

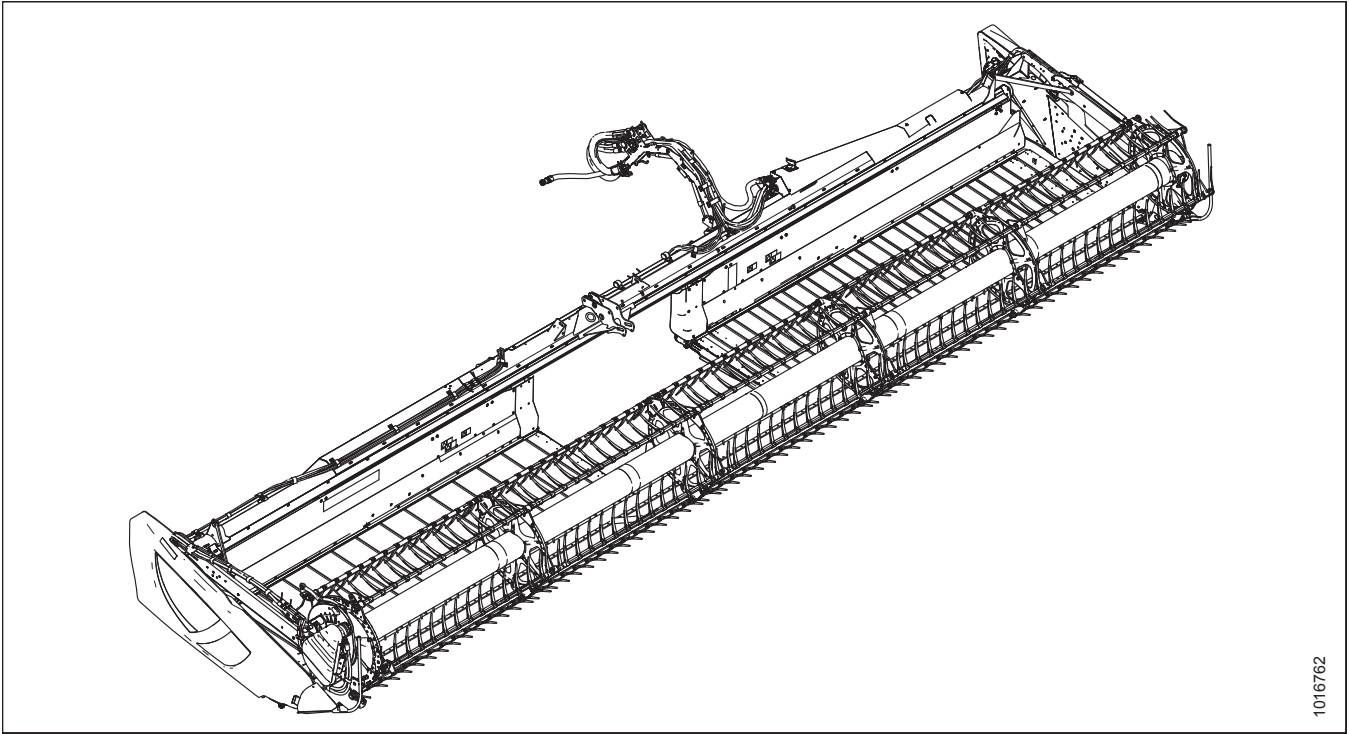
# **D1X and D1XL Series Draper Header**

Unloading and Assembly Instructions (North America)

215489 Revision A

Original Instruction

## D1XL Series Draper Header for M1 Series Windrowers



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## Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for MacDon D1X and D1XL Series Draper Headers for M1 Series Windrowers.

### NOTE:

Confirm the windrower is equipped with a **draper-ready** header drive **BEFORE** connecting to the header:

- All M1170 header drives are draper-ready.
- If the M1240 header drive is configured to only operate a rotary disc (B), convert the header drive to draper-ready (A) using kit MD #B5999.

For instructions on connecting the windrower hydraulics to a D1X or D1XL Series Header, refer to the windrower operator's manual.

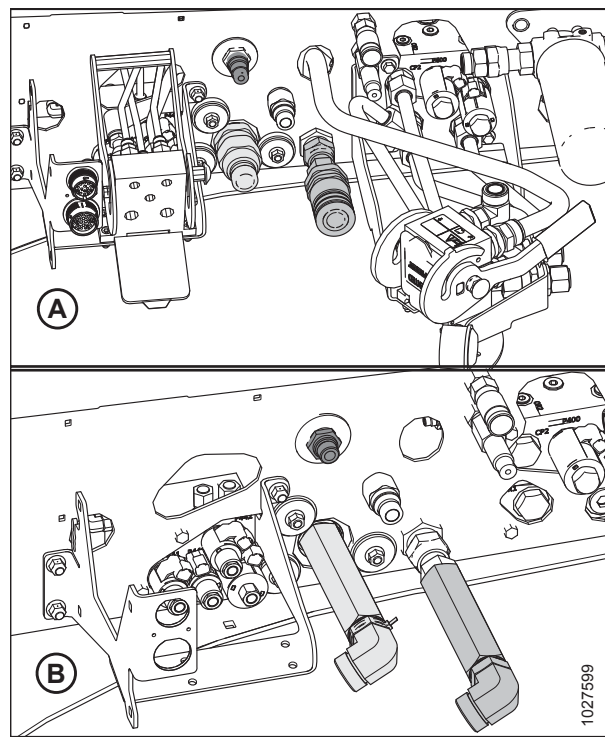


Figure 1: M1240 Header Hydraulics Configurations

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.

### Conventions

The following conventions are used in this document:

- Right and left are determined from the operator's position. The front of the header faces the crop.
- Unless otherwise noted, use the standard torque values provided in this manual.

### 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 currently available in English only.

## Summary of Changes

At MacDon, we're continuously making improvements, and occasionally these improvements affect product documentation. The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
<a href="#">2.1 Unloading Header from Trailer, page 7</a>	Revised topic. Some contents moved to <a href="#">9.2 Header Specifications for Unloading and Assembly, page 109</a>	Engineering
<a href="#">2.1 Unloading Header from Trailer, page 7</a>	Added step.	Technical Publications
<a href="#">2.1 Unloading Header from Trailer, page 7</a>	Added step and illustration for D1XL.	ECN 59347
<a href="#">2.2 Lowering Header to Field Position, page 9</a>	Changed title from Lowering Header.	Technical Publications
<a href="#">2.2.1 Lowering Single-Reel Header, page 9</a>	Added Important note about lifting requirements.	Technical Publications
<a href="#">2.2.2 Lowering Double-Reel Header, page 12</a>	Added Important note about lifting requirements.	Technical Publications
<a href="#">4.1 Installing the Hydraulic Hose Management System, page 21</a>	Revised steps and illustration.	Technical Publications
<a href="#">3 Adding Ballast, page 19</a>	Removed cross-reference.	Technical Publications, Product Support
<a href="#">6.5.2 Centering Single Reel, page 65</a>	Changed title from Checking and Adjusting Draper Tension.	Technical Publications
<ul style="list-style-type: none"> <li><a href="#">6.6 Reel Clearance to Cutterbar, page 67</a></li> <li><a href="#">6.6.1 Measuring Reel Clearance, page 67</a></li> <li><a href="#">6.6.2 Adjusting Reel Clearance, page 69</a></li> </ul>	Moved topics after Centering the Reel.	Product Support
<a href="#">6.7 Checking and Adjusting Draper Tension, page 71</a>	Changed title from Adjusting Draper Tension.	Technical Publications
<a href="#">6.14 Header System Calibration, page 86</a>	<ul style="list-style-type: none"> <li>Changed title from Calibrating the Header Systems.</li> <li>Revised topic.</li> </ul>	Technical Publications
<a href="#">6.14.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display, page 86</a>	Revised topic.	Technical Publications
<a href="#">6.14.2 Calibrating Header Position Sensors on the Harvest Performance Tracker Display, page 89</a>	Added topic.	Technical Publications
<a href="#">9.2 Header Specifications for Unloading and Assembly, page 109</a>	Replaced Lifting Requirements topic. New topic include the necessary specifications for unloading and assembly.	Engineering



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# Chapter 1: Safety

Understanding and following safety procedures consistently will help to ensure the safety of machine operators and bystanders.

## 1.1 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:



### **DANGER**

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



### **WARNING**

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



### **CAUTION**

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

#### **IMPORTANT:**

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

#### **NOTE:**

Provides additional information or advice.

## 1.2 General Safety

Protect yourself when assembling, operating, and servicing machinery.

### CAUTION

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

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

In addition, take the following precautions:

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

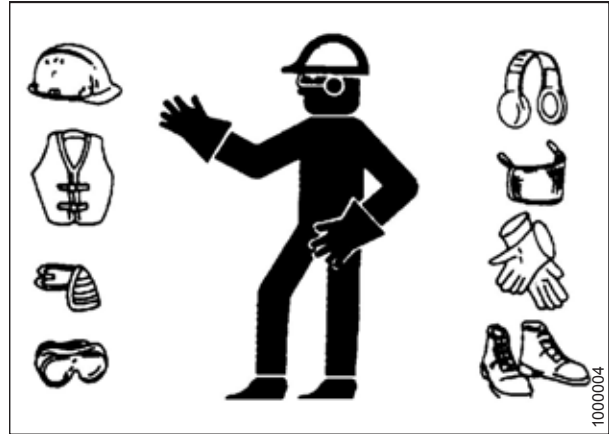


Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

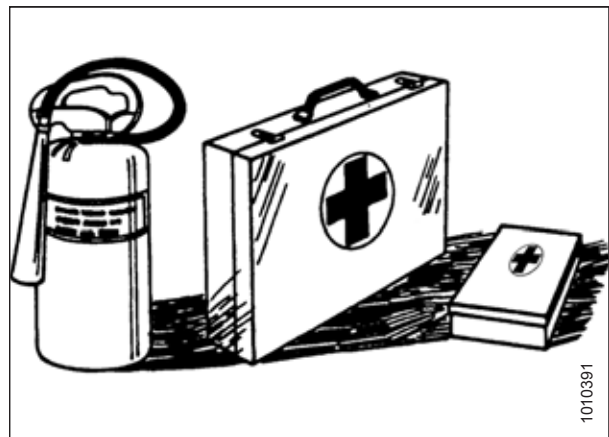


Figure 1.3: Safety Equipment

## 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 the engine is running.
- Do **NOT** modify the machine. Unauthorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid injury or death from unexpected startup of the machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

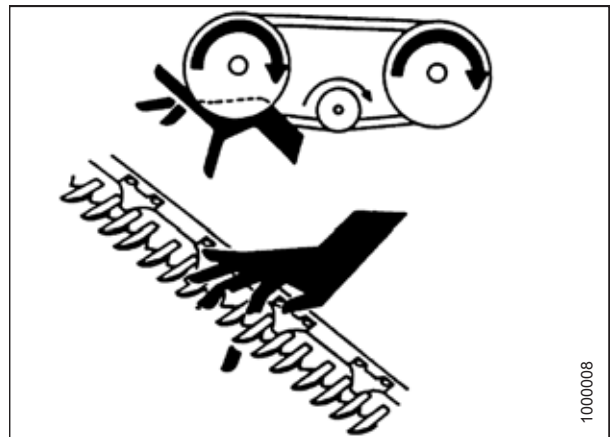


Figure 1.5: Safety around Equipment

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



Figure 1.6: Safety around Equipment

## 1.3 Welding Precaution

To prevent damage to sensitive electronics, welding should never be attempted on the header while it is connected to a windrower.



### **WARNING**

**Severe damage to sensitive, expensive electronics can result from welding on the header while it is connected to the windrower. It can be impossible to know what effect high current could have with regard to future malfunctions or shorter lifespan. It is very important that welding on the header is not attempted while the header is connected to the windrower.**

If it is unfeasible to disconnect the header from the windrower before welding, refer to the windrower's technical manual for welding precautions detailing all electrical components that must be disconnected first for safe welding.

## 1.4 Safety Signs

Safety signs are usually yellow decals placed on the machine where there is a risk of personal injury, or where the operator has to take extra precautions before operating controls. Operator manuals and technical manuals identify the location and meaning of all safety signs placed on the machine.

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

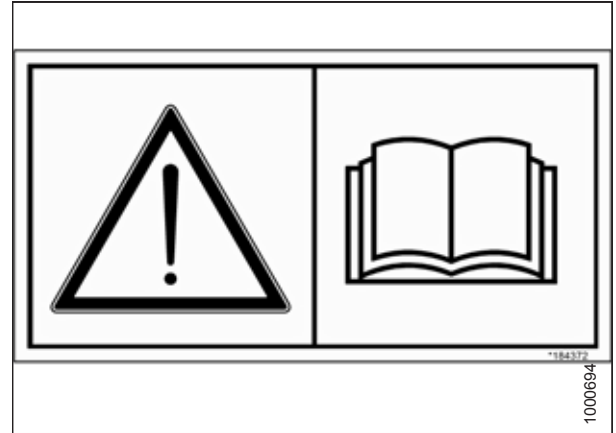


Figure 1.7: Operator's Manual Decal





## Chapter 2: Unloading the Header

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

### 2.1 Unloading Header from Trailer

In North America, headers are shipped on flat bed trailers. Following instructions carefully will help ensure headers make it from the trailer to the assembly area safely..

#### DANGER

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

#### DANGER

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

#### IMPORTANT:

For lifting equipment requirements, refer to [9.2 Header Specifications for Unloading and Assembly, page 109](#).

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

1. Move the trailer into position and block the trailer wheels.
2. Lower the trailer storage stands.
3. **For D1X:** Approach one of the headers and slide forks (A) underneath 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.

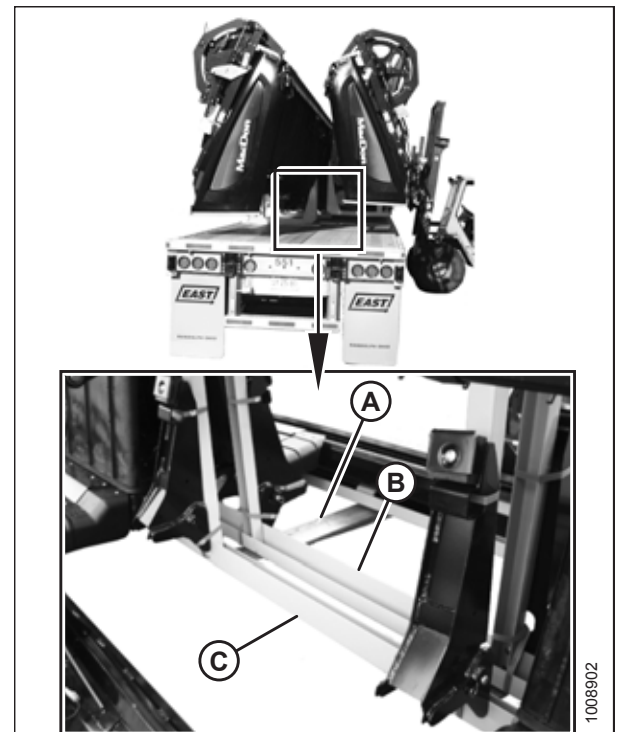


Figure 2.1: D1X Header Shipping Supports

## UNLOADING THE HEADER

4. **For D1XL:** Approach one of the headers and slide forks (A) through four forklift brackets (B) underneath the shipping support, 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.

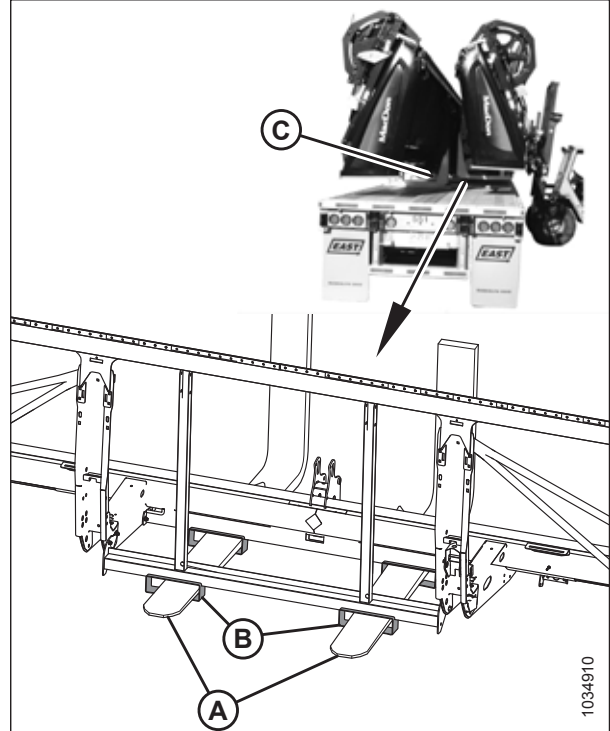


Figure 2.2: D1XL Header Shipping Supports

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



### WARNING

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

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

## 2.2 Lowering Header to Field Position

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

To lower the header, refer to the procedure according to the type of header:

- **Single-reel headers:** refer to [2.2.1 Lowering Single-Reel Header, page 9](#)
- **Double-reel headers:** refer to [2.2.2 Lowering Double-Reel Header, page 12](#)

### 2.2.1 Lowering Single-Reel Header

Lower the header to field position to prepare it for assembly and setup.

**IMPORTANT:**

For lifting equipment requirements, refer to [9.2 Header Specifications for Unloading and Assembly, page 109](#).

1. Approach the header from its underside and place the forks under the top of shipping frame (A).
2. Attach chain (B) at each end of the shipping frame and secure the other end to the lifting vehicle.

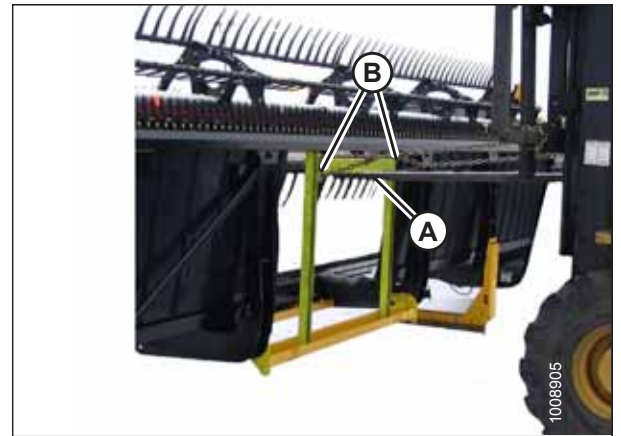


Figure 2.3: Shipping Frame

## UNLOADING THE HEADER

### CAUTION

Stand clear when lowering, as machine may swing.

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



Figure 2.4: Lowering the Header

## UNLOADING THE HEADER

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

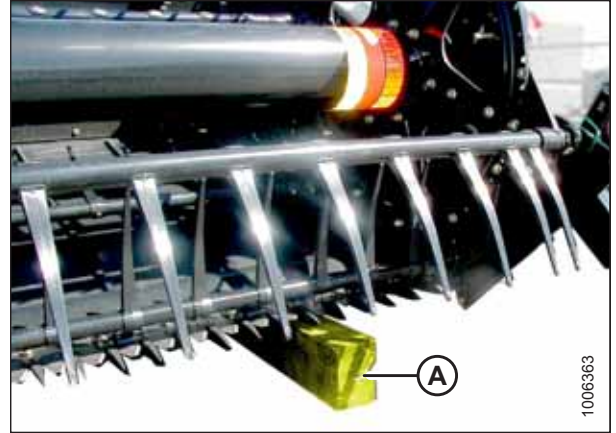


Figure 2.5: Block under Cutterbar

6. Attach the chain to center-link anchor (A) on the frame tube and raise the rear of the header so that the stand can be lowered.

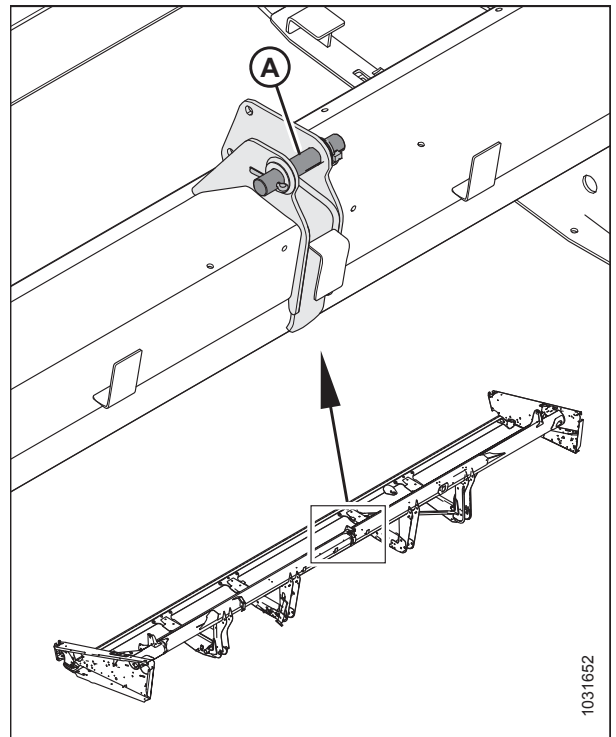


Figure 2.6: Center-link Anchor – Single-Reel

## UNLOADING THE HEADER

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

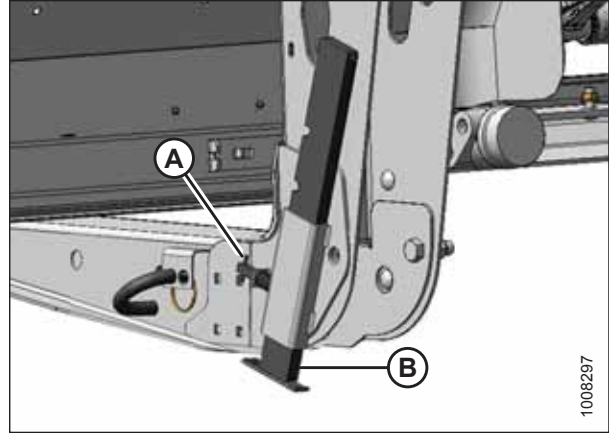


Figure 2.7: Header Stand

### 2.2.2 Lowering Double-Reel Header

Lower the header to field position to prepare it for assembly and setup.

**IMPORTANT:**

For lifting equipment requirements, refer to [9.2 Header Specifications for Unloading and Assembly, page 109](#).

1. Drive the lifting vehicle to approach the header from its underside.



Figure 2.8: Underside of Header

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

**IMPORTANT:**

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

**NOTE:**

Right reel removed for clarity.

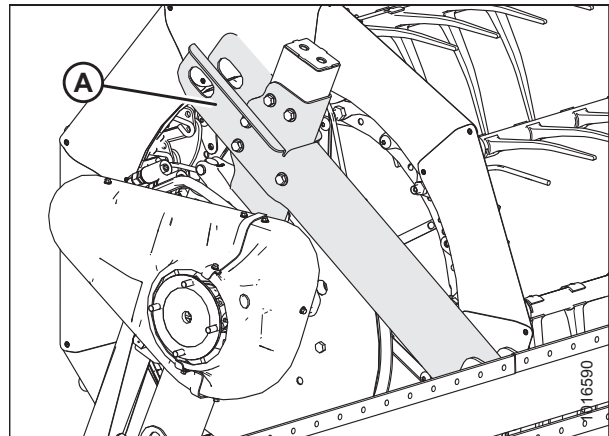


Figure 2.9: Shipping Support – Double-Reel, D1XL Shown



## UNLOADING THE HEADER

### CAUTION

Stand clear when lowering, as machine may swing.

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



Figure 2.10: Lowering the Header

## UNLOADING THE HEADER

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

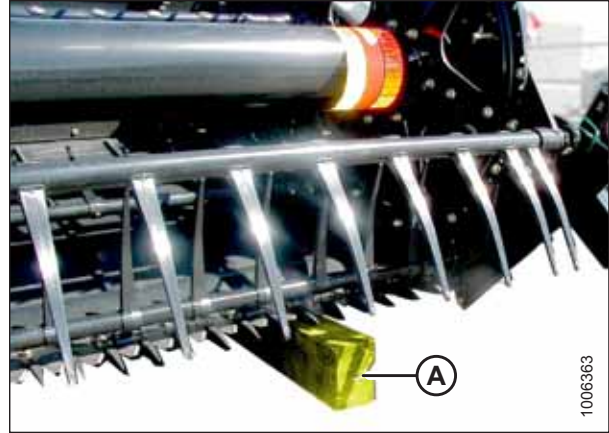


Figure 2.11: Block under Cutterbar

6. Attach the chain to center-link anchor (A) on the frame tube and raise the rear of the header so that the stand can be lowered.

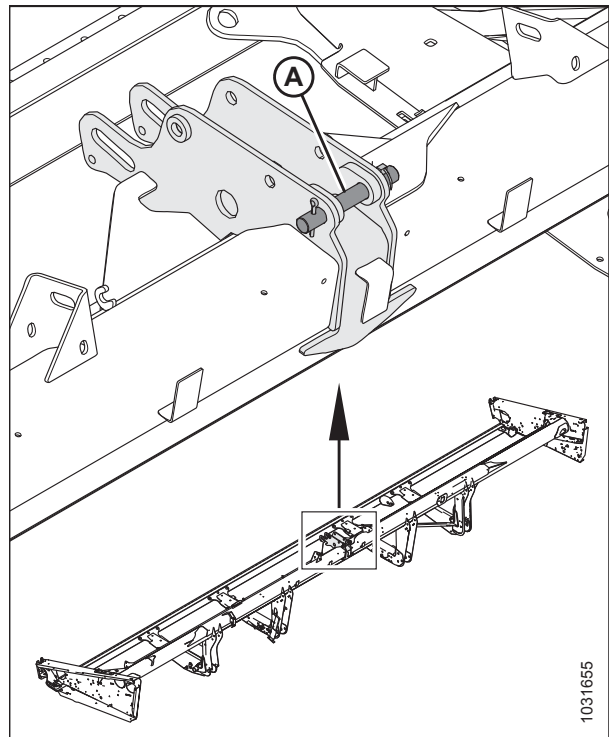


Figure 2.12: Center-Link Anchor – Double-Reel



## UNLOADING THE HEADER

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

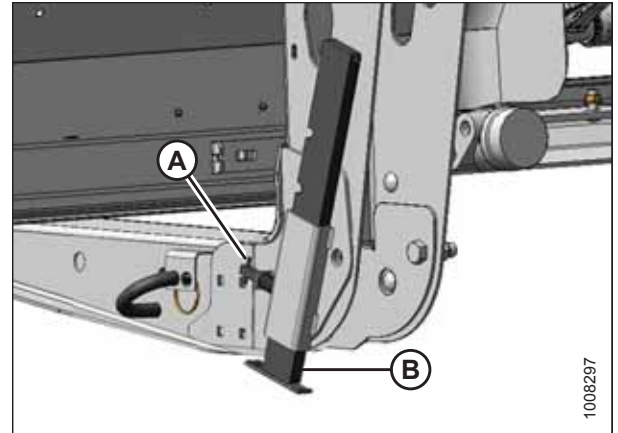


Figure 2.13: Header Stand

## 2.3 Removing Shipping Supports

Shipping supports must be removed to prepare the header for assembly.

**NOTE:**

Unless otherwise specified, discard all shipping materials and hardware.

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

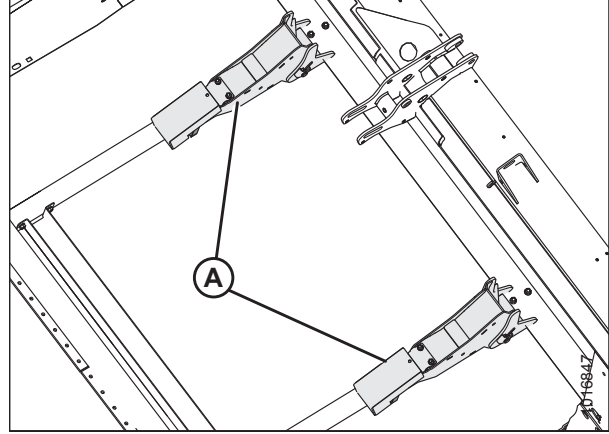


Figure 2.14: Draper Header Supports and Shipping Supports

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

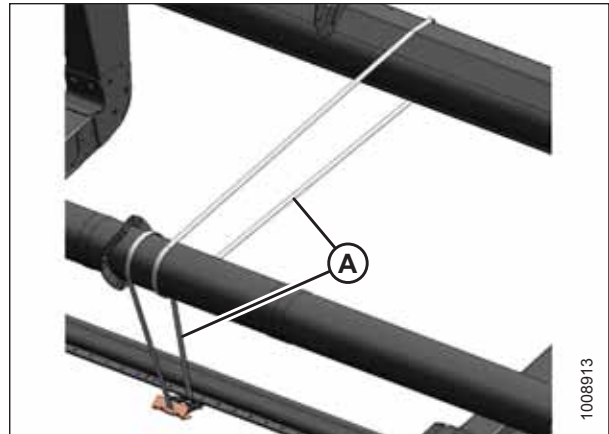


Figure 2.15: Single Reel

3. Remove the bolts from locations (A) securing upper support (B) to the header legs. Remove support (B).

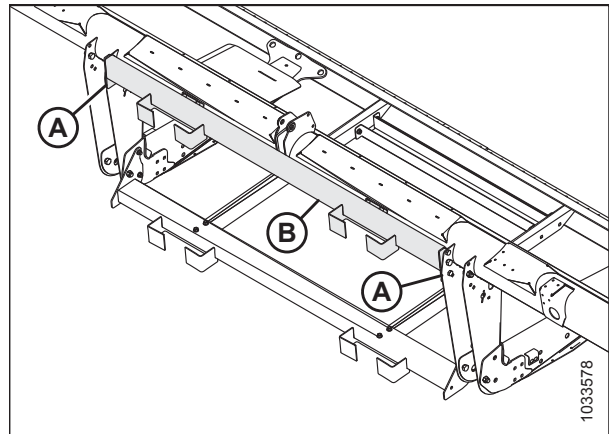
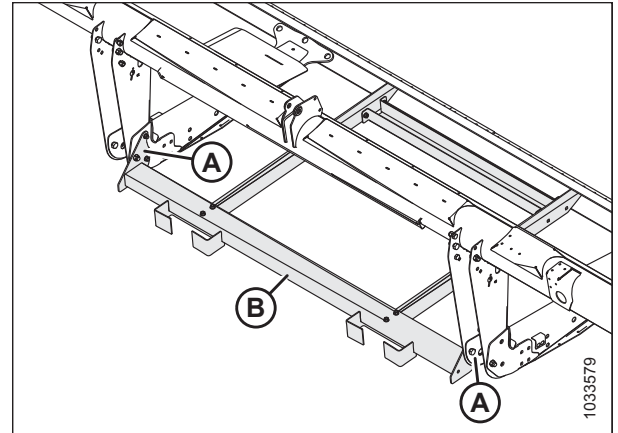


Figure 2.16: Upper Support

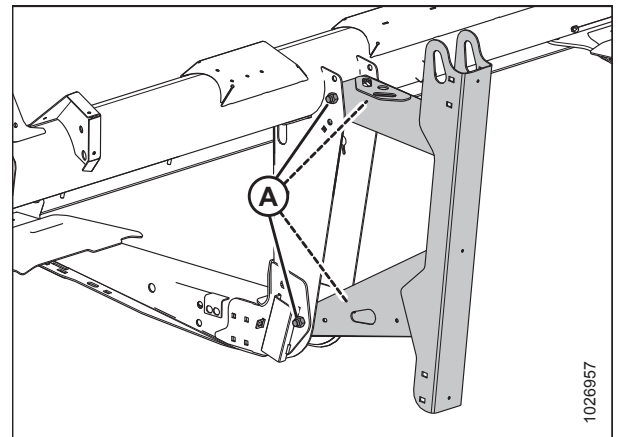
## UNLOADING THE HEADER

4. Remove the bolts from locations (A) securing lower support (B) to the header legs. Remove support (B).

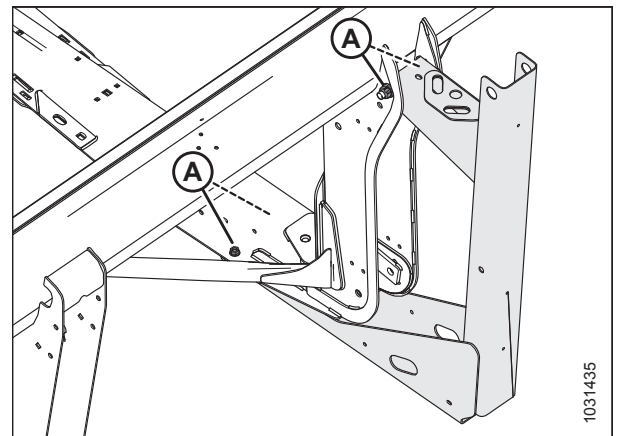


**Figure 2.17: Lower Support**

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



**Figure 2.18: Outer Leg Shipping Support for D115X, D120X, and D125X**



**Figure 2.19: Outer Leg Shipping Support for D130XL, D135XL, D140XL, and D145XL**

## UNLOADING THE HEADER

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

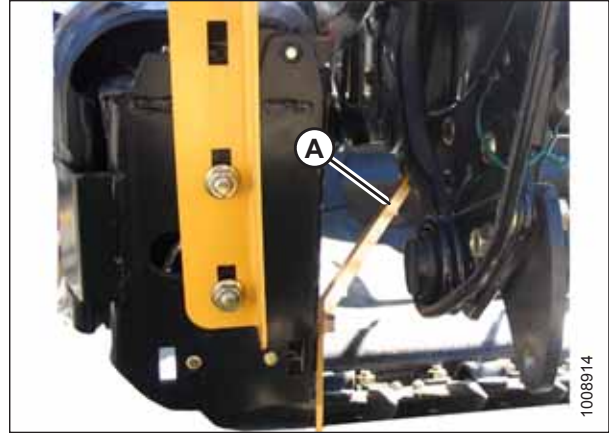


Figure 2.20: Anti-Rotation Brace

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

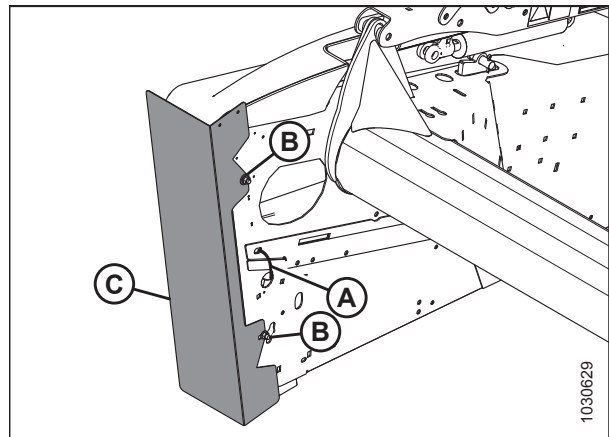


Figure 2.21: Endsheets Shipping Support

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

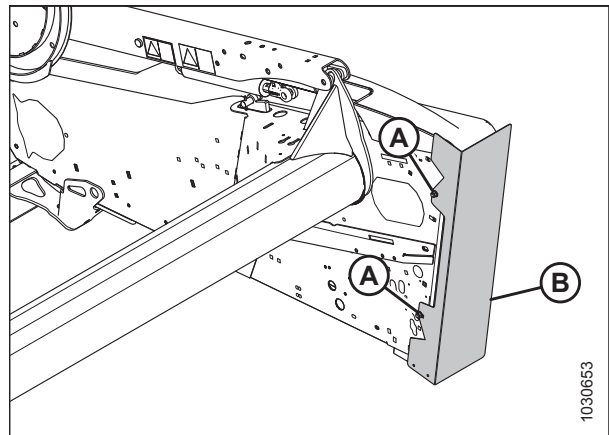


Figure 2.22: Endsheets Shipping Support

## Chapter 3: 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 3.1, page 19 lists the number of counterweight kits required for each D1XL and D1X Series configuration. Install them according to the instructions supplied with each kit **BEFORE** attaching the header to the windrower.

**Table 3.1 Available Ballast Kits for Different Header Types and Configurations**

Header Type	Description	Header Configuration	Initial Rear Ballast Kit	Additional Rear Ballast Kits
D115X	4.6 m (15 ft.) single reel, double knife, timed	Base	—	—
D120X	6.1 m (20 ft.) single reel, double knife, timed	Base	—	—
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	—

## ADDING BALLAST

**Table 3.1 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

## Chapter 4: Attaching Header to Windrower

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

### 4.1 Installing the Hydraulic Hose Management System

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

1. Cut and remove wire (A) securing hydraulic hose management system (B) to diagonal brace (C).

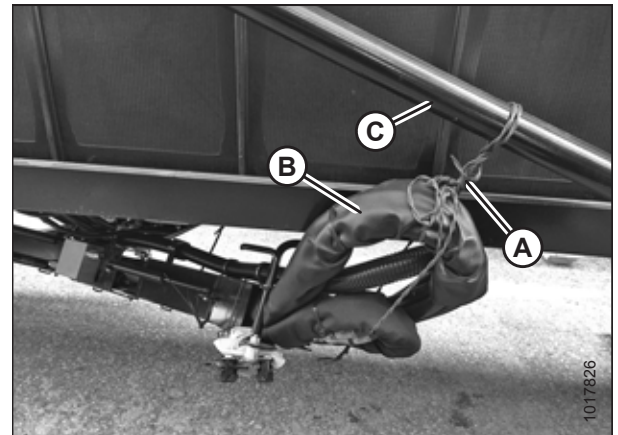


Figure 4.1: Hydraulic Hose Management System

**NOTE:**

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

2. Position sling (A) between gas spring cylinder (B) and secure around support arm (C).

**NOTE:**

Illustration shows the hydraulic hose management system in shipping position for a 7.6–10.6 m (25–35 ft.) header.

3. Attach sling (A) to the forklift or lifting device.

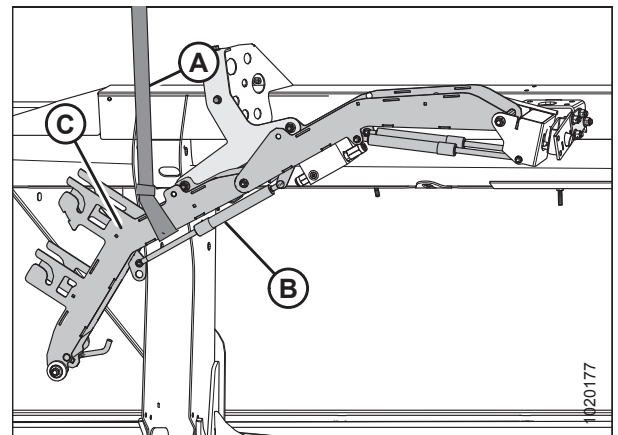


Figure 4.2: Hydraulic Hose Management System in Shipping Position

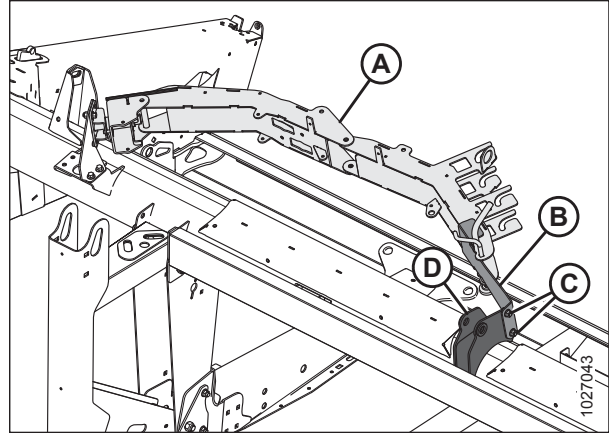
## ATTACHING HEADER TO WINDROWER

4. **4.6 m (15 ft.) and 6.1 m (20 ft.) Headers:** With the lifting device supporting the weight of hose management system (A), remove two bolts and nuts (C) securing shipping stand (B) to center anchor (D). Retain the hardware.

**NOTE:**

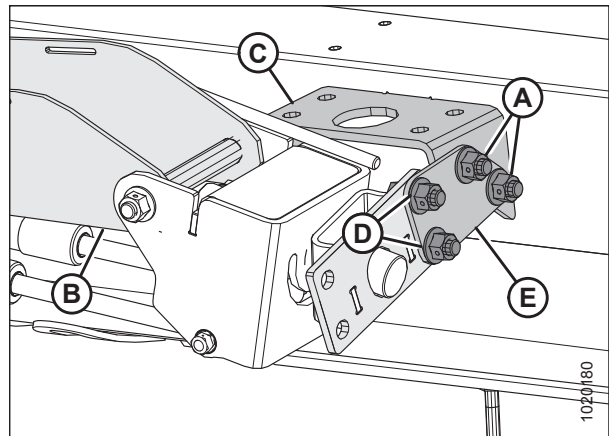
Sling not shown in the illustration at right.

5. Remove strap, shipping stand (B), and foam from hose management system (A).



**Figure 4.3: Hydraulic Hose Management System in Shipping Position – 4.6 m (15 ft.) and 6.1 m (20 ft.) Headers**

6. **7.6–10.6 m (25–35 ft.) Headers:** Remove two bolts and nuts (A) securing the base of hydraulic hose management system (B) to frame channel (C). Retain the bolts and nuts for use later.
7. Remove the other two bolts and nuts (D) from shipping plate (E). Retain the bolts and nuts for use later. Discard shipping plate (E).



**Figure 4.4: Hydraulic Hose Management System Base Frame – 7.6–10.6 m (25–35 ft.) Headers**



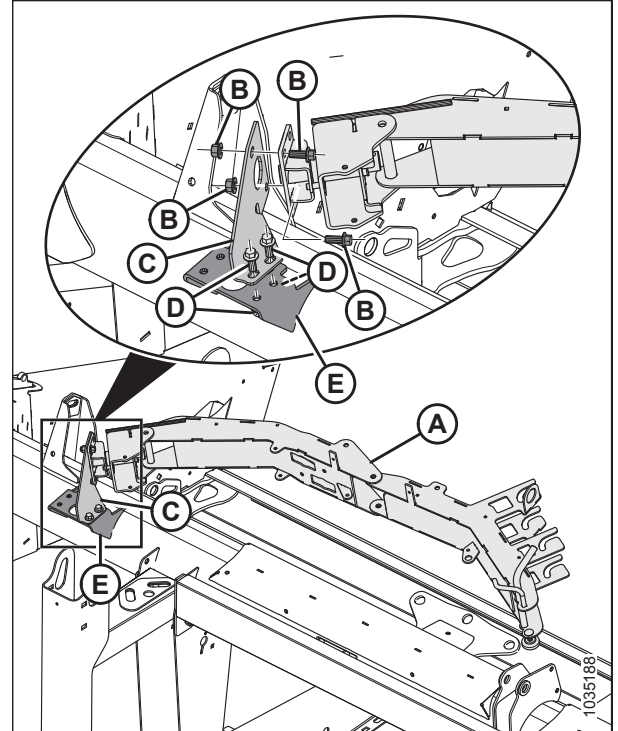
## ATTACHING HEADER TO WINDROWER

8. **4.6 m (15 ft.) and 6.1 m (20 ft.) Headers:** With the lifting device supporting the weight of hydraulic hose management system (A), remove two bolts and nuts (B) securing the hydraulic hose management system to outboard shipping support (C). Retain the hardware.

**NOTE:**

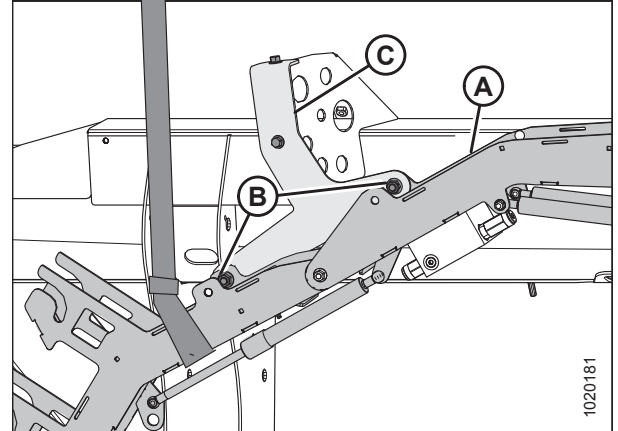
Sling not shown in the illustration at right.

9. Remove and retain bolts and nuts (D) securing shipping support (C) to frame channel (E). Discard shipping support (C).



**Figure 4.5: Hydraulic Hose Management System in Shipping Position – 4.6 m (15 ft.) and 6.1 m (20 ft.) Headers**

10. **7.6–10.6 m (25–35 ft.) Headers:** With the lifting device supporting the weight of hydraulic hose management system (A), remove two bolts and nuts (B) that secure the hydraulic hose management system to shipping support (C).



**Figure 4.6: Hydraulic Hose Management System in Shipping Position – 7.6–10.6 m (25–35 ft.) Headers**

## ATTACHING HEADER TO WINDROWER

11. **12.2–13.7 m (40–45 ft.) Headers:** With the lifting device supporting the weight of hydraulic hose management system, cut and remove wire (A) that secures the hydraulic hose management system to channel latch on top of header frame tube.



Figure 4.7: Hydraulic Hose Management System in Shipping Position – 12.2–13.7 m (40–45 ft.) Headers

12. With the help of the sling and lifting device, position hydraulic hose management system (A) as shown.

**NOTE:**

Sling not shown in the illustration at right.

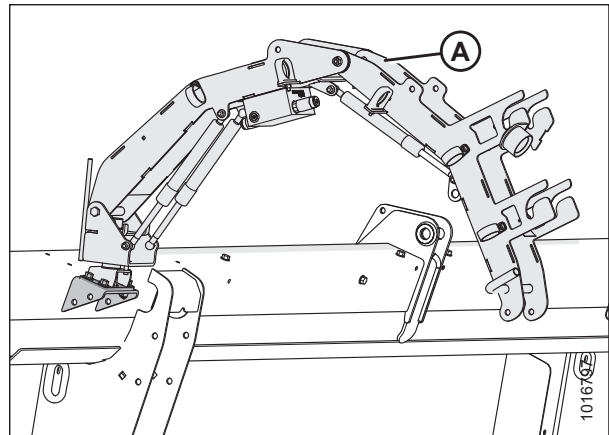


Figure 4.8: Hydraulic Hose Management System in Field Position

## ATTACHING HEADER TO WINDROWER

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

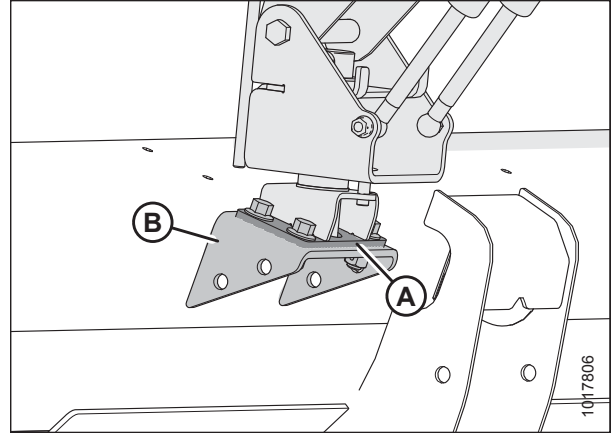


Figure 4.9: Hydraulic Hose Management System Plate Support

15. **7.6–10.6 m (25–35 ft.) Headers:** Remove two bolts (A) and shipping support (B) from 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.

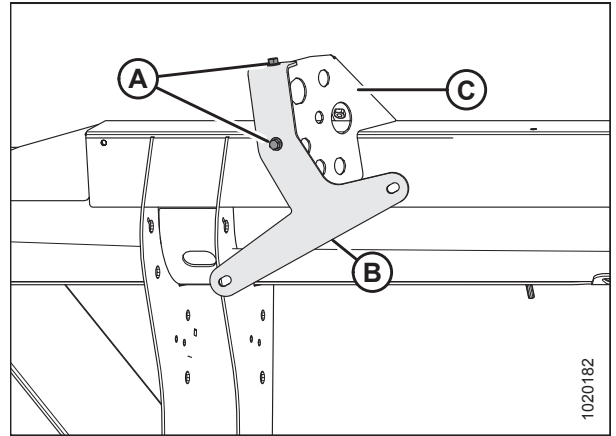


Figure 4.10: Hydraulic Hose Management System Shipping Support Bracket – 7.6–10.6 m (25–35 ft.) Headers

16. Remove cap (A) from the electrical coupler installed in the coupler holder.

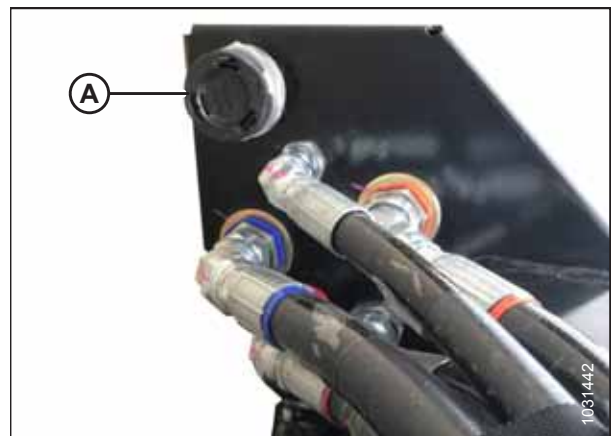


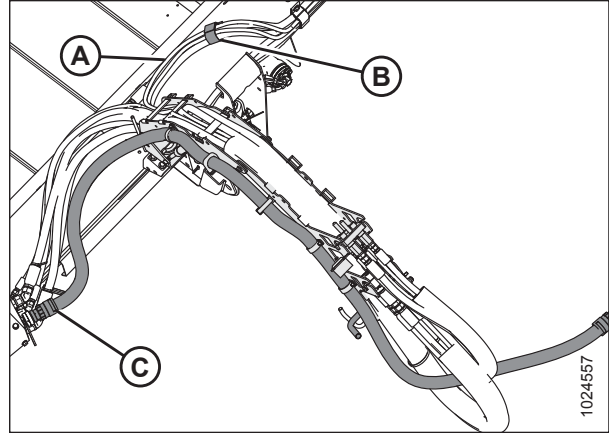
Figure 4.11: Electrical Connector on Header for Hydraulic Hose Management System

## ATTACHING HEADER TO WINDROWER

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

### IMPORTANT:

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



**Figure 4.12: Hydraulic Hose Management System  
Hose Routing – Top View**

## 4.2 Attaching Draper Header Supports

Draper header supports are required to attach a D1X or D1XL Series Draper Header to the windrower.

### 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. Shut down the engine, and remove the key from the ignition.
2. Retrieve the header draper supports that were removed from the shipping supports in Step 1, page 16.
3. Remove hairpin and clevis pin (B) from draper header support (A).

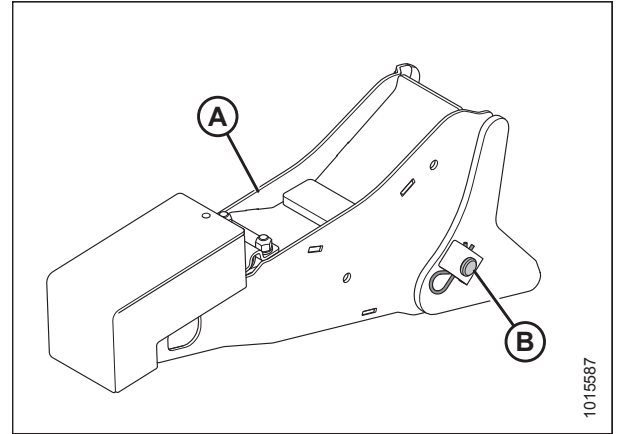


Figure 4.13: Draper Header Support

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

#### NOTE:

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

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

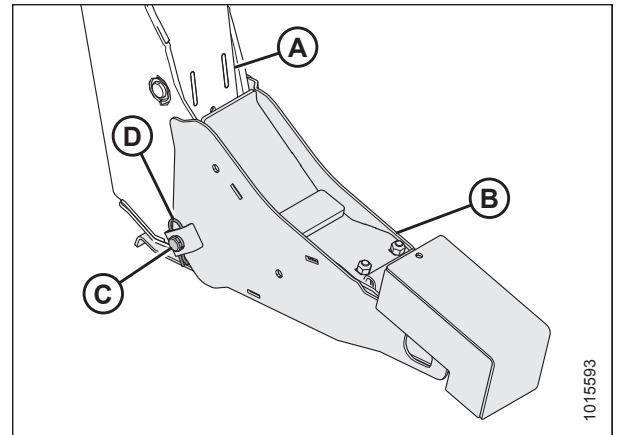


Figure 4.14: Draper Header Support

### 4.3 Connecting Center-Link

The center-link hook on the windrower connects to a pin on the header, providing support and angle adjustment.

The windrower may have an optional self-aligning hydraulic center-link that allows vertical position control of the center-link from the cab.

1. **For windrowers without the self-aligning center-link kit:** Relocate pin (A) in the frame linkage as required to raise 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.

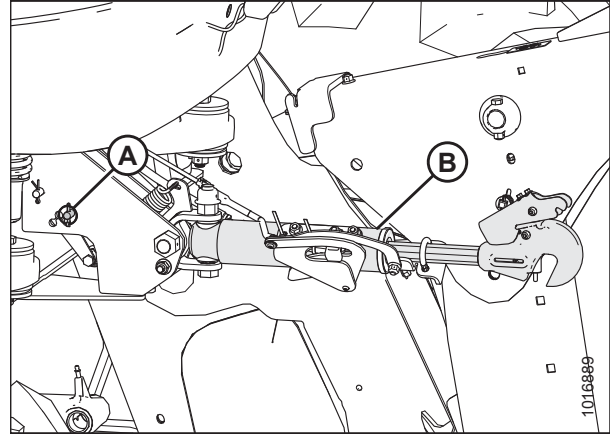


Figure 4.15: Center-Link without Self-Alignment

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

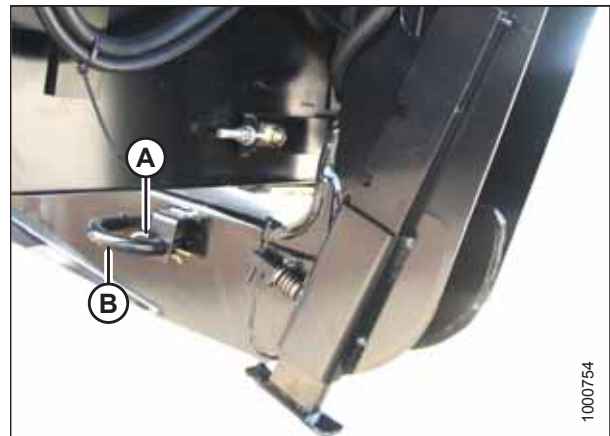


Figure 4.16: Header Leg

**⚠ DANGER**

Check to be sure all bystanders have cleared the area.

3. Start the engine.

## ATTACHING HEADER TO WINDROWER

4. If lowering the header lift legs **WITH** a header or weight box attached, proceed to Step 8, page 30.

If lowering the header lift legs **WITHOUT** a header or weight box attached to the windrower, fully release the tension in header float springs (A):

- If prompted by the Harvest Performance Tracker (HPT) to remove the float, then remove the float and proceed to Step 8, page 30.
- If not prompted by the HPT to remove the float, then proceed to Step 5, page 29 to remove the float manually.

### IMPORTANT:

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

5. In the windrower cab, press scroll knob (A) on the HPT to display the QuickMenu system.
6. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B), and press the scroll knob to select.

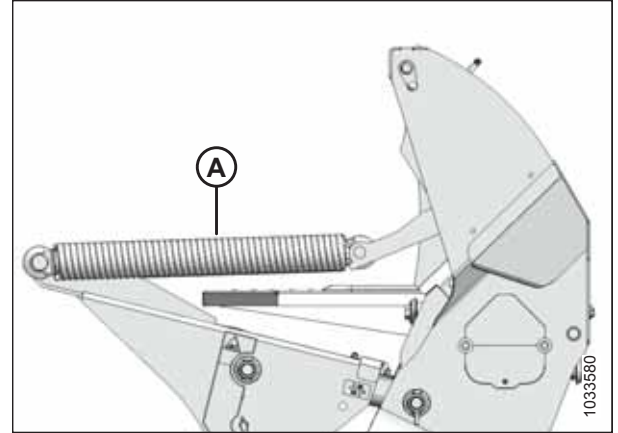


Figure 4.17: Header Float Springs



Figure 4.18: HPT Display

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



Figure 4.19: HPT Display

## ATTACHING HEADER TO WINDROWER

### 8. For windrowers equipped with the self-aligning center-link kit:

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

#### IMPORTANT:

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

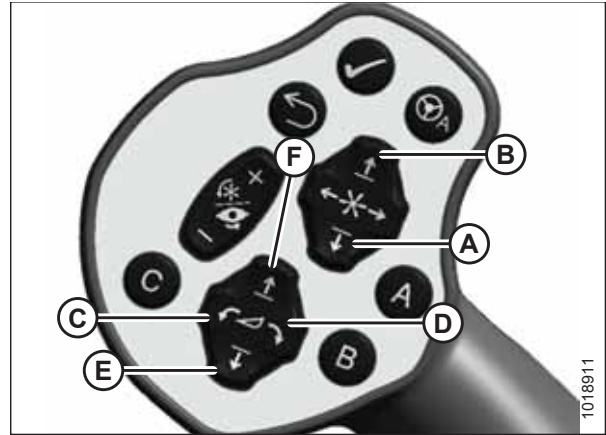


Figure 4.20: GSL Switches

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 draper header supports (A) enter 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 the header legs and are contacting the support plates.

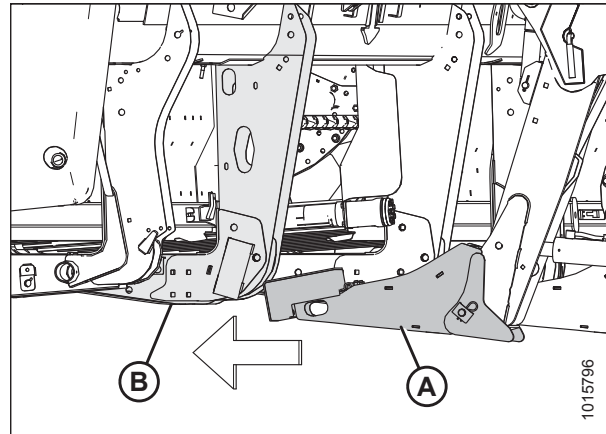


Figure 4.21: Header Leg and Draper Header Support

### 11. For windrowers equipped with the self-aligning center-link kit:

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

#### IMPORTANT:

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

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

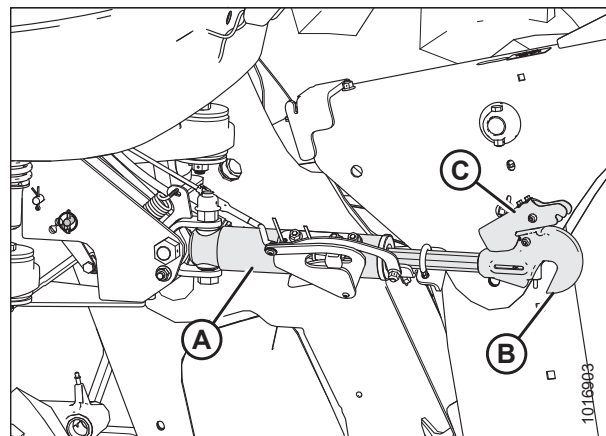


Figure 4.22: Hydraulic Center-Link



## ATTACHING HEADER TO WINDROWER

### 12. For windrowers without the self-aligning center-link kit:

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

#### IMPORTANT:

The 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.

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



### DANGER

Check to be sure all bystanders have cleared the area.

- Start the engine.
- Press HEADER UP switch (A) to raise header to maximum height.
  - Shut down the engine, and remove the key from the ignition.

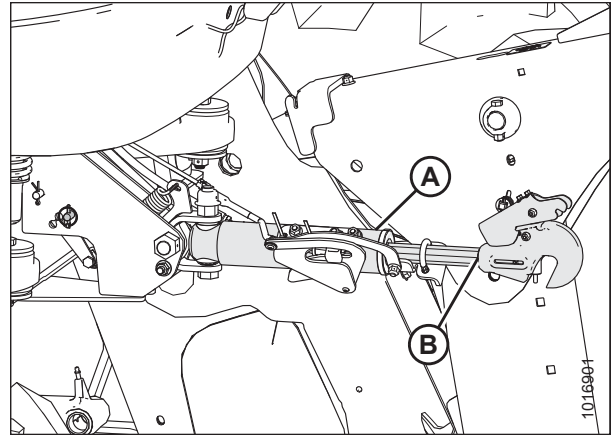


Figure 4.23: Hydraulic Center-Link



Figure 4.24: GSL

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

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

#### IMPORTANT:

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

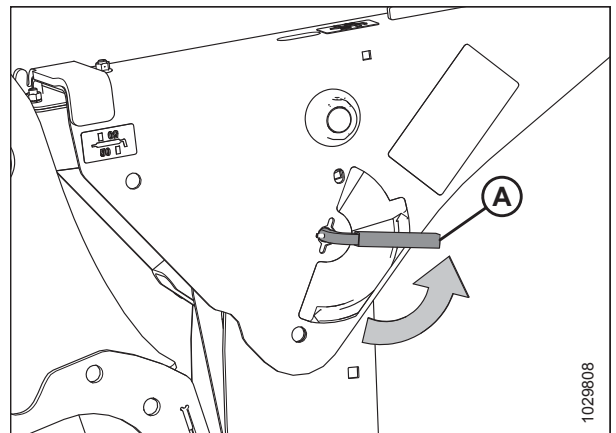


Figure 4.25: Safety Prop Lever

## ATTACHING HEADER TO WINDROWER

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.

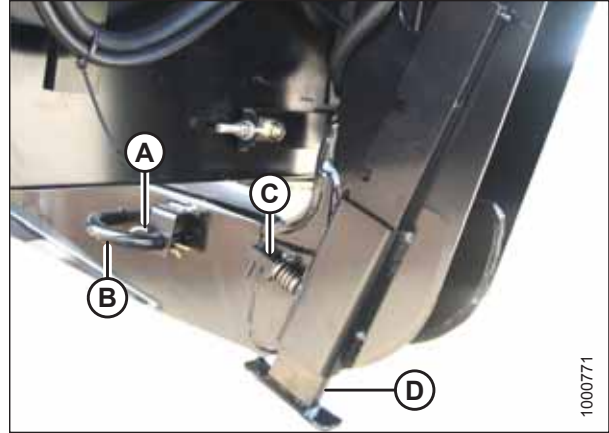


Figure 4.26: Header Leg

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

### NOTE:

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

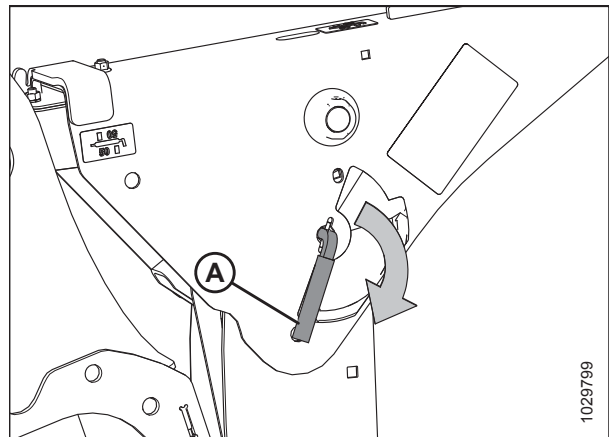


Figure 4.27: Safety Prop Lever



## DANGER

Check to be sure all bystanders have cleared the area.

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

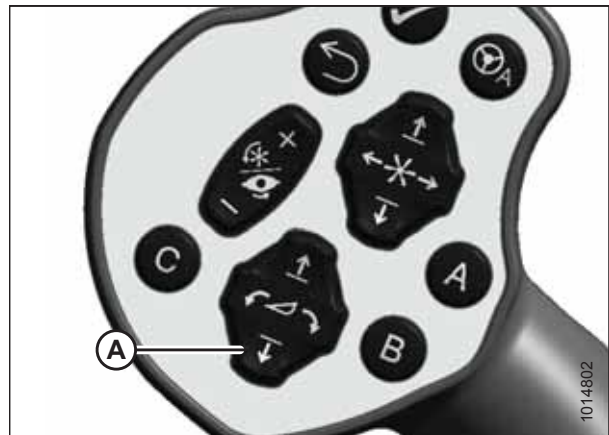


Figure 4.28: GSL

## 4.4 Connecting Hydraulics

Hydraulic connections power the reel, draper and knife functions of the header.

### 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 hydraulic hose management system (A) toward the left cab-forward side of the windrower.
2. Remove all remaining ties and shipping wire from the hydraulic hose management system.

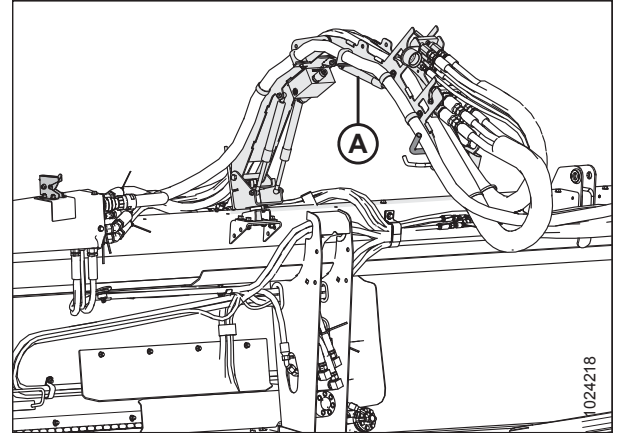


Figure 4.29: Hydraulic Hose Management System

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

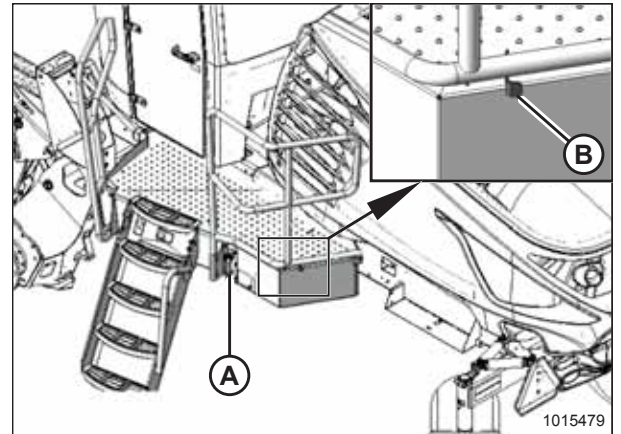


Figure 4.30: Platform

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

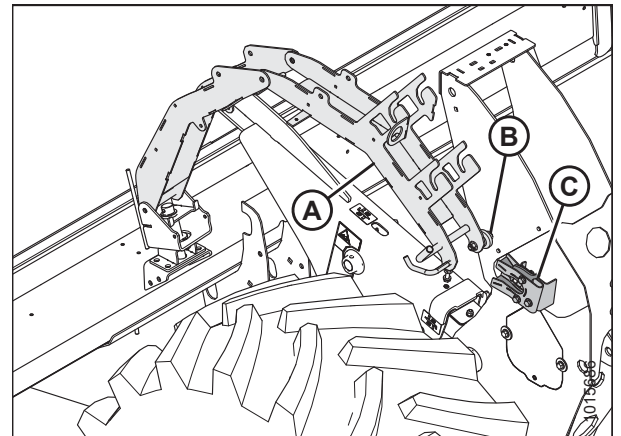


Figure 4.31: Hydraulic Hose Management System

## ATTACHING HEADER TO WINDROWER

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

### NOTE:

Hose quick-disconnect (F) is only present on M1240 machines configured for draper headers and on M1170 machines configured for rotary disc headers.

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

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

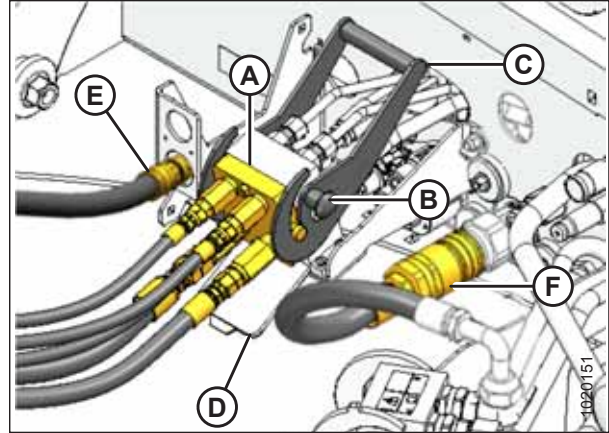


Figure 4.32: Draper/Reel Multicoupler

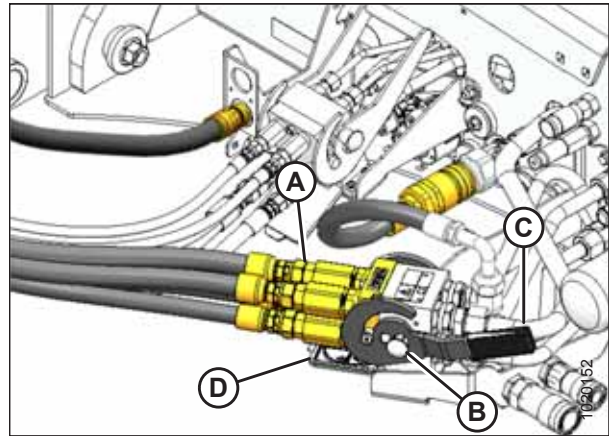


Figure 4.33: Knife/Reel Drive Multicoupler

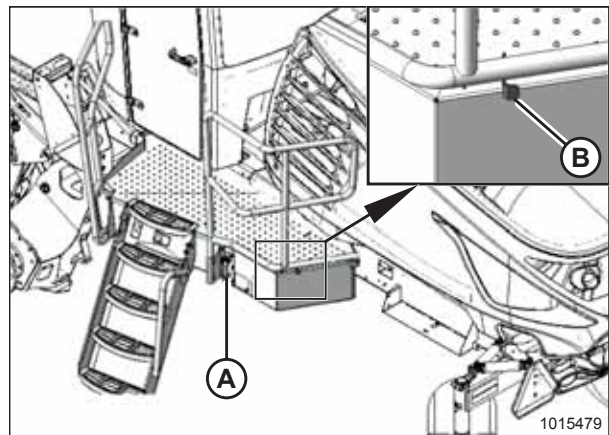
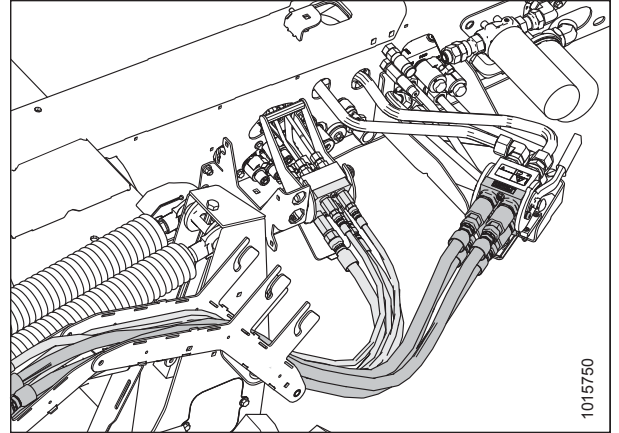


Figure 4.34: Platform

## ATTACHING HEADER TO WINDROWER

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



**Figure 4.35: Hydraulic Multicouplers and Hose Routing**



## Chapter 5: Assembling the Header

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

### 5.1 Positioning Transport Lights

Transport lights are located on each outboard reel arm. They are shipped in an inverted position on the inboard sides of the reel arms.

1. **D1X headers only:** Remove lock nuts (B) holding right light assembly (A) to the reel arm and remove the light assembly. Retain the lock nuts.

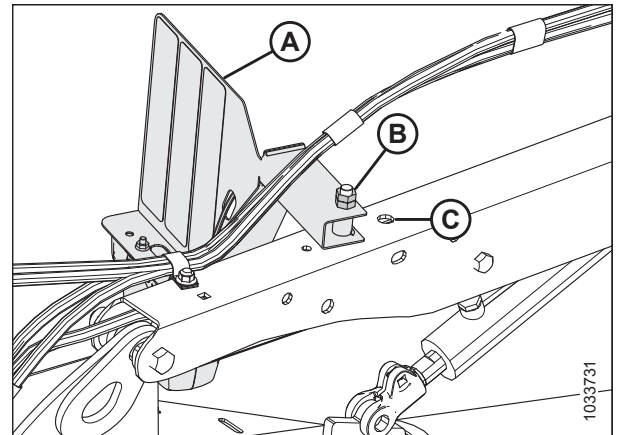


Figure 5.1: Right Light Assembly in Shipping Position – D1X Headers

2. **D1XL headers only:** Remove and retain lock nuts (A) and bolt holding right light assembly (B) to shipping bracket (C). Remove and discard nut (D) and bolt attaching shipping bracket (C) to reel arm bracket. Discard shipping bracket (C). Remove light assembly (B).

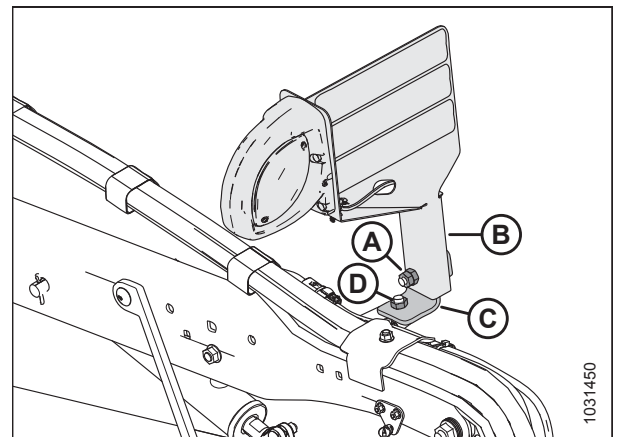


Figure 5.2: Right Light Assembly in Shipping Position – D1XL Headers



## ASSEMBLING THE HEADER

3. **D1X headers only:** Position right light assembly (A) perpendicular to the right reel arm and attach it using retained lock nuts (B).

**NOTE:**

The light assembly should rotate with normal hand force yet maintain its position.

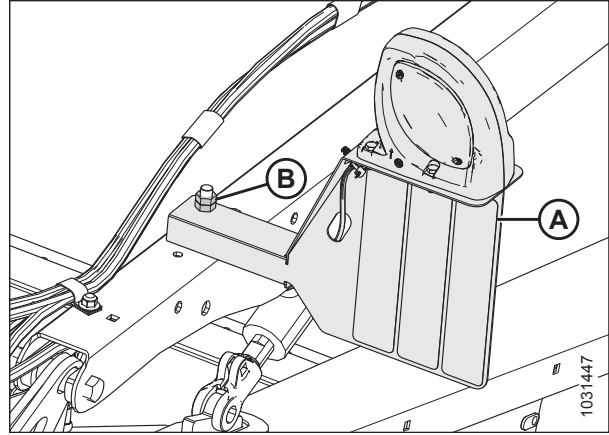


Figure 5.3: Right Transport Light – D1X Headers

4. **D1X headers only:** Position right light assembly (A) perpendicular to the right reel arm and attach it to reel arm bracket (B) using retained lock nuts (C) and bolt.

**NOTE:**

The light assembly should rotate with normal hand force yet maintain its position.

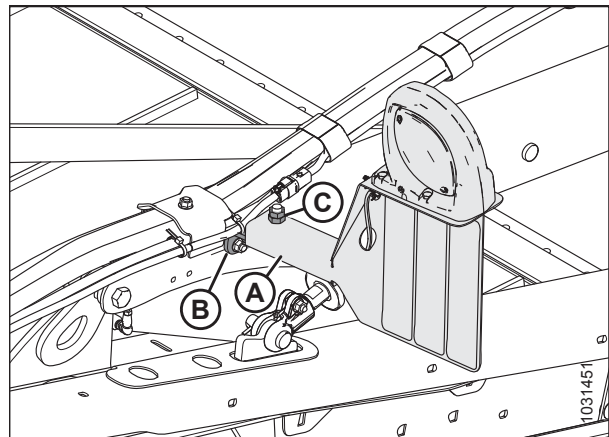


Figure 5.4: Right Transport Light – D1XL Headers

5. Remove lock nuts (A) holding left light assembly (B) to the reel arm and remove the light assembly. Retain lock nuts.

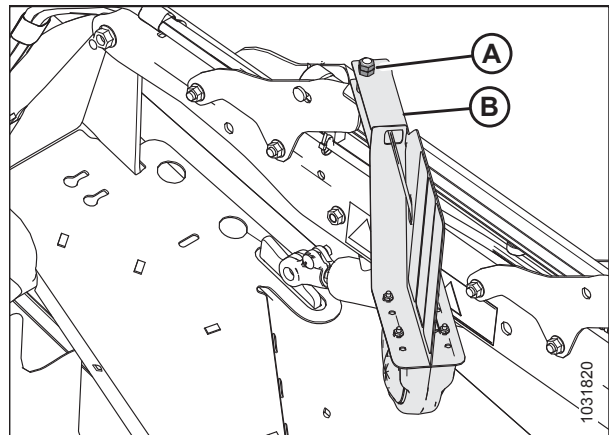


Figure 5.5: Left Light Assembly in Shipping Position



## ASSEMBLING THE HEADER

6. Position left light assembly (B) perpendicular to the left reel arm and attach it using retained lock nuts (A).

**NOTE:**

The light assembly should rotate with normal hand force yet maintain its position.

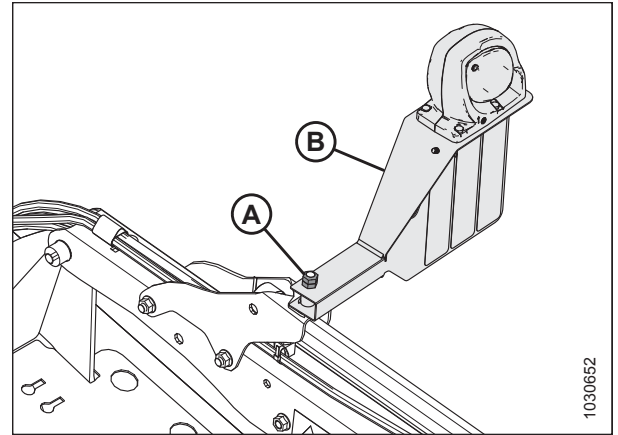


Figure 5.6: Left Transport Light

## 5.2 Attaching Reel Lift Cylinders

You must set up the reel lift arms before assembling the header any further.

### CAUTION

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

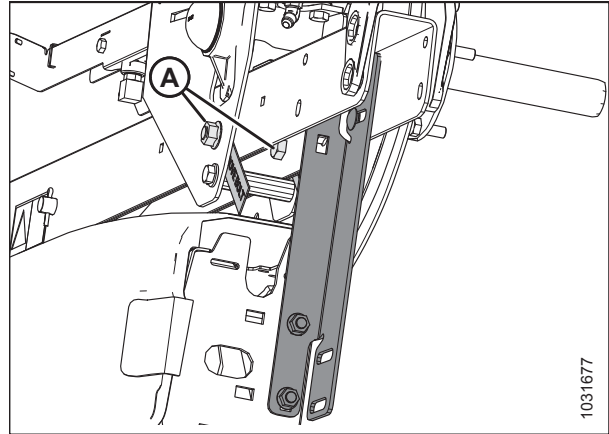


Figure 5.7: Reel Right Arm – Single Reel for D1X is Shown, D1XL is Similar

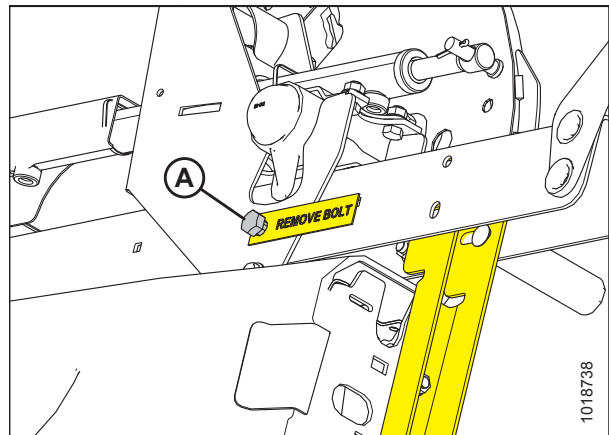


Figure 5.8: Reel Right Arm – Double Reel, D1XL Only

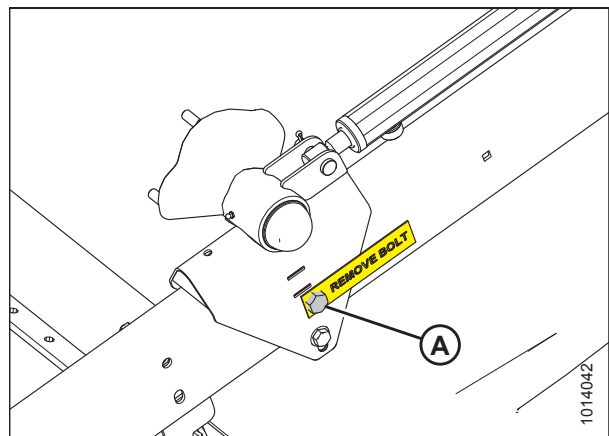


Figure 5.9: Left Reel Arm

## ASSEMBLING THE HEADER

### NOTE:

Some parts have been removed from the illustration for clarity.

1. Position sling (A) around reel tube (B) close to the outboard end of the reel and attach a sling to a forklift or an equivalent lifting device.
2. Remove the shipping wire/banding from the reel lift cylinder.
3. Support the reel with a lifting device, and remove two top bolts (A) on outboard reel arm supports (B). Repeat for the opposite side.

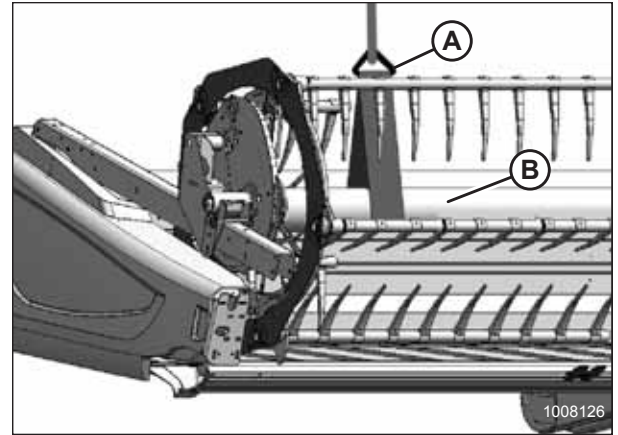


Figure 5.10: Reel Tube

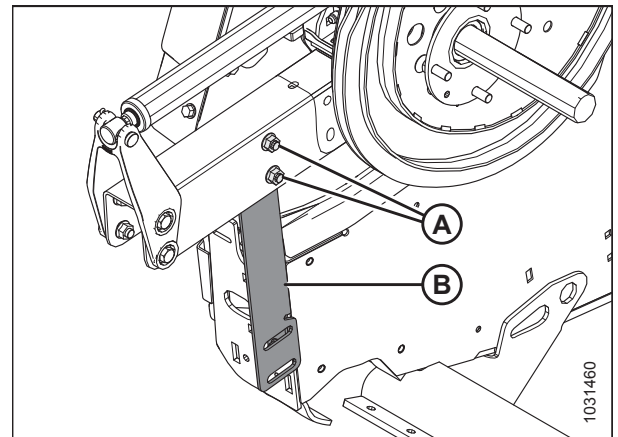


Figure 5.11: Outboard Reel Arm Support – D1X Header Shown

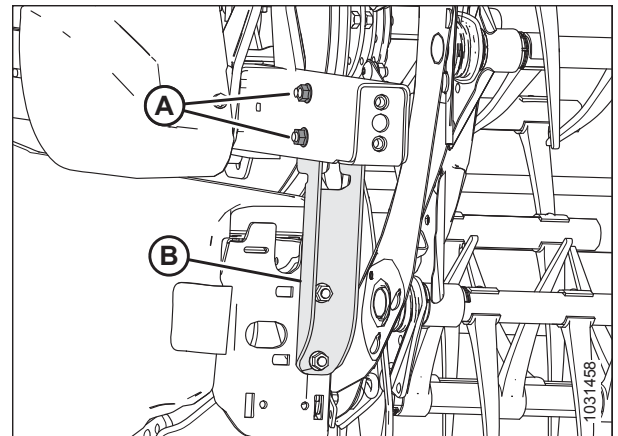


Figure 5.12: Outboard Reel Arm Support – D1XL Header Shown

## ASSEMBLING THE HEADER

4. **Double-reel headers only:** Support the reel with a lifting device, and remove two top bolts (A) from center reel arm shipping support (B) to allow the center reel arm to move.

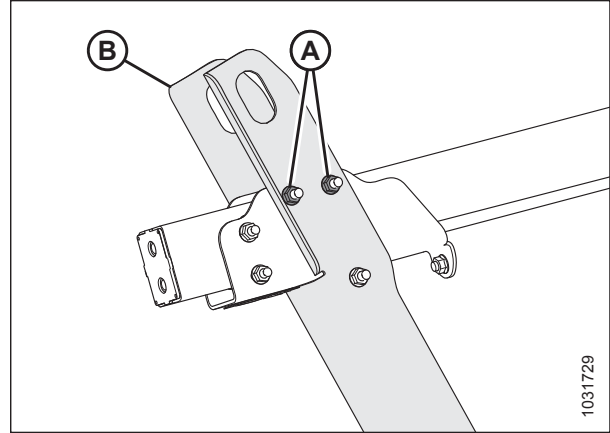


Figure 5.13: Center Reel Arm – Double Reel Only, D1XL Only

5. Support the reel with a lifting device, and remove pins from the endsheet and the reel arm.
6. Align the reel lift cylinder mounting holes with the lug on the endsheet and the hole in the reel arm.
7. Secure the cylinder to the endsheet and the reel arm with pins as shown.
- Insert clevis pin (A) and secure with cotter pin **OUTBOARD** on the reel arm
  - Insert clevis pin (B) and secure with cotter pin **INBOARD** of the endsheet

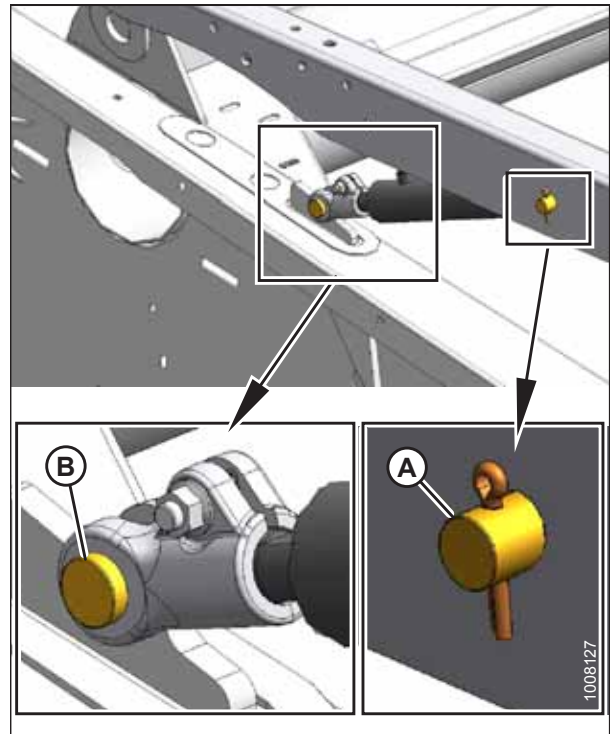


Figure 5.14: Right Reel Lift Cylinder

## ASSEMBLING THE HEADER

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

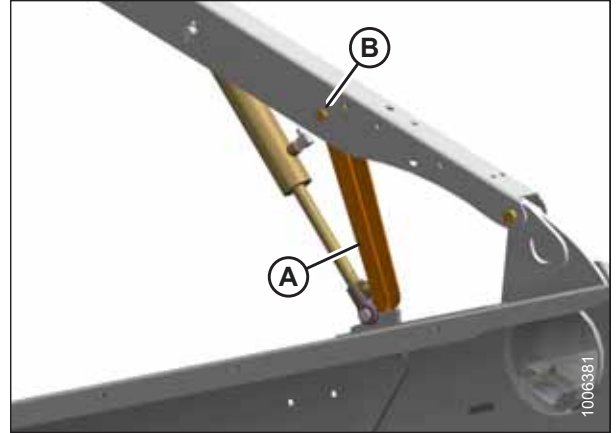


Figure 5.15: Reel Safety Props

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

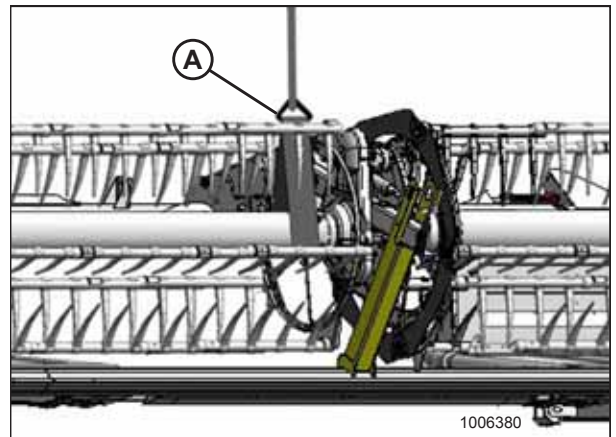


Figure 5.16: Lifting the Reel – Double Reel Only

10. **For double reel only:**
  - a. Remove the 3/4 in. socket head bolt and 5/8 in. nut from the cylinder rod end. Retain hardware.
  - b. Attach rod end of cylinder (B) to the reel arm with socket head bolt and nut (A). Access the hardware through the holes in the reel arm braces.
  - c. Torque bolt and nut (A) to 58 Nm (43 lbf-ft).
  - d. Remove the pin at the barrel end of the cylinder.
  - e. Adjust the reel height so the pin can be installed at the barrel end of the cylinder and mounting structure.

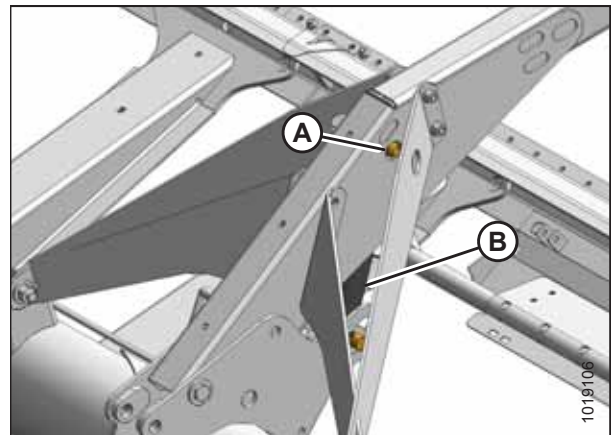


Figure 5.17: Reel Arm Braces

## ASSEMBLING THE HEADER

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

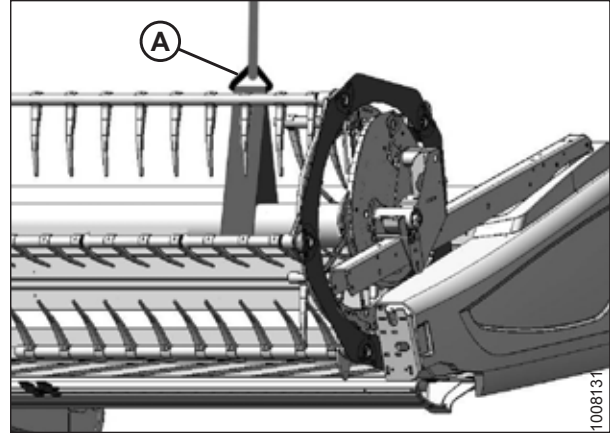


Figure 5.18: Outboard Reel Arm

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

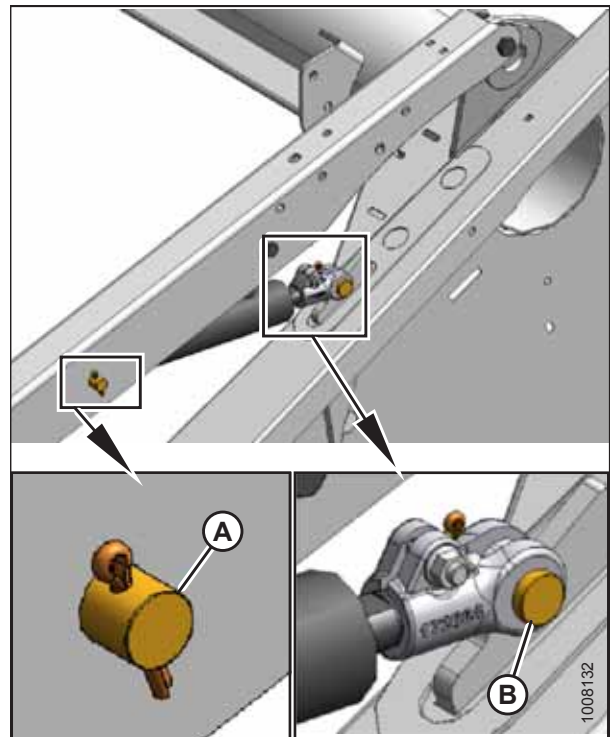


Figure 5.19: Left Reel Lift Cylinder

## ASSEMBLING THE HEADER

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

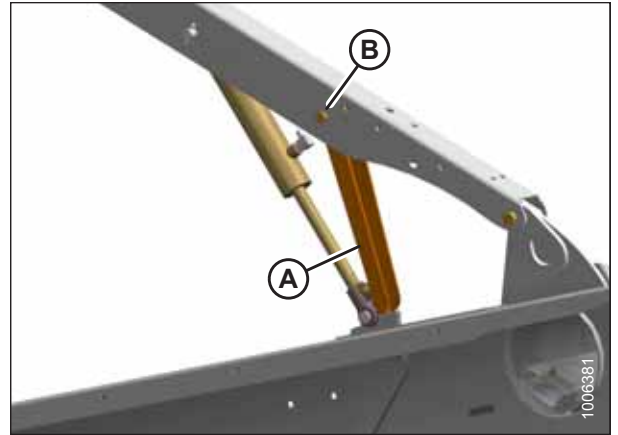


Figure 5.20: Reel Safety Prop

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

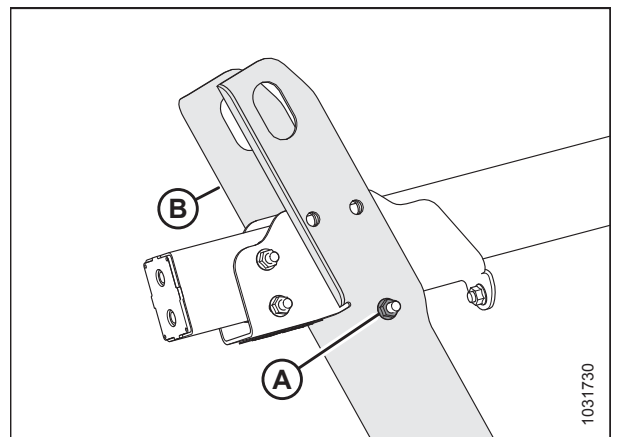
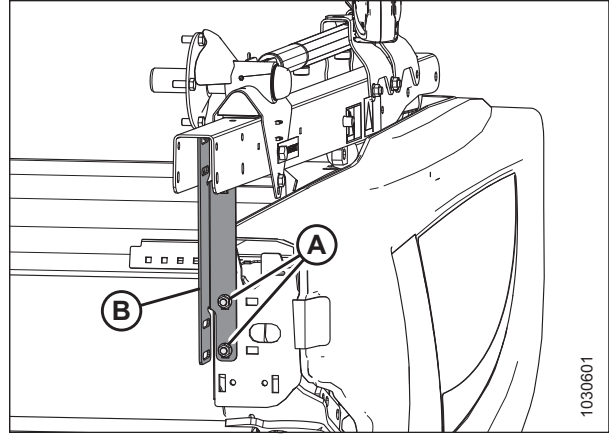


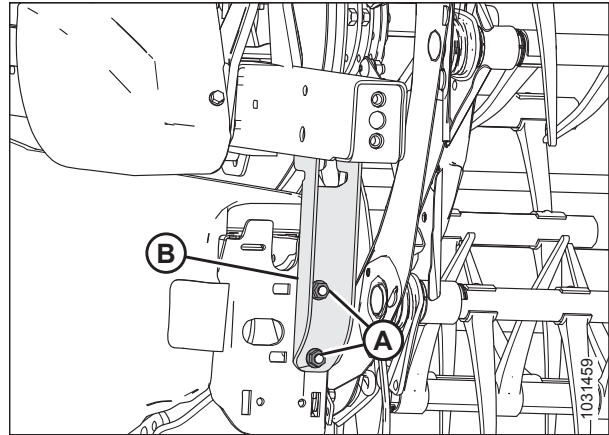
Figure 5.21: Center Reel Arm Shipping Support

## ASSEMBLING THE HEADER

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



**Figure 5.22: Outboard Reel Arm Supports – D1X Header Shown**



**Figure 5.23: Outboard Reel Arm Supports – D1XL Header Shown**



## ASSEMBLING THE HEADER

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

### IMPORTANT:

Do **NOT** use hydraulic pressure to move the fore-aft cylinder to aid brace bolts removal. The cylinder could be damaged.

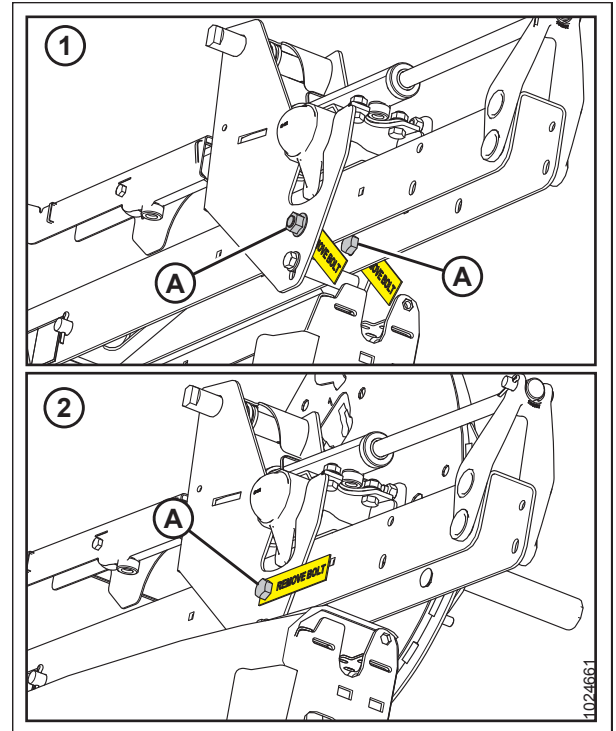


Figure 5.24: Right Reel Arm

1 - Single Reel

2 - Double Reel

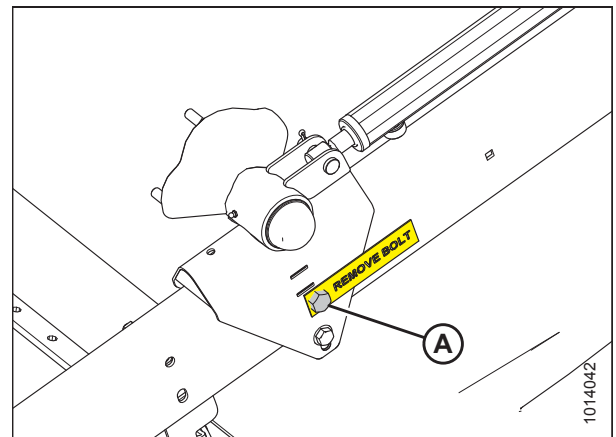


Figure 5.25: Left Reel Arm

## ASSEMBLING THE HEADER

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

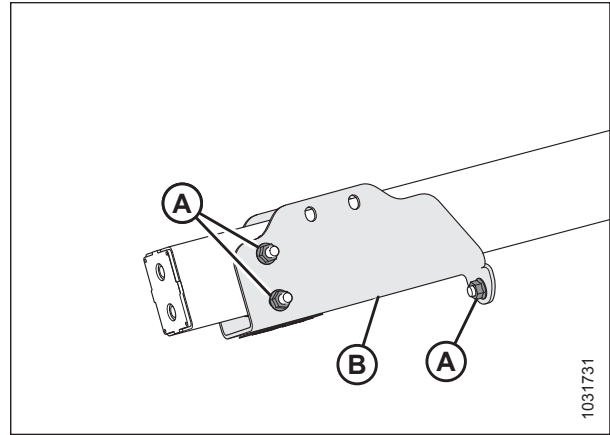


Figure 5.26: Center Reel Arm Shipping Channel – Double-Reel Only, D1XL Only

### 5.3 Installing Disc Segments of Outboard Reel Endshields

To meet the trucking load regulations for the maximum load width and height, two disc segments of reel endshields may have been removed from the right reel (tail end) and left reel (cam end).

Reel endshield (A) with two disc segments removed for shipping.

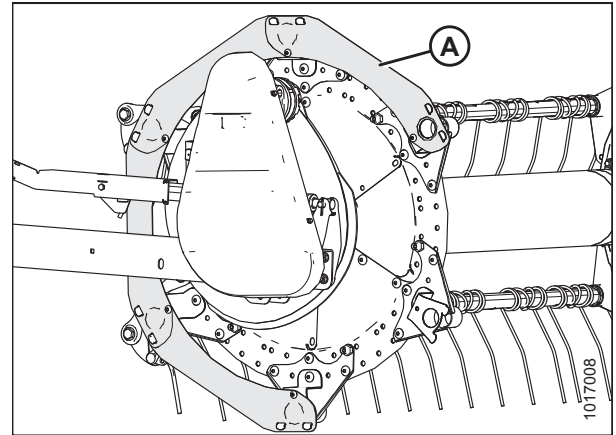


Figure 5.27: Reel Endshield – Cam End Shown, Tail End Similar

1. Check if the reel endshields are completely installed. If not, install the two disc segments as follows:
2. Retrieve the bag of hardware removed from the center draper support.
3. Remove two bolts (A) securing the disc segments to the support tabs. Retain the bolts for reinstallation later.
4. Engage the slots on disc segment (B) on endshield support tabs (C).

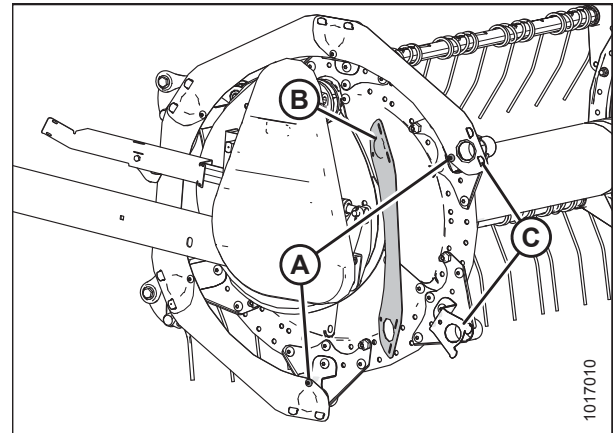


Figure 5.28: Reel Endshield

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

7. Repeat the procedure at the opposite side.

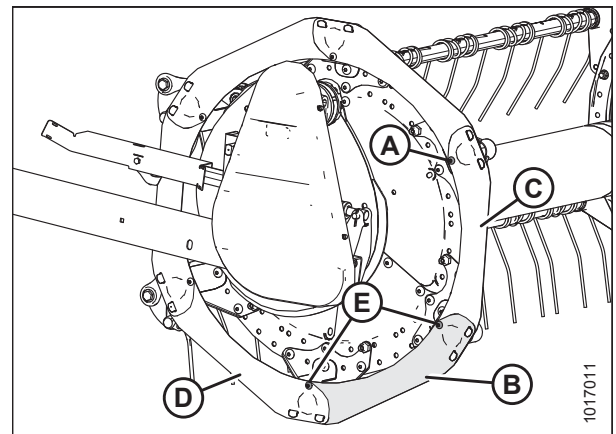


Figure 5.29: Reel Endshield

## 5.4 Attaching Cam Arms

Cam arms must be installed before operating the reel.

To attach the reel cam arms, follow these steps:

**NOTE:**

On nine-bat reel headers, one cam arm assembly was removed and secured to the tine tube for shipping purposes.

1. **Nine-bat reel headers:** Remove shipping wire (A) and foam, and remove cam arm assembly (B) from the tine tube.

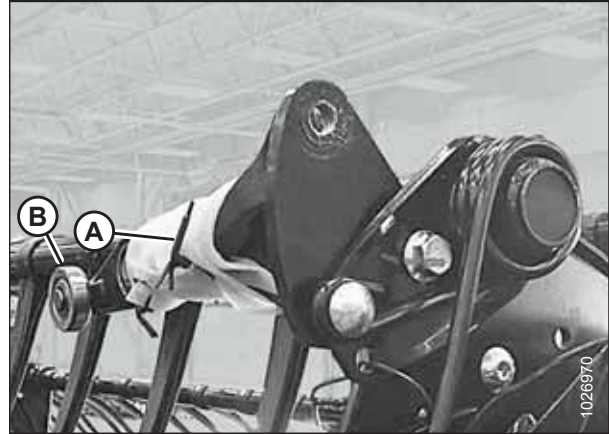


Figure 5.30: Cam Arm in Shipping Position

2. **Nine-bat reel headers:** Install cam arm assembly (A) onto arm (B), and secure with 1/2 in. smooth face lock nut (C). Torque to 75 Nm (55 lbf·ft).

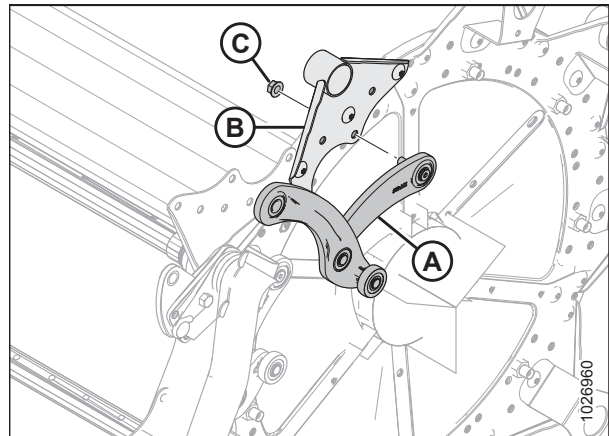


Figure 5.31: Cam Arm Assembly

## ASSEMBLING THE HEADER

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

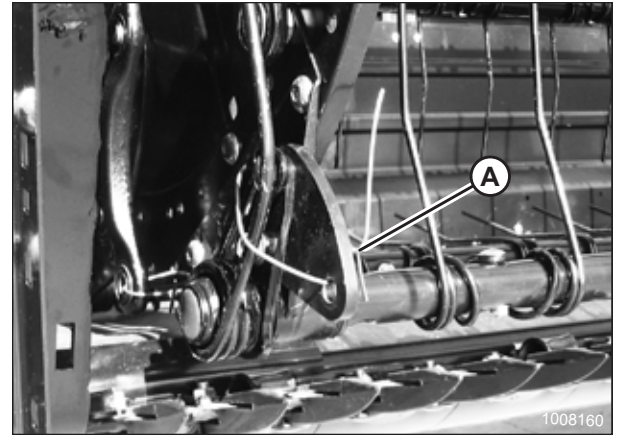


Figure 5.32: Disconnected Cam Links and Shipping Wire

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

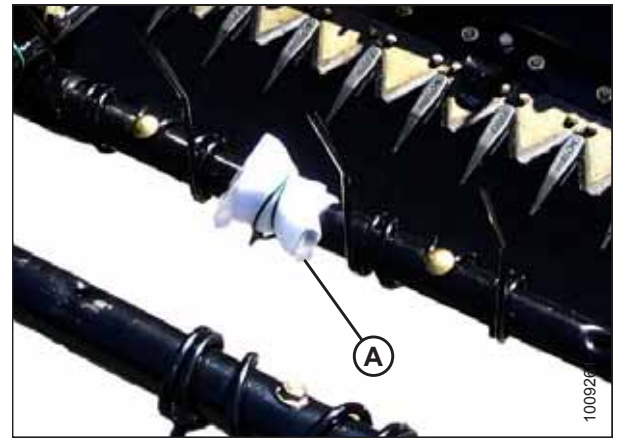


Figure 5.33: Hardware Bag Right Reel

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

### IMPORTANT:

Make sure shim (D) is installed in the correct location to avoid damage to the bar crank.

### NOTE:

Bolts are precoated with Loctite®, so no further locking method is required.

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

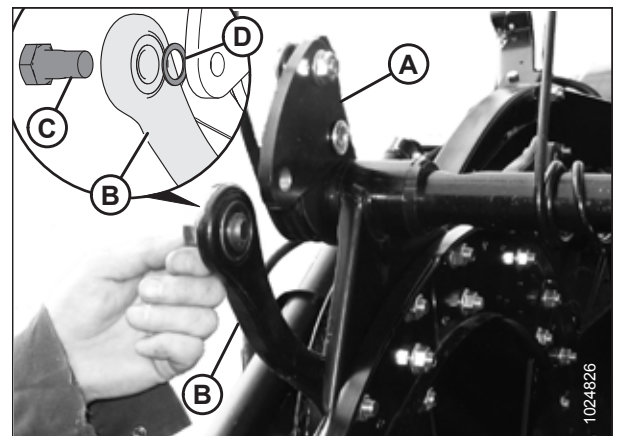


Figure 5.34: Bar Crank Attachment Holes and Link Alignment

## 5.5 Installing Crop Dividers

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

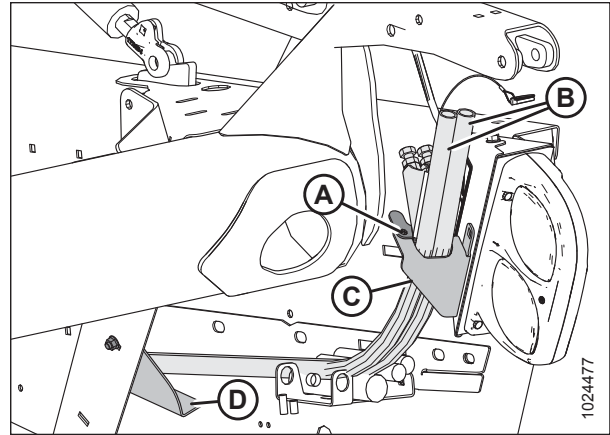


Figure 5.35: Divider Rods on Endsheets

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

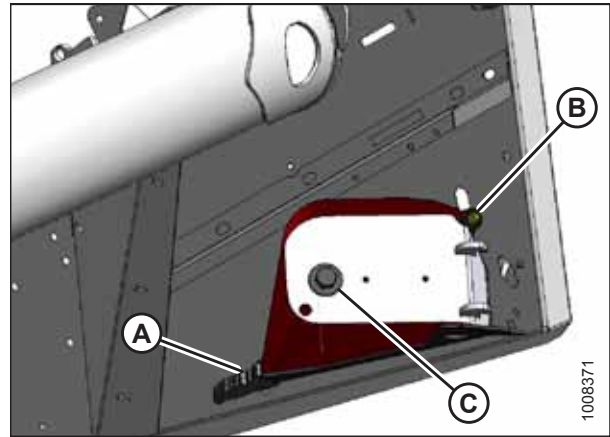


Figure 5.36: Crop Divider on Endsheets

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

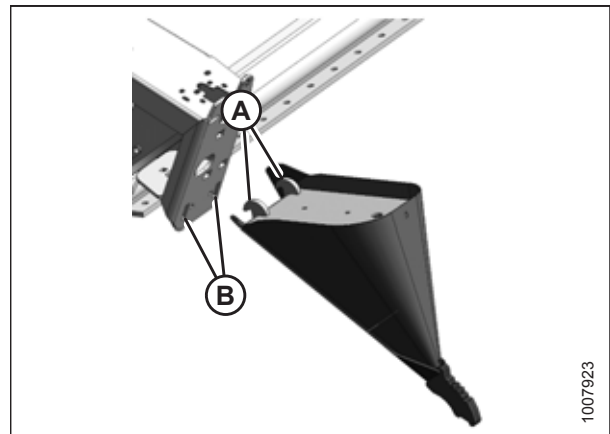


Figure 5.37: Crop Divider Lugs and Endsheets Slots

## ASSEMBLING THE HEADER

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

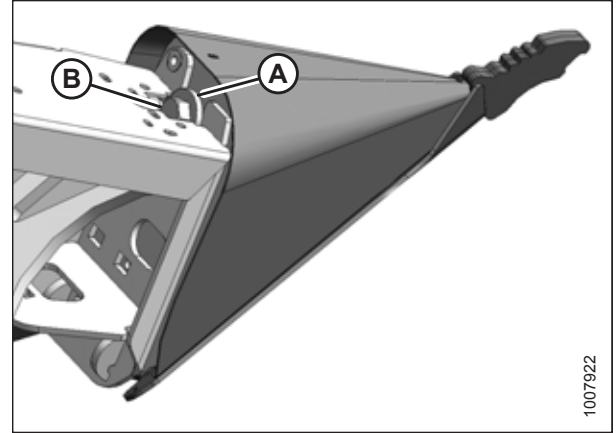


Figure 5.38: Installing Divider

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

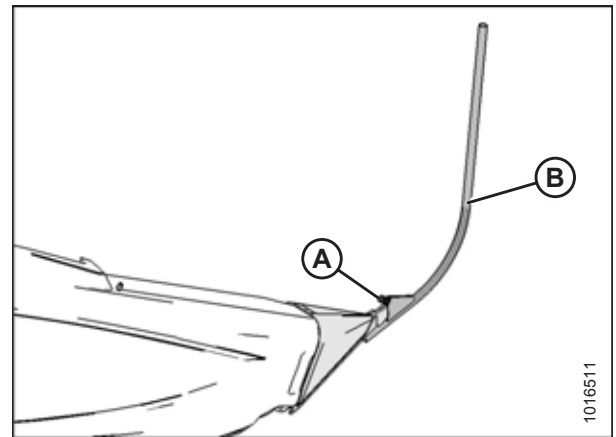


Figure 5.39: Divider Rod on Crop Divider

9. Check that the divider does **NOT** move laterally. Adjust bolts (A) as required to tighten the divider and remove lateral play when pulling at the divider tip.
10. Repeat Step 4, page 52 to Step 9, page 53 on the left side of the header.

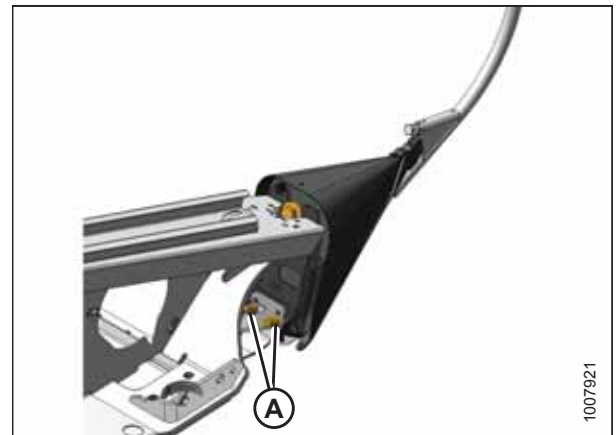


Figure 5.40: Adjustment Hardware

## 5.6 Attaching Reel Height Sensor – D1XL Headers

On D1XL headers, the reel height sensor linkage (located toward the back of the right reel arm) is disconnected to prevent shipping damage.

**NOTE:**

This procedure does **NOT** apply to D1X headers because D1X headers are **NOT** factory-equipped with a reel height sensor.

Reconnect the sensor using the following procedure:

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

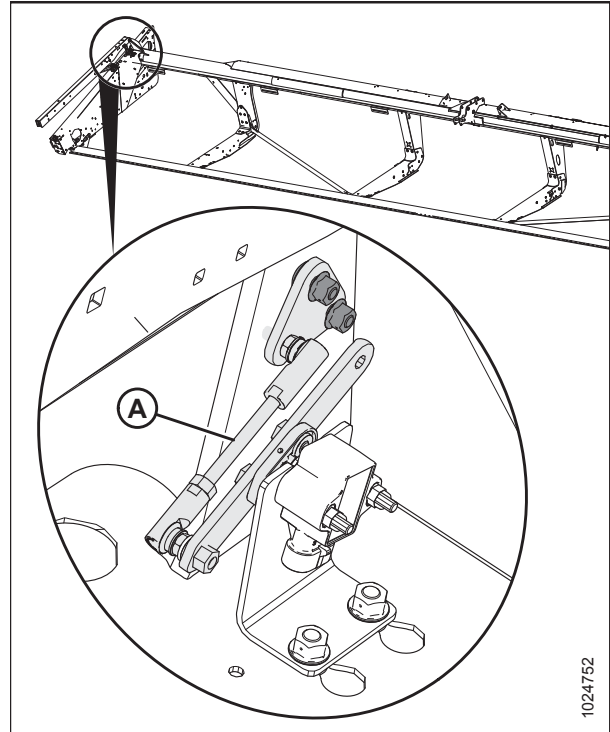


Figure 5.41: Reel Height Sensor – Disconnected



## ASSEMBLING THE HEADER

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

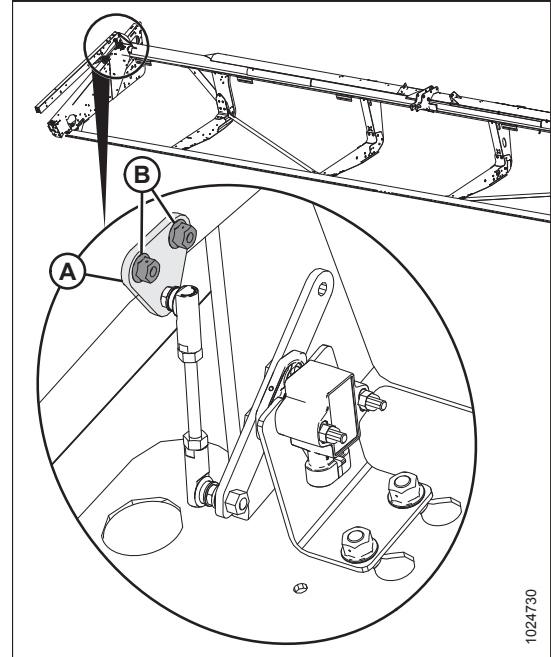


Figure 5.42: Reel Height Sensor

## 5.7 Installing Options

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

## Chapter 6: 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 adjusting machine.

#### **IMPORTANT:**

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

1. Shut down the engine, and remove the key from the ignition.
2. Perform the final checks as listed on the **Predelivery Checklist** (yellow sheet attached to this instruction – [Predelivery Checklist, page 115](#)) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the Checklist. The completed Checklist should be retained by either the Operator or the Dealer.

### 6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Headers

Make sure the tires are inflated to the pressure according to the load range of the tire. Load ranges are marked on the sidewall of the tire.

### **WARNING**

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

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

**Table 6.1 Tire Inflation Pressure**

Size	Load Range	Pressure
ST205/75 R15	C	345 kPa (50 psi)
	<b>IMPORTANT:</b> Load range “C” is an alternative tire for the stabilizer wheel option <b>ONLY</b> . Do <b>NOT</b> use with the transport option.	
	D	517 kPa (75 psi)
	E	586 kPa (85 psi)

## 6.2 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels, Option for D1XL Headers

Check the torque on all transport and stabilizer wheel bolts to make sure the wheels are installed properly.

Follow these steps to check the torque:

1. Check that wheel bolt torque is 115 Nm (85 lbf·ft).
2. If necessary, adjust torque. Refer to bolt tightening sequence illustration at right.

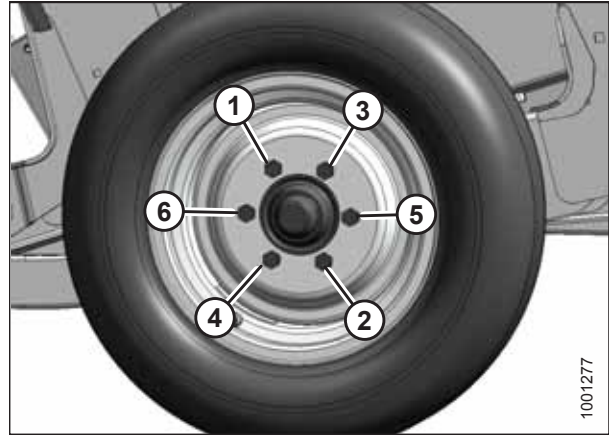


Figure 6.1: Sequence for Tightening Bolts

## 6.3 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), the endshield(s) must be fully opened.

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

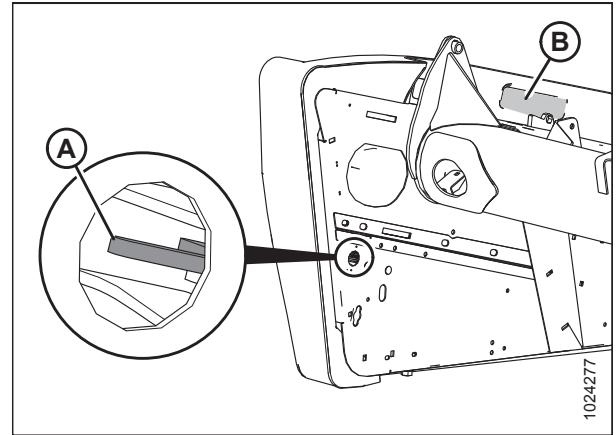


Figure 6.2: Endshield Latch Access

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

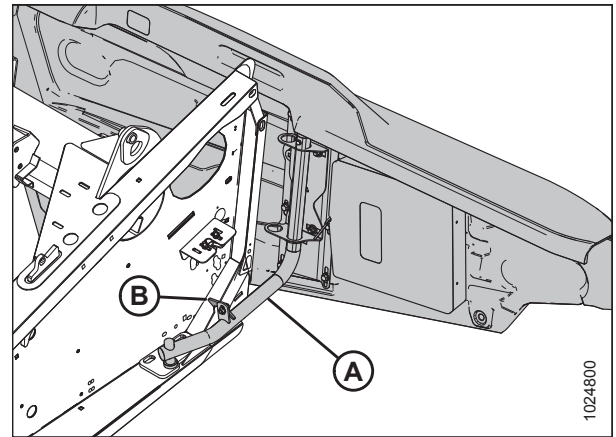


Figure 6.3: Left Endshield Support Tube

### 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 bottom edge (C) of lower hole (D) and bottom (E) of the breather.

### NOTE:

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

6. Reinstall breather and tighten.

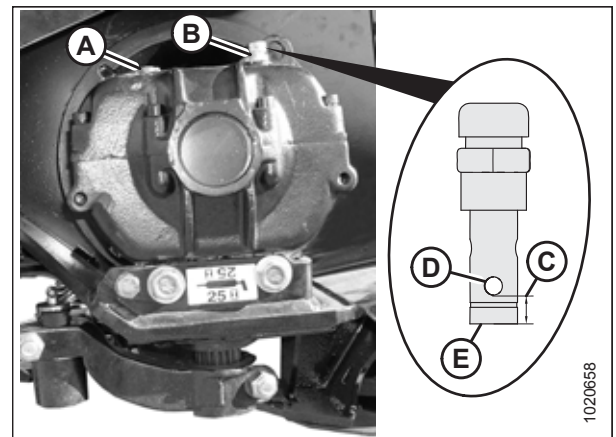


Figure 6.4: Knife Drive Box

## 6.4 Checking and Adjusting Knife Drive Belt Tension

Correct knife drive belt tension is necessary for the knife sections to stroke properly.

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

- [6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts, page 60](#)
- [6.4.2 Tensioning Timed Double-Knife Drive Belts, page 61](#)
- [6.4.3 Tensioning Timed Knife Drive V-Belts, page 63](#)

Double-knife headers have two knife-drive belts.

### 6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts

Correct knife drive belt tension is necessary for the knife sections to stroke properly. Single-knife headers have one knife-drive belt on the left side of the header. Double-knife untimed headers have two knife-drive belts, one on each side of the header.

#### IMPORTANT:

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

1. Open the left endshield.
2. Loosen two bolts (A) securing the motor assembly to the header endsheet.

#### NOTE:

The belt guide has been removed from the illustrations for clarity.

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.
4. If the belt needs to be tensioned, turn adjuster bolt (B) clockwise to move the drive motor until proper tension is set.

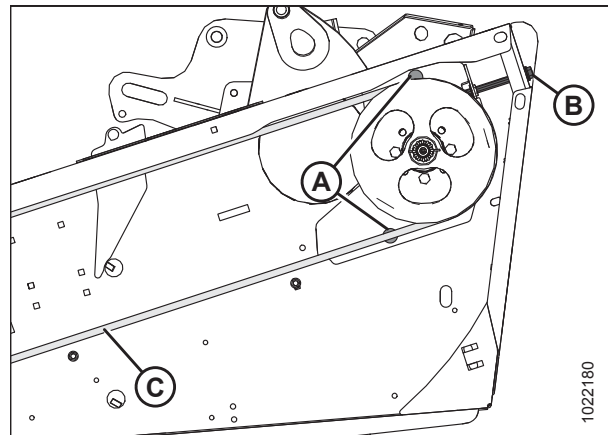


Figure 6.5: Knife Drive

5. Ensure clearance between belt (A) and belt guide (B) is 1 mm (1/16 in.).
6. Loosen three bolts (C), and adjust the position of guide (B) as required.
7. Tighten three bolts (C).
8. Close the endshield.
9. Repeat the procedure on the other side of the header.

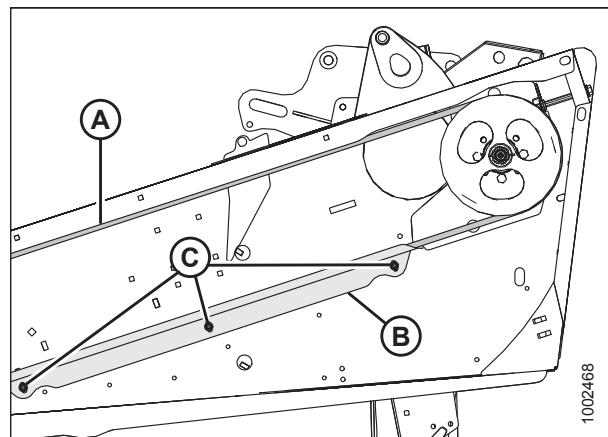


Figure 6.6: Knife Drive

## 6.4.2 Tensioning Timed Double-Knife Drive Belts

The procedure for tensioning timed double-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** overtighten 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 idler pulleys (B) to pivot.

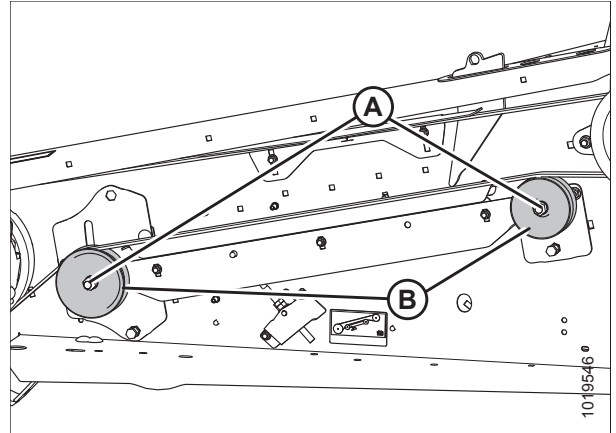


Figure 6.7: Left Knife Drive

3. Thread flange nut (C) down adjuster bolt (B) to push 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.

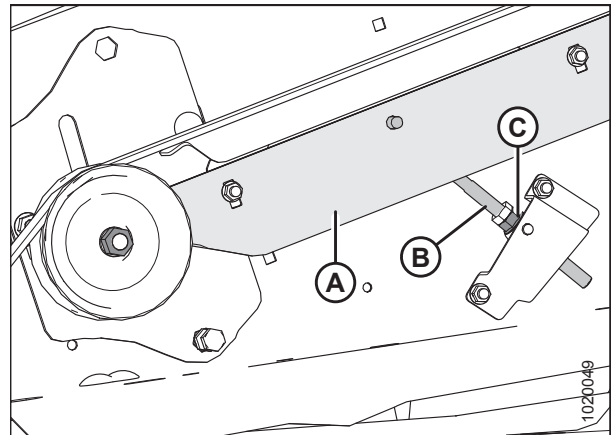


Figure 6.8: Left Knife Drive

## PERFORMING PREDELIVERY CHECKS

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

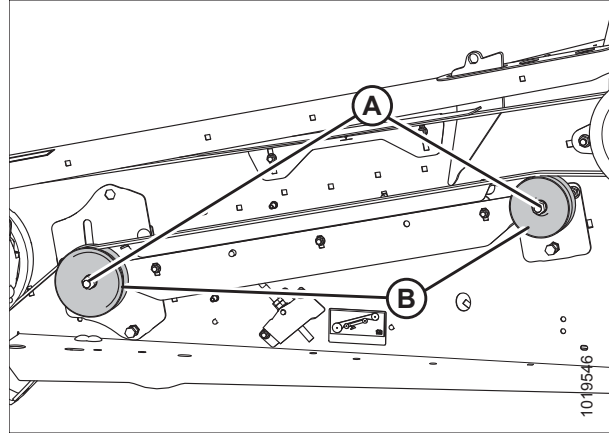


Figure 6.9: Left Knife Drive

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

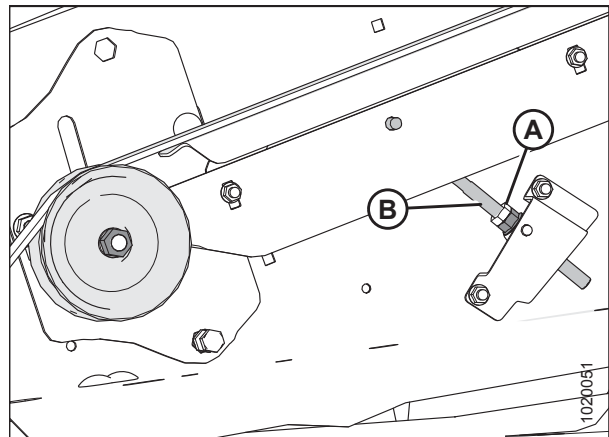


Figure 6.10: Left Knife Drive

6. Ensure there is a clearance of 2.5–3.5 mm (3/32–1/8 in.) between lower belt (A) and lower guide (B).
7. If necessary, loosen three bolts (C) and adjust lower guide (B) as required. Tighten bolts.
8. Check that upper belt (D) and upper guide (E) have a clearance of 1.5–2.5 mm (1/16–3/32 in.). If necessary, loosen the two bolts (F) and adjust as required. Tighten the bolts.
9. Repeat procedure for other side of header.

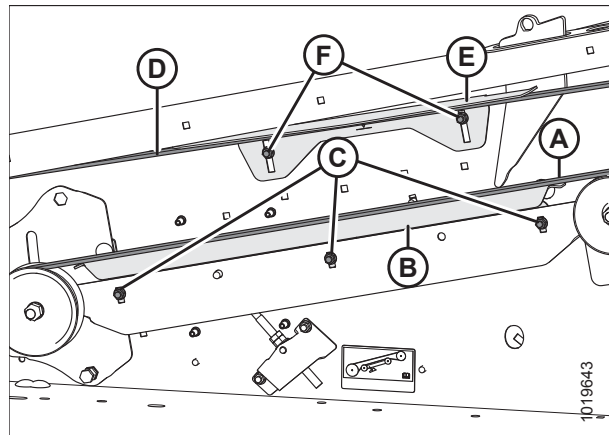


Figure 6.11: Left Knife Drive



### 6.4.3 Tensioning Timed Knife Drive V-Belts

Correct knife drive belt tension is necessary for the knife sections to stroke properly. Double-knife timed headers have a third knife drive belt, which is a v-belt located on the left side of the header. Check the v-belt tension whenever checking the tension on the other two knife drive belts.

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

**NOTE:**

Tension is checked at the belts' midspan. 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).

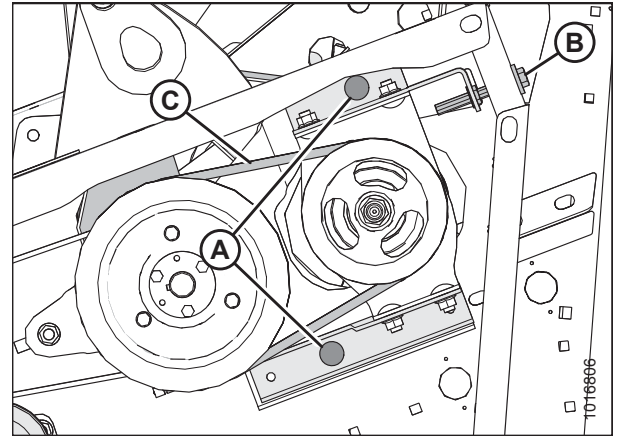


Figure 6.12: Knife Drive V-belts

## 6.5 Centering the Reel

A centered reel picks up crop evenly and prevents debris from accumulating at the ends of the reel.

Refer to the topic for header type:

- [6.5.1 Centering Double Reel, page 64](#)
- [6.5.2 Centering Single Reel, page 65](#)

### 6.5.1 Centering Double Reel

A centered reel picks up crop evenly and prevents debris from accumulating at the ends of the reel. Adjust the center reel support arm to center the reel.



#### **DANGER**

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

1. Measure clearance (A) at locations (B) between reel tine tube and endsheet at both ends of header. The clearances should be the same if the reels are centered..
  - If the reel is not centered, proceed to [Step 2, page 65](#).
  - If the reel is centered, proceed to [6.7 Checking and Adjusting Draper Tension, page 71](#).

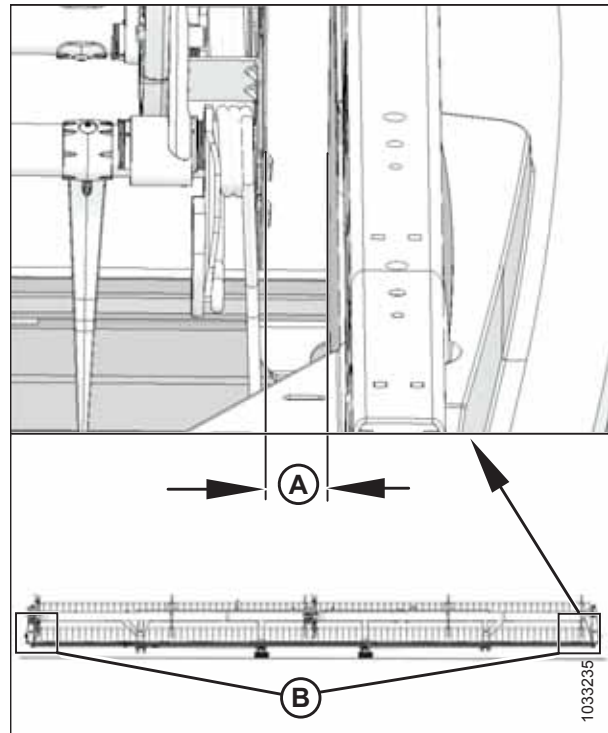


Figure 6.13: Double Reel Measurement Locations

## PERFORMING PREDELIVERY CHECKS

2. Loosen bolts (A) on each brace (B) located on both sides of reel center support arm (C).
3. Move the forward end of reel center support arm (C) laterally as required to center both reels.
4. Tighten bolts (A) and torque to 382 Nm (282 lbf·ft).

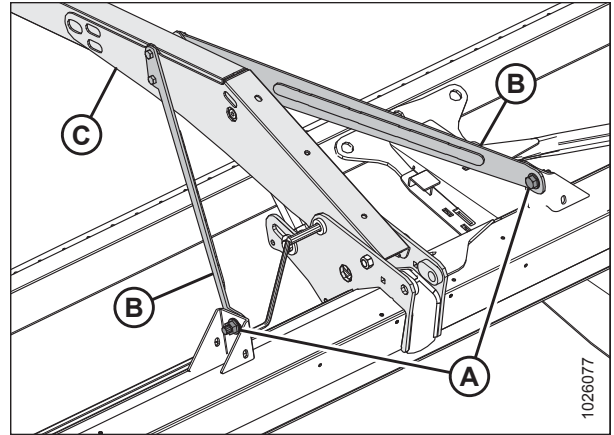


Figure 6.14: Reel Center Support Arm

### 6.5.2 Centering Single Reel

A centered reel picks up crop evenly and prevents debris from accumulating at the ends of the reel. Adjust the reel support arms at both ends of the header to center the reel.

#### DANGER

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

1. Measure clearance (A) at locations (B) between the reel tine tube and the endsheet at both ends of the header. The clearances should be the same if the reel is centered.
  - If the reel is not centered, proceed to [Step 2, page 66](#).
  - If the reel is centered, proceed to [6.7 Checking and Adjusting Draper Tension, page 71](#).

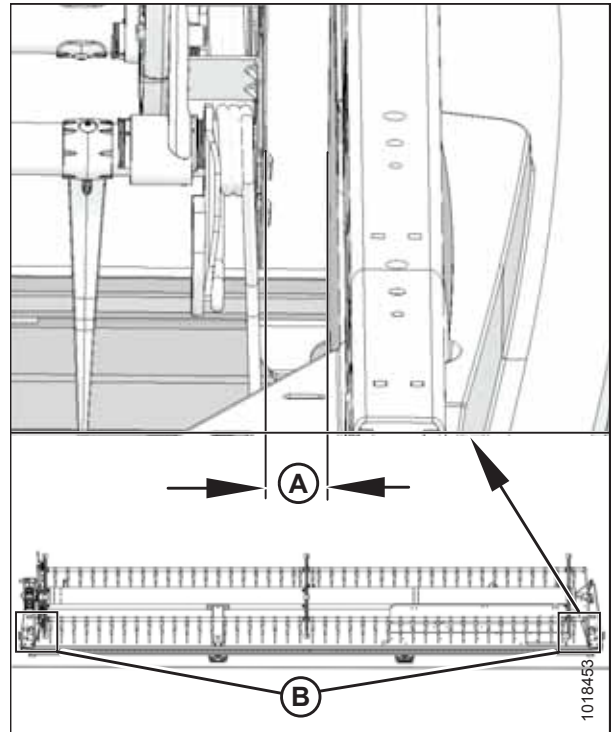


Figure 6.15: Single-Reel Measurement Locations

## PERFORMING PREDELIVERY CHECKS

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

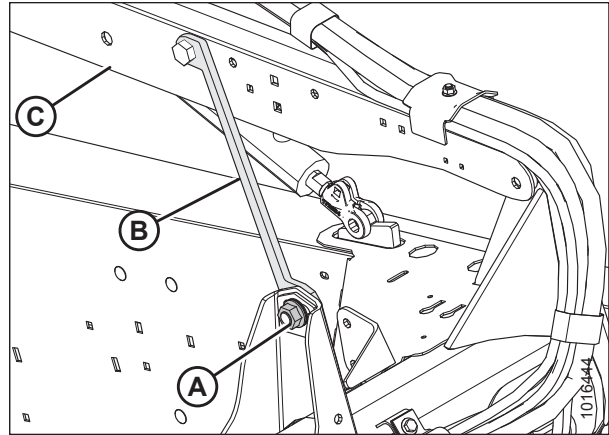


Figure 6.16: Reel Support Arm

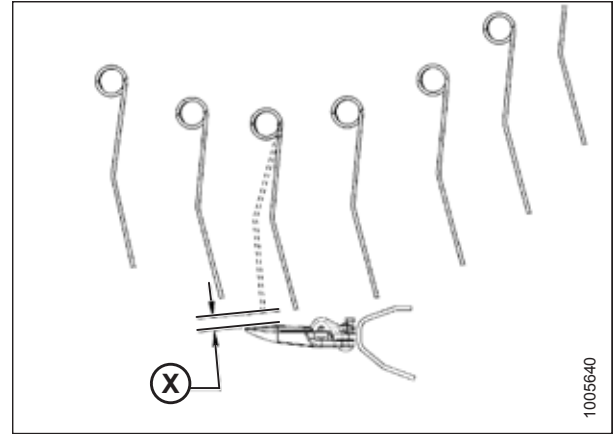
## 6.6 Reel Clearance to Cutterbar

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 the table below.

**Table 6.2 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.)	25 mm (1 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 6.17: Finger Clearance**

### 6.6.1 Measuring Reel Clearance

Measure the clearance between the reel fingers and the cutterbar to check if any adjustment is required before operating the reel.



#### **DANGER**

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



#### **DANGER**

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

1. Start the engine.
2. Park the combine on a level surface.
3. Lower the header fully.

## PERFORMING PREDELIVERY CHECKS

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

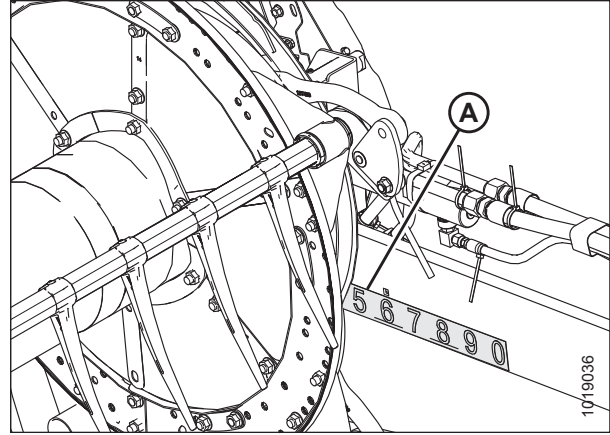


Figure 6.18: Fore-Aft Position

7. Measure clearance (X) between guard (A) and finger (B) at certain measurement locations. For clearance specifications, refer to Table 6.3, page 68.

For the measurement locations, refer to Figure 6.20, page 69.

**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.

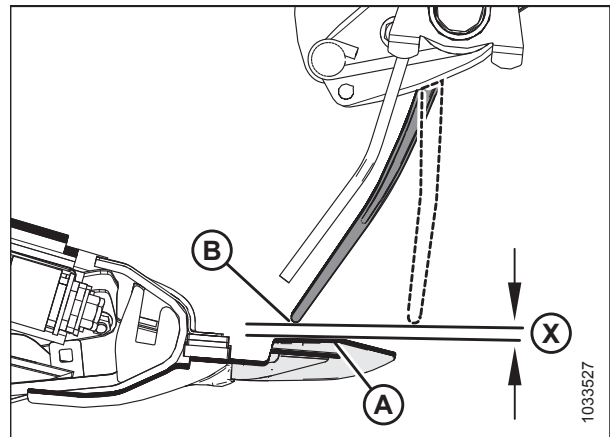
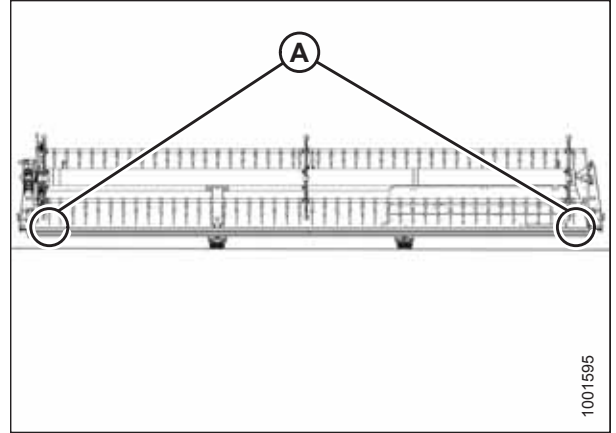


Figure 6.19: Clearance

Table 6.3 Finger to Guard/Cutterbar Clearance

Header Width	Clearance at Reel Ends +/- 3 mm (1/8 in.)	
	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.)	25 mm (1 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.)

**Measurement locations (A) for Single and Double Reels:** Outer ends of the reel (two places).



**Figure 6.20: Measurement Locations for Single and Double Reels – Single Reel Shown**

8. Adjust the reel clearance, if required. For instructions, refer to [6.6.2 Adjusting Reel Clearance, page 69](#).

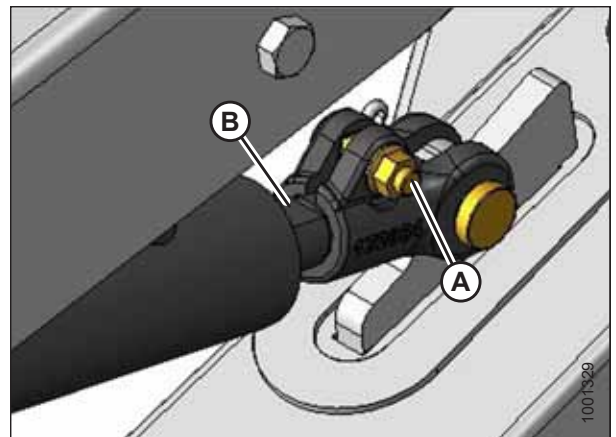
### 6.6.2 Adjusting Reel Clearance

Adjust the reel until there is enough clearance to prevent the reel fingers from contacting the cutterbar during operation.

#### **DANGER**

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

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props.
4. Adjust the outboard reel arm lift cylinders to set the clearance at the outboard ends of the 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 6.21: Outside Reel Arm**

## PERFORMING PREDELIVERY CHECKS

5. **Double reel:** adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels as follows:

- a. Loosen nut (B).

**NOTE:**

To make adjustment easier, lower reel onto the safety props after loosening 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).

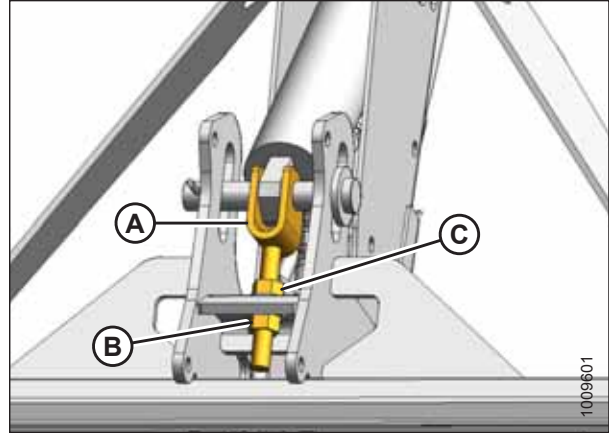


Figure 6.22: Underside of Center Arm

6. Check measurements and, if necessary, repeat adjustment procedures.



### **DANGER**

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

7. Start engine.
8. Move the reel back to ensure the steel end fingers do **NOT** contact the deflector shields.
9. If contact occurs, adjust the reel upward to maintain the clearance at all reel fore-aft positions. If contact cannot be avoided after adjusting the reel, trim the steel end fingers to obtain proper clearance.
10. Periodically check for evidence of contact during operation, and adjust clearance as required.
11. Shut down the engine, and remove the key from the ignition.



## 6.7 Checking and Adjusting Draper Tension

The drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough to prevent slipping and to keep the draper from sagging below the cutterbar. Adjust drapers on both sides of the header.

### DANGER

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

1. Ensure white indicator bar (A) is at the halfway point in the window. If adjustment is required, proceed to Step 2, [page 71](#).

### WARNING

Check to be sure all bystanders have cleared the area.

2. Start the engine and fully raise the header.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props.

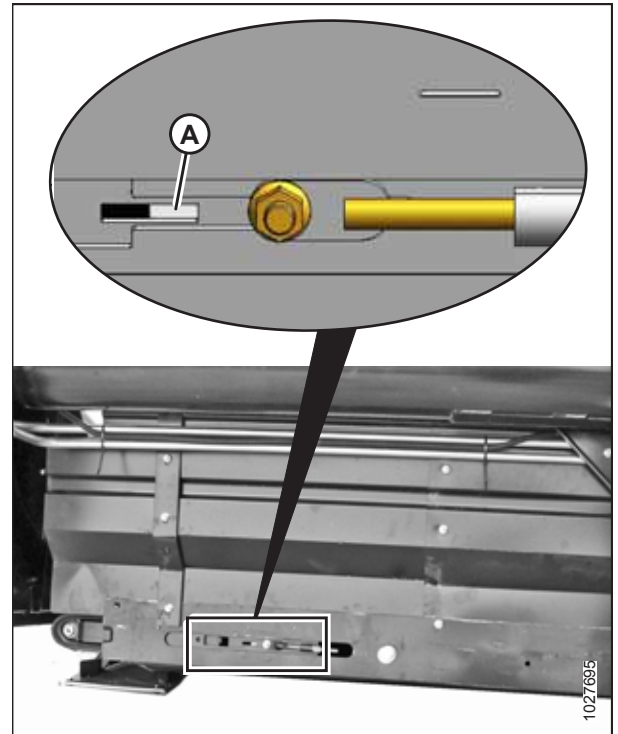


Figure 6.23: Left Tension Adjuster Shown – Right Opposite

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

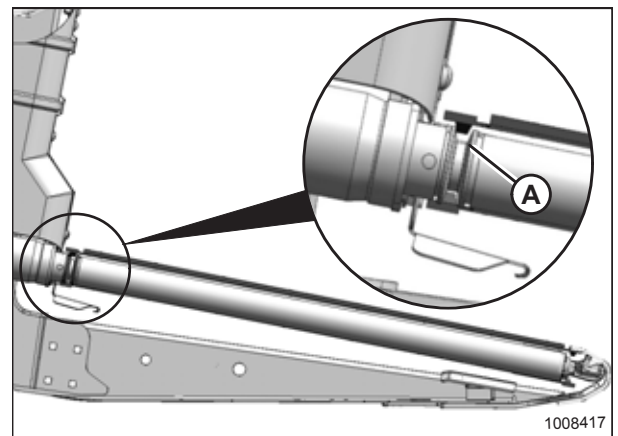


Figure 6.24: Drive Roller

## PERFORMING PREDELIVERY CHECKS

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

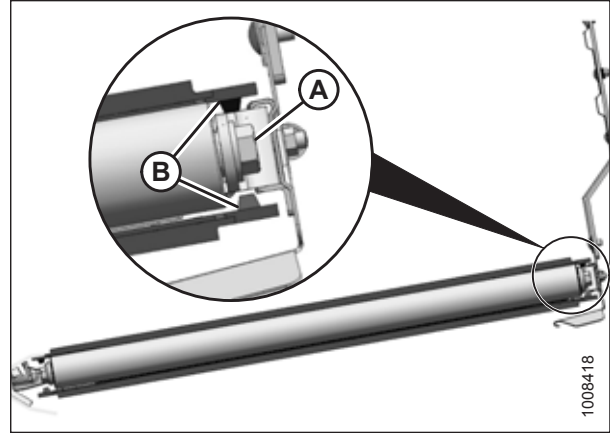


Figure 6.25: Idler Roller

### IMPORTANT:

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

7. To loosen draper tension, turn adjuster bolt (A) counterclockwise. 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 draper tension, turn adjuster bolt (A) clockwise. White indicator bar (B) will move inboard in 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 if the white bar is not visible.

### IMPORTANT:

To prevent scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

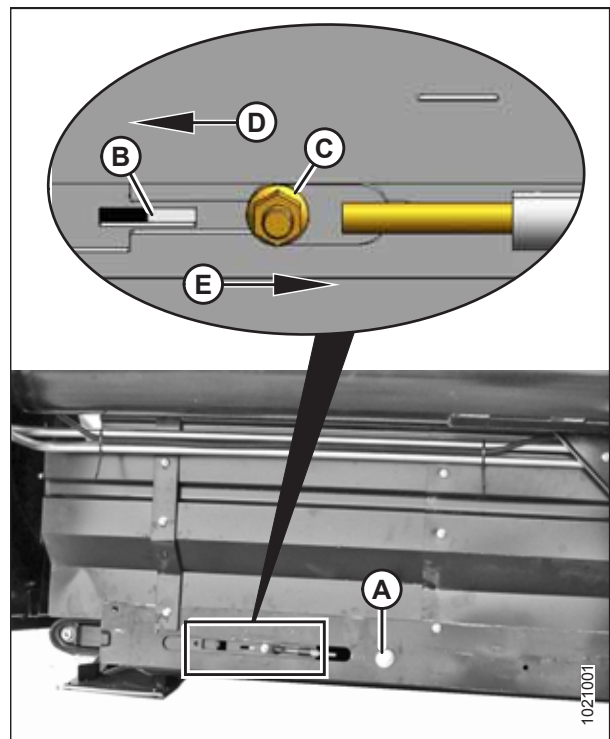


Figure 6.26: Left Tension Adjuster Shown – Right Opposite

## 6.8 Checking and Adjusting Draper Seal

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

### DANGER

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

### WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

#### IMPORTANT:

New factory-installed drapers are pressure and heat checked at the factory. The gap (deck seal) between draper and cutterbar is set to 0–3 mm (0.00–0.12 in.) at the factory to prevent material from entering into the side drapers and stalling them. When installing new drapers, however, it is **NEVER** acceptable for the gap to be less than 1 mm (0.04 in.) because new drapers are very tacky and there can be a buildup of powder coat on the underside of the cutterbar that can cause excessive drag and extremely high running pressure.

1. Lower the header onto blocks.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to the header operator's manual.
5. With the header in working position, check that clearance (A) between draper (B) and cutterbar (C) is 0–3 mm (0.00–0.12 in.).
  - If the deck height is acceptable, skip the remaining steps and proceed to [6.9 Checking and Adjusting Skid Shoe Settings, page 76](#).
  - If the deck height is **NOT** acceptable, adjust the seal as described in the following steps:

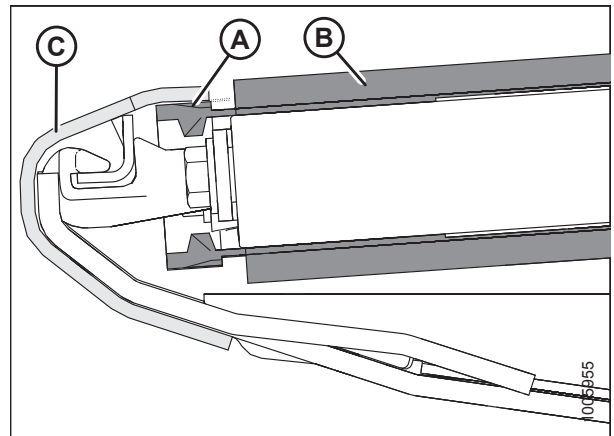


Figure 6.27: Draper Seal

## PERFORMING PREDELIVERY CHECKS

6. Take measurement at deck supports (A) with the header in working position. Depending on the header size, there are between two and five supports per deck.
7. Loosen the draper tension. For instructions, refer to [6.7 Checking and Adjusting Draper Tension, page 71](#).

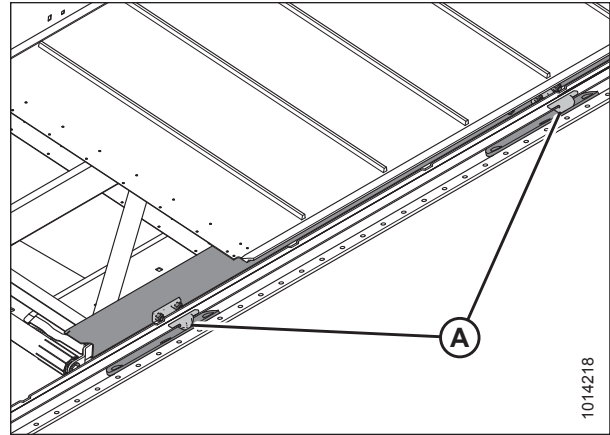


Figure 6.28: Draper Deck Supports

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

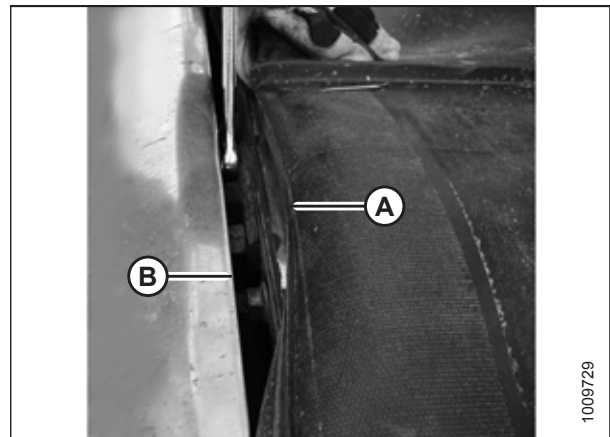


Figure 6.29: Deck Adjustment

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

### NOTE:

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

- **D115X and D120X:** Four supports
- **D125X:** Six supports
- **D130XL:** Six supports
- **D135XL and D140XL:** Eight supports
- **D145XL:** Ten supports

11. Tap deck (C) with a hammer to lower the deck relative to the deck supports. Tap deck support (B) using a punch to raise the deck relative to the deck supports.

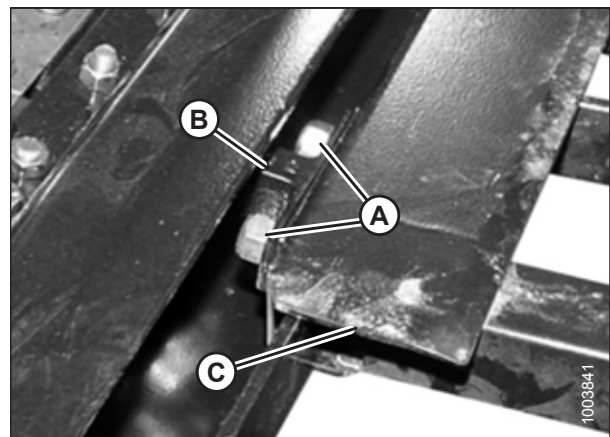


Figure 6.30: Deck Support

## PERFORMING PREDELIVERY CHECKS

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

**NOTE:**

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

14. Tighten deck support hardware (D).
15. Recheck gap (B) with thickness gauge. For instructions, refer to Step 12, [page 75](#).
16. Tension the draper. For instructions, refer to [6.7 Checking and Adjusting Draper Tension, page 71](#).
17. If required, adjust backsheet deflector (A) by loosening nut (D) and moving the deflector until there is a 1–7 mm (0.04–0.28 in.) gap (C) between draper (B) and the deflector.
18. Disengage the reel safety props.
19. Lower the reel fully.
20. Shut down the engine, and remove the key from the ignition.

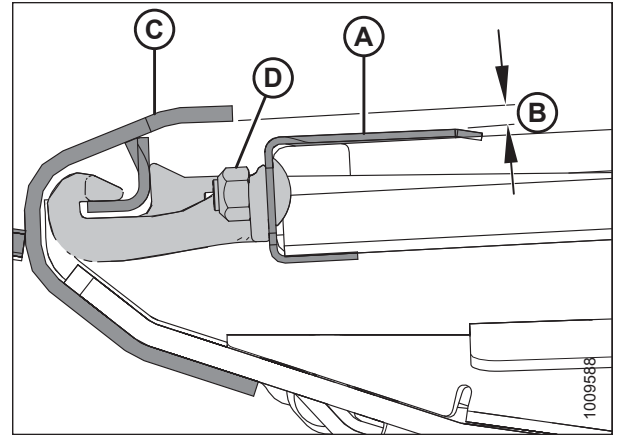


Figure 6.31: Deck Support

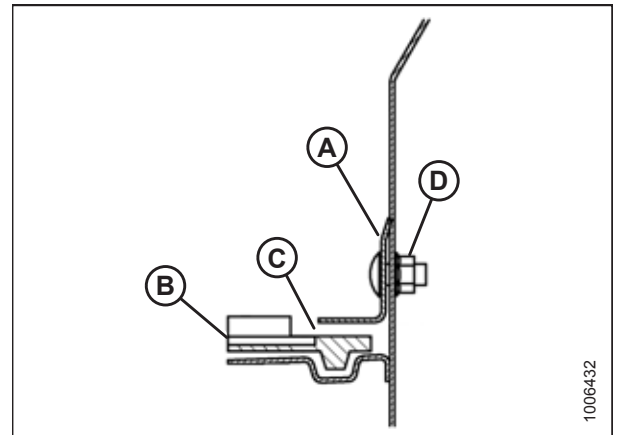


Figure 6.32: Backsheet Deflector

## 6.9 Checking and Adjusting Skid Shoe Settings

In addition to protecting the bottom of the header from damage during operation, skid shoes affect the cutting height. Raise or lower the skid shoes as required to optimize the cutterbar performance.

### DANGER

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

To check and adjust skid shoes, follow these steps:

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.
4. Check the adjustment hole positions on lugs (A) on each skid shoe. They should be the same.
5. 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.
6. Disengage the header safety props.
7. Lower the header fully.
8. Shut down the engine, and remove the key from the ignition.

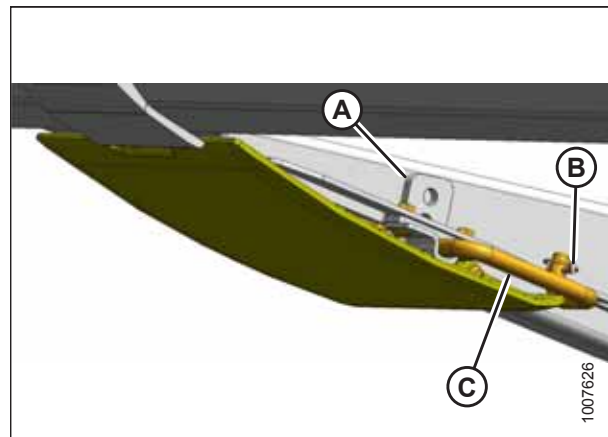


Figure 6.33: Inner Skid Shoe

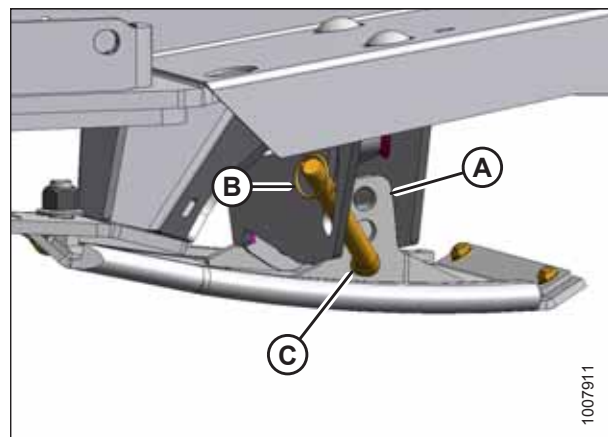


Figure 6.34: Outer Skid Shoe

## 6.10 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.

## 6.11 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.

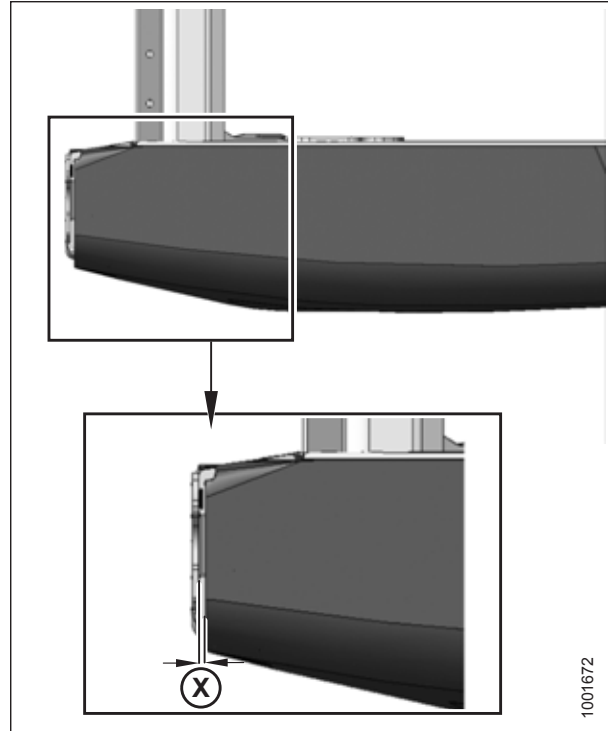
### Checking the endshield

1. Measure gap (X) between the front end of the endshield and the header frame and compare to the measurement values in Table 6.4, page 78.

**Table 6.4 Endshield Gap at Various Temperatures**

Temperature in °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)

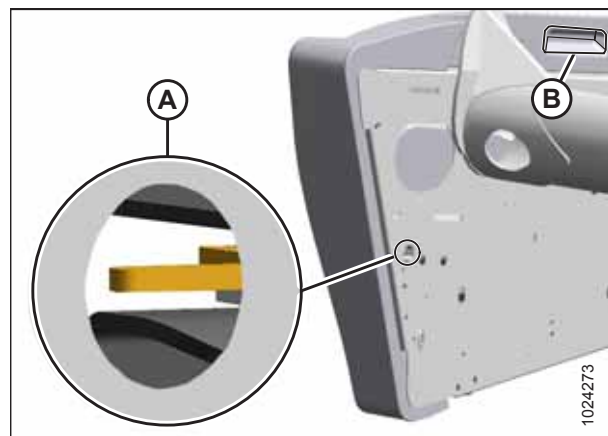
2. If the endshield gap is correct, proceed to the next procedure. If adjustment is required, proceed to Step 1, page 78.



**Figure 6.35: Gap between Endshield and Header Frame**

### Opening the endshield

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



**Figure 6.36: Left Endshield**



## PERFORMING PREDELIVERY CHECKS

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

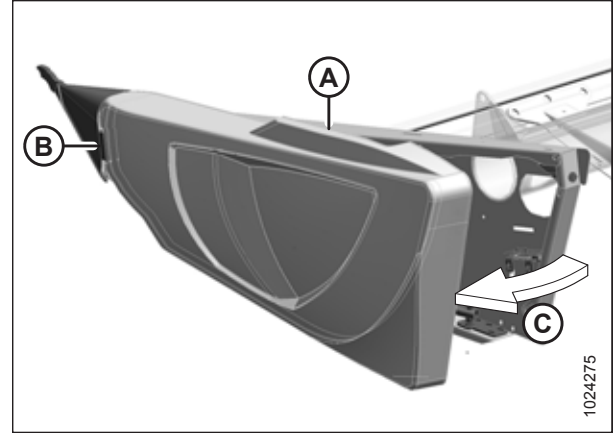


Figure 6.37: Left Endshield

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.

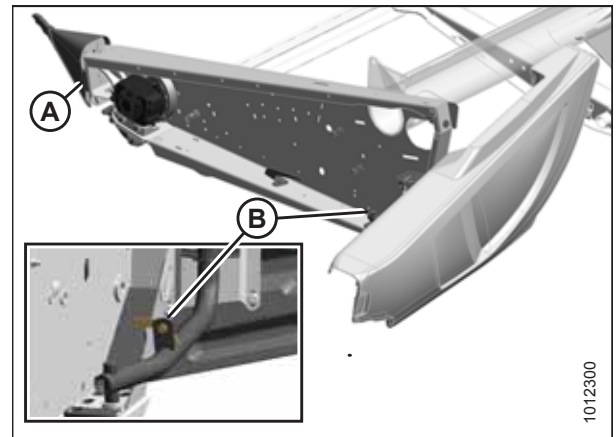


Figure 6.38: Left Endshield

### *Adjusting the endshield gap*

1. Inside the endshield, loosen four bolts (A) on support tube bracket (B).

**NOTE:**

A D1X Series header is shown in illustration. A D1XL header is similar.

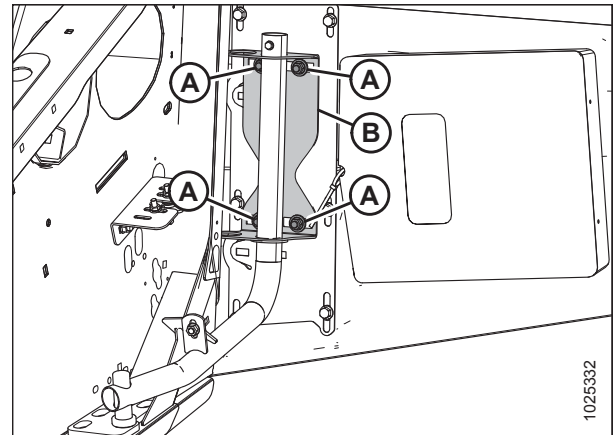


Figure 6.39: Left Endshield Support Tube on D1X Series Header

## PERFORMING PREDELIVERY CHECKS

2. Loosen three bolts (A) on latch assembly (B).
3. Adjust latch assembly (B) to achieve the desired gap between the front end of the endshield and the header frame. Refer to Table 6.4, page 78 for the recommended endshield gap at various temperatures.
4. Tighten three bolts (A) on the latch assembly to 27 Nm (20 lbf·ft).

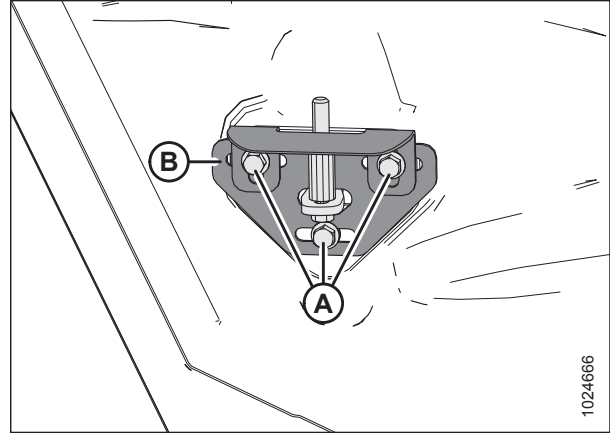


Figure 6.40: Left Endshield Latch Assembly

5. Tighten four bolts (A) on support tube bracket (B) to 31 Nm (23 lbf·ft).

### NOTE:

A D1X Series header is shown in illustration. A D1XL Series header is similar.

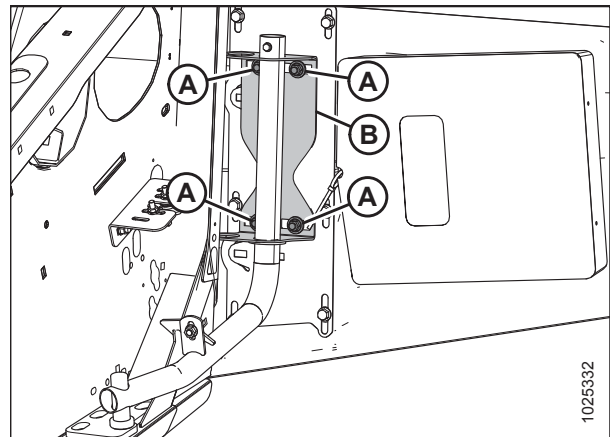


Figure 6.41: Left Endshield Support Tube on D1X Series Header

### 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.

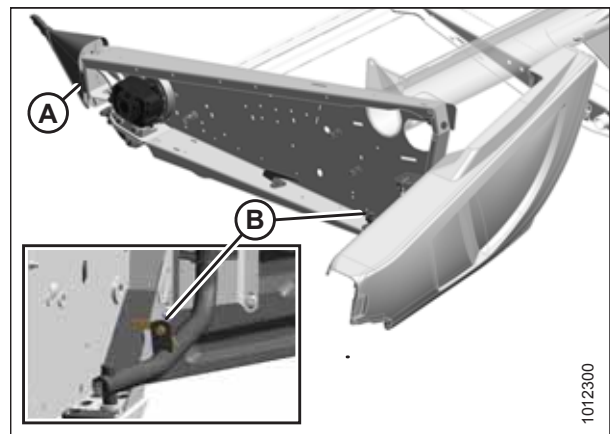


Figure 6.42: Left Endshield

## PERFORMING PREDELIVERY CHECKS

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

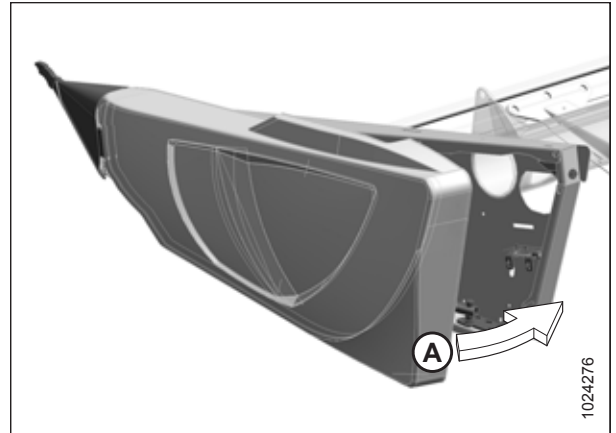


Figure 6.43: Left Endshield

## 6.12 Lubricating Header

Two types of lubricant are used on the header.

**Table 6.5 Recommended Lubricant**

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

### 6.12.1 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**

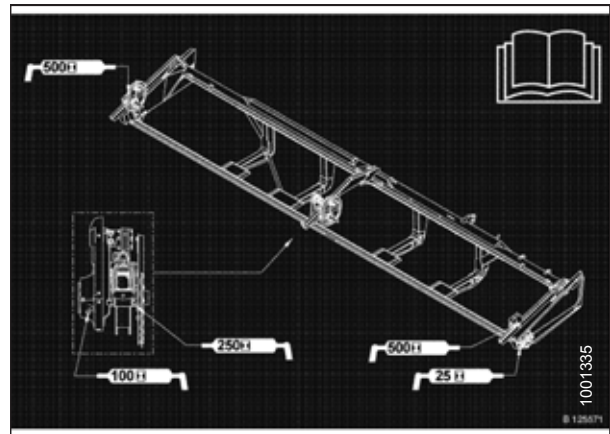
**To avoid injury or death from unexpected start-up of machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.**

1. Shut down the engine, and remove the key from the ignition.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

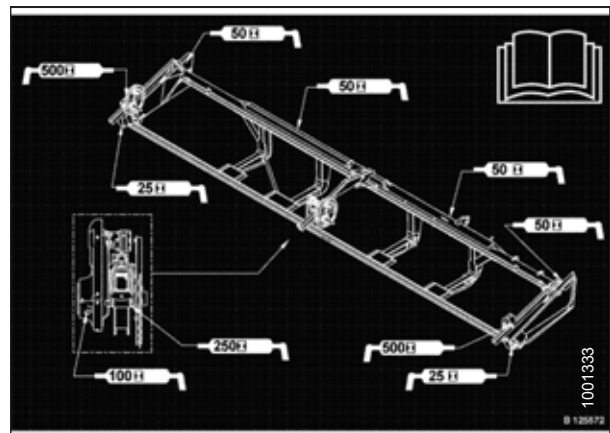
#### **IMPORTANT:**

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

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



**Figure 6.44: Single-Knife Header Grease Point Decal**



**Figure 6.45: Double-Knife Header Grease Point Decal**

## 6.12.2 Lubrication Points

Some components require additional lubrication instructions.

### *Knifehead*

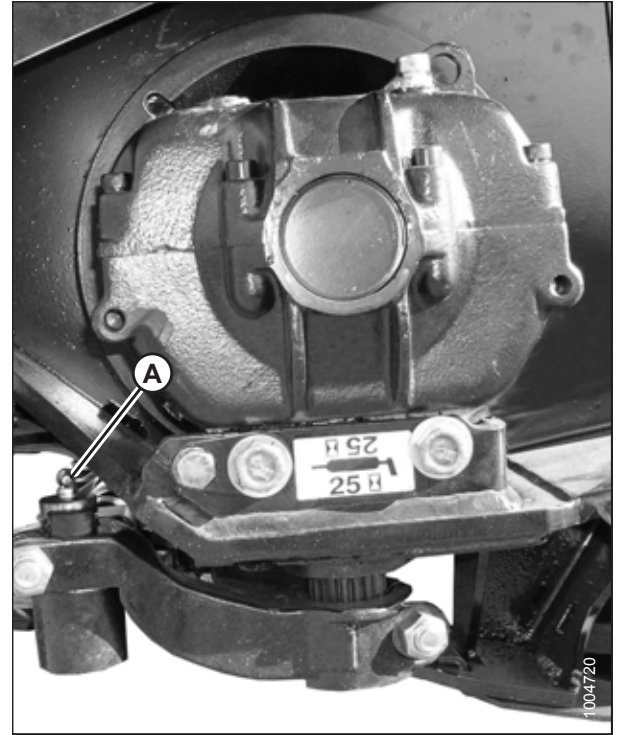
#### **IMPORTANT:**

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 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.



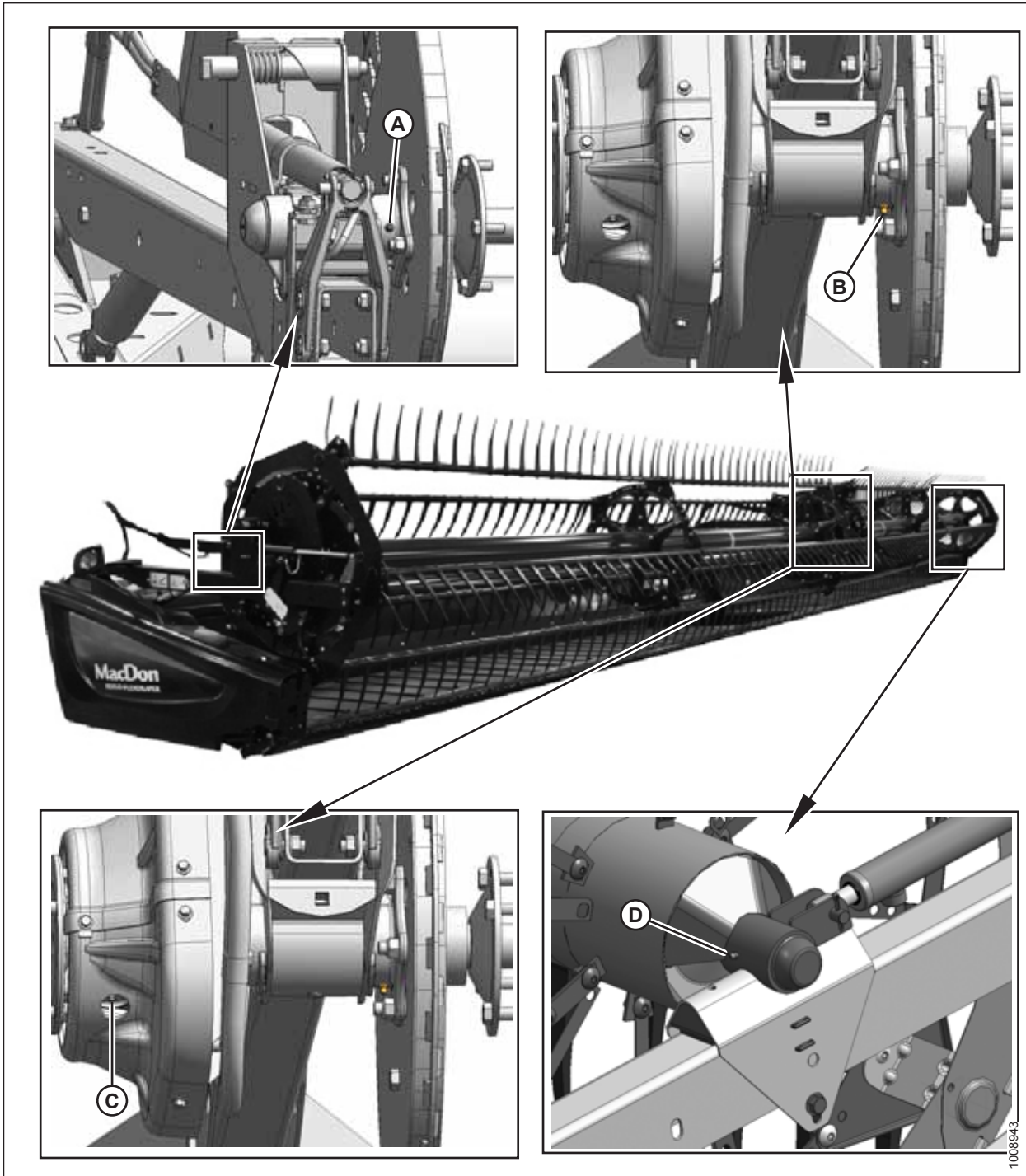
**Figure 6.46: Knifehead**

Single Knife – One Place

Double Knife – Two Places

**IMPORTANT:**

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 6.47: 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)

## 6.13 Checking Manuals

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

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

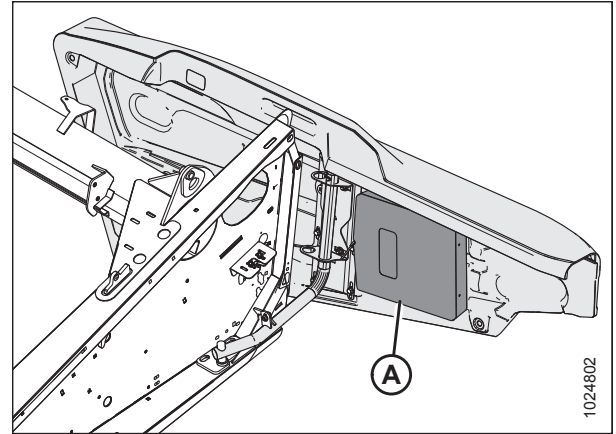


Figure 6.48: Manual Case



Figure 6.49: D1XL Series Manuals



## 6.14 Header System Calibration

The Harvest Performance Tracker (HPT) recognizes when a header is attached to the windrower and determines the systems that require calibration.

The following sensors may be calibrated depending on header type:

- Header height
- Header angle
- Header float left
- Header float right
- Reel height
- Reel fore-aft
- Swath compressor
- Knife Drive

Recalibration is required if the HPT is replaced, a position sensor is replaced, sensor readouts are erratic, pump has been replaced, or if a new header type or attachment is connected to the windrower.

### 6.14.1 Calibrating the Knife Drive on the Harvest Performance Tracker Display

When a header is attached to a windrower, the Harvest Performance Tracker (HPT) will recognize the header ID and configure the windrower accordingly. The header must be calibrated to ensure that the knife drive pump output is accurate.

#### DANGER

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

1. Start the engine. For instructions, refer to the windrower operator's manual.
2. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.

#### NOTE:

Calibrations **MUST** be performed with the engine running. Some calibrations will not be available with engine off.

3. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to highlight SETTINGS icon (C).
4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

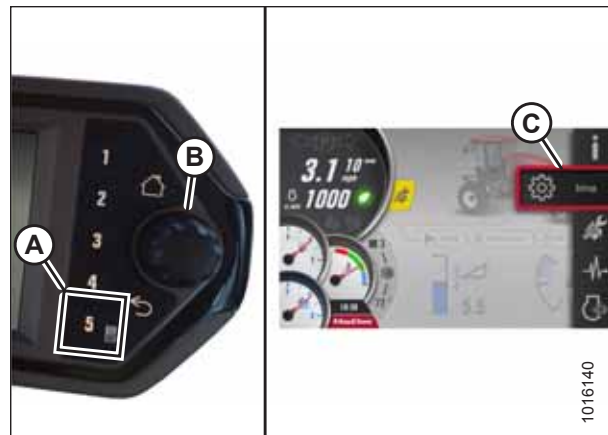


Figure 6.50: Opening the Main Menu



## PERFORMING PREDELIVERY CHECKS

5. Scroll to WINDROWER SETTINGS icon (A) and press SELECT.
6. Scroll to CALIBRATION icon (B), and press SELECT to open the Calibration Selection screen.

**NOTE:**

The F3 shortcut button on the operator's console will also open the WINDROWER SETTINGS menu.

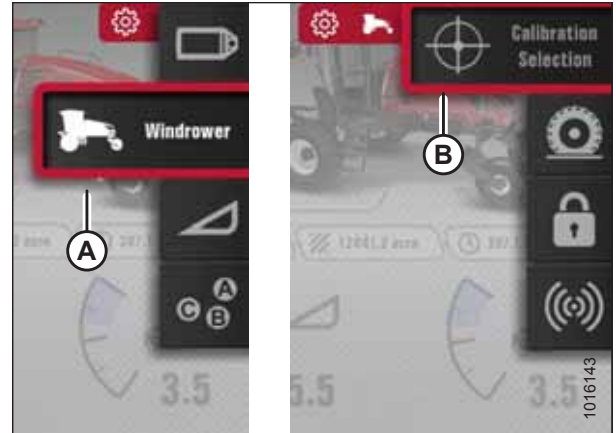


Figure 6.51: Windrower Settings Icon and Calibration Submenu Icon

7. In the Calibration Selection screen, scroll to KNIFE DRIVE (A) and press SELECT.
8. Engage the header.

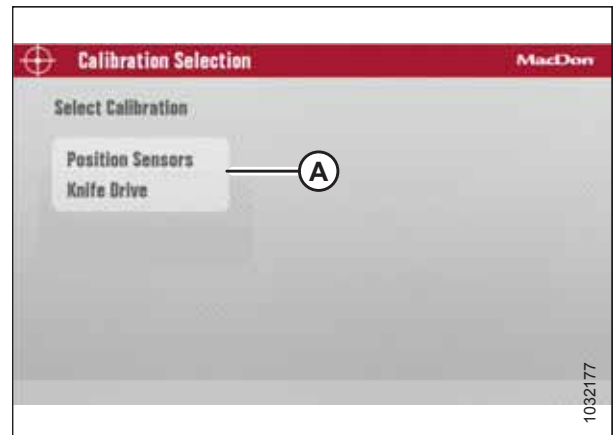


Figure 6.52: Calibration Selection Screen

**NOTE:**

If calibration is selected with header disengaged, WARNING (A) will appear. Engage the header. PLAY icon (B) will appear after you engage the header.

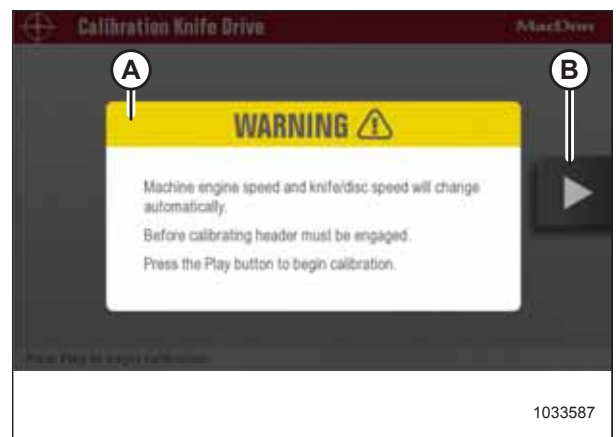


Figure 6.53: Engage Header Warning

## PERFORMING PREDELIVERY CHECKS

10. Press the PLAY icon on the screen to begin the calibration process. The display on the screen will change to show that calibration has started.

**NOTE:**

If the engine speed is less than 1500 rpm prior to starting the calibration, the system will accelerate the engine speed to 1500 rpm.



Figure 6.54: Calibration Screen

11. When Stage 1 of the calibration is complete, press PLAY icon (A) on the screen to continue with Stage 2 of the calibration process.

**NOTE:**

Knife drive calibration is completed in nine stages.



Figure 6.55: Calibration Page

12. Press the PLAY icon to begin the calibration process.

**NOTE:**

During the calibration sequence, the engine rpm and header speed will increase and decrease multiple times.

**NOTE:**

Press the X icon (A) on the screen or use the HEADER DISENGAGE switch at any time during the calibration process to exit calibration without saving. The engine speed will return to the original rpm prior to starting the calibration process.



Figure 6.56: Calibration Page

**NOTE:**

If an error message (A) appears when calibrating the knife drive system, follow the instructions in the message to fix the error. Press X (B) to exit the message. The following list is an example of items to check if the knife calibration fails:

- Confirm the engine and hydraulics are at operating temperature.
- Confirm the hydraulic system is free of any restrictions and is in working order.
- Confirm the throttle is working:
  - Check the engine codes to confirm engine is not derated or throttle inhibited
  - The throttle is controlled over the powertrain CAN network (CAN network 1). Check the powertrain CAN network wiring and connectors for open or intermittent connection
- Confirm the sensor mounting is fastened properly and sensor gap meets specification.
- Check the sensor wiring and connectors for intermittent connection.
- Replace the sensor.

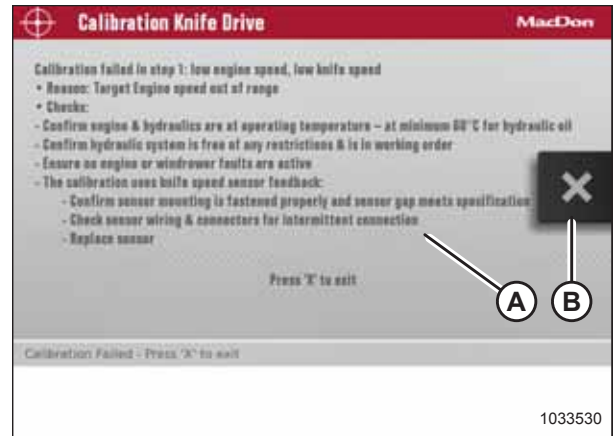


Figure 6.57: Calibration Page

## 6.14.2 Calibrating Header Position Sensors on the Harvest Performance Tracker Display



**DANGER**

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

1. Start the engine. For instructions, refer to the windrower operator's manual.
2. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.

**NOTE:**

Calibrations **MUST** be performed with the engine running. Some calibrations will not be available with engine off.

3. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to highlight SETTINGS icon (C).
4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

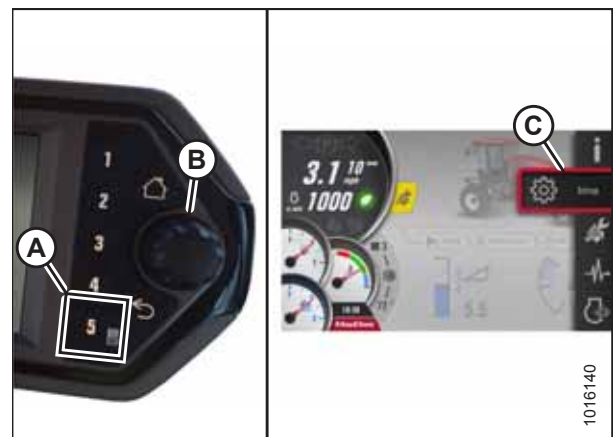


Figure 6.58: Opening the Main Menu

## PERFORMING PREDELIVERY CHECKS

5. Scroll to WINDROWER SETTINGS icon (A) and press SELECT.
6. Scroll to CALIBRATION icon (B), and press SELECT to open the Calibration Selection screen.

### NOTE:

The F3 shortcut button on the operator's console will also open the WINDROWER SETTINGS menu.

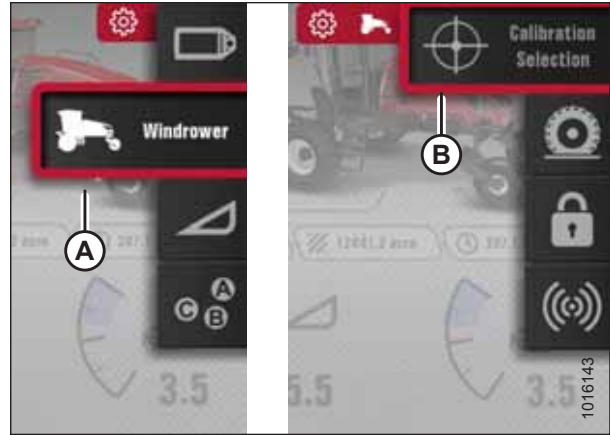


Figure 6.59: Windrower Settings Icon and Calibration Submenu Icon

7. In the Calibration Selection screen, scroll to POSITION SENSORS (A) and press SELECT.

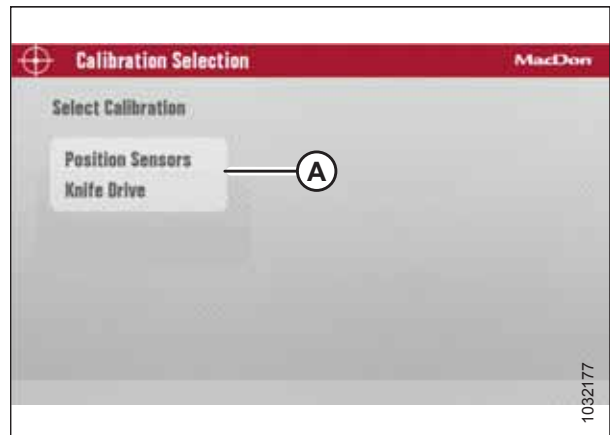


Figure 6.60: Calibration Selection Screen

### NOTE:

Pressing X icon (A) on the screen (or pressing the HOME, BACK or any GSL button [buttons not shown]) at any time during calibration process will EXIT calibration without saving. The engine speed will also return to the original rpm prior to starting the calibration process.

### NOTE:

If a sensor goes out of its normal operating range during the calibration process, calibration will stop and a message will appear on the screen indicating that the sensor is out of range.

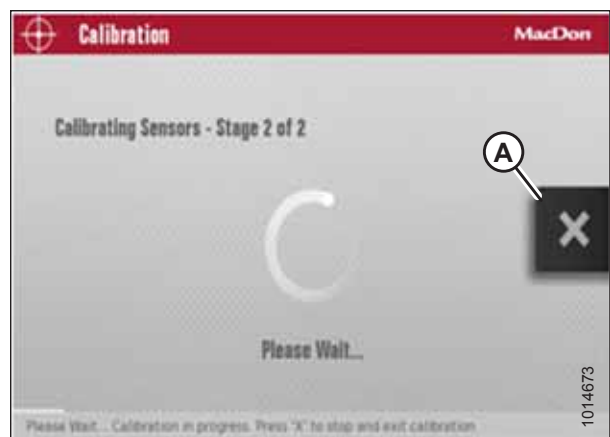


Figure 6.61: Calibration Screen

## PERFORMING PREDELIVERY CHECKS

8. When stage one of the calibration is complete, press PLAY icon (A) on the screen to continue with stage two of the calibration process.



Figure 6.62: Calibration Screen

9. When stage two of the calibration is complete, press RESUME icon (A) on the screen to set HEADER FLOAT, or press HOME or BACK button (not shown) to exit without setting the float.

**NOTE:**

The engine speed returns to the speed prior to calibration when stage two calibration is complete.



Figure 6.63: Calibration Screen

**NOTE:**

If the voltage of any sensor sweeps below what is acceptable during calibration, a message will be displayed after completing the calibration with a list of sensors with voltage range that is not acceptable. Adjust the sensor and repeat the calibration process from the beginning.



Figure 6.64: Sample of Failed Calibration Display Message



## Chapter 7: Running up the Header

Operate the header and check for any problems.

To run up the header, follow these steps:



### **DANGER**

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



### **WARNING**

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

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 engine, and remove the key from the ignition.
4. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction) *Predelivery Checklist, page 115*.





## Chapter 8: 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 115*) to ensure machine is field-ready.

### WARNING

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

It may be necessary to adjust the knife after the run-up. Refer to *8.1 Adjusting Knife, page 95*.

### 8.1 Adjusting Knife

Adjust the knife if you notice signs of overheating after running up the header.

### WARNING

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

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

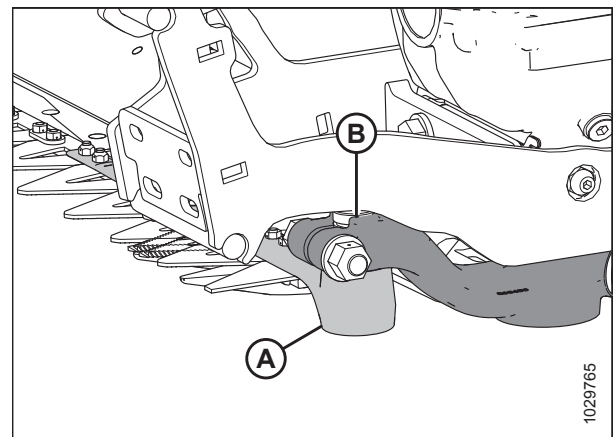


Figure 8.1: Knifehead and Pitman Arm

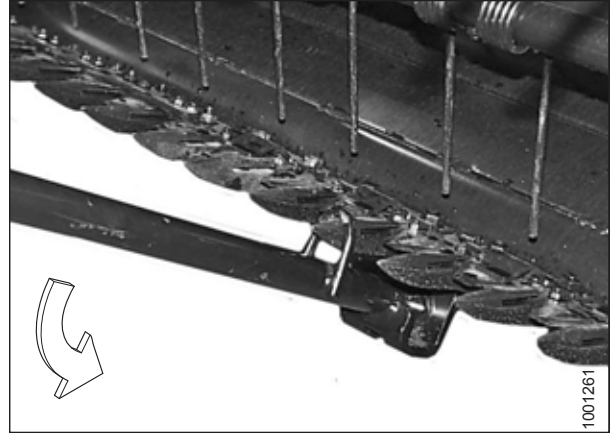
4. Adjust guard alignment as necessary using guard straightening tool (MD #140135). Adjust guard tips upwards by positioning tool as shown, and pulling up.



Figure 8.2: Straightening Tool – Upward Adjustment

## PERFORMING POST RUN-UP ADJUSTMENTS

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



**Figure 8.3: Straightening Tool – Downward Adjustment**

## Chapter 9: Reference

Use this section as a source for reference information.

### 9.1 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***

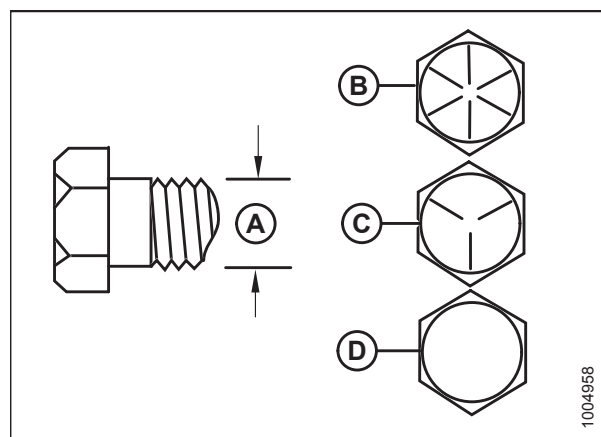
Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

#### 9.1.1 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 9.1 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 9.1: Bolt Grades**

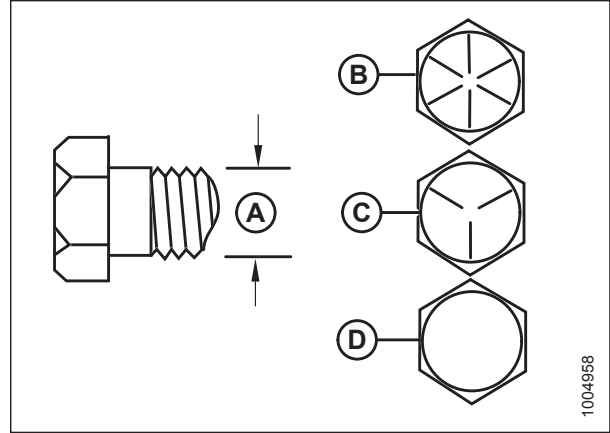
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

## REFERENCE

**Table 9.2 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



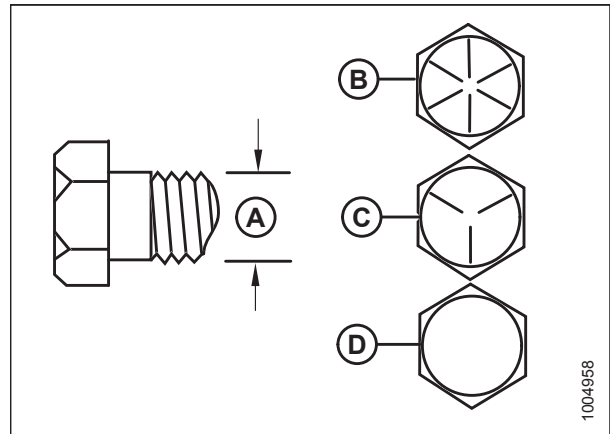
**Figure 9.2: Bolt Grades**

A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

**Table 9.3 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 9.3: Bolt Grades**

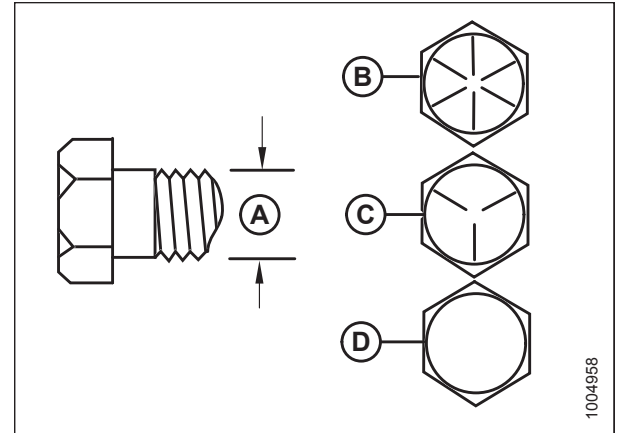
A - Nominal Size  
C - SAE-5

B - SAE-8  
D - SAE-2

## REFERENCE

**Table 9.4 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 9.4: Bolt Grades**

A - Nominal Size  
C - SAE-5

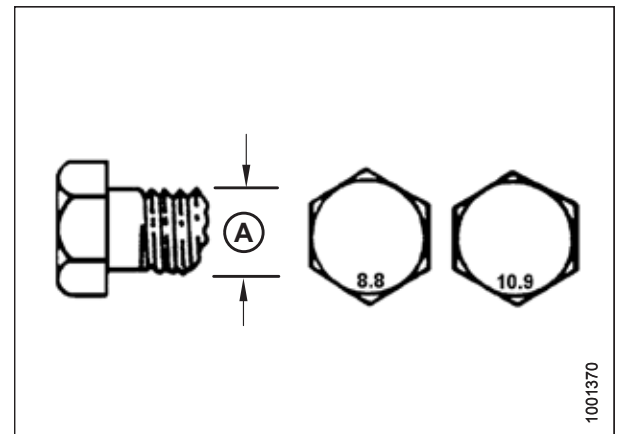
B - SAE-8  
D - SAE-2

### 9.1.2 Metric Bolt 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 9.5 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

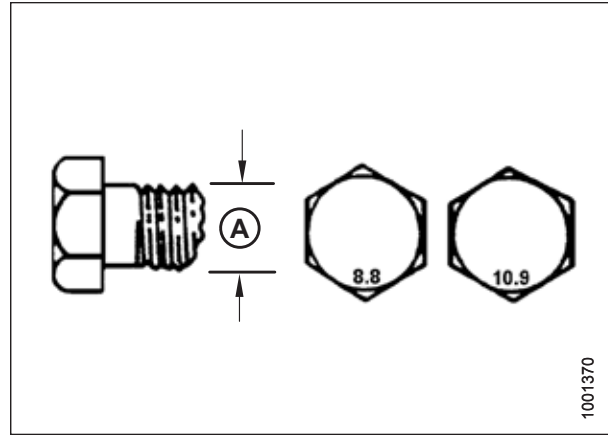


**Figure 9.5: Bolt Grades**

## REFERENCE

**Table 9.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut**

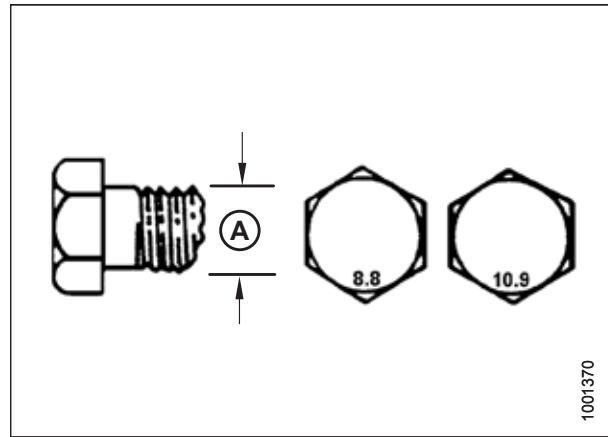
Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444



**Figure 9.6: Bolt Grades**

**Table 9.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut**

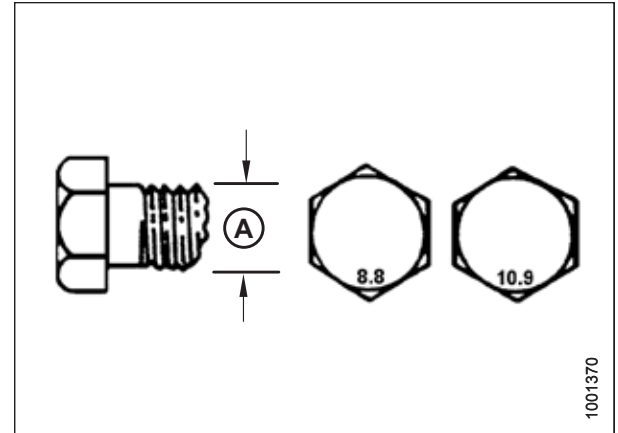
Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901



**Figure 9.7: Bolt Grades**

**Table 9.8 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



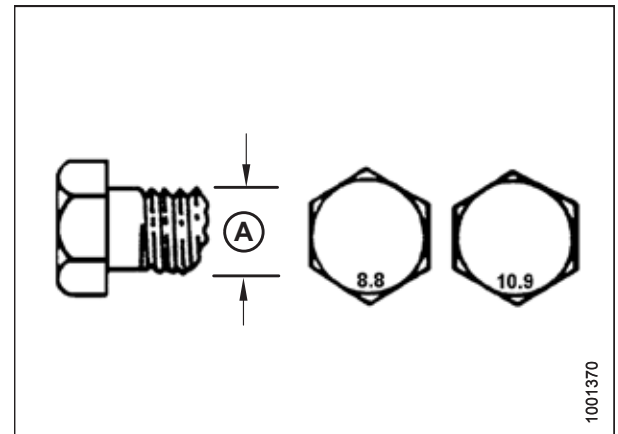
**Figure 9.8: Bolt Grades**

### 9.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

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 9.9 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 9.9: Bolt Grades**

### 9.1.4 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 9.10, page 102.
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.

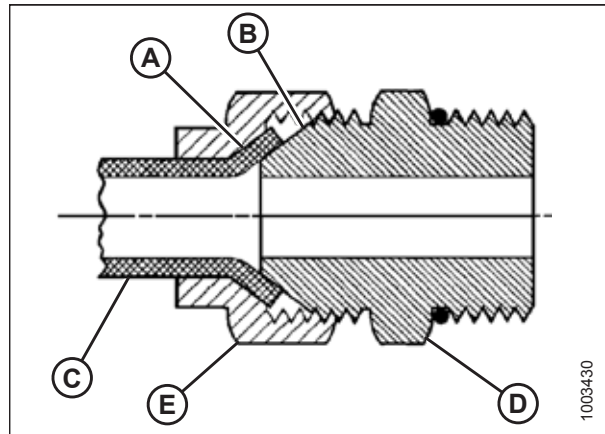


Figure 9.10: Hydraulic Fitting

Table 9.10 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.



### 9.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

Torque values are shown in following table below.

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).

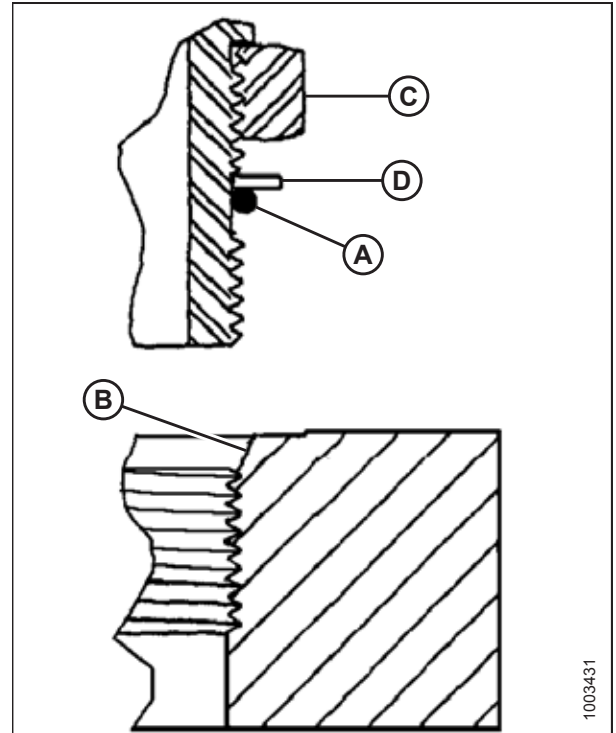


Figure 9.11: Hydraulic Fitting

5. Install fitting (B) into port until backup washer (D) and O-ring (A) contact part face (E).
6. Position the angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).
8. Check the final condition of the fitting.

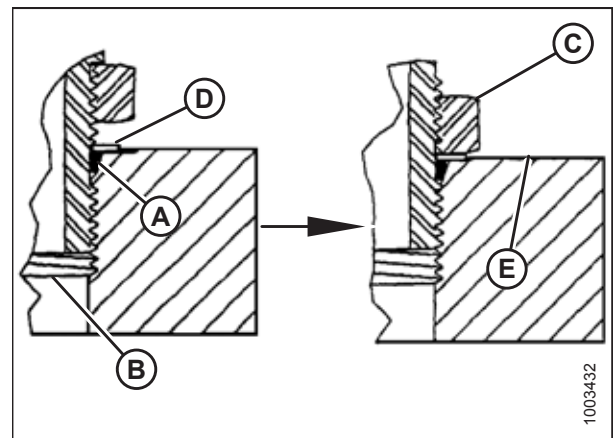


Figure 9.12: Hydraulic Fitting

## REFERENCE

**Table 9.11 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

---

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

### 9.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

Torque values are shown in following table below.

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table 9.12, page 105.
6. Check the final condition of the fitting.

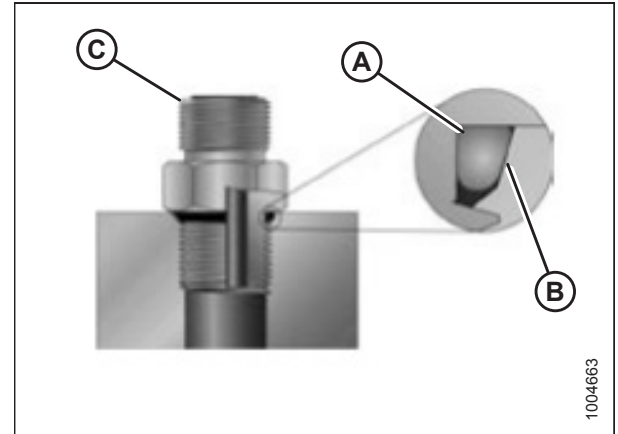


Figure 9.13: Hydraulic Fitting

Table 9.12 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.

### 9.1.7 O-Ring Face Seal Hydraulic Fittings

Torque values are shown in following table below.

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



Figure 9.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it is bottomed out.
5. Torque the fittings according to values in Table 9.13, page 106.

**NOTE:**

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

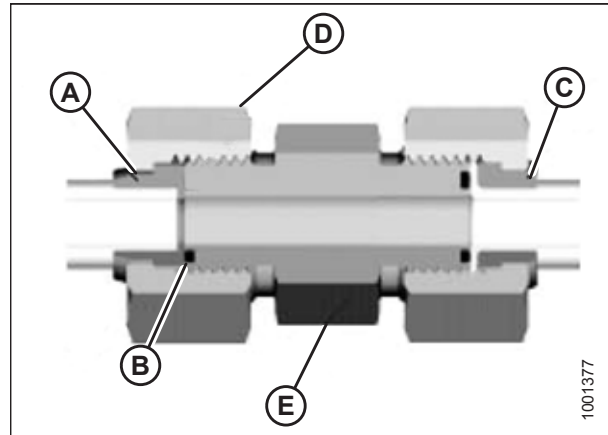


Figure 9.15: Hydraulic Fitting

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

Table 9.13 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

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 9.13 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
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-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

### 9.1.8 Tapered Pipe Thread Fittings

Torque values are shown in following table below.

Assemble pipe fittings as follows:

1. Check components to ensure that the fitting and port threads are free of burrs, nicks, scratches, and any form of contamination.
2. Apply pipe thread sealant (paste type) to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.
4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 9.14, page 107. Make sure that the tube end of a shaped connector (typically 45° or 90°) is aligned to receive the incoming tube or hose assembly. Always finish alignment of fitting in the direction of tightening. Never back off (loosen) the pipe threaded connectors to achieve alignment.
5. Clean all the residue and any excess thread conditioner with an appropriate cleaner.
6. Assess the final condition of the fitting. Pay special attention to the possibility of cracks to port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

**NOTE:**

Overtorque failure of fittings may not be evident until fittings are disassembled.

**Table 9.14 Hydraulic Fitting Pipe Thread**

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18

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

## REFERENCE

**Table 9.14 Hydraulic Fitting Pipe Thread (continued)**

<b>Tapered Pipe Thread Size</b>	<b>Recommended TFFT</b>	<b>Recommended FFFT</b>
1–1 1/2	1.5–2.5	9–15
1 1/4–1 1/2	1.5–2.5	9–15
1 1/2–1 1/2	1.5–2.5	9–15
2–1 1/2	1.5–2.5	9–15

## 9.2 Header Specifications for Unloading and Assembly

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

### DANGER

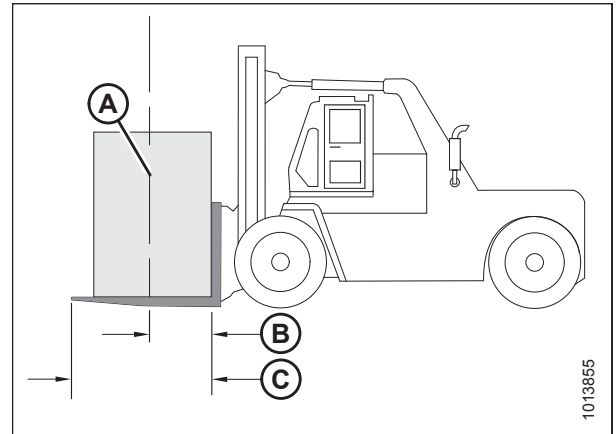
To avoid injury to bystanders from being struck by machinery, do NOT allow people to stand in unloading area.

### DANGER

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

#### 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 9.16: 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 9.15 Lifting Vehicle Requirements**

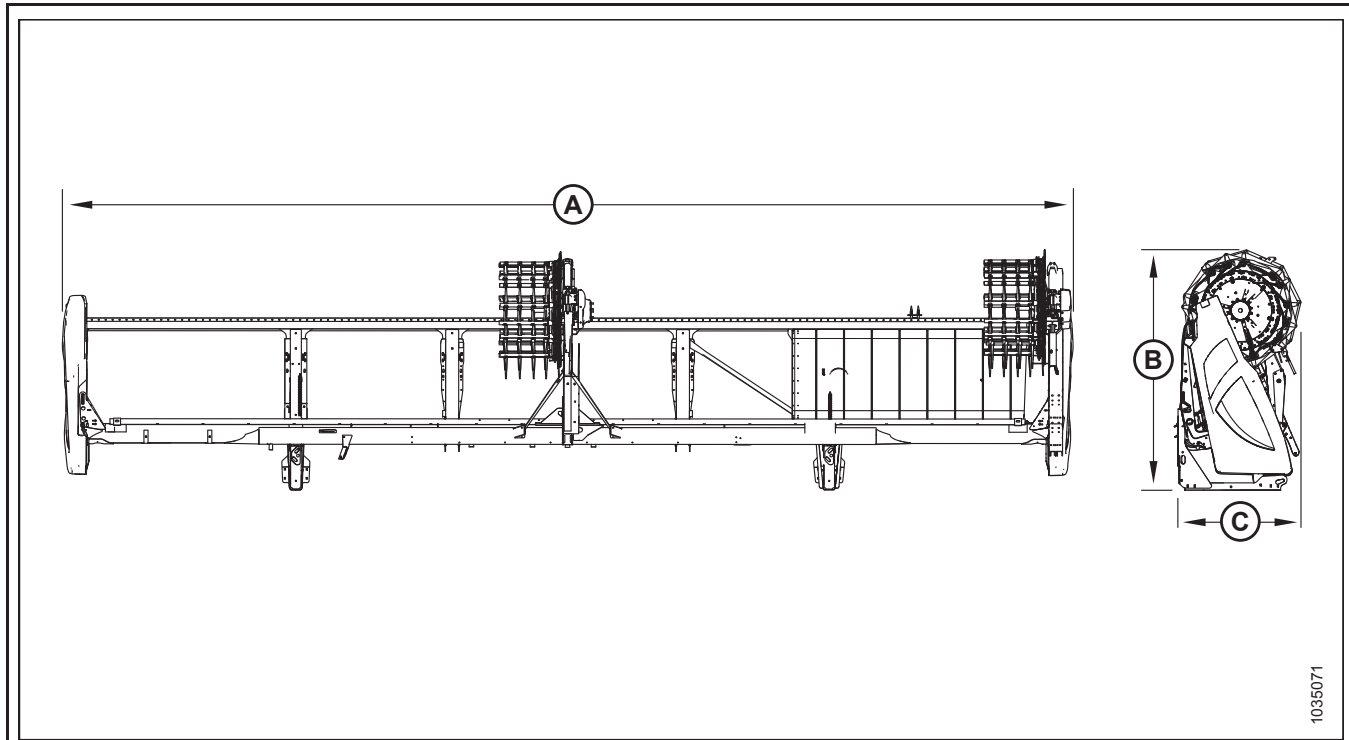
Minimum Capacity	3178 kg (7000 lb.) at 1220 mm (48 in.) from back end of forks
Minimum Fork Length	1981 mm (78 in.)

**Table 9.16 Lifting Chain Requirements**

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

## REFERENCE

**Table 9.17 Header Dimensions – Fully Assembled and Attached to Shipping Stands**



**IMPORTANT:**

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

Header Model	Dimensions		
	A	B	C
D115X	5.0 m (16 ft. 5 in.)	2.6 m (8.4 ft.)	1.5 m (4.9 ft.)
D120X	6.5 m (21 ft. 4 in.)		
D125X	8.0 m (26 ft. 3 in.)		
D130XL	9.6 m (31 ft. 6 in.)		
D135XL	11.1 m (36 ft. 5 in.)		
D140XL	12.6 m (41 ft. 4 in.)		
D145XL	14.2 m (46 ft. 6 in.)		



## 9.3 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

**Table 9.18 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.

## 9.4 Definitions

The following terms, abbreviations, and acronyms may be used in this instruction.

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Cab-forward	Windrower operation with Operator and cab facing in direction of travel
Center-link	A hydraulic cylinder link between the header and machine used to change header angle
CGVW	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
DDD	Double-draper drive
DK	Double knife
DKD	Double-knife drive
DR	Double reel
DWA	Double Windrow Attachment
Engine-forward	Windrower operation with Operator and engine facing in direction of travel
Export header	Header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts 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
HPT display	Harvest Performance Tracker display module on an M1 Series Windrower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting

## REFERENCE

Term	Definition
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
M1 Series	MacDon M1170 and M1240 Windrowers
n/a	Not applicable
North American header	Header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
PARK	The slot opposite the NEUTRAL position on operator's console of M1 Series windrowers
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)
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part
SDD	Single-drawer drive
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
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
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
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism

## REFERENCE

Term	Definition
Windrower	Power unit for a header
WOT	Wide open throttle

# 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 .19 Predelivery Checklist for D1X and D1XL 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.	<a href="#">9.1 Torque Specifications, page 97</a>
	Check tire pressure (Transport/Stabilizer Option).	<a href="#">6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Headers, page 57</a>
	Check wheel bolt torque (Transport/Stabilizer Option).	<a href="#">6.2 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels, Option for D1XL Headers, page 58</a>
	Check knife drive box breather position.	<a href="#">6.3 Checking Knife Drive Box, page 59</a>
	Check knife drive box lube level.	<a href="#">6.3 Checking Knife Drive Box, page 59</a>
	Check knife drive belt(s) tension.	<a href="#">6.4 Checking and Adjusting Knife Drive Belt Tension, page 60</a>
	Check if reel is centered between header endsheets.	<a href="#">6.5 Centering the Reel, page 64</a>
	Grease all bearings and U-joints.	<a href="#">6.12 Lubricating Header, page 82</a>
	Check draper tension.	<a href="#">6.7 Checking and Adjusting Draper Tension, page 71</a>
	Check draper seal.	<a href="#">6.8 Checking and Adjusting Draper Seal, page 73</a>
	Check reel tine to cutterbar clearance.	<a href="#">6.6.1 Measuring Reel Clearance, page 67</a>
	Check if skid shoes are evenly adjusted an appropriate setting for first crop.	<a href="#">6.9 Checking and Adjusting Skid Shoe Settings, page 76</a>
	Check fit of endshields.	<a href="#">6.11 Checking and Adjusting Endshields, page 78</a>
	Check that header is level.	<a href="#">6.10 Leveling the Header, page 77</a>
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel.	—
<b>Run-up procedure</b>		<a href="#">7 Running up the Header, page 93</a>
	Check if the knife drive pulley(s) is rotating in proper direction: clockwise on left side; counterclockwise on right side (double knife only).	<a href="#">6.4 Checking and Adjusting Knife Drive Belt Tension, page 60</a>
	Check if lights are functional.	—

## REFERENCE

**Table .19 Predelivery Checklist for D1X and D1XL Series Draper Headers – North America (continued)**

✓	Item	Reference
	Check if reel lift cylinders extend fully.	—
	Check if reel moves fully fore and aft.	—
<b>Post run-up check. Stop engine.</b>		<i>8 Performing Post Run-Up Adjustments, page 95</i>
	Check belt drives for heated bearings.	<i>6.4 Checking and Adjusting Knife Drive Belt Tension, page 60</i>
	Check knife sections for discoloration caused by misaligned components.	<i>8.1 Adjusting Knife, page 95</i>
	Check for hot spots on the cutterbar above the draper seal. Adjust deck height as required.	<i>6.8 Checking and Adjusting Draper Seal, page 73</i>
	Check for hydraulic leaks.	—
	Check that manual storage case contains operator's manual and parts catalog.	<i>6.13 Checking Manuals, page 85</i>

**Date checked:**

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