

R216

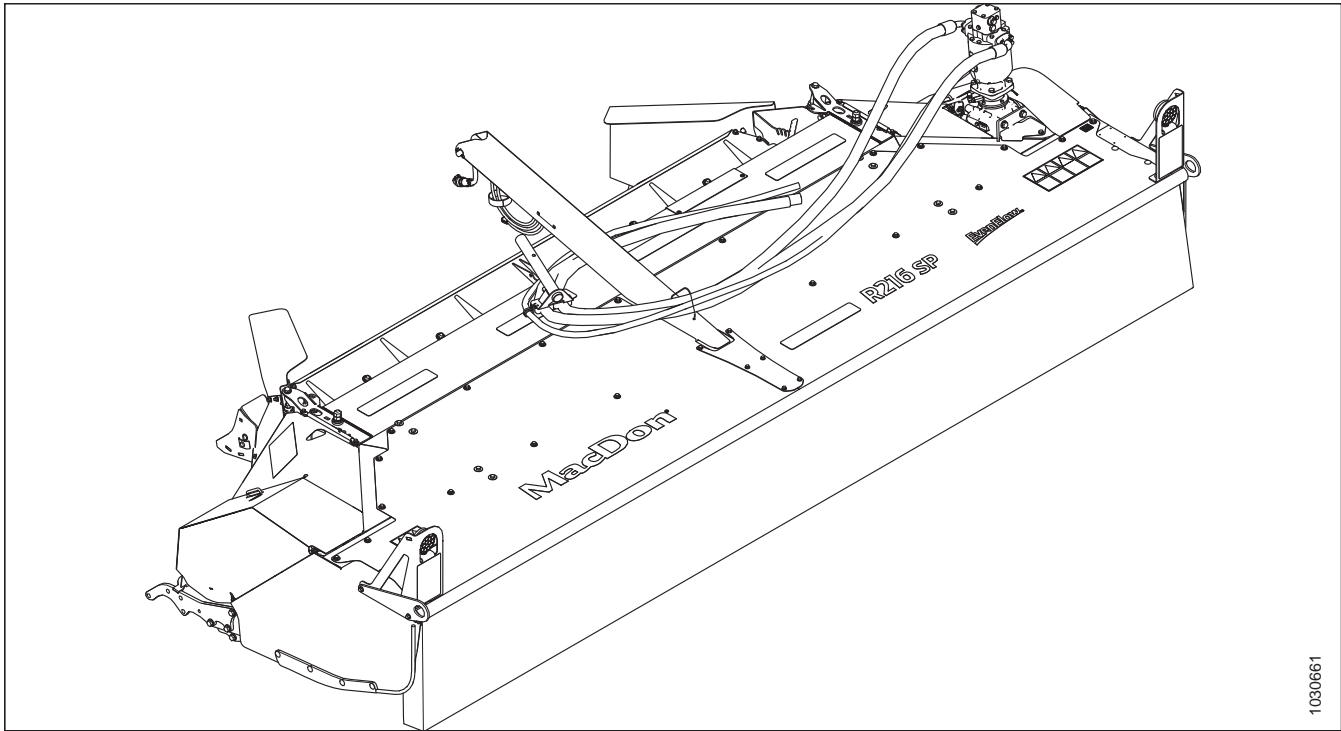
Rotary Disc Header for Windrowers

Unloading and Assembly Instructions

215028 Revision A

Original Instruction

R216 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.

Conventions

The following conventions are used in this document:

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

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

NOTE:

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

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
Throughout	Changed hanging drum to suspended drum	Tech Pubs
—	Removed Adjustable Gauge roller kit instructions	Tech Pubs
—	Removed Adjustable Skid Shoes kit instructions	Tech Pubs
3.1 Removing Shipping Supports, page 9	Updated images and procedure, added torque value	E58869
3.4 Removing Shipping Stands, page 14	Added missing steps	Tech Pubs
4.1.1 Assembling and Installing Forming Shield, page 19	Updated images and procedure	Product Support
4.1.2 Routing Electrical Harness, page 26	Updated images and procedure	Tech Pubs
4.1.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers – M1240 Windrowers, page 34	Added note	Product Support
4.1.5 Connecting Rotary Disc Header Hydraulics Using Hard Plumbing, page 36	Added note	Product Support
4.1.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers – M1240 Windrowers, page 34	Updated the procedure	ECN 58681
4.1.8 Unpacking the Curtain, page 41	Update images and procedure	E58886
6.1 Lubrication Locations, page 46	Updated driveline positions	ECN 58852
7.3.1 Checking Suspended Drum Drive, page 54	Updated images	Tech Pubs
7.4.1 Checking Feed Roll Drive, page 55	Updated images and text	ECN 31050
8.1 Starting the Engine, page 65	Added reference topic	Tech Pubs
8.2 Engaging and Disengaging Header Safety Props, page 69	Added reference topic	Tech Pubs
8.3 Leveling the Header, page 71	Added reference topic	Tech Pubs
8.4 Closing Driveshields, page 74	Added reference topic	Tech Pubs
8.5 Opening Driveshields, page 75	Added reference topic	Tech Pubs
8.6 Closing Cutterbar Curtain, page 77	Added reference topic	Tech Pubs
8.7 Opening Cutterbar Curtain, page 78	Added reference topic	Tech Pubs
8.8 Recommended Lubricants, page 79	Updated oil quantity	Tech Pubs

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Chapter 1: Safety

1.1 Signal Words

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



DANGER

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



WARNING

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



CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.2 General Safety

CAUTION

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

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

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



Figure 1.1: Safety Equipment



Figure 1.2: Safety Equipment

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

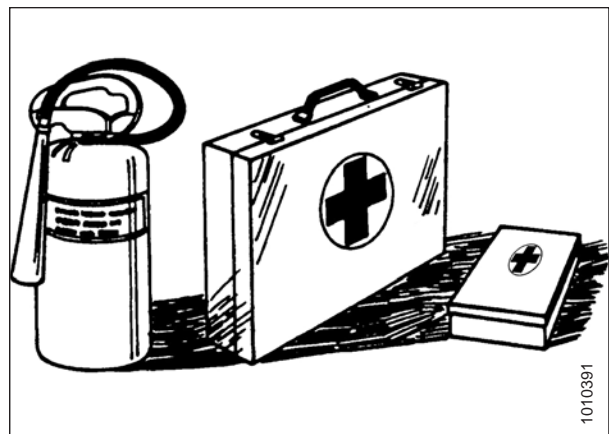


Figure 1.3: Safety Equipment

SAFETY

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



Figure 1.4: Safety around Equipment

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

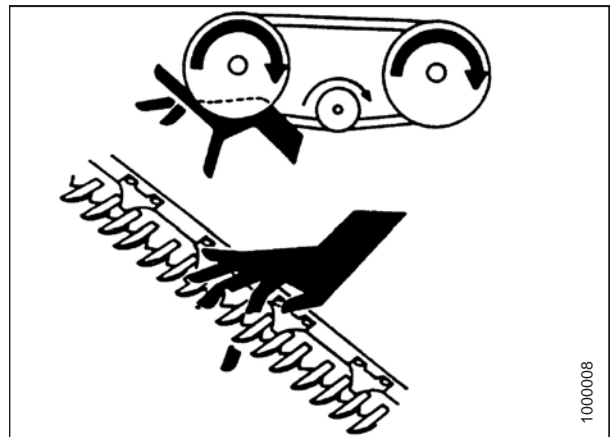


Figure 1.5: Safety around Equipment

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



Figure 1.6: Safety around Equipment

1.3 Welding Precaution

Welding should never be attempted on the header while it is connected to a windrower.



WARNING

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

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

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

1.4 Safety Signs

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

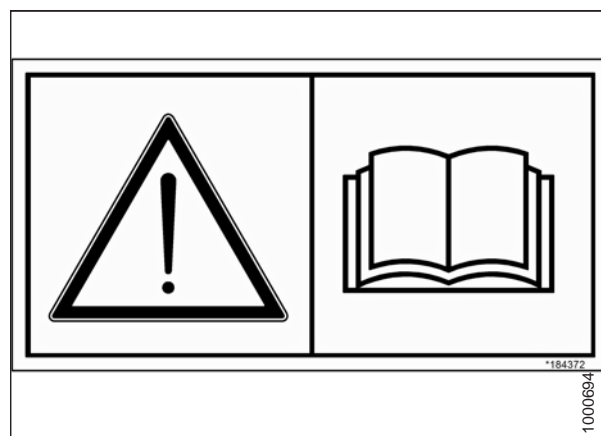


Figure 1.7: Operator's Manual Decal

Chapter 2: Unloading the Header from a Trailer

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.

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.

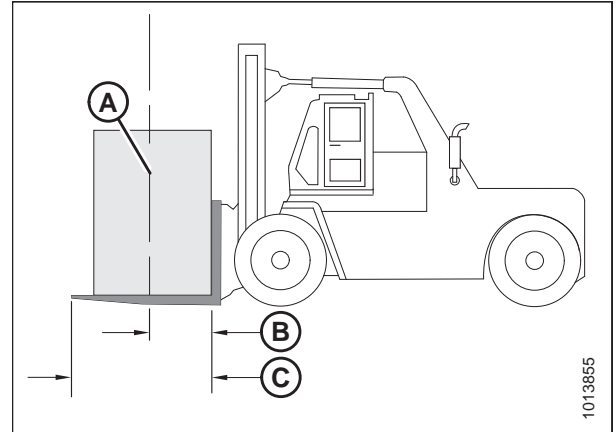


Figure 2.1: Minimum Lifting Capacity

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



Figure 2.2: Lifting Rotary Disc Header off Trailer

UNLOADING THE HEADER FROM A TRAILER

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.

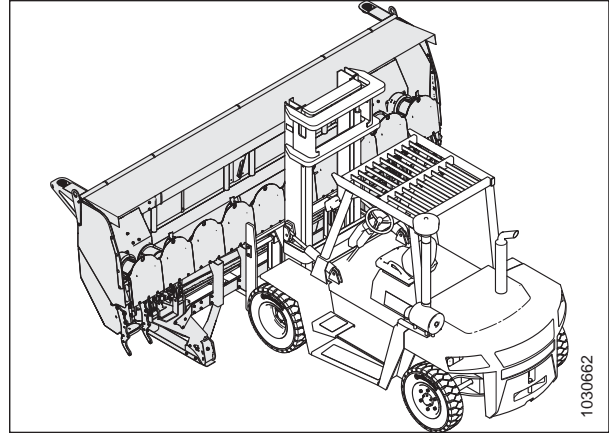


Figure 2.3: Moving Disc Header with Forklift

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).
2. Remove two supports (B)

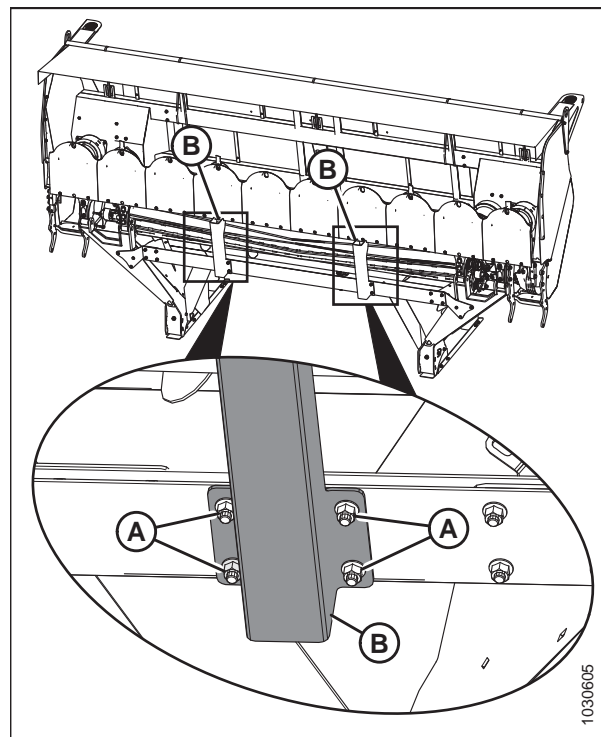


Figure 3.1: Shipping Supports

ASSEMBLING THE HEADER

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

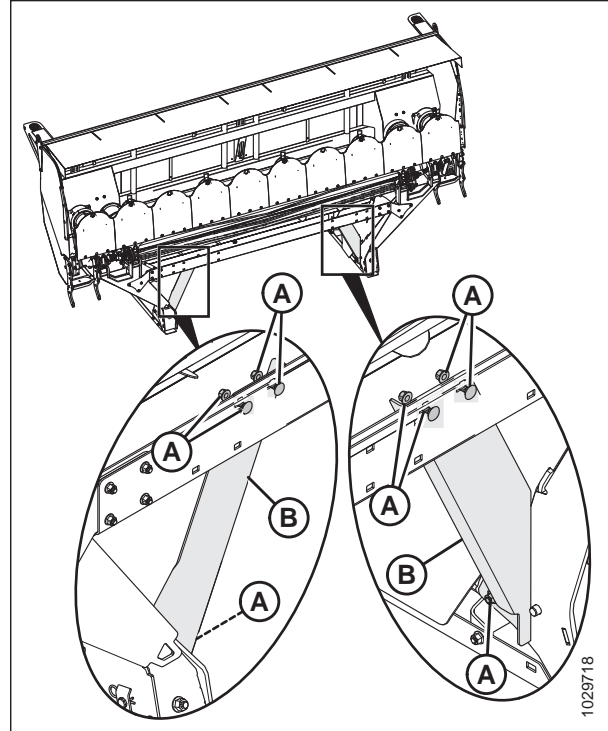


Figure 3.2: Shipping Stand Brace – Right Side Shown, Left Side Opposite

5. Remove three bolts and washers (A) holding support channel (B) onto the header supports.
6. Remove channel (B) from the header.

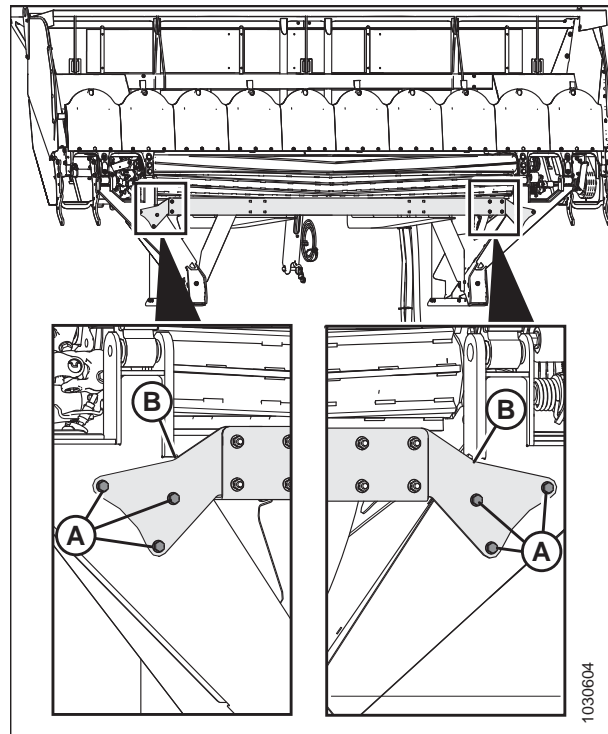


Figure 3.3: Plates

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.

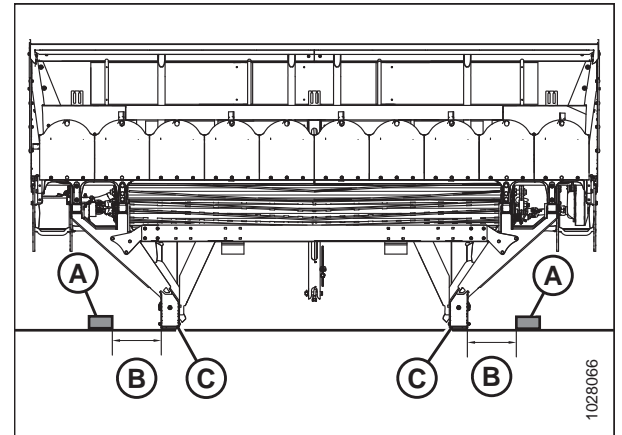


Figure 3.4: Block Placement

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 rotary 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.

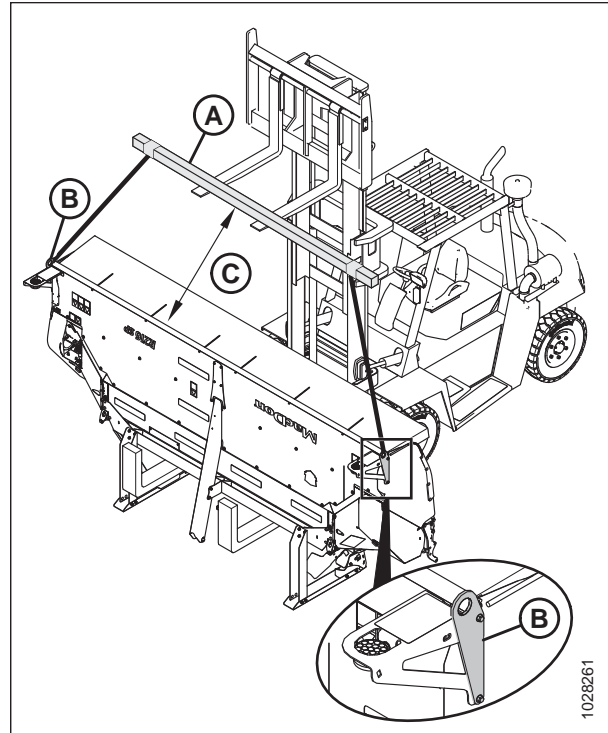


Figure 3.5: Spreader Bar Attached to Disc Header

6. Back up the forklift **SLOWLY**, and lower the rotary disc header (A) into working position on the wooden blocks (B) placed in Step 1, page 11.

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.

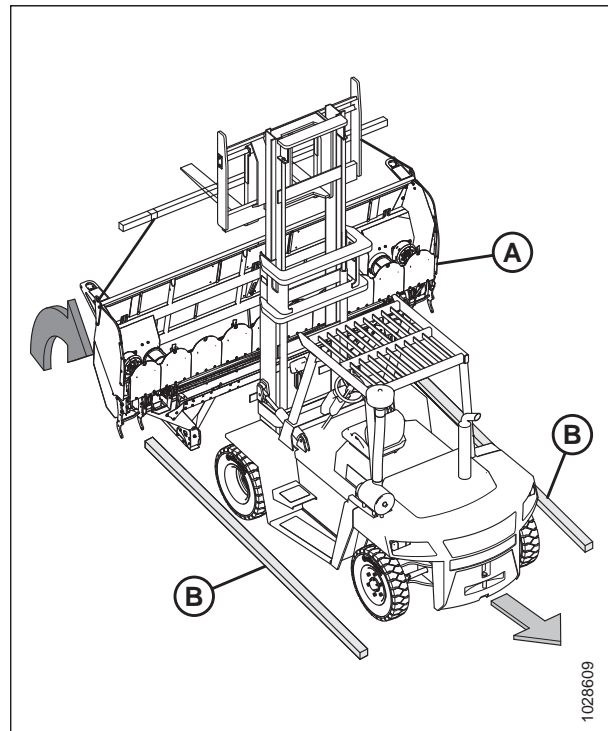


Figure 3.6: Lowering Rotary Disc Header to the Ground

3.3 Unpacking Hydraulic Hoses and Electrical Harness – M1240

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

NOTE:

Packing foam not shown in illustration at right.

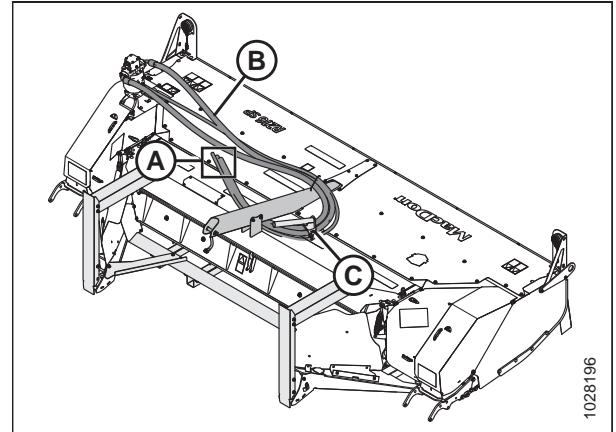


Figure 3.7: Hydraulic Hose Bundle in Shipping Position

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.

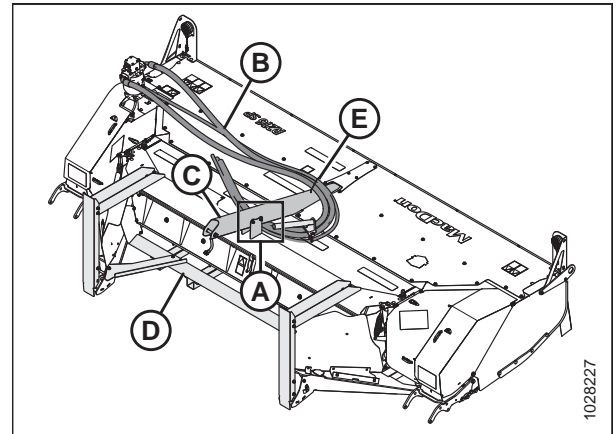


Figure 3.8: Hydraulic Hose Bundle in Shipping Position

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 the windrower.

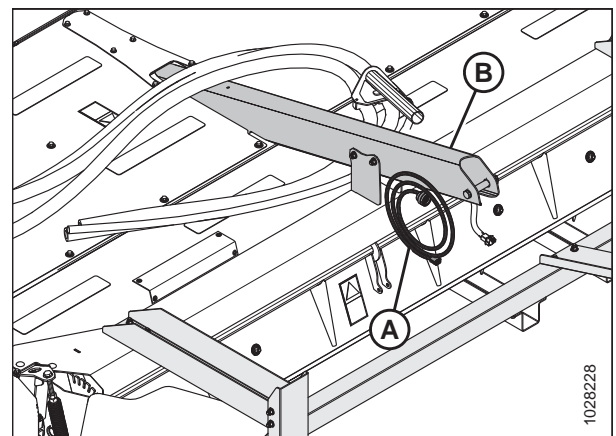


Figure 3.9: Center-Link

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.

1. Remove two nuts (A) and bolts and discard. Repeat on the opposite side.

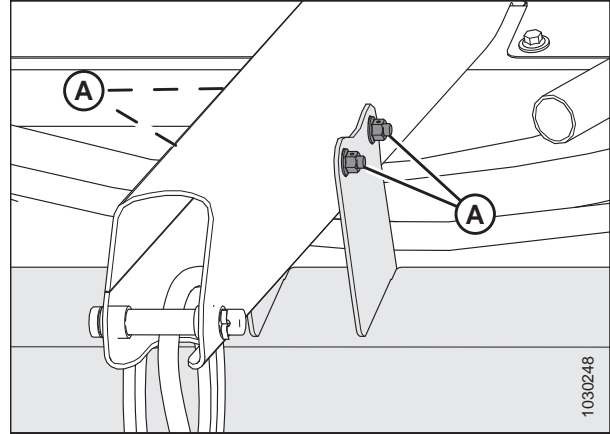


Figure 3.10: Shipping Stand – Center link

2. Remove two bolts (A) and nuts from the top of the header and discard. Repeat on the opposite side of the header.
3. Remove nut (B) and bolt and discard.

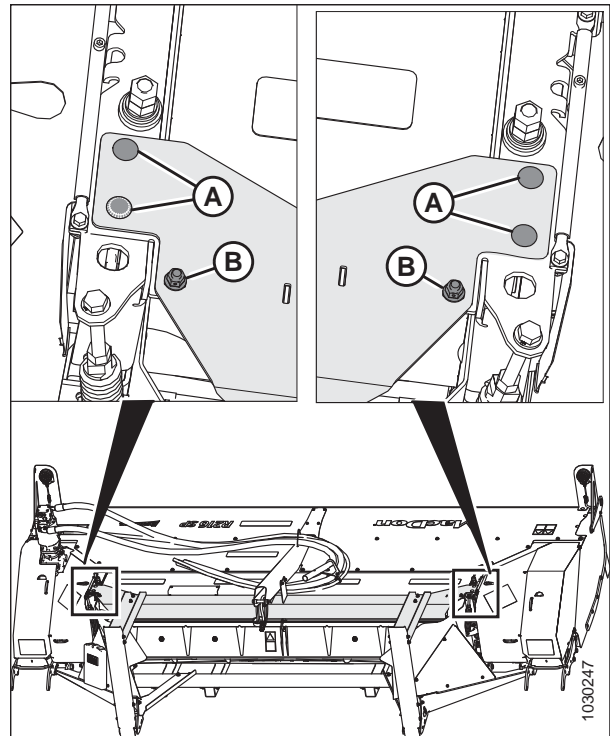


Figure 3.11: Shipping Stand – Right Side Shown, Left Side Opposite

ASSEMBLING THE HEADER

4. 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.

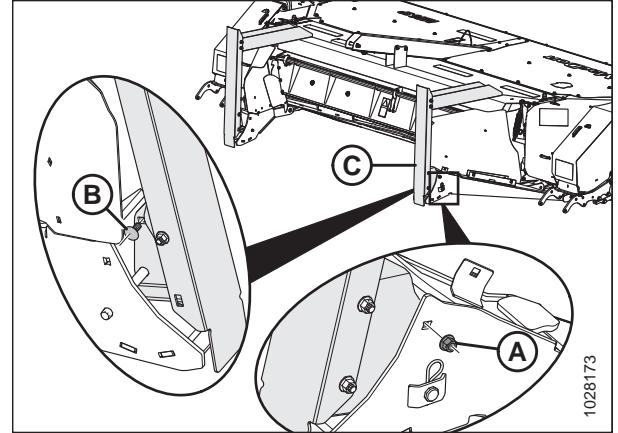


Figure 3.12: Shipping Stand – Right Side Shown, Left Side Opposite

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

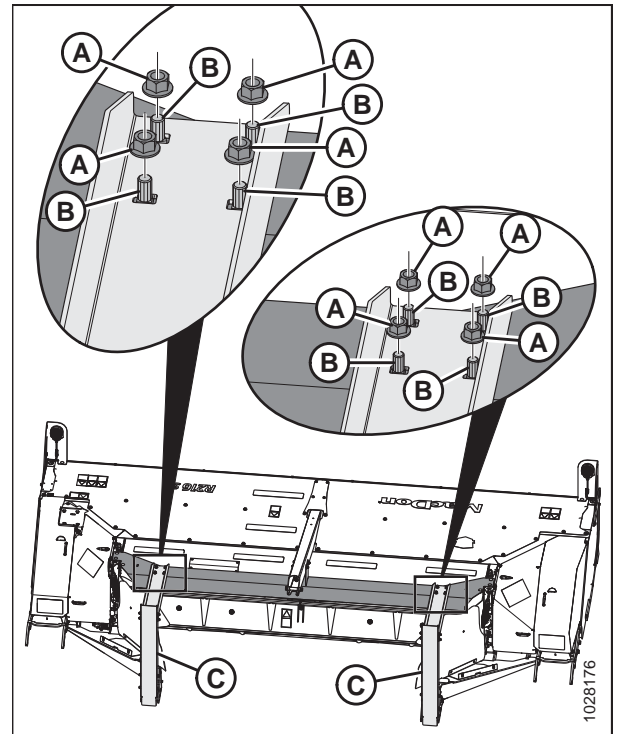


Figure 3.13: Shipping Stand

ASSEMBLING THE HEADER

6. Remove and retain bolts (A) and remove shipping plate (B). Discard plate (B), and repeat for the other side of the header.
7. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to bolt threads (A) and reinstall them onto the header. Torque hardware to 91 Nm (67 lbf·ft). Repeat for the other side of the header.

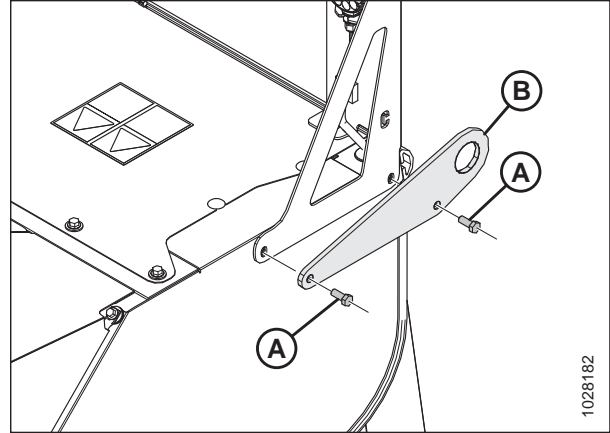


Figure 3.14: Shipping Plate – Right Side Shown, Left Side Opposite

3.5 Installing Manual Rear Deflectors

There are four fins and two deflectors located under the baffle. The fins and deflectors require no adjustment from shipping configuration to field position.

Install the rear deflectors as follows:

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.

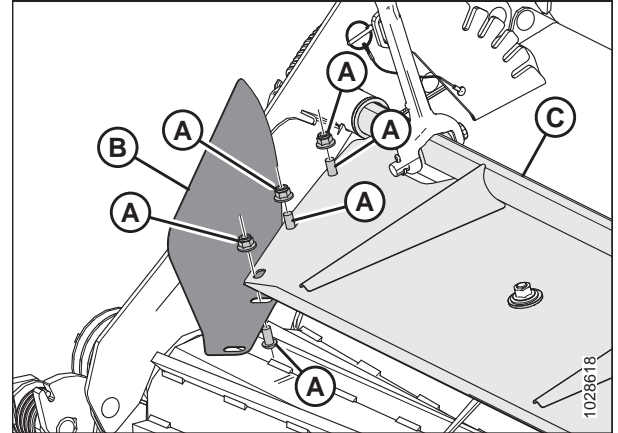


Figure 3.15: Deflector and Rear Baffle – View of baffle edge Deflector Underside, Right Side of the Header

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

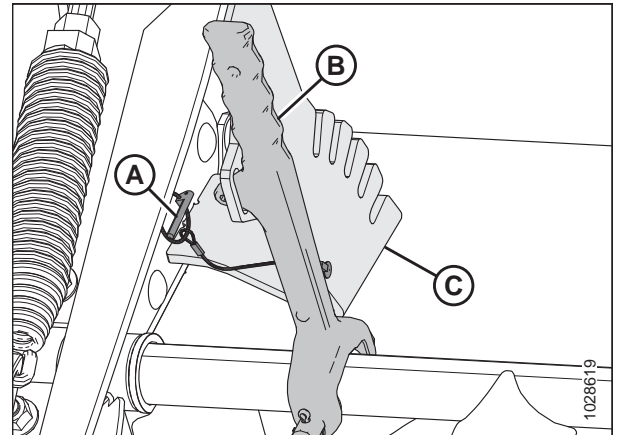


Figure 3.16: Baffle Handle and Baffle Bracket

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

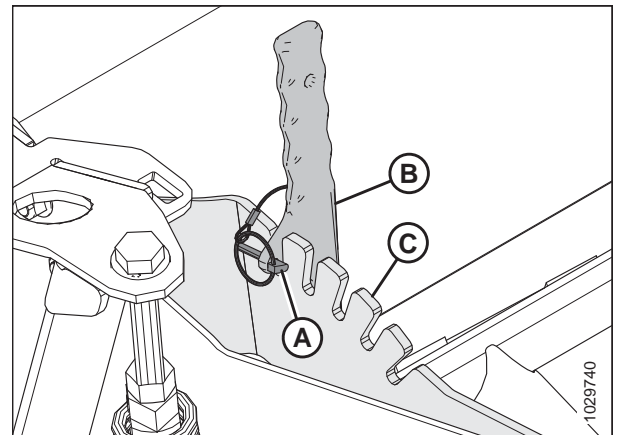


Figure 3.17: Baffle Handle

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.
7. Check that the baffle is adjustable across all working positions without binding.

NOTE:

Some contact is acceptable.

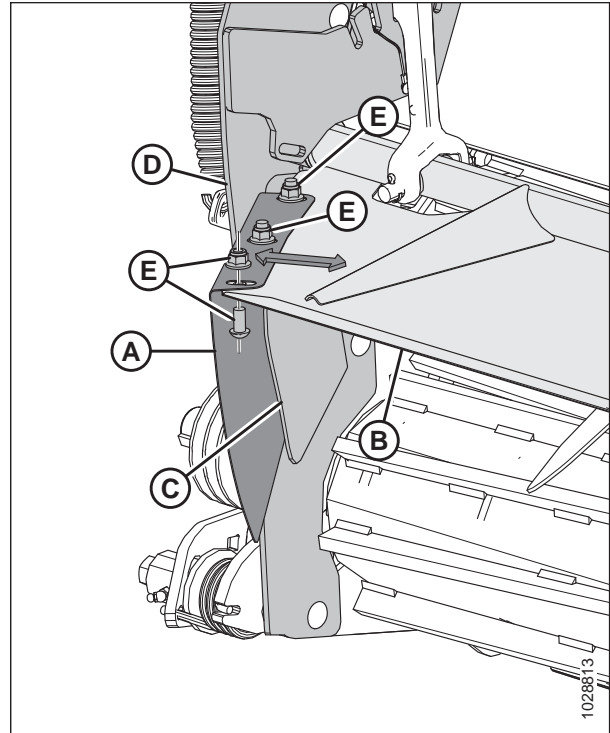


Figure 3.18: Deflector and Rear Baffle

Chapter 4: Attaching Rotary Disc Header to M1240 Windrower

4.1 Attaching Header to M1240

4.1.1 Assembling and Installing Forming Shield

Unpack and assemble the forming shield as follows:

1. Locate and open the included hardware bag.

For headers without the DWA installed:

2. Install shield mount plates (C) on the inside of the windrower legs.
3. Install two hex head M12 X 1.75 X 140-8.8 bolts (A), washers (D), and nuts (C) in the rear holes on the shield mounting plates. This ensures the forming shield is set at its lowest setting. The lowest setting is used when there is no double windrow attachment (DWA).

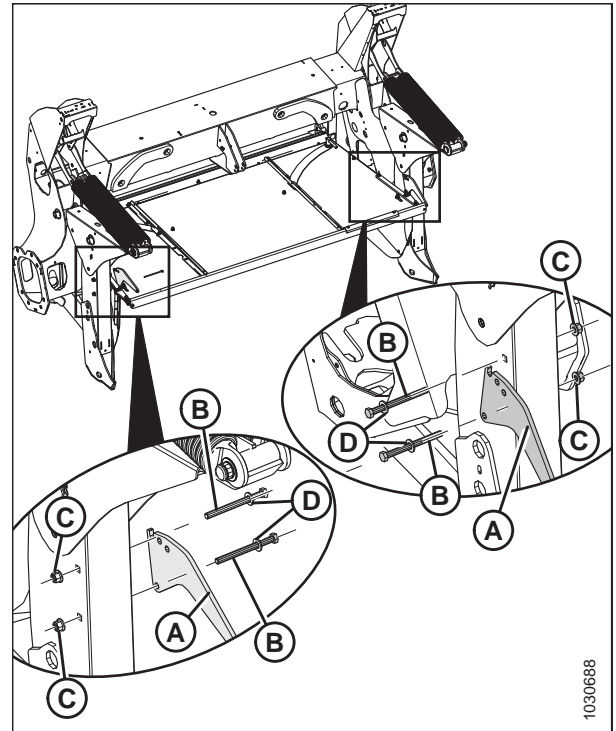


Figure 4.1: Setting Forming Shield for Header without DWA Option

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

For headers with the DWA installed:

4. Install two hex head M12 X 1.75 X 140-8.8 bolts (A), washers (D), and nuts (C) in the front holes on the shield mounting plates. This ensures the forming shield is set at its highest setting.

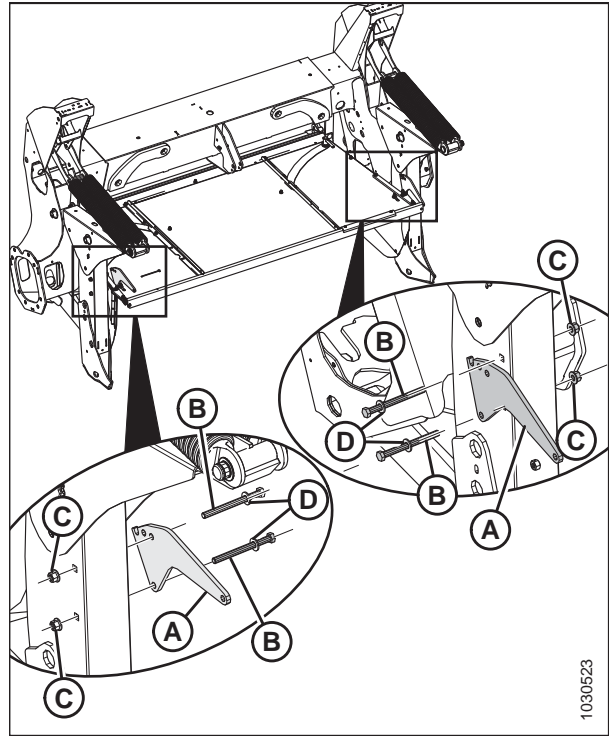


Figure 4.2: Setting Forming Shield for Header with the DWA Option

5. Unpack and remove shipping material from deflectors (A) and (B).
6. Remove right deflector (A) and left deflector (B) from shipping position and place them on an even work surface.
7. Remove cover (C) from shipping position and place the cover on an even work surface.

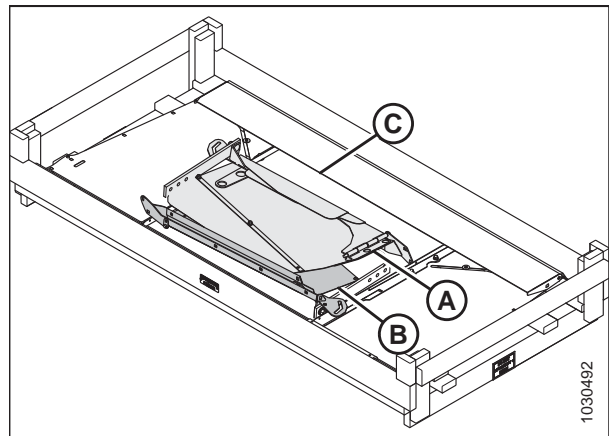


Figure 4.3: Forming Shield in Shipping Configuration

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

8. Remove right deflector (B) and left deflector (C) from shipping position. Retain for installation later.
9. Remove right hinge pin (A).
10. Remove right bracket (D).

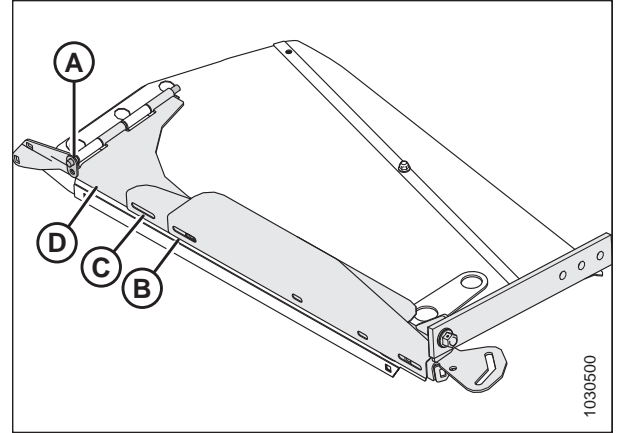


Figure 4.4: Right Deflector Hinge Rod

11. Remove the two outer existing bolts (B). Retain the bolts and discard the nuts.
12. Install right side bracket (A) on the underside of the forming shield cover.
13. Install three 25 mm-long short neck M10 bolts (B) and three Nyloc nuts (C).
14. Install support plate (D) on the top of the cover.
15. Install two 35 mm-long short neck M10 bolts (E) and two nuts (F).

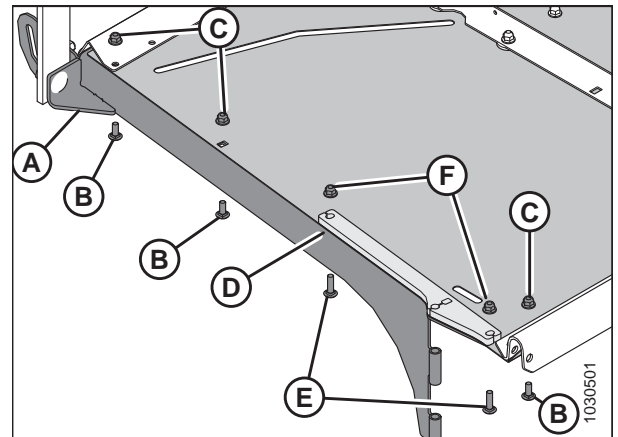


Figure 4.5: Right Side Bracket

16. Install one 25 mm-long short neck M10 bolt (A) and nut (B) through plate (C) and forming shield angle (D). Repeat this step on the left side of the forming shield.
17. Repeat Step 9, page 21 to Step 15, page 21 on the opposite side of the forming shield.
18. Place the forming shield in position under the windrower.

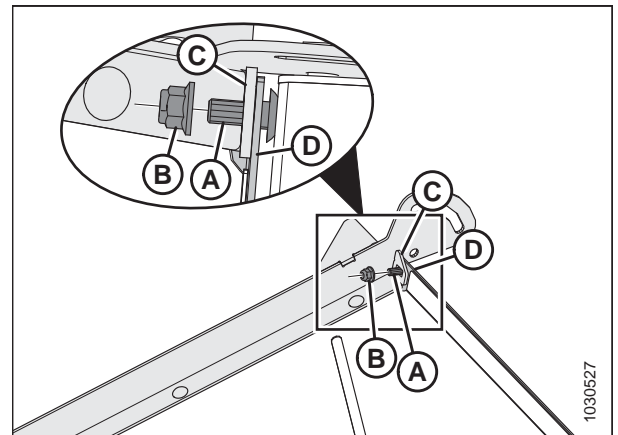


Figure 4.6: Plate and Forming Shield Angle

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

19. Using spacer (A), hex head M12 X 130 mm bolt (B), and nyloc 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.

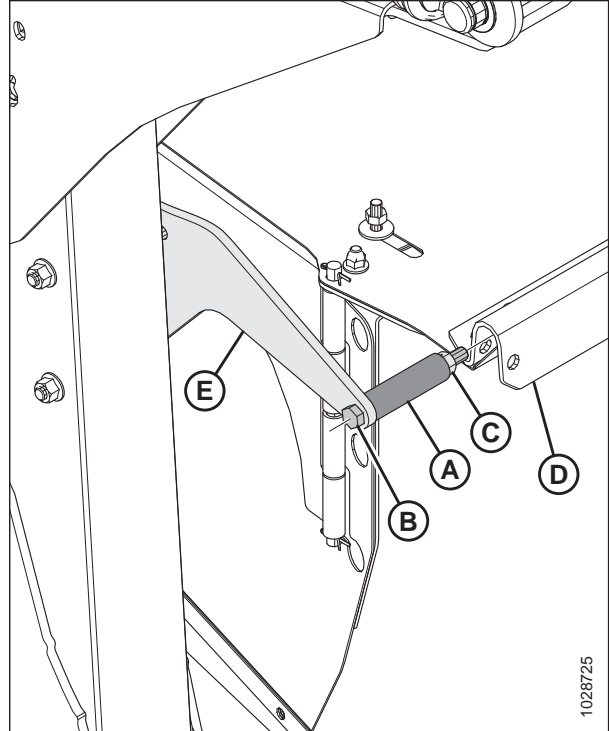


Figure 4.7: Shield Mount Plate and Attaching Hardware

20. Install 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.

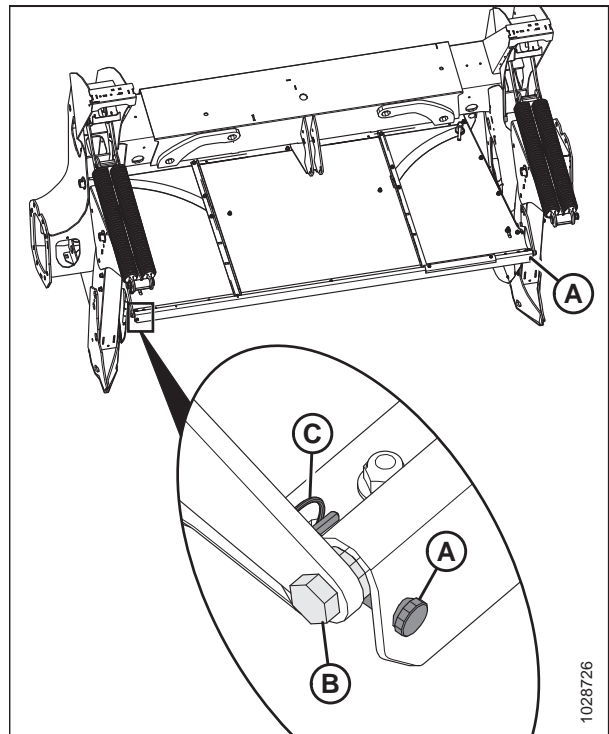


Figure 4.8: Clevis Pin

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

21. Pull rubber strap (A) up towards windrower frame. Align the first hole in rubber strap (A) with straight pin (B).
22. Secure rubber strap (A) in place with washer (C) and hair pin (D).
23. Repeat Step 21, page 23 to Step 22, page 23 for the left side of the forming shield.

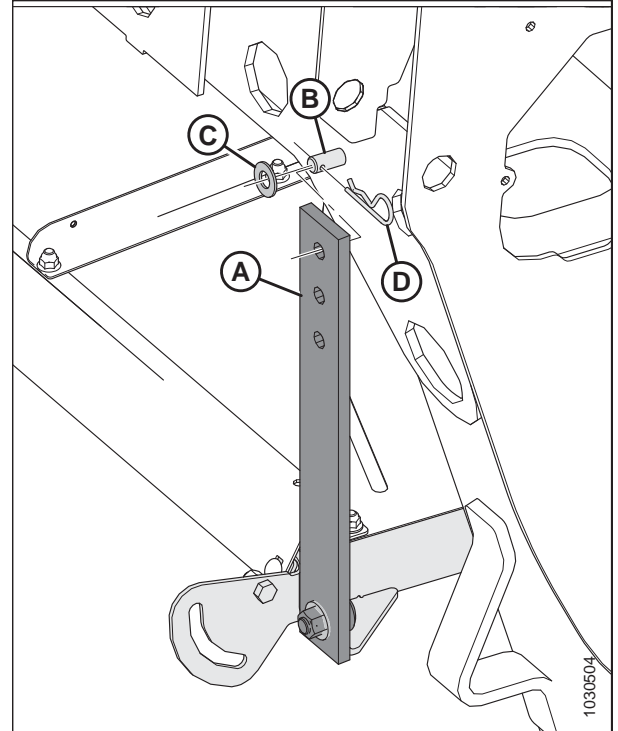


Figure 4.9: Rubber Strap — Right Side of Forming Shield

24. Retrieve baffle (A) from shipping position.
25. Secure baffle (A) to side bracket (D) with one 25 mm M12 bolt (B) and nut (C). Snug nut (C) to allow baffle (A) to rotate freely. Repeat on the other side of the forming shield.

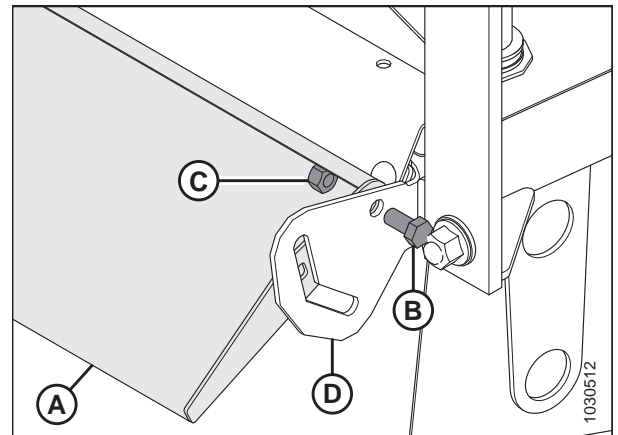


Figure 4.10: Right Side Bracket and Baffle

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

26. Install handle (A) with two flat washers (B) and one rubber washer (C), using one 40 mm-long square neck M12 bolt (D) installed through baffle (E) and right side bracket (F). Repeat on the other side of the forming shield.

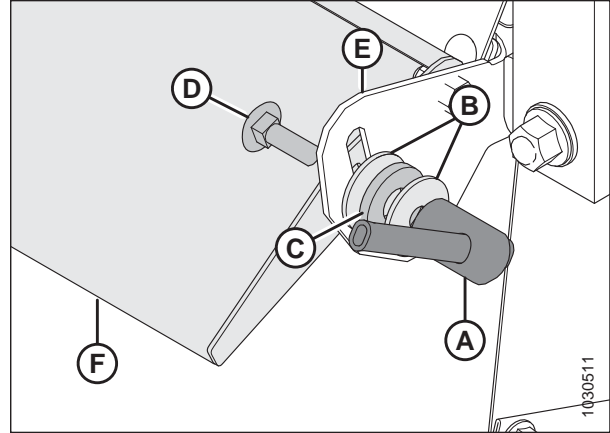


Figure 4.11: Baffle Handle

27. 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.

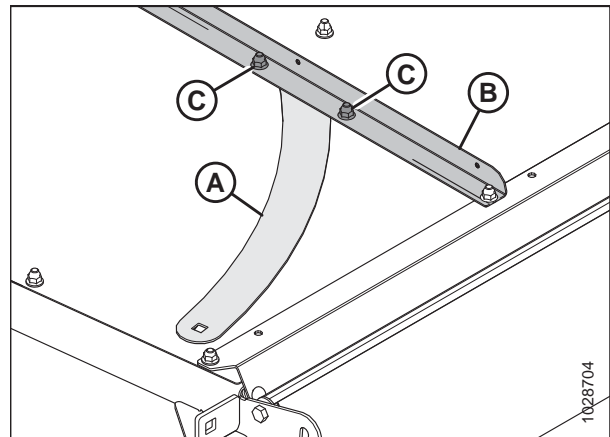


Figure 4.12: Deflector Cover

28. Install side deflector (A) on the right side of the forming shield.
29. Install pin (B) to secure the side deflector.
30. Install one 40 mm-long M10 bolt (C) and nut (D).
31. Install one 35 mm-long short neck M10 bolt (H) near the front of the forming shield with washer (F) and two jam nuts (G). Snug lower nut (G) against the forming shield, but keep it loose enough to rotate freely. Then jam upper nut (G) against the lower nut.
32. Install one 20 mm-long short neck M10 bolt (J) and nut (E). Repeat on the other side of the forming shield.

NOTE:

Bolt is installed with button head facing towards the leg to increase clearance.

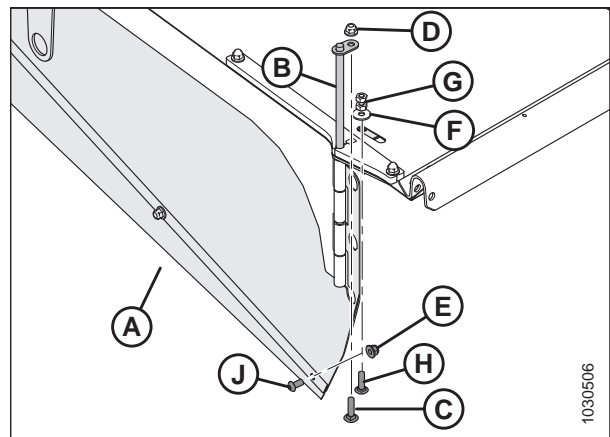


Figure 4.13: Right Side Bracket

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

33. Use one 40 mm-long square neck M12 bolt (A) to secure the forming shield cover (F), deflector adjustment cover (B), two washers (C), rubber washer (D), and handle (E) together. Repeat on the other side of the forming shield.
34. Repeat Step 28, page 24 to Step 33, page 25 on the other side of the forming shield.

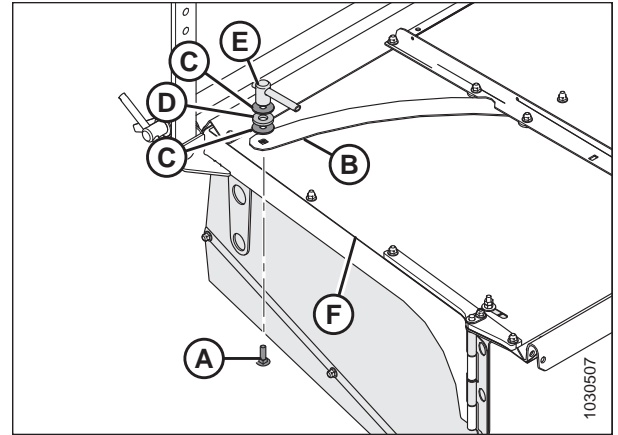


Figure 4.14: Right Side Bracket

35. Remove existing bolts and nuts (E). Retain the bolts and discard the nuts.
36. Install right deflector (A) on the right side of the forming shield using two 25 mm-short neck M10 bolt (C) and nuts (D). Repeat on the other side of the forming shield.

NOTE:

The narrower deflector end faces the front of forming shield, while the wider end faces the rear.

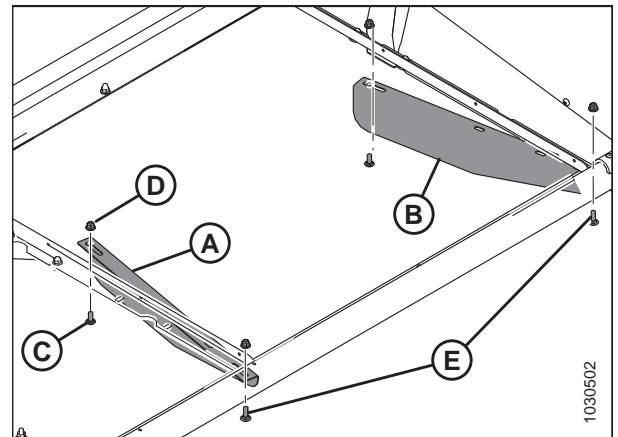


Figure 4.15: Forming Shield

4.1.2 Routing Electrical Harness

A total of seven cable ties (A) will secure the routed header electrical harness (B) in place alongside the windrower chassis 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:

Cable ties are located in the manual storage box.

NOTE:

Windrower chassis 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:

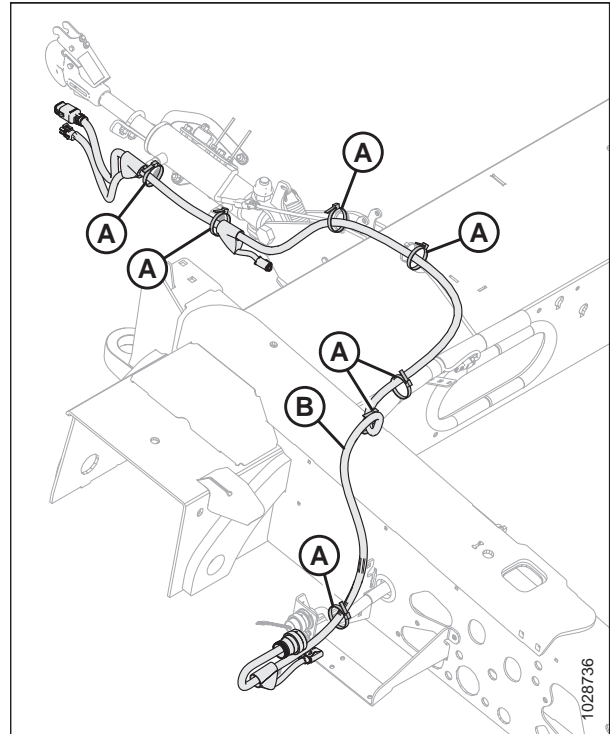


Figure 4.16: Cable Ties Securing Header Electrical Harness

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

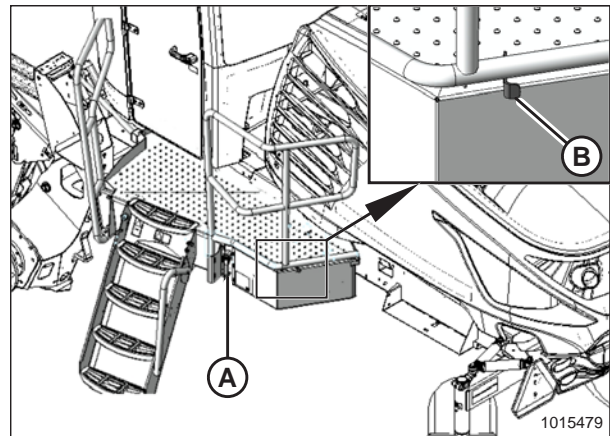


Figure 4.17: Left Cab-Forward Platform

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

- Retrieve header adapter harness (A) and adjustable strap (D). Loosely attach the harness to center-link (B) with two cable ties (C).

NOTE:

Cable ties (C) should bundle header adapter 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.

- Install velcro strap (D) around the center link cylinder.

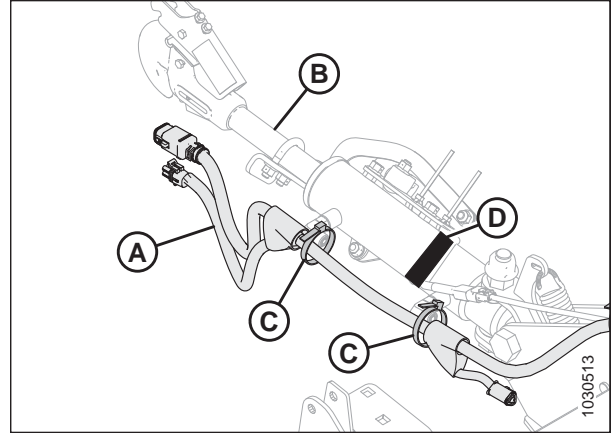


Figure 4.18: Electrical Harness Routed Along Center-Link with Cable Ties

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

NOTE:

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

NOTE:

The windrower chassis harness is only partially illustrated.

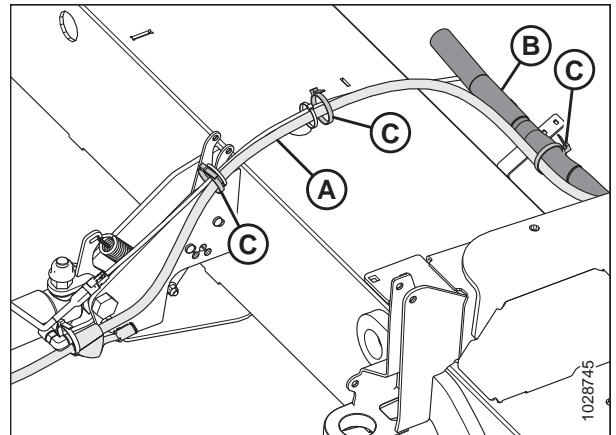


Figure 4.19: Forward Cross Member and Cable Ties

- Route header adapter harness (A) over windrower frame (B) towards the multicoupler base.
- Loosely secure header adapter harness (A) to the windrower chassis harness (C) with one cable tie (D) near the windrower frame.

NOTE:

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

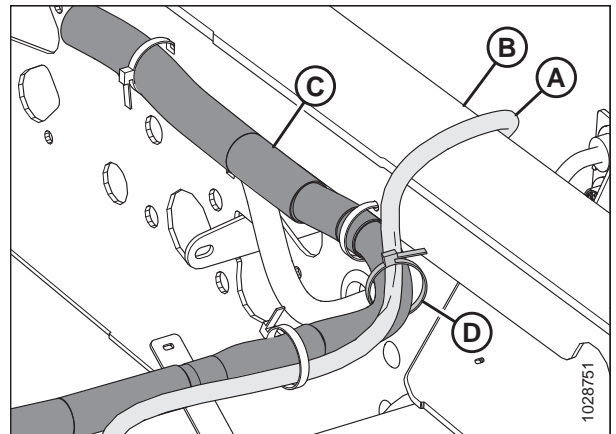


Figure 4.20: Electrical Harness Routing

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

8. Connect header adapter harness (A) to plug (B) set in multicoupler base (C).
9. Secure header adapter 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).

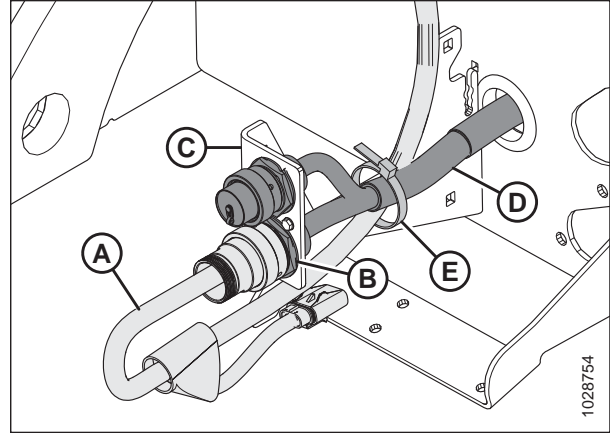


Figure 4.21: Electrical Connection

10. Extend center link (A) fully. Check that there is some slack in the harness (B).
11. Retract center link (A) fully. Check that there is not excessive amount of harness (B) hanging down.
12. Adjust harness (B) positioning as required.
13. Tighten all the cables along the harness.

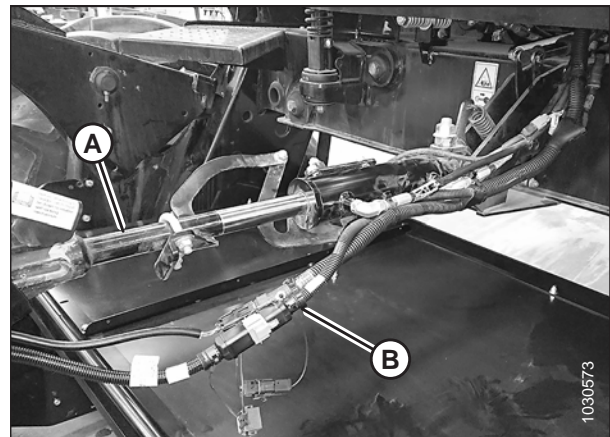


Figure 4.22: Electrical Connection

14. When disconnected from the header, gather the portion of adapter harness (A) that connects to the header and secure it to the center link using adjustable strap (B).

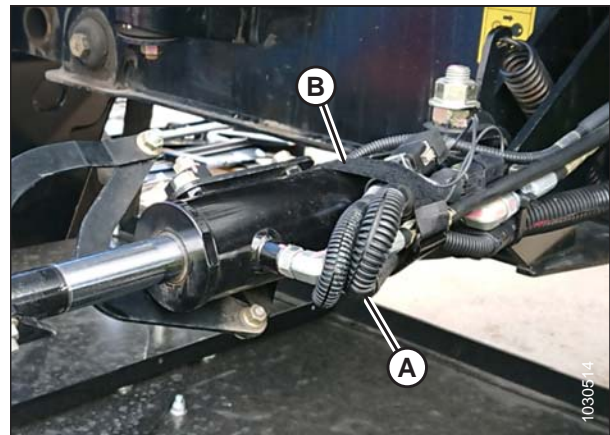


Figure 4.23: Electrical Connection

4.1.3 Attaching Rotary 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 rotary disc header. Replace pin (A) to hold center-link in place.

IMPORTANT:

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

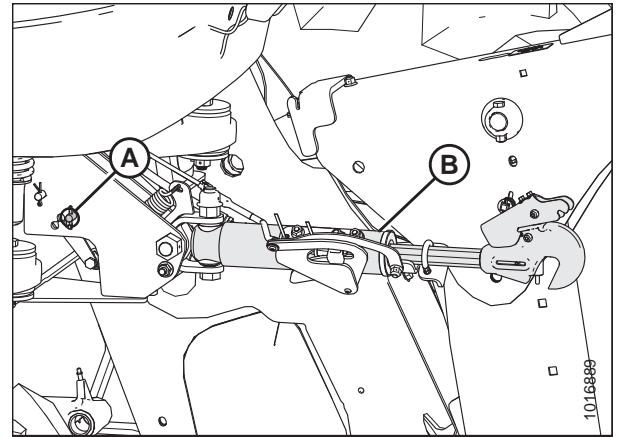


Figure 4.24: Hydraulic Center-Link

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

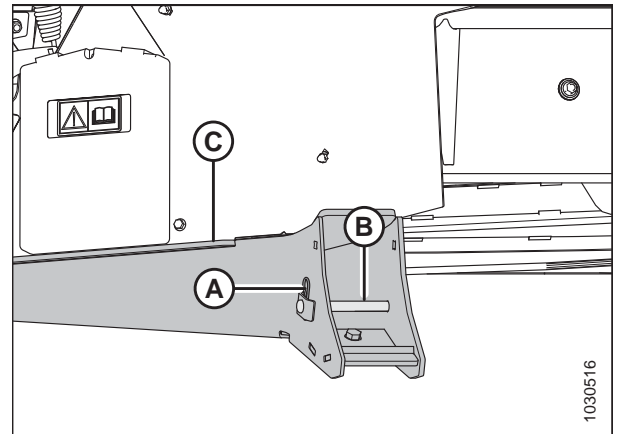


Figure 4.25: Rotary Disc Header Support

ATTACHING ROTARY DISC 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 11](#).

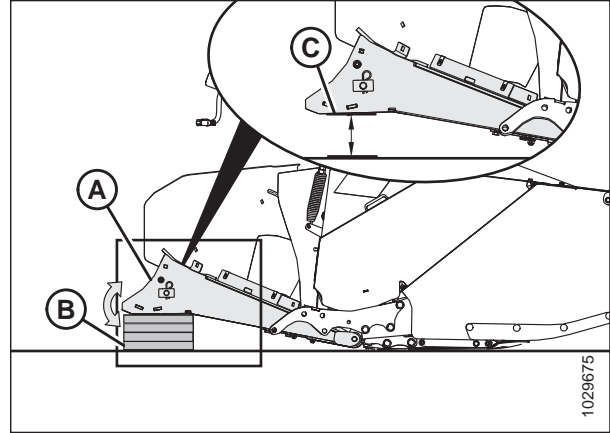


Figure 4.26: Header Boot – Right Side, Left Opposite

- Repeat Step 3, [page 30](#) 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.

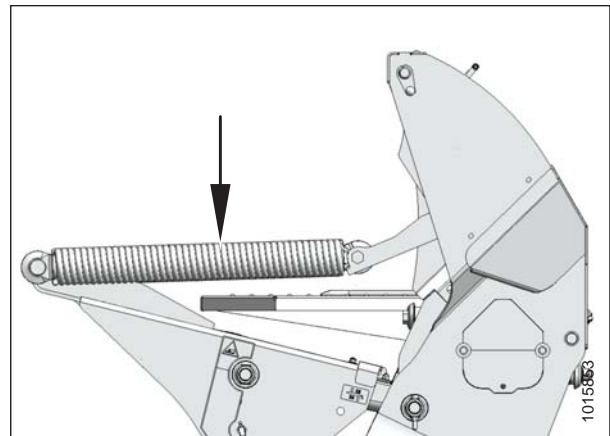


Figure 4.27: Header Float Spring

- 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 4.28: HPT Display

ATTACHING ROTARY DISC 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 4.29: 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.

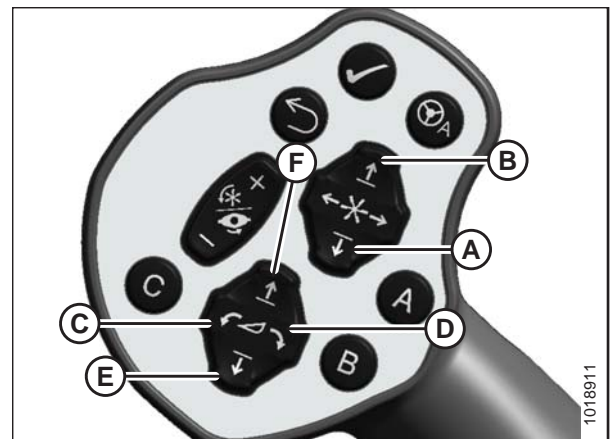


Figure 4.30: GSL

A - Reel Down
C - Header Tilt Down
E - Header Down

B - Reel Up
D - Header Tilt Up
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).

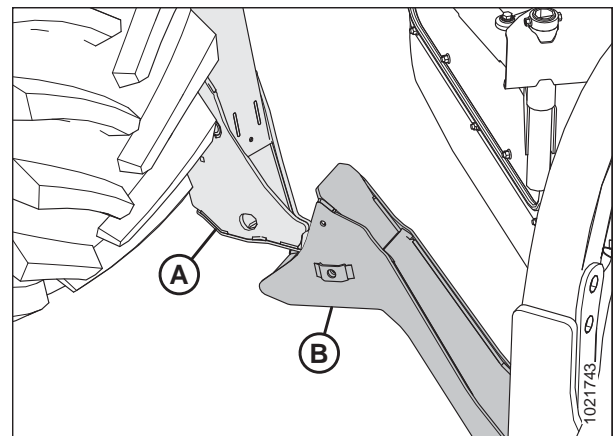


Figure 4.31: Header Support

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

14. Self-Aligning Hydraulic Center-Link:

- 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.

- 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.

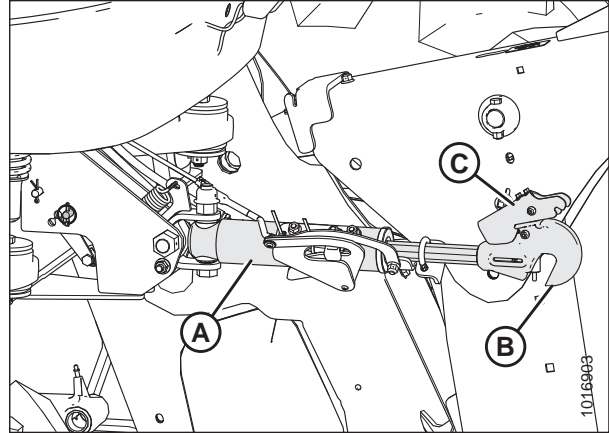


Figure 4.32: Hydraulic Center-Link

15. Self-Aligning Hydraulic Center-Link:

- 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.
- Check that the center-link is locked onto the header by pressing the REEL UP switch on the GSL.
- Turn off the windrower engine and remove the key from the ignition.

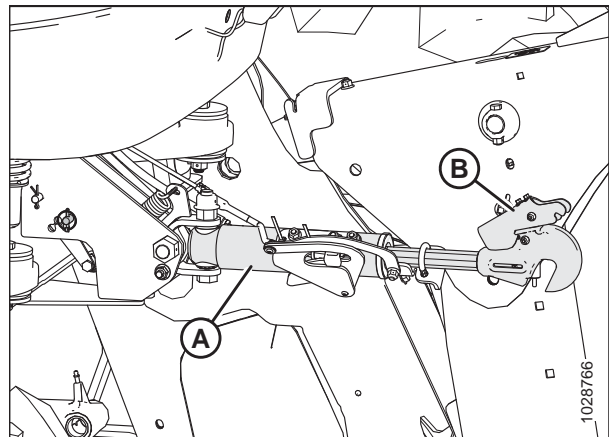


Figure 4.33: Hydraulic Center-Link

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

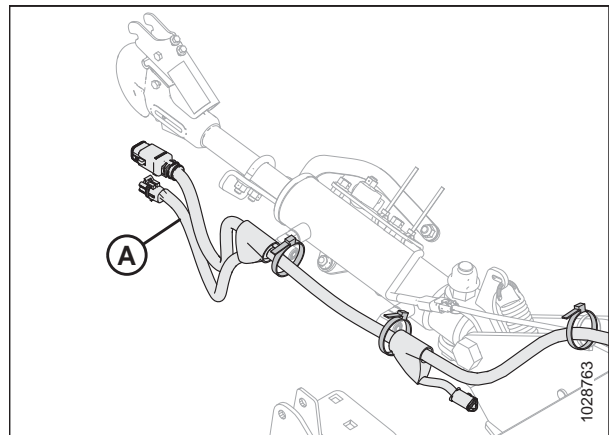


Figure 4.34: Header Electrical Harness

ATTACHING ROTARY DISC 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.

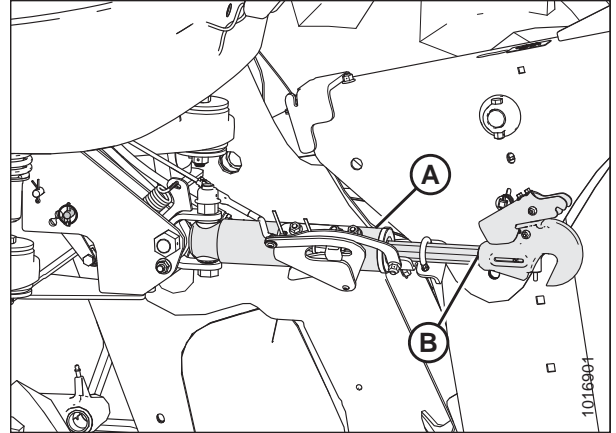


Figure 4.35: Hydraulic Center-Link

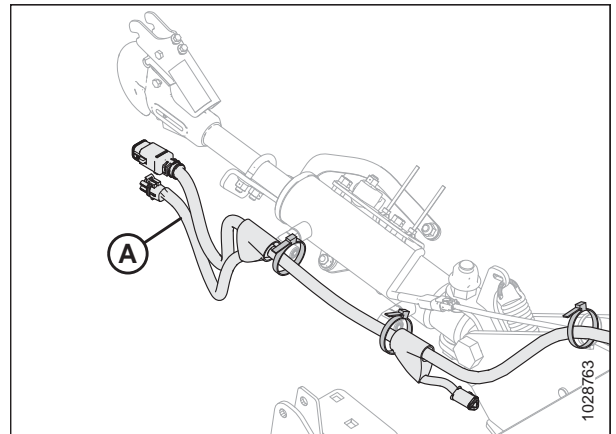


Figure 4.36: Header Electrical Harness

- 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 engine.
- Raise the header slightly.
- Shut down the 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.

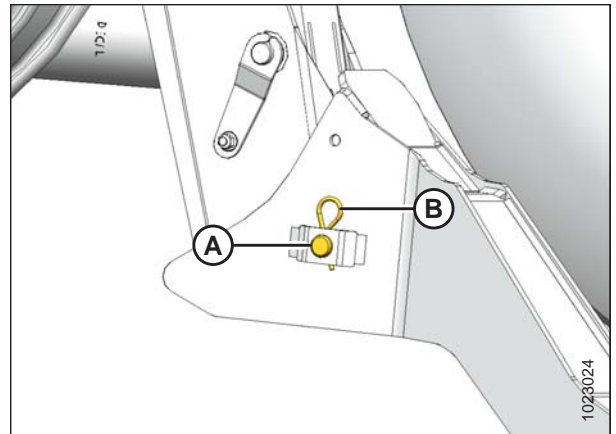


Figure 4.37: Header Support

23. Remove all wooden blocks from beneath the header.

CAUTION

Check to be sure all bystanders have cleared the area.

24. Start the engine.

25. Lower the header fully.

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

4.1.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers – M1240 Windrowers

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 [4.1.5 Connecting Rotary Disc Header Hydraulics Using Hard Plumbing, page 36](#) for connection instructions.

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

NOTE:

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

NOTE:

Leave hose support loose at this time.

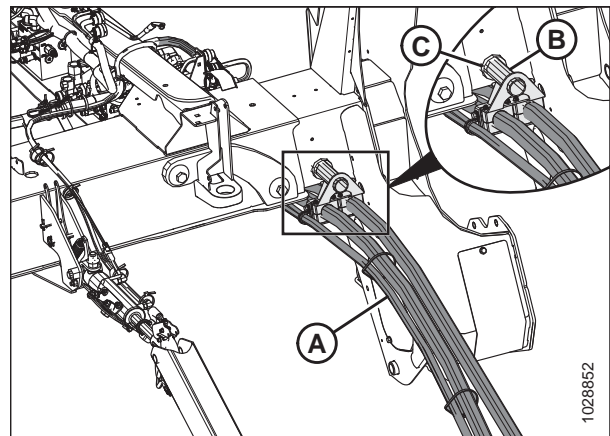


Figure 4.38: Hydraulic Hoses

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

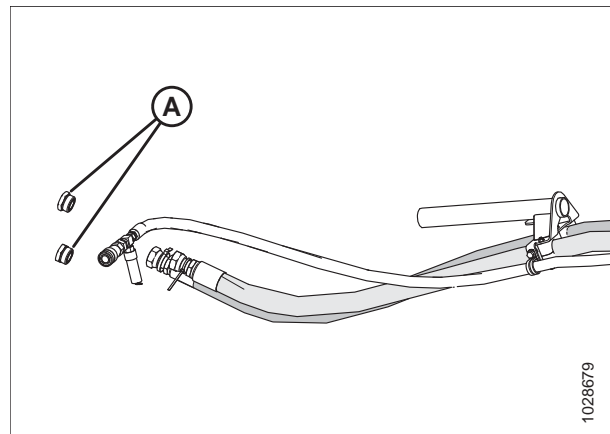


Figure 4.39: Protective Shipping Plugs on R216 SP Hydraulic Hoses

ATTACHING ROTARY DISC 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.

NOTE:

If required, loosen fitting (F) and retighten as needed to ensure relief valve is pointing straight down as shown.

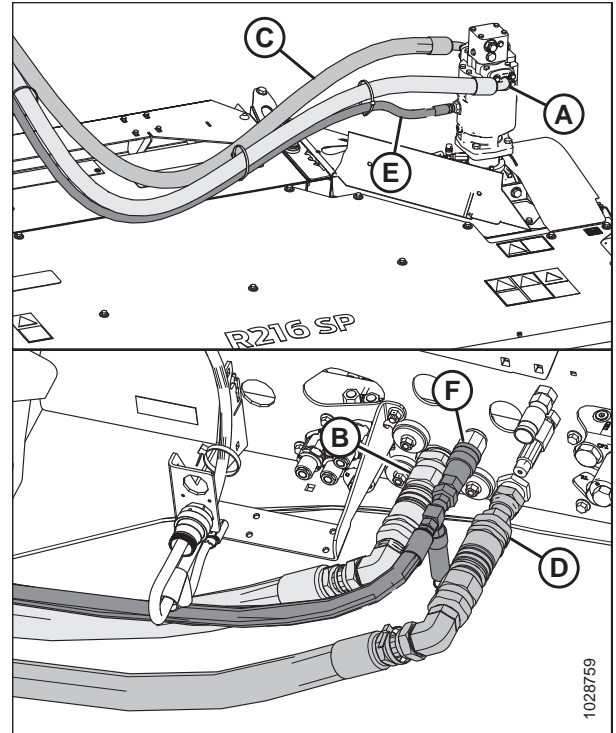


Figure 4.40: Hydraulic Connections on Rotary Disc Header and M1240 Windrower

5. Position the front plate on hose support (G), approximately 140 mm (5.5 in.) away from the windrower frame.
6. Route hoses (A), (B), and (C) as straight as possible and avoid rub/wear points that could damage the hydraulic hoses.
7. Route case drain hose (A) through clip (D), and leave it loose.
8. Slide hoses (B) and (C), back and forth until they relax into position.
9. Tighten clip (D).
10. Tighten nuts (E).
11. Close the platform.
12. Start the engine.
13. Raise the header fully.
14. Watch the hoses for any excessive stretching, or binding. Adjust the hose position in the hose support as required.
15. Lower the header fully.
16. Shut down the engine, and remove the key from the ignition.
17. Proceed to [4.1.6 Restoring Float for Rotary Disc Header](#), [page 38](#).

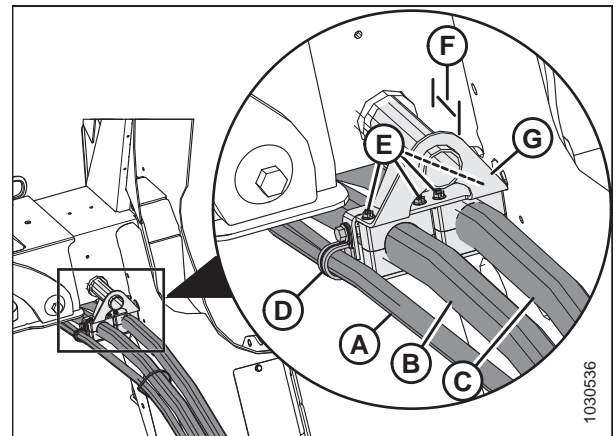


Figure 4.41: Hydraulic Hoses

4.1.5 Connecting Rotary 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 [4.1.4 Connecting Rotary Disc Header Hydraulics Using Quick Couplers – M1240 Windrowers, page 34](#) 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.

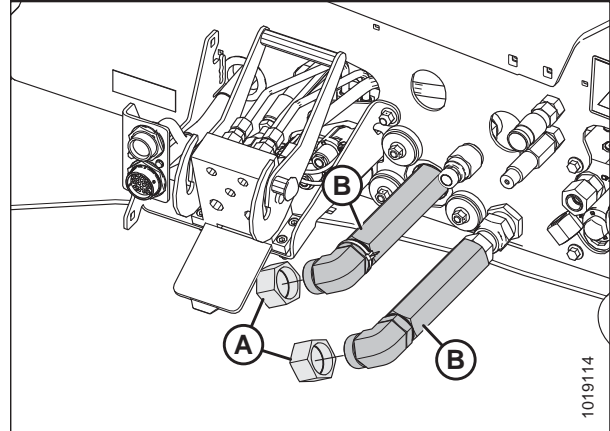


Figure 4.42: Protective Shipping Plugs on M1240 Hard Plumb Fittings

2. Route hose bundle (A) from the rotary 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.

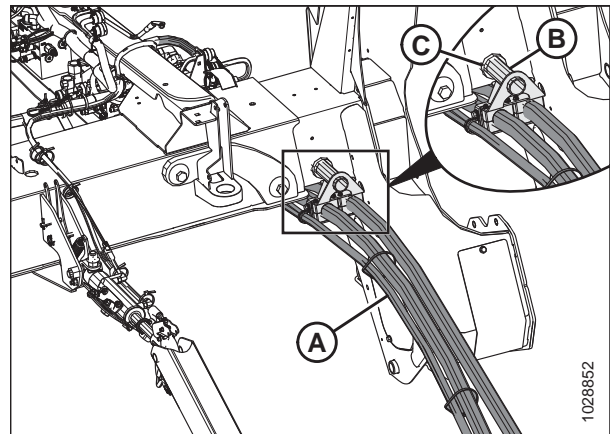


Figure 4.43: Hydraulic Hoses

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

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

NOTE:

Retain protective plugs for use when header is detached.

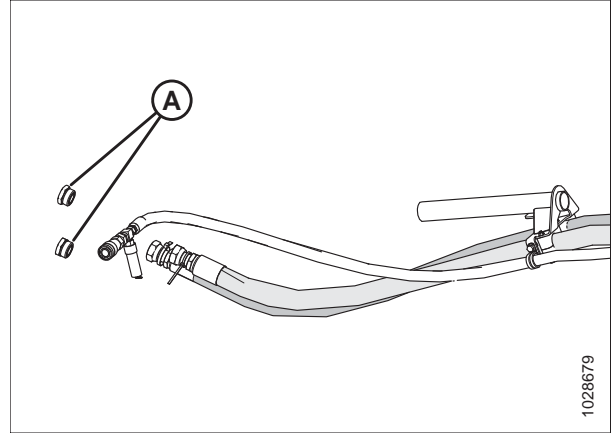


Figure 4.44: Protective Shipping Plugs on R216 Hydraulic Hoses

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 (151–167 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.

NOTE:

If required, loosen fitting (G) and retighten as needed to ensure relief valve is pointing straight down as shown.

NOTE:

Parts removed from illustration for clarity.

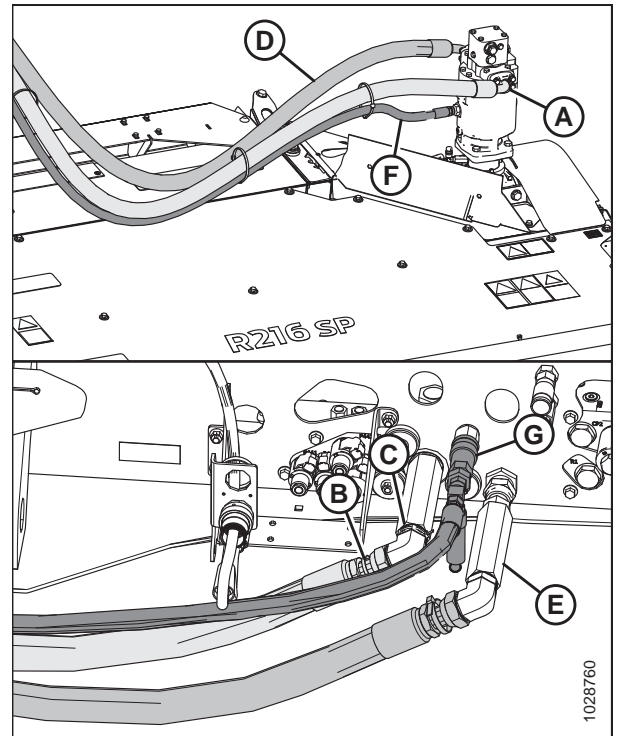


Figure 4.45: Hydraulic Connections on Rotary Disc Header and M1240 Windrower using Hard Plumb Fittings

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

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

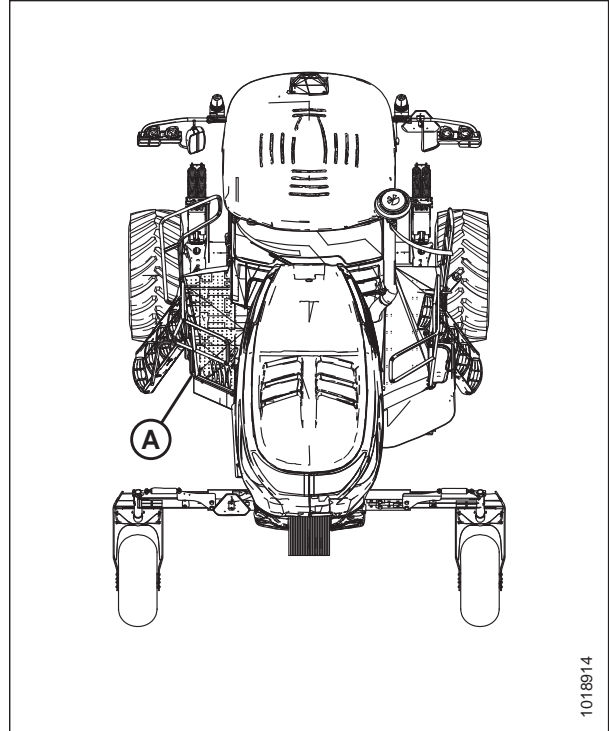


Figure 4.46: Windrower with Left Platform in Closed Position

4.1.6 Restoring Float for Rotary 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 the safety props on both lift cylinders as follows:

NOTE:

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

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

CAUTION

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

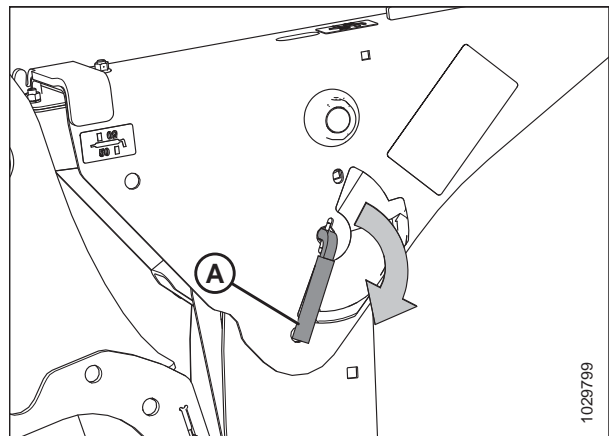


Figure 4.47: Safety Prop

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

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



Figure 4.48: GSL

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 4.49: 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 4.50: HPT Display

4.1.7 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 rotary 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 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.

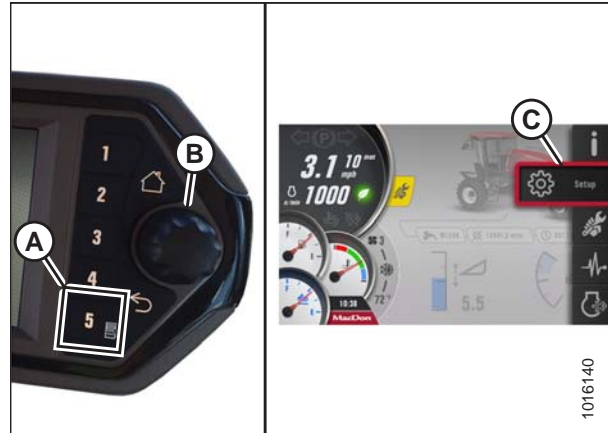


Figure 4.51: Opening the Main Menu

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.

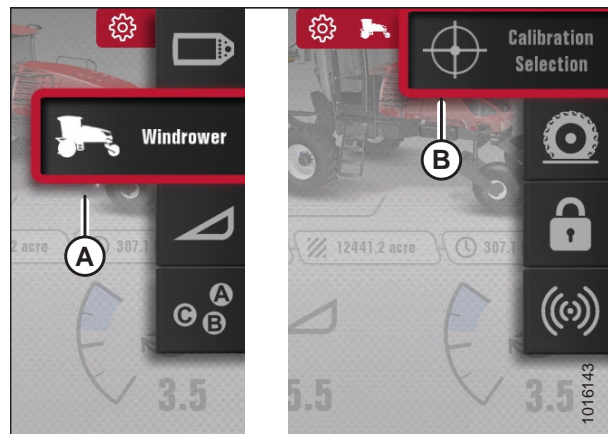


Figure 4.52: Windrower Settings Icon and Calibration Submenu Icon

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

- 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 4.53: Calibration Page

4.1.8 Unpacking the Curtain

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



WARNING

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

- Raise the header fully.
- Engage the header safety props. For instructions, refer to [8.2 Engaging and Disengaging Header Safety Props, page 69](#).
- Cut five straps (C) securing the cutterbar curtain to the header.
- Loosen 12 nuts (A) under the rotary 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.

- Remove the five straps and discard.

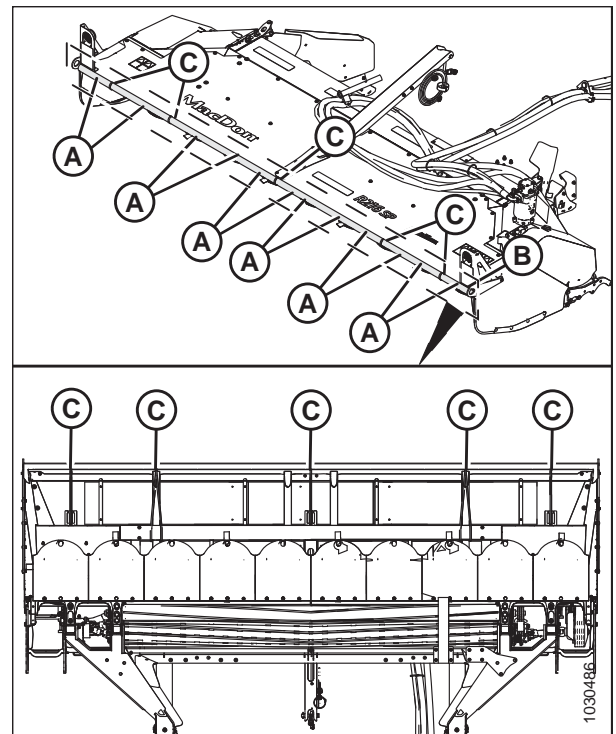


Figure 4.54: Cutterbar Curtain

ATTACHING ROTARY DISC HEADER TO M1240 WINDROWER

6. Ensure bumper (A) aligns with the rotary 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.



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.

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

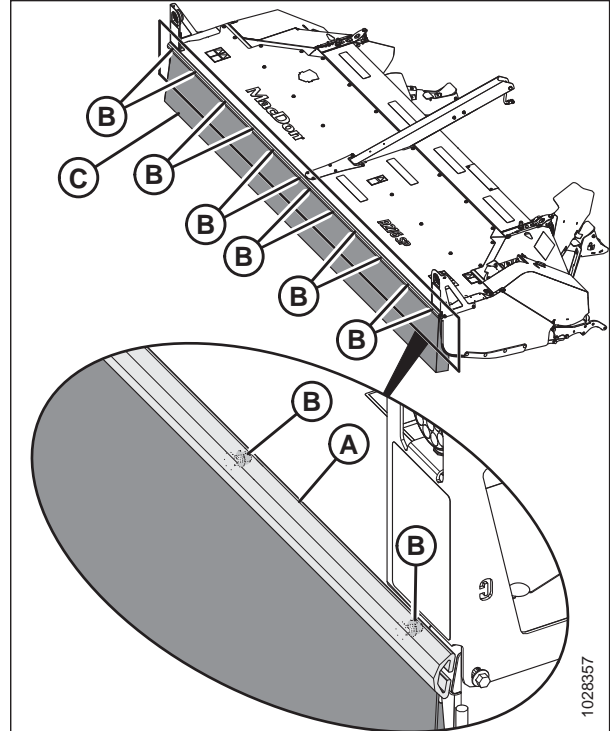


Figure 4.55: Cutterbar Curtain

Chapter 5: Installing Options

Install options (if supplied with shipment) according to the instructions supplied with each kit.

Chapter 6: Lubricating the Rotary 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 rotary disc header has been lubricated at the factory. However, you should lubricate the rotary 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.

6.1 Lubrication Locations

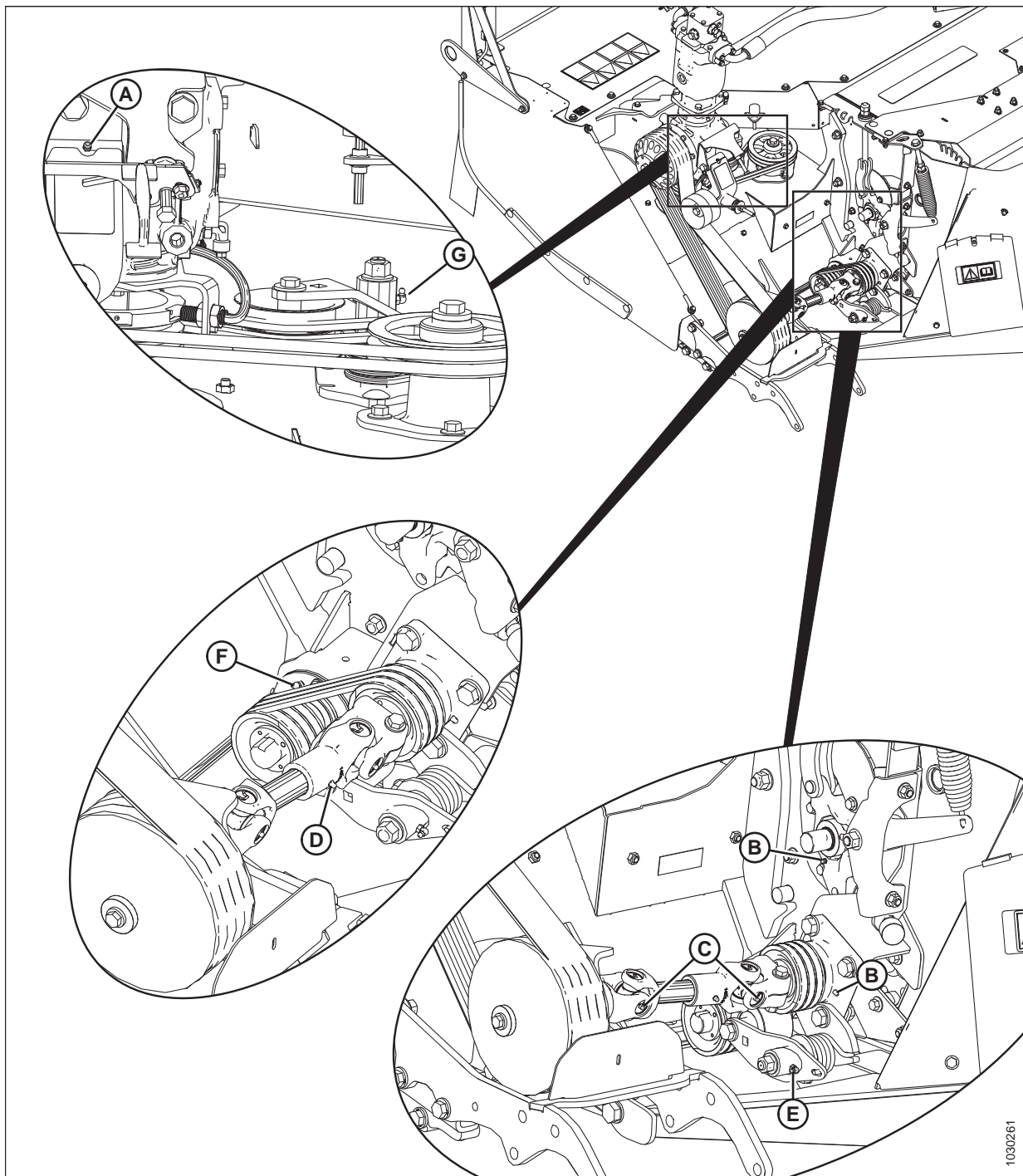


Figure 6.1: Left Side Lubrication Locations

A - Idler/Tensioner Pivot

D - Slip Joint, Conditioner Driveline¹

G - Tensioner Arm

B - Bearing, Roller Conditioner (Two Places)

E - Idler/Tensioner Pivot

C - U-Joint, Conditioner Driveline (Two 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 ROTARY DISC HEADER

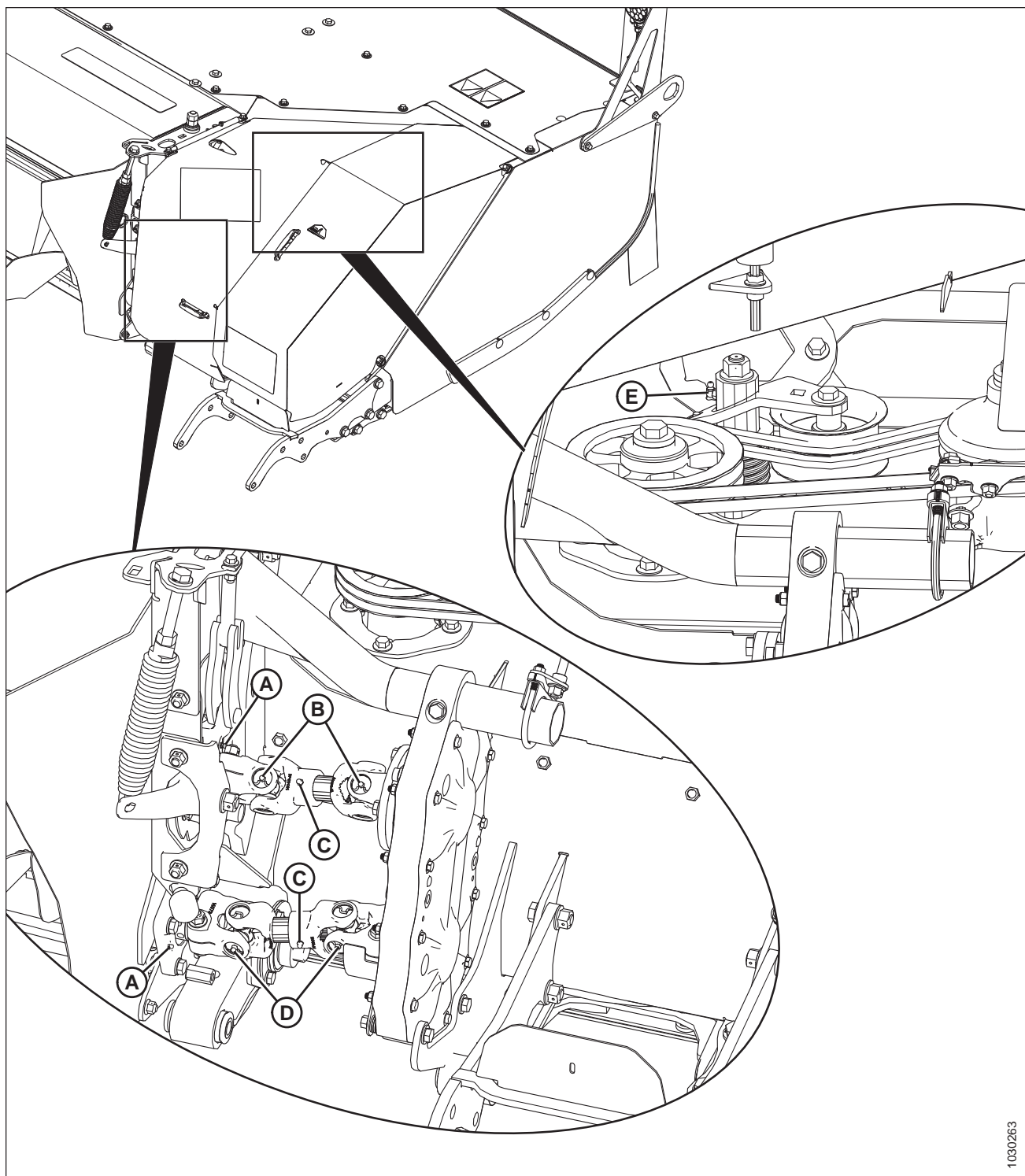


Figure 6.2: Right Side Lubrication Locations

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

B - U-Joint, Upper Driveline (Two 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

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 Predelivery Checklist for detailed instructions.

The Operator or the Dealer should retain the completed Predelivery 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 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 rotary disc header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Open left driveshield (A).

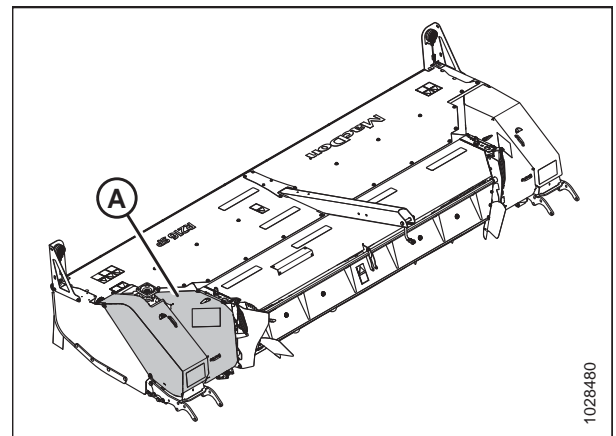


Figure 7.1: Left Driveshield

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

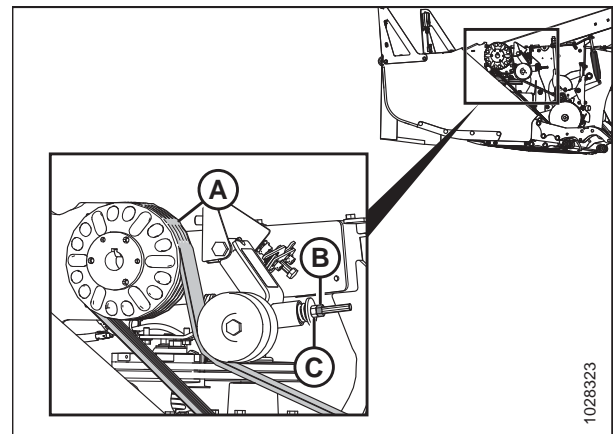


Figure 7.2: Conditioner Drive

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 50](#), otherwise close the drive shield and proceed to [7.2 Header Float](#), [page 52](#).

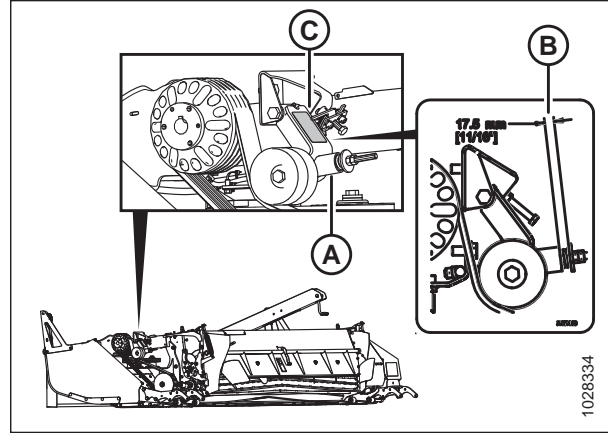


Figure 7.3: Belt Tension Spring

7.1.2 Adjusting Conditioner Drive Belt

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

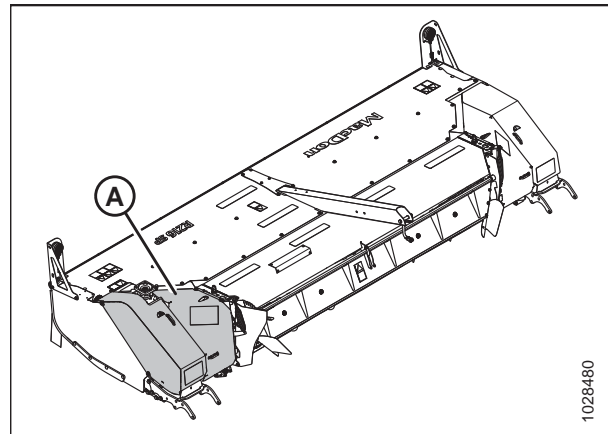


Figure 7.4: Left Driveshield

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.

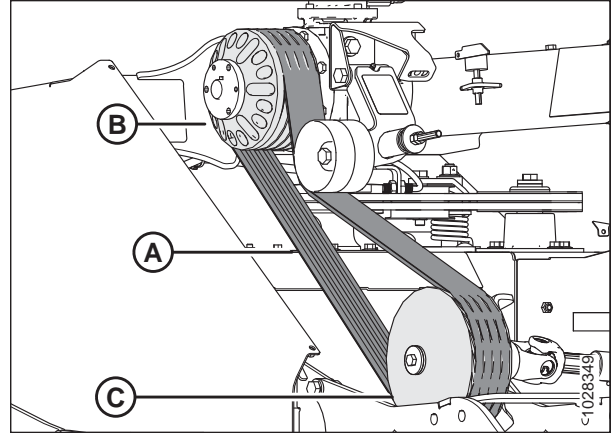


Figure 7.5: Conditioner Drive

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 723 mm (28 7/16 in.).
6. Torque hardware to 170 Nm (126 lbf·ft).

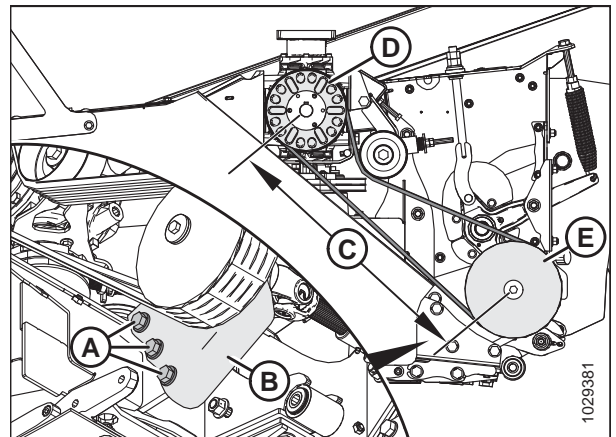


Figure 7.6: Conditioner Drive

7. With hardware fully loosened, slide threaded rod (E) up and backward into the disc 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.

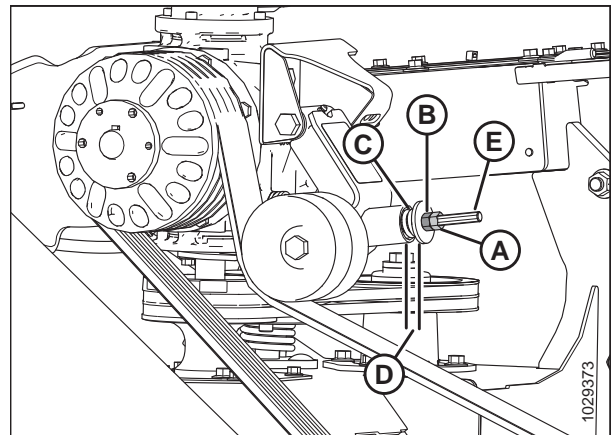


Figure 7.7: Conditioner Drive

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 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 HEADER DOWN switch (B), lower the rotary disc header fully and with the header lift cylinders fully retracted.

NOTE:

Ensure the header is level with the 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 52](#).

NOTE:

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

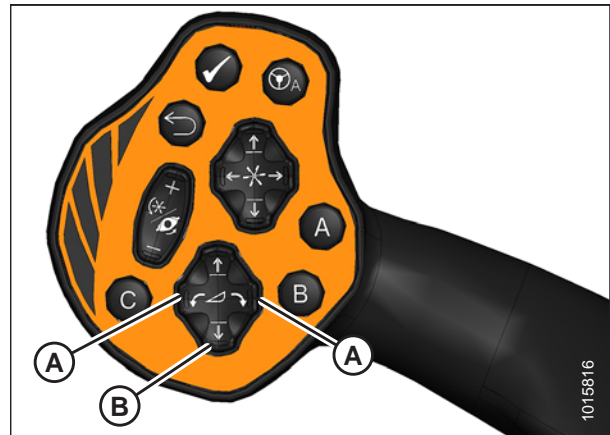


Figure 7.8: GSL

7.2.2 Setting the Float

The optimum float setting lets the rotary 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.

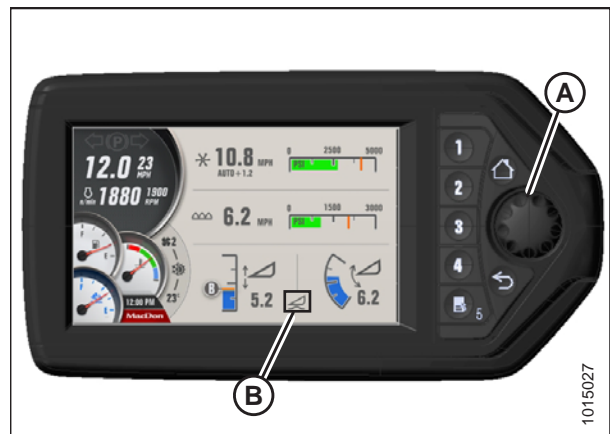


Figure 7.9: HPT Run Screen

PERFORMING PREDELIVERY CHECKS

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 Suspended Drum Drive

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

7.3.1 Checking Suspended Drum Drive

The suspended 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. For instructions, refer to [8.5 Opening Driveshields, page 75](#).
2. 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).

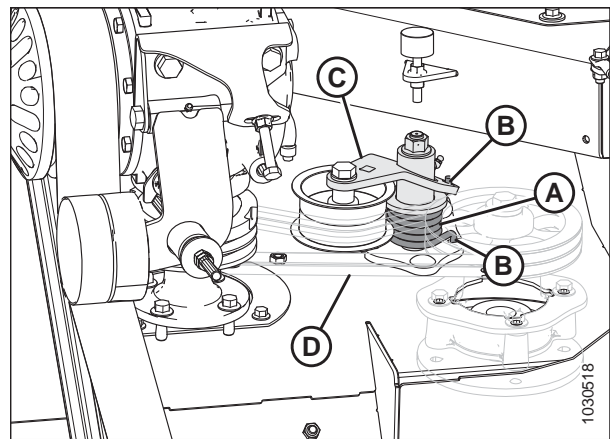


Figure 7.11: Tensioner Spring

3. Inspect the suspended drum belt drive and ensure belts (B) are properly seated on pulleys (A).
4. If necessary, adjust the belts as follows:
 - a. Release belt tension using a 1/2 in. drive ratchet at location (C) to turn the tensioner arm clockwise.
 - b. Install belt (B). Release tensioner arm to tension belt.

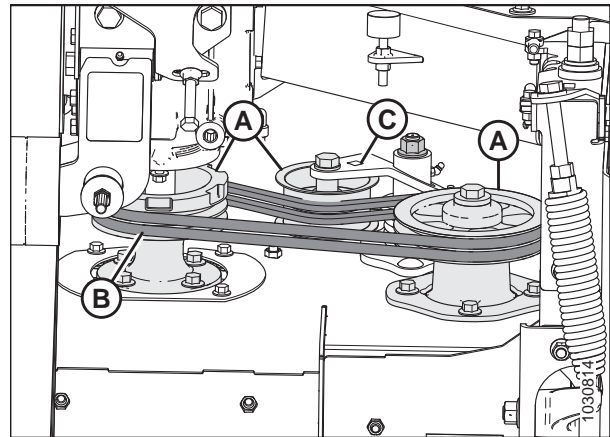


Figure 7.12: Suspended Drum Belt Drive

7.4 Feed Roll Drive

7.4.1 Checking 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 idler pulley (C).

NOTE:

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

3. If necessary, adjust belt alignment 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 idler 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 belts (D).

NOTE:

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

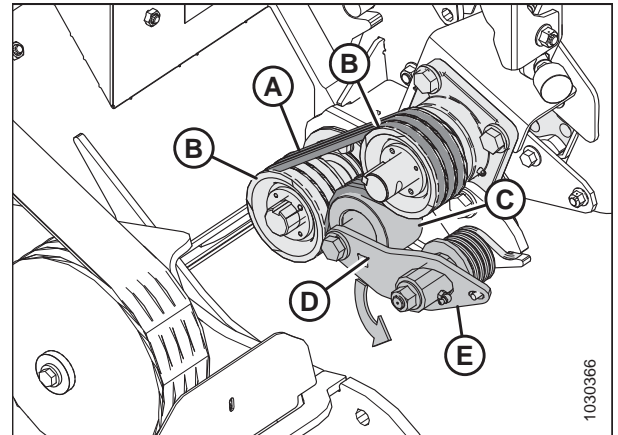


Figure 7.13: Feed Roll Belt Drive

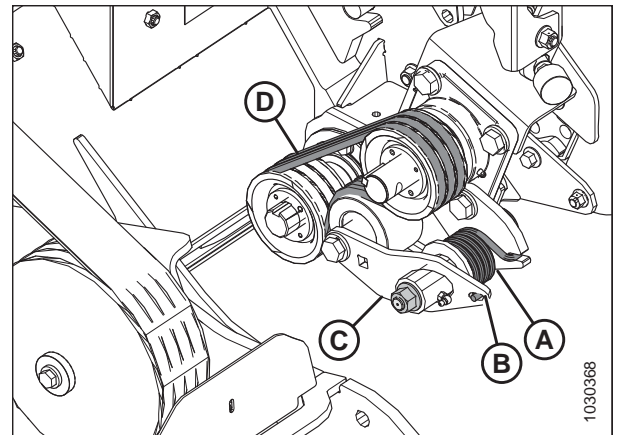


Figure 7.14: Tensioner Spring

7.5 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 rotary 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).

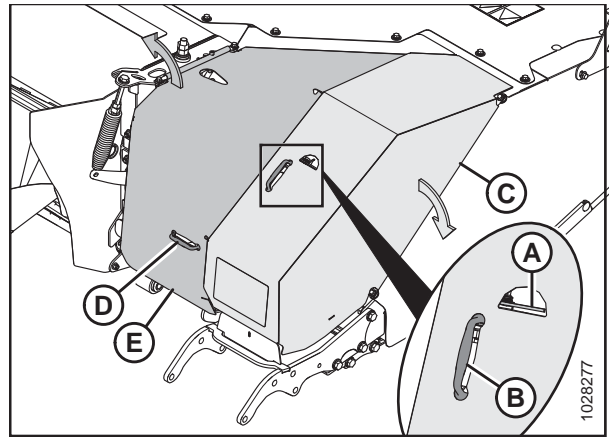


Figure 7.15: Right Driveshields

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 [8.8 Recommended Lubricants, page 79](#) for a list of recommended fluids, lubricants, and capacity.

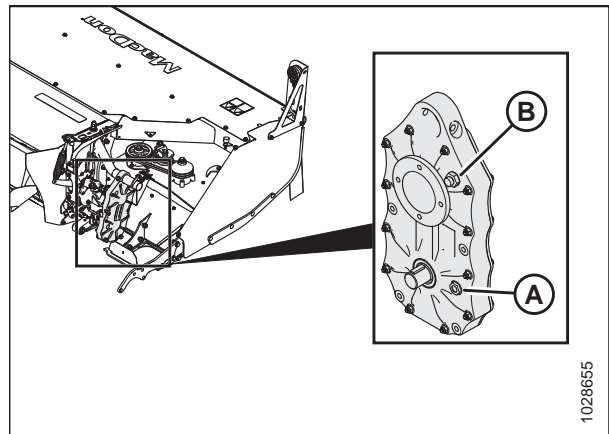


Figure 7.16: Roll Timing Gearbox

7.6 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 the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

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

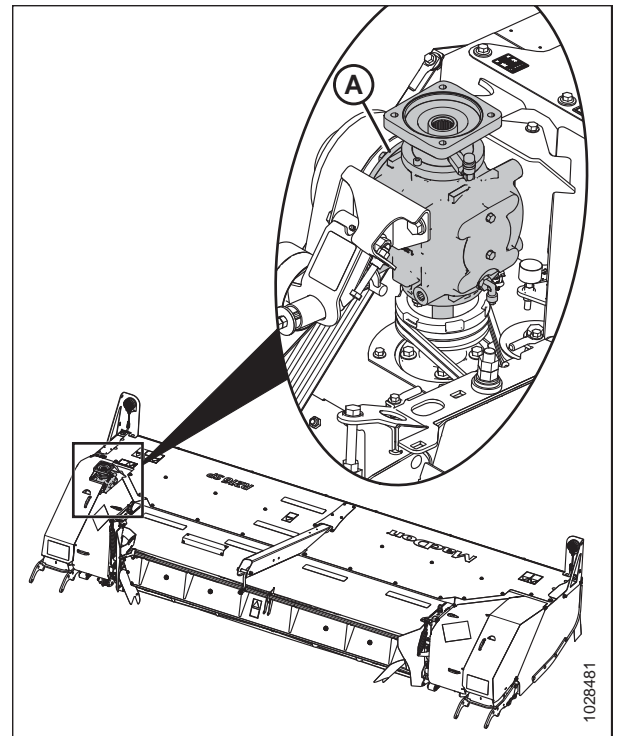


Figure 7.17: Header Drive Gearbox Location

PERFORMING PREDELIVERY CHECKS

6. Clean area around check plug (A).
7. Remove check plug (A) with a 13 mm (1/2 in.) socket.
8. Ensure lubricant is even with bottom of check hole (with check plug [A] removed) or slightly runs out of the check hole.
9. 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 [8.8 Recommended Lubricants, page 79](#) for a list of recommended fluids, lubricants, and capacity for the machine.
10. Reinstall the plug(s) and torque to 23 Nm (17 lbf-ft).
11. Close the left driveshield.
12. Lower the header fully.

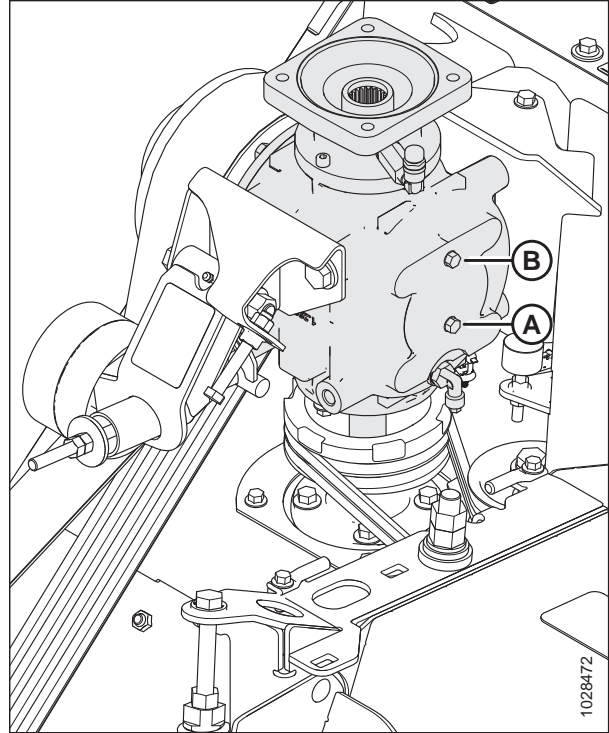


Figure 7.18: Header Drive Gearbox

7.7 Checking and Adding Lubricant in Cutterbar

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.

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).

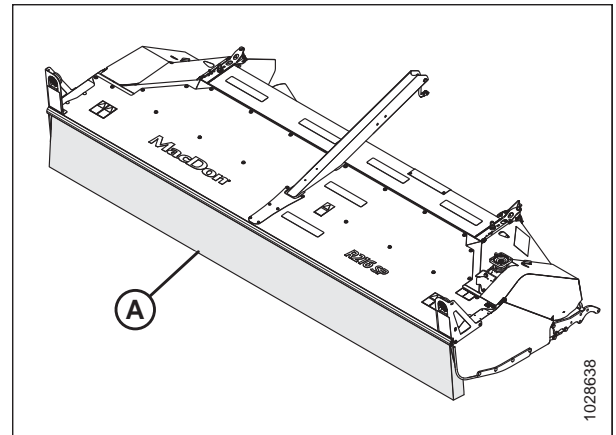


Figure 7.19: Cutterbar Curtain

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

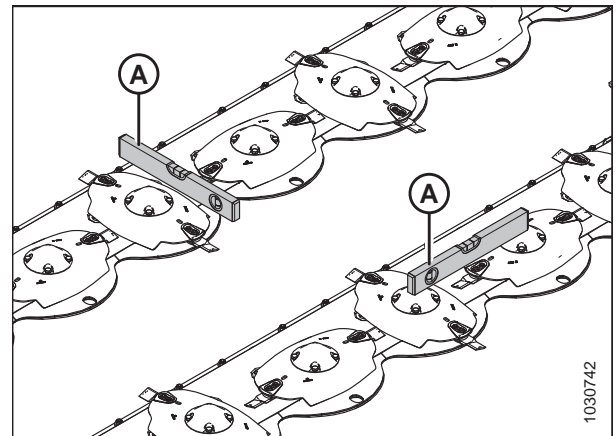


Figure 7.20: Spirit Level on Cutterbar

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 61.
8. Reinstall the inspection plug.

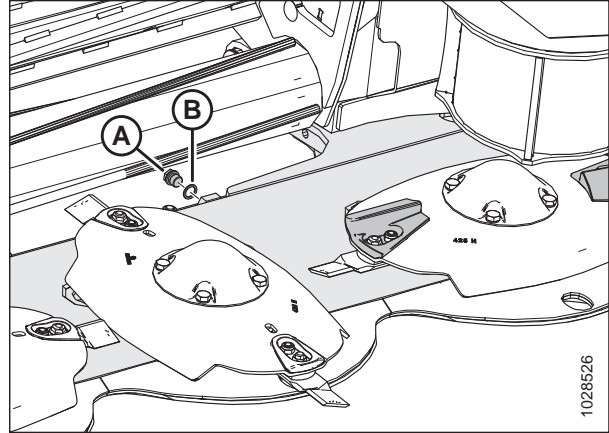


Figure 7.21: Cutterbar Oil Inspection Plug

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 [8.8 Recommended Lubricants, page 79](#).

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

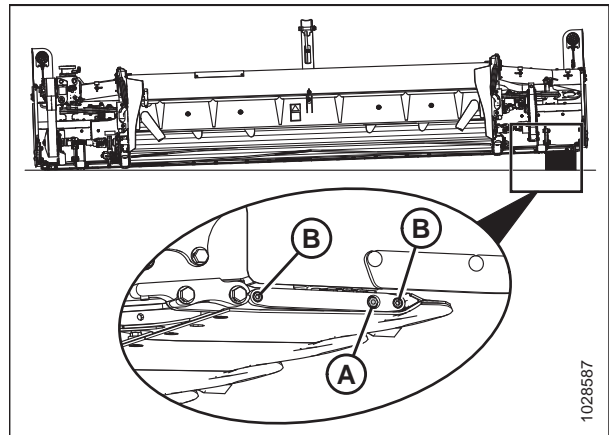


Figure 7.22: Cutterbar Oil Plug

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.

CAUTION

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

PERFORMING PREDELIVERY CHECKS

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.

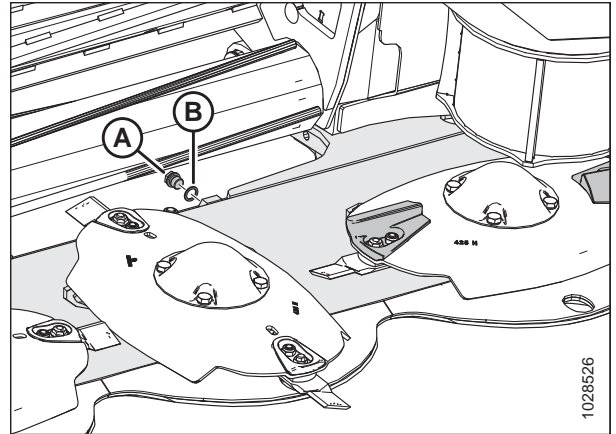


Figure 7.23: Cutterbar Oil Inspection Plug

24. Close cutterbar curtain (A).

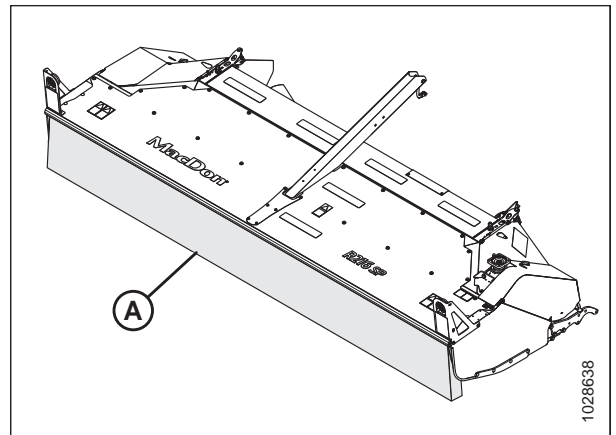


Figure 7.24: Cutterbar Curtain

7.8 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.

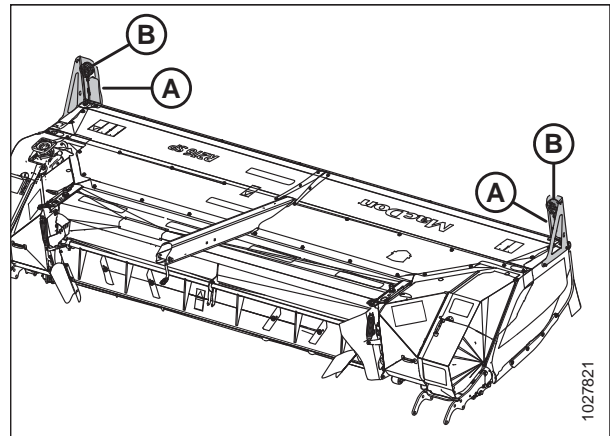


Figure 7.25: Lights

7.9 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
- R216 Rotary Disc Header Quick Card

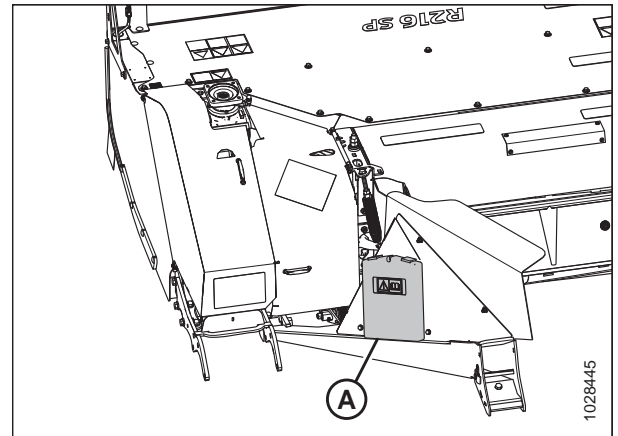


Figure 7.26: Manual Case

7.10 Running up the Header



WARNING

- Keep everyone 100 m (330 ft.) 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 rotary disc header. Do **NOT** exceed 1800 rpm.

1. Clear all bystanders from the area.
2. Start the windrower.
3. Set the rotary disc header 152–305 mm (6–12 in.) above the ground and adjust the center-link to mid-position.
4. Run the machine slowly for 5 minutes, and watch and listen **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
5. Run the machine at operating speed for 15 minutes. Listen for any unusual sounds or abnormal vibration.
6. 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.
7. Shut down the engine, and remove the key from the ignition.
8. Retain the Predelivery Checklist and this instruction for future reference.

Chapter 8: Reference

8.1 Starting the Engine



DANGER

- Avoid possible injury or death from a runaway machine.
- This machine has safety devices which allow the engine to start only when the ground speed lever (GSL) is in PARK, the steering wheel is locked in the PARK position, and the HEADER ENGAGE switch is in the OFF position. Under no circumstances are these devices to be deliberately rewired or misadjusted so that the engine can be started with controls out of NEUTRAL.
- Do NOT start the engine by shorting across the starter or starter relay terminals. If normal starting circuitry is bypassed, the machine will start with the drive engaged and move.
- Start the engine only from operator's seat with controls in PARK. NEVER start the engine while standing on ground. NEVER try to start the engine with someone under or near the machine.
- Before starting the engine, be sure there is plenty of ventilation to avoid asphyxiation.

IMPORTANT:

Before starting the windrower, check fluid level of the following, and add fluid if necessary:

- Engine oil – Refer to the operator's manual
- Hydraulic oil – Refer to the operator's manual
- Gearbox oil – Refer to the operator's manual

IMPORTANT:

Do **NOT** tow the machine to start the engine. Damage to hydrostatic drives will result.

NOTE:

Before taking the GSL out of PARK, let the hydraulic oil warm up to 32°C (90°F). You can view the hydraulic oil temperature on Run Screen 4 on the Harvest Performance Tracker (HPT) display.

NOTE:

When the console receives a wake-up signal, the console awakens from sleep mode and closes the battery disconnect relay. The Harvest Performance Tracker (HPT) goes into a boot-up sequence that takes approximately 40 seconds. The following items trigger a wake-up signal for the console:

- Key switch ignition or accessory positions
- Cab door switch
- Horn button
- Hazards button
- Field lights button
- Clearance lights button
- Road lights button
- High beam button

REFERENCE

1. Before starting the engine, ensure engine exhaust pipe (A) is not covered or obstructed.



Figure 8.1: Engine Exhaust

2. Ensure the cab-forward or engine-forward directional lock (A) is engaged at the base of the steering column.

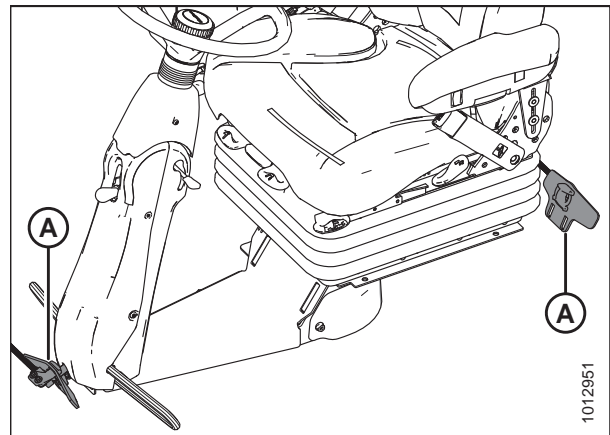


Figure 8.2: Direction Locks

3. Move GSL (A) into PARK (C).
4. Turn the steering wheel until it locks. It may be possible to move the steering wheel slightly in the locked position.

IMPORTANT:

Do **NOT** attempt to force the wheel out of the locked position or damage to the steering system may occur.

5. Fasten seat belt.
6. Push HEADER ENGAGE switch (B) to ensure it is in the OFF position.

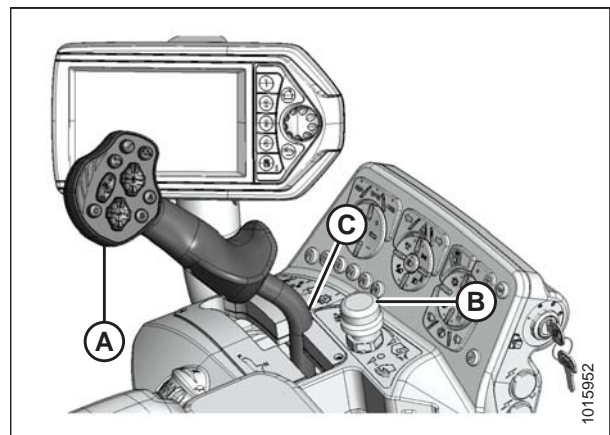


Figure 8.3: Operator Controls

REFERENCE

7. Turn IGNITION switch (A) to the ON position; the Harvest Performance Tracker (HPT) display (B) will illuminate. If the HPT is still booting up, wait for WAIT TO START (WTS) symbol (C) to disappear before trying to start engine.
8. Check that red PARK symbol light (D) is ON and that there are no error messages on screen.
9. Press HORN button (E) three times prior to starting the engine.

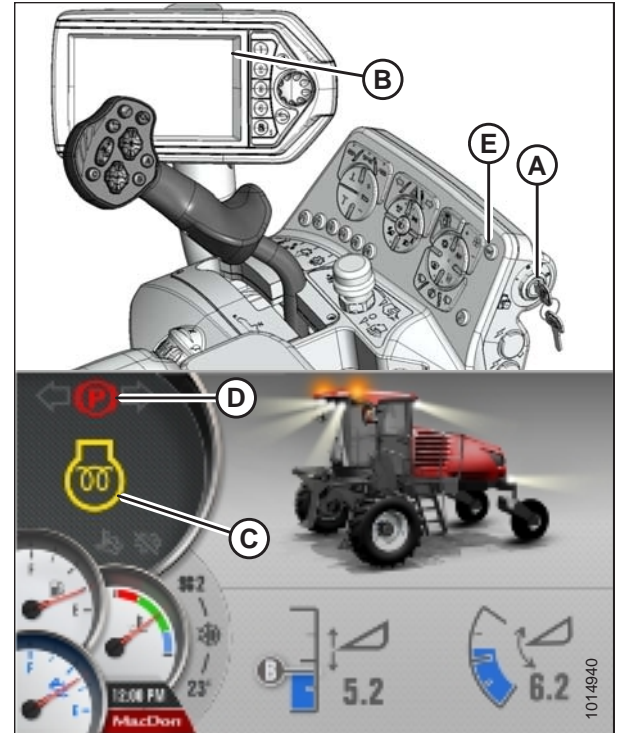


Figure 8.4: Console and HPT Run Screen

10. Turn the IGNITION switch to crank (A).

NOTE:

When the engine starts and the header is not engaged, the HPT will display the header disengaged page (B).

IMPORTANT:

- Do **NOT** operate the starter for longer than 15 seconds at a time.
- If the engine does not start, wait at least 2 minutes before trying again.
- If you crank the engine for more than 30 seconds within a 2-minute period, the engine will lock the starter circuit to prevent overheating, and a flashing WTS symbol will appear on the display. Wait for the WTS symbol to stop flashing before attempting to crank engine again.
- If the engine still does not start, refer to the operator's manual.



Figure 8.5: HPT Header Disengaged Screen

REFERENCE

NOTE:

When the engine temperature is below 5°C (40°F), the engine will cycle through a period where it appears to labor until it warms up. Do **NOT** operate the engine above 1500 rpm until the HPT engine temperature gauge is above the blue range (A).



Figure 8.6: HPT No Header Screen

8.2 Engaging and Disengaging Header Safety Props

Safety props are located on both header lift cylinders on the windrower. Follow these steps to engage or disengage the header safety props:

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.

1. Start the engine. Press the HEADER UP (A) switch to raise header to maximum height.

NOTE:

If one end of the header does **NOT** fully raise, rephase the lift cylinders as follows:

- a. Press and hold the HEADER UP switch (A) until both cylinders stop moving.
 - b. Continue to hold the switch for 3–4 seconds. Cylinders are now phased.
2. Shut down the engine, and remove the key from the ignition.



Figure 8.7: Ground Speed Lever

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

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

IMPORTANT:

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

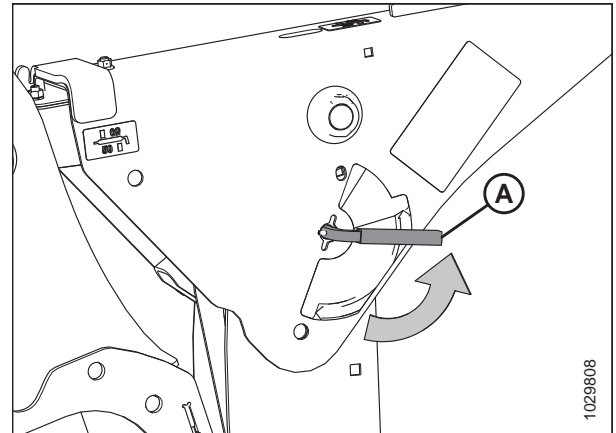


Figure 8.8: Safety Prop

REFERENCE

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

NOTE:

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

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

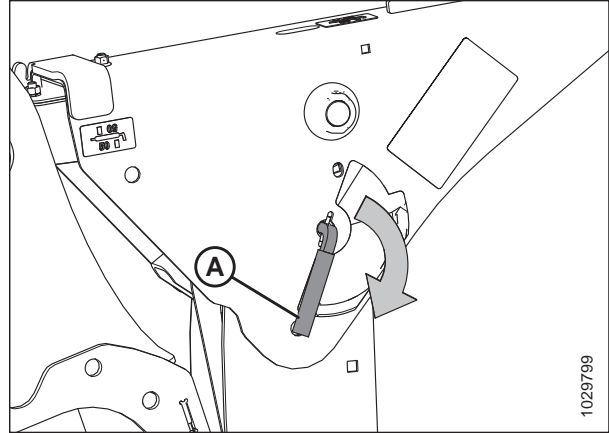


Figure 8.9: Safety Prop

8.3 Leveling the Header

The windrower lift linkages are factory-set to provide the proper header level, and should not normally require adjustment. If leveling is required, 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. Press rotary scroll knob (A) on Harvest Performance Tracker (HPT) to display the QuickMenu system.
2. Rotate scroll knob (A) to highlight the header float symbol (B) and press scroll knob to select. The SET-UP FLOAT page displays.



Figure 8.10: HPT Display

3. Press soft key 3 (A) to remove float.



Figure 8.11: HPT Display

REFERENCE

4. Park the windrower on level ground.
5. Press the header raise button (A) on the ground speed lever (GSL). When the header reaches maximum height, continue to hold the header raise button momentarily to allow the lift cylinders to rephase.



Figure 8.12: GSL

6. Lower the header to approximately 150 mm (6 in.) off the ground.
7. Ensure that channel (A) is against link (B).
8. Shut down the engine, and remove the key from the ignition.
9. Measure the distance to the ground at both ends of the header to determine if the header is level.

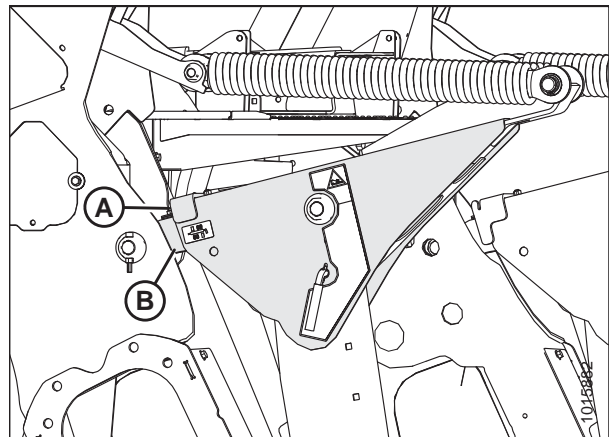


Figure 8.13: Lift Linkage



CAUTION

Check to be sure all bystanders have cleared the area.

10. If adjustment is necessary, start engine and resume float. Lower the header onto the ground until channel (A) lifts away from the link (B) on both sides.
11. Shut down the engine, and remove the key from the ignition.

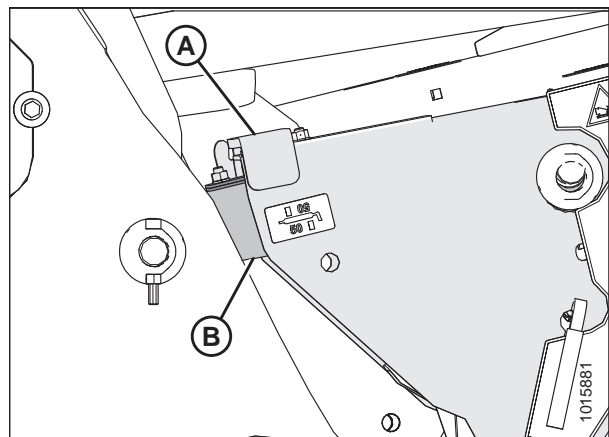


Figure 8.14: Lift Linkage

REFERENCE

12. On the side that is higher, remove nut, washer, and bolt (A) that attaches shims (B) to the linkage.
13. Remove one or both of the shims (B) and reinstall the hardware (A).



CAUTION

Check to be sure all bystanders have cleared the area.

14. Repeat Step 5, page 72 to Step 9, page 72 to rephase the cylinders and check the header level.
15. If additional adjustment is required, repeat Step 10, page 72 to Step 13, page 73, and install one of the removed shims on the opposite linkage.
16. Reset the header float. For instructions, refer to 7.2.2 *Setting the Float*, page 52.

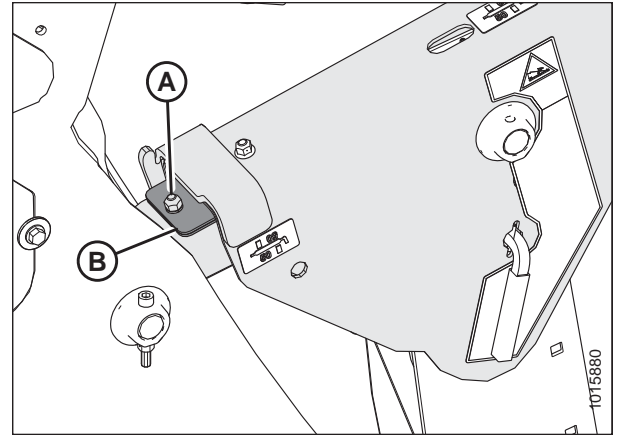


Figure 8.15: Lift Linkage Shims

8.4 Closing Driveshields

CAUTION

To reduce the risk of personal injury, do NOT operate the machine without the driveshields in place and secured.

NOTE:

Images shown in this procedure are for the left driveshield—the right driveshield is similar.

1. Lift lock latch (A) to disengage driveshield lock.

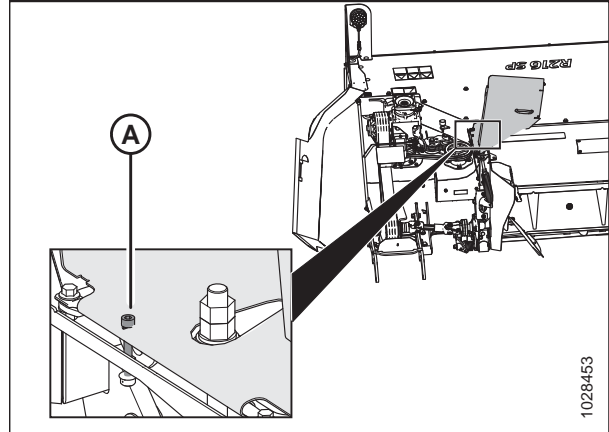


Figure 8.16: Driveshield Lock Latch

2. Move inboard half of driveshield (A) back to closed position.

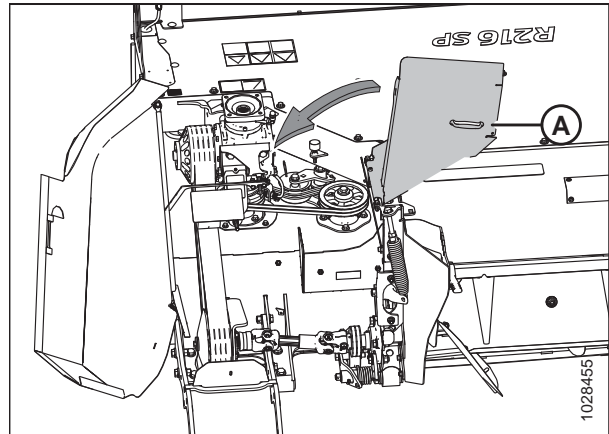


Figure 8.17: Left Driveshield

3. Move outboard half of driveshield (A) back to closed position.

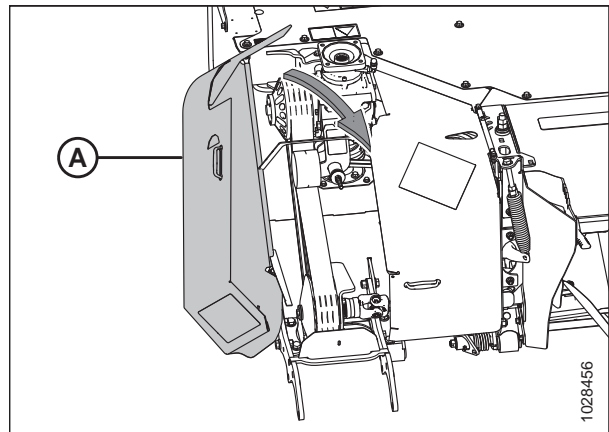


Figure 8.18: Left Driveshield

8.5 Opening Driveshields

CAUTION

To reduce the risk of personal injury, do NOT operate the machine without the driveshields in place and secured.

NOTE:

Images shown in this procedure are for the left driveshield—the right driveshield is similar.

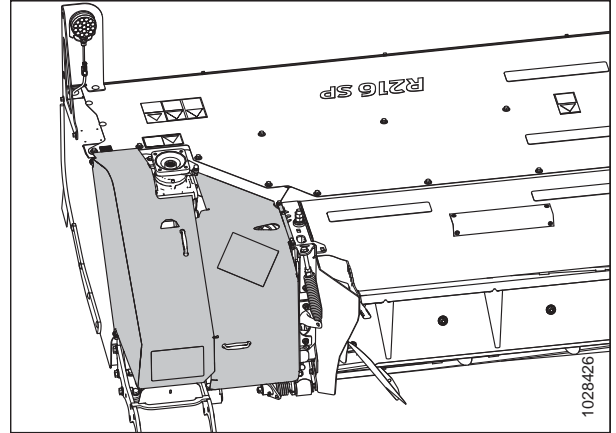


Figure 8.19: Left Driveshield

1. Push down on release lever (A) to disengage the release latch and pull handle (B).

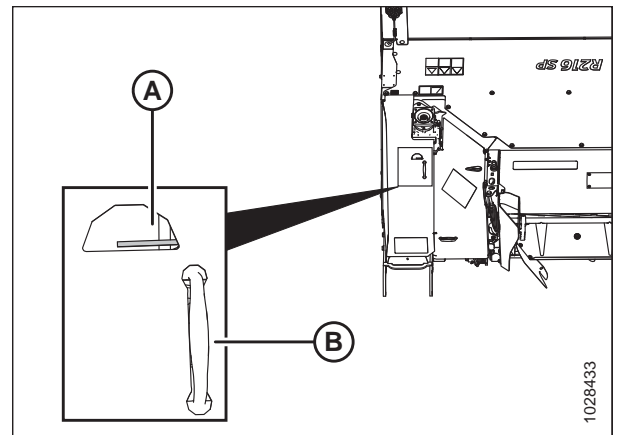


Figure 8.20: Driveshield Latch and Handle

2. Lift the outboard driveshield panel toward the outboard end of the header.

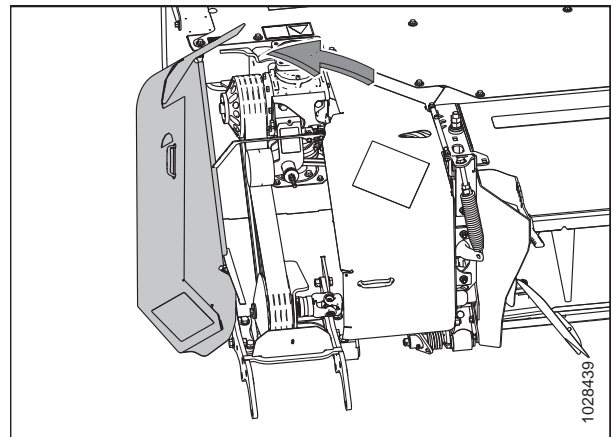


Figure 8.21: Opening Driveshield – Outboard Side

REFERENCE

3. Grab handle (A) and lift the other half of endshield (B) to the inboard side of the header.

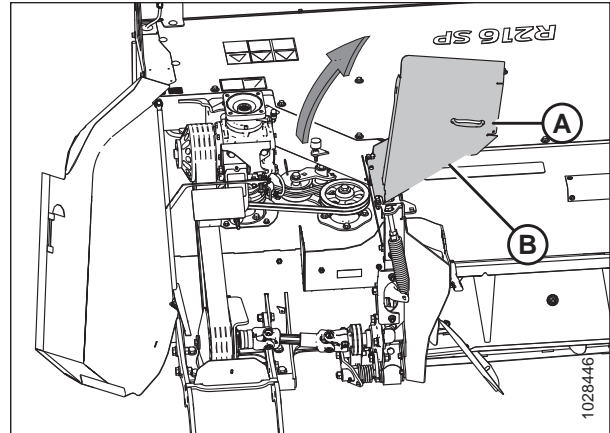


Figure 8.22: Driveshield – Inboard Side

8.6 Closing Cutterbar Curtain

CAUTION

To avoid injury, keep hands and fingers away from corners of doors when closing.

1. Pull curtain outward from retaining clips and lower curtain.

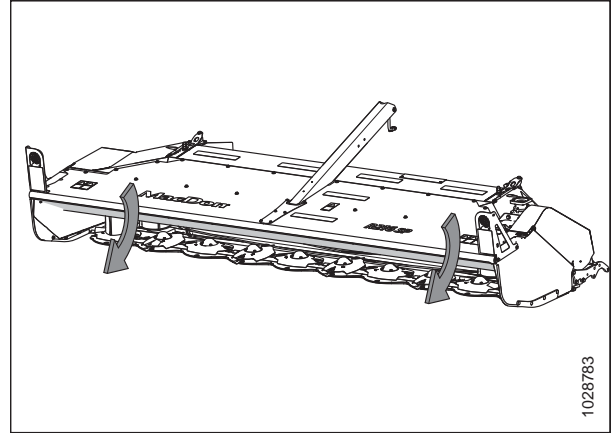


Figure 8.23: Cutterbar Curtain

8.7 Opening Cutterbar Curtain

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. Push curtain (A) inward and up.

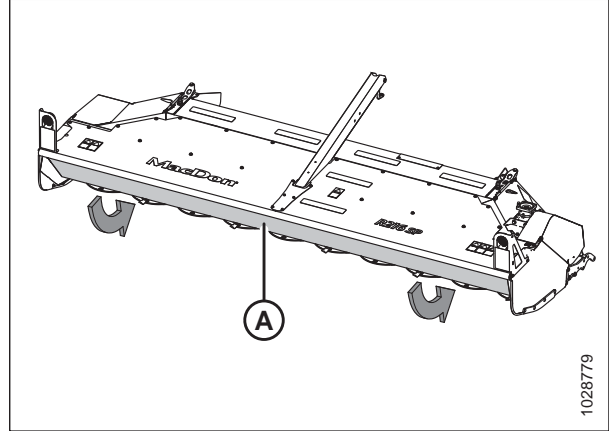


Figure 8.24: Cutterbar Curtain

2. Secure curtain in place at locations (A) using three clips provided.

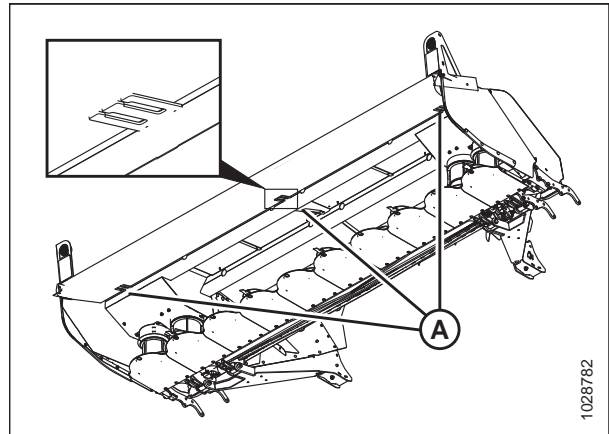


Figure 8.25: Cutterbar Curtains — View from Below

NOTE:

Cutterbar curtain (A) is held in place between the tines of retaining clips (B).

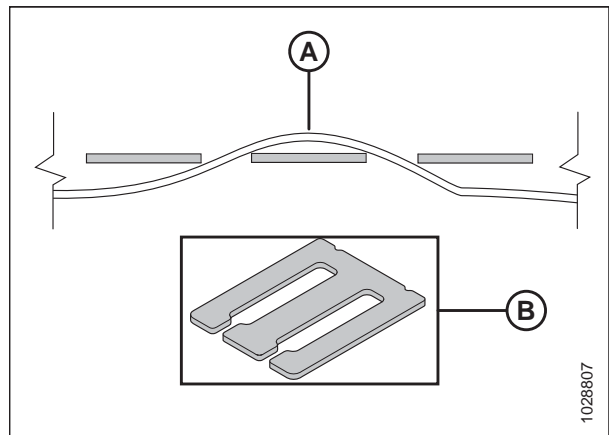


Figure 8.26: Cutterbar Curtain and Retaining Clips

8.8 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	1.8 liters (1.9 qts [US])

8.9 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).

8.9.1 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

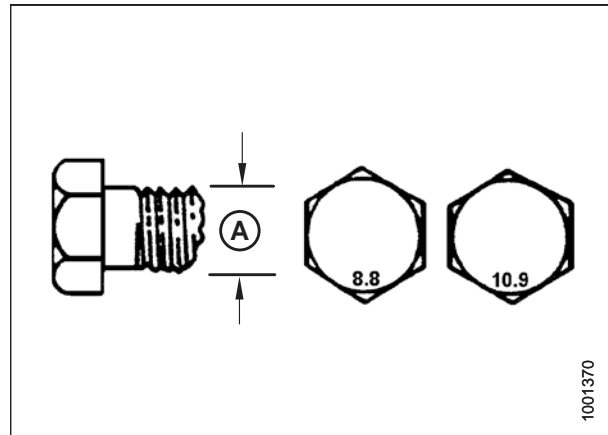


Figure 8.27: Bolt Grades

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

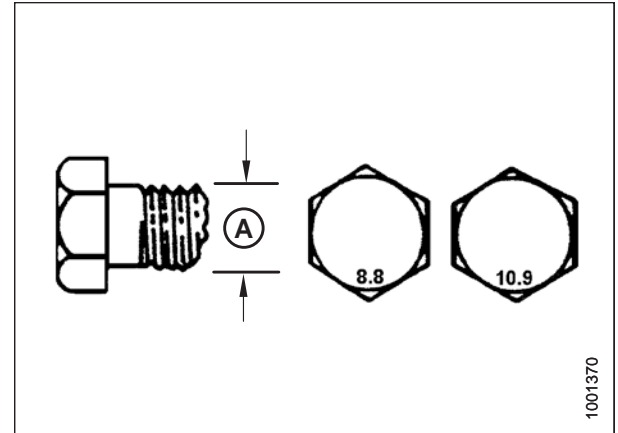


Figure 8.28: Bolt Grades

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

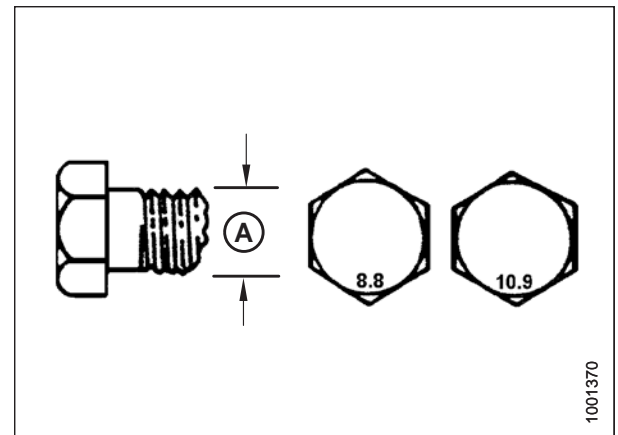


Figure 8.29: Bolt Grades

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

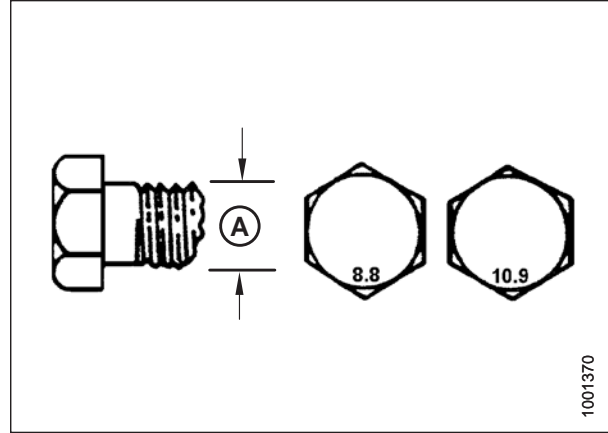


Figure 8.30: Bolt Grades

8.9.2 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	—	—	—	—

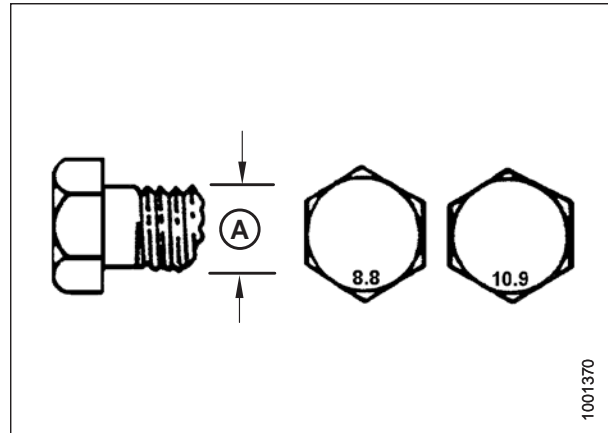


Figure 8.31: Bolt Grades

8.9.3 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).

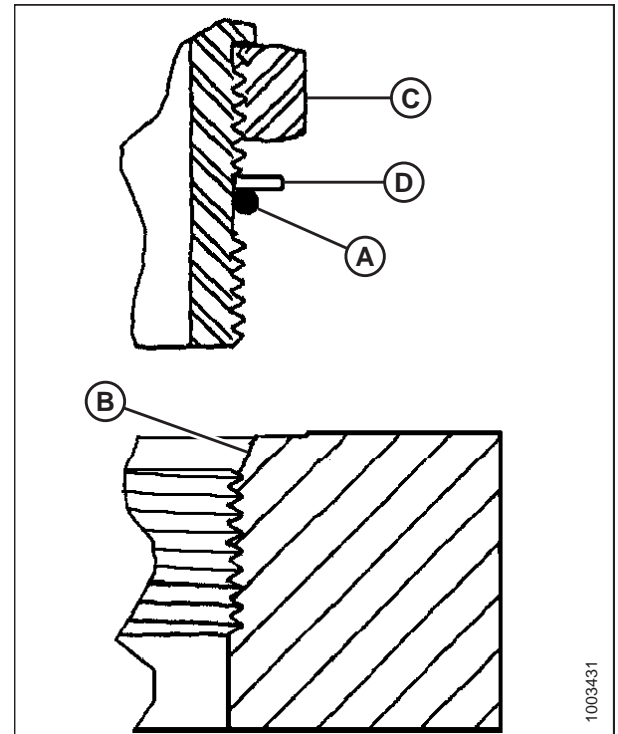


Figure 8.32: Hydraulic Fitting

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.

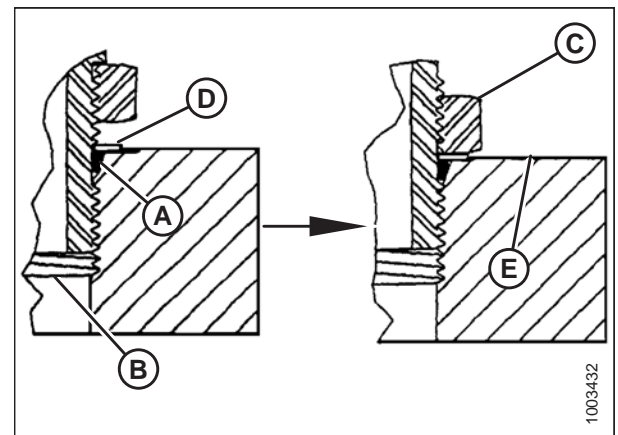


Figure 8.33: Hydraulic Fitting

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.

8.9.4 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 85*.
6. Check final condition of fitting.

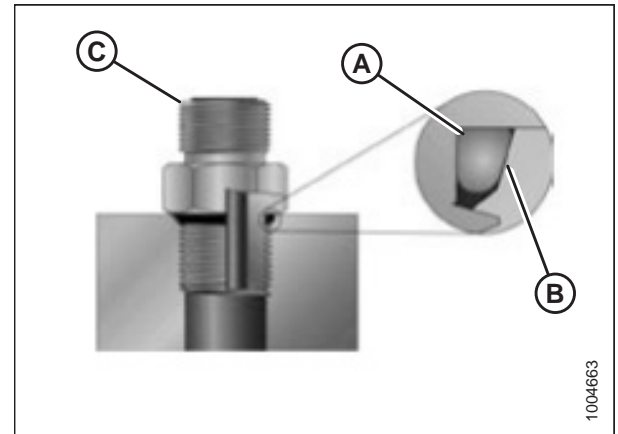


Figure 8.34: Hydraulic Fitting

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.

8.9.5 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 8.35: 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 86.

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.

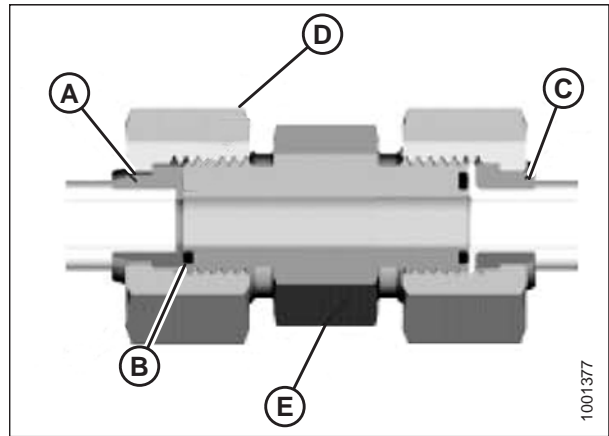


Figure 8.36: Hydraulic Fitting

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	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note	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	7/8	–	–
-16	1 7/16	1	150–165	111–122

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

REFERENCE

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

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ⁶	
			Nm	lbf·ft
-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

8.9.6 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 87. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

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

Table 8.10 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

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

8.10 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.

8.11 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.

Header Serial Number:

✓	Item	Reference
	Check that the header is level.	8.3 Leveling the Header, page 71
	Check that skid shoes or gauge rollers are evenly set on both sides of the header.	—
	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 14 • 4.1.8 Unpacking the Curtain, page 41
	Check that side forming shields are evenly set.	4.1.1 Assembling and Installing Forming Shield, page 19
	Check that baffle 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 Installing Manual Rear Deflectors, page 17
	Grease all bearings and drivelines.	6 Lubricating the Rotary Disc Header, page 45
	Check main drive belt tension.	7.1.1 Inspecting Conditioner Drive Belt, page 49
	Check suspended drum drive belts are tensioned.	7.3.1 Checking Suspended Drum Drive, page 54
	Check feed roll drive belts are tensioned.	7.4.1 Checking Feed Roll Drive, page 55
	Check conditioner roll timing gearbox lubricant.	7.5 Checking and Adding Conditioner Roll Timing Gearbox Oil, page 56
	Check drive gearbox lubricant.	7.6 Checking and Adding Oil in Header Drive Gearbox, page 57
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check cutterbar lubricant.	7.7 Checking and Adding Lubricant in Cutterbar, page 59
	Check for loose hardware. Tighten to required torque if applicable.	8.9 Torque Specifications, page 80
	Check cutterbar area carefully for loose parts and hardware on the cutterbar.	—

REFERENCE

✓	Item	Reference
	 WARNING These objects can be ejected with considerable force when the machine is started, and may result in serious injury or machine damage.	
	Run-Up Procedure	<i>7.10 Running up the Header, page 64</i>
	Check hydraulic hose and wiring harness routing to ensure adequate clearance when raising or lowering header.	—
	Ensure the hazard lights are functional.	<i>7.8 Checking Lights, page 62</i>
	Post Run-Up Check – Stop Engine	
	Check for hydraulic leaks.	—
	Check belt drive for proper idler alignment and overheated bearings.	<i>7.1 Conditioner Drive Belt, page 49</i>
	Ensure the header manuals are in storage compartment.	<i>7.9 Checking Manuals, page 63</i>

Date Checked:

Checked by:

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