

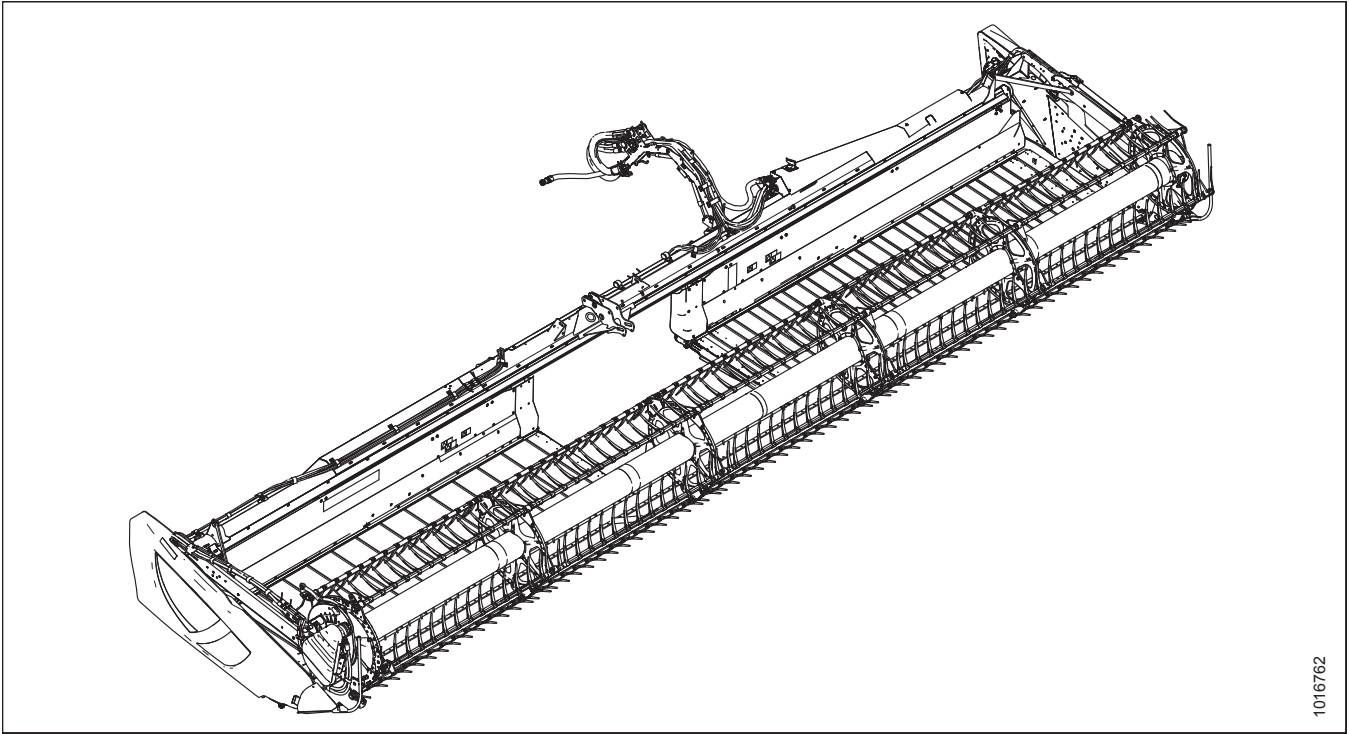
D1X and D1XL Series Draper Header

Unloading and Assembly Instructions (North America)

215653 Revision A

Original Instruction

D1XL Series Draper Header for M1 Series Windrowers



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Introduction

This manual contains unloading, assembly, and predelivery information for MacDon D1X and D1XL Series Draper Headers for M1 Series Windrowers.

To ensure the best performance of this product and the safety of your customers, carefully follow this unloading and assembly procedure.

Some sections or steps apply to multiple header configurations and sizes. Follow the procedures relevant for the header you are assembling.

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

Retain this instruction for future reference.

NOTE:

Confirm that the windrower is equipped with a draper-ready header drive **BEFORE** attempting to attach the header to the windrower. Remember:

- All M1170 header drives are draper-ready.
- If the M1240 header drive is configured to operate solely with a rotary disc header (hydraulic configuration [B]), convert the header drive to draper-ready (hydraulic configuration [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.

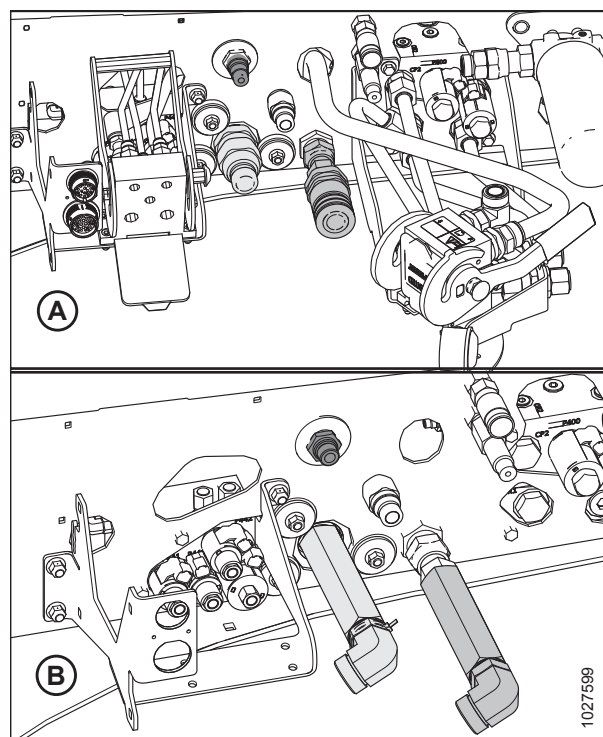


Figure 1: M1240 Header Hydraulics Configurations

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) or from our Dealer portal (<https://portal.macdon.com>) (login required).

If the shipment is damaged or is missing parts, contact shortageanddamage@macdon.com.

This document is currently available in English.

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
2 Unloading Header, page 7	Added steps for lowering the header onto its jack stand to both subtopics. Changed order of subtopics.	Technical Publications
2.2.2 Lowering Single-Reel Header, page 12	Added "Proceed to" step.	Technical Publications
4 Assembling Header, page 21	Changed order of chapters: Assembling Header now comes before Attaching Header to Windrower.	Technical Publications
5.1 Installing Hydraulic Hose Management System, page 41	Added step to check cinch straps.	ECR 22987
6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Series Headers, page 57	Revised pressure recommendations, added safety note, revised hazard statement.	Design Engineering
6.4 Checking and Adjusting Knife Drive Belt Tension, page 60	In all sub-topics: changed order of steps so that the belt tension is checked first, and added "proceed to" steps where appropriate.	Technical Publications
6.6.2 Adjusting Reel Clearance, page 69	Added steps for engaging and disengaging the reel safety props.	Technical Publications
6.8 Checking and Adjusting Draper Seal, page 75	Procedure now instructs the reader to repeat the height adjustment steps for each deck support. Added reel safety prop engage and disengage steps.	Technical Publications
6.12 Checking Grease Points, page 86	Replaced greasing procedure.	Technical Publications
6.13 Checking Manuals, page 87	Added instructions for checking for the presence of manuals.	Technical Publications
8.1 Adjusting Knife, page 97	Added specification for the gap between the knifehead and the pitman arm.	Technical Publications
Predelivery Checklist, page 115	Added instruction to check for quick cards. Clarified procedure.	Technical Publications

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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. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

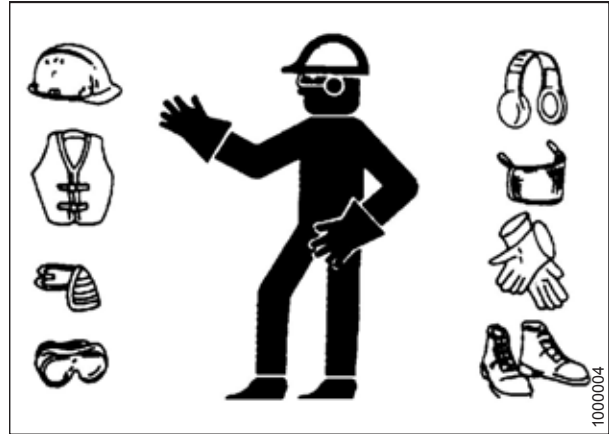


Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

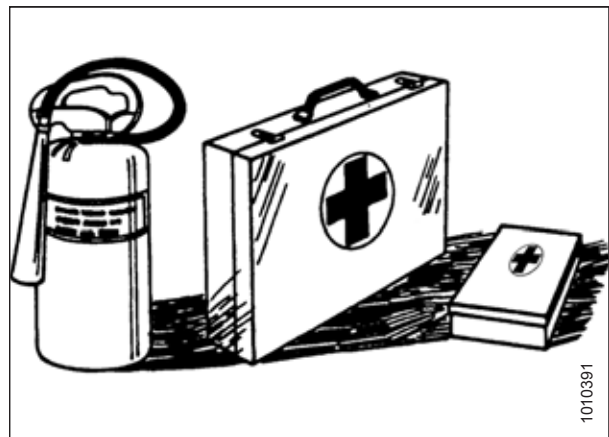


Figure 1.3: Safety Equipment

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. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements.



Figure 1.4: 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 the functionality and/or safety of the machine. It may also shorten the machine's service life.
- To avoid injury or death from the unexpected startup of the machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

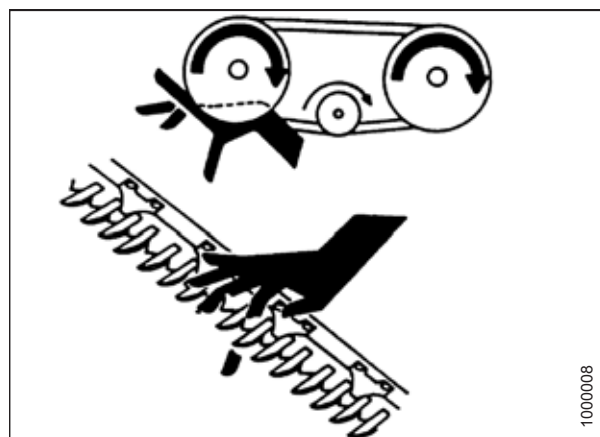


Figure 1.5: Safety around Equipment

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



Figure 1.6: 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 decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

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

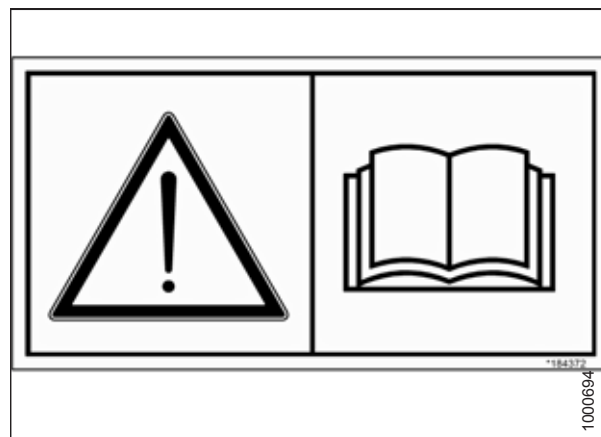


Figure 1.7: Operator's Manual Decal

Chapter 2: Unloading Header

Unload all header parts before beginning assembly. Carefully follow these procedures in the order in which they are presented.

2.1 Unloading Header from Trailer

A trailer will typically have two headers on it. Ensure that you use a forklift which meets the minimum length and capacity requirements when unloading a header.

DANGER

To prevent injury to bystanders caused by being struck by machinery, do NOT allow people to stand in the unloading area.

DANGER

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

IMPORTANT:

For lifting equipment requirements, refer to [9.2 Lifting Vehicle Specifications, page 110](#).

1. Move the trailer into position and block the trailer wheels.
2. Lower the trailer storage stands.
3. **D1X Series headers:** Approach one of the headers and slide forks (A) underneath shipping support (B). Insert the forks as far as possible without contacting the shipping support of second header (C).

IMPORTANT:

Ensure that the forklift's forks are lifting only **ONE** header. Inspect the positioning of the forks before lifting the header.

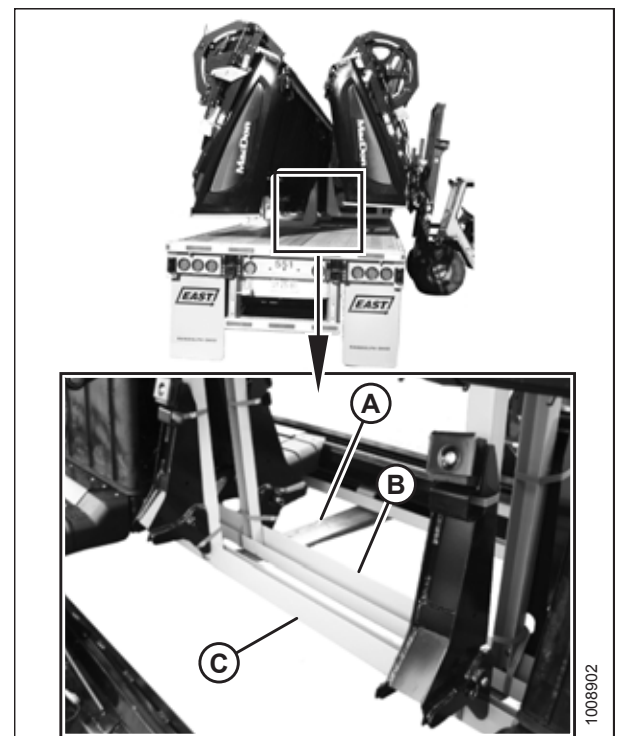


Figure 2.1: D1X Series Header Shipping Supports

UNLOADING HEADER

4. **D1XL Series headers:** Approach one of the headers and slide forks (A) through four forklift brackets (B) underneath the shipping support. Insert the forks as far as possible without contacting the shipping support of second header (C).

IMPORTANT:

Ensure that the forklift's forks are lifting only **ONE** header. Inspect the positioning of the forks before lifting the header.

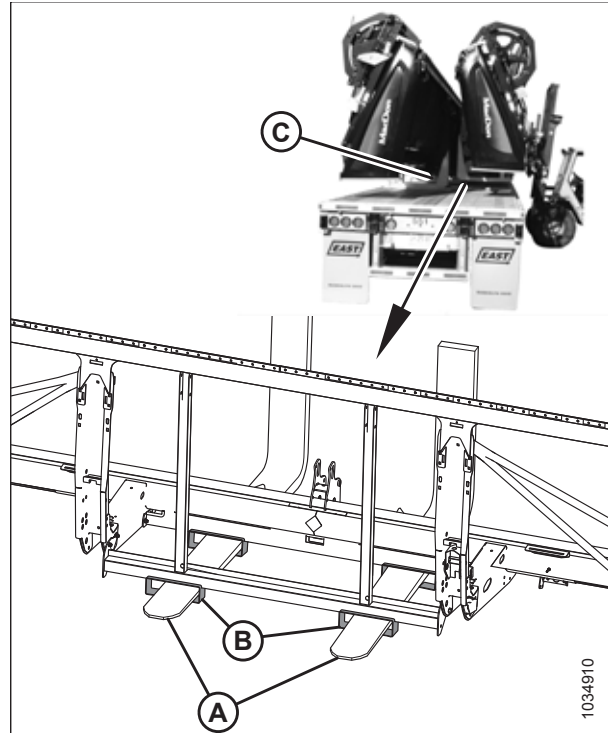


Figure 2.2: D1XL Series Header Shipping Supports

5. Remove the straps and chains securing the header to the trailer deck.
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 the forklift up until the header clears the trailer. Slowly lower the header until it sits 150 mm (6 in.) off of the ground.
8. Take the header to the storage or setup area.

NOTE:

Ensure that the ground where the header is to be placed is flat and free of rocks or debris that could damage the header.

9. Lower the header to the ground.
10. Unload the second header. Refer to Steps 2, page 7 to 9, page 8 for instructions.
11. Check the unloaded headers for damage and missing parts.

2.2 Lowering Header to Field Position

Headers are shipped resting on their backs, and must be lowered before assembly can continue. The procedure for lowering the header differs depending on whether the header has a single or double reel.

To lower the header, follow the relevant procedure:

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

2.2.1 Lowering Double-Reel Header

The header will need to be lowered to the field position to prepare it for further assembly.

IMPORTANT:

For information on lifting equipment requirements, refer to [9.2 Lifting Vehicle Specifications, page 110](#).

1. Orient the forklift so that you are approaching the header from its underside.



Figure 2.3: 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. The purpose of this procedure is to lay the header into its working position.

NOTE:

The right reel has been removed from the illustration for the sake of clarity.

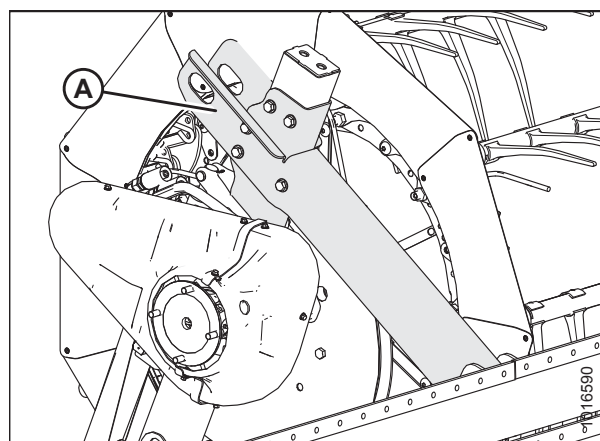


Figure 2.4: Shipping Support – Double-Reel, D1XL Series Header

UNLOADING HEADER

CAUTION

Stand clear when lowering the header; the machine may sway from side to side.

3. Back the forklift up **SLOWLY** while lowering the forks until the header is just above the ground, as shown in the numbered steps in the illustration.



Figure 2.5: Lowering the Header

UNLOADING HEADER

4. Place 150 mm (6 in.) blocks (A) under each end of the header, and one block at the center of the cutterbar. Lower the header onto the blocks.
5. Remove the chain and move the forklift to the rear of the header.

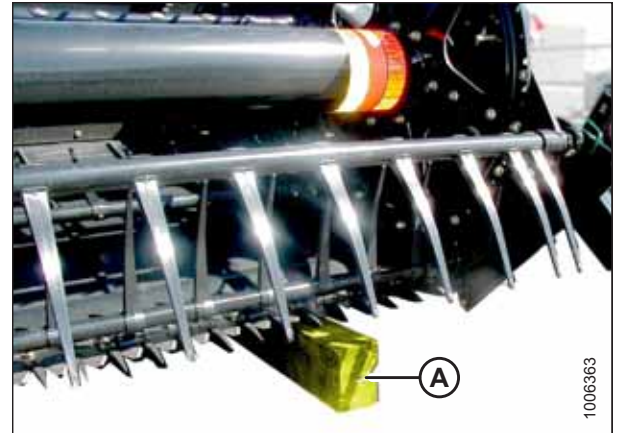


Figure 2.6: Block under Cutterbar

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

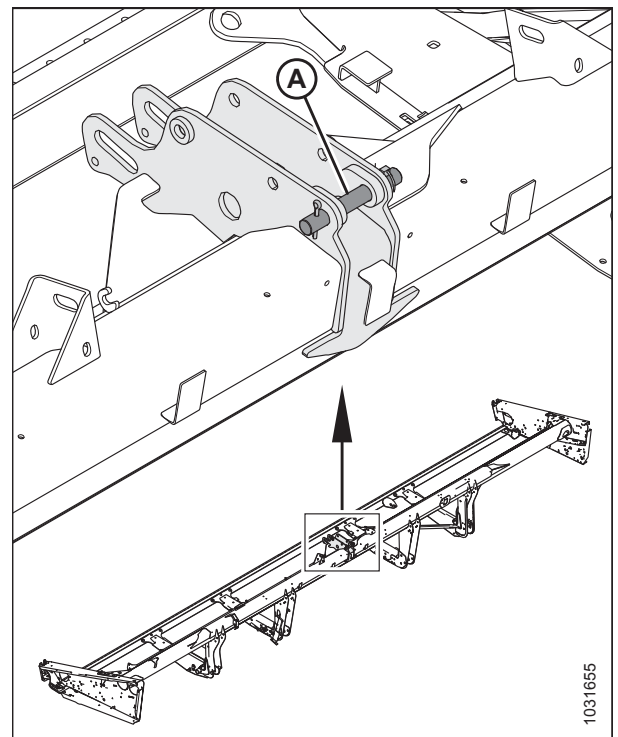


Figure 2.7: Center-Link Anchor – Double-Reel Header

UNLOADING HEADER

7. To lower the header stand: pull pin (A), gently lower stand (B) to the desired height, and then release pin (A) again to lock the stand at that height.

NOTE:

If the ground is soft, place a block under the stand.

8. Lower the header onto the stand.
9. Remove the chain.
10. Proceed to [2.3 Removing Shipping Supports, page 16](#).

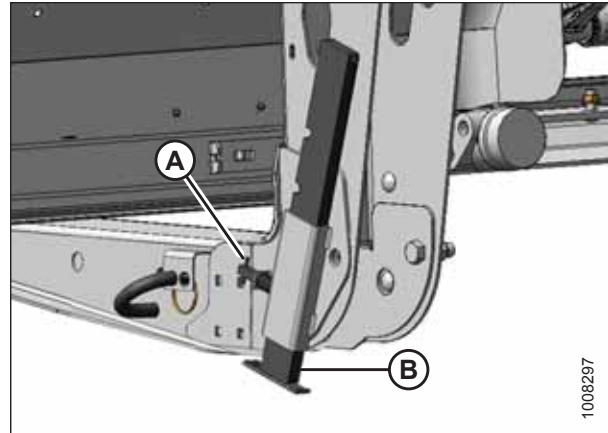


Figure 2.8: Header Stand

2.2.2 Lowering Single-Reel Header

The header will need to be lowered to the field position to prepare it for further assembly.

IMPORTANT:

For information on lifting equipment requirements, refer to [9.2 Lifting Vehicle Specifications, page 110](#).

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

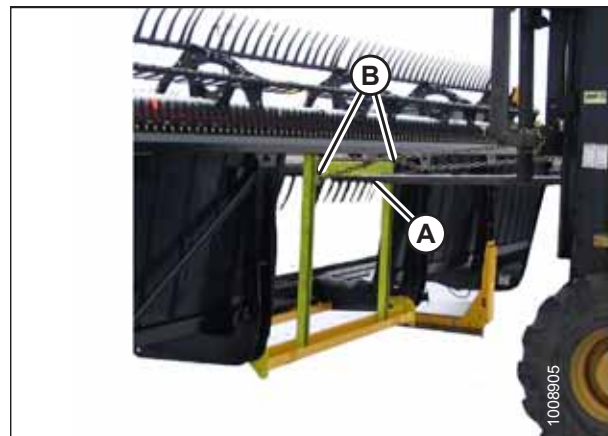


Figure 2.9: Shipping Frame

UNLOADING HEADER

CAUTION

Stand clear when lowering the header; the machine may sway from side to side.

3. Back the forklift up **SLOWLY** while lowering the forks until the header is just above the ground, as shown in the numbered steps in the illustration.



Figure 2.10: Lowering the Header

UNLOADING HEADER

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

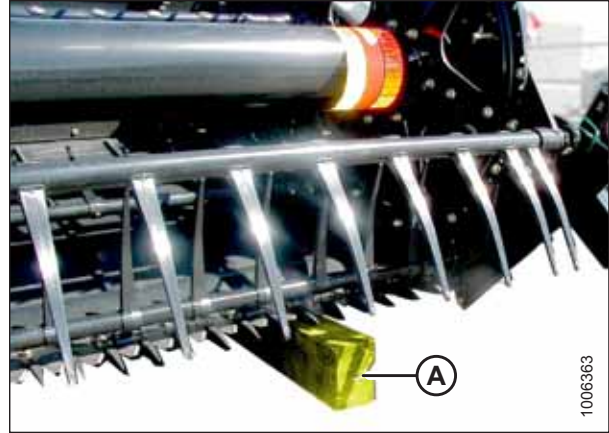


Figure 2.11: Block under Cutterbar

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.

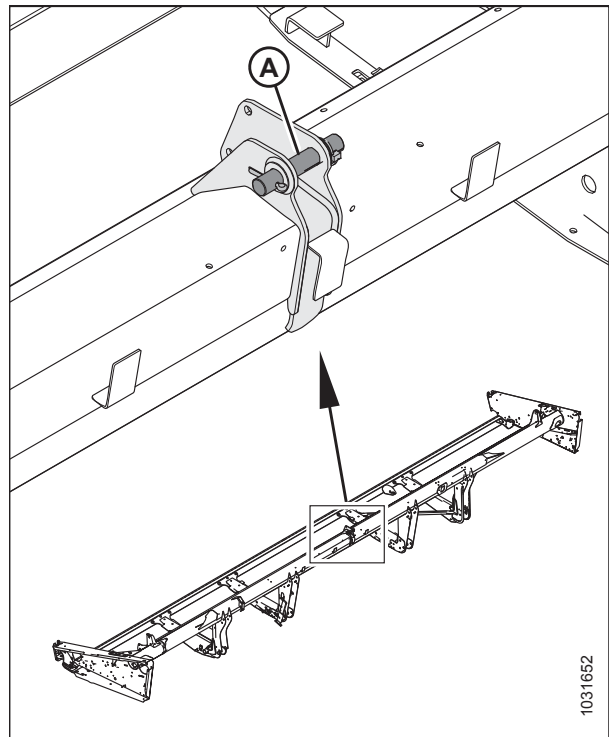


Figure 2.12: Center-link Anchor – Single-Reel

UNLOADING HEADER

7. To lower the header stand: pull pin (A), gently lower stand (B) to the desired height, and then release pin (A) again to lock the stand at that height.

NOTE:

If the ground is soft, place a block under the stand.

8. Lower the forklift forks so that the weight of the header is supported by the stand.
9. Remove the chain.

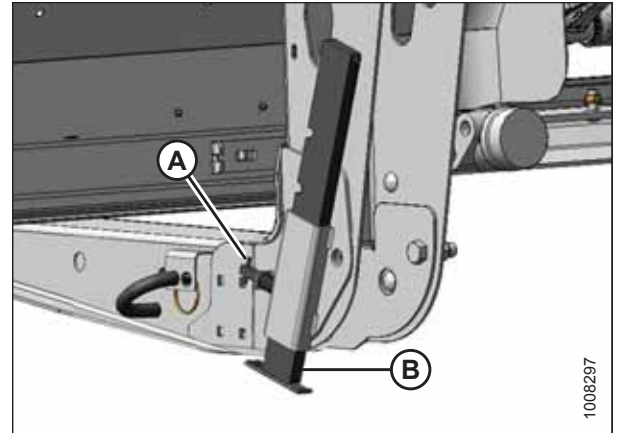


Figure 2.13: Header Stand

2.3 Removing Shipping Supports

Once the header has been lowered, the shipping supports must be removed to prepare the header for assembly.

NOTE:

Unless directed otherwise, discard all shipping materials and hardware.

1. Cut the straps securing draper header supports (A) to the shipping support. Remove the draper header supports and set them aside.

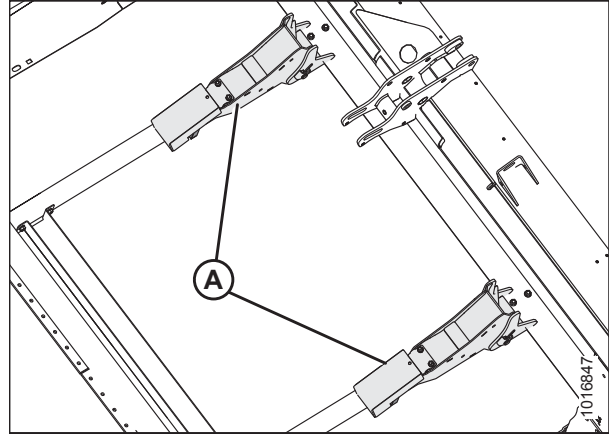


Figure 2.14: Draper Header Supports

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

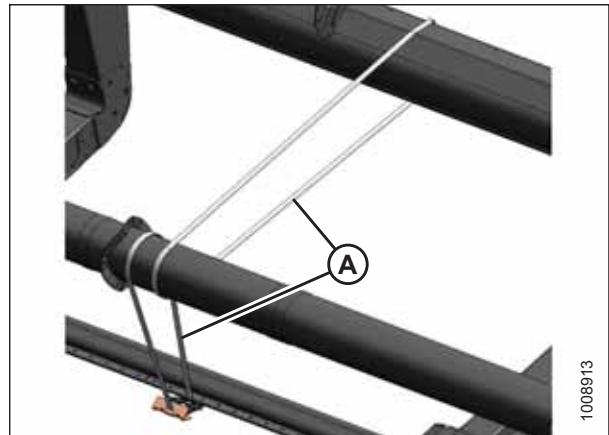


Figure 2.15: Reel Banding

3. Locate upper support (B).
4. Remove bolts (A). Remove upper support (B).

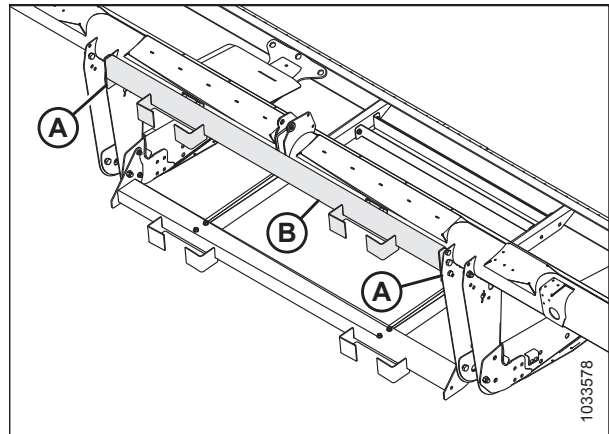


Figure 2.16: Upper Support

UNLOADING HEADER

5. Locate lower support (B).
6. Remove bolts (A). Remove lower support (B).

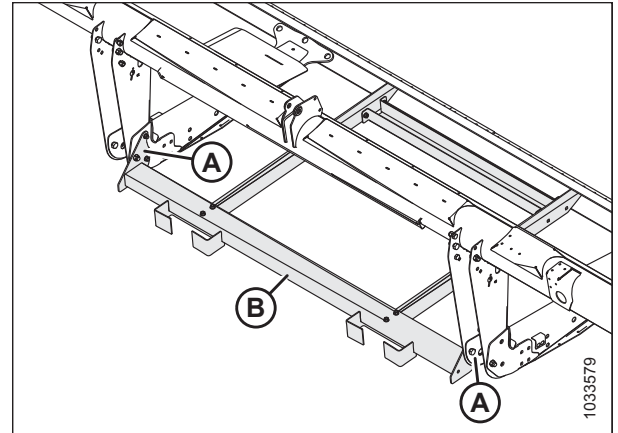


Figure 2.17: Lower Support

7. Remove bolts (A) from the left shipping stand. Remove the shipping stand.
8. Repeat the previous step to remove the right shipping stand.

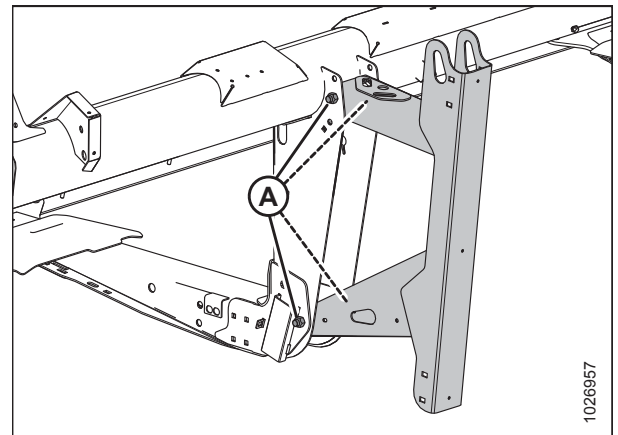


Figure 2.18: Outer Leg Shipping Support – D1X Series Header

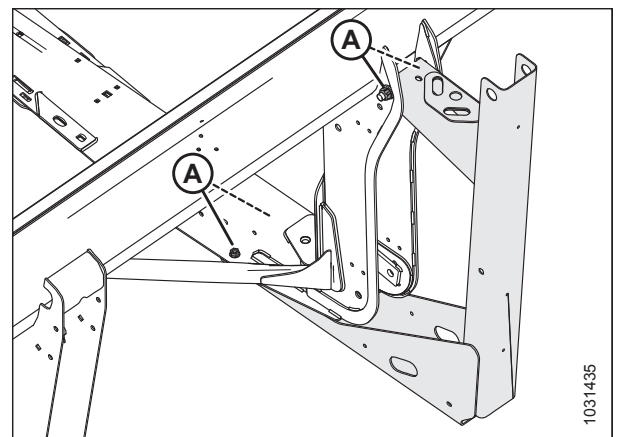


Figure 2.19: Outer Leg Shipping Support – D1XL Series Header

UNLOADING HEADER

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

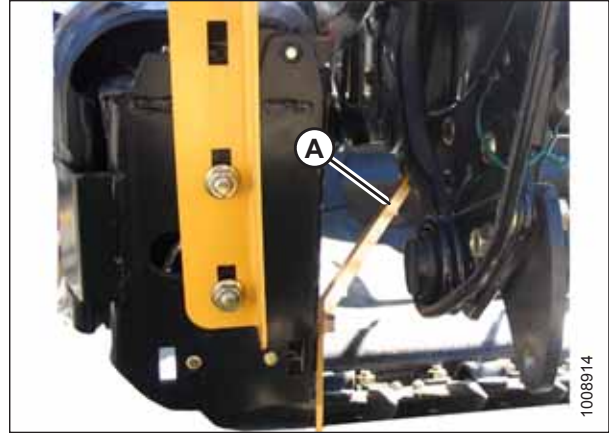


Figure 2.20: Anti-Rotation Brace

10. On the left side of the header, cut and remove wire (A) securing the endshield to the panel.
11. Repeat the previous step to remove the wire from the endshield on the right side.
12. Loosen two nuts (B).
13. Slide shipping support (C) backward and remove it.
14. Tighten nuts (B).

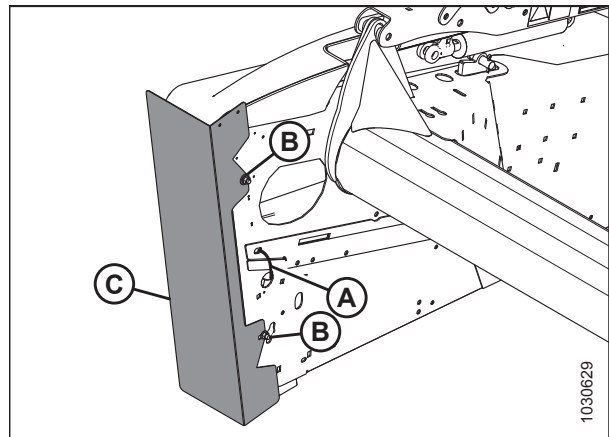


Figure 2.21: Left Endsheets Shipping Support

15. At the right side of the header, loosen two nuts (A).
16. Slide shipping support (B) backward to remove it.
17. Tighten nuts (A).

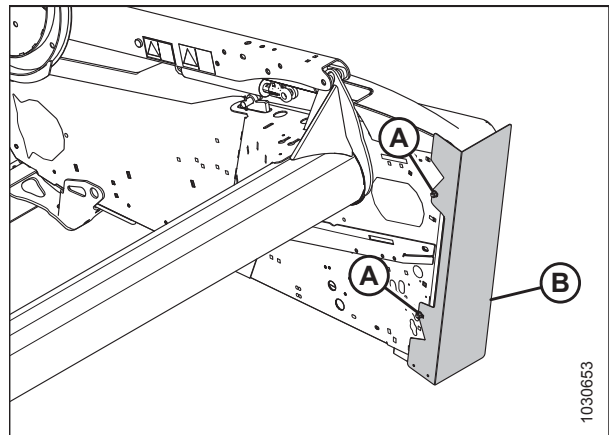


Figure 2.22: Right Endsheets Shipping Support

Chapter 3: Adding Ballast

An M1 Series Windrower paired with a large header needs rear ballast in order to maintain its balance. Ballast can be added to the windrower using a ballast kit.

Ballast kits include eight counterweights and the necessary mounting hardware. A ballast kit adds 163 kg (360 lb.) of weight to the rear of the header. An M1 Series Windrower can be equipped with a maximum of 24 counterweights, for a total possible ballast weight of 490 kg (1080 lb.).

Table 3.1, page 19 lists the number of counterweight kits required for each D1XL and D1X Series configuration when the header is paired with an M1 Series Windrower. Install the counterweights according to the instructions supplied with each kit.

IMPORTANT:

Attach the counterweights to the windrower **BEFORE** attaching the header.

Table 3.1 Ballast Kits Required for M1 Series Windrowers Paired with D1X/D1XL Series Headers

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	—

ADDING BALLAST

Table 3.1 Ballast Kits Required for M1 Series Windrowers Paired with D1X/D1XL Series Headers (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	Base	1	—
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: Assembling Header

Once the header has been attached to the windrower, the final assembly procedures can be performed.

4.1 Positioning Transport Lights

Transport lights are located on each outboard reel arm. The header is shipped with the transport lights in an inverted position on the inboard sides of the reel arms.

D1X Series headers only:

1. Locate right light assembly (A).
2. Remove and retain lock nuts (B).
3. Remove right light assembly (A).

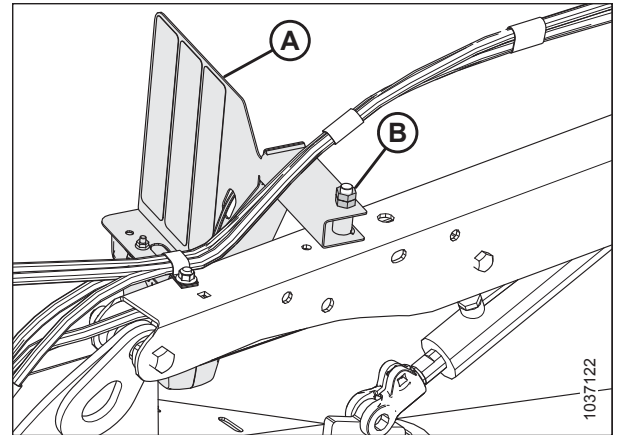


Figure 4.1: Right Light Assembly in Shipping Position – D1X Series Headers

D1XL Series headers only:

4. Remove and retain lock nuts and bolt (A).
5. Remove and discard nut and bolt (D).
6. Remove and discard shipping bracket (C).
7. Remove light assembly (B).

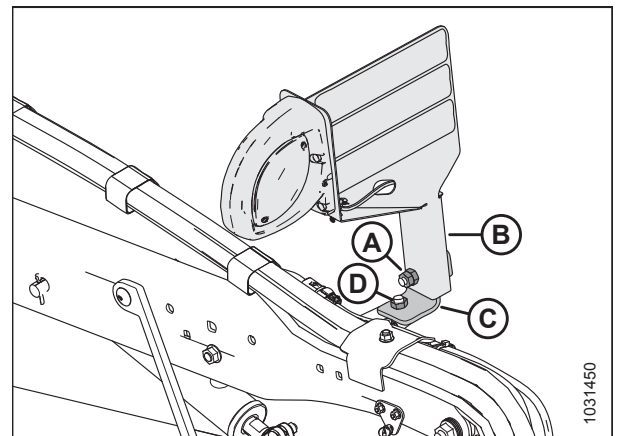


Figure 4.2: Right Light Assembly in Shipping Position – D1XL Series Headers

ASSEMBLING HEADER

D1X Series headers only:

8. Position right light assembly (A) perpendicular to the right reel arm as shown and attach it using retained lock nuts (B).

NOTE:

The light assembly should be able to rotate when hand force is applied, yet maintain its position when no force is being applied.

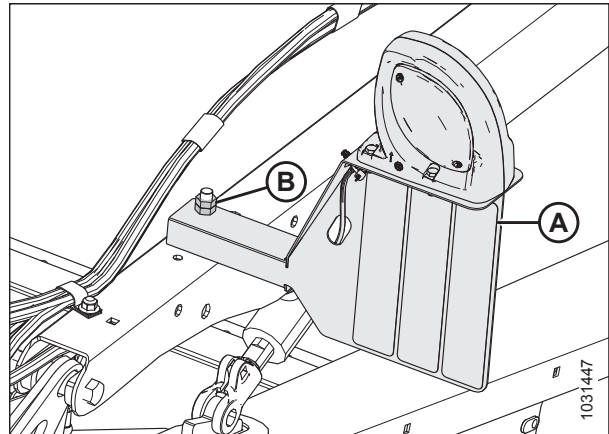


Figure 4.3: Right Transport Light – D1X Series Headers

D1X Series headers only:

9. Position right light assembly (A) perpendicular to the right reel arm as shown. Attach the light assembly to the reel arm bracket (B) using retained lock nuts and bolt (C).

NOTE:

The light assembly should be able to rotate when hand force is applied, yet maintain its position when no force is being applied.

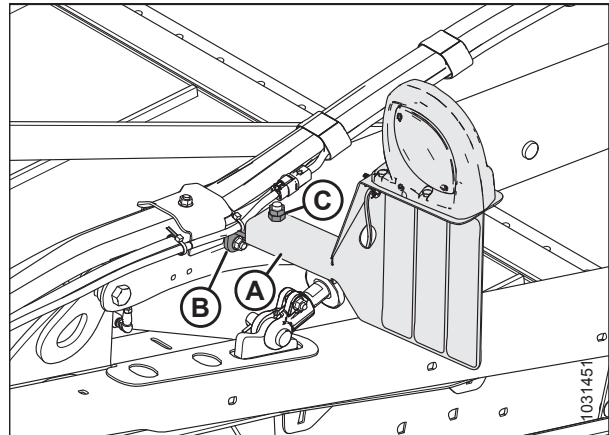


Figure 4.4: Right Transport Light – D1XL Series Headers

All headers:

10. Locate left light assembly (B).
11. Remove and retain lock nuts (A).
12. Remove left light assembly (B).

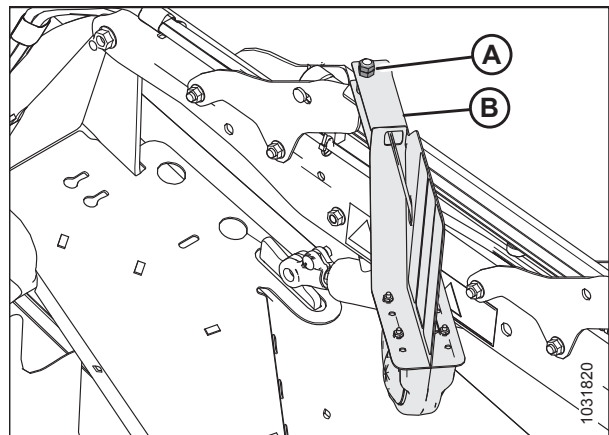


Figure 4.5: Left Light Assembly in Shipping Position

ASSEMBLING HEADER

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

NOTE:

The light assembly should be able to rotate when hand force is applied, yet maintain its position when no force is being applied.

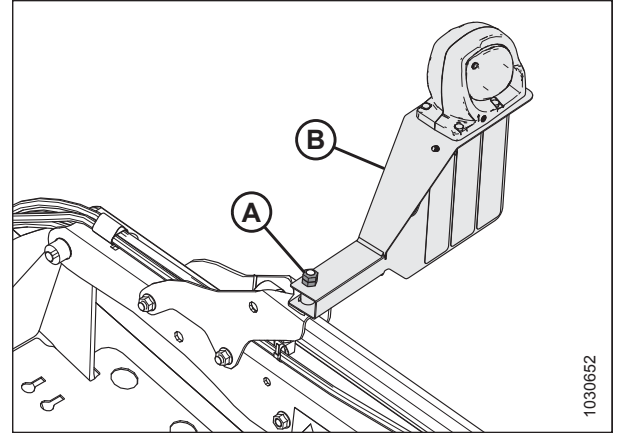


Figure 4.6: Left Transport Light

4.2 Attaching Reel-Lift Cylinders

Several shipping supports must be removed before the reel-lift cylinders can be attached to the reel arms. Headers equipped with a single reel have two reel-lift cylinders to install, while those with a double reel have three cylinders to install.

CAUTION

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

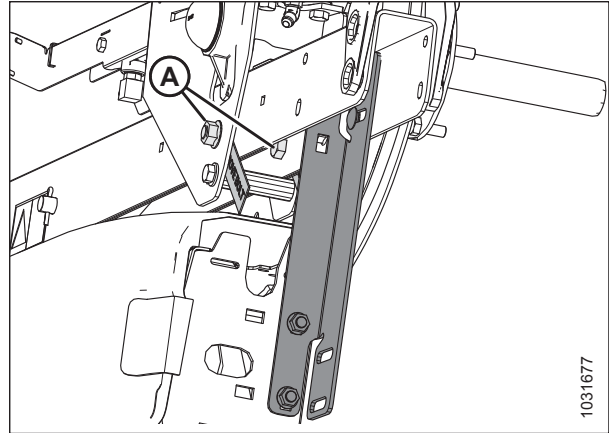


Figure 4.7: Reel Right Arm – Single Reel Header

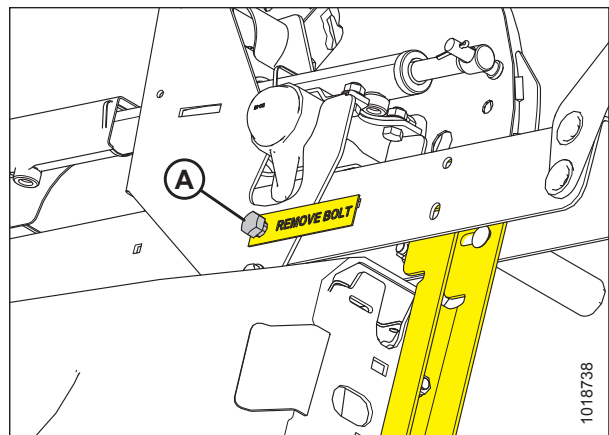


Figure 4.8: Reel Right Arm – Double-Reel D1XL Series Header

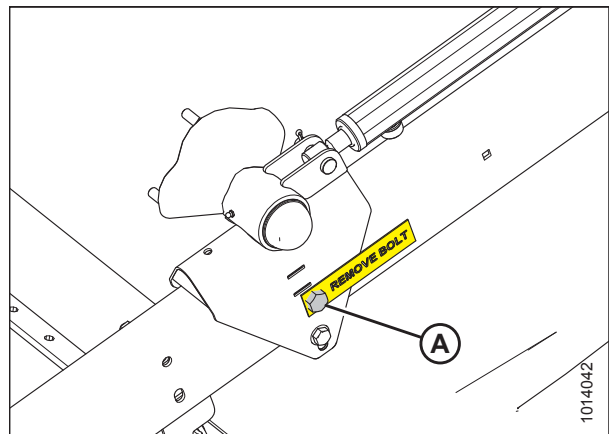


Figure 4.9: Left Reel Arm

ASSEMBLING HEADER

NOTE:

Some parts have been removed from the illustration for the sake of clarity.

1. Position sling (A) around reel tube (B) close to the outboard end of the reel. Attach the sling to a forklift or an equivalent lifting device.
2. Remove the shipping wire or banding (whichever is present) from the reel-lift cylinder.

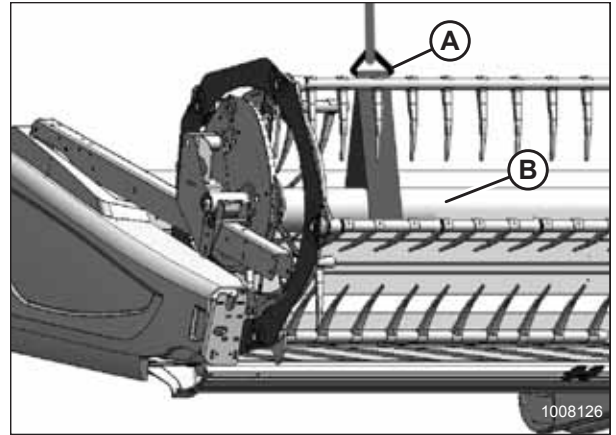


Figure 4.10: Reel Tube

3. Support the reel with a lifting device, and remove top bolts (A) on right outboard reel arm supports (B).
4. Repeat the previous step to remove the top bolts from the left outboard reel arm supports.

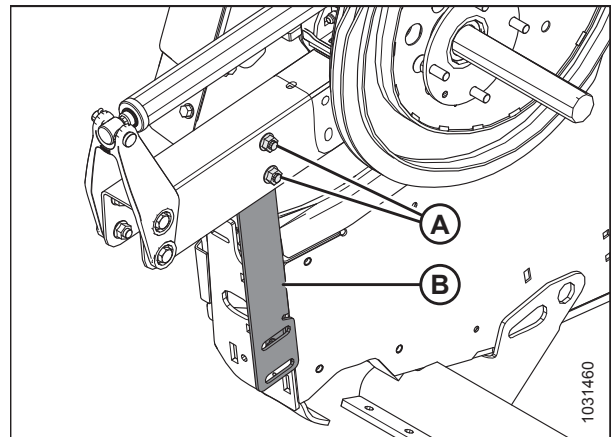


Figure 4.11: Outboard Reel Arm Support – D1X Series Header

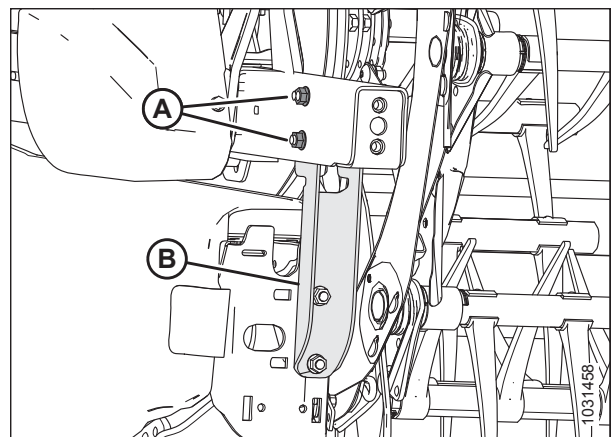


Figure 4.12: Outboard Reel Arm Support – D1XL Series Header

ASSEMBLING HEADER

5. **Double-reel headers:** 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.

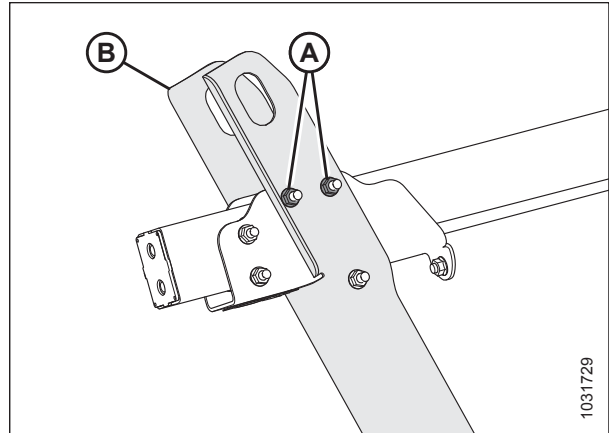


Figure 4.13: Center Reel Arm – D1XL Series Double-Reel Header

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

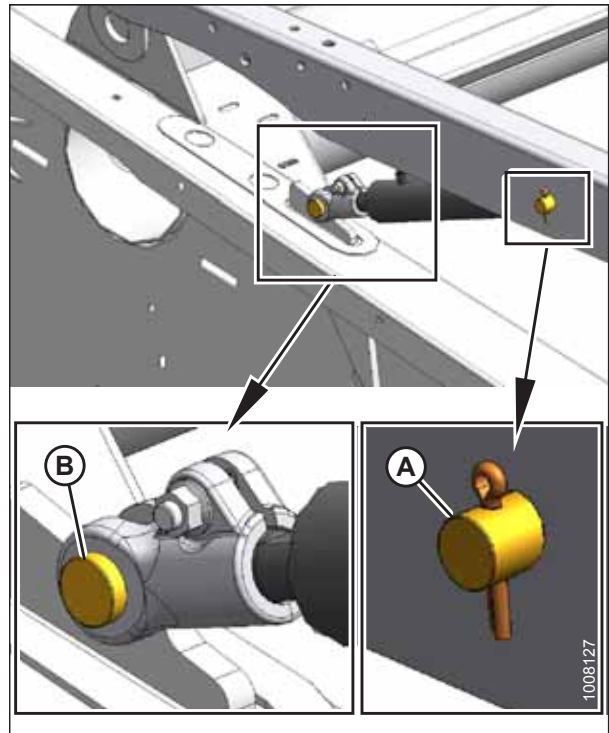


Figure 4.14: Right Reel-Lift Cylinder

ASSEMBLING HEADER

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

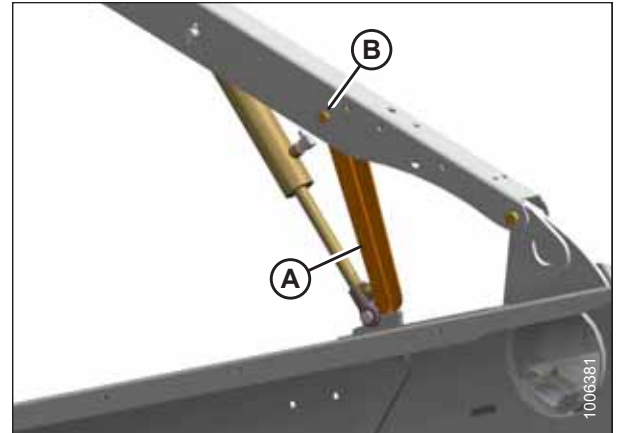


Figure 4.15: Reel Safety Props

10. *Double-reel headers:*

- 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 any shipping wire or banding from the center reel-lift cylinder.

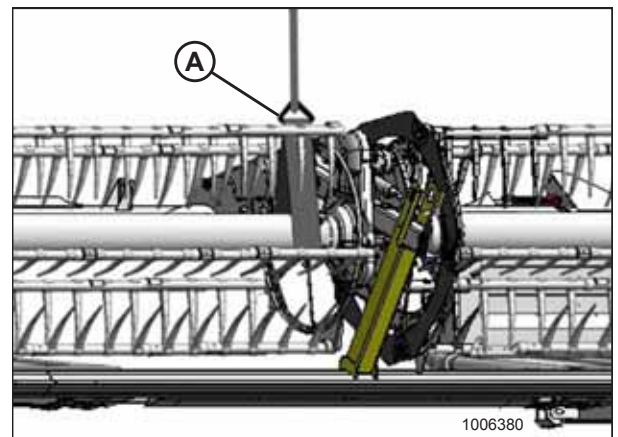


Figure 4.16: Lifting the Reel – Double-Reel Header

11. *Double-reel headers:*

- a. Remove the bolt and nut from the cylinder rod end. Retain the hardware for reinstallation.
- b. Attach the rod end of cylinder (B) to the reel arm with retained 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 that the pin can be installed at the barrel end of the cylinder.

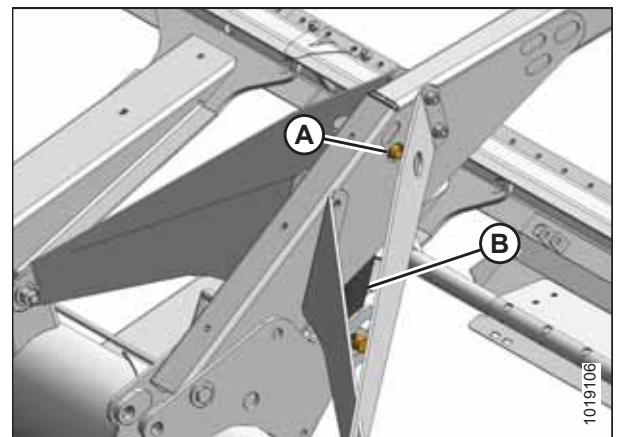


Figure 4.17: Reel Arm Braces

ASSEMBLING HEADER

12. Reposition sling (A) around the reel tube near the opposite outboard reel arm.
13. Remove any shipping wire or banding from the reel-lift cylinder.

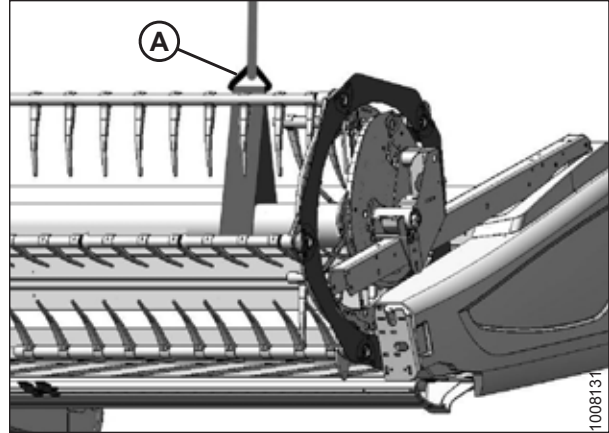


Figure 4.18: Outboard Reel Arm

14. Lift the reel and remove the pins from endsheet (B) and reel arm (A).
15. Align the reel-lift cylinder mounting holes with the lug on the endsheet and the hole in the reel arm.
16. Secure the cylinder to the endsheet and to the reel arm with pins as follows:
 - Insert clevis pin (A) as shown. Secure it with a cotter pin placed **OUTBOARD** of the reel arm.
 - Insert clevis pin (B) as shown. Secure it with a cotter pin placed **INBOARD** of the endsheet.

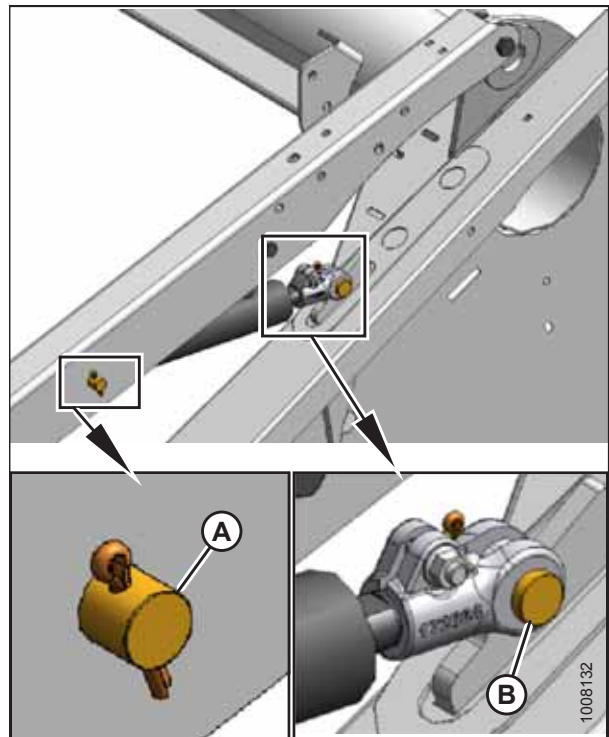


Figure 4.19: Left Reel-Lift Cylinder

ASSEMBLING HEADER

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

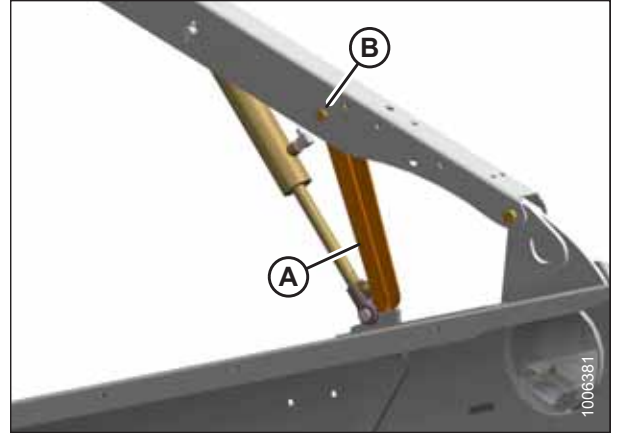


Figure 4.20: Reel Safety Prop

18. **Double-reel headers:** Remove bolt (A), disengage center reel arm shipping support (B) from the cutterbar, and remove the shipping support.

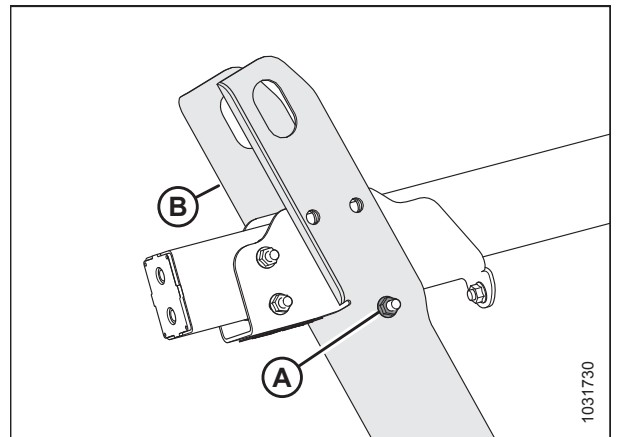


Figure 4.21: Center Reel Arm Shipping Support

ASSEMBLING HEADER

19. Remove bolts (A) from left reel arm support (B) at the endsheet. Remove the support.
20. Repeat the previous step to remove the right reel arm support.

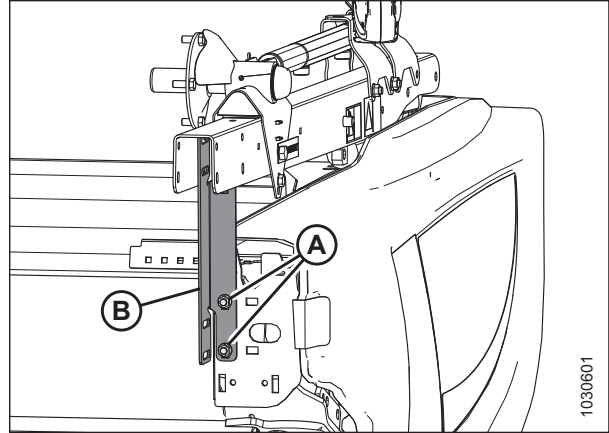


Figure 4.22: Outboard Reel Arm Supports – D1X Series Header

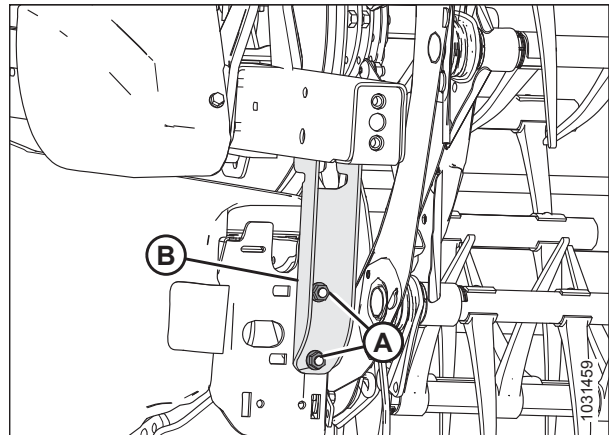


Figure 4.23: Outboard Reel Arm Supports – D1XL Series Header

ASSEMBLING HEADER

21. Remove brace bolts and tags (A).

IMPORTANT:

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

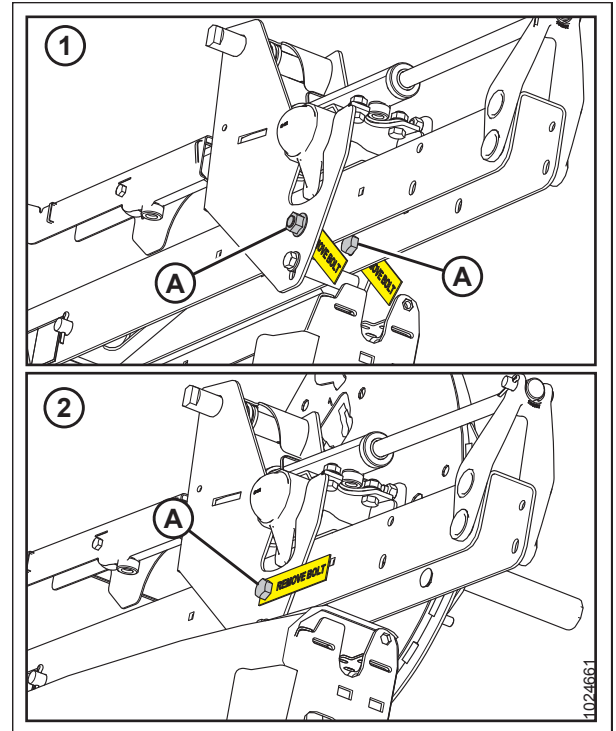


Figure 4.24: Right Reel Arm

1 - Single Reel

2 - Double Reel

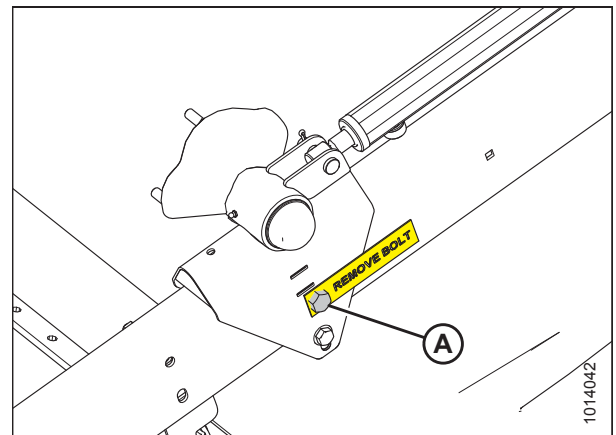


Figure 4.25: Left Reel Arm

ASSEMBLING HEADER

22. **Double-reel headers:** Remove three bolts (A). Remove shipping channel (B).

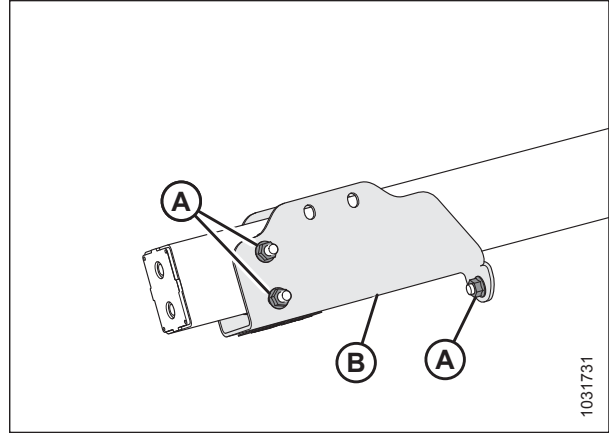


Figure 4.26: Center Reel Arm Shipping Channel – Double-Reel D1XL Series Header

4.3 Installing Disc Segments of Outboard Reel Endshields

Two disc segments of the reel endshields may have been removed from the reel for shipping purposes. They will need to be installed before the header can be operated.

1. The illustration shows reel endshield (A) with two disc segments removed. If the header you are assembling looks like this, then complete the rest of this procedure. If not, then proceed to [4.4 Attaching Cam Arms](#), [page 34](#).

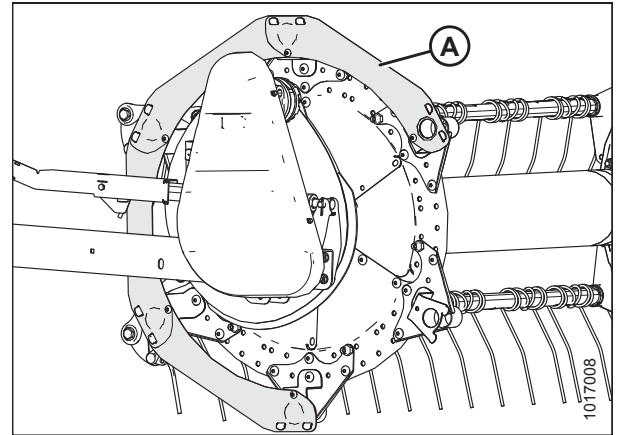


Figure 4.27: Reel Endshield – Cam End Shown; Tail End Similar

2. Retrieve the bag of hardware stored on the center draper support.
3. Remove and retain two bolts (A).
4. Insert endshield support tabs (C) into the slots on disc segment (B).

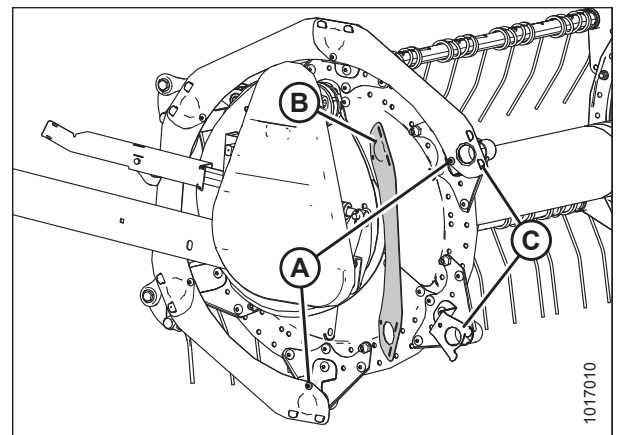


Figure 4.28: Reel Endshield

5. Secure the other end of the disc segment to the support with retained bolt (A).
6. Position last disc segment (B) in front of disc segment (C) and behind disc segment (D).

NOTE:

It may be necessary to loosen the hardware and use a prying tool to fit the last disc segment into place.

7. Ensure that the endshield support tabs are engaged with the slots on the disc segments. Secure the disc segments with bolts (E).
8. Repeat Steps [3, page 33](#) to [7, page 33](#) to install the disc segment on the other side of the header.

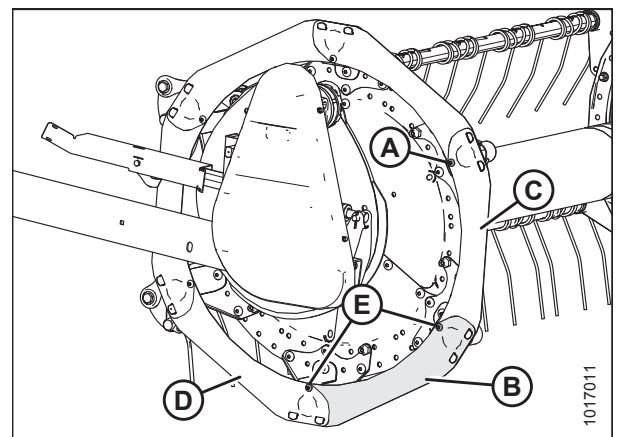


Figure 4.29: Reel Endshield

4.4 Attaching Cam Arms

The header's cam arms must be installed before the reel can be operated.

NOTE:

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

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



Figure 4.30: Cam Arm in Shipping Position

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

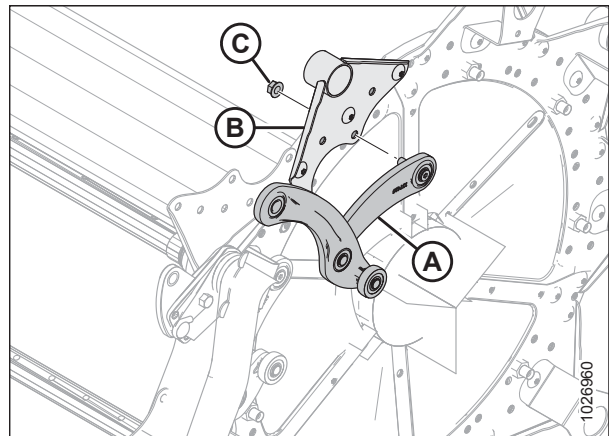


Figure 4.31: Cam Arm Assembly

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

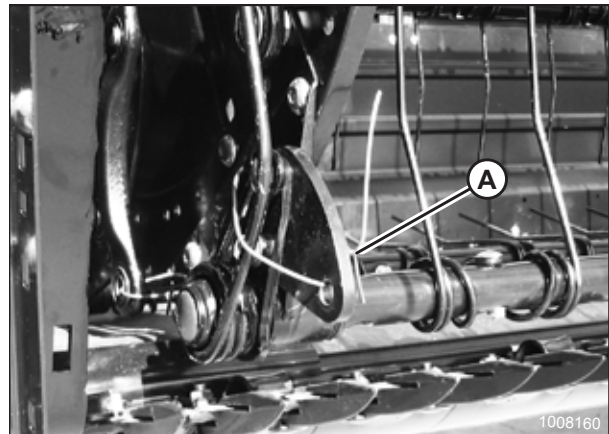


Figure 4.32: Disconnected Cam Links and Shipping Wire

5. Remove bag of hardware (A) from the tine bar.

NOTE:

The bag of hardware contains the hardware for the cam links and the endshields.

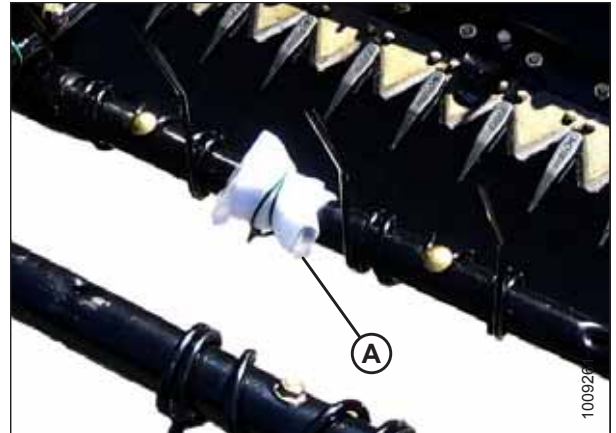


Figure 4.33: Hardware Bag Attached to Right Reel

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

IMPORTANT:

Ensure that shim (D) is installed in the correct location to prevent damage to the bar crank.

NOTE:

The bolts in the hardware bag are precoated with threadlocker. Do not add more threadlocker when you are installing the bolts.

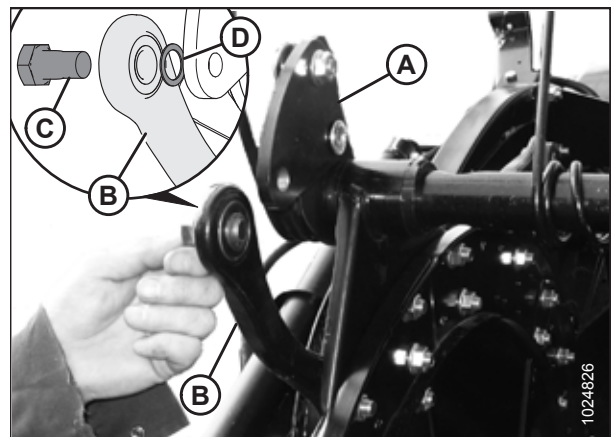


Figure 4.34: Bar Crank Attachment Holes and Link Alignment

8. Realign link (B) and tine bar crank (A), and insert bolt (C).
9. Repeat Steps 6, page 35 to 7, page 35 for the remaining tine bars.
10. Torque the installed bolts to 165 Nm (120 lbf·ft).

4.5 Installing Crop Dividers

The crop dividers must be installed before the header can be operated. One crop divider and two divider rods are stored on the inboard side of the right endsheet, while the other crop divider is stored on the inboard side of the left 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). Pull the divider rods away from lower divider rod support (D). Set the divider rods aside.
3. Return the lock tab to its original position and tighten the bolt at location (A).

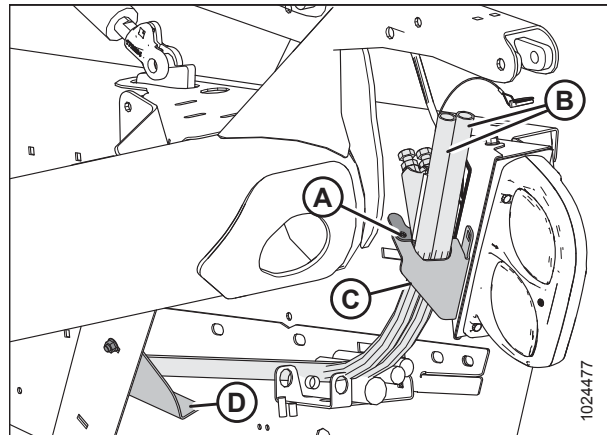


Figure 4.35: Divider Rods on Endsheets

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

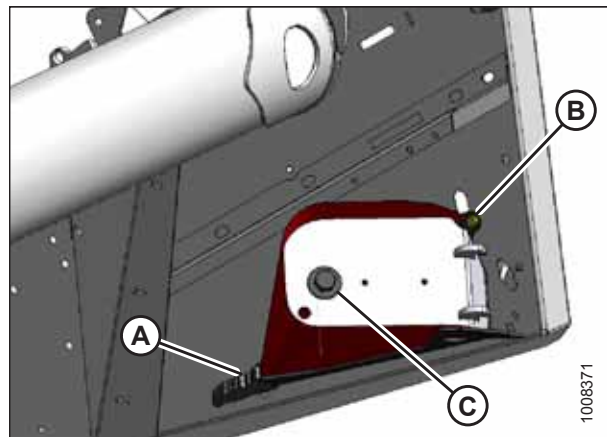


Figure 4.36: Crop Divider on Endsheets

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

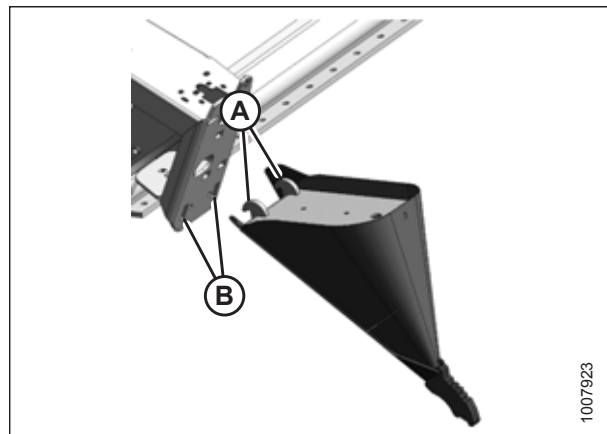


Figure 4.37: Crop Divider Lugs and Endsheets

ASSEMBLING HEADER

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

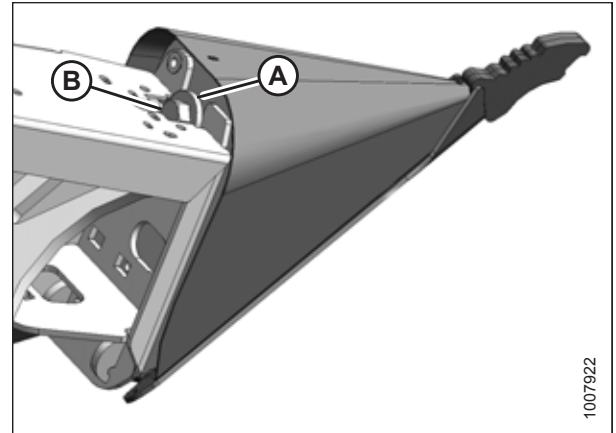


Figure 4.38: Crop Divider Installed

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

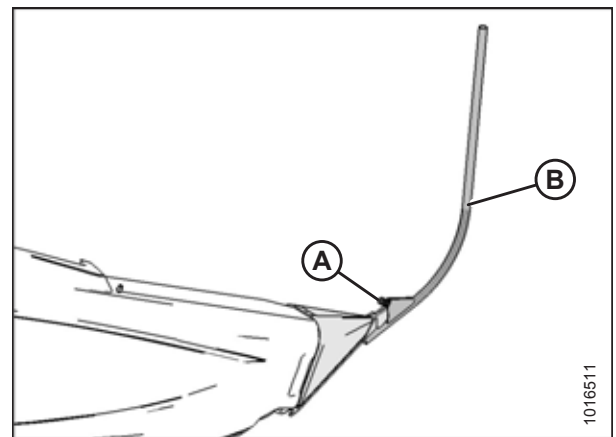


Figure 4.39: Divider Rod on Crop Divider

9. Ensure that the crop divider does **NOT** move laterally by pulling at the tip of the divider. Adjust bolts (A) as required to tighten the crop divider.
10. Repeat Step 4, page 36 to Step 9, page 37 to install the remaining crop divider.

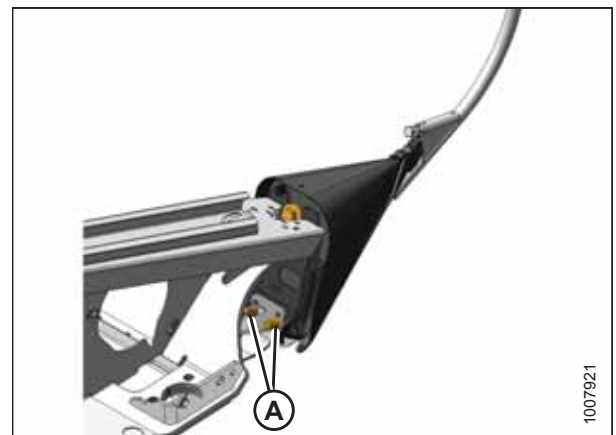


Figure 4.40: Adjustment Hardware

4.6 Attaching Reel Height Sensor – D1XL Series Headers

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

NOTE:

This procedure does **NOT** apply to D1X Series headers because D1X Series headers are not fitted with a reel height sensor at the factory.

Reconnect the sensor using the following procedure:

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

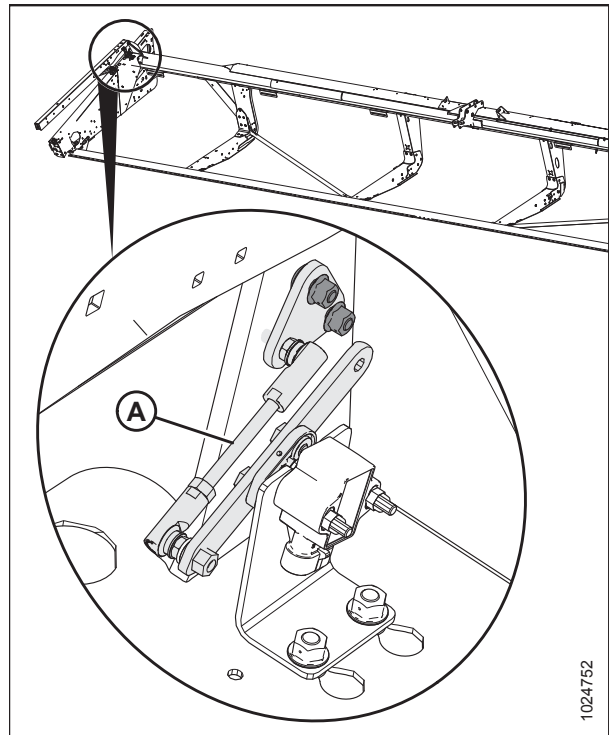


Figure 4.41: Reel Height Sensor – Disconnected

ASSEMBLING HEADER

2. Secure reel height sensor plate (A) to the reel arm using bolts and nuts (B). Torque the hardware to 8.2 Nm (6 lbf·ft).

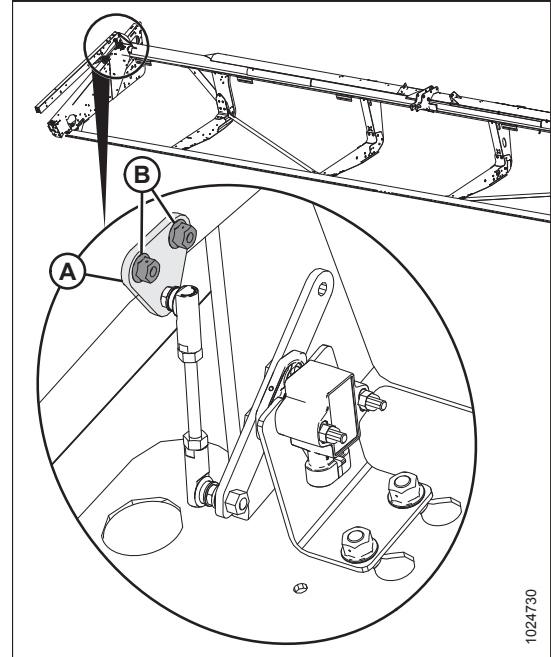


Figure 4.42: Reel Height Sensor

4.7 Installing Options

The header you are assembling may have shipped with optional kits. Install those kits now.

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

Chapter 5: Attaching Header to Windrower

Once the header has been assembled and any optional kits installed, it can be attached to the windrower, and the final header assembly procedures can be completed.

5.1 Installing Hydraulic Hose Management System

The hydraulic hose management system must be moved from the shipping position to the 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).

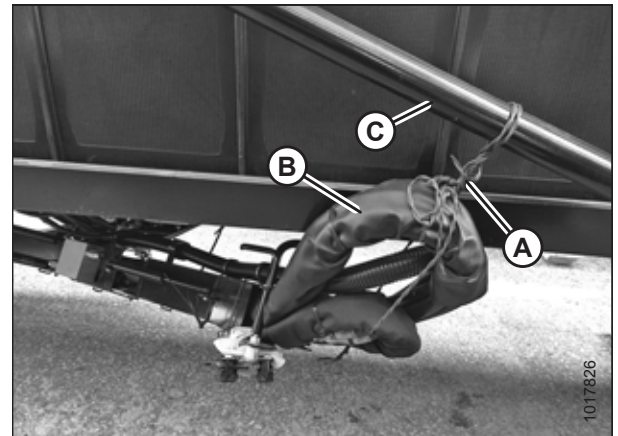


Figure 5.1: Hydraulic Hose Management System

NOTE:

The hydraulic hoses have been removed from the illustrations in this procedure for the sake of clarity.

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

NOTE:

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

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

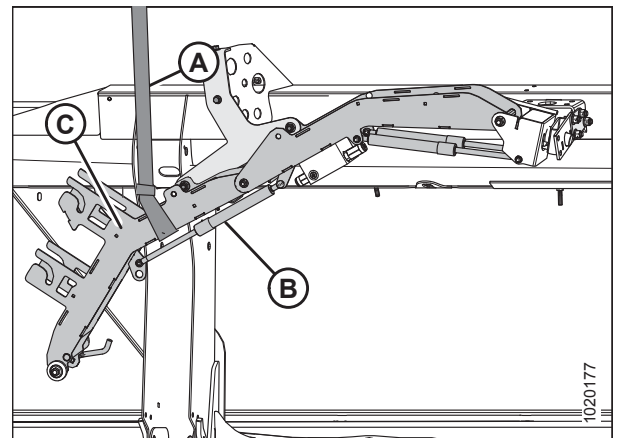


Figure 5.2: Hydraulic Hose Management System in Shipping Position

ATTACHING HEADER TO WINDROWER

4. **D115X and D120X 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:

The sling is not shown in the illustration.

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

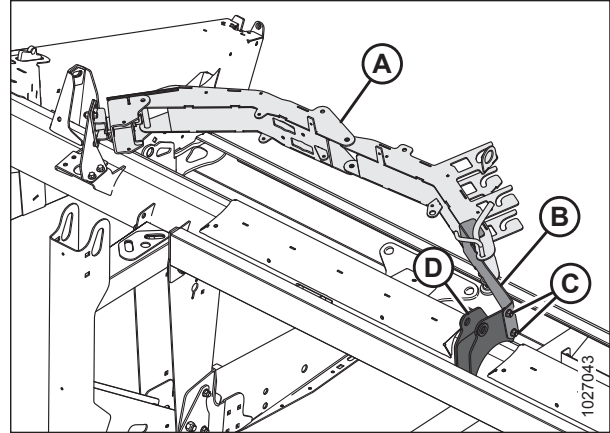


Figure 5.3: Hydraulic Hose Management System in Shipping Position – D115X and D120X Headers

6. **D125X, D130XL, and D135XL Headers:** Remove two bolts and nuts (A) securing the base of hydraulic hose management system (B) to frame channel (C). Retain the hardware.
7. Remove two bolts and nuts (D) from shipping plate (E). Retain the hardware; discard shipping plate (E).

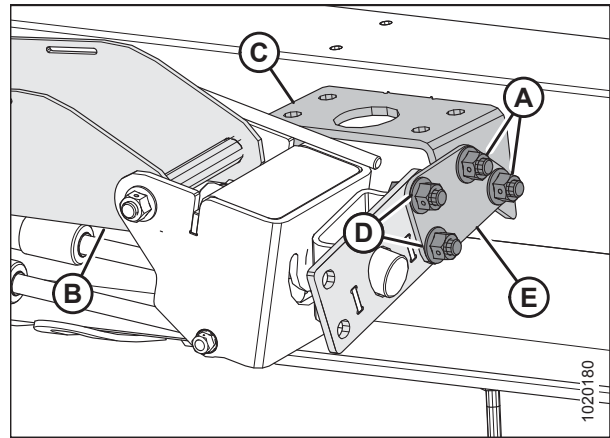


Figure 5.4: Hydraulic Hose Management System Base Frame – D125X, D130XL, and D135XL Headers

ATTACHING HEADER TO WINDROWER

8. **D115X and D120X 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:

The sling is not shown in the illustration.

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

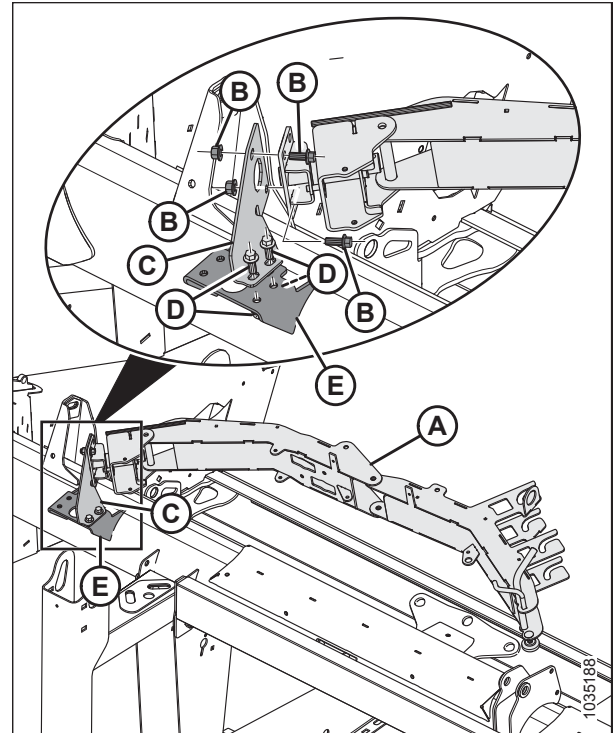


Figure 5.5: Hydraulic Hose Management System in Shipping Position – D115X and D120X Headers

10. **D125X, D130XL, and D135XL 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 shipping support (C).

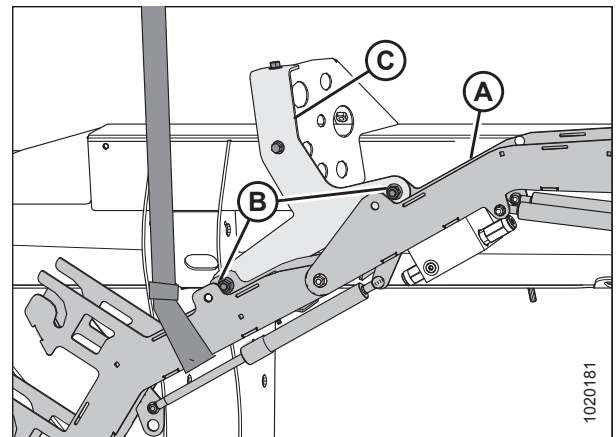


Figure 5.6: Hydraulic Hose Management System in Shipping Position – D125X, D130XL, and D135XL Headers

ATTACHING HEADER TO WINDROWER

11. **D140XL and D145XL Headers:** With the lifting device supporting the weight of the hydraulic hose management system, cut and remove wire (A) securing the hydraulic hose management system to the channel latch on top of the header frame tube.



Figure 5.7: Hydraulic Hose Management System in Shipping Position – D140XL and D145XL Headers

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

NOTE:

The sling is not shown in the illustration.

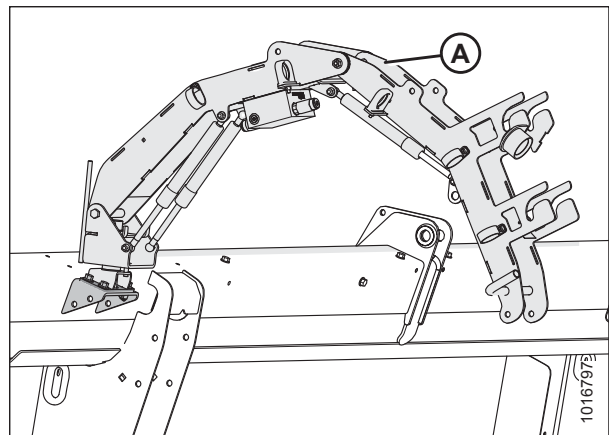


Figure 5.8: Hydraulic Hose Management System in Field Position

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.

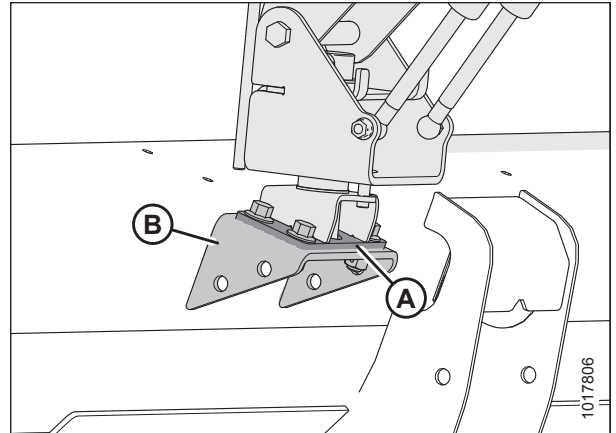


Figure 5.9: Hydraulic Hose Management System Plate Support

15. **D125X, D130XL, D135XL 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.

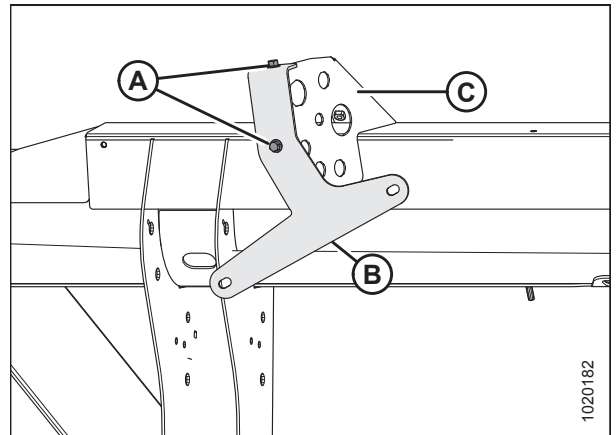


Figure 5.10: Hydraulic Hose Management System Shipping Support Bracket – D125X, D130XL, D135XL Headers

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



Figure 5.11: 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:

When the hydraulic hose management system is in the field position, the hydraulic hoses should be routed as shown in the illustration.

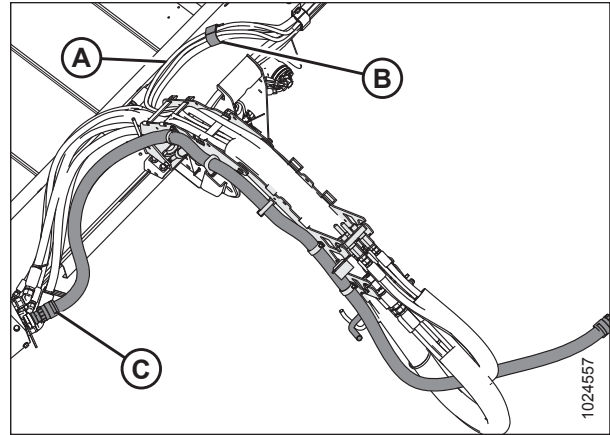


Figure 5.12: Hydraulic Hose Management System Hose Routing – Top View

19. Ensure that cinch straps (A) on the hydraulic hose management system are positioned as shown.

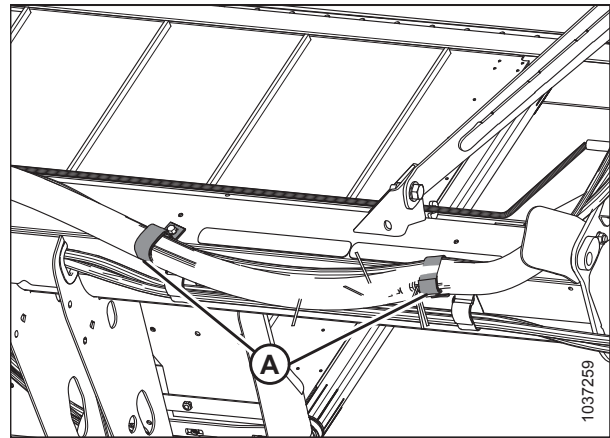


Figure 5.13: Hydraulic Hose Management System Cinch Straps – View from Above

5.2 Attaching Draper Header Supports

Draper header supports are required to attach the header to the windrower.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

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 the hairpin from clevis pin (B) on draper header support (A). Remove clevis pin (B).

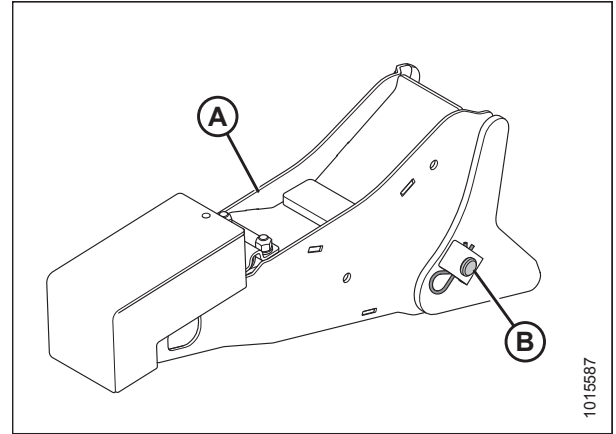


Figure 5.14: Draper Header Support

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

NOTE:

To ensure that the pin doesn't snag 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 Step 3, page 47 to Step 5, page 47 to install the remaining draper header support.

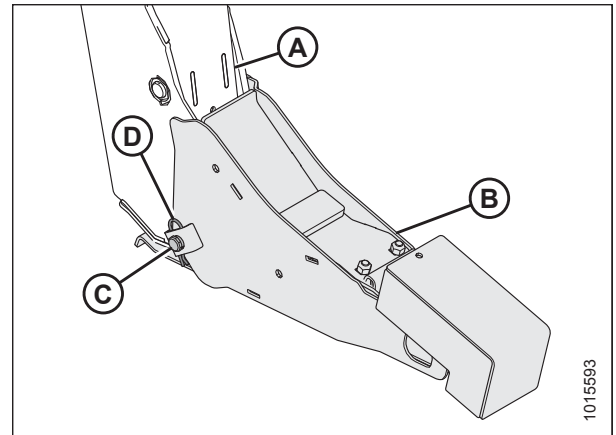


Figure 5.15: Draper Header Support

5.3 Connecting Center-Link

The windrower may have an optional self-aligning hydraulic center-link, which allows control over the vertical position of the center-link from the cab. If the windrower is so equipped, the procedure for attaching the header will differ slightly.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

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

Ensure that the center-link is positioned high enough that it does not contact the header as the windrower approaches the header.

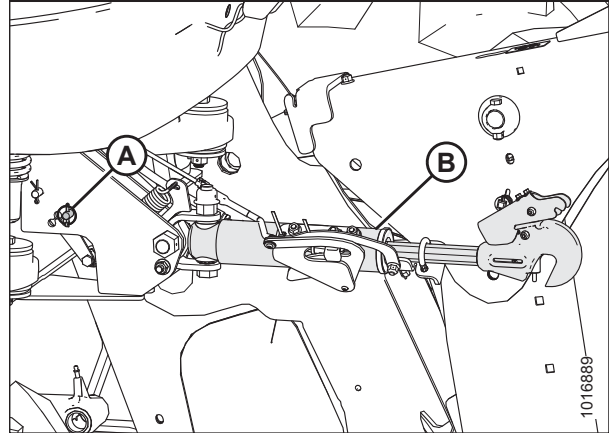


Figure 5.16: Center-Link without Self-Alignment

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

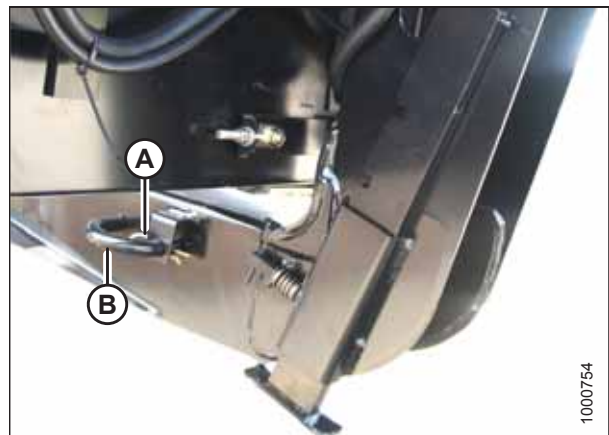


Figure 5.17: Header Leg

DANGER

Check to be sure all bystanders have cleared the area.

4. Start the engine.

ATTACHING HEADER TO WINDROWER

5. If you are lowering the header lift legs **WITH** a header or weight box attached to the windrower, proceed to Step 9, page 50.

If you are 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 9, page 50.
- If not prompted by the HPT to remove the float, then proceed to Step 6, page 49 to remove the float manually.

IMPORTANT:

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

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

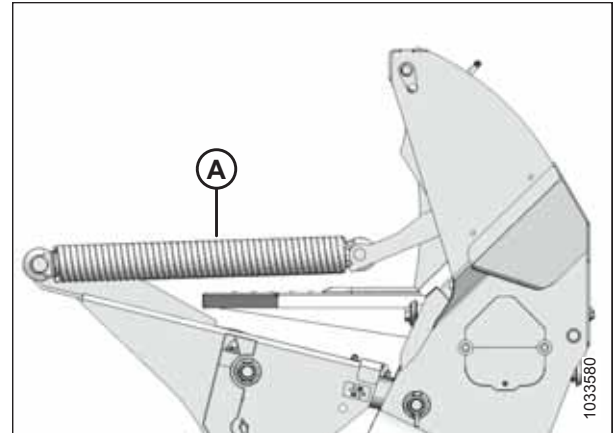


Figure 5.18: Header Float Springs



Figure 5.19: HPT Display

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



Figure 5.20: HPT Display

ATTACHING HEADER TO WINDROWER

9. 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.

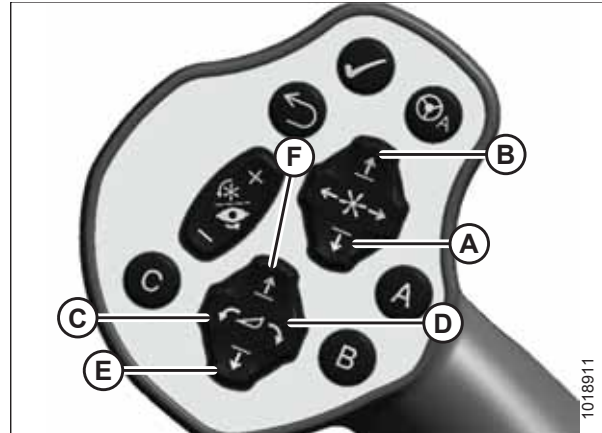


Figure 5.21: GSL Switches

- | | |
|----------------------|--------------------|
| 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 the lift linkages contact the support plates in the header legs and the header is nudged forward.
- Ensure that the lift linkages are properly engaged in the header legs and are in contact with the support plates.

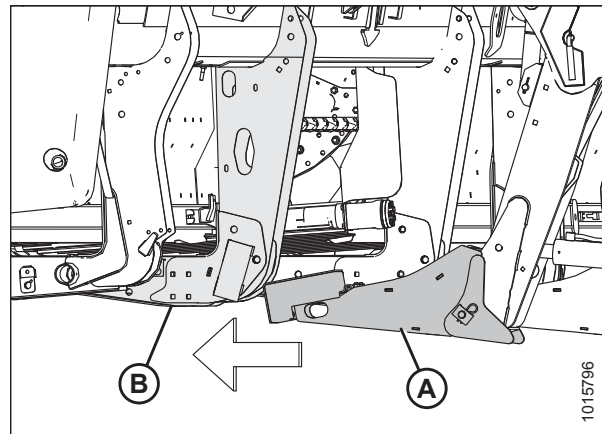


Figure 5.22: Header Leg and Draper Header Support

12. 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 to function.

- If hook release (C) is open (in the up position), 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 the REEL DOWN switch on the GSL until the center-link locks into position and hook release (C) is down.
- Check that the center-link is locked onto the header by pressing the REEL UP switch on the GSL.

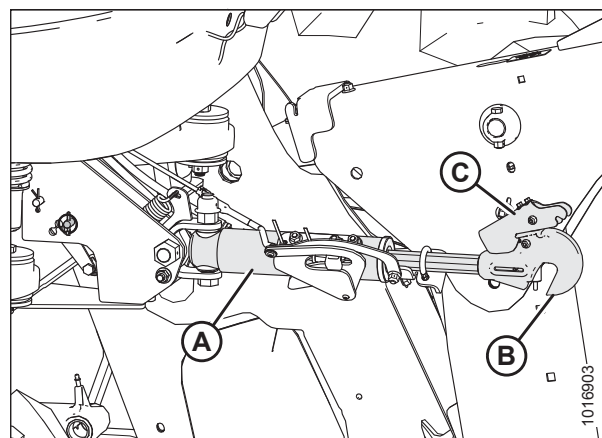


Figure 5.23: Hydraulic Center-Link

ATTACHING HEADER TO WINDROWER

13. 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 the 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 the self-locking mechanism to function. If the hook release is open (in the up position), manually push it down after the hook engages the pin.

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



DANGER

Check to be sure all bystanders have cleared the area.

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

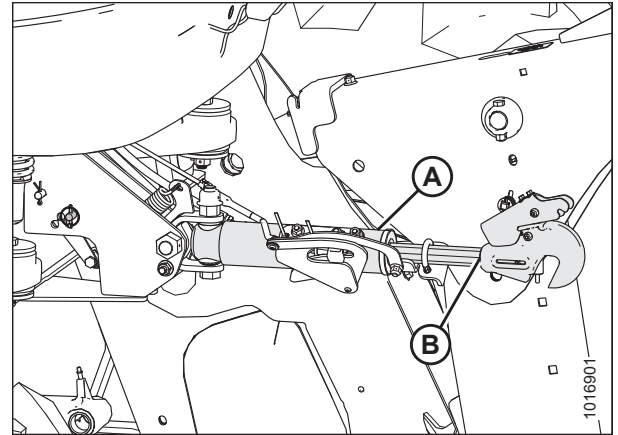


Figure 5.24: Hydraulic Center-Link

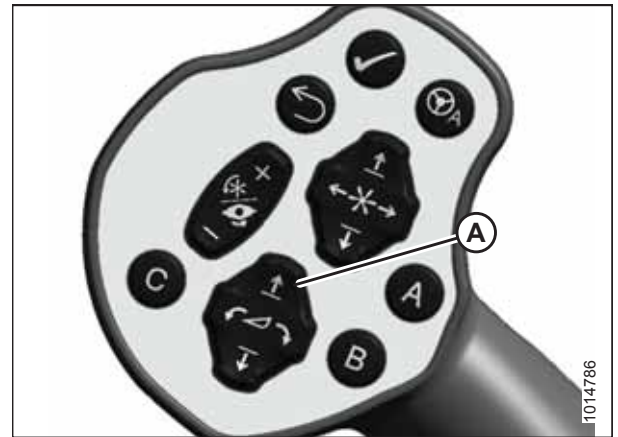


Figure 5.25: GSL

ATTACHING HEADER TO WINDROWER

16. Engage the safety props on both lift cylinders as follows:
 - a. Pull lever (A) toward you to release it, and then rotate it toward the header to lower the safety prop onto the cylinder.
 - b. Repeat the previous step for the opposite lift cylinder.

IMPORTANT:

Ensure that 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.

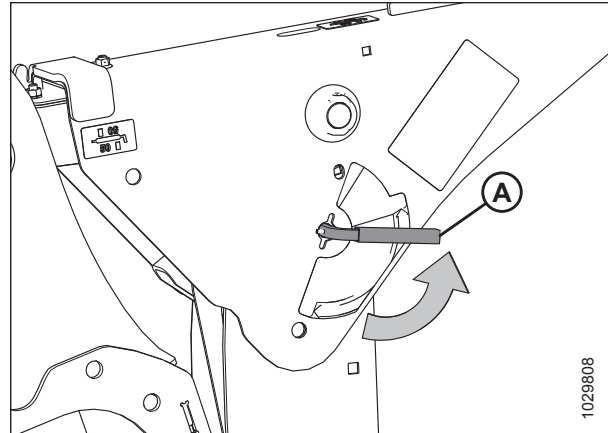


Figure 5.26: Safety Prop Lever

17. Install pin (B) through the header leg, ensuring that the pin engages the U-bracket in the draper header support and secure it with hairpin (A). Repeat this step on the other side of the header.
18. Raise header stand (D) to its storage position by pulling spring pin (C) and lifting the stand. Release the spring pin to secure the stand.

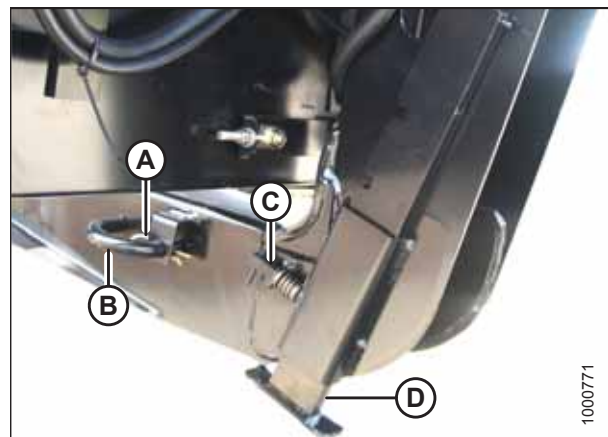


Figure 5.27: Header Leg

19. 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 the previous step for the opposite cylinder.

NOTE:

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

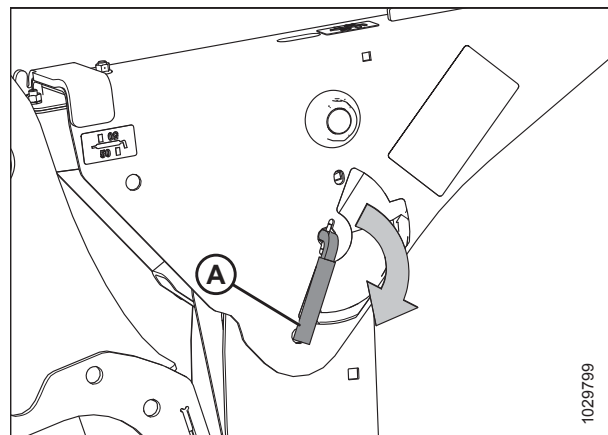


Figure 5.28: Safety Prop Lever

ATTACHING HEADER TO WINDROWER

DANGER

Check to be sure all bystanders have cleared the area.

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

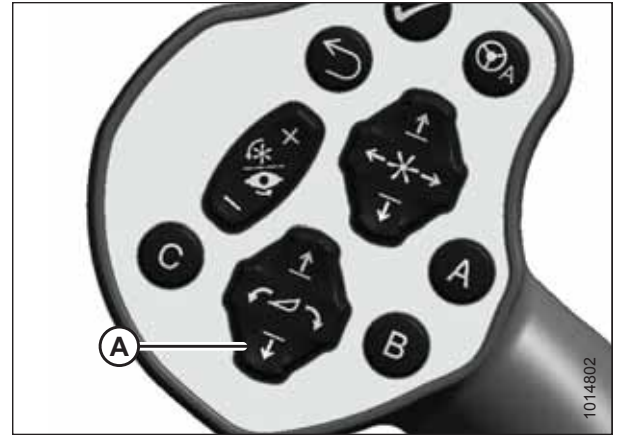


Figure 5.29: GSL

5.4 Connecting Hydraulics

Connecting the header's hydraulics to the windrower is a simple procedure, thanks to the hydraulic hose management system. There is an additional step to perform if you are switching from using a rotary header to using a draper header.

IMPORTANT:

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

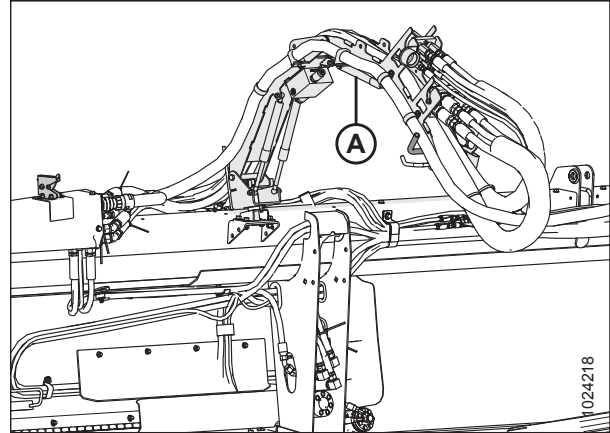


Figure 5.30: Hydraulic Hose Management System

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

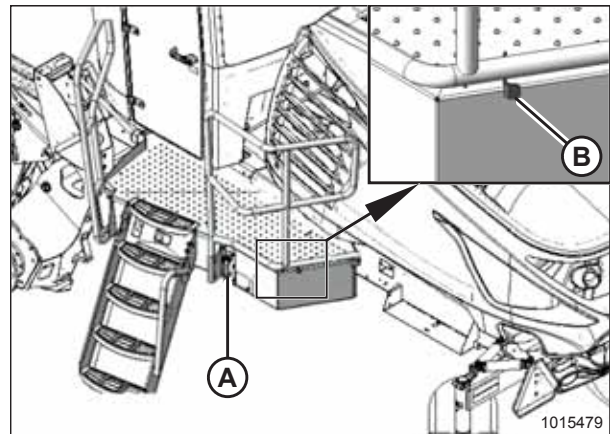


Figure 5.31: Left Cab-Forward Platform

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

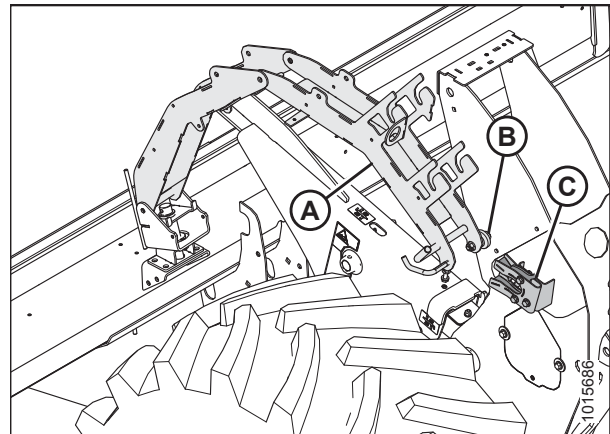


Figure 5.32: Hydraulic Hose Management System

ATTACHING HEADER TO WINDROWER

6. Retrieve draper drive and reel control multicoupler (A) from the hydraulic hose management system.
7. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
8. 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) pops out.
9. 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.
10. 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.

11. Retrieve knife and reel drive multicoupler (A) from the hydraulic hose management system.
12. Push knob (B) on the hydraulic receptacle and pull handle (C) fully away from the windrower.
13. 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.

14. Push latch (A) to unlock platform (B).

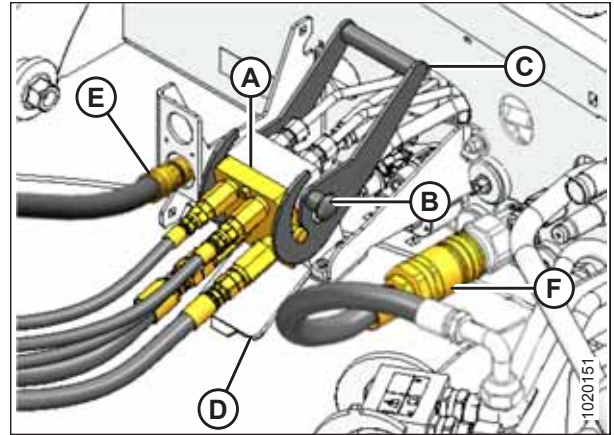


Figure 5.33: Draper/Reel Multicoupler

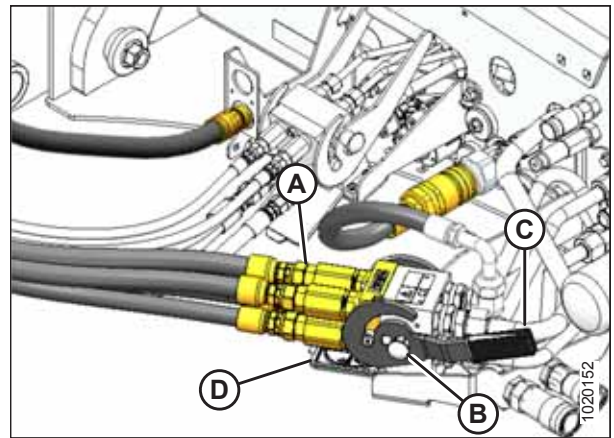


Figure 5.34: Knife/Reel Drive Multicoupler

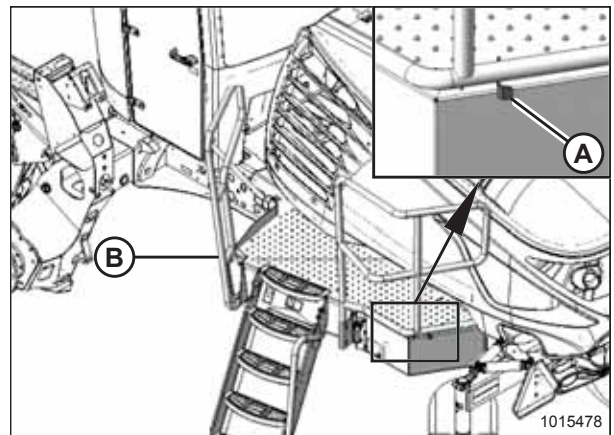


Figure 5.35: Left Cab-Forward Platform

ATTACHING HEADER TO WINDROWER

15. Pull platform (A) towards the cab until it stops and the latch is engaged.

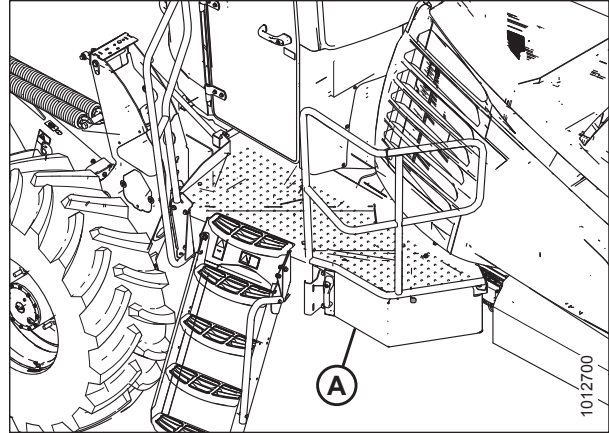


Figure 5.36: Left Cab-Forward Platform

16. Ensure that the hydraulic hose routing is as straight as possible.

IMPORTANT:

Straight routing will prevent abrasion damage to the hydraulic hoses.

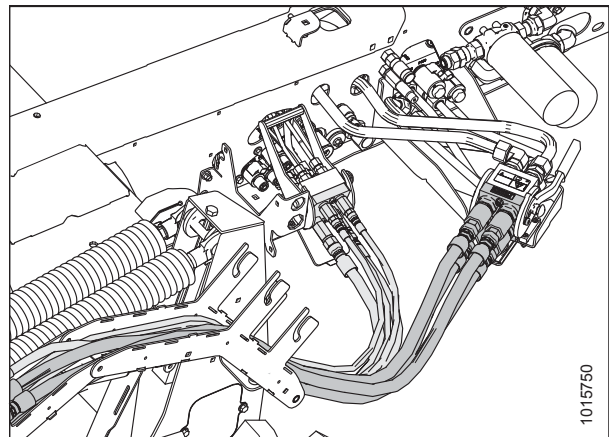


Figure 5.37: Hydraulic Multicouplers and Hose Routing

Chapter 6: Performing Predelivery Checks

After completing the setup process, the machine and its features should be inspected. If any adjustments are necessary, follow the procedures detailed in this chapter.



DANGER

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

IMPORTANT:

To prevent damage to the machine, ensure 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** (the yellow sheet attached to this instruction – [Predelivery Checklist, page 115](#)) to ensure that the machine is field-ready. 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 Series Headers

Ensure that the transport tires are inflated to the correct pressure and that the load on the tires is appropriate before attempting to transport the header. Inflate the tires to the pressures recommended in the table below.



WARNING

Determine the tire's load range before inflating a transport/stabilizer tire. When inflating the tire, do NOT exceed the pressure specified in [Table 6.1, page 57](#).

Measure the pressure of each transport tire. If necessary, inflate the tires to the pressure recommended in [Table 6.1, page 57](#).

IMPORTANT:

Do **NOT** tow the header at speeds faster than 32 km/h (20 mph) using the transport wheels. When turning a corner, or in slippery or rough conditions, do not tow the header faster than 8 km/h (5 mph).

IMPORTANT:

Where a discrepancy exists between the pressure specified on the tire's sidewall and the one listed in [Table 6.1, page 57](#), use the pressure listed in [Table 6.1, page 57](#).

Table 6.1 Header Transport Wheels – Tire Inflation Pressure Specifications

Size	Load Range	Recommended Pressure
ST205/75 R15	C	345 kPa (50 psi)
	IMPORTANT: Load range "C" is an alternative tire for the stabilizer wheel option ONLY . Do NOT use with the transport option.	
	D	517 kPa (75 psi) ¹
	E	586 kPa (85 psi)

1. The sidewall pressure for load range D tires is listed as 448 kPa (65 psi). However, since this tire is only operated at slow speeds, use the recommended pressure for load range D tires on the Slow Speed Transport/Stabilizer option.

6.2 Checking Wheel Bolt Torque – Option for D1XL Series Headers

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

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

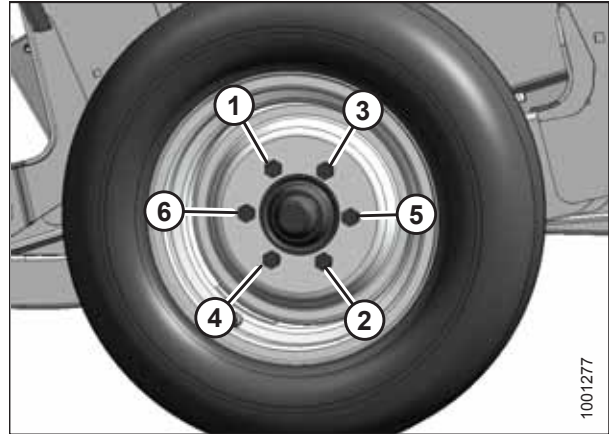


Figure 6.1: Sequence for Tightening Bolts

6.3 Checking Knife Drive Box

Single-knife headers have one knife drive box, while double-knife headers have two knife drive boxes. The knife drive box(es) can be accessed by opening the endshield(s). Each knife drive's breather and oil level will need to be inspected.

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

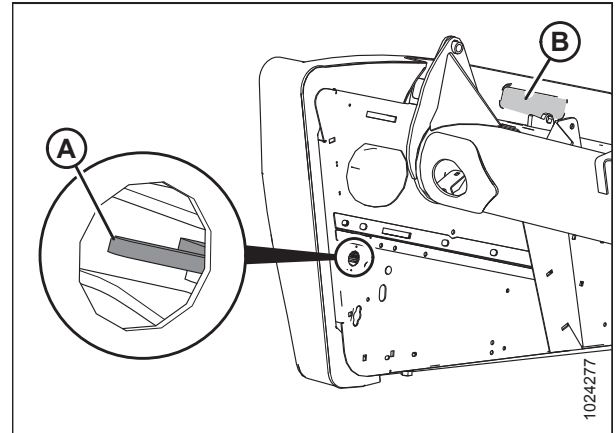


Figure 6.2: Endshield Latch Access

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

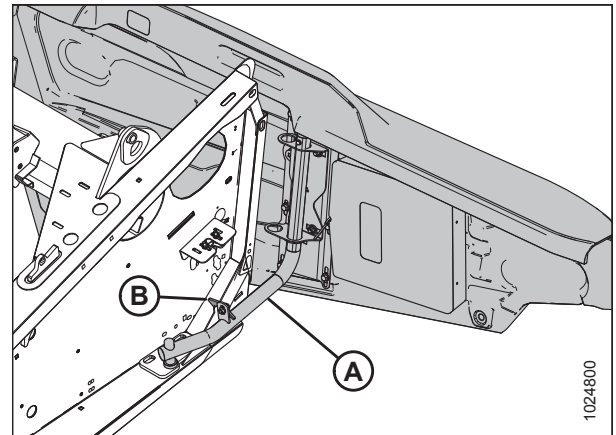


Figure 6.3: Left Endshield Support Tube

IMPORTANT:

The knife drive box's 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 of the header. Failure to do so can result in damage to the knife drive box.

4. Ensure that the position of plug (A) and breather (B) is as shown. Adjust the plug and breather as needed.
5. Remove breather (B) and check the knife box's oil level. The oil level should be between bottom edge (C) of lower hole (D) and bottom (E) of the breather.

NOTE:

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

6. Reinstall the breather and tighten it.

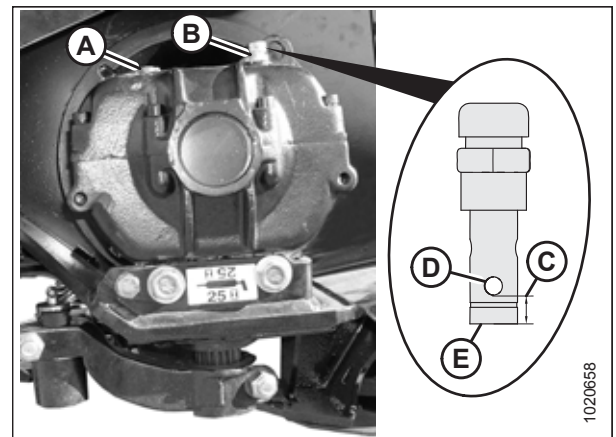


Figure 6.4: Knife Drive Box

6.4 Checking and Adjusting Knife Drive Belt Tension

The belt tension of the knife drive(s) must be set correctly in order for the cutterbar's knife sections to stroke properly.

Single-knife headers have one knife-drive belt and double-knife headers have two knife-drive belts. Refer to the relevant procedure:

- [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](#)

6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts

Knife drive systems are fitted with a drive belt which must be tensioned correctly for the knives to stroke properly.

IMPORTANT:

To ensure the service life of the belt and the knife drive, **NEVER** overtighten a drive belt.

1. Open the left endshield.
2. Check the tension on knife drive belt (C). A properly tensioned drive belt should deflect 24–28 mm (15/16–1 1/8 in.) when 133 N (30 lbf) of force is applied at the midspan of the belt. If the tension requires adjustment, proceed to the next step. If the tension is satisfactory, proceed to the next relevant procedure.

3. Loosen two bolts (A).

NOTE:

The belt guide has been removed from the illustration for the sake of clarity.

4. If the tension on the belt needs to be adjusted, turn adjuster bolt (B) clockwise to move the drive motor until the proper level of tension is achieved.
5. Ensure that the 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 needed.
7. Tighten three bolts (C).
8. Close the left endshield.
9. Repeat this procedure to check the knife drive's belt tension on the other side of the header.
10. Proceed to [6.5 Centering Reel, page 64](#).

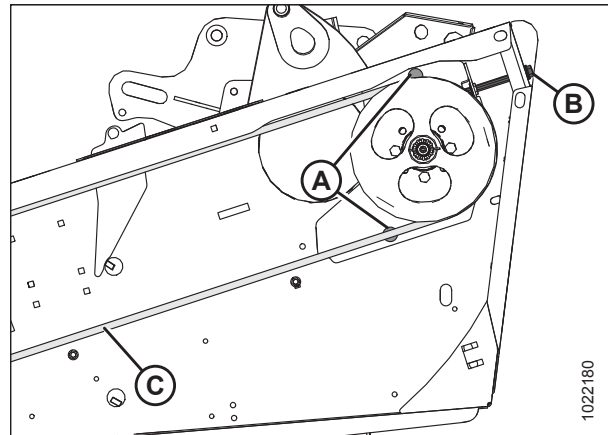


Figure 6.5: Knife Drive Motor and Adjuster

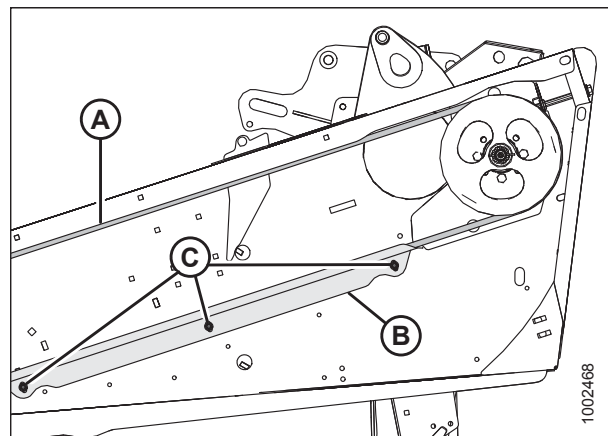


Figure 6.6: Knife Drive Belt Guide

6.4.2 Tensioning Timed Double-Knife Drive Belts

The tension of the timed knife drive belts must be set correctly in order for the cutterbar's knife sections to stroke properly.

IMPORTANT:

To ensure the service life of the belt and the knife drives, **NEVER** overtighten a drive belt.

IMPORTANT:

Do **NOT** use the adjuster bolt at the drive pulley to adjust the tension on the timing belt of a timed knife drive.

1. Open the left endshield.
2. Check the tension on the knife drive belt. A properly tensioned drive belt should deflect 20 mm (3/4 in.) when 89 N (20 lbf) of force is applied at the midspan of the belt. If the tension requires adjustment, proceed to the next step. If the tension is satisfactory, proceed to the next relevant procedure.
3. Loosen two nuts (A).

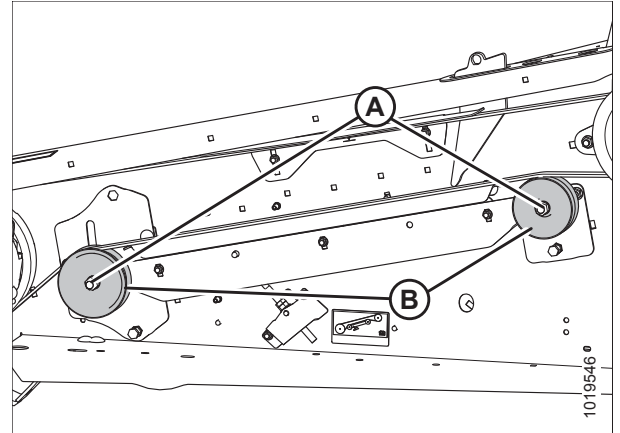


Figure 6.7: Left Knife Drive Pulleys

4. The tension on the knife drive belt can be adjusted by moving belt guide (A) up or down. Thread adjuster nut (C) down adjuster bolt (B) to increase the tension, or up to decrease the tension.

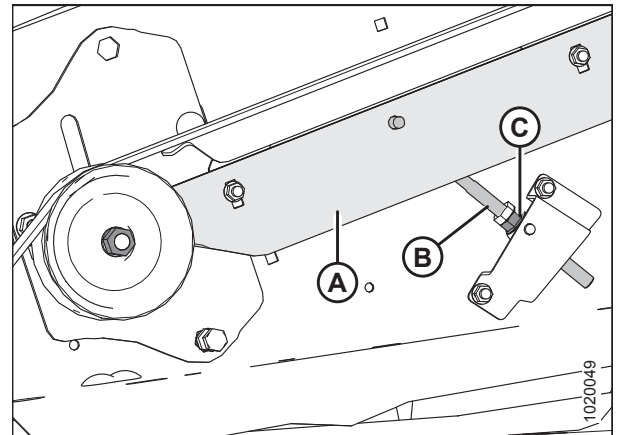


Figure 6.8: Left Knife Drive Belt Guide

PERFORMING PREDELIVERY CHECKS

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

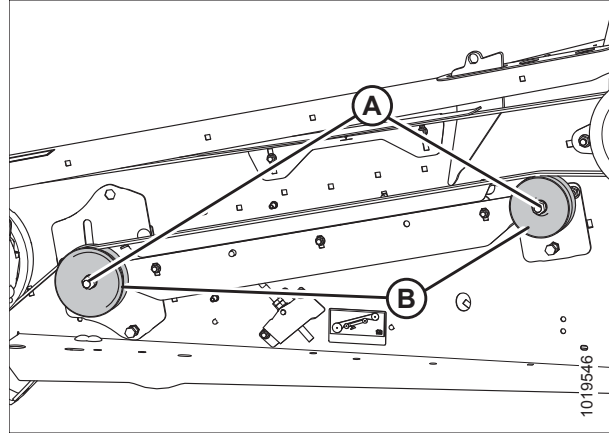


Figure 6.9: Left Knife Drive Pulleys

6. Tighten jam nut (A) to lock the position of adjuster bolt (B).

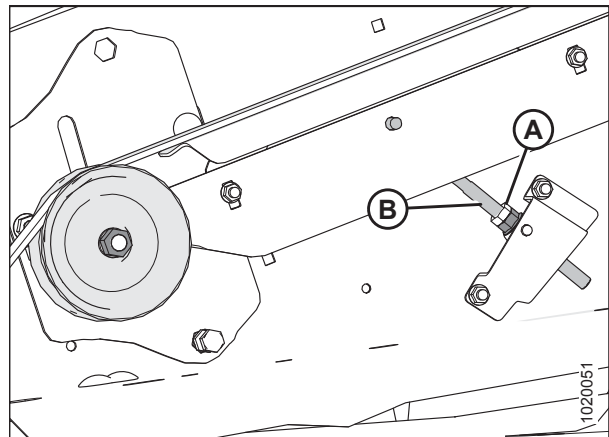


Figure 6.10: Left Knife Drive

7. Ensure that there is a clearance of 2.5–3.5 mm (3/32–1/8 in.) between lower belt (A) and lower guide (B).
8. If necessary, loosen three bolts (C) and adjust lower guide (B), then tighten the bolts again.
9. 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 upper guide (E), then tighten the bolts again.
10. Repeat this procedure to check and adjust the tension on the right knife drive.

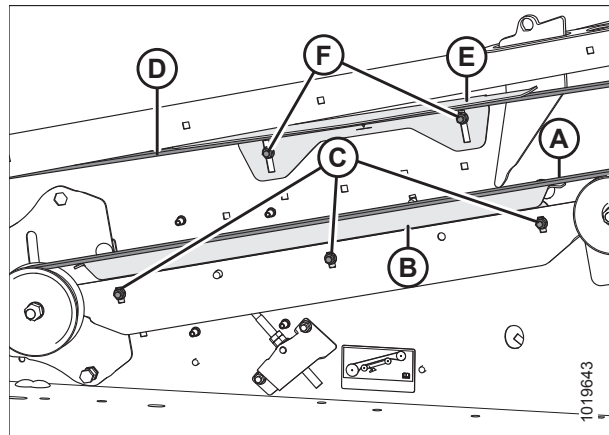


Figure 6.11: Left Knife Drive

6.4.3 Tensioning Timed Knife Drive V-Belts

Double-knife timed headers have a third knife drive V-belt located on the left side of the header. Check the tension on the V-belt whenever you check the tension on the other two knife drive belts.

1. Locate the timed knife drive on the left side of the header.
2. Check the tension on knife drive V-belt (C). A properly tension V-belt should deflect 4 mm (5/32 in.) when 52–77 N (12–17 lbf) of force is applied to the midspan of the belt. If the tension requires adjustment, proceed to the next step. If the tension is satisfactory, proceed to the next relevant procedure.
3. Loosen two bolts (A).
4. Turn drawbolt (B) clockwise to increase the tension on V-belt (C), or counterclockwise to decrease the tension on it.
5. Tighten bolts (A).
6. Close the left endshield.

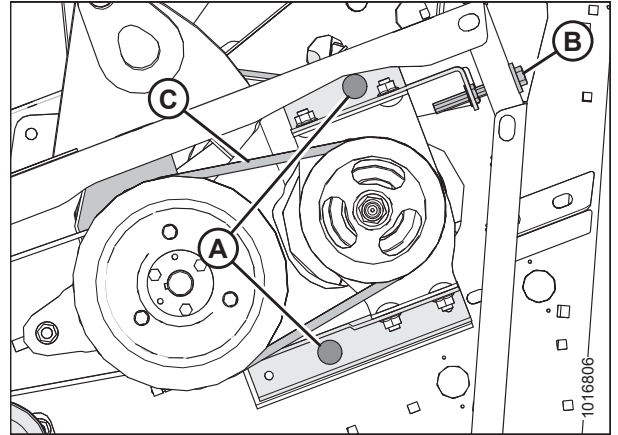


Figure 6.12: Knife Drive V-belts

6.5 Centering Reel

A properly centered reel picks up crop evenly and does not accumulate debris at the ends of the reel. You will need to verify that the reel is properly centered before the reel can be operated.

Proceed to the relevant topic:

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

6.5.1 Centering Double Reel

Centering a double reel requires measuring the current reel-endsheet clearance on each side of the header and adjusting the center reel support arm.



DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Measure clearance (A) at locations (B). Clearance (A) is the gap between the reel tine tube and the endsheet at each end of the header. You should obtain identical measurements if the reels are properly centered.
 - If the reel is not centered, proceed to [Step 3, page 65](#).
 - If the reel is centered, proceed to [6.6 Reel-to-Cutterbar Clearance, page 67](#).

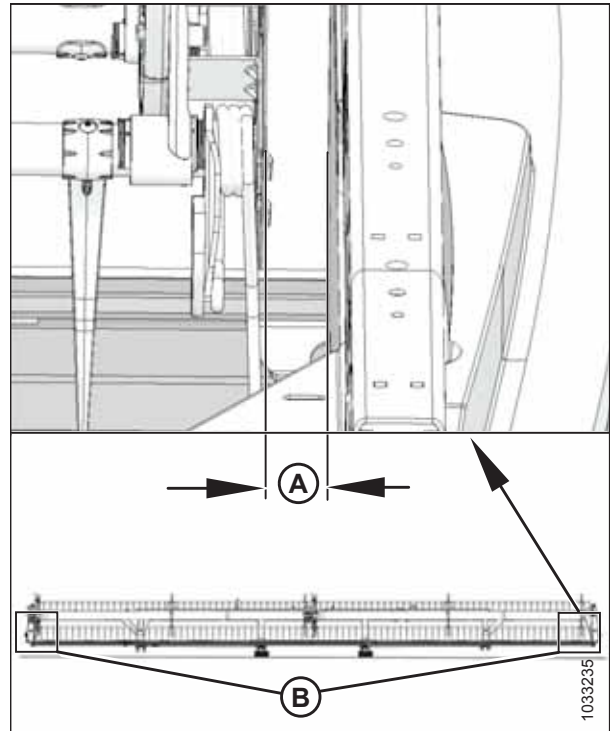


Figure 6.13: Double Reel Measurement Locations

PERFORMING PREDELIVERY CHECKS

3. Locate braces (B) on reel center support arm (C).
4. Loosen bolts (A).
5. Move the forward end of reel center support arm (C) laterally as needed to center both reels.
6. Tighten bolts (A). Torque the bolts to 382 Nm (282 lbf·ft).
7. Proceed to [6.6 Reel-to-Cutterbar Clearance, page 67](#).

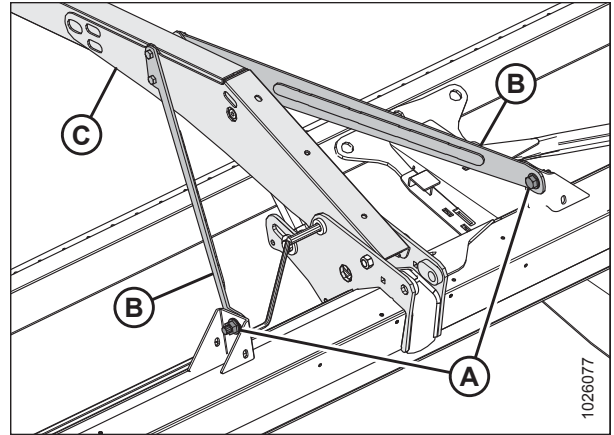


Figure 6.14: Reel Center Support Arm

6.5.2 Centering Single Reel

Centering a single reel requires measuring the current reel-to-endsheet clearance on each side of the header.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Measure clearance (A) at locations (B). Clearance (A) is the gap between the reel tine tube and the endsheet at each end of the header. You should obtain identical measurements if the reels are properly centered.
 - If the reel is not centered, proceed to [Step 3, page 66](#).
 - If the reel is centered, proceed to [6.6 Reel-to-Cutterbar Clearance, page 67](#).

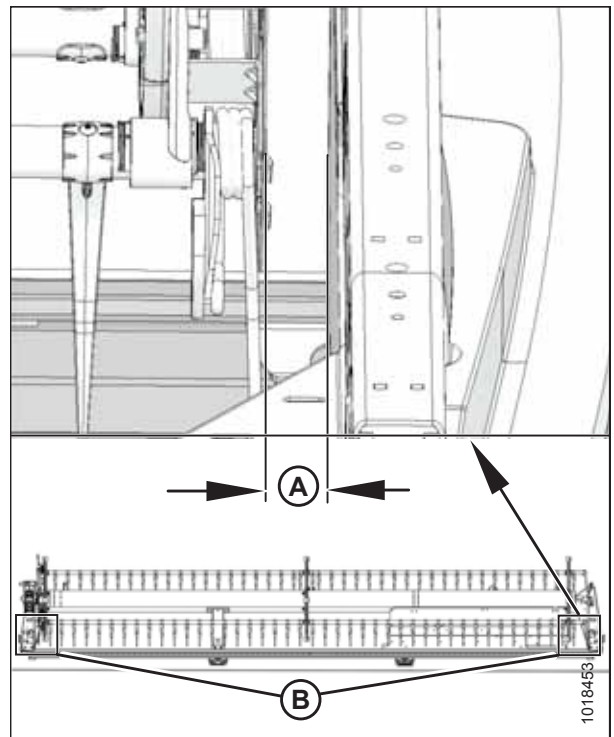


Figure 6.15: Single-Reel Measurement Locations

PERFORMING PREDELIVERY CHECKS

3. Loosen bolt (A) on brace (B) at each end of the reel.
4. Move the forward end of reel support arm (C) laterally as needed to center the reel.
5. Tighten bolt (A). Torque the bolt to 359 Nm (265 lbf-ft).
6. Repeat the previous step to secure the reel brace on the opposite side of the header.

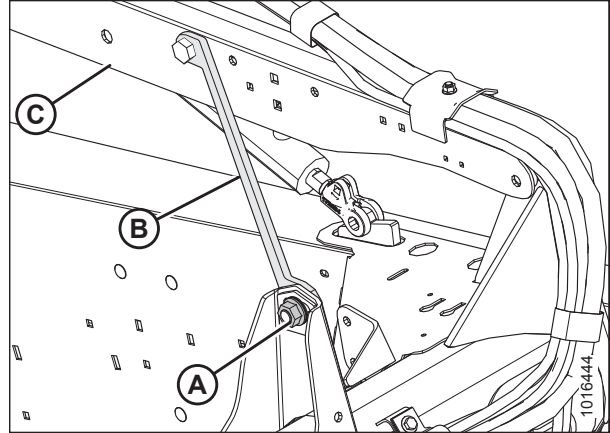


Figure 6.16: Reel Support Arm

6.6 Reel-to-Cutterbar Clearance

Correctly setting the clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar when the header is operating. The clearance is set at the factory, but some adjustment may be necessary before the header can be operated.

The finger to guard/cutterbar clearance values when the reels are fully lowered are shown in the table below.

Table 6.2 Finger to Guard/Cutterbar Clearance

Header Model	(X) +/- 3 mm (1/8 in.) at Reel Ends	
	Single Reel	Double Reel
D115X	20 mm (3/4 in.)	—
D120X	20 mm (3/4 in.)	—
D125X	25 mm (1 in.)	—
D130XL	55 mm (2 11/64 in.)	25 mm (1 in.)
D135XL	70 mm (2 3/4 in.)	25 mm (1 in.)
D140XL	—	25 mm (1 in.)
D145XL	—	25 mm (1 in.)

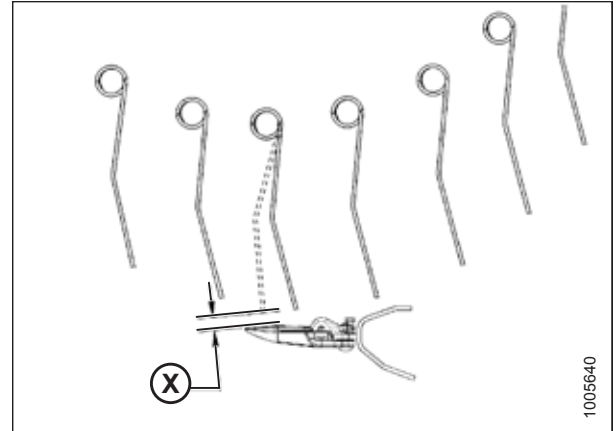


Figure 6.17: Finger Clearance

6.6.1 Measuring Reel Clearance

Measure the clearance between the reel fingers and the cutterbar before operating the reel.



DANGER

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



WARNING

Check to be sure all bystanders have cleared the area.

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

PERFORMING PREDELIVERY CHECKS

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

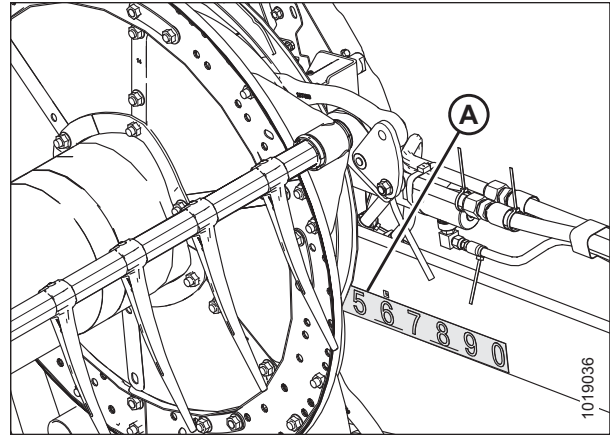


Figure 6.18: Fore-Aft Position

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

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

NOTE:

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

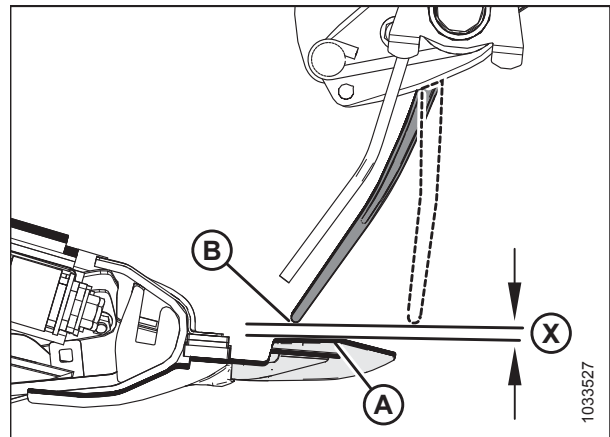


Figure 6.19: Reel-to-Cutterbar Clearance

Table 6.3 Finger to Guard/Cutterbar Clearance

Header Model	Clearance at Reel Ends +/- 3 mm (1/8 in.)	
	Single Reel	Double Reel
D115X	20 mm (3/4 in.)	—
D120X	20 mm (3/4 in.)	—
D125X	25 mm (1 in.)	—
D130XL	55 mm (2 11/64 in.)	25 mm (1 in.)
D135XL	70 mm (2 3/4 in.)	25 mm (1 in.)
D140XL	—	25 mm (1 in.)
D145XL	—	25 mm (1 in.)

PERFORMING PREDELIVERY CHECKS

8. Measure the clearances at the outer ends of the reel at locations (A).

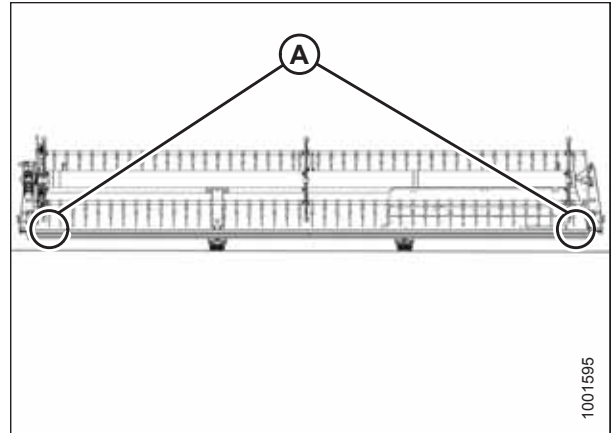


Figure 6.20: Reel Clearance Measurement Locations – Single-Reel Header

9. Adjust the reel clearance, if necessary. For instructions, refer to [6.6.2 Adjusting Reel Clearance, page 69](#). If the reel clearance is satisfactory, proceed to [6.7 Checking and Adjusting Draper Tension, page 73](#).

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

1. Raise the reel fully.
2. Move reel safety props (A) to the engaged position.

NOTE:

Keep pivot bolt (B) sufficiently tight that the prop remains in the stored position when not in use, but can be engaged using hand force.

3. Repeat the previous step on the opposite reel arm.

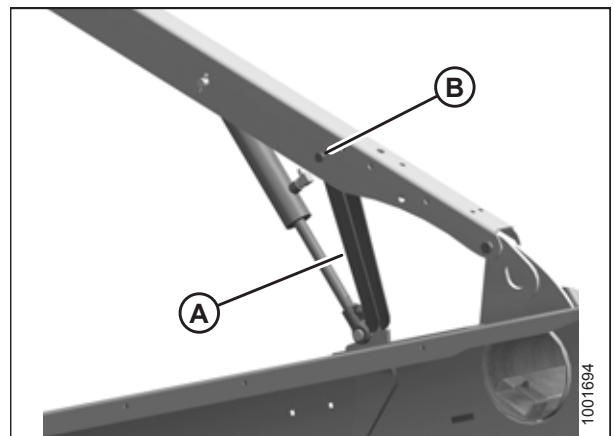
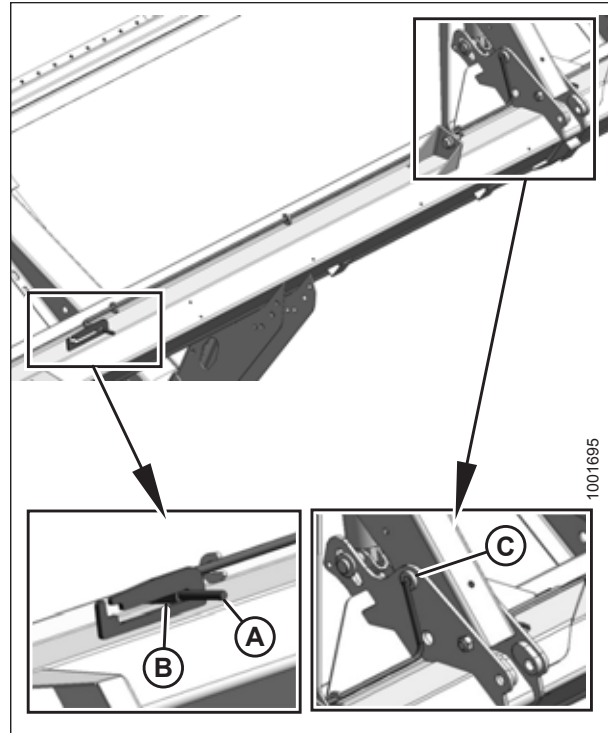


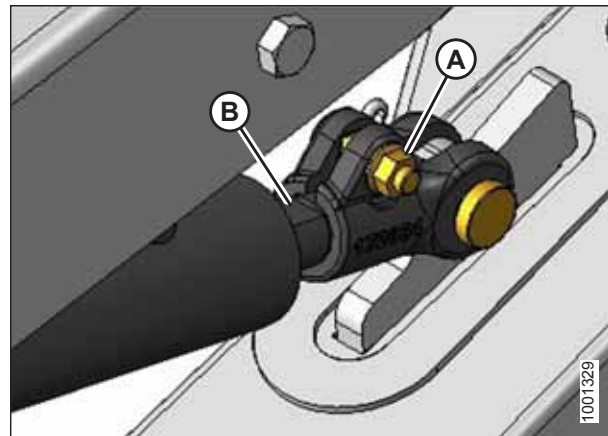
Figure 6.21: Engaged Reel Safety Prop – Left Shown

PERFORMING PREDELIVERY CHECKS

4. Use handle (A) to move the lock rod to inboard position (B), which engages pin (C) under the prop.
5. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pins.
6. Shut down the engine, and remove the key from the ignition.



7. **Single-reel headers:** 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 the clevis to raise the reel and thereby increase the reel-to-cutterbar clearance, or else turn cylinder rod into the clevis to lower the reel and thereby decrease the reel-to-cutterbar clearance.
 - c. Tighten bolt (A).
 - d. Repeat Steps a) to c) to set the reel-to-cutterbar clearance on the opposite side of the header.



PERFORMING PREDELIVERY CHECKS

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

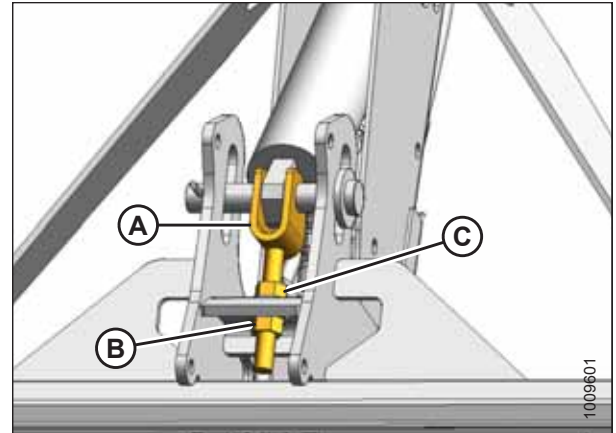


Figure 6.24: Underside of Center Arm

9. Measure the reel clearance again. For instructions, refer to [6.6.1 Measuring Reel Clearance, page 67](#). If necessary, repeat the reel-to-cutterbar clearance adjustment procedure.



WARNING

Check to be sure all bystanders have cleared the area.

10. Start the engine.
11. Move the reel back to ensure that the steel end fingers do **NOT** contact the deflector shields.
12. If contact between the steel end fingers and the deflector shields occurs, adjust the reel upward to maintain the reel-to-cutterbar clearance at all reel fore-aft positions. If contact between the steel end fingers and the deflector shields still occurs after adjusting the reel, trim the steel end fingers to obtain the proper clearances.
13. Raise the reel to its maximum height.
14. Move reel safety prop (A) back inside the reel arm.
15. Repeat the previous step on the opposite end of the reel.

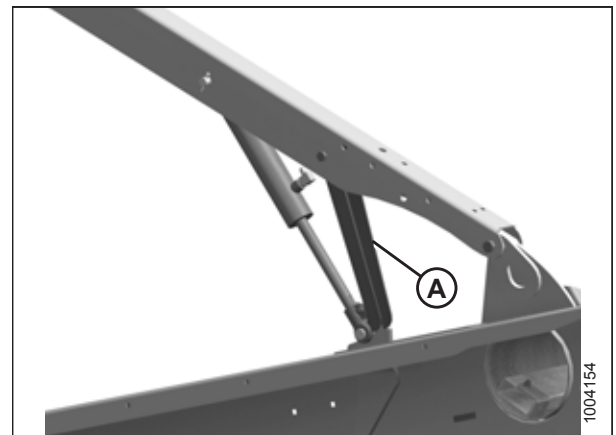


Figure 6.25: Left Reel Safety Prop

PERFORMING PREDELIVERY CHECKS

16. Use handle (B) on double-reel headers to move lock rod (A) to the outboard position.
17. Lower the reel fully.
18. Shut down the engine, and remove the key from the ignition.

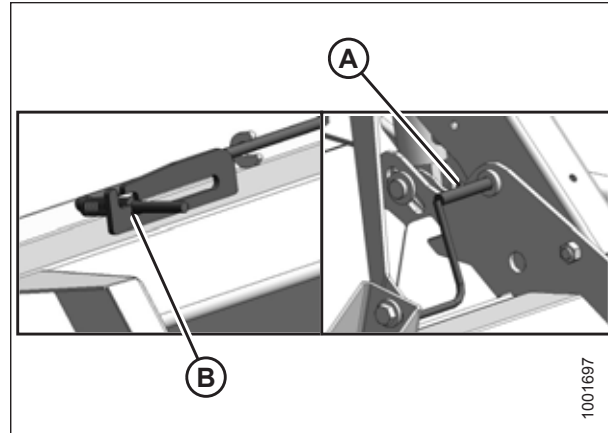


Figure 6.26: Reel Safety Prop – Center Arm

6.7 Checking and Adjusting Draper Tension

The header's drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough so that the drapers do not slip when in operation, and so that the draper does not sag below the cutterbar; ensure that the draper is adjusted similarly on both sides of the header.

DANGER

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

1. Locate the draper tension adjuster and the tension inspection window on the rear left side of the header.
2. Ensure that white indicator bar (A) is at the halfway point in the window. If this is not the case, then adjustment is required. Proceed to Step 3, [page 73](#).

WARNING

Check to be sure all bystanders have cleared the area.

3. Start the engine.
 4. Fully raise the header.
 5. Shut down the engine, and remove the key from the ignition.
 6. Engage the header safety props. Refer to the windrower operator's manual for instructions.
7. Ensure that the draper guide (the rubber track on the underside of the draper) is properly engaged in groove (A) on the drive roller.

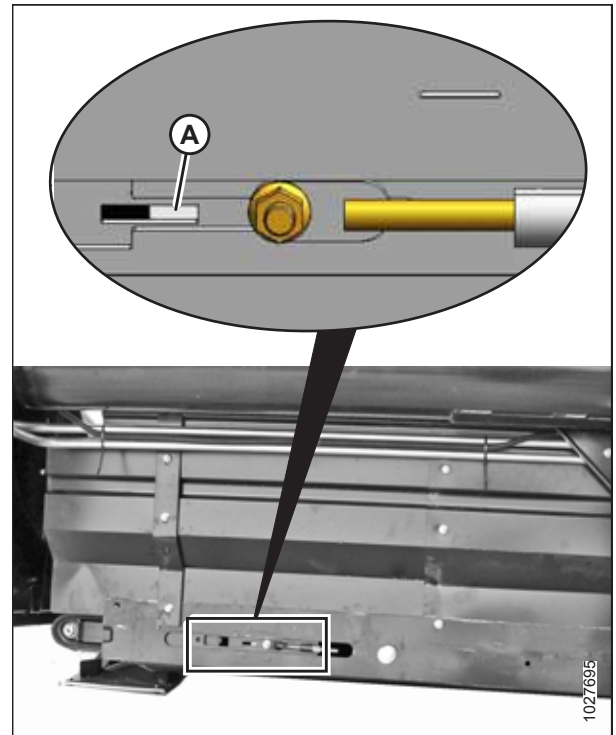


Figure 6.27: Left Draper Tension Adjuster

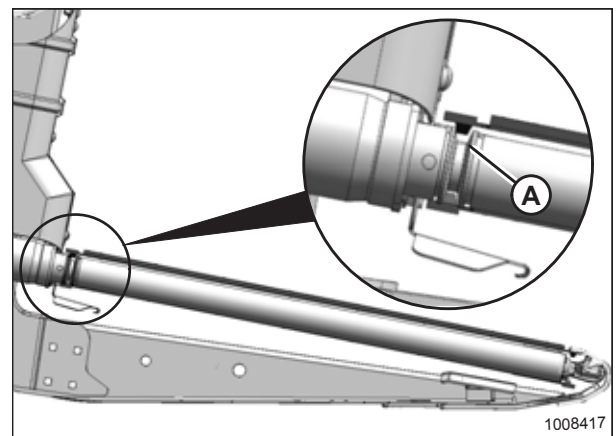


Figure 6.28: Drive Roller

PERFORMING PREDELIVERY CHECKS

8. Ensure that idler roller (A) sits between draper guides (B).

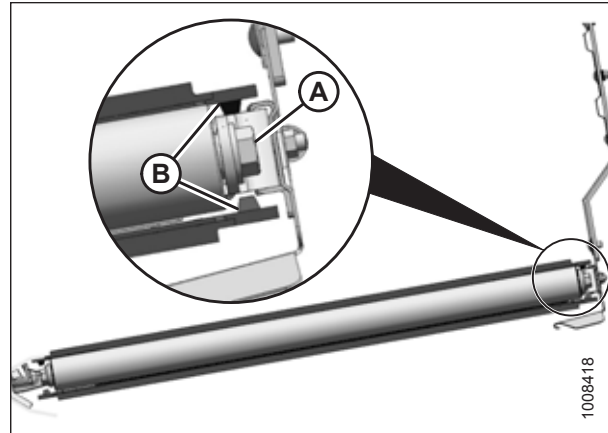


Figure 6.29: Idler Roller

9. To reduce the tension on the draper, turn adjuster bolt (A) counterclockwise. White indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the tension on the draper has lessened. Continue to turn adjuster bolt (A) counterclockwise until the white indicator bar is at the halfway point in the window.

IMPORTANT:

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

10. To increase the tension on the draper, turn adjuster bolt (A) clockwise. White indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the tension on the draper has increased. Continue to turn adjuster bolt (A) clockwise until the white indicator bar is at the halfway point in the window.

IMPORTANT:

To prevent premature failure of the draper, draper rollers, and/or tightener components, do **NOT** operate the draper if the white bar is not visible in the inspection window.

IMPORTANT:

To prevent the header from scooping soil while in operation, ensure that the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

11. Repeat Steps 1, page 73 to 10, page 74 to inspect and adjust the tension on the other draper belt.

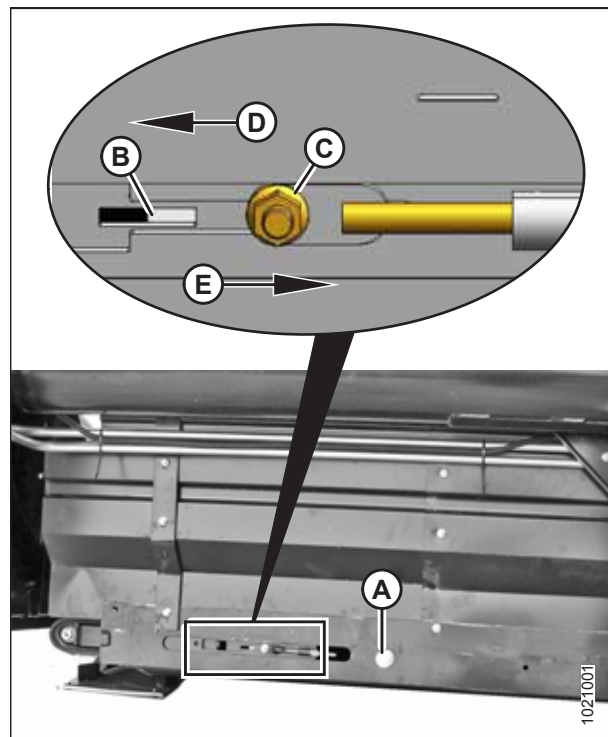


Figure 6.30: Left Tension Adjuster

6.8 Checking and Adjusting Draper Seal

The draper seal is the gap between the draper and the cutterbar. It should be inspected before the draper is operated, to prevent potential damage to the draper system.

DANGER

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

WARNING

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

IMPORTANT:

The draper seal 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. Whenever you are installing new drapers, the draper seal **MUST** be set to at least 1 mm (0.04 in.); new drapers are very tacky and can accumulate powder coating on the underside of the cutterbar, which can cause the draper to rub against the cutterbar and thereby cause the hydraulic pressure in the draper circuit to increase to dangerous levels.

1. Lower the header onto blocks.
2. Raise the reel fully.
3. Move reel safety props (A) to the engaged position.

NOTE:

Keep pivot bolt (B) sufficiently tight that the prop remains in the stored position when not in use, but can be engaged using hand force.

4. Repeat the previous step on the opposite reel arm.

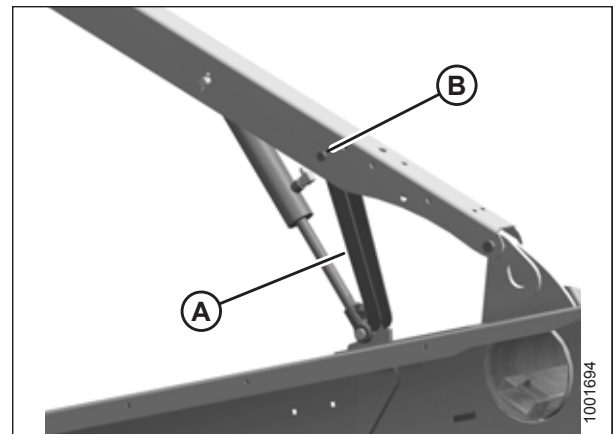
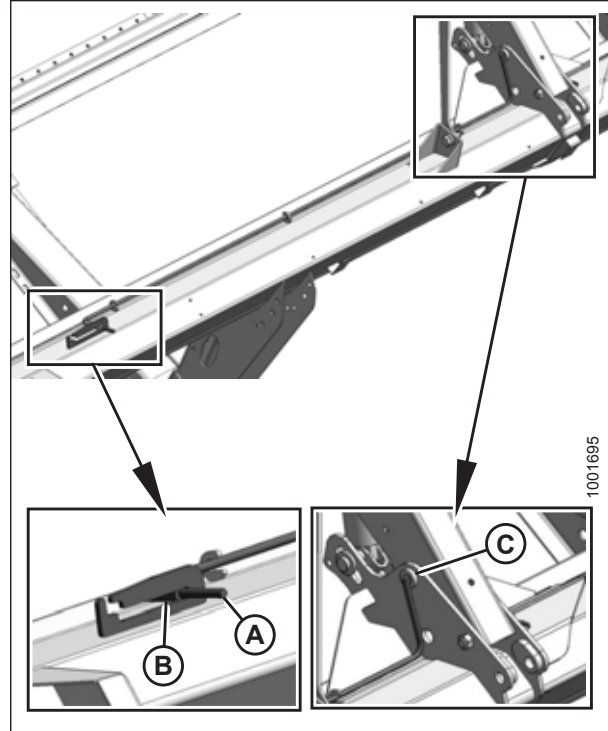


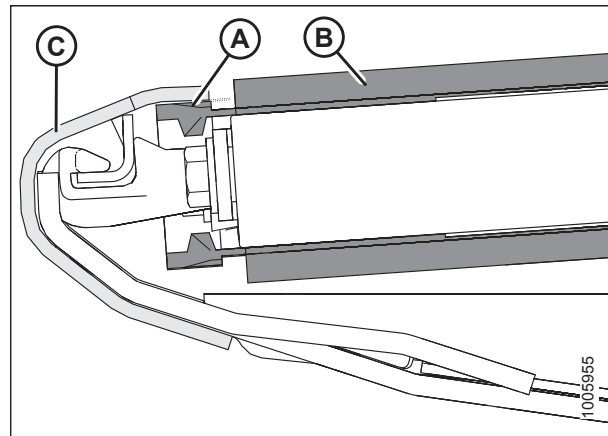
Figure 6.31: Engaged Reel Safety Prop – Left Shown

PERFORMING PREDELIVERY CHECKS

5. Use handle (A) to move the lock rod to inboard position (B), which engages pin (C) under the prop.
6. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pins.
7. Shut down the engine, and remove the key from the ignition.



8. Ensure that clearance (A) between draper (B) and cutterbar (C) is 0–3 mm (0.00–0.12 in.).
 - If clearance (A) is acceptable, proceed to [6.9 Checking and Adjusting Skid Shoe Settings, page 80](#).
 - If clearance (A) is not acceptable, proceed to the next step in this procedure.



PERFORMING PREDELIVERY CHECKS

9. Measure the clearance between the draper and the cutterbar at deck supports (A). Depending on the header size, there are between two and five supports per deck.
10. Reduce the tension on the draper. For instructions, refer to [6.7 Checking and Adjusting Draper Tension, page 73](#).

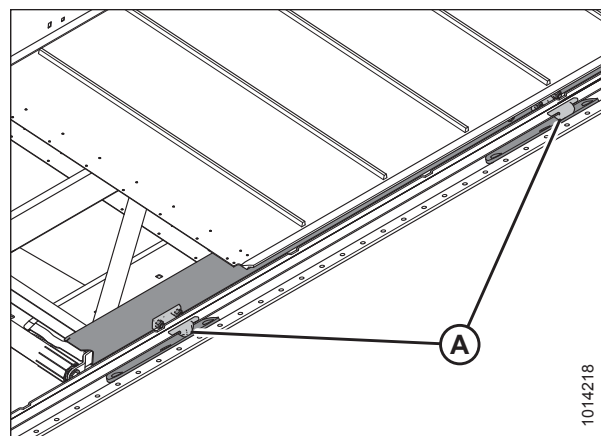


Figure 6.34: Draper Deck Supports

11. Lift the front edge of draper (A) past cutterbar (B) to expose the deck support.

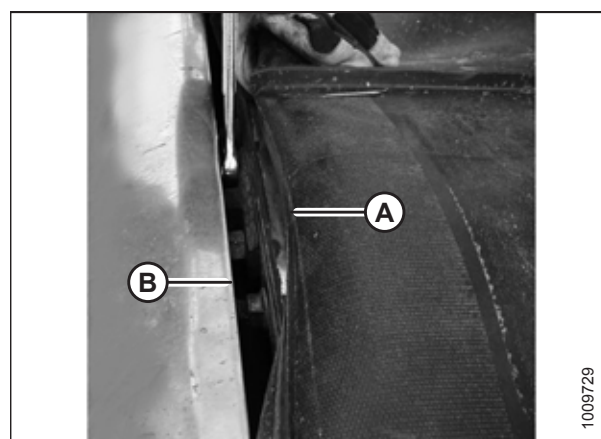


Figure 6.35: Deck Adjustment

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

NOTE:

The deck is shown with the draper removed. The number of deck supports depends on the width of the header:

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

13. Tap deck (C) with a hammer to lower the deck relative to the deck supports. Tap deck support (B) using a hammer and punch to raise the deck relative to the deck supports.
14. Measure the thickness of the draper belt.

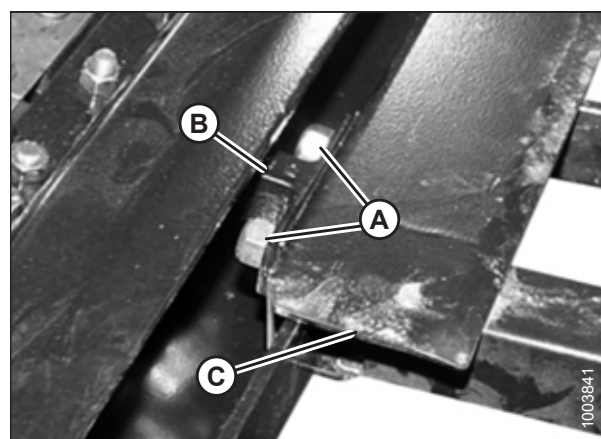


Figure 6.36: Deck Support

PERFORMING PREDELIVERY CHECKS

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

NOTE:

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

18. Tighten deck support hardware (D).
19. Recheck gap (B) with the feeler gauge. For instructions, refer to Step 15, page 78.
20. Repeat Steps 12, page 77 to 19, page 78 for each draper deck support requiring adjustment.
21. Tension the draper. For instructions, refer to 6.7 Checking and Adjusting Draper Tension, page 73.
22. If necessary, 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 (indicated by callout [C]) between draper (B) and the deflector.

WARNING

Check to be sure all bystanders have cleared the area.

23. Start the engine.

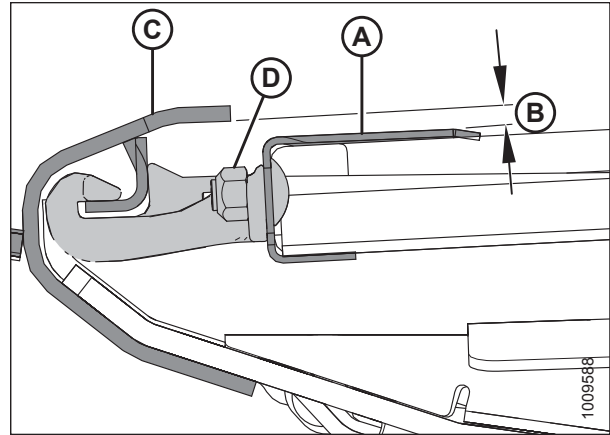


Figure 6.37: Deck Support

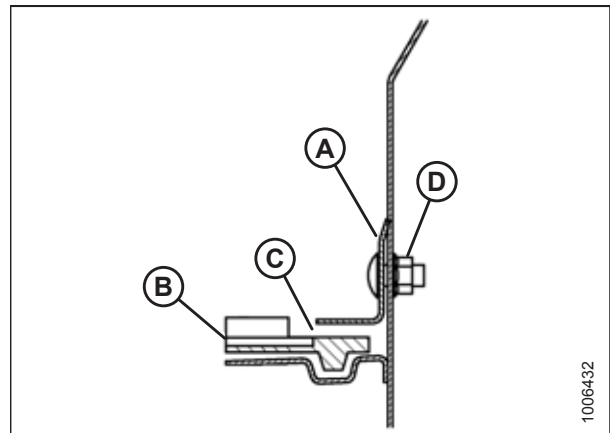


Figure 6.38: Backsheet Deflector

24. Raise the reel to its maximum height.
25. Move reel safety prop (A) back inside the reel arm.
26. Repeat the previous step on the opposite end of the reel.

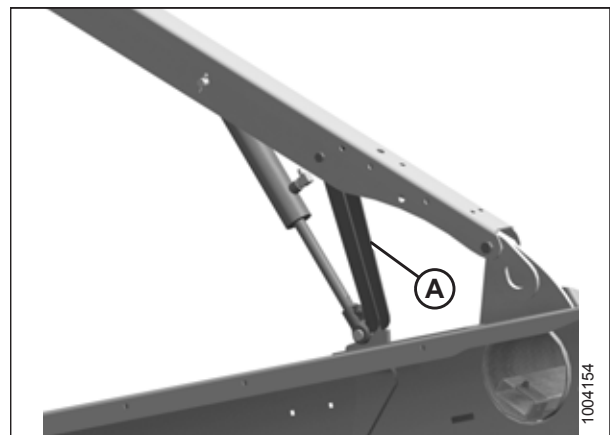


Figure 6.39: Left Reel Safety Prop

PERFORMING PREDELIVERY CHECKS

27. Use handle (B) on double-reel headers to move lock rod (A) to the outboard position.
28. Lower the reel fully.
29. Shut down the engine, and remove the key from the ignition.

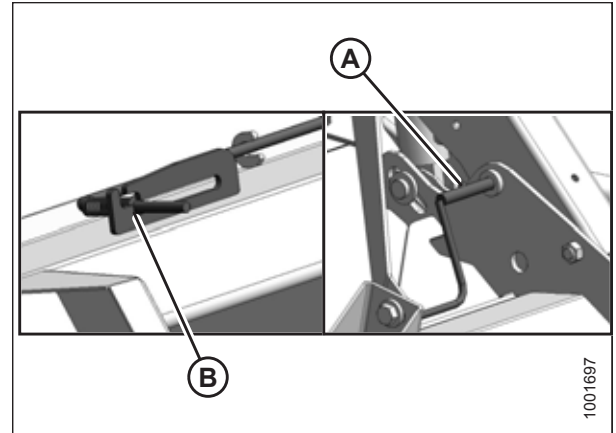


Figure 6.40: Reel Safety Prop – Center Arm

6.9 Checking and Adjusting Skid Shoe Settings

Skid shoes protect the bottom of the header from damage during operation, and affect the header's cutting height. Raise or lower the skid shoes as needed to optimize the performance of the cutterbar.

DANGER

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

1. Raise the header fully.
2. Engage the header's safety props. Refer to the windrower operator's manual for instructions.
3. Shut down the engine, and remove the key from the ignition.
4. Check the adjustment hole positions on lugs (A) on each skid shoe. The pin should be in the same position on all skid shoes.
5. If necessary, adjust the position of the skid shoe as follows:

NOTE:

Ensure that all skid shoes are set to the same position.

- a. Remove lynch pin (B).
- b. Support the weight of the shoe and remove pin (C) by disengaging the shoe from the frame and then pulling the pin away from the shoe.
- c. Raise or lower the skid shoe to the desired position.
- d. Reinsert pin (C), engage the shoe into the frame, and secure the shoe with lynch pin (B).

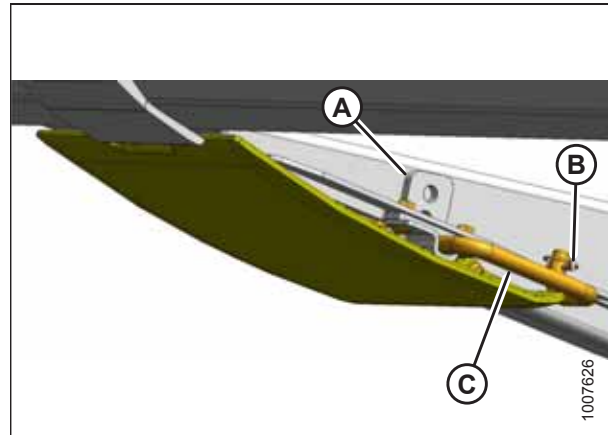


Figure 6.41: Inner Skid Shoe

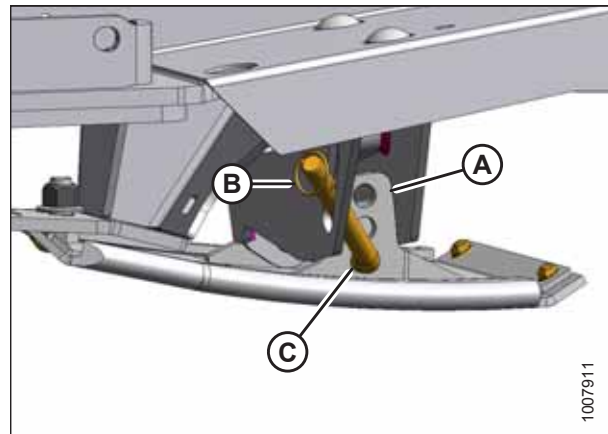


Figure 6.42: Outer Skid Shoe

WARNING

Check to be sure all bystanders have cleared the area.

6. Start the engine.
7. Disengage the header's safety props.
8. Lower the header fully.
9. Shut down the engine, and remove the key from the ignition.

6.10 Leveling Header

The windrower linkages are factory-set to provide the proper level for the header. Unless you are unable to level the header through normal means, they should not 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 the windrower operator's manual for instructions.
2. If the header is still not level, adjust the windrower linkages as required. Refer to the windrower operator's manual for instructions.

NOTE:

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

6.11 Checking and Adjusting Endshields

The header's endshields are made from molded plastic and are therefore subject to expansion or contraction caused by variations in the ambient temperature. The position of the top pin and that of the lower latch can be adjusted to compensate for dimensional changes in the endshield.

Checking the endshield

1. Measure gap (X) between the front end of the endshield and the header frame. Compare the measurement to the values provided in Table 6.4, [page 82](#).

Table 6.4 Endshield Gaps at Various Ambient Temperatures

Ambient Temperature °C (°F)	Expected 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 adjustment to the endshield is required, proceed to Step 3, [page 82](#). If no adjustment is required, proceed to 6.3 [Checking Knife Drive Box, page 59](#).

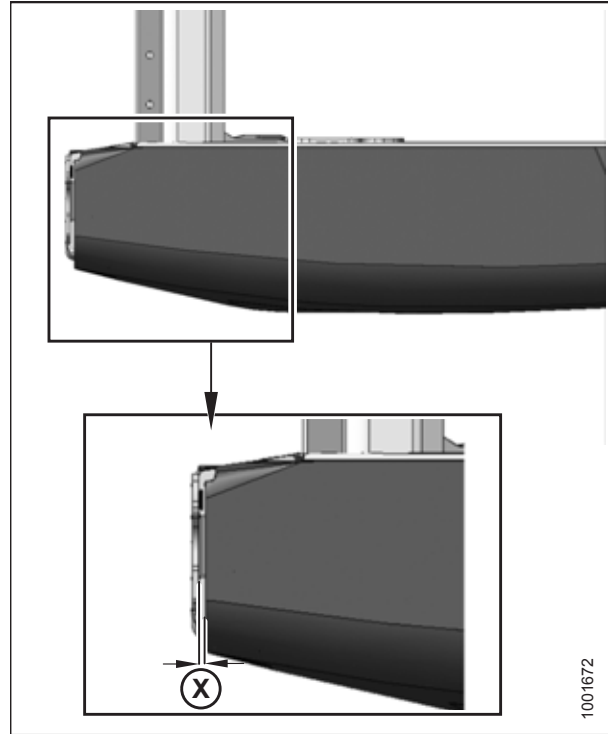


Figure 6.43: Gap between Endshield and Header Frame

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

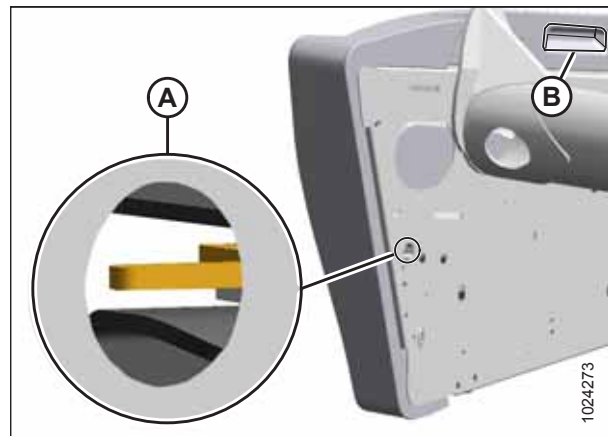


Figure 6.44: Left Endshield

PERFORMING PREDELIVERY CHECKS

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

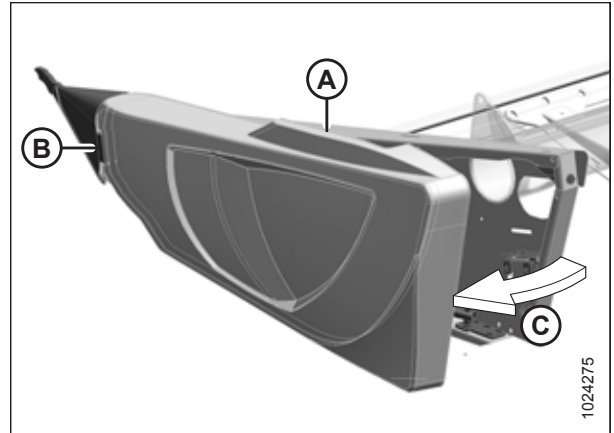


Figure 6.45: Left Endshield

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

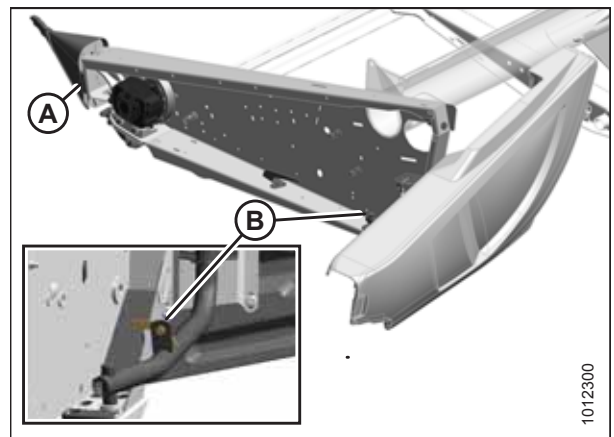


Figure 6.46: Left Endshield

Adjusting the endshield

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

NOTE:

A D1X Series Draper Header is shown in the illustration. The endshield on a D1XL Series Draper Header is similar.

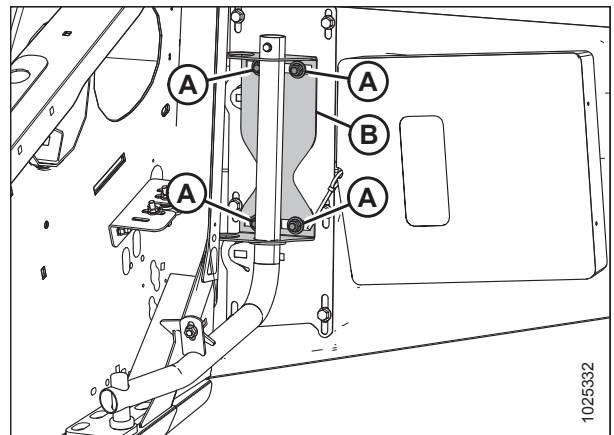


Figure 6.47: Left Endshield Support Tube on D1X Series Header

PERFORMING PREDELIVERY CHECKS

9. Loosen three bolts (A) on latch assembly (B).
10. 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 82 for the recommended endshield gap at various ambient temperatures.
11. Tighten three bolts (A) on the latch assembly to 27 Nm (20 lbf·ft).

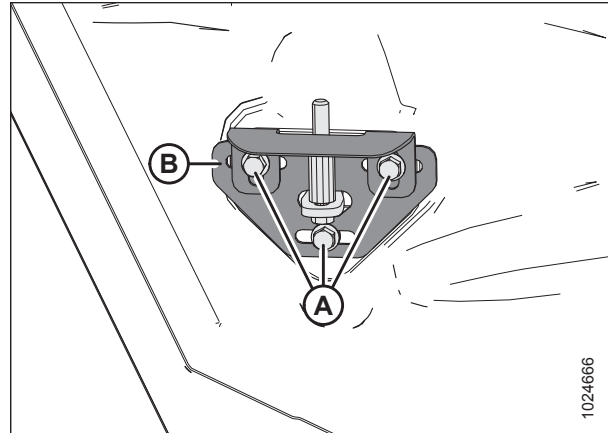


Figure 6.48: Left Endshield Latch Assembly

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

NOTE:

A D1X Series Draper Header is shown in the illustration; D1XL Series Draper Headers are similar.

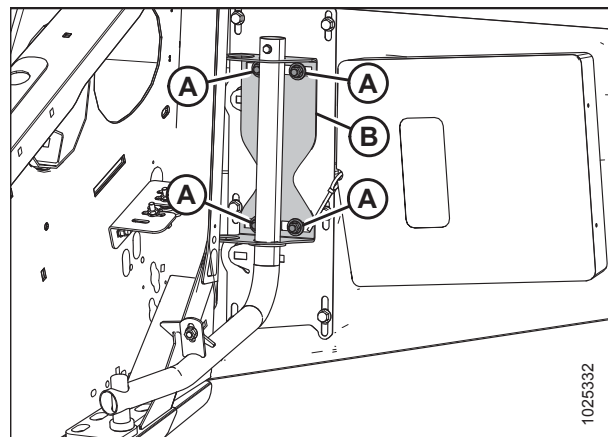


Figure 6.49: Left Endshield Support Tube on D1X Series Header

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

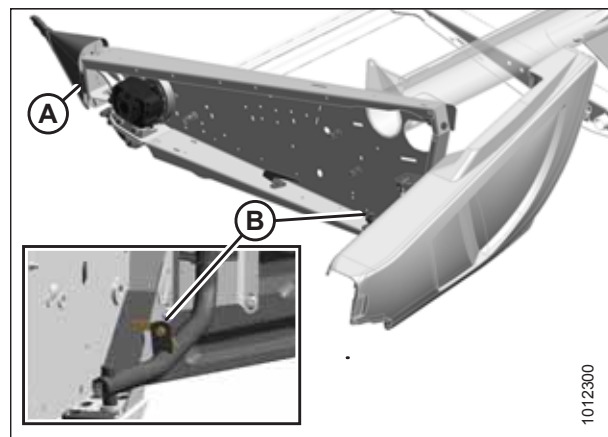


Figure 6.50: Left Endshield

PERFORMING PREDELIVERY CHECKS

15. Swing the endshield in direction (A) into the closed position. Engage the lock with a firm push.
16. Verify the dimensions of the other endshield.
17. Repeat Steps [1, page 82](#) to [16, page 85](#) to adjust the right endshield.

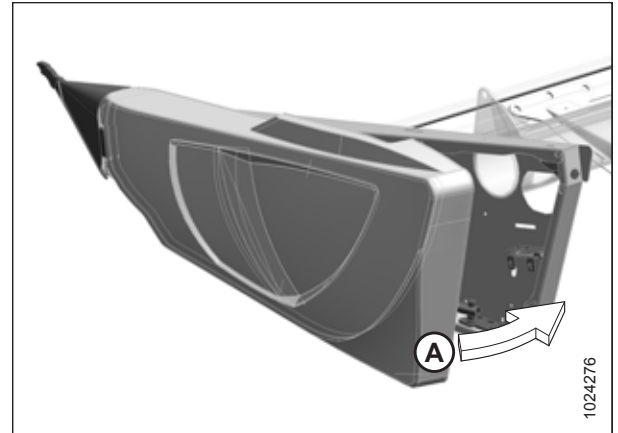


Figure 6.51: Left Endshield

6.12 Checking Grease Points

The grease zerk on the header will need to be checked to ensure that they can accept grease.

IMPORTANT:

All grease points on the header should have received grease from the factory. Do not add more than one pump of grease from a grease gun before consulting the greasing procedures in the header operator's manual, as some components have special greasing requirements and can be damaged if the wrong procedure is followed.

IMPORTANT:

Do not use an electric grease gun for this procedure.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Open both endshields.
3. Locate the grease point location decal on the header, or refer to the relevant illustration on the right side of this page.
4. For each grease point listed on the decal, check that the grease zerk accepts grease as follows:
 - a. Wipe the grease fitting with a clean cloth to avoid injecting dirt and grit.
 - b. Fit the end of the grease gun over the grease zerk. Inject one pump of grease ² into the zerk. Most or all of the grease should enter the grease zerk without resistance or without overflowing the zerk. Some grease may overflow the lubricated component. If the zerk will not accept grease, refer to the header operator's manual for instructions on how to repair or replace a grease zerk.
 - c. Leave a blob of excess grease on the fitting to keep out dirt.

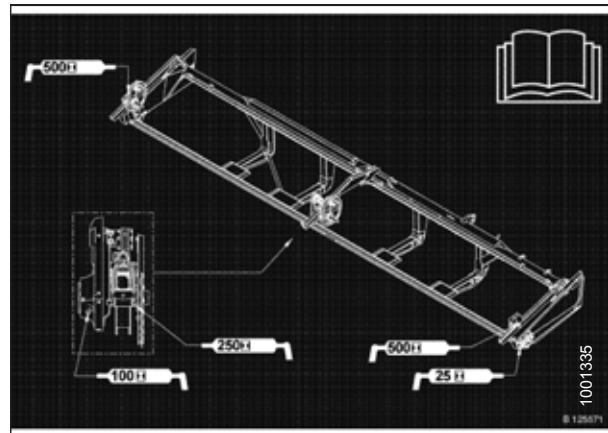


Figure 6.52: Single-Knife Header Grease Point Decal

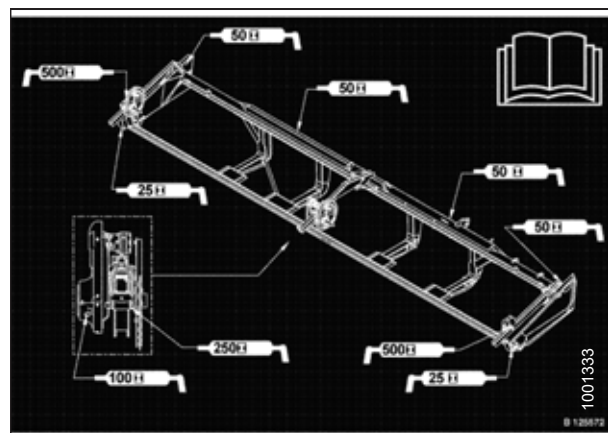


Figure 6.53: Double-Knife Header Grease Point Decal

5. Close the right endshield.

2. Use only high temperature extreme pressure (EP2) performance with 1% maximum molybdenum disulphide (NLGI grade 2) lithium base grease.

6.13 Checking Manuals

The header's manual case is located inside the left endshield.

1. Open the left endshield.
2. Remove the cable tie on manual case (A).
3. Confirm that the case contains the following manuals:
 - D1X and D1XL Series Draper Header Operator's Manual
 - D1X and D1XL Series Draper Header Quick Card
 - D1X and D1XL Series Draper Header Parts Catalog
4. Close the case.
5. Close the left endshield.

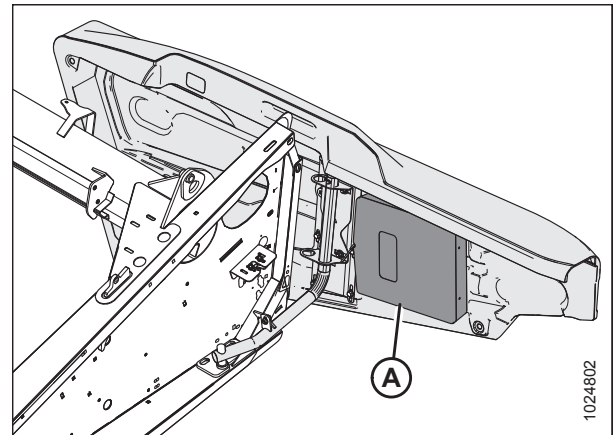


Figure 6.54: Manual Case



Figure 6.55: D1XL Series Manuals

6.14 Header System Calibration

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

The following sensors may require calibration, depending on the type of header attached to the windrower:

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

Recalibration is required in the following circumstances:

- The HPT is replaced
- A position sensor is replaced
- Sensor readouts are erratic
- A pump has been replaced
- A new header type or attachment is connected to the windrower

6.14.1 Calibrating Knife Drive on 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 that 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 the 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.

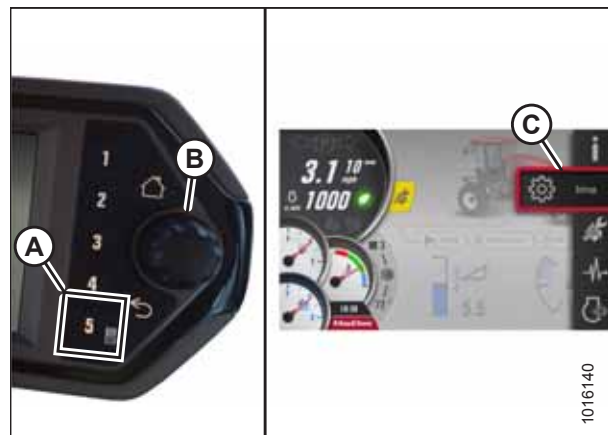


Figure 6.56: Opening the Main Menu

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.

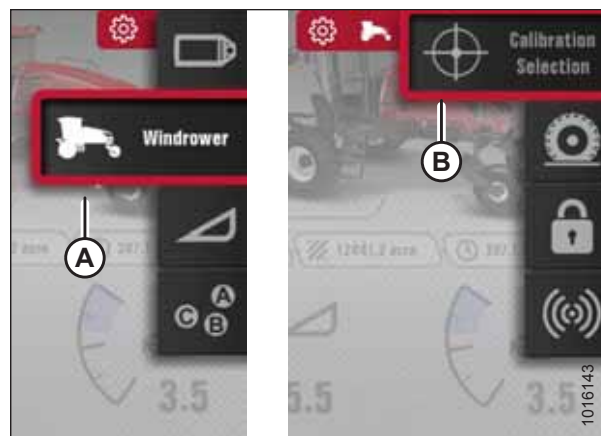


Figure 6.57: Windrower Settings Icon and Calibration Submenu Icon

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

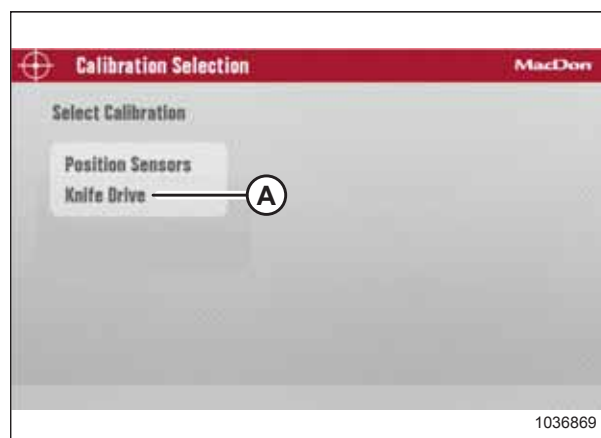


Figure 6.58: Calibration Selection Screen

NOTE:

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

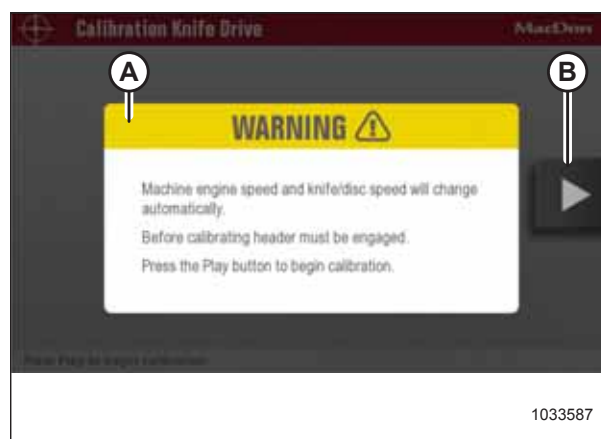


Figure 6.59: Engage Header Warning

PERFORMING PREDELIVERY CHECKS

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

NOTE:

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



Figure 6.60: 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 consists of nine stages.



Figure 6.61: Calibration Page

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

NOTE:

During the calibration procedure, the windrower's computer will vary the engine rpm and header speed.

NOTE:

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



Figure 6.62: Calibration Page

NOTE:

If 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. If the knife calibration fails:

- Confirm that the engine and hydraulics are at operating temperature.
- Confirm that the hydraulic system is free of any restrictions and is in working order.
- Confirm that the throttle is working:
 - Check the engine codes to confirm that engine is not de-rated or throttle-inhibited
 - The throttle is controlled via the powertrain's CAN network 1. Check the network's wiring and connectors for an open or intermittent connection
- Confirm that the sensor mounting is secured properly and that the sensor's gap is set correctly.
- Check the sensor wiring and connectors for an intermittent connection.
- Replace the sensor.

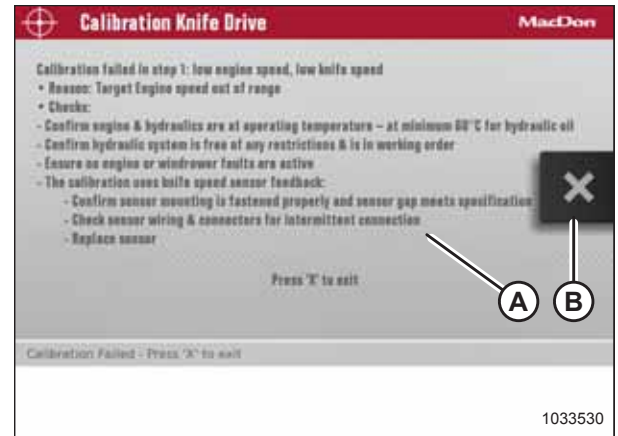


Figure 6.63: Calibration Page

6.14.2 Calibrating Header Position Sensors on Harvest Performance Tracker Display

The header position sensors need to be recalibrated whenever the Harvest Performance Tracker (HPT) is replaced, a position sensor is replaced, sensor readouts are erratic, a pump has been replaced, or when a new header type or attachment is connected to the windrower.

! DANGER

Never start or move the machine until you are sure that 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 the 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.

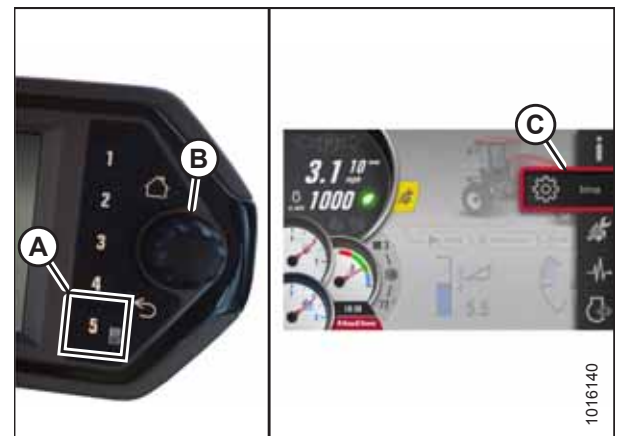


Figure 6.64: Opening the Main Menu

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.

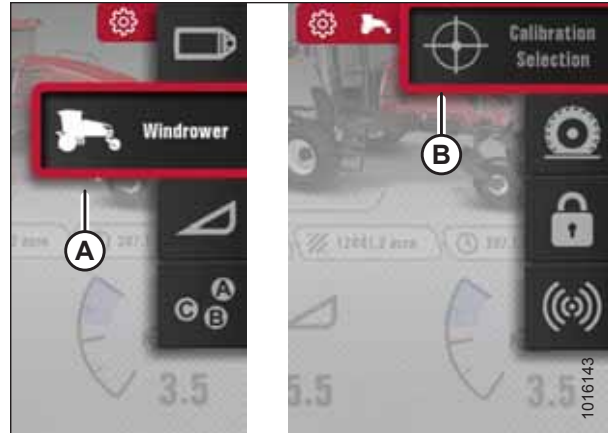


Figure 6.65: Windrower Settings Icon and Calibration Submenu Icon

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

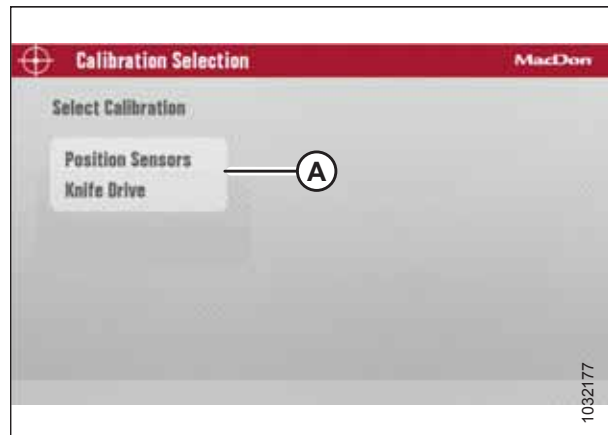


Figure 6.66: Calibration Selection Screen

NOTE:

Pressing X icon (A) on the screen (or pressing the HOME, BACK or any GSL button [buttons not shown]) at any time during the calibration process will EXIT the calibration procedure without saving your progress. 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 a sensor is out of range.

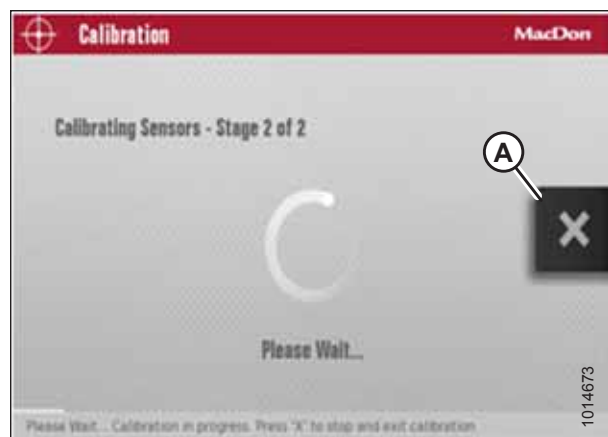


Figure 6.67: Calibration Screen

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 6.68: Calibration Screen

9. When stage two of the calibration is complete, press RESUME icon (A) on the screen to configure the HEADER FLOAT setting, or press HOME or BACK button (not shown) to exit.

NOTE:

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



Figure 6.69: Calibration Screen

NOTE:

If the voltage of any sensor falls below its acceptable range during calibration, a message appears after completing the calibration with a list of sensors reporting out-of-range voltages. Adjust the sensors as needed and repeat the calibration process from the beginning.



Figure 6.70: Sample of Failed Calibration Display Message

Chapter 7: Running up Header

The header must be run up before it is delivered to the customer, to ensure that all its features are functional.



DANGER

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



DANGER

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

1. Start the windrower.
2. Engage the header and let it run at low speed for 5 minutes, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.

NOTE:

The header's reels and drapers will not operate until hydraulic oil fills the lines.

3. Run the header for an additional 10 minutes at operating speed, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
4. Shut down the engine, and remove the key from the ignition.
5. Perform the run-up check as detailed on the Predelivery Checklist (the yellow sheet attached to this instruction):
Predelivery Checklist, page 115.

Chapter 8: Performing Post Run-Up Adjustments

After the initial run-up of the header, a few final adjustments may be necessary.

Stop the engine and perform the post run-up checks listed on the Predelivery Checklist (the yellow sheet attached to this instruction: [Predelivery Checklist, page 115](#)) to ensure that the machine is field-ready.

DANGER

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

It may be necessary to adjust the knife after the initial run-up. Refer to [8.1 Adjusting Knife, page 97](#) for instructions.

8.1 Adjusting Knife

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

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Check the guards for signs of overheating occurring during the initial run-up procedure.

NOTE:

Overheating can be caused by insufficient clearance between the guard and the knife.

3. Check the gap between knifehead (A) and pitman arm (B). A feeler gauge set to 0.4 mm (0.016 in.) should slide easily through the gap. If the gap is too small, adjust the gap by loosening bolt (C), and tapping knifehead (A) with a hammer. Retighten the bolt when your adjustments are complete.
4. Adjust the guard alignment as needed using the guard-straightening tool (MD #140135). Adjust the guard tips upwards by positioning the tool as shown and then pulling up on the tool.

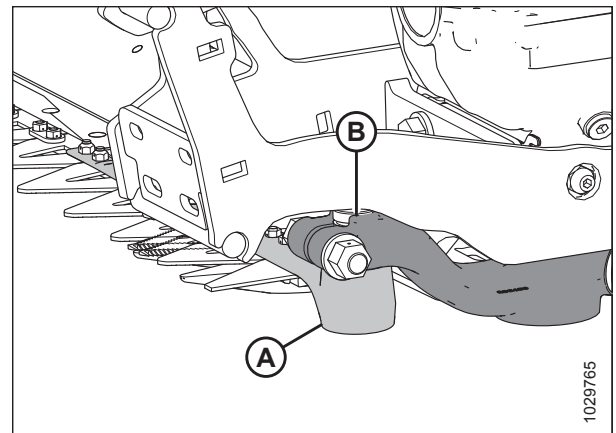


Figure 8.1: Knifehead and Pitman Arm



Figure 8.2: Straightening Tool – Upward Adjustment

PERFORMING POST RUN-UP ADJUSTMENTS

5. Adjust the guard tips downward by positioning the tool as shown and then pushing down on the tool.

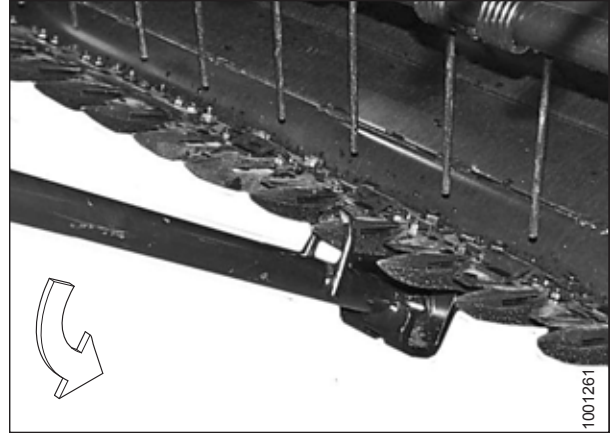


Figure 8.3: Straightening Tool – Downward Adjustment

Chapter 9: Reference

The reference section provides additional, support information on topics such as torque specifications, the requirements for lifting equipment, unit measurement conversions, and terminology definitions. Consult this section as needed.

9.1 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Use these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Use the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Use the standard torque values when installing self-tapping screws. Do **NOT** install self-tapping screws on structural or otherwise critical joints.

9.1.1 SAE Bolt Torque Specifications

The torque values provided in the following SAE bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** grease or oil bolts or cap screws unless directed to do so 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

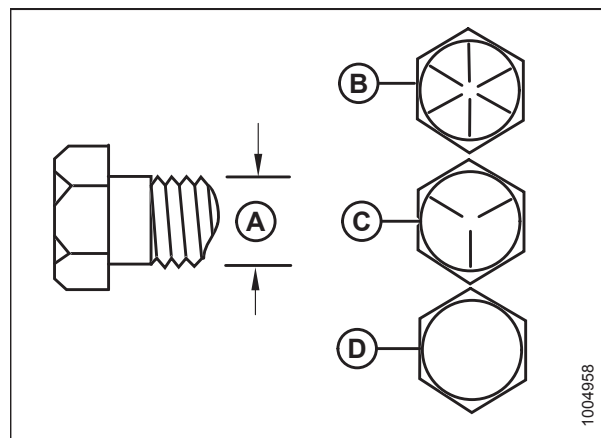


Figure 9.1: Bolt Grades

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

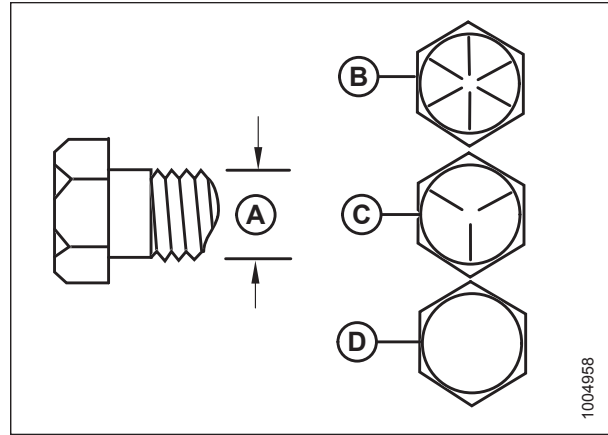


Figure 9.2: Bolt Grades

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

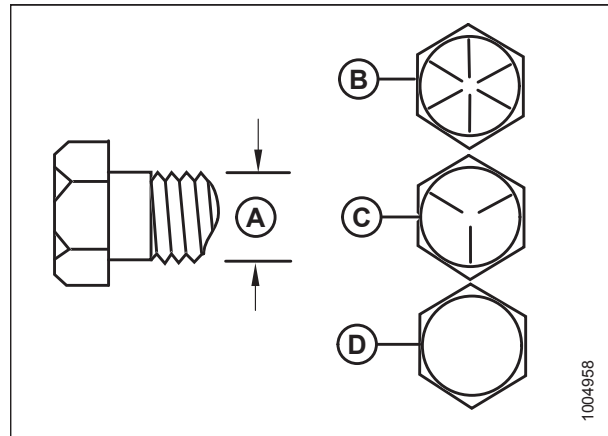


Figure 9.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

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

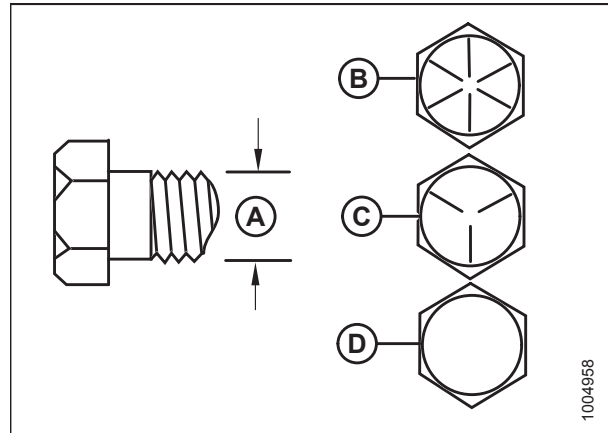


Figure 9.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

9.1.2 Metric Bolt Specifications

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** grease or oil bolts or cap screws unless directed to do so 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

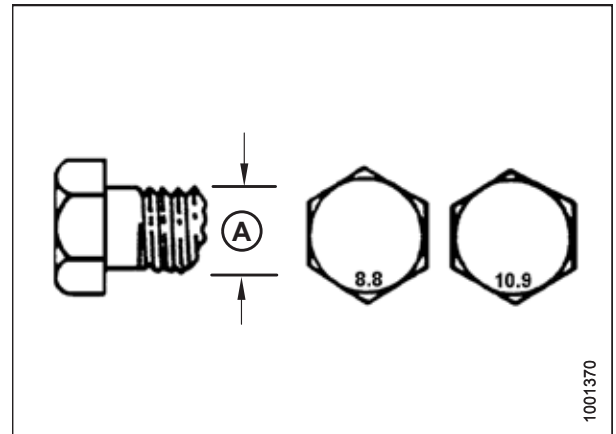


Figure 9.5: Bolt Grades

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

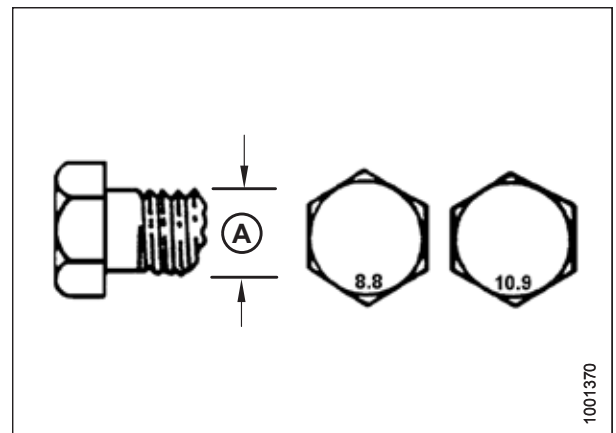


Figure 9.6: Bolt Grades

REFERENCE

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

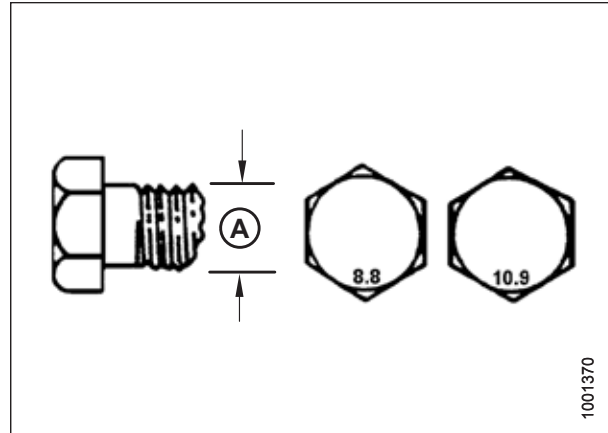


Figure 9.7: Bolt Grades

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

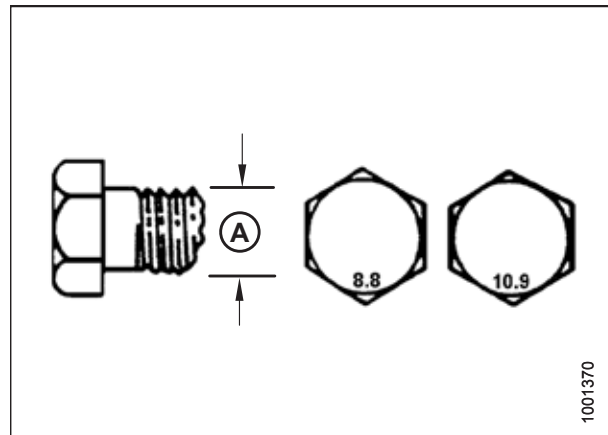


Figure 9.8: Bolt Grades

9.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** grease or oil bolts or cap screws unless directed to do so 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	—	—	—	—

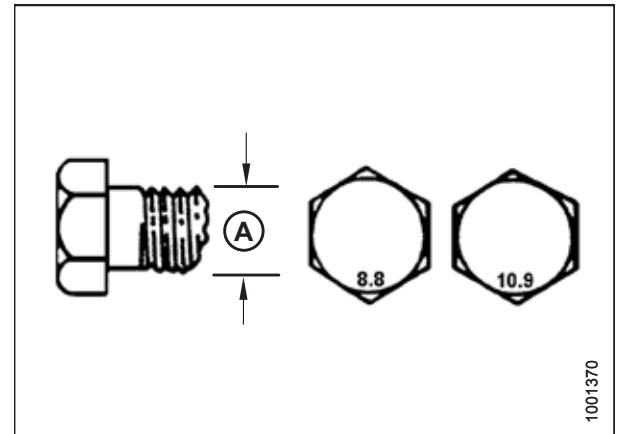


Figure 9.9: Bolt Grades

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 103](#).
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.

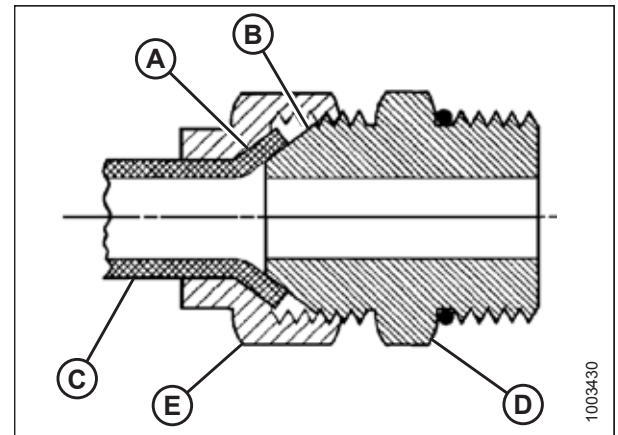


Figure 9.10: Hydraulic Fitting

Table 9.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value ³		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

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

Table 9.10 Flare-Type Hydraulic Tube Fittings (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ⁴		Flats from Finger Tight (FFFT)	
		Nm	lbf-ft	Tube	Swivel Nut or Hose
-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

9.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

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 the threads. Adjust O-ring (A) if necessary.
4. Apply hydraulic system oil to O-ring (A).

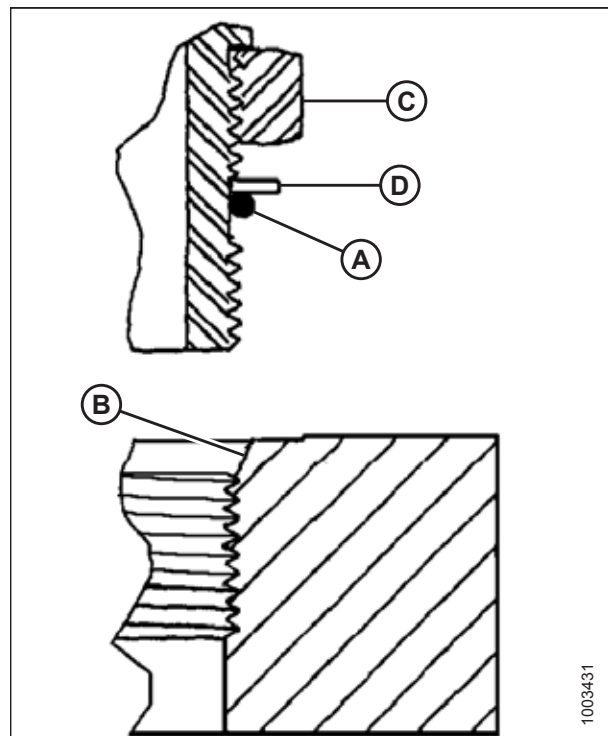


Figure 9.11: Hydraulic Fitting

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

REFERENCE

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

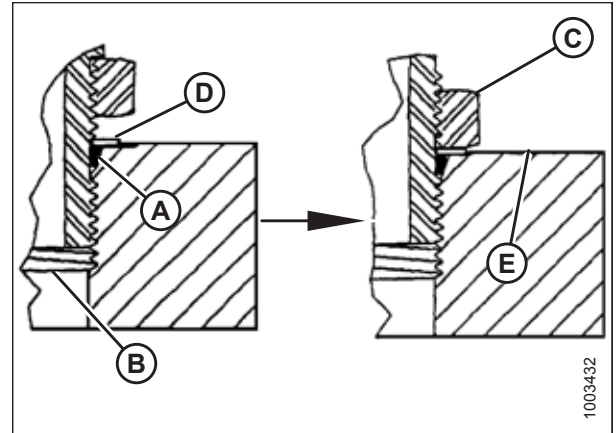


Figure 9.12: Hydraulic Fitting

REFERENCE

Table 9.11 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁵	
		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

9.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values are provided for non-adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

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. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table [9.12, page 107](#).
6. Check the final condition of the fitting.

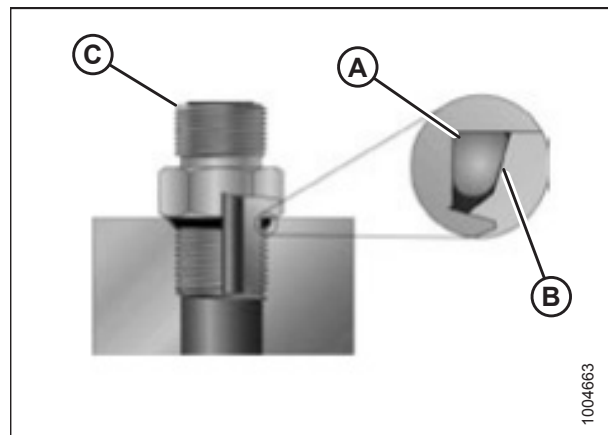


Figure 9.13: Hydraulic Fitting

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

Table 9.12 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁶	
		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

9.1.7 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

Torque values are shown in following table below.

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

**Figure 9.14: Hydraulic Fitting**

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

REFERENCE

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table 9.13, page 108.

NOTE:

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

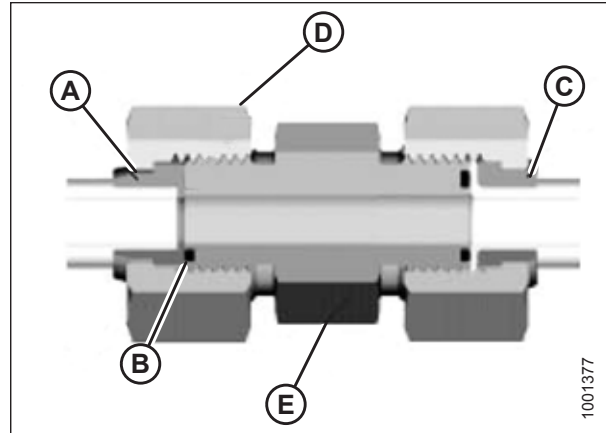


Figure 9.15: Hydraulic Fitting

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 ⁷	
			Nm	lbf-ft
-3	Note ⁸	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ⁸	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note ⁸	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

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Check the components to ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.

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

8. O-ring face seal type end not defined for this tube size.

REFERENCE

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 109. Make sure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never back off (i.e. loosen) the threaded connectors to achieve alignment.
5. Clean all 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 in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

NOTE:

The failure of fittings due to overtorquing may not be evident until the fittings are disassembled and inspected.

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
1-11 1/2	1.5-2.5	9-15
1 1/4-11 1/2	1.5-2.5	9-15
1 1/2-11 1/2	1.5-2.5	9-15
2-11 1/2	1.5-2.5	9-15

9.2 Lifting Vehicle Specifications

To handle a header safely, use a lifting vehicle appropriate to the task.

DANGER

To prevent injury to bystanders caused by being struck by machinery, do NOT allow people to stand in the unloading area.

DANGER

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

IMPORTANT:

The load center of a sample load is indicated by dimension (A). Forklifts are normally rated for a load center projected forward 610 mm (24 in.) from the back end of the forks. To learn the forklift capacity for a load center at 1220 mm (48 in.) (dimension [B]), contact your forklift distributor. The minimum fork length (shown by dimension [C]) required to unload the header is 1981 mm (78 in.).

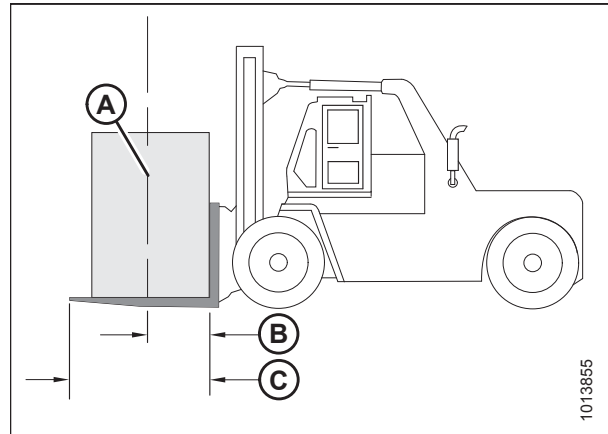


Figure 9.16: Minimum Lifting Capacity

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

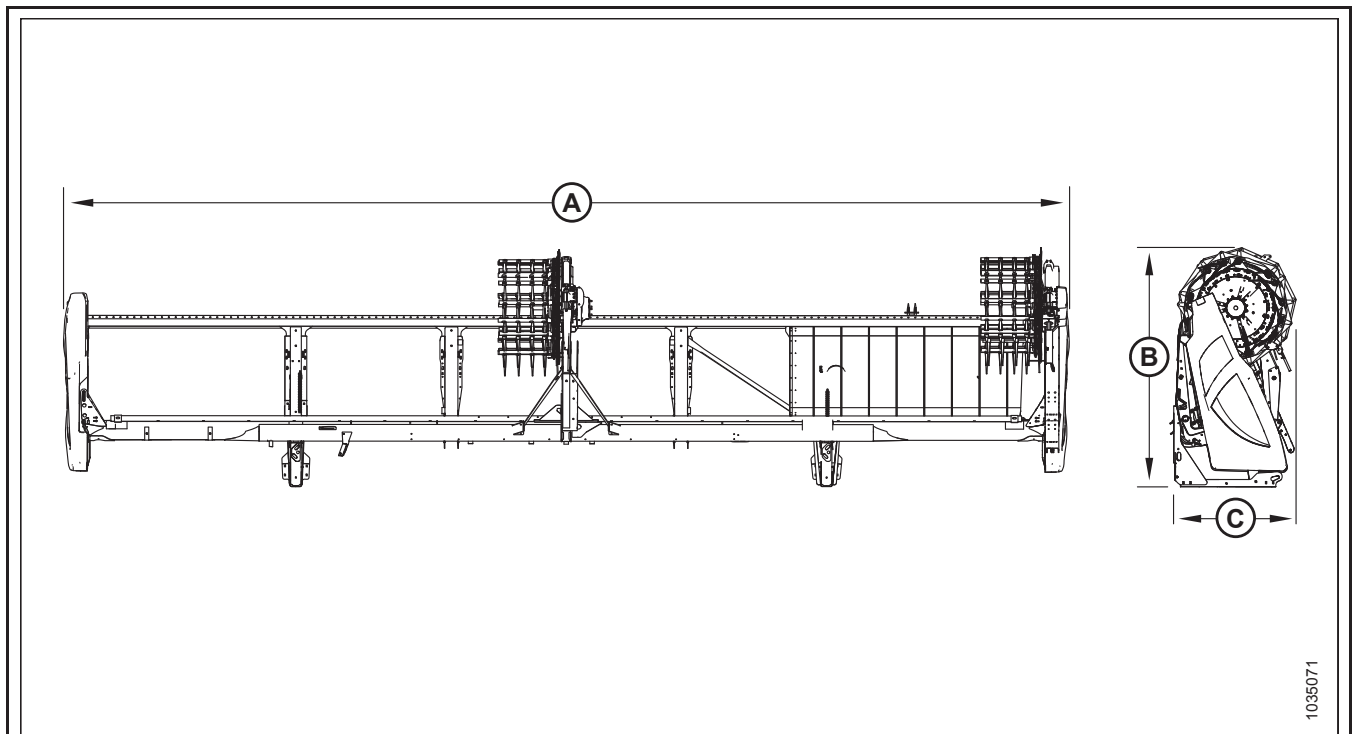
Minimum Capacity	3178 kg (7000 lb.) at 1220 mm (48 in.) from back end of forks
Minimum Fork Length	1981 mm (78 in.)

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:

The dimensions provided are approximations. They are provided so that you can select the appropriate size of vehicle to lift or transport the header. These dimensions are provided with the assumption that 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 ³ or cc	$\times 0.061 =$	cubic inch	in. ³
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 designed to be paired with a nut
Cab-forward	Windrower operation mode, in which the Operator's seat faces the header
Center-link	A hydraulic cylinder connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
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	The header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position in which the given sealing surfaces or components are making contact with each other and the fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
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 when attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
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
Knife	A cutting device found on a header's cutterbar which uses a reciprocating cutter (also called a sickle) to cut crop so that it can be fed into the header
M1 Series Windrowers	MacDon M1170 and M1240 Windrowers
n/a	Not applicable
North American header	The header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt

REFERENCE

Term	Definition
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 when inserted into a mating part
SDD	Single-drawer drive
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time
spm	Strokes per minute
SR	Single reel
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm) or foot-pounds (lbf-ft)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
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 the cutterbar to two separately driven knives from a single hydraulic motor or from two hydraulic motors
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism
Windrower	The power unit for a header
WOT	Wide-open throttle

Predelivery Checklist

Perform these checks before delivering the header. **Adjustments to the header normally are not required; the machine will have been assembled and adjusted at the factory.** However, if adjustments are required, refer to the relevant procedure in this manual. The completed Checklist should be retained by either the Operator or the Dealer.



CAUTION

Carefully follow the instructions provided herein. Be alert for safety related messages that bring your attention to hazards and unsafe practices.

Header Serial Number:

✓	Item	Reference
	Check for shipping damage or missing parts. Ensure that all shipping dunnage has been removed.	—
	Check for loose hardware. Tighten any loose hardware to the required torque value.	9.1 Torque Specifications, page 99
	Check the tire pressure on the Transport/Stabilizer Option tires.	6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Series Headers, page 57
	Check the wheel bolt torque on the Transport/Stabilizer Option wheels.	6.2 Checking Wheel Bolt Torque – Option for D1XL Series Headers, page 58
	Check the position of the knife drive box's breather.	6.3 Checking Knife Drive Box, page 59
	Check the level of lubricant in the knife drive box.	6.3 Checking Knife Drive Box, page 59
	Check the tension on the knife drive belt(s).	6.4 Checking and Adjusting Knife Drive Belt Tension, page 60
	Ensure that the reel is properly centered between the header's endsheets.	6.5 Centering Reel, page 64
	Ensure that all grease zerks accept grease.	6.12 Checking Grease Points, page 86
	Check the tension on the draper.	6.7 Checking and Adjusting Draper Tension, page 73
	Ensure that the draper seal is set correctly.	6.8 Checking and Adjusting Draper Seal, page 75
	Ensure that the reel tine-to-cutterbar clearance is set correctly.	6.6.1 Measuring Reel Clearance, page 67
	Ensure that the skid shoes are positioned correctly.	6.9 Checking and Adjusting Skid Shoe Settings, page 80
	Check the fit of the endshields.	6.11 Checking and Adjusting Endshields, page 82
	Ensure that the header is level.	6.10 Leveling Header, page 81
	Check the hydraulic hose and wiring harness routing for clearance when raising or lowering the header and reel.	—
Run-up procedure		7 Running up Header, page 95
	Ensure that the knife drive pulley(s) are rotating in the proper direction: clockwise on the left side; counterclockwise on the right side (double knife only).	6.4 Checking and Adjusting Knife Drive Belt Tension, page 60
	Ensure that the header's lights are functioning correctly.	—
	Ensure that the reel lift cylinders extend fully.	—
	Ensure that the reel moves fully fore and aft.	—
Post run-up check. Stop the engine before performing these procedures.		8 Performing Post Run-Up Adjustments, page 97

REFERENCE

✓	Item	Reference
	Inspect the belt drives. Ensure that the bearings are not overheating.	<i>6.4 Checking and Adjusting Knife Drive Belt Tension, page 60</i>
	Inspect the knife sections for discoloration caused by misaligned components.	<i>8.1 Adjusting Knife, page 97</i>
	Inspect the cutterbar above the draper seal for hot spots. Adjust the deck height as needed.	<i>6.8 Checking and Adjusting Draper Seal, page 75</i>
	Safely inspect the hydraulic system for hydraulic fluid leaks.	—
	Ensure that the manual storage case contains an operator's manual, a quick card, and a parts catalog.	<i>6.13 Checking Manuals, page 87</i>

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