

R216

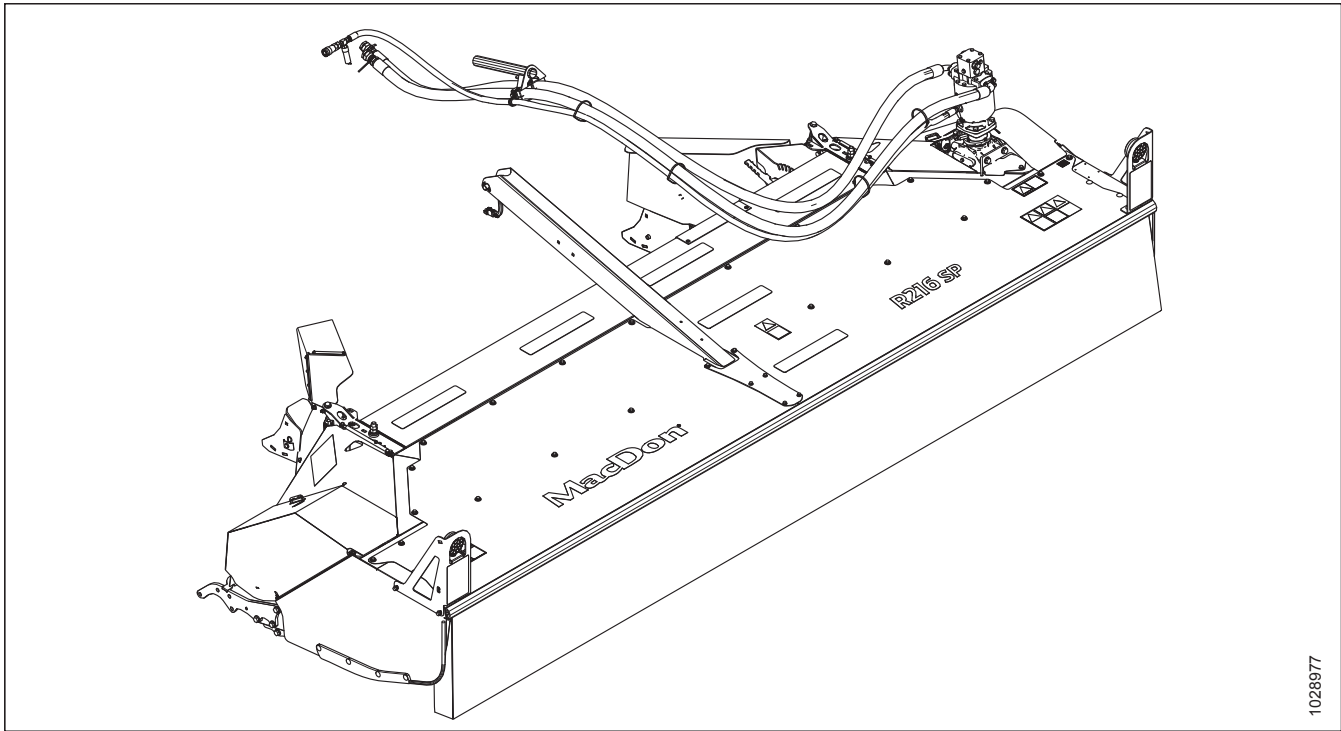
Rotary Disc Header

Unloading and Assembly Instructions

214882 Revision C

Original Instruction

R216 SP Rotary Disc Header



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Introduction

This document describes the unloading, setup, and predelivery requirements for the MacDon R216 Rotary Disc Header.

To ensure your customers receive all of the performance and safety benefits from this product, carefully follow the unloading and assembly procedure from the beginning through to completion.

Retain this instruction for future reference.

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

This instruction 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
—	Revision B was never published. Previous publication is revision A.	—
<ul style="list-style-type: none"> 3.1 Removing Shipping Supports, page 9 3.4 Removing Shipping Stands, page 21 	Edited steps and rearranged between the two topics.	Audit
3.2 Lowering the Header, page 18	Added note alerting readers to the potential for contact between the lowering chains and hazard light brackets on the header.	Audit
3.5 Adjusting Rear Baffle Deflectors, page 23	Updated illustrations.	Audit
4.1 Assembling and Installing Forming Shield, page 27	Edited details about hardware installation during forming shield installation. Updated illustrations.	Audit
4.2 Routing Electrical Harness, page 35	Edited procedure to include additional detail about installing cable ties securing the electrical harness on the windrower.	Audit
4.3 Attaching Disc Header, page 38	Edited attaching procedure to include steps for positioning header supports for connection, and adjusting forming shield height according to whether a Double Windrow Attachment (DWA) option is included on the machine. Added step to secure header harness.	Audit
<ul style="list-style-type: none"> 4.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers, page 45 4.5 Connecting Disc Header Hydraulics Using Hard Plumbing, page 47 	Edited steps to clarify relief valve orientation on the windrower.	Audit
5.2 Crop Dividers Kit, page 56	Edited procedure to include additional detail for removing/installing hardware during crop divider installation.	Audit

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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 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.

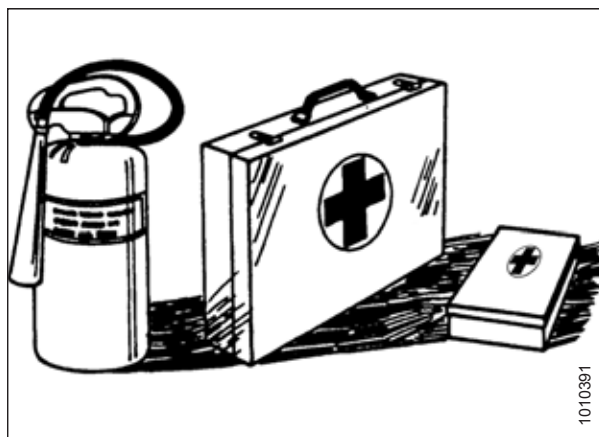


Figure 1.3: Safety Equipment

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

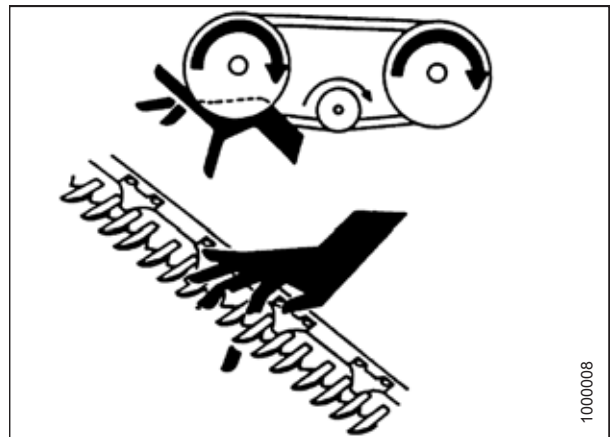


Figure 1.5: Safety around Equipment

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



Figure 1.6: Safety around Equipment

1.3 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, 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 original part on which a safety sign was installed is replaced, be sure the repair part displays the current safety sign.

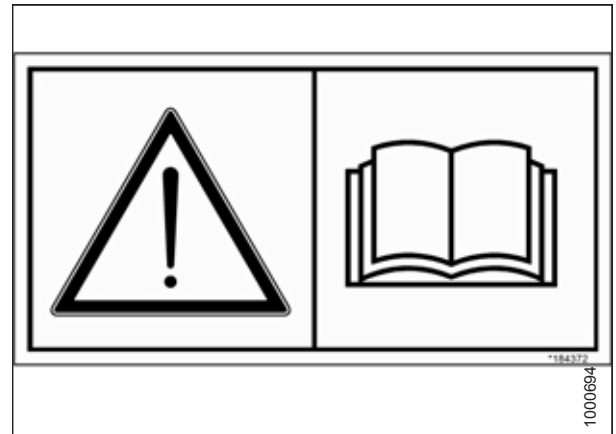


Figure 1.7: Operator's Manual Decal

Chapter 2: Unloading the Header

WARNING

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

IMPORTANT:

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

NOTE:

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

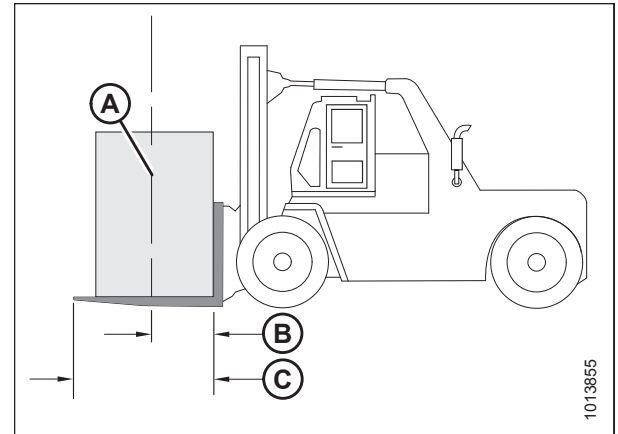


Figure 2.1: Minimum Lifting Capacity

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

Table 2.1 Lifting Vehicle

Minimum Capacity	3630 kg (8000 lb.)
Minimum Fork Length	198 cm (78 in.)

1. Remove the hauler's tie-down straps and chains.

WARNING

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

2. Approach the rotary disc header from its underside and slide the forks under the lifting framework as far as possible.

IMPORTANT:

If the load is two units wide, take care to avoid contacting the other machine.

3. Raise the rotary disc header off the deck.



Figure 2.2: Lifting Rotary Disc Header off Trailer

UNLOADING THE HEADER

4. Back up until the rotary disc header clears the trailer, and slowly lower it to 150 mm (6 in.) from the ground.
5. Take the rotary disc header to the storage or setup area.
6. Set the rotary disc header down on secure, level ground. Do **NOT** lower the header into working position.
7. Check for shipping damage and missing parts.

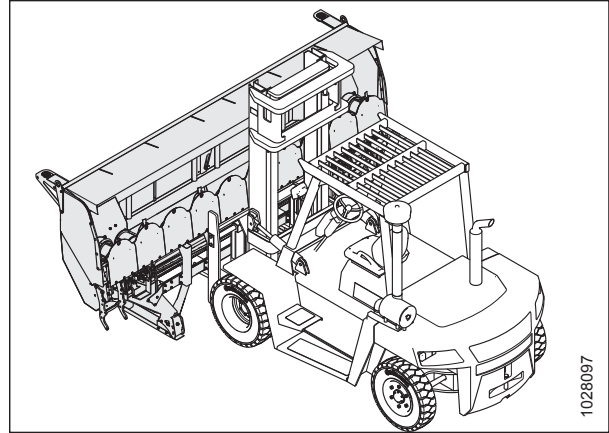


Figure 2.3: Moving Disc Header with Forklift

Chapter 3: Assembling the Header

Follow each procedure in this chapter in order.

3.1 Removing Shipping Supports

To remove the shipping supports from the cutterbar side of the header, follow these steps:

1. Remove four bolts and nuts (A) from each yellow shipping support (B) and remove the four supports from the disc header.

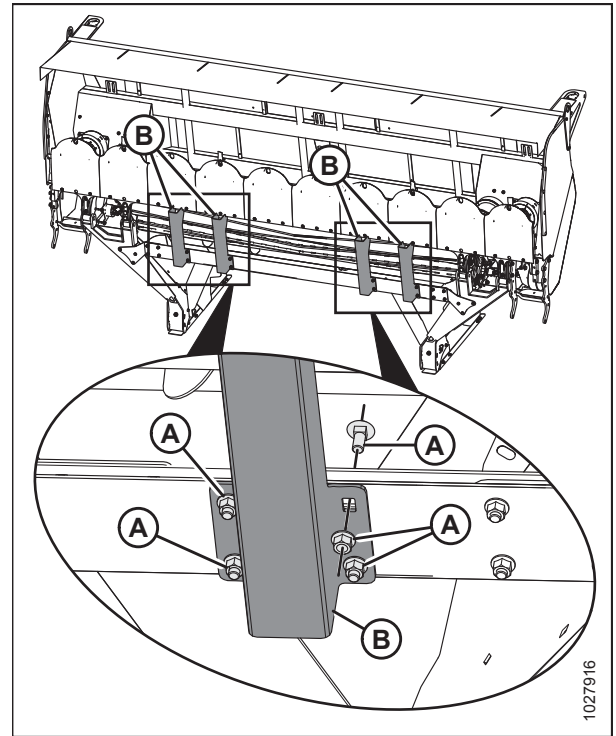


Figure 3.1: Shipping Supports

ASSEMBLING THE HEADER

2. Remove nuts and bolts (A) from the yellow channel and header supports.
3. Remove yellow braces (B) from the header.

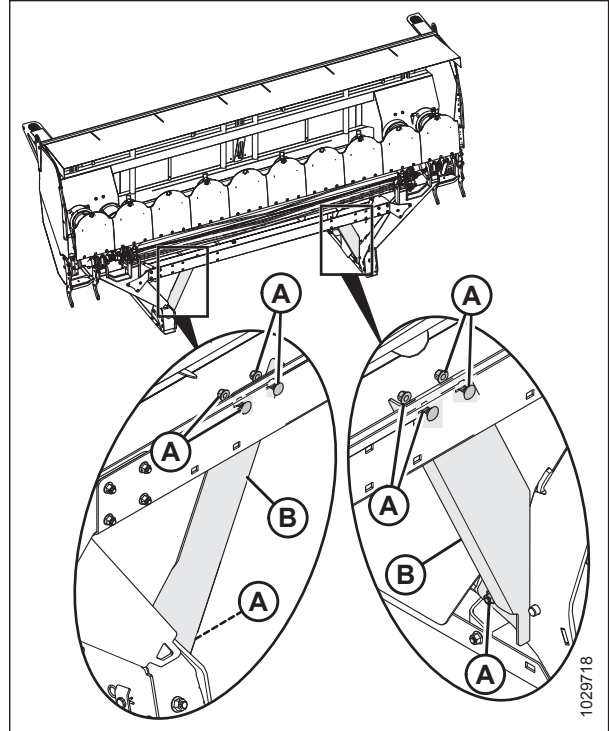


Figure 3.2: Shipping Stand Brace – Right Side Shown, Left Side Opposite

4. Remove four nuts and bolts (A) holding yellow channel (B) in place against the plates on both sides of the header.
5. Remove channel (B) from the header.

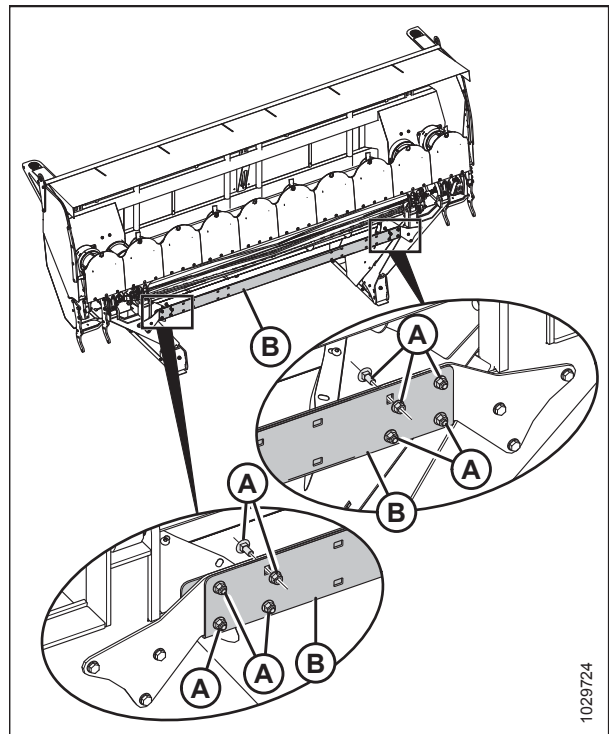


Figure 3.3: Shipping Channel – Right Side Shown, Left Side Opposite

ASSEMBLING THE HEADER

6. Remove three bolts and washers (A) holding each yellow plate (B) onto the header supports.
7. Remove plates (B) from the header.
8. Each header is shipped with either gauge rollers or skid shoes (but not both). Refer to the relevant installation procedure listed below:
 - [3.1.1 Installing Adjustable Gauge Roller Kit, page 12](#)
 - [3.1.2 Installing Adjustable Skid Shoes Kit, page 15](#)

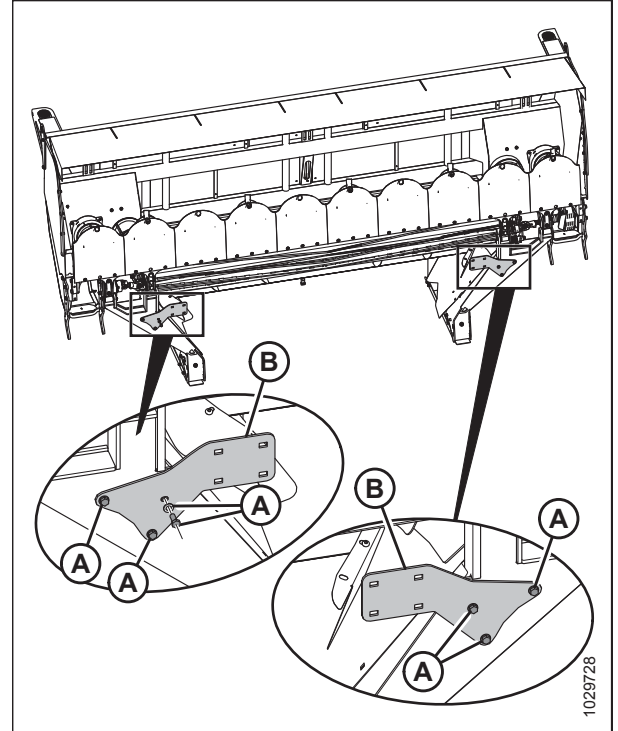


Figure 3.4: Plates

3.1.1 Installing Adjustable Gauge Roller Kit

Follow these steps and install the Adjustable Gauge Roller kit (MD #B6666) while the header is still set on the ground on its shipping stands:

NOTE:

If you are installing the Adjustable Skid Shoe kit (MD #B6667), refer to [3.1.2 Installing Adjustable Skid Shoes Kit, page 15](#).

1. Remove the gauge rollers from the shipping crate and remove lynch pin (A) and bar (B) from each gauge roller (C). Retain the bars and lynch pins.

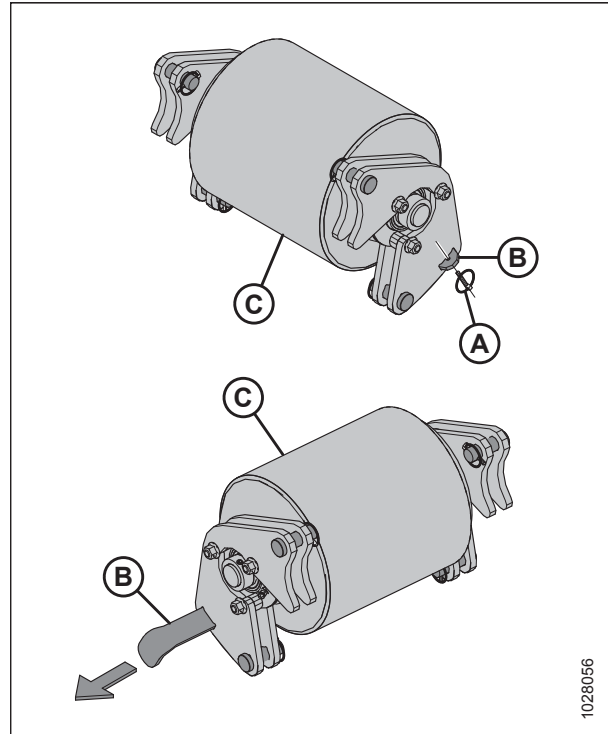
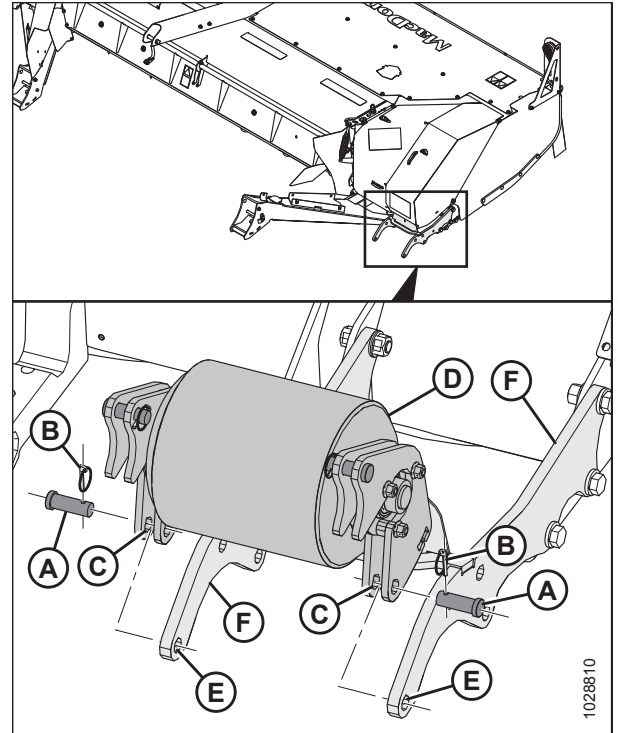


Figure 3.5: Gauge Rollers

ASSEMBLING THE HEADER

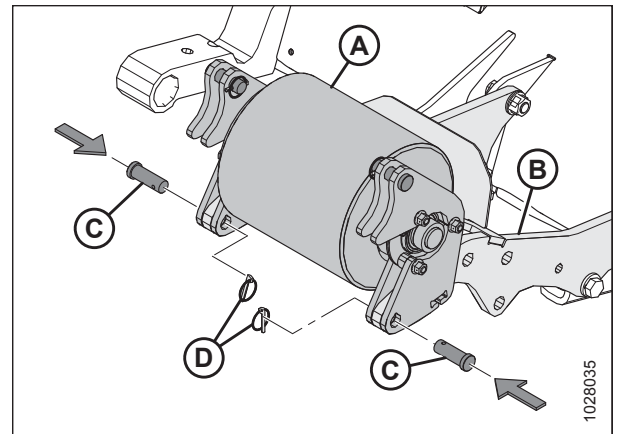
2. Remove and retain clevis pins (A) and lynch pins (B) from holes (C) on both ends of gauge roller (D).
3. Align holes (C) with holes (E) in the header's support bracket (F).



4. Secure gauge roller (A) to support bracket (B) using retained clevis pins (C) and lynch pins (D).

NOTE:

Insert clevis pins (C) from outside gauge roller (A) and secure with lynch pins (D) from inside gauge roller (A).



ASSEMBLING THE HEADER

5. Fully insert retained bar (A) into slot (B) from the inboard side of the gauge roller.

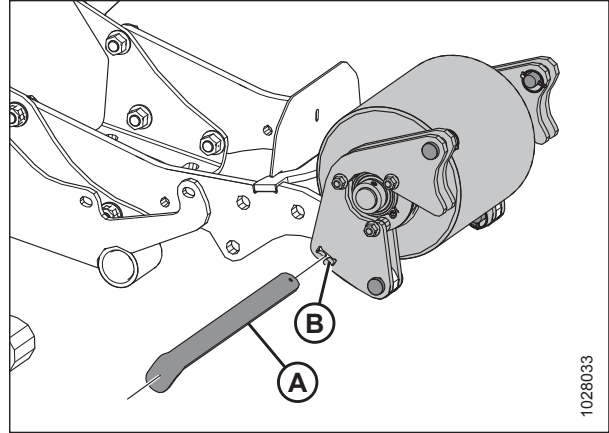


Figure 3.8: Bar and Support Bracket

6. Secure bar (A) with retained lynch pin (B).
7. Repeat the installation on the opposite side of the disc header.
8. Continue to [3.2 Lowering the Header, page 18](#).

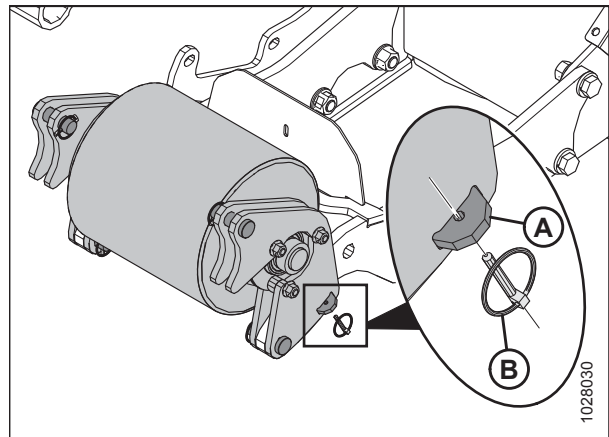


Figure 3.9: Bar and Lynch Pin

3.1.2 Installing Adjustable Skid Shoes Kit

Follow these steps and install the Adjustable Skid Shoes kit (MD #B6667) while the disc header is still set on the ground on its shipping stands:

NOTE:

If you are installing the Adjustable Gauge Roller kit (MD #B6666), refer to [3.1.1 Installing Adjustable Gauge Roller Kit, page 12](#).

1. Remove the skid shoes from the shipping crate and remove bolts (A), washers (B), spacers (C), and nuts (D). Retain the hardware.

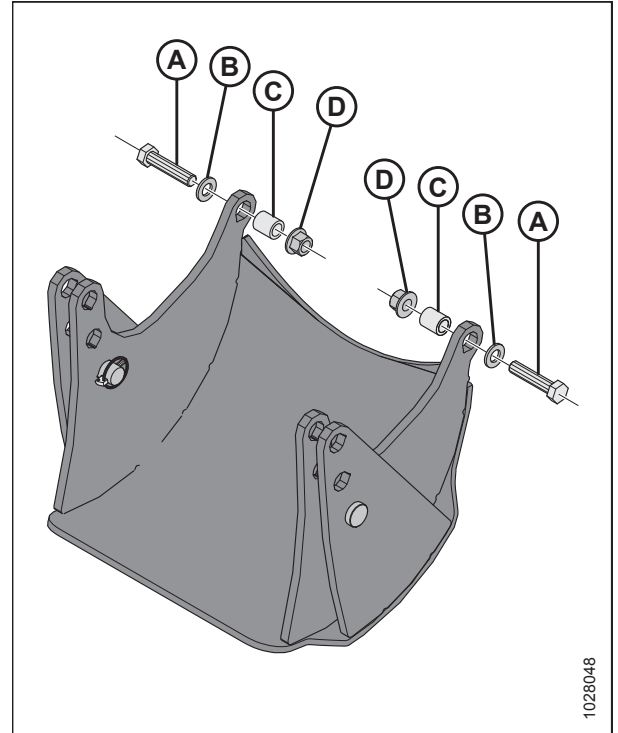


Figure 3.10: Skid Shoe

ASSEMBLING THE HEADER

2. Secure the back of skid shoe (A) to bracket (B) in two locations with retained bolts (C), washers (D), spacers (E), and nuts (F).

NOTE:

Bolt heads should be set outside the skid shoes.

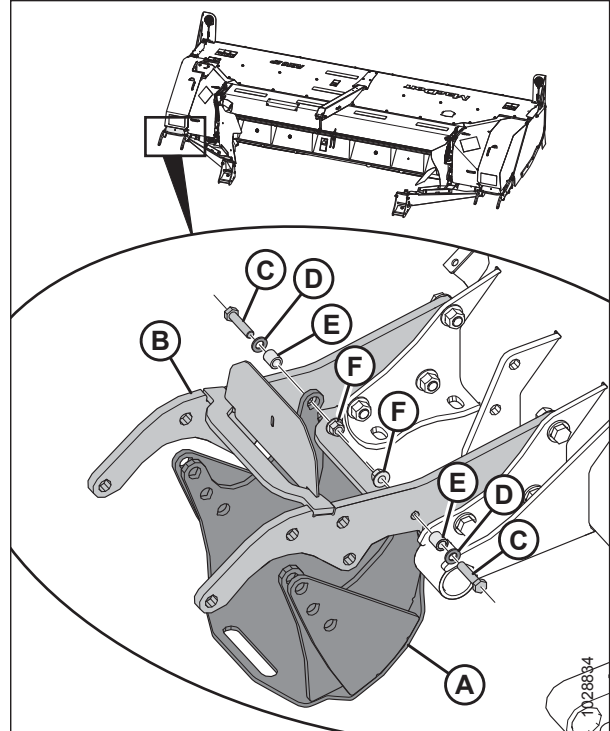


Figure 3.11: Skid Shoe

3. Position skid shoe (A) on bracket (B) in fully raised position (as shown) by aligning skid shoe mounting holes (C) with bracket mounting holes (D).

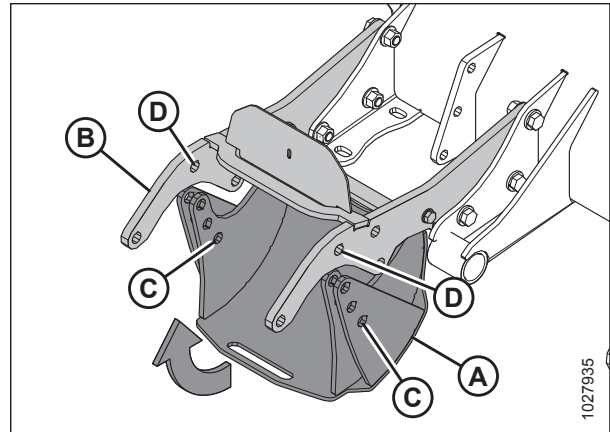


Figure 3.12: Fully Raised Alignment Position

ASSEMBLING THE HEADER

4. Insert clevis pins (A) from outside the skid shoe (B).

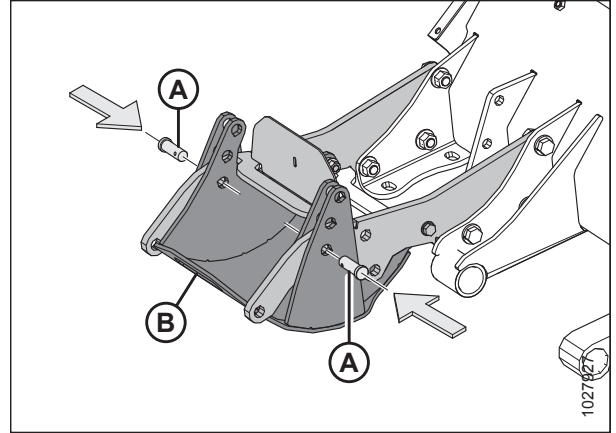


Figure 3.13: Clevis Pins

5. Secure each clevis pin (A) with a lynch pin (B).

NOTE:

Lynch pins should be inserted in the clevis pin from inside the skid shoe.

6. Repeat the installation on the opposite side of the disc header.
7. Continue to [3.2 Lowering the Header, page 18](#).

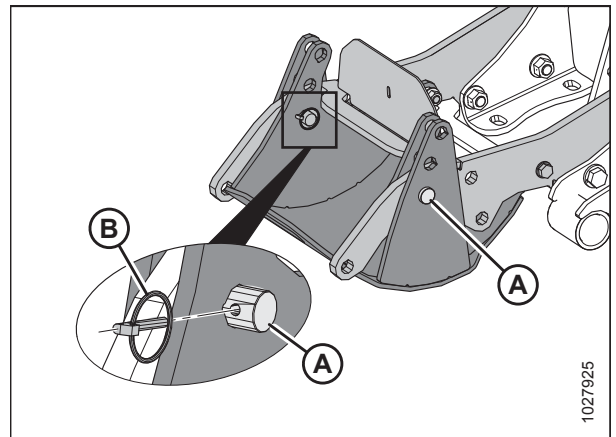


Figure 3.14: Clevis Pin and Lynch Pin

3.2 Lowering the Header

Complete the following steps to lower the header into working position after it has been lifted off its shipping trailer and set down on the ground.

CAUTION

Ensure spreader bar is secured to the forks so that it cannot slide off the forks or towards the mast as the header is lowered to the ground.

Table 3.1 Lifting Vehicle

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

1. Place wood blocks (A) at a distance of 42 cm (16 1/2 in.) (B) on the outboard side of each shipping stand (C).

NOTE:

Wood blocks should be 2 x 4 in. and 1–1.5 m (3–5 ft.) in length.

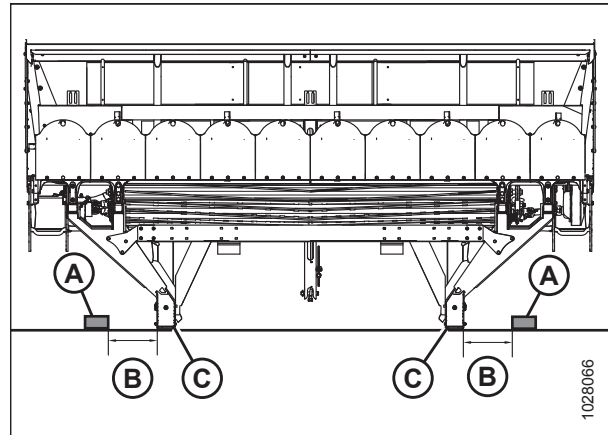


Figure 3.15: Block Placement

ASSEMBLING THE HEADER

2. Attach spreader bar (A) to forks.

IMPORTANT:

Length of spreader bar must be approximately 457 cm (15 ft.).

3. Approach the header from its underside with the forklift.
4. Attach chains with hooks to the spreader bar (A) and hook into shipping brackets (B) on both sides of the disc header.



CAUTION

Stand clear when lowering the disc header.

IMPORTANT:

Chain length must be sufficient to provide a minimum clearance (C) of 1219 mm (48 in.) between the disc header and the spreader bar.

IMPORTANT:

Do **NOT** attach chain hooks to the hazard light standards.

5. Raise forks until lift chains are fully tensioned.
 6. Back up the forklift **SLOWLY**, and lower the disc header (A) into working position on the wooden blocks (B) placed in Step 1, page 18.
- NOTE:**
- Watch out for contact between hazard light brackets and the lowering chains while the header is being lowered. Take care to avoid damaging the lights and brackets.
7. Remove chains from the header.

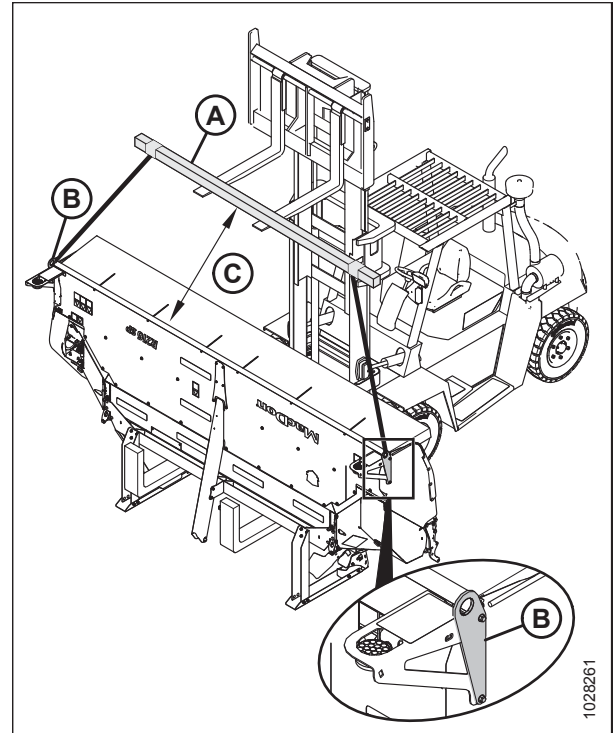


Figure 3.16: Spreader Bar Attached to Disc Header

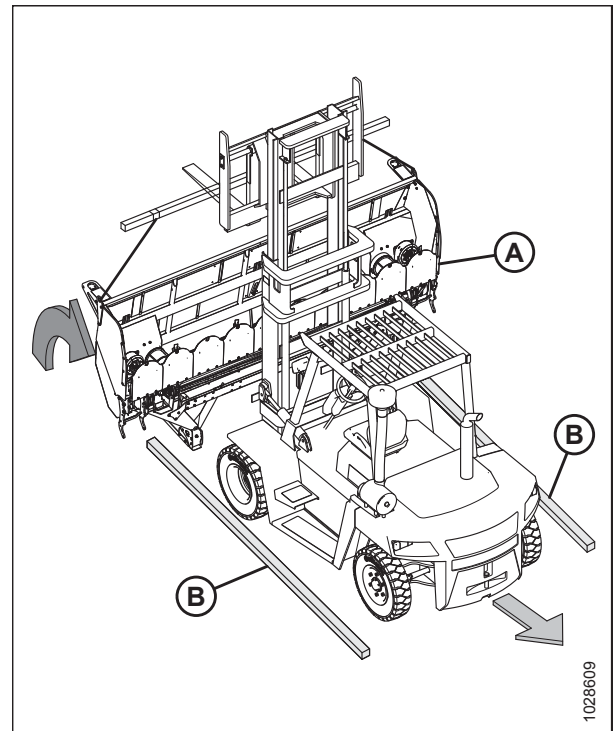


Figure 3.17: Lowering Disc Header to the Ground

3.3 Unpacking Hydraulic Hoses and Electrical Harness

Follow these steps to unpack the hydraulic hoses and electrical harness.

1. Remove shipping wire securing hose ends (A) to secured hoses (B) and remove all packing foam from the hose ends.

NOTE:

Packing foam not shown in illustration at right.

2. Remove packing foam from hose support (C).

NOTE:

Packing foam not shown in illustration at right.

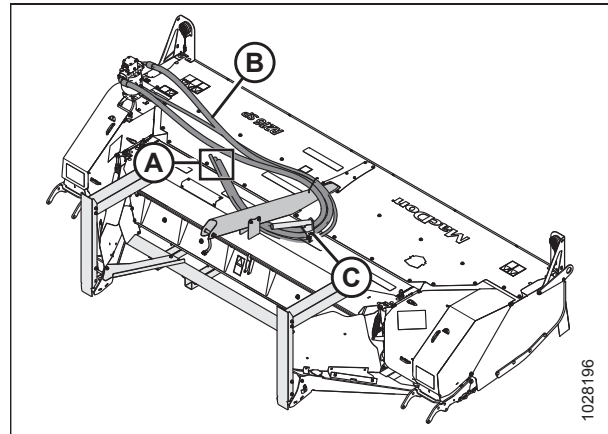


Figure 3.18: Hydraulic Hose Bundle in Shipping Position

3. Remove shipping wire cross ties (A) securing hoses (B) to center-link (C) near shipping stands (D), and pull the hoses out from under the center-link.

NOTE:

Shipping wire cross ties not shown in illustration at right.

4. Remove shipping wire (E) from center-link (C) and move hoses (B) away from the center-link. Rest hoses (B) on top of the header.

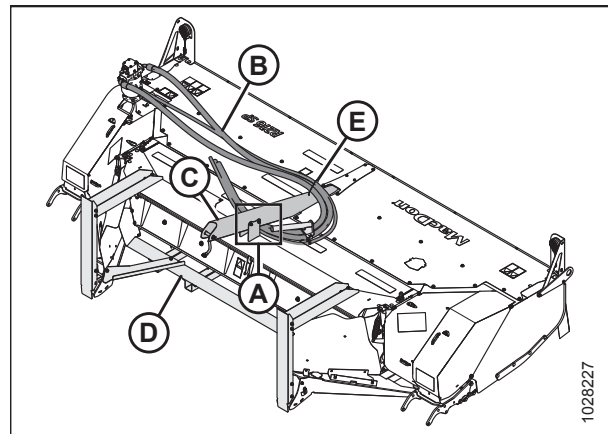


Figure 3.19: Hydraulic Hose Bundle in Shipping Position

5. Remove shipping wire and remove coiled electrical harness (A) from the center-link (B). Place the harness in a safe and clean spot until it's time to install on an M1240 Windrower.

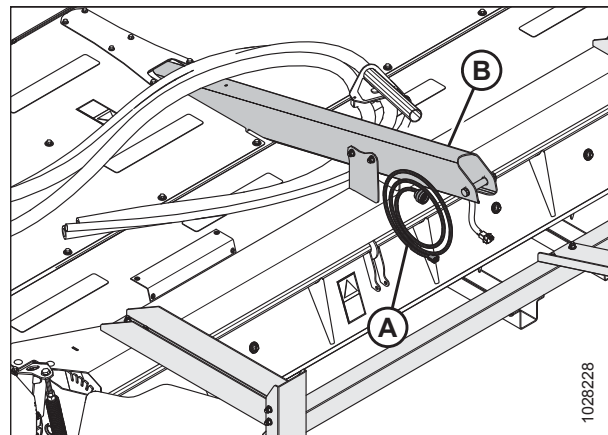


Figure 3.20: Center-Link

3.4 Removing Shipping Stands

Complete the following steps to remove the remaining shipping stands from the header.

NOTE:

This procedure must be completed on both sides of the header near the forming shields.

1. Remove nut (A) from the outboard side of the right header boot and bolt (B) from the inboard side of the right shipping stand (C). Repeat on the opposite side of the header.

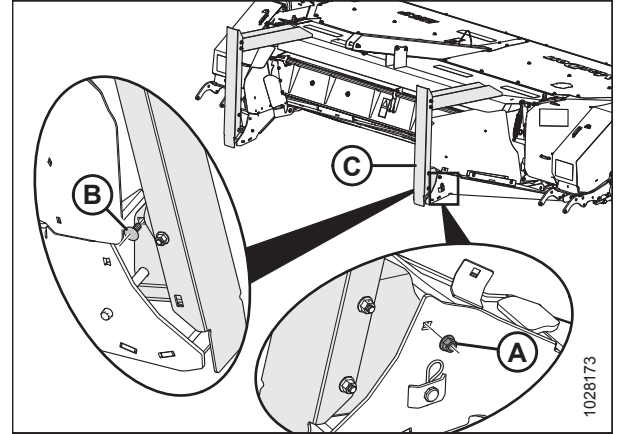


Figure 3.21: Shipping Stand – Right Side Shown, Left Side Opposite

2. Remove four nuts (A) and bolts (B) from top of shipping stands (C) and remove the shipping stands from the header.

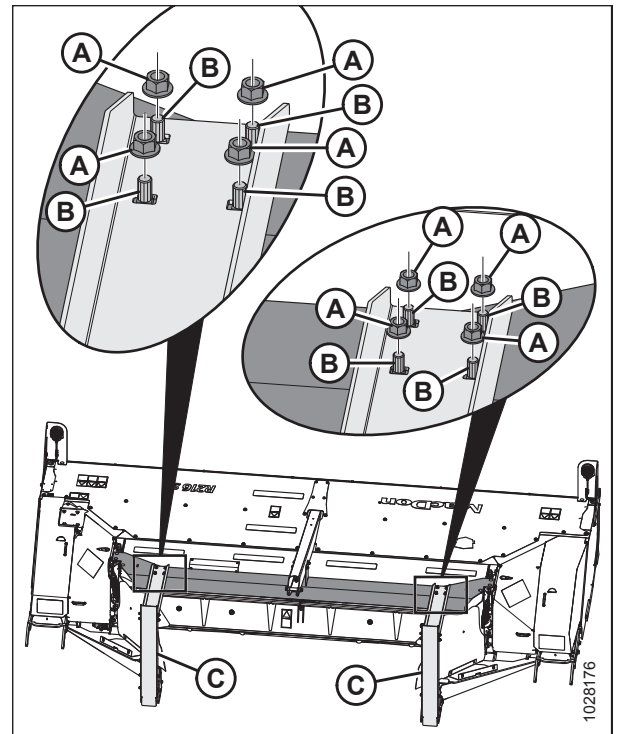


Figure 3.22: Shipping Stand

ASSEMBLING THE HEADER

3. Remove and retain bolts (A) and remove shipping plate (B). Discard plate (B) and reinstall bolts (A) on the header. Repeat for the other side of the header.

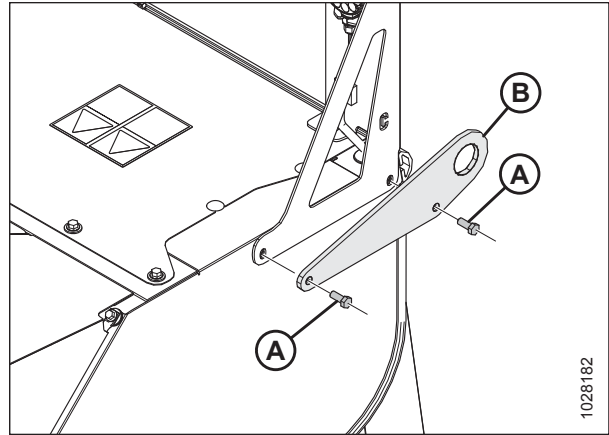


Figure 3.23: Shipping Plate – Right Side Shown, Left Side Opposite

3.5 Adjusting Rear Baffle Deflectors

Four rear baffle deflector fins are located under the baffle. The baffle and its deflectors require adjustment from shipping configuration to field position.

To adjust the rear baffle and deflector fins, follow these steps:

1. Remove and retain hardware (A) securing deflector (B) to rear baffle (C). Remove and retain deflector (B) from the header. Repeat on the opposite side of the header.

NOTE:

There are three sets of hardware (A) on the baffle, but only two sets hold deflector (B) in place in shipping position. Ensure all three sets of hardware (A) are removed and retained.

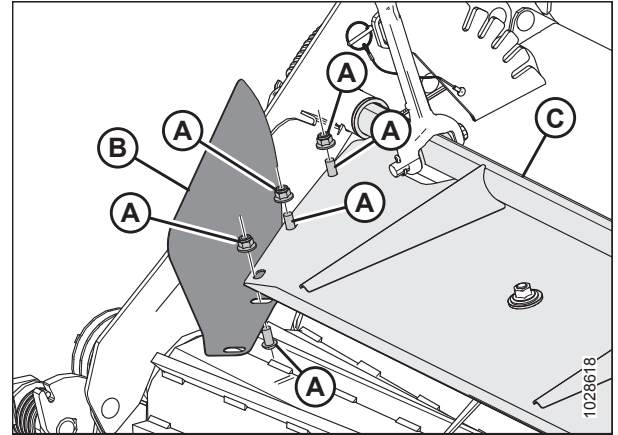


Figure 3.24: Deflector and Rear Baffle — View of Deflector Underside, Right Side of the Header

2. Remove pin (A) from baffle handle (B), and adjust the rear baffle by placing handle (B) in center position on baffle bracket (C).

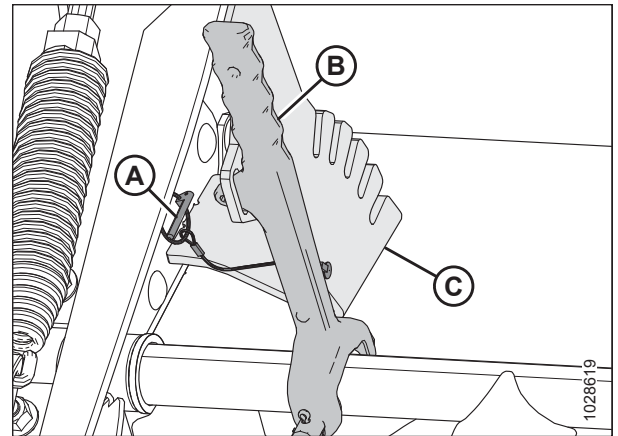


Figure 3.25: Baffle Handle and Baffle Bracket

3. Replace pin (A) in baffle handle (B) to secure the handle in fully raised position on baffle bracket (C).

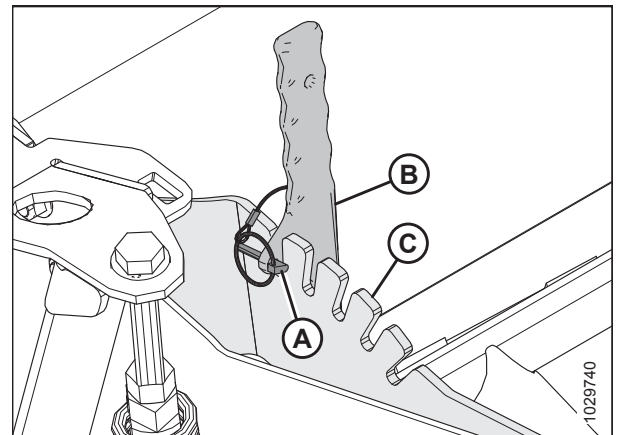


Figure 3.26: Baffle Handle

ASSEMBLING THE HEADER

4. Turn over deflector (A) and place on rear baffle (B) and between fixed deflector plate (C) and outer plate (D).
5. Loosely secure deflector (A) in place with retained hardware (E) in three locations. Do **NOT** tighten hardware. Repeat on the opposite side of the header.
6. Adjust the placement of deflector (A) as far inboard as possible so that it contacts fixed deflector plate (C) welded in place on the header. Tighten hardware (E) once deflector is properly placed. Repeat on the opposite side of the header.

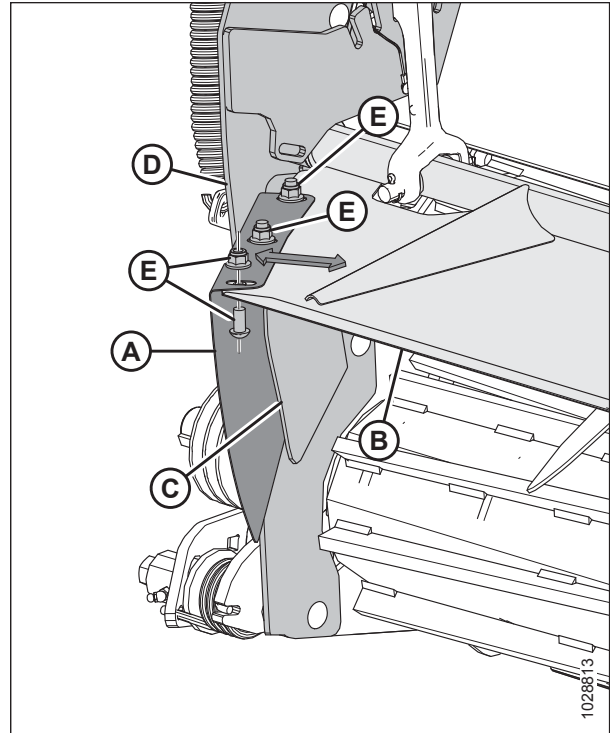


Figure 3.27: Deflector and Rear Baffle

3.6 Unpacking Curtain

Follow these steps to unpack the cutterbar curtain on the rotary disc header:

1. Loosen 12 nuts (A) under the disc header top shield 2–3 turns to loosen bumper (B).

IMPORTANT:

Do **NOT** remove nuts (A) from the disc header; the hardware should be loosened only enough so cable ties (C) can be removed.

2. Cut and remove six cable ties (C) securing cutterbar curtain (D) at the front of the disc header.

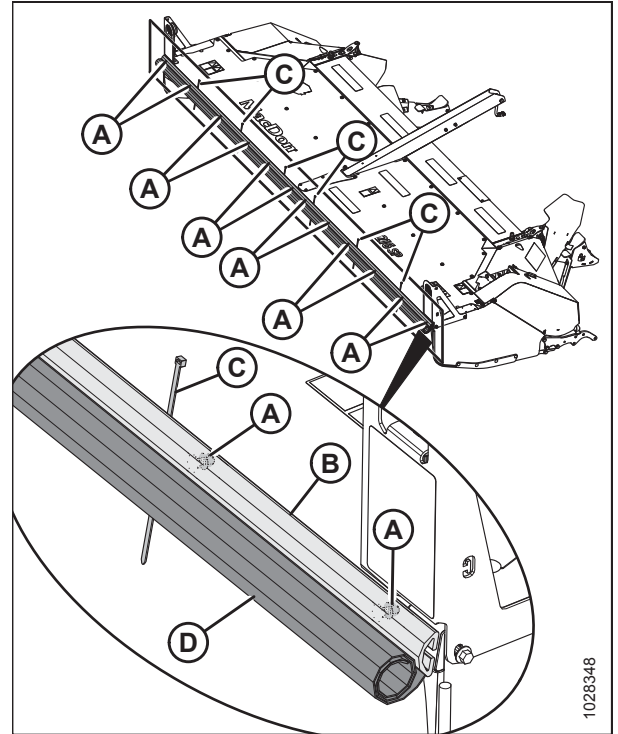


Figure 3.28: Cutterbar Curtain

3. Ensure bumper (A) aligns with the disc header top shield and tighten all loosened hardware (B) to 39 Nm (28.7 lbf·ft) so bumper (A) and cutterbar curtain (C) are held snugly in place.

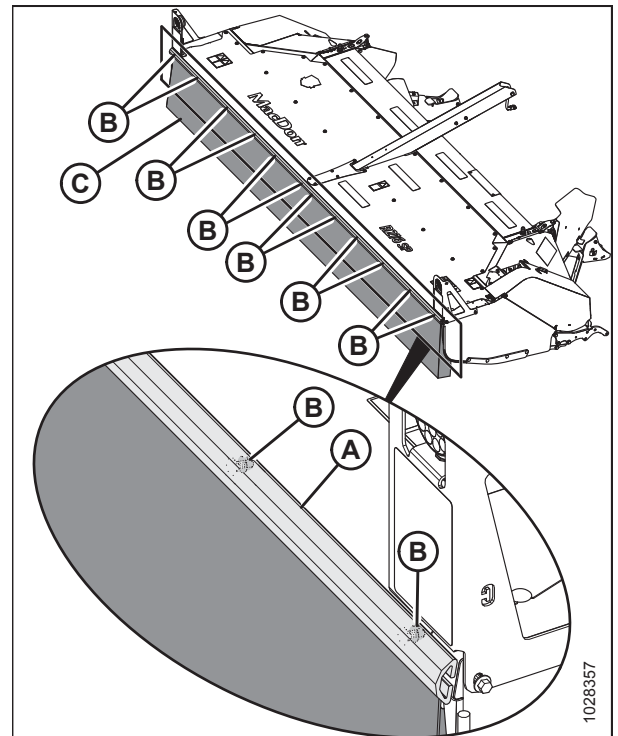


Figure 3.29: Cutterbar Curtain



WARNING

Ensure the cutterbar is completely clear of foreign objects. These objects can be ejected with considerable force when the machine is started and may result in serious injury or machine damage.

4. Check the cutterbar area for debris and foreign objects. Ensure all shipping material is removed.
5. Ensure that the curtain hangs properly and completely encloses the cutterbar area. Minor creases in the curtain will eventually straighten out.

Chapter 4: Attaching Header to M1240 Windrower

4.1 Assembling and Installing Forming Shield

Unpack and assemble the forming shield as follows:

1. Unpack and remove shipping material from deflectors (A) and remove deflectors from cover (B).
2. Locate and open the included hardware bag.

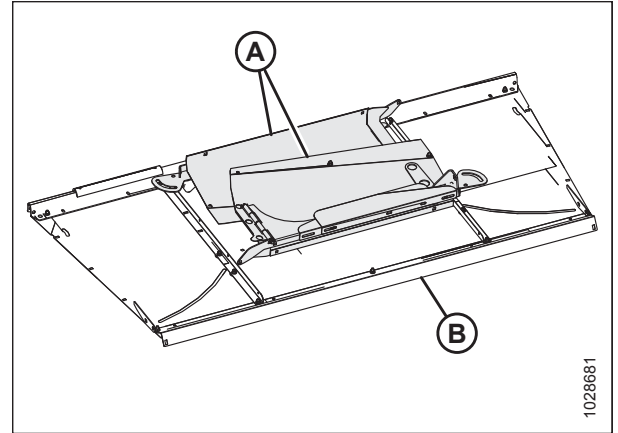


Figure 4.1: Forming Shield in Shipping Configuration

3. Remove cotter pins (A) and deflector hinge rod (B) from the right side bracket (C) and side deflector (D). Retain rod and pins.

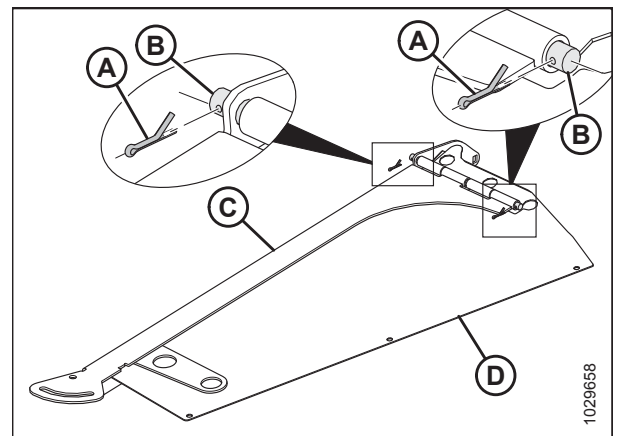


Figure 4.2: Deflector Hinge Rod and Cotter Pins

ATTACHING HEADER TO M1240 WINDROWER

4. Lay the cover upside down on an even work surface and install right side bracket (A) on the right side of the forming shield with five 25 mm-long short neck M10 bolts (B) and five nuts (C). Repeat this step and install the left side bracket on the left side of the forming shield.

NOTE:

Install bolts (B) from the forming shield's underside and install nuts (C) on the forming shield's top side.

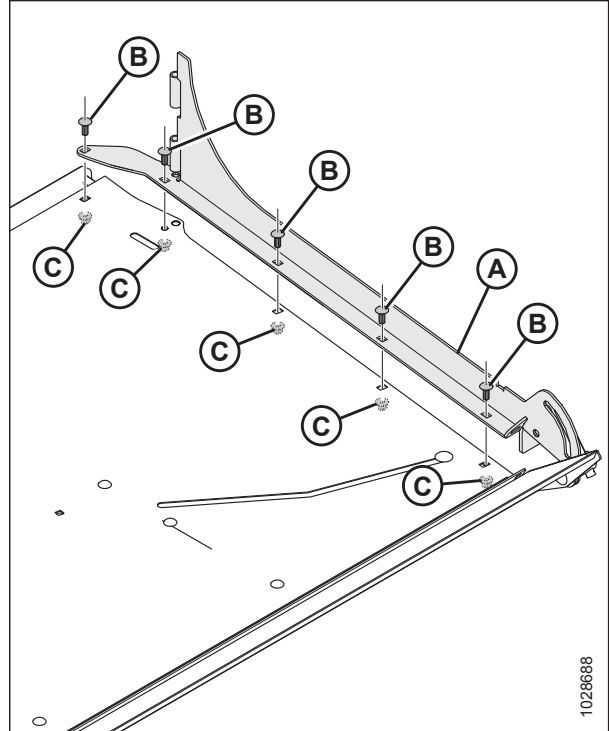


Figure 4.3: Right Side Bracket

5. Secure baffle (A) to side bracket (B) with bolt (C) and nut (D). Repeat on the other side of the header.

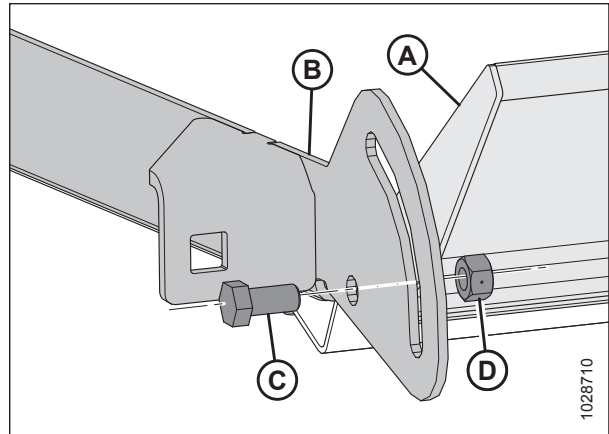


Figure 4.4: Right Side Bracket and Baffle

ATTACHING HEADER TO M1240 WINDROWER

6. Install bolt (A) and nut (B) through plate (C) and forming shield angle (D). Repeat this step on the left side of the forming shield.

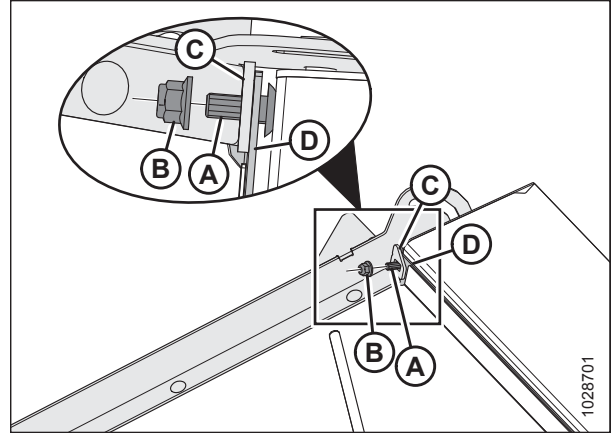


Figure 4.5: Plate and Forming Shield Angle

7. Flip the forming shield over so the forming shield is right side up and set on an even work surface.
8. Slide the angled end of deflector adjustment cover (A) under top sheet support (B) on the top of the forming shield. Repeat on other side of the forming shield.

NOTE:

Hardware (C) securing top sheet support (B) may need to be loosened to fit deflector adjustment cover (A) underneath. Retighten any loosened hardware to hold the deflector adjustment covers (A) in place on the forming shield.

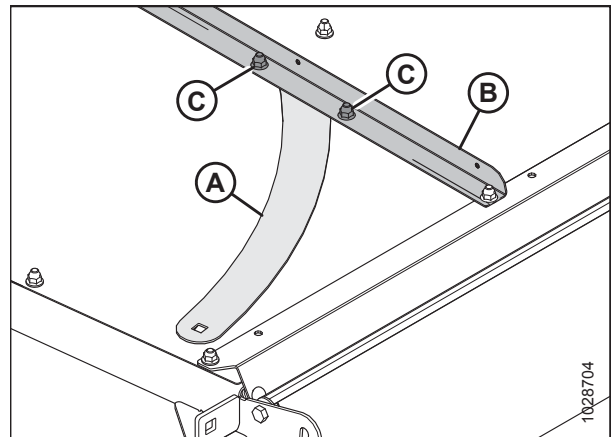


Figure 4.6: Deflector Adjustment Cover — Right Side Up

ATTACHING HEADER TO M1240 WINDROWER

9. Flip the forming shield upside down and set on an even work surface.
10. Install side deflector (A) on the right side of the forming shield with one 30 mm-long short neck M10 bolt (B).
11. Secure bolt (B) near the front of the forming shield with washer (C) and two jam nuts (D). Snug nuts (D) against the forming shield, but keep them loose enough to rotate freely.

NOTE:

Washer (C) and nuts (D) should be on top of the forming shield when the forming shield is set upright.

12. Use one 25 mm-long square neck M12 bolt (E) near the rear of the forming shield in deflector adjustment cover (F) to secure two washers (G), rubber washer (H), and handle (J). Repeat steps for the left side of the forming shield.

NOTE:

Handle (J) should be on top of the forming shield when the forming shield is set upright.

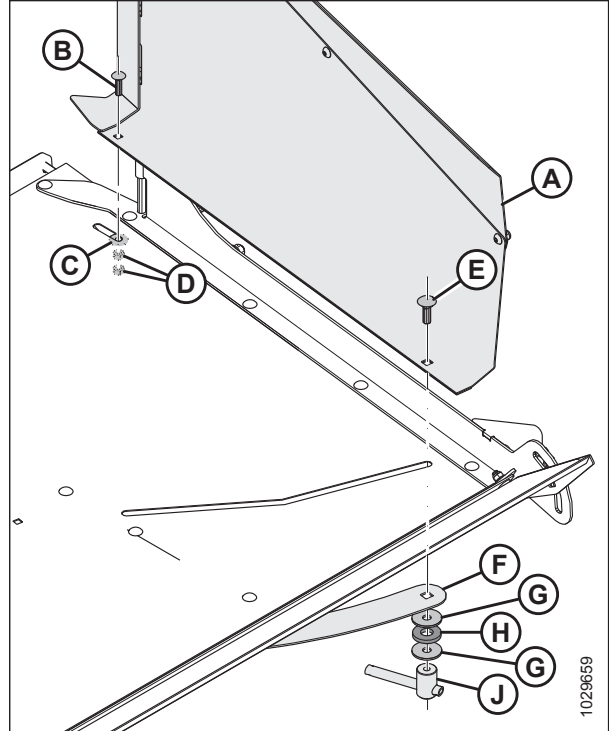


Figure 4.7: Right Side Bracket

13. At the rear of the forming shield, insert deflector hinge rod (A) through the hinges on installed side deflector (B) and side bracket (C).
14. Secure deflector hinge rod (A) in place with two cotter pins (D), one placed at the top and the bottom of the hinge rod.
15. Repeat steps on the other side of the forming shield.

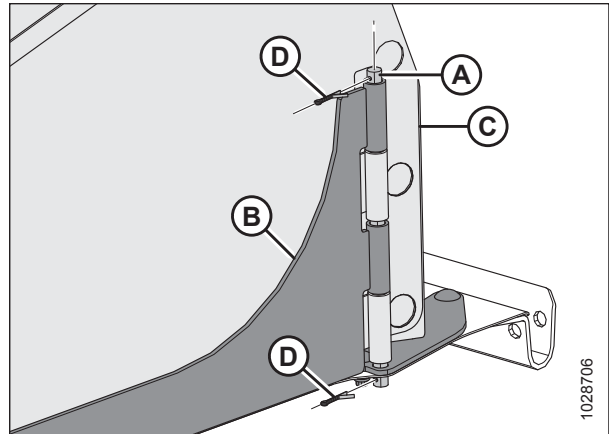


Figure 4.8: Deflector Hinge Rod

ATTACHING HEADER TO M1240 WINDROWER

16. Install handle (A) with two flat washers (B) and one rubber washer (C) using bolt (D) installed through baffle (E) and right side bracket (F). Repeat installation at the left side of the forming shield.

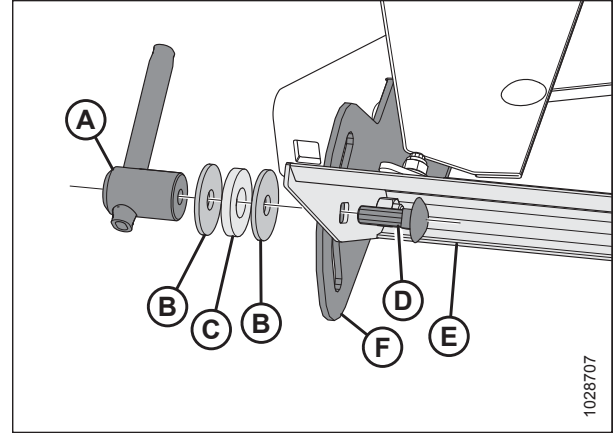


Figure 4.9: Baffle Handle

17. Lay cover (A) upside down on a flat surface.
18. Install right deflector (B) on the right side of cover (A) using two bolts and nuts (C). Repeat step to install the left deflector at left side of cover (A).

NOTE:

The narrower deflector end faces the front of cover (A), while the wider end faces the rear.

NOTE:

Deflector removed from illustration for clarity.

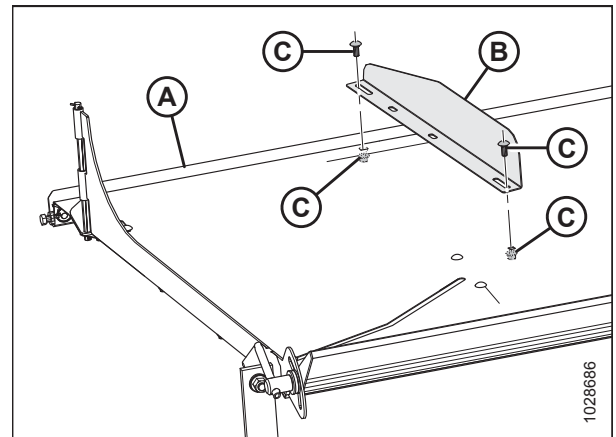


Figure 4.10: Forming Shield Cover Upside Down — Right Side Shown

19. Flip the forming shield right side up and into installation position.

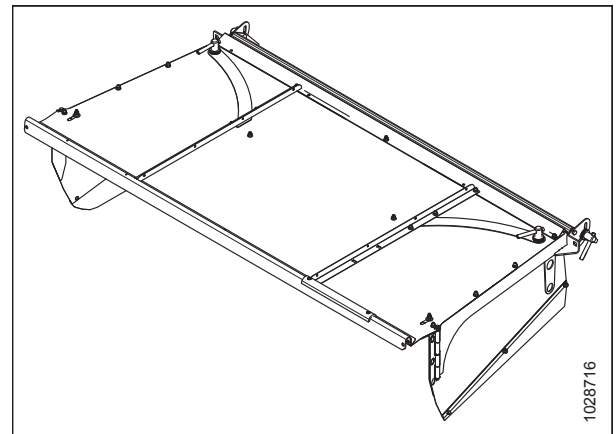


Figure 4.11: Forming Shield Right Side Up

ATTACHING HEADER TO M1240 WINDROWER

20. Install shield mount plates (A) on the inside of the windrower legs with two hex head bolts (B) and nuts (C) each.

NOTE:

Make sure the top bolt (B) is installed in the foremost setting hole on the shield mounting plate (A). This ensures the forming shield is set at its highest setting.

21. Place the forming shield in position under the windrower.

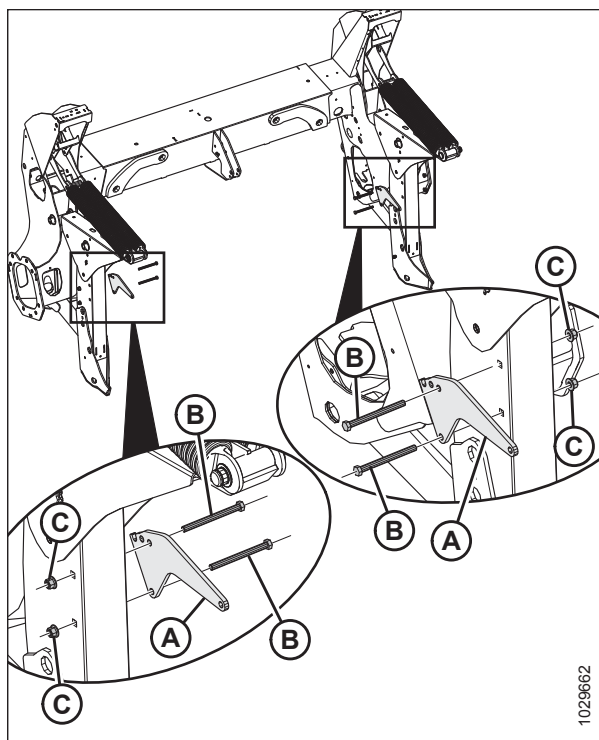


Figure 4.12: Shield Mount Plates

22. Remove and retain clevis pins (A) from the front corners of the forming shield.

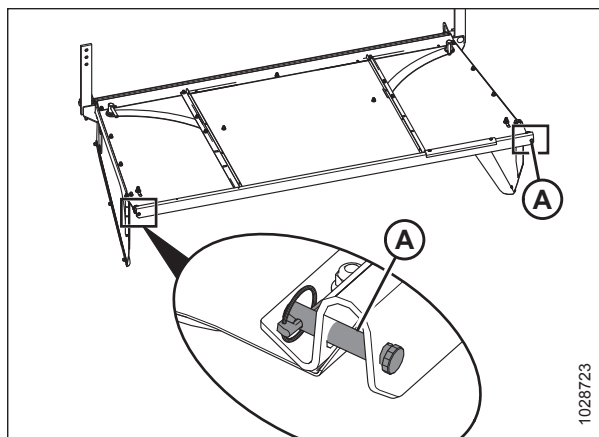


Figure 4.13: Clevis Pin

ATTACHING HEADER TO M1240 WINDROWER

23. Using spacer (A), hex head bolt (B), and nut (C), attach forming shield (D) to shield mount plate (E) installed on the inside of the windrower legs. Repeat on other side of the windrower and forming shield.

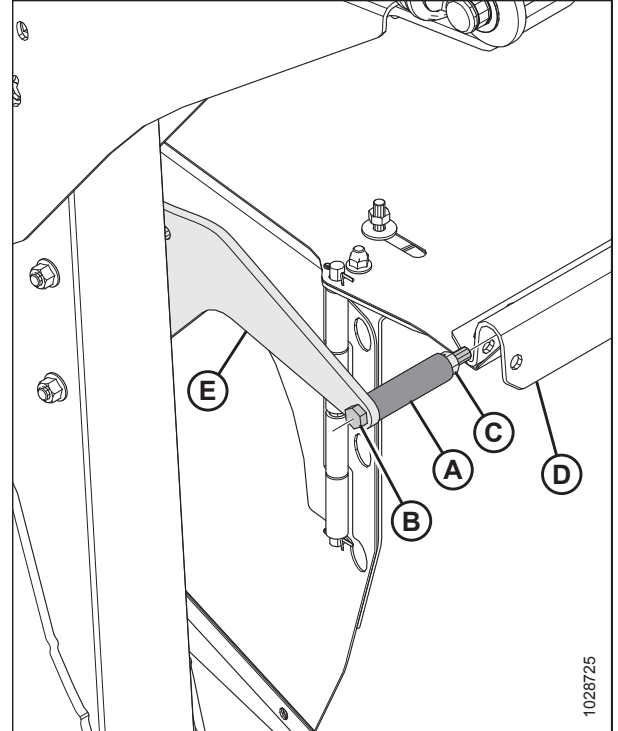


Figure 4.14: Shield Mount Plate and Attaching Hardware

24. Install retained clevis pin (A) to hold forming shield in place. Repeat on the other side of the forming shield.

NOTE:

Clevis pin (A) should pass under hex head bolt (B) and spacer installed in the previous step, with its lynch pin (C) set towards the interior of the header.

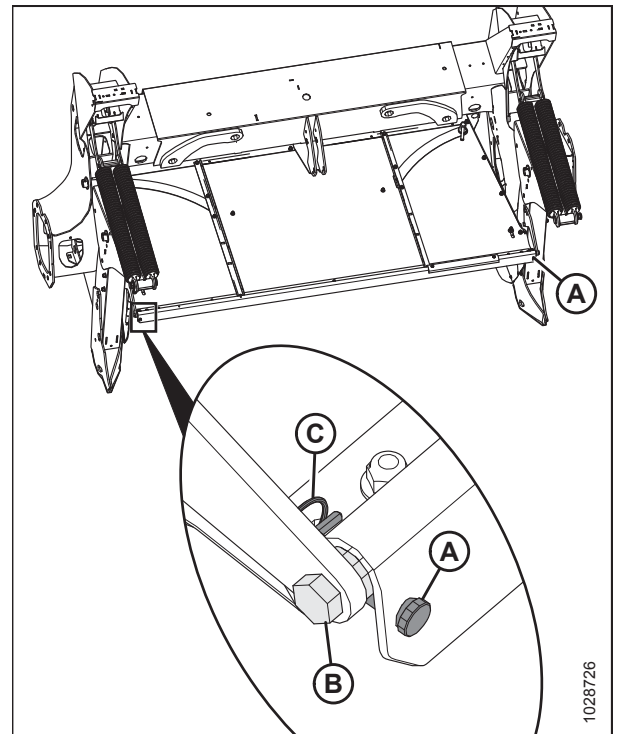


Figure 4.15: Clevis Pin

ATTACHING HEADER TO M1240 WINDROWER

25. Install rubber strap (A) on side bracket (B) using bolt (C), washer (D), and nut (E). Repeat on the left side of the forming shield.
26. Pull rubber strap (A) up towards windrower frame and place onto straight pin (F).
27. Secure rubber strap (A) in place with washer (G) and hair pin (H).
28. Repeat Step 25, page 34 to Step 27, page 34 for the left side of the forming shield.

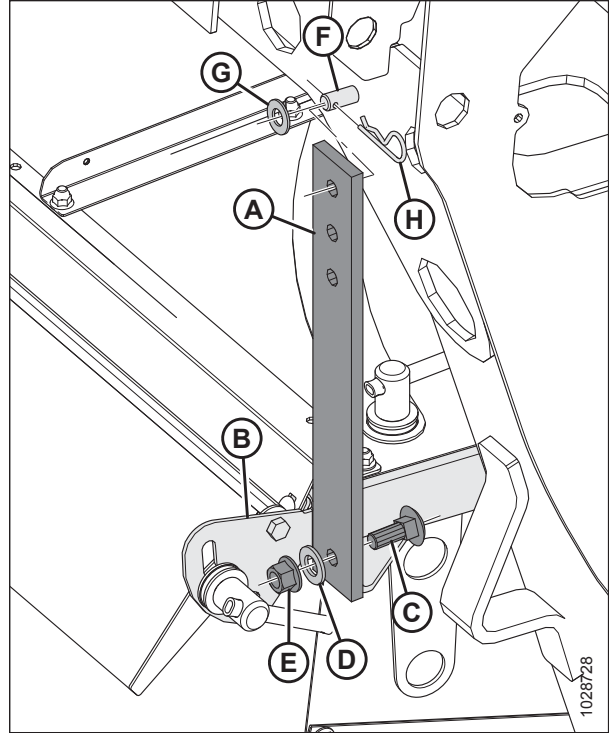


Figure 4.16: Rubber Strap — Right Side of Forming Shield

4.2 Routing Electrical Harness

A total of seven cable ties (A) will secure the routed header electrical harness (B) in place alongside the windrower main harness and avoid rub/wear points that could damage the harnesses. Keep cable ties (A) loose on harness until the entire harness has been routed on the header.

NOTE:

Windrower main harness is not shown in the illustration at right.

To route the R216 Rotary Disc Header electrical harness on the M1240 Windrower, follow these steps:

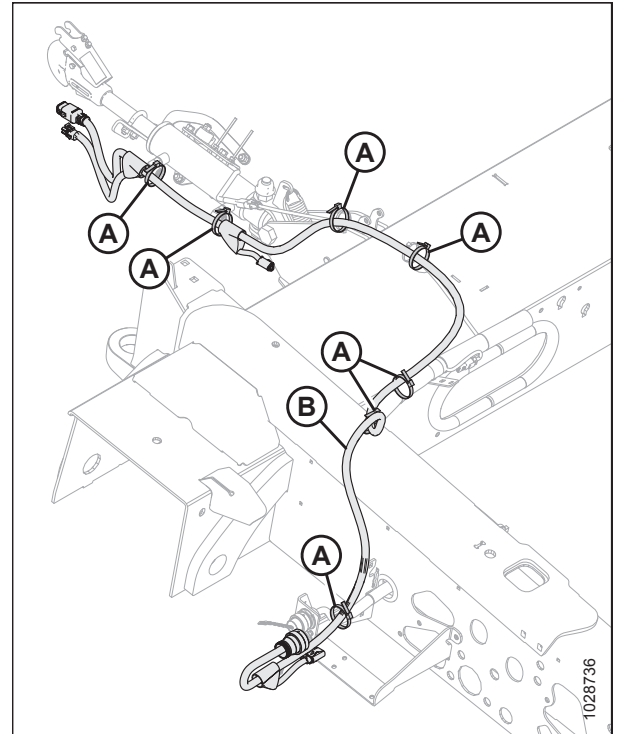


Figure 4.17: Cable Ties Securing Header Electrical Harness

1. Move windrower left (cab-forward) platform (A) to the **OPEN** position. For instructions, refer to the windrower operator's manual.

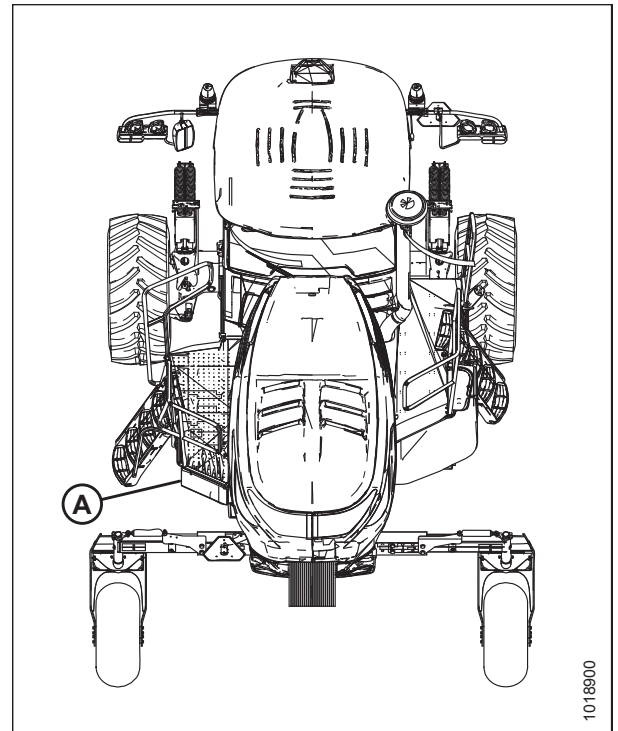


Figure 4.18: Windrower with Left Platform in Open Position

ATTACHING HEADER TO M1240 WINDROWER

- Retrieve electrical harness (A) and loosely attach it to center-link (B) with two cable ties (C).

NOTE:

Cable ties (C) should bundle electrical harness (A) with other hydraulic hoses from the windrower. The other hydraulic hoses are not shown in the illustration at right.

NOTE:

Do **NOT** tighten cable ties (C) on harness at this point.

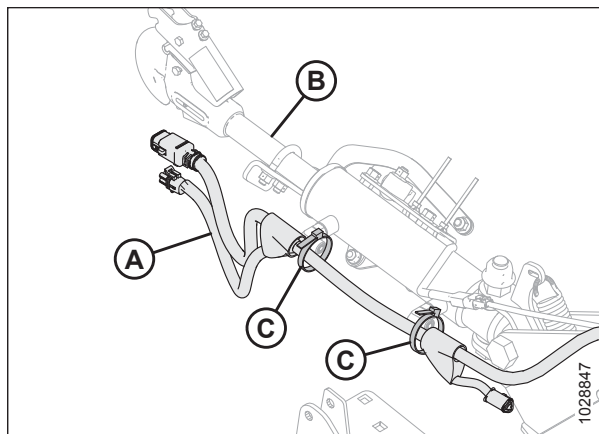


Figure 4.19: Electrical Harness Routed Along Center-Link with Cable Ties

- Route electrical harness (A) over the windrower forward cross member and loosely secure it to the windrower main harness (B) with three cable ties (C).

NOTE:

Do **NOT** tighten cable ties (C) on harness at this point.

NOTE:

The windrower main harness is only partially illustrated.

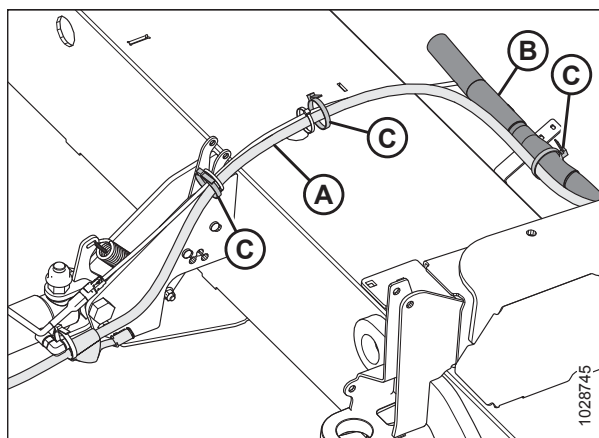


Figure 4.20: Forward Cross Member and Cable Ties

ATTACHING HEADER TO M1240 WINDROWER

4. Route electrical harness (A) over windrower frame (B) towards the multicoupler base.
5. Loosely secure electrical harness (A) to the windrower main harness (C) with one cable tie (D) near the windrower frame.

NOTE:

Do **NOT** tighten cable tie (D) on harness at this point.

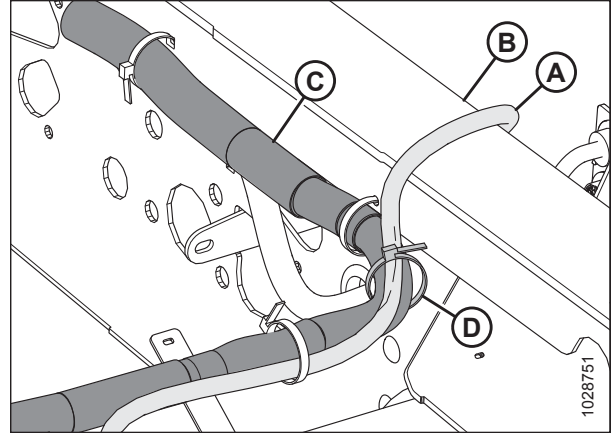


Figure 4.21: Electrical Harness Routing

6. Connect header electrical harness (A) to plug (B) set in multicoupler base (C).
7. Secure harness (A) to windrower harness (D) with cable tie (E) to avoid rub/wear points that could damage the harnesses.

NOTE:

Ensure there is enough slack in harness (A) before securing with cable tie (E) to maintain a minimum bend radius of 50 mm (2 in.) and avoid contact with multicoupler base (C).

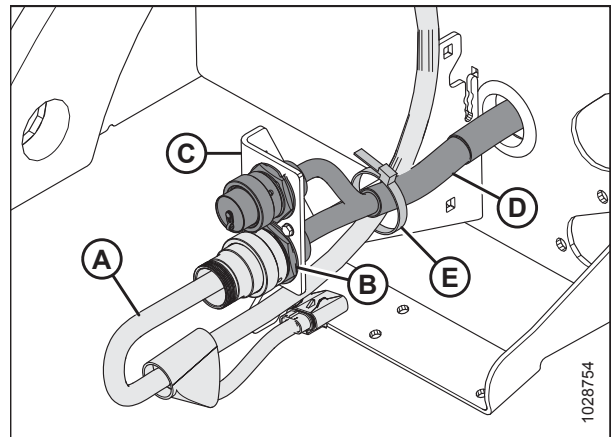


Figure 4.22: Electrical Connection

4.3 Attaching Disc Header

The M1240 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. **Hydraulic Center-Link without Self-Alignment:** Remove pin (A) and raise center-link (B) until hook is above the attachment pin on disc header. Replace pin (A) to hold center-link in place.

IMPORTANT:

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

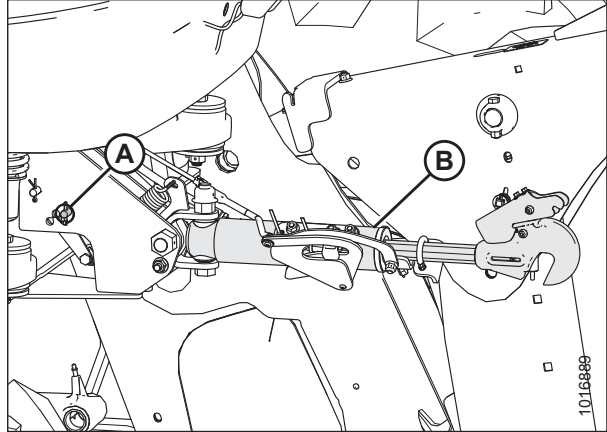


Figure 4.23: Hydraulic Center-Link

2. Remove hairpin (A) from clevis pin (B), and remove pin from disc header support (C) on both sides of disc header.

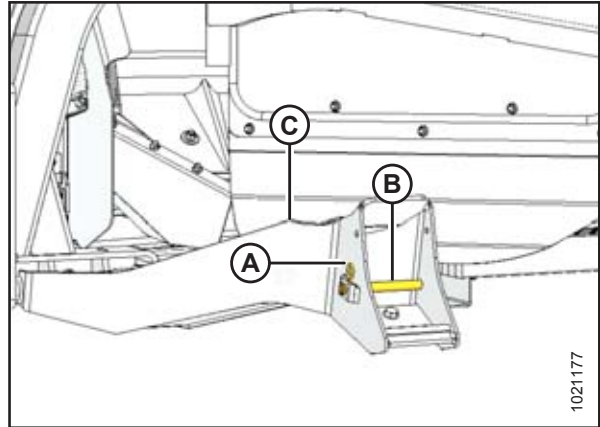


Figure 4.24: Disc Header Support

ATTACHING HEADER TO M1240 WINDROWER

- Lift header support (A) and place 2 x 4 in. blocks (B) under the header support. A total of four 2 x 4 in. blocks (B) will be necessary to raise the boot up and into field position. Ensure the boot's bottom edge (C) is parallel with the ground.

NOTE:

Do **NOT** stack blocks (B) crosswise as doing so can make the header unstable when attempting to connect the header and windrower. Stack blocks (B) parallel with each other.

NOTE:

To better show placement of blocks (B) under the header supports (A), the illustration at right does not show the two 2 x 4 blocks placed in Step 1, [page 18](#).

- Repeat Step 3, [page 39](#) on opposite side.



CAUTION

Check to be sure all bystanders have cleared the area.

- Start the windrower engine.



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.

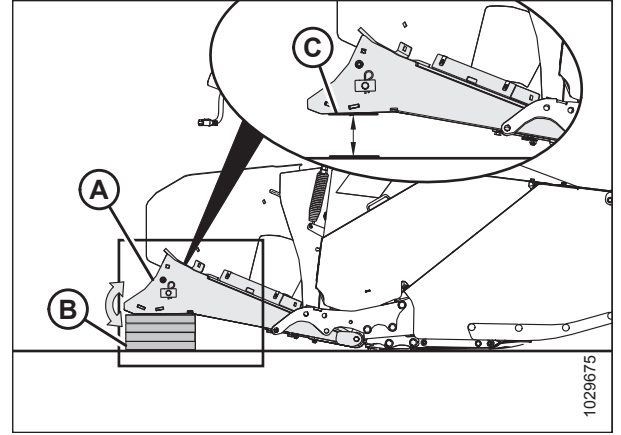


Figure 4.25: Header Boot — Right Side, Left Opposite

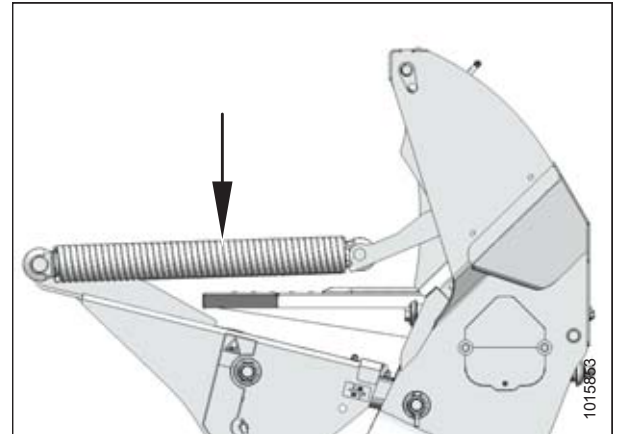


Figure 4.26: Header Float Spring

- Press rotary scroll knob (A) on the Harvest Performance Tracker (HPT) display to highlight QuickMenu options.
- Rotate scroll knob (A) to highlight the HEADER FLOAT symbol (B), and press scroll knob to select. The header float adjust screen displays.



Figure 4.27: HPT Display

ATTACHING HEADER TO M1240 WINDROWER

8. Press soft key 3 (A) to remove the header float.

NOTE:

If the header float is active, the icon at soft key 3 will display REMOVE FLOAT; if header float has been removed, the icon will display RESUME FLOAT.



Figure 4.28: HPT Display

9. Press HEADER DOWN switch (E) on the ground speed lever (GSL) to fully retract header lift cylinders.
10. **Self-Aligning Hydraulic Center-Link:** Press the 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.

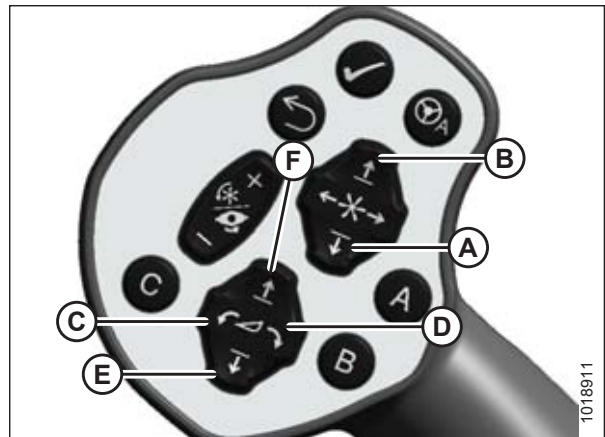


Figure 4.29: GSL

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

11. Lift the tractor lift linkage (A) to align with header supports (B).
12. Drive the windrower slowly forward until lift linkage feet (A) enter the supports (B). Continue to drive slowly forward until feet engage the supports and the header nudges forward.
13. Ensure that feet (A) are properly engaged in supports (B).

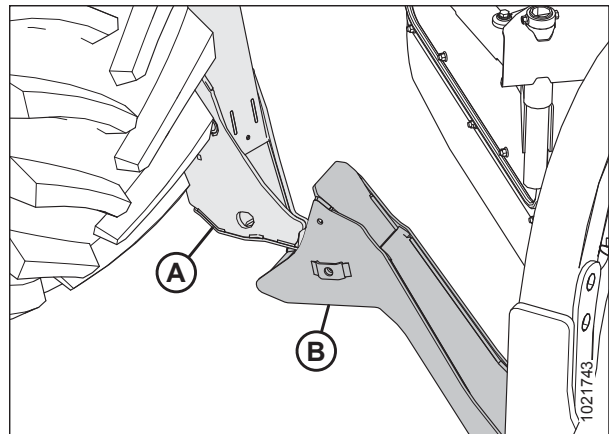


Figure 4.30: Header Support

ATTACHING HEADER TO M1240 WINDROWER

14. Self-Aligning Hydraulic Center-Link:

- a. Adjust position of the 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 self-locking mechanism.

- b. If the hook release (C) is open (up), stop the engine and remove the ignition key. Manually push the hook release (C) down after the hook engages the header pin.

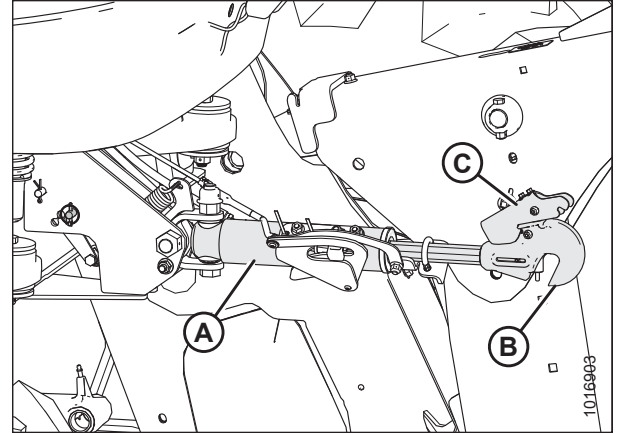


Figure 4.31: Hydraulic Center-Link

15. Self-Aligning Hydraulic Center-Link:

- a. Lower center-link (A) onto the header with REEL DOWN switch on the GSL until the center-link locks into position and the hook release (B) is down.
- b. Check that the center-link is locked onto the header by pressing the REEL UP switch on the GSL.
- c. Turn off the windrower engine and remove the key from the ignition.

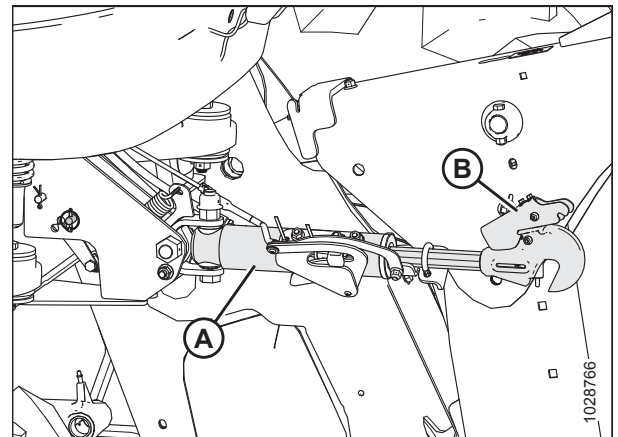


Figure 4.32: Hydraulic Center-Link

16. **Self-Aligning Hydraulic Center-Link:** Connect header electrical harness (A) to header.

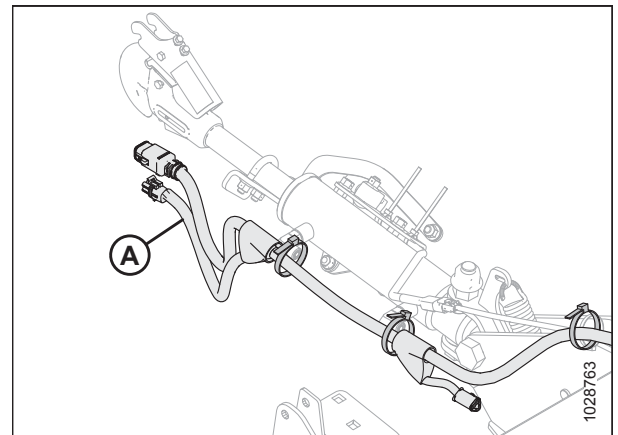


Figure 4.33: Header Electrical Harness

ATTACHING HEADER TO M1240 WINDROWER

17. Hydraulic Center-Link without Self-Alignment:

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

IMPORTANT:

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

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

18. Hydraulic Center-Link without Self-Alignment: Connect header electrical harness (A) to the header.

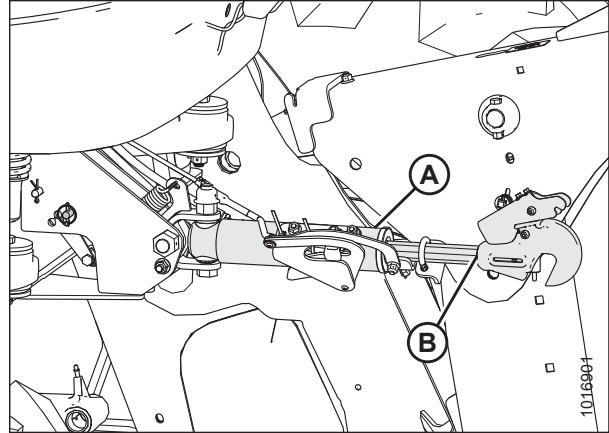


Figure 4.34: Hydraulic Center-Link

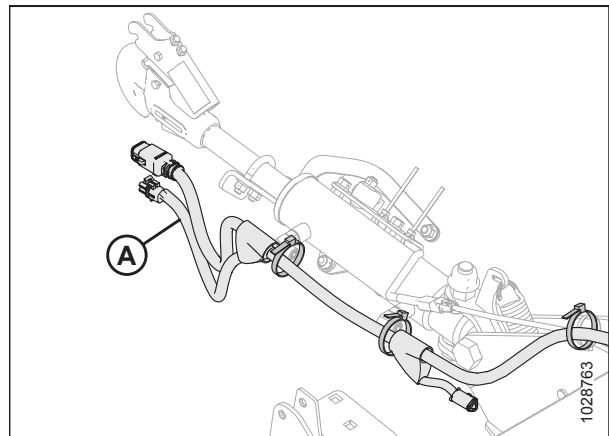


Figure 4.35: Header Electrical Harness

- Install clevis pin (A) through the support and windrower lift arm and secure with hairpin (B). Repeat for opposite side.

IMPORTANT:

Ensure clevis pin (A) is fully inserted, and the hairpin is installed behind the bracket.

CAUTION

Check to be sure all bystanders have cleared the area.

- Start the windrower engine and fully extend the windrower tilt cylinder.
- Stop the engine and remove the key from the ignition.

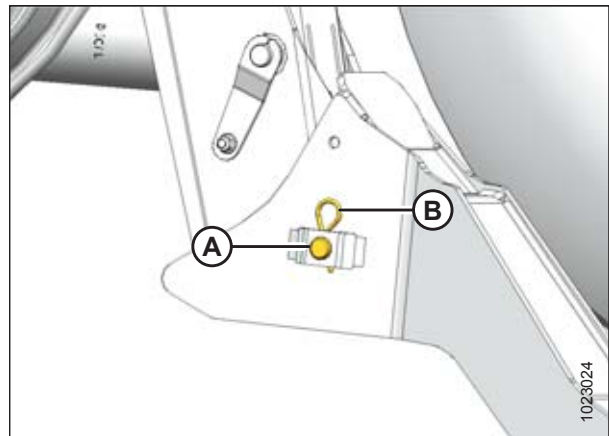


Figure 4.36: Header Support

ATTACHING HEADER TO M1240 WINDROWER

22. Pull back on routed header harness (A) to minimize slack in the routing. Ensure the harness is not under tension and tighten all cable ties (B) accordingly.

NOTE:

Any excess harness length can be secured under the windrower's cab with two additional cable ties provided in shipping material. A total of nine cable ties are located in the header's manual box.

NOTE:

Refer to the installation instructions included in the Electric Remote Baffle Control kit (MD #B6664) to connect the electrical harness (A) to the baffle control option. If this option is not installed on the header, tie the loose end of the harness at the header to the main header connector and keep this connector clean and capped for future use.

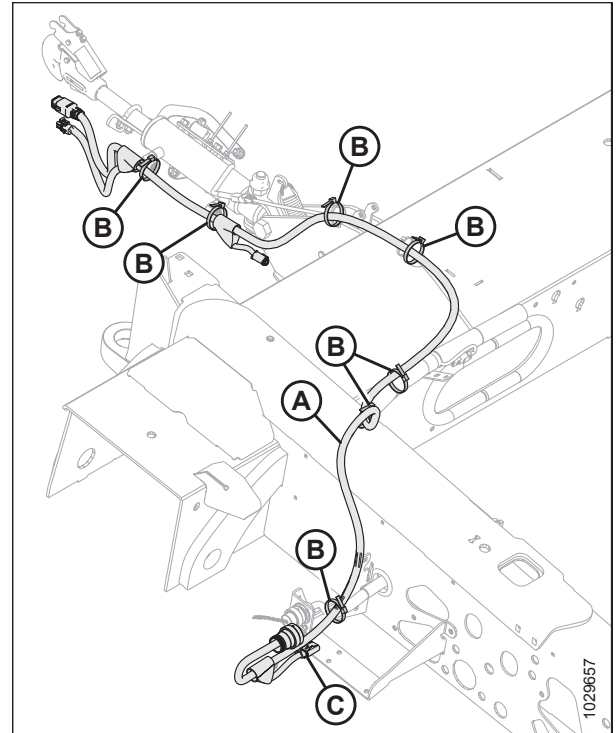


Figure 4.37: Cable Ties Securing Header Electrical Harness

For headers without the DWA installed:

23. On both sides of the header, remove and retain bolts (A) and nuts (B) from the forming shield mounting plates (C). Loosen bolts and nuts (D) on the mounting plates (C).

NOTE:

Support the forming shield while adjusting the mounting plates. The forming shield is not shown in the illustration to better show the mounting plates and their hardware.

24. Pull the mounting plates so they turn downward and install bolts (A) and nuts (B) through the forming shield frame and the cutout on shield mounting plate (C). Tighten bolts (D). This ensures the forming shield is set at its lowest setting.

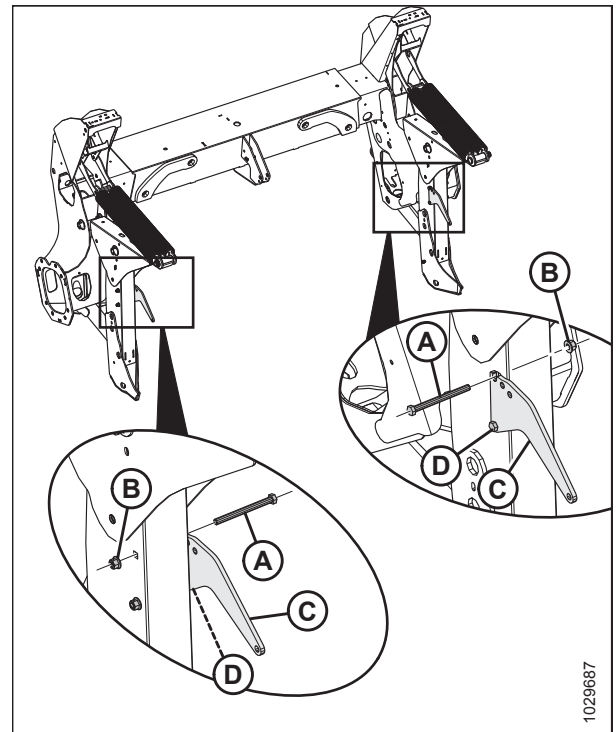


Figure 4.38: Setting for R216 SP Disc Header without DWA Option

ATTACHING HEADER TO M1240 WINDROWER

CAUTION

Check to be sure all bystanders have cleared the area.

25. Start the windrower engine and raise the header slightly.
26. Turn off the windrower engine and remove the key from the ignition.

DANGER

To avoid bodily injury from fall of raised header, always engage safety props when working on or around raised header, and before going under header for any reason.

27. Remove all wooden blocks from beneath the header.

CAUTION

Check to be sure all bystanders have cleared the area.

28. Start the windrower engine and lower the header fully to the ground.
29. Turn off the windrower engine and remove the key from the ignition.

4.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers

To connect the R216 Rotary Disc Header hydraulic hoses to the M1240 Windrower using quick couplers, follow these steps:

If your windrower is equipped with hard plumb connections, refer to [4.5 Connecting Disc Header Hydraulics Using Hard Plumbing, page 47](#) for connection instructions.

1. Route hose bundle (A) from the disc header, under the windrower frame, then insert pin (B) into hole (C) in the windrower frame.

NOTE:

Route hoses as straight as possible and avoid rub/wear points that could damage the hydraulic hoses.

NOTE:

Adding anti-seize to the hose holder pin will make future removal easier.

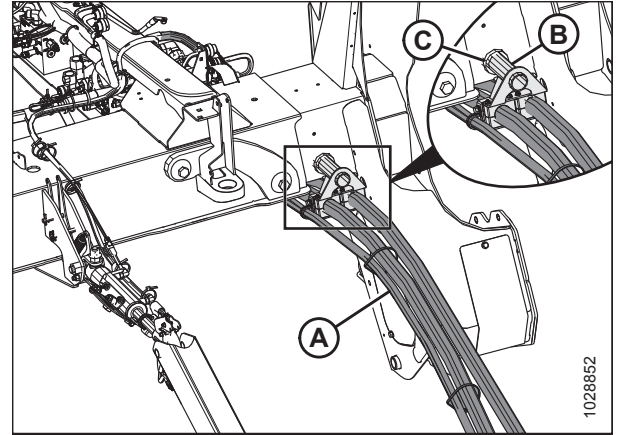


Figure 4.39: Hydraulic Hoses

2. Remove protective plugs (A) from the ends of the hydraulic hoses.

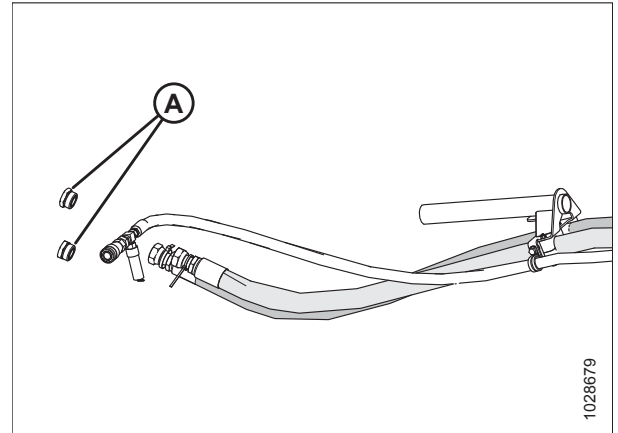


Figure 4.40: Protective Shipping Plugs on R216 Hydraulic Hoses

ATTACHING HEADER TO M1240 WINDROWER

3. Use a clean rag to remove dirt and moisture from the couplers on the left side of the windrower frame.
4. Make the following hydraulic and electrical connections to the windrower:
 - a. Connect disc pressure hose (A) with coupler (B) and torque to 205–226 Nm (151–167 lbf·ft).
 - b. Connect disc return hose (C) with coupler (D) and torque to 205–226 Nm (151–167 lbf·ft).
 - c. Connect case drain hose (E) to fitting (F), with relief valve pointing towards the ground. Loosen fitting (F) and retighten as needed to ensure relief valve is pointing straight down as shown.

NOTE:

Parts removed from illustration for clarity.

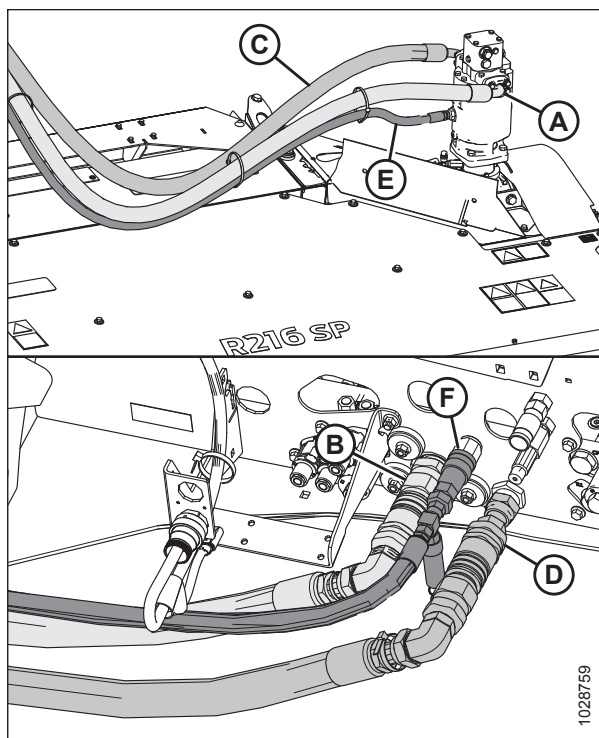


Figure 4.41: Hydraulic Connections on Rotary Disc Header and M1240 Windrower

5. Move left windrower platform (A) to the CLOSED position. For instructions, refer to the windrower operator's manual.
6. Proceed to [4.6 Restoring Float for Disc Header, page 50](#).

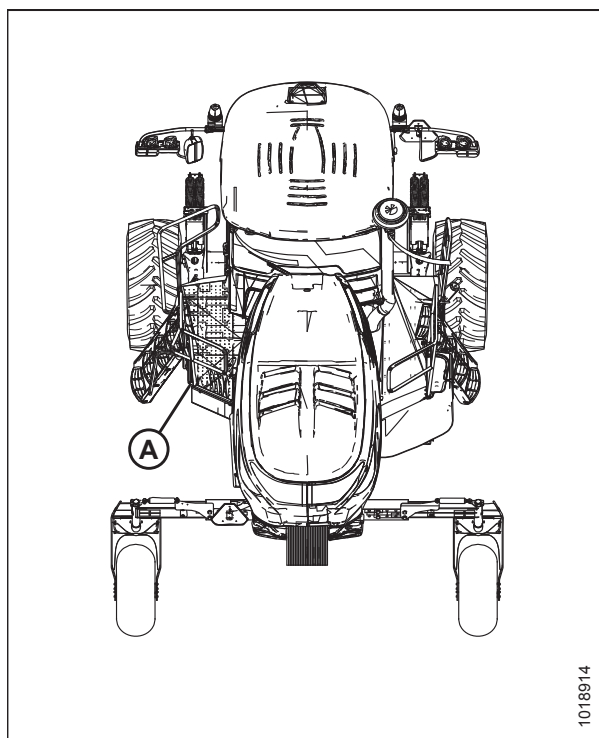


Figure 4.42: Windrower with Left Platform in Closed Position

4.5 Connecting Disc Header Hydraulics Using Hard Plumbing

Hard plumbing helps reduce the potential for leaks at the hydraulic connection sites and helps the header drive run more efficiently. To connect the R216 Rotary Disc Header to the M1240 Windrower with hard plumb fittings, follow these steps:

If your windrower is equipped with quick coupler connections, refer to [4.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers](#), page 45 for connection instructions.

1. Use a clean rag to remove dirt and moisture from fittings (B) on the left side of the windrower frame and remove protective caps (A).

NOTE:

Fittings should be factory-set to 30° to allow hoses to pass by the multicoupler.

NOTE:

Parts removed from illustration for clarity.

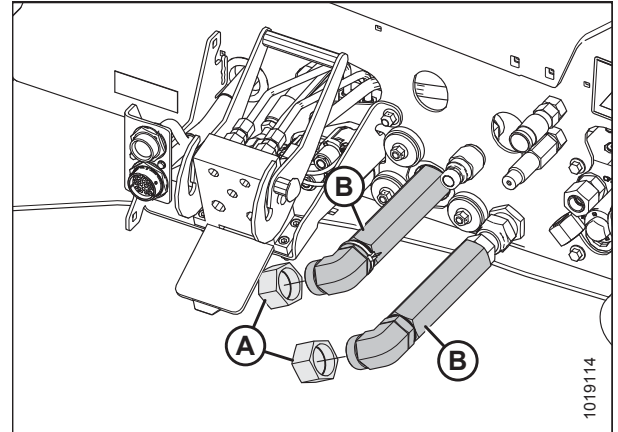


Figure 4.43: Protective Shipping Plugs on M1240 Hard Plumb Fittings

2. Route hose bundle (A) from the disc header, under the windrower frame, then insert pin (B) into hole (C) in the windrower frame.

NOTE:

Route hoses as straight as possible and avoid rub/wear points that could damage the hydraulic hoses.

NOTE:

Adding anti-seize to the hose holder pin will make future removal easier.

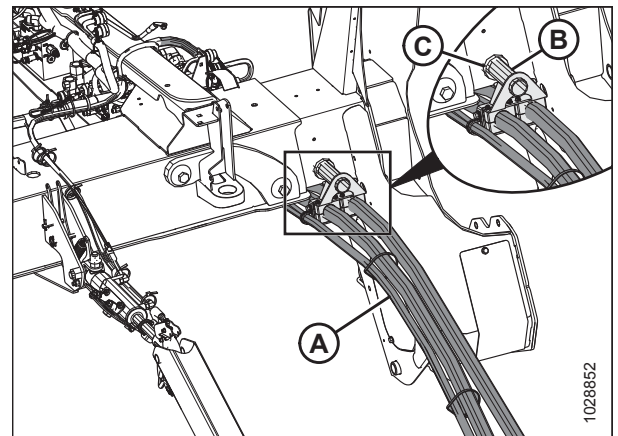


Figure 4.44: Hydraulic Hoses

ATTACHING HEADER TO M1240 WINDROWER

3. Remove protective plugs (A) from ends of hydraulic hoses.

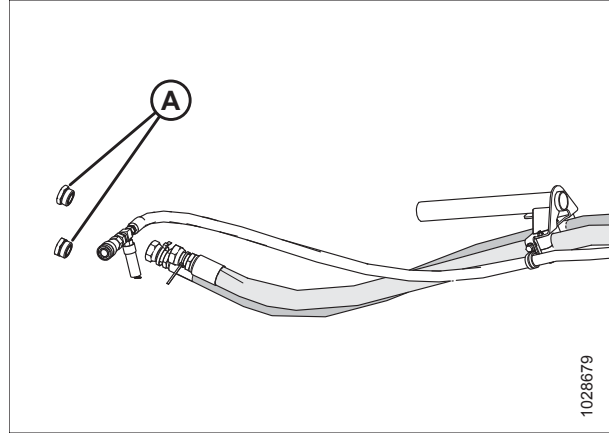


Figure 4.45: Protective Shipping Plugs on R216 Hydraulic Hoses

4. Make the following hydraulic and electrical connections to the windrower:
 - a. Connect disc pressure hose (A) marked with a red cable tie (B) to hard plumb fitting marked with a red cable tie (C) and torque to 205–226 Nm (151–157 lbf·ft)
 - b. Connect disc return hose (D) to hard plumb fitting (E) and torque to 205–226 Nm (151–167 lbf·ft)
 - c. Connect case drain hose (F) to fitting (G), with relief valve pointing towards the ground. Loosen fitting (G) and retighten as needed to ensure relief valve is pointing straight down as shown.

NOTE:

Parts removed from illustration for clarity.

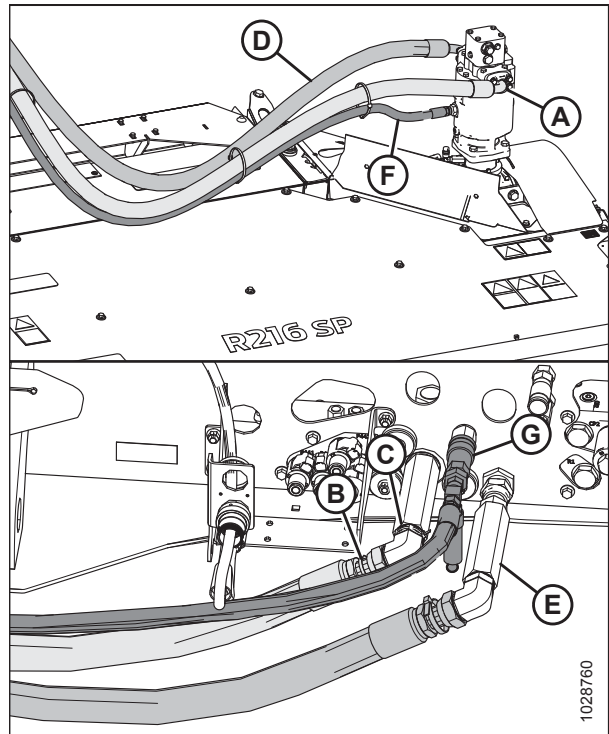


Figure 4.46: Hydraulic Connections on Disc Header and M1240 Windrower using Hard Plumb Fittings

ATTACHING HEADER TO M1240 WINDROWER

5. Move windrower platform (A) to the CLOSED position. For instructions, refer to the windrower operator's manual.

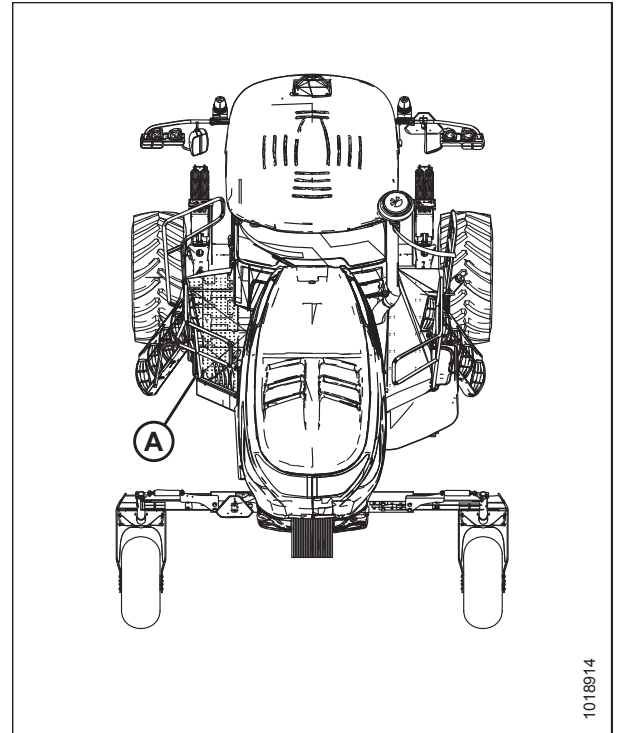


Figure 4.47: Windrower with Left Platform in Closed Position

4.6 Restoring Float for Disc Header

Follow these steps to restore the float for an R216 Rotary Disc Header used with an M1240 Windrower:

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. Disengage safety props by turning lever (A) away from the disc header to raise the safety prop until the lever locks into vertical position. Repeat for opposite cylinder.

CAUTION

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

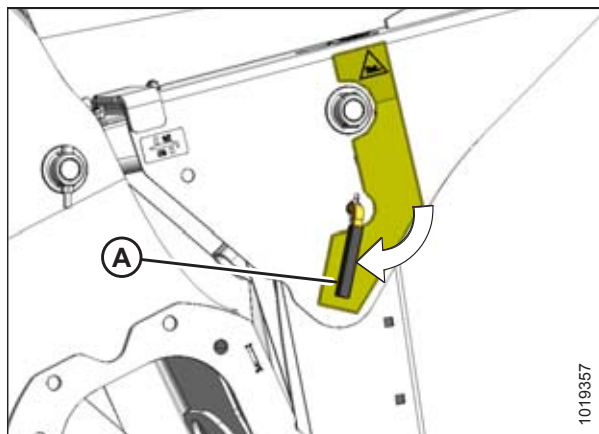


Figure 4.48: Safety Props

2. Start the engine and press HEADER DOWN switch (A) on ground speed lever (GSL) to fully lower the disc header.



Figure 4.49: GSL

ATTACHING HEADER TO M1240 WINDROWER

3. If not prompted by the Harvest Performance Tracker (HPT) display to restore the header float, restore the header float manually by doing the following:
 - a. Press rotary scroll knob (A) on HPT to highlight the QuickMenu options.
 - b. Rotate scroll knob (A) to highlight HEADER FLOAT symbol (B), and press the scroll knob to select. The screen changes.



Figure 4.50: HPT Display

4. Press soft key 3 (A) to restore the header float.

NOTE:

If the header float is active, the icon at soft key 3 will display REMOVE FLOAT; if header float has been removed, the icon will display RESUME FLOAT.

5. Stop the engine and remove the key.



Figure 4.51: HPT Display

4.7 Calibrating Windrower Knife Drive on the Harvest Performance Tracker Display

When the R216 Rotary Disc Header is attached to an M1240 Windrower, the Harvest Performance Tracker (HPT) will recognize the header ID and configure the windrower accordingly. The disc header must be calibrated to ensure that the knife drive pump output is accurate.

CAUTION

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

NOTE:

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

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.

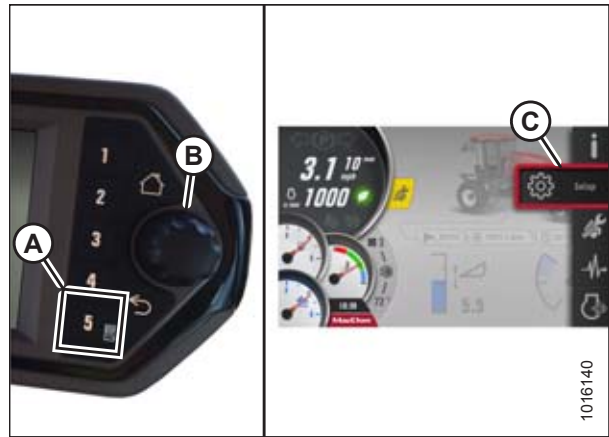


Figure 4.52: Opening the Main Menu

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 SETTINGS menu.

7. Select KNIFE DRIVE.

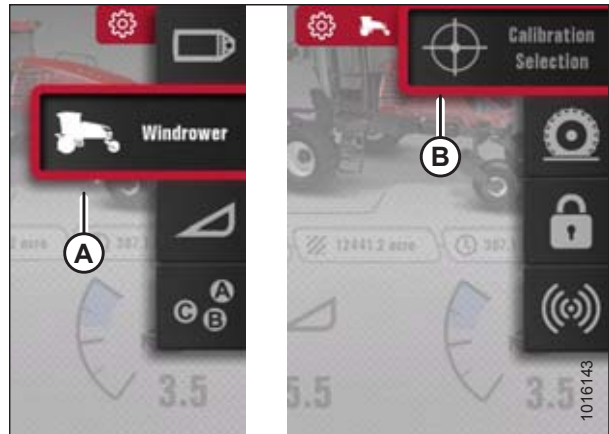


Figure 4.53: Windrower Settings Icon and Calibration Submenu Icon

ATTACHING HEADER TO M1240 WINDROWER

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

NOTE:

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

NOTE:

Press the X 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 4.54: Calibration Page

Chapter 5: Installing Options

5.1 Electric Remote Baffle Kit

The Electric Remote Baffle kit (MD #B6664), allows the operator to adjust the disc header baffle electronically from inside the windrower.

This kit includes a linear actuator and support which will need to be installed and adjusted on the disc header. Refer to the instructions included in the kit.

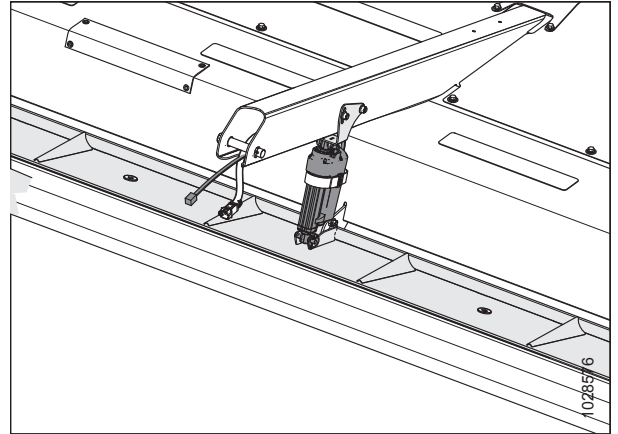


Figure 5.1: Electric Remote Baffle Kit

5.2 Crop Dividers Kit

To install the Crop Dividers kit (MD #B6665), follow these steps:

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. Lower the disc header fully.
2. Stop the engine and remove the key from the ignition.
3. Unpack the Crop Dividers kit.
4. Open the cutterbar curtain.

NOTE:

The left crop divider is shown in the following steps. The right side is the opposite.

5. Disconnect hazard light (A) from the header harness.
 6. Remove and retain bolt (B) and nut (C) securing hazard light support (D) to the top of the disc header.
 7. Remove and retain bolts (E) and nuts (F) from the disc header. Discard the washers between bolts (E) and nuts (F).
 8. Remove and retain two bolts (G) from the outboard side of the disc header.
-
9. Align left crop divider bracket (A) with one crop divider rod (B) and secure in place with two bolts (C) and nuts (D) from the kit.

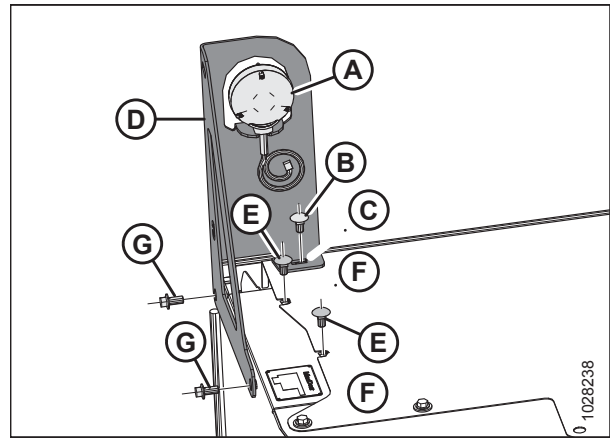


Figure 5.2: Hazard Light Assembly

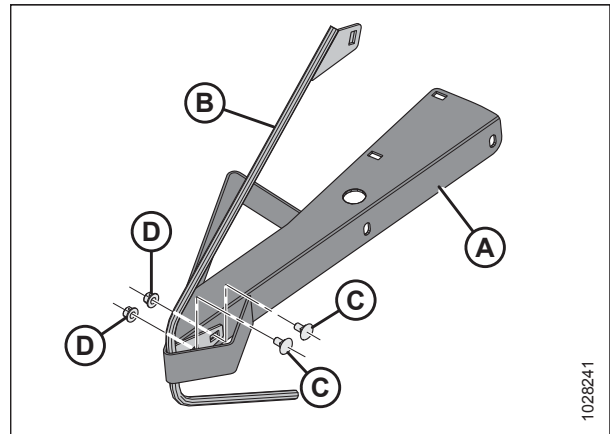


Figure 5.3: Installing Crop Divider Hardware

INSTALLING OPTIONS

10. Position left crop divider (A) on the front left corner of the disc header.
11. Install using two retained bolts (B) and nuts (C).

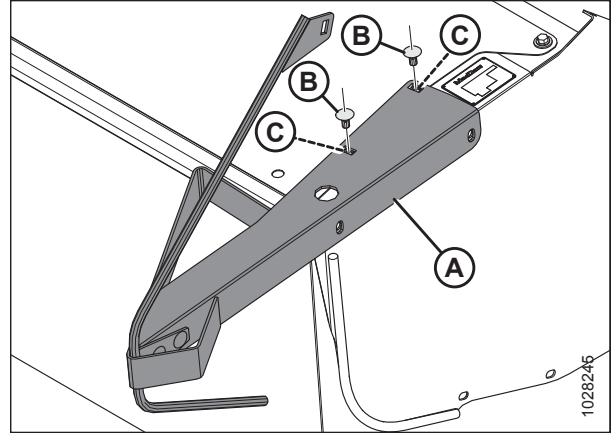


Figure 5.4: Crop Divider on R216

12. Reinstall hazard light assembly (A) using retained hardware (B) over the installed crop divider (C). Apply medium-strength threadlocker (Loctite® 242 or equivalent), to retained hardware (B), and torque to 100 Nm (73.75 lbf-ft).
13. Install bolt (D) and nut (E) from the kit, securing hazard light assembly (A) to crop divider (C).

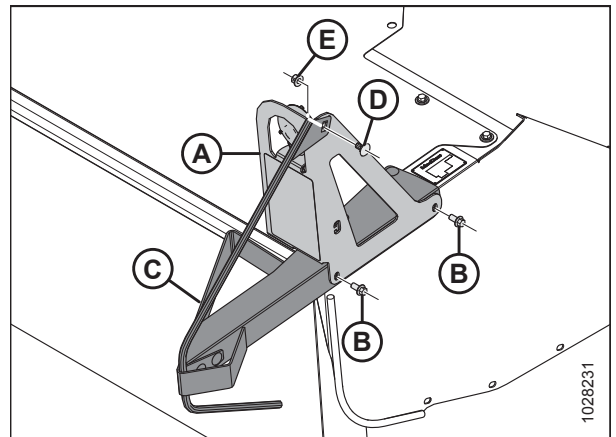


Figure 5.5: Hazard Light Assembly Reinstallation

14. Secure the hazard light assembly (A) in place on the disc header with retained bolt (B) and nut (C).
15. Reconnect the hazard light (D), routing the harness through hole (E) in the crop divider (F).
16. Repeat for the right side of the disc header and close the cutterbar curtain.

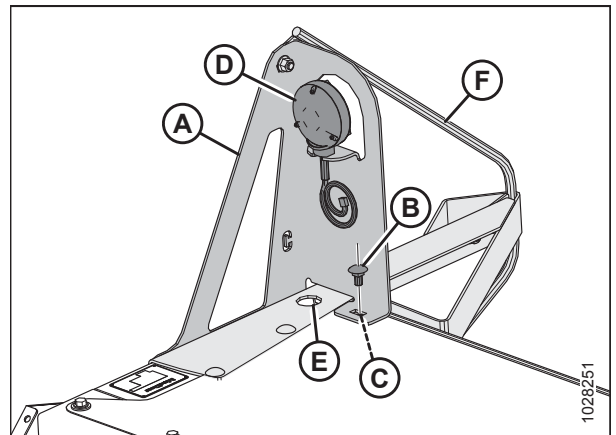


Figure 5.6: Hazard Light

5.3 Adjustable Gauge Roller Kit

The Adjustable Gauge Roller kit (MD #B6666) allows the R216 Rotary Disc Header to achieve the desired cutting height for optimum cutting performance.

This kit is installed after removing the header shipping supports. To review installation and adjustment instructions, refer to [*3.1.1 Installing Adjustable Gauge Roller Kit, page 12.*](#)

5.4 Adjustable Skid Shoes Kit

The Adjustable Skid Shoes kit (MD #B6667) allows the R216 Rotary Disc Header to achieve the desired cutting height for optimum cutting performance.

This kit is installed after removing the header shipping supports. To review installation and adjustment instructions, refer to [*3.1.2 Installing Adjustable Skid Shoes Kit, page 15.*](#)

Chapter 6: Lubricating the Disc Header



WARNING

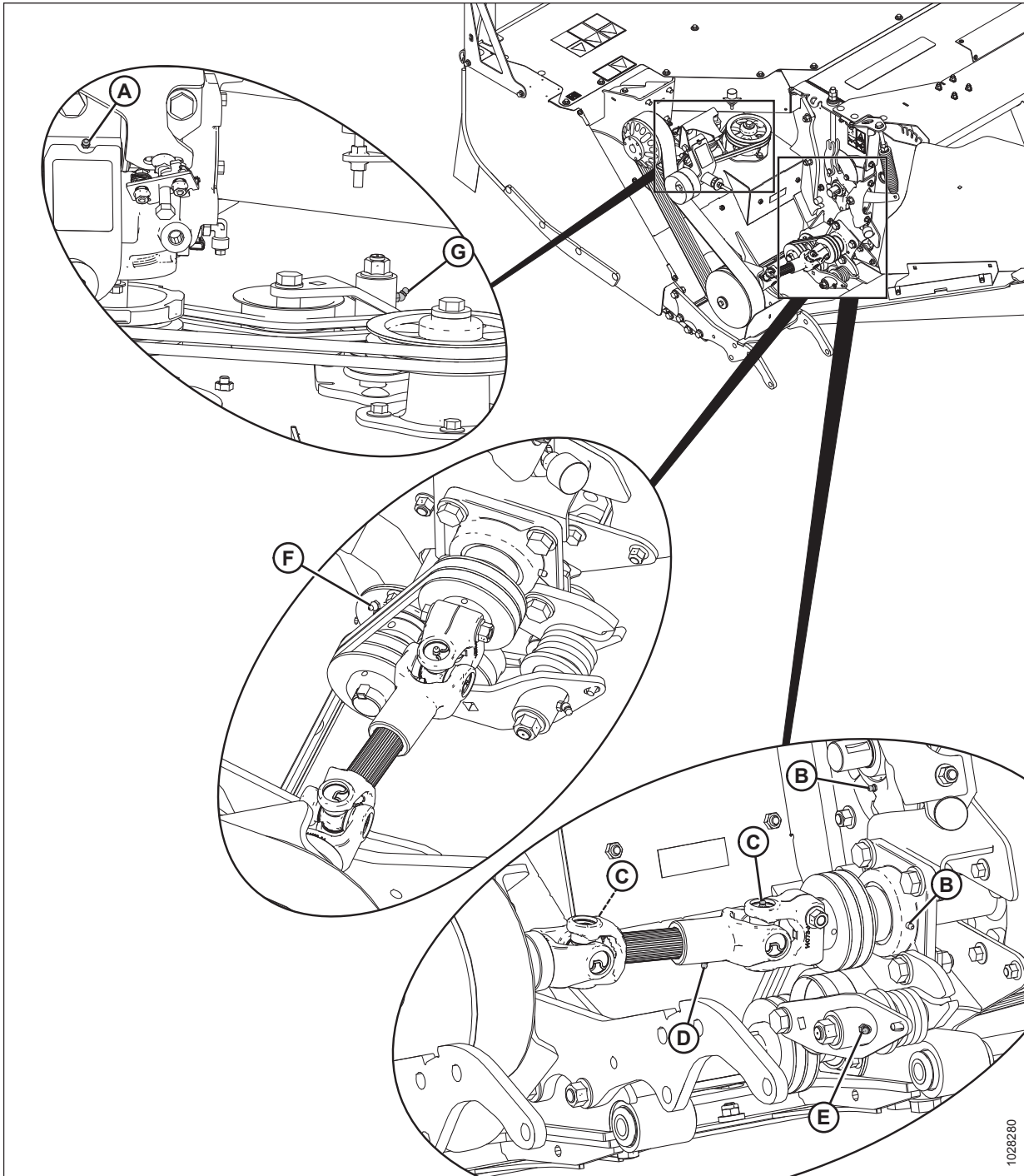
To avoid bodily injury or death from unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

The disc header has been lubricated at the factory. However, you should lubricate the disc header prior to delivery to offset the effects of weather during outside storage and transport, and to familiarize yourself with the machine. Unless otherwise specified, use high-temperature, extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI grade 2) lithium base.

Refer to [6.1 Lubrication Locations, page 62](#) for a list of grease points on both the right and left side of the header.

6.1 Lubrication Locations

Figure 6.1: Left Side Lubrication Locations



A - Idler/Tensioner Pivot

D - Slip Joint, Conditioner Driveline¹

G - Tensioner Arm

B - Bearing, Roller Conditioner (2 Places)

E - Idler/Tensioner Pivot

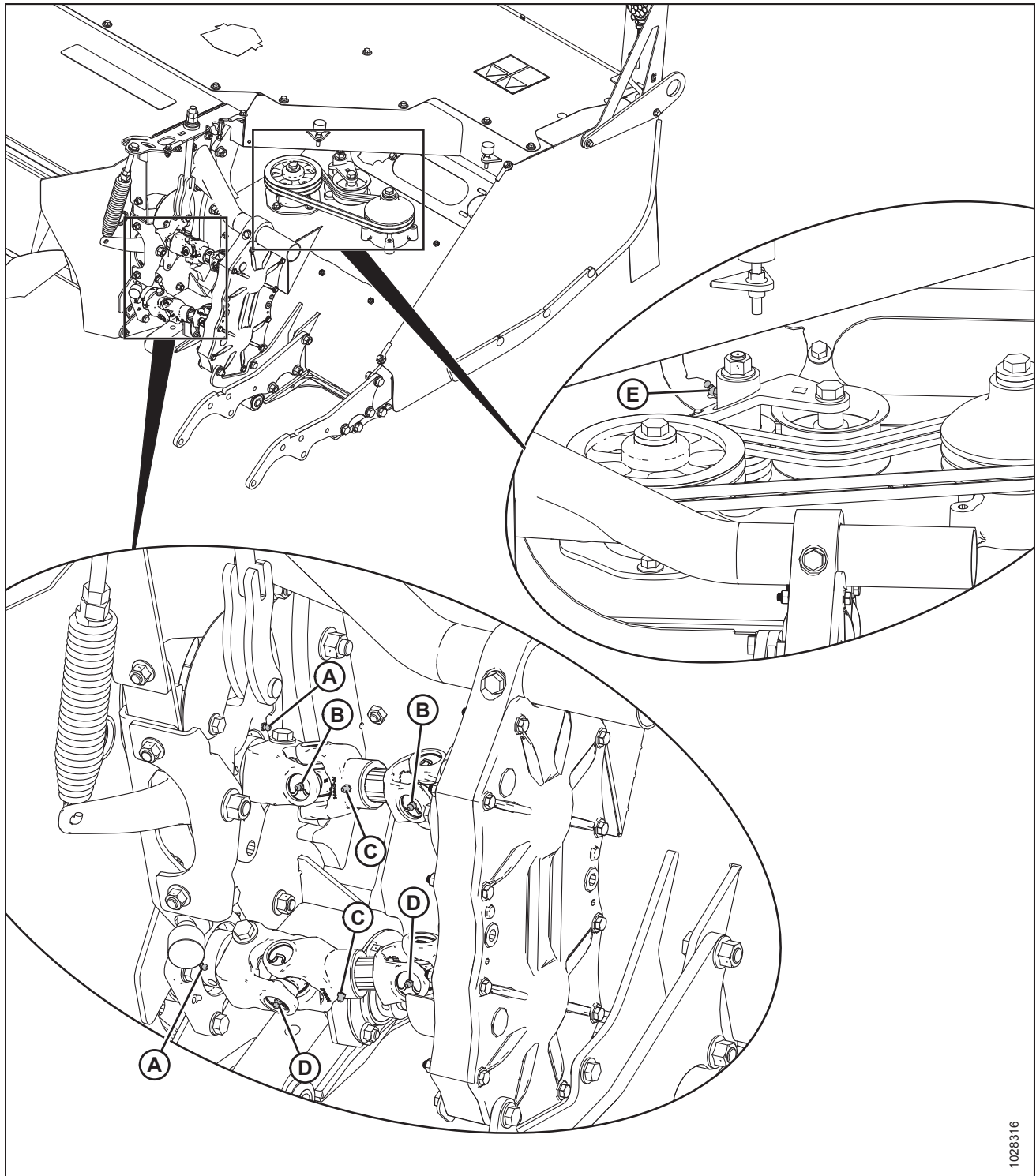
C - U-Joint, Conditioner Driveline (2 Places)

F - Bearing, Feed Roll

1. Use high-temperature, extreme-pressure (EP2) performance grease with 10% max molybdenum disulphide (NLGI grade 2) lithium base.

LUBRICATING THE DISC HEADER

Figure 6.2: Right Side Lubrication Locations



A - Bearing, Roller Conditioner (2 Places)
D - U-Joint, Lower Driveline (2 Places)

B - U-Joint, Upper Driveline (2 Places)
E - Idler Pivot

C - Slip Joints, Conditioner Drivelines²

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

Chapter 7: Performing Predelivery Checks

1. Perform final checks and adjustments as listed on the yellow sheet attached at the back of this instruction, to ensure the machine is field-ready. Refer to the referenced pages as indicated on the checklist for detailed instructions.
2. The Operator or the Dealer should retain the completed checklist.

7.1 Conditioner Drive Belt

The conditioner drive belt is located inside the left driveshield and is tensioned with a spring tensioner.

7.1.1 Inspecting Conditioner Drive Belt

The conditioner drive belt tension is set at factory and should not require adjustment. To inspect the conditioner drive belt, follow these steps:



WARNING

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

1. Lower the disc header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Open left driveshield (A).

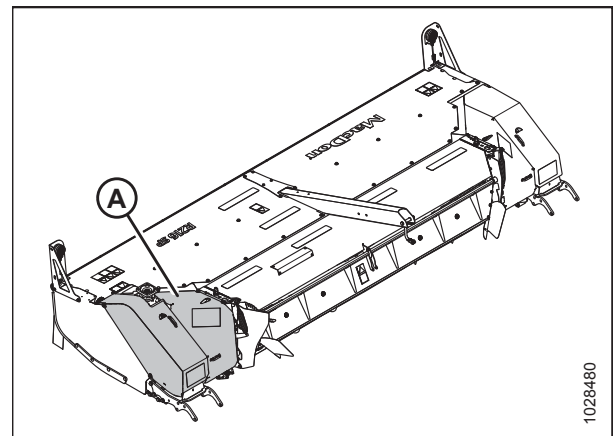


Figure 7.1: Left Driveshield

4. Inspect drive belt (A) and replace if damaged or cracked.
5. Check that jam nut (B) and adjuster nut (C) are tight.

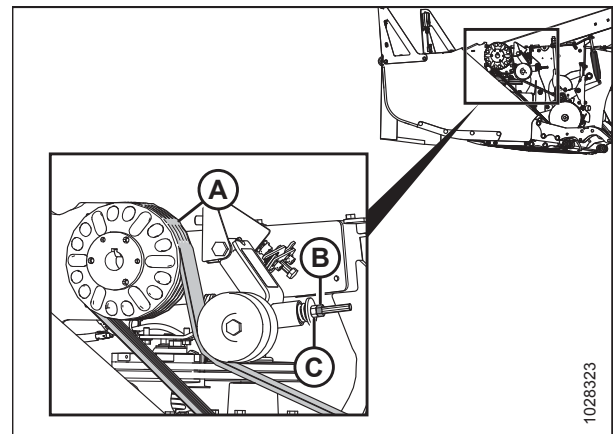


Figure 7.2: Conditioner Drive

PERFORMING PREDELIVERY CHECKS

6. Measure the length of belt tensioner spring (A) and ensure spring length (B) is 17 mm (11/16 in.) in accordance with spring tension decal (C). If the spring length requires adjustment, refer to [7.1.2 Adjusting Conditioner Drive Belt, page 66](#), otherwise close the drive shield and proceed to [7.2 Header Float, page 68](#).

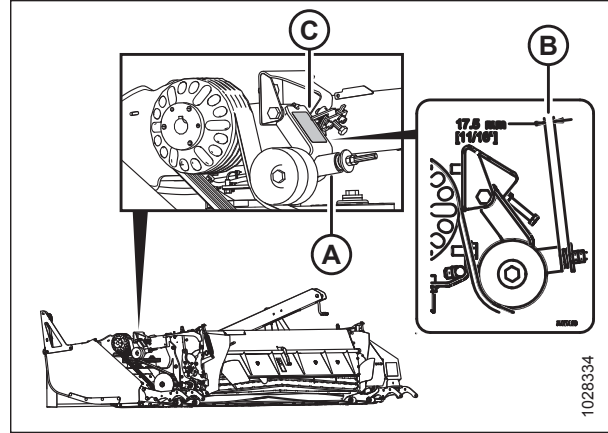


Figure 7.3: Belt Tension Spring

7.1.2 Adjusting Conditioner Drive Belt



WARNING

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

1. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Open left driveshield (A).

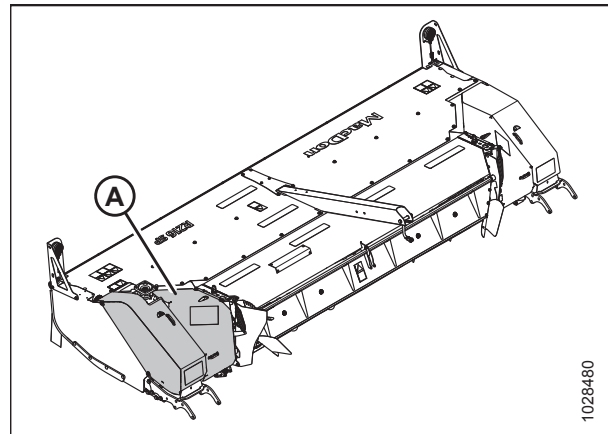


Figure 7.4: Left Driveshield

PERFORMING PREDELIVERY CHECKS

4. Ensure drive belt (A) is in the grooves on drive pulley (B) and driven pulley (C).

NOTE:

If necessary, loosen the jam nut and adjuster nut to relieve belt tension while checking.

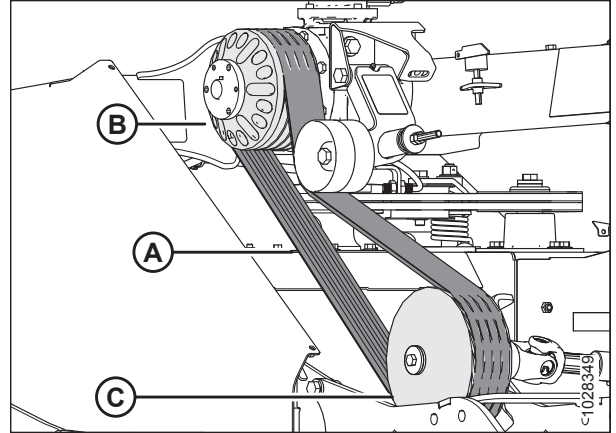


Figure 7.5: Conditioner Drive

5. Loosen M16 hex head bolt and lock nuts (A) on pulley mount bracket (B), and adjust position of bracket until the center-to-center distance (C) between drive pulley (D) and driven pulley (E) is 724 mm (28 1/2 in.).
6. Torque hardware to 170 Nm (126 lbf·ft).

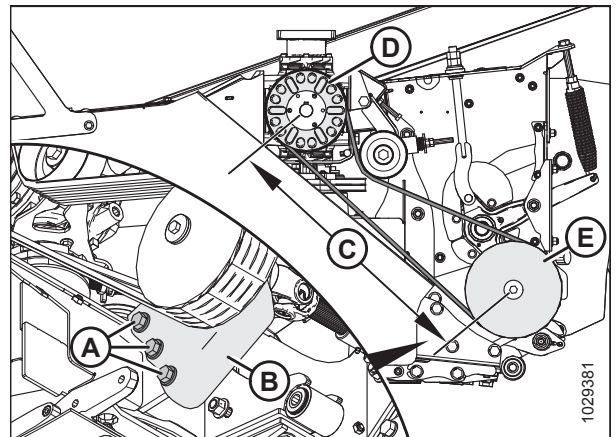


Figure 7.6: Conditioner Drive

7. With hardware fully loosened, slide threaded rod (E) up and backward into the reel speed sensor bracket, then snug hardware to engage the rod pivot point with the bracket.
8. Measure the length of tensioner spring (C). For proper belt tension, dimension (D) should be set to 17 mm (11/16 in.).
9. To adjust spring tension, loosen jam nut (A) by turning it counterclockwise.
10. Turn adjuster nut (B) clockwise to increase tensioner spring/belt tension or turn adjuster nut (B) counterclockwise to decrease tensioner spring/belt tension.
11. Once the correct spring measurement has been achieved, hold adjuster nut (B) in place and tighten jam nut (A) against it by turning the jam nut clockwise.
12. Close the driveshield.

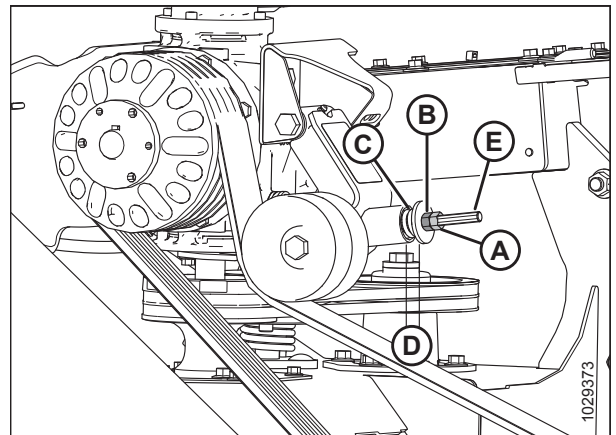


Figure 7.7: Conditioner Drive

7.2 Header Float

7.2.1 Checking Float



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.



CAUTION

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

1. Start the engine.
2. Use the HEADER TILT switches (A) on the ground speed lever (GSL) to set the center-link to the mid-range position (5.0 on the Harvest Performance Tracker [HPT]).
3. Using the HEADER DOWN switch (B), lower the disc header fully and with the header lift cylinders fully retracted.

NOTE:

Ensure header is level with ground with zero tilt.

4. Turn the engine off, and remove the ignition key.
5. Grasp one end of the header and lift. Lifting force should be 426–471 N (95–105 lbf) and should be the same at both ends.
6. Restart the engine, and adjust float as required. For instructions, refer to [7.2.2 Setting the Float, page 69](#).

NOTE:

Increasing the float value on the HPT makes the header feel lighter.

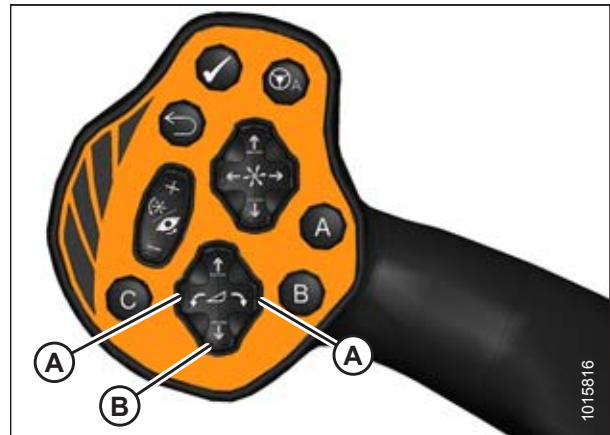


Figure 7.8: GSL

7.2.2 Setting the Float

The optimum float setting lets the disc header follow the contour of the terrain. Proceed as follows:

1. Press rotary scroll knob (A) on the Harvest Performance Tracker (HPT) to display the QuickMenu system.
2. Rotate scroll knob (A) to highlight header float icon (B) and press scroll knob to select.



Figure 7.9: HPT Run Screen

3. Turn scroll knob (A) to highlight left (B) or right (C) float and press knob (A) to activate selection.
4. Rotate scroll knob (A) to adjust float setting and press knob (A) when finished. Float is now set.

NOTE:

Float adjustments of **1.0** (out of 10) change the header weight at the cutterbar by approximately 91 kg (200 lb.). Adjust float in increments of **0.05** to optimize field performance.

5. Use soft key 3 (D) to remove/resume float and deck position to previous setting for the attached header.



Figure 7.10: HPT Left and Right Float Settings

7.3 Roll Timing

For proper conditioning, the rolls must be properly timed with the bar on one roll centered between two bars on the other roll. The factory setting should be suitable for most crop conditions.

IMPORTANT:

Roll timing is critical when the roll gap is decreased because conditioning is affected and the bars may contact each other.

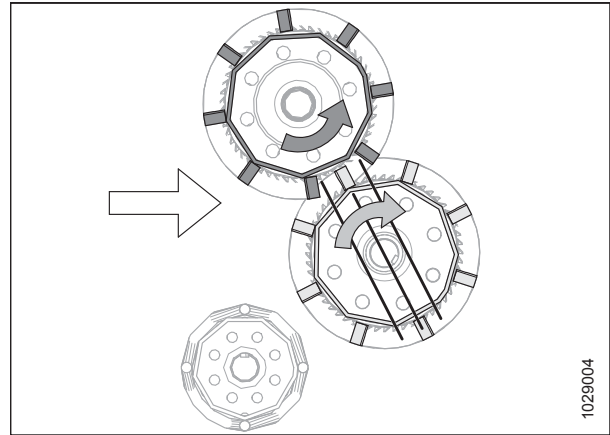


Figure 7.11: Properly Timed Rolls

7.3.1 Adjusting Roll Timing



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.

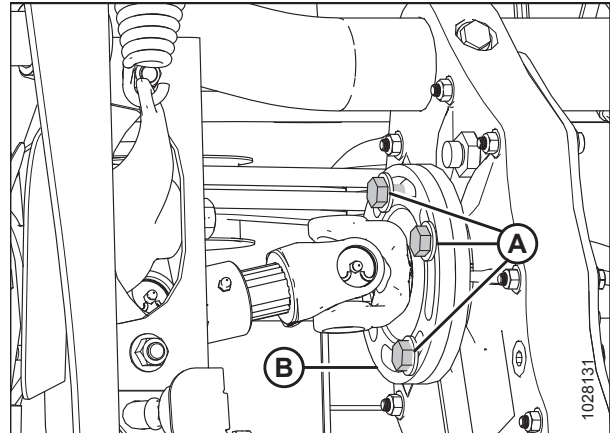


Figure 7.12: Conditioner Drive

PERFORMING PREDELIVERY CHECKS

2. On the right side of the header, engage lift release latch (A) and pull handle (B) to open outboard driveshield (C).
3. Lift at handle (D) and open inboard driveshield (E).
4. On the upper roll, loosen four bolts (A) securing yoke plate (B).

NOTE:

Only three of the four bolts are shown in the illustration.

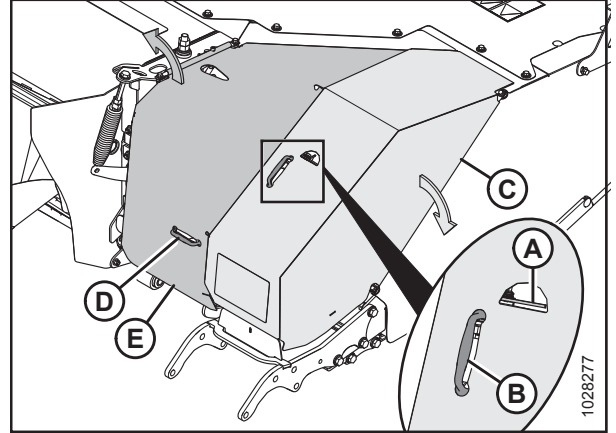


Figure 7.13: Right Driveshields

5. Secure bottom roll (A).
6. Manually rotate upper roll (B) counterclockwise as shown until it stops rotating.
7. Make a mark (C) across yoke (D) and gearbox flange (E).

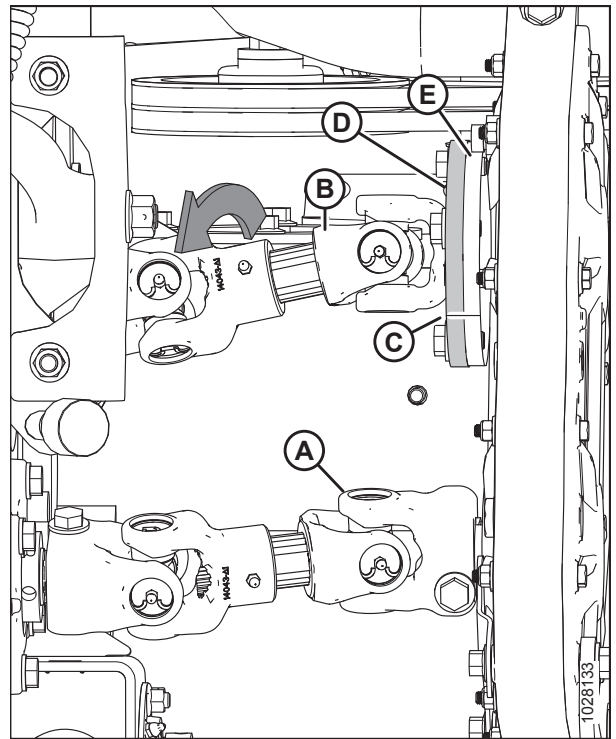


Figure 7.14: Conditioner Drive

PERFORMING PREDELIVERY CHECKS

8. Manually rotate upper roll (A) clockwise it stops rotating. Make a second mark (B) on the yoke flange, and align it with the mark on the gearbox flange.

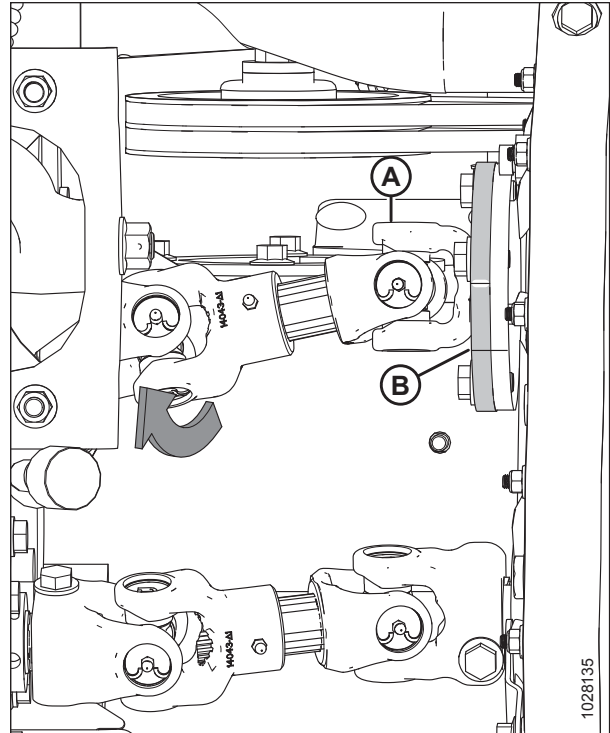


Figure 7.15: Conditioner Drive

9. Determine center point (A) between the two marks on the yoke plate, and place a third mark.
10. Rotate upper roll (B) counterclockwise, until the bolt lines up with the third (center) mark.

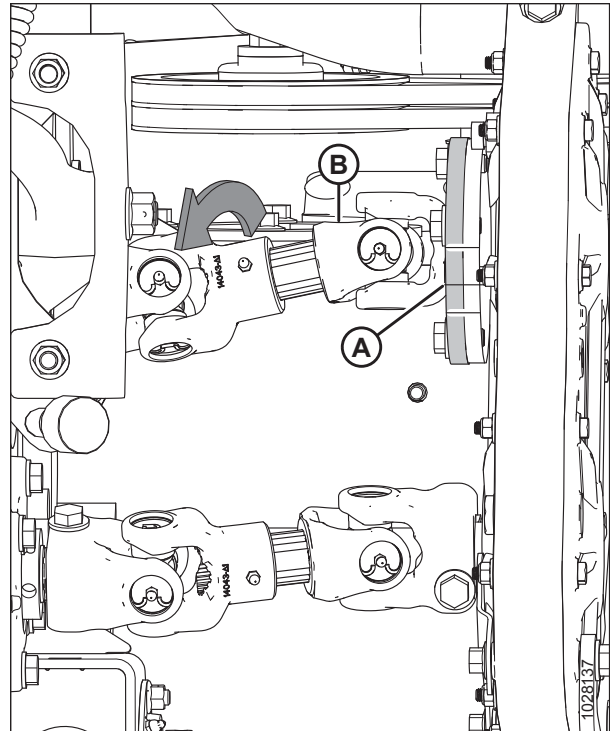


Figure 7.16: Conditioner Drive

PERFORMING PREDELIVERY CHECKS

11. Ensure the threads on four bolts (A) are clean and free of lubricant.

NOTE:

Only three of the four bolts are shown in the illustration.

12. Apply medium-strength threadlocker (Loctite® 242 or equivalent) and tighten bolts (A). Torque to 95 Nm (70 lbf-ft).
13. Close the right driveshields.

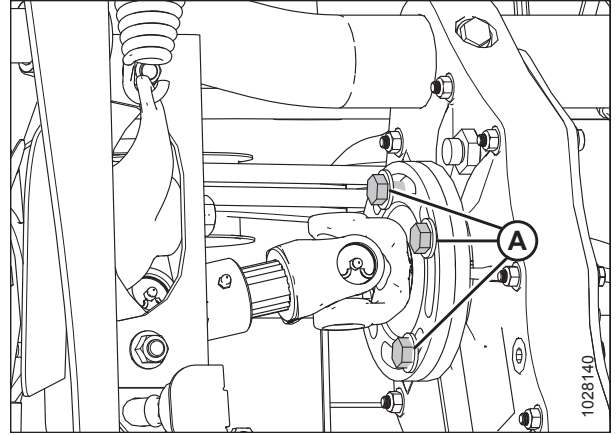


Figure 7.17: Conditioner Drive

7.4 Roll Gap

The roll gap controls the degree to which crop is conditioned as it passes through the rolls. Roll gap is factory-set at approximately 6 mm (1/4 in.) for steel rolls.

Steel rolls can be operated over a large range of roll gap settings (intermesh). Using a roll gap of (up to) 25 mm (1 in.), they are suited to a wide range of crops (including alfalfa and thicker-stemmed cane-type crops). However operating with too large of a gap may cause feeding problems.

Grass-type crops may require less gap for proper feeding and conditioning.

IMPORTANT:

If using settings below the factory setting, visually inspect the roll gap to ensure that there is no metal-to-metal contact between the upper and lower rolls.

7.4.1 Adjusting Roll Gap

If the roll gap is not set to factory, follow the procedure below to reset the gap:



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. Lower the disc header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Loosen jam nut (A) on both sides of the conditioner.
4. Turn lower nut (B) counterclockwise until the upper roll rests on the lower roll. Ensure the rolls intermesh.
5. Turn lower nut (B) two and a half turns clockwise to raise the upper roll and achieve a 6 mm (1/4 in.) roll gap.
6. Hold nut (B) and tighten jam nut (A) on both sides of the disc header.

IMPORTANT:

Make sure the roll gap adjustment nuts are adjusted equally on both sides of the disc header to achieve a consistent gap across the rolls.

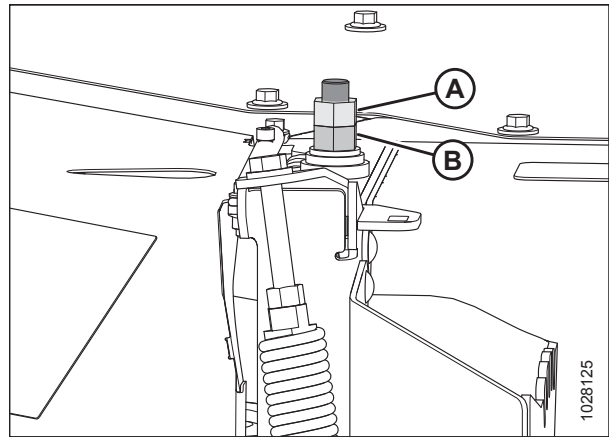


Figure 7.18: Roll Gap Adjustment

7.5 Roll Tension

Roll tension (the pressure holding the conditioner rolls together) is factory-set to maximum and should rarely require adjustment.

Heavy crops or tough forage can cause the rolls to separate; therefore, maximum roll tension is required to ensure that materials are sufficiently crimped.

7.5.1 Checking Roll Tension

Roll tension is indicated by the exposed thread on the roll tension adjuster bolt.



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. Lower the header to the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Measure the amount of exposed thread on the roll tension adjuster bolt (A) at both ends of the conditioner. Measurement (B) should be 12–15 mm (1/2–9/16 in.) for steel conditioners.
4. If the tension requires adjustment, refer to [7.5.2 Adjusting Roll Tension, page 76](#).

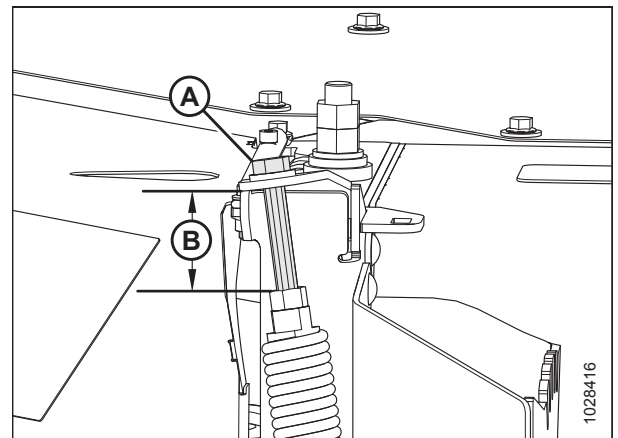


Figure 7.19: Roll Tension Adjuster

7.5.2 Adjusting Roll Tension

To adjust roll tension, follow these steps:



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. Lower the header to the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Loosen jam nut (A) on both sides of the conditioner.
4. Adjust spring drawbolt as follows:
 - Turn spring drawbolt (B) clockwise to tighten spring and **INCREASE** the roll tension.
 - Turn spring drawbolt (B) counterclockwise to loosen spring and **DECREASE** the roll tension.

IMPORTANT:

Turn each bolt equally. Roll tension changes by approximately 32 N (7.2 lbf) with each turn of the drawbolt.

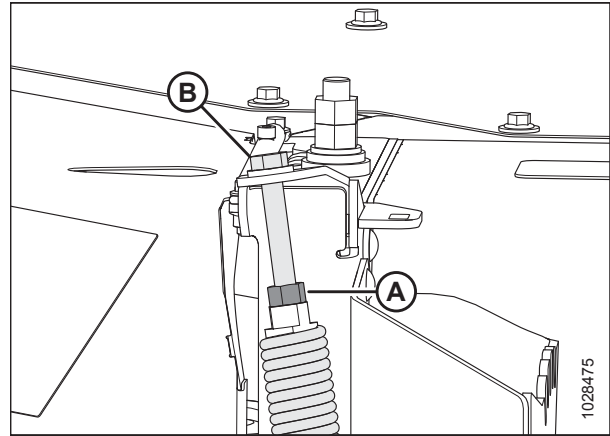


Figure 7.20: Roll Tension Adjuster

5. Measure the amount of exposed thread on spring drawbolt (A) at each end of the conditioner. For steel roll conditioners, measurement (B) should be 12–15 mm (1/2–9/16 in.).
6. Tighten jam nut (C) on both sides of the conditioner.

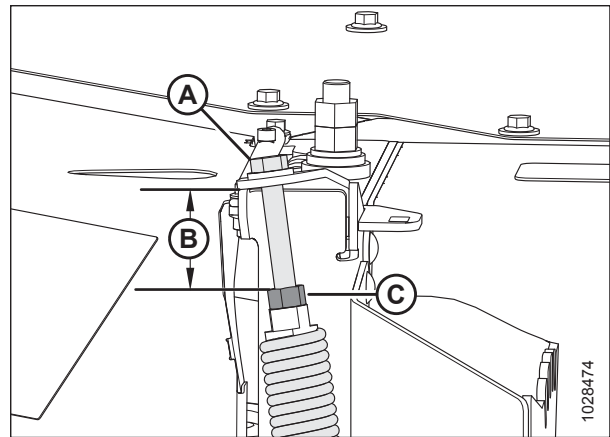


Figure 7.21: Roll Tension Adjuster

7.6 Hanging Drums

Hanging drums aid in feeding crop from the ends of the header into the conditioner.

7.6.1 Checking and Adjusting Hanging Drum Drive

The hanging drum drive is set up and tensioned at factory. Ensure the drive belt is properly set and tensioned by following the steps below:



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. Open the header driveshields on the left side of the header.
2. Inspect the hanging drum belt drive and ensure belts (A) are properly seated on pulleys (B).
3. If necessary, adjust the belts as follows:
 - a. Loosen tensioner nut (C) to decrease drive belt tension, and adjust belt placement on pulleys (B).
 - b. Tighten tensioner nut (C) to increase drive belt tension and hold belts (A) in place.

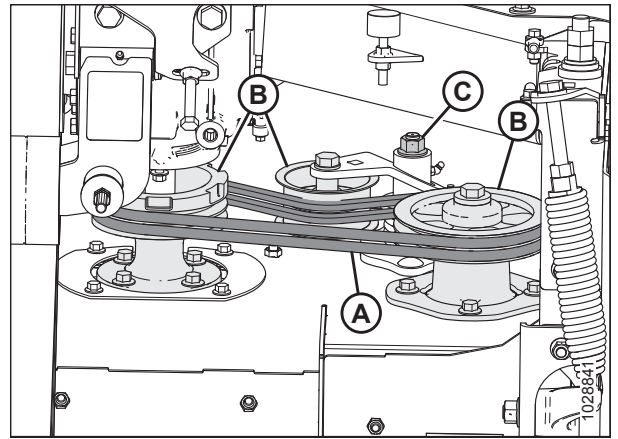


Figure 7.22: Hanging Drum Belt Drive

4. Inspect tensioner spring (A) and ensure it is seated properly in notches (B) on bracket (C) and applies tension to both belts (D).

NOTE:

Belts (D) are transparent in the illustration at right to better show spring (A) in bracket (C).

5. If necessary, adjust the belts as follows:
 - a. Loosen tensioner nut (E) and set the ends of spring (A) in the appropriate notches (B) on bracket (C).
 - b. Tighten tensioner nut (E) to hold spring (A) in place with appropriate tension placed on belts (D).

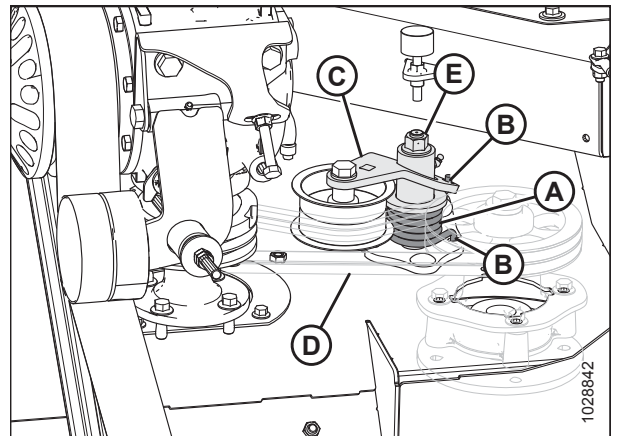


Figure 7.23: Tensioner Spring

7.7 Feed Roll Drive

7.7.1 Checking and Adjusting Feed Roll Drive

The feed roll drive is set up and tensioned at factory. Ensure the drive belt is properly set and tensioned by following the steps below:

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. Open the header driveshields on the left side of the header.
2. Inspect feed roll belt drive and ensure belts (A) are properly seated on pulleys (B) and pulley (C).

NOTE:

Driveline is not shown in illustration to better show pulleys and belts.

3. If necessary, adjust the belts as follows:
 - a. Insert 1/2 in. ratchet or breaker bar into hole (D) on bracket (E) and rotate bracket (E) and pulley (C) out of the way.
 - b. Adjust belt placement on pulleys (B) and pulley (C).
 - c. Rotate bracket (E) back into its original position, holding belts (A) in place on pulleys (B) and pulley (C).
4. Inspect tensioner spring (A) and ensure it is seated properly in notch (B) on bracket (C) and applies tension to both belts (D).

NOTE:

Driveline is not shown in illustration to better show spring (A) in bracket (C).

5. If necessary, adjust the belts as follows:
 - a. Loosen tensioner nut (E) and set the ends of spring (A) in the appropriate notches (B) on bracket (C).
 - b. Tighten tensioner nut (E) to hold spring (A) in place with appropriate tension placed on belts (D).

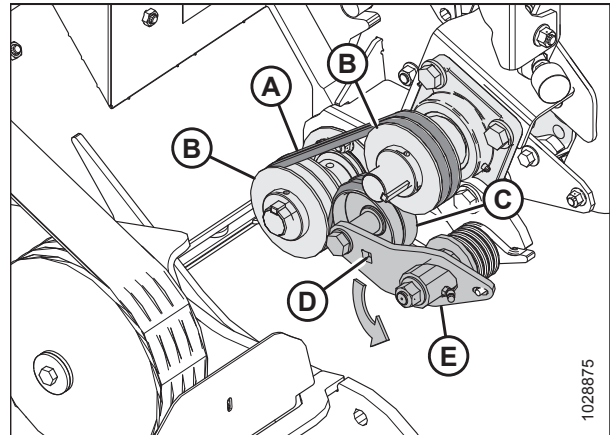


Figure 7.24: Feed Roll Belt Drive

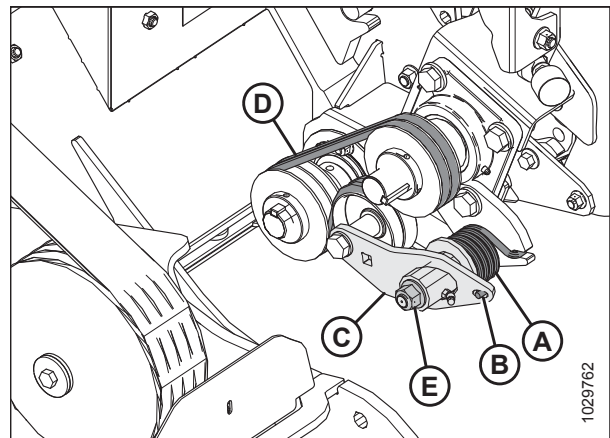


Figure 7.25: Tensioner Spring

7.8 Checking and Adding Conditioner Roll Timing Gearbox Oil

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.

IMPORTANT:

Check the gearbox oil level when the oil is warm. If the oil is cold, idle the machine for approximately 10 minutes prior to checking.

1. Lower the disc header to the ground and adjust the header angle (tilt) so that the cutterbar is level (parallel) with the ground.
2. Shut down the engine, and remove the key from the ignition.
3. On the right side of the header, engage lift release latch (A) and pull handle (B) to open outboard driveshield (C).
4. Lift at handle (D) and open inboard driveshield (E).

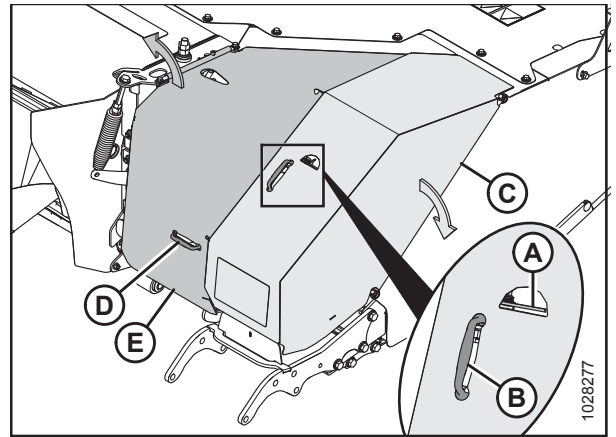


Figure 7.26: Right Driveshields

5. Clean around oil level sight glass (A) and breather (B) on the inboard side of the gearbox.
6. Ensure that the lubricant is level with the top of the sight glass. If necessary, add lubricant through breather (B). Refer to [8.1 Recommended Lubricants, page 89](#) for a list of recommended fluids, lubricants, and capacities.

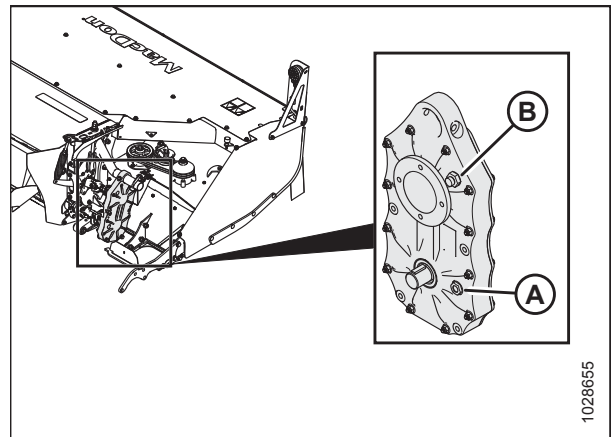


Figure 7.27: Roll Timing Gearbox

7.9 Checking and Adding Oil in Header Drive Gearbox

IMPORTANT:

Check the gearbox oil level when the oil is warm. If the oil is cold, idle the machine for approximately 10 minutes prior to checking.



WARNING

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

1. Adjust the header height until the cutterbar is parallel with the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Locate gearbox (A) on the left side of the header.

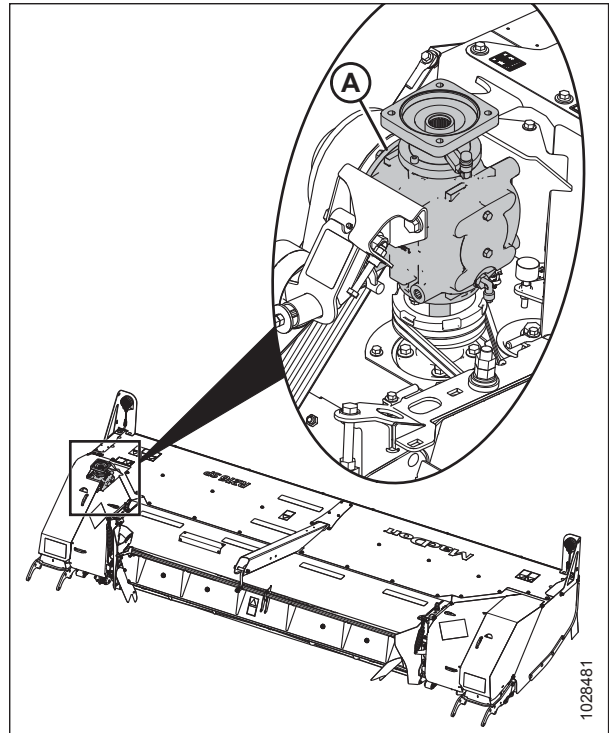


Figure 7.28: Header Drive Gearbox Location

PERFORMING PREDELIVERY CHECKS

4. Clean area around check plug (A).
5. Remove check plug (A) with a 13 mm (1/2 in.) socket.
6. Ensure lubricant is even with bottom of check hole (with check plug [A] removed) or slightly runs out of the check hole.
7. If necessary, remove fill plug (B) and add lubricant to gearbox through the fill hole until lubricant runs out of check hole (with check plug [A] removed). Refer to [8.1 Recommended Lubricants, page 89](#) for a list of recommended fluids, lubricants, and quantities for the machine.
8. Reinstall the plug(s) and tighten.
9. Close the left driveshield and lower the header.

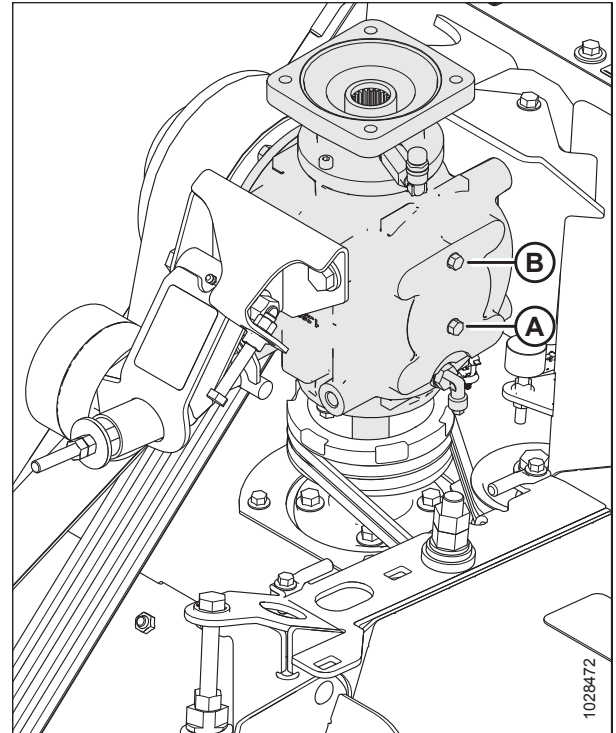


Figure 7.29: Header Drive Gearbox

7.10 Checking and Adding Lubricant in Cutterbar

WARNING

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

WARNING

Exercise caution when working around the blades. Blades are sharp and can cause serious injury. Wear gloves when handling blades.

1. Park the machine on level ground.
2. Lower the header onto 25 cm (10 in.) blocks under both ends of the cutterbar.
3. Shut down the engine, and remove the key from the ignition.
4. Open cutterbar curtain (A).

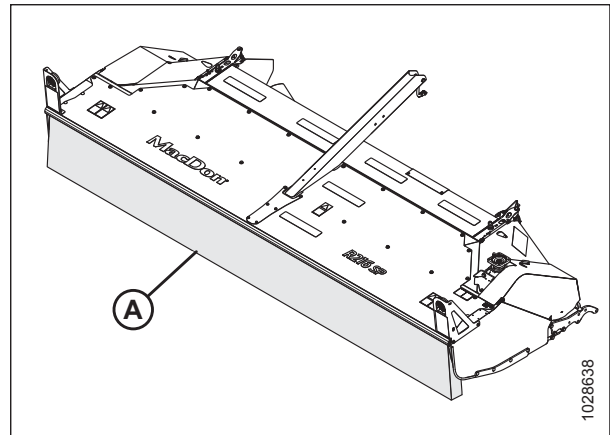


Figure 7.30: Cutterbar Curtain

5. Use a spirit (bubble) level (A) to ensure the cutterbar is level in both directions. Adjust the header accordingly.

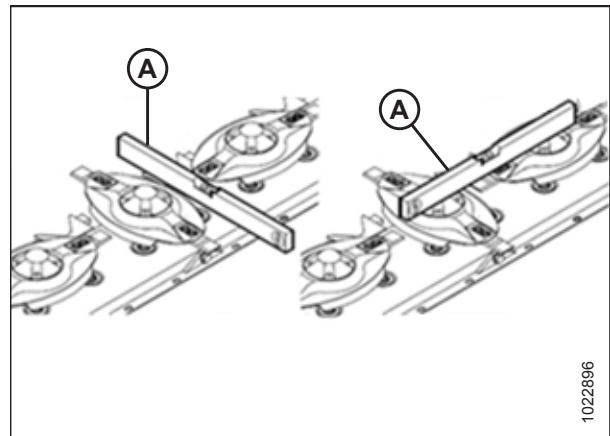


Figure 7.31: Spirit Level on Cutterbar

PERFORMING PREDELIVERY CHECKS

6. Clean the area around plug (A). Place a 5 liter (5.2 US qts) capacity container under plug (A).
7. Use a 17 mm socket to remove plug (A) and gasket (B) from cutterbar. Oil level must be up to the inspection plug hole. If additional lubricant is required, continue following this procedure and refer to the next step. If additional lubricant is **NOT** required, proceed to Step 22, [page 84](#).
8. Reinstall the inspection plug.

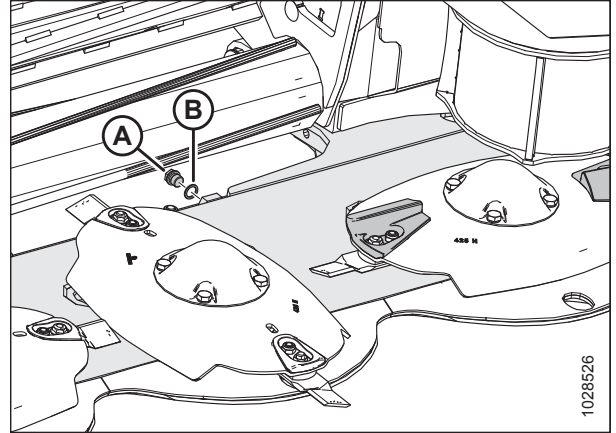


Figure 7.32: Cutterbar Oil Inspection Plug

CAUTION

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

9. Start the engine, and raise the header slightly.
10. Lower the header onto blocks, so the right end is slightly higher than left end.
11. Shut down the engine, and remove the key from the ignition.
12. Remove plug (A) at the right end of the header.

IMPORTANT:

Do **NOT** remove bolts (B).

13. Add lubricant to the required level.

IMPORTANT:

Do **NOT** overfill the cutterbar. Overfilling can cause overheating, damage, or cutterbar component failure.

NOTE:

For lubrication specifications, refer to [8.1 Recommended Lubricants, page 89](#).

14. Replace plug (A) and torque to 30 Nm (22 lbf·ft).

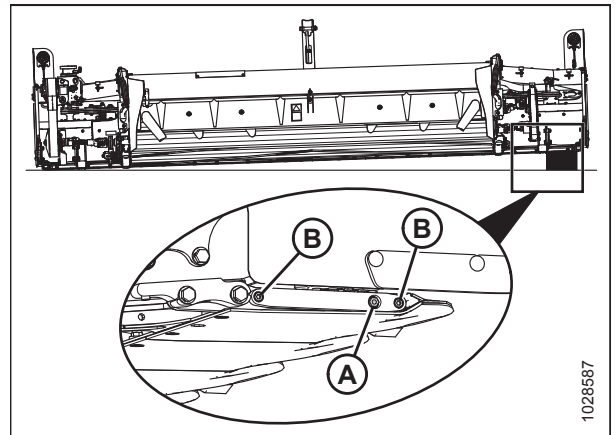


Figure 7.33: Cutterbar Oil Plug

CAUTION

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

15. Start the engine and raise the header fully.
16. Shut down the engine, and remove the key from the ignition. Engage the windrower lift cylinder safety props.
17. Remove the block from under the header.
18. Disengage the windrower lift cylinder safety props.

PERFORMING PREDELIVERY CHECKS

CAUTION

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

19. Start the engine and lower the header to a level position on the ground.

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

21. Recheck the oil level.

22. Check gasket (B) for breaks or cracks, and replace if necessary.

23. Install plug (A) and gasket (B). Tighten securely.

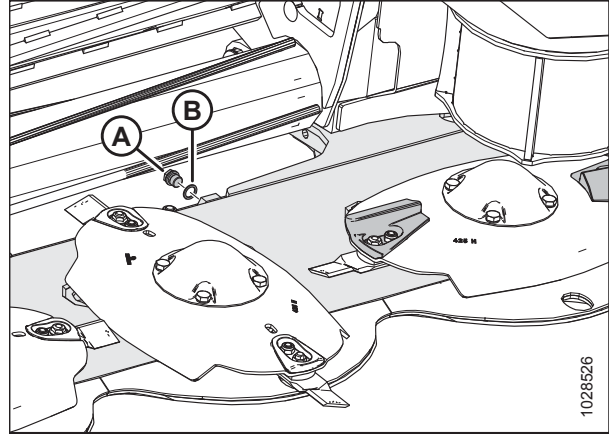


Figure 7.34: Cutterbar Oil Inspection Plug

24. Close cutterbar curtain (A).

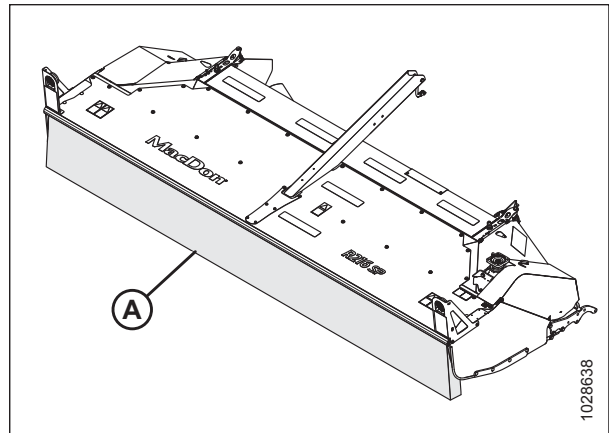


Figure 7.35: Cutterbar Curtain

7.11 Checking Lights

1. Check light brackets (A) and make sure they're securely installed and undamaged.
2. Check operation of hazard lights (B) during machine run-up.

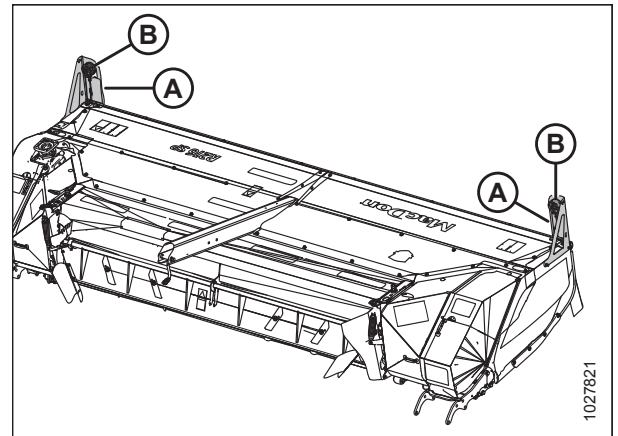


Figure 7.36: Lights

7.12 Checking Manuals

The following manuals should be stored in the manual storage case (A) on the left fixed deflector:

- R216 Rotary Disc Header Operator's Manual
- R216 Rotary Disc Header Parts Catalog

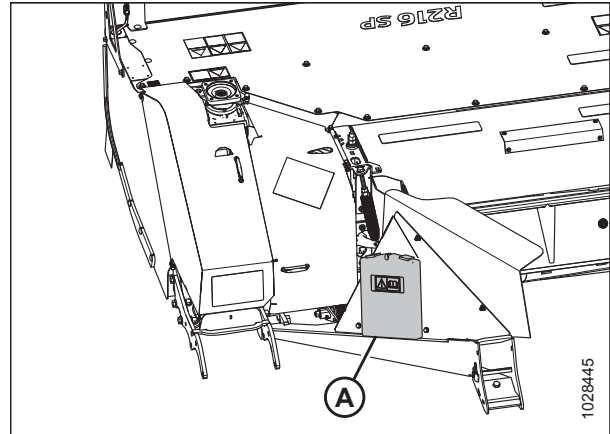


Figure 7.37: Manual Case

7.13 Running up the Header

WARNING

- Keep everyone several hundred feet away from your operation. Ensure bystanders are never in line with the front or rear of the machine. Stones and other foreign objects can be ejected from either end with force.
- Take extreme care to avoid injury from thrown objects. Do NOT, under any circumstances, operate the header when other people are nearby.
- Check cutterbar area carefully for loose parts and hardware on the cutterbar. These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.
- The cutterbar curtain reduces the potential for thrown objects. Always keep the curtain down when operating the header. Replace the curtains if it becomes worn or damaged.

WARNING

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

CAUTION

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

NOTE:

Higher engine rpm may be required to engage the disc header. Do **NOT** exceed 1800 rpm.

1. Start the windrower.
2. Set the disc header 152–305 mm (6–12 in.) above the ground and adjust the center-link to mid-position.
3. Run the machine slowly for 5 minutes, and watch and listen **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
4. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.
5. Perform the run-up check as listed on the Predelivery Checklist (the yellow sheet inside the back cover of this instruction) to ensure the machine is field-ready.
6. Retain the Checklist and retain this instruction for future reference.

Chapter 8: Reference

8.1 Recommended Lubricants

Keep your machine operating at top efficiency by using only clean lubricants and by ensuring the following:

- Use clean containers to handle all lubricants.
- Store lubricants in an area protected from dust, moisture, and other contaminants.

IMPORTANT:

Do **NOT** overfill the cutterbar when adding lubricant. Overfilling could result in overheating and failure of cutterbar components.

Table 8.1 Recommended Lubricants

Specification	Description	Use	Capacities
Lubricant: Grease			
SAE Multipurpose	High temperature extreme pressure (EP) 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	—
Lubricant: Gear Lubricant			
SAE 80W-90	High thermal and oxidation stability API service class GL-5	4.9 m (16 ft.) cutterbar	10 liters (10.5 qts [US])
SAE 85W-140	Gear lubricant API service class GL-5	Conditioner roll timing gearbox	0.7 liters (0.75 qts [US])
SAE 80W-140	Fully Synthetic Oil API GL-5 Minimum, SAE J2360 Preferred	Header drive 90 degree gearbox	1.65 liters (1.74 qts [US])

8.2 Torque Specifications

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

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

Jam nuts

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

Self-tapping screws

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

8.2.1 Metric Bolt Specifications

Table 8.2 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

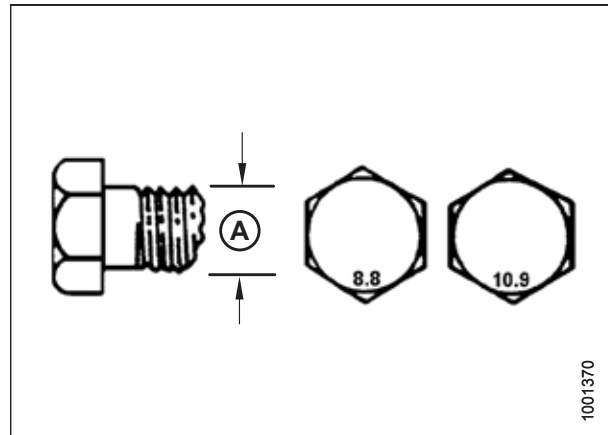


Figure 8.1: Bolt Grades

REFERENCE

Table 8.3 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

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

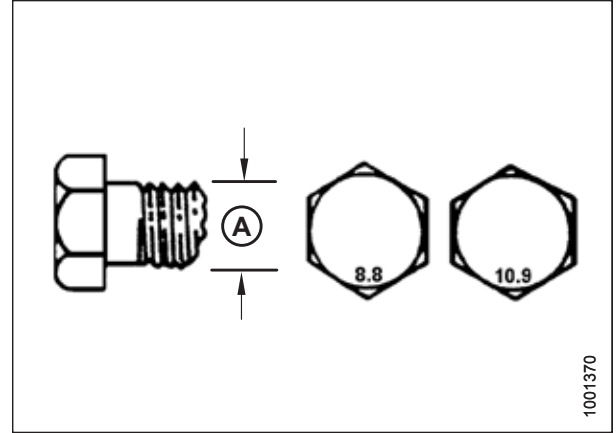


Figure 8.2: Bolt Grades

Table 8.4 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

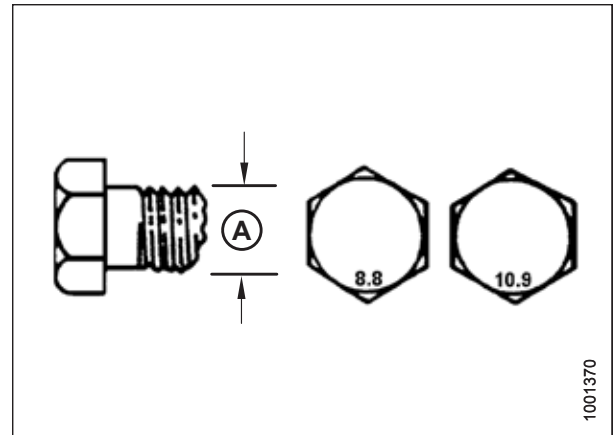


Figure 8.3: Bolt Grades

REFERENCE

Table 8.5 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

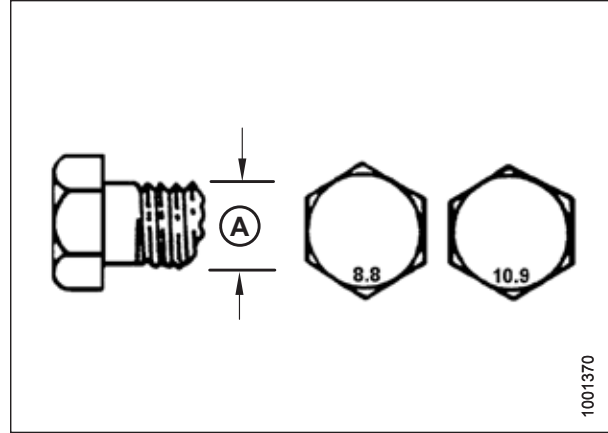


Figure 8.4: Bolt Grades

8.2.2 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.6 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf·ft	Nm	lbf·ft
M3	—	—	—	1
M4	—	—	4	2.6
M5	—	—	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	—	—	—	—
M16	—	—	—	—

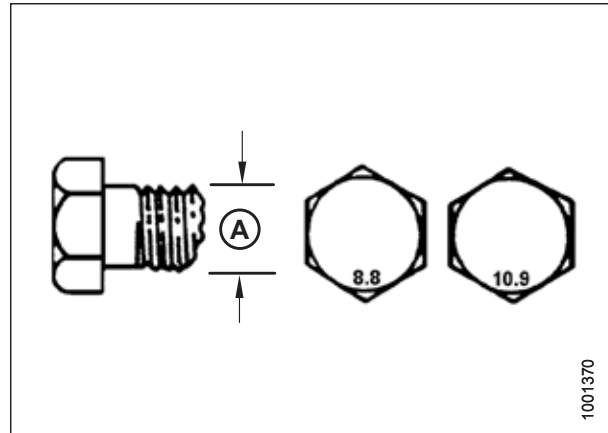


Figure 8.5: Bolt Grades

8.2.3 O-Ring Boss Hydraulic Fittings – Adjustable

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

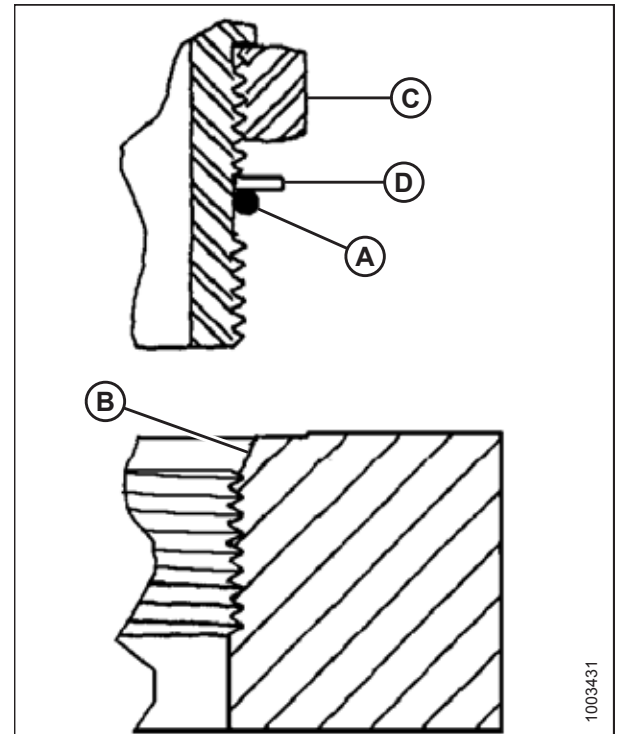


Figure 8.6: Hydraulic Fitting

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.

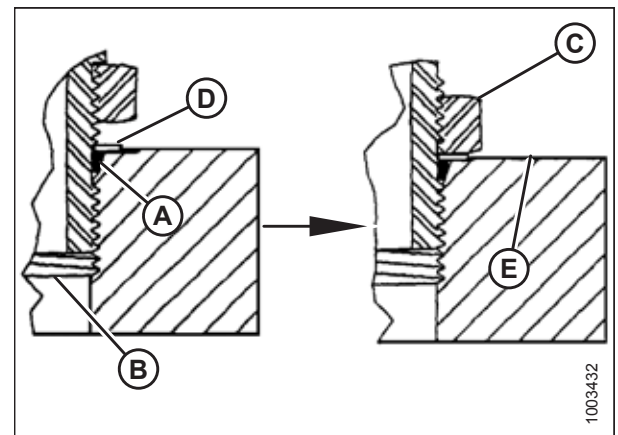


Figure 8.7: Hydraulic Fitting

REFERENCE

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – 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.

8.2.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table 8.8, page 95.
6. Check final condition of fitting.

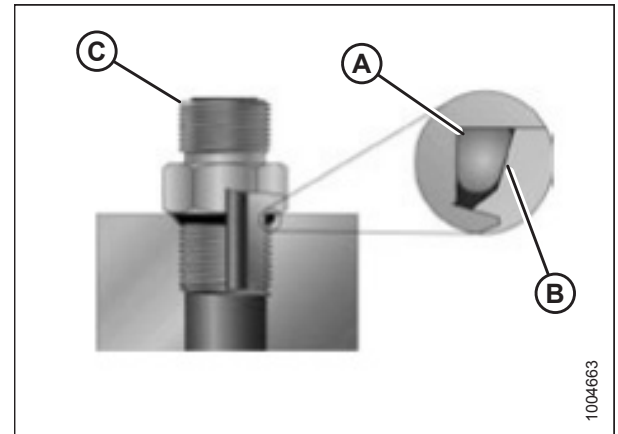


Figure 8.8: Hydraulic Fitting

Table 8.8 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ⁴	
		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

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

8.2.5 O-Ring Face Seal Hydraulic Fittings

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



Figure 8.9: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to values in Table 8.9, page 96.

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.

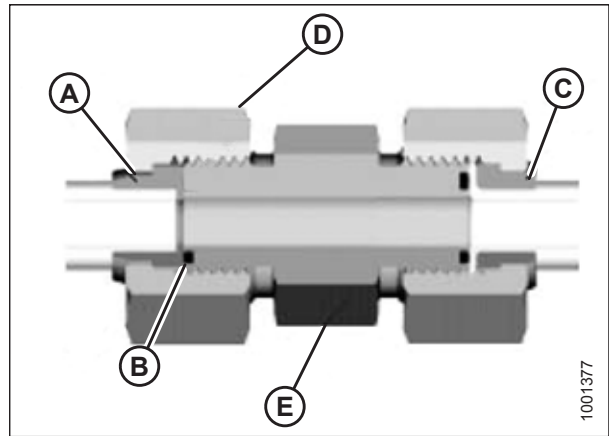


Figure 8.10: Hydraulic Fitting

Table 8.9 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁵	
			Nm	lbf-ft
-3	Note ⁶	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ⁶	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 ⁶	7/8	–	–

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

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

REFERENCE

Table 8.9 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁷	
			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

8.2.6 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 8.10, page 97. Make sure that tube end of a shaped connector (typically 45 degree or 90 degree) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

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

Table 8.10 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

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

8.3 Conversion Chart

Table 8.11 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.

8.4 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
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
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
hp	Horsepower
HPT display	Harvest Performance Tracker display module on a windrower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
M1 Series	MacDon M1170 and M1240 Windrowers
n/a	Not applicable
North American header	Header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
PARK	The slot opposite the NEUTRAL position on operator's console of M1 Series windrowers
R2 SP Series	MacDon R216 Rotary Disc Headers for windrowers
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

REFERENCE

Term	Definition
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
SP rotary disc header	Rotary disc header that connects to a self-propelled machine (windrower, etc.)
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism
Windrower	Power unit for a header

Predelivery Checklist

Perform these checks and adjustments before delivering the machine to your Customer. 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.



WARNING

Do NOT operate the machine with the driveshields open. High speed rotating components may throw debris and could result in death or serious injury.



CAUTION


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

Date Checked:

Checked by:

✓	Item	Reference
	Check that skid shoes or gauge rollers are evenly set on both sides of the header.	<ul style="list-style-type: none"> 3.1.1 Installing Adjustable Gauge Roller Kit, page 12 3.1.2 Installing Adjustable Skid Shoes Kit, page 15
	Ensure all shipping stands are removed from the header, the cable ties are removed from the cutterbar curtain, and the cutterbar curtain hangs properly.	<ul style="list-style-type: none"> 3.1 Removing Shipping Supports, page 9 3.4 Removing Shipping Stands, page 21 3.6 Unpacking Curtain, page 25
	Check that side forming shields are evenly set.	4.1 Assembling and Installing Forming Shield, page 27
	Check that deflectors are set in field position and the rear baffle is in the correct position: fully up for headers with the Double Windrow Attachment (DWA) option, and down for headers without the DWA option.	3.5 Adjusting Rear Baffle Deflectors, page 23
	Grease all bearings and drivelines.	6 Lubricating the Disc Header, page 61
	Check main drive belt tension.	7.1.1 Inspecting Conditioner Drive Belt, page 65
	Check conditioner roll tension (roll conditioner).	7.5.1 Checking Roll Tension, page 75
	Check hanging drum drive belts are properly tensioned.	7.6.1 Checking and Adjusting Hanging Drum Drive, page 77
	Check feed roll drive belts are properly tensioned.	7.7.1 Checking and Adjusting Feed Roll Drive, page 78
	Check conditioner roll timing gearbox lubricant.	7.8 Checking and Adding Conditioner Roll Timing Gearbox Oil, page 79
	Check drive gearbox lubricant.	7.9 Checking and Adding Oil in Header Drive Gearbox, page 80
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check cutterbar lubricant.	7.10 Checking and Adding Lubricant in Cutterbar, page 82
	Check for loose hardware. Tighten to required torque if applicable.	8.2 Torque Specifications, page 90

REFERENCE

✓	Item	Reference
	<p>Check cutterbar area carefully for loose parts and hardware on the cutterbar.</p> <p> WARNING</p> <p>These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.</p>	—
Run-Up Procedure		<i>7.13 Running up the Header, page 87</i>
	Check hydraulic hose and wiring harness routing to ensure adequate clearance when raising or lowering header.	—
	Ensure the hazard lights are functional.	<i>7.11 Checking Lights, page 85</i>
Post Run-Up Check – Stop Engine		
	Check for hydraulic leaks.	—
	Check belt drive for proper idler alignment and overheating bearings.	<i>7.1 Conditioner Drive Belt, page 65</i>
	Ensure the header manuals are in storage compartment.	<i>7.12 Checking Manuals, page 86</i>

**MacDon Industries Ltd.**

680 Moray Street
Winnipeg, Manitoba
Canada R3J 3S3
t. (204) 885-5590 f. (204) 832-7749

MacDon, Inc.

10708 N. Pomona Avenue
Kansas City, Missouri
United States 64153-1924
t. (816) 891-7313 f. (816) 891-7323

MacDon Australia Pty. Ltd.

A.C.N. 079 393 721
P.O. Box 103 Somerton, Victoria, Australia
Australia 3061
t.+61 3 8301 1911 f.+61 3 8301 1912

MacDon Brasil Agribusiness Ltda.

Rua Grã Nicco, 113, sala 404, B. 04
Mossunguê, Curitiba, Paraná
CEP 81200-200 Brasil
t. +55 (41) 2101-1713 f. +55 (41) 2101-1699

LLC MacDon Russia Ltd.

123317 Moscow, Russia
10 Presnenskaya nab, Block C
Floor 5, Office No. 534, Regus Business Centre
t. +7 495 775 6971 f. +7 495 967 7600

MacDon Europe GmbH

Hagenauer Strasse 59
65203 Wiesbaden
Germany

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