

# **D1X and D1XL Series Draper Header**

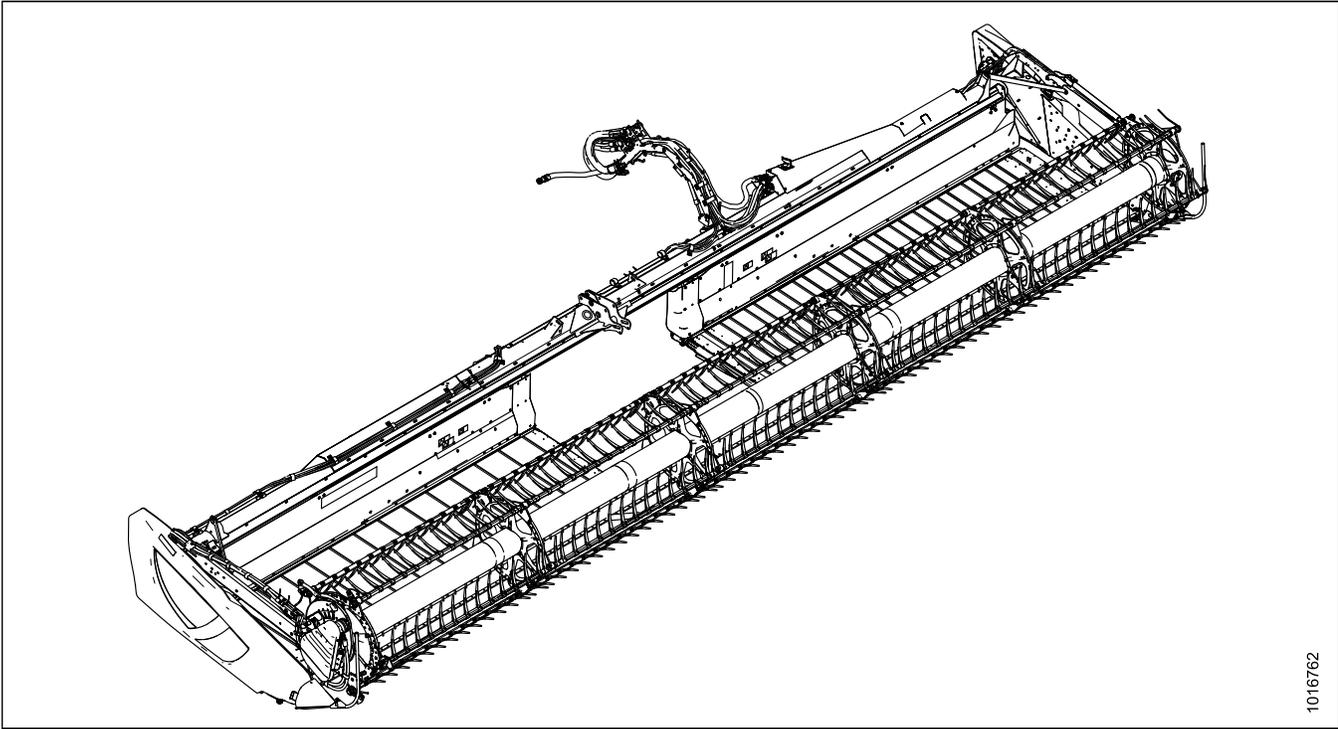
Unloading and Assembly Instructions (North America)

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Original Instruction

D1XL Draper Header for Self-Propelled Windrowers



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# Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon D1X and D1XL Series Draper Headers for Self-Propelled Windrowers.

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 apply to multiple 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.

## **NOTE:**

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

This document is available in English.



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# 1 Safety

## 1.1 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. 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.

## 1.2 General Safety

### CAUTION

The following are general farm safety precautions that 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 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
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

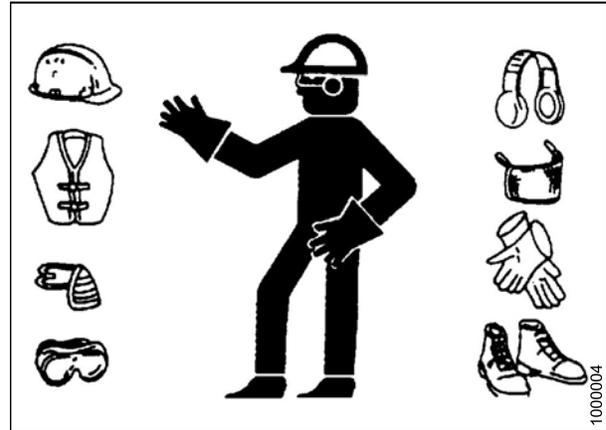


Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

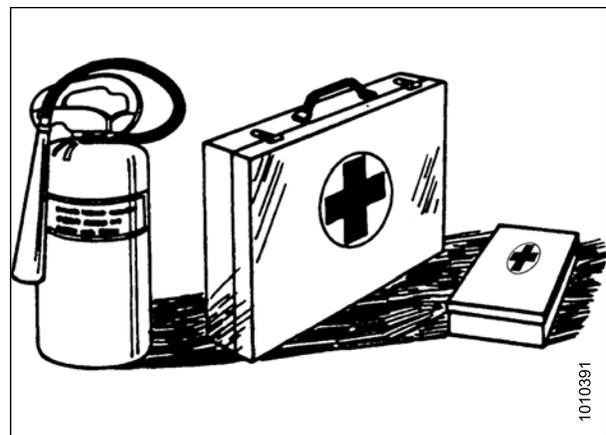


Figure 1.3: Safety Equipment

## SAFETY

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



Figure 1.4: Safety around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while engine is running.
- Do **NOT** modify machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten machine's life.
- 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.

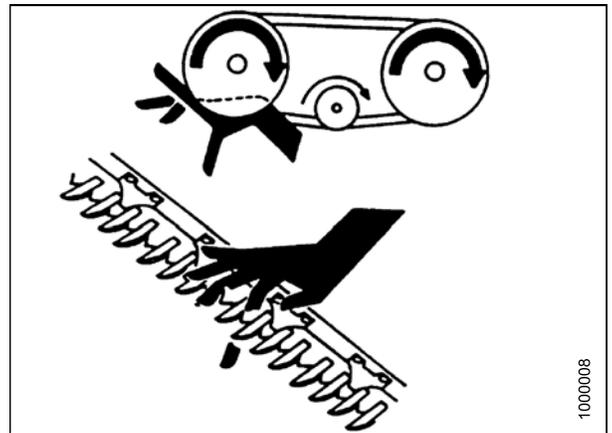


Figure 1.5: Safety around Equipment

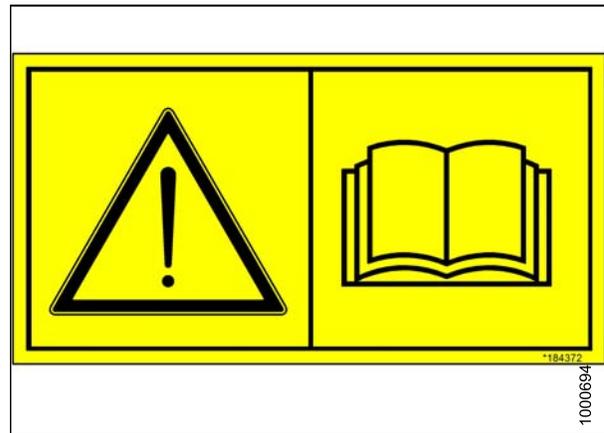
- Keep service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.
- Keep work area well lit.
- Keep machinery clean. Straw and chaff on a hot engine is a fire hazard. Do **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 become illegible.
- If original part on which a safety sign was installed is replaced, be sure repair part also bears current safety sign.
- Safety signs are available from your MacDon Dealer.



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

## 2 Unloading

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

### 2.1 Unloading Header from Trailer

The following procedure assumes that two headers were shipped on the trailer.

#### CAUTION

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

#### CAUTION

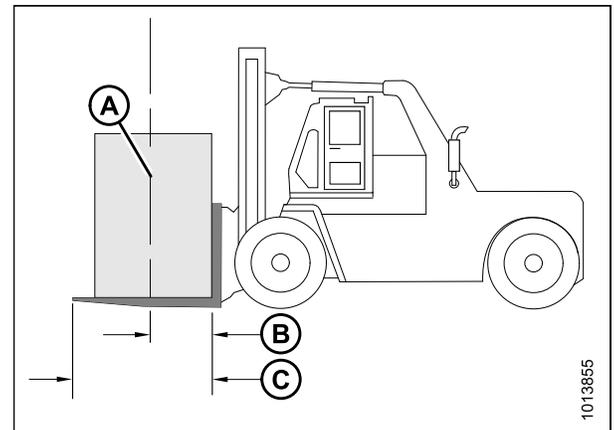
Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in chain breakage, vehicle tipping, or machine damage.

#### 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**

<b>Minimum Lifting Capacity</b>	3178 kg (7000 lb.) load center (A) at 1220 mm (48 in.) (B) from back of forks
<b>Minimum Fork Length (C)</b>	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 headers from a trailer, follow these steps:

1. Move trailer into position and block trailer wheels.
2. Lower trailer storage stands.

## UNLOADING

3. Approach one of the headers and slide forks (A) underneath the shipping support (B) as far as possible without contacting the shipping support of second header (C).

### IMPORTANT:

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

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

### WARNING

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

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

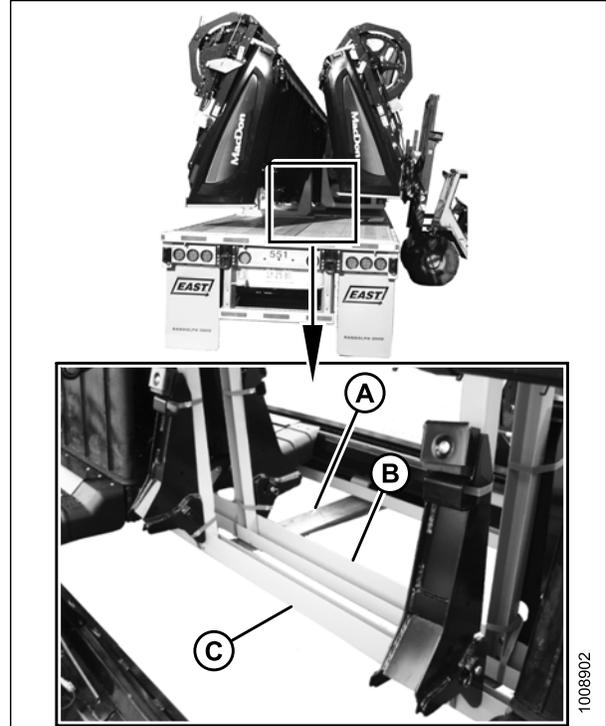


Figure 2.2: Header Shipping Supports

## UNLOADING

### 2.2 Lowering Header

The procedure for lowering the header varies depending on whether the header has a single or double reel. Refer to the following:

- [2.2.1 Lowering Single-Reel Header, page 7](#)
- [2.2.2 Lowering Double-Reel Header, page 9](#)

#### 2.2.1 Lowering Single-Reel Header

Reposition header in preparation for assembly and setup as follows:

1. Choose an area with level ground.
2. Approach header from its underside and place forks under top of shipping frame (A).
3. Attach a chain (B) at each end of the shipping frame and secure other end to lifting vehicle.

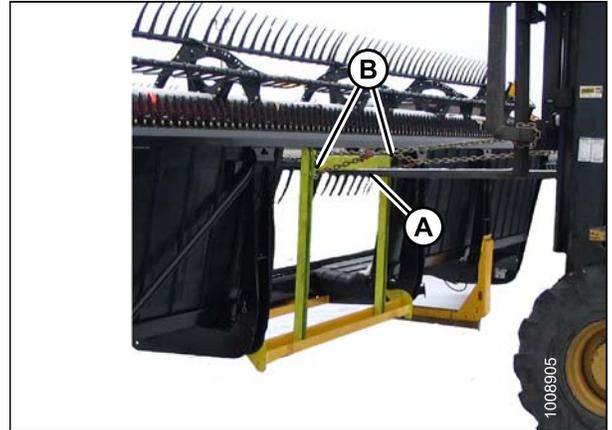


Figure 2.3: Shipping Frame

## UNLOADING

### CAUTION

Stand clear when lowering, as machine may swing.

4. Back up **SLOWLY** while lowering forks until header is just above the ground. Refer to the four positions in the illustration.



Figure 2.4: Lowering the Header

## UNLOADING

5. Place 150 mm (6 in.) blocks (A) under each end and center of cutterbar, and then lower header onto blocks.
6. Remove chain and move lifting vehicle to rear of header.
7. Attach chain to center-link anchor on frame tube and raise rear of header so that stand can be lowered.

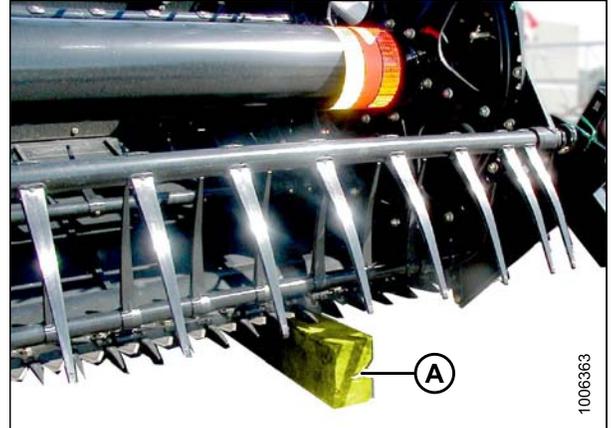


Figure 2.5: Block at One End of Cutterbar

8. Lower header stand by pulling pin (A), lowering stand (B), and releasing pin (A) to secure stand in place.
9. If ground is soft, place a block under the stand.
10. Lower header onto stand.

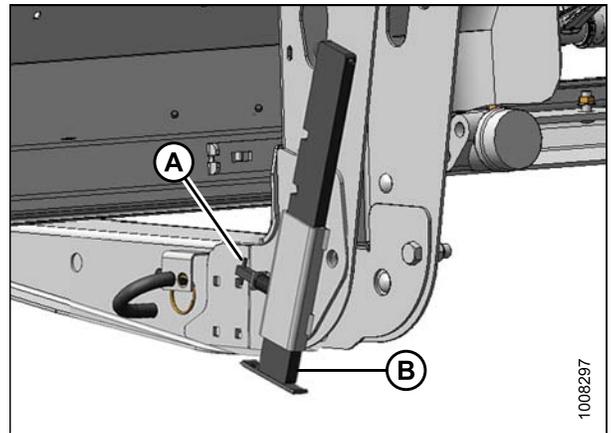


Figure 2.6: Header Stand

### 2.2.2 Lowering Double-Reel Header

Reposition header in preparation for assembly and setup as follows:

1. Choose an area with level ground.
2. Drive lifting vehicle to approach header from its underside.



Figure 2.7: Lift Location

## UNLOADING

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

**IMPORTANT:**

Do **NOT** lift header at this location. This procedure is only for laying the machine over into working position.

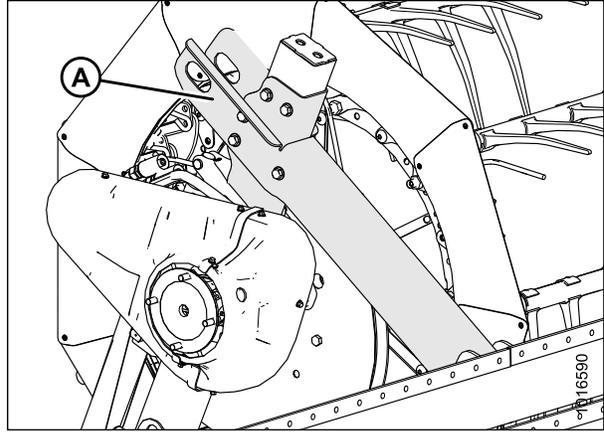


Figure 2.8: Shipping Support

**CAUTION**

Stand clear when lowering, as machine may swing.

## UNLOADING

4. Back up **SLOWLY** while lowering forks until header is just above the ground. Refer to the four positions in the illustration.



Figure 2.9: Lowering the Header

## UNLOADING

5. Place 150 mm (6 in.) blocks (A) under each end and center of cutterbar, and then lower header onto blocks.
6. Remove chain and move lifting vehicle to rear of header.
7. Attach chain to center-link anchor on frame tube and raise rear of header so that stand can be lowered.

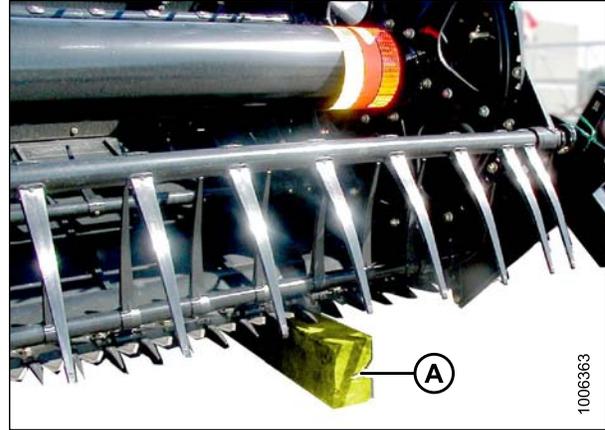


Figure 2.10: Block at One End of Cutterbar

8. Lower the header stand: pull pin (A), lower stand (B), and release pin (A) to secure stand in place.
9. If ground is soft, place a block under the stand.
10. Lower header onto stand.
11. Remove chain.

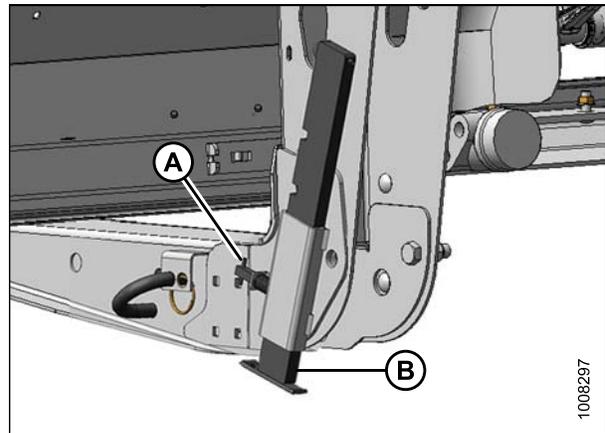


Figure 2.11: Header Stand

## UNLOADING

### 2.3 Removing Shipping Supports

#### NOTE:

Unless otherwise specified, discard all shipping materials and hardware.

1. Cut straps and remove draper header supports (A) from shipping support. Set draper header supports aside for reinstallation.

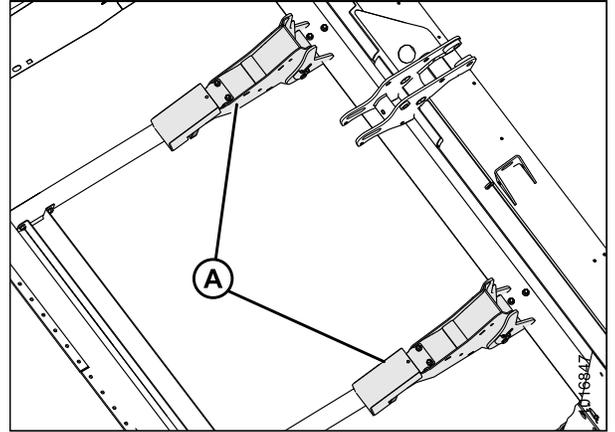


Figure 2.12: Draper Header Supports, and Shipping Supports

2. **Single reel only:** Cut banding (A) securing reel to cutterbar and backtube.

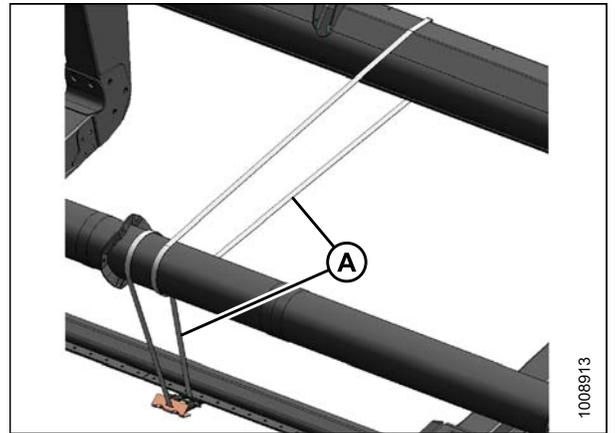


Figure 2.13: Single Reel

3. Remove four bolts (A) securing upper support (B) to header legs and remove support.

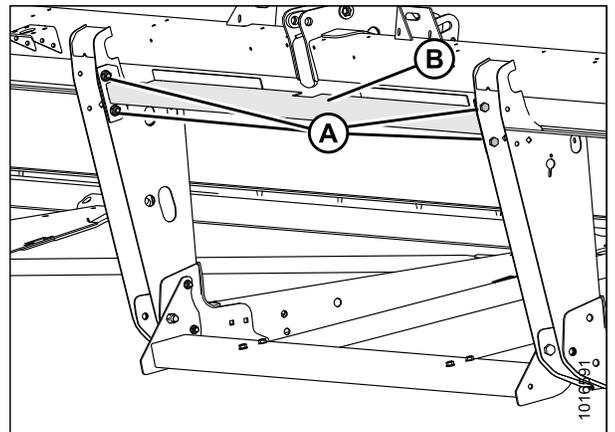


Figure 2.14: Upper Support

## UNLOADING

4. Remove six bolts (A) securing lower support (B) to header legs and remove support.

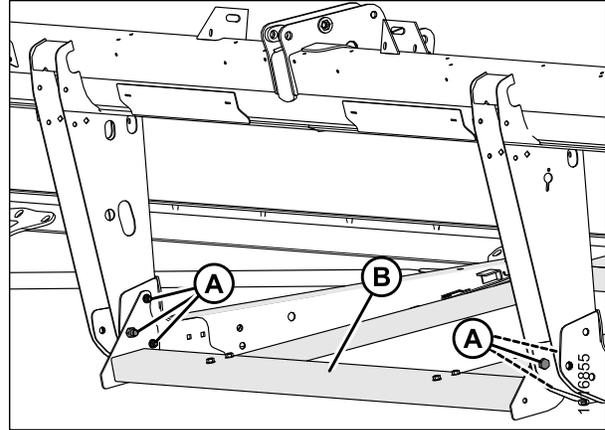


Figure 2.15: Lower Support

5. Remove the four bolts (A) from the shipping stands at both outboard header legs and remove the shipping stands.

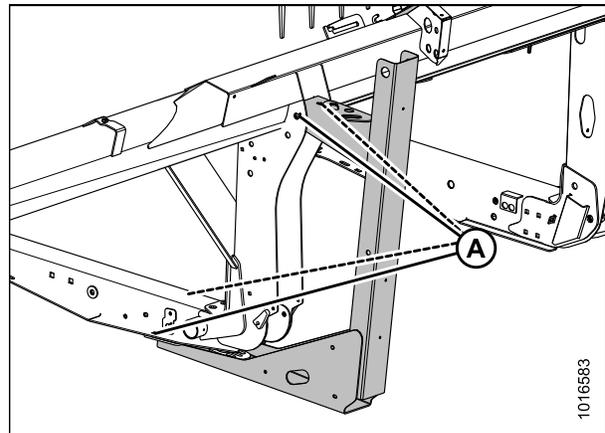


Figure 2.16: Outer Leg Shipping Supports

6. Remove reel anti-rotation brace (A) from between reel and endsheet.

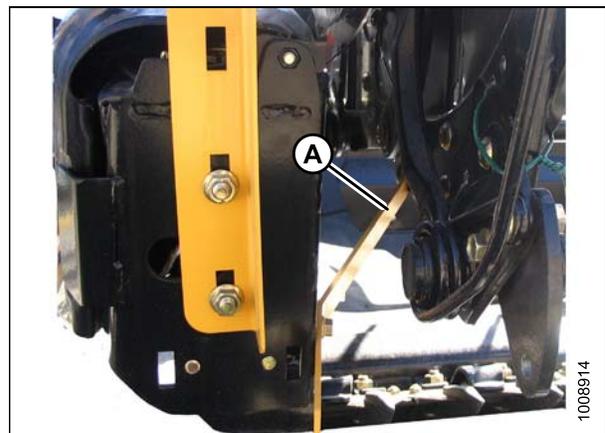


Figure 2.17: Anti-Rotation Brace

## UNLOADING

7. At the left side of the header, cut and remove the wire (A) securing the endshield to the panel. Repeat at the opposite side.
8. Loosen the three nuts (B) securing the shipping support to the endsheet.
9. Slide shipping support (C) backward to remove.
10. Tighten nuts (B).

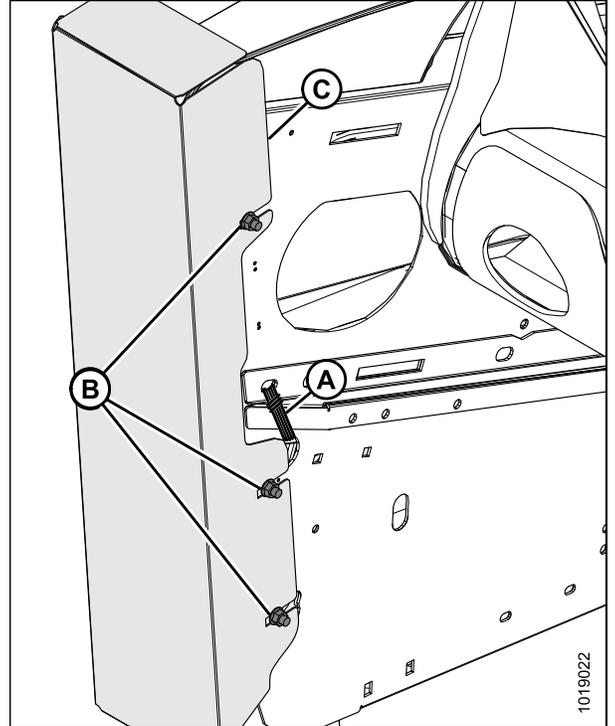


Figure 2.18: Endsheet Shipping Support

11. At the right side of the header, loosen the two nuts (A) securing the shipping support (B) to the endsheet.
12. Slide shipping support (B) backward to remove.
13. Tighten nuts (A).

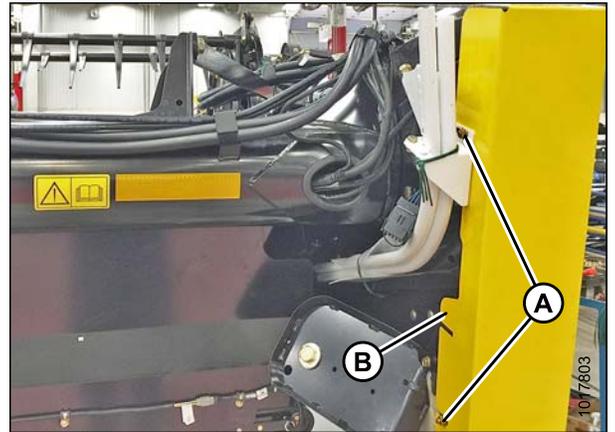


Figure 2.19: Endsheet Shipping Support



### 3 Attaching Header to Windrower

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

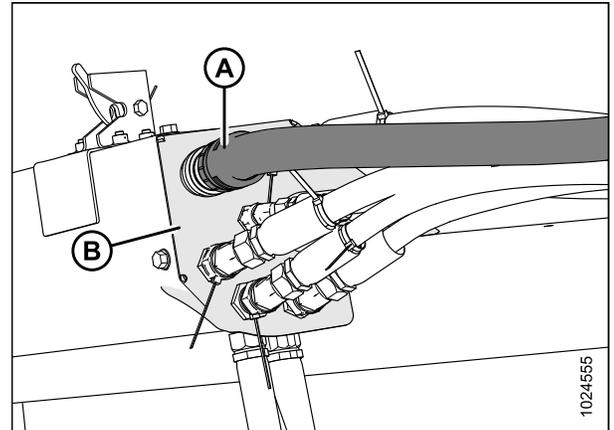
#### 3.1 Installing the Hydraulic Hose Management Arm

The hydraulic hose management arm should be properly installed from shipping position to working position. Lifting equipment is required to complete this task; the hydraulic hose management arm weighs approximately 54 kg (120 lb.).

1. Disconnect harness connector (A) from the header's coupler holder (B).

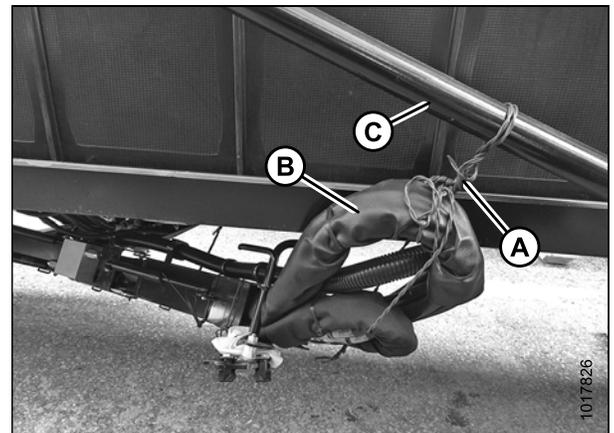
**NOTE:**

The harness connector must be disconnected from the header prior to moving the hose management arm to field position.



**Figure 3.1: Hoses and Connector Attached to the Header**

2. Cut and remove the wire (A) securing the hydraulic hose management arm (B) to the diagonal brace (C).



**Figure 3.2: Hydraulic Hose Management Arm**

## ATTACHING HEADER TO WINDROWER

### NOTE:

Hydraulic hoses were removed from the illustrations in this procedure for clarity.

3. Position a sling (A) between the gas spring cylinder (B) and around the support arm (C).
4. Attach sling (A) to forklift or lifting device.

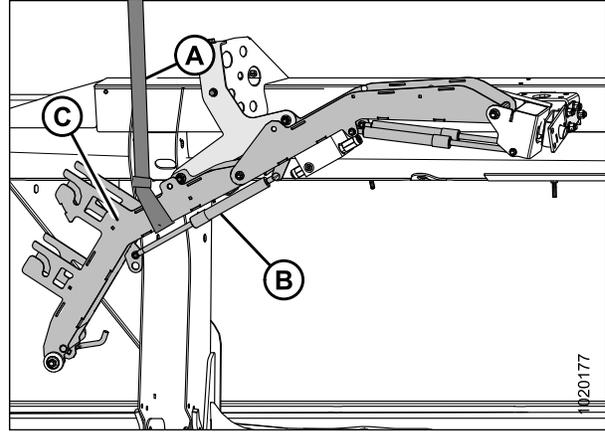


Figure 3.3: Hydraulic Hose Management Arm in Shipping Position

5. Remove the two bolts and nuts (A) securing the base of the hose management arm (B) to the frame channel (C). Retain bolts and nuts for use later.
6. Remove the other two bolts and nuts (D) from the shipping plate (E). Retain bolts and nuts for use later. Discard shipping plate (E).

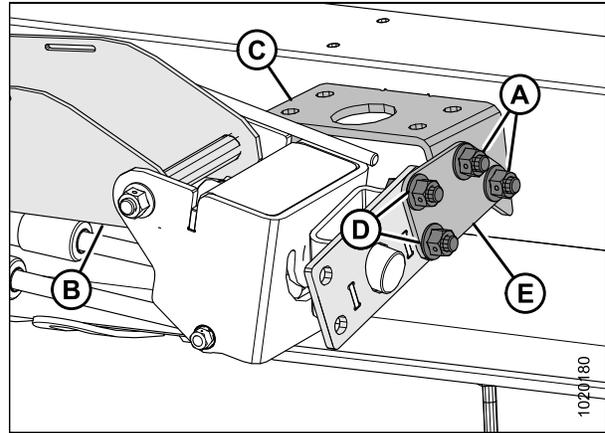


Figure 3.4: Hydraulic Hose Management Arm Base Frame

7. **7.6–10.6 Meter (25–35 Foot) Headers:** With the sling attached to the lifting device and supporting the hose management arm (A), remove the two bolts and nuts (B) that secure the hose management arm to the shipping support (C).

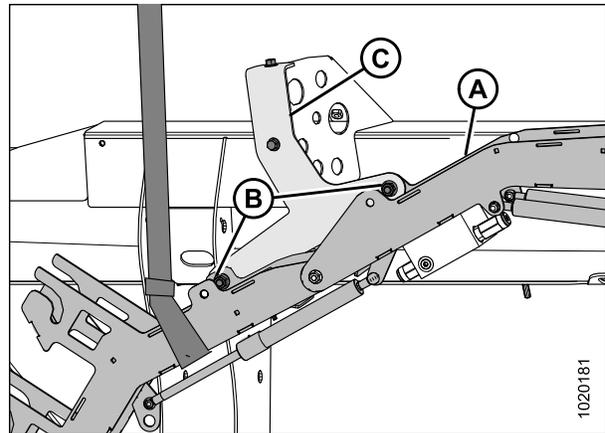


Figure 3.5: Hydraulic Hose Management Arm in Shipping Position (7.6–10.6 Meter [25–35 Foot] Headers)

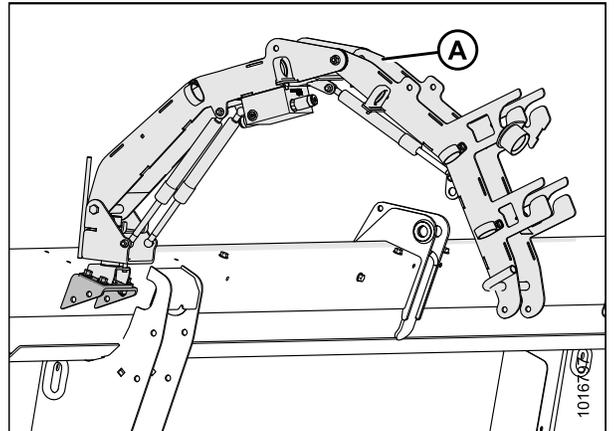
## ATTACHING HEADER TO WINDROWER

8. **12.2–13.7 Meter (40–45 Foot) Headers:** With the sling attached to the lifting device and supporting the hose management arm, cut and remove the wire (A) that secures the hose management arm to channel latch on top of header frame tube.



**Figure 3.6: Hose Management Arm in Shipping Position (12.2–13.7 Meter [40–45 Foot] Headers)**

9. With the help of the sling and lifting device, position the hose management arm (A) as shown.



**Figure 3.7: Hose Management Arm in Field Position**

## ATTACHING HEADER TO WINDROWER

- Secure the plate support (A) to the frame channel (B) using the four bolts and nuts previously removed.
- Remove sling from the hose management arm.

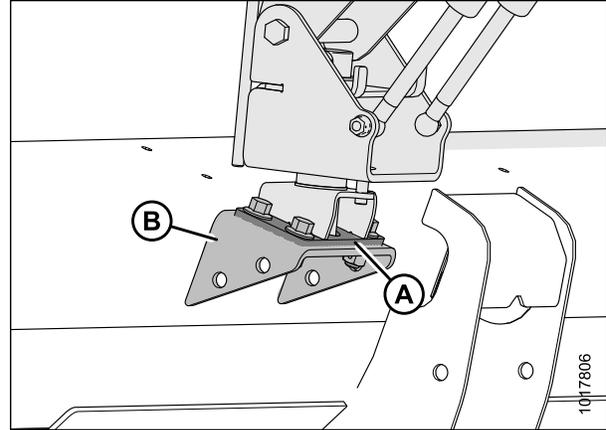


Figure 3.8: Hose Management Arm Plate Support

- 7.6–10.6 Meter (25–35 Foot) Headers:** Remove the two bolts (A) and shipping support (B) from the coupler holder (C). Discard shipping support (B) and reinstall the two bolts at the same location on the coupler holder to secure the hose cover.

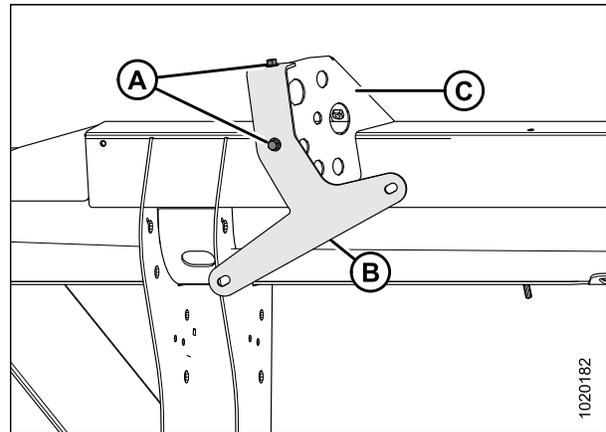


Figure 3.9: Hose Management Arm Shipping Support Bracket (7.6–10.6 Meter [25–35 Foot] Headers)

- Connect harness connector (C) to the bulkhead on the header's coupler holder.
- Cut the cable tie securing the hoses in position (A), and secure the hoses with the strap (B) bolted on the frame.

### IMPORTANT:

Note the routing of the hoses in the hose management arm field position shown at right.

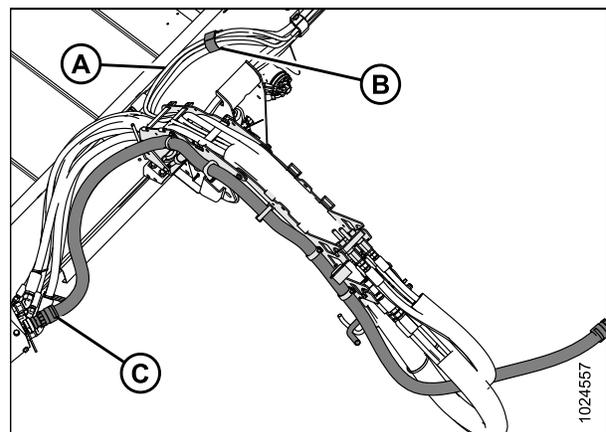


Figure 3.10: Hose Management Arm Hose Routing (Top View)

### 3.2 Attaching Draper Header Supports

**⚠ DANGER**

To avoid bodily 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.

1. Retrieve header draper supports removed from shipping supports in Step 1, page 13.
2. Remove hairpin and clevis pin (B) from the draper header support (A).

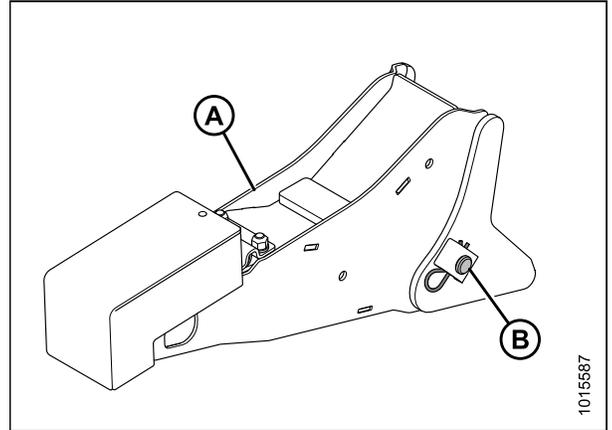


Figure 3.11: Draper Header Support

3. Position the draper header support (B) on lift linkage (A), and reinstall clevis pin (C).

**NOTE:**

To avoid pin snagging the windrow, install the clevis pin on the outboard side of the draper header support.

4. Secure clevis pin (C) with hairpin (D).
5. Repeat for opposite lift linkage.

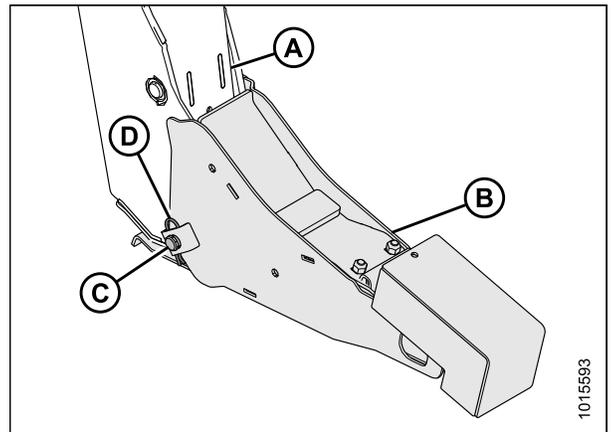


Figure 3.12: Draper Header Support

### 3.3 Connecting Center-Link

#### DANGER

To avoid bodily 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.

1. Stop the engine and remove the key.
2. **Hydraulic center-link without self-alignment:**  
Relocate pin (A) in frame linkage as required to raise the center-link (B) until the hook is above the attachment pin on the header.

**IMPORTANT:**

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

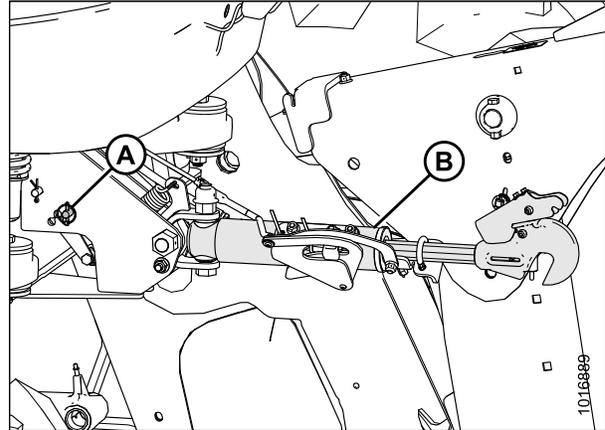


Figure 3.13: Center-Link without Self-Alignment

3. Remove hairpin (A) from pin (B), and remove pin (B) from header leg. Repeat on the opposite header leg.

#### CAUTION

Check to be sure all bystanders have cleared the area.

4. Start engine.

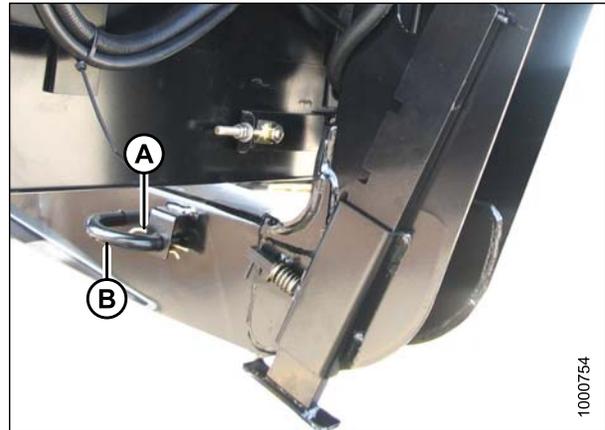


Figure 3.14: Header Leg

## ATTACHING HEADER TO WINDROWER

### CAUTION

To prevent damage to the header lift linkages when lowering header lift legs without a header or weight box attached to the windrower, ensure the float springs tension is fully released.

### NOTE:

If not prompted by the Harvest Performance Tracker (HPT) display to remove float, remove float manually by doing the following:

5. In the windrower cab, press scroll knob (A) on HPT to display the QuickMenu system.
6. Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B), and press scroll knob to select.
7. On Float Adjust page, press soft key 3 (A) to remove float.

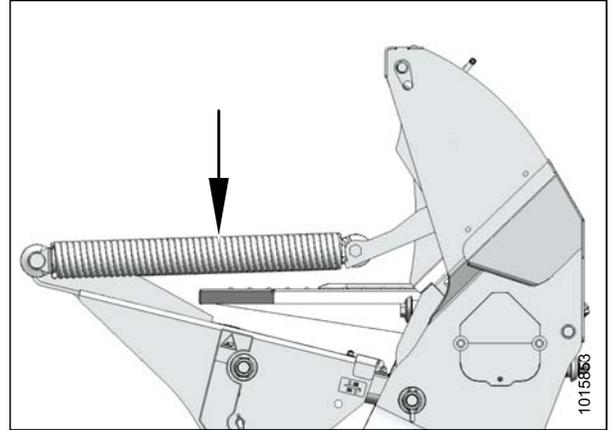


Figure 3.15: Header Float Springs



Figure 3.16: HPT Display



Figure 3.17: HPT Display

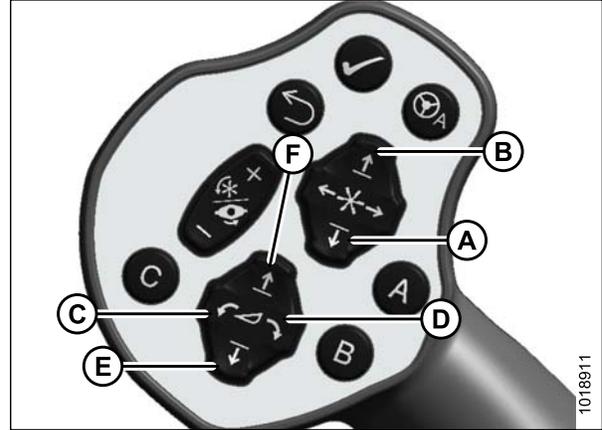
## ATTACHING HEADER TO WINDROWER

### 8. *For hydraulic center-link with optional self-alignment:*

- Press HEADER DOWN switch on the ground speed lever (GSL) to fully retract header lift cylinders.
- Press REEL UP switch on the GSL to raise the center-link until the hook is above the attachment pin on the header.

#### **IMPORTANT:**

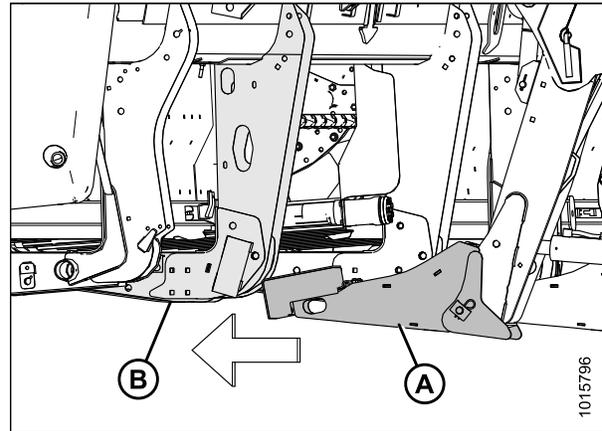
If the center-link is too low, it may contact the header as the windrower approaches the header for hookup.



**Figure 3.18: GSL Switches**

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

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



**Figure 3.19: Header Leg and Draper Header Support**

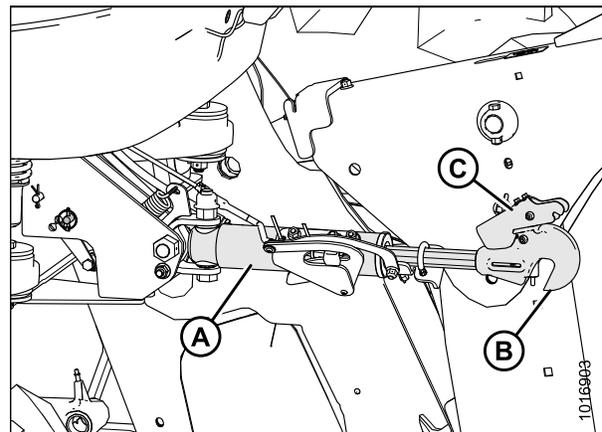
### 11. *Hydraulic center-link with optional self-alignment:*

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

#### **IMPORTANT:**

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

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



**Figure 3.20: Hydraulic Center-Link**

## ATTACHING HEADER TO WINDROWER

### 12. *Hydraulic center-link without optional self-alignment:*

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

#### **IMPORTANT:**

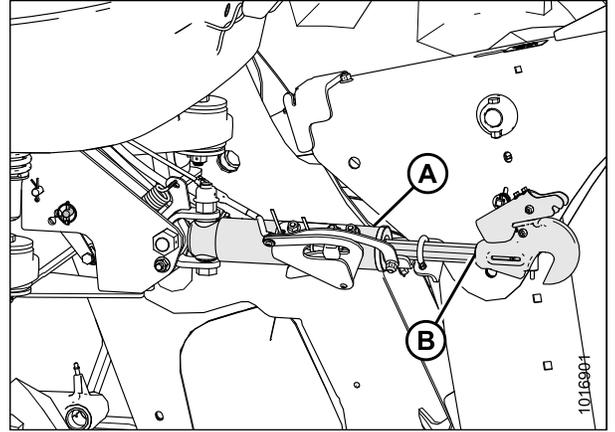
Hook release must be down to enable self-locking mechanism. If the hook release is open (up), manually push it down after hook engages pin.

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

### **CAUTION**

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

- e. Start engine.
13. Press the HEADER UP switch (A) to raise header to maximum height.
14. Stop the engine and remove the key.



**Figure 3.21: Hydraulic Center-Link**



**Figure 3.22: GSL**

## ATTACHING HEADER TO WINDROWER

15. Engage safety prop on the windrower's lift cylinder as follows:

- a. Pull lever (A) and rotate toward header to release, and lower safety prop onto cylinder.
- b. Repeat for opposite lift cylinder.

**IMPORTANT:**

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

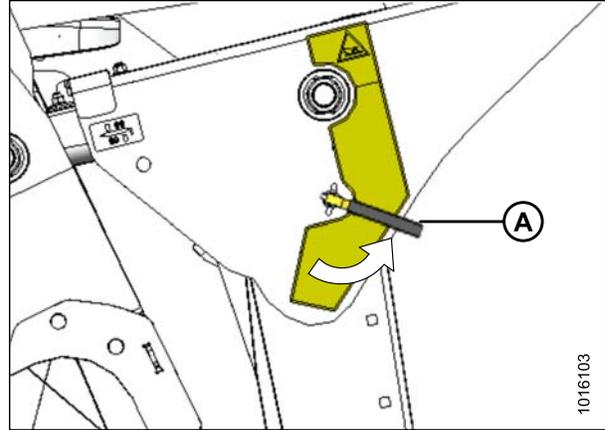


Figure 3.23: Cylinder Safety Prop

16. Install pin (B) through the header leg (engaging U-bracket in draper header support) on both sides and secure with a hairpin (A).
17. Raise header stand (D) to storage position by pulling spring pin (C) and lifting stand into uppermost position. Release spring pin.

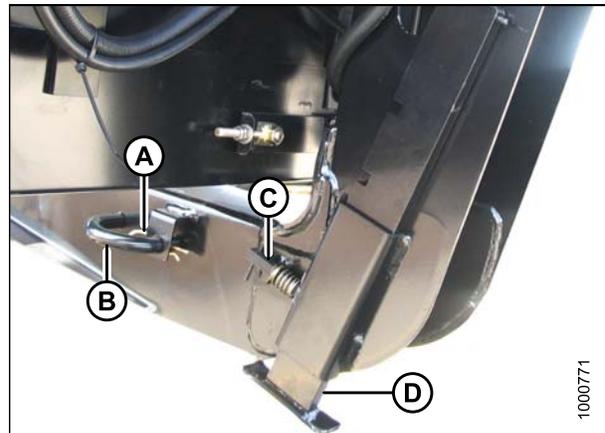


Figure 3.24: Header Leg

18. Disengage safety prop by turning lever (A) downward to raise safety prop until lever locks into vertical position.

**NOTE:**

If safety prop will not disengage, raise header slightly.

19. Repeat for opposite side.

**CAUTION**

Check to be sure all bystanders have cleared the area.

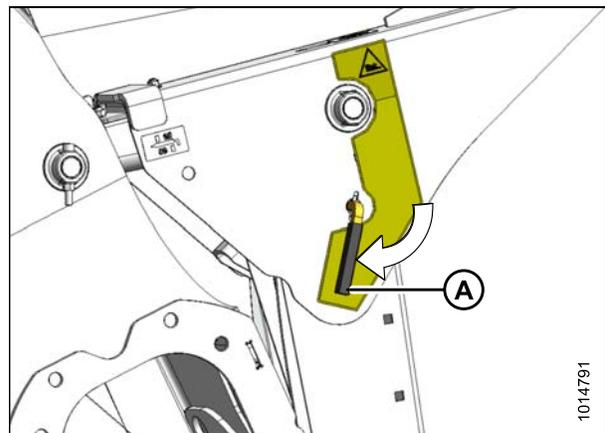


Figure 3.25: Cylinder Safety Prop



### 3.4 Connecting Hydraulics

**IMPORTANT:**

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

1. Move arm (A) toward left cab-forward side of windrower.
2. Remove all remaining ties and shipping wire from hose management arm.

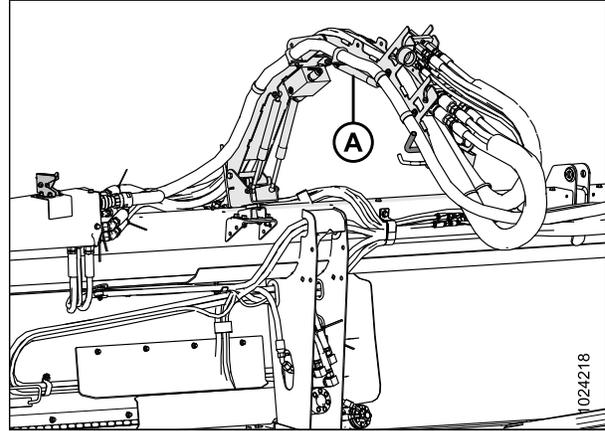


Figure 3.27: Hydraulic Hose Management Arm

3. Ensure cab door is closed on the left cab-forward side of the windrower.
4. Push latch (B), and pull platform (A) toward walking beam until it stops and latch engages.

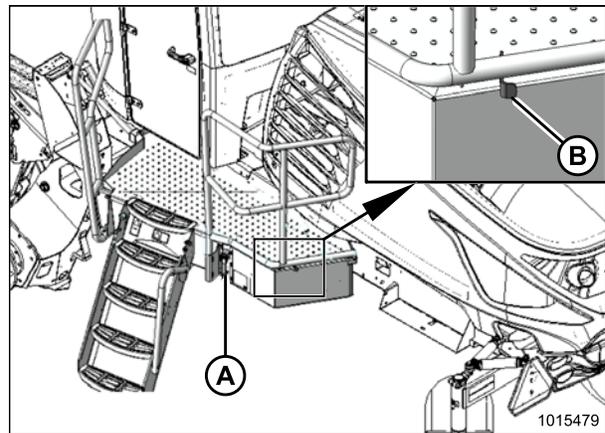


Figure 3.28: Platform

5. Connect hydraulic hose management arm (A) to windrower by securing the ball joint (B) on arm into the latch support (C) on windrower leg.

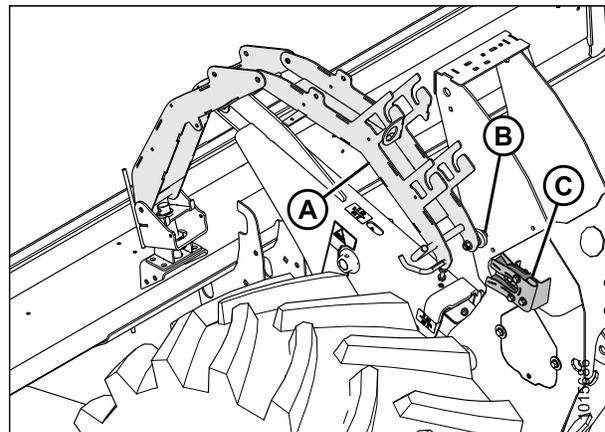


Figure 3.29: Hydraulic Hose Management Arm

## ATTACHING HEADER TO WINDROWER

6. Retrieve draper drive and reel control multicoupler (A) from hose management arm.
7. Push knob (B) on hydraulic receptacle and pull handle (C) fully away from windrower.
8. Open cover (D) and position coupler onto receptacle. Align pins in coupler with slots in handle (C) and push handle toward windrower so that coupler is locked onto receptacle and knob (B) snaps out.
9. Remove cover from electrical connector (E), push electrical connector onto receptacle, and secure by turning collar on electrical connector clockwise.
10. Remove hose quick-disconnect (F) from storage location and connect to receptacle on frame.
11. Retrieve knife and reel drive multicoupler (A) from hose management arm.
12. Push knob (B) on hydraulic receptacle and pull handle (C) fully away from windrower.
13. Open cover (D) and position coupler onto receptacle. Align pins in coupler with slots in handle (C) and push handle toward windrower so that coupler is locked onto receptacle and knob (B) snaps out.

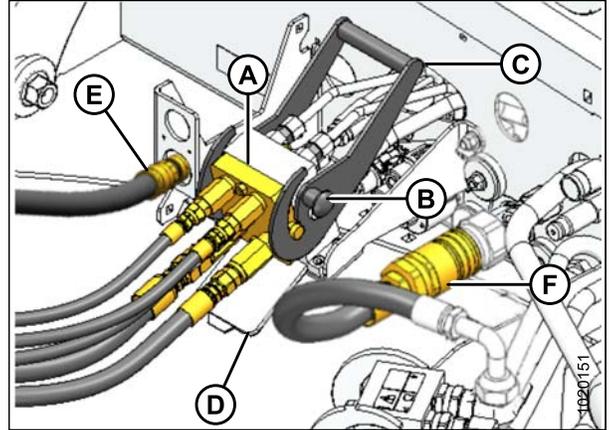


Figure 3.30: Draper/Reel Multicoupler

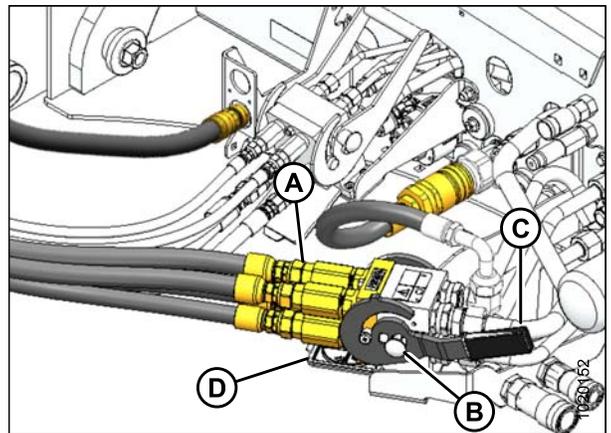


Figure 3.31: Knife/Reel Drive Multicoupler

14. Push latch (B) to unlock the platform (A).
15. Push the platform (B) towards the cab until it stops and latch engages.

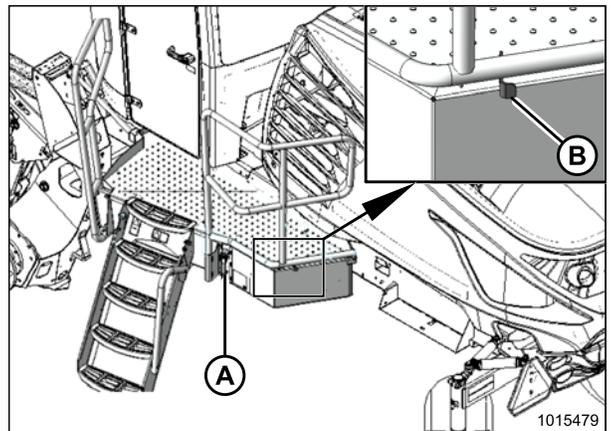
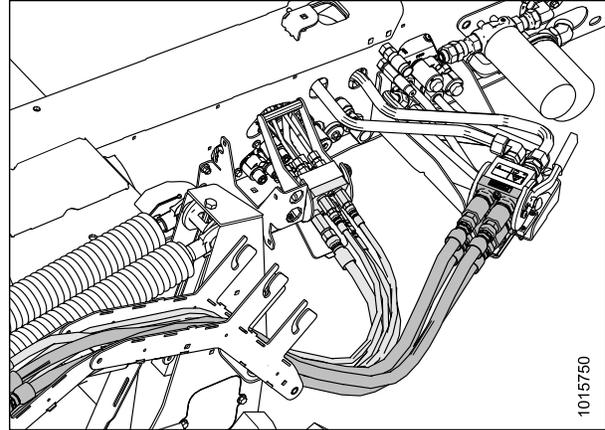


Figure 3.32: Platform

## ATTACHING HEADER TO WINDROWER

16. Ensure hydraulic hose routing is as straight as possible and avoids potential rub/wear points.



**Figure 3.33: Hydraulic Multicouplers and Hose Routing**

## 4 Assembling the Header

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

### 4.1 Attaching Reel Lift Cylinders

#### CAUTION

Bolts (A) (with tags) on reel arms keep the reel from sliding forward. Ensure fore-aft cylinders are attached before removing bolts.

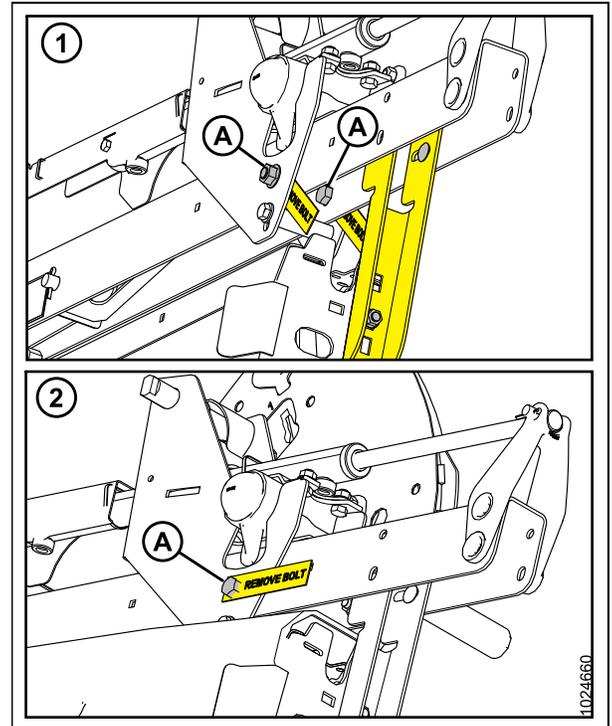


Figure 4.1: Right Reel Arm

1 - Single Reel

2 - Double Reel

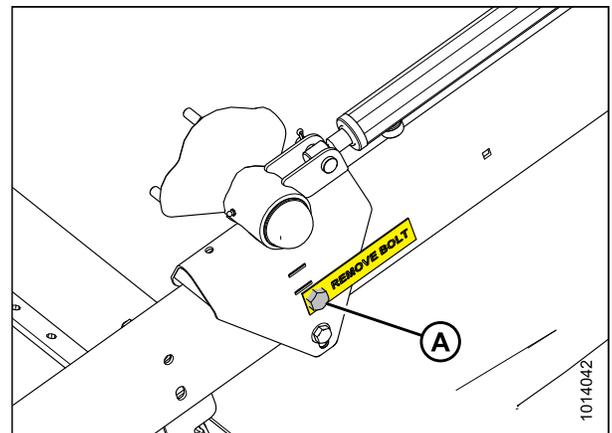


Figure 4.2: Left Reel Arm

## ASSEMBLING THE HEADER

### NOTE:

Some parts removed from illustration for clarity.

1. Position sling (A) around the reel tube (B) close to the outboard end of reel and attach sling to a forklift or equivalent lifting device.
2. Remove shipping wire/banding from the reel lift cylinder.

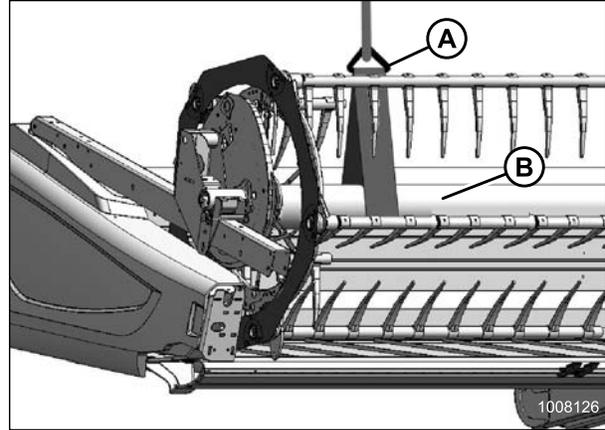


Figure 4.3: Reel Tube

3. Lift reel and remove two top bolts (A) on outboard reel arm supports. Repeat for opposite side.

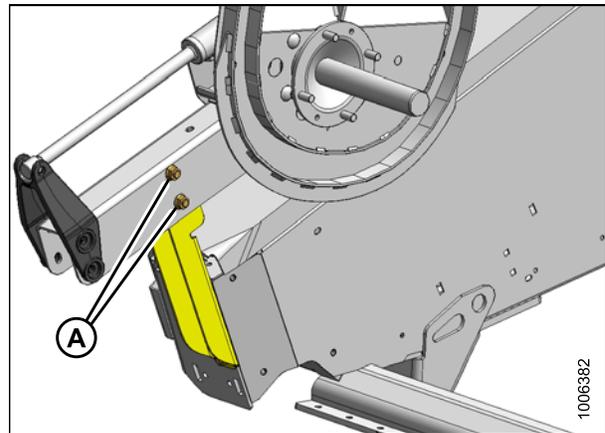


Figure 4.4: Outboard Reel Arm Support

4. **Double-reel headers only:** Lift reel and remove two top bolts (A) on center reel arm to allow the center reel arm to move.

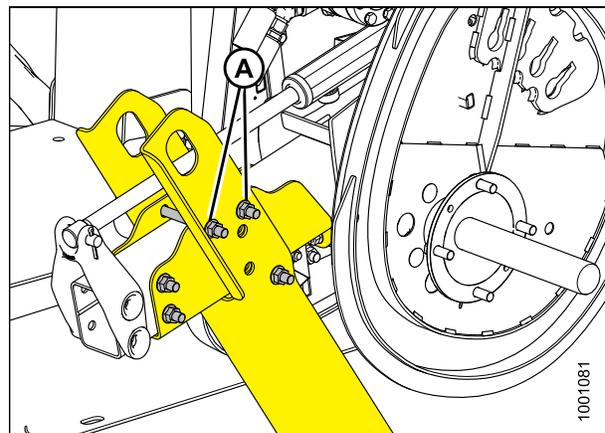


Figure 4.5: Center Reel Arm (Double-Reel Header Only)

## ASSEMBLING THE HEADER

5. Lift reel and remove pins from the endsheet and the reel arm.
6. Align the reel lift cylinder mounting holes until they line up with the lug on endsheet and the hole in the reel arm.
7. Secure cylinder to endsheet and reel arm with pins as shown.
  - Insert cotter pin (A) **OUTBOARD** at reel arm
  - Insert cotter pin (B) **INBOARD** at endsheet

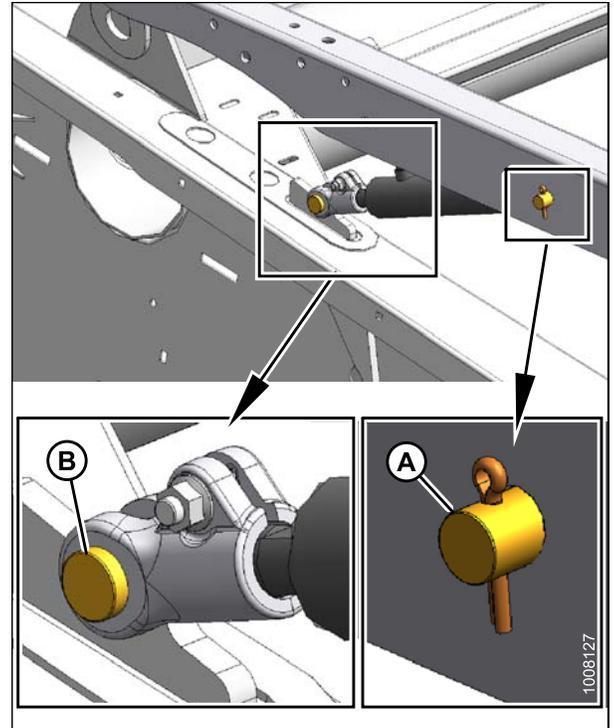


Figure 4.6: Right Side Shown

8. Move reel safety props (A) to engaged position (B) at outer arm.

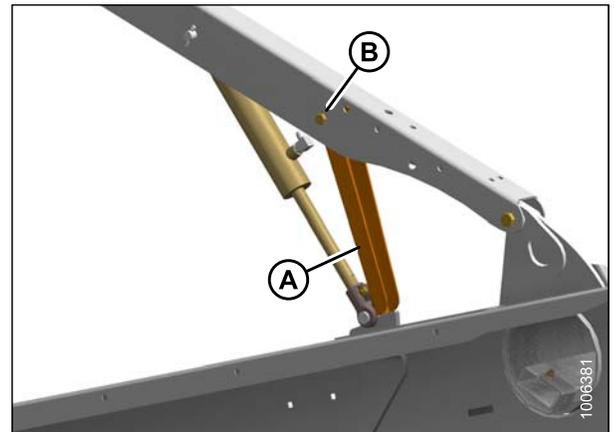


Figure 4.7: Reel Safety Props

## ASSEMBLING THE HEADER

### 9. *For double reel only:*

- a. Position sling (A) around the reel tube near the reel center support arm.
- b. Lift reel to gain access to the center lift cylinder.
- c. Remove shipping wire and banding from center reel lift cylinder.

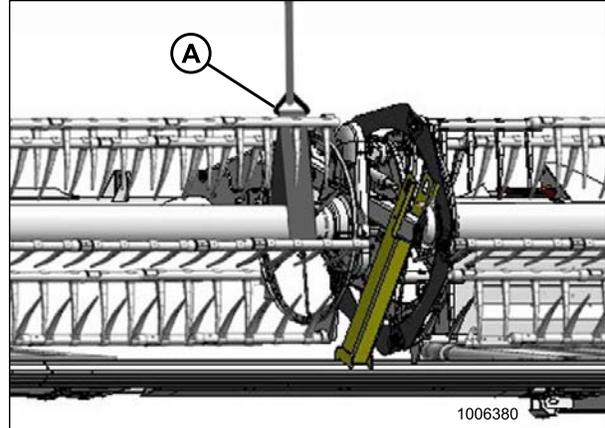


Figure 4.8: Lifting the Reel (Double Reel Only)

### 10. *For double reel only:*

- a. Remove 3/4 in. socket head bolt and 5/8 in. nut from cylinder rod end. Retain hardware.
- b. Attach rod end of cylinder (B) to reel arm with socket head bolt and nut (A). Access hardware through holes in reel arm braces.
- c. Torque bolt and nut (A) to 54–61 Nm (40–45 lbf-ft).
- d. Remove pin at barrel end of cylinder.
- e. Adjust reel height so pin can be installed at barrel end of cylinder and mounting structure.

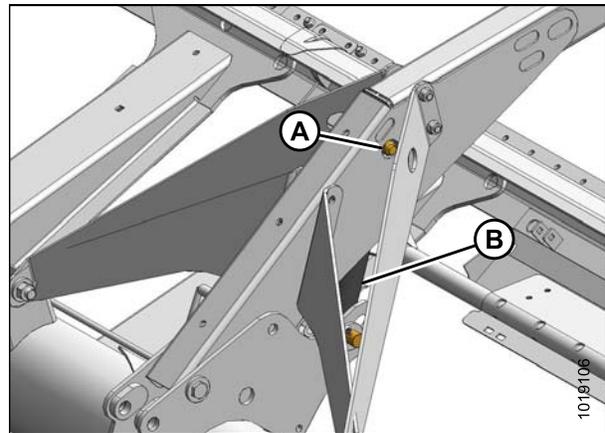


Figure 4.9: Reel Arm Braces

11. Reposition the sling (A) around reel tube near the opposite outboard reel arm.
12. Remove shipping wire and banding from the reel lift cylinder.

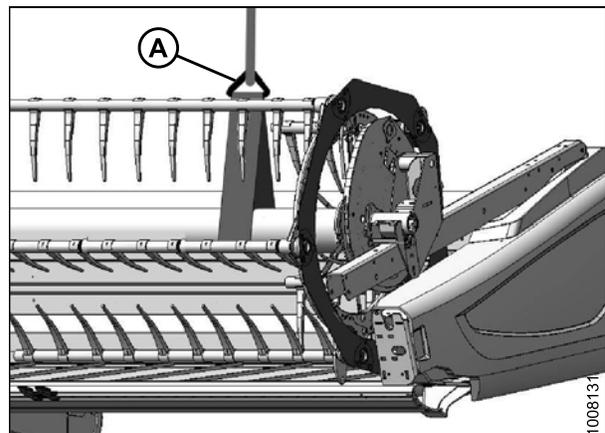


Figure 4.10: Outboard Reel Arm

## ASSEMBLING THE HEADER

13. Lift reel and remove pins from the endsheet (B) and the reel arm (A).
14. Align the reel lift cylinder mounting holes until they line up with the lug on endsheet and the hole in the reel arm.
15. Secure cylinder to endsheet and reel arm with pins as shown.
  - Insert cotter pin (A) **OUTBOARD** at reel arm
  - Insert cotter pin (B) **INBOARD** at endsheet

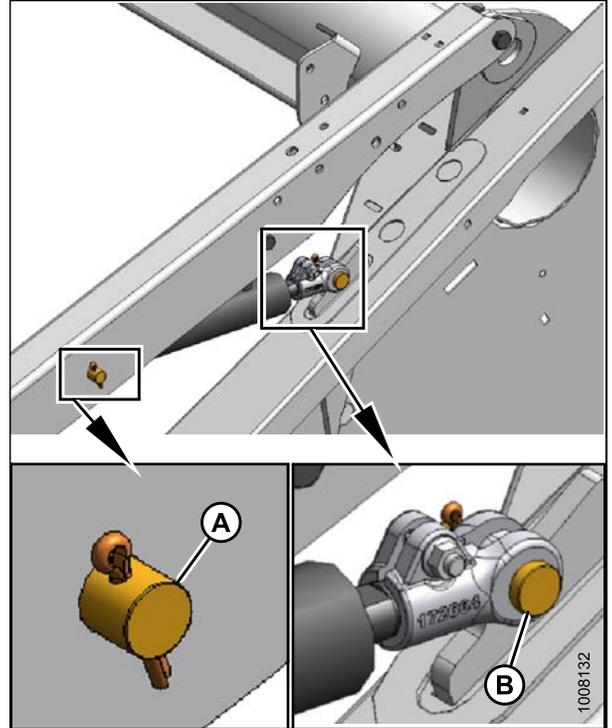


Figure 4.11: Cylinder and Endsheet

16. Move the reel safety props (A) to engaged position (B).

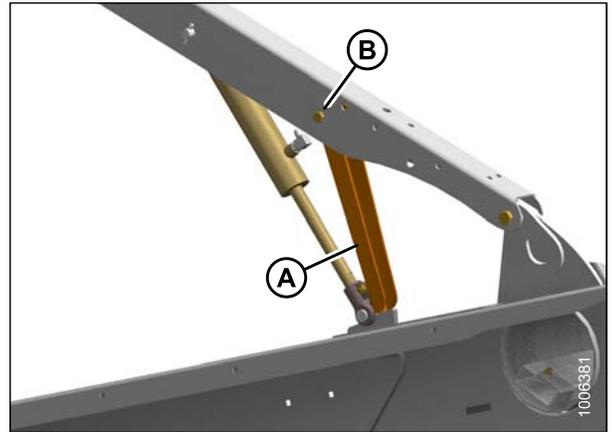


Figure 4.12: Reel Safety Prop

## ASSEMBLING THE HEADER

17. **Double reel only:** Remove the remaining bolt (A), disengage center reel arm shipping support (B) from cutterbar, and remove shipping support.

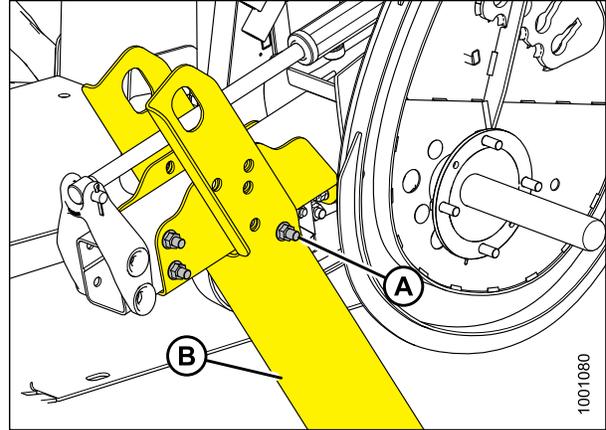


Figure 4.13: Center Reel Arm Shipping Support

18. Remove bolts (A) from reel arm support at endsheet and remove support. Repeat at other side.

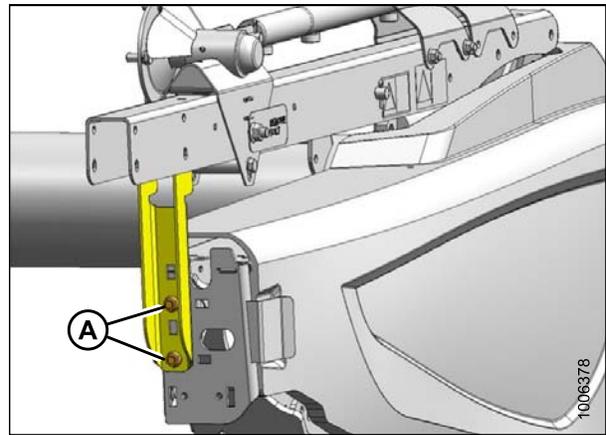


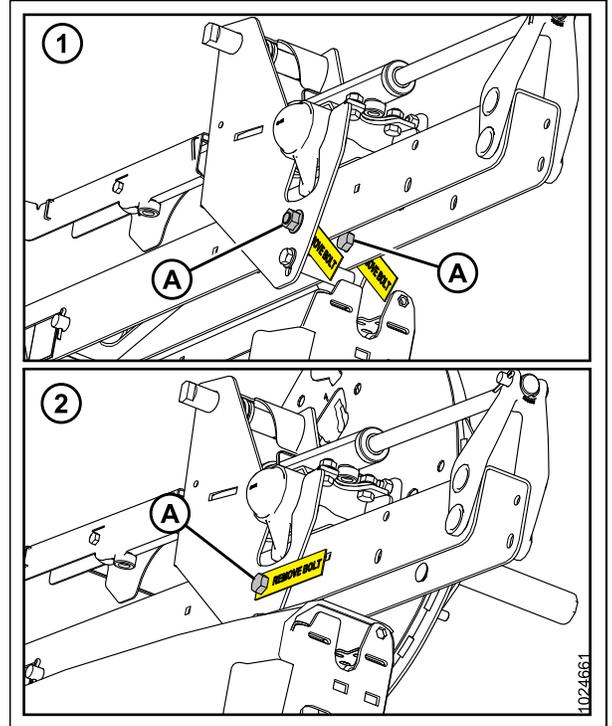
Figure 4.14: Outboard Reel Arm Supports

## ASSEMBLING THE HEADER

19. Remove brace bolts and tags (A) locking the reel fore-aft position at outer reel arms.

**NOTE:**

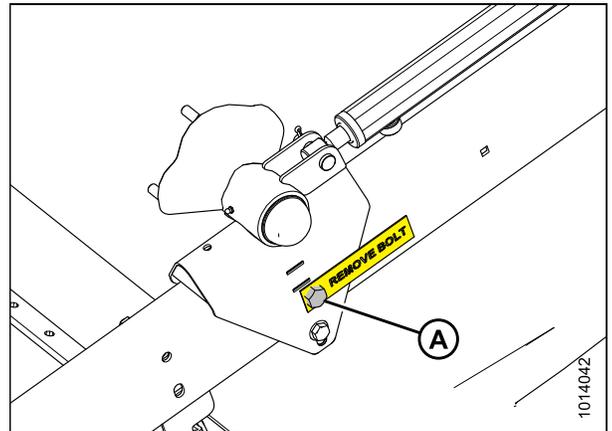
Do **NOT** use hydraulic pressure to move fore-aft cylinder to aid in removing brace bolts. Cylinder damage may occur.



**Figure 4.15: Right Reel Arm**

1 - Single Reel

2 - Double Reel



**Figure 4.16: Left Reel Arm**

## ASSEMBLING THE HEADER

20. **Double reel only:** Remove the remaining three bolts (A) locking the reel fore-aft position at the center reel arm and remove shipping channel (B).

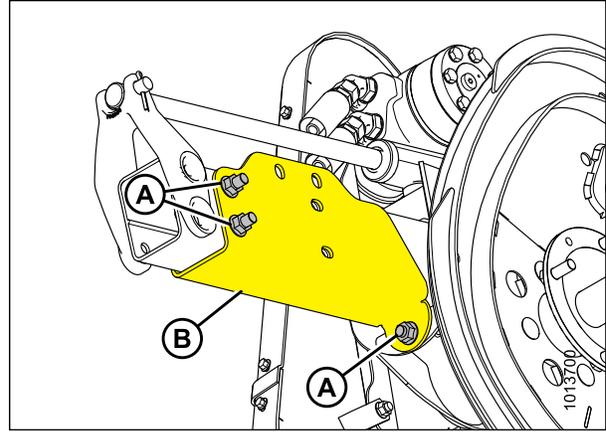


Figure 4.17: Center Reel Arm Shipping Channel (Double-Reel Header Only)

## 4.2 Installing Disc Segments of Outboard Reel Endshields

To meet the trucking load regulations for the maximum load width and height, two disc segments of the reel endshields (A) may have been removed from the right reel (tail end) and left reel (cam end). Check if reel endshields are completely installed. If not, install the two disc segments as follows:

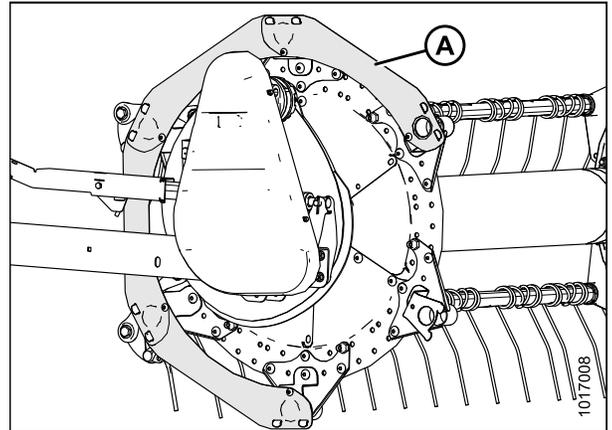


Figure 4.18: Partially Installed Reel Endshield (Cam End Shown, Tail End Similar)

1. Retrieve the bag of hardware removed from the center draper support.
2. Remove the two bolts (A) securing the disc segments to support tabs. Retain for reinstallation later.
3. Engage slots on disc segment (B) on endshield support tabs (C).

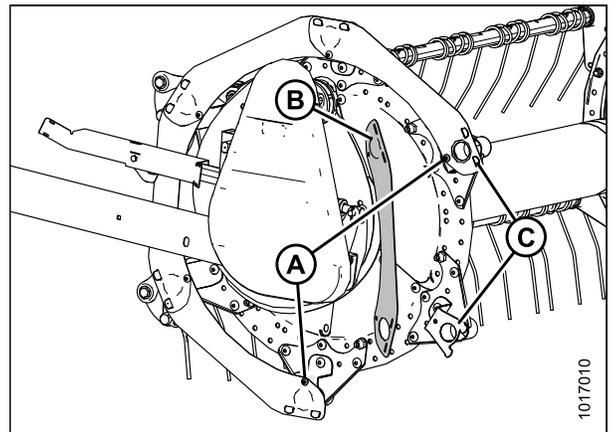


Figure 4.19: Reel Endshield

4. Secure the other end of the disc segment to support using the bolt (A) that was removed earlier.
5. Position last disc segment (B) in front of disc segment (C) and behind disc segment (D), engage endshield support tabs through all disc segments, and secure with two bolts (E).

**NOTE:**

It may be necessary to loosen hardware and use a pry tool to secure the last disc segment in place.

6. Repeat procedure at the opposite side.

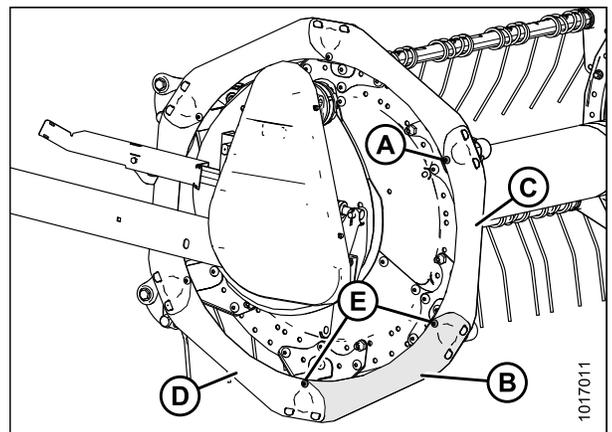


Figure 4.20: Reel Endshield

### 4.3 Attaching Cam Arms

To attach the reel cam arms, follow these steps:

1. Rotate the reel manually until the tine bars with disconnected cam links are accessible.
2. Remove shipping wire (A) (if not already removed).

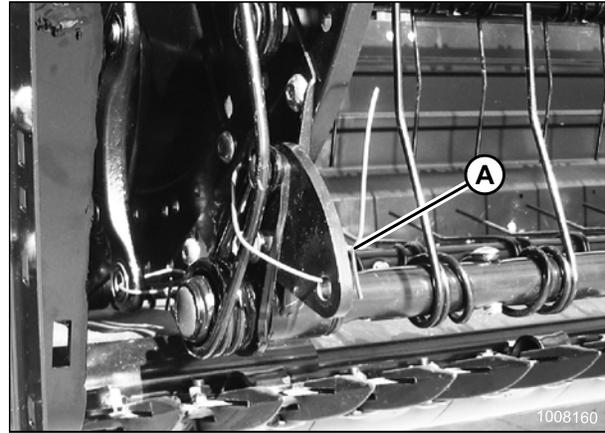


Figure 4.21: Disconnected Cam Links and Shipping Wire

3. Remove bag of hardware (A) from tine bar. It contains hardware for cam links and endshields.

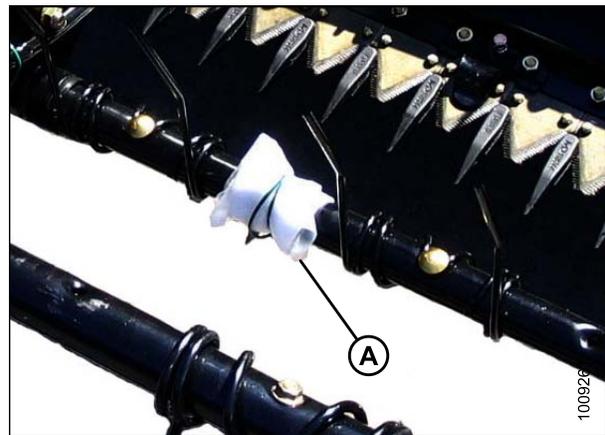


Figure 4.22: Hardware Bag Right Reel

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

**NOTE:**

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

6. Realign link (B) and tine bar crank (A) and thread in bolt (C).
7. Repeat for remaining tine bars and torque bolts to 165 Nm (120 lbf-ft).

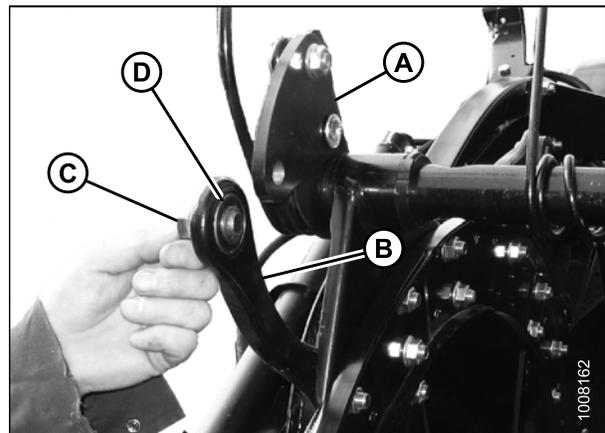


Figure 4.23: Bar Crank Attachment Holes and Link Alignment

## 4.4 Installing Crop Dividers

One crop and two rod dividers are stored on the right inboard side of the endsheet; the other crop divider is stored on the left inboard side of the endsheet.

1. Loosen the bolt at location (A) on the lock tab securing the divider rods (B) to the storage bracket (C).
2. Remove divider rods (B) from the storage bracket (C) and pull away from the lower divider rod support (D). Set aside for installation later.
3. Return lock tab to its original position and tighten bolt at location (A).

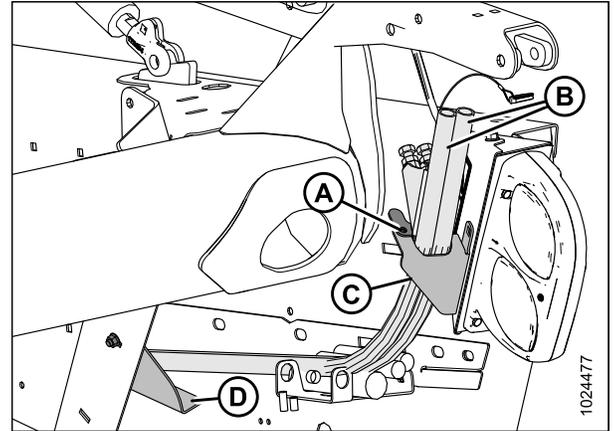


Figure 4.24: Divider Rods on Endsheet

4. Support the crop divider, remove shipping wire (A) at front end, and remove bolt (B).
5. Remove bolt and washer (C).

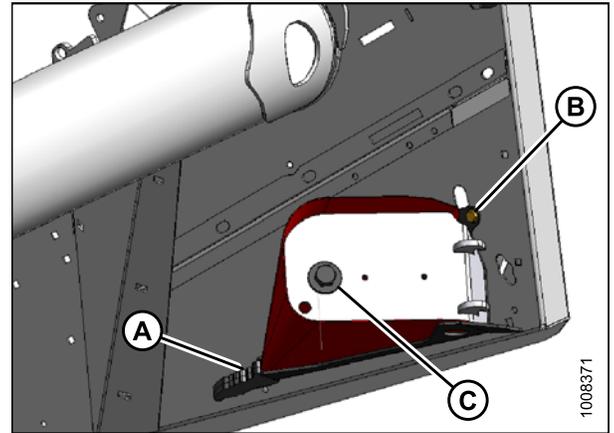


Figure 4.25: Crop Divider on Endsheet

6. Position crop divider as shown and insert lugs (A) into slots (B) in endsheet.

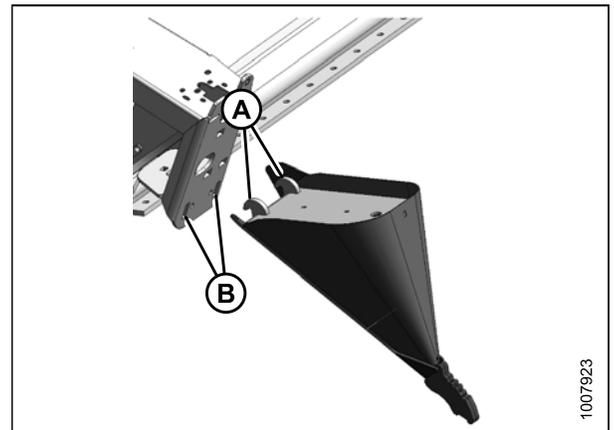


Figure 4.26: Crop Divider Lugs and Endsheet Slots

## ASSEMBLING THE HEADER

7. Lift forward end of divider up to endsheet and install washer (A) and bolt (B).

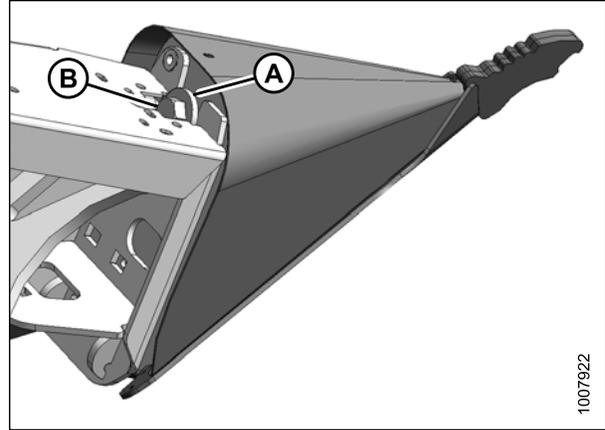


Figure 4.27: Installation Hardware

8. Position divider rod (B) on tip of crop divider as shown and tighten bolt (A).

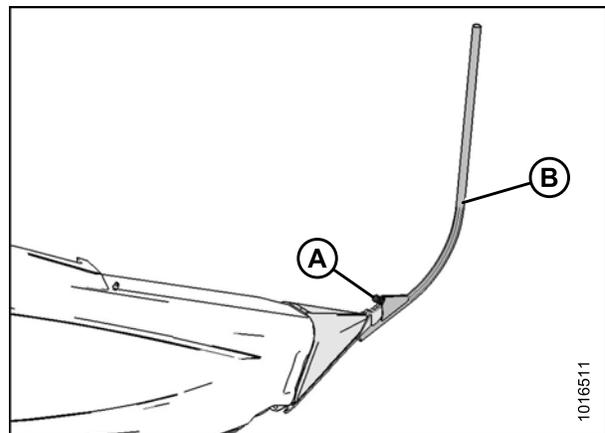


Figure 4.28: Divider Rod on Crop Divider

9. Check that divider does **NOT** move laterally. Adjust bolts (A) as required to tighten divider and remove lateral play when pulling at divider tip.
10. Repeat Step 4, [page 41](#) to Step 9, [page 42](#) on the left side of the header.

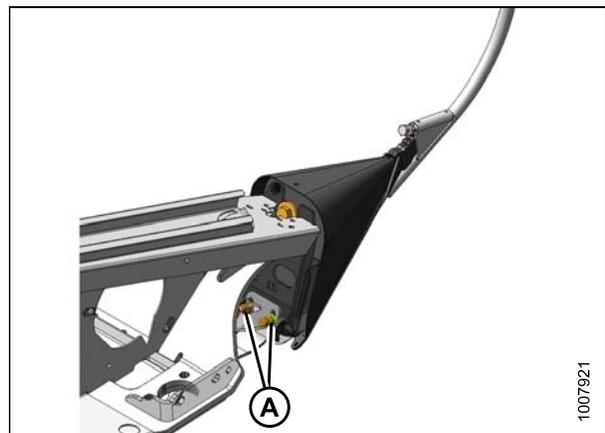
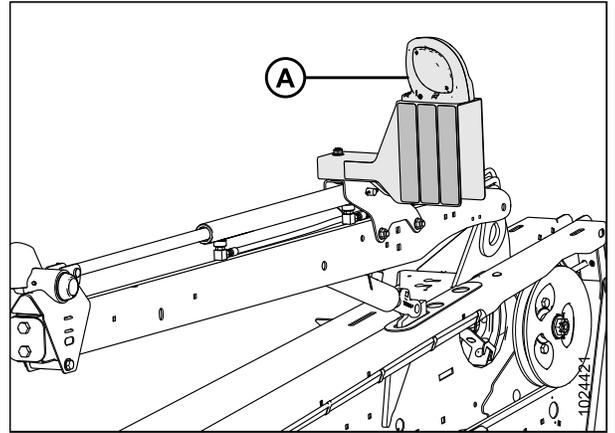


Figure 4.29: Adjustment Hardware

## 4.5 Positioning Transport Lights

Transport lights are located on each of the outboard reel arms.

1. Position lights (A) perpendicular to header.



**Figure 4.30: Transport Light Perpendicular to Header**

## 4.6 Installing Options

Retrieve the kits supplied as options with the header, and install them according to the instructions supplied with each kit.

## ASSEMBLING THE HEADER

### 4.7 Adding Ballast

M1 Series windrowers use counterweight kits to add ballast. The counterweights are used to improve a windrower's balance while operating with a header. Each kit comes with eight counterweights totaling 163 kg (360 lb.) and required hardware. The M1 Series windrowers will hold a maximum of 24 counterweights totaling 490 kg (1080 lb.).

Table 4.1, page 45 lists the number of counterweight kits required for each D1XL Series and D125X header configuration. Install them according to the instructions supplied with each kit.

**Table 4.1 Available Ballast Kits for Different Header Types and Configurations**

Header Type	Description	Header Configuration	Initial Rear Ballast Kit	Additional Rear Ballast Kits
D125X	7.6-m (25-ft.) single reel, double knife, timed	Base	–	–
D130XL	9.1-m (30-ft.) single reel, double knife, timed	Transport	–	–
D130XL	9.1-m (30-ft.) single reel, double knife, timed	Transport, Upper cross auger, Vertical knives	–	–
D135XL	10.6-m (35-ft.) single reel, double knife, untimed	Base	–	–
D135XL	10.6-m (35-ft.) single reel, double knife, untimed	Transport	–	–
D135XL	10.6-m (35-ft.) single reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	–	–
D135XL	10.6-m (35-ft.) double reel, double knife, untimed	Base	–	–
D135XL	10.6-m (35-ft.) double reel, double knife, untimed	Transport	–	–
D135XL	10.6-m (35-ft.) double reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	–	–
D140XL	12.2-m (40-ft.) double reel, double knife, untimed	Base	–	–
D140XL	12.2-m (40-ft.) double reel, double knife, untimed	Transport	–	–
D140XL	12.2-m (40-ft.) double reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	1	–
D145XL	13.7-m (45-ft.) double reel, double knife, untimed	Base	1	–

## ASSEMBLING THE HEADER

**Table 4.1 Available Ballast Kits for Different Header Types and Configurations (continued)**

Header Type	Description	Header Configuration	Initial Rear Ballast Kit	Additional Rear Ballast Kits
D145XL	13.7-m (45-ft.) double reel, double knife, untimed	Transport	1	1
D145XL	13.7-m (45-ft.) double reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	1	1

When the recommended fluid ballast has been added, proceed to [5 Performing Predelivery Checks, page 47](#).

## 5 Performing Predelivery Checks

This machine has been set at the factory and should not require further adjustments; however, 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 making adjustments to 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 95](#)) 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.

### 5.1 Checking Tire Pressure: Transport and Stabilizer Wheels

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

**Table 5.1 Tire Inflation Pressure**

Tire	Size	Pressure
Goodyear Wrangler RT/S	205/75 R15	276 kPa (40 psi)
Carlisle and Titan	ST205/75 R15	448 kPa (65 psi)

#### **IMPORTANT:**

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

## 5.2 Checking Wheel Bolt Torque

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

1. Check wheel bolt torque is 110–120 Nm (80–90 lbf·ft) and adjust as necessary. Refer to bolt tightening sequence illustration.

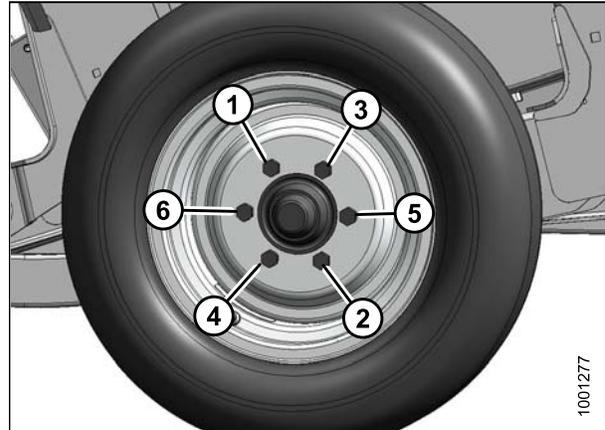


Figure 5.1: Bolt Tightening Sequence

### 5.3 Checking 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), endshield(s) must be fully opened.

**⚠ WARNING**

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

1. Press down on the latch in the opening (A) on the inboard side of the endsheet.
2. Pull endshield open using handle depression (B).

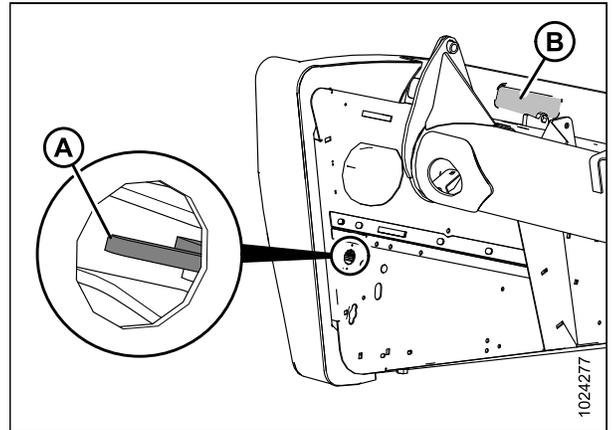


Figure 5.2: Endshield Latch Access

3. Swivel the endshield toward the back of the header and use the safety latch (B) to secure the endshield support tube (A) to the endsheet.

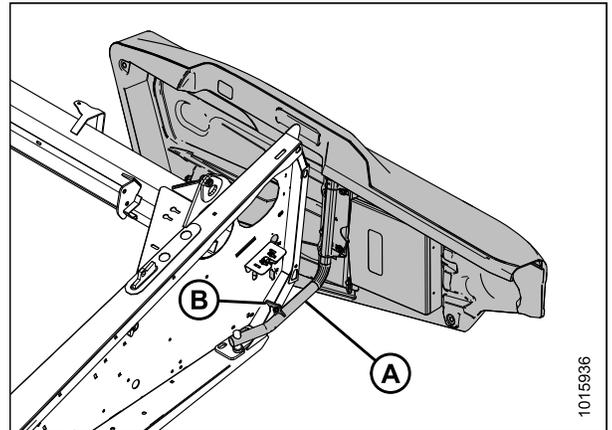


Figure 5.3: Left Endshield Support Tube

## PERFORMING PREDELIVERY CHECKS

### IMPORTANT:

The knife drive box breather is shipped in position (A) (forward) to prevent oil loss during transport. The breather **MUST** be repositioned to location (B) to prevent oil loss during normal operation. Failure to do so can result in damage to the knife drive box.

4. Check position of plug (A) and breather (B) at knife drive box. Position **MUST** be as shown.
5. Remove breather (B) and check oil level. The oil level should be between the bottom edge (C) of the lower hole (D) and the bottom (E) of the breather.

### NOTE:

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

6. Reinstall breather and tighten.

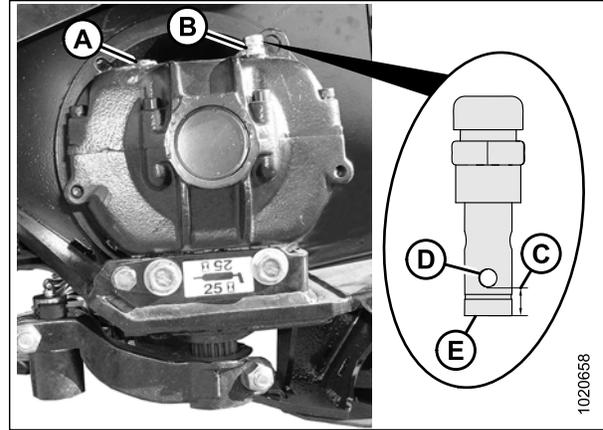


Figure 5.4: Knife Drive Box

## 5.4 Checking and Adjusting Knife Drive Belt Tension

Proceed to the section that applies to the header's knife drive configuration:

- [5.4.1 Checking and Tensioning Non-Timed Knife Drive Belts, page 51](#)
- [5.4.2 Tensioning Timed Knife Drive Belts, page 52](#)
- [5.4.3 Tensioning Timed Knife Drive V-Belts, page 54](#)

Single-knife headers have one knife-drive belt and double-knife headers have two knife-drive belts.

### 5.4.1 Checking and Tensioning Non-Timed Knife Drive Belts

#### WARNING

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

#### IMPORTANT:

To prolong the belt and drive life, do **NOT** overtighten the belt.

1. Open the left endshield.

#### NOTE:

Belt guide removed for clarity.

2. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
3. Check drive belt tension. A properly tensioned drive belt (C) should deflect 24–28 mm (15/16–1-1/8 in.) when 133 N (30 lbf) of force is applied at the midspan. If the belt needs to be tensioned, turn the adjuster bolt (B) clockwise to move the drive motor until proper tension is set.
4. Ensure the clearance between the belt (A) and the belt guide (B) is 1 mm (1/16 in.).
5. Loosen the three bolts (C), and adjust the position of the guide (B) as required.
6. Tighten the three bolts (C).
7. Close the endshield.
8. **Double-knife headers only:** Repeat procedure on the other side of the header.

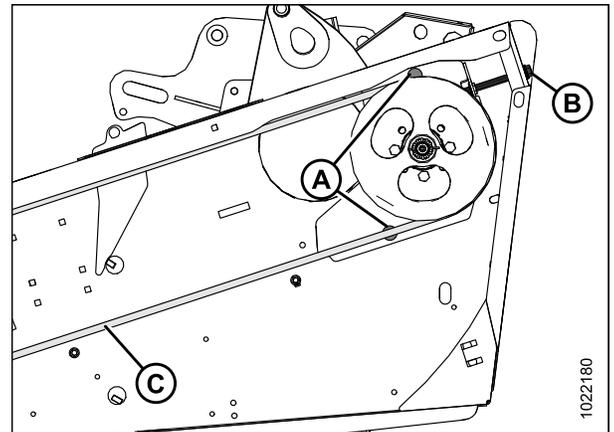


Figure 5.5: Non-Timed Double-Knife Drive

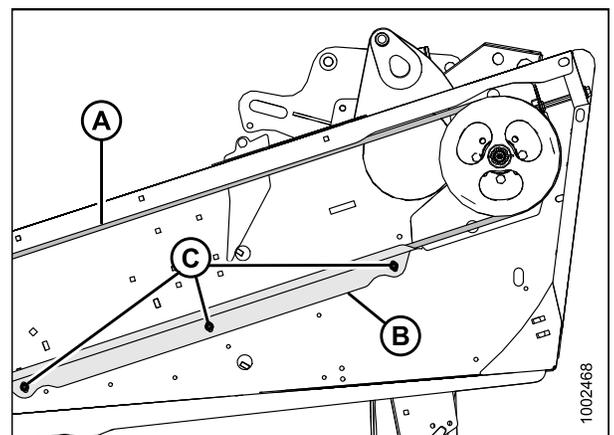


Figure 5.6: Knife Drive

### 5.4.2 Tensioning Timed Knife Drive Belts

The procedure for tensioning timed knife drive belts is the same for both sides of the header. The illustrations shown are for the left side—the right side is opposite.

**IMPORTANT:**

To prolong belt and drive life, do **NOT** over tighten belt.

**IMPORTANT:**

Do **NOT** use the adjuster bolt at the drive pulley to adjust timing belt tension.

1. Open the endshield.
2. Loosen two nuts (A) enough to allow the idler pulleys (B) to pivot.

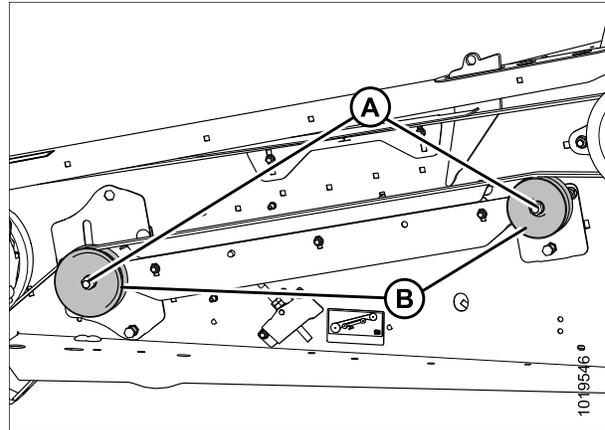


Figure 5.7: Left Knife Drive

3. Thread flange nut (C) down adjuster bolt (B) to push the bracket (A) up.

**NOTE:**

Tension is checked at midspan of the belts. The belts should deflect 20 mm (3/4 in.) with 89 N (20 lbf) of force applied to belt.

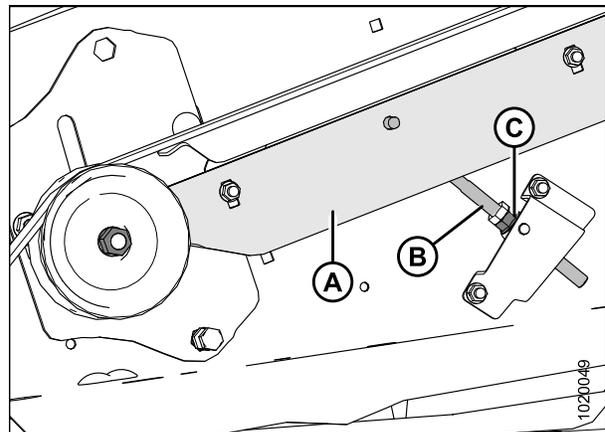


Figure 5.8: Left Knife Drive

## PERFORMING PREDELIVERY CHECKS

4. Tighten nuts (A) on idler pulleys (B) to 217 Nm (160 lbf-ft).

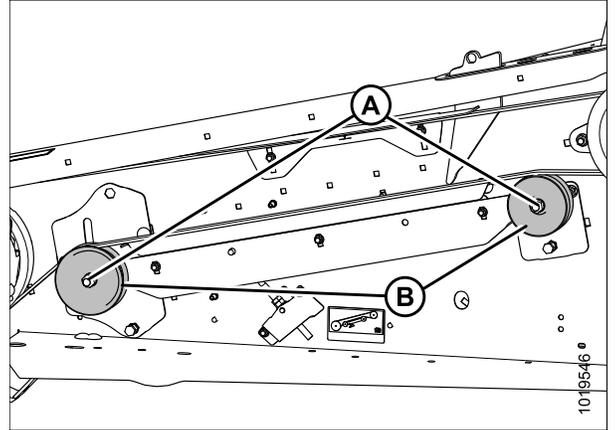


Figure 5.9: Left Knife Drive

5. Tighten jam nut (A) to prevent loosening of the adjuster bolt (B).

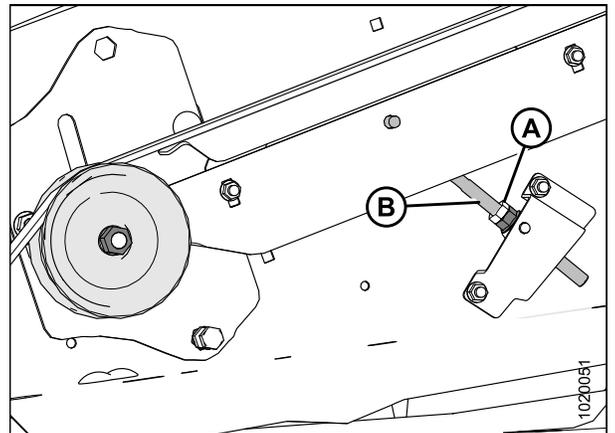


Figure 5.10: Left Knife Drive

6. Ensure there is a clearance of 2.5–3.5 mm (1/8 in.) between the lower belt (A) and lower guide (B).
7. If necessary, loosen the three bolts (C) and adjust lower guide (B) as required. Tighten bolts.
8. Check that upper belt (D) and upper guide (E) also have a clearance of 1.5–2.5 mm (1/16–1/8 in.). If necessary, loosen the two bolts (F) and adjust as required. Tighten the bolts.
9. Close the endshield.
10. Repeat procedure for other side of header.

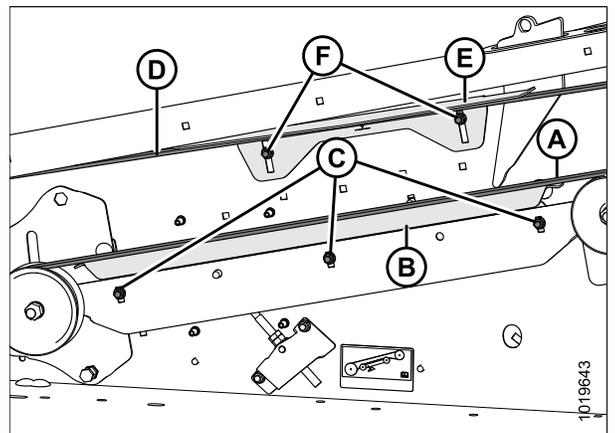


Figure 5.11: Left Knife Drive

## PERFORMING PREDELIVERY CHECKS

### 5.4.3 Tensioning Timed Knife Drive V-Belts

1. Loosen the two bolts (A).
2. Turn drawbolt (B) clockwise to tighten or counterclockwise to loosen belts' (C) tension.

**NOTE:**

Tension is checked at mid-span of the belts. The belts should deflect 4 mm (5/32 in.) with 52–77 N (12–17 lbf) of force applied to each belt.

3. Tighten bolts (A).

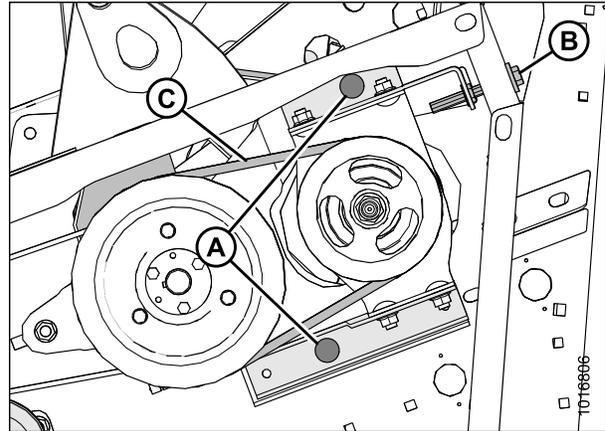


Figure 5.12: Knife Drive V-belts

## 5.5 Centering the Reel

Refer to the topic for header type:

- [5.5.1 Centering Double Reels, page 55](#)
- [5.5.2 Centering Single Reel, page 56](#)

### 5.5.1 Centering Double Reels

#### WARNING

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

1. Measure clearances at locations (A) between reels and both endsheets. The clearances should be the same if the reels are centered. If the reels are not centered, proceed to Step 2, [page 55](#).

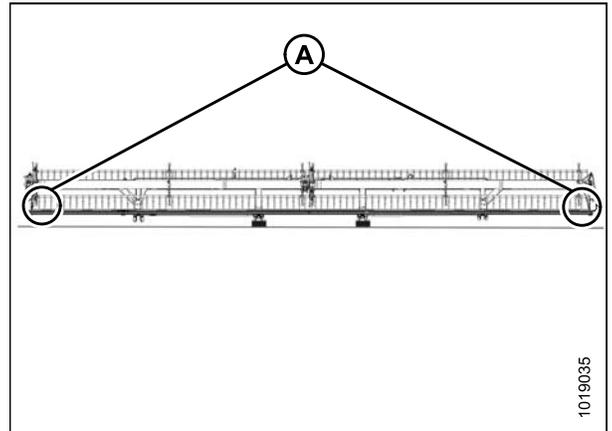


Figure 5.13: Double Reel Measurement Locations

2. Loosen bolts (A) on each brace (B) located on both sides of the reel support arm (C).
3. Move the forward end of the reel center support arm (C) laterally as required, to center both reels.
4. Tighten bolts (A) and torque to 359 Nm (265 lbf-ft).

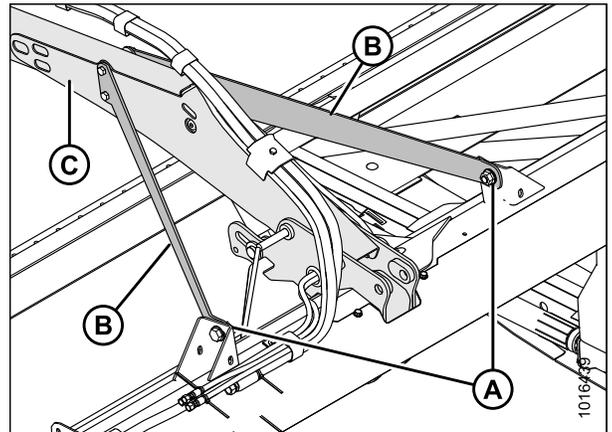


Figure 5.14: Reel Center Support Arm

## 5.5.2 Centering Single Reel

### WARNING

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

1. Measure the clearance at locations (A) between the reel and endsheets. The clearances should be the same if the reel is centered. If not centered, continue on the next step.

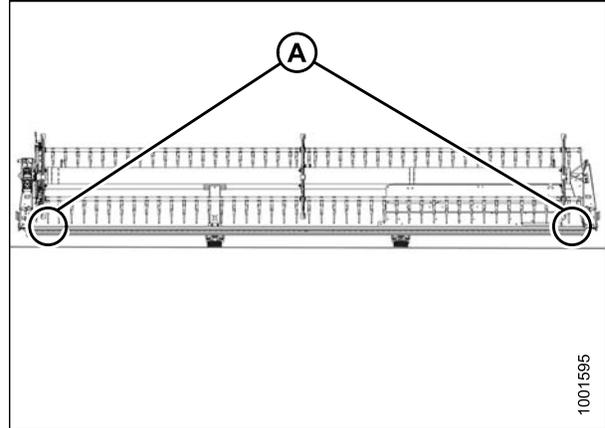


Figure 5.15: Single Reel Measurement Locations

2. Loosen bolt (A) on the brace (B) at both ends of the reel.
3. Move the forward end of the reel support arm (C) laterally as required, to center the reel.
4. Tighten bolts (A) and torque to 359 Nm (265 lbf-ft).

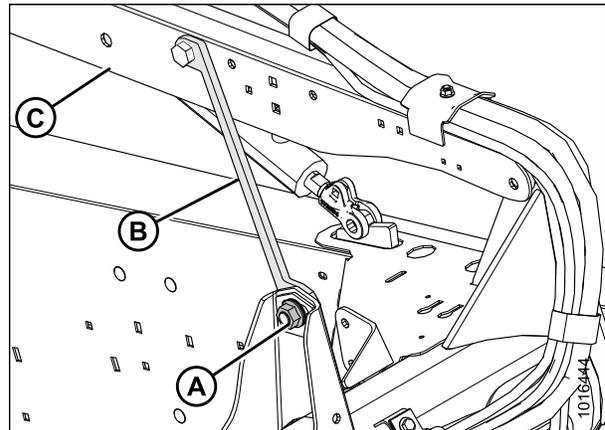


Figure 5.16: Reel Support Arm

## 5.6 Adjusting Draper Tension

### WARNING

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.

1. Ensure the white indicator bar (A) is at the halfway point in the window.

### WARNING

Check to be sure all bystanders have cleared the area.

2. Start the engine and fully raise the header.
3. Shut down the windrower, 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 (A) on the drive roller.

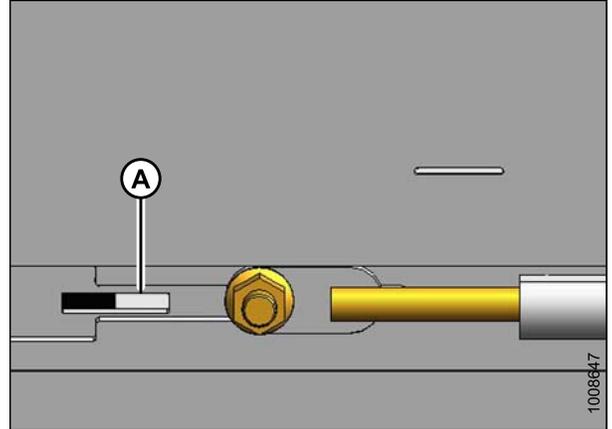


Figure 5.17: Left Side Tension Adjuster Shown – Right Side Opposite

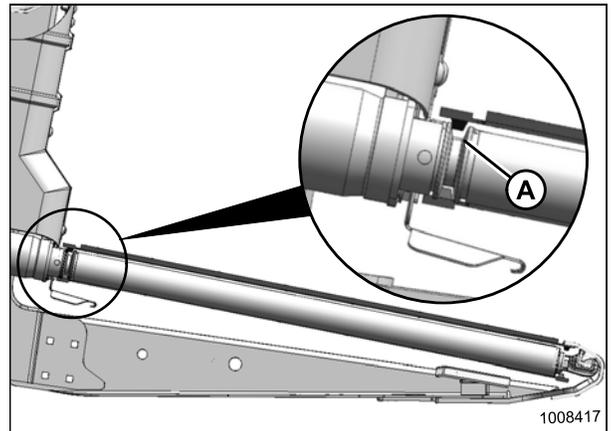


Figure 5.18: Drive Roller

## PERFORMING PREDELIVERY CHECKS

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

**NOTE:**

If adjustment is required, tension the drapers just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

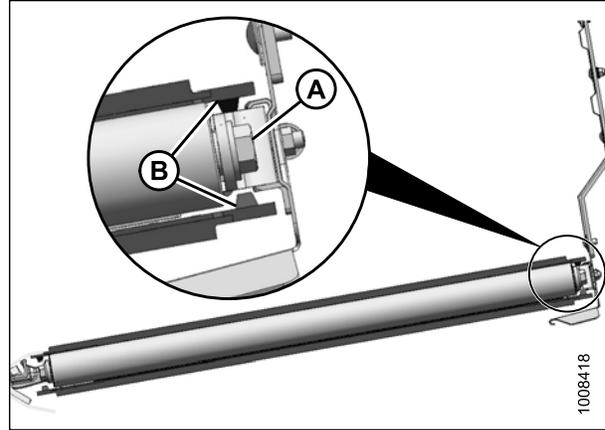


Figure 5.19: Idler Roller

**IMPORTANT:**

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

7. To loosen the adjuster bolt (A), turn it counterclockwise. The white indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the draper is loosening. Loosen until the white indicator bar is at the halfway point in the window.
8. To tighten the adjuster bolt (A), turn it clockwise. The white indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten until the white indicator bar is at the halfway point in the window.

**IMPORTANT:**

- To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tension set so the white bar is not visible.
- To prevent scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

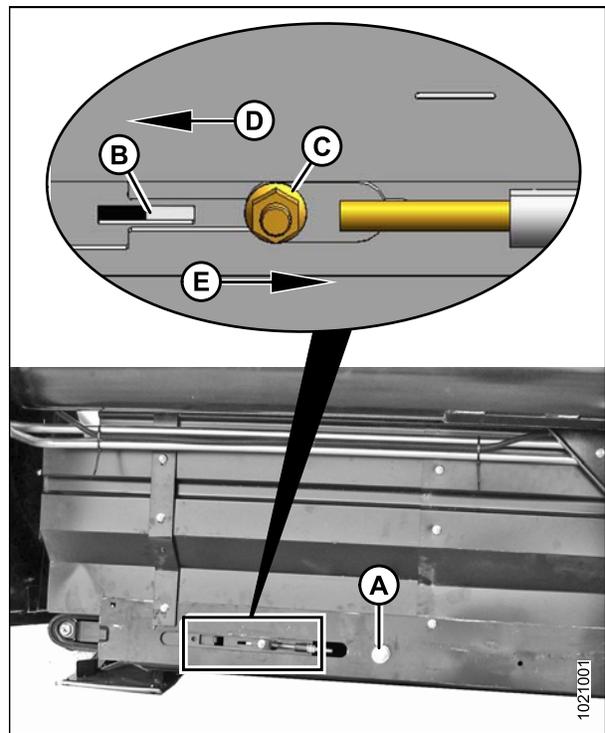


Figure 5.20: Left Side Tension Adjuster Shown – Right Side Opposite

## 5.7 Checking and Adjusting Draper Seal

Maintain the deck height such that the draper runs just below the cutterbar.

**IMPORTANT:**

New factory-installed drapers are pressure and heat checked at the factory. The gap between the draper (A) and cutterbar (B) is set to 1–3 mm (1/32–1/8 in.). To prevent material from entering the drapers and cutterbar, you may need to decrease the deck clearance to 0 mm (0 in.) after an initial break-in period of approximately 50 hours.

1. Check deck height. Draper (A) should run just below cutterbar (B) with a gap of 1–3 mm (1/32–1/8 in.) between the top of deck front track and cutterbar.
  - If deck height is acceptable, skip the remaining steps and proceed to [5.8 Checking and Adjusting Skid Shoe Settings, page 61](#).
  - If deck height is **NOT** acceptable, adjust seal as described in the following steps:

**NOTE:**

Take measurement at deck supports (A) with the header in working position. There are between two and five supports per deck depending on header size.

2. Loosen tension on drapers. For instructions, refer to [5.6 Adjusting Draper Tension, page 57](#).

3. Lift draper (A) up at front edge past cutterbar (B).

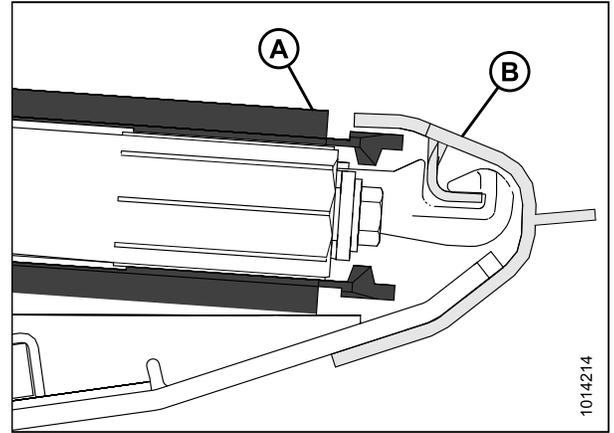


Figure 5.21: Draper/Cutterbar Gap

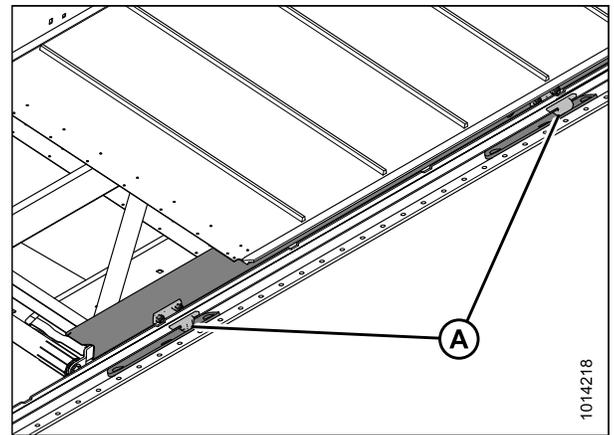


Figure 5.22: Draper Deck Supports

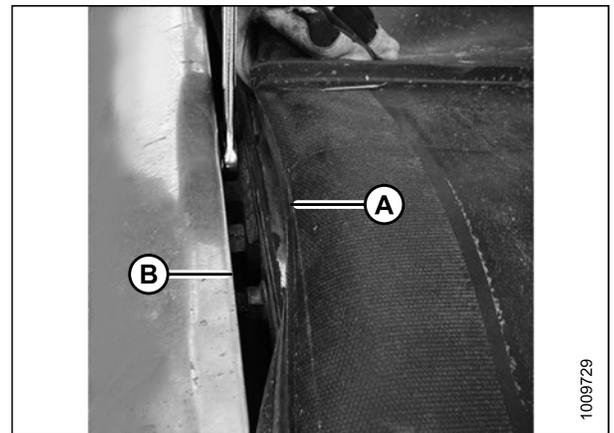


Figure 5.23: Draper and Cutterbar

## PERFORMING PREDELIVERY CHECKS

4. Loosen two lock nuts (A) only one-half-turn on deck support (B).
5. Tap deck (C) to lower deck relative to supports and achieve the recommended setting. Tap support (B) using a punch to raise deck relative to supports.
6. Tighten deck support hardware (A).

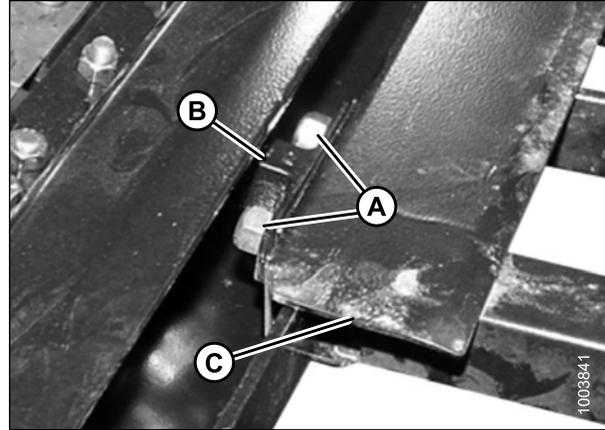


Figure 5.24: Draper Deck Supports (Draper Removed)

7. Tension drapers. Refer to [5.6 Adjusting Draper Tension, page 57](#).

## 5.8 Checking and Adjusting Skid Shoe Settings

To check and adjust skid shoes, follow these steps:

### WARNING

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.

### DANGER

Engage header safety props and reel props before working under header or reel.

1. Check the adjustment hole positions on the lugs (A) on each skid shoe. They should be the same.
2. If necessary, adjust skid shoe as follows:
  - a. Remove lynch pin (B).
  - b. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
  - c. Raise or lower skid shoe to desired position using holes in support as a guide.
  - d. Reinsert pin (C), engage in frame, and secure with lynch pin (B).
  - e. Check that all skid shoes are adjusted to the same position.

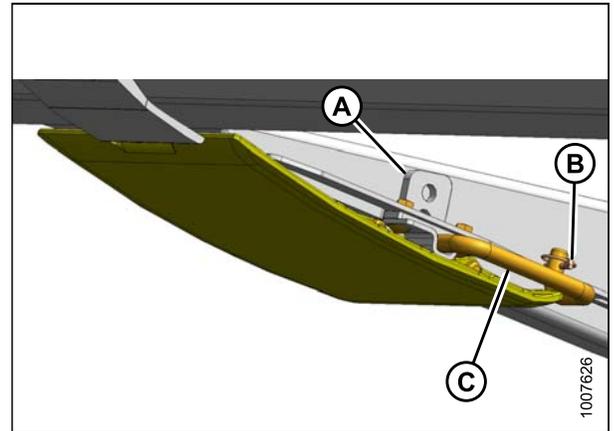


Figure 5.25: Inner Skid Shoe

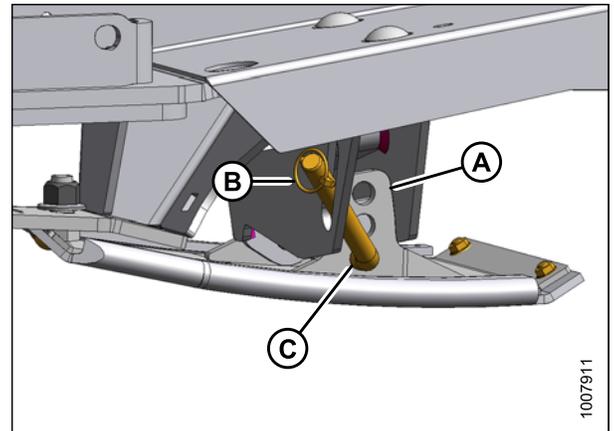


Figure 5.26: Outer Skid Shoe

## 5.9 Leveling the Header

The windrower linkages are factory-set to provide the proper level for the header and should not normally require adjustment.

1. If the header is not level, check the pressure of the windrower's tires to ensure they are properly inflated (refer to your windrower operator's manual).
2. If the header is still not level, adjust the windrower linkages as required (refer to the appropriate section in the windrower operator's manual).

**NOTE:**

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

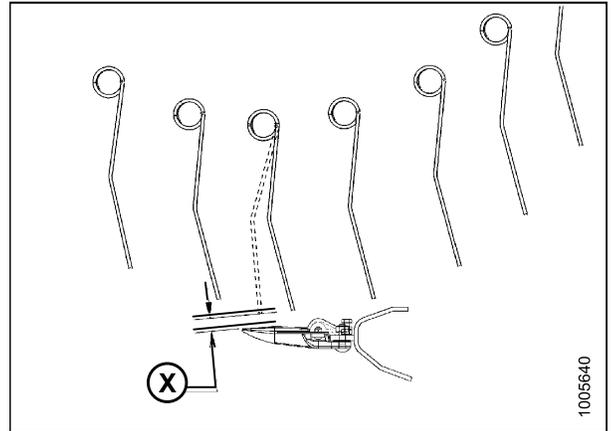
## 5.10 Measuring and Adjusting Reel Clearance to Cutterbar

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 clearances with reels fully lowered are shown in Table 5.2, page 63.

**Table 5.2 Finger to Guard/Cutterbar Clearance**

Header Width	(X) 3 mm (+/- 1/8 in.) at Reel Ends	
	Single Reel	Double Reel
4.6 m (15 ft.)	20 mm (3/4 in.)	—
6.1 m (20 ft.)	20 mm (3/4 in.)	—
7.6 m (25 ft.)	25 mm (1 in.)	—
9.1 m (30 ft.)	55 mm (2-11/64 in.)	—
10.7 m (35 ft.)	70 mm (2-3/4 in.)	25 mm (1 in.)
12.2 m (40 ft.)	—	25 mm (1 in.)
13.7 m (45 ft.)	—	25 mm (1 in.)



**Figure 5.27: Finger Clearance**

### 5.10.1 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.

1. Park the header on level ground.

## PERFORMING PREDELIVERY CHECKS

2. Set the fore-aft position to the middle position 5 on the fore-aft position decal (A).
3. Lower the reel fully.
4. Shut down the engine and remove key from the ignition.

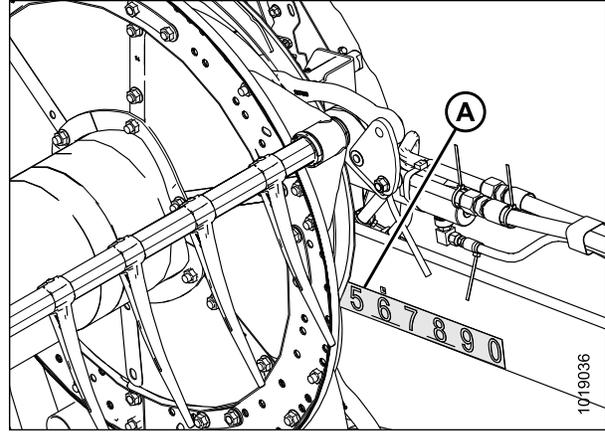


Figure 5.28: Fore-Aft Position

5. Measure the clearance (X) at all possible points of contact (between points [B] and [C] at the ends of each reel [A]) as shown in the illustrations at right.

**NOTE:**

The reel is factory-set to provide more clearance at the center of the reel than at the ends (frown) to compensate for reel flexing.

**NOTE:**

When measuring reel clearance at the center of a double-reel header, measure the lowest reel.

6. Check all possible points of contact between points (B) and (C). Depending on the reel fore-aft position, minimum clearance can result at the guard tine, hold-down, or cutterbar.
7. Adjust the reel if necessary. Refer to [5.10.2 Adjusting Reel Clearance, page 65](#).

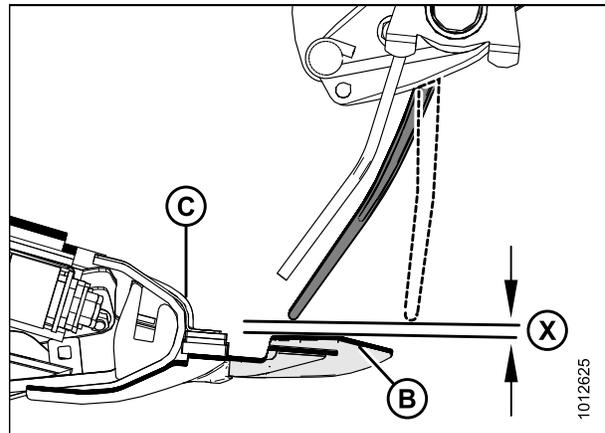


Figure 5.29: Reel Clearance

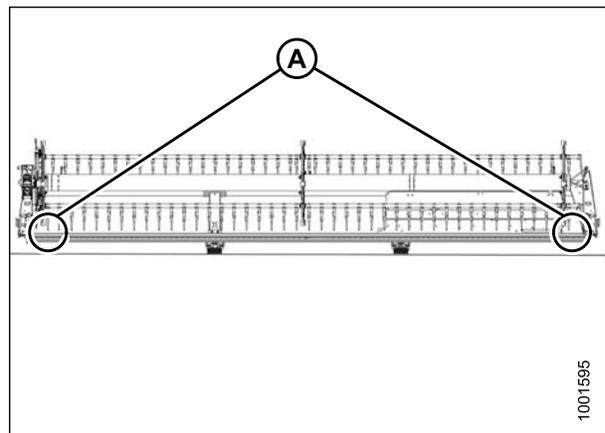


Figure 5.30: Single Reel Measurement Locations (Two Places)

## PERFORMING PREDELIVERY CHECKS

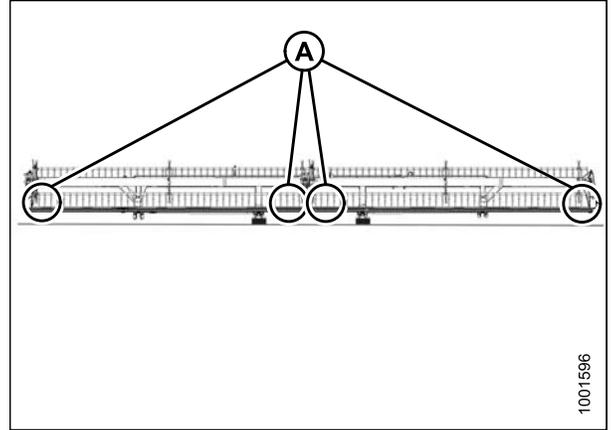


Figure 5.31: Double Reel Measurement Locations (Four Places)

### 5.10.2 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.

1. Shut down the engine, and remove the key from the ignition.
2. Adjust outboard reel arm lift cylinders to set clearance at outboard ends of reel as follows:
  - a. Loosen bolt (A).
  - b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
  - c. Tighten bolt (A).
  - d. Repeat at opposite side.

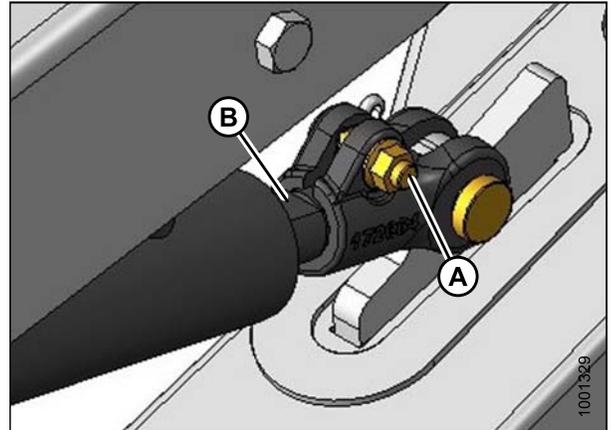


Figure 5.32: Outside Reel Arm

## PERFORMING PREDELIVERY CHECKS

3. **For double reel:** Adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels as follows:
  - a. Loosen nut (B).
  - b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
  - c. Tighten nut (B).

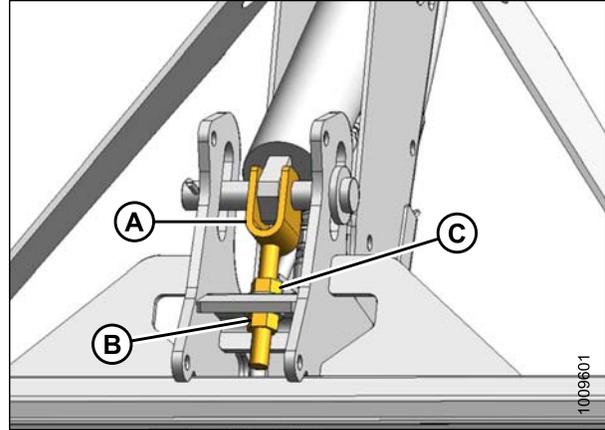


Figure 5.33: Underside of Center Arm

4. Check measurements and if necessary, repeat adjustment procedures.
5. Move reel back to ensure steel end fingers do not contact deflector shields.
6. If contact occurs, adjust reel upward to maintain clearance at all reel fore/aft positions. If contact can not be avoided after adjusting the reel, trim steel end fingers to obtain proper clearance.
7. Periodically check for evidence of contact, and adjust clearance as required.

## 5.11 Checking and Adjusting Endshields

Endshields are subject to expansion or contraction caused by large temperature variations. The position of the top pin and lower latch can be adjusted to compensate for dimensional changes.

### Checking the endshield:

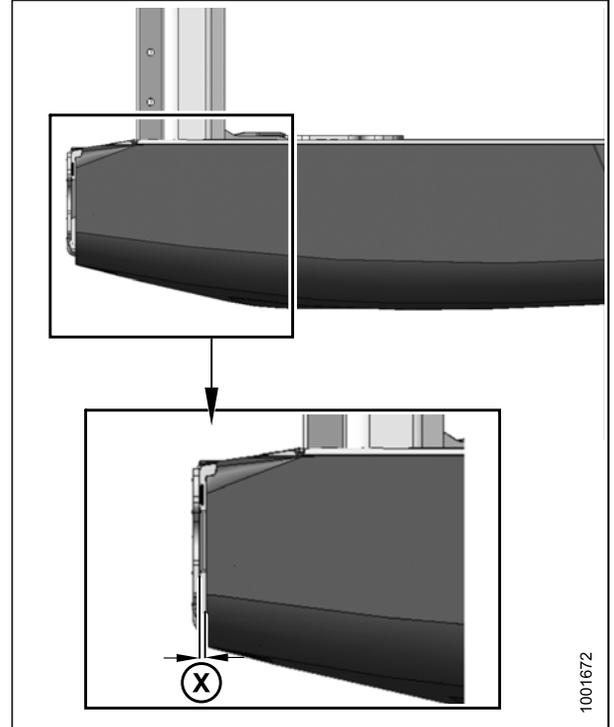
1. Check gap (X) between front end of shields and header frame and compare to the values in Table 5.3, page 67.

**Table 5.3 Endshield Gap at Various Temperatures**

Temperature in Degrees °C (°F)	Gap (X) mm (in.)
7 (45)	13–18 (1/2 – 23/32)
18 (65)	10–15 (3/8 – 19/32)
29 (85)	7–12 (9/32 – 15/32)
41 (105)	4–9 (5/32 – 11/32)

**NOTE:**

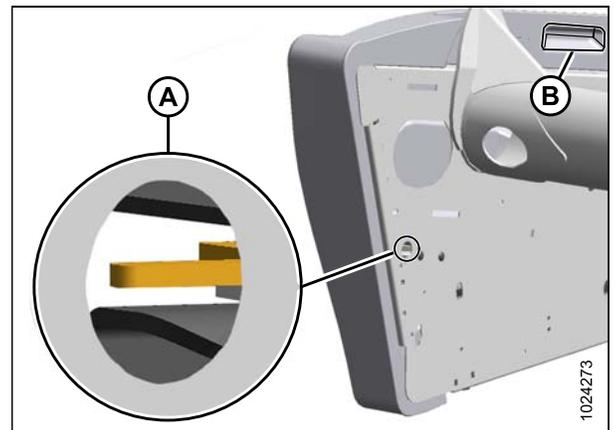
If the endshield gap is correct, skip to the next procedure. If adjustment is required, follow these steps:



**Figure 5.34: Gap between Endshield and Header Frame**

### Opening the endshield:

1. To unlock the shield, push the release lever (A) located on the backside of the endshield.
2. Pull endshield open using handle depression (B).



**Figure 5.35: Left Endshield**

## PERFORMING PREDELIVERY CHECKS

3. Pull endshield at handle depression (A). Endshield is retained by a hinge tab (B) and will open in direction (C).

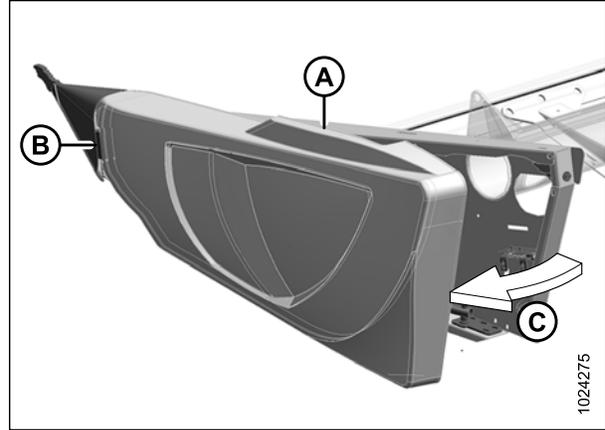


Figure 5.36: Left Endshield

4. Pull the endshield free of hinge tab (A) if additional clearance is required, and swing shield towards the rear of the header.
5. Engage safety catch (B) on hinge arm to secure the shield in fully-open position.

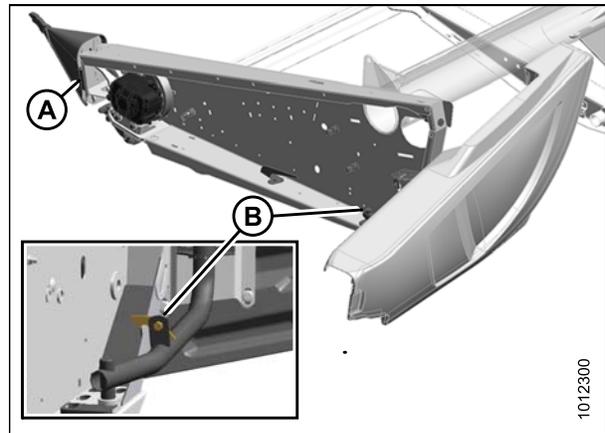


Figure 5.37: Left Endshield

### ***Adjusting the endshield gap:***

1. Loosen the four bolts (A) on the support tube bracket (B).

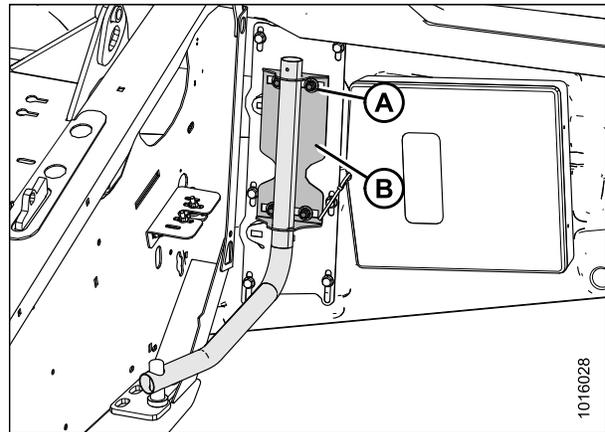


Figure 5.38: Left Endshield Support Tube

## PERFORMING PREDELIVERY CHECKS

2. Loosen the three bolts (A) on latch assembly (B).
3. Adjust latch assembly (B) to achieve the desired gap between the front end of shield and header frame. Refer to Table 5.3, page 67 for recommended endshield gap at various temperatures.
4. Tighten the three bolts (A) on the latch assembly.

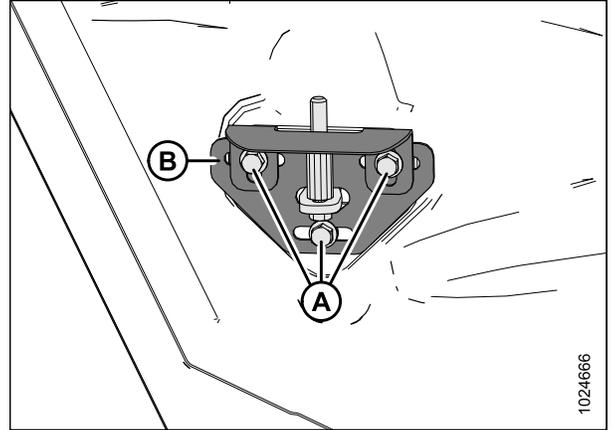


Figure 5.39: Left Endshield Latch Assembly

5. Tighten the four bolts on the support tube bracket.
6. Close endshield.

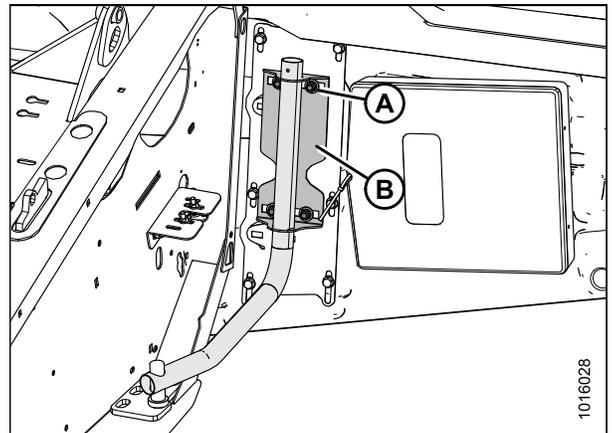


Figure 5.40: Left Endshield Support Tube

### ***Closing the endshield:***

1. Disengage lock (B) to allow endshield to move.
2. Insert front of endshield behind hinge tab (A) and into divider cone.

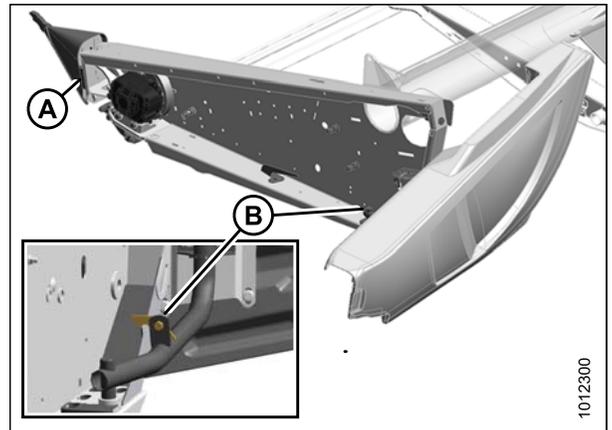


Figure 5.41: Left Endshield

## PERFORMING PREDELIVERY CHECKS

3. Swing endshield in direction (A) into closed position. Engage lock with a firm push.
4. Verify that endshield is locked.

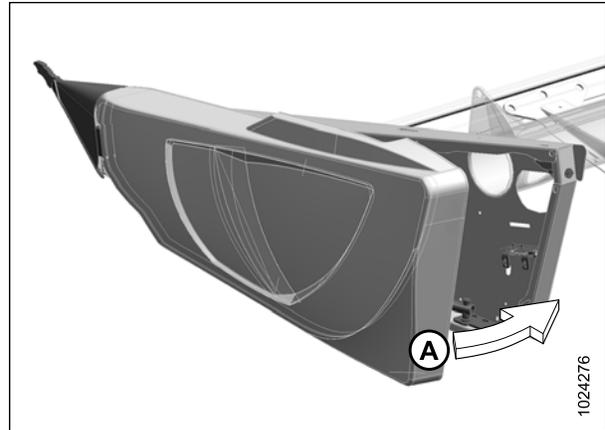


Figure 5.42: Left Endshield

## 5.12 Lubricating the Header

Table 5.4 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

### 5.12.1 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.

#### DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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.

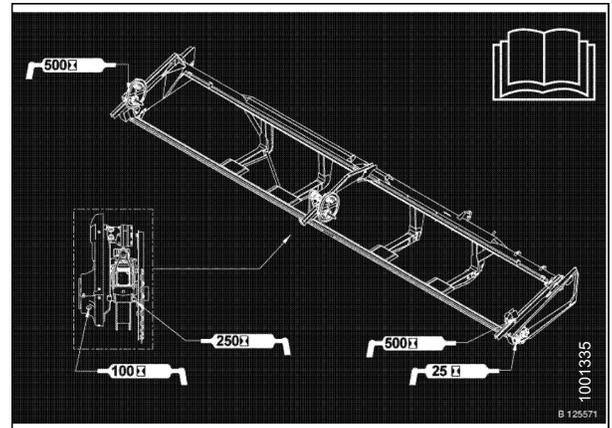


Figure 5.43: Single-Knife Header Grease Point Layout Decal

## PERFORMING PREDELIVERY CHECKS

### IMPORTANT:

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

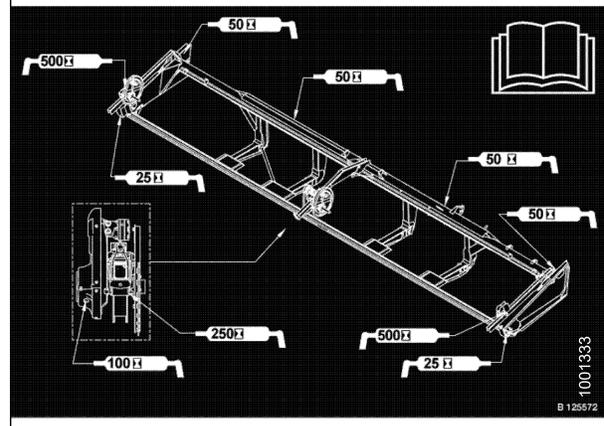


Figure 5.44: Double-Knife Header Grease Point Layout Decal

## 5.12.2 Lubrication Points

### Knifehead

#### 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.

#### NOTE:

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



Figure 5.45: Knifehead

Single Knife – One Place

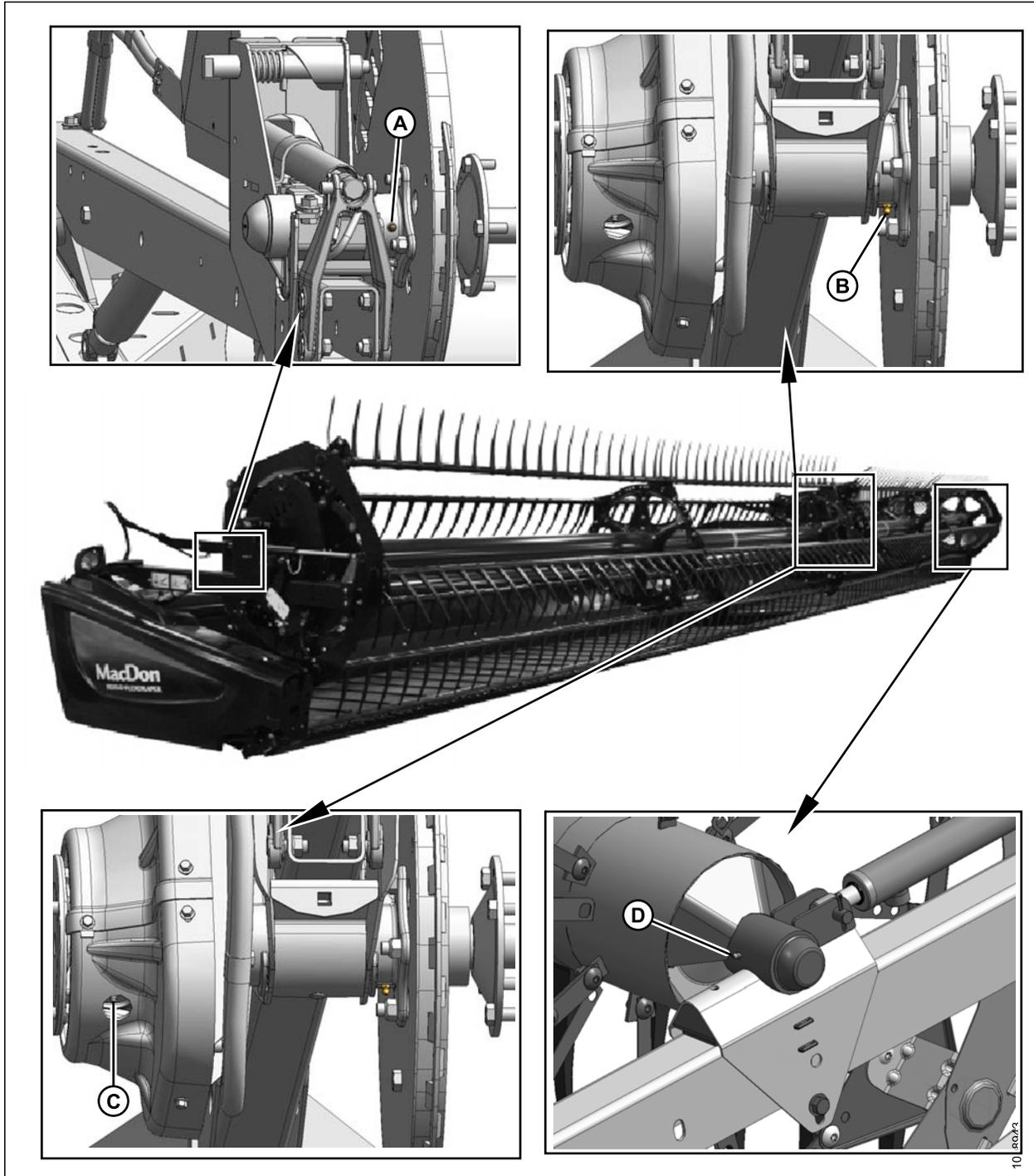
Double Knife – Two Places

## PERFORMING PREDELIVERY CHECKS

### IMPORTANT:

The reel U-joint (C) 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 is sufficient at first grease (factory). As U-joint wears and requires more than six pumps, grease the joint more often.

Figure 5.46: Reel Shaft Bearings



A - Reel Shaft Right Bearing (One Place)  
C - Reel U-joint (One Place)

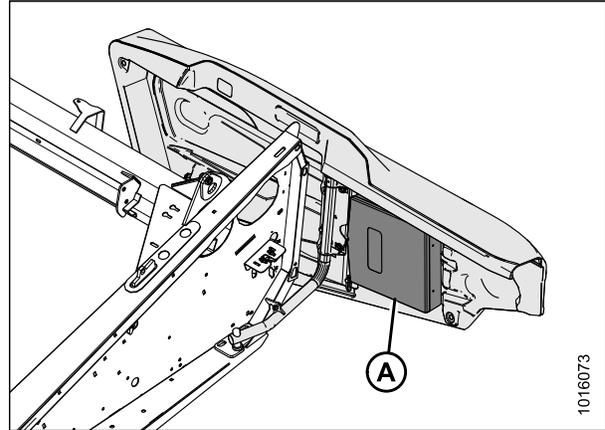
B - Reel Center Bearing (One Place)  
D - Reel Shaft left Bearing (One Place)

## PERFORMING PREDELIVERY CHECKS

### 5.13 Checking Manuals

Check manual case contents. The manual case is located inside the left endshield.

1. Open the left endshield. Remove the cable tie on the manual case (A).
2. Confirm that the case contains the following manuals:
  - Operator's Manual
  - Quick Card
  - Parts Catalog
3. Close case and endshield.



**Figure 5.47: Manual Case**

## 6 Running up the Header

To run up the header, follow these steps:

### CAUTION

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.

### CAUTION

Before investigating an unusual sound or attempting to correct a problem, shut off engine, engage parking brake, and remove key.

1. Start the windrower and run header for 5 minutes, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.

#### **NOTE:**

Reels and drapers will not operate until oil flow fills the lines.

2. Run header for an additional 10 minutes at operating speed, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
3. Shut down the windrower and remove key.
4. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction) *Predelivery Checklist, page 95.*



## 7 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 *Predelivery Checklist, page 95*) to ensure machine is field-ready.

### WARNING

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

It may be necessary to adjust the knife after the run-up. Refer to *7.1 Adjusting Knife, page 77*.

### 7.1 Adjusting Knife

#### WARNING

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

1. Stop engine and remove the key.
2. Check guards for signs of heating during run-up due to insufficient clearance between guard and knife.
3. If heating is evident, check gap between knifehead (A) and pitman arm (B). A business card should slide easily through the gap. If not, adjust gap by loosening bolt and tapping knifehead (A) with a hammer. Retighten bolt.
4. Adjust guard alignment as necessary using guard straightening tool (MD #140135). Adjust guard tips upwards by positioning tool as shown, and pulling up.

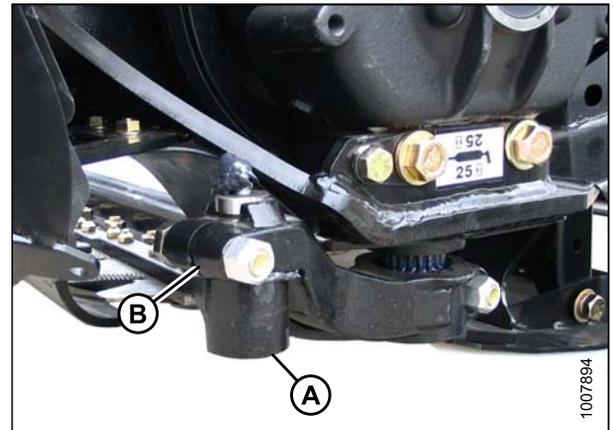


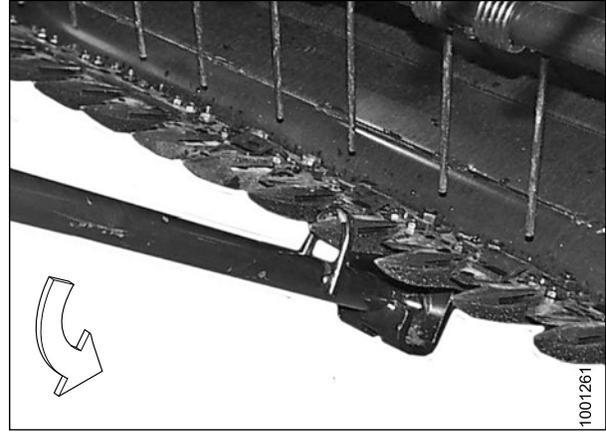
Figure 7.1: Knifehead and Pitman Arm



Figure 7.2: Straightening Tool – Upward Adjustment

## PERFORMING POST RUN-UP ADJUSTMENTS

5. Adjust guard tips downward by positioning tool as shown, and pushing down.



**Figure 7.3: Straightening Tool– Downward Adjustment**

## 8 Reference

### 8.1 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**

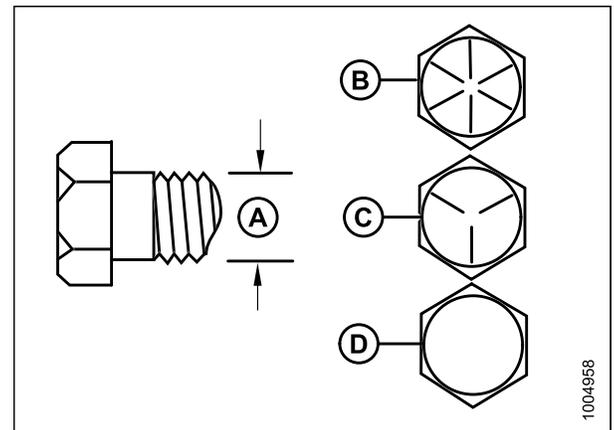
Standard torque is to be used (not to be used on critical or structurally important joints).

#### 8.1.1 SAE Bolt Torque Specifications

Torque values shown in following tables are valid for non-greased, or non-oiled threads and heads; therefore, do **NOT** grease or oil bolts or cap screws unless otherwise specified in this manual.

**Table 8.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut**

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	11.9	13.2	*106	*117
5/16-18	24.6	27.1	*218	*241
3/8-16	44	48	32	36
7/16-14	70	77	52	57
1/2-13	106	118	79	87
9/16-12	153	170	114	126
5/8-11	212	234	157	173
3/4-10	380	420	281	311
7/8-9	606	669	449	496
1-8	825	912	611	676



**Figure 8.1: Bolt Grades**

A - Nominal Size  
C - SAE-5

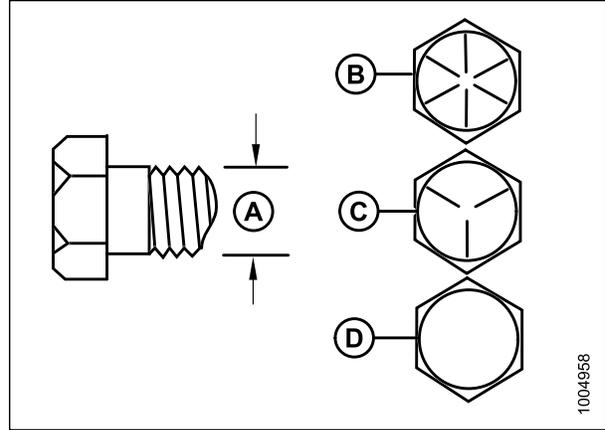
B - SAE-8  
D - SAE-2

1004958

REFERENCE

**Table 8.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut**

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
1/4-20	8.1	9	*72	*80
5/16-18	16.7	18.5	*149	*164
3/8-16	30	33	22	24
7/16-14	48	53	35	39
1/2-13	73	80	54	59
9/16-12	105	116	77	86
5/8-11	144	160	107	118
3/4-10	259	286	192	212
7/8-9	413	456	306	338
1-8	619	684	459	507

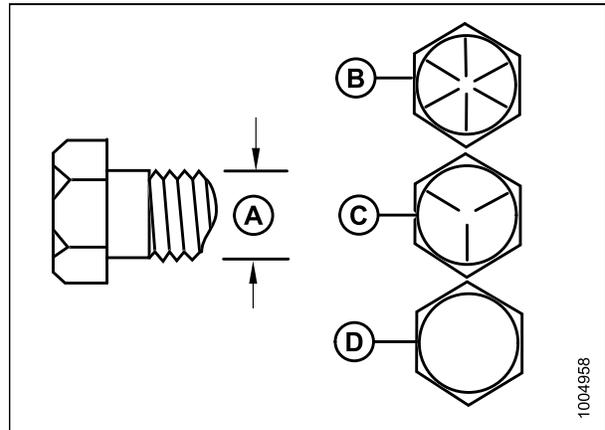


**Figure 8.2: Bolt Grades**

A - Nominal Size  
 B - SAE-8  
 C - SAE-5  
 D - SAE-2

**Table 8.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut**

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	24	26	18	19
3/8-16	42	46	31	34
7/16-14	67	74	50	55
1/2-13	102	113	76	84
9/16-12	148	163	109	121
5/8-11	204	225	151	167
3/4-10	362	400	268	296
7/8-9	583	644	432	477
1-8	874	966	647	716



**Figure 8.3: Bolt Grades**

A - Nominal Size  
 B - SAE-8  
 C - SAE-5  
 D - SAE-2

REFERENCE

Table 8.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	35	38	26	28
3/8-16	61	68	46	50
7/16-14	98	109	73	81
1/2-13	150	166	111	123
9/16-12	217	239	160	177
5/8-11	299	330	221	345
3/4-10	531	587	393	435
7/8-9	855	945	633	700
1-8	1165	1288	863	954

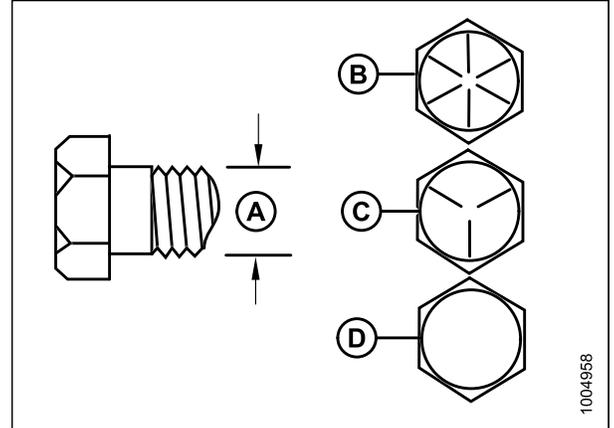


Figure 8.4: Bolt Grades

A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

8.1.2 Metric Bolt Specifications

Table 8.5 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

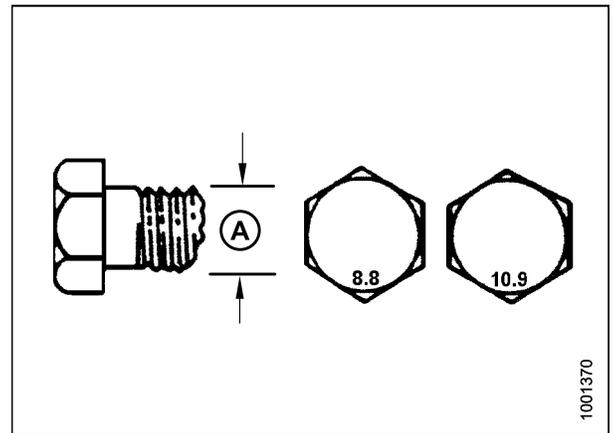


Figure 8.5: Bolt Grades

REFERENCE

Table 8.6 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

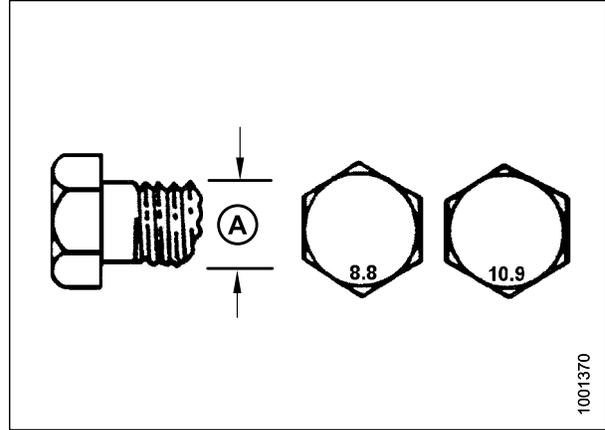


Figure 8.6: Bolt Grades

Table 8.7 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

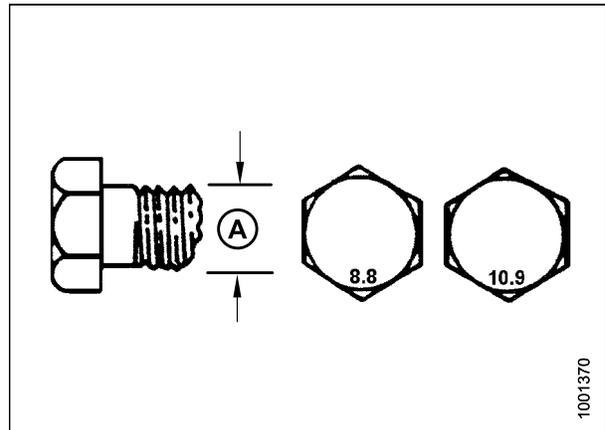


Figure 8.7: Bolt Grades

REFERENCE

Table 8.8 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

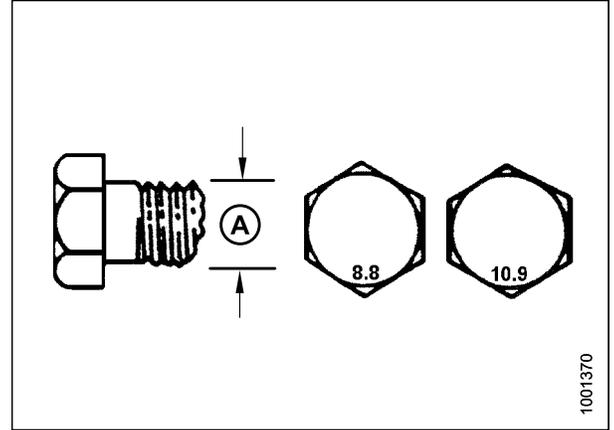


Figure 8.8: Bolt Grades

### 8.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.9 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	–	–	–	–

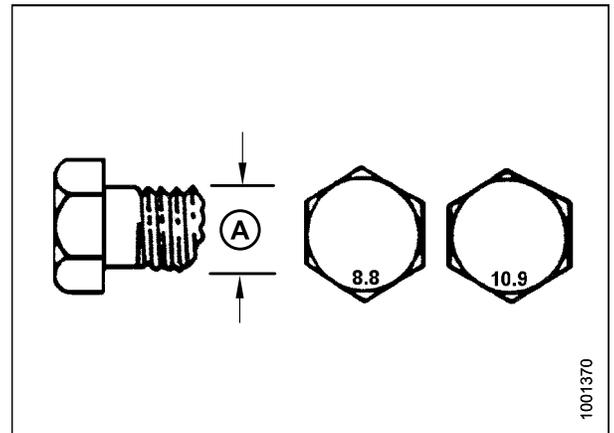


Figure 8.9: Bolt Grades

REFERENCE

### 8.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table 8.10, page 84.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

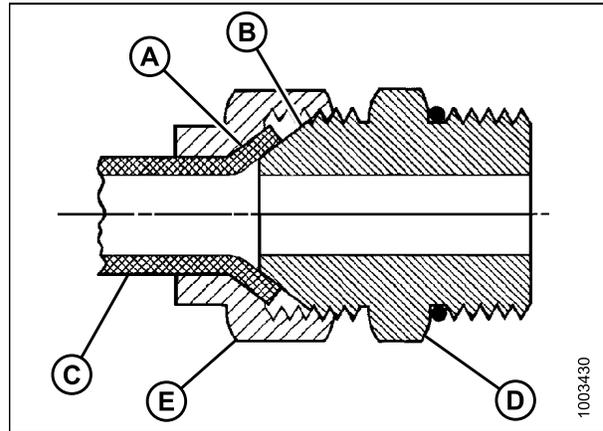


Figure 8.10: Hydraulic Fitting

Table 8.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value <sup>1</sup>		Flats from Finger Tight (FFFT)	
		Nm	lbf-ft	Tube	Swivel Nut or Hose
-2	5/16-24	4-5	3-4	—	—
-3	3/8-24	7-8	5-6	—	—
-4	7/16-20	18-19	13-14	2-1/2	2
-5	1/2-20	19-21	14-15	2	2
-6	9/16-18	30-33	22-24	2	1-1/2
-8	3/4-16	57-63	42-46	2	1-1/2
-10	7/8-14	81-89	60-66	1-1/2	1-1/2
-12	1-1/16-12	113-124	83-91	1-1/2	1-1/4
-14	1-3/16-12	136-149	100-110	1-1/2	1-1/4
-16	1-5/16-12	160-176	118-130	1-1/2	1
-20	1-5/8-12	228-250	168-184	1	1
-24	1-7/8-12	264-291	195-215	1	1
-32	2-1/2-12	359-395	265-291	1	1
-40	3-12	—	—	1	1

1. Torque values shown are based on lubricated connections as in reassembly.

## REFERENCE

### 8.1.5 O-Ring Boss (ORB) 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).

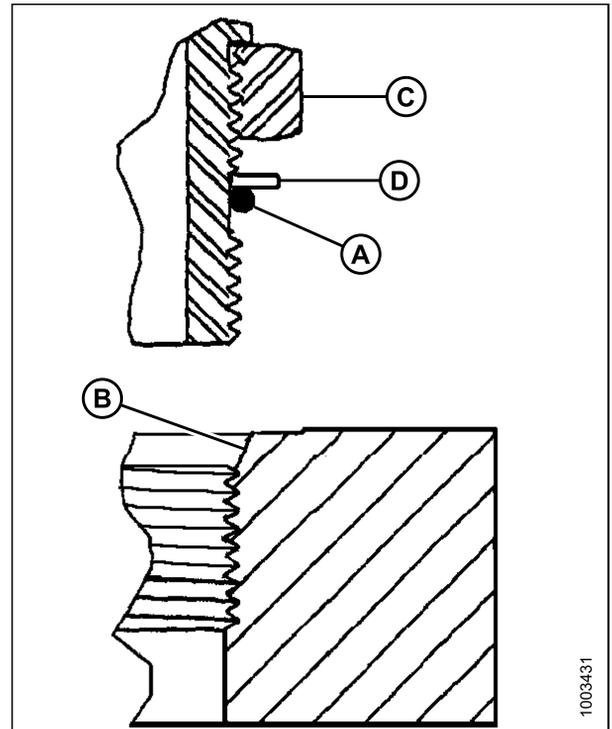


Figure 8.11: Hydraulic Fitting

5. Install fitting (B) into port until back up 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.

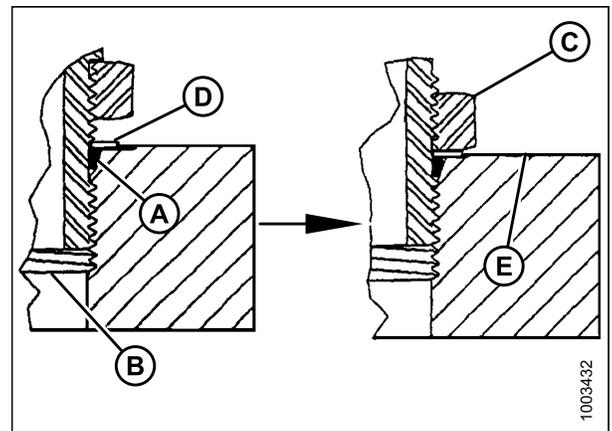


Figure 8.12: Hydraulic Fitting

**REFERENCE**

**Table 8.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)**

SAE Dash Size	Thread Size (in.)	Torque Value <sup>2</sup>	
		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

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2. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

### 8.1.6 O-Ring Boss (ORB) 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 8.12, page 87.
6. Check final condition of fitting.

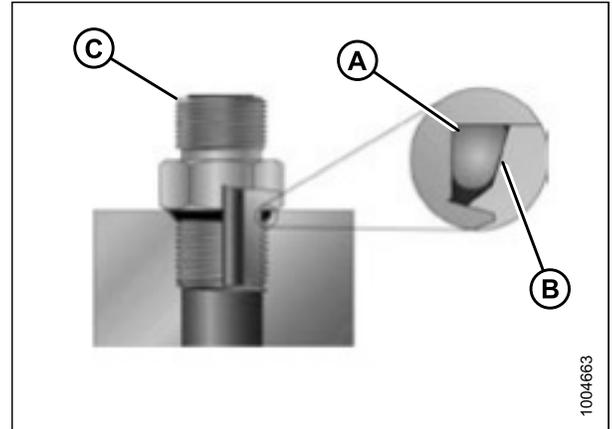


Figure 8.13: Hydraulic Fitting

Table 8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value <sup>3</sup>	
		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

3. Torque values shown are based on lubricated connections as in reassembly.

## REFERENCE

### 8.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

1. Check components to ensure that sealing surfaces and fitting threads are free of burrs, nicks, scratches, or any foreign material.



Figure 8.14: 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 8.13, page 88.

**NOTE:**

If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).

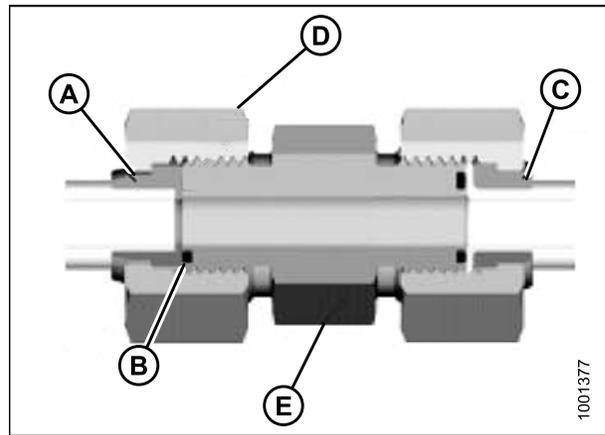


Figure 8.15: Hydraulic Fitting

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

**Table 8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings**

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>4</sup>	
			Nm	lbf-ft
-3	Note <sup>5</sup>	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note <sup>5</sup>	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

4. Torque values and angles shown are based on lubricated connection as in reassembly.
5. O-ring face seal type end not defined for this tube size.

## REFERENCE

**Table 8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)**

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value <sup>6</sup>	
			Nm	lbf·ft
-14	Note <sup>5</sup>	7/8	–	–
-16	1-7/16	1	150–165	111–122
-20	1-11/16	1-1/4	205–226	151–167
-24	1–2	1-1/2	315–347	232–256
-32	2-1/2	2	510–561	376–414

### 8.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and 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 (T.F.F.T.) values are shown in Table 8.14, page 89. 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 8.14 Hydraulic Fitting Pipe Thread**

Tapered Pipe Thread Size	Recommended T.F.F.T.	Recommended F.F.F.T.
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

- 
6. Torque values and angles shown are based on lubricated connection as in reassembly.

## 8.2 Lifting Equipment Requirements

The following topic describes the minimum equipment requirements for lifting headers.

### CAUTION

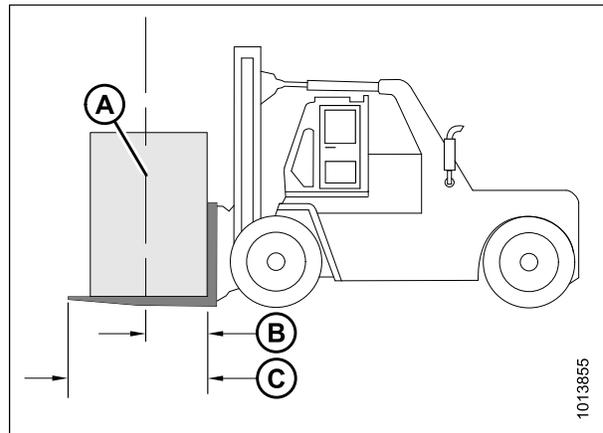
To avoid injury to bystanders from being struck by machinery, do not allow people to stand in unloading area.

### CAUTION

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 8.16: 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 8.15 Lifting Vehicle Requirements**

<b>Minimum Capacity</b>	3178 kg (7000 lb.) at 1220 mm (48 in.) from back end of forks
<b>Minimum Fork Length</b>	1981 mm (78 in.)

**Table 8.16 Lifting Chain Requirements**

<b>Type</b>	Overhead lifting quality (1/2 in.)
<b>Minimum Load</b>	2270 kg (5000 lb.)

REFERENCE

### 8.3 Conversion Chart

Table 8.17 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	$\times 2.4710 =$	acre	acres
Flow	liters per minute	L/min	$\times 0.2642 =$	US gallons per minute	gpm
Force	Newton	N	$\times 0.2248 =$	pound force	lbf
Length	millimeter	mm	$\times 0.0394 =$	inch	in.
Length	meter	m	$\times 3.2808 =$	foot	ft.
Power	kilowatt	kW	$\times 1.341 =$	horsepower	hp
Pressure	kilopascal	kPa	$\times 0.145 =$	pounds per square inch	psi
Pressure	megapascal	MPa	$\times 145.038 =$	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	$\times 14.5038 =$	pounds per square inch	psi
Torque	Newton meter	Nm	$\times 0.7376 =$	pound feet or foot pounds	lbf-ft
Torque	Newton meter	Nm	$\times 8.8507 =$	pound inches or inch pounds	lbf-in
Temperature	degrees Celsius	°C	$(^{\circ}\text{C} \times 1.8) + 32 =$	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	$\times 3.2808 =$	feet per minute	ft/min
Velocity	meters per second	m/s	$\times 3.2808 =$	feet per second	ft/s
Velocity	kilometers per hour	km/h	$\times 0.6214 =$	miles per hour	mph
Volume	liter	L	$\times 0.2642 =$	US gallon	US gal
Volume	milliliter	ml	$\times 0.0338 =$	ounce	oz.
Volume	cubic centimeter	cm <sup>3</sup> or cc	$\times 0.061 =$	cubic inch	in. <sup>3</sup>
Weight	kilogram	kg	$\times 2.2046 =$	pound	lb.

## REFERENCE

### 8.4 Definitions

The following terms and acronyms may be used in this manual.

<b>Term</b>	<b>Definition</b>
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
Cab-forward	Windrower operation with Operator and cab facing in direction of travel
Center-link	A hydraulic cylinder link between header and machine used to change header angle
CGVV	Combined gross vehicle weight
D1X Series header	MacDon D115X, D120X, and D125X rigid draper headers for M1 Series windrowers
D1XL Series header	MacDon D130XL, D135XL, D140XL, and D145XL rigid draper headers for M1 Series windrowers
DK	Double knife
DKD	Double-knife drive
DDD	Double-draper drive
DR	Double reel
ECU	Electronic control unit
Engine-forward	Windrower operation with Operator and engine facing in direction of travel
Export header	Header configuration typical outside North America
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
FFFT	Flats from finger tight
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
HPT display	Harvest Performance Tracker display module on a windrower
Header	A machine that cuts and lays crop into a windrow and is attached to a windrower
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
HDS	Hydraulic deck shift
hp	Horsepower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)

## REFERENCE

Term	Definition
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 opening 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
PARK	The slot opposite the NEUTRAL position on operator's console of M1 Series windrowers.
rpm	Revolutions per minute
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
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
SDD	Single-drapeer drive
Self-Propelled (SP) Windrower	Self-propelled machine consisting of a power unit with a header
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
SR	Single reel
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
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
UCA	Upper cross auger
Non-timed knife drive	Unsynchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors

## REFERENCE

Term	Definition
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 a locking mechanism
Windrower	Power unit of a self-propelled header
WCM	Windrower control module

# 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 given. Be alert for safety related messages that bring your attention to hazards and unsafe practices.

Header Serial Number:

---

**Table .18 Predelivery Checklist for D1X and D1 XL-Series Draper Headers – 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.	<i>8.1 Torque Specifications, page 79</i>
	Check tire pressure (Transport/Stabilizer Option).	<i>5.1 Checking Tire Pressure: Transport and Stabilizer Wheels, page 47</i>
	Check wheel bolt torque (Transport/Stabilizer Option).	<i>5.2 Checking Wheel Bolt Torque, page 48</i>
	Check knife drive box breather position.	<i>5.3 Checking Knife Drive Box, page 49</i>
	Check knife drive box lube level.	<i>5.3 Checking Knife Drive Box, page 49</i>
	Check knife drive belt(s) tension.	<i>5.4 Checking and Adjusting Knife Drive Belt Tension, page 51</i>
	Check if reel is centered between header endsheets.	<i>5.5 Centering the Reel, page 55</i>
	Grease all bearings and U-joints.	<i>5.12 Lubricating the Header, page 71</i>
	Check draper tension.	<i>5.6 Adjusting Draper Tension, page 57</i>
	Check draper seal.	<i>5.7 Checking and Adjusting Draper Seal, page 59</i>
	Check reel tine to cutterbar clearance.	<i>5.10.1 Measuring Reel Clearance, page 63</i>
	Check if skid shoes are evenly adjusted an appropriate setting for first crop.	<i>5.8 Checking and Adjusting Skid Shoe Settings, page 61</i>
	Check fit of endshields.	<i>5.11 Checking and Adjusting Endshields, page 67</i>
	Check that header is level.	<i>5.9 Leveling the Header, page 62</i>
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel.	—
	<b>Run-up procedure</b>	<i>6 Running up the Header, page 75</i>
	Check if the knife drive pulley(s) is rotating in proper direction: clockwise on left side; counterclockwise on right side (double knife only).	<i>5.4 Checking and Adjusting Knife Drive Belt Tension, page 51</i>

**REFERENCE**

**Table .18 Predelivery Checklist for D1X and D1 XL-Series Draper Headers – North America (continued)**

✓	Item	Reference
	Check if lights are functional.	—
	Check if reel lift cylinders extend fully.	—
	Check if reel moves fully fore and aft.	—
<b>Post run-up check. Stop engine.</b>		<i>7 Performing Post Run-Up Adjustments, page 77</i>
	Check belt drives for heated bearings.	<i>5.4 Checking and Adjusting Knife Drive Belt Tension, page 51</i>
	Check knife sections for discoloration caused by misaligned components.	<i>7.1 Adjusting Knife, page 77</i>
	Check for hot spots on the cutterbar above the draper seal. Adjust deck height as required.	<i>5.7 Checking and Adjusting Draper Seal, page 59</i>
	Check for hydraulic leaks.	—
	Check that manual storage case contains operator's manual and parts catalog.	<i>5.13 Checking Manuals, page 74</i>

**Date checked:**

**Checked by:**



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