MacDon

D65
Draper Header for Windrowers

Unloading and Assembly Instructions (North America)

147739 Revision A
2016 Model Year
Original Instruction

The harvesting specialists.

D65 Draper Header for Self-Propelled Windrowers

Published: July 2015

Introduction

This instruction manual describes the unloading, setup, and predelivery requirements for the MacDon D65 Draper Header for Windrowers.

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

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

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

Retain this instruction for future reference.

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

This instruction is available in the English language only.

List of Revisions

The following list provides an account of major changes from the previous version of this document.

Summary of Change	Location
Added the model year to the cover page.	Front cover
Updated the illustrations and instructions in the Removing Shipping Supports topic.	*2.3 Removing Shipping Supports, page 13*
Update images in the Attaching Reel Lift Cylinders topic.	*4.1 Attaching Reel Lift Cylinders, page 31*
Updated photo and instructions explaining the center-link cylinder connection in the Attaching to Windrower topic.	• *3.1.2 Hydraulic Link without Self-Alignment Kit, page 21* • *3.1.3 Hydraulic Link with Optional Self-Alignment Kit, page 23*
Added M155*E*4 to the Optional Drive/Lift Kits for D-Series Headers table in the Connecting Hydraulics topic.	*3.2 Connecting Hydraulics, page 26*
Updated the image and added the important statement about repositioning the breather and plug in the knife drive box.	*5.3 Checking Knife Drive Box, page 47*
Updated illustrations in Checking and Adjusting the Draper Seal.	*5.7 Checking and Adjusting Draper Seal, page 55*
Moved Torque Specifications, Conversion Chart, and Definitions to the Reference chapter. Added the Lifting Vehicle Requirements topic.	*8 Reference, page 73*

1 Safety

1.1 Signal Words

Three signal words, *DANGER*, *WARNING*, and *CAUTION*, are used to alert you to hazardous situations. The appropriate signal word for each situation has been 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.

1.2 General Safety

⚠ CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all the protective clothing and personal safety devices that **could** be necessary for the job at hand. Don't 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 ear muffs or ear plugs to help protect against objectionable or loud noises.

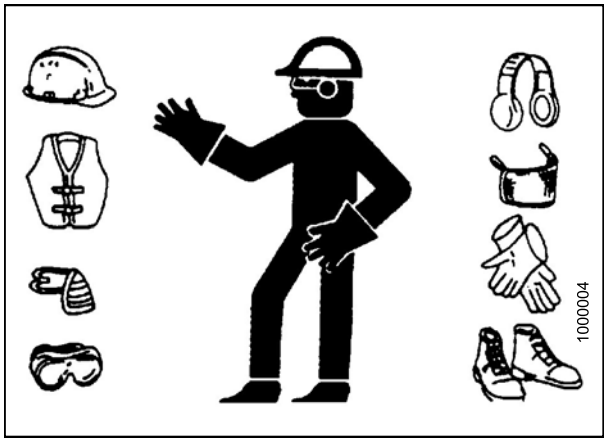

Figure 1.1: Safety Equipment

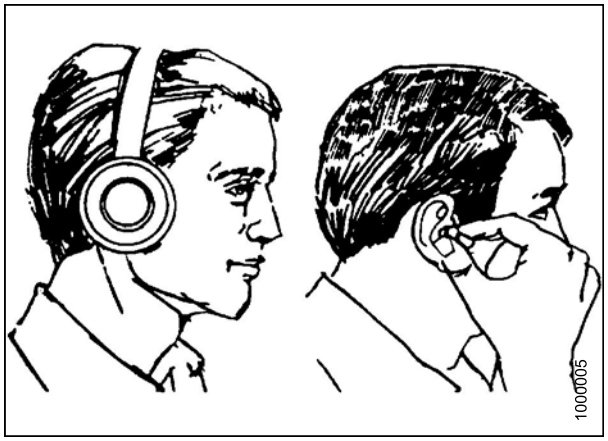

Figure 1.2: Safety Equipment

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

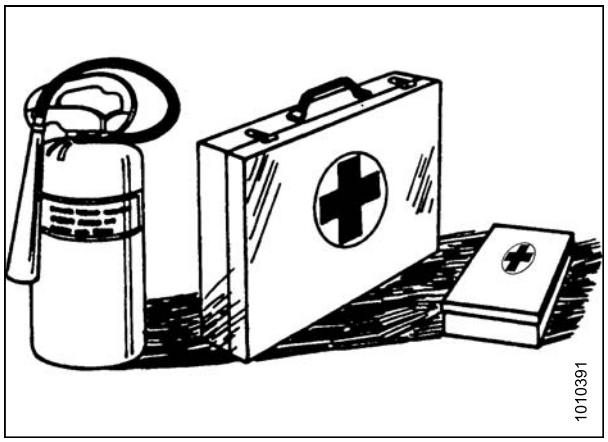

Figure 1.3: Safety Equipment

- 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 the shaft and can telescope freely.
- Use only service and repair parts made or approved by the 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. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key from ignition before leaving operator's seat for any reason.

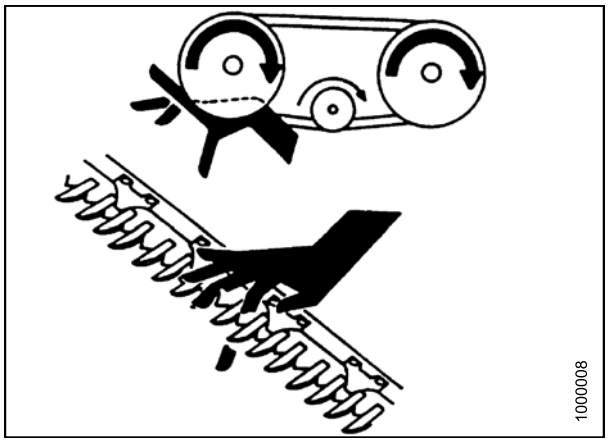

Figure 1.5: Safety Around Equipment

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

Figure 1.6: Safety Around Equipment

1.3 Safety Signs

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from MacDon Parts.

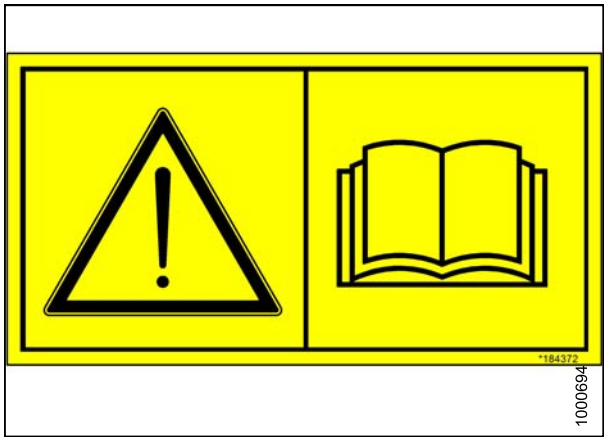

Figure 1.7: Operator's Manual Decal

2 Unloading Header

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

2.1 Unloading Header from Trailer

CAUTION

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

CAUTION

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

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

Table 2.1 Lifting Vehicle

	15–25 Foot Header	30–40 Foot Header
Minimum Lifting Capacity	5000 lb (2270 kg) load center (A) at 48 in. (1220 mm) (B) from back of forks	7000 lb (3178 kg) load center (A) at 48 in. (1220 mm) (B) from back of forks
Minimum Fork Length (C)	78 in. (1981 mm)	

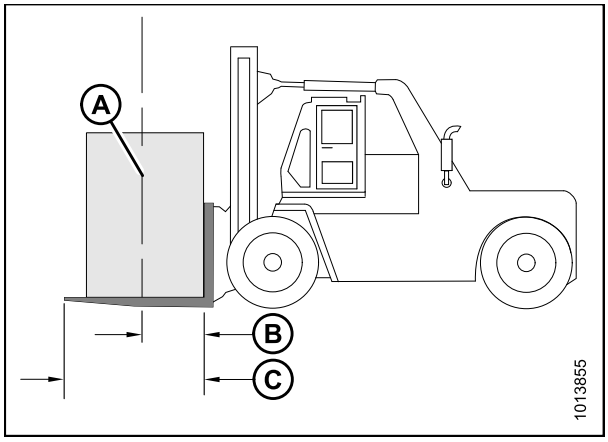

Figure 2.1: Minimum Lifting Capacity

A - Center of Gravity of the Load
B - Load Center 48 inches (1220 mm) form Back of Forks
C - Minimum Fork Length 78 inches (1981 mm)

To unload headers from a trailer, follow these steps:

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

   IMPORTANT:
   Avoid lifting the second header and ensure the forks do not interfere with the shipping frame. If the forks contact the second header, damage to the headers may occur.

3. Approach the header and slide forks (A) underneath the shipping support (B) as far as possible without contacting the shipping support of opposite header (C).
4. Remove hauler's tie-down straps, chains, and wooden blocks.
5. Slowly raise header off trailer deck.

WARNING

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

6. Back up until unit clears trailer and slowly lower to 6 in. (150 mm) from ground.

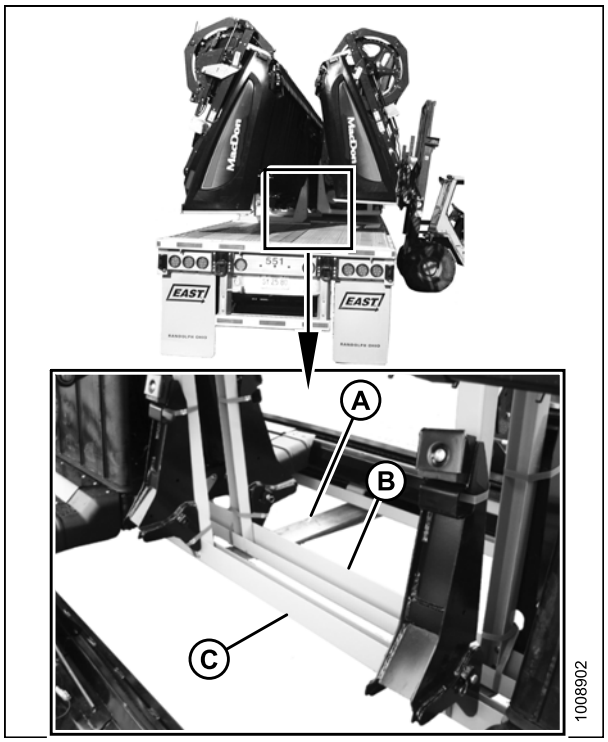

Figure 2.2: Header Shipping Supports

7. Take header to the storage or setup area. Ensure ground is flat and free of rocks or debris that could damage the header.
8. Repeat above steps for second header.
9. Check for shipping damage and missing parts.

2.2 Lowering Header

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

- *2.2.1 Lowering Single-Reel Header, page 7*
- *2.2.2 Lowering Double-Reel Header, page 9*

2.2.1 Lowering Single-Reel Header

Reposition header in preparation for assembly and setup as follows:

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

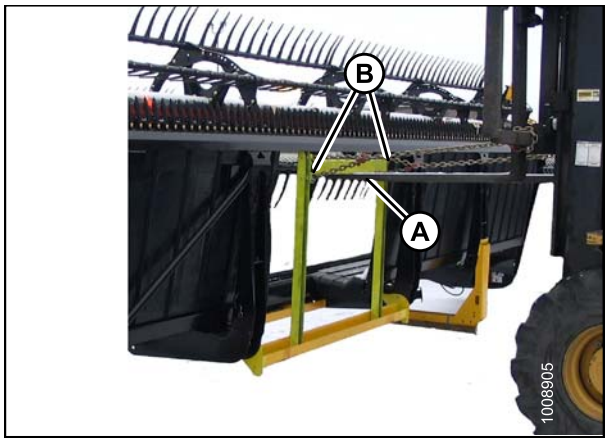

Figure 2.3: Top of Shipping Frame

CAUTION

Stand clear when lowering, as machine may swing.

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

Figure 2.4: Lowering the Header

5. Place 6 in. (150 mm) blocks (A) under each end and center of cutterbar and lower header onto blocks.
6. Remove chain and move lifting vehicle to rear of header.
7. Attach chain to center-link anchor on frame tube and raise rear of header so that stand can be lowered.

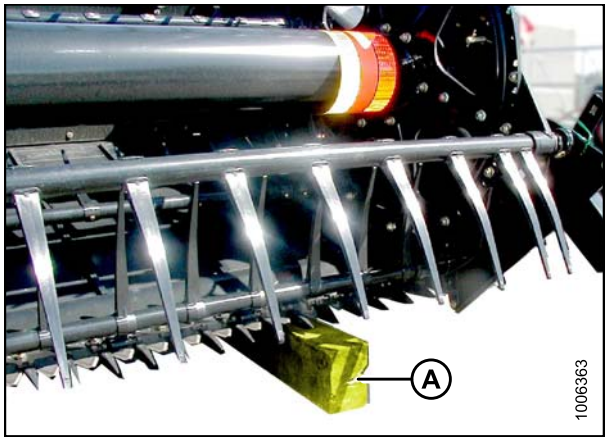

Figure 2.5: Blocks at Each End and Center of Cutterbar

8. Lower header stand by pulling pin (A), lowering stand (B), and releasing pin (A) to secure stand in place.
9. Lower header onto stand.

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

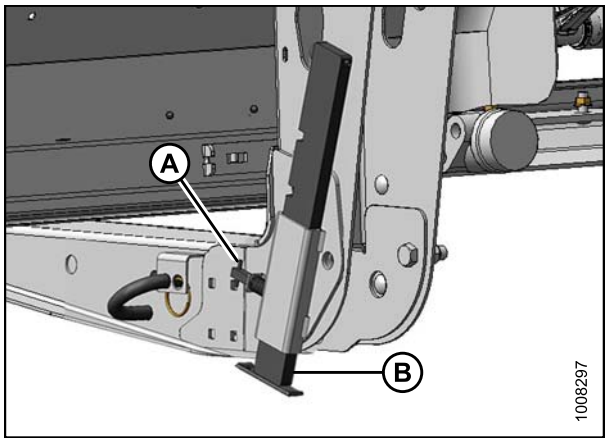

Figure 2.6: Header Stand

2.2.2 Lowering Double-Reel Header

Reposition header in preparation for assembly and setup as follows:

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

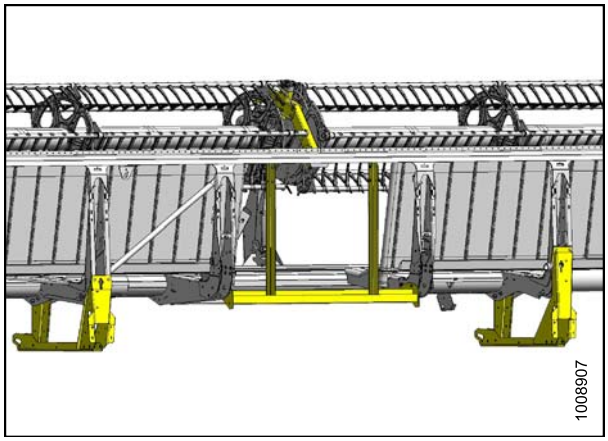

Figure 2.7: Underside of Header Lift Location

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

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

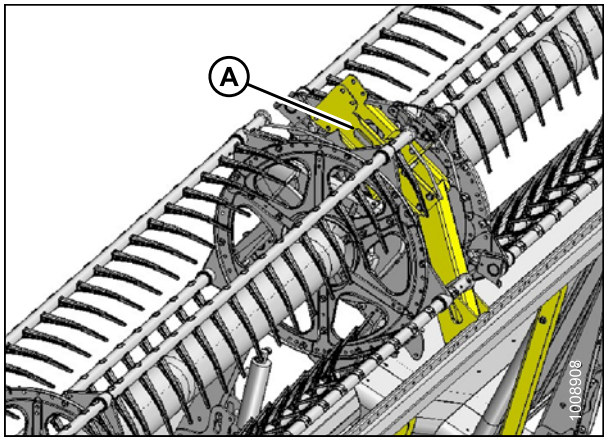

Figure 2.8: Shipping Support

CAUTION

Stand clear when lowering, as machine may swing.

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

Figure 2.9: Lowering the Header

5. Place 6 in. (150 mm) blocks (A) under each end and center of cutterbar and lower header onto blocks.
6. Remove chain and move lifting vehicle to rear of header.
7. Attach chain to center-link anchor on frame tube and raise rear of header so that stand can be lowered.

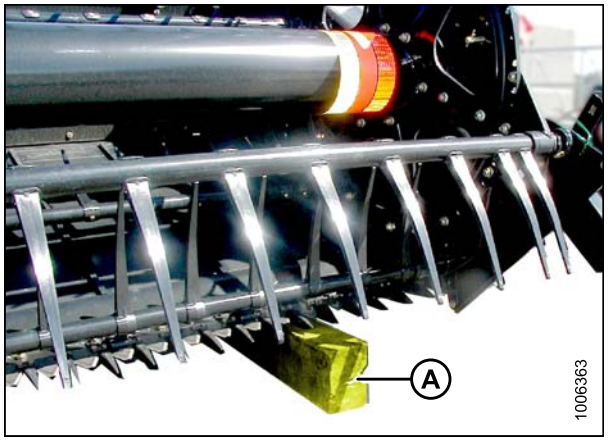

Figure 2.10: Blocks at Each End and Center of Cutterbar

8. Lower the header stand: pull pin (A), lower stand (B), and release pin (A) to secure stand in place.
9. Lower header onto stand.

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

10. Remove chain.

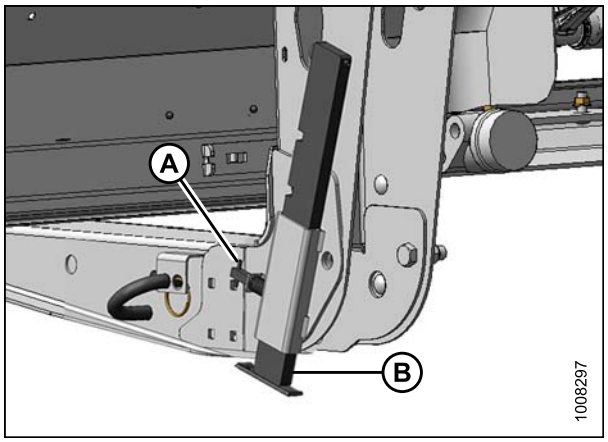

Figure 2.11: Header Stand

2.3 Removing Shipping Supports

NOTE:
Unless otherwise specified, discard all shipping materials and hardware.

1. Cut straps and remove header boots (A) from shipping support. Set boots aside for reinstallation.

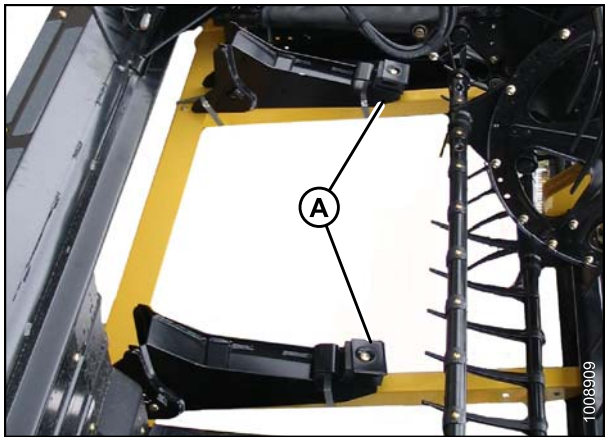

Figure 2.12: Straps, Header Boots, and Shipping Supports

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

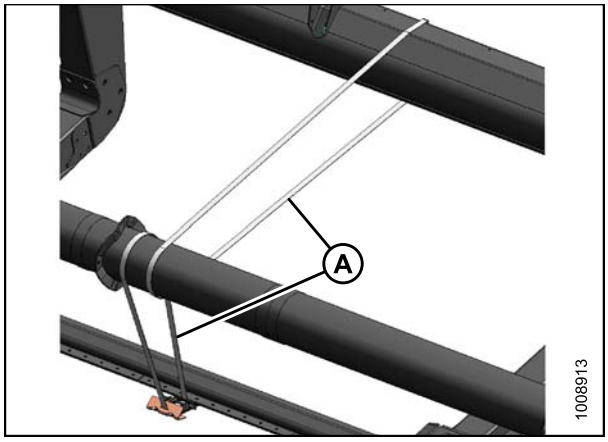

Figure 2.13: Single Reel

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

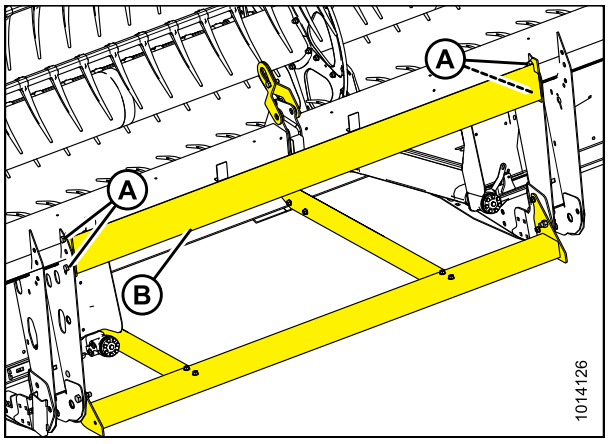

Figure 2.14: Upper Support (35- to 40-Foot Shown)

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

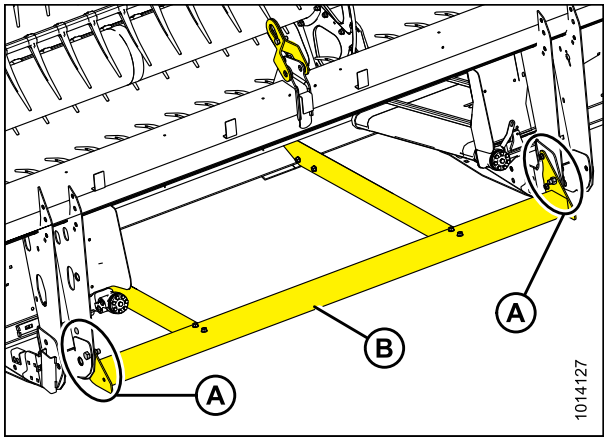

Figure 2.15: Lower Support (35- to 40-Foot Shown)

5. **15-, 20-, and 25-foot only:** Remove two bolts (A) from the top of the shipping stand (B).
6. **15-, 20-, and 25-foot only:** Remove the one remaining bolt (A) (a second bolt at location [C] was removed in Step *4, page 14*) from the bottom of the stand. Remove the shipping stand.
7. Repeat for the opposite side.

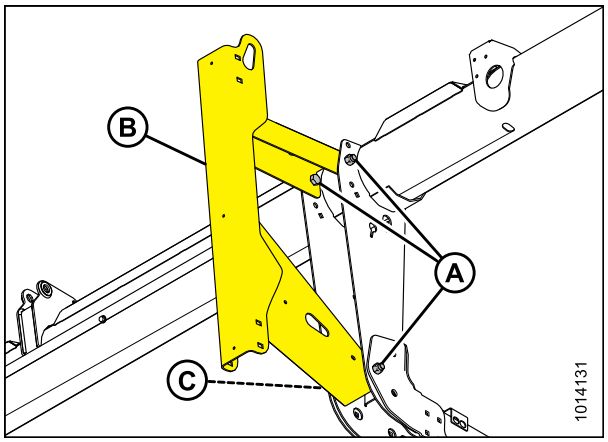

Figure 2.16: Center Leg Shipping Stands

8. **30-foot and larger only:** Remove the four bolts (A) and two bolts (B) from the shipping stands at both outboard header legs and remove the shipping stands.

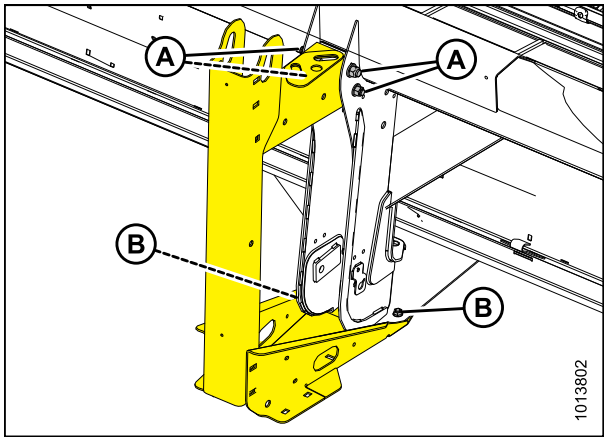

Figure 2.17: Outer Leg Shipping Supports

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

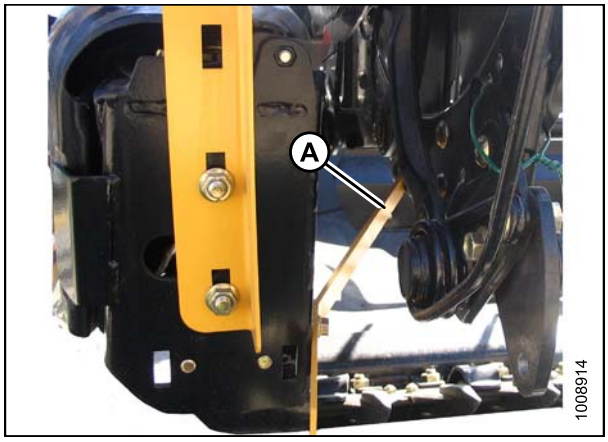

Figure 2.18: Anti-Rotation Brace

3 Attaching Header to Windrower

WARNING

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

IMPORTANT:
To prevent damage to the lift system when lowering header lift linkages without a header or weight box attached to windrower, ensure that float engagement pin is installed in storage location (B) and NOT installed at hole location (A).

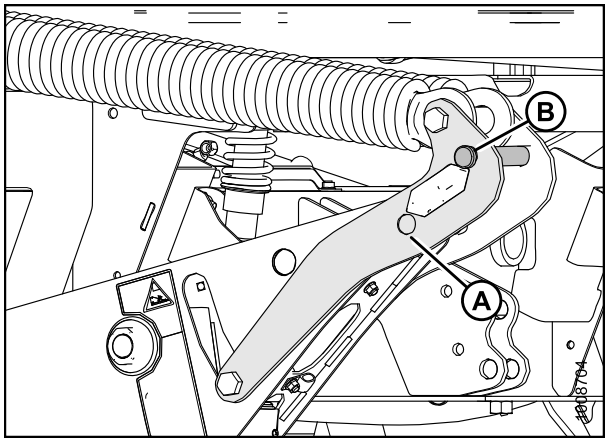

Figure 3.1: Header Float Linkage

If header boots (supplied with header) are already installed to windrower lift linkage, proceed to Step *5., page 18*

1. Remove hairpin to remove clevis pin (B) from boot (A).

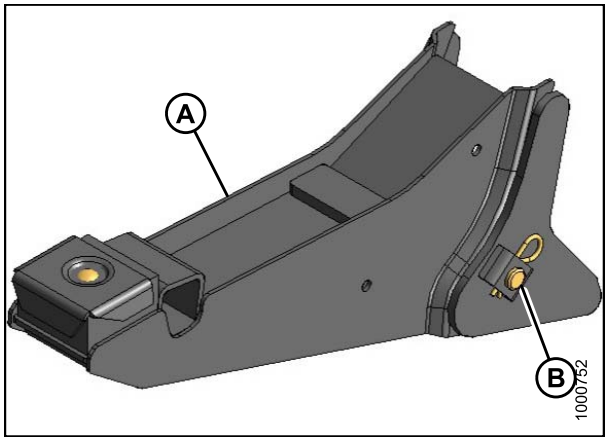

Figure 3.2: Boot and Pin

2. Position boot (B) on lift linkage (A) and reinstall clevis pin (C). Pin may be installed from either side of boot.
3. Secure clevis pin (C) with hairpin (D).
4. Repeat for opposite lift linkage.

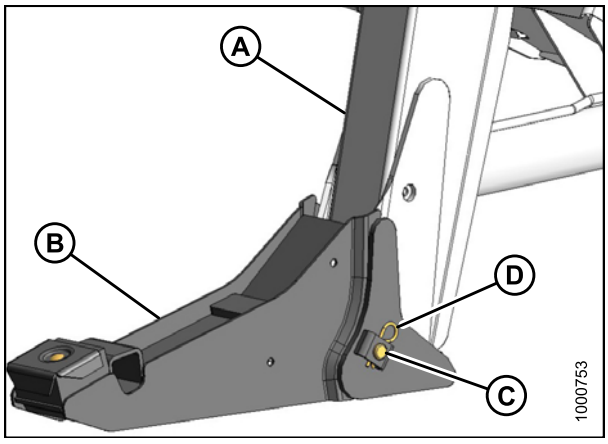

Figure 3.3: Boot, Lift Linkage, and Pin

5. Remove hairpins from pins (A) and remove pins from header legs.

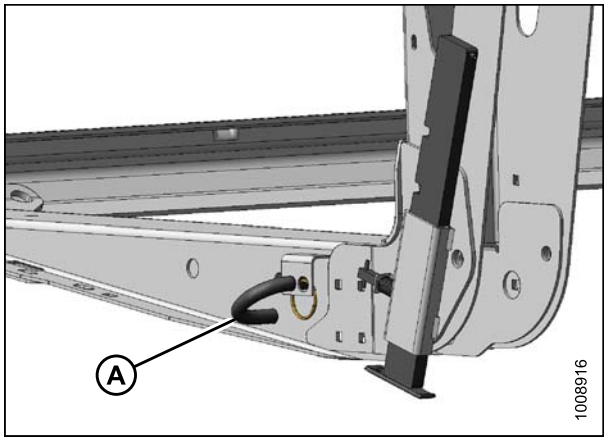

Figure 3.4: Header Leg Pins

CAUTION

Check to be sure all bystanders have cleared the area.

6. Start engine and activate HEADER DOWN switch (A) on the ground speed lever (GSL) to fully retract header lift cylinders.

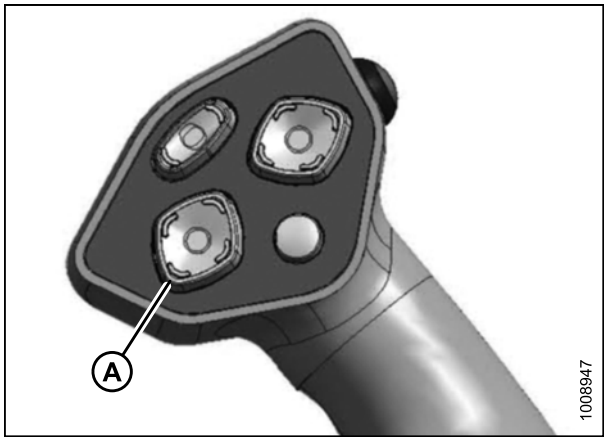

Figure 3.5: GSL

7. Drive windrower forward slowly so that boots (A) enter header legs (B). Continue to drive slowly forward until linkages contact support plates in the lower header legs and header nudges forward.
8. Check that linkages are properly engaged in header legs, contacting support plates.

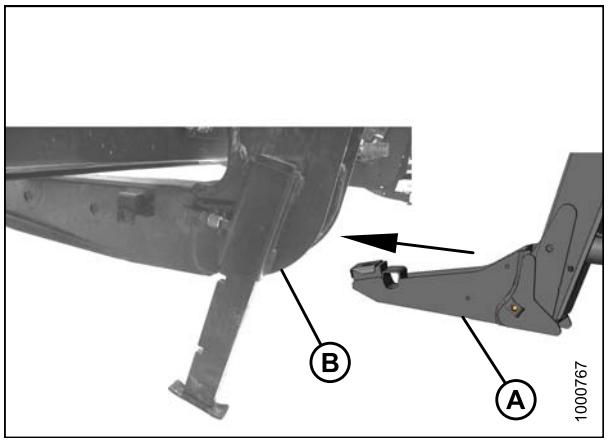

Figure 3.6: Header Leg and Boot

3.1 Connecting Center-Link

The procedure for connecting the center-link varies depending on the type of center-link installed on the machine. Refer to the applicable topic:

- *3.1.1 Mechanical Link, page 19*
- *3.1.2 Hydraulic Link without Self-Alignment Kit, page 21*
- *3.1.3 Hydraulic Link with Optional Self-Alignment Kit, page 23*

3.1.1 Mechanical Link

The following connection procedure applies to M100, M105, M150, and M155 windrowers with a mechanical center-link.

WARNING

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

1. Stop engine and remove key.
2. Loosen nut (A) and rotate barrel (B) to adjust length so that link lines up with header bracket.
3. Install pin (C) and secure with cotter pin.
4. Adjust link to required length for proper header angle by rotating barrel (B). Tighten nut (A) against barrel. A slight tap with a hammer is sufficient.

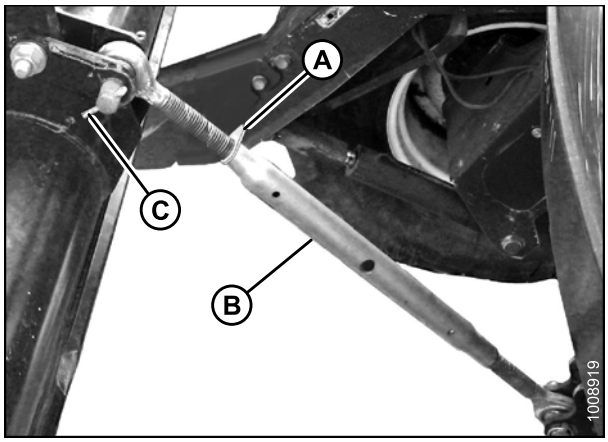

Figure 3.7: Linkage Adjustment

CAUTION

Check to be sure all bystanders have cleared the area.

5. Start engine.
6. Raise the header fully with HEADER UP switch (A) on the ground speed lever (GSL).
7. Stop engine and remove key.

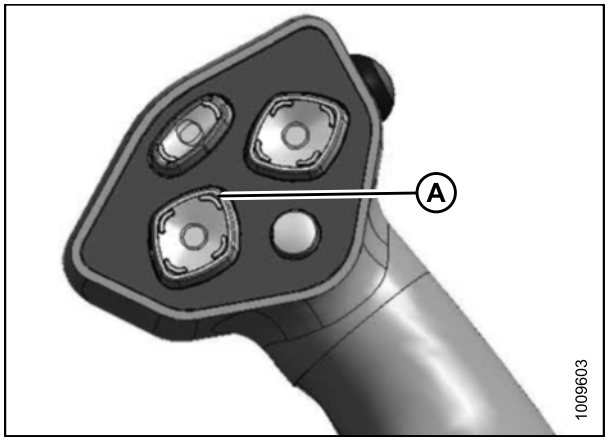

Figure 3.8: GSL

8. Engage safety props on both lift cylinders.

9. Install pin (A) through header leg (engaging U-bracket in header leg). Repeat for opposite side of header.
10. Raise header stand (B) to storage position by pulling pin (C) and lifting stand into uppermost position. Release pin (C) to secure stand in place.

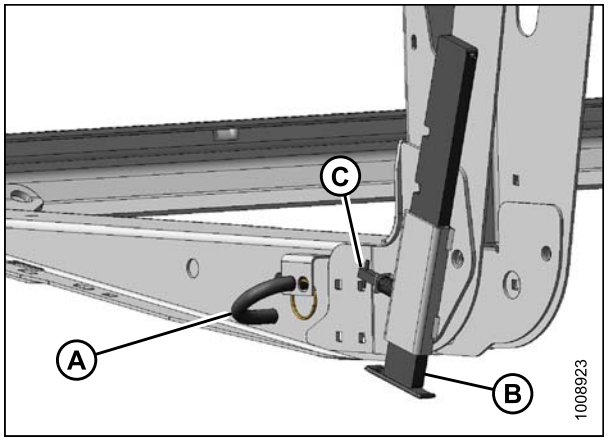

Figure 3.9: Pin and Header Stand in Raised Position

11. Remove pin from storage position (B) in linkage and insert into hole (A) to engage float springs. Secure with hairpin and repeat for opposite side of windrower.
12. Disengage safety props.

Figure 3.10: Float Springs Engaged

CAUTION

Check to be sure all bystanders have cleared the area.

13. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully.
14. Stop engine and remove key.

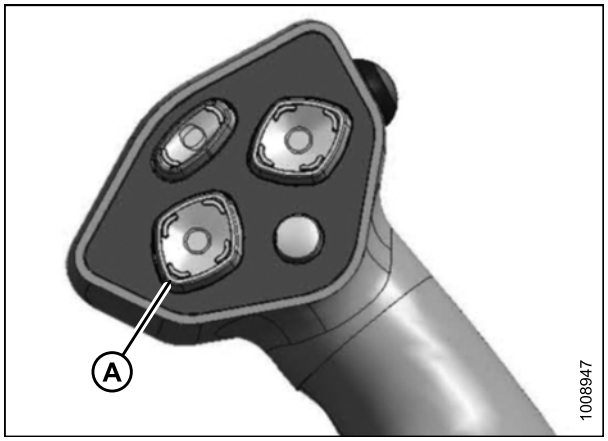

Figure 3.11: GSL

3.1.2 Hydraulic Link without Self-Alignment Kit

The following connection procedure applies to M155*E*4, M200, and M205 windrowers with the hydraulic center-link without the self-alignment kit. This center-link configuration is optional for M105, M150, and M155 windrowers.

WARNING

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

1. Stop engine and remove key.
2. Relocate the pin (A) at the frame linkage as required to position the hook (B) over the header pin (not shown).

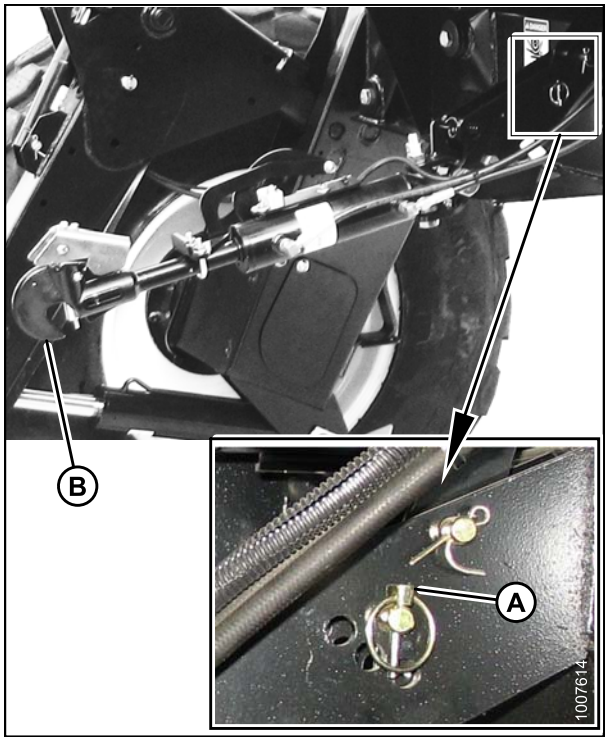

Figure 3.12: Frame Linkage Pin and Hook

CAUTION

Check to be sure all bystanders have cleared the area.

3. Start engine and activate HEADER TILT switches on ground speed lever (GSL) to extend or retract center-link cylinder so that the hook lines-up with the header attachment pin.
4. Stop engine.

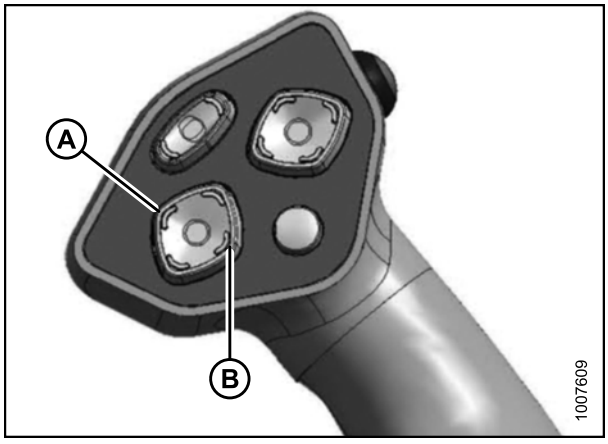

Figure 3.13: GSL

A - HEADER TILT DOWN Switch B - HEADER TILT UP Switch

5. Push down on rod end (B) of link cylinder (A) until hook engages pin on header and is locked.

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

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

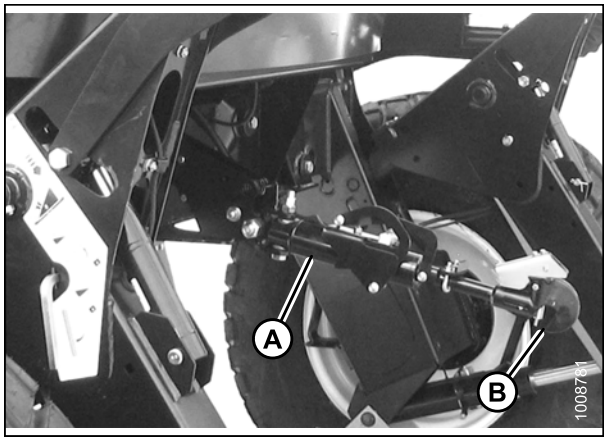

Figure 3.14: Center-Link on Header

CAUTION

Check to be sure all bystanders have cleared the area.

7. Start engine.
8. Raise the header fully with HEADER UP switch (A) on the GSL.
9. Stop engine and remove key.
10. Engage safety props on both lift cylinders.

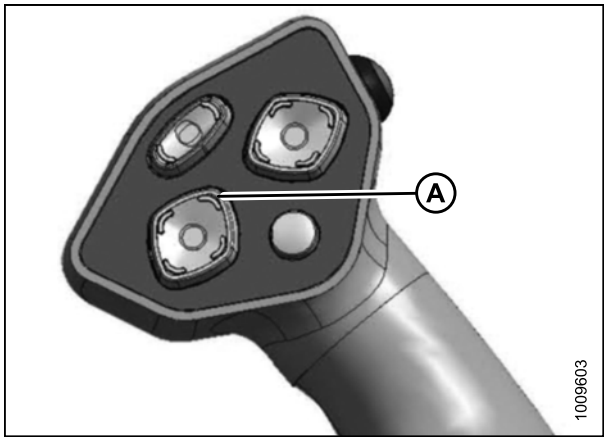

Figure 3.15: GSL

11. Install pin (A) through header leg (engaging U-bracket in header leg). Repeat for opposite side of header.
12. Raise header stand (B) to storage position by pulling pin (C) and lifting stand into uppermost position. Release pin (C) to secure stand in place.

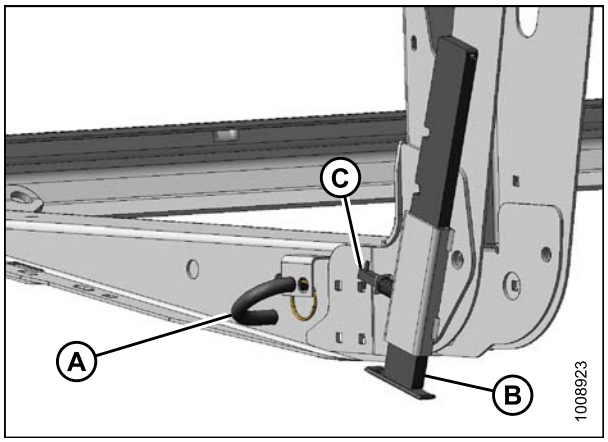

Figure 3.16: Pin and Header Stand in Raised Position

13. Remove pin from storage position (B) in linkage and insert into hole (A) to engage float springs. Secure with hairpin and repeat for opposite side of windrower.
14. Disengage safety props.

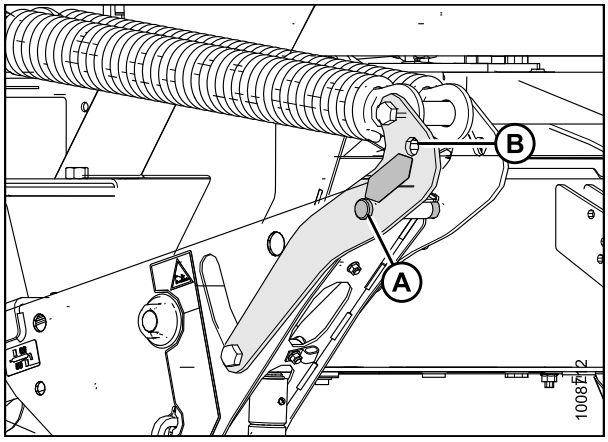

Figure 3.17: Float Springs Engaged

CAUTION

Check to be sure all bystanders have cleared the area.

15. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully.
16. Stop engine and remove key.

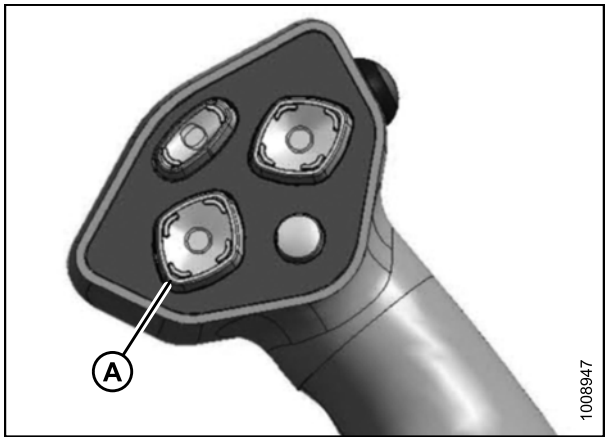

Figure 3.18: GSL

3.1.3 Hydraulic Link with Optional Self-Alignment Kit

The following connection procedure applies to M150, M155, M155*E*4, M200, and M205 windrowers with a hydraulic center-link and the optional self-alignment kit installed.

WARNING

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

1. Adjust position of center-link cylinder with the REEL UP, REEL DOWN, and HEADER TILT switches on the ground speed lever (GSL) to position hook above the header attachment pin.

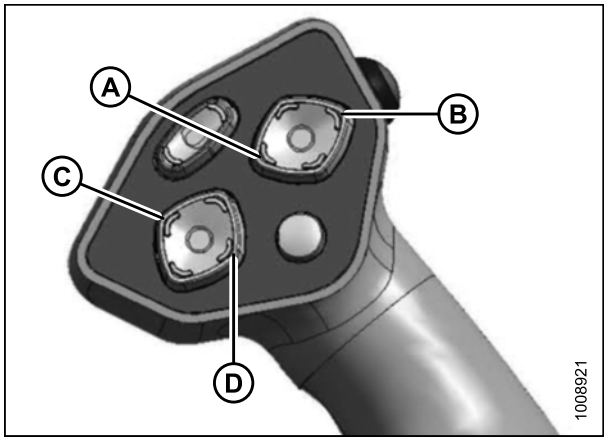

Figure 3.19: GSL

A - REEL DOWN Switch **B - REEL UP Switch**
C - HEADER TILT UP Switch **D - HEADER TILT DOWN Switch**

2. Adjust position of the center-link cylinder (A) with the REEL UP, REEL DOWN, and HEADER TILT switches on the GSL until the hook is above the header attachment pin.

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

3. Lower center-link (A) onto the header with the REEL DOWN switch on the GSL until it locks into position (hook release [B] is down).
4. Check that center-link is locked onto header by pressing the REEL UP switch on the GSL.

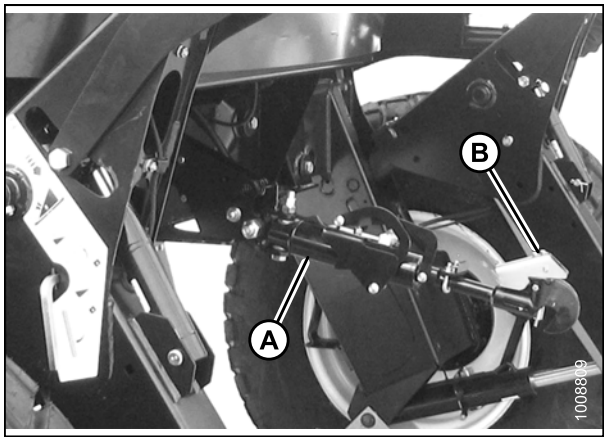

Figure 3.20: Hydraulic Center-Link

CAUTION

Check to be sure all bystanders have cleared the area.

5. Start engine.
6. Raise the header fully with HEADER UP switch (A) on the GSL.
7. Stop engine and remove key.
8. Engage safety props on both lift cylinders.

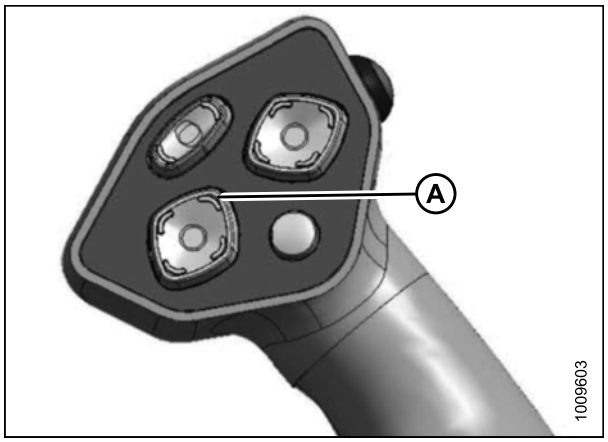

Figure 3.21: GSL

9. Install pin (A) through header leg (engaging U-bracket in header leg). Repeat for opposite side of header.
10. Raise header stand (B) to storage position by pulling pin (C) and lifting stand into uppermost position. Release pin (C) to secure stand in place.

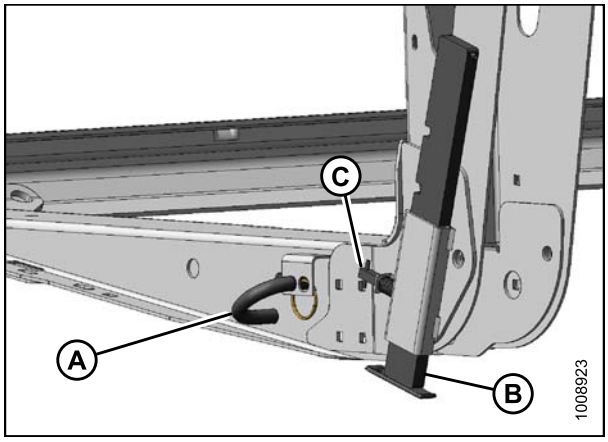

Figure 3.22: Pin and Header Stand in Raised Position

11. Remove pin from storage position (B) in linkage and insert into hole (A) to engage float springs. Secure with hairpin and repeat for opposite side of windrower.
12. Disengage safety props.

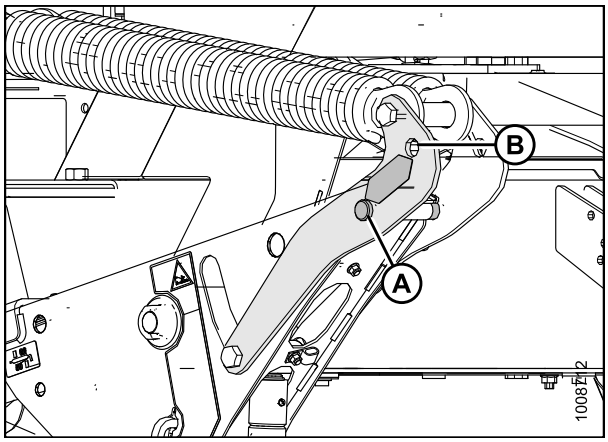

Figure 3.23: Float Springs Engaged

CAUTION

Check to be sure all bystanders have cleared the area.

13. Start engine and activate HEADER DOWN switch (A) on GSL to lower header fully.
14. Stop engine and remove key.

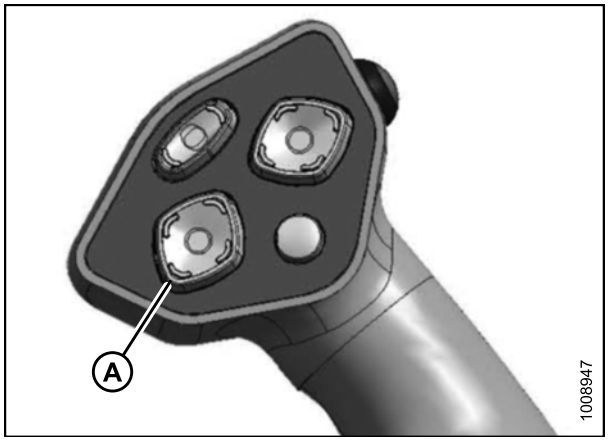

Figure 3.24: GSL

3.2 Connecting Hydraulics

M150, M200, and M205 windrowers may not come equipped with D-Series header and reel hydraulics as shown below.

NOTE:
Windrowers equipped with D-Series hydraulics have four header-drive hoses on the left-hand side and up to five reel-drive hoses on the right-hand side.

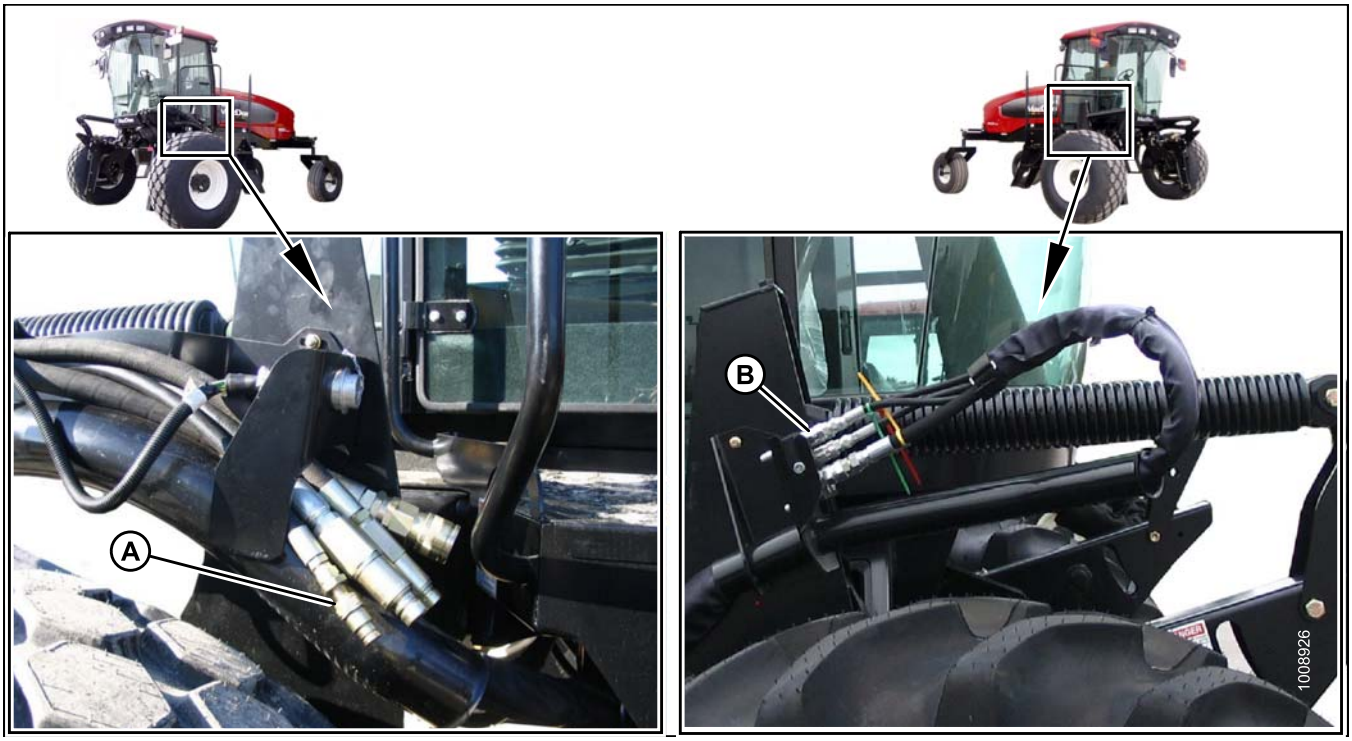

Figure 3.25: D-Series Hydraulics

A - Header-Drive Hydraulics

B - Reel-Drive Hydraulics

1. If **NOT** already equipped, install the optional drive/lift kits as shown in Table *3.1 Optional Drive/Lift Kits for D-Series Header, page 26*. If the windrower is equipped, proceed directly to Step *12, page 28*.

Table 3.1 Optional Drive/Lift Kits for D-Series Header

Windrower	Part Numbers for D-Series Draper Header Optional Kits			
	Reel Drive/Lift	Reel Fore-Aft	Reverser	Coupler
M100	MD #B5426	MD #B5194	–	–
M105	MD #B5577	MD #B5577	–	–
M150	MD #B5426	MD #B5194	MD #B4656	–
M155	MD #B5577	MD #B5577	MD #B4656	–
M155*E*4	MD #B5577	MD #B5577	MD #B4656	–
M200	MD #B5426 MD #B4651	MD #B5194	MD #B4656	–
M205	MD #B5491	MD #B5496	MD #B5492	MD #B5497

Connect header-drive hydraulics and electrical harness to header as follows:

2. Check connectors and clean if required.
3. Disengage and rotate lever (C) counterclockwise to fully up position.
4. Remove cap securing electrical connector (B) to frame.
5. Move hose bundle (A) from windrower around hose support on header.

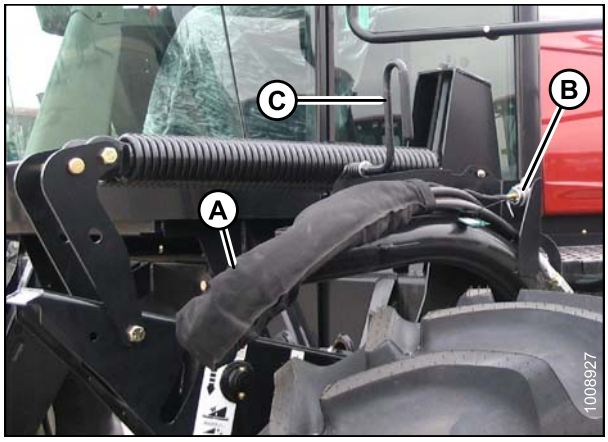

Figure 3.26: Header-Drive Hydraulics and Electrical Harness Connection

6. Push hose connectors onto mating receptacle until collar on receptacle snaps into lock position.
7. Remove cover on electrical receptacle (A).
8. Push electrical connector onto receptacle and turn collar on connector to lock it in place
9. Attach cover to mating cover on windrower wiring harness.

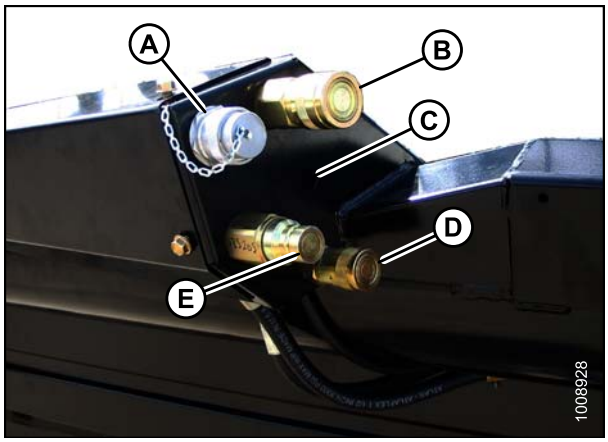

Figure 3.27: Mating Receptacle

A - Electrical Connector
B - Knife Drive
C - Case Drain (Double Knife)
D - Draper Drive
E- Return

10. Lower lever (A) and engage in down position.

Figure 3.28: Lever

11. Check that hose support is positioned so that top bolt (A) is midway in slot and lower bolt (B) is in forward hole. Loosen bolts and adjust as required.

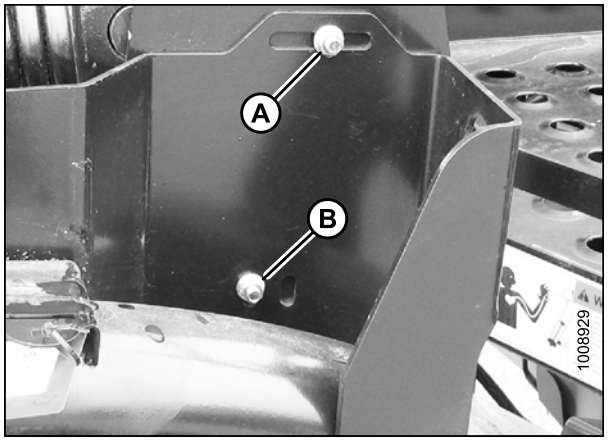

Figure 3.29: Hose Support

Connect reel-drive hydraulics (A) as follows:

12. Check connectors and clean if required.

Figure 3.30: Reel-Drive Hydraulics

13. Open cover (A) on header receptacle.
14. Push in lock button (B) and pull handle (C) to half open position.

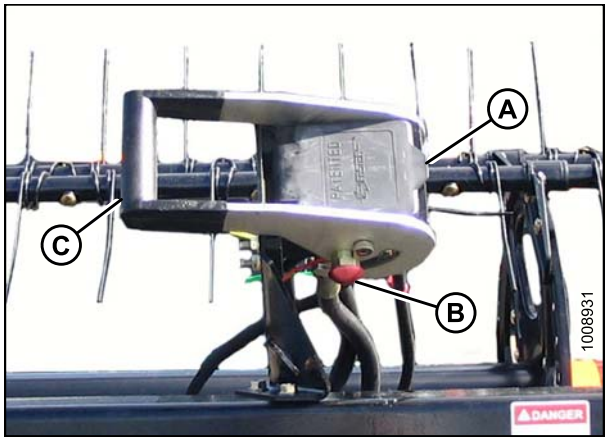

Figure 3.31: Header Receptacle

15. Remove hose bundle with multicoupler (A) from windrower and position onto header receptacle.
16. Push handle (B) to engage pins on connector.
17. Push handle away from hoses until lock button (C) snaps out.

CAUTION

Check to be sure all bystanders have cleared the area.

18. Start engine and raise and lower header and reel a few times to allow trapped air to pass back to the reservoir.
19. Stop engine.

NOTE:
It is not necessary to bleed the system by loosening fittings.

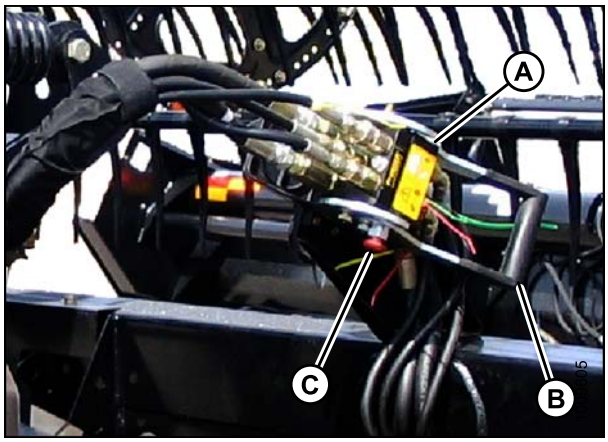

Figure 3.32: Multicoupler on Header

4 Assembling the Header

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

4.1 Attaching Reel Lift Cylinders

CAUTION

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

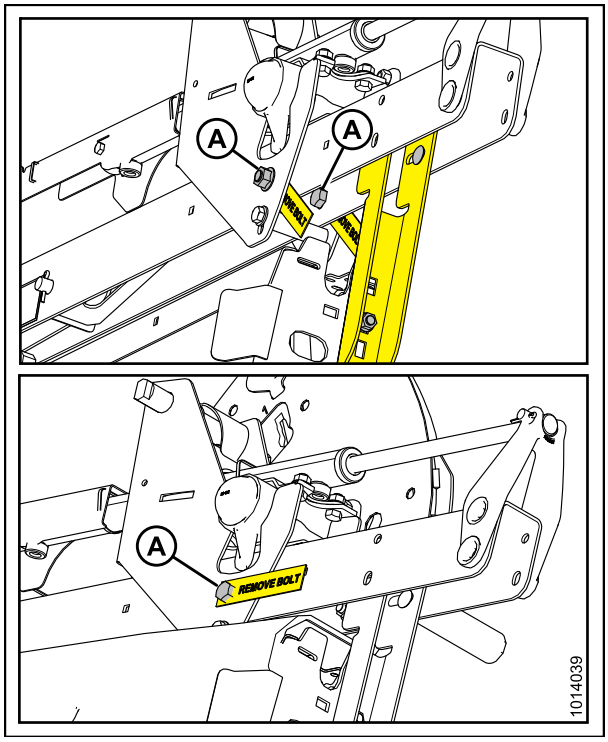

Figure 4.1: Right Reel Arm (Parts Removed for Clarity)

Top Image - Single Reel
Bottom Image - Double Reel

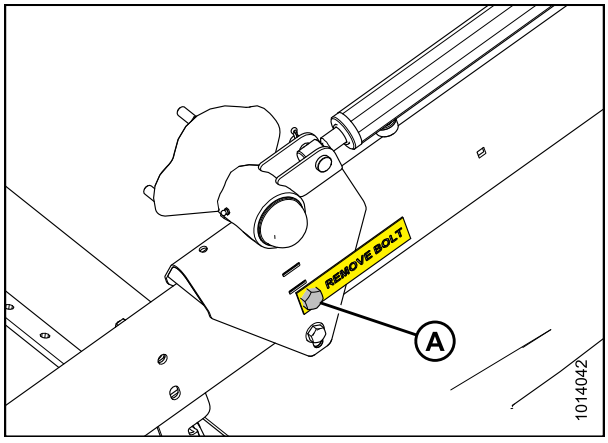

Figure 4.2: Left Reel Arm

1. Remove two top bolts (A) on outboard reel arm supports. Repeat for opposite side.

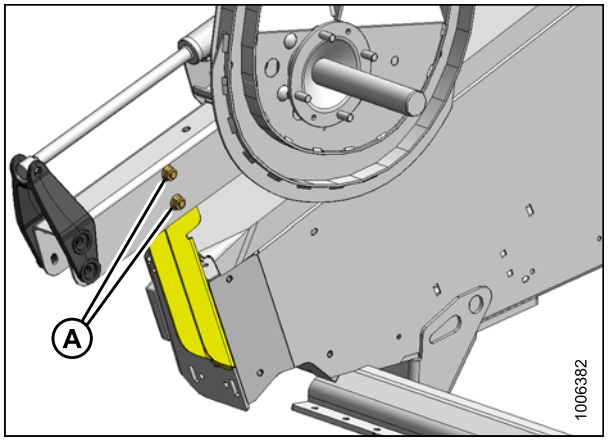

Figure 4.3: Outboard Reel Arm Support

2. **Double-reel headers only:** Remove two top bolts (A) on center reel arm to allow the center reel arm to move.

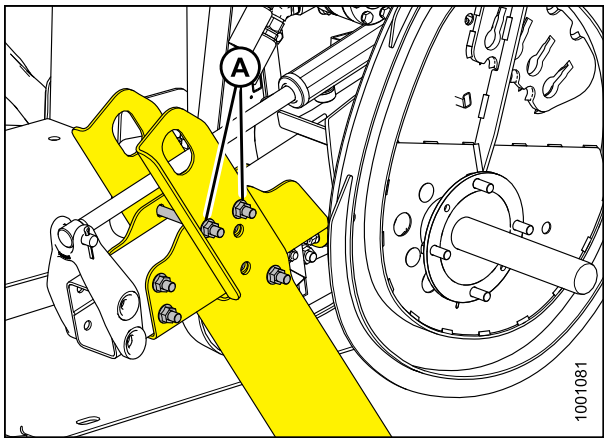

Figure 4.4: Center Reel Arm Double-Reel Header Only

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

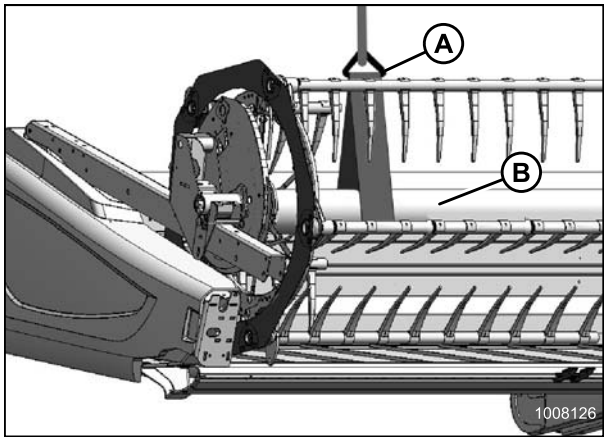

Figure 4.5: Reel Tube

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

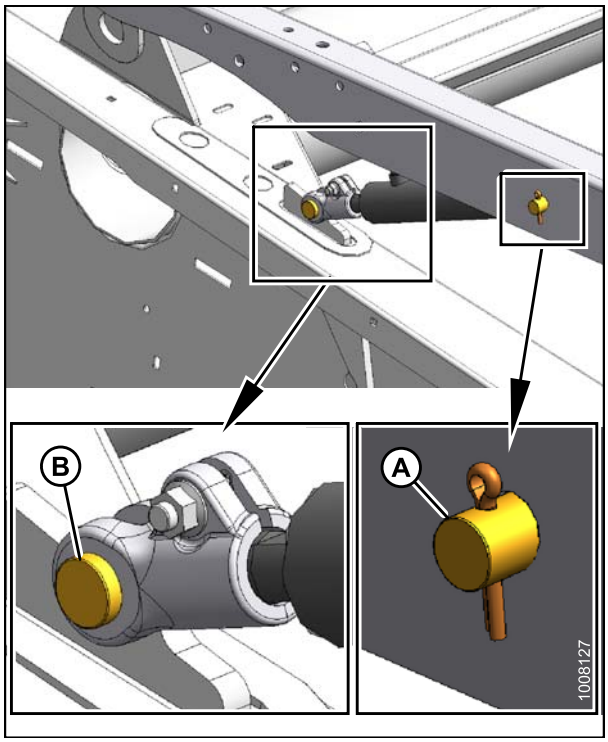

Figure 4.6: Right-Hand Shown

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

   NOTE:
   Step *9, page 34* to Step *16, page 34* apply **ONLY** to **double-reel headers**. For **single-reel headers**, go to Step *17, page 34*.

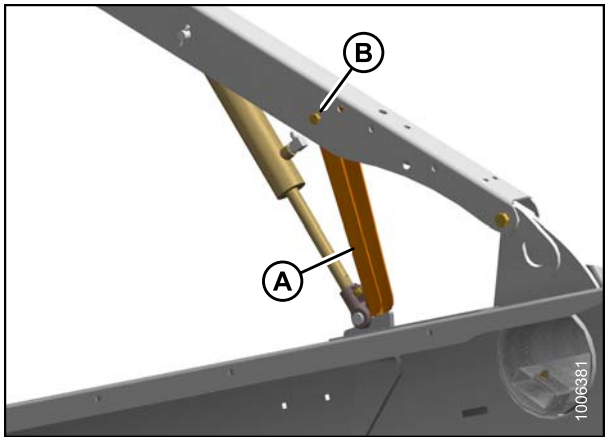

Figure 4.7: Reel Safety Props

9. **Double reel only:** Position sling (A) around the reel tube near the reel center support arm.
10. **Double reel only:** Lift reel to gain access to the center lift cylinder.
11. **Double reel only:** Remove shipping wire and banding from center reel lift cylinder.

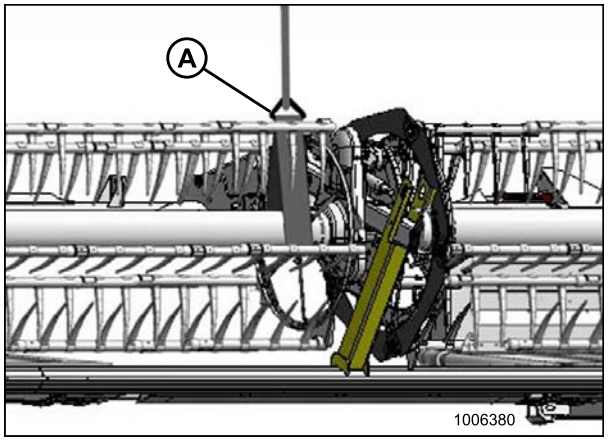

Figure 4.8: Lifting the Reel Double-Reel Header Only

12. **Double reel only:** Remove socket head bolt and nut from cylinder rod end.
13. **Double reel only:** Attach rod end of cylinder to reel arm with socket head bolt and nut (A). Access hardware through holes in reel arm braces.
14. **Double reel only:**
    Torque bolt and nut (A) to 40–45 ft·lbf (54–61 N·m).
15. **Double reel only:** Remove pin at barrel end of cylinder.
16. **Double reel only:** Adjust reel height so pin can be installed at barrel end of cylinder and mounting structure.

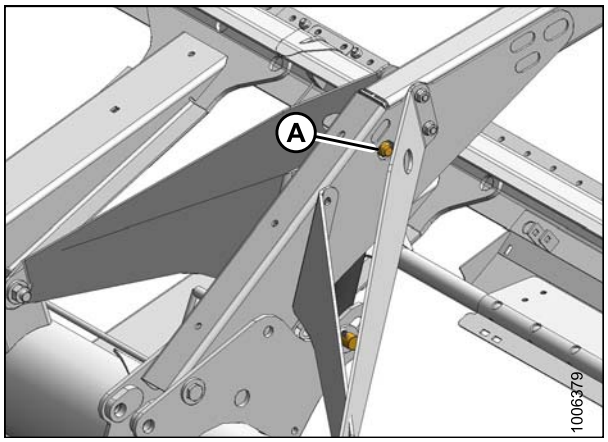

Figure 4.9: Reel Arm Braces

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

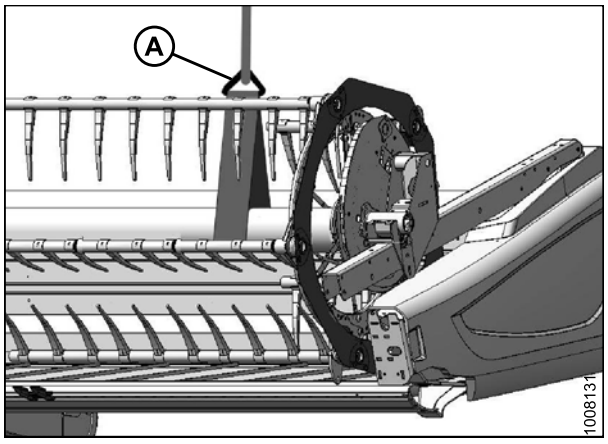

Figure 4.10: Outboard Reel Arm

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

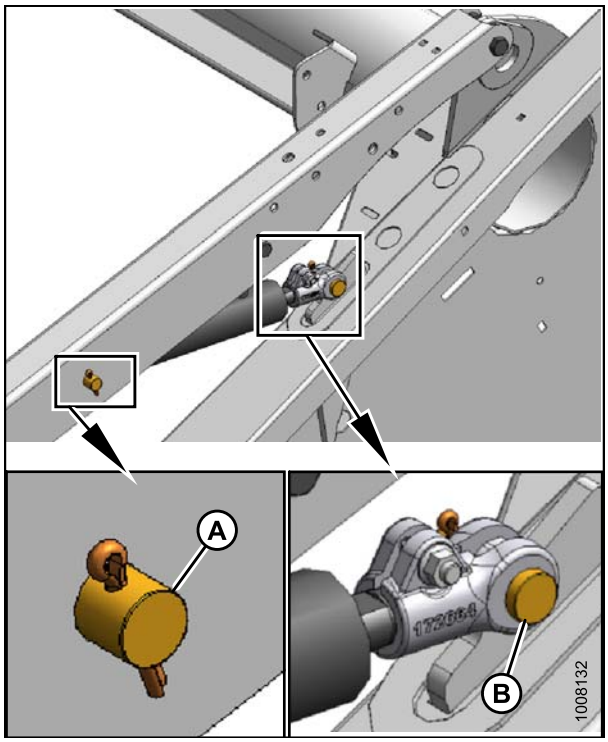

Figure 4.11: Cylinder and Endsheet

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

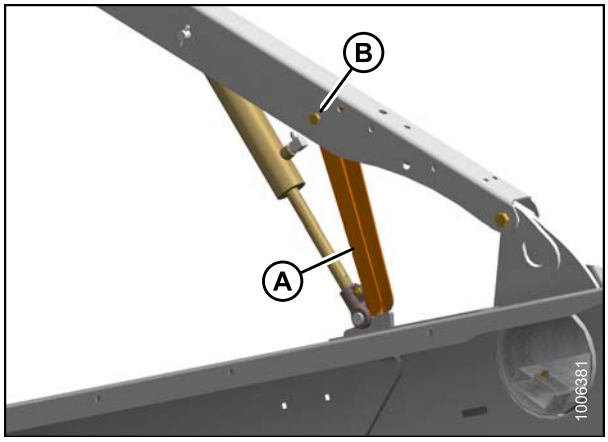

Figure 4.12: Reel Safety Prop

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

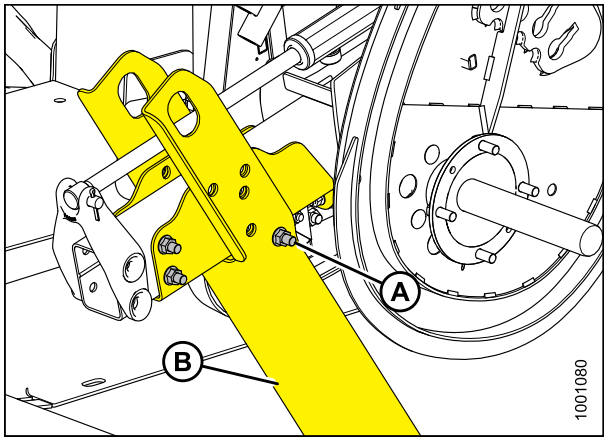

Figure 4.13: Center Reel Arm Shipping Support

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

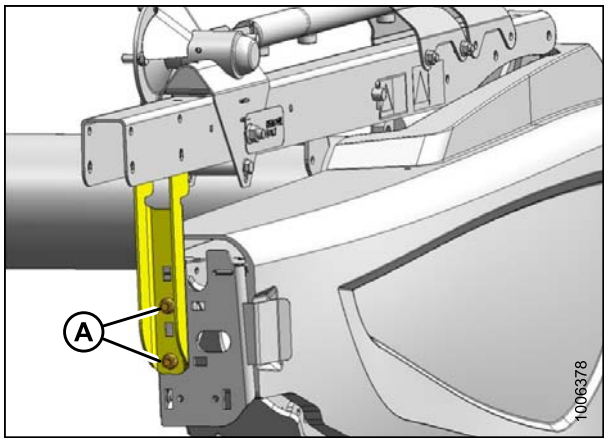

Figure 4.14: Outboard Reel Arm Supports

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

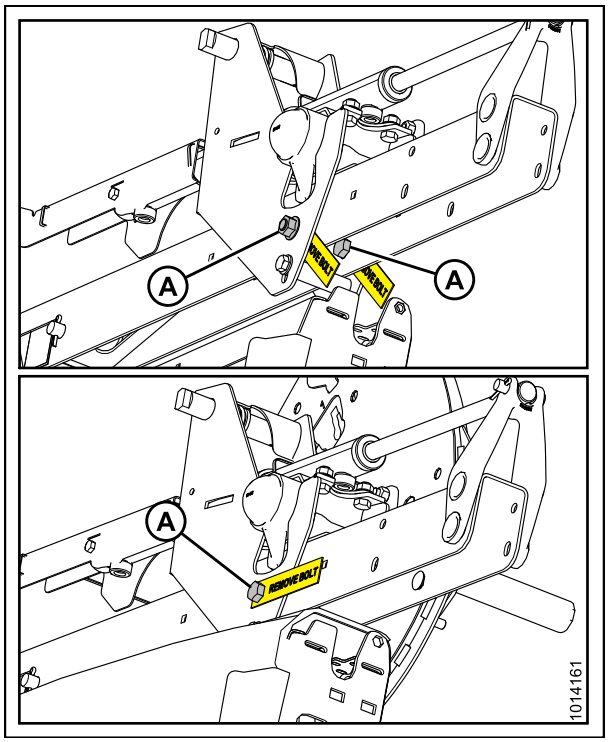

Figure 4.15: Right Reel Arm

Top Image - Single Reel
Bottom Image - Double Reel

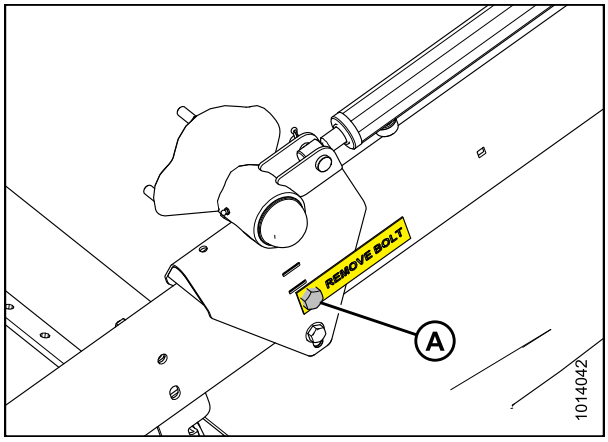

Figure 4.16: Left Reel Arm

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

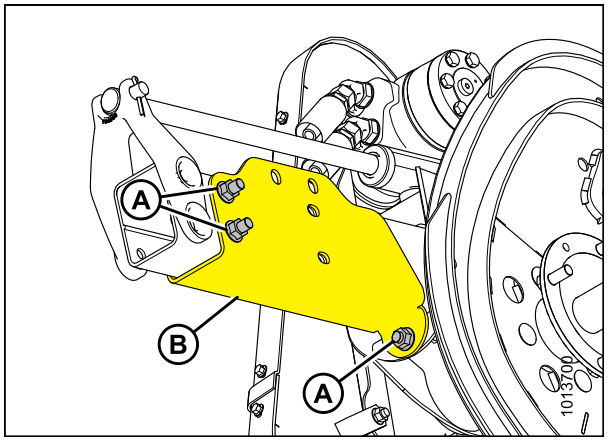

Figure 4.17: Center Reel Arm Shipping Channel (Double-Reel Header Only)

4.2 Attaching Cam Arms

To attach the reel cam arms, follow these steps:

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

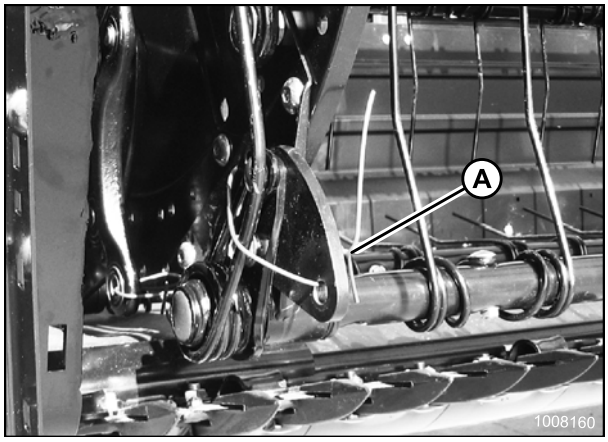

Figure 4.18: Disconnected Cam Links and Shipping Wire

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

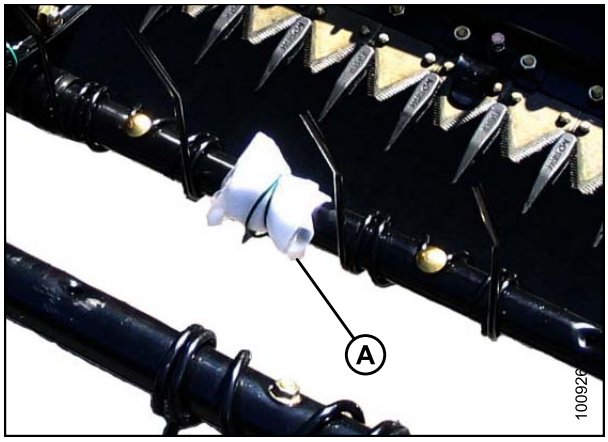

Figure 4.19: Hardware Bag Right-Hand Reel

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

   NOTE:
   Bolts are pre-coated with Loctite®, so no further locking method is required.

6. Realign link (B) and tine bar crank (A) and thread in bolt (C).
7. Repeat for remaining tine bars and torque bolts to 120 ft·lbf (165 N·m).

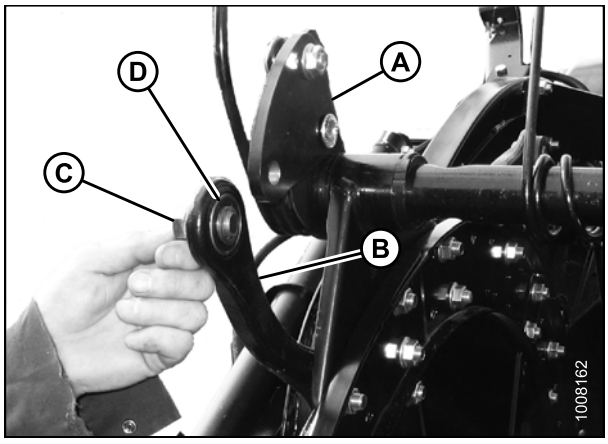

Figure 4.20: Bar Crank Attachment Holes and Link Alignment

4.3 Installing Crop Dividers

Dividers are stored on inboard side of endsheets.

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

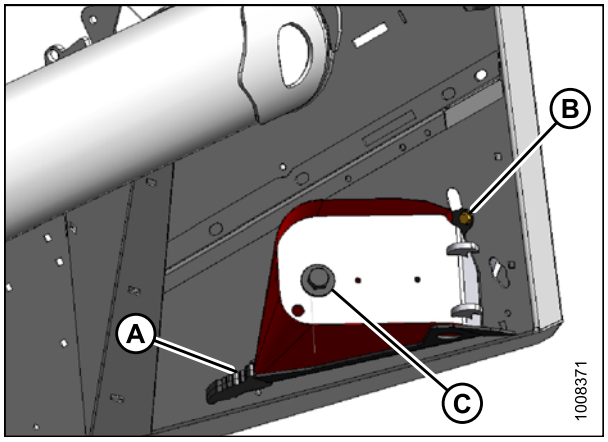

Figure 4.21: Crop Divider on Endsheet

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

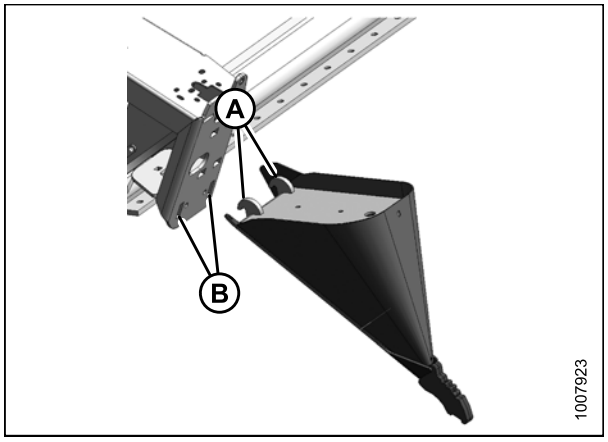

Figure 4.22: Crop Divider Lugs and Endsheet Slots

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

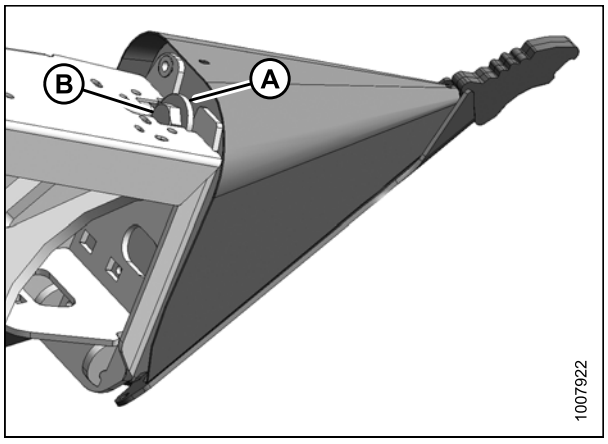

Figure 4.23: Installation Hardware

5. Check that divider does **NOT** move laterally. Adjust bolts (A) as required to tighten divider and remove lateral play when pulling at divider tip.

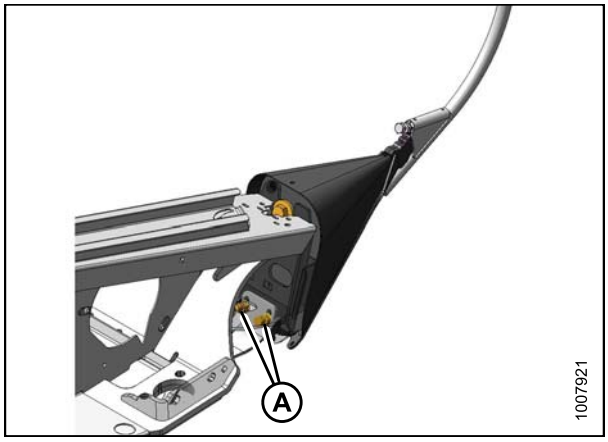

Figure 4.24: Adjustment Hardware

4.4 Positioning Transport Lights

Transport lights are located on each of the outboard reel arms.

1. Position lights (A) perpendicular to header.

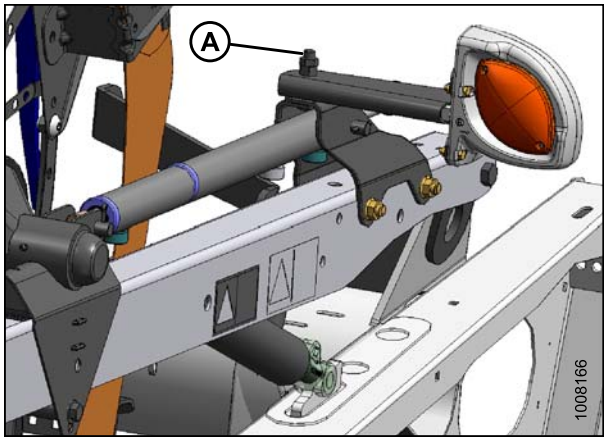

Figure 4.25: Transport Light Perpendicular to Header

4.5 Installing Options

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

4.6 Adding Tire Ballast

When using large headers on the windrower, adding fluid ballast to the rear caster tires will improve machine stability.

Machine stability is also affected by different attachments, windrower options, terrains, and driving techniques.

Ballast capability per tire is at a maximum fill of 75% or when the fluid is level with the valve stem when the stem is positioned at the 12 o'clock position. Always add an equal amount of fluid on both sides. Fluid can be added to any level up to maximum fill.

Table 4.1 Fluid per Tire

Tire Size	Fluid per Tire at 75% Fill U.S. Gal. (liters)	Total Weight of Both Tires lb (kg)[1]
7.5 x 16	10 (38)	200 (91)
10 x 16	18 (69)	380 (170)
16.5 x 16.1	41 (158)	830 (377)

Table 4.2 Recommended Ballast

Header Size	Applicable Windrower	Rec. Tire Size	Recommended Ballast			
			Level Ground		Hills	
			Per Tire U.S. Gal. (liters)	Both Tires lb (kg)[2]	Per Tire U.S. Gal. (liters)	Both Tires lb (kg)
25 ft. and less	All	7.5 x 16 10 x 16 16.5 x 16.1	0	0	0	0
30 ft. Single Reel or Double Reel (without conditioner) **35 ft. Single Reel**	All	7.5 x 16 10 x 16 16.5 x 16.1	0	0	10 (38)	200 (91)
30 ft. Double Reel (with steel fingers and conditioner) **35 ft. Double Reel** (5- or 6-bat)	All	Level ground: 10 x 16 16.5 x 16.1 Hills: 16.5 x 16.1	18 (69)	380 (170)	30 (115)	630 (288)
40 ft.	M150 M200 M155*E4* M205	16.5 x 16.1	30 (115)	630 (288)	41 (158)	830 (377)

When the recommended fluid ballast has been added, proceed to *5 Performing Predelivery Checks, page 45*.

1. Weights given are for typical calcium chloride and water mixtures. Weight is reduced by 20% if only water is used (for areas that do not require antifreeze protection).
2. If only water is used, increase volume of water by 20% (up to maximum allowable fill per tire) to compensate.

5 Performing Predelivery Checks

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

WARNING

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

IMPORTANT:
To avoid machine damage, check that no shipping dunnage has fallen into the machine.

1. Perform the final checks as listed on the **Predelivery Checklist** (yellow sheet attached to this instruction – *Predelivery Checklist, page 91*) to ensure the machine is field-ready. Refer to the following pages for detailed instructions as indicated on the Checklist. The completed Checklist should be retained either by the Operator or the Dealer.

5.1 Checking Tire Pressure: Transport and Stabilizer Wheels

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

Table 5.1 Tire Inflation Pressure

Year	Tire	Size	Pressure
2006 and earlier	Goodyear Wrangler RT/S	205/75 R15	40 psi (276 kPa)
2007 and later	Carlisle and Titan	ST205/75 R15	65 psi (448 kPa)

IMPORTANT:
Do NOT exceed maximum pressure specified on tire sidewall.

5.2 Checking Wheel Bolt Torque

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

1. Check wheel bolt torque is 80–90 ft·lbf (110–120 N·m). Refer to bolt tightening sequence illustration at right.

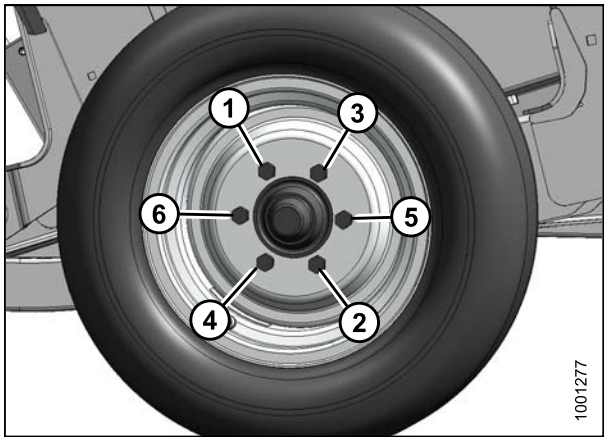

Figure 5.1: Bolt Tightening Sequence

5.3 Checking Knife Drive Box

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

1. Check position of plug (A) and breather (B) at knife drive box. Position MUST be as shown.
2. Check oil level. It should be between the lower hole (C) on the dipstick and the bottom end of the dipstick.

   NOTE:
   Check oil level with top of knife drive box horizontal.

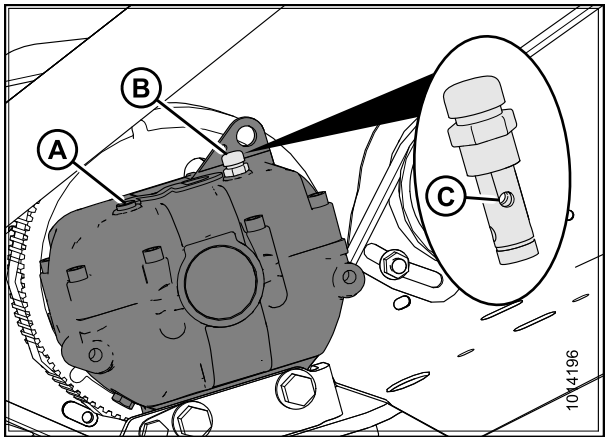

Figure 5.2: Knife Drive Box

5.4 Checking and Adjusting Knife Drive Belt Tension

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

- *5.4.1 Tensioning Non-Timed Knife Drive Belts, page 48*
- *5.4.2 Tensioning Timed Knife Drive Belts, page 48*

5.4.1 Tensioning Non-Timed Knife Drive Belts

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

1. Open the left endshield.
2. Loosen the two bolts (A) that secure the motor assembly to the header endsheet.
3. Turn adjuster bolt (B) clockwise to move the drive motor until a force of 20 lbf (89 N) deflects the belt (C) 3/4–1 in. (20–25 mm) at the mid-span.

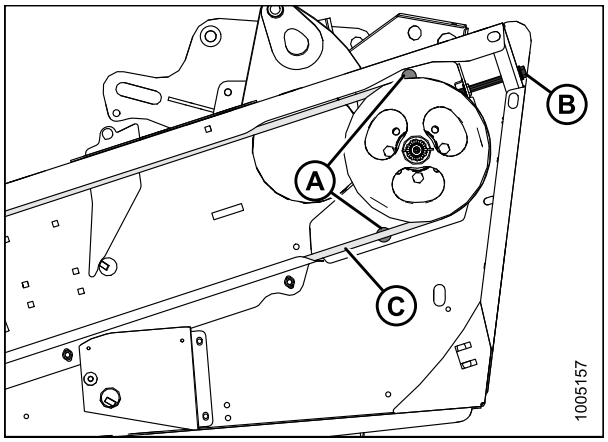

Figure 5.3: Left-Hand Shown – Right-Hand Opposite for Double-Knife Headers

4. Ensure the clearance between the belt (A) and belt guide (B) is 1/32 in. (1 mm).
5. Loosen the three bolts (C), and adjust the position of the guide (B) as required.
6. Tighten bolts (C).
7. Close the endshield.

NOTE:
Readjust the tension of a new belt after a short run-in period (about five hours).

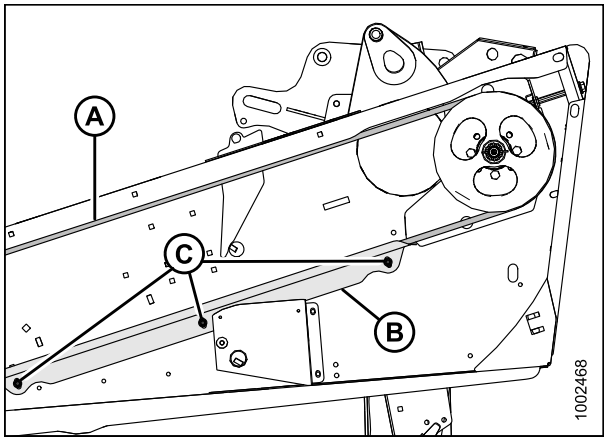

Figure 5.4: Knife Drive

5.4.2 Tensioning Timed Knife Drive Belts

This describes the tensioning procedure for the timed left and right knife drive belts. The illustrations for the right side are opposite to what is shown.

IMPORTANT:
To prolong belt and drive life, do **NOT** over-tighten belt.

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

1. Open left endshield.
2. Loosen two nuts (A) on knife drive belt idler bracket.

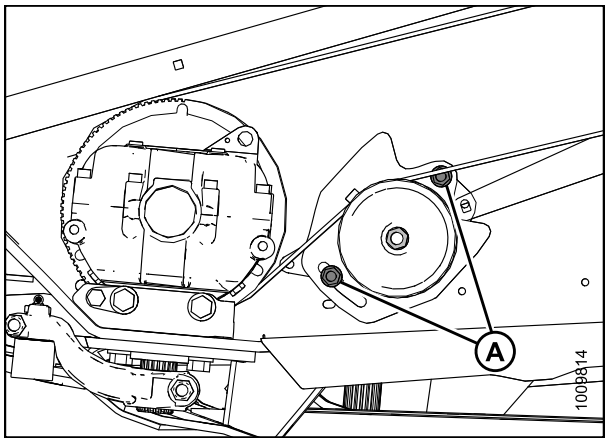

Figure 5.5: Knife Drive

3. Position pry bar (A) under the idler bracket (C), and push the bracket up until a force of 6 lb (27 N) deflects the belt 1/2 in. (13 mm) at mid-point of the upper span.

   NOTE:
   Place a piece of wood (B) under pry bar (A) to protect paint.

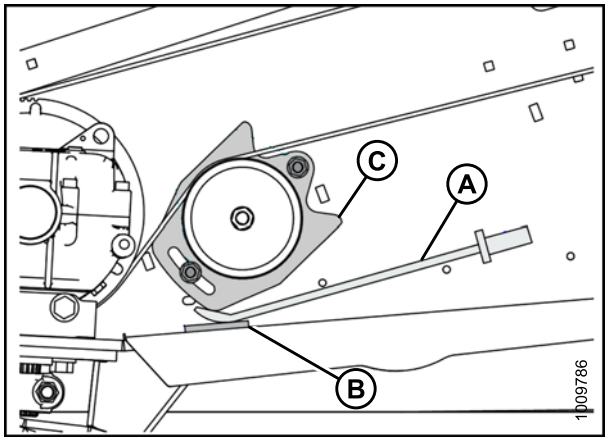

Figure 5.6: Knife Drive

4. Tighten nuts (C) to 54–59 ft·lbf (73–80 N·m) when proper belt tension is achieved.
5. Remove pry bar (A) and wood (B).

   NOTE:
   Readjust tension of a new belt after a short run-in period (about five hours).

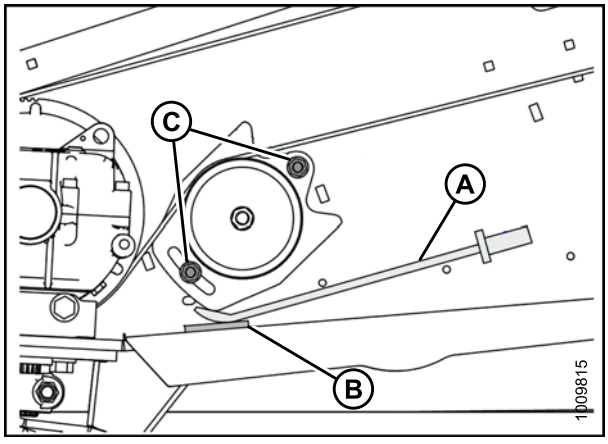

Figure 5.7: Knife Drive

6. Check that clearance (A) between belt (B) and guide (C) is 1/32–1/16 in. (0.5–1.5 mm).
7. If necessary, loosen bolts (D) and adjust guide as required. Tighten bolts.
8. Repeat procedure for opposite side of header.
9. Close endshields.

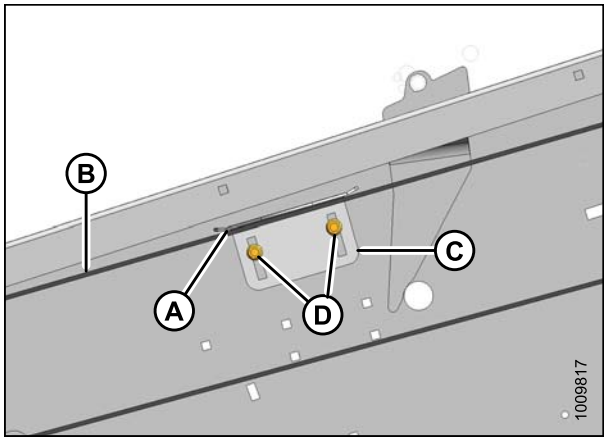

Figure 5.8: Belt Guide

5.5 Centering the Reel

If the reel is not centered between the endsheets, refer to the section appropriate for the header type:

WARNING

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

- *5.5.1 Centering the Reel: Double-Reel Headers, page 51*
- *5.5.2 Centering the Reel: Single-Reel Headers, page 52*

5.5.1 Centering the Reel: Double-Reel Headers

1. Measure clearances at locations (A) between reels and both endsheets. The clearances should be the same if the reels are centered.

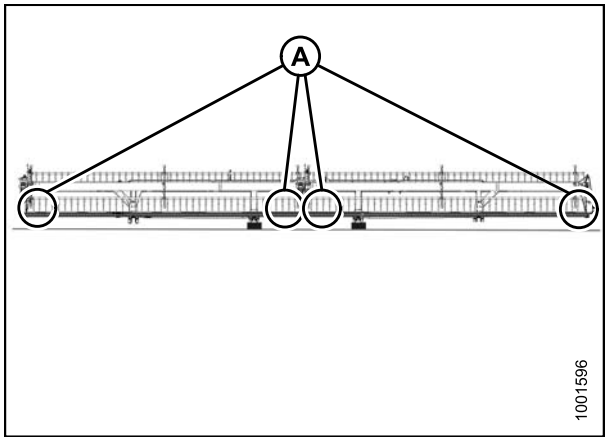

Figure 5.9: Double Reel Measurement Locations

2. Loosen bolts (A) on each of the braces (B) located on both sides of the reel support arm (C).
3. Move forward end of reel support arm (C) laterally as required to center reel.
4. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

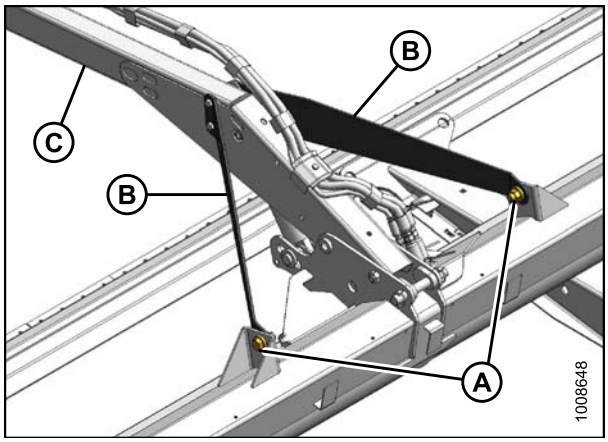

Figure 5.10: Reel Support Arm and Centering Adjustment Locations

5.5.2 Centering the Reel: Single-Reel Headers

1. Measure the clearance at locations (A) between the reel and endsheets. The clearances should be the same if the reel is centered.

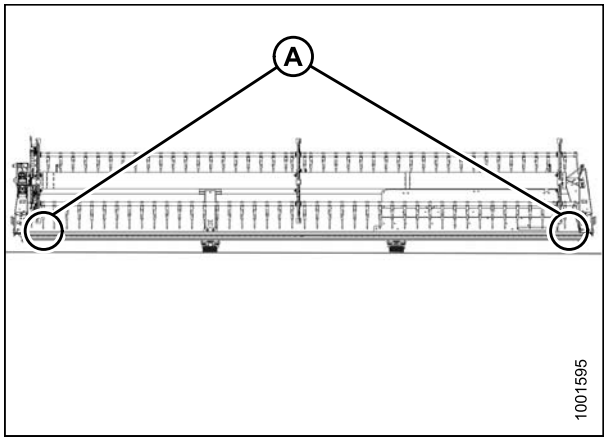

Figure 5.11: Single Reel Measurement Locations

2. Loosen bolts (A) on each of the braces (B) located on both sides of the reel support arm (C).
3. Move forward end of reel support arm (C) laterally as required to center reel.
4. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

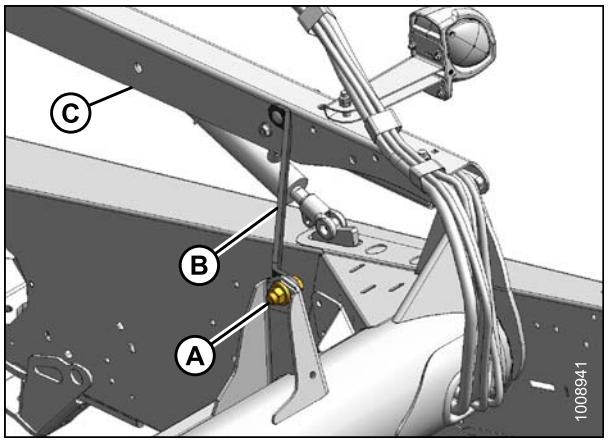

Figure 5.12: Reel Support Arm and Centering Adjustment Locations

5.6 Adjusting Draper Tension

WARNING

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

The drapers are tensioned at the factory and should NOT require adjustment. If adjustment is required, draper tension should be just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure white bar (A) is about halfway in the window.

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start engine and raise header.
3. Stop engine, remove key, and engage header safety props.

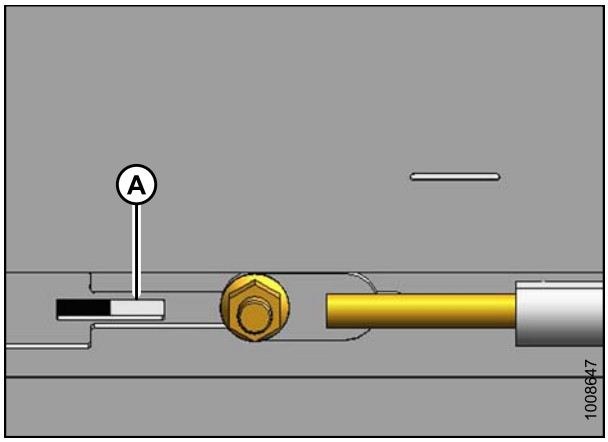

Figure 5.13: Tension Adjuster: Left-Hand Shown – Right-Hand Opposite

4. Check that draper guide (rubber track on underside of draper) is properly engaged in groove of drive roller.

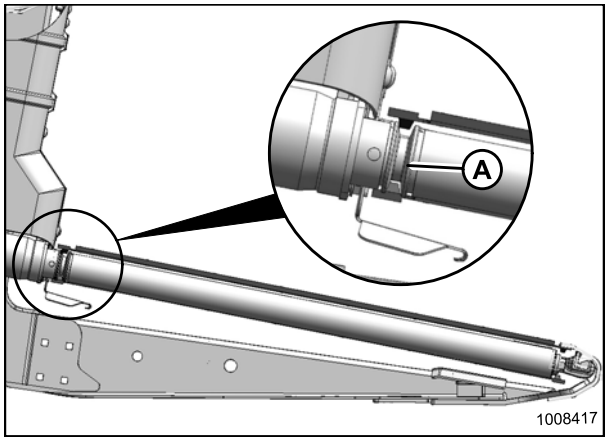

Figure 5.14: Drive Roller

5. Check that idler roller is between the guides.

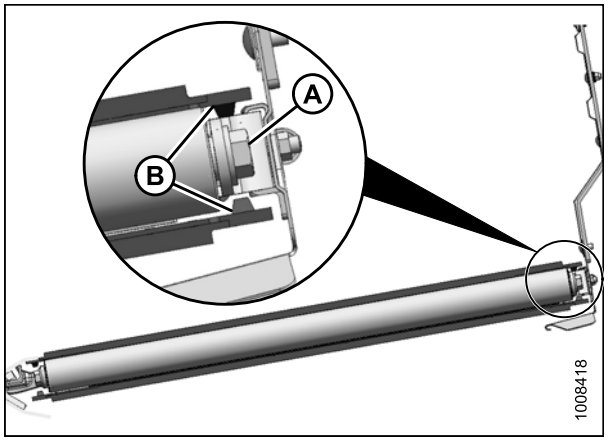

Figure 5.15: Idler Roller

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

6. Turn adjuster bolt (A) counterclockwise to loosen. The white indicator bar (B) will move outboard in direction of arrow (D) to indicate that draper is loosening. Loosen until bar is about halfway in window.
7. Turn adjuster bolt (A) clockwise to tighten. The white indicator bar (B) will move inboard in direction of arrow (E) to indicate that draper is tightening. Tighten until bar is about halfway in window.

IMPORTANT:

- To avoid premature failure of draper, draper rollers, and/or tightener components, do not operate with tension set so that white bar is not visible.
- To prevent the draper from scooping dirt, ensure draper is tight enough that it does not sag below point where cutterbar contacts the ground.

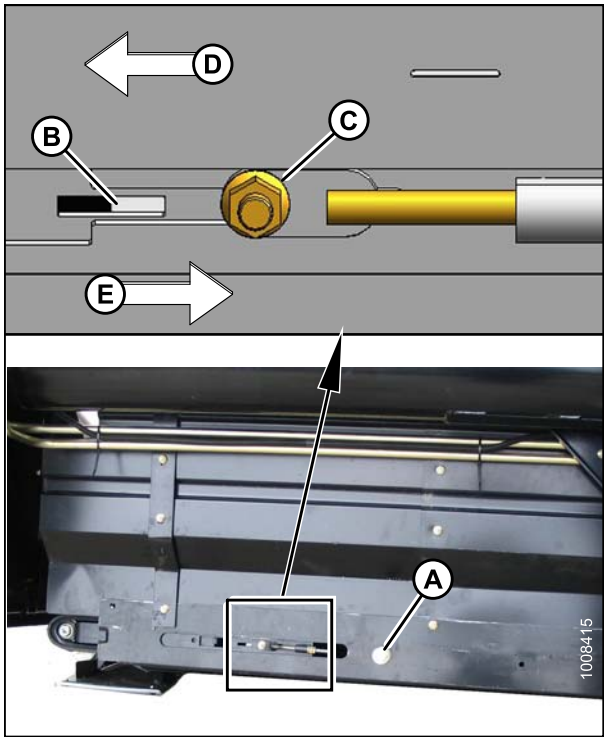

Figure 5.16: Tension Adjuster: Left-Hand Shown – Right-Hand Opposite

5.7 Checking and Adjusting Draper Seal

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

IMPORTANT:
With a new header or newly installed draper, set the gap between the draper (A) and cutterbar (B) to 1/8 in. (3 mm). To prevent material from entering the drapers and cutterbar, you may need to decrease the deck clearance to 0–1/32 in. (0–1 mm) after an initial break-in period of approximately 50 hours.

1. Check deck height. Draper (A) should run just below cutterbar (B) with a gap of 1/8 in. (3 mm) between the top of deck front track and cutterbar.
   If deck height is acceptable, skip the remaining steps and proceed to *5.8 Checking and Adjusting Skid Shoe Settings, page 57*.

   If deck height is NOT acceptable, adjust seal as described in the following steps:

   NOTE:
   Take measurement at deck supports (A) with the header in working position and decks slid fully forward. There are between two and five supports per deck depending on header size.

2. Loosen tension on drapers. For instructions, refer to *5.6 Adjusting Draper Tension, page 53*.

3. Lift draper (A) up at front edge past cutterbar (B).

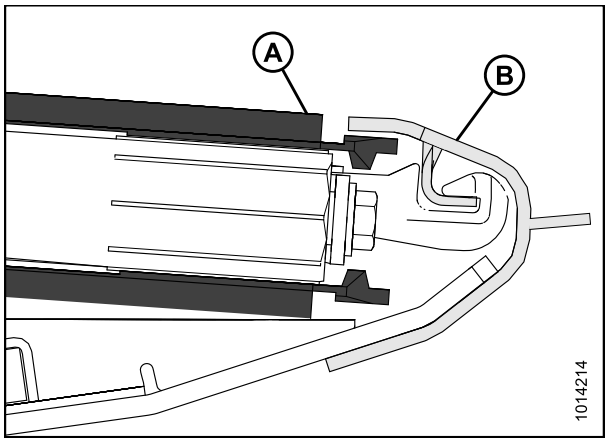

Figure 5.17: Draper/Cutterbar Gap

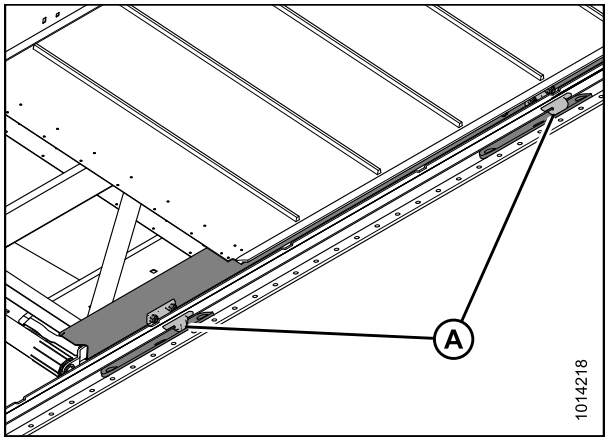

Figure 5.18: Draper Deck Supports

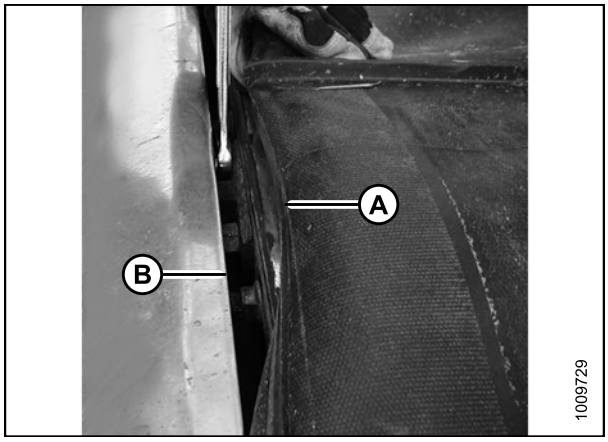

Figure 5.19: Draper Adjustment

4. Loosen two lock nuts (A) only one-half-turn on deck support (B).
5. Tap deck (C) to lower deck relative to supports and achieve the recommended setting. Tap support (B) using a punch to raise deck relative to supports.
6. Tighten deck support hardware (A).
7. Tension drapers. Refer to *5.6 Adjusting Draper Tension, page 53*.

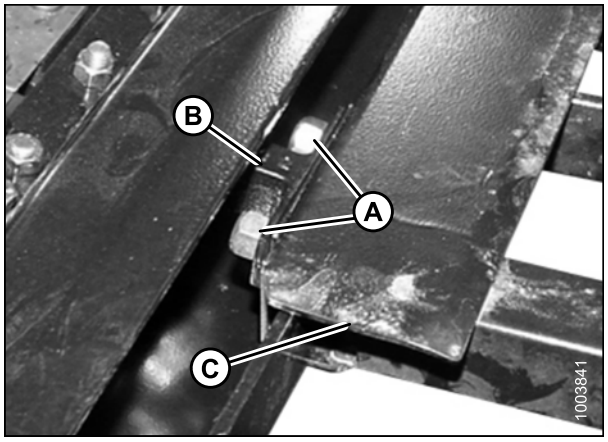

Figure 5.20: Draper Deck Supports (Draper Removed)

5.8 Checking and Adjusting Skid Shoe Settings

If optional skid shoes are installed, check and adjust if necessary.

WARNING

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

DANGER

Engage header safety props and reel props before working under header or reel.

1. Note the adjustment hole positions on the lugs (A) on each skid shoe. They should be the same.
2. If necessary, adjust skid shoe as follows:
   a. Remove lynch pin (B).
   b. Hold shoe and remove pin (C) by disengaging frame and then pulling away from shoe.
   c. Raise or lower skid shoe to desired position using holes in support as a guide.
   d. Reinsert pin (C), engage in frame, and secure with lynch pin (B).
   e. Check that all skid shoes are adjusted to the same position.

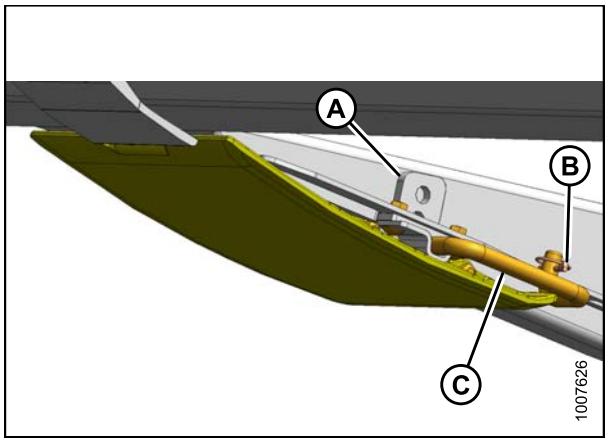

Figure 5.21: Inner Skid Shoe

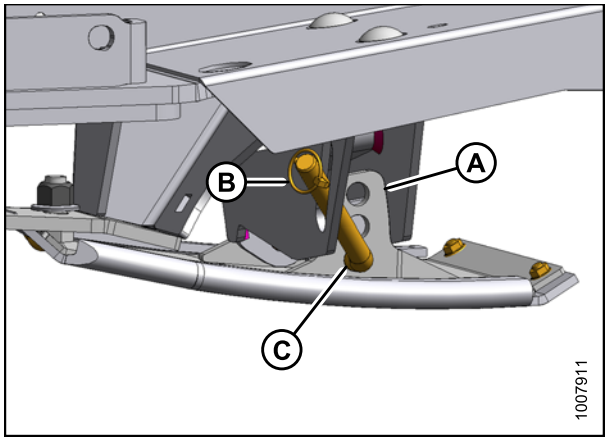

Figure 5.22: Outer Skid Shoe

5.9 Levelling the Header

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

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

NOTE:
The float springs are NOT used to level the header.

5.10 Measuring and Adjusting Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar during operation. The clearance is adjusted at the factory, but adjustments may be necessary before the header is put into operation.

The finger to guard/cutterbar clearances with reels fully lowered are shown in Table *5.2 Finger to Guard/Cutterbar Clearance, page 59*.

Table 5.2 Finger to Guard/Cutterbar Clearance

Header Width	'X' +/- 1/8 in. (3 mm) at Reel Ends	
	Single Reel	Double Reel
15 ft.	3/4 in. (20 mm)	–
20 ft.		
25 ft.	1 in. (25 mm)	
30 ft.	1-3/4 in. (45 mm)	3/4 in. (20 mm)
35 ft.	2-3/8 in. (60 mm)	
40 ft.	–	

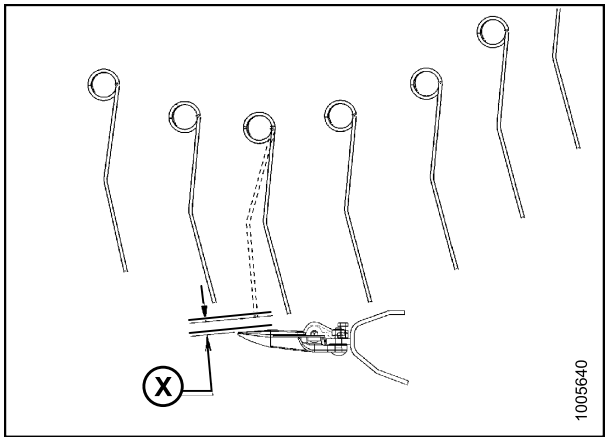

Figure 5.23: Clearance with Reel Fully Lowered

5.10.1 Measuring Reel Clearance

DANGER

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

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

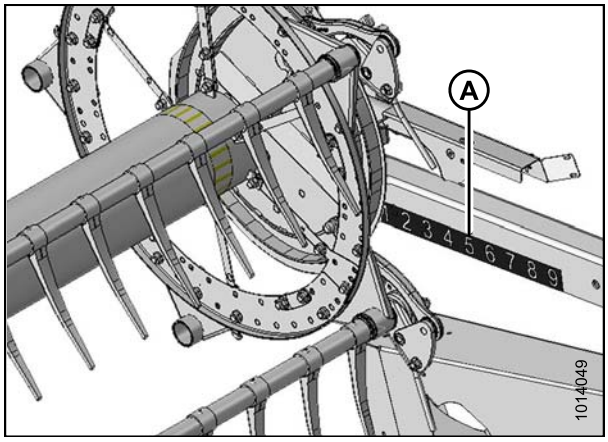

Figure 5.24: Fore-Aft Position

5. Measure the clearance (X) between points (B) and (C) at the ends of each reel (A).

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

6. Check all possible points of contact between points (B) and (C). Depending on the reel fore-aft position, minimum clearance can result at the guard tine, hold-down, or cutterbar.

7. Adjust the reel if necessary. Refer to *5.10.2 Adjusting Reel Clearance, page 61*.

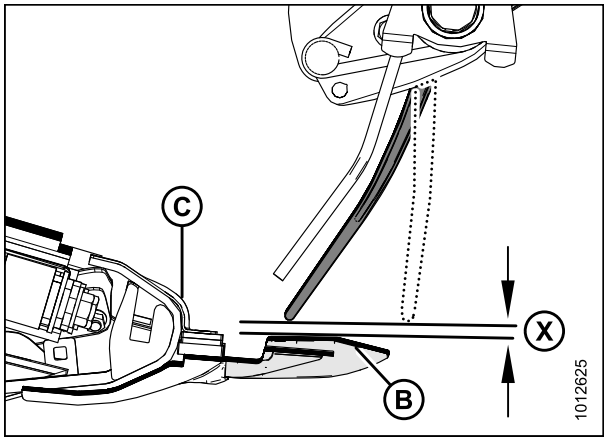

Figure 5.25: Clearance

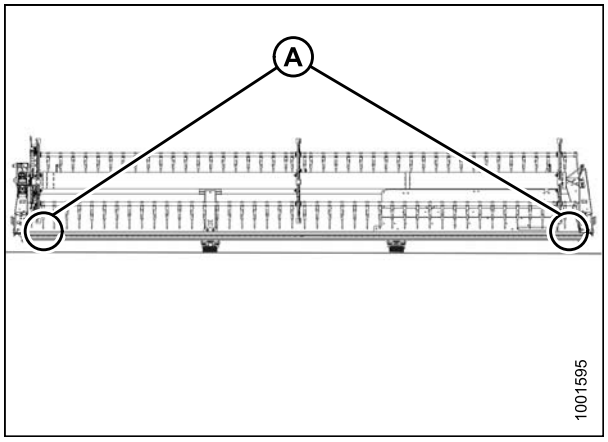

Figure 5.26: Single Reel Measurement Locations (Two Places)

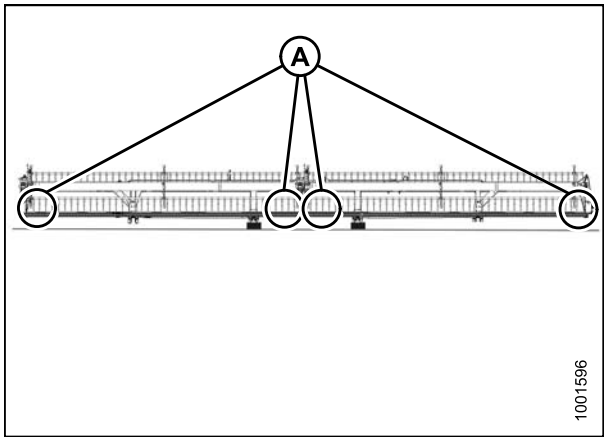

Figure 5.27: Double Reel Measurement Locations (Four Places)

5.10.2 Adjusting Reel Clearance

DANGER

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

1. Adjust outboard reel arm lift cylinders to set clearance at outboard ends of reel as follows:
   a. Loosen bolt (A).
   b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
   c. Tighten bolt (A).
   d. Repeat at opposite side.

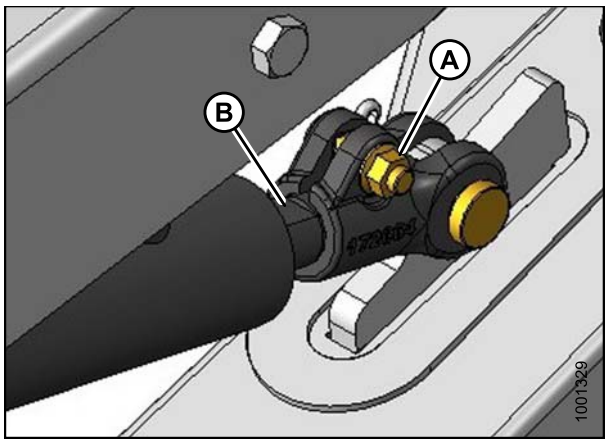

Figure 5.28: Outside Reel Arm

2. **For Double Reel Only:** Adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels as follows:

   NOTE:
   Instructions apply to double-reel headers only and are performed from the underside of the arm.

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

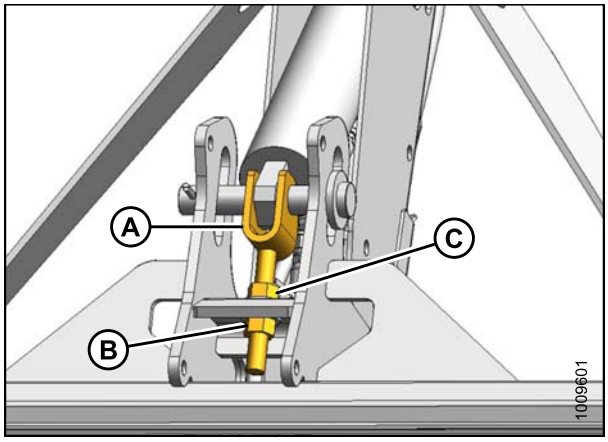

Figure 5.29: Looking Up at Arm Underside

5.11 Checking and Adjusting Endshields

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

1. Check gap (X) between front end of shields and header frame and compare to the values in Table *5.3 Endshield Gap at Various Temperatures, page 62*.

Table 5.3 Endshield Gap at Various Temperatures

Temperature in Degrees °F (°C)	Gap (X) in Inches (mm)
25 (–4)	1–1/10 (28)
45 (7)	1 (24)
65 (18)	13/16 (20)
85 (29)	5/8 (16)
105 (41)	1/2 (12)
125 (52)	5/16 (8)
145 (63)	3/16 (4)
165 (89)	0

NOTE:
If the gap is correct, skip to the next procedure.

If the gap is incorrect, follow Step *2, page 62* to Step *12, page 63* to adjust.

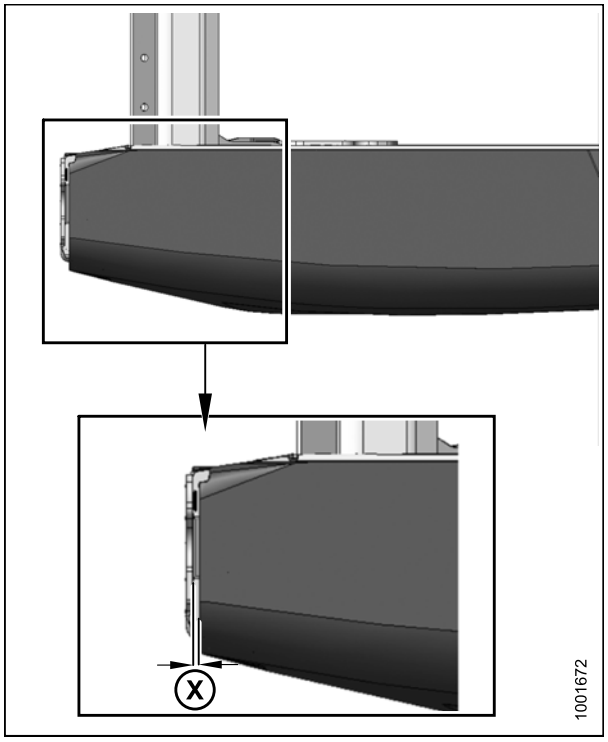

Figure 5.30: Gap Between Endshield and Header Frame

Opening the endshield:

2. Remove lynch pin (A) and tool (B) from pin (C) at top rear of endshield.

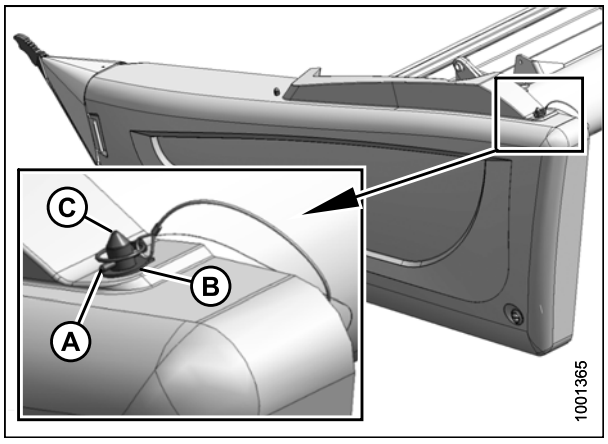

Figure 5.31: Left-Hand Endshield

3. Use tool (B) to unlock latch (A) at lower rear corner of endshield.
4. Lift shield at aft end to clear pin.
5. Swing shield out and away from header while maintaining forward pressure to prevent shield from slipping out of tab (C) at front of endsheet.

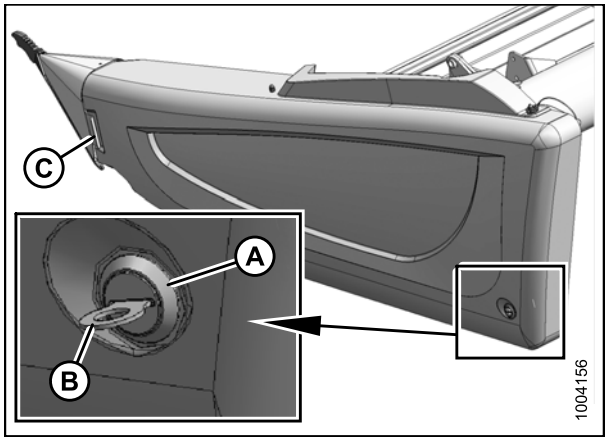

Figure 5.32: Tool to Unlock Endshield

Adjusting the endshield gap:

6. Loosen nut (A) on pin (B) from inside endsheet.
7. Close endshield and adjust position to achieve the desired gap between the front end of shield and header frame in accordance with Table *5.3 Endshield Gap at Various Temperatures, page 62*.
8. Open endshield and tighten nut (A).
9. Check for a snug fit between top of shield and header frame, and for full engagement of endshield on pin (B).
10. If necessary, loosen bolts on catch (C) and adjust catch as required to reposition shield.
11. Tighten bolts on catch (C).
12. Close endshield.

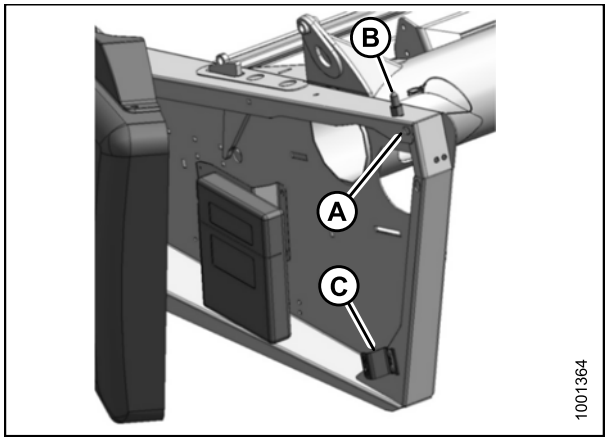

Figure 5.33: Endshield Gap

5.12 Lubricating the Header

Table 5.4 Recommended Lubricant

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

5.12.1 Greasing Procedure

Greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals are provided on the header.

DANGER

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

1. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting (except where noted).
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Also clean lubricant passageway. Replace fitting if necessary.
6. Use clean, high-temperature, extreme-pressure grease only.

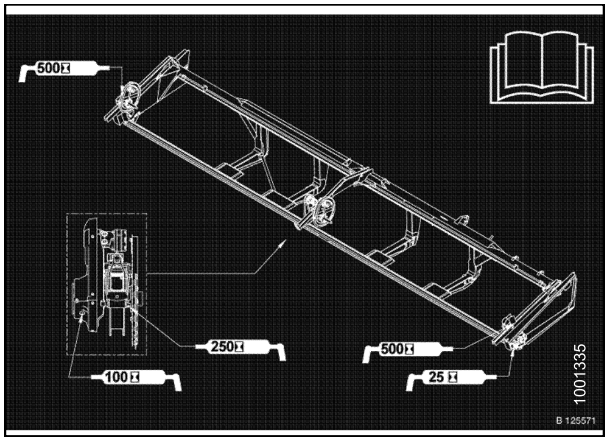

Figure 5.34: Single-Knife Header Master Grease Point Decal

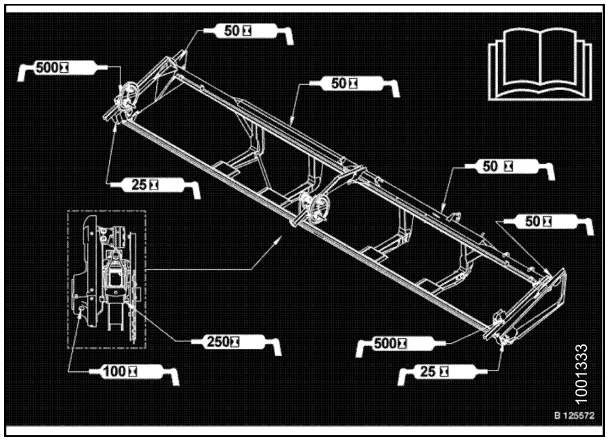

Figure 5.35: Double-Knife Header Master Grease Point Decal

5.12.2 Lubrication Points

NOTE:

- To prevent binding and/or excessive wear caused by knife pressing on guards, do **NOT** over-grease the knifehead (A).
- Only 1–2 pumps with a mechanical grease gun is required (do **NOT** use an electric grease gun).
- If more than 6–8 pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead.

IMPORTANT:
The U-joint has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult, or if U-joint stops taking grease. **OVER-GREASING WILL DAMAGE THE U-JOINT.** Six to eight pumps is sufficient at first grease (factory).

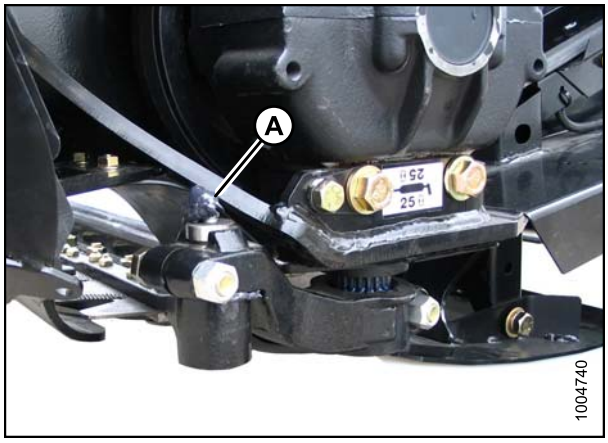

Figure 5.36: Knifehead

A - Knifehead (Single Knife - 1 Place) (Double Knife - 2 Places)

IMPORTANT:
Over-greasing can cause the knife to bend and make contact with the guards closest to the knifehead. Check for signs of excessive heating on first few guards after greasing. If required, relieve some pressure by pressing the check-ball in grease fitting.

Reel Shaft Bearings

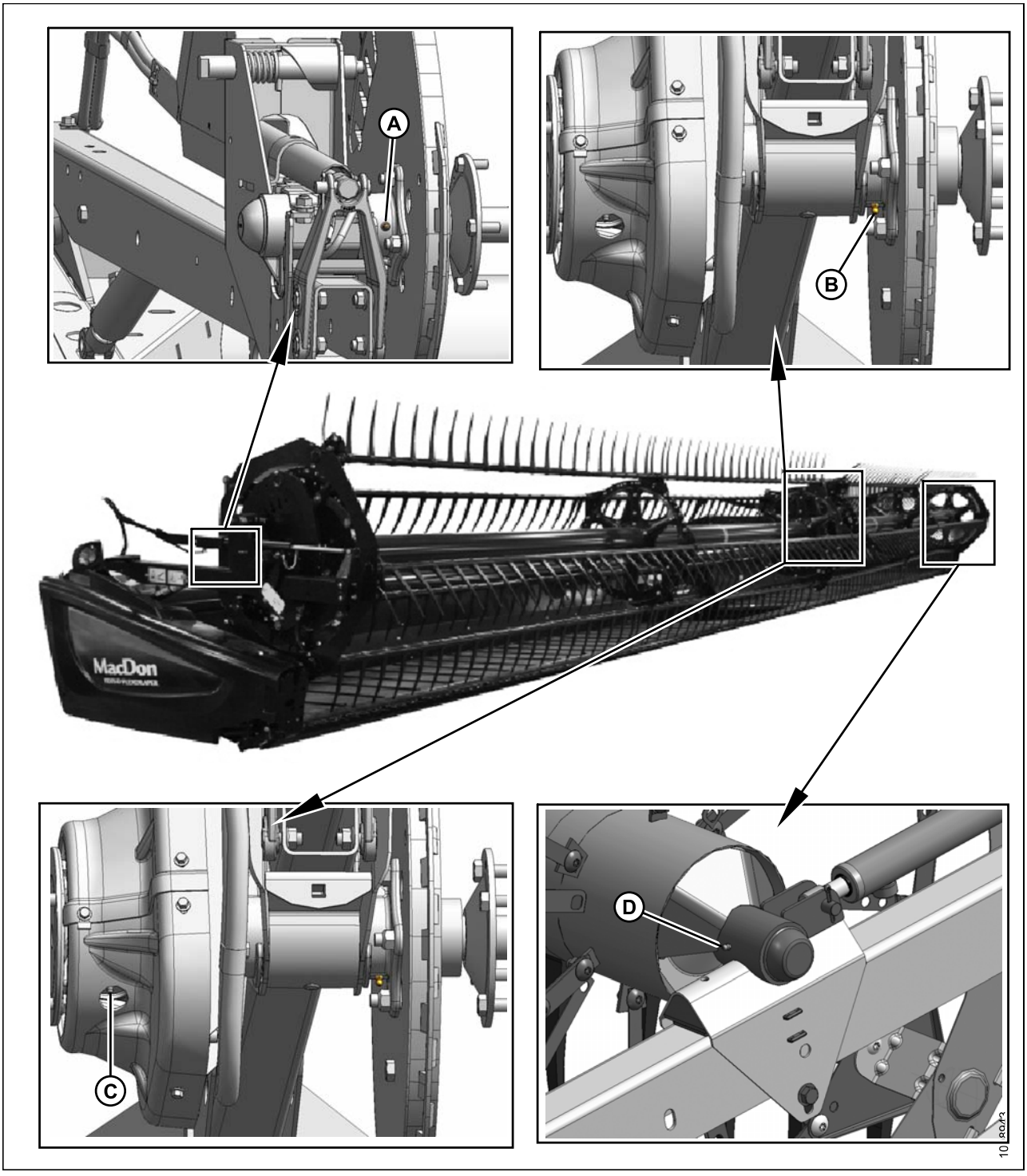

Figure 5.37: Lubrication Points

A - Reel Shaft Right-Hand Bearing (1 Place)
B - Reel Center Bearing (1 Place) (Double Reel Only)
C - Reel Universal (1 Place) (Double Reel Only)
D - Reel Shaft Left-Hand Bearing (1 Place)

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

5.13 Checking Manuals

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

1. Open the left-hand endshield and remove the cable tie on the manual case.

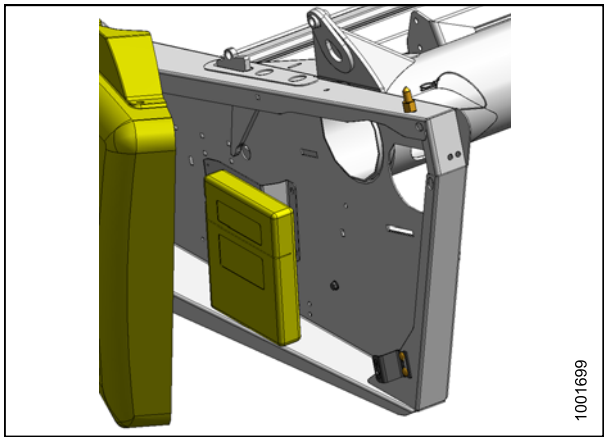

Figure 5.38: Manual Case

2. Confirm that the case contains the following manuals:
   - D65 Draper Header for Self-Propelled Windrowers Operator's Manual
   - D65 Draper Header for Self-Propelled Windrowers Quick Card
   - D65 Draper Header Parts Catalog
3. Close case and endshield.

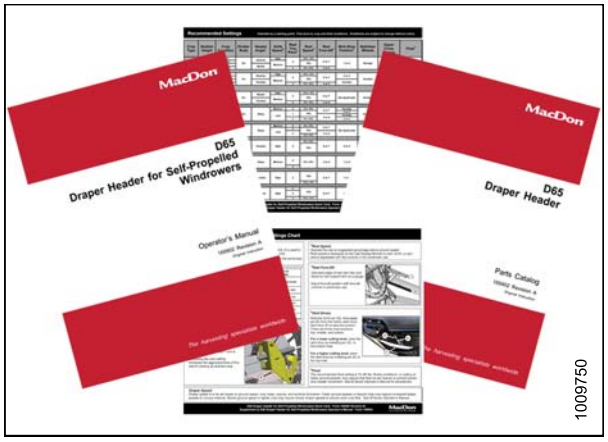

Figure 5.39: D65 Manuals

6 Running Up the Header

To run up the header, follow these steps:

CAUTION

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

CAUTION

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

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

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

2. Run header for an additional 10 minutes at operating speed, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts.
3. Shut down the windrower and remove key.
4. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction) *Predelivery Checklist, page 91*.

7 Performing Post Run-Up Adjustments

Perform post run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction *Predelivery Checklist, page 91*) to ensure machine is field-ready.

WARNING

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

Some adjustments may be necessary after the run-up. Refer to the following:

- *7.1 Adjusting Knife, page 71*

7.1 Adjusting Knife

WARNING

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

1. Stop engine and remove the key.
2. Check guards for signs of heating during run-up due to insufficient clearance between guard and knife.
3. If heating is evident, check gap between knifehead (A) and pitman arm (B). A business card should slide easily through the gap. If not, adjust gap by loosening bolt and tapping knifehead (A) with a hammer. Retighten bolt.

   IMPORTANT:
   Over-greasing can cause the knife to bend and make contact with the guards closest to the knifehead. Check for signs of excessive heating on first few guards after greasing. If required, relieve some pressure by pressing the check-ball in grease fitting.

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

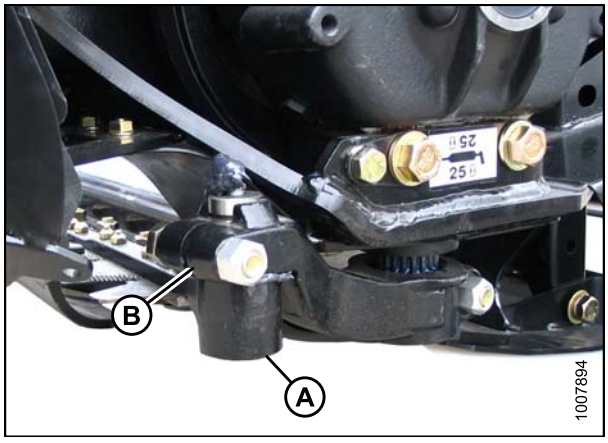

Figure 7.1: Knifehead and Pitman Arm

Figure 7.2: Guard Tips – Upward Adjustment

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

Figure 7.3: Guard Tips – Downward Adjustment

8 Reference

8.1 Torque Specifications

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

- Tighten all bolts to the torque values specified in the charts (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade of bolt.
- Use the 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.

8.1.1 SAE Bolt Torque Specifications

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

Table 8.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

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

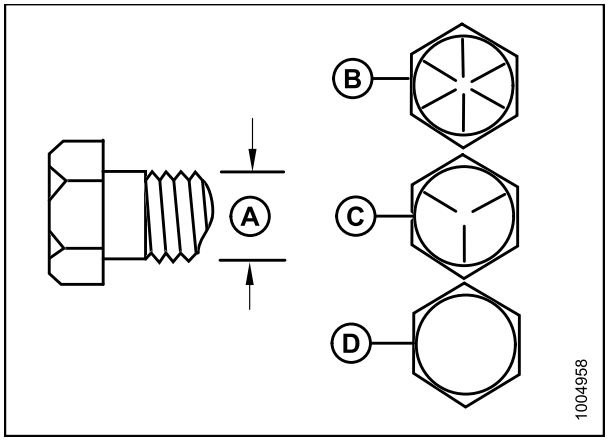

Figure 8.1: Bolt Grades

A - Nominal Size
B - SAE-8
C - SAE-5
D - SAE-2

Table 8.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

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

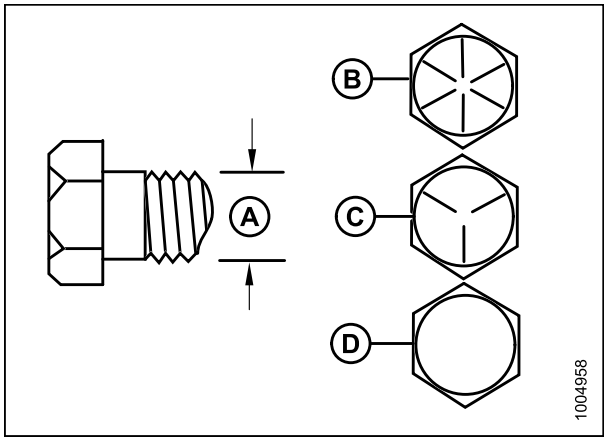

Figure 8.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 8.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

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

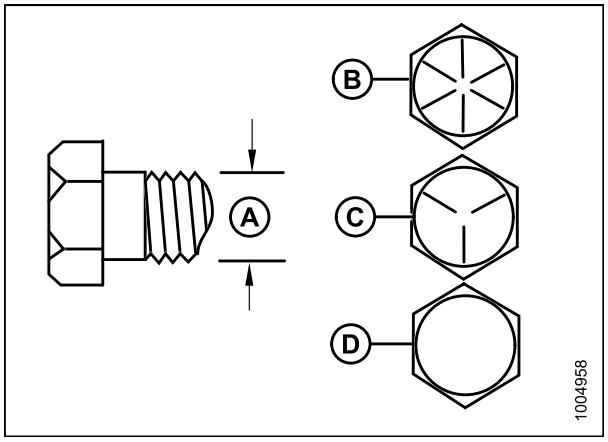

Figure 8.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 8.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

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

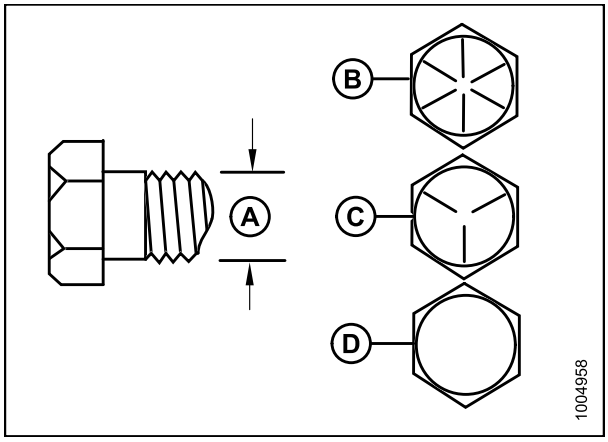

Figure 8.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

8.1.2 Metric Bolt Specifications

Table 8.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

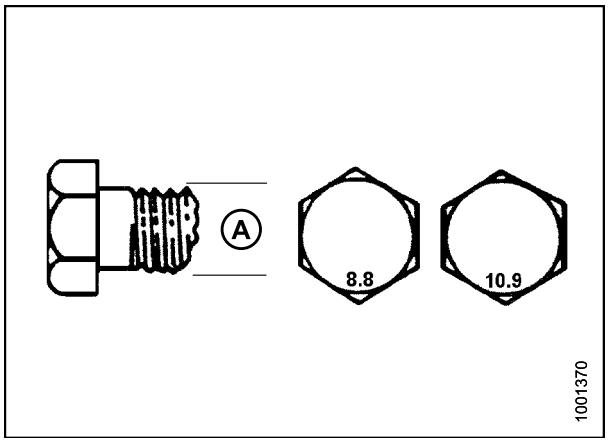

Figure 8.5: Bolt Grades

Table 8.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

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

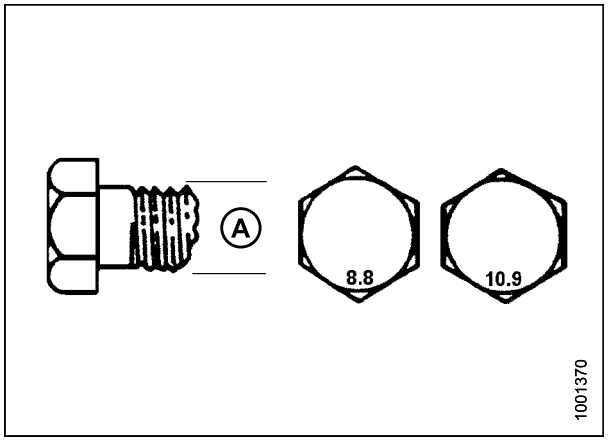

Figure 8.6: Bolt Grades

Table 8.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

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

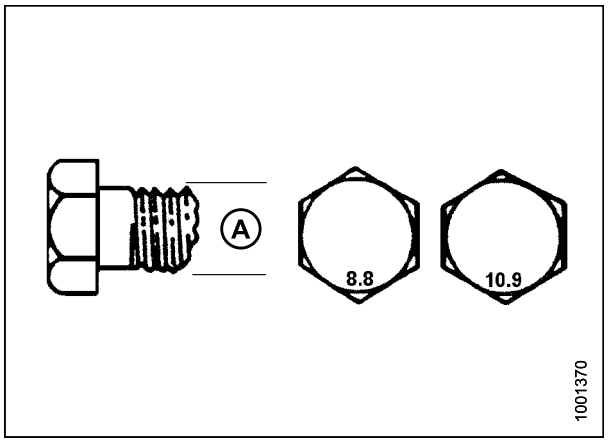

Figure 8.7: Bolt Grades

Table 8.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

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

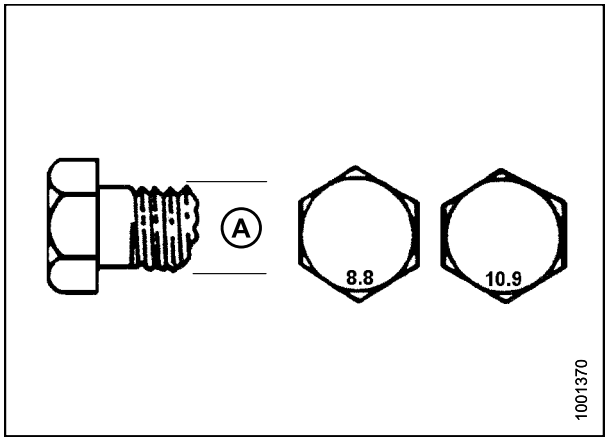

Figure 8.8: Bolt Grades

8.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.9 Metric Bolt Bolting into Cast Aluminum

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

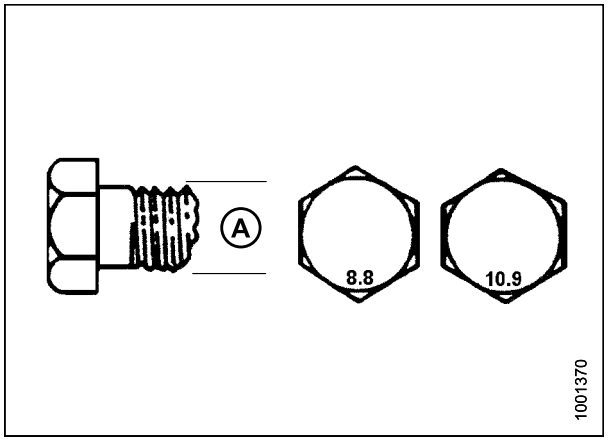

Figure 8.9: Bolt Grades

8.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between the flared surfaces.
3. Torque the fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table *8.10 Flare-Type Hydraulic Tube Fittings, page 79*.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on the fitting body (D) and tighten nut (E) with the other wrench to the torque shown.
5. Assess the final condition of the connection.

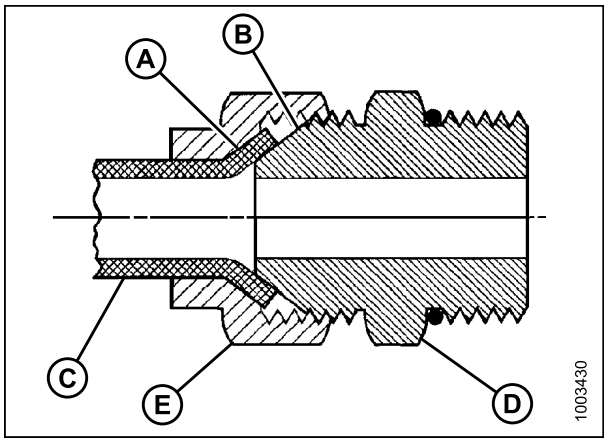

Figure 8.10: Hydraulic Fitting

Table 8.10 Flare-Type Hydraulic Tube Fittings

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

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

8.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

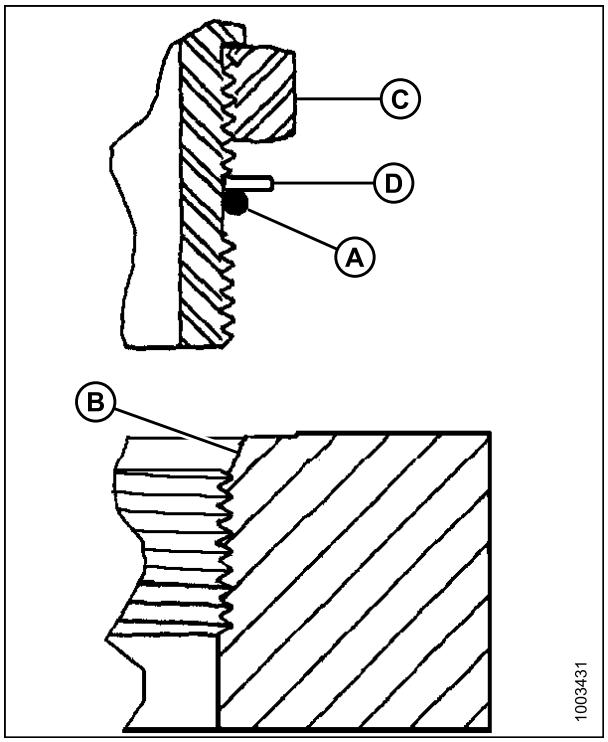

Figure 8.11: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact the 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 the other on lock nut (C).
8. Check the final condition of the fitting.

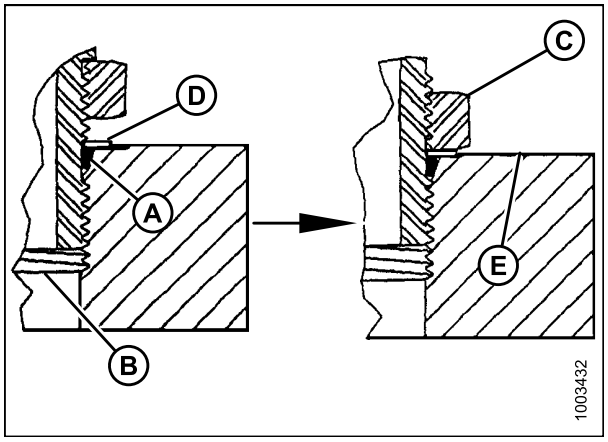

Figure 8.12: Hydraulic Fitting

Table 8.11 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

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

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

8.1.6 O-Ring Boss (ORB) 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 the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to the values in Table *8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable), page 82*.
6. Check the final condition of the fitting.

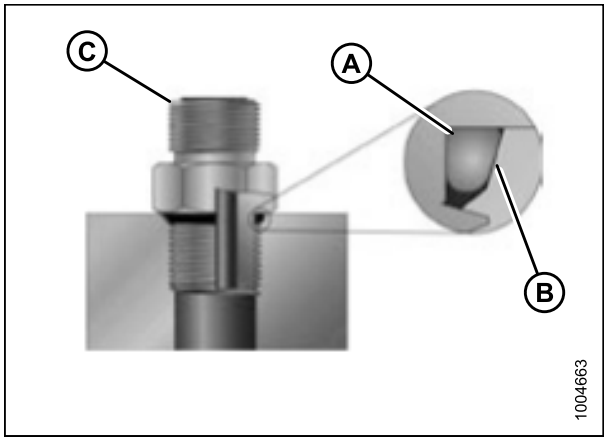

Figure 8.13: Hydraulic Fitting

Table 8.12 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

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

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

8.1.7 O-Ring Face Seal (ORFS) Hydraulic Fittings

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

Figure 8.14: Hydraulic Fitting

2. Apply hydraulic system oil to the O-ring (B).
3. Align the tube or hose assembly so that the flat face of the 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 the values in Table *8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 84*.

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

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

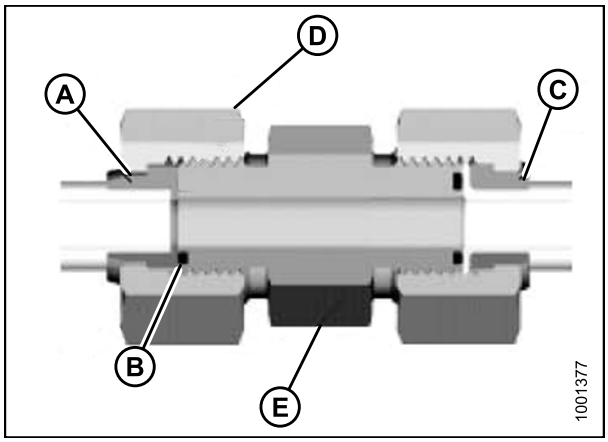

Figure 8.15: Hydraulic Fitting

Table 8.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[6]	
			ft·lbf	N·m
-3	Note[7]	3/16	–	–
-4	9/16	1/4	18–21	25–28
-5	Note[7]	5/16	–	–
-6	11/16	3/8	29–32	40–44
-8	13/16	1/2	41–45	55–61
-10	1	5/8	59–65	80–88
-12	1-3/16	3/4	85–94	115–127
-14	Note[7]	7/8	–	–
-16	1-7/16	1	111–122	150–165
-20	1-11/16	1-1/4	151–167	205–226
-24	1–2	1-1/2	232–256	315–347
-32	2-1/2	2	376–414	510–561

6. Torque values and angles shown are based on lubricated connection as in reassembly.
7. O-ring face seal type end not defined for this tube size.

8.2 Lifting Equipment Requirements

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

CAUTION

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

CAUTION

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

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

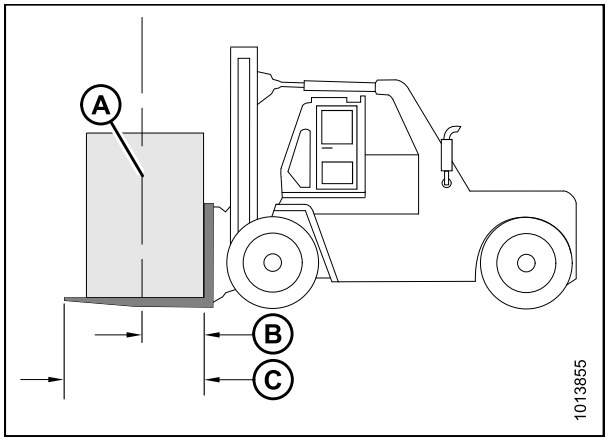

Figure 8.16: Minimum Lifting Capacity

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

Table 8.14 Lifting Vehicle Requirements

Lifting Vehicle	Header Size	
	15–25 foot	30–40 foot
Minimum Capacity	5000 lb (2270 kg) at 48 in. (1220 mm) from back end of forks.	7000 lb (3178 kg) at 48 in. (1220 mm) from back end of forks.
Minimum Fork Length	78 in. (1981 mm)	

Table 8.15 Lifting Chain Requirements

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

8.3 Conversion Chart

Table 8.16 Conversion Chart

Quantity	Inch-Pound Units		Factor	SI Units (Metric)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	Acres	acres	x 0.4047 =	Hectares	ha
Flow	US gallons per minute	gpm	x 3.7854 =	Liters per minute	L/min
Force	Pounds force	lbf	x 4.4482 =	Newtons	N
Length	Inch	in.	x 25.4 =	Millimeters	mm
	Foot	ft.	x 0.305 =	Meters	m
Power	Horsepower	hp	x 0.7457 =	Kilowatts	kW
Pressure	Pounds per square inch	psi	x 6.8948 =	Kilopascals	kPa
			x .00689 =	Megapascals	MPa
			÷ 14.5038 =	Bar (Non-SI)	bar
Torque	Pound feet or foot pounds	ft·lbf	x 1.3558 =	Newton meters	N·m
	Pound inches or inch pounds	in·lbf	x 0.1129 =	Newton meters	N·m
Temperature	Degrees Fahrenheit	˚F	(˚F-32) x 0.56 =	Celsius	˚C
Velocity	Feet per minute	ft/min	x 0.3048 =	Meters per minute	m/min
	Feet per second	ft/s	x 0.3048 =	Meters per second	m/s
	Miles per hour	mph	x 1.6063 =	Kilometres per hour	km/h
Volume	US gallons	US gal	x 3.7854 =	Liters	L
	Ounces	oz.	x 29.5735 =	Milliliters	ml
	Cubic inches	$in.^3$	x 16.3871 =	Cubic centimeters	cm^3 or cc
Weight	Pounds	lbs	x 0.4536 =	Kilograms	kg

8.4 Definitions

The following terms and acronyms may be used in this manual.

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 the Operator and cab facing in the direction of travel
CDM	Cab display module on a self-propelled windrower
Center-link	A hydraulic cylinder link between the header and the machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
DEF	Diesel exhaust fluid; also called AdBlue in Europe, and AUS 32 in Australia
DEF supply module	may also be referred to as DEF pump or DEF dosing unit
DM	Dosing module; may also be referred to as DEF injector, DEF dosing injector, or DEF dosing valve
D-Series header	MacDon D50, D60, and D65 rigid draper headers
DK	Double knife
DKD	Double-knife drive
DDD	Double-draper drive
DR	Double reel
DWA	Double Windrow Attachment
ECU	Electronic control unit
Engine-forward	Windrower operation with the Operator and engine facing in the direction of travel
Export header	Header configuration typical outside North America
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose
FFFT	Flats from finger tight
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible
Hex key	A hex key or Allen key (also known by various other synonyms) is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive)
HDS	Hydraulic deck shift
hp	Horsepower
ISC	Intermediate Speed Control

Term	Definition
JIC	Joint Industrial Council: A standards body that developed the standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
n/a	Not applicable
Nut	An internally threaded fastener that is designed to be paired with a bolt
N-DETENT	The slot opposite the NEUTRAL position on operator's console
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
ORB	O-ring boss: A style of fitting commonly used in port opening 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
rpm	Revolutions per minute
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts
SDD	Single-draper drive
Self-Propelled (SP) Windrower	Self-propelled machine consisting of a power unit with a header
SK	Single knife
SKD	Single-knife drive
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
SR	Single reel
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lbs (3400 kg)
Timed knife drive	Synchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb) or Newtons (N)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft·lbf) or Newton-meters (N·m)
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw

Term	Definition
ULSD	Ultra low sulphur diesel
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism
Windrower	Power unit of a self-propelled header
WCM	Windrower control module

Predelivery Checklist

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

CAUTION

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

Header Serial Number: _____

Table 1 D65 Predelivery Checklist – North America

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	*8.1 Torque Specifications, page 73*
	Check tire pressure (Transport/Stabilizer Option).	*5.1 Checking Tire Pressure: Transport and Stabilizer Wheels, page 45*
	Check wheel bolt torque (Transport/Stabilizer Option).	*5.2 Checking Wheel Bolt Torque, page 46*
	Check knife drive box breather position.	*5.3 Checking Knife Drive Box, page 47*
	Check knife drive box lube level.	*5.3 Checking Knife Drive Box, page 47*
	Check knife drive belt(s) tension.	*5.4 Checking and Adjusting Knife Drive Belt Tension, page 48*
	Check if reel is centered between header endsheets.	*5.5 Centering the Reel, page 51*
	Grease all bearings and U-joints.	*5.12 Lubricating the Header, page 64*
	Check draper tension.	*5.6 Adjusting Draper Tension, page 53*
	Check draper seal.	*5.7 Checking and Adjusting Draper Seal, page 55*
	Check reel tine to cutterbar clearance.	*5.10.1 Measuring Reel Clearance, page 59*
	Check if skid shoes are evenly adjusted an appropriate setting for first crop.	*5.8 Checking and Adjusting Skid Shoe Settings, page 57*
	Check fit of endshields.	*5.11 Checking and Adjusting Endshields, page 62*
	Check that header is level	*5.9 Levelling the Header, page 58*
	Check hydraulic hose and wiring harness routing for clearance when raising or lowering header and reel.	—
Run-up procedure		*6 Running Up the Header, page 69*
	Check if the knife drive pulley(s) is rotating in proper direction: clockwise on left-hand side; counterclockwise on right-hand side (double knife only).	*5.4 Checking and Adjusting Knife Drive Belt Tension, page 48*
	Check if lights are functional.	—

PREDELIVERY CHECKLIST

✓	Item	Reference
	Check if reel lift cylinders extend fully.	—
	Check if reel moves fully fore and aft.	—
Post run-up check. Stop engine.		*7 Performing Post Run-Up Adjustments, page 71*
	Check belt drives for heated bearings.	*5.4 Checking and Adjusting Knife Drive Belt Tension, page 48*
	Check knife sections for discoloration caused by misaligned components.	*7.1 Adjusting Knife, page 71*
	Check for hot spots on the cutterbar above the draper seal. Adjust deck height as required.	*5.7 Checking and Adjusting Draper Seal, page 55*
	Check for hydraulic leaks.	—
	Check that manual storage case contains operator's manual and parts catalog.	*5.13 Checking Manuals, page 68*

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