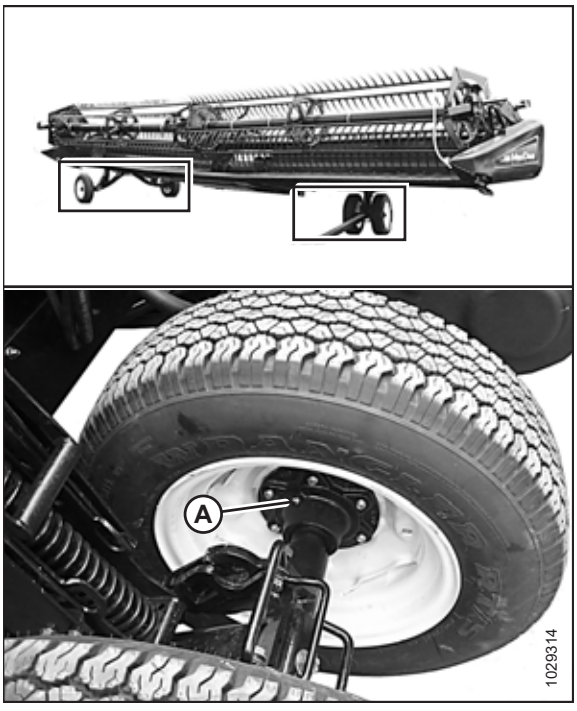


**Figure 6.86: Transport Wheel Bearings**

A - Wheel Bearings (Four Places)

# 6.19 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:**

Damage to the aluminum endsheet will result if the weight of the plastic header endshield rests on it.

1. Check if gap (A) between header endshield (B) and endsheet (C) is 1–3 mm (0.04–0.12 in.).

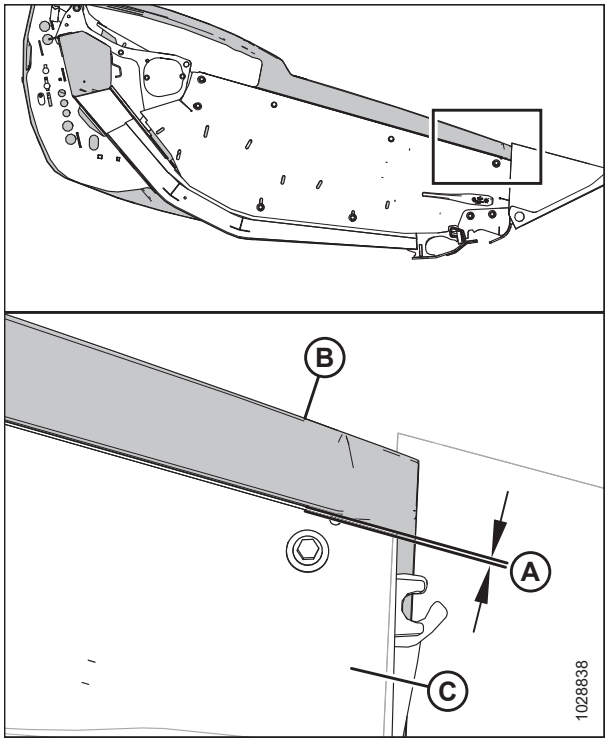


**Figure 6.87: Gap between Header Endshield and Endsheet**

2. If adjustment is required, adjust support bracket (A) as follows:
   a. Loosen bolts (B).
   b. Move support bracket (A) up or down as required to achieve correct clearance.
   c. Retighten hardware.

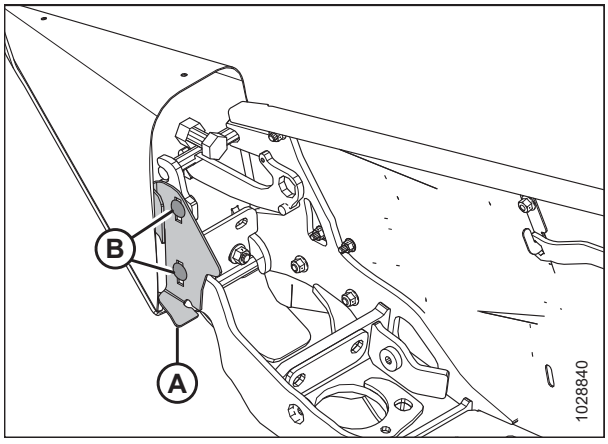


**Figure 6.88: Header Endshield Support Bracket**

3. Check if gap (A) between front of the header endshield and support bracket (B) is 6–10 mm (1/4–3/8 in.).

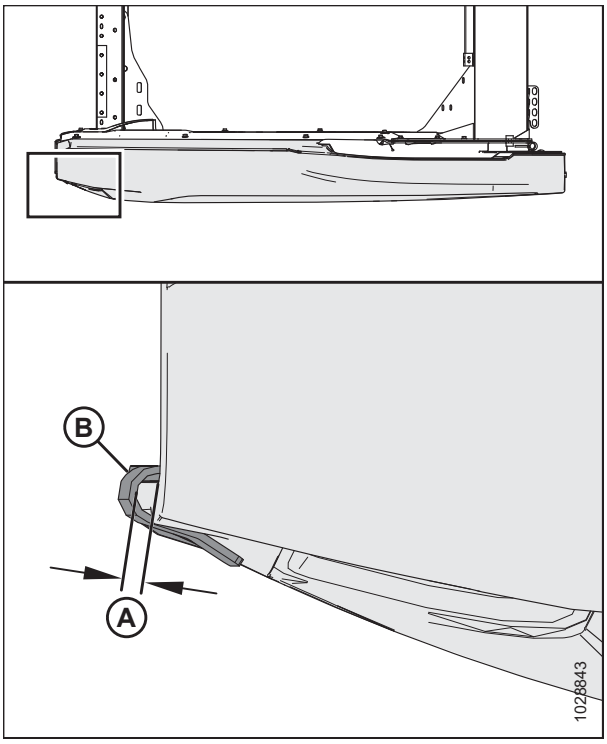


**Figure 6.89: Gap between Header Endshield and Support Bracket**

4. If adjustment is required, 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 correct clearance.
   c. Retighten hardware.

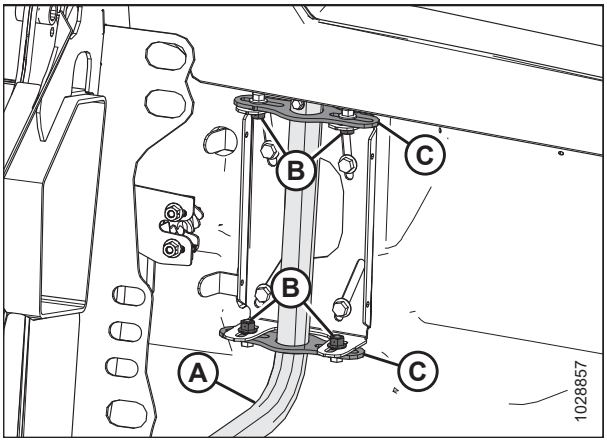


**Figure 6.90: Left Header Endshield**

**IMPORTANT:**

After making adjustments, ensure bolt (A) is fully engaged on two-stage latch (B) to prevent the header endshield from opening during operation.

**NOTE:**

The header endshield is shown transparent in the illustration.

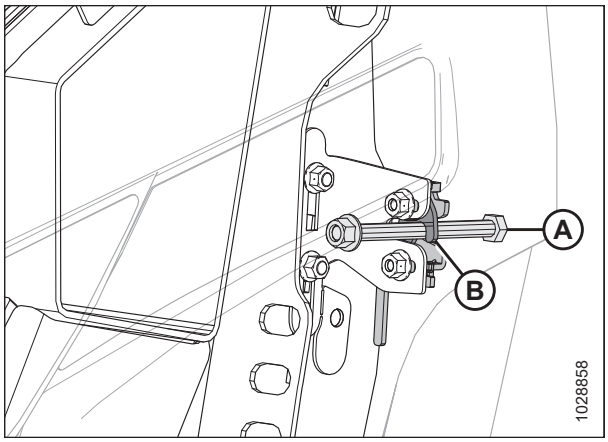


**Figure 6.91: Two-Stage Latch**

## 6.20 Checking Manuals

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

1. Remove the cable tie on manual case (A).
2. Confirm that the case contains the following manuals:
   - FD2 Series FlexDraper® Combine Header with FM200 Float Module Operator's Manual
   - FD2 Series FlexDraper® Combine Header with FM200 Float Module Quick Card
   - FD2 Series FlexDraper® Combine Header with FM200 Float Module Parts Catalog
3. Close the manual storage case.

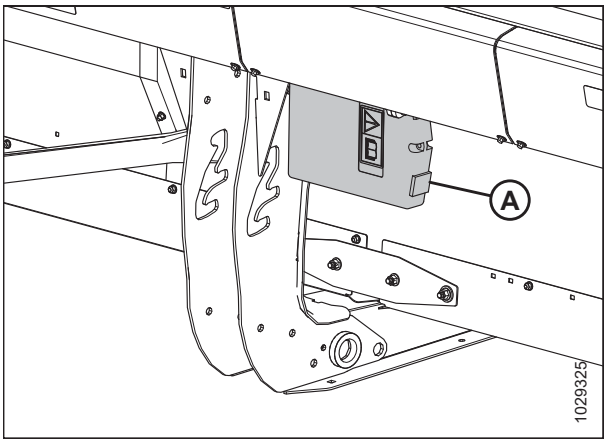


**Figure 6.92: Manual Case**

# Chapter 7: Setting up Auto Header Height Control

## 7.1 Auto Header Height Control

MacDon's auto header height control (AHHC) feature works in conjunction with the AHHC option available on certain combine models.

There are two float height sensors (A) installed on the float setting indicators on the float module. These sensors send signals to the combine allowing it to maintain a consistent cutting height and an optimum float as the header follows ground contours.

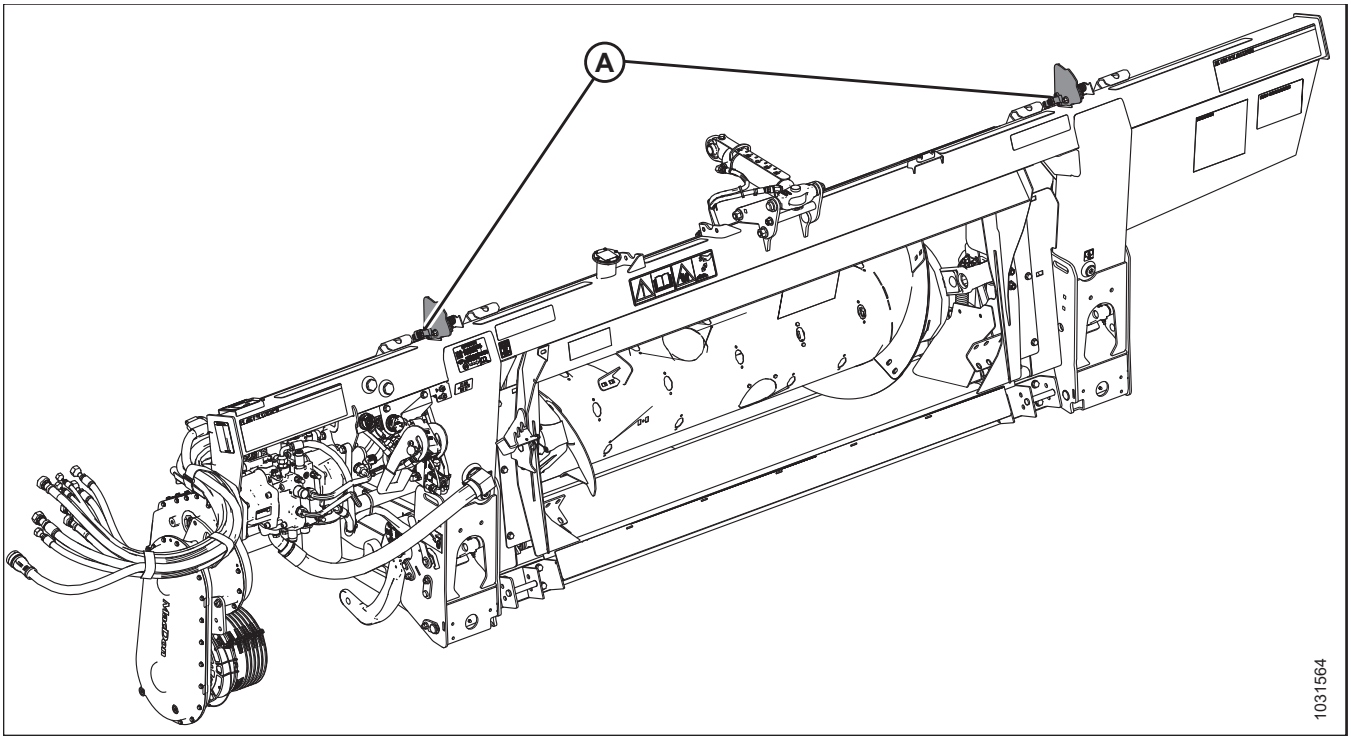


**Figure 7.1: FM200 Float Module**

FM200 Float Modules are factory-equipped for AHHC; however, before using the AHHC feature, you must do the following:

1. Ensure that the AHHC sensor's output voltage range is appropriate for the combine. For more information, refer to *7.1.2 Sensor Output Voltage Range – Combine Requirements, page 146*.
2. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the following instructions for your combine).
3. Calibrate the AHHC system so that the combine can correctly interpret data from the height sensor on the float module (refer to the following instructions for your combine).

   **NOTE:**

   Once calibration is complete, you are ready to use the AHHC feature in the field. Individual combine settings can improve AHHC performance (refer to your combine instruction manual).

Refer to the following instructions for your specific combine model:


- *7.1.6 AGCO IDEAL™ Series Combines, page 151*
- *7.1.8 Case IH, 120, 230, 240, and 250 Series Combines, page 173*
- *7.1.9 Challenger and Massey Ferguson 6 and 7 Series Combines, page 185*
- *7.1.10 CLAAS 500 Series Combines, page 192*
- *7.1.11 CLAAS 600 and 700 Series Combines, page 201*
- *7.1.13 Gleaner R65/R66/R75/R76 and S Series Combines, page 220*
- *7.1.14 Gleaner S9 Series Combines, page 229*
- *7.1.15 John Deere 70 Series Combines, page 243*
- *7.1.16 John Deere S and T Series Combines, page 249*
- *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*
- *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*


## 7.1.1 Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system are hall-effect sensors. Normal operating signal voltages for the sensors fall between 10% (0.5 VDC) and 90% (4.5 VDC). An increase in sensor voltage correlates to a decrease in ground pressure, or if you are cutting off the ground on gauge wheels an increase in the header cut height.

Sensor errors result in a 0 V signal, indicating a faulty sensor, incorrect supply voltage, or a damaged wiring harness.

## 7.1.2 Sensor Output Voltage Range – Combine Requirements

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.

**Table 7.1 Combine Voltage Limits**

| Combine | Low Voltage Limit | High Voltage Limit | Range (Difference between High and Low Limits) |
|---|---|---|---|
| Case IH 5088/6088/7088, 5130/6130/7130, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240 | 0.5 V | 4.5 V | 2.5 V |
| Challenger B, C, and IDEAL Series | 0.5 V | 4.5 V | 2.5 V |
| CLAAS 500/600/700, and Tucano Series | 0.5 V | 4.5 V | 2.5 V |
| Fendt IDEAL Series | 0.5 V | 4.5 V | 2.5 V |
| Gleaner A6, R, and S Series | 0.5 V | 4.5 V | 2.5 V |
| John Deere 70, S, and T Series | 0.5 V | 4.5 V | 2.5 V |
| Massey Ferguson 9005, 9500, and IDEAL Series | 0.5 V | 4.5 V | 2.5 V |
| New Holland CR/CX - 5 V system | 0.7 V | 4.3 V | 2.5 V |
| New Holland CR/CX - 10 V system | 2.8 V | 7.2 V | 4.1–4.4 V |
| Rostelmash Torum and RSM161 Series | 0.5 V | 4.5 V | 2.5 V |
| Versatile RT490 | 0.5 V | 4.5 V | 2.5 V |

## 7.1.3 Checking Voltage Limits

### WARNING

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

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 high voltage limit:***

4. Extend the guard angle until header angle indicator (A) is at **E**.

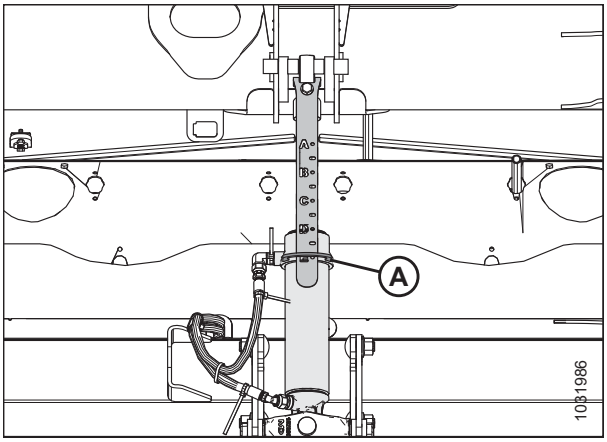


**Figure 7.2: Center-Link**

5. Float indicator pointer (A) should be at 0 (B).
6. Shut down the engine, and remove the key from the ignition.

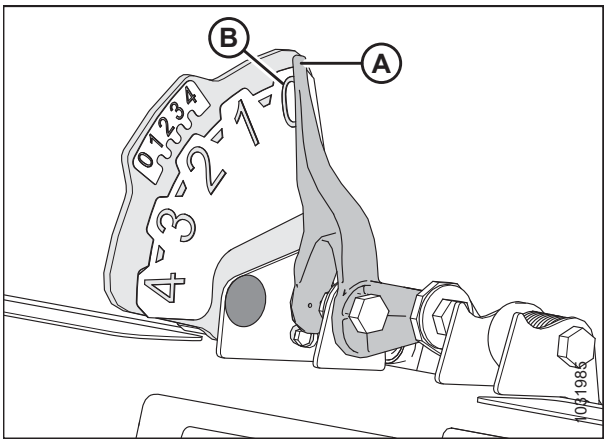


**Figure 7.3: Left Float Indicator – View from Rear**

7. 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.

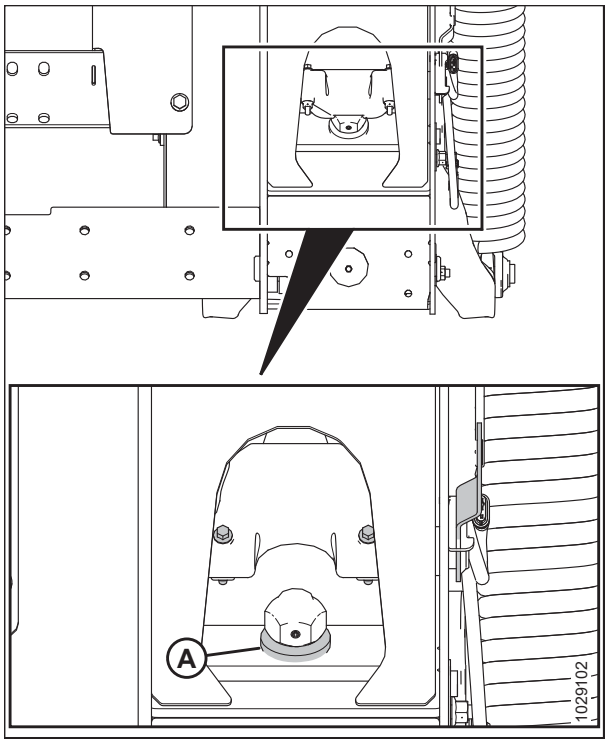


**Figure 7.4: Down Stop Washer**

8. Locate connector P600 (A) at the left front of the float module.
9. Remove plug cap (B).
10. Turn the key to the run position.
11. Check P600 for power from the combine. There should be 5 V at pin 7.
    - Pin 7 - FM2215E – signal
    - Pin 8 - FM2515E – ground
12. On connector P600, confirm voltage of 3.8–4.3 V from left sensor (pins 1 and 8), and right sensor (pins 3 and 8).
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3- FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

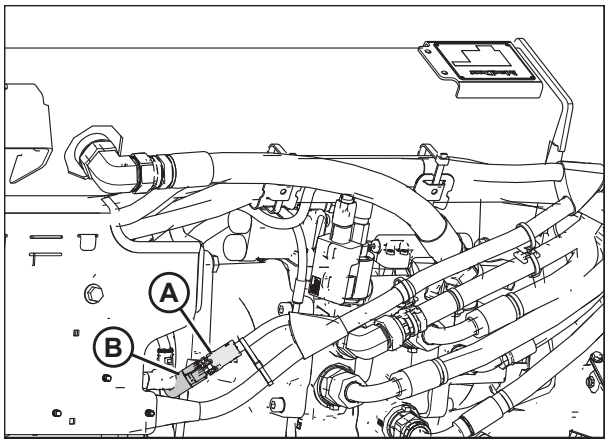


**Figure 7.5: Left Float Indicator – View from Rear**

**NOTE:**

The average of both sensors is what is sent to the combine.

***Checking sensor low voltage limit:***

13. Extend the guard angle until header angle indicator (A) is at **E**.

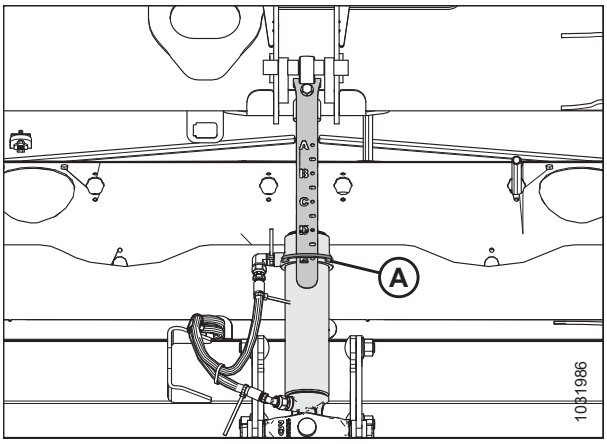


**Figure 7.6: Center-Link**

14. Fully lower header on the ground, float indicator pointer (A) should be at **4** (B).
15. Turn the key to the run position.
16. On connector P600, confirm voltage of 0.7–1.2 V from left sensor (pins 1 and 8), and right sensor (pins 3 and 8).
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3- FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

**NOTE:**

The average of both sensors is what is sent to the combine.

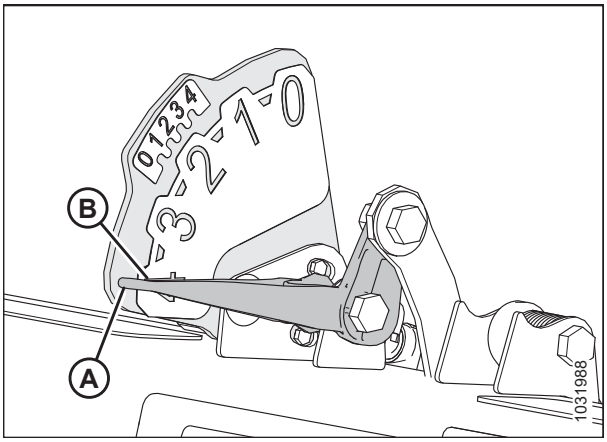


**Figure 7.7: Left Float Indicator – View from Rear**

## 7.1.4 Replacing Float Height Sensor

### ⚠ WARNING

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

**NOTE:**

This procedure can be completed on either side of the float module.

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.

   **NOTE:**

   If replacing the float height indicator sensor on the right side, disconnect plug P539.

6. Remove bolt (A).
7. Remove indicator plate (B) with sensor.

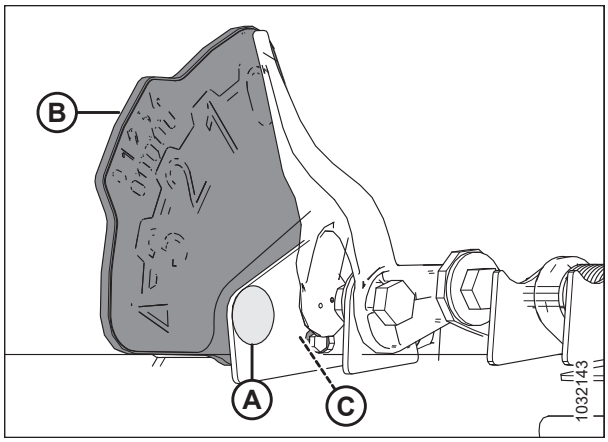


**Figure 7.8: Float Setting Indicator – Left**

8. Remove two bolts and nuts (A).
9. Remove and discard old sensor (B).
10. Install new sensor (B), so the plug is facing down.
11. Install two bolts and nuts (A).

    **NOTE:**

    Bolt heads should be on the same side as the decal.

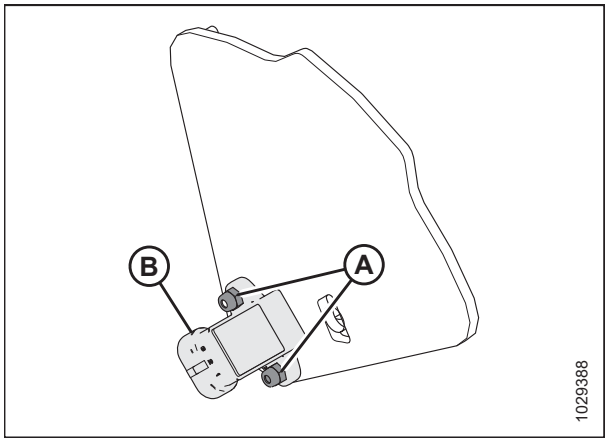


**Figure 7.9: Float Height Sensor**

12. Install indicator plate (B) with sensor.
13. Install bolt (A).
14. Connect harness plug (C).

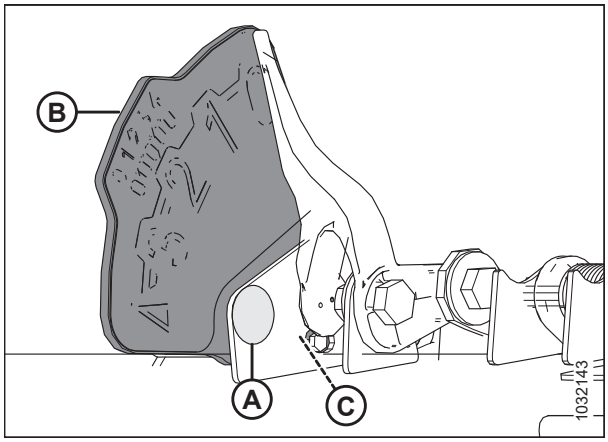


**Figure 7.10: Float Setting Indicator - Left**

## 7.1.5 10 Volt Adapter (MD #B6877) – New Holland Combines Only

New Holland combines with a 10 V system require the 10 V adapter (A) (MD #B6877) for proper calibration of the auto header height control (AHHC) feature.

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

To check sensor voltages, refer to *7.1.3 Checking Voltage Limits, page 147*.

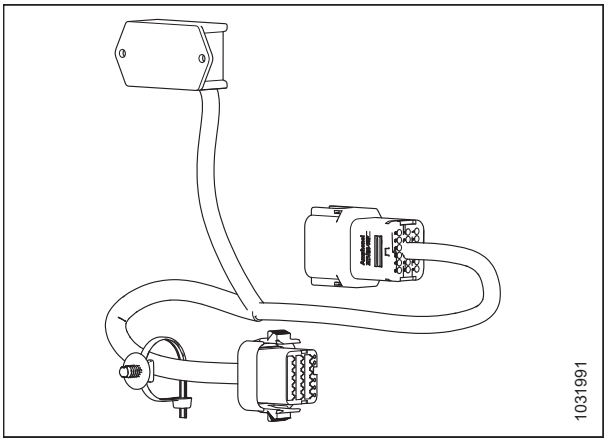


**Figure 7.11: 10 V Adapter (MD #B6877)**

## 7.1.6 AGCO IDEAL™ Series Combines

*Setting up the Header – AGCO IDEAL™ Series*

**NOTE:**

Up-to-date illustrations of the AGCO IDEAL™ Series combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

AGCO Tyton terminal (A) is used to set up and manage a MacDon header on an IDEAL™ combine. Use the touch screen display to select the desired item on the screen.


**Figure 7.12: AGCO IDEAL™ Operator Station**

**A - Tyton Terminal** **B - Control Handle**
**C - Throttle** **D - Header Control Cluster**

1. On the top right of the home screen, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

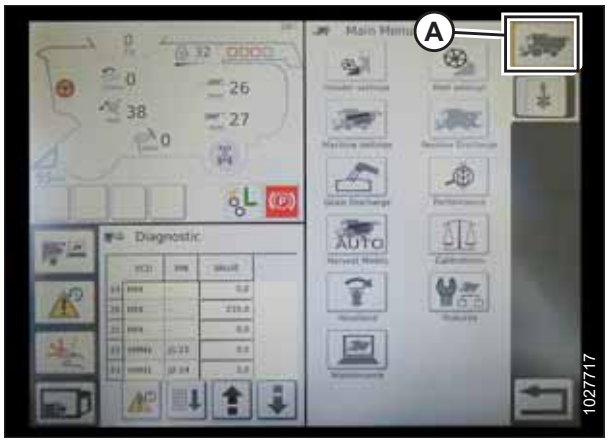


**Figure 7.13: Combine Icon on Home Page**

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

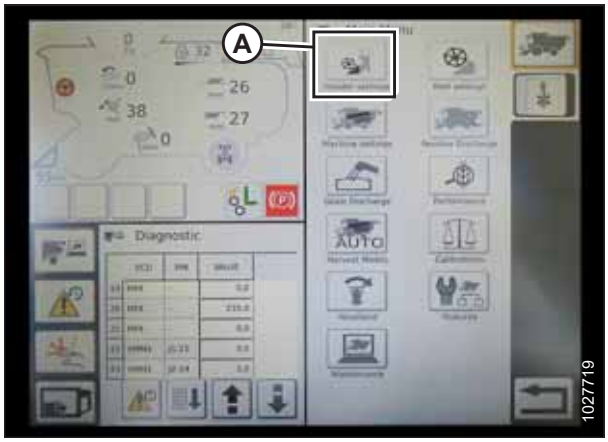


**Figure 7.14: Header Settings in Combine Main Menu**

3. Touch HEADER CONFIGURATION field (A). A dialog box showing predefined headers opens.
   - If your MacDon header is already set up, it appears on the header list. Touch the 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)

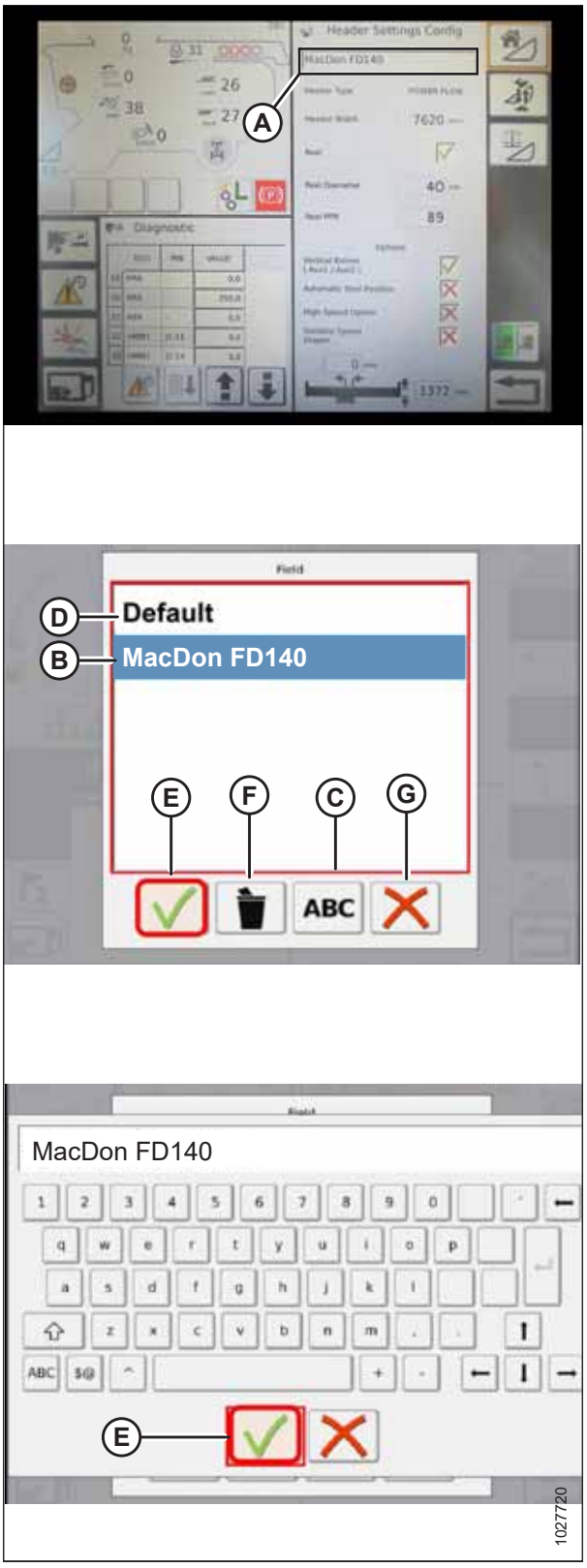


**Figure 7.15: Header Configuration Menu on Header Settings Page**

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A).

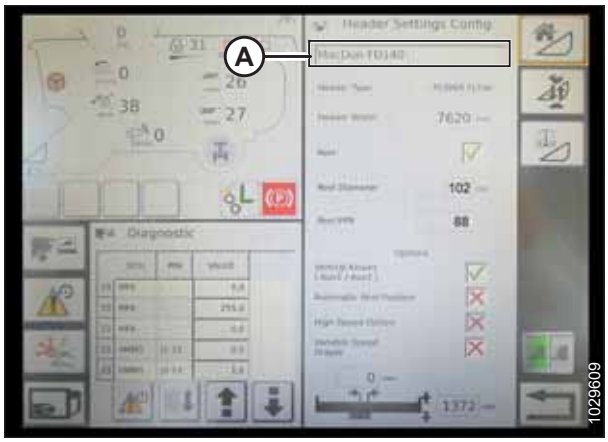


**Figure 7.16: Header Settings**

5. Make sure that REEL check box (A) is checked.

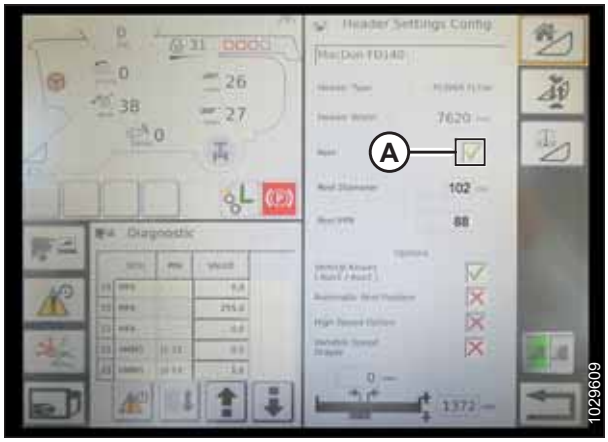


**Figure 7.17: Header Settings**

6. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **13** for a MacDon reel.
7. Touch REEL PPR (Pulses Per Revolution) field (B) and enter **18** as the value for your MacDon header.

   **NOTE:**

   PPR is determined by the number of teeth on the reel speed sprocket.

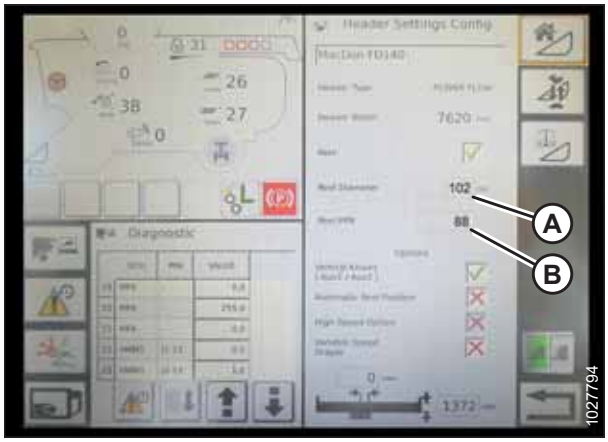


**Figure 7.18: Header Settings**

8. Touch green check mark (B) at the bottom of numeric keypad (A) when complete, or the red X to cancel.

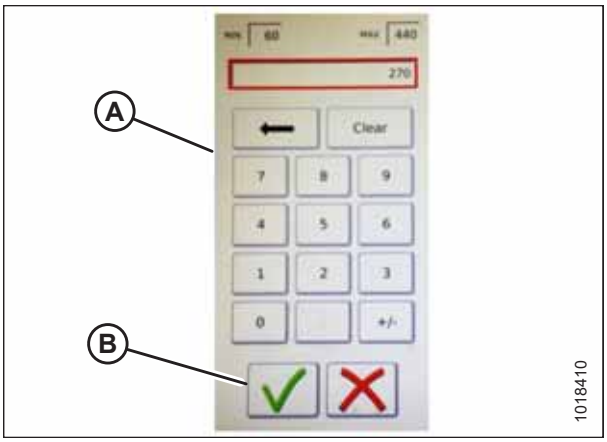


**Figure 7.19: Numeric Keypad**

9. When complete, touch green check mark (A) at the bottom of the HEADER SETTINGS page.

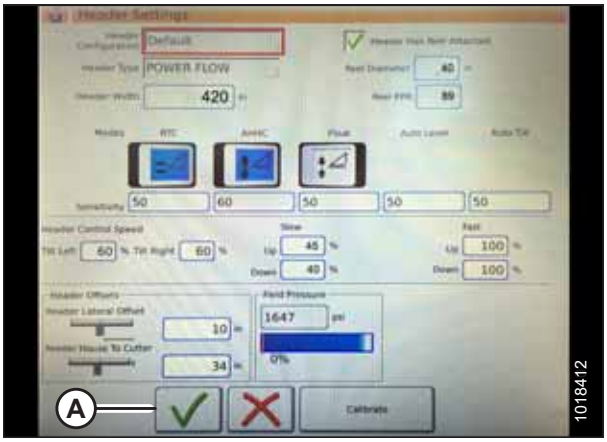


**Figure 7.20: Header Settings Page**

*Setting Minimum Reel Speed and Calibrating Reel – AGCO IDEAL™ Series*

## WARNING

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

**NOTE:**

Up-to-date illustrations of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

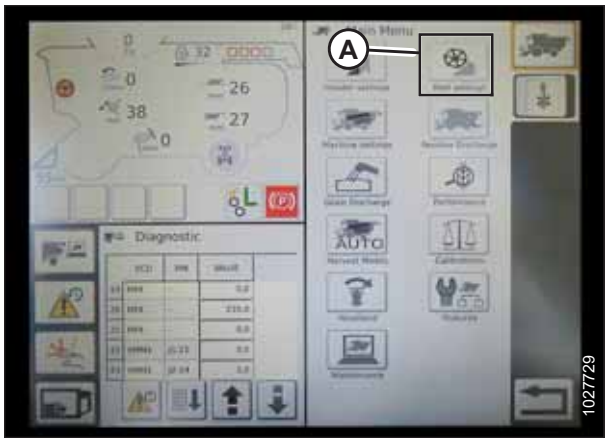


**Figure 7.21: Reel Settings on Combine Main Menu**

2. To set minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard displays. 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:**

   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. Reel speed is calibrated on the REEL SETTINGS page by touching CALIBRATE button (A) in the top right of the page.

   **NOTE:**

   The CALIBRATION WIZARD opens and displays a hazard warning.

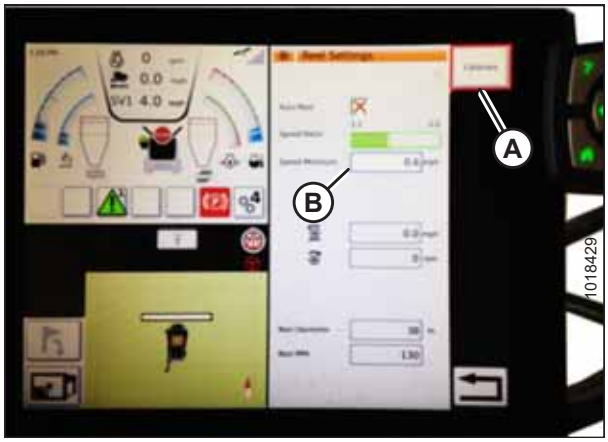


**Figure 7.22: Reel Settings Calibration**

4. Make sure to meet all the conditions listed in the CALIBRATION WIZARD warning. Press the green check mark to accept and start reel calibration. Pressing the red X will cancel the calibration procedure.


**Figure 7.23: Calibration Wizard**

5. A message appears in the CALIBRATION WIZARD stating that reel calibration has started. The reel will begin turning slowly and increase to high speed. A progress bar is provided. If necessary, touch the red X (not shown) to cancel. Otherwise, wait for the message that reel calibration has completed successfully. Touch the green check mark to save the calibrated settings.


**Figure 7.24: Calibration Progress**

## *Setting up Automatic Header Controls – AGCO IDEAL™ Series*

Automatic header functions are configured on the HEADER SETTINGS page.

**NOTE:**

Up-to-date illustrations of the IDEAL™ Series combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

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 sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease sensitivity if the combine hunts for a position in Auto Mode.

   **NOTE:**

   Recommended sensitivity starting points for MacDon headers are:

   - **50** for RTC (A)
   - **60** for AHHC (B)

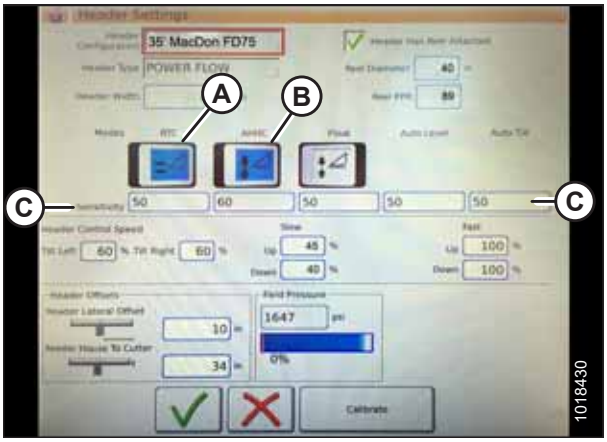


**Figure 7.25: Automatic Controls and Sensitivity Settings**

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:**

   Recommended header control speed starting points

   - Slow: Up 45/Down 40
   - Fast: Up 100/Down 100

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.

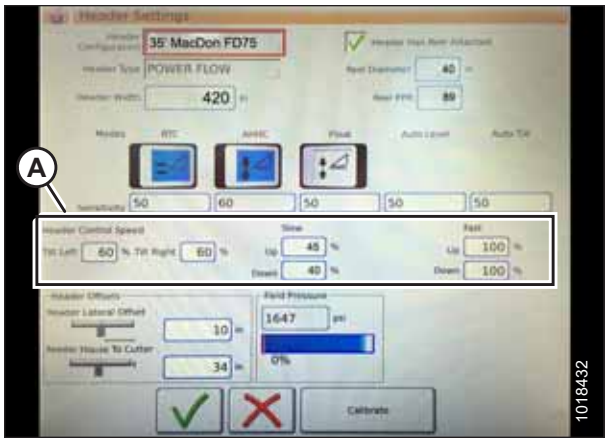


**Figure 7.26: Header Speed Control Settings**

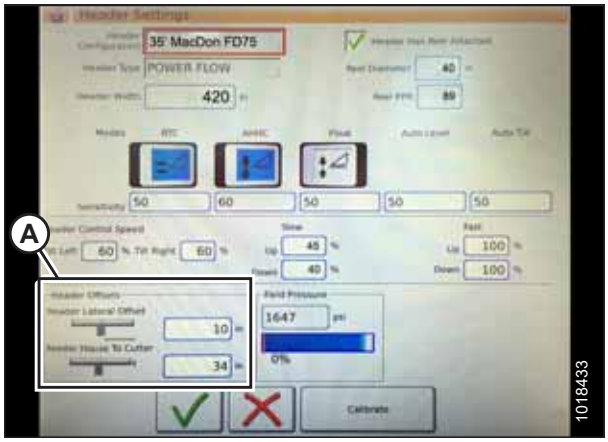


**Figure 7.27: Header Offset Settings**

## *Calibrating the Header – AGCO IDEAL™ Series*

The auto header control functions are configured on the HEADER SETTINGS page.

## WARNING

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

**NOTE:**

Up-to-date illustrations of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

1. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A).

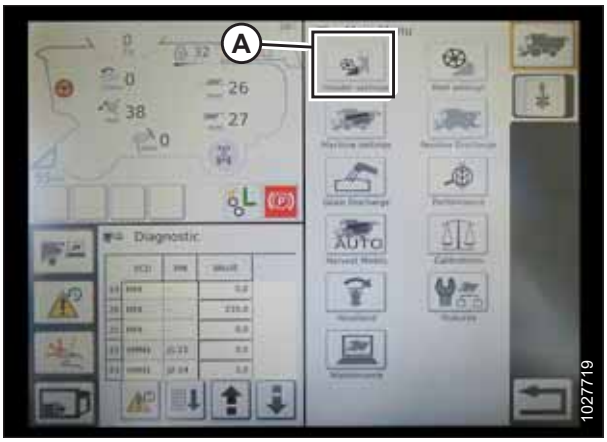


**Figure 7.28: Combine Main Menu**

2. Touch HEADER CALIBRATE (A) at the right side of the HEADER SETTINGS CONFIG page.

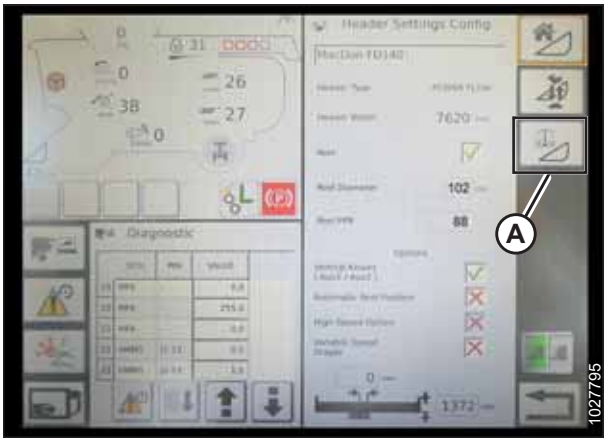


**Figure 7.29: Header Settings Page**

3. The hazard warning for HEADER CALIBRATION appears. Make sure that all conditions are met.
4. Touch the green check mark at the bottom of the page to start the calibration and follow the on-screen commands.


**Figure 7.30: Header Calibration Warning**

A progress bar is provided and the calibration can be stopped by touching the red X. The header moves automatically and erratically during this process.

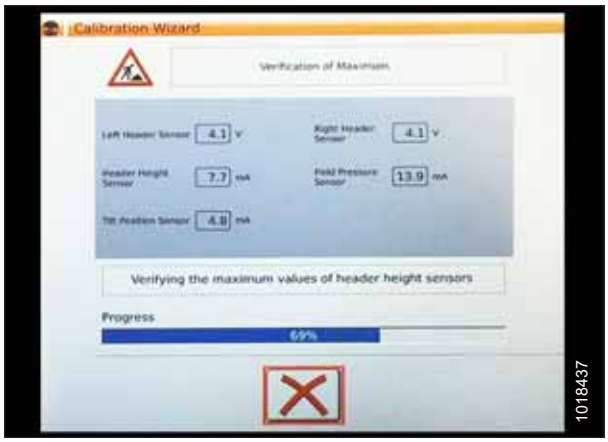


**Figure 7.31: Calibration in Progress**

5. When the calibration is complete:
   - Review summary information (A)
   - Review green check marks confirming calibrated functions (B)
   - Touch check mark (C) to save


**Figure 7.32: Completed Calibration Page**

**NOTE:**

Touch CALIBRATIONS icon (A) on MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.

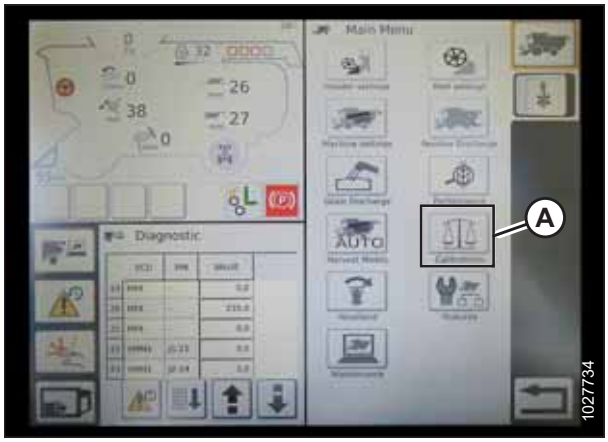


**Figure 7.33: Direct Calibration Menu**

## *Operating the Header – AGCO IDEAL™ Series*

**NOTE:**

Up-to-date illustrations of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

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)

For instructions, refer to the combine operator's manual to familiarize yourself with the controls.


**Figure 7.34: AGCO IDEAL™ Operator Station**

1. With the header running, set lateral tilt to MANUAL by pressing switch (A) so the light above switch is off.
2. Engage the AHHC by pressing switch (B) so light above switch is on.


**Figure 7.35: Header Control Cluster**

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current setpoint position.


**Figure 7.36: AHHC on Control Handle**

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the position.


**Figure 7.37: Header Control Cluster**

## *Reviewing Header In-Field Settings – AGCO IDEAL™ Series*

**NOTE:**

Up-to-date illustrations of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

1. To view header group settings, touch HEADER icon (A) on the right side of the home page.
2. The following information is displayed:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by red line)
   - HEADER symbol (D) – touch to adjust the setpoint cut-off position using the adjustment wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune with the header height setpoint control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

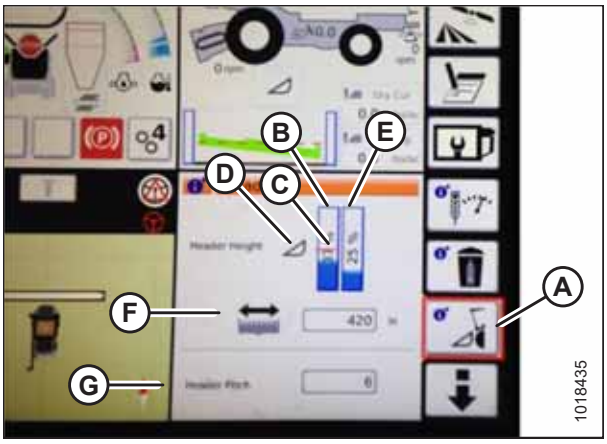


**Figure 7.38: Header Groups**

3. Touching a field opens the on-screen keyboard so that values can be adjusted. Enter the new value and touch the green check mark when complete.

   **NOTE:**

   Adjustment wheel (A) is located on the right of the Tyton terminal.

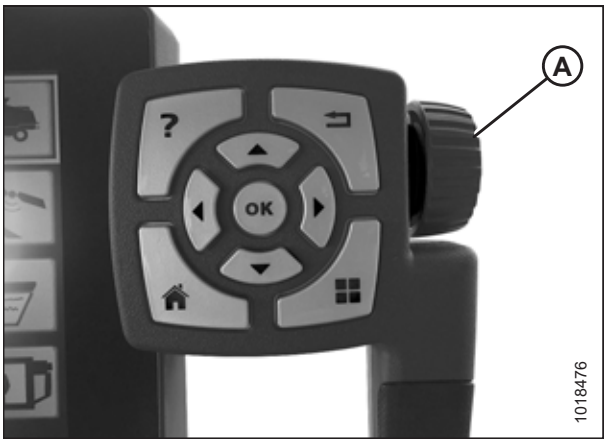


**Figure 7.39: Adjustment Wheel on Right of Tyton Terminal**

**NOTE:**

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.


**Figure 7.40: Header Control Cluster**

## 7.1.7 Case IH 130 and 140 Series Mid-Range Combines

*Setting up the Header on the Combine Display – Case IH 5130/6130/7130; 5140/6140/7140*

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

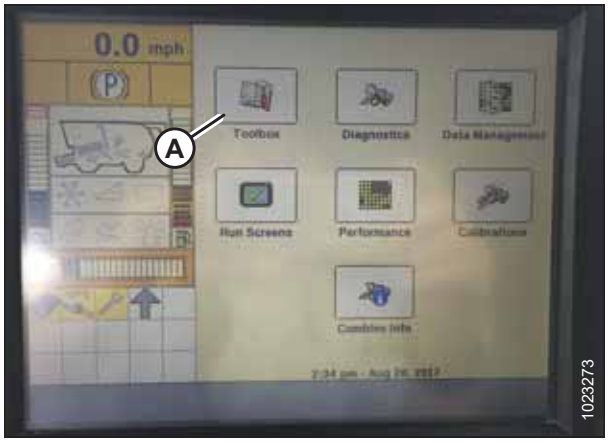


**Figure 7.41: Case IH Combine Display**

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

   **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.

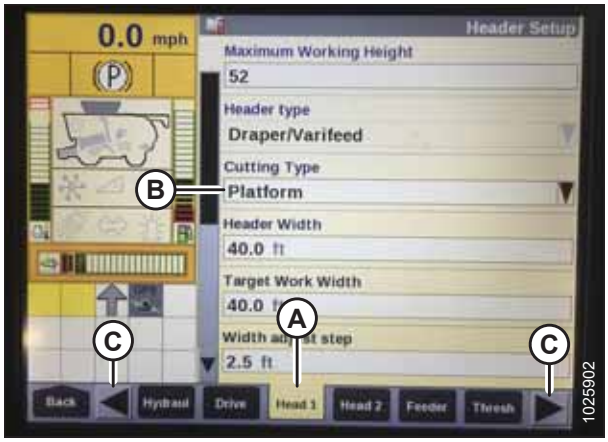


**Figure 7.42: Case IH Combine Display**

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

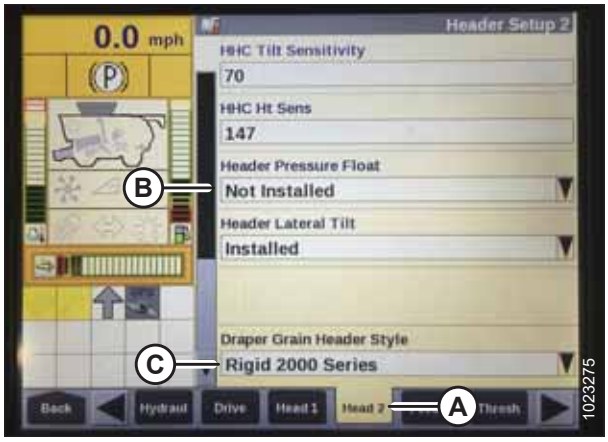


**Figure 7.43: Case IH Combine Display**

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

   - **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 hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.

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

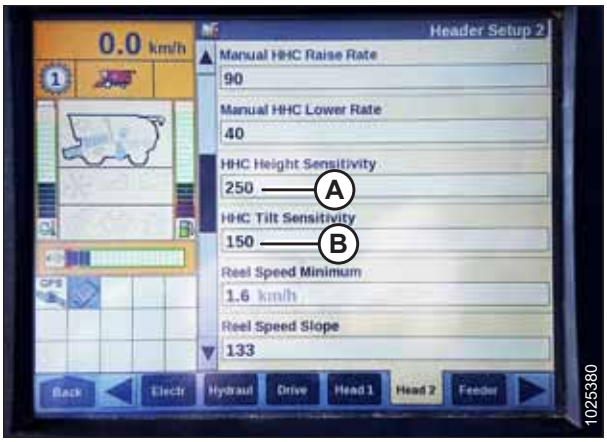


**Figure 7.44: Case IH Combine Display**

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

   - 4 if you are using a standard 19-tooth drive sprocket.
   - 5 if you are using an optional high-torque 14-tooth drive sprocket.
   - 6 if you are using an optional high-torque 10-tooth drive sprocket.

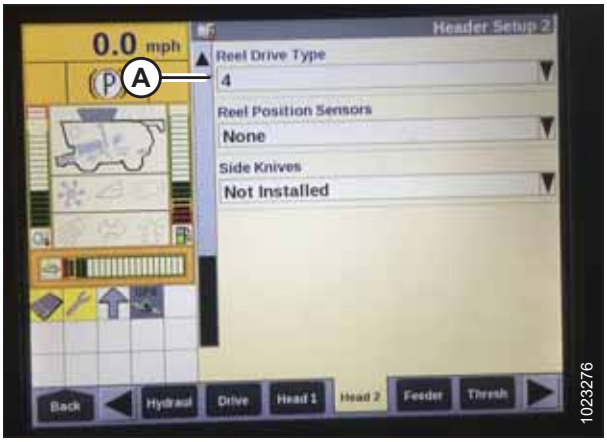


**Figure 7.45: Case IH Combine Display**

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


**Figure 7.46: 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.

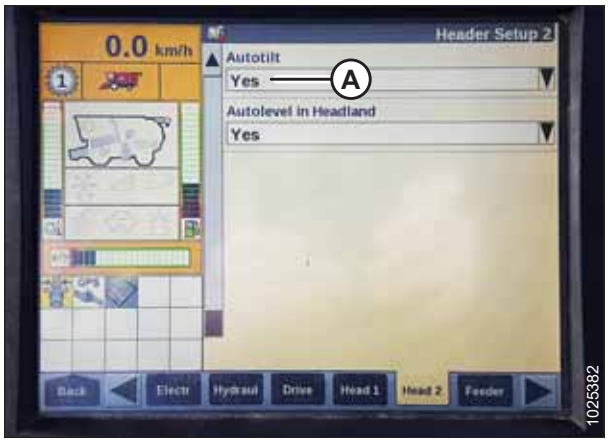


**Figure 7.47: Case IH Combine Display**

*Checking Voltage Range from Combine Cab – Case IH 5130/6130/7130; 5140/6140/7140*

**NOTE:**

Changes may have been made to combine controls or display since this document was published. For instructions, refer to the combine operator's manual for updates.

## WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   **NOTE:**

   If the header is not on 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.

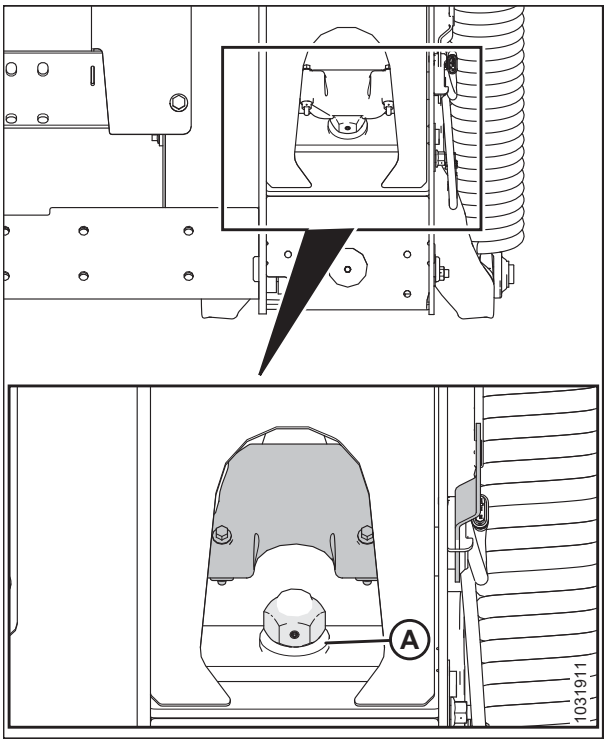


**Figure 7.48: Float Lock**

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

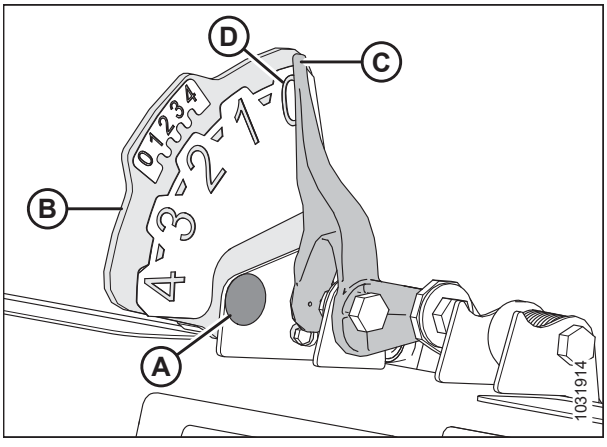


**Figure 7.49: Float Indicator**

5. Ensure header float is unlocked.
6. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page opens.

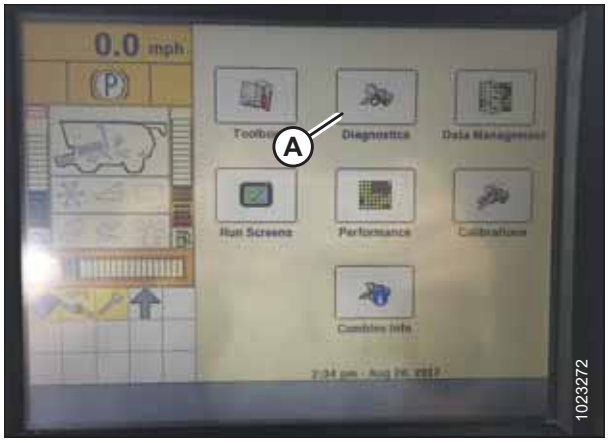


**Figure 7.50: Case IH Combine Display**

7. Select SETTINGS (A). The SETTINGS page opens.
8. From the GROUP menu, select HEADER (B).

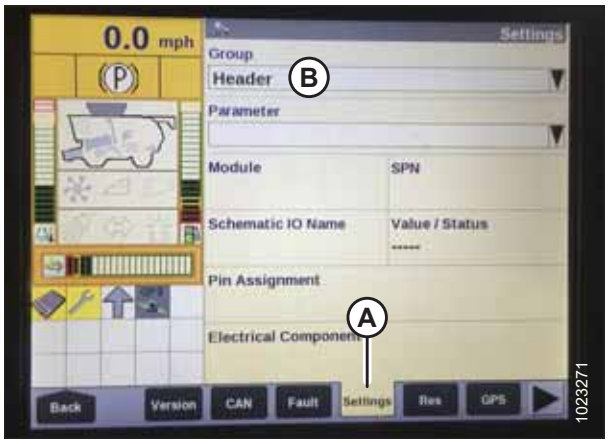


**Figure 7.51: Case IH Combine Display**

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


**Figure 7.52: Case IH Combine Display**

10. The SETTINGS page updates to display the voltage in VALUE/STATUS field (A). Lower the feeder house fully, and then raise it 254–306 mm (10–14 in.) off the ground to view the full range of voltage readings.


**Figure 7.53: Case IH Combine Display**

## *Calibrating Auto Header Height Control – Case IH 5130/6130/7130, 5140/6140/7140*

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

### WARNING

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

**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 *Calibrating the Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 179*.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. For instructions, refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure center-link is set to **D**.
2. Ensure all header and float module electrical and hydraulic connections are made.
3. Start the combine engine, but do **NOT** engage separator or feeder house.

4. Locate HEADER CONTROL switch (A) on the right console, and set to HT (this is AHHC mode).
5. Hold the DOWN button for 10 seconds, or until the combine feeder house has been lowered all the way down (the feeder house will stop moving).
6. Push the RAISE button and hold it until the feeder house travels all the way up. It will stop 61 cm (2 ft.) above ground for 5 seconds, then it will resume lift. This is an indication that calibration is successful.

   **NOTE:**

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

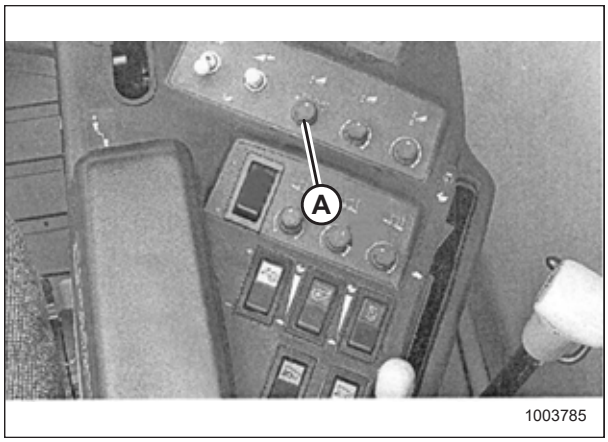


**Figure 7.54: Right Console**

## *Setting Preset Cutting Height – Case 5130/6130/7130, 5140/6140/7140*

To set preset cutting height, follow these steps:

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 254–306 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.

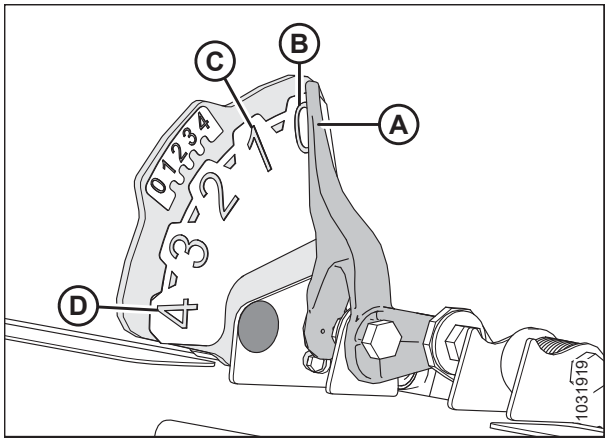


**Figure 7.55: Float Indicator Box**

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

   **NOTE:**

   When setting presets, always set header position before setting reel position. If header and reel are set at the same time, the reel setting will not be saved.
4. Manually raise or lower the reel to the desired working position.
5. Press 1 on button (A). A yellow light next to the button will illuminate.


**Figure 7.56: Case Combine Console**

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


**Figure 7.57: Case Combine Console**

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 7.58: 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 maximum working height, hold the SHIFT button on the back of the control handle while tapping AHHC button (A).


**Figure 7.59: 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 7.60: Case Combine Display – Header Setup Page**

12. If you need to change the position of one of the presets, you can fine-tune this setting with button (A) on the combine console.


**Figure 7.61: Case Combine Console**

## 7.1.8 Case IH, 120, 230, 240, and 250 Series Combines

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   **NOTE:**

   If the header is not on 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.

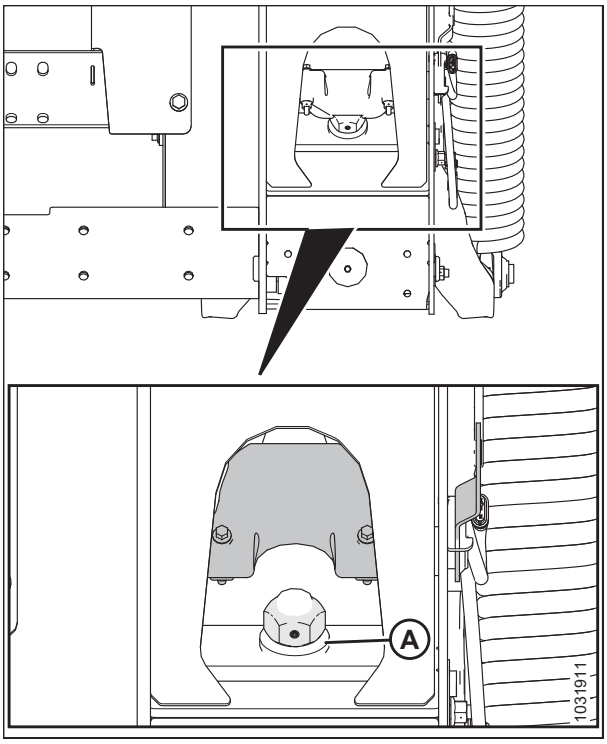


**Figure 7.62: Float Lock**

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

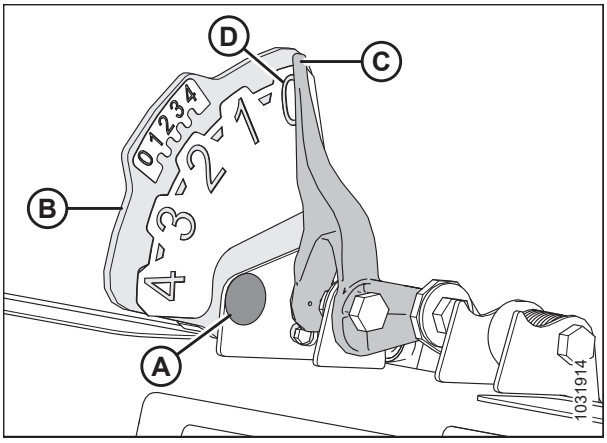


**Figure 7.63: Float Indicator**

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

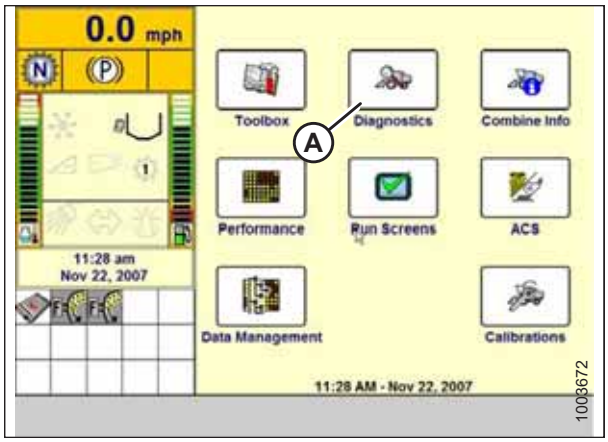


**Figure 7.64: Case IH Combine Display**

8. Select GROUP arrow (A). The GROUP dialog box opens.

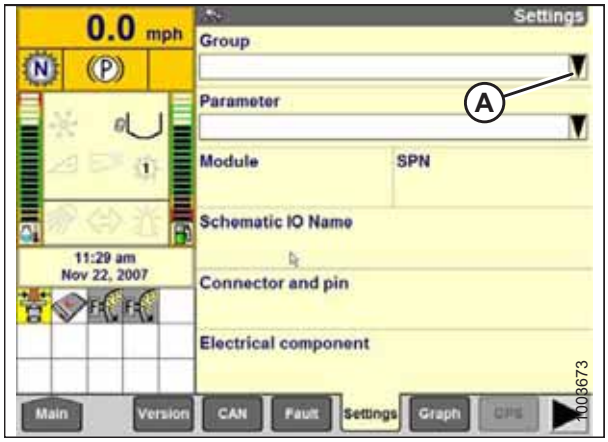


**Figure 7.65: Case IH Combine Display**

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

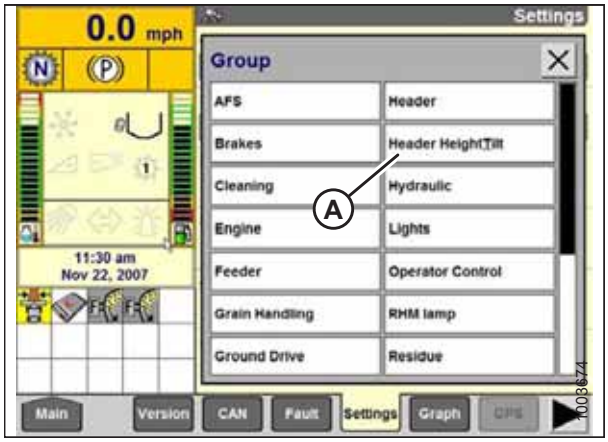


**Figure 7.66: Case IH Combine Display**

10. 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.

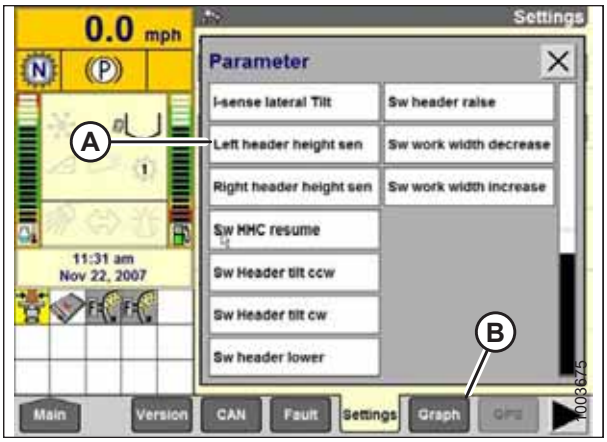


**Figure 7.67: Case IH Combine Display**

## *Calibrating the Auto Header Height Control – Case IH120, 230, 240, and 250 Series Combines*

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.

### WARNING

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

**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 *Calibrating the Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 179*.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure center-link is set to **D**.
2. Ensure all header and float module electrical and hydraulic connections are made.

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

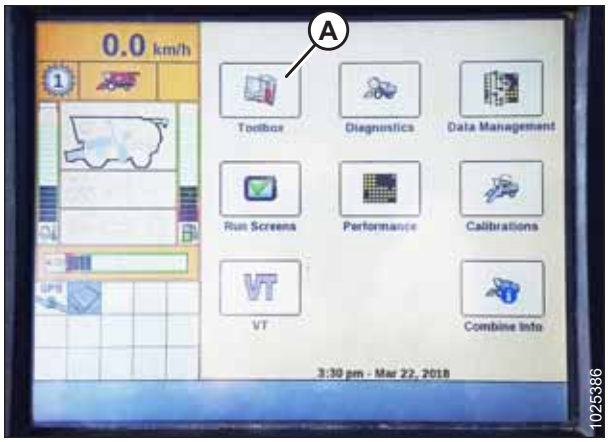


**Figure 7.68: Case IH Combine Display**

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 appropriate HEADER STYLE (B).


**Figure 7.69: Case IH Combine Display**

6. Set AUTO REEL SPEED 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 will turn be faster than ground speed. The reel should normally be slightly faster than ground speed; however, adjust the value according to crop conditions.

7. Set HEADER PRESSURE FLOAT to NO if equipped, and ensure REEL DRIVE is HYDRAULIC.


**Figure 7.70: Case IH Combine Display**

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

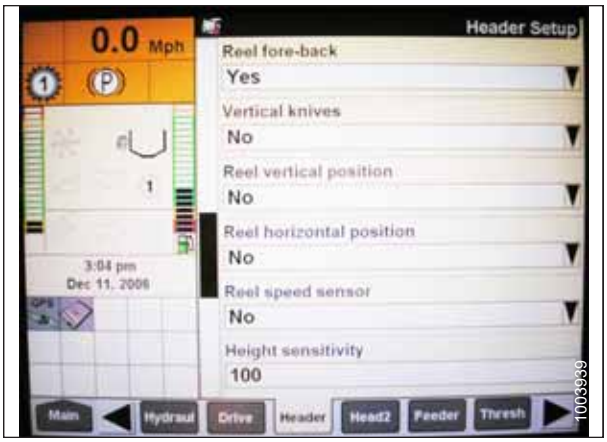


**Figure 7.71: Case IH Combine Display**

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

   - **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 hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.

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


**Figure 7.72: Case IH Combine Display**

11. Install FORE/AFT CONTROL and HDR FORE/AFT TILT (if applicable).


**Figure 7.73: Case IH Combine Display**

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

    **NOTE:**

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

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

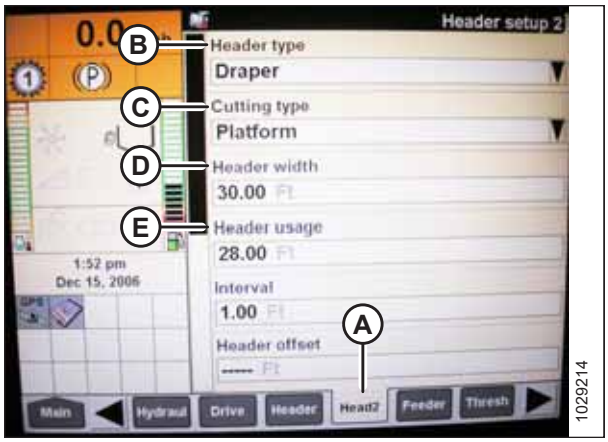


**Figure 7.74: Case IH Combine Display**

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


**Figure 7.75: Case IH Combine Display**

17. 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.

    **NOTE:**

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

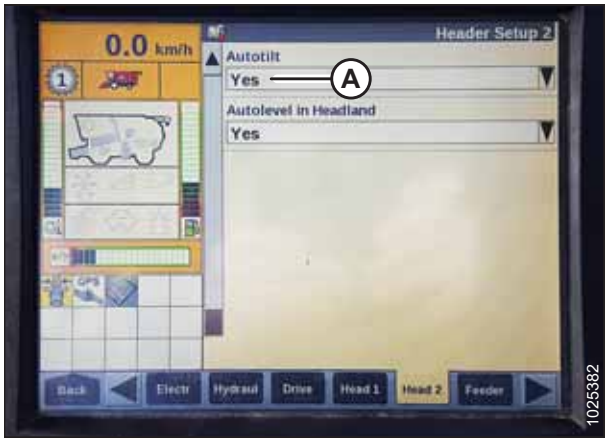


**Figure 7.76: Case IH Combine Display**

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

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.

## WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure header center-link is set to **D**.
2. Raise header on down stops and unlock float.
3. Place wings in locked position.
4. Select TOOLBOX (A) on the MAIN page.

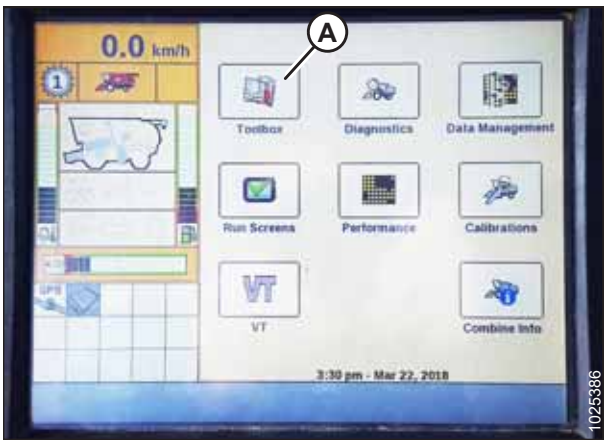


**Figure 7.77: Case IH Combine Display**

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).

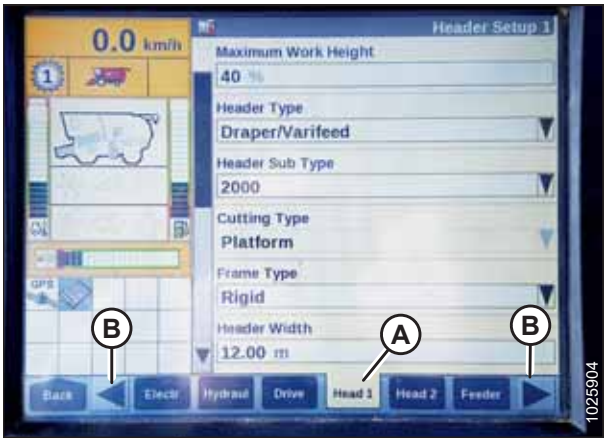


**Figure 7.78: Case IH Combine Display**

6. Locate the HEADER SUB TYPE field.
7. Select 2000 (A).

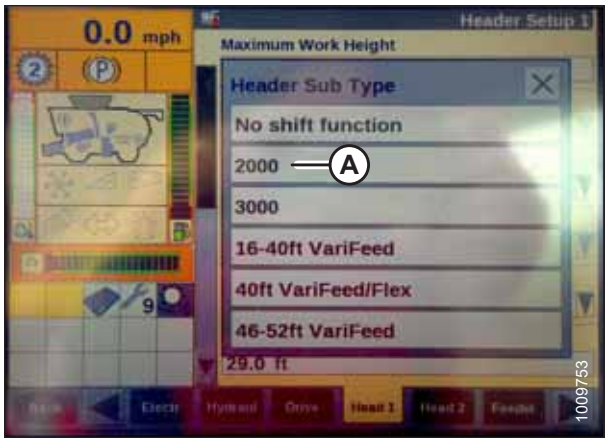


**Figure 7.79: Case IH Combine Display**

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

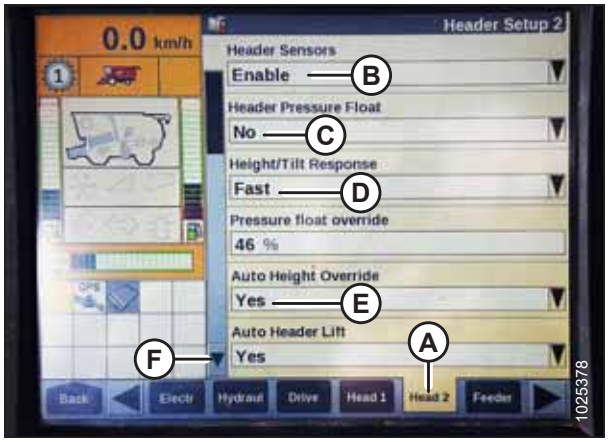


**Figure 7.80: Case IH Combine Display**

14. Locate HHC HEIGHT SENSITIVITY field (A), and set as follows:
    - **If using a single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.
    - **If using a two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.

    **NOTE:**

    If hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.
15. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease as desired.


**Figure 7.81: Case IH Combine Display**

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


**Figure 7.82: Case IH Combine Display**

17. 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.

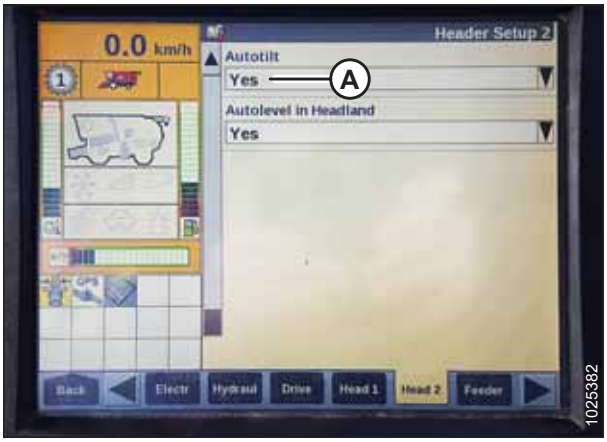


**Figure 7.83: Case IH Combine Display**

**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.

18. Ensure AUTO HEIGHT icon (A) appears on the monitor and is displayed 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 sense ground pressure.

**NOTE:**

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

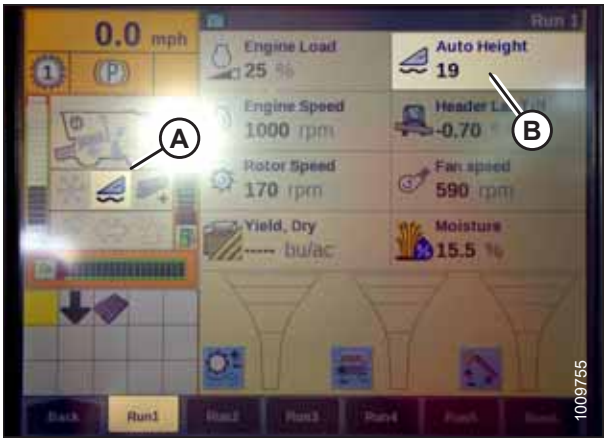


**Figure 7.84: Case IH Combine Display**

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:**

    You can use the up and down navigation keys to move between options.

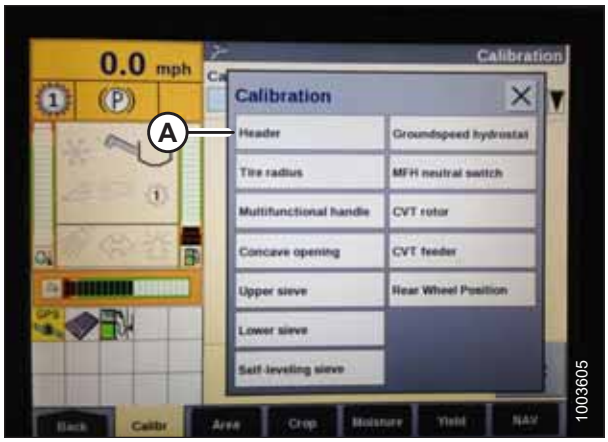


**Figure 7.85: Case IH Combine Display**

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 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.

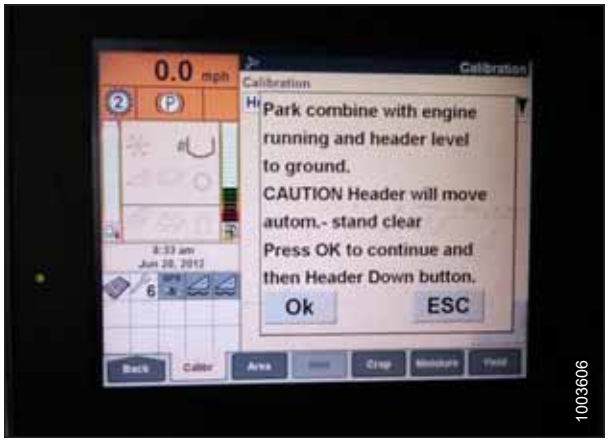


**Figure 7.86: Case IH Combine Display**

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

    **NOTE:**

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

## *Checking Reel Height Sensor Voltages – Case IH Combines*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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

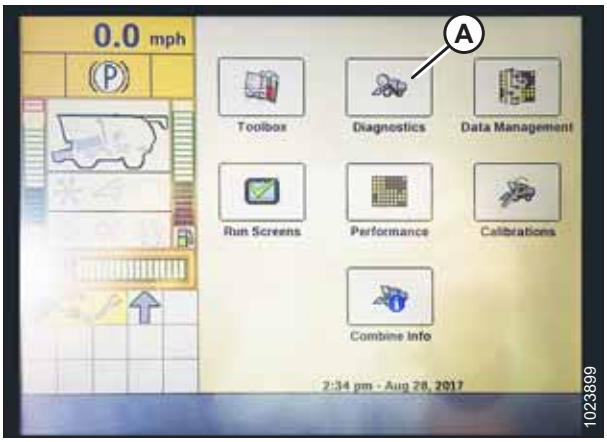


**Figure 7.87: Case IH Combine Display**

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


**Figure 7.88: Case IH Combine Display**

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Lower the reel to view high voltage (B). The voltage should be 4.1–4.5 V.
7. Raise the reel to view low voltage (C). The voltage should be 0.5–0.9 V.
8. If either voltage is out of range, refer to *8.1 Checking and Adjusting Reel Height Sensor, page 303*.

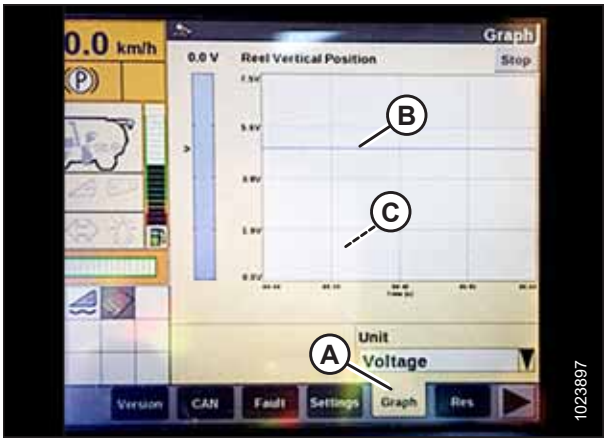


**Figure 7.89: Case IH Combine Display**

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

To set the preset cutting height, follow these steps:

## WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 254–306 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.

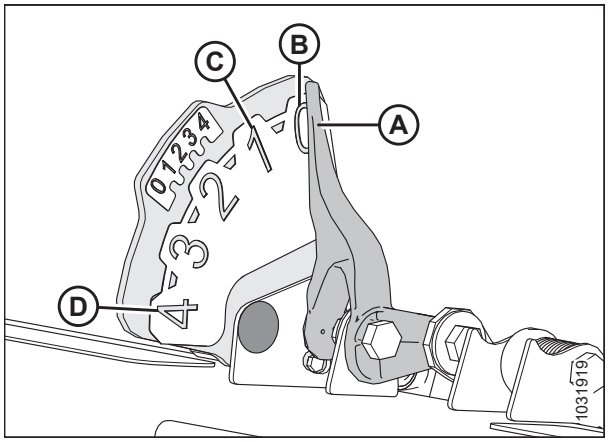


**Figure 7.90: Float Indicator Box**

1. Engage separator and header.
2. Manually raise or lower header to a desired cutting height.
3. Press SET #1 switch (A). Light (C) beside switch (A) will illuminate.

   **NOTE:**

   Use switch (E) for fine adjustments.

   **NOTE:**

   When setting presets, always set header position before setting reel position. If header and reel are set at the same time, the reel setting will not save.
4. Manually raise or lower the reel to the desired position.
5. Press SET #1 switch (A). Light (C) beside switch (A) will illuminate.
6. Manually raise or lower the header to a second desired cutting height.
7. Press SET #2 switch (B). Light (D) beside switch (B) will illuminate.
8. Manually raise or lower the reel to a second desired working position.
9. Press SET #2 switch (B). Light (D) beside switch (B) will illuminate.

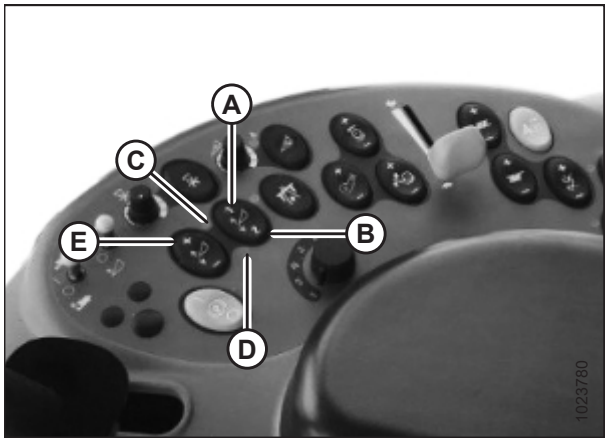


**Figure 7.91: Case Combine Controls**

10. To swap between set points, press HEADER RESUME (A).
11. To raise header at headlands, press and hold SHIFT button (B) at the back of the control handle and press HEADER RESUME switch (A). To lower header, press HEADER RESUME switch (A) once to return to header preset height.

    **NOTE:**

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


**Figure 7.92: Case Combine Controls**

## 7.1.9 Challenger and Massey Ferguson 6 and 7 Series Combines

*Checking Voltage Range from the Combine Cab – Challenger and Massey Ferguson*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

    **NOTE:**

    If the header is not on 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.

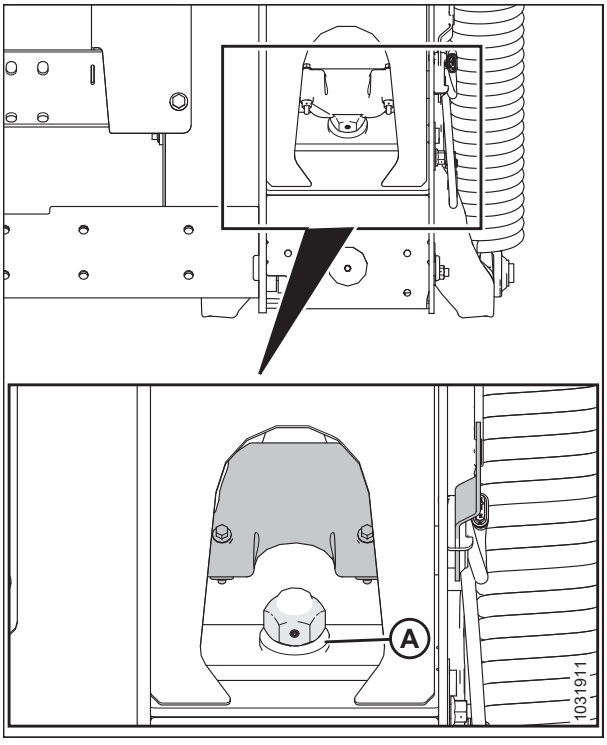


**Figure 7.93: Float Lock**

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

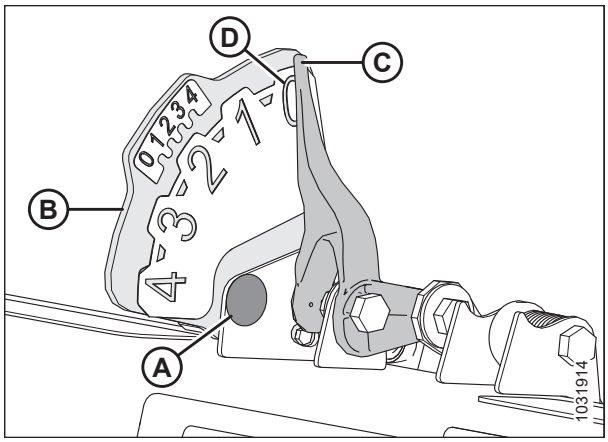


**Figure 7.94: Challenger Combine Display**

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

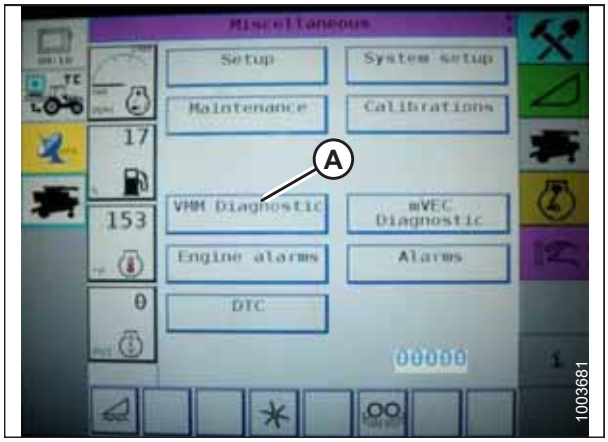


**Figure 7.95: Challenger Combine Display**

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

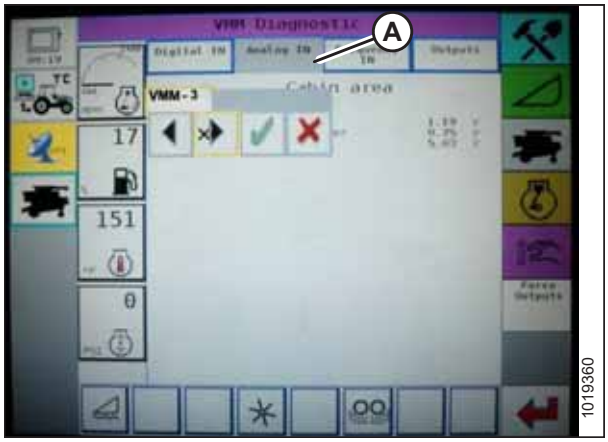


**Figure 7.96: Challenger Combine Display**

8. Fully lower the combine feeder house (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 voltage.

10. Raise the header until it is 254–306 mm (10–14 in.) off the ground.

11. Read voltage.


**Figure 7.97: Challenger Combine Display**

## *Engaging the Auto Header Height Control – Challenger and Massey Ferguson*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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

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

**NOTE:**

In addition to the above components, the electrohydraulic header lift control valve is an integral part of the system.

Engage the AHHC as follows:

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.

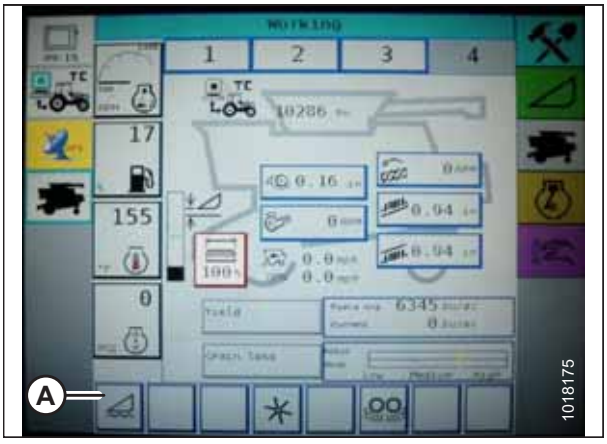


**Figure 7.98: Challenger Combine Display**

*Calibrating the Auto Header Height Control – Challenger and Massey Ferguson*

## WARNING

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

**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 Header Angle in the header operator's manual.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

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

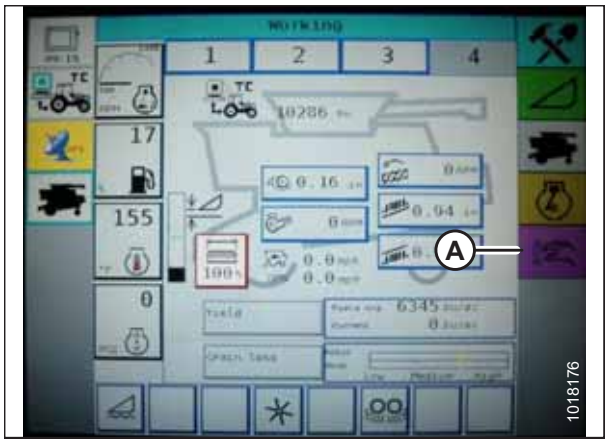


**Figure 7.99: Challenger Combine Display**

3. Press CALIBRATIONS button (A). The CALIBRATIONS screen appears.

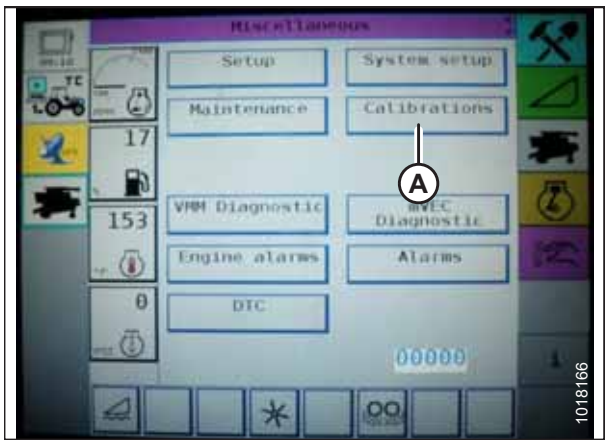


**Figure 7.100: Challenger Combine Display**

4. Press HEADER button (A). The HEADER CALIBRATION screen displays a warning.

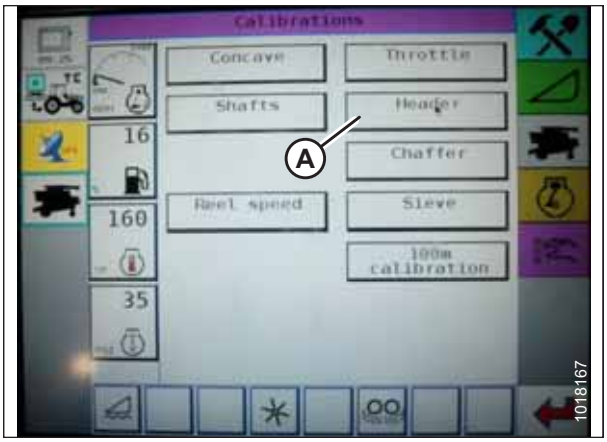


**Figure 7.101: Challenger Combine Display**

5. Read the warning message, and then press the green check mark button.

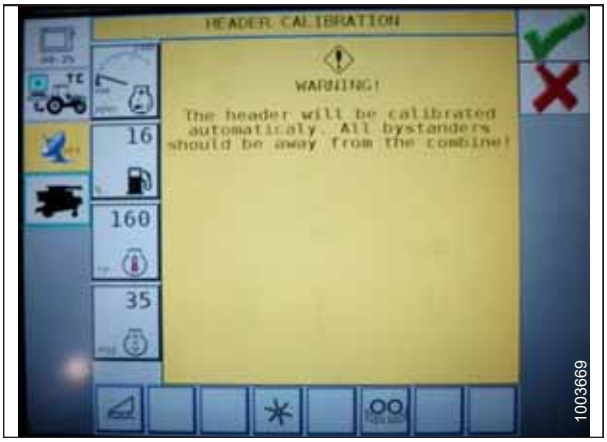


**Figure 7.102: Challenger Combine Display**

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

   **NOTE:**

   The calibration procedure can be canceled at any time by pressing the cancel button in the bottom right corner of 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.

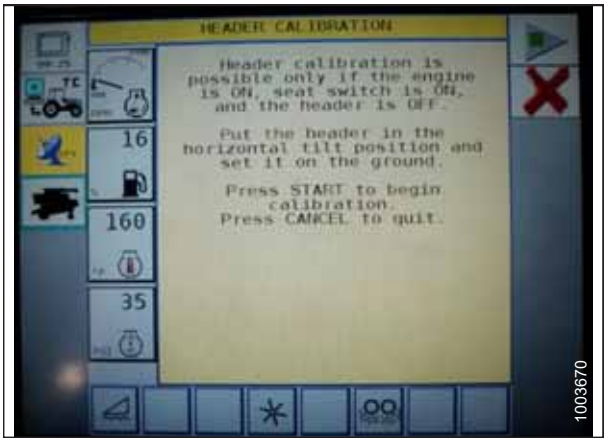


**Figure 7.103: Challenger Combine Display**

## *Adjusting the Header Height – Challenger and Massey Ferguson*

Once the auto header height control (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.

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 7.104: Height Adjustment Knob on the Combine Control Console**

## *Adjusting the Header Raise/Lower Rate – Challenger and Massey Ferguson*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press Header icon (A) on the FIELD screen. The HEADER screen displays.

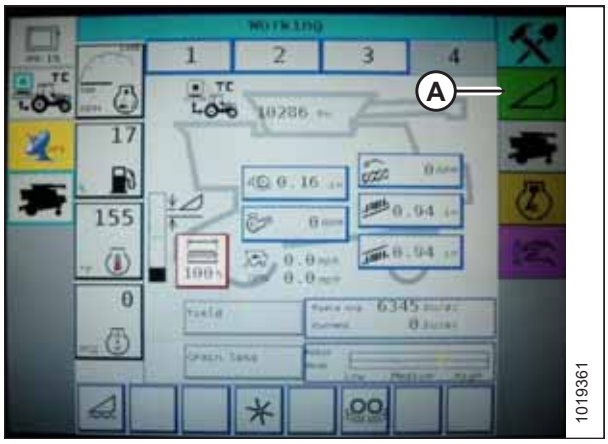


**Figure 7.105: Challenger Combine Display**

2. Press HEADER CONTROL (A). The HEADER CONTROL screen displays.

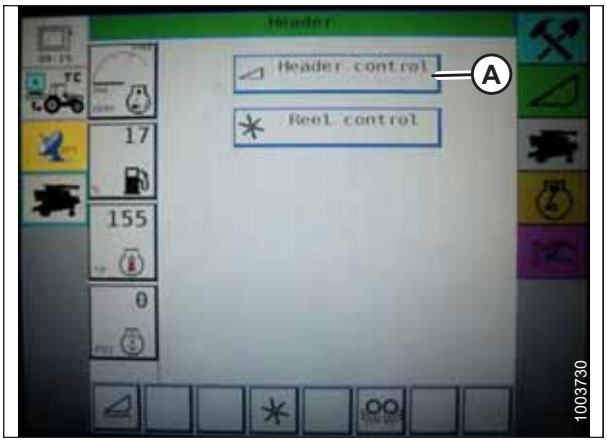


**Figure 7.106: Challenger Combine Display**

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

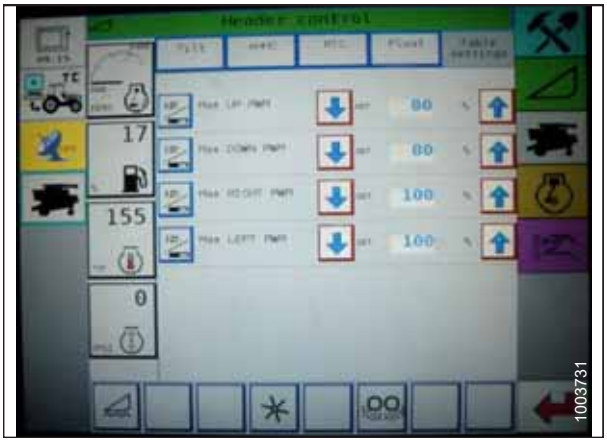


**Figure 7.107: Challenger Combine Display**

## *Setting the Sensitivity of the Auto Header Height Control – 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 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.

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the HEADER icon on the FIELD screen. The HEADER screen appears.

2. Press HEADER CONTROL button (A). The HEADER CONTROL screen appears. You can adjust sensitivity on this screen using the up and down arrows.

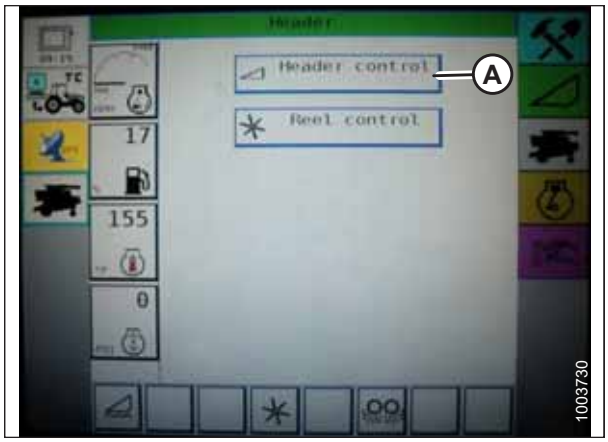


**Figure 7.108: Challenger Combine Display**

3. Adjust the sensitivity to the maximum setting.
4. Activate the AHHC, and press the 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 7.109: Challenger Combine Display**

## 7.1.10 CLAAS 500 Series Combines

### *Calibrating the Auto Header Height Control – CLAAS 500 Series*

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 Header Angle in the header operator's manual for instructions.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure center-link is set to **D**.

2. Use < key (A) or > key (B) to select AUTO HEADER, and press OK key (C). The E5 screen displays whether the automatic header height is on or off.

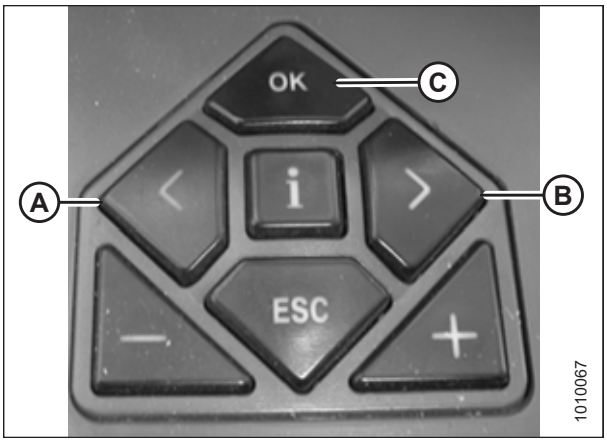


**Figure 7.110: CLAAS Combine Controls**

3. Use **–** key (A) or **+** key (B) to turn the AHHC on, and press OK key (C).
4. Engage the threshing mechanism and the header.

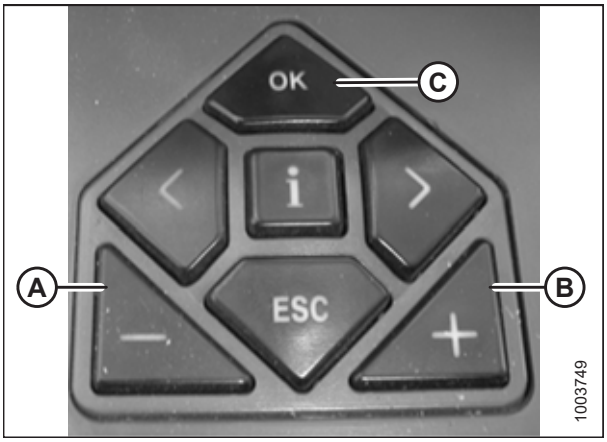


**Figure 7.111: CLAAS Combine Controls**

5. Use the < or > key to select CUTT. HEIGHT LIMITS, and press the combine controls OK key.
6. Follow the procedure displayed on the screen to program the upper and lower limits of the header into the CEBIS.

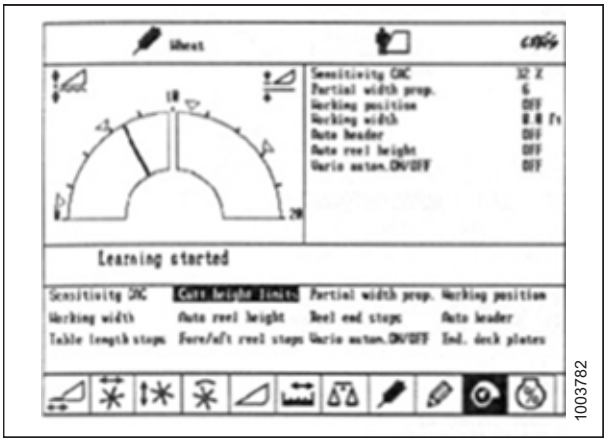


**Figure 7.112: CLAAS Combine Display**

7. Use the **<** or **>** key to select SENSITIVITY CAC, and press the combine controls OK key.

   **NOTE:**

   Setting the sensitivity of the AHHC system affects the reaction speed of the AHHC on the header.

8. Use the **–** key or the **+** key to change the setting of the reaction speed, and press the combine controls OK key.

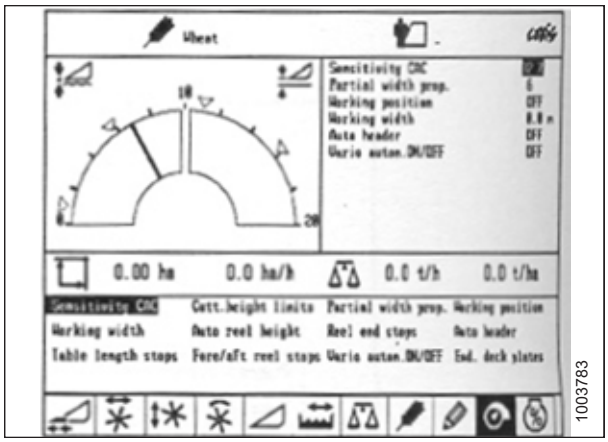


**Figure 7.113: CLAAS Combine Display**

9. Use line (A) or value (B) to determine the sensitivity setting.

   **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%.

   **NOTE:**

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

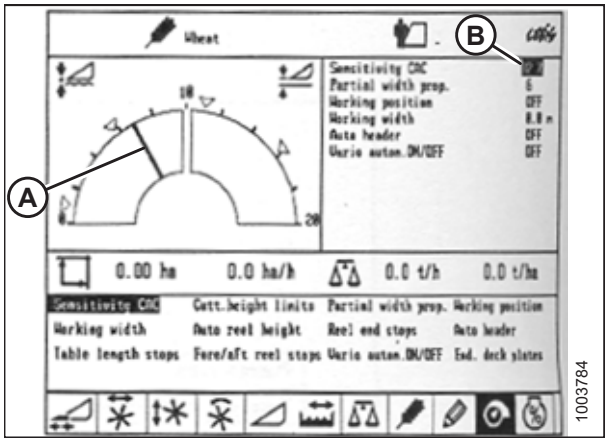


**Figure 7.114: CLAAS Combine Display**

## *Setting 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**

### WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 auto header height control (AHHC) function. Button (B) is used only with the return to cut function.


**Figure 7.115: Control Handle Buttons**

6. Use < key (C) or > key (D) to select the CUTTING HEIGHT screen, and press OK key (E).
7. Use – key (A) or + key (B) to set the desired cutting height. An arrow indicates the selected cutting height on the scale.

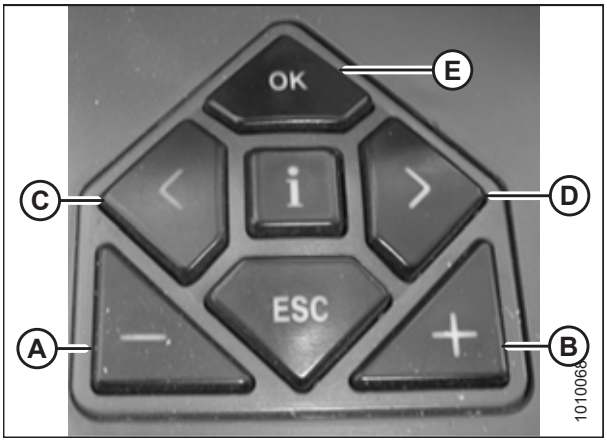


**Figure 7.116: CLAAS Combine Controls**

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7, page 195* for the set point.


**Figure 7.117: Control Handle Buttons**

**Setting Cutting Height Manually – CLAAS 500 Series**

## WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use 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 into the CEBIS (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 into the CEBIS (an alarm will sound when the new setting has been stored).

   **NOTE:**

   For above-the-ground cutting, repeat Step *1, page 196*, and use button (D) instead of button (C) while repeating Step *2, page 196*.


**Figure 7.118: Control Handle Buttons**

## *Setting the Sensitivity of the Auto Header Height Control – 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 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:**

The upper and lower limits of the header must be programmed into the CEBIS before adjusting the sensitivity of the AHHC system. 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%.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use **<** key (C) or **>** key (D) to select SENSITIVITY CAC, and press OK key (E).
2. Use **–** key (A) or **+** (B) key to change the reaction speed setting, and press OK key (E).

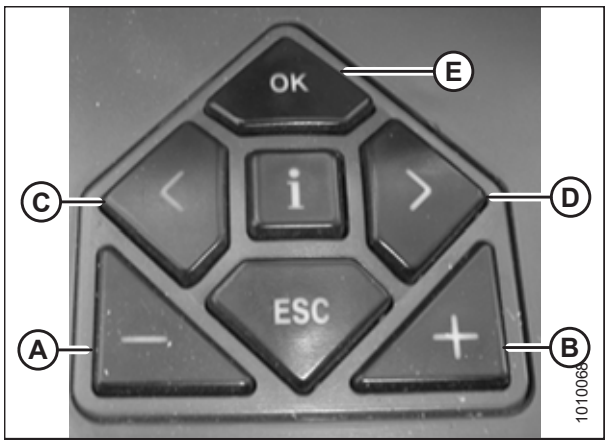


**Figure 7.119: CLAAS Combine Controls**

3. Use line (A) or value (B) to determine the sensitivity setting.

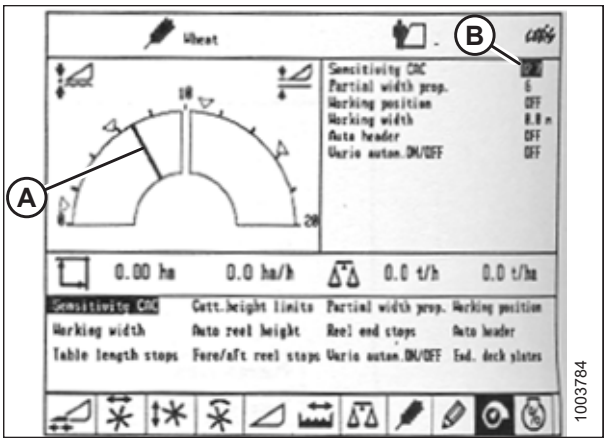


**Figure 7.120: CLAAS Combine Display**

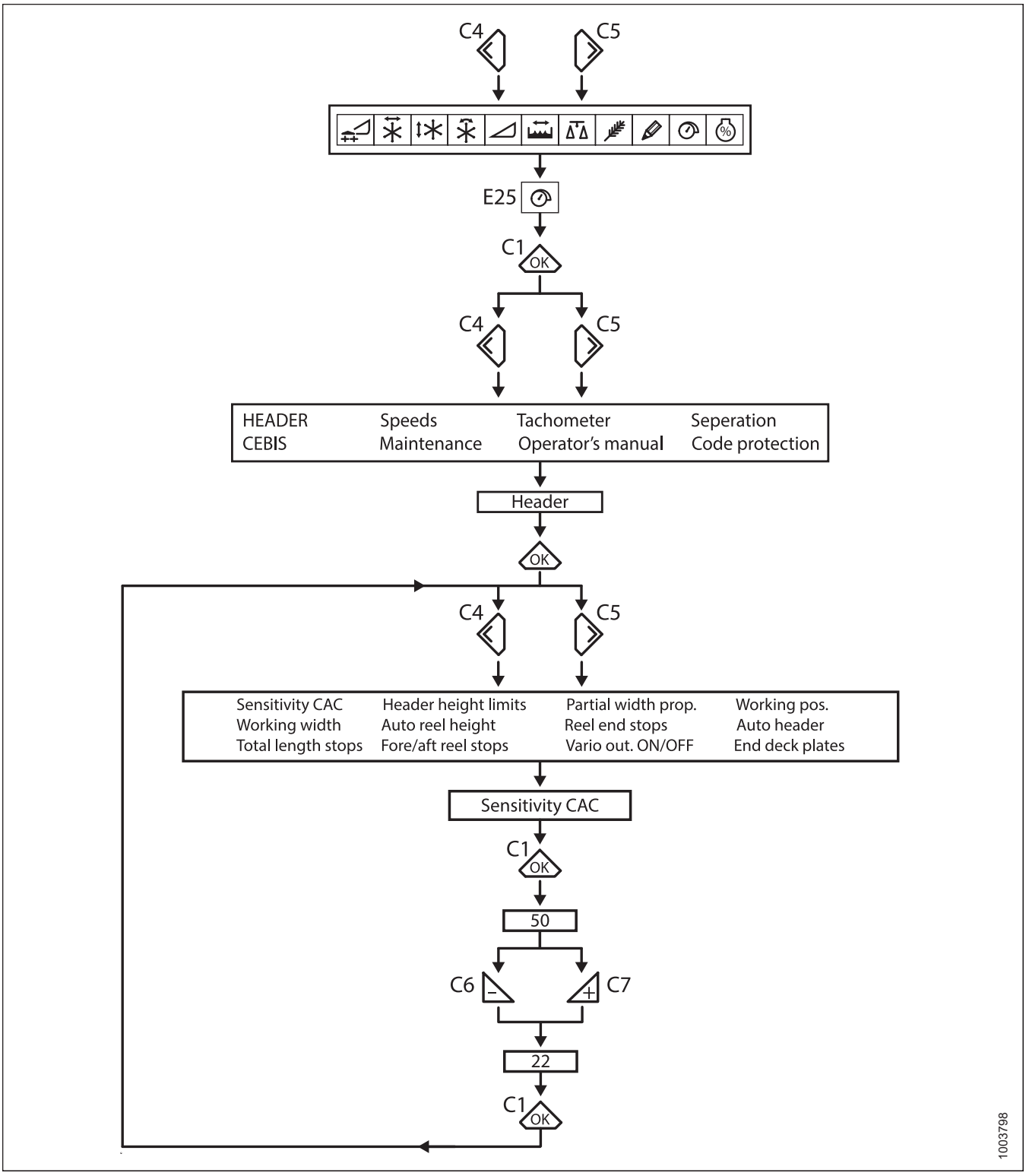


**Figure 7.121: Flow Chart for Setting the Sensitivity of the Float Optimizer**

## *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 display since this document was published. Refer to the combine operator's manual for updates.

1. Use the **<** or **>** key to select REEL WINDOW. Window E15 will display the current advance or retard speed of the reel in relation to the ground speed.

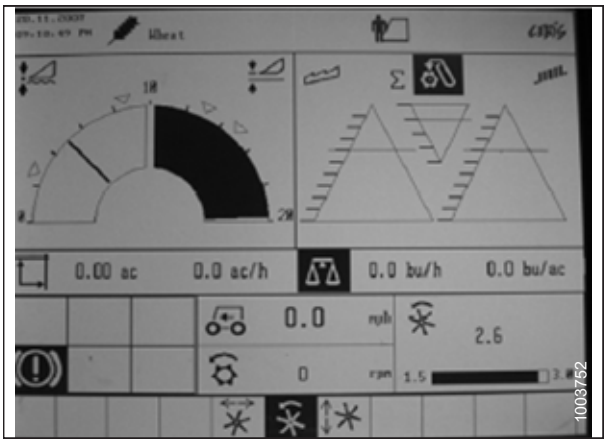


**Figure 7.122: CLAAS Combine Display**

2. Press OK key (C) to open the REEL SPEED window.
3. Use **–** key (A) or **+** key (B) to set the reel speed in relation to the current ground speed. Window E15 will display the selected reel speed.

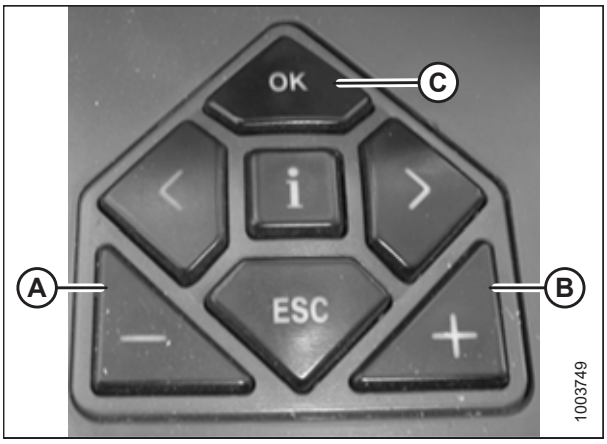


**Figure 7.123: CLAAS Combine Controls**

4. Manually adjust the reel speed by rotating the rotary switch to reel position (A), and then use the **–** or **+** key to set the reel speed.


**Figure 7.124: CLAAS Combine Rotary Switch**

5. Press and hold button (A) or button (B) for 3 seconds to store the setting into the CEBIS (an alarm will sound 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 7.125: CLAAS Control Handle Buttons**

6. Use the **<** or **>** key to select the REEL WINDOW. Window E15 will display the current advance or retard speed of the reel in relation to the ground speed.

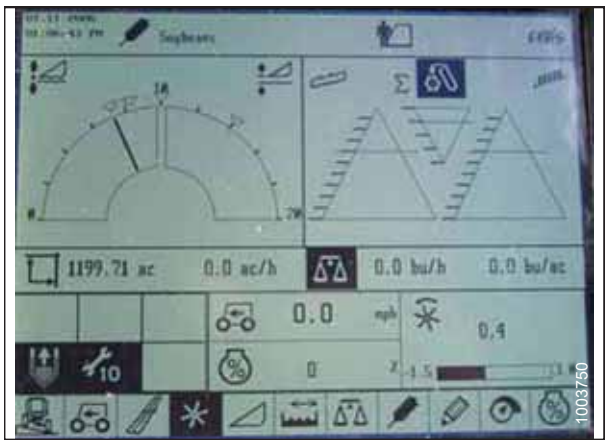


**Figure 7.126: CLAAS Combine Display**

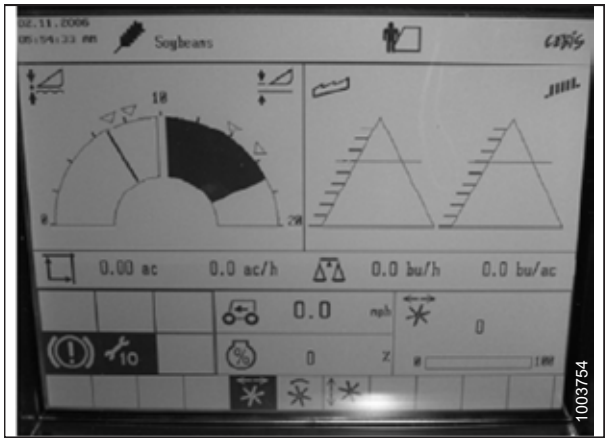


**Figure 7.127: CLAAS Combine Display**

7. Press OK key (E), and use < key (C) or > key (D) to select the REEL FORE AND AFT window.
8. 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 *7.129, page 201*) can also be used to set the reel fore-aft position.

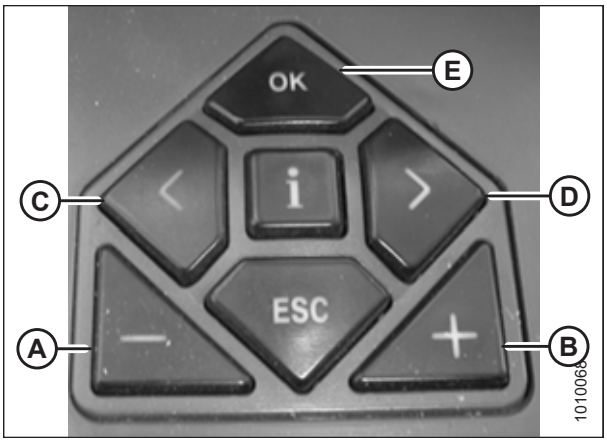


**Figure 7.128: CLAAS Combine Controls**

9. Press and hold button (A) or button (B) for 3 seconds to store the setting into the CEBIS (an alarm will sound 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 7.129: CLAAS Control Handle Buttons**

## 7.1.11 CLAAS 600 and 700 Series Combines

### *Calibrating the Auto Header Height Control – CLAAS 600 and 700 Series*

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 Header Angle in the header operator's manual for instructions.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure center-link is set to **D**.
2. Ensure that the header float is unlocked.
3. Place wings in locked position.

4. Use control knob (A) to highlight AUTO CONTOUR icon (B) and press control knob (A) to select it.


**Figure 7.130: CLAAS Combine Display, Console, and Control Handle**

5. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (not shown), and press control knob (A) to select it. Highlighted header icon (B) will be displayed on the screen.


**Figure 7.131: CLAAS Combine Display, Console, and Control Handle**

6. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (B), and press control knob (A) to select it.


**Figure 7.132: CLAAS Combine Display, Console, and Control Handle**

7. Use control knob (A) to highlight the icon that resembles a screwdriver (B).
8. Engage the combine separator and feeder house.
9. Press control knob (A) and a progress bar will appear.


**Figure 7.133: CLAAS Combine Display, Console, and Control Handle**

10. Fully raise the feeder house. Progress bar (A) will advance to 25%.
11. Fully lower the feeder house. Progress bar (A) will advance to 50%.
12. Fully raise the feeder house. Progress bar (A) will advance to 75%.
13. Fully lower the feeder house. Progress bar (A) will advance to 100%.


**Figure 7.134: CLAAS Combine Display, Console, and Control Handle**

14. Ensure progress bar (A) displays 100%. The calibration procedure is now complete.

    **NOTE:**

    If the voltage is not within the range of 0.5–4.5 V at any time throughout the calibration process, the monitor will indicate learning procedure not concluded.

    **NOTE:**

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


**Figure 7.135: CLAAS Combine Display, Console, and Control Handle**

## *Setting Cutting Height – CLAAS 600 and 700 Series*

### WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Lower the header to desired cutting height or 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.

   **NOTE:**

   You can set two different cutting heights.


**Figure 7.136: CLAAS Combine Display, Console, and Control Handle**

## *Setting the Sensitivity of the Auto Header Height Control – 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Use control knob (A) to highlight HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog box opens.
2. Select HEADER icon.

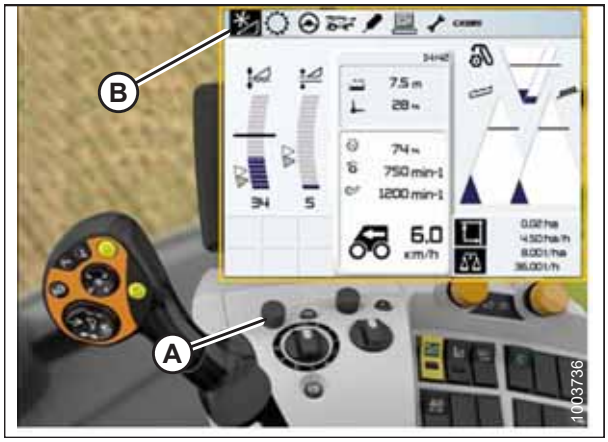


**Figure 7.137: CLAAS Combine Display, Console, and Control Handle**

3. Select FRONT ATTACHMENT PARAMETER SETTINGS icon (A). A list of settings appears.
4. Select SENSITIVITY CAC (B) from the list.


**Figure 7.138: CLAAS Combine Display, Console, and Control Handle**

5. Select SENSITIVITY CAC icon (A).

   **NOTE:**

   To set the sensitivity, you will have to 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 best results, make adjustments in increments of 5.
6. Increase the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the float module is too slow while cutting on the ground, and decrease the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the float module is too fast.
7. Increase the sensitivity if the header is lowered too slowly, and decrease the sensitivity if the header hits the ground too hard or is lowered too quickly.


**Figure 7.139: CLAAS Combine Display**

## *Adjusting Auto Reel Speed – CLAAS 600 and 700 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Use control knob (A) to highlight HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog box opens.

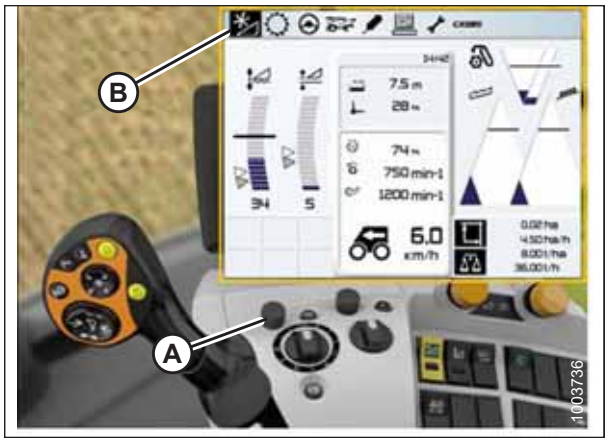


**Figure 7.140: CLAAS Combine Display, Console, and Control Handle**

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 displays in the dialog box.


**Figure 7.141: 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 7.142: 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 at full throttle.


**Figure 7.143: CLAAS Combine Display, Console, and Control Handle**

## *Calibrating Reel Height Sensor – CLAAS 600 and 700 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To calibrate reel height, follow these steps:

1. Position the header until it is 254–306 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. Use control knob (A) to highlight FRONT ATTACHMENT icon (B) and press control knob (A) to select it.

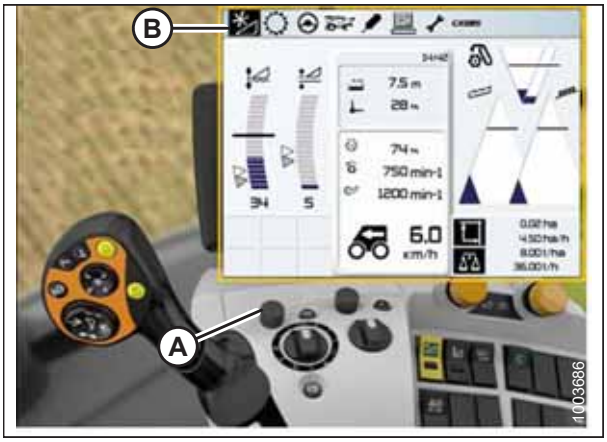


**Figure 7.144: CLAAS Combine Display, Console, and Control Handle**

3. Use control knob (A) to highlight REEL icon (B), and press control knob (A) to select it.


**Figure 7.145: CLAAS Combine Display and Console**

4. Highlight REEL HEIGHT icon (A), and press control knob to select it.
5. Select LEARNING END STOPS (B) from the list.


**Figure 7.146: CLAAS Combine Display and Console**

6. Use control knob (A) to highlight screwdriver icon (B).


**Figure 7.147: CLAAS Combine Display, Console, and Control Handle**

7. Press control knob and a progress bar chart (A) will appear.
8. Follow the prompts on the screen to raise the reel.
9. Follow the prompts on the screen to lower the reel.


**Figure 7.148: CLAAS Combine Display, Console, and Control Handle**

10. Ensure progress bar chart displays 100% (A). The calibration procedure is now complete.


**Figure 7.149: CLAAS Combine Display, Console, and Control Handle**

## *Adjusting Auto Reel Height – CLAAS 600 and 700 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To adjust the auto reel height, follow these steps:

1. Use HOTKEY rotary dial (A) to select REEL icon (B).

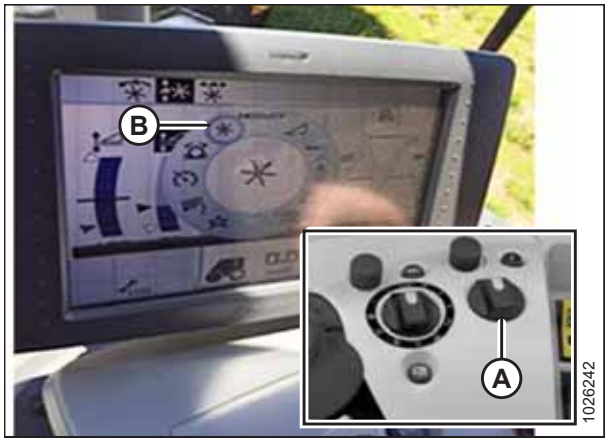


**Figure 7.150: CLAAS Combine Display and Console**

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 AHHC is not active. For instructions, refer to *Calibrating Reel Height Sensor – CLAAS 600 and 700 Series, page 207*.

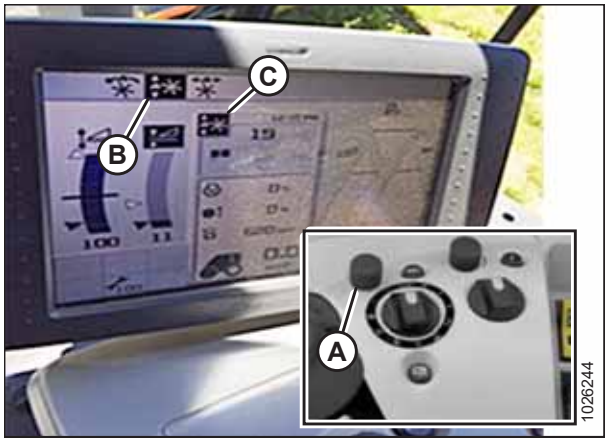


**Figure 7.151: CLAAS Combine Display and Console**

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.

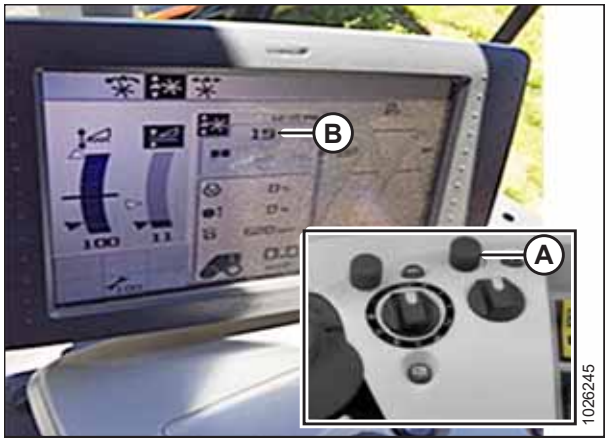


**Figure 7.152: CLAAS Combine Display and Console**

## 7.1.12 CLAAS 8000/7000 Series Combines

*Setting up the Header – CLAAS 8000/7000 Series*

Follow these steps to setup a MacDon header:

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. From the main page, select FRONT ATTACHMENT (A).


**Figure 7.153: CEBIS Main Page**

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).


**Figure 7.154: Front Attachment Page**

3. From the Front Attachment Parameters page, select FRONT ATTACHMENT TYPE (A).
4. From the drop down list, select FLEX CUTTERBAR PRODUCT BY OTHER MANUFACTURER (B).


**Figure 7.155: Attachment Parameters Page**

5. From the Front Attachment Parameters page, select WORKING WIDTH (A).
6. Set header width by sliding adjuster arrow (B) up or down.
7. Select check mark (C) to save settings.

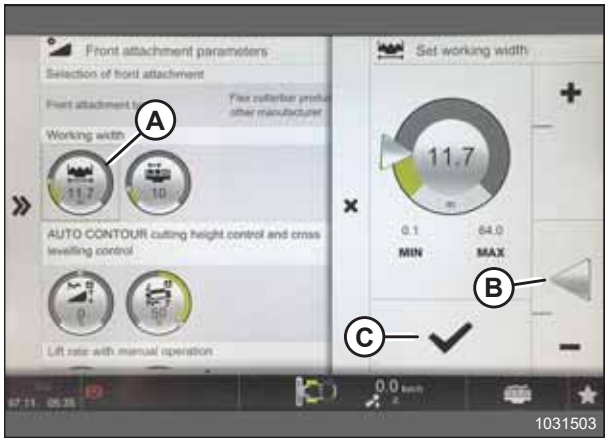


**Figure 7.156: Attachment Parameters Page**

## *Calibrating the Auto Header Height Control – CLAAS 8000/7000 Series*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. From the main page, select FRONT ATTACHMENT (A).


**Figure 7.157: CEBIS Main Page**

2. Select LEARNING PROCEDURES (A) from the menu.
3. SELECT FRONT ATTACHMENT HEIGHT (B).

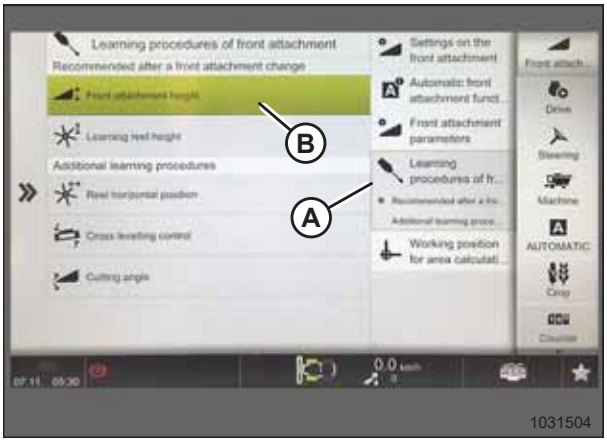


**Figure 7.158: Learning Procedures Page**

4. Follow the prompts that appear in Description and Notes fields (A).

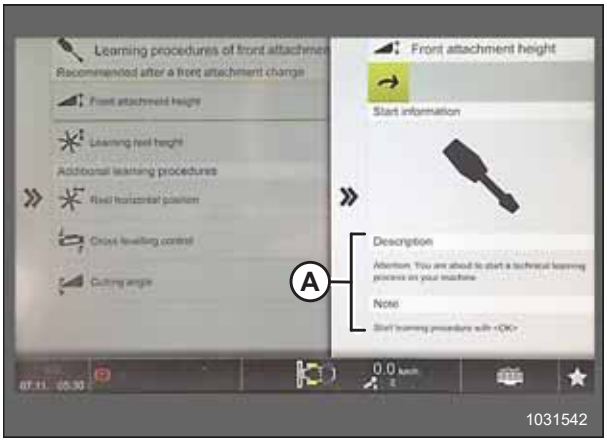


**Figure 7.159: Front Attachment Height Page**

5. When prompted, select OK button (A) to start the learning procedure.


**Figure 7.160: Operator Controls**

6. When prompted, raise front attachment with button (A) on the multifunction lever.
7. When prompted, lower front attachment with button (B) on multifunction lever.
8. Repeat as prompted until calibration is complete.


**Figure 7.161: Multifunction Lever**

*Setting Cut and Reel Height Preset – CLAAS 8000/7000 Series*

## WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Set desired cutting height with feederhouse raise/lower buttons (A) on the multifunction lever.
2. Set desired reel position with buttons (B).
3. Press and hold AUTO HEIGHT PRESET button (C) to store settings.

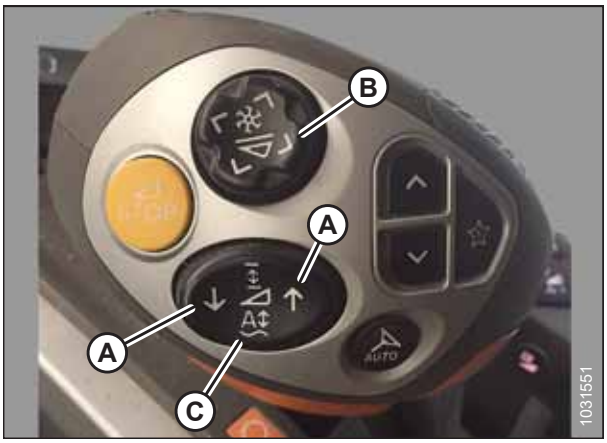


**Figure 7.162: Multifunction Lever**

A triangle (A) appears on the header height gauge indicating the preset level.


**Figure 7.163: CEBIS Main Page**

*Setting the Sensitivity of the Auto Header Height Control – CLAAS 8000/7000 Series*

## WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. From the main page, select FRONT ATTACHMENT (A).


**Figure 7.164: CEBIS Main Page**

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).


**Figure 7.165: 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 settings.


**Figure 7.166: Drop Rate with Auto Contour Page**

## *Adjusting Auto Reel Speed – CLAAS 8000/7000 Series*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. From the main page, select FRONT ATTACHMENT (A).


**Figure 7.167: 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 7.168: 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 setting.


**Figure 7.169: Reel Speed Target Value Page**

## *Calibrating Reel Height Sensor – CLAAS 8000/7000 Series*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Position the header until it is 254–306 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. From the main page, select FRONT ATTACHMENT (A).


**Figure 7.170: CEBIS Main Page**

3. Select LEARNING PROCEDURES FOR FRONT ATTACHMENT (A).
4. Select LEARNING REEL HEIGHT (B).

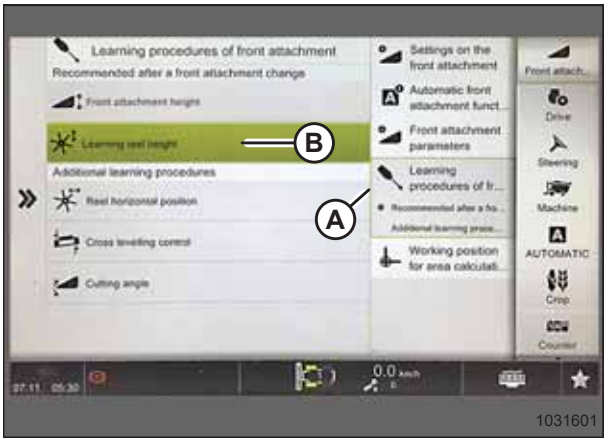


**Figure 7.171: Front Attachment Page**

5. Follow the prompts that appear in Description and Notes fields (A).

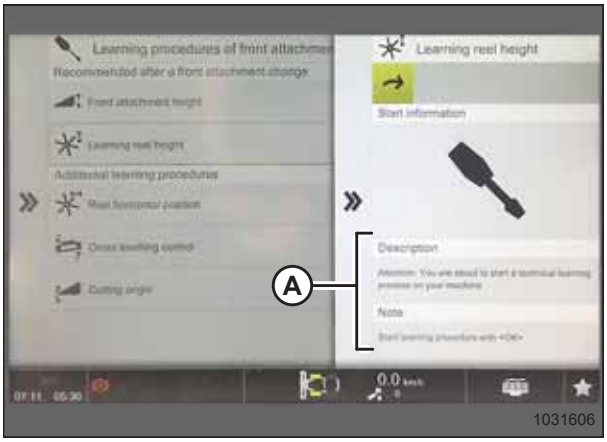


**Figure 7.172: Learning Reel Height Page**

6. When prompted, select OK button (A) to start the learning procedure.


**Figure 7.173: Operator Controls**

## 7.1.13 Gleaner R65/R66/R75/R76 and S Series Combines

*Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

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

   **NOTE:**

   If the header is not on 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.

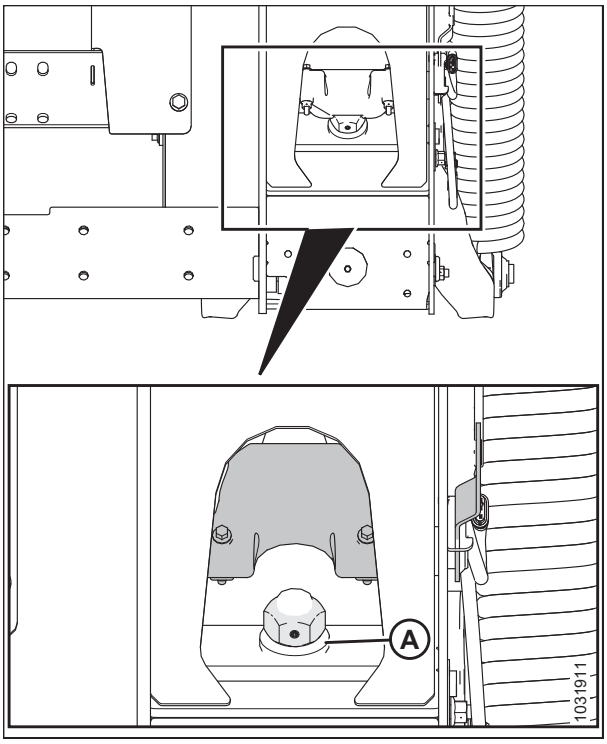


**Figure 7.174: Float Lock**

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

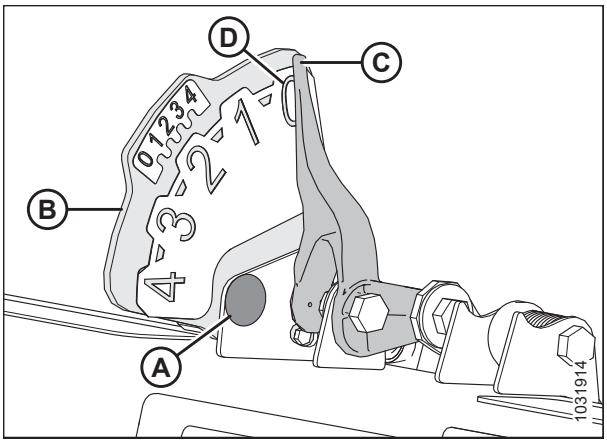


**Figure 7.175: Float Indicator Box**


**Figure 7.176: Combine Heads-Up Display**

5. Ensure 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 auto header height control (AHHC). Raise and lower the header to see the full range of voltage readings.

## *Engaging the Auto Header Height Control – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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.

**NOTE:**

In addition to the above components, the electrohydraulic header lift control valve is an integral part of the system.


**Figure 7.177: 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 AHHC.

## WARNING

**Check to be sure all bystanders have cleared the area.**

2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header also should drop toward the ground. The AHHC is now engaged and can be adjusted for height and sensitivity.
3. Use controls to adjust height and sensitivity to changing ground conditions such as shallow gullies and field drainage trenches.

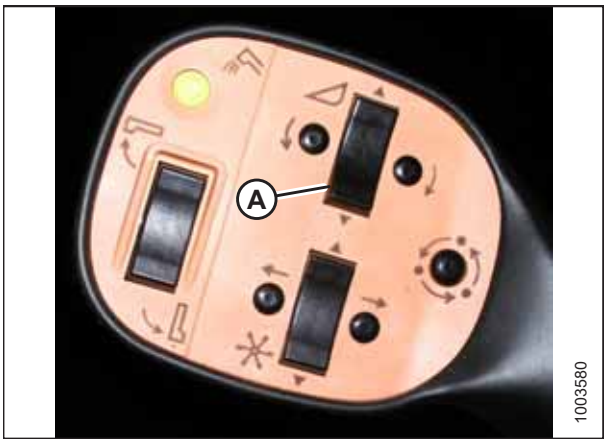


**Figure 7.178: Control Handle**

## *Calibrating the Auto Header Height Control – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

Calibration should be done on flat, level ground without the header clutches engaged. Header height and header tilt 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 auto header height control (AHHC). For instructions, refer to the combine operator's manual.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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


**Figure 7.179: Combine Auto Header Height Controls**

**A - AUTO MODE Button**
**B - AHHC Light**
**C - CAL1 Button**
**D - Raise Header**
**E - Lower Header**
**F - AUTO Mode**
**G - CAL2 Button**

**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 Header Angle in the header operator's manual for instructions.

1. Ensure center-link is set to **D**.
2. Press AUTO MODE button (A) until AHHC light (B) is illuminated.
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 float module has separated from 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 header to its maximum height (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 header to the maximum left position.
9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing, and release 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 to the memory. All lights should stop flashing.

    **NOTE:**

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

### *Turning off the Accumulator – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

The accumulator will affect the combine's reaction time and greatly inhibit the auto header height control's performance.

Refer to the combine operator's manual for proper procedure when turning 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 7.180: Combine Accumulator ON/OFF Switch**
**A - Accumulator Lever (Off Position)**

### *Adjusting the Header Raise/Lower Rate – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The auto header height control (AHHC) system's stability is affected by hydraulic flow rates. Ensure that header raise (A) and header lower (B) adjustable restrictors in the hydraulic manifold are adjusted so that it takes approximately 6 seconds to raise the header from ground level to maximum height (hydraulic cylinders fully extended), and approximately 6 seconds to lower the header from maximum height to ground level.

If there is too much header movement (for example, hunting) when the header is on the ground, adjust the lower rate to a slower rate of drop: 7 or 8 seconds.

**NOTE:**

Make this adjustment with the hydraulic system at normal operating temperature (54.4°C [130°F]) and the engine running at full throttle.


**Figure 7.181: Header Raise and Lower Adjustable Restrictors**

## *Adjusting Ground Pressure – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 254–306 mm (10–14 in.) off the ground. If not, the float sensor output voltage should be checked. Refer to *Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 S Series, page 220*. 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.

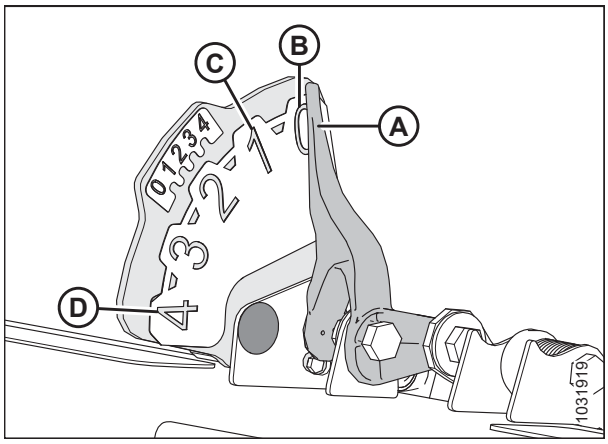


**Figure 7.182: Float Indicator**

1. 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.
2. 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 7.183: AHHC Console**

## *Adjusting the Sensitivity of the Auto Header Height Control – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.


**Figure 7.184: Auto Header Height Control Console**

SENSITIVITY ADJUSTMENT dial (A) 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 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.

## *Troubleshooting Alarms and Diagnostic Faults – Gleaner R65/R66/R75/R76 and Pre-2016 S Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

***Display type:***

Displayed on tachometer (A) as XX or XXX.


**Figure 7.185: Tachometer**

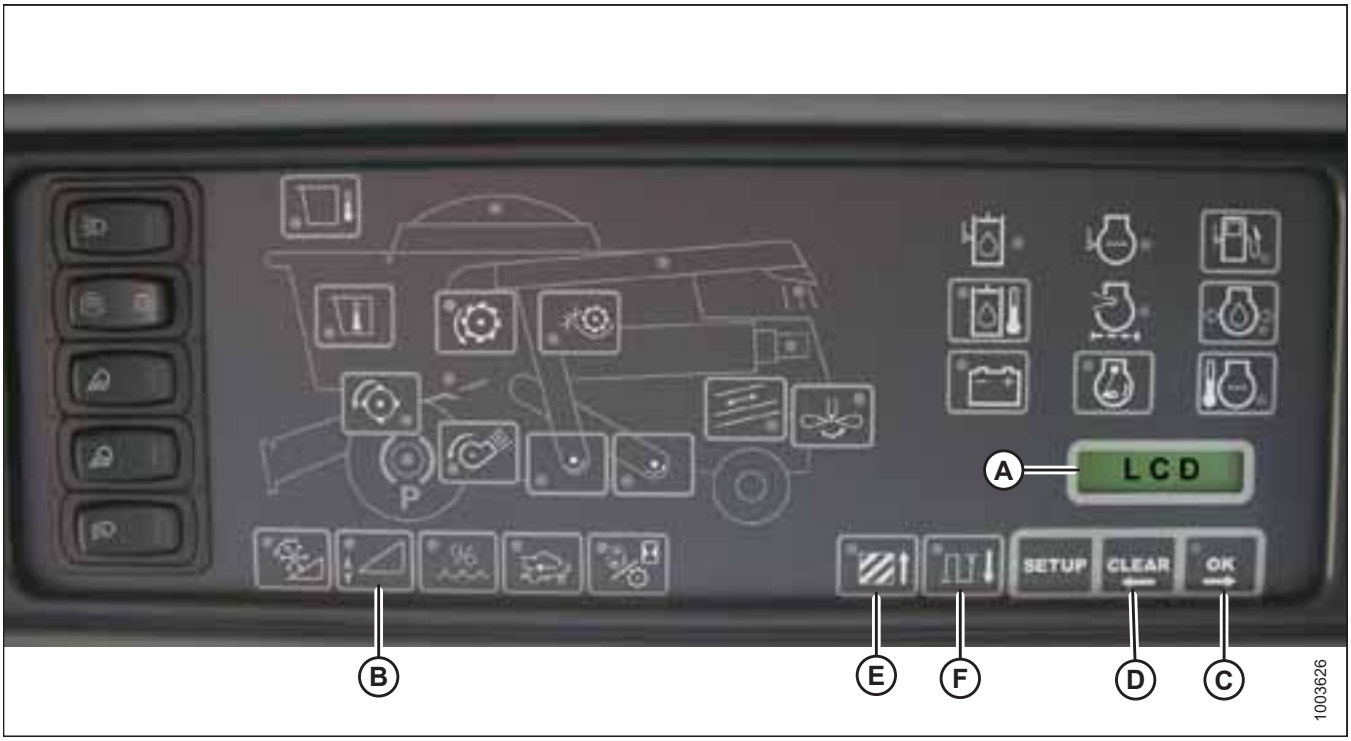


**Figure 7.186: Combine Heads-Up Display**

**NOTE:**

Displayed on LCD (A) as XX in. or XXX cm.

***Alarm conditions:***

If an error message is received from the fuse panel, an audible alarm sounds. The alarm buzzer sounds five times every 10 seconds. The LCD 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 on and off (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 *7.186, page 228*.

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.

Refer to *7.1.1 Sensor Operation, page 146*.

## 7.1.14 Gleaner S9 Series Combines

### *Setting up the Header – Gleaner S9 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

AGCO Tyton terminal (A) is used to set up and manage a MacDon draper header on a Gleaner S9 Series combine. Use the touch screen display to select the desired item on the screen.


**Figure 7.187: Gleaner S9**

**A - Tyton Terminal** **B - Control Handle**
**C - Throttle** **D - Header Control Cluster**

1. On the top right quadrant of the home screen, touch COMBINE icon (A). The COMBINE MAIN MENU opens.


**Figure 7.188: Combine Icon on Home Page**

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

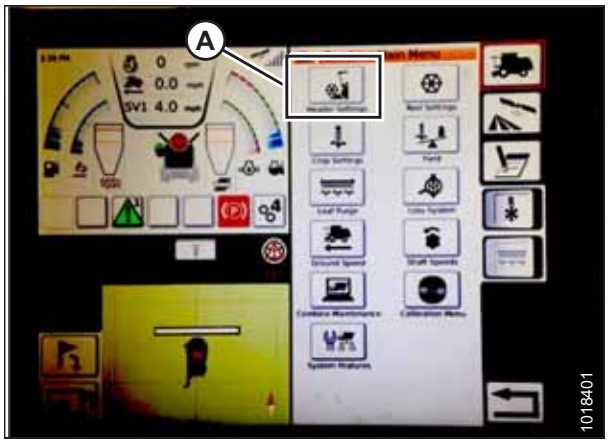


**Figure 7.189: Header Settings in Combine Main Menu**

3. Touch HEADER CONFIGURATION field (A). A dialog box showing predefined headers opens.
   - If your 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)

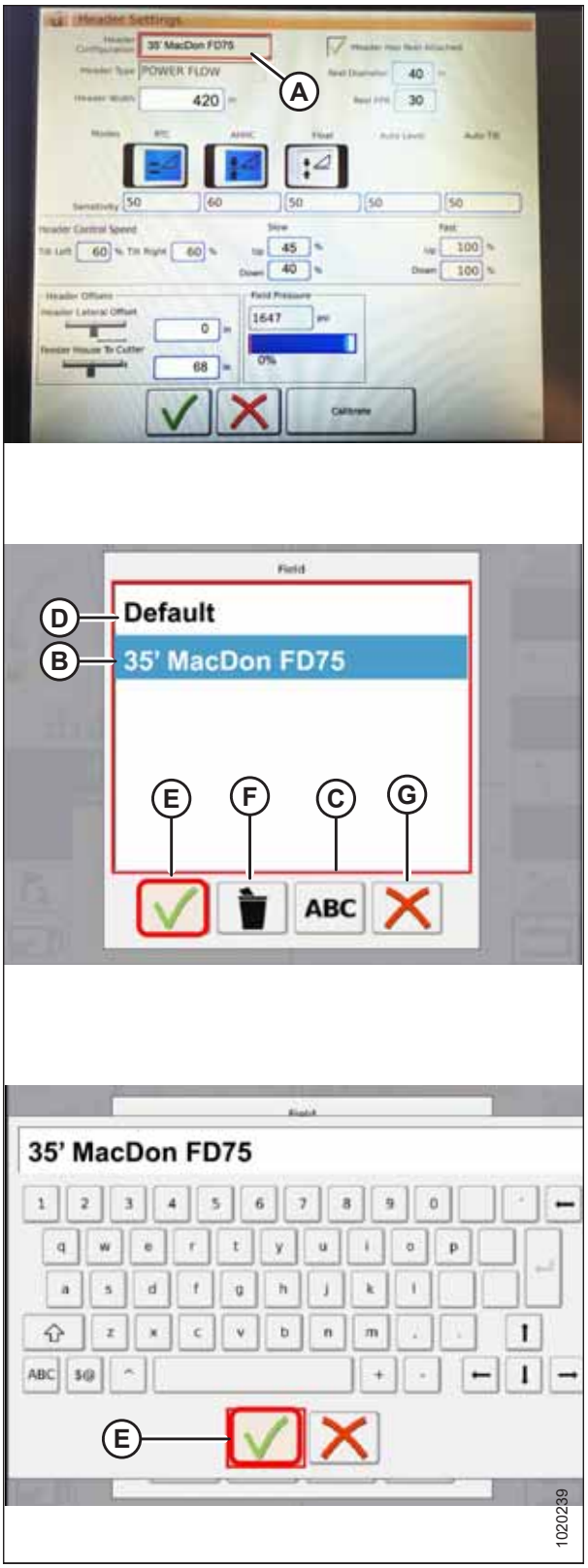


**Figure 7.190: Header Configuration Menu on Header Settings Page**

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A).

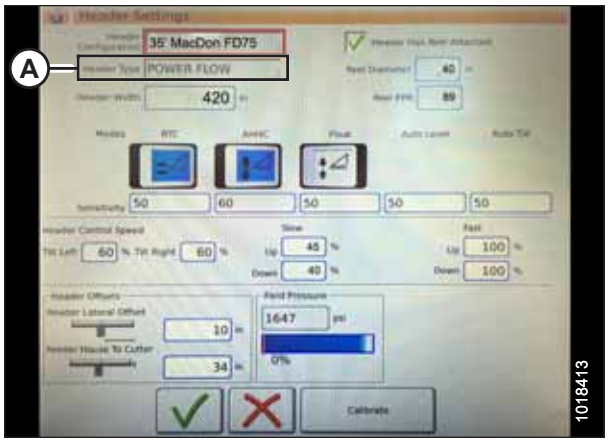


**Figure 7.191: Header Settings**

5. A list of predefined header types appears.
   - Touch green check mark (B) to save the selection and continue

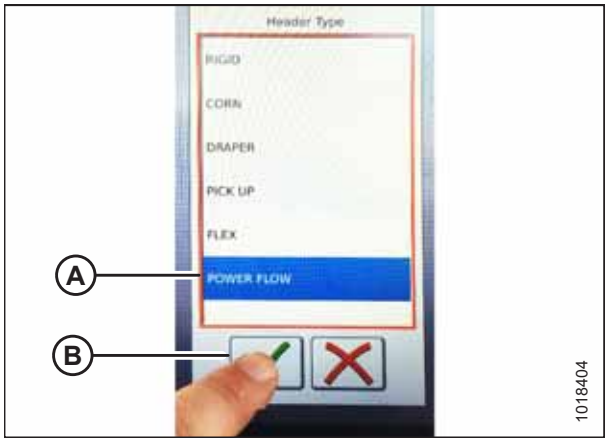


**Figure 7.192: Header Type**

6. Make sure that HEADER HAS REEL ATTACHED check box (A) is checked.

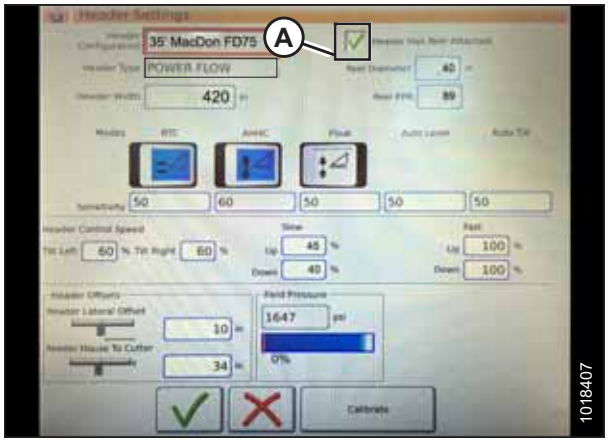


**Figure 7.193: Header Settings**

7. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** for a MacDon reel.
8. Touch REEL PPR (Pulses Per Revolution) field (B) and enter **30** as the value for your MacDon header.

   **NOTE:**

   PPR is determined by the number of teeth on the reel speed sprocket.

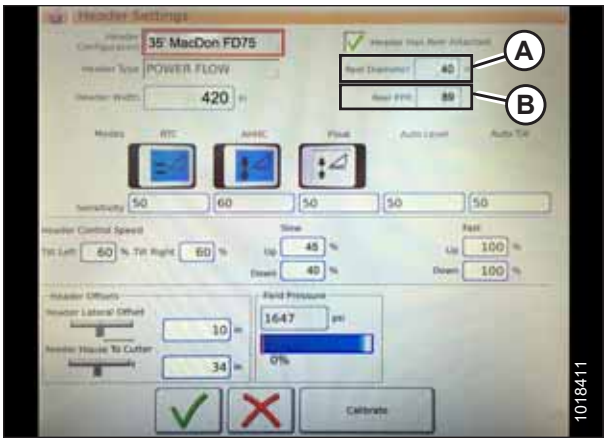


**Figure 7.194: Header Settings**

9. Touch green check mark (B) at the bottom of numeric keypad (A) when complete, or the red X to cancel.

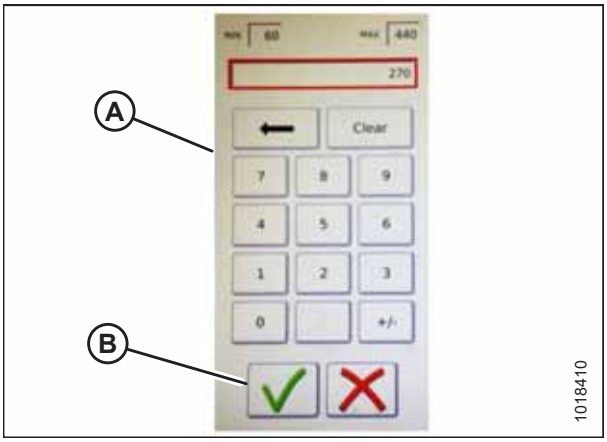


**Figure 7.195: Numeric Keypad**

10. When complete, touch green check mark (A) at the bottom of the HEADER SETTINGS page.

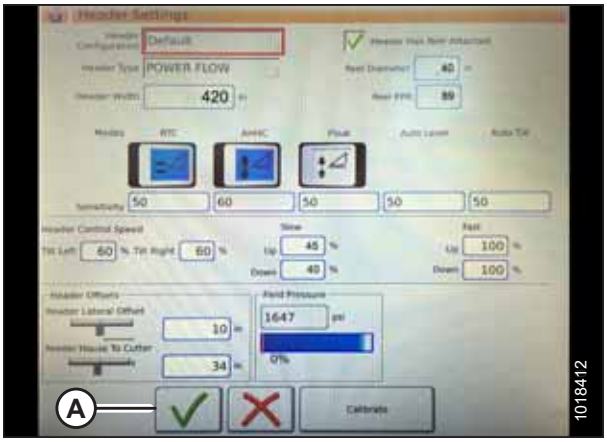


**Figure 7.196: Header Settings Page**

## *Setting Minimum Reel Speed and Calibrating Reel – Gleaner S9 Series*

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.


**Figure 7.197: Reel Settings on Combine Main Menu**

2. To set minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard displays. 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. Reel speed is calibrated on the REEL SETTINGS page by touching CALIBRATE button (A) in the top right of the page.

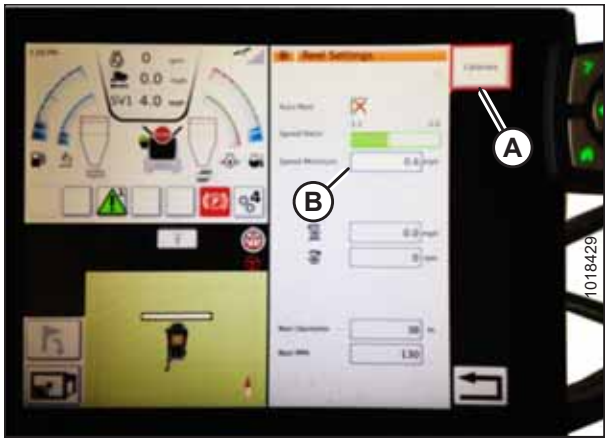


**Figure 7.198: Reel Settings Calibration**

   The CALIBRATION WIZARD opens and displays a hazard warning.


**Figure 7.199: Calibration Wizard**

4. Make sure to meet all the conditions listed in the CALIBRATION WIZARD warning. Press green check mark (A) to accept and start reel calibration. Pressing red X (B) will cancel the calibration procedure.

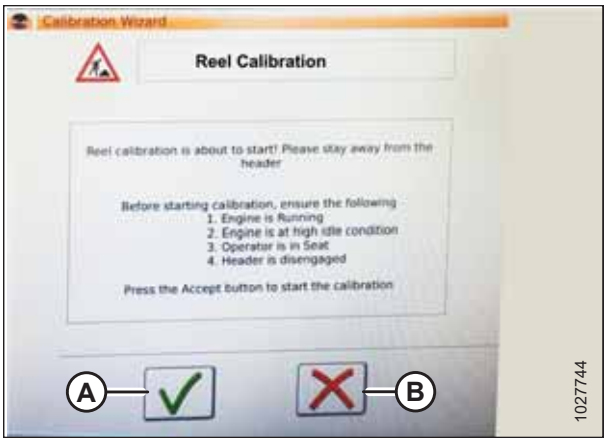


**Figure 7.200: Calibration Wizard**

5. A message appears in the CALIBRATION WIZARD stating that reel calibration has started. The reel will begin turning slowly and 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 7.201: Calibration Progress**

## *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 display since this document was published. Refer to the combine operator's manual for updates.

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 sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease sensitivity if the combine hunts for a position in Auto Mode.

   **NOTE:**

   Recommended sensitivity starting points for MacDon headers are:

   - **50** for RTC (A)
   - **60** for AHHC (B)

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:**

   Recommended header control speed starting points

   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

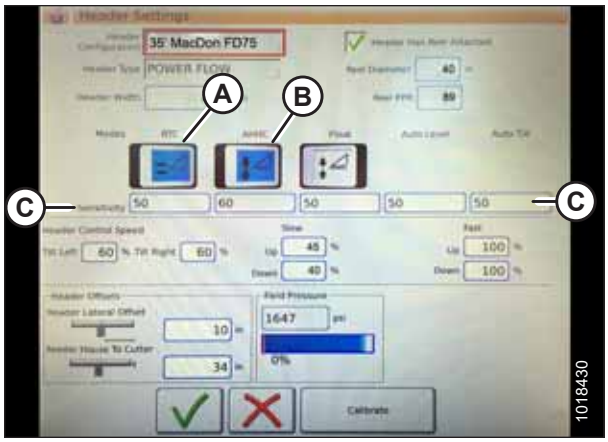


**Figure 7.202: Automatic Controls and Sensitivity Settings**

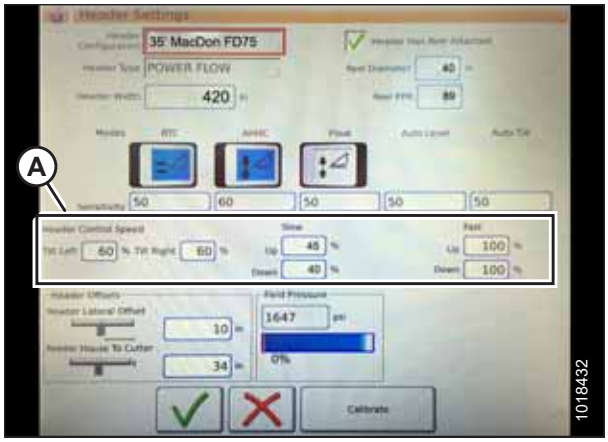


**Figure 7.203: Header Speed Control Settings**

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.

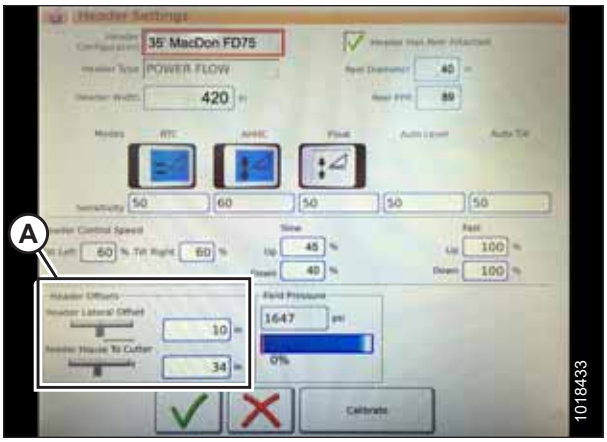


**Figure 7.204: Header Offset Settings**

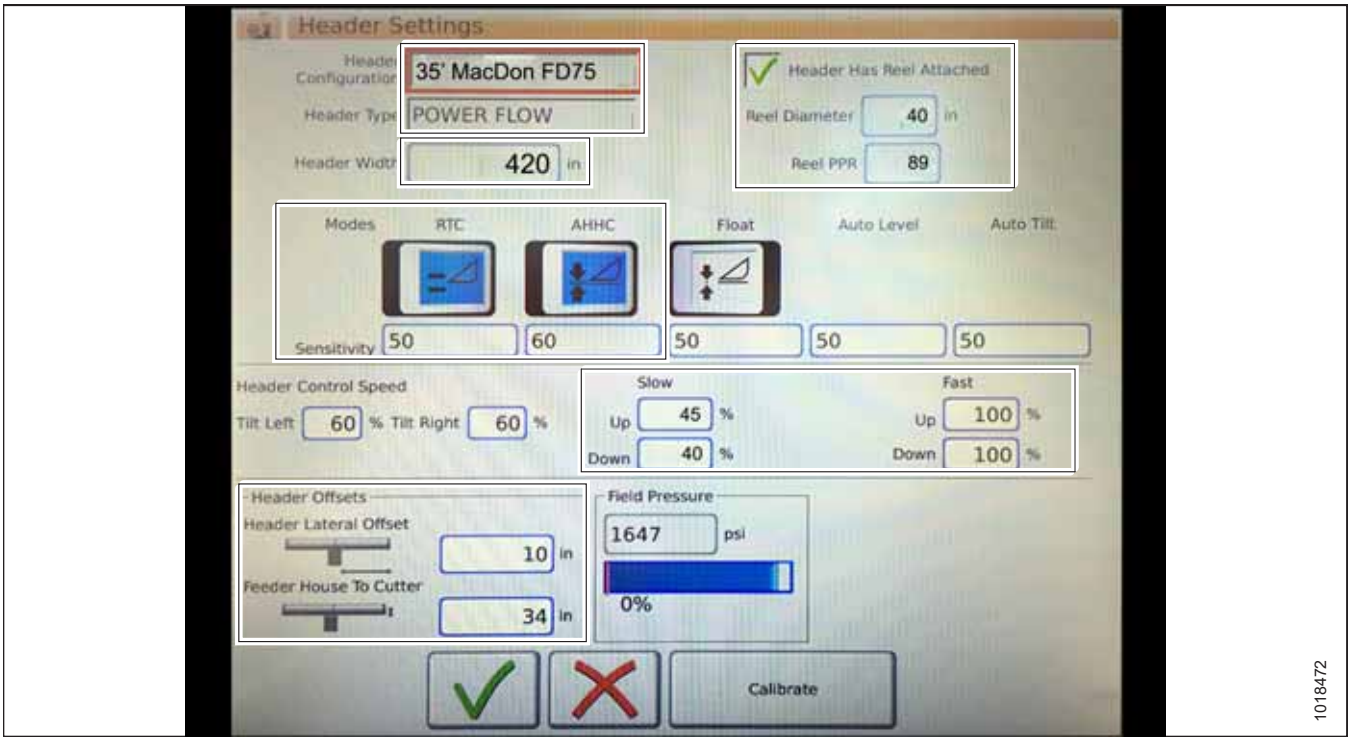


**Figure 7.205: MacDon Header Settings Inputs**

## *Calibrating the Header – Gleaner S9 Series*

The auto header control functions are configured on the HEADER SETTINGS page.

### WARNING

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A).

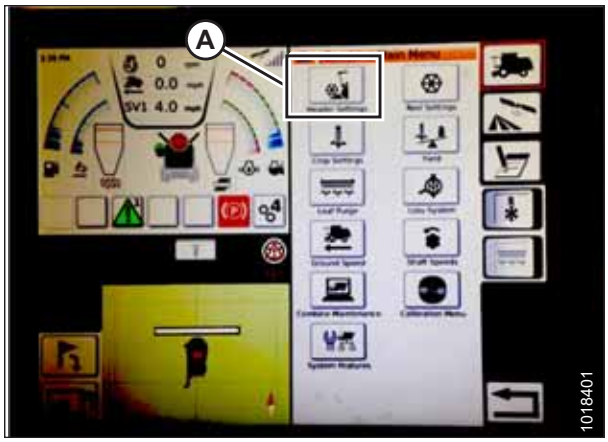


**Figure 7.206: Combine Main Menu**

2. Touch CALIBRATE (A) at the bottom right of the page. The HEADER CALIBRATION page displays.

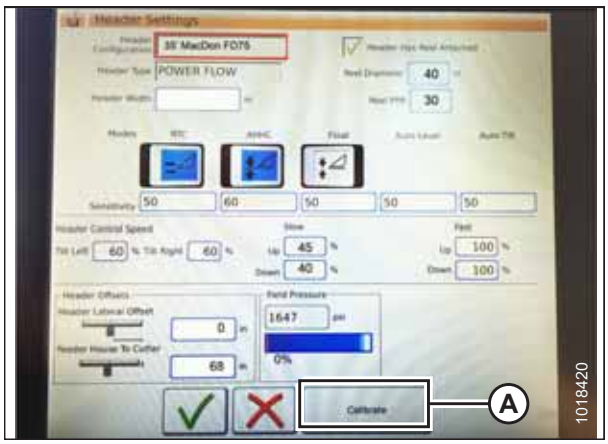


**Figure 7.207: Header Settings Page**

The right side of the page shows Header Calibration information (A). 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

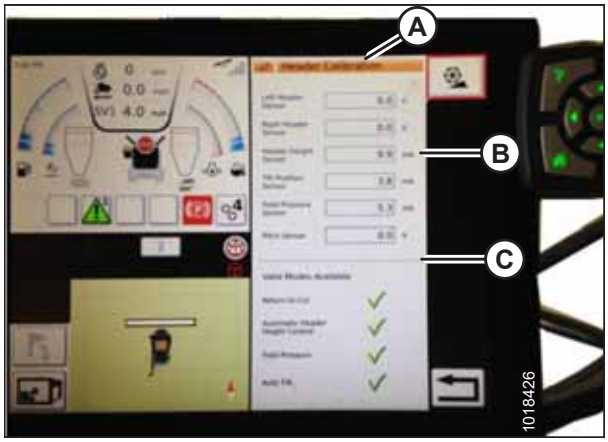


**Figure 7.208: Header Calibration Page**

## WARNING

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

3. On the control handle, touch HEADER DOWN button (A). Sensor values start changing on the HEADER CALIBRATION page as the header lowers.


**Figure 7.209: Header Down Switch**

4. When the sensor values are stable, touch CALIBRATE icon (A).


**Figure 7.210: Header Calibration**

5. The hazard warning for HEADER CALIBRATION appears. Make sure that all conditions are met.
6. Touch the green check mark at the bottom of the page to start the CALIBRATION WIZARD.


**Figure 7.211: Header Calibration Warning**

A progress bar is provided and the calibration can be stopped at any time by touching the red X. The header moves automatically and erratically during this process.

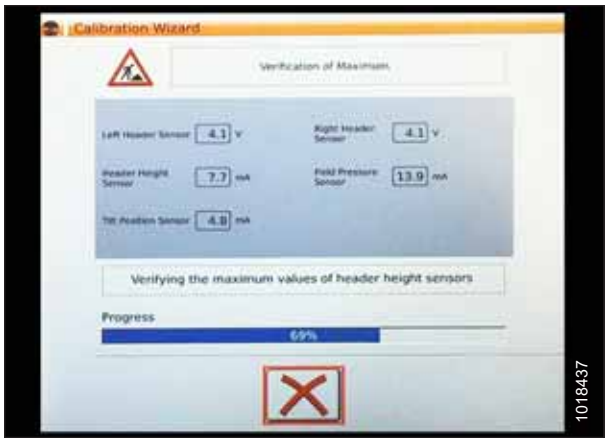


**Figure 7.212: Calibration in Progress**

7. When the calibration is complete, a message displays, and summary information (A) is shown. Green check marks confirm the functions have been calibrated (B). Touch bottom green check mark (C) to save.


**Figure 7.213: Completed Calibration Page**

**NOTE:**

Touch CALIBRATION icon (A) on the COMBINE MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.


**Figure 7.214: Direct Calibration Menu**

## *Operating the Header – Gleaner S9 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 7.215: 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 7.216: Header Control Cluster**

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current setpoint position.


**Figure 7.217: AHHC on Control Handle**

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the position.


**Figure 7.218: Header Control Cluster**

## *Reviewing Header In-Field Settings – Gleaner S9 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. To view header group settings, touch HEADER icon (A) on the right side of the home page.
2. The following information is displayed:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by red line)
   - HEADER symbol (D) – touch to adjust the setpoint 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 setpoint control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

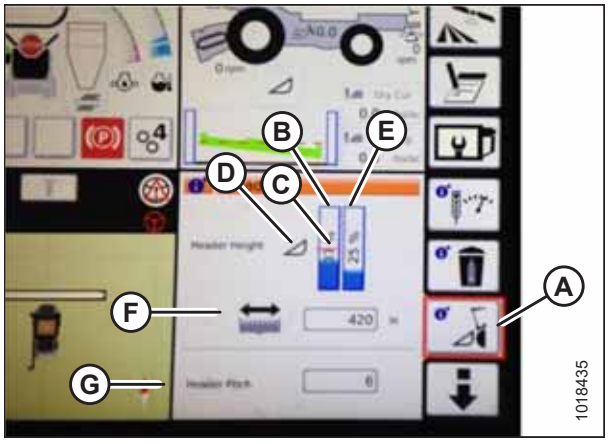


**Figure 7.219: Header Groups**

3. Touching a field opens the on-screen keyboard so that values can be adjusted. Enter the new value and touch the green check mark when complete.

   **NOTE:**

   Scroll wheel (A) is located on the right side of the Tyton terminal.

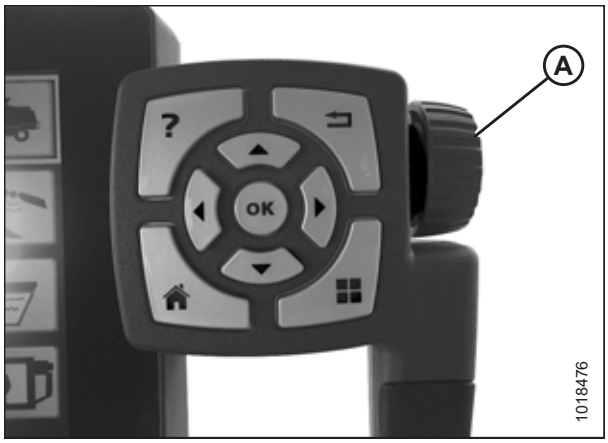


**Figure 7.220: Adjustment Wheel on Right Side of Tyton Terminal**

**NOTE:**

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.


**Figure 7.221: Header Control Cluster**

## 7.1.15 John Deere 70 Series Combines

*Checking Voltage Range from the Combine Cab – John Deere 70 Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   **NOTE:**

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

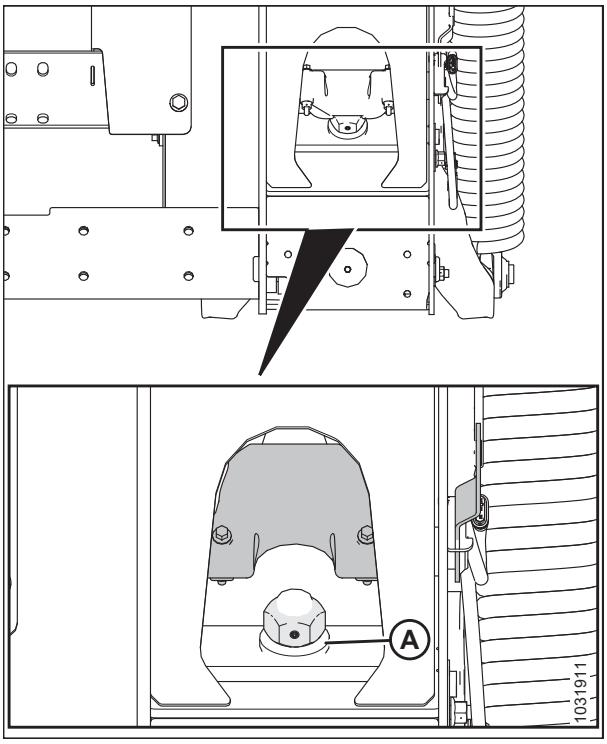


**Figure 7.222: Float Lock**

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

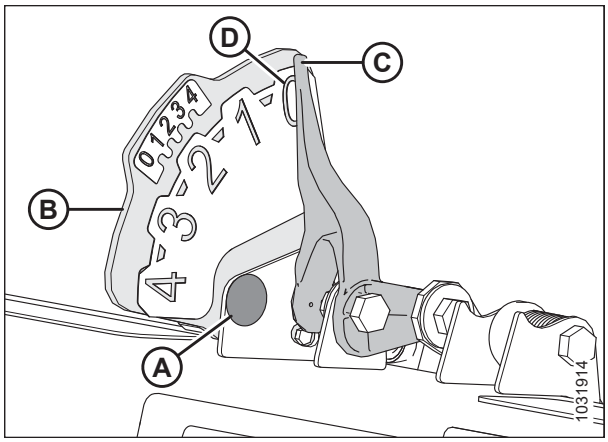


**Figure 7.223: Float Indicator**

5. Press HOME PAGE button (A) on the main screen of the monitor.


**Figure 7.224: John Deere Combine Display**

6. Ensure three icons (A) shown in the illustration at right appear on the monitor.


**Figure 7.225: 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. This will bring up the Message Center.

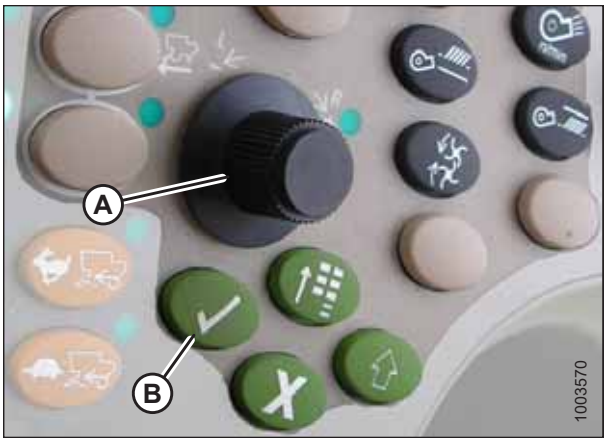


**Figure 7.226: John Deere Combine Control Console**

8. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column and select it by pressing the check mark button.
9. Use the scroll knob to highlight drop-down box (B) and press the check mark button to select it.


**Figure 7.227: John Deere Combine Display**

10. Use the scroll knob to highlight LC 1.001 VEHICLE (A) and press the check mark button to select it.


**Figure 7.228: John Deere Combine Display**

11. Use the scroll knob to highlight down arrow (A) and press the check mark button to scroll through the list until 029 DATA (B) is displayed and voltage reading (C) appears on the monitor.

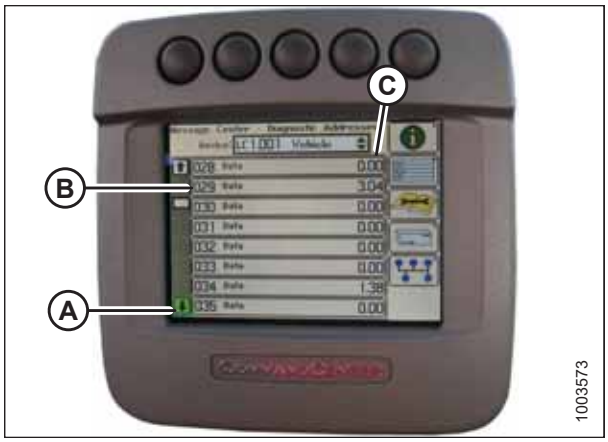


**Figure 7.229: John Deere Combine Display**

12. Ensure header float is unlocked.
13. Start the combine and fully lower 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.

14. Check the sensor reading on the monitor.
15. Raise the header so it is just off the ground and recheck the sensor reading.

### *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.

### *Calibrating the Auto Header Height Control – John Deere 70 Series*

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 Header Angle in the header operator's manual for instructions.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

## WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

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

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.
3. Start the combine.

4. Press the button located fourth from the left along the top of monitor (A) to select the icon that resembles an open book with a wrench on it (B).
5. Press top button (A) a second time to enter diagnostics and calibration mode.

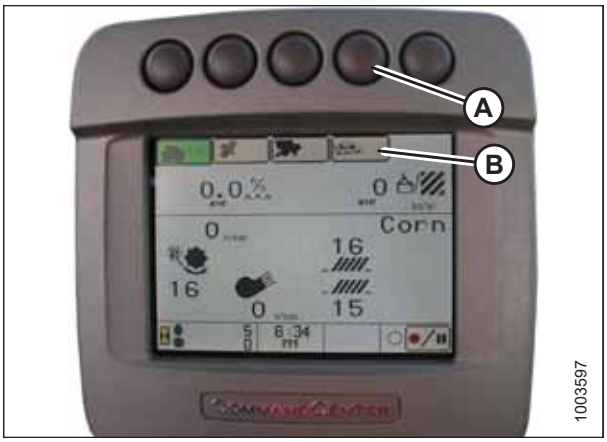


**Figure 7.230: John Deere Combine Display**

6. Select HEADER in box (A) by scrolling down to the box using the scroll knob, and then pressing the check mark button (knob and button are shown in Figure *7.232, page 247*).
7. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.

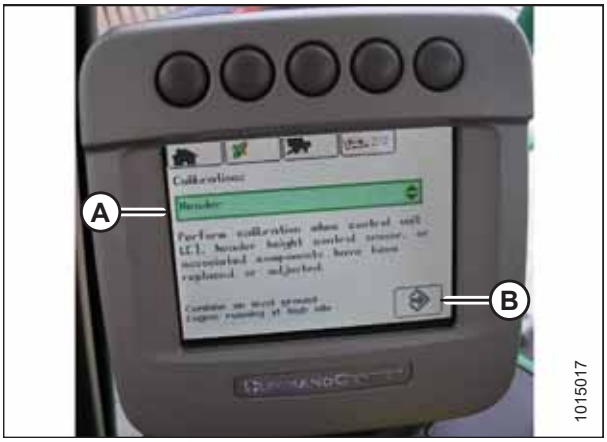


**Figure 7.231: John Deere Combine Display**

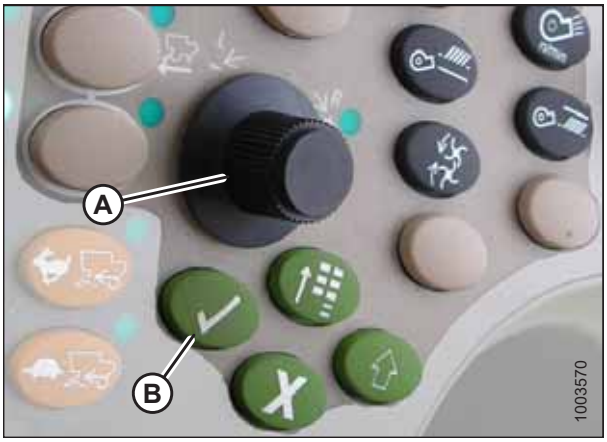


**Figure 7.232: John Deere Combine Control Console**

**A - Scroll Knob** **B - Check Mark Button**

8. Follow the steps listed on the monitor to perform the calibration.

   **NOTE:**

   If an error code appears on screen, the sensor is not in the correct working range. For instructions, refer to *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 249* to check and adjust the range.

**NOTE:**

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

## *Setting the Sensitivity of the Auto Header Height Control – 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) twice and the current sensitivity setting will appear on the monitor (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 screen remains idle for a short period of time, it will automatically return to the previous screen. Pressing check mark button (C) also will return the monitor to the previous screen.

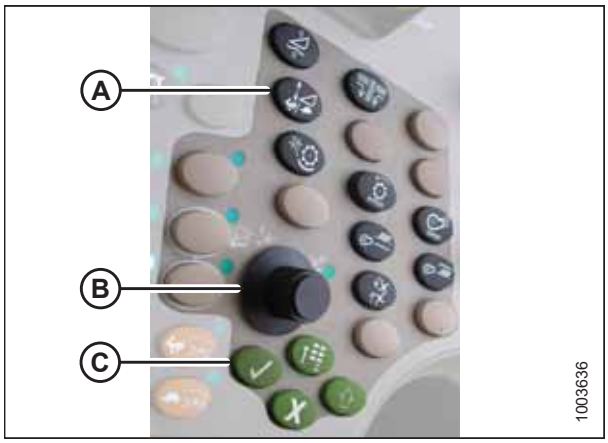


**Figure 7.233: John Deere Combine Control Console**

**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 7.234: John Deere Combine Display**

## *Adjusting the Manual Header Raise/Lower Rate – John Deere 70 Series*

The weight of the header will dictate the rate at which the header can be raised or lowered during operation.

To manually adjust the header raise/lower rate, do the following steps:

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) and the current raise/lower rate setting will appear on the monitor (the lower the reading, the slower the rate).
2. Use scroll knob (B) to adjust the rate. The adjustment will be saved automatically.

**NOTE:**

If the screen remains idle for a short period of time, it will automatically return to the previous screen. Pressing check mark button (C) will also return the monitor to the previous screen.

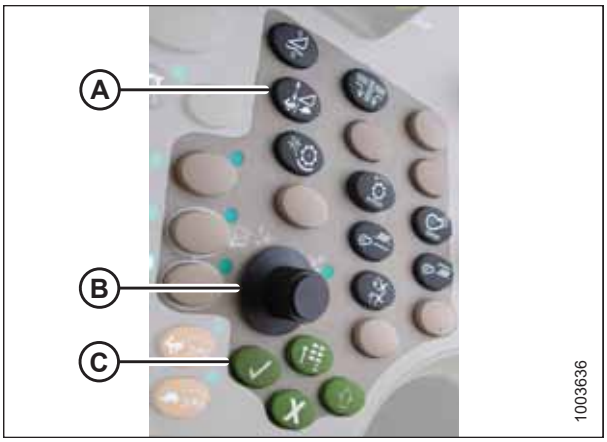


**Figure 7.235: John Deere Combine Control Console**

**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 7.236: John Deere Combine Display**

## 7.1.16 John Deere S and T Series Combines

*Checking Voltage Range from the Combine Cab – John Deere S and T Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

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

   **NOTE:**

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

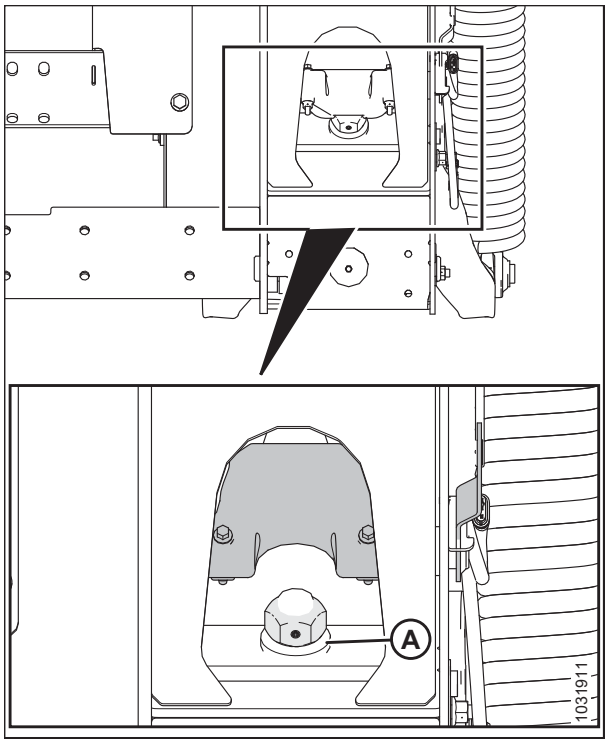


**Figure 7.237: Float Lock**

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

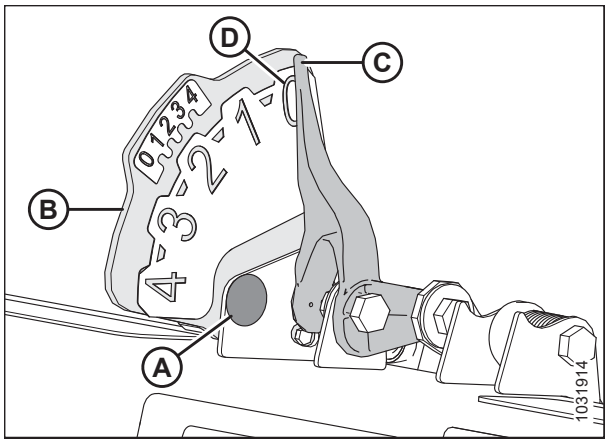


**Figure 7.238: Float Indicator**

5. Press CALIBRATION icon (A) on the main screen of the monitor. The CALIBRATION screen appears.


**Figure 7.239: John Deere Combine Display**

6. Press DIAGNOSTIC READINGS icon (A) on the CALIBRATION screen. The DIAGNOSTIC READINGS screen appears. This screen provides access to calibrations, header options, and diagnostic information.

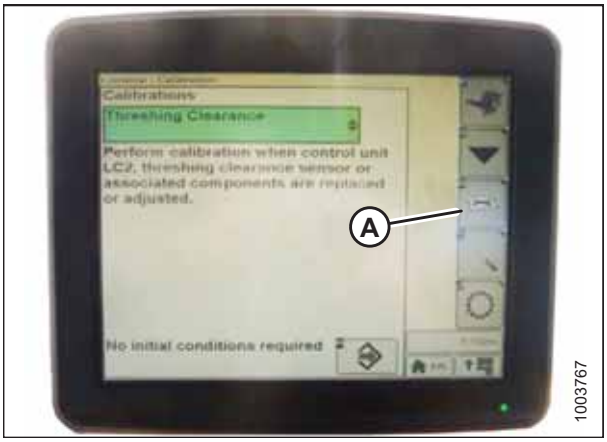


**Figure 7.240: John Deere Combine Display**

7. Select AHHC RESUME (A) and a list of calibration options appears.


**Figure 7.241: John Deere Combine Display**

8. Select the AHHC SENSING option.
9. Press icon (A) displayed on screen. The AHHC SENSING menu appears and five screens of information are displayed.


**Figure 7.242: John Deere Combine Display**

10. Press icon (A) until it reads Page 5 near the top of the screen and the following sensor readings appear:
    - LEFT HEADER HEIGHT
    - CENTER HEADER HEIGHT
    - RIGHT HEADER HEIGHT

    A reading is displayed for both 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).

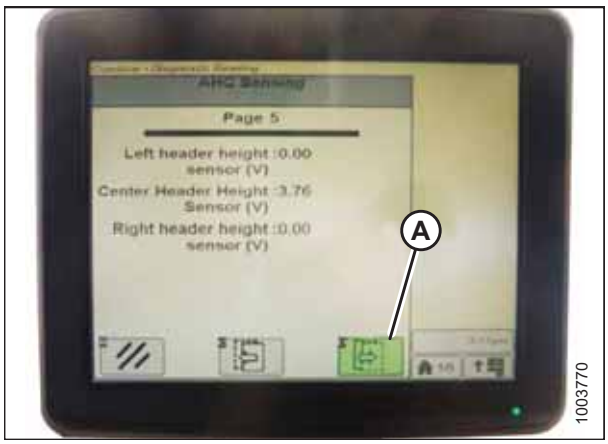


**Figure 7.243: John Deere Combine Display**

11. Ensure header float is unlocked.
12. Start the combine and fully lower 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 sensor reading on the monitor.

## *Calibrating the Auto Header Height Control – John Deere S and T Series*

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 Header Angle in the header operator's manual.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

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

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.

3. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen appears.


**Figure 7.244: John Deere Combine Display**

4. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

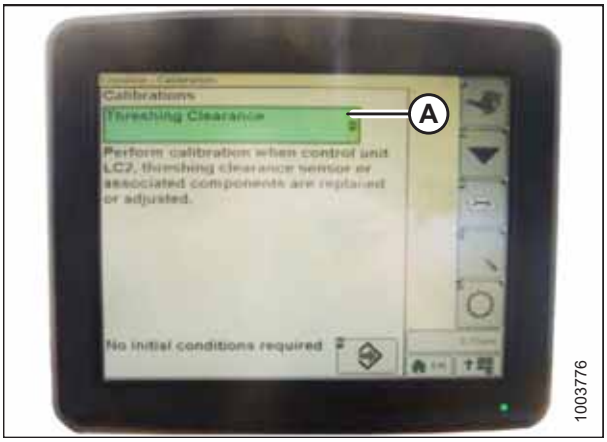


**Figure 7.245: John Deere Combine Display**

5. Select FEEDER HOUSE SPEED (A) from the list of calibration options.

   **NOTE:**

   Feeder house speed calibration must be done before header calibration.

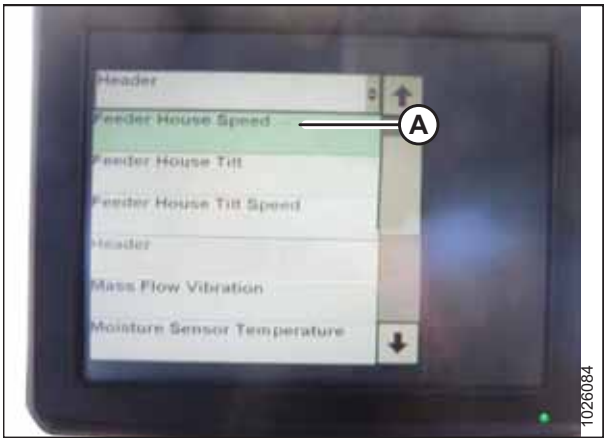


**Figure 7.246: John Deere Combine Display**

6. With FEEDER HOUSE SPEED selected, press icon (A). The icon will turn green.


**Figure 7.247: John Deere Combine Display**

7. Press icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

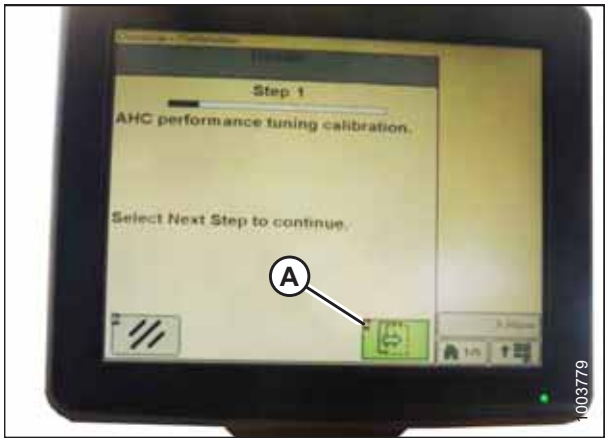


**Figure 7.248: John Deere Combine Display**

8. Select HEADER (A) from the list of calibration options.

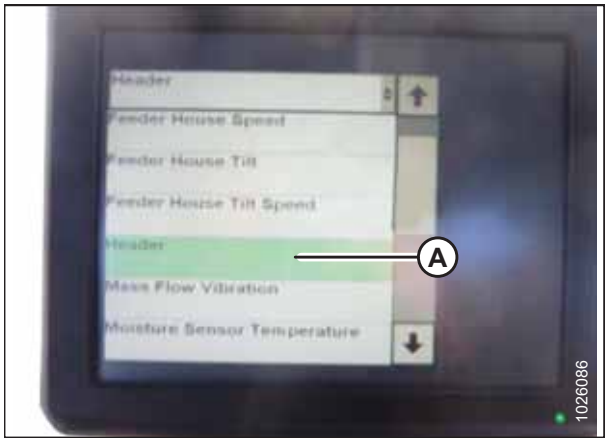


**Figure 7.249: John Deere Combine Display**

9. With HEADER selected, press icon (A). The icon will turn green.

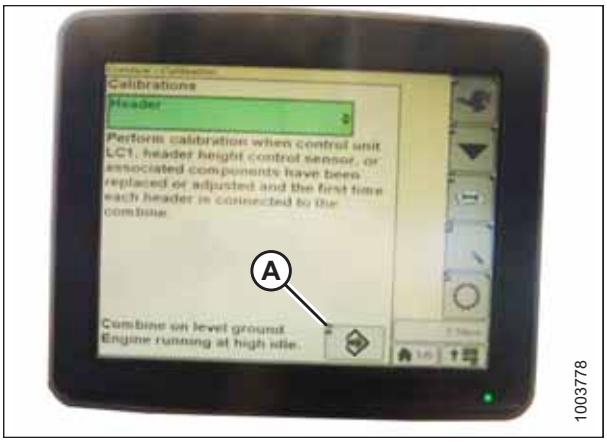


**Figure 7.250: John Deere Combine Display**

10. Press 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 *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 249*.

    **NOTE:**

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

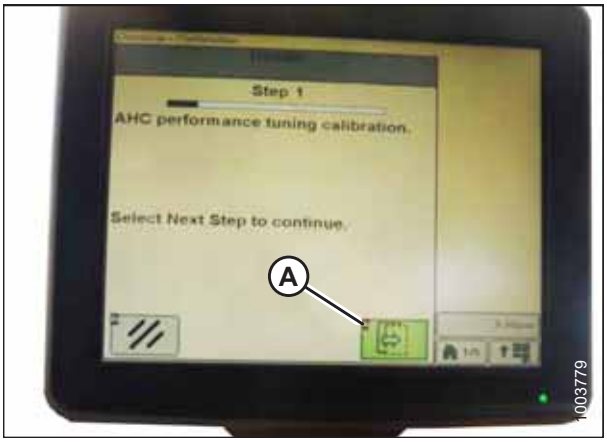


**Figure 7.251: John Deere Combine Display**

## *Setting the Sensitivity of the Auto Header Height Control – 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) twice and the current sensitivity setting will appear on the monitor.


**Figure 7.252: John Deere Combine Command Center**

2. Press **–** or **+** icons (A) to adjust 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 7.253: John Deere Combine Display**

## *Adjusting the Manual Header Raise/Lower Rate – John Deere S and T Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 152 mm (6 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.

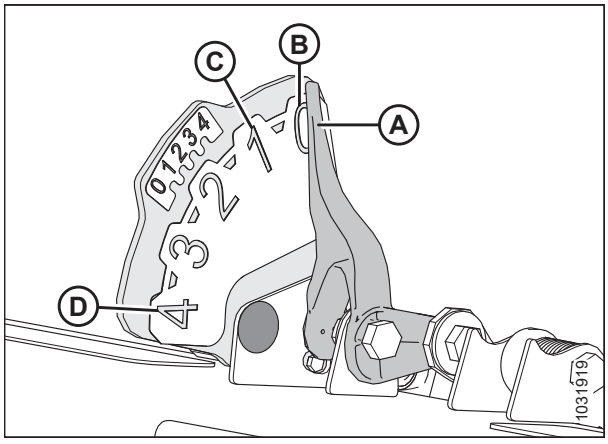


**Figure 7.254: Float Indicator Box**

1. Press button (A) and the current sensitivity setting will appear on the monitor.


**Figure 7.255: John Deere Combine Command Center**

2. Press **–** or **+** icons (A) to adjust 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 7.256: John Deere Combine Display**

## *Setting Preset Cutting Height – John Deere S and T Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 254–306 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.

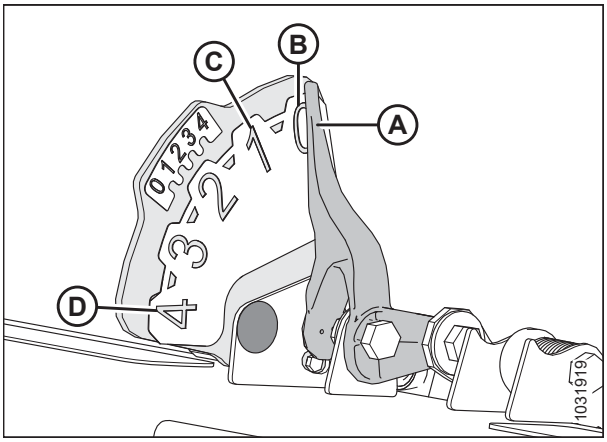


**Figure 7.257: Float Indicator Box**

1. Press COMBINE – HEADER SETUP icon (A) on the main screen. The COMBINE – HEADER SETUP screen appears. This screen is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.


**Figure 7.258: Combine Display**

2. Select COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC screen appears.


**Figure 7.259: Combine Display**

3. 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 *Calibrating Reel Height Sensor – John Deere S and T Series, page 264*.

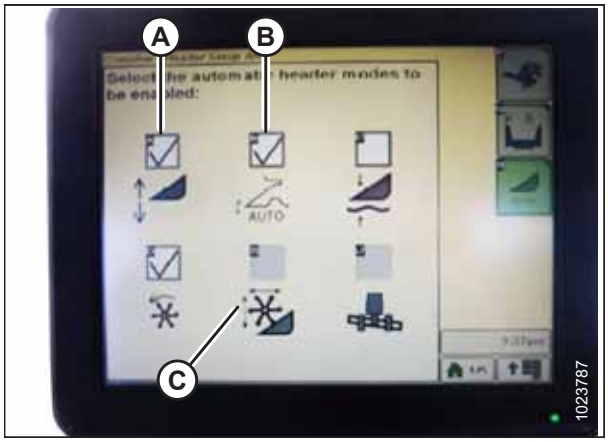


**Figure 7.260: Combine Display**

4. Engage the header.
5. Move the header to the desired position and use knob (A) to fine tune the position.
6. Move the reel to the desired position.


**Figure 7.261: Combine Control Console**

7. Press and hold preset switch 2 (B) until 1 reel height icon flashes on monitor.
8. Repeat previous three steps for preset switch 3 (C).
9. 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 ground.


**Figure 7.262: Control Handle Buttons**

**NOTE:**

When the AHHC is engaged, AHHC icon (A) appears on the monitor and the number indicating which button was pressed (B) is displayed on the screen.

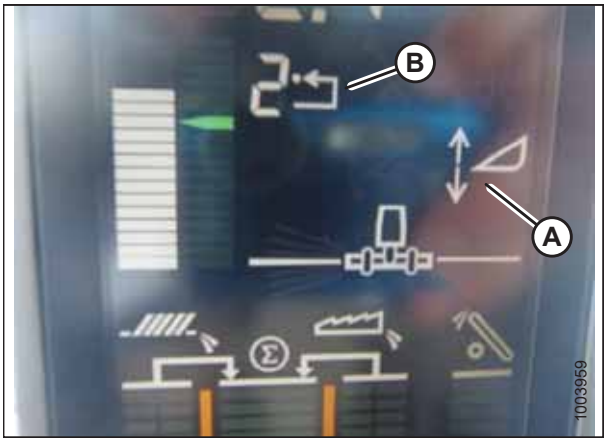


**Figure 7.263: Combine Display**

## *Calibrating Feeder House Fore-Aft Tilt Range – John Deere S and T Series*

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.

This 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 display since this document was published. Refer to the combine operator's manual for updates.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the control handle.


**Figure 7.264: John Deere Control Handle**

**NOTE:**

The feeder house fore/aft tilt controls can be changed to work with buttons E and F by pressing control handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from drop-down menu (B).

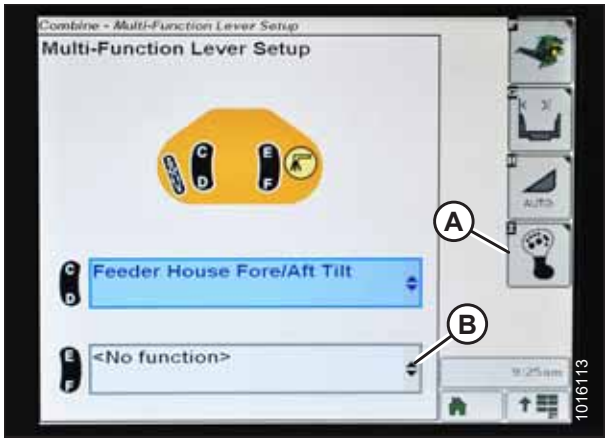


**Figure 7.265: John Deere Combine Display**

To calibrate the feeder house fore-aft tilt range, follow these steps:

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.

3. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen displays.


**Figure 7.266: John Deere Combine Display**

4. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.


**Figure 7.267: John Deere Combine Display**

5. Press arrow (A) to cycle up through the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

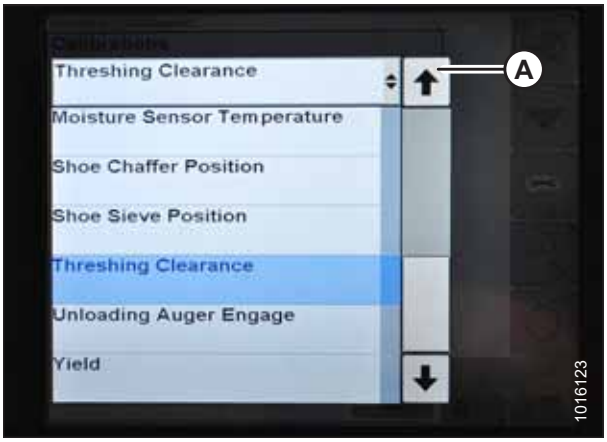


**Figure 7.268: John Deere Combine Display**

6. Press ENTER icon (A).

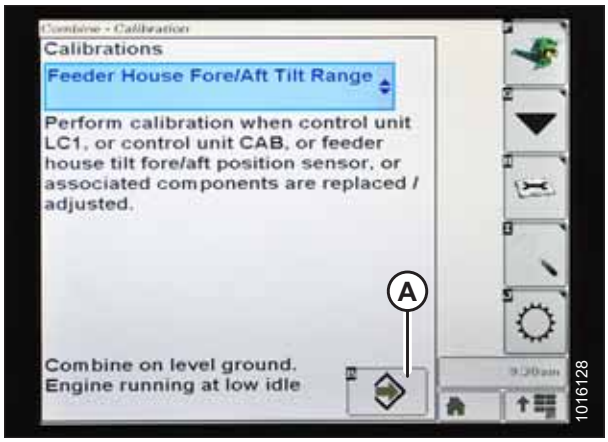


**Figure 7.269: John Deere Combine Display**

7. Follow the instructions that appear on the screen. 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 *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 249*.

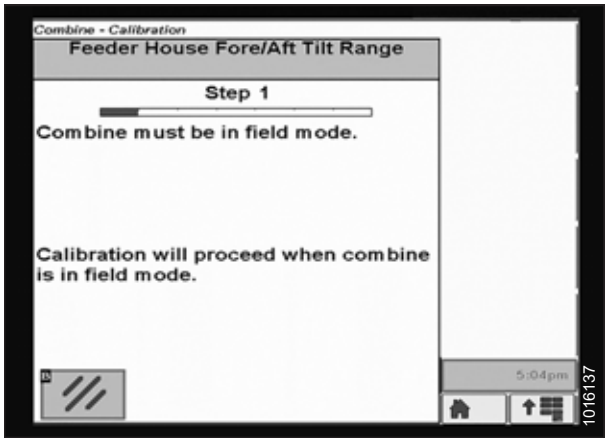


**Figure 7.270: John Deere Combine Display**

## *Checking Reel Height Sensor Voltages – John Deere S and T Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press CALIBRATION icon (A) on the main screen of the monitor. The CALIBRATION screen appears.


**Figure 7.271: John Deere Combine Display**

2. Press DIAGNOSTIC READINGS icon (A) on the CALIBRATION screen. The DIAGNOSTIC READINGS screen appears. This screen provides access to calibrations, header options, and diagnostic information.

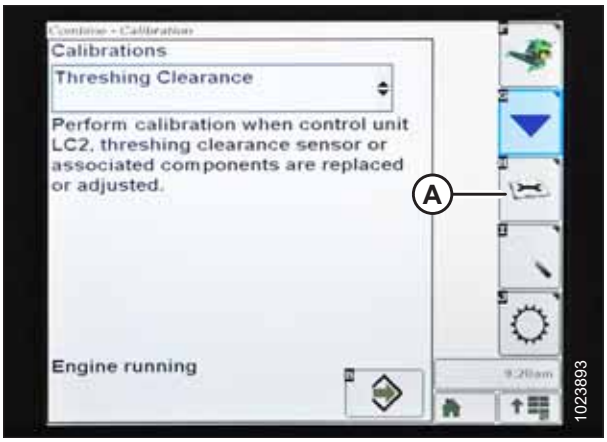


**Figure 7.272: John Deere Combine Display**

3. Select drop-down menu (A) to view the list of calibration options.

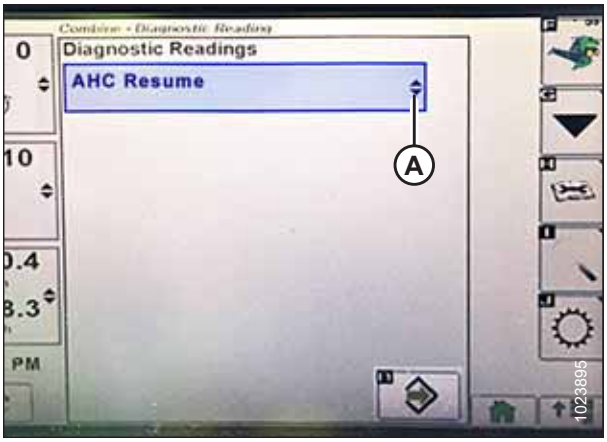


**Figure 7.273: John Deere Combine Display**

4. Scroll down and select REEL RESUME (A).


**Figure 7.274: John Deere Combine Display**

5. Press ENTER icon (A). The REEL RESUME page displays.

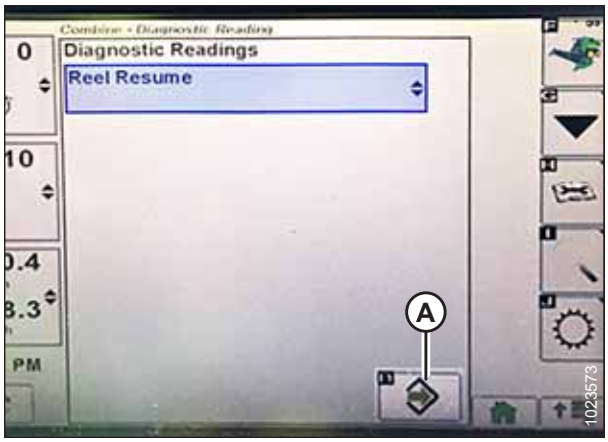


**Figure 7.275: John Deere Combine Display**

6. Press NEXT PAGE icon (A) to cycle to page 3.
7. Lower the reel to view low voltage (B). The voltage should be 0.5–0.9 V.

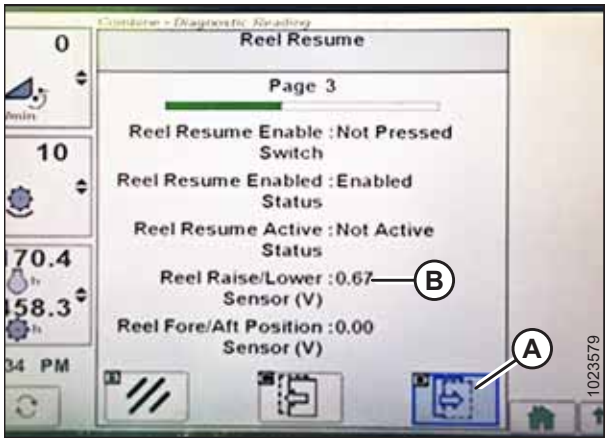


**Figure 7.276: John Deere Combine Display**

8. Raise the reel to view high voltage (A). The voltage should be 4.1–4.5 V.
9. If either voltage is not within the correct range, refer to *8.1 Checking and Adjusting Reel Height Sensor, page 303*.

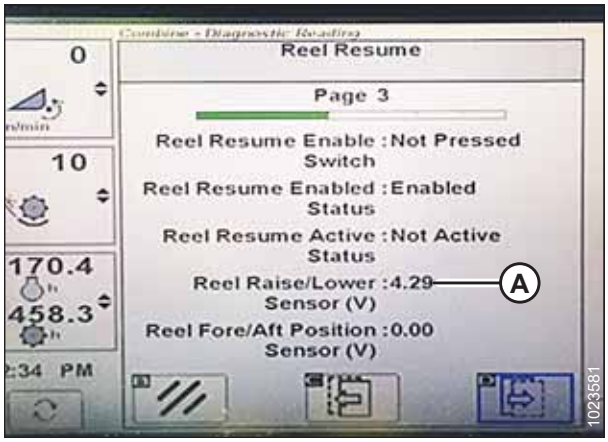


**Figure 7.277: John Deere Combine Display**

## *Calibrating Reel Height Sensor – John Deere S and T Series*

This 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 display since this document was published. Refer to the combine operator's manual for updates.

To calibrate reel height, follow these steps:

1. Position the header until it is 254–306 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. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen displays.

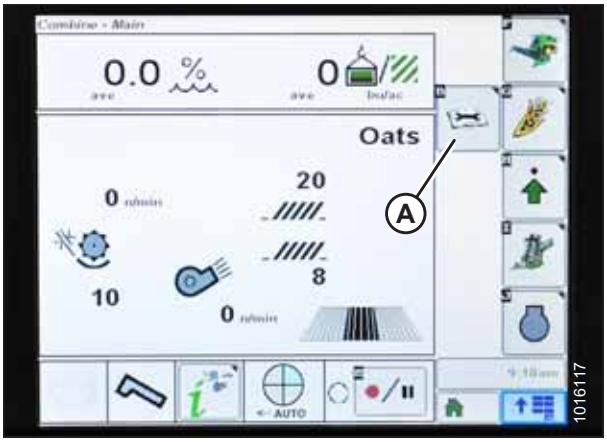


**Figure 7.278: John Deere Combine Display**

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. Press ENTER icon (B).

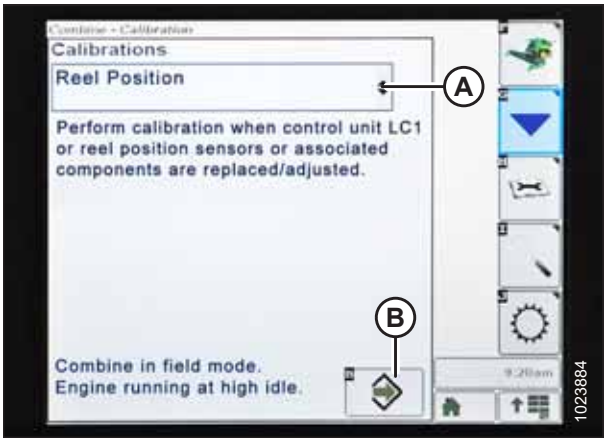


**Figure 7.279: John Deere Combine Display**

6. Follow the instructions that appear on the screen. 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 7.280: John Deere Control Handle**

7. Press and hold REEL LOWER switch until reel is fully lowered. Continue holding REEL LOWER switch until prompted by the display.


**Figure 7.281: John Deere Combine Display**

8. Press and hold REEL RAISE switch until reel is fully raised. Continue holding REEL RAISE switch until prompted by the display.


**Figure 7.282: John Deere Combine Display**

9. When all steps have been completed, CALIBRATION COMPLETE message is displayed on the screen. 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 *Checking Reel Height Sensor Voltages – John Deere S and T Series, page 262*.


**Figure 7.283: John Deere Combine Display**

## 7.1.17 John Deere S7 Series Combines

### *Setting up Header – John Deere S7 Series*

**NOTE:**

Changes may have been made to combine controls or display since this document was published. Refer to combine operator's manual for updates.

1. Press header button (A) on the panel below the display. The HEADER page opens.


**Figure 7.284: John Deere S7 Display**

2. Select HEADER TYPE field (A). The HEADER DETAILS window opens.


**Figure 7.285: 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 window opens.


**Figure 7.286: John Deere S7 Display – Header Details Window**

5. Use the on-screen keypad to enter the correct header width, and then press OK.


**Figure 7.287: John Deere S7 Display – Setting Header Width**

6. Press window close button (A) in top right corner of the window to return to the HEADER page.


**Figure 7.288: John Deere S7 Display – Header Details Window**

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 7.289: John Deere S7 Display – Header Page**

8. Use **+** and **–** buttons (A) to adjust the setting.
9. Press window close button in top right corner of the window to return to the HEADER page.

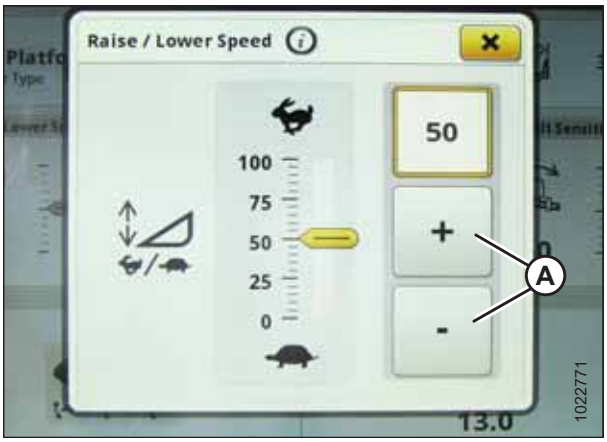


**Figure 7.290: John Deere S7 Display – Raise/Lower Speed Adjustment**

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.


**Figure 7.291: 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 error message.

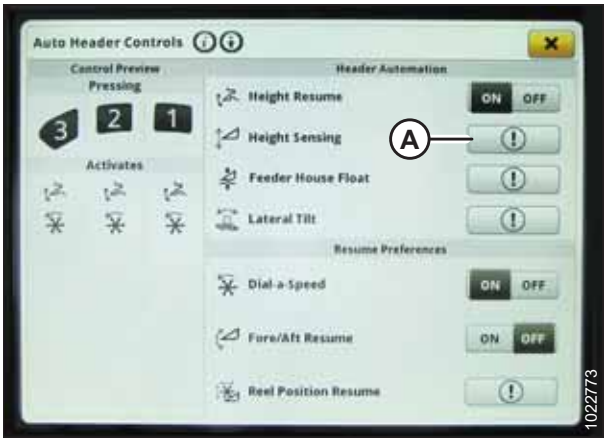


**Figure 7.292: John Deere S7 Display – Auto Header Controls**

12. Read error message and then press OK.
13. Proceed to *Checking Voltage Range from the Combine Cab – John Deere S7 Series, page 270*.


**Figure 7.293: John Deere S7 Display – Height Sensing Error Message**

## *Checking Voltage Range from the Combine Cab – John Deere S7 Series*

The auto header height sensor output must be within a specific range, or the feature will not work properly.

**Table 7.2 Voltage Range**

| Combine | Low Voltage Limit | High Voltage Limit | Minimum Range |
|---|---|---|---|
| John Deere S7 Series | 0.5 V | 4.5 V | 3.0 V |

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 254–306 mm (10–14 in.) off the ground.
2. Unlock the float module float.

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

   **NOTE:**

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

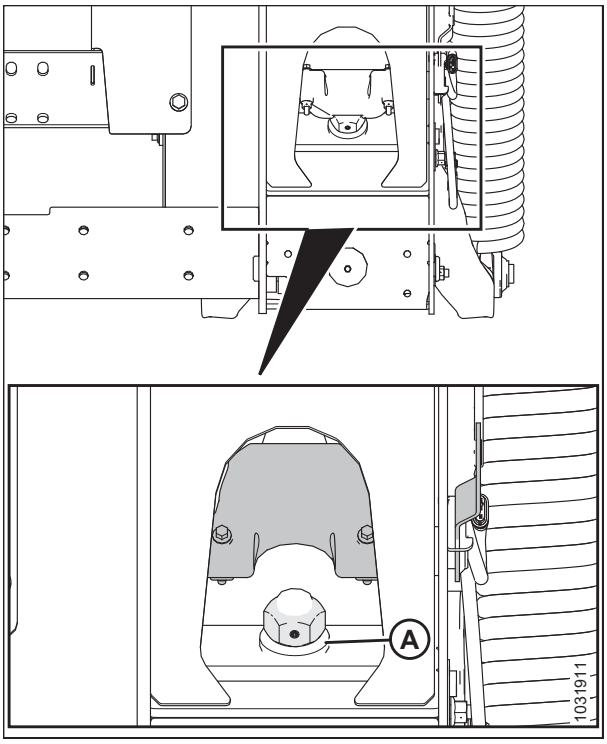


**Figure 7.294: Float Lock**

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

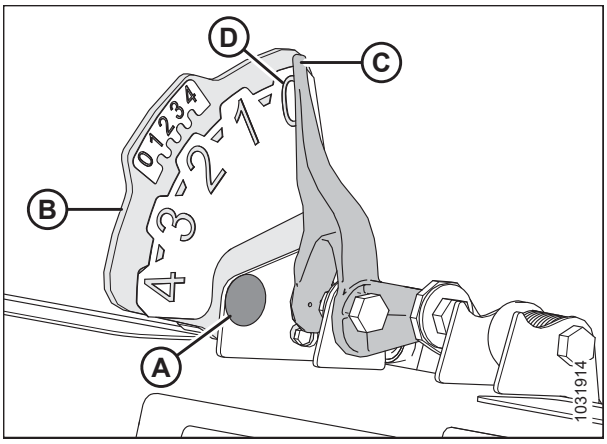


**Figure 7.295: Float Indicator**

6. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the screen.


**Figure 7.296: John Deere S7 Display – Harvesting Page**

7. On the MENU page, select SYSTEM tab (A). The MENU opens.
8. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

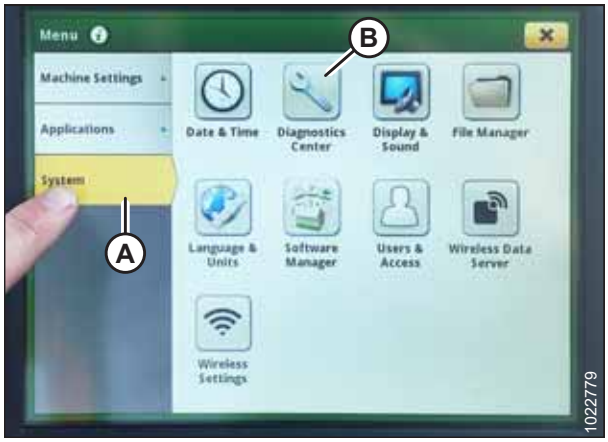


**Figure 7.297: John Deere S7 Display – Menu**

9. Select AHC - SENSING (A). The AHC - SENSING\ DIAGNOSTICS page displays.


**Figure 7.298: John Deere S7 Display – Diagnostics Center**

10. Select SENSOR tab (A) to view 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.

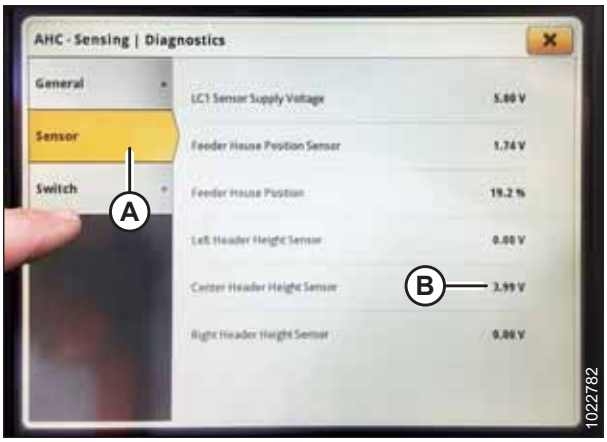


**Figure 7.299: John Deere S7 Display – Checking Sensor Voltage**

## *Calibrating Feeder House – John Deere S7 Series*

Feeder house calibration must be done before header calibration.

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

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.


**Figure 7.300: John Deere S7 Display – Harvesting Page**

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

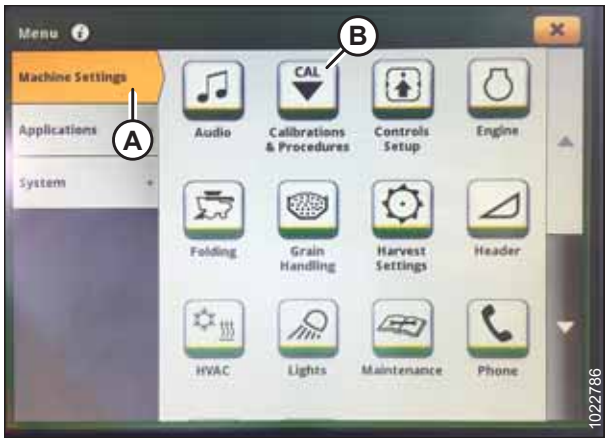


**Figure 7.301: John Deere S7 Display – Machine Settings**

6. Select HEADER tab (A).
7. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page displays.

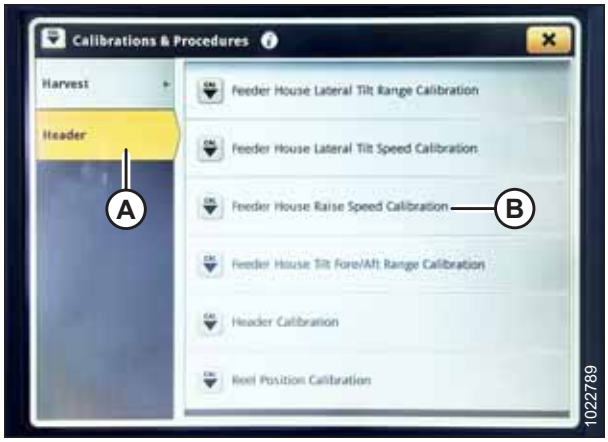


**Figure 7.302: John Deere S7 Display – Calibrations and Procedures**

8. Select CALIBRATE (A) at the bottom of the page. A calibration overview displays.

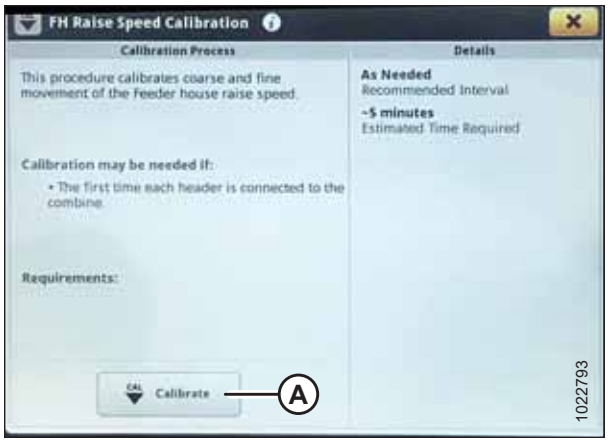


**Figure 7.303: John Deere S7 Display – Feeder House Calibration**

9. Read the calibration overview, and then press START.


**Figure 7.304: John Deere S7 Display – Feeder House Calibration**

10. Follow the instructions on the screen. As you proceed through the calibration process, the display will automatically update to show next step.


**Figure 7.305: John Deere S7 Display – Feeder House Calibration**

11. When calibration is complete, select SAVE to confirm calibration.


**Figure 7.306: John Deere S7 Display – Feeder House Calibration**

*Calibrating Header – John Deere S7 Series*

## WARNING

**Never start or move the machine until you are sure 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 *Calibrating Feeder House – John Deere S7 Series, page 273*.

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

**NOTE:**

Changes may have been made to combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.


**Figure 7.307: John Deere S7 Display – Harvesting Page**

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

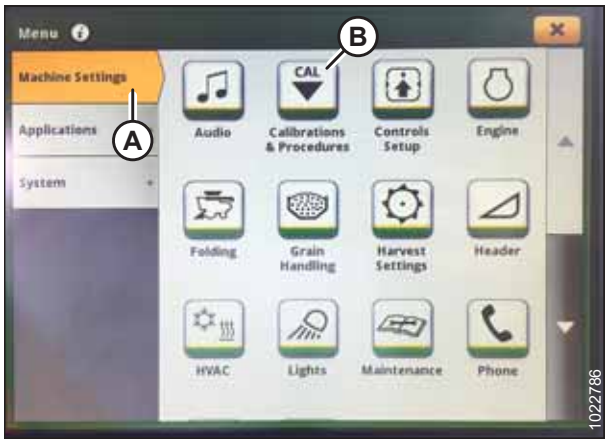


**Figure 7.308: John Deere S7 Display – Machine Settings**

6. Select HEADER tab (A).
7. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page displays.

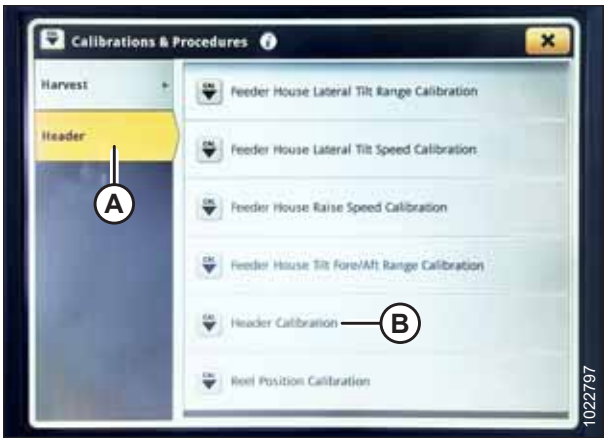


**Figure 7.309: John Deere S7 Display – Calibrations and Procedures**

8. Select CALIBRATE (A) at bottom of page. The calibration overview window opens.

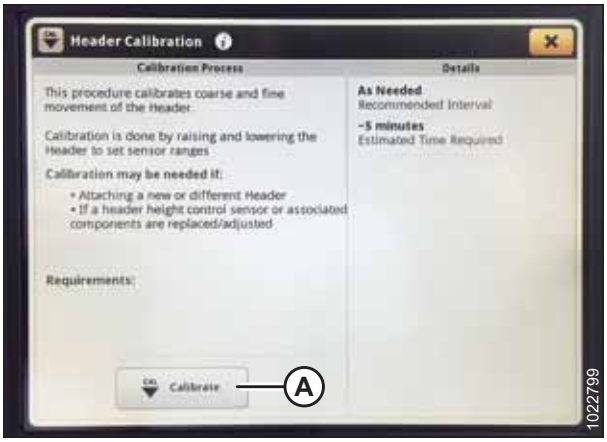


**Figure 7.310: John Deere S7 Display – Header Calibration**

9. Press button (A) on console to set engine to high idle.


**Figure 7.311: John Deere S7 Console**

10. Select START on calibration overview page.
11. Follow instructions that appear on combine display. As you proceed through calibration process, display will automatically update to show next step.


**Figure 7.312: John Deere S7 Display – Header Calibration**

12. When calibration is complete, select SAVE to confirm calibration.


**Figure 7.313: John Deere S7 Display – Header Calibration**

## 7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior

This section applies only to pre-2015 CR/CX models. For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

### *Checking Voltage Range from the Combine Cab – New Holland CR/CX Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

**WARNING**

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

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

   **NOTE:**

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

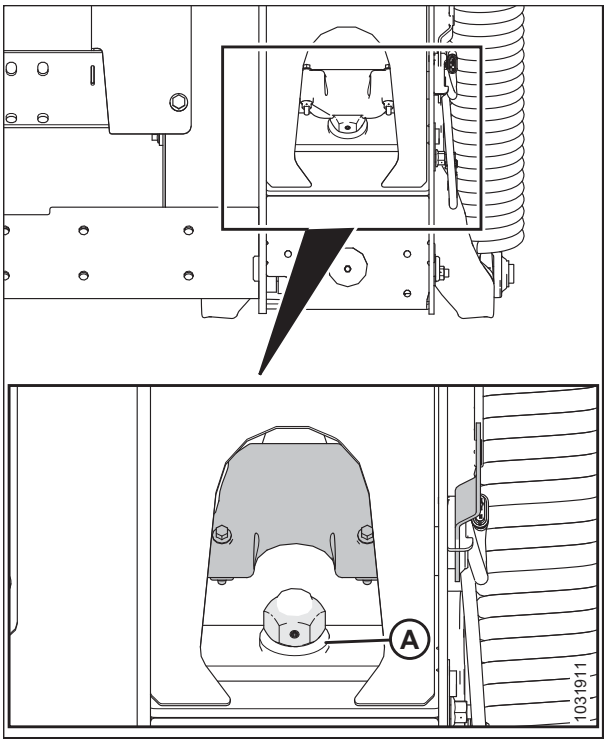


**Figure 7.314: Float Lock**

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

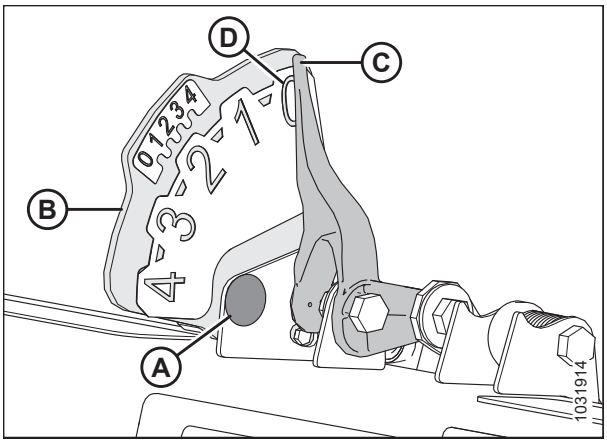


**Figure 7.315: Float Indicator**

5. Ensure header float is unlocked.
6. Select DIAGNOSTICS (A) on the main screen. The DIAGNOSTICS screen displays.
7. Select SETTINGS. The SETTINGS screen displays.

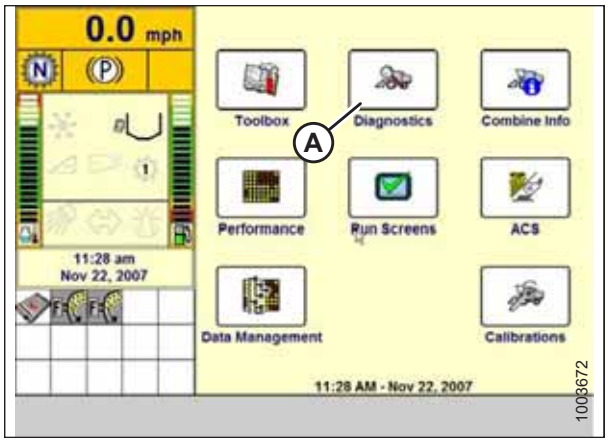


**Figure 7.316: New Holland Combine Display**

8. Select GROUP drop-down arrow (A). The GROUP dialog box displays.

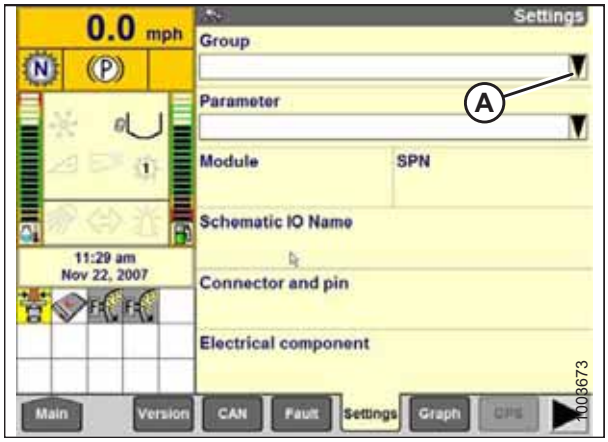


**Figure 7.317: New Holland Combine Display**

9. Select HEADER HEIGHT/TILT (A). The PARAMETER screen displays.

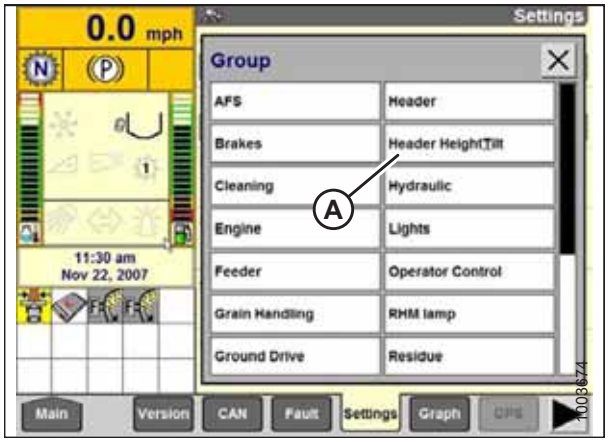


**Figure 7.318: New Holland Combine Display**

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

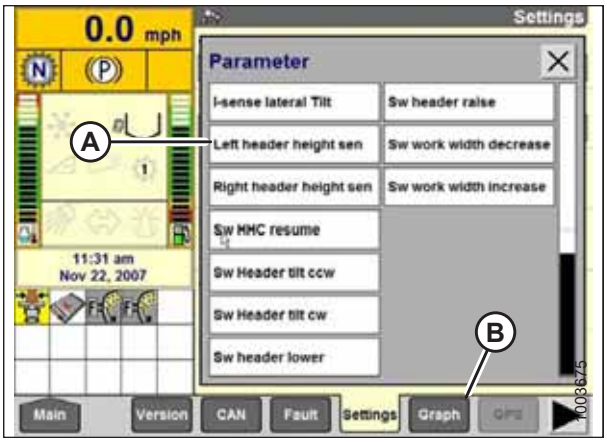


**Figure 7.319: New Holland Combine Display**

## *Setting up Auto Header Height Control – New Holland CR/CX Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

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.

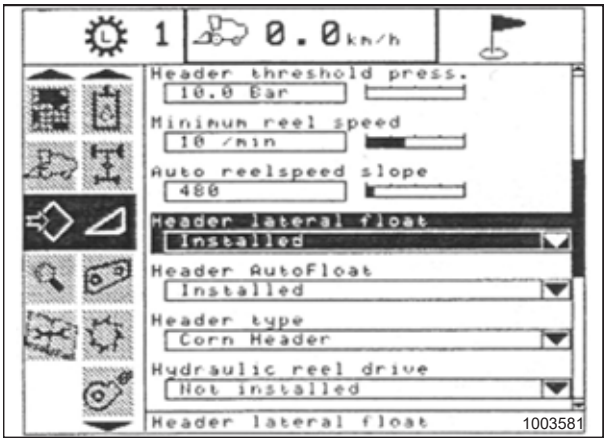


**Figure 7.320: New Holland Combine Display**

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

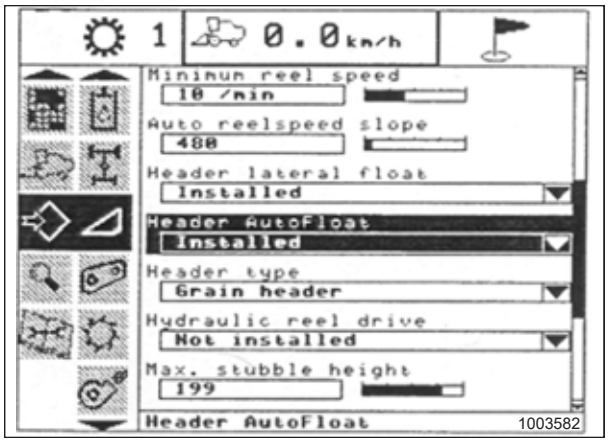


**Figure 7.321: New Holland Combine Display**

## *Calibrating the Auto Header Height Control – New Holland CR/CX Series*

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.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

## WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

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

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.
- Header/feeder is disengaged.
- Lateral float buttons are **NOT** pressed.
- 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 options.

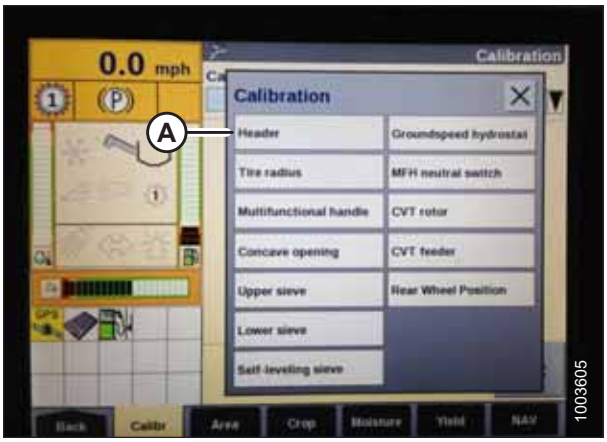


**Figure 7.322: New Holland Combine Display**

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 7.323: New Holland Combine Display**

4. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on the screen. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

   **NOTE:**

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

5. If the unit does not function properly, conduct the maximum stubble height calibration.

## *Calibrating Maximum Stubble Height – New Holland CR/CX Series*

This procedure describes how to calibrate the area counter to stop or start counting at the correct height. Program the header to a height that will never be reached while cutting. The area counter will stop counting when the header is above the programmed height, and will begin counting when the header is below the programmed height.

Select the height of the header that corresponds to the description above.

**IMPORTANT:**

- If the value is set too low, area may **NOT** be counted 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.

## WARNING

**Check to be sure 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.

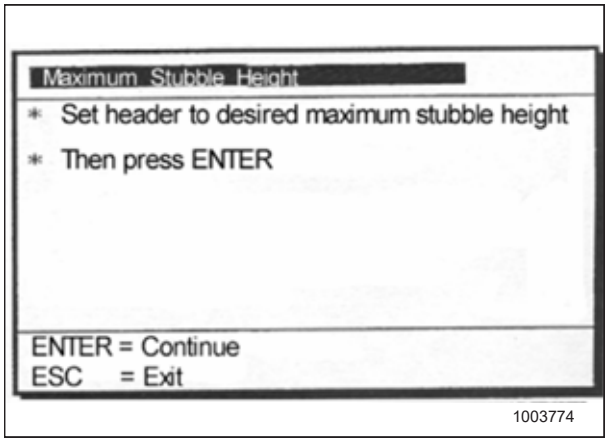


**Figure 7.324: New Holland Calibration Dialog Box**

2. Move header to the correct position using the header up or down control switch on the multifunction handle.
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.

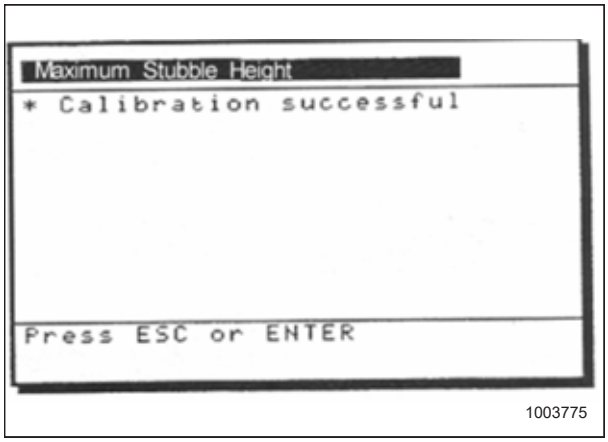


**Figure 7.325: New Holland Calibration Dialog Box**

### *Adjusting Header Raise Rate – New Holland CR/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 display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

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.

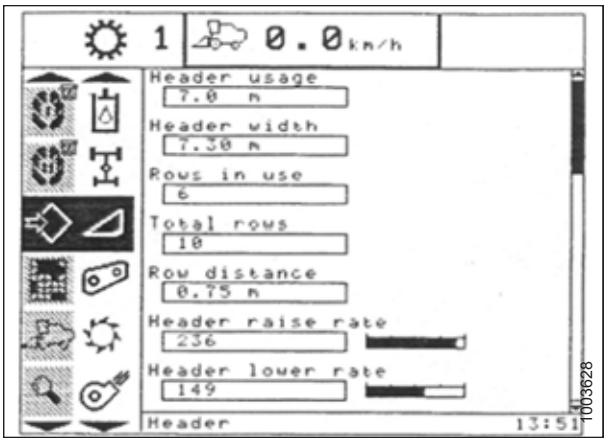


**Figure 7.326: New Holland Combine Display**

## *Setting the Header Lower Rate – New Holland CR/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 display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

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.

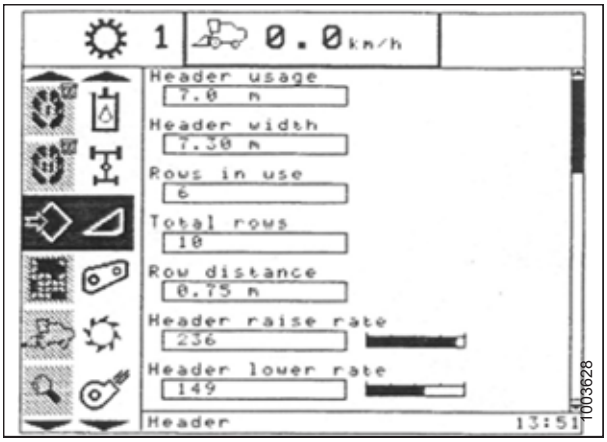


**Figure 7.327: New Holland Combine Display**

## *Setting the Sensitivity of the Auto Header Height Control – New Holland CR/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 display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

## WARNING

**Check to be sure all bystanders have cleared the area.**

1. Engage threshing and feeder house.
2. Select HEIGHT SENSITIVITY on the combine display screen.
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 7.328: New Holland Combine Display**

### *Setting Preset Cutting Height – New Holland CR/CX Series*

To set the preset cutting height, follow these steps:

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**NOTE:**

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *7.1.19 New Holland Combines – CR Series – 2015 and Later, page 287*.

**NOTE:**

Indicator (A) should be at position 0 (B) with the header 254–306 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.

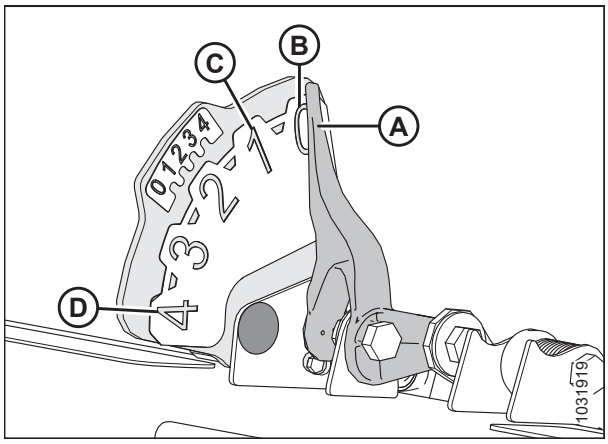


**Figure 7.329: Float Indicator Box**

1. Engage the threshing mechanism and the feeder 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 will confirm 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 REEL HEIGHT momentary switch (E).
6. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep will confirm the setting.
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 will confirm 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.

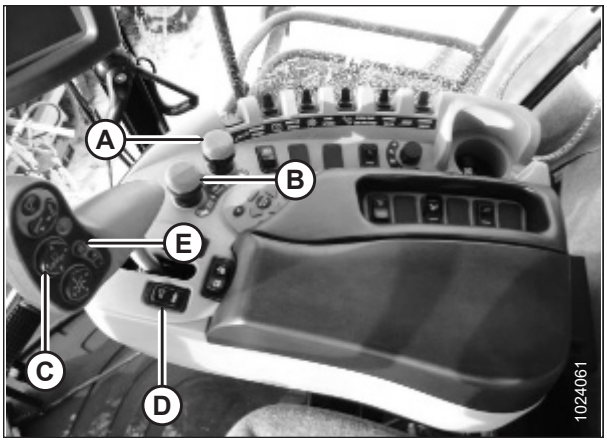


**Figure 7.330: New Holland Combine Controls**

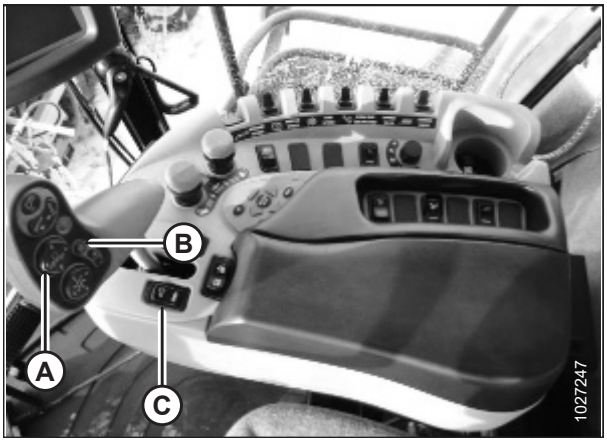


**Figure 7.331: New Holland Combine Controls**

## 7.1.19 New Holland Combines – CR Series – 2015 and Later

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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

### *Checking Voltage Range from the Combine Cab – New Holland CR Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

## WARNING

**Check to be sure all bystanders have cleared the area.**

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   **NOTE:**

   If the header is not on 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.

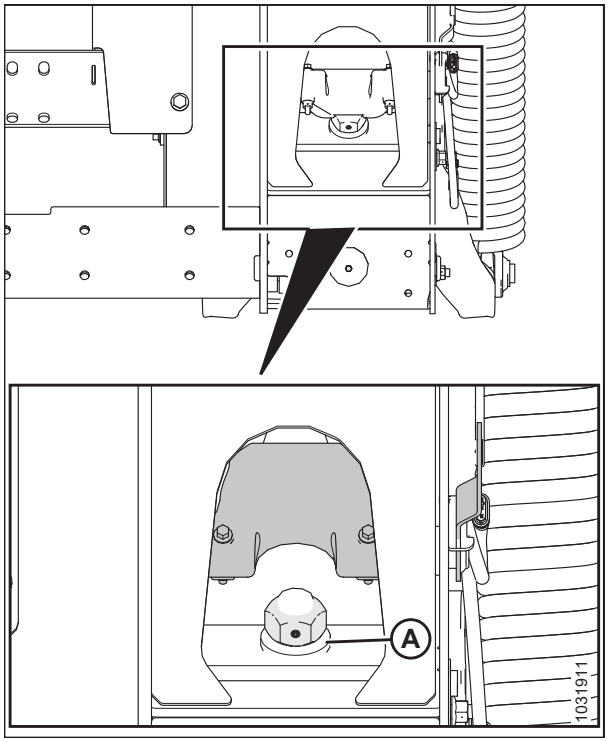


**Figure 7.332: Float Lock**

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

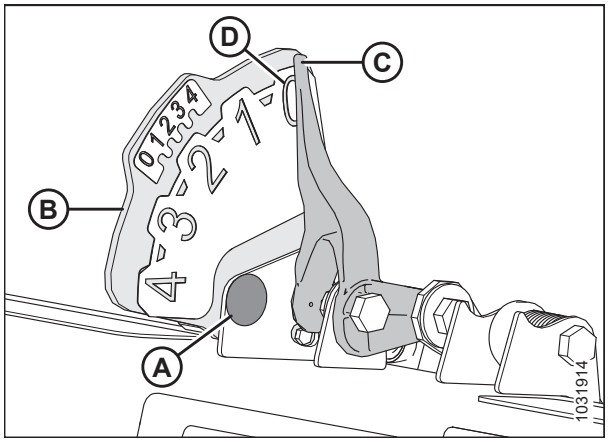


**Figure 7.333: Float Indicator**

6. Select DIAGNOSTICS (A) on the main screen. The DIAGNOSTICS screen displays.


**Figure 7.334: New Holland Combine Display**

7. Select SETTINGS (A). The SETTINGS screen displays.


**Figure 7.335: 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 7.336: New Holland Combine Display**

10. Select GRAPH (A). The exact voltage (B) is displayed at the top of the screen.
11. Raise and lower the header to see the full range of voltage readings.


**Figure 7.337: New Holland Combine Display**

## *Setting up Auto Header Height Control – New Holland CR Series*

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.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

1. Ensure center-link is set to **D**.
2. Select TOOLBOX (A) on the main screen. The TOOLBOX screen displays.


**Figure 7.338: New Holland Combine Display**

3. 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 screen by pressing and holding both the UNLOAD and RESUME buttons on the control handle for approximately 10 seconds. The DEALER SETTING screen should appear and will allow you to change the header and header type settings.


**Figure 7.339: New Holland Combine Controls**

4. Select HEAD 1 (A). The HEADER SETUP 1 screen displays.
5. Select CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).


**Figure 7.340: New Holland Combine Display**

6. Select HEADER SUB TYPE drop-down arrow (A). The HEADER SUB TYPE dialog box displays.


**Figure 7.341: New Holland Combine Display**

7. Set HEADER SUB TYPE to 80/90 (A) for a New Holland combine.


**Figure 7.342: New Holland Combine Display**

8. Select HEAD 2 (A). The HEADER SETUP 2 screen displays.


**Figure 7.343: New Holland Combine Display**

9. Select the AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).
10. Select the AUTO HEADER LIFT drop-down arrow 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.

11. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.


**Figure 7.344: New Holland Combine Display**

12. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

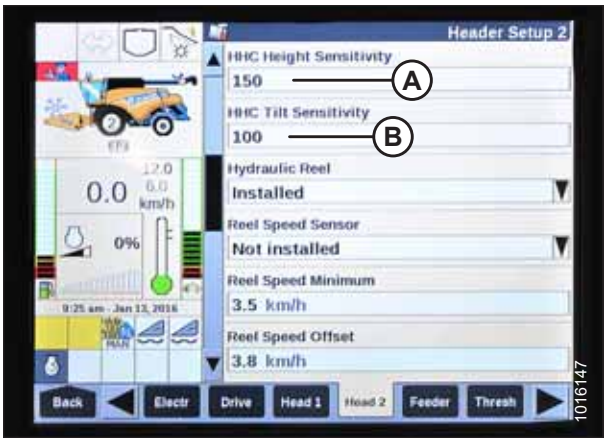


**Figure 7.345: New Holland Combine Display**

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


**Figure 7.346: New Holland Combine Display**

## *Calibrating the Auto Header Height Control – New Holland CR Series*

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.

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

**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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

## WARNING

**Check to be sure all bystanders have cleared the area.**

**NOTE:**

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

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.
- Header/feeder is disengaged.
- Lateral float buttons are **NOT** pressed.
- ESC key is **NOT** pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main screen. The CALIBRATION screen displays.


**Figure 7.347: New Holland Combine Display**

2. Select CALIBRATION drop-down arrow (A).


**Figure 7.348: New Holland Combine Display**

3. Select HEADER (A) from the list of calibration options.

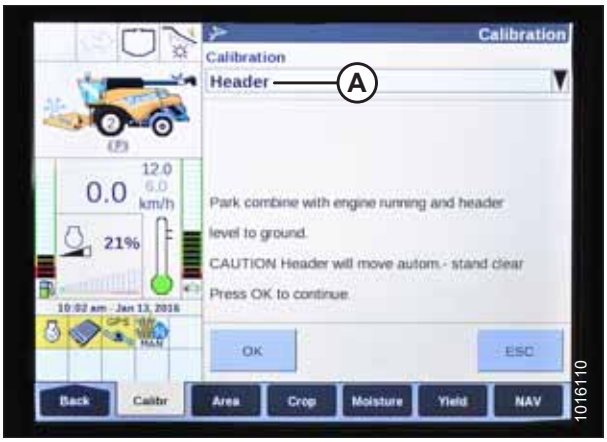


**Figure 7.349: New Holland Combine Display**

4. Follow the calibration steps in the order in which they appear on the screen. 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 7.350: New Holland Combine Display**

5. When all steps have been completed, CALIBRATION COMPLETED message is displayed on the screen.

   **NOTE:**

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


**Figure 7.351: New Holland Combine Display**

## *Checking Reel Height Sensor Voltages – New Holland CR Series*

**NOTE:**

Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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


**Figure 7.352: New Holland Combine Display**

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

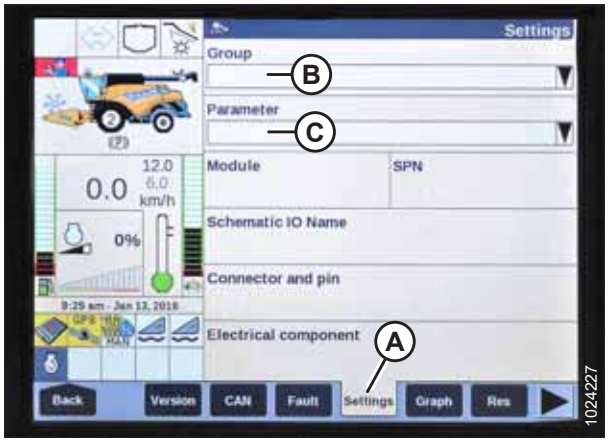


**Figure 7.353: New Holland Combine Display**

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Lower the reel to view high voltage (B). The voltage should be 4.1–4.5 V.
7. Raise the reel to view low voltage (C). The voltage should be 0.5–0.9 V.

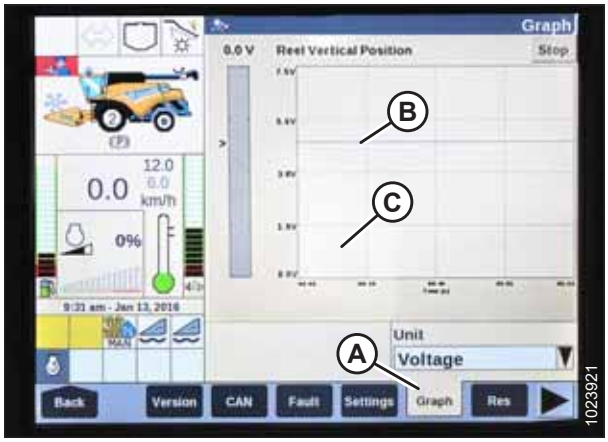


**Figure 7.354: New Holland Combine Display**

## *Setting Preset Cutting Height – New Holland CR Series*

**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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

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.

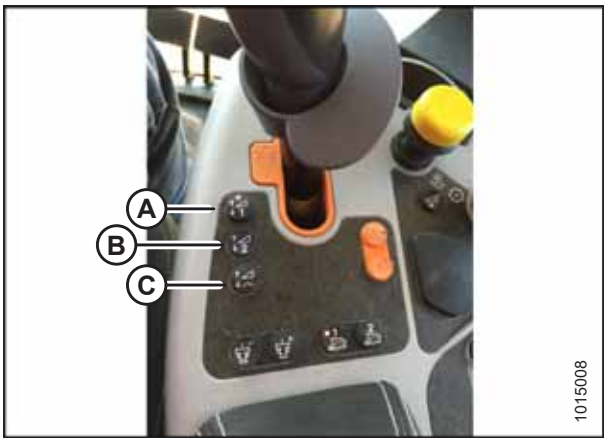


**Figure 7.355: New Holland Combine Controls**

## WARNING

**Check to be sure all bystanders have cleared the area.**

***To set preset cutting height, follow these steps:***

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


**Figure 7.356: New Holland Combine Controls**

4. Hold RESUME button (C) on the multifunction handle to set the preset.

   **NOTE:**

   When setting presets, always set header position before setting reel position. If 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 multifunction handle to set the preset.
7. Repeat Step *2, page 297* to Step *6, page 297*, using preset button 2.


**Figure 7.357: New Holland Combine Multifunction Handle**

8. Lower header to the ground.
9. Select RUN SCREENS (A) on the main screen.


**Figure 7.358: 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 will change to AUTO HEIGHT (A).

11. Press one of the auto height preset buttons to select a preset cutting height.


**Figure 7.359: New Holland Combine Display**

## *Setting Maximum Work Height – New Holland CR Series*

**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 *7.1.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 278*.

1. Select TOOLBOX (A) on the main screen. The TOOLBOX screen displays.

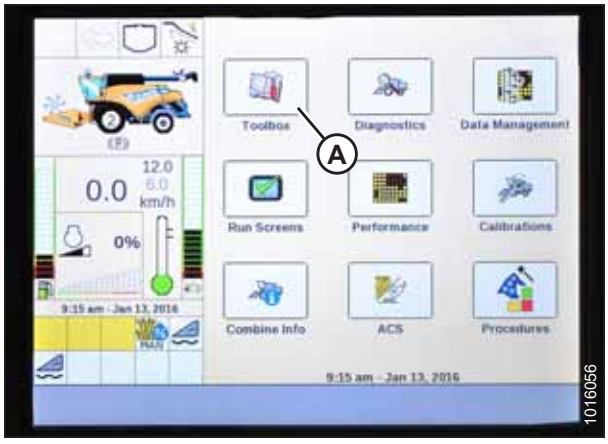


**Figure 7.360: New Holland Combine Display**

2. Select FEEDER (A). The FEEDER SETUP screen displays.
3. Select MAXIMUM WORK HEIGHT field (B).

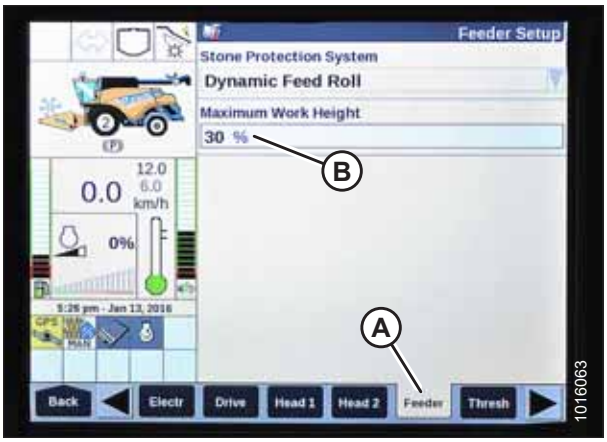


**Figure 7.361: New Holland Combine Display**

4. Set MAXIMUM WORK HEIGHT to desired value.
5. Press SET and then press ENTER.


**Figure 7.362: New Holland Combine Display**

## *Configuring Reel Fore-Aft, Header Tilt, and Header Type – New Holland CR Series*

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 display since this document was published. Refer to the combine operator's manual for updates.

1. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.


**Figure 7.363: New Holland Combine Controls**

2. On the HEAD 1 screen, change the CUTTING TYPE from FLEX to PLATFORM as shown at location (A).


**Figure 7.364: New Holland Combine Display**

3. On the HEAD 2 screen, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at location (A).


**Figure 7.365: New Holland Combine Display**

There are now two different buttons for 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.

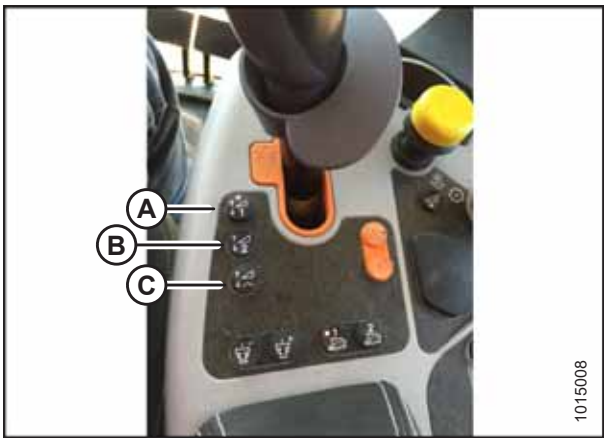


**Figure 7.366: New Holland Combine Controls**

# Chapter 8: Setting up Reel Position Sensors

## 8.1 Checking and Adjusting Reel Height Sensor

The output voltage range of the auto reel height sensor can be checked from inside the combine or manually at the sensor. For in-cab instructions, refer to the combine operator's manual.

**IMPORTANT:**

Ensure minimum reel height is properly set before adjusting reel height sensor. For instructions, refer to *6.14 Reel Clearance to Cutterbar, page 120*.

Reel height sensor (A) is located on the right endsheet and connects to the right reel arm.

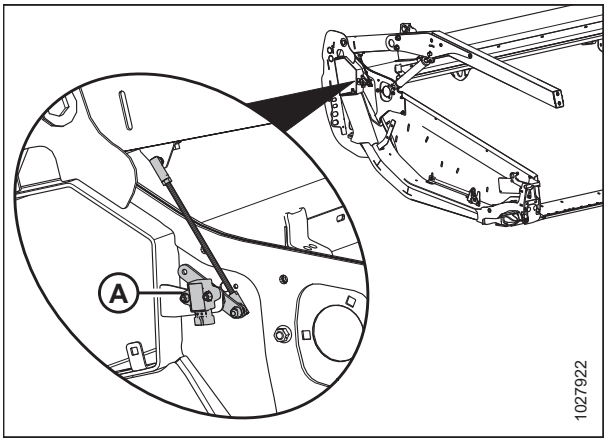


**Figure 8.1: Reel Height Sensor Location**

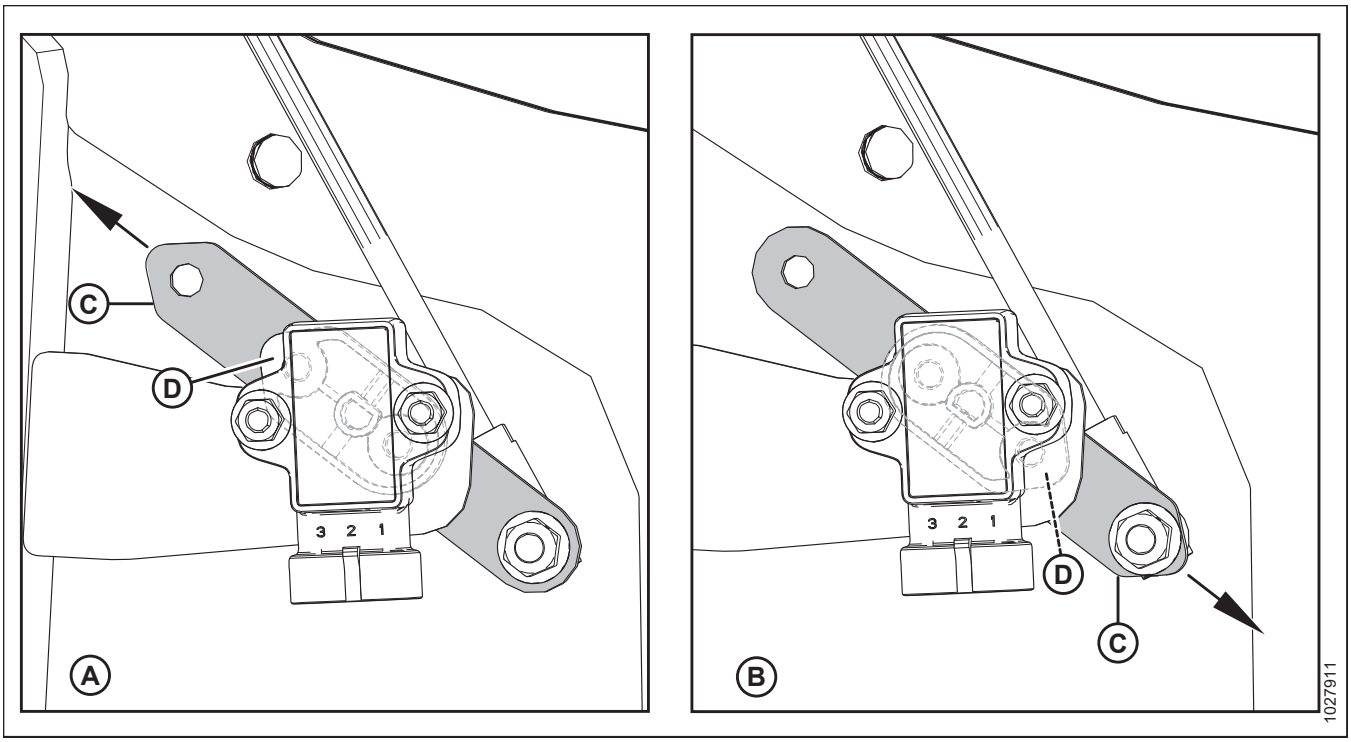


**Figure 8.2: Sensor Arm/Pointer Configurations**

**A - John Deere, CLAAS, AGCO IDEAL Configuration**

**B - Case/New Holland Configuration**

**C - Sensor Arm**

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

**NOTE:**

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

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

Check that sensor arm (C) and pointer (D) are configured properly for your machine, refer to Figure *8.2, page 304*.

**IMPORTANT:**

To measure the output voltage of the reel height sensor, the combine engine needs to be running and supplying power to the sensor. Always engage the combine parking brake and stay away from the reel.

**Table 8.1 Reel Height Sensor Voltage Limits**

| Combine Type | Voltage Range | |
|---|---|---|
| | X Voltage | Y Voltage |
| AGCO IDEAL | 3.9–4.3 V | 0.7–0.11 V |
| Case/New Holland | 0.7–0.11 V | 3.9–4.3 V |
| CLAAS | 3.9–4.3 V | 0.7–0.11 V |
| John Deere | 3.9–4.3 V | 0.7–0.11 V |

**NOTE:**

For CLAAS combines: To avoid a collision of the reel with the cab, the machine is equipped with an automatic reel height limitation. 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.

## WARNING

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

## WARNING

**Check to be sure all bystanders have cleared the area.**

***To check the voltage range manually, follow these steps:***

1. Engage combine parking brake.
2. Start the engine. For instructions, refer to the combine operator's manual.
3. Lower the reel fully.
4. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **Y**. Refer to Table *8.1, page 304* for range requirements.
5. If using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at the reel height sensor (B).
6. Shut down the engine, and remove the key from the ignition.
7. Adjust length of threaded rod (A) to modify voltage range **Y**.

   **NOTE:**

   Dimension (C) is factory set to 164.5 mm (6.5 in).
8. Repeat checking and adjusting until voltage range **Y** is within the range specified.
9. Start the engine, and fully raise the reel.
10. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **X**. Refer to Table *8.1, page 304* for range requirements.
11. If using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at the reel height sensor (A).
12. Shut down the engine, and remove the key from the ignition.
13. Loosen two M5 hex nuts (B) and rotate sensor (A) to achieve voltage range **X**.
14. Repeat checking and adjusting until voltage range **X** is within the range specified.
15. Start the engine and fully lower the reel.
16. Recheck voltage range **Y** and ensure it is still within the range specified. Adjust if required.

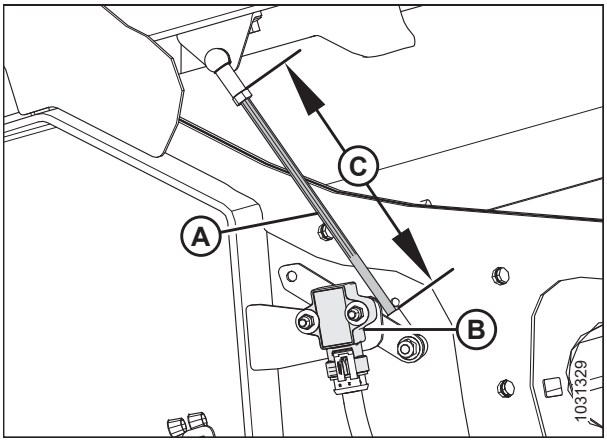


**Figure 8.3: Reel Height Sensor – Right Reel Arm with Reel Down**

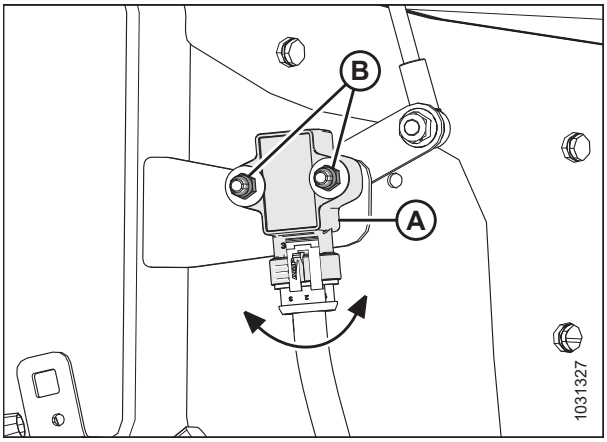


**Figure 8.4: Reel Height Sensor – Right Reel Arm with Reel Up**

## 8.2 Checking and Adjusting Fore-Aft Position Sensor

Note the orientation of sensor arm (C) and hardware (D). Ensure that the sensor arm is configured properly for your machine; refer to Figure *8.5, page 306*.

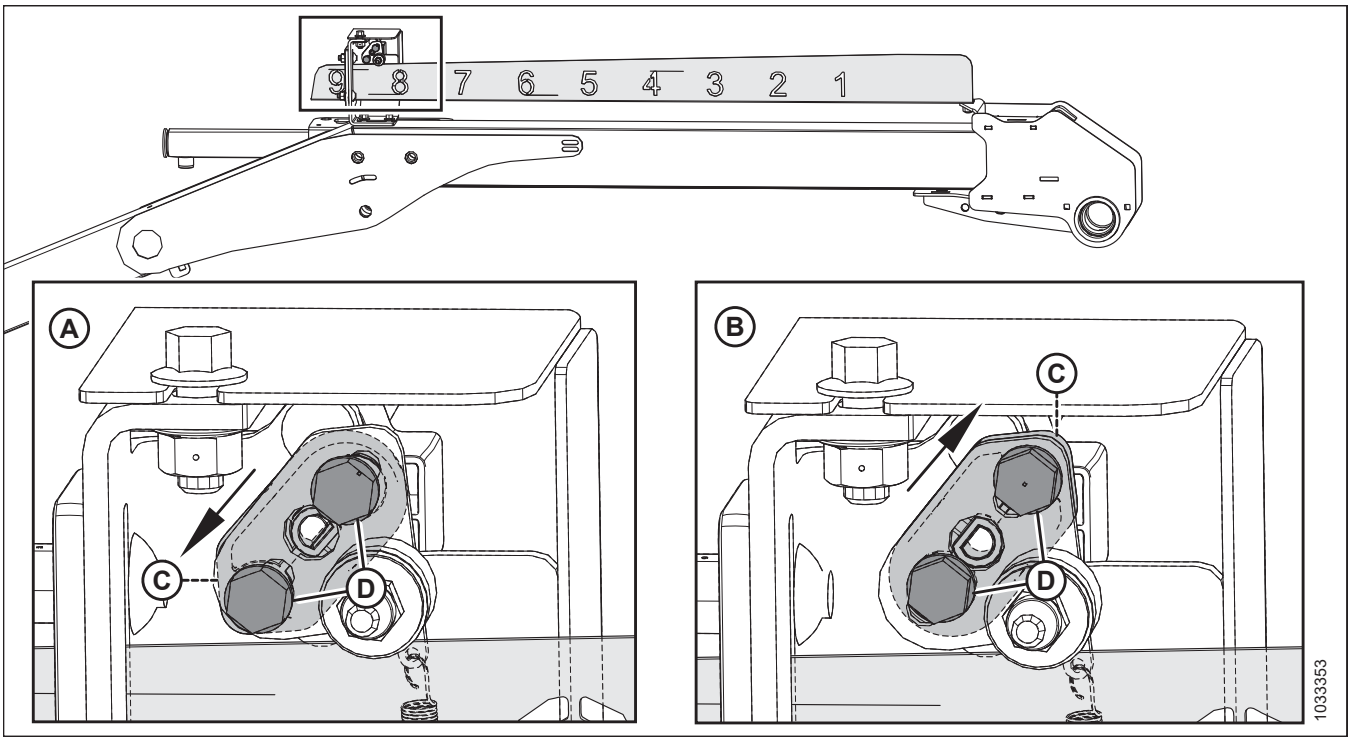


**Figure 8.5: Sensor Arm Configurations**

**A - John Deere, CLAAS, AGCO IDEAL Configuration**

**B - Case/New Holland Configuration**

**C - Sensor Arm**

**D - Mounting Hardware**

**IMPORTANT:**

To measure the output voltage of the fore-aft sensor, the combine engine needs to be running and supplying power to the sensor. Always engage the combine parking brake and stay away from the reel.

### WARNING

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

### WARNING

**Check to be sure all bystanders have cleared the area.**

1. Start the engine.
2. Adjust the reel to the fully forward position. Dimension (B) (from the sensor bracket to the end of the indicator) should be 62.1–72.1 mm (2.4–2.8 in.).

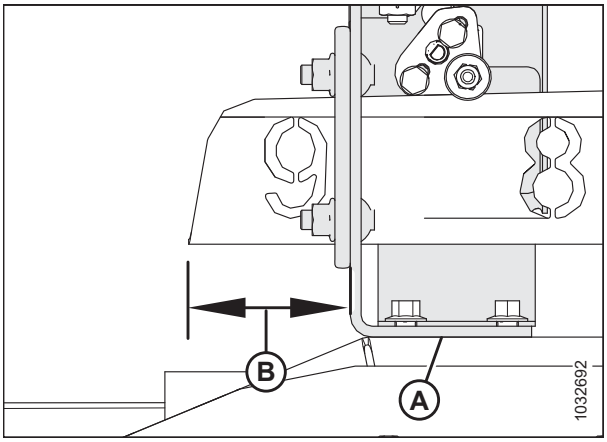


**Figure 8.6: Fore-Aft Bracket**

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

**Table 8.2 Fore-Aft Sensor Voltage Range**

| | |
|---|---|
| CNH | 0.7–0.11 V |
| John Deere, CLAAS, AGCO | 3.9–4.3 V |

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

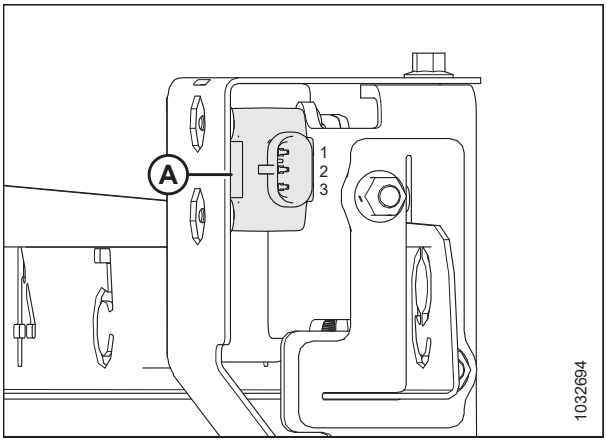


**Figure 8.7: Fore-Aft Sensor**

5. If adjustment is required, loosen hardware (A) and rotate sensor (B) until voltage is in the correct range.
6. Once sensor adjustment is complete, torque hardware to 2.5 Nm (1.8 lbf·ft).

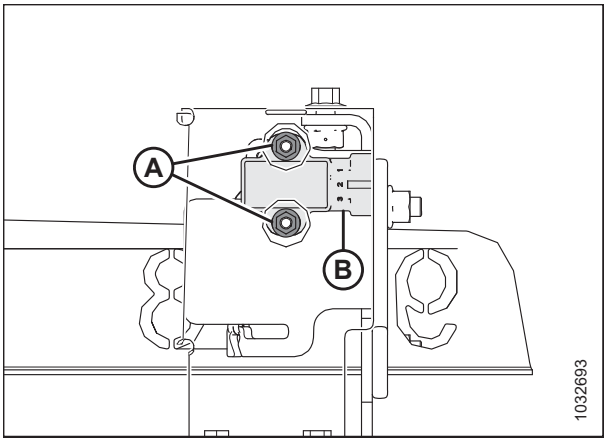


**Figure 8.8: Fore-Aft Sensor**

# Chapter 9: Running up Header

To run up the header, follow these steps:

## DANGER

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

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props.
5. Lower plastic pan under float module and check for shipping materials/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 pan. Lower pan to expose draper.

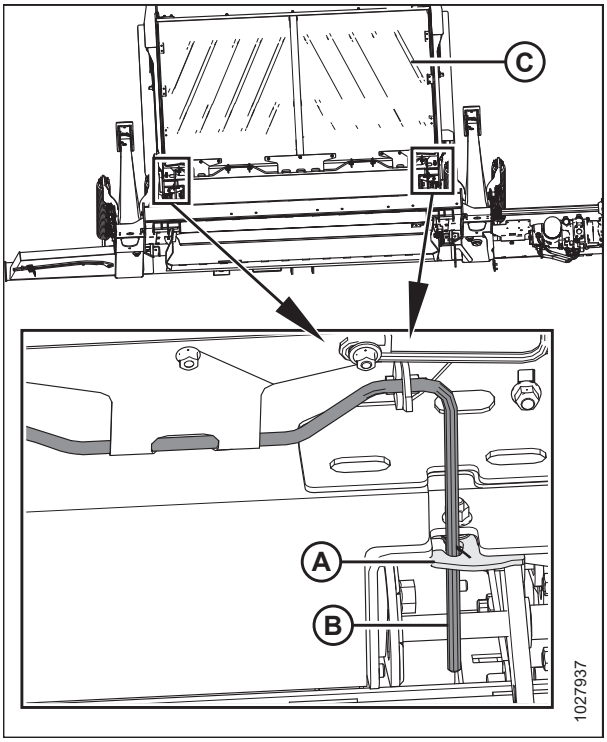


**Figure 9.1: Float Module Plastic Pan**

8. Check and remove debris from pan (A) and draper.

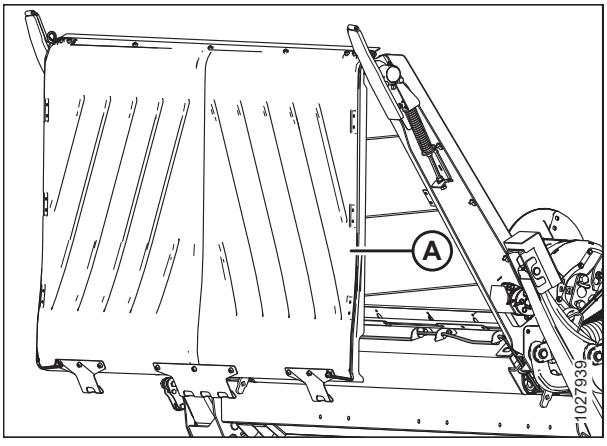


**Figure 9.2: Float Module Plastic Pan**

9. Raise the pan and rotate handle (A) so that the rod engages clips (B) on the pan.

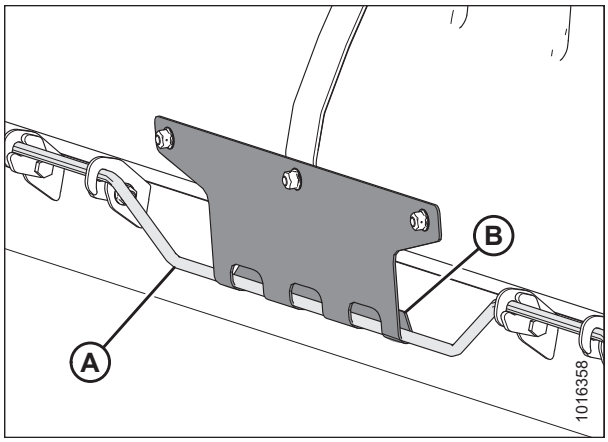


**Figure 9.3: Clips Engaged**

10. Push handle (A) into the slot and secure it with latches (B).
11. Open the left endshield.

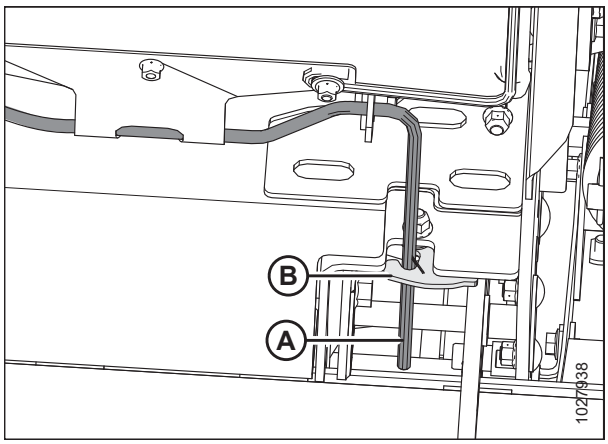


**Figure 9.4: Latches Secured**

12. Ensure flow control (A) is set to position 6.
13. Ensure the feeder house variable speed is set to MINIMUM.

## WARNING

**Never start or move the machine until you are sure 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 run-up check as listed on *Predelivery Checklist, page 339* (yellow sheet attached to this instruction) to ensure the machine is field-ready.

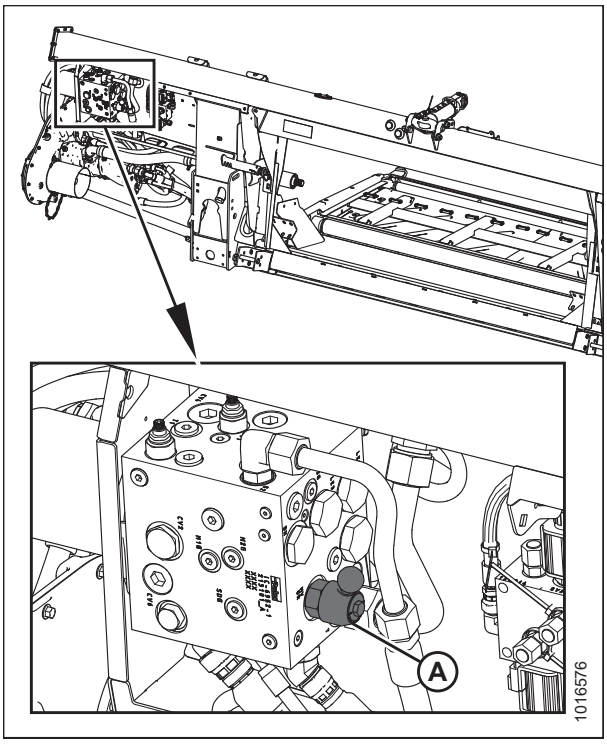


**Figure 9.5: Flow Control**

18. Check the speed of the knife drive box pulley (A) using a hand-held photo tachometer.
19. Compare the actual pulley speed with values in the following chart:

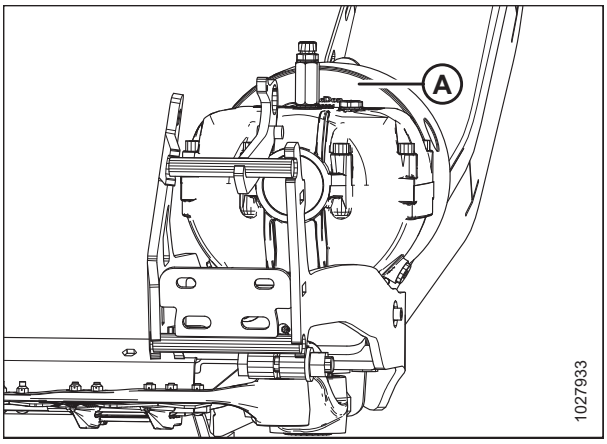


**Figure 9.6: Knife Drive Box**

**Table 9.1 Recommended Knife Drive Speed (rpm)**

| Header Size | Recommended Knife Drive Speed Range: Single Knife | Recommended Knife Drive Speed Range: Double Knife |
|---|---|---|
| FD230 | 600–750 | 600–750 |
| FD235 | 600–750 | 600–750 |
| FD240 | 600–700 | 600–750 |
| FD241 | N/A | 600–750 |
| FD245 | N/A | 600–750 |
| FD250 | N/A | 600–750 |

# 9.1 Knife Speed Information

The header knife drive is powered by the integrated pump.

**Table 9.2 Feeder House Speed**

| Combine | Feeder House Speed (rpm) |
|---|---|
| Case IH | 580 |
| Challenger | 625 |
| CLAAS[9] | 420 |
| Gleaner | 625 |
| John Deere | 490 |
| Massey Ferguson | 625 |
| New Holland | 580 |

**IMPORTANT:**

Ensure the knife speed is within the range of rpm values in Table *9.3, page 312*. For instructions, refer to *9.1.1 Checking Knife Speed, page 312*.

**IMPORTANT:**

Set knife speed at maximum to avoid risk of overspeeding and failing the knife if the feederhouse speed is adjusted.

**Table 9.3 FD2 Series Header Knife Speed**

| Header | Recommended Knife Drive Speed Range (rpm) | |
|---|---|---|
| | Single-Knife Drive | Double-Knife Drive |
| FD230 | 600–750 | — |
| FD235 | 600–750 | 600–750 |
| FD240 | 600–700 | 600–750 |
| FD241 | — | 600–750 |
| FD250 | — | 600–750 |

## 9.1.1 Checking Knife Speed

### WARNING

**To avoid injury or death from unexpected start-up of 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 *10.2.1 Opening Header Endshields, page 324*.

### WARNING

**Check to be sure 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 combine at operating rpm.
5. Run the float module and header for 10 minutes to warm up oil to 38°C (100°F).

9. The rear shaft speed on CLAAS combines is 420 rpm (speed shown on cab display monitor also will be 420). The output shaft speed is actually 750 rpm.

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. Compare flywheel rpm measurement with the rpm values in the knife speed chart. For more information, refer to *9.1 Knife Speed Information, page 312*.
9. If knife speed is not within range, pump adjustment will be required. For instructions, refer to *9.1.3 Adjusting Knife Speed – Coarse Adjustment, page 314*.

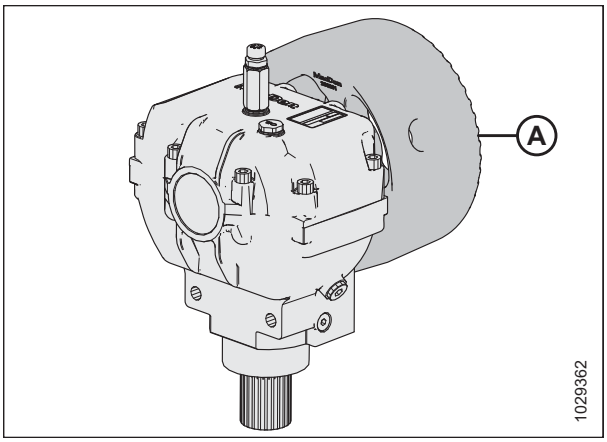


**Figure 9.7: Flywheel**

## 9.1.2 Adjusting Knife Speed – Fine Adjustment

The knife speed adjuster on the integrated pump, sets the maximum pump flow (knife drive [rpm]).

### WARNING

**To avoid injury or death from unexpected start-up of 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. Loosen bolt (A).
3. Turn knife drive adjuster clockwise to increase or counter clockwise to decrease the knife speed within the slot range to fine tune the flywheel rpm.
4. Open the endshield. For instructions, refer to *10.2.1 Opening Header Endshields, page 324*.
5. Start the engine, engage the header and run at high idle.

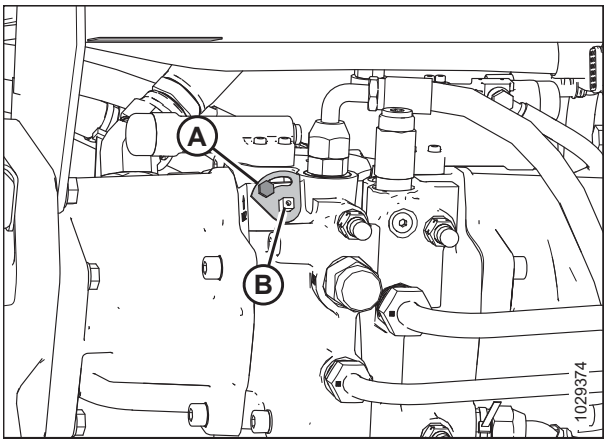


**Figure 9.8: Integrated Pump**

6. Using a photo tachometer, check the speed of flywheel (B). Continue adjusting the pump until desired flywheel rpm is achieved. Refer to *9.1 Knife Speed Information, page 312* for recommended settings.
7. Close the endshield. For instructions, refer to *10.2.2 Closing Header Endshields, page 325*.

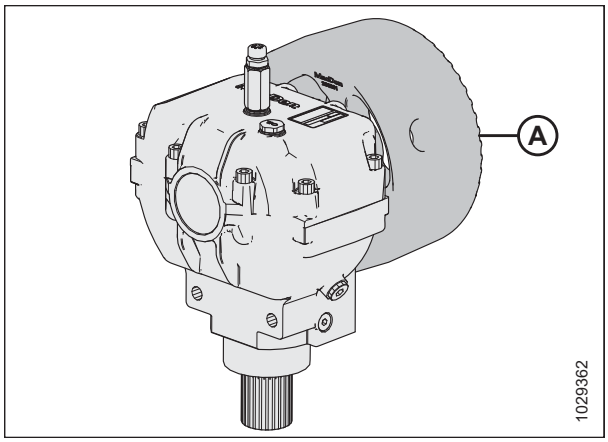


**Figure 9.9: Knife Drive Flywheel**

## 9.1.3 Adjusting Knife Speed – Coarse Adjustment

The knife speed adjuster on the integrated pump, sets the maximum pump flow (knife drive [rpm]).

### WARNING

**To avoid injury or death from unexpected start-up of 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. Remove bolt (A).
3. Remove fine adjustment plate (B).

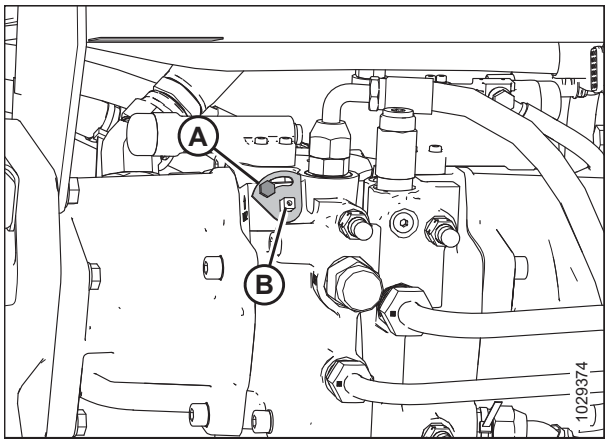


**Figure 9.10: Integrated Pump**

4. Turn knife drive adjuster clockwise to increase or counter clockwise to decrease the knife speed.
5. Open the endshield. For instructions, refer to *10.2.1 Opening Header Endshields, page 324*.
6. Start the engine, engage the header and run at high idle.

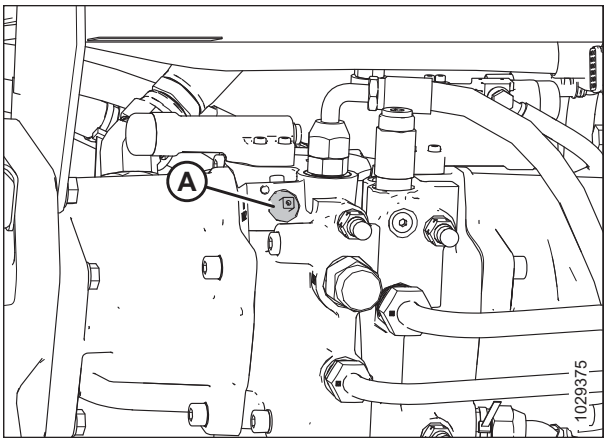


**Figure 9.11: Integrated Pump**

7. Using a photo tachometer, check the speed of flywheel (A). Adjust the pump as required to get to the desired rpm. Refer to *9.1 Knife Speed Information, page 312* for recommended settings.

   **NOTE:**

   For finer pump adjustment, refer to *9.1.2 Adjusting Knife Speed – Fine Adjustment, page 313*.
8. Close the endshield. For instructions, refer to *10.2.2 Closing Header Endshields, page 325*.

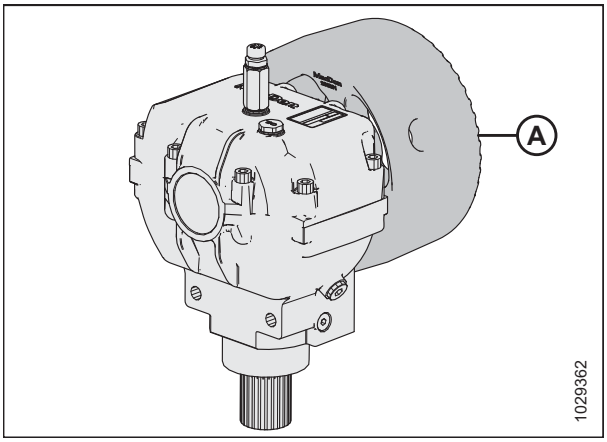


**Figure 9.12: Knife Drive Flywheel**

9. Install fine adjustment plate (B).
10. Install bolt (A).

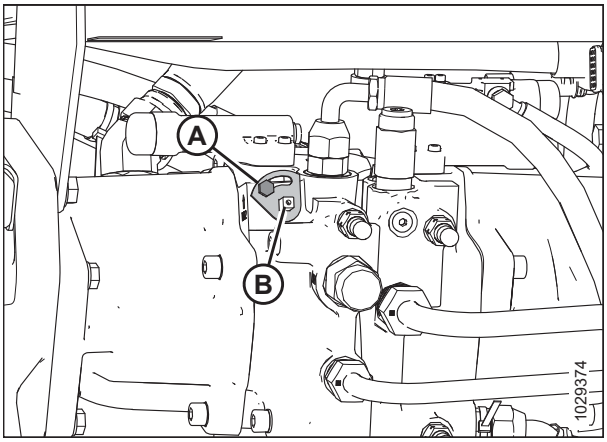


**Figure 9.13: Integrated Pump**

## 9.2 Adjusting Side Draper Tracking

The side draper tracking is adjusted by aligning the drive and idler draper rollers.

**NOTE:**

The left draper deck is shown in the illustrations in this procedure. The right deck is opposite.

**NOTE:**

Some parts were removed from the illustration for clarity.

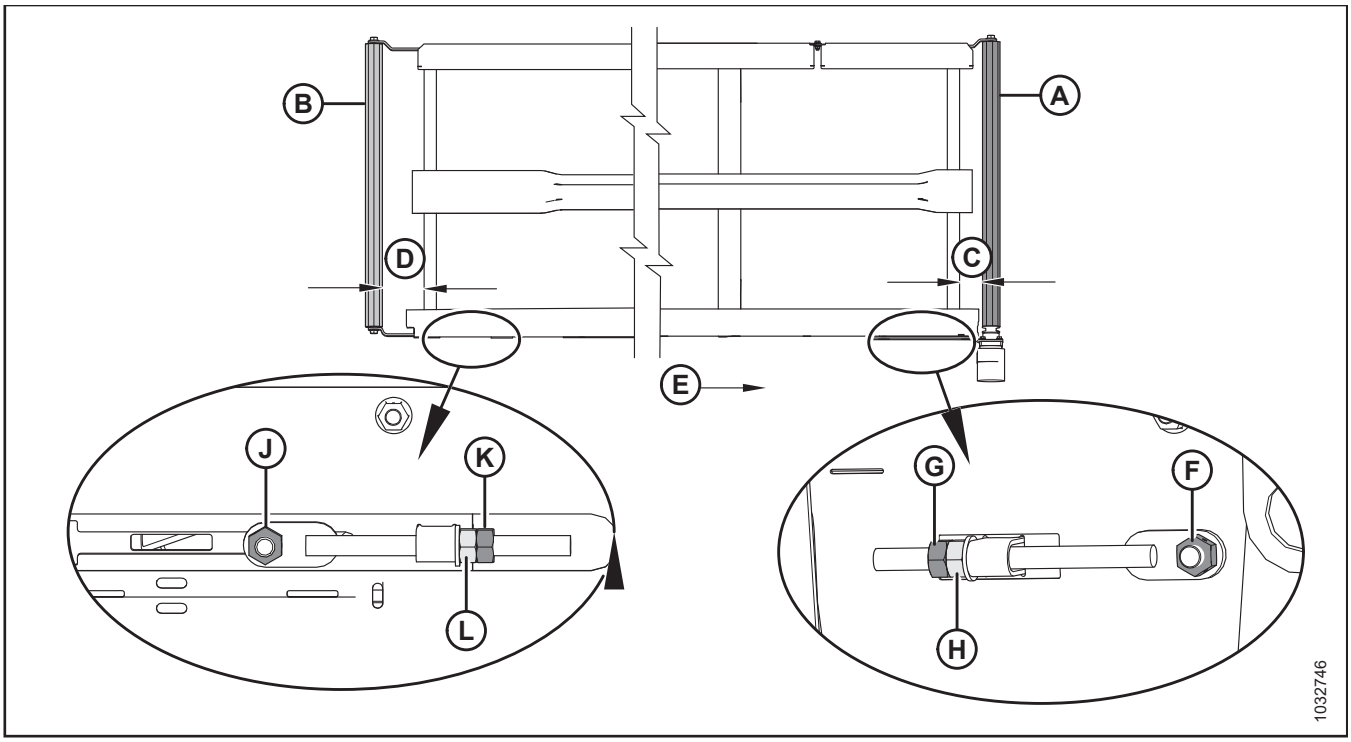


**Figure 9.14: Draper Tracking Adjustments**

**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**

1. To determine which roller requires adjustment and which adjustments are necessary, refer to the following table:

**Table 9.4 Draper Tracking**

| Tracking | At Location | Adjustment | Method |
|---|---|---|---|
| Backward | Drive roller | Increase **C** | Tighten adjuster nut (H) |
| Forward | Drive roller | Decrease **C** | Loosen adjuster nut (H) |
| Backward | Idler roller | Increase **D** | Tighten adjuster nut (L) |
| Forward | Idler roller | Decrease **D** | Loosen adjuster nut (L) |

2. Adjust drive roller (A) to change **C** (refer to Table *9.4, page 316*) as follows:
   a. Loosen nut (F) and jam nut (G).
   b. Turn adjuster nut (H).
3. Adjust idler roller (B) to change **D** (refer to Table *9.4, page 316*) 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 adjustment, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

# 9.3 Performing Post Run-Up Adjustments

Stop engine and perform post run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction ) to ensure machine is field-ready.

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

## 9.3.1 Adjusting Knife

## WARNING

**Never start or move the machine until you are sure all bystanders have cleared the area.**

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 the gap (C) between knifehead (A) and drive arm (B). There should be 0.2–1.2 mm (1/64–3/64 in.) clearance.
4. If the clearance needs adjustment, loosen bolt (D) and slide arm (B) up or down on the output shaft to achieve the correct clearance.
5. Tighten bolt (D) to 220 Nm (162 lbf·ft).

   **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 required, relieve some pressure by pressing the check-ball in grease fitting.

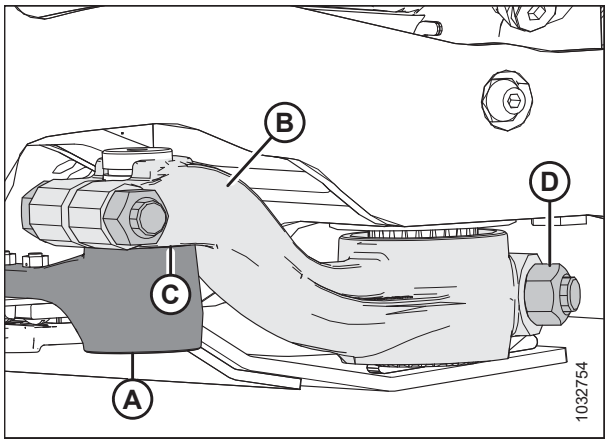


**Figure 9.15: Knifehead and Drive Arm**

## 9.3.2 Checking and Adjusting Feed Draper Tension

## DANGER

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

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

   **NOTE:**

   Illustrations show the left side of the float module. The right side is opposite.

**NOTE:**

The default position of spring retainer disc (A) is centered in the U shape on indicator (B); however, the position of the disc varies with draper tracking adjustment at the factory.

6. 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.
7. If adjustment is necessary, proceed to Step *8, page 319*.

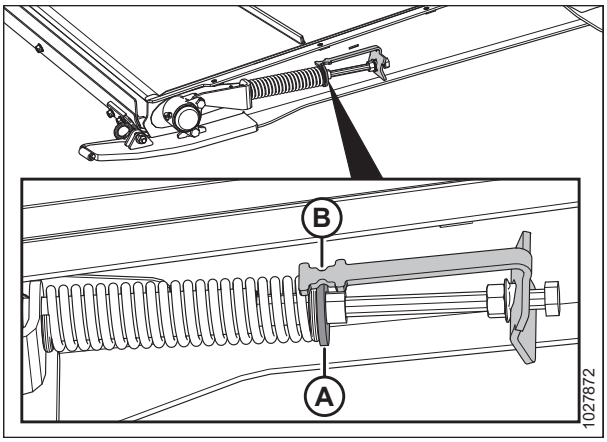


**Figure 9.16: Feed Draper Tensioner**

***Adjusting draper tension:***

8. Adjust the draper tension by loosening jam nut (A) and turning bolt (B) clockwise to increase draper tension or counterclockwise to decrease draper tension. Draper tension can be adjusted so that retainer disc (C) is within the following range:
   - Loosened to 3 mm (1/8 in.) aft of the U shape on indicator (D).
   - Tightened to 6 mm (1/4 in.) forward of the U shape on indicator (D).

   **IMPORTANT:**

   For small tension adjustments, you may need to only adjust one side of the draper. For larger tension adjustments and to avoid uneven draper tracking, you may need to adjust both sides of the draper equally.
9. Tighten jam nut (A). Ensure flange nut (E) is tight against the indicator bracket.

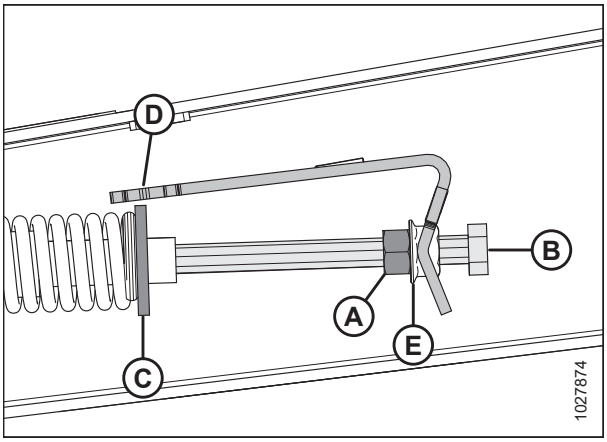


**Figure 9.17: Feed Draper Tensioner – Left Side**

# Chapter 10: Reference

## 10.1 Reel Safety Props

The reel safety props are located on the reel support arms and prevent the reel from unexpectedly lowering.

### DANGER

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

**IMPORTANT:**

To prevent damage to the reel support arms, do **NOT** transport the header with the reel safety props engaged.

### 10.1.1 Engaging Reel Safety Props

***Outer reel arms***

1. Raise reel to maximum height.
2. Lift up on safety prop (A) and push forward to remove prop off hook (B).

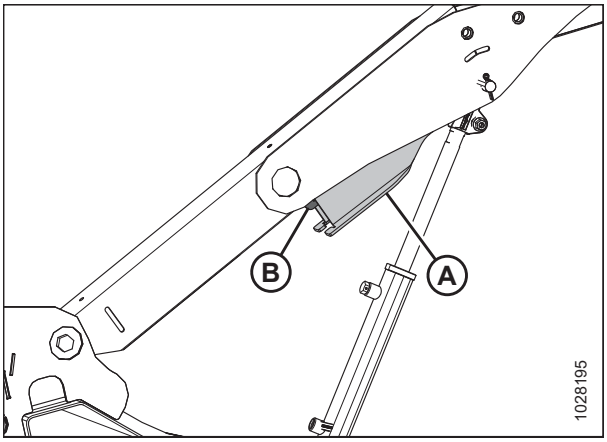


**Figure 10.1: Outer Right Arm**

3. Lower safety prop (A) and engage on the cylinder shaft as shown. Repeat on the opposite arm.

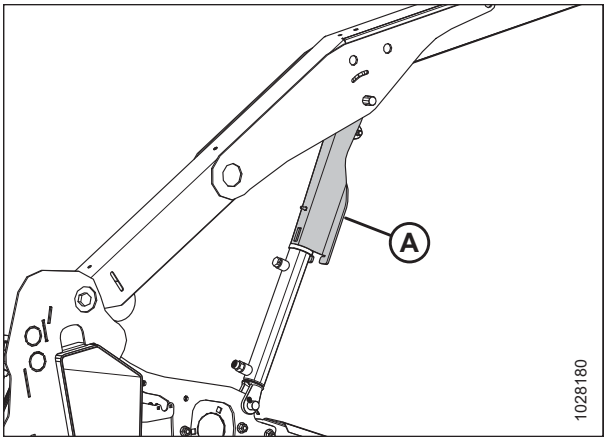


**Figure 10.2: Engaged Reel Safety Prop – Outer Right Arm**

***Center reel arm***

4. Rotate handle (A) to release the spring tension and allow the spring to guide the pin into the locked position.

   **NOTE:**

   For triple-reel headers, the illustration shows the center right arm. The center left arm is opposite.

5. On triple-reel headers, repeat previous step on the center left arm.

6. Lower reel until safety props contact the outer arm cylinder mounts and the center arm pins.

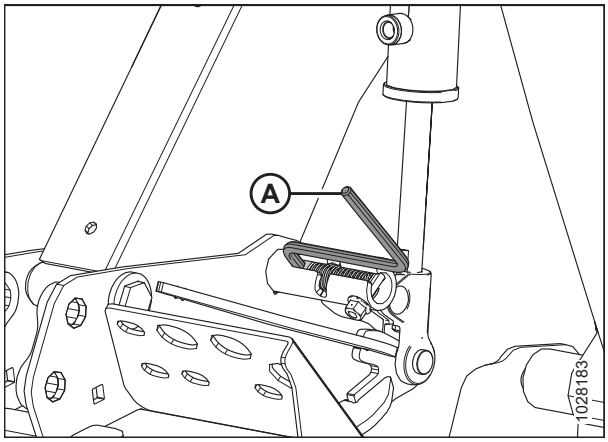


**Figure 10.3: Engaged Reel Safety Prop – Center Arm**

## 10.1.2 Disengaging Reel Safety Props

***Outer reel arms***

1. Raise the reel to its maximum height.

2. Move reel safety prop (A) up onto hook (B) under the reel arm. Repeat on the opposite arm.

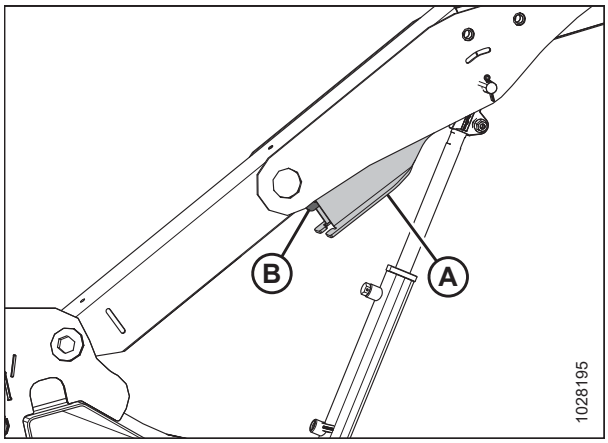


**Figure 10.4: Reel Safety Prop – Right Outer Arm**

***Center reel arm***

3. Move handle (A) outboard and into slot (B) to put the pin in the unlocked position.
4. On triple-reel headers, repeat previous step on the center left arm.

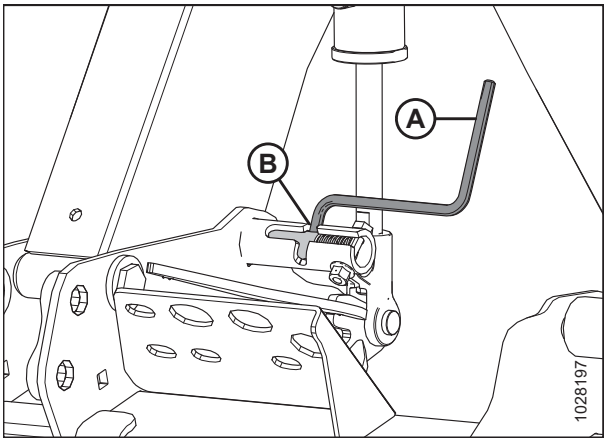


**Figure 10.5: Reel Safety Prop – Center Arm**

# 10.2 Header Endshields

A hinged, polyethylene endshield is fitted on each end of the header.

## 10.2.1 Opening Header Endshields

1. Push release lever (B) using access hole (A) located on the backside of the header endshield to unlock the shield.

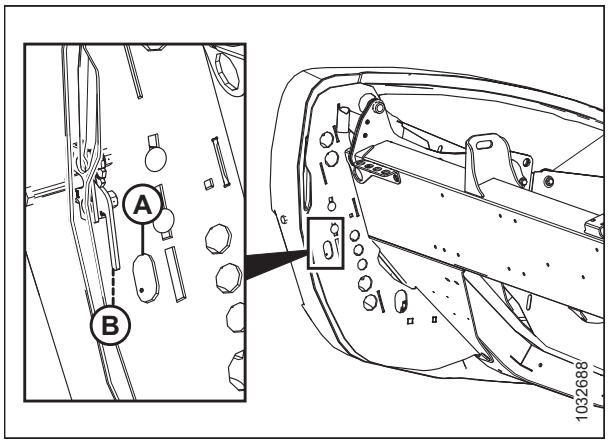


**Figure 10.6: Left Header Endshield**

2. Pull header endshield (A) open. The header endshield is retained by a tab (B) and will open in direction (C).

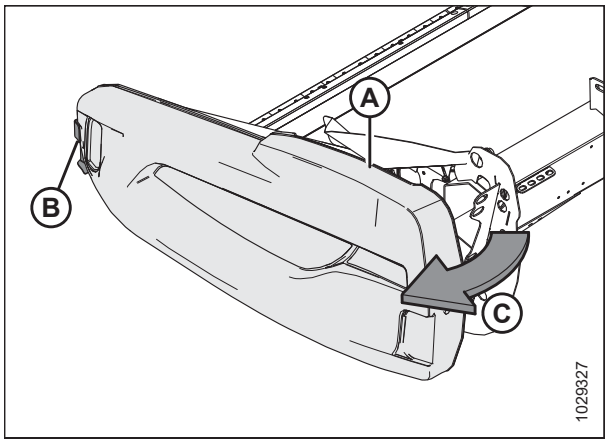


**Figure 10.7: Left Header Endshield**

3. If additional clearance is required, pull the header endshield free of tab (A) and swing shield toward the rear of the header.
4. Engage safety latch (B) on hinge arm (C) to secure the shield in fully open position.

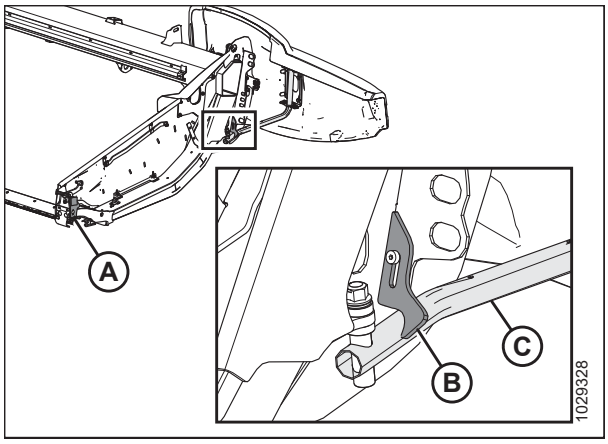


**Figure 10.8: Left Header Endshield**

## 10.2.2 Closing Header Endshields

1. Disengage lock (A) to allow header endshield (B) to move.
2. Rotate header endshield toward the front of the header.

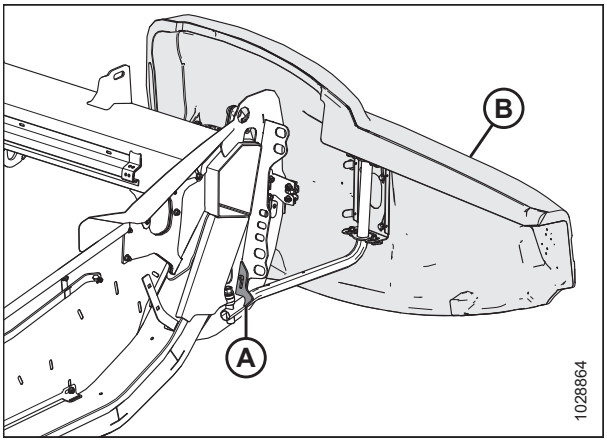


**Figure 10.9: Left Header Endshield**

3. While closing, ensure header endshield (A) does not contact the top of endsheet (B). If adjustment is required, refer to *6.19 Checking and Adjusting Header Endshields, page 140*.

   **IMPORTANT:**

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

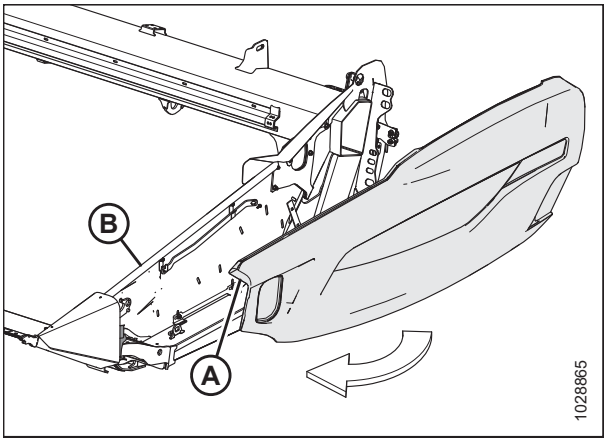


**Figure 10.10: Left Header Endshield**

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 closed position. Engage two-stage latch (C) with a firm push.

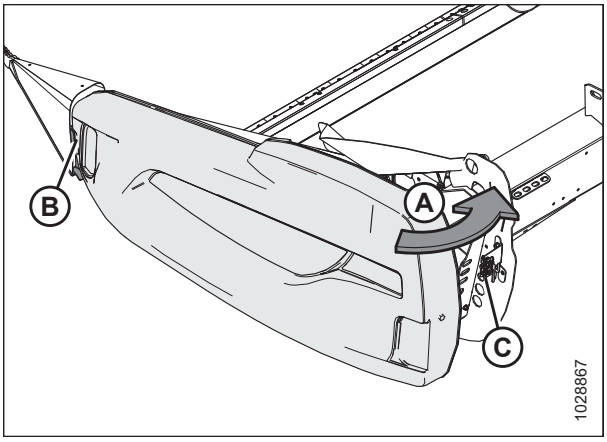


**Figure 10.11: Left Header Endshield**

**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 during operation.

**NOTE:**

The header endshield is transparent in the illustration to show the latch.

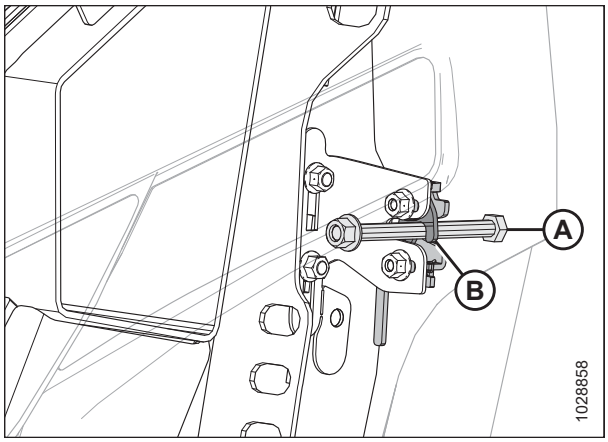


**Figure 10.12: Two-Stage Latch**

# 10.3 Torque Specifications

The following tables provide correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade of bolt.
- Use torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

***Jam nuts***

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by f=0.65.

***Self-tapping screws***

Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

## 10.3.1 Metric Bolt Specifications

**Table 10.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut**

| Nominal Size (A) | Torque (Nm) | | Torque (lbf·ft) (*lbf·in) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| 3-0.5 | 1.4 | 1.6 | *13 | *14 |
| 3.5-0.6 | 2.2 | 2.5 | *20 | *22 |
| 4-0.7 | 3.3 | 3.7 | *29 | *32 |
| 5-0.8 | 6.7 | 7.4 | *59 | *66 |
| 6-1.0 | 11.4 | 12.6 | *101 | *112 |
| 8-1.25 | 28 | 30 | 20 | 23 |
| 10-1.5 | 55 | 60 | 40 | 45 |
| 12-1.75 | 95 | 105 | 70 | 78 |
| 14-2.0 | 152 | 168 | 113 | 124 |
| 16-2.0 | 236 | 261 | 175 | 193 |
| 20-2.5 | 460 | 509 | 341 | 377 |
| 24-3.0 | 796 | 879 | 589 | 651 |

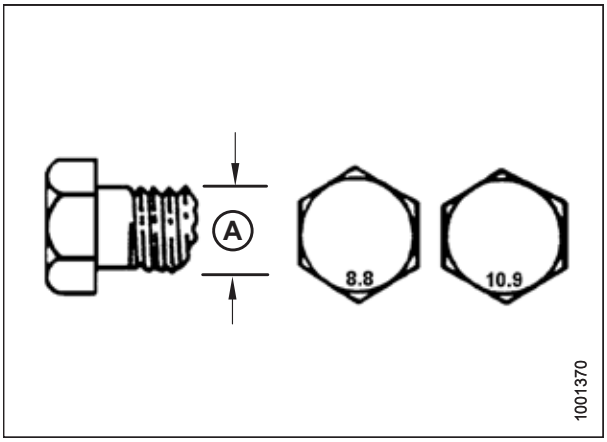


**Figure 10.13: Bolt Grades**

**Table 10.2 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut**

| Nominal Size (A) | Torque (Nm) | | Torque (lbf·ft) (*lbf·in) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| 3-0.5 | 1 | 1.1 | *9 | *10 |
| 3.5-0.6 | 1.5 | 1.7 | *14 | *15 |
| 4-0.7 | 2.3 | 2.5 | *20 | *22 |
| 5-0.8 | 4.5 | 5 | *40 | *45 |
| 6-1.0 | 7.7 | 8.6 | *69 | *76 |
| 8-1.25 | 18.8 | 20.8 | *167 | *185 |
| 10-1.5 | 37 | 41 | 28 | 30 |
| 12-1.75 | 65 | 72 | 48 | 53 |
| 14-2.0 | 104 | 115 | 77 | 85 |
| 16-2.0 | 161 | 178 | 119 | 132 |
| 20-2.5 | 314 | 347 | 233 | 257 |
| 24-3.0 | 543 | 600 | 402 | 444 |

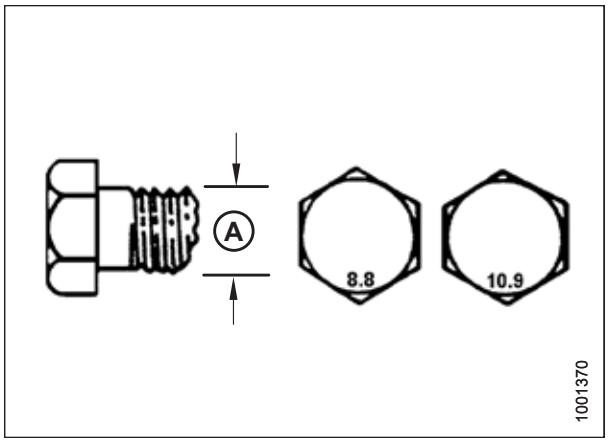


**Figure 10.14: Bolt Grades**

**Table 10.3 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut**

| Nominal Size (A) | Torque (Nm) | | Torque (lbf·ft) (*lbf·in) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| 3-0.5 | 1.8 | 2 | *18 | *19 |
| 3.5-0.6 | 2.8 | 3.1 | *27 | *30 |
| 4-0.7 | 4.2 | 4.6 | *41 | *45 |
| 5-0.8 | 8.4 | 9.3 | *82 | *91 |
| 6-1.0 | 14.3 | 15.8 | *140 | *154 |
| 8-1.25 | 38 | 42 | 28 | 31 |
| 10-1.5 | 75 | 83 | 56 | 62 |
| 12-1.75 | 132 | 145 | 97 | 108 |
| 14-2.0 | 210 | 232 | 156 | 172 |
| 16-2.0 | 326 | 360 | 242 | 267 |
| 20-2.5 | 637 | 704 | 472 | 521 |
| 24-3.0 | 1101 | 1217 | 815 | 901 |

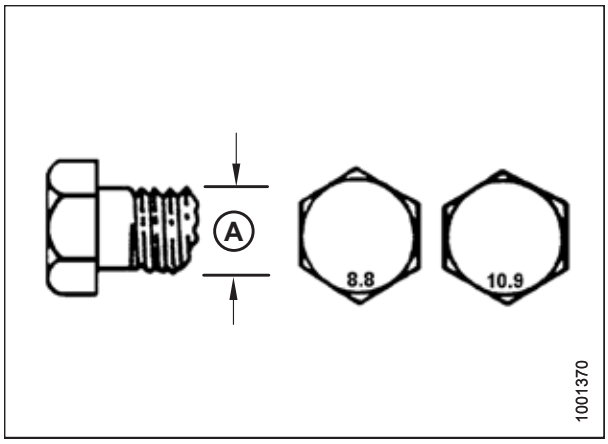


**Figure 10.15: Bolt Grades**

**Table 10.4 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut**

| Nominal Size (A) | Torque (Nm) | | Torque (lbf·ft) (*lbf·in) | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| 3-0.5 | 1.3 | 1.5 | *12 | *13 |
| 3.5-0.6 | 2.1 | 2.3 | *19 | *21 |
| 4-0.7 | 3.1 | 3.4 | *28 | *31 |
| 5-0.8 | 6.3 | 7 | *56 | *62 |
| 6-1.0 | 10.7 | 11.8 | *95 | *105 |
| 8-1.25 | 26 | 29 | 19 | 21 |
| 10-1.5 | 51 | 57 | 38 | 42 |
| 12-1.75 | 90 | 99 | 66 | 73 |
| 14-2.0 | 143 | 158 | 106 | 117 |
| 16-2.0 | 222 | 246 | 165 | 182 |
| 20-2.5 | 434 | 480 | 322 | 356 |
| 24-3.0 | 750 | 829 | 556 | 614 |

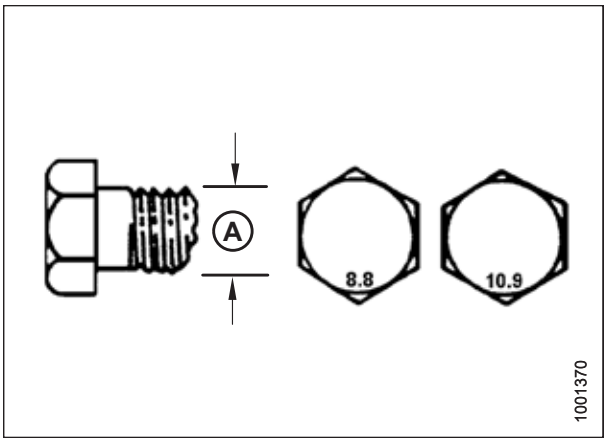


**Figure 10.16: Bolt Grades**

## 10.3.2 Metric Bolt Specifications Bolting into Cast Aluminum

**Table 10.5 Metric Bolt Bolting into Cast Aluminum**

| Nominal Size (A) | Bolt Torque | | | |
|---|---|---|---|---|
| | 8.8 (Cast Aluminum) | | 10.9 (Cast Aluminum) | |
| | Nm | lbf·ft | Nm | lbf·ft |
| M3 | – | – | – | 1 |
| M4 | – | – | 4 | 2.6 |
| M5 | – | – | 8 | 5.5 |
| M6 | 9 | 6 | 12 | 9 |
| M8 | 20 | 14 | 28 | 20 |
| M10 | 40 | 28 | 55 | 40 |
| M12 | 70 | 52 | 100 | 73 |
| M14 | – | – | – | – |
| M16 | – | – | – | – |

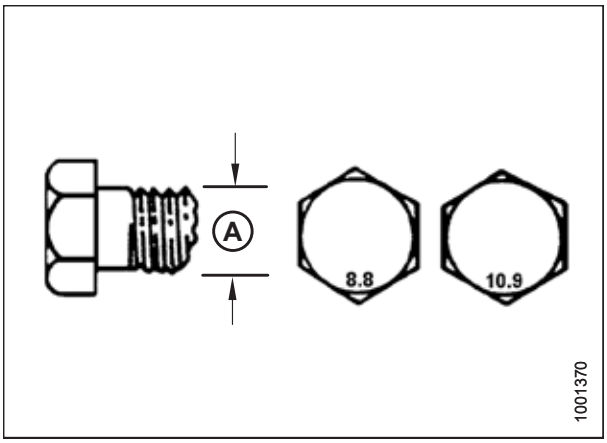


**Figure 10.17: Bolt Grades**

## 10.3.3 O-Ring Boss Hydraulic Fittings – Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious 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. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

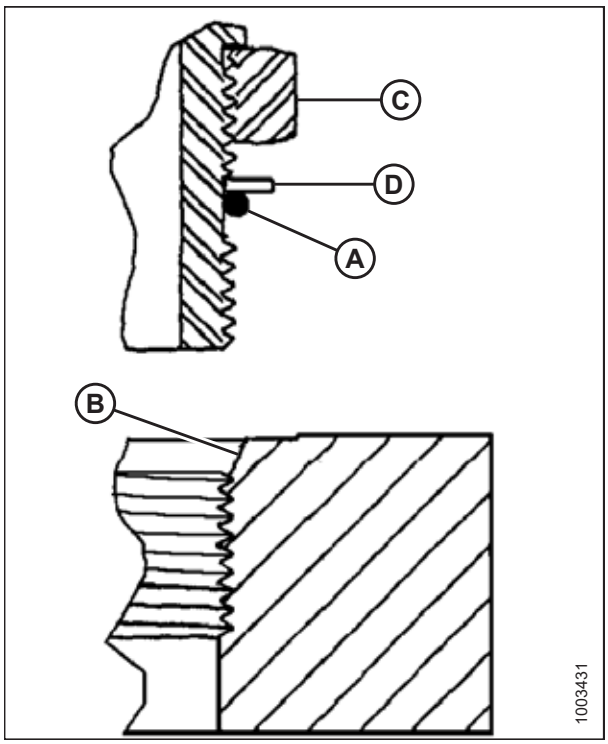


**Figure 10.18: Hydraulic Fitting**

5. Install fitting (B) into port until backup washer (D) and O-ring (A) contact part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).
8. Check final condition of fitting.

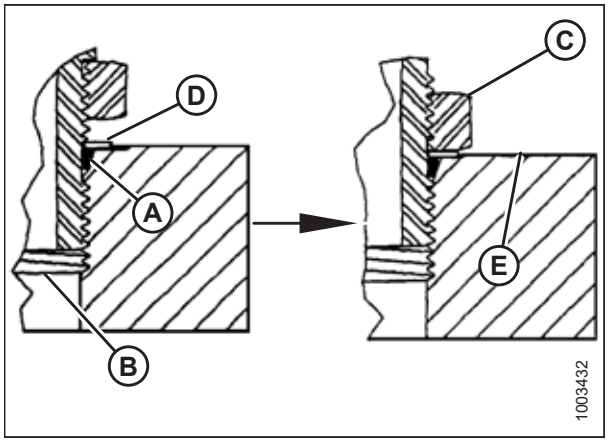


**Figure 10.19: Hydraulic Fitting**

**Table 10.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable**

| SAE Dash Size | Thread Size (in.) | Torque Value[10] | |
|---|---|---|---|
| | | 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 |

10. Torque values shown are based on lubricated connections as in reassembly.

## 10.3.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table *10.7, page 332*.
6. Check final condition of fitting.

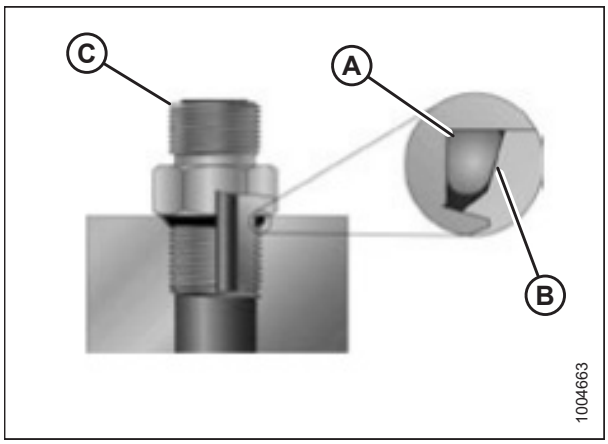


**Figure 10.20: Hydraulic Fitting**

**Table 10.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable**

| SAE Dash Size | Thread Size (in.) | Torque Value[11] | |
|---|---|---|---|
| | | 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 |

11. Torque values shown are based on lubricated connections as in reassembly.

## 10.3.5 O-Ring Face Seal Hydraulic Fittings

1. Check components to ensure that sealing surfaces and fitting threads are free of burrs, nicks, scratches, or any foreign material.


**Figure 10.21: Hydraulic Fitting**

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table *10.8, page 333*.

   **NOTE:**

   If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

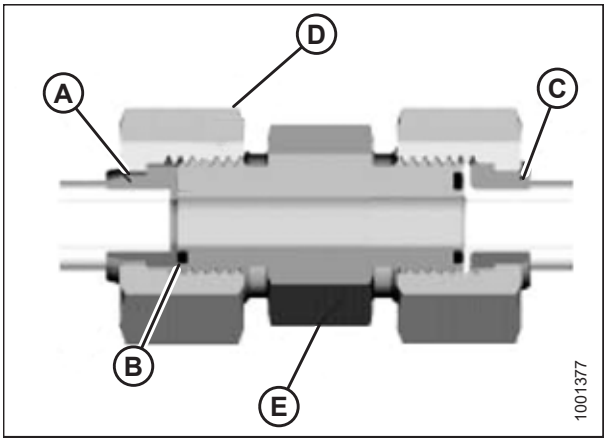


**Figure 10.22: Hydraulic Fitting**

**Table 10.8 O-Ring Face Seal (ORFS) Hydraulic Fittings**

| SAE Dash Size | Thread Size (in.) | Tube O.D. (in.) | Torque Value[12] | |
|---|---|---|---|---|
| | | | Nm | lbf·ft |
| -3 | Note[13] | 3/16 | – | – |
| -4 | 9/16 | 1/4 | 25–28 | 18–21 |
| -5 | Note[13] | 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[13] | 7/8 | – | – |

12. Torque values and angles shown are based on lubricated connection as in reassembly.
13. O-ring face seal type end not defined for this tube size.

**Table 10.8 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)**

| SAE Dash Size | Thread Size (in.) | Tube O.D. (in.) | Torque Value[14] | |
|---|---|---|---|---|
| | | | Nm | lbf·ft |
| -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 |

## 10.3.6 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *10.9, page 334*. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

**NOTE:**

Overtorque failure of fittings may not be evident until fittings are disassembled.

**Table 10.9 Hydraulic Fitting Pipe Thread**

| Tapered Pipe Thread Size | Recommended TFFT | Recommended FFFT |
|---|---|---|
| 1/8–27 | 2–3 | 12–18 |
| 1/4–18 | 2–3 | 12–18 |
| 3/8–18 | 2–3 | 12–18 |
| 1/2–14 | 2–3 | 12–18 |
| 3/4–14 | 1.5–2.5 | 12–18 |
| 1–11 1/2 | 1.5–2.5 | 9–15 |
| 1 1/4–11 1/2 | 1.5–2.5 | 9–15 |
| 1 1/2–11 1/2 | 1.5–2.5 | 9–15 |
| 2–11 1/2 | 1.5–2.5 | 9–15 |

14. Torque values and angles shown are based on lubricated connection as in reassembly.

## 10.4 Lifting Equipment Requirements

The following topic describes the minimum equipment requirements for lifting headers.

### WARNING

**To avoid injury to bystanders from being struck by machinery, do NOT allow people to stand in unloading area.**

### WARNING

**Equipment used for loading and unloading must meet or exceed the minimum specified requirements. Using inadequate equipment may result in vehicle tipping, machine damage, or chain breakage.**

**IMPORTANT:**

Forklifts are normally rated for a load center 610 mm (24 in.) ahead of back end of the forks. To obtain the forklift capacity for a load center (A) at 1220 mm (48 in.) (B), check with your forklift distributor. The minimum fork length (C) is 1981 mm (78 in.).

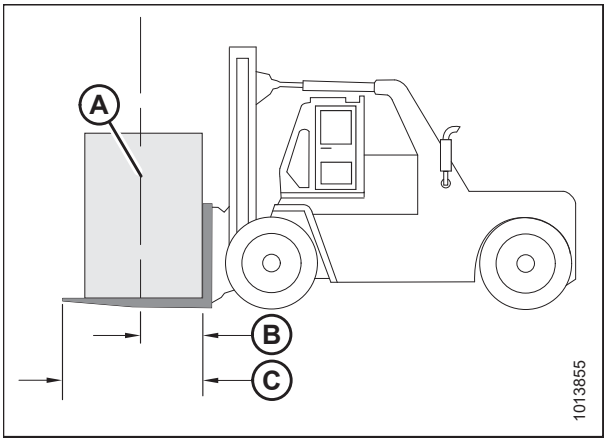


**Figure 10.23: Minimum Lifting Capacity**

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

**Table 10.10 Lifting Chain Requirements**

| | |
|---|---|
| **Type** | Overhead lifting quality (1/2 in.) |
| **Minimum Load** | 2270 kg (5000 lb.) |

## 10.5 Conversion Chart

**Table 10.11 Conversion Chart**

| Quantity | SI Units (Metric) | | Factor | US Customary Units (Standard) | |
|---|---|---|---|---|---|
| | Unit Name | Abbreviation | | Unit Name | Abbreviation |
| Area | hectare | ha | x 2.4710 = | acre | acres |
| Flow | liters per minute | L/min | x 0.2642 = | US gallons per minute | gpm |
| Force | Newton | N | x 0.2248 = | pound force | lbf |
| Length | millimeter | mm | x 0.0394 = | inch | in. |
| Length | meter | m | x 3.2808 = | foot | ft. |
| Power | kilowatt | kW | x 1.341 = | horsepower | hp |
| Pressure | kilopascal | kPa | x 0.145 = | pounds per square inch | psi |
| Pressure | megapascal | MPa | x 145.038 = | pounds per square inch | psi |
| Pressure | bar (Non-SI) | bar | x 14.5038 = | pounds per square inch | psi |
| Torque | Newton meter | Nm | x 0.7376 = | pound feet or foot pounds | lbf·ft |
| Torque | Newton meter | Nm | x 8.8507 = | pound inches or inch pounds | lbf·in |
| Temperature | degrees Celsius | °C | (°C x 1.8) + 32 = | degrees Fahrenheit | °F |
| Velocity | meters per minute | m/min | x 3.2808 = | feet per minute | ft/min |
| Velocity | meters per second | m/s | x 3.2808 = | feet per second | ft/s |
| Velocity | kilometers per hour | km/h | x 0.6214 = | miles per hour | mph |
| Volume | liter | L | x 0.2642 = | US gallon | US gal |
| Volume | milliliter | mL | x 0.0338 = | ounce | oz. |
| Volume | cubic centimeter | $cm^3$ or cc | x 0.061 = | cubic inch | $in.^3$ |
| Weight | kilogram | kg | x 2.2046 = | pound | lb. |

## 10.6 Definitions

The following terms and acronyms may be used in this instruction:

| Term | Definition |
|---|---|
| API | American Petroleum Institute |
| ASTM | American Society of Testing and Materials |
| Bolt | A headed and externally threaded fastener that is designed to be paired with a nut |
| Center-link | A hydraulic cylinder link between the header and machine used to change header angle |
| CGVW | Combined gross vehicle weight |
| Export header | Header configuration typical outside North America |
| FD2 Series header | MacDon FD230, FD235, FD240, FD241, or FD250 FlexDraper® header from the FD2 model number series |
| FFFT | Flats from finger tight |
| Finger tight | Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose |
| FM200 | Float module used with a FD2 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 head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms |
| hp | Horsepower |
| HPT display | Harvest Performance Tracker display module on an M1 Series Windrower |
| 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 | 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 that is designed to be paired with a bolt |
| ORB | O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors |
| ORFS | O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal |
| SAE | Society of Automotive Engineers |
| Screw | A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part |
| Soft joint | A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time |

| Term | Definition |
|---|---|
| Tension | Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.) |
| TFFT | Turns from finger tight |
| Torque | The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft) |
| Torque angle | A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position |
| Torque-tension | The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw |
| Washer | A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism |

# Predelivery Checklist

Perform these checks prior to delivery to your Customer. **Adjustments are normally not required as the machine is factory-assembled and adjusted.** If adjustments are required, refer to the appropriate page number in this manual. The completed checklist should be retained by either the Operator or the Dealer.

## CAUTION

**Carefully follow the instructions. Be alert for safety related messages that bring your attention to hazards and unsafe practices.**

**Header Serial Number:** **Float Module Serial Number:**

**Table .12 FD2 Series FlexDraper® / FM200 Float Module Predelivery Checklist – North America**

| ✓ | Item | Reference |
|---|---|---|
| | Check for shipping damage or missing parts. Be sure all shipping dunnage is removed. | — |
| | Check for loose hardware. Tighten to required torque. | *10.3 Torque Specifications, page 327* |
| | Check tire pressure (transport/stabilizer option). | *6.2 Checking Tire Pressure – Stabilizer Wheels, or Transport with Stabilizer Wheels (Option), page 91* |
| | Check wheel bolt torque (transport/stabilizer option). | *6.3 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels, page 92* |
| | Check the lubricant level in the knife drive box. | *6.4 Checking Oil Level in Knife Drive Box , page 93* |
| | Check the float module gearbox lube level. | *6.5 Checking Oil Level in Header Drive Main Gearbox, page 95* |
| | Check the hydraulic reservoir lube level before and after run-up. | *6.7 Checking Oil Level in Hydraulic Reservoir, page 97* |
| | Check if the reel is centered between header endsheets (header in full smile). | *6.9 Checking Reel Clearance, page 105* |
| | Grease all bearings and drivelines. | *6.18 Lubricating the Header, page 133* |
| | Check side draper tension. | *6.16 Checking and Adjusting Side Draper Tension, page 129* |
| | Check draper seal. | *6.17 Checking Draper Seal, page 131* |
| | Check header float. | *6.11 Checking and Adjusting Header Float, page 107* |
| | Check wing balance. | *6.13 Wing Balance, page 114* |
| | Check wing float lock adjustment / check that top-link is parallel. | *6.12 Checking that Top-Link is Parallel, page 112* |
| | Check reel tine to cutterbar clearance. | *6.14 Reel Clearance to Cutterbar, page 120* |
| | Check auger flighting to feed pan clearance. | *6.15 Adjusting Feed Auger to Pan Clearance, page 126* |
| | Check the knife hold-downs. | *6.8 Guard Identification, page 98* |
| | Ensure skid shoes are evenly adjusted and at a setting appropriate for crop. | — |

**Table .12 FD2 Series FlexDraper® / FM200 Float Module Predelivery Checklist – North America (continued)**

| ✓ | Item | Reference |
|---|---|---|
| | Ensure feeder house variable speed is set to minimum. | — |
| | Ensure auto header height is calibrated and functioning correctly. | *7.1 Auto Header Height Control, page 145* |
| **Run-up procedure** | | *9 Running up Header, page 309* |
| | Ensure the reel rotates in the correct direction. | — |
| | Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel. | — |
| | Ensure the reel lift cylinders can extend fully. | — |
| | Ensure the reel moves fully fore and aft. | — |
| | Check knife speed. | *9.1 Knife Speed Information, page 312* |
| | Check/adjust side draper tracking | *9.2 Adjusting Side Draper Tracking, page 316* |
| **Post run-up check. Stop engine.** | | *9.3 Performing Post Run-Up Adjustments, page 318* |
| | Check knife and reel drives for heated bearings. | *6.18 Lubricating the Header, page 133* |
| | Check knife sections for discoloration caused by misalignment of components. Adjust hold-downs as required. | *9.3.1 Adjusting Knife, page 318* |
| | Check/adjust feed draper tension | *9.3.2 Checking and Adjusting Feed Draper Tension, page 318* |
| | Check for hydraulic leaks. | — |
| | Check fitment of endshields. | *6.19 Checking and Adjusting Header Endshields, page 140* |
| | Check that manual storage case contains operator's manual. | *6.20 Checking Manuals, page 143* |

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