

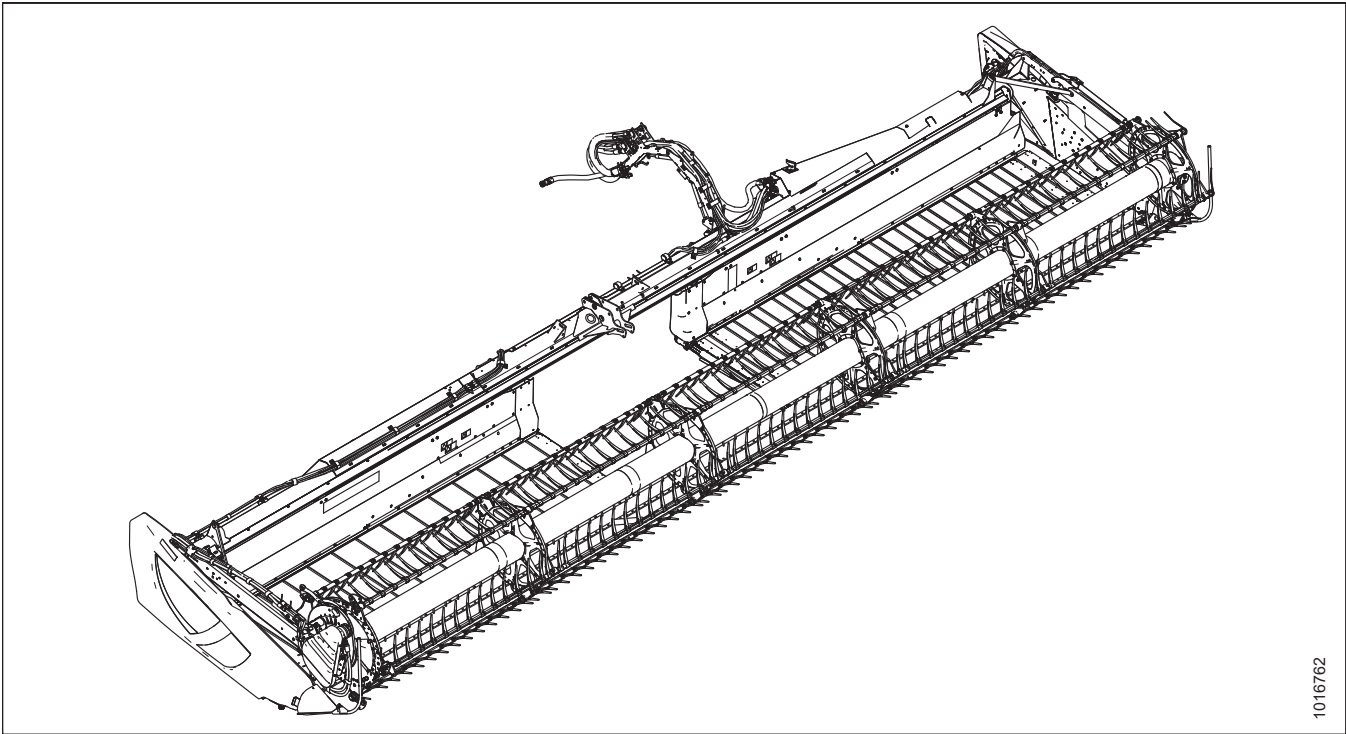
D1X and D1XL Series Draper Header

Unloading and Assembly Instructions (North America)

215167 Revision A

Original Instruction

D1XL Draper Header for M1 Series Windrowers



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Introduction

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

NOTE:

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

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

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

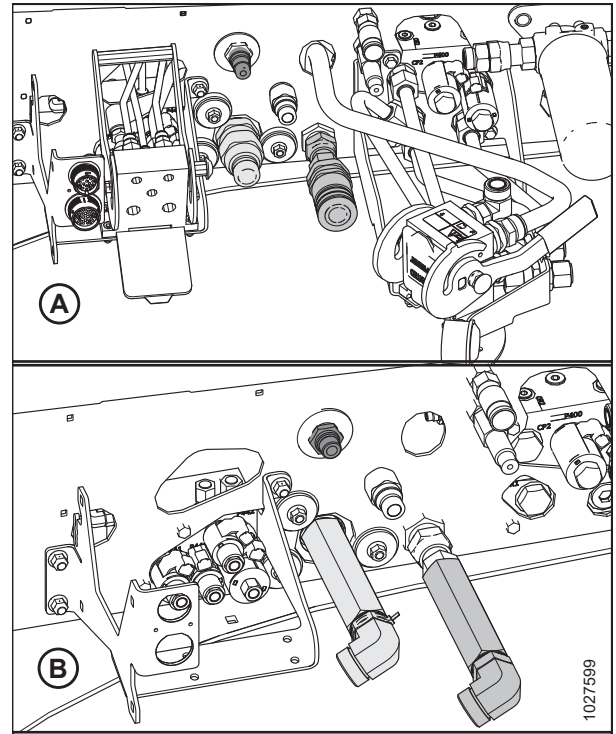


Figure 1: M1240 Header Hydraulics Configurations

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

Some sections/steps apply to multiple header configurations and sizes. Refer to the instructions for your specific header.

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

Retain this instruction for future reference.

Conventions

The following conventions are used in this document:

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

NOTE:

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

This document is currently available in English only.

Summary of Changes

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

Section	Summary of Change	Internal Use Only
Inside front cover	Added copyright and disclaimer.	Tech Pubs
<i>Introduction, page i</i>	Added NOTE and picture regarding windrower header drives.	Product Support
<i>Introduction, page i</i>	Added "Conventions".	Tech Pubs
<i>1.3 Welding Precaution, page 4</i>	Added topic.	Tech Pubs
<i>2.2.1 Lowering Single-Reel Header, page 9</i> • Step 7, page 11	Added picture to step to identify the center-link anchor.	Product Support
<i>2.2.2 Lowering Double-Reel Header, page 12</i> • Step 3, page 12	Revised picture caption to distinguish the D1XL from the D1X shipping support.	ECN 58690
<i>2.2.2 Lowering Double-Reel Header, page 12</i> • Step 3, page 12	Added NOTE for clarity: • Right reel removed for clarity.	Product Support
<i>2.2.2 Lowering Double-Reel Header, page 12</i> • Step 7, page 14	Added picture to step to identify the center-link anchor.	Product Support
<i>2.3 Removing Shipping Supports, page 16</i> • Step 5, page 17	Revised step as follows: • Removed picture that showed an incorrect type of 9.1–12.2 m (30–40 ft.) header. • Revised the caption for the picture of D1X headers to include header models, not length. • Added picture 1031435 to show D1XL headers.	Tech Pubs
<i>2.3 Removing Shipping Supports, page 16</i> • Step 7, page 18 • Step 11, page 18	Updated step and/or and picture to show new endshield shipping supports.	ECN 57607
<i>3 Adding Ballast, page 19</i>	Moved topic to this location to ensure the windrower is properly ballasted before operating the header. Revised topic to emphasize ballast must be added before attaching a header to the windrower.	Product Support
<i>4.1 Installing the Hydraulic Hose Management System, page 21</i>	Removed the first step and associated picture 1024555 because the headers are shipped with the hydraulic hose management system electrical harness capped, not connected to the header.	ECN 55671 ECN 57168
<i>4.1 Installing the Hydraulic Hose Management System, page 21</i> • Step 15, page 25	Added step and associated picture because the headers are shipped with the hydraulic hose management system electrical harness capped, not connected to the header.	ECN 55671 ECN 57168

Section	Summary of Change	Internal Use Only
<p><i>4.2 Attaching Draper Header Supports, page 27</i></p> <ul style="list-style-type: none"> • Step 1, page 27 	<p>Added step:</p> <ul style="list-style-type: none"> • Shut down the engine, and remove the key from the ignition. 	Tech Pubs
<p><i>4.3 Connecting Center-Link, page 28</i></p> <ul style="list-style-type: none"> • Step 15, page 31 • Step 18, page 32 	Updated the windrower safety prop decal for model year 2020.	ECN 58047
<p><i>5.1 Positioning Transport Lights, page 37</i></p> <ul style="list-style-type: none"> • Step 1, page 37 	<p>Revised step and associated picture as follows:</p> <ul style="list-style-type: none"> • Specified that step applies to D1X. • ECN 57670: Updated light bracket. • ECN 58057: Added one retaining nut, for a total of two. • ECN 58380: Removed clamp. 	ECN 57670 ECN 58057 ECN 58380
<p><i>5.1 Positioning Transport Lights, page 37</i></p> <ul style="list-style-type: none"> • Step 2, page 37 	Added step to show new shipping assembly for right transport light on D1XL headers.	ECN 58057
<p><i>5.1 Positioning Transport Lights, page 37</i></p> <ul style="list-style-type: none"> • Step 3, page 38 	<p>Revised step and associated picture as follows:</p> <ul style="list-style-type: none"> • Specified that step applies to D1X. • ECN 57670: Updated light bracket. • ECN 58057: Added one retaining nut, for a total of two. • ECN 58380: Removed clamp. 	ECN 57670 ECN 58057 ECN 58380
<p><i>5.1 Positioning Transport Lights, page 37</i></p> <ul style="list-style-type: none"> • Step 4, page 38 	Added step to show D1XL header right transport light on D1XL headers for clarity.	Tech Pubs
<p><i>5.1 Positioning Transport Lights, page 37</i></p> <ul style="list-style-type: none"> • Step 5, page 38 • Step 6, page 39 	<p>Updated associated picture as follows:</p> <ul style="list-style-type: none"> • ECN 57670: Updated light bracket. • ECN 58057: Added one retaining nut, for a total of two. 	ECN 57670 ECN 58057
<p><i>5.2 Attaching Reel Lift Cylinders, page 40</i></p> <ul style="list-style-type: none"> • Figure 5.7, page 40 	Updated picture to show new reel support brackets for D1X header. Revised caption to distinguish D1X brackets from D1XL brackets.	ECN 57607
<p><i>5.2 Attaching Reel Lift Cylinders, page 40</i></p> <ul style="list-style-type: none"> • Step 3, page 41 	<p>Revised step as follows:</p> <ul style="list-style-type: none"> • ECN 57607: Updated D1X picture to show new reel support brackets for D1X header. Revised caption to distinguish D1X brackets from D1XL brackets. • Added D1XL picture. 	ECN 57607
<p><i>5.2 Attaching Reel Lift Cylinders, page 40</i></p> <ul style="list-style-type: none"> • Step 4, page 42 	Corrected picture to show D1XL headers.	Tech Pubs

Section	Summary of Change	Internal Use Only
<ul style="list-style-type: none"> Step 17, page 45 		
<p>5.2 Attaching Reel Lift Cylinders, page 40</p> <ul style="list-style-type: none"> Step 18, page 46 	<p>Revised step as follows:</p> <ul style="list-style-type: none"> ECN 57607: Updated D1X picture to show new reel support brackets for D1X header. Revised caption to distinguish D1X brackets from D1XL brackets. Added D1XL picture. 	ECN 57607
<p>5.2 Attaching Reel Lift Cylinders, page 40</p> <ul style="list-style-type: none"> Step NA, page 40 	<p>Replaced picture of right reel arm supports with two separate pictures. Corrected picture of double reel right reel arm support.</p>	Tech Pubs
<p>5.2 Attaching Reel Lift Cylinders, page 40</p> <ul style="list-style-type: none"> Step 20, page 48 	<p>Corrected picture to show D1XL headers..</p>	Tech Pubs
<p>5.4 Attaching Cam Arms, page 50</p> <ul style="list-style-type: none"> Step 7, page 51 	<p>Revised step and added IMPORTANT to emphasize that the shim must be installed in the correct location.</p>	Product Support
<p>5.6 Attaching Reel Height Sensor – D1XL Headers, page 54</p>	<p>Added topic.</p>	Product Support
<p>6 Performing Predelivery Checks, page 57</p> <ul style="list-style-type: none"> Step 1, page 57 	<p>Added step:</p> <ul style="list-style-type: none"> Shut down the engine, and remove the key from the ignition. 	Tech Pubs
<p>6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Headers, page 57</p>	<p>Revised title to specify that the topic only applies to D1XL Series Headers equipped with the optional kit.</p>	Tech Pubs
<p>6.2 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels, Option for D1XL Headers, page 58</p>	<p>Revised title to specify that the topic only applies to D1XL Series Headers equipped with the optional kit.</p>	Tech Pubs
<p>6.3 Checking Knife Drive Box, page 59</p> <ul style="list-style-type: none"> Step 1, page 59 	<p>Added safety step:</p> <ul style="list-style-type: none"> Shut down the engine, and remove the key from the ignition. 	Tech Pubs
<p>6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts, page 61</p>	<p>Added “Untimed Double-Knife Drive Belts” to the topic heading.</p>	Tech Pubs
<p>6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts, page 61</p>	<p>Removed the following WARNING from this task ONLY because the necessary safety steps are considered to already have been taken during previous tasks:</p> <ul style="list-style-type: none"> WARNING: To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine. 	Tech Pubs
<p>6.5.1 Centering Double Reels, page 64</p>	<p>Removed the following WARNING from this task ONLY because the necessary safety steps are considered to already have been taken during previous tasks:</p>	Tech Pubs

Section	Summary of Change	Internal Use Only
	<ul style="list-style-type: none"> WARNING: To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine. <p>Removed the following safety step ONLY because this step is considered to already have been taken during previous tasks:</p> <ul style="list-style-type: none"> Shut down the engine, and remove the key from the ignition. 	
6.5.2 Centering Reel on a Single Reel Header, page 65	<p>Removed the following WARNING from this task ONLY because the necessary safety steps are considered to already have been taken during previous tasks:</p> <ul style="list-style-type: none"> WARNING: To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine. 	Tech Pubs
6.6 Adjusting Draper Tension, page 66	<p>Added the introduction.</p> <p>Changed the following hazard statement from a WARNING to a DANGER:</p> <ul style="list-style-type: none"> To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason. 	Tech Pubs
6.6 Adjusting Draper Tension, page 66 <ul style="list-style-type: none"> Step 1, page 66 	<p>Revised picture to show general location of the indicator bar.</p>	Tech Pubs
6.7 Checking and Adjusting Draper Seal, page 68	<p>Revised the IMPORTANT to clarify that the gap (deck seal) on new drapers needs to be set to 1–3 mm (1/16–1/8 in.). Removed information about the break-in period because this does not apply to an unloading and assembly manual.</p>	Tech Pubs
6.7 Checking and Adjusting Draper Seal, page 68 <ul style="list-style-type: none"> Step 1, page 68 	<p>Revised associated picture to identify gap dimension.</p>	Tech Pubs
6.7 Checking and Adjusting Draper Seal, page 68 <ul style="list-style-type: none"> Step 5, page 69 	<p>Added step to match technical manual.</p>	Tech Pubs
6.7 Checking and Adjusting Draper Seal, page 68 <ul style="list-style-type: none"> See NOTE below Step 6, page 69 	<p>Added the following information to the NOTE:</p> <ul style="list-style-type: none"> The number of deck supports (B) is determined by the header reels: four on single-reel headers, and eight on double-reel headers. 	Tech Pubs
6.7 Checking and Adjusting Draper Seal, page 68 <ul style="list-style-type: none"> Step 8, page 69 Step 9, page 69 Step 11, page 69 Step 13, page 70 	<p>Added steps and associated pictures to match technical manual.</p>	Tech Pubs

Section	Summary of Change	Internal Use Only
<p><i>6.8 Checking and Adjusting Skid Shoe Settings, page 71</i></p>	<p>Combined the previous WARNING and DANGER into a single DANGER:</p> <ul style="list-style-type: none"> To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under machine for any reason. 	Tech Pubs
<p><i>6.8 Checking and Adjusting Skid Shoe Settings, page 71</i></p> <ul style="list-style-type: none"> Step 1, page 71 Step 2, page 71 Step 3, page 71 Step 6, page 71 Step 7, page 71 Step 8, page 71 	<p>Added safety steps.</p>	Tech Pubs
<p><i>6.10.1 Measuring Reel Clearance, page 73</i></p>	<p>Added CAUTION:</p> <ul style="list-style-type: none"> Never start or move the machine until you are sure all bystanders have cleared the area. 	Tech Pubs
<p><i>6.10.1 Measuring Reel Clearance, page 73</i></p> <ul style="list-style-type: none"> Table 6.3, page 74 	<p>Added table and revised topic to refer to this table.</p>	Tech Pubs
<p><i>6.10.2 Adjusting Reel Clearance, page 76</i></p> <ul style="list-style-type: none"> Step 1, page 76 Step 2, page 76 Step 10, page 76 	<p>Added safety steps.</p>	Tech Pubs
<p><i>6.11 Checking and Adjusting Endshields, page 77</i></p> <ul style="list-style-type: none"> Step 4, page 79 Step 5, page 79 	<p>Added torque values to steps.</p>	Tech Pubs
<p><i>6.12.1 Greasing Procedure, page 81</i></p> <ul style="list-style-type: none"> Step 1, page 81 	<p>Added safety step:</p> <ul style="list-style-type: none"> Shut down the engine, and remove the key from the ignition. 	Tech Pubs
<p><i>6.14 Calibrating the Header Systems, page 85</i></p>	<p>Added topic.</p>	Product Support
<p><i>6.15 Calibrating Knife Drive on Harvest Performance Tracker, page 88</i></p>	<p>Added topic.</p>	Product Support
<p><i>7 Running up the Header, page 91</i></p>	<p>Replaced the CAUTION with the following WARNING:</p>	Tech Pubs

Section	Summary of Change	Internal Use Only
	<ul style="list-style-type: none"> To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine. 	
<i>8.1 Adjusting Knife, page 93</i> <ul style="list-style-type: none"> Step 1, page 93 	<ul style="list-style-type: none"> Replaced photo with illustration. 	Tech Pubs
<i>9.4 Definitions, page 108</i>	Removed the following terms: <ul style="list-style-type: none"> WCM: Windrower control module 	Tech Pubs

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Chapter 1: Safety

1.1 Signal Words

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



DANGER

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



WARNING

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



CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.2 General Safety

CAUTION

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

Protect yourself when assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.



Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

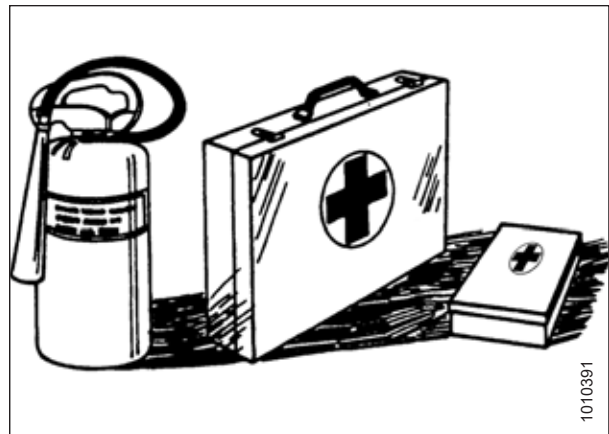


Figure 1.3: Safety Equipment

SAFETY

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



Figure 1.4: Safety around Equipment

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

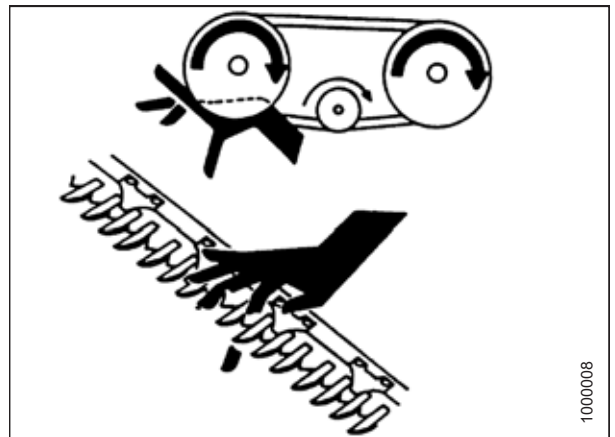


Figure 1.5: Safety around Equipment

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



Figure 1.6: Safety around Equipment

1.3 Welding Precaution

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 you need to do any welding on the header, it should first be disconnected and removed from the windrower.

If it is unfeasible to disconnect the header from the windrower before attempting 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

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

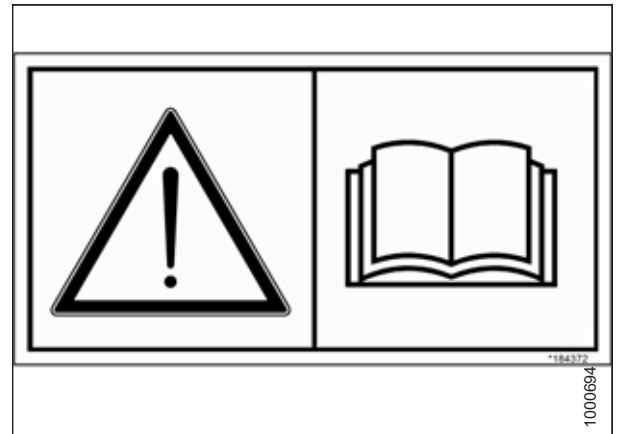


Figure 1.7: Operator's Manual Decal

Chapter 2: Unloading

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

2.1 Unloading Header from Trailer

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

⚠ CAUTION

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

⚠ CAUTION

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

IMPORTANT:

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

Table 2.1 Lifting Vehicle

Minimum Lifting Capacity	3178 kg (7000 lb.) load center (A) at 1220 mm (48 in.) (B) from the back of the forks
Minimum Fork Length (C)	1981 mm (78 in.)

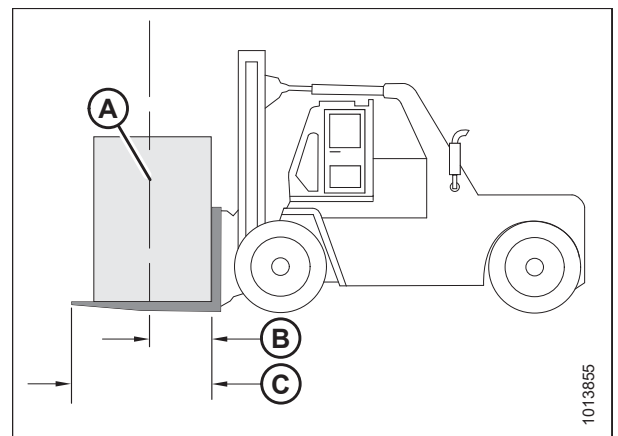


Figure 2.1: Minimum Lifting Capacity

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

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

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

UNLOADING

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

IMPORTANT:

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

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



WARNING

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

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

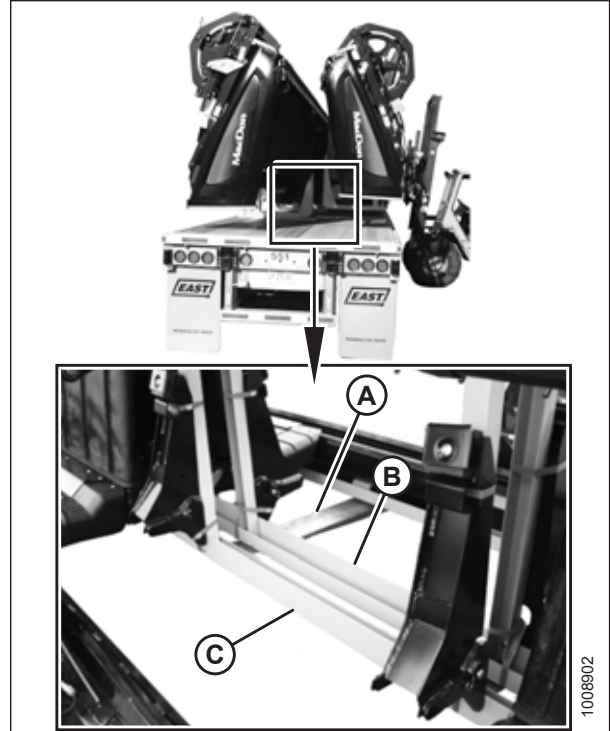


Figure 2.2: Header Shipping Supports

2.2 Lowering Header

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

- [2.2.1 Lowering Single-Reel Header, page 9](#)
- [2.2.2 Lowering Double-Reel Header, page 12](#)

2.2.1 Lowering Single-Reel Header

Reposition the header in preparation for assembly and setup as follows:

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

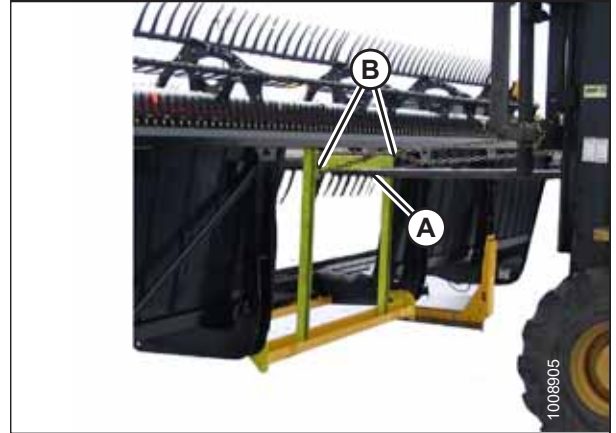


Figure 2.3: Shipping Frame

UNLOADING

CAUTION

Stand clear when lowering, as machine may swing.

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



Figure 2.4: Lowering the Header

UNLOADING

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

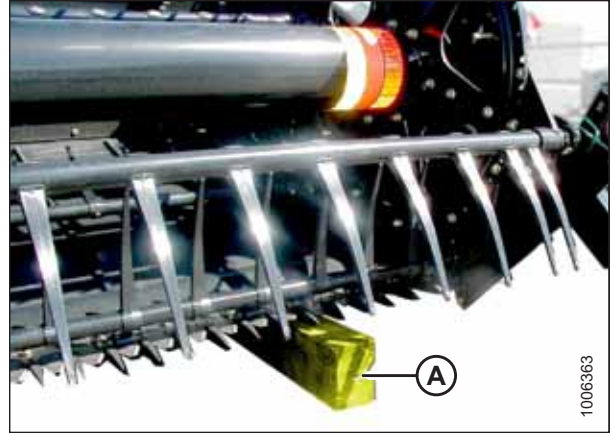


Figure 2.5: Block under Cutterbar

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

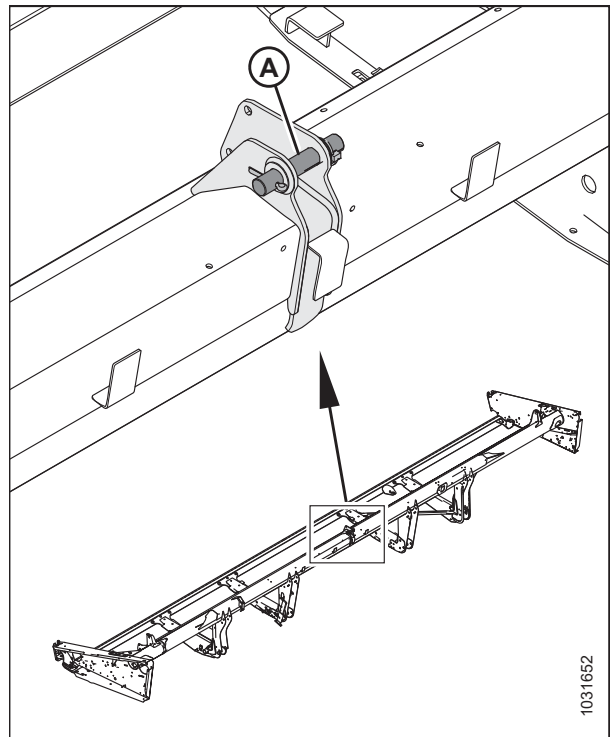


Figure 2.6: Center-link Anchor – Single-Reel

UNLOADING

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

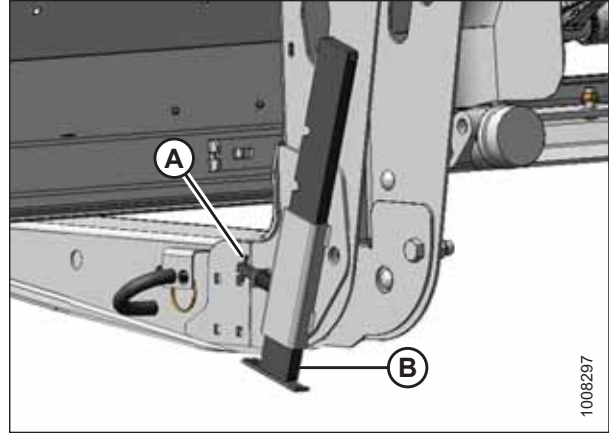


Figure 2.7: Header Stand

2.2.2 Lowering Double-Reel Header

Reposition header in preparation for assembly and setup as follows:

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



Figure 2.8: Underside of Header

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

IMPORTANT:

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

NOTE:

Right reel removed for clarity.

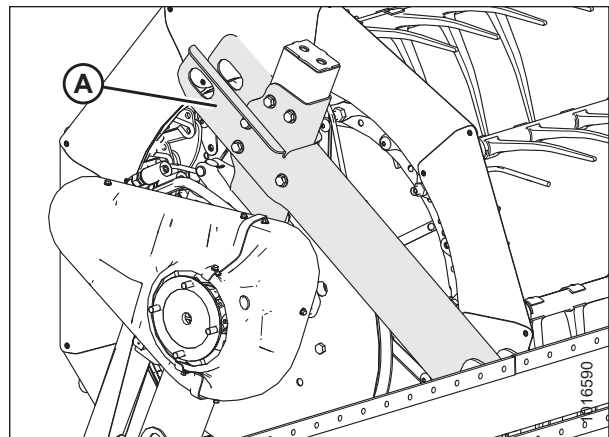


Figure 2.9: Shipping Support – Double-Reel, D1XL Shown

UNLOADING

CAUTION

Stand clear when lowering, as machine may swing.

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



Figure 2.10: Lowering the Header

UNLOADING

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

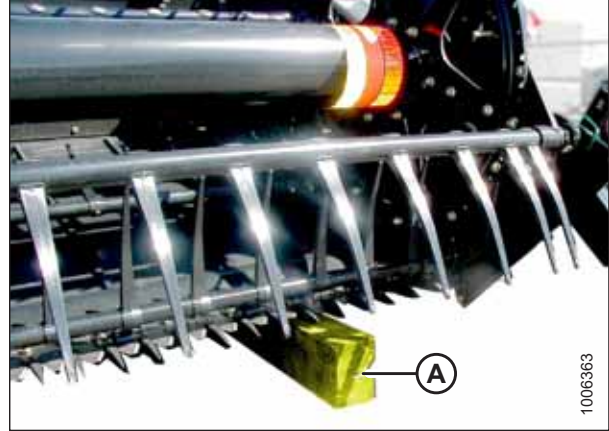


Figure 2.11: Block under Cutterbar

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

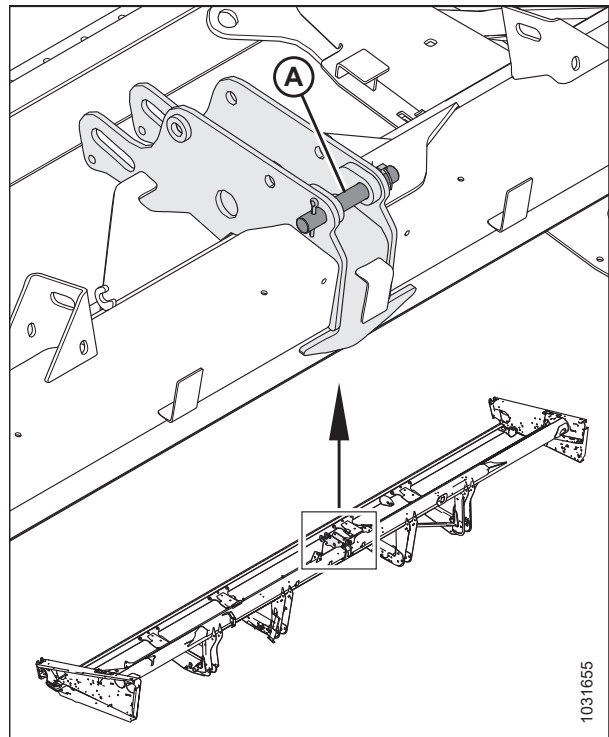


Figure 2.12: Center-Link Anchor – Double-Reel

UNLOADING

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

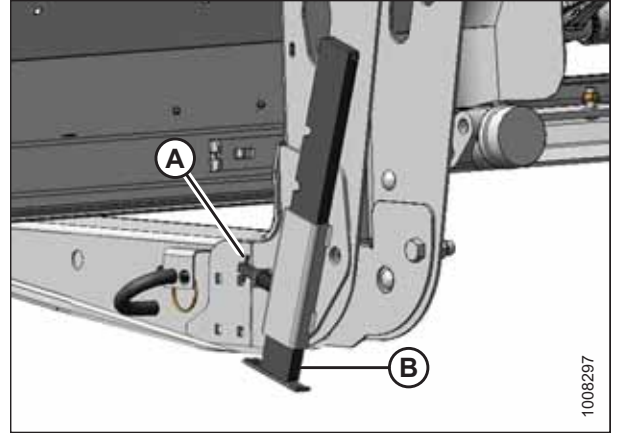


Figure 2.13: Header Stand

2.3 Removing Shipping Supports

NOTE:

Unless otherwise specified, discard all shipping materials and hardware.

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

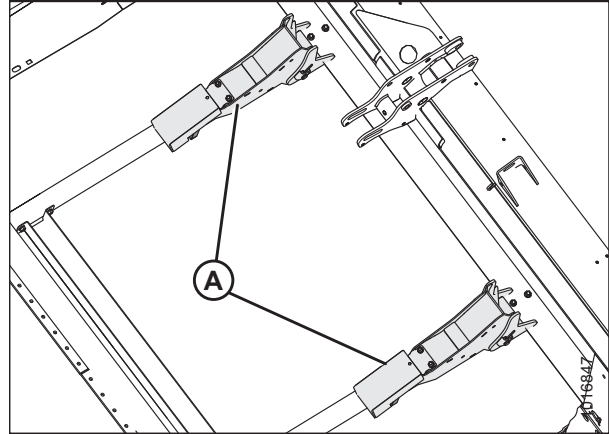


Figure 2.14: Draper Header Supports and Shipping Supports

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

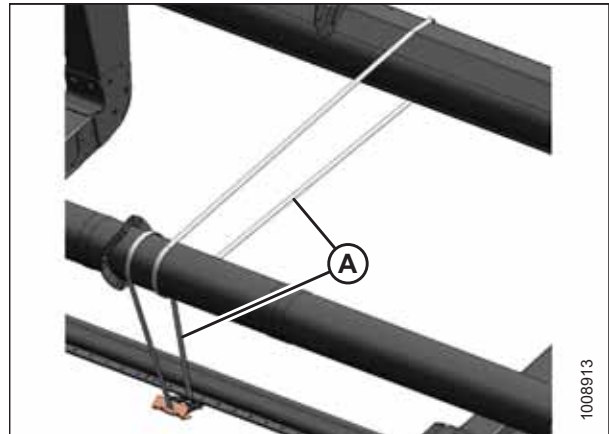


Figure 2.15: Single Reel

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

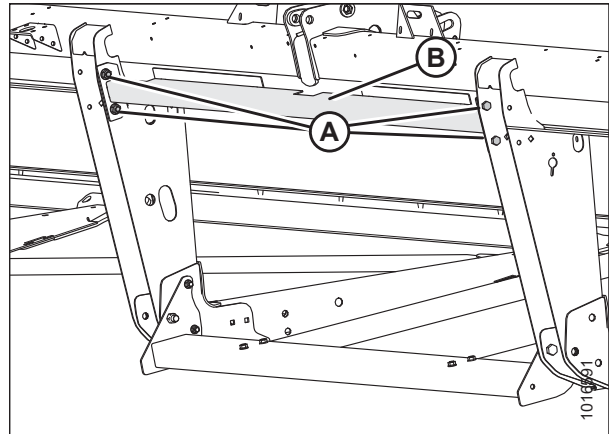


Figure 2.16: Upper Support

UNLOADING

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

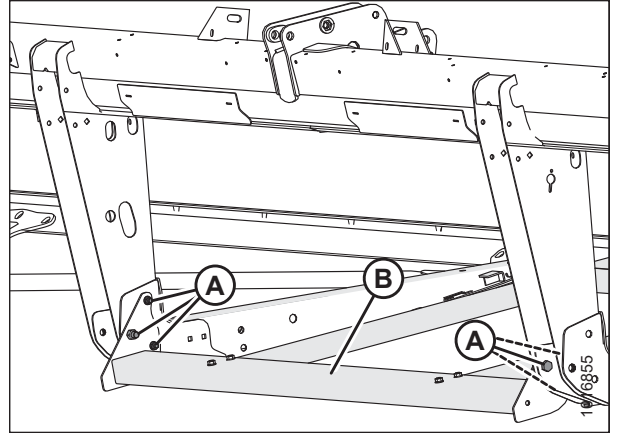


Figure 2.17: Lower Support

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

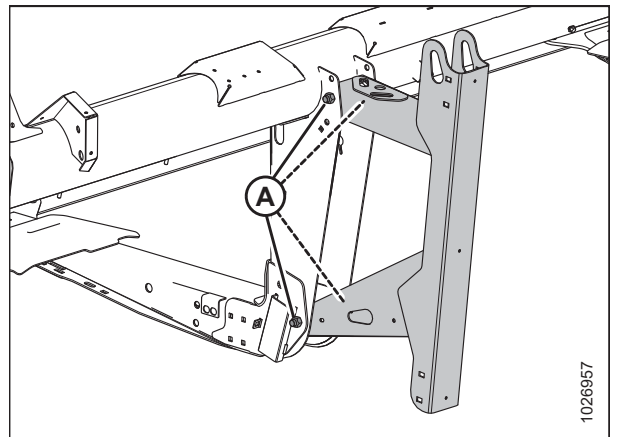


Figure 2.18: Outer Leg Shipping Support for D115X, D120X, and D125X

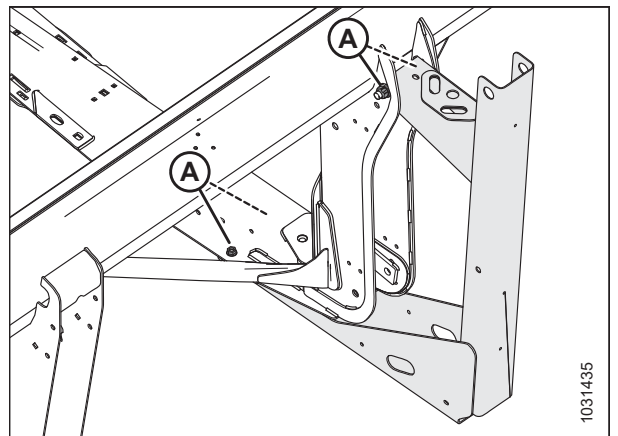


Figure 2.19: Outer Leg Shipping Support for D130XL, D135XL, D140XL, and D145XL

UNLOADING

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

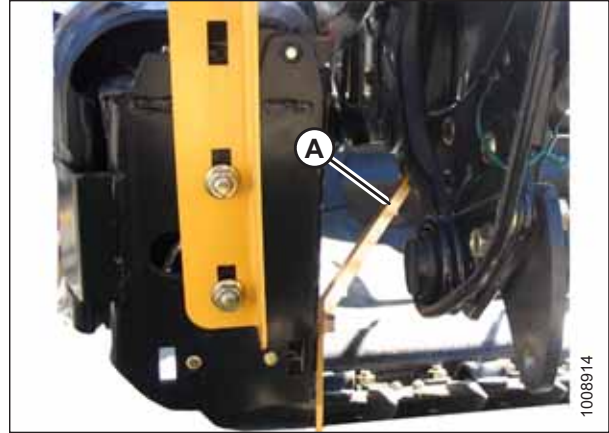


Figure 2.20: Anti-Rotation Brace

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

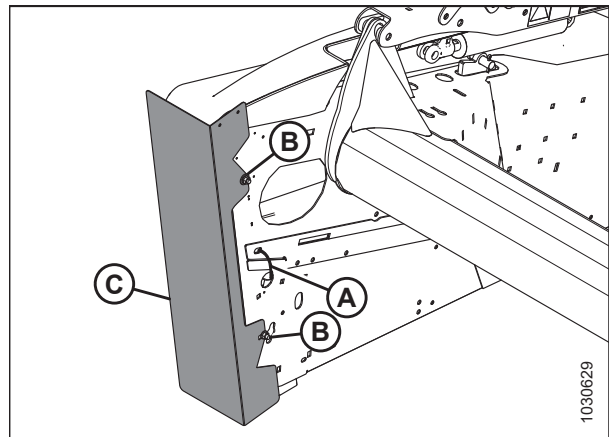


Figure 2.21: Endsheet Shipping Support

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

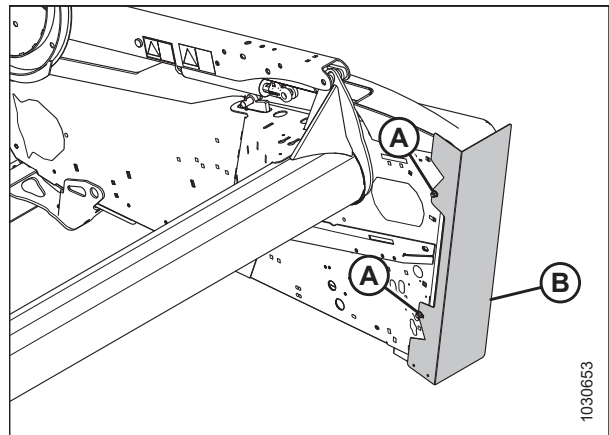


Figure 2.22: Endsheet Shipping Support

Chapter 3: Adding Ballast

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

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

Table 3.1 Available Ballast Kits for Different Header Types and Configurations

Header Type	Description	Header Configuration	Initial Rear Ballast Kit	Additional Rear Ballast Kits
D115X	4.6 m (15 ft.) single reel, double knife, timed	Base	–	–
D120X	6.1 m (20 ft.) single reel, double knife, timed	Base	–	–
D125X	7.6 m (25 ft.) single reel, double knife, timed	Base	–	–
D130XL	9.1 m (30 ft.) single reel, double knife, timed	Transport	–	–
D130XL	9.1 m (30 ft.) single reel, double knife, timed	Transport, Upper cross auger, Vertical knives	–	–
D135XL	10.6 m (35 ft.) single reel, double knife, untimed	Base	–	–
D135XL	10.6 m (35 ft.) single reel, double knife, untimed	Transport	–	–
D135XL	10.6 m (35 ft.) single reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	–	–
D135XL	10.6 m (35 ft.) double reel, double knife, untimed	Base	–	–
D135XL	10.6 m (35 ft.) double reel, double knife, untimed	Transport	–	–
D135XL	10.6 m (35 ft.) double reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	–	–
D140XL	12.2 m (40 ft.) double reel, double knife, untimed	Base	–	–
D140XL	12.2 m (40 ft.) double reel, double knife, untimed	Transport	–	–
D140XL	12.2 m (40 ft.) double reel, double knife, untimed	Transport, Upper cross auger, Vertical knives	1	–
D145XL	13.7 m (45 ft.) double reel, double knife, untimed	Base	1	–

ADDING BALLAST

Table 3.1 Available Ballast Kits for Different Header Types and Configurations (continued)

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

When the recommended fluid ballast has been added, proceed to [6 Performing Predelivery Checks, page 57](#).

Chapter 4: Attaching Header to Windrower

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

4.1 Installing the Hydraulic Hose Management System

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

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

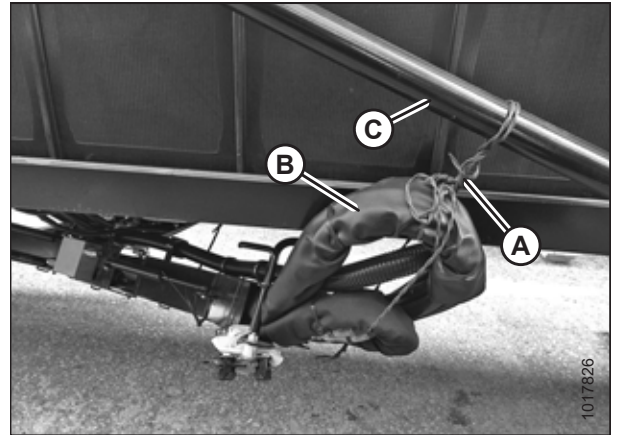


Figure 4.1: Hydraulic Hose Management System

NOTE:

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

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

NOTE:

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

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

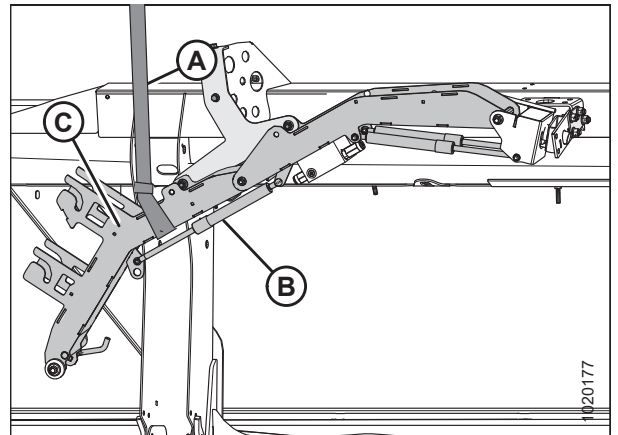


Figure 4.2: Hydraulic Hose Management System in Shipping Position

ATTACHING HEADER TO WINDROWER

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

NOTE:

Sling not shown in illustration.

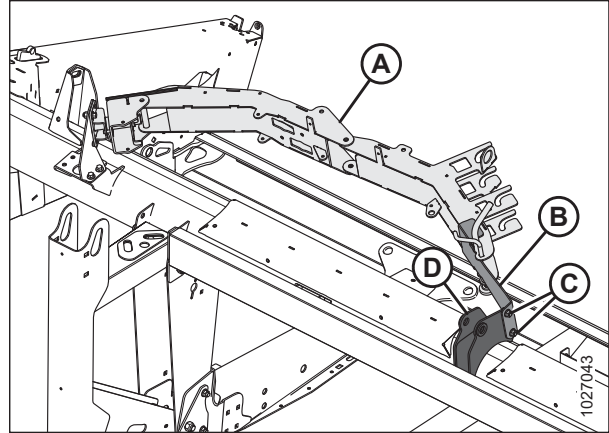


Figure 4.3: Hydraulic Hose Management System In Shipping Position – 4.6 m (15 ft.) and 6.1 m (20 ft.) Headers

5. **7.6–10.6 m (25–35 ft.) Headers:** Remove the two bolts and nuts (A) securing the base of hydraulic hose management system (B) to the frame channel (C). Retain bolts and nuts for use later.
6. Remove the other two bolts and nuts (D) from the shipping plate (E). Retain bolts and nuts for use later. Discard shipping plate (E).

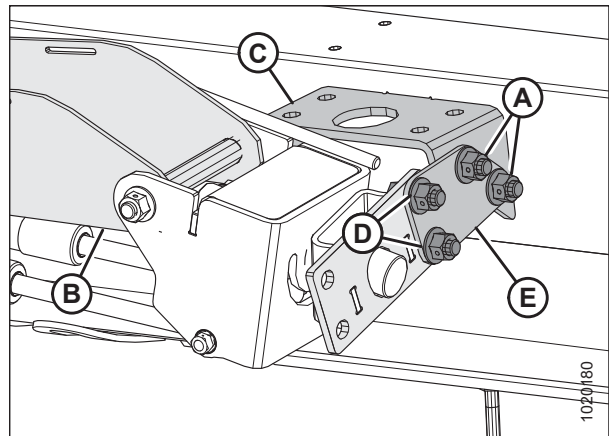


Figure 4.4: Hydraulic Hose Management System Base Frame – 7.6–10.6 m (25–35 ft.) Headers

ATTACHING HEADER TO WINDROWER

7. **4.6 m (15 ft.) and 6.1 m (20 ft.) Headers:** With the sling attached to the lifting device and supporting hydraulic hose management system (A), remove two bolts and nuts (B) securing the hydraulic hose management system to outboard shipping support (C). Retain hardware.

NOTE:

Sling not shown in illustration.

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

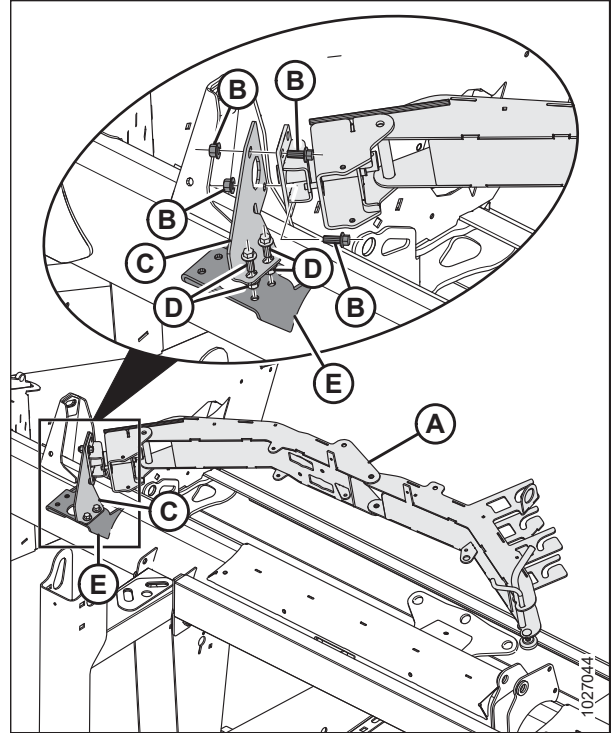


Figure 4.5: Hydraulic Hose Management System in Shipping Position – 4.6 m (15 ft.) and 6.1 m (20 ft.) Headers

9. **7.6–10.6 m (25–35 ft.) Headers:** With the sling attached to the lifting device and supporting hydraulic hose management system (A), remove two bolts and nuts (B) that secure the hydraulic hose management arm to shipping support (C).

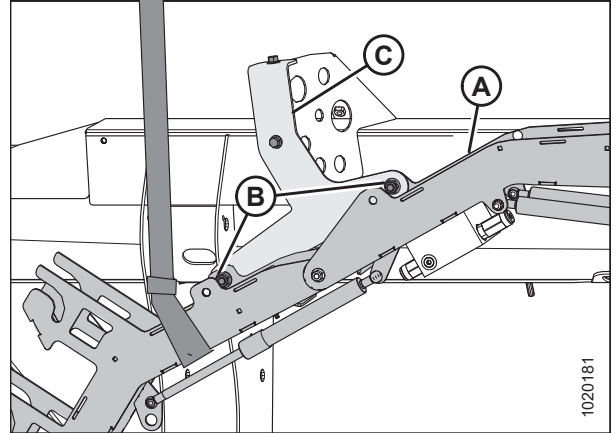


Figure 4.6: Hydraulic Hose Management System in Shipping Position – 7.6–10.6 m (25–35 ft.) Headers

ATTACHING HEADER TO WINDROWER

10. **12.2–13.7 m (40–45 ft.) Headers:** With the sling attached to the lifting device and supporting the hydraulic hose management system, cut and remove wire (A) that secures the hydraulic hose management system to channel latch on top of header frame tube.



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

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

NOTE:

Sling not shown in illustration.

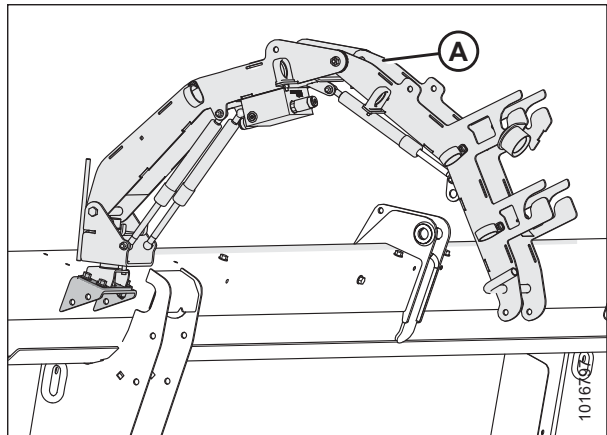


Figure 4.8: Hydraulic Hose Management System in Field Position

ATTACHING HEADER TO WINDROWER

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

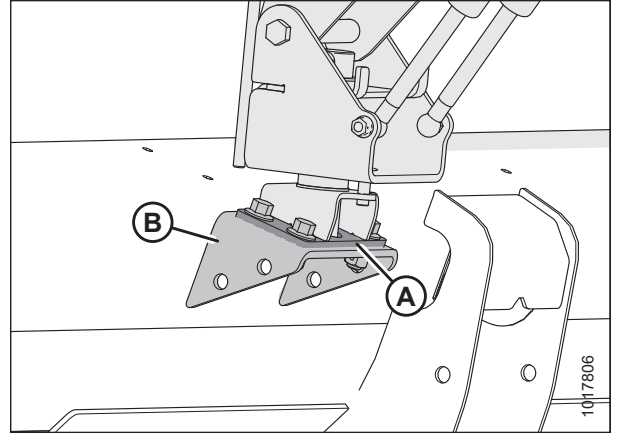


Figure 4.9: Hydraulic Hose Management System Plate Support

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

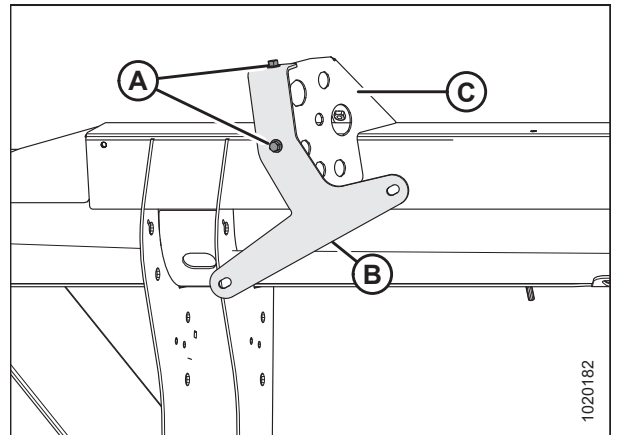


Figure 4.10: Hydraulic Hose Management System Shipping Support Bracket – 7.6–10.6 m (25–35 ft.) Headers

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

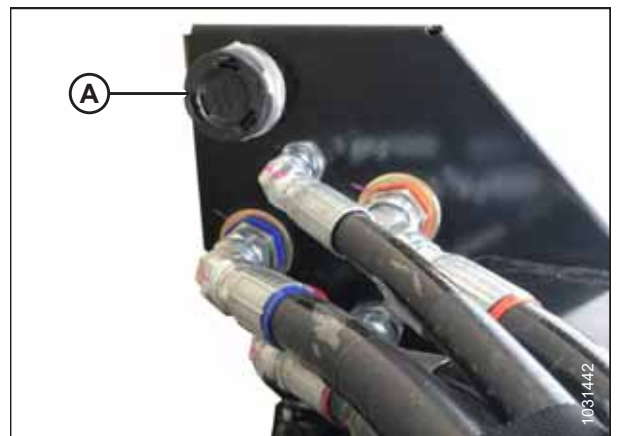


Figure 4.11: Electrical Connector on Header for Hydraulic Hose Management System

ATTACHING HEADER TO WINDROWER

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

IMPORTANT:

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

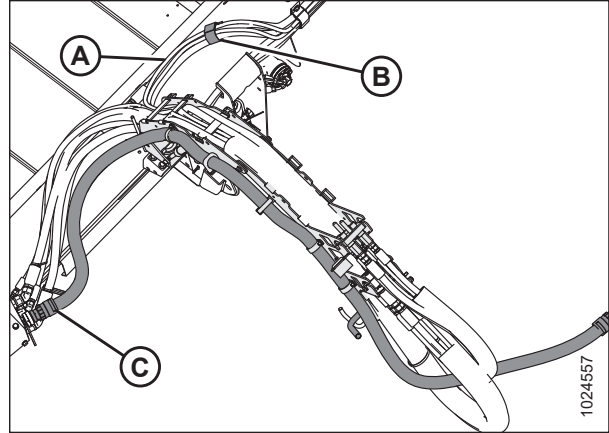


Figure 4.12: Hydraulic Hose Management System
Hose Routing – Top View

4.2 Attaching Draper Header Supports

WARNING

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

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

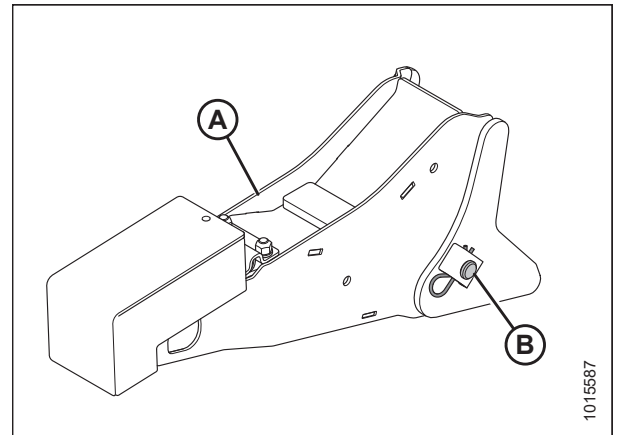


Figure 4.13: Draper Header Support

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

NOTE:

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

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

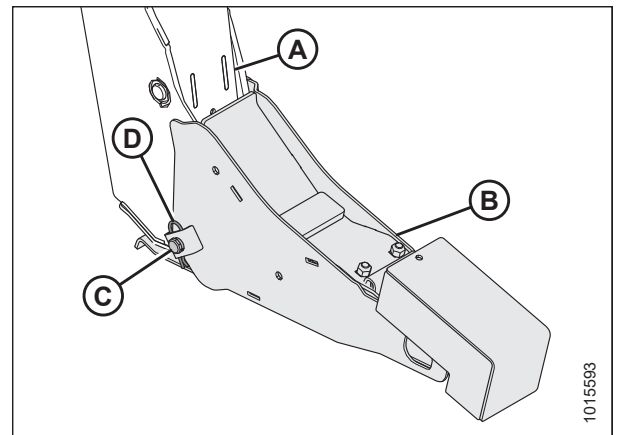


Figure 4.14: Draper Header Support

4.3 Connecting Center-Link

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

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. **For windrowers without the self-aligning center-link kit:** Relocate pin (A) in the frame linkage as required to raise the center-link (B) until the hook is above the attachment pin on the header.

IMPORTANT:

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

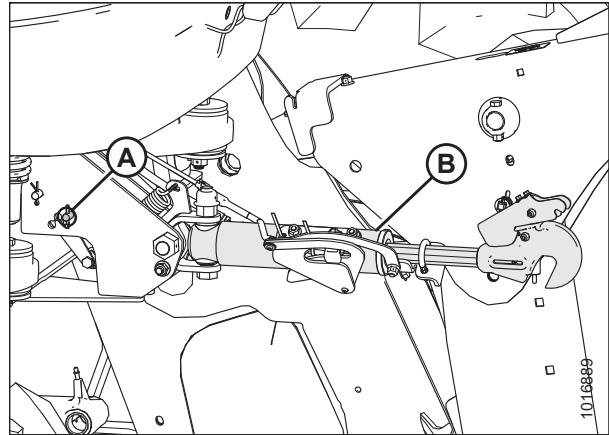


Figure 4.15: Center-Link without Self-Alignment

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

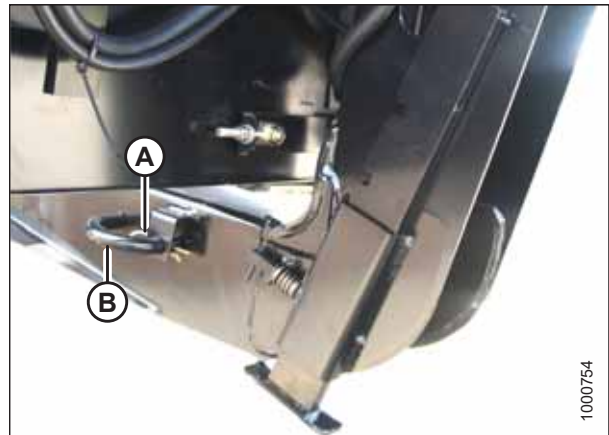


Figure 4.16: Header Leg

CAUTION

Check to be sure all bystanders have cleared the area.

4. Start the engine.

ATTACHING HEADER TO WINDROWER

CAUTION

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

NOTE:

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

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

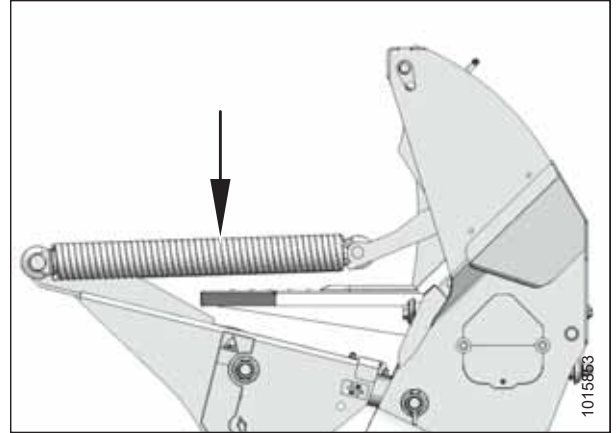


Figure 4.17: Header Float Springs



Figure 4.18: HPT Display



Figure 4.19: HPT Display

ATTACHING HEADER TO WINDROWER

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

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

IMPORTANT:

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

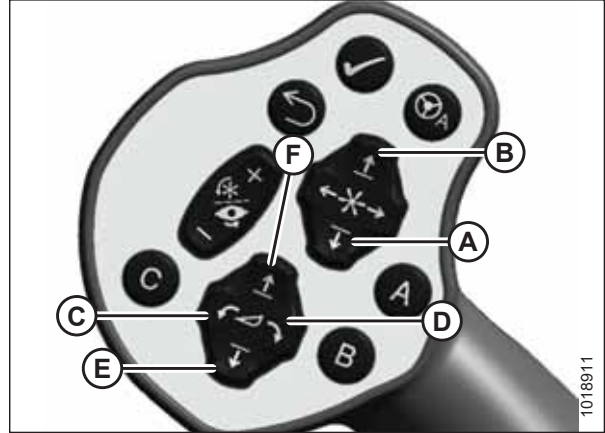


Figure 4.20: GSL Switches

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

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

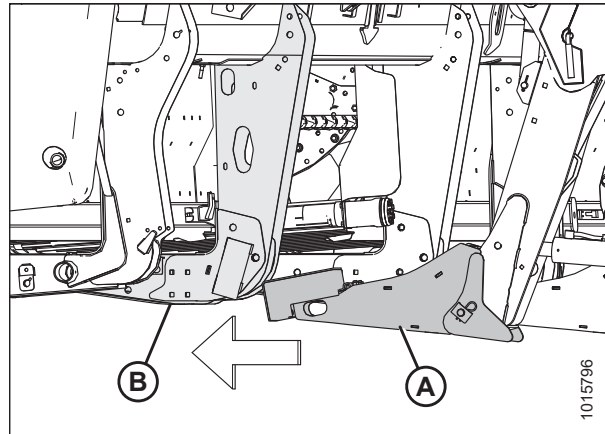


Figure 4.21: Header Leg and Draper Header Support

11. Self-Aligning Hydraulic Center-Link:

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

IMPORTANT:

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

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

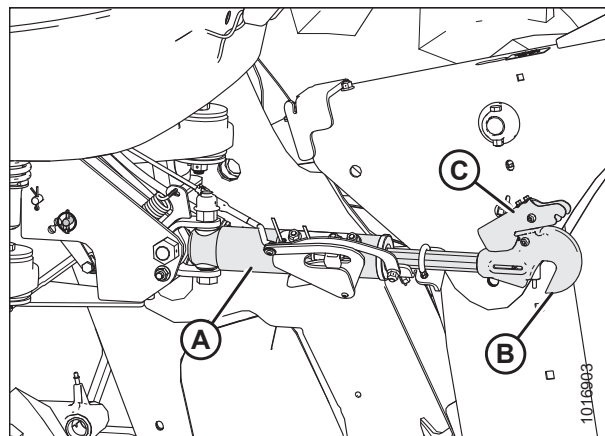


Figure 4.22: Hydraulic Center-Link

ATTACHING HEADER TO WINDROWER

12. Hydraulic Center-Link without Self-Alignment:

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

IMPORTANT:

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

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



CAUTION

Check to be sure all bystanders have cleared the area.

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

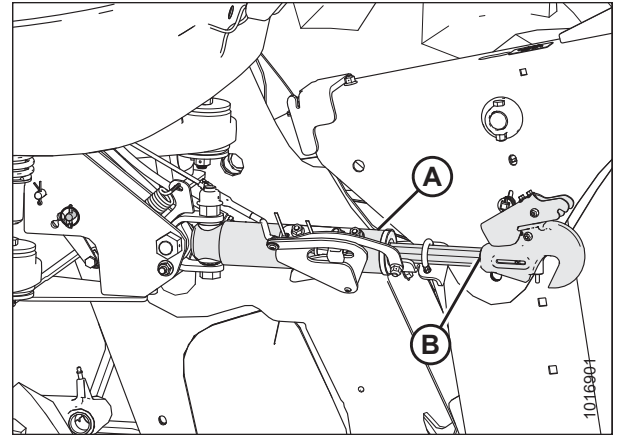


Figure 4.23: Hydraulic Center-Link



Figure 4.24: GSL

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

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

IMPORTANT:

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

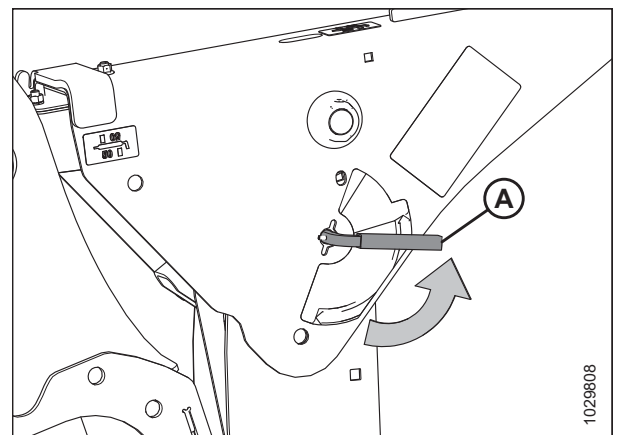


Figure 4.25: Safety Prop Lever

ATTACHING HEADER TO WINDROWER

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

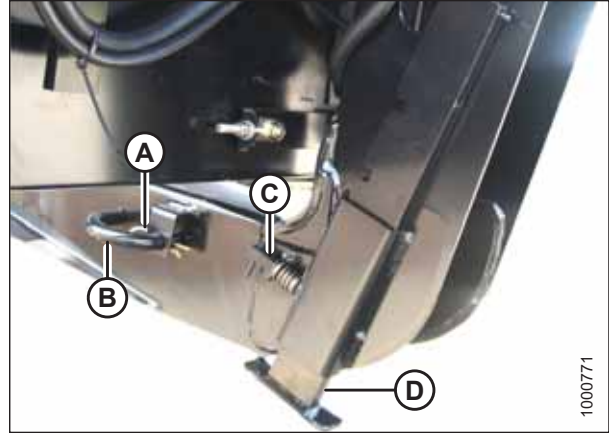


Figure 4.26: Header Leg

18. Disengage the safety props on both lift cylinders as follows:

NOTE:

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

- a. Turn lever (A) away from the header to raise the safety prop until the lever locks into the vertical position.
- b. Repeat for the opposite cylinder.

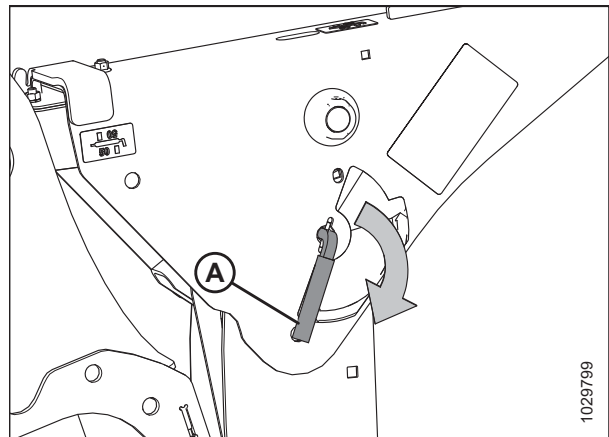


Figure 4.27: Safety Prop Lever

 **CAUTION**

Check to be sure all bystanders have cleared the area.

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

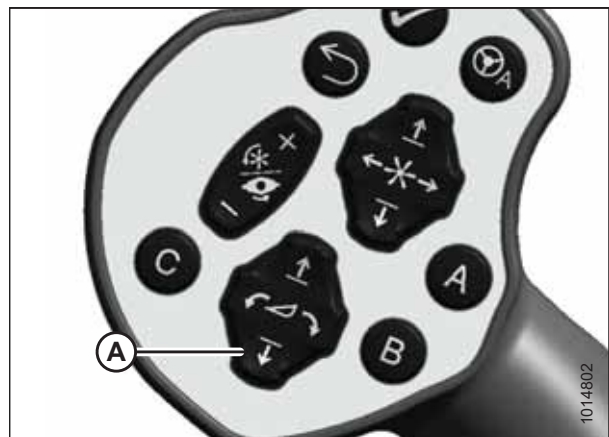


Figure 4.28: GSL

4.4 Connecting Hydraulics

IMPORTANT:

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

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

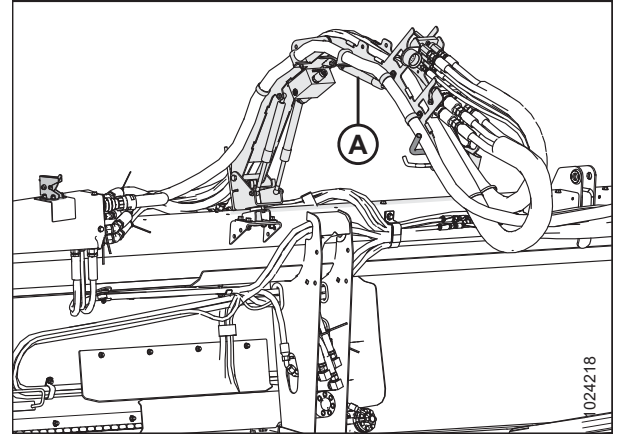


Figure 4.29: Hydraulic Hose Management System

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

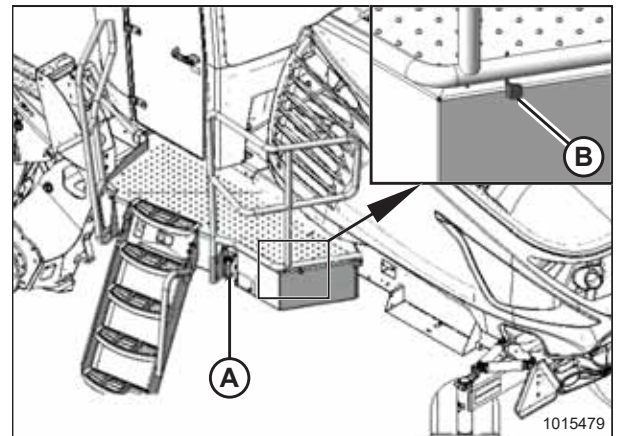


Figure 4.30: Platform

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

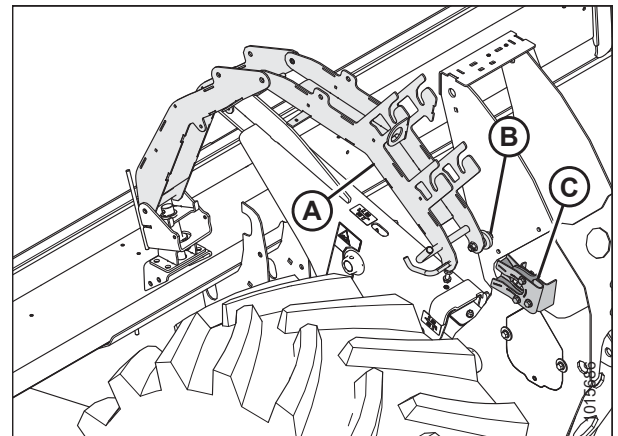


Figure 4.31: Hydraulic Hose Management System

ATTACHING HEADER TO WINDROWER

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

NOTE:

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

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

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

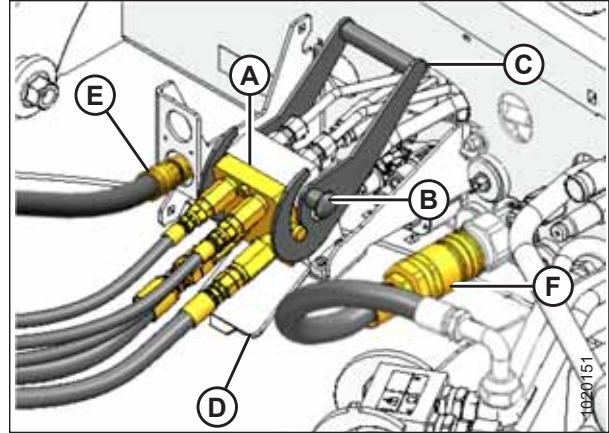


Figure 4.32: Draper/Reel Multicoupler

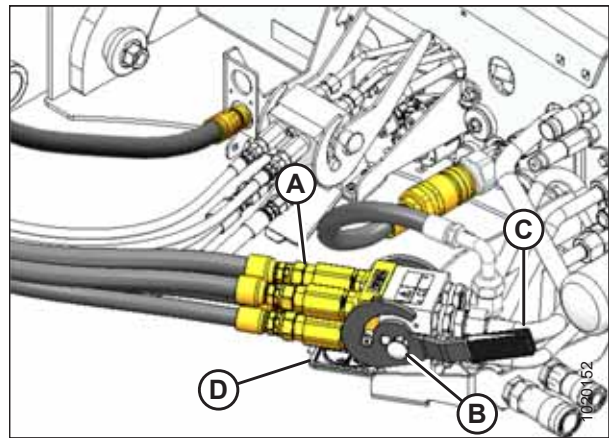


Figure 4.33: Knife/Reel Drive Multicoupler

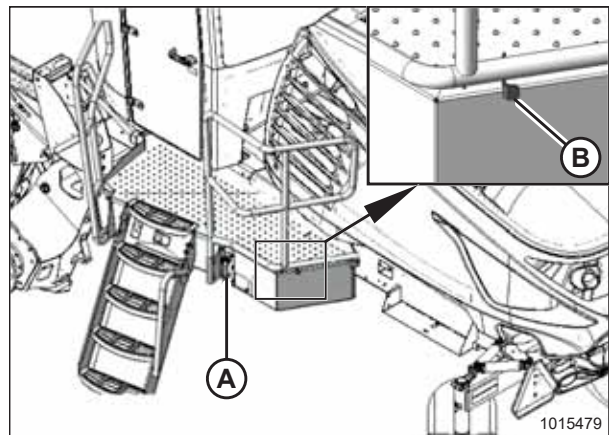


Figure 4.34: Platform

ATTACHING HEADER TO WINDROWER

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

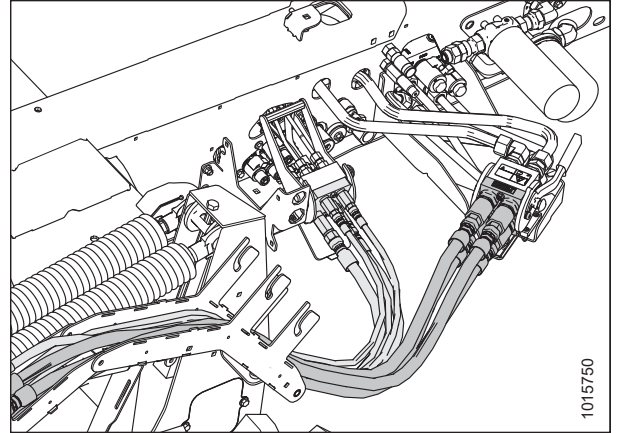


Figure 4.35: Hydraulic Multicouplers and Hose Routing

Chapter 5: Assembling the Header

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

5.1 Positioning Transport Lights

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

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

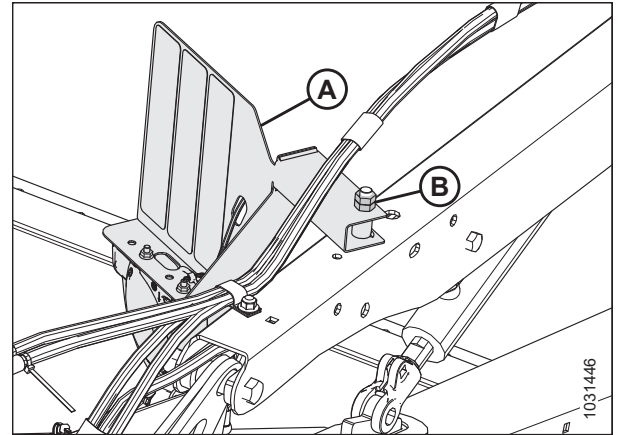


Figure 5.1: Right Light Assembly in Shipping Position – D1X Headers

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

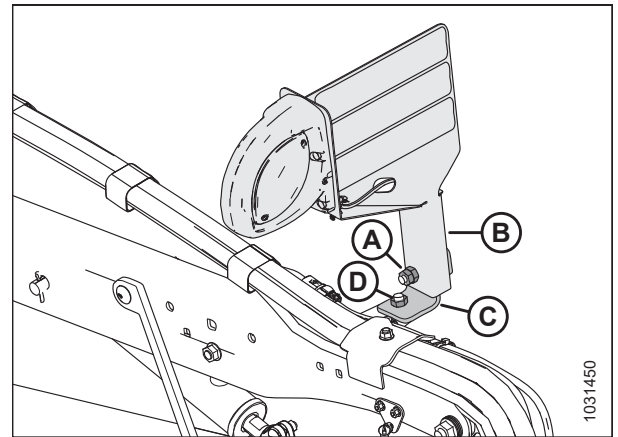


Figure 5.2: Right Light Assembly in Shipping Position – D1XL Headers

ASSEMBLING THE HEADER

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

NOTE:

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

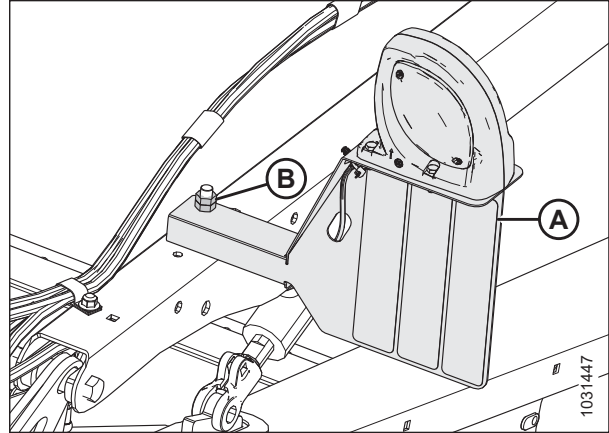


Figure 5.3: Right Transport Light – D1X Headers

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

NOTE:

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

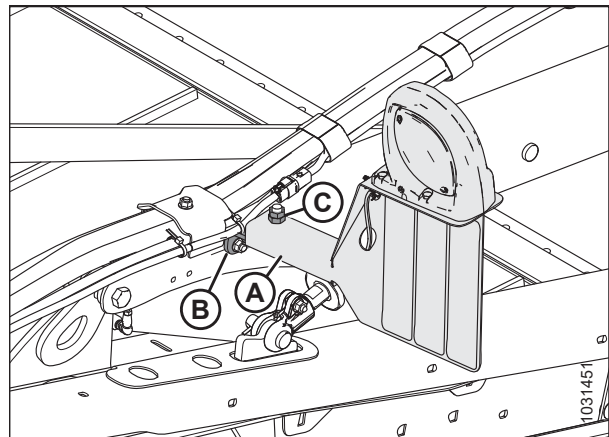


Figure 5.4: Right Transport Light – D1XL Headers

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

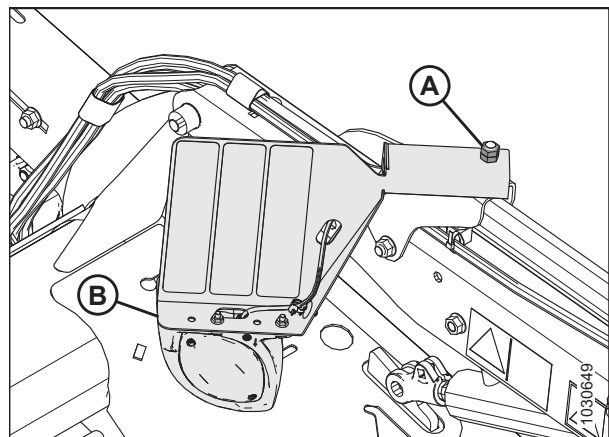


Figure 5.5: Left Light Assembly in Shipping Position

ASSEMBLING THE HEADER

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

NOTE:

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

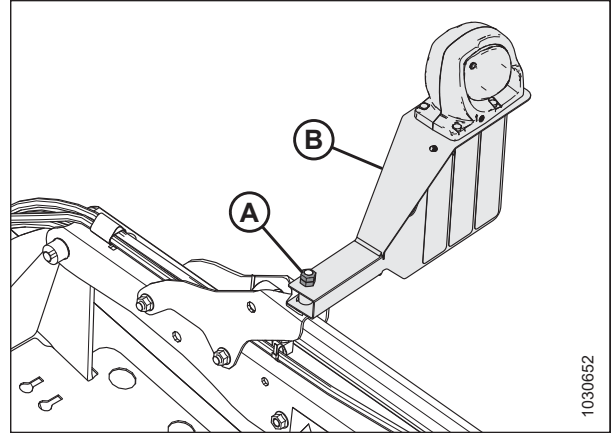


Figure 5.6: Left Transport Light

5.2 Attaching Reel Lift Cylinders

CAUTION

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

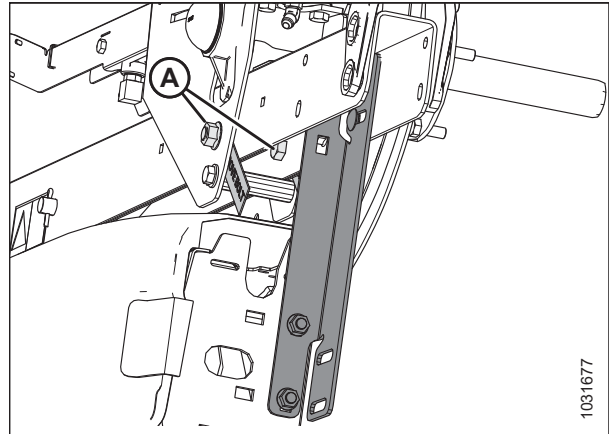


Figure 5.7: Reel Right Arm – Single Reel for D1X is Shown, D1XL is Similiar

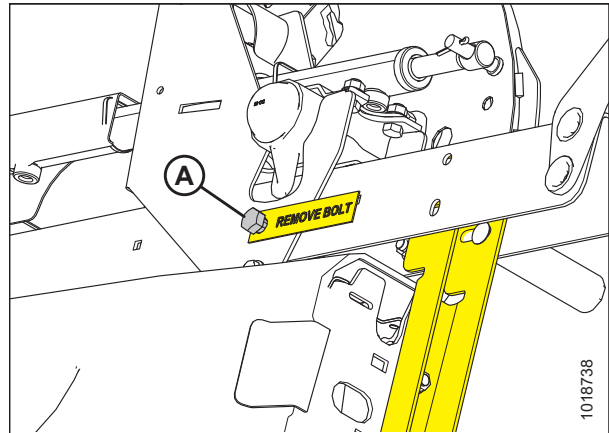


Figure 5.8: Reel Right Arm – Double Reel, D1XL Only

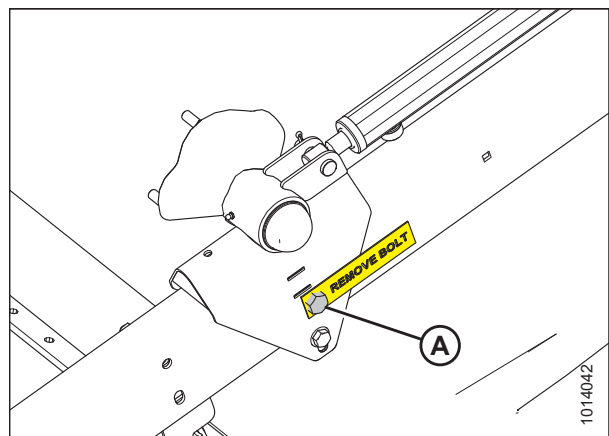


Figure 5.9: Left Reel Arm

ASSEMBLING THE HEADER

NOTE:

Some parts have been removed from the illustration for clarity.

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

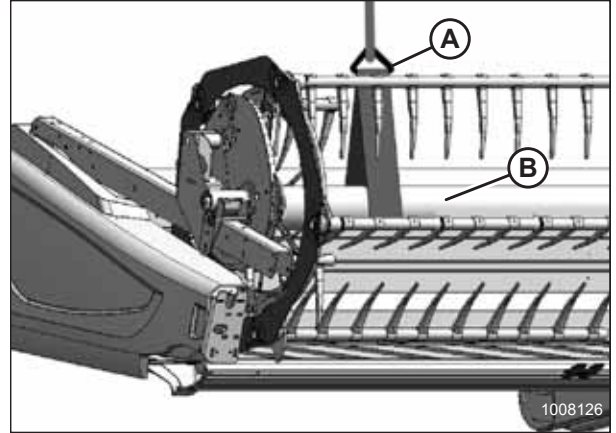


Figure 5.10: Reel Tube

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

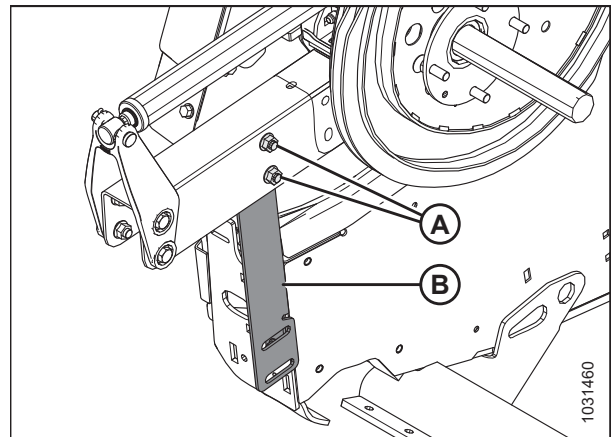


Figure 5.11: Outboard Reel Arm Support – D1X Header Shown

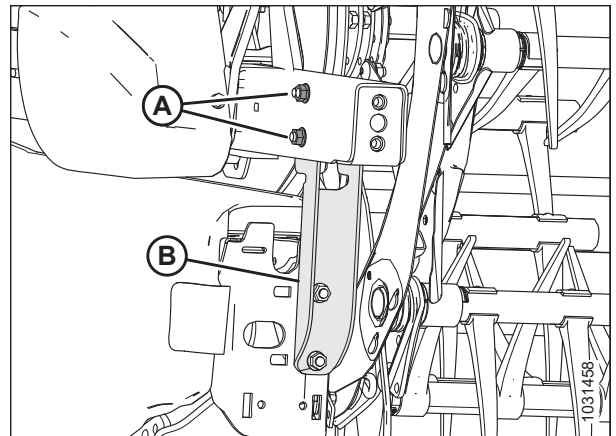


Figure 5.12: Outboard Reel Arm Support – D1XL Header Shown

ASSEMBLING THE HEADER

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

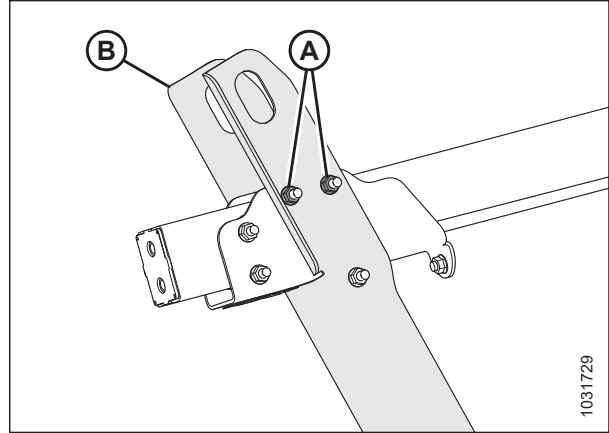


Figure 5.13: Center Reel Arm – Double Reel Only, D1XL Only

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

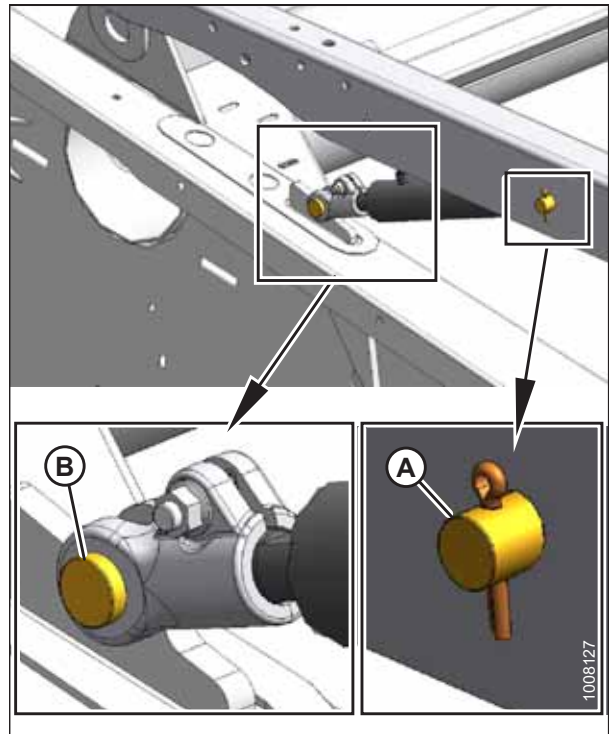


Figure 5.14: Right Reel Lift Cylinder

ASSEMBLING THE HEADER

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

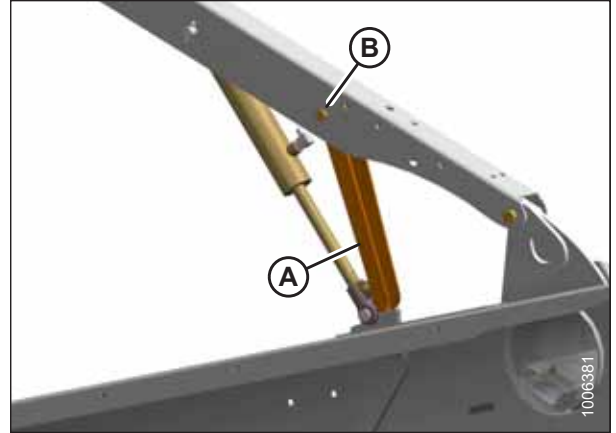


Figure 5.15: Reel Safety Props

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

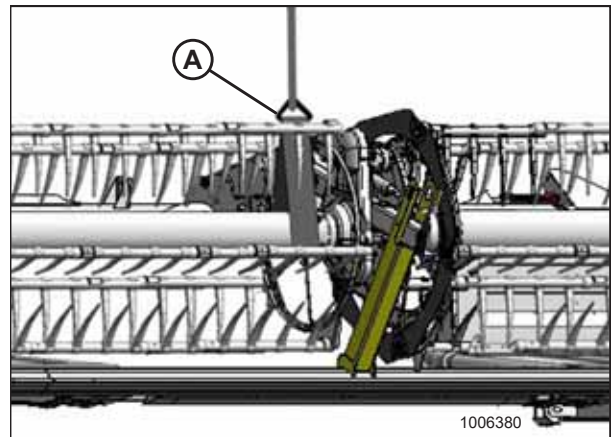


Figure 5.16: Lifting the Reel – Double Reel Only

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

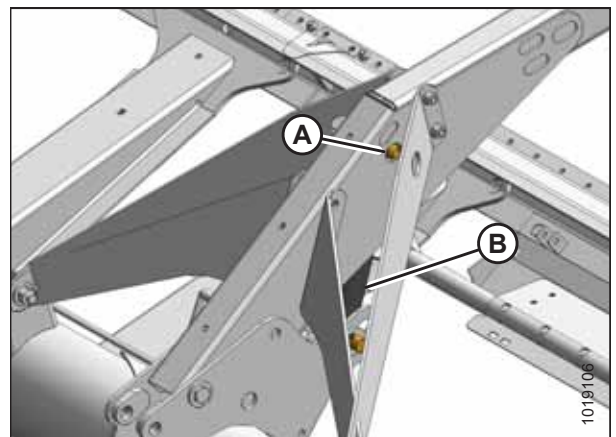


Figure 5.17: Reel Arm Braces

ASSEMBLING THE HEADER

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

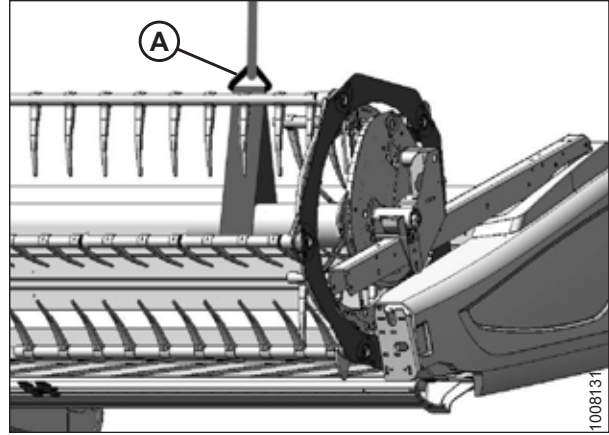


Figure 5.18: Outboard Reel Arm

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

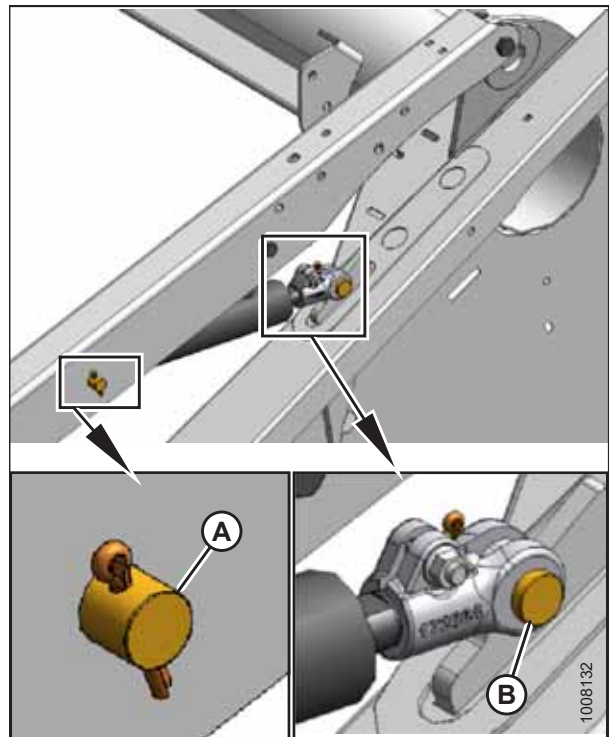


Figure 5.19: Left Reel Lift Cylinder

ASSEMBLING THE HEADER

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

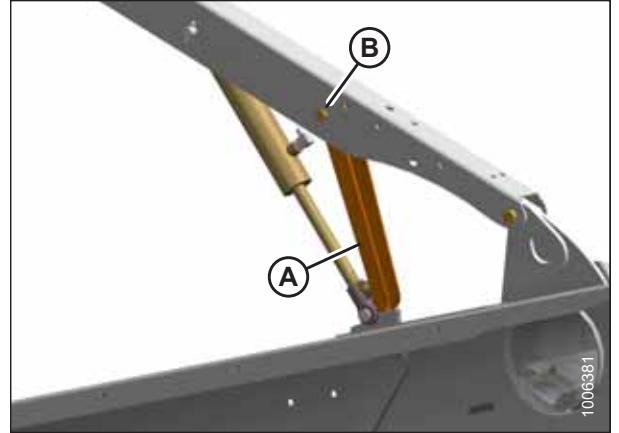


Figure 5.20: Reel Safety Prop

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

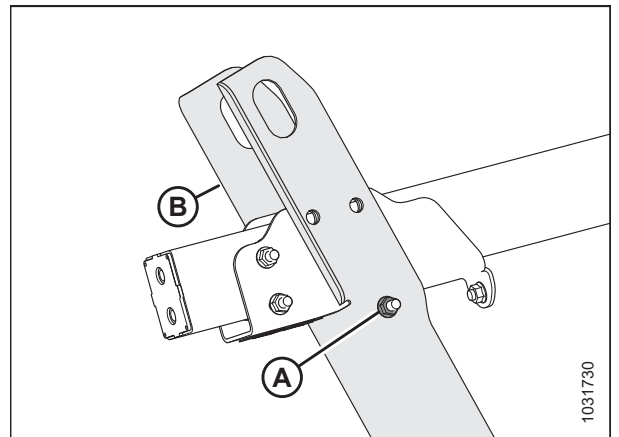


Figure 5.21: Center Reel Arm Shipping Support

ASSEMBLING THE HEADER

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

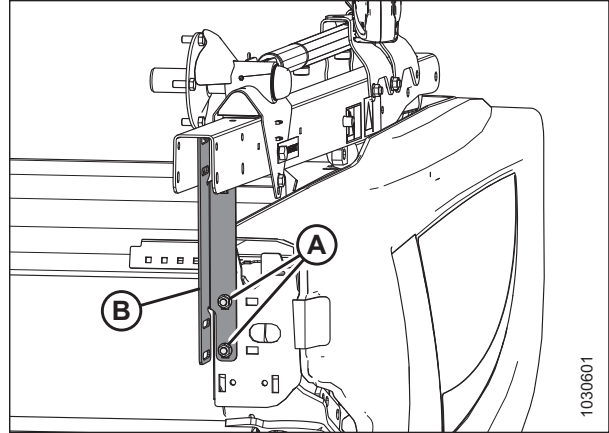


Figure 5.22: Outboard Reel Arm Supports – D1X Header Shown

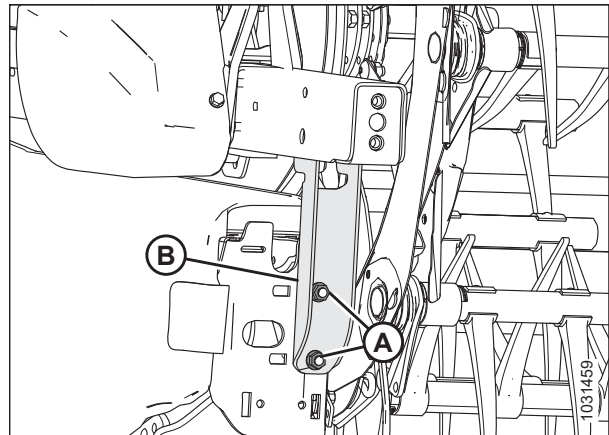


Figure 5.23: Outboard Reel Arm Supports – D1XL Header Shown

ASSEMBLING THE HEADER

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

NOTE:

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

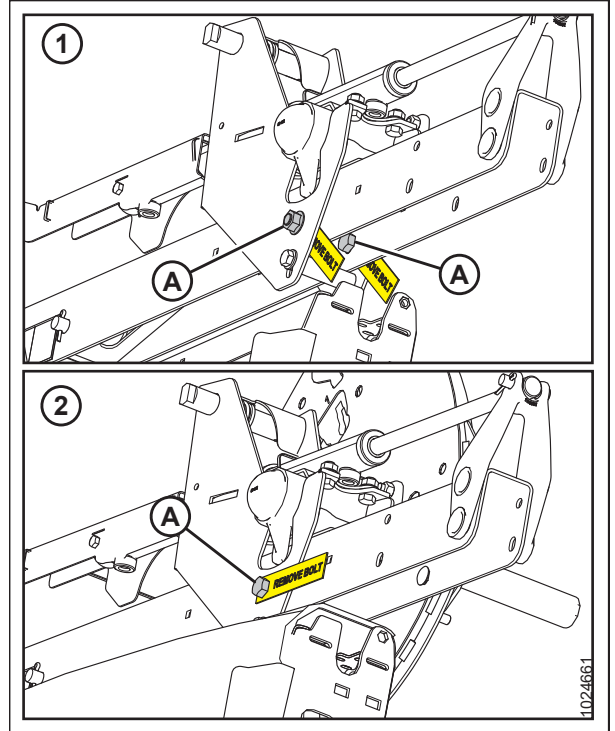


Figure 5.24: Right Reel Arm

1 - Single Reel

2 - Double Reel

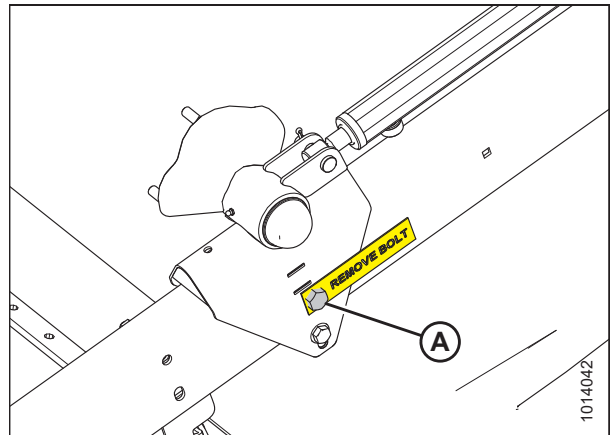


Figure 5.25: Left Reel Arm

ASSEMBLING THE HEADER

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

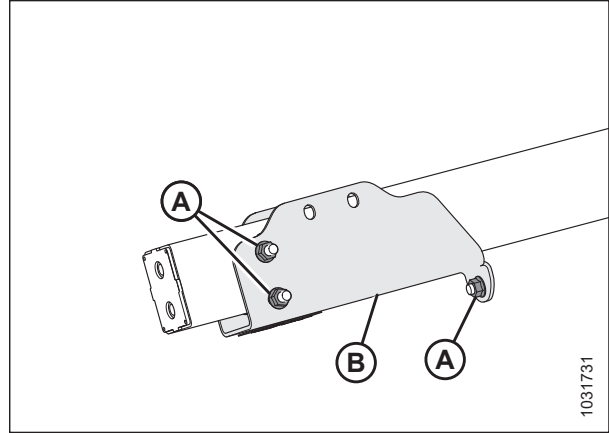


Figure 5.26: Center Reel Arm Shipping Channel – Double-Reel Only, D1XL Only

5.3 Installing Disc Segments of Outboard Reel Endshields

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

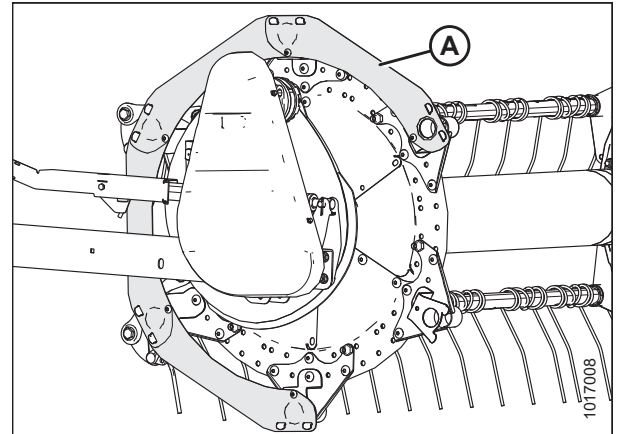


Figure 5.27: Partially Installed Reel Endshield – Cam End Shown, Tail End Similar

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

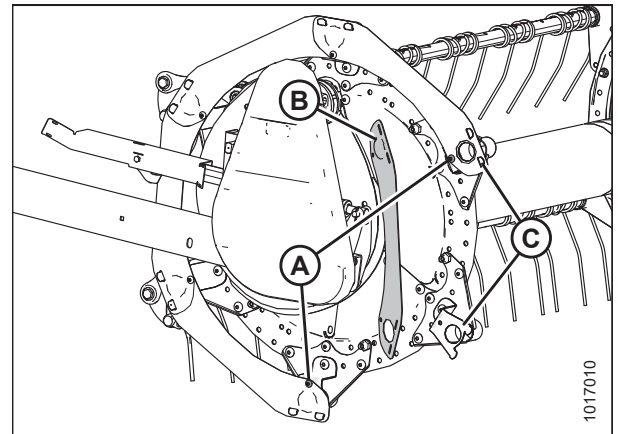


Figure 5.28: Reel Endshield

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

NOTE:

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

7. Repeat the procedure at the opposite side.

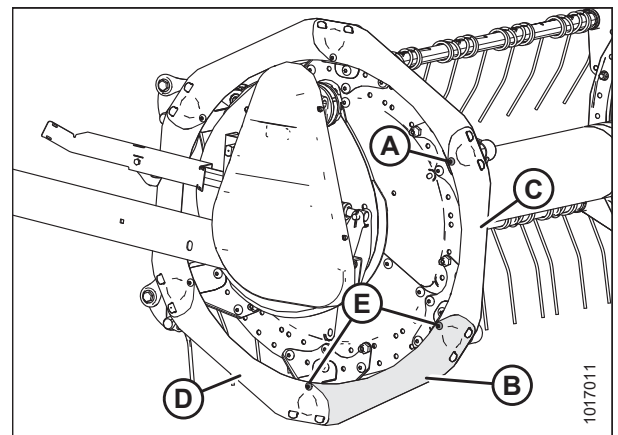


Figure 5.29: Reel Endshield

5.4 Attaching Cam Arms

To attach the reel cam arms, follow these steps:

NOTE:

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

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



Figure 5.30: Cam Arm in Shipping Position

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

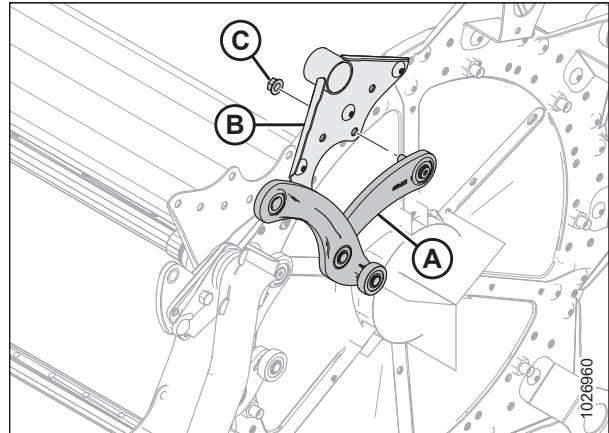


Figure 5.31: Cam Arm Assembly

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

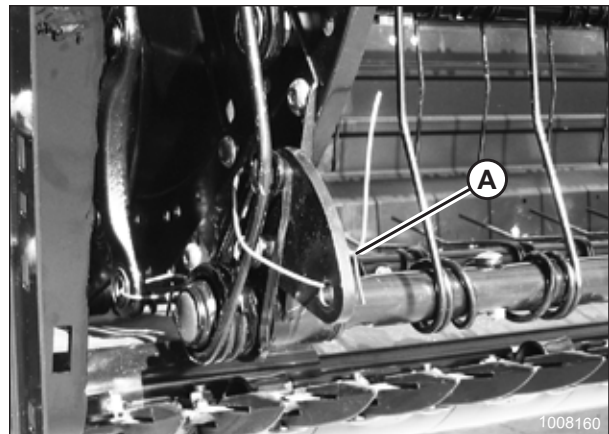


Figure 5.32: Disconnected Cam Links and Shipping Wire

ASSEMBLING THE HEADER

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

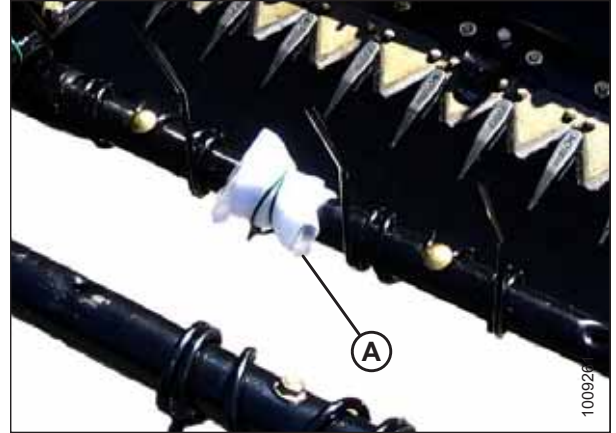


Figure 5.33: Hardware Bag Right Reel

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

IMPORTANT:

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

NOTE:

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

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

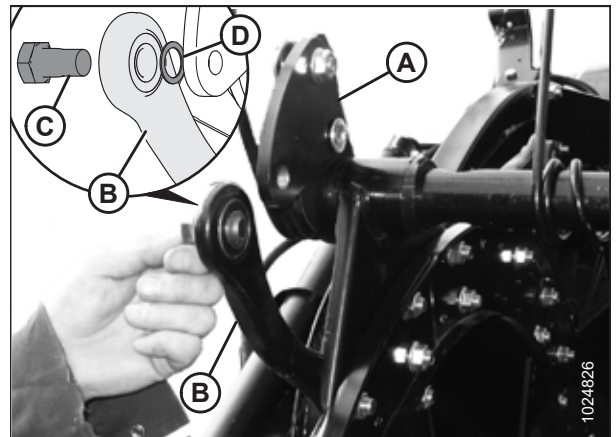


Figure 5.34: Bar Crank Attachment Holes and Link Alignment

5.5 Installing Crop Dividers

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

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

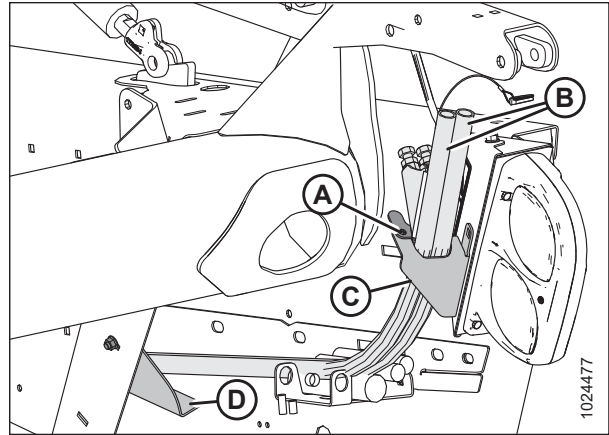


Figure 5.35: Divider Rods on Endsheet

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

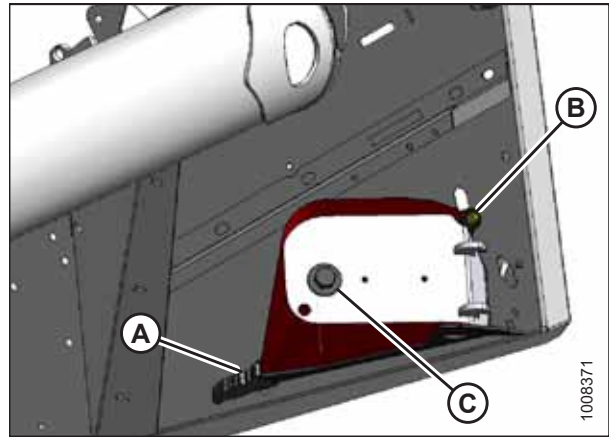


Figure 5.36: Crop Divider on Endsheet

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

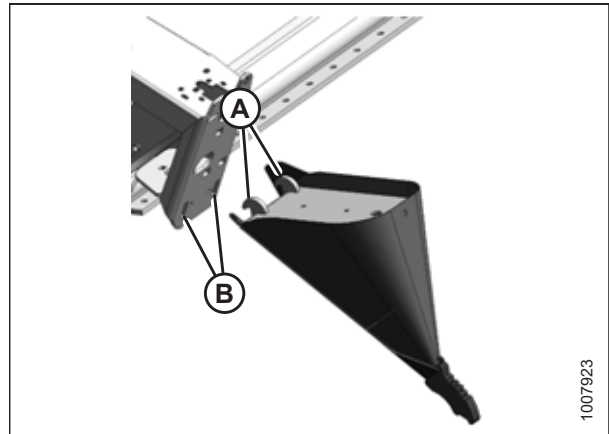


Figure 5.37: Crop Divider Lugs and Endsheet Slots

ASSEMBLING THE HEADER

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

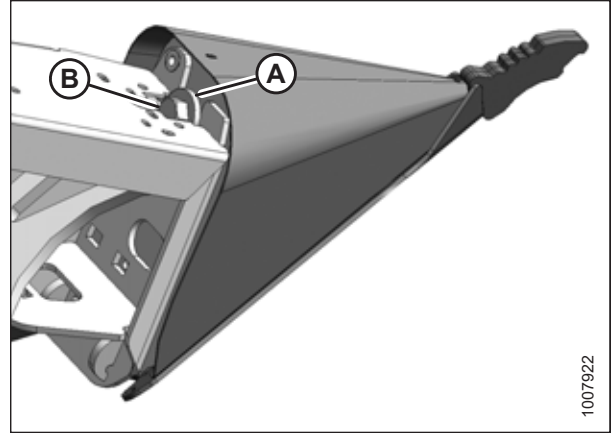


Figure 5.38: Installing Divider

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

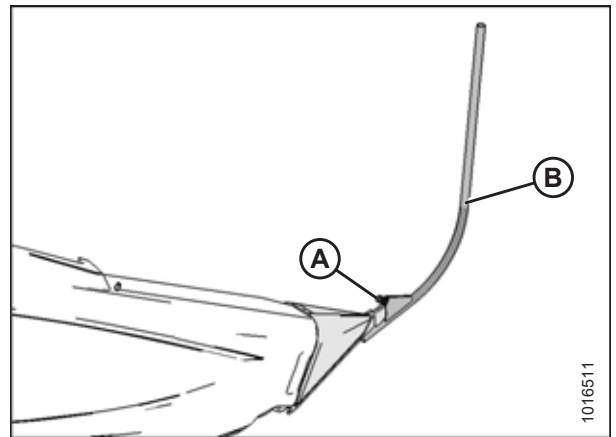


Figure 5.39: Divider Rod on Crop Divider

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

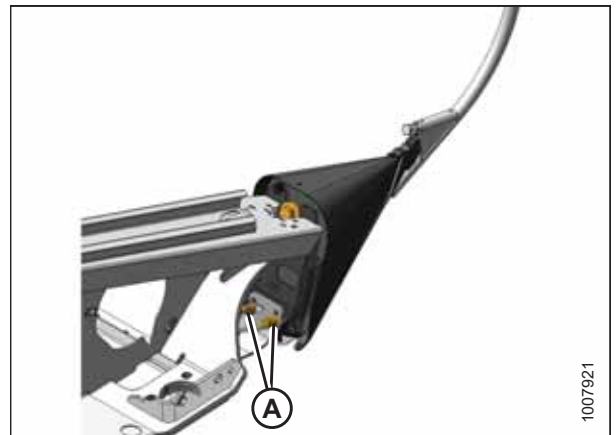


Figure 5.40: Adjustment Hardware

5.6 Attaching Reel Height Sensor – D1XL Headers

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

NOTE:

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

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

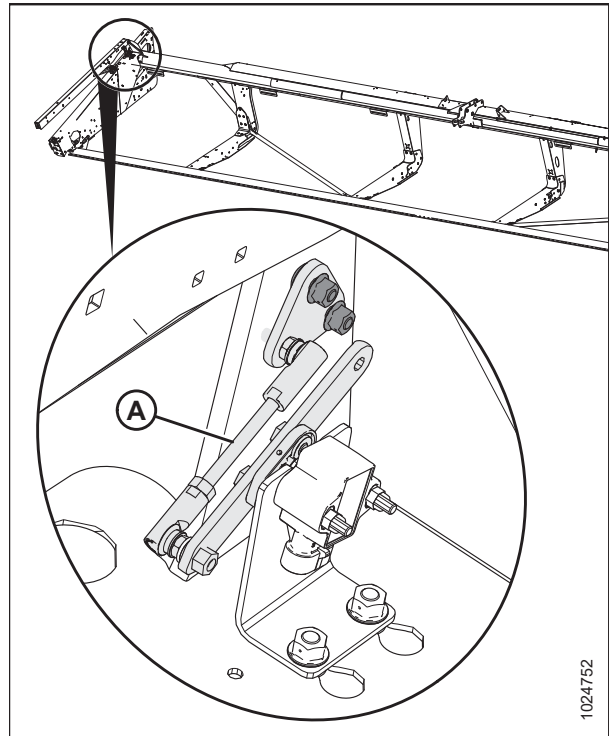


Figure 5.41: Reel Height Sensor – Disconnected

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

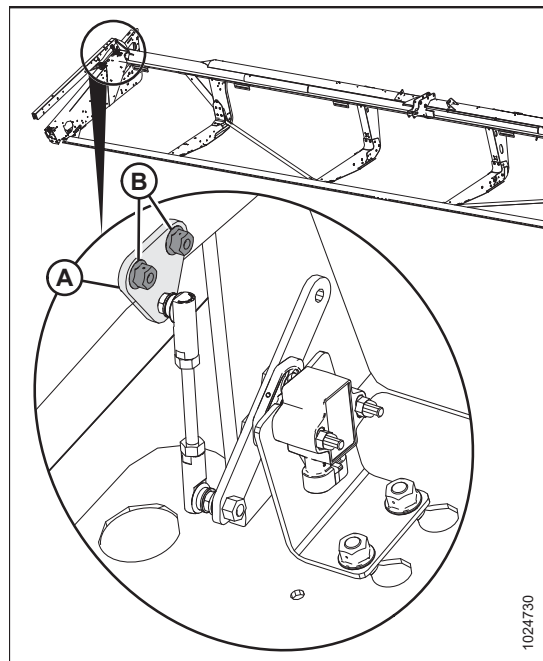


Figure 5.42: Reel Height Sensor

5.7 Installing Options

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

Chapter 6: Performing Predelivery Checks

This machine has been set at the factory and should not require further adjustments; however, the following checks will ensure your machine provides maximum performance. If adjustments are necessary, follow the procedures in this chapter.



WARNING

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

IMPORTANT:

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

1. Shut down the engine, and remove the key from the ignition.
2. Perform the final checks as listed on the **Predelivery Checklist** (yellow sheet attached to this instruction – *Predelivery Checklist, page 111*) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the Checklist. The completed Checklist should be retained by either the Operator or the Dealer.

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

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

Table 6.1 Tire Inflation Pressure

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

IMPORTANT:

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

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

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

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

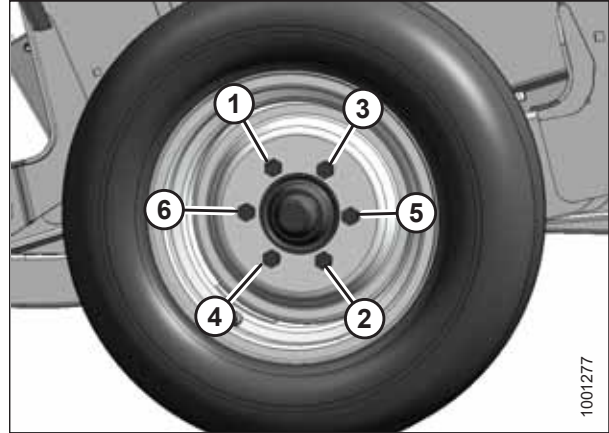


Figure 6.1: Sequence for Tightening Bolts

6.3 Checking Knife Drive Box

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

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Press down on latch (A) in the opening on the inboard side of the endsheet.
3. Pull endshield open using handle depression (B).

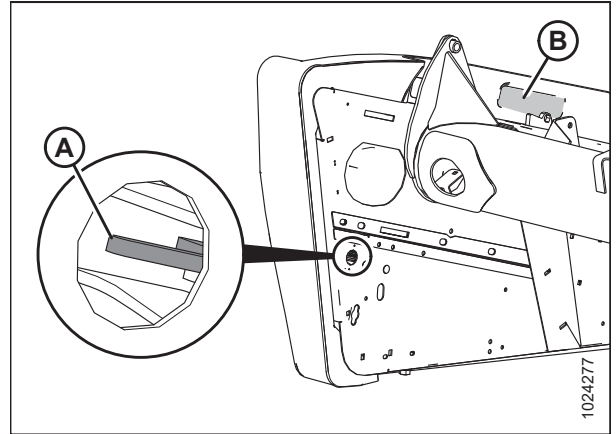


Figure 6.2: Endshield Latch Access

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

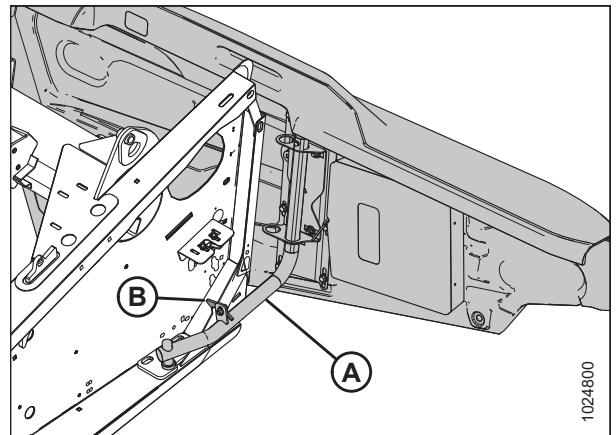


Figure 6.3: Left Endshield Support Tube

PERFORMING PREDELIVERY CHECKS

IMPORTANT:

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

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

NOTE:

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

7. Reinstall breather and tighten.

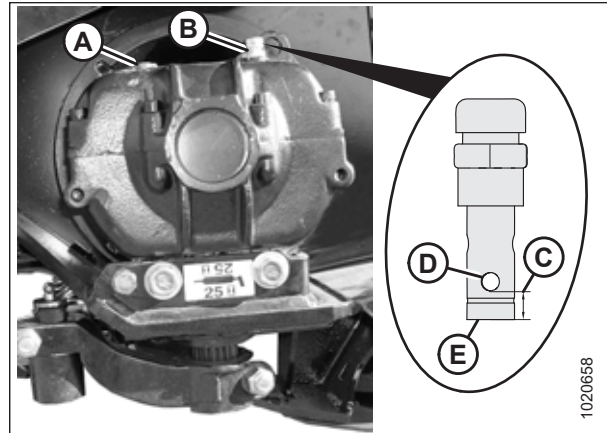


Figure 6.4: Knife Drive Box

6.4 Checking and Adjusting Knife Drive Belt Tension

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

- 6.4.1 *Checking and Tensioning Untimed Double-Knife Drive Belts, page 61*
- 6.4.2 *Tensioning Timed Double-Knife Drive Belts, page 61*
- 6.4.3 *Tensioning Timed Knife Drive V-Belts, page 63*

Double-knife headers have two knife-drive belts.

6.4.1 Checking and Tensioning Untimed Double-Knife Drive Belts

IMPORTANT:

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

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

NOTE:

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

3. Check drive belt tension. A properly tensioned drive belt (C) should deflect 24–28 mm (15/16–1 1/8 in.) when 133 N (30 lbf) of force is applied at the midspan.
4. If the belt needs to be tensioned, turn adjuster bolt (B) clockwise to move the drive motor until proper tension is set.

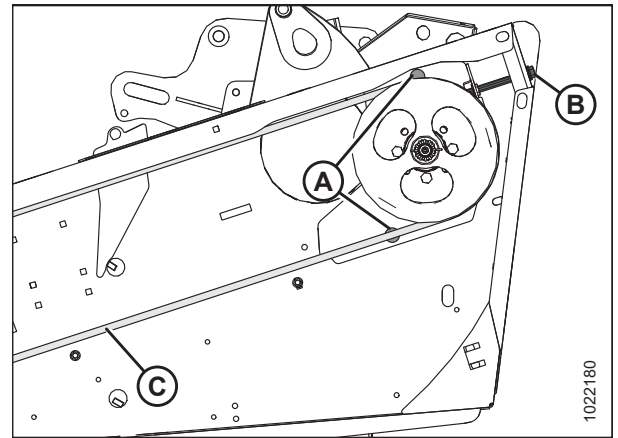


Figure 6.5: Knife Drive

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

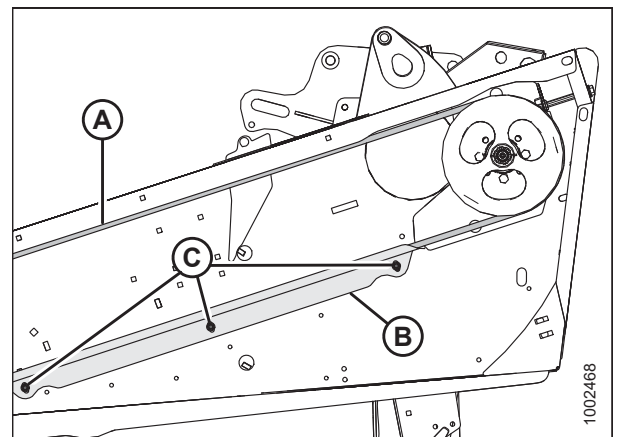


Figure 6.6: Knife Drive

6.4.2 Tensioning Timed Double-Knife Drive Belts

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

IMPORTANT:

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

PERFORMING PREDELIVERY CHECKS

IMPORTANT:

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

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

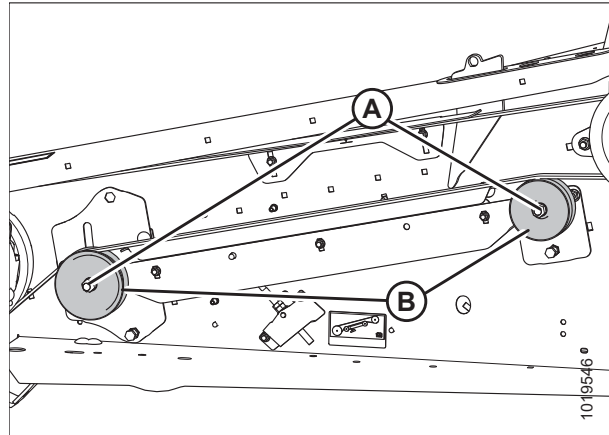


Figure 6.7: Left Knife Drive

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

NOTE:

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

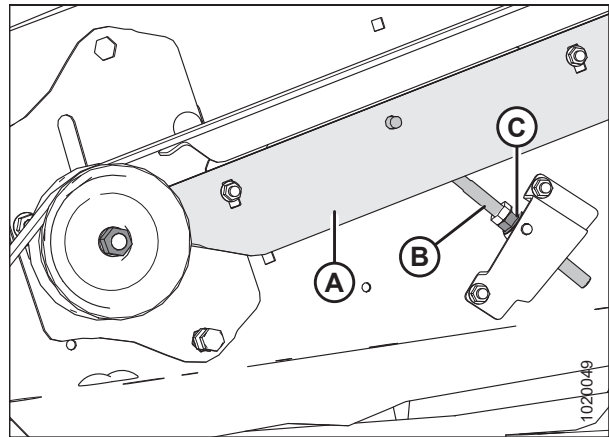


Figure 6.8: Left Knife Drive

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

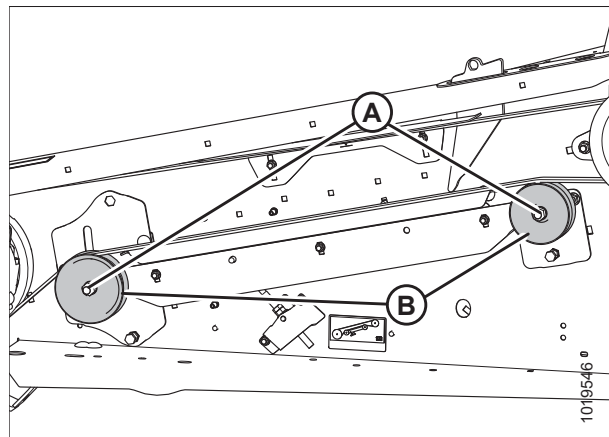


Figure 6.9: Left Knife Drive

PERFORMING PREDELIVERY CHECKS

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

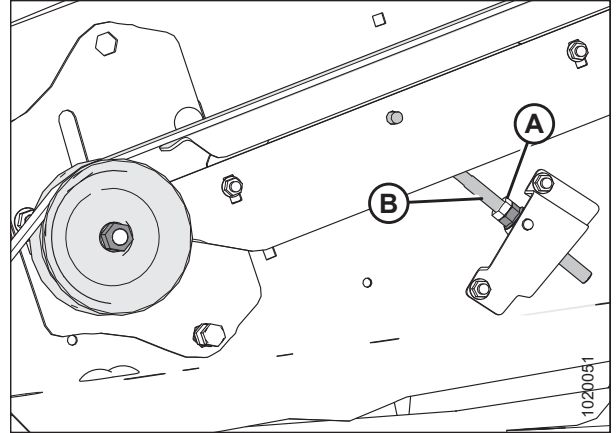


Figure 6.10: Left Knife Drive

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

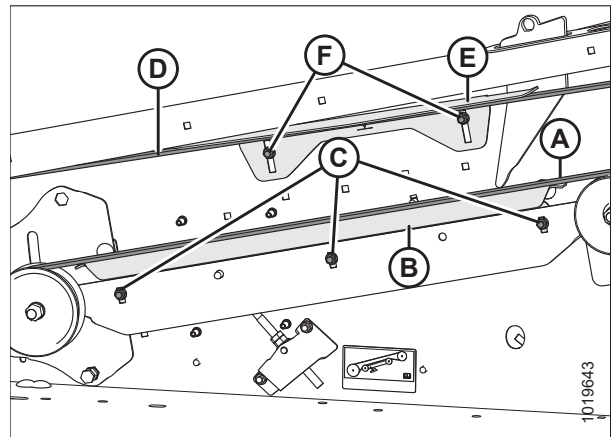


Figure 6.11: Left Knife Drive

6.4.3 Tensioning Timed Knife Drive V-Belts

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

NOTE:

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

3. Tighten bolts (A).

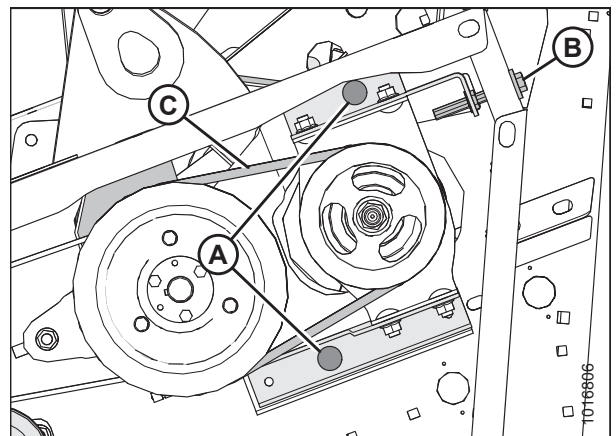


Figure 6.12: Knife Drive V-belts

6.5 Centering the Reel

Refer to the topic for header type:

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

6.5.1 Centering Double Reels

1. Measure clearances at locations (A) between reels and both endsheets. The clearances should be the same if the reels are centered. If the reels are not centered, proceed to Step 2, [page 64](#).

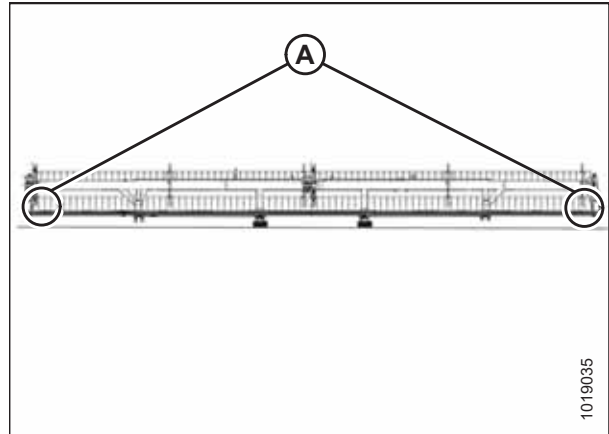


Figure 6.13: Double Reel Measurement Locations

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

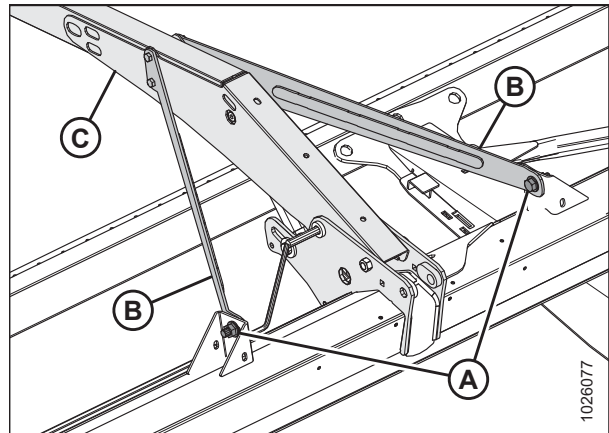


Figure 6.14: Reel Center Support Arm

6.5.2 Centering Reel on a Single Reel Header

1. Measure the clearance at locations (A) between the reel and endsheets. The clearances should be the same if the reel is centered.
 - If the reel is not centered, proceed to Step 2, page 65.
 - If the reel is centered, proceed to 6.6 Adjusting Draper Tension, page 66.

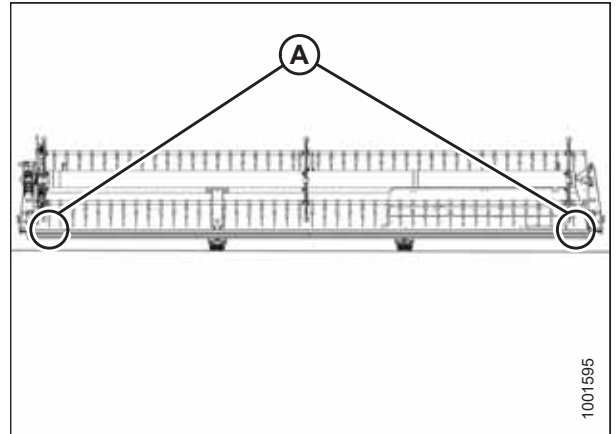


Figure 6.15: Single Reel Measurement Locations

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

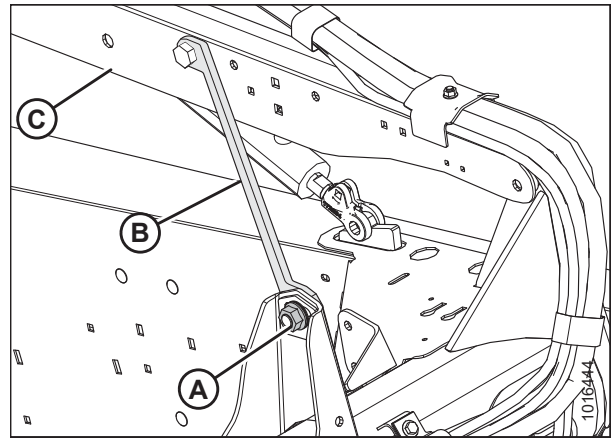


Figure 6.16: Reel Support Arm

6.6 Adjusting Draper Tension

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

DANGER

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

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

WARNING

Check to be sure all bystanders have cleared the area.

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

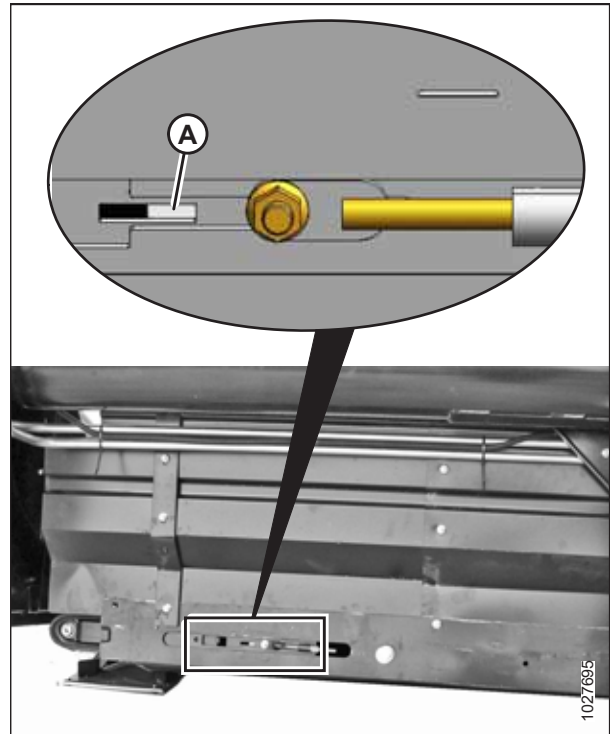


Figure 6.17: Left Side Tension Adjuster Shown – Right Side Opposite

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

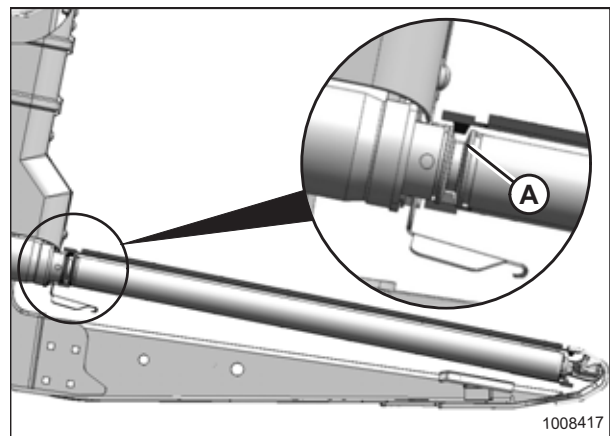


Figure 6.18: Drive Roller

PERFORMING PREDELIVERY CHECKS

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

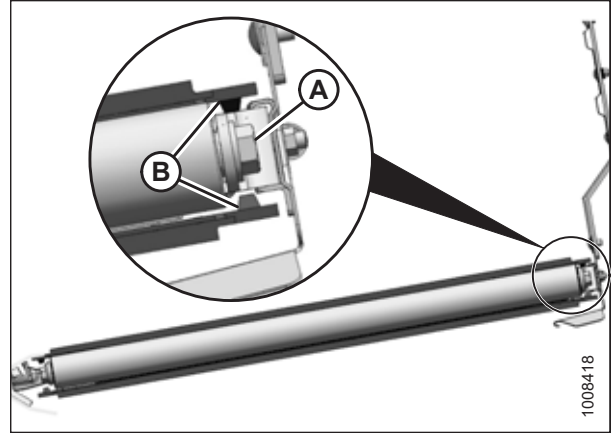


Figure 6.19: Idler Roller

IMPORTANT:

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

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

IMPORTANT:

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

IMPORTANT:

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

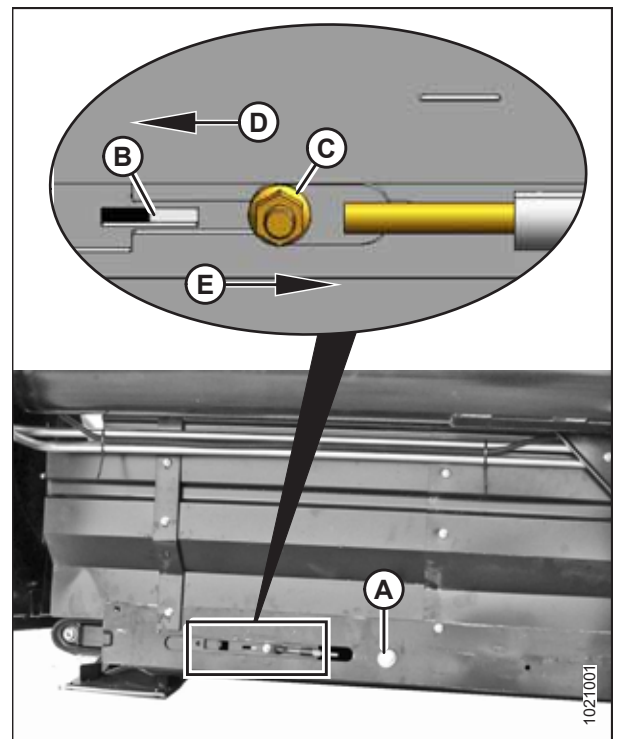


Figure 6.20: Left Side Tension Adjuster Shown – Right Side Opposite

6.7 Checking and Adjusting Draper Seal

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

IMPORTANT:

New factory-installed drapers are pressure and heat checked at the factory. The gap (deck seal) between draper and cutterbar is set to 0–3 mm (0.03–0.12 in.) at the factory to prevent material from entering into the side drapers and stalling them. On new drapers, however, it is **NEVER** acceptable for the gap to be less than 1 mm (0.04 in.) because new drapers are very tacky and there can be a buildup of powder coat on the underside of the cutterbar that can cause excessive drag and extremely high running pressure. A gap of 1–3 mm (0.04–0.12 in.) is acceptable. Follow this procedure to check the gap and adjust if required.

1. Check that clearance (A) between draper (B) and cutterbar (C) is 1–3 mm (0.04–0.12 in.).
 - If the deck height is acceptable, skip the remaining steps and proceed to [6.8 Checking and Adjusting Skid Shoe Settings, page 71](#).
 - If the deck height is **NOT** acceptable, adjust the seal as described in the following steps:

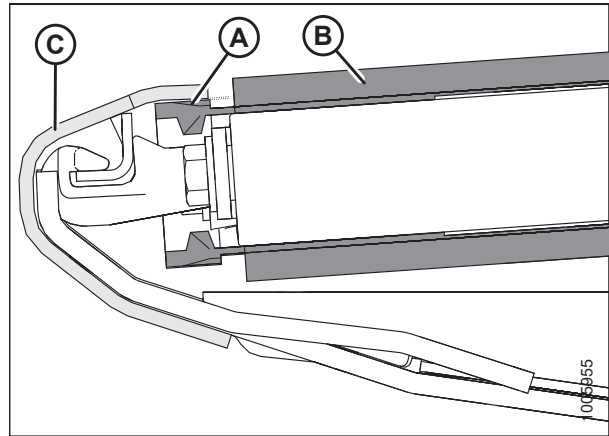


Figure 6.21: Draper Seal

2. Take measurement at deck supports (A) with the header in working position. Depending on the header size, there are between two and five supports per deck.
3. Loosen the draper tension. For instructions, refer to [6.6 Adjusting Draper Tension, page 66](#).

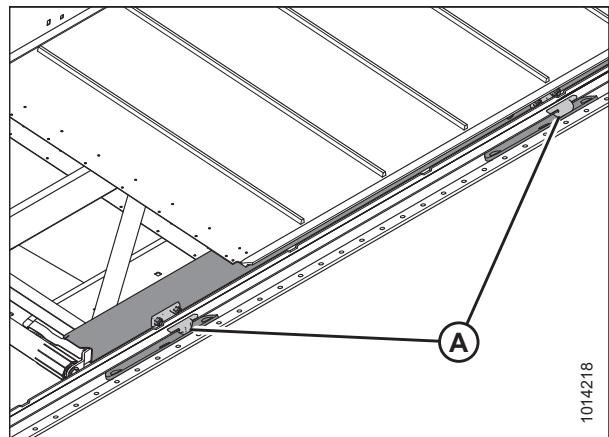


Figure 6.22: Draper Deck Supports

PERFORMING PREDELIVERY CHECKS

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

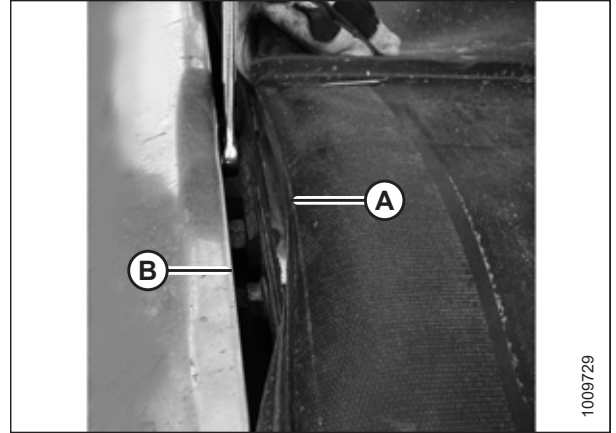


Figure 6.23: Deck Adjustment

6. Loosen two lock nuts (A) on deck support (B) **ONE HALF-TURN ONLY**.

NOTE:

The deck is shown with the draper removed. The number of deck supports (B) is determined by the header reels: four on single-reel headers, and eight on double-reel headers.

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

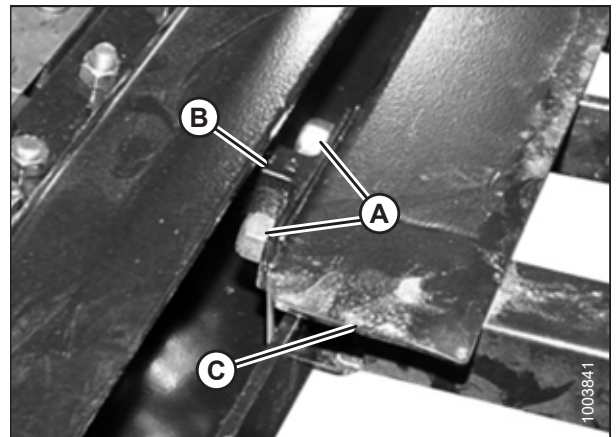


Figure 6.24: Deck Support

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

NOTE:

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

10. Tighten deck support hardware (D).
11. Recheck gap (B) with thickness gauge. For instructions, refer to Step 8, page 69.
12. Tension the draper. For instructions, refer to [6.6 Adjusting Draper Tension](#), page 66.

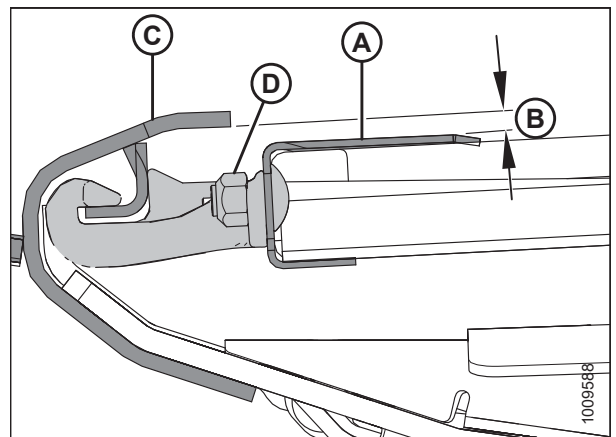


Figure 6.25: Deck Support

PERFORMING PREDELIVERY CHECKS

13. If required, adjust backsheet deflector (A) by loosening nut (D) and moving the deflector until there is a 1–7 mm (0.04–0.28 in.) gap (C) between draper (B) and the deflector.

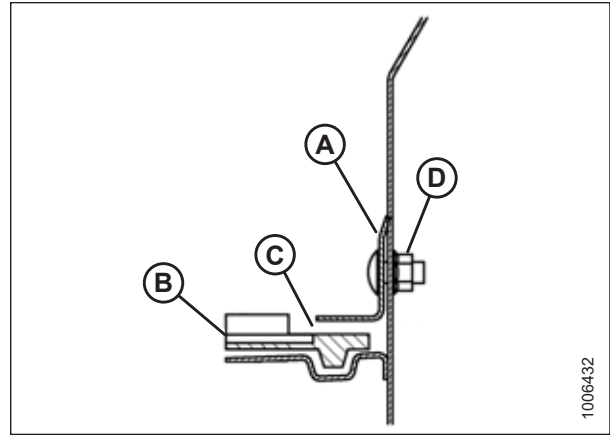


Figure 6.26: Backsheet Deflector

6.8 Checking and Adjusting Skid Shoe Settings

To check and adjust skid shoes, follow these steps:

DANGER

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

1. Raise the header fully.
2. Engage the header safety props.
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. They should be the same.
5. If necessary, adjust skid shoe as follows:
 - a. Remove lynch pin (B).
 - b. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
 - c. Raise or lower skid shoe to desired position using holes in support as a guide.
 - d. Reinsert pin (C), engage in frame, and secure with lynch pin (B).
 - e. Check that all skid shoes are adjusted to the same position.
6. Disengage the header safety props.
7. Lower the header fully.
8. Shut down the engine, and remove the key from the ignition.

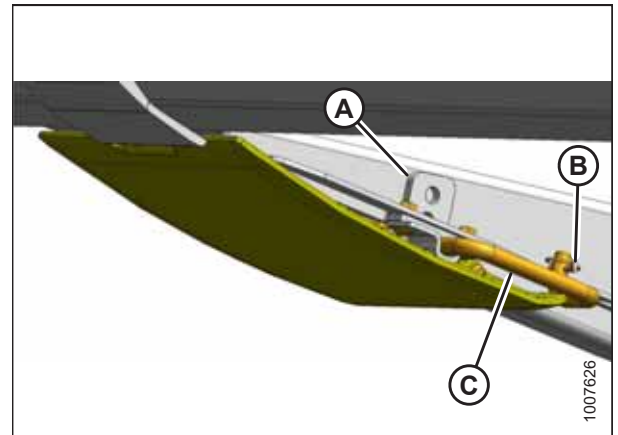


Figure 6.27: Inner Skid Shoe

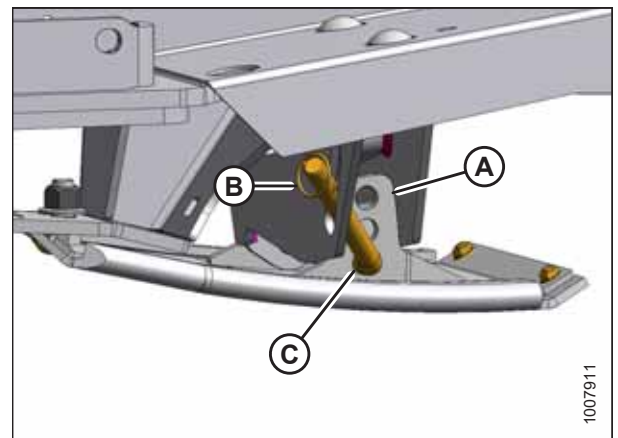


Figure 6.28: Outer Skid Shoe

6.9 Leveling the Header

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

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

NOTE:

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

6.10 Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operation.

The finger to guard/cutterbar clearances with reels fully lowered are shown in the table below.

Table 6.2 Finger to Guard/Cutterbar Clearance

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

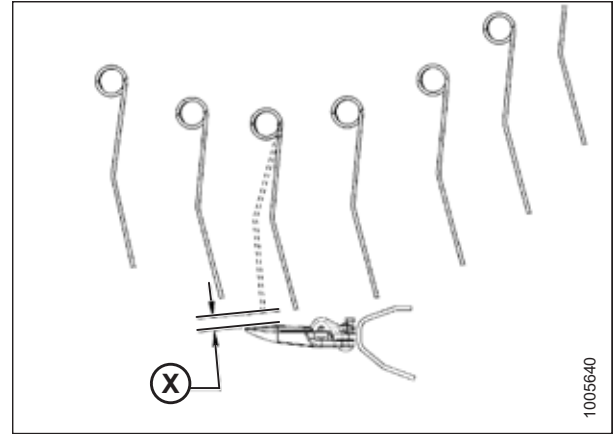


Figure 6.29: Finger Clearance

6.10.1 Measuring Reel Clearance

DANGER

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

CAUTION

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

1. Start the engine.
2. Lower the header fully on level ground.

PERFORMING PREDELIVERY CHECKS

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

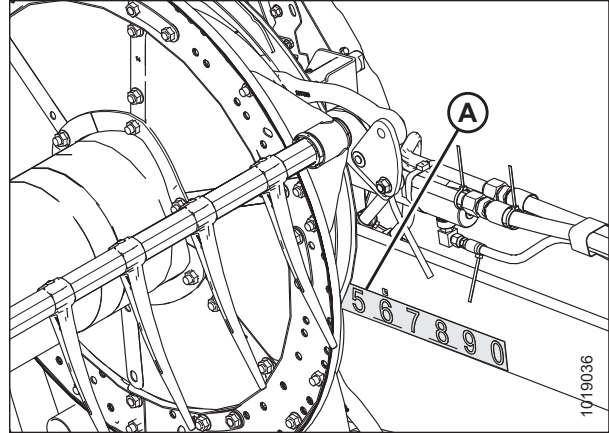


Figure 6.30: Fore-Aft Position

6. Measure clearance (X) between points (A) and (B) at certain measurement locations. For clearance specifications, refer to Table 6.3, page 74.

For the measurement locations, refer to:

- Figure 6.32, page 75 – single reel
- Figure 6.33, page 75 – double reel

NOTE:

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

NOTE:

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

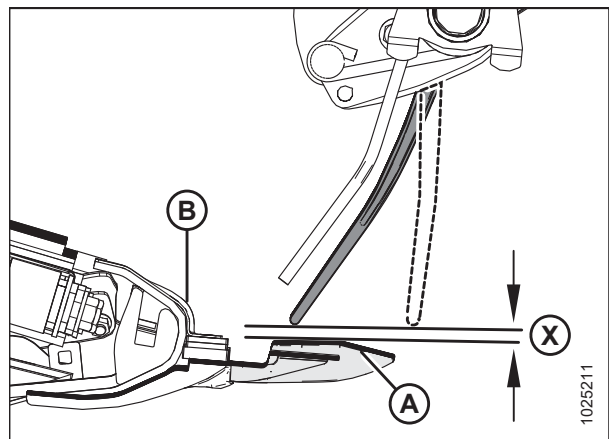


Figure 6.31: Clearance

Table 6.3 Finger to Guard/Cutterbar Clearance

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

PERFORMING PREDELIVERY CHECKS

Table 6.3 Finger to Guard/Cutterbar Clearance (continued)

Header Width	(X) 3 mm (+/- 1/8 in.) at Reel Ends	
	Single Reel	Double Reel
12.2 m (40 ft.)	—	25 mm (1 in.)
13.7 m (45 ft.)	—	25 mm (1 in.)

Measurement location (A): Outer ends of the reel (two places).

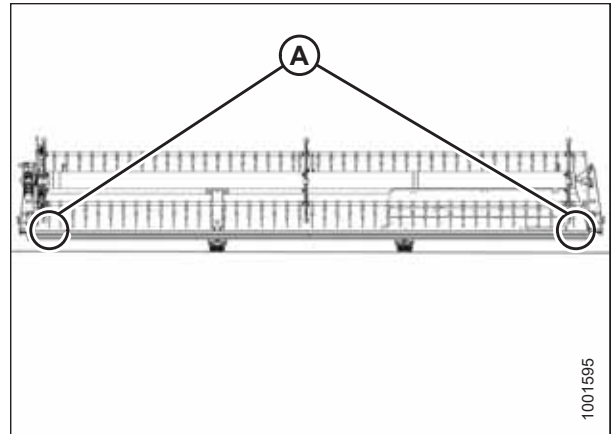


Figure 6.32: Single-Reel Measurement Locations

Measurement location (A): Both ends of both reels (four places).

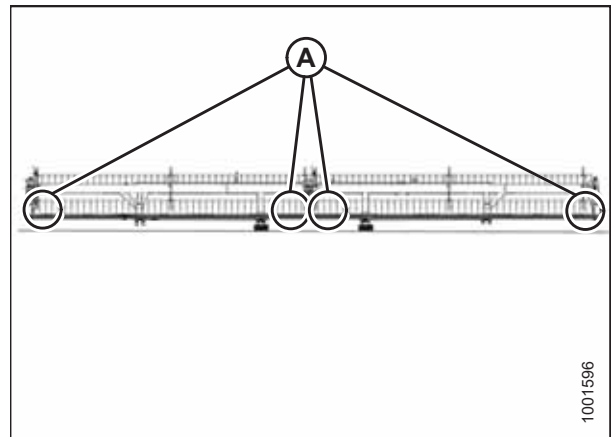


Figure 6.33: Double-Reel Measurement Locations

- Adjust the reel clearance, if required. For instructions, refer to [6.10.2 Adjusting Reel Clearance, page 76](#).

6.10.2 Adjusting Reel Clearance



DANGER

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

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

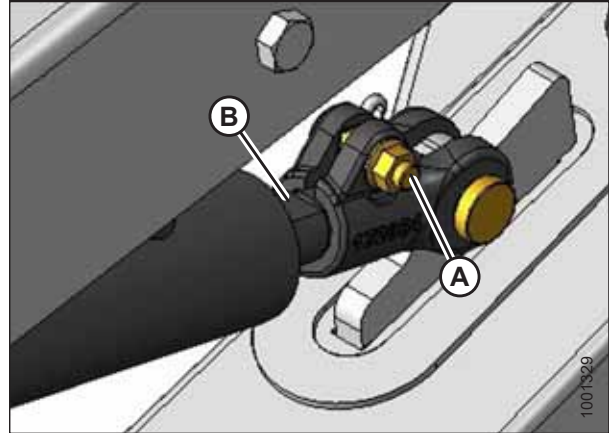


Figure 6.34: Outside Reel Arm

5. **For double reel:** Adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels as follows:
 - a. Loosen nut (B).

NOTE:
To make adjustment easier, lower reel onto the safety props after loosening nut (B).

 - b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
 - c. Tighten nut (B).

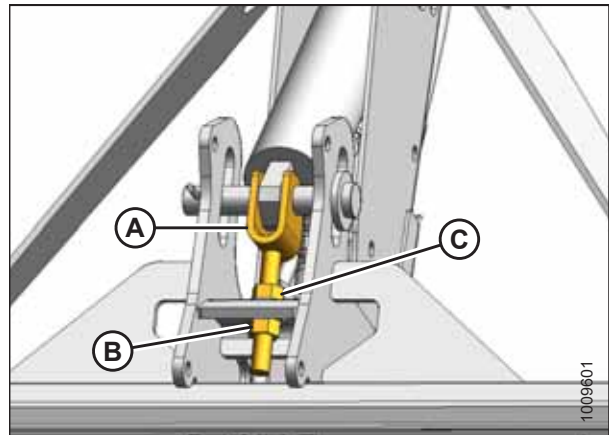


Figure 6.35: Underside of Center Arm

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

6.11 Checking and Adjusting Endshields

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

Checking the endshield:

1. Check gap (X) between front end of the shields and the header frame and compare to the values in Table 6.4, page 77.

Table 6.4 Endshield Gap at Various Temperatures

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

2. If the endshield gap is correct, proceed to the next procedure. If adjustment is required, proceed to Step 1, page 77.

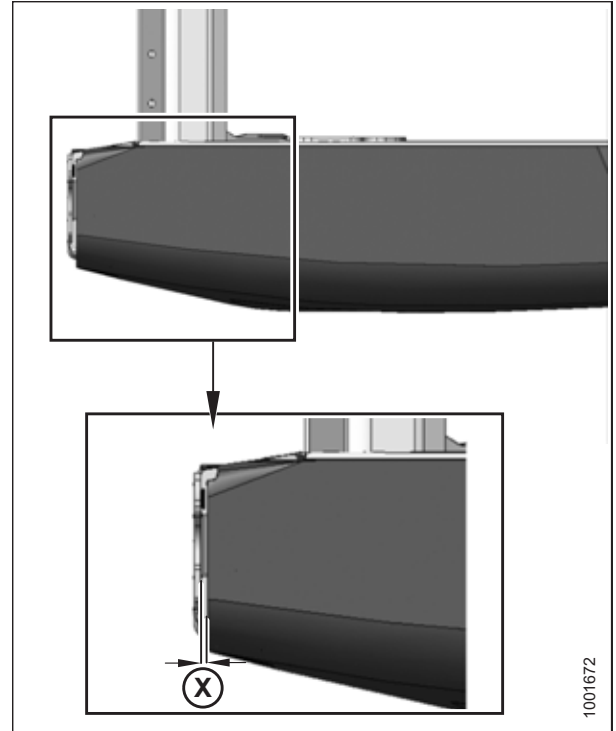


Figure 6.36: Gap between Endshield and Header Frame

Opening the endshield:

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

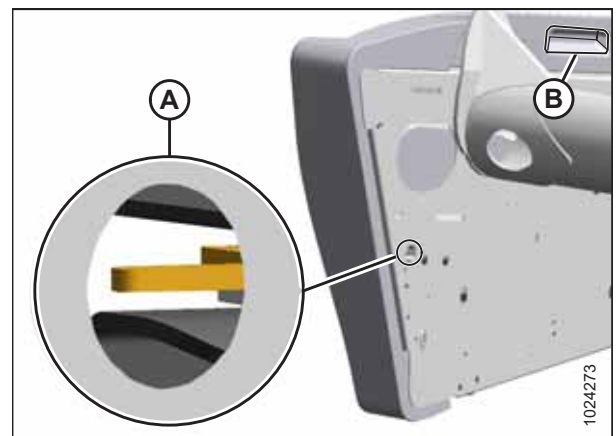


Figure 6.37: Left Endshield

PERFORMING PREDELIVERY CHECKS

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

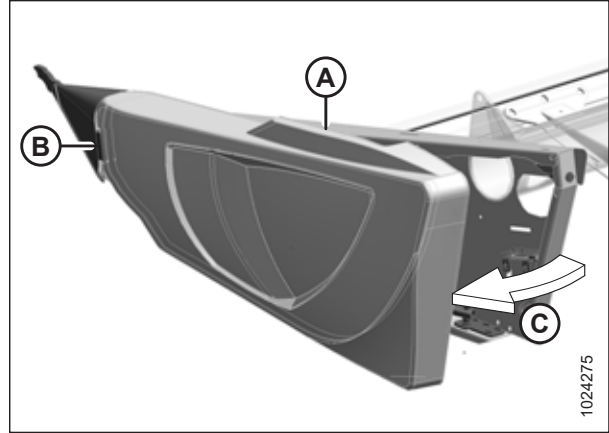


Figure 6.38: Left Endshield

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

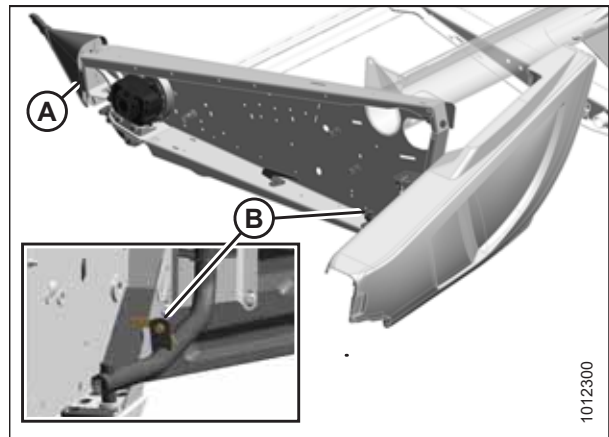


Figure 6.39: Left Endshield

Adjusting the endshield gap:

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

NOTE:

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

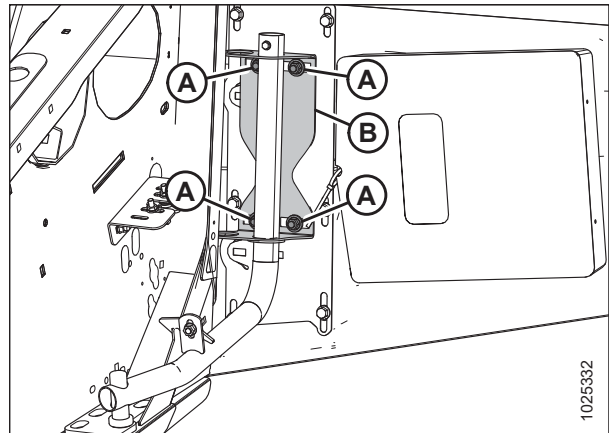


Figure 6.40: Left Endshield Support Tube on D1X Series Header

PERFORMING PREDELIVERY CHECKS

2. Loosen three bolts (A) on latch assembly (B).
3. Adjust latch assembly (B) to achieve the desired gap between the front end of the shield and the header frame. Refer to Table 6.4, page 77 for the recommended endshield gap at various temperatures.
4. Tighten three bolts (A) on the latch assembly to 27 Nm (20 lbf-ft).

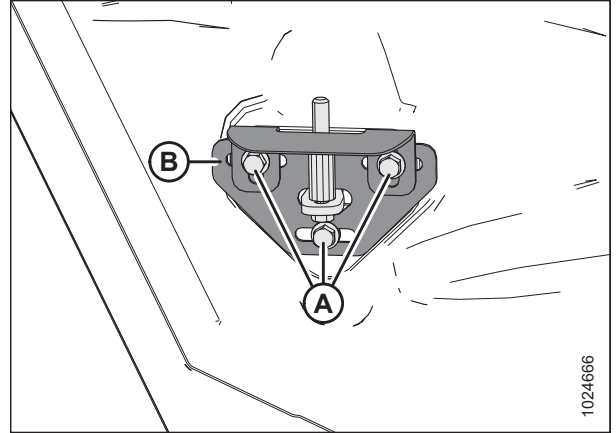


Figure 6.41: Left Endshield Latch Assembly

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

NOTE:

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

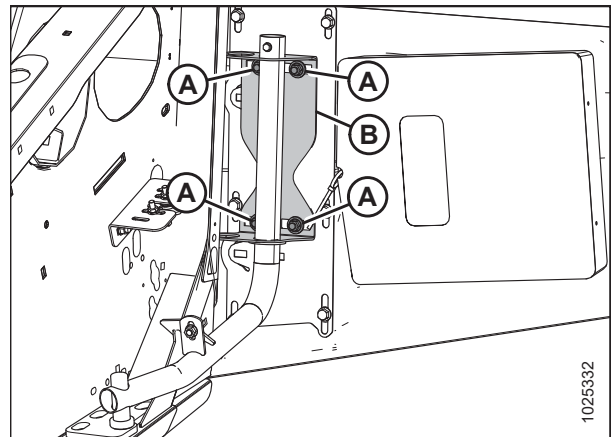


Figure 6.42: Left Endshield Support Tube on D1X Series Header

Closing the endshield:

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

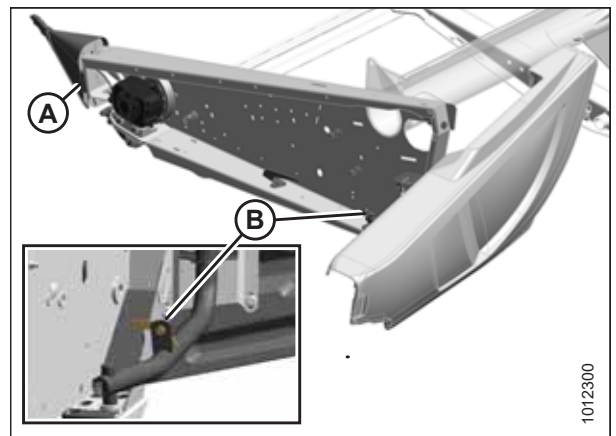


Figure 6.43: Left Endshield

PERFORMING PREDELIVERY CHECKS

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

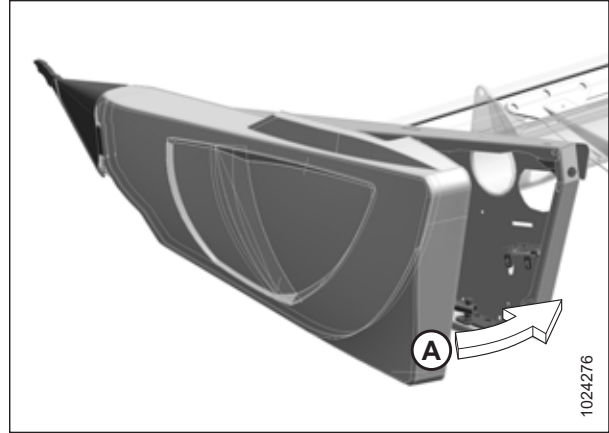


Figure 6.44: Left Endshield

6.12 Lubricating Header

Table 6.5 Recommended Lubricant

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

6.12.1 Greasing Procedure

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



WARNING

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

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

IMPORTANT:

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

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

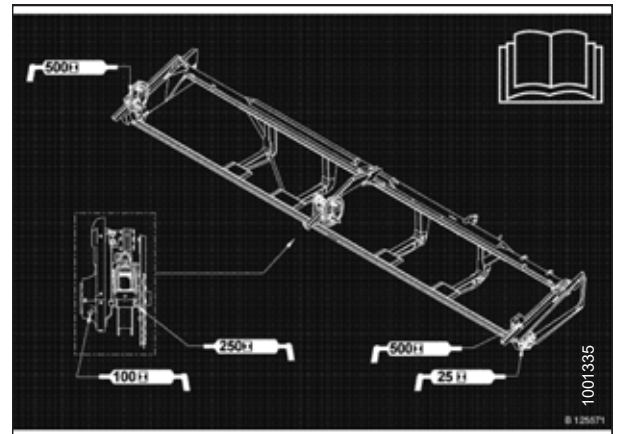


Figure 6.45: Single-Knife Header Grease Point Decal

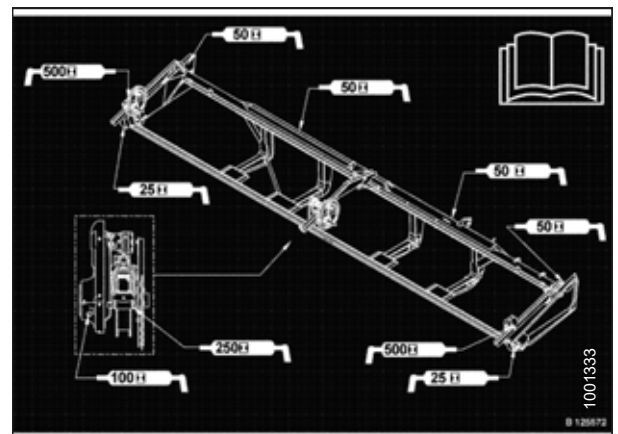


Figure 6.46: Double-Knife Header Grease Point Decal

6.12.2 Lubrication Points

Knifehead

IMPORTANT:

Overgreasing can cause the knife to bend and make contact with the guards closest to the knifehead. Check for signs of excessive heating on first few guards after greasing. If required, relieve some pressure by removing the grease fitting.

- To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** overgrease knifehead (A).
- Apply only 1–2 pumps of grease with a grease gun, or just until the knifehead starts to move away from the arm. Do **NOT** use an electric grease gun.
- If more than 6–8 pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead.
- Check for signs of excessive heating on first few guards after greasing. If required, relieve pressure by pressing check-ball in grease fitting.

NOTE:

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

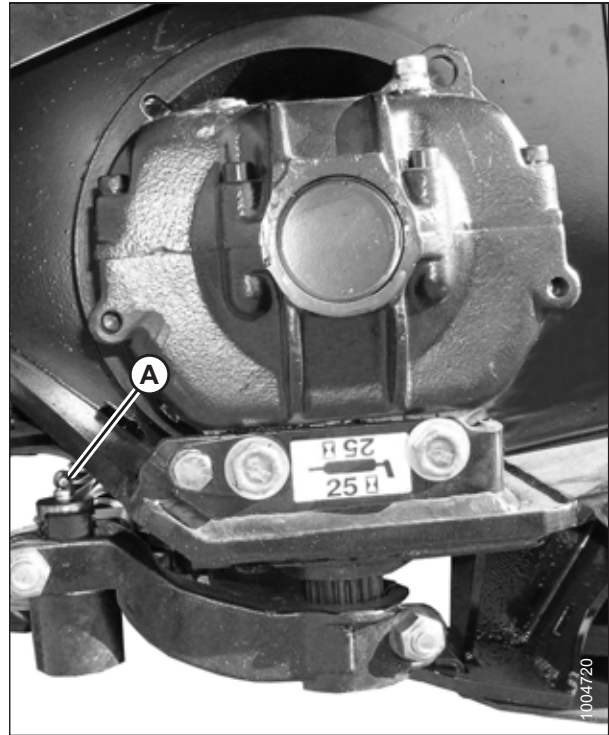


Figure 6.47: Knifehead

Single Knife – One Place

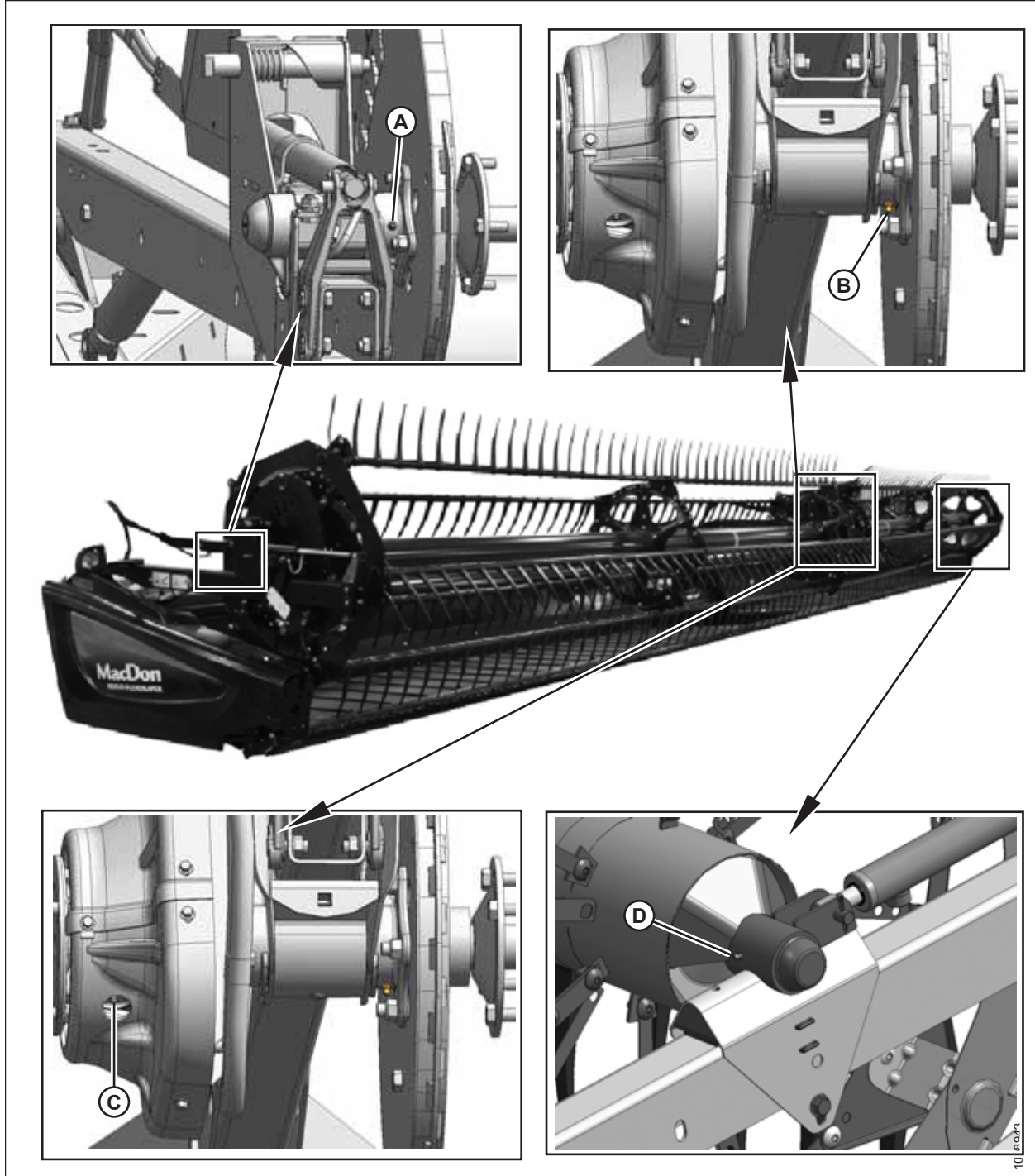
Double Knife – Two Places

PERFORMING PREDELIVERY CHECKS

IMPORTANT:

Reel U-joint (C) has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if U-joint stops taking grease. **OVERGREASING WILL DAMAGE U-JOINT.** Six to eight pumps is sufficient at first grease (factory). As U-joint wears and requires more than six pumps, grease the joint more often.

Figure 6.48: Reel Shaft Bearings



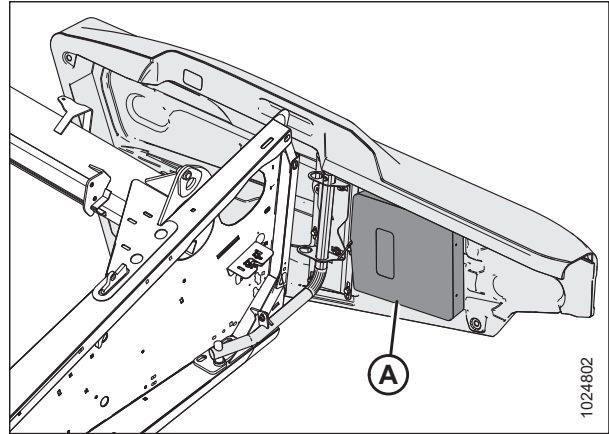
A - Reel Shaft Right Bearing (One Place)
C - Reel U-joint (One Place)

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

6.13 Checking Manuals

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

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



1024802

Figure 6.49: Manual Case



1016518

Figure 6.50: D1XL Series Manuals

6.14 Calibrating the Header Systems

When a header is attached to the windrower, the Harvest Performance Tracker (HPT) will recognize the header ID and determine the appropriate systems to calibrate. The following sensors may require calibration depending on header type:

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

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

NOTE:

To calibrate the knife drive, the header must be attached and engaged. If the header is disengaged when calibration is selected, the message ENGAGE HEADER will appear on the screen.

NOTE:

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



CAUTION

Before starting the machine, check to be sure all bystanders have cleared the area.

1. Start the engine, and engage the header.
2. Press soft key 5 (A) to open the Harvest Performance Tracker (HPT) main menu.
3. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel to scroll to settings icon (C).
4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

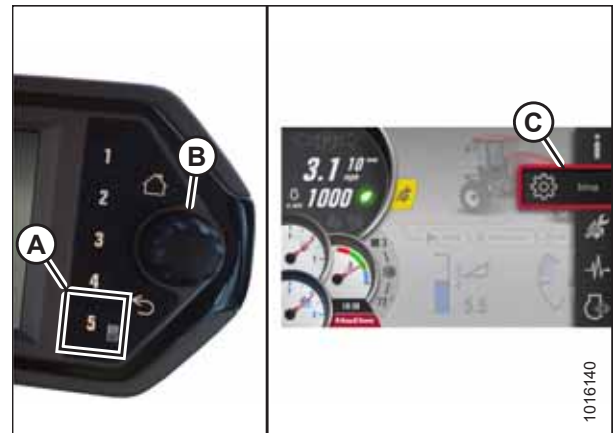


Figure 6.51: Opening the Main Menu

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 adjustment page.

NOTE:

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

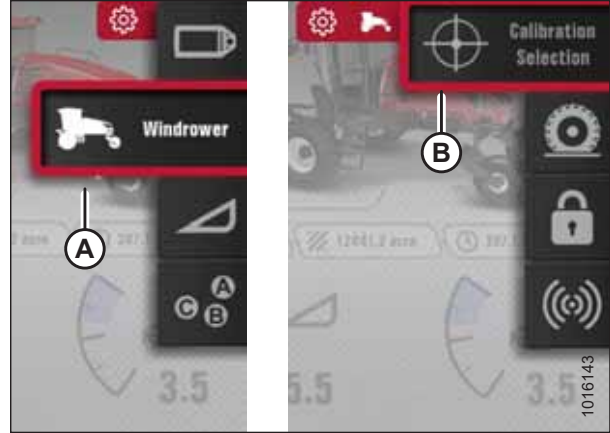


Figure 6.52: Windrower Settings Icon and Calibration Submenu Icon

7. Select POSITION SENSORS (A).

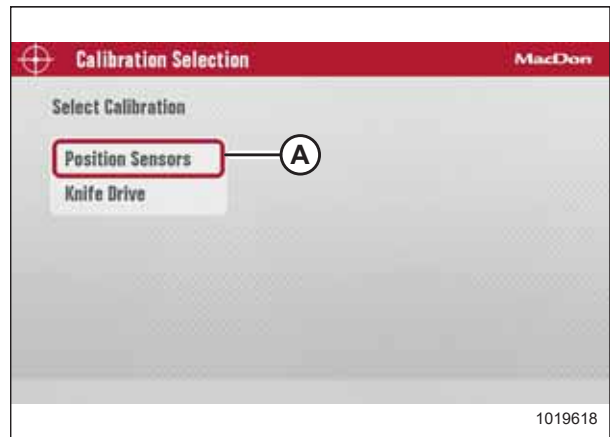


Figure 6.53: Calibration Options

8. Select CALIBRATION WITH HEADER ENGAGED to display the calibration page as shown at right.
9. Press the PLAY button on the screen to begin the calibration process.

NOTE:

If the engine speed is less than 1500 rpm when you press the PLAY button, the calibration system will accelerate the engine to 1500 rpm.

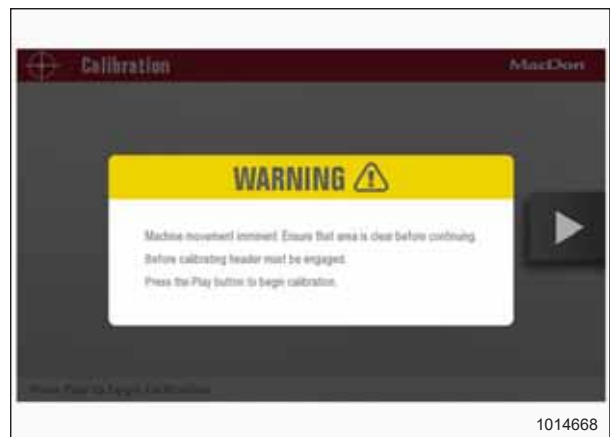


Figure 6.54: Calibration Page

PERFORMING PREDELIVERY CHECKS

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



Figure 6.55: Calibration Page

- When Stage 2 of the calibration is complete, press the RESUME button (A) on the screen to set HEADER FLOAT, or press the HOME or BACK button (not shown) to exit without setting the float.



Figure 6.56: Calibration Page

NOTE:

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

NOTE:

If a sensor goes out of its normal operating range during the calibration process, calibration will stop, and a message will appear on the screen indicating that the sensor is out of range. A flashing amber question mark will appear on the calibration icon in the menu system. If a sensor is out of range, adjust the sensor and restart the calibration process.



Figure 6.57: Calibration Page

6.15 Calibrating Knife Drive on Harvest Performance Tracker

NOTE:

Calibration of the knife drive must be completed with the header attached; the header must be engaged to perform the calibration procedure. If the header is disengaged when calibration is selected, the message ENGAGE HEADER will appear on the screen.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Start the windrower and engage the header.
2. Press soft key 5 (A) to open the main menu.
3. Use HPT scroll knob (B) or the ground speed lever (GSL) scroll wheel (not shown) to highlight SETTINGS icon (C).
4. Press HPT scroll knob (B) or the GSL SELECT button (not shown) to activate the settings menu options.

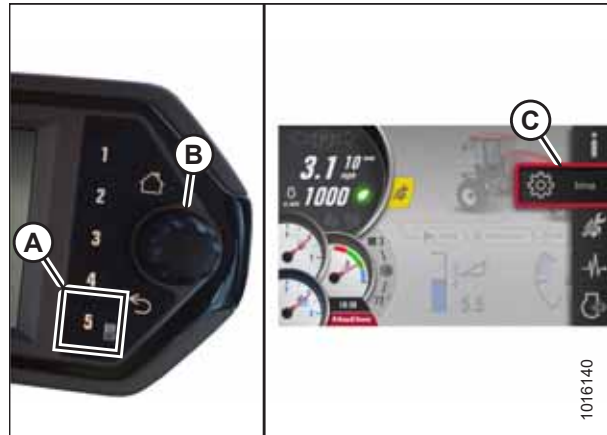


Figure 6.58: Opening the Main Menu

5. Scroll to WINDROWER SETTINGS icon (A) and press SELECT.
6. Scroll to CALIBRATION icon (B), and press SELECT to open the adjustment page.

NOTE:

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

7. Select KNIFE DRIVE.

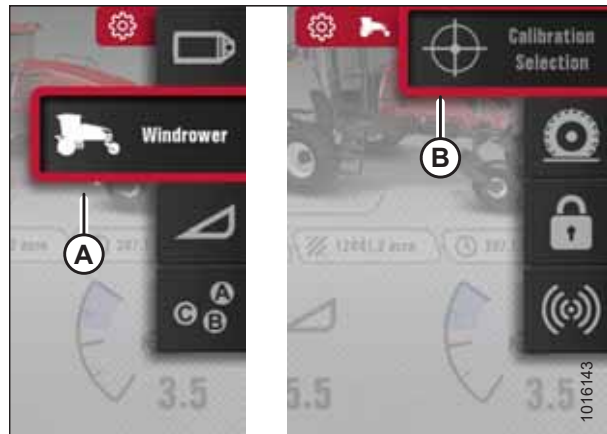


Figure 6.59: Windrower Settings Icon and Calibration Submenu Icon

PERFORMING PREDELIVERY CHECKS

8. Press the PLAY button on the screen to begin the calibration process.

NOTE:

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

NOTE:

Press X button (A) on the screen or use the Header Disengage Switch at any time during the calibration process to EXIT calibration without saving. The engine speed will return to the original rpm prior to starting the calibration process.

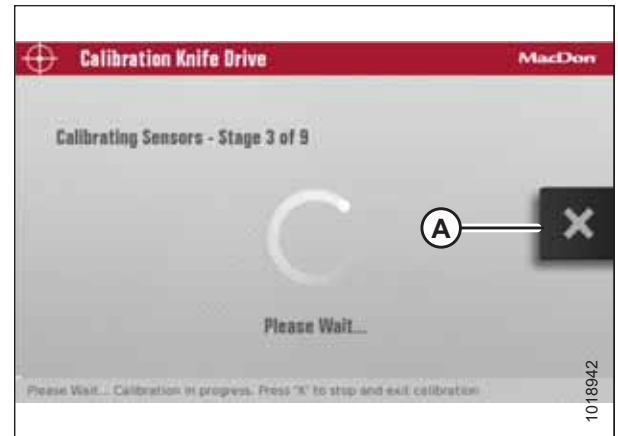


Figure 6.60: Calibration Page

Chapter 7: Running up the Header

To run up the header, follow these steps:



WARNING

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



CAUTION

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

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

NOTE:

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

2. Run header for an additional 10 minutes at operating speed, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
3. Shut down the engine, and remove the key from the ignition.
4. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction) *Predelivery Checklist, page 111*.

Chapter 8: Performing Post Run-Up Adjustments

Stop engine and perform post run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction *Predelivery Checklist, page 111*) to ensure machine is field-ready.

WARNING

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

It may be necessary to adjust the knife after the run-up. Refer to *8.1 Adjusting Knife, page 93*.

8.1 Adjusting Knife

WARNING

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

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

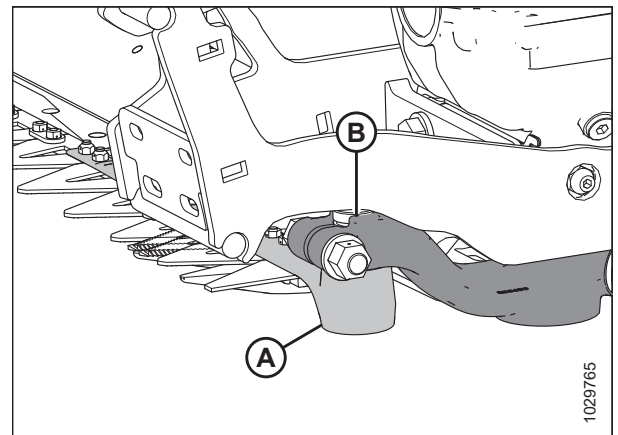


Figure 8.1: Knifehead and Pitman Arm



Figure 8.2: Straightening Tool – Upward Adjustment

PERFORMING POST RUN-UP ADJUSTMENTS

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

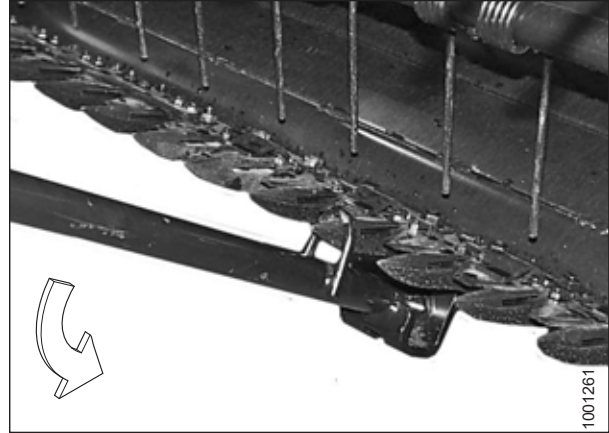


Figure 8.3: Straightening Tool – Downward Adjustment

Chapter 9: Reference

9.1 Torque Specifications

The following tables provide correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade of bolt.
- Use torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by $f=0.65$.

Self-tapping screws

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

9.1.1 SAE Bolt Torque Specifications

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

Table 9.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

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

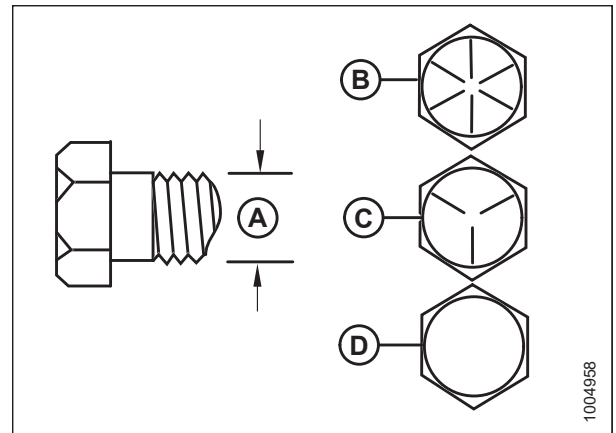


Figure 9.1: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

1004958

REFERENCE

Table 9.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

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

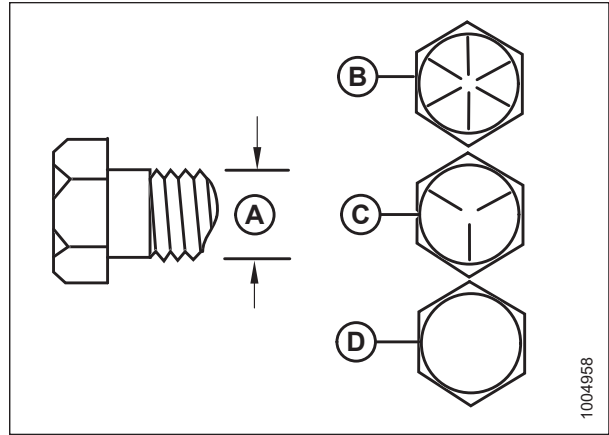


Figure 9.2: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

Table 9.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

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

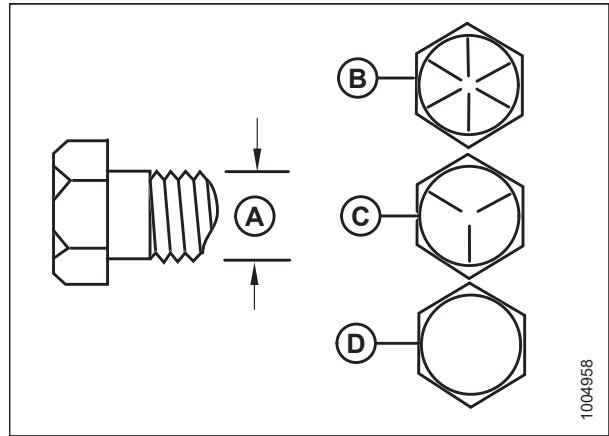


Figure 9.3: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

REFERENCE

Table 9.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

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

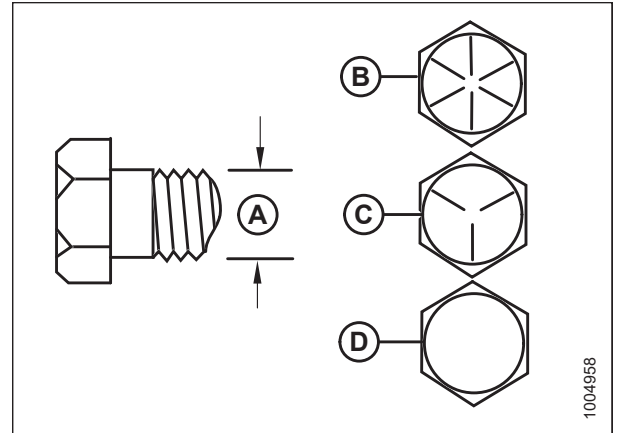


Figure 9.4: Bolt Grades

A - Nominal Size
C - SAE-5

B - SAE-8
D - SAE-2

9.1.2 Metric Bolt Specifications

Table 9.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf-ft) (*lbf-in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

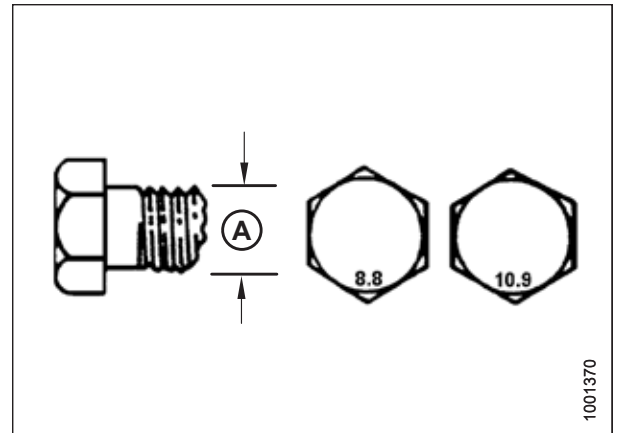


Figure 9.5: Bolt Grades

REFERENCE

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

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

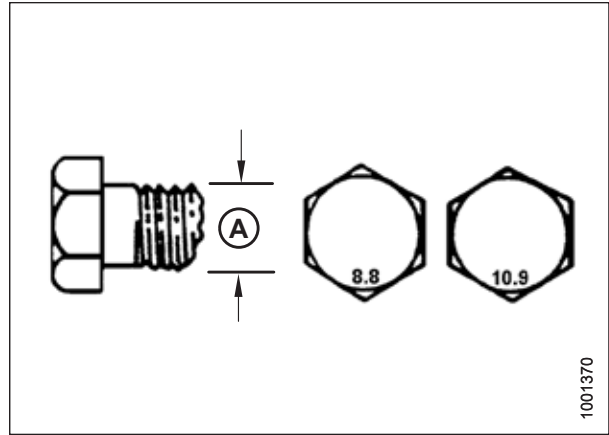


Figure 9.6: Bolt Grades

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

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

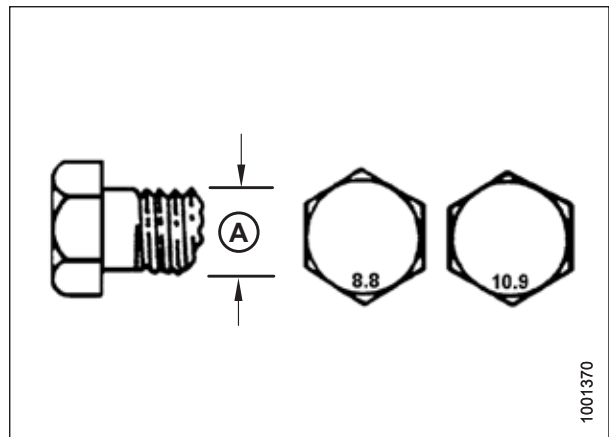


Figure 9.7: Bolt Grades

REFERENCE

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

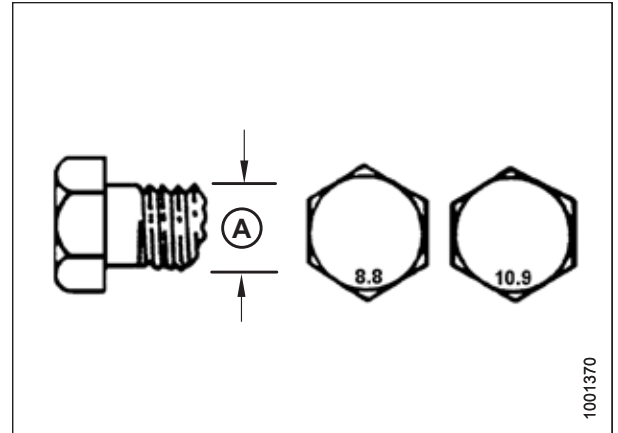


Figure 9.8: Bolt Grades

9.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

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	-	-	-	-

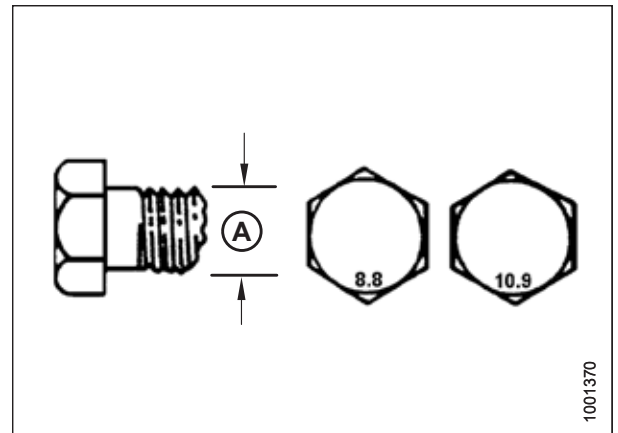


Figure 9.9: Bolt Grades

REFERENCE

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 100.
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.

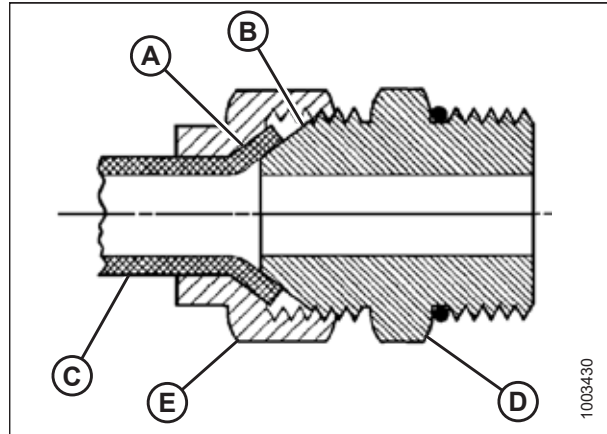


Figure 9.10: Hydraulic Fitting

Table 9.10 Flare-Type Hydraulic Tube Fittings

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

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

9.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

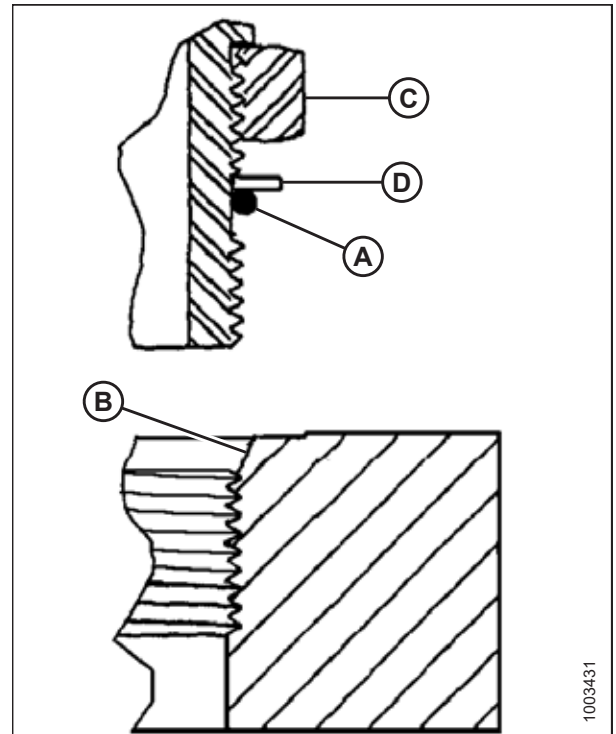


Figure 9.11: Hydraulic Fitting

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

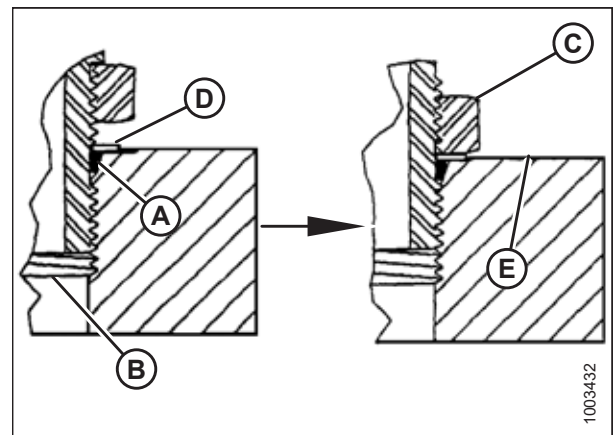


Figure 9.12: Hydraulic Fitting

REFERENCE

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

SAE Dash Size	Thread Size (in.)	Torque Value ²	
		Nm	lbf·ft (*lbf·in)
-2	5/16-24	6-7	*53-62
-3	3/8-24	12-13	*106-115
-4	7/16-20	19-21	14-15
-5	1/2-20	21-33	15-24
-6	9/16-18	26-29	19-21
-8	3/4-16	46-50	34-37
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

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

REFERENCE

9.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 9.12, page 103.
6. Check final condition of fitting.

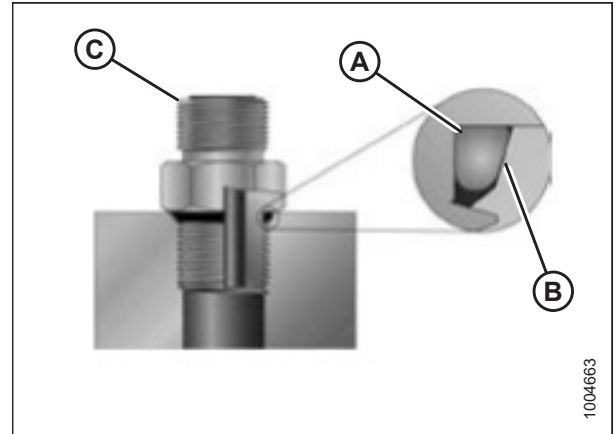


Figure 9.13: Hydraulic Fitting

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

SAE Dash Size	Thread Size (in.)	Torque Value ³	
		Nm	lbf·ft (*lbf·in)
-2	5/16-24	6-7	*53-62
-3	3/8-24	12-13	*106-115
-4	7/16-20	19-21	14-15
-5	1/2-20	21-33	15-24
-6	9/16-18	26-29	19-21
-8	3/4-16	46-50	34-37
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

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

REFERENCE

9.1.7 O-Ring Face Seal Hydraulic Fittings

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



Figure 9.14: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 9.13, page 104.

NOTE:

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

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

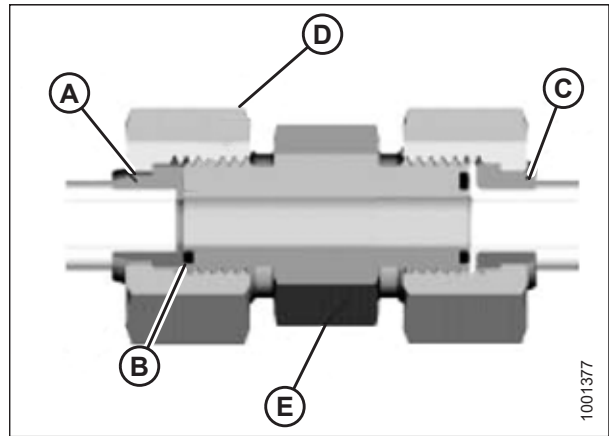


Figure 9.15: Hydraulic Fitting

Table 9.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁴	
			Nm	lbf-ft
-3	Note ⁵	3/16	-	-
-4	9/16	1/4	25-28	18-21
-5	Note ⁵	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 ⁵	7/8	-	-

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

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

REFERENCE

Table 9.13 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

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

9.1.8 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 9.14, page 105. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

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

Table 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

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

9.2 Lifting Equipment Requirements

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

WARNING

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

CAUTION

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

IMPORTANT:

Forklifts are normally rated for a load center 610 mm (24 in.) ahead of back end of the forks. To obtain the forklift capacity for a load center (A) at 1220 mm (48 in.) (B), check with your forklift distributor. The minimum fork length (C) is 1981 mm (78 in.).

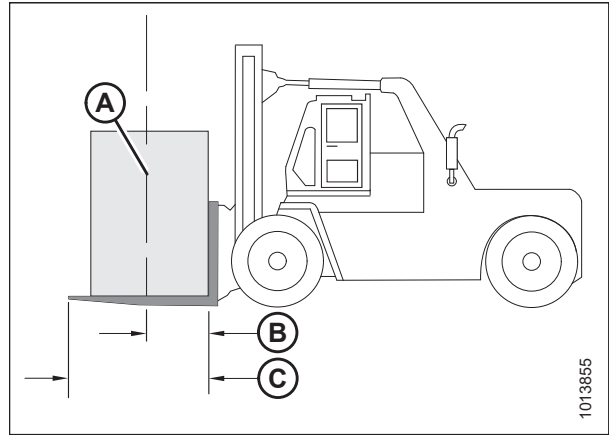


Figure 9.16: Minimum Lifting Capacity

- 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.)

9.3 Conversion Chart

Table 9.17 Conversion Chart

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

REFERENCE

9.4 Definitions

The following terms and acronyms may be used in this instruction:

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Cab-forward	Windrower operation with Operator and cab facing in direction of travel
Center-link	A hydraulic cylinder link between header and machine used to change header angle
CGVW	Combined gross vehicle weight
D1X Series Header	MacDon D115X, D120X, and D125X rigid draper headers for M1 Series Windrowers
D1XL Series Header	MacDon D130XL, D135XL, D140XL, and D145XL rigid draper headers for M1 Series Windrowers
DDD	Double-draper drive
DK	Double knife
DKD	Double-knife drive
DR	Double reel
DWA	Double Windrow Attachment
Engine-forward	Windrower operation with Operator and engine facing in direction of travel
Export header	Header configuration typical outside North America
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts and lays crop into a windrow and is attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
HDS	Hydraulic deck shift
hp	Horsepower
HPT display	Harvest Performance Tracker display module on an M1 Series Windrower
ISC	Intermediate Speed Control
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
M1 Series	MacDon M1170 and M1240 Windrowers

REFERENCE

Term	Definition
n/a	Not applicable
North American header	Header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
PARK	The slot opposite the NEUTRAL position on operator's console of M1 Series windrowers
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part
SDD	Single-draped drive
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
SR	Single reel
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf-ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism
Windrower	Power unit for a header
WOT	Wide open throttle

Predelivery Checklist

Perform these checks prior to delivery to your Customer. **Adjustments are normally not required as the machine is factory-assembled and adjusted.** If adjustments are required, refer to the appropriate page number in this manual. The completed Checklist should be retained by either the Operator or the Dealer.



CAUTION

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

Header Serial Number:

Table .18 Predelivery Checklist for D1X and D1XL Series Draper Headers – North America

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	<i>9.1 Torque Specifications, page 95</i>
	Check tire pressure (Transport/Stabilizer Option).	<i>6.1 Checking Tire Pressure – Transport and Stabilizer Wheels, Option for D1XL Headers, page 57</i>
	Check wheel bolt torque (Transport/Stabilizer Option).	<i>6.2 Checking Wheel Bolt Torque – Transport and Stabilizer Wheels, Option for D1XL Headers, page 58</i>
	Check knife drive box breather position.	<i>6.3 Checking Knife Drive Box, page 59</i>
	Check knife drive box lube level.	<i>6.3 Checking Knife Drive Box, page 59</i>
	Check knife drive belt(s) tension.	<i>6.4 Checking and Adjusting Knife Drive Belt Tension, page 61</i>
	Check if reel is centered between header endsheets.	<i>6.5 Centering the Reel, page 64</i>
	Grease all bearings and U-joints.	<i>6.12 Lubricating Header, page 81</i>
	Check draper tension.	<i>6.6 Adjusting Draper Tension, page 66</i>
	Check draper seal.	<i>6.7 Checking and Adjusting Draper Seal, page 68</i>
	Check reel tine to cutterbar clearance.	<i>6.10.1 Measuring Reel Clearance, page 73</i>
	Check if skid shoes are evenly adjusted an appropriate setting for first crop.	<i>6.8 Checking and Adjusting Skid Shoe Settings, page 71</i>
	Check fit of endshields.	<i>6.11 Checking and Adjusting Endshields, page 77</i>
	Check that header is level.	<i>6.9 Leveling the Header, page 72</i>
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel.	—
	Run-up procedure	<i>7 Running up the Header, page 91</i>
	Check if the knife drive pulley(s) is rotating in proper direction: clockwise on left side; counterclockwise on right side (double knife only).	<i>6.4 Checking and Adjusting Knife Drive Belt Tension, page 61</i>
	Check if lights are functional.	—
	Check if reel lift cylinders extend fully.	—

REFERENCE

Table .18 Predelivery Checklist for D1X and D1XL Series Draper Headers – North America (continued)

✓	Item	Reference
	Check if reel moves fully fore and aft.	—
Post run-up check. Stop engine.		<i>8 Performing Post Run-Up Adjustments, page 93</i>
	Check belt drives for heated bearings.	<i>6.4 Checking and Adjusting Knife Drive Belt Tension, page 61</i>
	Check knife sections for discoloration caused by misaligned components.	<i>8.1 Adjusting Knife, page 93</i>
	Check for hot spots on the cutterbar above the draper seal. Adjust deck height as required.	
	Check for hydraulic leaks.	—
	Check that manual storage case contains operator's manual and parts catalog.	<i>6.13 Checking Manuals, page 84</i>

Date checked:

Checked by:

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